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PRODUCT GUIDE

version S9.0



WORLD LEADER IN CONTROL & MEASUREMENT

HANYOUNG nux

 KS A 9001
 ISO 9001

 국가교정기관

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- 

HANYOUNG NUX "One-Stop Process System" - We provide **BEST QUALITY, LOW COST & ON-TIME DELIVERY** to our customers.

HANYOUNG NUX "One-Stop Process System"-

Based upon QCD policy, we provide **HIGH QUALITY, LOW COST,
AND ON-TIME DELIVERY** to our customers.

To meet quality of global standard, we are continuously performing
process innovation and quality activities.

As the realization of one-stop factory, our network system provides
real-time management of R&D, Manufacturing, Sales and Customer service.

We are performing perfect job on delivering products to our customers
on time by applying HIAP(HANYOUNG INNOVATION ACTION PLAN) system.



	Recorder Temperature Controller
	Digital Counter / Timer
	Analog Timer
	Panel meter
	Multi-Pulse meter
	Sensor Rotary Encoder
	TPR SSR
	Control Switch
	Micro Switch
	Limit Switch
	Cam Switch Mono Lever Switch
	Hoist Switch Foot Switch Main Switch
	LED Sign Tower Turn Light Signal Light
	Terminal Block Fuse Holder Control Box



TOUCH PANEL TYPE TEMPERATURE & HUMIDITY CONTROLLER

TD500

TWO CHANNELS PROGRAMMABLE TEMPERATURE CONTROLLER

- TOUCH PANEL 256 COLOR LCD INTERFACE
- HIGH ACCURACY CONTROLLER (1/100°..., 1/10 % RH DISPLAY & CONTROL)
- BUILT-IN LARGE STORAGE CAPACITY (300 PATTERNS / 6,000 SEGMENTS)
- GRAPHIC DISPLAY FOR SV & PV EACH CHANNEL (FOR MAX.360 DAYS)
- RS232, RS485 AND USB COMMUNICATION SUPPORT

TH500

PROGRAMMABLE TEMPERATURE & HUMIDITY CONTROLLER

- UNIVERSAL INPUT (RTD / TC / V d.c)
- UNIVERSAL OUTPUT (RELAY / SSR / SCR)
- TOUCH SCREEN & COLOR LCD INTERFACE
- RS232, RS485 AND USB COMMUNICATION SUPPORT



HYBRID & GRAPHIC RECORDER

- HIGH ACCURACY / HIGH QUALITY
- MULTI CHANNEL RECORDER
- MULTI-INPUT SIGNALS
- CONVENIENT INTERFACE
- POWER SAVING DESIGN
- WIDE APPLICATION FOR CONTROL SYSTEM



GR100



NR100



RT9

DIGITAL TEMPERATURE CONTROLLER

KX series

- AUTO TUNING FUNCTION
- UNIVERSAL INPUT
- CONVERTIBLE CONTROL ACTION (DIRECT OR REVERSE)
- RETRANSMISSION OUTPUT
- VARIOUS OPTIONS AVAILABLE



KX4S (Socket type)

DIGITAL COUNTER / TIMER

GE series

- BATCH COUNTER OUTPUT
- EXTERNAL OUTPUT POWER 12 V 200 mA
- PNP / NPN INPUT SELECTABLE
- ONE SHOT TIME OUTPUT (0.01S ~ 99.99S)



ANALOG & DIGITAL TIMER

T38N/T48N/T57N/TF62N/TF62D

ANALOG TIMER

- APPLY CONVENIENT TIME SET-UP MODE
- VARIOUS TIME RANGES (01, 03, 06, 10, 30, 60, 12)
- HOUR(H) / MINUTE(M) / SECOND(S) ARE PARTICULARLY INTEGRATED

MA4N

ANALOG TIMER

- APPLY CONVENIENT TIME SET-UP MODE
- VARIOUS TIME RANGES (TOTAL 16 TIME RANGES)
- VARIOUS OPERATION CHARTS (TOTAL 6 OPERATION CHARTS)

TT4-P42A/P42B

DIGITAL DUAL TIMER

- PLUG-IN TYPE (8 PINS AND 11 PINS)
- VARIOUS TIME RANGES (0.01 sec ~ 9999 hour)
- AVAILABLE INDIVIDUAL ON-DELAY SETTING FOR 2 OUTPUTS



DIGITAL MULTI PULSE METER / PANEL METER

RP series

DIGITAL MULTI PULSE METER

- AUTO ZERO TIME SETTING FUNCTION
- COMPARATIVE OUTPUT FUNCTION (HH, H, GO, L, LL)
- STARTING COMPENSATION TIMER FUNCTION
- DISPLAY CYCLE SETTING FUNCTION

MP series

DIGITAL MULTI PANEL METER

- MEASURING RMS
- MULTI INPUT RANGE
- WIDE DISPLAY RANGE
- 4 DIGITS (-1999 ~ 9999), 5 DIGITS (19999 ~ 99999)



RP series

MP series

PHOTO SENSOR

PEN series

- BUILT IN POWER (RELAY OUTPUT)
- ATTACHED MOTION DISPLAY LIGHT
- ATTACHED SENSITIVITY ADJUSTMENT VOLUME
- POWER VOLTAGE 24 - 240 V a.c/d.c

PFB series

- INTENSITY CONTROL BY AUTO TEACHING
- 7 SEGMENTS, 4 DIGIT LED
- EASY TO INSTALL
- TIMER SETTING (40ms, 100ms, 500ms, 1s)

PFD series

- ALARM OUTPUT 2 POINTS
- TIME SIGNAL 2 POINTS

PW series

- ADJUSTABLE RANGE SETTING SENSOR
- IP67 STRUCTURE

PS series

- SMALL AND LONGEST DISTANCE DETECTION (THROUGH BEAM TYPE 1m, 7m, 10m)



PROXIMITY SENSOR / ROTARY ENCODER

HYP/HCP series

- FAST AND RELIABLE DETECTION
- SURGE PROTECTION CIRCUIT
- REVERSE POLARITY PROTECTION
- SUITABLE FOR VARIOUS USES

HE series

- INCREMENTAL TYPE
- WIDE POWER VOLTAGE (5V d.c / 5-12 V d.c / 12-24V d.c)
- SIMPLE INSTALLATION STRUCTURE
- VARIOUS OUTPUT SPECIFICATIONS
- EASY TO INSTALL



THYRISTOR POWER REGULATOR

TPR series

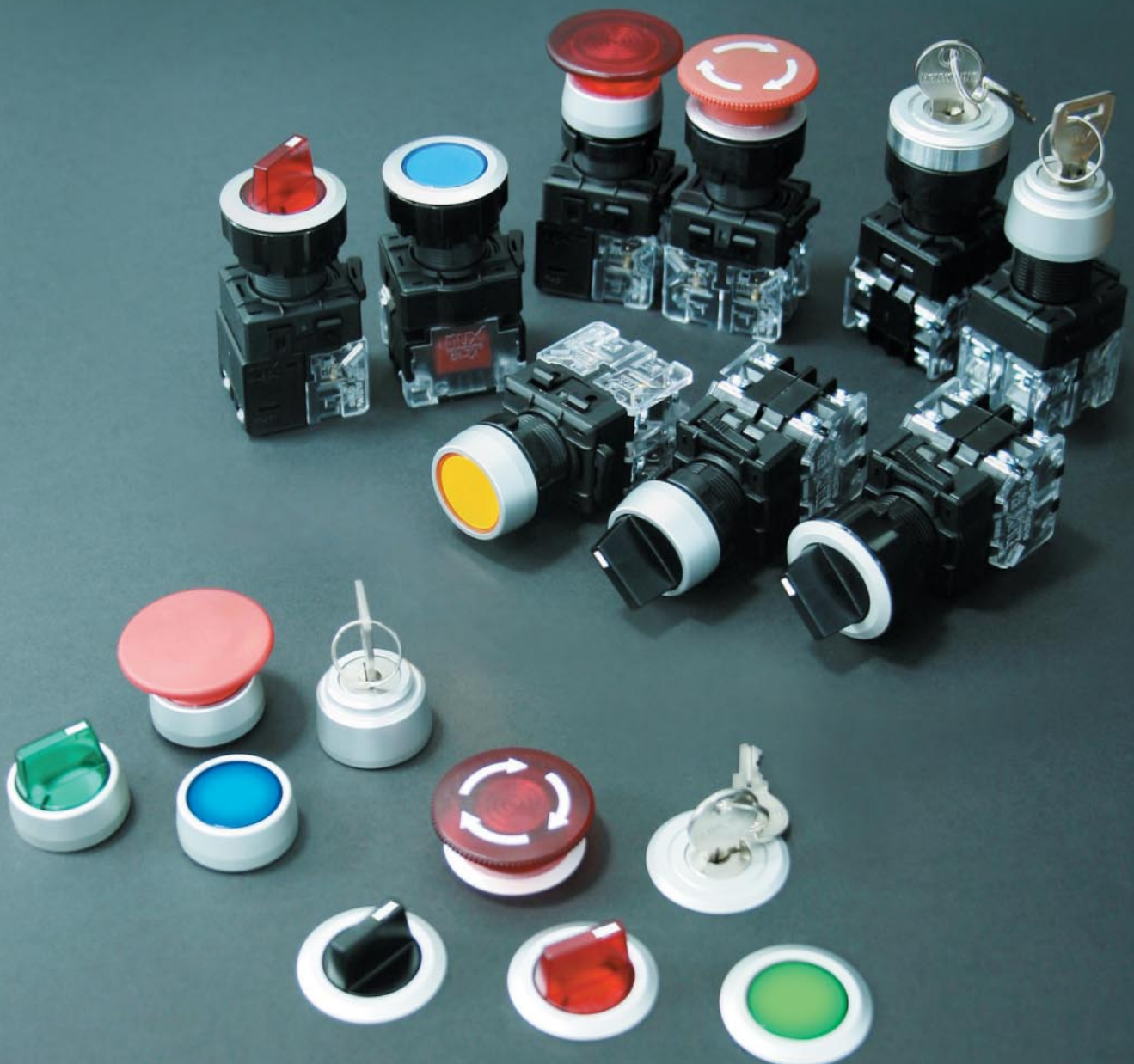
- SIMPLE DESIGN
- SEMIPERMANENT LIFE EXPECTANCY
- CONTROL MODE SELECTION
- MOVEMENT BY SOFT START



CONTROL SWITCH

QR series

- ALUMINUM GUARD TYPE (FLUSH TYPE/EXTENDED TYPE : 2 KINDS)
- PLASTIC GUARD (HANDLING PARTS 30 KINDS)
- HANDLING PART AND CONTACT UNIT ARE DETACHABLE
- SNAP OPERATION CONTACT BLOCK (1a1b STACKING TYPE)
- HIGH RELIABILITY CONTACT UNIT
- IP65 PROTECTION
- USE ILLUMINATED LED



LIMIT SWITCH

- STRONG DIE CASTING CASE
- LOW PRICE AND SAFETY LIMIT SWITCH
- ELEGANT APPEARANCE AND SOFT OPERATION



SIGNAL LIGHT

TLB series

TURN LIGHT

- TURN LIGHT (ABOUT 150 RPM)
- BUZZER (75 dB ~ 85 dB)

STL series

LED SIGN TOWER

- VARIOUS SIZES ($\varnothing 25$, $\varnothing 40$, $\varnothing 60$, $\varnothing 80$)
- 2 KINDS OF BUZZERS (75dB ~ 85dB)

SLB060

SIGNAL LIGHT

- BRILLIANT LIGHT AND LONG LIFE LED LAMP
- 2 KINDS OF BUZZERS (75dB ~ 85dB)

WME/WMS

WALL MOUNTED LIGHT

- ULTRA-SLIM WALL-MOUNT TYPE
- BEIGE AND CHROME METAL COLOR CASE
- 2 KINDS OF BUZZERS (75dB ~ 85dB)



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TEMPERATURE CONTROLLER

GRAPHIC RECORDER

Model	GR100
Appearance	
W × H × D (mm)	14 × 145 × 181
Function	Multi-input, Horizontal/Vertical scroll, Text, Bar, History(Magnification/Scale-down)Reading mode, 6 or 12 channels, 6 or 12 contact output, 4 alarm for each channel, Various computing, RS232, RS422/485, USB, ETHERNET communication
MMI	5.6 inch color / Touch panel
Input	Sampling cycle : 1 sec / channel Accuracy : ± 0.1 % of F.S Permissible signal source resistance : Max. 250 Ω, V d.c : Max. 2K Ω Permissible wiring resistance : RTD: Below 10 Ω wire(But the resistance of the 3wires should be the same) RTD : Min. 10 Ω, Thermocouple : V d.c : Min. 1 mV
Computing function	Computing, Function, Conversion : +, -, X, ÷, ABS(), SQRT(), SIN(), COS(), TAN(), LOG10(), %R.H. Conversion, °F Conversion
Contact input	Contact Specification : 6 points Capacity : Max. 24 V d.c 10 mA Contact operation : RECORD / STOP, ALARM
Contact output	Contact Specification : GR100-1X : 6 points, GR100-2X : 12 points Capacity : Normal Open (Max. 30 V d.c / 5 A, 250 V a.c / 5 A) Contact type : ALARM, BURNOUT, D/I
Communication	Protocol : GR100-x1 : MODBUS-RTU, GR100-x2 : MODBUS-RTU, MODBUS on TCP Type : GR100-x1 : RS232C, RS422/485, USB V1.1, GR100-x2 : RS232C, RS422/485, USB V1.1, ETHERNET TCP/IP
Memory	Internal memory : SD-RAM(Volatile) : Max. 12 hours(interval 1 sec), FLASH(non-volatile): operation setting storage External memory : SD CARD(non-volatile) : Possible storage for 1 year when you use 1GB (interval 2 sec.) Recording contents : Measuring or computing value for each channel, Burn-out, D/I, Alarm, Relay out
Power supply	Power voltage / Frequency : 100 - 240 V a.c Voltage variable ratio : ±10 % / 50 - 60 Hz
Operation environment	Temperature : 0 ~ 50 °C Humidity : 20 ~ 80 % R.H. (5 ~ 40 °C) No condensation
Storage environment	Temperature : -25 ~ 70 °C Humidity : 5 ~ 95 % R.H. No condensation

RECORDER/TEMPERATURE CONTROLLER

Model	RT9
Appearance	
W × H × D (mm)	96 × 96 × 100
Function	• ZOOM • Free scale • Alarms • RS485 • PID-Auto Tuning • Multi Input/Output • Recorder/Temp.controller
Power voltage	100 - 240 V a.c (±10 %), 50/60 Hz
Current 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(Free scale type)
Input display resolution	Below decimal point of input signal and measuring range
Input impedance	T.C and mV input: Min. 1 MΩ, d.c volt : 1 MΩ
Alarm	Relay output(AL1, AL2)
Source tolerable resistance	T.C : 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 (T.C, R.T.D, 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	T.C / R.T.D (KS/IEC/DIN)
Standard junction temp . compensation tolerance	±1.5 °C (15 ~ 35 °C), ±2.0 °C(0 ~ 50 °C)
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/mm) 384 dots/line Record speed : 24 mm/h ~ 900 mm/h Record paper : Width 57.5 mm , Length 16 m Runout of paper : P-END lamp on, Record is stopped

TEMPERATURE CONTROLLER

■ HYBRID RECORDER

Model	NR100
Appearance	
W×H×D (mm)	143×143×226.6
Function	6 channels multi input, zoom scale function, prescale function, 6 point relay output, 2 point event input, communication function (RS-485)
Power voltage	100 - 240 V a.c, 47 - 65 Hz (Voltage Fluctuation Rate $\pm 10\%$)
Power consumption	Max. 50 VA
Sampling Cycle	Below max. 500 ms (Depend on the number of channel)
Input	Thermocouple (B, R, S, K, E, J, T), RTD (JPT100, PT100) d.c voltage input: ± 100 mV, ± 20 V DC current input: 0 - 24 mA connected with external resistor 250 Ω
Input Display Resolution	Display up to 3rd decimal position
Alarm Output	6 points relay contact output
Input impedance	T.C and mV input : Min. 2 M Ω , d.c volt : 400 k Ω
Permissible Wiring Resistance	RTD: Below 10 Ω /1 wire (But the resistance of the 3 wires should be the same)
Applied Standard	Thermocouple / RTD (KS/IEC/DIN)
Accuracy	Indicator: 0.25 % (Full Scale), Record: 0.5 % (Full Scale)
Related to Record	Measuring point : 6 points Response time : depend on the record speed Record method : 6 dot dotting-method Record speed : 20 ~ 360 mm Availability of Record paper : on the front panel window, the lamp of P-END' is ON and the record stops if there is no paper Record paper : width 100 mm, length : 7.8 m

■ TEMPERATURE & HUMIDITY CONTROLLER

Model	TH500(One body)	TH500(Separation type)
Appearance		
W×H×D (mm)	190×155×84	190×155×84
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 : $\pm 10\%$)	
Input	Pt 100 Ω or 4 - 20 mA d.c (0 - 5 V d.c)	
Input cycle	500 ms	
Measuring accuracy	Temperature	Pt 100 Ω 4 - 20 mA d.c (0 - 5 V d.c) -100.0 ~ 200.0 $^{\circ}\text{C}$ (*Scale variable)
	Humidity	Pt 100 Ω 4 - 20 mA d.c (0 - 5 V d.c) 0.0 ~ 100.0 $^{\circ}\text{C}$ (0.0 ~ 100.0 % R.H.) (0.0 ~ 100.0 % R.H. *Scale variable)
Indicating accuracy	Temperature : $\pm 0.1\%$ of F.S, Humidity : $\pm 1\%$ of F.S	
Output	S.S.R output	Min. 24 V d.c (Minimum pulse width : 0.2ms)
	Current output	4 - 20 mA d.c
Retransmission output	Temperature : 1 point, Humidity : 1 point (PV, SV, MV selection) 4 - 20 mA Resistive Load Max. 600 Ω	
Contact input	DI : 8 points	
ON/OFF 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	
Communication output	Error signal : 1 point, Sensor disconnection signal : 1 point, Wait signal : 1 point, Hold signal : 1 point, PT End signal : 1 point	
	RS485-Max. communication distance 1.2 km, Max. 32 connections available, Communication speed : Max. 115,200 bps	
Storage / Capacity	RS 232 C, USB V 1.1	
Storage function	Internal FLASH memory, Temp./Humi. Each 86,400 points	
Ambient Temp. / Humidity	Program information & Setting value back-up and recovery, Temp. / humi. Setting, Indicating value storage 0 ~ 50 $^{\circ}\text{C}$, 10 ~ 90 % R.H. (No condensation)	

TEMPERATURE CONTROLLER

2 CHANNELS PROGRAMMABLE TEMPERATURE CONTROLLER

Model		TD500		
Appearance				
W×H×D (mm)		190 × 155 × 84		
Power supply		100 - 240 V a.c (±10 %), 50 - 60 Hz Max. 16 W		
Screen	LCD	5.7 inch color / Touch panel type		
Program	Pattern / Segment	100 patterns / 2400 segments, Pattern repetition : Max. 999 times, Partial repetition : Max. 255		
Input	Measuring range	Sensor type	Accuracy	Measuring range
		Pt.100	±0.1 % of F.S	- 200.0 ~ 640.0 °C
		T.C	±0.1 % of F.S	- 200.0 ~ 1700.0 °C
	Sampling cycle	V d.c	±0.1 % of F.S	0.0 ~ 10.0 V (Range setting)
Output	Control output	2 points for each channel (Heating / Cooling)		
	Specification	Voltage pulse (SSR) : 24 V d.c. minimum pulse width 10 ms		
		Current (SCR) : 4 - 20 mA d.c.(Below 600 Ω)		
Communication	Protocol	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 mA Sink		
	Communication Type	PC - Link(Check Sum), Modbus - ASC II		
		RS232C : 2400 ~ 115200 bps Max. 10 m, RS422/485 : 2400 ~ 115,200 bps, Max.1.5 km 256 Mode		

TEMPERATURE CONTROLLER (Programmable Temperature controller)

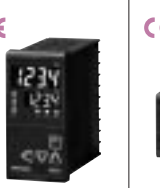
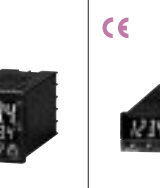
Model		NP200	NP100
Appearance			
W×H×D (mm)		96 × 96 × 100	96 × 96 × 100
Function		• Retransmission output • Input correction • Auto/Manual output • Heating/Cooling Control • Constant-value control • 5 Inner signals • 2 Alarm output (Relay) • Zone PID • 5 Time signals • 2 Time signals (Transistor)	
Power voltage		100 - 240 V a.c (50/60 Hz)	
Power consumption		Max. 10 VA (except communication)	
Input		Multi input (T.C: 13 kinds, R.T.D: 2 kinds, Voltage: 5 kinds)	
Control output		Universal-output: Relay, SSR, Current	
Control action		P.I.D or ON/OFF	
Alarm		4 Alarm output	2 Alarm output
Communication		RS 485/422 (Optional)	
Setting		By Up/Down key on the front	
Display		PV : Digital LED, SV : LCD Back light	PV/ SV : Digital LED
Setting and display accuracy		0.1 % of F.S (Full Scale)	
Setting resolution		1 or 0.1 % (According to input range)	
Memory protection		Semipermanent	
External control		4 Alarm output (Run, Reset, Step, Hold)	3 Alarm output (Run, Reset, Hold)
Number of pattern		30	2
Number of segment		300	20
Number of pattern contact		30	
Operation		1 ~ 99 times or limitless	
Program inclination		Hour, Minute	
Sampling cycle		250 ms	
Insulation resistance		500 V a.c 20 MΩ min.	
Dielectric strength		2300 V a.c 50/60 Hz for 1 minute (Between primary and secondary terminal & between primary and ground)	
Ambient temperature & humidity		0 ~ 50 °C(Between primary and ground), 35 ~ 85 % R.H.	

TEMPERATURE CONTROLLER

■ TEMPERATURE CONTROLLER (Programmable Temperature controller)

Model	PX 9	PX 7	PX 2	PX 3
Appearance				
W × H × D (mm)	96 × 96 × 100	72 × 72 × 100	48 × 96 × 100	96 × 48 × 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 (RS 485/422) • Protection: IP 65 (Front) • Input filter: OFF, 1~120 sec. • Retransmission output (PV, SV, MV) • Heating/Cooling hysteresis			
Input	Thermocouple: 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 ~ 20mV, 0 ~ 100 mV(Free scale type)			
Sampling cycle	250 ms, (Remote option: 500 ms)			
Input display resolution	Below decimal point of Input signal and Measuring range			
Input impedance	T.C and mV input: Min, 1 $M\Omega$ d.c V: 1 $M\Omega$			
Source tolerable resistance	Thermocouple: Max. 250 Ω , Voltage: Max. 2 k Ω			
Lead wire tolerable resistance	R.T.D: Max. 10 Ω /wire (notice: Identical conductor resistance between 3 wires)			
Input tolerable voltage	± 10 V (T.C, R.T.D, Voltage: mV d.c), ± 20 V (Voltage: V d.c)			
Noise removal rate	NMRR (Normal mode): 40dB min. CMRR(Common mode): 120 dB min.(50/60 Hz ± 1 %)			
Standard	T.C, R.T.D: KS, IEC, DIN			
Scaling	According to setting max. value(SH), min. value(SL) of measuring range, scaling is available (-1999 ~ 9999)			
Standard junction temp. compensation tolerance	± 1.5 $^{\circ}\text{C}$ (15 ~ 35 $^{\circ}\text{C}$), ± 2.0 $^{\circ}\text{C}$ (0 ~ 50 $^{\circ}\text{C}$)			
Burn-out	T.C: OFF, Up/Down selectable R.T.D: OFF, UP selectable (Detection current: 50 mA)			
Accuracy	± 0.1 % (Full scale)			
Power supply for sensor	24 V d.c (Internal resistance: 1.2 k Ω) Max. 50 mA 15 V d.c (Internal resistance: 600 Ω)			

■ TEMPERATURE CONTROLLER (P.I.D Auto-tuning)

Model	NX9	NX7	NX2	NX3	NX4	NX1
Appearance						
W × H × D (mm)	96 × 96 × 100	72 × 72 × 100	48 × 96 × 100	96 × 48 × 100	48 × 48 × 100	48 × 24 × 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 (RS 485/422) • Protection: IP 65 (Front) • Input filter: OFF, 1~120 sec. • Retransmission output (PV, SV, MV) • Heating/Cooling hysteresis					
Input	Thermocouple: 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 (Free scale type)					
Sampling cycle	250 ms					
Input display resolution	Below decimal point of Input signal and Measuring range					
Input impedance	T.C and mV input: Min, 1 $M\Omega$ d.c V: 1 $M\Omega$					
Source tolerable resistance	Thermocouple: Max. 250 Ω , Voltage: Max. 2 k Ω					
Lead wire tolerable resistance	R.T.D: Max. 150 Ω /wire (notice: Identical conductor resistance between 3 wires)					
Input tolerable voltage	± 10 V (T.C, R.T.D, Voltage: mV d.c), ± 20 V (Voltage: V d.c)					
Noise removal rate	NMRR (Normal mode): 40 dB min. CMRR(Common mode): 120 dB min.(50/60 Hz ± 1 %)					
Standard	T.C, R.T.D: KS, IEC, DIN					
Standard junction temp. compensation tolerance	± 1.5 $^{\circ}\text{C}$ (15 ~ 35 $^{\circ}\text{C}$), ± 2.0 $^{\circ}\text{C}$ (0 ~ 50 $^{\circ}\text{C}$)					
Burn-out	T.C: OFF, Up/Down selectable R.T.D: OFF, UP selectable (Detection current: 50 mA)					
Accuracy	± 0.5 % (Full scale)					
Power supply for sensor	12 V d.c (Internal resistance: 600 Ω) Max. 50 mA 15 V d.c (Internal resistance: 600 Ω)					

