Always with our customers

www.hynux.com

WORLD LEADER IN CONTROL & MEASUREMENT

PRODUCT GUIDE

HANYOUNG NUX

Since 1972

SHANGHAI HANYOUNG ELECTRONICS CO., LTD

PT. HANYOUNG ELECTRONIC INDONESIA

CONTENTS

Temperature Controller

TD510 Programmable temperature controller

Specification

Model	TD510		
Appearance	CE 		
W×H×D (㎜)	145× 145× 33.5		
Power voltage	100 - 240 V a.c. Voltage regulation ±10 %		
Power frequency	50 - 60 ㎐		
Power consumption	30 V A max		
Dielectric strength	Between 1st and 2nd terminals : Min. 1500 V a.c for 1 min Between 1st and FG terminals : Min. 1500 V a.c for 1 min Between 2nd and FG terminals : Min. 1500 V a.c for 1 min		
Input type	2 types of thermoresistor (Pt–100, KPt–100) ±0.1 % of FS ±1 Digit 11 types of thermocouple (K, J, E, T, R, B, S, L, N, U, Wire 5–26) ±0.1 % of FS ±1 Digit 4 types of DC voltage (–10 – 20 mV, 0 – 100 mV, 1 – 5 V, 0 – 30 V) ±0.1 % of FS ±1 Digit		
Sampling cycle	250 ms		
Contact output(DO)	Up to 32 relay	A Contact	30 V d.c. 3 A max, 250 V a.c. 3 A
		B Contact	NO : 30 V d.c. 5 A max, 250 V a.c. 5 A
Control output	SSR output	ON : 18 V d.c. Pulse voltage(800 Ω or more load resistance)	
	SCR output	4 – 20 mA d.c. (600 Ω or less load resistance)	
Transmission output	Current output	4 – 20 mA d.c.	
	Load resistance	600 Ω or less load resistance	
	Output type	Specific value(PV), Setting value(SV), Output(MV)	
	Refresh interval	250 ms	
Input	Input calibration (Sensor bias)	2 temperature points : EUS(0 – 100 %)	
	Scaling	DC voltage(VDC) : Input scaling according to conversion range	
	Input filter(LPF)	0 ~ 120 sec	
Control mode	Operation type	Constant–value / Program control	
Control output	Temperature control output	SSR output or SCR (4 – 20 mA d.c.) output	
Control operation	Pattern	100 patterns(1 pattern/100 segments)	
	Segment	2,000 segments	
	PID Group	4 groups (Each channel)	
	Auto tuning	Auto tuning according to target setting value	
	Proportional band	0.00 – 100.00 % (For 0.00 %, ON/OFF control)	
	Integral time	0.0 ~ 3,000 sec (OFF when 0 sec)	
	Derivative time		
	ON/OFF control	Set 0.0 to proportional band(PB)	
Transmission output	Temperatre(Ch.1 and 2)	4 – 20 mA d.c., Specific value(PV), Setting value(SV) and Output(MV)	
	Scaling	Auto scaling for defined upper/lower, limit range(4 – 20 mA d.c.)	
Alarm setting	Alarm setting	System alarm : 8 points, Assign 4 of 8 pattern alarms to a pattern	
	Alarm type	Absolute upper/lower limit, Offset upper/lower limit and Within/Out of range	
	Absolute alarm setting range	EU (0 ~ 100 %)	
Display	TFT color LCD (115.2 × 86.4 mm)		
Number of Pixels	640 × 480 pixel		
Back light	LED back light		
Life cycle of back light	Approx. 40,000 h		
Touch type	Resistive type (4 Wires)		
Language	Korean/English/Chinese(Simplified)		
Internal memory	Non–volatile memory : 80 MB - Saving of 15 days at 1 S interval		
External memory	SD card(2 GB) : Saving of 1 year at 1 S interval		
Saving interval	1 – 360 S		
Memory information	Program information, setting value, recovery, and temperature setting / specific / output value		
Ambient temperature	0 ~ 50 ℃		
Ambient humidity	20 ~ 90 % RH (Without condensation)		
Weight	Approx. 1.32 kg		

Suffix Code

Model	Code							Information
TD	□	1	□	–	□	□	□	Programmable temperature controller
Display device	5							5.7" TFT-LCD
Channel			1					1 Channel
			2					2 Channel
Input/output					1			8 input points/6 output points(1 module)
					2			8 input points/14 output points(2 modules)
					3			16 input points/16 output points(3 modules)
Language						S		Korean, English, and Chinese(Simplified)
						T		Korean, English, and Chinese(Traditional)
Communication							None	RS485
							E	RS485, Ethernet(OS)

※ Basic components (Power module, Control module)

※ This product consists of the display and control (Power, Control, Input, and Output Modules). (Up to 32 contact input/output points, respectively)

Components

TD510-DISPLAY	Display (5.7" TFT LCD)
TD510-MAIN	Temperature 2-channel control module
TM-PWR	Power module
TM-DI	Module with 16 input points
TM-DO	Module with 8 output points
TM-DIO	Module with 8 input and 6 output points

TD500 Programmable temperature controller

Specification

Model		TD500		
Appearance		CE 		
W×H×D(mm)		183×144×103		
Power supply		100 – 240 V a.c. (±10 %), 50 – 60 Hz 16 W max.		
Screen	LCD	5.7 inch color / Touch panel type		
Program	Pattern / Segment	100 patterns / 2400 segments, Pattern repetition : 999 times max., Partial repetition : 255 max.		
Input	Measuring range	Sensor type Pt 100 Ω(IEC751) T.C (K, J, E, T, R, S) V DC (Voltage Input : 0 – 10 V, 1 – 5 mV, –10 – 20 mV, 0 – 100 mV Current Input : 1 – 5 V d.c. (4 – 20 mA d.c., attach 250 Ω external resistance)	Accuracy ±0.1 % of FS ±0.1 % of FS ±0.1 % of FS	Measuring range – 200.0 ~ 640.0 ℃ – 200.0 ~ 1700.0 ℃ 0.0 ~ 10.0 V (Range setting)
	Sampling cycle	500 ms		
Output	Control output	2 points for each channel (Heating / Cooling)		
	Specification	Voltage pulse (SSR) : 24 V d.c., minimum pulse width 10 ㎳ Current (SCR) : 4 – 20 ㎃ d.c.(Below 600 Ω) Relay output : N/O 250 V a.c. 5 A/ 30 V d.c. 5 A, N/C : 250 V a.c. 2 A/ 30 V d.c., TR output (O/C) : Max. 24 V 100 ㎃ Sink		
Communication	Protocol	PC – Link(Check Sum), Modbus – ASCII		
	Communication Type	RS232C : 2400 ~ 115,200 bps Max. 10 m, RS422/485 : 2400 ~ 115,200 bps, Max.1.5㎞ 256 Mode		

Suffix Code

□	□	□	Programmable Temperature Controller
1			Communication (RS485/422 Communication, USB)
2			Communication (RS232 Communication, USB)
N			None (Only when need the I/O (Input/Output board))
	1		Contact input (DI) 8 contacts Contact output (DO) 8 contacts Transistor output (DO) 8 contacts
	N		Non (Only necessary standard body)
			Korean/English (Standard type)
		2	English/Chinese (Simplified Chinese character)

Temperature Controller

TD300 Programmable temperature controller

Specification

Model	TD300
Appearance	
W×H×D (㎜)	96×96×100
Program	Touch panel, 100 patterns (2,400 segments), 100 segments/1pattern setting
Screen	TFT LCD 70.08 × 52.56 mm (3.5″)
Function	Contact input (D.I) : 8 contacts, Output (D.O) : 8, RS232/485
Power voltage	100 – 240 V a.c. 50 – 60 Hz (Voltage variation rate ±10 %)
Input	TC(K, J, E, T, R, S), VDC(0 – 100 mV, 0 – 10 V)
Input cycle	500 ms
Display accuracy	±0.1 % of FS
Output	Control output : SSR 24 V d.c. / SCR 4 – 20 mA d.c., Retransmission output : 4 – 20 mA d.c.
Control type	PID automatic tuning

Suffix Code

Model	Code		Information
TD300	□	□	Programmable Temperature Controller (DIN 96 × 96)
Communication	1		RS485/422 communication
	2		RS232C communication
Language (Optional)		1	Korean and English (Standard type)
		2	English and Chinese (Simplified Chinese Characters)

TH300 Programmable temperature & Humidity controller

Specification

CE	
	96×96×100
	Touch panel, 100 patterns (2,000 segments), 100 segments / 1pattern setting
	TFT LCD 70.08 × 52.56 mm (3.5″)
	Contact input (DI) : 4 contacts, Output (DO) : max 12, RS232/485
	100 – 240 V a.c. 50 – 60 Hz (Voltage variation rate ±10 %)
	Pt100 Ω or 0 – 5 V d.c.
	500 ms
	Temperature (℃) : ±0.2 % of FS Humidity (%RH) : ±2 % of FS
	Control output : SSR 24 V d.c. pulse, Retransmission output : 4 – 20 mA d.c.
	PID automatic tuning

Suffix Code

Model	Code		Information
TH300	□	□	Programmable Temperature & Humidity controller (DIN 96 × 96)
Communication	1		RS232C communication
	2		RS485/422 communication
Language (Optional)		1	Korean and English (Standard type)
		2	English and Chinese (Simplified Chinese Characters)
		3	English and Chinese (Traditional Chinese Characters)

TH500 Programmable temperature & Humidity controller

Specification

Model	TH500	
Appearance	CE 	
W×H×D (㎜)	183× 144× 93.5	
Program	Max. 100 pattern (Max. 6,000 segment)	
Screen	5.7 inch STN color LCD screen (Touch screen type)	
Function	Pattern repetition : Max. 999 times, Partial repetition : Max. 255 times / Pattern link and editing	
Power voltage	100 – 240 V a.c., 50 – 60 Hz (Voltage variation rate : ±10 %)	
Input	Pt 100 Ω, 0(1) – 5 V d.c. or 4 – 20 ㎃ d.c. (External resistance 250 Ω)	
Input cycle	500 ㎳	
Measuring range	Temperature	–100.00 ~ 200.00 ℃
	Humidity	0.0 ~ 100.0 % RH
Display accuracy	Temperature : ±0.1 % of F.S, Humidity : ±1 % of F.S	
Control output	SSR output	Min. 24 V d.c. (Minimum pulse width : 0.2ms)
	Current output	4 – 20 ㎃ d.c.
Retransmission output	Temperature : 1 point, Humidity : 1 point (PV, SV, MV selection)	
	4 – 20 ㎃ Resistive Load Max. 600 Ω	
Contact input	D.I : 8 points	
Output	Max. 20 points (Relay : 12 points, Open collector : 8 points)	
Contact output type	Inner signal : 8 points, Alarm signal : 4 points each channel, Run/Stop signal : 1 point, 1st Ref. signal : 1 point, 2nd Ref. signal : 1 point	
	Temp. / Humi. Up/Down, Soak signal : 6 points, Temp./Humi. Control signal : 2 points, Time signal : 8 points / 1 segment	
	Error signal : 1 point, Sensor disconnection signal : 1 point, Wait signal : 1 point, Hold signal : 1 point, PT End signal : 1 point	
Communication output	RS485–Max. communication distance 1.2 ㎞, Max. 32 connections available, Communication speed : Max. 115,200 bps	
	RS 232, RS422/485	
Storage / Capacity	Internal FLASH memory, Temp./Humi. Each 86,400 points	
Storage function	Program information & Setting value back–up and recovery, Temp. / humi. Setting, Indicating value storage	
Ambient Temp. / Humidity	0 ~ 50 ℃, 10 ~ 90 % RH (No condensation)	

Suffix Code

☐	☐	☐	Programmable temperature & humidity controller		
1			Standard type	Temperature&Humidity Retransmission output Temperature&Humidity control output (SSR/SCR drive) Temperature&Humidity signal input External digital input (DI) : 8 contacts Digital output (DO) : relay 12 contacts, open collector 8 contacts Communication specification: RS232, RS422/485, USB	
2			Additional type	※ Input and output boards are separated from the main body. Temperature/Humidity Retransmission output Temperature/Humidity signal input Communication specification: RS232, RS422/485 2CH, USB (PV Backup)	
N			–	No body part	
	1		Input/Output board–1 (12 contacts relay output), Temperature/Humidity control output (SSR/SCR drive) (D.I: 8 contacts, DO: 12 contacts relay output external power supply) 24 V d.c., 18 W		
	2		Input/Output board–2 (8 contacts open collector output external terminal board)		
	3		Input/Output board–3 (8 contacts relay output board)		
	4		Input/Output board–1 + (output board–2)		
	5		Input/Output board–1 + (output board–3)		
	N		No output board (when selected the main body)		
		N	Korean/English (Standard type)		
		2	English/Chinese (Simplified Chinese Characters)		
		3	English/Chinese (Traditional Chinese Characters)		

Temperature Controller

TH510 Programmable temperature & Humidity controller

Specification

Model	TH510		
Appearance	CE 		
W×H×D (㎜)	145× 145× 33.5		
Power voltage	100 - 240 V a.c. Voltage regulation ±10 %		
Power frequency	50 - 60 ㎐		
Power consumption	30 V A max		
Dielectric strength	Between 1st and 2nd terminals : Min. 1500 V a.c. for 1 min Between 1st and FG terminals : Min. 1500 V a.c. for 1 min Between 2nd and FG terminals : Min. 1500 V a.c. for 1 min		
Input type	2 types of thermoresistor (Pt-100, KPt-100) ±0.1 % of F.S ±1 Digit 2 types of DC voltage (1 – 5 V, 0 – 30 V) ±0.1 % of F.S ±1 Digit		
Sampling cycle	250 ms		
Contact output(DO)	Up to 32 relay	A Contact	30 V d.c. 3 A max, 250 V a.c. 3 A
		B Contact	NO : 30 V d.c. 5 A max, 250 V a.c. 5 A
Control output	SSR output	ON : 18 V d.c. Pulse voltage (800 Ω or more load resistance)	
	SCR output	4 – 20 mA d.c. (600 Ω or less load resistance)	
Transmission output	Current output	4 – 20 mA d.c.	
	Load resistance	600 Ω or less load resistance	
	Output type	Specific value(PV), Setting value(SV), Output(MV)	
	Refresh interval	250 ms	
Input	Input calibration (Sensor bias)	1 Temperature contact : EUS(0~100 %), 1 Humidity contact : EUS(0 ~ 100 %)	
	Dry/wet-bulb sensor compensation	Compensate the dry/wet sensor difference after removing the gauze of the wet-bulb sensor.	
	Scaling	DC voltage(VDC) : Input scaling according to conversion range	
	Input filter(LPF)	0 ~ 120 sec	
Control mode	Operation type	Constant-value / Program control	
Control output	Temperature control output	SSR output or SCR (4 – 20 mA d.c.) output	
	Humidity control output		
Control operation	Pattern	100 patterns(1 pattern/100 segments)	
	Segment	2,000 segments	
	PID Group	16 groups(temperature 4 zones X humidity 4 zones)	
	Auto tuning	Auto tuning according to target setting value	
	Proportional band	0.00 ~ 100.00 % (For 0.00 %, ON/OFF control)	
	Integral time	0.0 ~ 3,000 sec (OFF when 0 sec)	
	Derivative time		
	ON/OFF control	Set 0.0 to proportional band(PB)	
Transmission output	Temperature, Humidity	4 – 20 mA d.c. Specific value(PV), Setting value(SV) and Output(MV)	
	Scaling	Auto scaling for defined upper/lower limit range (4 – 20 mA d.c.)	
Alarm setting	Alarm setting	System alarm : 8 points Assign 4 of 8 pattern alarms to a pattern	
	Alarm type	Absolute high/low limit, deviation high/low limit, in range/out of range (alarm direction, hold)	
	Absolute alarm setting range	EU (0 ~ 100 %)	
Display	TFT color LCD (115.2 × 86.4 mm)		
Number of Pixels	640 × 480 pixel		
Back light	LED back light		
Life cycle of back light	Approx. 40,000 h		
Touch type	Resistive type (4 Wires)		
Language	Korean/English/Chinese(Simplified)		
Internal memory	Non-volatile memory : 80 MB - Saving of 15 days at 1 S interval		
External memory	SD card(2 GB) : Saving of 1 year at 1 S interval		
Saving interval	1 – 360 S		
Memory information	Program information, setting value, recovery, and temperature setting / specific / output value		
Ambient temperature	0 ~ 50 ℃		
Ambient humidity	20 ~ 90 % RH (Without condensation)		
Weight	Approx. 1.32 kg		

Suffix Code

□	1	0	–	□	□	□	Programmable temperature controller
5							5.7" TFT–LCD
				1			8 input points/6 output points(1 module)
				2			8 input points/14 output points(2 modules)
				3			16 input points/16 output points(3 modules)
					S		Korean, English, and Chinese(Simplified)
					T		Korean, English, and Chinese(Traditional)
						None	RS485
						E	RS485, Ethernet(OS)

※ Basic components (Power module, Control module)

※ This product consists of the display and control (Power, Control, Input, and Output Modules). (Up to 32 contact input/output points, respectively)

Components

Product	Model	Information
Display	TD510–DISPLAY	Display (5.7" TFT LCD)
Control module	TD510–MAIN	Temperature 2–channel control module
Power module	TM–PWR	Power module
Input module	TM–DI	Module with 16 input points
Output module	TM–DO	Module with 8 output points
Input/output module	TM–DIO	Module with 8 input and 6 output points

Temperature Controller

NP200 Programmable temperature controller

Specification

96×96×100
• Retransmission output • Input correction • Auto/Manual output • Heating/Cooling Control
• Constant-value control • 5 Inner signals • Zone PID • 5 Time signals
100 – 240 V a.c. (50/60Hz)
Max. 10 VA (except communication)
Multi input a) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, b) R.T.D : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, 0 to 10 V, -10 to 20 mV, 0 to 100 mV, d) DC Current input : 4 to 20 mA(Connect a 250 Ω resistor to the input terminals)
Universal-output: Relay, SSR, Current
PID or ON/OFF
4 Alarm output
RS 485/422 (Optional)
By Up/Down key on the front
PV : Digital LED, SV : LCD Back light
0.1 % of F.S (Full Scale)
1 or 0.1 % (According to input range)
Semipermanent
4 Alarm output (Run, Reset, Step, Hold)
30
300
30
1 ~ 99 times or limitless
Hour, Minute
250 ㎳
500 V a.c. 20 ㏁ min.
2300 V a.c. 50/60 Hz for 1 minute (Between primary and secondary terminal & between primary and ground)
0 ~ 50 ℃, 35 ~ 85 % R.H.

Suffix Code

Model	Code		Information
NP200	□	□	Programmable temperature controller, 96(W) X 96(H) ㎜
Control Types	0		Universal type (heating)
	1		Heating/cooling type (synchronous control type)
Option		0	None
		1	Communication function (RS485/422)
		2	Contact input(DI) 4 contacts
		3	Communication(RS485/422)+contact input 4 contacts

※ Option contact input 4 contacts are (DI-4) ~ (DI-7)

NP100 Programmable temperature controller

Specification

96×96×100
• Retransmission output • Input correction • Auto/Manual output • Heating/Cooling Control
• 2 Alarm output (Relay) • 2 Time signals (Transistor)
100 – 240 V a.c. 50/60Hz
Max. 10 VA (except communication)
Multi input 1) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, 2) R.T.D : Pt100(KS/IEC), KPt100(KS) 3) DC Voltage input : 1 to 5 V, 0 to 10 V, –10 to 20 mV, 0 to 100 mV, 4) DC Current input : 4 to 20 mA(Connect a 250 Ωresistor to the input terminals)
Universal–output : Relay, SSR, Current
PID or ON/OFF
2 Alarm output
RS 485/422 (Optional)
By Up/Down key on the front
PV/ SV : Digital LED
0.1 % of FS (Full Scale)
1 or 0.1 % (According to input range)
Semipermanent
3 Alarm output (Run, Reset, Hold)
2 Patterns, 20 Segments (10 Segments / 1 Pattern)
1 ~ 99 times or limitless
Hour, Minute
250 ㎳
500 V a.c. 20 ㏁ min.
2,300 V a.c. 50/60 Hz for 1 minute (Between primary and secondary terminal & between primary and ground)
0 ~ 50 ℃, 35 ~ 85 % R.H.

Suffix Code

Model	Code		Information
NP100	□	□	Programmable temperature controller 96(W) X 96(H) ㎜
Control Types	0		Universal type (heating)
Option		0	None
		1	Time signal 2 contacts
		2	Communication function (RS485/422)
		3	Time signal 2 contacts and communication (RS485/422)

Temperature Controller

MC9 Multi channels digital temperature controller

Specification

CE

96 X 96 X 100
• Multi channels PID control device • Various alarm functions (15 types) • multi memory function (max 8 x 8 units) • 8/4 channels control device • DI contact input function • Heating/cooling function (4 channels are possible only)
110 – 220 V a.c. 50 – 60 Hz
100 V a.c. (below 14 VA) / 240V a.c. (below 20 VA)
Input(Sensor type) selection by the configuration suffix code. a) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, b) R.T.D : Pt100 Ω(KS/IEC), KPt100 Ω(KS) c) DC Voltage input : 0 to 5 V, 1 to 5 V,0 to 10 V, d) DC Current input : 4 to 20 mA(Connect a 250 Ωresistor to the input terminals)
Type (Relay Output, Voltage Pulse Output, Triac Output, 4 – 20 ㎃ Output, 0 – 20 ㎃ Output)
1a Contact Type / 250 V a.c., 1 A (for resistive load) / Life time: above 300,000 times ON/OFF
EIA RS485 / RS232C, Max. connecting units : 31 units (for RS485, Address can be set from 1 to 99) Communication method: 4-wire half duplex/ 2-wire half duplex, Communication Protocol: PC-LINK
From Below 2 kΩ, ON, From Above 15 kΩ, OFF
Temperature: 0 ~ 50 ℃ (32 ~ 122 ℉), Humidity: 45 ~ 85 % RH (but, without condensation) Magnetic field : Below 400 AT/m Without poisonous gas and without full of dust

Suffix Code

• MC9 (4 channels)

□	□	□	□	□	□	4 channels digital temperature controller dimension : 96(W) X 96(H) ㎜
D						Direct action (cooling action)
R						Reverse action (heating action)
W						Heating / Cooling (synchronous output)
	□					Refer to the "Range and input code chart"
		M				Relay
		S				SSR
		T				Triac
		4				4 – 20 ㎃ d.c.
		5				0 – 20 ㎃ d.c.
			N			NONE
			M			Relay
			S			SSR
			T			Triac
			4			4 – 20 ㎃ d.c.
			5			0 – 20 ㎃ d.c.
				N		NONE
				1		AL2, AL3
				2		AL2, AL3 + RS232 + contact input
				3		AL2, AL3 + RS485 / 422 + contact input
				4		AL2, AL3 + heater break
					2	100 – 240 V a.c. 50 / 60 Hz
					1	24 V d.c.

• MC9 (8 channels)

Model	Code						Information
MC9-8	□	□	□	□	□	□	8 channel digital temperature controller. Dimension : 96(W) X 96(H) X 100(D)
Control type	D						Direct action (cooling action)
	R						Reverse action (heating action)
Intput type		□					Refer to the "Range and input code chart"
Heating output (output 1 ~ 4)			M				Relay
			S				SSR
			T				Triac
			4				4 – 20 ㎃ d.c.
			5				0 – 20 ㎃ d.c.
Cooling output (output 5~8) * in case of when control types are D and R then fix to N * in case of when control type is W then select among M,S,T, 4 and 5				N			NONE (when selected, input channels 5 ~ 8 are for indication)
				M			Relay
				S			SSR
				T			Triac
				4			4 – 20 ㎃ d.c.
				5			0 – 20 ㎃ d.c.
Optional					N		None
					2		RS232 + contact input
					3		RS485 / 422 + contact input
					4		Heater break
Power Supply Voltage						2	100 – 240 V a.c. 50/60 ㎐
						1	24 V d.c.

Range and input code chart

	K0	K	–200 ~ 1370	Bigger one between the ±(0.3 % of FS ±1 Digit) or ±2 ℃
	K1	K	–199.9 ~ 999.9	
	J0	J	–200 ~ 1200	
	J1	J	–199.9 ~ 999.9	
	E0	E	–199.9 ~ 999.9	
	E1	E	–199.9 ~ 999.9	
	T0	T	–199.9 ~ 400.0	
	R0	R	0 ~ 1700	
	R1	R	0.0 ~ 999.9	
	B0	B	0 ~ 1800	
	B1	B	0.0 ~ 999.9	
	S0	S	0 ~ 1700	
	S1	S	0.0 ~ 999.9	
	L0	L	–199.9 ~ 900.0	
	N0	N	–200 ~ 1300	
	N1	N	–199.9 ~ 999.9	
	U0	U	–199.9 ~ 400.0	
	W0	W	0 ~ 2300	
	A0	PL2	0 ~ 1390	
	P0	KPt100 Ω	–199.9 ~ 500.0	Bigger one between the ±(0.3 % of FS ±1 Digit) or ±0.8 ℃
	D0	Pt100 Ω	–199.9 ~ 600.0	
	V0	0 – 5 V	–199.9 ~ 999.9	± (0.3 % of FS ± 1 Digit)
	V1	1 – 5 V	–199.9 ~ 999.9	
	V2	0 – 10 V	–199.9 ~ 999.9	

Temperature Controller

ML Multi channels temperature controller (Module type)

Specification

CE

30 X 100 X 96.9				
24 V d.c.				
±10 % of power source voltage				
ML-D4S/C	ML-D4M	ML-D2HMS/SS	ML-D2H	ML-E
Maximum 7W below	Maximum 5W below	Maximum 7W below	Maximum 5W below	Maximum 3W below
K, J, E, T, R, B, S, L, N, U, W, PL2				Each ch can be selected by INP parameter
Pt100 Ω, KPt100 Ω				
0 – 100 mV, 1 – 5 V, 0 – 10 V				
50 ms.				
Below minimum unit of input range				
Thermo couple and direct current voltage input: over 1 MΩ				
About 0.2 uV / Ω				
Thermo-resistor (below 10 Ω. however, resistance among 3 lines should be same)				
Within -2 - 5 (Thermo couple, thermo-resistor), within -5 - 12 V (direct current, voltage)				
±100% of input range				
±1.5 ℃ (0 ~ 50 ℃)				
up scale				
1a contract point				–
250 V a.c. 3 A, 30 V d.c. 3 A				
Over 12 V (over 600 Ω of load resistance) if short circuit, limit to about 25 mA				
Time resolving power : larger side between control cycle 0.1% or 10 ms				
Resolution 4 -20 mA d.c. (below load resistance 600 Ω)				
Degree : ±0.1% of FS (4-20 mA scope)				
RS-485 EIA standard / 2 line type half duplex				
31 units				
1200 m				
No sequence				
9600, 19200, 38400, 76800, 87600 bps [initial value: 9600]				
1 bit				
7, 8 bit [initial value: 8]				
None, Odd, Even [initial value: Even]]				
1, 2 bit [initial value: 1]				
Reception handling time + (response time x 10 ms)				
PC-Link, PC-Link with SUM, Modbus ASCII/RTU [initial value: PC-Link]				
0 ~ 50 ℃				
35 ~ 85% RH (however, there should not be condensation)				
Should not be used in areas with toxic gas, magnetic field or dust				
Minimum 30 minutes				
Thermo couple, direct current voltage: Larger side between ±3 uV / ℃ or ±0.03% of FS / ℃ Thermo-resistor: Below ±0.1 ℃ / ℃				
Larger side between ±3 uV / 10 V or ±0.03 % of FS / 10 V				
-25 ~ 65 ℃				
5 ~ 95% RH (however, there should not be condensation)				
Less than 1 m in packaged condition				
About 220g (excluding box)				

Suffix Code

■ Module type temperature controller (ML-D2H)

Model	Code			Information	
ML-D	2	H	□	Module type temperature controller	
Number of channels	2			2 channel	
Intput		H		Heating/cooling control (simultaneous), heater break alarm (HBA)	
Control output			MM	OUT1 (heating) OUT2 (cooling)	Relay output
			SM	OUT1 (heating) OUT2 (cooling)	SSR / SCR (4 –20 mA d.c.) parameter optional output
			SS	OUT1 (heating) OUT2 (cooling)	SSR / SCR (4 –20 mA d.c.) parameter optional output

■ Module type temperature controller (ML-D4)

4	□	Module type temperature controller
4		4 channel
	M	Relay output
	S	SSR output (12 V d.c.)
	C	SCR output (4 – 20 mA d.c.)

Ex: Temperature control system 4 channel relay output : ML-D4M

■ Module type event output (ML-E)

	Module type 8 events output unit

Temperature Controller

SM100 Multi channel temperature controller (Board type)

Specification

Model		SM100-□□12	SM100-□□16	SM100-□□20
Appearance		CE 		
Number of channels		12 Channel	16 Channel	20 Channel
Measurement Input	Input type	Thermocouple (K type), RTD (Pt100 Ω IEC 751)		
	Display accuracy	±0.5 % of FS (※±0.5 % of max range)		
	RJC compensation accuracy	±3.5 ℃		
	Sampling Input	1 sec		
	Input filter	0 ~ 120.0 sec		
	Burn-out action	Thermocouple: Up Scale when break, RTD: Up Scale when break		
	compensation	±1200.0 ℃		
Control Output	Output type	SSR driving voltage pulse output (min 12 V d.c.), Load resistance (min 600 Ω)		
	Control action	Time proportional PID or ON / OFF control		
	Proportional cycle	1 ~ 100 sec		
	Proportional band	0 ~ 1200.0 ℃		
	Integral time	1 ~ 3600 sec		
	Derivative time	1 ~ 3600 sec		
	Over integral limitation (ARW)	0.1 ~100.0 %, ※ "0"setting (Auto)		
	Hysteresis	0 ~ 120.0 ℃ (※ ON/OFF width when selecting ON/OFF control)		
	Manual reset	0.0 ~ 100.0 % (※ when selecting ON/OFF control)		
	Output amount in emergency situation	0.0 ~ 100.0 % (output amount)		
	Output limit	0 ~ 100 %		
	Output action change	Direct/Reverse action (selectable by internal parameter)		
Power supply voltage		100 – 240 V a.c. 50 – 60 HZ, 24 V d.c.		
Power supply voltage fluctuation		± 10 % of the rated power supply voltage		
Power consumption		25 V A max.		
Insulation resistance		20 MΩ min. power terminal and earth (ground) terminal (500 V d.c. mega)		
Dielectric strength		2,000 V a.c. for 1min. power terminal and earth (ground) terminal		
Ambient temperature		0 ℃ ~ 50 ℃		
Ambient humidity		20 % ~ 85 RH (dew condensation not allowed)		
Storage temperature		–20 ℃ ~ 70 ℃ (dew condensation not allowed)		
Vibration resistance		10 – 55 Hz 19.6 ㎨ 3 axis 6 directions 2 h		
Shock resistance		196 ㎨ 3 axes 3 times to each of 6 directions		
Case material		SPC		
Installation		Fixed with screws		
Weight		approx. 1,000 g		

Suffix Code

Model	Code				Information
SM100-	□	□	□		Multi channel temperature controller (Board type)
Intput type	K				K type thermocouple input
	P				Pt100 Ω RTD input
Output form		N			No control output (exclusive for measured value)
		A			Control output
Number of control contact			12		12 channel
			16		16 channel
			20		20 channel
Power				A	100 – 240 V a.c. 50 – 60 Hz
				D	24 V d.c.

PX series Digital temperature controller

Specification

Model	PX9	PX7
Appearance	CE 	CE 
W×H×D(mm)	96×96×100	72×72×100
Function	• Fuzzy • Zone PID • Group PID • Auto tuning • 3 Alarm outputs • Universal-input/output • External contact input • Ramp & Soak • Output limitation • Heating/Cooling control • Interface (RS485 / 422) • Protection : IP 65 (Front) • Input filter : OFF, 1 ~ 120 sec. • Retransmission output (PV, SV, MV) • Heating/Cooling hysteresis	
Input	Multi input a) TC : K, J, E, T, R, B, S, L, N, U, W, PLII, b) RTD : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, -10 to 20 mV, 0 to 100 mV, d) DC Current input : 4 to 20 mA(Connect a 250 Ω resistor to the input terminals)	
Sampling cycle	250 ㎳ (Remote input : 500 ㎳)	
Input display resolution	Below decimal point of Input signal and measuring range	
Input impedance	Min 1 ㏁ (Thermocouple, DC voltage input)	
Source tolerable resistance	Thermocouple : 250 Ω max, DC voltage : 2 kΩ max	
Lead wire tolerable resistance	RTD : Max. 10 Ω/wire (notice : Identical conductor resistance between 3 wires)	
Input tolerable voltage	±10 V (TC, RTD, DC voltage : mV d.c.), ±20 V (Voltage : V d.c.)	
Scaling	According to setting max. value(SH), min. value(SL) of measuring range, scaling is available (-1999 ~ 9999)	
Cold junction temp. compensation tolerance	±1.5 ℃(15 ~ 35 ℃), ±2.0 ℃(0 ~ 50 ℃)	
Accuracy	±0.1 % (Full scale)	

Suffix Code

□	□	□	Multi input/output temperature controller
7			72(W) X 72(H) ㎜
9			96(W) X 96(H) ㎜
	0		Standard
	1		Heating/cooling control (synchronous control output)
		0	NONE
		1	PX7 : RS485/422, OUT2, REM(Remote input function) PX9 : RS485/422, HBA 2 Contact, REM
		2	RS485/422, OUT2, HBA 1 Contact
		3	Contact input (D.I), OUT2, HBA 1 Contact

Note) 1) Only option 1 is available with PX9, 2) All options are available with PX7

Temperature Controller

AX series Multi input digital temperature controller

Specification

Model		AX9	AX2	AX7	AX3	AX4
Appearance						
W×H×D (mm)		96 X 96 X 63	48 X 96 X 63	72 X 72 X 63	96 X 48 X 63	48 X 48 X 63
Input type		Multi input (Thermocouple: K, J, R, T, IEC 584-1), (RTD: Pt 100 Ω, IEC751)				
Sampling cycle		100 ms				
Input impedance		max 1 MΩ				
Allowable input voltage		10 V d.c. max				
Display accuracy		±0.3 % of FS ±1 digit (In case of R type, ±1.0 % of ±1 digit in the 0 ~ 600 ℃ range)				
Display type		7 Segment LED (PV: red, SV: green)				
Front Size (mm)	PV	22.5×11.2	14.5×7.0	14.5×7.0	15.9×7.6	13.0×6.5
	SV	18.7×9.3	10.8×5.2	9.4×4.7	12.0×6.0	9.2×5.2
Input		• Thermocouple : 0.1 ℃ (TC-K2, TC-J), 0.5 ℃ (TC-K1) • RTD : 0.03 ℃, (0.1 ℉)				
Insulation resistance		min 20 MΩ, 500 V d.c. 1 minute (primary terminal-secondary terminal)				
Dielectric strength		2300 V a.c. 50/60 Hz, for 1min (primary terminal-secondary terminal)				
Control method		PID control by Auto-Tuning, ON / OFF control.				
Control output operation		Reverse operation / Direct operation selectable by the parameter setting				
Control output		• Relay output ※Selectable by the parameter setting 1a contact, 3A 240 V a.c., 3 A 30 V d.c. (resistive load)				
		• Voltage pulse output for running SSR [time sharing proportional control (CYC)] • Voltage pulse output for running SSR 0/12 V d.c., pulse voltage (resistive load minimum 600 Ω)				
Power supply voltage		100 – 240 V a.c. 50 / 60 Hz				
Voltage fluctuation		± 10 % of the power supply voltage				
Power consumption		Within 5.5 VA				
Ambient temperature		– 5 ~ 50 ℃				
Ambient humidity		35 ~ 85 % R.H(but without dew condensation)				
Vibration resistance		10 – 55 Hz, 0.75 mm, each to direction X, Y and Z for 2 hours				
Shock resistance		300 m/s² to direction 6 each 3 times				
Weight (Weight included the weight of box)		320 g	320 g	180 g	300 g	400 g

Suffix Code

□–	□	□	Digital temperature controller (Multi input: K, J, Pt100 Ω)	
2			AX2 : 48 X 96 ㎜	
3			AX3 : 96 X 48 ㎜	
4			AX4 : 48 X 48 ㎜	
7			AX7 : 72 X 72 ㎜	
9			AX9 : 96 X 96 ㎜	
	1		SSR + Relay1 + Relay2	Relay or SSR as control output (Selectable in operator setup mode)
	2		SSR + Relay1 + Relay2 + Relay3	
	1B		SSR + Relay1(Form c) + Relay2	Only for AX2, 3, 7, 9
	2B		SSR + Relay1(Form c) + Relay2 + Relay3	
	3		4 – 20 ㎃ + Relay2	Current output as control output
	4		4 – 20 ㎃ + Relay2 + Relay3	
		A	100 – 240 V a.c. 50 / 60 Hz	

※ Form C : Normal close type contact.

※ Relay output operates as control output, alarm output and LBA output depending on the internal parameter setting.

NX series Multi input/output digital temperature controller (PID Auto-tuning)

Specification

Model	NX9	NX2	NX7	NX3
Appearance				
W×H×D(mm)	96×96×100	48×96×100	72×72×100	96×48×100
Function	• Fuzzy • Zone PID • Group PID • Auto tuning • 2 Alarm outputs • Universal-input/output • External contact input • Output limitation • Heating/Cooling control • Heater Break Alarm (HBA1) • Interface (RS485 / 422) • Protection:IP 65 (Front) • Input filter : OFF, 1~120 sec. • Retransmission output (PV, SV, MV) • Heating/Cooling hysteresis			
Input	Multi input a) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, b) R.T.D : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, -10 to 20 mV, 0 to 100 mV, d) DC Current input : 4 to 20 mA(Connect a 250 Ω resistor to the input terminals)			
Sampling cycle	250 ms			
Input display resolution	Below decimal point of Input signal and Measuring range			
Input impedance	TC and DC mV input : Min 1 MΩ, DCV : Approx. 1 MΩ			
Source tolerable resistance	Thermocouple : Max. 250 Ω, Voltage : Max. 2 kΩ			
Lead wire tolerable resistance	RTD : Max. 10 Ω /wire (notice : Identical conductor resistance between 3 wires)			
Input tolerable voltage	±10 V (TC, RTD, Voltage : mV d.c.), ±20 V (Voltage: V d.c.)			
Cold junction temp. compensation tolerance	±1.5 ℃ (15 ~ 35 ℃), ±2.0 ℃ (0 ~ 50 ℃)			
Accuracy	±0.5 % (Full scale)			

Suffix Code

Model	Code			Information
NX	□-	□	□	Multi input/output temperature controller
Dimension	2			48(W) X 96(H) ㎜
	3			96(W) X 48(H) ㎜
	7			72(W) X 72(H) ㎜
	9			96(W) X 96(H) ㎜
Control type		0		Standard
		1		Heating/Cooling control (synchronously)
NX9 Option			0	NONE
			1	RS485, HBA
NX7 Option			0	NONE
			1	RS485, HBA
			2	SV2, SV3, HBA
NX2, 3 Option			0	SV2, SV3
			1	HBA
			2	RS485

Temperature Controller

NX4 Multi input/output digital temperature controller (PID Auto-tuning)

Specification

48 X 48 X 100
• Zone PID • Group PID • Auto tuning • 2 Alarm outputs • Universal-input/output • External contact input • Output limitation • Heating/Cooling control • Heater Break Alarm (HBA1) • Interface (RS485 / 422) • Protection:IP 65 (Front) • Input filter : OFF, 1~120 sec. • Retransmission output (PV, SV, MV) • Heating/Cooling hysteresis
Multi input a) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, b) R.T.D : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, -10 to 20 mV, 0 to 100 mV, d) DC Current input : 4 to 20 mA(Connect a 250 Ωresistor to the input terminals)
250 ms
Below decimal point of Input signal and Measuring range
TC and DC mV : Min 1 MΩ, DCV : Approx. 1 MΩ
Thermocouple : Max. 250 Ω, Voltage : Max. 2 kΩ
RTD : Max. 10 Ω / wire (notice : Identical conductor resistance between 3 wires)
±10 V (TC, RTD, Voltage : mV d.c.), ±20 V (Voltage : V d.c.)
±1.5 ℃ (15 ~ 35 ℃), ±2.0 ℃ (0 ~ 50 ℃)
±0.5 % (Full scale)

Suffix Code

Model	Code		Information
NX4-	□	□	Multi input/output temperature controller, 48(W) X 48(H)
Control type	0		Standard
	1		Heating/cooling control (synchronous control)
	2		Heating/cooling control (only for NX4-20)
NX4 Option		0	NONE
		1	HBA, AL2
		2	SV2, SV3
		3	RET, RS485
		4	RS485, SSR / SCR
		5	AL1, AL2
		6	AL1, AL2, SV2
		7	RS485, HBA

Note) Option 1: OUT1 (terminal 1-2-3) is applied as AL1 But, only with control output SSR/SCR selection
Option 3: OUT2 (terminal 11-12) is applied as RET
Option 4: OUT2 (terminal 11-12) is applied as SSR / SCR
Option 5: OUT1 (terminal 6-7) is impossible to apply as SV2
Option 6: OUT1 (terminal 6-7) is applied as SV2 but only with relay control output.

