

**AmeriMation**

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# PLD Series

Ø25mm LED Tower Light



## Ordering Information

PLD	S	F	-	5	01	-	RYGBC
	①	②		③	④		⑤
① Pole Length	S	65mm pole					
	L	200mm pole					
② Light Style	no mark	Steady					
	F	Steady & Flashing					
③ Number of Stacks	1	1 Light					
	2	2 Lights					
	3	3 Lights					
	4	4 Lights					
	5	5 Lights					
④ Power Supply	01	12VDC					
	02	24VDC					
⑤ Lens Colors (top to bottom)	R	Red					
	Y	Yellow					
	G	Green					
	B	Blue					
	C	Clear					

- Strong aluminum body
- Well suited for small device applications
- Long LED life and reliable operation
- Prism-cut lenses for even light distribution
- Direct mounting pole installed
- Lead wire connection

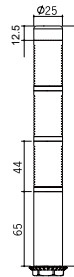
## Specifications

Operation/Function	Steady/ Flashing		
Maximum tier	5		
Body Style	Aluminum, Silver body		
Lens Diameter	25 mm (1 inch)		
Flash Rate	Approx. 80 ± 5 flashes/min.		
Certificate/Compliance	CE, RoHS		
Vibration	0.75mm at 10~55Hz		
Ambient Temperature	-15°C~40°C		
Storage Temperature	-20°C ~ 70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP52		
Recommended Wire Size	1007 UL / 22 AWG		
Power supply	12VDC	24VDC	
Current Consumption (RMS ±10%)	1stack	0.07A	0.03A
	2stack	0.14A	0.07A
	3stack	0.21A	0.10A
	4stack	0.28A	0.13A
	5stack	0.35A	0.16A

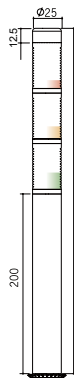


## Dimensions (unit:mm)

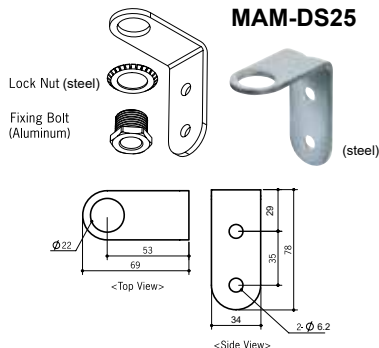
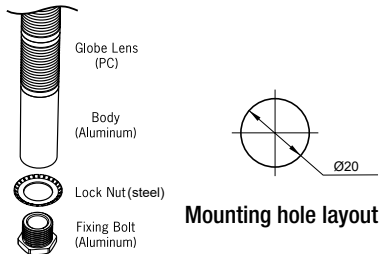
PLDS-000-00000  
PLDSF-000-00000



PLDL-000-00000  
PLDLF-000-00000

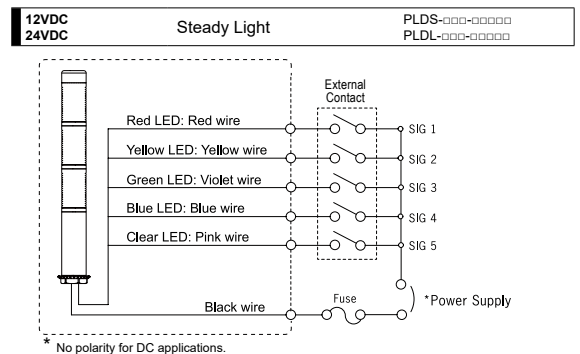
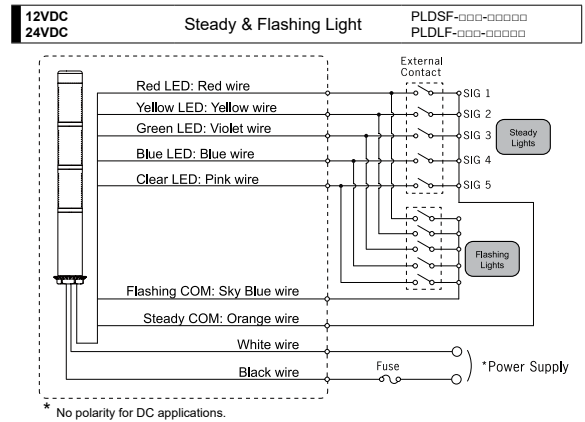


## Built-in mounting method



## Optional L-angle mounting bracket use

## Wiring Diagram





# MT4B/5B/8B Series

Ø45mm/Ø56mm/Ø85mm Bulb Type Tower Light

- Optional LED bulbs available
- Prism-cut lenses for even light distribution
- Direct, Pole or Wall Mount
- Wire leads connection



## Specifications

Operation		Steady							
Maximum tier		5 stacks							
Power Supply		12V AC/DC		24V AC/DC		110V AC		220V AC	
		4B	5B/8B	4B	5B/8B	4B	5B/8B	4B	5B/8B
Current Consumption (RMS ±10%)	1 Stack	0.4A	0.8A	0.2A	0.4A	0.04A	0.8A	0.02A	0.04A
	2 Stack	0.8A	1.7A	0.4A	0.8A	0.09A	0.16A	0.04A	0.08A
	3 Stack	1.2A	2.5A	0.6A	1.2A	0.13A	0.24A	0.06A	0.12A
	4 Stack	1.6A	3.3A	0.8A	1.6A	0.16A	0.32A	0.08A	0.16A
	5 Stack	2.0A	4.2A	1.0A	2.0A	0.20A	0.40A	0.10A	0.20
Lens Material		PC Plastic							
Rating		IP 54							
Vibration		3mm at 10~55Hz							
Ambient Temp.		-15°C~40°C							
Ambient Humidity		45~85% RH							
Wire Size		1007 UL / 22 AWG							
Certificate		UL, CE, RoHS							



## Ordering Information

MT 4 B 5 A L - RYGC

① ② ③ ④ ⑤ ⑥

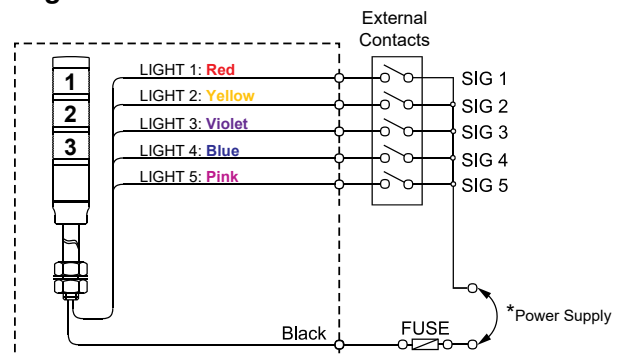
① Lens Diameter	4	Ø45mm
	5	Ø56mm
	8	Ø85mm
② Light Style	B	Steady
③ Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
	4	4 Lights
	5	5 Lights
④ Power Supply	D	12V AC/DC
	A	24V AC/DC
	B	110V AC
	C	220V AC
⑤ Connection	L	Lead Wires
⑥ Lens Colors (top to bottom)	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

## Replacement Parts

		Part Number	Power Supply/Specification	
MT4B	LED	MAL-T09-S-12-①	12V DC	
		MAL-T09-S-24-①	24V DC	
	BULB	MAB-T09-S-012-05	12V, 5W AC/DC	
		MAB-T09-S-024-05	24V AC/DC, 5W	
		MAB-T09-S-130-05	110~120V AC, 5W	
		MAB-T09-S-240-05	220~240V AC, 5W	
Lens	—	MT4-(①)	Ø45mm	
MT5B MT8B	LED	MAL-T15-D-12-①	12V DC	
		MAL-T15-D-24-①	24V DC	
		MAL-T15-D-120-①	110~120V AC	
	BULB	MAB-T15-D-012-10	12V AC/DC, 10W	
		MAB-T15-D-024-10	24V AC/DC, 10W	
		MAB-T15-D-120-10	110~120V AC, 10W	
		MAB-T15-D-240-10	220~240V AC, 10W	
	Lens	—	MT5-(①)	Ø56mm
		—	MT8-(①)	Ø85mm

(①): Color of LED or Lens; R, Y, G, B or C

## Wiring Diagram



\* No polarity for DC applications.

See page 21-23  
for mounting options and accessories

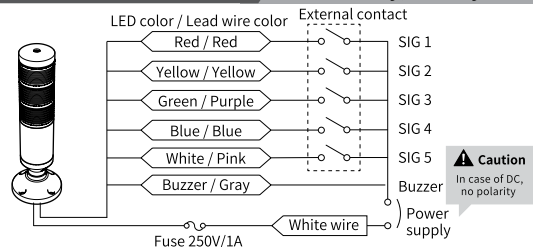
# PL4 Series

Ø45mm LED Steady & Flashing

- Pre-assembled 1 to 5 stack lights
- Built-in Audible Alarm Kit
- High visibility from every angle through prism-cut lens
- Various mounting options and accessories
- Various operating voltage
- Economy type

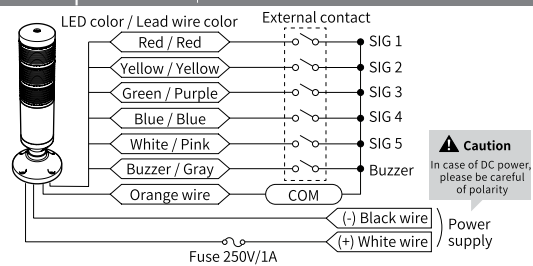
## Wiring Diagram

### 12VAC/DC, 24VAC/DC Steady, Steady+Buzzer



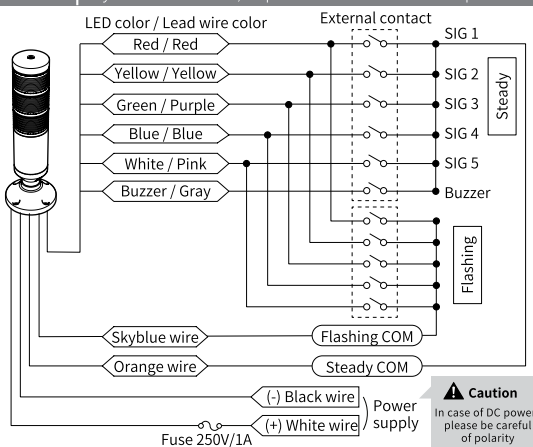
### 12~24VAC/DC, 110~220VAC Steady, Steady+Buzzer

**Caution** Please don't connect the steady wire (Orange colored) to power wire. This can cause product failure.

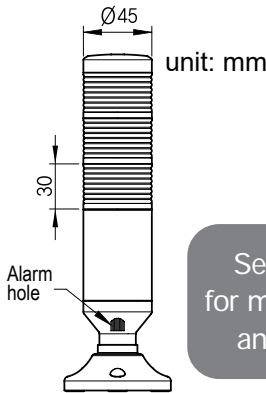


### 12~24VAC/DC, 110~220VAC Steady+Flashing+Buzzer

**Caution** Please don't connect the steady/flashing wire (Orange colored/Skyblue colored wire) to power wire. This can cause product failure.



	Power Supply	12 ~ 24VAC	
		Model	Standard type
Current Draw	1 Stack	0.22A	0.25A
	2 Stack	0.30A	0.32A
	3 Stack	0.38A	0.38A
	4 Stack	0.46A	0.46A
	5 Stack	0.52A	0.52A
	Power Supply	110~220VAC	
	1 Stack	0.03A	0.03A
	2 Stack	0.05A	0.06A
	3 Stack	0.07A	0.07A
	4 Stack	0.09A	0.09A
	5 Stack	0.11A	0.11A
LED Function		Steady + Flashing	
Operation Voltages		12~24VAC/DC, 110~220VAC (AC 50/60Hz)	
Light Source		LED	
LED Colors		5 Colors – Red, Yellow, Green, Blue, White	
Dimensions / Tiers		D45mm / up to 5 Tiers	



See page 21-23 for mounting options and accessories

## Ordering Information

PL 4 B - 3 FF - RYG - (B)

①      ②      ③      ④      ⑤

① Function	Steady	
	<b>F</b>	Steady + Flashing
<b>B*</b>	Steady + Audible Alarm	
<b>Z*</b>	Steady + Flashing + Audible Alarm	
② Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
③ Power Supply	<b>00</b>	12 ~ 24V AC/DC
	<b>FF</b>	110~120V AC
④ LED Color	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear
⑤ Audible Alarm	<b>B**</b>	Audible Alarm

\*PL4 Series only. \*\*PL5 Series only

## Specifications

Flashing rates	12VDC - 75±5times/minute
	12VAC , 24VAC/DC - 80±5times/minute
	90~240VAC - 80±5times/minute
Alarm sound level	Alternating Alarm: 75±5dB- at 1M
	Continuous Alarm: 75±5dB- at 1M
Lens Color	5 Colors – Red, Yellow, Green, Blue, Clear
Mounting	Upward only
Wiring Method	Lead wires
Ambient Temperature	-20 ~ 40°C
Storage Temperature	-20 ~ 70°C
Ambient Humidity	45~85% RH
Dielectric Strength	1000VAC 50/60Hz for 1min
Insulation Resistance	100 min. at 500VDC
Vibration	0.75mm at 10~55Hz
Recommended Wire Size	UL1007 / 22AWG
Certificate/compliance	RoHS, UL
Degree of Protection	IP52

• **Note** •

A large rectangular area with rounded corners, enclosed by a dotted border. It contains 25 horizontal dotted lines for writing.

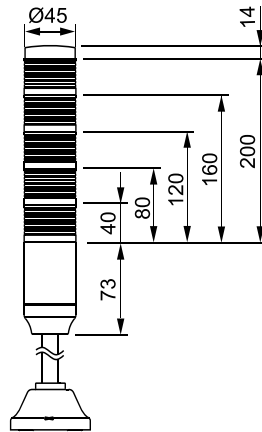


# PME Series

Ø45mm LED Modular Tower Light Steady & Flashing



## Dimensions (unit: mm)



- LED Modular type
- Pre wire type
- Surface, Pole or Wall Mount (Order poles & bases separately)
- Alarm sound type available for 12 ~ 24VAC/DC type

## Ordering Information

PME F - 5 01 - RYGBC  
 ① ② ③ ④

① Light Style		Steady
	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady + Buzzer*
	<b>Z</b>	Steady, Flashing + Buzzer*
② Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
③ Power Supply	<b>01</b>	12V AC/DC
	<b>02</b>	24V AC/DC
	<b>FF</b>	90~240V AC
④ Lens Colors (top to bottom)	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

\* 12 & 24V only

## Replacement parts

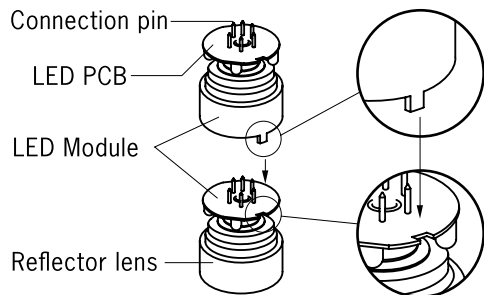
LED	PME-02-□	24V, 90~240V AC/DC
	PME-01-□	12V AC/DC
Lens	PME-□	—

(□): indicates color of LED or Lens; R, Y, G, B or C

## Specifications

Power Supply		12V AC/DC		24V AC/DC		90-240V AC
Current consumption (RMS value ±10%)		LED	w/Alarm	LED	w/Alarm	LED
	1stack	0.06A	0.07A	0.03A	0.06A	0.02A
	2stack	0.10A	0.11A	0.07A	0.09A	0.05A
	3stack	0.17A	0.18A	0.11A	0.14A	0.07A
	4stack	0.20A	0.21A	0.15A	0.17A	0.10A
	5stack	0.24A	0.25A	0.18A	0.20A	0.12A
Alarm Sound Level		80±5dB at 1m				
Flashing rate		Approx. 80 ± 5 flashes/min.				
Rating		IP55(IP50 with Buzzer)				
Vibration		3mm at 10~55Hz				
Ambient Temp.		-15°C~40°C				
Ambient Humidity		45~85% RH				
Recommended Wire Size		1007 UL / 22 AWG				

## How to assemble LED Module



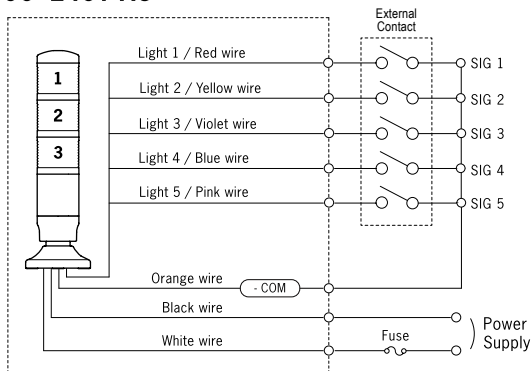
align the reflector lens  
LED PCB hole

See page 21-23  
for mounting options and accessories

# Wiring Diagram

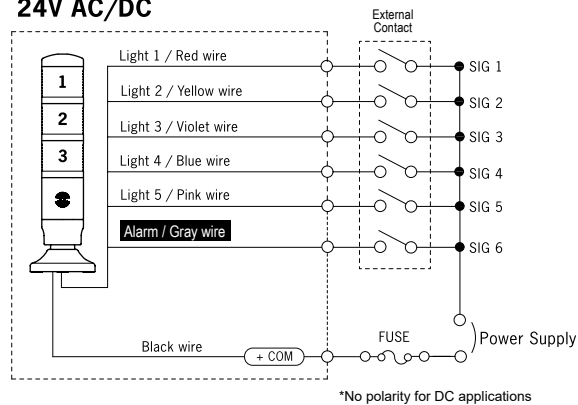
## Steady

90~240V AC



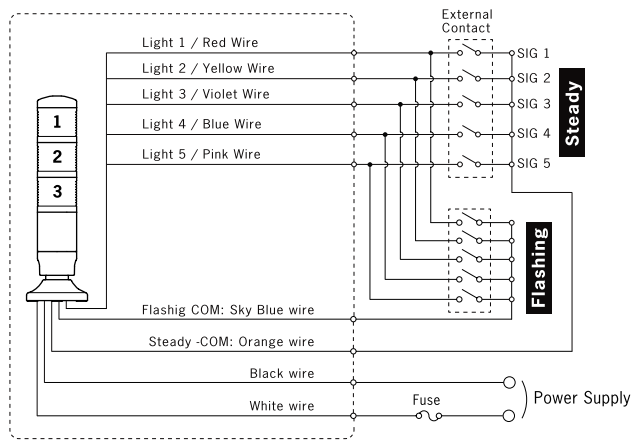
## Steady + Buzzer

12V AC/DC  
24V AC/DC

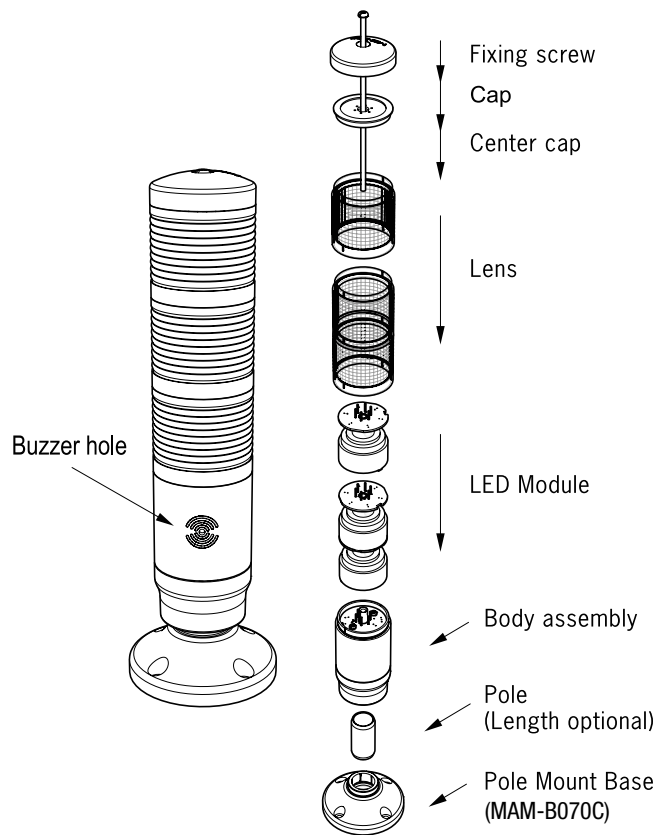


## Steady + Flashing

90~240V AC

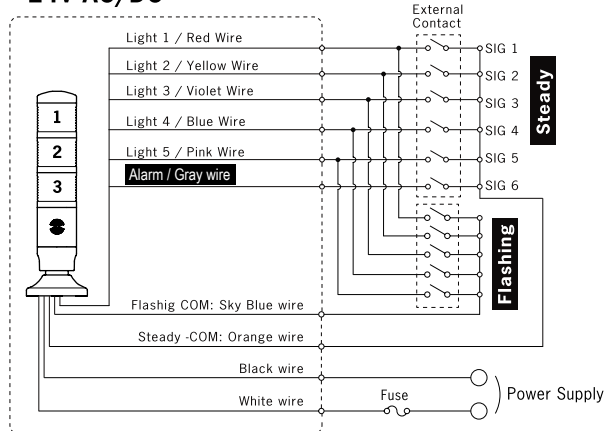


## How to Assemble



## Steady + Flashing + Buzzer

12V AC/DC  
24V AC/DC



# MT5C/8C Series

Ø56mm/Ø85mm Bulb Type Tower Light



- Optional LED bulbs available
- Selectable Steady or Flashing Modes
- Prism-cut lenses for even light distribution
- Various mounting options
- Optial buzzer (80 dB) kit available



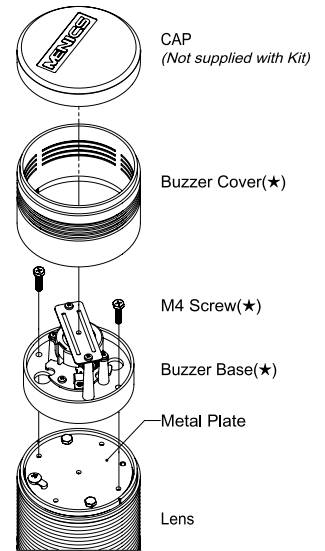
## Ordering Information

MT	5	C	5	A	L	-	RYGBC
	①	②	③	④	⑤		⑥
Lens Diameter	5	Ø56mm					
	8	Ø85mm					
Light Style	C		Steady & Flashing				
Number of Stacks	1	1 Light					
	2	2 Lights					
	3	3 Lights					
	4	4 Lights					
	5	5 Lights					
Power Supply	A	24V AC/DC					
	B	110~120V AC					
	C	220~240V AC					
⑤ Connection	L		Lead Wires				
⑥ Lens Colors (top to bottom)	R	Red					
	Y	Yellow					
	G	Green					
	B	Blue					
	C	Clear					

## Specifications

Power Supply		24VAC/DC (w/Buzzer)	110VAC (w/Buzzer)	220VAC (w/Buzzer)	
Current Consumption (RMS ±10%)	Bulb	1 Stack	0.4 A (0.43A)	0.09 A (0.12A)	0.04 A (0.07A)
	2 Stack	0.8 A (0.83A)	0.18 A (0.21A)	0.08 A (0.11A)	
	3 Stack	1.3 A (1.33A)	0.27 A (0.30A)	0.12 A (0.15A)	
	4 Stack	1.7 A (1.73A)	0.36 A (0.39A)	0.16 A (0.19A)	
	5 Stack	2.0 A (2.03A)	0.45 A (0.48A)	0.20 A (0.23A)	
LED Life-Span		10,000 hours (minimum)			
Degree of Protection		IP54 (IP50 with buzzer)			
Alarm Sound Level		80 ± 5dB at 1 meter			
Flashing rate		80 ± 10 times/minute			
Certificate/compliance		UL, CE, RoHS			
Vibration		3mm at 10~55Hz			
Ambient Temp.		-15°C~40°C			
Ambient Humidity		45~85% RH			
Recommended Wire Size		1007 UL / 22 AWG			
Operation		Steady/Flashing/Buzzer			

## Optional Buzzer Kit



MPZ - 56 A  
① ②

① Buzzer Size (Diameter)	
56	Ø56mm (for MT5C Series)
85	Ø85mm (for MT8C Series)

② Power Supply	
A	24V AC/DC, 80dB (30mA)
B	110~120V AC, 80dB (30mA)
C	220~240V AC, 80dB (30mA)

## Replacement Parts

\*Note: Max. number of tier including Buzzer is 5.

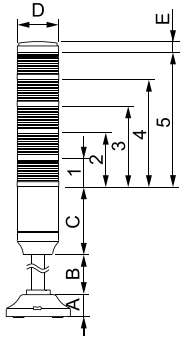
LED		MAL-T15-D-24-①	24V DC
		MAL-T15-D-120-①	110~120V AC
BULB		MAB-T15-D-024-10	24V AC/DC, 10W
		MAB-T15-D-120-10	110~120V AC, 10W
		MAB-T15-D-240-10	220~240V AC, 10W
Lens	-	MT5-(①)	Ø56mm
		MT8-(①)	Ø85mm

①: Color of LED or Lens; R, Y, G, B or C



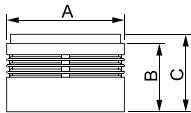
## Dimensions

unit: mm



Symbol	Model		
	MT4B	MT5C MT5B	MT8C MT8B
A	29	29	29
B	185	185	185
C	73	95	95
D	45	56	85
E	10.5	15	15
1	46	68	68
2	92	136	136
3	138	204	204
4	184	272	272
5	230	340	340

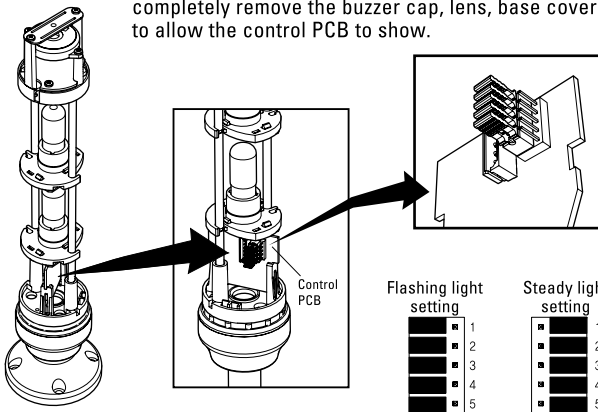
### Optional Buzzer Kit MPZ-56 MPZ-85



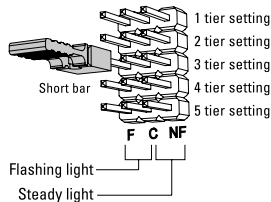
Symbol	MPZ-56	MPZ-85
A	56	86
B	48	50
C	54	56

## Lighting feature setting

- ① Remove the bulb by turning the upper fixed cap, and completely remove the buzzer cap, lens, base cover to allow the control PCB to show.



- ② The shortcircuit bar setting position of control PCB for all the shipped products is set at flashing function. In case of changing a signal of desired tier steady light function, take out the shortcircuit bar of the desired tier of the control PCB, move and insert it sideways by one space.



See page 21-23  
for mounting options and accessories

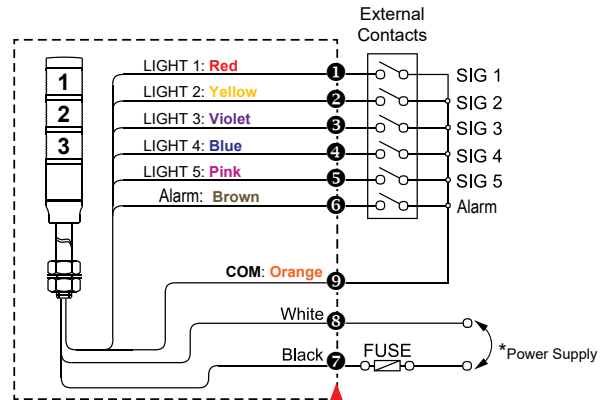
## Wiring Diagram

### MT5C/8C

#### 24V AC/DC

MT5C□AL-□□□□ MT8C□AL-□□□□

#### Steady & Flashing (w/Alarm)



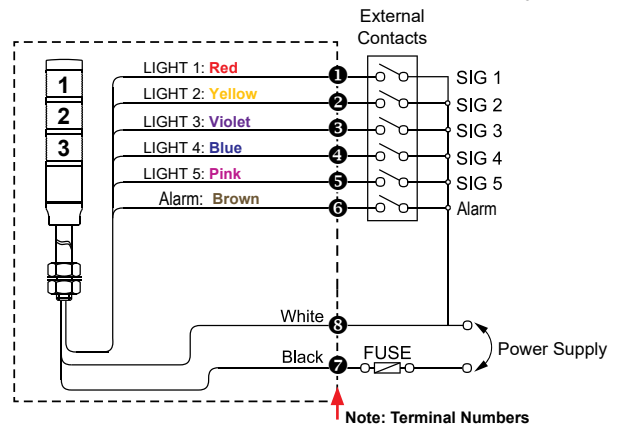
\* No polarity for DC applications.

#### 110~120V AC, 220~240V AC

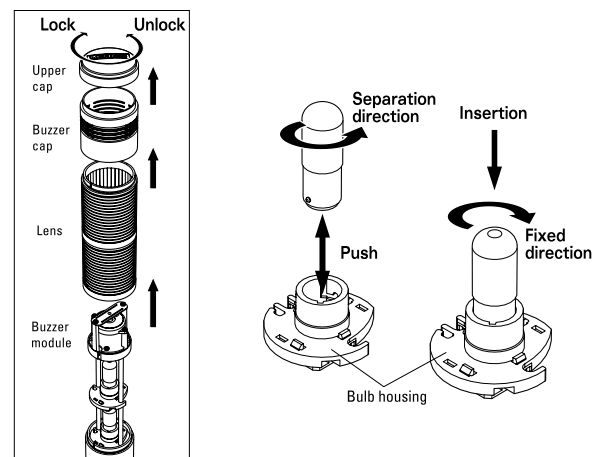
MT5C□BL-□□□□  
MT8C□BL-□□□□

#### Steady & Flashing Lights (w/Alarm)

MT5C□CL-□□□□  
MT8C□CL-□□□□



## How to change bulbs



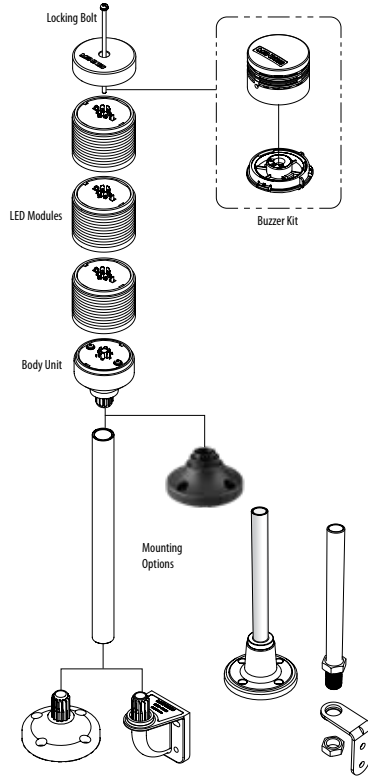


# PTE Series

Ø56mm LED Modular Stack Light  
Steady & Flashing lights with buzzer



- LED modular components
- Optional buzzer at 80 or 100dB (fixed or adjustable volume)
- Lead wire or terminal connection
- Pole mounting or direct mounting



## Ordering Information

**PTE - A F - 3 02 - RYGB C - B**  
①      ②      ③      ④      ⑤      ⑥

① Top Head Style	<b>PTE</b>	Standard
	<b>PTD</b>	Dome Head
② Body Unit Mounting / Connection	<b>A</b>	Pole Mounting/ Lead Wires
	<b>SC</b>	Direct Mounting / Lead Wires
	<b>T</b>	Pole Mounting/ Terminal Connection
	<b>TC</b>	Direct Mounting/ Terminal Connection
③ Light Style		Steady Light
	<b>F</b>	Steady & Flashing Light
④ Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
⑤ Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90~240V AC
⑥ Lens Colors (top to bottom)	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Optional Parts

### Body Units

Body Type		Voltage	Part Number	
			Steady	Steady & Flashing
Lead Wire Connection	Pole Mounting	90~240V AC	PTE-A-FF-B	PTE-AF-FF-B
		24V AC/DC	PTE-A-02-B	PTE-AF-02-B
	Direct Mounting	90~240V AC	PTE-SC-FF-B	PTE-SCF-FF-B
		24V AC/DC	PTE-SC-02-B	PTE-SCF-02-B
Terminal Connection	Pole Mounting	90~240V AC	PTE-T-FF-B	PTE-TF-FF-B
		24V AC/DC	PTE-T-02-B	PTE-TF-02-B
	Direct Mounting	90~240V AC	PTE-TC-FF-B	PTE-TCF-FF-B
		24V AC/DC	PTE-TC-02-B	PTE-TCF-02-B

### LED Modules

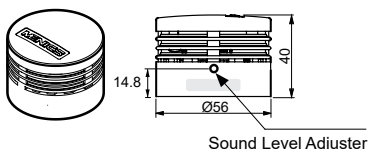
LED Color	Part Number	
	Standard Module	Dome Head Module
<b>Red</b>	PTE-02-R	PTD-02-R
<b>Yellow</b>	PTE-02-Y	PTD-02-Y
<b>Green</b>	PTE-02-G	PTD-02-G
<b>Blue</b>	PTE-02-B	PTD-02-B
<b>*Clear</b>	PTE-02-C	PTD-02-C

\*Clear Module cannot be used with Buzzer.

### Locking Bolts

	# Lights	Part Number	Size
PTE	1 Stack	B-PTE-1	M4, 65mm
	2 Stacks	B-PTE-2	M4, 105mm
	3 Stacks	B-PTE-3	M4, 145mm
	4 Stacks	B-PTE-4	M4, 185mm
	5 Stacks	B-PTE-5	M4, 225mm
PTD	1 Stack	B-PTD-1	M4, 83mm

\*Note: Do NOT count Buzzer as a stack.



### Buzzer Kits (Optional)

Alarm Style	Part Number
<b>Fixed Sound Level</b>	MPZ-56F-B
<b>Adjustable up to 80±5dB</b>	MPZ-56G-B
<b>Adjustable up to 100±5 dB</b>	MPZ-56H-B

\*Note: Max. number of tier including Buzzer is 5.

See page 21-23 for mounting options and accessories



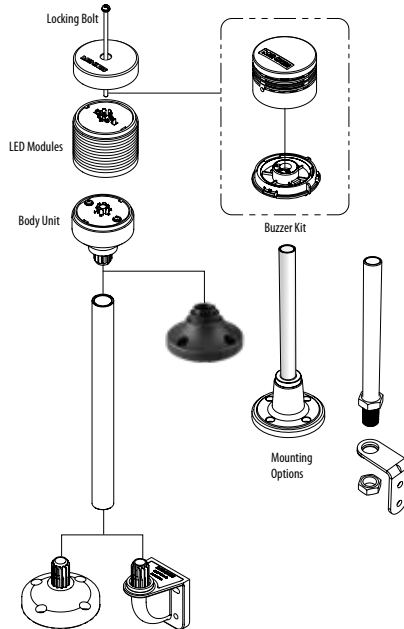


# PTM/PTD Series

Ø56mm Multicolored LED Modular Light  
Steady & Flashing lights with buzzer



- Multicolored LED modular components
- Lead wire or terminal connection
- Pole mounting or direct mounting
- Optional Buzzer at 80 or 100dB (fixed or adjustable volume)



## Ordering Information

PTM - A F - 1 02 - RYG - B  
① ② ③ ④ ⑤ ⑥

① Head Style	<b>PTM</b>	Standard
	<b>PTD</b>	Dome Head
② Body Unit Mounting / Connection	<b>A</b>	Pole Mounting/ Lead Wires
	<b>SC</b>	Direct Mounting / Lead Wires
	<b>T</b>	Pole Mounting/ Terminal Connection
	<b>TC</b>	Direct Mounting/ Terminal Connection
③ Light Style		Steady Light
	<b>F</b>	Steady & Flashing Light
④ Number of Stacks	<b>1</b>	1 stack
⑤ Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90~240V AC
⑥ Lens Colors (3 colors in 1 module)	<b>RYG</b>	Red, Yellow, Green
	<b>RBG</b>	Red, Blue, Green

## Optional parts

### Body Units

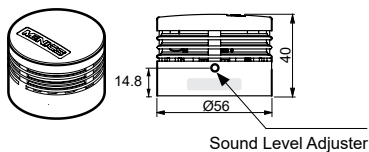
Body Type		Voltage	Part Number	
			Steady	Steady & Flashing
Lead Wire Connection	Pole Mounting	90~240V AC	PTE-A-FF-B	PTE-AF-FF-B
		24V AC/DC	PTE-A-02-B	PTE-AF-02-B
	Direct Mounting	90~240V AC	PTE-SC-FF-B	PTE-SCF-FF-B
		24V AC/DC	PTE-SC-02-B	PTE-SCF-02-B
Terminal Connection	Pole Mounting	90~240V AC	PTE-T-FF-B	PTE-TF-FF-B
		24V AC/DC	PTE-T-02-B	PTE-TF-02-B
	Direct Mounting	90~240V AC	PTE-TC-FF-B	PTE-TCF-FF-B
		24V AC/DC	PTE-TC-02-B	PTE-TCF-02-B

### LED Modules

LED Color		Part Number	
		Standard Module	Dome Head Module
3 colors in 1	R/Y/G	PTM-02-RYG	PTD-02-RYG
	R/B/G	PTM-02-RBG	PTD-02-RBG

### Locking Bolts

Part Number		Size
PTM	B-PTE-1	M4, 65mm
PTD	B-PTD-1	M4, 83mm



### Buzzer Kits (Optional)

Alarm Style	Part Number
Fixed Sound Level	MPZ-56F-B
Adjustable up to 80±5 dB	MPZ-56G-B
Adjustable up to 100±5 dB	MPZ-56H-B

See page 21-23  
for mounting options and accessories

# Specifications

## Body Units

Operation/Function	Steady/ Flashing
Power Supply	24V AC/DC, 90~240V AC 50/60 Hz
Alarm Sound Level	Fixed: 80±5dB Adjustable: 10~80±5dB, 10~100±5dB
Lens Color	3 colors in 1 module: Red/Yellow/Green, Red/Blue/Green
Lens Diameter	56 mm (2.2 inch)
Maximum Tier	1
Flash Rate	80 ± 5 times/min
Vibration	0.75mm @10~55Hz: xyz/60min
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Degree of Protection	IP65 / IP40 (with Buzzer)
Approvals	CE , UL, RoHS
Recommended Wire Size	1007 UL / 22 AWG

## LED Modules

LED Color		Current consumption	
		24V	90~240V
3 colors in 1	RYG	35mA	16mA
	RGB		
Weight		Approx. 43g	

## Buzzer Kits

Model	MPZ-56F-B	MPZ-56G-B	MPZ-56H-B
Style	Fixed Sound	Adjustable Sound	Adjustable Sound
Sound Level	85 dB	10~85 dB at 1M	10~100 dB at 1M
Current Consumption / Power	30mA / 0.72W	30mA / 0.72W	150mA / 3.6W
Weight	33g	33g	33g

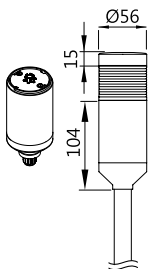
# Dimensions

unit: mm

## Lead Wire Connection

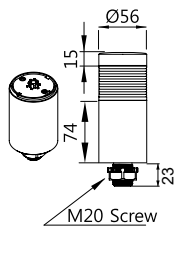
### Pole Mounting

PTE-A-□□  
PTE-AF-□□



### Surface Mounting

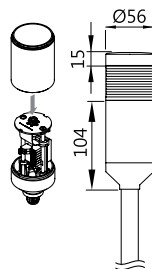
PTE-SC-□□  
PTE-SCF-□□



## Terminal Connection

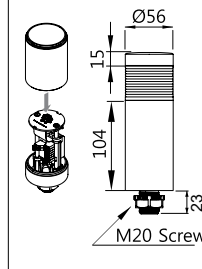
### Pole Mounting

PTE-T-□□  
PTE-TF-□□

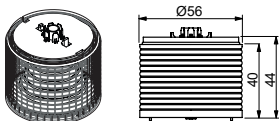


### Surface Mounting

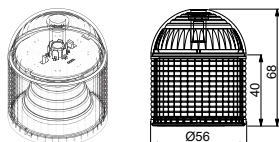
PTE-TC-□□  
PTE-TCF-□□



## Standard Modules



## Dome Head Modules

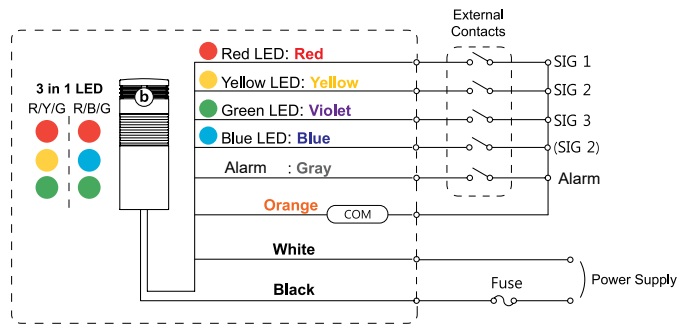


# Wiring Diagram

## 90-240V AC

### Steady Lights

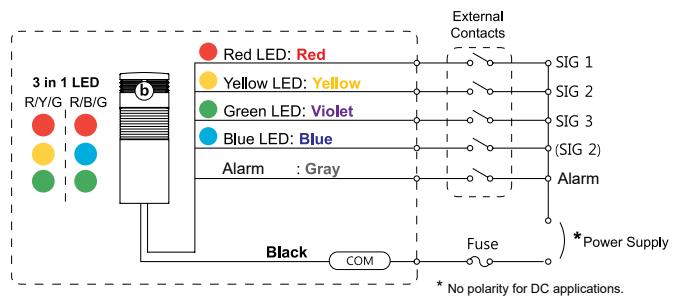
PTE-A-FF PTE-SC-FF



## 24V DC/AC

### Steady Lights

PTE-A-02 PTE-SC-02

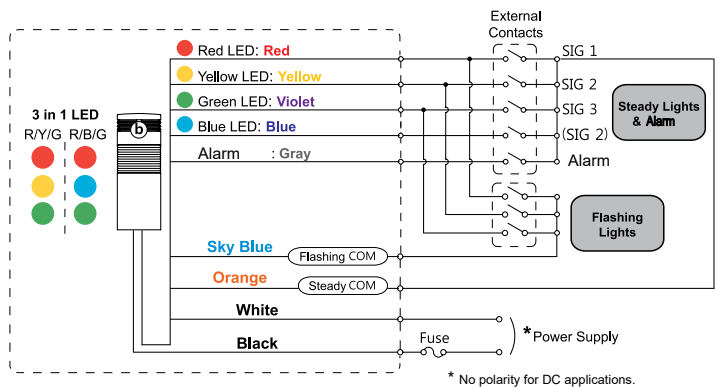


## 90-240V AC

## 24V DC/AC

### Steady & Flashing Lights

PTE-AF-02 PTE-AF-FF PTE-SCF-02  
PTE-SCF-FF PTE-T□-02 PTE-T□-FF



## Terminal Connections

PIN #	Description
R	Red LED
Y	Yellow LED
G	Green LED
B	Blue LED
Z	Alarm
COM	Steady COM
F	Flashing COM
A	Power Supply
B	No Polarity for DC Applications.

# PY7 Series

## D70mm LED Signal Tower Light

- Smooth surface of the lens minimize adhesion of dust & water
- Suitable for sanitary environment like food, pharmaceutical industries
- Low maintenance with replaceable durable polycarbonate outer lens
- Excellent visibility of LED light emitted from inner lens
- Variety of light styles and combinations



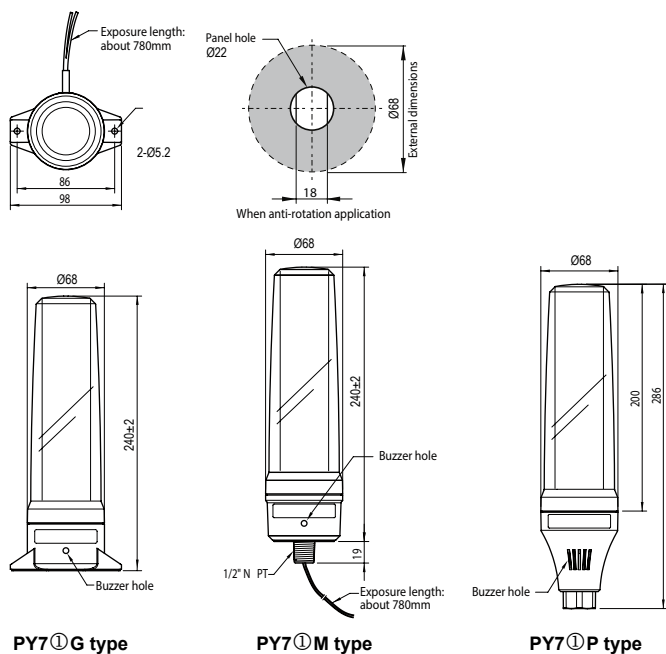
### Ordering Information

PY7	T	P	-	Z	F	02	-	RYG	-	B
	①	②		③	④	⑤		⑥		⑦
Model Type	L	Standard								
	T	Multi Channel								
Mounting Type	G	Surface Mounting								
	M	Direct Mounting								
	P	Pole Mounting								
Light Style	No mark	Steady								
	B	Steady + Buzzer								
	F	Steady + Flashing								
	Z	Steady + Flashing + Buzzer								
Number of Stack (L Type only)	3	3 LED Lights								
	4	4 LED Lights								
	5	5 LED Lights								
Power Supply	02	24VDC								
	FF	110~220VAC								
LED Color (top to bottom)	L Type	RYG	Red + Yellow + Green							
		RGB	Red + Blue + Green							
		RYGB	Red + Yellow + Green + Blue							
		RYGBW	Red + Yellow + Green + Blue + White							
	T Type	RBG	Red + Blue + Green							
RYG		Red + Yellow + Green								
Body Color	I	Ivory								
	B	Black								
	C	Silver Matte Coating								

### Current consumption

	Stack	LED Color	24VDC		110~220VAC	
			General	Buzzer	General	Buzzer
L Type	3 Lights	R+Y+G	0.14A	0.16A	0.08A	0.09A
	3 Lights	R+B+G	0.20A	0.22A	0.10A	0.11A
	4 Lights	R+Y+G+B	0.23A	0.25A	0.11A	0.11A
	5 Lights	R+Y+G+B+W	0.25A	0.27A	0.11A	0.11A
T Type	Multi-color	R+B+G	0.22A	0.23A	0.05~0.10A	0.06~0.10A
		R+Y+G	0.22A	0.23A	0.05~0.10A	0.06~0.10A

### Dimensions



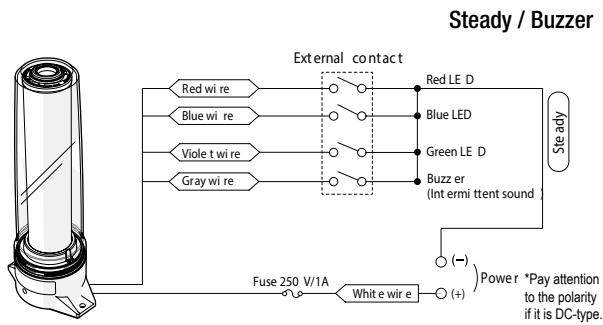
### Specifications

Model Type	L	T
Function	Steady, Flashing, Buzzer	
Power Supply	24VDC, 110~220VAC (50~60Hz)	
Allowable Voltage Range	24VDC: 21.6~26.4VDC / 110~220VAC: 100~240VAC	
Flashing Rate	70±5/min	
Buzzer Volume*	Continuous sound: 80±5dB (at 1M) Intermittent sound: 80±5dB (at 1M)	Intermittent sound: 75±5dB (at 1M)
Lens Color	Transparent (inner and outer) - PC Resin	
Mounting Options	Pole/Surface/Direct/Wall Mounting	
Ambient Temperature	-20°C ~ 50°C	
Storage Temperature	-20°C ~ 70°C	
Ambient Humidity	45~85% RH	
Withstand Voltage	500VAC 50/60Hz for 1 minute	
Insulation Resistance	100MΩ or more (500VDC Megger basis)	
Vibration	10 ~ 55Hz (1 min.cycle) Double amplitude 0.75mm X, Y, Z	
Connection	UL1007/22AWG	
Protection Structure	IP65 (with Buzzer type: IP62)	
Approval	UL/CE(24V Only),RoHS	UL(24V Only), RoHS
Weight (DC, Buzzer Type)	PY7 ①P type: app. 350g PY7 ①G type: app. 320g PY7 ①M type: app. 310g	

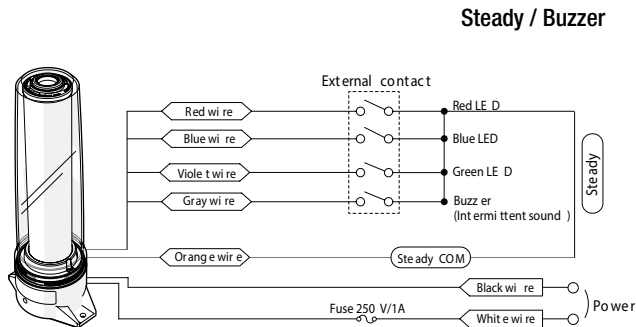
\*You can select only one of two buzzer sounds to use.

# T Type Connection diagram

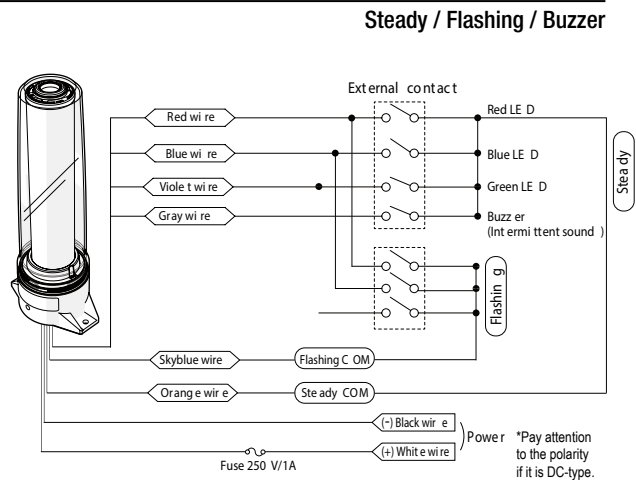
24VDC



110~220VAC



24VDC, 110~220VAC

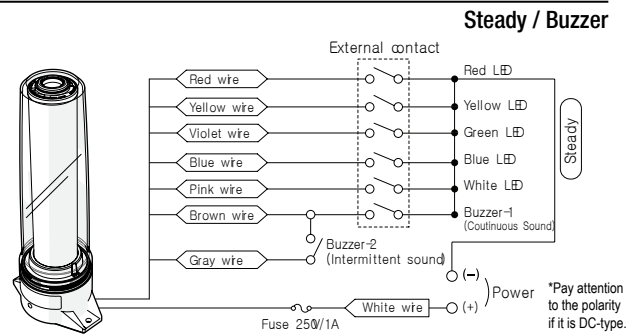


# T Type Operating Condition

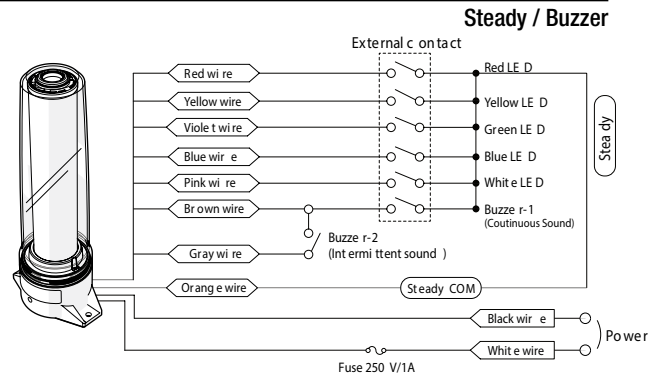
Conditions	Input condition			LED Output color	
	Red LED (Red wire)	Blue LED (Blue wire)	Green LED (Violet wire)	Upper Display	Lower Display
Condition-1	0	1	1	Red	
Condition-2	1	0	1	Blue	
Condition-3	1	1	0	Green	
Condition-4	0	1	0	Red	Green
Condition-5	0	0	1	Blue	Red
Condition-6	1	0	0	Sky blue	
Condition-7	0	0	0	Blue	Sky blue
Condition-8	1	1	1	Off	
Remark	0: Orange wire (-) COM ----> Connection Status 1: Open condition				

# L Type Connection diagram

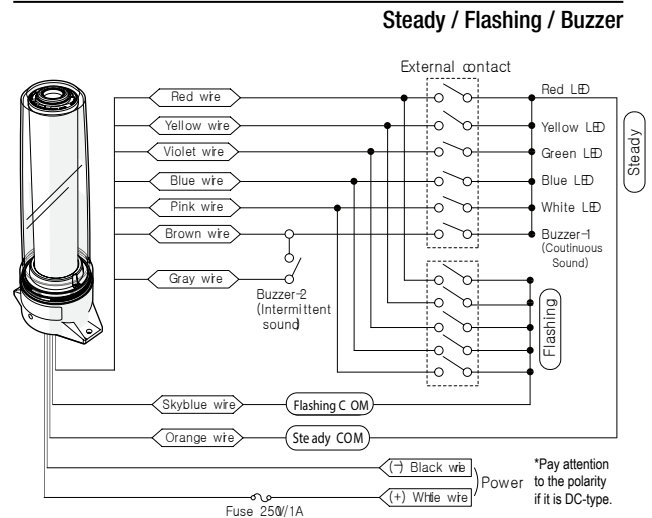
24VDC



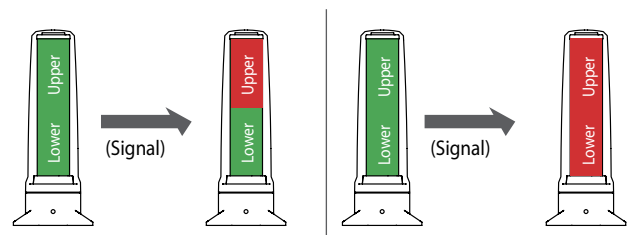
110~220VAC



24VDC, 110~220VAC



# T type's multi-color & multi-channel function



See page 21-23 for mounting options and accessories

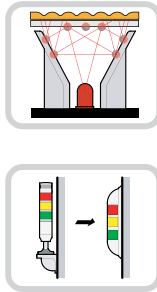




# PWE Series

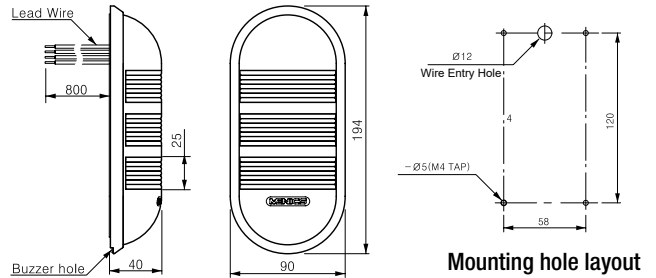
90mm Wall Mounting Semicircular LED Signal Light

- 1~3 colors
- Slim Profile Wall Mount
- Easy Mounted vertically and horizontally
- Steady and flashing lights
- Vibration and moisture resistant



## Dimensions

unit: mm



## Ordering Information

PWE C F - 3 02 - RYG  
 ① ② ③ ④ ⑤

① Housing Color	no mark	Cream
	C	Chrome
② Light Style		Steady
	F	Steady & Flashing
	B	Steady with Audible Alarm
	Z	Steady & Flashing with Alarm
③ Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
④ Power Supply	01	12V AC/DC
	02	24V AC/DC
	FF	90~240V AC
⑤ Lens Colors (top to bottom)	R	Red
	Y	Yellow
	G	Green

## Specifications

Alarm Sound Level	80 ± 5dB at 1m
Flashing rate	Approx. 80 ± 5 flashes/min.
Rating	IP65 (IP52 with buzzer)
Vibration	0.75mm at 10~55Hz
Ambient Temp.	-20°C~40°C
Ambient Humidity	45~85% RH
Recommended Wire Size	1007 UL / 22 AWG

## Current Consumption

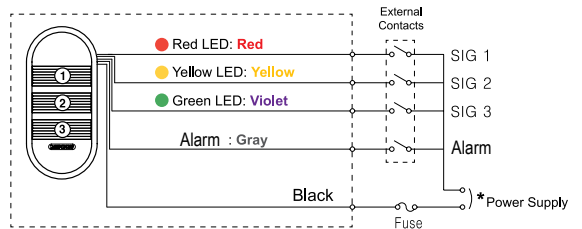
PowerSupply	12VAC/DC		24VAC/DC		90~240VAC	
	General	Buzzer	General	Buzzer	General	Buzzer
1stack-Red	0.06A	0.25A	0.07A	0.16A	0.02A	0.05A
2stacks-Red+Green	0.12A	0.30A	0.12A	0.20A	0.03A	0.13A
3stacks-R+Y+G	0.17A	0.37A	0.15A	0.27A	0.04A	0.18A

## Wiring Diagram

### 12V & 24V AC/DC

PWE-□01-□□□ PWEB-□01-□□□  
 PWE-□02-□□□ PWEB-□02-□□□

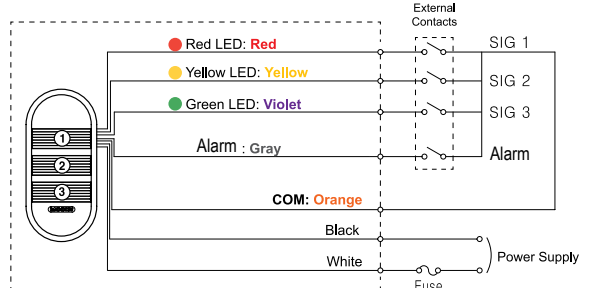
#### Steady Lights (with Audible Alarm)



### 90-240V AC

PWE-□FF-□□□ PWEB-□FF-□□□

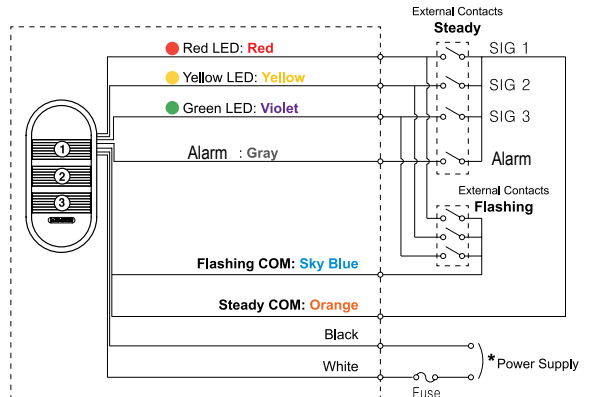
#### Steady Lights (with Audible Alarm)



### 90-240V AC, 24V AC/DC

PWEF-□01-□□□ PWEZ-□01-□□□  
 PWEF-□02-□□□ PWEZ-□02-□□□  
 PWEF-□FF-□□□ PWEZ-□FF-□□□

#### Steady & Flashing Lights (with Audible Alarm)



\* No polarity for DC applications.



# MWE Series

90mm Wall mounting Semicircular Multicolored LED Signal Light

- 3 or 4 Colors (Red, Yellow, Green, Blue)
- Large LED Light-emitting Lens (93mm)
- Optional built-in Alarm
- IP65 (With Alarm: IP52)



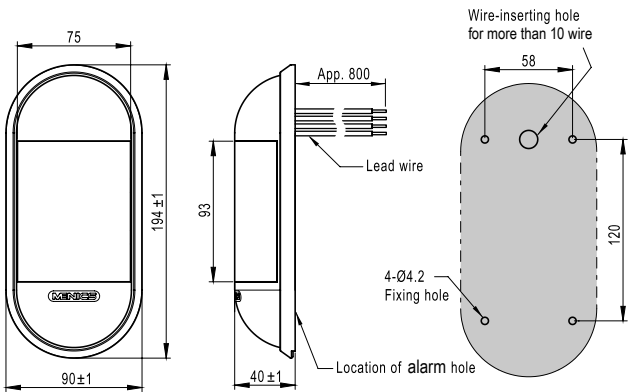
## Ordering Information

MWE C F - 3 00 - RGB M  
 ① ② ③ ④ ⑤ ⑥

① <b>Housing Color</b>	<b>no mark</b> <b>C</b>	Cream Nickel-plated
② <b>Light Style</b>	<b>F</b> <b>B</b>	Steady/Flashing Steady/Flashing/Alarm
③ <b>LED Signals</b>	<b>3</b> <b>4</b>	3 Colors 4 Colors
④ <b>Power Supply</b>	<b>00</b> <b>FF</b>	12~24VDC 110~220VAC
⑤ <b>LED Colors</b>	<b>RGB</b> <b>RYG</b> <b>RYGB</b>	Red, Green, Blue Red, Yellow, Green Red, Yellow, Green, Blue
⑥ <b>Lens Color (Optional)</b>	<b>No Mark</b> <b>M</b>	Clear Lens Milky Lens

## Dimensions

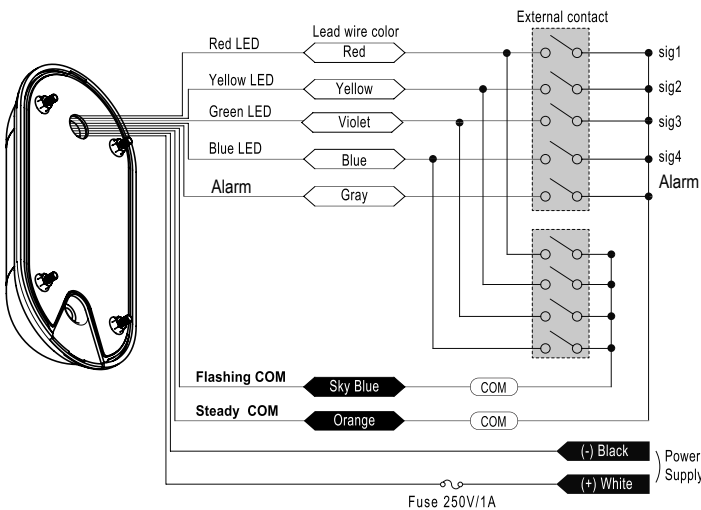
unit: mm



※ If you want to get IP52 grade, be sure to place the alarm side down. (For alarm type product)

Mounting hole layout

## Wiring Diagram

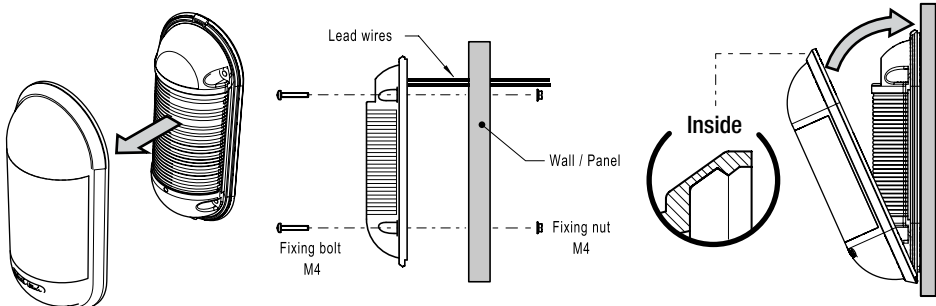


※ Pay attention to the polarity if it is DC-type.

## Specifications

Power Supply	12~24VDC	110~220VAC
Current Consumption	0.50A/ 0.60A(w/Alarm)	0.07A/0.07A (w/Alarm)
Flash Rate	12VDC	80±5 times per minute
	24AC/DC	85±5 times per minute
	110~220VAC	85±5 times per minute
Color of Front Lens	Standard Color—Clear, Option – Milky white	
Alarm Sound Level	75±5dB (at 1M, Sound Level is maximum)	
Wiring Method	Lead wire connection	
Vibration Resistance	0.75mm at 10~55Hz	
Dielectric strength	1000VAC 50/60Hz for 1min	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Recommended Wire Size	UL1007/22AWG	
Weight	AC type – About 300g, DC type – About 293g	
Degree of Protection	IP65 (IP52-Buzzer type)	

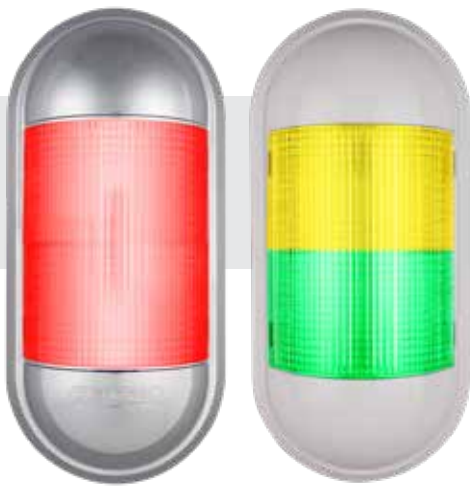
## How to install



## RGB LED Color Chart

Condition	Wiring	LED Color
1	Red wire	Red
2	Violet wire	Green
3	Blue wire	Blue
4	Red + Violet wire	Yellow
5	Red + Blue wire	Pink
6	Violet + Blue wire	Cyan
7	Red + Violet + Blue wire	White

\* 12~24VDC only



# MWET Series

90mm Wall mounting Semicircular Multi-channel LED Signal Light



- 3 Colors Signal Light
- Split lens can show different colors
- Large LED Light-emitting Lens (93mm)
- Optional built-in Alarm
- IP65 (With Alarm: IP52)

## Ordering Information

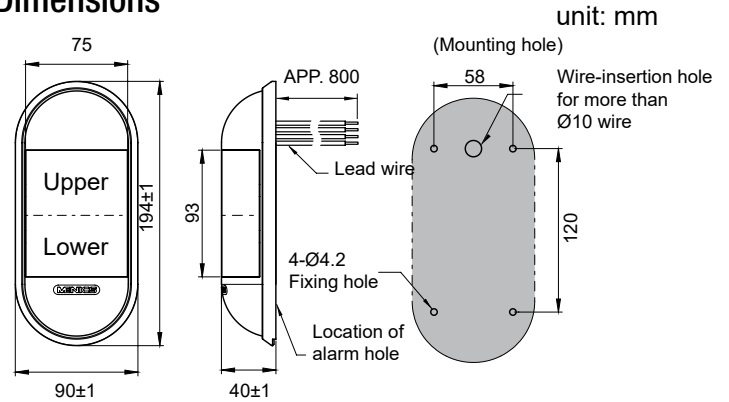
MWET C F - 3 00 - RYG M  
 ① ② ③ ④ ⑤ ⑥

① Housing Color (Optional)	no mark	Cream
	C	Nickel-plated
② Light Style	F	Steady/Flashing
	B	Steady/Flashing/Alarm
③ LED Signals	3	3 Colors
④ Power Supply	00	12~24VDC
	FF	110~220VAC
⑤ LED Colors	RGB	Red, Green, Blue
	RYG	Red, Yellow, Green
⑥ Lens Color (Optional)	No Mark	Clear Lens
	M	Milky Lens

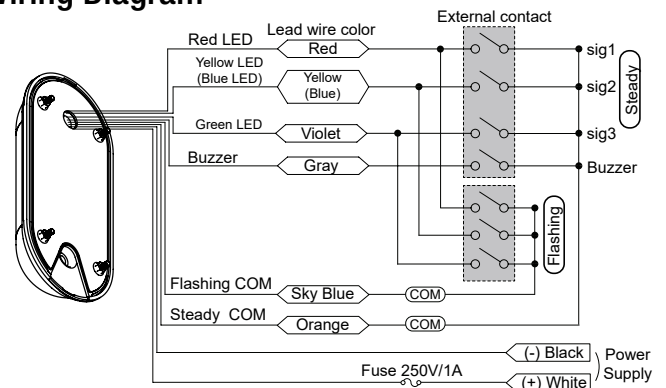
## Specifications

Power Supply	12~24 DC	110~220 AC
Current Consumption	Max 0.22A ±10%	Max 0.08A ±10%
Flash Rate	12VDC	80±5 times per minute
	24VDC	85±5 times per minute
	110~220VAC	85±5 times per minute
Alarm Sound Level	75±5dB (at 1M, Sound Level is maximum)	
Wiring Method	Lead wire connection	
Vibration Resistance	0.75mm at 10~55Hz	
Dielectric strength	1000VAC 50/60Hz for 1min	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65 (IP52-Buzzer type)	
Recommended Wire Size	UL 1007/22AWG	
Weight	AC type – About 300g, DC type – About 293g	
Approvals	RoHs, UL, CE	

## Dimensions



## Wiring Diagram



Pay attention to the polarity if it is DC-type.

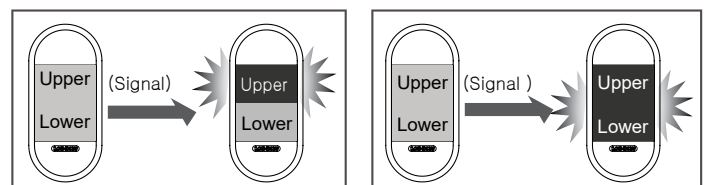
## Product Operating Conditions

Combination chart of color display

Signal wire condition			Red/yellow/Green		Red/Blue/Green	
Red LED (Red wire)	Yellow/Blue LED (Yellow/blue wire)	Green LED (Violet wire)	Upper Display	Lower Display	Upper Display	Lower Display
0	1	1	Red		Red	
1	0	1	Yellow		Blue	
1	1	0	Green		Green	
0	1	0	Red	Green	Red	Green
0	0	1	Red	Yellow	Blue	Red
1	0	0	Yellow	Green	Blue	Green
0	0	0	Red	OFF	Blue	OFF
1	1	1	OFF		OFF	

0: Orange wire (-) COM ----> Connection status

1: Open condition



Upper & lower lens can show different colors on a signal light.



# MSGS Series

D140mm Square Tower Warning Signal Light



- Incandescent type
- Outstanding visibility by magnified lens
- Large rotating reflector
- Selectable 5 signal sounds (100dB)
- Stud or Wall mount with optional bracket (see page B2)



## Specifications

Lighting Type	Incandescent, Rotating	
Power Supply	12VDC, 24VDC, 110VAC, 220VAC	
Current Draw & Wattage	12VDC	2.4A, 25W
	24VDC	1.3A, 25W
	110VAC	0.4A, 25W
	220VAC	0.2A, 25W
Rotation Rate	150±10 rpm	
Alarm Sound Level	100±5dB @1m	
Bulb Type	BA 15D	
Vibration	0.75mm at 10~55Hz	
Ambient Temperature	-15~40°C	
Storage Temperature	-25~70°C	
Ambient Humidity	45 ~ 85% RH	
Degree of Protection	IP20	
Recommended Wire Size	VSF / 0.75mm <sup>2</sup> (Power supply wire only)	
Certificate/Compliance	RoHS	

## Ordering Information

MSGS - 5 01 - RYGBC

①      ②                      ③

① Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
	4	4 Lights
	5	5 Lights
② Power Supply	01	12VDC
	02	24VDC
	10	110VAC
	20	220VAC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

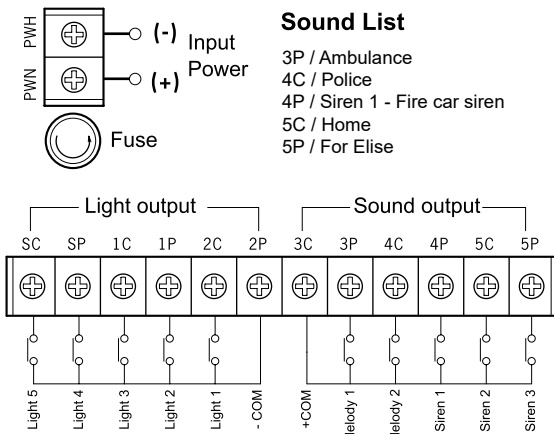
## Replacement Parts

Power Supply	12V DC	110V AC	220V AC	24V DC
Bulb	MAB-T15-D-012-25 (12V DC, 25 Watt)		MAB-T15-D-024-25 (24V DC, 25 Watt)	
LED Bulb	MAL-T15-D-②-①			
Lens	LENS-MSGS-①			

①: Color of LED or Lens; R, Y, G, B or C

②: Voltage: 12 (12VAC/DC) 24(24VAC/DC) 120(120VAC) 220(220VAC)

## Wiring Diagram

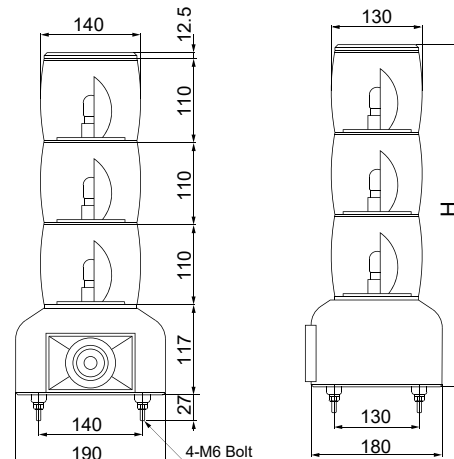


### Sound List

- 3P / Ambulance
- 4C / Police
- 4P / Siren 1 - Fire car siren
- 5C / Home
- 5P / For Elise

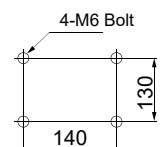
## Dimensions

unit: mm



# of Stack	H
1	240
2	350
3	460
4	570
5	680

### Mounting hole layout



## Wall Mounting Option



MAM-DS33

# ATEP/ATES Series

Ready to Use Andon Lights  
With Pole Mounted Control Box



- 56mm diameter LED Andon lights
- Pre-wired suitable for multiple applications
- 1-5 stacks, or 1-4 stacks with buzzer
- 80dB buzzer or adjustable 10-100dB buzzer
- Wall mountable with L bracket
- 9.45" pole & 6ft power cord



## Ordering Information

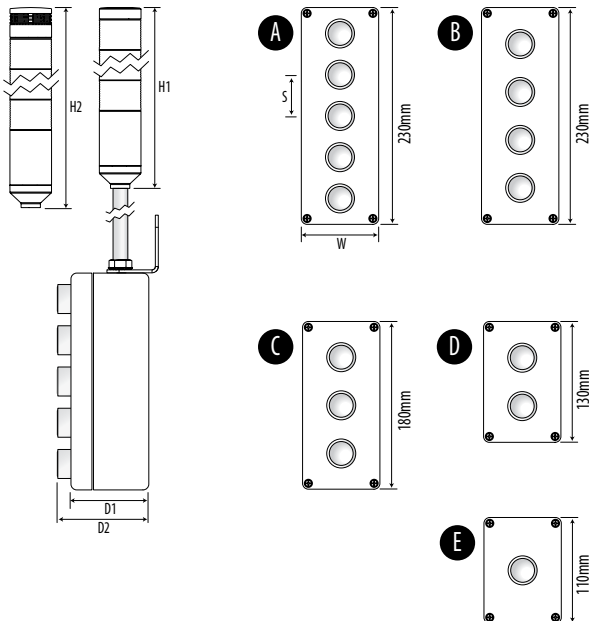
ATE P - R - B  
① ② ③

① Switch Type	<b>P</b>	Pushbutton
	<b>S</b>	Selector Switch (2 Position)
② Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>RY</b>	Red, Yellow
	<b>RG</b>	Red, Green
	<b>RYG</b>	Red, Yellow, Green
	<b>RYGB</b>	Red, Yellow, Green, Blue
③ Buzzer Type (optional)	<b>no mark</b>	No Buzzer
	<b>B</b>	80dB Buzzer
	<b>Z</b>	10-100dB Buzzer

"\*" marked type is not available for buzzer option

## Dimensions

unit: mm



	W	D1	D2	D3	S	H1	H2
<b>A</b>	80	72	83	96	42	319	N/A
<b>B</b>	80	72	83	96	50	279	304
<b>C</b>	80	72	83	96	50	239	264
<b>D</b>	80	72	83	96	50	199	224
<b>E</b>	80	72	83	96	N/A	159	184

D2 is for pushbutton type  
D3 is for selector switch type

## Specifications

Operation/Function	Red Flashing, Other Lights Steady *
Power Supply	90~240V AC 50/60 Hz (±10%)
Lens Color	Red, Yellow, Green, Blue & Clear
Lens Diameter	56 mm (2.2 inch)
Switching Options	Pushbutton or Selector Switch
Flash Rate	80 times/ minute
Vibration	0.75mm at 10~55Hz
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Pole length	9.45"(optional: 29.53", 39.37")
Power Cord	3 prong 6ft installed

\* Steady or Flashing function for any light stack can be changed by custom order

### LED Modules

Color	Red	Yellow	Green	Blue	Clear
Current Consumption	17mA	17mA	22mA	22mA	22mA

### Buzzer Modules

Type	B	Z
Style	Fixed Sound	Adjustable
Sound Level	80±5dB	10 ~ 100±5dB
Current Consumption	30mA	150mA

# ATEPR/ATESR Series

Ready to Use Andon Lights  
With Remote Control Box

- 56mm diameter LED Andon lights
- Pre-wired suitable for multiple applications
- 1-5 stacks, or 1-4 stacks with buzzer
- 80dB buzzer or adjustable 10-100dB buzzer
- Wall mountable with L bracket
- 9.45" pole & 6ft power cord



## Ordering Information

ATE PR - 10 - R - B  
① ② ③ ④

① Switch Type	<b>PR</b>	Pushbutton
	<b>SR</b>	Selector Switch (2 Position)
② Remote Cable Length	<b>10</b>	10 feet
	<b>15</b>	15 feet
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>RY</b>	Red, Yellow
	<b>RG</b>	Red, Green
	<b>RYG</b>	Red, Yellow, Green
	<b>RYGB</b>	Red, Yellow, Green, Blue
④ Buzzer Type (optional)	<b>no mark</b>	No Buzzer
	<b>B</b>	80dB Buzzer
	<b>Z</b>	10-100dB Buzzer

" \* " marked type is not available for buzzer option

## Specifications

Operation/Function	Red Flashing, Other Lights Steady *
Power Supply	90~240V AC 50/60 Hz (±10%)
Lens Color	Red, Yellow, Green, Blue & Clear
Lens Diameter	56 mm (2.2 inch)
Switching Options	Pushbutton or Selector Switch
Flash Rate	80 times/ minute
Vibration	0.75mm at 10~55Hz
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Pole length	9.45"(optional: 29.53", 39.37")
Power Cord	3 prong 6ft, installed

\* Steady or Flashing function for any light stack can be changed by custom order

### LED Modules

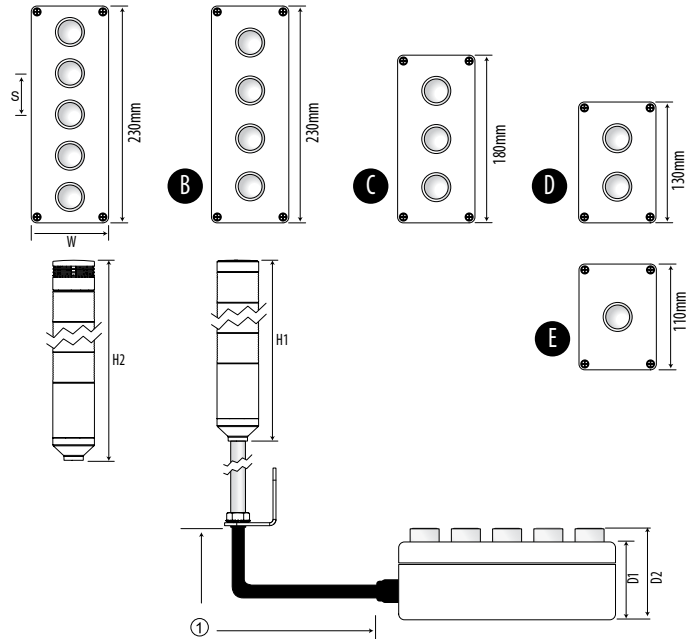
Color	Red	Yellow	Green	Blue	Clear
Current Consumption	17mA	17mA	22mA	22mA	22mA

### Buzzer Modules

Type	B	Z
Style	Fixed Sound	Adjustable Sound
Sound Level	80±5dB	10 ~ 100±5dB
Current Consumption	30mA	150mA

## Dimensions

unit: mm

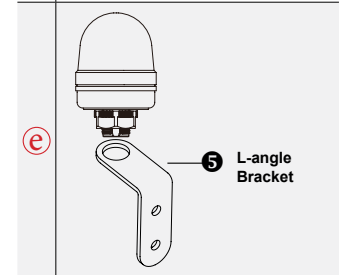
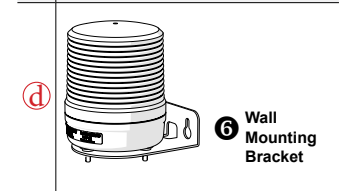
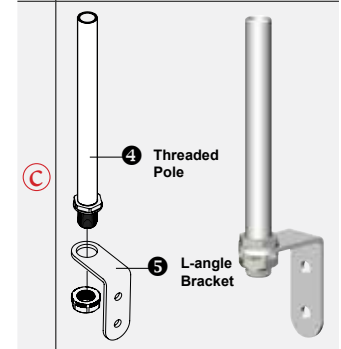
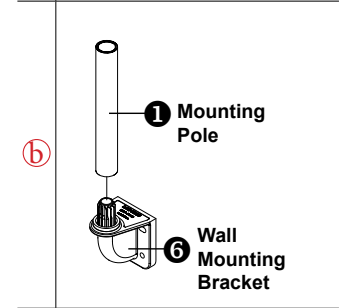
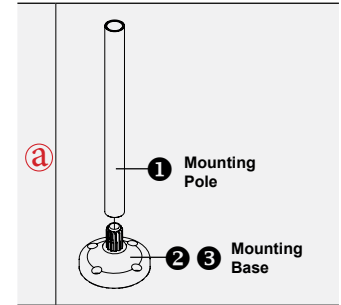


	W	D1	D2	D3	S	H1	H2
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<b>B</b>	80	72	83	96	50	279	304
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<b>D</b>	80	72	83	96	50	199	224
<b>E</b>	80	72	83	96	N/A	159	184

D2 is for pushbutton type  
D3 is for selector switch type

# Mounting Options

Series		Pole with Base Mounting <sup>a</sup>		Pole + Wall Mounting		Direct Wall Mounting (without Pole)
		Pole	Mounting Base	Pole	Wall Mount Bracket	
Stack Lights	PTE/PTM *	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAM-B070C MAM-B070D MAM-DS32A MAM-470R-20 MAM-DS42R-20C	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAP-DS40	Direct Mounting Type: MAM-DS25 <sup>e</sup>
	PME					
	MT4B/5B/5C					
	MT8B/8C **					
	PY7	MAP-225-22 (ø22mm)	MAM-DS32C MAM-470R-22 MAM-DS42R-22C	MAP-M240-22D (ø22mm)	MAM-DS25	M Type: MAM-DS25 <sup>e</sup> G Type: MAM-DS38 <sup>d</sup>
	PLD	N/A				MAM-DS25 <sup>e</sup>
	MSG5	Stud Mounting Type				MAM-DS33 <sup>d</sup>
Beacon Lights	MS66	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAM-B070C MAM-B070D MAM-DS32A MAM-470R-20 MAM-DS42R-20C	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAP-DS40	M Type: MAM-DS25 <sup>e</sup> G Type: MAP-DS30 <sup>d</sup> MAM-DS28
	ASG ***					
	MS86 ***					
	MS70	MAP-225-22 (ø22mm)	MAM-DS32C MAM-470R-22 MAM-DS42R-22C	MAP-M240-22D (ø22mm)	MAM-DS25	M Type: MAM-DS25 <sup>e</sup> G Type: MAM-DS38 <sup>d</sup>
	MS115	SAM-T115 (ø25mm Pole)		SAM-T115	MAM-DS38	MAM-DS29 <sup>d</sup>
	MS135	SAM-T135 (ø25mm Pole)		SAM-T135		MAM-DS37 <sup>d</sup>
	ML	Stud Mounting Type				MAP-DS30 <sup>d</sup> MAM-DS26
	MS56					MAM-DS25 <sup>e</sup>
	AVG					MAM-DS27 <sup>d</sup>



\* MAP-0022 cannot be used with PTE/PTM series.

\*\* Mounting base MAM-B090C is used for MT8B/8C.

\*\*\* ASG & MS86 needs pole adapter MAM-DS31 for pole mounting.

## Mounting Pole ①



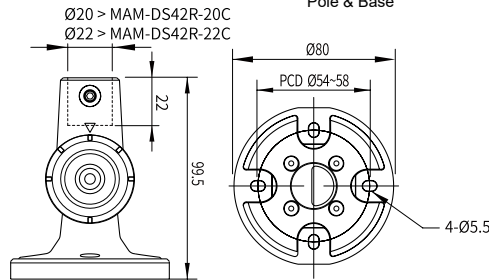
Part	Part #	Description
	<b>MAP-0022*</b>	Ø20mm, 0.87 in (22 mm) pole
	<b>MAP-0060</b>	Ø20mm, 2.36 in (60 mm) pole
	<b>MAP-0240</b>	Ø20mm, 9.45 in (240 mm) pole
	<b>MAP-0750</b>	Ø20mm, 29.53 in (750 mm) pole
	<b>MAP-1000</b>	Ø20mm, 39.37 in (1,000 mm) pole
	<b>MAP-225-22</b>	Ø22mm, 8.86 in (225 mm) pole 1/2 NPT Thread top

①

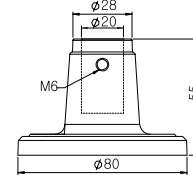
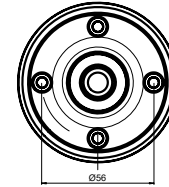
\* MAP-0022 CANNOT be used with PTE & PTM Series.

