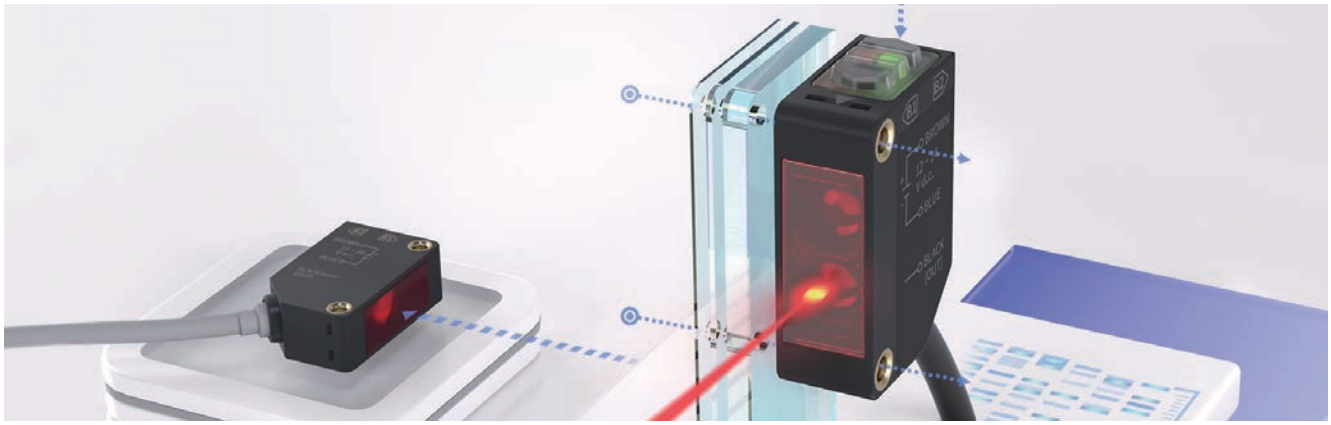
HANYOUNG NUX

PRODUCT CATALOG

World Leader In Control & Measurement



Let's Automate

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High function LCD Temperature Controller

VX series

- IP66/IP65 rating waterproof / dustproof
- TCS Integrated Communication Program
- Combined Heating & Cooling Control
- Reduced Auto-tuning Time
- Various High Function Settings
- Wire Break Alarm (Loop / Heater)

Waterproof, Dustproof Front Panel

With excellent front panel protection rating of IP66, it can be used safely in any environment causing dust or cleaning etc.

VX4 : IP66 / VX2, 3, 7, 9 : IP65

Waterproof / Dustproof Protection

IP66/IP65

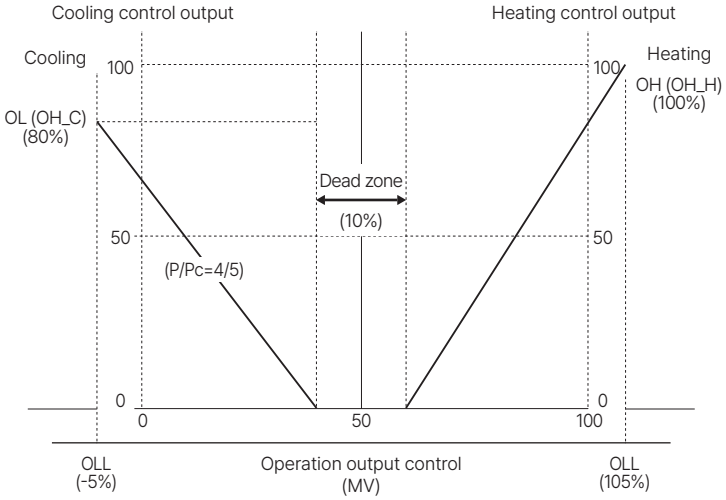
TCS Integrated Communicaton Program

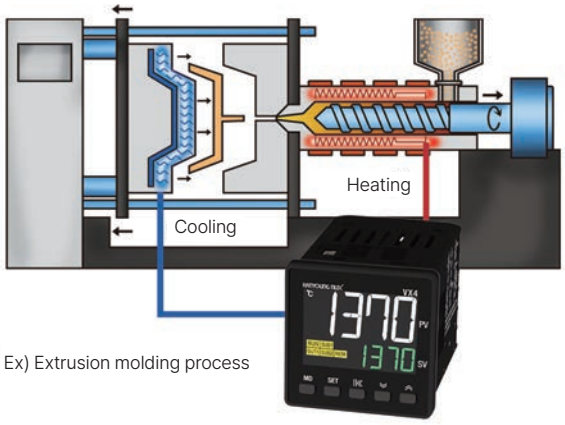
With HANYOUNG NUX TCS Integrated Communication Program, set the real time monitoring / recording / parameter for convenient integrated managing.

※ Homepage (www.hanyoungnux.com) communication data provided free.
※ For more detailed information, visit our website and refer to our user's guide.

Combined Heating & Cooling Control

Simultaneous control of heating and cooling is possible, helping with more efficient temperature control.

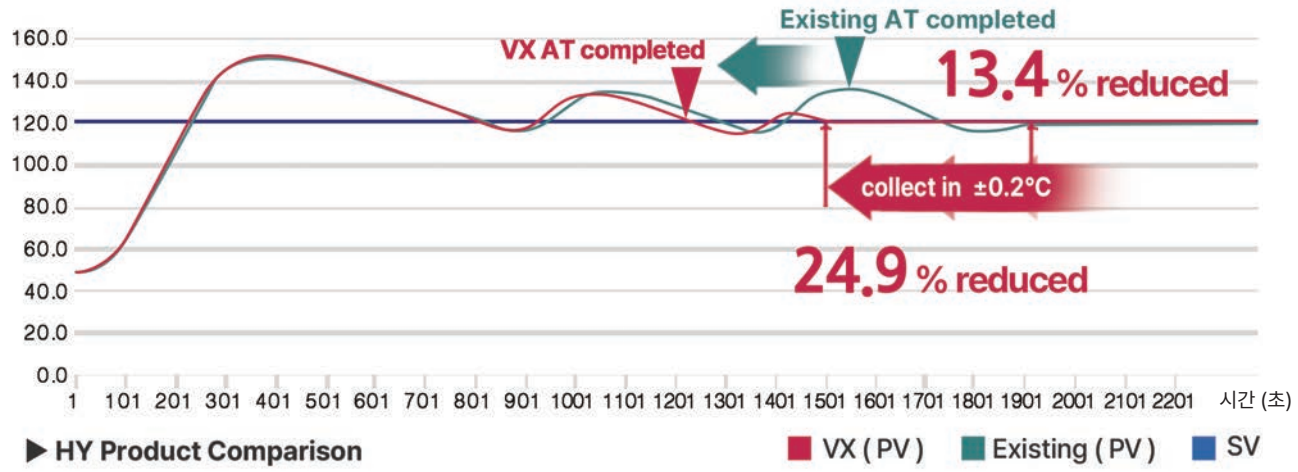




Ex) Extrusion molding process

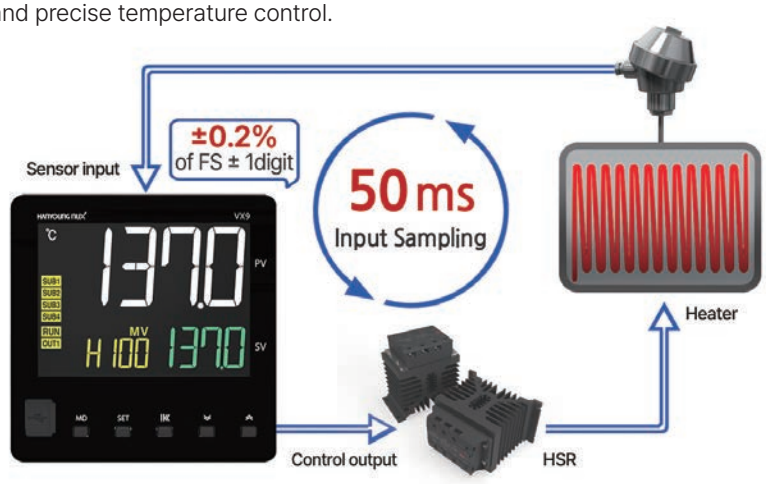
Reduced Auto-tuning Time

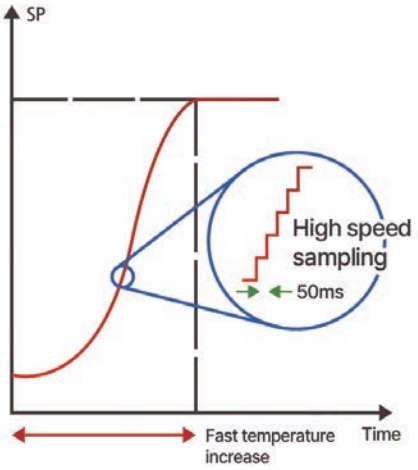
Excellent control function with the attached fast tuning speed of 1.5 Cycle



High precision & High speed sampling

With high precision of up to 0.2% display accuracy, more accurate measurement is possible than before.
By shortening the input sampling period to 50ms, it can be applied to advanced equipment and systems that require quick and precise temperature control.





USB Loader

By connectting the MINI USB 2.0 cable to the device and PC, it is easy to change and back up parameter settings without applying power.

Separate Front Panel Structure

With a front panel separation structure, simple maintenance/repair is possible without any additional wiring work while reset or replacing a product.

MODBUS Communication Support

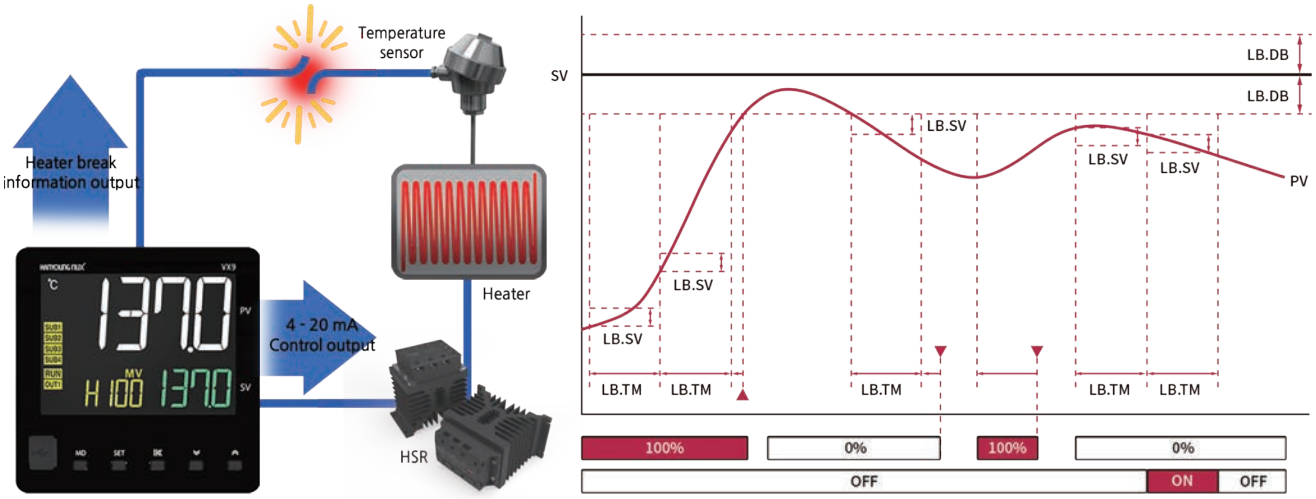
The MODBUS communication protocol can be used with RS-485 output, and up to 31 units can be connected using the company's communication converter (CV310).
The communication speed supports up to 57600 bps, enabling quick control and settings, improving user convenience.

※ RS232 ↔ RS485 converter CV310 is sold separately
※ For more detailed information, visit our website and refer to our user's guide.
※ Controller ↔ Indicating thermometer function added (available from Version 1.45)

Loop Break Alarm (LBA)

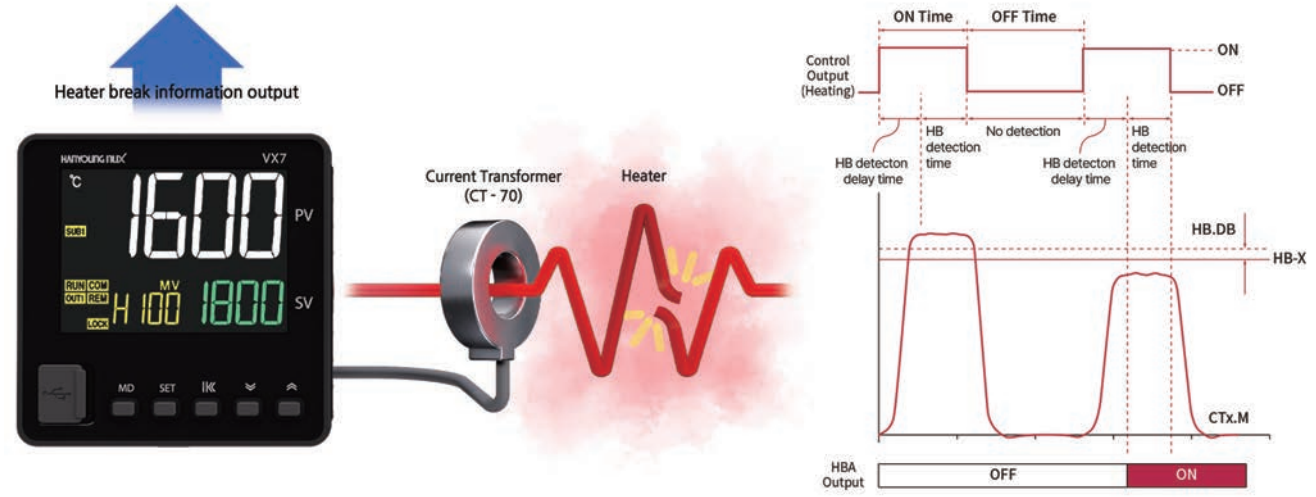
When the control output value by P.I.D (or ON/OFF) operation becomes 0% or 100%, the amount of change in deviation (SV-PV) is compared for each set time of LB.TM, detecting heater disconnection, wiring errors, temperature sensor disconnection, short circuit, and output circuit abnormalities.
Additionally, in order to avoid being affected by the normal control loop, you can set the LBA deadband (LB.DB).

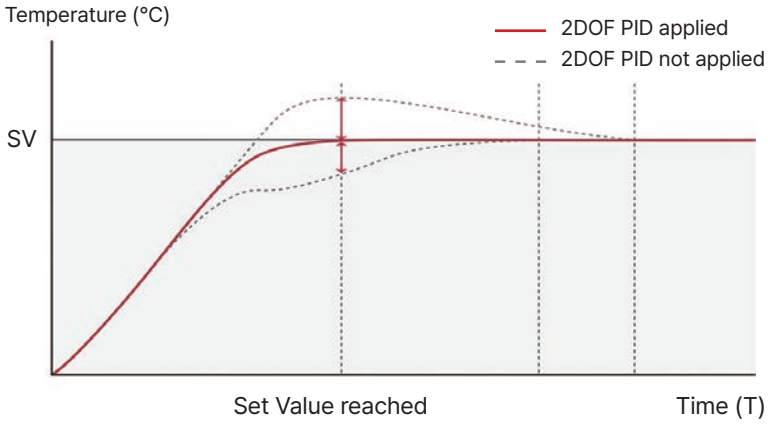
Only operates in reverse action in heating/cooling control.



Heater Break Alarm (HBA)

HBA detects whether the connected heater is in a normal state and generates the alarm by measuring the current of the current detector (CT) connected to the heater (load) side.





2DOF PID algorithm

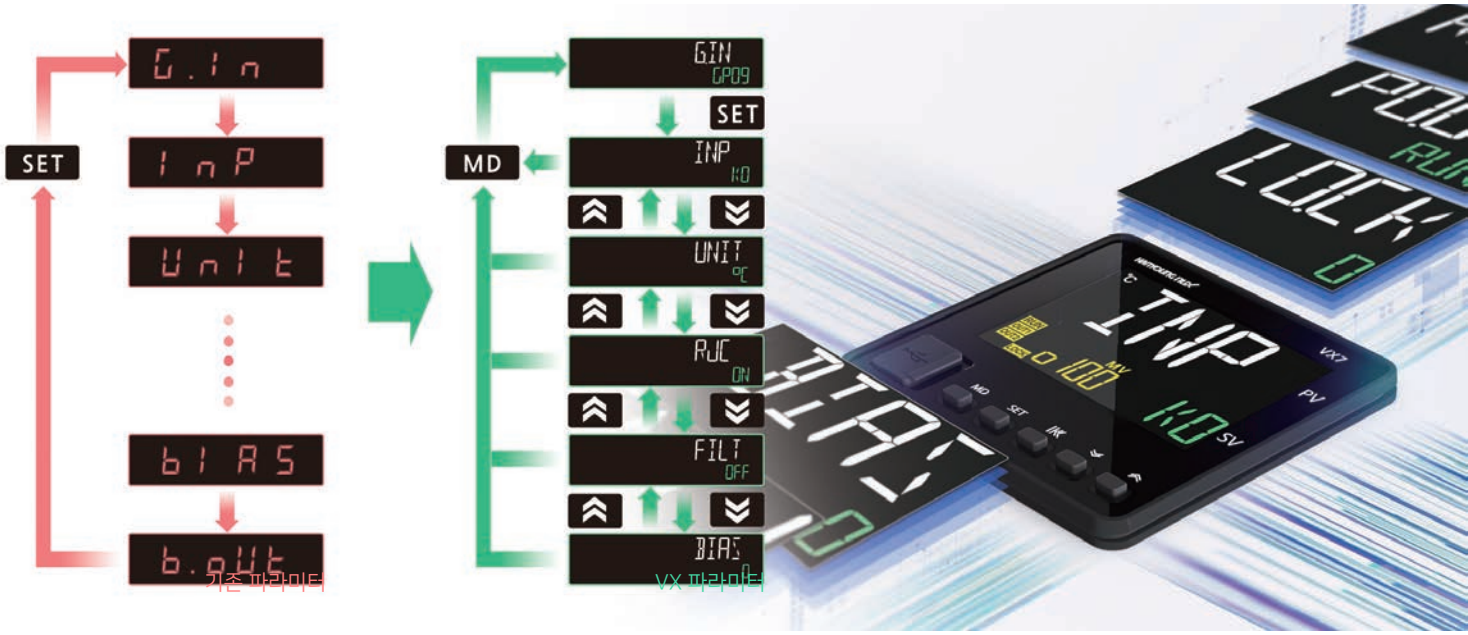
2-degree-of-freedom (2DOF) PID algorithm allows quick and accurate setting of temperature (SV), allowing precise temperature control by responding appropriately to disturbances even in various control environments.

ARW Function (Over-integration Prevention)

While using PID control, when the control output reaches the maximum point, calculates the intergral action for the prevention of over-integration and prevents overshoot.

Easier Parameter Setting

Parameter settings can be moved by the arrow keys, and an up/down movement structure is implemented to help provide flexible setting convenience and save time.
This high-performance device allows you to operate the facility more easily through the All / Basic / Simple menu.



Suffix code

Model	Code											Content
VX	▢ -	▢	▢	▢	▢ -	▢	▢	▢	▢	▢	▢	LCD Digital Temperature Controller
Size	2											48(W) × 96(H) × 63(D) mm
	3											96(W) × 48(H) × 62.5(D) mm
	4											48(W) × 48(H) × 63(D) mm
	7											72(W) × 72(H) × 63(D) mm
	9											96(W) × 96(H) × 63(D) mm
Sensor		U										Universal input
OUT 1 (Control Output 1)			M									Relay output
			S									Voltage pulse output (voltage pulse output for SSR drive)
			C									Current output (4-20 mA current output for SCR drive)
OUT 2 (Control Output 2)				N								None
				M								Relay output
Power					A							100 - 240 V a.c. 50/60 Hz
					D							24 V d.c., Class2
Sub output						A1						1 relay output (VX4 basic option)
						A2						2 relay outputs (VX2, VX7, VX9 basic option)
						A4						4 relay outputs (※ *1)
Communication							C					RS-485 communication
Retransmission output (RET)								T				Retransmission output (4 ~ 20 mA)
Digital Input (DI)									D2			2 digital inputs (DI 1 ~ 2)
Current Detection Input (CT)										H1		Current detection input (CT) 1 contact
Remote input (REM)											R	1 input, 4 ~ 20 mA (1 ~ 5 V)

※ *1) You can choose from VX2, VX3, VX7, VX9, except VX4.

Specification

Classification			VX2	VX3	VX4	VX7	VX9
Input	Thermocouple		K, J, E, T, R, B, S, L, N, U, W, PLII				
	Reference junction compen sation accuracy		±1.5 °C (within -10 ~ 50 °C)				
	RTD		JPT100, PT100				
	Allowable line resistance		Each 3 wire within 10 Ω (but the resistance among 3 lines should be same)				
	DC voltage / current		1 ~ 5 V (4 ~ 20 mA), 5 V (0 ~ 20 mA), 0 ~ 10 V, 0 ~ 50 mV, 0 ~ 100 mV				
	Sampling cycle		50 ms				
Control output	Relay output		▪ Rated switching capacity : 5 A 240 V a.c., 5 A 30 V d.c. ▪ Max. switching power : 750 VA, 90 W ▪ Max. switching voltage : 240 V a.c., 110 V d.c. ▪ Max. switching current : 5 A ▪ Mechanical life : 20 million times (at 180 CPM)				
	AC voltage type voltage pulse output		12 V d.c. ± 1 V d.c. pulse voltage (load resistance min. 600 Ω)				
	DC voltage type voltage pulse output		12 - 15 V d.c. pulse voltage (load resistance min. 600 Ω)				
	Current output		4 ~ 20 mA ± 0.2% of FS ± 1 digit, load resistance: max. 600 Ω				
Control	Control type		ON/OFF, PID control, 2DOF PID control				
	Output operation		Reverse action, direct action				
Memory	Non-volatile memory life		▪ EEPROM unlocked: when setting E2P.L: OFF in G.SET group (EEPROM life: 1 million times write guaranteed) ▪ EEPROM locked: when setting E2P.L: ON in G.SET group (store in RAM)				
Display part (H*W) mm	Display method		Wide viewing angle LCD				
	PV character		20.5 × 6.9	19.7 × 7.2	15.2 × 6.8	19.8 × 9.3	29.0 × 13.6
	SV character		12.8 × 5.9	10.7 × 4.7	7.4 × 3.9	10.2 × 4.9	15.0 × 7.2
	MV character		9.3 × 4.4	7.3 × 3.5	7.4 × 3.9	7.5 × 3.3	11.0 × 4.8
USB Loader	Communication method		USB 2.0				
	Protocol		▪ Protocol : PC-LINK ▪ Baudrate : 38400 bps ▪ Start bit : 1 bit ▪ Data bit : 8 bit ▪ Parity bit : None ▪ Stop bit : 1 bit				
	Communication distance		Within 5 m				
Option	Sub output		▪ Relay 1 ~ 4 outputs ▪ rated switching capacity: 5A 240 V a.c., 5 A 30 V d.c.				
	Digital input		▪ 2 points or 4 point ▪ Contact input ON : 1 KΩ max., OFF: 100 KΩ min. ▪ Non-contact input ON : 1.5 V max., OFF: 0.1 mA max. ▪ Current Flow : approx. 2 mA per contact, ▪ Voltage at open : Approx. 5 V d.c.				
	Retransmission output		▪ 1 output ▪ 4 ~ 20 mA ± 0.2% of FS ± 1 digit ▪ load resistance: max. 600 Ω				
	Remote input		▪ 1 input ▪ 4 ~ 20 mA (1 ~ 5 V)				
	Current detection input		▪ 1 input or 2 inputs ▪ 0.0 - 50.0 A ▪ CT-70 current transformer (sold separately)				
	RS-485	Communic method	▪ EIA RS485 standard ▪ 2-wire half-duplex				
		Max. connections	31 (address setting 1~99 available)				
		Communic sequence	No sequence				
		Communic distance	Within 1.2 km				
		Communic speed	4800, 9600, 14400, 19200, 38400, 57600 BPS				
		Bit	▪ Start bit : 1 bit ▪ Data bit : 7 or 8 bit ▪ Parity bit : NONE / EVEN / ODD ▪ Stop bit : 1 or 2 bit				
		Protocol	▪ PC-LINK STD ▪ PC-LINK WITH SUM ▪ MODBUS-ASCII ▪ MODBUS-RTU				
		Response time	Actual response time = processing time + (response time X 50 ms)				
Power	AC Power Supply Voltage		100 - 240 V a.c., 50/60 Hz				
	DC Power Supply Voltage		24 V d.c. , Class2				
	Voltage fluctuation rate		±10 % of power voltage				
	Insulation resistance		Min. 20 MΩ, 500 V d.c.				
	Dielectric strength		▪ 3,000 V a.c. ▪ 50/60 Hz for 1 minute (between 1st and 2nd terminal)				
	AC voltage type power consumption		Max. 8.5 VA	Max. 8.5 VA	Max. 8.2 VA	Max. 8.5 VA	Max. 9.0 VA
	DC voltage type power consumption		Max. 2.7 W	Max. 2.7 W	Max. 2 W	Max. 2.8 W	Max. 3.2 W
	Ambient temperature & humidity		-10 ~ 50 °C, 35 ~ 85 % RH (without condensation)				
	Storage temperature		-25 ~ 65 °C				
Degree of protection			IP65 (front panel)	IP65 (front panel)	IP66 (front panel)	IP65 (front panel)	IP65 (front panel)
Weight			202 g	202 g	120 g	194 g	290 g
Basic components			Main body, Bracket, 250 Ω resistor (1%) , Rubber packing, Instruction manual				

LCD Counter & TImer

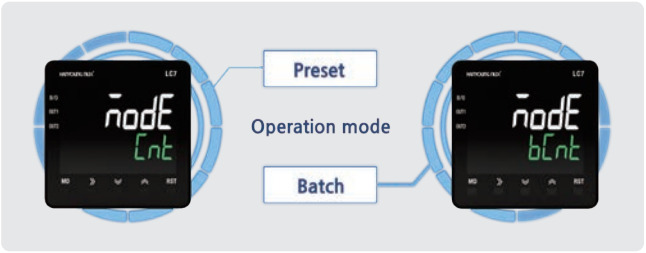
LC series

- High speed input/output
- Space-saving Installation
- Waterproof / Dustproof Front Panel (IP66)
- Various Output Modes
- TCS Integrated Communication Program

Various in/output mode [Preset Counter / Batch Counter]

Various options available with each 12 input modes and 8 output mode of the preset and batch counter.

•**Preset Counter** : The counting circuit is composed with electronic circuit, and the control output operates when the count reaches the set value.
•**Batch Counter** : Counts the number of times of count up, and operates the batch output when the batch count reaches the batch set value.



IP66 Rated Front Panel Protection

With excellent front panel protection rating of IP66, it can be used safely in any environment causing dust or cleaning etc.

Waterproof / Dustproof Protection Rate
IP66

Wide Pre-Scale Setting

With a wide range of pre-scale value from 0.00001~999999, it can be used effectively where length, liquid volume, location etc. are converted to units.

※ Line 4 display (9999) is only for LC4 model.

High Speed Input/Output

Supports up to 10 kcps, making accurate output without miss counts when high speed counting.

※ 1 cps / 30 cps / 1 kcps / 10 kcps support

TCS Integrated Communication Program

With HANYOUNG NUX TCS Integrated Communication Program, set the real time monitoring / recording / parameter for convenient integrated managing.

※ Homepage (www.hanyoungnux.com) communication data provided free.
※ For more detailed information, visit our website and refer to our user's guide.

MODBUS Communication Support

Supports RS-485 output method, allowing MODBUS-RTU communication protocol use, and up to 31 units can be connected with our communication converter (CV310).
The communication speed supports up to 38400 bps, enabling quick control and settings.

※ RS232 ↔ RS485 converter CV310 is sold separately.
※ For more detailed information, visit our website and reter to out user's guide.

ONE SHOT Output

MIN 0.01 s ~ MAX 99.99 s

One Shot Output

When output is activated, the set one-shot output time (0.01 ~ 99.99 seconds) is maintained and then restored.
START or RESET signal is available depending on the mode setting, Reset is also possible depending on power operation.

Self-maintaining output

When output is activated, the set one-shot output time (0.01 ~ 99.99 seconds) is maintained and then restored.
START or RESET signal is available depending on the mode setting, Reset is also possible depending on power operation.

0.01 sec ~ 9999day 23hour

Range select mark		Line 4 Time Range		Line 4 Time Range	
UP	DOWN	Decimal	Sexage simal	Decimal	Sexagesimal
UP 15	dP 15	99.99s	59.99s	9999.99s	59m 59.99s
U 15	d 15	999.9s	9m59.9s	99999.9s	9h59m59.9s
U 15	d 15	9999s	59m 59s	999999s	99h59m59s
U 1n	d 1n	9999m	99h 59m	999999m	9999h 59m
U 1H	d 1H	9999h	99d 23h	999999h	9999d 23h

Wide Range Time Setting

Offers the wide range time setting from 0.01 sec to 9999 days and 23 hours with decimal, sexagesimal system mode, allowing application to various industrial and research environment.

※ Line 4 time range (9999) display is only for LC4 model

Min. Input Time Select

With the minimum input signal time of the input terminal available setting from 1ms ↔ 20 ms, a more accurate timer function is available. Input time optimized for the user's work environment.

Various Output Mode Support

Equipped with various output modes, it supports various selection functions,
allowing settings optimized for the work environment.
-Timer / Batch timer 12 output mode support
-Twin timer 5 output mode support

Timer

The operation time when the external input START / INHIBIT / RESET signal is applied is displayed according to the set time, and when the time value reaches the 1st and 2nd stage set values,
OUT1 and OUT2 outputs operate according to the selected output mode.

Twin Timer

OUT1 and OUT2 output are turned ON/OFF depending on the ON and OFF setting time.

※ OUT operates in 1 model, OUT 1 and OUT 2 operates in model 2.

Batch Timer

The batch output is activated when the count value reaches the setting value by counting the number of time-ups.

※ The batch count value can be initialized by pressing the front reset button in the batch count value display mode or by applying a signal to the batch reset terminal.

Suffix code

Model	Code						Content
LC	-□	□	□	□	□	□	LCD Counter / Timer
Appearance	3						96(W) × 48(H) mm
	4						48(W) × 48(H) mm
	6						72(W) × 36(H) mm
	7						72(W) × 72(H) mm
Type		P					Preset Counter / Timer
Display digits			4				4 Digit display (9999) ※ LC4 only
			6				6 digit display (999999)
Setting stages				1			1 Stage setting
				2			2 Stage setting
Sub output					N		No sub output
					C		RS485 (MODBUS-RTU)
Power voltage						A	100-240 V a.c. 50/60 Hz
						D	24-48 V a.c. 50/60 Hz or 24-48 V d.c.