NX1 Multi input/output digital temperature controller (PID Auto-tuning)

Specification

Model	NX1
Appearance	
W×H×D(mm)	48 X 24 X 100
Function	• Zone PID • Group PID • Auto tuning • 2 Alarm outputs • Universal-input/output • External contact input • Output limitation • Heating/Cooling control • Heater Break Alarm (HBA1) • Interface (RS485 / 422) • Protection:IP 65 (Front) • Input filter : OFF, 1~120 sec. • Retransmission output (PV, SV, MV) • Heating/Cooling hysteresis
Input	Multi input a) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, b) R.T.D : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, -10 to 20 mV, 0 to 100 mV, d) DC Current input : 4 to 20 mA(Connect a 250 Ωresistor to the input terminals)
Sampling cycle	250 ms
Input display resolution	Below decimal point of Input signal and Measuring range
Input impedance	TC and DC mV : Min 1 MΩ, DCV : Approx. 1 MΩ
Source tolerable resistance	Thermocouple: Max. 250 Ω, Voltage: Max. 2 kΩ
Lead wire tolerable resistance	RTD: Max. 10 Ω /wire (notice: Identical conductor resistance between 3 wires)
Input tolerable voltage	±10 V (TC, RTD, Voltage : mV d.c.), ±20 V (Voltage : V d.c.)
Standard junction temp. compensation tolerance	±1.5 ℃ (15 ~ 35 ℃), ±2.0 ℃ (0 ~ 50 ℃)
Accuracy	±0.5 % (Full scale)

Suffix Code

□	□	Multi input/output temperature controller. 48(W) X 24(H) ㎜
0		Universal type
1		Heating/Cooling control (synchronously)

0	RET	Relay	–
1	None	SSR/SCR	–
2	RS485/RET	Relay	–
3	RS485	SSR/SCR	–
4	ALM	SSR/SCR	–
5	ALM/RS485	SSR/SCR	–
0	None	Relay	SSR/SCR
1	None	SSR/SCR	Relay
2	RS485	Relay	SSR/SCR

Temperature Controller

HX series Multi input/output Digital temperature controller

Specification

Model		HX9	HX2	HX7	HX3	HX4
Appearance						
W×H×D (mm)		96 X 96 X 63	48 X 96 X 63	72 X 72 X 63	96 X 48 X 63	48 X 48 X 63
Power supply Voltage		100 – 240 V a.c. (±10 %), 50/60 Hz				
Power consumption		6 W max, 10 VA max				
Input	Type	Refer to “input code for input type and range”				
	Sampling cycle	62.5 ms				
	Accuracy	±0.5 % of FS (refer to “input code for input type and range”)				
	Allowable voltage	Within ±20 V d.c. (VDC), within ±10 V d.c. (TC, RTD)				
	Reference junction compensation accuracy	±3.5 ℃ (0 ~ 50 ℃)				
	Operation after input break	TC: OFF, UP/DOWN RTD: UP				
Control output	Relay	NO : 5 A 250 V a.c., 5 A 30 V d.c. (resistive load), NC : 3 A 250 V a.c., 1 A 30 V d.c. (resistive load)				
	SSR (voltage pulse)	ON voltage : 12 V d.c. min, OFF voltage : 0.1 V d.c. max, Load resistance 600 Ω min				
	SCR (current)	range : 4 - 20 mA (±5%), accuracy : ±0.2 mA, Load resistance 600 Ω max				
Retransmission output		■ range : 4 - 20 mA (±5%), accuracy : ±0.2 mA Load resistance 600 Ω max ■ range : 0 - 20 mA (±5%), accuracy : ±0.2 mA Load resistance 600 Ω max				
Alarm output		5 A 250 V a.c., 5 A 30 V d.c. (Resistive load)				
Contact input		OFF resistance : 10 kΩ min, ON resistance : 1 kΩ max				
Control	Method	ON/OFF, PID control				
	Output operation	Reverse operation, Direct operation				
	Anti-reset windup	Auto(A=0), 0.1 ~ 100.0 %				
Interface	Standard	EIA RS485				
	Max connection unit	31 units (but, ADDRESS setting : 1 ~ 99)				
	Communication method	2 wire half duplex				
	Data transmission	asynchronous				
	Communication sequence	None				
	Communication distance	Within1.2 km				
	Communication Speed	2400, 4800, 9600, 14400, 19600 BPS (selectable by parameter)				
	Start bit	1 BIT				
	Data length	7 or 8 BIT				
	Parity bit	NONE, EVEN, ODD				
	Stop bit	1 or 2 BIT				
	Protocol	PC.LINK, PC.LINK SUM, MODBUS-ASCII, MODBUS-RTU				
	Response time	Processing time in receiving + (response time x 25 ms)				
Insulation resistance		20 MΩ min (primary terminal - secondary terminal)				
Dielectric strength		2,300 V a.c., for 1 minute (primary terminal - secondary terminal)				
Operating ambient temperature		0 ~ 50 ℃, (without condensation)				
Operating ambient humidity		35 ~ 85 % RH (without condensation)				

Suffix Code

Model	Code			Information
HX	□-	□	□	Multi-input and output digital temperature controller
Dimension	2			48(W) × 96(H) mm
	3			96(W) × 48(H) mm
	4			48(W) × 48(H) mm
	7			72(W) × 72(H) mm
	9			96(W) × 96(H) mm
Control output		0		Standard
		1		Heating/cooling control (simultaneous control)
HX2/3/9 option			0	None
			1	RS485 communication + Heater break alarm (HBA)
HX7 option			0	None
			1	RS485 communication + D.I 2 contacts (SV2, SV3)
			2	RS485 communication + Heater break alarm (HBA)
HX4 option			0	None
			1	RS485 communication + D.I 1 contact (SV2)
			2	RS485 communication + Heater break alarm (HBA)

Range and input code chart

	1	K	*1	–200 ~ 1370	±0.5 % of FS ±1 Digit	• FS is the measurable range from the maximum to the minimum for each range. • Digit is the minimum display value *1 below 0 ℃ : ±1.0 % of FS ± 1 digit *2 0 ~ 400℃ range : ±10 % of FS ± 1 digit *3 20 → KPt100 Ω (C1603) 21, 22 → Pt100 Ω(IEC751) *4 In case of using Current input, Resistor 250 Ω 0.1 % should be installed in the input terminal.
	2	K	*1	–199.9 ~ 999.9		
	3	J	*1	–100.0 ~ 999.9		
	4	E	*1	–100.0 ~ 999.9		
	5	T	*1	–199.9 ~ 400.0		
	6	R		0 ~ 1700		
	7	B	*2	0 ~ 1800		
	8	S		0 ~ 1700		
	9	L	*1	–100.0 ~ 900.0		
	10	N		–200 ~ 1300	±1.0 % of FS ±1 Digit	
	11	U	*1	–199.9 ~ 400.0	±0.5 % of FS ±1 Digit	
	12	W		0 ~ 2300		
	13	Platinel II		0 ~ 1390		
	20	KPt100 Ω	*3	–199.9 ~ 500.0	±0.5 % of FS ±1 Digit	
	21	Pt100 Ω	*3	–199.9 ~ 640.0		
	22	Pt100 Ω	*3	–200 ~ 640		
	30	1.000 – 5.000 V DC		–1999 ~ 9999 Scaling function(SL–H/SL–L) necessary	±0.5 % of FS ±1 Digit	
	31	0.0 – 100.0 mV DC				
	30	4 – 20 mA DC	*4			

UX100 Multi input/output digital temperature controller

Specification

Model	UX100
Appearance	
W×H×D (mm)	48 X 24 X 100
Function	• Fuzzy • Input correction • Interface (RS485) • Heating/Cooling control • Output limitation • Auto tuning • ARW • Input filter: OFF, 1 ~ 120 sec. • Universal–input • Heating/Cooling hysteresis • Alarm output
Input	Multi input a) T.C : K, J, E, T, R, B, S, L, N, U, W, PLII, b) R.T.D : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, –10 to 20 mV, 0 to 100 mV, d) DC Current input : 4 to 20 mA(Connect a 250 Ωresistor to the input terminals)
Sampling cycle	250 ms
Input display resolution	Below decimal point of Input signal and Measuring range
Input impedance	TC and DC mV : Min 1 MΩ, DCV : Approx. 1 MΩ
Source tolerable resistance	Thermocouple: Max. 250 Ω, Voltage: Max. 2 kΩ
Lead wire tolerable resistance	RTD: Max. 10 Ω/wire
Input tolerable voltage	±10 V (TC, RTD, Voltage: mV d.c.), ±20 V (Voltage: V d.c.)
Scaling	According to setting Max. value(SH), Min. value(SL) of measuring range, scaling is available (–1999 ~ 9999)
Cold junction temp. compensation tolerance	±1.5 ℃ (15 ~ 35 ℃), ±2.0 ℃ (0 ~ 50 ℃)
Accuracy	±0.5 % (Full scale)

Suffix Code

Model	Code		Information
UX100–	□	□	Multi input/output temperature controller. 48(W) X 24(H) mm
Control type	0		Standard
	1		Heating/cooling control (but heating side cannot use relay)
Option		0	None
		1	Communication function (RS 485)

Temperature Controller

KX series Multi input Digital temperature controller (PID Auto-tuning)

Specification

Model	KX9N	KX2N	KX7N	KX3N	KX4N
Appearance					
W×H×D(mm)	96 X 96 X 100	48 X 96 X 100	72 X 72 X 100	96 X 48 X 100	48 X 48 X 100
Function	• Built-in PID auto tuning function • Direct/Reverse operation selection function • Alarm (ALH, ALL, LBA) • Upper/Lower limit setting limitation function • Setting data lock function • Input compensation function • Decimal point display function				
Power Voltage	100 – 240 V a.c. 50 – 60 Hz (voltage fluctuation rate: ±10 %)				
Power Consumption	approx. 11 VA max				
Input	Multi input a) TC : K, J, E, T, R, B, S, L, N, U, W, PLII, b) RTD : Pt100(KS/IEC), KPt100(KS) c) DC Voltage input : 1 to 5 V, 0 to 10 V, d) DC Current input : 4 to 20 mA(Connect a 250 Ω resistor to the input terminals)				
Control Output	• Relay: 250 V a.c. 3 A (Resistive load) • SSR : 12 V d.c. pulse voltage(Load resistance ±0.2 mA 600 Ω min) • Current Output: 4 – 20 mA d.c. (Load resistance 600 Ω max)				
Control type	• PID operation • ON/OFF operation				
Alarm Output	ALH, ALL (250 V a.c. 3 A)				
Loop Break Alarm	LBA (250 V a.c. 3 A)				
Setting Method	Digital Setting by Up/Down Keys				
Accuracy	±0.5 % of FS (Please refer to Input code)				
Dielectric Strength	2,300 V a.c. 50/60 Hz, for 1 minute (Primary terminal-secondary terminal)				
Operating Ambient Temperature/Humidity	0 ~ 50 ℃ / 35 ~ 85 % RH (without condensation)				

Suffix Code

□-	□	□	□	□		
2N					48(W) X 96(H) ㎜	
3N					96(W) X 48(H) ㎜	
4N					48(W) X 48(H) ㎜	
7N					72(W) X 72(H) ㎜	
9N					96(W) X 96(H) ㎜	
4S					48(W) X 48(H) ㎜	for 11 pin socket
	M				Relay	
	S				SSR (voltage pulse 12 V d.c.)	
	C				SCR (Current 4 – 20 ㎃ d.c.)	
		C			※ KX4N, KX4S selection only	ALH, ALL, LBA (1a common output)
		E			※ Unavailable KX4S	
					KX2N, KX3N, KX9N	ALH(1c),ALL(1a)
					KX7N, KX4N (optional)	ALH(1a),ALL(1a)
		K			※ Unavailable KX4N, KX4S	
					KX2N, KX3N, KX9N (optional)	ALH(1c),ALL(1a),LBA(1a)
					KX7N (optional)	ALH(1a),ALL(1a),LBA(1a)
			A		※ Only selectable with models given in the below KX4N-□C KX2N-□E, KX3N-□E, KX9N-□E KX2N-□K, KX3N-□K, KX9N-□K	Retransmission output(RET) 4 – 20 ㎃ d.c.
			N		None	
				A	100 – 240 V a.c. 50 – 60 Hz	
				D	24 V d.c. (Unavailable in KX4S)	

※ When using 4 – 20 ㎃ input, attach 0.1 % of 250 Ω resistance to the input terminal of 1 – 5 V d.c.

DX series Simple operation, approved function (PID Auto-tuning)

Specification

Model		DX9	DX2	DX7	DX3	DX4
Appearance						
W×H×D (mm)		96 X 96 X 100	48 X 96 X 100	72 X 72 X 100	96 X 48 X 100	48 X 48 X 100
Power supply		100 – 240 V a.c. (± 10 %), 50 – 60 Hz				
Power consumption		Max. 12 VA				
Input	Type	Input(Sensor type) selection by the configuration suffix code. a) Thermo couple : K, J,R, b) R.T.D : KPt100 Ω(KS), Pt100 Ω(IEC751), c) DC current input : 4 to 20 mA, d) DC voltage : 1 to 5 V, 0 to 10 V				
	Sampling Cycle	250 ms				
	Accuracy	± 0.5 % of FS (DCV Input : ±1 % of FS)				
	Tolerable voltage	20 V d.c. for 1 minute				
	Cold junction compensation error	± 3.5 ℃ (Within 0 ~ 50℃)				
	Input disconnection	Up Scale				
Output	Relay output	NO : 5 A 250 V a.c., 5 A 30 V d.c. (Resistive load), NC : 3 A 250 V a.c., 1 A 30 V d.c. (Resistive load), Switching Life : 1,000,000 times (No-load)				
	Voltage output	ON voltage : 12 V d.c. Min, OFF voltage : 0.1 V d.c. max, Resistive load 600 Ωmin.				
	Current output	4 – 20 mA d.c. (Load resistance 600 Ω max.) Accuracy : ±0.2 mA				
Transmission output		4 – 20 mA d.c. (Load resistance 600 Ω max.) Accuracy : ±0.2 mA				
Alarm		5 A 250 V a.c., 5 A 30 V d.c. (Resistive load), Switching Life : 1,000,000 times (No-load)				
Control	Type	ON/OFF, PID control				
	Operation	Reverse, Direct				
	ARW	Auto(A=0), 0.1 ~ 100.0 %				
Insulation resistance		More than 20 MΩ between Primary terminal and secondary terminal				
Dielectric strength		2,300 V a.c., for 1 minute between Primary terminal and secondary terminal				
Operating environment	Temp. & Humidity	0 ~ 50 ℃, 35 ~ 85 % RH (No condensation)				
	Environment	Refer to "safety information"				

Suffix Code

Model	Code								Information
DX	□–	□	□	□	□	□	□	□	Digital temperature controller
Dimension	2								48(W) x 96(H) ㎜
	3								96(W) x 48(H) ㎜
	4								48(W) x 48(H) ㎜
	7								72(W) x 72(H) ㎜
	9								96(W) x 96(H) ㎜
Intput		K							K thermocouple
		J							J thermocouple
		R							R thermocouple
		D							RTD (KPt 100 Ω)
		P							RTD (Pt 100 Ω)
		V							1 – 5 V d.c.
		C							4 – 20 ㎃ d.c.
		F							0 – 10 V d.c.
Control output			M						Relay contact output
			C						Current output (4 – 20 ㎃ d.c.)
			S						SSR (voltage pulse output, 12 V d.c.)
Alarm output				S					Alarm output 1 contact (model : DX4)
				W					Alarm output 2 contact (all models except DX4)
Optional					A				Retransmission output (4 – 20 ㎃ d.c. measured value)
					N				None (DX4, DX7 No retransmission output)
Control operation ※selection by SL9 (initial value : R)						R			Reverse action (heating control)
						D			Direct action (cooling control)
Power Supply Voltage								•	No indication (100 – 240 V a.c.)
								C	24 V d.c. / a.c.

Temperature Controller

BR6A Refrigeration temperature controller

Specification

Model			BR6A
Appearance			CE 
W×H×D(mm)			75 X 33 X 69.5
Power consumption			5 VA max (220 V a.c. 60 Hz)
Input sensor			Company exclusive sensor (TH-570N) ※ Thermistor (-50.0 ~ 150.0 ℃)
Display accuracy			±1 % of FS ±1 Digit
Control output (Main Output)		Relay output	Contact composition : 1c, 250 V a.c., 5 A (Resistive load)
		SSR	10 V d.c. more than (Resistive load 500 Ω min)
Alarm/Defrost		Relay	Contact composition : 1c, 250 V a.c., 5 A (Resistive load)
Control action			Proportional control (P control), ON/OFF control
Setting method			Digital setting with operation buttons
Other function			Defrosting Timer, Alarm function, Heating/cooling control
Ambient temperature			0 ~ 50 ℃
Resistance between wires			Below 10 Ω for each wire
Ambient humidity			35 ~ 85 % RH (With no condenssation)
Weight			120 g

Suffix code

Model	Code					Description
BR6A -	□	□	□	□	-□	Digital temperature controller (Selective control type in parameter (Proportional or ON/OFF control))
Input	N					Company exclusive sensor (TH-570N) ※ Thermistor
Control output		M				Relay connect output
		S				SSR output (Voltage pulse 12 V d.c.)
Option			0			None
			1			Communication (RS-485, MODBUS ASCII / RTU)
Power supply voltage				P4		100 ~ 240 V a.c. 50 ~ 60 Hz
LED color					W	White LED display
					R	Red LED display

BR6 Refrigeration temperature controller

Specification

Model		BR6
Appearance		CE 
W×H×D(mm)		77 X 35 X 70.5
Power Voltage		100 ~ 240 V a.c. 50 ~ 60 Hz, 10 ~ 24 V d.c./a.c. 50 ~ 60 Hz
Power Consumption		5 VA max(220 V a.c. 60 Hz)
Input		Thermistor (HANYOUNG NUX exclusive)
Display accuracy		±1 % of FS ±1 digit
Control&Auxiliary output	Relay	Form C contact, 250 V a.c. 5 A (Resistive load)
	SSR	Approx 5 V d.c. 500 Ω min (Load resistance)
Control mode		ON / OFF, Proportion
Setting method		Digital method by up and Down key
Other function		Defrosting Timer, Alarm function, Heating / cooling control
Ambient temperature		0 ~ 50 ℃
Ambient humidity		Max. 85 % RH

Suffix code

					Digital temperature controller
F					ON/OFF control
P					Proportional control
	N				Company exclusive sensor (TH-540N) *Thermistor
		M			Relay
		S			SSR (voltage pulse output 5 V d.c.)
			P3		10 ~ 24 V d.c. / a.c. 50 ~ 60 Hz
			P4		100 ~ 240 V a.c. 50 ~ 60 Hz

ED6 Economical Digital temperature controller

Specification

Model		ED6
Appearance		CE 
W×H×D(mm)		77 X 35 X 70.5
Power Voltage		100 – 240 V a.c. 50 – 60 Hz, 10 – 24 V d.c./a.c. 50 – 60 Hz
Power Consumption		5 VA max(220 V a.c. 60 Hz)
Input		Thermocouple : K, RTD : Pt100 Ω(IEC751)
Display accuracy		±1 % of FS ±1 digit
Control&Auxiliary output	Relay	SPDT(Form C contact) 250 V a.c. 5 A (Resistive load)
	SSR	Approx 5 V d.c. 500 Ω min (Load resistance)
Control mode		ON / OFF or Proportional
Setting method		Digital method by up and Down key
Other function		Defrosting Timer, Alarm function, Heating / cooling control
Ambient temperature		0 – 50 ℃
Ambient humidity		35 ~ 85 % RH (Without Condensation)

Suffix code

Model	Code					Information
ED6	□	□	□	□	□	Digital temperature controller
Control type	F					ON/OFF control
	P					Proportional control
Input		K				Thermocouple K
		P				RTD Pt100 Ω (IEC)
		C				4 – 20 ㎃ d.c. (attach 250 Ω of external resistance), 1 – 5 V d.c.
Control output			M			Relay
			S			SSR (voltage pulse output 5 V d.c.)
Optional				A		Alarm or defrosting timer
				N		NONE
Power Supply Voltage					P3	10 – 24 V d.c. / a.c. 50 – 60 ㎐
					P4	100 – 240 V a.c. 50 – 60 ㎐

HD6 Economical Digital temperature controller

Specification

Model	HD6
Appearance	
W×H×D(mm)	77 X 35 X 70.5
Power Voltage	100 – 240 V a.c. 50 – 60 ㎐, 10 – 24 V d.c./a.c. 50 – 60 ㎐
Power Consumption	5 VA max (220 V a.c. 60 ㎐)
Input	Thermistor(HANYOUNG NUX exclusive)
Display accuracy	±1 % of FS ±1 Digit
Control output (Relay contact)	From A contact X 2, 250 V a.c. (Resistive load)
Control mode	ON/OFF control
Setting method	Digital method by up and Down key
Other function	Output for motor control of operation/closing window of green house
Ambient temperature	0 ~ 50 ℃
Ambient humidity	35 ~ 85 % RH (without dew condensation)

Suffix code

Model	Code				Information
HD6	□	□	□	□	Economical digital temperature controller
Control type	F				ON/OFF control
Input		N			Company exclusive sensor (TH–540N) *Thermistor
Control output			M		Relay
Power Supply Voltage				P4	100 – 240 V a.c. 50 – 60 ㎐

Temperature Controller

HY series Economical digital temperature controller

Specification

Model		HY-8000S	HY-8200S	HY-72D	HY-48D
Appearance					
W×H×D(mm)		96 X 96 X 125	96 X 96 X 125	72 X 72 X 110	48 X 48 X 100
Power Voltage		110 / 220 V a.c. (50 / 60 Hz)			
Power Consumption		3 VA			
Input		Input(Sensor type) selection by the configuration suffix code. a) Thermo couple : K, J, R b) RTD : KPt100 Ω(KS), Pt100 Ω(IEC 751) c)DC current : 4 to 20 mA d) DC voltage : 1 to 5 V d.c.			
Control Output		Relay contact : 250 V a.c. 3 A (Resistive load), SSR: 12 V d.c. (Constant voltage pulse) [Load resistance min. 800 Ω], Current: 4 – 20 mA d.c. [Load resistance max. 600 Ω)			
Control action		Proportional or ON/OFF control			
Alarm Output		–	Relay contact : 250 V a.c. 3 A	–	
Setting Method		By B.C.D S/W			
Indication range		Setting temperature range			
Display		LED Display			
Setting and display accuracy		Set Value : ±1.0 % of FS, Display :±0.5 % of FS			
Control sensitivity		Approx 0.2 % FS (Fixed)			
Proportional Cycle		Relay contact : 25 ~ 30 sec SSR : 2 ~ 4 sec			
Reset Range		Max. ±1.5 % of Range			
Dielectric Strength		2,000 V a.c. 50/60 Hz for 1 minute (Primary terminal-secondary terminal)			
Vibration	Malfunction Resistance	2 – 55 Hz, X·Y·Z each position for 10 minutes			
	Mechanical Durability	10 – 55 Hz, 0.76 mm, X·Y·Z each positions for 2 hours			
Shock	Malfunction Resistance	100 ㎨ 6 positions, each 3 times			
	Mechanical Durability	300 ㎨ 6 positions, each 3 times			
Life	Mechanical	Min.10 million times (Relay type)			
	Electrical	Min. 0.3 million times (Relay type)			
Ambient temperature and humidity		0 ~ 50 ℃ (32 ~122 ℉) 35 ~ 85 % RH (Without freeze)			

Suffix Code

Model	Code								Information
HY–	□–	□	□	□	□	□	□		Digital temperature controller
Dimension	8000S								96 X 96 ㎜
	8200S								96 X 96 (alarm setting general specification)
	72D								72 X 72
	48D								48 X 48
Control type		F							ON/OFF control
		P							Proportional control
Input			K						K thermocouple
			J						J thermocouple
			R						R thermocouple
			D						RTD KPt 100 Ω
			P						RTD Pt 100 Ω (IEC)
			V						1 – 5 V d.c.
			C						4 – 20 ㎃ d.c.
Control output				M					Relay
				C					Current output (4 – 20 ㎃ d.c.)
				S					SSR (voltage pulse output, 12 V d.c.)
Alarm output					N				None
					O				High alarm (HY-8200S)
Control action(Internal selection)						R			Reverse action (heating control)
						D			Direct action (cooling control)
Range code									Refer to the range and input code

Range and input code chart

Classification	Code	HY-8000S, 8200S		HY-72D		HY-48D	
		Input type	Range (℃)	Input type	Range (℃)	Input type	Range (℃)
Thermocouple	4	–	–	–	–	K, J	0 ~ 299
	5	–	–	–	–		0 ~ 399
	6	K, J	0 ~ 199	K,J	0 ~ 199	–	–
	7		0 ~ 299		0 ~ 299		
	8		0 ~ 399		0 ~ 399		
	9		–		0 ~ 599		
	10		0 ~ 599	K	0 ~ 799		
	11	K	0 ~ 799		–		
	12		–		0 ~ 1199		
	13		0 ~ 1199	R	600 ~ 1699		
	14	R	600 ~ 1699	–	–		
RTD	1	–	–	–	–	Pt100 Ω	-49 ~ 49
	2	Pt100 Ω	-99 ~ 99	Pt100 Ω	-99 ~ 99		-99 ~ 99
	3		-99 ~ 199		-99 ~ 199		0 ~ 199
	4		0 ~ 99		0 ~ 99		0 ~ 299
	5		–		–		0 ~ 399
	6		0 ~ 199		0 ~ 199	–	–
	7		0 ~ 299		0 ~ 299		
	8		0 ~ 399		0 ~ 399		
Voltage/ current (DC)	–	1 – 5 V	0 ~ 99	1 – 5 V	0 ~ 99	1 – 5 V	0 ~ 99
	–	4 – 20 mA	0 ~ 99	4 – 20 mA	0 ~ 99	4 – 20 mA	0 ~ 99

DF series Economical digital temperature controller

Specification

Model		DF2	DF2(SUB)	DF4
Appearance				
W×H×D(mm)		48 X 96 X 100	48 X 96 X 100	48 X 48 X 100
Power voltage		110 / 220 V a.c. (50/60 Hz)		220 V a.c. (110 V, option)
Power consumption		3 VA	4 VA	3 VA
Input		See range and input code chart(TC, RTD, 4 to 20 mA d.c., 1 to 5 d.c.) ※ Range(0 to 99) of Current and voltage input		
Control output		Relay contact : 250 V a.c. 3 A (Resistive load), SSR : 12 V d.c. (constant voltage pulse) (Load resistance min. 800 Ω), Current: 4 – 20 mA d.c. (Load resistance max. 600 Ω)		
Control action		–	Proportional or ON/OFF control	–
Alarm		Relay contact : 250 V a.c. 3 A		
Setting		By BCD S/W		
Display range		Setting value		
Display		Digital indicator		
Setting and display accuracy		Display ±0.5 % of FS Range, Max. Set value ±1.0 % of FS		
Hysteresis		0.2 % FS (fixing), ON/OFF control.		
Proportional cycle		Relay contact : 25 ~ 30 sec SSR : 2 ~ 4 sec		
Reset range		±1.5 % of Max. Range		
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute (Primary terminal–secondary terminal)		
Vibration	Malfunction Resistance	2 – 55 Hz, X, Y, Z each position for 10 minutes		
	Mechanical Durability	10 – 55 Hz, 0.76 mm, X, Y, Z each position for 2 hours		
Shock	Malfunction Resistance	100 ㎨ 6 positions, Each 3 times		
	Mechanical Durability	300 ㎨ 6 positions, Each 3 times		
Life	Mechanical	More than 10 million times		
	Electrical	More than 0.3 million times		
Ambient temperature and humidity		0 ~ 50 ℃(32 ~ 122 ℉) 35 ~ 85 % RH (Without condensation)		

Suffix code

Model	Code	Information
DF	□– □ □ □ □ □	Economical digital temperature controller
Dimension	2	48(W) X 96(H) ㎜
	4	48(W) X 48(H) ㎜ (socket type, 8 pin)
Control type	F	ON/OFF control
	P	Proportional control
Input	K	K thermocouple
	J	J thermocouple
	D	RTD KPt100 Ω
	P	RTD Pt100 Ω (IEC)
	V	1 – 5 V d.c.
	C	4 – 20 ㎃ d.c.
Control output	M	Relay
	C	Current output (4 – 20 ㎃ d.c.)
	S	S.S.R (voltage pulse output, 12 V d.c.)
Auxiliary output (SUB) ※ only with DF2	N	None
	O	High deviation
	P	Low deviation
	W	High/Low deviation
Control action (internal selection)	R	Reverse action (heating control)
	D	Direct action (cooling control)
Range code		Refer to the range and input code

※ Model DF4 selects proportional control/ON–OFF control by using internal dip switch.

※ Model DF4 with 110 V power voltage is available as order–made.

Range and input code chart

Classification	Code	DF2		DF4	
		Input type	Range (℃)	Input type	Range (℃)
Thermocouple	4	K,J	–	K, J	0 ~ 199
	5		0 ~ 199		0 ~ 299
	6		0 ~ 299		0 ~ 399
	7		0 ~ 399		0 ~ 599
	8		–	K	0 ~ 799
RTD	1	Pt100 Ω	–99 ~ 99	Pt100 Ω	–
	2		–		–99 ~ 99
	3		–		0 ~ 99
	4		0 ~ 99		0 ~ 199
	5		0 ~ 199		0 ~ 299
	6		0 ~ 299		0 ~ 399
	7		0 ~ 399		–
DC voltage	–	1 – 5 V	0 ~ 99	1 – 5 V	0 ~ 99
DC current	–	4 – 20 mA	0 ~ 99	4 – 20 mA	0 ~ 99

Temperature Controller

RS6 Digital temperature controller

Specification

Model	RS6
Appearance	
W×H×D(mm)	72 X 36 X 76
Power Supply Voltage	12 V a.c. 60 Hz
Power Consumption	5 VA max
Input Sensor	Pt100 Ω(IEC751), NTC(Company exclusive)
Display accuracy	±1 % of FS ±1 Digit
Output (Relay contact)	Control output : From C contact, 250 V a.c. 3A(Resistive load), Alarm output : From A x 2, 250 V a.c. 3A (Resistive load)
Control mode	Only for ON/OFF control
Setting method	Digital method by up and Down key
Other function	Reverse action (heating) or direct action (cooling) selection
Ambient temperature	0 ~ 50 ℃
Ambient humidity	35 ~ 85 % RH (without dew condensation)

Suffix code

Model	Code	Information
RS6	□	Digital temperature controller
Input	K	K thermocouple
	P	RTD Pt100 Ω (IEC)
	N	Company exclusive NTC

TP3 5 channel digital indicator

Specification

Model	TP3
Appearance	
W×H×D(mm)	96 X 48 X 100
Power Supply Voltage	100 – 240 V a.c. (±10 %) 50 – 60 Hz
Power consumption	Max. 5 VA
Input	Thermocouple : K, J, RTD : Pt 100 Ω(IEC)
Display accuracy	Thermocouple : ±0.5 % of display value ±1 digit or ±3 ℃ RTD : ±0.5 % of display value ±1 digit or ±2 ℃
Control operation	Indicator only (5 channels)
Setting method	Digital method by setting key
Function	1 to 5 channel display by automatic or fixed 1 channel
	Offset correction for each channel
Ambient Temp. / Humidity	Max. 0 ℃ ~ 50 ℃ / 35 ~ 85 % RH

Suffix code

Model	Code		Information
TP3 –	□	□	5 channel indication thermometer 96(W) X 48(H)
Input	K		K thermocouple
	J		J thermocouple
	P		Resistance Temperature Detector(RTD) Pt 100 Ω (IEC)
Power Supply Voltage	P4		100 – 240 V a.c. 50 – 60 Hz

BK6-M Multi input digital indicator

Specification

Model	BK6-M	
Appearance		
W×H×D(mm)	72 X 36 X 86	
Power Supply Voltage	100 – 240 V a.c. 50 – 60 Hz	
Input	Multi input	Thermocouple : K, J, E, T, R, B, S, L, N, U, W, PLII RTD : Pt100 Ω(IEC), KPt100 Ω(KS)
Display accuracy	±0.5 % of FS ±1 digit	
Voltage fluctuation	±10 % of power supply voltage	
Power consumption	4 VA max	
Ambient temperature	0 ~ 50 ℃ (Without condensation)	
Ambient humidity	35 ~ 85 % RH	
Storage temperature	–25 ~ 65 ℃ (Dew condensation)	

Suffix code

Model	Code	Information
BK6-M	□	Multi input digital indication thermometer
Optional	0	None
	1	RET(Retransmission output 4 – 20 mA d.c.)

HN100 Digital indicator

Specification

Model	HN100
Appearance	
W×H×D(mm)	275×170×34.4
Use	Sauna facility, bathroom, fitness center, hospital, greenhouse, etc temperature display in spacious places
FND size	24 x 34
Protection degress	IP57
Input	RTD : Pt100 Ω(IEC751), DC current : 4 to 20 mA(for 0 to 100 ℃)
Input display accuracy	Full span of ±0.5 % reg ±1 Digit
Sensor appearance	Waterproof SUS TUBE
Sensor cable length	1.5 m
Power cable length	1.8 m
Power Voltage	12 V d.c.

Suffix code

Model	Code		Information
HN100–	□	□	Digital temperature indicator 275(W)×170(H)
Input	1		Resistance Temperature Detector(RTD) Pt100 Ω
	2		4 – 20 ㎃ d.c. (measurement range 0 ~ 100 ℃ fixed)
Measurement range		1	–100 ~ 400 ℃
		2	–19.9 ~ 99.9 ℃

Temperature Controller

AT series Digital indicator

Specification

Model		AT3	AT6
Appearance			
W×H×D(mm)		96 X 48 X 100	72 X 36 X 95
Power Voltage		110 / 220 V a.c. (50/60 Hz)	100 – 240 V a.c. (50 – 60 Hz)
Power Consumption		4 VA	5 VA
Input		K thermocouple, RTD Pt 100 Ω, R thermocouple	K thermocouple, J thermocouple, RTD : Pt100 Ω(IEC) –199 ~ 600 ℃, RTD : Pt100 Ω(IEC) –199.9 ~ 199.9 ℃, DC voltage : G (0 – 5 V d.c.), V (1 – 5 V d.c.), F (0 – 10 V d.c.), DC current : C (4 – 20 ㎃ d.c.)
Permissible input resistance		TC : 100 Ω max. , RTD : 10 Ω max.	
Display accuracy		Max. 0.5 % of Max. range	
Display		Digital indicator	
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute(Between + and – charged terminals)	
Vibration	Malfunction Resistance	2 – 55 Hz, X·Y·Z each position for 10 minutes	
	Mechanical Durability	10 – 55 Hz, 0.76 ㎜, X·Y·Z each position for 2 hours	
Shock	Malfunction Resistance	100 ㎨ 6 positions , Each 3 time (Approx. 10 G)	
	Mechanical Durability	300 ㎨ 6 positions , Each 3 time (Approx. 30 G)	
Ambient temperature and humidity		0 ~ 50 ℃ 35 ~ 85 %RH (without condensation)	

Suffix code

Model	Code		Information	
AT	□–	□	Digital Temperature Indicator	
Dimension	6		72 (W) × 36 (H) ㎜	
	3		96 (W) × 48 (H) ㎜	
AT3	KP		K thermocouple, RTD Pt 100 Ω	Select K or RTD by internal dip switch
	R		R thermocouple	
AT6	K		K thermocouple	
	J		J thermocouple	
	P1		Resistance Temperature Detector(RTD) Pt100 Ω(IEC) –199 ~ 600 ℃	
	P2		Resistance Temperature Detector(RTD) Pt100 Ω(IEC) –199.9 ~ 199.9 ℃	
	G		0 – 5 V d.c.	
	V		1 – 5 V d.c.	
	F		0 – 10 V d.c.	
	C		4 – 20 ㎃ d.c.	

BK3 Digital indicator

Specification

Model	BK3
Appearance	
W×H×D(mm)	96 X 48 X 100.2
Power Voltage	110/220 V a.c. 50/60 ㎐ (dual usage)
Power Consumption	4 VA max
Input	Input(Sensor type) selection by the configuration suffix code. a) Thermo couple : K, J, R b) R.T.D : Pt100 Ω(IEC). c) DC current : 4 to 20 mA (for 0 to 100 ℃). e) DC voltage : 0 to 5 V, 0 to 10 V, 1 to 5 V d.c.(for 0 to 100 ℃)
Display accuracy	±0.5 % of FS ±1 Digit (But, input type R is not applicable in the range of below 599 ℃)
Ambient temperature	0 ~ 50 ℃
Storage temperature	–25 ~ 65 ℃

Suffix code

Model	Code	Information
BK3–	□	Digital Temperature Indicator 96(W) X 48(H)
Input	K	K thermocouple (refer to the range and input code chart)
	K1	
	J	J thermocouple
	R	R thermocouple
	P1	Resistance Temperature Detector(RTD) Pt100 Ω (refer to the range and input code chart)
	P2	
	G	0 – 5 V d.c.
	V	1 – 5 V d.c.
	F	0 – 10 V d.c.
	C	4 – 20 mA d.c.

HY-4500S / 4700S / 5000 Analog indication temperature controller

Specification

Model	HY-4500S	HY-4700S	HY-5000
Appearance			
W X H X D (mm)	96 X 96 X 125	96 X 96 X 125	72 X 72 X 110
Power voltage	100 / 220 V a.c. (50/60 Hz)		
Power Consumption	3 VA	3 VA	3 VA
Input	Input(Sensor type) selection by the configuration suffix code. a) Thermo couple : K, J, R. b) R.T.D : KPt100 Ω(KS), Pt100 Ω(IEC751). c) DC current : 4 to 20 mA (for 0 to 100 ℃). e) DC voltage : 1 to 5 V d.c.(for 0 to 100 ℃)		
Control output	Relay contact : 250 V a.c. 3 A (Resistive load), SSR: 12 V d.c. (Constant voltage pulse) (Load resistance 800 Ωmin), current output: 4 – 20 mA d.c. (Load resistance 600 Ωmax)		
Control action	Proportional or ON/OFF contact		
Alarm output	–	Relay contact: 250 V a.c. 3 A(Resistive load)	–
Control sensitivity	±0.2 % of FS		
Setting	Volume		
Display	Meter		
Setting and display accuracy	The same as SV, ±2.0 % of FS		
Alarm setting range	–	Within 1~10% of Max. range for operation point of SV	–
Proportional cycle	Relay contact : 25 ~ 30 sec , SSR : 2 ~ 4 sec		
Reset range	±1.5 % of FS		
Dielectric strength	2,000 V a.c. for 1 minute		
Ambient temperature and humidity	0 ~ 50 ℃(32 ~ 122 ℉)·35 ~ 85 % RH (Without condensation)		

Suffix code

Model	Code							Information
HY-	□	□	□	□	□	□	□	Analog indication temperature controller
Dimension	4500S							96(W) X 96(H)
	4700S							96(W) X 96(H) (auxiliary output: L,M)
	5000							72(W) X 72(H)
Control type		F						ON/OFF control (2 position control)
		P						Proportional control
Input			K					K thermocouple
			J					J thermocouple
			R					R thermocouple
			D					Resistance Temperature Detector(RTD) KPt100 Ω
			P					Resistance Temperature Detector(RTD) Pt100 Ω(IEC)
			V					1 – 5 V d.c.
			C					4 – 20 ㎃ d.c.
Control output				M				Relay
				C				Current output (4 – 20 ㎃ d.c.)
				S				SSR (12 V d.c. voltage pulse output)
Sub output (L,M) (apply only with the model HY-4700)					N			NONE
					O			Low action
					P			High action
					W			Low/High action
Control operation						R		Reverse action (heating control)
						D		Direct action (cooling control)
Range code								Refer to the "Range and input code chart"

Range and input code chart

Code	HY-4500S, HY-4700S		HY-5000	
	Input type	Range (℃)	Input type	Range (℃)
1	Pt100 Ω	–50 ~ 50	Pt100 Ω	–50 ~ 50
3	Pt100 Ω	–50 ~ 100	Pt100 Ω	–0 ~ 100
5	Pt100 Ω	0 ~ 100	K, Pt100 Ω	0 ~ 200
6	–	–	K, Pt100 Ω	0 ~ 300
7	K, Pt100 Ω	0 ~ 200	K, Pt100 Ω	0 ~ 400
8	K, Pt100 Ω	0 ~ 300	K	0 ~ 600
9	K, J, Pt100 Ω	0 ~ 400	K	0 ~ 800
10	K	0 ~ 600	K	0 ~ 1200
11	K	0 ~ 800	–	–
13	K	0 ~ 1200	–	–
14	R	0 ~ 1600	–	–

Temperature Controller

HY-3000, AF1 Deviation indicating temperature controller

Specification

Model	HY-3000	AF1	AF1(SUB)
Appearance			
W×H×D(mm)	96 X 96 X 104	48 X 96 X 100	48 X 96 X 100
Power voltage	100 / 220 V a.c. 50/60 Hz		
Power Consumption	3 VA		
Input	Input(Sensor type) selection by the configuration suffix code. a) Thermo couple : K, J b) RTD : Pt100 Ω(IEC751). c) DC current : 4 to 20 mA (for 0 to 100 ℃) e) DC voltage : 1 to 5 V d.c.(for 0 to 100 ℃)		
Control output	Relay contact : 250 V a.c. 5 A (Resistive load), SSR : 12 V d.c. (Constant voltage pulse) (Load resistance more than 800 Ω)		
Control action	Proportional or ON/OFF control		
Alarm output	–		Relay contact : 250 V a.c. 5 A
Alarm setting	–		Variation setting for SV
Setting	Volume	BCD switch	
Display range	–50 ~ 50 ℃		
Display	Meter		
Setting and display accuracy	Setting temperature: within ±2 % of FS, Display accuracy : Within ±2.5 % of FS		
Proportional band	3 % of FS (Fixing)		
Proportional cycle	Relay contact : 25 ~ 30 sec SSR : 2 ~ 4 sec		
Reset range	±1.5 % of FS (Primary terminal-secondary terminal)		
Dielectric strength	2,000 V a.c. 50/60 Hz for 1 minute		
Ambient temperature and humidity	0 ~ 50 ℃ (32 ~ 122 ℉) 35 ~ 85 % RH (without condensation)		

Suffix code

Model	Code						Information
HY-1000	□	□	□	□	□		96X96
AF1							48X96
Control type	F						ON/OFF control (2 position control)
	P						Proportional control
Input		K					K thermocouple
		J					J thermocouple
		P					Resistance Temperature Detector(RTD) Pt100 Ω(IEC)
		V					1 – 5 V d.c.
		C					4 – 20 ㎃ d.c.
Control output			M				※ Relay
			C				※ Current output (4 – 20 ㎃ d.c.)
			S				SSR (12 V d.c. voltage pulse output)
Sub output(SUB) (only with model AF1)				N			※ NONE
				O			※ High action
				P			Low action
				W			※ High/Low action
Control operation						R	※ Reverse action (heating control)
						D	※ Direct action (cooling control)
Range code							Refer to the "Range and input code chart"

※ Applied only to the AF1

Range and input code chart

–	–	Pt100 Ω	–99 ~ 99
Pt100 Ω	–50 ~ 100	–	–
K, J, Pt100 Ω	0 ~ 100	Pt100 Ω	0 ~ 99
K, J, Pt100 Ω	0 ~ 200	K, Pt100 Ω	0 ~ 199
K, J, Pt100 Ω	0 ~ 300	K, Pt100 Ω	0 ~ 299
K, J, Pt100 Ω	0 ~ 400	K, Pt100 Ω	0 ~ 399
K	0 ~ 600	–	–
K	0 ~ 800	–	–
K	0 ~ 1200	–	–

HY-2000, HY-1000, ND4 Non-indicating temperature controller

Specification

Model	HY-2000	HY-1000	ND4	ND4(For socket)
Appearance				
W×H×D(mm)	96 X 96 X 104	72 X 72 X 100	48 X 48 X 80	48 X 48 X 78
Power voltage	110 /220V a.c. 60 Hz			
Power consumption	3VA			
Input	Thermocouple : K, J RTD : Pt100 Ω(IEC751)			
Control Output	Relay contact : 250 V a.c. (Resistive load)			
Control action	Proportional or ON/OFF control			
Setting	Volume			
Setting and display accuracy	±1.0 % of FS			
Proportional band	1 ~ 10 % of FS (HY-4500) (Model HY-4700, HY-5000 fixing to 3% of FS)			
Proportional cycle	Relay contact : 25 ~ 30 sec.			
Dielectric strength	2,000 V a.c. 50/60 Hz for 1 minute (Primary terminal-secondary terminal)			
Ambient temperature and humidity	0 ~ 50 ℃ (32 ~ 122 ℉) 35 ~ 85 % RH (without condensation)			

Suffix code

Model	Code							Information
HY-1000	□	□	□	□	□	□	□	72(W) X 72(H) ㎜
HY-2000								96(W) X 96(H) ㎜
ND4								48(W) X 48(H) ㎜
Control type	F							ON/OFF control (2 position control)
	P							Proportional control
Input		K						K thermocouple
		J						J thermocouple
		P						Resistance Temperature Detector(RTD) Pt100 Ω(IEC751)
Control output			M					Relay
Alarm output				N				None (*.Model ND4 does not display)
Control action					R			Reverse action (heating control)
					D			Direct action (cooling control)
Range code								Refer to the "Range and input code chart"
Terminal							T	ND4 terminal type

※ ND4 : Please select power voltage (110 V a.c. or 220 V a.c.)

Range and input code chart

Code	HY-2000		HY-1000		ND4	
	Input type	Range (℃)	Input type	Range (℃)	Input type	Range (℃)
1	–	–	Pt100 Ω	–50 ~ 50	Pt100 Ω	–50 ~ 50
2	Pt100 Ω	–50 ~ 100	–	–	Pt100 Ω	–100 ~ 100
3	–	–	Pt100 Ω	0 ~ 100	Pt100 Ω	0 ~ 100
4	K, J, Pt100 Ω	0 ~ 100	–	–	–	–
5	K, J, Pt100 Ω	0 ~ 200	K, Pt100 Ω	0 ~ 200	K, Pt100 Ω	0 ~ 200
6	K, J, Pt100 Ω	0 ~ 300	K, Pt100 Ω	0 ~ 300	K, Pt100 Ω	0 ~ 300
7	K, J, Pt100 Ω	0 ~ 400	K, Pt100 Ω	0 ~ 400	K, Pt100 Ω	0 ~ 400
8	K	0 ~ 600	K	0 ~ 600	–	–
9	K	0 ~ 800	K	0 ~ 800	–	–
10	–	–	K	0 ~ 1200	–	–
11	K	0 ~ 1200	–	–	–	–

Temperature Controller

D55 Portable thermometer

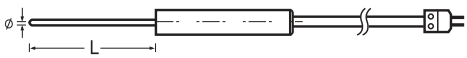
Specification

CE

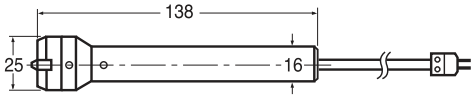
71 X 158 X 32
9 V d.c.
K, J
LCD digital
±0.5 % of FS
–200.0 ~ 1370.0 ℃
0 ~ 50 ℃(32 ~122 ℉) 35 ~ 85 % RH (without condensation)

Thermocouple

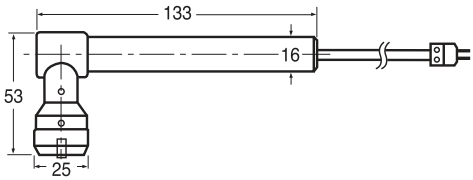
• TC–PJP



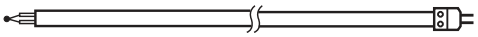
• TC–PIP



• TC–PLP



• TC–POP



EM310 Data storage device

Specification

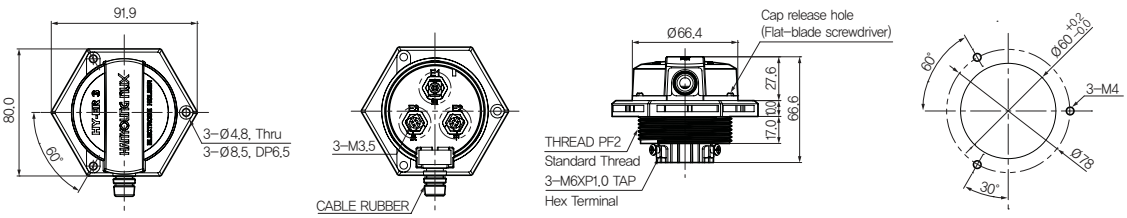
Model	EM310
Appearance	
Power voltage	24 V d.c., 500 ㎃
Communication type	Asynchronous type serial communication (RS232C)
Communication speed	38400 bps
Communication distance	Max 5 m
Setting type	Set by front switch
Saving media	USB MEMORY STICK
File system	Support FAT16, 32
Internal memory	32 Mbyte (Non–volatile)

FS-3A Floatless level switch

Specification

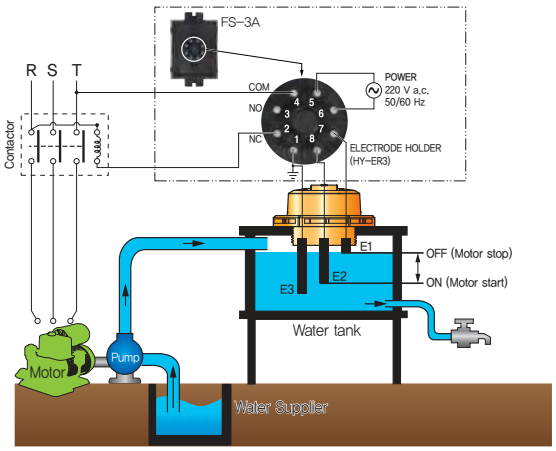
Model	FS-3A	
Appearance		
Model	FS-3 A (high sensitivity)	FS-3 A (low sensitivity)
Power Supply Voltage	110 V a.c. / 220 V a.c. 50 – 60 Hz	
Allowable voltage fluctuation range	± 10 % of the power supply voltage	
Voltage between the electrodes secondary voltage	24 V a.c.	8 V a.c.
Power consumption	Approx. 3.2 VA	
Response time	Max 80 ㎳ when operating, max 160 ㎳ when returning	
Operation resistance between electrodes	0 – approx. 27 KΩ	0 – approx. 7 KΩ
Return resistance between electrodes	approx. 38 KΩ – ∞Ω	approx. 15 KΩ – ∞Ω
Control output	Relay contact output (1c) : 250 V a.c. 5 A (resistive load)	
Insulation resistance	100 MΩ min (with 500 V d.c. mega) electric conduction part and exposed non-charged metal part	
Dielectric strength	2,000 V a.c. 50 – 60 ㎐ for 1 min (Primary terminal-secondary terminal)	
Vibration resistance	10 – 55 ㎐ (for cycle 1 min) single amplitude for 2 hrs each in X, Y and Z direction 0.76 mm	
Shock resistance	300 m/s²	
Life expectancy	Mechanically more than 5 million times (relay type), electrically more than 500 thousand times (load resistance)	
Ambient temperature	–10 ~ 50 ℃ (without condensation)	
Ambient humidity	35 ~ 85 % RH	

HY-ER3 Electrode Holder

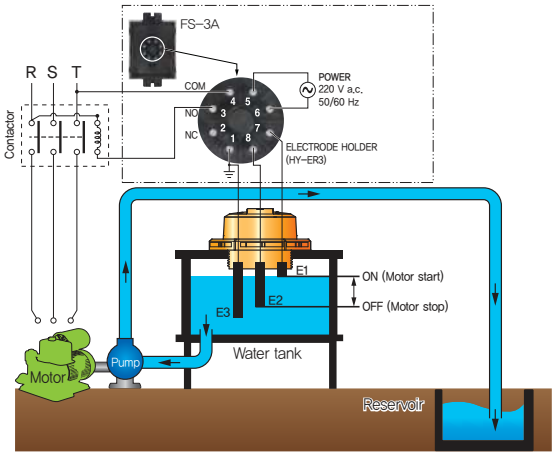
Appearance	Dimession
	

Using the example

·Example of Water Supply connection (FS-3A)



·Example of Drain connection (FS-3A)



Temperature Controller

HMCW-103 Wi-Fi_to_Serial Converter

Specification

Model	HMCW-103
Appearance	
CPU	PIC32MX695F512L
Memory	SRAM : 128 Kbit, Flash : 512 Kbit
Input Voltage	5 V d.c. (±10 %)
Maximum Current	Maximum under 250 mA
RS-232 Communication	Data communication / Serial console Male DB9 Serial Port
	Communication speed : 4800 ~ 115200bps
	Flow control: None
	Signal : TX, RX, GND
RS-485 Communication	For 2 and half wires and duplex method for data communication
	Communication speed : 4800 ~ 115200bps
	Flow control : DE/RE
	Signal : TX+, TX-
RS-422 Communication	4 wires and duplex method for data communication
	Communication speed : 4800 ~ 115200bps
	Flow control : None
	Signal : TX+, RX+, TX-, RX-
Ethernet Communication	Wi-Fi
	fluid IP support
	It is possible to access a lot of Clients (maximum 3 devices)
	ARP, IP/ICMP, TCP, Telnet, DHCP support
Configuration	Telnet or Serial Console Interface
LED	Power Supply Input mark
	Activating Condition Mark
Weight	74 g
Ambient Temperature	-10 ℃ ~ 60 ℃
Storage temperature	-30 ℃ ~ 80 ℃
Certification Standard	MSIP-CRM-NUX-HMCW-103
Warranty period	1 year

CV300 Communication converter

Specification

Model	CV300
Appearance	
Power	9 V, 300 mA d.c. Adapter (1.3 Ø DC Jack)
Communication speed	2400 ~ 115200 bps
Communication distance	1.5km max and possible to connect max 256 devices
Safety	1/2 circuit insulation, built in the surge protective device, automatically forms ±15 KV ESD Protection Line Drive signal
Function setting	2 wires/4 wires, usage of the built in terminating resistance, full duplex/half duplex setting Possible
Connection method	RS232 -> DB-9 Female (possible to connect directly to the serial port of PC), RS422/485 -> method of inserting communication wire to the 4 pin terminal block.
Switch setting	6 Pin Piano Type Dip-Switch
Case material	Made of plastic
Weight	Body : 60 g, Adapter 300 g
Dimension	52 x 90 x 20 ㎜

HMCE-103 Ethernet_to_Serial Converter

Specification

Model	HMCE-103
Appearance	
CPU	PIC32MX695F512L
Memory	SRAM : 128 Kbit, Flash : 512 Kbit
Input Voltage	5 V d.c. (±10 %)
Maximum Current	Maximum under 200 mA
RS-232 Communication	Data communication / Serial console Male DB9 Serial Port
	Communication speed : 2400 ~ 115200 bps
	Flow control : None
	Signal : TX, RX, GND
RS-485 Communication	For 2 and half wires and duplex method for data communication
	Communication speed : 2400 ~ 115200 bps
	Flow control : DE/RE
	Signal : TX+, TX-
RS-422 Communication	4 wires and duplex method for data communication
	Communication speed : 2400 ~ 115200 bps
	Flow control : None
	Signal : TX+, RX+, TX-, RX-
Ethernet Communication	10/100 Base-T Ethernet (RJ-45 Connector)
	Fixed and fluid IP support
	Multi-client access (maximum 3 devices)
	ARP, IP/ICMP, TCP, Telnet, DHCP
Configuration	Telnet or Serial Console Interface
LED	Power Supply Input mark
	Activating Condition Mark
Weight	74 g
Ambient Temperature	-10 ℃ ~ 60 ℃
Storage temperature	-30 ℃ ~ 80 ℃
Certification Standard	KCC-REM-NUX-HMCE-103
Warranty period	1 year

CV250 Dry/wet type temperature/humidity converter

Specification

Model	CV250
Appearance	
Power Supply Voltage	100 / 240 V a.c., 50 – 60 Hz
Power consumption	Approx. 3 VA
Input signal	Resistance Temperature Detector(RTD) : Pt100 Ω (IEC751), dry/wet each 1 example ※ Dry/Wet transmitter (Company model HY-PT230)
Measurement range	Temperature : 0 ~ 100 ℃, Humidity : 0 ~ 100 % RH
Accuracy	Temperature : ±0.5 %, Humidity : ±1 %
Output signal	Temperature/humidity yields 1 output individually (current by the suffix code/voltage output selectable) 4 – 20 ㎃ d.c. (Load resistance 600 Ωmax), 1 – 5 V d.c. (Load resistance 1 KΩmin)
Output compensation	±5 % (Off-set compensation by the variable resistance)
Insulation resistance	Min 20 ㏁ (500 V d.c.)
Dielectric strength	2,500 V a.c. (power terminal-signal input/output terminal)
Ambient temperature	0 ~ 50 ℃
Ambient humidity	35 ~ 85 % RH (without dew condensation)
Storage temperature	-25 ~ 65 ℃
Vibration resistance	10 – 55 Hz, single amplitude 0.76 ㎜, for 1 min each in 3 axis direction
Shock resistance	300 ㎨, 6 directions each 3 times
Weight	Approx. 300 g

Suffix code

Model	Code	Information
CV250-	□	Temperature/Humidity converter
Output signal	C	4 – 20 ㎃ d.c.
	V	1 – 5 V d.c.