## ③ Aluminum Mounting Bases

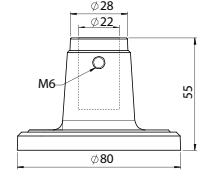
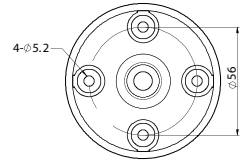
**MAM-DS42R-20C**  
**MAM-DS42R-22C**



**MAM-DS32A**

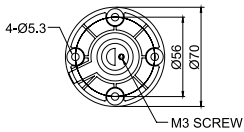
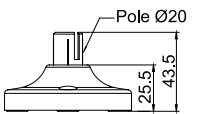


**MAM-DS32C**

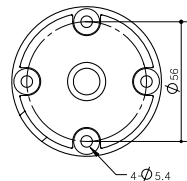
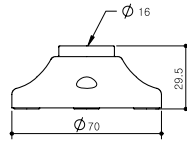


## Plastic Mounting Bases ②

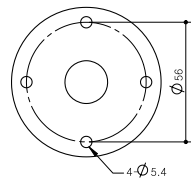
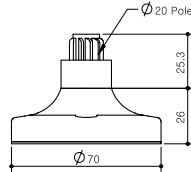
**MAM-B070C**



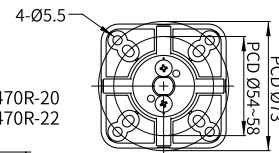
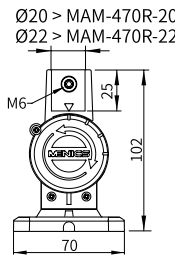
**MAM-B070F**



**MAM-B070D**

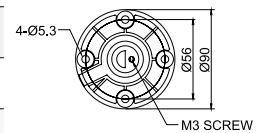
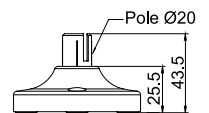


**MAM-470R-20**  
**MAM-470R-22**



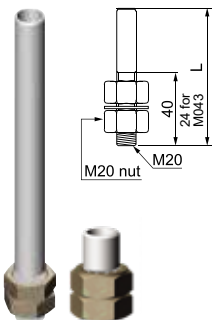
90° Angle Mounting  
with Pole & Base

**MAM-B090C**



Part	Part #	Description
	<b>MAM-B070C</b>	Ø70mm Plastic Base
	<b>MAM-B070D</b>	Ø70mm Plastic Base with Water-Proof Rubber Gasket
②	<b>MAM-470R-20</b>	Ø70mm Plastic Folding Base 90° angle, for 20mm pole
	<b>MAM-470R-22</b>	Ø70mm Plastic Folding Base 90° angle, for 22mm pole
	<b>MAM-B090C</b>	Ø90mm Plastic Base

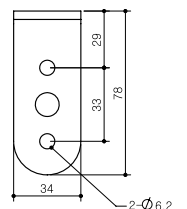
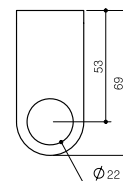
## Threaded Poles ④



④	<b>MAP-M043</b>	Ø20mm, 1.69 in (43 mm) threaded pole with 2 nuts
	<b>MAP-M240</b>	Ø20mm, 9.45 in (240 mm) threaded pole with 2 nuts
	<b>MAP-M750</b>	Ø20mm, 29.53 in (750 mm) threaded pole with 2 nuts
	<b>MAP-M1000</b>	Ø20mm, 39.37 in (1,000 mm) threaded pole with 2 nuts
	<b>MAP-M240-22D</b>	Ø22mm, 9.45 in (240 mm), 1/2 NPT thread top & 2 x M20 Nuts bottom

## ⑤ L-angle Bracket

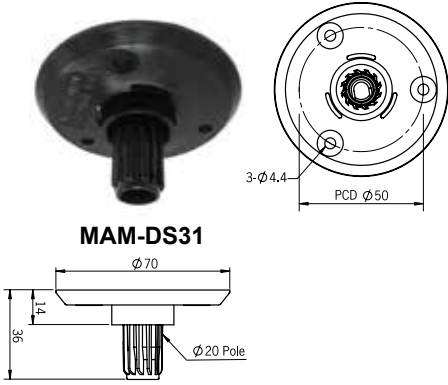
**MAM-DS25**



## Pole Adaptor

## Conduit Direct Mount Option

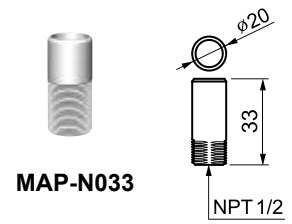
### Pole Mounting Adaptor



### Pole Extension Adaptor



1/2" NPT  
Mounting Adaptor



## Semi-assembled Pole Mounting Base

### SAM-T115

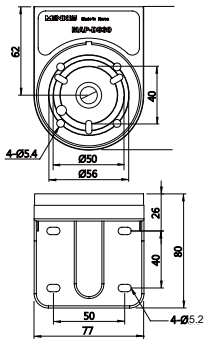


### SAM-T135

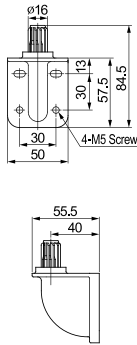


## Wall Mounting Brackets ⑥

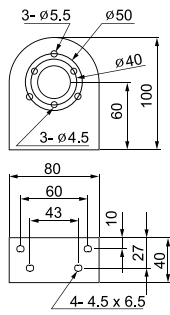
### MAP-DS30



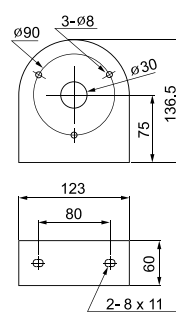
### MAP-DS40



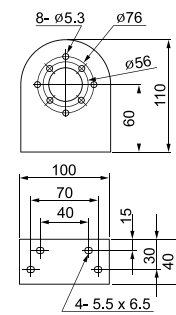
### MAM-DS26



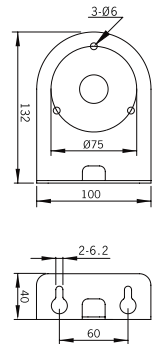
### MAM-DS27



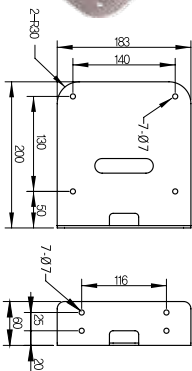
### MAM-DS28



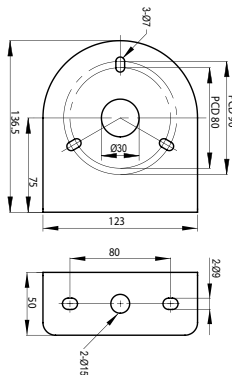
### MAM-DS29



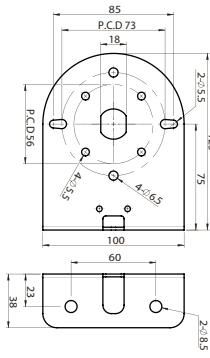
### MAM-DS33



### MAM-DS37



### MAM-DS38





Part	Part #	Description
⑥	MAP-DS30-BLK	Plastic Wall Mounting Bracket, Black
	MAP-DS30-BGE	Plastic Wall Mounting Bracket, Beige
	MAP-DS40-BLK	Plastic Wall Mounting Bracket, Black (Pole required)
	MAP-DS40-BGE	Plastic Wall Mounting Bracket, Beige (Pole required)
	MAM-DS26	Metal Wall Mounting Bracket
	MAM-DS27	Metal Wall Mounting Bracket
MAM-DS28	Metal Wall Mounting Bracket	
MAM-DS29	Metal Wall Mounting Bracket	
MAM-DS33	Metal Wall Mounting Bracket	
MAM-DS37	Metal Wall Mounting Bracket	
MAM-DS38	Metal Wall Mounting Bracket	

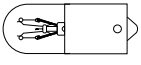
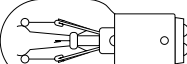
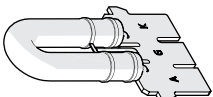


# Replacement bulb

## LED Bulb

LED Bulb	Ordering Information		Applicable Products																		
 <p>Base 9mm Single contact</p>	<b>MAL - T09 - S - <u>12</u> - R</b> ①      ②	<b>Current consumption</b> 12V: 30~50mA 24V: 20mA	<b>Allowable voltage range</b> 12V: 11~13V 24V: 22~26V	MT4B series																	
	<table border="1"> <tr> <td rowspan="2">① Voltage</td> <td><b>12</b></td> <td>12VAC/DC</td> </tr> <tr> <td><b>24</b></td> <td>24VAC/DC</td> </tr> </table>	① Voltage	<b>12</b>		12VAC/DC	<b>24</b>	24VAC/DC	<table border="1"> <tr> <td rowspan="3">② Color</td> <td><b>R</b></td> <td>Red</td> <td><b>G</b></td> <td>Green</td> </tr> <tr> <td><b>Y</b></td> <td>Yellow</td> <td><b>B</b></td> <td>Blue</td> </tr> <tr> <td><b>C</b></td> <td>Clear</td> <td></td> <td></td> </tr> </table>	② Color	<b>R</b>	Red	<b>G</b>	Green	<b>Y</b>	Yellow	<b>B</b>	Blue	<b>C</b>	Clear		
① Voltage	<b>12</b>		12VAC/DC																		
	<b>24</b>	24VAC/DC																			
② Color	<b>R</b>	Red	<b>G</b>	Green																	
	<b>Y</b>	Yellow	<b>B</b>	Blue																	
	<b>C</b>	Clear																			
 <p>Base 15mm Double contact</p>	<b>MAL - T15 - D - <u>24</u> - R</b> ①      ②	<b>Current consumption</b> 12V: 30~50mA 24V: 20~30mA	<b>Allowable voltage range</b> 12V: 11~13V 24V: 22~26V	MT5 series MT8 series AVG series MSGS series MS135B Series																	
		<table border="1"> <tr> <td rowspan="2">① Voltage</td> <td><b>12</b></td> <td>12VAC/DC</td> </tr> <tr> <td><b>24</b></td> <td>24VAC/DC</td> </tr> </table>	① Voltage		<b>12</b>	12VAC/DC	<b>24</b>	24VAC/DC	<table border="1"> <tr> <td rowspan="3">② Color</td> <td><b>R</b></td> <td>Red</td> <td><b>G</b></td> <td>Green</td> </tr> <tr> <td><b>Y</b></td> <td>Yellow</td> <td><b>B</b></td> <td>Blue</td> </tr> <tr> <td><b>C</b></td> <td>Clear</td> <td></td> <td></td> </tr> </table>	② Color	<b>R</b>	Red	<b>G</b>	Green	<b>Y</b>	Yellow	<b>B</b>	Blue	<b>C</b>	Clear	
① Voltage	<b>12</b>	12VAC/DC																			
	<b>24</b>	24VAC/DC																			
② Color	<b>R</b>	Red	<b>G</b>	Green																	
	<b>Y</b>	Yellow	<b>B</b>	Blue																	
	<b>C</b>	Clear																			
	<b>MAL - T15 - D - <u>220</u> - R</b> ①      ②	<b>Current consumption</b> 120V: 15mA 220V: 20mA	<b>Allowable voltage range</b> 120V: 100~120V 220V: 210~240V																		
	<table border="1"> <tr> <td rowspan="2">① Voltage</td> <td><b>120</b></td> <td>120VAC</td> </tr> <tr> <td><b>220</b></td> <td>220VAC</td> </tr> </table>	① Voltage	<b>120</b>	120VAC	<b>220</b>	220VAC	<table border="1"> <tr> <td rowspan="3">② Color</td> <td><b>R</b></td> <td>Red</td> <td><b>G</b></td> <td>Green</td> </tr> <tr> <td><b>Y</b></td> <td>Yellow</td> <td><b>B</b></td> <td>Blue</td> </tr> <tr> <td><b>C</b></td> <td>Clear</td> <td></td> <td></td> </tr> </table>	② Color	<b>R</b>	Red	<b>G</b>	Green	<b>Y</b>	Yellow	<b>B</b>	Blue	<b>C</b>	Clear			
① Voltage	<b>120</b>		120VAC																		
	<b>220</b>	220VAC																			
② Color	<b>R</b>	Red	<b>G</b>	Green																	
	<b>Y</b>	Yellow	<b>B</b>	Blue																	
	<b>C</b>	Clear																			

## Bulb

Bulb Type	Voltage & Power Consumption	Ordering information	Applicable Products
 <p>T10/BA9S</p>	12V 5W	MAB-T09-S-012-05	MT4B series
	24V 5W	MAB-T09-S-024-05	
	130V 5W	MAB-T09-S-130-05	
	240V 5W	MAB-T09-S-240-05	
 <p>G19/BA15S</p>	12V 5W	MAB-T15-S-012-05	ASG Series
 <p>T16/BA15S</p>	12V 8W	MAB-T15-S-012-08	ASG Series
	24V 8W	MAB-T15-S-024-08	
	130V 8W	MAB-T15-S-130-08	
	240V 8W	MAB-T15-S-240-08	
 <p>T16/BA15D</p>	12V 10W	MAB-T15-D-012-10	MT5B/5C series MT8B/8C series
	24V 10W	MAB-T15-D-024-10	
	120V 10W	MAB-T15-D-120-10	
	240V 10W	MAB-T15-D-240-10	
 <p>T22/BA15D</p>	12V 25W	MAB-T15-D-012-25	AVG series MSGS series MS135B series
	24V 25W	MAB-T15-D-024-25	
	130V 25W	MAB-T15-D-130-25	AVG series MS135B series
	240V 25W	MAB-T15-D-240-25	
 <p>Xenon Lamp 3W AC/DC 12 ~ 24V I-Type</p>		MS86S-LAMP-02	MS86S series MS115S series
			MS70S-LAMP-AL
 <p>Xenon Lamp 6W AC 110V, 220V U-Type</p>		MS86S-LAMP-10	MS86S series MS115S series
			MAB-STROBE-110-06



# MS56L Series

Ø56mm LED Signal Lights



- Compact LED warning light
- Direct mount
- Lead wire connection
- Rotating speed is adjustable

## Specifications

Functions	Steady, Steady+Flashing, Rotating				
Power Supply		12VAC/DC	24VAC/DC	110VAC	220VAC
Current Consumption	Steady	0.1A	0.12A	0.03A	
	Rotating	0.8A	0.07A	0.03A	0.04A
Flash Rate (±10 times/minute)		110/60	80/80	80	
Vibration	0.75mm at 10~55Hz				
Insulation Resistance	100 MΩ minimum (500VDC mega)				
Ambient Temperature	-15~40°C				
Storage Temperature	-25~70°C				
Ambient Humidity	45 ~ 85% RH				
Certificate/Compliance	CE, RoSH				
Recommended Wire Size	UL1007/22AWG				
Degree of protection	IP65				
Weight	Approx. 66g				

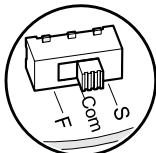
## Ordering Information

MS56L - F 02 - R  
 ① ② ③

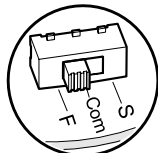
① Light Style	No mark	Steady
	F	Steady + Flashing
	R	Rotating
② Power Supply	01	12V AC/DC
	02	24V AC/DC
	10	110V AC
	20	220V AC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

## Function controls

### MS56L Series

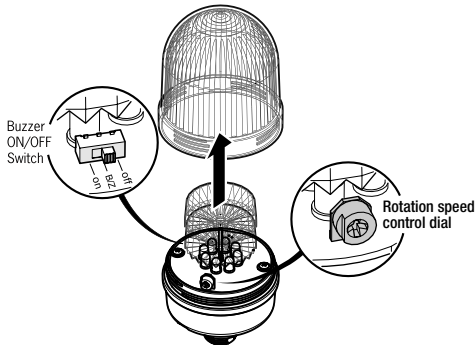


Steady

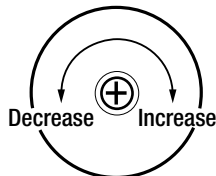


Flashing

### MS66 Series



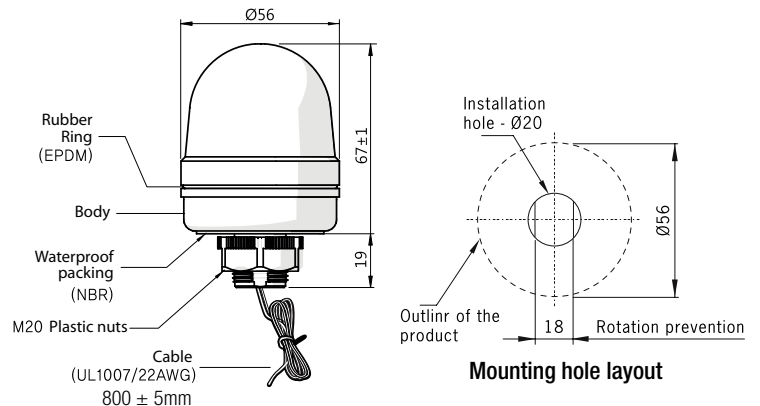
### Rotation speed control



min40 to max300 RPM (±10%)  
(Clockwise rotation)

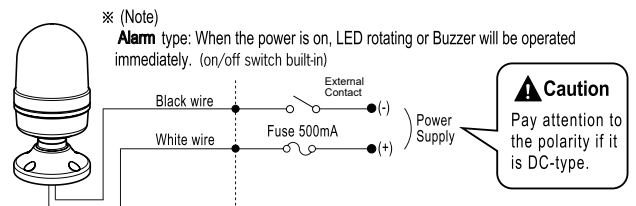
## Dimensions

(unit: mm)



## Wiring Diagram (MS56L & MS66)

12~24VAC/DC, 110~220VAC Rotating (Alarm)



Wall Mounting Option  
(MS56L & MS66)

MAM-DS25



See page 19 - 21  
for mounting options and accessories





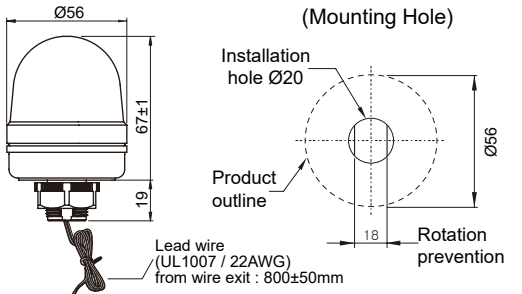
# MS56M Series

Ø56mm Multi color LED Signal Light



- Steady, Flashing type
- Wire draw-out type and internal switch type
- Various power supply
- Plastic M20 nut panel mounting type

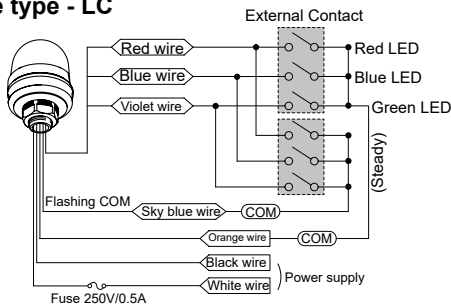
## Dimensions



## Wiring Diagram

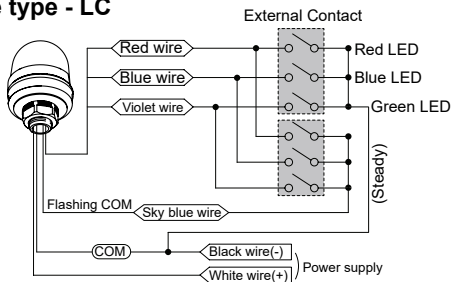
### 100~240VAC

#### Lead wire type - LC



### 12/24VDC

#### Lead wire type - LC



## LED color wiring chart

Condition	Wiring Line color	Lens color
1	Red	Red
2	Violet	Green
3	Blue	Blue
4	Red+Violet	Yellow
5	Red+Blue	Pink
6	Violet+Blue	Cyan
7	Red+Violet+Blue	White

## Ordering Information

MS56M - 02 - LC

①                      ②



① Power Supply	01	12VDC
	02	24VDC
	FF	100~240VAC
② Output Method	LC	External contact type Lead Wire type
	SW	Internal dip switch type -

## Specifications

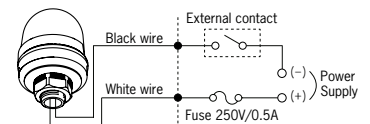
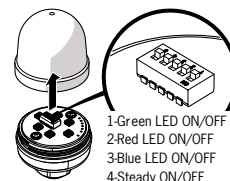
Function	Steady, Flashing
Power Supply	12VDC, 24VDC 100~240VAC (AC. 50/60Hz)
Dimension	56mm
LED color	Red, Yellow, Green, Cyan, Blue, Pink, White
Lens color	Milky white
Flashing rate	80±5times/minute
Connection	UL1007 / 22AWG
Material	Lens - PC resin, Body - ABS resin
Vibration	0.75mm at 10~55Hz
Ambient temperature	-15 ~ 40°C
Storage ambient temperature	-25 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65 (front)

## Current Consumption

(RMS ±10%)

	12VDC	24VDC	100~240VAC
Steady Light	0.13A	0.08A	0.08A

## Internal Switch Type



LED Colors	Steady	Flashing
No.1 Green	ON 1 2 3 4 5	ON 1 2 3 4 5
No.2 Red	ON 1 2 3 4 5	ON 1 2 3 4 5
No.3 Blue	ON 1 2 3 4 5	ON 1 2 3 4 5

LED Colors	Steady	Flashing
No.4 Yellow	ON 1 2 3 4 5	ON 1 2 3 4 5
No.5 Cyan	ON 1 2 3 4 5	ON 1 2 3 4 5
No.6 Pink	ON 1 2 3 4 5	ON 1 2 3 4 5
No.7 White	ON 1 2 3 4 5	ON 1 2 3 4 5

## Optional Parts

See page 19 - 21  
for mounting options  
and accessories



Wall mounting bracket  
**MAM-DS25**  
Steel





# ML Series

Ø66mm Warning Signal Lights

- Incandescent or Xenon type
- Smooth lens or Prism lens
- Stud mounted or Pole mounted
- Wide range of power supply



## Specifications

Model	MLG	MLGF	MLGS
Bulb Type	Incandescent		Xenon
Power Supply	12V AC/DC, 24V AC/DC 110V AC, 220V AC		110VAC, 220VAC
Current Consumption & Wattage	12VDC	0.6A, 8W	—
	24VDC	0.3A, 8W	—
	110VAC	0.07A, 8W	0.22A, 6W
	220VAC	0.03A, 8W	0.11A, 6W
Rotation Rate	130 ±10 times/minute	—	
Flashing rate	—	80 ±10 times/minute	

## Ordering Information

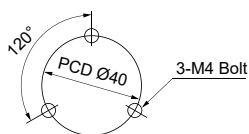
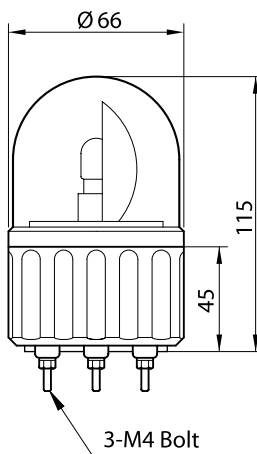
ML G F - 01 - R  
① ② ③ ④

① Mounting	<b>G</b>	Stud mounting	
② Light Style	No mark	Rotating	
	<b>F</b>	Steady & Flashing	
	<b>S</b>	Strobe with Xenon Bulb	
③ Power Supply	Rotating/ Steady & Flashing Lights	<b>01</b>	12V AC/DC
		<b>02</b>	24V AC/DC
		<b>10</b>	110V AC
		<b>20</b>	220V AC
	Strobe Lights	<b>10</b>	110V AC
		<b>20</b>	220V AC
④ Lens Colors	<b>R</b>	Red	
	<b>Y</b>	Yellow	
	<b>G</b>	Green	
	<b>B</b>	Blue	

## Replacement Parts

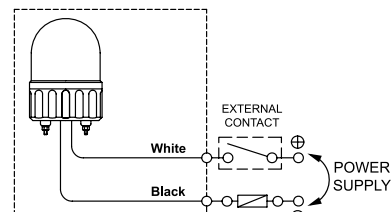
Lens	LENS-MLG-(□)	Smooth Lens for Rotating Lights
	LENS-MLGF/S-(□)	Prism Lens for Flashing/Strobe Lights
(□): indicates color of Lens; R, Y, G or B		
Bulb	<b>MAB-T15-S-012-08</b>	12V DC, 8 Watt
	<b>MAB-T15-S-024-08</b>	24V DC, 8 Watt
	<b>MAB-T15-S-130-08</b>	110V AC, 8 Watt
	<b>MAB-T15-S-240-08</b>	220V AC, 8 Watt
Xenon Bulb	<b>MAB-STROBE-110-06</b>	110/220V AC, 6 Watt

## Dimensions (unit: mm)



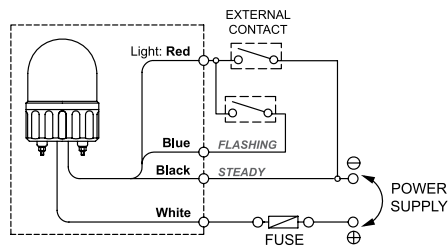
Mounting hole layout

## Wiring Diagram



Rotating & Strobe Lights

MLG-□□□-□ MLGS-□□□-□



Flashing Lights

MLGF-□□□-□

## Wall Mount Brackets



MAP-DS30-BLK (Black)  
MAP-DS30-BGE (Beige)



MAM-DS26

See page 19 - 21  
for mounting options and accessories



# MS70LT Series

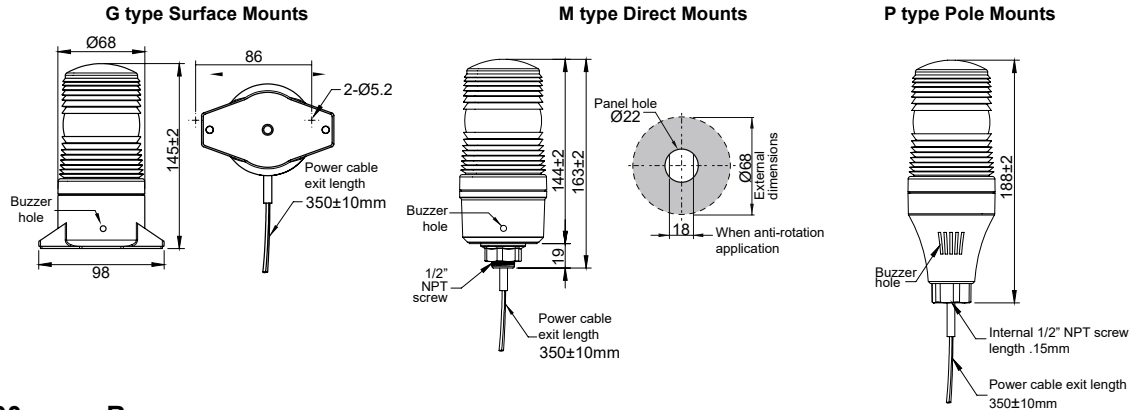
Ø70mm LED Signal Light

- High intensity LED flashing light
- Three mounting options
- Two flashing patterns (built-in slide switch)
- IP 65 (buzzer type- IP50)



## Dimensions

unit: mm



## Ordering Information

MS70LT - G B 00 - R  
 ① ② ③ ④

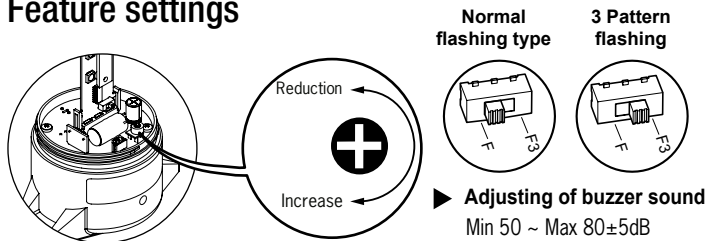
① Mounting Type	<b>G</b>	Surface Mounting
	<b>M</b>	Direct mounting
	<b>P</b>	Pole mounting
② Light Style	<b>F</b>	Flashing
	<b>B</b>	Flashing & Buzzer
③ Power Supply	<b>00</b>	12~24VDC
	<b>FF</b>	110~220VAC
④ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Specifications

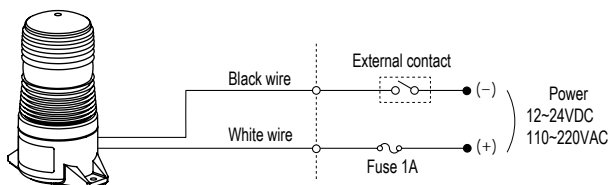
Function	Flashing, Buzzer	
Power Supply	12 ~ 24VDC, 110 ~ 220VAC(AC 50/60Hz)	
Buzzer Volume	min 50 ~ max 80±5dB	
Dimension	68mm	
Lens Color	Red, Yellow, Green, Blue, Clear	
Flashing rate (2 patterns)	- Normal flashing : 75±5 time/minute - 3 pattern flashing (Emergency signal) : 130±5 time/minute	
Current consumption	Flashing type 12~24VDC: 0.12~0.16A 110~220VAC:0.04~0.05A	Flashing + Buzzer type 12~24VDC:0.16~0.21A 110~220VAC: 0.05~0.06A
Connection	UL2464 / 18AWG, AWM, 2C, 300V	
Material	Body - ABS resin Lens - PC resin	
Ambient temperature	-20 to 50°C	
Storage ambient temperature	-20 to 70°C	
Ambient Humidity	45~85% RH	
Insulation resistance	500VAC 50 / 60Hz for 1 minute	
Vibration	10 to 55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1 hour in each direction	
Approval	CE(DC products only), RoHS	
Protection structure	IP65 (IP50-Buzzer type)	
Weight (DC type)	G type: app.196g M type: app.195g P type: app.198g	

\* Life of the LED varies according to operating conditions and environment.

## Feature settings



## Wiring Diagram



\* buzzer type : When power is applied, LED flashing and buzzer operate simultaneously

See page 19 - 21  
for mounting options and accessories



# MS70S Series

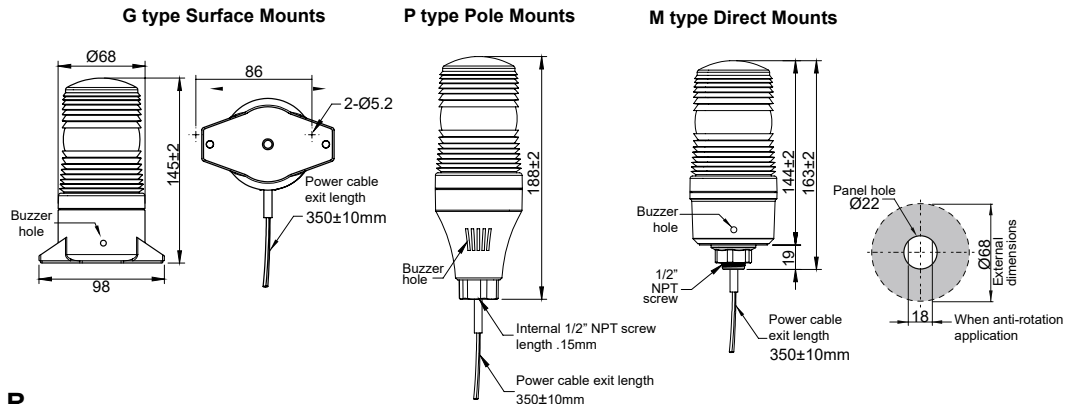
Ø70mm Xenon Lamp Strobe Light

- low intensity strobe ideal for industrial applications
- Field replaceable snap-fit flashing lamp
- Three mounting options
- IP65



## Dimensions

unit: mm



## Ordering Information

MS70S - G 00 - R  
 ① ② ③

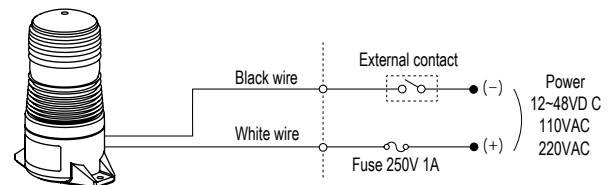
① Mounting Type	<b>G</b>	Surface Mounting
	<b>M</b>	Direct mounting
	<b>P</b>	Pole mounting
② Power Supply	<b>00</b>	12~48VDC
	<b>10</b>	110VAC
	<b>20</b>	220VAC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue

## Specifications

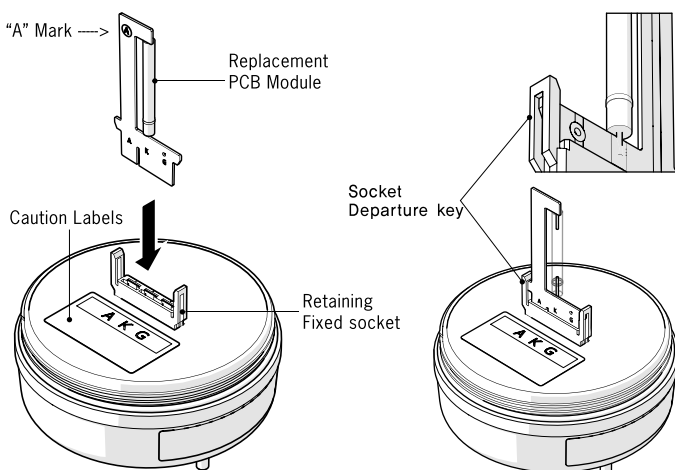
Function	Flashing
Power Supply	12 ~ 48VDC, 110VAC, 220VAC(AC 50/60Hz)
Dimension	68 mm
Lens Color	Red, Yellow, Green, Blue
Flashing rate	12~48VDC : 80±5 times per minute 110VAC : 77±5 times per minute 220VAC : 60±5times per minute
Current consumption	12~48VDC : 0.08~0.2A 110VAC : 0.07A 220VAC : 0.04A
Connection	UL2464/18AWG, AWM, 2C, 300V
Material	Body - ABS resin Lens - PC resin
Ambient temperature	-20 to 50°C
Storage ambient temperature	-20 to 70°C
Ambient Humidity	45~85% RH
Insulation resistance	500VAC 50 / 60Hz for 1 minute
Vibration	10 to 55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1 hour in each direction
Approval	RoHS
Protection structure	IP65
Weight (DC type)	G type: app.196g M type: app.195g P type: app.198g

\*Lifetime of the lamp varies according to operating conditions and environment.

## Wiring Diagram



## How to install Xenon bulb



The new lamp should be inserted firmly to match the same signal A K G (or A G K) mark. Printed "A" in circuit and label.

- ⚠ - If you insert reverse direction, the lamp can not operate.
- Insert the lamp circuit board correctly, not to inclined.

See page 19-21 for mounting options and accessories

MS70S -LAMP-AL	
	Xenon lamp Type: 3W Lamp life: App 2,000 hours





# MS70M Series

Ø70mm Multicolored LED Signal Light

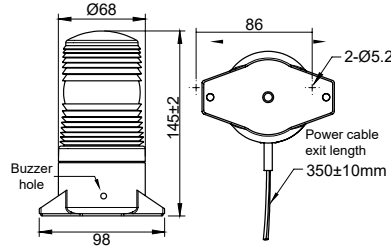
- Up to 7 color combinations available
- Three Mounting Options
- Two lens options for clear or softer view
- IP65 (buzzer type -IP50)



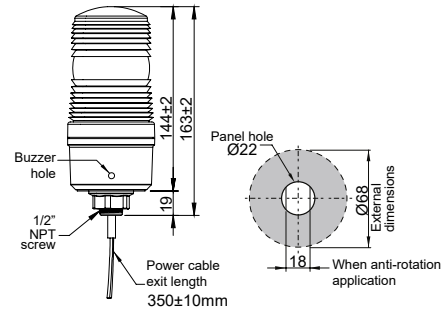
## Dimensions

unit: mm

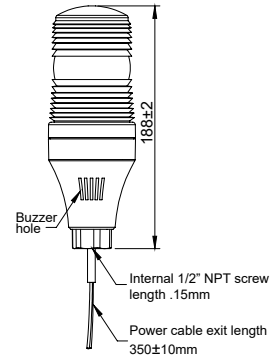
### G type Surface Mounts



### M type Direct Mounts



### P type Pole Mounts



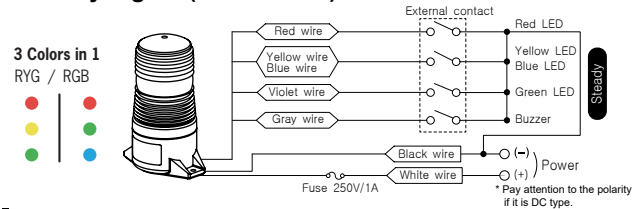
## Specifications

Function	Steady, Flashing, Buzzer	
Power Supply	12 ~ 24VDC, 110 ~ 220VAC(AC 50/60Hz)	
Alarm Sound Level	min 50 ~ max 75±5dB	
Dimension	68mm	
Lens Color	Clear / Milky white	
Flashing rate	12VDC : 65±5 times per minute 24VDC : 60±5 times per minute 110~220VAC : 70±5times per minute	
Current consumption	LED Steady 12~24VDC: 0.22A 110~220VAC: 0.04~0.06A	LED Steady +Buzzer 12~24VDC: 0.26A 110~220VAC: 0.05~0.06A
Connection	UL1007/22AWG	
Material	Body - ABS resin Lens - PC resin	
Ambient temperature	-20 to 50°C	
Storage ambient temperature	-20 to 70°C	
Ambient Humidity	45~85% RH	
Insulation resistance	500VAC 50 / 60Hz for 1 minute	
Vibration	10 to 55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1 hour in each direction	
Approval	RoHS	
Protection structure	IP65 (IP50-Buzzer type)	
Weight (DC type)	G type: app.196g M type: app.195g P type: app.198g	

## Wiring Diagram

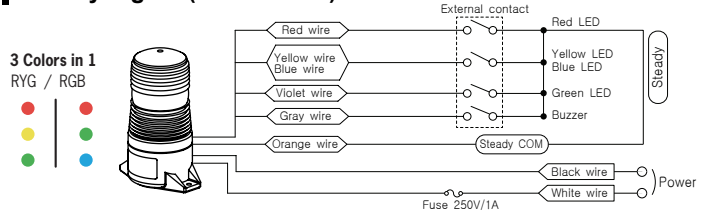
### 12~24VDC

#### Steady Lights (with Buzzer)



### 110~220VAC

#### Steady Lights (with Buzzer)



## Ordering Information

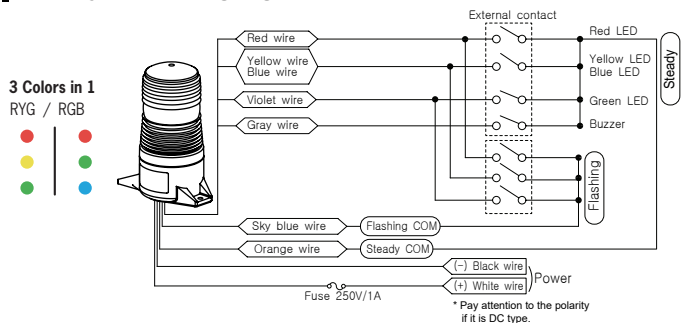
MS70M - ① ② ③ - ④ ⑤

① Mounting Type	<b>G</b>	Surface Mounting
	<b>M</b>	Direct mounting
	<b>P</b>	Pole mounting
② Light Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Buzzer
	<b>Z</b>	Steady & Flashing & Buzzer
③ Power Supply	<b>00</b>	12~24VDC
	<b>FF</b>	110~220VAC
④ LED Colors	<b>RBG</b>	Red & Blue & Green
	<b>RYG</b>	Red & Yellow & Green
⑤ Lens Colors	<b>No Mark</b>	Clear lens
	<b>M</b>	Milky lens

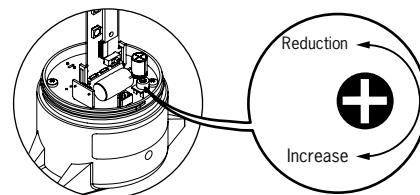
\* Life of the LED varies according to operating conditions and environment.

### 12~24VDC , 110~220VAC

#### Steady & Flashing Lights (with Buzzer)



## Feature settings



► Adjusting of buzzer sound  
Min 50 ~ Max 75±5dB

See page 19-21  
for mounting options  
and accessories



# ASG Series

Ø86mm Warning Signal Lights

- Incandescent or Xenon type
- Smooth Lens for Rotating Lights and Prism Lens for Flashing/Strobe Lights
- Stud mount
- Optional Wall Mounting Brackets available



## Ordering Information

ASG B - 01 - R  
 ①      ②      ③

① Light Style	no mark	Rotating
	<b>B</b>	Rotating w/Alarm
	<b>F</b>	Steady & Flashing
	<b>S</b>	Strobe w/Xenon bulb

② Power Supply	Rotating	<b>01</b>	12V AC/DC
		<b>02</b>	24V AC/DC
		<b>FF</b>	110/220V AC
	Steady & Flashing	<b>01</b>	12V AC/DC
		<b>02</b>	24V AC/DC
		<b>10</b>	110V AC
		<b>20</b>	220V AC
	Strobe	<b>10</b>	110V AC
		<b>20</b>	220V AC

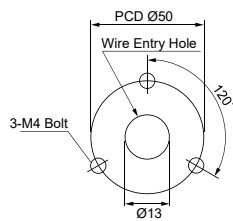
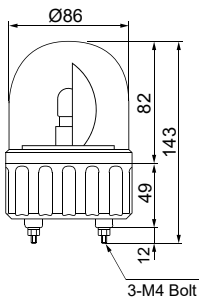
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue

## Specifications

Model	ASG/ASGB	ASGF	ASGS	
Lighting type	Incandescent		Xenon	
Power Supply	12V AC/DC 24V AC/DC 110/220VAC	12V AC/DC 24V AC/DC 110VAC, 220VAC	110VAC 220VAC	
Current Draw & Wattage	12VDC	0.67A, 8W		
	24VDC	0.33A, 8W		
	110/220VAC	0.4A, 5W	N/A	N/A
	110VAC	N/A	0.07A, 8W	0.22A, 6W
	220VAC	N/A	0.03A, 8W	0.11A, 6W
Alarm Sound Level	80±5 dB	N/A		
Rotation Rate	130±10 RPM	N/A		
Flashing rate	N/A	80 ±10 flashes/min		
Ambient Temperature	-15~40°C			
Storage Temperature	-25~70°C			
Ambient Humidity	45 ~ 85% RH			
Degree of Protection	IP42			
Recommended Wire Size	AC 110/220V : VSF / 0.75mm <sup>2</sup> (Power supply wire only)			
	AC/DC 12/24V : UL1007 22AWG	N/A		
Certificate/Compliance	RoHS, CE			

## Dimensions

unit: mm



Mounting hole layout

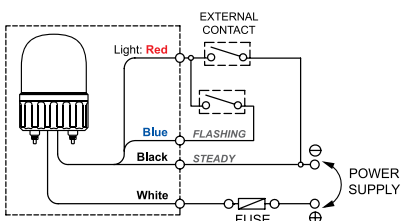
## Replacement Parts

Lens	LENS-ASG-(□)	Smooth Lens for Rotating Lights
	LENS-ASGF-(□)	Prism Lens for Flashing/Strobe Lights

(□): indicates color of Lens; R, Y, G or B

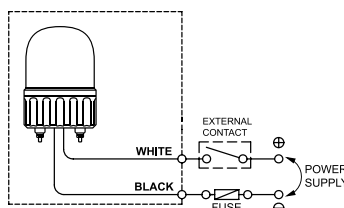
Bulb	Rotating only	Flashing only	Input voltage
	<b>MAB-T15-S-012-08</b>	<b>MAB-T15-S-012-08</b>	12V DC
	<b>MAB-T15-S-024-08</b>	<b>MAB-T15-S-024-08</b>	24V DC
	<b>MAB-T15-S-012-05</b>	<b>MAB-T15-S-130-08</b>	110V AC
	<b>MAB-T15-S-012-05</b>	<b>MAB-T15-S-240-08</b>	220V AC
	<b>MAB-T15-S-012-05</b>	-	110/220V AC (free voltage)
Xenon Bulb	<b>MAB-STROBE-110-06</b>		110/220V AC, 6 Watt

## Wiring Diagram



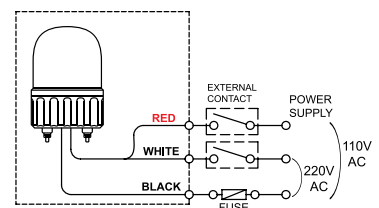
DC & AC Steady & Flashing Lights

- ASGF-01-□ ASGF-10-□  
 ASGF-02-□ ASGF-20-□



DC Rotating Lights

- ASG-01-□ ASGB-01-□  
 ASG-02-□ ASGB-02-□



AC Rotating & Strobe Lights

- ASG-FF-□ ASGS-10-□  
 ASGB-FF-□ ASGS-20-□



# MS86L Series

Ø86mm LED Signal Lights

- Wide light distribution with prism-cut lens
- Selectable Steady/Flashing modes by jumper

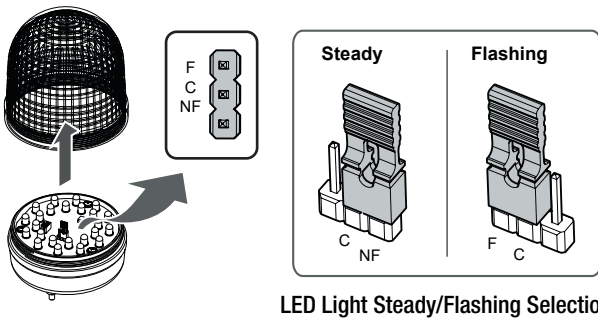


## Ordering Information

MS86L - F 02 - R  
 ① ② ③

① Light Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Audible Alarm
② Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90-240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

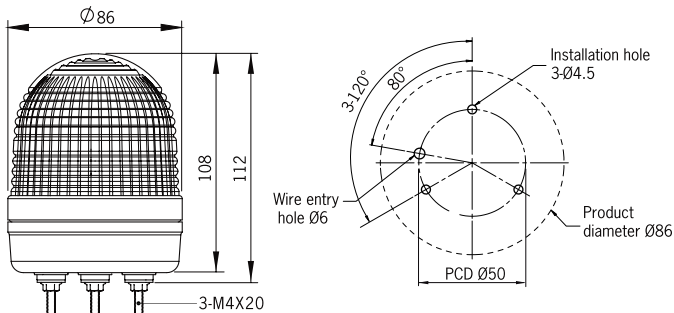
## Jumper setting



LED Light Steady/Flashing Selection

## Dimensions

unit: mm

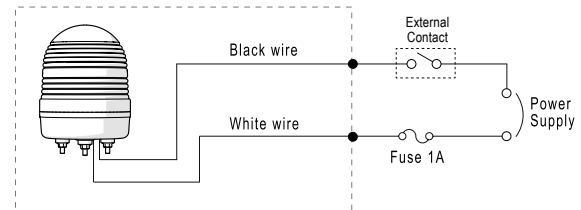


Mounting hole layout

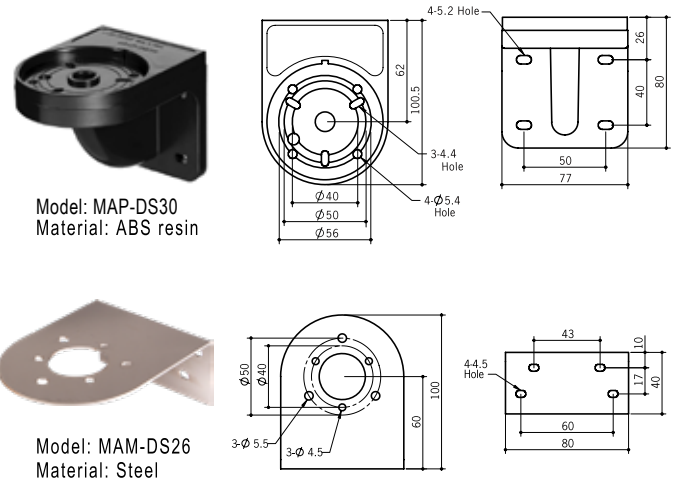
## Specifications

Functions	Steady/Flashing/Alarm	
Power Supply	24V AC/DC	90~240VAC
Current Consumption	R	0.33A(W/Alarm : 0.36A)
	Y	
	G	0.49A (W/Alarm : 0.49A)
	B	
C	0.05A (W/Alarm : 0.08A)	
Flash Rate	80 ±10 time/min	
Alarm Sound Level	80 ±5 dB	
Vibration	0.75mm at 10~55 Hz	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL 2464,22AWGx2C	
Weight	150g	
Certificate/Compliance	RoHS, UL	

## Wiring Diagram



## Wall mounting options (for all MS86 Series)



See page 19 - 21 for mounting options and accessories





# MS86S Series

Ø86mm Xenon Strobe Lights

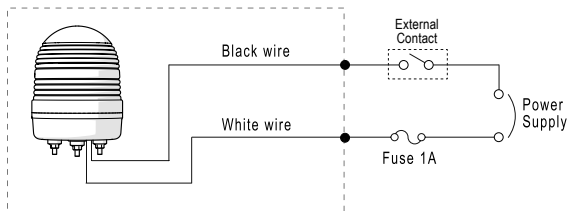


- Outstanding visibility from distance
- PCB module style Xenon lamp
- Fast and easy replacement of lamp

## Specifications

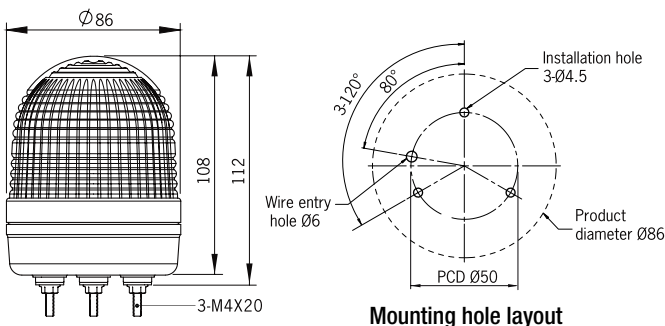
Lighting type	Xenon strobe		
Models	S00	N10	N20
Power Supply	12~24VAC/DC	110VAC	220VAC
Current Consumption	0.08~0.15A	0.07A	0.03A
Flash Rate	80 ± 10 times/minute		
Vibration	0.75mm at 10~55 Hz		
Insulation Resistance	100 MΩ minimum (500VDC mega)		
Ambient Temperature	-20~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL 2464, 22 AWG X 2C		
Weight	300g	200g	
Certificate/Compliance	RoHS, UL		

## Wiring Diagram



## Dimensions

unit: mm



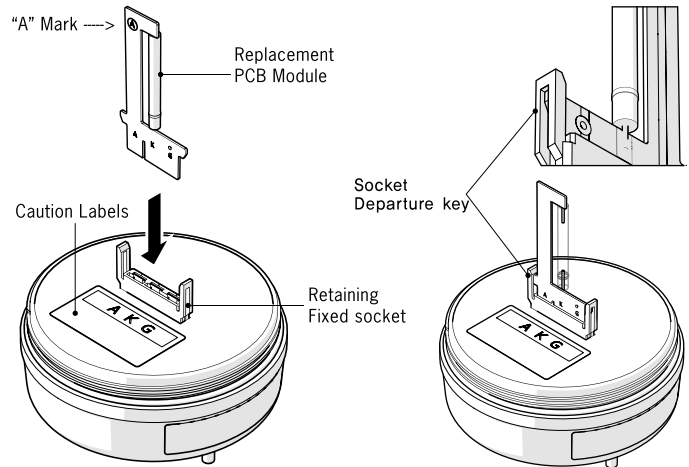
Mounting hole layout

## Ordering Information

MS86S - S00 - R  
① ②

① Power Supply	<b>S00</b>	12-24V AC/DC
	<b>N10</b>	110V AC
	<b>N20</b>	220V AC
② Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Ground
	<b>B</b>	Black
	<b>C</b>	Clear

## How to install Xenon bulb



The new lamp should be inserted firmly to match the same signal **A K G** (or **A G K**) mark. Printed "A" in circuit and label.

- ⚠ - If you insert reverse direction, the lamp can not operate.
- ⚠ - Insert the lamp circuit board correctly. not to inclined.

Supplier No.	MS86S-LAMP-02	MS86S-LAMP-10	
	Description. Xenon Lamp I - Type, 3W 12~24V Lamp life: 1,000,000 Frequency. (2,000 hours)		Description. Xenon Lamp U - Type, 6W AC110V / 220V Lamp life: 1,000,000 Frequency. (2,000 hours)

See page 19 - 21 for mounting options and accessories



# MS86W Series

Ø86mm LED Low-head  
Multi-Function indicator light

- 2 flashing patterns(Selectable by DIP switch)
- Energy efficient: Low power consumption
- Main body: heat resistant ABS resin
- Good for both indoor or outdoor



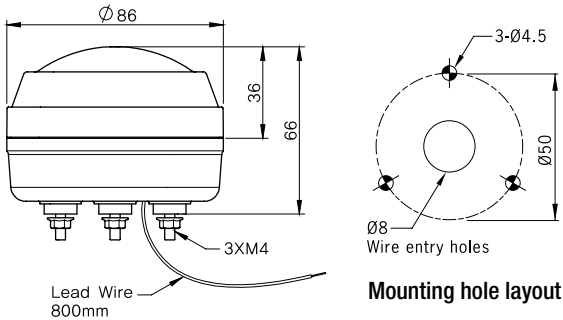
## Ordering Information

MS86W - R 00 - R  
① ② ③

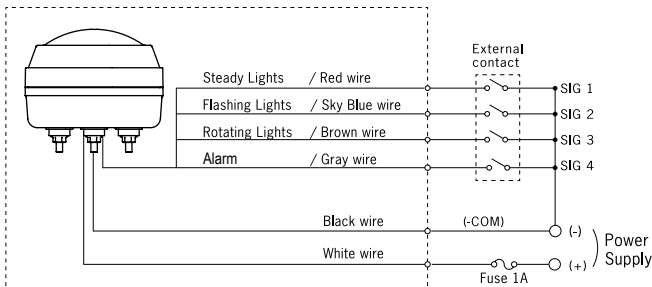
① Style	<b>R</b>	Steady + Flashing + Rotating
	<b>B</b>	Steady + Flashing + Rotating + Alarm (24V AC/DC only)
② Power	<b>00</b>	12-24V AC/DC (R-type only)
	<b>02</b>	24V AC/DC (B-type only)
	<b>FF</b>	100-220V AC (R-type only)
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions

unit: mm



## Wiring Diagram



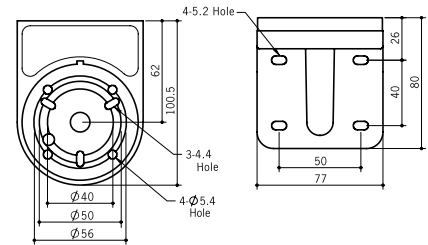
## Specifications

Functions	Steady, Flashing, Rotating w/Audible Alarm		
Input Voltate Options	12~24V AC/DC		
Current Consumption (RMS value ±10%)		LED	w/Alarm
	R	0.50A	0.53A
	Y	0.50A	0.53A
	G	0.30A	0.34A
	B	0.35A	0.38A
	C	0.38A	0.40A
Flashing Rate	F1: 80 ±10 flashes/minute		
	F3: 240 ±10 flashes/minute(Emergency Signal)		
Rotating Rate	Approx. 130 ±20 rpm (clockwise rotation)		
Alarm Sound Level	80 ±5dB at 1m		
Vibration	Operating extremes:10~55 Hz, amplitude 0.75mm		
Insulation Resistance	100 MΩ minimum (500VDC mega)		
Ambient Temperature	-15~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL1007/22AWG		
Weight	170g		
Certificate/Compliance	RoHS, UL		

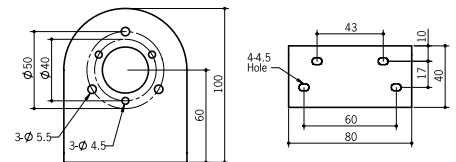
## Wall mounting options (for all MS86 Series)



Model: MAM-DS30  
Material: ABS resin



Model: MAM-DS26  
Material: Steel



See page 19 - 21  
for mounting options and accessories

• **Note** •

A large rectangular area with a dotted border, containing 25 horizontal dotted lines for writing notes.



# MS86T Series

Ø86mm High Intensity LED  
Multi Function Signal Lights



- Extremely high light output using unique LED technology
- Outstanding visibility at distance
- Flashing Cycles : 2 patterns (Selectable by a switch)
- Adjustable flashing or rotating cycles
- Built-in audible alarm with adjustable volume

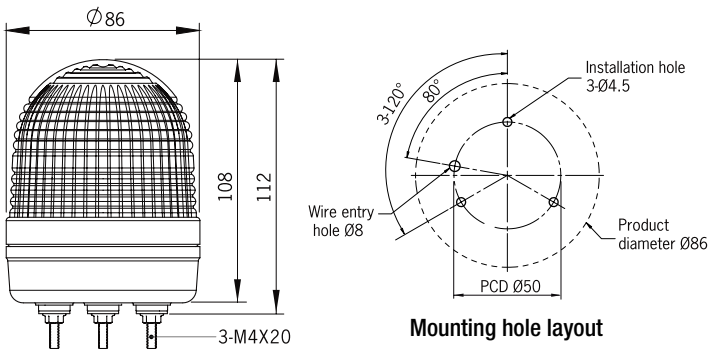
## Ordering Information

MS86T - ① ② - ③

① Light Style	<b>R</b>	Steady, Flashing & Rotating
	<b>B</b>	Steady, Flashing & Rotating w/Alarm
② Power Supply	<b>00</b>	12-24V AC/DC
	<b>FF</b>	90-240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

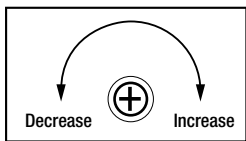
## Dimensions

unit: mm

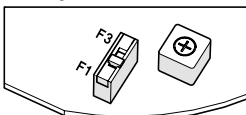


## Feature settings

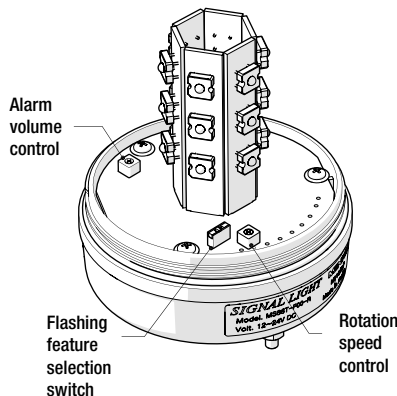
- Alarm volume control
- Rotation speed control



- Flashing feature selection



F1: 80±10 times per minute  
F3: 240±10 times per minute  
( emergency signal display light )

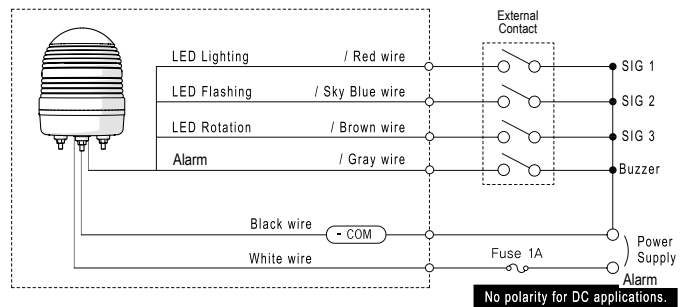


## Specifications

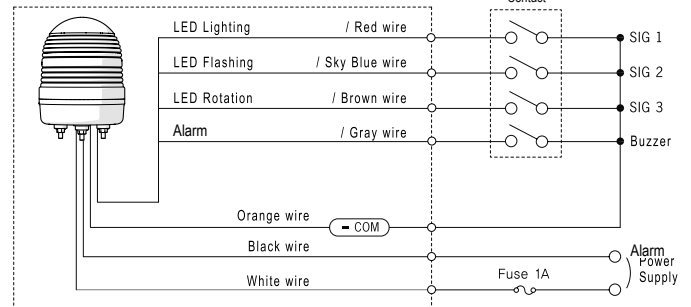
Lighting type	Steady/Flashing/Rotating/Alarm	
Power Supply	12~24VAC/DC	90~240VAC
Current Consumption	3 Sound type	Max. 0.52A±10%
	4 Sound type	Max. 0.65A±10%
	Alarm	150mA
Flash Rate	F1: 80 ±10 flashes/minute F3: 240 ±10 flashes/minute(emergency)	
Rotation Rate	Min 60 ~ Max 300rpm (clockwise)	
Alarm Sound Level	10-100 ±5dB at 1m	
Vibration	0.75mm at 10~55 Hz	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL1007/22AWG	
Weight	Approx. 230g	
Certificate/Compliance	RoHS, UL	

## Wiring Diagram

### 12-24V AC/DC



### 90-240V AC



See page 19 - 21  
for mounting options and accessories



# MS86M Series

Ø86mm 3 color in 1 High Intensity LED Signal Lights

- 3 color in 1 LED Modular Component
- High brightness LED light
- Adjustable Sound level 10 ~ 100dB
- Flashing cycles : 2 patterns (selectable by a switch)

LED *ROHS*



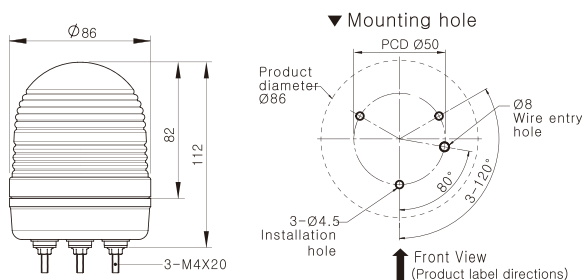
## Ordering Information

MS86M F 00 - RYG  
 ① ② ③

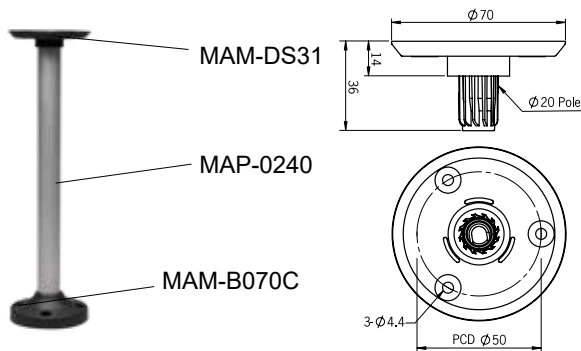
① Light Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Audible Alarm
② Power Supply	<b>00</b>	12-24V AC/DC
	<b>FF</b>	90 ~240V AC
③ Colors	<b>RYG</b>	Red, Yellow and Green
	<b>RGB</b>	Red, Green and Blue

## Dimensions

unit: mm



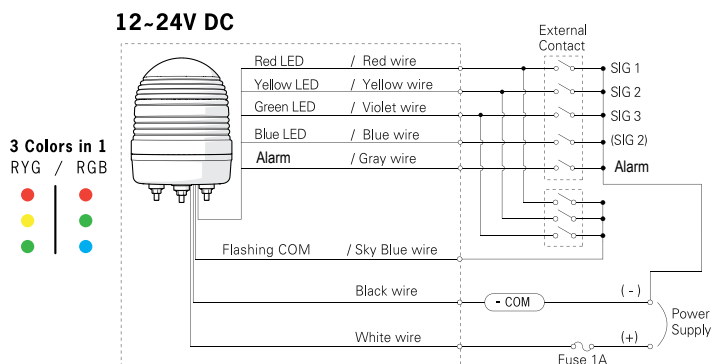
## MS86 Pole Mounting Option MAM-DS31 Dimensions



## Specifications

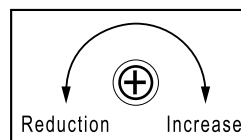
Lighting type	Steady+Flashing w/Audible Alarm	
Power Supply	12~24VAC/DC	90~240VAC
Current Consumption	LED	0.6A
	w/Alarm	0.23A
Flash Rate	F1: 80 ±10 flashes/minute F3: 240 ±10 flashes/minute	
Alarm Sound Level	10-100 ±5dB at 1m: Volume adjustable	
Vibration	0.75mm at 10~55Hz	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-40~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL1007/22AWG	
Weight	270g	

## Wiring Diagram

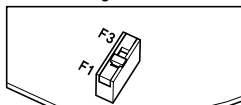


## Feature settings

- Alarm volume control

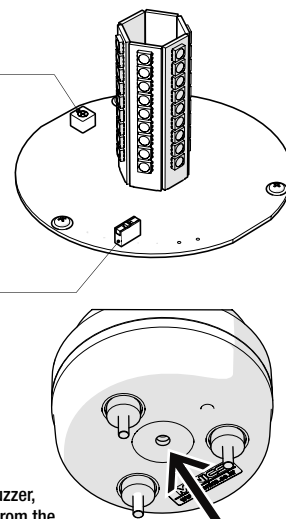


-Flash settings



F1: 80 ±10 flashing per minute  
F3: 240 ±10 flashing per minute

\* When installing a light with built in buzzer, please allow minimum of 5mm space from the surface to the base of unit.



Alarm hole

See page 19 - 21  
for mounting options and accessories



# MW86T/M Series

Ø86mm LED/Multi Function Signal Lights

- High intensity LED
- 2 flashing mode: Standard and Emergency Signaling
- Adjustable Sound volume and Rotating speed
- 3 Melody & 3 siren modes
- Removable horn included



Horn Type



Standard Type



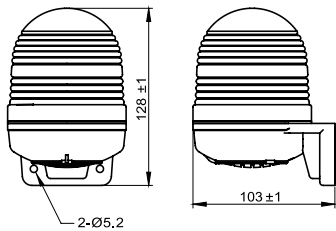
## Ordering Information

MW86 T - R 00 - Y - M3 (B)  
 ① ② ③ ④ ⑤

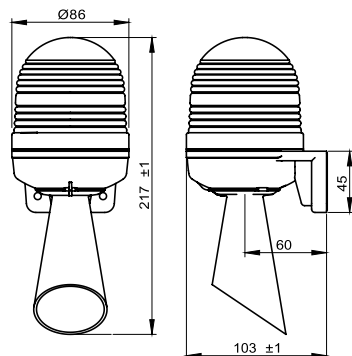
① Model	<b>T - R</b>	Steady/Flashing/Rotating	
	<b>M - F</b>	3 color in 1 Steady/Flashing	
② Power	<b>00</b>	12 ~ 24VDC	
	<b>FF</b>	90 ~ 240VAC	
③ Lens Colors	<b>MW86T</b>	<b>R</b>	Red
		<b>Y</b>	Yellow
		<b>G</b>	Green
		<b>B</b>	Blue
		<b>C</b>	Clear
	<b>MW86M</b>	<b>RYG</b>	Red, Yellow, Green
<b>RGB</b>		Red, Green, Blue	
④ Sound Type	<b>M3</b> (melody)		Fur Elise
			Home, Sweet home
			The Cuckoo Waltz
	<b>S3</b> (Siren)		Fire truck
			Police car
		Ambulance	
⑤ Body color	<b>no mark</b>	Ivory	
	<b>B</b>	Black	

## Dimensions (Unit: mm)

Standard Type



Horn Type

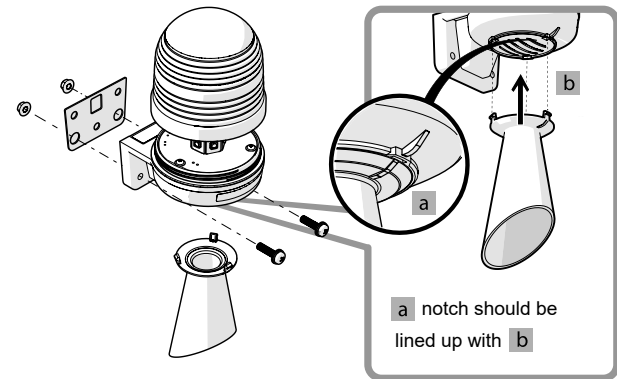
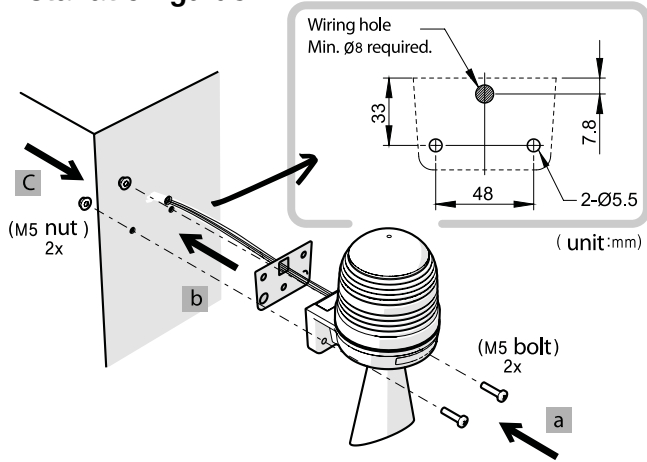


## Specifications

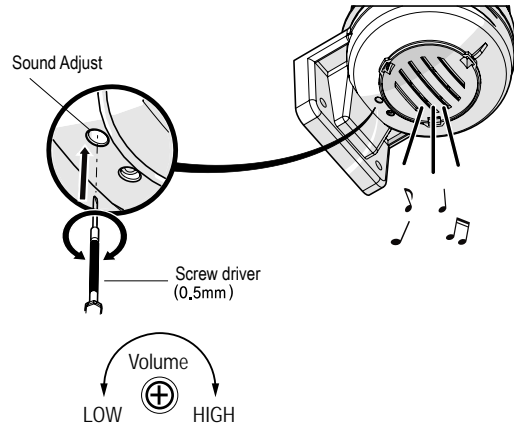
Model	MW86T		MW86M	
Lighting type	Steady / Flashing / Rotating		Steady / Flashing	
Power Supply	12 ~ 24VDC	90 ~ 240VAC(50~60Hz)	12 ~ 24VDC	90 ~ 240VAC(50~60Hz)
Current Consumption	Light	Max 0.32A ±10%	Max 0.10A ±10%	Max 0.40A ±10%
	w/Sound	Max. 0.52A±10%	Max 0.16A ±10%	Max 0.20A ±10%
Flash Rate	80 times/min ± 5 (F1), 240 times /min ± 10 (F3)			
Rotation Rate	60 ~ 300 ± 10 RPM(clock wise)		N/A	
Alarm Sound Level	Standard Type	55 ~ 85±5dB	Standard Type	55 ~ 85±5dB
	Horn Type	55 ~ 90±5dB	Horn Type	55 ~ 90±5dB
Material	Body: ABS, Lens: PC			
Insulation Resistance	100 MΩ minimum (500VDC mega)			
Ambient Temperature	-20~40°C			
Storage Temperature	-20~70°C			
Ambient Humidity	45~85% RH			
Degree of Protection	Standard Type	IP43	Standard Type	IP43
	Horn Type	IP54	Horn Type	IP54
Recommended Wire Size	UL1007/22AWG			
Weight	Standard Type	Approx. 279g	Standard Type	Approx. 286g
	Horn Type	Approx. 306g	Horn Type	Approx. 313g
Certificate/Compliance	UL, RoHS			



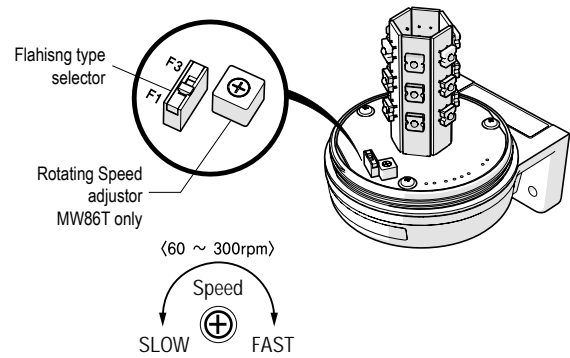
## Installation guide



## Volume Control



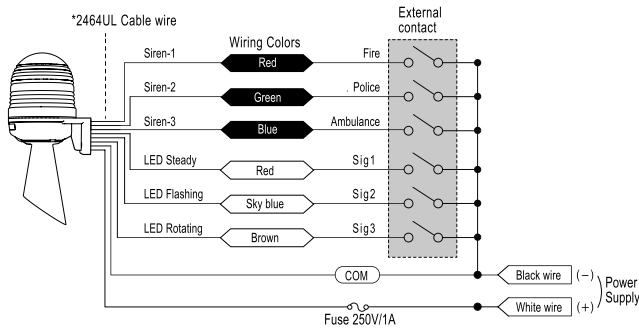
## Flashing/Rotating setting



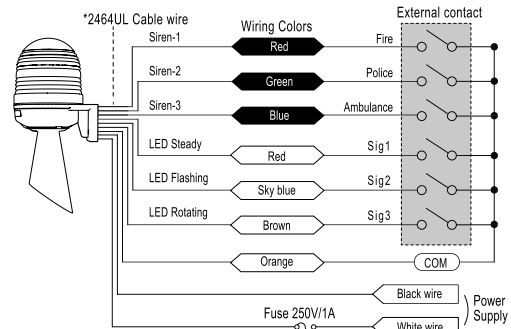
## Wiring Diagram

### MW86T

12 ~ 24V

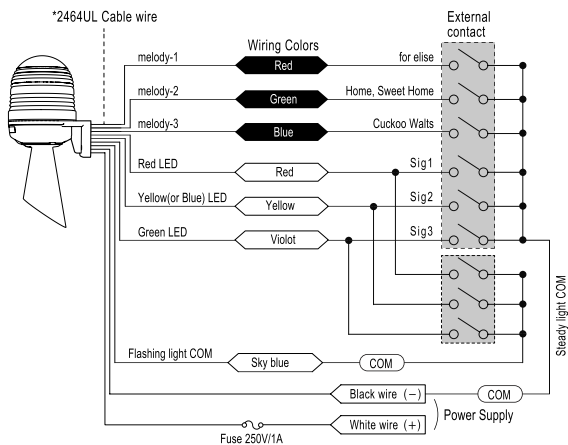


### 90 ~ 240V

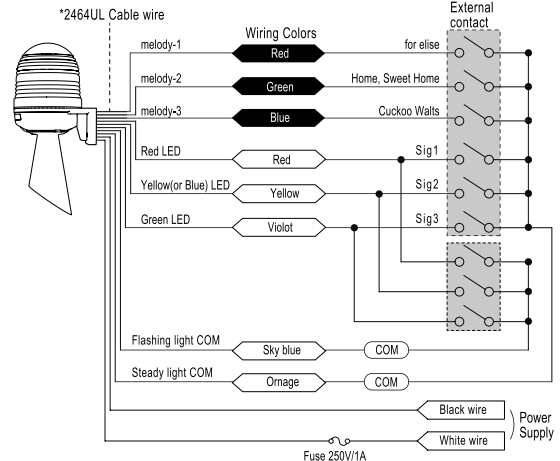


### MW86M

12 ~ 24V



### 90 ~ 240V





# MQV Series

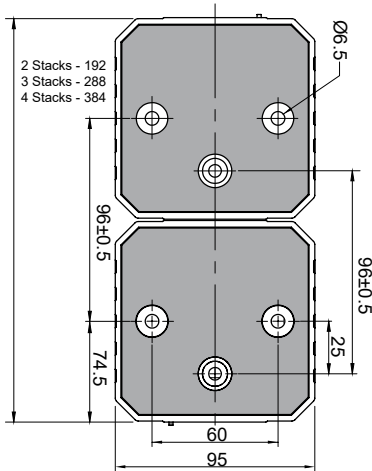
D95mm Cube Signal Lights and Alarms

MQVL series  
MQVM series  
MQVX series

MQVH series  
MQVS series

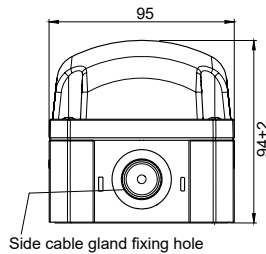
## Combination of MQV Series

unit: mm



## Combination with signal lights

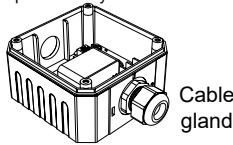
Speaker products and signal lights can be used in the form of traffic lights by connecting two or more products.



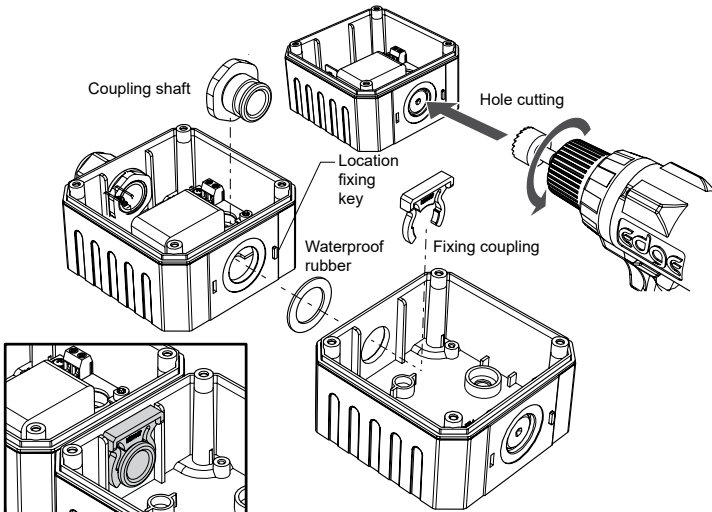
## Mounting hole dimension by cable gland standard

Cable gland	Mounting hole	Cable Outer dia
M16X1.5	Ø16	Ø4.5~10
M20X1.5	Ø20	Ø7~12.5
PG9	Ø16	Ø3~8
PG13.5	Ø20	Ø5~12

Before inserting the cable gland accessory, cutting work is required using drill and hole cutter on the side of product body.



## Body connection coupling assembly



# MQVM Series

D95mm Cube Multi-color LED Signal Light



## Ordering Information

MQVM - ① - ② - ③ (V) LED ROHS IP65

① Power Supply	00	12~24VDC
	FF	110~220VAC
② LED Color	RGB	Red & Green & Blue
	RYG	Red & Yellow & Green
③ Option	V	240 ±10 times/minute (Emergency signal)

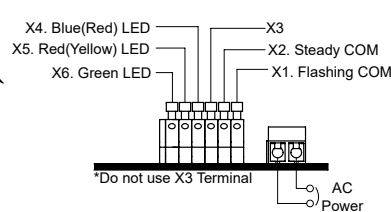
## Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)
Allowable voltage range	10.8V ~ 26.4VDC, 100 ~ 240VAC
Current consumption (±10%)	12~24VDC : 0.28A 110~220VAC : 0.07A
Function	Steady, Flashing
Dimension	95 x 95 x 94 (mm)
Flashing rate	Standard - 80±5 per minute Option (V) type - 240±10 times per minute
Mounting method	Body bottom mount base - Screw type (M6, 2EA)
Power cable insertion	Internal bottom of main body - Maximum cable diameter : Ø7mm External locations - Cable gland
Connection	UL1007/AWG22
Color	Milky white
Material	Body - PA6 Lens - PC
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case )
Withstand voltage	500VAC 50/60Hz 1 min (between terminals and case before )
Vibration	0.75mm at 10~55Hz (cycle: 1minute)
Temperature	Ambient temperature : -20 ~ 50°C Storage ambient temperature: -20 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65
Weight	App. 300g (AC type standard)

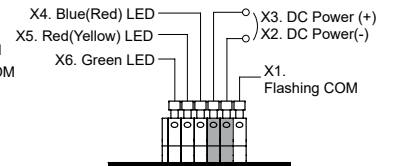
\* Life of the LED varies according to operating conditions and environment

## Connection Diagram

### AC type (110~220VAC)

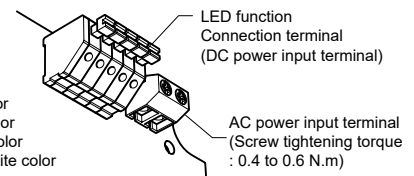


### DC type (12~24VDC)



## RGB Product Color Combination

- X2 + X4: Blue color
- X2 + X5: Red color
- X2 + X6: Green color
- X2 + X4 + X5: Pink color
- X2 + X4 + X6: Cyan color
- X2 + X5 + X6: Yellow color
- X2 + X4 + X5 + X6: White color





## MQVL Series

D95mm Cube LED Signal Light

### Ordering Information



MQVL - FF - R (V)

①                      ②                      ③

① Power Supply	00	12~24VDC		
	FF	110~220VAC		
② Lens Color	R	Red	G	Green
	Y	Yellow	B	Blue
	C	Clear		
③ Option	V	240 ±10 times/minute (Emergency signal)		

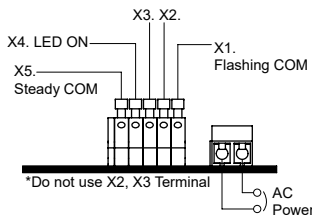
### Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)
Allowable voltage range	10.8V ~ 26.4VDC, 100 ~ 240VAC
Function	Steady, Flashing
Dimension	95 x 95 x 94 (mm)
Flashing rate	Standard - 80±5 per minute Option (V) type - 240±10 times per minute
Mounting method	Body bottom mount base - Screw type (M6, 2EA)
Power cable insertion	Internal bottom of main body - Maximum cable diameter : Ø7mm External locations - Cable gland
Connection	UL1007/AWG22
Color	Red, Yellow, Green, Blue, Clear
Material	Body - PA6 Lens - PC
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case )
Withstand voltage	500VAC 50/60Hz 1 min (between terminals and case before )
Vibration	0.75mm at 10~55Hz (cycle: 1minute)
Temperature	Ambient temperature : -20 ~ 50°C Storage ambient temperature: -20 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65
Weight	App. 300g (AC type standard)

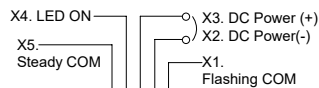
\* Life of the LED varies according to operating conditions and environment

### Connection Diagram

#### AC type (110~220VAC)



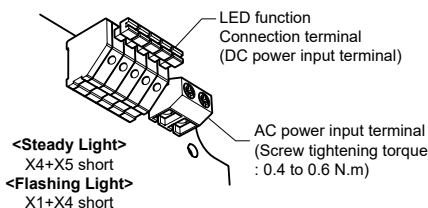
#### DC type (12~24VDC)



#### Current consumption

LED color	MQVL Series	
	12~24VDC	110~220VAC
Red	0.21A	0.06A
Yellow	0.21A	0.06A
Green	0.21A	0.06A
Blue	0.28A	0.19A
White	0.21A	0.06A

(RMS value current consumption when LED is on ± 10%)



## MQVX Series

D95mm Cube Strobe Light

### Ordering Information



MQVX - 00 - R

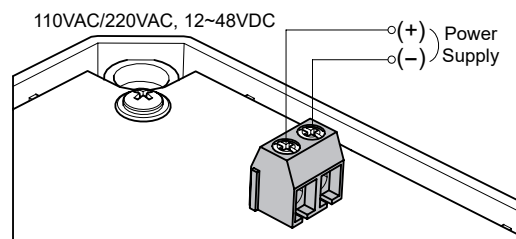
①                      ②

① Power Supply	00	12~48VDC		
	10	110VAC		
	20	220VAC		
② Lens Color	R	Red	G	Green
	Y	Yellow	B	Blue
	C	Clear		

### Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)
Allowable voltage range	10.8V ~ 50VDC, 100~120VAC, 210~230VAC
Current consumption	12~28VDC : 0.2A 110VAC : 0.07A 220VAC : 0.04A
Function	Flashing
Dimension	95 x 95 x 94 (mm)
Flashing rate	12~18VDC : 80±5 times per min ute 110VAC : 77±5 times per minute 220VAC : 60±5 times per minute
Mounting method	Body bottom mount base - Screw type (M6, 2EA)
Power cable insertion	Internal bottom of main body - Maximum cable diameter : Ø7mm External locations - Cable gland
Connection	UL1007/18AWG
Color	Red, Yellow, Green, Blue, Clear
Material	Body - PA6 Lens - PC
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case )
Withstand voltage	500VAC 50/60Hz 1 min (between terminals and case before )
Vibration	0.75mm at 10~55Hz (cycle: 1minute)
Temperature	Ambient temperature : -20 ~ 50°C Storage ambient temperature: -20 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65
Weight	App. 283g (DC type)

### Connection Diagram





# MQV S/H Series

D95mm Cube Multi-Tone Sounder

- Built-in 5 or 15W speaker
- Volume adjustable up to 85dB or 105dB
- 9 to 15 tones for a diverse range of applications
- IP 55 to 65



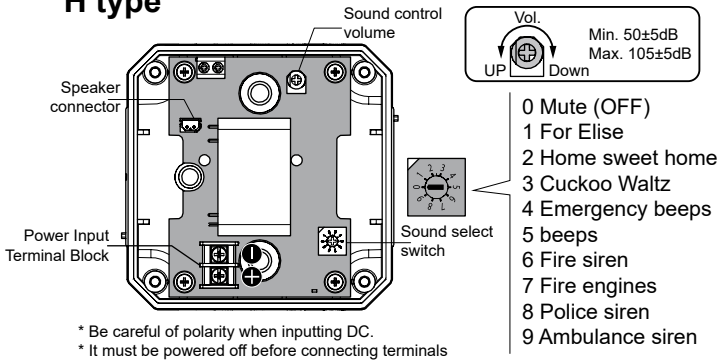
## Ordering Information

MQV - H15 FF R  
 ① ② ③

① Type	<b>S9</b>	Speaker 9ch Sound type
	<b>H15</b>	Horn speaker 15ch Sound type
② Power Supply	<b>00</b>	12 ~ 24VDC
	<b>FF</b>	110~220VAC
③ Cover Color	<b>R</b>	Red
	<b>B</b>	Black

## Connection Diagram

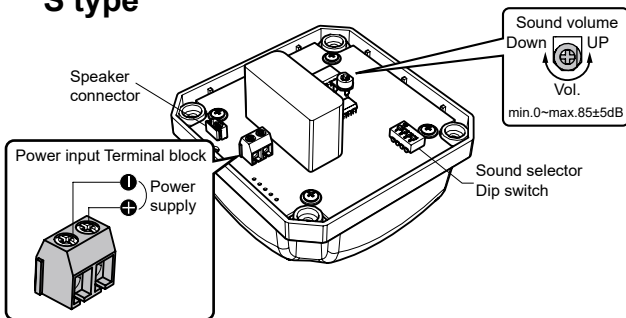
### H type



## Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)	
Allowable voltage range	10.8V ~ 26.4VDC, 100 ~ 240VAC	
Current consumption (±10%)	S type	H type
	12~24VDC : 01.A 110~220VAC : 0.03A	12V~24VDC: 0.45A 110~220VAC: 0.20A
Volume control	Internal volume control	Internal volume control
Sound volume (max)	85±5dB (1M)	105±5dB (1M)
Sound type	Siren: 3ch Vehicle beep: 2ch Phone bell: 4ch Melody: 6ch	Melody : 3ch Signal : 3ch Siren : 3ch
	Weight	App. 380g (AC type)
Protection structure	IP55	IP65
Power cable insertion	Bottom of main body - Maximum cable diameter: Ø7mm Two external locations - Cable gland	
Connection	AC : 18 AWG DC : 22 AWG	
Color	Body - Black	Speaker cover - Black or Red
Material	Body - PA6	Speaker Cover - ABS
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case)	
Withstand voltage	500VAC 50/60Hz 1 min(between terminals and case before)	
Vibration	0.75mm at 10~55Hz (cycle: 1minute)	
Temperature	Working temperature : -20 ~ 50°C Storage temperature: -20 ~ 70°C	
Operating humidity	45 ~ 85% RH	
Mounting method	Body bottom face fixing - Screw type (M6, 2EA)	

### S type



## Sound Selection Guide for S Type

No.	Dip Switch	Tone	ON = 1 OFF = 0			
			Ch1	Ch2	Ch3	Ch4
0		Mute(off)	0	0	0	0
1		Emergency vehicle	1	0	0	0
2		Ambulance	0	1	0	0
3		Fire vehicle	1	1	0	0
4		Car clock	0	0	1	0
5		Vehicle back-beep	1	0	1	0
6		Doorbell	0	1	1	0
7		Pipipi	1	1	1	0
8		Telephone ringing	0	0	0	1
9		Telephone	1	0	0	1
10		General Alarm	0	1	0	1
11		Spinning song	1	1	0	1
12		Serenade-Haydn	0	0	1	1
13		Orpheus in the Underworld	1	0	1	1
14		Melody	0	1	1	1
15		Home sweet home	1	1	1	1





# AVG Series

135mm Rotating  
Warning Signal Light

- Incandescent type
- Smooth lens
- Large rotating reflector
- Stud mount
- Audible Alarm (80dB) model available

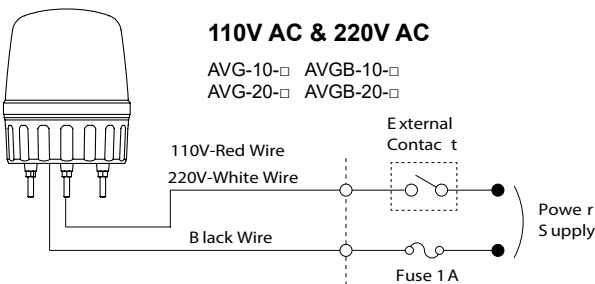
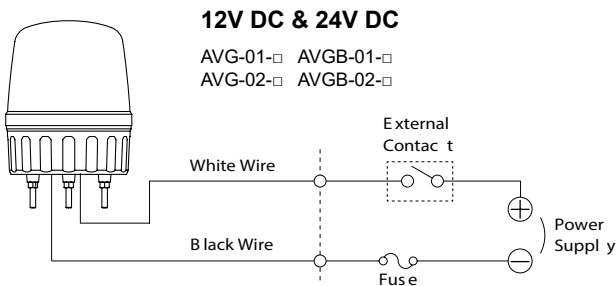


## Ordering Information

AVG **B** - **01** - **R**  
 ①      ②      ③

① Style	no mark	Rotating
	<b>B</b>	Rotating w/Buzzer
② Power Supply	<b>01</b>	12VDC
	<b>02</b>	24VDC
	<b>10</b>	110VAC
	<b>20</b>	220VAC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue

## Wiring Diagram



## Mounting option

Wall Mount  
Brackets



MAM-DS27

## Specifications

Model	AVG	AVGB
Lighting type	Incandescent	
Power Supply	12VDC, 24VDC, 110VAC, 220VAC	
Current consumption Wattage	12VDC	2.08A, 25W
	24VDC	1.04A, 25W
	110VAC	0.22A, 25W
	220VAC	0.11A, 25W
Sound Level	N/A	80 ±5dB @1m
Rotation Rate	150±10 times/minute	
Ambient Temperature	-15~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45 ~ 85% RH	
Degree of Protection	IP42	
Recommended Wire Size	AC 110/220V : UL1007, 18AWG	
	AC/DC 12/24V : UL1007 22AWG	
Certificate/Compliance	RoHS, UL, CE	

## Replacement Parts

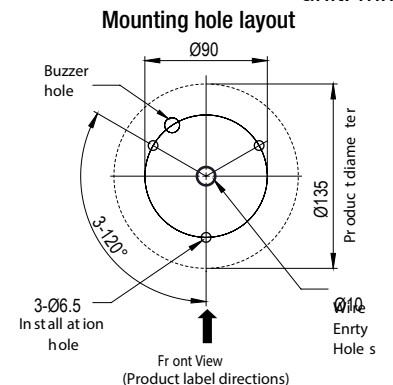
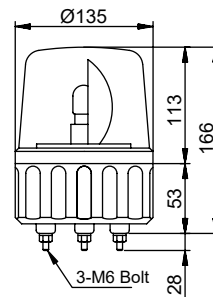
	Part Number	Power Supply
Bulb	MAB-T15-D-012-25	12V DC, 25 Watt
	MAB-T15-D-024-25	24V DC, 25 Watt
	MAB-T15-D-130-25	110V AC, 25 Watt
	MAB-T15-D-240-25	220V AC, 25 Watt
LED Bulb	MAL-T15-D-②-①	-
Lens	LENS-AVG-①	Smooth Lens for Rotating Lights

①: Color of LED or Lens; R, Y, G, B or C

②: Voltage of LED or Lens; 12 (12VAC/DC) 24(24VAC/DC) 120(120VAC) 220(220VAC)

## Dimensions

unit: mm



See page 19 - 21  
for mounting options and accessories



# MS115L Series

Ø115mm LED Signal Lights



- Triple-reflection system for enhanced visibility
- Enhanced Illumination : long-life, super bright LED
- Energy efficient : Low power consumption

## Specifications

Style	LED Steady, Flashing + Buzzer				
Power Supply	24VAC/DC		90~240VAC		
Current Consumption (RMS value ±10%)		LED	w/Buzzer	LED	w/Buzzer
	R	0.13A	0.16A	0.07A	0.10A
	Y	0.11A	0.14A		
	G	0.25A	0.28A		
	B	0.25A	0.28A		
C	0.29A	0.32A			
Flash rate	80 ±10 flashes/min				
Alarm Sound Level	80 ±5 dB at 1m				
Vibration	0.75mm at 10~55Hz				
Ambient Temp.	-20~40°C				
Storage Temp.	-20~70°C				
Ambient Humidity	45~85% RH				
Degree of Protection	IP65				
Weight	Approx. 325g				
Connection	2464UL/22AWG				
Certificate/Compliance	RoHS, UL				

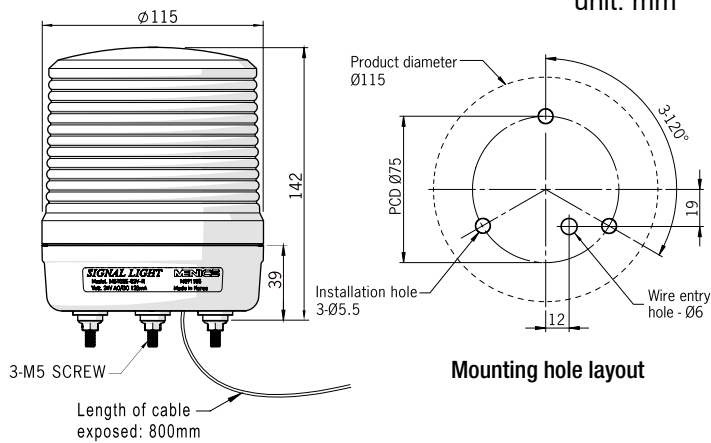
## Ordering Information

MS115L - F 02 - R  
 ① ② ③

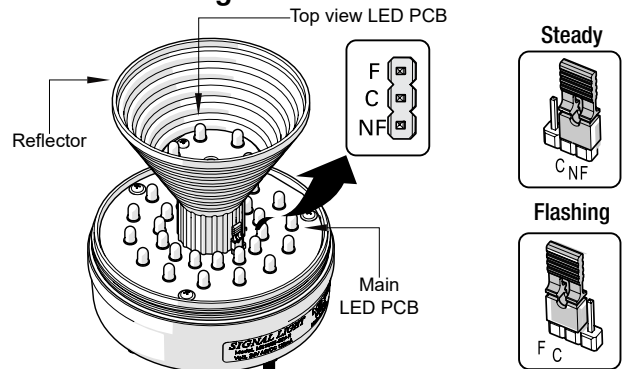
① Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Alarm
② Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90-240V AC
③ Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions

unit: mm

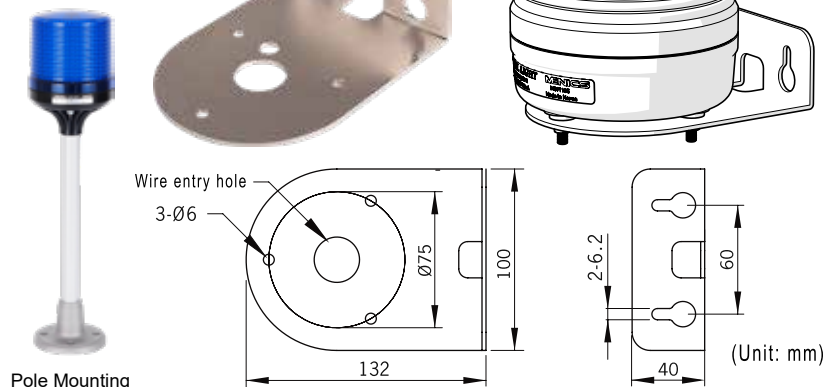


## Feature settings

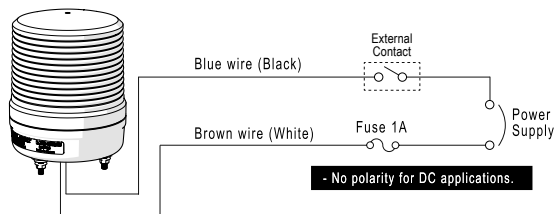


## Wall mounting options (for all MS115 Series)

Model: MAM-DS29  
Material: Steel



## Wiring Diagram







# MS115S Series

Ø115mm Xenon Lamp Signal Lights

- Xenon lights
- Outstanding visibility at distance
- PCB module style Xenon lamp
- IP65 rated

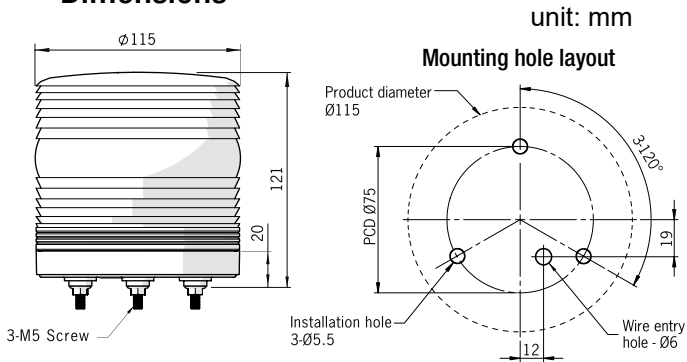


## Ordering Information

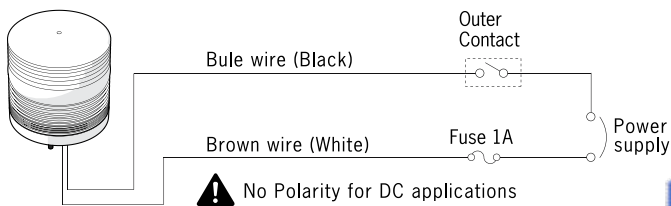
MS115S - S 20 - R     
                   ①                  ②

① Power Supply	<b>00</b>	12-24V AC/DC
	<b>10</b>	110V AC
	<b>20</b>	220V AC
② Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions



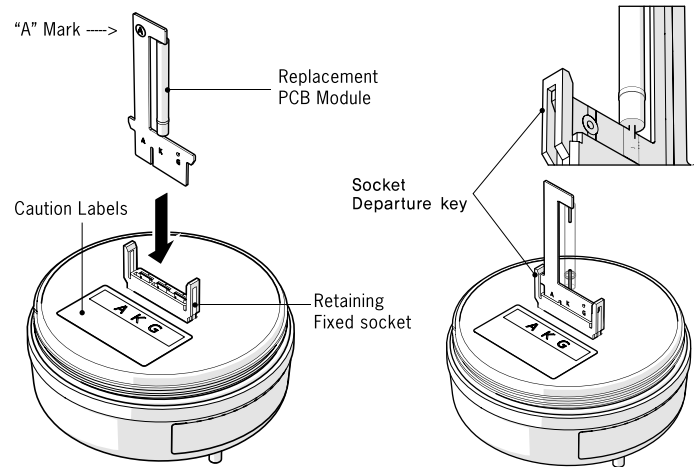
## Wiring Diagram



## Specifications

Lighting type	Xenon Strobe		
Power Supply	12~24V AC/DC	110V AC	220V AC
Current Consumption	0.08~0.15A	0.07A	0.03A
Flashing Rate	60±10 times/min		
Vibration	0.75mm at 10~55 Hz		
Lens Material	PC Plastic		
Ambient Temperature	-20~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL 2464, 22 AWG X 2C, 300mm		
Weight	315g		
Certificate/Compliance	RoHS, UL		

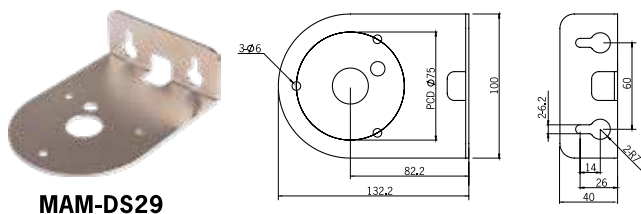
## How to install Xenon bulb



The new lamp should be inserted firmly to match the same signal A K G (or A G K) mark. Printed "A" in circuit and label.

- ⚠ - If you insert reverse direction, the lamp can not operate.
- ⚠ - Insert the lamp circuit board correctly. not to inclined.

## Wall mounting options (for all MS115 Series)



Supplier No.	MS86S-LAMP-02	MS86S-LAMP-10
Description.	Xenon Lamp I - Type, 3W 12~24V Lamp life: 1,000,000 Frequency. (2,000 hours)	Xenon Lamp U - Type, 6W AC110V / 220V Lamp life: 1,000,000 Frequency. (2,000 hours)



# MS115T Series

Ø115mm Multi Function LED Signal Light

- Low body type (20mm)
- Wide light distribution with prism-cut lens
- Outstanding visibility at distance
- 2 flashing patterns (selectable by DIP Switch)
- IP65 rated



## Specifications

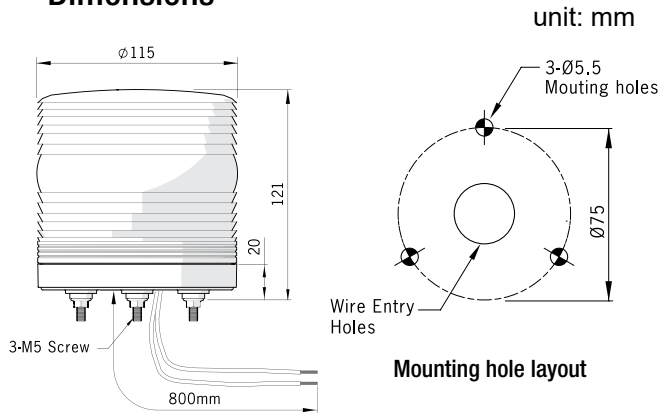
Lighting type	Steady/Flashing/Rotating w/Buzzer		
Power Supply	12-24V AC/DC	90-240V AC	
Current Consumption	Red	0.54A/ 0.69A(w/Buzzer)	0.08A/ 0.23A (w/Buzzer)
	Yellow	0.53A/ 0.69A (w/Buzzer)	0.07A/ 0.23A (w/Buzzer)
	Green	0.25A/ 0.39A (w/Buzzer)	0.04A/ 0.19A (w/Buzzer)
	Blue	0.54A/ 0.69A (w/Buzzer)	0.08A/ 0.23A (w/Buzzer)
	Clear	0.24A/ 0.39A (w/Buzzer)	0.04A/ 0.19A (w/Buzzer)
Flash Rate(adjustable)	F1: 80 ±10 flashes/minute F3: 240 ±10 flashes/minute(Emergency signal)		
Rotation Rate	60 ~ 300±10 rpm (Clockwise)		
Alarm Sound Level(Adjustable)	10 - 100dB±5 at 1m		
Vibration	0.75mm at 10~55 Hz		
Ambient Temperature	-20~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL1007/22AWG		
Weight	360g		
Certificate/Compliance	RoHS, UL		

## Ordering Information

MS115T - R 00 - R  
 ① ② ③

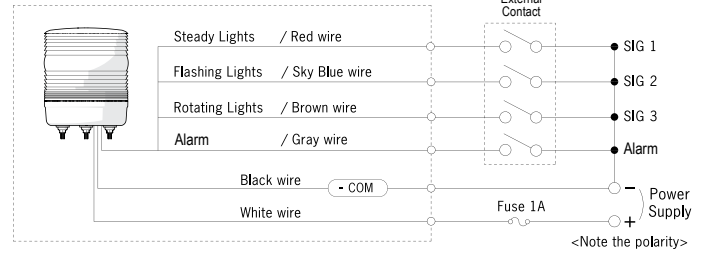
① Light Style	<b>F</b>	Steady/Flashing
	<b>R</b>	Steady/Flashing/Rotating
	<b>B</b>	Steady/Flashing/Rotating+Alarm
② Power	<b>00</b>	12 - 24V AC/DC
	<b>FF</b>	90 - 240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions

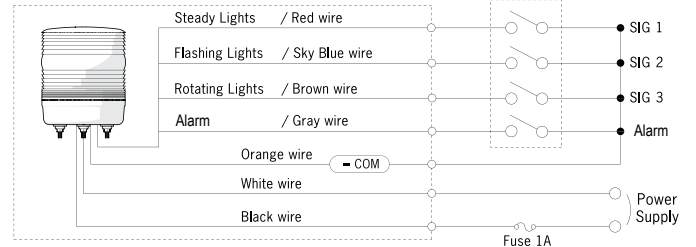


## Wiring Diagram

### 12-24V DC

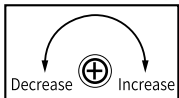


### 90-240V AC

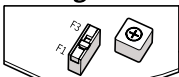


## Function Setting

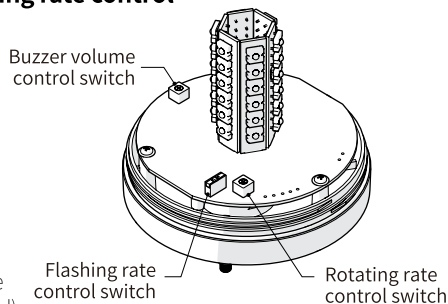
### Buzzer volume / Rotating rate control



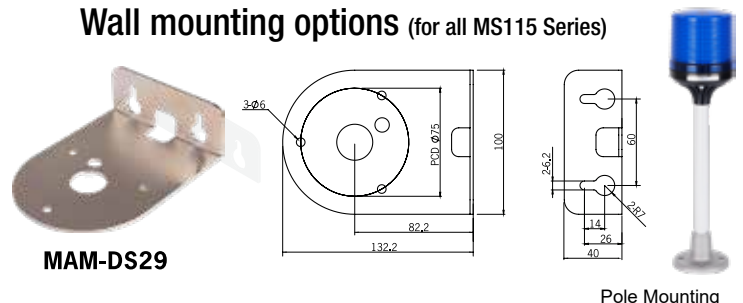
### Flashing rate control



F1: 80 ±10 times per minute  
 F3: 240 ±10 times per minute  
 (when using emergency signal)



## Wall mounting options (for all MS115 Series)

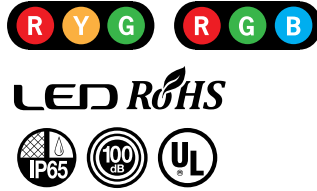




# MS115M Series

Ø115mm 3 colors in 1 LED Signal Lights

- 3 Colors in 1 LED modular components
- Bright & even light distribution with prism-cut lenses
- Multi-functional LED signal light
- Flashing Cycles : 2 patterns (Selectable by a switch)
- Optional Audible Alarm upto 100dB (adjustable volume)



## Ordering Information

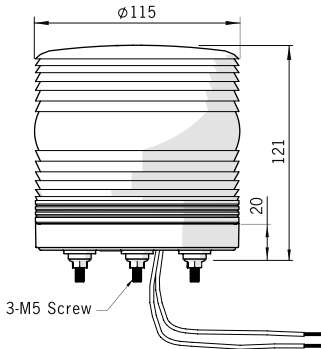
MS115M - F 00 - RYG  
 ① ② ③

① Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Alarm
② Power Supply	<b>00</b>	12-24V AC/DC
	<b>FF</b>	90-240V AC
③ Colors	<b>RYG</b>	Red, Yellow and Green
	<b>RGB</b>	Red, Green and Blue

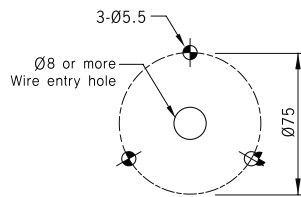
## Dimensions

unit: mm

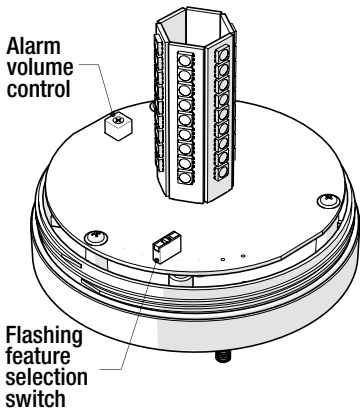
### "20mm" Base body



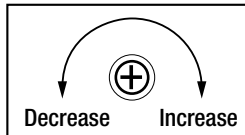
### Mounting hole layout



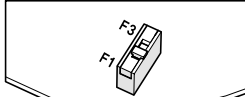
## Feature settings



### Alarm volume control



### Flashing feature selection



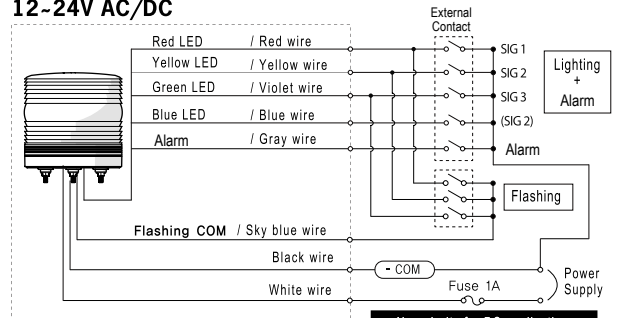
F1: 80 ± 5 times per minute  
 F3: 240 ± 5 times per minute  
 ( emergency signal display light )

## Specifications

Functions	Steady, Flashing + Alarm	
Power Supply	12~24VAC/DC	90~240VAC
Current Consumption	F Style	0.6A
	B Style	0.76A
Flash rate(Adjustable)	F1: 80 ± 10 flashes/min., F3: 240 ± 10 times/minute(emergency signal)	
Alarm Sound Level	10~100 ± 5 dB at 1m: Volume adjustable	
Vibration	0.75mm at 10~55Hz	
Ambient Temp.	-20~40°C	
Storage Temp.	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL1007/22AWG	
Weight	Approx. 360g	
Certificate/Compliance	RoHS, UL	

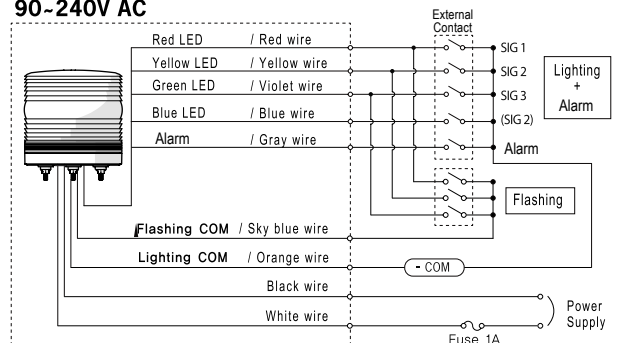
## Wiring Diagram

### 12~24V AC/DC

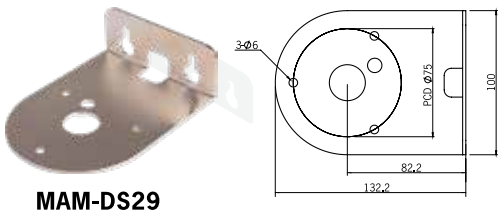


- No polarity for DC applications.