TEMPERATURE CONTROLLER

TEMPERATURE CONTROLLER

Model	UX100			
Appearance				
W×H×D (mm)	48×24×100			
Function	- Fuzzy - Input correction - Interface (RS 485) - Heating/Cooling control - Output limitation - Auto tuning - ARW - Input filter: OFF, 1 ~ 120sec. - Universal-input - Heating/Cooling hysteresis - Alarm output			
Input	Thermocouple: 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, -10 ~ 20 mV, 0 ~ 100 mV (Free scale type)			
Sampling cycle	250 ms			
Input display resolution	Below decimal point of Input signal and Measuring range			
Input impedance	T.C and mV input: Min. 1 $M\Omega$ d.c V: 1 $M\Omega$			
Source tolerable resistance	Thermocouple: Max. 250 Ω , Voltage: Max. 2 $K\Omega$			
Lead wire tolerable resistance	R.T.D: Max. 150 Ω /wire			
Input tolerable voltage	± 10 V (T.C, R.T.D, Voltage: mV d.c), ± 20 V (Voltage: V d.c)			
Noise removal rate	NMRR (Normal mode): Min. 40 dB CMRR(Common mode): Min. 120 dB (50/60 Hz ± 1 %)			
Standard	T.C, R.T.D: KS, IEC, DIN			
Scaling	According to setting Max. value(SH), Min. value(SL) of measuring range, scaling is available (-1999 ~ 9999)			
Standard junction temp. compensation tolerance	± 1.5 $^{\circ}\text{C}$ (15 ~ 35 $^{\circ}\text{C}$), ± 2.0 $^{\circ}\text{C}$ (0 ~ 50 $^{\circ}\text{C}$)			
Burn-out	T.C: Up/Down scale selectable R.T.D: Up scale selectable (Detection current: 50 μA)			
Accuracy	± 0.5 % (Full scale)			

TEMPERATURE CONTROLLER (P.I.D Auto-tuning)

Model	MX9-F	MX7-F	MX2-F	MX3-F	MX4-F
Appearance					
W ×H ×D (mm)	96 ×96 ×100	72 ×72 ×100	48 ×96 ×100	96 ×48 ×100	48 ×48 ×100
Function	• Auto tuning • Multi input. 11 kinds of input • Ramp • Direct/Reverse action • PV/SV Retransmission • Input correction • Manual output				
Power voltage	100 - 240 V a.c (50/60 Hz)				
Power consumption	Max. 15 VA				Max. 12 VA
Input	Multi Input, Thermocouple(K,J,R), R.T.D.(DIN/JIS Pt100 $\varnothing$),mV & mA				
Control output	Current output : 4 - 20 mA d.c (Load resistance Max.600 $\varnothing$) Relay contact output : 250 V a.c 3 A (Resistive load) , SSR driving : 12 V d.c (Constant voltage pulse) [Load resistance : Min. 800 $\varnothing$]				
Control action	P.I.D(Auto-tuning function), ON/OFF, P - PI - PD				
Alarm output	Relay contact output : 250 V a.c 3 A (Resistive load)				
Heater/ Loop Break Alarm	LBA,HBA [Relay contact output : 250 V a.c 3A (Resistive Load)]				
Setting	By Up/Down key on the front				
Display	L.E.D Display (PV: Green, SV:Red)				
	PV : 14 mm, SV : 10.5 mm	PV : 11 mm, SV : 8 mm	PV : 10 mm, SV : 8 mm	PV : 14 mm, SV : 8 mm	PV : 8 mm, SV : 8 mm
Setting and display accuracy	· T/C : Within $\pm$ (0.3 % of SV $\pm$ 1 digit) or $\pm$ 2 $^{\circ}$ C (Whichever is larger) · R.S : $\pm$ 4 $^{\circ}$ C + 1 digit · R.T.D : Within $\pm$ (0.3 % of SV $\pm$ 1 digit) or $\pm$ 0.8 $^{\circ}$ C (Whichever is larger)				
Memory protection	Semipermanent				
Sampling cycle	500 ms				
Dielectric strength	2,000 V a.c 50/60 Hz for 1 minute				
Vibration	Malfunction	2 - 55 Hz X - Y - Z each positions for 10 minutes			
	Durability	10 - 55 Hz 0.76 mm X - Y - Z each positions for 2 hours			
shock	Malfunction	100 % $\varnothing$ 6 position, Each 3 times			
	Durability	300 % $\varnothing$ 6 position, 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 $^{\circ}$ C(32 ~ 122 $^{\circ}$ F) · 35 ~ 85 %R.H. (Without condensation)				

TEMPERATURE CONTROLLER

HEATING/COOLING TEMPERATURE CONTROLLER (P.I.D Auto-tuning)

Model	MX9-V	MX2-V
Appearance		
W×H×D (mm)	96×96×100	48×96×100
Function	Multi input, Heating/Cooling PID control, HBA(Heater Break Alarm), Remote function, Manual output function, Remote/Local input selectable °C/°F, Reverse/Direct action selectable.Ramp	
Power voltage	100 - 240 V a.c (50/60 Hz)	
Power consumption	Max. 15VA	
Input	Multi Input, (Thermocouple : K/J/T/E/R/S/B, RTD : KS Pt100 Ω / DIN Pt 100 Ω, Voltage/Current)	
Control output	Relay contact : 250 V a.c 5 A (Resistive load), SSR: 12 V d.c (constant voltage pulse) [Load resistance Min. 800 Ω], Current: 4 - 20mA d.c (Load resistance Max 600 Ω)	
Control action	PID (Auto-tuning function) or ON/ OFF	
Alarm output	Relay contact output : 250 V a.c 3 A (AL-2), 3 A(AL-1) Resistive load	
Heater/Loop Break Alarm	LBA, HBA [Relay contact output : 250 V a.c 3 A (Resistive load)]	
Setting	By Up/Down key on the front	
Display	L.E.D Display	
Setting and display accuracy	· T/C : Within ±(0.3 % of SV ±1 digit) or ±2℃(Whichever is larger) · R.S : ± 4℃ + 1 digit · R.T.D : Within ±(0.3 % of SV ±1 digit) or ±0.8℃ (Whichever is larger)	
Protection Memory	Semipermanent	
Sampling cycle	500 ms	
Heating cycle	1 ~ 100 sec	
Cooling cycle	1 ~ 100 sec	
Cooling gain	Display of 10 times to proportional band	
Cooling deadband	-20.0 ~ 20.0 °C(°F)	
Input correction range	SLU ~ SLF	
Insulation resistance	Min 20 MΩ (500 V d.c Mega)	
Dielectric strength	2000 V a.c 50/60 Hz for 1 minute (Between terminal and earth)	
Vibration	Malfunction	2 - 55 Hz X, Y, Z each position for 10 minute
	Durability	10 - 55 Hz 0.76 mm X, Y, Z each position for 2 hours
shock	Malfunction	100 % 6 positions each 3 times
	Durability	300 % 6 positions each 3 times
Life	Mechanical	Min 10 millions times (Relay type)
	Electrical	Min 0.3 million times (Relay type)
Ambient temperature and humidity	0 ~ 50 °C(32 ~ 122 °F) - 35 ~ 85 % R.H. (Without condensation)	

TEMPERATURE CONTROLLER (P.I.D Auto-tuning)

Model	KX9N	KX7N	KX4N	KX3N	KX2N
Appearance					
W × H × D (mm)	96(W) × 96(H) × 100(D)	72(W) × 72(H) × 100(D)	48(W) × 48(H) × 100(D)	96(W) × 48(H) × 100(D)	48(W) × 96(H) × 100(D)
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	Below approx. 11 VA				
Input	· Thermocouple: K, J, E, T, R, B, S, L, N, U, W · RTD: D(Kpt), P(Dpt) · d.c Voltage Current input: 1 ~ 5 V d.c, 0 ~ 10 V d.c				
Control Output	· Relay: 250 V a.c 3 A (resistive load) · SSR: 12V d.c pulse voltage(above resistive load 800 Ω) · Current Output: 4 - 20 mA d.c (Below Resistive load 600 Ω)				
Adjusting Operation	· PID operation · ON/OFF operation				
Alarm Output	Relay output: ALH, ALL (250 V a.c 3 A)				
Loop Break Alarm	Relay output: LBA (250 V a.c 3 A)				
Setting Method	Digital Setting by Up/Down Keys				
Indicator Method	Digital display (PV: red, SV: red)				
Accuracy	±0.5 % of F.S (But thermocouple Btype 0 ~ 400 °C out of guarantee range)				
Power failure back up	Semipermanent				
Dielectric Strength	2000 V a.c, 50/60 Hz for 1 minute (between the terminals of the two-polar current carry part)				
Vibration	Malfunction	2 - 55 Hz each X · Y · Z direction for 10 minutes			
	Durability	10 - 55 Hz, 0.76 mm, each X · Y · Z direction for 2 hours			
Shock	Malfunction	100 % 3 times at each 6 direction (approx. 10 G)			
	Durability	300 % 3 times at each 6 direction (approx. 30 G)			
Life	Mechanical	Above 10 million times (Relay type)			
	Electrical	Above 300 thousand times (Relay type)			
Operating Ambient Temperature/Humidity	0 ~ 50 °C / 35 ~ 85 %R.H. (without condensation)				

TEMPERATURE CONTROLLER

TEMPERATURE CONTROLLER (P.I.D Auto-tuning)

Model	DX9	DX7	DX2	DX3	DX4
Appearance					
W ×H×D (mm)	96 ×96 ×100	72 ×72 ×100	48 ×96 ×100	96 ×48 ×100	48 ×48 ×100
Power supply	100 - 240 V a.c (± 10 %), 50 - 60 Hz				
Power consumption	Max. 12 VA				
Input	Type	Refer to "Input type chart"			
	Cycle	250 ms			
	Accuracy	± 0.5 % of F.S (DCV Input : ±1 % of F.S)			
	Tolerable voltage	20 V d.c for 1 minute			
	Standard junction temp. compensation tolerance	± 3.5 °C (Within 0 ~ 50 °C)			
	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 Ω Min.			
	Current output	Range : 3.2 - 20.8 mA, Accuracy : ± 0.2 mA, Resistive load 600 Ω Max.			
Transmission output	Range : 3.2 - 20.8 mA, Accuracy : ± 0.2 mA, Resistive load 600 Ω Max.				
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			
	Over-integral protection	Auto(A=0), 0.1 ~ 100.0 %			
Insulation resistance	More than 20 MΩ between 1st terminal and 2nd terminal				
Dielectric strength	2,300 V a.c, for 1 minute between 1st terminal and 2nd terminal				
Operating environment	Temp. & Humidity	0 ~ 50 °C, 35 ~ 85 %RH (No condensation)			
	Environment	Refer to "safety information"			

TEMPERATURE CONTROLLER

Model	HY-8000S	HY-8200S (Alarm output)	HY-72D	HY-48D
Appearance				
W×H×D (mm)	96×96×125	96×96×125	72×72×110	48×48×100
Power voltage	110 / 220 V a.c (50 / 60 Hz)			
Power consumption	3 VA			
Input	Thermocouple (K,J), R.T.D (DIN/JIS pt 100 Ω) Voltage/Current			
Control output	Relay contact : 250 V a.c 3 A (Resistive road), SSR: 12 V d.c (Constant voltage pulse) [Load resistance Min. 800 Ω], Current: 4 - 20 mA d.c [Load resistance Min. 600 Ω]			
Control action	Proportional or ON/OFF control			
Alarm output	—	Relay contact : 250 V a.c 3 A	—	
Setting	By B.C.D S/W			
Permissible input resistance	Thermocouple : Max.250 Ω, R.T.D : Max. 10 Ω			
Indication range	Setting temperature range			
Display	L.E.D Display			
Setting and display accuracy	Set Value : ±1.0 % of F.S, Display : ±0.5 % of F.S			
Control sensitivity	Approx 0.2 % F.S (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 (Between + and - charging terminals)			
Vibration	Malfunction	2 - 55 Hz, X · Y · Z each position for 10 minutes		
	Durability	10 - 55 Hz, 0.76 mm, X · Y · Z each positions for 2 hours		
Shock	Malfunction	100 % 6 positions, each 3 times		
	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 °C(32 ~122 °F) · 35 ~ 85 %R.H. (Without freeze)			

TEMPERATURE CONTROLLER

■ TEMPERATURE CONTROLLER

Model		KF9	KF9 (built-in alarm)	KF7	KF7 (built-in alarm)
Appearance					
W ×H ×D (mm)		96 ×96 ×100	96 ×96 ×100	72 ×72 ×100	72 ×72 ×100
Power Voltage		100 - 240 V a.c 50 - 60 Hz (voltage fluctuation rate: ±10 %)			
Power Consumption		Approx. 3 VA			
Input		Thermocouple, RTD, voltage/current			
Control Output		Relay: 250 V a.c 3 A (resistive load), SSR: 12 V d.c Voltage Pulse(load resistor: Above 800 Ω), Current: 4 - 20 mA d.c(Road resistor: Below 600 Ω)			
Control Method		Proportional Control or ON/OFF			
Alarm Output		—	Relay : 250 V a.c 3 A	—	Relay: 250 V a.c 3 A
Setting Method		Setting by the digital switch			
Permissible Input Resistor		Thermocouple: Below 100 Ω , R.T.D: Below 10 Ω /each wire			
Indicated Range		Setting temperature range			
Indicated Method		Digital indicator			
Setting and indicator accuracy		Below ±0.5 % of F.S, Below ±1.0 % of setting range			
Hysteresis		1 ~ 20 ℃ (ON/OFF control, proportional band control volum)			
Proportional Cycle		Relay : 25 ~ 30 sec, SSR : 2 ~ 4 sec			
Reset Range		Above ±1.5 % of Max. range (variable)			
Dielectric Strength		2000 V a.c 50/60 Hz, for 1 minute (between the terminals of the two-polar current carry part)			
Vibration	Malfunction	2 - 55 Hz each X · Y · Z direction for 10 minutes			
	Durability	10 - 55 Hz, 0.76 mm, each X · Y · Z direction for 2 hours			
Shock	Malfunction	100 % 3 times at each 6 direction (approx. 10G)			
	Durability	300 % 3 times at each 6 direction (approx. 30G)			
Life	Mechanical	Above 10 million times (Relay type)			
	Electrical	Above 300 thousand times (Relay type)			
Operating Ambient Temperature/Humidity		0 ~ 50 ℃ / 35 ~ 85 % R.H. (without condensation)			

■ TEMPERATURE CONTROLLER

Model		KF2	KF2 (built-in alarm)	KF4
Appearance				
W × H × D (mm)		48 × 96 × 100	48 × 96 × 100	48 × 48 × 100
Power Voltage		100 - 240 V a.c. 50 - 60 Hz (voltage fluctuation rate : ±10 %)		
Power Consumption		Approx. 3 VA		
Input		Thermocouple, RTD, voltage/current		
Control Output		Relay : 250 V a.c. 3 A (Resistive load), SSR : 12 V d.c. Voltage Pulse (load resistor : Above 800 Ω), Current : 4 - 20 mA d.c. (load resistor : Below 600 Ω)		
Control Method		Proportional Control or ON/OFF		
Alarm Output		—	Relay : 250 V a.c. 3 A	—
Setting Method		Setting by the digital switch		
Permissible Input Resistor		Thermocouple: Below 100 Ω, RTD : Below 10 Ω / each wire		
Indicated Range		Setting temperature range		
Indicated Method		Digital indicator		
Setting and indicator accuracy		Below ±0.5 % of F.S, Below ±1.0 % of setting range		
Hysteresis		1 ~ 20 °C (ON/OFF control, proportional band control volum)		
Proportional Cycle		Relay : 25 ~ 30 sec, SSR : 2 ~ 4 sec		
Reset Range		Above ±1.5 % of max range (variable)		
Dielectric Strength		2000 V a.c, 50/60 Hz, for 1 minute (between the terminals of the two-polar current carry part)		
Vibration	Malfunction	2 - 55 Hz each X · Y · Z direction for 10 minutes		
	Durability	10 - 55 Hz, 0.76 mm, each X · Y · Z direction for 2 hours		
Shock	Malfunction	100 % 3 times at each 6 direction (approx. 10G)		
	Durability	300 % 3 times at each 6 direction (approx. 30G)		
Life	Mechanical	Above 10 million times (Relay type)		
	Electrical	Above 300 thousand times (Relay type)		
Operating Ambient Temperature/Humidity		0 °C ~50 °C / 35 ~ 85 % R.H. (without condensation)		

TEMPERATURE CONTROLLER

TEMPERATURE CONTROLLER

Model	DF2 DF2	(SUB)	DF4
Appearance			
W×H×D (mm)	48×96×100	48×96×100	48×48×100
Power voltage	110 / 220 V a.c (50/60 Hz)		
Power consumption	3 VA	4 VA	3 VA
Input	Thermocouple (k.J) R.T.D (DIN/JIS Pt 100 Ω). Voltage/Current		
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 B.C.D S/W		
Permissible input resistance	Thermocouple : Max. 250 Ω, R.T.D : Max. 10 Ω		
Display range	Setting value		
Display	Digital indicator		
Setting and display accuracy	Display ±0.5 % of F.s Range, Max. Set value ±1.0 % of F.S		
Hysteresis	0.2 % F.S (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 (Between + and - charging terminals)		
Vibration	Malfunction	2 - 55 Hz, X, Y, Z each position for 10 minutes	
	Durability	10 - 55 Hz, 0.76 mm, X, Y, Z each position for 2 hours	
shock	Malfunction	100 ㎐ 6 positions, Each 3 times	
	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 % R.H. (Without condensation)		

MULTI CHANNEL TEMPERATURE CONTROLLER (8CH / 4CH)

Model	MC9
Appearance	
W×H×D (mm)	96×96×100
Function	- 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)
Power Voltage	110 - 220 V a.c (50 - 60 Hz)
Power consumption	100 V a.c (below 14 VA)/ 240V a.c (below 20 VA)
Input	4 or 8 channels (Sampling Time: 1s) Type (TC, RTD, d.c V) / Input impedance (Approx. 1 MΩ)
Output	Type (Relay Output, Voltage Pulse Output, Triac Output, 4 - 20 mA Output, 0 - 20 mA Output)
Alarm	1a Contact Type/ 250 V a.c, 1 A (for resistive load) /Life time: above 300,000 times ON/OFF
Communication	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
Contact input	From Below 2 kΩ, ON, From Above 15 kΩ, OFF
Operating Environment	Temperature: 0 ~ 50 ℃ (32 ~ 122 ℉), Humidity: 45 ~ 85 % R.H. (but, without condensation) Magnetic field: Below 400 AT/m Without poisonous gas and without full of dust

TEMPERATURE CONTROLLER

■ TEMPERATURE CONTROLLER FOR FREEZER CONTROL

Model	BR6	ED6
Appearance		
W×H×D (mm)	77×35×77	77×35×77
Power Voltage	10 - 24 V a.c / d.c, 110/ 220 V a.c, 50/60 Hz (±10 %)	10 - 24 V a.c / d.c, 110/220 V a.c, 50/60 Hz (±10 %)
Power Consumption	Max. 5 VA	Max. 5 VA
Input Sensor	Diode, NTC	Pt100 Ω , CA, 4 - 20 μ A d.c, 1 - 5 V d.c
Display accuracy	Max. range: 1% +1Digit	Max. range: 1 % +1 Digit
Control output (Relay contact)	Main output : 250 V a.c 5 A(Resistive load) Auxiliary output : 250 V a.c 5 A(Resistive load)	Main output : 250 V a.c 5 A(Resistive load) Auxiliary output : 250 V a.c 5 A(Resistive load)
Control mode	ON / OFF, Proportion	ON / OFF or Proportional
Setting method	Digital method by up and Down key	Digital method by up and Down key
Other function	Defrosting Timer, Alarm function, Heating / cooling control	Defrosting Timer, Alarm function, Heating / cooling control
Ambient temperature	0 ~ 50 °C	0 - 50 °C
Ambient humidity	Max. 85 % R.H.	Max. 85 % R.H.

■ ANALOG TEMPERATURE CONTROLLER

Model	HY-4500	HY-4700	HY-5000
Appearance			
W ×H ×D (mm)	96 ×96 ×125	96 ×96 ×125	72 ×72 ×110
Power voltage	100 / 220 V a.c (50/60 Hz)		
Power Consumption	3 VA	5 VA	5 VA
Input	T.C , R.T.D , Voltage/current		
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 output: 4 - 20 mA d.c (Load resistance Min. 600 Ω)		
Control action	Proportional or ON/OFF contact		
Alarm output	Relay contact: 250 V a.c 3 A(Resistive load)		
Control sensitivity	±0.2 % of F.S		
Permissible input resistance	Thermocouple : Max. 100 Ω , R.T.D: Max. 10 Ω /wire		
Setting	Analog setting		
Display	Analog indication		
Setting and display accuracy	The same as SV, ±2.0 % of F.S		
Alarm setting range	—	Within 1~10% of Max. range for operation point of SV	—
Proportional cycle	Relay contact : 25 ~ 30 sec , SSR : 2 ~ 4sec		
Reset range	±1.5 % of F.S		
Dielectric strength	2,000 V a.c for 1 minute		
Vibration	Malfuction	2 - 55 Hz, X · Y · Z, each position for 10 minutes	
	Durability	10 - 55 Hz, 0.76 mm, X · Y · Z, each position for 2 hours	
Shock	Malfuction	100 % 6 positions, Each 3 times	
	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 %R.H. (Without condensation)		

TEMPERATURE CONTROLLER

ANALOG TEMPERATURE CONTROLLER

Model	HY-2000	HY-1000	ND4	ND4 (for socket)
Appearance				
W ×H ×D (mm)	96×96×104	72×72×110	48×48×80	48×48×78
Power voltage	110/220 V a.c (50/60 ㎐)			
Power consumption	2 VA			
Input	Thermocouple, R.T.D (DIN, JIS Pt100 ㉓)			
Control Output	Relay contact : 250 V a.c (Resistive load)			
Control action	Proportional or ON/OFF control			
Permissible input resistance	Thermocouple : Max. 100 ㉓, R.T.D: Max. 10 ㉓ / wire			
Setting	Analog setting			
Setting and display accuracy	±1.0 % of F.S			
Proportional band	1 ~ 10 % of F.S (HY-4500) (Model HY-4700, HY-5000 fixing to 3% of F.S)			
Proportional cycle	Relay contact : 25 ~ 30 sec.			
Dielectric strength	2,000 V a.c 50/60 ㎐ per 1 minute (Between + and - charging terminals)			
Vibration	Malfunction	2 - 55 ㎐, X · Y · Z each position for 10 minutes		
	Durability	10 - 55 ㎐, 0.76 mm, X · Y · Z each position for 2 hours		
Shock	Malfunction	100 ㉓ 6 positions, each 3 times (Approx. 10 G)		
	Durability	300 ㉓ 6 positions, each 3 times (Approx. 30 G)		
Life	Mechanical	Min. 10 million times (Relay type)		
	Electrical	Min. 0.3 million times (Relay type)		
Ambient temperature and humidity	0 ~ 50 ㊸(32 ~ 122 ㊸) · 35 ~ 85 % R.H. (without condensation)			

ANALOG TEMPERATURE CONTROLLER

Model	HY-3000	AF1	AF1 (Built-in alarm output)
Appearance			
W×H×D (mm)	96×96×104	48×96×100	48×96×100
Power voltage	110/220 V a.c (50/60 Hz)		
power consumption	3 VA		
Input	Temperature, R.T.D		
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	Analog setting	by B.C.D switch	
Permissible input resistance	Thermocouple : Max. 100 Ω, R.T.D: Max. 10 Ω/wire		
Display range	Setting value		
Display	Analog		
Setting and display accuracy	Setting temperature: within ±2 % of F.S, Display accuracy : Within ±2.5 % of F.S		
Proportional band	3 % of F.S (Fixing)		
Proportional cycle	Relay contact : 25 ~ 30 sec SSR : 2 ~ 4 sec		
Reset range	±1.5 % of F.S (Between + and - charging terminals)		
Dielectric strength	2,000 V a.c 50/60 Hz for 1 minute		
Vibration	Malfunction	2 - 55 Hz, X · Y · Z each position for 10 minutes	
	Durability	10 - 55 Hz, 0.76 mm, X · Y · Z each position for 2 hours	
Shock	Malfunction	100 ㎐ 6 positions, each 3 times	
	Durability	300 ㎐ 6 positions, each 3 times	
Life	Mechanical	Max. 10 million times (Relay type)	
	Electrical	Max. 0.3 million times (Relay type)	
Ambient temperature and humidity	0 ~ 50 °C (32~122 °F) · 35 ~ 85 %R.H. (without condensation)		

TEMPERATURE CONTROLLER

5 CHANNELS TEMPERATURE INDICATOR

Model	TP3
Appearance	
W×H×D (mm)	96×48×100
Power supply	100 - 240 V a.c(±10 %), 50 - 60 Hz
Power consumption	Max. 5 VA
Input	Thermocouple : K, J, R RTD : DIN Pt 100 Ω
Display accuracy	Thermocouple : ±0.5 % of display value + 1 digit or ±3 °C RTD : ±0.5 % of display value +1 digit or ±2 °C
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 °C ~ 50 °C / 35 ~ 85 % R.H.