Specification

Model			LC3	LC4	LC6	LC7
Power voltage			100 - 240 V a.c. 50/60 Hz, 24 - 48 V a.c. 50/60 Hz or 24 - 48 V d.c. (Voltage fluctuation rate: ±10%)			
Power consumption	AC		▪ 2-stage setting type: max. 12 VA ▪ 1-stage setting type: max. 11 VA			
	DC		▪ 2-stage setting type: max. 6 W ▪ 1-stage setting type: max. 5 W			
Character height			Counting unit (14.5 mm), Setting unit (10 mm)	▪ 6 Digit : Counting unit (10.8 mm), Setting unit (8 mm) ▪ 4 Digit : Counting unit (14 mm), Setting unit (8.5 mm)	Counting unit (10.5 mm), Setting unit (6.7 mm)	Counting unit (17.2 mm), Setting unit (12.5 mm)
Max counting speed			1 cps / 30 cps / 1 kcps / 10 kcps			
Power outage compensation			10 years (using non-volatile memory)			
Input			▪ Selection of input method by external switch (voltage input / non-voltage input) ▪ Counter: composed of CP1, CP2, RESET, BATCH -RESET ▪ Timer: composed of START, INHIBIT, RESET ▪ Voltage input: HIGH level (5 - 30 V d.c.), LOW level (0 - 2 V d.c.), input resistance (about 4.5 KΩ) ▪ Non-voltage input: impedance during short-circuit (max. 1 KΩ), residual voltage during short-circuit (max. 2 V d.c.)			
Minimum input signal time			1 ms / 20 ms (START, INHIBIT, RESET inputs)			
External power supply			12 V d.c. 100 mA max			
ONE SHOT output			0.01 ~ 99.99 sec			
Control output	Contact output	1-stage	OUT (SPDT, 1c)		OUT (SPST, 1a)	OUT (SPDT, 1c)
		2-stage	OUT1 (SPST, 1a), OUT2 (SPDT, 1c) * OUT2 of LC6-P62C: SPST configuration			
		Capacity	▪ SPDT: NC (250 V a.c. 2 A), NO (250 V a.c. 5 A), resistive load ▪ SPST: 250 V a.c. 5 A, resistive load			
	Contactless output	1-stage	NPN 2 circuits (OUT, BAT.O), * LC4-P61C / P41C models NPN 1 circuit configuration			
		2-stage	NPN 2 circuits (OUT1, OUT2)	-		NPN 2 circuits (OUT1, OUT2)
		Capacity	Open collector, max. 30 V d.c. 100 mA			
Timer operation error			▪ Power start: max. ±0.01 % ±0.05 sec ▪ Reset start: max. ±0.01 % ±0.03 sec			
Communication	Protocol		Modbus RTU			
	Method		RS485 (2-wire half-duplex)			
	Synchronism		Asynchronous			
	Speed		2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps			
	Effective distance		Max. within 800 m			
	Max. connections		31 (address : 1 ~ 127)			
	Tesponse waiting time		5 ~ 99 ms			
	START BIT		1 bit (fixed)			
	STOP BIT		1 bit (fixed)			
	DATA BIT		w8 bit			
	PARITY BIT		None / Odd / Even			
Insulation resistance			Min. 100 MΩ (500 V d.c.) conductive part terminal - unfilled metal			
Dielectric strength			2000 V a.c. 60 Hz for 1 minute (different live part terminals)			
Noise immunity			Square-wave noise by noise simulator ±2000 V (pulse width 1 μs)			
Shock resistance			300 m/s² (30G), 3 times each in X, Y and Z direction			
Vibration durability			10 - 55 Hz, single amplitude 0.5 mm, 3-axis each direction, 2 h			
Relay life	Electrical		Min. 50,000 times			
	Mechnical		Min. 10,000,000 times			
Degree of protection			IP66 (product front)			
Storage temperature			-25 ~ 65 °C (without condensation)			
Ambient temperature & humidity			-10 ~ 55 °C, 35 ~ 85% RH (without condensation)			
Weight			196 g	140 g	143 g	222 g

High speed input/output

LM series

- High speed input/output
- High precision & High-speed Sampling
- MODBUS Communication Support
- Front Panel Protection
- TCS Integrated Communication Program

4 Function Modes

The function mode consists of 4 parameter groups such as P.FUN / P.EXP / P.OUT / P.OPT, and includes general function settings, extended function settings, output function settings, You can use the optional function settings from simple settings to the settings you need.

※For more information, see the documentation.

Intuitive Parameter Setting

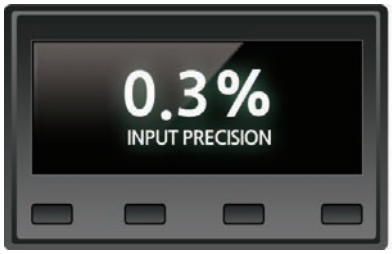
With 4 rows and 2 columns display, you can check measured values and set values at the same time, and you can experience convenience when setting parameters.

RMS and AVG Optional Measurements

You can check the output value according to the usage environment and purpose by selecting RMS (root means square measurement) and AVG (average value measurement) in the P.EXP extended function settings group.
※ The RMS/AVG selection is only available for AC type

High precision & High-speed Sampling

By high precision of up to 0.3% display accuracy, more accurate measurement is possible than before, and by shortening the input sampling period to 50ms, it can be used in advanced equipment and systems that require fast control.



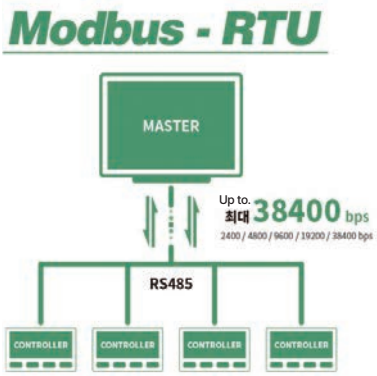
Up to 0.3% display accuracy

50 ms high-speed sampling

Various Control Outputs

· Contact output : 3-stage, 1-stage, 250 V a.c. 5A
· Solid state output : 3-stage, NPN or PNP
12 - 24 V d.c. 50 mA
· Transmission output : 4 - 20 mA d.c.

Communication output : RS-485 (MODBUS-RTU)
You can select from the various control output specifications above and select an option suitable for your usage environment.



CV310
RS485 Communication converter

6 Output Modes

Equipped with 6 output modes LO, HI, LH, LL, HH, and LD, allows the user to set the minimum and maximum input values. Also by using the 6 output modes, you can conveniently adjust the output for upper and lower limits.

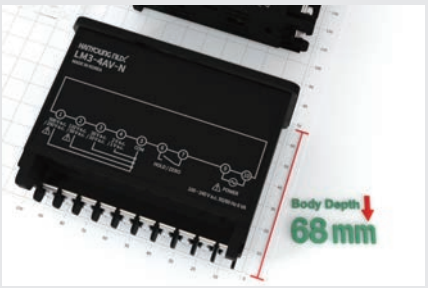
MODBUS Communication Support

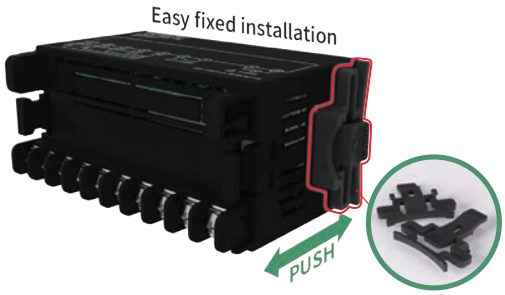
The MODBUS-RTU communication protocol can be used with RS-485 output, and up to 31 units can be connected using the company's communication converter (CV310).
Communication speed supports up to 38400 bps, enabling quick control and settings, improving user convenience.

※ RS232 ↔ RS485 converter CV310 is sold separately.
※ Please refer to the website and user manual for detailed explanations.

Save Installation Space

Improved space utilization with the shorter rear length of 68 mm (LM3) and 81 mm (LM6)





Easy fixed installation

With a new bracket, easily installed and dismantled without any additional equipment.
※ Improved bracket is limited to LM3

Improved Durability

By applying ABS material tact switch, it provides a soft touch and improved durability.

Safety Protection Cover

Safety improved by applying a dedicated wiring hole to the rear protective cover to enable wiring without separate removal of the protective cover.

Safety Protection Cover

Safety improved by applying a dedicated wiring hole to the rear protective cover to enable wiring without separate removal of the protective cover.

Dust-proof and water-proof protection rate
IP66

Dust-proof and water-proof protection rate

Convenient integrated management is possible by setting real-time monitoring/recording/parameters through Hanyoung Nux integrated communication program TCS.
※ Website (www.hanyoungnux.com) provides free communication materials.
※ Please refer to the website and user manual for further details.

Specification

Display	LM3/6 - DV	LM3/6 - DA	LM3/6 - AV	LM3/6 - AA
Size	▪ LM3 : 96(W) × 48(H) × 68(D) mm ▪ LM6 : 72(W) × 36(H) × 81(D) mm			
Power	100 - 240 V a.c. 50/60 Hz			
Power Consumption	▪ LM3-N : 6 VA or less ▪ LM3-3RT : 11 VA or less ▪ LM3-3NT/3PT : 10 VA or less ▪ LM6-3R : 7 VA or less ▪ LM6-RC : 6 VA or less		▪ LM3-3R/3RC : 10 VA or less ▪ LM3-3NC/3PC : 9 VA or less ▪ LM6-N : 5 VA or less ▪ LM6-3N/3P : 5 VA or less ▪ LM6-RT : 7 VA or less	
Input signal	DC voltage	DC current	AC voltage / frequency	AC current / frequency
Input range	500 V / 100 V 50 V / 10 V 5 V / 1 V 200 mV / 50 mV	5 A / 2 A 500 mA / 200 mA 50 mA / 4 - 20 mA 5 mA / 2 mA	500 V / 250 V 110 V / 50 V 20 V / 10 V 2 V / 1 V	5 A / 2 A 500 mA / 200 mA 50 mA / 20 mA
AC measurement method	AVG / RMS selective measurement			
Input sampling cycle	50 ms			
Input sampling method	OVER sampling method using continuous approximation A / D converter			
Maximum allowable input	F.S. of each input range 110 %			
Frequency measurement range	0.2 ~ 9999 Hz (Frequency measurement range depends on the decimal point position)			
Display	▪ Negative-LCD ▪ 4 digit 2 rows ▪ PV (White) ▪ SV (Green)			
Character size	▪ LM3 : 17.6 X 10.6 mm ▪ LM6 : 7.0 X 11.5 mm			
Maximum display	- 9999 ~ 9999			
Display degree	▪[23 °C ± 5 °C] - F.S. ± 0.1 % rdg ± 2 digit ▪[23 °C ± 5 °C, 5 A] - F.S. ± 0.3 % rdg ± 3 digit ▪[50 °C ~ -10 °C] - F.S. ± 0.5 % rdg ±3 digit		▪[23 °C ± 5 °C] - F.S. ± 0.3 % rdg ±3 digit ▪[23 °C ± 5 °C, frequency] - F.S. ± 0.1 % rdg ± 2 digit ▪[50 °C ~ -10 °C] - F.S. ± 0.5 % rdg ± 3 digit	
Control output	▪ Contact output : 3 stage, SPST (1a), 250 V a.c. 5 A ▪ Solid state output: 3-stage, NPN or PNP open collector, 12 - 24 V d.c. 50 mA or less			
Relay life time	▪ Electrical (about 100,000 times, 250 V a.c. 5 A) ▪ Mechanical (about 5 million times)			
Optional output	▪ Transmission output (4 - 20 mA) ▪ RS－485 output			
External input	▪ HOLD/ZERO Optional input ▪ Non - voltage input ▪ Short circuit impedance : 300 Ω or less ▪ Residual voltage: 1 V or less ▪ Impedance when open : 100 kΩ or more			
Communication	▪ Communication protocol : Modbus - RTU ▪ Communication method : RS - 485 (2 - wire half duplex) ▪ Communication speed : 2400 / 4800 / 9600 / 19200 / 38400 bps			
Insulation Resistance	100 MΩ or more (500 V d.c. Mega standard, between conductive terminal and case)			
Withstand voltage	2000 V a.c. 60 Hz 1 minute (between conductive terminal and case)			
Noise	± 2 kV(Between operation power terminals, Pulse width = 1 us, Square wave noise by noise simulator)			
Vibration resistance	10 - 55 Hz, Single amplitude 0.5 mm, 3 - axis angular, 2 hours			
Protection structure	▪ IP66 (front) ▪ Terminal block protection cover applied			
Ambient temperature and humidity	- 10 ~ 50 °C, 35 ~ 85 % R.H.			
Storage temperature	- 20 ~ 65 °C			

Suffix Code

Model	Code						Description
LM	□-	□	□-	□	□-	□	LCD Multi Panelmeter
Appearance	3						96(W) X 48(H) mm
	6						72(W) X 36(H) mm
Displayable Digit		4					4 Digit indication
Input Specification			DV				DC voltage
			DA				DC current
			AV				AC voltage
			AA				Alternating current
tOutput specifications				N			Non only (Indication option output)
				R			1-stage contact output *LM6 only (For LM6-RC/RT, 1-stage contact output fixed.)
				3R			3-stage contact output
				3N			3-stage NPN open collector output
				3P			3-stage PNP open collector output
Optional output					-		Non option output
					C		RS-485 output (MODBUS-RTU)
					T		Transmission output (4 - 20 mA d.c.)
Power supply voltage						A	100 - 240 V a.c. 50/60 Hz

LCD Multi Pulse Meter

LP series

High-speed Pulse Measurement (50 KHZ)

Supports 13 operation modes such as RPM measurement, pulse count, and error ratio etc.

Extended functions (Parameters)

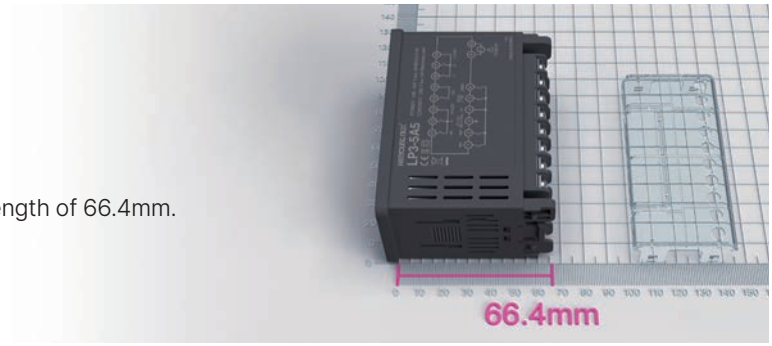
IP66 Front Protection Structure

50 KHz High-speed Pulse Measurement

Supports up to 50 KHz, so you can experience accurate measurement with no miss at high speed.

Shortened rear length

Effective saving installation space with a short rear length of 66.4mm.



Function Setting Mode

13 modes equipped.
Consists of parameters that set basic items necessary for pulse meter operations, such as operation mode, sensor type, output mode, prescale, decimal point position, time range, and display period.

Extended Features

Consists of parameters that set additional items of the pulse meter such as parameter initialization, output hysteresis, AUTO-ZERO, output limit, start compensation timer, power failure memory, BANK conversion, and lock.

BANK Function

- Consists of parameters that set the items necessary to use the BANK function, such as operation mode, sensor type, output mode, prescale, decimal point position, time range, display period, HH comparison value, H comparison value, L comparison value, and LL comparison value.
- Consists of two BANKs, and the necessary items can be individually set for each BANK number.
- The BANK function setting is activated when the BANK conversion of the extended function is set to 'KEY' or 'EX-IN'.
- BANK can be switched using KEY or external input.

IP66 Rate Front Protection

Excellent protection structure with a protection rating of IP66 on the front, so it can be used even in environments where dust and washing are generated.

Dust-proof and water-proof protection rate
IP66

Suffix code

Model	Code					Description
LP	□-	□	□	□	□	LCD Multi pulse meter
Appearance	3					96(W) × 48(H) mm
	6					72(W) × 36(H)mm
Display digits		5				5-Digit display
Power voltage			A			100 - 240 V a.c. 50/60Hz
Output specifications		LP3		N	N	Directive only, No output, No options
				3R	N	3-Stage contact output, No options
				5R	N	5-Stage contact output, No options
				5N	C	5-Stage NPN open collector output + RS485 output (MODBUS-RTU)
				5N	T	5-Stage NPN open collector output + Transfer output (4-20 mA d.c.)
				5P	C	5-Stage PNP open collector output + RS485 output (MODBUS-RTU)
				5P	T	5-Stage PNP open collector output + Transfer output (4-20 mA d.c.)
		LP6		N	N	Directive only, No output, No options
				N	C	Directive only, No output, RS485 output (MODBUS-RTU)
				N	T	Directive only, No output, Transfer output (4 - 20 mA d.c.)
				3R	N	3-Stage contact output, No options
				5N	N	5-Stage NPN open collector output, No options
				5P	N	5-Stage PNP open collector output No options

Selection Guide

Model	Number of rows displayed	Power voltage	Output Options	Product configuration
LP3	5 digits (-99999 ~ 99999)	100 - 240 V a.c. 50/60 Hz	Indicator/No output/No options	LP3-5ANN
			Contact output 3 stage/No options	LP3-5A3RN
			Contact output 5 stage/No options	LP3-5A5RN
			5 stage NPN Open collector output + RS485 Output (MODBUS-RTU)	LP3-5A5NC
			5 stage NPN Open collector output + Transmission output(4 - 20 mA d.c.)	LP3-5A5NT
			5 stage PNP Open collector output + RS485 Output (MODBUS - RTU)	LP3-5A5PC
			5 stage PNP Open collector output + Transmission output(4 - 20 mA d.c.)	LP3-5A5PT
LP6			Indicator/No output/No options	LP6-5ANN
			Indicator/No output/RS485 Output(MODBUS-RTU)	LP6-5ANC
			Indicator/No output/ Transmission output (4 - 20 mA d.c.)	LP6-5ANT
			Contact output 3 stage/No options	LP6-5A3RN
			5 stage NPN Open collector output/No options	LP6-5A5NN
			5 stage PNP Open collector output/No options	LP6-5A5PN

Specification

Model		LP3	LP6
Power voltage		100 - 240 V a.c. 50/60 Hz	
Power consumption		▪ LP3-5ANN : Max. 6 VA ▪ LP3-5A3RN : Max. 8 VA ▪ LP3-5A5RN : Max. 8 VA ▪ LP3-5A5NC/5A5PC : Max. 7 VA ▪ LP3-5A5NT/5A5PT : Max. 9 VA	▪ LP6-5ANN : Max. 5 VA ▪ LP6-5A5NN/5A5PN : Max. 6 VA ▪ LP6-5A3RN : Max. 6 VA ▪ LP6-5ANC : Max. 5 VA ▪ LP6-5ANT : Max. 7 VA
Display		▪ Negative-LCD ▪ 4 rows and 2 columns ▪ PV (White) ▪ SV (Green)	
Character height		▪ PV (14.5 mm) ▪ SV (10.0 mm)	▪ PV (10.5 mm) ▪ SV (6.7 mm)
Input frequency		▪ Non-contact (Max. 50 KHz, ON/OFF pulse width Min. 10 us), ▪ Contact (Max. 30 Hz ON/OFF pulse width Min. 16.6 ms)	
Input	Voltage	[H] level (4.5 - 24 V d.c.), [L] level (0 - 1 V d.c.), Input impedance (4.5 kΩ)	
	Non-voltage	Residual voltage (Max. 1 V), Impedance during short-circuit (Max. 300 Ω), Impedance during open (Min. 100 kΩ)	
Measurement range		▪ F1, F2, F10, F11, F12, F13 : 0.0005 Hz ~ 50 KHz ▪ F3, F4, F5, F6 : 0.01s ~ 3200s ▪ F7, F8, F9 : 0 ~ 99999	
Measurement accuracy		▪ F1, F2, F10, F11, F12, F13 : F.S. ±0.05% rdg ±1digit ▪ F3, F4, F5, F6 : F.S. ±0.01% rdg ±1digit	
External power supply		12 V d.c. ±10 % 100 mA	
Display cycle		0.05 s / 0.5 s / 1 sec / 2 sec / 4 sec / 8 sec	
Display range		-99999 ~ 99999	
Power outage compensation		Approx. 10 years (non-volatile EEPROM only)	
Control output	3 stage	▪ H, L - Contact (SPDT) ▪ GO - Contact (SPST)	▪ H, GO, L - Contact (SPST)
	5 stage	▪ HH, H, GO, L, LL - Contact point (SPST) or, Non-contact point (NPN or PNP Open Collector) * Contact (HH/H - COM Output common use and LL/L - COM Output common use)	HH, H, GO, L, LL - Non-contact (NPN or PNP Open Collector)
	Capacity	▪ NO Contact (250 V a.c. 5A Resistive load) ▪ NC Contact (250 V a.c. 2A Resistive load) ▪ Non-contact (12 - 24 V d.c. Max. 50mA)	▪ Contact (250 V a.c. 5A Resistive load) ▪ Non-contact (12 - 24 V d.c. Max. 50mA)
Relay life cycle	Electrical	Min. 100,000 times (250 V a.c. 2A)	Min. 100,000 times (250 V a.c. 5A)
	Mechanical	Min. 10,000,000 times	Min. 5,000,000 times
PV Retransmission Output		4 - 20 mA d.c. Load resistance Less than 600 Ω (Response time Max. 800 ms)	
RS485 Communication Output		▪ Communication Protocol - Modbus-RTU ▪ Communication type - RS485 (2 wire type : half-duplex) ▪ Communication speed - 2400 / 4800 / 9600 / 19200 / 38400 bps	
Vibration resistance		10 - 55 Hz double amplitude 0.75 mm X·Y·Z each direction 2 hours	
Insulation Resistance		Min. 100 MΩ (500 V d.c.), conductive terminal - unfilled metal	
Dielectric strength		2000 V a.c. at 60Hz for 1 min (different live part terminals)	
Noise immunity		±2000 V (pulse width 1 μs, apply square wave noise by noise simulator among power terminals)	
Ambient temperature		-10 ~ 50 °C	
Storage temperature		-20 ~ 60 °C	
Ambient humidity		35 ~ 85 % R.H.	
Degree of protection		▪ IP66 (IEC 60529) (product front) ▪ Apply terminal block protective COVER	
Weight		150 g	108 g

Analog timer with various time ranges

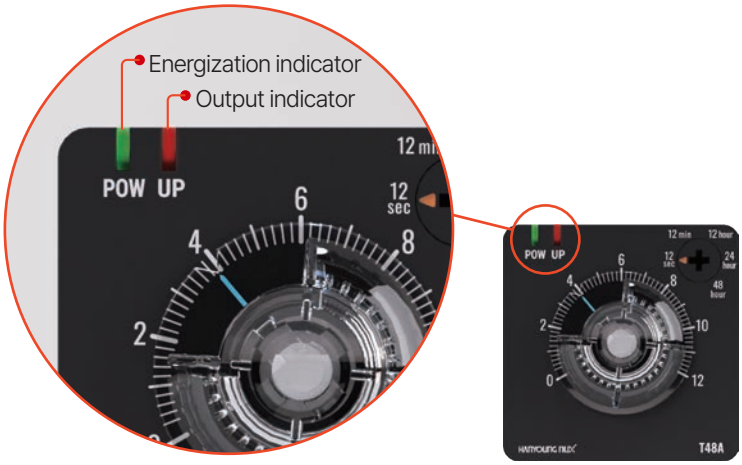
T38A / T48A
TF62A

- LED Product Operation Output Indicator
- Compact Size
- Simplified Time Setting
- Easy and Simple Operation

Product Operation Status Displayed by Light

You can check the operating status with the output indicator (red LED) and energization indicator (green LED)

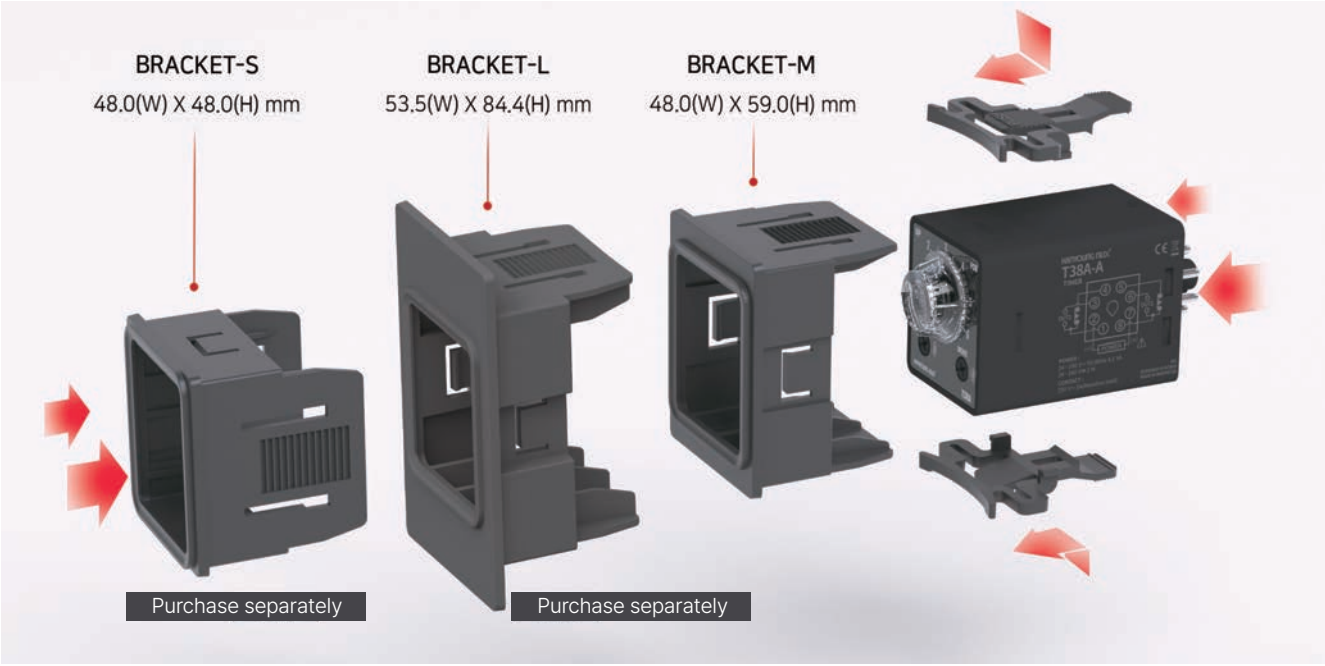
※ T48A only, see manual for details.



Customizable, easy-to-install brackets

We offer recessed brackets so you can install it any way you want, giving you a wide range of ways to use it.

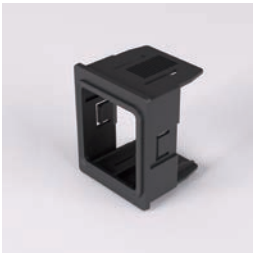
※ T48A is the basic fixing brackets only
※ BRACKET-L : T57NP, TF62 recessed replaceable



※ Accessories (except for standard bracket) are sold separately.

Accessory **Fixed Bracket**

Model	T48A	T38A	TF62A
Compatible	●	●	●



Accessory **BRACKET-M**

48.0 × 59.0 mm
T38A, TF62A built-in bracket

Model	T48A	T38A	TF62A
Compatible		●	●

Accessory **BRACKET-L**

53.5 × 84.4 mm
(Old type)T57NP, TF62 Replacement built-in bracket(Sold separately)

Model	T48A	T38A	TF62A
Compatible		●	●

Accessory **BRACKET-S**

48.0 × 48.0 mm
Size convertible built-in bracket (Sold separately)

Model	T48A	T38A	TF62A
Compatible		●	●

0.1 sec ~ 60 hour

Total 108	
01	1 sec, 1 min, 1 hour
03	3 sec, 3 min, 3 hour
06	6 sec, 6 min, 6 hour
10	10 sec, 10 min, 10 hour
30	30 sec, 30 min, 30 hour
60	60 sec, 60 min, 60 hour
12	12 hour, 24 hour, 48 hour

Total 14	
1	1 sec, 1 min, 1hour, 10 sec, 10 min, **10 hour**
3	3 sec, 3 min, 3hour, 30 sec, 30 min, **30 hour**
6	6 sec, 6 min, 6hour, 60 sec, 60 min, **60 hour**
12	**12 sec, 12 min, 12 hour, 24 hour, 48 hour**

T48A only T38A, TF62A only

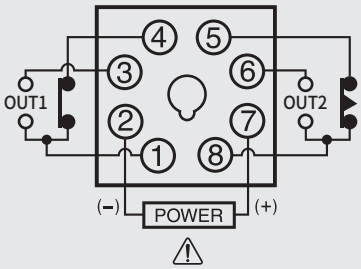
More choices with ne roduct

Provides a time range from 0.1 second to 60 hours depending on the model, and the time selection range has been integrated from the existing 108 types to 14 types, improving the user's convenience and usability in product selection.

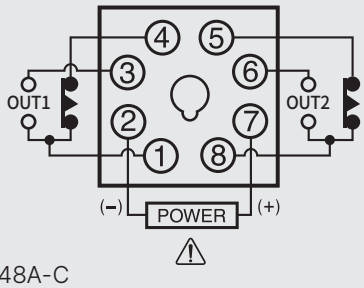
※ Please refer to our website for further details.

Connection diagram

T48A

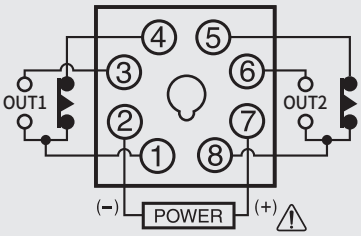


T48A-B
(Instantaneous 1C + Time limit1C)



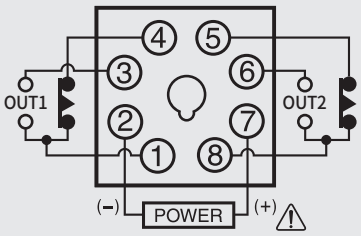
T48A-C
(Time limit 2C)

T38A



※ OUT1 operates as instantaneous output in operation mode 'B/C/E/F'.