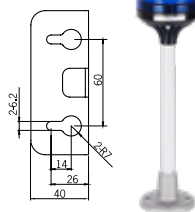
### 90~240V AC



## Wall mounting options (for all MS115 Series)



MAM-DS29



Pole Mounting



# MS135T Series

Ø135mm LED Warning Light

- Excellent visibility outdoor and long distance
- Multi-function with various sound options
- Adjustable rotating speed & sound volume
- IP65 rated



## Specifications

Lighting type	Flashing(emergency signal flash pattern), rotating, Buzzer						
Power Supply	12-24V DC			100-240V AC			
Current Consumption	Color	Standard	Buzzer	Melody / Siren	Standard	Buzzer	Melody / Siren
	Red	0.75A	0.78A	0.90A	0.10A	0.13A	0.14A
	Yellow	0.75A	0.78A	0.90A	0.10A	0.13A	0.14A
	Green	0.72A	0.75A	0.90A	0.08A	0.10A	0.14A
	Blue	0.72A	0.75A	0.90A	0.08A	0.10A	0.14A
Clear	0.75A	0.78A	0.90A	0.10A	0.12A	0.14A	
Flash Rate	240±5 time/min						
Rotation Rate	60 ~ 300±10 rpm (Clockwise)						
volume	Buzzer volume (Built-in volume control)			Sound volume (built-in volume)			
	intermittent sound (Beep-Beep-Beep) : 75~100±5dB (1M)			55~80±5dB (1M) (Melody: for Elise, Home sweet home Cuckoo waltz) (Siren: Fire, Police, Ambulance)			
Vibration	10 ~ 55Hz (1 min.cycle) Double amplitude 0.75mm X, Y, Z						
Ambient Temperature	-15 ~ 50°C						
Storage Temperature	-20 ~ 70°C						
Ambient Humidity	45~85% RH						
Degree of Protection	IP65						
Mounting Option	Stud/Pole/Wall mounting						
Connection method	Exposed wiring connections						
Recommended Wire Size	UL2464/22AWG						
Weight	app.555g						
Certificate/Compliance	RoHS						

## Ordering Information

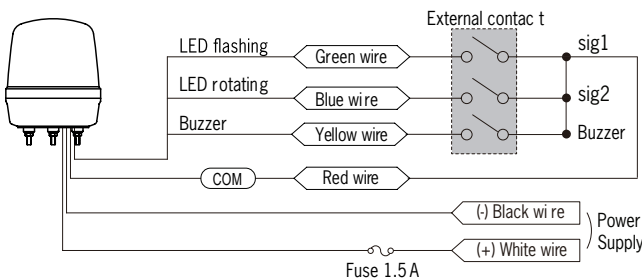
MS135T - B 00 - R  
 ①      ②      ③

① Light Style	<b>R</b>	Flashing + Rotating
	<b>B</b>	Flashing + Rotating + Buzzer
	<b>M*</b>	Flashing + Rotating + Melody
	<b>S*</b>	Flashing + Rotating + Siren
② Power	<b>00</b>	12 - 24V DC
	<b>FF</b>	100 - 240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

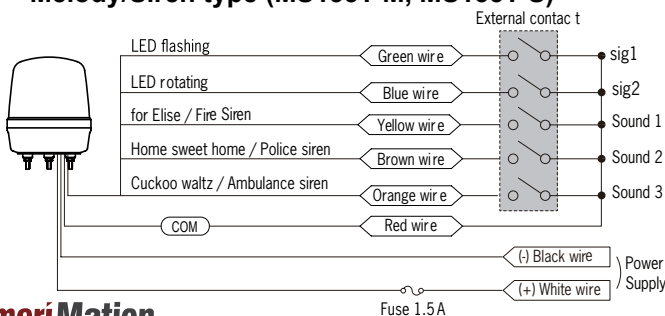
\* Pole mounting option is not applicable for M or S type

## Wiring Diagram

### Standard buzzer type (MS135T-R, MS135T-B)

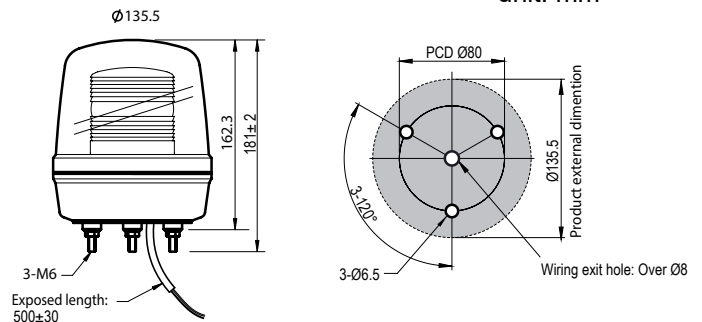


### Melody/Siren type (MS135T-M, MS135T-S)

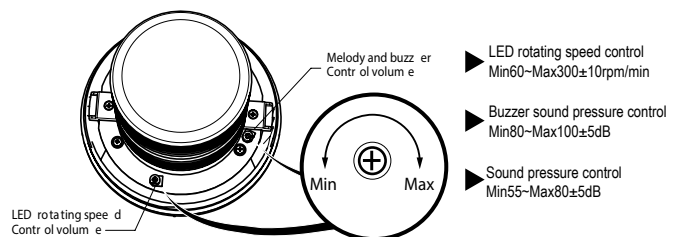


## Dimensions

unit: mm



## Feature Setting







# MS135B Series

Ø135mm Rotating  
Warning Light

- Strong flash using reflector with 25W bulb
- Weather resistant lens and body
- LED bulb replacement available
- IP65 rated



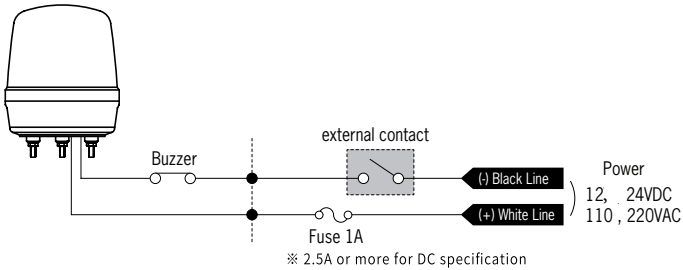
## Ordering Information

MS135B -                -               

①                      ②                      ③

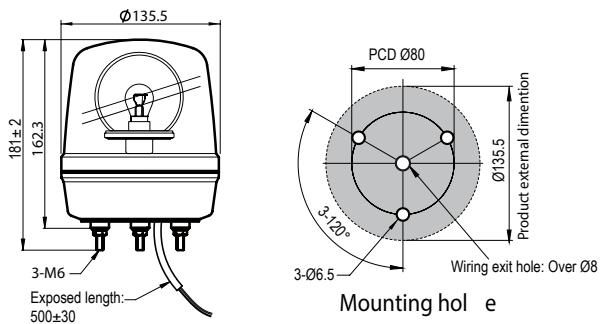
① Function	No mark	Reflector rotation
	B	Reflector rotation + Buzzer
② Power	01	12VDC
	02	24VDC
	10	110VAC
	20	220VAC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

## Wiring Diagram



## Dimensions

unit: mm



## Replacement Parts

LED Bulb		MAL-T15-D-12-①	12V
		MAL-T15-D-24-①	24V
		MAL-T15-D-120-①	110V
		MAL-T15-D-240-①	220V
Incandescent BULB		MAM-T15-D-012-25	12V 25W
		MAB-T15-D-024-25	24V 25W
		MAB-T15-D-130-25	110V 25W
		MAB-T15-D-240-25	220V 25W

(①):Color of LED or Lens; R, Y, G, B or C

## Specifications

Light source	Incandescent bulb			
Power Supply	12VDC	24VDC	110VAC	220VAC
Current Consumption	2.08A, 25W	1.04A, 25W	0.22A, 25W	0.11A, 25W
Rotation Rate	150 ±10% rpm/min			
Buzzer volume	90 ±5dB (1M) beep-beep-beep : The volume can not be adjusted			
Lens color	Red, Yellow, Green, Blue, Clear			
Mounting options	Stud/Pole/Wall mounting			
Connection method	Exposed wiring connections			
Ambient temperature	-15 ~ 50°C			
Storage ambient temperature	-20 ~ 70°C			
Ambient humidity	45 ~ 85% RH			
Dielectric strength	1 Min. at 1000VAC 50/60Hz			
Insulation Resistance	100MΩ or more (500VDC Megger basis)			
Vibration resistance	10 ~ 55Hz (1 min cycle) Double amplitude 0.75mm X, Y, Z			
Protection structure	IP65			
Connection	UL2464/22AWG			
Bulb life	1,000 hrs			
Approval	RoHS			
Weight	app.555g			



# MPL Series

Bar Type LED Panel Lamp

- Wide angle high illumination light
- Easy installation with screw or magnet
- Slide rail bracket for easy adjustment
- Excellent vibration & impact resistance



## Ordering Information

MPL N - C 20 - 2L - M  
 ① ② ③ ④ ⑤

① Light Color	<b>N</b>	Natural White
	<b>Y</b>	Warm white
② Type	<b>C</b>	External power cable type (*IP65)
	<b>T</b>	Terminal block type
	<b>Z</b>	Terminal block + Built-in ON/OFF switch type
③ Power Supply	<b>01</b>	12VDC
	<b>02</b>	24VDC
	<b>10</b>	110VAC
	<b>20</b>	220VAC
④ Product Length	<b>2L</b>	200mm
	<b>3L</b>	300mm
	<b>4L</b>	400mm
	<b>5L</b>	500mm
⑤ Fixing bracket	<b>No mark</b>	Screw fixing type
	<b>M</b>	Magnet fixed type



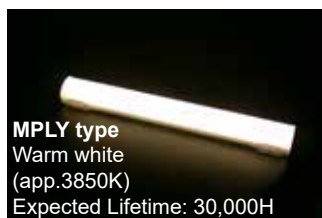
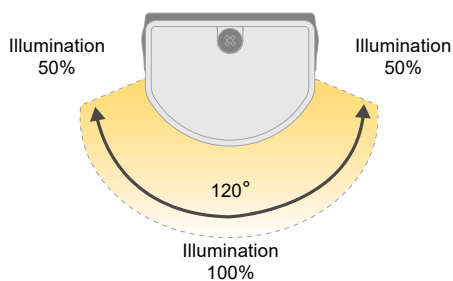
Screw fixing type



Magnet fixed type

Number of brackets required\*  
 product length 200/300mm (2L, 3L) - 2ea  
 product length 400/500mm (4L, 5L) - 3ea

## Illumination range drawing



## Specifications

Application	Working light, Enclosure box, Semiconductor machinery
Type	Bar type lamp
Power supply	12/24VDC±5V , 110/220VAC±10V (AC50/60Hz)
Light color	N type-Natural white (app.6200K) Y type-Warm white (app.3850K)
Connection	60227 KS IEC 53, 2CX0.7-Exposure length: 400mm
Material	Housing-PC resin (milky white), Cover-ABS resin(ivory), Bracket - PC resin (transparent)
Ambient temperature	-20 ~ 50°C
Storage ambient temperature	-20 ~ 70°C
Ambient humidity	45~85% RH
Withstand voltage	AC: 1500VAC 60Hz for 1 minute DC: 500VAC 60Hz for 1 minute
Insulation resistance	100MΩ or more (500VDC Mega between all terminals and case)
Vibration	10~55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1hour

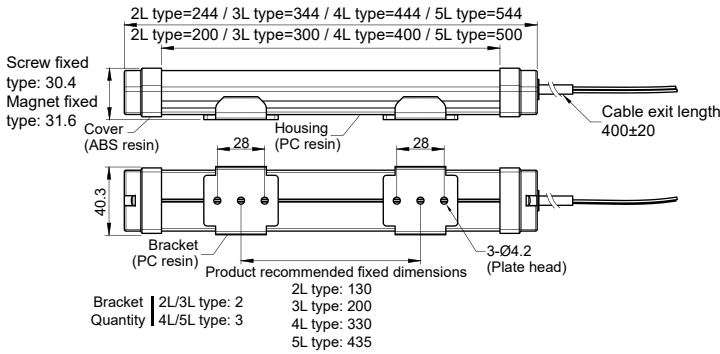
MPLN type	Current / Power (±10%)	2L series	3L series	4L series	5L series	
		12V	0.60A / 7.6W	0.56A / 7.3W	0.80A / 9.6W	0.85A / 10.2W
Illuminance (1M)	24V	0.34A / 8.0W	0.26A / 6.4W	0.50A / 12.0W	0.46A / 11.0W	
	110V	0.08A / 3.3W	0.07A / 3.7W	0.13A / 11W	0.12A / 10.5W	
	220V	0.10A / 5.2W	0.10A / 6.4W	0.14A / 10W	0.15A / 14W	
	12V: 180 lux 24V: 180 lux 110V: 100 lux 220V: 140 lux	12V: 160 lux 24V: 170 lux 110V: 110 lux 220V: 210 lux	12V: 295 lux 24V: 370 lux 110V: 243 lux 220V: 270 lux	12V: 300 lux 24V: 355 lux 110V: 240 lux 220V: 360 lux		
Luminous flux	12V	565 lm	495 lm	926 lm	942 lm	
	24V	565 lm	535 lm	1160 lm	1115 lm	
	110V	305 lm	395 lm	763 lm	753 lm	
	220V	440 lm	660 lm	848 lm	1130 lm	
MPLY type	Current / Power (±10%)	12V	0.60A / 7.6W	0.52A / 6.5W	0.70A / 8.4W	0.70A / 8.4W
		24V	0.28A / 7.0W	0.22A / 5.3W	0.37A / 9.0W	0.33A / 8.0W
		110V	0.08A / 3.3W	0.07A / 3.8W	0.10A / 9.0W	0.10A / 8.3W
		220V	0.11A / 5.4W	0.10A / 6.4W	0.13A / 10.0W	0.15A / 14W
	Illuminance (1M)	12V: 180 lux 24V: 180 lux 110V: 90 lux 220V: 144 lux	12V: 150 lux 24V: 150 lux 110V: 110 lux 220V: 160 lux	12V: 240 lux 24V: 300 lux 110V: 225 lux 220V: 243 lux	12V: 260 lux 24V: 275 lux 110V: 214 lux 220V: 342 lux	
Luminous flux	12V: 623 lm 24V: 560 lm 110V: 310 lm 220V: 452 lm	12V: 520 lm 24V: 520 lm 110V: 380 lm 220V: 554 lm	12V: 754 lm 24V: 942 lm 110V: 706 lm 220V: 763 lm	12V: 900 lm 24V: 952 lm 110V: 672 lm 220V: 1074 lm		

Weight (220VAC standard)	2L series	Screw fixed	Magnet fixed	3L series	Screw fixed	Magnet fixed
	MPL⓪-C MPL⓪-T MPL⓪-Z	app. 113g app. 110g app. 112g	app. 142g app. 133g app. 133g	MPL⓪-C MPL⓪-T MPL⓪-Z	app. 141g app. 140g app. 140g	app. 162g app. 161g app. 161g
4L series	Screw fixed	Magnet fixed	5L series	Screw fixed	Magnet fixed	
	MPL⓪-C MPL⓪-T MPL⓪-Z	app. 183g app. 175g app. 178g	app. 215g app. 207g app. 210g	MPL⓪-C MPL⓪-T MPL⓪-Z	app. 211g app. 203g app. 206g	app. 243g app. 235g app. 238g

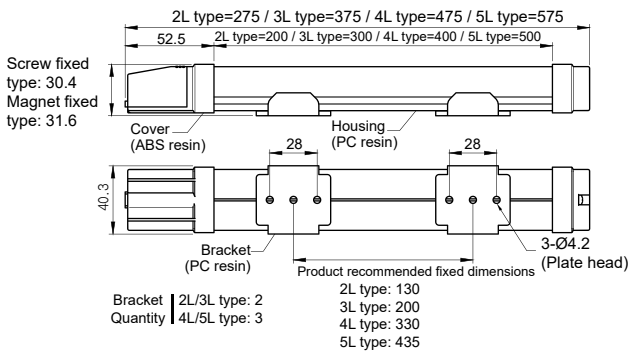


# Dimensions unit: mm

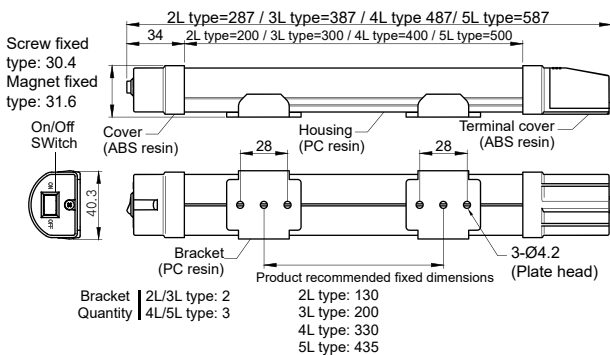
## MPL ①-C type



## MPL ①-T type



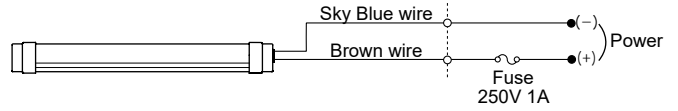
## MPL ①-Z type



# Wiring Diagram

## MPL ①-C model

### Power cable type

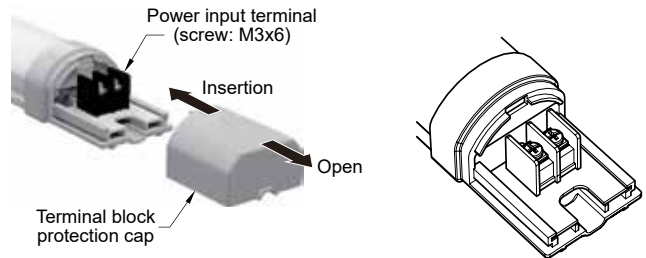


\* AC, DC power : Please connect the power line regardless of color.  
 (No polarity for DC power)

## MPL ①-T, MPL ①-Z model

### Terminal block type

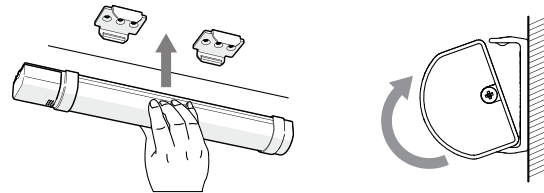
Recommended screw torque : 0.5 N.m



\* AC/DC power : Please connect the power line regardless of color.  
 (No polarity for DC power)

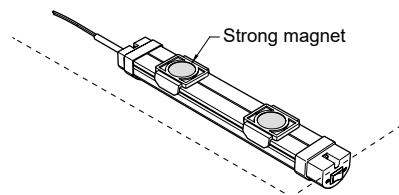
# Installation Guide

## Screw fixing type



After fixing the brackets with the screws, the lamp can be easily attached just by snapping in. The position of the lamp can be adjusted along the slide rail of the bracket.

## Back side magnet fixing type



With strong magnets, The lamp can be easily installed onto metal surfaces like steel.

# LED Indicators

Ø6-16 LED Indicators



## Flat Head



6 mm



8, 10, 12, & 16 mm

## Round Head



6 mm



8, 10, 12, & 16 mm

## Protrusive Head



6 mm



8, 10, 12, & 16 mm

## Accessories



LTC-0500 / LTC-1000

Wire length: 500mm Wire length: 1M

\* Wire : UL 1007, 22AWG

\* Terminal : 110 series connector, Brass 0.3t

## Key Features

Operating Temperature Range: -25 ~ +60 °C

Chrome plated brass, Plastic housing

Dielectric strength: 500 VAC 50/60Hz for 1 minute (DC Type)

Dielectric strength: 1000 VAC 50/60Hz for 1 minute (AC Type)

Insulation resistance: Max. 100MΩ (at 500VDC mega)

## Specifications

Voltage	Operating Voltage	Operating Current
3V DC	2.7 to 3.3 VDC	20 mA
12V DC	10.8 to 13.2 VDC	20 mA
24V DC	21.6 to 26.4 VDC	20 mA
110V AC*	100 to 120 VAC	4 mA
220V AC*	200 to 240 VAC	2 mA

\* not valid on Ø6 mm

## Ordering Information

M 06 R - 03 R  
① ② ③ ④ ⑤

① Type	M	IP60	Standard
	H		High Bright (F head only)
	E	IP67	Standard
	S		High Bright(F head only)
② Diameter	06	6 mm (Not applied to E,S type)	
	08	8 mm	
	10	10 mm	
	12	12 mm	
	16	16 mm	
③ Head Shape	F	Flat (High bright type only)	
	R	Round	
	P	Protrusive	
④ Power	03	3V DC	
	12	12V DC	
	24	24V DC	
	10	110V AC*	
	20	220V AC*	
⑤ Color	R	RED	
	Y	YELLOW	
	G	GREEN	
	B	BLUE**	
	W	WHITE**	

\* Not applied for 6 mm series.

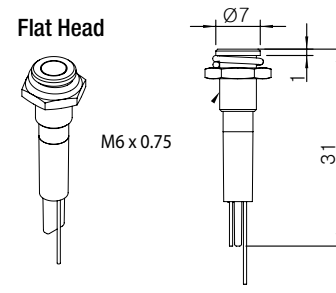
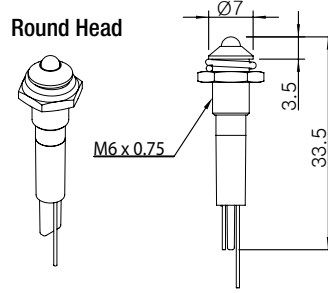
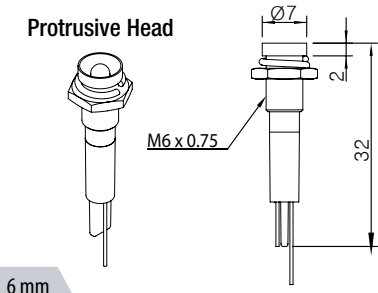
\*\* Blue & White Colors are available only for High Bright types.

## Luminous Intensity

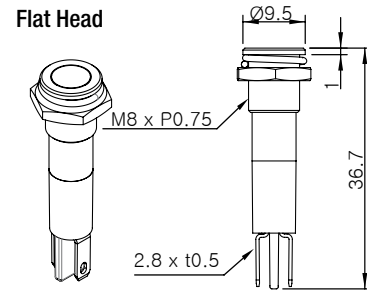
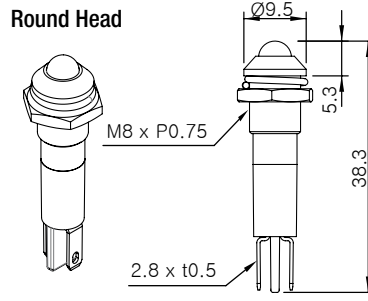
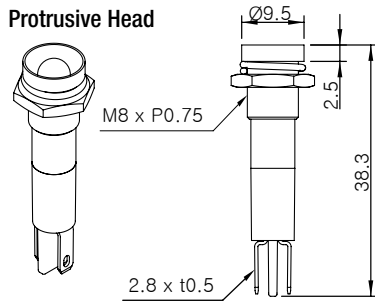
	LED Color	Standard type P & R Head (mcd)	High Bright Type F Head (mcd)
6 mm	RED	50 to 80	100 to 200
	YELLOW	50 to 70	100 to 200
	GREEN	50 to 80	150 to 250
	BLUE	N/A	100 to 220
	WHITE	N/A	120 to 200
8 mm	RED	60 to 90	150 to 250
	YELLOW	50 to 80	130 to 260
	GREEN	70 to 100	200 to 300
	BLUE	N/A	140 to 240
	WHITE	N/A	150 to 240
10 mm	RED	60 to 90	140 to 220
	YELLOW	50 to 80	120 to 240
	GREEN	70 to 100	180 to 270
	BLUE	N/A	130 to 230
	WHITE	N/A	140 to 230
12 mm	RED	50 to 80	110 to 180
	YELLOW	40 to 70	100 to 190
	GREEN	60 to 80	130 to 220
	BLUE	N/A	100 to 200
	WHITE	N/A	100 to 210
16 mm	RED	50 to 80	80 to 150
	YELLOW	40 to 60	80 to 160
	GREEN	50 to 70	100 to 210
	BLUE	N/A	80 to 190
	WHITE	N/A	90 to 180

# Dimensions

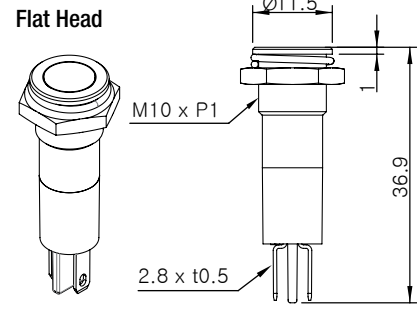
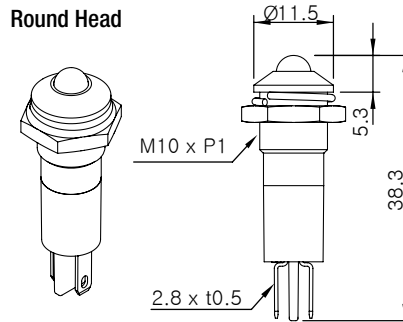
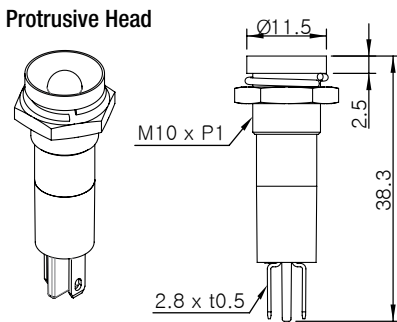
unit: mm



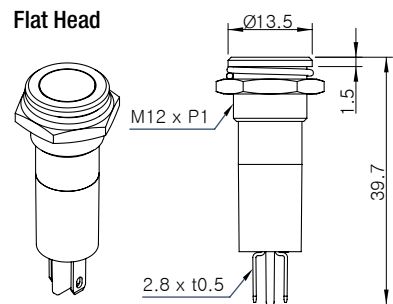
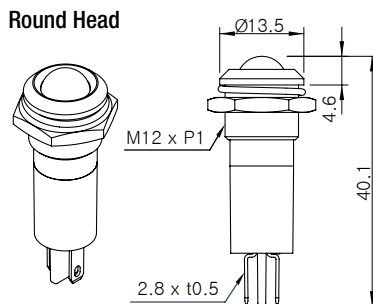
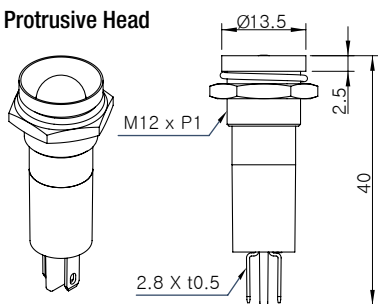
6 mm



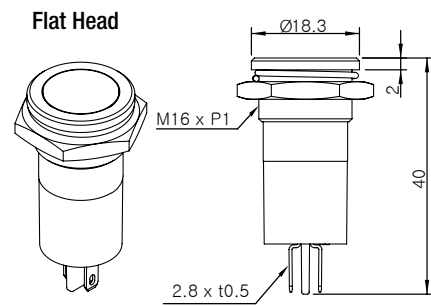
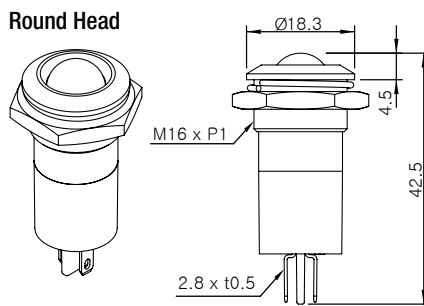
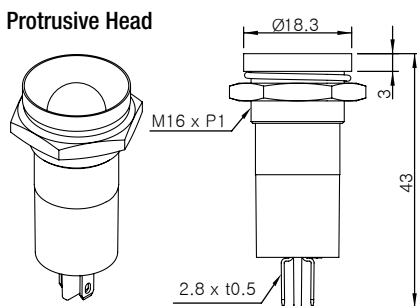
8 mm



10 mm



12 mm



16 mm



# A20 Series

Ø22 Pilot Lamp



## General Specifications

Insulation Resistance	100MΩ minimum at 500V DC megger
Dielectric Strength	Contact block: 2,500VAC for 1 Min.
	Illuminated unit: 2,000VAC for 1 Min.
Vibration Resistance	Operation Extremes: 5-55Hz, Amplitude: 0.5mm
	Damage Extremes: 30Hz, Amplitude: 1.5mm
Shock Resistance	Operation Extremes: 100m/s <sup>2</sup>
	Damage Extremes: 1,000m/s <sup>2</sup>
Ambient Temperature	Operation: -25°C~ +55°C, Storage: -45°C~+85°C
Ambient Humidity	45~85%RH
Degree of Protection	IP65

LED Rating	Type No	Rated Voltage	Rated Current	Color code	LED life
	LAED-6	6V AC/DC	10mA (R, Y) 7mA (G, W, S)	G: Green W: White R: Red S: Blue Y: Yellow	50,000 Hrs
	LAED-1	12V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-2	24V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-H	110V AC/DC	5.5mA		50,000 Hrs
	LAED-M3	230/240V AC/DC	2.7mA		50,000 Hrs

A	B	C	A	B	Dimensions
Pilot lamp operators	LED Lamps	Lamp Socket	Pilot lamp operators Part Numbers	LED LAMP Part Numbers	
			<b>1</b> <b>Flush type</b> A20P-1EG A20P-1ER A20P-1ES A20P-1EW A20P-1EY A20P-1EC	LAED-6G (6VAC/DC) LAED-6R (6VAC/DC) LAED-6S (6VAC/DC) LAED-6W (6VAC/DC) LAED-6Y (6VAC/DC) LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC)	
			<b>2</b> <b>Marking Plate Type</b> A20P-1BEG A20P-1BER A20P-1BES A20P-1BEW A20P-1BEY A20P-1BEC	LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC)	
			<b>3</b> <b>Dome Type</b> A20P-2EG A20P-2ER A20P-2ES A20P-2EW A20P-2EY A20P-2EC	LAED-HG (110VAC/DC) LAED-HR (110VAC/DC) LAED-HS (110VAC/DC) LAED-HW (110VAC/DC) LAED-HY (110VAC/DC)	
			<b>4</b> <b>Extended Type</b> A20P-2TEG A20P-2TER A20P-2TES A20P-2TEW A20P-2TEY A20P-2TEC	LAED-M3G (230/240VAC/DC) LAED-M3R (230/240VAC/DC) LAED-M3S (230/240VAC/DC) LAED-M3W (230/240VAC/DC) LAED-M3Y (230/240VAC/DC)	

\* Head color = G: Green, R: Red, S: Blue, W: White, Y: Yellow, C: Clear



# B30 Series

Ø30 Pilot Lamp



## Ordering Information

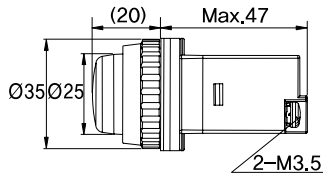
**B30 - 17 R - 110VAC**

	①	②
① Model	<b>R</b>	RED
	<b>G</b>	GREEN
	<b>Y</b>	YELLOW
	<b>B</b>	BLUE
	<b>W</b>	WHITE
② Voltage	<b>24VDC</b>	
	<b>110VAC</b>	

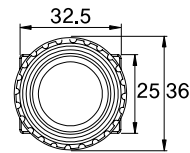
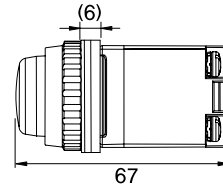
## Specifications

Degree of Protection		IP65	
Ambient Temperature	Operation	-25°C~+70°C	
	Storage	-30°C~+80°C	
Ambient Humidity		35~80% RH	
Recommended wire		Copper wire 14-16 AWG	
LED	Normal Current	AC	Approx. 15mA
		DC	Approx. 15mA
	Voltage		24VAC
	Expected Life		Min. 50,000 hrs

## Dimensions (Unit: mm)



Packing RubberX3



Great resistance to UV rays ·  
Integrated LED microchip system: high brightness ·

# KPL Series

Ø22 Pilot Lamp

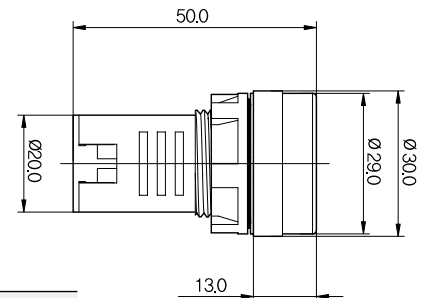


## Ordering Information

**KPL - R - 12VAC**

	①	②
① Model	<b>R</b>	RED
	<b>G</b>	GREEN
	<b>Y</b>	YELLOW
	<b>B</b>	BLUE
	<b>W</b>	WHITE
② Voltage	<b>AC</b>	12V
	<b>DC</b>	24V
	<b>AC</b>	110V
		220V

## Dimensions (Unit: mm)



\* Terminals: No Polarity

## Specifications

Nominal Current	Approx. 20mA
Insulation Resistance	100MΩ at 500V DC
Weight	Approx. 24g
Ambient Temperature	-25°C~+55°C with no icing
Expected Life	50,000hrs
Torque	0.8N·m (8.16kg·cm)
Degree of protection	IP65
Recommended wire	Copper wire 14-16 AWG

# B2NB Series

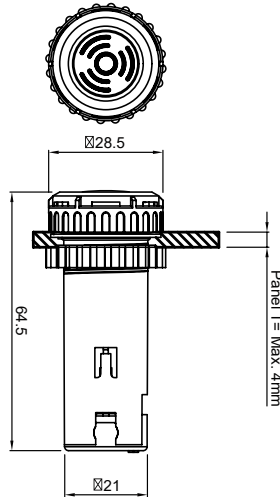
Ø22/25mm LED Illuminated Buzzer



## Dimensions



B2NB-B1D



- Improved visibility with high luminance LED
- Magnetic buzzer with clear & loude bass sound

## Ordering Information

B2NB- 1D- R  
①

① LED Color	no mark	Green
	R	Red

## Specifacations

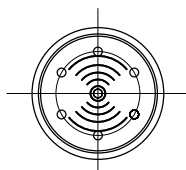
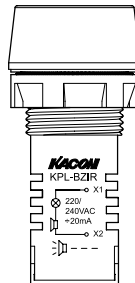
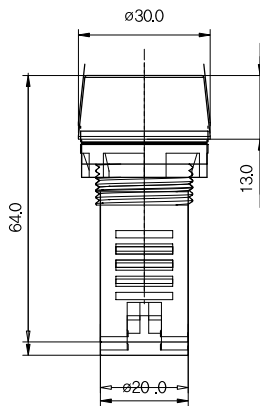
Rated voltage/current	12-14VDC / 60mA	
Protection	IP30	
Sound level	0.1m	85dB
	1.0m	75dB
Sound mode	Intermittent / Continuous	
Operation Frequency	Max 30 times/min	
Vibration	10-55Hz, 3mm	
Operation temperature	-10°C~ +55°C	
Operating Humidity	35~85%RH	
Storage Temperature	-20°C~ +65°	
Recommended wire	Copper wire 14-16 AWG	
Weight	Approx. 18g	

# KPL Series

Ø22/25mm LED Illuminated Buzzer



## Dimensions



## Ordering Information

KPL- BZ I R 12V  
① ② ③

① Sound	I	Interrupted
	C	Continuous
② Color	R	Red
	G	Green
③ Volatge	AC/DC	12V
		24V
		110V
	AC	220V

## Specifacations

Power Consumption	20mA
Insulation Resistance	100MΩ at 500VDC
Lamp Life	50,000 hrs
Type of Sounds	Interrupted/Continued
Sound Level	80dB
Weight	Approx. 24g
Ambient Temp.	-25°C~ +55°C (No Freezing)
Terminal bolt driving torque	0.8N·m (8.16kgf·cm)
Recommended wire	Copper wire 14-16 AWG



# HRB-PS Series

Ø30mm Alarm/Buzzer



# KSP Series

Ø66mm Alarm/Buzzer



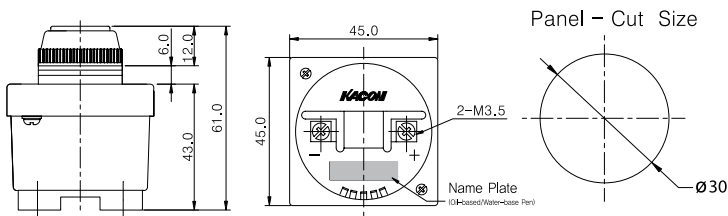
## Ordering Information HRB- PS50 I R 12V

① Sound	I	Interrupted
	C	Continuous
② Voltage	AC/DC	12V
		24V
		110V
	AC	220V

## Specifications

Light	Life: 50,000hrs Color: Red
Inlet Diameter	Ø30mm
Voltage	12, 24, 110VAC/DC 220VAC
Current Consumption	Electrical DC : 25mA, Mechanical AC : 4VA
Max. Output	1W (PEAK)
Sound Level	80dB
Protection rate	IP40
Sound Type	Interrupted, Continuous
Dielectric strength	Charged and non charged parts : 1,000VAC 1Min.
Ambient Temp.	-10°C~ +55°C (No Freezing)
Ambient Humidity	35 ~ 85% RH
Driving Torque	0.8N·m (8.16kgf·cm)
Recommended wire	Copper wire 14-16 AWG

## Dimensions



## Precautions

• DC electric buzzer has a contact in series with the inductive load coil. Therefore, its life is limited, and it may cause disturbance to other devices due to its noise. Installing a noise filter at the power can prevent the noise. If the EMI level of other devices is low, using an electronic buzzer is desirable.

• The external impact may change the tone.

## Ordering Information KSP- 41 S

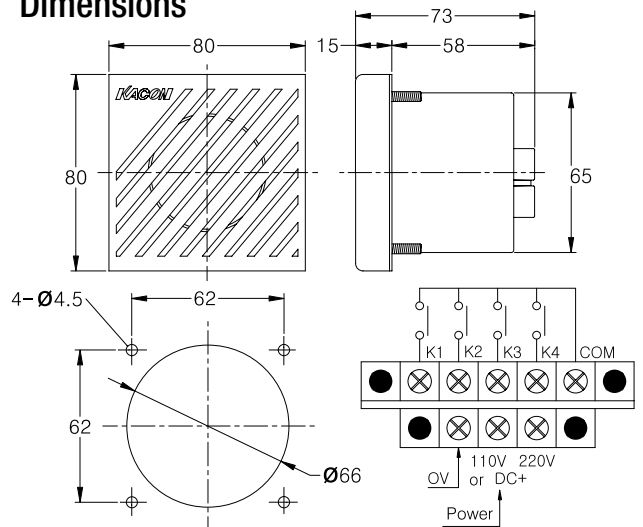
① Voltage	41	110/220VAC
	42	12/24VDC
	43	100-125VDC
② Sound Mode	S	Ambulance, Patrol, Telephone, Song
	T	Fast, Slow, High, Low

## Specifications

Inlet Diameter	Ø66mm		
Current Consumption	Approx. 5W Max.		
Max. Output	1W (PEAK)		
Sound Level	85 dB		
Protection rating	IP65		
Sound type	Type	KSP-4 S	KSP-4 T
	K1	Ambulance	Fast
	K2	Patrol	Slow
	K3	Telephone	High
	K4	Song*	Low
Driving torque	0.8N·m (8.16kgf·cm)		
Recommended wire	Copper wire 14-16 AWG		

\* London bridge is falling down

## Dimensions



\* Do not connect the SIG COM of the signal input with the COM of the power supply because their circuits are different. Otherwise, it may damage the device.

# KMB Series

Ø65mm Alarm/Buzzer



## Models

KMB-P80A1(110VAC)  
KMB-P80A2(220VAC)  
KMB-P80D1(110 VDC)  
KMB-P80D2(12-24VDC)

KMB-N80A1(110VAC)  
KMB-N80A2(220VAC)  
KMB-N80D2(12-24VDC)

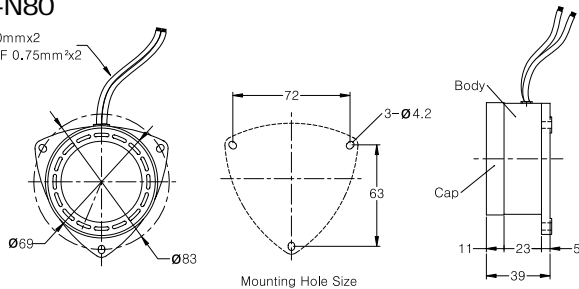
## Specifications

Voltage	110, 220VAC
	12, 24, 110VDC
Current Consumption	Approx. 5W Max.
Max. Output	1W (PEAK)
Sound Level	80 dB
Protection rating	IP40
Alert type	AC: Continuous Buzzer
	DC: Electronic - Flashing LED
Driving torque	0.8N·m (8.16kgf·cm)
Recommended wire	Copper wire 14-16 AWG

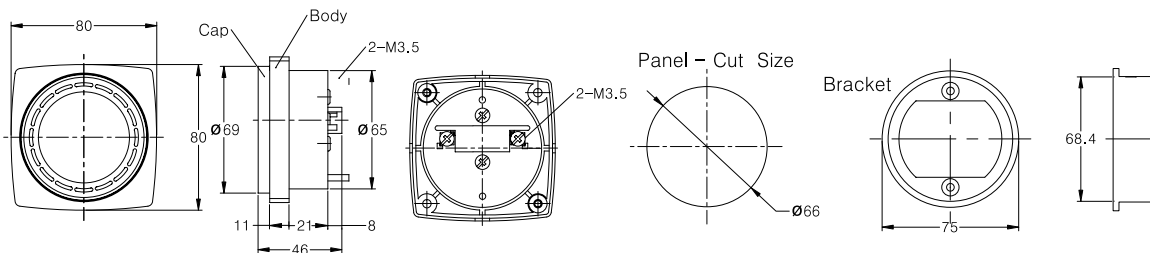
## Dimensions

### KMB-N80

Wire Length : 200mm×2  
Lead Wire : VCTF 0.75mm×2



### KMB-P80



## Precautions

- DC electric buzzer has a contact in series with the inductive load coil. Therefore, its life is limited, and it may cause disturbance to other devices due to its noise. Installing a noise filter at the power can prevent the noise. If the EMI level of other devices is low, using an electronic buzzer is desirable.
- The external impact may change the tone.

# HRE Series

Ø150mm Bell



## Models

HRE-S90A1 (110VAC)  
HRE-S90D4 (24VDC)

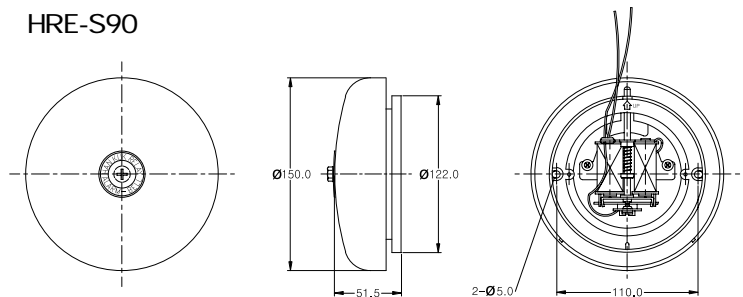
HRE-S90A2 (220VAC)  
HRE-S90D2 (12VDC)

## Specifications

Voltage	110, 220VAC
	12, 24VDC
Current Consumption	Approx. 5W Max.
Max. Output	1W (PEAK)
Alarm Sound Level	90 dB
Protection rating	IP40
Sound type	Striking Vibration
Recommended wire	Copper wire 14-16 AWG

## Dimensions

### HRE-S90



# Ordering Information

Adjustable volume •  
3 Melody & 3 Siren Modes •

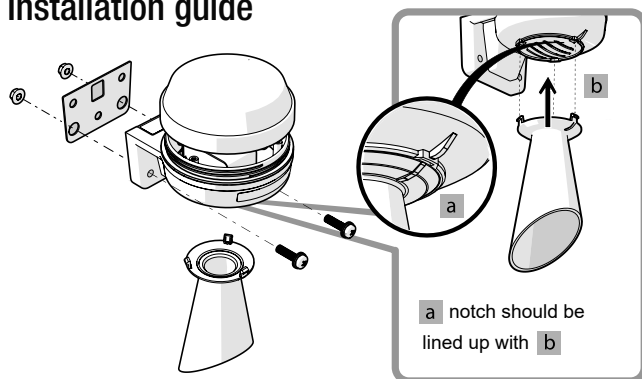
MW86N - 00 - M3 B  
①      ②      ③

① Power	00	12 ~ 24VAC/DC
	FF	90 ~ 240VAC
② Sound Type	M3 (melody)	For Elise
		Home, Sweet Home
		The Cuckoo Waltz
	S3 (Siren)	Fire Truck
		Police Car
		Ambulance
③ Body color	no mark	Ivory
	B	Black
	R	Red

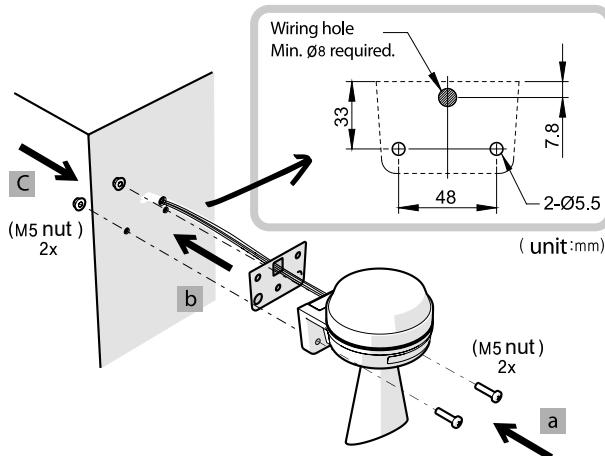
# Specifications

Model	MW86N	
Power Supply	12 ~ 24VAC/DC	90 ~ 240VAC(50~60Hz)
Current Consumption	Max 0.20A ±10%	Max 0.06A ±10%
Alarm Sound Level	Standard Type	55 ~ 85±5dB
	Horn Type	55 ~ 90±5dB
Material	ABS	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	Standard Type	IP43
	Horn Type	IP54
Recommended Wire Size	464UL/22AWG	
Weight	Standard Type	Approx. 189g
	Horn Type	Approx. 244g
Certificate/Compliance	UL,RoHS	

# Installation guide



Installation panel drawing



# MW86N Series

Ø86mm Wall Mounting Signal Horn

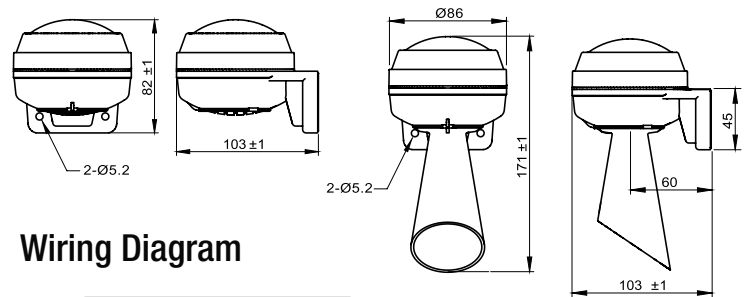


Standard Type



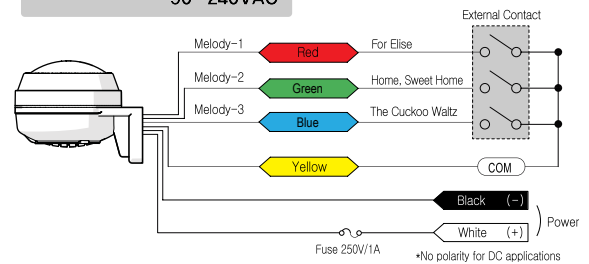
Horn Type

# Dimensions

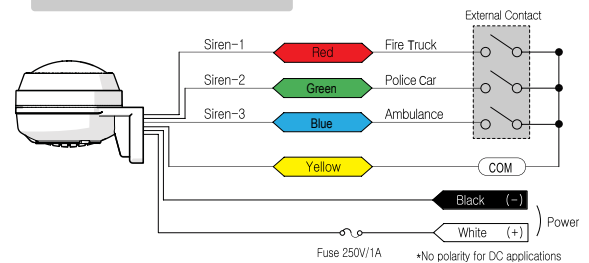


# Wiring Diagram

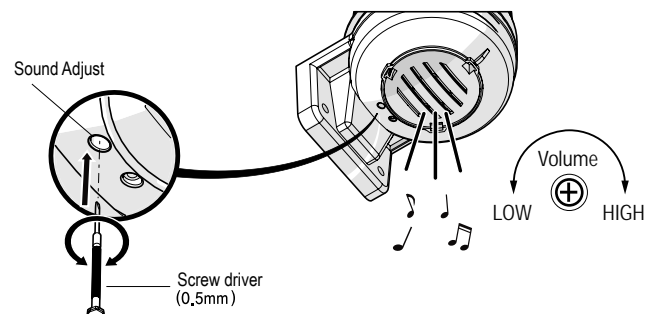
Melody Type / 12~24VAC/DC  
90~240VAC



Siren Type / 12~24VAC/DC  
90~240VAC



# Volume Control



# MSP Series

Panel/Wall Mount Buzzer



## Ordering Information

MSP - T P M - 02 (B)  
 ① ② ③ ④ ⑤

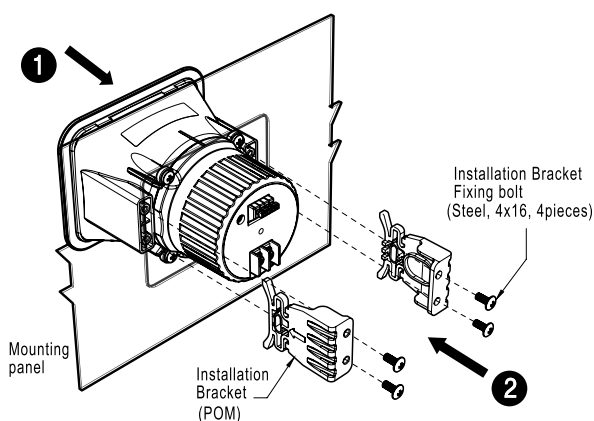
① Connection	<b>T</b>	Terminal Type
	<b>L</b>	Lead Wire Type
② Mounting	<b>P</b>	Panel Mounting
	<b>B</b>	External Fixation Type
③ Sound Type	<b>M</b>	Melody 3 channel
	<b>S</b>	Siren 3 channel
④ Rated Voltage	<b>01</b>	12VDC
	<b>02</b>	24VDC
	<b>FF</b>	100 ~ 240VAC
⑤ Body Colors	<b>no mark</b>	Ivory
	<b>(B)</b>	Black
	<b>(R)</b>	Red

## Specifications

Model	MSP-T	MSP-L
Power Supply	12 VDC, 24VDC, 100~240 VAC	
Current Consumption	12VDC Melody type: 0.22A Siren type: 0.8A 24VDC Melody type: 0.12A Siren type: 0.4A 100~240VAC Melody type: 0.13A Siren type: 0.13A	
Maximum Volume	Melody type: 100±5dB(1M), Siren type: 110±5dB(1M)	
Number of Channels	Sound types: 3 channels	
Sound Type	Melody type: For Elise, Sweet Home, Cuckoo Waltz Siren type: Fire Truck, Police Car, Ambulance	
Volume Control	Built-in volume control	None
Color	Body - Ivory/Black/Red, Horn speaker - Black	
Material	Body - ABS, Horn - NBR	
Insulation resistance	Over 100MΩ (500VDC mega btwn terminal and case)	
Withstand voltage	500VAC 50/60Hz 1 min.	
Temperature	Working temp.: - 20 ~ 50°C Storage temp.: - 20 ~ 65°C	
Operating humidity	45 ~ 85% RH	
Degree of protection	IP65 (Front panel)	
Wire Size	-	2464UL/22AWG, 6P, 450mm
Certificate	RoHS	
Weight	436g (MSP-TP type)	588g (MSP-LB type)

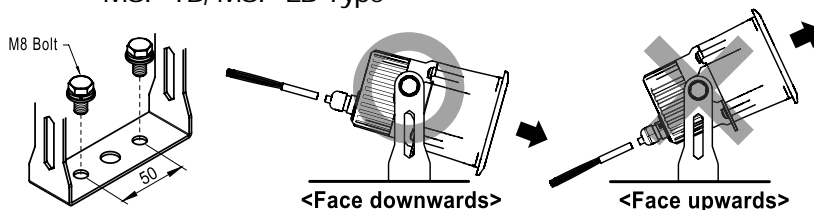
## How to install

MSP-TP, MSP-LP Type



1. Remove the installation bracket and bolts with a screwdriver from the product.
2. Insert the speaker in the direction of ① on the panel.
3. Mount the installation bracket to the direction of ② and fix with fixing bolt to prevent from shaking.

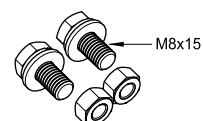
MSP-TB, MSP-LB Type



1. Fixed using M8 bolts in the hole of the angle adjusting holder. Do not fail to apply vibration absorbing rubber when installing in the place with strong vibration.
2. Please install downwards when installing outdoors to prevent rainwater from entering in the device.
3. Set the speaker angle and then fasten the angle adjustment bolt tight. (Tightening torque: 5 ~ 6N.m)

### Accessories

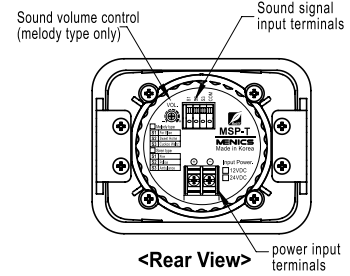
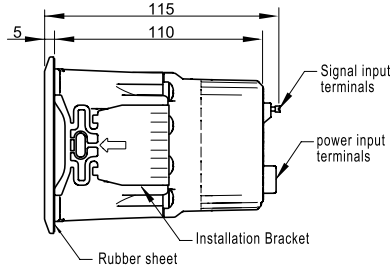
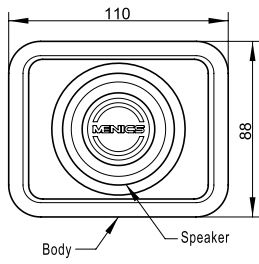
- Each two bolts and nuts to fix M8 are packaged.



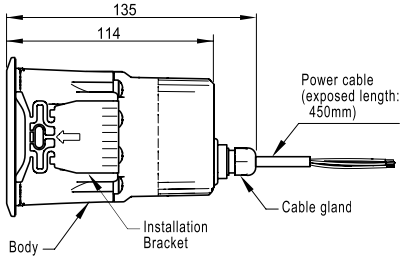
# Dimensions

(Unit: mm)

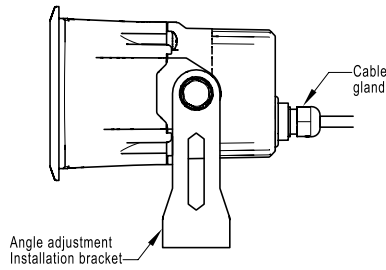
## MSP-TP Type



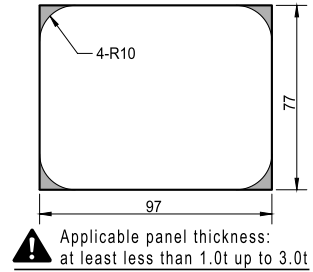
## MSP-LP Type



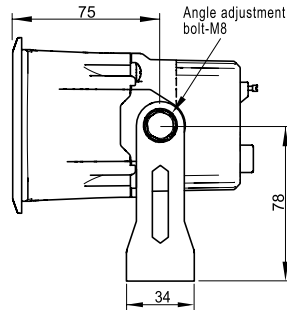
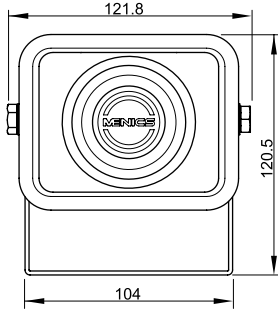
## MSP-LB Type



## Panel cutout dimensions



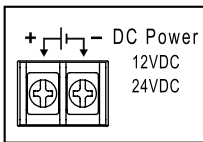
## MSP-TB Type



# Wiring Diagram

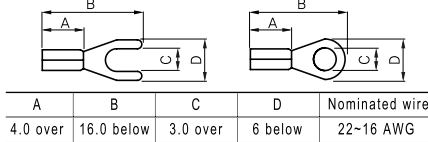
## MSP-T series Connection diagram

### Power input terminals



※ It is recommended to lead wire short to reduce noise and use shield wire.

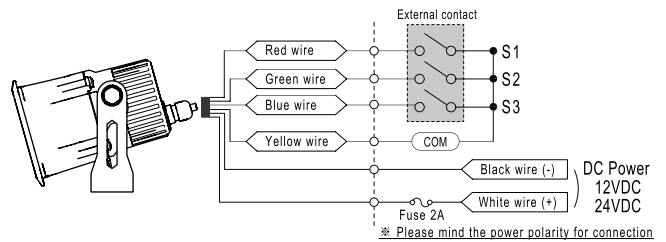
### Specification of crimp terminal



## MSP-L series Wiring Diagram



- Connect the power same as indicated in the product. Otherwise, over current may cause a failure of the product.
- Do not apply power to the sound color signal line and COM line. Short circuit and over current may cause a failure of the product.



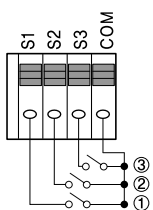
No	Wire color	Melody type	Siren type
S1	Red	for Elise	Fire truck
S2	Green	Sweet home	Police car
S3	Blue	Cuckoo Waltz	Ambulance

### Caution

- ※ Connect external fuse between the product and the power supply to protect internal circuitry. Siren type: 2A Melody type: 0.5A
- ※ Please isolate the signal line that is not in use. There is a risk of electric shock.

※ External dimension and the performance is subject to change without prior notice to improve the product.

### Sound signal input terminals

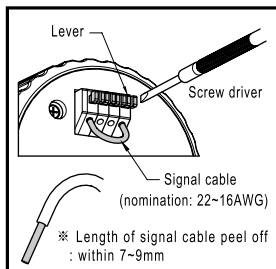
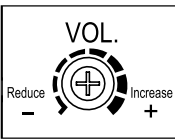


※ Connect signal wire to COM terminal of sound color input terminal and to the terminal of the selected sound type.

No	Terminals	Melody type	Siren type
①	COM - S1	for Elise	Fire truck
②	COM - S2	Sweet home	Police car
③	COM - S3	Cuckoo Waltz	Ambulance

※ Do not put power to the sound color signal input terminal. There is a risk of damage to the circuit if powered.

### Volume control



## How to connect signal cable

1. Press the lever of the terminal with a small screw driver.
2. Insert peeled off signal cable into terminal hole.
3. Release pressing lever.

### Caution

- ※ Keep the length of peeled off signal cable. If the length of peeled off signal cable is too short, there is a risk of malfunction due to connection error and if too long, it may cause electric shock or short circuit.
- ※ Do not pull out signal cable to remove. There is a risk of damage to the terminal. Do not fail to remove by handling the lever of the terminal.



# K16 Series

Ø16mm Switches/Buttons




















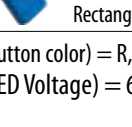
- 16mm (5/8") Mounting Holes
- IP 65 degree of protection (Water & dust proof)
- Snap action contacts
- Illuminated Mushroom & Round, square, rectangular heads (Selector switches are optional)
- Useful quick connector (tap #110) or available solder socket or PCB pin sockets
- Flush mountable switches available - see page F4

## Specifications

<b>Contacts</b>	Contact Form	SPDT (1NO + 1NC), DPDT (2NO + 2NC)
	Contact Material	Ag Alloy (24K Gold plated)
	Max. Switching Current	3A MAX
	Max. Rated Voltage	250VAC, 110VDC
	Rated Current	1A at 24VDC/ 120VAC, 0.5A at 250VAC
	Min. Switching Current	1mA 5VDC
<b>LED</b>	Rated Voltage	24VDC, 12VDC, 6VDC
	Rated Current	15mA
	Expected Life	50,000hrs
<b>Buzzer</b>	Sound	80dB continuous alert sound at 0.1m
	Voltage/Current	24VDC/15mA

<b>General Spec</b>	Contact Resistance	Max. 50mΩ	
	Insulation Resistance	100MΩ at 500V DC	
	Dielectric Strength	2,000VAC for 1 Min.	
	Vibration Resistance	5~55Hz Dual amplitude : 0.75mm	
	Shock Resistance	Endurance: 500m/s <sup>2</sup> , Operatin 200m/s <sup>2</sup>	
	Expected Life	Mechanical	Push Button (release): Min. 1,000,000
			Selector, Key Selector: 250,000
	Expected Life	Electrical	Others: Min. 100,000
			Maintained: Min. 50,000 (frequency 1,200 times/hrs)
	Ambient Temperature	Operation: -25°C~ +55°C, Storage: -30°C~+80°C	Others: Min. 100,000
Ambient Humidity	45~85%RH		
Degree of Protection	IP65		
Terminal Soldering Temp.	20W 5sec / 260°C 3sec		

	Style	Operation	Contact	Part Numbers		
				Non Illuminated	Illuminated	
Push Button		Momentary	SPDT DPDT	K16-211 ① K16-212 ①	K16-271 ①-② K16-272 ①-②	
		Maintained	SPDT DPDT	K16-311 ① K16-312 ①	K16-371 ①-② K16-372 ①-②	
		Momentary	SPDT DPDT	K16-221 ① K16-222 ①	K16-281 ①-② K16-282 ①-②	
		Maintained	SPDT DPDT	K16-321 ① K16-322 ①	K16-381 ①-② K16-382 ①-②	
		Momentary	SPDT DPDT	K16-231 ① K16-232 ①	K16-291 ①-② K16-292 ①-②	
		Maintained	SPDT DPDT	K16-331 ① K16-332 ①	K16-391 ①-② K16-392 ①-②	
Mushroom Switches		Momentary	SPDT DPDT	K16-911 ① K16-912 ①	K16-971 ①-② K16-972 ①-②	
		Maintained	SPDT DPDT	K16-911H ① K16-912H ①	K16-971H ①-② K16-972H ①-②	
		Momentary	SPDT DPDT	K16-921 ① K16-922 ①	K16-981 ①-② K16-982 ①-②	
		Maintained	SPDT DPDT	K16-921H ① K16-922H ①	K16-981H ①-② K16-982H ①-②	
		Momentary	SPDT DPDT	K16-931 ① K16-932 ①	K16-991 ①-② K16-992 ①-②	
		Maintained	SPDT DPDT	K16-931H ① K16-932H ①	K16-991H ①-② K16-992H ①-②	
	E-Stop Switches		Turn to Release	SPDT DPDT	K16-811R K16-812R	K16-871-24VDC K16-872-24VDC
	Buzzers		80dB	N/A	K16-CZ	K16-CZL
		80dB	N/A	K16-BZ	K16-BZL	

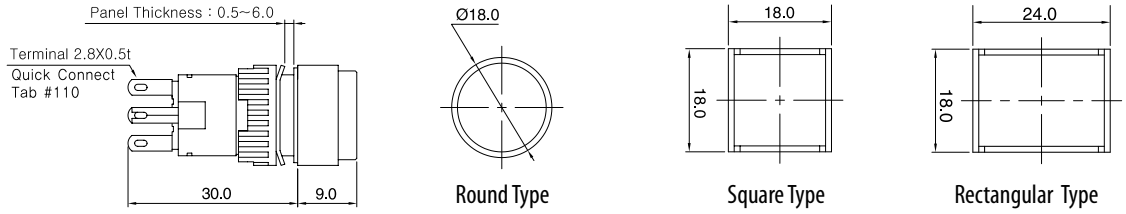
	Style	Operation	Contact	Part Numbers
Pilot Lamp		Pilot Lamp	N/A	K16-170 ①-②V
		Pilot Lamp	N/A	K16-180 ①-②V
		Pilot Lamp	N/A	K16-190 ①-②V
Selector Switches		2 Step	SPDT DPDT	K16-411 K16-412
		3 Step	DPDT	K16-512
		2 Step	SPDT DPDT	K16-421 K16-422
		3 Step	DPDT	K16-522
		2 Step	SPDT DPDT	K16-431 K16-432
		3 Step	DPDT	K16-532
Key Selector Switches		2 Step	SPDT DPDT	⊗ K16-611 ⊗ K16-612
		3 Step	DPDT	⊕ K16-712
		2 Step	SPDT DPDT	⊗ K16-621 ⊗ K16-622
		3 Step	DPDT	⊕ K16-722
		2 Step	SPDT DPDT	⊗ K16-631 ⊗ K16-632
		3 Step	DPDT	⊕ K16-732

\* ① (Button color) = R, G, Y, B, and W (Red, Green, Yellow, Blue, and White)

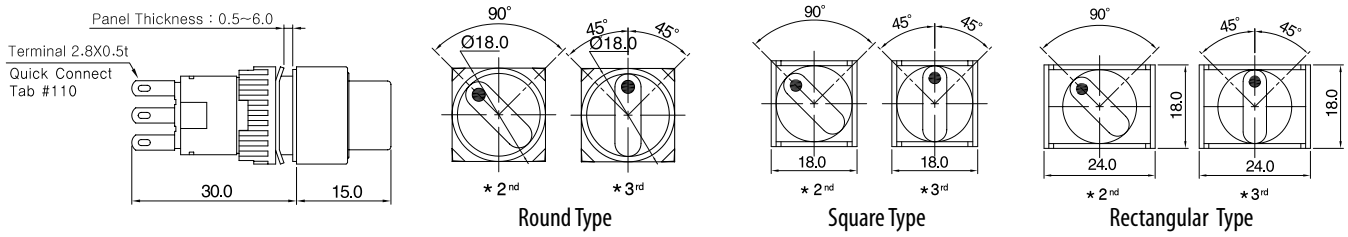
\* ② (LED Voltage) = 6VDC, 12VDC, 24VDC

# Dimensions

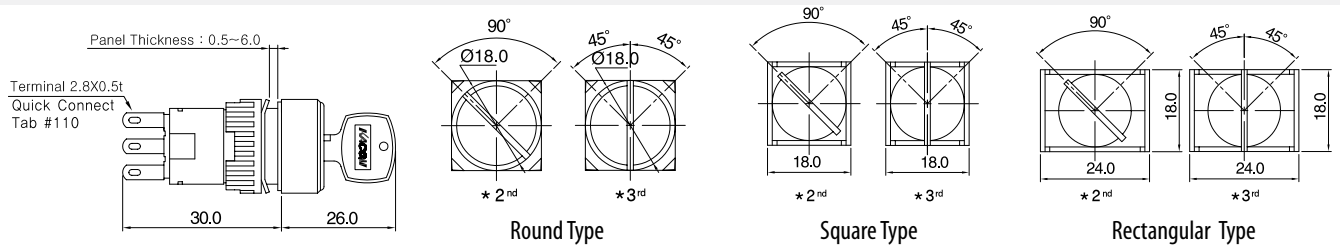
## Pilot Lamps & Push Buttons



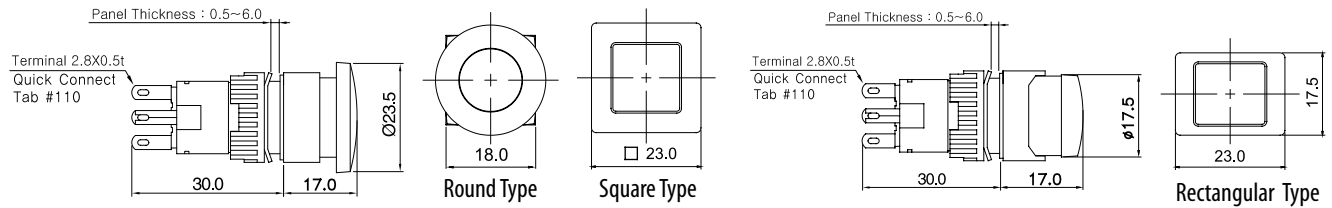
## Selector Switches



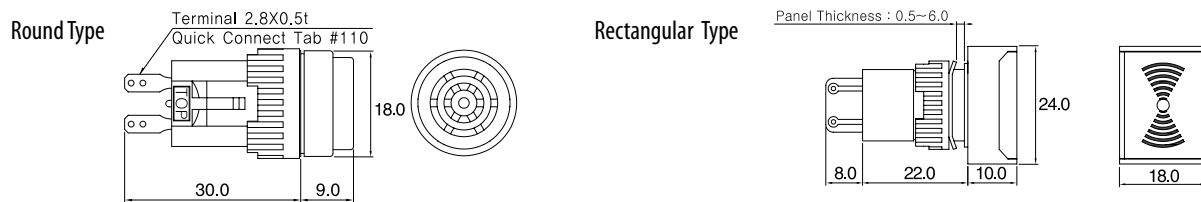
## Key Switches



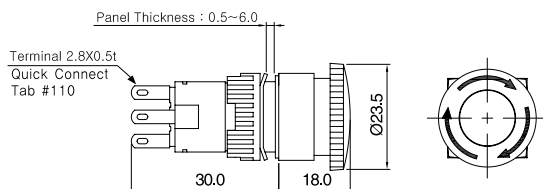
## Mushroom Type Push Buttons



## Buzzers

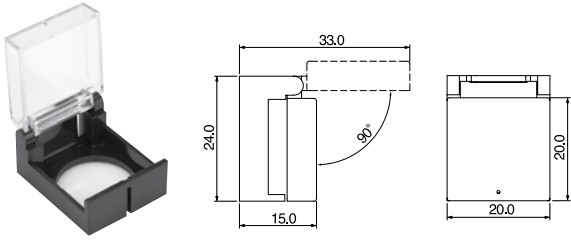


## Emergency Resets

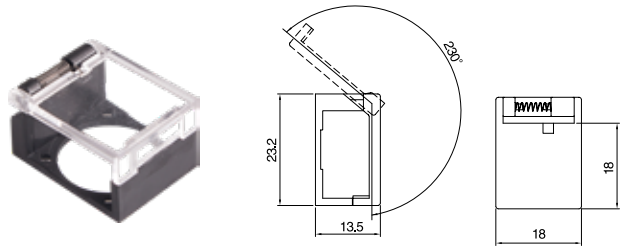


# K16 Accessories

## Protection Covers - Round & Square Type

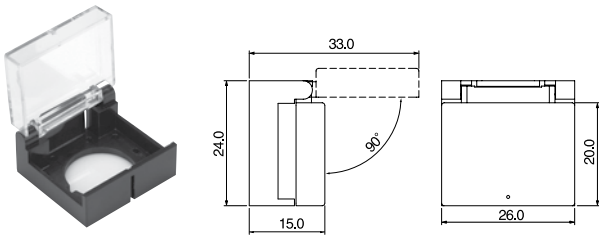


K16-S111 - Opens 90 degree

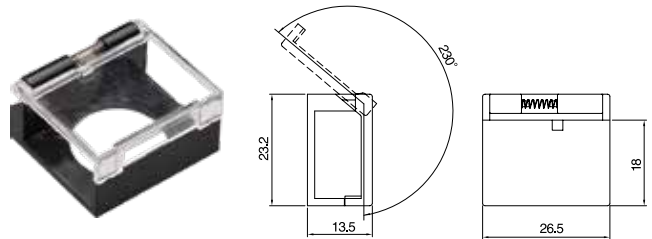


K16-S221 - Opens 230 degree

## Protection Covers - Rectangular Type

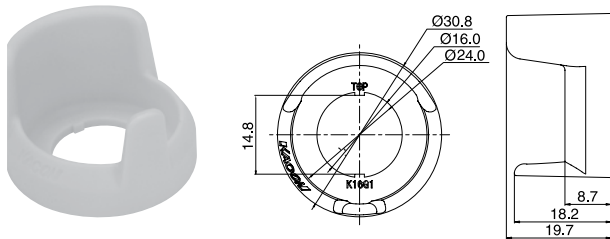


K16-S112 - Opens 90 degree

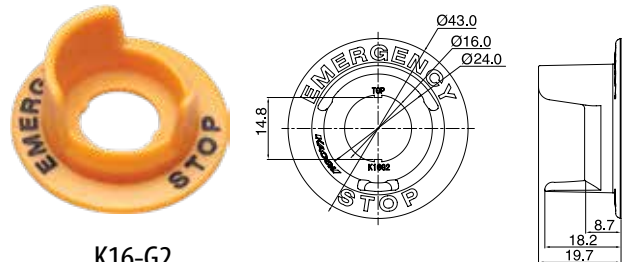


K16-S222 - Opens 230 degree

## Safety Guard



K16-G1



K16-G2

## LED

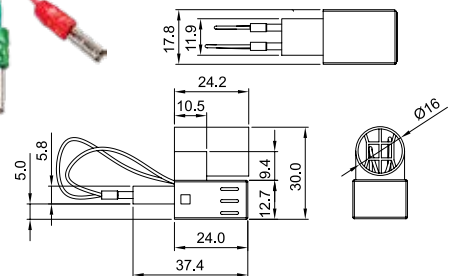
K16-S115①

① - R, Y, G, B, C & 6, 12, 24VDC

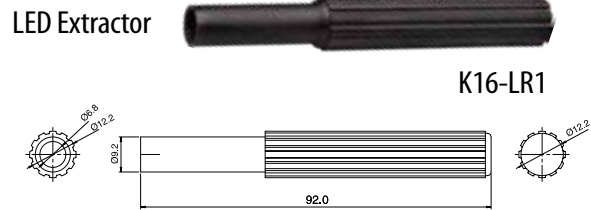
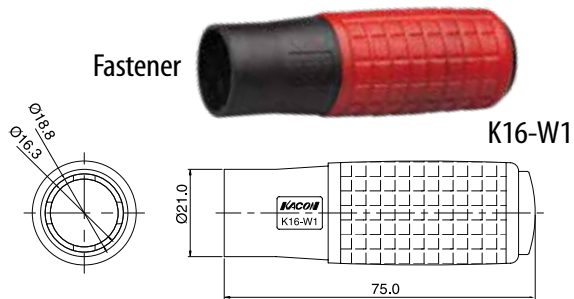


## Transformer

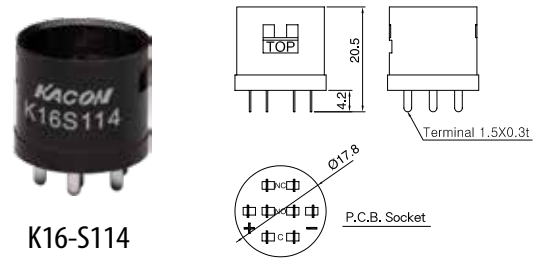
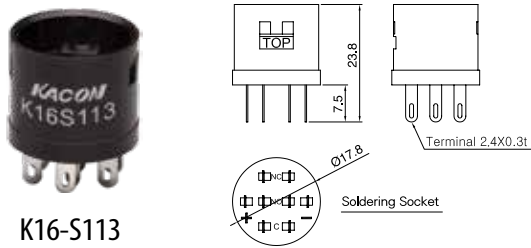
K16-T1 : 220V to 24V  
K16-T2 : 110V to 24V



## Hand Tools



## Sockets



## Terminal Protection



K16-S116

## Protection Cover



K16-S223

## R Type Lens



K16-S224

## Flush Mounting Guard



Switches shown with  
flush mounting guard



# A20 Series

Ø22 Switches/Buttons



- Compact & light weight
- IP20 finger safe screw terminal (IEC60529)
- Matted surface on buttons, lenses, and bezels to reduce reflection of ambient light
- Detachable contact block for easy installation & removal
- Wide light distribution to increase the visibility range
- Comply with EN standard

## General Specifications

Insulation Resistance		100MΩ minimum at 500V DC megger
Dielectric Strength		Contact block: 2,500VAC for 1 Min. Illuminated unit: 2,000VAC for 1 Min.
Vibration Resistance	E-stop switches	Operation Extremes: 10-500Hz, Amplitude: 0.35mm 50m/s <sup>2</sup> Damage Extremes: 10-500Hz, Amplitude: 0.35mm 50m/s <sup>2</sup>
	Indicator, Pushbutton, Selector switches	Operation Extremes: 5-55Hz, Amplitude: 0.5mm Damage Extremes: 30Hz, Amplitude: 1.5mm
Shock Resistance	E-stop switches	Operation Extremes: 150m/s <sup>2</sup> Damage Extremes: 1,000m/s <sup>2</sup>
	Indicator, Pushbutton, Selector switches	Operation Extremes: 100m/s <sup>2</sup> Damage Extremes: 1,000m/s <sup>2</sup>
Mechanical Durability	E-Stop switches	250,000
	Pushbuttons	Momentary: 5,000,000 (Single contact), 1,000,000 (double contact) Maintained: 250,000 (Single contact), 100,000 (double contacts)
	Selector switches	250,000 (Single contact), 100,000 (double contacts)
Electrical Life	E-stop switches	100,000
	Pushbuttons	250,000 (Single contact), 100,000 (double contacts)
	Selector switches	250,000 (Single contact), 100,000 (double contacts)
Ambient Temperature		Operation: -25°C~ +55°C, Storage: -45°C~+85°C
Ambient Humidity		45~85%RH
Degree of Protection		IP65
Terminal Soldering Temperature		20W 5sec / 260°C 3sec

Contacts Rating	Rated Insulation Voltage		250V			
	Rated Terminal Current		10A			
	Operation Voltage (AC/DC)		24V	120V	240V	380V
	AC 50/60Hz	Resistive Load	10A	10A	6A	2A
		Inductive Load	10A	6A	3A	1.9A
	DC	Resistive Load	8A	2.2A	1.1A	-
Inductive Load		4A	1.1A	0.55A	-	
Minimum Applicable Load		3V AC/DC x 3mA				

LED Rating	Type No	Rated voltage	Rated Current	Color code	LED life
LED Rating	LAED-6	6V AC/DC	10mA (R, Y) 7mA (G, W, S)	G: Green W: White R: Red S: Blue Y: Yellow	50,000 Hrs
	LAED-1	12V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-2	24V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-H	110V AC/DC	5.5mA		50,000 Hrs
	LAED-M3	230/240V AC/DC	2.7mA		50,000 Hrs


## Switch Construction Instructions


Assembly	A	B	C	B LED Lamps Part Number	C Contact Block Assembly Part Number
	Pushbutton Operators	LED Lamps	Contact Block Assembly		
Illuminated				LAED-6G (6VAC/DC) LAED-6R (6VAC/DC) LAED-6S (6VAC/DC) LAED-6W (6VAC/DC) LAED-6Y (6VAC/DC) LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC) LAED-HG (110VAC/DC) LAED-HR (110VAC/DC) LAED-HS (110VAC/DC) LAED-HW (110VAC/DC) LAED-HY (110VAC/DC)	A20L-E10P (1NO) A20L-E01P (1NC) A20L-E20P (2NO) A20L-E02P (2NC) A20L-E11P (1NO-1NC)
Non-illuminated				LAED-M3G (230/240VAC/DC) LAED-M3R (230/240VAC/DC) LAED-M3S (230/240VAC/DC) LAED-M3W (230/240VAC/DC) LAED-M3Y (230/240VAC/DC)	A20B-E10P (1NO) A20B-E01P (1NC) A20B-E20P (2NO) A20B-E02P (2NC) A20B-E11P (1NO-1NC) A20B-E30P (3NO) A20B-E03P (3NC) A20B-E21P (2NO-1NC) A20B-E12P (1NO-2NC)

(Lens color) = G: Green, R: Red, S: Blue,  
W: White, Y: Yellow













# A20 Series Operators












	Style	Operation	Part Numbers
Non-illuminated Pushbutton Plastic bezel		Momentary	A20B-M1E①
		Maintained	A20B-A1E①
		Momentary	A20B-M2E①
		Maintained	A20B-A2E①
		Momentary	A20B-M4E①
		Maintained	A20B-A4E①
Non-illuminated Pushbutton metal bezel		Momentary	A204B-M1E①
		Maintained	A204B-A1E①
		Momentary	A204B-M2E①
		Maintained	A204B-A2E①
		Momentary	A204B-M4E①
		Maintained	A204B-A4E①
Non-illuminated Pushbutton flush mountable metal bezel		Momentary	A204B-M1E①-U
		Maintained	A204B-A1E①-U
		Momentary	A204B-M2E①-U
		Maintained	A204B-A2E①-U
		Momentary	A204B-M4E①-U
		Maintained	A204B-A4E①-U

	Style	Operation	Part Numbers
Illuminated Pushbutton plastic bezel		Momentary	A20L-MF2E②
		Maintained	A20L-AF2E②
		Momentary	A20L-M2E②
		Maintained	A20L-A2E②
		Momentary	A20L-M4E②
		Maintained	A20L-A4E②
Illuminated Pushbutton metal bezel		Momentary	A204L-M1E②
		Maintained	A204L-A1E②
		Momentary	A204L-M2E②
		Maintained	A204L-A2E②
		Momentary	A204L-M1E②-BU
		Maintained	A204L-A1E②-BU
Illuminated Pushbutton flush mountable metal bezel		Momentary	A204L-M2E②-U
		Maintained	A204L-A2E②-U
		Momentary	A204L-M4E②
		Maintained	A204L-A4E②
		Momentary	A204L-M4E②-U
		Maintained	A204L-A4E②-U

\* ① (Head color) = B: Black, G: Green, R: Red, S: Blue, W: White, Y: Yellow


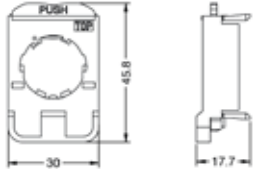

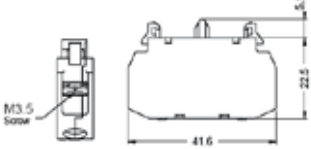

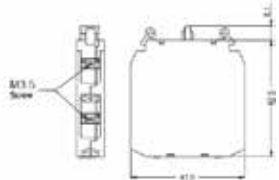

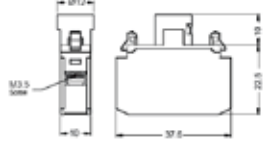

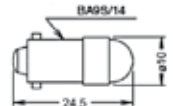
\* ② (Lens color) = G: Green, R: Red, S: Blue, W: White, Y: Yellow

	Style	Operation	Part Numbers
Non-illuminated selector switches		Maintained	A20S-2E①
		Spring return from right	A20S-21E①
		Maintained	A20S-3E①
		Spring return from right	A20S-31E①
		Spring return from two-way	A20S-33E①
	Illuminated selector switches		Maintained
Spring return from right			A20F-21E②
		Maintained	A20F-3E②
		Spring return from right	A20F-31E②
		Spring return from two-way	A20F-33E②
Non-illuminated selector switches with metal bezel			Maintained
	Spring return from right		A204S-21E①
		Maintained	A204S-3E①
		Spring return from right	A204S-31E①
		Spring return from two-way	A204S-33E①
	Illuminated selector switches with metal bezel		Maintained
Spring return from right			A204F-21E②
		Maintained	A204F-3E②
		Spring return from right	A204F-31E②
		Spring return from two-way	A204F-33E②
Non-illuminated selector switches with flush mountable metal bezel			Maintained
	Spring return from right		A204S-21E①-U
		Maintained	A204S-3E②-U
		Spring return from right	A204S-31E②-U
		Spring return from two-way	A204S-33E②-U

	Style	Operation	Part Numbers
Illuminated selector switches with flush mountable metal bezel		Maintained	A204F-2E②-U
		Spring return from right	A204F-21E②-U
		Maintained	A204F-3E②-U
		Spring return from right	A204F-31E②-U
		Spring return from two-way	A204F-33E②-U
	Key selector switches		Maintained
Spring return from right			A20K-21BE-2
		Maintained	A20K-3AE-2
		Spring return from right	A20K-31BE-2
		Spring return from two-way	A20K-33DE-2
Key selector switches with metal bezels			Maintained
	Spring return from right		A204K-21BE-2
		Maintained	A204K-3AE-2
		Spring return from right	A204K-31BE-2
		Spring return from two-way	A204K-33DE-2
	Key selector switches with flush mountable metal bezels		Maintained
Spring return from right			A204K-21BE-2U
		Maintained	A204K-3AE-2U
		Spring return from right	A204K-31BE-2U
		Spring return from two-way	A204K-33DE-2U
Non-illuminated E-Stop switches			Push lock Twist reset
Illuminated E-Stop switches		Push lock Twist reset	A20L-V4ER
Key-Reset E-Stop switches		Push lock Key reset	A20E-K4


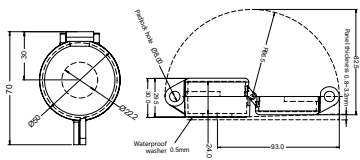

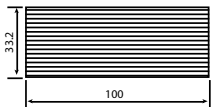

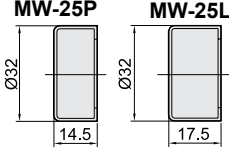

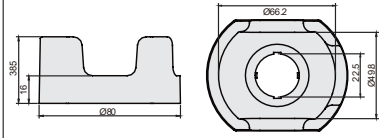
\* ① (Head color) = **B**: Black, **G**: Green, **R**: Red, **S**: Blue, **W**: White, **Y**: Yellow  
 \* ② (Lens color) = **G**: Green, **R**: Red, **S**: Blue, **W**: White, **Y**: Yellow

# A20 Components

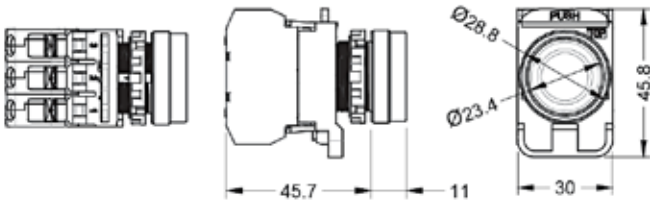
Name	Part No.	Description	Dimensions
	A20B-E00P	Contact block mounting adapter	
	A20-E01P	1NC contact block	
	A20-E10P	1NO contact block	
	A20-E20P	2NO contact block	
	A20-E11P	1NO-1NC contact block	
	A20-E02P	2NC contact block	
	A20-E00P	Lamp socket - full voltage adapter	
	LAED-①②*	LED lamp	

\* ① (Operation Voltage) = 6: 6VAC/DC, 1: 12VAC/DC, 2: 24VAC/DC, H: 110VAC/DC, M3: 230/240VAC/DC  
 \* ② (Lens color) = G: Green, R: Red, S: Blue, W: White, Y: Yellow

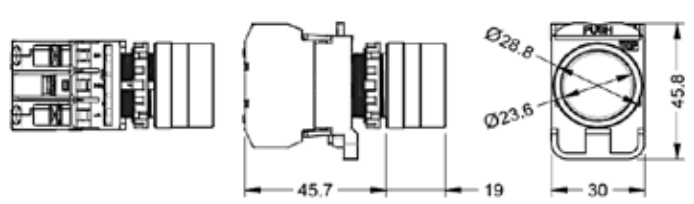
# A20 Series Accessories

Name	Part No.	Description	Dimensions
	A29Z-KL1	Padlock cover	
	MC2-P100	Locking ring wrench	
	MW-25P	Water proof cap	
	MW-25L (for Illuminated Button)		
	KEG12Y	Shroud for E-Stop switch	

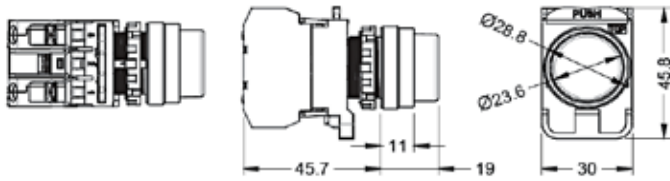
Flush type pushbutton



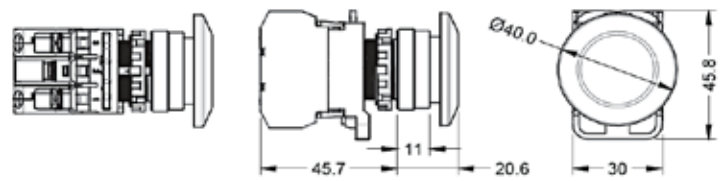
Illuminated flush type pushbutton



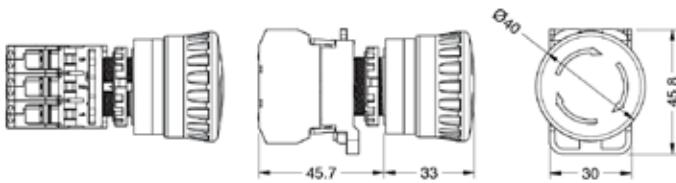
Extended type pushbutton



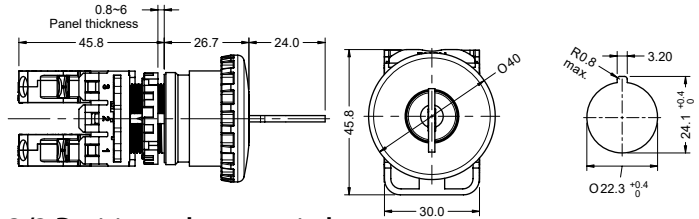
Mushroom type pushbutton



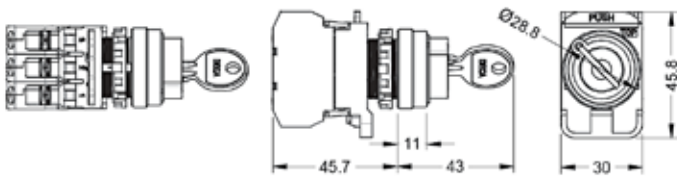
E-Stop switches



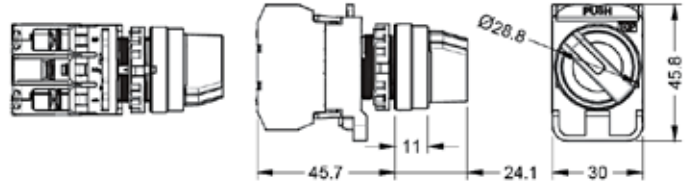
Emergency Switch with Key Reset



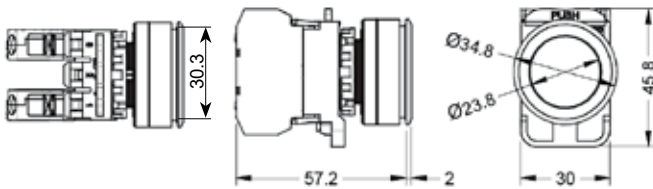
2/3 Position key selector switch



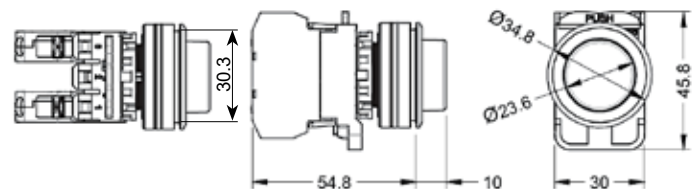
2/3 Position selector switch



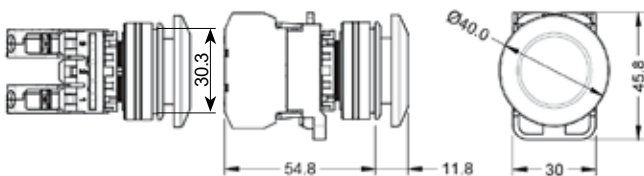
Flush type w/flush mountable metal bezels



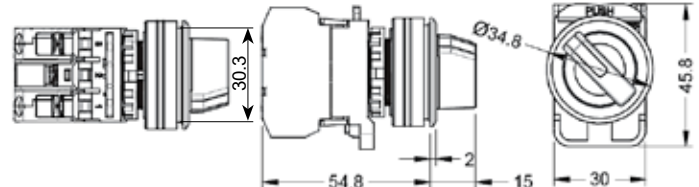
Extended type w/flush mountable metal bezels



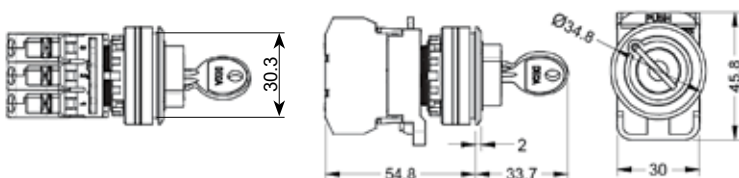
Mushroom type w/flush mountable metal bezels



2/3 Position selector w/flush mountable metal bezels

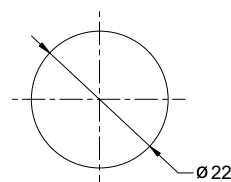


2/3 Position key selector switch w/flush mountable metal bezels

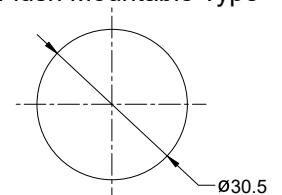


Panel Hole Guide

Standard Type



Metal bezel Flush Mountable Type







# CP2 Series

Ø22mm WIRE-PUSH-IN Unibody Switches



- Save time with quick WIRE-PUSH-IN system
- Spring clamps for strong wire holding force
- Compact unibody housing to reduce installation space
- Double wiring holes for common wiring
- IP66 waterproof (front operator)
- Accessories for contact blocks available (IP66/IP68)

## General Specifications

Insulation Resistance		100 MΩ above ( 500V DC High resistance meter )
Vibration Resistance	E-stop switches	Operation Extremes: 10-500Hz, Amplitude: 0.35mm, 50m/s <sup>2</sup>
		Damage Limits: 10-500Hz, Amplitude: 0.35mm, 50m/s <sup>2</sup>
	Pilot light Pushbutton, Illuminated pushbutton and Selector switch	Operation Extremes: 5-55Hz, Amplitude: 0.5mm
		Damage Limits: 30Hz, Amplitude: 1.5mm
Shock Resistance	E-stop switches	Operation Extremes: 150m/s <sup>2</sup>
		Damage Limits: 1,000m/s <sup>2</sup>
	Pilot light Pushbutton, Illuminated pushbutton and Selector switch	Operation Extremes: 100m/s <sup>2</sup>
		Damage Limits: 1,000m/s <sup>2</sup>
Dielectric Strength	Switch parts	Between charge and non-charged metal parts: 2,000V AC . 1minute
		Between abnormal terminals: 2,000V AC . 1minute
		Between Same polarity Terminals: 2,000V AC . 1minute
		Between Contact terminals and lamp terminals: 2,000V AC . 1minute
	Illuminated parts	Between charging and grounding: 2,000V AC . 1minute
Ambient Temperature		Operation: -25 ~ +55°C( no freezing ), Storage: -45°C~+85°C
Ambient Humidity		45~85%RH
Degree of Protection		From panel front: IP66 / Terminal: IP20 (IP66 with silicon sleeve)
Certificate/Compliance		UL(E333442), CE

Contacts Rating	Rated Insulation Voltage		400 V				
	Rated Terminal Current		8A				
	Rated Operating Voltage		12V	24V	120V	240V	380V
	AC 50/60Hz	Resistive Load	8V	8A	8A	6A	3.8A
		Inductive Load	8V	8A	6A	3A	1.9A
	Rated Operating Voltage		12V	24V	125V	250V	400V
DC	Resistive Load	2.5V	2.5A	1.1A	0.55A	0.3A	
	Inductive Load	2.5V	2.5A	0.55A	0.27A	0.15A	

Type No	Rated voltage	Rated Current	Color code ①
LAED-1 ①	12V AC/DC	2.2 mA (G) 10.0 mA (R . Y) 12.0 mA (S)	G:Green S:Blue R:Red W:White Y:Yellow
LAED-2 ①	24V AC/DC		
LAED-H ①	110V AC/DC	1.2 mA (G) 1.3 mA (Y) 1.4 mA (R . S)	
LAED-M3 ①	230/240V AC/DC	1.1 mA (G) 1.2 mA (R . S . Y)	
LAED-11 ①	110VAC	2.8 mA (G)   10.5 mA (S)	
		10.6 mA (R)   10.5 mA (Y)	
LAED-22 ①	220V AC/DC	1.9 mA (G)   9.1 mA (S)	
		8.8 mA (R)   9.0 mA (Y)	



## Contact Block

- Two wiring holes per spring contact for common wiring or alternative use
- WIRE-PUSH-IN system to greatly reduce wiring time
- Spring clamps to increase wire holding force and stability
- Central partition structure between contact blocks to enhance electrical insulation
- Solid wire, strand wire or European terminal wiring can be used
- Contact blocks and lampholders are clearly recognizable with their colors



## Operator and Housing

- Compact unibody housing to reduce installation space
- Anti-rotation latch design on operators
- Mounting panel thickness: 0.8~12.0mm (standard type)

## Accessories

- Waterproof Silicon Sleeve: provides IP66 protection to contacts under the mounting panel
- Waterproof Cover: provides IP68 protection to contact blocks



# Ordering Information

## Pushbuttons Switches

CP2 ① ② - ③ ④ ⑤ E ⑥ ⑦ ⑧ - ⑨

① Bezel Material	Blank	Plastic Bezel			
	4	Metal Bezel			
② Style	B	Non-Illuminated Pushbutton Switch			
	L	Illuminated Pushbutton Switch			
③ Operator	A	Maintained			
	M	Momentary			
④ Shape	1	Flush	2	Extended	
	F2	Extended with Full Shroud	4	Φ40 Mushroom	
⑤ Marking Type	Blank	Unmarking Type			
	B	Marking Type			
⑥ Contact Arrangement	10	1NO	01	1NC	
	20*	2NO	02*	2NC	
	11*	1NO+1NC			
⑦ Operator Voltage	Blank	Non-Illumination Type	Q3**	LED 12V AC/DC	
	Q4**	LED 24V AC/DC	Q11**	LED 110V AC	
	Q22**	LED 220V AC			
⑧ Color	B*	Black	G	Green	
	R	Red	S	Blue	
	W	White	Y	Yellow	
⑨ Head	Blank	Standard			
	U	Silhouette			
	T	Extended Large frame			

\*Non-Illuminated only  
\*\*Illuminated only

## Key Selector Switches

CP2 ① K - ② ③ E ④ - ⑤

① Bezel Material	Blank	Plastic Bezel			
	4	Metal Bezel			
② Action	2	2 Positions -45°~+45° Maintained	22	2 Positions 0°~+90° Maintained	
	23	2 Positions 0°~+45° Maintained	24	2 Positions 0°~+45° Spring Return from Right	
	3	3 Positions -45°~0°~+45° Maintained	31	3 Positions -45°~0°~+45° Spring Return from Right	
	32	3 Positions -45°~0°~+45° Spring Return from Left	33	3 Positions -45°~0°~+45° Spring Return Two-Way	
③ Function (2 position / 3 position)	A	Key removable in L+R / L+C+R	B	Key removable in L / L+C	
	C	Key removable in R / C+R	D*	Key removable in C	
	E*	Key removable in L+R	G*	Key removable in L	
	H*	Key removable in R			
④ Contact Arrangement (No.1 / No.2)	10	NO / X	01	NC / X	
	20	NO / NO	02	NC / NC	
	11	NO / NC	11N	NC / NO	
⑤ Head	Blank	Standard			
	U	Silhouette			
	T	Extended Large frame			

\*3 Position only

## Emergency Stop Switches

CP2 ① E - ② E ③ ④ R - ⑤

① Bezel Material	Blank	Plastic Bezel				
	4	Metal Bezel				
② Type	Bezel Hole ø34.6mm					
	BV*	Pull/Turn To Release ø40 Mushroom	LV**	Pull/Turn To Release ø40 Mushroom		
	BP*	Pull To Release ø40 Mushroom	LP**	Pull To Release ø40 Mushroom		
	BT*	Turn To Release ø40 Mushroom	LT**	Turn To Release ø40 Mushroom		
	Bezel Hole ø29.0mm					
	P3*	Pull to Release Φ30 Mushroom	P4*	Pull to Release Φ40 Mushroom		
	P6*	Pull to Release Φ60 Mushroom	T3*	Turn to Release Φ30 Mushroom		
	T4*	Turn to Release Φ40 Mushroom	T6*	Turn to Release Φ60 Mushroom		
	K3*	Key Release Φ30 Mushroom	K4*	Key Release Φ40 Mushroom		
	K6*	Key Release Φ60 Mushroom				
	③ Contact Arrangement	10	1NO	01	1NC	
		20*	2NO	02*	2NC	
11*		1NO+1NC				
④ Operator Voltage	Blank	Non-Illumination Type	Q3**	LED 12V AC/DC		
	Q4**	LED 24V AC/DC	Q11**	LED 110V AC		
	Q22**	LED 220V AC				
⑤ Head	Blank	Standard				
	T	Extended Large frame				

\*Non-Illuminated only  
\*\*Illuminated only

## Selector Switches

CP2 ① ② - ③ ④ E ⑤ ⑥ ⑦ - ⑧

① Bezel Material	Blank	Plastic Bezel			
	4	Metal Bezel			
② Style	S	Non-Illuminated Selector Switch			
	F	Illuminated Selector Switch			
③ Action	2	2 Positions -45°~+45° Maintained	22	2 Positions 0°~+90° Maintained	
	23	2 Positions 0°~+45° Maintained	24	2 Positions 0°~+45° Spring Return from Right	
	3*	3 Positions -45°~0°~+45° Maintained	31*	3 Positions -45°~0°~+45° Spring Return from Right	
	32*	3 Positions -45°~0°~+45° Spring Return from Left	33*	3 Positions -45°~0°~+45° Spring Return Two-Way	
④ Lever	Blank	Standard Lever			
	L	Long Lever			
⑤ ***Contact Arrangement	10	1NO	01	1NC	
	20*	NO / NO	02*	NC / NC	
	11*	NO / NC	11N*	NC / NO	
⑥ Operator Voltage	Q2**	LED 6V AC/DC	Q3**	LED 12V AC/DC	
	Q4**	LED 24V AC/DC	Q11**	LED 110V AC	
	Q22**	LED 220V AC			
⑦ Color	B*	Black	G	Green	
	R	Red	S	Blue	
	W	White	Y	Yellow	
⑧ Head	Blank	Standard			
	U	Silhouette			
	T	Extended Large frame			