TEMPERATURE INDICATOR

Model	HN100
Appearance	
W×H×D (mm)	270×166×34
Use	Sauna facility, bathroom, fitness center, hospital, greenhouse, etc temperature display in spacious places
FND size	24 x 34
Case	Complete waterproof to IP57
Input type	Pt100(-100 ~ 400 °C, -19.9 ~ -99.9 °C)
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

TEMPERATURE INDICATOR

Model	AT3	AT6
Appearance		
W×H×D (mm)	96×48×100	72×36×95
Power voltage	110/220 V a.c (50/60 Hz)	100 - 240 V a.c (50 - 60 Hz)
Power consumption	3 VA	
Input	R.T.D. , Thermocouple, Voltage/Current	
Permissible input resistance	T.C : 100 Ω Min. , R.T.D : 10 Ω Min.	
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 - charging terminals)	
Vibration	Malfunction	2 - 55 Hz, X · Y · Z each position for 10 minutes
	Durability	10 - 55 Hz, 0.76 mm, X · Y · Z each position for 2 hours
Shock	Malfunction	100 ㊦ 6 positions , Each 3 time (Approx. 10 G)
	Durability	300 ㊦ 6 positions , Each 3 time (Approx. 30 G)
Ambient temperature and humidity	0 ~ 50 °C · 35 ~ 85 %R.H. (without condensation)	

TEMPERATURE CONTROLLER

TEMPERATURE INDICATOR

Model		DF40(Socket)	HY-800S	HY-48I	HY-72I
Appearance					
W×H×D (mm)		48×48×100	96×96×125	48×48×110	72×72×110
Power voltage		110/220 V a.c (50/60 Hz)			
Function		Display exclusive use			
Power consumption		3 VA			
Input		R.T.D, Thermocouple, voltage / current			
Permissible input resistance		T.C :Max. 100 Ω , R.T.D: Max. 10 Ω			
Display accuracy		Max. 0.5% of F.S			
Display		Digital indicator			
Dielectric strength		2,000 V a.c 50/60 Hz for 1 minute			
Vibration	Malfunction	2 - 55 Hz , X,Y,Z, each position for 10 minutes			
	Durability	10 - 55 Hz , 0.76 mm ,X,Y,Z,each position for 3 hours			
Shock	Malfunction	100 % 6 positions, Each 3 times			
	Durability	300 % 6 positions, Each 3 times			
Ambient temperature and humidity		0 ~ 50 ℃(32 ~ 122 ℉) , 35 ~ 85 %R.H.(without condensation)			

TEMPERATURE INDICATOR

Model	BK3	BK6	BK6-M
Appearance			
W×H×D (mm)	96×48×100	72×36×98	72×36×100
Power voltage	110 / 220 V a.c 50 / 60 Hz		100 - 240 V a.c 50 / 60 Hz
Function	Display exclusive use		
Power consumption	4 VA max.		
Input	T.C : K, K1, J, R, R.T.D : Pt100 Ω, voltage		Universal input
Display accuracy	max. 0.5 % of F.S		
Display	Digital indicator		Digital indicator / Retrans mission
Dielectric strength	2,000 V a.c 50/60 Hz for 1 minute		
Vibration	10 - 55 Hz, X, Y, Z each position for 2 hours		
Shock	300 % , X,Y, Z each position 3 times		

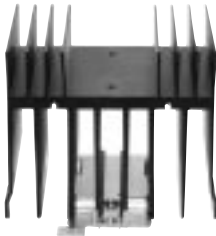
DIGITAL PORTABLE THERMOMETER

Model	D55
Appearance	
W×H×D (mm)	71×158×32
Power voltage	9 V d.c
Input	K, J
Display method	LCD digital
Display accuracy	±0.5 % of F.S
Measuring range	-200.0 ~ 1370.0 °C
Ambient temperature and humidity	0 ~ 50 °C(32 ~ 122 °F) . 35 ~ 85 %R.H. (without condensation)

■ TPR (Thyristor power regulator)

Model	Single phase			Three phase	
	TPR-2N	TPR-2N	TPRF-2N	TPR-3N	TPRF-3N
Appearance					
W×H×D (mm)	92×100×131	115.2×194.7×131	115.2×194.7×131	190X266X150	169×361×213
Input voltage	110 V a.c, 220 V a.c, 380 V a.c, 440 V a.c				
Operating Frequency	50 - 60 Hz				
Rated current	25 A, 35 A	50 A, 70 A		35 A, 50 A, 60 A	70 A, 100 A
Ambient temperature	0 - 50 ℃ (Ambient humidity : Max. 90% R.H.)				
Applied load	Resistance load / L load			Resistance load / L load	
Control Input	Current input : 4 - 20 mA d.c, Voltage input : 1 - 5 V d.c, Contact input : ON - OFF				
Output voltage	Min. 97 % against input voltage				
Protection circuit	Fuse, Over current protection, short detection				
Starting Method	Soft Start, Soft Down type				
Cooling type	Auto cooling (70 A : Forced cooling by FAN)			Forced cooling by the FAN	
Alarm output	Short alarm (FUSE), over current(Relay contact 1a, 250 V, 1 A)				
Insulation resistance	Min. 20 M Ω (500 V Mega)				
Option	-	Communication RS232C / 485		-	Communication RS232C / 485
Communication	-	RS485		-	RS485
Control Method	· Phase control · Cycle control · ON / OFF			· Phase control · ON / OFF	
Function	· Output Limit	· Soft start · Load Break Alarm (L.L) · Over Current Alarm (O.C)		· Output Limit	· Fuse Break Alarm · Load Break Alarm (L.L) · Over Current Alarm (O.C)

■ HEATSINK (HSP series / HSM series)

Model	HSP-10	HSP-20	HSP-40	HSM-70	HSM-110	HSM-150	HSM-200	HSM-250
	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□□	
Appearance								
Capacity	10 A	20 A	30 A	10 A	20 A	40 A	20 A	40 A
			40 A		30 A	10 A	30 A	
length	48 mm	80 mm	109 mm	70 mm	110 mm	150 mm	200 mm	250 mm

■ SINGLE PHASE SSR (Solid State Relay)- Low Voltage (100 - 240 V a.c)

Model		HSR-2D102 □	HSR-2D202 □	HSR-2D302 □	HSR-2D402 □	HSR-2D502 □	HSR-2D702 □
Appearance							
W × H × D (mm)		44 × 64 × 29					
Input	Rated voltage	5 - 24 V d.c					
	Voltage use range	4 - 32 V d.c					
	Impedance	Less than 4 kΩ					
	Operating voltage	More than 3 V d.c					
	Release voltage	Less than 1.5 V					
Output	Rated load voltage	100 - 240 V a.c					
	Load voltage range	90 - 264 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	170 A	250 A	315 A		580 A	
Output voltage drop		1.3 V	1.6 V	1.8 V			
Leakage current		10 mA	15 mA				
Insulation resistance		500 V d.c 100 MΩ (Between I/O and case)					
Dielectric strength		2,500 V a.c (1 minute at 60 Hz)					
Vibration		10 - 55 Hz Double amplitude width 1.5 mm/ X.Y.Z each direction for 2 hours					
Shock		1,000 m/s ² (Approx100G) X.Y.Z each axis 3 times					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 150 g(Including packing box)					

■ SINGLE PHASE SSR (Solid State Relay)- Low Voltage (100 - 240 V a.c)

Model		HSR-2A102 □	HSR-2A202 □	HSR-2A302 □	HSR-2A402 □	HSR-2A502 □	HSR-2A702 □
Appearance							
W ×H ×D (mm)		44 ×64 ×29					
Input	Rated voltage	100 - 240 V a.c					
	Voltage use range	90 - 264 V a.c					
	Impedance	Less than 40 kΩ					
	Operating voltage	More than 72 V d.c					
	Release voltage	Less than 40 V a.c					
Output	Rated load voltage	100 - 240 V a.c					
	Load voltage range	90 - 264 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	170 A	250 A	315 A		580 A	
Output voltage drop		1.3 V	1.6 V	1.8 V			
Leakage current		15 mA					
Insulation resistance		500 V d.c 100 MΩ(Between I/O and case)					
Dielectric strength		2,500 V a.c (1 minute at 60Hz)					
Vibration		10 - 55 Hz Double amplitude width:1.5 mm/ X.Y.Z each direction for 2 hours					
Shock		1,000 $\frac{m}{s^2}$ (Approx100G) X.Y.Z each axis 3 times					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 150 g(Including packing box)					

THREE PHASE SSR (Solid State Relay) - Low Voltage (100 - 240 V a.c)

Model	HSR-3D102 □	HSR-3D202 □	HSR-3D302 □	HSR-3D402 □	HSR-3D502 □	HSR-3D702 □	
Appearance							
W×H×D (mm)		109×75×36					
Input	Rated voltage	5 - 24 V d.c					
	Voltage use range	4 - 32 V d.c					
	Impedance	Less than 4 kΩ					
	Operating voltage	More than 3 V d.c					
	Release voltage	Less than 1.4 V					
Output	Rated load voltage	100 - 240 V a.c					
	Load voltage range	90 - 264 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	125 A	260 A	315 A		580 A	
Output voltage drop		1.5 V	1.8 V				
Leakage current		10 mA	15 mA				
Insulation resistance		500 V d.c 100 MΩ (Between I/O and case)					
Dielectric strength		2,500 V a.c (1minute at 60 Hz)					
Vibration		10 - 55 Hz Double amplitude width 1.5 mm/ X.Y.Z each direction for 2 hours					
Shock		1,000 ㏪ (Approx100G) X.Y.Z each axis 3 times					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 400 g(Including packing box)					

THREE PHASE SSR (Solid State Relay)- Low Voltage (100 - 240 V a.c)

Model		HSR-3A102 □	HSR-3A202 □	HSR-3A302 □	HSR-3A402 □	HSR-3A502 □	HSR-3A702 □
Appearance							
W ×H ×D (mm)		109 ×75 ×36					
Input	Rated voltage	100 - 240 V d.c					
	Voltage use range	90 - 264 V d.c					
	Impedance	Less than 40 kΩ					
	Operating voltage	More than 72 V d.c					
	Release voltage	Less than 40 V a.c					
Output	Rated load voltage	100 - 240 V a.c					
	Load voltage range	90 - 264 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	125 A	260 A	315 A		580 A	
Output voltage drop		1.3 V	1.6 V	1.8 V			
Leakage current		20 mA				15 mA	
Insulation resistance		500 V d.c 100 MΩ(Between I/O and case)					
Dielectric strength		2,500 V a.c (1minute at 60Hz)					
Vibration		10 - 55 Hz Double amplitude width:1.5 mm/ X.Y.Z each direction for 2 hours					
Shock		1,000 m/s² (Approx100G) X.Y.Z each axis 3 times					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 400 g(Including packing box)					

■ SINGLE PHASE SSR (Solid State Relay)- High Voltage (100 - 440 V a.c)

Model		HSR-2D104 □	HSR-2D204 □	HSR-2D304 □	HSR-2D404 □	HSR-2D504 □	HSR-2D704 □
Appearance							
W × H × D (mm)		44 × 64 × 29					
Input	Rated voltage	5 - 24 V d.c					
	Voltage use range	4 - 32 V d.c					
	Impedance	Less than 4 kΩ					
	Operating voltage	More than 3 V d.c					
	Release voltage	Less than 1.4 V					
Output	Rated load voltage	100 - 440 V a.c					
	Load voltage range	90 - 480 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	170 A	250 A	350 A	370 A	580 A	
Output voltage drop		1.3 V	1.6 V	1.8 V			
Leakage current		20 mA					
Insulation resistance		500 V d.c 100 MΩ (Between I/O and case)					
Dielectric strength		2,500 V a.c (1 minute at 60 Hz)					
Vibration		10 - 55 Hz Double amplitude width 1.5 mm					
Shock		1,000 m/s ² (Approx 100G)					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 150 g (Including packing box)					

■ SINGLE PHASE SSR (Solid State Relay)- High Voltage (100 - 440 V a.c)

Model		HSR-2A104 □	HSR-2A204 □	HSR-2A304 □	HSR-2A404 □	HSR-2A504 □	HSR-2A704 □
Appearance							
W ×H ×D (mm)		44 ×64 ×29					
Input	Rated votage	100 - 240 V a.c					
	Voltage use range	90 - 264 V a.c					
	Impedance	Less than 40 k Ω					
	Operating voltage	More than 75 V d.c					
	Release voltage	Less than 40 V a.c					
Output	Rated load voltage	100 - 440 V a.c					
	Load voltage range	90 - 480 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	170 A	250 A	350 A	370 A	580 A	
Output voltage drop		1.3 V	1.6 V	1.8 V			
Leakage current		15 mA					20 mA
Insulation resistance		500 V d.c 100 MΩ(Between I/O and case)					
Dielectric strength		2,500 V a.c (1 minute at 60 Hz)					
Vibration		10 - 55 Hz Double amplitude width:1.5 mm					
Shock		1,000 ㎐ (Approx 100G)					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 150 g(Including packing box)					

THREE PHASE SSR (Solid State Relay)- High Voltage (100 - 440 V a.c)

Model		HSR-3D104 □	HSR-3D204 □	HSR-3D304 □	HSR-3D404 □	HSR-3D504 □	HSR-3D704 □
Appearance							
W ×H ×D (mm)		109 ×75 ×36					
Input	Rated vottage	5 - 24 V d.c					
	Voltage use range	4 - 32 V d.c					
	Impedance	Less than 4 kΩ					
	Operating voltage	More than 3 V d.c					
	Release voltage	Less than 1.4 V					
Output	Rated load voltage	100 - 440 V a.c					
	Load voltage range	90 - 480 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	170 A	250 A	350 A	370 A	580 A	
Output voltage drop		1.3 V	1.8 V				
Leakage current		20 mA					
Insulation resistance		500 V d.c 100 MΩ(Between I/O and case)					
Dielectric strength		2,500 V a.c (1minute at 60Hz)					
Vibration		10 - 55 Hz Double amplitude width 1.5 mm					
Shock		1,000 𐄂𐄂 (Approx 100G)					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 400 g(Including packing box)					

THREE PHASE SSR (Solid State Relay)- High Voltage (100 - 440 V a.c)

Model	HSR-3A104 □	HSR-3A204 □	HSR-3A304 □	HSR-3A404 □	HSR-3A504 □	HSR-3A704 □	
Appearance							
W ×H ×D (mm)		109 ×75 ×36					
Input	Rated vottage	100 - 240 V d.c					
	Voltage use range	90 - 264 V d.c					
	Impedance	Less than 72 kΩ					
	Operating voltage	More than 75 V d.c					
	Release voltage	Less than 40 V a.c					
Output	Rated load voltage	100 - 440 V a.c					
	Load voltage range	90 - 480 V a.c					
	Rated load current	10 A	20 A	30 A	40 A	50 A	70 A
	Input current	170 A	260 A	350 A	370 A	580 A	
Output voltage drop		1.95 V	1.8 V				
Leakage current		20 mA					
Insulation resistance		500 V d.c 100 MΩ(Between I/O and case)					
Dielectric strength		2,500 V a.c (1minute at 60Hz)					
Vibration		10 - 55 Hz Double amplitude width:1.5 mm					
Shock		1,000 %g (Approx 100G)					
Storage temperature		-30 ℃ ~ 90 ℃					
Ambient temperature		-20 ℃ ~ 80 ℃					
Ambient humidity		45 ~ 85 %R.H.					
Net weight		Approx 400 g(Including packing box)					

DIGITAL COUNTER · TIMER

DIGITAL COUNTER / TIMER (Built-in Batch counter)

Model	GE6-P4	GE6-P6	GE6-T6	GE4-P4	GE4-P6	GE4-T6
Appearance						
W×H×D (mm)	72×36×86			48×48×85		
Type	Preset		Display	Preset		Display
Display digit	4Digits 2Stages	6Digits 2Stages	6Digits 1Stage	4Digits 2Stages	6Digits 2Stages	6Digits 1Stage
FND Hight	PV : 11 mm SV : 8 mm			PV : 11 mm SV : 8 mm		
Function	Out-counter setting & Indication(Exception: Indication)			Out-counter output & constant output		
	PNP / NPN Input selection, built-in switch			Twin timer(On/Off Time separate setting)		
	Dual counter function (CP1+CP2)			Flicker MODE 99.99 sec setting		
	Prescale function			Key Lock function		
	OFFSET setting function(Standard value when reset)			P.V storage function when power off		
Counting speed & Input	1 / 30 / 1 K / 10 Kcps, Contact. Non-contact					
Reset	External reset signal width 0.1 ms / 1 ms / 20 m sec selectable					
Input type	CP1, CP2, RST, RST.B (TOTAL is exception) 4 Input					
	[H]Level 4 - 30 V d.c [L]Level 0 - 2 V d.c NPN / Internal full-up by PNP setting / full-down resistance connection(4.7 kΩ)					
Power voltage	1. 100 V - 240 V d.c / a.c 50 - 60 Hz(±10%)					
	2. 24 V - 60 V d.c / a.c 50 - 60 Hz(±10%)					
Consumption power	About 13 VA(220 V a.c 60 Hz)					
Power supply to sensor	+12 V d.c (Voltage fluctuation rate : Max. ±5%) 200 mA Max.					
Control output	RELAY1	1a (250 V a.c 3 A)	-	1c (250 V a.c 3 A)		
	RELAY2	1c (250 V a.c 3 A)		1c (250 V a.c 3 A)	-	
	TR1/TR2	NPN open collector 30 V d.c 100 mA Max. (Refer to terminal structure)				
Dielectric strength	-					
Ambient temperature & humidity	-10 - 50 ℃ 30 - 85 % R.H.(Without condensation)					
Protection structure	IP65(Front)					

DIGITAL COUNTER / TIMER (Built-in Batch counter)

Model	GE3-P6		GE3-T6		GE7-P6		GE7-T6		
Appearance									
W×H×D (mm)	96×48×100				72×72×87				
Type	Preset		Display		Preset		Display		
Display digit	6Digits 2Stages		6Digits 1Stage		6Digits 2Stages		6Digits 1Stage		
FND Hight	PV : 13 mm SV : 10 mm				PV : 13 mm SV : 10 mm				
Function	Out-counter setting & Indication(Exception: Indication)				Out-counter output & constant output				
	PNP / NPN Input selection, built-in switch				Twin timer(On/Off Time separate setting)				
	Dual counter function (CP1+CP2)				Flicker MODE 99.99 sec setting				
	Prescale function				Key Lock function				
	OFFSET setting function(Standard value when reset)				P.V storage function when power off				
Counting speed & input	1 / 30 / 1 K / 10 Kcps, Contact. Non-contact								
Reset	External reset signal width 0.1 ms / 1 ms / 20 m sec selectable								
Input type	CP1, CP2, RST, RST.B (TOTAL is exception) 4 Input								
	[H]Level 4 - 30 V d.c [L]Level 0 - 2 V d.c NPN / Internal full-up by PNP setting / full-down resistance connection(4.7 kΩ)								
Power voltage	1. 100 V - 240 V d.c / a.c 50 - 60 Hz(±10%)								
	2. 24 V - 60 V d.c / a.c 50 - 60 Hz(±10%)								
Consumption power	About 13 V A(220 V a.c 60 Hz)								
Power supply to sensor	+12 V d.c (Voltage fluctuation rate : Max. ±5%) 200 mA Max.								
Control output	RELAY1	1a (250 V a.c 3 A)		-		1a (250 V a.c 3 A)		-	
	RELAY2	1c (250 V a.c 3 A)				1c (250 V a.c 3 A)			
	TR1/TR2	NPN open collector 30 V d.c 100 mA Max. (Refer to terminal structure)							
Dielectric strength	-								
Ambient temperature & humidity	-10 - 50 ℃ 30 - 85 % R.H.(Without condensation)								
Protection structure	IP65(Front)								

DIGITAL COUNTER / TIMER

Model		GF7-P62 / GF7-P42	GF7-P61 / GF7-P41	GF7-T60
Appearance				
W ×H ×D (mm)		72 ×72 ×127.5	72 ×72 ×127.5	72 ×72 ×127.5
Control method		Up, Down , Up/Down		
Display method		7 Segment LED LED Height :10 mm, 11 mm		
Stage of freeset		1stage, 2stages	1stage	—
Display digit		4 digits, 6 digits		6 digits
Max. Counting speed		30 / 1 K / 3 K/ 5 Kcps		
Counting input		Contact, Non-contact		
Reset		External reset: Min.input signal width 0.02 sec (Contact, Non-contact input) Power reset: Min. power opening time 0.5 sec		
Inhibit input		Voltage input(d.c input) ‘H’_level 5-30 Vd.c, ‘L’_level 0-2 Vd.c (input resistance Approx. 4.7 kΩ)		
Memory protection		Semipermanent		
Power voltage		100 - 240 V a.c (50/60 Hz)		
Power consumption		GF7-P62 : Approx. 8.7 VA, GF7-P61 : Approx. 7.6 VA, GF7-T60 : Approx. 6.4 VA (220 V a.c 60 Hz)		
Power supply to sensor		12 V d.c (Voltage fluctuation rate : Max. ± 10 %) 100 mA Max.		
Control output		Contact output : 1c (250 V a.c 3 A) 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 exposed non-elecrifying metal part		
Dielectric strength		2000 V a.c 50/60 Hz for 1minute		
Vibration	Malfuction	10 - 55 Hz, X · Y · Z each position for 10 minutes		
	Durability	10 - 55 Hz, 0.76 mm _{rms} X · Y · Z each position for 2 hours		
Shock	malfuction	100 %g 6, each direction 3 times		
	Durability	300 %g 6, each direction 3 times		
Life	Mechanical	10 million operations Min. (Relay type)		
	Electrical	10,000 million operation Min. (Relay type)		
Ambient temperature & humidity		0 ~ 50 ℃ · 30 ~ 85 %R.H.		

DIGITAL COUNTER / TIMER

Model	GF4-P41	GF4-P41S (SOCKET)	GF4-T40
Appearance			
W ×H ×D (mm)	48 ×48 ×112	48 ×48 ×112	48 ×48 ×112
Control method	Up, Down , Up/Down		
Display method	7 Segment LED LED Height :8 mm		
Stage of freeset	1stage	1stage	—
Display digit	4 digits		
Max. Counting speed	30 / 5 Kcps		
Counting input	Contact, Non-contact		
Reset	External reset: Min.input signal width 0.02 sec (Contact, Non-contact input) Power reset: Min. power opening time 0.5 sec		
Inhibit input	Voltage input(d.c input) “H”_level 5-30 Vd.c, “L”_level 0-2 Vd.c (input resistance Approx. 4.7 kΩ)		
Memory protection	Semipermanent		
Power voltage	100 - 240 V a.c (50/60 Hz)		
Power consumption	GF4-T40 : 4.8 VA, GF4-P41/ P41S : 6.2 VA (240 V a.c 60 Hz)		
Power supply to sensor	12 V d.c (Voltage fluctuation rate : Max. + 10 %) 100 mA Max.		
Control output	Contact output : 1c (250 V a.c 3 A) 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 exposed non-electrifying metal part		
Dielectric strength	2000 V a.c 50/60 Hz for 1minute		
Vibration	Malfuction	10 - 55 Hz, X · Y · Z each position for 10 minutes	
	Durability	10 - 55 Hz, 0.76 mm _{rms} X · Y · Z each position for 2 hours	
Shock	malfuction	100 %g, each direction 3 times	
	Durability	300 %g 6, each direction 3 times	
Life	Mechanical	10 million operations Min. (Relay type)	
	Electrical	10,000 million operation Min. (Relay type)	
Ambient temperature & humidity		0 ~ 50 ℃ · 30 ~ 85 %R.H.	

DIGITAL COUNTER · TIMER

DIGITAL TIMER

Model	LF4N-A	LF4N-B	LF4N-C	LF4N-D	TF4-A	TF4-B	TF4-C	TF2
Appearance								
W×H×D (mm)	48×48×75.5				48×48×95.6			48×96×112
Terminal type	8 pin Plug		11 pin Plug		8 pin Plug			plug-in
Control method	Up, Down				Up, Down			Up
Display method	LCD				LED Height 7 Segment LED : 8 mm			
Display digit	3 digits				4 digits			3 digits
Time setting range	0.01 s ~ 9990 h				999.9 sec/ 9999 sec	9 m 59.9 sec/ 59 m 59 sec	59 hours 59 minute	99.9 sec/ 999 sec
Counting input	Reset, start, inhibit				Reset, 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				External reset, inhibit: Min. input signal width 0.02 sec. Power reset: Min. power opening time 0.5 sec.			
Power voltage	24 - 240 V a.c/d.c (50 / 60 Hz)				100 - 240 V a.c (50/60 Hz)			
Power consumption					Approx. 4.8 VA (220 V a.c 60 Hz)			Approx. 4.8 VA (220 V a.c 60 Hz)
Control output	Contact output : 1c 250 V a.c 3A (resistance load)				Contact output : 1c 250 V a.c 3 A (resistance load) Non-Contact output: 30 V d.c 100 mA Max.			Contact output : 1 c 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 exposed non-electrifying metal part			
Dielectric strength					2,000 V a.c 50/60 Hz for 1 minute (Between terminal)			
Vibration	Malfunction				10 - 55 Hz, X · Y · Z each position for 10 minutes			
	Durability				10 - 55 Hz, 0.76 mm, X · Y · Z each position for 2 hours			
Shock	Malfunction				100 % 6 positions, each 3 times			
	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 °C · 30 ~ 85 %R.H.			

DIGITAL DUAL TIMER

Model	TT4-P42A	TT4-P42B	TT7
Appearance			
W×H×D (mm)	48×48×100	48×48×100	72×72×87
Power supply	100 - 240 V a.c 50 - 60 Hz		
Voltage Regulation	± 10 % of Power supply voltage		
Power Consumption	Below 9.1 VA (at 220 V a.c 60Hz)		
Display method	PV : 11 mm, SV : 8 mm		PV: 13.5 mm, SV : 13.5 mm
Tereminal type	Plug 11 Pin	Plug 8 Pin	Terminal
Min. signal amplitude	START	—	Max. 100 ms
	RST/INH		
Control	Contact	OUT A : Specified time SPDT (1c), OUTB : Specified time SPDT(1c)	
	Construction capacity	250 V a.c 5 A (Resistance load)	
Life	Mechanical	10 million times	
	Electrical	more than100,000 times	
Dielectric strength	2,000 V a.c 50 / 60 Hz for 1 minute		
Noise	±2 kV		
Insulation resistance	Min. 100 MΩ (500 V d.c mega standard)		
Vibration (Durability)	10 - 55 Hz (cycle 1 minute), Double amplitude 0.5 for 2h		
Shock	Durability	300 (30 G) X · Y · Z each direction 3 times	
	Malfunction	100 (10 G) X · Y · Z each direction 3 times	
Ambient temperature	-10 ~ 55 °C Without freeze		
Storage temperature	-20 ~ 65 °C Without freeze		
Ambient humidity	30 ~ 85 %R.H.		

MULTI-ANALOG TIMER

MODEL		MA4N-A	MA4N-B	MA4N-C
Appearance				
W × H × D (mm)		48 × 48 × 94		
Function		Multi operation, Multi time		POWER ON DELAY, Multi time
Power voltage		24 - 240 V a.c/d.c 50 - 60 Hz		
Operating voltage		±10 % of power voltage		
Power consumption		a.c : Approx. 5.3 VA Max., d.c : 2.5 W		
Time setting range		0.12 sec ~ 300 hours		
Min. signal amplitude		START input, INHIBIT input, RESET input: Min. 20 ms		—
Input		• 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		—
Control output	Contact	Specified time DPDT (2c)		Specified time SPDT (1c), Instantaneous time SPDT (1c)
	Contact capacity	250 V a.c 5 A (Resistance load)		
Variation of operation time		Max. ±0.3 % (Rate against full scale)		
Setting error		Max. ± 5 % ±0.05 sec		
Voltage error		Max. ±0.5 %		
Temperature error		Max. ±2 %		
Dielectric strength		2,000 V a.c 50/60 Hz for 1minute		
Vibration	Malfunction	10 - 55 Hz double amplitude 0.75 mm		
	Durability	10 - 55 Hz double amplitude 0.5 mm		
Shock	Malfunction	100 % (Approx. 10 G)		
	Durability	300 % (Approx. 30 G)		
Life	Mechanical	Over 10 million operations (Open & Short frequency : 180 / min)		
	Electrical	Over 100,000 (250V a.c 3 A load resistance)		
Ambient temperature & humidity		0 ~ 50 °C · 30 ~ 85 %R.H.		