Recorder

GR200 Graphic recorder with touch panel function

Specification

Model		GR200
Appearance		
W×H×D(mm)		144 (W) × 144 (H) × 173.5 (D)
Power supply voltage		100 – 240 V a.c. (voltage fiuctuation : ±10 %)
Power frequency		50 – 60 Hz
Power consumption		max 22 VA
Input	Channel	2 Channels, 4 channels, 8 Channels, 12 Channels
	Input type	RTD 2 type (Pt–100, KPt–100), Thermocouple 12 type (K, J, E, T, R, B, S, L, N, U, Wre 5–26, PL–II), DC voltage 4 type (–10 – 20 ㎷, 0 – 100 ㎷, 1 – 5 V, 0 – 30 V)
	Sampling time	250 ㎳
	Accuracy	±0.15 % of FS ±1 digit (Except RJC temperature error)
	RJC temperature error	±1.5 ℃ (0 ~ 50 ℃)
	Burn–out	Display UP–Scale
Alarm	Alarm setting	2 settings within each channel
	Alarm type	High/Low, Alarm within high/low range, Alarm without high/low range etc.
Save function	Internal memory	Non–volatile flash memory (80 MB) : In case of 1 second of record cycle, It saves data for 15 days
	External memory	SD card (2GB) : In case of 1 second of record cycle, it saves data for 1 year. (Support SDHC)
	File type	FAT 16/32 (SD card)
	Record cycle	1, 2, 5, 10, 20, 30, 60, 120 sec
	LIST	Display important event messages in the trend view
Display	Indicator	TFT color LCD (115.2 ㎜ × 86.4 ㎜, 640 × 480 pixel) LED Backlight
	Language	Korean, English, Chinese
	Screen setting	Trend view, Text view, Bar view
	Save history view	Check saved data and Provide zoom in & zoom out function
DI (Option)	External direct input (DI)	2 contacts, 4 contacts
	Input type	Non–voltage contact input
Output (Option)	Contact output	6 contacts, 12 contacts (NO)
	Contact capacity	3 A 250 V a.c. (3 A 30 V d.c.)
Weight		Approx. 1.3 ㎏

Suffix code

Model	Code			Information
GR200 –	□	□	□	Graphic recorder(applied touch panel function) 145(W) × 145(H) ㎜
Input channel	2			2 channels
	4			4 channels
	8			8 channels
	12			12 channels
Input / Output (DI / DO)		N		None
		1		DI 2 Contact + Relay 6 Contact
		2		DI 4 Contact + Relay 12 Contact
Communication specification			0	RS422/485

RT9 Mini recorder

Specification

Model	RT9
Appearance	
W×H×D(mm)	96 X 96 X 100
Function	• ZOME • PID-Auto Tuning • Prescale • Multi Input/Output • Alarms • Recorder/Temp.controller
Power voltage	100 – 240 V a.c. (±10 %), 50/60 Hz
Power consumption	Max. 6.0 W, Max. 10 VA
Sampling cycle	250 ms
Input	T.C: K, J, E, T, R, S, B, L, N, U, WRe 5 – 26, PL-II R.T.D: Pt 100 Ω, KPt 100 Ω Direct voltage: 1 – 5 V, 0 – 10 V, –10 – 20 mV, 0 – 100 mV(Prescale type)
Input display resolution	Below decimal point of input signal and measuring range
Input impedance	TC and mV input: Min. 1 MΩ, DC volt : 1 MΩ
Alarm	Relay output(AL1,AL2)
Source tolerable resistance	TC : Max . 250 Ω , Voltage : Max . 2 kΩ
Lead wire tolerable resistance	R.T.D : Max . 10 Ω / Wire (Notice:Identical conductor resistance between 3wires)
Input tolerable voltage	±10 V (TC, RTD, voltage : mV d.c.), ±20 V (voltage : V d.c.)
Noise removal rate	NMRR(Normal mode) : Min. 40dB , CMRR(Common mode) : Min. 120 dB (50/60 Hz ±1 %)
Standard	TC / RTD (KS/IEC/DIN)
Standard junction temp· compensation tolerance	±1.5 ℃ (15 ~ 35 ℃), ±2.0 ℃(0 ~ 50 ℃)
Accuracy	±0.3 % (Full Scale)
Record	Measuring point : 1 point, Response time : Variable by recording time, Record method : Thermal line, Printing : 203 dpi (8.0 dot/㎜) 384 dots/line Record speed : 24 ㎜/h ~ 900 ㎜/h, Record paper : Width 57.5 ㎜ , Length 16 m Runout of paper : P-END lamp on,Record is stopped

Suffix code

Model	Code			Information
RT9-	□	□	□	Mini recorder 96(W) × 96(H) ㎜
Control type	0			Exclusive for recorder
	1			Record and temperature control
Unit selection		0		(℃) Celsius(only)
		1		Etc
Optional			0	None
			1	Alarm output 1 contact (AL1)
			2	Alarm output 2 contact (AL1, AL2)
			3	Communication (RS485)
			4	Communication (RS485) / alarm 1 contact (AL1)
			5	Communication (RS485) / alarm 2 contact (AL1, AL2)

Digital Counter/Timer

GE series Digital batch counter

Specification

Model		GE6-P4	GE6-P6	GE6-T6	GE4-P4	GE4-P6	GE4-T6
Appearance		CE 	CE 	CE 	CE 	CE 	CE 
W×H×D(mm)		72 X 36 X 81 (W X H X D)			48 X 48 X 79.3 (W X H X D)		
Type		Preset		Totalizing	Preset		Totalizing
Display digits		4 Digits	6 Digits	6 Digits	4 Digits	6 Digits	6 Digits
Preset stages		1 or 2 Stages	1 or 2 Stages	–	1 or 2 Stages	1 or 2 Stages	–
Function		1 Stages : Preset counter/Timer (Selectable by the internal parameter)					
		2 Stages : Preset counter/Timer/Twin timer (Selectable by the internal parameter)					
		Prescale setting, Batch output, Displaying unit decimal point setting, NPN input/PNP input (Selectable by the internal switch)					
Counting speed		1 cps, 30 cps, 1 kcps, 10 kcps (Selectable by the internal parameter) ※ Input levels : [High] 5 to 30 V d.c. [Low] 0 to 2 V d.c.					
Input action		UP, DOWN, UP/DOWN (Selectable by the internal parameter)					
Output action		N, F, C, R, K, P, Q, A (Selectable by the internal parameter)					
Prescale		Applicable only preset counter, 0.001 ~ 9999(4 digits), 0.00001 ~ 999999(6 digits)					
Power supply voltage		100 to 240 V a.c. (50 to 60 Hz), 24 to 60 V d.c./a.c. (50 to 60 Hz)					
External supplying power		12 V d.c. 100 mA max					
Control output		Contact : 250 V a.c. 3 A (NO), 250 V a.c. 2 A (NC) Solid-state : 30 V 100 mA max (Open collector)					
Communication	Protocol	ModbusRTU					
	Communication type	RS485					
	Communication method	2-wire half-duplex					
	Communication synchronization	Asynchronous					
	Communication speed	2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps					
	Effective distance	Up to 800 m					
	Maximum number of connections	31 units (station number: 1 to 127)					
	Response waiting time	5 ~ 99 ms					
	Start bit	1bit (fix)					
	Stop bit	1bit (fix)					
	Data bit	8 bit					
	Parity bit	None / Odd / Even					

			
96 X 48 X 102.6 (W X H X D)		72 X 72 X 87 (W X H X D)	
Preset	Totalizing	Preset	Totalizing
6 Digits		6 Digits	
1 or 2 Stages	–	1 or 2 Stages	–
1 Stages : Preset counter/Timer (Selectable by the internal parameter)			
2 Stages : Preset counter/Timer/Twin timer (Selectable by the internal parameter)			
Prescale setting, Batch output, Displaying unit decimal point setting, NPN input/PNP input (Selectable by the internal switch)			
1 cps, 30 cps, 1 kcps, 10 kcps (Selectable by the internal parameter) ※ Input levels : [High] 5 to 30 V d.c. [Low] 0 to 2 V d.c.			
UP, DOWN, UP/DOWN (Selectable by the internal parameter)			
N, F, C, R, K, P, Q, A (Selectable by the internal parameter)			
Applicable only preset counter, 0.001 ~ 9999(4 digits), 0.00001 ~ 999999(6 digits)			
100 to 240 V a.c. (50 to 60 Hz), 24 to 60 V d.c./a.c. (50 to 60 Hz)			
12 V d.c. 100 mA max			
Contact : 250 V a.c. 3 A (NO), 250 V a.c. 2 A (NC) Solid-state : 30 V 100 mA max (Open collector)			
ModbusRTU			
RS485			
2-wire half-duplex			
Asynchronous			
2,400 / 4,800 / 9,600 / 19,200 / 38,400 bps			
Up to 800 m			
31 units (station number: 1 to 127)			
5 ~ 99 ms			
1bit (fix)			
1bit (fix)			
8 bit			
None / Odd / Even			

Suffix code

□	□	□	□	□	
3					96 X 48 ㎜
4					48 X 48 ㎜
6					72 X 36 ㎜
7					72 X 72 ㎜
	P				Pre-set counter
	T				Total counter (only for indication)
		4			4 digits (9999) ※ GE3 and GE7 are not selectable
		6			6 digits (999999)
			1		1 Stage setting
			2		2 Stage setting
				A	100 – 240 V a.c. 50 – 60 Hz
				D	24 – 60 V d.c./a.c. 50 – 60 Hz

Model	Code						Information
GE	□–	□	□	□	□	□	Digital counter & timer
Appearance	3N						96 X 48 ㎜
	4N						48 X 48 ㎜
	6N						72 X 36 ㎜
	7N						72 X 72 ㎜
Type		P					Preset counter
		T					Total counter (Only for indication)
Displayable digit			4				4 digits (9999)
			6				6 digits (999999)
Setting stage				–			No setting
				1			1 Stage setting
				2			2 Stage setting
Power supply voltage					M		RS485(MODBUS-RTU)
					–		No setting

Digital Counter/Timer

LC1 LCD display digital counter

Specification

Model		LC1	LC1-F
Appearance		CE 	
Input type		Non-voltage input	Voltage input
Power supply voltage		Lithium battery built in	
Dimension		DIN 48 X 24 mm	
Input action		UP Count	
Computation speed		1/30/100/ 1K cps	20 cps
Input condition		Remaining voltage when breaks : 0.7 V Max impedance when breaks : max 10 kΩ Min impedance when opens : min 1 MΩ	HIGH : 24 – 240 V a.c. / 6 – 240 V d.c. LOW : 0 – 2 V a.c./d.c.
Reset	Input type	Non-voltage input	
	Min signal width	Min 20 ms	
Battery life expectancy		At least 7 years (approx. 25 ℃) ※This is calculated value so it is not certified value (Replacing cycle reference value)	
External setting switch		Switch1 : internal power/front reset selectable Switch2 : computing speed selectable (4 kinds)	Switch1 : internal power/front reset selectable
External connection		Terminal (4P)	
Display method		7 segments LCD (character height : 8.7 mm)	
Displayable digits		8 digits	
Insulation resistance		Min 100 MΩ (500 V d.c.), conductive terminal non-recharging metal	
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 min (conductive part-disposable metal)	
Vibration resistance		10 – 55 Hz, double amplitude 0.75 mm, each direction in 3 axis, 2h	
Shock resistance		300 m/s², each direction in 3 axis each 3 times	
Ambient temperature		-10 ~ 55 ℃	
Ambient humidity		35 ~ 85 % RH	
Storage temperature		-20 ~ 65 ℃	
Degree of protection		IP66 (Front side)	
Weight		58 g	

Suffix code

Model	Code	Information
LC1	□	Compact LCD display total counter (dimension : DIN 48 X 24 mm)
Input signal		Non voltage input
	F	Voltage input (24 – 240 V a.c., 6 – 240 V d.c.)

LT1 LCD display digital Timer

Specification

Model		LT1	LT1-F
Appearance		CE 	
Power supply voltage		Lithium battery built in	
Dimension		DIN 48 X 24 mm	
Operation type		UP Timer	
Time display		9999 h 59 m 59 s / 99999 h 59.9 m / 999999 h 59 m / 9999999.9 h	
Time accuracy		± 0.01 %	
Input condition		Remaining voltage when breaks : 0.7 V Max impedance when breaks : max 10 kΩ Min impedance when opens : min 1 MΩ	HIGH : 24 – 240 V a.c. / 6–240 V d.c. LOW : 0 – 2 V a.c./d.c.
Start	Input type	Non-voltage input	Voltage input
	Min signal width	Min 20 ms	
Reset	Input type	Non-voltage input	
	Min signal width	Min 20 ms	
Battery life expectancy		Expectancy : at least 10 years (approx. 25℃) ※This is calculated value so it is not certified value (Replacing cycle reference value)	
External setting switch		Switch 1 : internal power / front reset selectable Switch 2 : computing speed selectable (4 kinds) time range selectable	
External connection		Terminal (4P)	
Display method		7 segments LCD (character height : 8.7 ㎜)	
Displayable digits		8 digits	
Insulation resistance		Min 100 MΩ(500 V d.c.). conductive terminal-disposable metal	
Dielectric strength		2000 V a.c. 50/60 Hz for 1 min (conductive part-non-recharging metal)	
Vibration resistance		10 – 55 Hz, double amplitude 0.75 ㎜, each direction in 3 axis, 2h	
Shock resistance		300 ㎨, each direction in 3 axis each 3 times	
Ambient temperature		-10 ~ 55 ℃	
Ambient humidity		35 ~ 85 % RH	
Storage temperature		-20 ~ 65 ℃	
Degree of protection		IP 66 (Front side)	
Weight		58 g	

Suffix code

Model	Code	Information
LT1	□	Compact LCD display total Timer (dimension : DIN 48 X 24 ㎜)
Input signal		Non voltage input
	F	Voltage input (24 – 240 V a.c., 6 – 240 V d.c.)

Digital Counter/Timer

GF series Digital counter / Timer

Specification

Model	GF7-P62 / GF7-P42	GF7-P61 / GF7-P41	GF7-T60	GF4-P41	GF4-P40	GF4-P41S
Appearance						
W×H×D(mm)	72 X 72 X 112			48 X 48 X 90.8		48 X 48 X 71.8
Type	Preset		Totalizing	Preset	Totalizing	Preset
Display digits	4 digits or 6 digits		6 digits	4 digits		
Preset stages	Double stage	Single stage	–	Single stage	–	Single stage
Function	Preset counter/Timer(selectble), Prescale setting, Displaying unit decimal point setting,					
	NPN input/PNP input (Selectable by the dip switch)					
Counting speed	30 cps, 1K cps, 3K cps, 5K cps Select by using the volume (Located on the front panel) ※Input signal levels : [High] 5 to 30 V d.c. [Low] 0 to 2 V d.c.			30 cps, 5K cps (Select by using the dip switch) ※Input signal levels : [High] 5 to 30 V d.c. [Low] 0 to 2 V d.c.		
Input action	UP, DOWN, UP/DOWN (Selectable by the dip switch)			–		
Output action	N, F, C, R, K, P, Q, A (Selectable by the dip switch) ※With the totalizing counter, it is displayed as F, K output mode					
Prescale	Applicable only preset counter, 0.001 ~ 9999(4 digits), 0.00001 ~ 999999(6 digits)			Applicable only preset counter, 0.001 ~ 9999(4 digits)		
Timer range	4 digit : 99.99s, 999.9s, 9999s, 99m59s, 999.9m, 99h59m, 999.9h, 9999h 6 digit : 99999.9s, 999999s, 99m59.99s, 999m59.9s, 99999.9m, 99h59m59s, 9999h59m, 99999.9h					
Power supply voltage	100 – 240 V a.c. 50 – 60 Hz (Voltage fluctuation : ±10 % of the power supply voltage)					
External power supply	12 V d.c. 100 mA max					
Control output	Contact : 250 V a.c. 3A (Resistive load), ※(Out 1 / Out 2 : Form C) Solide state : 30 V 100 mA max (Open collector)		–	Contact : 250 V a.c. 3A (Resistive load) Solide state : 30 V 100 mA max (Open collector)	–	Contact : 250 V a.c. 3A (Resistive load)

Suffix code

Model	Code					Information
GF7–	□	□	□	□		Digital counter / Timer (72 X 72 ㎜)
Type	P					Preset counter
	T					Total counter
Displayable digits		4				4 digits (9999)
		6				6 digits (999999)
Setting stage			1			1st stage setting
			2			2nd stage setting
			0			Total counter
Pre-scale function				E		Pre-scale function built in (Preset counter)
				N		No Pre-scale (Total counter)

Model	Code					Information
GF4–	□	□	□	□		Digital counter / Timer (48 X 48 ㎜)
Type	P					Preset counter
	T					Total counter
Displayable digits		4				4 digits (9999)
Setting stage			0			None (total counter)
			1			1st stage setting (Preset counter)
Terminal structure				N		Terminal
				S		8 pin structure (suitable for 8 pin socket)

TT series Digital dual Timer

Specification

Model		TT7H	TT4-P42A	TT4-P42B
Appearance				
W×H×D(mm)		72 X 72 X 87	48 X 48 X 100	48 X 48 X 100
Power supply		100 – 240 V a.c., 50 – 60 Hz		
Voltage Regulation		±10 % of Power supply voltage		
Power Consumption		About 9.6 VA (220 V a.c. 60 Hz)	Below 9.1 VA (at 220 V a.c. 60Hz)	
Display method		ON time display : Red color 4 digits (alphabet height 18.7mm) OFF time display : Red color 4 digits (alphabet height 14.5mm)	PV : 11 mm, SV : 8 mm	
External Connection type		Terminal	Plug 11 Pin	Plug 8 Pin
Min. signal amplitude	START	Min. 1s	Min. 20 ㎳	–
	RST/INH			
Control	Contact	Output : Instantaneous SPDT (1c)	OUT A : Specified time SPDT (1c), OUTB : Specified time SPDT(1c)	
	Construction capacity	NO contact : 250 V a.c. 5 A resistive load, NC contact 250 V a.c. 2 A resistive load		
Life	Mechanical	Min. 10 million		
	Electrical	Min. 100,000 times (250 V a.c. 3 A resistive load)		
Dielectric strength		2,000 V a.c. 50/60Hz for 2 min	2,000 V a.c. 50 / 60 Hz for 1 minute	
Noise Immunity		±2 ㎸ (Between unit's power terminals, square wave by noise simulator (pulse width : 1㎲)		
Insulation resistance		Min. 100 ㏁ (500 V d.c. mega standard)		
Vibration (Durability)		10 – 55 Hz (cycle for 1min) Peak amplitude 0.75 mm for 1 hour each in X, Y and Z direction		
Shock	Mechanical Durability	300 ㎨ 3 times each in X, Y and Z direction		
	Malfunction Resistance	100 ㎨ 3 times each in X, Y and Z direction		
Ambient temperature		–10 ~ 55 ℃ (Without condensation)		
Storage temperature		–20 ~ 65 ℃ (Without condensation)		
Ambient humidity		30 ~ 85 % RH		

Suffix code

Model	Code	Information
TT4	□ □ □ □	Digital dual timer (48 X 48 ㎜)
Setting division	P	Exclusive for setting
Displayable digit	4	4 digits (9999)
Setting stage	2	2nd stage setting
External connection	A	11 pins plug type
	B	8 pins plug type

□ □ □ □	Digital twin timer, 72 (W) × 72 (H) ㎜
P	Preset (Exclusive for setting)
4	4 digits (9999)
1	1 level output
A	9 pin terminal type (external input)

Digital Counter/Timer

TF series Digital Timer

Specification

Model		TF4-A	TF4-B	TF4-C
Appearance				
W×H×D (mm)		48 X 48 X 95.6		
Terminal type		8 pin Plug		
Control method		Up, Down		
Display method		LED Height 7 Segment LED : 8 mm		
Display digit		4 digits		
Time setting range		999.9 sec / 9999 sec	9 m 59.9 sec / 59 m 59 sec	59 hours, 59 minute
Input signal		External reset, inhibit: Min. input signal width 0.02 sec. Power reset: Min. power opening time 0.5 sec.		
Power voltage		100 – 240 V a.c. 50/60 Hz		
Power consumption		Approx. 4.8 VA (220 V a.c. 60 Hz)		
Control output		Contact output : 1c 250 V a.c. 3 A (resistance load) Non-Contact output: 30 V d.c. 100 mA Max.		
Insulation resistance		Min.100 MΩ (At 500 V d.c.) Part of conduction terminal and exposured non-electrified metal part		
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute (Between terminal)		
Vibration	Malfunction Resistance	10 – 55 Hz, X·Y·Z each position for 10 minutes		
	Mechanical Durability	10 – 55 Hz, 0.76㎜, X·Y·Z each position for 2 hours		
Shock	Malfunction Resistance	100 ㎨ 6 positions, each 3 times		
	Mechanical Durability	300 ㎨ 6 positions, each 3 times		
Life	Mechanical	Min. 10 million operations (Relay type)		
	Electrical	Min. 100,000 million operation (Relay type)		
Ambient temperature & humidity		0 ~ 50 ℃, 30 ~ 85 % RH		

Suffix code

Model	Code				Information
TF4-	□	□	□	□	Digital timer 48(W) X 48(H)
Time specification	A				999.9sec / 9999sec
	B				9min 59.9sec / 59min 59sec
	C				999.9min / 59hour 59min
Display method		U			Up display
		D			Down display
Power supply voltage			A		100 – 240 V a.c. 50 – 60 Hz
			D		24 – 60 V d.c.
Control output				R	Relay
				T	Open collector

LF4N series Digital Timer

Specification

Model		LF4N-A	LF4N-B	LF4N-C	LF4N-D
Appearance		CE 			
W×H×D(mm)		48 X 48 X 75.5			
Terminal type		8 pin Plug			11 pin Plug
Control method		Up, Down			
Display method		LCD			
Display digit		3 digits			
Time setting range		0.01 s ~ 9990 h			
Counting input		Reset, start, inhibit			
Input signal		• Non voltage input • Impedance in a short circuit : Max. 2 kΩ • Residual voltage in a short circuit : Max. 0.7 V d.c. • Impedance in open : Min. 100 kΩ			
Power voltage		24 – 240 V a.c./d.c. 50 / 60 Hz			
Power consumption		Approx. 4.4 VA (240 V a.c.), Approx. 1.5 W (240 V d.c.)		Approx. 7.2 VA (240 V a.c.), Approx. 2.2 W (240 V d.c.)	
Control output		Contact output : 1c 250 V a.c. 3A (Resistive load)			
Insulation resistance		Min.100 MΩ (At 500 V d.c.) Part of conduction terminal and exposured non-electrified metal part			
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute (Between terminal)			
Vibration	Malfunction Resistance	10 – 55 Hz, X·Y·Z each position for 10 minutes			
	Mechanical Durability	10 – 55 Hz, 0.76㎜, X·Y·Z each position for 2 hours			
Shock	Malfunction Resistance	100 ㎨ 6 positions, each 3 times			
	Mechanical Durability	300 ㎨ 6 positions, each 3 times			
Life	Mechanical	Min. 10 million operations (Relay type)			
	Electrical	Min. 100,000 million operation (Relay type)			
Ambient temperature & humidity		0 ~ 50 ℃ 30 ~ 85 %RH			

Suffix code

Model	Code	Information		
LF4N-	□	Digital timer 48(W) X 48(H) ㎜		
Device selection	A	Time limit : 1c	Operation mode (10 kinds)	8pin socket type
	B	Time limit : 1c, Constantaneous : 1c	ON Delay output (A mode fixed)	
	C	Time limit : 2c		
	D	Time limit : 1c	Operation mode (10 kinds)	11pin socket type
Power supply voltage		24 – 240 V a.c./d.c. dual usage 50 – 60 Hz		

Digital Counter/Timer

LY series LCD weekly yearly timer switch

Specification

Model		LY4	LY7
Appearance		CE 	CE 
W×H×D(mm)		DIN 48 X 48 mm	DIN 72 X 72 mm
Power supply voltage		100 – 240 V a.c. 50/60 Hz (Dual usage)	
Allowable voltage variation		±10 % of the power supply voltage	
Power consumption		Approx 2.6 VA (220 V a.c. 60 Hz)	Approx 4.2 VA (220 V a.c. 60 Hz)
Display method		LCD display method (displayable digit : 4 digits, 2 lines) 1st display: character height 7.8 mm, 2nd display : character height 5.2 mm	LCD display method (displayable digit : 4 digits, 2 lines) 1st display : character height 12 mm, 2nd display : character height 7 mm
1 cycle time		Weekly setting : for 1 week (7days), Yearly setting : for 1 year (calendar until 2099)	
Backup time		More than 5 consecutive years (25 ℃)	
setting steps	Number of program setting	Weekly program : 64 step, yearly program : 32 step	
	Number of season setting	4 seasons (Spring, summer, fall, winter)	
	Number of holidays in one year	16 times	
Installation type (external connection)		Flush panel mount type, and exposed panel mount type(dual usage) (Din rail installation and screw fixing)	
Cycle error		±15 sec/mon (25 ℃)	
Time error		Less than ±0.01% ±0.05 sec (Setting error, Power error, Temperature error)	
Control output	Contact composition	OUT : SPST (1a)	2 independent circuits. OUT1 : SPDT (1c), OUT2 : SPDT (1c)
	Contact capacity	15A 250 V a.c. (resistive load)	
	Life Expectancy(mechanically)	Above 10 million times	
	Life Expectancy(electrically)	Above 50 thousand times (250 V a.c. 15 A resistive load)	
Insulation resistance		100 MΩ min (500 V d.c. mega standard, actuator terminal and exposed non-charged metal part)	
Dielectric strength		2000 V a.c. 50/60 Hz for 1 min (actuator terminal and exposed non-charged metal part)	
Noise immunity		±2 kV (between the actuating power terminal), square wave shape noise by the noise simulator (Pulse width = 1 us).	
Vibration	Mechanical Durability	10 – 55 Hz (for cycle 1 min) 0.75 mm double amplitude for 1 hrs each in X, Y and Z	
	Malfunction Resistance	10 – 55 Hz (for cycle 1 min) 0.5 mm double amplitude for 10 minutes each in X, Y and Z	
Storage	Mechanical Durability	300 ㎨ 3 times each in X, Y and Z directions	
	Malfunction Resistance	100 ㎨ 3 times each in X, Y and Z directions	
Ambient temperature		–10 ~ 55 ℃ (with no icing)	
Storage temperature		–20 ~ 65 ℃ (with no icing)	
Ambient humidity		35 ~ 85 % RH	
Weight		Approx. 100 g (excluded the weight of box)	Approx. 275 g (excluded the weight of box)

Suffix code

Model	Code	Information
LY–	□	LCD weekly, Yearly time switch
Dimension	4	DIN 48 × 48 ㎜
	7	DIN 72 × 72 ㎜
Power supply voltage		100 – 240 V a.c. 50/60 Hz (Dual usage)

T21 Timing Relay

Specification

Model	AC	T21 – 1 / 3 / 6 / 3H – 4A20
	DC	T21 – 1 / 3 / 6 / 3H – 4D24
Appearance		
Power supply voltage	AC	200 – 230 V a.c. 50/60 Hz
	DC	24 V d.c.
Operating voltage range		Power supply voltage ±10 %
Power Consumption	AC	3.1 VA max (230 V a.c. 60 Hz)
	DC	1.5 W max (24 V d.c.)
Reset time		100 ms max
Time Range	1	0.1 sec ~ 10 min
	3	0.3 sec ~ 30 min
	6	0.6 sec ~ 60 min
	3H	0.3 hrs ~ 24 hrs
Accuracy of operating time		±1 % FS max
Setting Error		±10 % FS max
Control output	Output mode	Power on delay, Interval, Flicker OFF Start, Flicker ON Start
	Contact construction	4a4b
	Capacity	250 V a.c. 3A Resistive load
Life expectancy		Mechanical : 10 million operations min, Electrical : 200,000 operations min
Insulation resistance		100 MΩ min (at 500 V d.c., Between current–carrying terminals and exposed noncurrent–carrying metal parts.)
Dielectric strength		2000 V a.c. 50/60 Hz 1 minute (Between current–carrying terminals and exposed noncurrent–carrying metal parts.)
Noise immunity		±2 kV (Between power terminal, pulse width ±1 ㎲, square wave noise by noise simulator)
Vibration resistance		10 – 55 Hz (For 1 min), Double amplitude 0.75mm X, Y, Z each direction for 1 hour
Shock resistance		300 ㎨ X, Y, Z each direction for 3 times
Ambient temperature		–10 ~ 50 ℃ (Without condensation)
Storage temperature		–25 ~ 65 ℃ (Without condensation)
Ambient humidity		35 ~ 85 % RH
Weight		Approx. 42 g

Suffix code

Model	Code			Information
T21–	□	□	□	Timing Relay
Time Range	1			1 sec, 10 sec, 1 min, 10 min
	3			3 sec, 30 sec, 3 min, 30 min
	6			6 sec, 60 sec, 6 min, 60 min
	3H			3 hrs, 6 hrs, 12 hrs, 24 hrs
Contact		4		4a4b
Power supply voltage			A20	200 – 230 V a.c.
			D24	24 V d.c.

Analog Timer

T38N, T48N, T57N Power On Delay Timer

Specification

Model	Exposure type / Panel type	T38N	T48N	T57NE / T57NP
Appearance		CE 	CE 	CE 
W×H×D (mm)		40.5 X 50.5 X 74	48 X 48 X 78.7	50.0 X 62.0 X 86.2 57.5 X 84.4 X 83.7
Function		POWER ON DELAY TIMER		
Power supply		24 – 240 V a.c. 50/60 Hz, 24 – 240 V d.c.		
Allowable voltage variation		±10 % of Power supply Voltage		
Power consumption		Less than 4.5 VA (at 240 V a.c. 60 Hz), Less than 1.5 W (at 24 V d.c.)		
Return time		Less than 100 ms		
maximum time	01	0.01 ~ 1 s / 0.01 ~ 1 m / 0.01 ~ 1 h		
	03	0.01 ~ 3 s / 0.01 ~ 3 m / 0.01 ~ 3 h		
	06	0.01 ~ 6 s / 0.01 ~ 6 m / 0.01 ~ 6 h		
	10	0.01 ~ 10 s / 0.01 ~ 10 m / 0.01 ~ 10 h		
	30	0.01 ~ 30 s / 0.01 ~ 30 m / 0.01 ~ 30 h		
	60	0.01 ~ 60 s / 0.01 ~ 60 m / 0.01 ~ 60 h		
	12H	0.01 ~ 12 h / 0.01 ~ 24 h / 0.01~ 48 h ('24h' and '48h' time setting '12h' : '×2' and '×4')		
Time error	Repeat error	Less than ±0.3 % (ratio against Max. scale)		
	Setting error	Less than ±5 % (ratio against Max. scale)		
Control output	Output mode	POWER ON DELAY		
	Contact	A type (Time – limit 1c + Instantaneous 1a) / B type (Time – limit 1c + Instantaneous 1c) / C type(Time – limit 2c)		
	Contact capacity	250 V a.c. 3 A (Resistive load)		
Life span of relay		Mechanical : More than 10 million times / Electrical : More than 100,000 times		
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute		
Noise Immunity		±2 kV (Between unit's power terminals), square wave by noise simulator (pulse width : 1 μs)		
Insulation resistance		More than 100 MΩ (Based on 500 V d.c. mega standard)		
Vibration (Durability)		10 – 55 Hz (cycle :1 minute), Double amplitude 0.5 mm X·Y·Z each direction for 2h.		
Shock (Durability)		300 m/s² (30 G) X·Y·Z each direction 3 times		
Ambient temperature		–10 ~ 55 ℃ Without condensation		
Storage temperature		–25 ~ 65 ℃ Without condensation		
Ambient humidity		30 ~ 85 % RH		

Suffix code

□	□	□	□	Analog timer
				T38N timer (40 X 50 mm)
				T48N timer (48 X 48 mm)
				T57N timer (58 X 84 mm)
P				Panel type (T38N panel adapter sold separately)
E				Exposure type (Select with T48N panel type)
	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
		A		Time limit : 1c contact, Constantaneous : 1a contact
		B		Time limit : 1c contact, moment : 1c contact
		C		Time limit : 2 x 1c
		D		TF62N twin timer fixing code
		F		TF62D dual timer fixing code
				24 – 240 V a.c. / d.c. 50 – 60 Hz (dual usage)

※ Installation type selection is only applied to the model T57N, TF62N and TF62D (Model T38N requires separate purchase of panel adapter)

TF62N, TF62D Twin / Dual Timer

Specification

Model		TF62NE	TF62DE
	Exposure type	TF62NP	TF62DP
Appearance		CE 	CE 
W×H×D (mm)		50.0 X 62.0 X 91.2 57.5 X 84.5 X 83.7	50.0 X 62.0 X 91.2 57.5 X 84.5 X 83.7
Function		TWIN TIMER	DUAL TIMER
Power supply		24 – 240 V a.c. 50/60 Hz, 24 – 240 V d.c.	
Allowable voltage variation		±10 % of Power supply Voltage	
Power consumption		Less than 4.5 VA (at 240 V a.c. 60 Hz), Less than 1.5 W (at 24 V d.c.)	
Return time		Less than 100 ㎳	
maximum time	01	0.01 ~ 1 s / 0.01 ~ 1 m / 0.01 ~ 1 h	
	03	0.01 ~ 3 s / 0.01 ~ 3 m / 0.01 ~ 3 h	
	06	0.01 ~ 6 s / 0.01 ~ 6 m / 0.01 ~ 6 h	
	10	0.01 ~ 10 s / 0.01 ~ 10 m / 0.01 ~ 10 h	
	30	0.01 ~ 30 s / 0.01 ~ 30 m / 0.01 ~ 30 h	
	60	0.01 ~ 60 s / 0.01 ~ 60 m / 0.01 ~ 60 h	
	12H	'12' model is not availale	
Time error	Repeat error	Less than ±0.3 % (ratio against Max. scale)	
	Setting error	Less than ±5 % (ratio against Max. scale)	
Control output	Output mode	FLICKER (ON Start)	FLICKER (ON–A Start)
	Contact	D type (Time – limit 1c)	F type (Time – limit 2c)
	Contact capacity	250 V a.c. 3 A (Resistive load)	
Life span of relay		Mechanical : More than 10 million times / Electrical : More than 100,000 times	
Dielectric strength		2,000 V a.c. 50/60 Hz for 1 minute	
Noise Immunity		±2 kV (Between unit's power terminals), square wave by noise simulator (pulse width : 1 ㎲)	
Insulation resistance		More than 100 MΩ (Based on 500 V d.c. mega standard)	
Vibration (Durability)		10 – 55 Hz (cycle :1 minute), Double amplitude 0.5 ㎜ X·Y·Z each direction for 2h.	
Shock (Durability)		300 ㎨ (30 G) X·Y·Z each direction 3 times	
Ambient temperature		–10 ~ 55 ℃ Without condensation	
Storage temperature		–25 ~ 65 ℃ Without condensation	
Ambient humidity		30 ~ 85 % RH	

Suffix code

□	□	□	Analog timer
			TF62N twin timer (58 X 84 ㎜)
			TF62D dual timer (58 X 84 ㎜)
P			Panel type (T38N panel adapter sold separately)
E			Exposure type (Select with T48N panel type)
	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 (※ But exclude the model TF62N and TF62D)
		A	Time limit : 1c contact, Constantaneous : 1a contact
		B	Time limit : 1c contact, moment : 1c contact
		C	Time limit : 2 x 1c
		D	TF62N twin timer fixing code
		F	TF62D dual timer fixing code
			24 – 240 V a.c. / d.c. 50 – 60 Hz (dual usage)

※ Installation type selection is only applied to the model T57N, TF62N and TF62D (Model T38N requires separate purchase of panel adapter)

Analog Timer

MA4N series Analog multi timer

Specification

MODEL		MA4N-A	MA4N-B	MA4N-C
Appearance		CE 		
W X H X D (mm)		48 X 48 X 94		
Device selection		2c (time limit) ※ 11 pin type	2c (time limit+ constantaneous) ※ 11pin type.	2c (time limit), 2c (time limit+ constantaneous) ※ processed by mode selection (8pin type)
Function		Multi operation, Multi time		POWER ON DELAY, Multi time
Power voltage		24 – 240 V a.c./d.c. 50 – 60 Hz (Dual usage)		
Operating voltage		±10 % of power voltage		
Power consumption		AC : Approx. 5.3 VA Max, DC : 2.5 W		
Time setting range		0.12 sec ~ 300 hours		
Min. signal amplitude		START input, INHIBIT input, RESET input: Min. 20 ㎳		–
Input		• Non voltage Input • Impedance in a short circui t: Max. 2 kΩ • Residual voltage in a short circuit: Max. 0.7 V d.c. • Impedance in open: Min. 100 kΩ		–
Control output	Contact	Specified time DPDT (2c)		Specified time SPDT (1c), Instantaneous time SPDT (1c)
	Contact capacity	250 V a.c. 5 A (Resistive load)		
Variation of operation time		Max. ±0.3 % (Rate against full scale)		
Setting error		Max. ±0.5 %		
Voltage error		Max. ± 5 % ±0.05 sec		
Temperature error		Max. ±2 %		
Dielectric strength		2,000 V a.c. 50/60 Hz for 1minute		
Vibration	Malfunction Resistance	10 – 55 Hz double amplitude 0.75 ㎜		
	Mechanical Durability	10 – 55 Hz double amplitude 0.5 ㎜		
Shock	Malfunction Resistance	100 ㎨		
	Mechanical Durability	300 ㎨		
Life	Mechanical	Over 10 million operations (Open & Short frequency : 180 / min)		
	Electrical	Over 100,000 (250 V a.c. 3 A load resistance)		
Ambient temperature & humidity		0 ~ 50 ℃ / 30 ~ 85 % RH		

MA4SD series Star-Delta timer

Specification

MODEL		MA4SD	MA4SDI
Appearance			
W X H X D (mm)		48 X 48 X 94	
Power supply voltage		100 – 240 V a.c. 50/60 Hz, 24 - 240 V d.c.	
Allowable voltage		Power supply voltage ±10 %	
Power consumption		Approx. 3.8 VA (100 – 240 V a.c. 60 Hz), Approx. 1.9 W (24 - 240 V d.c.)	
Resetting time		100 ms max	
Operating time range		1 ~ 300 sec	
⅄ Operating time difference		Repeated error : ±0.3 % max, Setting error : ±5 % max, Voltage error : ±0.5 % max, Temperature tolerance : ±2 % max (Percentage of full scale)	
△ Conversion time error		±25 % max	
Control output	Output mode	Power ON Start	
	Contact composition	⅄ Contact : 1 a, △Contact : 1 a	⅄ Contact : 1a, △Contact : 1 a, Instantaneous contact : 1 a
	Contact capacity	250 V a.c. 5 A resistive load	
Relay Life span		Mechanical : 5 million times min, Electrical : 100 thousand times min (250 V a.c. 5 A resistive load)	
Insulation resistance		100 ㏁ min (at 500 V d.c. Between current-carrying teminals and exposed noncurrent-carrying metal parts.)	
Dielectric strength		2,000 V a.c. 50/60 Hz 2 minute (Between current-carrying terminal and exposed noncurrent-carrying metal parts.)	
Noise immunity		±2 kV (Between power terminal, pulse width ±1 ㎲, square wave noise by noise simulator)	
Vibration resistance		10 – 55 Hz (For 1 min), Double amplitude 0.75 mm, X, Y, Z each direction for 1 hour	
Shock resistance		300 ㎨(30G) X, Y, Z each direction for 3 times	
Ambient temperature		–10 ~ 55 ℃ (icing or dew condensation not allowed)	
Storage temperature		–25 ~ 65 ℃ (icing or dew condensation not allowed)	
Ambient humidity		35 ~ 85 % RH	
Weight		Approx. 95g (Including fixing bracket)	

BP series Multi pulse meter

Specification

Model		BP6
Appearance		CE 
W X H X D (mm)		72 X 36 X 100
Function		Auto Zero time setting function, Time unit selection function (Individual input for each bank/ batch input selection function), Parameter lock function, Electricity failure compensation function (applicable only to F9), Remote/local conversion function(applicable only to communication output type), Comparative output function (HH, H, GO, L, LL), 4 steps bank setting function, Current output range selection function, Max, Min, Peak value 10 steps memory function (Max: 4 steps save, average value save, Min: 4 steps save, average save), Start compensation timer function, Display cycle setting function
Power Supply		100 – 240 V a.c. 50 – 60 Hz
		24 – 60 V d.c./a.c. 50 – 60 Hz
Power Consumption		Below 10 VA (240 V a.c.)
		Below 6 W (24 V d.c.)
Voltage output for Sensor		12 V d.c. ±10 % 120 ㎃ (voltage fluctuation rate: ±10 %)
Measuring Accuracy		FS ± 0.01 % rdg ± 1 dig
Measurement Range		0.0005 Hz ~ 50 ㎑, 0.001 s ~ 3,200 s, 0 ~ 4 x 10 Count
Max. Display Digits		5 digits (–19999 ~ 99999)
Display method		7 Segment
Input Signal		Non–Contact Input: Max. 50 ㎑ (ON/OFF width for each above 10 ㎲)(ON voltage: 4.5 V – 24 V, OFF voltage: 0 – 1.0 V) Contact Input: Max. 30 ㎐ (ON/OFF width for each above 33 ㎳)(12 V d.c., able to switch the current of 2 ㎃ sufficiently)
Output type		Relay Output (H, GO, L)
Operation Mode		·F1: revolution/ frequency/ speed ·F2: moving speed ·F3: cycle ·F4: passing time ·F5: time difference ·F6: time width ·F7: pulse width ·F8: pulse interval ·F9: Addition counte ·F10: absolute ratio ·F11: error ratio ·F12: density ·F13: error
Noise Immunity		By noise simulator, square–shaped wave noise (pulse width 1㎲) ±2000V
Vibration	Mechanical Durability	10 – 55 ㎐ double amplitude width 0.75 mm in each X·Y·Z direction for 2 hours
	Malfunction Resistance	10 – 55 ㎐ double amplitude width 0. 5 mm in each X·Y·Z direction for 10 minutes
Shock	Mechanical Durability	300 ㎪ (approx. 30G) in each X·Y·Z direction for 3 times
	Malfunction Resistance	100 ㎪ (approx. 10G) in each X·Y·Z direction for 3 times
Operating Ambient Environment		Temperature: –10 ~ 50 ℃ (without condensation) Humidity: 35 ~ 85 % R.H.