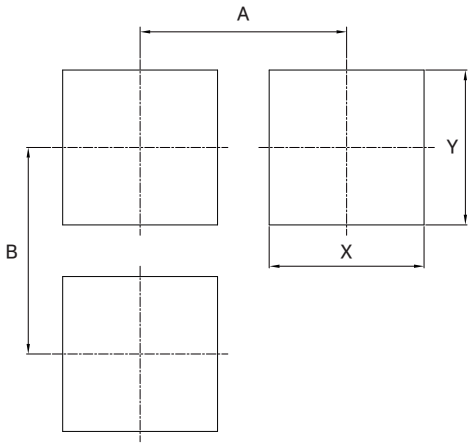
TF62A



※ OUT1 operates as instantaneous output in operation mode 'B/E'.

Panel cutout

[unit : mm]



Content	Display	T48A	T38A / TF62A		
			BEACKET-L	BRACKET-M	BRACKET-S
Panel Process Size (+0.5 / -0)	X	45.0	51.0	45.5	45.0
	Y	45.0	63.0	55.0	45.0
	A	60.0	60.0	70.5	60.0
	B	60.0	86.0	80.0	60.0

T38A Compact Analog Timer

- Compact Analog Timer
- Easy time setting using dial
- Multi time range : 18 time ranges
- Various output operations : 6 operation modes
- Various time setting range : 0.1 sec ~ 60 hours
- Tiime unit select (sec, min, hour)
- Easy maintenance with built-in bracket
- Power supply voltage (24 - 240 V a.c. 50/60 Hz, 24 - 240 V d.c.)

Suffix code

Model	Code				Content	Product configuration
T38A	□-	□	□-	□	Analog small timer 38.4(W) x 42.4(H) x 59.0(D) mm	• T38A-1N-A • T38A-3N-A • T38A-6N-A
Time range		1			Maximum time : 1sec / 1min / 1hour / 10sec / 10min / 10hour	
		3			Maximum time : 3sec / 3min / 3hour / 30sec / 30min / 30hour	
		6			Maximum time : 6sec / 6min / 6hour / 60sec / 60min / 60hour	
Control output			N		No option	
Power supply voltage				A	24 – 240 V a.c. 50/60 Hz or 24 – 240 V d.c. dual usage	

Specifications

Model		T38A	
Timer type		Analog small timer	
Power supply voltage		24 – 240 V a.c. 50/60 Hz or 24 – 240 V d.c. dual usage	
Allowable voltage		±10 % of Power supply voltage	
Power consumption		• Max. 4.1 VA (24 – 240 V a.c. 50/60 Hz)	• Max. 2 W (24 – 240 V d.c.)
Operating time range		0.1 sec ~ 60 hour	
Operating time error		• Setting error: Max. ±5 % ±0.05 • Voltage error: Max. ±0.5 %	• Repetition error: Max. ±0.3 % • Temperature error: Max. ±2 %
Return time		Max. 100 ms	
External connection method		8-pin socket	
Control output	Operation mode	A/B/C/D/E/F (selected by front operating mode selector switch)	
	Contact composition	• instantaneous SPDT (1c) + time-limit SPDT (1c) • time-limit DPDT (2c) *Automatic change of contact composition according to operation mode	
	Contact capacity	• N.O. (250 V a.c. 3A Resistive load)	• N.C. (250 V a.c. 2A Resistive load)
Relay life		• Mechanical life: Min 10 million cycles	• Electrical life: Min. 20,000 cycles (250 V a.c. 2A resistive load)
Insulation resistance		Min. 100 MΩ (500 V d.c. mega, at conductive terminal and non-charged metal which is exposed)	
Dielectric strength		2000 V a.c. 60 Hz for 1 minute (conductive terminal and non-charged metal which is exposed)	
Noise immunity		±2kV (between the power terminals, pulse width = 1 us, square wave noise by noise simulator)	
Vibration resistance		10 - 55 Hz (for 1 minute) 0.75mm double amplitude 0.75mm in each X, Y, Z direction for 2 hours	
Shock resistance		300 m/s² (30G) in each X, Y, Z direction for 3 times	
Operating ambient temperature		-10 ~ 55 °C (without condensation)	
Accessories		• Fixing BRACKET	• BRACKET-M (48.0 X 59.0 mm) flush type bracket
Accessories (separately sold)		• BRACKET-S (48.0 X 48.0 mm) bracket for adjusting size (flush type)	• BRACKET-L (53.5 X 84.4 mm) bracket for adjusting size (flush type)
Weight		Approx. 74 g (exposure type)	
Approval		CE	

T48A Analog Timer

- 48.0(W) x 48.0(H) x 59.0(D) mm Miniaturized size
- Easy time setting using dial
- Multi time range : 20 time ranges
- Various time setting range : .0.1sec ~ 48 hours
- Time unit select (sec, min, hour)
- Easy maintenance with built-in panel installation
- Power supply voltage (24 - 240 V a.c. 50/60 Hz, 24 - 240 V d.c. Dual usage)

Suffix code

Model	Code				Content	Product configuration
T48A	▢-	▢	▢-	▢	Analog timer 48.0(W) x 48.0(H) x 59.0(D)mm	• T48A-1B-A • T48A-3B-A • T48A-6B-A • T48A-12B-A • T48A-1C-A • T48A-3C-A • T48A-6C-A • T48A-12C-A
Time range		1			Maximum time : 1sec / 1min / 1hour / 10sec / 10min	
		3			Maximum time : 3sec / 3min / 3hour / 30sec / 30min	
		6			Maximum time : 6sec / 6min / 6hour / 60sec / 60min	
		12			Maximum time : 12sec / 12min / 12hour / 24hour / 48hour	
Control output			B		Instantaneous SPDT (1c) + time-limit SPDT (1c)	
			C		Time-limit DPDT (2c)	
Power supply voltage				A	24 - 240 V a.c. 50/60 Hz or 24 - 240 V d.c. (dual usage)	

Specification

Model		T48A
Timer type		Analog timer
Power voltage		24 - 240 V a.c. 50/60 Hz, 24 - 240 V d.c. dual usage
Allowable voltage		±10 % of Power supply voltage
Power consumption		• Max. 3.7 VA (24 - 240 V a.c. 50/60 Hz) • Max. 1.5 W (24 - 240 V d.c.)
Operating time range		0.1 sec ~ 48 hour
Operating time error		• Setting error : Max. ±5 % ±0.05 • Repetition error : Max. ±0.3 % • Voltage error : Max. ±0.5 % • Temperature error : Max. ±2 %
Return time		Max. 100 ms
External connection method		8-pin socket
Control output	Operation mode	POWER ON DELAY (fixing)
	Contact composition	• T48A-B : instantaneous SPDT (1c) + time-limit SPDT (1c) • T48A-C : time-limit DPDT (2c)
	Contact capacity	• N.O. (250 V a.c. 3A Resistive load) • N.C. (250 V a.c. 2A Resistive load)
Relay life		• Mechanical life : Min. 10 million cycles • Electrical life : Min. 20,000 cycles (250 V a.c. 2A Resistive load)
Insulation resistance		Min. 100 MΩ (500 V d.c. mega, at conductive terminal and non-charged metal which is exposed)
Dielectric strength		2000 V a.c. 60 Hz for 1 minute (at conductive terminal and non-charged metal which is exposed)
Noise immunity		±2kV (between the power terminals, pulse width = 1 us, square wave noise by noise simulator)
Vibration resistance		10 - 55 Hz (for 1 minute) 0.75mm double amplitude in each X, Y, Z direction for 2 hours
Shock resistance		300 m/s² (30G) in each X, Y, Z direction for 3 time
Operating ambient temperature		-10 ~ 55 °C (without condensation)
Accessories		Fixing Bracket
Weight		Approx. 82 g
Approval		CE

TF62A Compact Analog Twin Timer

- 38.4(W) × 42.4(H) ×59.0(D) mm Compact size
- Easy time setting using dial
- Separate ON/OFF time setting
- Multi-time range : 18 time ranges
- Various output operations : 6 operation modes
- Various time setting range : 0.1sec~ 60 hour
- Time unit select (sec, min, hour)
- Easy maintenance with flush mounting bracket installation
- Power supply voltage (24 - 240 V a.c. 50/60 Hz, 24 - 240 V d.c. Dual usage)

Suffix code

Model	Code				Content	Product configuration
TF62A	□-	□	□-	□	Analog twin timer 38.4(W) X 42.4(H) X 59.0(D) mm	• TF62A-1N-A • TF62A-3N-A • TF62A-6N-A
Time range		1			Maximum time : 1sec / 1min / 1hour / 10sec / 10min / 10hour	
		3			Maximum time : 3sec / 3min / 3hour / 30sec / 30min / 30hour	
		6			Maximum time : 6sec / 6min / 6hour / 60sec / 60min / 60hour	
Control output			N		No option	
power voltage				A	24 - 240 V a.c. 50/60 Hz, 24 - 240 V d.c.	

Specification

Model		TF62A
Timer type		Analog twin timer
Power voltage		24 - 240 V a.c. 50/60 Hz or 24 - 240 V d.c. dual usage
Allowable voltage		±10 % of Power supply voltage
Power consumption		• Max. 4.1 VA (24 - 240 V a.c. 50/60 Hz • Max. 2 W (24 - 240 V d.c.)
Operating time range		0.1 sec ~ 60 hour
Operating time error		• Setting error : Max. ±5 % ±0.05 sec • Repetition error : Max. ±0.3 % • Voltage error : Max. ±0.5 % • Temperature error : Max. ±2 %
Return time		Max. 100 ms
External connection method		8-pin socket
Control output	Operation mode	A/B/C/D/E/F (selected by front operating mode selector switch)
	Contact composition	• instantaneous SPDT (1c) + Time limit SPDT (1c) • Time limit DPDT (2c) * Automatic change of contact composition according to operation mode
	Contact capacity	N.O. (250 V a.c. 3A Resistive load) • N.C. (250 V a.c. 2A Resistive load)
Relay life		• Mechanical life : Min. 10 million cycles • Electrical life: Min. 20,000 cycles (250 V a.c. 2A resistive load)
Insulation resistance		Min. 100 MΩ (500 V d.c. mega, at conductive terminal and non-charged metal which is exposed)
Dielectric strength		2000 V a.c. 60 Hz for 1 minute (at conductive terminal and non-charged metal which is exposed)
Noise immunity		±2kV (between the power terminals, pulse width = 1 us, square wave noise by noise simulator)
Vibration resistance (durability)		10 - 55 Hz (1 minute) 0.75mm double amplitude 0.75 in each X, Y, Z direction for 2 hours
Shock resistance (durability)		300 m/s² (30G) in each X, Y, Z direction for 3 times
Operating ambienttemperature		-10 ~ 55 °C (without condensation)
Accessories		• Fixing Bracket • BRACKET-M (48.0 X 59.0 mm) flush type bracket
Accessories (separately sold)		• BRACKET-S (48.0 X 48.0 mm)bracket for adjusting size (flush type) • BRACKET-L (53.5 X 84.4 mm) bracket for adjusting size (flush type)
Weight		Approx. 79 g (Exposure type)
Approval		CE

Single-phase Thyristor Power Regulator

TPR-2SL series

- Alarm Output Segmentation
- Control Method according to Load
- Various Protection Functions
- Improved safety with separated Circuit Power, Load Power

Suffix code

Model	Code				Content	
TPR-2SL	▢	▢	- ▢	▢	Slim type Single phase power regulator	
Rated current	040				40 A	
	055				55 A	
	070				70 A	
	090				90 A	Built-in Fuse
	110				110 A	
	130				130 A	
	160				160A	
	200				200 A	
Power supply voltage		L			100 - 240 V a.c. (Low)	
		H			380 - 440 V a.c. (High)	
Options			C		RS485	
				F	Built-in Fuse (Only 40/55/70 A)	

※ Please supply 100 – 240 V a.c. to the control unit of the power controller (Thyristor) separately.

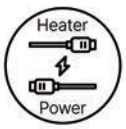
Specification

Model		TPR-2SL040L	TPR-2SL055L	TPR-2SL070L	TPR-2SL090L	TPR-2SL110L	TPR-2SL130L	TPR-2SL160L	TPR-2SL200L
	High	TPR-2SL040H	TPR-2SL055H	TPR-2SL070H	TPR-2SL090H	TPR-2SL110H	TPR-2SL130H	TPR-2SL160H	TPR-2SL200H
Power supply voltage	Low	100 - 240 V a.c.							
	High	380 - 440 V a.c.							
Circuit input power		100 - 240 V a.c.							
		6 W		16 W	20 W				
Power frequency		50 Hz / 60 Hz (Dual usage)							
Rated current (40 °C Standard)		40 A	55 A	70 A	90 A	110 A	130 A	160 A	200 A
Fuse installation		None			Built-in Fuse				
Applying load		Resistive load							
Control Input	Current input	4 - 20 mA d.c. (Impedance : 100 Ω)							
	Voltage input	1 - 5 V d.c. (Order specification : 0 - 10 V d.c.)							
	Contact input	ON/OFF							
	External VR	External volume (10 kΩ)							
Control method		Phase control, Fixed Cycle control, Variable Cycle control, ON/OFF control							
Movement type		SOFT START, SOFT UP/DOWN							
Output voltage		More than 98 % of the power supply voltage (In case of maximum current input)							
Cooling method		Natural cooling		Forced cooling	Natural cooling	Forced cooling			
Display method		Display by LED							
Insulation resistance		Min 100 MΩ (Base on 500 VDC mega)							
Output control range		0 ~ 100 %							
Dielectric strength		3,000 V a.c. 50/60 Hz for 1 min							
Line noise		Noise by noise simulator (3,000 V)							
Ambient temperature & humidity		0 ~ 40 °C (Without Condensation), 30 ~ 85 % RH							
Storage temperature		-25 °C ~ 70 °C							
Approval		CE							
Weight		1,388 g		1,478 g	2,820 g				


Reduced size

60°C/80°C Temperature detect


Temperature detect



Separated circuit design


Over current detect

Slim Type Three-Phase Power Regulator

TPR-3SL series

- Heat dissipation design
- Semi-permanent Lifespan due to Protection Circuit Installation
- Improved safety by separated circuit power and load power
- Various Alarm Functions

Suffix code

Model	Code					Content
TPR-3SL	☐	☐	- ☐	☐	☐	Slim type 3-phase thyristor power regulator
Rated current	040					40 A
	055					55 A
	070					70 A
	090					90 A
	130					130 A
	160					160 A
Load voltage		L				100 - 240 V a.c. (Low)
		H				380 - 440 V a.c. (High)
Option			C			RS485
				N		No Fuse
					F	Fan mounted (option for 40A, 55 A models)

※ Circuit and fan need 100 - 240 V a.c. voltage power separately.

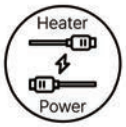
Specification

Model	Low	TPR-3SL040L	TPR-3SL055L	TPR-3SL070L	TPR-3SL090L	TPR-3SL130L	TPR-3SL160L
	High	TPR-3SL040H	TPR-3SL055H	TPR-3SL070H	TPR-3SL090H	TPR-3SL130H	TPR-3SL160H
Load voltage	Low	100 - 240 V a.c.					
	High	380 - 440 V a.c.					
Circuit input power		100 - 240 V a.c. 18 W			100 - 240 V a.c. 20 W		
Power frequency		50 / 60 Hz					
Rated current		40 A	55 A	70 A	90 A	130 A	160 A
Applying load		Resistive load					
Control Input	Current input	4 - 20 mA d.c.(Impedance : 100 Ω)					
	Voltage input	1 - 5 V d.c.					
	Contact input	ON / OFF					
	External VR	External volume (10 kΩ)					
Control method		Phase control, Fixed Cycle control, Variable Cycle control, ON/OFF control (General type only)					
Movement type		SOFT START, SOFT UP/DOWN					
Output voltage		More than 98 % of the power voltage (in case of maximum current input)					
Cooling method		▪ Natural cooling (40 A, 55 A) ▪ Forced cooling (70 A, 90 A, 130 A, 160 A)					
Display method		Output display by LED					
Insulation resistance		Min 100 MΩ (based on 500 V d.c. mega)					
Leakage current		Less than 20 mA					
Rated impulse withstand voltage (Uimp)		2,500 V					
Output control range		0 ~ 100 %					
Dielectric strength		3,000 V a.c. 50/60 Hz for 1 min					
Line noise		Noise by noise simulator (2,500 V)					
Ambient temperature & humidity		0 ~ 40 °C (without condensation), 30 ~ 85 % RH					
Storage temperature		-25 °C ~ 70 °C					
Approval		CE					
Weight		4,044 g		4,324 g	9,100 g		


Reduced size

60°C/80°C Temperature detect


Temperature detect



Separated circuit design


Over current detect

Slim, Single-phase, Three-phase Solid State Relay

HSR series

- Improved Heat Dissipation Efficiency
- Optimal Heat Dissipation Design
- Slim type, Lightweight of Large Capacity
- Integrated/Detachable Heat Sink Type
- Semi-Permanent Lifespan

Fire Prevention by Improved Flameproof Case

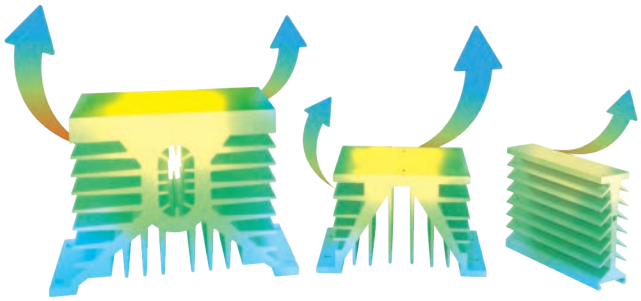
The case used in the new HSR series has improved flame-resistant performance, and is more safe from fire. In addition, safe environment will be realized by blocking the cause of fire with the new HSR series adopting non-epoxy method.

※This image has been created to aid understanding.

It meets strict conditions
of certificates with great insulation
performance in spite of its non-epoxy method.

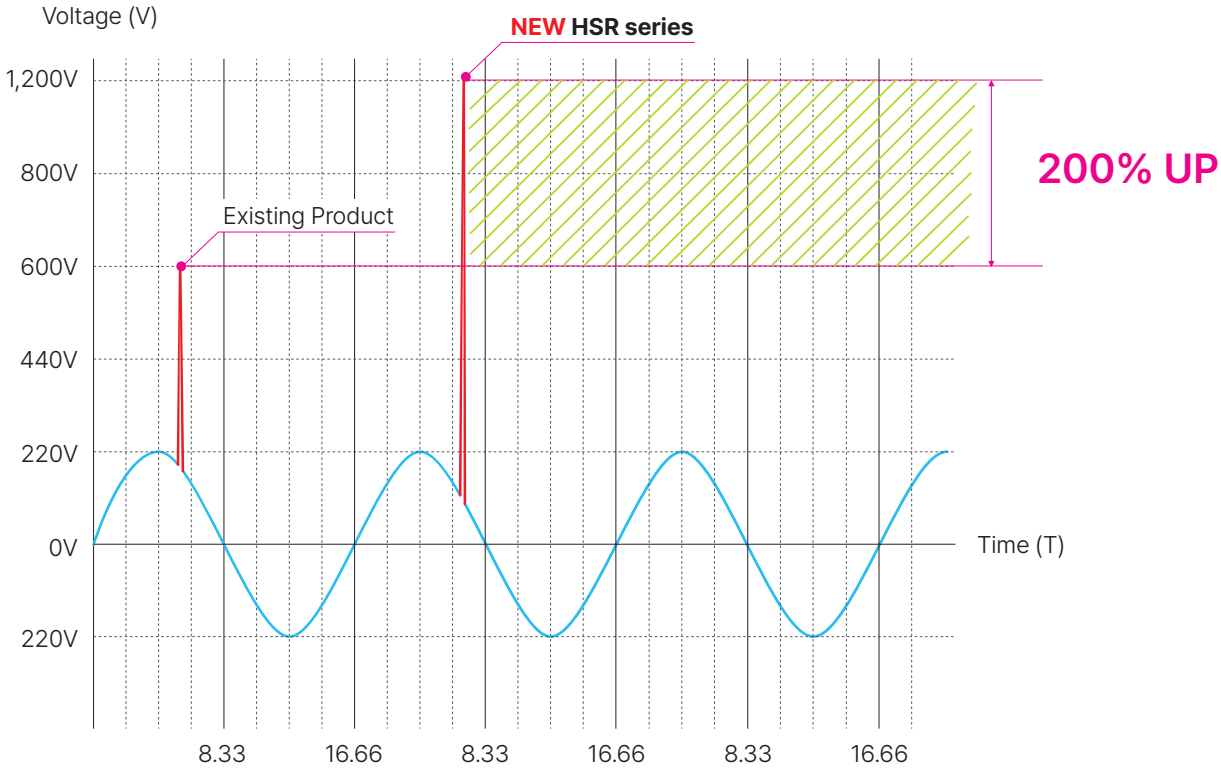
Upgraded Heatsink

It provides the best heat emission performance in any environment.



200% Improved Non-repetitive Peak Voltage

The new HSR series achieved 200% improvement of non-repetitive peak voltage compared to the previous HSR series, preventing damage to parts caused by peak voltage, thereby increasing durability.



Newly Added AC Input in HSR-SL

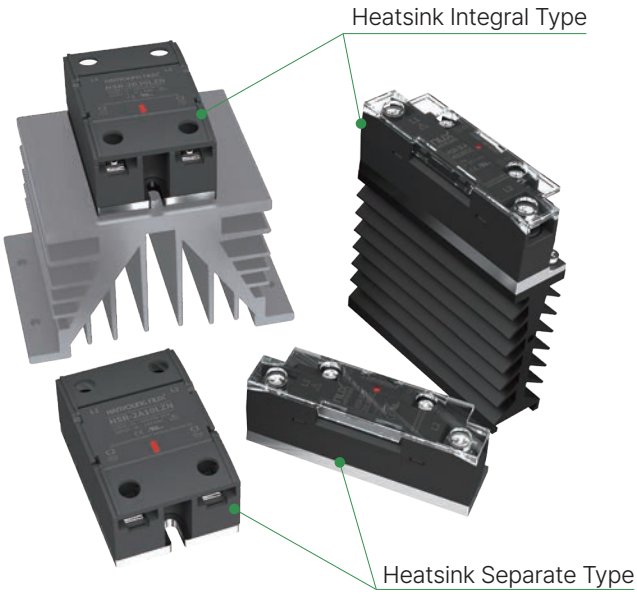
AC input option is newly added.

2,500V Withstand Voltage

It is more safe by 2,500 V of high voltage withstand capacity.

Heatsink Integral/Separate Selection

It is possible to choose the product with heatsink or without heatsink.
Installation holes are same sized, so it is convenient for replacement and maintenance.



HSR-SL Slim Type Solid State Relay

CE cULus RoHS2

- 22.4mm Width Slim Type • Din-rail Installation
- The Best Heat Sinking Design, Semi-permanent Lifespan
- Heatsink Integral/Separate Selection
- High Insulation Performance in Input/Output

Suffix code

- CE, UL certified products CE cULus

Model	Code						Content
HSR-SL	□	□	□	□	□	□	Slim-type single-phase Solid State Relay
Control input voltage	D						4 - 32 V d.c.
	A						90 - 240 V a.c.
Rated load current		15					15 A
		25					25 A
		40					40 A
Operating load voltage			L				24 - 240 V a.c. (Low voltage)
			H				24 - 480 V a.c. (High voltage)
Method of operation				Z			Zero-cross switching (standard product)
				R			Random switching
Heat sink & Option					S		Integrated heat sink (standard product)
					T		Heat sink + Bimetal mounted
					N		No heat sink ※ CAUTION 1
Point of contact						1C	1 Point of contact (Unmarked)
						2C	2 Point of contact (Unmarked) ※ CAUTION 2 Only for 15 A

※ CAUTION 1 - In case of using a heatsink from other suppliers, it must be used in accordance with the thermal resistance table in the product manual.
※ CAUTION 2 - 2 contact : Only available for 15 A items. (HSR-SL□15LZS2C, HSR-SL□15HZS2C)

Suffix code

• S-MARK certified prod Ⓢ

Model	Code						Content
HSR-SL	□	□	□	□	□	-S	Slim-type single-phase Solid State Relayt
Control input voltage	D						4 - 32 V d.c.
Rated load current		15					15 A
		25					25 A
		40					40 A
Operating load voltage			L				24 - 240 V a.c. (Low voltage)
			H				24 - 480 V a.c. (High voltage)
Method of operation				Z			Zero-cross switching (standard product)
Heat sink & Option					S		Integrated heat sink (standard product)
					T		Heat sink + Bimetal mounted
					N		No heat sink ※CAUTION 1

※ CAUTION 1 - In case of using a heatsink from other suppliers, it must be used in accordance with the thermal resistance table in the product manual.

Specifications

Model			HSR-SLD15LR□□	HSR-SLD25LR□□	HSR-SLD40LR□□	HSR-SLA15LR□□	HSR-SLA25LR□□	HSR-SLA40LR□□
			HSR-SLD15LZ□□	HSR-SLD25LZ□□	HSR-SLD40LZ□□	HSR-SLA15LZ□□	HSR-SLA25LZ□□	HSR-SLA40LZ□□
		High	HSR-SLD15HR□□	HSR-SLD25HR□□	HSR-SLD40HR□□	HSR-SLA15HR□□	HSR-SLA25HR□□	HSR-SLA40HR□□
			HSR-SLD15HZ□□	HSR-SLD25HZ□□	HSR-SLD40HZ□□	HSR-SLA15HZ□□	HSR-SLA25HZ□□	HSR-SLA40HZ□□
		S-Low	HSR-SLD15LZ□-S	HSR-SLD25LZ□-S	HSR-SLD40LZ□-S			
		S-High	HSR-SLD15HZ□-S	HSR-SLD25HZ□-S	HSR-SLD40HZ□-S			
LOAD	Rated Load Voltage	Low	24 - 240 V a.c. 50/60 Hz					
		High	24 - 480 V a.c. 50/60 Hz					
	Peak Voltage (Non-repetition)	Low	1,200 V					
		High						
	Rated load current		15 A	25 A	40 A	15 A	25 A	40 A
	Surge current 60 Hz (8.3 ms No repetition)	Low	170 A	260 A	420 A	170 A	260 A	420 A
		High	170 A	250 A	370 A	170 A	250 A	370 A
	Surge current 50 Hz (10 ms No repetition)	Low	160 A	250 A	400 A	160 A	250 A	400 A
		High	160 A	230 A	350 A	160 A	230 A	350 A
	Leakage current		Less than 20 mA					
	Output ON voltage dropping		Less than 1.6 V (R.M.S)					
INPUT	Rated Voltage		5 - 24 V d.c.			100 - 240 V a.c. 50/60 Hz		
	Operating Voltage Range (ON Voltage)		4 - 32 V d.c.			90 - 264 V a.c. 50/60 Hz		
	Return voltage (OFF Voltage)		Less than 3 V			Less than 50 V		
	Impedance		Less than 4 kΩ			Less than 40 kΩ		
	Current consumption		Constant current method : Less than 14 mA			Less than 14 mA		
Response Time			1/2 Cycle + 1 ms max. (“R” type below 1 ms)					
Insulating Resistance			500 V d.c., 100 MΩ (Between the input / output and case)					
Dielectric strength			2,500 V a.c. (For 1min at 60 Hz)					
Rated impulse withstand voltage (Uimp)			2,500 V					
Vibration resistance			10 - 55 Hz, Constant current method : 1.5 mm,X·Y·Z each axis direction for 2 hour					
Shock resistance			1,000 m/s², X·Y·Z each axis 3 times					
Storage Temperature			-30 ~ 90 °C					
Ambient Temperature			-30 ~ 80 °C (no condensation)					
Ambient Humidity			45 ~ 85 % RH					
Pollution level grade			2 Level					
Bolt tightening torque			Input terminal: 0.05 Nm / Output terminal: 0.25 Nm					
Usage			Resistive load					
Certification			CE EN 60947-4-3 c UL us Ⓢ RoHS2					
Weight Integrated heat sink (with box)			Approx. 226 g		Approx. 372 g	Approx. 230 g		Approx. 372 g
Weight Heating plate removal (with box)			Approx. 65 g					

HSR-2 Single Phase Solid State Relay

- Downsized/Lightweight
- High Insulation Performance in Input/Output
- Din-rail Installation
- C-R Snubber, Zero Cross

Suffix code

Model	Code					Information
HSR-2	□	□	□	□	□	Single-Phase Solid State Relay
Control Input Voltage	D					4 - 32 V d.c.
	A					90 - 240 V a.c.
Rated load current		10				10A
		20				20A
		30				30A
		40				40A
		50				50A
		70				70A
Rated load voltage			L			24 - 240 V a.c. (Low voltage)
			H			24 - 480 V a.c. (High voltage)
Operation method (Switching Mode)				Z		Zero Cross Switching (Standard product)
				R		Random Switching
Heatsink option					T	Heat sink + Bimetal mounting (50 A, 70 A only)
					N	No Heat sink ※ CAUTION 1

※ CAUTION 1 - When using a separate heat sink, you must use a heat sink that meets the thermal resistance table.