ANALOG TIMER

ANALOG TIMER

Model	Exposure type	T38N	T48N	T57NE		TF62NE		TF62DE	
	Panel type			T57NP		TF62NP		TF62DP	
Appearance									
		Exposure type	Exposure type	Panel type	Exposure type	Panel type	Exposure type	Panel type	Exposure type
W×H×D (mm)		40.5×50.5	48.0×48.0(H)	50.0×62.0 57.5×84.5		50.0×62.0 57.5×84.5		50.0×62.0 57.5×84.5	
Function		POWER ON DELAY TIMER				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 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')					'12' model is not available		
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				FLICKER (ON Start)		FLICKER (ON-A Start)	
	Contact	A type (Time - limit 1c + Instantaneous 1a) / B type (Time - limit 1c + Instantaneous 1c) / C type (Time - limit 2c)				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		2000 V a.c 50/60 Hz for 1 minute							
Noise		±2 kV							
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 ㉫ (30 G) X · Y · Z each direction 3 times							
Ambient temperature		-10 ~ 55 ℃ Without freeze							
Storage temperature		-25 ~ 65 ℃ Without freeze							
Ambient humidity		30 ~ 85 % R.H.							

MULTI PULSE METER

Model	BP6	
Appearance		
W×H×D (mm)	72×36×100	
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 mA (voltage fluctuation rate: ±10 %)	
Measuring Accuracy	FS ±0.01 % rdg ±1 dig	
Measurement Range	0.0005 Hz ~ 50 kHz, 0.001 s ~ 3.200 s, 0 ~ 4 × 10 ⁹ Count	
Max. Display Digits	5 digits (-19999 ~ 99999)	
Display method	7 Segment	
Input Signal	Non-Contact Input: Max. 50 kHz (ON/OFF width for each above 10 μs) (ON voltage: 4.5 V - 24 V, OFF voltage: 0 - 1.0 V) Contact Input: Max. 30 Hz (ON/OFF width for each above 33 ms) (12 V d.c, able to switch the current of 2 mA 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 counter · F10: absolute ratio · F11: error ratio · F12: density · F13: error	
Noise Immunity	By noise simulator, square-shaped wave noise (pulse width 1 μs) ±2000V	
Vibration Resistance	Durability	10 - 55 Hz double amplitude width 0.75 mm in each X · Y · Z direction for 2 hours
Shock Resistance	Malfunction	10 - 55 Hz double amplitude width 0.5 mm in each X · Y · Z direction for 10 minutes
Shock Resistance	Durability	300 % (approx. 30G) in each X · Y · Z direction for 3 times
Shock Resistance	Malfunction	100 % (approx. 10G) in each X · Y · Z direction for 3 times
Operating Ambient Environment	Temperature: -10 ~ 50 °C (without condensation) Humidity: 35 ~ 85 % R.H.	

MULTI PULSE METER

Model	RP1 RP3		RP4		RP6	RP7	
Appearance							
W×H×D (mm)	48×24×100		96×48×105		48×48×85	72×36×105	72×72×92
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 10 VA (240 V a.c)	Below 9.5 VA (240 V a.c)	Below 12 VA (240 V a.c)			Below 9.5 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 mA (voltage fluctuation rate ±10 %)						
Measuring Accuracy	±0.02 % rdg ±1 digit						
Measurement Range	0.0003 Hz ~ 10 kHz, 0.001 s ~ 3.200 s, 0 ~ 4 × 10 ⁹ Count						
Max. Display Digits	4 Digits (0 ~ 9999)		5 Digits (0 ~ 99999)				
Display Method	7 Segment						
Input Signal	Non-Contact Input: Max. 10 kHz (ON/OFF width for each above 50 μs)(ON voltage: 4.5 V - 24 V, OFF voltage : 0 - 1.0 V) Contact Input: Max. 30 Hz (ON/OFF width for each above 33 ms)(12 V d.c, able to switch the current of 2 mA sufficiently)						
Output type	Relay Output (H)	Relay Output (H, GO, L) (HH, H,GO, L, LL)	Relay Output (H)	Relay Output (H, GO, L)	Relay Output (H, GO, L) (HH, H, GO, L, LL)		
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 μs) ±2000 V						
Vibration	Durability	10 - 55 Hz double amplitude width 0.75 mm in each X · Y · Z direction for 2 hours					
Resistance	Malfunction	10 - 55 Hz double amplitude width 0.5 mm in each X · Y · Z direction for 10 minutes					
Shock	Durability	300 % (approx. 30G) in each X · Y · Z direction for 3 times					
Resistance	Malfunction	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.					

PANEL METER

DIGITAL MULTI PANEL METER

Model	MP3	MP6
Appearance		
W×H×D (mm)	96×48×112	72×36×100
Power Supply	100 - 240 V a.c (50 - 60 Hz) voltage fluctuation rate ±10 %	
Power Consumption	5 VA	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 1 μs, ±3000 V	
Vibration Resistance	Malfunction: 10 - 55 Hz Single amplitude 0.5 mm X · Y · Z each direction for 1 hour Durability: 10 - 55 Hz Single amplitude 0.75 mm X · Y · Z each direction for 2 hours	
Shock Resistance	Malfunction: 100 % for 3 times each in X · Y · Z direction Durability: 300 % for 3 times each in X · Y · Z direction	
Operating Ambient temperature	-10 ~ 55 °C (without freeze)	
Operating Ambient Humidity	Relative Humidity 35 ~ 85 % R.H.	
Operating Circumstance	With no corrosive gas	
Storage Ambient Temperature	-20 ~ 65 °C (without freeze)	
Relay Life Expectancy	Mechanical: More than 20,000,000 times Electrical: More than 100,000 times	

DIGITAL PANEL METER (VOLTAGE METER • CURRENT METER)

Model	BS1	BS3	BS6
Appearance			
W × H × D (mm)	48 × 24 × 100	96 × 48 × 100	72 × 36 × 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 (3 ½ Digit)		
Input signal	a.c voltage, a.c current, d.c voltage, d.c 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	10 - 55 Hz each direction for 1 hour	
	Electrical	10 - 55 Hz each direction for 10 minutes	
Shock	Mechanical	300 ⅓ X · Y · Z each direction 3 times (Approx. 30G)	
	Electrical	100 ⅓ X · Y · Z each direction 3 times (Approx. 10G)	
Ambient Temp. & Humidity		0 ~ 50 °C / 35 ~ 85 % R.H.	

DIGITAL PANEL METER

Model	BA1 DP3-N	DP1		DP6
Appearance				
W×H×D (mm)	48×24×53	48×24×53	96×48×113	72×36×100
Function	Display		Display	Display
Power supply	5 V d.c 12 - 24 V d.c		110/220 V a.c (50/60 Hz)	100/240 V a.c (50/60 Hz) 12 - 48 V d.c
Display unit	-		V · mV · A · mA · μ A · Hz	V · mV · A · mA · μ A
Max. range	±1999 (3 $\frac{1}{2}$ Digit)		±1999 (3 $\frac{1}{2}$ Digit)	±1999 (3 $\frac{1}{2}$ Digit)
Input signal	d.c voltage, d.c current, Instrumentation signal		a.c voltage, a.c current, d.c voltage, d.c current, Instrumentation signal	
A/D converter	2 dual integration			
Sampling cycle	2.5 times / sec.			
Response speed	Approx. 2.5sec.			
Insulation resistance	Min. 100 M Ω at 500 V d.c mega between external terminal and case			
Dielectric strength	1500 V a.c for 1 minute between power and external terminals			
Vibration	Malfunction	10 - 55 Hz 0.76 mm X · Y · Z each direction for 2 hours		
	Durability	2 - 55 Hz X · Y · Z each direction for 10 minutes		
Shock	Malfunction	100 % each direction 3 times (Approx. 10G)		
	Durability	300 % each direction 3 times (Approx. 30G)		
Ambient temp. & Humidity		0 ~ 50 °C / 35 ~ 85 % R.H. (No condensation)		

DC SWITCHING INDUCTIVE SENSOR (Square Type)

Model	HYP-18S5N□ HYP-18S5P□ HYP-18S8N□ HYP-18S8P□	HYP-25S5N□ HYP-25S5P□ HYP-25S8N□ HYP-25S8P□ HYP-25S12N□ HYP-25S12P□	HYP-30S10N□ HYP-30S10P□ HYP-30S15N□ HYP-30S15P□	HYP-40S20N□ HYP-40S20P□
Appearance				
W×H×D (mm)	18×18×37.5	25×25×40.8	30×30×54.8	40×40×55.0
Object	Steel 18×18×1 mm Steel 25×25×1 mm	Steel 25×25×1 mm Steel 30×30×1 mm Steel 35×35×1 mm	Steel 30×30×1 mm Steel 45×45×1 mm	Steel 50×50×1 mm
Sensing distance	5 mm 8 mm	5 mm 8 mm 12 mm	10 mm 15 mm	20 mm
Mounting distance	0 ~ 4.0 mm 0 ~ 6.4 mm	0~4.0 mm 0~6.4 mm 0~9.6 mm	0~8.0 mm 0~12.0 mm	0~16.0 mm
Frequency	500 Hz 300 Hz	350 Hz 250 Hz 200 Hz	250 Hz 100 Hz	250 Hz
hysteresis	Max. 10 % of sensing distance			
Current voltage	12 - 24 V d.c (±10 %)			
Control output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA			
Power consumption	Max. 10 mA (At 12 V d.c)			
Residual voltage	Max. 1 V (At 24 V d.c, 200 mA)			
Leakage current	Max. 0.5 mA (At 12 V d.c)			
Ambient temperature	-25 °C ~ +70 °C (At ±10 % at +20 °C for sensing distance)			
Insulation resistance	Max. 50 M Ω (At 500 V d.c)			
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)			
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours			
Shock	500 % (Approx. 50 G), X · Y · Z each position for 3 times			
Display	Red LED			
Protection circuit	Surge protection/ reverse polarity protection			
Protection	IP67(IEC)			
Material	Case: PBT resin			

PROXIMITY SENSOR

■ DC SWITCHING INDUCTIVE SENSOR (Round Type)

Model	HYP-8R1.5N□ HYP-8R1.5P□	HYP-8R2N□ HYP-8R2P□	HYP-12R2N□ HYP-12R2P□	HYP-12R4N□ HYP-12R4P□	HYP-18R5N□ HYP-18R5P□	HYP-18R8N□ HYP-18R8P□
Appearance						
∅/ L (mm)	8/30	8/30	12/43	12/43	18/47	18/47
Object	Steel 8 × 8 × 1 mm		Steel 12 × 12 × 1 mm		Steel18 ×18 ×1 mm	Steel25 ×25 ×1 mm
Sensing distance	1.5 mm	2 mm	2 mm	4 mm	5 mm	8 mm
Mounting distance	0 ~ 1.2 mm	0 ~ 1.6 mm	0 ~ 1.6 mm	0 ~ 3.2 mm	0 ~ 4.0 mm	0 ~ 6.4 mm
Frequency	800 Hz		800 Hz	400 Hz	350 Hz	200 Hz
Hysteresis	Max. 10 % of sensing distance					
Current voltage	12 - 24 V d.c (±10 %)					
Control output	Resistive load : Max. 200 mA Inductive load: Max. 100 mA					
Current consumption	Max. 10 mA (At 12 V d.c)					
Residual voltage	Max. 1.5 V		Max. 1 V (At 24 V d.c, 200 mA)			
Leakage voltage	Max. 0.5 mA (At 12 V d.c)					
Ambient voltage	-25 ℃ ~ +70 ℃(Max. ±10 % at +20 ℃ for sensing distance)					
Insulation resistance	Min. 50 MΩ (At 500 V d.c)					
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)					
Vibration	10 - 55 Hz, Double amplitude 1.5 mm X・Y・Z each position for 2 hours					
Shock	500 m/s ² (Approx.50G), X・Y・Z each position for 3 times					
Display	Red LED					
Protection circuit	Surge protection/Reverse polarity protection					
Protection	IP67(IEC)					
Material	Case: stainless Face: PBT resin		Case: stainless Face: PBT resin Holder : PC		Case : Brass(Chrome plating) Face : PBT resin Holder : PC	

■ DC SWITCHING INDUCTIVE SENSOR (Round Type)

Model	HYP-18RL5N □ HYP-18RL5P □	HYP-18RL8N □ HYP-18RL8P □	HYP-30R10N □ HYP-30R10P □	HYP-30R15N □ HYP-30R15P □	HYP-30RL10N □ HYP-30RL10P □	HYP-30RL15N □ HYP-30RL15P □
Appearance						
Ø/ L (mm)	18/80	18/80	30/57	30/57	30/80	30/80
Object	Steel 18 × 18 × 1 mm	Steel 25 × 25 × 1 mm	Steel 30 × 30 × 1 mm	Steel 45 × 45 × 1 mm	Steel 30 × 30 × 1 mm	Steel 45 × 45 × 1 mm
Sensing distance	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 8.0 mm	0 ~ 12.0 mm	0 ~ 8 mm	0 ~ 12 mm
Frequency	350 Hz	200 Hz	250 Hz	100 Hz	250 Hz	100 Hz
Hysteresis	Max. 10% of sensing distance					
Current voltage	12 - 24 V d.c (±10 %)					
Control output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA					
Power consumption	Max. 10 mA (At 12 V d.c)					
Residual voltage	Max. 1V (At 24 V d.c, 200 mA)					
Leakage voltage	Max. 0.5 mA (At 12 V d.c)					
Ambient voltage	-25 °C ~ +70 °C (Max. ±10 % at +20 °C for sensing distance)					
Insulation resistance	Min. 50 MΩ (At 500 V d.c)					
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)					
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours					
Shock	500 m/s ² (Approx. 50G), X · Y · Z each position for 3 times					
Display	Red LED					
Protection circuit	Surge protection/Reverse polarity protection					
Protection	IP67(IEC)					
Material	Case : Brass(Chrome plating) Face : PBT resin Holder : PC					

■ AC SWITCHING INDUCTIVE SENSOR (Square Type)

Model	HYP-25S5A□	HYP-30S10A□	HYP-40S20A□
	HYP-25S8A□	HYP-30S15A□	
Appearance			
W×H×D (mm)	25(W)×25(H)×51.8(D)	30(W)×30(H)×54.8(D)	40(W)×40(H)×55.0(D)
Object	Steel 25×25×1 mm	Steel 40×40×1 mm	Steel 60×60×1 mm
	Steel 30×30×1 mm	Steel 50×50×1 mm	
Sensing distance	5 mm	10 mm	20 mm
	8 mm	15 mm	
Mounting distance	0 ~ 4.0 mm	0 ~ 8.0 mm	0~16.0 mm
	0 ~ 6.4 mm	0 ~ 12.0 mm	
Frequency	20 Hz		
Hysteresis	Max. 10 % of sensing distance		
Power voltage	100 - 240 V a.c (±10 %)		
Control output	Max. 200 mA (At 220 V a.c)		
Residual voltage	Max. 2.2 mA (At 220 V a.c, 200 mA)		
Leakage voltage	Max. 10 V a.c (At 220 V a.c, 200 mA)		
Ambient temperature	-25 ℃ ~ +70 ℃(Max. ±10 % at 20 ℃ of sensing distance)		
Insulation resistance	Min.50 MΩ (At 500 V a.c)		
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)		
Vibration	10 ~ 55 Hz, Double amplitude 1.5 mm, X・Y・Z each position for 2 hours		
Shock	500 m/s ² (Approx. 50G), X・Y・Z each position for 3 times		
Display	Red LED		
Protection circuit	Surge protection		
Protection	IP67 (IEC)		
Material	Case: PBT resin		

■ AC SWITCHING INDUCTIVE SENSOR (Round Type)

Model	HYP-12R2A□	HYP-12R4A□	HYP-18R5A□	HYP-18R8A□	HYP-18RL5A□	HYP-18RL8A□	HYP-30R10A□	HYP-30R15A□	HYP-30RL10A□	HYP-30RL15A□
Appearance										
Ø/ L (mm)	12/43	12/60	18/53	18/53	18/80	18/80	30/57	30/57	30/80	30/80
Object	Steel12×12×1 mm	Steel12×12×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel30×30×1 mm	Steel45×45×1 mm	Steel30×30×1 mm	Steel45×45×1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0 ~ 1.6 mm	0 ~ 3.2 mm	0~4.0 mm	0 ~ 6.4 mm	0~4.0 mm	0 ~ 6.4 mm	0 ~ 8.0 mm	0 ~ 12.0 mm	0 ~ 8.0 mm	0 ~ 12.0 mm
Frequency	20 Hz									
Hysteresis	Max. 10% of sensing distance									
Power voltage	100 - 240 V a.c. (± 10 %)									
Control output	Max. 200 mA (At 220 V a.c.)									
Residual voltage	Max. 10 V a.c. (At 220 V a.c., 200 mA)									
Leakage current	Max. 2.2 mA (At 220 V a.c., 200 mA)									
Ambient temperature	-25 °C ~ +70 °C (Max. ± 10 % at 20 °C of sensing distance)									
Insulation resistance	Min. 50 MΩ (At 500 V a.c.)									
Dielectric strength	2,000 V a.c. for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours									
Shock	500 ㉫ (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection									
Protection	IP67 (IEC)									
Material	Case:Stainless Face:PBT resin Holder : PC		Case:Brass(Chrome plating) Face:PBT resin Holder : PC							

PROXIMITY SENSOR

DC 2WIRE SWITCHING INDUCTIVE SENSOR (Square Type)

Model	HYP-18S5T□	HYP-25S5T□	HYP-30S10T□	HYP-40S20T□
	HYP-18S8T□	HYP-25S8T□ HYP-25S12T□	HYP-30S15T□	
Appearance				
W×H×D (mm)	18×18×37.5	25×25×40.8	30×30×54.8	40×40×55.0
Object	Steel 18×18×1 mm	Steel 25×25×1 mm	Steel 30×30×1 mm	Steel 50×50×1 mm
	Steel 25×25×1 mm	Steel 25×30×1 mm Steel 35×35×1 mm	Steel 45×45×1 mm	
Sensing distance (mm)	5 mm	5 mm	10 mm	20 mm
	8 mm	8 mm 12 mm	15 mm	
Mounting distance	0 ~ 4.0 mm	0 ~ 4.0 mm	0 ~ 8.0 mm	0 ~ 16.0 mm
	0 ~ 6.4 mm	0 ~ 6.4 mm 0~9.6 mm	0 ~ 12.0 mm	
Frequency	500 Hz	350 Hz	250 Hz	100 Hz
	300 Hz	250 Hz 200 Hz	100 Hz	
hysteresis	Max. 10% of sensing distance			
Power voltage	12 - 24 V d.c (±10 %)			
Control output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA			
Residual voltage	Max. 7 V			
Leakage current	Max. 1 mA			
Ambient temperature	-25 ℃ ~ +70 ℃(At ±10 % at+20 ℃ for sensing distance)			
Insulation resistance	Min. 50 MΩ (At 500 V d.c)			
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)			
Vibration	10 - 55 Hz, Double amplitude width 1.5 mm, X · Y · Z each position for 2 hours			
Shock	500 ㉫ (Approx. 50G), X · Y · Z each position for 3 times			
Display	Red LED			
Protection circuit	Surge protection/ reverse polarity protection			
Protection	IP67(IEC)			
Material	Case: PBT resin			

DC 2WIRE SWITCHING INDUCTIVE SENSOR (Round Type)

MODEL	HYP-8R1.5T□	HYP-8R2T□	HYP-12R2T□	HYP-12R4T□	HYP-18R5T□	HYP-18R8T□
Appearance						
∅/L (mm)	8×30	8×30	12×43	12×43	18×47	18×47
Object	Steel 8×8×1 mm		Steel 12×12×1 mm		Steel 18×18×1 mm	Steel 25×25×1 mm
Sensing distance	1.5 mm	2 mm	2 mm	4 mm	5 mm	8 mm
Mounting distance	0~1.2 mm	0~1.6 mm	0~1.6 mm	0~3.2 mm	0~4.0 mm	0~6.4 mm
Frequency	800Hz		800Hz	400Hz	350Hz	200Hz
Hysteresis	Max. 10 % of sensing distance					
Power voltage	24 V d.c (±10 %)					
Control output	Resistive load : Max. 200 mA Inductive load: Max. 100 mA					
Residual voltage	Max. 7 V					
Leakage voltage	Max. 1 mA					
Ambient voltage	-25℃~+70℃(Max. ±10 % at +20℃ for sensing distance)					
Insulation resistance	Min. 50 MΩ (At 500 V d.c)					
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)					
Vibration	10~55 Hz, Double amplitude 1.5 mm, X·Y·Z each position for 2 hours					
Shock	500 ㉫ (Approx. 50G), X·Y·Z each position for 3 times					
Display	Red LED					
Protection circuit	Surge protection/Reverse polarity protection(Exception : HYP-8RT Series)					
Protection	IP67(IEC)					
Material	Case: stainless		Case : Stainless		Case : Brass (Chrome plating)	
	Face: PBT resin Holder : PC		Face : PBT resin Holder : PC		Face : PBT resin Holder : PC	

DC 2WIRE SWITCHING INDUCTIVE SENSOR (Round Type)

MODEL	HYP-18RL5T □	HYP-18RL8T □	HYP-30R10T □	HYP-30R15T □	HYP-30RL10T □	HYP-30RL15T □
Appearance						
Ø / L (mm)	18 / 80	18 / 80	30 / 57	30 / 57	30 / 80	30 / 80
Object	Steel 18 × 18 × 1 mm	Steel 25 × 25 × 1 mm	Steel 30 × 30 × 1 mm	Steel 45 × 45 × 1 mm	Steel 30 × 30 × 1 mm	Steel 45 × 45 × 1 mm
Sensing distance	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 8.0 mm	0 ~ 12.0 mm	0 ~ 8 mm	0 ~ 12 mm
Frequency	350 Hz	200 Hz	250 Hz	100 Hz	250 Hz	100 Hz
Hysteresis	Max. 10 % of sensing distance					
Power voltage	24 V d.c (± 10 %)					
Control output	Resistive load : Max. 200 mA Inductive load: Max. 100 mA					
Residual voltage	Max. 7 V					
Leakage voltage	Max. 1 mA					
Ambient voltage	-25 °C ~ +70 °C (Max. ± 10 % at +20 °C for sensing distance)					
Insulation resistance	Min. 50 MΩ (At 500 V d.c)					
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)					
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours					
Shock	500 %g (Approx. 50G), X · Y · Z each position for 3 times					
Display	Red LED					
Protection circuit	Surge protection/Reverse polarity protection					
Protection	IP67(IEC)					
Material	Case : Brass(Chrome plating) Face : PBT resin Holder : PC					

DC SWITCHING INDUCTIVE SENSOR (Relay Connector , Round Type)

Model	HYP-12R2N □-CR 12R2P □-CR	HYP-12R4N □-CR 12R4P □-CR	HYP-18R5N □-CR 18R5P □-CR	HYP-18R8N □-CR 18R8P □-CR	HYP-18RL5N □-CR 18RL5P □-CR	HYP-18RL8N □-CR 18RL8P □-CR	HYP-30R10N □-CR 30R10P □-CR	HYP-30R15N □-CR 30R15P □-CR	HYP-30RL10N □-CR 30RL10P □-CR	HYP-30RL15N □-CR 30RL15P □-CR
Appearance										
Ø / L (mm)	12 × 43	12 × 43	18 × 47	18 × 47	18 × 80	18 × 80	30 × 57	30 × 57	30 × 80	30 × 80
Object	Steel 12 × 12 × 1 mm		Steel 18 × 18 × 1 mm	Steel 25 × 25 × 1 mm	Steel 18 × 18 × 1 mm	Steel 25 × 25 × 1 mm	Steel 30 × 30 × 1 mm	Steel 45 × 45 × 1 mm	Steel 30 × 30 × 1 mm	Steel 45 × 45 × 1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0 ~ 1.6 mm	0 ~ 3.2 mm	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 8.0 mm	0 ~ 12.0 mm	0 ~ 8.0 mm	0 ~ 12.0 mm
Frequency	800 Hz	400 Hz	350 Hz	200 Hz	350 Hz	200 Hz	250 Hz	100 Hz	250 Hz	100 Hz
Hysteresis	Max. 10 % of sensing distance									
Current voltage	12 - 24 V d.c (± 10 %)									
Control output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA									
Current consumption	Max. 10 mA (At 12 V d.c)									
Residual voltage	Max. 1 V (At 24 V d.c, 200 mA)									
Leakage current	Max. 0.5 mA (At 12 V d.c)									
Ambient temperature	-25 °C ~ +70 °C (Max. ± 10 % at +20 °C for sensing distance)									
Insulation resistance	Min. 50 MΩ (At 500 V d.c)									
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude width 1.5 mm, X · Y · Z each position for 2 hours									
Shock	500 %g (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection/ Reverse polarity protection									
Protection	IP67(IEC)									
Material	Case: stainless, Face: PBT resin Holder : PC		Case : Brass(Chrome plating), Face : PBT resin Holder : PC							

PROXIMITY SENSOR

AC SWITCHING INDUCTIVE SENSOR (Relay Connector, Round Type)

Model	HYP-12R2A □-CR	HYP-12R4A □-CR	HYP-18R5A □-CR	HYP-18R8A □-CR	HYP-18RL5A □-CR	HYP-18RL8A □-CR	HYP-30R10A □-CR	HYP-30R15A □-CR	HYP-30RL10A □-CR	HYP-30RL15A □-CR
Appearance										
Ø/ L (mm)	12/60	12/60	18/53	18/53	18/80	18/80	30/57	30/57	30/80	30/80
Object	Steel12×12×1 mm	Steel12×12×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel30×30×1 mm	Steel45×45×1 mm	Steel30×30×1 mm	Steel45×45×1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0 ~ 1.6 mm	0 ~ 3.2 mm	0 ~ 4 mm	0 ~ 6.4 mm	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 8.0 mm	0 ~ 12.0 mm	0 ~ 8.0 mm	0 ~ 12.0 mm
Frequency	20 Hz									
Hysteresis	Max. 10 % of sensing distance									
Power voltage	100 - 240 V a.c. (±10 %)									
Control output	Max. 200 mA (At 220 V a.c.)									
Leakage current	Max. 2.2 mA (At 220 V a.c., 200 mA)									
Residual voltage	Max. 10 V a.c. (At 220 V a.c., 200 mA)									
Ambient temperature	-25 °C ~ +70 °C (Max. ±10 % at 20 °C of sensing distance)									
Insulation resistance	Min. 50 MΩ (At 500 V d.c.)									
Dielectric strength	2,000 V a.c. for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours									
Shock	500 %g (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection									
Protection	IP67 (IEC)									
Material	Case:Stainless, Face:PBT resin				Case:Brass(Chrome plating), Face:PBT resin					

DC 2WIRE SWITCHING INDUCTIVE SENSOR (Relay Connector, Round Type)