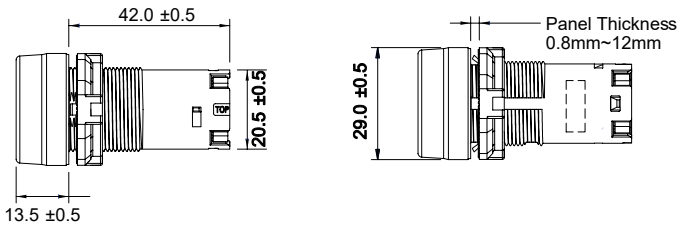
\*Non-Illuminated only  
\*\*Illuminated only

\*\*\*Contact arrangement : 2 position (10, 01, 20, 02, 11), 3 position(20, 02, 11, 11N)

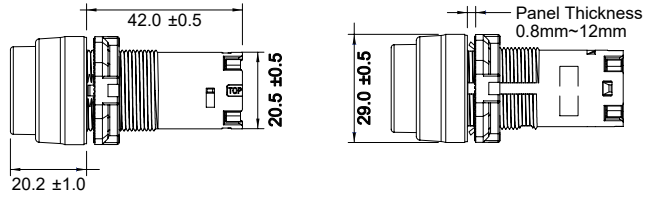
# Dimensions

Unit: mm

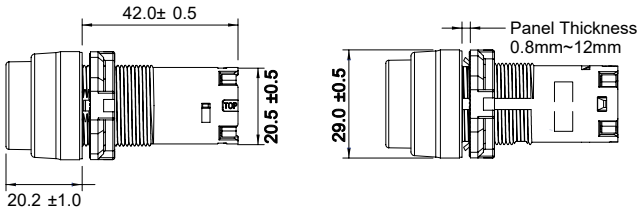
CP2B-A1E, CP2L-M1E, CP2B-M1E



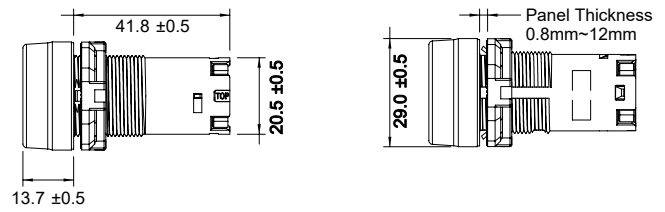
CP2L-A2E



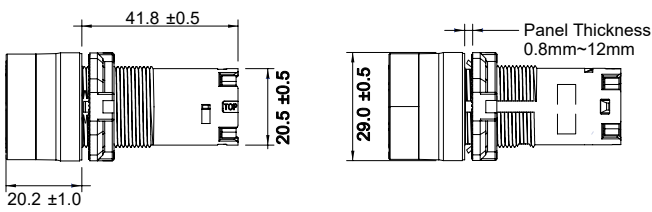
CP2L-M2E, CP2B-M2E



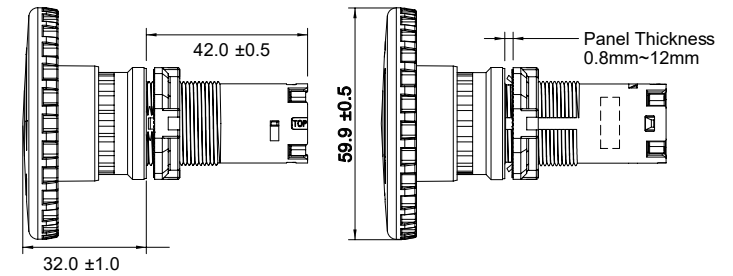
CP2L-A1E



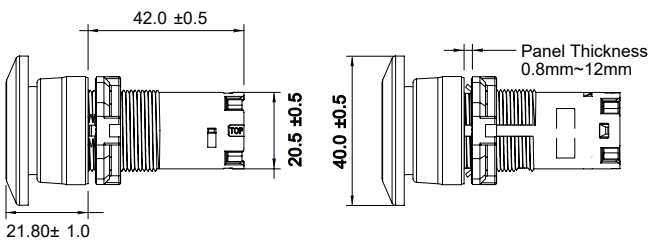
CP2L-AF2E, CP2B-MF2E



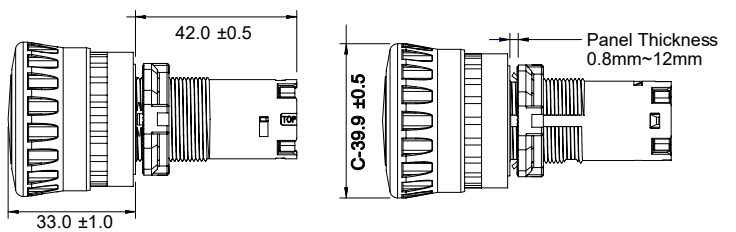
CP2E-T6E



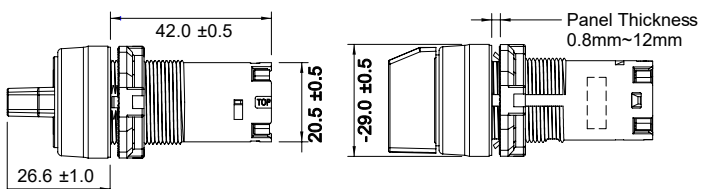
CP2L-A4E, CP2B-M4E



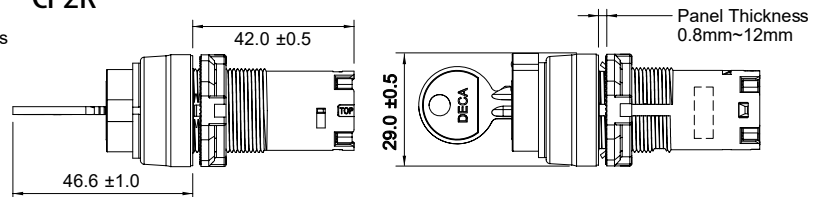
CP2E-BV, CP2E-LPE, CP2E-LTE, CP2E-LVE, CP2E-BPE



CP2S



CP2K



# B30 Series

Ø30mm Switches/Buttons



## General Specifications

Nominal Rating		10A 250VAC
Contact Resistance		Max. 50mΩ
Insulation Resistance		100MΩ at 500V DC
Frequency of Alteration	Mechanical	30 operation/min
	Electrical	30 operation/min
Dielectric Strength	btwn Charging sectors	1,800VAC/Min. (50~60Hz)
	btwn charger & earth	2,500VAC/Min. (50~60Hz)
Expected Life	Mechanical	500,000 times
	Electrical	100,000 times
Degree of Protection		IP63 (Optional IP65)
Ambient Temperature	Operation	-25°C~ +70°C
	Storage	-30°C~+80°C
Ambient Humidity		35~80% RH

	Style	Operation	Part Number
Push button		Momentary	B30-21①
		Momentary Illuminated	B30-27①②
Half guarded Push button		Momentary	B30-21①-EG
Maintained Selector switch		2 Step Knob	B30-41S
		2 Step long lever	B30-41L
		3 Step Knob	B30-51S
		3 Step long lever	B30-51L
Maintained Key Selector		2 Step	B30-61K
		3 Step	B30-71K
Mushroom 45mm head		Momentary	B30-21①-N40
Halfmoon guard 65mm Head		Momentary	B30-21①-C65

\* ① (Head color) = R: Red, Y: Yellow, G: Green, B: Blue, W: White

\* ② (Operation Voltage) = 24VDC, 110VAC, 220VAC

LED	Normal Current	AC	LED	Approx. 15mA
		DC	LED	Approx. 15mA
	Voltage			24VAC
	Expected Life			Min. 50,000 hrs

## Normal Current

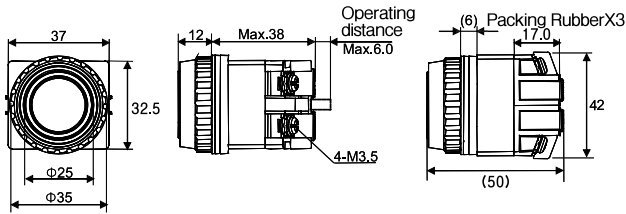
Rated Current	Contact Material		Ag Alloy		
	Voltage	AC1	AC3	DC1	
24V	24V	20A	10A	6A	
	110V	16A	8A	1.2A	
	250V	10A	5A	0.5A	
	440V	5A	2.5A	0.25A	

	Style	Operation	Part Number
Extended 65mm Head		Momentary	B30-21①-H65
Full guard 65mm Head		Momentary	B30-21①-F65
Mushroom 65mm Head		Momentary	B30-21①-N65
EN418 Safety Lock E-stop switch		Turn to release	B30-81L
Water proof E-stop switch		Turn to release	B30-81A
E-stop switch		Turn to release	B30-81R
Connect Block		BCB(NC) BCA(NO)	

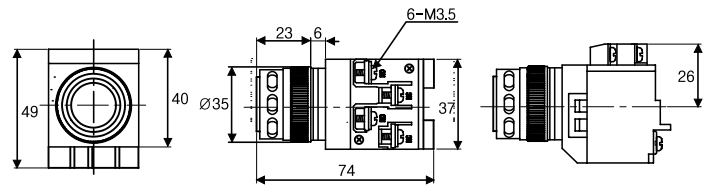
# Dimensions

Unit: mm

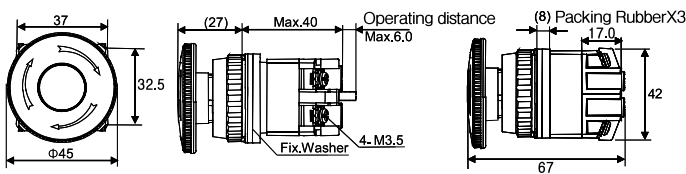
## Push Buttons



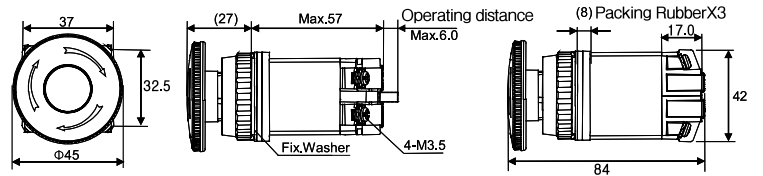
## Illuminated Push Buttons



## E-Stop Switches

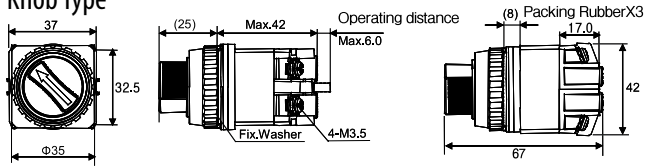


## E-Stop Switches (water proof)/ Latch Type E-Stop Switches

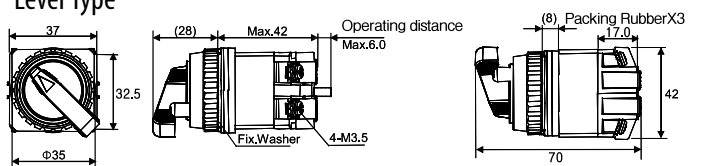


## Selector Switches

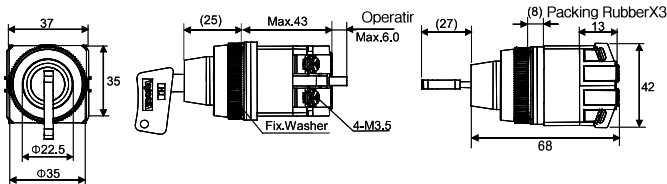
### Knob Type



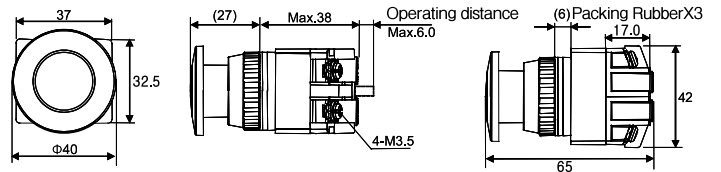
### Lever Type



## Key Switches

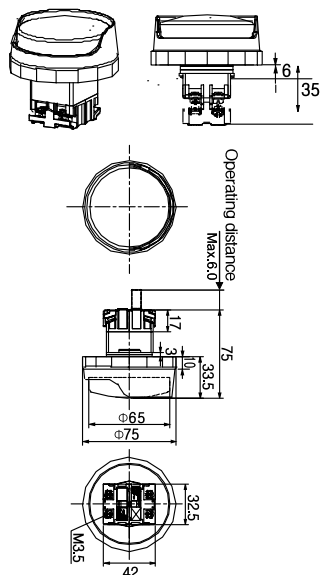


## Mushroom Push Buttons

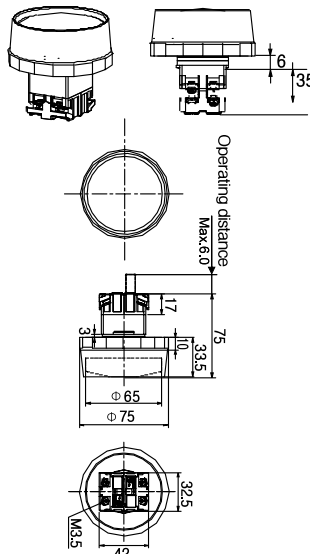


## 65mm Metal Guarded Head Push Buttons

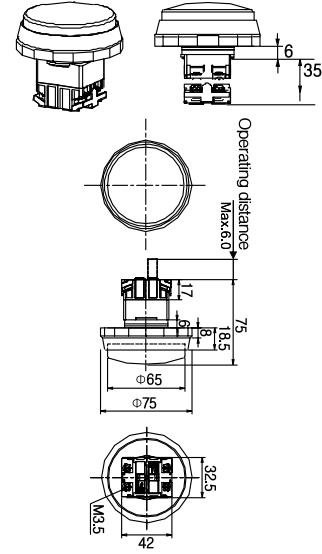
### Halfmoon Guard



### Full Guard



### Extended head





# T Series

Metal Chassis Pushbuttons



## Ordering Information

T ① - ② ③ ④ ⑤ ⑥ ⑦

① Size	16	Ø16mm		
	19	Ø19mm		
	22	Ø22mm		
	25	Ø25mm		
	30	Ø30mm		
② Operation Type	1	Pilot Lamp	2	Momentary Push
	3	Maintained Push	4*	2 Position Selector
	5*	3 Position Selector	6*	2 Position Key Selector
	7*	3 Position Key Selector	8*	Emergency Stop
	CZ*	Buzzer		
	③ Illumination & Shape	1	Non-Illuminated Round	
7		Illuminated LED Round		
C		Continuous		
④ Contact Form	0	No Contact		
	1	1N/O + 1N/C		
	2	2N/O + 2N/C		
⑤ Color	R	Red		
	Y	Yellow		
	G	Green		
	B	Blue		
	W	White		
⑥ Button Type		Flush Head		
	H	Extended Head**		
⑦ Voltage	D4	24VDC		
	A2	110/220VAC		

\*T19 Series Only  
\*\*T16 & T19 only, Non-Illuminated only

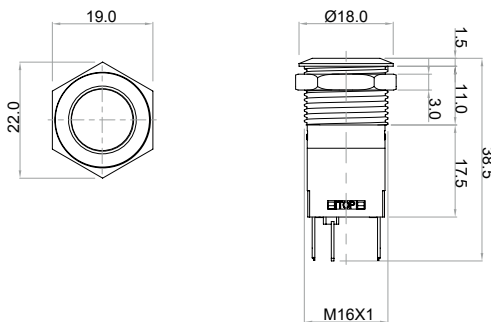
## Specifications

		T16, 19	T22, 25, 30	
General Specs.	Contact Resistance	Max. 50mΩ		
	Insulation Resistance	Min. 100MΩ at 500V DC		
	Dielectric Strength	2,000VAC for 1 Min.		
	Vibration Resistance	5~55Hz dual amplitude : 0.75mm		
	Shock resistance	Operation: 200m/s <sup>2</sup> , Endurance: 500m/s <sup>2</sup>		
	Life Cycles	Mechanical	Momentary: Min. 1,000,000 Maintained: Min. 250,000	
		Electrical	Momentary: Min. 100,000 Maintained: Min. 50,000	
	Frequency of On/Off	1,200 times/hr		
	Ambient Temperature	Operation: -25°C~ +55°C, Storage: -30°C~+80°C		
	Ambient Humidity	45~85%RH (at -5~+40°C)		
Degree of Protection	IP65			
Terminal soldering temperature	20W 5Sec / 260°C 3Sec			
Material	Body:SUS304, Operator:SUS316			
Contacts	Contact Arrangement	1N/O + 1N/C, 2N/O + 2N/C		
	Contact Material	Ag Alloy (24K Gold plate)		
	Rated Insulation Voltage	250VAC		
	Max. Switching Current	3A Max.	5A Max.	
	Max. Switching Voltage	250VAC, 110VDC		
LED Lamp	Rated Current	1A 24VDC / 120VAC 0.5A 250VAC	3A 24VDC/120VAC 1.5A 250VAC	
	Min. Switching Current	1mA 5VDC		
	Color	Red, Green, Yellow, Blue, White		
	Operator Type	Round		
Buzzer	Rated Voltage	24VDC, 110VAC, 220VAC		
	Rated Current	15mA Approx.		
	Expected Life	50,000hrs		
	Sound Type	Continuous		
Buzzer	Volume	80dB		
	Rated Voltage	24VDC		
	Rated Current	Approx. 15mA		
	Life Cycles	1,000hours		

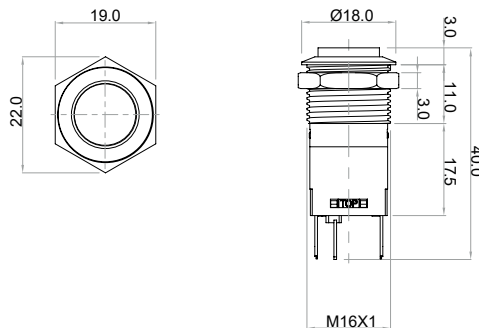
## Dimensions

Unit: mm

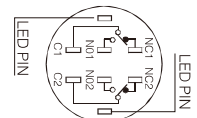
T16 Flush head pushbuttons



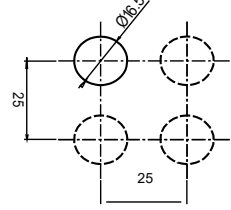
T16 Extended head pushbuttons



T16 Wiring Diagram

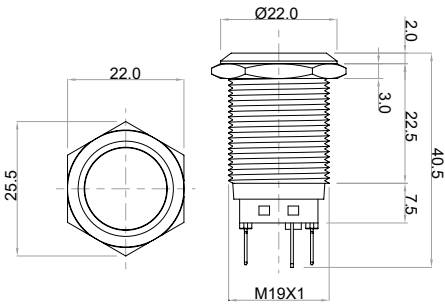


T16 Panel Cut-out

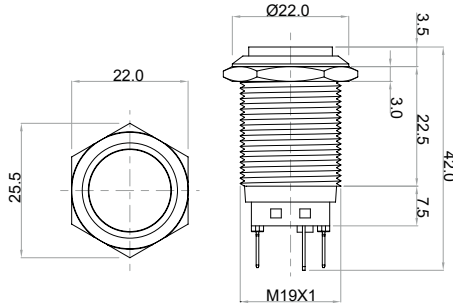




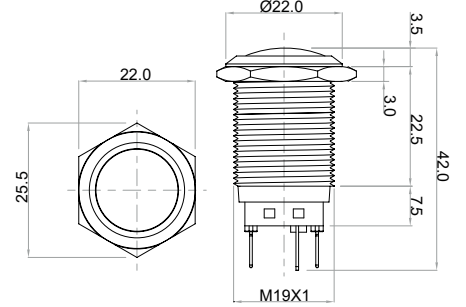
T19 Flush head pushbuttons



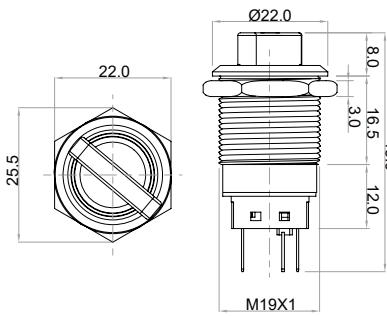
T19 Extended head pushbuttons



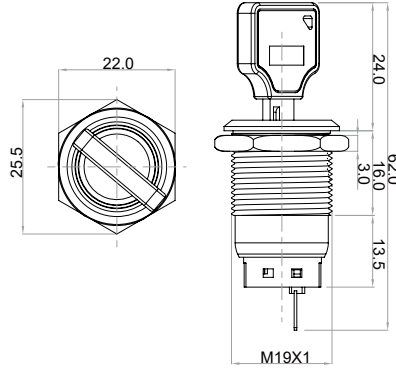
T19 Dome head pushbuttons



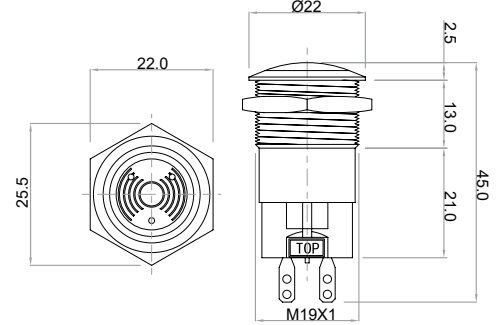
T19 Selector Switches



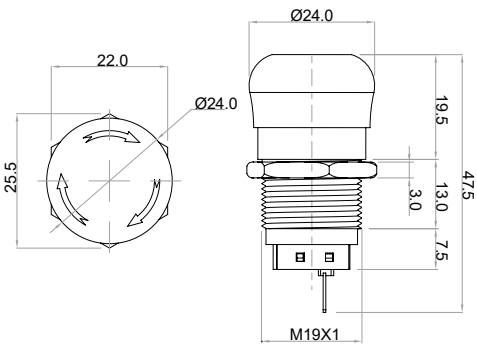
T19 Key Selector Switches



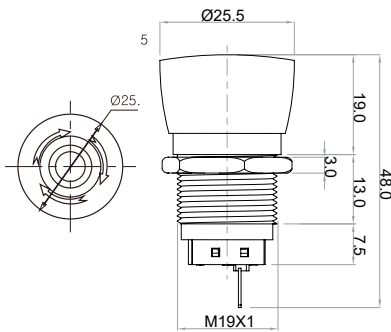
T19 LED Illuminated Buzzer



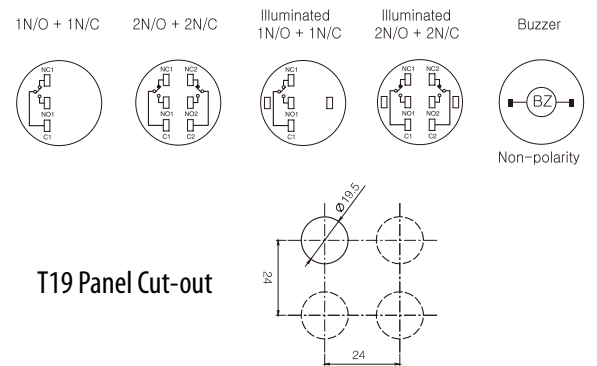
T19 Emergency Switches (T19-8 Type)



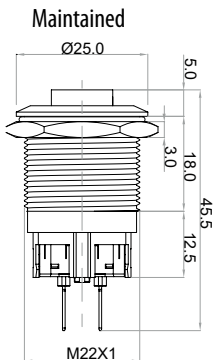
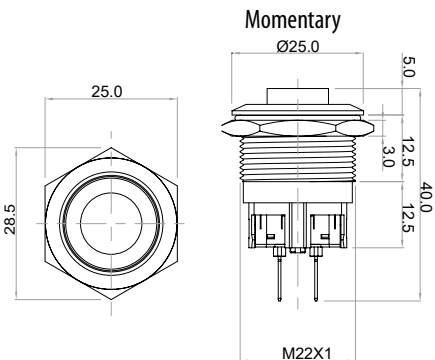
T19 Emergency Switches (T19-A Type)



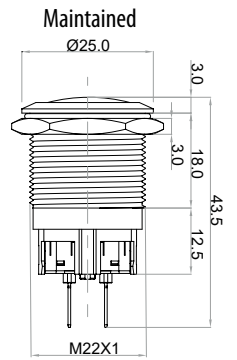
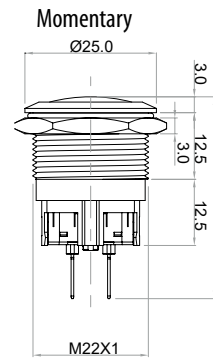
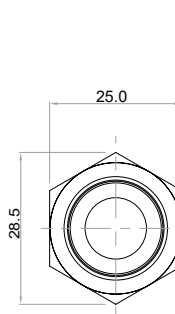
T19 Wiring Diagram



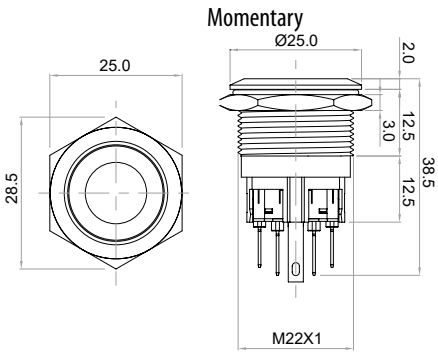
T22 Non-Illuminated Flush head pushbuttons



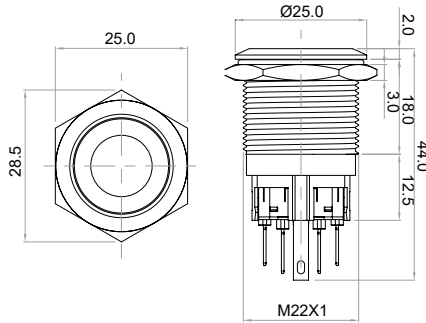
T22 Non-Illuminated Extended head pushbuttons



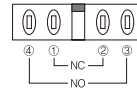
T22 Illuminated Momentary  
Flush head pushbuttons



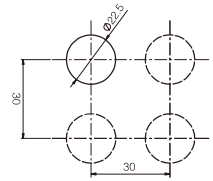
T22 Illuminated Maintained  
Flush head pushbuttons



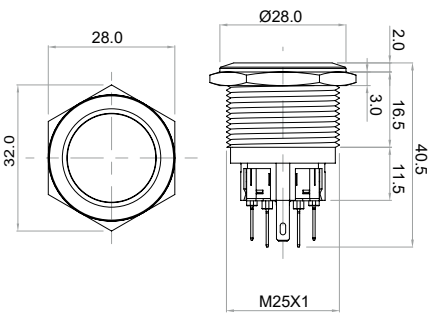
T22 Wiring Diagram



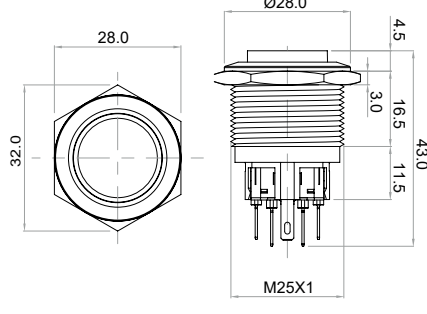
T22 Panel Cut-out



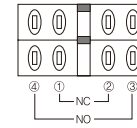
T25 Flush head pushbuttons



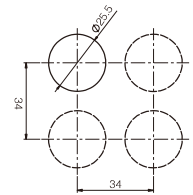
T25 Extended head pushbuttons



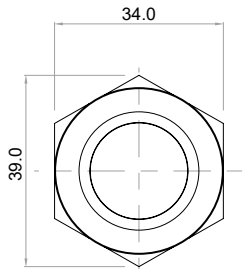
T25 Wiring Diagram



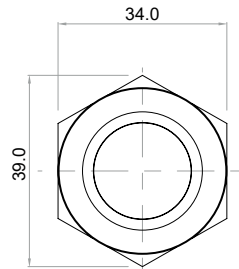
T25 Panel Cut-out



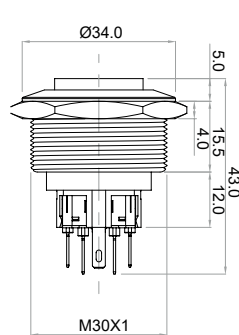
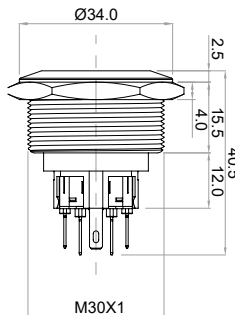
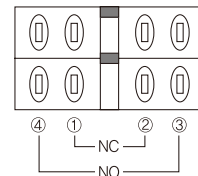
T30 Flush head pushbuttons



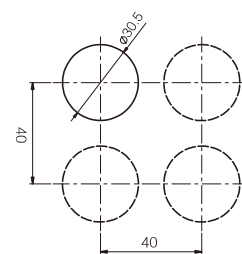
T30 Extended head pushbuttons



T30 Wiring Diagram



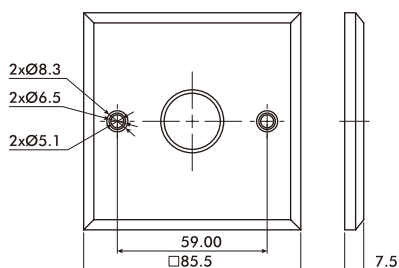
T30 Panel Cut-out



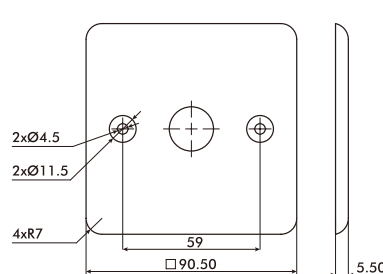
Accessory: Fix Plate

Unit: mm

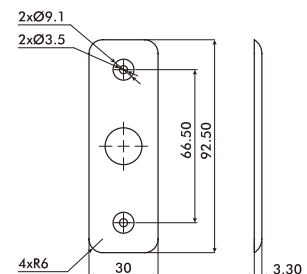
T-P1 (T19, 22, 25, 30)



T-P2 (T19)



T-P3 (T16)





# MLD Series

Rotary Switch Disconnecter



## Ordering Information

MLD - ① ②

① Rated Current			
<b>020</b>	20A	<b>032</b>	32A
<b>040</b>	40A	<b>063</b>	63A
<b>080</b>	80A	<b>100</b>	100A

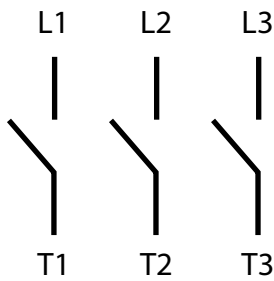
② Mounting Type	PE	Panel Type
	ESE	Extension Shaft

## Specifications

Division		MLD-020	MLD-032	MLD-040	MLD-063	MLD-080	MLD-100
Rated Isolation Voltage (Ui)	V	660	660	660	660	1000	1000
Maximum Switching Current (I th)	A	20	32	40	63	80	100
Rated Current (Ie)							
AC-23A	A	15	22	30	43	57	70
AC-3	A	11	15	22	36	43	57
Rated Voltage (Ue)	V	240 440	240 440	240 440	240 440	240 440	240 440
Contact Capacity							
AC-23A	kW	3.7 5.5	5.5 11	7.5 15	9 22	15 30	22 37
AC-3	kW	2.7 3.7	4 7.5	5.5 11	8 18.5	9 22	15 30
Motor Load							
V		240 440	240 440	240 440	240 440	240 440	240 440
HP		2 3	5 10	7.5 15	10 20	20 40	25 50
Icw/s	A	180	264	360	516	684	840
Wire	mm <sup>2</sup>	1.25 - 5.5	2 - 14	2 - 14	3 - 38	2 - 38	2 - 60
Tightening Torque	N-m	0.8(8.16kgf-cm)		1.2(12.24kgf-cm)		2.5(25.49kgf-cm)	

\* Workable temperature : -25 ~ 70°C (With no icing)

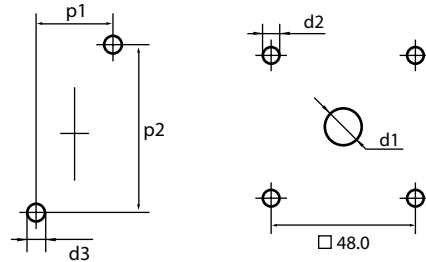
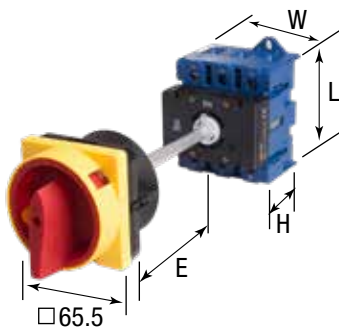
## Contact Diagram



## Dimensions

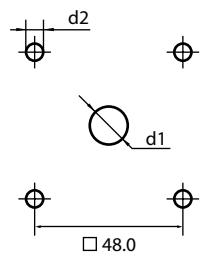
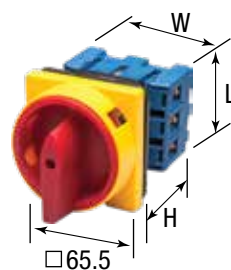
unit: mm

### MLD-ES Series



Model	Switch			Panel				
	H	L	W	d1	d2	d3	p1	p2
MLD-020	55	54	42	20	4.2	4.2	22	60
MLD-032	55	54	42	20	4.2	4.2	22	60
MLD-040	60	64	50	20	4.2	4.2	22	70
MLD-063	60	64	50	20	4.2	4.2	22	70
MLD-080	70	80	70	20	4.2	4.2	25	90
MLD-100	70	80	70	20	5.2	5.2	25	90

### MLD-P Series



Model	Switch			Panel	
	H	L	W	d1	d2
MLD-020	55	54	42	20	4.2
MLD-032	55	54	42	20	4.2
MLD-040	60	64	50	20	4.2
MLD-063	60	64	50	20	4.2
MLD-080	70	80	70	20	4.2
MLD-100	70	80	70	20	5.2



# KMCB Series

Miniature Circuit Breaker

- Two types of terminal blocks
- Terminal covers
- DIN Rail mounting
- On/Off Indicator



## Ordering Information

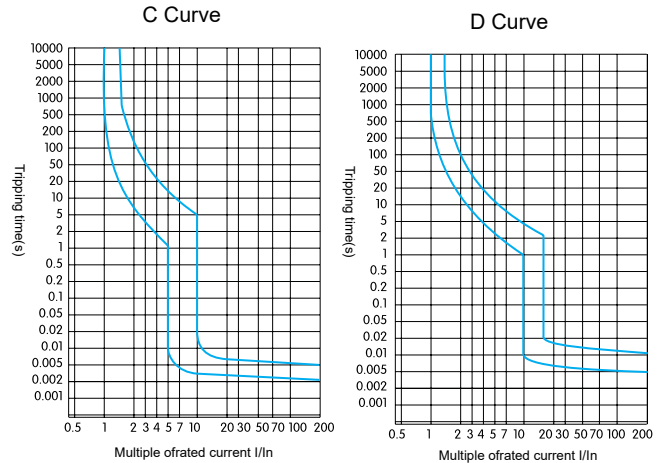
KMCB - ① ② ③

① Tripping Characteristic		C	D	C type	D type
② Rated Current					
2	2A*	3	3A*		
4	4A*	6	6A*		
10	10A	16	16A		
20	20A	25	25A		
32	32A	40	40A		
50	50A				

\*Custom orders only

③ Poles	1P	2P	3P	4P

## Characteristics



## Features

KMCB can be installed on any 35mm DIN rail with easy clip on bracket



Two terminal block options give easier access per installation environment



On-Off Indicator



Terminal cover can be opened for easier access

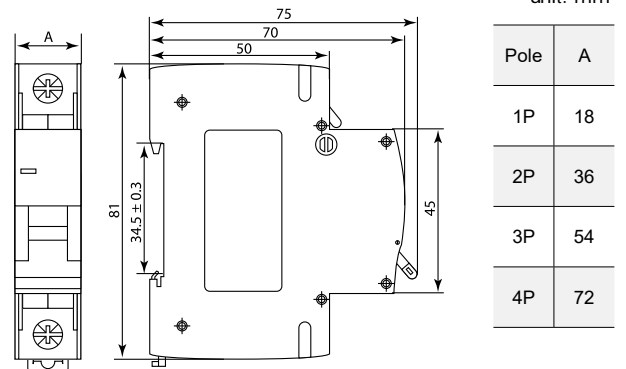


Enhanced resistance of vibration shock with SEMS Screw

## Specifications

Poles	1P	2P	3P	4P
Standard	IEC60989, GB10963			
Rated Voltage	220VAC (Max. 400VAC)	220VAC/380VAC (Max. 400VAC)		
Rated Current	(2, 3, 4, 6), 10, 16, 20, 25, 32, 40, 50A			
Insulation Voltage	400VAC			
Withstanding Voltage	4,000VAC			
Rated Frequency	50/60Hz			
Rated Capacity	6KA at 380VAC			
Electrical Life	4,000 times			
Mechanical Life	20,000 times			
Operation Frequency/hr	Mechanical	240 times/hr 2A - 50A		
	Electrical	240 times/hr 2A - 32A 120 times/hr 40A - 63A		
Protection	IP20			
Ambient Temperature	-5 ~ 40°C			
Installation Altitude	Less than 2,000 meter			
Recommended wire	2A-6A:1mm <sup>2</sup>	10A:1.5mm <sup>2</sup>	16, 20A:2.5mm <sup>2</sup>	25A: 4mm <sup>2</sup>
	32A: 6mm <sup>2</sup>	40, 50A: 10mm <sup>2</sup>		

## Dimensions



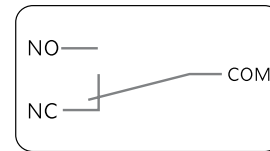
## Specifications

<b>Contact Arrangement</b>	SPDT(1NO + 1NC)	
<b>Material</b>	Ag Alloy	
<b>Distance btw contacts</b>	0.5mm	
<b>Insulation Resistance</b>	100MΩ at 500V DC	
<b>Contact Resistance</b>	50mΩ	
<b>Vibration</b>	10~55Hz (Durable Amplitude 1.5mm)	
<b>Schock</b>	30G	
<b>Ambient Temperature</b>	Operation: -25°C~ +80°C, Storage: -30°C~+80°C	
<b>Ambient Humidity</b>	35~80%RH (at -5~+40°C)	
<b>Operation Speed</b>		0.1mm/sec ~ 0.5m/sec
<b>Operation Frequency</b>	Electrical	Max. 20/min
	Mechanical	Max 60/min
<b>Dielectric Strength</b>	1,500VAC 1min	
<b>Expected Life</b>	Electrical	Min. 100,000
	Mechanical	Min. 1,000,000

## Contact Rating

Rated Voltage	Non-Inductive Load				Inductive Load			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NO	NC	NO	NC	NO	NC	NO	NC
125VAC	15A	15A	1.5A	3A	10A	10A	2A	4A
250VAC	10A	15A	1A	2A	6A	10A	1A	3A
8VDC	10A	15A	1.5A	4A	8A	10A	2.5A	6A
14VDC	5A	15A	1.5A	4A	4A	10A	2.5A	6A
30VDC	2A	10A	1A	4A	1.5A	6A	1.5A	4A
125VDC	0.5A	0.6A	0.1A	0.1A	0.05A	0.6A	0.05A	0.1A
250VDC	0.25A	0.3A	0.05A	0.05A	0.03A	0.3A	0.04A	0.05A

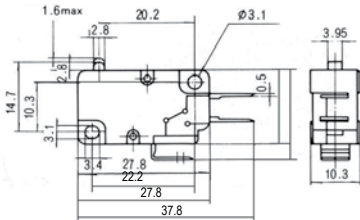
## Contact Diagram



## Dimensions

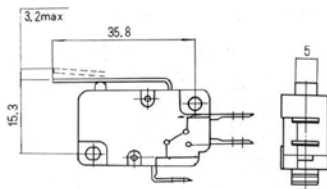
(unit: mm)

### V15F-01C



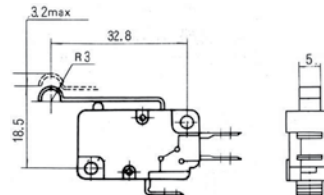
<b>PT</b>	Max. 1.7mm
<b>MD</b>	Max. 0.4mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	14.7 ± 0.6mm

### V15F-06C



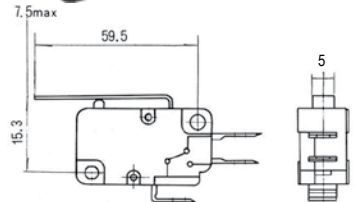
<b>PT</b>	Max. 3.2mm
<b>MD</b>	Max. 1.2mm
<b>OT</b>	Min. 1.2mm
<b>OP</b>	15.3 ± 1.2mm

### V15F-070C



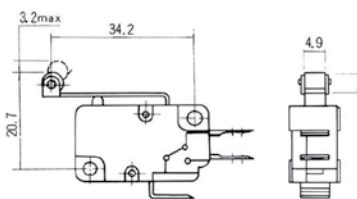
<b>PT</b>	Max. 3.2mm
<b>MD</b>	Max. 1.2mm
<b>OT</b>	Min. 1.2mm
<b>OP</b>	15.5 ± 1.2mm

### V15F-060C



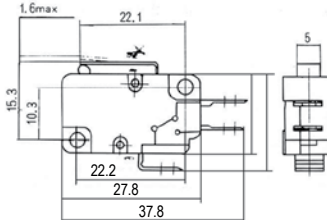
<b>PT</b>	Max. 7.5mm
<b>MD</b>	Max. 2.2mm
<b>OT</b>	Min. 2.2mm
<b>OP</b>	15.3 ± 2.6mm

### V15F-07C



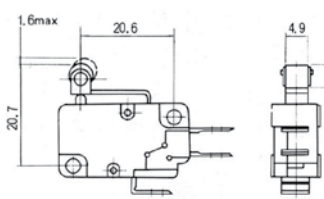
<b>PT</b>	Max. 3.2mm
<b>MD</b>	Max. 1.2mm
<b>OT</b>	Min. 1.2mm
<b>OP</b>	20.7 ± 1.2mm

### V15F-08C



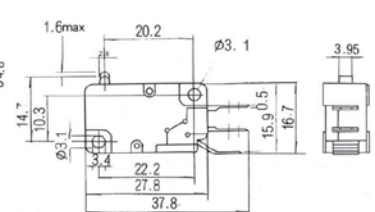
<b>PT</b>	Max. 1.6mm
<b>MD</b>	Max. 0.5mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	15.3 ± 0.8mm

### V15F-09C



<b>PT</b>	Max. 1.6mm
<b>MD</b>	Max. 0.5mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	20.7 ± 0.8mm

### VV15F-01C



<b>PT</b>	Max. 1.6mm
<b>MD</b>	Max. 0.4mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	14.7 ± 0.6mm



# Z15 Series

Micro Switches

- Available with a variety of actuators, compact size fits where you need it
- A variety of standard features, such as current capacity, operating force, travel characteristics and actuators



## Specifications

<b>Contact Arrangement</b>	Ag Alloy, SPDT(1NO+1NC)	
<b>Distance btw contacts</b>	Z15G:0.5mm Z15H:0.25mm	
<b>Insulation Resistance</b>	100MΩ @ 500 VDC	
<b>Contact Resistance</b>	15m Ohms maximum, initial	
<b>Ambient Temperature</b>	Operation: -25°C~ +80°C, Storage: -30°C~+80°C	
<b>Ambient Humidity</b>	35~80%RH (at -5~+40°C)	
<b>Operation Speed</b>	0.01mm/sec to 0.5m/sec	
<b>Operation Frequency</b>	Electrical	Max. 20/min
	Mechanical	Max 240/min
<b>Dielectric Strength</b>	2,000VAC 1min	
<b>Expected Life</b>	Electrical	Min. 500,000
	Mechanical	Min. 2,000,000

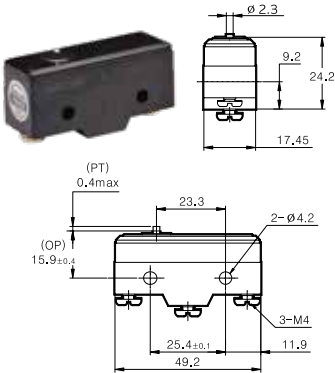
## Contact Rating

Rated Voltage	Non-Inductive Load			Inductive Load		
	Resistive Load	Lamp Load		Inductive Load	Motor Load	
		NO	NC		NO	NC
125VAC	15A(10)	1.5A	3A	15A(10)	2.5A	5A
250VAC	15A(10)	1.25A	2.5A	15A(10)	1.5A	3A
500VAC	10A	0.75A	1.5A	6A	0.75A	1.5A
8VDC	15A	1.5A	3A	15A	2.5A	5A
14VDC	15A	1.5A	3A	10A	2.5A	5A
30VDC	6(2)A	1.5A	3A	5(1)A	2.5(1)A	5(1)A
125VDC	0.5A	0.5A	0.5A	0.05A	0.05A	0.05A
250VDC	0.25A	0.25A	0.25A	0.03A	0.03A	0.03A

## Dimensions

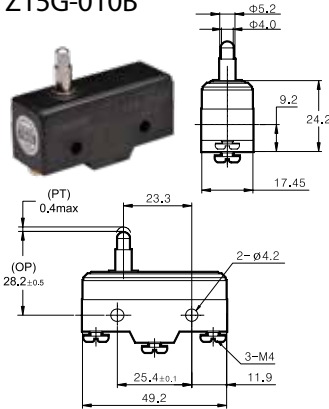
unit: mm

### Z15G-01B



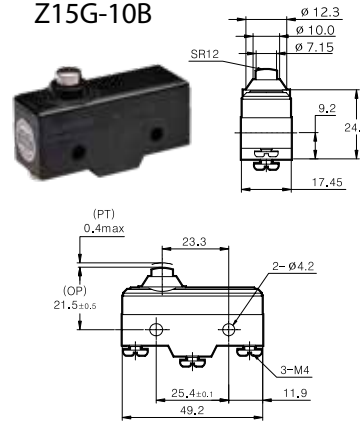
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	0.13mm
MD	0.05mm
OP	15.9 ± 0.4mm

### Z15G-010B



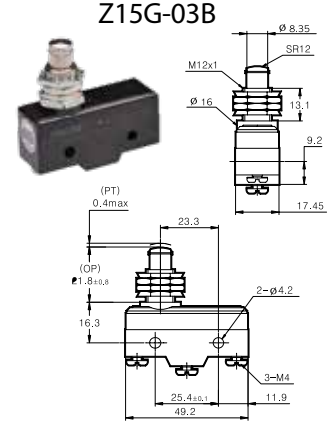
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	1.6mm
MD	0.05mm
OP	28.2 ± 0.5mm

### Z15G-10B



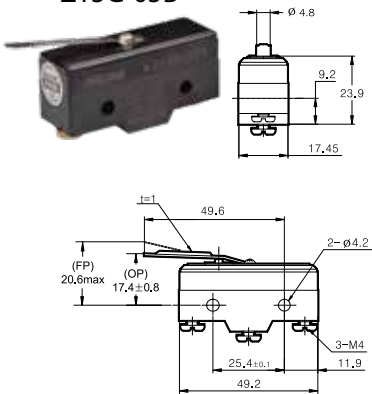
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	1.6mm
MD	0.05mm
OP	21.5 ± 0.5mm

### Z15G-03B



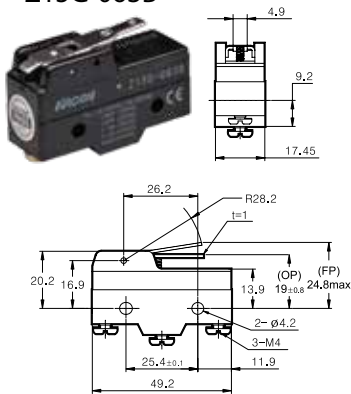
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	5.5mm
MD	0.05mm
OP	21.8 ± 0.8mm

### Z15G-05B



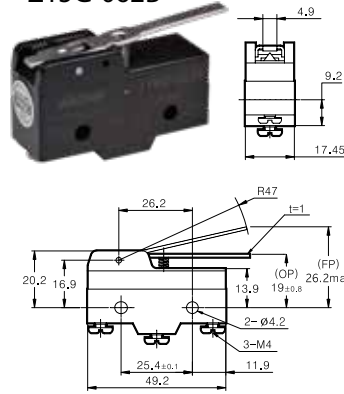
OF	141gf(1.38N)
RF	14gf(0.14N)
OT	1.6mm
MD	1.3mm
FP	20.6mm
OP	17.4 ± 0.8mm

### Z15G-063B



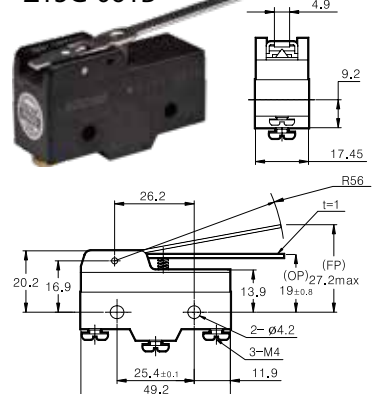
OF	160gf(1.38N)
RF	28gf(0.14N)
OT	2.0mm
MD	1.0mm
FP	24.8mm
OP	19.0 ± 0.8mm

### Z15G-062B



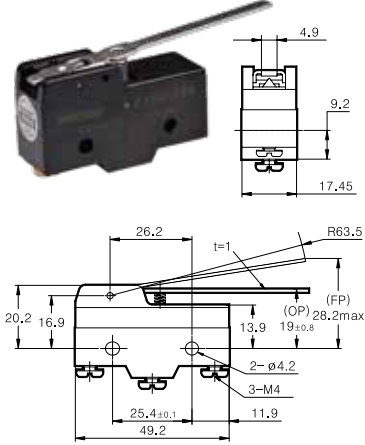
OF	95gf(0.95N)
RF	18gf(0.18N)
OT	4.2mm
MD	0.95mm
FP	26.2mm
OP	19.0 ± 0.8mm

### Z15G-061B



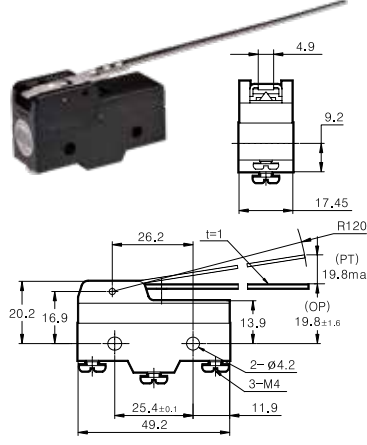
OF	80gf(0.78N)
RF	15.5gf(0.15N)
OT	4.8mm
MD	1.12mm
FP	27.2mm
OP	19.0 ± 0.8mm

Z15G-06B



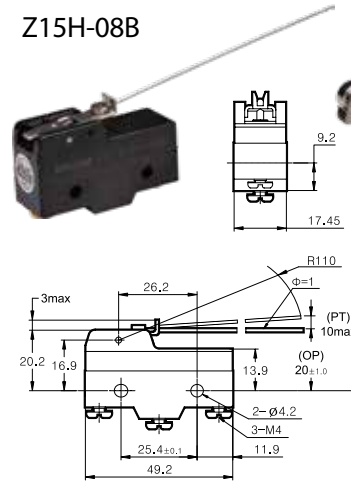
OF	70gf(0.69N)
RF	14gf(0.14N)
OT	5.6mm
MD	1.27mm
FP	28.2mm
OP	19.0 ± 0.8mm

Z15H-060B



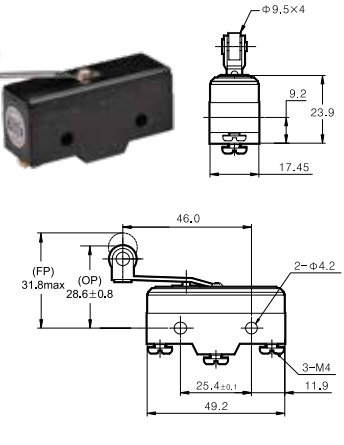
OF	6gf(58.8mN)
RF	0.5gf(4.90mN)
PT	19.8mm
OT	10.0mm
MD	2.0mm
OP	19.8 ± 1.6mm

Z15H-08B



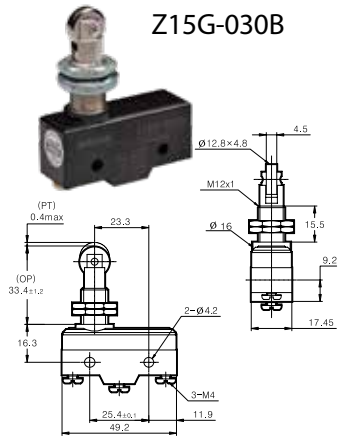
OF	4gf(39.2mN)
RF	0.3gf(2.94mN)
PT	10.0mm
OT	6.0mm
MD	3.0mm
OP	20.0 ± 1.0mm

Z15G-052B



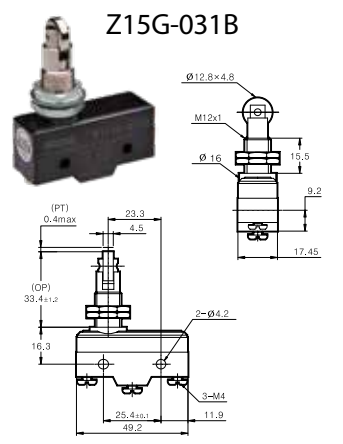
OF	141gf(1.38N)
RF	14gf(0.14N)
OT	1.6mm
MD	1.3mm
FP	31.8mm
OP	28.6 ± 0.8mm

Z15G-030B



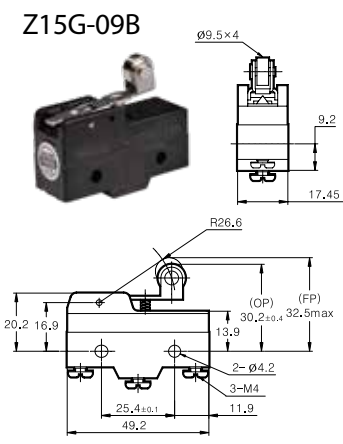
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	3.58mm
MD	0.05mm
OP	33.4 ± 1.2mm

Z15G-031B



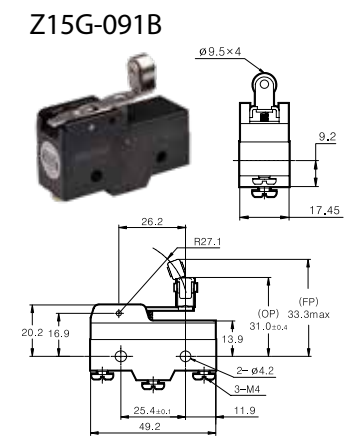
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	3.58mm
MD	0.05mm
OP	33.4 ± 1.2mm

Z15G-09B



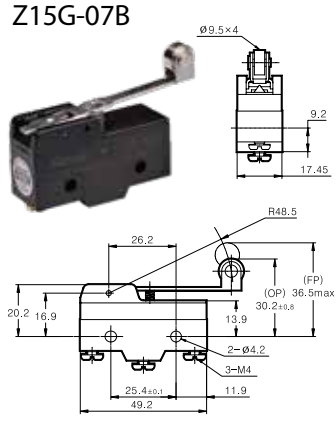
OF	160gf(1.57N)
RF	42gf(0.41N)
PT	2.4mm
OT	0.5mm
MD	32.5mm
OP	30.2 ± 0.4mm

Z15G-091B



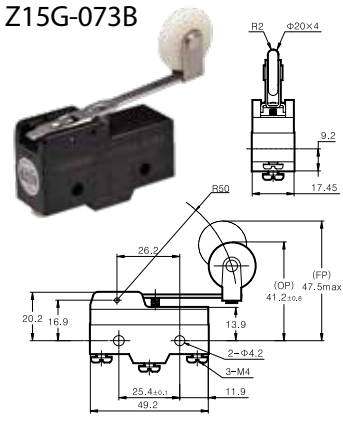
OF	170gf(1.67N)
RF	42gf(0.41N)
PT	2.4mm
OT	0.51mm
MD	33.3mm
OP	31.0 ± 0.4mm

Z15G-07B



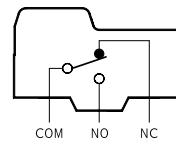
OF	100gf(0.98N)
RF	22gf(0.22N)
PT	4.0mm
OT	1.02mm
MD	36.5mm
OP	30.2 ± 0.8mm

Z15G-073B



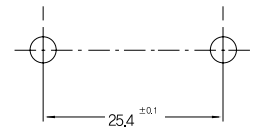
OF	100gf(0.98N)
RF	21gf(0.21N)
PT	4.0mm
OT	1.6mm
MD	47.5mm
OP	41.2 ± 0.8mm

Contact Diagram



COM: Common Terminal  
NO: Normally open  
NC: Normally Close

Panel Cut out



# ZXM Series

Light Duty Limit Switches



## Specifications

<b>Contact Arrangement</b>	Ag Alloy, SPDT(1NO+1NC)
<b>Insulation Resistance</b>	100MΩ at 500V DC
<b>Contact Resistance</b>	Max. 25mΩ
<b>Ambient Temperature</b>	Operation: -20°C~+60°C, Storage: -30°C~+80°C
<b>Ambient Humidity</b>	90%RH Max
<b>Degree of Protection</b>	IP65

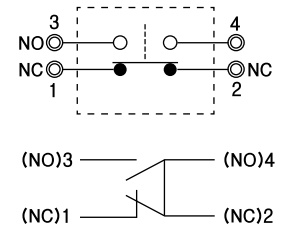
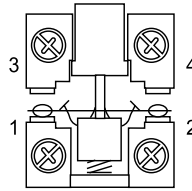
<b>Operation Frequency</b>	Electrical	Max. 30/min
	Mechanical	Max 120/min
<b>Dielectric Strength</b>	1,500VAC 50/60Hz 1min	
<b>Expected Life</b>	Electrical	Min. 300,000
	Mechanical	Min. 10,000,000

## Contact Rating

Rated Voltage	Non-Inductive Load				Inductive Load			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NO	NC	NO	NC	NO	NC	NO	NC
125VAC	6A	6A	0.7A	1.5A	3A	3A	1A	2A
250VAC	6A	6A	0.5A	1A	3A	3A	0.8A	1.5A
500VAC	2A	2A	0.35A	0.75A	0.75A	0.75A	0.4A	0.75A
30VDC	5A	5A	3A	3A	4A	4A	3A	3A
125VDC	0.2A	0.4A	-	-	-	-	-	-
250VDC	0.2A	0.4A	-	-	-	-	-	-

## Contact Diagram

24K Au Plt



## Dimensions

unit: mm



ZXM-301



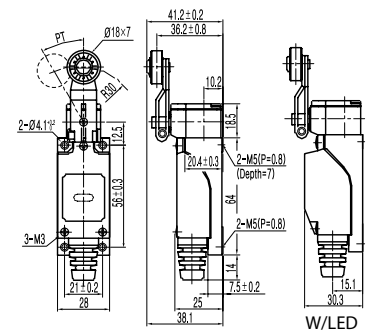
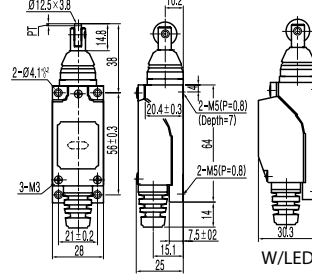
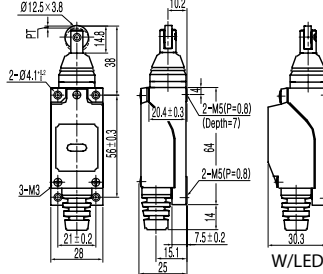
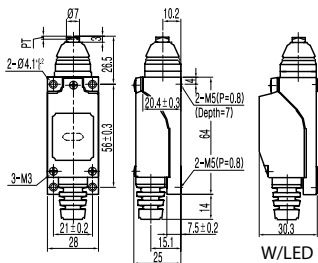
ZXM-302



ZXM-312



ZXM-702



OF	900gf(8.83N)
RF	150gf (1.47N)
PT	1.5mm
MD	0.7mm
OT	4mm
TT	5.5mm

OF	900gf(8.83N)
RF	150gf (1.47N)
PT	1.5mm
MD	0.7mm
OT	4mm
TT	5.5mm

OF	900gf(8.83N)
RF	150gf (1.47N)
PT	1.5mm
MD	0.7mm
OT	4mm
TT	5.5mm

OF	600gf(5.88N)
RF	50gf (0.49N)
PT	20°
MD	10°
OT	75°
TT	95°



**ZXM-703**



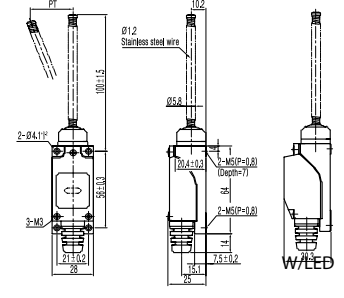
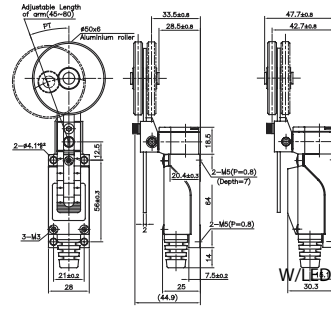
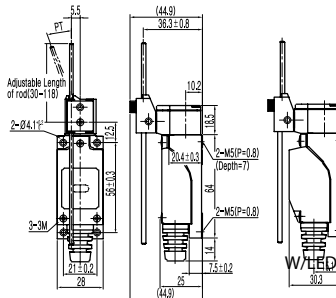
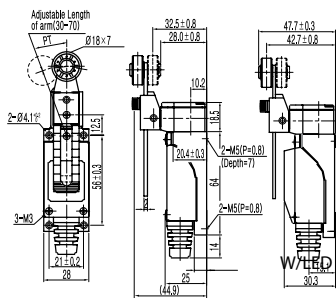
**ZXM-704**



**ZXM-726**



**ZXM-901**

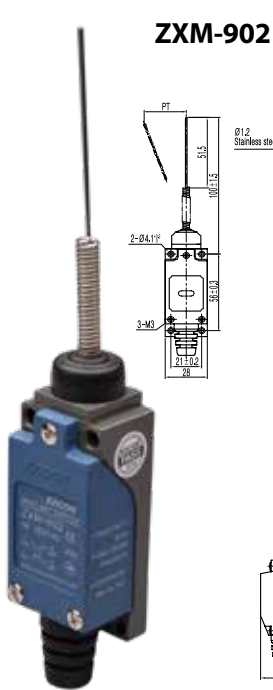


OF	800gf(7.84N)~342gf(3.35N)
RF	50gf(0.49N)~21gf(0.21N)
PT	20°
MD	10°
OT	75°
TT	95°

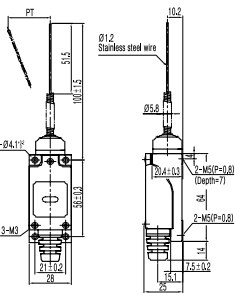
OF	800gf(7.84N)~203gf(1.99N)
RF	50gf(0.49N)~12gf(0.12N)
PT	20°
MD	10°
OT	75°
TT	95°

OF	800gf(7.84N)~342gf(3.35N)
RF	50gf(0.49N)~21gf(0.21N)
PT	20°
MD	10°
OT	75°
TT	95°

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°

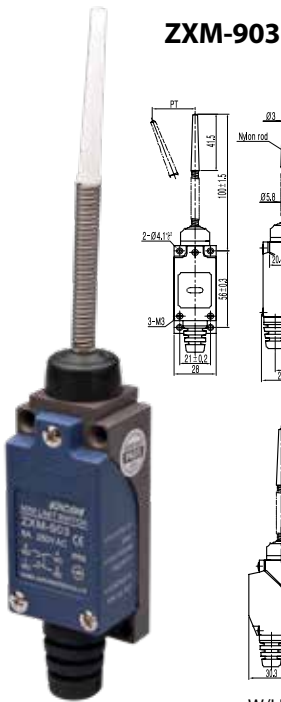


**ZXM-902**

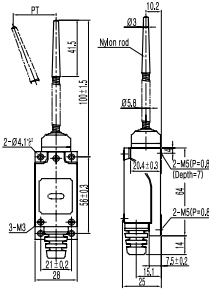


W/LED

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°

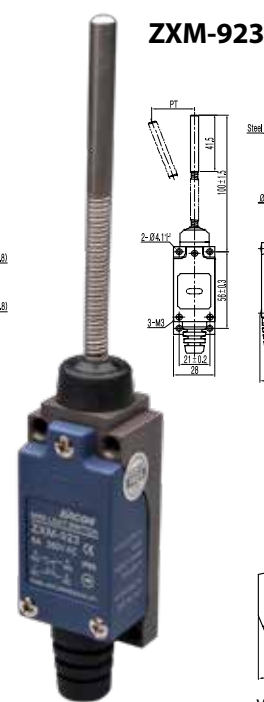


**ZXM-903**

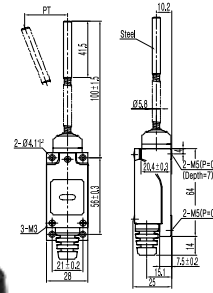


W/LED

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°



**ZXM-923**



W/LED

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°

**Option Parts**

24K Gold Plated Contact Block  
**ZXM-101**



Indicator Lamp

**ZXM-102**  
LED 12 ~ 24V AC/DC  
**ZXM-103**  
Neon 80/240V AC



\*Changeable ON status at NC or NO

# ZXL Series

Medium Duty Limit Switches



- High reliability by 24K Gold plated contact of SPDT(1a+1b) •
- Low maintenance by die-cast body & stainless steel of moving parts •
- IP67 rated with built-in gasket in body cover & O-ring in moving part •
- Detachable head can be positioned in any direction •
- Available optional LED indicator cover (ZXL-102/103) •

## Option Parts

24K Gold Plated Contact Block  
**ZXL-101**



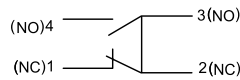
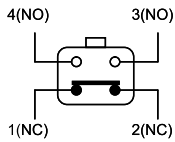
Indicator Lamp

**ZXL-102**  
LED 12 ~ 24V AC/DC  
**ZXL-103**  
Neon 110/240V AC



\*Changable ON status at NC or NO

## Contact Diagram



## Specifications

Contac	SPDT(1NO+1NC), 24K Ag Alloy	
Protection	IP67	
Rated Current	12 at 250VAC	
Insulation Resistance	100MΩ at 500V DC	
Contact Resistance	Max. 50mΩ	
Operation Speed	1mm/sec ~ 1m/sec	
Vibration	10~55Hz dual wave length 1.5mm	
Ambient Temperature	Operation: -25°C~+80°C, Storage: -30°C~+80°C	
Ambient Humidity	35~85%RH (at -5~+40°C)	
Impact Resistance	Durability	Max. 100G
	Error	Plunger max. 30G Lever Max. 20G
Dielectric Strength	2,200	
Expected Life	Electrical	Min. 500,000
	Mechanical	Min. 10,000,000

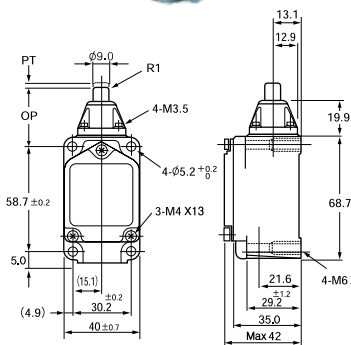
## Contact Rating

Rated Voltage	Non-Inductive Load		Inductive Load	
	Resistive Load	Lamp Load	Inductive Load	Motor Load
125VAC	16A	5A	16A	8A
250VAC	12A	3A	12A	5A
500VAC	10A	2.5A	10A	2.5A
30VDC	8A	6A	8A	6A
125VDC	1A	0.3A	1A	0.3A
250VDC	0.5A	0.2A	0.5A	0.2A

## Dimensions

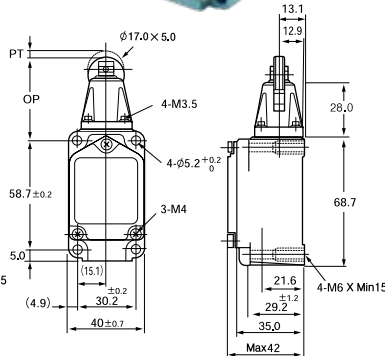
unit: mm

**ZXL-301**



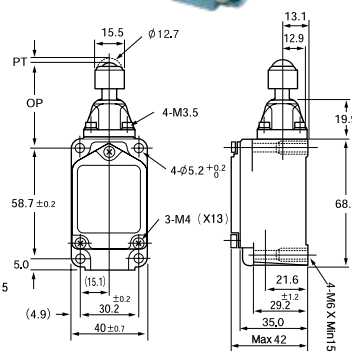
OF	2,720gf(26.67N)
RF	910gf(8.92N)
PT	1.7mm
OT	6.4mm
MD	1mm
TT	-
OP	34 ± 0.8mm
TTP	29.5mm

**ZXL-302**



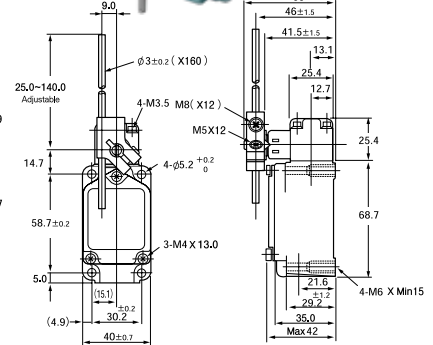
OF	2,720gf(26.67N)
RF	910gf(8.92N)
PT	1.7mm
OT	5.6mm
MD	1mm
TT	-
OP	44 ± 0.8mm
TTP	39.5mm

**ZXL-303**



OF	2,720gf(26.67N)
RF	910gf(8.92N)
PT	1.7mm
OT	4mm
MD	1mm
TT	-
OP	44.5 ± 0.8mm
TTP	41mm

**ZXL-704**



OF	142gf(1.4N)
RF	28gf(0.27N)
PT	15 ± 5°
OT	80°
MD	12°
TT	100°
OP	
TTP	





**ZXL-703**



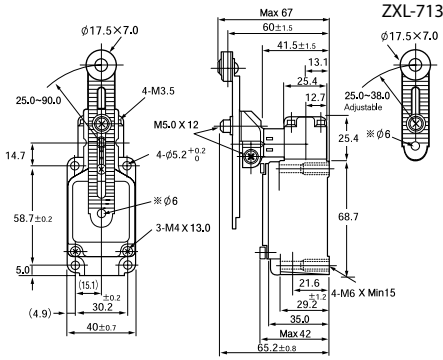
**ZXL-713**



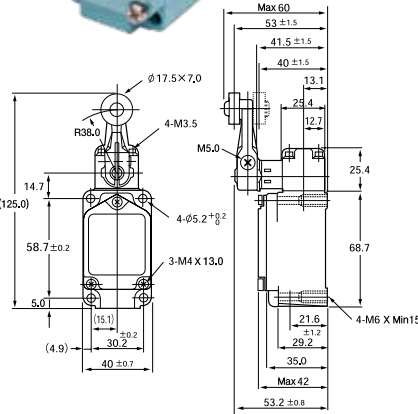
**ZXL-702**



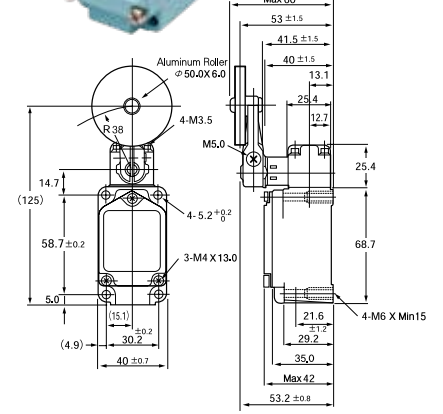
**ZXL-705**



OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	$15 \pm 5^\circ$ $80 \pm 5^\circ(703M)$
OT	$80^\circ$
MD	$12^\circ$
TT	$100^\circ$



OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	$15 \pm 5^\circ$
OT	$80^\circ$
MD	$12^\circ$
TT	$100^\circ$



OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	$15 \pm 5^\circ$
OT	$80^\circ$
MD	$12^\circ$
TT	$100^\circ$



**ZXL-706**



**ZXL-726**



**ZXL-717**

**ZXL-727**

**ZXL-737**

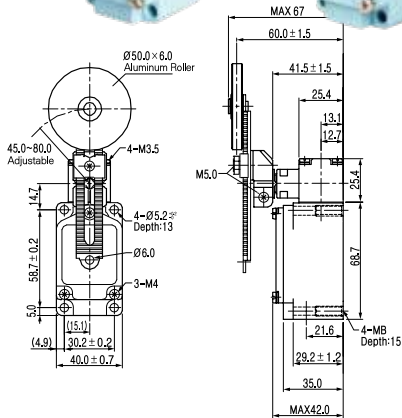
**ZXL-747**



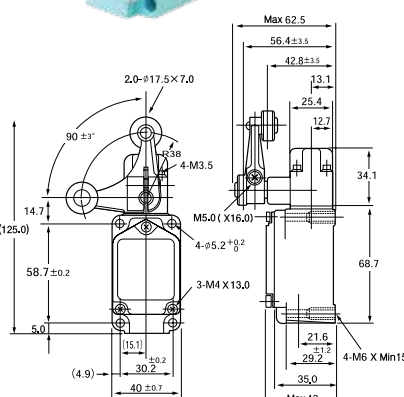
**ZXL-901**



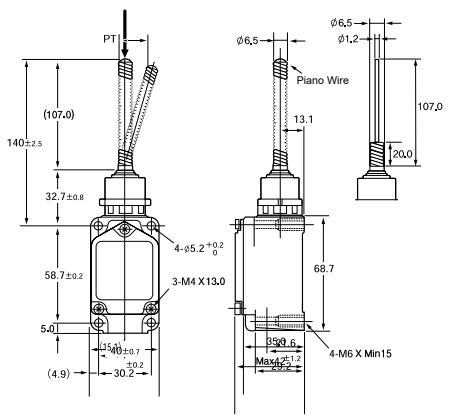
**ZXL-902**



OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	$15 \pm 5^\circ$
OT	$80^\circ$
MD	$12^\circ$
TT	$100^\circ$



OF	1,200gf(11.8N)
RF	$50 \pm 5^\circ$
PT	$15 \pm 5^\circ$
OT	$35^\circ$
MD	-
TT	-



OF	150gf(1.47N)
RF	-
PT	$20 \pm 10mm$
OT	-
MD	-
TT	-

# KL Series

Heavy Duty Limit Switches



- High reliability by silver plated contact of SPDT(1a+1b)
  - Low maintenance by die-cast aluminum body & stainless steel of moving parts
  - IP65 rated with built-in NBR gasket in body cover & O-ring in moving part
  - Single & multi conduits (PG13.5) for saving wiring time
  - 3 different sizes for diverse mounting application
- Reliable operation with physical lift-off system preventing any malfunction of contact (NC only)

## Specifications

<b>Contact Arrangement</b>	Ag Alloy, SPDT(1NO+1NC)
<b>Operation Speed</b>	0.01mm/sec to 0.5m/sec
<b>Insulation Resistance</b>	100MΩ at 500V DC
<b>Contact Resistance</b>	Max. 50mΩ
<b>Ambient Temperature</b>	Operation: -25°C~ +80°C, Storage: -30°C~+80°C
<b>Ambient Humidity</b>	35~80%RH (at -5~+40°C)

## Contact Rating

Rated Voltage	Non-Inductive Load				Inductive Load			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NO	NC	NO	NC	NO	NC	NO	NC
125VAC	10A	10A	1.5A	3A	6A	6A	2.5A	5A
250VAC	10A	10A	1A	2A	4A	4A	1.5A	3A
600VAC	1A	3A	0.5A	1A	1.5A	1.5A	0.5A	1A
8VDC	10A	10A	3A	6A	10A	10A	6A	6A
30VDC	6A	6A	3A	4A	6A	6A	4A	4A
125VDC	0.8A	0.8A	0.2A	0.2A	0.8A	0.8A	0.2A	0.2A

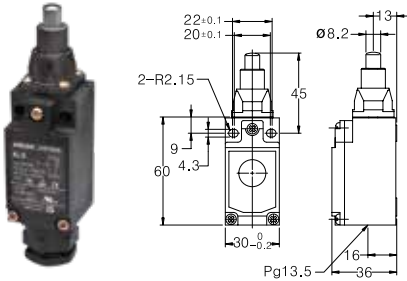
<b>Operation Frequency</b>	Electrical	Max. 30/min
	Mechanical	Max 120/min
<b>Dielectric Strength</b>	2,000VAC 1min	
<b>Expected Life</b>	Electrical	Min. 500,000
	Mechanical	Min. 10,000,000

## Dimensions

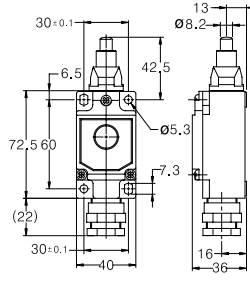
unit: mm

**KLSAP1**

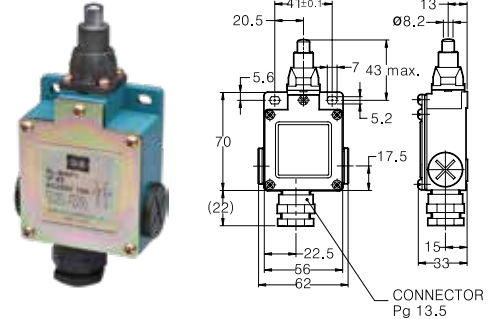
Push Plunger



**KLLAP1**

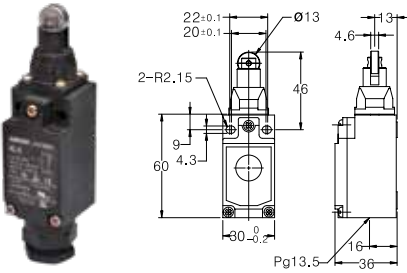


**KLMAP1**

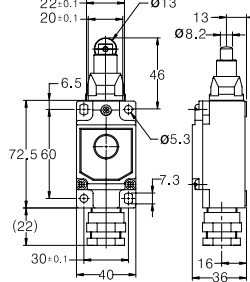


**KLSAP2**

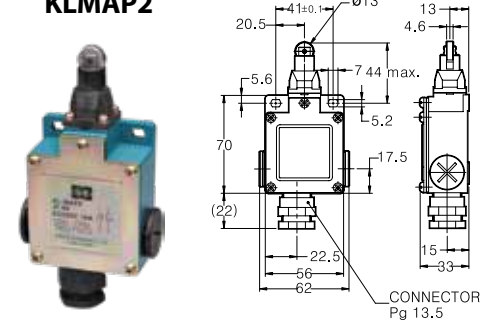
Roller Plunger



**KLLAP2**

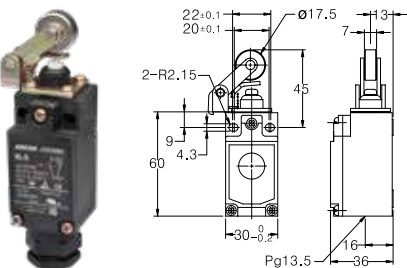


**KLMAP2**

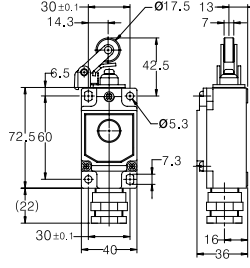


**KLSAL1**

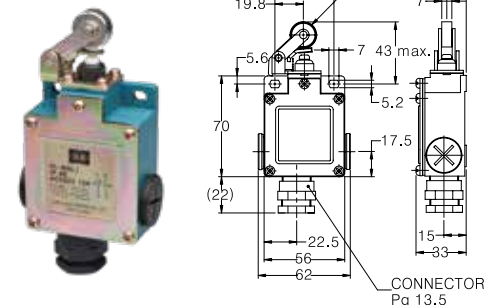
Roller Lever Plunger

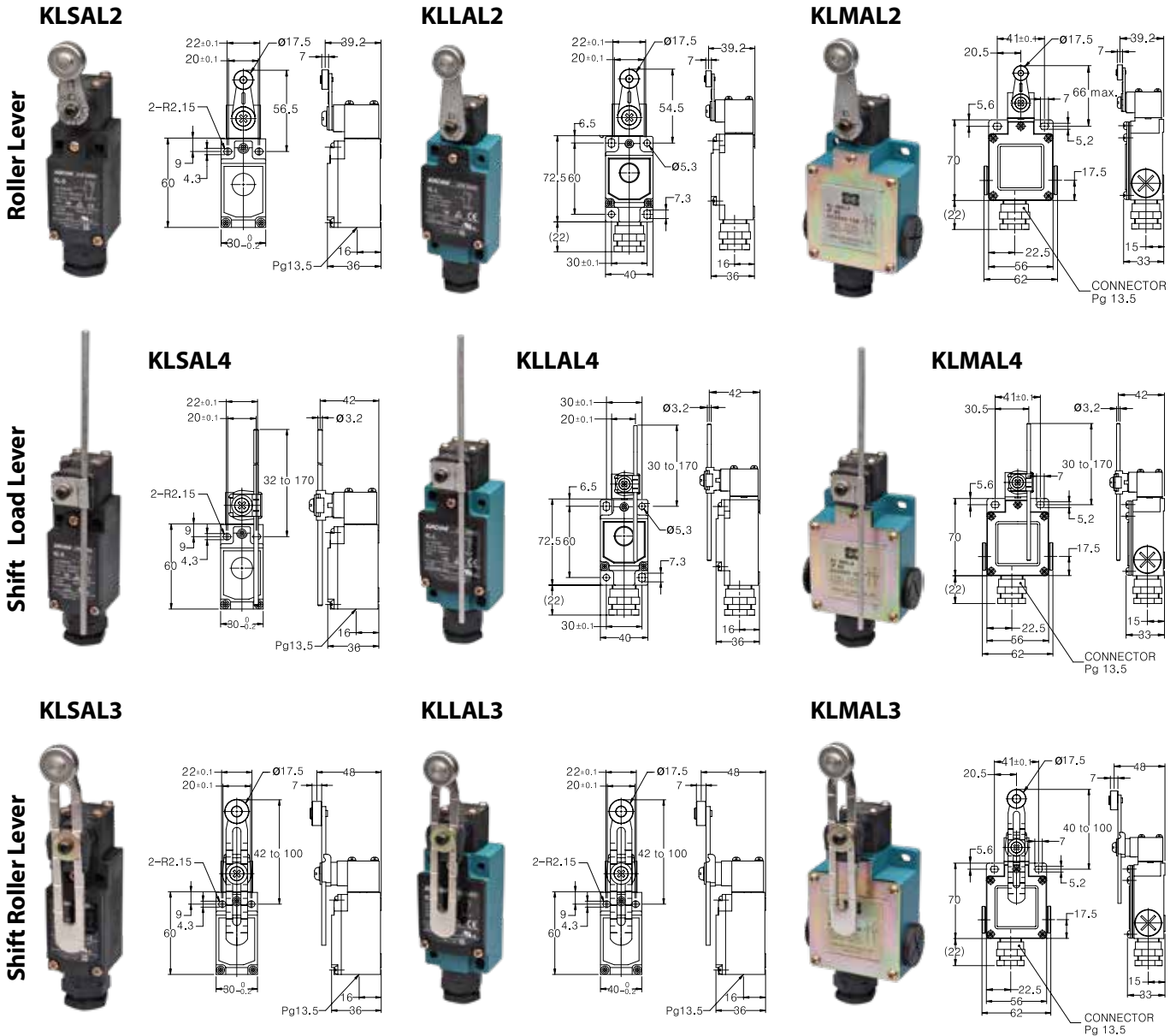


**KLLAL1**



**KLMAL1**

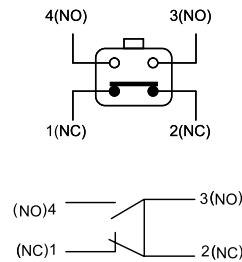




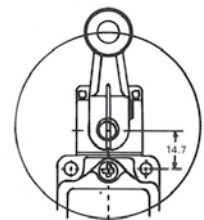
### Operation Characteristics

	AP1	AP2	AL1	AL2	AL3	AL4
OF	2,720g	2,720g	700g	1,360g	1,360g	142g
RF	910g	910g	170g	227g	227g	28g
PT	1.7mm	1.7mm	4.5mm	20°±5	20°±5	20°±5
OT	6.4mm	5.6mm	6.4mm	40°	40°	40°
MD	1.0mm	1.0mm	1.0mm	12°	12°	12°
TF	-	-	-	2,720g	200g	200g

### Contact Diagram



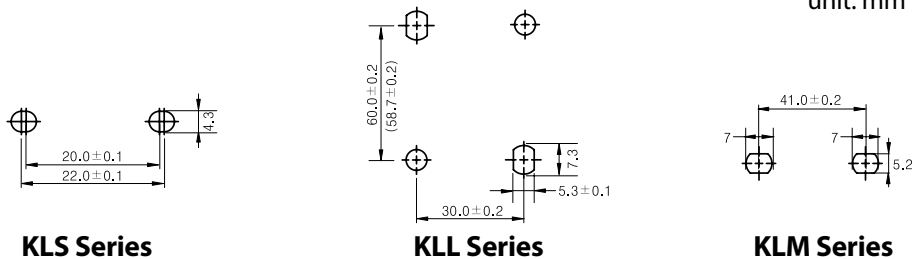
### Roller Lever Operating Position Adjustment



Loosen the bolt on the side of the roller lever to adjust angle.