Specifications

Model			HSR-2D 10LZ□	HSR-2D 20LZ□	HSR-2D 30LZ□	HSR-2D 40LZ□	HSR-2D 50LZ□	HSR-2D 70LZ□	HSR-2A 10LZ□	HSR-2A 20LZ□	HSR-2A 30LZ□	HSR-2A 40LZ□	HSR-2A 50LZ□	HSR-2A 70LZ□
		Low	HSR-2D 10LR□	HSR-2D 20LR□	HSR-2D 30LR□	HSR-2D 40LR□	HSR-2D 50LR□	HSR-2D 70LR□	HSR-2A 10LR□	HSR-2A 20LR□	HSR-2A 30LR□	HSR-2A 40LR□	HSR-2A 50LR□	HSR-2A 70LR□
		High	HSR-2D 10HZ□	HSR-2D 20HZ□	HSR-2D 30HZ□	HSR-2D 40HZ□	HSR-2D 50HZ□	HSR-2D 70HZ□	HSR-2A 10HZ□	HSR-2A 20HZ□	HSR-2A 30HZ□	HSR-2A 40HZ□	HSR-2A 50HZ□	HSR-2A 70HZ□
			HSR-2D 10HR□	HSR-2D 20HR□	HSR-2D 30HR□	HSR-2D 40HR□	HSR-2D 50HR□	HSR-2D 70HR□	HSR-2A 10HR□	HSR-2A 20HR□	HSR-2A 30HR□	HSR-2A 40HR□	HSR-2A 50HR□	HSR-2A 70HR□
LOAD	Rated Load Volta	Low	24 - 240 V a.c. 50/60 Hz											
		High	24 - 480 V a.c. 50/60 Hz											
	Peak Voltage (Non-repetition)	Low	1,200V											
		High												
	Rated load current		10A	20A	30A	40A	50A	70A	10A	20A	30A	40A	50A	70A
	Surge current 60Hz (8.3ms No repetition)	Low	170A	260A	420A		525A		170A	260A	420A		525A	
		High	170A	250A	370A		525A		170A	250A	370A		525A	
	Leakage current		Less than 20 m											
	Output ON voltage dropping		Less than 1.6 V (R.M.S)											
INPUT	Rated Voltage		5 - 24 V d.c.						100 - 240 V a.c. 50/60 Hz (Dual usage)					
	Operating Voltage Range (ON Voltage)		4 - 32 V d.c.						90 - 264 V a.c. 50/60 Hz (Dual usage)					
	return voltage (OFF Voltage)		Less than 3 V						Less than 50 V					
	Impedance		Less than 4 kΩ						Less than 40 kΩ					
	Current consumption		Constant current method : 14 mA or less						Less than 14 mA					
Response Time			1/2 Cycle + 1 ms max. (“R” type below 1ms)											
Insulating Resistance			500 V d.c., 100 MΩ (Between input and output and case)											
Dielectric strength			2,500 V a.c. (For 1min at 60 Hz)											
Vibration resistance			10 - 55 Hz, Double amplitude : 1.5 mm, X-Y-Z each axis direction for 2 hour											
Shock resistance			1,000 m/s², X·Y·Z each axis 3 time											
Storage Temperature			-30 ~ 90 °C											
Ambient Temperature & Humidity			-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH											
Pollution level grad			2 level											
Bolt tightening torque			Input terminal : 0.05 Nm / Output terminal : 0.25 Nm											
Usage			Resistive load											
Accepted standard			EN 60947-4-3											
Weight Heating plate removal (with box)			Approx 89 g				Approx 120 g		Approx 89 g				Approx 120 g	
Weight Integrated heat sink (with box)			Approx 462g	Approx 668g	Approx 868g		Approx 1,266g	Approx 1,832g	Approx 462g	Approx 668g	Approx 868g		Approx 1,266g	Approx 1,832g

HSR-3 Three Phase Solid State Relay

- Downsized/Lightweight
- Contact Protection Cover for Safet
- Din-rail Installation
- Zero Cross/Random Switching

Suffix code

Model	Code					Information
HSR-3	□	□	□	□	□	Three Phase Solid State Relay
Control Input Voltage	D					4 - 32 V d.c.
	A					90 - 240 V a.c.
Rated load current		10				10 A
		20				20 A
		30				30 A
		40				40 A
		50				50 A
		70				70 A
Rated load voltage			L			24 - 240 V a.c. (Low voltage)
			H			24 - 480 V a.c. (High voltage)
Operation method (Switching Mode)				Z		Zero Cross Switching (Standard product)
				R		Random Switching
Heatsink option					T	Heat sink + Bimetal mounting (50 A, 70 A only)
					N	No Heat sink ※ CAUTION 1

※ CAUTION 1 - When using a separate heat sink, you must use a heat sink that meets the thermal resistance table.

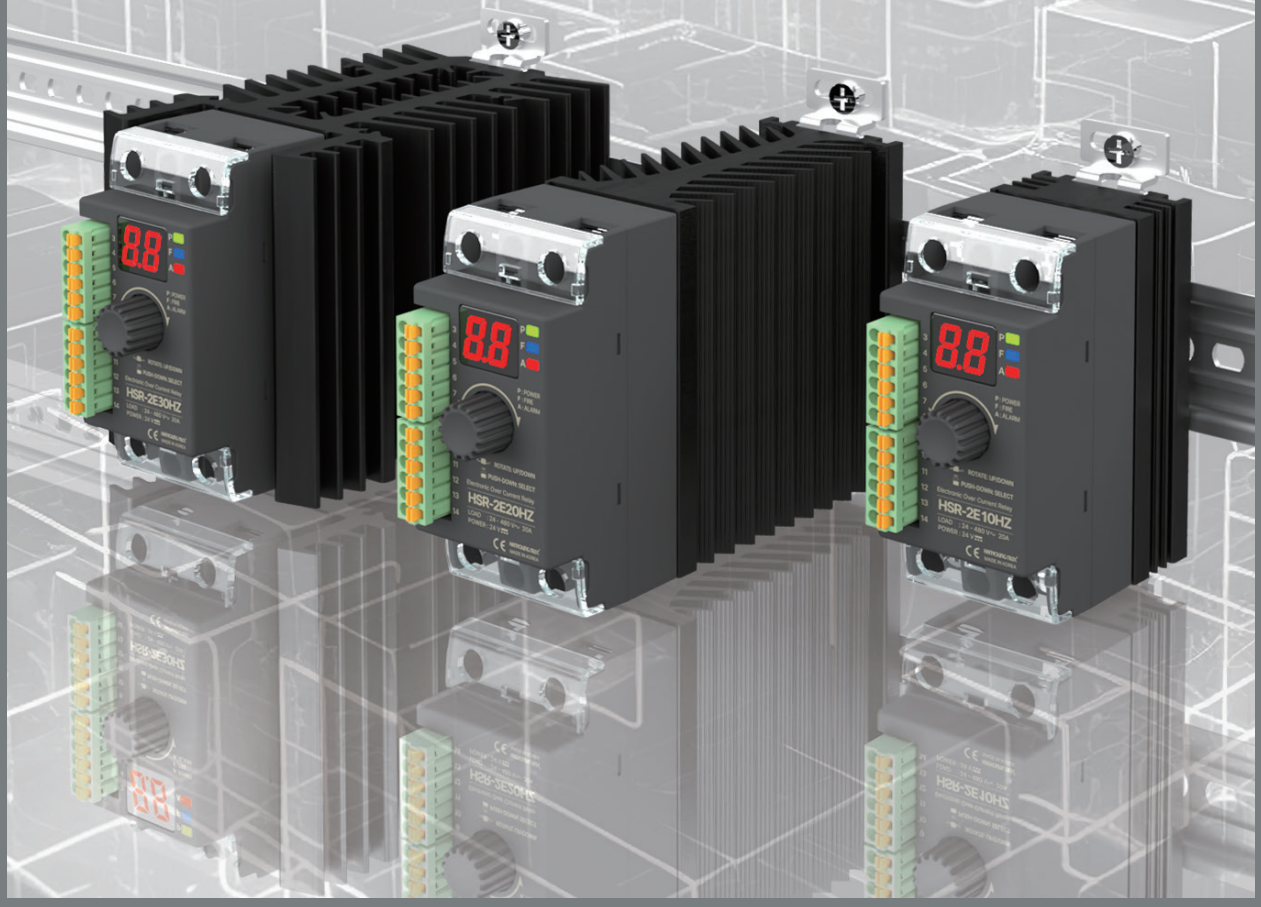
Specifications

Model			HSR-3D 10LZ□	HSR-3D 20LZ□	HSR-3D 30LZ□	HSR-3D 40LZ□	HSR-3D 50LZ□	HSR-3D 70LZ□	HSR-3A 10LZ□	HSR-3A 20LZ□	HSR-3A 30LZ□	HSR-3A 40LZ□	HSR-3A 50LZ□	HSR-3A 70LZ□
		Low	HSR-3D 10LR□	HSR-3D 20LR□	HSR-3D 30LR□	HSR-3D 40LR□	HSR-3D 50LR□	HSR-3D 70LR□	HSR-3A 10LR□	HSR-3A 20LR□	HSR-3A 30LR□	HSR-3A 40LR□	HSR-3A 50LR□	HSR-3A 70LR□
		High	HSR-3D 10HZ□	HSR-3D 20HZ□	HSR-3D 30HZ□	HSR-3D 40HZ□	HSR-3D 50HZ□	HSR-3D 70HZ□	HSR-3A 10HZ□	HSR-3A 20HZ□	HSR-3A 30HZ□	HSR-3A 40HZ□	HSR-3A 50HZ□	HSR-3A 70HZ□
			HSR-3D 10HR□	HSR-3D 20HR□	HSR-3D 30HR□	HSR-3D 40HR□	HSR-3D 50HR□	HSR-3D 70HR□	HSR-3A 10HR□	HSR-3A 20HR□	HSR-3A 30HR□	HSR-3A 40HR□	HSR-3A 50HR□	HSR-3A 70HR□
LOAD	Rated Load Voltage	Low	24 - 240 V a.c. 50/60 Hz											
		High	24 - 480 V a.c. 50/60 Hz											
	Peak Voltage (Non-repetition)	Low	1,200 V											
		High												
	Rated load current		10A	20A	30A	40A	50A	70A	10A	20A	30A	40A	50A	70A
	Surge current 60Hz (8.3ms No repetition)	Low	170A	260A	420A		525A		170A	260A	420A		525A	
		High	170A	250A	370A		525A		170A	250A	370A		525A	
	Surge current 50Hz (10ms No repetition)	Low	160A	250A	400A		500A		160A	250A	400A		500A	
		High	160A	250A	350A		500A		160A	250A	350A		500A	
	Leakage current		Less than 20 mA											
	Output ON voltage dropping		Less than 1.6 V (R.M.S)											
INPUT	Rated Voltage		5 - 24 V d.c.						100 - 240 V a.c. 50/60Hz					
	Operating Voltage Range (ON Voltage)		4 - 32 V d.c.						90 - 264 V a.c. 50/60Hz					
	Return voltage (OFF Voltage)		Less than 3 V						Less than 50 V					
	Impedance		Less than 4 kΩ						Less than 40 kΩ					
	Current consumption		Constant current method : Less than 25mA						Less than 14 mA					
Response Time			1/2 Cycle + 1 ms max. (“R” type below 1ms)											
Insulating Resistance			500 V d.c., 100 MΩ (Between input and output and case)											
Dielectric strength			2,500 V a.c. (For 1min at 60 Hz)											
Vibration resistance			10 - 55 Hz, Double amplitude : 1.5 mm, X-Y-Z each axis direction for 2 hour											
Shock resistance			1,000 m/s², X·Y·Z each axis 3 time											
Storage Temperature			-30 ~ 90 °C											
Ambient Temperature & Humidity			-30 ~ 80 °C (No Condensation), 45 ~ 85 % RH											
Pollution level grad			2 level											
Bolt tightening torque			nput terminal : 0.05 Nm / Output terminal : 0.25 Nm											
Usage			Resistive load											
Accepted standard			EN 60947-4-3											
Weight Heating plate removal (with box)			Approx 227 g			Approx 322g			Approx 227 g			Approx 322 g		
Weight Integrated heat sink (with box)			Approx 995g	Approx 1,257g	Approx 1,511g		Approx 1,796g	Approx 2,374g	Approx 995	Approx 1,257g	Approx 1,511g		Approx 1,796g	Approx 2,374g

Solid state relay with built-in 2-wire blocking overcurrent detection function

HSR-2E series

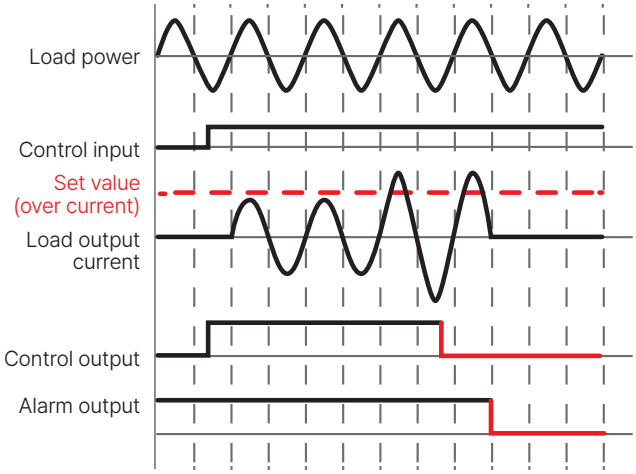
- Overcurrent/Undercurrent Sensing
- Single-phase two-wire blocking
- FND
- Easy Wiring and Maintenance
- Easy Operation



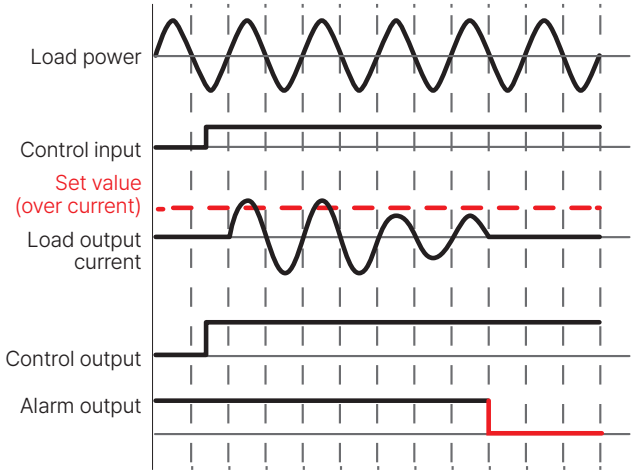
Over Current / Under Current Sensing

When over current/under current occurs due to fluctuations in the load power or damage to the load, it detects this and outputs an alarm after a set detection delay time.

Over current sensing



Under current sensing



Applied FND & LED status display

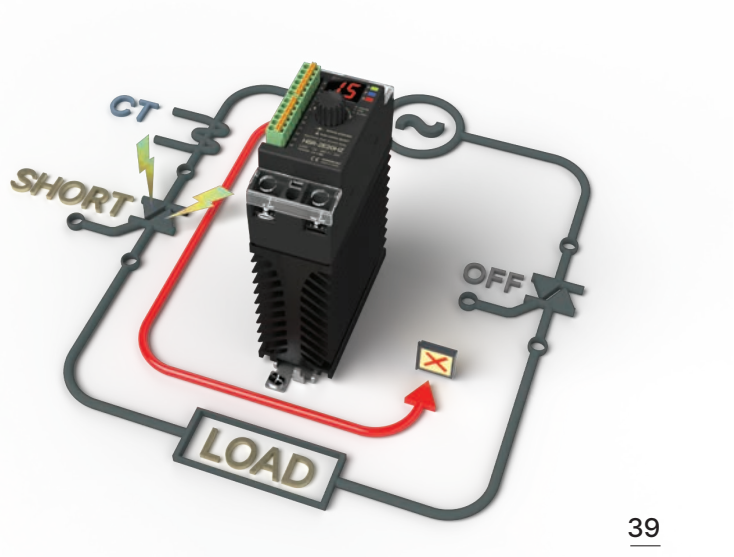
Applied FND & LED status display.
Over current, under current, load disconnection detection, detection delay time, alarm function setting etc., detailed parameter setting is possible.

LED Status & Function

LED color	Function	Content
Green (P : POWER)	System Management	System monitor : auto mode = light ON / manual mode = flash
Blue (F : FIRE)	Output Status	Output monitor : In auto mode, when control input is ON, light ON In manual mode, light flash according to output level 0~100%
Red (A : ALARM)	Abnormal Alarm	Alarm1 (caution) : Light flash (over current, under current, load disconnection) Alarm 2 (warning) : Light ON (Triac short circuit, over current 200%)

Much safer use with single-phase 2-wire blocking

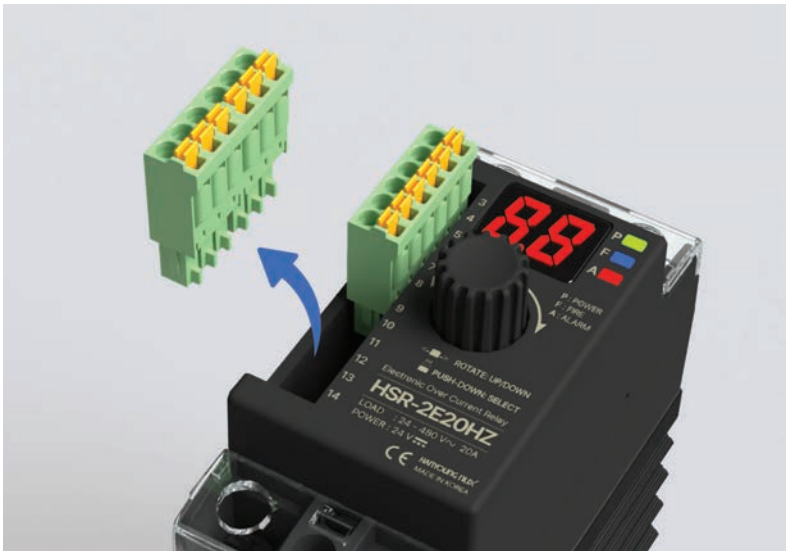
Individual power devices applied to each of the two lines in single-phase.
Even with one line's device being shorted, it cuts off the current from the other device and prevents load output without control.



Easy Wiring & Maintenance

Easy wiring with I/O connection terminal one-touch detachable connector.

Also, during maintenance, you can replace the product by detaching the connector without separating the wiring.



Easy Operation

With the rotation (L/R) and PUSH structure of a knob switch, reduces the setting time and increases user convenience.

HSR-2E

Single-phase 2-wire control overcurrent sensing solid-state relay

- Over current/under current sensing
- FND applied & LED status display
- Much safer use with single-phase 2-wire blocking
- Easy Operation
- Easy wiring & Maintenance

Suffix code

Model	Code			Content
HSR-2E	☐	☐	☐	Single-phase 2-wire control overcurrent sensing solid-state relay
Rated load current	10			10 A
	20			20 A
	30			30 A
Rated load voltage		L		24 - 240 V a.c.
		H		24 - 480 V a.c.
Operation method			Z	Zero cross switching

Specification

Model			HSR-2E10LZ / HSR-2E10HZ	HSR-2E20LZ / HSR-2E20HZ	HSR-2E30LZ / HSR-2E30HZ
Output	Load voltage range		24 - 240 V a.c.		
			24 - 480 V a.c.		
	Peak voltage		1,200 V		
	Surge current		400 A		
	Rated load current		10 A	20 A	30 A
	Leakage current		Max. 15 mA		
	Voltage Drop at ON-state		Max. 1.6 V (R.M.S)		
Input	control signal	Voltage (V)	4 ~ 32 V d.c. (consumption current 4 ~ 14 mA d.c.)		
	Circuit power		22 ~ 25 V .d.c.		
	OFF-state voltage		Max. 1 V		
	Current consumption		Max. 40 mA d.c.		
Contact Rating	Relay Contact		Alarm1, Alarm2, 0.5 A, 125 V a.c. / 0.3 A, 110 V d.c. / 1 A, 30 V d.c.		
	BI METAL Contact		▪ Max. 60 °C, 80 °C, 2.5 A, 48 V d.c. ▪ Max. 60 °C, 80 °C, 0.5 A, 240 V a.c.		
Response Time			1/2 Cycle + 1 ms max. 8.3 msec (60 Hz)		
Insulation resistance			500 V d.c., 100 MΩ		
Dielectric strength			2,500 V a.c. (60 Hz for one minute)		
Rated impulse withstand voltage (Uimp)			2,500 V		
Vibration resistance			10 - 55 Hz, single amplitude : 1.5 mm, Each X · Y · Z axis for 2 hours		
Shock resistance			1,000 m/s², X · Y · Z each axis 3 time		
Storage temperature			-30 ~ 90°C		
Ambient temperature			-20 ~ 50 °C (No Condensation)		
Ambient humidity			30 ~ 85% RH		
Applied Load			Resistive load		
Mounting Specification			DIN Rail & Screw		
Certification			CE cULus		
Weight (g) with heatsink box			Approx. 350 g	Approx. 542 g	Approx. 700 g

Auto Teaching Photo Sensor

PQ series

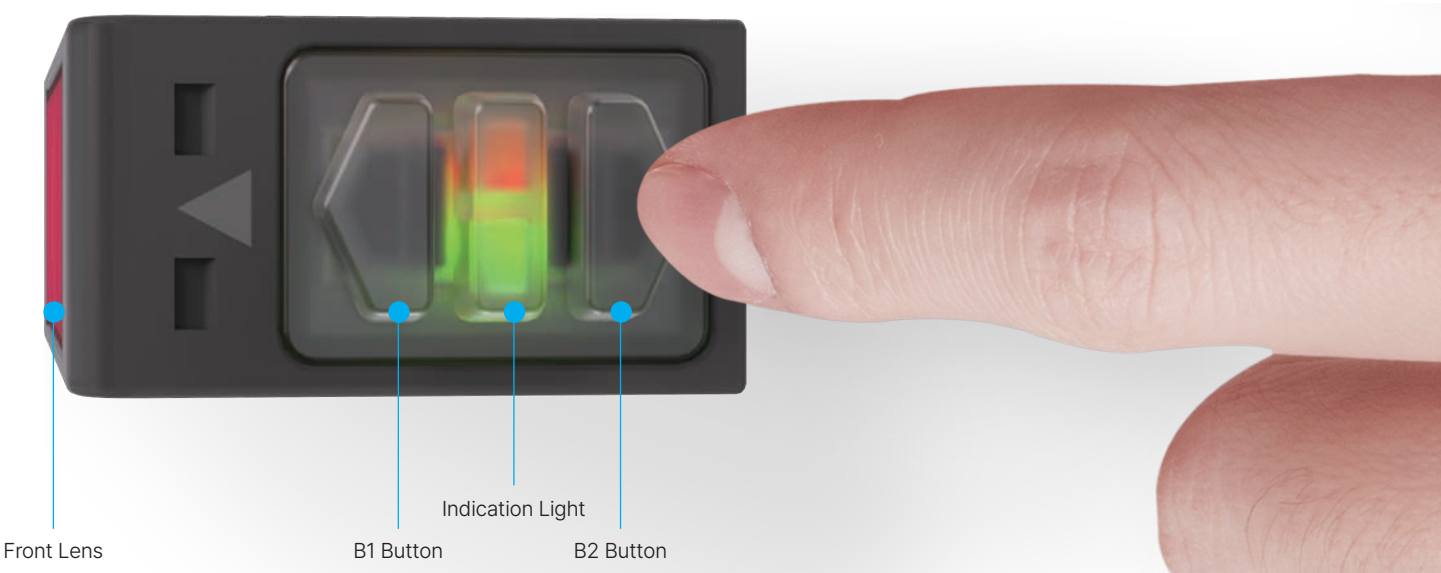
Easy-to-set Auto-teaching

Button Sensitivity Adjustment

AGC
(Unstable Incident Light → Stable Incident Light Auto-Switching)

Connector type

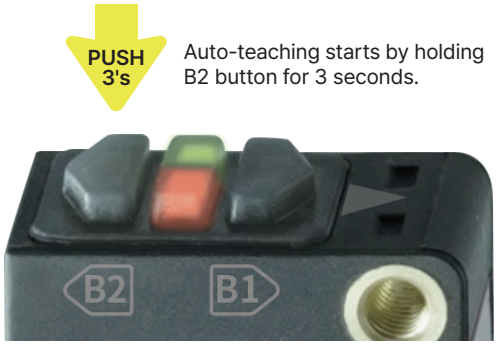
Cable type



Easy-to-set sensitivity by Auto-teaching Function

Complicated initial setting is solved by the Auto-teaching function making users easy to set.

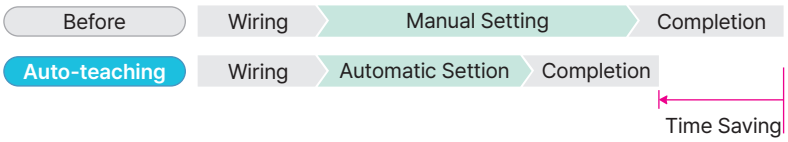
※Auto-teaching function works while the light enters



Auto-teaching starts by holding B2 button for 3 seconds.

•AUTO-TEACHING, THE TIME SAVER.

In the previous models, users had to set the sensitivity by screw bolt.
PQ series sets the sensitivity automatically enabling saving the user's time to set.



•THROUGH BEAM / RETROREFLECTIVE

Holding B2 button for 3 seconds.

•DIFFUSE REFLECTIVE

Step 1
Holding B2 button for 3 seconds when there is a subject.

Step 2
Green, Red LED alternately turn on check.

Step 3
Holding B2 button for 0.5 second when there is no subject.

※It doesn't matter if you change the order.

Easy-to-set Button Type

PQ series is button type which was improved from the previous dial type.

Button Type

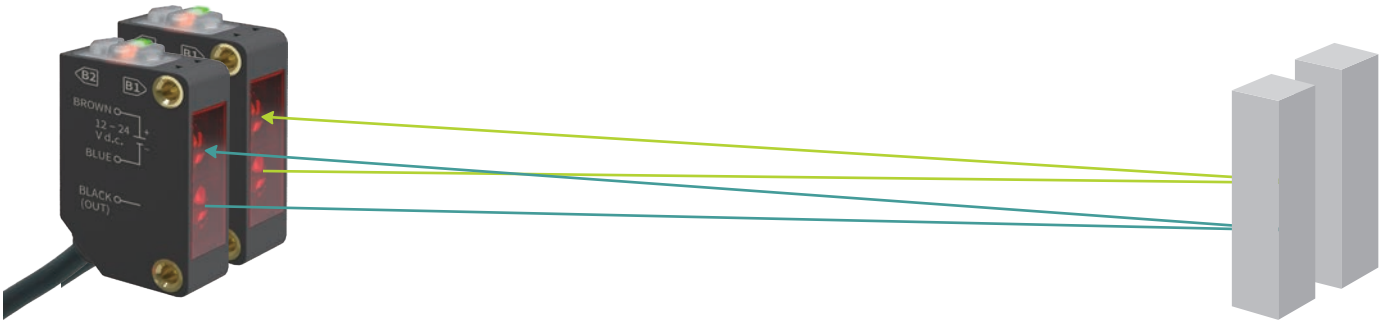
- Improved Design for Comfortable Grip.
- Easy Operation.
- No Deviation in Sensitivity Control.
- Fine Tuning.

Dial Type

- Reguiring Tools for Sensitivity Control.
- Hard for Fine Tuning.
- Deviation might arise in Sensitivity Control.

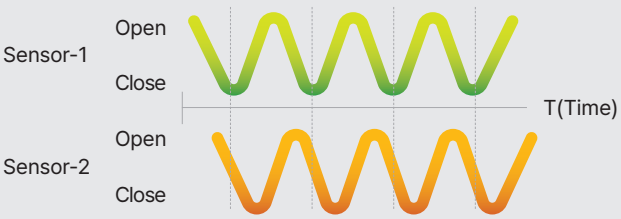
Mutual Interference Protection

PQ series has mutual interference protection function so that each device is not affected by the others.
[Retroreflective(M.S.R.), Diffuse Reflective Only]

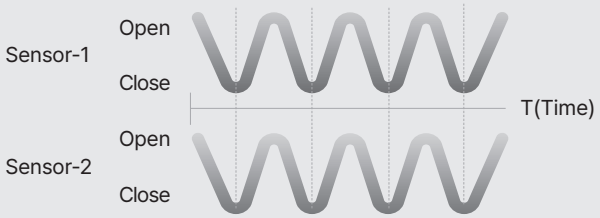


•Floodlighting Cycle

PQ series

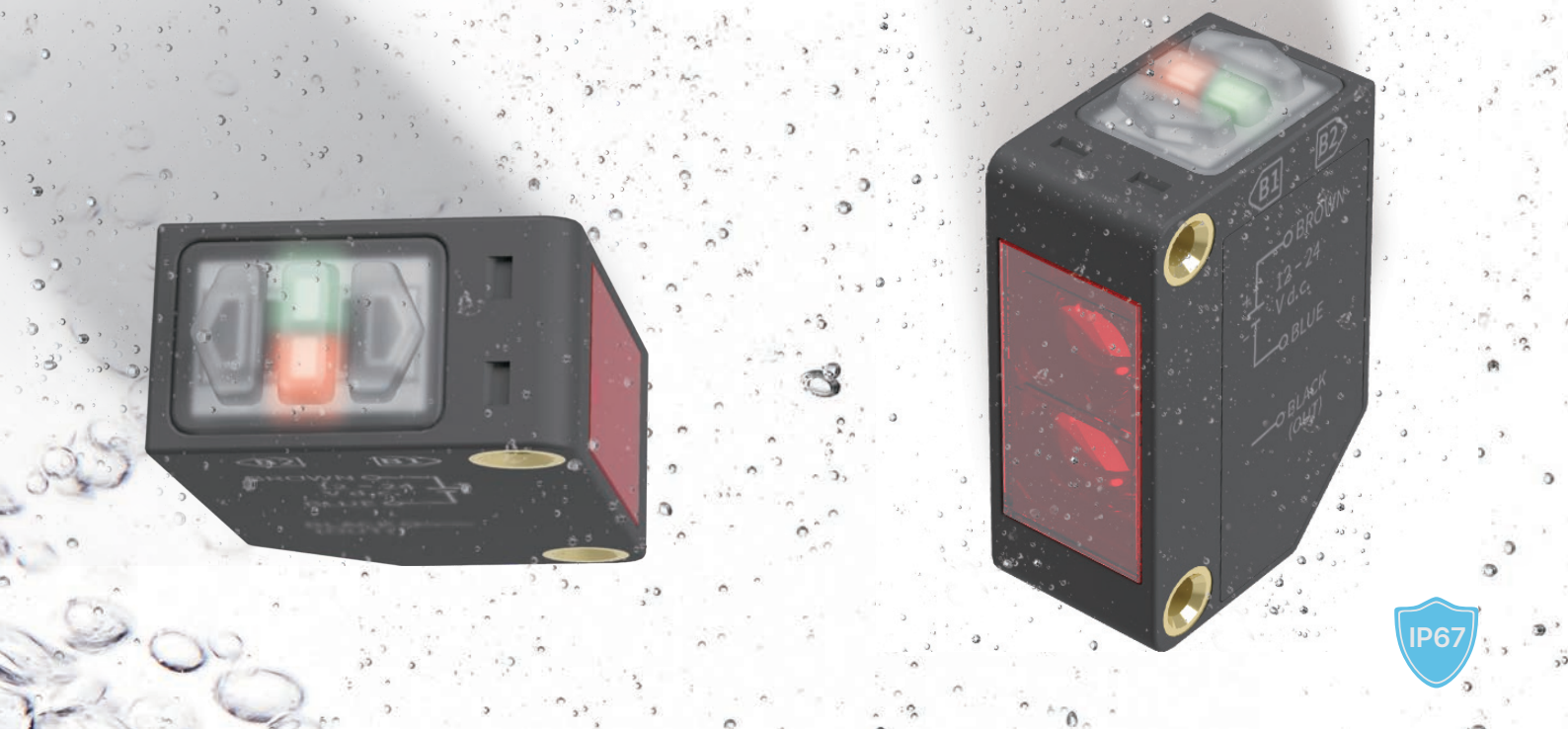


PREVIOUS MODEL



Each device of PQ series(retroreflective type and diffuse reflective type) are not affected by the other devices, so it is possible to install closely.