Model	HYP-12R2T □-C	HYP-12R4T □-C	HYP-18R5T □-C	HYP-18R8T □-C	HYP-18RL5T □-C	HYP-18RL8T □-C	HYP-30R10T □-C	HYP-30R15T □-C	HYP-30RL10T □-C	HYP-30RL15T □-C
Appearance										
Ø/ L (mm)	12/43	12/43	18/47	18/47	18/80	18/80	30/57	30/57	30/80	30/80
Object	Steel12×12×1 mm		Steel18×18×1 mm	Steel25×25×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel30×30×1 mm	Steel45×45×1 mm	Steel30×30×1 mm	Steel45×45×1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0 ~ 1.6 mm	0 ~ 3.2 mm	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 4.0 mm	0 ~ 6.4 mm	0 ~ 8.0 mm	0 ~ 12.0 mm	0 ~ 8.0 mm	0 ~ 12.0 mm
Frequency	800 Hz	400 Hz	350 Hz	200 Hz	350 Hz	200 Hz	250 Hz	100 Hz	250 Hz	100 Hz
Hysteresis	Max. 10 % of sensing distance									
Power voltage	24 V d.c. (±10 %)									
Control output	Resistive load: Max. 50 mA Inductive load: Max. 25 mA									
Residual voltage	Max. 7 V									
Leakage current	Max. 1 mA									
Ambient temperature	-25 °C ~ +70 °C (Max. ±10 %, at +20 °C for sensing distance)									
Insulation resistance	Min. 50 MΩ (At 500 V d.c.)									
Dielectric strength	2,000 V a.c. for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude width 1.5mm, X · Y · Z each position for 2 hours									
Shock	500 %g (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection									
Protection	IP67 (IEC)									
Material	Case:Stainless, Face:PBT resin				Case : Brass (Chrome plating), Face : PBT resin					
	Holder : PC				Holder : PC					

DC SWITCHING INDUCTIVE SENSOR (Connector, Round Type)

Model	HYP-12R2N □-C 12R2P □-C	HYP-12R4N □-C 12R4P □-C	HYP-18R5N □-C 18R5P □-C	HYP-18R8N □-C 18R8P □-C	HYP-18RL5N □-C 18RL5P □-C	HYP-18RL8N □-C 18RL8P □-C	HYP-30R10N □-C 30R10P □-C	HYP-30R15N □-C 30R15P □-C	HYP-30RL10N □-C 30RL10P □-C	HYP-30RL15N □-C 30RL15P □-C
Appearance										
∅/ L (mm)	12/57	12/57	18/55	18/55	18/88	18/88	30/63	30/63	30/85	30/85
Object	Steel12×12×1 mm		Steel18×18×1 mm	Steel25×25×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel30×30×1 mm	Steel45×45×1 mm	Steel30×30×1 mm	Steel45×45×1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0~1.6 mm	0~3.2 mm	0~4.0 mm	0~6.4 mm	0~4.0 mm	0~6.4 mm	0~8.0 mm	0~12.0 mm	0~8.0 mm	0~12.0 mm
Frequency	800 Hz	400 Hz	350 Hz	200 Hz	350 Hz	200 Hz	250 Hz	100 Hz	250 Hz	100 Hz
Hysteresis	Max. 10 % of sensing distance									
Power voltage	12 - 24 V d.c (±10 %)									
Control output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA									
Current consumption	Max. 10 mA (At 12 V d.c)									
Residual voltage	Max. 1V (At 24 V d.c, 200 mA)									
Leakage current	Max. 0.5 mA (At 12 V d.c)									
Ambient temperature	-25 °C ~ +70 °C (Max. ±10 %, at +20 °C for sensing distance)									
Insulation resistance	Min. 50 MΩ (At 500 V d.c)									
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude width 1.5 mm, X · Y · Z each position for 2 hours									
Shock	500 % (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection/ Reverse polarity protection									
Protection	IP67(IEC)									
Material	Case : Stainless, Face : PBT resin Holder : PC		Case : Brass(Chrome plating), Face : PBT resin Holder : PC							

DC 2WIRE SWITCHING INDUCTIVE SENSOR (Connector, Round Type)

Model	HYP-12R2T □-C	HYP-12R4T □-C	HYP-18R5T □-C	HYP-18R8T □-C	HYP-18RL5T □-C	HYP-18RL8T □-C	HYP-30R10T □-C	HYP-30R15T □-C	HYP-30RL10T □-C	HYP-30RL15T □-C
Appearance										
∅/ L (mm)	12/43	12/43	18/47	18/47	18/80	18/80	30/57	30/57	30/80	30/80
Object	Steel12×12×1 mm		Steel18×18×1 mm	Steel25×25×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel30×30×1 mm	Steel45×45×1 mm	Steel30×30×1 mm	Steel45×45×1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0~1.6 mm	0~3.2 mm	0~4.0 mm	0~6.4 mm	0~4.0 mm	0~6.4 mm	0~8.0 mm	0~12.0 mm	0~8.0 mm	0~12.0 mm
Frequency	800 Hz	400 Hz	350 Hz	200 Hz	350 Hz	200 Hz	250 Hz	100 Hz	250 Hz	100 Hz
Hysteresis	Max. 10 % of sensing distance									
Power voltage	24 V d.c (±10 %)									
Control output	Resistive load:Max. 50 mA Inductive load:Max. 25 mA									
Residual voltage	Max. 7 V									
Leakage current	Max. 1 mA									
Ambient temperature	-25 °C ~ +70 °C (+Max. ±10 % at 20 °C of sensing distance)									
Insulation resistance	Min. 50 mA (At 500 V d.c mega)									
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude width 1.5 mm, X · Y · Z each position for 2 hours									
Shock	500 % (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection									
Protection	IP67 (IEC)									
Material	Case:Stainless, Face:PBT resin Holder : PC		Case:Brass(Chrome plating), Face:PBT resin Holder : PC							

PROXIMITY SENSOR

AC SWITCHING INDUCTIVE SENSOR (Connector, Round Type)

Model	HYP-12R2A□-C	HYP-12R4A□-C	HYP-18R5A□-C	HYP-18R8A□-C	HYP-18RL5A□-C	HYP-18RL8A□-C	HYP-30R10A□-C	HYP-30R15A□-C	HYP-30RL10A□-C	HYP-30RL15A□-C
Appearance										
∅/ L (mm)	12/57	12/74	18/55	18/62	18/71	18/88	30/63	30/63	30/85	30/85
Object	Steel12×12×1 mm	Steel12×12×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel18×18×1 mm	Steel25×25×1 mm	Steel30×30×1 mm	Steel45×45×1 mm	Steel30×30×1 mm	Steel45×45×1 mm
Sensing distance	2 mm	4 mm	5 mm	8 mm	5 mm	8 mm	10 mm	15 mm	10 mm	15 mm
Mounting distance	0~1.6 mm	0~3.2 mm	0~4.0 mm	0~6.4 mm	0~4.0 mm	0~6.4 mm	0~8.0 mm	0~12.0 mm	0~8.0 mm	0~12.0 mm
Frequency	20 Hz									
Hysteresis	Max. 10 % of sensing distance									
Power voltage	100 - 240 V a.c. (±10 %)									
Control output	Max. 200 mA (At 220 V a.c.)									
Residual voltage	Max. 10 V a.c. (At 220 V a.c., 200 mA)									
Leakage current	Max. 2.2 mA (At 220 V a.c., 200 mA)									
Ambient temperature	-25 °C~+70 °C(Max. ±10 % at 20 °C of sensing distance)									
Insulation resistance	Min. 50 MΩ (At 500 V d.c.)									
Dielectric strength	2,000 V a.c. for 1 minute (At 50/60 Hz)									
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours									
Shock	500 %g (Approx. 50G), X · Y · Z each position for 3 times									
Display	Red LED									
Protection circuit	Surge protection									
Protection	IP67 (IEC)									
Material	Case : Stainless, Face : PBT resin		Case : Brass(Chrome plating), Face : PBT resin							
	Holder : PC		Holder : PC							

DC CAPACITIVE PROXIMITY SENSOR (Round Type)

Model	HCP-18R8N□ HCP-18R8P□	HCP-18RP8N□ HCP-18RP8P□	HCP-30R15N□ HCP-30R15P□	HCP-30RP15N□ HCP-30RP15P□
Appearance				
∅/ L (mm)	18/75	18×75	30×73.5	30×73.5
Object	Steel 50 X 50 X 1 mm			
Sensing distance	8 mm (variable)	8 mm (variable)	15 mm (variable)	15 mm(variable)
Mounting distance	0 ~ 6.4 mm	0 ~ 6.4 mm	0 ~ 12.0 mm	0 ~ 12.0 mm
Frequency	50 Hz			
Hysteresis	Max. 20 % of sensing distance			
Power voltage	12 - 24 V d.c. (±10 %)			
Control Output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA			
Residual voltage	Max.1.5V (At 24 V d.c., 200 mA)			
Leakage current	Max. 15 mA (At 12 V d.c.)			
Ambient temperature	-25 °C~+70 °C(Max. ±10 % at 20 °C of sensing distance)			
Insulation resistance	Min 50 MΩ			
Dielectric strength	2,000 V a.c. for 1 minute (At 50/60 Hz)			
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours			
Shock	500 %g (Approx. 50 G), X · Y · Z each position for 3 times			
Display	Red LED			
Protection circuit	Surge protection, Reverse polarity protection			
Protection	IP67 (IEC)			
Material	HCP-18R, 30R TYPE	Case : Brass(Chrome plating)	Face : PBT resin	Holder : PC
	HCP-18RP, 30RP TYPE	Case : PBT resin	Face : PBT resin	Holder : PC

AC CAPACITIVE PROXIMITY SENSOR (Round Type)

Model	HYP-18R8A□	HCP-18RP8A□	HCP-30R15A□	HCP-30RP15A□
Appearance				
Ø/ L (mm)	18/75	18/75	30/73.5	30/73.5
Object	Steel 50 X 50 X 1 mm			
Sensing distance	8 mm (variable)	8 mm (variable)	15 mm (variable)	15 mm (variable)
Mounting distance	0 ~ 6.4 mm	0 ~ 6.4 mm	0 ~ 12.0 mm	0 ~ 12.0 mm
Frequency	20 Hz			
Hysteresis	Max. 20 % of sensing distance			
Power voltage	100 - 240 V a.c (±10 %)			
Control Output	Max. 200 mA (At 240 V a.c)			
Residual voltage	Max. 20 V a.c			
Leakage current	Max. 2.2 mA			
Ambient temperature	-25 °C ~ +70 °C (Max. ±20 % At 20 °C of sensing distance)			
Insulation resistance	Min. 50 Ω			
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)			
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each position for 2 hours			
Shock	500 m/s ² (Approx. 50 G), X · Y · Z each position for 3 times			
Display	Red LED			
Protection circuit	Surge protection			
Protection	IP67 (IEC)			
Material	HCP-18 R, 30 R TYPE	Case : Brass(Chrome plating)	Face : PBT resin	Holder : PC
	HCP-18 RP, 30 RP TYPE	Case : PBT resin	Face : PBT resin	Holder : PC

DC CAPACITIVE PROXIMITY SENSOR (Relay Connector, Round Type)

Model	HCP-18R8N □-CR HCP-18R8P □-CR	HCP-18RP8N □-CR HCP-18RP8P □-CR	HCP-30R15N □-CR HCP-30R15P □-CR	HCP-30RP15N □-CR HCP-30RP15P □-CR
Appearance				
Ø/ L (mm)	18/75	18/75	30/73.5	30/73.5
Object	Steel 50X50X1 mm			
Sensing distance	8 mm (Variable)	8 mm (Variable)	15 mm (Variable)	15 mm (Variable)
Mounting distance	0 ~ 6.4 mm	0 ~ 6.4 mm	0 ~ 12.0 mm	0 ~ 12.0 mm
Frequency	50 Hz			
Hysteresis	Max. 20 % of sensing distance			
Power voltage	12 - 24 V d.c (±10 %)			
Control output	Resistive load : Max. 200 mA Inductive load : Max. 100 mA			
Residual voltage	Max. 1.5 V (At 24 V d.c , 200 mA)			
Leakage current	Max. 0.5 mA (At 12 V d.c)			
Ambient temperature	-25 °C ~ +70 °C (Max. +20 % at ±20 °C for sensing distance)			
Insulation resistance	Min. 50 MΩ (At 500 V d.c)			
Dielectric strenght	2,000 V a.c for 1minute (At 50 / 60 Hz)			
Vibration	10 - 55 Hz, Double amplitude, 1.5 mm, X · Y · Z each position for 2 hours			
Shock	500 m/s ² (Approx. 50 G) X · Y · Z each position for 3 time			
LED indicators	Red L.E.D			
Protection circuit	Surge protection , Reverse polarity protection			
Protection	IP67(IEC)			
Material	HCP-18R, 30R TYPE	Case : Brass(Chrome plating)	Face : PBT resin	Holder : PC
	HCP-18RP, 30RP TYPE	Case : PBT resin	Face : PBT resin	Holder : PC

PROXIMITY SENSOR

AC CAPACITIVE PROXIMITY SENSOR (Relay Connector, Round Type)

Model	HCP-18R8A □-CR	HCP-18RP8A □-CR	HCP-30R15A □-CR	HCP-30RP15A □-CR
Appearance				
Ø/ L (mm)	18/75	18/75	30/73.5	30/73.5
Object	Steel 50X50X1 mm			
Sensing distance	8 mm (Variable)	8 mm (Variable)	15 mm (Variable)	15 mm (Variable)
Mounting distance	0 ~ 6.4 mm	0 ~ 6.4 mm	0 ~ 12.0 mm	0 ~ 12.0 mm
Frequency	20 Hz			
Hysteresis	Max. 20 % of sensing distance			
Power voltage	100 - 240 V a.c (± 10 %)			
Control output	Max. 200 mA (At 240 V a.c)			
Residual voltage	Max. 20 V a.c			
Leakage current	Max. 2.2 mA			
Ambient temperature	-25 °C ~ +70 °C (Max. ±10 % at +20 °C for sensing distance)			
Insulation resistance	Min. 50 MΩ (At 500 V d.c)			
Dielectric strength	2,000 V a.c for 1 minute (At 50/60 Hz)			
Vibration	10 - 55 Hz, Double amplitude width, 1.5mm, X · Y · Z each position for 2hours			
Shock	500 %g (Approx, 50 G) X · Y · Z each position for 3 time			
LED indicators	Red L.E.D			
Protection circuit	Surge protection			
Protection	IP67(IEC)			
Material	HCP-18R, 30R TYPE Case : Brass(Chrome plating) Face : PBT resin Holder : PC			
	HCP-18RP, 30RP TYPE Case : PBT resin Face : PBT resin Holder : PC			

PEN SERIES

Model	Built in Power Supply	PEN-T10A	PEN-M5A	PEN-R700A
	Built in Amplifier	PEN-T10B	PEN-M5B	PEN-R700B
Appearance				
Type		Through beam	Retro reflection	Diffuse reflection
Sensing distance		10 m	0.1 ~ 5 m	700 mm
Detection object		More than $\varnothing 16$ mm (Opaque object)	More than $\varnothing 60$ mm (Opaque object)	200 x 200 mm (White no glossy paper)
Power voltage	Built in Power Supply	24 - 240 V a.c/d.c ± 10 % 50/60 Hz		
	Built in Amplifier	12 - 24 V a.c/d.c ± 10 %		
Current Consumption	Trns	Less than 30 mA	Less than 40 mA	
	Rcvr	Less than 20 mA		
Control Output	Built in Power Supply	Relay output 1c 250 V a.c 2 A(Resistive load)		
	Built in Amplifier	NPN/PNP Open Collector, 200 mA d.c (Resistive load)		
Operation mode		Light ON / Dark ON		
Response time		Less than 20 ms		
		Less than 1 ms	Less than 0.5 ms	
Hysteresis		-	-	Within 15% of detecting distance
Light source		Infrared LED		
Protection circuit		Reverse polarity protection circuit, Over current protection circuit		
Connection		Length of code : 1.5 M 5P $\varnothing 6$ mm, Trns : 2P (Built in power supply : 4P $\varnothing 4$ mm, Trns : 2P)		
Ambient light		Sun light: less than 11,000 lx, Incandescent lamp: less than 3,000 lx		
Ambient temperature		Operation : -20 ~ 65 °C (Storage : -25 ~ 70 °C)		
Protection		IP65(IEC)		
Vibration		10 - 55 Hz, Double amplitude width 1.5 mm , X · Y · Z, each direction for 2 hours		
Dielectric strength		1,000 V a.c (1 minute)		
Insulation resistance		500 M Ω , X.Y.Z each direction 3 times		
Material		Case : Heatproof ABS, Lens : PC		
Insulation resistance		More than 20 M Ω (At 500V d.c between code and case, adjusting switch and case)		
Weight		150 g (Built in Power Supply), 100 g(Built in Amplifier)		

■ PE SERIES

MODEL		PE-T5D	PE-R05D	PE-M3D
Appearance				
Type		Through beam	Diffuse reflection	Retro reflection
Sensing distance		5 m	500 mm	3 m
Detection object		Substance(over 20 mm)	White no-glossy paper (500x500 mm)	Substance(over ϕ 60 mm)
Power voltage		24 - 240 V a.c (50/60 Hz) / 24 - 240 V d.c		
Current Consumption		Trns : Max. 0.7 W Rcvr : Max. 1.2 W	Max. 2 W	Max. 1.6 W
Operation mode		Dark : ON	Light : ON	Dark : ON
Control Output		Relay output 1c 250 V a.c 2 A(Resistive load)		
Response time		Max. 25 ms		
Hysteresis		—	Max. 20 %	—
Light source		Infrared LED(Modulated)		
LED Indicators		Red LED		
Sensitivity control		—	By sensitivity control volume	
Material	Case	Polycarbonate		
	Lens	Polycarbonate		
Connection		Cable		
Ambient light		Max. 20,000 lx (Max.)		
Ambient temperature and humidity		Max. -10 ℃ ~ 55 ℃, 85 %R.H. (Max.)		
Case protection		IP54(IEC)		
Vibration		10 - 55 Hz, Double amplitude width 1.5 mm, X · Y · Z, each direction for 2 hours		
Dielectric strength		1,500 V a.c for 1 minute		
Insulation resistance		Min. 20 M Ω (At 500 V d.c, Between code and case, contact and power supply)		
Accessories		Bracket for fixing. Bolt Nut for fixing		

■ PHOTO SENSOR (PN SERIES)

Model	PN-T3	PN-R02	PN-M1
Appearance			
Type	Through beam	Diffuse reflection	Retro reflection
Sensing distance	3 m	200 mm	1 m
Detection object	Substance(over ϕ 8 mm)	White no-glossy(200 x 200 mm)	Substance (over ϕ 60 mm)
Power voltage	12 - 24 V d.c $\pm$ 10 %		
Current consumption	Max. 45 mA	Max. 40 mA	
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, Over current protection		
Response time	Max. 3 ms		
Hysteresis	—	Max. 20 %	—
Light source	Infrared LED(Modulated)		
LED Indicators	Rcvr :Red LED Trns: Green LED	Red LED	—
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 and humidity	-10℃ ~ 60℃, 85 %R.H. (Max.)		
Case protection	IP54(IEC)		
Vibration	10 - 55 Hz, Double amplitude 1.5 mm, X · Y · Z each direction for 2 hours		
Dielectric strength	500 V a.c for 1 minute		
Insulation resistance	Min. 20 M Ω (At 500 V d.c, Between code and case, contact and power supply)		
Accessories	Bracket for fixing, Bolt, Nut for fixing		

PHOTO SENSOR

PHOTO SENSOR (PU SERIES)

Model		PU-30	PU-30S	PU-50	PU-50S
Appearance					
Sensing distance		30 mm		50 mm	
Detection object		Over $\phi 2$ mm (Substance)	Over $\phi 0.4$ mm (Substance)	Over $\phi 1.5$ mm (Substance)	Over $\phi 0.6$ mm (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 , Over current protection			
Response time		Max.1 ms			
Light source		Infrared LED (Modulated)			
LED Indicators		Output : Red LED, Power : Green LED			
Sensitive control		—	control volume	—	control volume
Material	Case	Zn			
	Lens	Polycarbonate			
Connection		Cable			
Ambient light		Sun light : Max, 1,100 lx, Incandescence light : Max 3,000 lx			
Ambient temperature and humidity		-25 °C ~ +55 °C, 35 ~ 85 % R.H.			
Case protection		IP65(IEC)			
Vibration		10 - 55Hz, Double amplitude 1.5 mm X · Y · Z each direction for 2 hours			
Dielectric strength		1,500 V a.c for 1minute			
Insulation resistance		Min. 20 M Ω (At 500 V d.c, Between code and case, contact and power supply)			

PHOTO SENSOR (PR SERIES)

Model		PR-T10NP. PR-T10NC	PR-R300NP. PR-R300NC	PR-M1NP. PR-M1NC
Appearance				
Type		Through beam	Diffuse reflection	Retro reflection
Sensing distance		10 m	300 mm	1 m
Detection object		Substance (over ϕ 10 mm)	White no-glossy paper (200 x 200 mm)	Substance(over ϕ 25 mm)
Power voltage		12 - 24 V d.c $\pm$ 10 %		
Current consumption		Tcvt : Max. 20 mA Rcvt : Max. 15 mA	Max. 35 mA	
Operating mode		Light ON / Dark ON Selectable		
Control Output		NPN open collector output : Load voltage Max. 30 V d.c, Load current : Max. 200 mA, Residual voltage : Max. 1 V		
Protection circuit		Reverse polarity protection, Over current protection		
Response time		Max. 1.5 ms		
Hysteresis		—	Max. 20 %	—
Light source		Infrared LED (Modulated)		
LED Indicators		Tcvt : Green LED, Rcvt : Red LED	Red LED	
Sensitive control		By sensitive control volume		
Material	Case	Brass, Plastic		
	Lens	Polycarbonate		
Connection		Out going cable		
Ambient light		sun light : Max. 11,000 lx , Incandescence light : Max. 3,000 lx		
Ambient temperature and humidity		-25 $^{\circ}$ C $\sim$ 55 $^{\circ}$ C, Max. 35 $\sim$ 85 %RH		
Case protection		IP66 (IEC)		
Vibration		10 - 55 Hz, Double amplitude 1.5 mm X $\cdot$ Y $\cdot$ Z each direction for 2 hours		
Dielectric strength		500 V a.c for 1 minute		
Insulation resistance		Min. 20 M Ω (At 500 V d.c, Between code and case, contact and power supply)		
Accessories		Bolt. Nut for fixing		

PHOTO SENSOR (PS Series)

Appearance														
Type		Through beam			Retro reflection		Diffuse reflection			Convergent beam		Distance convergent beam		
Model	NPN type	PS-T1N	PS-T7N	PS-T10RN	PS-M2RN	PS-R7N	PS-R30N	PS-R40RN	PS-Z4N	PS-Z3RN	PS-D3RN	PS-D4RN	PS-D5RN	
	PNP type	PS-T1P	PS-T7P	PS-T10RP	PS-M2RP	PS-R7P	PS-R30P	PS-R40RP	PS-Z4P	PS-Z3RP	PS-D3RP	PS-D4RP	PS-D5RP	
Sensing distance		1 m	7 m	10 m	0.1 - 2 m	70 mm	300 mm	400 mm	1-40 mm	3-30 mm	10-30 mm	10-40 mm	10-50 mm	
Detection object		Ø6 mm			Ø20 mm		white no-glossy paper 100 ×100 mm	white no-glossy paper 200 ×200 mm	white no-glossy paper 100 ×100 mm		White no-glossy paper 50 ×50 mm			
Power voltage		+12 - +24 V d.c ±10 % (Ripple ±10 %)												
Current consumption	Trns	Max. 23 mA	Max. 20 mA	Max. 23 mA	Max. 23 mA	Max. 28 mA	Max. 23 mA	Max. 25 mA	Max. 23 mA	Max. 30 mA				
	Rcvr	Max. 20 mA	Max. 20 mA	Max. 20 mA										
Output	Control output	NPN / PNP open collector output, load voltage : Max. 30 V d.c, Resistive load : 100 mA, Inductive load : Max. 50 mA, Residual voltage : Max.1 V												
	Stability output	NPN open collector output, load voltage : Max. 30 V d.c, Resistive load : Max. 50 mA, Residual voltage : Max.1 V												
Operating mode		Light On / Dark On selection by switch Volume built-in type												
Response time		Max. 0.7 ms												
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	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		When operating : -25 ~ + 55℃, When preserving : 35 ~ 85 % R.H.(No condensation)												
Ambient humidity		When operating : 35 ~ 85 % R.H., When preserving : 35 ~ 85 % R.H.(No condensation)												
Case protection		IP67(IEC)												
Vibration		10 - 55 Hz (Cycle for 1 min.), Double amplitude : 1.5 mm, each X · Y · Z direction for 2 hr.												
Shock		500 m/s ² (approx. 50 G), each X · Y · Z direction for 3 time												
Connection		Flying lead NPN 4P(Trns. 2P) / PNP 3P(Trns 2P), Ø3 mm, length 2 m			Flying lead NPN 4P / PNP 3P, Ø3 mm, length 2 m									
Material		CASE : PC, Lens Cover : PC												
Weight		Trns : Rcvr:each 50 g(Net weight)			Approx. 50 g (Net weight)									

PHOTO SENSOR (PZ1 Series)