### Assembly Guide

unit: mm



# HD8 Series

Heavy Duty Foot Switches



- Available Momentary, Maintained, Anti-trip by Safety Lever, 2 stage, and 2 or 3 pedal types
- Available 1 NO/NC, 2 NO/NC, or 2 NO, 2 NC contacts with 24K gold plated
- Adjustable pedal height from 20 to 45mm for user convenience
- 200J impact resistant foot guard with aluminum di-cast of covered shape
- IP67 rating proof by silicon gasket
- Safety in dark place by fluorescent label

## Operations

- **Momentary:** Push the pedal and hold to turn on, release to turn off
- **Maintained type:**  
From the Initial Stage, if you push the pedal down, it goes to turn on, and if release foot from the pedal, automatically returns to the Initial Stage (turn off) by spring return.  
If you push the pedal down until you feel or hear a clicking sound, it maintained ON status even release your foot from the pedal.  
From the Maintained Stage, if you push the pedal down until you feel or hear a clicking sound, it goes back to the Initial Stage(turn off).
- **Anti-Trip by Safety lever type:** Push forward safety lever before activating, and then push the pedal down to work the switch
- **Two-stage type:** Two-stage models have an additional force added in between activation of each switch, allowing the user to distinguish between activation of the first and second switches

## Ordering Information

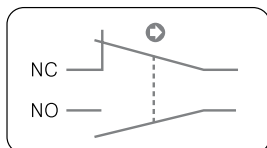
HRF- HD8 S 8 1 1  
                           ①    ②           ③

① Protection	<b>S</b>	Standard
	<b>L</b>	Anti-Operation-Error Lever Type
② Operation Type	<b>1</b>	Standard
	<b>8</b>	Safety-Reset Type[KSB1-S contact block]
	<b>3</b>	Self-Holding Type[KSB1-A contact block]
	<b>2</b>	Two-step Operation Type
③ Contact	<b>1</b>	1N/O + 1N/C
	<b>2</b>	2N/O
	<b>3</b>	2N/O + 2N/C
	<b>4</b>	2N/C

## Specifications

Contact Ratings	Contact Material	Ag Alloy (24K Au Plated)	
	Rated Current	20A 250VAC	
	Rated Voltage	Max. 440VAC	
	Contact Resistance	Max. 50mΩ	
General Ratings	Dielectric Stretch		2,000VAC for 1 minute
	Life Cycle	Electrical	200,000
		Mechanical	1,000,000
	Degree of Protection		IP67
	Insulation Resistance		100MΩ

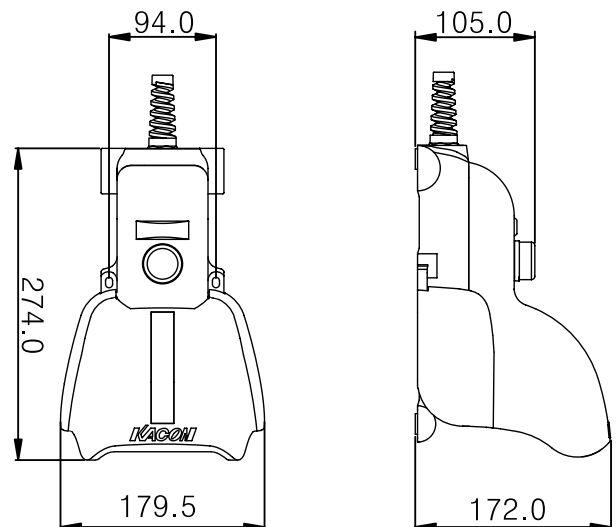
## Contact Block & Diagram



KSB1-□

## Dimensions

(Unit: mm)





# HD 2/3/5 Series

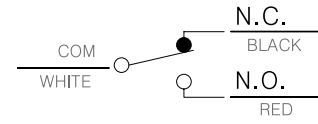
Medium Duty Foot Switches



## Specifications

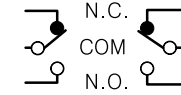
	HD3	HD3N	HD3NX	HD3LX	HD3NS	HD5NX	HD5NS	HD202P
Contact	1NO + 1NC				2NO + 2NC			
Regular Current	15A 125/250/380VAC							
Built-in Switch	Z type micro switch (CE Certified)							
Body Material	Aluminum Die casting							
Cable	1/2 inch tap flexible cable (zinc connector 10~16)							
Degree of Protection	IP65				IP54			

## Contact Diagram



### SWITCH1

BLACK  
YELLOW  
RED



### SWITCH2

BLUE  
ORANGE  
GREEN

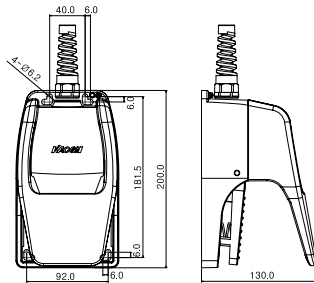
YELLOW · GREEN

## Dimensions

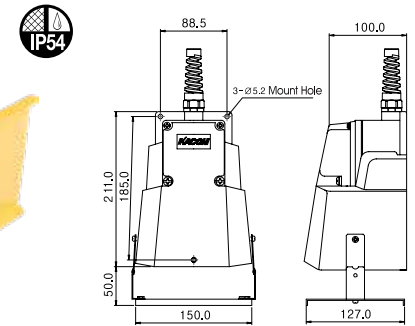
(Unit: mm)



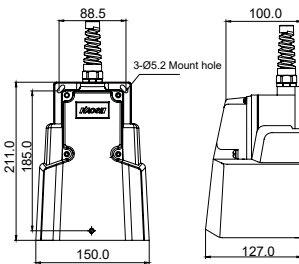
**HRF-HD3**  
200.0 X 92.0 X 130.0



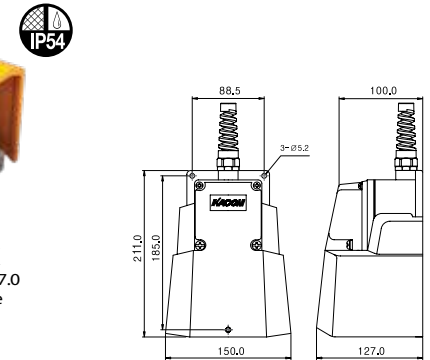
**HRF-HD3NS**  
361.0 X 150.0 X 127.0



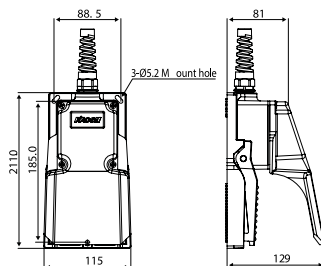
**HRF-HD3N**  
211.0 X 150.0 X 127.0



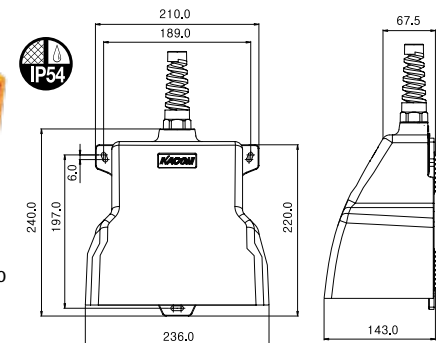
**HRF-HD3LX**  
211.0 X 150.0 X 127.0  
Safety Lock Type



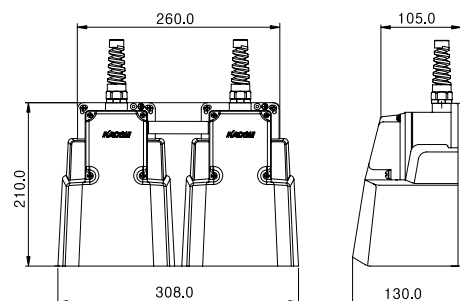
**HRF-HD3NX**  
211.0 X 115.0 X 129.0



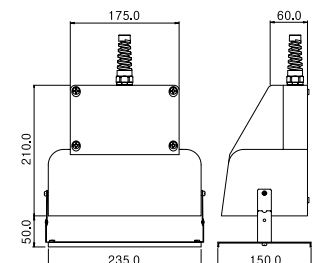
**HRF-HD5NX**  
240.0 X 236.0 X 143.0



**HRF-HD202P**  
210.0 X 308.0 X 130.0  
(CE Only)



**HRF-HD5NS**  
260.0 X 235.0 X 150.0



Order product



# M Series

Light Duty Foot Switches



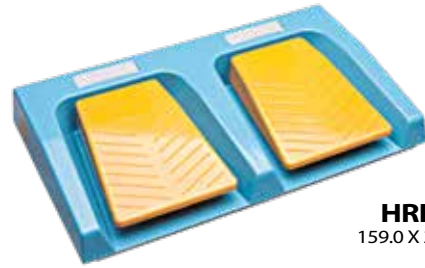
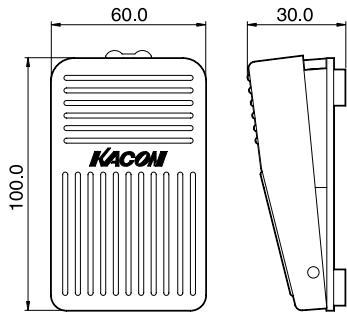
## Specifications

	M1	M2	MX1	MD2	MD23	MD25	MD3	MD4	M5	M8	M52	M6
Contact	SPDT (1NO + 1NC)								1NO	2NO + 2NC		
Regular Current	10A 250VAC											
Built-in Switch	V type micro switch (UL, CUL, VDE, CE Certified) + 24K gold plated											
Body Material	Plastic	Steel	Aluminum Die cast						Plastic			
Function	Momentary				Maintained				Momentary			
Degree of Protection	IP54								IP67	IP68	IP67	
Cable	0.75 mm <sup>2</sup> x 3 line cables x 2 m											

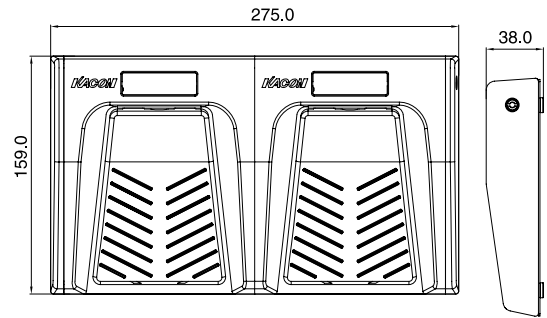
## Plastic Housing (Unit: mm)



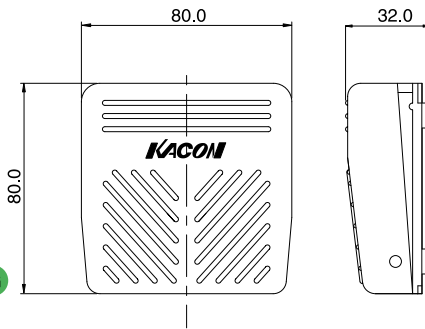
**HRF-M1**  
100.0 X 60.0 X 30.0



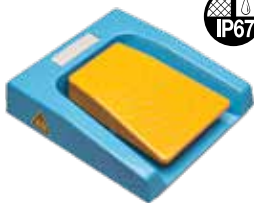
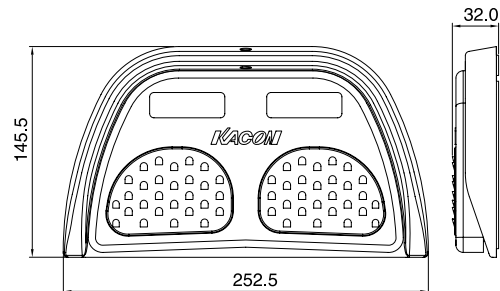
**HRF-M52**  
159.0 X 275.0 X 38.0



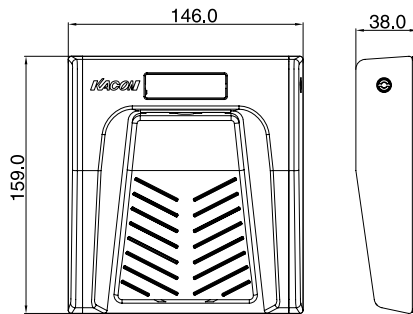
**HRF-M2**  
85.0 X 80.0 X 32.0



**HRF-M6**  
145.0 X 252.5 X 32.0



**HRF-M5**  
159.0 X 146.0 X 38.0

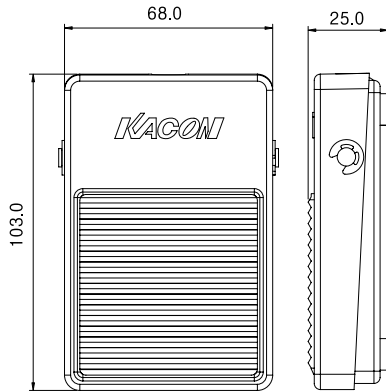


# Metal Housing

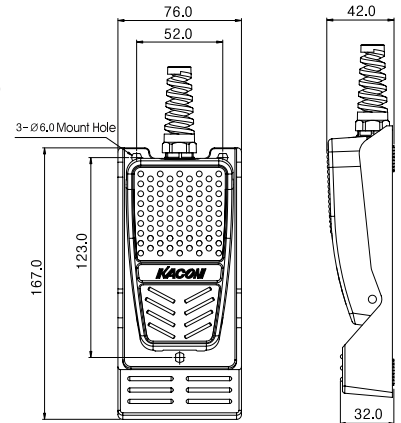
(Unit: mm)



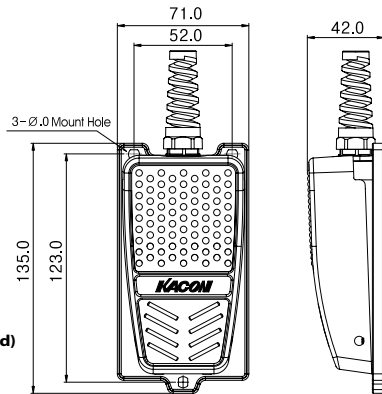
**HRF-MX1**  
103.0 X 68.0 X 25.0



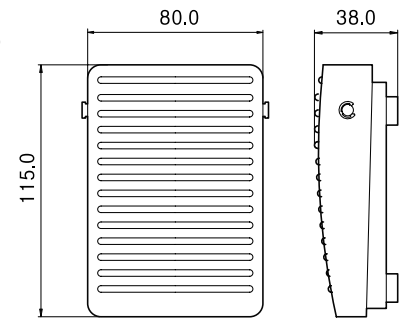
**HRF-MD2S**  
167.0 X 76.0 X 42.0



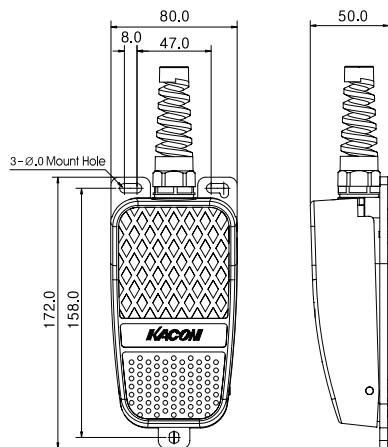
**HRF-MD2**  
**HRF-MD23(Maintained)**  
135.0 X 71.0 X 42.0



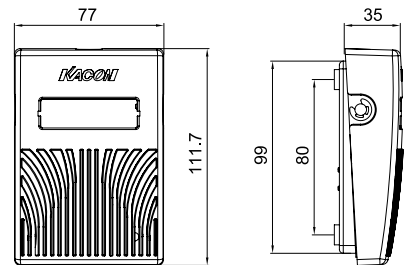
**HRF-MD4**  
115.0 X 80.0 X 38.0



**HRF-MD3**  
172.0 X 80.0 X 50.0



**HRF-M8**  
111.7 X 77.0 X 35.0





# KMSR Series

Single Phase Solid State Relays



- Hockey puck style single phase SSR
- LED indicator of the control input status
- Clip cover of IP20 touch protection
- Available 4 ~ 32VDC or 90 ~ 265VAC input

## Specifications

Insulation Resistance	100MΩ/500VDC (btwn Terminal & Case)
Dielectric Strength	2500VAC(50/60Hz 1minute)
Vibration Resistance	10-55Hz, amplitude: 1.5mm,x,y,z each axis 2 hours
Shock Resistance	1000m/s <sup>2</sup> ,s,y,z each axis 3times
Storage Temperature	-30°C~ +90°C
Ambient Temperature	-25°C~ +70°C
Ambient Humidity	45 - 85% R.H
Weight	approx. 100g

## Ordering Information

**KMSR -** ① ② ③ ④

① Input Voltage	<b>D</b>	4 - 32 VDC	
	<b>A</b>	90 - 265 VAC	
② Output Voltage	<b>S</b>	Single Phase	
	<b>D</b>	DC	
③ Load Current			
<b>005</b>	5A*	<b>040</b> 40A	
<b>010</b>	10A	<b>050</b> 50A	
<b>020</b>	20A	<b>060</b> 60A	
<b>025</b>	25A	<b>100</b> 100A	
<b>030</b>	30A		
④ Load Voltage	<b>AC</b>	2	90 - 240V
		4	90 - 480V
	<b>DC</b>	5	50V

\*DC output type only  
- DC Output DC Input models are not available

## Characteristics

### DC Input / AC Output (90 - 240VAC) .9A

Model#	KMSR-	DS0102	DS0202	DS0252	DS0302	DS0402	DS0502	DS0602	DS1002
Input	Rated Control Voltage	4 - 32VDC							
	Pick-up Voltage	3VDC Minimum							
	Drop-out Voltage	1.5VDC Maximum							
	Input Current	3-35mA							
Output	Rated Load Voltage	90 - 240VAC							
	Peak Voltage	600V						800V	
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	315A			580A		
	Output Leakage Current (Maximum)	10mA	15mA						
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

### DC Input / AC Output (90 - 480VAC) .9A

Model#	KMSR-	DS0104	DS0204	DS0254	DS0304	DS0404	DS0504	DS0604	DS1004
Input	Rated Control Voltage	4 - 32VDC							
	Pick-up Voltage	3VDC Minimum							
	Drop-out Voltage	1.5VDC Maximum							
	Input Current	3 - 35mA							
Output	Rated Load Voltage	90 - 480VAC							
	Peak Voltage	800V	1200V						
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	350A	370A		580A		
	Output Leakage Current (Maximum)	20mA							
	Output on Voltage Drop	1.3V MAX	1.6V MAX	1.8V Maximum					
	Minimum Switching Current	1A							
Pick-up/Drop-out Time	1/2 cycle+1ms Maximum								

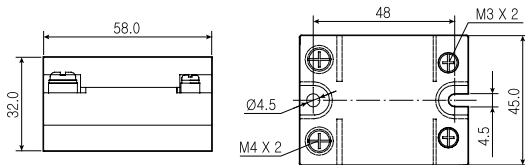
**AC Input / AC Output (90 - 240VAC)**

Model#	KMSR-	AS0102	AS0202	AS0252	AS0302	AS0402	AS0502	AS0602	AS1002
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 240VAC							
	Peak Voltage	600V				800V			
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	315A			580A		
	Output Leakage Current (Maximum)	10mA	15mA						
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

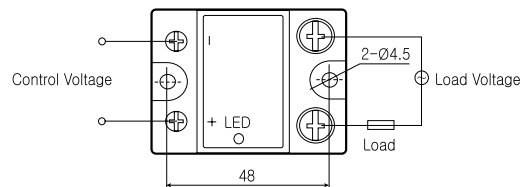
**AC Input / AC Output (90 - 480VAC)**

Model#	KMSR-	AS0104	AS0204	AS0254	AS0304	AS0404	AS0504	AS0604	AS1004
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 480VAC							
	Peak Voltage	800V	1200V						
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	350A	370A	580A			
	Output Leakage Current (Maximum)	20mA							
	Output on Voltage Drop	1.3V MAX	1.6V MAX	1.8V Maximum					
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

**Dimension**

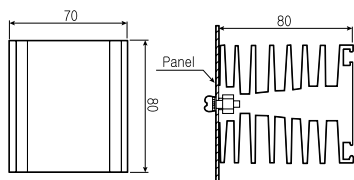


**Connection Diagram**

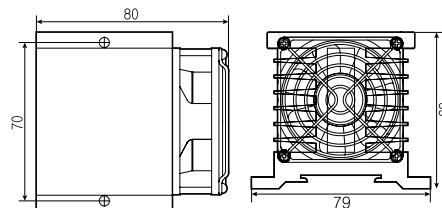


**Optional Heatsink**

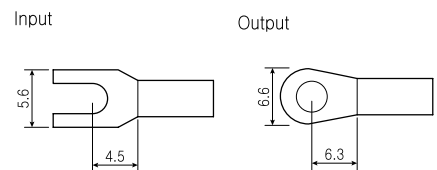
**KSH-A040(25A-40A)**



**KSH-A100(40A-100A)**



**Terminals**





# KMSR Series

Three Phase Solid State Relays



- Economic type three phase SSR
- LED indicator of the control input status
- Available heatsinks & fans

## Ordering Information

KMSR - ① ② ③ ④

① Input voltage	<b>D</b>	4 - 32 VDC
	<b>A</b>	90 - 265 VAC

② Output Voltage	<b>T</b>	Three Phase
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③ Load Current			
<b>010</b>	10A	<b>040</b>	40A
<b>020</b>	20A	<b>050</b>	50A
<b>025</b>	25A	<b>060</b>	60A
<b>030</b>	30A	<b>100</b>	100A

④ Load Voltage	2	90 - 240VAC
	4	90 - 480VAC

## Specifications

Insulation Resistance	100MΩ/500VDC (btwn Terminal & Case)
Dielectric Strength	2500VAC(50/60Hz 1minute)
Vibration Resistance	10-55Hz, amplitude: 1.5mm,x,y,z each axis 2 hours
Shock Resistnace	1000m/s <sup>2</sup> ,s,y,z each axis 3times
Storage Temperature	-30°C~ +90°C
Ambient Temperatur	-25°C~ +70°C
Ambient Humidity	45 - 85% R.H
Weight	approx. 530g

## Characteristics

### DC Input / AC Output (90 - 240VAC)

		DT0102	DT0202	DT0252	DT0302	DT0402	DT0502	DT0602	DT1002
Input	Rated Control Voltage	4 -32VDC							
	Pick-up Voltage	3VDC Minimum							
	Drop-out Voltage	1.5VDC Maximum							
	Input Current	25mA Maximum							
Output	Rated Load Voltage	90 - 240VAC							
	Peak Voltage	600V				800V			
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	125A	260A	315A			580A		
	Output Leakage Current (Maximum)	10mA	10mA						
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

### DC Input / AC Output (90 - 480VAC)

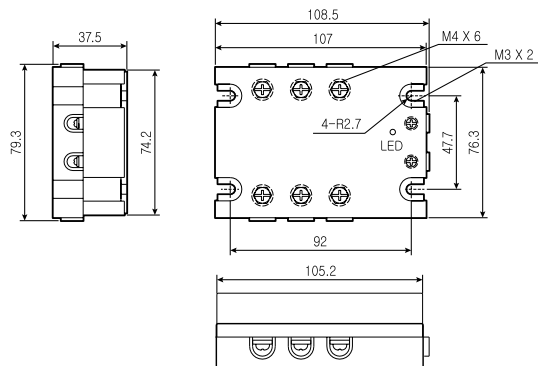
		DT0104	DT0204	DT0254	DT0304	DT0404	DT0504	DT0604	DT1004	
Input	Rated Control Voltage	4 -32VDC								
	Pick-up Voltage	3VDC Minimum								
	Drop-out Voltage	1.5VDC Maximum								
	Input Current	3 - 35mA								
Output	Rated Load Voltage	90 - 480VAC								
	Peak Voltage	800V	1200V							
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A	
	Frequency	47 - 63Hz								
	Single Cycle Surge Current Resistance	170A	250A		350A		580A			
	Output Leakage Current (Maximum)	10mA								
	Output on Voltage Drop	1.5V Maximum								
	Minimum Switching Current	1A								
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum								



AC Input / AC Output (90 - 240VAC)										
		AT0102	AT0202	AT0252	AT0302	AT0402	AT0502	AT0602	AT1002	
Input	Rated Control Voltage	90-265VAC								
	Pick-up Voltage	72VAC Minimum								
	Drop-out Voltage	60VAC Maximum								
	Input Current	15mA Maximum								
Output	Rated Load Voltage	90 - 240VAC								
	Peak Voltage	600V					800V			
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A	
	Frequency	47 - 63Hz								
	Single Cycle Surge Current Resistance	125A	260A	315A			580A			
	Output Leakage Current (Maximum)	10mA								
	Output on Voltage Drop	1.5V Maximum								
	Minimum Switching Current	1A								
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum								

AC Input / AC Output (90 - 480VAC)									
		AT0104	AT0204	AT0254	AT0304	AT0404	AT0504	AT0604	AT1004
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 480VAC							
	Peak Voltage	800V	1200V						
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A		350A		580A		
	Output Leakage Current (Maximum)	10mA							
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

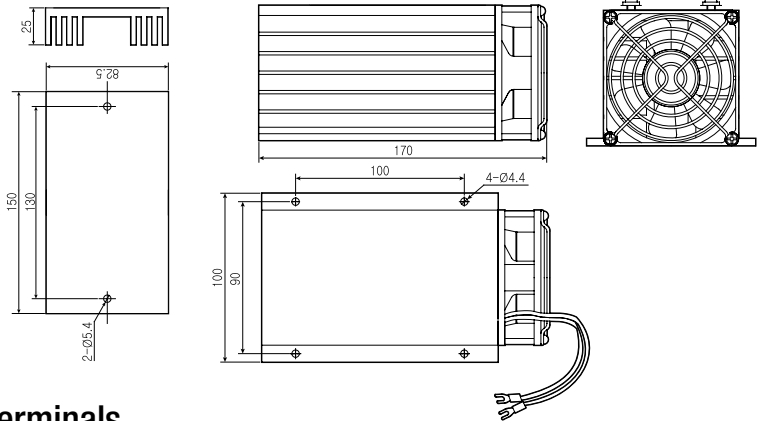
### Dimension



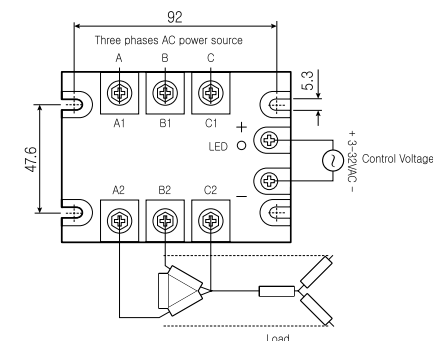
### Optional Heatsink

KSH-B040(25A-40A)

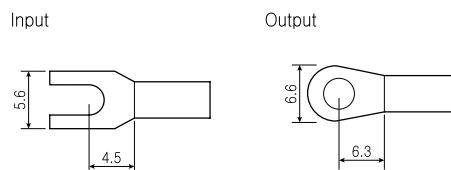
KSH-B100(40A-100A)



### Connection Diagram



### Terminals





# KSR Series

Single Phase Solid State Relays

- Slim type single phase SSR
- LED indicator of the control input status
- Over heat alarm output of SSR with connector cable
- Heatsink integrated SSR available



## Ordering Information

KSR ① ② ③ ④ ⑤

① Load Voltage	②	90 - 240 VAC $\overline{V}$
	⑤	90 - 480 VAC

② Load Current			
005 $\overline{V}$	5A	050 $\overline{V}$	50A
015 $\overline{V}$	15A	060 $\overline{V}$	60A
030 $\overline{V}$	30A	080 $\overline{V}$	80A
040 $\overline{V}$	40A		

③ Operate mode	Z	Zero Cross
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④ Input voltage	D	24VDC(4-32V) $\overline{V}$
	A	220VAC(90-240V 50/60Hz)

⑤ Heatsink	no mark	Mount Type
	H	Heatsink Type $\overline{V}$
	HF	Heatsink + Fan Type

## Specifications

	Low Voltage	High Voltage
Release Time	Cycle of 1/2 Load + Less than 1 ms	
Output on Voltage Drop	Less than 1.6V (RMS)	Less than 1.8V (RMS)
Leakage Current	Less than 10mA (AC200V)	Less than 20mA (AC480V)
Insulation Resistance	more than 100MΩ (DC500V)	
Withstand Voltage	AC 5,000V 50/60Hz 1min	
Vibration Resistance	10-55-10Hz Peak Amplitude 0.35mm (Dual Amplitude 0.7mm)	
Shock Resistance	294m/s <sup>2</sup>	
Storage Temperature	-30 - +100°C (non-condensing)	
Ambient Temperature	-30 - +80°C (non-condensing)	
Ambient Humidity	45 - 85%RH	

## Over temperature alarm specification

Output	NPN Open Collector	
Maximum Switching Current Rating	Opens at 95 ± 5°C of SSR Body temperature	
Alarm Voltage Drop	Typical	50mADC
	Maximum	2.8VDC
Visual Indication	Normal : Green LED, Overheat alarm : Red LED	
UL Certification	4VDC	
	Only on 24VDC Input voltage, with and without heatsink	

## Characteristics

### Input Ratings (Ambient Temp of 25°C)

Rated Control Voltage	Control Voltage Range	Control Voltage Levels			Input Current
		Pick-up Voltage	Drop-out Voltage		
24VDC	4-32VDC	Less than 4VDC	More than 1.4VDC	10±3mA	
220VAC	90-240VAC	Less than 90VAC	More than 50VAC	10±5mA	

### Low Voltage Load

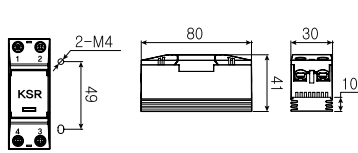
	2005	2015	2030	2040	2050	2060	2080
Rated Load Voltage	AC 220V (50/60Hz)						
Load Voltage Range	AC 90-240V (50/60Hz)						
Rated Load Current	5A	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C						
Peak Voltage	600V						
Single Cycle	84	260	420	520	580		
Surge Current Resistance	60Hz, 1 Cycle						

### High Voltage Load

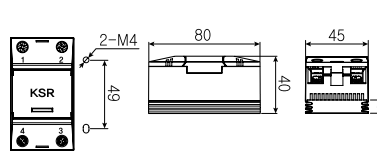
	5005	5015	5030	5040	5050	5060	5080
Rated Load Voltage	AC 440V (50/60Hz)						
Load Voltage Range	AC 90-480V (50/60Hz)						
Rated Load Current	5A	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C						
Peak Voltage	1,200V						
Single Cycle	80	250	370	500	580		
Surge Current Resistance	60Hz, 1/2 Cycle						

# Dimensions

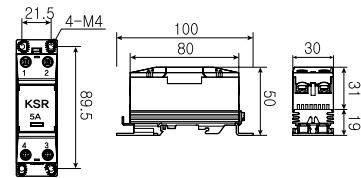
Mount Type 5 / 15 / 30A



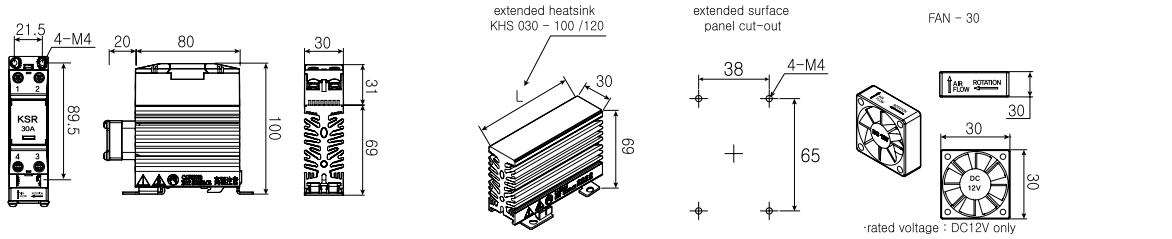
Mount Type 40 / 50 / 60 / 80A



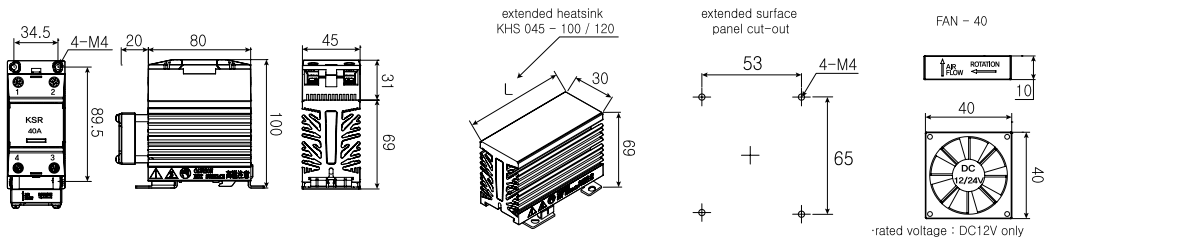
Heatsink Type 5A



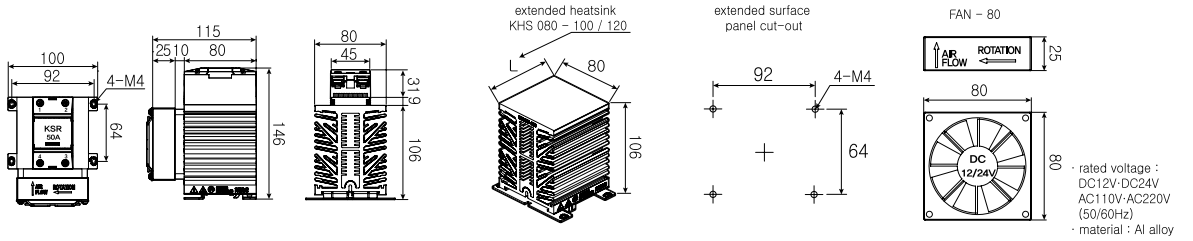
Heatsink + Fan Type 30A



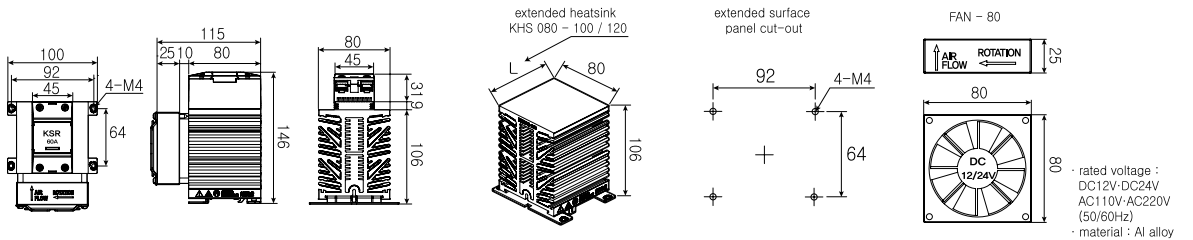
Heatsink + Fan Type 40A



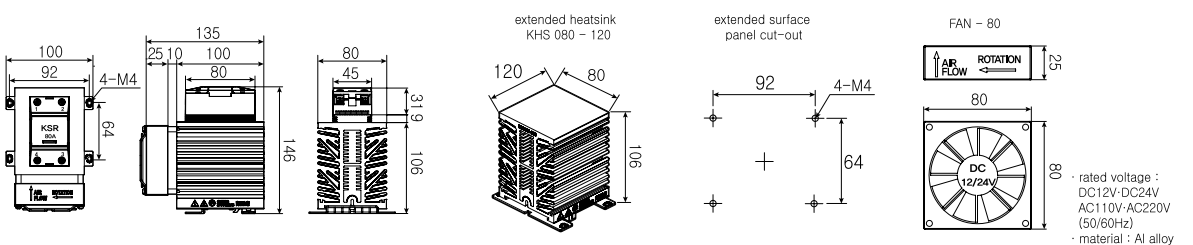
Heatsink + Fan Type 50A



Heatsink + Fan Type 60A



Heatsink + Fan Type 80A





# KSC Series

Three Phase Solid State Relays



- 80 x 80mm three phase SSR
- LED indicator of the control input status
- Over heat alarm output of SSR with connector cable
- Heatsink integrated SSR available
- Clip cover of IP20 touch protection

## Ordering Information

KSC- ① ② ③ ④ ⑤

① Load Voltage	2	90 - 240 VAC $\cdot \overline{V}_{is}$
	5	90 - 480 VAC
② Load Current		
015 $\cdot \overline{V}_{is}$	15A	050 $\cdot \overline{V}_{is}$ 50A
030 $\cdot \overline{V}_{is}$	30A	060 $\cdot \overline{V}_{is}$ 60A
040 $\cdot \overline{V}_{is}$	40A	080 $\cdot \overline{V}_{is}$ 80A
③ Operate mode	Z	Zero Cross
④ Input voltage	D	24VDC(4-32V) $\cdot \overline{V}_{is}$
	A	220VAC(90-240V 50/60Hz)
⑤ Heatsink	no mark	Mount Type
	H	Heatsink Type $\cdot \overline{V}_{is}$
	HF	Heatsink + Fan Type

## Specifications

	Low Voltage	High Voltage
Release Time	Cycle of 1/2 Load + Less than 1 ms	
Output on Voltage Drop	Less than 1.6V (RMS)	Less than 1.8V (RMS)
Leakage Current	Less than 10mA (AC200V)	Less than 20mA (AC480V)
Insulation Resistance	more than 100MΩ (DC500V)	
Withstand Voltage	AC 5,000V 50/60Hz 1min	
Vibration Resistance	10-55-10Hz Peak Amplitude 0.35mm (Dual Amplitude 0.7mm)	
Shock Resistance	294m/s <sup>2</sup>	
Storage Temperature	-30 - +100°C (non-condensing)	
Ambient Temperature	-30 - +80°C (non-condensing)	
Ambient Humidity	45 - 85%RH	

## Over temperature alarm specification

Output	NPN Open Collector	
	Opens at 95 ± 5°C of SSR Body temperature	
Maximum Switching Current Rating	50mADC	
Alarm Voltage Drop	Typical	2.8VDC
	Maximum	4VDC
Visual Indication	Normal : Green LED, Overheat alarm : Red LED	

## Characteristics

### Input Ratings (Ambient Temp of 25°C)

Rated Control Voltage	Control Voltage Range	Operational Voltage Range			Input Current
		Pick-up Voltage	Drop-out Voltage		
24VDC	4-32VDC	Less than 4VDC	More than 1.4VDC	30±3mA	
220VAC	90-240VAC	Less than 90VAC	More than 50VAC	30±5mA	

### Low Voltage Load

	2015	2030	2040	2050	2060	2080
Rated Load Voltage	220VAC (50/60Hz)					
Load Voltage Range	90-240VAC (50/60Hz)					
Rated Load Current	15A	30A	40A	50A	60A	80A
Load Current Range	0.5A - Rated Current @ Ambient Temp of 25°C					
Peak Voltage	600V					
Single Cycle Surge Current Resistance	260	420	520	580		
	60Hz, 1Cycle					
UL Certification	Only on 24VDC Input voltage, with and without heatsink					No UL

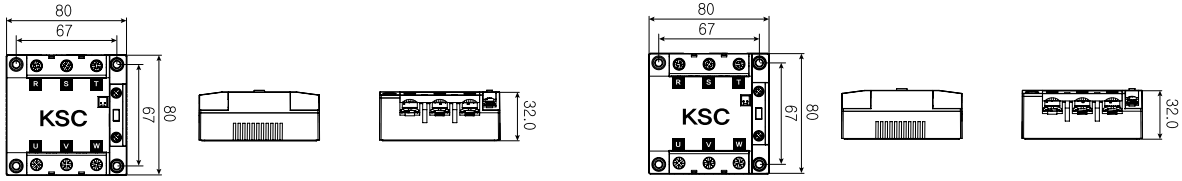
### High Voltage Load

	5015	5030	5040	5050	5060	5080
Rated Load Voltage	440VAC (50/60Hz)					
Load Voltage Range	90-480VAC (50/60Hz)					
Rated Load Current	15A	30A	40A	50A	60A	80A
Load Current Range	0.5A - Rated Current @ Ambient Temp of 25°C					
Peak Voltage	1,200V					
Single Cycle Surge Current Resistance	250	370	500	580		
	60Hz, 1/2Cycle					

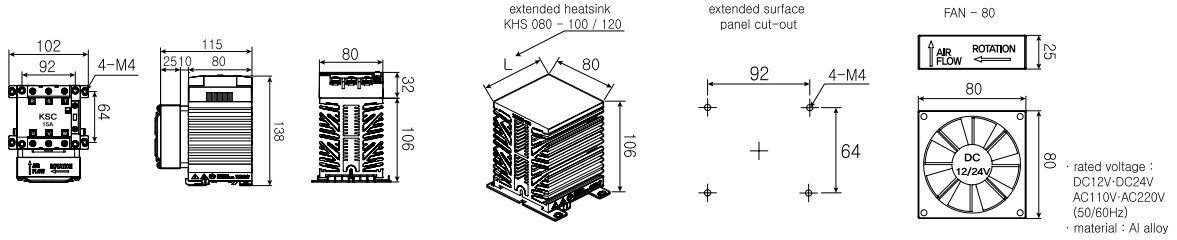
# Dimensions

Mount Type 15 / 30A

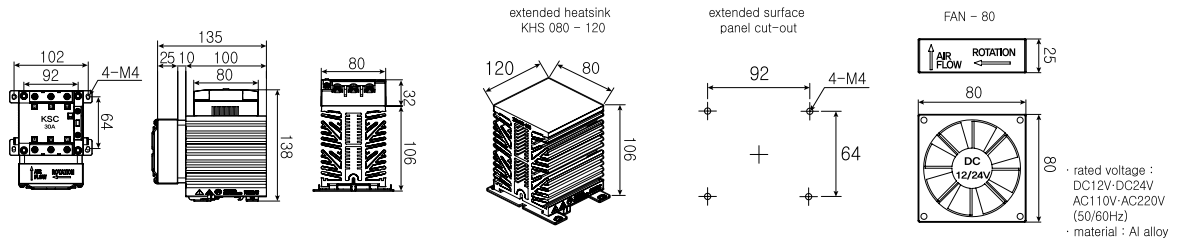
Mount Type 40 / 50 / 60 / 80A



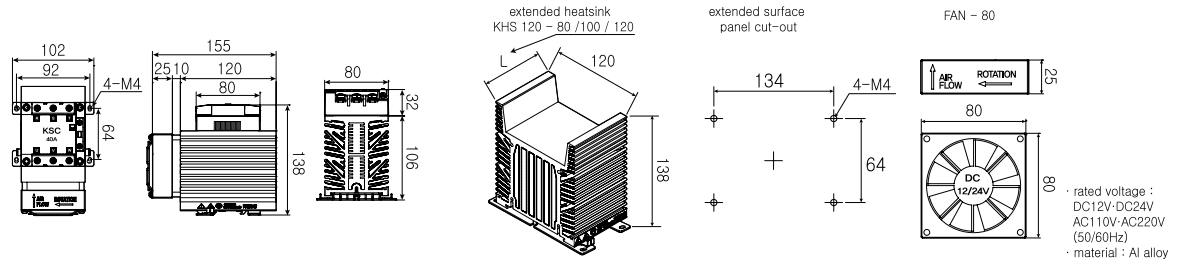
Heatsink Type 15A



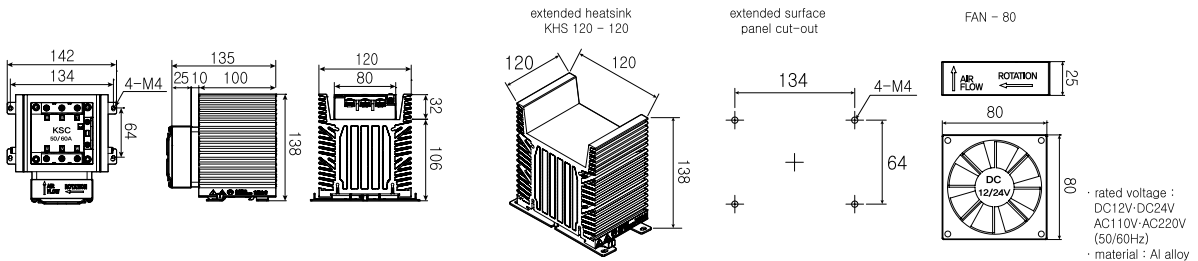
Heatsink Type 30A



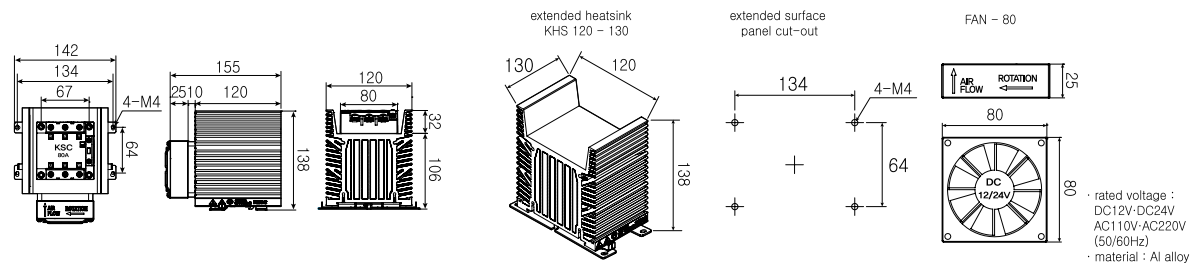
Heatsink Type 40A



Heatsink Type 50 / 60A



Heatsink Type 80A

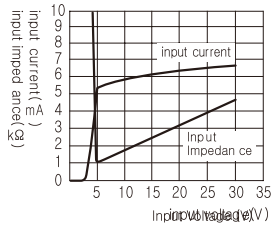




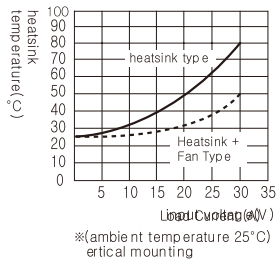
# Technical Data

## KSR & KSC Series

### Input current and Impedance

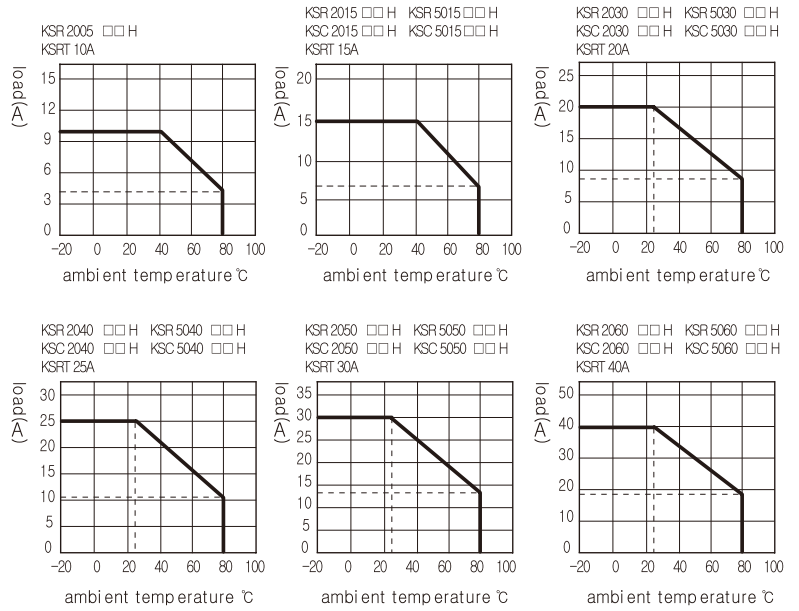


### Heatsink type & Heatsink + Fan type



※(ambient temperature 25°C)  
vertical mounting

### Ambient Temperature-load current



#### ► Caution

- The radiator fan reduces the radiator temperature by up to 35 ~ 40 % (ambient temperature of 25°C / vertical mounting)
- In the design process, note that the load current characteristic worsens with the increase in the ambient temperature.
- With the high-voltage type, design the system at 80 % of the rating or less.
- The device life is prolonged when the temperature decreases.

## Note



# TA/TR Series

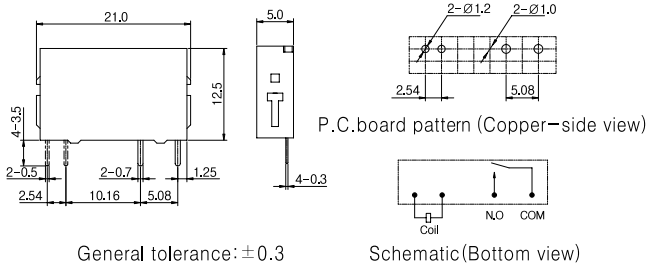
Miniature sized class F Relays



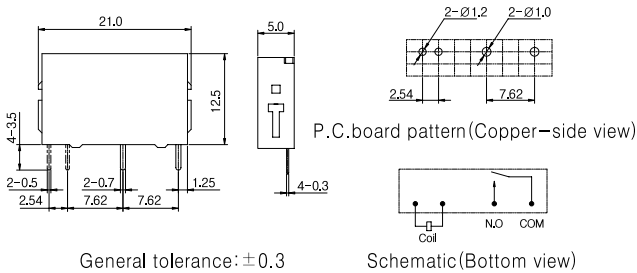
- Miniature size (width 5mm, height 12.5mm) high density and easy to install
- Extended switching capability (1mA 5VDC to 5A 250VAC, 30VDC)
- Twin Cross Bar Contact Mechanism for enhanced contact reliability
- High sensitive operation: 120mW ~ 180mW (5 to 24VDC)
- Gold Clad Silver Alloy Contact to secure micro current conductivity
- SIL terminal layout
- Wider terminal structure (TA : 5.08mm/TR : 7.62mm)
- Gold plated Socket terminal (24k gold plated)
- Class F 155°C

## Dimensions (unit: mm)

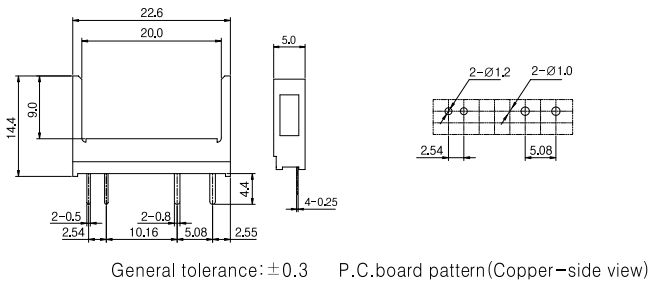
### TA Series



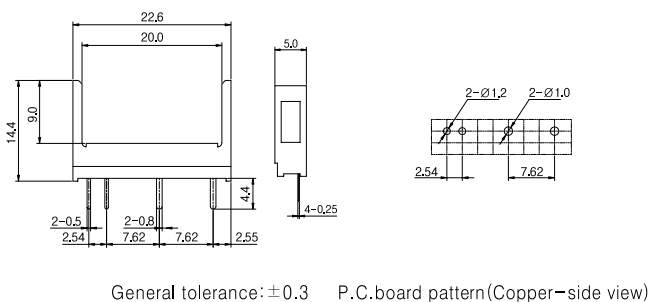
### TR Series



### TAS (Socket for TA)



### TRS (Socket for TR)



## Ordering Information

T A - 1a 5

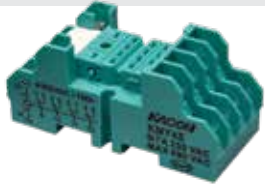
①                      ②

① Distance btwn Terminals	<b>A</b>	5.08mm
	<b>R</b>	7.62mm
② Voltage	<b>5</b>	5V DC
	<b>12</b>	12V DC
	<b>24</b>	24V DC

## Specifications

Contact Specifications	<b>Contact point composition</b>		SPST (1NO)
	<b>Contact point material</b>		Gold-clad Silver alloy
	<b>Initial contact resistance</b>		30mΩ max
	<b>Rated current(resistance load)</b>		5A 30V DC 5A 250V AC
	<b>Maximum Switching Current rating</b>		5A
	<b>Maximum Contact capacity</b>	<b>DC</b>	150W
		<b>AC</b>	1,250VA
	<b>Maximum Rated Voltage</b>		110V DC 250V AC
<b>Minimum switching rating*</b>		1mA 5V DC	
Coil Spec.	<b>Coil Voltage</b>		5VDC ~ 24VDC
	<b>Power consumption</b>		120mW, 180mW
	<b>Minimum operating</b>		70% of rated voltage
	<b>Maximum cut-off voltage</b>		5% of rated voltage
	<b>Insulation</b>		Class F 155°C
<b>Time of operation</b>		maximum rated voltage at 6ms	
<b>Time of interruption</b>		maximum tated voltage at 3ms	
<b>Insulation resistance</b>		1,000MΩ min. (500VDC)	
<b>Dielectric Strength</b>	between contact points	1,000VACrms per minute	
	Between contact points and coil	2,000VACrms per minute	
<b>Surge voltage</b>	Between contact points and coil	4,000V	
<b>Life span</b>	Mechanical	Over 10,000,000 times	
	Electrical	Over 100,000 times under rated load	
<b>Vibration resistand</b>	Functional	Min. 147m/s <sup>2</sup> (15G), 10~55Hz (width of vibration:2.5mm)Min.	
	Destructive	Min. 205.8m/s <sup>2</sup> (21G), 10~55Hz (width of vibration: 3.5mm)	
<b>Counter Shock</b>	Functional and destructive	15G min. (147m/s <sup>2</sup> ) 100G min. (980m/s <sup>2</sup> )	
	<b>Ambient temperature</b>		-40°C ~ +70°C (non-freezing)
<b>Ambient humidity</b>		5% ~ 85% RH	
<b>Weight</b>		Approx. 3g	

\* The above mentioned minimum switching rating is only referential. The referenced value varies according to the make and break frequency, environmental condition and anticipated credibility level. Therefore, it is recommended that tests be done with actual load value before the production process.



# HR705 Series

Cube Type Relays



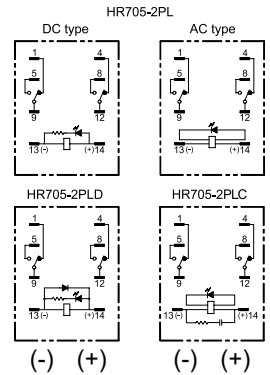
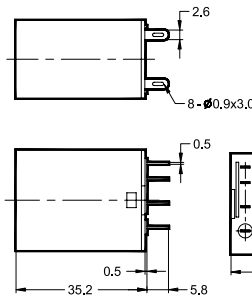
- 705 Series are designed with compact housing & ICE cube style, silver alloy contact, LED indicator, high reliability and long life
- Available Surge protection type to protect malfunction of PLC, electronic devices from back EMF

## Specifications

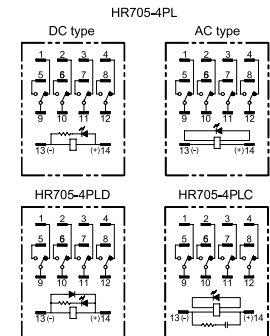
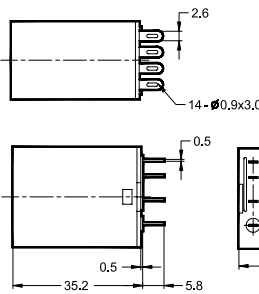
Part Numbers	Standard type	HR705-2PL-220VAC HR705-2PL-110VAC HR705-2PL-24VAC HR705-2PL-110VDC HR705-2PL-24VDC HR705-2PL-12VDC	HR705-4PL-220VAC HR705-4PL-110VAC HR705-4PL-24VAC HR705-4PL-110VDC HR705-4PL-24VDC HR705-4PL-12VDC
	Surge protection type	HR705-2PLD-12VDC HR705-2PLD-24VDC HR705-2PLC-110VAC HR705-2PLC-220VAC	HR705-4PLD-12VDC HR705-4PLD-24VDC HR705-4PLC-110VAC HR705-4PLC-220VAC
Contact	Configuration	DPDT (2NO + 2NC)	4PDT (4NO + 4NC)
	Material	Silver alloy (24K gold plate)	
	Max. Switching current	5A	3A
	Rated Max. Resistive Load	5A at 24VDC/240VAC	3A at 24VDC/240 VAC
	Max. Switching Voltage	125VDC/ 250VAC	
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	Voltage range	12VDC to 110VDC, 12VAC to 240VAC	
	Power consumption	AC: 0.9VA Approx. , DC: 0.9W Approx.	
	Minimum operating voltage	80% of the rated coil voltage	
	Max. Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
	Operating Time	20ms	
	Dropout time	20ms	
General Info.	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min.	
		Between Contact & Coil: 1,500Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-35 ~ +55°C (-13°F ~ 131°F) at non freezing	
	Ambient humidity	35% ~ 80% RH	
	Weight	33g (1.2oz)	
	Socket	Socket part number	KMY2(Rail), KY08-02(PCB)
Terminal Tightened Torque		0.5N • m (5.10kgf • cm)	

## Dimensions (unit: mm)

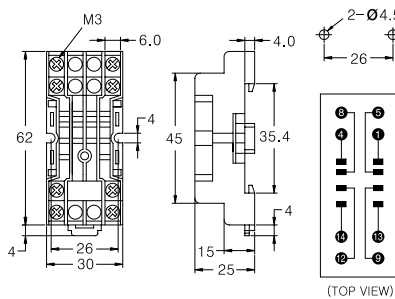
### HR705-2PL Series



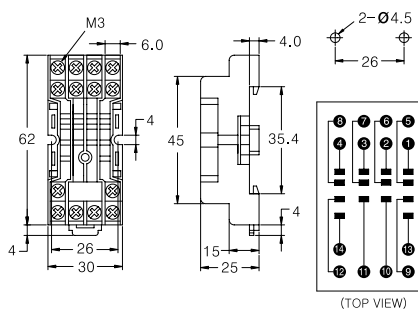
### HR705-4PL Series



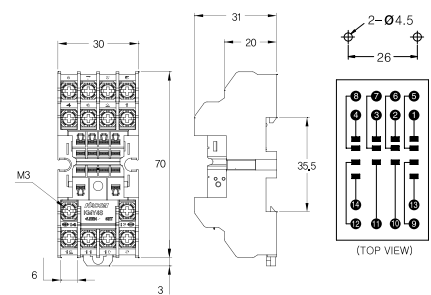
### KMY2 Socket



### KMY4 Socket



### KMY4S Socket





# HR710 Series

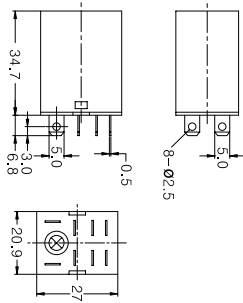
Cube Type Relays



- 710 Series are designed with compact housing & ICE cube style, silver alloy contact, LED indicator, high reliability and long life
- Available Surge protection type to protect malfunction of PLC, electronic devices from back EMF

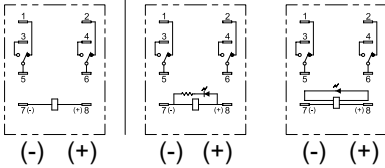
## Dimensions (unit: mm)

### HR710-2P Series

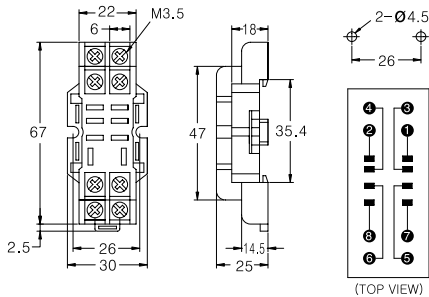


HR710-2P

HR710-2PL



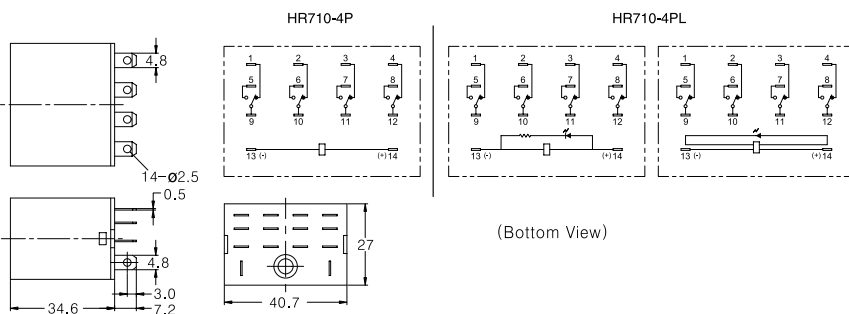
### KLY2 Socket



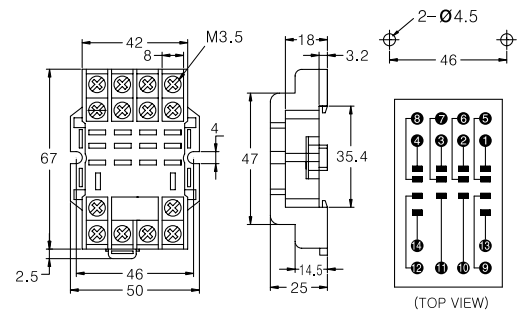
## Specifications

Part Numbers	Standard type	HR710-2PL-220VAC HR710-2PL-110VAC HR710-2PL-24VAC HR710-2PL-110VDC HR710-2PL-24VDC HR710-2PL-12VDC	HR710-4PL-220VAC HR710-4PL-110VAC HR710-4PL-24VAC HR710-4PL-110VDC HR710-4PL-24VDC HR710-4PL-12VDC
	Surge protection type	HR710-2PLD-12VDC HR710-2PLD-24VDC HR710-2PLC-110VAC HR710-2PLC-220VAC	HR710-4PLD-12VDC HR710-4PLD-24VDC HR710-4PLC-110VAC HR710-4PLC-220VAC
Contact	Configuration	DPDT (2NO + 2NC)	4PDT (4NO + 4NC)
	Material	Ag alloy (24K gold plate)	
	Max. Switching current	10A	
	Rated Max. Resistive Load	10A at 24VDC/220VAC	
	Max. Switching Voltage	125VDC/ 250VAC 50/60Hz	
Coil Spec.	Min. Switching requirement	100mA 5VDC	
	Voltage range	12VDC to 24VDC, 12VAC to 220VAC	
	Power consumption	AC: approx. 1.2VA DC: approx. 0.9W	AC: approx. 2.5VA DC: approx. 1.5W
	Minimum operating voltage	80% of the rated coil voltage	
	Max. Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
General Info.	Operating Time	25ms	
	Dropout time	25ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min. Between Contact & Coil: 1,500Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-25 ~ +55°C (-13°F ~ 131°F) at non freezing	
	Ambient Humidity	35% ~ 80% RH	
	Weight	33g(1.2oz)	65g(2.4oz)
Socket	Socket part number	KLY2(DIN Rail), KT08-0(PCB)	KLY4(Din Rail)
	Terminal Tightened Torque	0.5N · m (5.10kgf · cm)	

### HR710-4P Series



### KLY4 Socket





# K7SR Series

## Safety Relay

- Various contact configurations
- Forcibly guided contact type (IEC 61810-3)
- 6A switching capacity, Low power consumption
- Terminal layout for easy wiring of PWB patterns
- High insulation capacity (UL Insulation Class F)

### Specifications

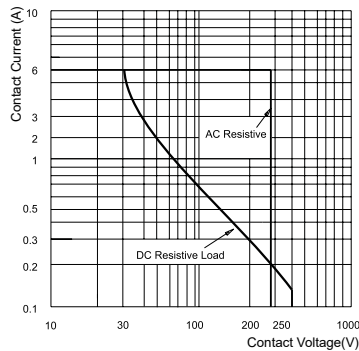
<b>Contact Ratings</b>	Contact Form	4P 2NO + 2NC, 3NO + 1NC	6P 5NO + 1NC, 4NO + 2NC, 3NO + 3NC
	Forcibly Guided Contact Type (Based on IEC 61810-3)	Type A	
	Contact resistance	100mΩ max. (at 1A 6VDC)	
	Material	AgSnO <sub>2</sub>	
	Rating	6A 250VAC / 30VDC (1circuit)	
	Max Switching voltage	400VAC / 30VDC	
	Max Switching current	6A	
	Max Switching power	1500VA / 180W	
	Mechanical Life*	10,000,000	
	Electrical Life*	100,000 (1NO : 6A 30VDC, resistance load, 1sec ON 1sec OFF) 100,000 (1NO : 6A 250VAC, resistance load, 1sec ON 1sec OFF)	
<b>Coil Ratings</b>	Coil Consumption	Approx. 360mW	Approx. 500mW
	General voltage	24VDC	
	Min Operating voltage	18.0VDC	
	Maximum Drop-out Voltage	2.4VDC	
	Minimum Pick Up Voltage**	31.2VDC	26.4VDC
	Coil resistance (Ω)	1600 x (1±10%)	1152 x (1±10%)
<b>Safety Relay General Ratings</b>	Insulation Resistance	1000MΩ at 500VDC (It was measured at the same locations as the dielectric strength was measured.)	
	Grade of insulation	Class F	
	Withstand voltage***	Between Coil & Contacts : 4000VAC 1 min	
		Between Open Contacts : 1500VAC 1 min	
		Between Contact sets : 2500VAC 1 min (34-33/44-43) 4000VAC 1 min (Other)	Between Contact sets : 2500VAC 1 min (54-53/64-63) 4000VAC 1 min (Other)
	Surge voltage	Between Coil & Contacts : 10kV (1.2 / 50μs)	
		Between Contact sets : 5kV (1.2 / 50μs)	
	Operating time (at rated voltage)	20ms max. (The ambient temperature was 23 °C. Contact bounce time is not included.)	
	Breaking time (at rated voltage)	20ms max. (The ambient temperature was 23 °C. Contact bounce time is not included.)	
	Vibration resistance	NO/NC : 10Hz to 55Hz 1.5mm DA NO : 55Hz to 200Hz, 98m/s <sup>2</sup> NC : 55Hz to 200Hz, 49m/s <sup>2</sup>	
	Shock Resistant	Malfunction : 980m/s <sup>2</sup>	Destruction : 100m/s <sup>2</sup>
	Ambient temperature****	-40° C to 85° C	
Ambient Humidity	5% to 85% RH		
Wiring	PCB board / Dedicated socket		
Weight	Approx. 20g	Approx. 23g	
<b>Socket General Ratings</b>	Rated voltage	250VAC	
	Rated Current	6A	
	Applicable relay coil voltage	6 ~ 24 VDC	
	Ambient temperature	-25° C to 55° C	
	Specification Torque	1.0N . m	
	Wire thickness	1.5mm 16AWG	
Stripping Length	7mm <sup>2</sup>		
Remarks	With LED		

### Ordering Information

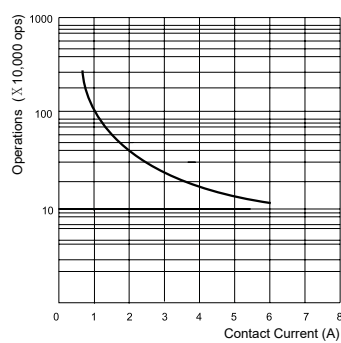
Safety Relay Part Number	Contact Form	Socket Part Number	Number of Terminals
K7SR-3A1B-24VDC	3NO + 1NC	K7SC-10FL-24VDC	10FL : 10 Terminal (4P Relay)
K7SR-2A2B-24VDC	2NO + 2NC		
K7SR-5A1B-24VDC	5NO + 1NC		
K7SR-4A2B-24VDC	4NO + 2NC	K7SC-14FL-24VDC	14FL : 14 Terminal (6P Relay)
K7SR-3A3B-24VDC	3NO + 3NC		

### Reference Data

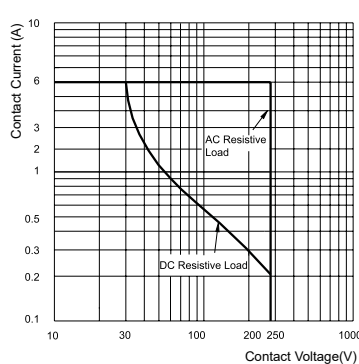
Maximum Switching Power for 4P



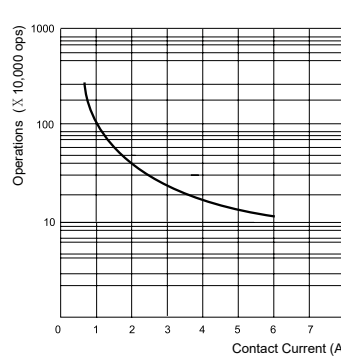
Endurance Curve for 4P



Maximum Switching Power for 6P



Endurance Curve for 6P



Caution: The above figures are the initial values.

Specifications and materials are subject to change without prior notice for quality improvement.

\*The Life is for an ambient temperature of 15 to 35°C and an ambient humidity of 25% to 75%.

\*\*This is the maximum voltage of the relay coil that can be stably operated.

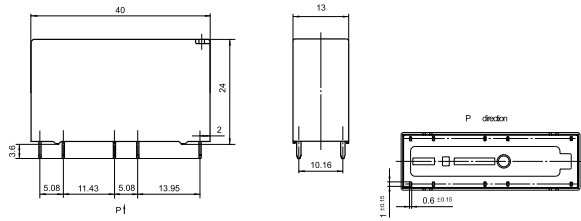
\*\*\*When using Socket, the dielectric strength between coil contacts/different poles is 2,500VAC, for 1 min.

\*\*\*\*When operating at a temperature between 50 and 70°C, reduce the rated carry current by 0.3A/°C.

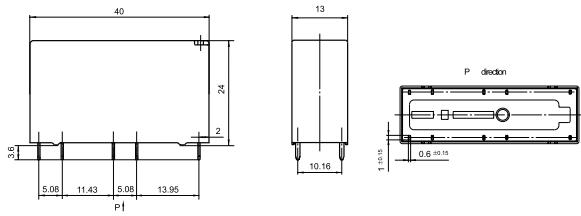


# Relay Dimensions

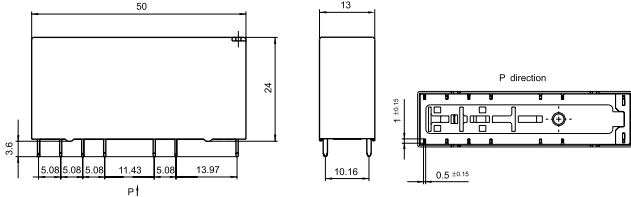
3A1B (unit: mm)



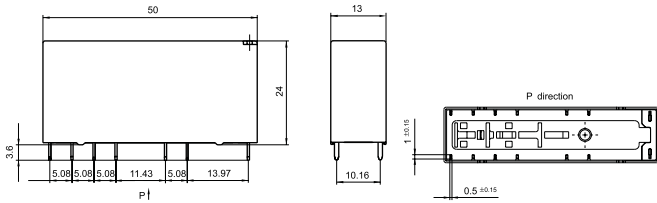
2A2B (unit: mm)



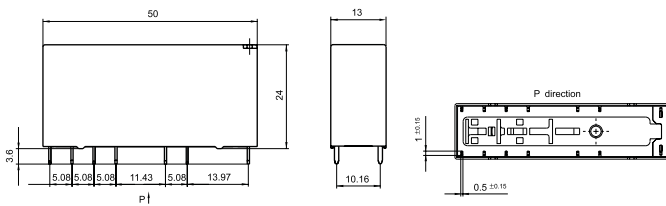
5A1B (unit: mm)



4A2B (unit: mm)

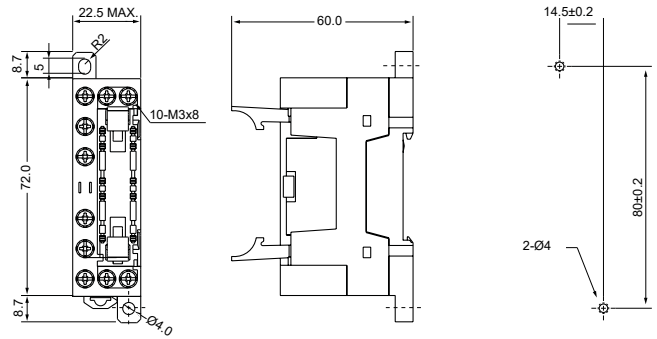


3A3B (unit: mm)

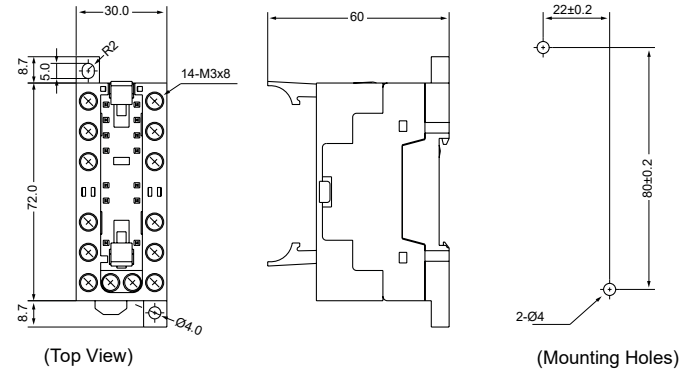


# Socket Dimensions

Socket 4P (unit: mm)

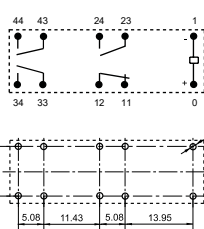


Socket 6P (unit: mm)

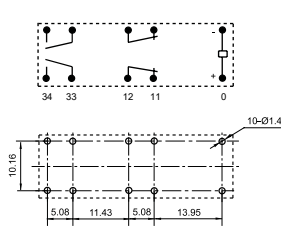


# Relay Wiring Diagram

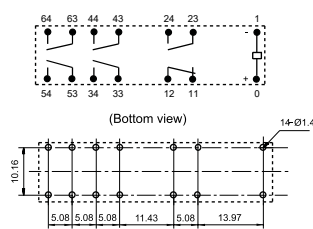
3A1B (unit: mm)



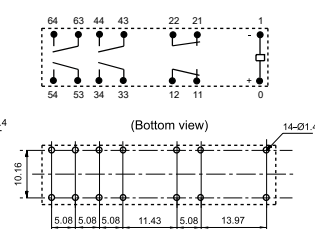
2A2B (unit: mm)



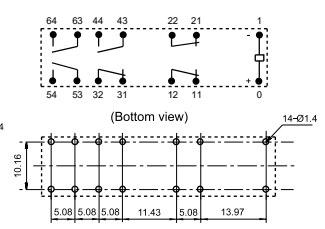
5A1B (unit: mm)



4A2B (unit: mm)

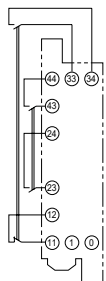


3A3B (unit: mm)

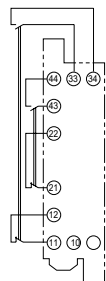


# Socket Terminal Layout & Internal Connection Diagram

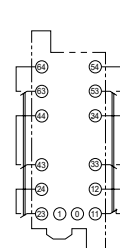
3A1B



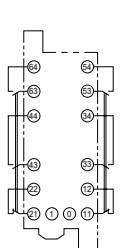
2A2B



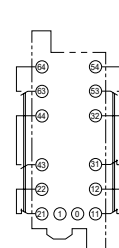
5A1B



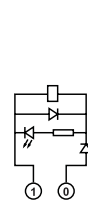
4A2B



3A3B



With LED





# K706 Series

Slim & Compact Relays

- Different colored test button for AC or DC
- Switch type On/Off structure for easy test
- LED indicator to show operation
- Socket with safety cover available



## Ordering Information

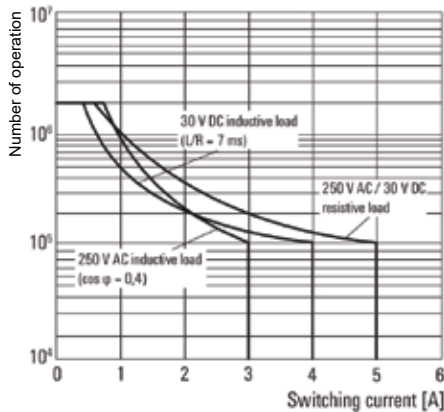
**K706 - 1PL D T 12VDC**

①      ②      ③      ④

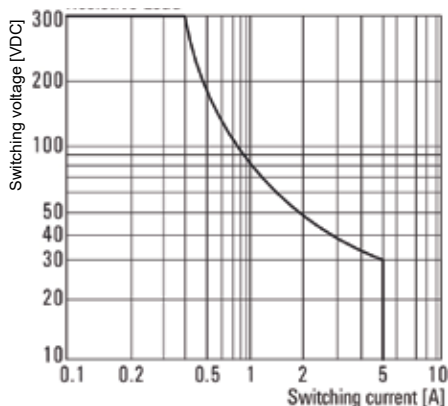
① Contact Ratings	<b>1PL</b>	1C
	<b>2PL</b>	2C
② Option	no mark	None
	<b>D</b>	Diode (Only DC)
③ Function	no mark	None
	<b>T</b>	Test Button Type (AC : Red, DC : Blue)
④ Coil Voltage	<b>12VDC</b>	12VDC
	<b>24VDC</b>	24VDC
	<b>24VAC</b>	24VAC
	<b>110VAC</b>	110VAC
	<b>230VAC</b>	230VAC

## Reference Data

Life cycle curve



DC load breaking capacity



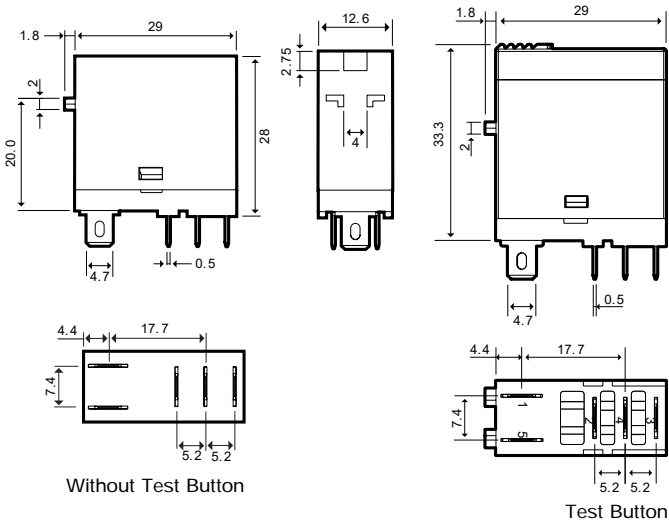
## Specifications

<b>Contact</b>	Contact Arrangement	1C	2C	
	Contact Material	Ag alloy (24K Gold Plt.)		
	Max. Rated Current (Resistance Load)	10A / 250VAC (1P 1C)	5A / 250VAC (2P 2C)	
	Max. Switching Current	10A (1P 1C)	5A (2P 2C)	
	Max. Switching Capacity	3,000VA (1P 1C)	2,000VA (2P 2C)	
	Min. Switching Current*	100mA 5VDC		
	Initial Contact Resistance	100mΩ (1A 6VDC)		
<b>Coil Spec.</b>	Coil Voltage	12VDC, 24VDC, 24VAC, 100/110VAC, 220/240VAC		
	Coil Consumption	DC(W) : 0.53 / AC(VA) : 1.0		
	Min. Pick-up Voltage	DC : 75% of Nominal Voltage		
		AC : 80% of Nominal Voltage		
	Max. Dropout Voltage	DC : 10% of Nominal Voltage DC		
AC : 30% of Nominal Voltage AC				
<b>General Info.</b>	Operating Time	20ms		
	Release Time	10ms / Standard, 20ms / Diode		
	Insulation Resistance	1,000MΩ at 500VDC		
	Dielectric Strength	Between Contact Points	1,000Vrms 1min.	
		Between poles	3,000Vrms 1min.	
		Between Contact Points and Coil	5,000Vrms 1min	
	Life Cycle	Mechanical	Min. 10,000,000	
		Electrical	Min. 100,000	
	Vibration Resistant	Malfunction	10 ~ 55Hz (Durable Amplitude 1.5mm)	
		Destruction	10 ~ 55Hz (Durable Amplitude 1.5mm)	
	Shock Resistant	Malfunction	98 m/s	
Destruction		980 m/s		
Ambient Temperature	-40 ~ +55°C (with no Condensing)			
Ambient Humidity	35% ~ 85% RH			
<b>Socket</b>	Socket part number	KPX12/ KPX12-P	KPX22/KPX22-P	
	Terminal Tightened Torque	0.5N • m (5.10kgf • cm)		

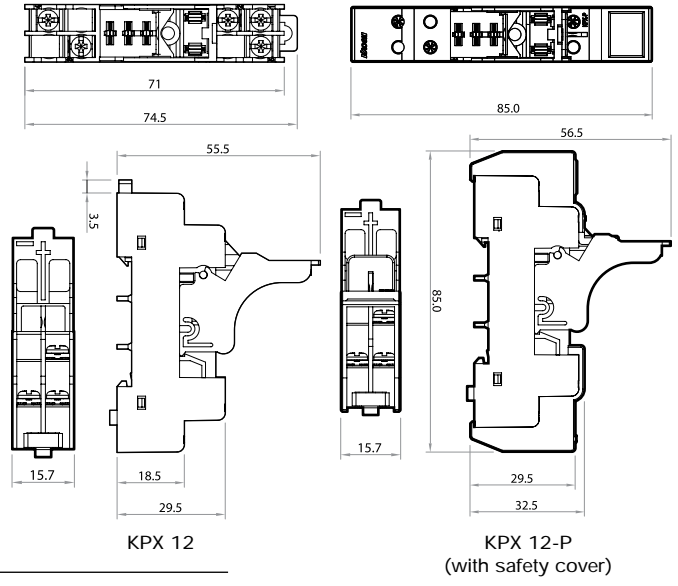
\*The minimum switching current is indicated as a standard value. The actual minimum switching rate is variable factor according to the make and break frequency, environmental condition and anticipated credibility level. Therefore, it is recommended that tests be done to test actual load value before the production process.

# K706-1PL

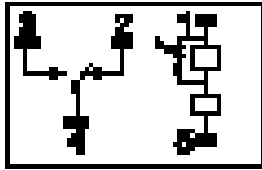
## Relays Dimensions (unit: mm)



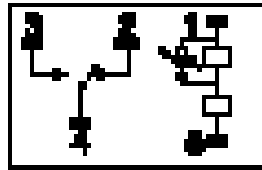
## Socket Dimensions (unit: mm)



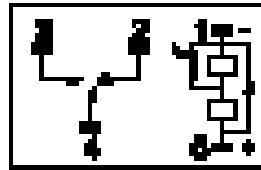
## Wiring diagram



LED (AC)



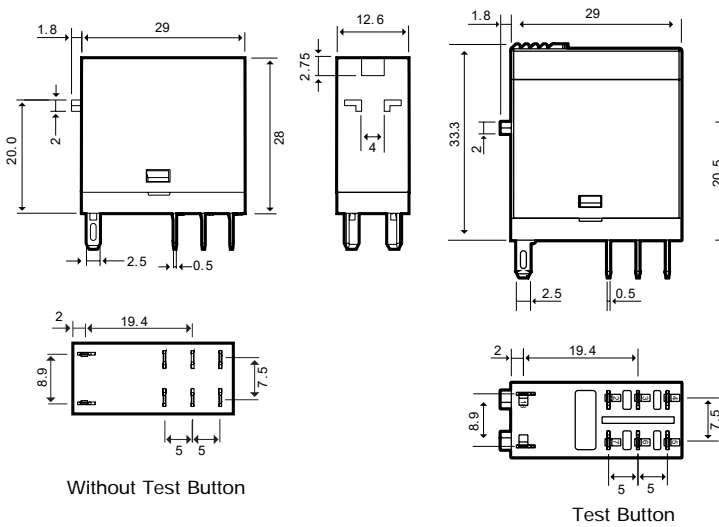
LED (DC)



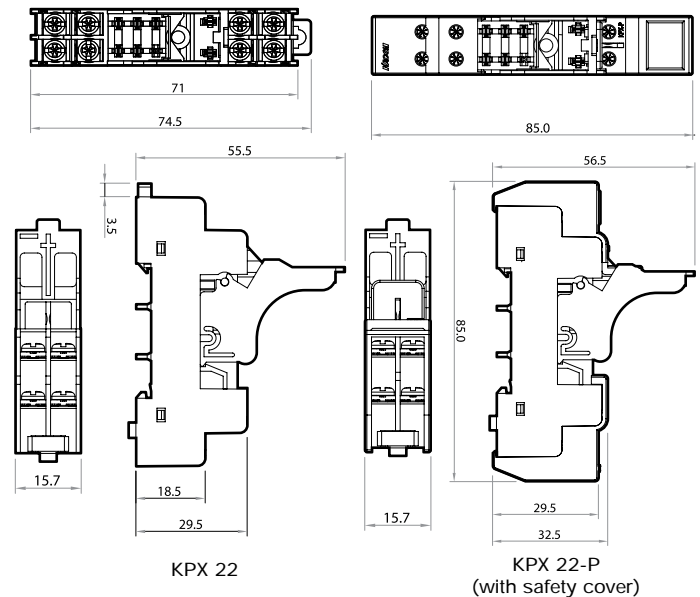
LED + Diode (DC)

# K706-2PL

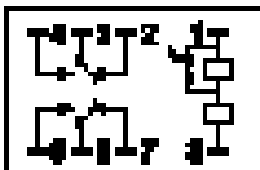
## Relays Dimensions (unit: mm)



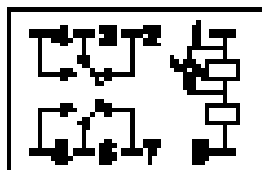
## Socket Dimensions (unit: mm)



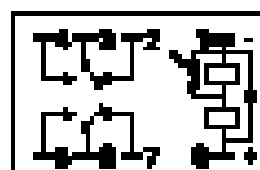
## Wiring diagram



LED (AC)



LED (DC)



LED + Diode (DC)



# HR707N Series

Octal Base Relays



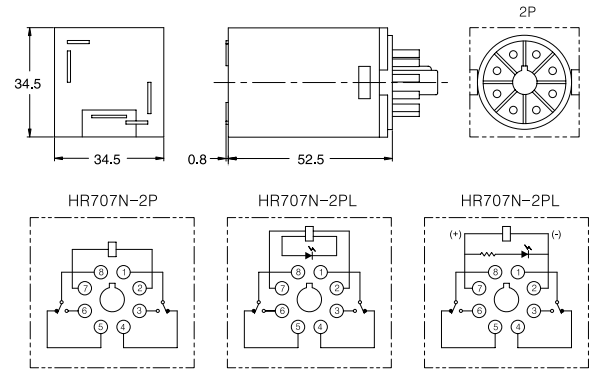
- 707 Series are designed with octal base, silver alloy contact, LED indicator, high reliability and long life
- Available Surge protection type to protect malfunction of PLC, electronic devices from back EMF

## Specifications

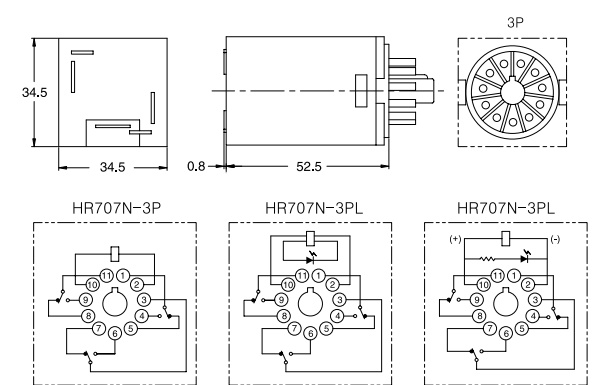
Part Numbers	Standard type	HR707-2PL-220VAC HR707-2PL-110VAC HR707-2PL-24VAC HR707-2PL-110VDC HR707-2PL-24VDC HR707-2PL-12VDC	HR707-3PL-220VAC HR707-3PL-110VAC HR707-3PL-24VAC HR707-3PL-110VDC HR707-3PL-24VDC HR707-3PL-12VDC
	Surge protection type	HR707-2PLD-12VDC HR707-2PLD-24VDC HR707-2PLC-110VAC HR707-2PLC-220VAC	HR707-3PLD-12VDC HR707-3PLD-24VDC HR707-3PLC-110VAC HR707-3PLC-220VAC
Contact	Configuration	DPDT (2NO + 2NC)	3PDT (3NO + 3NC)
	Material	Silver alloy (24K gold plate)	
	Max. Switching current	10A	
	Rated Max. Resistive Load	10A at 250VAC	
	Max. Switching Voltage	250VDC/ 250VAC	
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	Voltage range	12VDC to 110VDC, 12VAC to 240VAC	
	Power consumption	AC: Approx. 2.4VA, DC: Approx. 1.6W	
	Minimum operating voltage	80% of the rated coil voltage	
	Max. Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
General Info.	Operating Time	30ms	
	Dropout time	20ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min.	
		Between Contact & Coil: 1,500Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-10 ~ +40°C (-14°F ~ 104°F) at non freezing	
	Ambient humidity	35% ~ 80% RH	
Weight	75g (2.6oz)		
Socket	Socket part number	KF083A (DIN Rail)	KF113A (DIN Rail)
	Terminal Tightened Torque	0.5N • m (5.10kgf • cm)	

## Dimensions (unit: mm)

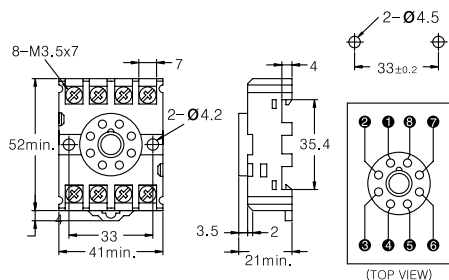
### HR707N-2P Series



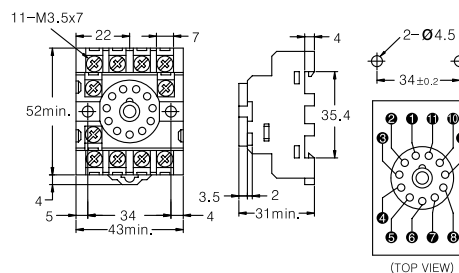
### HR707N-3P Series



### KF083A Socket



### KF113A Socket



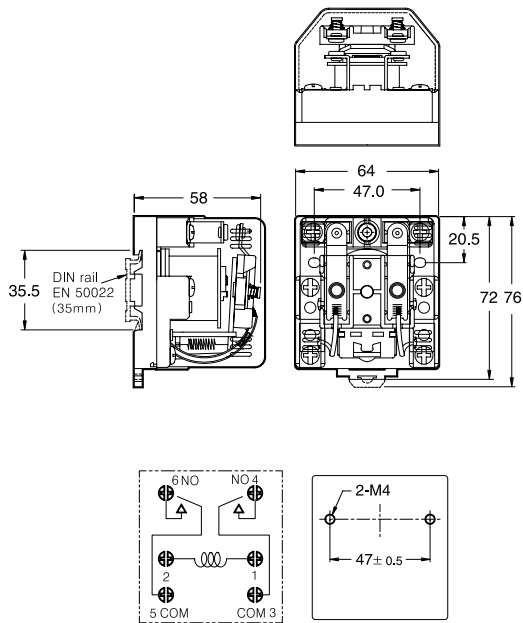


# HR723 Series

Heavy Duty Relays

## Dimensions (unit: mm)

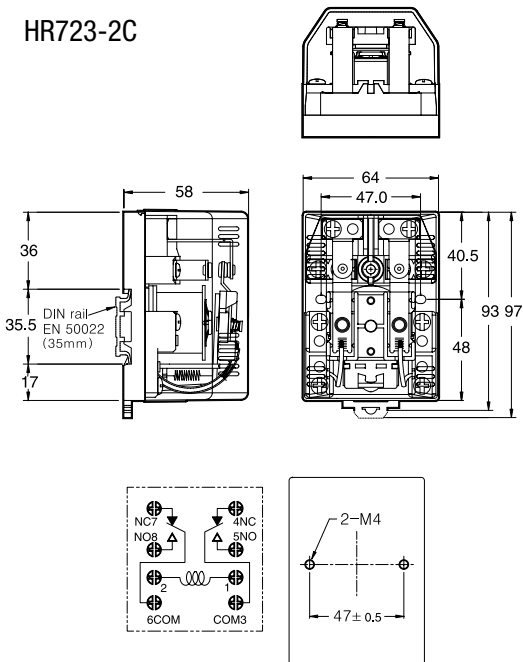
### HR723-2A



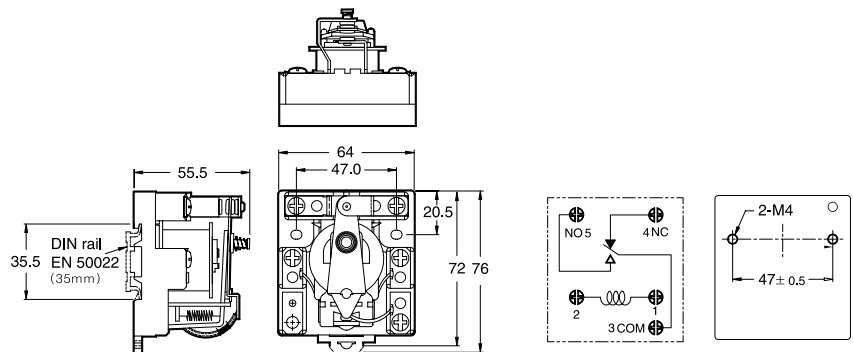
## Specifications

Part Numbers	HR723-2A-220VAC HR723-2A-110VAC HR723-2A-24VDC	HR723-1C-220VAC HR723-1C-110VAC HR723-1C-24VDC	HR723-2C-220VAC HR723-2C-110VAC HR723-2C-24VDC	
<b>Contact</b>	Configuration	DPST(2NO)	SPDT(1NO+1NC)	DPDT(2NO+2NC)
	Material	Silver alloy		
	Max. Switching current	30A		
	Rated Max. Resistive Load	30A at 24VDC/220VAC		
	Max. Switching Voltage	110VDC/250VAC		
Min. Switching requirement	100mA 5VDC			
<b>Coil Spec.</b>	Voltage range	12VDC to 24VDC, 110VAC to 220VAC		
	Power consumption	AC: approx. 9.6VA, DC: approx. 2.8W		
	Minimum operating voltage	80% of the rated coil voltage		
Max. Dropout voltage	DC Coil: 10% of rated voltage		AC Coil: 30% of rated voltage	
	Operating Time	30ms		
Dropout time	30ms			
Insulation resistance	100MΩ at 500V DC			
Dielectric Strength	Between Contact(2a): 2,000 Vrms 1Min.		Between Contact & Coil: 2,500Vrms 1Min.	
	General Info.	Mechanical life		5,000,000 operations
Electrical life	100,000 operations			
Vibration resistant	10~55Hz at double amplitude of 1.5mm			
Ambient temperature	-55 ~ +80°C (-67°F ~ 176°F) at non freezing			
Ambient humidity	5% ~ 80% RH			
Relay Weight	250g (8.8oz)	200g (7oz)	300g (10.6oz)	

### HR723-2C



### HR723-1C







# 730 Series

## Heavy Duty Relays

730 Series are designed with DIN rail mount & Panel direct mount, and Quick connector (#250) & terminal screw type, reliability and long life, and pushbutton allows manual operation of the relay

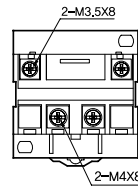


### Specifications

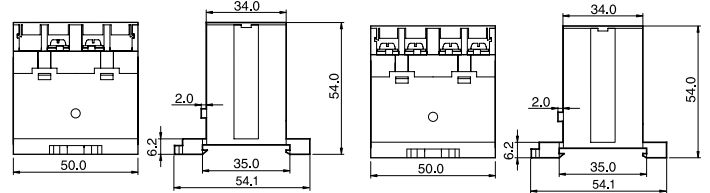
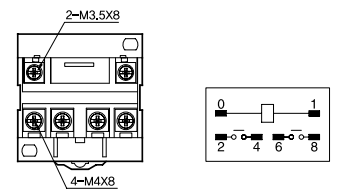
<b>Part Numbers</b>	Screw Terminal & DIN Rail Mount Type	730-1TR - 220VAC 730-1TR - 110VAC 730-1TR - 24VDC	730-2TR - 220VAC 730-2TR - 110VAC 730-2TR - 24VDC
	Quick Connector (#250) & DIN Rail Mount Type	730-1QR - 220VAC 730-1QR - 110VAC 730-1QR - 24VDC	730-2QR - 220VAC 730-2QR - 110VAC 730-2QR - 24VDC
	Screw Terminal & Panel Mount Type	730-1TB - 220VAC 730-1TB - 110VAC 730-1TB - 24VDC	730-2TB - 220VAC 730-2TB - 110VAC 730-2TB - 24VDC
	Quick Connector (#250) & Panel Mount Type	730-1QB - 220VAC 730-1QB - 110VAC 730-1QB - 24VDC	730-2QB - 220VAC 730-2QB - 110VAC 730-2QB - 24VDC
<b>Contact</b>	Configuration	SPST (1NO)	DPST (2NO)
	Material	Silver alloy	
	Max. Switching current	30A	25A
	Rated Max. Resistive Load	30A at 30VDC/277VAC	25A at 30VDC/277VAC
<b>Coil Spec.</b>	Min. Switching requirement	100mA 5VDC	
	Voltage range	6VDC to 110VDC, 6VAC to 240VAC	
	Power consumption	DC: approx. 1.9W 6-48VAC: 1.7-1.9VA 100/120VAC: 1.9-2.7VA 200/240VAC: 1.8-2.6VA	
	Minimum operating voltage	80% of the rated coil voltage	
	Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
	Operating Time	30ms	
	Dropout time	30ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact(2a): 2,000 Vrms 1Min. Between Contact & Coil: 4,000Vrms 1Min.	
	Mechanical life	1,000,000 operations	
<b>General Info.</b>	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-10 ~ +60°C (-14°F ~ 140°F) at non freezing	
	Ambient humidity	35% ~ 80% RH	
	Weight	TB Type: 90g (3.2oz), QB Type: 120g (4.2oz)	

### Dimensions (unit: mm)

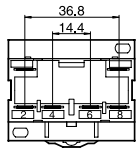
730-1TR



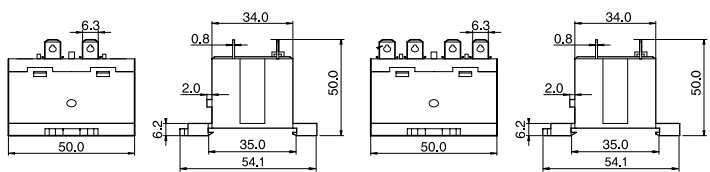
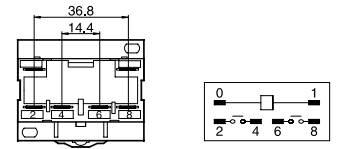
730-2TR



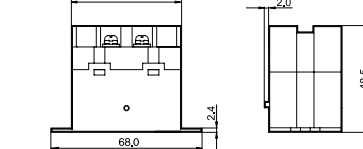
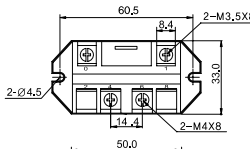
730-1QR



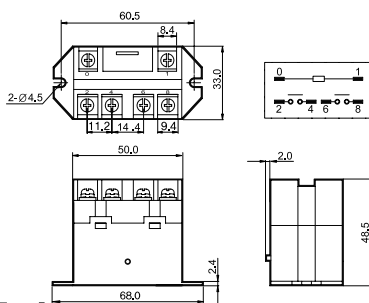
730-2QR



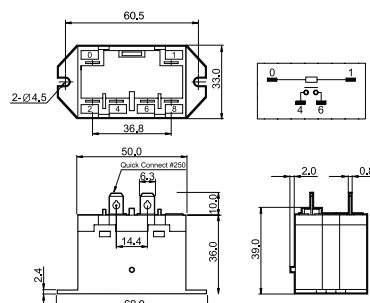
730-1TB



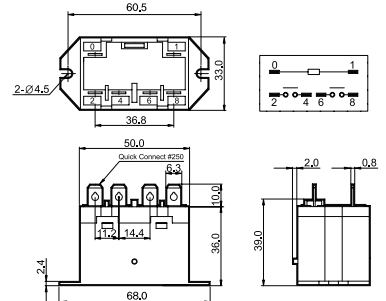
730-2TB



730-1QB



730-2QB



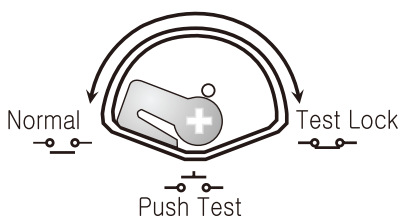
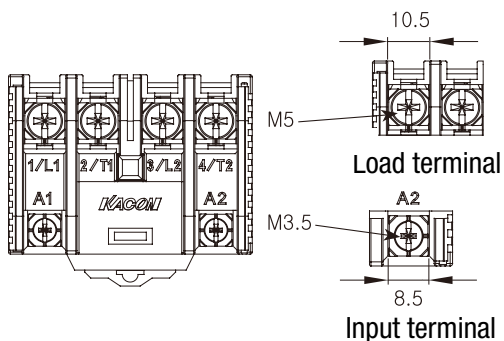
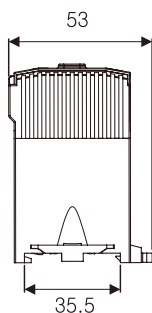
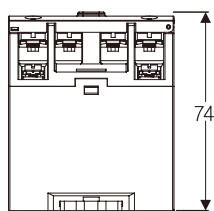
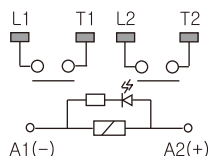
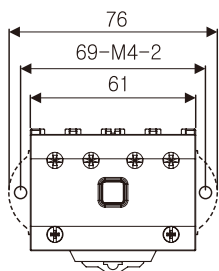
\* Min. Switching requirement: If load require low current, you may consider a troubleshooting for operation. For a proper operation, a dummy resistance should be added in parallel on the load to provide current more than min. Switching requirement (100mA 5VDC)



# K750 Series

Heavy Duty Relays

## Dimensions (unit: mm)



## Specifications

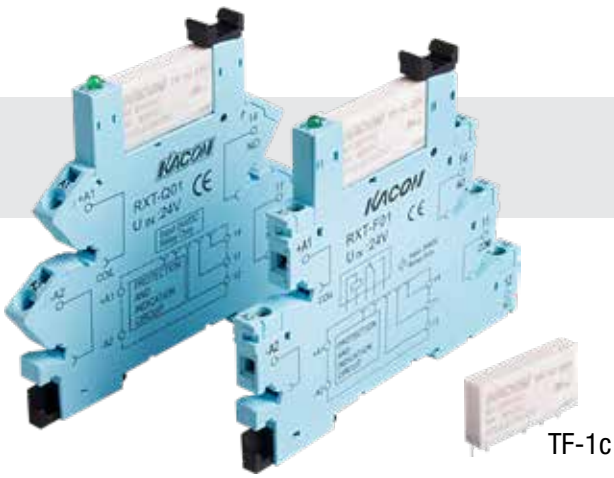
Part Numbers	DC	K750-2A-12VDC	K750-2A-24VDC
	AC	K750-2A-110VAC	K750-2A-220VAC
<b>Contact</b>	Configuration	2N/C or 2N/O	
	Material	Tri-Composite Silver Alloy	
	Maximum Contact	100mΩ	
	Rated Current	30A at 30VDC	40A at 250VAC
	Max. Switching Current	40A	
<b>Coil Spec.</b>	Min. Switching requirement	100mA 5VDC	
	Coil Voltage	12VDC, 24VDC 100/110VAC 50/60Hz, 220/240VAC 50/60Hz	
	Coil consumption	DC: approx. 1.9W AC: 1.8-27VA	
	Minimum Pick-up voltage	80% of nominal voltage	
	Maximum Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
<b>General Info.</b>	Operating Time	30ms	
	Dropout time	30ms	
	Insulation resistance	100MΩ	
	Dielectric Strength	Between Contact(2a): 2,000 Vrms 1Min.	
		Between Contact & Coil: 4,000Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	Malfunction 10-55Hz dual amp:1.0mm Destruction 10-55Hz dual amp:1.5mm	
	Ambient temperature	-40 ~ 60°C at non freezing	
Ambient humidity	10% ~ 80% RH		

## Terminal Specifications

	LOAD 2a	INPUT
Terminal	8.0 - 5.0	2.0 - 3.5
Screw	M5.0	M3.5
Torque (MAX/N.m)	2.00	0.8

## Test Button

Push test	Momentary
Test lock	Contact ON
Normal	Contact OFF



# RXT Series

Relay Terminal Blocks



## Ordering Information

RXT - ①	①	F01
	Description	Q01

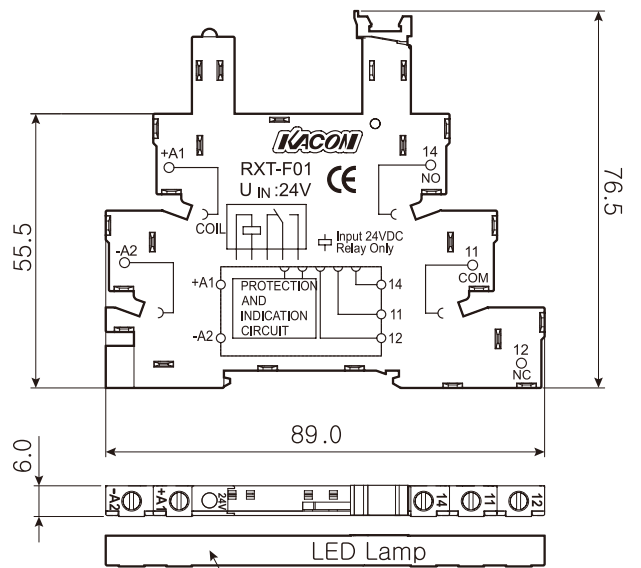
## Relay Specifications (TF-1c)

Contact Ratings	Contact Form		1N/O + 1N/C
	Contact Material		Silver Alloy
	Maximum Contact Resistance		30mΩ
	Rated Current ( Resistance Load )		6A 250VAC , 6A 30VDC
	Maximum Contact Capacity	DC	180W
		AC	1500VA
	Maximum Rated Voltage		6A 250VAC
	Minimum Switching Current		1mA 5VDC
Coil Ratings	Coil Voltage		5V 12V 24V
	Coil Consumption		170mW 24VDC
	Minimum Pick Up Voltage		70% of Nominal Voltage
	Maximum Drop-Out Voltage		5% of Nominal Voltage
General Ratings	Operating Time	Pick-up	8ms
		Drop-out	4ms
	Insulation Resistance		100MΩ
	Dielectric Strength	Btwn Contacts and Coil	4000VAC 1 minute
		Btwn Contacts	1000VAC 1 minute
	Life Cycles	Mechanical	Min. 10,000,000
		Electrical	Min. 100,000
	Vibration Resistance		10Hz to 55HZ 1mm DA
	Ambient Temperature		-40°C to 85°C
	Ambient Humidity		5% to 85% RH
	Weight		Approx. 3g
	Approval		CE , VDE , UL

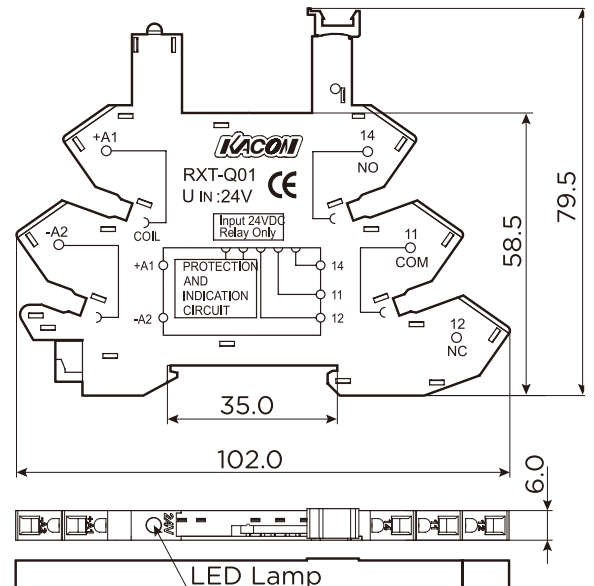
## Dimensions

unit: mm

RXT - F01 screw type



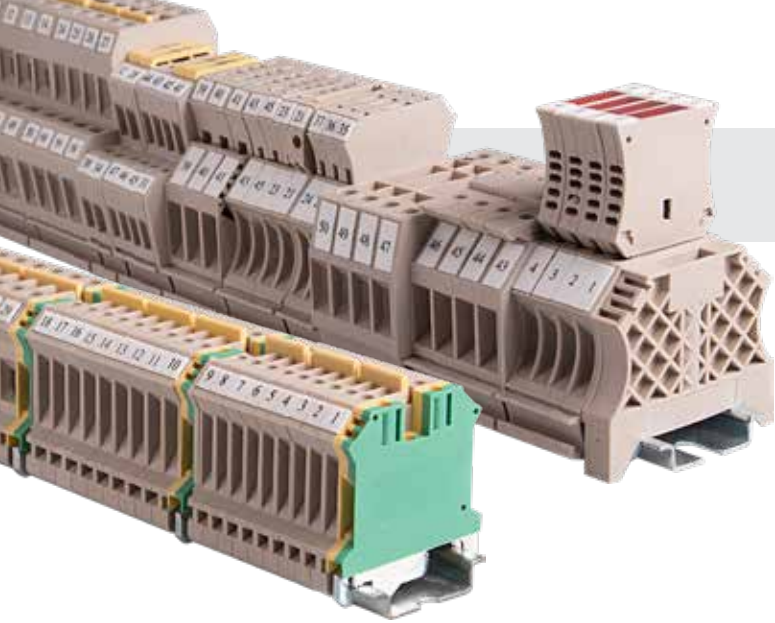
RXT - Q01 pin type



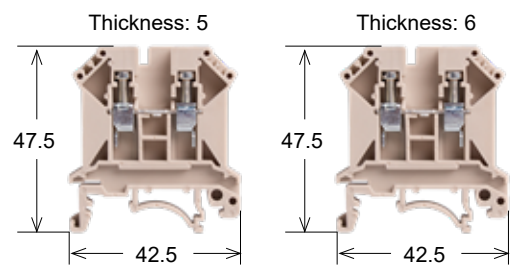
RXT-QS (Jumper)

# Note

A series of horizontal dotted lines for writing notes.



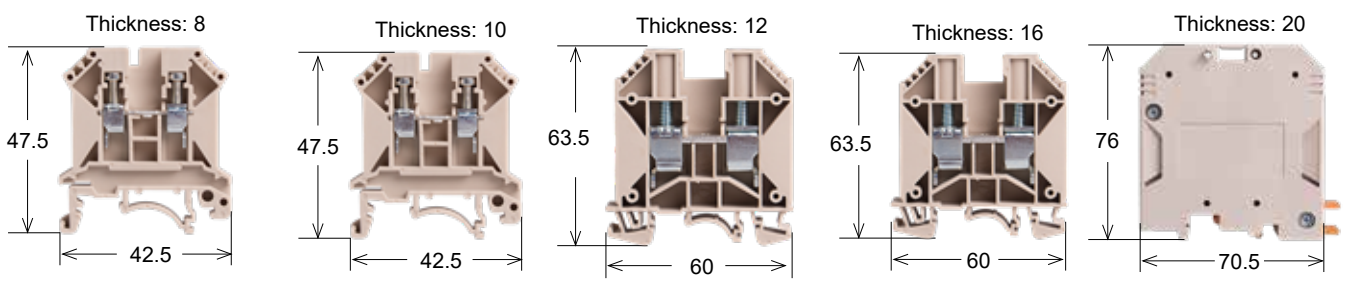
# Screw Clamp Terminal Blocks



## Key Features

- Housing made of high quality Polyamide 6.6
- Molded from UL94-V0 material with flame and shock resistance
- Mount on any standard 35mm DIN Rails
- Vibration proof to avoid loosening
- Strong contact force, low voltage drop and excellent connection.
- Low contact resistance
- Suitable for a broad range of cross-section and types of wires
- Easy handling and wiring
- Green-yellow color coded ground terminal blocks.
- Corrosion proof contact points.