Smartness that adjusts sensitivity by itself depending on the environment



AGC Function - preventing production line stop

AGC : Automatic Gain Control

When unstable light enters due to external environmental factors such as water, dust, moisture, and oil lasts for more than 20 seconds, AGC(Automatic Gain Control) function is activated turning into stable light enterance. It enables users for convenient maintenance.

Unstable Light Enterance

Stable Light Enterance

•**AGC** (**A**utomatic **G**ain **C**ontrol)

Unstable Light Entrance over 20 Seconds

▼

AGC Turned ON

▼

Automatical Sensitivity Adjustment

▼

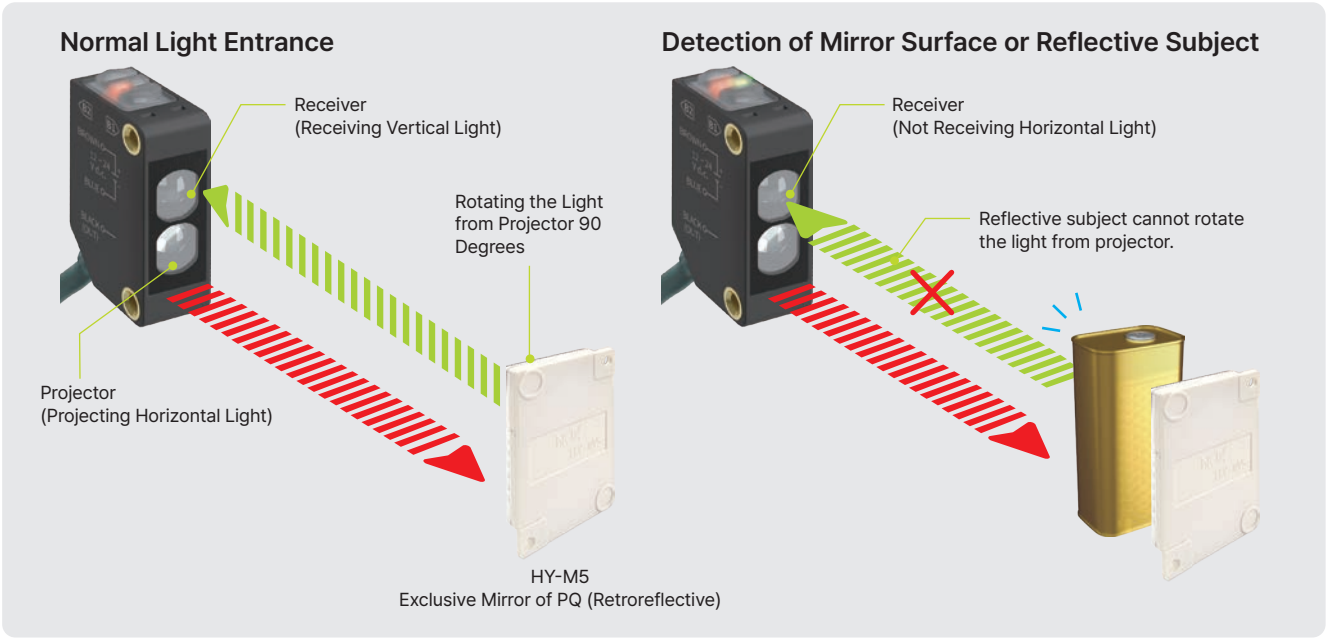
Stable Light Entrance

M.S.R. Function for Precise Detection

M.S.R. : **M**irror **S**urface **R**ejection

M.S.R.(Mirror Surface Rejection) is a function of receiving reflected light from a exclusive mirror.
It enables mirror surface or reflective subject to be detected.
Since it is not affected by the color and material of the subject, it allows stable detection.

• **The Principle of M.S.R.** (Mirror Surface Rejection)



3 Types of Detection Method

PQ series has 3 types of detection method; through beam / retroreflective / diffuse reflective.

• Diffuse
Reflective Type

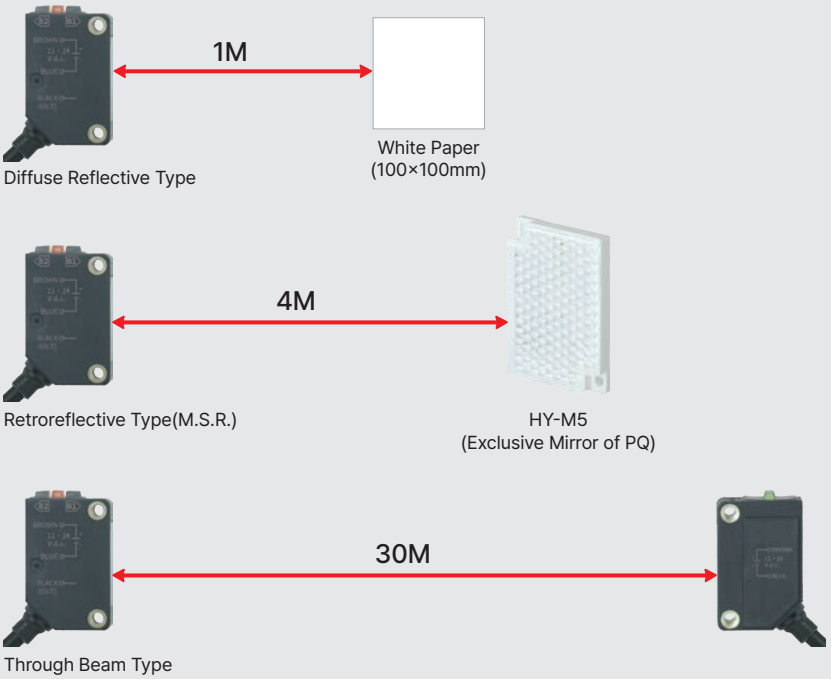
• Retroreflective Type
(M.S.R.)

• Through Beam Type

Receiver Projector

Maximum Sensing Distance

※Long-distance detection is possible
by using a high-performance lens.

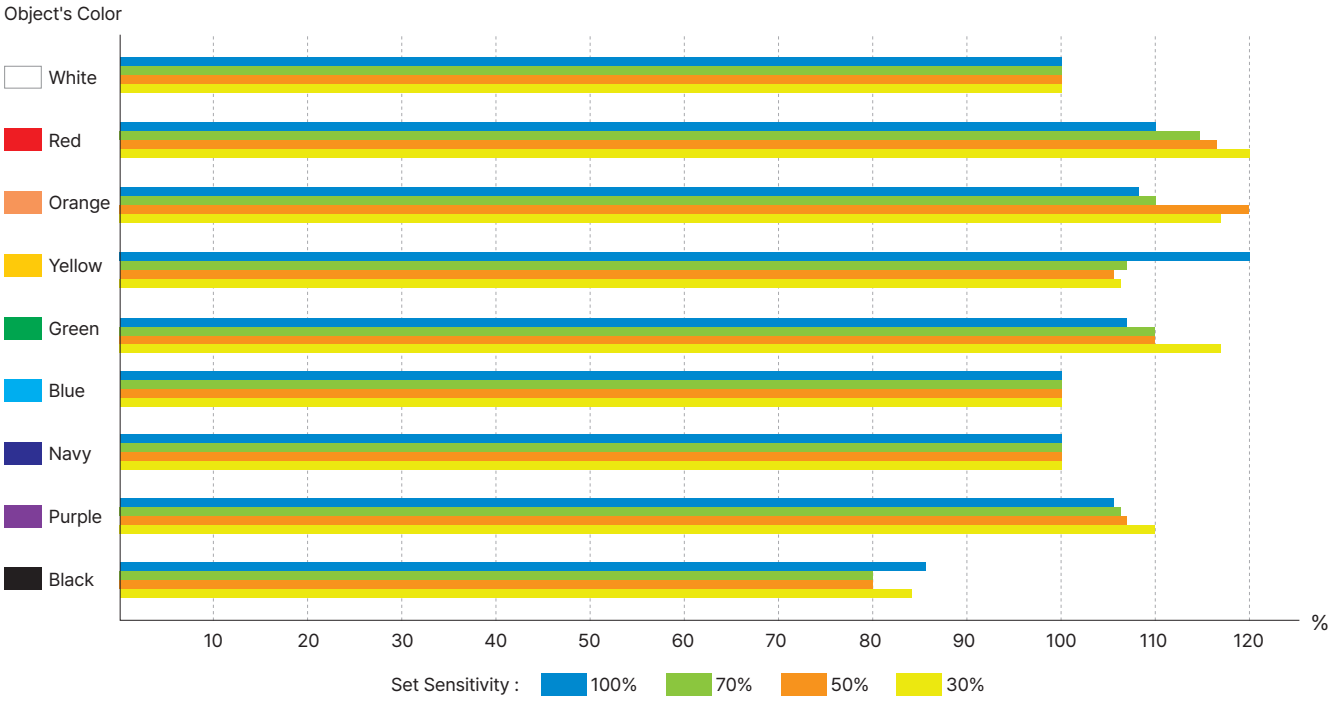


Reliable Detection regardless of Color

Photoelectric sensor cannot often detect subject properly depending on the subject's color.
PQ series is designed to detect subject regardless of its color.

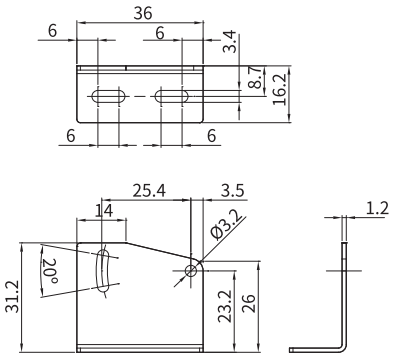
• **Maximum Sensing Distance Depending on Color** (Diffuse Reflective)

Standard : White Paper(100×100mm)

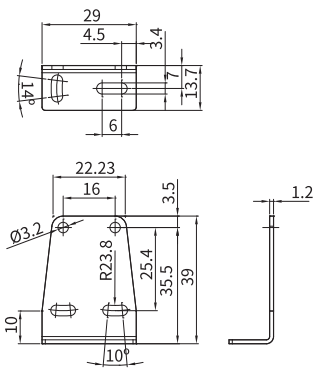


Accessory (Bracket)

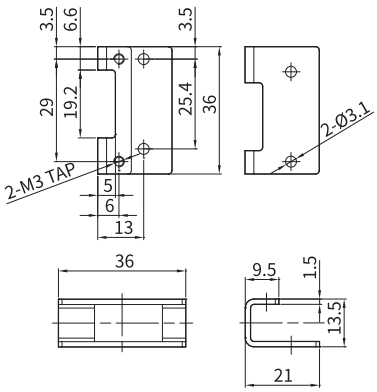
•**BRACKET A**



•**BRACKET B (SEPARATE)**

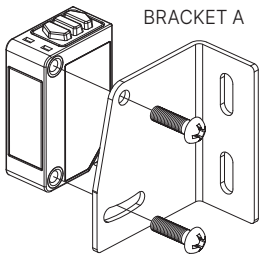


•**BRACKET C (SEPARATE)**



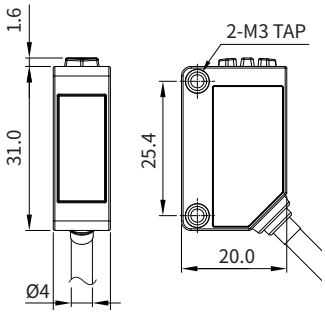
Installation Method / Diagram

•**Installation Method**



Screwing Torque of M3×12mm should be less than 0.5Nm.

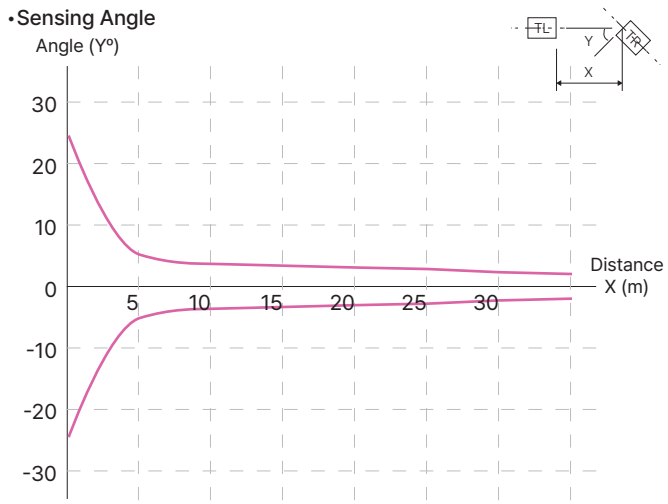
•**DIAGRAM**



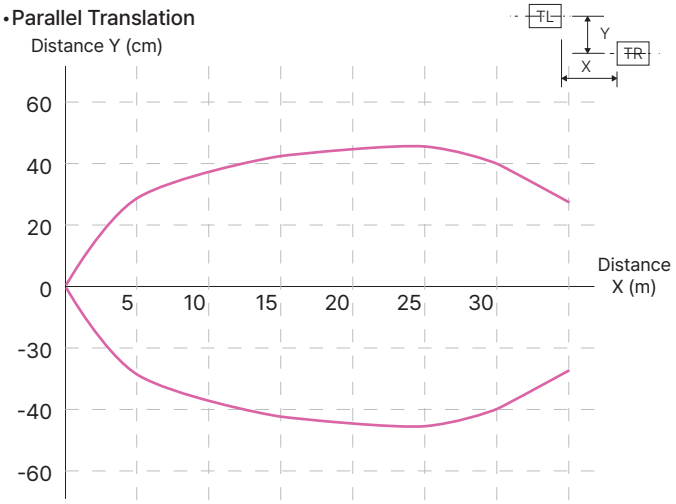
Reference Data for Installation

Through Beam Type

•Sensing Angle

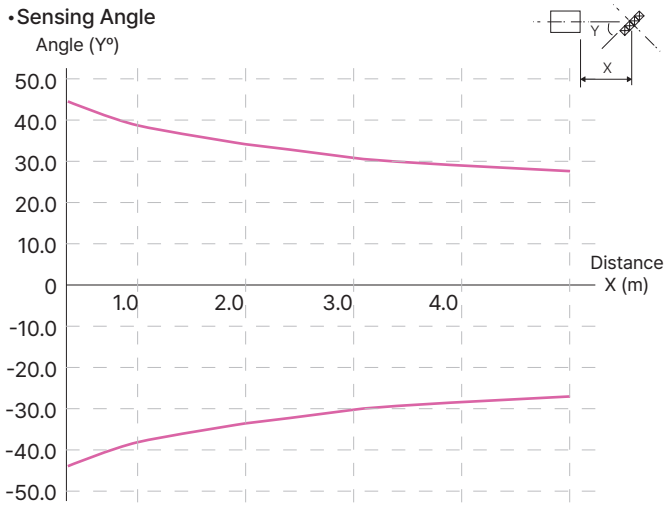


•Parallel Translation

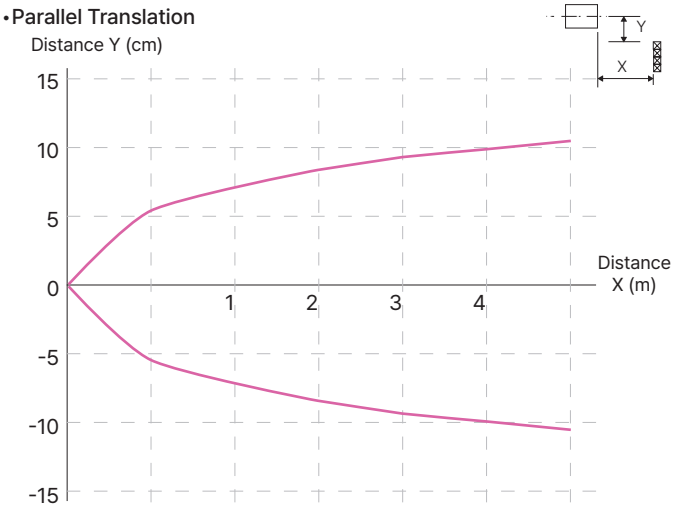


Retroreflective Type(M.S.R.)

•Sensing Angle

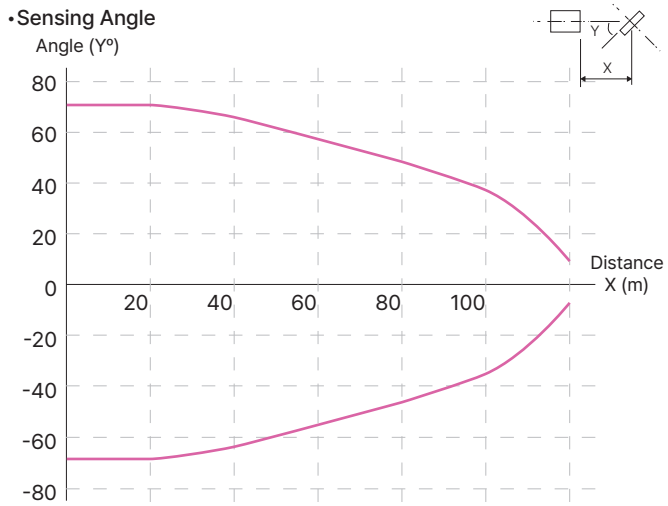


•Parallel Translation

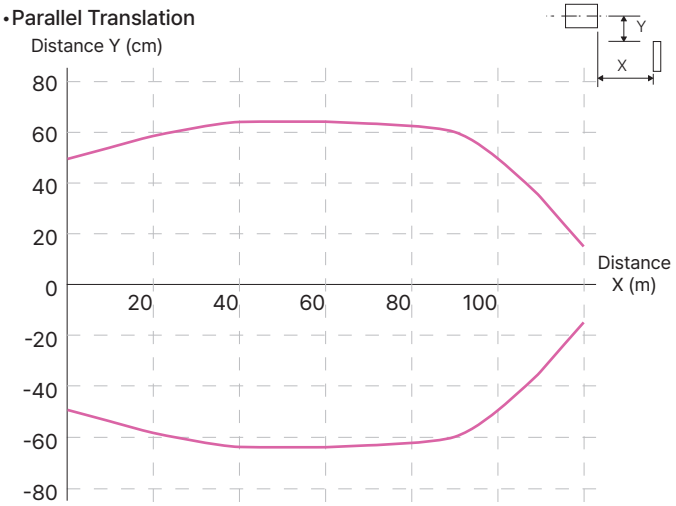


Diffuse Reflective Type

•Sensing Angle



•Parallel Translation



Suffix Code

Model	Code				Content
PQ-	▢	▢	▢	▢	Photoelectric Sensor
Sensing mode / Sensing distance (m)	T	30			Through beam
	M	4			Retroreflective
	R	1			Diffuse-reflective
Output			N		NPN open collector output
			P		PNP open collector output
Option				W	No mark (cable type)
				C	Connector type

Specification

Sensing mode		Through-beam	Retroreflective (M.S.R.)	Diffuse-reflective
Cable type	NPN	PQ-T30NW	PQ-M4NW	PQ-R1NW
	PNP	PQ-T30PW	PQ-M4PW	PQ-R1PW
Connector type	NPN	PQ-T30NC	PQ-M4NC	PQ-R1NC
	PNP	PQ-T30PC	PQ-M4PC	PQ-R1PC
Sensing distance		30 m	0.1 ~ 4 m	1 m
Hysteresis distance		-		20% or less of detection distance
Detecting object		Ø12 mm or more (Opaque)	Ø60 mm more (Opaque)	White paper (100 × 100 mm)
Light source (wavelength)		Infrared LED (855 nm)	Red LED (660 nm)	Infrared LED (855 nm)
Current consumption		Emitter: max. 15 mA, Receiver: max. 20 mA	Max. 30 mA	
Power voltage		12 - 24 V d.c. Class 2 ±10 % (Ripple max. 10 %)		
Control output		▪ NPN or PNP open collector output		
		▪ Load current - max. 100 mA (26.4 V d.c. standard)		
		▪ Residual voltage - NPN: max. 1.5 V, PNP: max. 1.5 V		
Operation mode		Light ON / Dark ON button switch type		
Indicator light		▪ Control output indicator light : Red LED ▪ Stability indicator light : Green LED (However, the green LED of the through-type emitter is a power indicator)		
Auto teaching	Through-beam	If the B2 (⬭) button is pressed for more than 3 seconds in the presence of a detection object, the sensitivity is automatically set.		
	Retroreflective (M.S.R.)			
	Diffuse reflective	1) In the presence of a detection object (stable light incident) 2) Release the B2 (⬭) button after pressing it for more than 3 seconds. 3) Check the green + red LED cross blinking (try again if either side is not blinking) 4) Press the B2 (⬭) button once after removing the detected object (0.5 seconds)		
AGC		After 20 seconds of unstable light entering on button locked state to stable light entering state.		
Sensitivity adjustment		B1 increases the sensitivity and B2 decreases the sensitivity		
Protection circuit	Common	Power reverse connection protection, Output short-circuit over-current protection, Output reverse connection protection, Output short-circuit alarm		
	Individual	-	Mutual interference prevention function	
Response time		Max. 1 ms		
Insulation Resistance		More than 20 MΩ (500 V d.c. mega)		
Noise immunity		Square wave noise by noise simulator (pulse width 1μs) ±240 V		
Dielectric strength		1,000 V a.c. (50/60 Hz for 1 minute)		
Vibration resistance		10-55Hz, sweep: 1.5mm, X·Y·Z 2 in each direction for 2 hours		
Shock resistance		500 m/s², X·Y·Z each direction 3 times		
Ambient illumination		Sunlight : max. 11,000 lx / Incandescent: max 3,000 lx		
Ambient temperature range		Operating temperature : -20 ~ +55 °C / During storage : -40 ~ +70°C (Without condensation or icing)		
Ambient humidity		35 ~ 85 % RH (Without condensation or icing)		
Pollution degree		3 rating		
Protection		IP67 (IEC standard)		
Approval		CE cULus RoHS2		
Weight (Packing)	Cable type	100 g (160 g)	55 g (115 g)	55 g (100 g)
	Connector type	20 g (80 g)	10 g (70 g)	10 g (55 g)
Texture	Case	NYLON		
	Display	PC		
	Lens	PMMA		
Accessory	Common	Instructions manual, bracket A, bolt (M3 X 12 mm)		
	Individual	-	Mirror(HY-M5)	-
Connection method	Cable type	Number of wires - 3P, Outer diameter - 4 Ø, Length - 2 m (however, the emiiter of through-beam type has 2P)		
	Connector type	M8 Connector Wiring (M8 relay cable sold separately)		

Auto Teaching Photo Sensor

PEA series

Auto Teaching Easy Setting

Button Sensitivity Adjustment

AGC
(Unstable Incident Light → Stable Incident Light Auto-Switching)

Easy-to-set sensitivity by Auto-teaching Function

Complicated initial setting is solved by the Auto-teaching function making users easy to set.

※Auto-teaching function works while the light enters

Auto-teaching starts by holding B2 button for 3 seconds.

PUSH 3's

•AUTO-TEACHING, THE TIME SAVER.

In the previous models, users had to set the sensitivity by screw bolt.
PEA series sets the sensitivity automatically enabling saving the user's time to set.

Before	Wiring	Manual Setting	Completion	
Auto-teaching	Wiring	Automatic Settion	Completion	Time Saving

•THROUGH BEAM / RETROREFLECTIVE

Holding B2 button for 3 seconds.

•DIFFUSE REFLECTIVE

Step 1
Holding B2 button for 3 seconds when there is a subject.

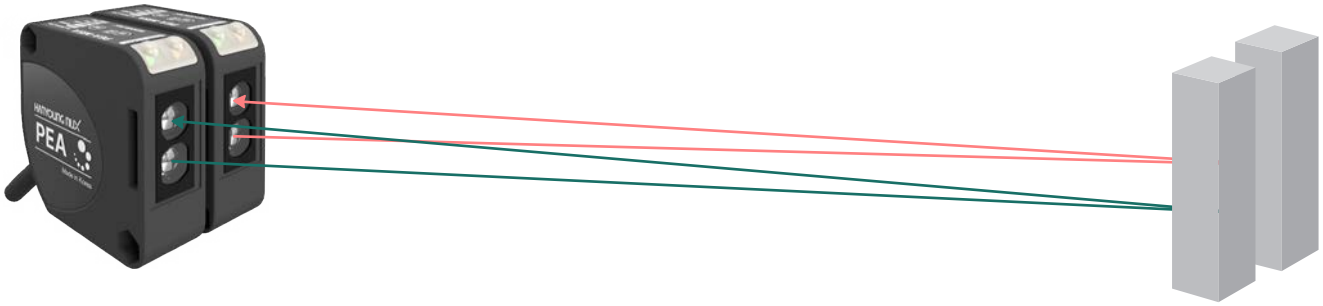
Step 2
Green, Red LED alternately turn on check.

Step 3
Holding B2 button for 0.5 second when there is no subject.

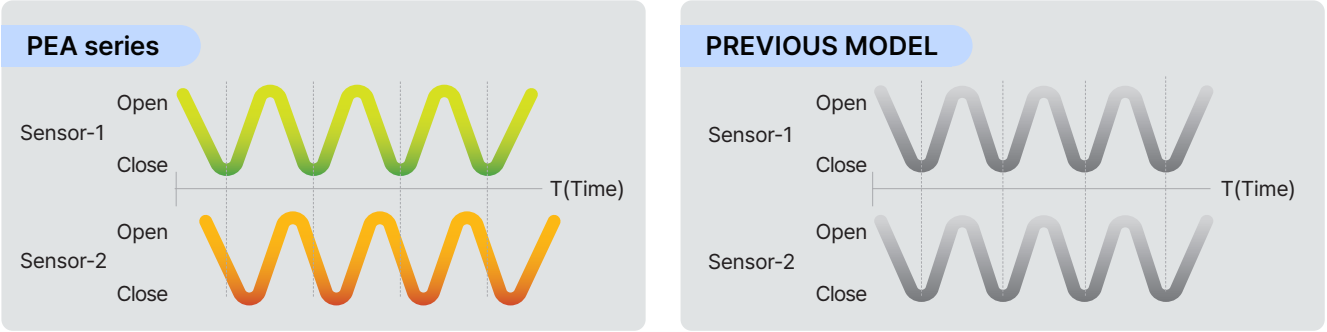
※It doesn't matter if you change the order.

Mutual interference prevention function ensures stable detection even when sensors are in close contact

Built-in mutual interference prevention function, enabling stable detection without being affected by adjacent sensors.
[Retroreflective(M.S.R.), Diffuse Reflective Only]



•Floodlighting Cycle



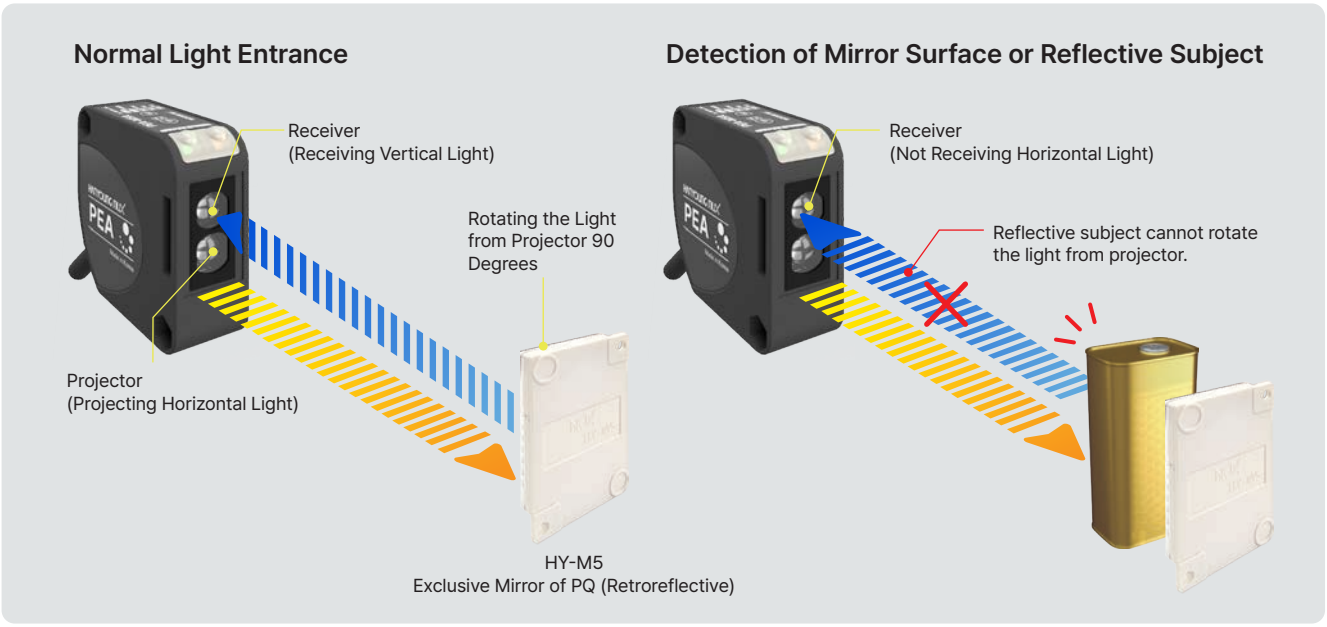
Each device of PEA series(retroreflective type and diffuse reflective type) are not affected by the other devices, so it is possible to install closely.

M.S.R. Function for Precise Detection

M.S.R. : **M**irror **S**urface **R**ejection

M.S.R.(Mirror Surface Rejection) is a function of receiving reflected light from a exclusive mirror.
It enables mirror surface or reflective subject to be detected.
Since it is not affected by the color and material of the subject, it allows stable detection.