Suffix code

Model	Code				Information
BP	□–	□	□	□	Multi pulse meter
Dimension	6				72(W) X 36(H) mm
Displayable digit		5			5 digits (–19999 – 99999)
Power supply voltage			A		100 – 240 V a.c. 50 – 60 ㎐
			D		24 – 60 V d.c. / a.c.
Output specification					Main output
				N	Display only
				1	Relay 3 stages output

Multi Pulse Meter

RP series Multi pulse meter

Specification

Model	RP7	RP3	RP4	RP6	RP1
Appearance					
W X H X D (mm)	72 X 72 X 92	96 X 48 X 105	48 X 48 X 85	72 X 36 X 105	48 X 24 X 100
Function	·Auto Zero time setting function ·Time unit selection function ·Parameter lock function ·Electricity failure compensation function(applicable only to F9) ·Remote/local conversion function (applicable only to communication output type) ·Comparative output function (HH, H, GO, L, LL) ·Current output range selection function ·Max, Min, Peak value 10 steps memory function (Max : 4 steps save, average value save, Min: 4 steps save, average save) ·Starting compensation timer function ·Display cycle setting function				
Power Supply	100 – 240 V a.c. 50 – 60 Hz				
	24 – 60 V d.c./a.c. 50 – 60 Hz				–
Power Consumption	Below 9.5 VA (240 V a.c.)	Below 9.5 VA (240 V a.c.)	Below 12 VA (240 V a.c.)		Below 10 VA (240 V a.c.)
	Below 5 W (24 V d.c.)		Below 6 W (24 V d.c.)	Below 5 W (24 V d.c.)	–
Voltage output for Sensor	12 V d.c. ±10 % 120 ㎃ (voltage fluctuation rate ±10 %)				
Measuring Accuracy	± 0.02 % rdg ±1 digit				
Measurement Range	0.0003 ~ 10 ㎑, 0.001 s ~ 3,200 s, 0 ~ 4 x 10 9 Count				
Max. Display Digits	5 Digits (0 ~ 99999)				4 dugit (0 ~ 9999)
Display Method	7 Segment				
Input Signal	Non-Contact Input: Max. 10 ㎑ (ON/OFF width for each above 50 ㎲)(ON voltage: 4.5 – 24 V, OFF voltage : 0 – 1.0 V) Contact Input: Max. 30 ㎐ (ON/OFF width for each above 33 ㎳)(12 V d.c., able to switch the current of 2 ㎃ sufficiently)				
Output type	Relay Output (H, GO, L) (HH, H, GO, L, LL)	Relay Output (H, GO, L) (HH, H,GO, L, LL)	Relay Output (H)	Relay Output (H, GO, L)	Relay Output (H)
Operation Mode	·F1: Revolution/ Frequency/ Speed ·F2: Moving speed ·F3: Cycle ·F4: Passing Time ·F5: Time Difference ·F6: Time Width ·F7: Pulse Width ·F8: Pulse Interval ·F9: Additon Counter				
Noise Immunity	By noise simulator, square-shaped wave noise (pulse width 1㎲) ±2000 V				
Vibration – Mechanical Durability	10 – 55 ㎐ double amplitude width 0.75 ㎜ in each X·Y·Z direction for 2 hours				
Vibration – Malfunction Resistance	10 – 55 ㎐ double amplitude width 0. 5 ㎜ in each X·Y·Z direction for 10 minutes				
Shock – Mechanical Durability	300 ㎨ (approx. 30G) in each X·Y·Z direction for 3 times				
Shock – Malfunction Resistance	100 ㎨ (approx. 10G) in each X·Y·Z direction for 3 times				
Operating Ambient Environment	Temperature: –10 ~ 50 ℃ (without condensation) Humidity: 35 ~ 85 % RH				

Suffix code

Model	Code					Information
RP	□–	□	□	□		Multi Pulse Meter
Dimension	1					48 (W) × 24 (H)
	3					96 (W) × 48 (H)
	4					48 (W) × 48 (H)
	6					72 (W) × 36 (H)
	7					72 (W) × 72 (H)
Displayable digit		4				4 digits 1 stage (0 – 9999) ※ applicable to RP1
		5				5 digits 1 stage (0 – 99999)
Power specification			A			100 – 240 V a.c. 50 – 60 ㎐
			D			24 – 60 V d.c. / a.c. ※ Exception : RP1
Output specification		RP1		H		Display Only
				1		Relay 1 stage output (H : High limit output)
		RP3		N		Display Only
				1		Relay 3 stages output (H, GO, L)
				2		Relay 5 stages output (HH, H, GO, L, LL)
				4		NPN Open Collector 5 stages output, 4 – 20 mA d.c.(Retransmission output)
		RP4		N		Display Only
				1		Relay 1 stage output (H : High limit output)
		RP6		N		Display Only
				1		Relay 3 stages output (H, GO, L)
				3		NPN Open Collector 5 stages output, 4 – 20 mA d.c.(Retransmission output)
		RP7		N		Display Only
				1		Relay 3 stages output (H, GO, L)
				2		Relay 5 stages output (HH, H, GO, L, LL)
				5		NPN Open Collector 5 stages output, 4 – 20 mA d.c.(Retransmission output)

WM3 Digital wattmeter

Specification

Model	WM3
Appearance	CE 
WXHXD(mm)	96 X 48 X 100
Measurement method	Period measuring type
Input voltage	0 – 220 V a.c.
Displaying period	0.1 ~ 2 sec
Power factor	80 ~ 100 %
Response speed	Approx. 2 sec (max range)
max displayable digit	4 digits (–1999 ~ 9999)
Displaying part	7 segments LED
Accuracy	Less than ± 5 Digt
Insulation resistance	Min 100 MΩ(500 V d.c.)
Dielectric strength	1500 V a.c. for 1 min (power terminal – input terminal)
Communication output(RS485)	Able to set the address from 00 ~ 99 and able to select the baud rate of series transfer. (Transfer speed : 1200, 2400, 4800, 9600, 19200 bps)
Current output (transfer)	Yields the 4 – 20 mA d.c. output corresponding to the current indication value. (Resolving power: 12,000)
Transistor output	PNP/NPN open collector output (12 – 24 V d.c. 50 ㎃ max)
Relay output	1 a X 3 contact (HI, GO, LO), (220 V a.c. 5 A)
Power supply voltage	100 – 240 V a.c. 50 – 60 ㎐ (Dual usage)
Voltage fluctuation	–15 ~ 10 % of the power supply voltage
Power consumption	Approx. 5 VA
Weight	300 g
Ambient temperature	0 ~ 50 ℃
Ambient humidity	35 ~ 85 % RH
Storage temperature	–10 ~ 70 ℃
Vibration resistance	10 – 55 ㎐ single amplitude, to the each direction of X, Y, Z for 2 hour
Shock resistance	300 m/s², to the 6 direction of X, Y, Z and each 3 times

Suffix code

Model	Code			Information
WM3–	□	□	□	Digital wattmeter (DIN 96 X 48 mm)
Phase and wire	1			Single phase 2 wire type (0 – 220 V a.c.)
Input specification		01		Refer to the input specification (Refer to the code)
Output (Optional)			N	Only for displaying
			0	Relay (HI, GO, LO), 4 – 20 ㎃ d.c.
			1	Relay (HI, GO, LO)
			2	NPN Open collector (HI, GO, LO), 4 – 20 ㎃ d.c.
			3	PNP Open collector (HI, GO, LO), 4 – 20 ㎃ d.c.
			4	NPN Open collector (HI, GO, LO), RS485
			5	PNP Open collector (HI, GO, LO), RS485

Panel Meter

MP3 series Digital multimeter

Specification

Model	MP3
Appearance	CE  〈Front Plate Type〉 〈Front Acrylic Type〉
W×H×D (mm)	96 X 48 X 112
Power Supply	100 – 240 V a.c. 50 – 60 Hz voltage fluctuation rate ±10 %
Power Consumption	5 VA
Display	7 Segment LED Display
Insulation Resistance	100 MΩ minimum (at 500 V d.c.) between external terminal and case
Dielectric Strength	2000 V a.c. minimum for 1 minute between external terminal and case
Noise Immunity	By noise simulator, square–shaped wave noise, pulse width 1μs, ±3000 V
Vibration Resistance	Malfunction Resistance : 10 – 55 Hz Single amplitude 0.5 mm X·Y· Z each direction for 1 hour Mechanical Durability : 10 – 55 Hz Single amplitude 0.75 mm X·Y·Z each direction for 2 hours
Shock Resistance	Malfunction Resistance : 100 % for 3 times each in X·Y·Z direction, Mechanical Durability: 300 % for 3 times each in X·Y·Z direction
Operating Ambient temperature	–10 ~ 55 ℃ (without condensation)
Operating Ambient Humidity	35 ~ 85 % RH
Operating Circumstance	With no corrosive gas
Storage Ambient Temperature	–20 ~ 65 ℃ (without condensation)
Relay Life Expectancy	Mechanical: More than 20,000,000 times, Electrical: More than 100,000 times

Suffix code

Model	Code				Information
MP3–	□	□	□	□	Digital Multi Panelmeter 96 x 48 mm
Displaying digit	4				4 digits (9999)
Input type		DV			DC VOLTAGE
		DA			DC AMPERE
		AV			AC VOLTAGE
		AA			AC AMPERE
		AVR			AC VOLTAGE (RMS) ※Option output can be ordered only N type
		AAR			AC AMPERE (RMS) ※Option output can be ordered only N type
Output (Optional)			N		Display only
			0		Relay Output (HI,GO,LO) + Current Output (4 – 20 mA)
			1		Relay Output (HI, GO, LO)
			2		NPN Open Collector Output (HI,GO,LO) + BCD Output (Dynamic)
			3		PNP Open Collector Output (HI,GO,LO) + BCD Output (Dynamic)
			4		NPN Open Collector Output (HI,GO,LO) + Current Output (4 – 20 mA)
			5		PNP Open Collector Output (HI,GO,LO) + Current Output (4 – 20 mA)
			6		NPN Open Collector Output (HI,GO,LO) + Serial Output (lowspeed)
			7		PNP Open Collector Output (HI,GO,LO) + Serial Output (lowspeed)
			8		NPN Open Collector Output (HI,GO,LO) + RS485 Output
			9		PNP Open Collector Output (HI,GO,LO) + RS485 Output
			10		BCD Output (Static)
			11		Relay Output (HI,GO,LO) + RS485 Output
Front panel type				A	Front Acrylic type (100 – 240 V a.c.)
				B	Front Plate type (100 – 240 V a.c.)
				C	Front Plate type (24 V d.c.) ※Only N type is available

MP6 series Digital multimeter

Specification

Model	MP6
Appearance	CE  〈Front Plate Type〉 〈Front Acrylic Type〉
W×H×D (mm)	72 X 36 X 100
Power Supply	100 – 240 V a.c. 50 – 60 Hz voltage fluctuation rate ±10 %
Power Consumption	Approx. 4 VA
Display	7 Segment LED Display
Insulation Resistance	100 MΩ minimum (at 500 V d.c.) between external terminal and case
Dielectric Strength	2000 V a.c. minimum for 1 minute between external terminal and case
Noise Immunity	By noise simulator, square-shaped wave noise, pulse width 1μs, ±3000 V
Vibration Resistance	Malfunction Resistance : 10 – 55 Hz Single amplitude 0.5 mm X·Y· Z each direction for 1 hour Mechanical Durability : 10 – 55 Hz Single amplitude 0.75 mm X·Y·Z each direction for 2 hours
Shock Resistance	Malfunction Resistance : 100 % for 3 times each in X·Y·Z direction, Mechanical Durability: 300 % for 3 times each in X·Y·Z direction
Operating Ambient temperature	–10 ~ 55 ℃(without condensation)
Operating Ambient Humidity	35 ~ 85 % RH
Operating Circumstance	With no corrosive gas
Storage Ambient Temperature	–20 ~ 65 ℃(without condensation)
Relay Life Expectancy	Mechanical: More than 20,000,000 times, Electrical: More than 100,000 times

Suffix code

Model	Code					Information
MP6–	☐	☐	☐	☐	☐	Digital Multi Panelmeter 72 x 36 mm
Displaying digit	4					4 digits (9999)
Input type		DV				DC VOLTAGE
		DA				DC AMPERE
		AV				AC VOLTAGE
		AA				AC AMPERE
		AVR				AC VOLTAGE (RMS) ※Option output can be ordered only N type
		AAR				AC AMPERE (RMS) ※Option output can be ordered only N type
Output (Optional)			N			Display only
			0			Relay, Current output (4 – 20 mA d.c.)
			1			Relay
			4			NPN Open Collector , Current output (4 – 20 mA)
			5			PNP Open Collector , Current output (4 – 20 mA)
Front panel type				A		Front Acrylic type (100 – 240 V a.c.)
				B		Front Plate type (100 – 240 V a.c.)
				C		Front Plate type (24 V d.c.)

Panel Meter

MP3-4H, MP6-4H Digital frequency meter

Specification

Model	MP3-4H	MP6-4H
Appearance	CE 	CE 
W X H X D (mm)	96 X 48 X 100	72 X 36 X 100
Input signal	AC (voltage, current), DC (voltage, current)	
A/D converting method	Double integral method	
Sampling time	AC type : 300 ㎳	
Response speed	Approx. 2sec (max range)	
Max displayable digit	4 digits (-1999~9999)	
Displaying unit	7 segments LED	
Accuracy	AC : below ±5 Digit, DC : below ±2 Digit	
Insulation resistance	Min 100 MΩ(500 V d.c.)	
Dielectric strength	1500 V a.c. for 1 min (power terminal - input terminal)	
Communication output (RS485)	It can set address from 00 to 99 and it can select modulation rate of direct retransmission. (Retransmission speed : 1200, 2400, 4800, 9600, 19200 bps)	
Current output (Retransmission)	Yields 4~20mA d.c. output regarding current indicated value. (Resolving power : 12,000)	
Transistor output	PNP/NPN open collector output (12 - 24 V d.c. 50 ㎃ max)	
Relay output	1 a X 3 contacts (HI, GO, LO), (220 V a.c. 5 A)	
Power supply voltage	100 - 240 V a.c., 50 - 60 ㎐ (dual usage)	
Allowable voltage fluctuation range	85 - 264 V a.c.	
Power consumption	Approx. 5 VA	Approx. 5 VA
Weight(g)	Approx. 180	
Ambient temperature	0 ~ 50 ℃	
Ambient humidity	35 ~ 85 % RH	
Storage temperature	-10 ~ 70 ℃	
Vibration resistance	10 - 55 ㎐ single amplitude X, Y, Z each direction for 2 hours	
Shock resistance	300 m/s², X, Y, Z 6 directions each 3 times	

Suffix code

Model	Code	Information
MP	□ □ □ □	Digital frequency meter
Dimension	3	Dimension 96×48 ㎜
	6	Dimension 72×36 ㎜
Displayable digit	4	4 digits (9999)
Output (Optional)	N	Only for display
	0	Relay output (HI, GO, LO) + current output (4 - 20 ㎃)
	1	Relay output (HI, GO, LO)
	2	NPN TR output (HI, GO, LO) + current output (4 - 20 ㎃)
	3	PNP TR output (HI, GO, LO) + current output (4 - 20 ㎃)
	4	NPN TR output (HI, GO, LO) + RS485output
	5	PNP TR output (HI, GO, LO) + RS485output
Output (Optional)	H	AC input frequency measurement

BS series Exclusive digital voltmeter·Ammeter

Specification

Model		BS3	BS6	BS1
Appearance				
WXHXD(mm)		96 X 48 X 100	72 X 36 X 100	48 X 24 X 100
Function		Indicator		
Power supply		100 – 220 V a.c. 50 – 60 Hz (voltage variation rate ±10 %)		
Display unit		V · mV · A · mA · μA		
Max. display range		1999 (3½ Digit)		
Input signal		AC voltage, AC current, DC voltage, DC current, Instrumentation signal		
A/D converter		2 dual integration		
Sampling cycle		300 ms		
Response speed		Approx. 2 sec. (Max. range)		
Insulation resistance		Min. 100 MΩ at 500 V d.c. between terminals		
Dielectric strength		1500 V a.c. for 1 minute between power and external terminals		
Vibration	Mechanical Durability	10 – 55 Hz each direction for 1 hour		
	Malfunction Resistance	10 – 55 Hz each direction for 10 minutes		
Shock	Mechanical Durability	300 m/s² X·Y·Z each direction 3 times (Approx. 30G)		
	Malfunction Resistance	100 m/s² X·Y·Z each direction 3 times (Approx. 10G)		
Ambient Temp. & Humidity		0 ~ 50 ℃/ 35 ~ 85 % RH		

Suffix code

Model	Code						Information
BS	□–	□	□	□	□	□	Digital panel meter
Dimension	6						72 X 36 mm
	3						96 X 48 mm
	1						48 X 24 mm
Output		N					Only for indication
Input type			A	10			AC voltmeter (AC)
				20			AC ammeter (AC)
			D	10			DC voltmeter(DC)
				20			DC ammeter(DC)
				11			DC voltmeter
				21			DC ammeter
Measurement range						1	Refer to the measurement range code : BS3–NA101 (1.999 V)

※Mode: range code of BS6 and BS3 are different

Measurement range

■ AC current (model: BS3, BS6, BS1)

19.99 mA	10 μA	10 Ω	50 mA
199.9 mA	100 μA	1 Ω	300 mA
1.999 A	1 mA	0.1 Ω	3 A
5.00 A	10 mA	40 MΩ	5.1 A
19.99 A	10 mA	Use transformer (Secondary current 5 A)	
30.0 A	100 mA		
100.0 A	100 mA		
150.0 A	100 mA		
199.9 A	100 mA		
300 A	1 A		
1999 A	1 A		

■ DC voltage (model: BS3, BS6, BS1)

1 – 5 V d.c.	50.0	500 kΩ	100 V
	100.0	500 kΩ	100 V
	199.9	500 kΩ	100 V

Input Measurement range 0 – 10 V d.c. (optional)

■ AC voltage (model: BS3)

1.999 V	1 mV	100 kΩ	10 V
19.99 V	10 mV	1 MΩ	50 V
199.9 V	100 mV	10 MΩ	300 V
400 V	1 V	10 MΩ	500 V
400 V	1 V	10 MΩ	500 V

■ AC voltage (model: BS6, BS1)

199.9 mV	0.1 mV	10 kΩ	10 V
1.999 V	1 mV	100 kΩ	10 V
19.99 V	10 mV	1 MΩ	50 V
199.9 V	100 mV	10 MΩ	300 V
400 V	1 V	10 MΩ	500 V
500 V			

※BS1–NA105 range : 500 V

■ DC ammeter (model: BS3, BS6, BS1)

4 – 20 mA d.c.	50.0	25 Ω	150 mA
	100.0	50 Ω	150 mA
	199.9	100 Ω	150 mA

■ DC current (model: BS3, BS6, BS1)

199.9 mV	0.1 mV	10 kΩ	70 V
1.999 V	1 mV	100 kΩ	100 V
19.99 V	10 mV	1 MΩ	200 V
199.9 V	100 mV	10 MΩ	300 V
500 V	1 V	10 MΩ	600 V

■ DC current (model: BS6)

199.9 μA	0.1 μA	100 Ω	1 mA
1.999 mA	1 μA	10 Ω	50 mA
19.99 mA	10 μA	1 Ω	150 mA
199.9 mA	100 μA	0.1 Ω	300 mA
5.00 A	10 mA	400 MΩ	5.1 A
19.99 A	10 mA	Use shunt (Secondary voltage 50 mV)	
199.9 A	100 mA		
1999 A	1 A		

■ DC current (model: BS1)

199.9 μA	0.1 μA	1 kΩ	50 mA
1.999 mA	1 μA	100 Ω	150 mA
19.99 mA	10 μA	10 Ω	300 mA
199.9 mA	100 μA	1 Ω	3 A
1.999 A	1 mA	0.1 Ω	3 A
5.00 A	10 mA	0.01 Ω	5 A
19.99 A	10 mA	Use shunt (Secondary voltage 50 mV)	
199.9 A	100 mA		
1999 A	1 A		

■ DC ammeter current (model: BS3)

1.999 mA	1 μA	100 Ω	50 mA
19.99 mA	10 μA	10 Ω	150 mA
199.9 mA	100 μA	1Ω	300 mA
1.999 A	1 mA	0.1Ω	3 A
5.00 A	10 mA	0.01Ω	5 A
19.99 A	10 mA	Use shunt (Secondary voltage 50 mV)	
199.9 A	100 mA		
1999 A	1 A		

Panel Meter

BA1 Digital Voltmeter·Ammeter

Specification

Model		BA1
Appearance		
WXHXD(mm)		48 X 24 X 53
Function		Display
Power supply		5 V d.c., 12 – 24 V d.c.
Display unit		–
Max. range		±1999 (3½Digit)
Input signal		DC voltage, DC current, Instrumentation signal
A/D converter		2 dual integration
Sampling cycle		2.5 times / sec.
Response speed		Approx. 2.5sec.
Insulation resistance		Min. 100 MΩ at 500 V d.c. between external terminal and case
Dielectric strength		1500 V a.c. for 1 minute between power and external terminals
Vibration	Malfunction Resistance	10 – 55 Hz 0.76 mm X·Y·Z each direction for 2 hours
	Mechanical Durability	2 – 55 Hz X·Y·Z each direction for 10 minutes
Shock	Malfunction Resistance	100 m/s² each direction 3 times (Approx. 10G)
	Mechanical Durability	300 m/s² each direction 3 times (Approx. 30G)
Ambient temp. & Humidity		0 ~ 50 ℃ / 35 ~ 85 % RH (Without condensation)

Suffix code

Model	Code				Information
BA1–	□	□	□	□	Mini DC indicator (48 X 24 mm)
Input	D	10			DC voltage (voltmeter)
		20			DC current (ammeter)
		11			DC voltmeter (1 – 5 V d.c.)
		21			DC ammeter (4 – 20 mA d.c.)
Range code					Refer to the Measurement range
Power supply voltage			–		5 V d.c.
			A		12 – 24 V d.c.

Measurement range

■ DC voltage

	199.9 mV	100 μV	100 kΩ	70 V
	1.999 V	1 mV	1 MΩ	100 V
	19.99 V	10 mV	1 MΩ	250 V
	199.9 V	100 mV	10 MΩ	300 V
	1 – 5 V d.c.	50.0	100 kΩ	100 V
		100.0	100 kΩ	100 V
		199.9	100 kΩ	100 V

※ Degree : Indicate value of ±0.2 % ±1 digit (23 ℃ ±5 ℃)

■ DC current

	199.9 μA	0.1 μA	1 kΩ	10 mA
	1.999 mA	1 μA	100 Ω	50 mA
	19.99 mA	10 μA	10 Ω	150 mA
	199.9 mA	100 μA	1 Ω	500 mA
	1.999 A	1 mA	0.01 Ω	5 A
	19.99 A	10 mA	Use shunt (secondary voltage 50 mV)	
	199.9 A	100 mA		
	1999 A	1 A		
	4 – 20 mA d.c.	50.0	25 Ω	150 mA
		100.0	50 Ω	150 mA
		199.9	100 Ω	150 mA

※ Degree : Indicate value of ±0.2 % ±1 digit (23 ℃ ±5 ℃)

HLP1 Non voltage digital scale meter

Specification

Model	HLP1
Appearance	
W X H X D (mm)	48 X 25 X 50
Power supply voltage	Non–voltage type
Ambient temperature	–5 ~ 50 ℃
Ambient humidity	20 ~ 90 % RH
Storage temperature	–25 ~ 70 ℃
Vibration resistance	10 ~ 55 Hz Single amplitude for 2 hour each in X, Y and Z direction
Shock resistance	300 m/s², 3 times each in X, Y and Z 6 direction

UP series Round type proximity sensor

Specification

■ Inductive DC 3 wire type

			
Shield	Non shield	Shield	Non shield
Iron 8 X 8 X 1		Iron 12 X 12 X 1	
1.5 mm	2 mm	2 mm	4 mm
0 ~ 1.2 mm	0 ~ 1.6 mm	0 ~ 1.6 mm	0 ~ 3.2 mm
Less than 10% of sensing distance			
800 Hz		800 Hz	400 Hz
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)			
200 ㎃ max (Resistive load)			
Max 1.5 V			
Max 6 ㎃			
Red LED			
Power reversely connected protective circuit, Surge protective circuit and Over current protective circuit are built in.			
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
35 ~ 85 %RH			
min 50 ㏁ (500 V d.c. mega standard)			
For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
500 ㎨ 3 times to each of X, Y and Z directions			
IP67(IEC standard)			
Cable type (standard cable length 2 m), relay connector type, connector type			
NPN : Green, PNP : Purple			
Case: stainless, Sensing surface: PBT, Cable holder: Polyester elastomer		Case: brass (chrome plating), Sensing surface: PBT, Cable holder: Polyester elastomer	

■ Inductive DC 3 wire type

			
Shield	Non shield	Shield	Non shield
Iron 18×18×1	Iron 25×25×1	Iron 18×18×1	Iron 25×25×1
5 mm	8 mm	5 mm	8 mm
0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm
Less than 10% of sensing distance			
350 Hz	200 Hz	350 Hz	200 Hz
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)			
200 ㎃ max (Resistive load)			
Max 1.5 V			
Max 6 ㎃			
Red LED			
Power reversely connected protective circuit, Surge protective circuit and Over current protective circuit are built in.			
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
35 ~ 85 % RH			
min 50 ㏁ (500 V d.c. mega standard)			
For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
500 ㎨ 3 times to each of X, Y and Z directions			
IP67(IEC standard)			
Cable type (standard cable length 2 m), relay connector type, connector type			
NPN : Green, PNP : Purple			
Case: brass (chrome plating), Sensing surface : PBT, Cable holder: Polyester elastomer			

Proximity Sensor

■ Inductive DC 3 wire type

			
Shield	Non shield	Shield	Non shield
Iron 30×30×1	Iron 45×45×1	Iron 30×30×1	Iron 45×45×1
10 mm	15 mm	10 mm	15 mm
0 ~ 8 mm	0 ~ 12 mm	0 ~ 8 mm	0 ~ 12 mm
Less than 10% of sensing distance			
250 Hz	100 Hz	250 Hz	100 Hz
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)			
200 ㎃ max (Resistive load)			
Max 1.5 V			
Max 6 ㎃			
Red LED			
Power reversely connected protective circuit, Surge protective circuit and Over current protective circuit are built in.			
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
35 ~ 85 %RH			
min 50 ㏁ (500 V d.c. mega standard)			
For 1 min at 2000 V a.c. 50/60 Hz (between the recharging part and case)			
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
500 ㎨ 3 times to each of X, Y and Z directions			
IP67(IEC standard)			
Cable type (standard cable length 2 m), relay connector type, connector type			
NPN : Green, PNP : Purple			
Case: brass (chrome plating), Sensing surface : PBT, Cable holder: Polyester elastomer			

■ Inductive DC 2 wire type (Polarity / No polarity)

			
Shield	Non shield	Shield	Non shield
Iron 8×8×1	Iron 8×8×1	Iron 12×12×1	Iron 12×12×1
1.5 mm	2 mm	2 mm	4 mm
0 ~ 1.2 mm	0 ~ 1.6 mm	0 ~ 1.6 mm	0 ~ 3.2 mm
Less than 10% of sensing distance			
800 Hz	800 Hz	800 Hz	400 Hz
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)			
100 ㎃ max (Resistive load)			
T (Polarity) : max 3.5 V, U (No polarity) : max 5 V			
Max 1 ㎃			
Red LED			
Surge protective circuit and Over current protective circuit are built in.			
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
35 ~ 85 % RH			
min 50 ㏁ (500 V d.c. mega standard)			
For 1 min at 2000 V a.c. 50/60 Hz (between the recharging part and case)			
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
500 ㎨ 3 times to each of X, Y and Z directions			
IP67(IEC standard)			
Cable type (standard cable length 2 m), relay connector type, connector type			
NO : Green, NC : Purple			
Case: stainless, Sensing surface: PBT, Cable holder: Polyester elastomer		Case: brass (chrome plating), Sensing surface: PBT, Cable holder: Polyester elastomer	

■ Inductive DC 2 wire type (Polarity / No polarity)

			
Shield	Non shield	Shield	Non shield
Iron 18×18×1	Iron 25×25×1	Iron 18×18×1	Iron 25×25×1
5 mm	8 mm	5 mm	8 mm
0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm
Less than 10% of sensing distance			
800 Hz	400 Hz	800 Hz	400 Hz
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)			
100 ㎃ max (Resistive load)			
T (Polarity) : max 3.5 V, U (No polarity) : max 5 V			
Max 1 ㎃			
Red LED			
Surge protective circuit and Over current protective circuit are built in.			
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
35 ~ 85 % RH			
min 50 ㏁ (500 V d.c. mega standard)			
For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
500 ㎨ 3 times to each of X, Y and Z directions			
IP67(IEC standard)			
Cable type (standard cable length 2 m), relay connector type, connector type			
NO : Green, NC : Purple			
Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer			

■ Inductive DC 2 wire type (Polarity / No polarity)

			
Shield	Non shield	Shield	Non shield
Iron 30×30×1	Iron 45×45×1	Iron 30×30×1	Iron 45×45×1
10 mm	15 mm	10 mm	15 mm
0 ~ 8 mm	0 ~ 12 mm	0 ~ 8 mm	0 ~ 12 mm
Less than 10% of sensing distance			
250 Hz	100 Hz	250 Hz	100 Hz
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)			
100 ㎃ max (Resistive load)			
T (Polarity) : max 3.5 V, U (No polarity) : max 5 V			
Max 1 ㎃			
Red LED			
Surge protective circuit and Over current protective circuit are built in.			
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
35 ~ 85 % RH			
min 50 ㏁ (500 V d.c. mega standard)			
For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
500 ㎨ 3 times to each of X, Y and Z directions			
IP67(IEC standard)			
Cable type (standard cable length 2 m), relay connector type, connector type			
NO : Green, NC : Purple			
Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer			

Proximity Sensor

■ Inductive AC 2 wire type

		
	Shield	Non shield
	Iron 12×12×1	
	2 mm	4 mm
	0 ~ 1.6 mm	0 ~ 3.2 mm
	Less than 10 % of sensing distance	
	20 Hz	
	100 - 240 V a.c. (Usable voltage range 90 – 250 V a.c.)	
	200 ㎃ max (Resistive load)	
	max 10 V	
	Max 2.2 ㎃	
	Red LED	
	Surge protective circuit built in.	
	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)	
	35 ~ 85 %RH	
	min 50 ㏁ (500 V d.c. mega standard)	
	For 1 min at 2000 V a.c. 50/60 Hz (between the recharging part and case)	
	10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)	
	500 ㎨ 3 times to each of X, Y and Z directions	
	IP67(IEC standard)	
	Cable type (standard cable length 2 m), relay connector type, connector type	
	NO : Green, NC : Purple	
	Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer	

■ Inductive AC 2 wire type

				
	Shield	Non shield	Shield	Non shield
	Iron 18×18×1	Iron 25×25×1	Iron 18×18×1	Iron 25×25×1
	5 mm	8 mm	5 mm	8 mm
	0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4 mm	0 ~ 6.4 mm
	Less than 10 % of sensing distance			
	20 Hz			
	100 - 240 V a.c. (Usable voltage range 90 – 250 V a.c.)			
	200 ㎃ max (Resistive load)			
	max 10 V			
	Max 2.2 ㎃			
	Red LED			
	Surge protective circuit built in.			
	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
	35 ~ 85 %RH			
	min 50 ㏁ (500 V d.c. mega standard)			
	For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
	10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
	500 ㎨ 3 times to each of X, Y and Z directions			
	IP67(IEC standard)			
	Cable type (standard cable length 2 m), relay connector type, connector type			
	NO : Green, NC : Purple			
	Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer			

■ Inductive AC 2 wire type

Model	UP30RM–10A□□	UP30RD–15A□□	UP30RLM–10A□□	UP30RLD–15A□□
Appearance				
Shield	Shield	Non shield	Shield	Non shield
Standard sensing object(㎜)	Iron 30×30×1	Iron 45×45×1	Iron 30×30×1	Iron 45×45×1
Sensing distance	10 mm	15 mm	10 mm	15 mm
Setting distance	0 ~ 8 mm	0 ~ 12 mm	0 ~ 8 mm	0 ~ 12 mm
Hysteresis	Less than 10 % of sensing distance			
Response frequency	20 Hz			
Power supply voltage	100 - 240 V a.c. (Usable voltage range 90 – 250 V a.c.)			
Control output	200 ㎃ max (Resistive load)			
Residual voltage	max 10 V			
Leakage current	Max 2.2 ㎃			
Operation indication	Red LED			
Protection circuit	Surge protective circuit built in.			
Ambient temperature	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
Ambient humidity	35 ~ 85 % RH			
Insulation resistance	min 50 ㏁ (500 V d.c. mega standard)			
Dielectric strength	For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
Vibration resistance	10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
Shock resistance	500 ㎨ 3 times to each of X, Y and Z directions			
Degree of protection	IP67(IEC standard)			
Connection structure	Cable type (standard cable length 2 m), relay connector type, connector type			
Color	NO : Green, NC : Purple			
Material	Case : brass (chrome plating), Sensing surface : PBT, Cable holder : Polyester elastomer			

Suffix code

□	□–	□	□	□	□	Inductive type proximity sensor
8						M8
12						M12
18						M18
30						M30
	RM					Round type Shield
	RD					Round type Non Shield
	RLM					Long round type Shield (M8 and M12 are excluded)
	RLD					Long round type Non Shield (M8 and M12 are excluded)
		*				Please refer to the sensing distance of each specification (unit : ㎜)
			N			DC NPN output
			P			DC PNP output
			A			AC 2 wire type
			T			DC 2 wire type (Polarity)
			U			DC 2 wire type (No polarity) ※ But M8 is excluded
				A		Normal Open (N.O)
				C		Normal Close (N.C)
					*	Cable type
					CR	Relay connector type
					C	Connector type

Proximity Sensor

UP series Square type proximity sensor

Specification

■ Inductive DC 3 wire type

CE 	CE 	
Iron 12X12X1	Iron 18X18X1	Iron 25X25X1
4 ㎜	5 ㎜	8 ㎜
0 ~ 3.2 ㎜	0 ~ 4 ㎜	0 ~ 6.4 ㎜
Less than 10 % of sensing distance		
800 ㎐		
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)		
200 ㎃ max (Resistive load)		
1.5 V max		
6 ㎃ max		
Red LED		
Power reversely connected protective circuit, Surge protective circuit and over current protective circuit are built in.		
IP67(IEC standard)		
Cable type (standard cable length 2 m), Relay connector type		
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)		
35 ~ 85 %RH		
Min 50 ㏁ (500 V d.c. mega standard)		
For 1 min at 2000 V a.c. 50/60 Hz (Between the recharging part and case)		
10 – 55 ㎐ (Cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)		
500 ㎨ 3 times to each of X, Y and Z directions		
Case : PBT resin, cable holder : Polyester elastomer		
approx. 45g	approx. 60g	approx. 60g
approx. 15g	approx. 20g	approx. 20g

■ Inductive DC 3 wire type

CE 			CE 		CE 
Iron 25 X 25 X 1	Iron 30 X 30 X 1	Iron 35 X 35 X 1	Iron 30 X 30 X 1	Iron 45 X 45 X 1	Iron 60 X 60 X 1
5 ㎜	8 ㎜	12 ㎜	10 ㎜	15 ㎜	20 ㎜
0 ~ 4 ㎜	0 ~ 6.4 ㎜	0 ~ 9.6 ㎜	0 ~ 8 ㎜	0 ~ 12 ㎜	0 ~ 16 ㎜
Less than 10% of sensing distance					
350 ㎐	250 ㎐	200 ㎐	250 ㎐	100 ㎐	100 ㎐
12 – 24 V d.c. (Usable voltage range 5 – 35 V d.c.)					
200 ㎃ max (Resistive load)					
1.5 V max					
6 ㎃ max					
Red LED					
Power reversely connected protective circuit, Surge protective circuit and over current protective circuit are built in.					
IP67(IEC standard)					
Cable type (standard cable length 2 m), Relay connector type					
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)					
35 ~ 85 % RH					
Min 50 ㏁ (500 V d.c. mega standard)					
For 1 min at 2,000 V a.c. 50/60 Hz (Between the recharging part and case)					
10 – 55 ㎐ (Cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)					
500 ㎨ 3 times to each of X, Y and Z directions					
Case : PBT resin, Cable holder : Polyester elastomer					
approx. 80g	approx. 80g	approx. 80g	approx. 90g	approx. 90g	approx. 110g
approx. 40g	approx. 40g	approx. 40g	approx. 60g	approx. 60g	approx. 80g

■ Inductive DC 2 wire type

CE 	CE 	
Iron 12X12X1	Iron 18X18X1	Iron 25X25X1
4 ㎜	5 ㎜	8 ㎜
0 ~ 3.2 ㎜	0 ~ 4 ㎜	0 ~ 6.4 ㎜
Less than 10 % of sensing distance		
500 ㎐	500 ㎐	300 ㎐
12 – 24 V d.c. (Usable voltage range 10 – 30 V d.c.)		
100 ㎃ max (Resistive load)		
1.5 V max		
6 ㎃ max		
Red LED		
Power reversely connected protective circuit, Surge protective circuit and over current protective circuit are built in.		
IP67(IEC standard)		
Cable type (standard cable length 2 m), Relay connector type		
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)		
35 ~ 85 %RH		
Min 50 ㏁ (500 V d.c. mega standard)		
For 1 min at 2,000 V a.c. 50/60 Hz (Between the recharging part and case)		
10 – 55 ㎐ (Cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)		
500 ㎨ 3 times to each of X, Y and Z directions		
Case : PBT resin, Cable holder : Polyester elastomer		
approx. 45g	approx. 60g	approx. 60g
approx. 15g	approx. 20g	approx. 20g

■ Inductive DC 2 wire type

CE 			CE 		CE 
Iron 25 X 25 X 1	Iron 30 X 30 X 1	Iron 35 X 35 X 1	Iron 30 X 30 X 1	Iron 45 X 45 X 1	Iron 60 X 60 X 1
5 ㎜	8 ㎜	12 ㎜	10 ㎜	15 ㎜	20 ㎜
0 ~ 4 ㎜	0 ~ 6.4 ㎜	0 ~ 9.6 ㎜	0 ~ 8 ㎜	0 ~ 12 ㎜	0 ~ 16 ㎜
Less than 10 % of sensing distance					
350 ㎐	250 ㎐	200 ㎐	250 ㎐	100 ㎐	100 ㎐
12 - 24 V d.c. (Usable voltage range 10 – 30 V d.c.)					
100 ㎃ max (Resistive load)					
T (Polarity): max 3.5V, U (Non polarity): max 5V					
Max 1 ㎃					
Red LED					
Power reversely connected protective circuit, Surge protective circuit and over current protective circuit are built in.					
IP67 (IEC standard)					
Cable type (standard cable length 2 m), Relay connector type					
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)					
35 ~ 85 %RH					
Min 50 ㏁ (500 V d.c. mega standard)					
For 1 min at 2,000 V a.c. 50/60 Hz (Between the recharging part and case)					
10 – 55 ㎐ (Cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)					
500 ㎨ 3 times to each of X, Y and Z directions					
Case : PBT resin, Cable holder : Polyester elastomer					
approx. 80g	approx. 80g	approx. 80g	approx. 90g	approx. 90g	approx. 110g
approx. 40g	approx. 40g	approx. 40g	approx. 60g	approx. 60g	approx. 80g

Proximity Sensor

■ Inductive AC 2 wire type

CE 		CE 
Iron 25 X 25 X 1		Iron 30 X 30 X 1
5 ㎜	8 ㎜	10 ㎜
0 ~ 4 ㎜	0 ~ 6.4 ㎜	0 ~ 8 ㎜
Less than 10% of sensing distance		
20 Hz		
100 - 240 V a.c. (Usable voltage range 90 - 250 V a.c.)		
200 ㎃ max (Resistive load)		
Max 10 V a.c.		
Max 2.2 ㎃		
Red LED		
Surge protective circuit is built in.		
IP67(IEC standard)		
Cable type (Standard cable length 2 m), Relay connector type		
−25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)		
35 ~ 85 %RH		
Min 50 ㏁ (500 V d.c. mega standard)		
For 1 min at 2,000 V a.c. 50/60 Hz (Between the recharging part and case)		
10 − 55 Hz (Cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)		
500 ㎨ 3 times to each of X, Y and Z directions		
Case : PBT resin, Cable holder : Polyester elastomer		
approx. 80g	approx. 80g	approx. 90g
approx. 40g	approx. 40g	approx. 80g

■ Inductive AC 2 wire type

CE 		CE 
Iron 45 X 45 X 1		Iron 60 X 60 X 1
15 ㎜		20 ㎜
0 ~ 12 ㎜		0 ~ 16 ㎜
Less than 10 % of sensing distance		
20 Hz		
100 - 240 V a.c. (Usable voltage range 90 - 250 V a.c.)		
200 ㎃ max (Resistive load)		
Max 10 V a.c.		
Max 2.2 ㎃		
Red LED		
Surge protective circuit is built in.		
IP67(IEC standard)		
Cable type (Standard cable length 2 m), Relay connector type		
−25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)		
35 ~ 85 % RH		
Min 50 ㏁ (500 V d.c. mega standard)		
For 1 min at 2,000 V a.c. 50/60 Hz (Between the recharging part and case)		
10 − 55 Hz (Cycle 1 min, Double amplitude : 1.5 mm 2 hours for each of X, Y and Z directions)		
500 ㎨ 3 times to each of X, Y and Z directions		
Case : PBT resin, Cable holder : Polyester elastomer		
approx. 90g		approx. 110g
approx. 60g		approx. 80g

Suffix code

□	S –	□	□	□	□	□	Inductive type proximity sensor
12							12 X 12 ㎜
18							18 X 18 ㎜
25							25 X 25 ㎜
30							30 X 30 ㎜
40							40 X 40 ㎜
	S						Square type
		2					2 ㎜ (Only with UP8S–2)
		4					4 ㎜ (Only with UP12S–4)
		5					5 ㎜ (Only with UP18S–5, UP25S–5)
		8					8 ㎜ (Only with UP18S–8, UP25S–8)
		10					10 ㎜ (Only with UP30S–10)
		12					12 ㎜ (Only with UP25S–12)
		15					15 ㎜ (Only with UP30S–15)
		20					20 ㎜ (Only with UP40S–20)
			N				DC NPN output
			P				DC PNP output
			A				AC 2 wire type (But UP18S is excluded)
			T				DC 2 wire type (Polarity)
			U				DC 2 wire type (No polarity)
				A			Normal Open (NO)
				C			Normal Close (NC)
					*		Detect Front side
					U		Detect upper side (Only available with the square type UP18S)
						*	Cable type
						CR	Relay connector type

Proximity Sensor

UP series Flat type proximity sensor

Specification

■ Inductive DC 3 wire type / 2 wire type

CE		
Iron 25 X 25 X 1		
8 ㎜		
0 ~ 6.4 ㎜		
Less than 10 % of sensing distance		
200 ㎐		
12 - 24 V d.c. (Usable voltage range 5 - 35 V d.c.)		12 - 24 V d.c. (Usable voltage range 10 - 30 V d.c.)
200 ㎃ max (Resistive load)		100 ㎃ max (Resistive load)
Max 1.5 V		Polarity : max 3.5 V, No polarity : max 5 V
Max 6 mA		–
–		max 1 mA
Red LED		
Power reversely connected protective circuit, Surge protective circuit and Over current protective circuit are built in.		Surge protective circuit and Over current protective circuit are built in.
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)		
35 ~ 85 %RH		
min 50 ㏁ (500 V d.c. mega standard)		
For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)		
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)		
500 ㎨ 3 times to each of X, Y and Z directions		
IP67(IEC standard)		
Cable type (standard cable length 2 m), relay connector type		
Polarity : Green, No Polarity : Purple		
Case : PBT resin, cable holder : Polyester elastomer		

■ Inductive AC 2 wire type

CE	
Iron 25 X 25 X 1	
8 ㎜	
0 ~ 6.4 ㎜	
Less than 10% of sensing distance	
20 ㎐	
100 - 240 V a.c. (Usable voltage range 90 - 250 V a.c.)	
200 ㎃ max (Resistive load)	
Max 10 V a.c.	
Max 2.2 ㎃	
Red LED	
Surge protective circuit built in.	
–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)	
35 ~ 85 % RH	
min 50 ㏁ (500V d.c. mega standard)	
For 1 min at 2000 V a.c. 50/60 Hz (between the recharging part and case)	
10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)	
500 ㎨ 3 times to each of X, Y and Z directions	
IP67(IEC standard)	
Cable type (standard cable length 2 m), relay connector type	
NO : Green, NC : Purple	
Case : PBT resin, cable holder : Polyester elastomer	