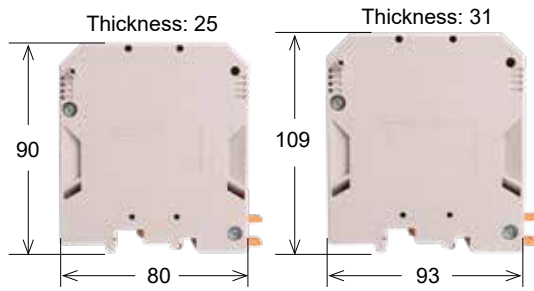
Model	CDU 2.5N			CDU 4N		
	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
Technical Data	600V	20A	AWG12-28	600V	30A	AWG10-22
	800V	24A	0.5-2.5mm <sup>2</sup>	800V	32A	0.5-4mm <sup>2</sup>
Torque (lb-in)	7			7.7		
Clamping Screw	M2.6			M3		
Stripping length	8-10mm			8-10mm		
Available colors	Beige, Grey, Blue			Beige, Grey, Blue		
Accessories						
End Bracket	SEW35			SEW35		
	CEW35/2			CEW35/2		
End Cover	CEP6			CEP6		
Cross Jumper	CQV 2.5/2		CQV 2.5/3	CQV 4/2		CQV 4/3
	CQV 2.5/4		CQV 2.5/10	CQV 4/4		CQV 4/10
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10			CQB 4/2, CQB 4/3, CQB 4/10		
Warning Cover	WSS 2.5			WSS4		
Marking Tags	W5 W5Z W5K			W6 W6Z W6K		



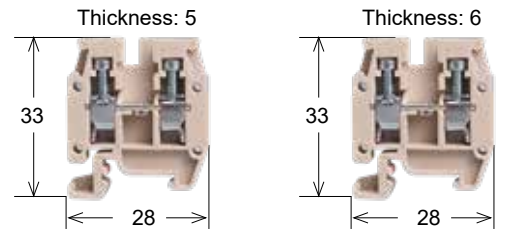
Model	CDU 6N			CDU 10N			CDU 16			CDU 35			CDU 50		
	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
Technical Data	600V	50A	AWG8-26	600V	65A	AWG6-24	600V	78A	AWG4-14	1000V	114A	AWG2-10	1000V	150A	AWG1/0-6
	800V	57A	0.5-6mm <sup>2</sup>	800V	76A	0.5-10mm <sup>2</sup>	1000V	76A	2.5-16mm <sup>2</sup>	1000V	125A	4-35mm <sup>2</sup>	1000V	150A	16-50mm <sup>2</sup>
Torque (lb-in)	14			19			31			51			53		
Clamping Screw	M4			M4			M5			M6			M6		
Stripping length	10-12mm			10-12mm			15-17mm			16-18mm			25-30mm		
Available colors	Beige, Grey, Blue			Beige, Grey, Blue			Beige			Beige			Beige		
Accessories															
End Bracket	SEW35			SEW35			SEW35			SEW35			SEW35		
	CEW35/2			CEW35/2			CEW35/1			CEW35/1			CEW35/1		
End Cover	CEP6			CEP6			CEP2			CEP2			CEP2		
Cross Jumper	CQV 6/2		CQV 6/3	CQV 10/2		CQV 10/3	CQV 16/2		CQV 16/3	CQV 35/2		CQV 35/3	CQV 50/2		
	CQV 6/4		CQV 6/10	CQV 10/4		CQV 10/10	CQV 16/4			CQV 35/4			CQV 50/3		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10			CQB 10/2, CQB 10/3, CQB 10/10			CQB 16/2, CQB 16/3, CQB 6/10			CQB 35/2, QB 35/3, CQB 35/10			CQB 50/2, CQB 50/3		
Warning Cover	WSS6			WSS10			WS-16			WS-35					
Marking Tags	W6 W6Z W6K			W6 W6Z W6K			W6 W6Z W6K			W6 W6Z W6K			W6 W6Z W6K		
							W8 W8Z W8K			W8 W8Z W8K			W8 W8Z W8K		



# Screw Clamp Miniature Terminal Blocks

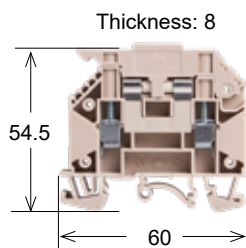


Model	CDU 95			CDU 150		
Technical Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	1000V	230A	AWG4/0-2	600V	275A	AWG2-300
IEC	1000V	232A	35-95mm <sup>2</sup>	1000V	309A	35-150mm <sup>2</sup>
Torque (lb-in)	150			165		
Clamping Screw	M8			M10		
Stripping length	30-35mm			30-40mm		
Available colors	Beige			Beige		
Accessories						
End Bracket	SEW35			CEW35/1		
	CEW35/1					
Comb Link	CQB 95/2, CQB 95/3			CQB 105/2		
Marking Tags	W6 W6Z W6K			W6 W6Z W6K		
	W8 W8Z W8K			W8 W8Z W8K		



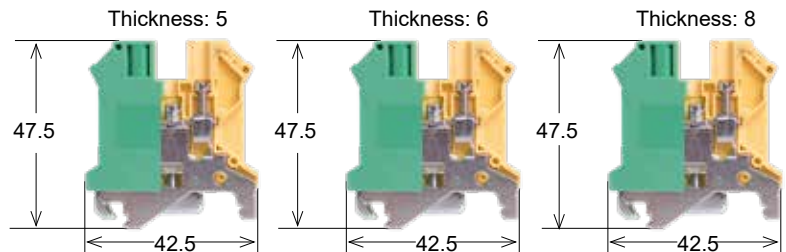
Model	CDU 2.5M			CDU 4M		
Technical Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	300V	20A	AWG12-22	300V	30A	AWG10-22
IEC	400V	24A	0.2-2.5mm <sup>2</sup>	500V	30A	0.5-4mm <sup>2</sup>
Torque (lb-in)	7			7.7		
Clamping Screw	M2.6			M3		
Stripping length	6mm			6mm		
Available colors	Beige			Beige		
Accessories						
End Bracket	CEW15			CEW15		
End Cover	CEP7			CEP7		
Cross Jumper	CQVM 2.5/2			CQVM 4/2		
	CQVM 2.5/3			CQVM 4/3		
	CQVM 2.5/10			CQVM 4/10		
Comb Link	CQB 2.5/2, CQB 2.5/3			CQB 4/2, CQB 4/3		
Marking Tags	W5 W5Z W5K			W6 W6Z W6K		

## Fuse Holder

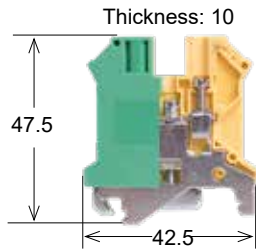


Model	CTR4SI-EN		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	7.5A	AWG10-22
IEC	800V	10A	0.5-4mm <sup>2</sup>
Torque (lb-in)	7.7		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2		
	SEW35		
End Cover	CEP5		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	-		
Marking Tags	W6 W6Z W6K		
	W8 W8Z W8K		

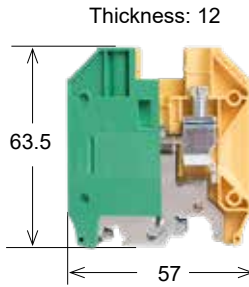
## Screw Clamp Ground Terminal Blocks



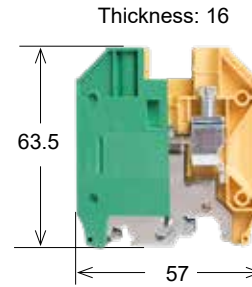
Model	CPE 2.5N	CPE 4N	CPE 6N
UL/CSA	AWG 12-26	AWG 10-26	AWG 8-26
IEC	0.2-2.5mm <sup>2</sup>	0.2-4mm <sup>2</sup>	0.2-6mm <sup>2</sup>
Torque (lb-in)	7	8.5	16
Clamping Screw	M3	M3	M4
Stripping length	10-14mm	10-14mm	12-16mm
Available colors	Green+Yellow	Green+Yellow	Green+Yellow
Accessories			
End Bracket	SEW35	SEW35	SEW35
	CEW35/2	CEW35/2	CEW35/2
Protection Cover	DP1	DP1	DP1
Retaining Plate	AD1	AD1	AD1
Comb Link	CQB 2.5/2, QB 2.5/3, CQB 2.5/10	CQB 4/2, CQB 4/3, CQB 4/10	CQB 6/2, CQB 6/3, CQB 6/10
Marking Tags	W5 W5Z W5K	W6 W6Z W6K	W6 W6Z W6K
	W7 W7Z W7K	W8 W8Z W8K	W8 W8Z W8K



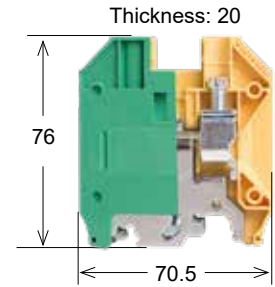
Model	CPE 10N
UL/CSA Wire Size	AWG 6-16
IEC Wire Size	0.5-10mm <sup>2</sup>
Torque (lb-in)	18
Clamping Screw	M4
Stripping length	12-16mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/2
Protection Cover	DP1
Retaining Plate	AD1
Comb Link	CQB 10/2, CQB 10/3, CQB 10/4
Marking Tags	W6 W6Z W6K W8 W8Z W8K



Model	CPE 16
UL/CSA Wire Size	AWG 6-14
IEC Wire Size	2.5-16mm <sup>2</sup>
Torque (lb-in)	35
Clamping Screw	M5
Stripping length	14-18mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/1
Protection Cover	DP1
Retaining Plate	AD2
Comb Link	-
Marking Tags	W6 W6Z W6K W8 W8Z W8K

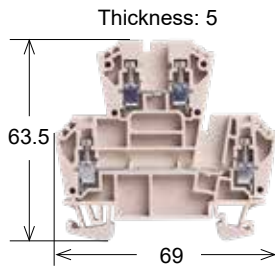


Model	CPE 35
UL/CSA Wire Size	AWG 2-10
IEC Wire Size	4-35mm <sup>2</sup>
Torque (lb-in)	51
Clamping Screw	M6
Stripping length	14-18mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/1
Protection Cover	DP1
Retaining Plate	AD2
Comb Link	-
Marking Tags	W6 W6Z W6K W8 W8Z W8K

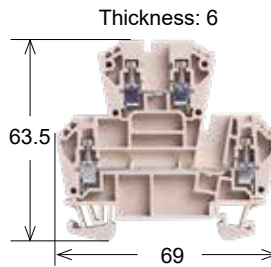


Model	CPE 50
UL/CSA Wire Size	AWG 1/0-6
IEC Wire Size	16-50mm <sup>2</sup>
Torque (lb-in)	70
Clamping Screw	M6
Stripping length	20-25mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/1
Protection Cover	-
Retaining Plate	-
Comb Link	-
Marking Tags	W6 W6Z W6K W8 W8Z W8K

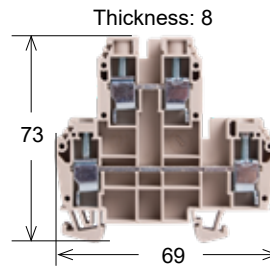
## Screw Clamp Double Level Terminal Blocks



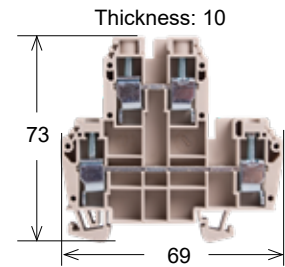
Model	CDK 2.5
Technical Data	Rated Voltage Rated Current Wire Size
UL/CSA	600V 20A AWG12-22
IEC	800V 24A 0.5-2.5mm <sup>2</sup>
Torque (lb-in)	5
Clamping Screw	M2.6
Stripping length	6mm
Available colors	Beige
Accessories	
End Bracket	CEW35/2 SEW35
End Cover	CEP3
Cross Jumper	CQV 2.5/2 CQV 2.5/3 CQV 2.5/4 CQV 2.5/10
Comb Link	CQB2.5/2, CQB2.5/3, CQB2.5/10
Warning Cover	WSS-2.5
Marking Tags	W5Z W5K



Model	CDK 4
Technical Data	Rated Voltage Rated Current Wire Size
UL/CSA	600V 30A AWG10-22
IEC	500V 32A 0.5-4mm <sup>2</sup>
Torque (lb-in)	8
Clamping Screw	M3
Stripping length	6mm
Available colors	Beige
Accessories	
End Bracket	CEW35/2 SEW35
End Cover	CEP3
Cross Jumper	CQV 4/2 CQV 4/3 CQV 4/4 CQV 4/10
Comb Link	CQB4/2, CQB4/3, CQB4/10
Warning Cover	WSS-4
Marking Tags	W6Z W6K



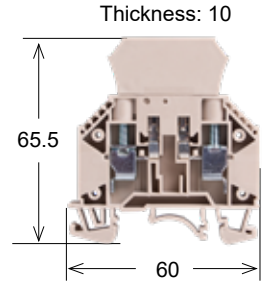
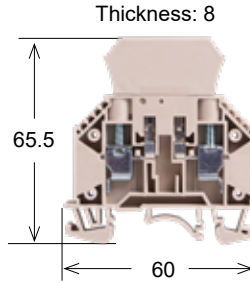
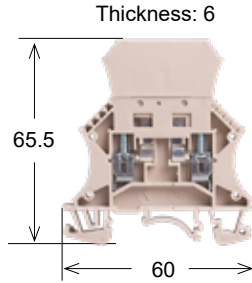
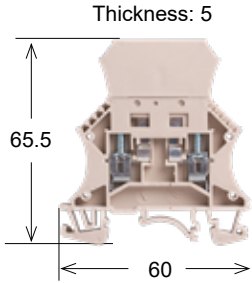
Model	CDK 6
Technical Data	Rated Voltage Rated Current Wire Size
UL/CSA	600V 41A AWG 8-20
IEC	500V 50A 0.5-6mm <sup>2</sup>
Torque (lb-in)	14
Clamping Screw	M4
Stripping length	10-12mm
Available colors	Beige
Accessories	
End Bracket	CEW35/2 SEW35
End Cover	CEP4
Cross Jumper	CQV 6/2 CQV 6/3 CQV 6/4 CQV 6/10
Comb Link	CQB6/2, CQB6/3, CQB6/10
Warning Cover	WSS-6
Marking Tags	W6Z W6K



Model	CDK 10
Technical Data	Rated Voltage Rated Current Wire Size
UL/CSA	600V 65A AWG 6-16
IEC	500V 76A 1.5-10mm <sup>2</sup>
Torque (lb-in)	19
Clamping Screw	M4
Stripping length	10-12mm
Available colors	Beige
Accessories	
End Bracket	CEW35/2 SEW35
End Cover	CEP4
Cross Jumper	CQV 10/2 CQV 10/3 CQV 10/4 CQV 10/10
Comb Link	CQB10/2, CQB10/3, CQB10/10
Warning Cover	WSS-10
Marking Tags	W6Z W6K



# Diode Terminal Blocks



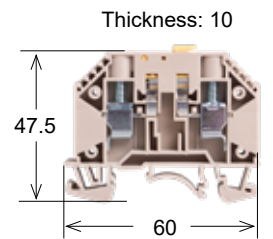
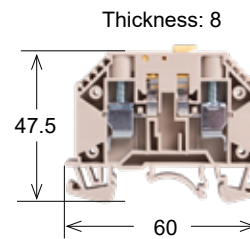
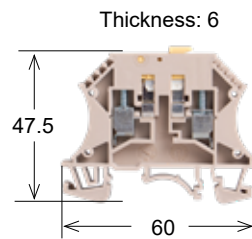
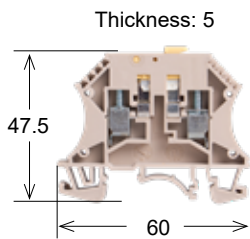
Model	CTR 2.5D		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	2A	AWG12-22
IEC	400V	2A	0.5-2.5mm <sup>2</sup>
Torque (lb-in)	4.5		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Partition	CEP2		
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		
Diode Plug	CSD2.5		
Marking Tags	W5 W5Z W5K W7 W7Z W7K		

Model	CTR 4D		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	2A	AWG10-22
	800V	2A	0.5-4mm <sup>2</sup>
Torque (lb-in)	6		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Partition	CEP2		
Comb Link	CQB 4/2, CQB 4/3, CQB 4/10		
Diode Plug	CSD4		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CTR 6D		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	3A	AWG12-22
	500V	3A	0.5-6mm <sup>2</sup>
Torque (lb-in)	14		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Partition	CEP2		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	CSD6		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CTR 10D		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	3A	AWG12-22
	500V	3A	1.5-10mm <sup>2</sup>
Torque (lb-in)	19		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Partition	CEP2		
Comb Link	CQB 10/2, CQB 10/3, CQB 10/10		
Diode Plug	CSD10		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

# Screw Clamp Disconnect Terminal Blocks



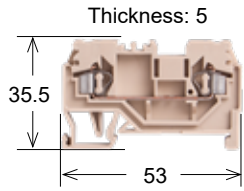
Model	CTR 2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	12A	AWG12-22
IEC	500V	15A	0.5-2.5mm <sup>2</sup>
Torque (lb-in)	4.5		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		
Diode Plug	CSD2.5		
Marking Tags	W5 W5Z W5K W7 W7Z W7K		

Model	CTR 4		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	22A	AWG10-22
	800V	22A	0.5-4mm <sup>2</sup>
Torque (lb-in)	6		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Comb Link	CQB 4/2, CQB 4/3, CQB 4/10		
Diode Plug	CSD4		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

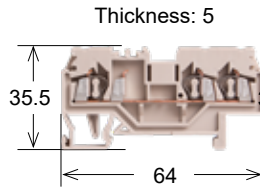
Model	CTR 6		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	24A	AWG8-22
	630V	24A	0.5-6mm <sup>2</sup>
Torque (lb-in)	14		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	CSD6		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CTR 10		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	40A	AWG6-22
	630V	40A	1.5-10mm <sup>2</sup>
Torque (lb-in)	19		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Comb Link	CQB 10/2, CQB 10/3, CQB 10/10		
Diode Plug	CSD10		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

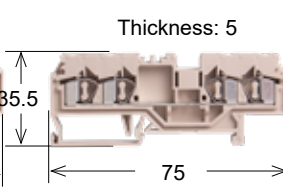
# Spring Clamp Terminal Blocks



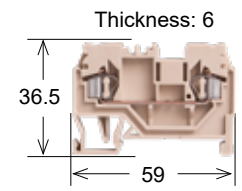
Model	SDU2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP1		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



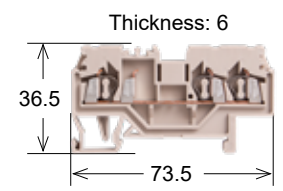
Model	SDU2.5/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP2		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



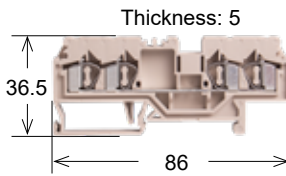
Model	SDU2.5/4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP3		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



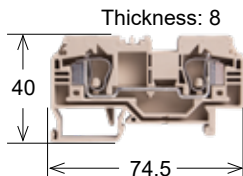
Model	SDU4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm <sup>2</sup>
Stripping length	9-10mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP4		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



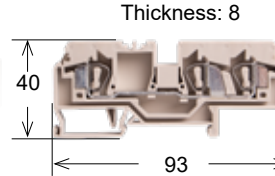
Model	SDU4/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP5		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



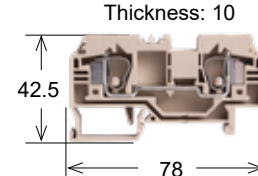
Model	SDU4/4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm <sup>2</sup>
Stripping length	9-10mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP6		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



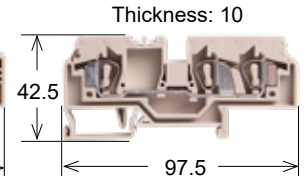
Model	SDU6		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG10-24
IEC	800V	41A	0.2-6mm <sup>2</sup>
Stripping length	12-13mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP7		
Comb Link	SQV6/2, SQV6/3		
Marking Tags	W6 W6Z W6K		



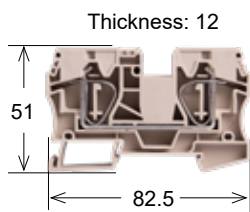
Model	SDU6/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG 10-24
IEC	800V	41A	0.2-6mm <sup>2</sup>
Stripping length	12-13mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP8		
Comb Link	SQV6/2, SQV6/3		
Marking Tags	W6 W6Z W6K		



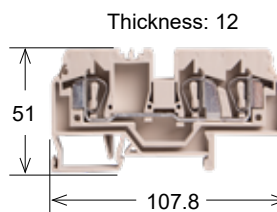
Model	SDU10		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	38A	AWG 8-24
IEC	800V	57A	0.2-10mm <sup>2</sup>
Stripping length	15-16mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP9		
Comb Link	SQV10/2, SQV10/3		
Marking Tags	W6 W6Z W6K		



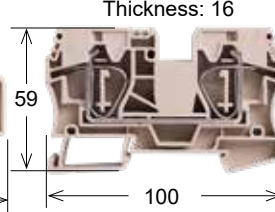
Model	SDU10/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	38A	AWG 8-24
IEC	800V	57A	0.2-10mm <sup>2</sup>
Stripping length	15-16mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP10		
Comb Link	SQV10/2, SQV10/3		
Marking Tags	W6 W6Z W6K		



Model	SDU16		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG4-16
IEC	1000V	85A	1.5-16mm <sup>2</sup>
Stripping length	16-17mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP12		
Comb Link	SQV16/2		
Marking Tags	W6 W6Z W6K		

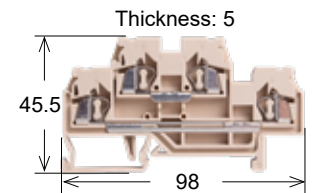


Model	SDU16/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG4-16
IEC	1000V	76A	1.5-16mm <sup>2</sup>
Stripping length	16-17mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP13		
Comb Link	SQV16/2		
Marking Tags	W6 W6Z W6K		



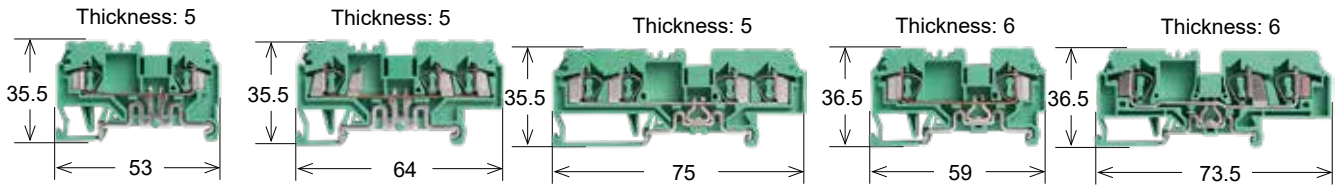
Model	SDU35		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	120A	AWG 2-12
IEC	800V	125A	2.5-35mm <sup>2</sup>
Stripping length	25mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP14		
Comb Link	SQV35/2		
Marking Tags	W6 W6Z W6K		

## Spring Clamp Double Level Terminal Blocks

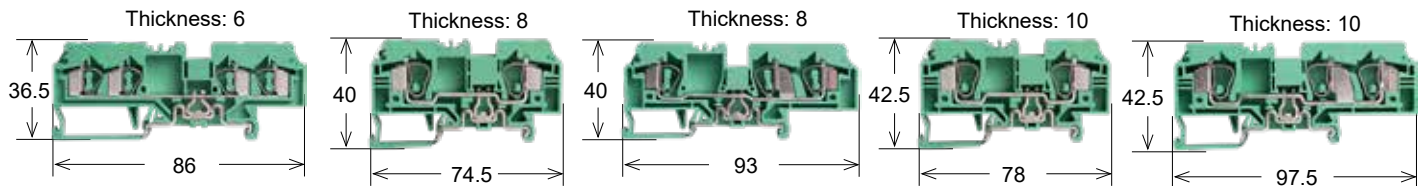


Model	SDK2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG 12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP11		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		

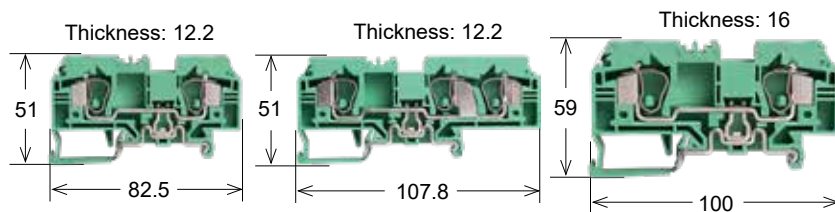
# Spring Clamp Ground Terminal Blocks



Model	SPE2.5	SPE2.5/3	SPE2.5/4	SPE4	SPE4/3
UL/CSA Wire Size	AWG 12-28	AWG 12-28	AWG 12-28	AWG 12-28	AWG 12-28
IEC Wire Size	0.2-2.5mm <sup>2</sup>	0.2-2.5mm <sup>2</sup>	0.2-2.5mm <sup>2</sup>	0.2-4mm <sup>2</sup>	0.2-4mm <sup>2</sup>
Stripping length	8-9mm	8-9mm	8-9mm	9-10mm	8-9mm
Available colors	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow
Accessories					
End Bracket	SEW35	SEW35	SEW35	SEW35	SEW35
End Cover	SEP1	SEP2	SEP3	SEP4	SEP5
Comb Link	SQV2.5/2, SQV2.5/3	SQV2.5/2, SQV2.5/3	SQV2.5/2, SQV2.5/3	SQV4/2, SQV4/3	SQV4/2, SQV4/3
Marking Tags	W5 W5Z W5K	W5 W5Z W5K	W5 W5Z W5K	W6 W6Z W6K	W6 W6Z W6K



Model	SPE4/4	SPE6	SPE6/3	SPE10	SPE10/3
UL/CSA Wire Size	AWG 12-28	AWG 10-24	AWG 10-24	AWG 8-24	AWG 8-24
IEC Wire Size	0.2-4mm <sup>2</sup>	0.2-6mm <sup>2</sup>	0.2-6mm <sup>2</sup>	0.2-10mm <sup>2</sup>	0.2-10mm <sup>2</sup>
Stripping length	9-10mm	12-13mm	12-13mm	15-16mm	15-16mm
Available colors	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow
Accessories					
End Bracket	SEW35	SEW35	SEW35	SEW35	SEW35
End Cover	SEP6	SEP7	SEP8	SEP9	SEP10
Comb Link	SQV4/2, SQV4/3	SQV6/2, SQV6/3	SQV6/2, SQV6/3	SQV10/2, SQV10/3	SQV10/2, SQV10/3
Marking Tags	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K



Model	SPE16	SPE16/3	SPE35
UL/CSA Wire Size	AWG 4-16	AWG 4-16	AWG 2-12
IEC Wire Size	1.5-16mm <sup>2</sup>	1.5-16mm <sup>2</sup>	2.5-35mm <sup>2</sup>
Stripping length	16-17mm	16-17mm	25mm
Available colors	Green	Green	Green
Accessories			
End Bracket	SEW35	SEW35	SEW35
End Cover	SEP12	SEP12	SEP14
Comb Link	SQV16/2	SQV16/2	SQV35/2
Marking Tags	W6	W6	W6



# Accessories

## Terminal Rails



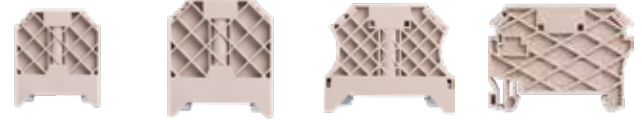
TS-37	TS-31	KTB2-CHB	TS-15
35 x 7.5mm	35 x 15mm	35 x 7.5mm	15 x 5.5 mm
Steel	Steel	Aluminum	Steel

## Protection Cover



DP1
CDU2.5 CDU4 CDU6 CDU10 CDU16 CDU35
CDK2.5 CDK4
CDE2.5 CDE4 CDE6 CDE10 CDE16 CDE35
CTR2.5 CTR2.5D CTR4 CTR4D CTR6 CTR6D CTR10 CTR10D

## End Brackets (D X W X H)



CEW15	CEW35/1	CEW35/2	SEW35
8 X 28 X 30.7	12 X 56 X 63	8 X 56 X 47	6 X 56 X 42
CDU2.5M CDU4M	CDU16 CDU35 CDU50 CDU95	CDU2.5N CDU4N CDU6N CDU10N	CDK2.5 CDK4 CDK6 CDK10
	CPE16 CPE35 CPE50	CDK2.5 CDK4 CDK6 CDK10	CTR2.5 CTR2.5D CTR4 CTR4D CTR6 CTR6D CTR10 CTR10D CTR4SI/EN
		CTR2.5 CTR2.5D CTR4 CTR4D CTR6 CTR6D CTR10 CTR10D CTR4SI/EN	SPE2.5 SPE2.5/3 SPE2.5/4 SPE4 SPE4/3 SPE4/4 SPE6 SPE6/3 SPE10 SPE10/3
			SDU2.5 SDU2.5/3 SDU2.5/4 SDU4 SDU4/3 SDU4/4 SDU6 SDU6/3 SDU10 SDU10/3

## End Covers/Partitions (W X H)



CEP1	CEP2	CEP3	CEP4	CEP5	CEP6	CEP7
55.5 X 35.5	55.5 X 51	69 X 51.5	78 X 61	56.5 X 35.5	40 X 36	27.5 X 26
CTR2.5 CTR2.5D CTR4 CTR4D	CDU16 CDU35 CTR2.5 CTR2.5D CTR4 CTR4D	CDK2.5 CDK4	CDK6 CDK10	CTR2.5 CTR4 CTR6 CTR6D CTR10 CTR10D	CDU2.5N CDU4N CDU6N CDU10N	CDU2.5M CDU4M

## End Plates



SEP1	SEP2	SEP3	SEP4	SEP5	SEP6	SEP7	SEP8	SEP9	SEP10	SEP11	SEP12
SDU2.5 SPE2.5	SDU2.5/3 SPE2.5/3	SDU2.5/4 SPE2.5/4	SDU4 SPE4	SDU4/3 SPE4/3	SDU4/4 SPE4/4	SDU6 SPE6	SDU6/3 SPE6/3	SDU10 SPE10	SDU10/3 SPE10/3	SDK2.5	SDU16

## Warning Covers



WS-16	WS-35	WSS-2.5
CDU16	CDU35	CDK2.5
WSS-4	WSS-6	WSS-10
CDK4	CDK6	CDK10



## Diode Plugs

Type	CSD2.5	CSD4	CSD6	CSD10
Electric Rating	2A600V	2A600V	3A600V	3A600V
Terminal Type	CTR2.5 CTR2.5D	CTR4 CTR4D	CTR6 CTR6D	CTR10 CTR10D

## Retaining Plate



AD 1	AD 2
3 X 56.5 X 58	3.5 X 56.5 X 74
CDU2.5 CDU4 CDU6 CDU10	CDU16 CDU35
CPE16 CPE35	CPE16 CPE35
CPE2.5 CPE4 CPE6 CPE10	CTR2.5D CTR4D CTR6D STR10D
CTR2.5 CTR4 CTR6 CTR10	CTK2.5 CTK4

## Cross Jumpers



Type	CQV-2.5	CQV-4	CQV-6	CQV-10	CQV-16	CQV-35	CQV-50	CQV-95
Pole	2, 3, 10	2, 3, 4, 10	2, 3, 10	2, 3, 10	2, 3, 4	2, 3, 4	2, 3	-
Terminal Type	CDU 2.5 CDK 2.5	CDU 4 CDK 4	CDU 6 CDK 6	CDU 10 CDK 10	CDU16	CDU35	CDU50	CDU95

## Comb Links



Type	CQB-2.5	CQB-4	CQB-6	CQB-10	CQB-16	CQB-35	CQB-50	CQB-95	
Poles	2, 3, 10	2, 3, 4, 10	2, 3, 10	2, 3, 10	2, 3, 10	2, 3, 10	2, 3	2, 3	
Terminal Type	CDU 2.5 CPE 2.5 CDK 2.5 CTR 2.5	CDU 4 CPE 4 CDK 4 CTR 4 CTR 4D	CDU 6 CPE 6 CDK 6 CTR 6 CTR 6D	CDU 10 CPE 10 CDK 10 CTR 10 CTR 10D		CDU16 CPE16	CDU35 CPE35	CDU50 CPE50	CDU95 CPE95



Type	SQV-2.5	SQV-4	SQV-6	SQV-10
Poles	2, 3	2, 3	2, 3	2, 3
Terminal Type	SDU2.5 SDU2.5/3 SDU2.5/4 SDK2.5	SPE2.5 SPE2.5/3 SPE2.5/4	SDU4 SDU4/3 SDU4/4	SPE4 SPE4/3 SPE4/4
			SDU6/6 SEU6/3	SPE6/3 SPE6/3
			SDU10 SDU10/3	SPE10 SPE6/3



W-6

## Blank Marking Tags

Model	Size (mm)	PCS/Sheet	Number of sheets/pkg	Compatible Blocks
W-4	4.5 X 10	40p/s	10	SDU/SPE 2.5 ~ 10
W-5	5 X 6	50p/s	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR/CSD 2.5
W-6	6 X 6	50p/s	10	CDU/CDK/CPE/CTR/CSD 4 ~ 10
W-7	5 X 12	40p/s	10	CDU/CPE/CTR 2.5
W-8	6 X 12	40p/s	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5



W5K-1/50

## Legend Marking Tags

Model	Size (mm)	Legend	Number of sheets/pkg	Compatible Blocks
W4K-1/40	4.5 X 10	1 to 40	10	SDU/SPE 2.5 ~ 10
W4K-41/80	4.5 X 10	41 to 80	10	SDU/SPE 2.5 ~ 10
W4K-A/Z	4.5 X 10	A to Z	10	SDU/SPE 2.5 ~ 10
W5K-1/50	5 X 6	1 to 50	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR 2.5
W5K-51/100	5 X 6	51 to 100	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR 2.5
W5K-A/Z	5 X 6	A to Z	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR 2.5
W6K-1/50	6 X 6	1 to 50	10	CDU/CDK/CPE/CTR 4 ~ 10
W6K-51/100	6 X 6	51 to 100	10	CDU/CDK/CPE/CTR 4 ~ 10
W6K-A/Z	6 X 6	A to Z	10	CDU/CDK/CPE/CTR 4 ~ 10
W7K-1/40	5 X 12	1 to 40	10	CDU/CPE/CTR 2.5
W7K-41/80	5 X 12	41 to 80	10	CDU/CPE/CTR 2.5
W7K-A/Z	5 X 12	A to Z	10	CDU/CPE/CTR 2.5
W8K-1/40	6 X 12	1 to 40	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5
W8K-41/80	6 X 12	41 to 80	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5
W8K-A/Z	6 X 12	A to Z	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5



W7K-A/Z



# KTB1 Series

Barrier Terminal Blocks



## Ordering Information KTB1 - ① ②

### 10 & 30A

① Rated Current	<b>010</b>	10A	<b>030</b>	30A
② Number of Poles	<b>03</b>	3 poles	<b>04</b>	4 poles
	<b>06</b>	6 poles	<b>10</b>	10 poles

### 20A

① Rated Current	<b>020</b>		20A	
② Number of Poles	<b>03</b>	3 poles	<b>04</b>	4 poles
	<b>06</b>	6 poles	<b>10</b>	10 poles
	<b>12</b>	12 poles	<b>15</b>	15 poles
	<b>20</b>	20 poles		

### 60 - 600A

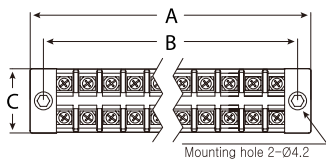
① Rated Current	<b>060</b>	60A	<b>100</b>	100A
	<b>150</b>	150A	<b>200</b>	200A
	<b>300</b>	300A	<b>400</b>	400A
	<b>500</b>	500A	<b>600</b>	600A
② Number of Poles	<b>03</b>	3 poles	<b>04</b>	4 poles

## General Specification

Rated Voltage		Max. 600VAC
Insulation Resistance		Min. 100MΩ
Dielectric Strength		2,500VAC/Min.
Material	Body	Flame retardant PC
	Cover	PC (clear)
	Terminal	1st grade brass
	Name Plate	PVC (Pearl white)

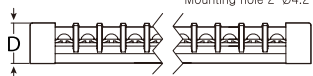
## Dimensions

unit:mm

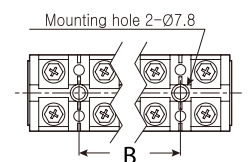


KTB1-010 ~ KTB1-030

Model	A				B				C				D			
	03	04	06	10	03	04	06	10	03	04	06	10	03	04	06	10
KTB1-010	48	57.5	76.5	115	37	46.5	65.5	104	24	24	24	24	17	17	17	17
KTB1-030	67.5	81	108	162	52.5	66	93	147	35	35	35	35	26	26	26	26



Model	A				B				C				D			
	03	04	06	10	03	04	06	10	03	04	06	10	03	04	06	10
KTB1-020	56	68	91	139	44.5	56	79	125	30	30	30	30	19.5	19.5	19.5	19.5
	<b>12</b>	<b>15</b>	<b>20</b>	-	<b>12</b>	<b>15</b>	<b>20</b>	-	<b>12</b>	<b>15</b>	<b>20</b>	-	<b>12</b>	<b>15</b>	<b>20</b>	-
	163	198	254.5	-	147	185.5	242	-	30	30	30	-	19.5	19.5	19.5	-

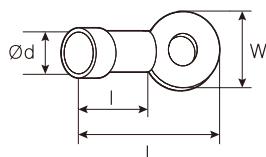


KTB1-060 ~ KTB1-600

Model	A		B		C		D	
	03	04	03	04	03	04	03	04
KTB1-060	85.8	114.5	28.5	57	43	43	31.5	31.5
KTB1-100	102.5	136	34	68	54.5	54.5	36	36
KTB1-150	115	153.5	38	76	66	66	39	39
KTB1-200	132.5	176	43.5	87	72	72	44	44
KTB1-300	165	220	55	110	90	90	51.5	51.5
KTB1-400	165	220	55	110	90	90	51.5	51.5
KTB1-500	206	275	68.5	137	100	100	70	70
KTB1-600	206	275	68.5	137	100	100	70	70

## Connection Terminal Specification

unit:mm



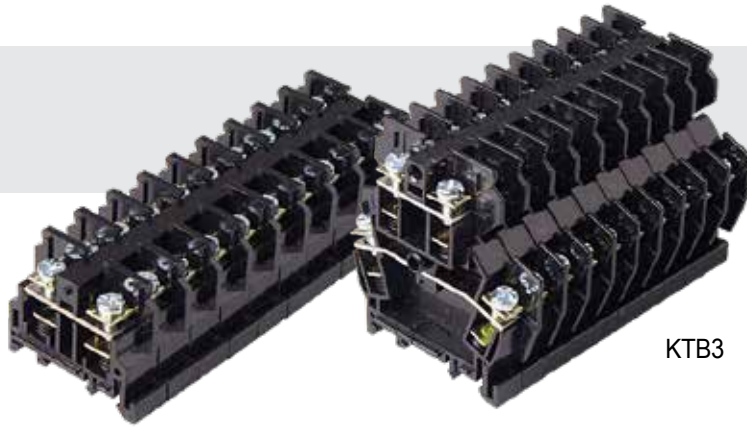
Model	KTB1-010	KTB1-020	KTB1-030	KTB1-060	KTB1-100	KTB1-150	KTB1-200	KTB1-300	KTB1-400	KTB1-500	KTB1-600
Terminal Bolt	M3.0	M4.0		M6.0	M7.0	M8.0		M10.0		M12.0	
W	6.5	8.0	10.2	14.5	19.5	21.5	24.5	35		44.5	
L	20.6	21.5	26.5	35.5	45.6	50.5		55		65.5	
l	10.0		14.5		20.0		26		65.5		
d	Ø3.1	Ø4.1		Ø6.1	Ø8.1	Ø10.1					

# KTB2/3 Series

Modular Barrier Terminal Blocks



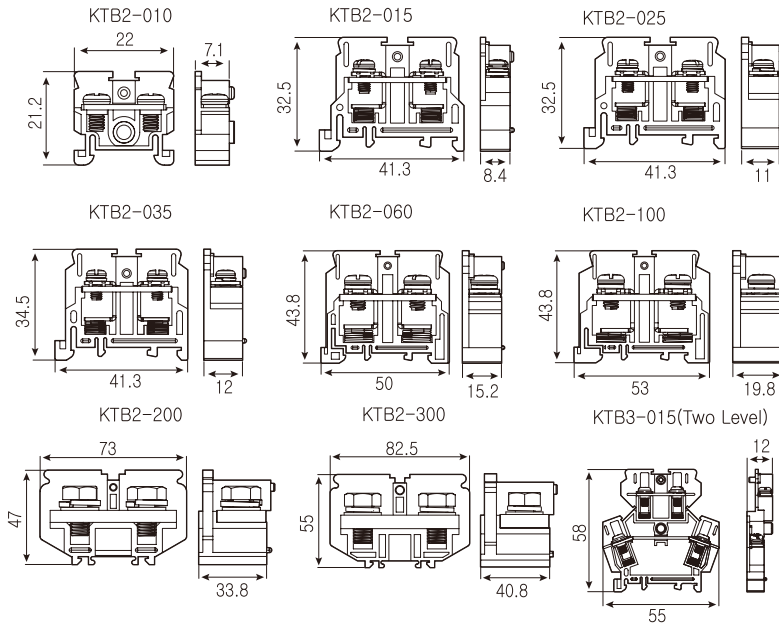
KTB2



KTB3

## Dimensions

unit:mm



## Ordering Information

KTB ① - ②

① Description	2	Single level		
	3*	Double level		
② Rated Current	<b>010</b>	10A	<b>015*</b>	15A
	<b>025</b>	25A	<b>035</b>	35A
	<b>060</b>	60A	<b>100</b>	100A
	<b>200</b>	200A	<b>300</b>	300A

\* KTB3 double level terminal block has only 15A model.

## General Specification

Rated Voltage	Max. 600VAC
Insulation Resistance	Min. 100MΩ
Dielectric Strength	2,500VAC/Min.

## Accessories

### Jumper



KTB2-S2506

<b>KTB2-015</b>	KTB2-S1512K
<b>KTB2-025</b>	KTB2-S2506K
<b>KTB2-035</b>	KTB2-S3508K

### Stoppers



KTB2-StA

<b>15mm</b>	STA
<b>35mm</b>	STB
<b>35mm (plastic)</b>	STC



KTB2-StB



KTB2-StC

### Separators

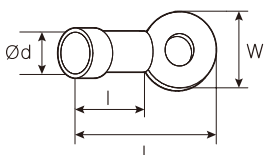


KTB2-A10      KTB2-A35      KTB3-A15

<b>KTB2-010</b>	KTB2-A10	<b>KTB2-015</b>	KTB2-A15
<b>KTB2-025</b>	KTB2-A25	<b>KTB2-035</b>	KTB2-A35
<b>KTB2-060</b>	KTB2-A60	<b>KTB2-100</b>	KTB2-A100
<b>KTB2-200</b>	KTB2-A200	<b>KTB2-300</b>	KTB2-A300
<b>KTB3-015</b>	KTB3-A15		

## Connection Terminal Specification

unit:mm



Model	KTB2-010	KTB2-015	KTB2-025	KTB2-035	KTB2-060	KTB2-100	KTB2-200	KTB2-300	KTB3-015
Terminal Bolt	M3.0	M3.5	M4.0		M6.0		M10.0	M12.0	M3.5
W	6.6	6.8	8.7	9.6	12.4	16.5	24.5	29	6.8
L	20.0		27.0		30.0	45.5		55.5	20.0
l	8.0		14.0		14.5	20.5		25.5	8.0
d	Ø3.1	Ø3.6	Ø4.1		Ø6.1		Ø10.1	Ø12.1	Ø3.6



# KF Series

Fuse Holders



## Ordering Information

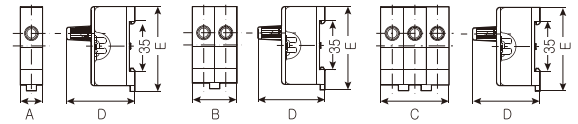
KF ① - ②

① Description	15A	15A	30A	30A
	10D	10A	20D	20A
② Number of Poles	1	1 Pole		
	2	2 Poles		
	3	3 Poles		

## General Specification

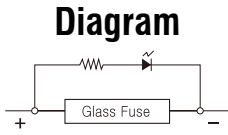
Model	Fuse	Material	Tightening Torque
KF-15A	Ø6X30mm	Cover: PC Body: PBT	0.8N·m (8.16kgf·cm)
KF-30A	Ø10X38mm		
KF-10D	Ø6X30mm		
KF-20D	Ø10X38mm		

## Dimensions (unit:mm)



	1 Pole	2 Poles	3 Poles
	15A AC 30A AC 10A DC 20A DC	15A AC 10A DC	15A AC 10A DC

Current	10/15A	20/30A
A	16	21
B	32	
C	48	
D	48	60
E	60	75

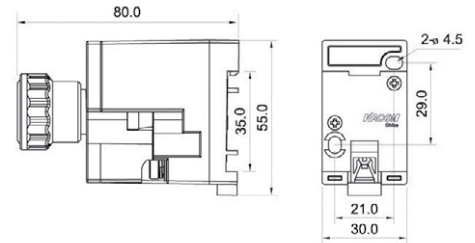


## KF-30L

### General Specification

Fuse Size	Ø12.5 x 50mm
Rated Voltage	600V
Rated Current	30A
Rated short-circuit strength	50KA
Material	Nylon
Illuminated	LED Lamp
Ambient Temperature	-25°C + 60°C (with no icing)
Ambient Humidity	35% ~ 85% RH (non - condensing)

## Dimensions (unit:mm)



## KF-32K, KF-63K

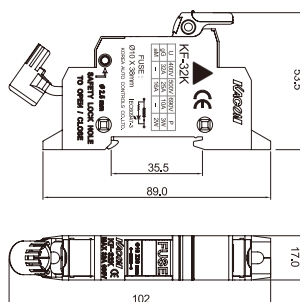
### General Specification

Model	KF-32K	KF-63K
Fuse Size	Ø10 x 38mm	Ø14 x 51mm
Rated Voltage	690V	690V
Rated Current	32A	63A
Rated short-circuit strength	50KA	
Material	Nylon	
Illuminated	LED Lamp	
Ambient Temperature	-25°C + 60°C (with no icing)	
Ambient Humidity	35% ~ 85% RH (non - condensing)	

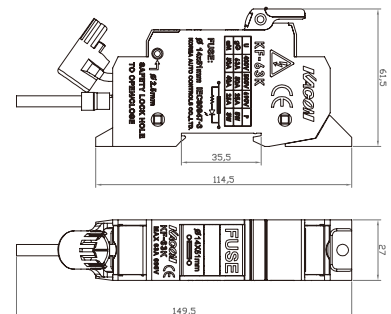
## Dimensions

(unit:mm)

KF-32K



KF-63K





# Ceramic Fuse




## Ordering Information **KFS** - ① ②

① Size	A		Ø12.5×50mm				B		Ø10×38mm			
	C		Ø14×51mm									
② Rated Current	<b>01</b>	1A	<b>02</b>	2A	<b>03</b>	3A*	<b>04</b>	4A	<b>05</b>	5A*	<b>06</b>	6A
	<b>07</b>	7A*	<b>08</b>	8A	<b>10</b>	10A	<b>12</b>	12A	<b>15</b>	15A*	<b>16</b>	16A
	<b>25</b>	25A	<b>30</b>	30A*	<b>32</b>	32A	<b>40</b>	40A	<b>45</b>	45A	<b>50</b>	50A
	<b>63</b>	63A	*Japanese standard									

## General Specification

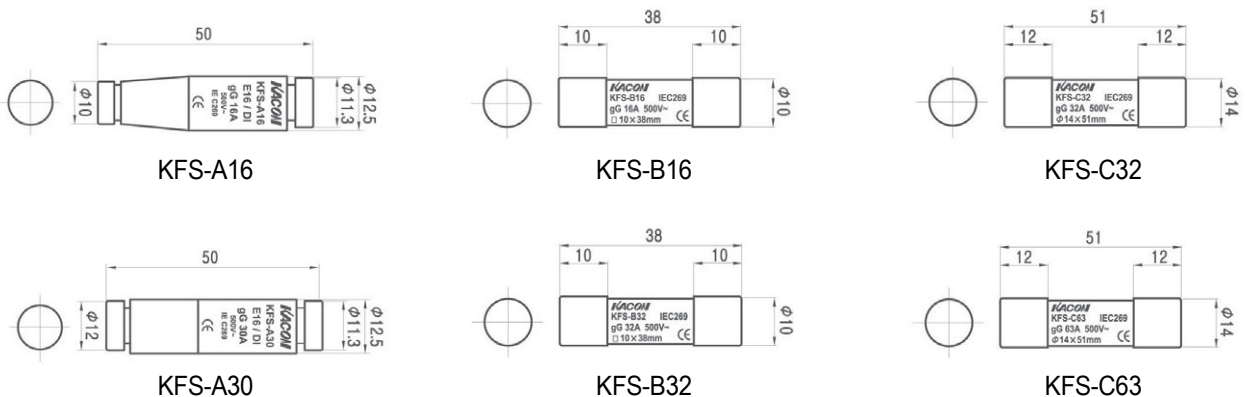
Rated Voltage	500VAC/DC
Rated short-circuit strength	50KA

## Product selection Guide

	Size	Rated Current	Part Number	Rated Current	Part Number	Rated Current	Part Number	Rated Current	Part Number
	Ø12.5×50mm	2A	KFS-A02	5A	KFS-A05	10A	KFS-A10	20A	KFS-A20
		3A	KFS-A03	6A	KFS-A06	15A	KFS-A15	25A	KFS-A25
		4A	KFS-A04	7A	KFS-A07	16A	KFS-A16	30A	KFS-A30
	Ø10×38mm	1A	KFS-B01	5A	KFS-B05	10A	KFS-B10	20A	KFS-B20
		2A	KFS-B02	6A	KFS-B06	12A	KFS-B12	25A	KFS-B25
		3A	KFS-B03	7A	KFS-B07	15A	KFS-B15	30A	KFS-B30
		4A	KFS-B04	8A	KFS-B08	16A	KFS-B16	32A	KFS-B32
	Ø14×51mm	2A	KFS-C02	10A	KFS-C10	25A	KFS-C25	45A	KFS-C45
		4A	KFS-C04	12A	KFS-C12	32A	KFS-C32	50A	KFS-C50
		6A	KFS-C06	20A	KFS-C20	40A	KFS-C40	63A	KFS-C63
		8A	KFS-C08						

## Dimensions

(unit:mm)



# Switch boxes

Non-Metallic



## Specifications

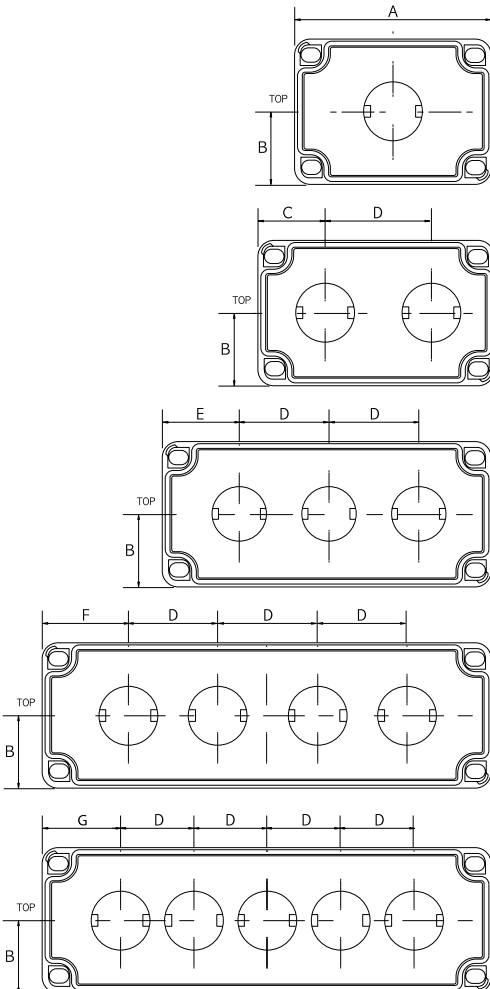
Protection Level	Water proof: IP66/67, Impact Test: IK07/08
Technical	Smooth sidewalls
	Standard or Quick turn screws
	Integrated cover retainer
Certification	UL508A (Polycarbonate models)
Color	Light gray
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

## Dimensions

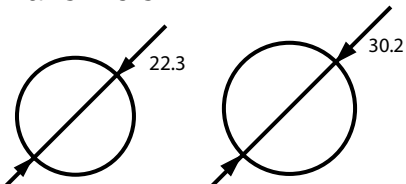
Cat. No.	Hole	A	B	C	D	E	F	G
BC- S-2201	1	110	40	-	-	-	-	-
BC- S-2202	2	130	40	40	50	-	-	-
BC- S-2203	3	180	40	-	50	40	-	-
BC- S-2204	4	250	40	-	50	-	50	-
BC- S-2205	5	250	40	-	42	-	-	42
BC- S-3001	1	110	40	-	-	-	-	-
BC- S-3002	2	130	40	40	50	-	-	-
BC- S-3003	3	180	40	-	50	40	-	-
BC- S-3004	4	250	40	-	50	-	50	-

## Part Numbers and Size

MODEL		SIZE (including cover)		φ	Hole
ABS	PC	W * L * H (unit : mm)	W * L * H (unit : inch)		
BC-AGS-2201	BC-CGS-2201	80x110x70	3.15x4.33x2.76	22	1
BC-AGS-2202	BC-CGS-2202	80x130x70	3.15x5.12x2.76	22	2
BC-AGS-2203	BC-CGS-2203	80x180x70	3.15x7.09x2.76	22	3
BC-AGS-2204	BC-CGS-2204	80x250x70	3.15x9.84x2.76	22	4
BC-AGS-2205	BC-CGS-2205	80x250x70	3.15x9.84x2.76	22	5
BC-AGS-3001	BC-CGS-3001	80x110x70	3.15x4.33x2.76	30	1
BC-AGS-3002	BC-CGS-3002	80x130x70	3.15x5.12x2.76	30	2
BC-AGS-3003	BC-CGS-3003	80x180x70	3.15x7.09x2.76	30	3
BC-AGS-3004	BC-CGS-3004	80x250x70	3.15x9.84x2.76	30	4



### Panel hole





# MB Series

Aluminum Switch Boxes

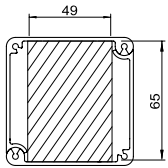
## Ordering Information

MB 57 - S - 01 - AA  
 ① ② ③ ④

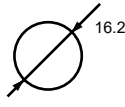
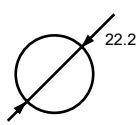
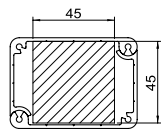
① Box Size	<b>57</b>	50mm X 70mm (Ø16mm hole)
	<b>70</b>	70mm X 70mm (Ø22mm hole)
① Box Style	<b>S</b>	Square Side
	<b>T</b>	Triangular Side (MB70 only)
③ Number of Holes	<b>01</b>	1 Hole
	<b>02</b>	2 Holes
	<b>03</b>	3 Holes
	<b>04</b>	4 Holes
	<b>05</b>	5 Holes
④ Box Cap	<b>AA</b>	Standard

## Mounting Effective Dimension

MB70 - S



MB57

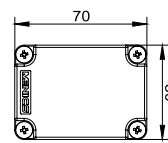


## Dimensions

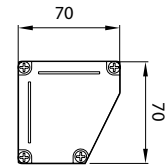
(unit: mm)

	MB57 AA		MB70 AA	
	L	P	L	P
1 Hole	86	-	86	-
2 Holes	101	25	136	50
3 Holes	126	50	186	100
4 Holes	151	75	236	150
5 Holes	176	100	286	200

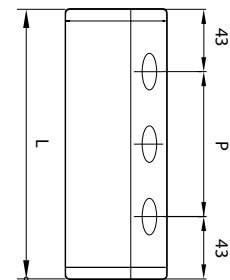
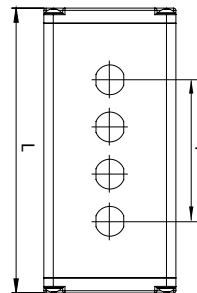
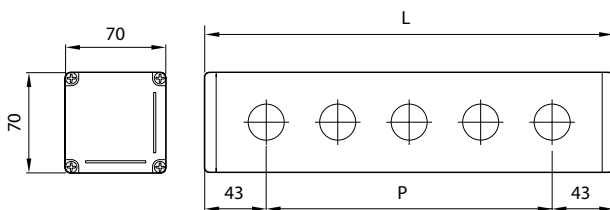
MB57 - S - AA



MB70 - T - AA



MB70 - S - AA

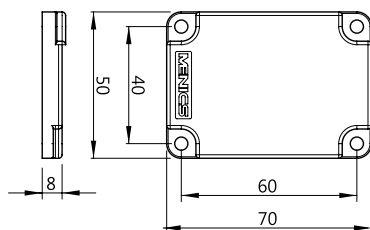


## Box Cap Options

(unit: mm)

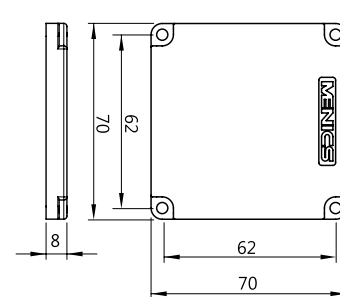
MB57 Series

CL57-A



MB70 Series

CL70-A



# S-Series (Small)

Screw Bolt Type Small Size Plastic Enclosures

- Lift off screw cover & smooth side walls
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



unit : mm

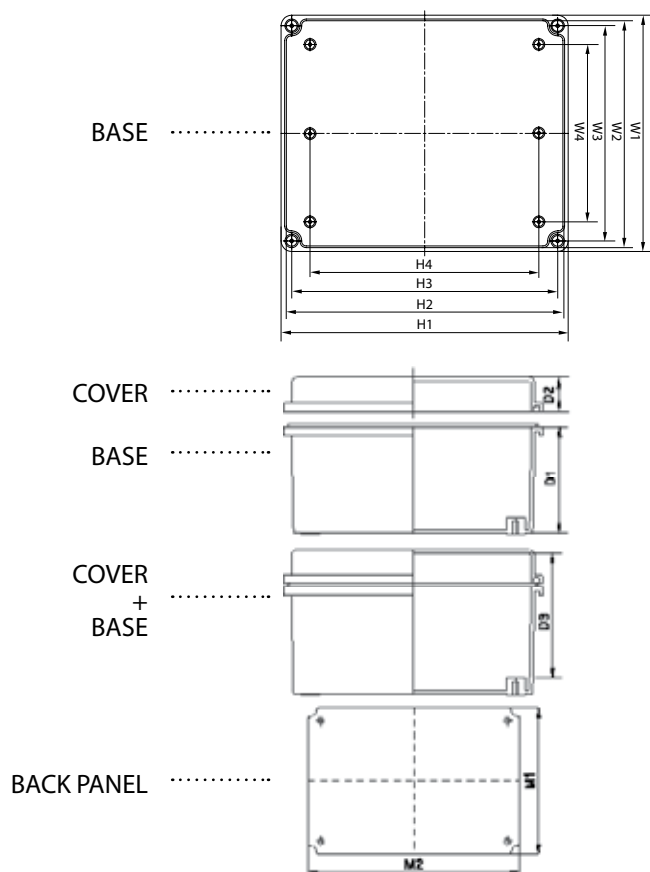
## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

Size	Enclosures Dimensions											Back Panel	
	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	D3	M1	M2
50×65×45	50	44	37	0	65	59	52	40	30	15	33	(52)	(38)
50×65×55	50	44	37	0	65	59	52	40	40	15	43	(52)	(38)
65×95×55	65	56	47	0	95	86	77	65	40	15	41.6	(50)	(80)
75×105×55	75	66	57	0	105	96	87	75	40	15	41.6	(60)	(90)
80×80×60	80	71	62	0	80	71	62	50	45	15	46.6	(65)	(65)
80×110×45	80	71	62	0	110	101	92	80	25	20	31.6	65	95
80×110×70	80	71	62	0	110	101	92	80	50	20	56.6	65	95
80×110×85	80	71	62	0	110	101	92	80	65	20	71.6	65	95
80×110×100	80	71	62	0	110	101	92	80	65	35	81.6	65	95
80×130×70	80	71	62	0	130	121	112	100	50	20	56.6	65	115
80×130×85	80	71	62	0	130	121	112	100	50	35	71.6	65	115
80×160×55	80	74	50	0	162	154	148	137	40	15	41.6	65	152
80×160×85	80	74	50	0	162	154	148	137	70	15	71.6	65	152
80×180×70	80	71	62	0	180	171	162	150	50	20	56.6	65	165
80×180×85	80	71	62	0	180	171	162	150	50	35	71.6	65	165
80×250×70	80	71	62	0	250	241	232	220	50	20	56.6	65	235
80×250×85	80	71	62	0	250	241	232	220	50	35	71.6	65	235
100×100×75	100	90	82	0	101	90	82	70	55	20	61.6	88	89
100×100×100	100	90	82	0	101	90	82	70	80	20	86.6	88	89
100×185×70	100	91	82	0	185	176	167	139	55	15	56.6	(88)	(174)
100×200×70	100	92	82	0	200	196	182	158	55	15	56.6	(88)	(189)
100×230×70	100	91	82	0	230	221	212	184	55	15	56.6	(88)	(219)
125×125×75	125	117	105	0	125	117	105	70	55	20	63.6	101	102
125×125×100	125	117	105	0	125	117	105	70	80	20	88.6	101	102
125×175×75	125	117	109	0	175	166	157	140	50	25	61.6	101	156
125×175×100	125	117	109	0	175	166	157	140	50	50	86.6	101	156
140×230×95	140	131	122	100	230	221	212	190	75	20	81.6	122	154
140×170×95	140	134	122	0	173	164	152	130	75	20	81.6	122	211
150×150×75	150	140	132	110	150	141	132	110	55	20	61.6	134	134
150×150×100	150	140	132	110	150	141	132	110	80	20	86.6	134	134
150X200X45	150	140	132	110	200	191	182	160	25	20	31.6	129	179
150×200×75	150	140	132	110	200	191	182	160	55	20	61.6	129	179
150×200×100	150	140	132	110	200	191	182	160	80	20	86.6	129	179
150×200×130	150	140	132	110	200	191	182	160	110	20	116.6	129	179
150×200×160	150	140	132	110	200	191	182	160	110	50	146.6	129	179
150×250×100	150	141	132	0	250	240	232	210	80	20	87.6	136	235
150×250×130	150	141	132	0	250	240	232	210	80	50	117.6	136	235
160×160×70	160	151	142	110	160	151	142	110	55	15	56.6	134	134
200×200×100	200	190	182	150	200	190	182	120	80	20	86	187	187
200×200×130	200	190	182	150	200	190	182	120	110	20	116	187	187
200×200×160	200	190	182	150	200	190	182	120	140	20	146	187	187
200X200X190	200	190	182	150	200	190	182	120	140	50	176	187	187
210×230×100	210	201	192	160	230	221	212	180	80	20	86	196.5	216

## Dimensions



## Size and Part Numbers

SIZE (including cover)		MODEL				Back Panel		Mounting Bracket
W * L * H (Unit :mm)	W * L * H (Unit :inch)	ABS		Polycarbonate(UL 508A)		Steel 1.6mm	Plastic 3mm +	
		Gray cover	Transparent cover	Gray cover	Transparent cover			
50x65x45	1.97x2.56x1.77	BC-AGS-050604	BC-ATS-050604	BC-CGS-050604	BC-CTS-050604	BC-0506 ST	X	None
50x65x55	1.97x2.56x2.17	BC-AGS-050605	BC-ATS-050605	BC-CGS-050605	BC-CTS-050605	BC-0506 ST	X	
65x95x55	2.56x3.74x2.17	BC-AGS-060905	BC-ATS-060905	BC-CGS-060905	BC-CTS-060905	BC-0609 ST	X	
75x105x55	2.95x4.13x2.17	BC-AGS-071005	BC-ATS-071005	BC-CGS-071005	BC-CTS-071005	BC-0710 ST	X	B40
80x80x60	3.15x3.15x2.36	BC-AGS-080806	BC-ATS-080806	BC-CGS-080806	BC-CTS-080806	BC-0808 ST	X	
80x110x45	3.15x4.33x1.77	BC-AGS-081104	BC-ATS-081104	BC-CGS-081104	BC-CTS-081104	BC-0811ST	BC-0811 P	
80x110x70	3.15x4.33x2.76	BC-AGS-081107	BC-ATS-081107	BC-CGS-081107	BC-CTS-081107	BC-0811 ST	BC-0811 P	
80x110x85	3.15x4.33x3.35	BC-AGS-081108	BC-ATS-081108	BC-CGS-081108	BC-CTS-081108	BC-0811 ST	BC-0811 P	
80x110x100	3.15x4.33x3.94	BC-AGS-081110	BC-ATS-081110	BC-CGS-081110	BC-CTS-081110	BC-0811 ST	BC-0811 P	
80x130x70	3.15x5.12x2.76	BC-AGS-081307	BC-ATS-081307	BC-CGS-081307	BC-CTS-081307	BC-0813 ST	BC-0813 P	
80x130x85	3.15x5.12x3.35	BC-AGS-081308	BC-ATS-081308	BC-CGS-081308	BC-CTS-081308	BC-0813 ST	BC-0813 P	
80x160x55	3.15x6.30x2.17	BC-AGS-081605	BC-ATS-081605	BC-CGS-081605	BC-CTS-081605	BC-0816 ST	BC-0816 P	
80x160x85	3.15x6.30x3.35	BC-AGS-081608	BC-ATS-081608	BC-CGS-081608	BC-CTS-081608	BC-0816 ST	BC-0816 P	
80x180x70	3.15x7.09x2.76	BC-AGS-081807	BC-ATS-081807	BC-CGS-081807	BC-CTS-081807	BC-0818 ST	BC-0818 P	
80x180x85	3.15x7.09x3.35	BC-AGS-081808	BC-ATS-081808	BC-CGS-081808	BC-CTS-081808	BC-0818 ST	BC-0818 P	
80x200x70	3.15x7.87x2.76	BC-AGS-082007	BC-ATS-082007	BC-CGS-082007	BC-CTS-082007	X	X	
80x250x70	3.15x9.84x2.76	BC-AGS-082507	BC-ATS-082507	BC-CGS-082507	BC-CTS-082507	BC-0825 ST	BC-0825 P	
80x250x85	3.15x9.84x3.35	BC-AGS-082508	BC-ATS-082508	BC-CGS-082508	BC-CTS-082508	BC-0825 ST	BC-0825 P	
100x100x75	3.94x3.94x2.95	BC-AGS-101007	BC-ATS-101007	BC-CGS-101007	BC-CTS-101007	BC-1010 ST	BC-1010 P	
100x100x100	3.94x3.94x3.94	BC-AGS-101010	BC-ATS-101010	BC-CGS-101010	BC-CTS-101010	BC-1010 ST	BC-1010 P	
100x185x70	3.94x7.28x2.76	BC-AGS-101807	BC-ATS-101807	BC-CGS-101807	BC-CTS-101807	BC-1018 ST	X	
100x200x70	3.94x7.87x2.76	BC-AGS-102007	BC-ATS-102007	BC-CGS-102007	BC-CTS-102007	BC-1020 ST	BC-1020 P	
100x230x70	3.94x9.06x2.76	BC-AGS-102307	BC-ATS-102307	BC-CGS-102307	BC-CTS-102307	BC-1023 ST	X	
125x125x75	4.92x4.92x2.95	BC-AGS-121207	BC-ATS-121207	BC-CGS-121207	BC-CTS-121207	BC-1212 ST	BC-1212 P	
125x125x100	4.92x4.92x3.94	BC-AGS-121210	BC-ATS-121210	BC-CGS-121210	BC-CTS-121210	BC-1212 ST	BC-1212 P	
125x175x75	4.92x6.89x2.95	BC-AGS-121707	BC-ATS-121707	BC-CGS-121707	BC-CTS-121707	BC-1217 ST	BC-1217 P	
125x175x100	4.92x6.89x3.94	BC-AGS-121710	BC-ATS-121710	BC-CGS-121710	BC-CTS-121710	BC-1217 ST	BC-1217 P	
140x170x95	5.51x6.69x3.74	BC-AGS-141709	BC-ATS-141709	BC-CGS-141709	BC-CTS-141709	BC-1417 ST	BC-1417 P	
140x230x95	5.51x9.06x3.74	BC-AGS-142309	BC-ATS-142309	BC-CGS-142309	BC-CTS-142309	BC-1423 ST	BC-1423 P	
150x150x75	5.91x5.91x2.95	BC-AGS-151507	BC-ATS-151507	BC-CGS-151507	BC-CTS-151507	BC-1515 ST	BC-1515 P	
150x150x100	5.91x5.91x3.94	BC-AGS-151510	BC-ATS-151510	BC-CGS-151510	BC-CTS-151510	BC-1515 ST	BC-1515 P	
150x200x45	5.91x7.87x1.77	BC-AGS-152004	BC-ATS-152004	BC-CGS-152004	BC-CTS-152004	BC-1520 ST	BC-1520 P	
150x200x75	5.91x7.87x2.95	BC-AGS-152007	BC-ATS-152007	BC-CGS-152007	BC-CTS-152007	BC-1520 ST	BC-1520 P	
150x200x100	5.91x7.87x3.94	BC-AGS-152010	BC-ATS-152010	BC-CGS-152010	BC-CTS-152010	BC-1520 ST	BC-1520 P	
150x200x130	5.91x7.87x5.12	BC-AGS-152013	BC-ATS-152013	BC-CGS-152013	BC-CTS-152013	BC-1520 ST	BC-1520 P	
150x200x160	5.91x7.87x6.30	BC-AGS-152016	BC-ATS-152016	BC-CGS-152016	BC-CTS-152016	BC-1520 ST	BC-1520 P	
150x250x100	5.91x9.84x3.94	BC-AGS-152510	BC-ATS-152510	BC-CGS-152510	BC-CTS-152510	BC-1525 ST	BC-1525 P	
150x250x130	5.91x9.84x5.12	BC-AGS-152513	BC-ATS-152513	BC-CGS-152513	BC-CTS-152513	BC-1525 ST	BC-1525 P	
160x160x70	6.30x6.30x2.76	BC-AGS-161607	BC-ATS-161607	BC-CGS-161607	BC-CTS-161607	BC-1616 ST	BC-1616 P	
200x200x100	7.87x7.87x3.94	BC-AGS-202010	BC-ATS-202010	BC-CGS-202010	BC-CTS-202010	BC-2020 ST	BC-2020 P	B40
200x200x130	7.87x7.87x5.12	BC-AGS-202013	BC-ATS-202013	BC-CGS-202013	BC-CTS-202013	BC-2020 ST	BC-2020 P	
200x200x160	7.87x7.87x6.30	BC-AGS-202016	BC-ATS-202016	BC-CGS-202016	BC-CTS-202016	BC-2020 ST	BC-2020 P	
200x200x190	7.87x7.87x7.48	BC-AGS-202019	BC-ATS-202019	BC-CGS-202019	BC-CTS-202019	BC-2020 ST	BC-2020 P	B50
210x230x100	8.27x9.06x3.94	BC-AGS-212310	BC-ATS-212310	BC-CGS-212310	BC-CTS-212310	BC-2123 ST	X	





# S-Series (Medium)

Screw Bolt Type Medium Size Plastic Enclosures

- Lift off screw cover & smooth side walls
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



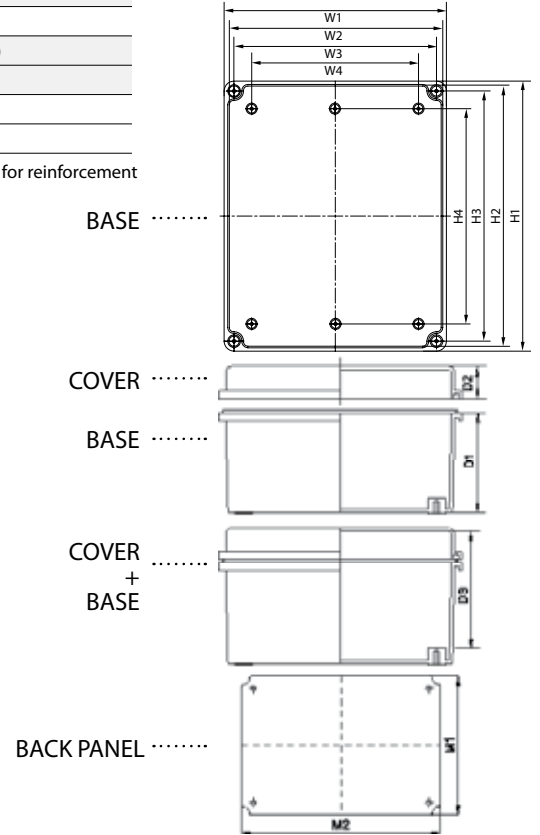
## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\*The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Dimensions unit : mm

Size	Enclosures Dimensions											Back Panel	
	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	D3	M1	M2
190x190x130	190	169	90	120	190	169	150	120	98	30	115	159	159
190x280x100	190	169	150	120	280	259	182	210	100	30	115	159	248
190x280x130	190	169	150	120	280	259	182	210	98	30	115	159	248
190x280x180	190	169	150	120	280	259	182	210	148	30	165	159	248
190x380x130	190	169	150	120	380	359	282	310	98	30	112	159	348
190x380x180	190	169	150	120	380	359	282	310	148	30	165	159	348
250x350x100	250	230	-	-	350	330	-	-	70	30	112	-	-
280x280x130	280	259	183	210	280	259	240	210	98	30	112	248	248
280x340x130	280	258	240	210	340	318	244	270	98	30	112	248	308
280x380x130	280	259	240	210	380	359	284	310	98	30	112	248	348
280x380x180	280	259	240	210	380	359	284	310	148	30	161.6	248	348
280x560x130	280	259	240	210	560	535	460	490	98	30	112	232	535
330x430x180	330	305	290	260	430	405	335	360	148	30	160.8	295	395
380x560x180	380	355	340	310	560	535	460	490	148	30	160.8	345	535



## Size and Part Numbers

SIZE (including cover)		MODEL				Back Panel		Mounting Bracket
W * L * H (Unit :mm)	W * L * H (Unit :inch)	ABS		Polycarbonate(UL 508A)		Steel 1.6mm	Plastic 3mm +	
		Gray cover	Transparent cover	Gray cover	Transparent cover			
190x190x130	7.48x7.48x5.12	BC-AGS-191913	BC-ATS-191913	BC-CGS-191913	BC-CTS-191913	BC-1919 ST	BC-1919 P	B50
190x280x100	7.48x11.02x3.94	BC-AGS-192810	BC-ATS-192810	BC-CGS-192810	BC-CTS-192810	BC-1928 ST	BC-1928 P	
190x280x130	7.48x11.02x5.12	BC-AGS-192813	BC-ATS-192813	BC-CGS-192813	BC-CTS-192813	BC-1928 ST	BC-1928 P	
190x280x180	7.48x11.02x7.09	BC-AGS-192818	BC-ATS-192818	BC-CGS-192818	BC-CTS-192818	BC-1928 ST	BC-1928 P	
190x380x130	7.48x14.96x5.12	BC-AGS-193813	BC-ATS-193813	BC-CGS-193813	BC-CTS-193813	BC-1938 ST	BC-1938 P	
190x380x180	7.48x14.96x7.09	BC-AGS-193818	BC-ATS-193818	BC-CGS-193818	BC-CTS-193818	BC-1938 ST	BC-1938 P	
250x350x100	9.84x13.98x3.94	BC-AGU-253510*	BC-ATU-253510*	BC-CGU-253510*	BC-CTU-253510*	X	X	
280x280x130	11.02x11.02x5.12	BC-AGS-282813	BC-ATS-282813	BC-CGS-282813	BC-CTS-282813	BC-2828 ST	BC-2828 P	
280x340x130	11.02x13.39x5.12	BC-AGS-283413	BC-ATS-283413	BC-CGS-283413	BC-CTS-283413	BC-2834 ST	BC-2834 P	
280x380x130	11.02x14.96x5.12	BC-AGS-283813	BC-ATS-283813	BC-CGS-283813	BC-CTS-283813	BC-2838 ST	BC-2838 P	
280x380x180	11.02x14.96x7.09	BC-AGS-283818	BC-ATS-283818	BC-CGS-283818	BC-CTS-283818	BC-2838 ST	BC-2838 P	
280x560x130	11.02x22.05x5.12	BC-AGS-285613	BC-ATS-285613	BC-CGS-285613	BC-CTS-285613	BC-2856 ST	X	
330x430x180	12.99x16.93x7.09	BC-AGS-334318	BC-ATS-334318	BC-CGS-334318	BC-CTS-334318	BC-3343 ST	BC-3343 P	
380x560x180	14.96x22.05x7.09	BC-AGS-385618	BC-ATS-385618	BC-CGS-385618	BC-CTS-385618	BC-3856 ST	X	

\* U Type Screw type Enclosure. No insert



# E-Series

Screw type  
SUS cover screw

- Screw type SUS cover screw
- light grey cover available
- Excellent UV resistance (polycarbonate models)



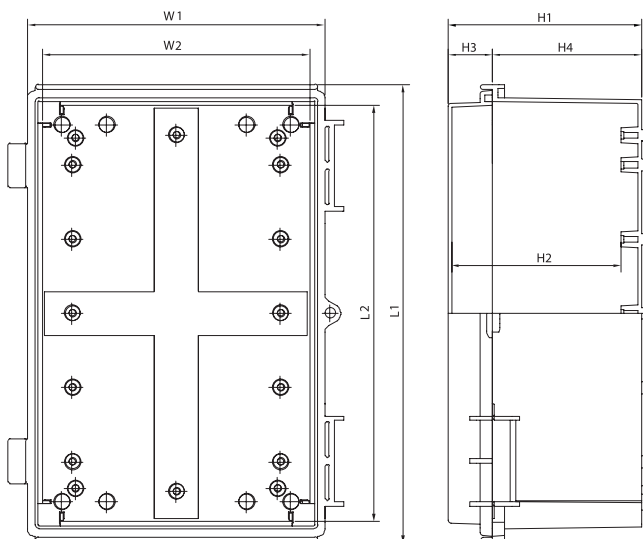
## Specifications

Protection Level	Dust/Water proof: IP67
	Impact test: IK07/08
Certification	CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

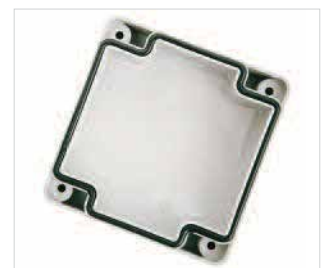
## Part Numbers and Size

Outside size (including cover)		PART NUMBERS				Back Panel		
W * L * H (unit: mm)	W * L * H (unit: inch)	ABS		Polycarbonate (UL508A)		Steel 1.6mm	Plastic 3mm+	Size (unit: mm)
		Gray cover	Transparent cover	Gray cover	Transparent cover			
83x85x55	3.27x3.34x2.17	BC-AGE-080806	BC-ATE-080806	BC-CGE-080806	BC-CTE-080806	0808 E	-	
83x85x65	3.27x3.34x2.56	BC-AGE-080807	BC-ATE-080807	BC-CGE-080807	BC-CTE-080807			
83x85x85	3.27x3.34x3.34	BC-AGE-080809	BC-ATE-080809	BC-CGE-080809	BC-CTE-080809			
83x85x95	3.27x3.34x3.74	BC-AGE-080810	BC-ATE-080810	BC-CGE-080810	BC-CTE-080810			
122x162x90	4.80x6.38x3.54	BC-AGE-121609	BC-ATE-121609	BC-CGE-121609	BC-CTE-121609	1216 E	-	
122x162x140	4.80x6.38x5.51	BC-AGE-121614	BC-ATE-121614	BC-CGE-121614	BC-CTE-121614			
122x202x75	4.80x7.95x2.95	BC-AGE-122008	BC-ATE-122008	BC-CGE-122008	BC-CTE-122008	1220 E	-	
122x202x90	4.80x7.95x3.54	BC-AGE-122009	BC-ATE-122009	BC-CGE-122009	BC-CTE-122009			

## Dimensions



Size	Enclosures							
	W1	W2	L1	L2	H1	H2	H3	H4
83x85x55	83	75	85	77	55	42	15	40
83x85x65	83	75	85	77	65	53	25	40
83x85x85	83	74	85	76	85	72	15	70
83x85x95	83	74	85	76	95	83	25	70
122x162x90	122	113	162	153	90	78	30	60.3
122x162x140	122	113	162	153	140	128	80	60.3
122x202x75	122	114	202	194	75	63	15.1	60
122x202x90	122	114	202	194	90	78	30	60





# M-Series

Screw Bolt Type Plastic Enclosures

- Lift off screw cover & smooth side walls
- 0.6mm lower center space for membrane keypad
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



## Specifications

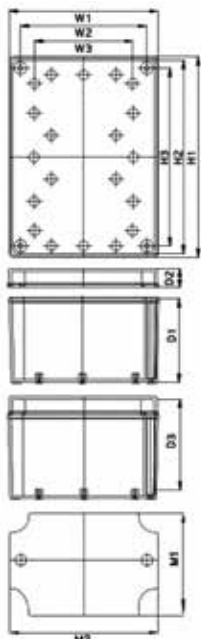
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

## Part Numbers and Size

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

Outside Size (w/cover)		MODEL				Back panel	
W * L * H (unit :mm)	W * L * H (unit :inch)	ABS		Polycarbonate (UL508A)		Steel 1.6mm	Plastic 3mm above
		Gray cover	Transparent cover	Gray cover	Transparent cover		
80x130x35	3.15x5.12x1.38	BC-AGM-081303	BC-ATM-081303	BC-CGM-081303	BC-CTM-081303	BC-0813 ST	-
80x130x60	3.15x5.12x2.36	BC-AGM-081306	BC-ATM-081306	BC-CGM-081306	BC-CTM-081306	BC-0813 ST	-
80x130x75	3.15x5.12x2.95	BC-AGM-081307	BC-ATM-081307	BC-CGM-081307	BC-CTM-081307	BC-0813 ST	-
80x130x85	3.15x5.12x3.35	BC-AGM-081308	BC-ATM-081308	BC-CGM-081308	BC-CTM-081308	BC-0813 ST	-
80x130x100	3.15x5.12x3.94	BC-AGM-081310	BC-ATM-081310	BC-CGM-081310	BC-CTM-081310	BC-0813 ST	-
80x130x125	3.15x5.12x4.92	BC-AGM-081312	BC-ATM-081312	BC-CGM-081312	BC-CTM-081312	BC-0813 ST	-
130x130x35	5.12x5.12x1.38	BC-AGM-131303	BC-ATM-131303	BC-CGM-131303	BC-CTM-131303	BC-1313 ST	-
130x130x60	5.12x5.12x2.36	BC-AGM-131306	BC-ATM-131306	BC-CGM-131306	BC-CTM-131306	BC-1313 ST	-
130x180x35	5.12x7.09x1.38	BC-AGM-131803	BC-ATM-131803	BC-CGM-131803	BC-CTM-131803	BC-1318 ST	BC-1217 P
130x180x60	5.12x7.09x2.36	BC-AGM-131806	BC-ATM-131806	BC-CGM-131806	BC-CTM-131806	BC-1318 ST	BC-1217 P
130x180x100	2.12x7.09x3.94	BC-AGM-131810	BC-ATM-131810	BC-CGM-131810	BC-CTM-131810	BC-1318 ST	BC-1217 P
150x180x60	5.91x7.09x2.36	BC-AGM-151806	BC-ATM-151806	BC-CGM-151806	BC-CTM-151806	BC-1518 ST	-
180x180x60	7.09x7.09x2.36	BC-AGM-181806	BC-ATM-181806	BC-CGM-181806	BC-CTM-181806	BC-1818 ST	-
180x180x75	7.09x7.09x2.95	BC-AGM-181807	BC-ATM-181807	BC-CGM-181807	BC-CTM-181807	BC-1818 ST	-
180x180x100	7.09x7.09x3.94	BC-AGM-181810	BC-ATM-181810	BC-CGM-181810	BC-CTM-181810	BC-1818 ST	-
180x180x125	7.09x7.09x4.92	BC-AGM-181812	BC-ATM-181812	BC-CGM-181812	BC-CTM-181812	BC-1818 ST	-
180x255x75	7.09x10.04x2.95	BC-AGM-182507	BC-ATM-182507	BC-CGM-182507	BC-CTM-182507	BC-1825 ST	-
180x255x100	7.09x10.04x3.94	BC-AGM-182510	BC-ATM-182510	BC-CGM-182510	BC-CTM-182510	BC-1825 ST	-
180x255x125	7.09x10.04x4.92	BC-AGM-182512	BC-ATM-182512	BC-CGM-182512	BC-CTM-182512	BC-1825 ST	-

## Dimensions



Size	Enclosures									Back panel	
	W1	W2	W3	H1	H2	H3	D1	D2	D3	M1	M2
80x130x35	80	62	40	130	112	90	25	10	24	(49)	(98)
80x130x60	80	62	40	130	112	90	50	10	47	(49)	(98)
80x130x75	80	62	40	130	112	90	65	10	62	(49)	(98)
80x130x85	80	62	40	130	112	90	50	35	72	(49)	(98)
80x130x100	80	62	40	130	112	90	90	10	87	(49)	(98)
80x130x125	80	112	40	130	112	90	90	35	112	(49)	(98)
130x130x35	130	112	90	130	112	90	25	10	24	(98)	(98)
130x130x60	130	112	90	130	112	90	50	10	47	(98)	(98)
130x180x35	130	112	90	180	162	140	25	10	24	113	161
130x180x60	130	132	90	180	162	140	50	10	47	113	161
150x180x60	150	162	110.5	180	162	140	50	10	47	(123)	(161)
180x180x60	180	162	140	180	162	140	50	10	47	(148)	(148)
180x180x75	180	162	140	180	162	140	65	10	62	(148)	(148)
180x180x100	180	162	140	180	162	140	90	10	87	(148)	(148)
180x180x125	180	162	140	180	162	140	115	10	112	(148)	(148)
180x255x75	180	162	140	255	237	201.5	60	15	62	(148)	(223)
180x255x100	180	162	140	255	237	201.5	85	15	87	(148)	(223)
180x255x125	180	162	140	255	237	201.5	110	15	112	(148)	(223)



# Knock-out Box

Screw type Knock-out base  
Plastic Enclosures

- Knockouts on both sides for easy onsite installation
- Suitable for applications like control box, junction box etc.
- Lift off screw cover & smooth side walls
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base



## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

## Part Numbers and Size

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

Outside Size (w/cover)		MODEL				Back panel	
W * L * H (unit :mm)	W * L * H (unit :inch)	ABS		Polycarbonate (UL508A)		Steel 1.6mm	Plastic 3mm above
		Gray cover	Transparent cover	Gray cover	Transparent cover		
80x110x70	3.15x4.33x2.76	BC-AGS-081107-K	BC-ATS-081107-K	BC-CGS-081107-K	BC-CTS-081107-K	0811 S	0811 P
80x110x85	3.15x4.33x3.35	BC-AGS-081108-K	BC-ATS-081108-K	BC-CGS-081108-K	BC-CTS-081108-K		
80x130x70	3.15x5.12x2.76	BC-AGS-081307-K	BC-ATS-081307-K	BC-CGS-081307-K	BC-CTS-081307-K	0813 S	0813 P
80x130x85	3.15x5.12x3.35	BC-AGS-081308-K	BC-ATS-081308-K	BC-CGS-081308-K	BC-CTS-081308-K		
80x180x70	3.15x7.09x2.76	BC-AGS-081807-K	BC-ATS-081807-K	BC-CGS-081807-K	BC-CTS-081807-K	0818 S	0818 P
80x180x85	3.15x7.09x3.35	BC-AGS-081808-K	BC-ATS-081808-K	BC-CGS-081808-K	BC-CTS-081808-K		
80x250x70	3.15x9.84x2.76	BC-AGS-082507-K	BC-ATS-082507-K	BC-CGS-082507-K	BC-CTS-082507-K	0825 S	0825 P
80x250x85	3.15x9.84x3.35	BC-AGS-082508-K	BC-ATS-082508-K	BC-CGS-082508-K	BC-CTS-082508-K		
125x175x75	4.92x6.89x2.95	BC-AGS-121707-K	BC-ATS-121707-K	BC-CGS-121707-K	BC-CTS-121707-K	1217 S	1217 P
125x175x100	4.92x6.89x3.94	BC-AGS-121710-K	BC-ATS-121710-K	BC-CGS-121710-K	BC-CTS-121710-K		

## Dimensions

BASE .....

COVER .....

BASE .....

COVER + BASE .....

BACK PANEL .....