•The Principle of M.S.R. (Mirror Surface Rejection)

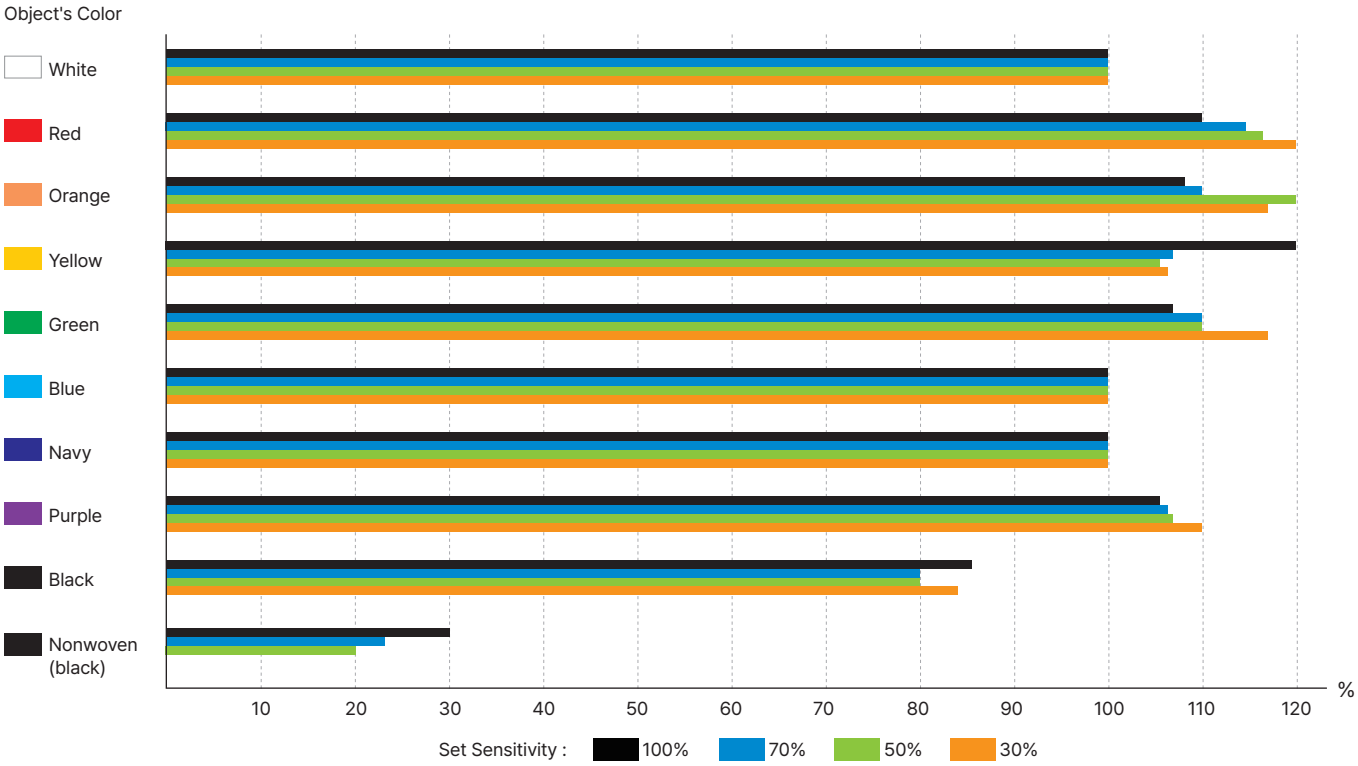


Reliable Detection regardless of Color

Photoelectric sensor cannot often detect subject properly depending on the subject's color.
PEA series is designed to detect subject regardless of its color.

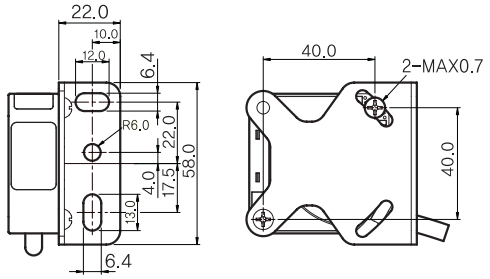
• **Maximum Sensing Distance Depending on Color** (Diffuse Reflective)

Standard : White Paper(100×100mm)

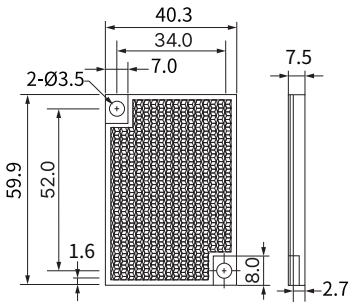


Accessory (Bracket)

•**BRACKET**

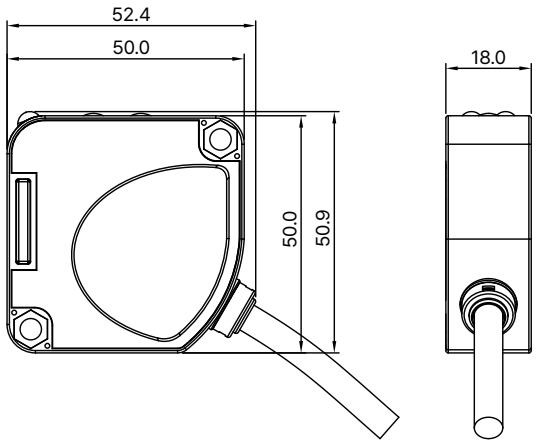


•**Reflecting plate (HY-M5)**



Dimension

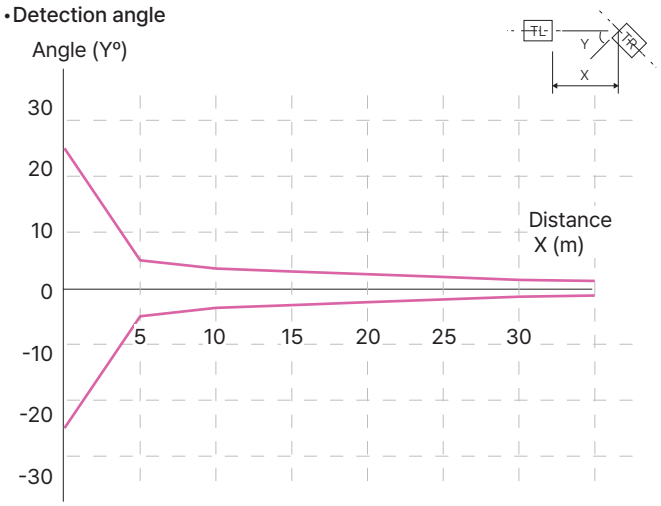
[unit : mm]



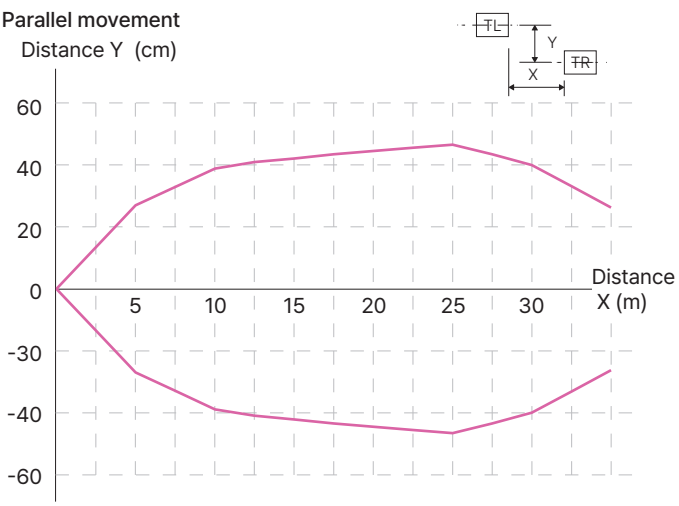
PEA series reference data

Through Beam Type

•Detection angle

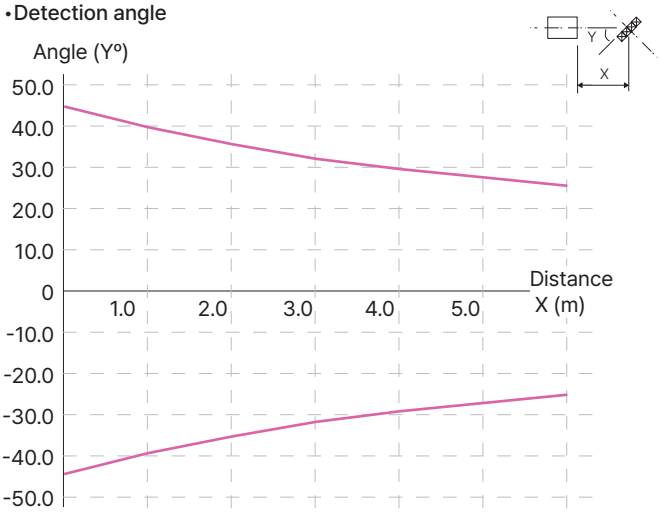


•Parallel movement

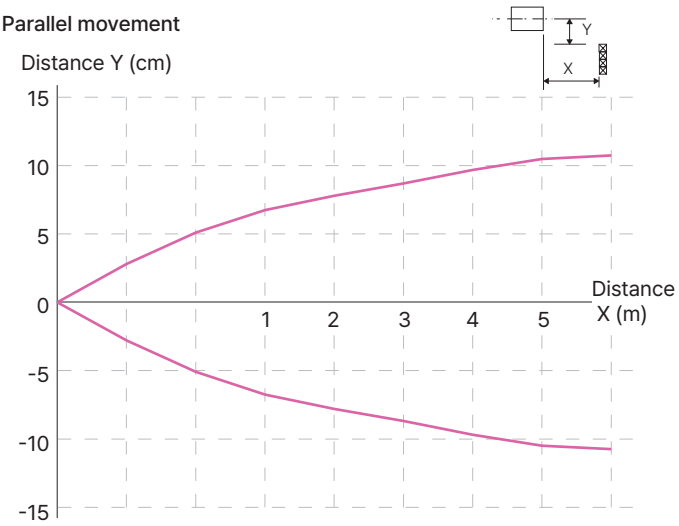


Retroreflective Type (MSR)

•Detection angle

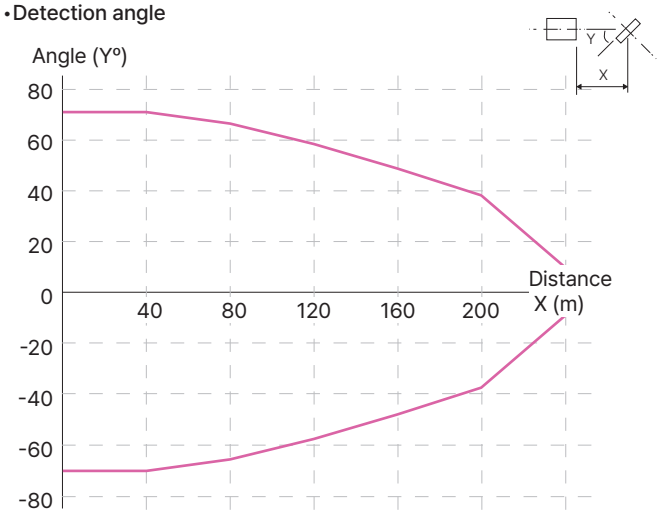


•Parallel movement

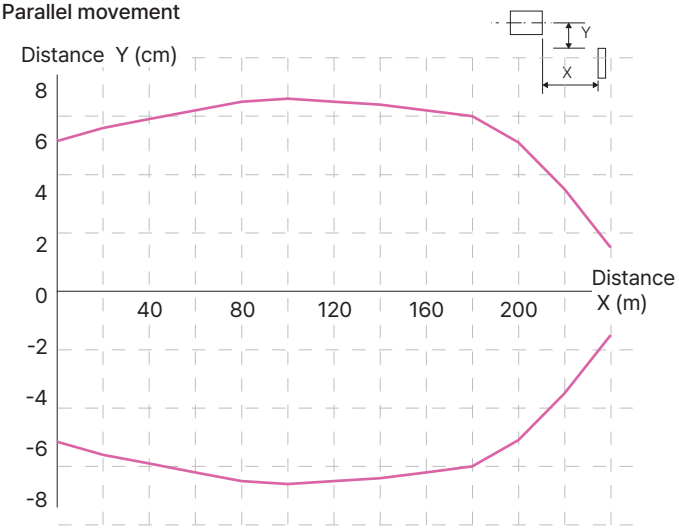


Diffuse Reflective Type

•Detection angle



•Parallel movement



Suffix code

Model	Code			Content	
PEA-	▢	▢	▢	PEA series	
Sensing mode	T			Through-beam	
	M			Retroreflective	
	R			Diffuse-reflective	
Sensing distance		30		30 m (Through-beam)	
		5		5 m (Retroreflective)	
		2		2 m (Diffuse-reflective)	
Control output			A	Relay contact output	AC/DC power
			N	NPN Open collector output	DC power
			P	PNP Open collector output	DC power

Specifications

Sensing mode		Through-beam	Retroreflective (M.S.R.)	Diffuse-reflective
Model	Relay output (AC/DC power)	PEA-T30A	PEA-M5A	PEA-R2A
	NPN Open collector output (DC power)	PEA-T30N	PEA-M5N	PEA-R2N
	PNP Open collector output (DC power)	PEA-T30P	PEA-M5P	PEA-R2P
Sensing distance		30 m	0.1 ~ 5 m	2 m
Hysteresis distance		-		20% or less of detection distance
Detecting object		Ø12 mm more (Opaque)	Ø60 mm more (Opaque)	White paper (100 × 100 mm)
Light source (wavelength)		Infrared light emitting diode (855 nm)	Red light emitting diode (660 nm)	Infrared light emitting diode (855 nm)
Power voltage	Relay output (AC/DC power)	24 - 240 V a.c. ±10 % or 24 - 240 V d.c. ±10% (Ripple max. 10 %)		
	Open collector output (DC power)	12 - 24 V d.c. Class 2 ± 10% (Ripple max. 10 %)		
Power consumption	Relay output (AC/DC power)	▪ Transmitter Max. 1 VA ▪ Receiver Max. 2VA	Max. 3 VA	
	Open collector output (DC power)	▪ Transmitter Max. 15 mA ▪ Receiver Max. 20 mA	Max. 30 mA	
Contro output	Relay output (AC/DC power)	▪ Relay contact output (Contact configuration 1a1b) ▪ Electrical life : Min 10 cycles ▪ Contact Capacity : 30 V d.c. 5A / 250 V a.c. 5 A with resistive load ▪ Mechanical life : Min. 50 million cycles (Opening/closing frequency 180 times/min)		
	Open collector output(DC power)	▪ NPN or PNP open collector output ▪ Load current - Max. 100 mA (26.4 V d.c. standard) ▪ Residual voltage - Max. 1.5 V		
Operation mode		Light ON / Dark ON button switch type		
Indicator light		▪ Control output indicator light : Orange LED ▪ Stability indicator light : Green LED (However, the Green LED of the through-type emitter is a power indicator)		
Auto teaching	Through-beam	If the B2 button is pressed for more than 3 seconds in the presence of a detection object, the sensitivity is automatically set.		
	Retroreflective (M.S.R.)			
	Diffuse- reflective	① In the presence of a detection object (stable light incident) ② Release the B2 button after pressing it for more than 3 seconds. ③ Check the Green + Orange LED cross blinking (try again if either side is not blinking) ④ Press the B2 button once after removing the detected object (0.5 seconds)		
AGC		After 20 seconds of unstable light entering on button locked state to stable light entering state.		
Sensitivity adjustment		B1 increases the sensitivity and B2 decreases the sensitivity		
Protection circuit	Common	-	Mutual interference prevention function	
	Open collector output (DC power)	▪ Power reverse connection protection ▪ Output short-circuit over-current protection ▪ Output reverse connection protection ▪ Output short-circuit alarm		
Response time	Relay output (AC/DC power)	Max. 20 ms		
	Open collector output (DC power)	Max. 1 ms		
Insulation Resistance		More than 20 MΩ (500 V d.c. mega)		
Dielectric strength		1,000 V a.c. (50/60 Hz for 1 minute)		
Vibration resistance		▪ 10-55Hz, sweep: 1.5mm ▪ X·Y·Z 2 in each direction for 2 hours		
Shock resistance		▪ 500 m/s² ▪ X·Y·Z each direction 3 times		
Ambient illumination		▪ Sunlight : max. 11,000 lx ▪ Incandescent: max 3,000 lx		
Ambient temperature range		▪ Operating temperature : -20 ~ +55 °C ▪ During storage : -40 ~ +70°C (Without condensation or icing)		
Ambient humidity		35 ~ 85 % RH (Without condensation or icing)		
Protection		IP67 (IEC standard)		
Weight (Packing)	Relay output (AC/DC power)	265 g (440 g)	150 g (280 g)	145 g (260 g)
	Open collector output (DC power)	255 g (430 g)	140 g (270 g)	140 g (255 g)
Texture	Case	PC		
	Display	PC		
	Lens	PMMA		
Accessory	Common	Instructions manual, bracket, bolt (M3 X 12 mm)		
	Accessory	-	Mirror (HY-M5)	-
Connection method		Cable type		
Wiring specification	Relay output (AC/DC power)	Ø 6 mm, Through-beam type transmitter : 2-core, Through-beam type receiver Mirror-reflection type receiver, Diffuse-reflective type receiver : 5-core, 2 m		
	Open collector output (DC power)	Ø 6 mm, Through-beam type transmitter : 2-core, Through-beam type receiver, Mirror-reflection type receiver, Diffuse-reflective type receiver : 5-core, 2 m		
Specifications of the small-sized cable		▪ AWG20 (0.18 mm, 21 strands) ▪ Insulation outer diameter : 1.5 mm		

Round type photo sensor

PRA series

Wide viewing angle LED

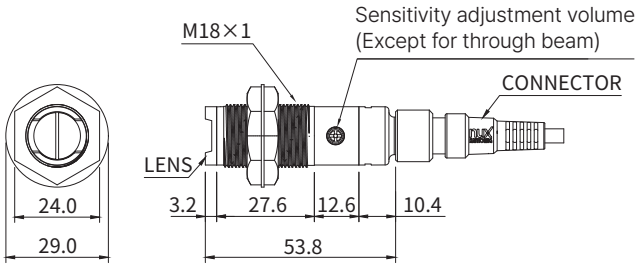
Wiring outlet/connector

Metal/Plastic Case

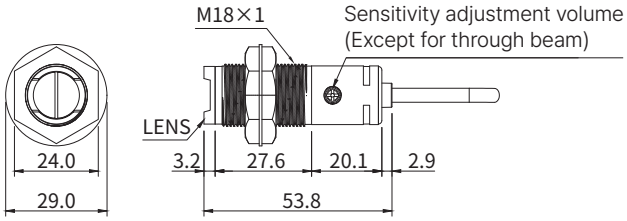
Dimension

•Connector type (C)

[unit : mm]

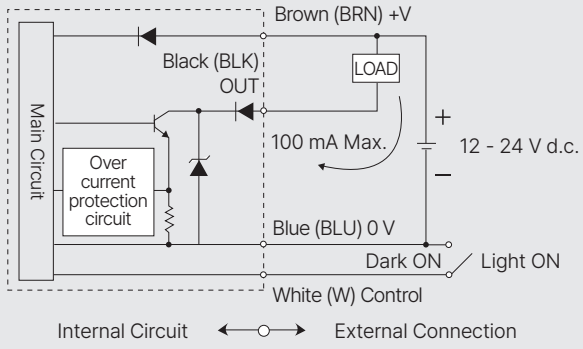


•Cable Type (W)

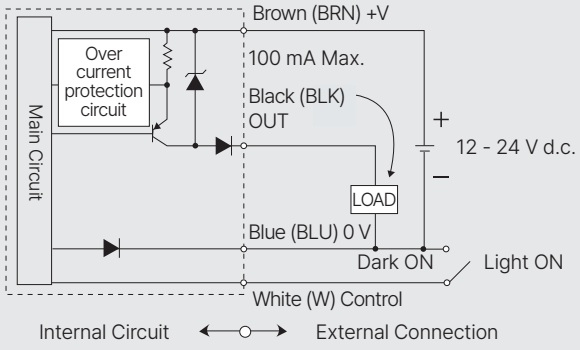


Output Circuit

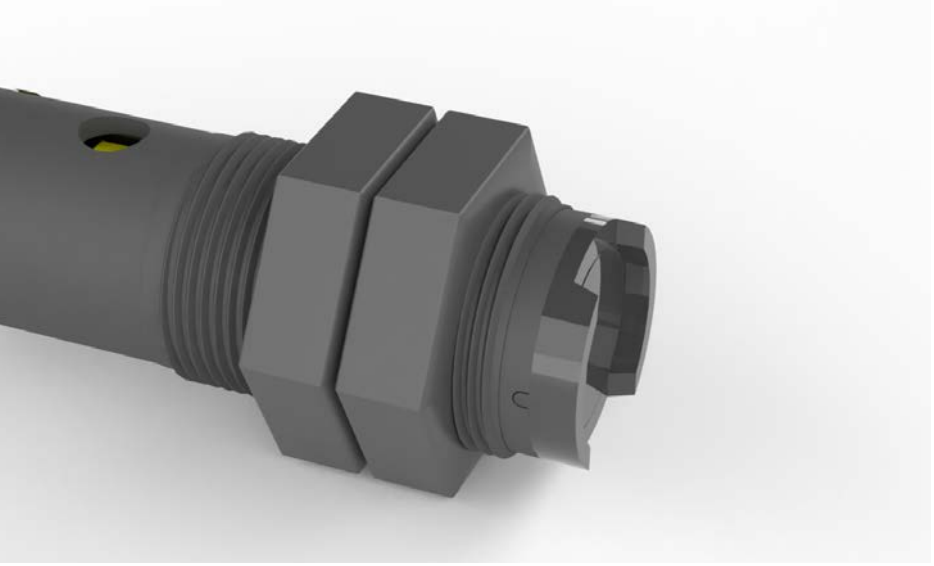
•NPN TYPE

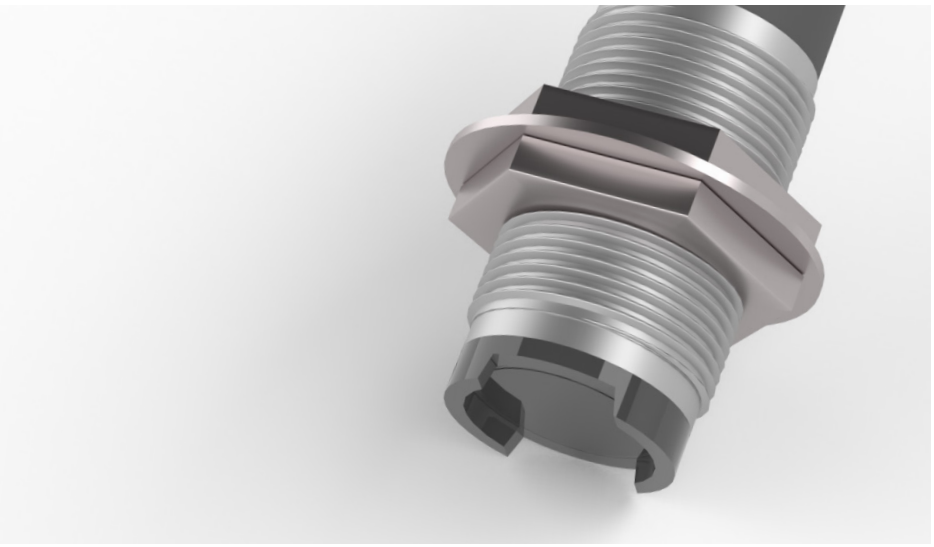


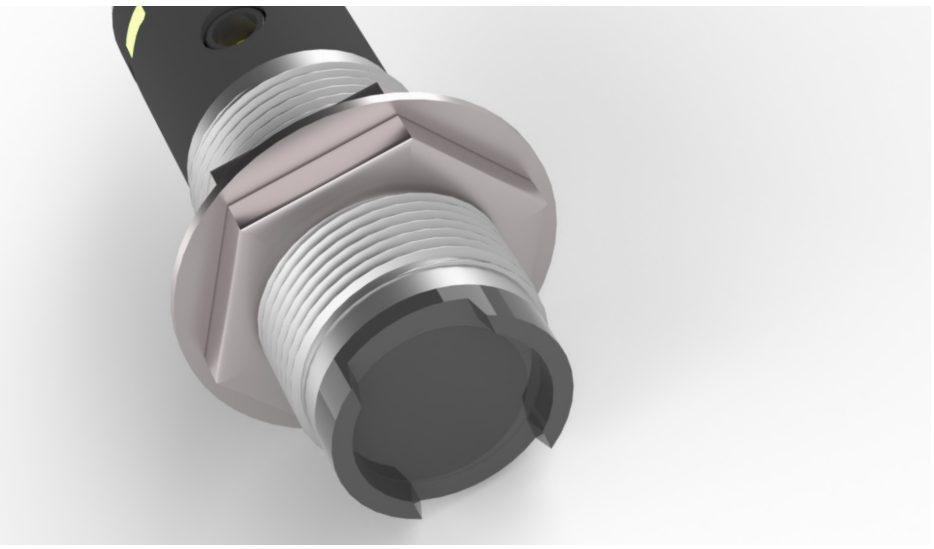
•PNP TYPE

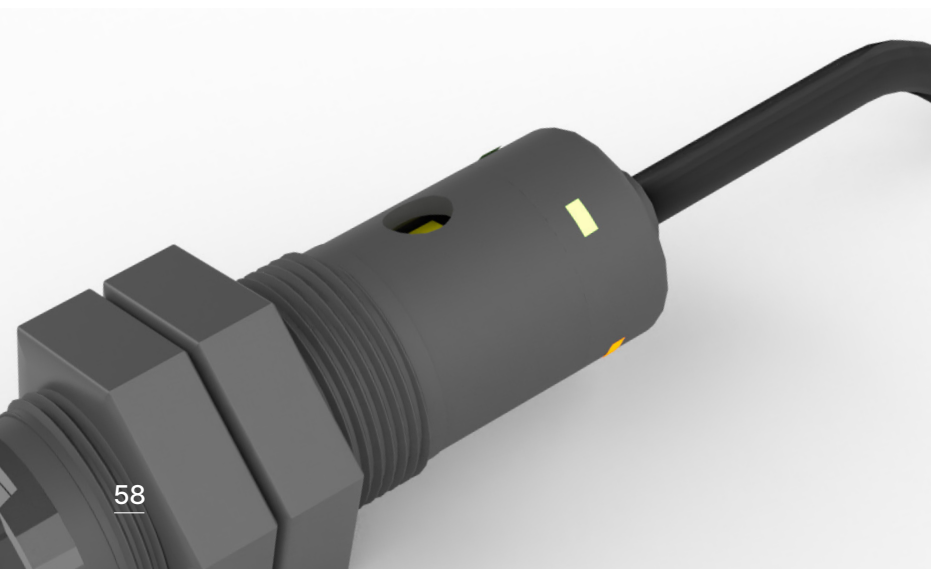


※ Limited to mirror reflection type and diffuse reflection type of through beam type (however, through beam type only has power input (12 - 24 V d.c.).