Suffix code

□	F –	□	□	□	□	Inductive type proximity sensor
25						Please refer to the dimension (25 X 49 X 10 ㎜)
	F					Flat type
		8				8 ㎜
			N			DC NPN output
			P			DC PNP output
			A			AC 2 wire type
			T			DC 2 wire type (Polarity)
			U			DC 2 wire type (No polarity)
				A		Normal Open (NO)
				C		Normal Close (NC)
					*	Cable type
					CR	Relay connector

Proximity Sensor

CUP series Capacitive type proximity sensor

Specification

■ Capacitive DC 3 wire type

Model					
	NPN	CUP18R-8N□□	CUP18RP-8N□□	CUP30R-15N□□	CUP30RP-15N□□
	PNP	CUP18R-8P□□	CUP18RP-8P□□	CUP30R-15P□□	CUP30RP-15P□□
Appearance					
Shield		Non shield		Non shield	
Standard sensing object(㎜)		Iron 50 X 50 X 1 (Grounded 〈earthed〉 state)			
Sensing distance		8 ㎜ (Volume variation)		15 ㎜ (Volume variation)	
Setting distance		0 ~ 6.4 mm		0 ~ 12 mm	
Hysteresis		Less than 20 % of sensing distance			
Response frequency		50Hz			
Power supply voltage		12 – 24 V d.c. (Usable voltage range 10 – 30 V d.c.)			
Control output		200 ㎃ max (Resistive load)			
Residual voltage		Max 1.5 V			
Current consumption		Max 10 ㎃			
Operation indication		Red LED			
Protection circuit		Power reversely connected protective circuit, Surge protective circuit and Over current protective circuit are built in.			
Ambient temperature		–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
Ambient humidity		35 ~ 85 %RH			
Insulation resistance		min 50 ㏁ (500 V d.c. mega standard)			
Dielectric strength		For 1 min at 2,000 V a.c. 50/60 Hz (between the recharging part and case)			
Vibration resistance		10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
Shock resistance		500 ㎨ 3 times to each of X, Y and Z directions			
Degree of protection		IP67(IEC standard)			
Connection structure		Cable type (standard cable length 2 m), relay connector type, connector type			
Color		NPN : Green, PNP : Purple			
Material		CUP-18R/CUP-30R (Case: brass chrome plating, sensing surface: PBT resin), CUP-18RP/CUP-30RP (Case and sensing surface one body type: PBT resin)			

■ Capacitive type, DC/AC dual usage 2 wire type

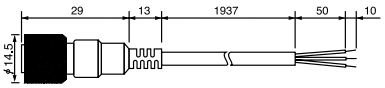
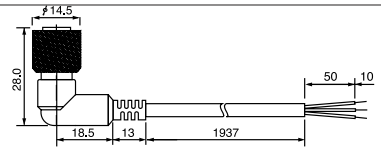
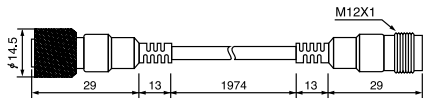
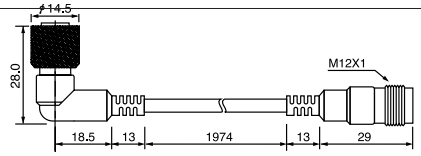
				
Shield	Non shield		Non shield	
Standard sensing object(㎜)	Iron 50 X 50 X 1 (Grounded 〈earthed〉 state)			
Sensing distance	8 mm (Volume variation)		15 mm (Volume variation)	
Setting distance	0 ~ 6.4 mm		0 ~ 12 mm	
Hysteresis	Less than 20% of sensing distance			
Response frequency	DC : 40 ㎐ / AC : 20 ㎐			
Power supply voltage	20 - 240 V a.c./d.c. (Usable voltage range 18 - 250 V a.c./d.c.)			
Control output	5 – 250 ㎃ max (Resistive load)			
Residual voltage	Max. 7 V (a.c./d.c.)			
Current consumption	Max 2 ㎃			
Operation indication	Red LED			
Protection circuit	Surge protective circuit built in.			
Ambient temperature	–25 ~ 70 ℃ (Less than ±10 % of sensing distance at temperature 20 ℃)			
Ambient humidity	35 ~ 85 %RH			
Insulation resistance	min 50 ㏁ (500 V d.c. mega standard)			
Dielectric strength	For 1 min at 2000 V a.c. 50/60 Hz (between the recharging part and case)			
Vibration resistance	10 – 55 ㎐ (cycle 1 min, double amplitude: 1.5 ㎜ 2 hours for each of X, Y and Z directions)			
Shock resistance	500 ㎨ 3 times to each of X, Y and Z directions			
Degree of protection	IP67(IEC standard)			
Connection structure	Cable type (standard cable length 2 m), relay connector type, connector type			
Color	Brass (Chrome plating)	PTB resin	Brass (Chrome plating)	PTB resin
	NO : Green, NC : Purple	NO/NC : Green	NO : Green, NC : Purple	NO/NC : Green
Material	CUP-18R/CUP-30R (Case : brass chrome plating, sensing surface: PBT resin), CUP-18RP/CUP-30RP (Case and sensing surface one body type : PBT resin)			

Suffix code

□	□ –	□	□	□	□		Capacitive type proximity sensor
18							M18
30							M30
	R						Round type (Brass chrome plating case)
	RP						Round type (Plastic case)
		8					8 ㎜(Only with CUP–18□–8)
		15					15 ㎜(Only with CUP–30□–15)
			N				DC NPN output
			P				DC PNP output
			F				AC/DC 2 wire type (dual usage) (No polarity)
				A			Normal Open (NO)
				C			Normal Close (NC)
						*	Cable type
						CR	Relay connector type

Connector cable

Specification

Type	Code	Power/Number of wire	Dimension
Connector cable	AD3S	DC 3 wire	·Straight type 
	AD2S	DC 2 wire	
	AA2S	AC 2 wire	
	AD3A	DC 3 wire	·Angle type 
	AD2A	DC 2 wire	
	AA2A	AC 2 wire	
Relay cable	BD4S	DC 4 wire	·Straight type 
	BA4S	AC 4 wire	
	BD4A	DC 4 wire	·Angle type 
	BA4A	AC 4 wire	

Suffix code

Model	Code						Information
	□	□	□	□–	□		Cable for connecting proximity sensor
Cable	A						Connector cable
	B						Relay cable
Power supply voltage		A					AC
		D					DC
Sensing distance			2				2 wires
			3				3 wires
			4				4 wires
Power and output type				S			Straight type
				A			Angle type
Output state					2M		2 m
					5M		5 m

Photo Sensor

PZ1 series Mini photo sensor

Specification

		PZ series					
Appearance		CE 			CE 		
Type		Through beam			Diffuse reflection		
Model	NPN type	PZ1–T1N	PZ1–T5N	PZ1–T7N	PZ1–R10N	PZ1–R30N	PZ1–R40N
Sensing distance		1 m	5 m	7 m	100 mm	30–300 mm	40–400 mm
Detecting object		Opaque object of Min.Ø6 ㎜			White no–glossy paper 200×200 ㎜		
Power voltage		12 – 24 V d.c. (±10 %)					
Current consumption	Trns	Max. 20 ㎃ d.c.			Max. 30 ㎃ d.c.		
	Rcvr	Max. 18 ㎃ d.c.					
Operating mode		LIGHT ON(L.ON) / DARK ON(D.ON) Selectable S/W build in type.					
Control Output		NPN/PNP OPEN collector output , Load current : Max.100 ㎃ d.c. (Resistive load), Residual voltage : Max.1 V d.c.					
Response time		Max. 1 ㎳					
Hysteresis		–			Within 25 % of Operating distance	Within 10 % of Operating distance	Within 10 % of Operating distance
Light source		Infrared emitting diode					
Material		CASE : PC(EXRL)			Lense : PC		
Protection circuit		Reverse polarity protection and overcurrent protection					
Connection		3P (Trsn. 2P), Ø 3.8 ㎜, length : 2 m					
Ambient light		Sunlight : Max. 11,000 lx, Incandescent lamp : Max.3,000 lx					
Ambient temperature		Operating : –20 ~ 60 ℃, Preserving : – 25 ~ 70 ℃(Without condensation)					
Ambient humidity		Max. 35 ~ 85 % R.H.					
Protection structure		IP 65(IEC) (IP67 is an option)					
Vibration resistance		10 – 55 ㎐ (for a minute), double amplitude width : 1.5 ㎜, each X.Y.Z direction for 2hr.					
Dielectric strength		1000 V a.c. (50–60 ㎐ for a minute)					
Shock resistance		500 ㎨ (Approx 50 G), each X.Y.Z direction for 3times					
Insulation resistance		20 ㏁ min.(At 500 V d.c. between code and case, adjusting switch and case)					
Weight		Trns., Rcvr. : each approx. 55 g			approx. 60 g		

Suffix code

□	□	□	Small size photo sensor	
T	1		1 m	Through–beam
	5		5 m	
	7		7 m	
R	10		100 mm	Diffuse–reflective
	30		30 – 300 mm	
	40		40 – 400 mm	
		N	NPN open collector output	
		P	PNP open collector output	
			IP 65 : Standard type	
			IP 67 : Optional (No volume & setting switch)	

PS series Compact photo sensor with high accuracy

Specification

		PS series									
Appearance											
Type		Through beam			Retroreflection	Diffuse reflection			Distance convergent beam		
Model	NPN	PS-T1N	PS-T7N	PS-T10RN	PS-M2RN	PS-R7N	PS-R30N	PS-R40RN	PS-D3RN	PS-D4RN	PS-D5RN
	PNP	PS-T1P	PS-T7P	PS-T10RP	PS-M2RP	PS-R7P	PS-R30P	PS-R40RP	PZS-D3RP	PS-D4RP	PS-D5RP
Sensing distance		1 m	7 m	10 m	0.1–2 m	70 m	300 mm	400 mm	10–30 mm	10–40 mm	10–50 mm
Detecting object		Ø6 mm			Ø20 mm	white no-glossy paper 100×100 ㎜	white no-glossy paper 200×200 ㎜		White no-glossy paper 50×50 ㎜		
Power voltage		12 – 24 V d.c. ±10 % (Ripple ±10 %)									
Current consumption	Trns	Max. 23 ㎃	Max. 20 ㎃	Max. 23 ㎃	Max. 23 ㎃	Max. 28 ㎃	Max. 23 ㎃	Max. 25 ㎃	Max. 30 ㎃		
	Rcvr	Max. 20 ㎃	Max. 20 ㎃	Max. 20 ㎃							
Output	Control output	NPN / PNP open collector output, load voltage : Max. 30 V d.c., Resistive load : 100 ㎃, Inductive load : Max. 50 ㎃, Residual voltage : Max.1 V									
	Stability output	NPN open collector output, load voltage : Max. 30 V d.c., Resistive load : Max. 50 ㎃, Residual voltage : Max.1 V									
Operating mode		Light On / Dark On selection by switch Volume built-in type									
Response time		Max. 0.7 ㎳									
Hysteresis		–				Within 20 % of operating distance			Within 10 % of operating distance		
Light source		Infrared emitting diode		Red emitting diode		Infrared emitting diode		Red emitting diode			
Operating indicator		Control output indicator : Red LED, stability output indicator : Green LED(Infrared LED of emitting part for through beam type is power indicator									
Ambient light		Sunlight : Max. 5000 lx									
Ambient temperature		–20 ~ 60 ℃ / –25 ~ 70 ℃ (No condensation)									
Ambient humidity		35 ~ 85 % RH (No condensation)									
Case protection		IP67(IEC)									
Vibration resistance		10 – 55 ㎐ (Cycle for 1 min.), Double amplitude : 1.5 ㎜, each X·Y·Z direction for 2 hr.									
Shock resistance		500 ㎨ (approx. 50 G), each X·Y·Z direction for 3 time									
Connection		Flying lead NPN 4P(Trns. 2P) / PNP 3P(Trns 2P), Ø3 ㎜, length 2 m				Flying lead NPN 4P / PNP 3P, Ø3 ㎜, length 2 m					
Material		CASE : PC, Lens Cover : PC									
Weight		Trns·Rcvr:each 50 g(Net weight)			Approx. 50 g (Net weight)						

Suffix code

□	□	□	Small size photo sensor	
T	1		1 m	Through-beam
	7		7 m	
	10R		10 m	
M	2R		0.1 – 2 m	Retro-reflective
R	7		70 mm	Diffuse-reflective
	30		300 mm	
	40R		400 mm	
D	3R		10 – 30 mm	Distance-settable
	4R		10 – 40 mm	
	5R		10 – 50 mm	
		N	NPN open collector output	
		P	PNP open collector output	

Photo Sensor

PW series Compact photo sensor with distance setting

Specification

		PW series			
Appearance		CE 			
Type		Diffuse reflection			
Model	NPN type	PW-D10RN	PW-D10N	PW-D15N	PW-D20N
	PNP type	PW-D10RP	PW-D10P	PW-D15P	PW-D20P
Sensing distance		10 – 100 mm	10 – 100 mm	10 – 150 mm	10 – 200 mm
Detecting object		White no-glossy paper 100×100 ㎜			
Power voltage		12 – 24 V d.c. ±10 % (Ripple ±10 % (Max.))			
Current consumption		Max. 30 mA			
Output	Control output	NPN open collector output(NPN TYPE)/PNP open collector output(PNP TYPE), Load Current:Max. 100 ㎃, Load voltage:Max. 30 V d.c.			
	Stabilize output	NPN open collector output Load Current:Max. 50 ㎃, Load voltage:Max. 30 V d.c. but there is no stable output with PNP output type			
Operating mode		Light ON / Dark ON Selectable			
Response time		Max. 0.7 ㎳			
Hysteresis		10 % of operating distance			
Light source		Red LED	Infrared emitting diode		
Operating Indicator		Control output indicate : Red LED, Stabilized output indicate : Green LED			
Ambient light		Sunlight : Max. 5000 lx			
Ambient temperature		–20 ~ 60 ℃ (Surrounding storage temperature : –25~70 ℃) (Without condensation)			
Ambient humidity		35 ~ 85 % RH (Without condensation)			
Case Protection		IP67(IEC)			
Vibration resistance		10 – 55 ㎐ for 1 minute, Double amplitude width : 1.5 ㎜, X·Y·Z each direction for 2 hours			
Shock resistance		500 ㎨ (About 50 G), X·Y·Z each direction for 10 times			
Connection		NPN type : Ø4/4C(Length : 2 m), PNP type : Ø4/3C(Length : 2 m)			
Material		CASE : Heatproof ABS, Lens Cover : PC(Translucent red)			
Weight		Approx. 80 g			

Suffix code

□	□	□	□	Photo Sensor Small Wide Type
D				Distance Convergent Beam Type
	10			10 ~ 100 ㎜
	15			10 ~ 150 ㎜
	20			10 ~ 200 ㎜
		–		Infrared LED
		R		Red LED
			N	NPN output
			P	PNP output

PY series Mini flat type photo sensor

Specification

	PY series			
Appearance	CE 			
Type	Through beam			
Model	PY-T3N		PY-T3P	
	PY-T3N-D	PY-T3N-L	PY-T3P-D	PY-T3P-L
	PY-TL3(Trns.), PY-TR3N-D(Rcvr.)	PY-TL3(Trns.), PY-TR3N-L(Rcvr.)	PY-TL3(Trns.), PY-TR3P-D(Rcvr.)	PY-TL3(Trns.), PY-TR3P-L(Rcvr.)
Detecting object	Opaque object of over (Min. Ø5 ㎜)			
Operating mode	Dark ON	Light ON	Dark ON	Light ON
Sensing distance	3 m			
Response time	Max. 1 ㎳			
Power voltage	+12 – + 24 V d.c. ±10 % (Ripple Max. ±10 %)			
Current consumption	In case of rating Voltage 24 V d.c., Trns : 23 mA, Rcvr : Max. 18 ㎃			
Light source	Infrared emitting diode			
Control Output	• Load voltage : Max. 30 V d.c. • Stability output current : Max. 50 ㎃ • Residual voltage : Max.1 V • NPN open collector output • load current : Max. 100 ㎃		• PNP open collector output • Load current : Max. 100 ㎃ • Residual voltage: Min.(Power voltage –2.0 V)	
Protection circuit	Reverse polarity protection, overcurrent protection			
LED Indicator	Trns. : Power indicate(Red LED), Rcvr. : Operating indicate(Red LED), Stability indicate(Green LED)			
Insulation resistance	Min. 20 ㏁ (At 500 V d.c.)			
Dielectric strength	1000 V a.c. (for a minute in 50/60 ㎐ mega)			
Vibration resistance	10 – 55 ㎐ (cycle for 1 minute) double amplitude width : 1.5 ㎜, each X·Y·Z direction 2 hrs			
Shock resistance	500 ㎨ (Approx. 50 G) each X·Y·Z direction 2 time			
Ambient light	Sunlight : Max. 11000 lx, Incandescent : Max. 3000 lx			
Ambient temperature	–20 ~ 60 ℃ (Surrounding storage temperature : –25~70 ℃) (Without condensation)			
Ambient humidity	35 – 85 % R.H			
Case Protection	IP 67 (IEC)			
Material	Lens, case : PC			
Connection	Trns. : Ø3 ㎜, 2P, Rcvr. : Ø3 ㎜, 3P(NPN:4P), Cable length : 2 m			
Weight	Approx. 66 g			

Suffix code

□	□	□	□	Slim type Photo Sensor
D				Through beam
	3			3 m
		N		NPN Open Collector Output
		P		PNP Open Collector Output
			D	Dark ON Operation
			L	Light ON Operation

Photo Sensor

PN series Voltage output type photo sensor

Specification

Model		PN-T3	PN-R02	PN-M1
Appearance				
Type		Through beam	Diffuse reflection	Retroreflection
Sensing distance		3 m	200 mm	0.1–1 m
Detecting object		Substance (over Ø8 ㎜)	White no-glossy (200 x 200 ㎜)	Substance (over Ø48 ㎜)
Power voltage		12 – 24 V d.c.(± 10 %)		
Current consumption		Emitter : Max. 2 0mA d.c., Receiver : Max. 18 mA d.c.	Max. 30 mA d.c.	
Operating mode		Dark : ON	Light : ON	Dark : ON
Control Output		NPN voltage output :Load voltage Max. 30 V d.c., Load current : Max 200 mA , Residual voltage: Max. 1 V		
Protection circuit		Reverse polarity protection, Overcurrent protection		
Response time		Max. 3 ㎳		
Hysteresis		–	Max. 20 %	–
Light source		Infrared LED (Modulated)		
Sensitivity control		–	By sensitivity control volume	–
Material	Case	Polycarbonate		
	Lens	Polycarbonate		
Connection		Cable		
Ambient light		Sun light : Max. 11,000 lx, Incandescent light : Max. 3,000 lx		
Ambient temperature		–25 ~ 55 ℃ (Surrounding storage temperature : –40~70 ℃) (Without condensation)		
Ambient humidity		35 ~ 85 % RH (Without condensation)		
Case protection		IP54(IEC)		
Vibration resistance		10 – 55 ㎐, Double amplitude 1.5 ㎜, X·Y·Z each direction for 2 hours		
Dielectric strength		1,000 V a.c. for 1 minute		
Insulation resistance		Min. 20 ㏁ (At 500 V d.c., Between code and case, contact and power supply)		
Accessories		Bracket for fixing, Bolt, Nut for fixing		

(Note 1) The sensing distance can be varied depending on the size, surface condition, glossy, non-glossy of the sensing object
(Note 2) PN-TL3 is transmitter and PN-TR3 is receiver when it is through beam type

Suffix code

Model	Code		Information
PN –	□	□	Photo Sensor
Detection	T	3	Through beam
	M	1	Diffuse reflection
	R	02	Retroreflection
Operation			12 – 24 V d.c. ± 10 %

PR series Simple installing cylinder type photo sensor

Specification

Model						
	Brass case	PR-T10NC	PR-M1NC	PR-M2NC	PR-R100NC	PR-R300NC
	Plastic	PR-T10NP	PR-M1NP	PR-M2NP	PR-R100NP	PR-R300NP
Appearance						
Sensing method		Through beam type	Retroreflection type		Diffuse reflection type	
Sensing distance		10 m	1 m	2 m	100 mm	300 mm
Detecting object		Min Ø10 ㎜ (Opaque above)	Min Ø25 ㎜ (Opaque above)		200 x 200 ㎜ White non-glossy paper	
Power supply voltage		12 – 24 V d.c. ±10 %				
Current consumption	Transmitter	Max. 20 mA	Max. 35 mA			
	Receiver	Max. 15 mA				
Control output		NPN voltage output, Load current max 200 ㎃ (30 V d.c.). Resistive load				
Output action		L.ON, D.ON * Selected by the control line, but limited with receiver in the through beam type				
Response time		max 1.5 ㎳				
Hysteresis		–			Less than ±20 % of the sensing range	
Light source(Wave length)		Infrared lightening LED (890 ㎚)				
LED		Control output indicator: Red LED (Red LED of through beam type transmitter is the power indicator)				
Sensitivity adjustment		By the sensitivity adjusting volume (But limited with the receiver in the through beam type)				
Protection circuit		Reverse polarity protection and output short-circuit protection				
Ambient illumination		Sunlight: max 11,000 Lux, Incandescent lamp : max 3,000 Lux				
Ambient temperature		–20 ~ 60 ℃ (Surrounding storage temperature : –25 ~ 70 ℃) (Without condensation)				
Ambient humidity		35 ~ 85 % RH (With no condensation)				
Protective structure		IP 66 (IEC)				
Insulation resistance		min 20 MΩ (500 V d.c., Between the code and case)				
Dielectric strength		1,000 V a.c., 50/60 ㎐ for 1 min				
Vibration resistance		10 – 55 ㎐ double amplitude 1.5㎜, for 2 hours each in X, Y and Z directions				
Shock resistance		500 ㎨, 3 times each in X, Y and Z directions				
Connection method		Code extended type 2 m, 4P (Transmitter of the through beam type : 3P)				
Material		Case : brass (Nickel plating) / PBT, lens : PC				
Weight		Brass case : Approx. 120 g, Plastic case : Approx. 100 g				

(Note 1) The sensing distance can be varied depending on the size, surface condition, glossy, non-glossy of the sensing object
(Note 2) PR-TL10N□ is transmitter and PR-TR10N□ is receiver
(Note 3) Sensing range of the retroreflection type is a distance when using HY-M5 (Mirror)

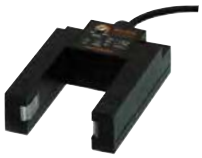
Suffix code

Model	Code					Information	
PR	□	□	□	□		Round type photosensor	
Sensing method and Sensing distance	T	10				Through-beam	10 m
	M	1				Retro-reflection	1 m
		2					2 m
	R	100				Diffuse reflection	100 mm
		300					300 mm
Output			N			NPN open collector output	
			P			PNP open collector output	
material				P		Plastic case	
				C		Brass case	

Photo Sensor

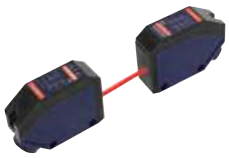
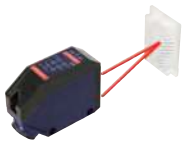
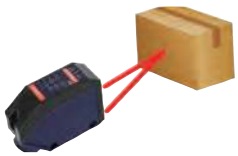
PU series Fast responding, Best reliability

Specification

Model		PU-30	PU-30S	PU-50	PU-50S
Appearance					
Sensing distance		30 mm		50 mm	
Detecting object		Over Ø2 ㎜(Substance)	Over Ø0.6 ㎜ (Substance)	Over Ø1.5 ㎜ (Substance)	Over Ø0.4 ㎜ (substance)
Power voltage		12 – 24 V d.c. ±10 %			
Current consumption		Max. 30 mA			
Operating mode		Selectable Light On/Dark On for reverse polarity			
Control Output		NPN Open collector output : Load voltage Max. 300 V d.c., Load current : Max. 180 mA, Residual voltage : Max. 2 V			
Protection circuit		Reverse polarity protection , Overcurrent protection			
Response time		Max.1 ms			
Light source		Infrared LED (Modulated)			
LED Indicators		Output : Red LED, Power : Green LED			
Sensitivity adjustment		–	By adjusting volume	–	By adjusting volume
Material	Case	Zn			
	Lens	Polycarbonate			
Connection		Cable			
Ambient light		Sun light : Max. 11,000 lx, Incandescence light : Max 3,000 lx			
Ambient temperature		–25 ~ 55 ℃ (Surrounding storage temperature : –40~70 ℃) (Without condensation)			
Ambient humidity		35 ~ 85 % RH (Without condensation)			
Case protection		IP65(IEC)			
Vibration resistance		10 – 55Hz, Double amplitude 1.5 ㎜, X·Y·Z each direction for 2 hours			
Dielectric strength		1,000 V a.c. for 1minute			
Insulation resistance		Min. 20 ㏁ (At 500 V d.c., Between code and case, contact and power supply)			

PTX series Photo sensor

Specification

		
Through beam	Retroreflection	Diffuse reflection
15 m	7 m	1 m
More than Ø20 ㎜ (Opaque object)	More than Ø60 ㎜ (Opaque object)	200 x 200 ㎜ (White no glossy paper)
24 – 240 V a.c./d.c. ±10 % 50/60 Hz		
12 – 24 V d.c. (± 10 %)		
Max 2 W	Max 2 W	
Max 1 W		
Relay contact output (Contact composition 1a, 1b), Contact capacity : 5A resistive load, rated load life expectancy less than 100,000 times.		
NPN/PNP open collector yield output at the same time,Load : 150 mA, Load current: (Resistive load) NPN Residual voltage: Max 1 V d.c./PNP Residual voltage: Max 2 V d.c.		
Light ON/Dark ON are selectable by the selector switch		
Max 20 ms		
Max 1 ms		
–	Less than 20 % of sensing distance	
Output indication: Red LED, Stability indication: Green LED		
Sensitivity adjusting volume built–in		
Surge protection		
Reverse polarity protection and output–circuit protection		
Select OFF Delay, ON Delay or One Shot Delay by using the ON/OFF switch. Delay Time: 0.1~5sec adjust by the volume.		
Sun light: Max 11,000 lx, Incandescent lamp: Max 3,000 lx		
Operation temperature : –20 ~ 60 ℃, Storage temperature : –25 ~ 70 ℃((with no icing nor dew condensation)		
35 ~ 85 % RH (with no icing nor dew condensation)		
IP66 (IEC standard)		
Min 20㏁ (standard on 500 V d.c. mega)		
1,500 V a.c. (for 1min)		
10 – 55 Hz Double amplitude: 1.5 mm, 2 hours to each of X, Y, Z directions		
500 ㎨(approx 50G), 3 times to each of X, Y, Z directions		
Terminal		
Case : ABS, Lens : PC		
Max 80g		
–	Reflector	–
Driver, Bracket, Bolt, Nut, Water–proof rubber, Wire holder		

Note1) The sensing distance may vary depending on the size, surface condition, glossy, non–glossy of the sensing object
Note2) The sensing distance of PTX–M7A (–T), PTX–M7B (–T) is the distance when using the reflector HY–M5

Suffix code

□	□	□	□	Photo Sensor	
T	15			Through–beam	15m
M	7			Retro–reflection	7m
R	1			Diffuse reflection	1m
		A		24 – 240 V a.c./d.c. ±10 % 50/60 Hz	
		B		12 – 24 V d.c. ±10 %	
			–	Normal type	
			–T	Timer Built–in type	

Photo Sensor

PL-D2B Photo sensor

Specification

Model	PL-D2B
Appearance	CE 
Sensing method	Distance-settable
Sensing distance	0.2 ~ 2 m
Detecting object	200 X 200 ㎜ White paper with no gloss
Power supply voltage	12 – 24 V d.c. ±10 %
Current consumption	30 ㎃ max.
Control output	NPN / PNP open collector asynchronously, Load current : 150 ㎃ d.c. max. (Resistive load) NPN remaining voltage : 1 V d.c. max., PNP remaining voltage Max : 2 V d.c.
Operation mode	Light ON / Dark ON ※ Selectable by the mode V/R
Response time	2 ㎳ max.
Hysteresis	Less than 10% of the sensing distance
Light source(Wave length)	Infrared lightening LED (880 nm)
Receiving part	2 photo diodes
Display	Control out display: Red LED, Stability display: Green LED
Distance setting	Near/Far: Optical distance adjusting volume 5 cycles.
Protection circuit	Reverse polarity protection and output short-circuit protection
Ambient illumination	Sunlight : 11,000 lx max., Incandescent lamp : 3,000 lx max.
Ambient temperature	Operation : -20 ~ 60 ℃, Storage : -25 ~ 70 ℃ (Without freezing)
Ambient humidity	35 ~ 85 % RH (Without condensation)
Protective structure	IP 65
Insulation resistance	20 ㏁ min.(500 V d.c. Mega)
Dielectric strength	1000 V a.c. (50/60 Hz for 1 min)
Vibration resistance	10 – 55 Hz, double amplitude :1.5mm for 2 hours each in X, Y and Z directions.
Shock resistance	500 ㎨ 3 times each in X, Y and Z directions.
Connection method	Cable output type, Number of wires: 4P, Thickness:Ø 4mm, Length 2m
Material	Case : PC, Lens : PC
Accessory	Bracket, Adjustable driver, bolt, Nut.

Suffix code

Model	Code			Information
PL –	D	2	B	Photosensor
Sensing method	D			Distance-settable
Sensing distance		2		2 m
Power supply voltage			B	12 – 24 V d.c.

PLD series Amp built-in photo sensor

Specification

	PLD series	
Appearance	CE 	
Type	Diffuse Reflection	
Model	PLD-R2N	PLD-R2P
Sensing distance	2 m (200X200 mm White No reflectible object)	
Detecting object	Over Ø6 mm opacity objection	
Power voltage	12 – 24 V d.c., ±10%	
Power consumption	Max. 30 ㎃ d.c.	
Control output	NPN open collector Max 150 mA d.c. (resistance load)	PNP open collector Max 150 mA d.c. (resistance load)
Operation mode	Light On mode	
Response time	Max 1 ms	
Hysteresis	Within 20 % of detectable distance	
Light source	Infrared LED (850 nm)	
Operation display	Control output : Red LED, Safety : Green LED	
Sensitivity adjustment	'Built-in' sensitivity adjustment V/R (220°degree spin V/R)	
Protection circuit	Reverse polarity protection, overcurrent protection	
Ambient intensity of illumination	Light of the sun: Max 11000 Lux, Incandescent lamp: Max 3000 Lux	
Ambient temperature	When operating : -20 ~ 60 , when maintaining : -25 ~ 70	
Ambient humidity	Max. 35 ~ 85 % RH (Freezing not allowed)	
Protective structure	IP64 (IEC standard)	
Insulating resistance	Min 20 Ω (using 500 V d.c. between code and case)	
Dielectric strength	1,000 V a.c., for 1 minute	
Vibration resistance	10-55 Hz double amplitude 1.5mm, X,Y,Z each direction for 2 hours	
Shock resistance	500 ㎨ X,Y,Z each direction for 2 times	
Connection method	Number of cable 3P,Thickness : Ø3 mm, length : 2 m.(But, Emitter 2P)	
Material	Case : PET, Lens cap: PC, Lens : PMMA	
Cable	3P (26 AWG), Length : 2 m	
Accessories	Sensitivity adjust driver, Fixing volt (3-M3 X 17L)	
Weight	Approx. 60 g	

Suffix code

Model	Code			Information
PLD -	R	2	□	Small size photosensor
Sensing method	R			Diffuse reflection
Sensing distance		2		2 m
LED indicator			N	NPN open collector output
			P	PNP open collector output
Protective structure				IP 64 (IEC)

Photo Sensor

PEN series Photo sensor

Specification

		
Through beam	Retroreflection	Diffuse reflection
10 m	0.1 ~ 5 m	700 m
More than Ø16 ㎜ (Opaque object)	More than Ø60 ㎜ (Opaque object)	200 x 200 ㎜ (White no glossy paper)
24 – 240 V a.c./d.c. 50/60 ㎐ ±10 %		
Max. 1 W	Max. 2 W	
Max. 2 W		
Relay output (Contact composition 1a,1b)capacity : 30 V d.c. 5 A / 250 V a.c. 5 A Resistance load life expectancy – min 100 thousand time		
Light ON / Dark ON		
Less than 20 ms		
–		Within 20 % of detecting distance
Infrared LED		
Reverse polarity protection and overcurrent protection		
Length of code : 1.5 M 5P Ø6 ㎜, Trns : 2P (Built in power supply : 4P Ø4 ㎜, Trns : 2P)		
Sun light: less than 11,000 lx, Incandescent lamp: less than 3,000 lx		
Operation : –20 ~ 60 ℃ (Storage : –25 ~ 70 ℃)		
IP64(IEC)		
10 – 55 ㎐, Double amplitude width 1.5 ㎜ , X·Y·Z, each direction for 2 hours		
1,500 V a.c. (1 minute)		
500 ㎨, X.Y.Z each direction 3 times		
Case : Heatproof ABS, Lens : PC		
More than 20 ㏁ (At 500V d.c. between code and case, adjusting switch and case)		
150 g (Built in Power Supply), 100 g (Built in Amplifier)		

Suffix code

Model	Code			Information	
PEN –	□	□	□	Photo Sensor	
Sensing method and Sensing distance	T	10		Through-beam	10 m
	M	5		Retro-reflection	0.1 – 5 m
	R	700		Diffuse reflection	700 mm
Power supply voltage			A	24 – 240 V a.c./d.c. 50/60 ㎐ ±10 %	
			B	12 – 24 V d.c. ±10 %	

PE series Power built-in photo sensor

Specification

			
Through beam	Diffuse reflection	Retroreflection	
5 m	500 m	0.1m – 3 m	
Substance(over 20 ㎜)	White no-glossy paper (500x500 ㎜)	Substance(over Ø60 ㎜)	
24 – 240 V a.c. (50/60 ㎐) / 24 – 240 V d.c.			
Trns : Max. 0.7 W Rcvr : Max. 1.2 W	Max. 2 W	Max. 1.6 W	
Dark : ON	Light : ON	Dark : ON	
Relay output 1c 250 V a.c. 2 A(Resistive load)			
Max. 25 ms			
–	Max. 20 %	–	
Infrared LED(Modulated)			
Power ON / OFF	Operation Indicationg		
–	By sensitivity control volume		
Polycarbonate			
Cable			
Max. 20,000 lx			
Max. –20 ℃ ~ 60 ℃, 85 % RH			
IP54(IEC)			
10 – 55 ㎐, Double amplitude width 1.5 ㎜ , X·Y·Z, each direction for 2 hours			
1,500 V a.c. for 1 minute			
Min. 20 ㏁ (At 500 V d.c., Between code and case, contact and power supply)			
Bracket for fixing, Bolt Nut for fixing			

Photo Sensor

PG series Fiber optic sensor

Specification

		
	PG-TRN	PG-TARN
	PG-TRP	PG-TARP
	Change OFF Delay, ON Delay by switch Delay Time : 40 ㎳	Change OFF Delay, ON Delay, One Shot Delay by switch Delay Time : 0.1 ~ 5 sec. (adjustable by volume)
	Through beam type, Diffuse reflection type(Decision by combined with Fiber unit)	
	Decision by combined with Fiber unit	
	12 – 24 V d.c. ±10 %	
	Max. 35 ㎃	
	NPN/PNP Voltage output , Load voltage : Max. 200 ㎃(30 V d.c.), Residual voltage : Max. 1 V d.c.	
	–	NPN/PNP Voltage output Load voltage : Max. 50 ㎃(30 V d.c.) Residual voltage : Max. 1 V d.c.
	Light ON / Dark ON switch selection operating Normal or ON/OFF delay Switch selection operating	
	Max. 1 ㎳	
	Max. 10 % of sensing distance (Reflection)	
	Red LED(630 ㎚)	
	Control output indicator : Red LED, Stability indicator : Green LED	
	Built in the sensitivity control V/R	
	Reverse polarity protection, overcurrent protection (except for stable output of multi-function type)	
	Sunlight : Max. 11,000 lx, Incandescent lamp : Max. 3,000 lx	
	Operating : –20 ~ 60 ℃, preserving : –25 ~ 70 ℃(Without condensation)	
	35 ~ 85 % RH(Without condensation)	
	IP40	
	Min. 20 ㏁ (500 V d.c. Mega standard)	
	1000 V a.c. 50/60 Hz for 1 min	
	10 – 55 Hz double amplitude 1.5mm, X,Y,Z each direction for 2 hours	
	500 ㎨ X,Y,Z each direction for 2 times	
	Cable extended type (Number of wire : 3P, Diameter ø4, Length 2 m	Cable extended type (Number of wire : 4P, Diameter ø4, Length 2 m
	Approx. 120 g	

Suffix code

Model	Code		Information
PG –	□	□	Fiber optic sensor
Sensing method and Sensing distance	TR		Universal type
	TAR		Multi type (stable output)
Output		N	NPN open collector output
		P	PNP open collector output

PFD series Digital Multi Control Type

Specification

		Digital Multi Control Type	
Appearance		CE 	
Type		General purpose	Multi function
Model	NPN	PFD-RGN	PFD-RMN
	PNP	PFD-RGP	PFD-RMP
Power voltage		12 – 24 V d.c. ±10 % (Ripple Max. 10 %)	
Current consumption		Max. 30 mA	
Output	Control	Open collector output, 100 mA (Supplied voltage Max. 30 V, Residual voltage Max. 0.5 V)	
	Stability	Open collector output, 100 mA (Supplied voltage Max. 30 V, Residual voltage Max 0.5 V)	
External input		Teaching / Auto teaching	Teaching / Auto teaching / Reset input
Operating mode		Light On / Dark On output	
		Normal output, ON DELAY, OFF DELAY, ON/OFF DELAY output	
On/Off Delay		0 ~ 9999 ms	
Light source		Red emitting diode / 660 nm	
Protection circuit		Reverse polarity protection, Overcurrent protection	
Response time		Max. 700 μs	
LED indicator		7 points status LED, 4 Digits FND	
Sensitivity control		Auto-teaching, Manual	
Additional function		Brightness control 180 ° Turning indication Display time set, Zero Reset, Initial reset, Lock function	
Ambient light		Incandescent Light : Max. 10,000 lx	
Ambient temperature		Operating : –20 ~ 60 ℃, preserving : –25 ~ 70 ℃ (Without condensation)	
Ambient humidity		35 ~ 85 % RH	
Vibration resistance		10 – 55 Hz for 1 minute, Double amplitude : 1.5 mm, X·Y·Z each direction for 2 hours	
Shock resistance		1,000 ㎨ (About 50 G), X·Y·Z each direction for 3 times	
Dielectric strength		1500 V a.c. 50/60 Hz for 1 minute	
Insulation Resistance		Min. 20 MΩ (at 500 V d.c.)	
Connection		For DIN Rail attachment Flying lead 1.5 m	
		5 P	

·MODEL : PFD-RMN only

	• UP / DOWN Mode, Prescale 1 ~ 1000 integers setting • Indicating range : 0 ~ 9999 • Counting speed : 400 cps • Output mode : 8 kinds selectable (N, F, C, R, K, P, Q, A) • External reset : Min. Signal width 5 ms
	• Indicating range : 0 ~ 9999 rpm • Speed monitoring output function • Prescale : 1~1000 integers setting • Measurement cycle setting
	RS485 or RS232 (TTL Level), No external output when using communication

Suffix code

Model	Code			Information
PFD –	□	□	□	10 bit A/D, 4Digit display
Light source	R			Red LED
Use		G		General purpose (MARK)
		M		Multi type (MARK / RPM / COUNTER)
External output			N	NPN Open collector
			P	PNP Open collector

Photo Sensor

PFB series Bar Indication Type

Specification

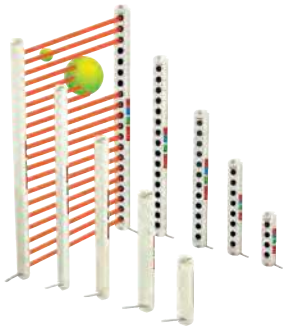
General purpose
PFB–RN
PFB–RP
12 – 24 V d.c. ±10 % (Ripple Max. 10 %)
Max. 20 ㎃
Open collector output, 100 ㎃ (Supplied voltage Max. 30 V, Residual voltage Max. 0.5 V)
Open collector output, 100 ㎃ (Supplied voltage Max. 30 V, Residual voltage Max 0.5 V)
Auto teaching
Normal output, ON DELAY, OFF DELAY output
10, 40 ㎳
Red emitting diode / 660 ㎚
Reverse polarity protection, Overcurrent protection
1 ㎳
6 Points bar
Auto–teaching
Incandescent Light : Max. 11,000 / 3,000 lx
Operating : –20 ~ 60 ℃, preserving : –25 ~ 70 ℃ (Without condensation)
35 ~ 85 % RH
10 – 55 ㎐ for 1 minute, Double amplitude : 1.5 ㎜, X·Y·Z each direction for 2 hours
500 ㎨ (About 50 G), X·Y·Z each direction for 3 times
1,000 V a.c. 50/60 ㎐ for 1 minute
Min. 20 ㏁ (at 500 V d.c.)
For DIN Rail attachment Flying lead 1.5 m
5 P

Suffix code

Model	Code		Information
PFB –	□	□	10 bit A/D, Bar display
Light source	R		Red LED
External output		N	NPN Open collector
		P	PNP Open collector

PAS series Area sensor

Specification

Model						
	NPN	PAS-T4N	PAS-T8N	PAS-T12N	PAS-T16N	PAS-T20N
	PNP	PAS-T4P	PAS-T8P	PAS-T12P	PAS-T16P	PAS-T20P
Appearance	CE 					
Type	Through beam					
Sensing distance	5 m					
Detecting object	Opaque object of Min. Ø30 ㎜					
Optical axis pitch	20 ㎜					
Number of optical axis	4	8	12	16	20	
Sensing range	60 mm	140 mm	220 mm	300 mm	380 mm	
Power voltage						
Current Consumption	Max. 80 ㎃	Max. 90 ㎃	Max. 100 ㎃	Max. 110 ㎃	Max. 120 ㎃	
Output range	NPN open collector output-Load current : Max. 100 ㎃, Load voltage : Max. 30 V d.c., Residual voltage : Max. 1 V PNP open collector output-Load current : Max. 100 ㎃, Output voltage : (Power voltage-over 2.5 V)					
Operating mode	Light ON					
Response time	Below 7 ㎳					
Light source	Infrared emitting diode(Wave length 850 ㎚)					
Point angle	Within ±5 ° (At over 2 m sensing distance)					
Operating indicator	Trns.:M/S display:Red LED, Power display : Green LED, Operation Display : Red LED Rcvr.E1 display : Red LED, E2 display : Blue, Red, LIght on stability display : Green LED, Operation display : Red LED					
Ambient light	Sun light : 11,000 / 3,000 lx					
Ambient temperature	Operating : -20 ~ 60 ℃, preserving : -25 ~ 70 ℃ (Without condensation)					
Ambient humidity	35 ~ 85 % RH					
Vibration resistance	0 - 55 ㎐ (Cycle for 1 min.) Double amplitude width 1.5 ㎜, each X·Y·Z direction for 2 hr.					
Case protection	IP40(IEC)					
Dielectric strength	1,000 V a.c. for 1 min. between current part and case					
Material	Case : ABS, Window : Acryl					
Connection	Flying lead 5P, Ø4.3 length 3 m					
Weight	Each Max.160 g	Each Max.180 g	Each Max.200 g	Each Max.220 g	Each Max.240 g	
Protection function/circuit	Auto sensitivity compensation, Mutual interference prevention in parallel installation (M/S mode), Reverse polarity protection, Overcurrent protection					

Suffix code

Model	Code			Information
PAS -	☐	☐	☐	Area sensor
Sensing method	T			Through beam
Number of optical axis		4		4 optical axis
		8		8 optical axis
		12		12 optical axis
		16		16 optical axis
		20		20 optical axis
Control output			N	NPN open collector
			P	PNP open collector

Photo Sensor

PAN series High reliable optical area sensor with an exclusive IC

Specification

Through beam	
7 m	
Opaque object of over Ø32 ㎜	Opaque object of over Ø52 ㎜
20 mm	40 mm
12 – 24 V d.c. ±10 % (Ripple P–P ± 10 %)	
Max. 170 ㎃	Max. 100 ㎃
Light ON	
Trns.M/S display:Red LED, Power display : Green L(+) Rcvr. E1 display : Red LED, E2 display : Blue LED stability display : Green LED, Operation display : Red LED	
Max. 15 ms	Max. 7 ms
Infrared emitting diode (Wave length 880 ㎚)	
Trns.:M/S display:Red LED, Power display : LED, Operation Display : Red, Rcvr.: E1 display : Green LED, E2 display : Red, Light on stability display : Green LED, Operation display : Red LED	
ALL/ONE S/W Operation (only for Rcvr.), Max.ter/Slave S/W Operation (only for Trns.)	
Sun light : Max. 11,000 / 3,000 lx	
Operating : –20 ~ 60 ℃, preserving : –25 ~ 70 ℃ (Without condensation)	
Max. 35 ~ 85 % RH	
10 – 55 ㎐ (Cycle for 1 min.) Double amplitude width 1.5 ㎜, each X·Y·Z direction for 2 hr.	
IP65 (IEC)	
1000 V a.c. for 1 min. between current part and case	
Case: Aluminum, Window : acryl, Lens : acryl	
Connector flying lead 4P Ø5.5	
Mutual interference prevention when parallel installation (M/S mode), Reverse polarity protection, Overcurrent protection	