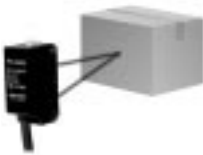
Appearance																								
Type	Through beam				Retro reflection		Diffuse reflection			Convergent beam		Time convergent beam												
Model	NPN type	PZ1-T1N	PZ1-T5N	PZ1-T7N	PZ1-M1N	PZ1-M2N	PZ1-R10N	PZ1-R30N	PZ1-R40N	PZ1-Z3N	PZ1-Z4N	PZ1-ZT3N	PZ1-ZT4N											
	PNP type	PZ1-T1P	PZ1-T5P	PZ1-T7P	PZ1-M1P	PZ1-M2P	PZ1-R10P	PZ1-R30P	PZ1-R40P	PZ1-Z3P	PZ1-Z4P	PZ1-ZT3P	PZ1-ZT4P											
Sensing distance	1 m		5 m		7 m		0.1-1 m		0.1-2 m		100 mm		30-300 mm		40-400 mm		10-30 mm		10-40 mm		10-30 mm		10-40 mm	
Detection object	Opaque object of Min. $\phi 6$ mm						Opaque object of Min. $\phi 48$ mm		White no-glossy paper 200 × 200 mm			White no-glossy paper 50 × 50 mm												
Power voltage	12 - 24 V d.c (± 10 %)																							
Current consumption	Trns	Max. 20 mA d.c				Max. 30 mA d.c																		
	Rcvr	Max. 18 mA d.c																						
Operating mode	LIGHT ON(L.ON) / DARK ON(D.ON) Selectable S/W built in type.																						Timer settlement V/R built in type	
Control Output	NPN/PNP OPEN collector output , Load current : Max.100 mA d.c (Resistive load), Residual voltage : Max.1 V d.c																							
Response time	Max. 1 ms																						Operating : Max. 3 ms Momentary : Max. 100 ms (At Min. Timer V/R)	
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 circuit, over current protection circuit																							
Connection	3P (Trsn. 2P), ϕ 3.8 mm, length : 2 m																							
Ambient light	Sunlight : Max. 11,000 lx, Incandescent lamp : Max.3,000 lx																							
Ambient temperature	Operating : -25 ~ 55 ℃, Preserving : - 25 ~ 70 ℃ (Without condensation)																							
Ambient humidity	Max. 35 ~ 85 % R.H.																							
Protection structure	IP 65(IEC) (IP67 is an option)																							
Vibration	10 - 55 Hz (for a minute), double amplitude width : 1.5 mm, each X.Y.Z direction for 2hr.																							
Dielectric strength	1000 V a.c (50-60 Hz for a minute)																							
Shock	500 ms ² (Approx 50 G), each X.Y.Z direction for 3times																							
Insulation resistance	20 M Ω Min.(At 500 V d.c between code and case, adjusting switch and case)																							
Weight	Trns., Rcvr. : each approx. 55g												Approx. 60g											

PHOTO SENSOR

■ PHOTO SENSOR (PW SERIES)

Appearance	PW SERIES				
					
Type	Distance Convergent Beam				
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
Detection object	White no-glossy paper 100 ×100 mm				
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 mA, Load voltage:Max. 30 V d.c, NPN open			
	Stabilize output	collector output Load Current:Max. 50 mA, Load voltage:Max. 30 V d.c			
Operating mode	Light ON / Dark ON Selectable				
Response time	Max. 0.7 ms				
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	-25 ~ +55 °C				
Ambient humidity	35 ~ 85 % R.H.				
Case Protection	IP67(IEC)				
Vibration	10 - 55 Hz for 1 minute, Double amplitude width : 1.5 mm, X · Y · Z each direction for 2 hours				
Shock	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				

■ PHOTO SENSOR (PY SERIES)

Appearance	PY series			
				
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.)
Detection object	Opaque object of over (Min. $\varnothing 5\text{ mm}$)			
Operating mode	Dark ON	Light ON	Dark ON	Light ON
Sensing distance	3 m			
Response time	Max. 1 ms			
Power voltage	+12 - + 24 V d.c $\pm 10\%$ (Ripple Max. $\pm 10\%$)			
Current consumption	In case of rating Voltage 24 V d.c, Trns : 23 mA, Rcvr : Max. 18 mA			
Light source	Infrared emitting diode			
Control Output	• Load voltage : Max. 30 V d.c • Stability output current : Max. 50 mA • Residual voltage : Max.1 V • NPN open collector output • load current : Max. 100 mA		• PNP open collector output • Load current : Max. 100 mA • Residual voltage: Min.(Power voltage -2.0 V)	
Protection circuit	Reverse polarity protection, over current protection			
LED Indicator	Trns. : Power indicate(Red LED), Rcvr. : Operating indicate(Red LED), Stability indicate(Green LED)			
Insulation resistance	Min. 20 M Ω (At 500 V d.c)			
Dielectric strength	1000 V a.c (for a minute in 50/60 Hz mega)			
Vibration	10 - 55 Hz (cycle for 1 minute) double amplitude width : 1.5 mm, each X · Y · Z direction 2 hrs			
Shock	500 %g (Approx. 50 G) each X · Y · Z direction 2 time			
Ambient light	Sunlight : Max. 11000 lx, Incandescent : Max. 3000 lx			
Ambient temperature	-25 $^{\circ}\text{C}$ ~ +65 $^{\circ}\text{C}$ (Without freeze)			
Ambient humidity	Operating : 35 - 85 % R.H., preserving : -35 - 90 % R.H.			
Case Protection	IP 67 (IEC)			
Material	Lens, case : PC			
Connection	Trns. : $\varnothing 3\text{ mm}$, 2P, Rcvr. : $\varnothing 3\text{ mm}$, 3P(NPN:4P), Cable length : 2 m			
Weight	Approx. 66 g			

■ PHOTO SENSOR (PLD SERIES)

Appearance	PLD SERIES	
		
Type	Diffuse Reflection	
Model	PLD-R2N	PLD-R2P
Detectable distance	2 m (200X200 mm White No reflectible object)	
Detection object	Over Ø6 mm opacity objection	
Power voltage	12 - 24 V d.c, ±10%	
Power consumption	Max. 30 mA 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	Power connection protecting circuit, output terminal (over current) protecting circuit	
Ambient intensity of illumination	Light of the sun: Max 11000 Lux Incandescent lamp: Max 3000 Lux	
Ambient temperature	When operating : -20 ~ 55 , when maintaining : -25 ~ 70	
Ambient humidity	Max. 35 ~ 85 % R.H (Freezing not allowed)	
Protectable 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	
Max. vibration	10-55 Hz double amplitude 1.5mm, X,Y,Z each direction for 2 hours	
Max. Shock	500 m/s ² 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	

PHOTO SENSOR

PHOTO SENSOR (PF SERIES)

Appearance		Digital Multi Control Type		Bar Indication Type
				
Type		Mediocrity	Multi function	Mediocrity
Model	NPN type	PFD-RGN	PFD-RMN	PFB-RN
	PNP type	PFD-RGP	PFD-RMP	PFB-RP
Power voltage		+12 - 24 V d.c. $\pm 10\%$ (Ripple Max. 10 %)		
Current consumption		Max. 30 mA		Max. 45 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	Auto teaching
Operating mode		Light On / Dark On output		
		Normal output, ON DELAY, OFF DELAY, ON/OFF DELAY output		Normal output, ON DELAY, OFF DELAY output
On/Off Delay		0 ~ 9999 ms		10, 40 ms
Light source		Red emitting diode / 660 nm		
Protection circuit		Reverse polarity protection, Over current protection		
Response time		Max. 700 μ s	Max. 1 ms	Max. 500 μ s
LED indicator		7 points status LED, 4 Digits FND		6 Points bar
Sensitivity control		Auto-teaching, Manual		Auto-teaching
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		-10 °C ~ +60 °C (without freeze)		
Ambient humidity		35 ~ 85 % R.H.		
Vibration		10 - 55 Hz for 1 minute, Double amplitude : 1.5 mm, X · Y · Z each direction for 2 hours		
Shock		500 %g (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 M Ω (at 500 V d.c)		
Connection		For DIN Rail attachment Flying lead 1.5 m 5 P		
• MODEL : PFD-RMN only				
Multi function	Counter	• UP / DOWN Mode, Free scale 1~1000 integers setting • Output mode : 8 kinds selectable(N, F, C, R, K, P, Q, A)		• Indicating range : 0 ~ 9999 • External reset : Min. Signal width 5 ms
	RPM	• Counting speed : 400 cps • Indicating range : 0 ~ 9999 rpm • Speed monitoring output function • Free scale : 1~1000 integers setting • Measurement cycle setting		
Option	Communication	RS485 or RS232 (TTL Level), No external output when using communication		

FIBER OPTIC SENSOR (PG SERIES)

Appearance		Universal type	
			
Model		PG - TR	
Light Source		Red LED (Modulated)	
Type		Decision by combined with Fiber unit.(Diffuse Reflection, Through beam)	
Hysteresis		Max. 10 % of sensing distance (Reflection)	
Response time		Max. 1 ms	
Power voltage		12 - 24 V d.c ($\pm 10\%$)	
Power consumption		Max. 35 mA (Sensitivity control by COARSE and FINE)	
Sensitive control		Built-in sensitivity control volume (COARSE & sensitivity control by FINE)	
Output	Control	NPN Voltage Output, Load voltage: Max. 30 V d.c, Load current: Max. 200 mA, Residual voltage: Max. 1 V	
	Stability	—	
Operating mode		LIGHT-ON / DARK-ON Switch selection operating	
LED Indicator		NORMAL or ON/OFF DELAY	
Protection circuit		Switch Selection operating (40 ms fixed)	
Ambient light		Operating indicator(Red LED) Stability operating indicator (Green LED)	
Ambient temperature		Reverse polarity protection, Over current protection(stability output of multi-function type an exception)	
Ambient humidity		Sunlight Max : 11000 lx, Incandescent lamp : 3500 lx	
Vibration		Operating : -10 - 55 °C, preserving : -25 - 70 °C (Without condensation)	
Shock		35 - 85 % R.H.	
Dielectric strength		10 - 55 Hz (Cycle for a minute), double amplitude width: 1.5 mm each X · Y · Z direction 2 hrs.	
Insulation resistance		500 m Ω s (Approx 50 G), each X · Y · Z direction 3 times.	
Connection		500 V a.c(For a minute in 50/60 Hz)	
		Max. 20 M Ω (At 500 V d.c mega)	
		Flying lead 2 m (3P)	Flying lead 2 m (4P)

FIBER OPTIC CABLE

Internal diameter : I.

External diameter : E.

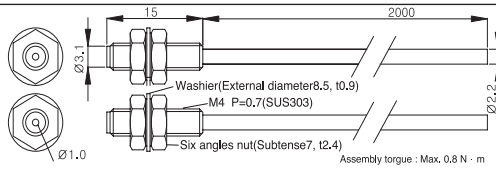
Model			APPEARANCE	SPECIFICATIONS	Ambient temperature	Length of cable
Through Beam TYPE	Standard TYPE	GT-4310-2		• Hood: M4 × 0.7(P) • Core: Ø1 • E.: Ø2.2 • Permitted radius of flexural: 30R	-30 - 70 °C	2 m
	Standard TYPE (Round type)	GTR-2910-2		• Hood: Ø2.9 • Core: Ø1 • E.: Ø2.2 • Permitted radius of flexural: 30R		
	Standard TYPE	GT-4M10-2		• Hood: M4 × M2.6 • Core: Ø1 • E.: Ø2.2 • Permitted radius of flexural: 30R		
	Standard TYPE (Small)	GT-3005-2		• Hood: M3 × 0.5(P) • Core: Ø0.5 • E.: Ø1 • Permitted radius of flexural: 1R		
	Standard TYPE (Small Round type)	GTR-1505-2		• Hood: Ø1.5 • Core: Ø0.5 • E.: Ø1.25 • Permitted radius of flexural: 15R		
	SUS TUBE TYPE	GTS3-4005-2		• Hood: M4 × 0.7(P) • Core: Ø0.5 • E.: Ø2.2 • SUS Tube Length: Ø1 × 70 mm • Permitted radius of flexural: 30R		
	Standard TYPE	GT-3075-2		• Hood: M3 × 0.5(P) • Core: Ø0.75 • E.: Ø1.25 • Permitted radius of flexural: 20R		
Reflection TYPE	Standard TYPE	GR-6210-2		• Hood: M6 × 0.75(P) • Core: Ø1 • E.: Ø2.2 • Permitted radius of flexural: 30R	-30 - 70 °C	2 m
	Standard TYPE	GR-6410-2		• Hood: M6 × 1(P) • Core: Ø1 • E.: Ø2.2 • Permitted radius of flexural: 30R		
	Standard TYPE	GR-4205-2		• Hood: M4 × Ø2.5 • Core: Ø0.5 • E.: Ø1.25 • Permitted radius of flexural: 15R		
	Standard TYPE (Small)	GR-3005-2		• Hood: M3 × 0.5(P) • Core: Ø0.5 • E.: Ø1.25 • Permitted radius of flexural: 15R		
	Standard TYPE (Round type)	GRR-3005-2		• Hood: Ø3 • Core: Ø0.5 • E.: Ø1.25 • Permitted radius of flexural: 15R		
	SUS TUBE TYPE	GRS3-4005-2		• Hood: M6 × 1(P) • Core: Ø0.5 • E.: Ø2.2 • Permitted radius of flexural: Fiber: 10R, SUS: 10R • SUS Tube Length: Ø1.5 × 70 mm		
	SUS TUBE TYPE	GRS2-6005-2		• Hood: M6 × 1(P) • Core: Ø0.5 • E.: Ø2.2 • Permitted radius of flexural: Fiber: 15R, SUS: 10R • SUS Tube Length: Ø1.5 × 35 mm		
	Co-axial TYPE	GR-62X5-2		• Hood: M6 × 0.75(P) • Emitter Fiber Core: Ø1 × 1 • Permitted radius of flexural: 30R • Receiver Fiber Core: Ø0.265 × 16 • E.: Ø2.2		
Surface detection TYPE	Liquid TYPE	GL-635-05		• Skin: Ø6.35(PFA Tube) • E.: Ø1.25 • PFA Tube Length: 500 mm • Permitted radius of flexural: 30R	-40 - 80 °C	2 m
	Liquid TYPE	GL-635-1		• Skin: Ø6.35(PFA Tube) • E.: Ø1.25 • PFA Tube Length: 1000 mm • Permitted radius of flexural: 30R		1.5 m

FIBER OPTIC CABLE

DIMENSIONS

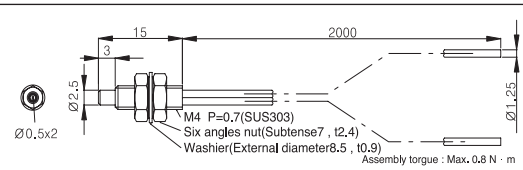
GT-4310-2

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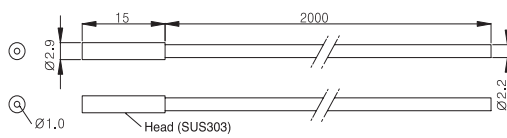
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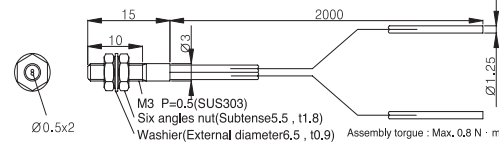
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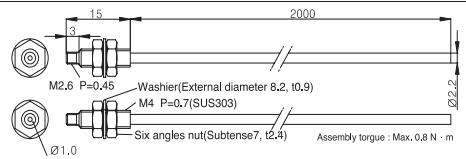
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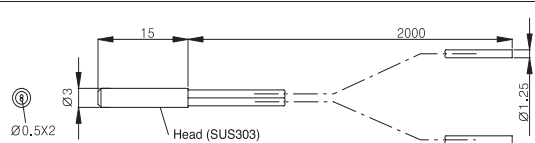
GT-4M10-2

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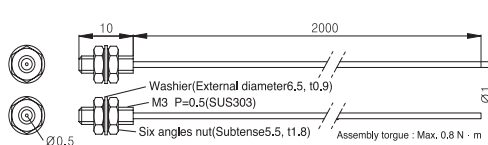
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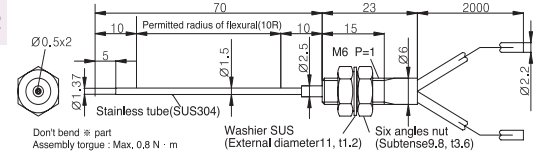
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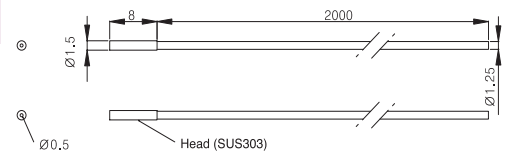
GRS3-4005-2

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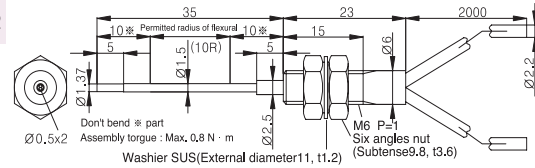
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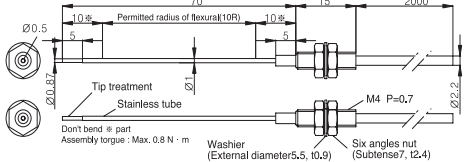
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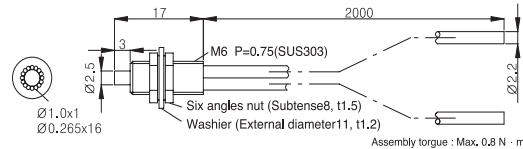
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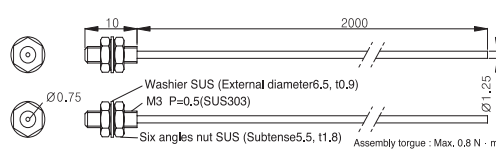
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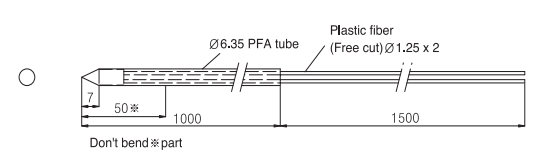
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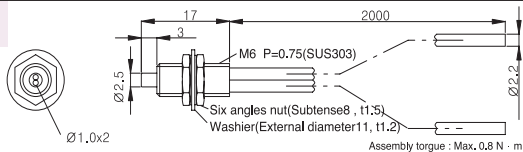
GL-635-05

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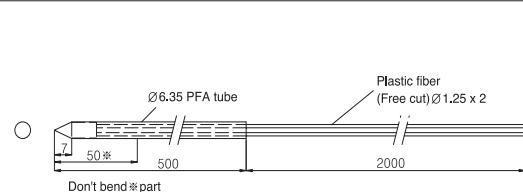
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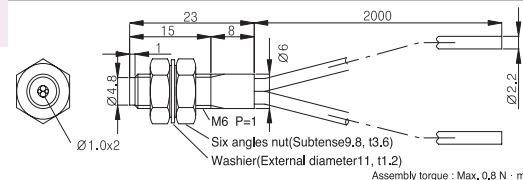
GL-635-1

Free



GR-6410-2

Free



AREA SENSOR (PAN Series)

Series	Model	Type	Sensing Distance	Number of optical axis	Sensing range	Detection object
PAN10	PAN10-T16	Through beam	2 m	16 EA	150 mm	Opaque object of over Ø17 mm
	PAN10-T24			24 EA	230 mm	
	PAN10-T32			32 EA	310 mm	
	PAN10-T40			40 EA	390 mm	
	PAN10-T48			48 EA	470 mm	
	PAN10-T56			56 EA	550 mm	
	PAN10-T64			64 EA	710 mm	
	PAN10-T72			72 EA	780 mm	
PAN20	PAN20-T08	Through beam	7 m	8 EA	140 mm	Opaque object of over Ø32 mm
	PAN20-T12			12 EA	220 mm	
	PAN20-T16			16 EA	300 mm	
	PAN20-T20			20 EA	380 mm	
	PAN20-T24			24 EA	460 mm	
	PAN20-T28			28 EA	540 mm	
	PAN20-T32			32 EA	620 mm	
	PAN20-T36			36 EA	700 mm	
PAN40	PAN40-T40	Through beam	7 m	40 EA	780 mm	Opaque object of over Ø57 mm
	PAN40-T44			44 EA	860 mm	
	PAN40-T48			48 EA	940 mm	
	PAN40-T04			4 EA	120 mm	
	PAN40-T06			6 EA	200 mm	
	PAN40-T08			8 EA	280 mm	
	PAN40-T10			10 EA	360 mm	
	PAN40-T12			12 EA	440 mm	
PAN40	PAN40-T14	Through beam	7 m	14 EA	520 mm	Opaque object of over Ø57 mm
	PAN40-T16			16 EA	600 mm	
	PAN40-T18			18 EA	680 mm	
	PAN40-T20			20 EA	760 mm	
	PAN40-T22			22 EA	840 mm	
	PAN40-T24			24 EA	920 mm	

Model	PAN10-T □ □N PAN10-T □ □P	PAN20-T □ □N PAN20-T □ □P	PAN40-T □ □N PAN40-T □ □P
Appearance			
Type	Through beam		
Sensing distance	2 m	7 m	
Detection object	Opaque object of over Ø17 mm	Opaque object of over Ø32 mm	Opaque object of over Ø52 mm
Optical axis pitch	10 mm	20 mm	40 mm
Power voltage	12 - 24 V d.c. ± 10 % (Ripple P-P ± 10 %)		
Current Consumption	Max. 220 mA	Max. 170 mA	Max. 100 mA
Output Control	Light ON		
Operating mode	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		
Response time	Max. 30 ms	Max. 15 ms	Max. 7 ms
Light source	Infrared emitting diode (Wave length 860 nm)	Infrared emitting diode (Wave length 950 nm)	
Operating indicator	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		
Operating S/W	ALL/ONE S/W Operation (only for Rcvr.), Max.ter/Slave S/W Operation (only for Trns.)		
Ambient light	Sun light : Max. 10,000 lx		
Ambient temperature	-10 ~ +55 ℃ (No freezing)		
Ambient humidity	Max. 35 ~ 85 % RH		
Vibration	10 - 55 Hz(Cycle for 1 min.) Double amplitude width 1.5 mm, each X - Y - Z direction for 2 hr.		
Case protection	IP66(IEC)		
Dielectric strength	1000 V a.c for 1 min. between current part and case		
Material	Case: Aluminum, Window : acryl, Lens : acryl		
Connection	Connector flying lead 4P Ø5.5		
Protection circuit	Preventing mutual interference function when installing in parallel(MS/MODE). Over current protection		

AREA SENSOR (PAS Series)

Model	NPN PNP	PAS-T4N PAS-T4P	PAS-T8N PAS-T8P	PAS-T12N PAS-T12P	PAS-T16N PAS-T16P	PAS-T20N PAS-T20P
Type	Through beam					
Sensing distance	5 m					
Detection object	Opaque object of over Ø30 mm					
Optical axis pitch	20 mm					
Number of optical axis	4					
Sensing range	80 mm					
Power voltage	12 - 24 V d.c. (Ripple Max. ± 10 %)					
Current Consumption	Max. 80 mA					
Output range	Appearance					
Operating mode	NPN open collector output-Load current : Max. 100 mA, Load voltage : Max. 30 V d.c., Residual voltage : Max. 1 V PNP open collector output-Load current : Max. 100 mA, Output voltage : (Power voltage-over 2.5 V)					
Response time	Light ON Below 7 ms					
Light source	Infrared emitting diode(Wave length 850 nm)					
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 : 10,000 lx					
Ambient temperature	-10 ~ +55 °C (No freezing)					
Ambient humidity	35 ~ 85 % R.H.					
Vibration	0 - 55 Hz (Cycle for 1 min.) Double amplitude width 1.5 mm, each X · Y · Z direction for 2 hr.					
Case protection	IP40(IEC)					
Dielectric strength	1000 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					
Protection circuit	Auto compensation sensitivity function, Preventing mutual interference function when installing in parallel, Over current protection					

ROTARY ENCODER

■ ROTARY ENCODER (HE/ HE Ø40HB, Ø40H SERIES)

HE SERIES (HE shaft type)

Appearance						
Ø40	Ø50					
40(W)	50(W)					
40(H)	50(H)					
50(D)	57(D)					



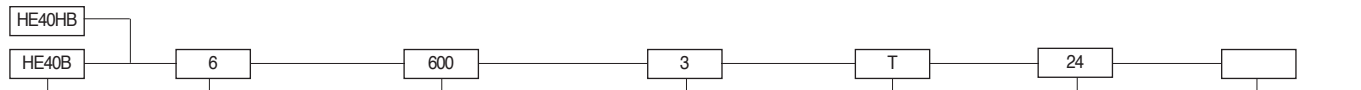
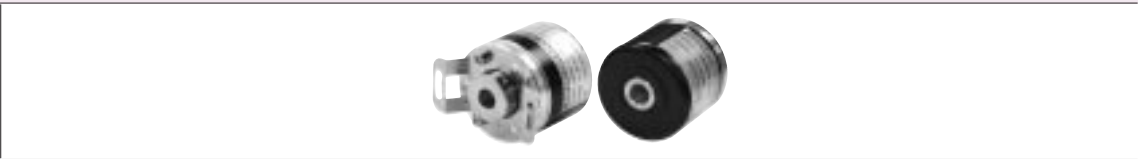
HE40B	6	600	3	T	24	
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Mode	Shaft external diameter	Pulse number per revolution	Phase type	Output type	Power voltage	Wire Specification
HE40B Ø40 mm Shaft type	6 : Ø6 mm 8 : Ø8 mm (Option)	*1, 2, 5, 10, 12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 200, 240, 250, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000	2 : A, B 3 : A, B, Z 3C : A, B, $\bar{Z}$ 4 : A, $\bar{A}$, B, $\bar{B}$ 6 : A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$ (Standard : A, B, Z)	O : NPN Open collector N : NPN Voltage T : Totem-pole L : Line driver (Line Drive: 5V d.c)	5 : 5 V d.c 12 : 12 V d.c (5-12 V d.c) 24 : 24 V d.c (12-24 V d.c)	No mark: Standard type C : Connector
HE50B Ø50 mm Shaft type	8 : Ø8 mm	*1, 2, 5, 10, 12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 200, 240, 250, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000				