W side

W side

H side

Box Size	Enclosure Dimensions										Back panel		# of Knock-out/side	
	W1	W2	W3	H1	H2	H3	H4	D1	D2	D3	M1	M2	H Sides	W Sides
80x110x70	80	74	62	110	104	92	80	50	20	53	-	-	-	1-Ø22
80x110x85	80	74	62	110	104	92	80	50	35	68	-	-	-	1-Ø22
80x130x70	80	74	62	130	124	112	100	50	20	53	-	-	-	1-Ø22
80x130x85	80	74	62	130	124	112	100	50	35	68	-	-	-	1-Ø22
80x180x70	80	74	62	180	174	162	150	50	20	53	-	-	-	1-Ø22
80x180x85	80	74	62	180	174	162	150	50	35	68	-	-	-	1-Ø22
110x260x75	80	74	62	250	244	232	220	50	20	52	-	-	-	1-Ø22
110x260x100	80	74	62	250	244	232	220	50	35	67	-	-	-	1-Ø22
135x155x85	125	121	109	175	169	157	140	50	25	58	101	156	3-Ø21	2-Ø29
135x185x85	125	121	109	175	169	157	140	50	50	83	101	156	3-Ø21	2-Ø29



# P-Series

Hinge & Latch Type  
Plastic Enclosures

- Molded hinges & Stainless steel latches
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



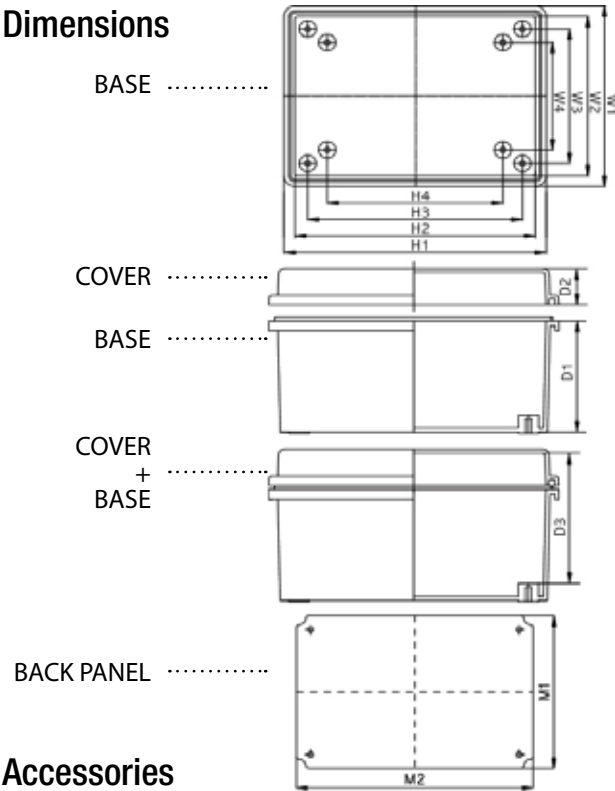
unit : mm

## Specifications

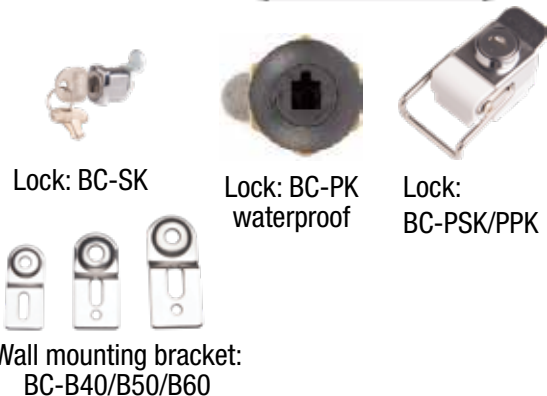
Protection Level	Dust/Water proof: IP66/67, NEMA 4X Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F) PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB PC: UL94-V-0, 5VA, 94-HB

\*The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Dimensions



## Accessories



Box Size	Enclosure Dimensions											Back panel	
	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	D3	M1	M2
90x120x70	90	69	50	45	128.4	99	80	69	50	20	56.6	65	95
90x120x85	90	69	50	45	128.4	99	80	69	65	20	71.6	65	95
100x150x70	100	79.6	60	55	158.4	129.6	110	99	50	20	56.6	65	115
100x150x85	100	79.6	60	55	158.4	129.6	110	99	65	20	71.6	65	115
110x210x75	110	89.6	70	65	218.4	189.6	170	158	55	20	61.6	75.5	176
110x210x100	110	89.6	70	65	218.4	189.6	170	158	80	20	86.6	75.5	176
110x260x75	110	89.6	70	65	268.4	239.6	220	208	55	20	61.6	76.5	226
110x260x100	110	89.6	70	65	268.4	239.6	220	208	80	20	86.6	76.5	226
135x155x85	135	114.6	95	90	163.4	132.5	115	110	65	20	71.6	101.5	121.5
135x185x85	135	114.6	95	90	193.4	164.6	145	140	65	20	71.6	110	160
135x185x100	135	114.6	95	90	193.4	164.6	145	140	80	20	86.6	110	160
150x150x90	150	128	116.5	110	158.4	128	116.5	110	70	20	76	123	123
150x150x120	150	129.6	118	110	158.4	129.6	118	110	100	20	106	123	123
160x210x100	160	139.6	120	110	218.4	189.6	170	160	75	25	86.6	129	179
160x210x130	160	139.6	120	110	218.4	189.6	170	160	105	25	116.6	129	179
160x260x100	160	137	120	110	268.4	238.7	220	210	75	25	86.6	129	229
160x260x130	160	137	120	110	268.4	238.7	220	210	105	25	116.6	129	229
170x220x110	170	148	132	110	228.4	198	182	160	80	30	95.6	129	179
170x270x110	170	148	132	110	278.4	247	232	210	80	30	95.6	129	229
190x280x100	190	167	147.5	120	288.4	257	238	210	70	30	83.6	159	249
190x280x140	190	167	147.5	120	288.4	257	238	210	110	30	123.6	159	249
200x300x130	200	178	152	129	308.4	278	252	226	100	30	113.6	167	267
200x300x150	200	178	152	129	308.4	278	252	226	120	30	133.6	167	267
200x300x180	200	178	152	129	308.4	278	252	226	150	30	163.6	167	267
210x210x100	210	187	170	120	218.4	187	170	150	75	25	86.6	179	179
210x210x130	210	187	170	120	218.4	187	170	150	105	25	123.6	179	179
250x350x150	250	227	205	180	358.4	327	305	269	120	30	133.6	216	316
250x350x180	250	227	205	180	358.4	327	305	269	150	30	163.6	216	316
280x280x130	280	257	238	210	288.4	257	238	210	100	30	113.6	248	248
280x380x130	280	257	238	210	388.4	357	338	310	100	30	113.6	249	348
300x300x150	300	278	252	230	308.4	278	252	219	120	30	133.6	262	262
300x300x180	300	278	252	230	308.4	278	252	219	150	30	163.6	262	262
300x400x120	300	275.5	252	228	408.4	370.5	352	325	90	30	103.6	264	364
300x400x150	300	275.5	252	228	408.4	370.5	352	325	120	30	133.6	264	364
300x400x180	300	275.5	252	228	408.4	370.5	352	325	150	30	163.6	264	364
350x350x150	350	327	302	270	358.4	327	302	270	120	30	133.6	314	314
350x350x180	350	327	302	270	358.4	327	302	270	150	30	163.6	314	314
350x450x120	350	325.4	300	274	458.4	425	400	365	90	30	102.6	305	405
350x450x160	350	325.4	300	274	458.4	425	400	365	130	30	142.6	305	405
350x450x200	350	325.4	300	274	458.4	425	400	365	170	30	182.6	305	405
400x500x160	400	370.5	352	328	511.4	470.5	452	428	130	30	144	358	457
400x500x200	400	370.5	352	328	511.4	470.5	452	428	170	30	183.6	358	457
400x600x180	401	370.5	352	328	611.4	560	552.5	525	150	30	163.6	357	556
400x600x230	401	370.5	352	328	611.4	560	552.5	525	200	30	213.6	357	556
530x630x185	530	485	462	426	641.4	585	526	526	150	35	166	460	560
530x630x255	530	485	462	426	641.4	585	526	526	220	35	236	460	565
530x730x185	530	485	462	426	741.4	685	662	626	150	35	166	460	660
530x730x255	530	485	462	426	741.4	685	662	626	220	35	236	460	660
630x830x185	630	585	562	526	841.4	785	762	726	150	35	166	560	752
630x830x285	630	585	562	526	841.4	785	762	726	250	35	266	560	752



## Size and Part Numbers

Outside size (including cover)		PART NUMBERS				Back Panel		Mounting Bracket
W * L * H (unit: mm)	W * L * H (unit: inch)	ABS		Polycarbonate (UL508A)		Steel 1.6mm	Plastic 3mm+	
		Gray cover	Transparent cover	Gray cover	Transparent cover			
90x120x70	3.54x4.72x2.76	BC-AGP-091207	BC-ATP-091207	BC-CGP-091207	BC-CTP-091207	BC-0912 ST	BC-0811 P	B40
90x120x85	3.54x4.72x3.35	BC-AGP-091208	BC-ATP-091208	BC-CGP-091208	BC-CTP-091208	BC-0912 ST	BC-0811 P	
100x150x70	3.94x5.91x2.76	BC-AGP-101507	BC-ATP-101507	BC-CGP-101507	BC-CTP-101507	BC-0813 ST	BC-0813 P	
100x150x85	3.94x5.91x3.35	BC-AGP-101508	BC-ATP-101508	BC-CGP-101508	BC-CTP-101508	BC-0813 ST	BC-0813 P	
110x210x75	4.33x8.27x2.95	BC-AGP-112107	BC-ATP-112107	BC-CGP-112107	BC-CTP-112107	BC-1020 ST	BC-1020 P	
110x210x100	4.33x8.27x3.94	BC-AGP-112110	BC-ATP-112110	BC-CGP-112110	BC-CTP-112110	BC-1020 ST	BC-1020 P	
110x260x75	4.33x10.24x2.95	BC-AGP-112607	BC-ATP-112607	BC-CGP-112607	BC-CTP-112607	BC-1126 ST	BC-1126 P	
110x260x100	4.33x10.24x3.94	BC-AGP-112610	BC-ATP-112610	BC-CGP-112610	BC-CTP-112610	BC-1126 ST	BC-1126 P	
135x155x85	5.12x5.91x3.35	BC-AGP-131508	BC-ATP-131508	BC-CGP-131508	BC-CTP-131508	BC-1315 ST	BC-1315 P	
135x185x85	5.12x7.09x3.35	BC-AGP-131808	BC-ATP-131808	BC-CGP-131808	BC-CTP-131808	BC-1217 ST	BC-1217 P	
135x185x100	5.12x7.09x3.94	BC-AGP-131810	BC-ATP-131810	BC-CGP-131810	BC-CTP-131810	BC-1217 ST	BC-1217 P	
150x150x90	5.91x5.91x3.54	BC-AGP-151509	BC-ATP-151509	BC-CGP-151509	BC-CTP-151509	BC-1515 ST	BC-1515 P	
150x150x120	5.91x5.91x4.72	BC-AGP-151512	BC-ATP-151512	BC-CGP-151512	BC-CTP-151512	BC-1515 ST	BC-1515 P	
160x210x100	6.30x8.27x3.94	BC-AGP-162110	BC-ATP-162110	BC-CGP-162110	BC-CTP-162110	BC-1520 ST	BC-1520 P	
160x210x130	6.30x8.27x5.12	BC-AGP-162113	BC-ATP-162113	BC-CGP-162113	BC-CTP-162113	BC-1520 ST	BC-1520 P	
160x260x100	6.30x10.24x3.94	BC-AGP-162610	BC-ATP-162610	BC-CGP-162610	BC-CTP-162610	BC-1525 ST	BC-1525 P	
160x260x130	6.30x10.24x5.12	BC-AGP-162613	BC-ATP-162613	BC-CGP-162613	BC-CTP-162613	BC-1525 ST	BC-1525 P	
170x220x110	6.69x8.66x4.33	BC-AGP-172211	BC-ATP-172211	BC-CGP-172211	BC-CTP-172211	BC-1520 ST	BC-1520 P	
170x270x110	6.69x10.63x4.33	BC-AGP-172711	BC-ATP-172711	BC-CGP-172711	BC-CTP-172711	BC-1525 ST	BC-1525 P	
190x280x100	7.48x11.02x3.94	BC-AGP-192810	BC-ATP-192810	BC-CGP-192810	BC-CTP-192810	BC-1928 ST	BC-1928 P	
190x280x140	7.48x11.02x5.51	BC-AGP-192814	BC-ATP-192814	BC-CGP-192814	BC-CTP-192814	BC-1928 ST	BC-1928 P	
200x300x130	7.87x11.81x5.12	BC-AGP-203013	BC-ATP-203013	BC-CGP-203013	BC-CTP-203013	BC-2030 ST	BC-2030 P	
200x300x150	7.87x11.81x5.91	BC-AGP-203015	BC-ATP-203015	BC-CGP-203015	BC-CTP-203015	BC-2030 ST	BC-2030 P	
200x300x180	7.87x11.81x7.09	BC-AGP-203018	BC-ATP-203018	BC-CGP-203018	BC-CTP-203018	BC-2030 ST	BC-2030 P	
210x210x100	8.27x8.27x3.94	BC-AGP-212110	BC-ATP-212110	BC-CGP-212110	BC-CTP-212110	BC-2020 ST	BC-2020 P	
210x210x130	8.27x8.27x5.12	BC-AGP-212113	BC-ATP-212113	BC-CGP-212113	BC-CTP-212113	BC-2020 ST	BC-2020 P	
250x350x150	9.84x13.78x5.91	BC-AGP-253515	BC-ATP-253515	BC-CGP-253515	BC-CTP-253515	BC-2535 ST	BC-2535 P	
250x350x180	9.84x13.78x7.09	BC-AGP-253518	BC-ATP-253518	BC-CGP-253518	BC-CTP-253518	BC-2535 ST	BC-2535 P	
280x280x130	11.02x11.02x5.12	BC-AGP-282813	BC-ATP-282813	BC-CGP-282813	BC-CTP-282813	BC-2828 ST	BC-2828 P	
280x380x130	11.02x14.96x5.12	BC-AGP-283813	BC-ATP-283813	BC-CGP-283813	BC-CTP-283813	BC-2838 ST	BC-2838 P	
300x300x150	11.81x11.81x5.91	BC-AGP-303015	BC-ATP-303015	BC-CGP-303015	BC-CTP-303015	BC-3030 ST	BC-3030 P	
300x300x180	11.81x11.81x7.09	BC-AGP-303018	BC-ATP-303018	BC-CGP-303018	BC-CTP-303018	BC-3030 ST	BC-3030 P	
300x400x120	11.81x15.75x4.72	BC-AGP-304012	BC-ATP-304012	BC-CGP-304012	BC-CTP-304012	BC-3040 ST	BC-3040 P	
300x400x150	11.81x15.75x5.91	BC-AGP-304015	BC-ATP-304015	BC-CGP-304015	BC-CTP-304015	BC-3040 ST	BC-3040 P	
300x400x180	11.81x15.75x7.09	BC-AGP-304018	BC-ATP-304018	BC-CGP-304018	BC-CTP-304018	BC-3040 ST	BC-3040 P	
350x350x150	13.78x13.78x5.91	BC-AGP-353515	BC-ATP-353515	BC-CGP-353515	BC-CTP-353515	BC-3535 ST	BC-3535 P	
350x350x180	13.78x13.78x7.09	BC-AGP-353518	BC-ATP-353518	BC-CGP-353518	BC-CTP-353518	BC-3535 ST	BC-3535 P	
350x450x120	13.78x17.72x4.72	BC-AGP-354512	BC-ATP-354512	BC-CGP-354512	BC-CTP-354512	BC-3545 ST	BC-3545 P	
350x450x160	13.78x17.72x6.30	BC-AGP-354516	BC-ATP-354516	BC-CGP-354516	BC-CTP-354516	BC-3545 ST	BC-3545 P	
350x450x200	13.78x17.72x7.87	BC-AGP-354520	BC-ATP-354520	BC-CGP-354520	BC-CTP-354520	BC-3545 ST	BC-3545 P	
400x500x160	15.75x19.69x7.87	BC-AGP-405016	BC-ATP-405016	BC-CGP-405016	BC-CTP-405016	BC-4050 ST	BC-4050 P	
400x500x200	15.75x19.69x7.87	BC-AGP-405020	BC-ATP-405020	BC-CGP-405020	BC-CTP-405020	BC-4050 ST	BC-4050 P	
400x600x180	15.75x23.62x7.09	BC-AGP-406018	BC-ATP-406018	BC-CGP-406018	BC-CTP-406018	BC-4060 ST	BC-4060 P	
400x600x230	15.75x23.62x9.06	BC-AGP-406023	BC-ATP-406023	BC-CGP-406023	BC-CTP-406023	BC-4060 ST	BC-4060 P	
530x630x185	20.87x24.80x7.28	BC-AGP-506018	BC-ATP-506018	BC-CGP-506018	BC-CTP-506018	BC-5060 ST	BC-5060 P	
530x630x255	20.87x24.80x10.04	BC-AGP-506025	BC-ATP-506025	BC-CGP-506025	BC-CTP-506025	BC-5060 ST	BC-5060 P	
530x730x185	20.87x28.74x7.28	BC-AGP-507018	BC-ATP-507018	BC-CGP-507018	BC-CTP-507018	BC-5070 ST	BC-5070 P	
530x730x255	20.87x28.74x10.04	BC-AGP-507025	BC-ATP-507025	BC-CGP-507025	BC-CTP-507025	BC-5070 ST	BC-5070 P	
630x830x185	24.80x32.68x7.28	BC-AGP-608018	BC-ATP-608018	BC-CGP-608018	BC-CTP-608018	BC-6080 ST	X	
630x830x285	24.80x32.68x11.22	BC-AGP-608028	BC-ATP-608028	BC-CGP-608028	BC-CTP-608028	BC-6080 ST	X	



# Q-Series

Hinge & Latch Type  
All Plastic Enclosures

- Plastic hinges & Plastic latches
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



## Specifications

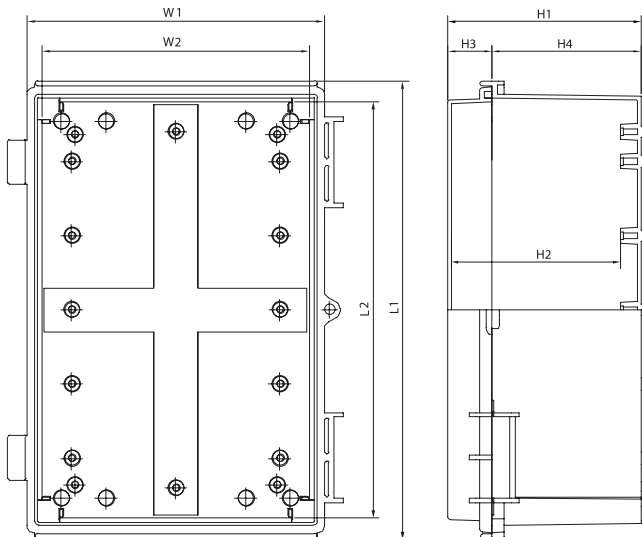
Protection Level	Dust/Water proof: IP67
	Impact test: IK07/08
Certification	UL508A(CGQ), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

## Part Numbers and Size

\*The base of Polycarbonate model contains 10% glass fiber for reinforcement

Outside size (including cover)		PART NUMBERS				Back Panel		
W * L * H (unit: mm)	W * L * H (unit: inch)	ABS		Polycarbonate (UL508A)		Steel 1.6mm	Plastic 3mm+	Size (unit: mm)
		Gray cover	Transparent cover	Gray cover	Transparent cover			
100x150x90	3.93x5.90x3.54	BC-AGQ-101509	BC-ATQ-101509	BC-CGQ-101509	BC-CTQ-101509	1015SQ	1015G	74x124
150x150x90	5.90x5.90x3.54	BC-AGQ-151509	BC-ATQ-151509	BC-CGQ-151509	BC-CTQ-151509	1515SQ	1515G	124x124
150X150X120	5.90x5.90x4.72	BC-AGQ-151512	BC-ATQ-151512	BC-CGQ-151512	BC-CTQ-151512			
160x210x100	6.30x4.72x3.93	BC-AGQ-162110	BC-ATQ-162110	BC-CGQ-162110	BC-CTQ-162110	1621SQ	1621G	130x180
160X210X130	6.30x4.72x5.11	BC-AGQ-162113	BC-ATQ-162113	BC-CGQ-162113	BC-CTQ-162113			
210x210x130	4.72x4.72x5.11	BC-AGQ-212113	BC-ATQ-212113	BC-CGQ-212113	BC-CTQ-212113	2121SQ	2121G	180x180
200X300X130	7.87x11.81x5.11	BC-AGQ-203013	BC-ATQ-203013	BC-CGQ-203013	BC-CTQ-203013	2030SQ	2030G	160x260
200X300X150	7.87x11.81x5.90	BC-AGQ-203015	BC-ATQ-203015	BC-CGQ-203015	BC-CTQ-203015			
200X300X180	7.87x11.81x7.08	BC-AGQ-203018	BC-ATQ-203018	BC-CGQ-203018	BC-CTQ-203018			
250X350X160	9.84x13.78x6.30	BC-AGQ-253516	BC-ATQ-253516	BC-CGQ-253516	BC-CTQ-253516	2535SQ	2535G	210x310
300X300X160	11.81x11.81x6.30	BC-AGQ-303016	BC-ATQ-303016	BC-CGQ-303016	BC-CTQ-303016	3030SQ	3030G	260x260
300X400X160	11.81x15.74x6.30	BC-AGQ-304016	BC-ATQ-304016	BC-CGQ-304016	BC-CTQ-304016	3040SQ	3040G	260x360
300x400x180	11.81x15.74x7.08	BC-AGQ-304018	BC-ATQ-304018	BC-CGQ-304018	BC-CTQ-304018			
350X450X200	13.78x17.71x7.87	BC-AGQ-354520	BC-ATQ-354520	BC-CGQ-354520	BC-CTQ-354520	3545SQ	3545G	300x400
400X500X160	15.74x19.69x6.30	BC-AGQ-405016	BC-ATQ-405016	BC-CGQ-405016	BC-CTQ-405016	4050SQ	4050G	350x450
400X500X200	15.74x19.69x7.87	BC-AGQ-405020	BC-ATQ-405020	BC-CGQ-405020	BC-CTQ-405020			

## Dimensions



Size	Enclosures							
	W1	W2	L1	L2	H1	H2	H3	H4
100x150x90	100	82	150	132	90	78	20	70
150x150x90	150	132	150	132	90	78	20	70
150X150X120	150	132	150	132	120	108.5	20	100
160x210x100	160	140	210	190	100	88	20	80
160X210X130	160	140	210	190	130	118	20	110
210x210x130	210	190	210	190	130	118.5	20	110
200X300X130	200	180	300	280	130	114	30	100
200X300X150	200	180	300	280	150	134	30	120
200X300X180	200	180	300	280	180	164	30	150
250X350X160	250	230	350	330	160	144	30	130
300X300X160	300	280	300	280	160	144	30	130
300X400X160	300	280	400	380	160	143	30	130
300x400x180	300	280	400	380	180	163	30	150
350X450X200	350	323	450	423	200	183	30	170
400X500X160	400	373	500	473	160	143	30	130
400X500X200	400	373	500	473	200	183	30	170



# AGD Series

Dual Door Type Enclosures

- Pre-assembled cover and transparent window
- Built-in hinge and stainless steel latch
- Detachable cover for easy access
- UL Listed (UL508A): Ref.# E343339
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base



## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Part Numbers and Size

Model		Size		Back Panel	
ABS	PC (UL508A)	mm	inches	Steel 1.6mm	Plastic 3mm
BC-AGD-253516	BC-CGD-253516	250 x 350 x 160	9.84 x 13.77 x 6.29	BC-2535ST	BC-2535P
BC-AGD-253519	BC-CGD-253519	250 x 350 x 190	9.84 x 13.77 x 7.48	BC-2535ST	BC-2535P
BC-AGD-354513	BC-CGD-354513	350 x 450 x 130	13.77 x 17.12 x 5.11	BC-3545ST	BC-3545P
BC-AGD-354517	BC-CGD-354517	350 x 450 x 170	13.77 x 17.12 x 6.69	BC-3545ST	BC-3545P
BC-AGD-354521	BC-CGD-354521	350 x 450 x 210	13.77 x 17.12 x 8.26	BC-3545ST	BC-3545P



# ATF series

Swing Panel Type Enclosures



## Assembly of Dual Door Kits



## Part Numbers and Size

\*Specifications is same as the double door

Model		Size		Back Panel	
ABS	PC (UL508A)	mm	inches	Steel 1.6mm	Plastic 3mm
BC-ATF-203013	BC-CTF-203013	200 x 300 x 130	7.87 x 11.81 x 5.12	BC-2030ST	BC-2030P
BC-ATF-203015	BC-CTF-203015	200 x 300 x 150	7.87 x 11.81 x 5.90	BC-2030ST	BC-2030P
BC-ATF-203018	BC-CTF-203018	200 x 300 x 180	7.87 x 11.81 x 7.09	BC-2030ST	BC-2030P
BC-ATF-253515	BC-CTF-253515	250 x 350 x 150	9.84 x 13.78 x 5.9	BC-2535ST	BC-2535P
BC-ATF-253518	BC-CTF-253518	250 x 350 x 180	9.84 x 13.78 x 7.09	BC-2535ST	BC-2535P
BC-ATF-282813	BC-CTF-282813	280 x 380 x 130	11.02 x 11.02 x 5.12	BC-2828ST	BC-2828P
BC-ATF-283813	BC-CTF-283813	280 x 380 x 130	11.02 x 14.96 x 5.12	BC-2838ST	BC-2828P
BC-ATF-303015	BC-CTF-303015	300 x 300 x 150	11.81 x 11.81 x 5.9	BC-3030ST	BC-3030P
BC-ATF-303018	BC-CTF-303018	300 x 300 x 180	11.81 x 11.81 x 7.09	BC-3030ST	BC-3030P
BC-ATF-304015	BC-CTF-304015	300 x 400 x 150	11.81 x 15.75 x 5.9	BC-3040ST	BC-3040P
BC-ATF-304018	BC-CTF-304018	300 x 400 x 180	11.81 x 15.75 x 7.09	BC-3040ST	BC-3040P
BC-ATF-354516	BC-CTF-354516	350 x 450 x 160	13.78 x 17.72 x 6.23	BC-3545ST	BC-3545P
BC-ATF-354520	BC-CTF-354520	350 x 450 x 200	13.78 x 17.72 x 7.87	BC-3545ST	BC-3545P
BC-ATF-405016	BC-CTF-405016	400 x 500 x 160	15.75 x 19.69 x 6.23	BC-4050ST	BC-4050P
BC-ATF-405020	BC-CTF-405020	400 x 500 x 200	15.75 x 19.69 x 7.87	BC-4050ST	BC-4050P
BC-ATF-406018	BC-CTF-406018	400 x 600 x 180	15.75 x 23.62 x 7.09	BC-4060ST	BC-4060P
BC-ATF-406023	BC-CTF-406023	400 x 600 x 230	15.75 x 23.62 x 9.05	BC-4060ST	BC-4060P
BC-ATF-506018	BC-CTF-506018	530 x 630 x 185	20.86 x 24.8 x 7.28	BC-5060ST	BC-5060P
BC-ATF-506025	BC-CTF-506025	530 x 630 x 255	20.86 x 24.8 x 10.04	BC-5060ST	BC-5060P

# Terminal Block Box



## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08 (Non-metallic), IK 09/10 (Aluminum)
Certification	CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PBT: -40°C to 100°C (-40°F to 212°F)
Flammability Rating	ABS: UL94-HB
	PBT: GF 15%, V-Ø
Rated Current	17A 400V
Material	ABS (with Built-in Cable Gland : PBT)

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Non-Metallic Terminal Block Box

Part Number	Outside size (including cover)			No. of Poles	Terminal Layout
	Unit:mm	Unit : inch	Knock-Out		
BC-A①②-4P	55 x 91 x 43	2.17 x 3.58 x 1.69	Ø21	4	Flat
BC-A①②-4PH	50 x 82 x 43	1.92 x 3.23 x 1.69	Ø21	4	Stair
BC-A①②-4PT	65 x 74 x 43	2.56 x 2.91 x 1.69	Ø21	4	Stair
BC-A①②-6PH	55 x 91 x 43	2.17 x 3.58 x 1.69	Ø21	6	Stair
BC-A①②-6PT	75 x 91 x 43	2.95 x 3.58 x 1.69	Ø21	6	Stair
BC-A①②-6P	75 x 91 x 43	2.95 x 3.58 x 1.69	Ø21	6	Flat
BC-A①②-10P	91 x 102 x 43	3.58 x 4.01 x 1.69	Ø21	10	Flat
BC-A①②-10PT	75 x 125 x 43	2.95 x 4.92 x 1.69	Ø21	10	Stair
BC-A①②-15PT	100 x 185 x 70	3.94 x 7.28 x 2.76		15	Stair
BC-A①②-15P	100 x 200 x 70	3.94 x 7.87 x 2.76		15	Flat
BC-A①②-20P	100 x 230 x 70	3.94 x 9.06 x 2.76		20	Flat
BC-A①②-20PT	100 x 230 x 70	3.94 x 9.06 x 2.76		20	Stair
BC-A①②-20PA	160 x 160 x 70	6.30 x 6.30 x 2.76		20	2 Line Stair
BC-A①②-20P2	160 x 160 x 70	6.30 x 6.30 x 2.76		20	2 Line Flat

①G: Opaque cover/ T: Transparent cover    ②B: Grayish blue / G: Gray  
\* Ø21=PG13.5 Gland

## Non-Metallic Terminal Block Box with Built-in Cable Gland

Part Number	Outside size (including cover)		Assembled Cable Gland	No. of Poles	Terminal Layout	Color
	Unit: mm	Unit: Inch				
BC-T①②-3PC	33 x 65 x 24	1.29 x 2.55 x 0.94	2 x PG9	3	Flat	Gray
BC-T①②-4PC	40 x 60 x 24	1.57 x 2.36 x 0.94	2 x PG9	4	Flat	Gray
BC-T①②-6PC	50 x 70 x 24	1.96 x 2.75 x 0.94	2 x PG9	6	Flat	Gray

①G: Opaque cover / T: Transparent cover    ②B: Black / G: Gray

## Aluminum Terminal Block Box

Model No.	Outside size (including cover)		Number of poles	Terminal Layout
	W x L x H (Unit :mm)	W x L x H (Unit : inch)		
BC-AL-5PT	80 x 75 x 65	3.15 x 2.95 x 2.56	5	Stair
BC-AL-6P	80 x 75 x 65	3.15 x 2.95 x 2.56	6	Flat
BC-AL-9P	100 x 100 x 80	3.94 x 3.94 x 3.15	9	Flat
BC-AL-10PT	80 x 125 x 65	3.15 x 4.92 x 2.56	10	Stair
BC-AL-15PT	100 x 160 x 80	3.94 x 6.30 x 3.15	15	Stair
BC-AL-15P	100 x 160 x 80	3.94 x 6.30 x 3.15	15	Flat
BC-AL-20PT	120 x 220 x 80	4.72 x 8.66 x 3.15	20	Stair
BC-AL-20P	120 x 220 x 80	4.72 x 8.66 x 3.15	20	Flat
BC-AL-20PAS	150 x 132 x 90	5.90 x 5.19 x 3.54	20	2 Line Stair
BC-AL-20PA	160 x 160 x 90	6.30 x 6.30 x 3.54	20	2 Line Stair
BC-AL-20P2	160 x 160 x 90	6.30 x 6.30 x 3.54	20	2 Line Flat
BC-AL-25PT	160 x 260 x 90	6.30 x 10.24 x 3.54	25	Stair
BC-AL-30PA	180 x 180 x 100	7.09 x 7.09 x 3.94	30	2 Line Stair
BC-AL-30PAS	120 x 220 x 80	4.72 x 8.66 x 3.15	30	2 Line Stair
BC-AL-30P2	230 x 200 x 110	9.06 x 7.87 x 4.33	30	2 Line Flat
BC-AL-40PA	160 x 260 x 90	6.30 x 10.24 x 3.54	40	2 line Stair
BC-AL-40P2	160 x 260 x 90	6.30 x 10.24 x 3.54	40	2 Line Flat
BC-AL-45P3	230 x 200 x 110	9.06 x 7.87 x 4.33	45	3 Line Flat
BC-AL-50PA	160 x 260 x 90	6.30 x 10.24 x 3.54	50	2 Line Stair

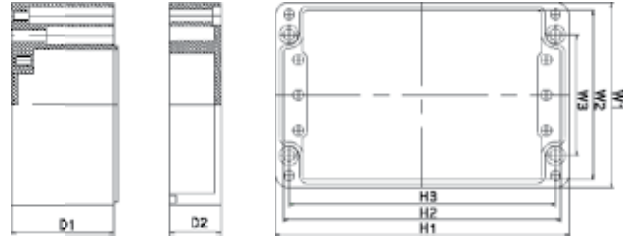
# Aluminum Enclosures



BASE

COVER

BASE



## Specifications

Protection level	IP Rating	IP66/67
	Impact testing	IK 09/10

## Dimensions

(unit: mm)

Model	W1	W2	W3	H1	H2	H3	D1	D2
BC-AL-050503	45	40	35	50	45	40	24	6
BC-AL-060603	64	57	36	58	51	46	25	9
BC-AL-060605	64	57	36	58	51	46	37	9
BC-AL-061003	68	57.8	36	98	91.8	86	25	9
BC-AL-061005	64	57	36	98	91	86	37	9
BC-AL-061503	64	57	36	150	143	138	25	9
BC-AL-061505	64	57	36	150	143	138	37	9
BC-AL-080806	75	67	63	80	72	52	42	15
BC-AL-080807	80	72	52	75	67	63	55.5	15
BC-AL-081306	80	72	52	125	117	113	42	15
BC-AL-081307	80	72	52	125	117	113	53.5	15
BC-AL-081806	80	72	52	175	167	16	42	15
BC-AL-081807	80	72	52	175	167	163	55	15
BC-AL-082506	80	72	52	250	242	238	40	12
BC-AL-082507	80	72	52	250	242	238	55	15
BC-AL-101008	100	92	66	100	92	86	61	20
BC-AL-101608	100	92	66	160	152	146	61	20
BC-AL-121208	120	111	82	122	113	106	61	20
BC-AL-122208	120	111	82	122	113	106	61	20
BC-AL-122209	120	111	82	220	211	204	61	30
BC-AL-123608	120	111	82	360	351	344	61	20
BC-AL-151309	132	121	92	150	144	138	70	20
BC-AL-161609	160	151	110	160	151	140	71	20
BC-AL-162110	160	151	110	210	201	190	81	20
BC-AL-162609	160	151	110	260	251	240	71	20
BC-AL-163609	160	151	110	360	351	340	71	20
BC-AL-181810	180	171	130	180	171	160	71	30
BC-AL-232011	230	230	140	200	193	150	91	20
BC-AL-232018	232	222	180	202	192	180	160	20
BC-AL-232811	230	221	180	280	271	160	91	20
BC-AL-233311	230	220	180	330	320	310	91	20
BC-AL-314011	313	303	262	404	394	382	91	20
BC-AL-314018	313	303	262	404	394	382	161	20

## Part Numbers and Size

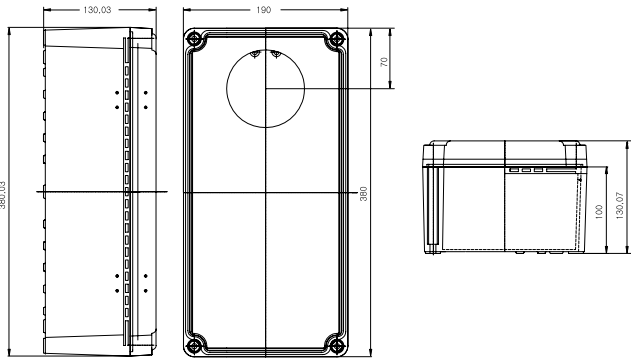
MODEL	SIZE (including cover)		Back panel
	unit :mm	unit : inch	
BC-AL-050503	45 x 50 x 32	1.77 x 1.95 x 1.25	-
BC-AL-060603	64 x 58 x 34	2.51 x 2.28 x 1.33	-
BC-AL-060605	64 x 58 x 46	2.51 x 2.28 x 1.81	-
BC-AL-061003	64 x 98 x 34	2.52 x 3.86 x 1.34	BC-0610A
BC-AL-061005	64 x 98 x 46	2.51 x 3.85 x 1.81	-
BC-AL-061503	64 x 150 x 34	2.51 x 5.90 x 1.33	-
BC-AL-061505	64 x 150 x 46	2.51 x 5.90 x 1.81	-
BC-AL-080806	80 x 75 x 57	3.15 x 2.95 x 2.24	BC-0808A
BC-AL-080807	80 x 75 x 70	3.14 x 2.95 x 2.75	BC-0808A
BC-AL-081306	80 x 125 x 57	3.15 x 5.00 x 2.24	BC-0813A
BC-AL-081307	80 x 125 x 70	3.15 x 5.00 x 2.75	BC-0813A
BC-AL-081806	80 x 175 x 57	3.15 x 6.89 x 2.05	BC-0818A
BC-AL-081807	80 x 175 x 70	3.15 x 6.89 x 2.75	BC-0818A
BC-AL-082506	80 x 250 x 57	3.15 x 9.84 x 2.05	BC-0825A
BC-AL-082507	80 x 250 x 70	3.15 x 9.84 x 2.75	BC-0825A
BC-AL-101008	100 x 100 x 81	3.94 x 3.94 x 3.15	BC-1010A
BC-AL-101608	100 x 160 x 81	3.94 x 7.87 x 3.15	BC-1016A
BC-AL-121208	120 x 122 x 81	4.72 x 4.80 x 3.15	BC-1212A
BC-AL-122208	120 x 220 x 81	4.72 x 8.66 x 3.15	BC-1222A
BC-AL-122209	120 x 220 x 91	4.72 x 8.66 x 3.54	BC-1222A
BC-AL-123608	120 x 220 x 81	4.72 x 8.66 x 3.18	BC-1236A
BC-AL-151309	150 x 132 x 90	5.90 x 5.19 x 3.54	BC-1315A
BC-AL-161609	160 x 160 x 90	6.30 x 6.30 x 3.54	BC-1616A
BC-AL-162110	160 x 210 x 100	6.29 x 8.26 x 3.94	BC-1621A
BC-AL-162609	160 x 260 x 90	6.30 x 10.24 x 3.54	BC-1626A
BC-AL-163609	160 x 360 x 91	6.29 x 14.17 x 3.58	BC-1636A
BC-AL-181810	180 x 180 x 100	7.09 x 7.09 x 3.94	BC-1818A
BC-AL-232011	230 x 200 x 111	9.06 x 7.87 x 4.33	BC-2320A
BC-AL-232018	230 x 200 x 180	9.05 x 7.87 x 7.08	BC-2320A
BC-AL-232811	230 x 280 x 111	9.05 x 11.02 x 4.37	BC-2328A
BC-AL-233311	230 x 330 x 111	9.05 x 12.99 x 4.37	BC-2333A
BC-AL-314011	313 x 404 x 111	12.3 x 15.90 x 4.27	BC-3140A
BC-AL-314018	313 x 404 x 181	12.3 x 15.90 x 7.12	BC-3140A



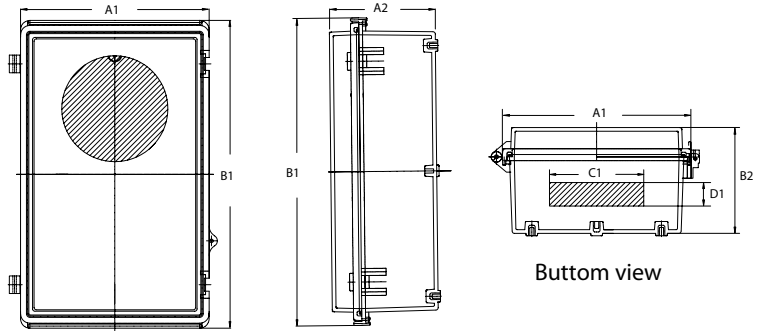


## SMPS Cases

- Front ventilator pre-installed
- Rectangle cut-out for easy access



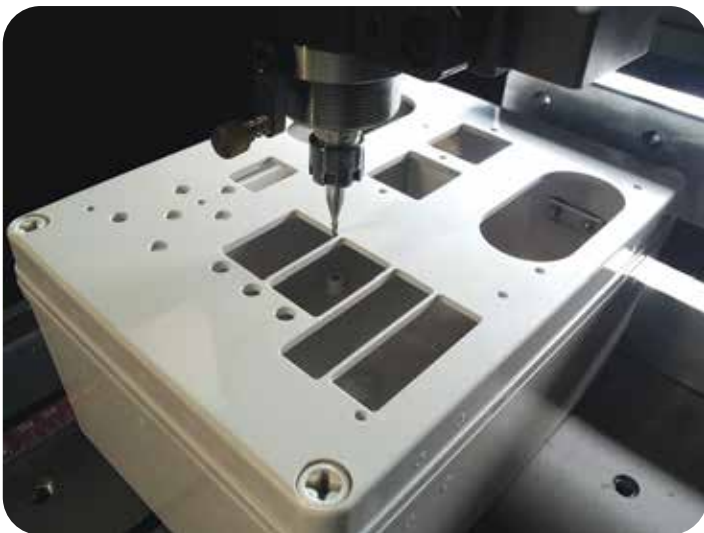
BC-SMPS-193813



Model	A1	A2	B1	B2	C1	D1
BC-SMPS-162609	160	90	268.40	90	80	20
BC-SMPS-192810	190	100	288.40	100	95	20

## Customization Services

10 pcs minimum order is required



### Hole Processing Services

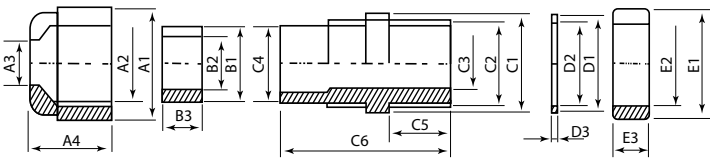
Per various customers' request, Amerimation provides sophisticated hole processing services on demand even on the side of the enclosures.

### Printing Services

A vivid silk screen printing and lettering is also available.



# Cable Glands



## NPT Series Specifications

Material	PL (Nylon), UL94
Working Temperature	-40°C to 100°C (-40°F to 212°F) in static state instantaneous heat resistance up to 120°C -20°C to 80°C (-4°F to 176°F) in dynamic state - Instantaneous heat resistance up to 100°C
Hermetic Seal	NBR

## Part Numbers and Size

SIZE CABLE Ømm	MODEL	
	Beige	Black
3.5 ~ 6	BC-PG-7 -G	BC-PG-7 -B
4 ~ 8	BC-PG-9 -G	BC-PG-9 -B
5 ~ 10	BC-PG-11 -G	BC-PG-11 -B
6 ~ 12	BC-PG-13.5 -G	BC-PG-13.5 -B
10 ~ 14	BC-PG-16 -G	BC-PG-16 -B
12 ~ 15	BC-PG-19 -G	BC-PG-19 -B
13 ~ 18	BC-PG-21 -G	BC-PG-21 -B
15 ~ 19	BC-PG-25 -G	BC-PG-25 -B
18 ~ 25	BC-PG-29 -G	BC-PG-29 -B
22 ~ 32	BC-PG-36 -G	BC-PG-36 -B
30 ~ 38	BC-PG-42 -G	BC-PG-42 -B
34 ~ 44	BC-PG-48 -G	BC-PG-48 -B
42 ~ 50	BC-PG-63 -G	BC-PG-63 -B

## Dimensions

Unit: mm

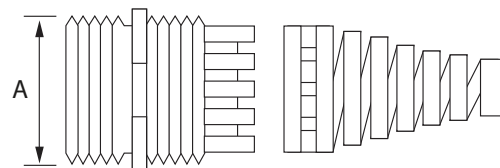
Part Number	Ømm (cable)	A1	A2	A3	A4	B1	B2	B3	C1	C2	C3	C4	C5	C6	D1	D2	D3	E1	E2	E3
BC-PG-7	3.5~6	17	12.5	7	15.5	8	6	7.5	17.5	12	8	8.5	8	29	17	11	1.5	19.5	12	5
BC-PG-9	4~8	20.5	15.5	8.5	15	10.5	8	8.5	21	16	11	10.5	8	31.5	21	15.5	1.5	24	15.5	5
BC-PG-11	5~10	24	18.5	10.5	16.5	13.5	9.5	8.5	24	18	14	14	8	33	24	18	1.5	26	18	5
BC-PG-13.5	6~12	26.5	20.5	12.5	18.5	15.5	11.5	7.5	26	20	16	16	9	33.5	26	20	1.5	29	21.5	5.5
BC-PG-16	10~14	29.5	22.5	14	18	17	13	9	29.5	22	17.5	18	10	36	29.5	21.5	1.5	32.5	22.5	6
BC-PG-19	12~15	30	24.5	16	20	18	15	8.5	30	23.5	18.5	18.5	10	37	30	23	1.5	33	24.5	6
BC-PG-21	13~18	36	29.5	18	23	21	17	10.5	36	28	22	22.5	10	41	36	27.5	1.5	39	27.5	6.5
BC-PG-25	15~19	39	31	20.5	21	23	19	11	39	29.5	24	24	11	41	39	28.5	1.5	40	30	7
BC-PG-29	18~25	45.5	37	25	25.5	29.5	24.5	14	45	36.5	30.5	30.5	12	46.5	45	36	1.5	49.5	37	7.2
BC-PG-36	22~32	59	48.5	32	29.5	39	32.5	16	57.5	46.5	39.5	39.5	13.5	55	57.5	45	1.5	64.5	47	7.5
BC-PG-42	30~38	67.5	56	38	30	46.5	39	16.5	66	53.5	47.5	45.5	14.5	56.5	66	52.5	2	69	54	7.9
BC-PG-48	34~44	72	60.5	43.5	29.5	50	44	16.5	70.5	58.5	52	51	14	56.5	69.5	57.5	2	76	59	7.9
BC-PG-63	42~50	76	67.2	49.7	39.8	60	53.3	18.8	76.5	70	61	58	27	77	70	65	3	81	68	9.2

# Bend Proof Cable Glands

## Part Numbers and Size

Unit: mm

Part number	Cable Range	Screw width(A)	Mounting Hole
BC-BP-PG 7	3 ~ 5.5	12.5	12.5 ~ 12.8
BC-BP-PG 9	8 ~ 4.5	15.2	15.2 ~ 15.5
BC-BP-PG 11	6 ~ 10	18.6	18.6 ~ 18.9
BC-BP-PG 13.5	7 ~ 12.5	20.4	20.4 ~ 20.7
BC-BP-PG 16	8.5 ~ 14	22.5	22.5 ~ 22.8
BC-BP-PG 21	12.5 ~ 18	28.3	28.3 ~ 28.7

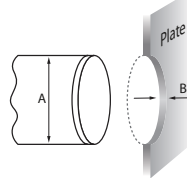
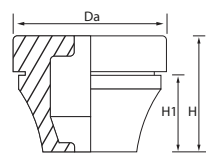


## Part Numbers and Size

Unit: mm

Part number	Thread	Cable	A	B	Da	H	H1
BC-RG-PG7	12.5	3~5	13	0.5~2	20	12.6	5.4
BC-RG-PG9	15.2	5~7	16	1~4	21	17.8	10.3
BC-RG-PG11	18.6	7~10	19	1~4	24	19.8	12.7
BC-RG-PG16	22.5	10~14	23	1~4	28	21.6	14.7
BC-RG-PG21	28.3	14~20	29	1~4	35	24.6	17.6
BC-RG-PG29	37	20~26	38	1~4	46	28.5	20
BC-RG-PG36	47	26~35	48	1~4	58	34.9	23.9

## Rubber Grommet

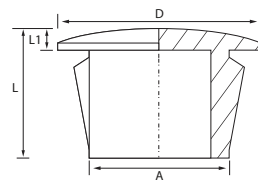


## Part Numbers and Size

Unit: mm

Part number	A	D	L1	L
BC-HP-PG8	7.8	11.9	1.6	8
BC-HP-PG10	9.5	13	1.6	10.5
BC-HP-PG13	12.7	16.9	1.6	10.5
BC-HP-PG16	15.9	19.8	1.6	10.5
BC-HP-PG19	19	22.9	1.6	10.5
BC-HP-PG22	22.2	24.9	1.6	11.5
BC-HP-PG26	25.5	28.3	1.6	11.5
BC-HP-PG30	30	34.2	1.6	11.5

## Hole Plug



## Specifications

Material	PC(BC-CG), ABS(BC-AG)
Temperature range	ABS: -40°C to 86°C (-40°F to 185°F)
	UL94-HB Non-Flammable
	Polycarbonate: -40°C to 120°C (-40°F to 248°F)
	UL94-V-0~5VA(Grey) Non-flammable
Rated Current	17A 240VAC

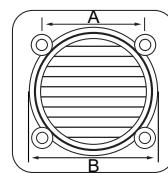
## Ventilators



## Part Numbers and Size

Unit: mm

Part number	A	Cut Out (B)	Fan Size
BC-AG-V60 BC-CG-V60	50 ±0.3mm	63 ~ 65Φ	60Φ
BC-AG-V80 BC-CG-V80	71.5 ±0.3mm	88 ~ 90Φ	80Φ

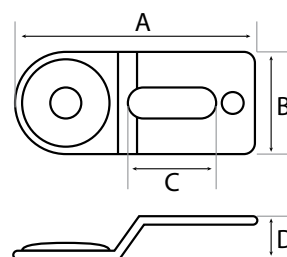


## Wall Mounting Bracket

## Part Numbers and Size

Unit: mm

Part number	A	B	C	D
B40	43	18	14	6
B50	49	22	14	7
B60	58	25	16	9



B40



B50



B60



# Cable chains

## **Mini Type**

CPS Series

## **Fast & Silent Type**

Clean Room Type : nsb - CR Series

Normal Type : nsb - N Series

Enclosed Type : nsb - E Series

Sliding Type : nsb - S Series

## **Longer Self-Supporting Type**

Normal Type : ST-N Series

Enclosed Type : ST-E Series

## **Long Travel Type**

Skid Type : ST-S Series

Enclosed Skid Type : ST-ES Series

Roller Skid Type : ST-RS Series

Enclosed Roller Skid Type : ST-ERS Series

## **Revolving Type : RV Series**

## **Twist/Screw Type : HX Series**

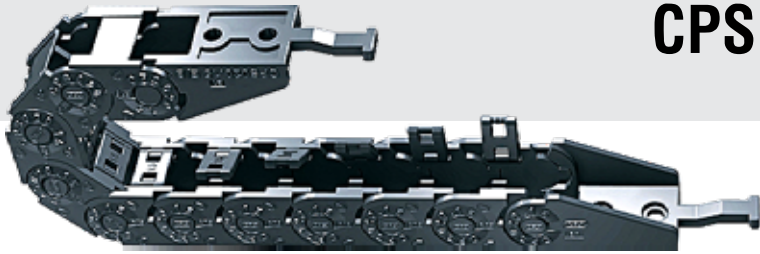
## **Dress Packs**

Roboway

UR Band / Robo-kit

## **Corrugated Tubes**

## **Tube Connectors**



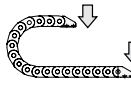
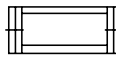
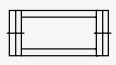
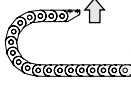
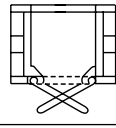
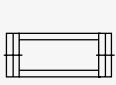
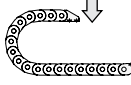
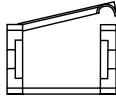
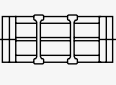


# CPS Series

Mini Cable Chain

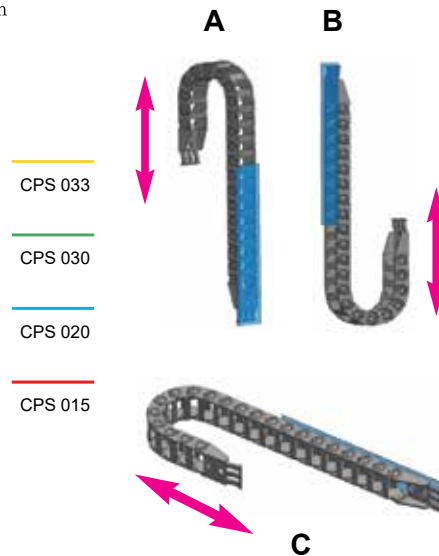
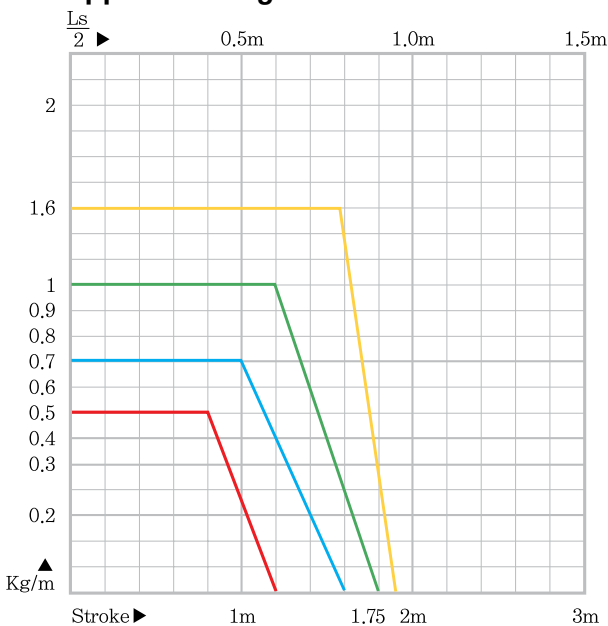


## Ordering Information

CPS 015 . 10 . R28 / B2 - (XXX mm)  
 ①      ②      ③      ④      Length

① CPS Ca- blechain	② Inner Width	③ Bending Radius	④ Bracket Type	Size (Unit : mm)				Frame type	Section - composition	Weight (kg/m)
				A	B	C	D			
015	06	18	 B1	12.6	13	6	10			0.100
	10	16.6		10		0.106				
	15	21.6		15		0.111				
	20	26.6		20		0.115				
020	15	28	 B2	24	20	15	14.5			0.245
	20	29		20		0.260				
	30	39		30		0.285				
	40	49		40		0.310				
030	15	38	 B3	29	26	15	19			0.380
	25	39		25		0.400				
	35	49		35		0.420				
	50	64		50		0.440				
033	27	35	E (S-EEB033)	45	31	27	23			0.550
	37	45		37		0.590				
	47	65		47		0.610				
	67	85		67		0.680				
	77	95		77		0.700				

## Unsupported Length



## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV
Certificate	CE, ATEX(Ex), RoHs

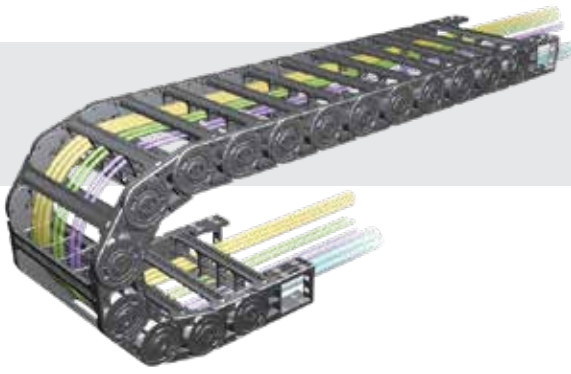
## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
CPS 015	0.8m	3.0m	0.2m
CPS 020	1.0m	5.0m	0.5m
CPS 030	1.5m	10.0m	0.6m
CPS 033	1.5m	10.0m	0.6m



# ST-N Series

Shift Cable Chain - Normal type



## Ordering Information

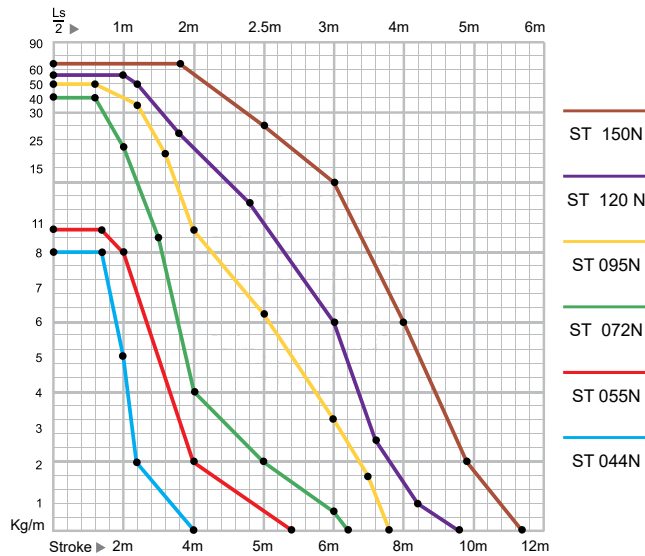
ST 044 N . 100 . R120

①                      ②                      ③

## Specifications

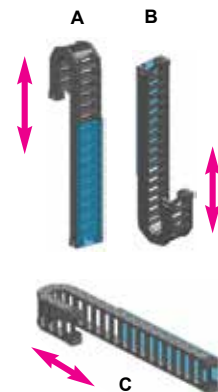
Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV
Certificate	CE, ATEX(Ex), RoHS

## Unsupported Length



## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
ST 044N	2.0m	40m	1.0m
ST 055N	3.0m	50m	1.0m
ST 072N	6.0m	100m	2.5m
ST 095N	6.0m	100m	3.0m
ST 120N	6.0m	120m	3.0m
ST 150N	7.0m	150m	4.0m

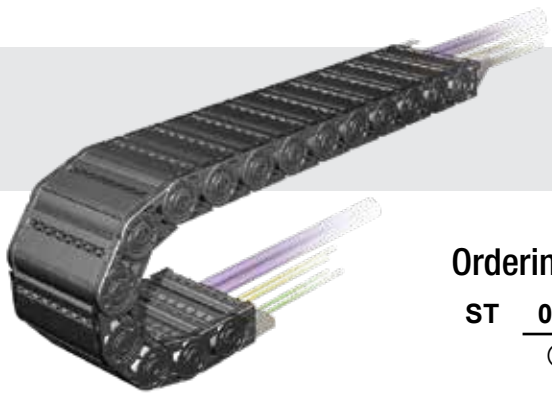


## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	50	56	38	35	26		0.93
	50		71		50			0.97
	55		76		55			1.00
	75		96		75			1.06
	100		121		100			1.17
	125		146		125			1.30
	150		171		150			1.43
	175		196		175			1.78
	200		221		200			1.94
	055		35		65			56
50		71	50	1.15				
55		76	55	1.18				
75		96	75	1.23				
100		121	100	1.31				
125		146	125	1.41				
150		171	150	1.51				
175		196	175	1.78				
200		221	200	1.92				
072		50	72	82		66	50	45
	75	107		75	2.20			
	100	132		100	2.30			
	125	157		125	2.43			
	140	172		140	2.51			
	150	182		150	2.56			
	175	197		175	2.62			
	200	207		200	2.66			
	250	222		250	2.93			
	300	232		300	3.11			
095	75	135	113	82	75	56		3.11
	100		138		100			3.17
	125		163		125			3.37
	150		188		150			3.49
	175		213		175			3.60
	190		228		190			3.71
	200		238		200			3.79
	250		278		250			4.00
	300		288		300			4.05
	350		338		350			4.31
400	388	400	4.69					
120	75	180	117	108	75	78		4.41
	100		142		100			4.53
	125		157		125			4.61
	150		167		150			4.67
	175		192		175			4.78
	200		217		200			4.93
	250		242		250			5.17
	300		282		300			5.41
	350		292		350			5.47
	400		342		400			5.88
150	75	205	121	140	75	110		5.85
	100		146		100			5.96
	125		171		125			6.08
	150		196		150			6.18
	175		221		175			6.30
	200		246		200			6.51
	250		296		250			6.78
	300		346		300			7.14
	350		396		350			7.51
	400		446		400			7.88
150	450	605	496	140	450	110		8.18
	500		546		500			8.37
	550		596		550			9.11
	600		646		600			9.26

See page 144 - 145 for accessories



# ST-E Series

Shift Cable Chain - Enclosed type



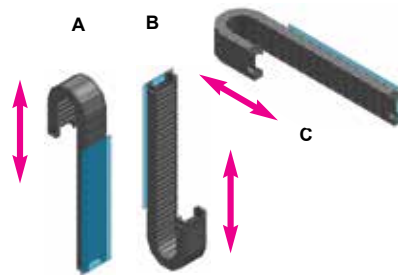
## Ordering Information

ST 044 E . 100 . R120  
 ①                      ②                      ③

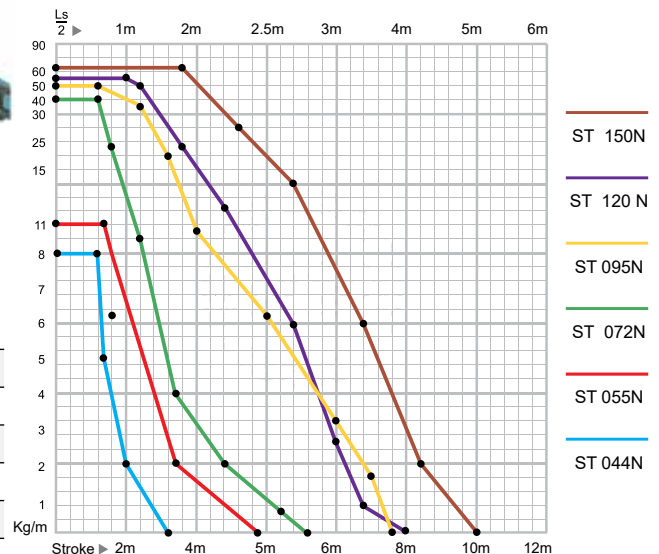
① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	56	38	35	24.5		1.03
	55	90	76		1.21			
	75	120	96		1.37			
	100	150	121		1.58			
055	50	100	71	52	50	38.5		1.36
	75	125	96		1.56			
	100	150	121		1.76			
	125	200	146		1.97			
	150	250	171		2.21			
072	50	120	82	66	50	44		2.37
	75	145	107		2.61			
	100	200	132		2.85			
	125	250	157		3.09			
	150	300	182		3.33			
095	100	150	138	82	100	55		3.55
	125	200	163		3.79			
	150	230	188		4.04			
	175	280	213		4.29			
	200	400	238		4.53			
120	150	200	192	108	150	76		5.79
	200	250	242		6.43			
	250	300	292		7.07			
	290	350	342		7.71			
	300	400	342		7.71			
150	200	305	246	140	200	110		8.16
	250	405	296		8.76			
	300	505	346		10.50			
	350	605	396		12.33			
	400	605	446		14.16			

## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
ST 044N	2.0m	40m	1.0m
ST 055N	3.0m	50m	1.0m
ST 072N	6.0m	100m	2.5m
ST 095N	6.0m	100m	3.0m
ST 120N	6.0m	120m	3.0m
ST 150N	7.0m	150m	4.0m



## Unsupported Length



## Specifications

Material	CPS-Amid(PA6+GF)
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV
Certificate	CE, ATEX(Ex), RoHS

## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
Bending Radius	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# ST-S Series

Shift Cable Chain - Long Travel Type



## Ordering Information

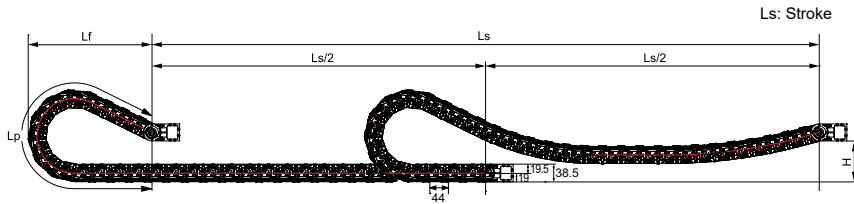
ST 044 S . 100 . R120  
 ①                      ②                      ③

① Normal type (N)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	74	38.5	35	26		1.03
	50		89		50			1.08
	55		94		55			1.10
	75		90		75			1.17
	100		120		100			1.26
	125	150	139		125			1.40
	150		189		150			1.52
	175		214		175			1.81
	200		239		200			1.98

## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3 m/s
Acceleration	10 m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

## Calculation of the chain length



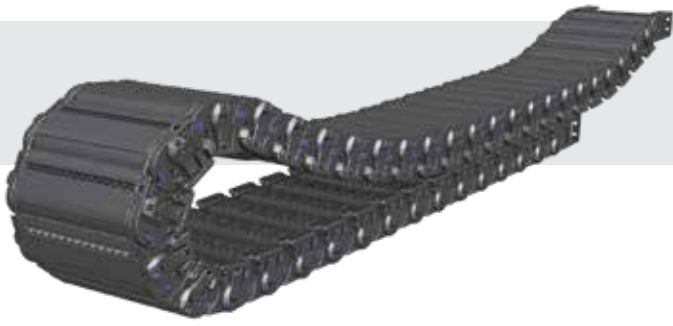
$$[ L = \frac{L_s}{2} + L_p ] \quad (\text{Unit : mm})$$

Bending Radius (R)	L p Loop Length	L f Loop Projection	H Moving Height
70	544	249	110
90	662	289	
120	926	393	
150	1,190	497	

## Accessories

See page 144 - 145 for accessories

Free end bracket						System tie wrap			Tie wrap			
Ordering No.	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	E M.EB Bolt hole width	Ordering No.	C Frame	Hole Type	Ordering No.	A	B	C
ST-FEB120E sb-FEB/WH075	74	38.5	35	26	0.4	S-TW.EB028.35	35	M6 Bolt Holes	S- TW036/025CR.35	46	35.4	-
	89		50		15.4	S-TW.EB028.50	50		69	48.9	15	
	94		55		20.4	S-TW.EB028.55	55		70	48.9	20	
	114		75		40.4	S-TW.EB028.75	75		94	48.9	40	
	139		100		65.4	S-TW.EB028.100	100		118	48.9	65	
	164		125		90.4	S-TW.EB028.125	125		142	48.9	90	
	189		150		115.4	S-TW.EB028.150	150					
	214		175		140.4	S-TW.EB028.175	175					
	239		200		165.4	S-TW.EB028.200	200					



# ST-ES Series

Shift Cable Chain - Enclosed Long Travel Type



## Ordering Information

ST 044 ES . 100 . R120

①                      ②                      ③

See page 144 - 145 for accessories

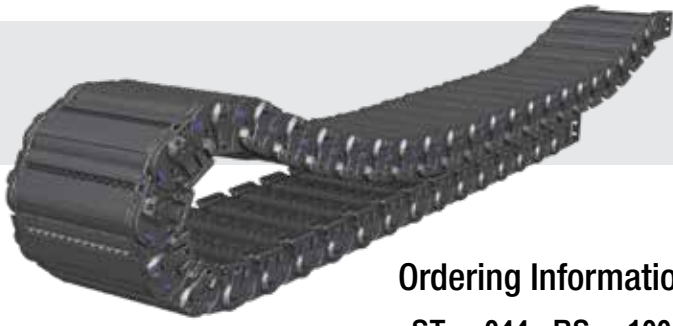
① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	74	38.5	35	26		1.18
	55	90	94		55			1.37
	75	120	114		75			1.53
	100	150	139		100			1.74
072	50	120	105	71.8	50	44		2.77
	75	145	130		75			3.01
	100	200	155		100			3.25
	125	250	180		125			3.49
	150	300	205		150			3.73
095	100	150	162	89	100	55		4.16
	125	200	187		125			4.41
	150	230	212		150			4.65
	175	280	237		175			4.90
	200	400	262		200			5.15
120	150	200	218	115	150	76		6.28
	200	250	268		200			6.92
	250	300	318		250			7.56
	290	350	368		290			8.20
	300	400			300			

## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS



# ST-RS Series

Shift Cable Chain - Enclosed Long Travel Type



## Ordering Information

ST 044 RS . 100 . R120

①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	73	40.5	35	26		1.09
	50		88		50			1.15
	55		93		55			1.17
	75		113		75			1.24
	100		138		100			1.33
	125		163		125			1.47
	150		188		150			1.59
	175		213		175			1.88
	200		238		200			2.05
	072		50		100			104
75		129	75	2.67				
100		154	100	2.77				
125		179	125	2.91				
140		194	140	3.02				
150		204	150	3.05				
175		229	175	3.17				
200		254	200	3.59				
250		304	250	3.99				
300		354	300	4.34				
095	75	135	143	90	75	56		3.48
	100		168		100			3.55
	125		193		125			3.73
	150		218		150			3.84
	175		243		175			3.96
	190		258		190			4.07
	200		268		200			4.14
	240		308		240			4.36
	250		318		250			4.41
	300		368		300			4.67
350	418	350	5.03					
400	468	400	5.43					
120	75	180	143	117	75	78		4.75
	100		168		100			4.87
	125		193		125			5.02
	150		218		150			5.10
	175		243		175			5.28
	200		268		200			5.52
	250		318		250			5.82
	300		368		300			6.25
	350		418		350			6.67
	400		468		400			6.96
150	75	305	162	145	75	110		7.87
	100		187		100			7.98
	115		202		115			8.06
	125		212		125			8.11
	150		237		150			8.18
	175		262		175			8.34
	200		287		200			8.55
	240		327		240			8.76
	250		337		250			8.81
	290		377		290			9.11
300	387	300	9.18					
350	437	350	9.55					
400	487	400	9.98					
150	450	605	537		450			10.21
	500		587		500			10.41
	550		637		550			11.14
	600		687		600			11.29

## How to Choose Bending Radius

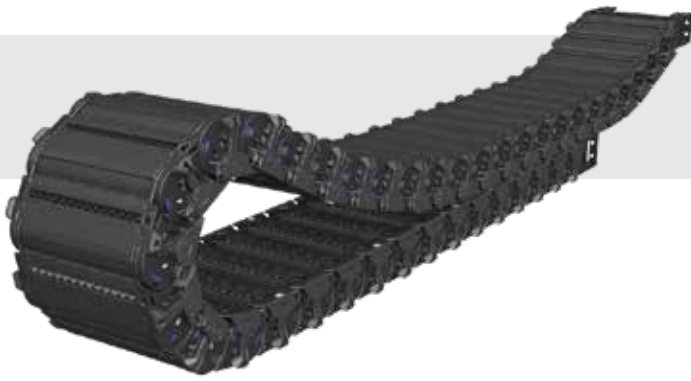
Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

## Specifications

Material	Polyamide with reinforced glass fiber : UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

See page 144 - 145 for accessories





# ST-ERS Series

Long travel type with Built In Roller Wheels



## Ordering Information

ST 044 ERS . 100 . R120  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	73	40.5	35	24.5		1.07
	55	90	93		55			1.16
	75	120	113		75			1.23
	100	150	138		100			1.33
072	50	120	104	69	50	44		2.53
	75	145	129		75			2.65
	100	200	154		100			2.77
	125	250	179		125			2.89
	150	300	204		150			3.01
095	100	150	168	85	100	55		4.20
	125	200	193		125			4.45
	150	230	218		150			4.70
	175	280	243		175			4.95
	200	400	268		200			5.19
120	150	200	218	112	150	76		5.17
	200	300	268		200			5.48
	250	350	318		250			5.78
	290	400	368		290			6.09
	300	500			300			

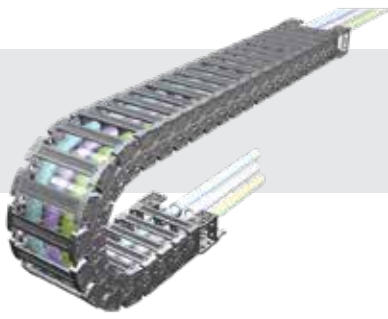
See page 144 - 145 for accessories

## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

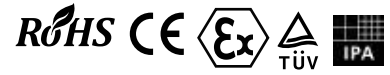
## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS



# nsb-CR Series

Clean room type



## Ordering Information

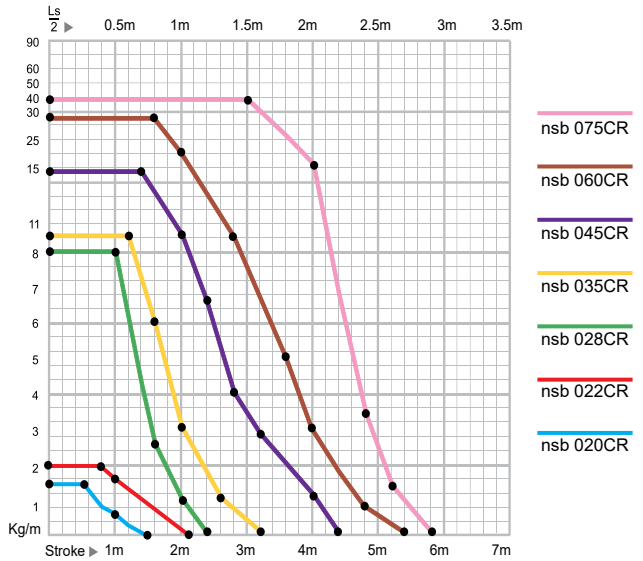
nsb 020 CR . 20 . R48  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)			
			A	B	C	D					
020	20	28	34	22	20	15	0.32 0.35				
	40	38 48	54		40						
022	16	35	30	29	16	22	0.43				
	27	45	41		27		0.47				
	37	75	51		37		0.51				
	47	100	61		47		0.55				
	67	120	81		67		0.67				
028	35	50	55	38	35	26	0.90				
	50		70		50		0.98				
	55		75		55		1.02				
	75		95		75		1.12				
	100		120		100		1.27				
	125		145		125		1.41				
	150		170		150		1.59				
	175		195		175		1.74				
	200		220		200		1.84				
	035		35		75		55	52	35	40	1.00
50		70	50	1.06							
55		75	55	1.09							
75		95	75	1.17							
100		125	100	1.29							
125		145	125	1.39							
150		170	150	1.53							
175		195	175	1.65							
200		220	200	1.73							
045		50	75	80		70	50		49		2.59
	75	105		75	2.74						
	100	130		100	2.90						
	125	155		125	3.11						
	150	180		150	3.31						
	175	205		175	3.48						
	200	230		200	4.18						
	250	280		250	4.76						
	300	330		300	5.32						
	060	75		125	115		82	75		56	3.56
100		140	100		3.66						
125		165	125		3.97						
150		190	150		4.16						
175		215	175		4.33						
190		230	190		4.52						
200		240	200		4.64						
250		290	250		5.06						
300		340	300		5.48						
350		390	350		6.09						
400	440	400	6.66								
075	75	180	115	108	75	78	5.37				
	100		140		100		5.57				
	125		165		125		5.82				
	150		190		150		6.01				
	200		240		200		6.26				
	250		290		250		6.68				
	300		340		300		7.22				
	350		390		350		7.94				
	400		440		400		8.67				
	450		490		450		9.43				
	500		540		500		10.01				
	550		590		550		10.41				
	600		640		600		11.88				
											12.17

## Specifications

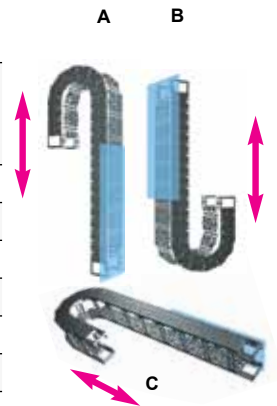
Material	Polyamide with reinforced glass fiber: UL94-HB
Speed	5m/s
Noise level	30dB
Acceleration	15m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV, Customized color
Certificate	CE, IPA, ATEX(Ex), TUV, RoHS

## Unsupported Length



## Other Length Restrictions

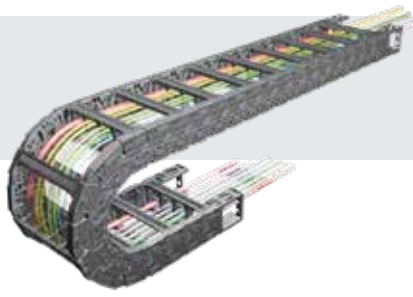
Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
nsb 020CR	1.0m	5m	0.5m
nsb 022CR	1.0m	5m	0.5m
nsb 028CR	2.0m	40m	1.0m
nsb 035CR	3.0m	50m	1.0m
nsb 045CR	6.0m	100m	2.5m
nsb 060CR	6.0m	100m	3.0m
nsb 075CR	6.0m	100m	3.0m



## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# nsb-N Series

Low Noise, Normal type



## Ordering Information

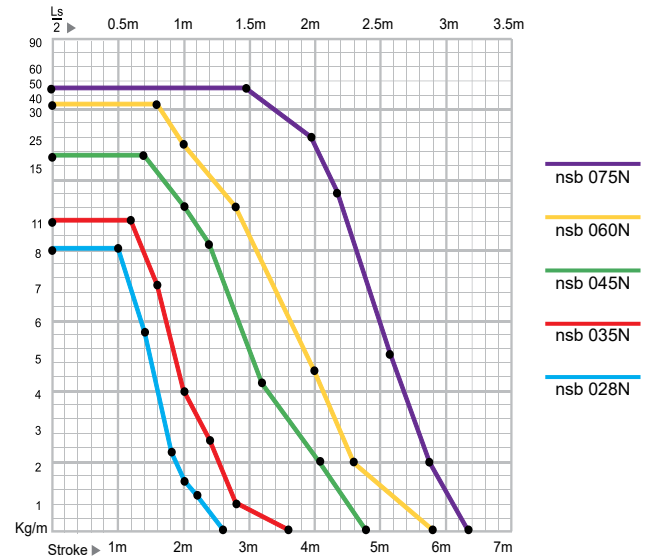
nsb 028 N . 50 . R66  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
028	35	46	55	38	35	26		0.79
	50		70		50			0.82
	55		75		55			0.85
	75		95		75			0.90
	100		120		100			0.98
	125		145		125			1.08
	150		170		150			1.18
	175		195		175			1.45
	200		220		200			1.59
	035		35		55			55
50		70	50	1.13				
55		75	55	1.15				
75		95	75	1.18				
100		120	100	1.25				
125		145	125	1.32				
150		170	150	1.41				
175		195	175	1.62				
200		220	200	1.72				
045		50	90	80		66	50	45
	75	105		75	2.14			
	100	130		100	2.22			
	125	155		125	2.32			
	140	170		140	2.38			
	150	180		150	2.42			
	175	205		175	2.51			
	200	230		200	2.86			
	250	285		250	3.15			
	300	330		300	3.43			
060	75	125	115	82	75	56		3.30
	100		140		100			3.35
	125		165		125			3.51
	150		190		150			3.60
	175		215		175			3.69
	200		240		200			3.84
	250		290		250			4.05
	300		340		300			4.26
	350		390		350			4.57
	400		440		400			4.85
075	75	160	115	108	75	78		4.80
	100		140		100			4.90
	125		165		125			5.02
	150		190		150			5.12
	175		215		175			5.25
	200		240		200			5.46
	250		290		250			5.72
	300		340		300			6.09
	350		380		350			6.45
	400		440		400			6.83
	450	480	490	450	450	7.12		
	500		540	500	500	7.32		
	550		590	550	550	8.06		
	600		640	600	600	8.20		

## Specifications

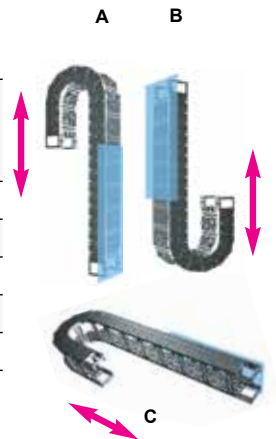
Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	30dB
Speed	5m/s
Acceleration	15m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV, Customized color
Certificate	CE, ATEX(Ex), RoHS

## Unsupported Length



## Other Length Restrictions

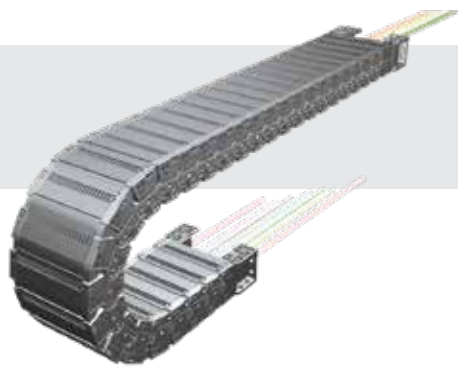
Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
nsb 028N	2.0m	40m	1.0m
nsb 035N	2.0m	40m	1.0m
nsb 045N	6.0m	100m	2.5m
nsb 060N	6.0m	100m	3.0m
nsb 075N	6.0m	100m	3.0m



## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# nsb-E Series

Low Noise Enclosed type



## Ordering Information

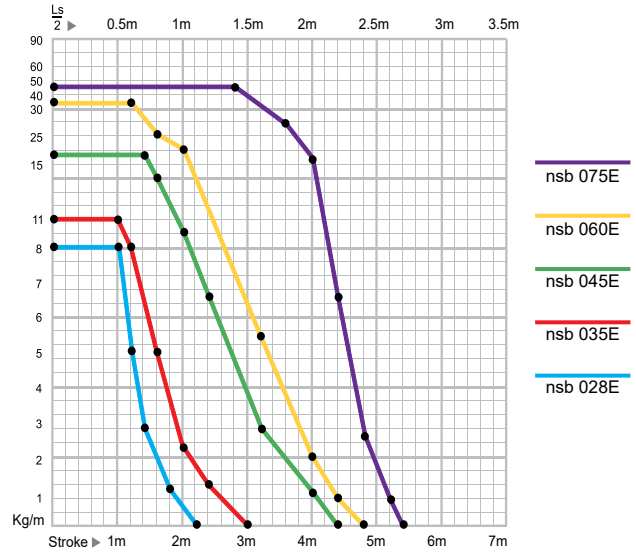
nsb 028 E . 50 . R66  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
028	35 55 75 100	66 86 116 146	55 75 95 120	38	35 55 75 100	26		1.00
								1.13
								1.30
								1.50
035	50 75 100 125 150	90 115 140 190	70 95 120 145 170	52	50 75 100 125 150	40		1.45
								1.64
								1.83
								2.06
								2.28
045	75 100 125 150	90 110 135 165 185 235 285	105 130 155 180	66	75 100 125 150	45		2.78
								3.07
								3.35
								3.58
								060
4.86								
5.41								
075	150 200 300	160 180 230 280 330 380 480	190 240 340	108	150 200 300	78		
								7.97
								9.48

## Specifications

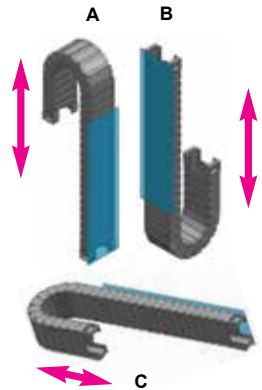
Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	30dB
Speed	5m/s
Acceleration	15m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV, Customized color
Certificate	CE, ATEX(Ex), RoHS

## Unsupported Length



## Other Length Restrictions

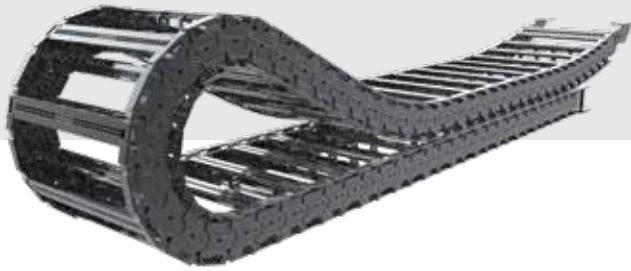
Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
nsb 028E	2.0m	40m	1.0m
nsb 035E	3.0m	50m	1.0m
nsb 045E	6.0m	100m	2.5m
nsb 060E	6.0m	100m	3.0m
nsb 075E	6.0m	120m	3.0m



## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# nsb-S Series

Low Noise, Long Travel Type

- Silent running-30dB
- Fit for high speed applications
- Low dust



## Ordering Information

nsb 044 S . 100 . R185  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)					
			A	B	C	D							
050	50	110	104	71.5	50	45	45	2.38					
	75		129		75			2.44					
	100		154		100			2.51					
	125		179		125			2.61					
	150		204		150			2.71					
	175		229		175			2.80					
	200		254		200			3.09					
	250		285		250			3.38					
	300		354		300			3.63					
	065		75		140			137	89	75	56	56	3.29
			100					162		100			3.34
125		187	125	3.49									
150		212	150	3.58									
175		237	175	3.68									
190		252	190	3.76									
200		262	200	3.82									
240		302	240	3.99									
250		312	250	4.03									
300		362	300	4.24									
350		412	350	4.53									
400	462	400	4.85										
080	75	180	143	115	75	76	76	4.27					
	100		168		100			4.36					
	125		193		125			4.47					
	150		218		150			4.57					
	175		243		175			4.67					
	200		268		200			4.85					
	250		318		250			5.07					
	300		368		300			5.40					
	350		418		350			5.71					
	400		468		400			6.09					
	450		518		450			6.28					
500	568	500	6.45										
550	618	550	7.08										
600	668	600	7.20										

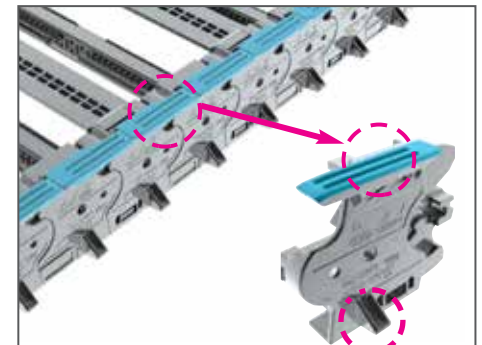
## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

## Specifications

Material	CPS-Amid(PA6+GF)
Noise Range	30dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

nsb chain is designed to minimize dust as forming the groove on skid surface and by installing sliding bar (Nylon) which is same material with nsb cable chain on guide channel



The side supports allow it to maintain a stable operation, making it suitable for high speed applications.

See page 144 - 145 for accessories



# RV Series

Revolving Chain



## Ordering Information

RV 048 CR . 200 . A  
 ①                      ②                      ③

(Unit : mm)

① Pitch (mm)	② Inner Height	③ Application Type of Ball Caster	Size (Unit : mm)				Application for Ball Caster			
			A (A1)	B	C	D(D1)	Type A		Type B	
							Minimum distance (L)	Minimum reverse bending (R)	Minimum distance (L')	Minimum reverse bending (R')
020	16	Type A or B	30	28	16	22	130	40	150	30
	27		41		27					
	37		51		37					
	47		61		47					
	67		81		67					
77	91		77							
028	35		59(65)	38	35	28(25)	170	70	200	50
	55		79(85)		55					
	75		99(105)		75					
	100		124(130)		100					
	125	149(155)	125							
040	50	78 (86)	52	50	40(37)	230	120	340	70	
	75	103 (111)		75						
	100	128 (136)		100						
	110	138 (146)		110						
	125	153 (161)		125						
	150	178 (186)		150						
	175	203 (211)		175						
	200	228 (236)		200						
048	50	78(86)	65	50	53(50)	300	160	450	90	
	75	103(111)		75						
	100	128(136)		100						
	125	153(161)		125						
	150	178(186)		150						
	200	228(236)		200						
060	50	90(97)	82	50		400	165	485	120	
	75	115(122)		75						
	100	140(147)		100						
	125	165(172)		125						
	150	190(197)		150						
	175	215(222)		175						
	200	240(247)		200						
	300	340(347)		300						

## Specifications

Material	CPS-Amid(PA6+GF)
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

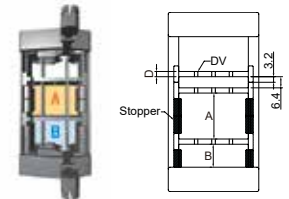
## Stopper System

Stopper decides the location of divider which is settled in side of cable chain and control the position of divider according to the inserted cable's size and quantity.  
 The items are classified as ST-M1, ST-M2, ST-S1, ST-S2 and please refer following drawings.



	ST-M1.10	ST-M2.10	ST-S1.05	ST-S2.05
Ordering No.	CPS 036N	CPS 050N	CPS 068, 077	CPS 095, 120
A	5, 10, 15, 20			
B	16	24	27.8	35.4
C	1.5		1.8	

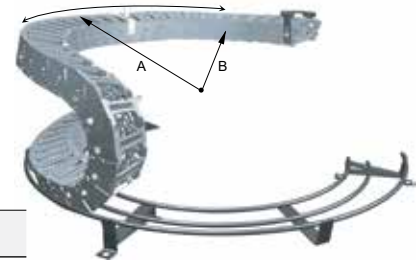
## Application method stopper



A	6.4+10XStopper Q'ty
B	3.2+10XStopper Q'ty
D	RV028CR : 3.3mm RV040CR : 3.2mm RV048CR : 3.5mm

# HX Series

Helix Chain



## Ordering Information

HX 3553 . 075 . R 90  
 ①                      ②                      ③

(Unit : mm)

① Helix Chain	② Inner Width	③ Bending Radius	Pitch	A	B
3553	75	90 140	53	418	315
6075	100	110 135 185 235	75	608	468

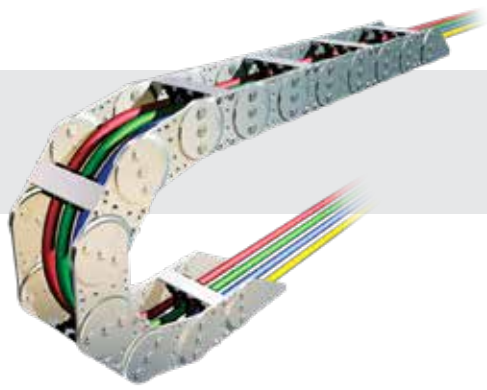
## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Speed	When the rotation speed up to 4m/sec.
Temperature	-30°C~+130°C
Certificate	CE, RoHS

## Calculation of required Number of Links

$$N = \left( \frac{\pi \times X \text{ Or } X \times B}{360^\circ \times P} \right) + \frac{Lp}{P}$$

N : Number of Links Or : Outer Radius B : Rotation angle P : Chain pitch Lp : π R+6p



# SK Series

Steel Cable Chain

- Highly durable cable chains made of steel and aluminum
- Smaller Link Plate design provide more stability
- Customized holes and frames can give stronger supporting power
- For various industrial applications like conveying machinery etc.

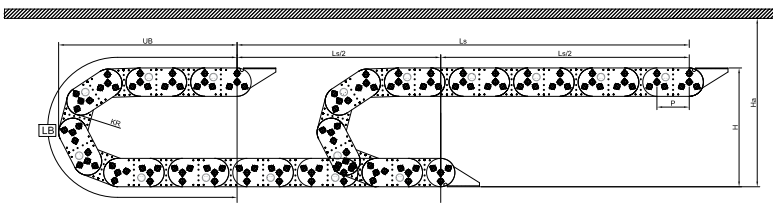
## Ordering Information

SKS 70 . BST 84 . KR 125 / F - XXXL  
 ①                      ②                      ③                      Length(mm)

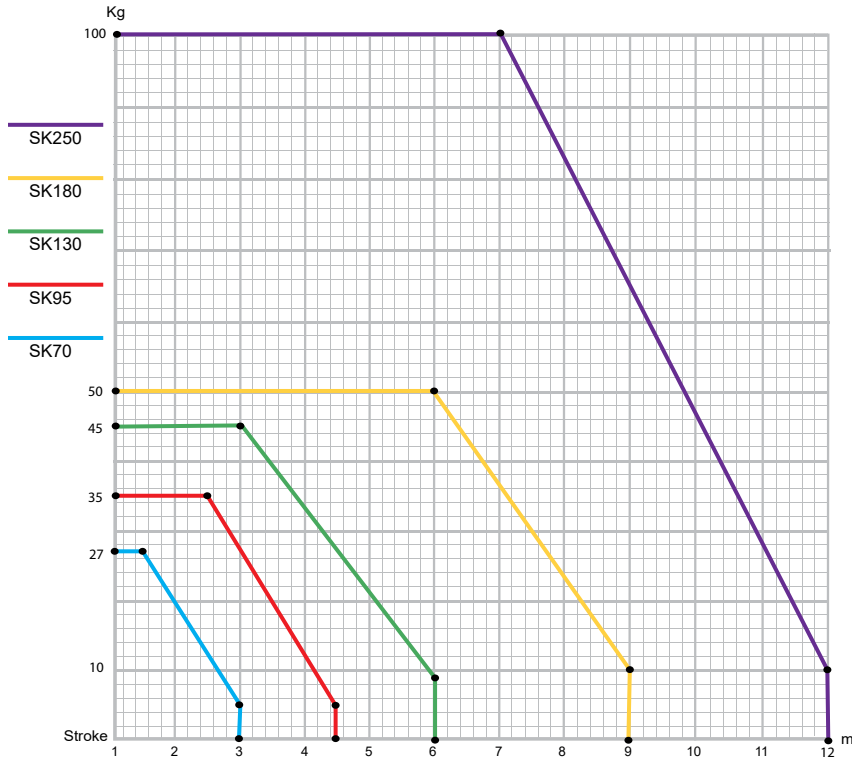
## Calculation of the chain length

$$[ L = \frac{Ls}{2} + LB ]$$

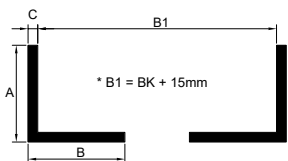
Ls: Stroke UB: Loop Projection



## Unsupported Length



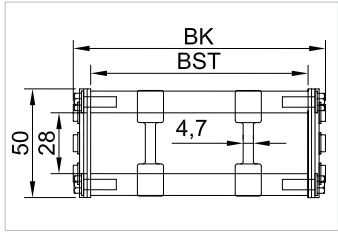
## Guide Channel



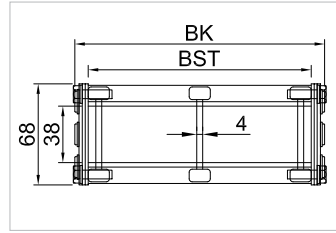
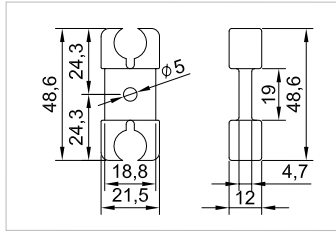
	SK70	SK95	SK130	SK180	SK250
A	30	50	65	90	100
B	30	50	65	90	100
C	3	4	5	6	7

① Pitch (mm)	② Inner Width (Frame width) (BST)	③ Bending Radius (KR)	Loop Length (LB)	Safe Space (Ha)	Moving Height (H)	Q'ty of Divider	Outside width (BK)							
70	84	75	515	210	200	2	100							
	109													
	134													
	159													
	184													
	234													
	284													
334														
95	82	125	770	330	318	1	100							
	107													
	132													
	157													
	182													
	232													
	282													
	332													
	382													
	432													
	482													
	532													
582														
130	176	150	990	410	394	3	200							
	226													
	276													
	326													
	376													
	426													
	476													
	526													
	576													
	626													
	676													
	726													
776														
180	171	250	1,500	650	640	2	200							
	221													
	271													
	321													
	371													
	421													
	471													
	571													
	671													
	771													
	871													
	971													
	1,071													
	250							264	350	2100	950	950	UP	300
364														
464														
564														
664														
764														
864														
964														
1064														
1164														
		3	400	2100	950	950	Down	400						
		4												
	5													
	6													
	7													
	8													
	9													
	10													
	11													
	12													

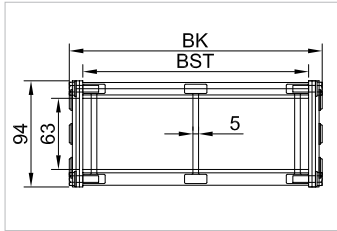
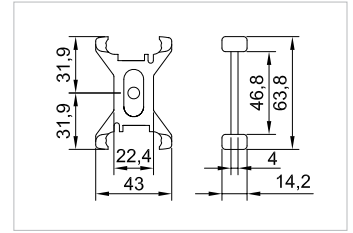
## Solid Bar Type



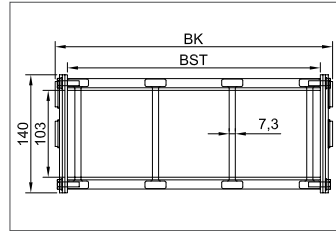
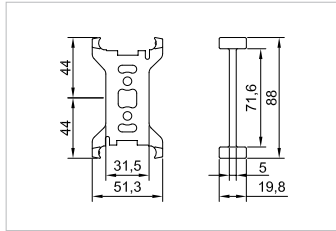
KS70



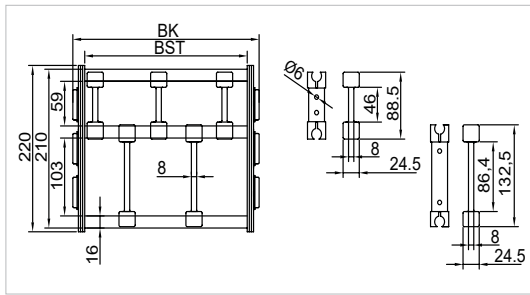
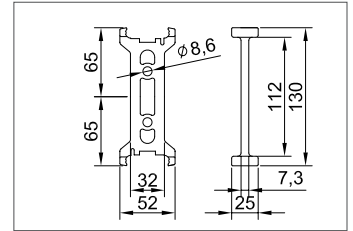
KS95



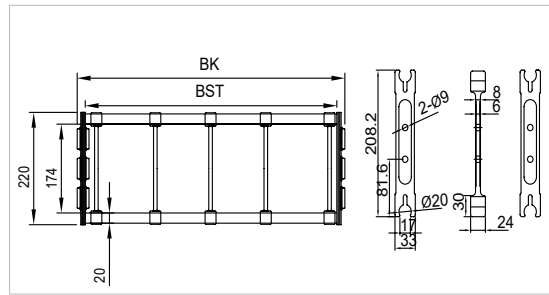
KS130



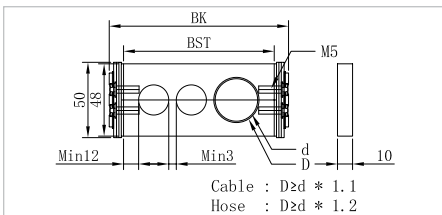
KS180



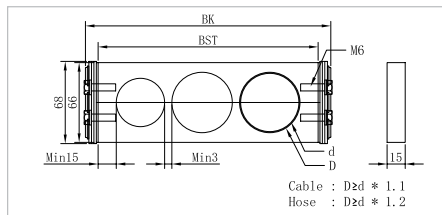
KS250



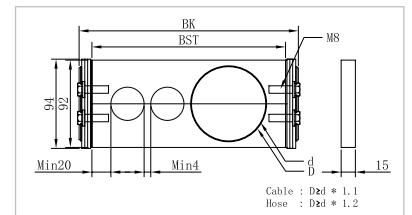
## Hole Bar Type



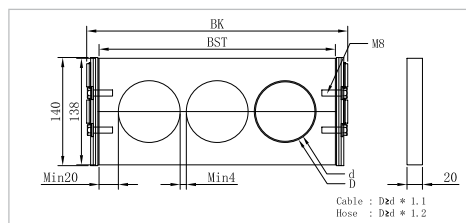
KS70



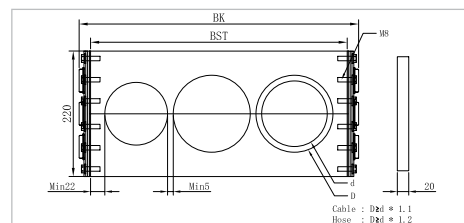
KS95



KS130



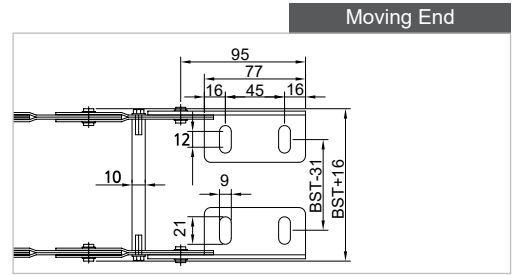
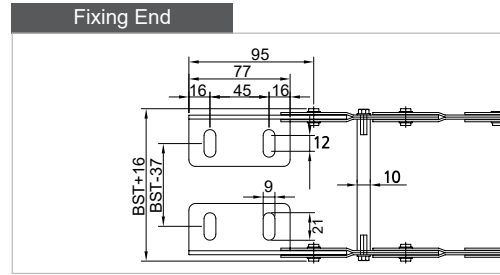
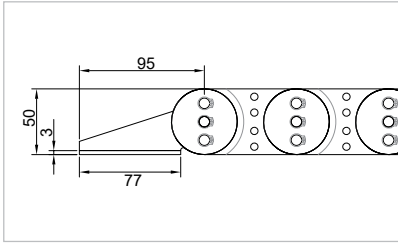
KS180



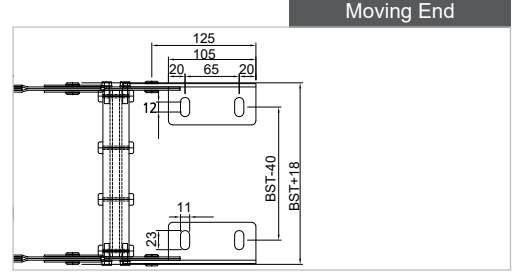
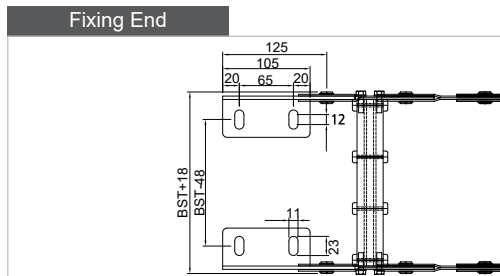
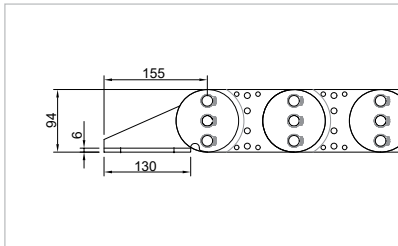
KS250

# Bracket

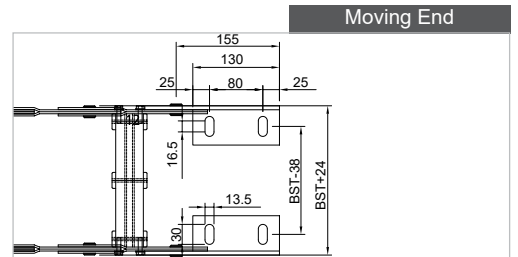
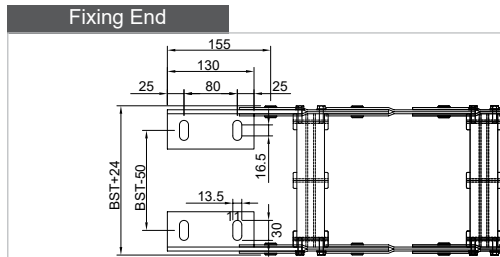
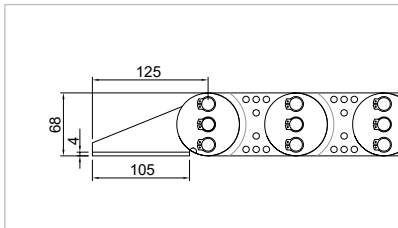
## KS70



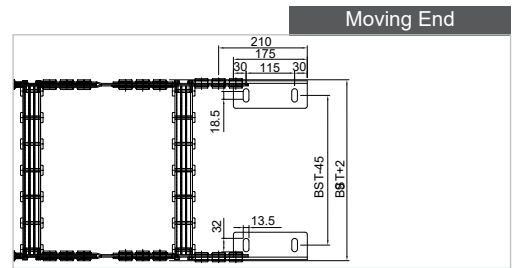
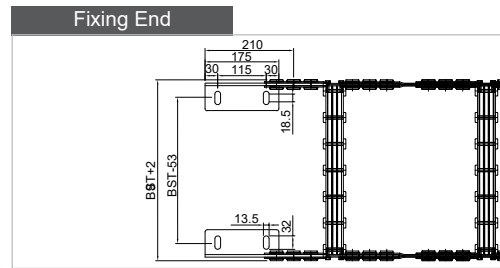
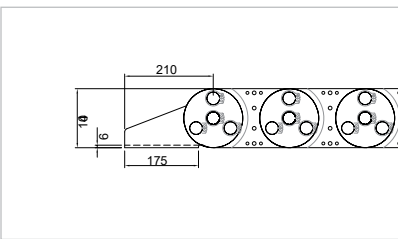
## KS95



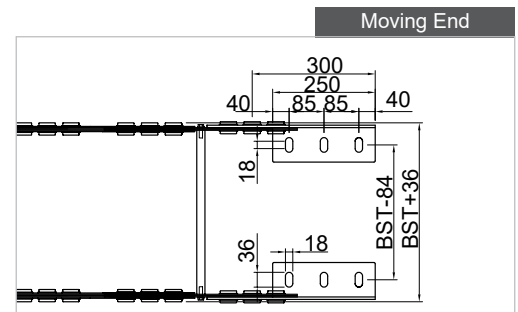
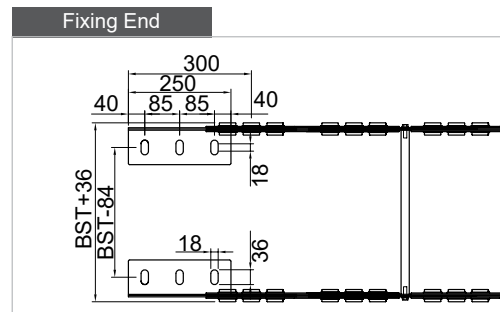
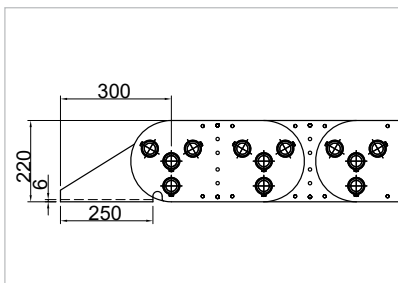
## KS130



## KS180



## KS250



• **Note** •

A series of horizontal dotted lines for writing notes, contained within a rounded rectangular border.