Production formation

series	Model	Sensing Distance	Number of optical axis	Sensing range	Detecting object
PAN20	PAN20–T08	7 m	8EA	140 mm	Opaque object of over Ø32 ㎜
	PAN20–T12		12EA	220 mm	
	PAN20–T16		16EA	300 mm	
	PAN20–T20		20EA	380 mm	
	PAN20–T24		24EA	460 mm	
	PAN20–T28		28EA	540 mm	
	PAN20–T32		32EA	620 mm	
	PAN20–T36		36EA	700 mm	
	PAN20–T40		40EA	780 mm	
	PAN20–T44		44EA	860 mm	
	PAN20–T48		48EA	940 mm	
PAN40	PAN40–T04		4EA	120 mm	Opaque object of over Ø57 ㎜
	PAN40–T06		6EA	200 mm	
	PAN40–T08		8EA	280 mm	
	PAN40–T10		10EA	360 mm	
	PAN40–T12		12EA	440 mm	
	PAN40–T14		14EA	520 mm	
	PAN40–T16		16EA	600 mm	
	PAN40–T18		18EA	680 mm	
	PAN40–T20		20EA	760 mm	
	PAN40–T22		22EA	840 mm	
	PAN40–T24		24EA	920 mm	

Suffix code

Model	Code				Information
PAN–	□	□	□	□	Area sensor
Optical axis pitch	20				20 ㎜ gap
	40				40 ㎜ gap
Sensing method		T			Through beam
Number of optical axis			□		Number of optical axis (please refer to the dimension)
Output				N	NPN open collector
				P	PNP open collector

HPAN series Sensor controller

Specification

MODEL	HPAN-C7	HPAN-CT7	HPAN-C7W
Appearance	CE  8.5(W) X 82.1(H) X 80.8(D)		
Function	Multi-purpose	Timer function	Two sensors connectable
How to attach	DIN Rail		
Power Voltage	100 – 240 V a.c. 50/60 Hz		
Power consumption	Approx. 5 VA		
Power supply to sensor	+12 V d.c. (±10 %), Max. 200 mA		
Connectable sensor	NPN / PNP transistor output or relay output sensor		
Output	· Relay contact : 1c (250 V a.c. 3 A, Resistive load) Rated electrical life : over 100,000 operation · NPN Transistor output (open collector) Max. sink current : 100 mA, Applied voltage : 30 V d.c. Max.		·Relay contact:1c (2outs separately) (250 V a.c. 3A resistive load) Rated electrical life: over 100,000 operations (in power off)
Response time	Relay contact : Approx. 10 ms, Open collector : 5 μs Max.		Approx. 10 ms
External synchronization	Gate synchronization	Frequency and differential synchronization	–
Timer	–	·Selectable from on-delay, off-delay and one shot-delay ·Time range 40 ms~1 S↔ 0.4~10 S (selectable by dip switch)	–
Ambient temperature and humidity	–25 ~ 70 ℃, 35 – 85 % RH (without condensation)		
Noise immunity	Power line: 2,000 VP, 0.5 μs pulse width (by noise simulation)		
Dielectric strength	1,500 V a.c. for 1 minute (Between supply and output)		
Insulation resistance	20 MΩ (At 500 V d.c., Between supply and output)		
Vibration resistance	10 – 55 Hz(For a minute), double amplitude width 1.5 mm, each X·Y·Z direction for 2 hour (in power off)		
Shock resistance	100 % (Approx. 10 G), each X·Y·Z, 2 direction (in power off)		
Net·Weight	Approx. 150 g	Approx. 160 g	Approx. 165 g

HPA-12 Sensor controller

Specification

MODEL	HPA-12
Appearance	 49(W) X 62(H) X 91(D)
Function	Multi-purpose
How to attach	Relay Socket 8PIN
Power Voltage	220 V a.c. ±10 % 60 Hz
Power consumption	Approx. 4 VA
Power supply to sensor	12 V DC±10 % 50 mA
Connectable sensor	NPN, PNP transistor output
Output	· Relay contact: 1c (250 V a.c. 3 A, resistive load) Rated electrical life:over 100,000 operations (in power off)
Response time	Approx. 10 ms
Ambient temperature and humidity	–20 ~ 60 ℃, 25 ~ 70 % RH (No freezing or No condensation)
Noise immunity	Power line: 2,000 VP, 0.5 μs pulse width (by noise simulation)
Dielectric strength	1,500 V a.c. for 1 minute (Between supply and output)
Insulation resistance	20 MΩ (At 500 V d.c., Between supply and output)
Vibration resistance	10 – 55 Hz(For a minute), double amplitude width 1.5 mm, each X·Y·Z direction for 2 hour (in power off)
Shock resistance	100 % (Approx. 10 G), each X·Y·Z, 2 direction (in power off)
Net·Weight	Approx. 260 g

Rotary Encoder

HE30B, HE40B, HE50B series Shaft rotary encoder

Specification

MODEL			HE30B	HE40B	HE50B
Appearance			CE 	CE 	CE 
Electrical specification	Phase difference on output		Phase difference between the phase A and B : T/4 ± T/8(1 cycle of A is T)		
	Response speed		200 KHz max.		
	Rated voltage	Voltage output Open collector Totem pole output	※ By the suffix code 5 – 12 V d.c. ±5 % 12 – 24 V d.c. ±5 %		
		Line driver	5 V d.c. ±5 %	5 / 12 / 24 V d.c. ±5 %	
	Current consumption		Max 60 mA(No load)		
	Connection type		Cable extended type		
	Control output	NPN voltage output NPN open collector	Load voltage : max 30 V, load current : max 30 mA Remaining voltage : max 0.4 V		
		Totem pole	LOW (load current : max 30 mA, remaining voltage : max 0.4 V)		
			HIGH (load current : max 10 mA, output voltage: above rated voltage – 2.5 V)		
		Line driver	LOW (load current : max 20 mA, max 0.4 V)		
			HIGH (load current : max 20 mA, remaining voltage : above 2.5 V)		
	Response time	Voltage output Open collector	Max 1 μs (wire length : 1.5 m, sinking current = 30 mA)		
		Totem pole	Max 1 μs (wire length : 1.5 m, sinking current = 10 mA max.)		
		Line driver	Max 1 μs (wire length : 1.5 m, sinking current = 30 mA max.)		
Mechanical specification	Starting torque		2×10^{-3} N·m	4×10^{-3} N·m	7×10^{-3} N·m
	Moment of inertia		Max 2 × 10^{-6} kg·m²	Max 4 × 10^{-6} kg·m²	Max 8 × 10^{-6} kg·m²
	Permissible shaft loading		Radial : 15 N within Thrust : 10 N within	Radial : 30 N within Thrust : 20 N within	Radial : 50 N within Thrust : 30 N within
	Max permissible revolution		5,000 r/min		
Environmental specification	Insulation resistance		Min 100 MΩ (between the terminal and case 500 V d.c. mega standard)		
	Dielectric strength		800 V a.c. (for 1 min in 60 Hz between the terminal and case)		
	Vibration resistance		10 – 55 Hz (period for 1 min), double amplitude : 1.5 mm, for 2 hour each in X, Y and Z directions		
	Shock resistance		Max 490 m/s²		Max 735 m/s²
	Ambient temperature		–10 ~ 70 ℃ (no icing allowed), when storing: –25 ~ 85 ℃		
	Ambient humidity		35 ~ 85 % RH		
	Cable		5 P, Ø5.0 mm, length: 1.5 m, shield cable(HE40B, HE50B cable length option : 2 m, 8 m, 10 m) (Line drive type : 8P, Ø5.0 mm, length : 1.5 m, shield cable)		
	Accessory		Ø 4.0 mm coupling	Ø 6.0 mm / Ø 8.0 mm coupling	Ø 8.0 mm coupling, bracket
	Weight		Approx. 120 g	Approx. 170 g	Approx. 200 g

Suffix code

Model	Code						Information
HE	□–	□	□	□	□	□	Shaft rotary encoder (Incremental)
Dimension	30B	4					Outer diameter : Ø 30 mm axis : Ø 4 mm
	40B	6					Outer diameter : Ø 40 mm axis : Ø 6 mm
		8					Outer diameter : Ø 40 mm axis : Ø 8 mm optional : (Option)
	50B	8					Outer diameter : Ø 50 mm axis : Ø 8 mm
Number of pulse		*					Refer to the pulse code chart(resolving power)
Output signal			2				A, B phase output
			3				A, B, Z phase output
			3C				A, B, $\overline{Z}$ phase output
			4				A, $\overline{A}$, B, $\overline{B}$ phase output
			6				A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ phase output
Output circuit				N	12		NPN voltage output (5 – 12 V d.c.)
					24		NPN voltage output (12 – 24 V d.c.)
				O	12		NPN open collector output (5 – 12 V d.c.)
					24		NPN open collector output (12 – 24 V d.c.)
				T	12		Totem pole output (5 – 12 V d.c.)
					24		Totem pole output (12 – 24 V d.c.)
				L	5		Line Driver output (5 V d.c.)
					12		Line Driver output (12 V d.c.)
					24		Line Driver output (24 V d.c.)
							Apply only for HE40B, HE50B

(Note) A and B phase only can be generated with * mark(Line drive output : A, $\overline{A}$, B, $\overline{B}$, phase) Pulses other than the pulses in the chart are order made product

Pulse code chart (Resolving power)

	100, 200, 360, 500, 1000, 1024
	*1, *2, *5, 10, *12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024,

Please contact us for the production of (Pulse).

HE40H, HE60H Hollow shaft rotary encoder

Specification

CE

Phase difference between the phase A and B : T/4 ± T/8 (1 cycle of A phase=T)
200 KHz max.
※ By the suffix code 5 – 12 V d.c. ±5 % 12 – 24 V d.c. ±5 %
5 V d.c. ±5 %
Max 60 ㎃(no load), Line driver output less than 50 ㎃ (no load)
Cable extended type
Load voltage : max 30 V, load current : max 30 ㎃ Remaining voltage : max 0.4 V
LOW (load current : max 30 ㎃, remaining voltage : max 0.4 V) HIGH (load current : max 10 ㎃, Output voltage: above rated voltage – 2.5 V)
LOW (load current : max 20 ㎃, max 0.4 V) HIGH (load current : max 20 ㎃, remaining voltage : above 2.5V)
Max 1 ㎲ (wire length : 1.5 m, sinking current = 30 ㎃)
Max 1 ㎲ (wire length : 1.5 m, sinking current = 10 ㎃ max.)
Max 1 ㎲ (wire length : 1.5 m, sinking current = 30 ㎃ max.)
4×10^{-3} N.m
4×10^{-6} g·㎠ max
Radial : 30 N within Thrust : 20 N within
5,000 r/min
Min 100 MΩ (between the terminal and case 500 V d.c. mega standard)
800 V a.c. (for 1 min in 60 ㎐ between the terminal and case)
10 – 55 ㎐ (period for 1 min), double amplitude : 1.5 ㎜, for 2 hour each in X, Y and Z directions
490 ㎨ max
–10 ~ 70 ℃ (no icing allowed), when storing: –25 ~ 85 ℃
35 ~ 85 % RH
5 P, Ø5.0 ㎜, length: 1.5 m, shield cable(HE40H cable length option : 2 m, 8 m, 10 m) (Line drive type : 8P, Ø5.0 ㎜, length : 1.5 m, shield cable)
Approx. 170 g

Suffix code

□	□	□	□	□	Hollow shaft rotary encoder (incremental)
6					Outer diameter : Ø 40 ㎜ axis inner diameter : Ø 6 ㎜
8					Outer diameter : Ø 40 ㎜ axis inner diameter : Ø 8 ㎜
10					Outer diameter : Ø 40 ㎜ axis inner diameter : Ø 10 ㎜
12					Outer diameter : Ø 40 ㎜ axis inner diameter : Ø 12 ㎜
	*				Refer to the pulse code chart (resolving power)
		2			A, B phase output
		3			A, B, Z phase output
		3C			A, B, $\overline{Z}$ phase output
		4			A, $\overline{A}$, B, $\overline{B}$ phase output
		6			A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ phase output
			N	12	NPN voltage output (5 – 12 V d.c.)
				24	NPN voltage output (12 – 24 V d.c.)
			O	12	NPN open collector output (5 – 12 V d.c.)
				24	NPN open collector output (12 – 24 V d.c.)
			T	12	Totem pole output (5 – 12 V d.c.)
				24	Totem pole output (12 – 24 V d.c.)
			L		Line Driver output (5 V d.c.)

(Note) A and B phase only can be generated with * mark(Line drive output : A, $\overline{A}$, B, $\overline{B}$, phase) Pulses other than the pulses in the chart are order made product

Pulse code chart (Resolving power)

Model	Number of pulse per 1 revolution
HE40H	*1, *2, *5, 10, *12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024,

Please contact us for the production of (Pulse).

Rotary Encoder

HE30HB, HE40HB Blind shaft encoder

Specification

MODEL			HE30HB	HE40HB
Appearance				CE 
Electrical specification	Phase difference on output		Phase difference between the phase A and B : T/4 ± T/8(1 cycle of A phase=T)	
	Response speed		200 KHz max.	
	Rated voltage	Voltage output Open collector Totem pole output	※ By the suffix code 5 – 12 V d.c. ±5 % 12 – 24 V d.c. ±5 %	
		Line driver	5 V d.c. ±5 %	5 / 12 / 24 V d.c. ±5 %
	Current consumption		Max 60 mA(No load), Line driver output less than 30 mA(No load)	
	Connection type		Cable extended type	
	Control output	NPN voltage output NPN open collector	Load voltage : max 30 V, load current : max 30 mA Remaining voltage : max 0.4 V	
		Totem pole	LOW (load current : max 30 mA, remaining voltage : max 0.4 V) HIGH (load current : max 10 mA, Output voltage: above rated voltage – 2.5 V)	
		Line driver	LOW (load current : max 20 mA, max 0.4 V) HIGH (load current : max 20 mA, remaining voltage : above 2.5V d.c.)	
	Response time	Voltage output Open collector	Max 1 μs (wire length : 1.5 m, sinking current = 30 mA)	
		Totem pole	Max 1 μs (wire length : 1.5 m, sinking current = 10 mA max.)	
		Line driver	Max 1 μs (wire length : 1.5 m, sinking current = 30 mA max.)	
Mechanical specification	Starting torque		2×10^{-3} N.m	4×10^{-3} N.m
	Moment of inertia		2×10^{-6} Kg·m^2 max	4×10^{-6} Kg·m^2 max
	Permissible shaft loading		Radial : 15 N within Thrust : 10 N within	Radial : 30 N within Thrust : 20 N within
	Max permissible revolution		5,000 rpm	
Environmental specification	Insulation resistance		Min 100 MΩ (between the terminal and case 500 V d.c. mega standard)	
	Dielectric strength		800 V a.c. (for 1 min in 60 Hz between the terminal and case)	
	Vibration resistance		10 – 55 Hz (period for 1 min), double amplitude : 1.5 mm, for 2 hour each in X, Y and Z directions	
	Shock resistance		490 m/s^2 max	735 m/s^2 max
	Ambient temperature		–10 ~ 70 ℃ (no icing allowed), when storing: –25 ~ 85 ℃	
	Ambient humidity		35 ~ 85 % RH	
	Wire specification		5 P, Ø5.0 mm, length: 1.5 m, shield cable (Line drive type : 8P, Ø5.0 mm, length : 1.5 m, shield cable)	
	accessory		Bracket	
	Weight		Approx. 120g	Approx. 170g

Suffix code

Model	Code							Information
HE	□–	□	□	□	□	□		Blind shaft rotary encoder(Incremental)
dimension	30HB	2						Outer diameter : Ø 30 mm axis inner diameter : Ø 2 mm
		2.5						Outer diameter : Ø 30 mm axis inner diameter : Ø 2.5 mm
		3						Outer diameter : Ø 30 mm axis inner diameter : Ø 3 mm
	40HB	6						Outer diameter : Ø 40 mm axis inner diameter : Ø 6 mm
		8						Outer diameter : Ø 40 mm axis inner diameter : Ø 8 mm
		10						Outer diameter : Ø 40 mm axis inner diameter : Ø 10 mm
		12						Outer diameter : Ø 40 mm axis inner diameter : Ø 12 mm
Number of pulse			*					Refer to the pulse code chart(resolving power)
Output signal (output phase)				2				A, B phase output
				3				A, B, Z phase output
				3C				A, B, $\overline{Z}$ phase output
				4				A, $\overline{A}$, B, $\overline{B}$ phase output
				6				A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$ phase output
Output circuit					N		24	NPN voltage output (12 – 24 V d.c.)
							12	NPN voltage output (5 – 12 V d.c.)
					O		24	NPN open collector output (12 – 24 V d.c.)
							12	NPN open collector output (5 – 12 V d.c.)
					T		24	Totem pole output (12 – 24 V d.c.)
							12	Totem pole output (5 – 12 V d.c.)
					L		5	Line Driver output (5 V d.c.)
							12	Line Driver output (12 V d.c.)–Apply only for HE40HB
							24	Line Driver output (24 V d.c.)–Apply only for HE40HB

(Note) A and B phase only can be generated with * mark(Line drive output : A, $\overline{A}$, B, $\overline{B}$, phase) Pulses other than the pulses in the chart are order made product

Pulse code chart (Resolving power)

Model	Number of pulse per 1 revolution
HE30HB	100, 200, 360, 500, 1000, 1024
HE40HB	*1, *2, *5, 10, *12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 192, 200, 240, 250, 256, 300, 360, 400, 500, 512, 600, 800, 1000, 1024

Please contact us for the production of (Pulse).

PSC series Wheel type encoder

Specification

MODEL			PSC
Appearance			CE 
Electrical specification	Phase difference on output		Phase difference between the A and B : T/4 ± T/8 (1 cycle of A phase = T)
	Response speed		100 KHz max.
	Rated voltage		5 – 12 V d.c. (±5 %), 12 – 24 V d.c. (±5 %)
	Current consumption		Max 60 ㎃
	Connection type		Cable extended type
	Control output	Voltage and open collector	Load voltage : max 30 V/load current : max 30 ㎃/Remaining voltage : max 0.4 V
		Totem pole	LOW (Load current : max 30 ㎃/Remaining voltage : max 0.4 V) HIGH (Load current : max 10 ㎃/Output voltage : above rated voltage – 1.5 V d.c.)
	Response time		Max 1 ㎲ (Wire length : 1.5 m Iv sink = 30 ㎃)
Mechanical specification	Starting torque		Max 200 gf·㎝ (19.600 u N·m)
	Moment of inertia		Max 800 g·㎠ ($8X10^{-6}$ kg·m^2)
	Permissible shaft loading		Radial : 0.1 ㎜ within, Thrust : 0.2 ㎜ within
	Max permissible revolution		5,000 rpm
	Bearing life		1.2 X 10/ (r/min) : time
Environmental specification	Insulation resistance		Min 500 MΩ (Between the terminal and case)
	Dielectric strength		500 V a.c. (For 1 min in 60 ㎐ between the terminal and case)
	Vibration resistance		10 – 55 ㎐ (Period for 1 min), Double amplitude : 1.5 ㎜, for 2 hour each in X, Y and Z directions
	Shock resistance		Max 75 G
	Ambient temperature		–10 ~ 70 ℃ (No icing allowed), When storing : –25 ~ 85 ℃
	Ambient humidity		35 ~ 85 % RH
	Wire specification		Number of strips : 5 P, Thickness : Ø 5.0 ㎜, Length : 1.5 m, Shield cable
	Weight		Approx. 625 g

Suffix code

Model	Code				Information
PSC–	□	□	□	□	Wheel type encoder
Min length measurement	MA				1 m
	MB				1 ㎝
	MC				1 ㎜
	YA				1 YARD
	YB				0.1 YARD
	YC				0.01 YARD
Output signal		AB			A, B phase output (PSC–MA, YA), Rests are A, B, Z Phase output
Output Circuit			N		NPN voltage output
			O		NPN open collector
			T		Totem pole output
Power supply voltage				12	12 V d.c. (5 – 12 V d.c.)
				24	24 V d.c. (12 – 24 V d.c.)

※ Code PSC–MA and PSC–YA are A, B phase output. Rests are A, B, Z Phase output

Thyristor Power Regulator

TPR-2M Slim type 1-phase power regulator

Specification

Model		Economical type	Advanced type	
		Low voltage	Low voltage	High voltage
		TPR-2ME25L	TPR-2MS25L	TPR-2MS25H
		TPR-2ME35L	TPR-2MS35L	TPR-2MS35H
Appearance				
W X H X D (mm)		47.5 X 90 X 112		
Function		• Soft start/Soft up/Soft down • Over heat alarm	• Soft start/Soft up/Soft down • Over heat alarm • Over current alarm • Slope setting • Output indication • Power failure alarm • SCR short alarm	
Load Voltage		100 – 240 V a.c.		100 – 440 V a.c.
Circuit input power		100 – 240 V a.c. 3 W		24 V d.c. 1 W
Power frequency		50 / 60 Hz (Dual usage)		
Rated current		25 A / 35 A		
Control Input	Current input	4 – 20 ㎃ d.c. (Impedance : 100 Ω) (Basic packages)	4 – 20 ㎃ d.c. (Impedance : 100 Ω) (Option)	
	Voltage input	1 – 5 V d.c. (Basic packages)	1 – 5 V d.c. (Option)	
	Contact input	ON/OFF (Basic packages)	ON/OFF (Option)	
	External VR	External VR (10 ㏀) Simultaneous use of current and voltage input is not supported	–	
Control method		Phase control (Basic), Variable Cycle control (Option)		
Movement type		Soft start (60 sec) / Soft up, Soft down (15 sec) / Adjust start time by SOFT VR		
Output voltage		More than 98 % of the power supply voltage (In case of maximum current input) / Output limitation control by Power VR		
Alarm function		–	O (Relay contact output) : Current error(CE), Over temperature(OT), Power error / Heater break(PE), SCR short (PE)	
Display method (LED)	Output	FIRE : Flicker speed directly proportional to output		
	Power	Light on when power connect to circuit	–	
	Alarm	–	CE (CURRENT ERROR) : Light on in case of more than 45 A load	
		–	OT (OVER TEMP) : Light on when Heat sink temperature is above 85 ℃	
		PE (POWER ERROR) : Power error, Heater break		
Cooling method		Natural cooling		
Weight		approx. 322 g		

Suffix code

Model	Code					Information	
TPR-2M	□	□	□	□	□	Slim type 1- phase power regulator	
Type	E					Economical type 25 A 100 – 24 V a.c. only	
	S					Advanced type	
Rated current			25			25 A	
			35			35 A	
Power supply voltage				L		100 – 240 V a.c.	
				H		100 – 440 V a.c. (Only for advanced type)	
Control input (For Advanced type only)					C	4 – 20 mA d.c.	Economical Type(E) supports all input options.
					V	1 – 5 V d.c.	
					O	ON/OFF	

※ Please supply power separately for circuit input (100 – 240 V a.c. for low voltage, 24 V d.c. for high voltage)

TPR–2N 1–phase thyristor power regulator

Specification

MODEL	TPR–2N□□□	TPR–2N□□□
Appearance	CE 	CE 
W X H X D	92 X 100.2 X 131.6	115.2 X 194.7 X 123.6
Function	• Soft Start / Soft Down • Slope setting	• Soft start • Overheated alarm (O.T) • Alarm output • Slope setting • Output limit setting • Overcurrent detection (O.C) • Load break detection (L.L)
Power supply voltage	110 V a.c. / 220 V a.c. / 380 V a.c.	110 V a.c. / 220 V a.c. / 380 V a.c. / 440 V a.c.
Operating Frequency	50 / 60 Hz (Dual usage)	
Rated Current	25 A, 35 A	50 A, 70 A
Protection Circuit	Protected by fast acting fuse (external attachment)	
Applied Load	Resistive Load/ Inductive Load	
Control Input	Input Current : 4 – 20 mA d.c, Input Voltage : 1 – 5 V d.c. Input Contact Point : ON – OFF, External VR (10 kΩ)	Current input : 4 – 20 ㎃ d.c., Voltage input : 1 – 5 V d.c. / 0 – 10 V d.c. (Option) Contact input : ON / OFF, External VR : External volume (10 kΩ)
Control Method	Phase control, Cycle control, ON/OFF control (selected by dip switch)	
Movement type	Soft start / Soft down (Time : 0 ~ 50 sec)	Soft start / Soft down
Output Adjusting Range	Above 95 % input voltage (when putting maximum of input voltage)	
Cooling Method	Natural Cooling	50 A(Natural cooling), 70 A (Forced cooling)
Indicator Function	LED lighting for output status	
Insulation Resistance	100 ㏁ min (500 V d.c. mega standard)	
Output Range	0 ~ 100 %	
Dielectric Strength	2,000 V a.c. at 50/60 Hz for 1 minute	
Line Noise	Noise by noise simulator (pulse width 1 ㎲ : ±2 KV)	
Ambient temperature	0 ~ 50 ℃ (Without condensation)	
Ambient Humidity	30 ~ 85 % RH	
Storage Temperature	–25 ~ 70 ℃	
Weight	Approx. 960 g	Approx 2,000 g

Suffix code (25 A / 35 A)

※ Control Method : Phase control (factory default)

Model	Code		Information
TPR – 2N	□	□	1–phase power regulator
Power supply voltage	110		110 V a.c. 50/60 Hz (Dual usage)
	220		220 V a.c. 50/60 Hz (Dual usage)
	380		380 V a.c. 50/60 Hz (Dual usage)
Rated current		25	25 A
		35	35 A

Suffix code (50A / 70A)

Model	Code		Information
TPR – 2N	□	□	1–phase power regulator
Power supply voltage	110		110 V a.c. 50/60 Hz (Dual usage)
	220		220 V a.c. 50/60 Hz (Dual usage)
	380		380 V a.c. 50/60 Hz (Dual usage)
	440		440 V a.c. 50/60 Hz (Dual usage)
Rated current		50	50 A
		70	70 A

Thyristor Power Regulator

TPR-2SL Slim type 1-phase power regulator

Specification

CE 	CE 	CE 	CE 
• Ultra Slim type (60 mm) • Improve reliability by separating circuit power and load power (Apply a wide range of power supply circuit) • Realized various control methods according to the variety of load. • Alarm output is divided as caution and warning. • Various protection functions for partial heater break, overcurrent, overheated heat sink, SCR short-circuit			
100 – 240 V a.c.			
380 – 440 V a.c.			
100 – 240 V a.c.		100 – 240 V a.c.	
6 W	16 W	20 W	
50 / 60 Hz (Dual usage)			
40 A / 55 A	70 A	90 A / 110 A / 130 A / 160 A / 200 A	
None (selectable option)		Built-in fast acting fuse	
Resistive load			
4 – 20 ㎃ d.c. (Impedance : 100 Ω)			
1 – 5 V d.c. (Option : 0 – 10 V d.c.)			
ON/OFF			
External volume (10 ㏀)			
Phase control, Fixed Cycle control, Variable Cycle control, ON/OFF control			
Soft start / Soft up, down			
More than 98 % of the power supply voltage (In case of maximum current input)			
Natural cooling	Forced cooling	Natural cooling	Forced cooling
Display by LED			
Min 100 MΩ (Base on 500 V d.c. mega)			
0 ~ 100 %			
3,000 V a.c. 50/60 Hz for 1 min			
Noise by noise simulator (3,000 V)			
20 ~ 80 ℃ (Without condensation)			
30 ~ 85 % RH			
–25 ~ 70 ℃			
1,388 g	1,478 g	2,820 g	3,100 g

Suffix code

Model	Code				Information	
TPR-2SL	□	□	□	□	Slim type 1- phase power regulator	
Rated current	040				40 A	
	055				55 A	
	070				70 A	
	090				90 A	Built-in fast acting fuse
	110				110 A	
	130				130 A	
	160				160 A	
	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 type (For option 50 / 55 / 70 A)	

※ Circuit and FAN need 100 – 240 V a.c. voltage power separately.

TPR-2SE Slim type 1-phase power regulator

Specification

Model		TPR-2SE025L	TPR-2SE040L
	High	TPR-2SE025H	TPR-2SE040H
Appearance			
W X H X D		47 X 138 X 151.7	
Function		• Soft start/Soft up/Soft down, • Over heat alarm, • Over current alarm, • Slope setting • Load break alarm, • Output indication, • Power failure alarm, • SCR short alarm	
Power supply voltage	Low	100 – 240 V a.c.	
	High	100 – 440 V a.c.	
Circuit input power		100 – 240 V a.c. 6 W	
Power frequency		50 / 60 Hz (Dual usage)	
Rated current (40 ℃ Standard)		25 A	40 A
Fuse installation		None	
Applying load		Resistive load	
Control Input	Current input	4 – 20 ㎃ 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	
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	
Display method		Display by LED	
Insulation resistance		Min 100 MΩ (Base on 500 V d.c. 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		0 ~ 40 ℃ (Without condensation)	
Ambient Humidity		30 ~ 85 % RH	
Storage temperature		–25 ~ 70 ℃	
Weight		1,388 g	

Suffix code

Model	Code		Information
TPR-2SE	□	□–	Slim type 1– phase power regulator
Rated current	025		25 A
	040		40 A
Power supply voltage		L	100 – 240 V a.c. (Low)
		H	100 – 440 V a.c. (High)

Thyristor Power Regulator

TPR-3M Mini 3-phase power regulator

Specification

Model	TPR-3M25L	TPR-3M45L
Appearance	CE 	
W X H X D	110 X 157.5 X 150	
Function	• Over heat alarm, • Over current alarm, • Load break alarm, • Output indication, • SCR short alarm	
Power supply voltage	100 – 240 V a.c.	
Circuit input power	24 V d.c. 8 W	
Power frequency	50 / 60 Hz	
Rated current	25 A	45 A
Applying load	Resistive load	
Control Input	4 – 20 ㎃ d.c. (Impedance : 100 Ω)	
Control method	Phase control (Fixed Cycle control, Variable Cycle control Option)	
Output voltage	More than 98 % of the power supply voltage (In case of maximum current input)	
Cooling method	Forced cooling (24 V d.c. FAN)	
Display method	4 LED display status and alarm status	
Insulation resistance	Min 100 MΩ (Base on 500 V d.c. mega)	
Dielectric strength	2,500 V a.c. 50 / 60 Hz for 1 min	
Line noise	Noise by noise simulator (2,000 V)	
Storage temperature	–30 ~ 90 ℃	
Ambient temperature	–20 ~ 80 ℃ (Without condensation)	
Ambient Humidity	45 ~ 85 % RH	
Weight	1,756 g	

Suffix code

Model	Code			Information
TPR-3M	□	□	□	Mini 3-phase power regulator
Rated current	25			25 A
	45			45 A
Power supply voltage		L		100 – 240 V a.c. (Low)
Option			IS	Power isolation for multi series connection

※ IS type support connection in series up to 5 units with 1 temperature controller or power supply (SMPS.)
The general type requires a 1 to 1 connection to the temperature controller with a 24 V d.c. partial power circuit as a non-isolated type.

TPR-3SL Slim type 3-phase power regulator

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
Appearance		CE 		CE 		CE 	
Function		• Soft start / Soft up, down, • Over heat alarm, • Over current alarm, • Slope setting, • Load break alarm, • Output indication, • Power failure alarm, • SCR short alarm					
Power supply 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 (Dual usage)					
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					
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 (40 A, 55 A), Forced cooling (70 A, 90 A, 130 A, 160 A)					
Display method		Display by LED					
Insulation resistance		Min 100 MΩ (Base on 500 V d.c. 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 (2,500 V)					
Ambient temperature		0 ~ 40 ℃ (Without condensation)					
Ambient Humidity		30 ~ 85 % RH					
Storage temperature		–25 ~ 70 ℃					
Weight		4,044 g		4,324 g	9,100 g	9,194 g	

Suffix code

Model	Code			Information
TPR-3SL	□	□	–□	Slim type 3-phase power regulator
Rated current	040			40 A
	055			55 A
	070			70 A
	090			90 A
	130			130 A
	160			160 A
Power supply voltage		L		100 – 240 V a.c. (Low)
		H		380 – 440 V a.c. (High)
Option			–	Fuse built-in
			N	No fuse

※ Circuit and FAN need 100 – 240 V a.c. voltage power separately.

Thyristor Power Regulator

TPR-3SL-EP 1-phase X 3 power regulator

Specification

CE

• Soft start / Soft up, down, • Over heat alarm, • Over current alarm, • Slope setting, • Load break alarm, • Output indication, • Power failure alarm, • SCR short alarm					
100 – 440 V a.c.					
100 – 240 V a.c. 18 W					
50/60 Hz (Dual usage)					
40 A	55 A	70 A	90 A	130 A	160 A
Resistive load					
4 – 20 mA d.c. (Impedance : 100 Ω)					
Phase control, Fixed Cycle control, Variable Cycle control, ON/OFF control					
Soft start / Soft up, down					
More than 98 % of the power supply voltage (In case of maximum current input)					
Forced cooling					
Display by LED					
Min 100 MΩ (Base on 500 V d.c. mega)					
0 ~ 100 %					
3,000 V a.c. 50/60 Hz for 1 min					
Noise by noise simulator (2,500 V)					
0 ~ 40 ℃ (Without condensation)					
30 ~ 85 % RH					
–25 ~ 70 ℃					
4,324 g			9,194 g	9,288 g	

Suffix code

Model	Code			Information
TPR-3SL	□	□	-EP	1-phase X 3 power regulator
Rated current	040			40 A
	055			55 A
	070			70 A
	090			90 A
	130			130 A
	160			160 A
Power supply voltage		H		100 – 440 V a.c.

※ Circuit and FAN need 100 – 240 V a.c. voltage power separately.
※ 130 A and 160 A products need 24 V d.c. power separately for FAN (Only for TPR-3SL EP models)

TPR-3N 3 phases thyristor controller

Specification

MODEL	TPR-3N□35MR	TPR-3N□50MR	TPR-3N□60MR
Appearance			
W X H X D (mm)	195 X 266 X 150		
Rated current	35 A	50 A	60 A
Function	• Power failure and fuse break (L.E) alarm output • Overcurrent detection alarm output • Current limit setting • Manual setting (slope setting)		
Display method	Output displayed by the LED		
Control method	Phase control, ON/OFF control		
Applying load	Resistive load/Inductance load		
Power supply voltage	220, 380, 440 V a.c.		
Power frequency	50 Hz or 60 Hz (Dual usage)		
Output voltage	More than 95% of the input voltage (with the max current input)		
Controlling element	SCR		
Control input	4 – 20 mA ※ 0 – 5 V d.c., 1 – 5 V d.c., 0 – 10 V d.c.		
External volume	External volume (B10 KΩ)		
Alarm output	Power failure and fuse break (L.E) alarm output, Overcurrent detection alarm output, Relay contact output(1a contact), 5 A 250 V a.c. max		
Insulation resistance	min 20 MΩ, 500 V d.c. (between input terminal and power terminal)		
Dielectric strength	For 1 minute at 2,000 V a.c. 50/60 Hz		
Cooling method	Natural cooling	Forced cooling	
Ambient temperature	0 ~ 50 ℃ (Refer to the ambient temperature characteristic)		
Ambient humidity	35 ~ 85 % RH (No condensation allowed)		
Storage temperature	–25 ~ 70 ℃		
Weight	Approx 5,350 g		

Suffix code

Model	Code					Information
TPR-3N	□	□	□	□	□	3-phases thyristor controller
Control type	P					Phase control, ON/OFF control
Power supply voltage		220				220, 380, 440 V a.c. (※ Voltage selectable)
Rated current			35			35, 50, 60 A (※ Capacity selectable)
Control input				M		4 – 20 mA d.c. ※ 1 – 5 V d.c.
Applying load					R	Resistive load

Thyristor Power Regulator

TPR-3 3 phase power regulator

Specification

Model	TPR-3P□70MR	TPR-3P□100MR	TPR-3P□150MR	TPR-3P□200MR	TPR-3P□250MR	TPR-3P□320MR	TPR-3P□500MR	TPR-3P□600MR
Appearance								
W X H X D (mm)	235×360×180		256×440×200			266×524×225	337×548×237	338×613×253
Function	• Power failure and fuse break (L.E) alarm output • Overcurrent detection alarm output • Current limit setting • Soft start down • Manual setting (slope setting)							
Power supply voltage	220 V a.c. / 380 V a.c. / 440 V a.c.							
Applying frequency	50 Hz / 60 Hz(Dual usage)							
Rated current	70 A	100 A	150 A	200 A	250 A	320 A	500 A	600 A
Protective circuit	Fuse break alarm, Over current alarm, Overheating heat sink							
Applying load	Resistive load / Inductive load							
Control input – Current Input	4 – 20 mA d.c.							
Control input – Voltage Input	0 – 5 V d.c. / 1 – 5 V d.c. / 0 – 10 V d.c.							
Control input – Contact Input	ON/OFF							
Control input – External VR	External volume (10 KΩ)							
Control type	Phase control, ON/OFF control, Cycle control							
Start type	Soft start / Soft down							
Output voltage	More than 95 % of the power supply voltage (In case of maximum current input)							
Cooling type	Forced cooling (150 A ~ 600 A), Forced cooling (70 A, 100 A), Need separate power supply for FAN (320 A, 500 A and 600 A)							
Display method	Display by LED light							
Insulation resistance	Min 100 MΩ (Base on 500 V d.c. mega)							
Output adjustable range	0 ~ 100 %							
Dielectric strength	2,000 V a.c. 50/60 Hz for 1 min							
Line noise	Noise by noise simulator (2 kV)							
Ambient temperature	0 ~ 40 ℃ (Without condensation)							
Ambient humidity	35 ~ 85 % RH							
Storage temperature	–25 ~ 70 ℃							
Weight	11 kg		15 kg			22 kg	35 kg	40 kg

Suffix code

Model	Code		Description
TPR-3P	□	□	3-phase power regulator
Power supply voltage	220		220 V a.c.
	380/440		380 V a.c. / 440 V a.c.
Rated current		70	70 A
		100	100 A
		150	150 A
		200	200 A
		250	250 A
		320	320 A
		500	500 A
		600	600 A

TPR-3N 3 phase power regulator

Specification

169 X 361 X 180
• LED display function • input signal selection • Operation mode selection (resistive load, inductive load)
• Overcurrent alarm output (OC) • Power failure and fuse break alarm output • Load break alarm (LL) • Alarm output
• LED ON when heat sink is overheated (OT) (thermal start fixed to 85 ℃)
Three phase
70 A, 100 A
Phase control, ON/OFF control
Resistive load, inductive load
(220, 380, 440 V) a.c. 50/60 Hz(dual usage)
More than 95 % of the input voltage (min load more than 0.5A)
4 – 20 ㎃ d.c., 0 – 5, 1 – 5, 0 – 10 V d.c. contact input, manual setting
• Slope setting : 50 % (when inductive load is selected) • Output Limit : 0 ~ 100 % • Manual setting : 0 ~ 100 % (selected by the external B 10 KΩ volume or parameter)
• Soft Up / Soft Down (setting : 0 ~ 50 sec)
• Overcurrent alarm (OC) • Power failure and fuse break alarm • Load break (LL)alarm • Overheated heat sink
• Relay contact output (1a contact) • 250 V a.c., 10 A max. (resistive load)
Min 100 MΩ, 500 V d.c.
2,000 V, for 1 min
Forced cooling by the FAN
0 ~ 50 ℃
35 ~ 85 % RH (no condensation allowed)
–25 ~ 70 ℃
Approx 5 ㎏ (Included the weight of box)

Suffix code

Model	Code		Description
TPR-3N	□	□	3-phase power regulator
Power supply voltage	220		220 V a.c.
	380		380 V a.c.
	440		440 V a.c.
Rated current		70	70 A
		100	100 A

Solid State Relay

SSR-2 series Single phase solid state relay

Specification

■ DC input – AC load

CE				
42 X 64 X 27.3				
90 – 264 V a.c.				
90 – 480 V a.c.				
600 V				
800 V	1,200 V			
10 A	20 A	30 A	40 A	
50/60 Hz (Dual usage)				
170 A	260 A	420 A		
170 A	250 A	370 A		
20 ㎃ max				
Less than 1.6 V (R.M.S)				
5 – 24 V d.c.				
4.6 – 32 V d.c.				
Less than 4 ㏀				
more than 4.6 V d.c.				
Constant-current system : 8 ㎃ (±3)				
1/2 Cycle + 1 ms max. (“R”type below 1 ms)				
500 V d.c., 100 ㏁ (Between the input / output and case)				
2,500 V a.c. (For 1 min at 60 ㎐)				
10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours				
1,000 ㎨, X,Y,Z each axis 3 times				
–30 ~ 90 ℃				
–5 ~ 40 ℃ (But without frostiness)				
45 ~ 85 % RH				
2level pollution				
Resistive load / Inductive load				
IEC 62314				
Approx. 89g				

■ AC input – AC load

CE

42 X 64 X 27.3			
90 – 264 V a.c.			
90 – 480 V a.c.			
600 V			
800 V	1,200 V		
10 A	20 A	30 A	40 A
50/60 Hz (Dual usage)			
170 A	260 A	420 A	
170 A	250 A	370 A	
20 ㎃ max			
Less than 1.6 V (RMS)			
100 – 240 V a.c.			
70 – 264 V a.c.			
Less than 40 ㏀			
more than 70 V a.c.			
220 V a.c. : 8 mA			
1/2 Cycle + 1 ms max. (“R”type below 1 ms)			
500 V d.c., 100 ㏁ (Between the input / output and case)			
2,500 V a.c. (For 1 min at 60 ㎐)			
10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours			
1,000 ㎨, X,Y,Z each axis 3 times			
–30 ~ 90 ℃			
–5 ~ 40 ℃ (But without frostiness)			
45 ~ 85 % RH			
2level pollution			
Resistive load / Inductive load			
IEC 62314			
Approx. 89g			

Suffix code

Model	Code					Information
SSR-2	□	□	□	□	□	Single phase solid state relay
Input Control Voltage	D					5 – 24 V d.c.
	A					100 – 240 V a.c.
Rated load current		10				10 A
		20				20 A
		30				30 A
		40				40 A
Rated load voltage			2			90 – 264 V a.c. (Low)
			4			90 – 480 V a.c. (High)
Operation method					Z	Zero Cross Switching (Standard product)
					R	Random Switching

Solid State Relay

HSR-2 series Single phase solid state relay

Specification

■ DC input – AC load (Low voltage : 90 – 264 V a.c.)

CE						
44 X 64 X 29						
5 – 24 V d.c.						
4 – 32 V d.c.						
Less than 4 kΩ						
More than 3 V d.c.						
Less than 1.5 V						
100 – 240 V a.c.						
90 – 264 V a.c.						
10 A	20 A	30 A	40 A	50 A	70 A	
170 A	250 A	315 A		580 A		
1.3 V	1.6 V	1.8 V				
10 mA	15 mA					

■ AC input – AC load (Low voltage : 90 – 264 V a.c.)

CE					
44 X 64 X 29					
100 – 240 V d.c.					
90 – 264 V d.c.					
Less than 40 kΩ					
More than 72 V a.c.					
Less than 40 V a.c.					
100 – 240 V a.c.					
90 – 264 V a.c.					
10 A	20 A	30 A	40 A	50 A	70 A
170 A	250 A	315 A		580 A	
1.3 V	1.6 V	1.8 V			
15 mA					

■ DC input – AC load (High voltage : 90 – 480 V a.c.)

CE					
44 X 64 X 29					
5 – 24 V d.c.					
4 – 32 V d.c.					
Less than 4 kΩ					
More than 3 V d.c.					
Less than 1.4 V d.c.					
100 – 440 V a.c.					
90 – 480 V a.c.					
10 A	20 A	30 A	40 A	50 A	70 A
170 A	250 A	350 A	370 A	580 A	
1.3 V	1.6 V	1.8 V			
20 mA					

■ AC input – AC load (High voltage : 90 – 480 V a.c.)

CE

44 X 64 X 29					
100 – 240 V a.c.					
90 – 264 V a.c.					
Less than 40 kΩ					
More than 75 V a.c.					
Less than 40 V a.c.					
100 – 440 V a.c.					
90 – 480 V a.c.					
10 A	20 A	30 A	40 A	50 A	70 A
170 A	250 A	350 A	370 A	580 A	
1.3 V	1.6 V	1.8 V			
15 mA				20 mA	

■ General specification

500 V d.c. 100 MΩ(Between I/O and case)
2,500 V a.c. (1minute at 60Hz)
10 – 55 Hz Double amplitude width 1.5 mm/ X.Y.Z each direction for 2 hours
1,000 m/s² (Approx100G) X.Y.Z each axis 3 times
–30 ~ 90 ℃
–20 ~ 80 ℃
45 ~ 85 % RH
Approx. 150 g (Including packing box)

Suffix code

Model	Code					Information
HSR-2	□	□	□	□	□	Single phase solid state relay
Input voltage	D					4 – 32 V d.c.
	A					90 – 264 V a.c.
Rated load current		10				10 A
		20				20 A
		30				30 A
		40				40 A
		50				50 A
		70				70 A
Load voltage			2			90 – 264 V a.c. (low voltage)
			4			90 – 480 V a.c. (high voltage)
Operation method				Z		Zero Cross Switching
				R		Random Switching
Radiator attachment state					–	No indication (no radiator)
					T	Radiator in one body type (only with 50 A and 70 A)

Solid State Relay

SSR-3 series 3-phase solid state relay

■ DC input – AC load

CE

109 X 60 X 31.25			
90 – 264 V a.c.			
90 – 480 V a.c.			
600 V			
800 V	1,200 V		
10 A	20 A	30 A	40 A
50/60 Hz (Dual usage)			
170 A	260 A	420 A	
170 A	250 A	370 A	
20 ㎃ max			
Less than 1.6 V (RMS)			
5 – 24 V d.c.			
4.6 – 32 V d.c.			
Less than 4 ㏀			
more than 4.6 V d.c.			
Constant-current system : 12 ㎃ (±3)			
1/2 Cycle + 1 ms max. ("R"type below 1 ms)			
500 V d.c., 100 ㏁ (Between the input / output and case)			
2,500 V a.c. (For 1 min at 60 ㎐)			
10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours			
1,000 ㎨, X,Y,Z each axis 3 times			
–30 ~ 90 ℃			
–5 ~ 40 ℃ (But without frostiness)			
45 ~ 85 % RH			
2level pollution			
Resistive load / Inductive load			
IEC 62314			
Approx. 227g			

■ AC input – AC load

CE

109 X 60 X 31.25			
90 – 264 V a.c.			
90 – 480 V a.c.			
600 V			
800 V	1,200 V		
10 A	20 A	30 A	40 A
50/60 Hz (Dual usage)			
170 A	260 A	420 A	
170 A	250 A	370 A	
20 ㎃ max			
Less than 1.6 V (RMS)			
100 – 240 V a.c.			
70 – 264 V a.c.			
Less than 40 ㏀			
more than 70 V a.c.			
220 V a.c. : 8 mA			
1/2 Cycle + 1 ms max. (“R”type below 1 ms)			
500 V d.c., 100 ㏁ (Between the input / output and case)			
3,000 V a.c. (For 1 min at 60 ㎐)			
10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours			
1,000 ㎨, X,Y,Z each axis 3 times			
–30 ~ 90 ℃			
–5 ~ 40 ℃ (But without frostiness)			
45 ~ 85 % RH			
2level pollution			
Resistive load / Inductive load			
IEC 62314			
Approx. 227 g			

Suffix code

□	□	□	□	□	3–Phase Solid State Relay
D					5 – 24 V d.c.
A					100 – 240 V a.c.
		10			10 A
		20			20 A
		30			30 A
		40			40 A
			2		90 – 264 V a.c. (Low)
			4		90 – 480 V a.c. (High)
				Z	Zero Cross Switching (Standard product)
				R	Random Switching

Solid State Relay

HSR-3 series 3-phase solid state relay

■ DC input – AC load (Low voltage : 90 – 264 V a.c.)