Model	HE □□B- □-□-□-□-□-□	HE □□B- □-□-□-□-□-□-□	HE □□B- □-□-□-□-□-□-□-□	HE □□B- □-□-□-□-□-□-□-□
Output type	NPN Voltage output	NPN Open collector output	Totem Pole Output	Line Driver Output
Output type	A, B, Z phase			A,B,Z $\bar{A}$ $\bar{B}$ $\bar{Z}$ phase
Phase difference on Output	Phase difference between A, B phase : T/4 $\pm$ T/8 (Cycle of A phase = T)			
Max Response Frequency	300 kHz			
Power voltage	5 - 12 V d.c / 12 - 24 V d.c $\pm$ 5 %			5 V d.c $\pm$ 5 %
Current Consumption	70 mA Max. (No-load) Line Drive output below 30 mA (No-load)			
Connection method	WIRE			
Control output	Load voltage : 30 V Max. Load Current : 30 mA Max. Residual Voltage : 0.4 V Max.		For Low Load Current: 30 mA Max. Residual Voltage: 0.4 V Max. For High Load Current: 10 mA Max. Residual Voltage: Above -2.5V of rated voltage	For Low Load Current: 20 Max. Residual Voltage : 0.4 V Max. For High Load Current : 20 mA Max. Residual Voltage : 2.5 V Max.
Response Time	1 μ s Max. (Cable length 2.0 m / sink=30 mA)		1 μ s Max. (Cable length 1.5 m / sink=10 mA)	1 μ s Max. (Cable length 1.5 m / sink = 30 mA)
Starting Torque	$\varnothing 40$: 40 gf $\cdot$ cm (0.004 N $\cdot$ m Max.) $\varnothing 50$: 80 gf $\cdot$ cm (0.008 N $\cdot$ m Max.)			
Moment of inertia	$\varnothing 40$: 40 g $\cdot$ cm ² Max., $\varnothing 50$: 80 g $\cdot$ cm ² Max.			
Permissible Shaft Loading	$\varnothing 40$: Radial : Within 2 kgf, Thrust : Within 1 kgf $\varnothing 50$: Radial : Within 2.5 kgf, Thrust : Within 1.2 kgf			
Max. Permissible Revolution	5000 rpm			
Bearing Life	1.2 x 10 ⁶ /rpm : hour			
Insulation Resistance	Over 100 M Ω (Based on 500 V d.c mega between terminal and case)			
Dielectric strength	800 V a.c (Between terminal and case at 60Hz for 1 minute)			
Vibration Resistance	10 - 55Hz (Cycle for 1 minute), Double amplitude width : 1.5 mm, Each X $\cdot$ Y $\cdot$ Z direction for 2 hours			
Shock Resistance	$\varnothing 40$: 50 G Max., $\varnothing 50$: 75 G Max.			
Operating Ambient Temperature	-10 ~ 60 $^{\circ}$ C (Without condensation), Storage Temperature: -25 ~ 85 $^{\circ}$ C			
Operating Ambient Humidity	35 ~ 85 % R.H.			
Protection	IP 50 (IEC Standard)			
Wire Specification	5 P, $\varnothing$ 5.0 mm, Length : 2.0 m, Shield cable (Line Driver Type : 2P, $\varnothing$ 5.0 mm, Length : 2.0 m, Shield cable)			
Weight	$\varnothing$ 40 : 170 g, $\varnothing$ 50 : 200 g			
Accessories	$\varnothing$ 8.0 mm Coupling, Bracket ($\varnothing$ 40mm Bracket – Separate sales)			

HE 40HB/ HE 40H SERIES (Hollow / Hollow Built- in Shaft)

Appearance



Mode	Shaft external diameter	Pulse number per revolution	Phase type	Output type	Power voltage	Wire Specification
HE40HB Ø40 mm Hollow Built-in Shaft	6 : Ø6 mm 8 : Ø8 mm 12 : Ø12 mm (Option)	*1, 2, 5, 10, 12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 200, 240, 250, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000	2 : A, B 3 : A, B, Z 3C : A, B, $\bar{Z}$ 4 : A, $\bar{A}$, B, $\bar{B}$ 6 : A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$ (Standard : A, B, Z)	O : NPN Open collector N : NPN Voltage T : Totem-pole L : Line driver (Line Drive: 5V d.c)	5 : 5 V d.c 12 : 12 V d.c (5-12 V d.c) 24 : 24 V d.c (12-24 V d.c)	No mark : Standard type C : Connector
HE40H Ø40 mm Hollow Shaft	6 : Ø6 mm 8 : Ø8 mm 12 : Ø12 mm (Option)	*1, 2, 5, 10, 12, 15, 20, 25, 30, 40, 45, 50, 60, 75, 100, 120, 125, 150, 200, 240, 250, 300, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 1500, 1800, 2000, 2048, 2500, 3000				

Model	HE40HB-□-□-□-□-□-□-□ HE40H-□-□-□-□-□-□-□	HE40HB-□-□-□-□-□-□ HE40B-□-□-□-□-□-□	HE40HB-□-□-□-□-□-□ HE40B-□-□-□-□-□-□	HE40HB-□-□-□-□-□-□ HE40B-□-□-□-□-□-□
Output type	NPN Voltage output	NPN Open collector output	Totem Pole Output	Line Driver Output
Output type	A, B, Z phase			A, B, Z, $\bar{A}$, $\bar{B}$, $\bar{Z}$ phase
Phase difference on Output	Phase difference between A, B phase : $T/4 \pm T/8$ (Cycle of A phase = T)			
Max Response Frequency	300 kHz			
Power voltage	5 - 12 V d.c / 12 - 24 V d.c $\pm$ 5 %			5 V d.c $\pm$ 5 %
Current Consumption	70 mA Max. (No-load) Line Drive output below 30 mA (No-load)			
Connection method	WIRE			
Control output	Load voltage : 30 V Max. Load Current : 30 mA Max. Residual Voltage : 0.4 V Max.		For Low Load Current: 30 mA Max. Residual Voltage: 0.4 V Max. For High Load Current: 10 mA Max. Residual Voltage: Above -2.5V of rated voltage	For Low Load Current: 20 Max. Residual Voltage: 0.4 V Max. For High Load Current: 20 mA Max. Residual Voltage: 2.5 V Max.
Response Time	$1 \mu\text{s}$ Max. (Cable length 2.0 m / sink=30 mA)		$1 \mu\text{s}$ Max. (Cable length 1.5 m / sink=10 mA)	$1 \mu\text{s}$ Max. (Cable length 1.5 m / sink = 30 mA)
Starting Torque	50 gf · cm (0.005 N · m Max.)			
Moment of inertia	40 g · cm ² Max.			
Permissible Shaft Loading	Radial : Within 2 kgf, Thrust : Within 1 kgf			
Max. Permissible Revolution	5000 rpm			
Bearing Life	1.2×10^6 /rpm · hour			
Insulation Resistance	Over 100 M Ω (Base on 500 V d.c mega between terminal and case)			
Dielectric strength	800 V a.c (Between terminal and case at 60Hz for 1 minute)			
Vibration Resistance	10 - 55Hz (Cycle for 1 minute), Double amplitude width : 1.5 mm, Each X · Y · Z direction for 2 hours			
Shock Resistance	$\phi 40$: 50 G Max., $\phi 50$: 75 G Max.			
Operating Ambient Temperature	-10 ~ 60 °C (Without condensation), Storage Temperatur : -25 ~ 85 °C			
Operating Ambient Humidity	35 ~ 85 % R.H.			
Protection	Protection IP 50 (IEC Standard)			
Wire Specification	5 P, ϕ 5.0 mm, Length : 1.5 m, Shield cable (Line Driver Type : 8P, ϕ 5.0 mm, Length : 1.5 m, Shield cable)			
Weight	ϕ 40 : 170 g			
Accessory	Spring Bracket			

ROTARY ENCODER

■ ROTARY ENCODER (PSC SERIES)

PSC SERIES	
Appearance	

PSC	MA	AB	T
Mode	Min.measuring Unit	Output Phase	Output type
INCREMENTAL TYPE	• MA: 1 m • MB: 1 cm • MC: 1 mm • YA: 1 YARD • YB: 0.1 YARD • YC: 0.01 YARD	• AB : A, B phase	• N : NPN Voltage output • O : NPN Open collector output • T : Totem Pole Output

Model		PSC-MA-AB-N PSC-MB-AB-N PSC-MC-AB-N PSC-YA-AB-N PSC-YB-AB-N PSC-YC-AB-N	PSC-MA-AB-O PSC-MB-AB-O PSC-MC-AB-O PSC-YA-AB-O PSC-YB-AB-O PSC-YC-AB-O	PSC-MA-AB-T PSC-MB-AB-T PSC-MC-AB-T PSC-YA-AB-T PSC-YB-AB-T PSC-YC-AB-T
Output type		NPN Voltage output	NPN Open collector output	Totem Pole Output
Electrical Specification	Output type	A, B, Z phase (* PSC-MB-□□-□, PSC-MC-□□-□, PSC-YC-□□-□)		
	Phase difference on Output	Phase difference between A, B phase : T/4 ± T/8 (Cycle of A phase = T)		
	Max. Response Frequency	180 kHz		
	Power voltage	5 - 12 V d.c / 12 - 24 V d.c ± 5 %		
	Current Consumption	60 mA Max.		
	Connection method	WIRE		
	Control output	Load voltage : 30 V Max. Load Current : 30 mA Max. Residual Voltage : 0.4 V Max.		
Mechanical Specification		For LowLoad Current: 30 mA Max. Residual Voltage: 0.4 V Max. For HighLoad Current : 10 mA Max. Residual Voltage : -1.5V of rated voltage Max.		
	Response Time	1 μs Max. (Cable length 2.0 m / sink=30 mA)		
	Starting Torque	200 gf · cm (19600 uN.m · m Max.)		
	Moment of inertia	800 g.cm ² (8 × 10 ⁻⁶ kg.m ²) Max.		
	Permissible Shaft Loading	Radial : Within 2 kgf, Thrust : Within 1 kgf		
	Max. Permissible Revolution	5000 rpm		
	Bearing Life	1.2 x 10 ⁸ /rpm : hour		
	Insulation Resistance	Over 500 MΩ (Between terminal and case)		
	Dielectric strength	500 V a.c (Between terminal and case at 60 Hz for 1 minute)		
	Vibration Resistance	10 - 55 Hz (Cycle for 1 minute), Double amplitude width: 1.5 mm, Each X · Y · Z direction for 2 hours		
Shock Resistance		75G Max.		
Operating Ambient Temperature		-10 ~ 60 °C (Without condensation), Storage Temperature : -25 ~ 85 °C		
Operating Ambient Humidity		35 ~ 85 % R.H.		
Wire Specification		5 P, Ø 6.0 mm, Length : 1.5 m, Shield cable		
Weight		About 170 g		

FLOATLESS LEVEL SWITCH (FS-3)

MODEL		FS-3
Appearance		
	49(W) × 62(H) × 91(D)	
Power supply		220 V a.c (50/60 Hz), 110 V a.c(50/60 Hz)
Operating voltage		±10 % of power supply
Secondary voltage		24 V a.c (high sensitive)
Power Consumption		Approx. 3.2 VA
Response time	Working	Max. 80 ms
	Reset	Max. 160 ms
Operating resistance of electrodes		0 ~ about 27 kΩ
Reversion resistance of electrodes		about 38 kΩ ~ ∞ Ω
Control output		Contact output : (1c) 250 V a.c 5 A(resistive load)
Insulation resistance		Min. 100 MΩ (500 V d.c)
		Conductive part and non-charging metal part
Dielectric strength		2,000 V a.c 50/60 Hz for 1 minute (between ⊕ and ⊖)
Vibration	Malfunction	2 - 55 Hz, X, Y, Z each direction for 10 minute
	Durability	10 - 55 Hz, 0.76 mm, X, Y, Z each direction for 2 hours
Shock	Malfunction	100 % 6 direction each 3 times
	Durability	300 % 6 direction each 3 times
Life	Mechanical	More than 5 million times (Relay type)
	Electrical	More than 0.5 million times (Resistive load)
Ambient temperature and humidity		-10 ~ 55 °C (32 ~ 122 °F) · 35 ~ 85 % R.H. (Without condensation)

CONTROL UNIT

MODEL	HPAN-C7	HPAN-CT7	HPAN-C7W	HPA-12
Appearance				
	8.5(W) × 82.1(H) × 80.8(D)			49(W) × 62(H) × 91(D)
Function	Multi-purpose	Timer function	Two sensors connectable	Multi-purpose
How to attach	DIN Rail			Relay Socket 8PIN
Power Voltage	85 - 264 V a.c, 50/60 Hz			220 V a.c ± 10 % 60 Hz
Power consumption	Approx. 5 VA			Approx. 4 VA
Power supply to sensor	+12 V d.c (±10 %), Max. 200 mA			12 V d.c ± 10 % 50 mA
Connectable sensor	NPN / PNP transistor output or relay output sensor			NPN, PNP transistor output
Output	- Relay contact : 1c (250 V a.c 3A, 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)	- Relay contact: 1c (250 V a.c 3 A, resistive load) - Rated electrical life: over 100,000 operations (in power off)
	Relay contact : Approx. 10 ms, Open collector : 5 μs Max.		Approx. 10 ms	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	-10 ~ 50 °C, 35 - 85 % R.H. (No freezing)			-10 ~ 50 °C, 35 ~ 85 % R.H. (No freezing or No condensation)
Noise immunity	Power line: 1,500 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	10 MΩ (At 500 V d.c, Between supply and output)			—
Vibration	10 - 55 Hz (For a minute), double amplitude width 0.75 mm, each X · Y · Z direction for 2 hour (in power off)			—
Shock	100 m/s ² (Approx. 10G), 0.75 mm, each X · Y · Z, 2 direction (in power off)			—
Net Weight	Approx. 150 g	Approx. 160 g	Approx. 165 g	Approx. 260 g

CONTROL SWITCH

QR Series (ALUMINUM GUARD TYPE)

Model	PUSH-BUTTON SWITCH		ILLUMINATED PUSH BUTTON SWITCH		PILOT LAMP	
	Flush $\varnothing 30$	Extended $\varnothing 22$	Flush $\varnothing 30$	Extended $\varnothing 22$	Flush $\varnothing 30$	Extended $\varnothing 22$
Appearance						
Suffix code	QRF-A □□□	QRF-R □□□	QXR-A □□□□	QXR-R □□□□	QRP-A □□	QRP-R □□
Model	SELECTOR SWITCH		ILLUMINATED SELECTOR SWITCH		KEY SELECTOR SWITCH	
	Flush $\varnothing 30$	Extended $\varnothing 22$	Flush $\varnothing 30$	Extended $\varnothing 22$	Flush $\varnothing 30$	Extended $\varnothing 22$
Appearance						
Suffix code	QRS-A □□	QRS-R □□	QRT-A □□□□	QRT-R □□□□	QRK-A □□□□	QRK-R □□□□
Model	EMERGENCY STOP BUTTON SWITCH					
	Flush $\varnothing 30$			Extended $\varnothing 22$		
Appearance						
Suffix code	QRE-A M□		QRE-A R□		QRE-R M□	
Model	ILLUMINATED EMERGENCY STOP BUTTON SWITCH					
	Flush $\varnothing 30$			Extended $\varnothing 22$		
Appearance						
Suffix code	QRA-A M□□		QRA-A R□□		QRA-R M□□	

Operation of contact		Snap-action switching
Material	Contact	AgNi(Gold Plated)
	Contact case	Polycarbonate (PC)
Mechanical characteristics	Tightening torque	Screws : 25 Ncm Max, Terminal Screw : 50 Ncm Max
	Actuating force	(Operation+1a1b) 6.47N
	Actuating travel	5 mm +0.5
	Rebound time	≤3 ms
	Mechanical lifetime	BUTTON : more than 1.0 million times, SELECTOR SWITCH : more than 0.5 million times
Electrical characteristics	Rated Insulation Voltage	2000 V a.c for 1 min.
	Contact resistance	Max. 50 m Ω (Initial setting)
	Isolation resistance	≤10 M Ω 500 V d.c.
	Switch rating	AC : 6 A 250 V a.c DC : 10 A 24 V d.c
	Minimum load current	15 mA 24V d.c, 10 mA 110 V d.c
Environmental conditions	Ambient Temperature	-25 ~ 55 °C
	Ambient Humidity	35 ~ 85 % R.H.
	Storage Temperature	-40 ~ 85 °C
	Shock resistance	300 %g, pulse width 11 ms
	Vibration resistance	100 %g at 10 Hz - 500 Hz, amplitude 0.75 mm

● TRANSFORMER RATINGS

Light Source	Rated Voltage	Remark
	100 - 240 V a.c	
	12 - 24 V d.c / a.c	
		L.E.D(Without voltage reduction) ※Plastic Guide applied

QR Series (PLASTIC GUARD TYPE)

Model	PUSH-BUTTON SWITCH					
	Flush $\varnothing 22$	Extended $\varnothing 22$	Full Guide $\varnothing 22$	Half Guide $\varnothing 22$		
Appearance						
Suffix code	QRF-F□□	QRF-P□□	QRF-G□□	QRF-H□□		
Model	PUSH-BUTTON SWITCH					
	Square Flush $\varnothing 22$	Square Extended $\varnothing 22$	Square Mushroom $\varnothing 22$	Square Double Buttons $\varnothing 22$		
Appearance						
Suffix code	QRF-C□□	QRF-D□□	QRF-M□□	QRF-W□□		
Model	ILLUMINATED PUSH-BUTTON SWITCH					
	Flush $\varnothing 22$	Full Guide $\varnothing 22$	Half Guide $\varnothing 22$	Square Flush $\varnothing 22$	Square Extended $\varnothing 22$	Square Mushroom $\varnothing 22$
Appearance						
Suffix code	QRX-P□□□	QRX-G□□□	QRX-H□□□	QRX-C□□□	QRX-D□□□	QRX-M□□□
Model	PILOT LAMP			ILLUMINATED SELECTOR SWITCH		
	Flush $\varnothing 22$	Roulette $\varnothing 22$	Square Flush $\varnothing 22$	Short Lever $\varnothing 22$	Long Lever $\varnothing 22$	Short Lever $\varnothing 22$
Appearance						
Suffix code	QRP-F□□	QRP-B□□	QRP-S□□	QRS-S□□	QRS-L□□	QRT-S□□

Operation of contact		Snap-action switching
Material	Contact	AgNi(Gold Plated)
	Contact case	Polycarbonate (PC)
Mechanical characteristics	Tightening torque	Screws : 25 Ncm Max, Terminal Screw : 50 Ncm Max
	Actuating force	(Operation+1a1b) 6.47N
	Actuating travel	5 mm +0.5
	Rebound time	≤3 ms
Electrical characteristics	Mechanical lifetime	BUTTON : more than 1.0 million times, SELECTOR SWITCH : more than 0.5 million times
	Rated Insulation Voltage	2000 V a.c. for 1 min.
	Contact resistance	Max. 50 m Ω (Initial setting)
	Isolation resistance	≤10 M Ω 500 V d.c.
	Switch rating	AC : 6 A 250 V a.c. DC : 10 A 24 V d.c.
Environmental conditions	Minimum load current	15 mA 24V d.c., 10 mA 110 V d.c.
	Ambient Temperature	-25 ~ 55 °C
	Ambient Humidity	35 ~ 85 % R.H.
	Storage Temperature	-40 ~ 85 °C
	Shock resistance	300 % pulse width 11 ms
	Vibration resistance	100 % at 10 Hz ~ 500 Hz amplitude 0.75 mm

● TRANSFORMER RATINGS

Light Source	Rated Voltage	Remark	
	100 - 240 V a.c		L.E.D.(Without voltage reduction) ※Plastic Guide applied
	12 - 24 V d.c. / a.c		

CONTROL SWITCH

■ QR Series (PLASTIC GUARD TYPE) ☞

Model	EMERGENCY STOP BUTTON SWITCH						KEY SELECTOR SWITCH
	Mushroom Ø30	Mushroom Ø40	Mushroom Ø40	Mushroom Ø40	Mushroom Ø47	Mushroom Ø75	Projection Key Ø22
Appearance							
Suffix code	QRE-3R□	QRE-4M□	QRE-4P□	QRE-4R□	QRE-5M□	QRE-7M□	QRK-P□□□
Model	ILLUMINATED EMERGENCY STOP BUTTON SWITCH						
	Mushroom Ø30	Mushroom Ø40	Mushroom Ø40	Mushroom Ø40	Mushroom Ø47	Mushroom Ø75	
Appearance							
Suffix code	QRA-3R□□	QRA-4M□□	QRA-4P□□	QRA-4R□□	QRA-5M□□	QRA-7M□□	

Operation of contact		Snap-action switching
Material	Contact	AgNi(Gold Plated)
	Contact case	Polycarbonate (PC)
Mechanical characteristics	Tightening torque	Screws : 25 Ncm Max, Terminal Screw : 50 Ncm Max
	Actuating force	(Operation+1a1b) 6.47N
	Actuating travel	5 mm +0.5
	Rebound time	≤3 ms
	Mechanical lifetime	BUTTON : more than 1.0 million times, SELECTOR SWITCH : more than 0.5 million times
Electrical characteristics	Rated Insulation Voltage	2000 V a.c. for 1 min.
	Contact resistance	Max. 50 mΩ (Initial setting)
	Isolation resistance	≤10 MΩ 500 V d.c.
	Switch rating	AC : 6 A 250 V a.c. DC : 10 A 24 V d.c.
	Minimum load current	15 mA 24V d.c., 10 mA 110 V d.c.
Environmental conditions	Ambient Temperature	-25 ~ 55 °C
	Ambient Humidity	35 ~ 85 % R.H.
	Storage Temperature	-40 ~ 85 °C
	Shock resistance	300 %g, pulse width 11 ms
	Vibration resistance	100 %g at 10 Hz - 500 Hz, amplitude 0.75 mm

● TRANSFORMER RATINGS

Light Source	Rated Voltage	Remark	
	100 - 240 V a.c		L.E.D(Without voltage reduction) ※Plastic Guide applied
	12 - 24 V d.c / a.c		

CONTROL SWITCH

AR Series

Model		PUSH-BUTTON SWITCH					
		Round	Direction	Square	Square projection	Wholly	Wholly-momentary
Appearance							
Suffix code		ARF-F, B, P, G, H	ARC-I	ARC-S, C	ARC-P	ARF-DF	ARF-DP
Model		ILLUMINATED PUSH-BUTTON SWITCH				PILOT LAMP	
		Round	Direction	Square	ON / OFF	a.c	d.c
Appearance							
Suffix code		ARX-P, G, H	ARC-XI	ARC-XS	ARX-S	ARP-A1, A2	ARP-B12, B24
Model		PILOT WHOLLY TYPE		SELECTOR SWITCH		ILLUMINATED SELECTOR SWITCH	
		Applied power directly		Lever	Handle	Lever	
Appearance							
Suffix code		ARP-DF, DR		ARS-S, L	ARS-H	ART	
Model		KEY SELECTOR SWITCH		EMERGENCY PUSH-BUTTON SWITCH			
Appearance							
Suffix code		ARK		ARE-B, P, R, K	ARE-4XR	ARE-5XB,7XB	ARE-5B, 7B
Operation	Mechanical	Max. 30 Operations /minute					
	Electrical	Max. 30 Operations /minute					
Insulation resistance		Min.100 MΩ (AT d.c 500 V)					
Dielectric strength		1500 V a.c 50/60 Hz for minute					
Vibration	Malfunction	10 - 55 Hz double amplitude width 3 mm					
Shock	Durability	Min.500 ms ²					
	Malfunction	Min.100 ms ²					
Life	Mechanical	Min. 0.5 millions operations, 1,000hour (PILOT LAMP)					
	Electrical	Min. 0.1 millions operations, 1,000hour (PILOT LAMP)					
Ambient temperature		-25 ℃ ~ +40 ℃					
Ambient humidity		45 ~ 85%R.H.					
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

CONTROL SWITCH

■ CONTROL SWITCH (CR Series)

Suffix code		Power voltage	Input voltage	Power consumption	Diameter	Remarks
 Push Button Lamp Switch	CR-254	24 V a.c / d.c	24 V a.c / d.c	1 W	φ 25	Red Green, Blue, Yellow, White * L : LED type ex)CR-254-2L
	CR-304	110 V, 220 V a.c 380 V, 440 V a.c Contact 5 A, 250 V a.c	6.3V a.c		φ 30	
 Push Button Switch	CR-251	5 A, 250 V a.c			φ 25	Red Green, Blue, Yellow, Black
	CR-301				φ 30	
 Pilot Lamp	CR-252	110 V a.c 220 V a.c 380 V a.c 440 V a.c	6.3 V a.c	1 W	φ 25	Red, Green, Blue, Yellow, White * L : LED type ex)CR-252-2L
	CR-302				φ 30	
 Pilot Lamp	CR-2510	24 V d.c	24 V d.c	1W	φ 25	Red, Green, Blue, Yellow, White * L : LED type ex)CR-251-0L
	CR-3010				φ 30	
 Selector Switch	CR-253	5 A, 250 V a.c			φ 25	
	CR-303				φ 30	
 Emergency Stop Button Switch	CR-257	5 A, 250 V a.c			φ 25	Red Green, Yellow
	CR-307				φ 30	
 Emergency Stop Button Switch (Push lock turn reset)	CR-257R	5 A, 250 V a.c			φ 25	Red Green
	CR-307R				φ 30	
 Selector Push Button Switch	CR-308	5 A, 250 V a.c			φ 30	Contact 1a1b
 Key Switch	CR-2511	5 A, 250 V a.c			φ 25	
	CR-3011				φ 30	

■ Ø 16 SMALL CONTROL SWITCH (SR Series)

Model		SRF	SRX	SRP	SRS	SRK	SRE
		PUSH-BUTTON	ILLUMINATED PUSH-BUTTON	PILOT-LAMP	SELECTOR	KEY-SELECTOR	EMERGENCY RESET
Appearance							
Ratings		6 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	10 - 55 Hz, Double amplitude 0.75 mm					
Operation	Mechaical	Min. 500,000 times		Min. 100,000 times			
	Electrical	Min. 70,000 times					
Ambient temperature		-20 ℃ ~ 50 ℃					
Ambient humidity		45 ~ 88 % R.H.					
Storage temperature		-40 ℃ ~ 70 ℃					

● INCANDISCANT LAMP RATINGS

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

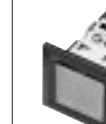
● LED RATINGS

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

■ RECTANGULAR LAMP

Model	CR-401(a.c SUPPLY)				CR-402(d.c SUPPLY)	
Appearance						
Voltage	110 V	220 V	380 V	440 V	12 V	24 V
Secondary voltage	6.3 V	6.3 V	6.3 V	6.3 V	transless voltage	
Cap color	Red, Yellow, Green, Blue, White					
Insulation resistance	Min. 100 MΩ (Within current carrying part & non current carryng part)					
Dielectric strength	1,500 V a.c For minute					
Bulb' s life	5,000 Hours above					
Ambient temperature	-20 ℃ ~ +40 ℃					
Ambient humidity	45 ~ 85 %R.H.					
Storage temperature	-25 ℃ ~ +55 ℃					

■ COMBINATION DISPLAY LIGHTS

Model	VOLTAGE TYPE		TRANSFORMER TYPE		RESISTANCE TYPE	
	CD-SA	CD-RA	CD-SC,SD	CD-RC,RD	CD-SB	CD-RB
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 M Ω (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 %R.H.					
Storage temperature	-25 ℃ ~ +55 ℃					

※Note : CD-S  (30x30mm) and CD-R  (30x40mm)