PRA series

HANYOUNG NUX

Metal & Plastic Case Selectable Installation Space Saved

- Improved visibility with wide viewing angle LED
- Through beam, Retroreflective, Diffuse reflective Type
- Wiring-out type, connector type connection
- Metal & Plastic Case Selectable

Suffix code

Model	Code					Content
PRA-	▢	▢	▢	▢	▢	Round type photo sensor
Sensing mode	T					Through-beam
	M					Diffuse-reflective
	R					Retroreflective
Sensing distance		20				20 m (Through-beam)
		4				4 m (Retroreflective (M.S.R.)
		1				1 m (Diffuse-reflective)
Control output			N			NPN Open collector output
			P			PNP Open collector output
Connection method				W		Cable Type
				C		Connector Type
Case texture					M	Metal : Chrome plating
					P	Plastic

Specification

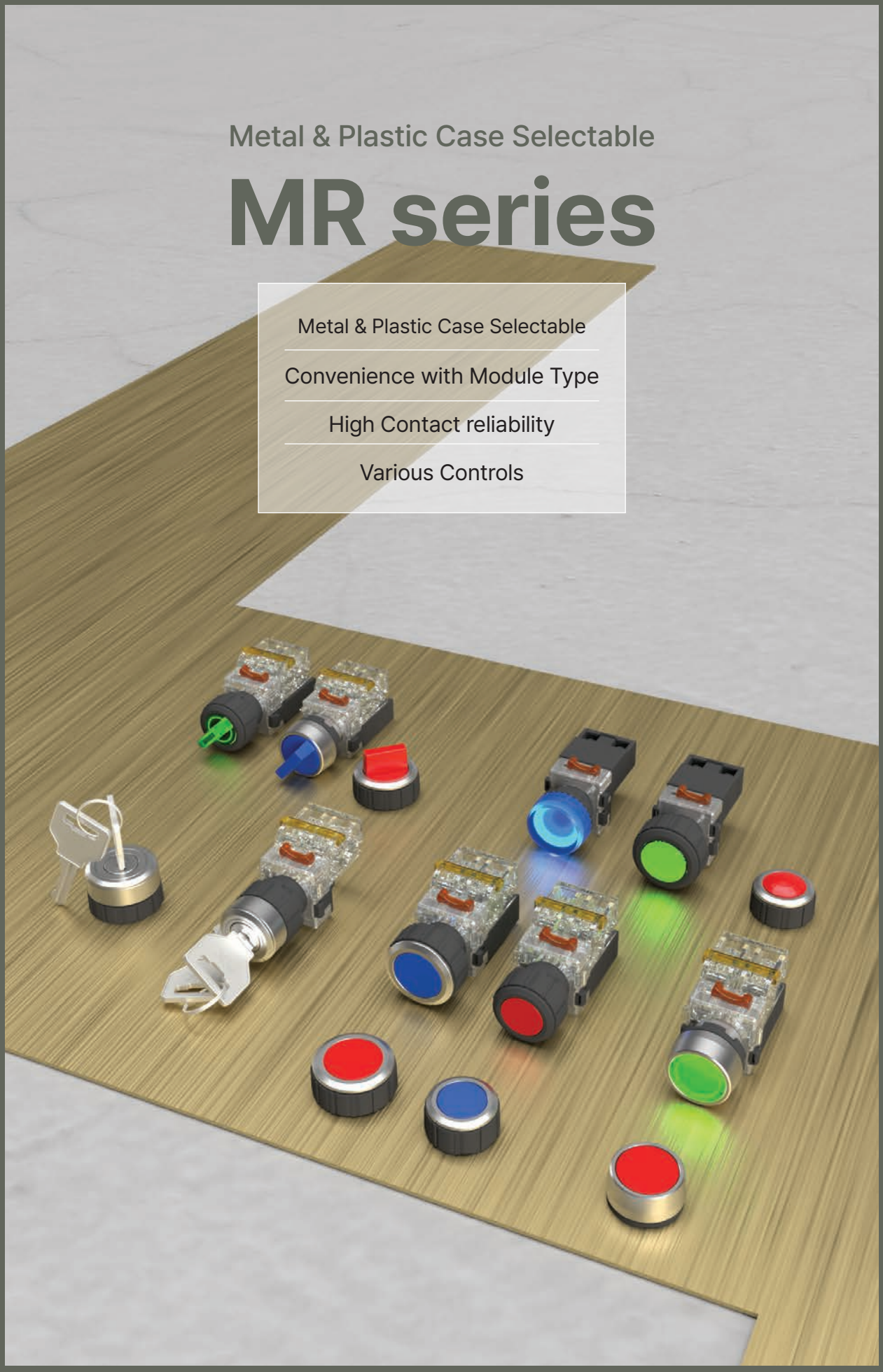
Division		Through-beam	Retroreflective (M.S.R.)	Diffuse-reflective
Control output	NPN	PRA-T20N	PRA-M4N	PRA-R1N
	PNP	PRA-T20P	PRA-M4P	PRA-R1P
Sensing distance		20 m	0.3 ~ 4 m	1 m
Hysteresis distance		-		Less than 20% of the sensing range
Detecting object		Ø10mm more (Opaque)	Ø10mm more (Opaque)	Ø10mm more (Opaque)
light source (emission wavelength)		IR LED (855 nm)		
Power voltage		12 - 24 V d.c. Class 2 ± 10% Ripple (p-p) max. 10 %		
Current consumption		Emitter : 15 mA, Receiver : 20 mA	Max. 30 mA	
Control output		•NPN or PNP open collector output •Load current - max. 100 mA (26.4 V d.c. standard) •Residual voltage - NPN : max. 1.5 V, PNP : max. 1.5 V		
Operation mode		Light ON / Dark ON (By white cable) ※ In terms of through-beam type, receiver only		
Indicator light		Control output light : Orange LED, Stability light : Green LED (Diffuse-reflective of Through-beam green LED is power indicator)		
Sensitivity adjustment		V/R adjustment		
Protective circuit	Common	Power reverse connection protection, Output short-circuit over-current protection, Output reverse connection protection, Output short-circuit alarm		
	Individual	-	Mutual interference prevention function	
Response time		1 ms or less		
Insulation Resistance		More than 20 MΩ (500 V d.c. mega)		
Withstand Voltage		1,000 V a.c. (50/60 Hz for 1 minute)		
Noise immunity		Square Wave Noise (Pulse Width 1 μs) ±240V D.C. induced by Noise Simulator		
Vibration resistance		10 ~ 55 Hz, sweep : 1.5 mm, X·Y·Z 2 in each direction for 2 hours		
Shock resistance		500 m/s², X·Y·Z each direction 3 times		
Ambient illumination		Sunlight : max. 11,000 Lux, Incandescent: max 3,000 Lux		
Ambient temperature range		Operating temperature : -20 ~ +55 °C During storage : -40 ~ +70°C (Without condensation or icing)		
Ambient humidity		35 ~ 85 % RH (Without condensation or icing)		
Protection		IP67 (IEC standard)		
Texture	Case	•Metal : Brass chrome plated •Plastic : Plastic		
	Display, Lens	PC		
Accessory	Common	• Metal : 2Fixing nut, 1 washer, V / R adjustment screwdriver • Plastic : 2Fixing nut, V / R adjustment screwdriver		
	Individual	-	Mirror (HY-M5)	-
Weight	Cable Type	• Metal : Approx 165 g (195 g) • Plastic : Approx 120 g (175 g)	• Metal : Approx 85 g (195 g) • Plastic : Approx 65 g (175 g)	• Metal : Approx85g(115g) • Plastic : Approx65g(95g)
	Connector Type	• Metal : Approx80 g (110 g) • Plastic : Approx35 g (65 g)	• Metal : Approx45 g (155 g) • Plastic : Approx20 g (130 g)	• Metal : Approx45 g (75 g) • Plastic : Approx20 g (50 g)
Connection method	Cable Type	Number of wires - 4P, Outer diameter - Ø 4 mmlength - 2 mm (through-beam type is 2P)		
	Connector Type	M12 connector wiring (M12 Repeater cable sold separately)		

· Please note that the sensing distance may vary depending on the size of the object to be detected, its surface condition, and whether or not it is glossy

Metal & Plastic Case Selectable

MR series

- Metal & Plastic Case Selectable
- Convenience with Module Type
- High Contact reliability
- Various Controls



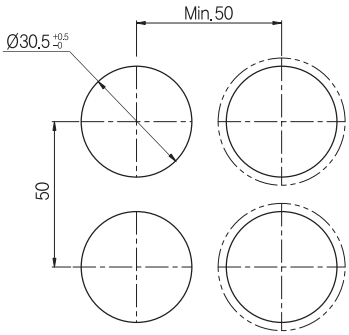
Specification

Model		Content
Contact configuration		1a1b contact unit
Contact operation		Snap-action
Installation panel thickness		7 mm (excluding accessories)
Material	Contact material	AgSnO2
	Contact body material	Polycarbonate (PC)
Mechanical	Tightening torque	Mounting nut : 1.96 N·m max, Terminal bolt: 0.78 N·m max
	Operating distance	5 mm ±0.2
	Recoil time	3 ms or less
	Operating part operation life	Button : more than 500,000 times, Selector : more than 200,000 times
Electrical	Withstand voltage	2,000 V a.c. 50/60 Hz 1 minute
	Contact contact resistance	50 MΩ or less (at the time of shipment)
	Insulation Resistance	100 MΩ or more 500 V d.c.
	Rated current	6A 250 V a.c.
	Minimum load current	5 mA 24 V d.c., 10 mA 110 V d.c.
	Electrical life	More than 200,000 times
Light source	Power supply voltage	100 - 240 V a.c. (LED Condenser voltage drop)
		380 V a.c. (LED Condenser voltage drop)
		12 - 24 V d.c. / a.c. (LED Resistance voltage drop)
Buzzer volume		About 90dB
Environmental condition	Ambient temperature	-20 ~ 55 °C
	Ambient humidity	35 ~ 85 % RH
	Storage temperature	-40 ~ 85 °C
	Shock resistance	300 m/s² pulse period 11 ms
	Vibration resistance	300 m/s², 10 Hz - 55 Hz, amplitude 0.75 mm (within 1 ms)

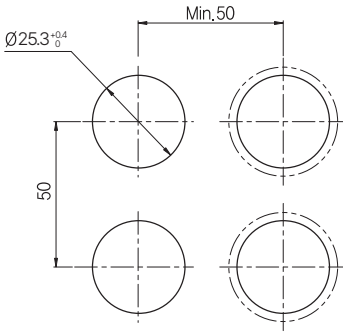
Panel cutout

[unit : mm]

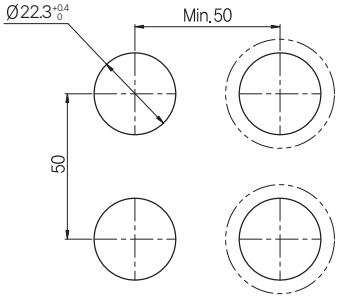
■ Ø30



■ Ø25



■ Ø22



Accessory

Model	Aluminum Guard			Plastic Guard	
	EN-36	EN-26	HEG-22	HEG-25F	HEG-30F
Application Model	MRE-A MRA-A	MRE-R, MRE-T MRA-R, MRA-T	MRE-R, MRE-R, MRA-R, MRA-T	MRE-N, MRE-K, MRA-N, MRA-K	MRE-A, MRA-A
Appearance					
Model	Front protective cover			Tightening tool	
	Protrusion HSC-22P	FlatHSC-25F	FlatHSC-30F	FIX HEAD-MR	FIX HANDLE
Application Model	MRF-R, MRF-T, MRX-R, MRX-T	MRF-N, MRF-K, MRX-N, MRX-K	MRF-A, MRX-A	Ø22, Ø25, Ø30	Handle
Appearance					

MR series

Aluminum guard / Plastic guard Control switch (Ø22, Ø25, Ø30)

Model	Push button switch				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRF-A(Ø30)	MRF-N(Ø25)	MRF-R(Ø22)	MRF-K(Ø25)	MRF-T(Ø22)

Model	Illuminated pushbutton switch					
	Aluminum guard			Plastic guard		
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22	ON / OFF
Appearance						
Actuator code	MRX-A(Ø30)	MRX-N(Ø25)	MRX-R(Ø22)	MRX-K(Ø25)	MRX-T(Ø22)	MRX-WM2

Model	Indicator light				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRP-A(Ø30)	MRP-N(Ø25)	MRP-R(Ø22)	MRP-K(Ø25)	MRP-T(Ø22)

Model	Selector switch				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRS-A(Ø30)	MRS-N(Ø25)	MRS-R(Ø22)	MRS-K(Ø25)	MRS-T(Ø22)

Model	Illuminated selector switch				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRT-A(Ø30)	MRT-N(Ø25)	MRT-R(Ø22)	MRT-K(Ø25)	MRT-T(Ø22)
Appearance					
Actuator code	MRT-A3(Ø30)	MRT-N3(Ø25)	MRT-R3(Ø22)	MRT-K3(Ø25)	MRT-T3(Ø22)

Model	Key selector switch		
	Aluminum guard		
	Flat Ø30	Flat Ø25	Protrusion Ø22
Appearance			
Actuator code	MRK-A(Ø30)	MRK-N(Ø25)	MRK-R(Ø22)

Model	Emergency stop switch				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRE-AM(Ø30)	MRE-NM(Ø25)	MRE-RM(Ø22)	MRE-KM(Ø25)	MRE-TM(Ø22)
Appearance					
Actuator code	MRE-AR(Ø30)	MRE-NR(Ø25)	MRE-RR(Ø22)	MRE-KR(Ø25)	MRE-TR(Ø22)
Model	Illuminated emergency stop switch				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRA-AM(Ø30)	MRA-NM(Ø25)	MRA-RM(Ø22)	MRA-KM(Ø25)	MRA-TM(Ø22)
Appearance					
Actuator code	MRA-AR(Ø30)	MRA-NR(Ø25)	MRA-RR(Ø22)	MRA-KR(Ø25)	MRA-TR(Ø22)
Model	Buzzer				
	Aluminum guard			Plastic guard	
	Flat Ø30	Flat Ø25	Protrusion Ø22	Flat Ø25	Protrusion Ø22
Appearance					
Actuator code	MRB-A(Ø30)	MRB-N(Ø25)	MRB-R(Ø22)	MRB-K(Ø25)	MRB-T(Ø22)

Control panel installation geometry

Aluminum guard			Plastic guard	
Flat Ø30 MR□-A	Flat Ø25 MR□-N	Protrusion Ø22 MR□-R	Flat Ø25 MR□-K	Protrusion Ø22 MR□-T
				

Component Configuration

Type	Appearance	Model	Reference
Contact unit		MR-CB	Hook fixing contact unit which is composed of 1a1b, is assembled to fixing plate.
Flush aluminum guard		MR-AGA	Aluminum guard A type panel cutout Ø30
		MR-AGN	Aluminum guard N type panel cutout Ø25
Extended aluminum guard		MR-AGR	Aluminum guard R type panel cutout Ø22
Fixing plate		MR-FP	Connect to actuator, contact unit and lamp unit.
LED Illuminated unit		MR-LBA0	100 - 200 V a.c.
		MR-LBA3	380 V a.c.
		MR-LBD0	12 - 24 V d.c./a.c.
Protective cover		MR-AC	Protective cover is installed in opposite side when using only 1 LED illuminated unit or contact unit.
Nnut clamping tool		QR-82	Used to tighten the fixing nut on the back of the panel.
Clamping tool		FIX TOOL-MR	Used to tighten the fixing nut on the back of the panel.

Suffix code

■ MRF series

Model	Code				Content	
MRF-	□	□	□	□	Push button switch	
Actuator	A				Flat (Installing hole:Ø30)	Aluminum guard
	N				Flat (Installing hole:Ø25)	
	R				Protrusion (Installing hole:Ø22)	
	K				Flat (Installing hole:Ø25)	Plastic guard
	T				Protrusion (Installing hole:Ø22)	
Operation function	M				Momentary	
	A				Alternate	
Contact composition		1			1a1b	
		2			2a2b	
Cap (LED color)				R	R(Red), G(Green), Y(Yellow), A(Blue), W(White)	

■ MRE series

Model	Code				Content	
MRE-	□	□	□	□	Emergency stop switch	
Actuator	A				Flat (Installing hole:Ø30)	Aluminum guard
	N				Flat (Installing hole:Ø25)	
	R				Protrusion (Installing hole:Ø22)	
	K				Flat (Installing hole:Ø25)	Plastic guard
	T				Protrusion (Installing hole:Ø22)	
Operation function	M				Momentary	
	R				Push lock turn reset	
Contact composition		1			1a1b	
		2			2a2b	
Cap (LED color)				R	R(Red)	
				G	G (Green) ※Push lock turn reset : only R (Red)	

■ MRP series

Model	Code			Content	
MRP-	□	□	□	Pilot lamp	
Actuator	A			Flat (Installing hole:Ø30)	Aluminum guard
	N			Flat (Installing hole:Ø25)	
	R			Protrusion (Installing hole:Ø22)	
	K			Flat (Installing hole:Ø25)	Plastic guard
	T			Protrusion (Installing hole:Ø22)	
Rated input voltage	A0			100 - 240 V a.c.	LED (Condenser voltage dropping type)
	A3			380 V a.c.	
	A4			440 V a.c.	
	D0			12 - 24 V d.c./a.c.	LED (Resistance voltage dropping type)
	D1			100 - 125 V d.c.	
Cap (LED color)			R	R(Red), G(Green), Y(Yellow), A(Blue), W(White)	

■ MRS series

Model	Code			Content	
MRS -	□	□	□	Selector switch	
Actuator	A			Flat (Installing hole:Ø30)	Aluminum guard
	N			Flat (Installing hole:Ø25)	
	R			Protrusion (Installing hole:Ø22)	
	K			Flat (Installing hole:Ø25)	Plastic guard
	T			Protrusion (Installing hole:Ø22)	
Operation function	2A			2 positions alternate operation	Refer to contact operation (3 positions : Only 2a2b contact available)
	2R			2 positions momentary operation	
	3A			3 positions alternate operation	
	3R			3 positions left and right side momentary operation	
Contact composition		1		1a1b	
		2		2a2b	
Cap (LED color)				Black (solid)	

■ MRB series

Model	Code		Content	
MRB-	□	□	Buzzer	
Actuator	A		Flat (Installing hole:Ø30)	Aluminum guard
	N		Flat (Installing hole:Ø25)	
	R		Protrusion (Installing hole:Ø22)	
	K		Flat (Installing hole:Ø25)	Plastic guard
	T		Protrusion (Installing hole:Ø22)	
Rated input voltage	A0		100 - 240 V a.c.	
	D0		12 - 24 V d.c./a.c.	

■ MRK series

Model	Code					Content	
MRK-	□	□	□	□		Key selector switch	
Actuator	A					Flat (Installing hole:Ø30)	Aluminum guard
	N					Flat (Installing hole:Ø25)	
	R					Protrusion (Installing hole:Ø22)	
Operation function		2A				2 positions alternate operation	Refer to contact operation (3 positions : Only 2a2b contact available)
		2R				2 positions momentary operation	
		3A				3 positions alternate operation	
		3R				3 positions left and right side momentary operation	
Contact composition			1			1a1b	
			2			2a2b	
Key removing position (Key selecting switch)				L		Left	In case of 2 positions, exclude the middle key removing position
				R		Right	
				C		Middle	
				D		Left and right	
				E		Front	
Cap (LED color)						Aluminum (Plating a matt chrome)	

■ MRT series

Model	Code					Content	
MRT-	□	□	□	□	□	Illuminated selector switch	
Actuator	A					Flat (Installing hole:Ø30)	Aluminum guard
	N					Flat (Installing hole:Ø25)	
	R					Protrusion (Installing hole:Ø22)	
	K					Flat (Installing hole:Ø25)	Plastic guard
	T					Protrusion (Installing hole:Ø22)	
Operation function	2A					2 positions alternate operation	
	2R					2 positions momentary operation	
	3A					3 positions alternate operation	
	3R					3 positions left and right side momentary operation	
Contact composition		1				1a1b	
		2				2a2b	
Power supply voltage			A0			100 - 240 V a.c.	LED (Condenser voltage dropping type)
			A3			380 V a.c.	
			D0			12 - 24 V d.c./a.c.	LED (Resistance voltage dropping type)
Cap (LED color)					R	R(Red), G(Green), Y(Yellow), A(Blue), W(White)	

■ MRX series

Model	Code					Content	
MRX-	□	□	□	□	□	Illuminated push button switch	
Actuator	A					Flat (Installing hole:Ø30)	Aluminum guard
	N					Flat (Installing hole:Ø25)	
	R					Protrusion (Installing hole:Ø22)	
	K					Flat (Installing hole:Ø25)	Plastic guard
	T					Protrusion (Installing hole:Ø22)	
동작기능	M					Momentary	
	A					Alternate	
Contact composition		1				1a1b	
		2				2a2b	
Rated input voltage			A0			100 - 240 V a.c.	LED (Condenser voltage dropping type)
			A3			380 V a.c.	
			D0			12 - 24 V d.c./a.c.	LED (Resistance voltage dropping type)
Cap (LED color)					R	R(Red), G(Green), Y(Yellow), A(Blue), W(White)	

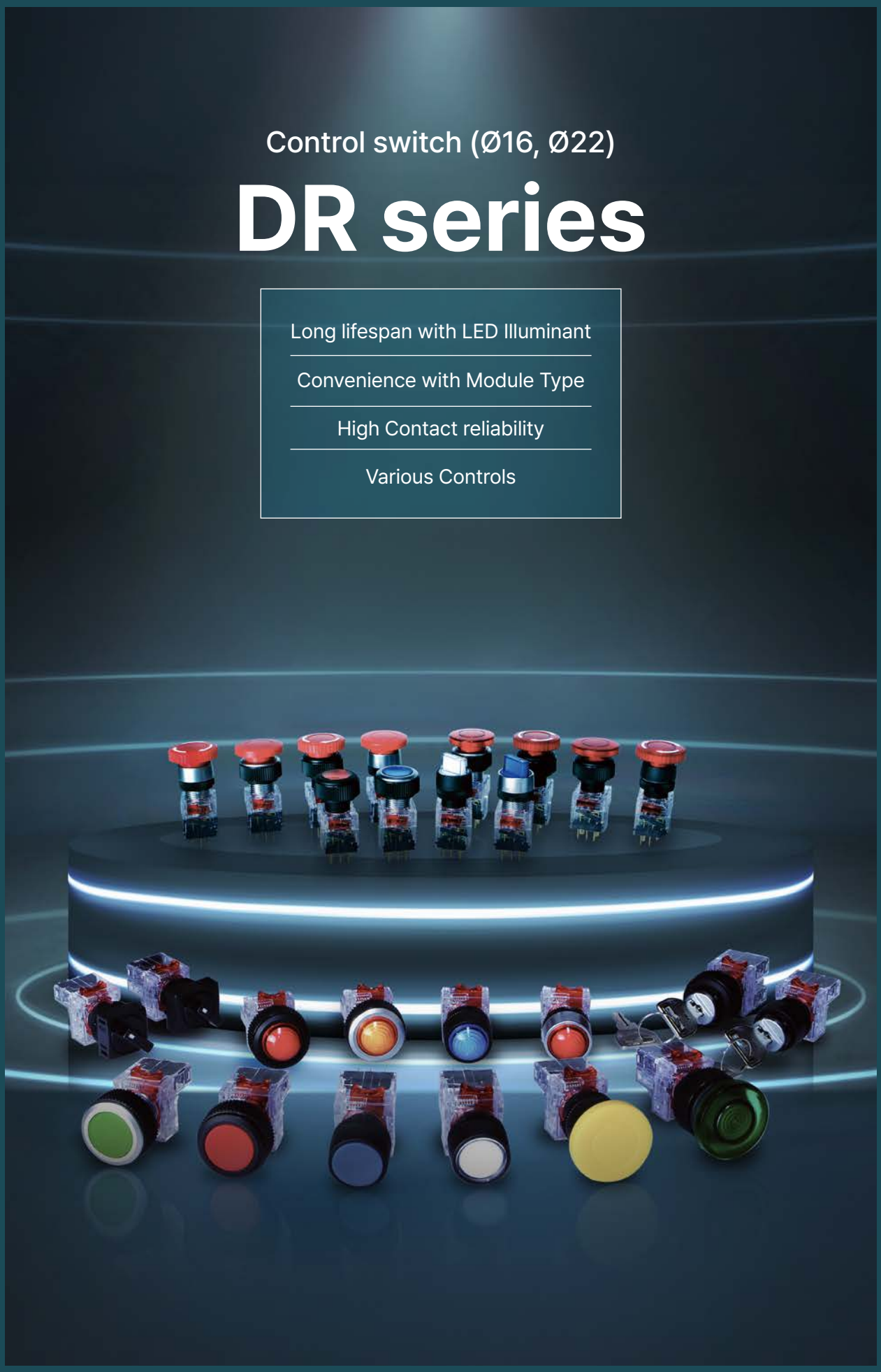
■ MRA series

Model	Code					Content	
MRA-	□	□	□	□	□	Illuminated emergency stop switch	
Actuator	A					Flat (Installing hole:Ø30)	Aluminum guard
	N					Flat (Installing hole:Ø25)	
	R					Protrusion (Installing hole:Ø22)	
	K					Flat (Installing hole:Ø25)	Plastic guard
	T					Protrusion (Installing hole:Ø22)	
Operation function	M					Momentary	
	R					Push lock turn reset	
Contact composition		1				1a1b	
		2				2a2b	
Power supply voltage			A0			100 - 240 V a.c.	LED (Condenser voltage dropping type)
			A3			380 V a.c.	
			D0			12 - 24 V d.c./a.c.	LED (Resistance voltage dropping type)
Cap (LED color)					R	R (Red)	
					G	G (Green) ※Push lock turn reset : only R (Red)	

Control switch (Ø16, Ø22)

DR series

- Long lifespan with LED Illuminant
- Convenience with Module Type
- High Contact reliability
- Various Controls

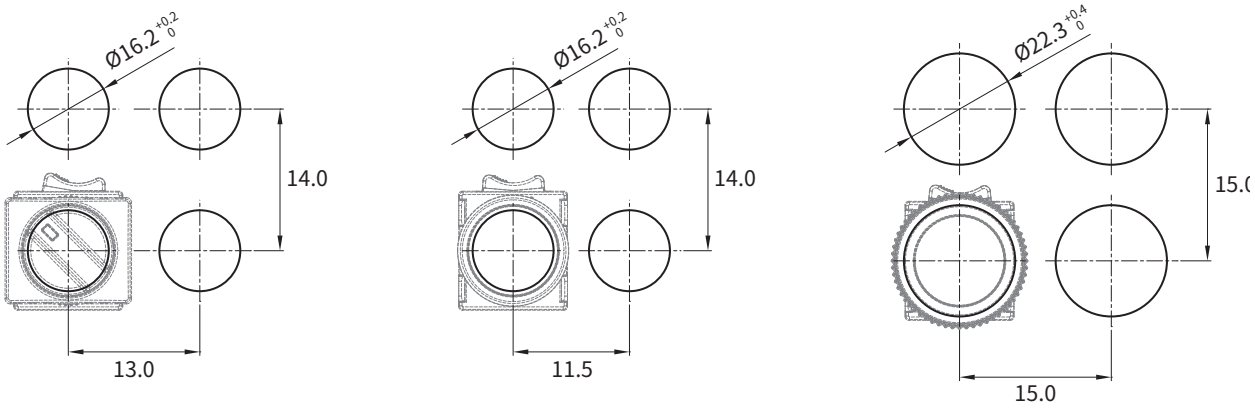


Specification

Model		Content
Rating		250 V a.c. 3 A
Insulation Resistance		100 MΩ or more
Withstand voltage		1500 V a.c. 1 minute at 50/60 Hz
Contact contact resistance		50 MΩ or less
Vibration resistance		10 - 55 Hz double amplitude 3 mm
Shock resistance		Approx. 50G (500 m/s²)
Ambient temperature		-10 ~ 50 °C
Ambient humidity		45 ~ 85 % RH
Opening and closing frequency		Up to 30 times/min
Life	Electrical	More than 200,000 times / 1,800 h
	Mechanical	More than 500,000 times / 1,800 h
Approval		

Dimension

•Square Ø16 **•Rectangular Ø16** **•Rectangular Ø22** [unit : mm]



Accessory

Model	Emergency protection cover		Front protective cover			Anti-rotation ring
	HEG-16 (Protrusion)	EN-26	HSC-16P (Protrusion)	HSC-16PS (Protruding square)	HSC-22F (Flat)	DR Ø16
Application Model	DRE-R, DRE-T, DRA-R, DRA-T	Only for DRE Ø22	DRF-R, DRF-T, DRX-R, DRX-T	DRF-S, DRF-O, DRX-S, DRX-O	DRF-A, DRS-K, DRX-A, DRX-K	Ø16 Common
Appearance						

DR series

Assembling type (actuator and contact part) Control switch (Ø16, Ø22)

Model	Push button switch					
	Chrome plated guard type		Plastic guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16	Square Ø16	Rectangular Ø16
Appearance						
Actuator code	DRF-A	DRF-R	DRF-K	DRF-T	DRF-S	DRF-O
Model	Illuminated pushbutton switch					
	Chrome plated guard type		Plastic guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16	Square Ø16	Rectangular Ø16
Appearance						
Actuator code	DRX-A	DRX-R	DRX-K	DRX-T	DRX-S	DRX-O
Model	Indicator light					
	Chrome plated guard type		Plastic guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16	Square Ø16	Rectangular Ø16
Appearance						
Actuator code	DRP-A	DRP-R	DRP-K	DRP-T	DRP-S	DRP-O
Model	Selector switch					
	Chrome plated guard type		Plastic guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16	Square Ø16	Rectangular Ø16
Appearance						
Actuator code	DRS-A	DRS-R	DRS-K	DRS-T	DRS-S	DRS-O
Model	Illuminated selector switch					
	Chrome plated guard type		Plastic guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16	Square Ø16	Rectangular Ø16
Appearance						
Actuator code	DRT-A	DRT-R	DRT-K	DRT-T	DRT-S	DRT-O
Model	KEY selector switch					
	Chrome plated guard type		Plastic guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16	Square Ø16	Rectangular Ø16
Appearance						
Actuator code	DRK-A	DRK-R	DRK-K	DRK-T	DRK-S	DRK-O

Model	Emergency stop switch			
	Chrome plated guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16
Appearance				
Actuator code	DRE-AM	DRE-RM	DRE-KM	DRE-TM
Appearance				
Actuator code	DRE-AA	DRE-RA	DRE-KA	DRE-TA
Appearance				
Actuator code	DRE-AR	DRE-RR	DRE-KR	DRE-TR
Model	Illuminated emergency stop switch			
	Chrome plated guard type		Plastic guard type	
	Flat Ø22	Protrusion Ø16	Flat Ø22	Protrusion Ø16
Appearance				
Actuator code	DRA-AM	DRA-RM	DRA-KM	DRA-TM
Appearance				
Actuator code	DRA-AA	DRA-RA	DRA-KA	DRA-TA
Appearance				
Actuator code	DRA-AR	DRA-RR	DRA-KR	DRA-TR

Suffix code

• DRK series

Model	Code			Content	
DRK-	▢	▢	▢	Key selector switch	
Actuator	A			Flat (Installing hole:Ø22)	Chrome plating guard
	R			Protrusion (Installing hole:Ø16)	
	K			Flat (Installing hole:Ø22)	Plastic guard
	T			Protrusion (Installing hole:Ø16)	
	S			Square (Installing hole:Ø16)	Plastic guard
	O			Rectangle (Installing hole:Ø16)	
Operation function		2A		2 positions alternate operation	
		2R		2 positions momentary operation	
		3A		3 positions alternate operation	
		3R		3 positions momentary operation	
Contact composition			1	1a1b	
			2	2a2b	

• DRP series

Model	Code			Content	
DRP-	▢	▢	▢	Pilot lamp	
Actuator	A			Flat (Installing hole:Ø22)	Chrome plating guard
	R			Protrusion (Installing hole:Ø16)	
	K			Flat (Installing hole:Ø22)	Plastic guard
	T			Protrusion (Installing hole:Ø16)	
	S			Square (Installing hole:Ø16)	Plastic guard
	O			Rectangle (Installing hole:Ø16)	
Rated input voltage		A		100 - 240 V a.c.	LED (Resistance voltage dropping type)
		D		12 - 24 V d.c./a.c.	
Cap (LED color)			R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

• DRS series

Model	Code			Content	
DRS-	▢	▢	▢	Selector switch	
Actuator	A			Flat (Installing hole:Ø22)	Chrome plating guard
	R			Protrusion (Installing hole:Ø16)	
	K			Flat (Installing hole:Ø22)	Plastic guard
	T			Protrusion (Installing hole:Ø16)	
	S			Square (Installing hole:Ø16)	Plastic guard
	O			Rectangle (Installing hole:Ø16)	
Operation function		2A		2 positions alternate operation	
		2R		2 positions momentary operation	
		3A		3 positions alternate operation	
		3R		3 positions momentary operation	
Contact composition			1	1a1b	
			2	2a2b	
Cap (LED color)				Black (solid)	

• DRX series

Model	Code					Content	
DRX-	▢	▢	▢	▢	▢	Illuminated push button switch	
Actuator	A					Flat (Installing hole:Ø22)	Chrome plating guard
	R					Protrusion (Installing hole:Ø16)	
	K					Flat (Installing hole:Ø22)	Plastic guard
	T					Protrusion (Installing hole:Ø16)	
	S					Square (Installing hole:Ø16)	Plastic guard
	O					Rectangle (Installing hole:Ø16)	
Operation function		M				Momentary	
		A				Alternate	
Contact composition			1			1a1b	
			2			2a2b	
Rated input voltage				A		100 - 240 V a.c.	LED (Resistance voltage dropping type)
				B		12 - 24 V d.c./a.c.	
Cap (LED color)					R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

• DRT series

Model	Code					Content	
DRT-	▢	▢	▢	▢	▢	Illuminated selector switch	
Actuator	A					Flat (Installing hole:Ø22)	Chrome plating guard
	R					Protrusion (Installing hole:Ø16)	
	K					Flat (Installing hole:Ø22)	Plastic guard
	T					Protrusion (Installing hole:Ø16)	
	S					Square (Installing hole:Ø16)	Plastic guard
	O					Rectangle (Installing hole:Ø16)	
Operation function		2A				2 positions alternate operation	
		2R				2 positions momentary operation	
		3A				3 positions alternate operation	
		3R				3 positions momentary operation	
Contact composition			1			1a1b	
			2			2a2b	
Rated input voltage				A		100 - 240 V a.c.	LED (Resistance voltage dropping type)
				D		12 - 24 V d.c./a.c.	
Cap (LED color)					R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