CE

109 X 75 X 36					
5 – 24 V d.c.					
4 – 32 V d.c.					
Less than 4 kΩ					
More than 3 V d.c.					
Less than 1.4 V d.c.					
100 – 240 V a.c.					
90 – 264 V a.c.					
10 A	20 A	30 A	40 A	50 A	70 A
125 A	260 A	315 A		580 A	
1.5 V	1.8 V				
1.5 mA	below 1.8 mA			15 mA	
Approx. 400 g (Including packing box)					

■ AC input – AC load (Low voltage : 90 – 264 V a.c.)

CE

109 X 75 X 36					
100 – 240 V a.c.					
90 – 264 V a.c.					
Less than 40 kΩ					
More than 72 V a.c.					
Less than 50 V a.c.					
100 – 240 V a.c.					
90 – 264 V a.c.					
10 A	20 A	30 A	40 A	50 A	70 A
125 A	260 A	315 A		580 A	
1.3 V	1.6 V	1.8 V			
20 mA				15 mA	
Approx. 400 g (Including packing box)					

■ DC input – AC load (High voltage : 90 – 480 V a.c.)

CE

109 X 75 X 36					
5 – 24 V d.c.					
4 – 32 V d.c.					
Less than 4 kΩ					
More than 3 V d.c.					
Less than 1.4 V d.c.					
100 – 440 V a.c.					
90 – 480 V a.c.					
10 A	20 A	30 A	40 A	50 A	70 A
170 A	250 A	315 A		580 A	
1.95 V	1.8 V	1.8 V			
below 20 mA					
Approx. 400 g (Including packing box)				approx. 2000 g	approx. 2600 g

■ AC input – AC load (High voltage : 90 – 480 V a.c.)

CE

109 X 75 X 36						
100 – 240 V d.c.						
90 – 264 V d.c.						
Less than 72 kΩ						
More than 75 V a.c.						
Less than 40 V a.c.						
100 – 440 V a.c.						
90 – 480 V a.c.						
10 A	20 A	30 A	40 A	50 A	70 A	
170 A	250 A	350 A	370 A	580 A		
1.95 V	1.8 V					
below 20 mA						
Approx. 400 g (Including packing box)				approx. 2000 g (including packing box)	approx. 2600 g (including packing box)	

■ General specification

500 V d.c. 100 MΩ (Between I/O and case)
2,500 V a.c. (1minute at 60 Hz)
10 – 55 Hz Double amplitude width 1.5 mm/ X.Y.Z each direction for 2 hours
1,000 % X.Y.Z each axis 3 times
–30 ~ 90 ℃
–20 ~ 80 ℃
45 ~ 85 % RH

Suffix code

Model	Code					Information
HSR-2	□	□	□	□	□	3-phase solid state relay
Input voltage	D					4 – 32 V d.c.
	A					90 – 264 V a.c.
Rated load current		10				10 A
		20				20 A
		30				30 A
		40				40 A
		50				50 A
		70				70 A
Load voltage			2			90 – 264 V a.c. (low voltage)
			4			90 – 480 V a.c. (High voltage)
Operation method				Z		Zero cross switching (standard product)
				R		Random switching
Radiator attachment state					–	No indication (no radiator)
					T	Radiator in one body type (only with 50A and 70A)

(Note) Operation method Z: zero cross switching, R: random switching

Solid State Relay

HSR-SL series Slim type Single phase solid state relay

Specification

CE

22.42 X 99 X 74	22.4 X 99 X 98.5		44.4 X 99 X 98.5
–	22.4 X 99 X 98.5	44.4 X 99 X 98.5	85 X 114 X 118
90 – 264 V a.c.			
90 – 480 V a.c.			
600 V			
800 V		1,200 V	
10 A	15 A	25 A	40 A
50/60 Hz (Dual usage)			
170 A		260 A	420 A
170 A		250 A	370 A
20 ㎃ max			
Less than 1.6 V (R.M.S)			
5 – 24 V d.c.			
4 – 32 V d.c.			
Less than 4 ㏀			
more than 3 V d.c.			
Less than 1.5 V d.c.			
Constant-current system : 8 ㎃ (±3)			
1/2 Cycle + 1 ms max. ("R"type below 1 ms)			
500 V d.c., 100 ㏁ (Between the input / output and case)			
3,000 V a.c. (For 1 min at 60 ㎐)			
10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours			
1,000 ㎨, X,Y,Z each axis 3 times			
–30 ~ 90 ℃			
–5 ~ 40 ℃ (But without frostiness)			
45 ~ 85 % RH			
2level pollution			
Resistive load / Inductive load			
IEC 62314			
Approx. 190 g	Approx. 230 g		Approx. 372 g

Suffix code

Model	Code						Information	
HSR-SL	□	□	□	□	□	-□	Slim Type Single-Phase Solid State Relay	※ 2 contact : Only available for 15 A items (HSR-SLD2C152Z, HSR-SLD2C154Z) ※ Heat sink overheating (80 ℃) alarm type is available for the 10 A product with low/high voltage (HSR-SLD102Z-AL, HSR-SLD104Z-AL)
Input Control Voltage	D						4 – 32 V d.c.	
Contact		–					1 contact (No mark)	
		2C					2 contact (Only for 15 A)	
Rated load current			10				10 A (Alarm type product on demand)	
			15				15 A	
			25				25 A	
			40				40 A	
Rated load voltage				2			90 – 264 V a.c. (Low)	
				4			90 – 480 V a.c. (High)	
Operation method					Z		Zero Cross Switching (Standard product)	
					R		Random Switching	
Option						AL	Heat sink overheating 80 ℃ (For 10 A)	

HSR-2SL series Slim type Single phase solid state relay

Specification

CE

58 X 96.6 X 130	79 X 96.6 X 131.3	95 X 96.6 X 156.7
90 – 264 V a.c.		
90 – 480 V a.c.		
600 V		
1,200 V		
25 A		40 A
50/60 Hz (Dual usage)		
260 A		420 A
250 A		370 A
Less than 10 ㎃		
Less than 1.8 V (RMS)		
4 ㎸		
6 ㎸		
5 – 24 V d.c.		
4 – 32 V d.c.		
Less than 4 ㏀		
More than 3 V d.c.		
Less than 1.5 V d.c.		
Constant-current system : 10 ㎃ (±3)		
24 V d.c.		
20 – 26 V d.c.		
Max 25 ㎃, Max 40 ㎃ in case of Alarm output (Base on 24 V d.c.)		
Less than 30 V d.c.		
Less than 50 ㎃		
500 mW		
Transistor open collector (Hi at detection of problem)		
1/2 Cycle + 1 ms max. ("R"type below 1 ms)		
500 V d.c., 100 ㏁ (Between the input / output and case)		
2,500 V a.c. (For 1 min at 60 ㎐)		
10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours		
1,000 ㎨, X,Y,Z each axis 3 times		
-30 ~ 90 ℃		
-20 ~ 80 ℃ (But without frostiness)		
45 ~ 85 % RH		
2level pollution		
IP20		
Resistive load / Inductive load		
IEC 62314		
Approx. 1,000 g		Approx. 1,300 g

Suffix code

Model	Code			Information
HSR-2SLD	□	□	□	2 wire breaking alarm output contactless relay (Alarm open collector output)
HSR-2SE				2-wire isolated low-cost solid state relay (Alarm bimetallic contact output)
Rated load current	25			25 A
	40			40 A
Rated load voltage		2		90 – 264 V a.c. (Low)
		4		90 – 480 V a.c. (High)
Operation method			Z	Zero Cross Switching (Standard product)
			R	Random Switching

Solid State Relay

HSR-3SL series Slim Type 3-Phase Solid State Relay

Specification

Model			HSR-3SLD152Z	HSR-3SLD252Z	HSR-3SLD402Z
		High	HSR-3SLD154Z	HSR-3SLD254Z	HSR-3SLD404Z
Appearance					
W X H X D (mm)			79 X 96.6 X 120		95 X 96.6 X 146
LOAD	Rated Load Voltage	Low	90 – 264 V a.c.		
		High	90 – 480 V a.c.		
	Peak Voltage (Non-repetition)	Low	600 V		
		High	800 V	1,200 V	
	Rated load current		15 A (40 ℃)	25 A (25 ℃)	40 A (25 ℃)
	Frequency		50/60 Hz (Dual usage)		
	Surge current (8.3 ms No repetition)	Low	170 A	260 A	420 A
		High	170 A	250 A	370 A
	Leakage current		20 ㎃ max		
	Output ON voltage dropping		Less than 1.6 V (RMS)		
INPUT	Rated Voltage		5 – 24 V d.c.		
	Operating Voltage Range		4 – 32 V d.c.		
	Impedance		Less than 4 ㏀		
	Operation Voltage		More than 3 V d.c.		
	Reset Voltage		Less than 1.5 V d.c.		
	Input Current		Constant-current system : 10 ㎃ (±3)		
Response Time			1/2 Cycle + 1 ms max. ("R"type below 1 ms)		
Insulating Resistance			500 V d.c., 100 ㏁ (Between the input / output and case)		
Dielectric strength			3,000 V a.c. (For 1 min at 60 ㎐)		
Vibration resistance			10 – 55 ㎐, Double amplitude : 1.5 ㎜, X,Y, and Z direction for 2 hours		
Shock resistance			1,000 ㎨, X,Y,Z each axis 3 times		
Storage Temperature			-30 ~ 90 ℃		
Ambient Temperature			-20 ~ 80 ℃ (But without frostiness)		
Ambient Humidity			45 ~ 85 % RH		
Weight			Approx. 1,000 g		Approx. 1,300 g

Suffix code

Model	Code				Information
HSR-3SL	□	□	□	□	Slim Type 3-Phase Solid State Relay
Input Control Voltage	D				4 – 32 V d.c.
Rated load current		15			15 A
		25			25 A
		40			40 A
Rated load voltage			2		90 – 264 V a.c. (Low voltage)
			4		90 – 480 V a.c. (High voltage)
Operation method				Z	Zero Cross Switching (Standard product)
				R	Random Switching

HEATSINK (HSP series / HSM series)

HSR-2□10□□	HSR-2□20□□	HSR-2□30□□	HSR-2□10□□	HSR-2□20□□	HSR-2□40□□	HSR-3□20□□	HSR-3□40□□
		HSR-2□40□□		HSR-2□30□□	HSR-3□10□□	HSR-3□30□□	
							
10 A	20 A	30 A	10 A	20 A	40 A	20 A	40 A
		40 A		30 A	10 A	30 A	
48 mm	80 mm	109 mm	70 mm	110 mm	150 mm	200 mm	250 mm

DPS series Power Supply

Specification

Model	DPS-15S	DPS-30S	DPS-50S	DPS-75S
Appearance	CE 	CE 	CE 	CE 
Dimension (㎜)	25 X 90 X 103	40 X 90 X 103	40 X 90 X 103	56 X 124 X 97.8
Power output	15 W	30 W	50 W	75 W
Input voltage	100 – 240 V a.c. (※ Designed voltage range : 85 – 264 V a.c.)			
Output voltage	5 V, 12 V, 15 V, 24 V			12 V, 24 V, 48 V
Voltage fluctuation range	±5 ~ 10 % (Varies due to the internal VR)			
Protective circuit	Over voltage, Over current, Over heat, Short circuit			
Dielectric strength	2,700 V a.c. for 1 minute (Between the input terminal and output terminal)			
Insulation resistance	100 MΩ min, 500 V d.c. (Between the input terminal and output terminal)			

Model	DPS-100S	DPS-120S	DPS-180S	DPS-240S
Appearance	CE 	CE 	CE 	CE 
Dimension (㎜)	56 X 124 X 97.8	66 X 124 X 97.8	66 X 124 X 97.8	125.5 X 124 X 97.8
Power output	100 W	120 W	180 W	240 W (※ But, DPS-240S-12 : 216 W)
Input voltage	100 – 240 V a.c. (85 – 264 V a.c.)	100 – 120 V a.c. / 200 - 240 V a.c. ※ Auto-select input		
Output voltage	12 V, 24 V, 48 V		24 V, 48 V	12 V, 24 V, 48 V
Voltage fluctuation range	±5 ~ 10 % (Varies due to the internal VR)			
Protective circuit	Over voltage, Over current, Over heat, Short circuit			
Dielectric strength	2,700 V a.c. for 1 minute (Between the input terminal and output terminal)			
Insulation resistance	100 MΩ min, 500 V DC (Between the input terminal and output terminal)			

Suffix code

□	□	□	DPS Power supply (DIN Rail Type)
15			15 W
30			30 W
50			50 W
75			75 W
100			100 W
120			120 W
180			180 W
240			240 W (※ Only DPS-240S-12 : 216 W)
	S		1 Output (Single output)
		05	5 V d.c. (DPS-75S, DPS-100S, DPS-120S, DPS-180S, DPS-240S Exclude)
		12	12 V d.c. (DPS-180S Exclude)
		15	15 V d.c. (DPS-75S, DPS-100S, DPS-120S, DPS-180S, DPS-240S Exclude)
		24	24 V d.c.
		48	48 V d.c. (DPS-15S, DPS-30S, DPS-50S Exclude)

Power Supply

TPS series Power Supply

Specification

Model	TPS-15S	TPS-30S	TPS-50S	TPS-55T	TPS-75S	TPS-100S
Appearance	CE 	CE 	CE 	CE 	CE 	CE 
Dimension (㎜)	64.1 X 97.5 X 32	79 X 98 X 37	83 X 125 X 39.8	83 X 125 X 39.8	83 X 125 X 39.8	93 X 199 X 50
Power output	15 W	30 W	50 W	55 W	75 W	100 W
Input voltage	100 – 240 V a.c. (※ Designed voltage range : 88 – 264 V a.c.)					100 – 120 / 200 – 240 V a.c. (50 – 60Hz)
Output voltage	5 V, 12 V, 15 V, 24 V			A, B, C	5 V, 12 V, 15 V, 24 V	
Voltage fluctuation range	±5 ~ ±10 % (Varies due to the internal VR)					
Protective circuit	Over current, Over voltage, Over heat, Short circuit					
Dielectric strength	2,700 V a.c. for 1 minute (Between the input terminal and output terminal)					
Insulation resistance	100 ㏁ min. 500 V d.c. (Between the input terminal and output terminal)					

Model	TPS-150S	TPS-220S	TPS-350S	TPS-450S	TPS-30D	TPS-50D
Appearance	CE 	CE 	CE 	CE 	CE 	CE 
Dimension (㎜)	93 X 209 X 65	93 X 209 X 65	115 X 230 X 50	115 X 230 X 50	83 X 125 X 39.8	96 X 135 X 40.2
Power output	150 W	220 W	350 W	450 W	30 W	50 W
Input voltage	100 – 120 / 200 – 240 V a.c. (50 – 60Hz)			100 – 240 V a.c. (※ Designed voltage range : 88 – 264 V a.c.)		
Output voltage	5 V, 12 V, 15 V, 24 V	12 V, 15 V, 24 V	12 V, 24 V, 48 V	12 V, 24 V, 48 V	24/05 V, 24/12 V, 24/24 V	
Voltage fluctuation range	±5 ~ ±10 % (Varies due to the internal VR)					
Protective circuit	Over current, Over voltage, Over heat, Short circuit					
Dielectric strength	2,700 V a.c. for 1 minute (Between the input terminal and output terminal)					
Insulation resistance	100 ㏁ min. 500 V d.c. (Between the input terminal and output terminal)					

						
	83 X 125 X 39.8	115 X 230 X 50	64.1 X 97.5 X 32	79 X 98 X 37	83 X 125 X 39.8	93 X 199 X 50
	75 W	230 W	15 W	30 W	50 W	150 W
	100 – 240 V a.c. (※ Designed voltage range : 88 – 264 V a.c.)	100 – 120 / 200 – 240 V a.c. (50 – 60Hz)	100 – 240 V a.c. (※ Designed voltage range : 88 – 264 V a.c.)			100 – 120 / 200 – 240 V a.c. (50 – 60Hz)
	24/05V, 24/12 V, 24/24 V	24/05 V, 24/12 V	5 V, 12 V, 15 V, 24 V, 48 V			12 V, 24 V, 48 V
	±5 ~ ±10 % (Varies due to the internal VR)					
	Over current, Over voltage, Over heat, Short circuit					
	2,700 V a.c. for 1 minute (Between the input terminal and output terminal)					
	100 MΩ min, 500 V d.c. (Between the input terminal and output terminal)					

Suffix code

■ TPS series

Model	Code			Information	
TPS–	□	□–	□	TPS Power supply (Enclosed Type)	
Power output	15			15W, 30W, 50W, 55W, 75W, 100W, 150W, 220W, 230W, 350W, 450W	
Number of output voltage		S		1 Output	
		D		2 Output (Only for 30W, 50W, 75W, 230W)	
		T		3 Output (Only for 55W)	
Output voltage classification			5	5 V d.c. (220W, 350W, 450W Exclude)	1 output (Single Output_
			12	12 V d.c.	
			15	15 V d.c. (350W, 450W Exclude)	
			24	24 V d.c.	
			48	48 V d.c. (15W, 30W, 50W, 75W, 100W, 150W, 220W Exclude)	
			2405	Output 1 : 24 V d.c. / Output 2 : 5 V d.c.	2 output (Dual Output)
			2412	Output 1 : 24 V d.c. / Output 2 : 12 V d.c.	
			2424	Output 1 : 24 V d.c. / Output 2 : 24 V d.c. (230W Exclude)	
			A	Output 1 : 5 V d.c. / Output 2 : 12 V d.c. / Output 3 : –5 V d.c.	3 output (Triple Output)
			B	Output 1 : 5 V d.c. / Output 2 : 12 V d.c. / Output 3 : –12 V d.c.	
			C	Output 1 : 5 V d.c. / Output 2 : 15 V d.c. / Output 3 : –15 V d.c.	

■ EPS series (Economy)

□	□–	□	EPS Power supply (Enclosed Type)
15			15W, 30W, 50W, 150W
	S		1 Output
		5	5 V d.c.(150W Exclude)
		12	12 V d.c.
		15	15 V d.c. (150W Exclude)
		24	24 V d.c.
		48	48 V d.c.

Control Switch

MR series (Aluminum guard type)

Model	PUSH-BUTTON SWITCH				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRF-A(Ø30)	MRF-N(Ø25)	MRF-R(Ø22)	MRF-K(Ø25)	MRF-T(Ø22)

Model	ILLUMINATED PUSH BUTTON SWITCH					
	Aluminum guard type			Plastic guard type		
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22	ON / OFF
Appearance						
Suffix code	MRX-A(Ø30)	MRX-N(Ø25)	MRX-R(Ø22)	MRX-K(Ø25)	MRX-T(Ø22)	MRX-WM2

Model	PILOT LAMP				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRP-A(Ø30)	MRP-N(Ø25)	MRP-R(Ø22)	MRP-K(Ø25)	MRP-T(Ø22)

Model	SELECTOR SWITCH				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRS-A(Ø30)	MRS-N(Ø25)	MRS-R(Ø22)	MRS-K(Ø25)	MRS-T(Ø22)

Model	ILLUMINATED SELECTOR SWITCH				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRT-A(Ø30)	MRT-N(Ø25)	MRT-R(Ø22)	MRT-K(Ø25)	MRT-T(Ø22)

Model	KEY SELECTOR SWITCH		
	Aluminum guard type		
	Flush Ø30	Flush Ø25	Extended Ø22
Appearance			
Suffix code	MRK-A(Ø30)	MRK-N(Ø25)	MRK-R(Ø22)

Model	EMERGENCY STOP BUTTON SWITCH				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRE–AM(Ø30)	MRE–NM(Ø25)	MRE–RM(Ø22)	MRE–KM(Ø25)	MRE–TM(Ø22)
Appearance					
Suffix code	MRE–AR(Ø30)	MRE–NR(Ø25)	MRE–RR(Ø22)	MRE–KR(Ø25)	MRE–TR(Ø22)

Model	ILLUMINATED EMERGENCY STOP BUTTON SWITCH				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRA–AM(Ø30)	MRA–NM(Ø25)	MRA–RM(Ø22)	MRA–KM(Ø25)	MRA–TM(Ø22)
Appearance					
Suffix code	MRA–AR(Ø30)	MRA–NR(Ø25)	MRA–RR(Ø22)	MRA–KR(Ø25)	MRA–TR(Ø22)

Model	BUZZER				
	Aluminum guard type			Plastic guard type	
	Flush Ø30	Flush Ø25	Extended Ø22	Flush Ø25	Extended Ø22
Appearance					
Suffix code	MRB–A(Ø30)	MRB–N(Ø25)	MRB–R(Ø22)	MRB–K(Ø25)	MRB–T(Ø22)

Contact unit		MR–CB
Contact configuration		1a1b
Operation of contact		Snap–action
Installing panel thickness		7.0 ㎜ (When excluded the additional accessories)
		Plastic guard extended type : 7 ㎜ (when excluded the additional accessories)
Material	Contact material	AgSnO2
	Contact cover material	Polycarbonate (PC)
	Contact body material	Polycarbonate (PC)
Mechanical characteristic	Fixed torque	Installing screw : 1.96 N • m max, Terminal screw : 0.78 N • m max
	Operating distance	5 ㎜ ±0.2
	Reflection time	max 3 ㎳
	Durability of actuator	Button : min 1 million times, Selector switch : min 50 thousand times
Electrical characteristic	Dielectric strength	2,000 V a.c. for 1 min
	Contact resistance	Max 50 mΩ (Default)
	Insulation resistance	Min 100 MΩ 500 V d.c
	Switch rating	AC : 6 A 250 V a.c., DC : 10 A 24 V d.c.
	Min load current	5 ㎃ 24 V d.c., 10 ㎃ 110 V d.c.
	Electrical durability	500 thousand times (resistive load)
Light source	Power supply voltage	100 – 240 V a.c. (LED condenser voltage dropping type)
		380 V a.c. (LED condenser voltage dropping type)
		12 – 24 V d.c./a.c. (LED Resistance voltage dropping type)
Environment condition	Ambient temperature	–20 ~ 55 ℃
	Ambient humidity	35 ~ 85 % RH
	Storage temperature	–40 ~ 85 ℃
	Shock resistance	300 ㎨ pulse cycle 11 ㎳
	Vibration resistance	100 ㎨, 10 ㎐ – 55 ㎐, amplitude 0.75 ㎜ (within 1 ㎳)

Control Switch

AR series

Model	PUSH-BUTTON SWITCH		ILLUMINATED PUSH-BUTTON SWITCH		PILOT LAMP	
	Round	Round	Round	ON / OFF	AC	DC
Appearance						
Suffix code	ARF-F,B,P,G,H	ARF-S	ARX-P,G,H	ARX-S	ARP-A1,A2	ARP-B12,B24

Model	SELECTOR SWITCH	ILLUMINATED SELECTOR SWITCH	PILOT WHOLLY TYPE	EMERGENCY PUSH-BUTTON SWITCH	
	Lever	Lever			
Appearance					
Suffix code	ARS-S	ART	ARK	ARE-B,P,R,K	ARE-4XR

Operation	Mechanical	Max. 30 Operations /minute
	Electrical	Max. 30 Operations /minute
Insulation resistance		Min.100 ㏁ (AT 500 V d.c.)
Dielectric strength		1,500 V a.c. 50/60 ㎐ for minute
Vibration	Malfunction Resistance	10 – 55 ㎐ double amplitude width 3 ㎜
Shock	Mechanical Durability	Min.500 ㎨
	Malfunction Resistance	Min.100 ㎨
Life	Mechanical	Min. 0.5 millions operations, 1,000 hour (PILOT LAMP)
	Electrical	Min. 0.1 millions operations, 1,000 hour (PILOT LAMP)
Ambient temperature		-25 ~ 40 ℃
Ambient humidity		45 ~ 85 % RH
Storage temperature		-40 ~ 70℃

LAMP RATINGS

Rated voltage		Rated current		Consumption power	
Incandescent light lamp	LED LAMP	Incandescent light lamp	LED LAMP	Incandescent light lamp	LED LAMP
6.3 V	6 V	150 mA	72 mA	1 W	0.4 W
12 V	12 V	80 mA	36 mA	1 W	0.4 W
24 V	24 V	40 mA	18 mA	1 W	0.4 W

TRANSFORMER RATINGS

Rated voltage	Voltage use	Lamp
110 V a.c.	110 V a.c.	150 mA, 6.3 V a.c. LAMP
220 V a.c.	220 V a.c.	

※ LED lamp switch using transformer is on order made product. Contact block rated is 6 A 250 V a.c.

CR series (Control switch)

Suffix code		Power voltage	Current consumption	Diameter	Remarks
 Push Button Lamp Switch	CR–254	100 – 240 V a.c.	4.4 VA max	Ø25	Red, Green, Blue, Yellow, White
		380 V a.c.	2.7 VA max		
	CR–304	12 – 24 V d.c.	18 mA max	Ø30	
 Push Button Switch	CR–251	5 A, 250 V a.c.	–	Ø25	Red, Green, Blue, Yellow, Black
	CR–301			Ø30	
 Pilot Lamp	CR–252	100 – 240 V a.c.	4.4 VA max	Ø25	Red, Green, Blue, Yellow, White
		380 V a.c.	2.7 VA max		
	CR–302	12 – 24 V d.c.	18 mA max	Ø30	
 Selector Switch	CR–253	5 A, 250 V a.c.	–	Ø25	–
	CR–303			Ø30	
 Emergency Stop Button Switch	CR–257	5 A, 250 V a.c.	–	Ø25	Red, Green, Yellow
	CR–307			Ø30	
 Emergency Stop Button Switch (Push lock turn reset)	CR–257R	5 A, 250 V a.c.	–	Ø25	Red, Green
	CR–307R			Ø30	
 Selector Push Button Switch	CR–308	5 A, 250 V a.c.	–	Ø30	Contact 1a1b
 Key Switch	CR–2511	5 A, 250 V a.c.		Ø25	–
	CR–3011			Ø30	

Control Switch

SR series (Ø16 Small control switch) CE

Model		SRF PUSH-BUTTON	SRX ILLUMINATED PUSH-BUTTON	SRP PILOT-LAMP	SRS SELECTOR	SRK KEY-SELECTOR	SRE EMERGENCY RESET
Appearance							
Ratings		5 A, 250 V a.c.					
Display color		Red, Yellow, Green, Blue, White					
Contact		AgNi					
Insulation resistance		Min.100 MΩ					
Dielectric strength		1500 V a.c. (50/60 Hz for 1min.)					
Vibration	Malfunction Resistance	10 – 55 Hz, Double amplitude 0.75 mm					
Operation	Mechanical	Min. 500,000 times		Min. 100,000 times			
	Electrical	Min. 70,000 times					
Ambient temperature		–20 ~ 50 ℃					
Ambient humidity		45 ~ 88 % RH					
Storage temperature		–40 ~ 70 ℃					

● INCANDESCENT LAMP RATINGS

Power voltage	Power consumption
6.3 V a.c. / d.c.	60 mA
6.3 V a.c. / d.c.	40 mA
6.3 V a.c. / d.c.	20 mA

● LED RATINGS

Power voltage	Power consumption
12 V a.c. / d.c.	20 mA
24 V a.c. / d.c.	15 mA

CR40 series LED Rectangular lamp

Specification

Model	CR40		
Appearance			
Voltage	100 – 240 V a.c.	380 V a.c.	12 – 24 V d.c.
Current consumption	4.4 VA max	2.7 VA max	18 mA max
Cap color	Red, Yellow, Green, Blue, White		
Insulation resistance	Min. 100 MΩ (Within current carrying part & non current carrying part)		
Dielectric strength	1,500 V a.c. for 1 minute		
LED life	above 100,000 Hours		
Ambient temperature	–20 ~ 40 ℃		
Ambient humidity	45 ~ 85 % RH		
Storage temperature	–25 ~ 55 ℃		

Suffix code

Model	Code		Information	
CR40	□	□	CR40 series, LED indicator	
Power supply voltage	A0		110 – 240 V a.c.	LED (Condenser voltage dropping type)
	A3		380 V a.c.	
	D0		12 – 24 V d.c.	LED (Resistance voltage dropping type)
Color of indicator		R	Red, Yellow, Green, Blue, White	

CD series LED Combination display lights

Specification

Model	CD		
Appearance			
Voltage	24 V d.c.	110 / 220 V a.c.	110 / 125 V d.c.
Cap color	Red, Yellow, Green, White, Orange		
Insulation resistance	Min. 100 MΩ (At 500 V d.c.)		
Dielectric strength	1,500 V a.c. for 1minute		
Consumption power	0.68 W(24 V d.c., 28 mA)		
LED	24 V d.c.		
Life	50,000 hours (24 V d.c., 25 ℃)		
Ambient temperature	–20 ℃ ~ 40 ℃		
Ambient humidity	45 ~ 85 % RH		
Storage temperature	–25 ~ 55 ℃		

※Note : CD–S☐ (30 X 30 mm) and CD–R☐ (30 X 40 mm)

Suffix code

Model	Code				Information	
CD	☐	☐	☐	☐	CD series Combination display lights	
Standard type	S				Square type (30 ㎜ ×30 ㎜)	
	R				Rectangular type (30 ㎜ ×40 ㎜)	
Power supply voltage		A			24 V a.c. / d.c.	Without voltage dropping
		B			100 ~ 125 V d.c.	Resistance voltage dropping type
		C			110 V a.c.	Condenser voltage dropping type
		D			220 V a.c.	
LED indicating color			R		Red	
			G		Green	
			Y		Yellow	
			W		White	
			O		Orange	
			A		Blue	
Surface composition				2	1 column ~ 10 column (height)	
				6	1 row ~ 20 rows (Width)	

HY–500 series Power button switch

Model			RATINGS	USE
EXPOSURE		HY–510	3P 250 V a.c. 15A	Electromotor 3 phase power supply ON, OFF
BUILT–IN		HY–512	2P 250 V a.c. 15A	1 phase Electromotor ON, OFF
		HY–513	3P 250 V a.c. 15A	Electromotor for 3 phase power supply ON, OFF
		HY–514	3P 250 V a.c. 15A	Electromotor for 3 phase power supply ON, OFF
EXPOSURE		HY–516	3P 250 V a.c. 15A	Electromotor for 3 phase power supply Direct/reverse revolution for stop 1 phase, 3 phase, right/left for revolution
EXPOSURE		HY–517	3P 250 V a.c. 15A	Electromotor 1 phase, 3 phase ON, OFF

Power Push Button Switch

BE series Power button switch

● STEEL CASE BE

Model		RATINGS	ELECTROMOTOR CAPACITY(KW)		CONTACT TERMINAL	LITERAL DISPLAY	MATERIAL OF CASE
			1Ø100/110V	3Ø200/220V			
 STEEL CASE EXPOSURE	BE 230	3P 30A	–	3.7	M5	ON(black) OFF(red)	cold workable steel plate

● WATER PROOF (BEW, BEWT)

Model		RATINGS	ELECTROMOTOR CAPACITY(KW)		CONTACT TERMINAL	LITERAL DISPLAY	MATERIAL OF CASE
			1Ø100/110V	3Ø200/220V			
 WATER PROOF	BEW 215	3P 15A	0.4	2.2	M4	ON(black) OFF(red)	burning resist ABS
	BEW 230	3P 30A	–	3.7	M5		
 ADVANCED WATER PROOF	BEWT 215	3P 15A	0.4	2.2	M4		
 ADVANCED WATER PROOF	BEWT 315	3P 15A	0.4	2.2	M4	FOR(black) STOP(red) REV(black)	

MAS series Main switch

Specification

Appearance	Suffix code	Rated insulation voltage	Rated current	Material
	MAS–025–A/B	690 V a.c.	25 A	Anti–flammable
	MAS–063–A/B		63 A	
	MAS–125–A/B		125 A	

Suffix code

Model	Code		Information
MAS–	□	□	Main Switch
Rated current	025		25 A a.c. ※IP64
	063		63 A a.c. ※IP55
	125		125 A a.c. ※IP65
Color classification		A	Emergency stop type (Yellow guard / Red handle)
		B	Standard type (White guard / Black handle)

HY-SQ5/255/305/MRK series Cam switch

Specification

Model				Square type	Round type	Handle control type	Circle type	Square key type
Appearance								
Contact part	AC	Voltage		110 / 250 / 440 V				
		Rated current		10 / 7 / 3 A				
		Momentary current		closed momentary current = rated current×10				
	DC	Voltage		24 / 110 / 250 V				
		Resistance	Rated current	10 / 5 / 3 A				
			Momentary current	closed momentary current=rated current×1.1				
		Induction	Rated current	5 / 1 / 0.4 A				
			Momentary current	closed momentary current=rated current×1.1				
	Rated electric current			10 A				
Life	Mechanical			Min. 0.5 millions operations				
	Electrical			Min. 0.1 millions operations				
Insulation resistance				Min. 100 MΩ				
Contact resistance				Max. 15 MΩ (Initial)				
Dielectric strength				1,500 V a.c. 1 minute				
Vibration resistance				10 – 55 Hz double amplitude width 1.5 mm				
Shock resistance				Min. 30G				
Operation power				560 g				
Ambient temperature				–20 ~ 50 ℃				

Suffix code

Model		Code						Information
Appearance	□	□	□	□	□	□		Cam switch
	HY-SQ5							Square type cam switch
	HY-255							Ø 25 type cam switch
	HY-305							Ø 30 type cam switch
Contact type		S						Square type (Standard type)
		C						Round type (for HY-SQ5)
Handle type			H					Standard type (Standard industrial machine)
			R					Switch-board type (A/S, V/S)
			P					Control switch type (C/S)
Notches selection				2				2 positions selection
				3				3 positions selection
				4				4 positions selection
				5				5 positions selection
				6				6 positions selection
Number of contact unit (Number of rows)					1			1 Row
					2			2 Rows
Serial number (Contact formation diagram)						01		Label the serial number of contact formation
						02		Diagram in case of order-made product

※ A/S : ammeter converting switch, V/S : voltmeter converting switch

※ Possible to manufacture 20 A, 250 V product only within the square type contact structure

Model	Code				Information
HY-MRK	4	2	0	2	KEY-CAM SWITCH
Contact formation					Labeled the serial number (Refer to the standard circuit diagram)

Cam Switch

SQ4 Cam switch

Specification

Model		SQ4
Appearance		
Rated Insulation voltage (Ui)		690 V a.c.
Dielectric strength (Uimp)		2,500 V a.c.
Rated Electro Current (Ith)		16 A
Rated Service Voltage (Ie)		16 A
Rated Service Current (Ue)		480 V a.c.
Mechanical Life Expectancy		300,000 Times
Electrical Life Expectancy		AC : 200,000 Times, DC : 100,000 Times
Ambient Temperature		–25 ~ 55 ℃
Ambient Humidity		Max 90 % RH
Altitude		Max 2,000 m
Protective Structure		IP65
Pollution level		3
Component Materials	Body	NY66 GF15 % Level of Resistence to flame
	Cam	ACETAL
	Contact	AgNi
	Terminal	Brass
	Bolt	Iron (Galvanizing)
	Spring	Stainless (STS)
	Handle	Level of PC Resistence to flame

Suffix code

Model	Code							Information
SQ4–	□	□	□–	□	□	□	□	Cam switch
Installation	F							Four holes of panel mounting
Contact type		S						Square type (Standard type)
Handle type			H					Standard type (Standard industrial machine)
			R					Switch–board type (A/S, V/S)
Notches selection				2				2 positions selection
				3				3 positions selection
				4				4 positions selection
				5				5 positions selection
				6				6 positions selection
				7				7 positions selection
Number of contact unit (Number of rows)					1			1 Row
					2			2 Rows
					3			3 Rows
					4			4 Rows
					5			5 Rows
					6			6 Rows
Serial number (Contact formation diagram)						0	1	Label the serial number of contact formation

※ In case of standard item, please check circuit diagram

LIMIT SWITCH CE

Model		ROLLER PLUNGER		TOP BALL PLUNGER		VARIABLE ROLLER LEVER		VARIABLE ROD		ROLLER LEVER		SPRING WIRE		FORK ROLLER LEVER	
		M902	LM902	M903	LM903	M904	LM904	M907	LM907	M908	LM908	M909	LM909	M908R	M908L
Appearance															
Operation speed		0.1 – 1 ㎜													
Frequency	Mechanical	120 /minute													
	Electrical	20 /minute													
Insulation resistance		Min. 100 ㏁ (At 500 V d.c.)													
Dielectric strength		1,000 V a.c. 50/60 ㎐ 1 minute (between charging part), 1,500 V a.c. 50/60 ㎐ 1 minute (between discharging part)													
Contact resistance		Max. 100 ㏁ (initial)													
Vibration	Malfunction Resistance	10 – 55 ㎐ Double amplitude width 1.5 ㎜													
Shock	Mechanical Durability	Min. 1,000 ㎨ (Min. 100G)													
	Malfunction Resistance	Min. 300 ㎨ (Min. 30G)													
Life	Mechanical	Min. 1 Millions operations													
	Electrical	Min. 0.3 Million operation													

● RATINGS

RATED VOLTAGE (V)		NON–INDUCTIVE LOAD(A)				INDUCTIVE LOAD(A)			
		Resistive LOAD		RAMP		INDUCTIVE LOAD		MOTOR LOAD	
		NC	NO	NC	NO	NC	NO	NC	NO
AC	125	15		3	1.5	10		3	1.5
	250	10		2	1	6		2	1
	480	3		1.5	0.8	2		1.5	0.75
DC	8	15		6	3	10		–	
	14	15		6	3	10		–	
	30	6		4	3	5		–	
	125	0.4		0.2	0.2	0.05		–	
	250	0.2		0.1	0.1	0.03		–	

MINI LIMIT SWITCH

Model		Roller Plunger type	CrossRoller Plunger type	Top Plunger type	Roller Adjustable Lever	Rubber Roller Adjustable Lever	Adjustable Rod Lever	Roller Lever	Coil spring type
		HY–L802	HY–L802C	HY–L803	HY–L804	HY–L804RE	HY–L807	HY–L808	HY–L809
Appearance									
Frequency	Mechanical	120 /minute							
	Electrical	30 /minute							
Insulation resistance		Min. 100 ㏁ (At 500 V d.c.)							
Dielectric strength		Between non–continuous terminal : 1500 V a.c. 50/60 ㎐ 1minute Between terminal & non–current carrying metal part : 2,000 V a.c. 50/60 ㎐ 1 minute							
Contact resistance		Max. 25 ㏁ (initial), Max. 100 ㏁ (after testing)							
Vibration	Malfunction Resistance	Min. 10 – 55 ㎐ double amplitude width 1.5 ㎜							
Shock	Mechanical Durability	Min. 300㎨ (30G above)							
	Malfunction Resistance	Min. 100㎨ (10G above)							
Life	Mechanical	Min. 1 million operation (Switching frequency 120 /minute)							
	Electrical	Min. 0.1 millions operations (Switching frequency 20 /minute, at rated load)							
Ambient temperature and humidity		–10 ~ 70 ℃ 95 % RH below (20 ℃)							

● RATINGS

LOAD / RATED VOLTAGE	Resistive LOAD (cosφ≒1)	INDUCTIVE (cosφ≒0.4)
125 V a.c.	5 A	3 A
250 V a.c.	5 A	2 A
125 V d.c.	0.4 A	0.1 A

Limit Switch

N TYPE LIMIT SWITCH

Model		Roller Plunger	Push Plunger	Roller Arm	Rubber Roller Lever	Roller Adjustable Lever	Adjustable Rod Lever	Roller Lever
		LS-802N	LS-803N	LS-803RN	LS-804RE	LS-804N	LS-807N	LS-808N
Appearance								
Frequency	Mechanical	120 /minute						
	Electrical	30 /minute						
Insulation resistance		Min. 100 MΩ (AT 500 V d.c.)						
Contact resistance		Max. 25 MΩ (initial)						
Dielectric resistance		1,000 V a.c. 50/60 Hz for 1 minute, 2,000 V a.c. 50/60 Hz for 1 minute						
Vibration	Malfunction Resistance	10 – 55 Hz double amplitude width 1.5 mm						
Shock	Mechanical Durability	Min. 1000 ㎨ (Min. 100G)						
	Malfunction Resistance	Min. 300 ㎨ (Min. 30G)						
Life	Mechanical	Min. 1 million operation						
	Electrical	Min. 0.1 million operation						
Ambient temperature		–10 ~ 70 ℃						
Ambient humidity		Max. 95 % RH (20 ℃)						

● RATINGS

RATED VOLTAGE (V)		NON-INDUCTIVE Load(A)		INDUCTIVE LOAD(A)			
		Resistive LOAD	RAMP	INDUCTIVE LOAD		MOTOR LOAD	
		NO	NC	NO	NC	NO	NC
AC	125	6	2	6		3	
	250	6	1.5	6		1.5	
DC	8	6	4	6		4	
	14	6	4	6		4	
	30	4	2.5	4		2.5	
	125	0.4	0.1	0.4		0.1	
	250	0.2	0.05	0.2		0.05	

ZCN TYPE LIMIT SWITCH

Model		Plunger type	Hinge roller short lever type	Hinge roller long lever type	Hinge short lever type	Hinge lever type	Hinge long lever type	Vertical roller plunger type	Horizontal roller plunger type	Resin road spring type
		P501O	R504A	R504C	L507A	L507C	L507D	PR508V	PR508H	L509
Appearance										
Operation speed		0.1 mm – 0.5 ㎨								
Frequency	Mechanical	120 /minute								
	Electrical	20 /minute								
Insulation resistance		Min. 100 MΩ (AT 500 V d.c.)								
Contact resistance		Max. 25 MΩ (initial), Max. 100 MΩ								
Dielectric strength		Between charging part : 1,000 V a.c. 50/60 Hz for 1 minute, Between discharging part : 1,500 V a.c. 50/60 Hz for 1 minute								
Vibration	Malfunction Resistance	10 – 55 Hz double amplitude width 1.5 mm								
Shock	Mechanical Durability	Min. 1,000 ㎨ (Min. 100G)								
	Malfunction Resistance	Min. 300 ㎨ (Min. 30G)								
Life	Mechanical	Min. 1 million operation								
	Electrical	Min. 0.3 million operation								
Ambient temperature and humidity		–10 ~ 80 ℃ Max. 25 ~ 95 % RH								

● RATINGS

RATED VOLTAGE (V)		NON-INDUCTIVE LOAD(A)		INDUCTIVE LOAD(A)			
		Resistive LOAD		INDUCTIVE LOAD		MOTOR LOAD	
		N.C	N.O	N.C	N.O	N.C	N.O
AC	125	15		10		3	1.5
	250	10		6		2	1
	600	3		2		1.5	0.75
DC	8	15		10		–	–
	14	15		10		–	–
	30	6		5		–	–
	125	0.4		0.05		–	–
	250	0.2		0.03		–	–

MICRO SWITCH

Model	Panel mounting type	Spring single push button type	Pin push button type	Spring stander push button type	Hinge roller single lever type
	HY-P701A (Z4G1P05B)	HY-P701B (Z4G1P09B)	HY-P701C (Z4G1P01B)	HY-P701D (Z4G1P03B)	HY-R704A (Z4G1L07B)
Appearance					
Model	Hinge roller middle lever type	Hinge roller lever type	2 positions roller lever type	Single position lever type	Middle lever type
	HY-R704B	HY-R704C (Z4G1L03B)	HY-R704-2W	HY-L707A	HY-L707B
Appearance					
Model	Hinge lever type	Special lever type	Hinge special lever type	Roller panel mounting type (Vertical)	Roller panel mounting type
	HY-L707C (Z4G1L01B)	HY-L707D	HY-L707S	HY-PR708A	HY-PR708B (Z4G1P07B)
Appearance					

Operation speed		0.1 ㎜ – 1 ㎐
Frequency	Mechanical	50 – 300 / minute
	Electrical	20 / minute
Insulation resistance		Min. 100 ㏁ (AT 500 V d.c.)
Contact resistance		Max. 50 ㏁ (initial), Max. 2 Ω (after testing)
Vibration resistance		10 – 55 ㎐ double amplitude 0.75㎜
Shock	Mechanical Durability	Min. 1000 ㎨ (Min. 100 G)
	Malfunction Resistance	Min. 300 ㎨ (Min. 30 G)
Dielectric strength		1,000 V a.c. 50/60 ㎐ for 1 minute (between charging part) 1,500 V a.c. 50/60 ㎐ for 1 minute (between discharging part)
Life	Mechanical	Min. 1 Millions Operations (Switching frequency 120 / minute)
	Electrical	Min. 0.3 Millions Operations (Switching frequency 20 / minute, at rated load)
Net weight		31.5 ~ 59.5 g
Rated current		10 A 250 V a.c. (Resistive load)

Foot Switch

HY-100 series Foot switch

Specification

Model	HY-101	HY-102N
Appearance		
Rated voltage	250 V a.c., 10 A	250 V a.c., 10 A
Internal switch	SMV-61A-07H	SMV-61A-07H
Material of case	ABS resin	AL Die-casting

Model	HY-103N	HY-104	HY-105
Appearance			
Rated voltage	250 V a.c., 10 A		
Internal switch	HY-P701B	HY-P701B	HY-P701B
Material of case	AL Die-casting		

Suffix code

Model	Code	Information
HY-10	□	Foot Switch
Appearance	1	Plastic foot switch
	2N	Aluminum foot switch
	3N	Middle size aluminum foot switch
	4	Large size aluminum foot switch
	5	Large size aluminum foot switch

LEL/LES series Mono lever switch

Specification

Model				LONG LEVER	SHORT LEVER
Appearance					
Contact part	AC	Rated voltage		150 V / 250 V / 600 V	
		Rated current		5 A / 3 A / 1 A	
		Cut-off current		Open circuit & Cut-off current=Rated current×10	
	DC	Rated voltage		125 V / 250 V	
		resistance	Rated current	2.2 A / 1.1 A	
			Cut-off current	Rated current×1.1	
		Induction	Rated current	1.2 A / 0.45 A	
			Cut-off current	Rated current×1.1	
	Rated electric current			10 A	
Insulation resistance				Min. 100 Ω	
Dielectric strength				2,500 V a.c. / 1 minute between charging part & between discharging part	
Contact resistance				Max. 20 MΩ below	
Life				mechanical, Min. 0.5 millions operations , electrical: Min. 0.1millions operations	
Ambient temperature				-20 ~ 50 ℃	

Suffix code

Model	Code	Information
LE	□ □ □	Mono lever switch
Lever selection	L	Long lever
	S	Short lever
Stage selection	01	Select 1 position
	02	Select 2 positions
	03	Select 3 positions
	04	Select 4 positions
Returning type	1	Auto returning
	2	Manual returning

HY-1020 series Hoist switch

Specification

Model		HY-1022 (2 BUTTON)	HY-1024 (4 BUTTON)	HY-1026 (6 BUTTON)	HY-1028 (8 BUTTON)	HY-1029 (10 BUTTON)
Appearance						
Protection construction		IP-66(IEC) (Excluding Emergency Switch Type)				
Material · Color	Case	ABS				
	Screw	Cover Bolt (Stainless screw)				
	Button packing	Special rubber (black)				
	Cable bracket	Special rubber (black)				
Insulation resistance		Min. 100 MΩ (At 500 V d.c.)				
Dielectric strength		1,500 V a.c. for 1 minute				
Ambient temperature		-15 ~ 45 ℃				
Ambient humidity		45 ~ 85 % RH				

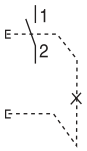
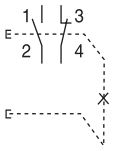
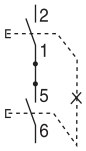
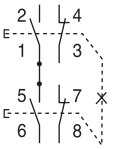
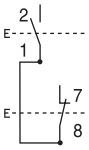
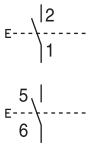
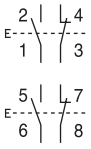
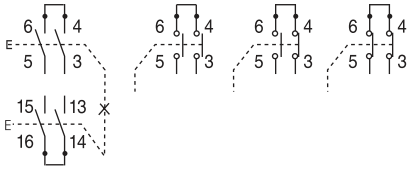
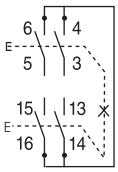
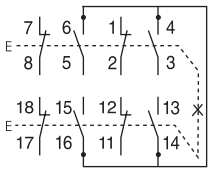
Suffix code

Model	Code						Information	
HY-102	□	□	□	□	□	□	Hoist switch	
Lever selection	2						2	Excluded an emergency switch
	4						4	
	6						6	
	8						8	
	9						9	
Emergency button							No	
	S						Yes	
Switch unit type		A	A	A	A		102A contact unit	2 Buttons / unit
		B	B	B	B		102B contact unit	
		C	C	C	C		102C contact unit	
		D	D	D	D		102D contact unit	
		E	E	E	E		102E contact unit	

※Within the switch unit type, AAAA indication means 4 switch units.