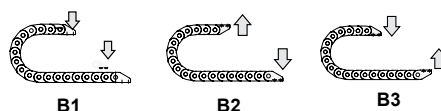
# Accessories

Type	Series Part#	① Inner Width (Inner frame size)	Free End Bracket	System Tie Wrap	Divider	Separator	Tie Wrap
CPS Mini	CPS015	06 / 10 / 15 / 20	S-TEB015. ①	-	-	-	-
	CPS020	15 / 20 / 30 / 40	S-TEB020.①	-	-	-	-
	CPS030	15 / 25 / 35 / 50	S-TEB030.①	-	S-DV030	-	-
	CPS033	27 / 37 / 47 / 67 / 77	S-EEB033	-	S-DV033	-	S-TW033/020CR.①
ST-N Series	ST044N	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	ST-FEB044N/S	S-TW.EB028.①	sb-DV028/② (②: S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ① (*35~125 only)
	ST055N		ST-FEB055N	S-TW.EB035. ①	sb-DV035/② (②: S / M1 / M2 / T / W)		S-TW050/035N. ① (*50~200 only)
	ST 072N	50 / 75 / 100 / 125 / 140 / 150 / 175 / 200 / 250 / 300	ST-FEB072N/S	S-TW.EB045. ①	sb-DV045/② (②: S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ① (*50~150 only)
	ST 095N	75 / 100 / 125 / 150 / 175 / 200 / 230 / 240 / 250 / 300 / 350 / 400	ST-FEB095N/S	S-TW.EB060. ①	sb-DV060/② (②: S / M / R / T / W)		S-TW ① (50 / 75 / 100 / 125 / 150 only)
	ST 120N	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	ST-FEB120N/S	S-TW.EB075. ①	sb-DV075/② (②: S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (50 / 75 / 100 / 125 / 150 only)
	ST 150N		ST-SEB150N ④ (④: B1 / B2 / B3)	-	sb-DV/S100/② (②: S / M / T)		
ST-E Series	ST 044E	35 / 55 / 75 / 100	ST-FEB044E	S-TW.EB028. ①	sb-DV028/② (②:S / M1 / M2 / T / W)	S-SP/M. ③ (③:35 / 50 / 75 / 100)	S-TW036/025CR. ①
	ST 055E	50 / 75 / 100 / 125 / 150	ST-FEB055E	S-TW.EB035. ①	sb-DV035/② (②: S / M1 / M2 / W)	S-SP/M. ①	S-TW050/035N. ①
	ST 072E	50 / 75 / 100 / 125 / 150	ST-FEB072E	S-TW.EB045. ①	sb-DV045/② (②: S / M / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 095E	100 / 125 / 150 / 175 / 200	ST-FEB095E	S-TW.EB060. ①	sb-DV060/② (②: S / M / W)		S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 120E	150 / 200 / 250 / 300	ST-FEB120E	S-TW.EB075. ①	sb-DV075/② (S / M / W)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 150E	200 / 250 / 300 / 350 / 400	ST-SEB150E/④ (④: B1 / B2 / B3)(Steel)	-	sb-DV/S100/S sb-DV100/M		S-TW ① (*50 / 75 / 100 / 125 / 150 only)
ST-S Series	ST 044S	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	ST-FEB120E	S-TW.EB028. ①	sb-DV028/② (②: S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ① (*35~125 only)
ST-ES Series	ST 044ES	35 / 55 / 75 / 100	ST-FEB044E	S-TW.EB028. ①	sb-DV028/② (②: S / M1 / M2 / W)	S-SP/M. ①	S-TW036/025CR. ①
	ST 072ES	50 / 75 / 100 / 125 / 150	ST-FEB072	S-TW.EB045. ①	sb-DV045/② (②: S / M / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ①
	ST 095ES	100 / 125 / 150 / 175 / 200	ST-FEB095	S-TW.EB060. ①	sb-DV060/② (②: S / M / W)		S-TW ①
	ST 120ES	150 / 200 / 250 / 300	ST-FEB120E	S-TW.EB075. ①	sb-DV075/② (②: S / M / W)		S-TW ①
ST-RS Series	ST 044RS	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	ST-FEB044N/S	S-TW.EB028. ①	sb-DV028/ ② (②: S / M1 / M2 / T / W)		S-SP/M. ①
	ST 072RS	50 / 75 / 100 / 125 / 140 / 150 / 175 / 200 / 240 / 250 / 300	ST-FEB072N/S	S-TW.EB045. ①	sb-DV045/ ② (②: S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ① (*50~150 only)
	ST 095RS	75 / 100 / 125 / 150 / 175 / 190 / 200 / 230 / 250 / 300 / 350 / 400	ST-FEB095N/S	S-TW.EB060. ①	sb-DV060/ ② (②: S / M / R / T / W)		S-TW ① (*50~150 only)
	ST 120RS	75 / 100 / 125 / 150 / 175 / 200 / 240 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	ST-FEB120N/S	S-TW.EB075. ①	sb-DV075/ ② (②: S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 150RS	75 / 100 / 115 / 125 / 150 / 175 / 200 / 240 / 250 / 290 / 300 / 350 / 400 / 450 / 500 / 550 / 600	ST-SEB150N ④ (④: B1 / B2 / B3)	-	sb-DV100/ ② (②: S / M / T)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
ST-ERS Series	ST 044ERS	35 / 55 / 75 / 100	ST-FEB044E	S-TW.EB028. ①	sb-DV028/ ② (②: S / M1 / M2 / W)	S-SP/M. ①	S-TW036/025CR. ①
	ST 072ERS	50 / 75 / 100 / 125 / 150	ST-FEB072	S-TW.EB045. ①	sb-DV045/ ② (②: S / M / W)	sb-SP/400.400 Cut to length(400 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 095ERS	100 / 125 / 150 / 175 / 200	ST-FEB095	S-TW.EB060. ①	sb-DV060/ ② (②: S / M / W)		S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 120ERS	150 / 200 / 250 / 300	ST-FEB120RE	S-TW.EB075. ①	sb-DV060/ ② (②: S / M / W)		S-TW ① (*50 / 75 / 100 / 125 / 150 only)

## ② Divider

- S : divider is used to fix a separator that is the same length as the frame
- M : divider is used to separate individual cables
- M1 : divider is used to separate individual cables
- M2 : divider is used to fasten a separator that is shorter than the frame length
- T : divider can be used at center position to support frame longer than 125mm and up
- R : Side position roller divider to protect abrasion of moving cable at inner side of chain
- W : (Tie wrap) dividers are used to hold the cables in place at both ends of the cable chain size

## ④ End Bracket



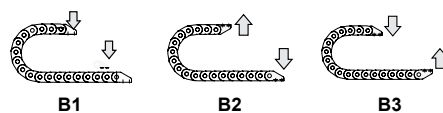
# Accessories

Type	Series Part#	① Inner Width (Inner frame size)	Free End Bracket	System Tie Wrap	Divider	Separator	Tie Wrap
nsb - CR Series	nsb 020CR	20 / 40	nsb-FEB020CR	-	sb-DV018CR	-	sb-TW018CR. ①
	nsb 022CR	16 / 27 / 37 / 47 / 67 / 77	nsb-FEB022CR	-	sb-DV020CR	-	sb-TW020CR. ①
	nsb 028CR	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB028CR	S-TW.EB028. ①	sb-DV028/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ① (*35~125 only)
	nsb 035CR	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB035CR	S-TW.EB035. ①	sb-DV035/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW050/035N. ① (*50~200 only)
	nsb 045CR	50 / 75 / 100 / 125 / 150 / 175 / 200 / 240 / 250 / 300	nsb-FEB045CR	S-TW.EB045. ①	sb-DV045/ ② (S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ① (*50~150 only)
	nsb 060CR	75 / 100 / 125 / 150 / 175 / 190 / 200 / 250 / 300 / 350 / 400	nsb-FEB060CR	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / T / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 075CR	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	nsb-FEB075CR	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
nsb - N Series	nsb 028N	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB028N	S-TW.EB028. ①	sb-DV028/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ①
	nsb 035N	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB035N	S-TW.EB028. ①	sb-DV035/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW050/035N. ①
	nsb 045N	50 / 75 / 100 / 125 / 140 / 150 / 175 / 200 / 250 / 300	nsb-FEB045N	S-TW.EB045. ①	sb-DV045/ ② (S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ① (*50~150 only)
	nsb 060N	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400	nsb-FEB060N	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / T / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 075N	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	nsb-FEB075N	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
nsb - E Series	nsb 028E	35 / 55 / 75 / 100	nsb-FEB028E	S-TW.EB028. ①	sb-DV028/ ② (S / M1 / M2 / W)	S-SP/M. ①	S- TW036/025CR. ①
	nsb 035E	50 / 75 / 100 / 125 / 150	nsb-FEB035E	S-TW.EB035. ①	sb-DV035/ ② (S / M1 / M2 / W)	S-SP/M. ①	S-TW050/035N. ①
	nsb 045E	75 / 100 / 125 / 150	nsb-FEB045E	S- TW.EB045. ①	sb-DV045/ ② (S / M / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ①
	nsb 060E	100 / 150 / 200	nsb-FEB060E	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 075E	150 / 200 / 300	nsb-FEB075E	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
nsb - S Series	nsb 050S	50 / 75 / 100 / 125 / 150 / 175 / 190 / 200 / 250 / 300	nsb-FEB050S / F nsb-FEB050S/ M(SEB)(Steel)	S-TW.EB045. ①	sb-DV045/ ② (S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 065S	75 / 100 / 125 / 150 / 175 / 190 / 200 / 230 / 240 / 250 / 300 / 350 / 400	nsb-FEB065S / F nsb-FEB065S/ M(SEB)(Steel)	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / T / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 080S	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	NSB-FEB080S / F NSB-FEB080S/ M(SEB)(Steel)	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)

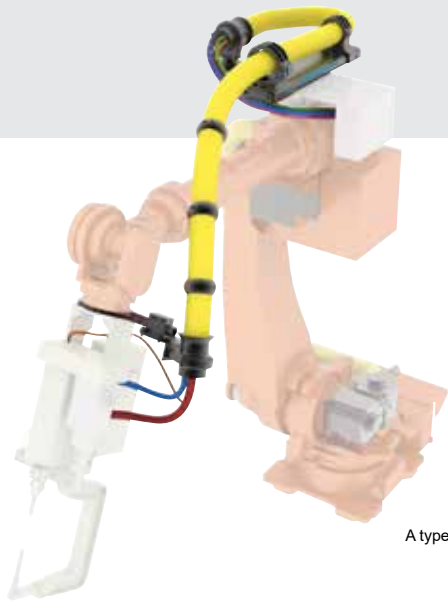
## ② Divider

- S** : divider is used to fix a separator that is the same length as the frame
- M** : divider is used to separate individual cables
- M1** : divider is used to separate individual cables
- M2** : divider is used to fasten a separator that is shorter than the frame length
- T** : divider can be used at center position to support frame longer than 125mm and up
- R** : Side position roller divider to protect abrasion of moving cable at inner side of chain
- W** : (Tie wrap) dividers are used to hold the cables in place at both ends of the cable chaine size

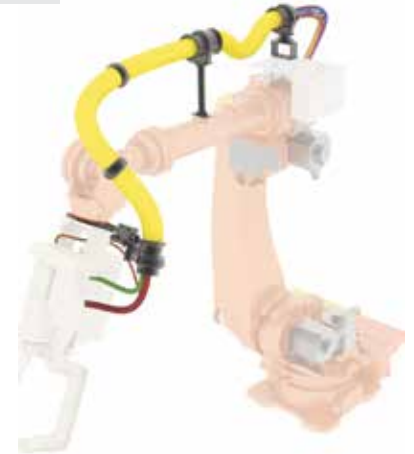
## ③ End Bracket



# Dress Pack



A type



B type

## Dress Pack (A Type)

## Dress Pack (B Type)

### Ordering Information

ROBOWAY - 70 - B - A

①

① Size	36, 48, 56, 70
Components	RW(1set), PAM(CPS FLEX 5m), RKTP(4pcs), RKS(2pcs), RK-C(2pcs), RKSC(2pcs), RKR(1pcs), VCG(2pcs), RCS(1pcs),

### Ordering Information

ROBOWAY - 48 - B - B

①

① Size	48,56,70
Components	PAM(CPS FLEX 5m), RKTP(4pcs), RKS(3pcs), RK-C(3pcs), RKSC(2pcs), RKR(1pcs), VCG(2pcs), RCS(1pcs), RPS(1pcs), RBP(1pcs)

### Retractor

### Parts for B Type

### Ordering Information

RW - 48 . 400 L

①

②

① Size	② L Stroke
36	300/400/
48	500/600/
56	350/450/
70	550/650



RPS  
(Pillar Support)



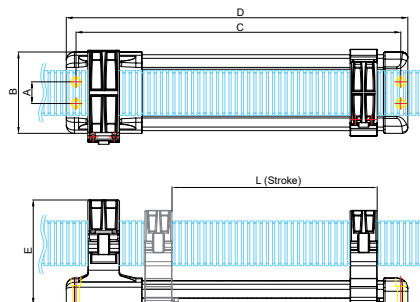
RBP  
(Bed Plate)

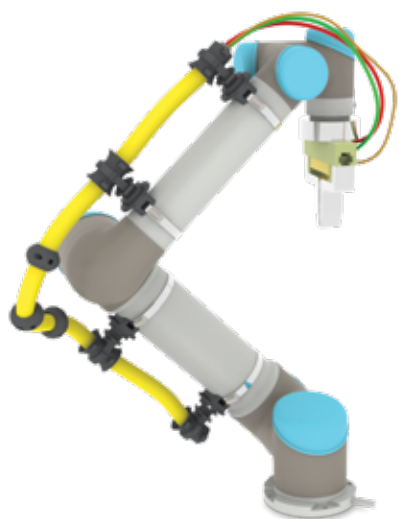


RCS  
(Column Support)

### Size Information

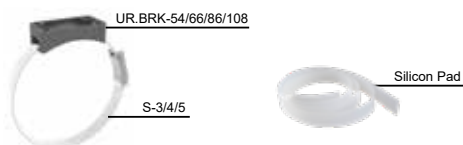
A Bolt hole width	B Width	C Bolt hole width	D Length	E Height
30	96	L+170	L+202	137
30	96	L+170	L+202	137
40	150	L+215.5	L+249	192
40	150	L+215.5	L+249	192



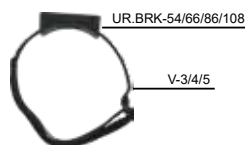


## Dress Packs for Universal Robot

### UR. Band



### UR. Velcro



Part name	Robot type	Arm Size	Components
UR3.BAND 054	UR3	Lower (Ø50~Ø70)	S-3(Steel Band), UR.BRK-54(Bracket), Silicon Pad
UR3.BAND 066		Upper (Ø50~Ø70)	S-3(Steel Band), UR.BRK-66(Bracket), Silicon Pad
UR5.BAND 075	UR5	Lower (Ø70~90)	S-4(Steel Band), UR.BRK-86(Bracket), Silicon Pad
UR5.BAND 085		Upper (Ø70~90)	S-4(Steel Band), UR.BRK-86(Bracket), Silicon Pad
UR10.BAND 086	UR10	Lower (Ø70~90)	S-4(Steel Band), UR.BRK-86(Bracket), Silicon Pad
UR10.BAND 108		Upper (Ø90~110)	S-5(Steel Band), UR.BRK-108(Bracket), Silicon Pad









Part name	Robot type	Arm Size	Components
UR3.VELCRO	UR3	Upper arm (A Ø55~Ø66)	V-3(Velcro Band), UR.BRK-54(Bracket)
		Lower arm (A Ø55~Ø66)	V-3(Velcro Band), UR.BRK-66(Bracket)
UR5.VELCRO	UR5	Upper arm (B Ø66~90)	V-4(Velcro Band), UR.BRK-86(Bracket)
		Lower arm (B Ø66~90)	V-4(Velcro Band), UR.BRK-86(Bracket)
UR10.VELCRO	UR10	Upper arm (B Ø66~90)	V-4(Velcro Band), UR.BRK-86(Bracket)
		Lower arm (C Ø108~145)	V-5(Velcro Band), UR.BRK-108(Bracket)

Part name	Robot Descriptions to be applied	Kit components
DP-UR3	UR3 robot type, Ø54 & Ø66 size of robot arm, Max. 3kg carried	UR3.BAND-054(2set.) UR3 BAND-066(2set.) RKC-22/28(4ea.) RKR-22/28(4ea.) RKD-22/28(2ea.) RKS-22/28(2ea.) RKSC-22/28(2ea.) RKT-22/28(2ea.) VCG-22/28(2ea.) PAR/PAM(1M) M4 X 10(40ea.) M4(24ea.)
DP-UR5	UR5 robot type, Ø75 & Ø86 size of robot arm, Max. 5kg carried	UR5.BAND-075(2set.) UR3 BAND-085(2set.) RKC-22/28(4ea.) RKR-22/28(4ea.) RKD-22/28(2ea.) RKS-22/28(2ea.) RKSC-22/28 2ea, RKT-22/28 2ea. VCG-22/28 2ea, PAR/PAM 1M, M4 X 10 40ea. M4 24ea.
DP-UR10	UR10 robot type, Ø86 & Ø108 size of robot arm, Max. 10kg carried	UR10.BAND-086 1set. UR3 BAND-108 1set. RKC-22/28 4ea. RKR-22/28 4ea. RKD-22/28 2ea. RKS-22/28 2ea. RKSC-22/28 2ea, RKT-22/28 2ea. VCG-22/28 2ea, PAR/PAM 1M, M4 X 10 40ea. M4 24ea.

## Ordering Information

### RKC - 70

①      ②

	① Part name	② Conduit Size	Dimension				description
			Width	Height	Length	Outer Diameter	
	RKTP (Abrasion protector )	22 28 36 48 56 70	28.0 30.0 30.0 30.0 40.0 40.0	46.4 53.0 62.0 80.0 93.2 108.0	-	46.4 53.0 62.0 80.0 93.2 108.0	Made of reinforced polyamide 6. Protect abrasion and damage of tube when tube bumps on robot arm.
	RKTC (Abrasion protector )	48 56 70	50.0 60.0 60.0	78.0 90.2 105	-	78.0 90.2 105	If robot tube got damaged such as cut or stretched condition, you don't need to replace total tube by using RKTC as it can cover damaged area.
	RKC (Bracket)	22 28 36 48 56 70	30.0 30.0 45.0 49.5 40.0 40.0	50.0 59.5 88.3 105.0 138.1 145.5	49.0 58.8 90.2 128.2 150.1 164.9	45.0 53.5 76.0 94.0 116.2 131.0	Tube clamp in combination with RKS+RKRC or RKD+RKRC to holds tube's movement while robot operates.
	RKS (Tube Ball Joint)	22 28 36	50.0 60.0 100.3	23.0 27.0 80.5	23.0 27.0 80.5	23.0 27.0 80.5	Tube ball joint to strengthen tube's flexibility and release tube's tension loaded by robot operation.
		48 56 70	89 102 102	92.3 105.3 120.1	92.3 105.3 120.1	92.3 105.3 120.1	
	RKD (Ball Joint Sleeve)	22 28 36	40.0 63.5 120.0	22.0 30.0 83.0	22.0 30.0 83.0	22.0 30.0 83.0	Tube ball joint, however, its shape is a little bit different as ball joint direction is bidirectional unlike RKS.
	RKSC (Strain Relief Insert)	22 28 36 48 56 70	10.5 13.0 20.6 22.0 26.0 26.0	29.5 34.5 44.6 67.5 81.2 96.0	-	29.5 34.5 44.6 67.5 81.2 96.0	22~36 of RKSC : It clamp for VCG. 48~70 of RKSC : It clamp for Tube and RKS.
	RKR (swivel plate)	22 28 36 48 56 70	43.0 55.0 98.0 98.0 98.0 98.0	18.5 23.0 42.0 42.0 42.0 42.0	-	43.0 55.0 98.0 98.0 98.0 98.0	RKR in combination with RKC is to release tube's tension and fatigue as it can rotate with robot-arm movement.
	VCG (Cable star)	22 28 36 48 56 70	10.5 13.0 20.6 24.0 34.0 34.0	25.5 30.5 40.6 62.5 75.8 90.0	-	25.5 30.5 40.6 62.5 75.8 90.0	Clamp for robot cables/hoses at end position of tube.



• **Note** •

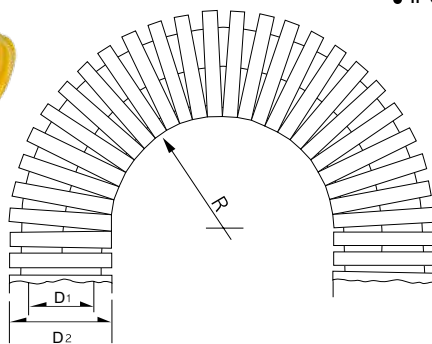
A series of horizontal dotted lines for writing notes, contained within a rounded rectangular border.



# CPSFLEX

Corrugated Tube

- Polyamide with reinforced glass fiber: UL94-HB
- Perfect for fast moving environment
- Good to use for machinery center, assembly loader, wood work machine and more
- IP 68 acc. EN 60529 protection except split type.



(Unit : mm)

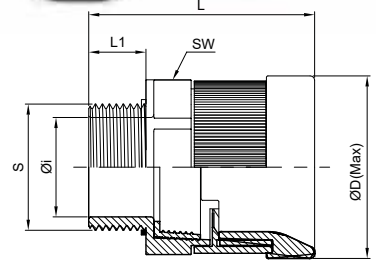
## Ordering Information

PAH - 10 B  
 ① ② ③

① Type	② Size	③ Color	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm ± 10%	Packing meter / roll	Material	Version	Temperature range	Self-extinguishing UL-94	Resistance	Application							
CPS	07	B = Black G = Gray U = UV-Resistant (Only Black)	6.4	10.0	15	50/100	High Quality Polyamide 6 Level	standard version medium-wall, very flexible	-40°C to +105°C short term +130°C	UL94-HB Halogen-Free		Machine tool, Industrial & Automatic Machinery etc.							
	10		9.6	13.0	20	50													
RAH	12	B = Black G = Gray U = UV-Resistant (Only Black)	11.8	15.8	30	50	High Quality Polyamide 6 Level	standard version medium-wall, very flexible		UL94-Vo Halogen-Free UL File No.E191879 VDE License No.135369	alcohol, benzol, greases, mineral oil, diesel fuel, sea water, petrol etc.	Rolling Stock, Machine tool, industrial & Automatic Machinery etc.							
	16		15.9	21.2	40	50													
	22		21.7	28.5	45	50													
	28		27.8	34.5	55	50													
PAH	36	B = Black G = Gray U = UV-Resistant (Only Black)	36.0	42.5	60	30	High Quality Polyamide 6 Level		-40°C to +105°C short term +150°C			Machine tool, industrial & Automatic Machinery, Rolling Stock Rail Road, etc.							
	48		46.5	54.5	70	30													
	56		56.3	67.2	110	30													
POH	70	B = Black G = Gray U = UV-Resistant (Only Black)	70.0	82.5	160	10	High Quality Polyamide 6 Level	reinforced version thick-wall, flexible		UL94-HB Halogen-Free		Machine tool, Shipbuilding Industrial Machinery, Heavy Industry etc.							
	95		91.5	106.0	210	10													
	07		B = Black G = Gray U = UV-Resistant (Only Black)	6.0	10.0	20							50/100	High Quality Polyamide 6 Level					
	10			9.0	13.0	25							50						
	12			11.5	15.8	35							50						
	16			15.5	21.2	45							50						
	22			21.3	28.5	50							50						
	28			26.8	34.5	60							50						
	36			35.2	42.5	70							30						
	48			46.0	54.5	80							30						
56	55.3	67.2		110	30														
70	69.0	82.5		160	10														
95	91.5	106.0	210	10															
PES	07	B = Black G = Gray	6.0	10.0	15	50/100	Soft Polyethylene (PE)	simple version light-weight, flexible	-15°C to +60°C short term +80°C	-	acid, sea water, ammonia etc	Chemical Machinery, Acid areas, Industrial Machinery etc.							
	10		9.0	13.0	20	50													
PPS	12	B = Black G = Gray U = UV-Resistant (Only Black)	11.5	15.8	30	50	Polypropylene (PP)												
	16		15.5	21.2	40	50													
	22		21.3	28.5	45	50													
	28		26.8	34.5	55	50													
	36		35.2	42.5	60	30													
	48		46.0	54.5	70	30													
	56		55.3	67.2	110	30													
70	69.0	82.5	160	10															
95	91.5	106.0	210	10															
CPSS	07	B = Black G = Gray	6.4	10.0	15	50/100	High Quality Polyamide 6 Level	Split type standard version medium-wall, very flexible	-40°C to +105°C short term +130°C	UL94-HB Halogen-Free	alcohol, benzol, greases, mineral oil, diesel fuel, sea water, petrol etc.	Machine tool, Industrial & Automatic Machinery etc.							
	10		9.6	13.0	20	50													
	12		11.8	15.8	30	50													
	16		15.9	21.2	40	50													
PESS	22	B = Black G = Gray	21.7	28.5	45	50	Soft Polyethylene (PE)	Split type simple version light-weight, flexible	-15°C to +60°C short term +80°C	-	acid, sea water, ammonia etc	Chemical Machinery, Acid areas, Industrial Machinery etc.							
	28		27.8	34.5	55	50													
	36		36.0	42.5	60	30													
	48		46.5	54.5	70	30													
	56		56.3	67.2	110	30													
	70		70.0	82.5	160	10													
	95		91.5	106.0	210	10													
PAM	07	B = Black Y = Yellow U = UV-Resistant (Only Black)	6.4	10.0	15	50/100	High Quality Polyamide 11/12	medium -wall very flexible to highly flexible	-50°C to +95°C short term +150°C	UL94-V2 Halogen-Free	alcohol, benzol, mineral oil, diesel fuel, etc	Robots (Welding robot)							
	10		9.6	13.0	20	50													
	12		11.8	15.8	30	50													
	16		15.9	21.2	40	50													
PAR	22	B = Black Y = Yellow U = UV-Resistant (Only Black)	21.7	28.5	45	50	High Quality Polyamide 12			UL94-V2 Halogen-Free		Robots (Heandling robot, Rotating machinery)							
	28		27.8	34.5	55	50													
	36		36.0	42.5	60	30													
	48		46.5	54.5	70	30													
	56		56.3	67.2	110	30													
70	70.0	82.5	160	10															
95	91.5	106.0	210	10															

# PNC

## Straight Fittings



### Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray (Light Gray Available in PF Thread Type)
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		

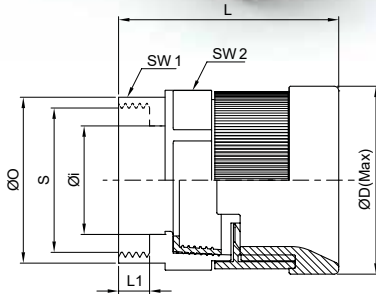
(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	PNC-G07B	PNC-G07G	G1/4"	07	13.1	11	34.0	8.5	25	14
	PNC-G10B	PNC-G10G	G1/2"	10	20.9	13	44.2	12	25	19.7
	PNC-G12B	PNC-G12G	G1/2"	12	20.9	13	43.1	15	27.6	22.8
	PNC-G16B	PNC-G16G	G1/2"	16	20.9	13	45	15.2	33	28
	PNC-G22B	PNC-G22G	G3/4"	22	26.4	15	54.7	22	43	37.5
	PNC-G28B	PNC-G28G	G1"	28	33.2	15	62.4	27	48.8	43
	PNC-G36B	PNC-G36G	G1 1/4"	36	41.9	19	76.6	34	60.6	52.2
	PNC-G42B	PNC-G42G	G1 1/2"	48	47.8	21	81.4	40.8	71.8	64
	PNC-G48B	PNC-G48G	G2"	48	59.6	21	81.4	50	71.8	64
	Metric Thread (EN 60423)	PNC-M107B	PNC-M107G	M12 X 1.5	07	12.0	11	34	8.5	25
PNC-M127B		PNC-M127G	M16 X 1.5	07	16.0	11	34	8.5	25	14
PNC-M167B		PNC-M167G	M20 X 1.5	07	20.0	11	34	8.5	25	14
PNC-M10B		PNC-M10G	M12 X 1.5	10	12.0	13	43.5	7.5	25	19.7
PNC-M120B		PNC-M120G	M16 X 1.5	10	16.0	13	43.5	10	25	19.7
PNC-M20B		PNC-M20G	M20 X 1.5	10	20.0	13	43.5	12	25	19.7
PNC-M102B		PNC-M102G	M12 X 1.5	12	12.0	13	43.1	8	27.6	22.8
PNC-M12B		PNC-M12G	M16 X 1.5	12	16.0	13	43.1	12	27.6	22.8
PNC-M202B		PNC-M202G	M20 X 1.5	12	20.0	13	43.1	15	27.6	22.8
PNC-M126B		PNC-M126G	M16 X 1.5	16	16.0	13	45	12	33	28
PNC-M16B		PNC-M16G	M20 X 1.5	16	20.0	13	45	15.2	33	28
PNC-M226B		PNC-M226G	M25 X 1.5	16	25.0	13	45	17.5	33	28
PNC-M22B		PNC-M22G	M25 X 1.5	22	25.0	15	54.7	20.6	43	37.5
PNC-M3222B		PNC-M3222G	M32 X 1.5	22	32.0	15	54.7	22	43	37.5
PNC-M28B		PNC-M28G	M32 X 1.5	28	32.0	15	62.4	27	48.8	43
PNC-M4028B		PNC-M4028G	M40 X 1.5	28	40.0	15	62.4	30.5	48.8	43
PNC-M36B		PNC-M36G	M40 X 1.5	36	40.0	19	76.6	34	60.6	52.2
PNC-M5036B		PNC-M5036G	M50 X 1.5	36	50.0	19	76.6	36	60.6	52.2
PNC-M48B		PNC-M48G	M50 X 1.5	48	50.0	21	81.4	42	71.8	64
PNC-M6348B		PNC-M6348G	M63 X 1.5	48	63.0	21	81.4	50	71.8	64
Pg Thread (DIN 40430)	PNC-P077B	PNC-P077G	Pg 07	07	12.5	11	34	8.5	16.8	14
	PNC-P097B	PNC-P097G	Pg 09	07	15.2	11	34	8.5	25	14
	PNC-P117B	PNC-P117G	Pg 11	07	18.6	11	34	8.5	25	14
	PNC-P137B	PNC-P137G	Pg 13.5	07	20.4	11	34	8.5	25	14
	PNC-P070B	PNC-P070G	Pg 07	10	12.5	13	43.5	8	25	19.7
	PNC-P09B	PNC-P09G	Pg 09	10	15.2	13	43.5	10	25	19.7
	PNC-P110B	PNC-P110G	Pg 11	10	18.6	13	43.5	12	25	19.7
	PNC-P130B	PNC-P130G	Pg 13.5	10	20.4	13	43.5	12	25	19.7
	PNC-P160B	PNC-P160G	Pg 16	10	22.5	13	43.5	12	25	19.7
	PNC-P0912B	PNC-P0912G	Pg 09	12	15.2	13	43.1	12	27.6	22.8
	PNC-P11B	PNC-P11G	Pg 11	12	18.6	13	43.1	12	27.6	22.8
	PNC-P132B	PNC-P132G	Pg 13.5	12	20.4	13	43.1	15	27.6	22.8
	PNC-P162B	PNC-P162G	Pg 16	12	22.5	13	43.1	15	27.6	22.8
	PNC-P136B	PNC-P136G	Pg 13.5	16	20.4	13	45	15.2	33	28
	PNC-P16B	PNC-P16G	Pg 16	16	22.5	13	45	15.2	33	28
	PNC-P216B	PNC-P216G	Pg 21	16	28.3	13	45	17.5	33	28
	PNC-P163B	PNC-P163G	Pg 16	22	22.5	13	54.7	18	43	37.5
	PNC-P21B	PNC-P21G	Pg 21	22	28.3	15	54.7	22	43	37.5
	PNC-P29B	PNC-P29G	Pg 29	28	37.0	15	62.4	30.5	48.8	43
	PNC-P36B	PNC-P36G	Pg 36	36	47.0	19	76.6	36	60.6	52.2
PNC-P48B	PNC-P48G	Pg 48	48	59.3	21	81.4	50	71.8	64	
NPT Thread (ANSI/ASME B1.20.1)	PNC-N10B	PNC-N10G	NPT 1/2"	10	21.2	13	43.5	12	25	19.7
	PNC-N12B	PNC-N12G	NPT 1/2"	12	21.2	13	43.1	15	27.6	22.8
	PNC-N16B	PNC-N16G	NPT 1/2"	16	21.2	13	45	15.2	33	28
	PNC-N22B	PNC-N22G	NPT 3/4"	22	26.5	15	54.7	22	43	37.5
	PNC-N28B	PNC-N28G	NPT 1"	28	33.2	15	62.4	27	48.8	43



# PIC

Straight Fittings



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		

(Unit : mm)

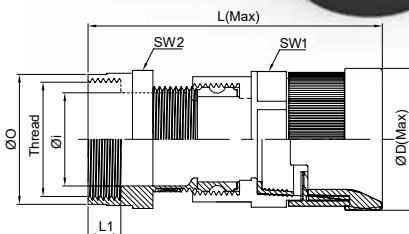
	Ordering No.		Thread	Tube Size	Shell Size	L 1	L	Øi	ØO	ØD	SW
	Black	Gray									
UNEF Thread (ASME B1.1)	PIC-U1010B	PIC-U1010G	1/2-28UNEF	10	8S, 10S	10	45.4	9	18.4	25.2	20
	PIC-U1210B	PIC-U1210G	5/8-24UNEF	10	10SL, 12S	10	45.4	9	20.6	25.2	20
	PIC-U1410B	PIC-U1410G	3/4-20UNEF	10	14, 14S	10	45.4	9	24	25.2	20
	PIC-U1212B	PIC-U1212G	5/8-24UNEF	12	10SL, 12S	10	43.8	11	20.6	27.6	22.4
	PIC-U1412B	PIC-U1412G	3/4-20UNEF	12	14, 14S	10	43.8	11	24	27.6	22.4
	PIC-U1812B	PIC-U1812G	1-20UNEF	12	18	10	43.8	11	31	27.6	22.4
	PIC-U2012B	PIC-U2012G	1 3/16-18UNEF	12	20, 22	10	43.8	11	35.5	27.6	22.4
	PIC-U1616B	PIC-U1616G	7/8-20UNEF	16	16, 16S	10	45.8	13	28	33	28
	PIC-U1816B	PIC-U1816G	1-20UNEF	16	18	10	45.8	13	31	33	28
	PIC-U2016B	PIC-U2016G	1 3/16-18UNEF	16	20,22	10	45.8	13	35.5	33	28
	PIC-U2316B	PIC-U2316G	1 3/8-8UNEF	16	20,22	10	45.8	13	40	33	28
	PIC-U2816B	PIC-U2816G	1 7/16-18UNEF	16	24, 28	10	45.8	13	42	33	28
	PIC-U2222B	PIC-U2222G	1 3/16-18UNEF	22	20, 22	9.5	54	18	35.5	43	36.7
	PIC-U2822B	PIC-U2822G	1 7/16-18UNEF	22	24,28	9.5	54	18	42	43	36.7
	PIC-U3622B	PIC-U3622G	2-18UNS	22	36	9.5	54	18	56.5	43	36.7
	PIC-U2828B	PIC-U2828G	1 7/16-18UNEF	28	24,28	10	62.2	25	41.5	48.8	42.7
	PIC-U3228B	PIC-U3228G	1 3/4-18UNS	28	32	10	62.2	25	49.5	48.8	42.7
	PIC-U3628B	PIC-U3628G	2-18UNS	28	36	10	62.2	25	56.5	48.8	42.7
	PIC-U3636B	PIC-U3636G	2-18UNS	36	36	10	71	35	53.5	60.6	52

	Ordering No.		Thread	Tube Size	L 1	L	Øi	ØO	ØD	SW
	Black	Gray								
Metric Thread (EN 60423)	PIC-M12B	PIC-M12G	M16 X 1.5	12	10	43.8	11	20.6	27.6	22.4
	PIC-M226B	PIC-M226G	M25 X 1.5	16	10.2	46	13	35.5	33	28
Pg Thread (DIN 40430)	PIC-P11B	PIC-P11G	Pg11	12	10	43.8	11	20.6	27.6	22.4
	PIC-P132B	PIC-P132G	Pg13.5	12	10	43.8	11	24	27.6	22.4
	PIC-P16B	PIC-P16G	Pg16	16	10	45.8	13	28	33	28
	PIC-P21B	PIC-P21G	Pg21	22	9.5	59.7	13	35.5	43	36.7



# PIPC

Straight Fittings



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L	Øi	ØO	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PIPC-G16B	PIPC-G16G	G1/2"	16	18.6	13.8	45.7	15.2	28	33	28
	PIPC-G22B	PIPC-G22G	G3/4"	22	24.1	15	54.7	22	35	43	37.5
	PIPC-G28B	PIPC-G28G	G1"	28	30.2	15	62.7	27	41.5	48.8	43
	PIPC-G36B	PIPC-G36G	G1 1/4"	36	38.9	29	84.7	33	53	60.6	52.2
	PIPC-G42B	PIPC-G42G	G1 1/2"	48	44.8	29	89.1	40.8	66	71.8	64
	PIPC-G48B	PIPC-G48G	G2"	48	56.6	29	89.1	50	66	71.8	64

# PNCC

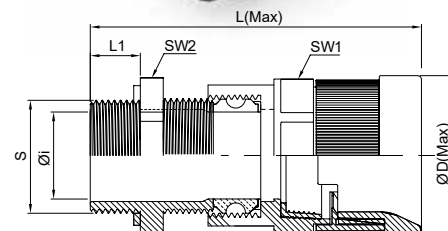
## Straight Fittings



### Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.		



(Unit : mm)

	Ordering No.		Thread	Tube Size	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray										
PF Thread (JIS B0202)	PNCC-G10B	PNCC-G10G	G1/2"	10	3.5	6.5	20.9	15.0	74.2	25.0	19.7	20.3
	PNCC-G12B	PNCC-G12G	G1/2"	12	4.0	8.0	20.9	15.0	73.1	27.6	22.8	22.7
	PNCC-G16B	PNCC-G16G	G1/2"	16	7.0	12.3	20.9	15.0	77.3	33.0	28.0	27.7
	PNCC-G1622B	PNCC-G1622G	G1/2"	22	12.0	15.2	20.9	15.0	90.3	43.0	37.5	36.9
	PNCC-G22B	PNCC-G22G	G3/4"	22	12.0	18.0	26.4	15.0	90.3	43.0	37.5	36.9
	PNCC-G228B	PNCC-G228G	G3/4"	28	18.0	20.3	26.4	15.0	97.2	48.8	43.0	43.0
	PNCC-G28B	PNCC-G28G	G1"	28	18.0	26.0	33.2	15.0	97.2	48.8	43.0	43.0
	PNCC-G36B	PNCC-G36G	G1 1/4"	36	22.0	33.0	41.9	19.0	120.2	60.6	52.2	52.2
	PNCC-G48B	PNCC-G48G	G2"	48	30.0	38.0	59.6	19.0	130.0	71.8	64.0	64.1
	Metric Thread (EN 60423)	PNCC-M10B	PNCC-M10G	M12 X 1.5	10	3.5	6.5	12.0	15.0	74.2	25.0	19.7
PNCC-M120B		PNCC-M120G	M16 X 1.5	10	3.5	6.5	16.0	15.0	74.2	25.0	19.7	20.3
PNCC-M102B		PNCC-M102G	M12 X 1.5	12	4.0	7.1	12.0	15.0	73.1	27.6	22.8	22.7
PNCC-M12B		PNCC-M12G	M16 X 1.5	12	4.0	8.0	16.0	15.0	73.1	27.6	22.8	22.7
PNCC-M162B		PNCC-M162G	M20 X 1.5	12	4.0	8.0	20.0	15.0	73.1	27.6	22.8	22.7
PNCC-M126B		PNCC-M126G	M16 X 1.5	16	7.0	10.9	16.0	15.0	77.3	33.0	28.0	27.7
PNCC-M16B		PNCC-M16G	M20 X 1.5	16	7.0	12.3	20.0	15.0	77.3	33.0	28.0	27.7
PNCC-M1622B		PNCC-M1622G	M20 X 1.5	22	12.0	14.5	25.0	15.0	90.3	33.0	28.0	36.9
PNCC-M22B		PNCC-M22G	M25 X 1.5	22	12.0	18.0	25.0	15.0	90.3	43.0	37.5	36.9
PNCC-M228B		PNCC-M228G	M25 X 1.5	28	18.0	19.5	32.0	15.0	97.2	43.0	37.5	43.0
PNCC-M28B		PNCC-M28G	M32 X 1.5	28	18.0	26.0	30.0	15.0	97.2	48.8	43.0	43.0
PNCC-M36B		PNCC-M36G	M40 X 1.5	36	22.0	33.0	40.0	19.0	120.2	60.6	52.2	52.2
PNCC-M48B		PNCC-M48G	M50 X 1.5	48	30.0	38.0	50.0	19.0	130.0	71.8	64.0	64.1
Pg Thread (DIN 40430)		PNCC-P07B	PNCC-P07G	Pg07	10	3.5	6.5	12.5	15.0	74.2	25.0	19.7
	PNCC-P09B	PNCC-P09G	Pg09	10	6.5	6.5	15.2	15.0	74.2	25.0	19.7	20.3
	PNCC-P072B	PNCC-P072G	Pg07	12	4.0	8.0	12.5	15.0	73.1	27.6	22.8	22.7
	PNCC-P092B	PNCC-P092G	Pg09	12	4.0	8.0	15.2	15.0	73.1	27.6	22.8	22.7
	PNCC-P11B	PNCC-P11G	Pg11	12	4.0	8.0	18.6	15.0	73.1	27.6	22.8	22.7
	PNCC-P132B	PNCC-P132G	Pg13.5	12	4.0	8.0	20.4	15.0	73.1	27.6	22.8	22.7
	PNCC-P162B	PNCC-P162G	Pg16	12	4.0	8.0	22.5	15.0	73.1	27.6	22.8	22.7
	PNCC-P096B	PNCC-P096G	Pg09	16	7.0	10.6	15.2	15.0	77.3	33.0	28.0	27.7
	PNCC-P116B	PNCC-P116G	Pg11	16	7.0	12.3	18.6	15.0	77.3	33.0	28.0	27.7
	PNCC-P13B	PNCC-P13G	Pg13.5	16	7.0	12.3	20.4	15.0	77.3	33.0	28.0	27.7
	PNCC-P16B	PNCC-P16G	Pg16	16	7.0	12.3	22.5	15.0	77.3	33.0	28.0	27.7
	PNCC-P122B	PNCC-P122G	Pg11	22	12.0	13.9	18.6	15.0	90.3	43.0	37.5	36.9
	PNCC-P1322B	PNCC-P1322G	Pg13.5	22	12.0	14.8	20.4	15.0	90.3	43.0	37.5	36.9
	PNCC-P1622B	PNCC-P1622G	Pg16	22	12.0	17.3	22.5	15.0	90.3	43.0	37.5	36.9
	PNCC-P21B	PNCC-P21G	Pg21	22	12.0	18.0	28.3	15.0	90.3	43.0	37.5	36.9
	PNCC-P218B	PNCC-P218G	Pg21	28	18.0	22.5	28.3	15.0	97.2	48.8	43.0	43.0
	PNCC-P29B	PNCC-P29G	Pg29	28	18.0	26.0	37.0	15.0	97.2	48.8	43.0	43.0
	PNCC-P36B	PNCC-P36G	Pg36	36	22.0	33.0	47.0	19.0	120.2	60.6	52.2	52.2
	PNCC-P48B	PNCC-P48G	Pg48	48	30.0	38.0	59.3	19.0	130.0	71.8	64.0	64.1

# TNC

## Straight Fittings

### Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector.		

(Unit : mm)

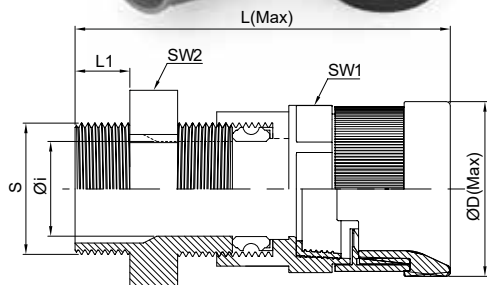
	Ordering No.		Thread	Tube Size	S	L1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0204)	TNC-G56B	TNC-G56G	G2"	56	59.6	24	64.3	46	93	78
	TNC-G70B	TNC-G70G	G2 1/2"	70	75.1	30	75.2	64	121	94.5
	TNC-G95B	TNC-G95G	G4"	95	113	40	92.2	96	151	118.5





# PNCCL

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.		

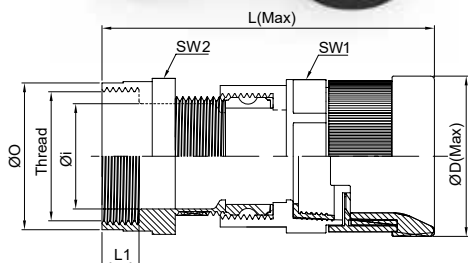
(Unit : mm)

	Ordering No.		Thread	Tube Size	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray										
PF Thread (JIS B0202)	PNCCL-G10B	PNCCL-G10G	G1/2"	10	3.5	6.5	20.9	9	68.2	25	19.7	20.3
	PNCCL-G12B	PNCCL-G12G	G1/2"	12	4	8	20.9	6	67.1	27.6	22.8	22.7
	PNCCL-G16B	PNCCL-G16G	G1/2"	16	7	12.3	20.9	6	71.3	33	28.0	27.7
Metric Thread (EN 60423)	PNCCL-M10B	PNCCL-M10G	M12 X 1.5	10	3.5	6.5	12	9	68.2	25	19.7	20.3
	PNCCL-M120B	PNCCL-M120G	M16 X 1.5	10	3.5	6.5	16	9	68.2	25	19.7	20.3
	PNCCL-M102B	PNCCL-M102G	M12 X 1.5	12	4	7.1	12	9	67.1	27.6	22.8	22.7
	PNCCL-M12B	PNCCL-M12G	M16 X 1.5	12	4	8	16	9	67.1	27.6	22.8	22.7
	PNCCL-M162B	PNCCL-M162G	M20 X 1.5	12	4	8	20	9	67.1	27.6	22.8	22.7
	PNCCL-M126B	PNCCL-M126G	M16 X 1.5	16	7	10.9	16	6	71.3	33	28	27.7
	PNCCL-M16B	PNCCL-M16G	M20 X 1.5	16	7	12.3	20	9	71.3	33	28	27.7
	PNCCL-M216B	PNCCL-M216G	M25 X 1.5	16	12	14.5	25	6	71.3	33	28	36.9
	Pg Thread (DIN 40430)	PNCCL-P09B	PNCCL-P09G	Pg09	10	6.5	6.5	15.2	9	68.2	25	19.7
PNCCL-P092B		PNCCL-P092G	Pg09	12	4	8	15.2	9	67.1	27.6	22.8	22.7
PNCCL-P11B		PNCCL-P11G	Pg11	12	4	8	18.6	9	67.1	27.6	22.8	22.7
PNCCL-P132B		PNCCL-P132G	Pg13.5	12	4	8	20.4	9	67.1	27.6	22.8	22.7
PNCCL-P162B		PNCCL-P162G	Pg16	12	4	8	22.5	9	67.1	27.6	22.8	22.7
PNCCL-P116B		PNCCL-P116G	Pg11	16	7	12.3	18.6	9	71.3	33	28	27.7
PNCCL-P13B		PNCCL-P13G	Pg13.5	16	7	12.3	20.4	9	71.3	33	28	27.7
PNCCL-P16B		PNCCL-P16G	Pg16	16	7	12.3	22.5	9	71.3	33	28	27.7



# PICC

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	Shell Size	Øi (Min)	Øi (Max)	L1	L2	ØO	ØD	SW1	SW2
	Black	Gray											
PF Thread (JIS B0202)	PICC-U1010B	PICC-U1010G	1/2-28UNEF	10	8S, 10S	3.5	6.5	10	74.2	18.4	25.2	20	22.6
	PICC-U1210B	PICC-U1210G	5/8-24UNEF	10	10SL, 12S	3.5	6.5	10	74.2	20.6	25.2	20	22.6
	PICC-U1410B	PICC-U1410G	3/4-20UNEF	10	14, 14S	3.5	6.5	10	74.2	24	25.2	20	22.6
	PICC-U1212B	PICC-U1212G	5/8-24UNEF	12	10SL, 12S	4	8	10	73.1	20.6	27.6	22.4	25.5
	PICC-U1412B	PICC-U1412G	3/4-20UNEF	12	14, 14S	4	8	10	73.1	24	27.6	22.4	25.5
	PICC-U1812B	PICC-U1812G	1-20UNEF	12	18	4	8	10	73.1	31	27.6	22.4	25.5
	PICC-U1616B	PICC-U1616G	7/8-20UNEF	16	16, 16S	7	12.3	10	77.3	28	33	28	25.4
	PICC-U1816B	PICC-U1816G	1-20UNEF	16	18	7	12.3	10	77.3	31	33	28	25.4
	PICC-U2016B	PICC-U2016G	1 3/16-18UNEF	16	20, 22	7	12.3	10	77.3	35.5	33	28	25.4
	PICC-U2816B	PICC-U2816G	1 7/16-18UNEF	16	24, 28	7	12.3	10	77.3	42	33	28	25.4
	PICC-U2222B	PICC-U2222G	1 3/16-18UNEF	22	20, 22	12	16	9.5	90.3	35.5	43	36.7	34
	PICC-U2822B	PICC-U2822G	1 7/16-18UNEF	22	24, 28	12	16	9.5	90.3	42	43	36.7	34
	PICC-U2828B	PICC-U2828G	1 7/16-18UNEF	28	24, 28	18	26	10	97.2	50	48.8	42.7	43.4
	PICC-U3228B	PICC-U3228G	13/4-18UNS	28	32	18	26	10	97.2	50	48.8	42.7	43.4
	PICC-U3628B	PICC-U3628G	2-18UNS	28	36	18	26	10	97.2	56.5	48.8	42.7	53
	PICC-U3636B	PICC-U3636G	2-18UNS	36	36	22	33	10	122	56.5	60.6	52	66.5

# FCG

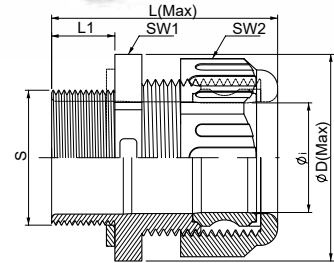
Cable Glands



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.		



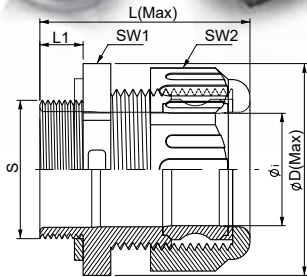
(Unit : mm)

	Ordering No.		Thread	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray									
PF Thread (JIS B0202)	FCG-G10B	FCG-G10G	G1/2"	3.5	6.5	20.9	15	43.9	24.4	22.6	18
	FCG-G12B	FCG-G12G	G1/2"	4	8	20.9	15	46.2	28.8	25.5	21.3
	FCG-G16B	FCG-G16G	G1/2"	7	12.3	20.9	15	47.2	28.6	25.4	25.4
	FCG-G1622B	FCG-G1622G	G1/2"	12	15.2	20.9	15	53.4	38.2	34	34
	FCG-G22B	FCG-G22G	G3/4"	12	18	26.4	15	53.4	38.2	34	34
	FCG-G228B	FCG-G228G	G3/4"	18	20.3	26.4	15	53.4	49	43.4	43.4
	FCG-G28B	FCG-G28G	G1"	18	26	33.2	15	53.4	49	43.4	43.4
	FCG-G36B	FCG-G36G	G1 1/4"	22	33	41.9	19	67.7	59	53	51.6
	FCG-G48B	FCG-G48G	G2"	36	42	59.6	19	69.7	74	66.5	67
	Metric Thread (EN 60423)	FCG-M10B	FCG-M10G	M12 X 1.5	3.5	6.5	12	15	43.9	25.4	22.6
FCG-M120B		FCG-M120G	M16 X 1.5	3.5	6.5	16	15	43.9	25.4	22.6	18
FCG-M102B		FCG-M102G	M12 X 1.5	4	7.1	12	15	46.2	28.8	25.5	21.3
FCG-M12B		FCG-M12G	M16 X 1.5	4	8	16	15	46.2	28.8	25.5	21.3
FCG-M162B		FCG-M162G	M20 X 1.5	4	8	20	15	46.2	28.8	25.5	21.3
FCG-M126B		FCG-M126G	M16 X 1.5	7	10.9	16	15	47.2	28.6	25.4	25.4
FCG-M16B		FCG-M16G	M20 X 1.5	7	12.3	20	15	47.2	28.6	25.4	25.4
FCGM1622B		FCGM1622G	M20 X 1.5	12	14.5	20	15	53.4	38.2	34	34
FCG-M22B		FCG-M22G	M25 X 1.5	12	18	25	15	53.4	38.2	34	34
FCG-M228B		FCG-M228G	M25 X 1.5	18	19.5	25	15	53.4	49	43.4	43.4
FCG-M28B		FCG-M28G	M32 X 1.5	18	26	32	15	53.4	49	43.4	43.4
FCG-M36B		FCG-M36G	M40 X 1.5	22	33	40	19	67.7	59	53	51.6
FCG-M48B		FCG-M48G	M50 X 1.5	36	42	50	19	69.7	74	66.5	67
Pg Thread (DIN 40430)		FCG-P07B	FCG-P07G	Pg07	3.5	6.5	12.5	15	43.9	25.4	22.6
	FCG-P09B	FCG-P09G	Pg09	3.5	6.5	15.2	15	43.9	25.4	22.6	18
	FCG-P072B	FCG-P072G	Pg07	4	8	12.5	15	46.2	28.8	25.5	21.3
	FCG-P092B	FCG-P092G	Pg09	4	8	15.2	15	46.2	28.8	25.5	21.3
	FCG-P11B	FCG-P11G	Pg11	4	8	18.6	15	46.2	28.8	25.5	21.3
	FCG-P132B	FCG-P132G	Pg13.5	4	8	20.4	15	46.2	28.8	25.5	21.3
	FCG-P162B	FCG-P162G	Pg16	4	8	22.5	15	46.2	28.8	25.5	21.3
	FCG-P096B	FCG-P096G	Pg09	7	10.6	15.2	15	47.2	28.6	25.4	25.4
	FCG-P116B	FCG-P116G	Pg11	7	12.3	18.6	15	47.2	28.6	25.4	25.4
	FCG-P13B	FCG-P13G	Pg13.5	7	12.3	20.4	15	47.2	28.6	25.4	25.4
	FCG-P16B	FCG-P16G	Pg16	7	12.3	22.5	15	47.2	28.6	25.4	25.4
	FCG-P122B	FCG-P122G	Pg11	12	13.9	18.6	15	53.4	38.2	34	34
	FCG-P1322B	FCG-P1322G	Pg13.5	12	14.8	20.4	15	53.4	38.2	34	34
	FCG-P1622B	FCG-P1622G	Pg16	12	17.3	22.5	15	53.4	38.2	34	34
	FCG-P21B	FCG-P21G	Pg21	12	18	28.3	15	53.4	38.2	34	34
	FCG-P218B	FCG-P218G	Pg21	18	22.5	28.3	15	53.4	49	43.4	43.4
	FCG-P29B	FCG-P29G	Pg29	18	26	37	15	53.4	49	43.4	43.4
	FCG-P36B	FCG-P36G	Pg36	22	33	47	19	67.7	59	53	51.6
	FCG-P48B	FCG-P48G	Pg48	36	42	59.3	19	69.7	74	66.5	67



# FCGL

Cable Glands



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.		

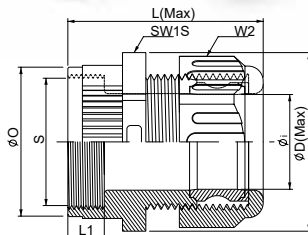
(Unit : mm)

	Ordering No.		Thread	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray									
PF Thread (JIS B0202)	FCGL-G10B	FCGL-G10G	G1/2"	3.5	6.5	20.9	9	37.9	25.4	22.6	18
	FCGL-G12B	FCGL-G12G	G1/2"	4	8	20.9	9	40.2	28.8	25.5	21.3
	FCGL-G16B	FCGL-G16G	G1/2"	7	12.3	20.9	9	41.2	28.6	25.4	25.4
Metric Thread (EN 60423)	FCGL-M10B	FCGL-M10G	M12 X 1.5	3.5	6.5	12	9	37.9	25.4	22.6	18
	FCGL-M120B	FCGL-M120G	M16 X 1.5	3.5	6.5	16	9	37.9	25.4	22.6	18
	FCGL-M102B	FCGL-M102G	M12 X 1.5	4	7.1	12	9	40.2	28.8	25.5	21.3
	FCGL-M12B	FCGL-M12G	M16 X 1.5	4	8	16	9	40.2	28.8	25.5	21.3
	FCGL-M162B	FCGL-M162G	M20 X 1.5	4	8	20	9	40.2	28.8	25.5	21.3
	FCGL-M126B	FCGL-M126G	M16 X 1.5	7	10.9	16	9	41.2	28.6	25.4	25.4
	FCGL-M16B	FCGL-M16G	M20 X 1.5	7	12.3	20	9	41.2	28.6	25.4	25.4
	FCGL-M216B	FCGL-M216G	M25 X 1.5	7	12.3	25	9	41.2	28.6	25.4	25.4
	Pg Thread (DIN 40430)	FCGL-P09B	FCGL-P09G	Pg09	3.5	6.5	15.2	9	37.9	25.4	22.6
FCGL-P092B		FCGL-P092G	Pg09	4	8	15.2	9	40.2	28.8	25.5	21.3
FCGL-P11B		FCGL-P11G	Pg11	4	8	18.6	9	40.2	28.8	25.5	21.3
FCGL-P132B		FCGL-P132G	Pg13.5	4	8	20.4	9	40.2	28.8	25.5	21.3
FCGL-P162B		FCGL-P162G	Pg16	4	8	22.5	9	40.2	28.8	25.5	21.3
FCGL-P116B		FCGL-P116G	Pg11	7	12.3	18.6	9	41.2	28.6	25.4	25.4
FCGL-P13B		FCGL-P13G	Pg13.5	7	12.3	20.4	9	41.2	28.6	25.4	25.4
FCGL-P16B		FCGL-P16G	Pg16	7	12.3	22.5	9	41.2	28.6	25.4	25.4



# TICG

Cable Glands



## Specifications

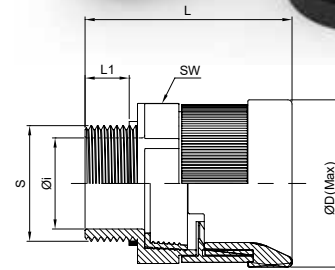
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.		

(Unit : mm)

	Ordering No.		Thread	Shell Size	Øi (Min)	Øi (Max)	L1	L	ØO	ØD	SW1	SW2
	Black	Gray										
PF Thread (JIS B0202)	TICG-U1010B	TICG-U1010G	1/2-28UNEF	8S, 10S	3.5	6.5	10	43.9	18.4	25.4	22.6	18
	TICG-U1210B	TICG-U1210G	5/8-24UNEF	10SL, 12S	3.5	6.5	10	43.9	20.6	25.4	22.6	18
	TICG-U1410B	TICG-U1410G	3/4-20UNEF	14, 14S	3.5	6.5	10	43.9	24	25.4	22.6	18
	TICG-U1610B	TICG-U1610G	7/8-20UNEF	16, 16S	3.5	6.5	10	43.9	28	25.4	22.6	18
	TICG-U1810B	TICG-U1810G	1-20UNEF	18	3.5	6.5	10	43.9	31	25.4	22.6	18
	TICG-U2010B	TICG-U2010G	1 3/16-18UNEF	20, 22	3.5	6.5	10	43.9	35.5	25.4	22.6	18
	TICG-U2810B	TICG-U2810G	1 7/16-18UNEF	24, 28	3.5	6.5	10	43.9	42	25.4	22.6	18
	TICG-U1212B	TICG-U1212G	5/8-24UNEF	10SL, 12S	4	8	10	46.2	20.6	28.8	25.5	21.3
	TICG-U1412B	TICG-U1412G	3/4-20UNEF	14, 14S	4	8	10	46.2	24	28.8	25.5	21.3
	TICG-U1612B	TICG-U1612G	7/8-20UNEF	16, 16S	4	8	10	46.2	28	28.8	25.5	21.3
	TICG-U1812B	TICG-U1812G	1-20UNEF	18	4	8	10	46.2	31	28.8	25.5	21.3
	TICG-U2012B	TICG-U2012G	1 3/16-18UNEF	20, 22	4	8	10	46.2	35.5	28.8	25.5	21.3
	TICG-U2812B	TICG-U2812G	1 7/16-18UNEF	24, 28	4	8	10	46.2	42	28.8	25.5	21.3
	TICG-U1616B	TICG-U1616G	7/8-20UNEF	16, 16S	7	12.3	10	47.2	28	28.6	25.4	25.4
	TICG-U1816B	TICG-U1816G	1-20UNEF	18	7	12.3	10	47.2	31	28.6	25.4	25.4
	TICG-U2016B	TICG-U2016G	1 3/16-18UNEF	20, 22	7	12.3	10	47.2	35.5	28.6	25.4	25.4
	TICG-U2816B	TICG-U2816G	1 7/16-18UNEF	24, 28	7	12.3	10	47.2	42	28.6	25.4	25.4
	TICG-U2222B	TICG-U2222G	1 3/16-18UNEF	20, 22	12	18	10	53.4	35.5	38.2	34	34
	TICG-U2822B	TICG-U2822G	1 7/16-18UNEF	24, 28	12	18	10	53.4	42	38.2	34	34
	TICG-U3222B	TICG-U3222G	1 3/4-18UNS	32	12	18	10	53.4	50	38.2	34	34
	TICG-U3622B	TICG-U3622G	2-18UNS	36	12	18	10	53.4	56.5	38.2	34	34
	TICG-U3228B	TICG-U3228G	1 3/4-18UNS	32	18	26	10	53.4	50	49	43.4	43.4
	TICG-U3628B	TICG-U3628G	2-18UNS	36	18	26	10	67.7	56.5	59	53	51.6
	TICG-U3636B	TICG-U3636G	2-18UNS	36	22	33	10	69.7	56.5	74	66.5	67

# PNCL

## Straight Fittings



(Unit : mm)

### Specifications

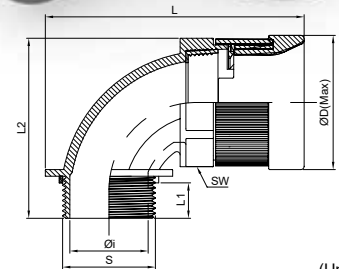


Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.		

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	PNCL-G10B	PNCL-G10G	G1/2"	10	20.9	8	44.2	12	25	19.7
	PNCL-G12B	PNCL-G12G	G1/2"	12	20.9	8	43.1	15	27.6	22.8
	PNCL-G16B	PNCL-G16G	G1/2"	16	20.9	8	45	15.2	33	28
Metric Thread / Straight (EN 60423)	PNCL-M10B	PNCL-M10G	M12 X 1.5	10	12	8	43.5	7.5	25	19.7
	PNCL-M120B	PNCL-M120G	M16 X 1.5	10	16	8	43.5	10	25	19.7
	PNCL-M20B	PNCL-M20G	M20 X 1.5	10	20	8	43.5	12	25	19.7
	PNCL-M102B	PNCL-M102G	M12 X 1.5	12	12	8	43.1	8	27.6	22.8
	PNCL-M12B	PNCL-M12G	M16 X 1.5	12	16	8	43.1	12	27.6	22.8
	PNCL-M202B	PNCL-M202G	M20 X 1.5	12	20	8	43.1	15	27.6	22.8
	PNCL-M126B	PNCL-M126G	M16 X 1.5	16	16	8	45	12	33	28
	PNCL-M16B	PNCL-M16G	M20 X 1.5	16	20	8	45	15.2	33	28
	PNCL-M226B	PNCL-M226G	M25 X 1.5	16	25	8	45	17.5	33	28
Pg Thread / Straight (DIN 40430)	PNCL-P09B	PNCL-P09G	Pg09	10	15.2	8	43.5	10	25	19.7
	PNCL-P160B	PNCL-P160G	Pg16	10	22.5	8	43.5	12	25	19.7
	PNCL-P0912B	PNCL-P0912G	Pg09	12	15.2	8	43.1	12	27.6	22.8
	PNCL-P11B	PNCL-P11G	Pg11	12	18.6	8	43.1	12	27.6	22.8
	PTNCL-P136B	PNCL-P136G	Pg13.5	16	20.4	8	45	15.2	33	28
	PNCL-P16B	PNCL-P16G	Pg16	16	22.5	8	45	15.2	33	28

# PWCL

## Elbow 90° Connector



(Unit : mm)

### Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.		

	Ordering No.		Thread	Tube Size	S	L 1	L2	L	Øi	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PWCL-G10B	PWCL-G10G	G1/2"	10	20.9	8	45.1	60.7	12	24.5	19.7
	PWCL-G12B	PWCL-G12G	G1/2"	12	20.9	8	45.8	60.8	15	27.6	22.8
	PWCL-G16B	PWCL-G16G	G1/2"	16	20.9	8	51.4	68.2	15.2	33	28
Metric Thread / 90°Elbow (EN 60423)	PWCL-M10B	PWCL-M10G	M12 X 1.5	10	12	8	45.1	60.7	8	24.5	19.7
	PWCL-M12B	PWCL-M12G	M16 X 1.5	12	16	8	45.8	60.8	12	27.6	22.8
	PWCL-M202B	PWCL-M202G	M20 X 1.5	12	20	8	45.8	60.8	15	27.6	22.8
	PWCL-M16B	PWCL-M16G	M20 X 1.5	16	20	8	51.4	68.2	15.2	33	28
Pg Thread / 90°Elbow (DIN 40430)	PWCL-P09B	PWCL-P09G	Pg09	10	15.2	8	45.1	60.7	11	24.5	19.7
	PWCL-P110B	PWCL-P110G	Pg11	10	18.6	8	45.1	60.7	12	24.5	19.7
	PWCL-P130B	PWCL-P130G	Pg13.5	10	20.4	8	45.1	60.7	12	24.5	19.7
	PWCL-P11B	PWCL-P11G	Pg11	12	18.6	8	45.8	60.8	13	27.6	22.8
	PWCL-P132B	PWCL-P132G	Pg13.5	12	20.4	8	45.8	60.8	15	27.6	22.8
	PWCL-P162B	PWCL-P162G	Pg16	12	22.5	8	45.8	60.8	15	27.6	22.8
	PWCL-P136B	PWCL-P136G	Pg13.5	16	20.4	8	51.4	68.2	15.2	33	28
	PWCL-P16B	PWCL-P16G	Pg16	16	22.5	8	51.4	68.2	17.5	33	28



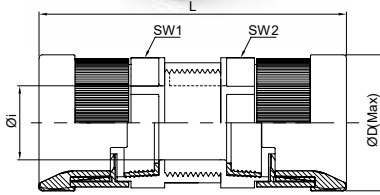
# PNSC

Connector for tube to tube \*Under development

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	The connector which can connect tube and tube each other.		



(Unit : mm)

Ordering No.		Tube Size	L	Øi	ØD	SW1	SW2
Black	Gray						
PNSC-10B	PNSC-10G	10 + 10	78.4	8	25	19.7	19.7
PNSC-12B	PNSC-12G	12 + 12	78.9	11	27.6	22.8	22.8
PNSC-16B	PNSC-16G	16 + 16	82.7	12.5	33	28	28
PNSC-22B	PNSC-22G	22 + 22	109.2	19	43	37.5	37.5
PNSC-28B	PNSC-28G	28 + 28	117.2	22	48.8	43	43
PNSC-36B	PNSC-36G	36 + 36	140.6	30	60.6	52.2	52.2
PNSC-48B	PNSC-48G	48 + 48	149.8	42	71.8	64	64



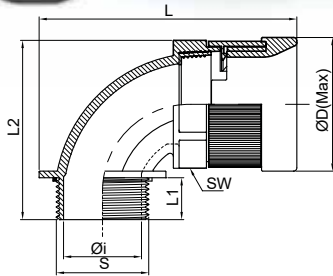
# PWC

Elbow 90° Connector

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray (Light Gray Available in PF Thread Type)
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		



(Unit : mm)

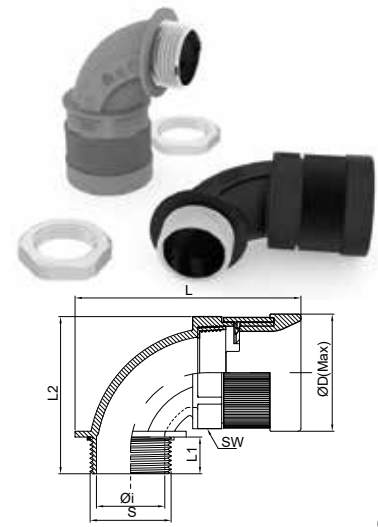
	Ordering No.		Thread	Tube Size	S	L 1	L 2	L	Øi	ØD	SW	
	Black	Gray										
PF Thread (JIS B0202)	PWC-G10B	PWC-G10G	G1/2"	10	20.9	13	45.1	60.7	12	25	19.7	
	PWC-G12B	PWC-G12G	G1/2"	12	20.9	13	45.8	60.8	15	27.6	22.8	
	PWC-G16B	PWC-G16G	G1/2"	16	20.9	13	51.4	68.2	15.2	33	28	
	PWC-G22B	PWC-G22G	G3/4"	22	26.4	15	62.6	85.2	22	43	37.5	
	PWC-G28B	PWC-G28G	G1"	28	33.2	15	71.6	100.9	27	48.8	43	
	PWC-G368B	PWC-G368G	G1 1/4"	28	41.9	15	71.6	100.9	30.5	48.8	43	
	PWC-G36B	PWC-G36G	G1 1/4"	36	41.9	19	81.3	116.9	33	60.6	52.2	
	PWC-G42B	PWC-G42G	G1 1/2"	48	47.8	19	97	135.4	40.8	71.8	64	
	PWC-G48B	PWC-G48G	G2"	48	59.6	19	97	135.4	50	71.8	64	
	Metric Thread (EN 60423)	PNC-M107B	PWC-M107G	M12 X 1.5	07	12	11	35.6	47	7.5	17.9	14
		PWC-M107B	PWC-M10G	M12 X 1.5	10	12	13	45.1	60.7	8	25	19.7
		PWC-M10B	PWC-M12G	M16 X 1.5	12	16	13	45.8	60.8	12	27.6	22.8
PWC-M12B		PWC-M20G	M20 X 1.5	12	20	13	45.8	60.8	15	27.6	22.8	
PWC-M202B		PWC-M16G	M20 X 1.5	16	20	13	51.4	68.2	15.2	33	28	
PWC-M16B		PWC-M22G	M25 X 1.5	22	25	15	62.6	85.2	20.6	43	37.5	
PWC-M22B		PWC-M28G	M32 X 1.5	28	32	15	71.6	100.9	27	48.8	43	
PWC-M28B		PWC-M36G	M40 X 1.5	36	40	19	81.3	116.9	33	60.6	52.2	
PWC-M36B		PWC-M48G	M50 X 1.5	48	50	19	97	135.4	42	71.8	64	
Pg Thread (DIN 40430)		PNC-P077B	PWC-P077G	Pg07	07	12.5	11	35.6	47	8.5	17.9	14
		PWC-P077B	PWC-P097G	Pg09	07	15.2	11	35.6	47	8.5	17.9	14
		PWC-P097B	PWC-P09G	Pg09	10	15.2	13	45.1	60.7	11	25	19.7
	PWC-P09B	PWC-P110G	Pg11	10	18.6	13	45.1	60.7	12	25	19.7	
	PWC-P110B	PWC-P130G	Pg13.5	10	20.4	13	45.1	60.7	12	25	19.7	
	PWC-P130B	PWC-P11G	Pg11	12	18.6	13	45.8	60.8	13	27.6	22.8	
	PWC-P11B	PWC-P132G	Pg13.5	12	20.4	13	45.8	60.8	15	27.6	22.8	
	PWC-P132B	PWC-P162G	Pg16	12	22.5	13	45.8	60.8	15	27.6	22.8	
	PWC-P162B	PWC-P136G	Pg13.5	16	20.4	13	51.4	68.2	15.2	33	28	
	PWC-P136B	PWC-P16G	Pg16	16	22.5	13	51.4	68.2	17.5	33	28	
	PWC-P16B	PWC-P163G	Pg16	22	22.5	15	62.6	85.2	18	43	37.5	
	PWC-P163B	PWC-P21G	Pg21	22	28.3	15	62.6	85.2	22	43	37.5	
	PWC-P21B	PWC-P29G	Pg29	28	37	15	71.6	100.9	30.5	48.8	43	
	PWC-P29B	PWC-P36G	Pg36	36	47	19	81.3	116.9	33	60.6	52.2	
	PWC-P36B	PWC-P48G	Pg48	48	59.3	19	97	135.4	50	71.8	64	



# SPWC

\*Under development

Elbow 90° Connector



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		



(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
Pg Thread (DIN 40430)	SPWC-P077B	SPWC-P077G	Pg07	07	12.5	11	33	41	6	17	14.2
	SPWC-P09B	SPWC-P09G	Pg09	10	15.2	13	53	62	8	25	19.8
	SPWC-P11B	SPWC-P11G	Pg11	12	18.6	13	53	60	9	25	22.7
	SPWC-P136B	SPWC-P136G	Pg13.5	16	20.4	13	62	66	12	30	28
	SPWC-P16B	SPWC-P16G	Pg16	16	22.5	13	62	66	12	30	28
	SPWC-P21B	SPWC-P21G	Pg21	22	28.3	15	71	81	18	41	37.5
	SPWC-P29B	SPWC-P29G	Pg29	28	37	15	77	96	25	47	43
	SPWC-P36B	SPWC-P36G	Pg36	36	47	19	97	119	31	56	52.2
	SPWC-P48B	SPWC-P48G	Pg48	48	59.3	19	112	141	42	68	64.1
	Metric Thread (EN 60423)	SPWC-M107B	SPWC-M107G	M12 X 1.5	07	12	11	33	41	6	17
SPWC-M10B		SPWC-M10G	M12 X 1.5	10	12	13	53	62	6	25	19.8
SPWC-M12B		SPWC-M12G	M16 X 1.5	12	16	13	53	60	9	25	22.7
SPWC-M16B		SPWC-M16G	M20 X 1.5	16	20	13	62	66	12	30	28
SPWC-M22B		SPWC-M22G	M25 X 1.5	22	25	15	71	81	16	41	37.5
SPWC-M28B		SPWC-M28G	M32 X 1.5	28	32	15	77	96	23	47	43
SPWC-M36B		SPWC-M36 G	M40 X 1.5	36	40	19	97	119	31	56	52.2
SPWC-M48B		SPWC-M48G	M50 X 1.5	48	50	19	112	141	41	68	64.1

# SPAC

\*Under development

Elbow 45° Connector



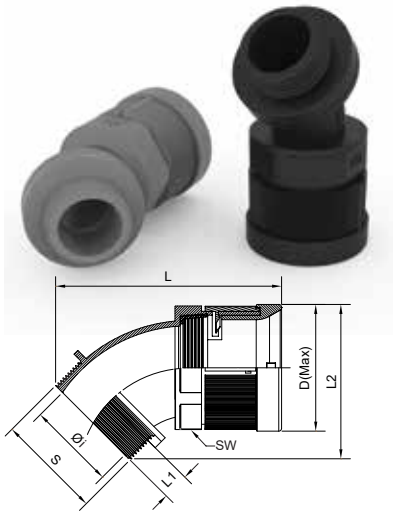
## Specifications

Material	High Quality Polyamide 6 + Brass Nickel plated	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		



(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW	
	Black	Gray										
Pg Thread (DIN 40430)	SPAC-P09B	SPAC-P09G	Pg09	10	15.5	13	33.7	59.8	11.1	24.5	19.7	
	SPAC-P11B	SPAC-P11G	Pg11	12	18.6	13	37.1	62.2	14.1	27.6	22.8	
	SPAC-P136B	SPAC-P136G	Pg13.5	16	20.4	13	41.1	66.5	15.3	33	28	
	SPAC-P16B	SPAC-P16G	Pg16	16	22.5	13	41.8	67.3	17.6	33	28	
	SPAC-P21B	SPAC-P21G	Pg21	22	28.3	15	51.7	81.7	22.2	43	37.5	
	SPAC-P29B	SPAC-P29G	Pg29	28	37	15	57.8	94.1	31.2	48.8	43	
	SPAC-P36B	SPAC-P36G	Pg36	36	47	20	73.3	113.9	40.3	60.6	52.2	
	SAC-P48B	SPAC-P48G	Pg48	48	59.3	20	84.6	125.9	50.4	71.8	64	
	Metric Thread (EN 60423)	SPAC-M10B	SPAC-M10G	M12 X 1.5	10	12	13	32.2	58.6	8.1	24.5	19.7
		SPAC-M12B	SPAC-M12G	M16 X 1.5	12	16	13	35.8	61.3	12.1	27.6	22.8
SPAC-M16B		SPAC-M16G	M20 X 1.5	16	20	13	40.6	66.3	15.3	33	28	
SPAC-M22B		SPAC-M22G	M25 X 1.5	22	25	15	50.2	80.6	20.8	43	37.5	
SPAC-M28B		SPAC-M28G	M32 X 1.5	28	32	15	56.4	92.5	27.2	48.8	43.0	
SPAC-M36B		SPAC-M36G	M40 X 1.5	36	40	20	70.5	111.5	34.3	60.6	52.2	
SPAC-M48B		SPAC-M48G	M50 X 1.5	48	50	20	81.3	122.5	42.3	71.8	64	



# PAEL

Elbow 45° Connector

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
PF Thread / 45°Elbow (JIS B0202)	PACL-G10B	PACL-G10G	G1/2"	10	21	8	35.5	61.5	15.1	24.5	19.7
	PACL-G12B	PACL-G12G	G1/2"	12	21	8	37.6	62.7	15.1	27.6	22.8
	PACL-G16B	PACL-G16G	G1/2"	16	21	8	41.1	66.4	15.3	33	28
Metric Thread / 45°Elbow (EN 60423)	PACL-M10B	PACL-M10G	M12 X 1.5	10	12	8	32.2	58.6	8.1	24.5	19.7
	PACL-M12B	PACL-M12G	M16 X 1.5	12	16	8	35.8	61.3	12.1	27.6	22.8
	PACL-M16B	PACL-M16G	M20 X 1.5	16	20	8	37.2	62.7	15.1	27.6	22.8
Pg Thread / 45°Elbow (DIN 40430)	PACL-P09B	PACL-P09G	Pg09	10	15.5	8	33.7	59.8	11.1	24.5	19.7
	PACL-P110B	PACL-P110G	Pg11	10	18.6	8	34.8	60.9	15.1	24.5	19.7
	PACL-P130B	PACL-P130G	Pg13.5	10	20.4	8	35.4	61.5	15.1	24.5	19.7
	PACL-P11B	PACL-P11G	Pg11	12	18.6	8	37.1	62.2	14.1	27.6	22.8
	PACL-P136B	PACL-P136G	Pg13.5	16	20.4	8	41.1	66.5	15.3	33	28
	PACL-P16B	PACL-P16G	Pg16	16	22.5	8	41.8	67.3	17.6	33	28



# PAC

Elbow 45° Connector

## Specifications



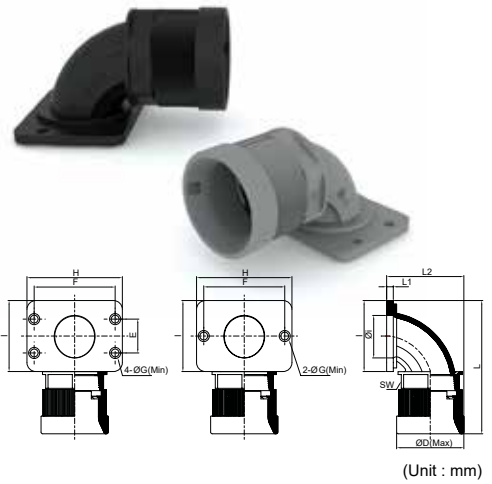
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray (Light Gray Available in PF Thread Type)
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PAC-G10B	PAC-G10G	G1/2"	10	21	13	35.5	61.5	15.1	24.5	19.7
	PAC-G12B	PAC-G12G	G1/2"	12	21	13	37.6	62.7	15.1	27.6	22.8
	PAC-G16B	PAC-G16G	G1/2"	16	21	13	41.1	66.4	15.3	33	28
	PAC-G22B	PAC-G22G	G3/4"	22	26.5	15	50.8	80.7	22.2	43	37.5
	PAC-G28B	PAC-G28G	G1"	28	33.3	15	56.6	92.7	27.2	48.8	43
	PAC-G36B	PAC-G36G	G1 1/4"	36	41.9	20	71.3	111.7	34.3	60.6	52.2
	PAC-G42B	PAC-G42G	G1 1/2"	48	47.8	20	80.1	121.5	41.1	71.8	64
	PAC-G48B	PAC-G48G	G2"	48	59.6	20	84.1	125.5	50.4	71.8	64
	Metric Thread (EN 60423)	PAC-M10B	PAC-M10G	M12 X 1.5	10	12	13	32.2	58.6	8.1	24.5
PAC-M12B		PAC-M12G	M16 X 1.5	12	16	13	35.8	61.3	12.1	27.6	22.8
PAC-M202B		PAC-M202G	M20 X 1.5	12	20	13	37.2	62.7	15.1	27.6	22.8
PAC-M16B		PAC-M16G	M20 X 1.5	16	20	13	40.6	66.3	15.3	33	28
PAC-M22B		PAC-M22G	M25 X 1.5	22	25	15	50.2	80.6	20.8	43	37.5
PAC-M28B		PAC-M28G	M32 X 1.5	28	32	15	56.4	92.5	27.2	48.8	43
PAC-M36B		PAC-M36G	M40 X 1.5	36	40	20	70.5	111.5	34.3	60.6	52.2
PAC-M48B		PAC-M48G	M50 X 1.5	48	50	20	81.3	122.5	42.3	71.8	64
Pg Thread (DIN 40430)		PAC-P09B	PAC-P09G	Pg09	10	15.5	13	33.7	59.8	11.1	24.5
	PAC-P110B	PAC-P110G	Pg11	10	18.6	13	34.8	60.9	15.1	24.5	19.7
	PAC-P130B	PAC-P130G	Pg13.5	10	20.4	13	35.4	61.5	15.1	24.5	19.7
	PAC-P11B	PAC-P11G	Pg11	12	18.6	13	37.1	62.2	14.1	27.6	22.8
	PAC-P136B	PAC-P136G	Pg13.5	16	20.4	13	41.1	66.5	15.3	33	28
	PAC-P16B	PAC-P16G	Pg16	16	22.5	13	41.8	67.3	17.6	33	28
	PAC-P21B	PAC-P21G	Pg21	22	28.3	15	51.7	81.7	22.2	43	37.5
	PAC-P29B	PAC-P29G	Pg29	28	37	15	57.8	94.1	31.2	48.8	43
	PAC-P36B	PAC-P36G	Pg36	36	47	20	73.3	113.9	40.3	60.6	52.2
	PAC-P48B	PAC-P48G	Pg48	48	59.3	20	84.6	125.9	50.4	71.8	64

# PWOC

Flange Type 90° Connector



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Control box with connector.		

Ordering No.		Tube Size	E	F	G	H	I	L1	L2	L	Øi	ØD	SW
Black	Gray												
PWOC-12B	PWOC-12G	12	-	36.5	5.5	45	32	5	38.9	64.1	15	27.6	22.8
PWOC-16B	PWOC-16G	16	-	36.5	5.5	44	32	5	44.6	69	17.5	33	28
PWOC-22B	PWOC-22G	22	30.5	53.5	5.5	65	45	5	53.6	87.2	22	43	37.5
PWOC-28B	PWOC-28G	28	31	55	6	65	45	6	63.5	100.9	27	48.8	43
PWOC-36B	PWOC-36G	36	30.5	73	7	86	64	6	69.6	120.1	36	60.6	52.2
PWOC-48B	PWOC-48G	48	30.5	73	7	86	78	6	84.9	139.4	50	71.8	64

# TIS

Straight Fittings



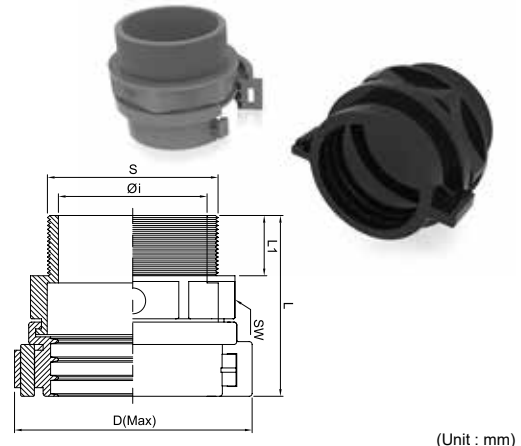
## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Transparency
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Sencer with connector.		

	Ordering No.		Tube Size	S	L 1	L	Øi	ØO	ØD	SW1	SW2
	Black	Gray									
Metric Thread (EN 60423)	TIS-M08T	M8 X 1.0	10	7.7	12.8	61.5	5	17.5	23	20	16
	TIS-M12T	M12 X 1.0	10	11.6	12.8	61.5	9	20	23	20	18.3
	TIS-M18T	M18 X 1.0	10	17.7	12.8	61.5	9	24	23	20	22
	TIS-M30T	M30 X 1.5	10	28.5	12.8	61.5	9	38	23	20	34

# TNRC

Straight Fittings



## Specifications

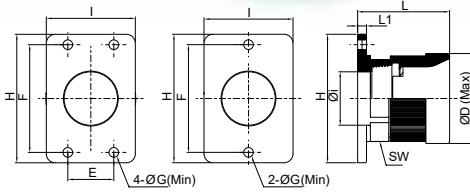
Material	High Quality Polyamide 6	Degrees of Protection	IP 66 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Applied in control box or moving point.		

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	TNRC-G22B	TNRC-G22G	G3/4"	22	26.4	15	50.8	19.4	50.6	36.9
	TNRC-G28B	TNRC-G28G	G1"	28	33.2	15	49	26.2	57.7	42.7
	TNRC-G36B	TNRC-G36G	G1 1/4"	36	41.6	19	60	35	70	52.2
	TNRC-G48B	TNRC-G48G	G2"	48	58.7	21	63.3	51	85	64.1



# PNOC

Straight Fittings of flange type



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.		

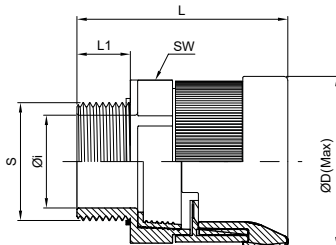
(Unit : mm)

Ordering No.		Tube Size	E	F	G	H	I	L1	L	Øi	ØD	SW
Black	Gray											
PNOC-12B	PNOC-12G	12	-	36.5	5.5	46	32	5	35.1	15	27.6	22.8
PNOC-16B	PNOC-16G	16	-	36.5	5.5	46	32	5	37	17.5	33	28
PNOC-22B	PNOC-22G	22	30.5	53.5	5.5	65	45	5	44.7	22	43	37.5
PNOC-28B	PNOC-28G	28	31	54.8	6.5	64.8	45	6	53.4	27	48.8	43
PNOC-36B	PNOC-36G	36	31	72.6	6.5	86.6	60	6	62	36	60.6	52.2
PNOC-48B	PNOC-48G	48	30.5	72.6	6.5	86.6	73	6	66.4	50	71.8	64



# SPNC

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc		

(Unit : mm)

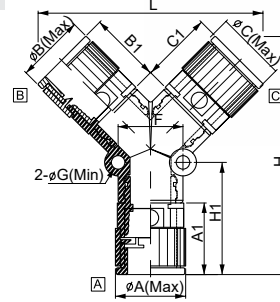
	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
Pg Thread (DIN 40430)	SPNC-P09B	SPNC-P09G	Pg09	10	15.2	13	43.5	10	25	19.7
	SPNC-P11B	SPNC-P11G	Pg11	12	18.6	13	43.1	12	27.6	22.8
	SPNC-P132B	SPNC-P132G	Pg13.5	12	20.4	13	42	12	25	22.7
	SPNC-P136B	SPNC-P136G	Pg13.5	16	20.4	13	45	15.2	33	28
	SPNC-P16B	SPNC-P16G	Pg16	16	22.5	13	45	15.2	33	28
	SPNC-P21B	SPNC-P21G	Pg21	22	28.3	15	54.7	22	43	37.5
	SPNC-P29B	SPNC-P29G	Pg29	28	37	15	62.4	30.5	48.8	43
	SPNC-P36B	SPNC-P36G	Pg36	36	47	19	76.6	36	60.6	52.2
	SPNC-P48B	SPNC-P48G	Pg48	48	59.3	21	81.4	50	71.8	64
	Metric Thread (EN 60423)	SPNC-M10B	SPNC-M10G	M12 X 1.5	10	12	13	43.5	7.5	25
SPNC-M12B		SPNC-M12G	M16 X 1.5	12	16	13	43.1	12	27.6	22.8
SPNC-M16B		SPNC-M16G	M20 X 1.5	16	20	13	45	15.2	33	28
SPNC-M22B		SPNC-M22G	M25 X 1.5	22	25	15	54.7	20.6	43	37.5
SPNC-M28B		SPNC-M28G	M32 X 1.5	28	32	15	62.4	27	48.8	43
SPNC-M36B		SPNC-M36G	M40 X 1.5	36	40	19	76.6	34	60.6	52.2
SPNC-M48B		SPNC-M48G	M50 X 1.5	48	50	21	81.4	42	71.8	64

# TVC

## Y Type Connector

### Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.		



(Unit : mm)

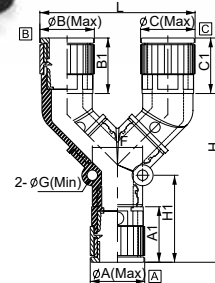
Ordering No.		A	B	C	$\phi A$	A1	$\phi B$	B1	$\phi C$	C1	$\phi G$	F	H1	H	L
Black	Gray														
TVC-101010B	TVC-101010G	10	10	10	23	26.6	23	26.6	23	26.6	5	24	41.6	86	80
TVC-121010B	TVC-121010G	12	10	10	25	26.5	23	26.6	23	26.6	5	24	41.5	86	80
TVC-121210B	TVC-121210G	12	12	10	25	26.5	25	26.5	23	26.6	5	24	41.5	88	83
TVC-121212B	TVC-121212G	12	12	12	25	26.5	25	26.5	25	26.5	5	24	41.5	88	83
TVC-161010B	TVC-161010G	16	10	10	30	28.5	23	26.6	23	26.6	5	24	43.5	88	83
TVC-161210B	TVC-161210G	16	12	10	30	28.5	25	26.5	23	26.6	5	24	43.5	90	81
TVC-161212B	TVC-161212G	16	12	12	30	28.5	25	26.5	25	26.5	5	24	43.5	90	83
TVC-161616B	TVC-161616G	16	16	16	30	28.5	30	28.5	30	28.5	5	24	43.5	93	89.8
TVC-222222B	TVC-222222G	22	22	22	41	33.3	41	33.3	41	33.3	5.6	39	48.2	112	112
TVC-282222B	TVC-282222G	28	22	22	47	39.0	41	33.3	41	33.3	5.6	39	53.9	118	112
TVC-282822B	TVC-282822G	28	28	22	47	39.0	47	39.0	41	33.3	5.6	39	53.9	124	118
TVC-282828B	TVC-282828G	28	28	28	47	39.0	47	39.0	47	39.0	5.6	39	53.9	124	124

# TYC

## Y Type Connector

### Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Transparency
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.		



(Unit : mm)

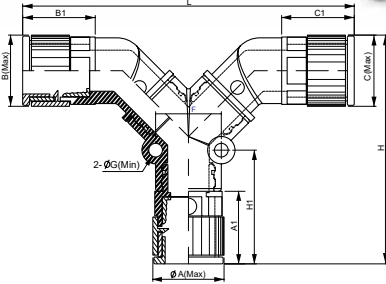
Ordering No.		A	B	C	$\phi A$	A1	$\phi B$	B1	$\phi C$	C1	$\phi G$	F	H1	H	L
Black	Gray														
TYC-101010B	TYC-101010G	10	10	10	23	26.6	23	24	23	24	5	24	41.6	104	67
TYC-121010B	TYC-121010G	12	10	10	25	26.5	23	24	23	24	5	24	41.5	104	67
TYC-121210B	TYC-121210G	12	12	10	25	26.5	25	24.4	23	24	5	24	41.5	107	69.7
TYC-121212B	TYC-121212G	12	12	12	25	26.5	25	24.4	25	24.4	5	24	41.5	107	73.5
TYC-161010B	TYC-161010G	16	10	10	30	28.5	23	24	23	24	5	24	43.5	105.7	67
TYC-161210B	TYC-161210G	16	12	10	30	28.5	25	24.4	23	24	5	24	43.5	108.7	69.7
TYC-161212B	TYC-161212G	16	12	12	30	28.5	25	24.4	25	24.4	5	24	43.5	108.7	73
TYC-161616B	TYC-161616G	16	16	16	30	28.5	30	26	30	26	5	24	43.5	110.8	83
TYC-222222B	TYC-222222G	22	22	22	41	33.3	41	33.5	41	33.5	5.6	39	48.2	134.5	108
TYC-282222B	TYC-282222G	28	22	22	47	39.0	41	33.5	41	33.5	5.6	39	53.9	142	108
TYC-282822B	TYC-282822G	28	28	22	47	39.0	47	39.5	41	33.5	5.6	39	53.9	150	111
TYC-282828B	TYC-282828G	28	28	28	47	39.0	47	39.5	47	39.5	5.6	39	53.9	150	114





# TTC

T Type Connector



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.		

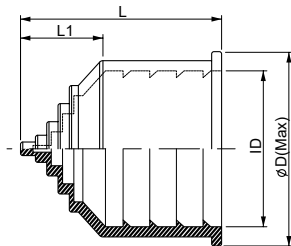
(Unit : mm)

Ordering No.		A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
Black	Gray														
TTC-101010B	TTC-101010G	10	10	10	23	26.6	23	24	23	24	5	24	41.6	81	114
TTC-121010B	TTC-121010G	12	10	10	25	26.5	23	24	23	24	5	24	41.5	81	114
TTC-121210B	TTC-121210G	12	12	10	25	26.5	25	24.4	23	24	5	24	41.5	83	118
TTC-121212B	TTC-121212G	12	12	12	25	26.5	25	24.4	25	24.4	5	24	41.5	83	120
TTC-161010B	TTC-161010G	16	10	10	30	28.5	23	24	23	24	5	24	43.5	82	114
TTC-161210B	TTC-161210G	16	12	10	30	28.5	25	24.4	23	24	5	24	43.5	85	118
TTC-161212B	TTC-161212G	16	12	12	30	28.5	25	24.4	25	24.4	5	24	43.5	85	120
TTC-161616B	TTC-161616G	16	16	16	30	28.5	30	26	30	26	5	24	43.5	90	124
TTC-222222B	TTC-222222G	22	22	22	41	33.3	41	33.5	41	33.5	5.6	39	48.2	110	156
TTC-282222B	TTC-282222G	28	22	22	47	39	41	33.5	41	33.5	5.6	39	53.9	116	156
TTC-282822B	TTC-282822G	28	28	22	47	39	47	39.5	41	33.5	5.6	39	53.9	120	165
TTC-282828B	TTC-282828G	28	28	28	47	39	47	39.5	47	39.5	5.6	39	53.9	120	174



# FEC

CPSFIX Series



## Specifications

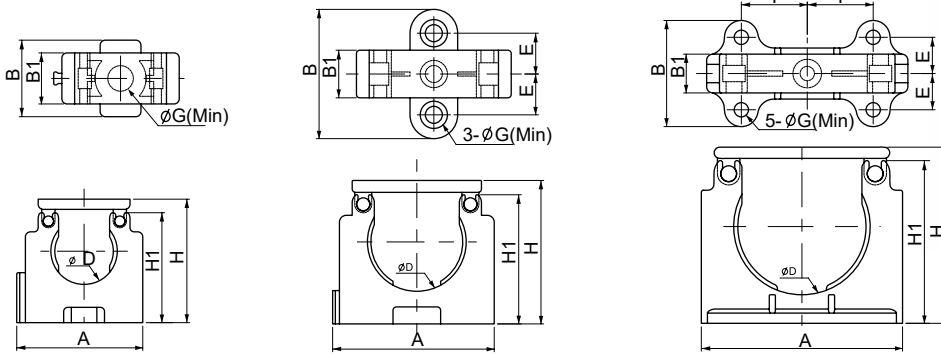
Material	N.B.R (Nitrile-Gutadiene Rubber)	Degrees of Protection	IP 66 (EN 60529)
Properties	Tube terminal, assembled by just putting on	Color	Black & Gray
For tube type	Corrugated tubes, type of CPSFLEX		

(Unit : mm)

Ordering No.		Tube Size	Min	Max	L1	L	ID	ØD
Black	Gray							
FEC-07B	FEC-07G	07	2	7	8	24	10	16
FEC-10B	FEC-10G	10	3	10	11	33	12.5	17
FEC-12B	FEC-12G	12	4.2	12	11	33	16	23.5
FEC-16B	FEC-16G	16	6	160	12.5	34.5	21.2	29
FEC-22B	FEC-22G	22	6	220	16	43	28.5	37
FEC-28B	FEC-28G	28	6	28	16	43	34.5	43
FEC-36B	FEC-36G	36	6	36	24	58.5	42.5	52
FEC-48B	FEC-48G	48	6	48.	24	58.5	54.5	64
FEC-56B	FEC-56G	56	9	56	29	71	67.2	76.7
FEC-70B	FEC-70G	70	10	70	36	86	82.5	92
FEC-95B	FEC-95G	95	13	95	45	110	106	115.5

# NFH

Tube clip



## Specifications

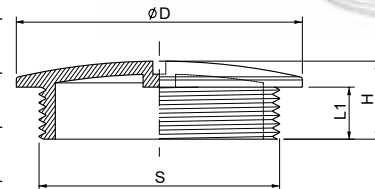
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Fixing tubes By making more screw holes, the clip is more stable and the hinge cover is easy to use. This new clip was developed to facilitate straight arrangement and be installable at any size.		

(Unit : mm)

Ordering No.		Tube Size	ØD	A	H	H1	B	B1	E	F	ØG	Bolt
Black	Gray											
NFH-07B	NFH-07G	07	10.0	16.6	20.5	17.9	14.5	10.0	-	-	5.0	1-M4
NFH-10B	NFH-10G	10	13.0	23.0	24.2	21.6	15.0	10.0	-	-	5.0	1-M4
NFH-12B	NFH-12G	12	16.0	27.5	25.7	22.5	33.0	14.0	11.30	-	5.4	3-M5
NFH-16B	NFH-16G	16	21.5	34.2	33.0	29.5	36.0	14.0	12.00	-	5.4	3-M5
NFH-22B	NFH-22G	22	29.0	45.5	42.2	38.0	38.0	14.0	12.00	-	6.4	3-M6
NFH-28B	NFH-28G	28	35.0	55.0	49.8	45.3	37.0	14.0	12.50	17.00	6.4	5-M6
NFH-36B	NFH-36G	36	42.0	66.0	59.5	54.3	41.5	14.0	13.50	18.75	6.4	5-M6
NFH-48B	NFH-48G	48	54.0	84.9	73.2	66.9	41.5	14.0	13.50	28.00	6.4	5-M6
NFH-56B	NFH-56G	56	66.8	98.6	86.3	79.7	52.0	19.0	17.75	32.30	6.4	5-M6
NFH-70B	NFH-70G	70	82.0	121.0	105.8	97.6	63.0	23.0	21.50	39.50	8.4	5-M8
NFH-95B	NFH-95G	95	105.6	155.4	136.3	125.8	82.0	30.0	28.00	51.70	8.4	5-M8

# BBS

Fitting Screw



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 66 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray

(Unit : mm)

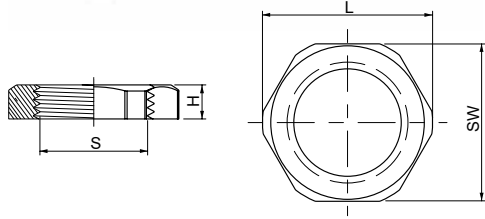
	Ordering No.		Thread	S	L 1	H	ØD
	Black	Gray					
Pg Thread (DIN 40340)	BBS-P07W	BBS-P07G	Pg07	12.5	6.0	8.0	15.0
	BBS-P09W	BBS-P09G	Pg09	15.2	6.0	9.0	19.0
	BBS-P11W	BBS-P11G	Pg11	18.6	6.0	10.0	22.0
	BBS-P13W	BBS-P13G	Pg13.5	20.4	6.0	10.0	25.0
	BBS-P16W	BBS-P16G	Pg16	22.5	6.0	10.0	27.0
	BBS-P21W	BBS-P21G	Pg21	28.3	8.0	12.0	33.0
	BBS-P29W	BBS-P29G	Pg29	37.0	8.0	12.0	44.0
	BBS-P36W	BBS-P36G	Pg36	47.0	10.0	15.0	55.0



# FEC

Hexagon nut

## Specifications



Material	N.B.R (Nitrile-Gutadiene Rubber)	Degrees of Protection	IP 66 (EN 60529)
Properties	Tube terminal, assembled by just putting on	Color	Black & Gray
For tube type	Corrugated tubes, type of CPSFLEX		

(Unit : mm)

	Ordering No.		Thread	S	H	L	SW
	Black	Gray					
PF Thread (JIS B0202)	FLN-G07B	FLN-G07G	G1/4"	13.0	6.0	20.7	19.0
	FLN-G10B	FLN-G10G	G1/2"	20.9	6.0	29.5	27.3
	FLN-G12B	FLN-G12G	G1/2"	20.9	6.0	29.5	27.3
	FLN-G16B	FLN-G16G	G1/2"	20.9	6.0	29.5	27.3
	FLN-G22B	FLN-G22G	G3/4"	26.4	6.8	38.4	36.0
	FLN-G28B	FLN-G28G	G1"	33.2	6.8	47.8	44.0
	FLN-G36B	FLN-G36G	G1 1/4"	41.9	8.0	52.3	49.0
	FLN-G42B	FLN-G42G	G1 1/2"	47.8	8.0	72.3	65.0
	FLN-G48B	FLN-G48G	G2"	59.6	8.0	76.5	70.0
	Metric Thread (EN 60423)	FLN-M10B	FLN-M10G	M12 X 1.5	12.0	6.0	18.6
FLN-M12B		FLN-M12G	M16 X 1.5	16.0	6.0	24.0	22
FLN-M16B		FLN-M16G	M20 X 1.5	20.0	6.0	28.0	26
FLN-M22B		FLN-M22G	M25 X 1.5	25.0	6.8	35.6	33
FLN-M28B		FLN-M28G	M32 X 1.5	32.0	6.8	43.6	40
FLN-M36B		FLN-M36G	M40 X 1.5	40.0	8.0	54.0	50
FLN-M48B		FLN-M48G	M50 X 1.5	50.0	8.0	65.4	60
Pg Thread (DIN 40430)	FLN-P07B	FLN-P07G	Pg07	12.5	4.0	21.1	19.0
	FLN-P09B	FLN-P09G	Pg09	15.2	4.0	23.9	22.0
	FLN-P11B	FLN-P11G	Pg11	18.6	6.0	25.8	24.0
	FLN-P13B	FLN-P13G	Pg13.5	20.4	6.0	28.7	27.0
	FLN-P16B	FLN-P16G	Pg16	22.5	6.0	32.1	30.3
	FLN-P21B	FLN-P21G	Pg21	28.3	6.8	38.5	36.0
	FLN-P29B	FLN-P29G	Pg29	37.0	6.8	49.7	46.0
	FLN-P36B	FLN-P36G	Pg36	47.0	8.0	66.5	60.0
	FLN-P48B	FLN-P48G	Pg48	59.3	8.0	78.1	70.2



# SLN

Fitting Steel Nut

(Unit : mm)

PF Thread (JIS B0202)	Metric Thread (EN 60423)	Pg Thread (DIN 40430)
SLN-G07	SLN-M10	SLN-P07
SLN-G10	SLN-M12	SLN-P09
SLN-G12	SLN-M16	SLN-P11
SLN-G16	SLN-M22	SLN-P13
SLN-G22	SLN-M28	SLN-P16
SLN-G28	SLN-M36	SLN-P21
SLN-G36	SLN-M48	SLN-P29
SLN-G42		SLN-P36
SLN-G48		SLN-P48



# FWH

Fitting Washer

(Unit : mm)

PF(G) Thread	Metric Thread	Pg Thread
-	-	FWH-P07
FWH-G10	FWH-M10	FWH-P09
FWH-G12	FWH-M12	FWH-P11
FWH-G16	FWH-M16	FWH-P13
FWH-G22	FWH-M22	FWH-P16
FWH-G28	FWH-M28	FWH-P21
FWH-G36	FWH-M36	FWH-P29
FWH-G42	-	FWH-P36
FWH-G48	FWH-M48	FWH-P48



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