• DRA series

Model	Code					Content	
DRA-	▢	▢	▢	▢	▢	Illuminated emergency stop switch	
Actuator	A					Flat (Installing hole:Ø22)	Chrome plating guard
	R					Protrusion (Installing hole:Ø16)	
	K					Flat (Installing hole:Ø22)	Plastic guard
	T					Protrusion (Installing hole:Ø16)	
Operation function		M				Momentary	
		A				Alternate	
		R				Push lock turn reset	
Contact composition			1			1a1b	
			2			2a2b	
Rated input voltage				A		100 - 240 V a.c.	LED (Resistance voltage dropping type)
				D		12 - 24 V d.c./a.c.	
Cap (LED color)					R	R (Red), G (Green), Y (Yellow)	

• DRF series

Model	Code				Content	
DRF-	▢	▢	▢	▢	Push button switch	
Actuator	A				Flat (Installing hole:Ø22)	Chrome plating guard
	R				Protrusion (Installing hole:Ø16)	
	K				Flat (Installing hole:Ø22)	Plastic guard
	T				Protrusion (Installing hole:Ø16)	
	S				Square (Installing hole:Ø16)	Plastic guard
	O				Rectangle (Installing hole:Ø16)	
Operation function		M			Momentary	
		A			Alternate	
Contact composition			1		1a1b	
			2		2a2b	
Cap (LED color)				R	R (Red), G (Green), Y (Yellow), A (Blue), W (White)	

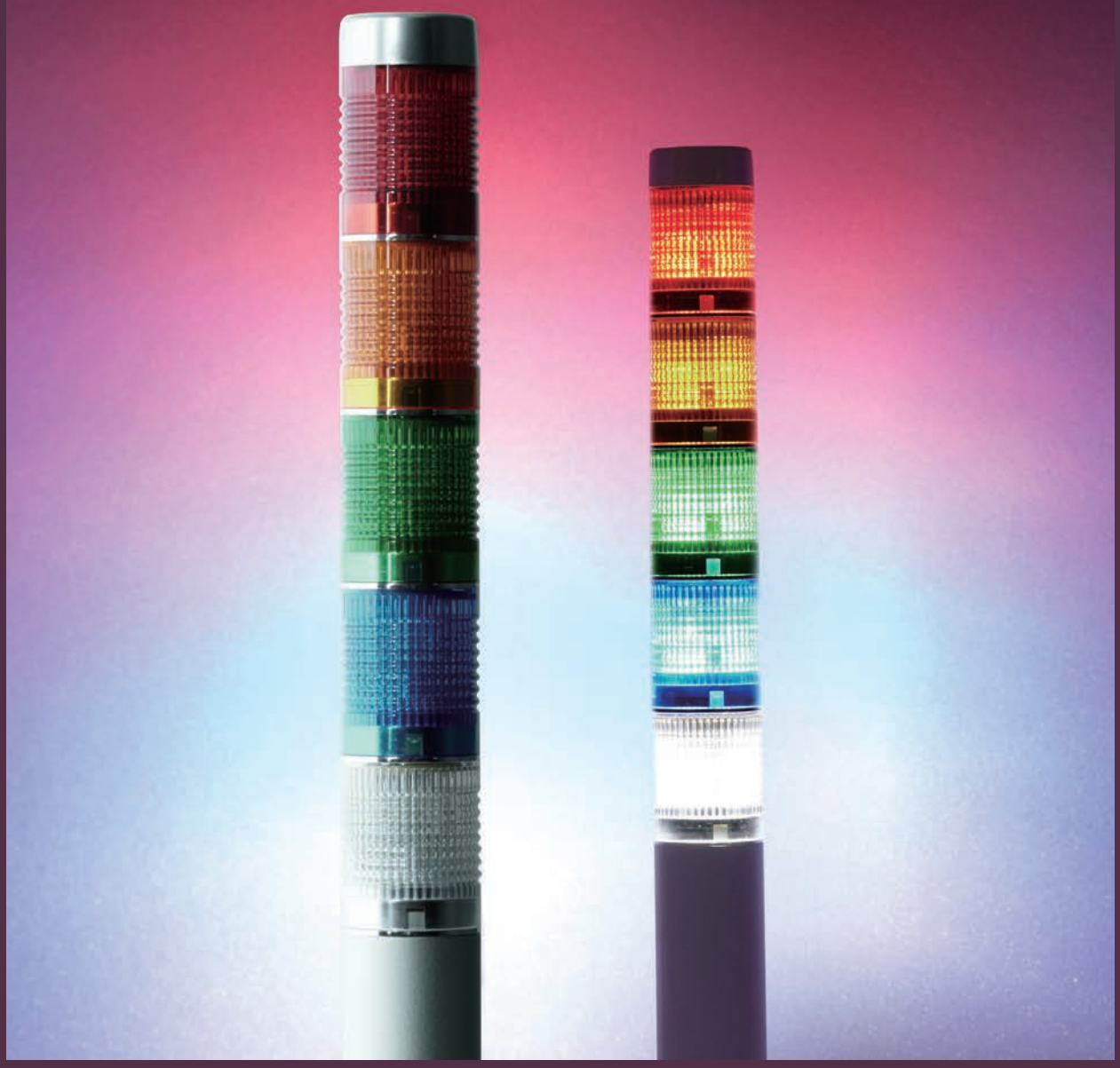
• DRE series

Model	Code				Content	
DRE-	▢	▢	▢	▢	Emergency stop switch	
Actuator	A				Flat (Installing hole:Ø22)	Chrome plating guard
	R				Protrusion (Installing hole:Ø16)	
	K				Flat (Installing hole:Ø22)	Plastic guard
	T				Protrusion (Installing hole:Ø16)	
Operation function		M			Momentary	
		A			Alternate	
		R			Push lock turn reset	
Contact composition			1		1a1b	
			2		2a2b	
Cap (LED color)				R	R (Red), G (Green), Y (Yellow)	

LED Light/Flash/Buzzer Sign Tower

STL series

- Long lifespan with High-brightness LED
- 5-layer Laminated Structure and 5 Color Types
- Light exclusive, Light/Flash/Buzzer
- Aluminum pipe direct installation

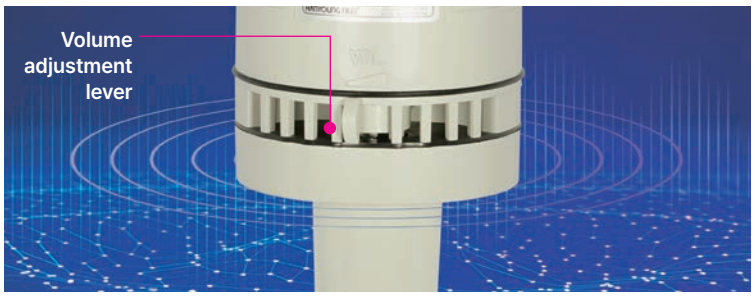


BUZZER

Powerful BUZZER with easy volume control

■ Buzzer sound adjustment

▪ Lever at the bottom of the body to adjust the buzzer volume.



L type mount bracket (basic configuration)

Direct installation type

MP - 40
MP - 60
MP - 80

Elbow type
EPM - 18 / 25
(optional)

Optional type
STM
(optional)

Mount Bracket

Various mount brackets can be applied depending on the installation environment.

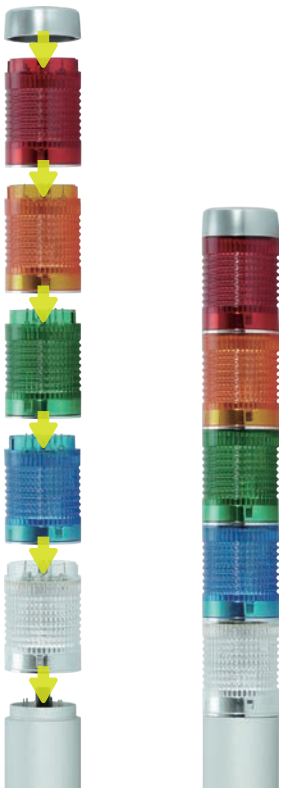
LED Unit

■ Easy Color Change

▪ The LED unit is designed with a connector structure, making color change and maintenance work simple.

■ Red, yellow, green, blue, and white LED are integrated into the lens to provide vivid color illumination.

▪ Red, yellow, green, blue, and white LED are integrated into the lens to provide vivid color illumination.



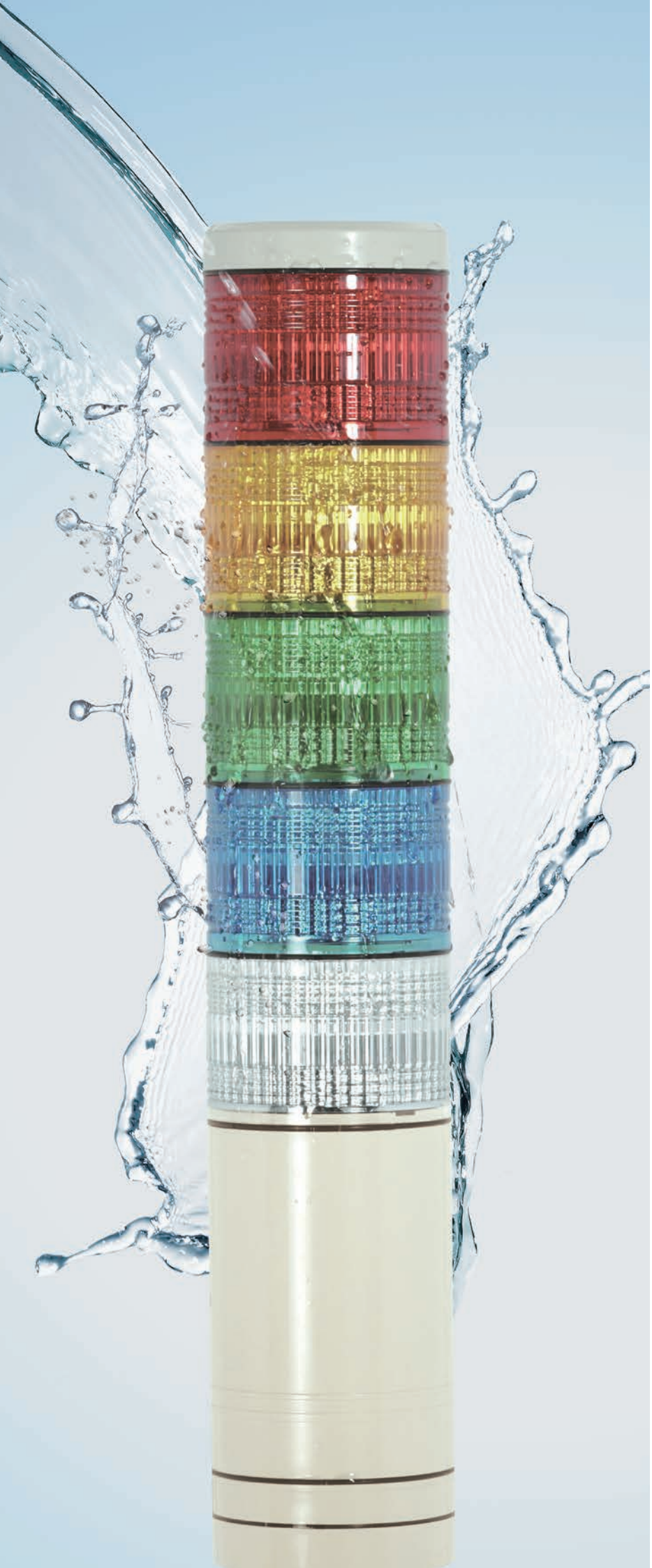
1~5 stage easy configuration

HIgh brightness LED

Independent color units

Bright environment

Dark environment



IP54 Rating Front Protection

HANYOUNG NUX

More Powerful More Safely

Excellent protection structure with a protection rating of IP54 on the front, so it can be used with confidence even in environments where dust and washing are generated.

Water-proof / Dust-proof Protection Rate

IP54

Specification

Model	STL040-□□□□	STL060-□□□□	STL080-□□□□
Circumference size	Ø40	Ø60	Ø80
Function	Continuous light, Flashing light, Buzzer (Selected by the external signal)		
Number of stacks	1 ~ 5 Light		
Flashing time	60 Times / 1 Min		
Buzzer melody type	Single melody, Beeping (Volume of buzzer spreads out to 1 m)		
Buzzer melody volume	75 dB	85 dB	
Power supply voltage	24 V d.c. / a.c. (Dual usage), 100 - 240 V a.c. 50 - 60 Hz		
Power consumption	Approx 8W (5th stack standard, 1.2 W for each stacks)		
Light source	LED		
Radiating angle	360°		
Lens material	Polycarbonate (P.C)		
Body material	Heat resistant ABS		
Pipe material	Aluminum		
Lens color	Red, Green, Yellow, Blue, White		
Degree of protection	IP54		

Suffix code

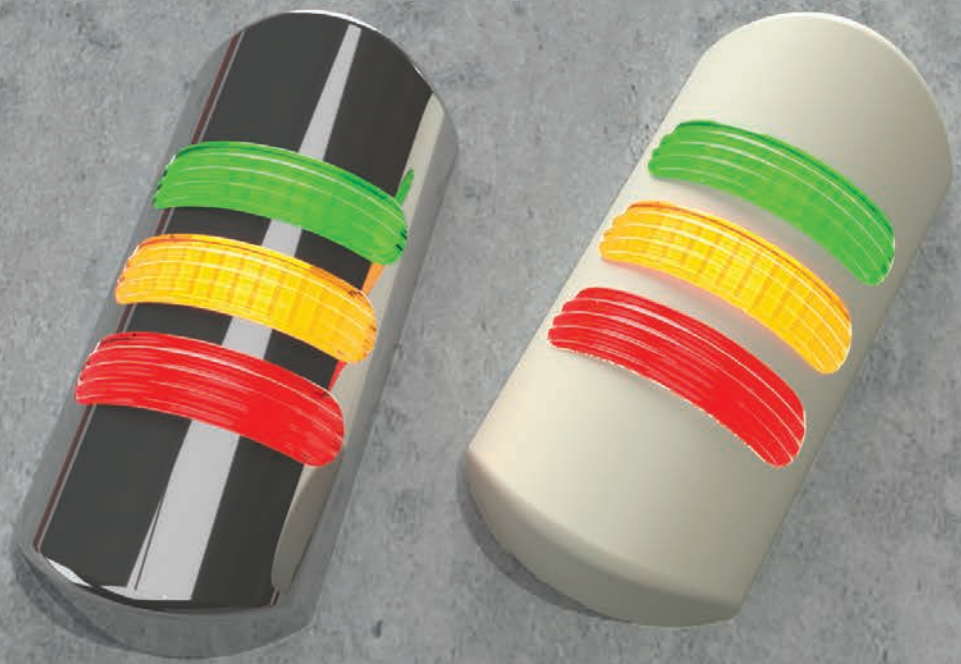
Model	Code					Description
STL	□	-□	□	□	□	LED sign tower (LED light source)
Circumference size	040					Ø40 Cylinder type
	060					Ø60 Cylinder type
	080					Ø80 Cylinder type
Function		A				Continuous light only
		F				Continuous light, flashing light and buzzer(Selected by the external signal)
Power supply voltage			C51			24 V d.c./a.c. 50 - 60 Hz (Dual usage)
			A11			100 - 240 V a.c. 50 - 60 Hz
Stacking modules				1		1 Light (Red)
				2		2 Light (Red, Green)
				3		3 Light (Red, Yellow, Green)
				4		4 Light (Red, Yellow, Green, Blue)
				5		5 Light (Red, Yellow, Green, Blue, White)
Supporter selection					D	Plastic Elbow Type Bracket (EPM)
					L	L type supporter
					M	Plastic supporter
Optional						Selecting type supporter(STM)
						Plastic Elbow Type Bracket (EPM)

※ 12 V d.c. On demand product.

Wall Mounting Indicator Light

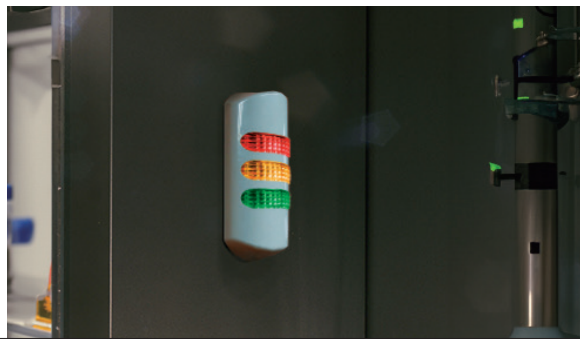
WME series

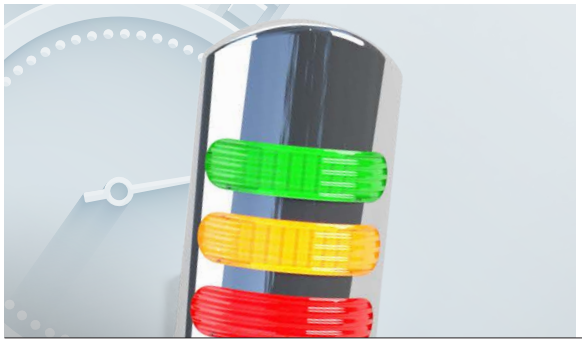
- 3 Color Slim Type
- Long Lifespan with High Brightness LED
- Beige or Chrome Plating 2 Types
- Built in Light, Flash, Two Sound Buzzer
- IP54 Rated Front Protection



Slim shape suitable for wall installation

Available in 3 colors to suit your needs.
It can be installed in close contact
with the wall horizontally or vertically.
Slim shape (43mm protrusion) reduces installation
space restrictions.





Long lifespan due to high-brightness LED light source

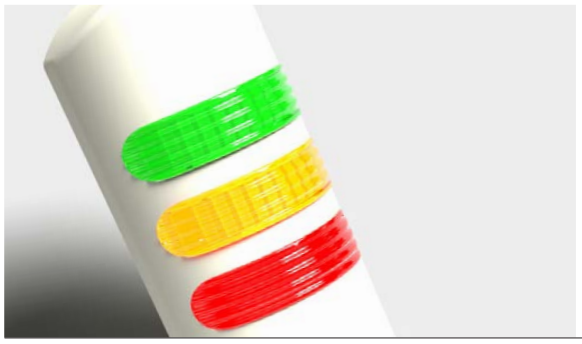
Long-life LED light source, uniform and smooth light transmission, and excellent clarity.

The wide-area signal dispersion lens structure provides excellent long-distance visibility.

2 buzzer sounds

Multiple signals can be transmitted with one indicator light.

Two types of buzzer sounds are built-in,
so you can set the warning sound according to the situation.
(short/intermittent sound)



Light, Flash

The LED lights are distributed directly to the user's gaze, emitting clear and faint signal light.

Visual signals can be delivered directly,
improving worker's gaze stability.

IP54 Rating Front Protection

By applying an excellent front protection rating of IP54, it can be used safely even in environments where dust and washing are generated.

Water-proof / Dust-proof Protection Rate
IP54

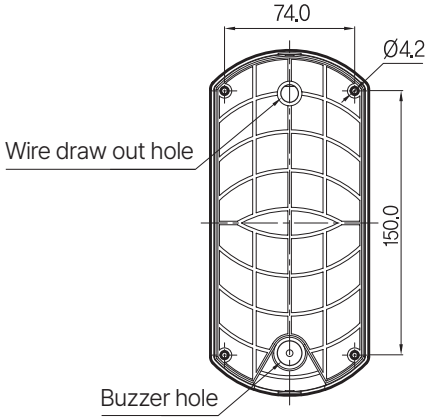
Specification

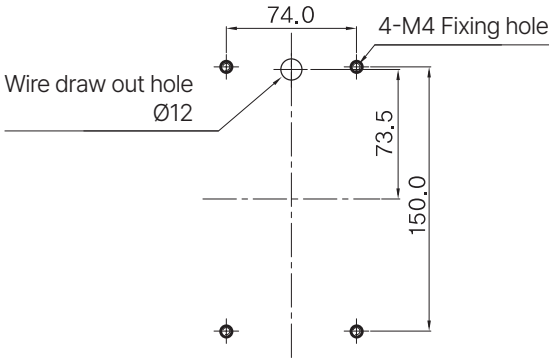
Model	WME-BA	WME-CA	WME-BF	WME-CF
Appearance	Beige color body	Chrome plating body	Beige color body	Chrome plating body
Function	Only for continuous light		Continuous light, flashing light, buzzer (selected by the external signal)	
Stacking number	3 stack			
Flashing time	-		Approx 60 times / 1min	
Buzzer	-		2 types of melodies (single melody/beeping) approx 80 dB (1 m distance)	
Power supply voltage	24 V d.c/a.c (dual usage), 50 - 60 Hz ※ 12 V d.c/a.c (Order made)			
Current consumption	Max 2.1 W			
Light source	LED			
Material	Lens : Polycarbonate (P.C), Body : ABS			
Lens color	Red, Yellow, Green			
Degree of protection	IP54			
Approval	CE			

Suffix code

Model	Code			Description
WME-	▢	▢	▢	Wall mounted light
Appearance	B			Beige color body
	C			Chrome plating body
Function		A		Continuous light indication
		F		Continuous light indication, flashing light indication, buzzer (selected by the external signal)
Power supply voltage			C51	24 V a.c. 50/60 Hz or 24 V d.c.
			C41	12 V a.c. 50/60 Hz or 12 V d.c. ※ C41 optional

Panel cutout





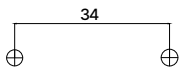
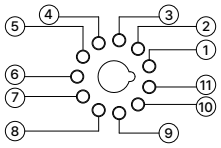
8-Pin, 11-Pin Universal Socket Relay Socket

VARIOUS SOCKET CONFIGURATIONS

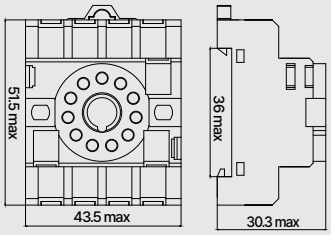
- Excellent Flame and Insulation Resistance
- Timing Relay Dedicated Bracket (applied with Hanyoung T21 timers)
- MY, LY Relay Socket
- CE Certified
- Easy DIN rail Installation
- Application available with Hanyoung Analog Timer, Temperature Controller, Electrode Level Switch etc. (8-Pin socket)

11-PIN Universal Socket

HS-G-E11

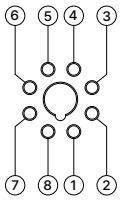
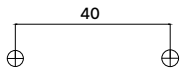
Material	1. Plastic ① Socket : PC (black) ② Ring : POM 2. Metal ① Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62		
Flame Resistance	Combustion temperature : 650°C, Combustion Duration tR ≤ 30s		
Bolt	Torque ≥ 0.6 N.m		
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust		
Electroplating	Connecting piece : CnSn, Bolt : zinc		
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA		
Clamping Force	1pin clamping force : 2N – 15N		
Installation Hole Dimension		Connection Diagram	
Applied products	KX4S / MA4N-A / MA4N-B		

Dimension
[Unit : mm]

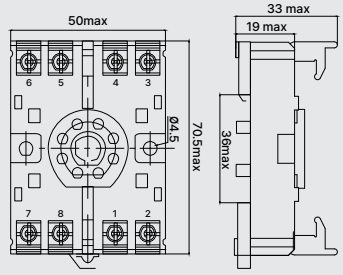


8-PIN Universal Socket

HS-G-E08

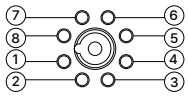
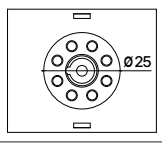
Matetrial	1. Plastic ① Socket : PC (black) ② Ring : POM 2. Metal ① Nut : carbon steel Q195, Bolt : carbon steel C-1022A 3. Connecting piece : brass H62		
Flame Resistance	Flammability Rate V2		
Bolt	Torque ≥ 0.8 N.m		
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust		
Electroplating	Connecting piece : CnSn, Bolt : zinc		
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA		
DIN rail Torque Breakage	Breakage value ≥ 20kg	Connection Diagram	
Clamping Force	Total Clamp Force : 40 N - 90 N 1pin Pluck Power : 1 N - 3.5 N.m 1pin Clamp Force : 2 N - 8 N.m		
Installation Hole Dimension			
Applied products	ND4 / DF4 / LT4 / LT4S / T38A / T48A / TF62A / MA4N-C / FS-3A / MA4SD / GF4A-P41S / GF4A-T40S / TF4A		

Dimension
[Unit : mm]

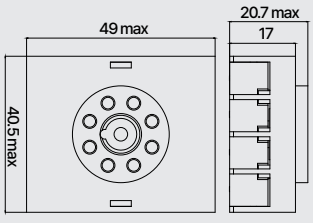


8-PIN Universal Socket

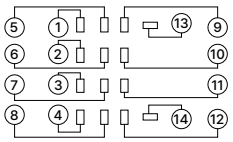
HS-G-F08

Material	1. Plastic ① Socket : PC (black) 2. Metal ① Nut : carbon steel Q195, Bolt : carbon steel C-1022A 3. Connecting piece : brass H62		
Flame Resistance	Flammability Rate V2		
Bolt	Torque ≥ 0.8 N.m		
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust		
Electroplating	Connecting piece : CnSn, Bolt : zinc		
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA		
Clamping Force	Total Clamp Force : 40 N - 90 N 1pin Pluck Power : 1 N - 3.5 N.m 1pin Clamp Force : 2 N - 8 N.m	Connection Diagram	
Pin Joint Dimension			
Applied products	ND4 / DF4 / LT4 / LT4S / T38A / T48A / TF62A / MA4N-C / FS-3A / MA4SD / GF4A-P41S / GF4A-T40S / TF4A		

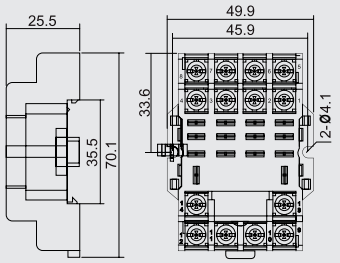
Dimension
[Unit : mm]



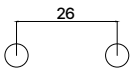
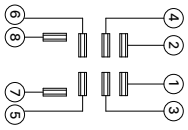
LY Type 4 Pole Relay Socket HS-R-L04

Material	1. Plastic ① Socket : PA (black) ② Stopper : POM 2. Metal ① Nut : carbon steel Q195 3. Connecting piece : brass H62
Bolt	Torque ≥ 0.6 N.m
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust
Electroplating	Connecting piece : CnSn, Bolt : zinc
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA
Clamping Force	1pin clamping force : 1 N - 20N
Connection Diagram	

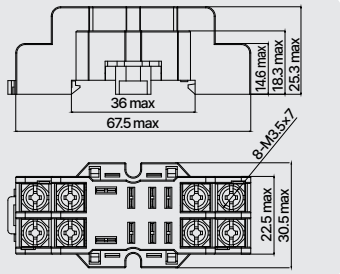
Dimension
[Unit : mm]



LY Type 2 Pole Relay Socket HS-R-L02

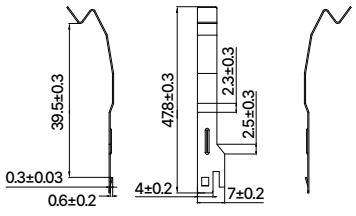
Material	1. Plastic ① Socket : PA (black) ② Stopper : POM 2. Metal ① Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62		
Flame Resistance	Flammability Rate V2		
Bolt	Torque ≥ 0.6 N.m		
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust		
Electroplating	Connecting piece : CnSn, Bolt : zinc		
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA		
Clamping Force	1pin clamping force : 1 N – 20N		
Installation Hole Dimension		Connection Diagram	

Dimension
[Unit : mm]

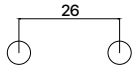
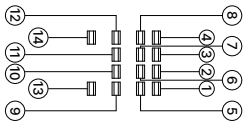


Accessories

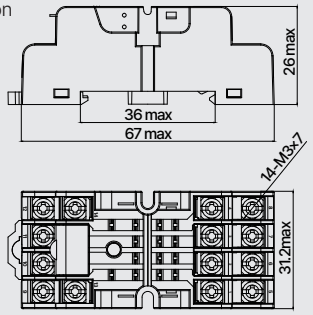
Model	Relay Socket Bracket (included)	Order Code	HS-BRACKET-01	Appearance		Dimension	



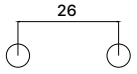
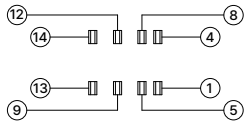
MY Type 4 Pole Relay Socket HS-R-M04

Material	1. Plastic ① Socket : PA (black) ② Stopper : POM 2. Metal ① Nut : carbon steel Q195 ② Bolt : carbon steel 08A 3. Connecting piece : brass H62		
Flame Resistance	Flammability Rate V2		
Bolt	Torque ≥ 0.6 N.m		
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust		
Electroplating	Connecting piece : CnSn, Bolt : zinc		
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA		
Clamping Force	1pin clamping force : 1 N - 20N		
Installation Hole Dimension		Connection Diagram	

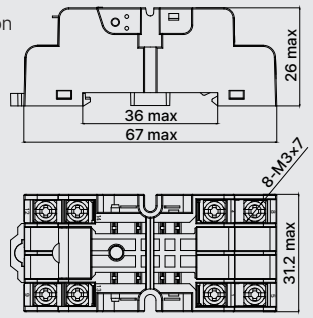
Dimension
[Unit : mm]



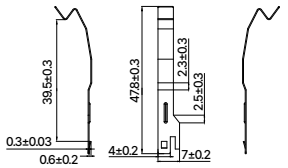
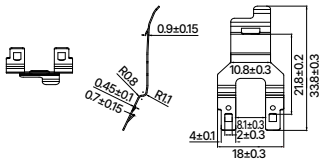
MY Type 2 Pole Relay Socket HS-R-M02

Material	1. Plastic ① Socket : PA (black) ② Stopper : POM 2. Metal ① Nut : carbon steel Q195, Bolt : carbon steel 08A 3. Connecting piece : brass H62		
Flame Resistance	Flammability Rate V2		
Bolt	Torque ≥ 0.6 N.m		
Salt Spray Test	Steel : 24 hours, Copper : 24 hours, No rust		
Electroplating	Connecting piece : CnSn, Bolt : zinc		
Insulation Resistance	AC ≥ 2000 V, Leakage current ≤ 1mA		
Clamping Force	1pin clamping force : 1 N - 20N		
Installation Hole Dimension		Connection Diagram	

Dimension
[Unit : mm]



Accessories

Model		Order Code		Appearance		Dimension	
	Relay Socket Bracket (included)		HS-BRACKET-01				
	Finger Timer Bracket (sold separately)		HS-BRACKET-02				

PRODUCT CATALOG

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