Hoist Switch

Contact unit

Model	Appearance	Contact composition	Explanation
102 A		102A10 (1a)  102A11 (1a1b) 	※ On/Off switch • Pressing the On button will turn ON the power and self-maintenance will be performed • Pressing the Off button will turn OFF the power.
102 B		102B20 (1a-1a)  102B22 (1a1b-1a1b) 	※ Up/Down, forward/back, left/right • This is for the typical circuit. It is a seesaw type so pressing it synchronously is impossible
120 C		102C11 (1a-1b)  102C20 (1a-1a)  102C22 (1a1b-1a1b) 	※ Typical circuit • No mechanical interlock is included, so two buttons can be operated independently.
102 D		102D(2a-2a) 	※ 2 stages switch • Contact separated in 2 stages and operated • Velocity controlling, 2 circuits controlling • Seesaw type so pressing it synchronously is impossible
102 E		102E20 (2a-2a)  102E22 (2a2b-2a2b) 	※ Typical circuit • Max 2a2b-2a2b, 2a-2b • Seesaw type so it is impossible to press it synchronously

Contact unit (Emergency switch)

Model	Appearance	Contact composition	Explanation
102 S			※ Emergency switch (Red) (Push lock-turn reset) • Cut off the power when pressing the button (becomes self-maintenance) • It will return once rotating the button to the printing direction.

※ Mixed returning type is an order-made product so when placing an order please record the returning operation within each channel. Standard contact composition (each direction of product) is 1a

STS series Sign tower

Specification

Model	STS 040	STS 060	STS 080
Appearance	CE 	CE 	CE 
Size	Ø 40	Ø 60	Ø 80
Mount	Plastic round bracket L type bracket Elbow bracket (option)	Plastic round bracket L type bracket Elbow bracket (option)	Plastic round bracket L type bracket Elbow bracket (option)
Rated voltage	24 V d.c., 24 V a.c. (12 V is a custom-made)		
Number of stacks	1, 2, 3, 4, 5 stacks		
Color	Red, Yellow, Green, Blue, White		
Power consumption	Approx. max 6 W for 5 stacks (0.9 W per each lamp)		
Drive	Relay, NPN, PNP Transistor Open Collector Drive		
Material	Heat resistant (ABS)		

Suffix code

Model	Code				Information
STS	□	-□	□	□	Sign tower continuous light
Diameter size	040				Ø40 cylinder type
	060				Ø60 cylinder type
	080				Ø80 cylinder type
Power supply voltage		C51			24 V d.c./a.c. 50 – 60 Hz (dual usage)
		D41			12 V d.c./a.c. 50 – 60 Hz (dual usage)
Module colors			1		1 stack (Red)
			2		2 stack (Red, green)
			3		3 stack (Red, yellow, green)
			4		4 stack (Red, yellow, green, blue)
			5		5 stack (Red, yellow, green, blue, white)
Supporter selection				M	Plastic round supporter (standard)
				L	L type supporter
Optional					Elbow type supporter (EPM)

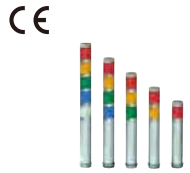
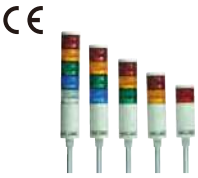
※ 12 V d.c./a.c. : order made product.

Model	L Type	M Type Plastic round supporter (standard)	EPM Elbow type supporter (OPTION)
Appearance			

Sign Tower

STL series Sign tower

Specification

Model	STL 025	STL 040	STL 060	STL 080
Appearance				
Size	Ø 25	Ø 40	Ø 60	Ø 80
Function	Continuous light only	A : Continuous light F : Continuous light, Flashing light, Buzzer		
Rated voltage	24 V d.c.	24 V d.c./a.c., 100 – 240 V a.c. 50–60 Hz		
Number of stacks	1, 2, 3, 4, 5 stacks			
Drive	Relay, NPN, PNP Transistor Open Collector Drive 24 V d.c. / 24 V a.c.	Relay, NPN, PNP Transistor Open Collector Drive 24 V a.c. / V d.c., 100 – 240 V a.c.		
Mount	L type bracket (ST–AG : sold separately)	Direct Plastic round bracket STM–84 (option), STM–105 (option) Elbow type bracket(EPM) (option)		
Color	Red, Yellow, Green, Blue, White			
Power consumption	approx. max 4 W for 5 stacks (0.6W per each lamp)	approx. max 8 W for 5 stacks (1.2 W per each lamp)		
Buzzer	–	75 dB (1 m)	85 dB (1 m)	

Suffix code

Model	Code				Information
STL	□	–□	□	□	Sign tower
Diameter size	025				Ø25 cylinder type
Power supply voltage	D51				24 V d.c. (LED light source)
Module colors		1			1 stack (Red)
		2			2 stack (Red, green)
		3			3 stack (Red, yellow, green)
		4			4 stack (Red, yellow, green, blue)
		5			5 stack (Red, yellow, green, blue, white)
Supporter selection			N		NPN (Common Anode)
			P		PNP (Common Cathode)

※ Color of modules can be changed at customer's request

※ L type supporter sold separately

Supporter

Model	L Type	M Type Plastic round supporter (standard)	EPM Elbow type supporter (OPTION)
Appearance			

Suffix code

Model	Code					Information
STL	□–	□	□	□	□	Sign tower (LED light source)
Diameter 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
Module colors				1		1 stack (Red)
				2		2 stack (Red, green)
				3		3 stack (Red, yellow, green)
				4		4 stack (Red, yellow green, blue)
				5		5 stack (Red, yellow, green, blue, white)
Supporter selection					D	Direct installation (bolt fixing installation)
					L	L type supporter
					M	Plastic supporter (standard)
Optional						Selecting type supporter (STM)
						Elbow type supporter installation (EPM)

※ Composition of stacking modules : Upper side (1st stack) to the lower side.

STA series (Ø25) Sign tower

Specification

Model	VOLTAGE	BULB	COLOR
HY-STA-TB-012	12 V a.c. / d.c.	12 V, 2 W	Red,Green
HY-STA-TB-013	12 V a.c. / d.c.	12 V, 2 W	Red,Yellow,Green
HY-STA-TB-014	12 V a.c. / d.c.	12 V, 2 W	Red,Yellow,Green,Blue
HY-STA-TB-022	24 V a.c. / d.c.	24 V, 2 W	Red,Green
HY-STA-TB-023	24 V a.c. / d.c.	24 V, 2 W	Red,Yellow,Green
HY-STA-TB-024	24 V a.c. / d.c.	24 V, 2 W	Red,Yellow,Green,Blue
HY-STA-TB-102	110 V a.c.	110 V, 2 W	Red,Green
HY-STA-TB-103	110 V a.c.	110 V, 2 W	Red,Yellow,Green
HY-STA-TB-104	110 V a.c.	110 V, 2 W	Red,Yellow,Green,Blue
HY-STA-TB-202	220 V a.c.	220 V, 2 W	Red,Green
HY-STA-TB-203	220 V a.c.	220 V, 2 W	Red,Yellow,Green
HY-STA-TB-204	220 V a.c.	220 V, 2 W	Red,Yellow,Green,Blue

Suffix code

Model	Code		Information
STA	□	□	Sign tower (Ø25)
Power supply voltage	01		12 V d.c./a.c.
	02		24 V d.c./a.c.
	10		110 V a.c.
	20		220 V a.c.
Stacking modules		2	2 stack (Red, green)
		3	3 stack (Red, yellow, green)
		4	4 stack (Red, yellow, green, blue)

※ L type supporter sold separately

Sign Tower

HY-STE series (Ø60) Sign tower

Specification

Base unit specification

Model	STE060-BAD51	STE060-BFD51	STE060-BAA11	STE060-BFA11	Dimension
Power supply voltage	24 V d.c.		100 – 240 V a.c. 50 – 60 Hz		 DC type AC type
Function	Lighting only	Lighting, Flickering, Buzzer (External signal)	Lighting only	Lighting, Flickering, Buzzer (External signal)	
Flickering time	–	60 times / minute	–	60 times / minute	
Buzzer sound types	–	A single melody / beeping	–	A single melody / beeping	
Size of buzzer sound	–	85 dB (1 m distance)	–	85 dB (1 m distance)	
Consumption of electrical power	–	1.2 W	–	1.2 W	
Ambient Temperature/Humidity	–5 ℃ ~ 50 ℃ / 35 ~ 85 % RH (with no condensation)				
Weight	76 g	96 g	160 g	178 g	

LED unit specification

Model	STE060-LR	STE060-LY	STE060-LG	STE060-LB	STE060-LW
Dimension					
Power supply voltage	24 V d.c.				
Consumption of electrical power	1.2 W				
Light source	LED				
Emission angle	360 °				
Ambient Temperature/Humidity	–5 ℃ ~ 50 ℃ / 35 ~ 85 % RH (with no condensation)				
Weight (g)	43 g				

Suffix code

Model	Code	Description
STE060 –	□ □ □ □	Ø60 LED Light sign tower
Function	A	Lighting only
	F	Lighting, Flickering, Buzzer (External signal)
Power supply voltage	D51	24 V d.c.
	A11	100 – 240 V a.c. 50– 60 Hz
Stacking modules	1	1 stack (Red)
	2	2 stacks (Red, Green)
	3	3 stacks (Red, Yellow, Green)
	4	4 stacks (Red, Yellow, Green, Blue)
	5	5 stacks (Red, Yellow, Green, Blue, White)
Supporter selection	L	L type supporter (Standard type)
	E	Elbow type supporter (EPM-18)
	M	Plastic supporter (MP-60)
	S	Plastic supporter (ST-011)

※ The color was arranged from top to bottom in following order, Red, Yellow, Green, Blue, and White. There are two types of functions which are lightening only / Lightening, Flickering & Buzzer.

Base unit suffix code

Model	Code	Description
STE060 –	□ □ □	STE060 Sign tower base unit
Classification	B	Base unit
Function	A	Lighting only
	F	Lighting, Flickering, Buzzer (External signal)
Power supply voltage	D51	24 V d.c.
	A11	100 – 240 V a.c. 50 – 60 Hz

LED unit suffix code

Model	Code	Description
STE060 –	□ □	STE060 Sign tower LED unit
Classification	L	LED unit
Unit	R	Red unit
	Y	Yellow unit
	G	Green unit
	B	Apua unit
	W	White unit

Supporter

Model	L Type	M Type Plastic round supporter (standard)	EPM Elbow type supporter (OPTION)
Appearance			

HY-TN series (Ø55) Sign tower

Specification

STAGE	Model	VOLTAGE	CONSUMPTION POWER	BULB	LED
CE  1	HY-TN-24-1 HY-TN-220-1	24 V d.c. 220 V a.c.	0.21 A 0.04 A	5 W	
CE  2	HY-TN-24-2 HY-TN-220-2	24 V d.c. 220 V a.c.	0.42 A 0.08 A	5 W	
CE  3	HY-TN-24-3 HY-TN-220-3	24 V d.c. 220 V a.c.	0.63 A 0.11 A	5 W	
CE  4	HY-TN-24-4 HY-TN-220-4	24 V d.c. 220 V a.c.	0.84 A 0.14 A	5 W	
CE  5	HY-TN-24-5 HY-TN-220-5	24 V d.c. 220 V a.c.	1.05 A 0.17 A	5 W	

STAGE	Model	VOLTAGE	CONSUMPTION POWER	BULB	LED	FLASHING
CE  1	HY-TWBN-24-1 HY-TWBN-220-1	24 V d.c. 220 V a.c.	0.21 A 0.04 A	5 W		60 /minute
	HY-TWBLN-24-1 HY-TWBLN-220-1	24 V d.c. 220 V a.c.	48 mA 18 mA		1.2 VA 4 VA	
CE  2	HY-TWBN-24-2 HY-TWBN-220-2	24 V d.c. 220 V a.c.	0.42 A 0.08 A	5 W		
	HY-TWBLN-24-2 HY-TWBLN-220-2	24 V d.c. 220 V a.c.	96 mA 36 mA		1.2 VA 4 VA	
CE  3	HY-TWBN-24-3 HY-TWBN-220-3	24 V d.c. 220 V a.c.	0.63 A 0.11 A	5 W		
	HY-TWBLN-24-3 HY-TWBLN-220-3	24 V d.c. 220 V a.c.	144 mA 54 mA		1.2 VA 4 VA	
CE  4	HY-TWBN-24-4 HY-TWBN-220-4	24 V d.c. 220 V a.c.	0.84 A 0.14 A	5 W		
	HY-TWBLN-24-4 HY-TWBLN-220-4	24 V d.c. 220 V a.c.	192 mA 72 mA		1.2 VA 4 VA	
CE  5	HY-TWBN-24-5 HY-TWBN-220-5	24 V d.c. 220 V a.c.	1.05 A 0.17 A	5 W		
	HY-TWBLN-24-5 HY-TWBLN-220-5	24 V d.c. 220 V a.c.	240 mA 90 mA		1.2 VA 4 VA	

Suffix code

Model	Code		Information	
HY-	☐ ☐ ☐ ☐		HY-TN series sign tower	
Function	TN		Continuous light only	Bulb type
	TWBN		Continuous light, flashing light, buzzer	
Power supply voltage	24		24 V d.c.	
	220		220 V a.c.	
Stacking modules		1	1 stack (Red)	
		2	2 stack (Red, green)	
		3	3 stack (Red, yellow, green)	
		4	4 stack (Red, yellow, green, blue)	
		5	5 stack (Red, yellow, green, blue, white)	
Supporter selection			No indication (L type supporter standard)	
Optional			 ST-011 (Plastic bracket installation)	
			 MP-60 (Plastic bracket installation (Bar type))	
			 EPM (Plastic elbow type bracket)	

Cube Tower

CTB-KBB, CTC-KBM Square pillar type Cube tower (Turn light)

Specification

Model		VOLTAGE	CONSUMPTION POWER	BULB	COLOR	REVOLUTION
 ☐ 82 REVOLVING CUBE LIGHT	HY-CTB-KBB-021	24 V d.c.	12 W	24 V, 10 W	Red	160 /minute
	HY-CTB-KBB-022	24 V d.c.	24 W	24 V, 10 W	Red,Green	
	HY-CTB-KBB-023	24 V d.c.	35 W	24 V, 10 W	Red,Yellow,Green	
	HY-CTB-KBB-201	220 V a.c.	8 W	12 V, 5 W	Red	
	HY-CTB-KBB-202	220 V a.c.	16 W	12 V, 5 W	Red,Green	
	HY-CTB-KBB-203	220 V a.c.	23 W	12 V, 5 W	Red,Yellow,Green	
 ☐ 116 REVOLVING CUBE LIGHT	HY-CTC-KBM-021	24 V d.c.	18 W	24 V, 10 W	Red	130 /minute
	HY-CTC-KBM-022	24 V d.c.	28 W	24 V, 10 W	Red,Green	
	HY-CTC-KBM-023	24 V d.c.	38 W	24 V, 10 W	Red,Yellow,Green	
	HY-CTC-KBM-201	220 V a.c.	13 W	12 V, 5 W	Red	
	HY-CTC-KBM-202	220 V a.c.	18 W	12 V, 5 W	Red,Green	
	HY-CTC-KBM-203	220 V a.c.	23 W	12 V, 5 W	Red,Yellow,Green	

Suffix code

Model	Code		Information
CTB-KBB	☐	☐	82 mm square pillar type Cube tower (Turn light) (buzzer built in)
CTB-KBM	☐	☐	116 mm square pillar type Cube tower (Turn light) (4 melody type built in)
Power supply voltage	02		24 V d.c./a.c.
	10		110 V a.c.
	20		220 V a.c.
Stacking modules		1	1 stack (Red)
		2	2 stack (Red, green)
		3	3 stack (Red, yellow, green)

WME series Wall mounted light

Specification

Model	WME
Appearance	CE 
Function	A : Continuous light F : Continuous light, Flashing light, Buzzer
Body (Color)	B : Beige C : Chrome plating
Rated voltage	24 V d.c., 24 V a.c. (12 V is a custom-made)
Number of stacks	3 stacks basics
Power consumption	2.1 W max
Buzzer	approx 85 dB (1m)
Drive	NPN, PNP Transistor Open Collector Drive 24 V d.c. , 24 V a.c.

Suffix code

Model	Code			Information
WME-	☐	☐	☐	Wall mounted light
Appearance	B			Beige color body
	C			Chrome gold 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 d.c./a.c. 50 – 60 Hz Dual usage
			C41	12 V d.c./a.c. 50 – 60 Hz Dual usage C41 ※optional

WMS series Wall mounted light

Specification

Model	WMS
Appearance	CE 
Function	A : Continuous light F : Continuous light, Flashing light, Buzzer
Body (Color)	Red, Yellow, Green, Blue, White
Rated voltage	24 V d.c., 24 V a.c. (12 V is a custom-made)
Number of stacks	1, 2, 3, 4, 5 stacks
Power consumption	0.5 W per each lamp, max. 3.2 W for 5 stacks F type
Buzzer	70 dB (1m)
Drive	NPN, PNP Transistor Open Collector Drive 24 V d.c. , 24 V a.c.

Suffix code

Model	Code			Information
WMS-	□	□	□	Wall mounted light
Appearance	A			Only for continuous light
	F			Continuous light, flashing light, buzzer (selected by the external signal)
Function		C51		24 V d.c./a.c. 50 – 60 Hz Dual usage (Standard specification)
		C41		12 V d.c./a.c. d50 – 60 Hz Dual usage ※ "C41" Order made
Power supply voltage			1	1 stack (Red)
			2	2 stack (Red, Green)
			3	3 stack (Red, Yellow, Green)
			4	4 stack (Red, Yellow, Green, Blue)
			5	5 stack (Red, Yellow, Green, Blue, White)

WT series Turn light

Specification

Model	WT-□C51□	WT-□A11□
Appearance		
Function	Turn Light	Turn Light
Dimension	Ø 100 (Round cap)	
Power supply voltage	24 V d.c. / a.c. 50 – 60 Hz	100 – 240 V a.c. 50 – 60 Hz
Power consumption	3.3 W max.	6 W max.
Revolution	Approx. 180 turn/ 1 min (reflector)	
Light source	Flat type LED (1 W)	
Cap(sensor)material	PC(Polycarbonate)	
Body	Heat resistant ABS copolymer	
Cap color	Red, Yellow, Green	
Environmental operation range	Temperature : –5 ~ 50 ℃, Humidity : 35 ~ 85 % RH (Without condensation)	

Suffix code

Model	Code			Information
WT-	□	□	□	Wall-mounted type LED turn light
Cap shape	P			Round cap
	F			Square cap
Power supply voltage		C51		24 V d.c. / a.c. 50 – 60 Hz
		A11		100 – 240 V a.c. 50 – 60 Hz
Cap color			R	Red
			Y	Yellow
			G	Green

Turn Light

TLB series Turn light

Specification

Model	TLB 060	TLB 100	TLB 150
Appearance			
Size	Ø70	Ø100	Ø140
Shape	P: Round shape lens, Direct mount (Buzzer) R : Round shape lens, Prop mount F : Square shape lens, Direct mount (Buzzer) X : Square shape lens, Prop mount	P: Round shape lens, Direct mount (Buzzer) F : Square shape lens, Direct mount (Buzzer)	F : Square shape lens, Direct mount (Buzzer)
Function	A : Revolution and continuous light F : Revolution and continuous light, Buzzer (Except stainless material)	A : Revolution and continuous light F : Revolution and continuous light, Buzzer (Except stainless material)	A : Revolution and continuous light F : Revolution and continuous light, Buzzer (Except stainless material)
Rated voltage	24 V d.c., 24 V a.c. (12 V is a custom-made)		
Color	Red, Yellow, Green		
Bulb	24 V 5 W	24 V 10 W	24 V 21 W
Buzzer	Approx. 80 dB for code F (1m)	Approx. 90 dB for code F (1m)	Approx. 90 dB (1m)
Power consumption	max 7 W for code C51, max 11 W for code A11	max 12 W for code C51, max 15 W for code A11	max 24 W for code A, max 33 W for code F
Revolutions	approx. 210 revoltions per minute	approx. 170 revoltions per minute	approx. 85 revoltions per minute
Drive	Relay, NPN, PNP Transistor Open Collector Drive		
Material	ABS		

Suffix code (TLB060)

Model	Code					Information	
TLB-	□	-□	□	□	□	Turn light	
Dimension	060					Ø70 Cap	
Cap shape		P				Round cap direct installation	※ Optional (Supporter : STM-84 )
		F				Rectangular cap direct installation	
		R				Round cap support installation	※ "F" function selection excluded
		X				Rectangular cap support installation	
Function			A			Rotating continuous light	
			F			Rotating continuous light, Buzzer	※ Cap shape, R, X type excluded
Power supply voltage				C51		24 V d.c./a.c. 50 – 60 Hz	
				A11		100 – 240 V a.c. 50 – 60 Hz	
Cap color					R	Red	
					Y	Yellow	
					G	Green	
					B	Blue	

Suffix code (TLB100)

Model	Code					Information	
TLB-	□	-□	□	□	□	Turn light	
Dimension	100					Ø100 Dimension	
Cap shape		P				Round cap direct installation	※ Optional (Supporter : STM-105  , MTM-98 )
		F				Rectangular cap direct installation	
Function			A			Rotating continuous light	
			F			Rotating continuous light, Buzzer	
Power supply voltage				C51		24 V d.c./a.c. 50 – 60 Hz	
				A11		100 – 240 V a.c. 50 – 60 Hz	
Cap color					R	Red	
					Y	Yellow	
					G	Green	
					B	Blue	

Suffix code (TLB150)

Model	Code					Information
TLB-	□	-□	□	□	□	Turn light
Dimension	150					Ø140 Cap
Cap shape		F				Rectangular cap direct installation
Function			A			Rotating continuous light
			F			Rotating continuous light, Buzzer (※ Material "S" excluded)
Power supply voltage				C51		24 V d.c./a.c. 50 – 60 Hz
				A11		100 – 240 V a.c. 50 – 60 Hz
Cap color					R	Red
					Y	Yellow
					G	Green
					B	Blue

T series Turn light

Specification

Model	TR-□□	TX-□□	TF-□□	TP-□□	TFB-□□	TPB-□□
Appearance						
Function	Rotating continuous light				Rotating continuous light, buzzer	
Dimension	Round type cap supporter attachment	Rectangular type cap supporter attachment	Rectangular type cap direct attachment	Round type cap direct attachment	Rectangular type cap direct attachment	Round type cap direct attachment
Power supply voltage	12 V d.c., 24 V d.c., 110/220 V a.c., 50/60 Hz					
Current consumption	0.9 A (When power supply voltage is 12 V d.c.), 0.5 A (When power supply voltage is 24 V d.c.) 0.1 A (When power supply voltage is 110 V d.c.), 0.05 A (When power supply voltage is 240 V d.c.)					
Rotating speed	Approx 130 tome/min					
Light source	Incandescent lamp (BA 15S)					
Lamp capacity	12 V 5 W (When power supply voltage is 12 V d.c.), 24 V 5W (When power supply voltage is 24 V d.c.) 12 V 5 W (When power supply voltage is 110/220 V d.c.)					
Buzzer volume	–				Approx 80 dB	
Cap material	Polycarbonate (PC) resin					
Body	ABS resin					
Lens color	Red, Yellow, Green, Blue					
Degree of protection	IP54					

Suffix code

Model	Code		Information	
Dimension and function	□–	□ □	Turn light (Ø84)	
	TR		Round type cap supporter attaching installation	Rotating continuous light
	TX		Rectangular type cap supporter attaching installation	
	TF		Rectangular type cap direct installation	
	TP		Round type cap direct installation	
	TFB		Rectangular type cap direct installation	Rotating continuous light, buzzer
	TPB		Round type cap direct installation	
Power supply voltage	12		12 V d.c.	
	24		24 V d.c.	
	012		110/220 V a.c. 50 / 60 Hz	
Cap color		R	Red	
		Y	Yellow	
		G	Green	
		B	Blue	

Turn Light

RLA-KB/KBB Turn light

Specification

Model	RLA-KB□	RLA-KBB□□
Appearance		
Function	Rotating continuous light	Rotating continuous light, buzzer
Dimension	Ø118 Cap	
Power supply voltage	12 V d.c., 24 V d.c., 110/220 V a.c. 50/60 Hz	
Power consumption	4.0 W (when power supply voltage is 24 V d.c.), 4.5 W (when power voltage is 220 V a.c.)	
Rotating speed	Approx 80 times/min	
Light source	Incandescent lamp (base rating : BA 15S)	
Buzzer volume	–	Approx 90 dB
Material	Cap: acryl resin, Body : ABS resin	
Cap color	Red, Yellow, Green	
Degree of protection	IP54	

Suffix code

Model	Code			Information	
RLA-	□	□	□	Turn light (Ø118)	
Appearance	KB			Rotating continuous light	
	KBB			Rotating continuous light and buzzer built in	
Power supply voltage and installation method		01		12 V d.c.	※ Direct installing type
		02		24 V d.c.	
		012		110 / 220 V a.c.	
		012M		110 / 220 V a.c.	※ Magnet supporter
		01A		12 V d.c.	※ Cigar jack attachment magnet supporter
		02A		24 V d.c.	
Cap color			R	Red	
			Y	Yellow	
			G	Green	

RLA-WX/WXB Signal light(XENON lamp)

Specification

Model	RLA-WX□□	RLA-WXB□□
Appearance	CE 	
Function	Strobe only	Strobe, Buzzer
Dimension	Ø118 rectangular cap (Direct installation, Magnet attachment type supporter, Magnet attachment type supporter and cigar jack)	
Power supply voltage	12 V d.c., 24 V d.c., 110 V a.c., 220 V a.c. 50/60 Hz, Selected by the suffix code	
Power consumption	7.2 W (when power supply voltage is 24 V d.c.), 12 W (when power supply voltage is 220 V a.c.)	
Strobe speed	Approx. 60 times/min	
Light source	Xenon tube Strobe light	
Buzzer	–	Buzzer built in (approx 90 dB from distance 1 m)
Material	Cap : acryl resin, Body : ABS resin	
Cap color	Red, Blue, White	
Degree of protection	IP54	

Suffix code

Model	Code			Information	
RLA-	□	□	□	Signal light (XENON Lamp)	
Function	WX			Strobe light	
	WXB			Strobe light and buzzer built in type	
Power supply voltage and installation method		01		12 V d.c.	※ Direct installing type
		02		24 V d.c.	
		10		110 V a.c.	
		20		220 V a.c.	
		10M		110 V a.c.	※ Magnet supporter
		20M		220 V a.c.	
		01A		12 V d.c.	※ Cigar jack attachment magnet supporter
		02A		24 V d.c.	
Cap color			R	Red	
			Y	Yellow	
			B	Blue	

LT series Signal light

Specification

Appearance	Suffix code	Power voltage	Power consumption	Number of leds	Revolution	Flickering
	LT–R–12	12 – 24 V a.c. / d.c.	2.9 W max.	24	approx. 90 times for a minutes	approx. 50 times for a minutes
	LT–R–012	110 – 220 V a.c. / d.c.	5 W max.	24		
	LT–P–12	12 – 24 V d.c.	2.9 W max.	24		
	LT–P–012	110 – 220 V a.c.	5 W max.	24		
	LT–PB–12	12 – 24 V d.c.	2.9 W max.	24		
	LT–PB–012	110 – 220 V a.c.	5 W max.	24		

Suffix code

Model	Code			Information	
LT–	☐	☐	☐	Signal light (Ø84 Cap)	
Installation type (Function)	R			Supporter mounting (rotating, flashing)	
	P			Direct mounting (rotating, flashing)	※ Optional supporter (STM–105)
	PB			Direct mounting (rotating, flashing, buzzer built in)	
Power supply voltage		12		12 - 48 V d.c., 12 - 24 V a.c. 50 – 60 Hz	
		012		110/220 V a.c. 50 – 60 Hz	
Cap color			R	Red	
			Y	Yellow	
			G	Green	
			B	Blue	

SLB series Signal light

Specification

Model	SLB 060
Appearance	
Dimension	Ø70 CAP
Shape	P: Round shape lens, Direct mount (Buzzer), R : Round shape lens, Prop mount F : Square shape lens, Direct mount (Buzzer), X : Square shape lens, Prop mount
Function	A : Continuous light F : Continuous light, Flashing light, Buzzer
Rated voltage	24 V d.c., 24 V a.c. (12 V is a custom–made)
Color	Red, Yellow, Green
Light	LED
Drive	NPN, PNP Transistor Open Collector 24 V a.c./d.c.
Power consumption	max. 1 W
Buzzer	75 ~ 85 dB (1m)

Suffix code

Model	Code				Information	
SLB	☐	–☐	☐	☐	Turn light	
Dimension	060				Ø70 Cap	
Design and function		RA			Round type cap supporter mounting installation	Only for Continuous light
		XA			Rectangular type cap supporter mounting installation	
		PA			Round type cap direct installation	
		FA			Rectangular type cap direct installation	
		PF			Round type cap direct installation	Continuous light, flashing light and buzzer selected by the external signal
		FF			Rectangular type cap direct installation	
Power supply voltage			C51		24 V d.c./a.c. 50 – 60 Hz	
			C41		12 V d.c./a.c. 50 – 60 Hz (※ Order–made)	
			A11		110 – 240 V a.c. 50 – 60 Hz	
Cap color				R	Red	
				Y	Yellow	
				G	Green	

Terminal Blocks & The Others

HY-256/306/606/606N Power buzzer

Specification

				
	110 V, 220 V a.c./d.c. 12 V, 24 V d.c.			
	4 VA : HY-256-1,HY-256-2,HY-306-1,HY-306-2 30 mA : HY-256-12,HY-256-24,HY-306-12,HY-306-24		8 VA : HY-606-1,HY-606N-1,HY-606-2,HY-606N-2 30 mA : HY-606-12,HY-606N-2,HY-606-24,HY-606N-24	
	50 / 60 Hz			
	85 dB			
	Ø 25	Ø 30	Ø 65	Exposure type

Suffix code

Model	Code		Information
HY-	☐	☐	Power Buzzer
Dimension	256		For Ø25
	306		For Ø30
	606		Rectangular panel flush type (For Ø66)
	606N		Rectangular panel extended type (☐80)
Voltage		1	110 V a.c., 50/60 Hz
		2	220 V a.c., 50/60 Hz
		12	12 d.c.
		24	24 d.c.

HY-606MD/MA 4 tones melody buzzer

Specification

		
	12 / 24 V d.c.	110 / 220 V a.c.
	2.5 W	
	–	50 / 60 Hz
	98 dB max	
	Ø 66	

Suffix code

☐	4 tones melody buzzer
MD	12 / 24 V d.c.
MA	110 / 240 V a.c.

HY-226M/256M 3 tones electronic buzzer

Specification

		
	100 – 240 V a.c./ 12, 24 V d.c.	100 – 240 V a.c./ 12, 24 V d.c.
	0.6 W / 13.5 W	0.6 W / 13.5 W
	50/60 Hz	50/60 Hz
	80 dB	80 dB
	Ø 22/Ø 25	Ø 25

Suffix code

	☐	☐	3 tones electronic buzzer
	226		Ø22 / Ø25 dual usage (Front side : rectangular type)
	256		For Ø25 installation (Front side : round type)
		MD	12 – 24 V d.c./a.c.
		MA	100 – 240 V a.c.

HYBT series Assembling terminal block

Specification

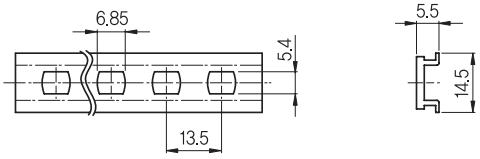
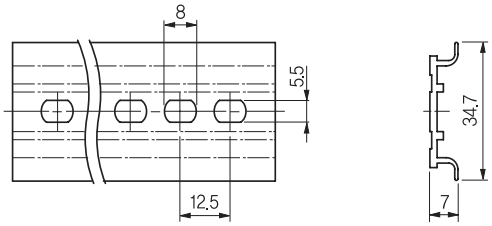
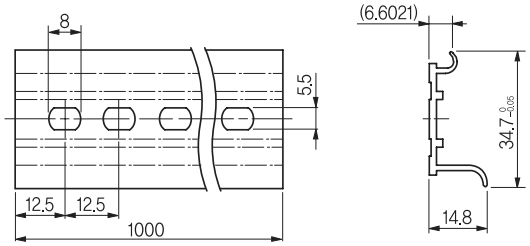
Classification \ Model	HYBT-10A	HYBT-15A	HYBT-15A2	HYBT-25A	HYBT-35A	HYBT-60A	HYBT-100A
							
Rated Insulating voltage	Max. 600 V						
Rated current	10A	15A	15A,□□	25A	35A	60A	100A
Insulation resistance	Min. 100 MΩ						
Dielectric strength	2,500 V a.c. for 1minute between non-current carrying parts						
Terminal bolt	M3	M3.5	M3.5	M4	M4	M6	M6
Ambient temperature	-20 ~ 55 ℃						
Ambient humidity	45 ~ 85 % RH						

Accessory

Applying accessories classification

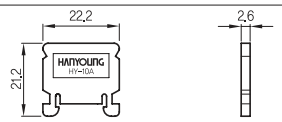
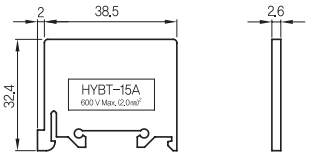
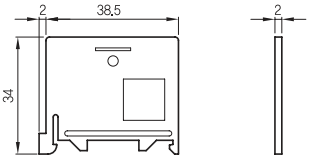
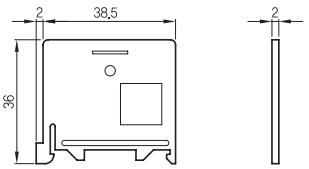
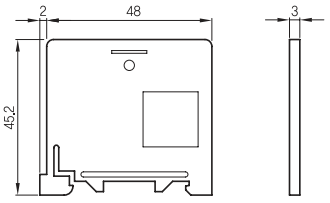
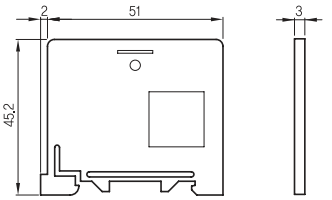
Model	HYBT-10A	HYBT-15A HYBT-15A2	HYBT-25A	HYBT-35A	HYBT-60A	HYBT-100A
Rail	HYBT-CH10	HYBT-01				
Separator	HYBT-SP10	HYBT-02 HYBT-12	HYBT-03	HYBT-04	HYBT-05	HYBT-06
Stopper	HYBT-ST10	HYBT-07				
Terminal cover	HYBT-CV10	HYBT-08			HYBT-09	
Number plate	NBT-03	HYBT-10	HYBT-11			
Short terminal	-	HYBT-13	-	-	-	-

Aluminum rail (DIN Rail)

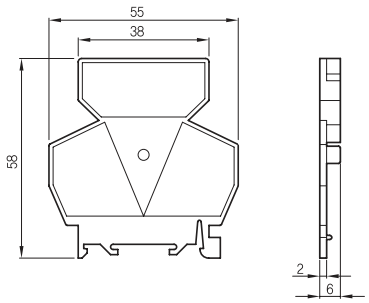
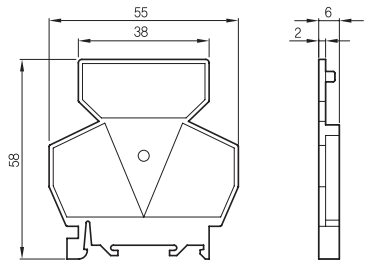
Appearance	Dimension
 HYBT-CH10 (10A)	
 HYBT-01 (15A ~ 100A)	
 HYBT-01A (15 A ~ 100 A for slant purpose)	

Terminal Blocks & The Others

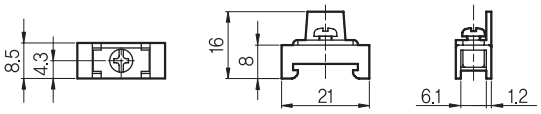
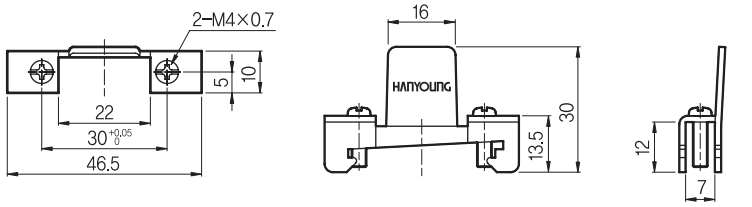
■ Separator

Model	Appearance	Dimension
HYBT-SP10 (10A)		
HYBT-02 (15A)		
HYBT-03 (25A)		
HYBT-04 (35A)		
HYBT-05 (60A)		
HYBT-06 (100A)		

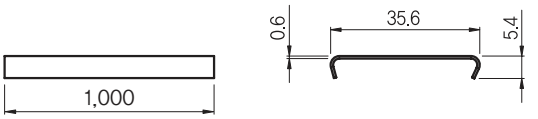
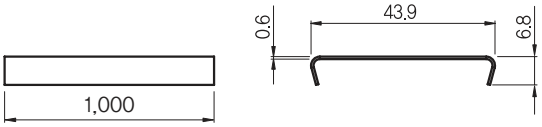
■ Separator

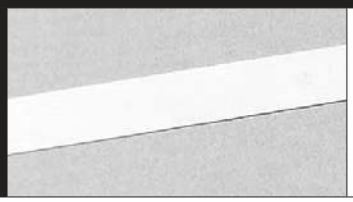
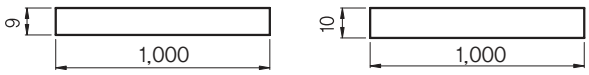
■ Stopper

Model	Appearance	Dimension
HYBT-ST10		
HYBT07		

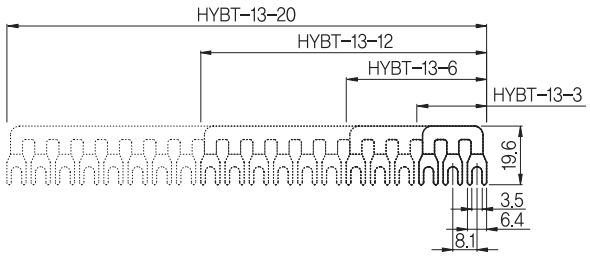
■ Terminal cover

■ Number plate (Seal)

■ Short Bar

Appearance	Dimension
 HYBT-13-3	
 HYBT-13-6	
 HYBT-13-12	
 HYBT-13-20	

※ Short bar HYBT-13-3~13-20 are only for the HYBT-15A

Terminal Blocks & The Others

HYT series Fixing type terminal block

- Rated current 10A

	10A 10P	112	24	17	102.5

- Rated current 20 A

	20A 3P	56	30	20	44
	20A 4P	68	30	20	56
	20A 6P	89	30	20	78
	20A 10P	137	30	20	126
	20A 12P	163	30	20	150.5
	20A 15P	199	30	20	187
	20A 20P	257	30	20	245

- Rated current 30 A

	30A 3P	67	5	24	54.5
	30A 4P	83	35	24	70
	30A 6P	113	35	24	100.5
	30A 10P	153	35	24	143

- Rated current 60 A

	60A 3P	84.5	40	31	28
	60A 4P	113.5	40	31	57

- Rated current 100 A

	100A 3P	104.5	55.5	36.5	35
	100A 4P	140	55.5	36.5	70

- Rated current 150 A

	150A 3P	115.5	67.5	41	39
	150A 4P	153	67.5	41	77

■ Rated current 200 A

		200A 3P	134	72.5	44.5	45
		200A 4P	180	72.5	44.5	90

■ Rated current 300 A

		300A 3P	155.5	83.5	49.5	51.8
		300A 4P	207.5	83.5	49.5	103.6

■ Rated current 400 A

		400A 3P	155.5	83.5	49.5	51.8
		400A 4P	207.5	83.5	49.5	103.6

■ Rated current 500 A

		500A 3P	204	94	59.5	68
		500A 4P	270	93	59.5	136

■ HY-F15 series / HY-F30 series Fuse holder

Specification

Model	F15-1A	F15-1D	F15-2A	F15-2D	F15-3A	F15-3D	F30
Appearance							
Rating	250 V a.c. 15 A	24 V d.c. 10 A	250 V a.c. 15 A	24 V d.c. 10 A	250 V a.c. 15 A	24 V d.c. 10 A	250 V a.c. 30 A
Remark	For AC :Common to 110 – 220 V a.c. For DC :Common to 12 – 24 V d.c. ※Use a ceramic fuse						110 – 600 V a.c. ※Ceramic Fuse

Terminal Blocks & The Others

HY-25/30 series Rolled iron control box

Specification

Appearance	Model	Material	Remark
	HY-2501	Heat resistant ABS resin	Ø25
	HY-2502		
	HY-2503		
	HY-2504		
	HY-2505		
	HY-2506		
	HY-3001	Heat resistant ABS resin	Ø30
	HY-3002		
	HY-3003		
	HY-3004		
	HY-3005		
	HY-3006		

Suffix code

Model	Code		Information
HY-	☐	☐	Rolled iron control box
Installation hole	25		Ø25 Installation hole
	30		Ø30 Installation hole
Number of holes		01	1
		02	2 (03 :3, 04 :4, 05 : 5, 06 : 6)

HYC-M1/M2 series Cable connector

Specification

		PC (resin)	Ø8
		PC (resin)	Ø11

Always with our customers

www.hynux.com

nux
HANYOUNG

Control Switch | Control Instrument | Photo Sensor / Proximity Sensor | Thyristor Power Regulator | Sign tower / Signal light

World Leader in Control & Measurement

MAIN PRODUCTS

Temperature Controller / Recorder / Digital Counter / Timer / Analog Timer / Panelmeter / Multi Pulse Meter
Sensor / Rotary Encoder / Thyristor Power Regulator / Solid State Relay / Power Supply / Control Switch
Hoist Switch / Foot Switch / Mono Lever Switch / Micro Switch / Power Switch / Limit Switch / Cam Switch
Main Switch / Sign Tower / Signal Light / Buzzer / Terminal Block / Fuse Holder / Control Box / Cable Connector

HANYOUNG nux

ADDRESS : 28, Gilpa-ro 71beon-gil, Nam-gu, Incheon, 22121 Korea
T E L : +82-32-876-4697 FAX : +82-32-876-4696
E-mail : overseas@hynux.com

HANYOUNG NUX

MAIN PRODUCTS

Temperature controller / Recorder / Counter / Timer / Panelmeter / Multi pulse meter / Proximity sensor / Photo sensor / Rotary encoder / Thyristor power regulator / Solid state relay / Power supply / Control switch / Combination display light / Power switch / Main switch / Cam switch / Limit switch / Micro switch / Hoist switch / Foot switch / Mono lever switch / Sign tower / Turn light / Buzzer / Terminal block / Fuse holder / Control box / Cable connector

HANYOUNG NUX

HANYOUNG NUX CO.,LTD.

28, Gilpa-ro 71 beon-gil, Nam-gu, Incheon, Korea
Tel : +82-32-876-4697 Fax : +82-32-876-4696
E-mail : overseas@hynux.com

CA170511