MICRO SWITCH

MICRO SWITCH



Model		PUSH BUTTON	ROLLER LEVER	LEVER	ROLLER PUSH BUTTON
		P701-A, B, C, D	R704-A, B, C, 2W	L707-A, B, C, D	PR708-A, B
Appearance					
Operation speed		0.1 mm - 1 ㎖			
Frequency	Mechanical	50 - 300 / minute			
	Electrical	20 / minute			
Insulation resistance		Min. 100 MΩ (AT d.c 500 V)			
Contact resistance		Max. 50 MΩ (initial), Max. 2 Ω (after testing)			
Vibration		10 - 55 Hz double amplitude 0.75mm			
Shock	Durability	Min. 1000 ㎖ (Min. 100G)			
	Malfunction	Min. 300 ㎖ (Min. 30G)			
Dielectric strength		1,000 V a.c 50/60 Hz for 1 minute (between charging part) 1,500 V a.c 50/60 Hz 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)			

MICRO SWITCH

Model	ROLLER LEVER (WATERPROOF)															
	HY-R404B															
Appearance																
Operation speed		0.1 - 0.1 mm/sec														
Frequency	Mechanical	50 - 300 / minute														
	Electrical	20 / minute														
Insulation resistance		Min. 100 MΩ (At 500 V d.c)														
Contact resistance		Max. 15 mΩ (initial)														
Dielectric Strength	Charging part	1,000 V a.c 1 minute (50 - 60 Hz)														
	Discharging part	1,500 V a.c 1 minute (50 - 60 Hz)														
Vibration/Malfunction		10 - 55 Hz double amplitude width 1.5 mm														
Shock	Durability	Min. 1,000 g (Min. 100G)														
	Malfunction	Min. 300 g (Min. 30G) pin push button type about Min. 30G														
Life	Mechanical	Min. 0.5 millions operations (Switching frequency 60 / minute)														
	Electrical	Min. 0.1 millions operations (Switching frequency 20 / minute, at rated load)														
Net weight		6.2 g ~ 10.2 g														
Rated current		10 A 250 V a.c (Resistive load)														

■ LIMIT SWITCH



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	M908L
Appearance														
Operation speed		0.1 - 1 1/s												
Frequency	Mechanical	120 /minute												
	Electrical	20 /minute												
Insulation resistance		Min. 100 MΩ (At 500 V d.c)												
Dielectric strength		1,000 V a.c 50/60 Hz 1 minute (between charging part) 1,500 V a.c 50/60 Hz 1 minute (between discharging part)												
Contact resistance		Max. 100 MΩ (initial)												
Vibration	Malfunction	10 - 55 Hz Double amplitude width 1.5 mm												
Shock	Durability	Min. 1,000 1/s (Min. 100G)												
	Malfunction	Min. 300 1/s (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	
		N,C	N,O	N,C	N,O	N,C	N,O	N,C	N,O
a.c	125	10		3	1.5	8		5	2.5
	250	6		2	1	4		3	1.5
	480	2		1.5	0.8	2		1.5	0.8
d.c	8	10		6	3	6		6	
	14	10		6	3	6		6	
	30	6		4	3	4		4	
	125	0.4		0.2	0.2	0.05		0.2	
	250	0.2		0.1	0.1	0.02		0.1	

■ MINI LIMIT SWITCH



Model	VARIABLE ROLLER LEVER(L804)	VARIABLE ROD(L807)	ROLLER LEVER(L808)	SPRING WIRE(L809)
Appearance				
Frequency	120 /minute			
	30 /minute			
Insulation resistance		Min. 100 MΩ (At 500 V d.c)		
Dielectric strength		Between noncontinuous terminal : 1500 V a.c 50/60 Hz 1minute Between terminal & non-current carrying metal part : 2000 V a.c 50/60 Hz 1 minute		
Contact resistance		Max. 25 MΩ (initial), Max. 100 MΩ (after testing)		
Vibration	Malfunction	Min. 10 - 55 Hz double amplitude width 1.5 mm		
Shock	Durability	Min. 300 1/s (30G above)		
	Malfunction	Min. 100 1/s (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 °C ~ +70 °C 95 %R.H. below (20 °C)		

● RATINGS

RATED VOLTAGE	LOAD	Resistive LOAD(cos φ ≒ 1)	INDUCTIVE(cos φ ≒ 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

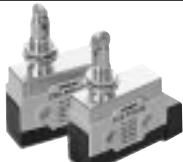
N TYPE LIMIT SWITCH

Model		ROLLER PLUNGER	PUSH PLUNGER	ROLLER ARM	VARIABLE ROLLER LEVER	VARIABLE ROD	ROLLER LEVER
		LS-802N	LS-803N	LS-803RN	LS-804N	LS-807N	LS-808N
Appearance							
Frequency	Mechanical	120 /minute					
	Electrical	30 /minute					
Insulation resistance		Min. 100 M Ω (AT 500 V d.c)					
Contact resistance		Max. 25 M Ω (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	10 - 55 Hz double amplitude width 1.5 mm					
Shock	Durability	Min. 1000 $\frac{m}{s^2}$ (Min. 100G)					
	Malfunction	Min. 300 $\frac{m}{s^2}$ (Min. 30G)					
Life	Mechanical	Min. 1 million operation					
	Electrical	Min. 0.1 million operation					
Ambient temperature		-10 $^{\circ}$ C ~ +70 $^{\circ}$ C					
Ambient humidity		Max. 95 %R.H. (20 $^{\circ}$ C)					

RATINGS

RATED VOLTAGE (V)		NON-INDUCTIVE Load(A)		INDUCTIVE LOAD(A)			
		Resistive LOAD	RAMP LOAD	INDUCTIVE LOAD		MOTOR LOAD	
		N.O	N.C	N.O	N.C	N.O	N.C
a.c	125	6	2	6		3	
	250	6	1.5	6		1.5	
d.c	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		PUSH BUTTON	ROLLER LEVER	LEVER	ROLLER PUSH BUTTON	SPRING WIRE
		P501O	R504A,C	L507A,C	PR508A,H	L509
Appearance						
Operation speed		0.1 mm - 0.5 $\frac{m}{s}$				
Frequency	Mechanical	120 /minute				
	Electrical	20 /minute				
Insulation resistance		Min. 100 M Ω (AT 500 V d.c)				
Contact resistance		Max. 25 M Ω (initial), Max. 100 M Ω				
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	10 - 55 Hz double amplitude width 1.5 mm				
Shock	Durability	Min. 1,000 $\frac{m}{s^2}$ (Min. 100G)				
	Malfunction	Min. 300 $\frac{m}{s^2}$ (Min. 30G)				
Life	Mechanical	Min. 1 million operation				
	Electrical	Min. 0.3 million operation				
Ambient temperature and humidity		-10 $^{\circ}$ C ~ +80 $^{\circ}$ C Max. 25 ~ 95 %R.H.				

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
a.c	125	15		10		3	1.5
	250	10		6		2	1
	600	3		2		1.5	0.75
d.c	8	15		10		—	—
	14	15		10		—	—
	30	6		5		—	—
	125	0.4		0.05		—	—
	250	0.2		0.03		—	—

POWER PUSH BUTTON SWITCH

■ POWER PUSH BUTTON SWITCH

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

■ POWER PUSH BUTTON SWITCH (BE Series)

● STEEL CASE BE

Model		RATINGS	ELECTROMOTOR CAPACITY(KW)		CONTACT TERMINAL	LITERAL DISPLAY	MATERIAL OF CASE
			1 ϕ 100/110 V	3 ϕ 200/220 V			
 STEEL CASE EXPOSURE	BE 215	3 P 15 A	0.4	2.2	M4	ON(black) OFF(red)	cold workable steel plate
	BE 230	3 P 30 A		3.7	M5		

● WATER PROOF (BEW, BEWT)

Model		RATINGS	ELECTROMOTOR CAPACITY(KW)		CONTACT TERMINAL	LITERAL DISPLAY	MATERIAL OF CASE
			1 ϕ 100/110 V	3 ϕ 200/220 V			
 WATER PROOF	BEW 215	3 P 15 A	0.4	2.2	M4	ON(black) OFF(red)	burning resist ABS
	BEW 230	3 P 30 A		3.7	M5		
 ADVANCED WATER PROOF	BEWT 215	3 P 15 A	0.4	2.2	M4		
 ADVANCED WATER PROOF	BEWT 315	3 P 15 A	0.4	2.2	M4	FOR(black) STOP(red) REV(black)	

CAM / MONO LEVER SWITCH

CAM SWITCH

Model			SQUARE TYPE	255,305 TYPE	HANDLE CONTROL TYPE	CIRCLE TYPE	SQUARE KEY TYPE
Appearance							
Contact part	a.c	Voltage		110 / 250 / 440 V			
		Rated current		10 / 7 / 3 A			
		Momentary current		closed momentary current=rated current ×10			
	d.c	Voltage		24 / 110 / 250 V			
		Resistance	Rated current	10 / 2 / 1 A			
			Momentary current	closed momentary current=rated current ×1.1			
		Indication	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 1minute				
Vibration			10 - 55 Hz double amplitude width 1.5 mm				
Shock			Min. 30G				
Operation power			560 g				
Ambient temperature			-20 ℃ ~ +50 ℃				

MONO LEVER SWITCH

Model				LONG LEVER	SHORT LEVER	
Appearance						
Contact part	a.c	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		
	d.c	Rated voltage		125 V / 250 V		
		resis- -tance	Rated current		2.2 A / 1.1 A	
			Cut-off current		Rated current ×1.1	
		Induc- -tion	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			a.c 2,500 V / 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 ℃			

HOIST / FOOT / MAIN SWITCH

HOIST SWITCH



Model	HY-1022 (2 BUTTON)	HY-1024 (4 BUTTON)	HY-1026 (6 BUTTON)	HY-1028 (8 BUTTON)
Appearance				
Protection construction	IP-65 (IEC)			
Material Color	Case	ABS		
	Screw	Stainless screw		
	Button packing	Special rubber (black)		
	Cable bracket	Special rubber (black)		
Insulation resistance	Min. 100 MΩ (At d.c 500 V)			
Dielectric strength	1500 V a.c for 1 minute			
Ambient temperature	-15 ℃ ~ 45 ℃			
Ambient humidity	45 ~ 85 %R.H.			

FOOT SWITCH



Model	HY-101		HY-102			
Appearance						
Rated voltage	250 V a.c, 6 A		250 V a.c, 6 A			
Internal switch	HY-P601 A		HY-P601 A			
Material of case	ABS resin		AL Diecasting			
Model	HY-103		HY-104		HY-105	
Appearance						
Rated voltage			250 V a.c, 10 A			
Internal switch			HY-P701D		HY-P701B	
Material of case			AL Diecasting			

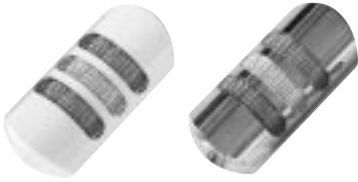
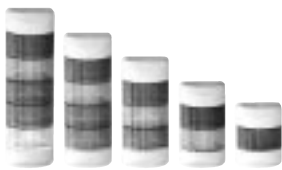
MAIN SWITCH



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	

SIGNAL LIGHT

WALL MOUNTED LIGHT

Model	WME	WMS
Appearance		
Function	A : Continuous light F : Continuous light, Flashing light, Buzzer	A : Continuous light F : Continuous light, Flashing light, Buzzer
Body (Color)	B : Beige C : Chrome plating	Red, Yellow, Green, Blue, White
Rated voltage	24 VDC, 24 VAC (12 V is a custom-made)	
Number of stacks	3 stacks basics	1, 2, 3, 4, 5 stacks
Power consumption	0.5 W per each lamp, max. 2.1 W	0.5 W per each lamp, max. 3.2 W for 5 stacks F type
Buzzer	75 ~ 85 dB (1m)	75 ~ 85 dB (1m)
Drive	NPN, PNP Transistor Open Collector Drive 24 V d.c , 24 V a.c	

TURN LIGHT (TLB Series)

Model	TLB 060	TLB 100	TLB 150
Appearance			
Size	Ø 60	Ø 100	Ø 150
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	5 W	10 W	20 W
Buzzer	75 ~ 85 dB (1m)	75 ~ 85 dB (1m)	90 dB (1m)
Power consumption	max. 6 W	max. 11 W	max. 21 W
Revolutions	120 ~ 160 revolutions per minute		
Drive	Relay, NPN, PNP Transistor Open Collector Drive		
Material	ABS		ABS, Stainless

SIGNAL LIGHT (SLB Series)

Model	SLB 060
Appearance	
Size	Ø 60
Shape	P : Round shape lens, Direct mount (Buzzer) R : Round shape lense, 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 VDC, 24 VAC (12 V is a custom-made)
Color	Red, Yellow, Green
Light	LED
Drive	NPN, PNP Transistor Open Collector 24 V a.c / V d.c
Power consumption	max. 1 W
Buzzer	75 ~ 85 dB (1m)

■ TURN LIGHT

Model		VOLTAGE	CONSUMPTION POWER	BULB	REVOLUTION
	TR-12	12 V d.c	0.9 A	12 V 5 W	130 /minute
	TR- 24	24 V d.c	0.5 A	24 V 5 W	
	TR-012	110 V a.c	0.1 A	12 V 5 W	
		220 V a.c	0.05 A		
	TX- 12	12 V d.c	0.9 A	24 V 5 W	
	TX- 24	24 V d.c	0.5 A		
	TX-012	110 Va.c	0.1 A	12 V 5 W	
		220 V a.c	0.05 A		
	TF- 12	12 V d.c	0.9 A	24 V 5 W	
	TF- 24	24 V d.c	0.5 A		
	TF-012	110 V a.c	0.1 A	12 V 5 W	
		220 V a.c	0.05 A		
	TP- 12	12 V d.c	0.9 A	24 V 5 W	
	TP- 24	24 V d.c	0.5 A		
	TP-012	110 V a.c	0.1 A	12 V 5 W	
		220 V a.c	0.05 A		

■ REVOLVING LIGHT

● SPECIFICATION

Model		VOLTAGE	BULB	REVOLUTION	COLOR	REMARK
	HY-RLA-KB-01	12 V d.c	12 V,10 W	160 /minute	Red	General use
	HY-RLA-KB-01A					Car use. (magnet method)
	HY-RLA-KBB-10	110 V a.c	12 V,10 W		Red	Absorption buzzer method
	HY-RLA-KBB-20	220 V a.c	12 V,10 W		Red	

■ LED TURN LIGHT

Appearance	Suffix code	Power voltage	Power consumption	Chips	Revolution	Flickering
	LTR-12	12-24 Vac/dc	0.07 A, 1.7 W	24	approx. 190 times for a minutes	approx. 50 times for a minutes
	LTR-012	110 - 220 V a.c	0.01 A, 2.2 W	24		
	LTP- 12	12-24 Vac/dc	0.07 A, 1.7 W	24		
	LTP- 012	110 - 220 V a.c	0.01 A, 2.2 W	24		
	LTPB- 12	12-24 Vac/dc	0.07 A, 1.7 W	24		
	LTPB-012	110 - 220 V a.c	0.01 A, 2.2 W	24		

SIGNAL LIGHT

SIGNAL LIGHT (XENON Lamp Flashing) ☺☺

● SPECIFICATION

Model		Rated Volt	BULB	Consumption power	Flashing	Remark
	RLA-WX-01	12 V d.c	XENON LAMP	4 W	60 /MIN	• Buzzer built-in type is optional. • It is available to use cigar jack with car. • Flashing number is selectable (1~3 times).
	RLA-WX-02	24 V d.c				
	RLA-WX-10	110 V a.c				
	RLA-WX-20	220 V a.c				

■ CUBE TOWER

Model		VOLTAGE	CONSUMPTION POWER	BULB	COLOR	REVOLUTION
 ☐ R2 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	
 ☐ R16 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	

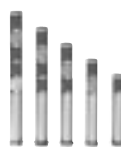
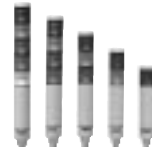
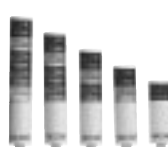
■ CUBE LIGHT

Model		VOLTAGE	CONSUMPTION POWER	BULB	COLOR
 ☐ R2 CUBE LIGHT	HY-CTB-TB-021	24 V d.c	0.42 A	24 V, 10 W	Red (Option)
	HY-CTB-TB-022		0.63 A		Red, Blue
	HY-CTB-TB-101	110 V a.c	0.14 A	110 V, 10 W	Red (Option)
	HY-CTB-TB-102		0.20 A		Red, Blue
	HY-CTB-TB-201	220 V a.c	0.08 A	220 V, 10 W	Red (Option)
	HY-CTB-TB-202		0.11 A		Red, Blue

LED SIGN TOWER (STS Series)

Model	STS 040	STS 060	STS 080
Appearance			
Size	Ø 40	Ø 60	Ø 80
Mount	Mounting Bracket Pipe Bracket L type Bracket	Mounting Bracket Pipe Bracket L type Bracket	Mounting Bracket Pipe Bracket L type Bracket
Rated voltage	24 VDC, 24 VAC (12 V is a custom-made)		
Number of stacks	1, 2, 3, 4, 5 stacks		
Color	Red, Yellow, Green, Blue, White		
Power consumption	1.1 W per each lamp, max. 7 W for 5 stacks F type		
Drive	Relay, NPN, PNP Transistor Open Collector Drive		
Material	ABS		

LED SIGN TOWER (STL Series)

Model	STL 025	STL 040	STL 060	STL 080
Appearance				
Size	Ø 25	Ø 40	Ø 60	Ø 80
Function	A : Continuous light F : Continuous light, Flashing light, Buzzer	A : Continuous light F : Continuous light, Flashing light, Buzzer	A : Continuous light F : Continuous light, Flashing light, Buzzer	A : Continuous light F : Continuous light, Flashing light, Buzzer
Rated voltage	24 VDC / VAC	24 VDC, 24 VAC (12 V is a custom-made)		
Number of stacks	1, 2, 3, 4, 5 stacks			
Drive	Relay, NPN, PNP Transistor Open Collector Drive 24 VDC / 24 VAC	Relay, NPN, PNP Transistor Open Collector Drive 24 VAC / VDC, 100 ~ 240 VAC		
Mount	Direct	Direct Mounting Bracket Pipe Bracket L type Bracket	Direct Mounting Bracket Pipe Bracket L type Bracket	Direct Mounting Bracket Pipe Bracket L type Bracket
Color	Red, Yellow, Green, Blue, White			
Power consumption	1.1 W per each lamp, max. 7 W for 5 stacks F type			
Buzzer	75 ~ 85 dB (1 m)	65 ~ 75 dB (1 m)	75 ~ 85 dB (1 m)	75 ~ 85 dB (1 m)

SIGNAL LIGHT

SIGN TOWER (HY-T, HY-TB)

STAGE	Model	VOLTAGE	CONSUMPTION POWER	BULB	FLASHING	STAGE	Model	VOLTAGE	CONSUMPTION POWER	BULB	FLASHING
	HY-T(TW)-12-1 HY-T(TW)-24-1 HY-T(TW)-110-1 HY-T(TW)-220-1	12 V a.c/d.c 24 V a.c/d.c 110 V a.c 220 V a.c	0.42 A 0.21 A 0.07 A 0.04 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W	60 /minute (HY-TW)		HY-TB(TWB)-12-1 HY-TB(TWB)-24-1 HY-TB(TWB)-110-1 HY-TB(TWB)-220-1	12 V d.c 24 V d.c 110 V a.c 220 V a.c	0.42 A 0.21 A 0.07 A 0.04 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W	60 /minute (HY-TWB)
	HY-T(TW)-12-2 HY-T(TW)-24-2 HY-T(TW)-110-2 HY-T(TW)-220-2	12 V a.c/d.c 24 V a.c/d.c 110 V a.c 220 V a.c	0.84 A 0.42 A 0.14 A 0.08 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W			HY-TB(TWB)-12-2 HY-TB(TWB)-24-2 HY-TB(TWB)-110-2 HY-TB(TWB)-220-2	12 V d.c 24 V d.c 110 V a.c 220 V a.c	0.84 A 0.42 A 0.14 A 0.08 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W	
	HY-T(TW)-12-3 HY-T(TW)-24-3 HY-T(TW)-110-3 HY-T(TW)-220-3	12 V a.c/d.c 24 V a.c/d.c 110 V a.c 220 V a.c	1.26 A 0.63 A 0.20 A 0.11 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W			HY-TB(TWB)-12-3 HY-TB(TWB)-24-3 HY-TB(TWB)-110-3 HY-TB(TWB)-220-3	12 V d.c 24 V d.c 110 V a.c 220 V a.c	1.26 A 0.63 A 0.20 A 0.11 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W	
	HY-T(TW)-12-4 HY-T(TW)-24-4 HY-T(TW)-110-4 HY-T(TW)-220-4	12 V a.c/d.c 24 V a.c/d.c 110 V a.c 220 V a.c	1.68 A 0.84 A 0.27 A 0.14 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W			HY-TB(TWB)-12-4 HY-TB(TWB)-24-4 HY-TB(TWB)-110-4 HY-TB(TWB)-220-4	12 V d.c 24 V d.c 110 V a.c 220 V a.c	1.68 A 0.84 A 0.27 A 0.14 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W	
	HY-T(TW)-12-5 HY-T(TW)-24-5 HY-T(TW)-110-5 HY-T(TW)-220-5	12 V a.c/d.c 24 V a.c/d.c 110 V a.c 220 V a.c	2.10 A 1.05 A 0.33 A 0.17 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W			HY-TB(TWB)-12-4 HY-TB(TWB)-24-4 HY-TB(TWB)-110-4 HY-TB(TWB)-220-4	12 V d.c 24 V d.c 110 V a.c 220 V a.c	2.10 A 1.05 A 0.33 A 0.17 A	12 V 5 W 24 V 5 W 110 V 5 W 220 V 5 W	

TOWER LIGHT

Model	VOLTAGE	BULB	COLOR
 HY-STA-TB-012	12 V a.c/d.c	12 V, 3 W	Red, Green
HY-STA-TB-013	12 V a.c/d.c	12 V, 3 W	Red, Yellow, Green
HY-STA-TB-014	12 V a.c/d.c	12 V, 3 W	Red, Yellow, Green, Blue
HY-STA-TB-022	12 V a.c/d.c	24 V, 3 W	Red, Green
HY-STA-TB-023	12 V a.c/d.c	24 V, 3 W	Red, Yellow, Green
HY-STA-TB-024	12 V a.c/d.c	24 V, 3 W	Red, Yellow, Green, Blue
HY-STA-TB-102	110 V a.c	110 V, 3 W	Red, Green
HY-STA-TB-103	110 V a.c	110 V, 3 W	Red, Yellow, Green
HY-STA-TB-104	110 V a.c	110 V, 3 W	Red, Yellow, Green, Blue
HY-STA-TB-202	220 V a.c	220 V, 3 W	Red, Green
HY-STA-TB-203	220 V a.c	220 V, 3 W	Red, Yellow, Green
HY-STA-TB-204	220 V a.c	220 V, 3 W	Red, Yellow, Green, Blue

TERMINAL BLOCKS & THE OTHERS

■ ASSEMBLY TERMINAL BLOCK

● SPECIFICATION

Model Classification	HYBT-15	HYBT-25	HYBT-35	HYBT-60	HYBT-100	HYBT-15-2
						
Rated Insulating voltage	Max. 600 V					
Rated current	15 A	25 A	35 A	60 A	100 A	15 A, 2 stack
Insulation resistance	Min. 100 M Ω					
Dielectric strength	2,500 V a.c for 1minute between non-current carrying parts					
Terminal bolt	M3.5	M4	M4	M6	M6	M3.5
Ambient temperature	-20 ~ 55 °C					
Ambient humidity	45 - 85 % R.H					

■ TERMINAL BLOCK

● SPECIFICATION

Model Classification	TB-10	TB-20	TB-30	TB-60	TB-100
					
Rated insulating voltage	Max. 600 V				
Rated current	10 A	20 A	30 A	60 A	100 A
Insulation resistance	Min. 100 M Ω				
Dielectric strength	2, 500 V a.c for 1minute between non- current carrying parts				
Ambient temperature	-20 ~ 55 °C				
Ambient humidity	45 - 85 % R.H				

● SPECIFICATION

Model Classification	TB-150	TB-200	TB-300	TB-400	TB-500
					
Rated insulating voltage	Max. 600 V				
Rated current	150 A	200 A	300 A	400 A	500 A
Insulation resistance	Min. 100 M Ω				
Dielectric strength	2,500 V a.c for 1 minute between non-current carrying parts				
Ambient temperature	-20 ~ 55 °C				
Ambient humidity	45 - 85 % R.H				

■ POWER BUZZER

Model	HY-256	HY-306	HY-606	HY-606N
Appearance				
Voltage	110 V, 220 V a.c / d.c 12 V, 24 V d.c			
Power consumption	4 VA		8 VA	
Cycle	50 / 60 Hz			
Volume(distance 1m)	85Phon	85Phon	85Phon	
External diameter	φ 25	φ 30	φ 65	Exposure type

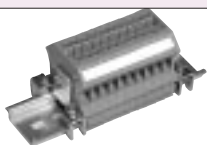
TERMINAL BLOCKS & THE OTHERS

■ 3 TIMBRE ELECTRIC BUZZER

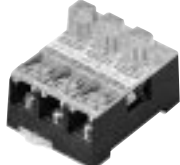
Model	HY-226 MD, MA	HY-256 MD, MA	HY-606 MD, MA
Appearance			
Voltage	110, 220 V a.c / 12, 24 V d.c	110, 220 V a.c / 12, 24 V d.c	110, 220 V a.c / 12, 24 V d.c
Power consumption	0.6 W / 13.5 W	0.6 W / 13.5 W	2.5 W
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Volume(distance 1m)	80 phon	80 phon	98 phon
Diameter	φ 22	φ 25	φ 66

■ MELODY BUZZER

■ N-TYPE ASSEMBLY TERMINAL BLOCK

Appearance	Model	HY-NBT-15
	Rated insulating voltage	600 V
	Rated current	15 A
	Insulation resistance	100 MΩ
	Dielectric strength	2,500 V a.c for 1 minute

■ FUSE HOLDER

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	600 V a.c 30 A
Remark	For a.c : Common to 110 V - 220 V For d.c : Common to 12 V - 24 V ※Use a ceramic fuse						110 V - 600 V a.c ※Ceramic Fuse

■ CONTROL BOX AND CONNECTOR

Appearance	Model	Material	Remark
	HY-2501	Thermostable ABS resin	φ 25
	HY-2502		
	HY-2503		
	HY-2504		
	HY-2505		
	HY-2506		
	HY-3001	Thermostable ABS resin	φ 30
	HY-3002		
	HY-3003		
	HY-3004		
	HY-3005		
	HY-3006		
	CB25	Thermostable ABS resin	φ 25
	CB30	Thermostable ABS resin	φ 30
	HYC-M1	PC (resin)	φ 8
	HYC-M2	PC (resin)	φ 11

TEMPERATURE CONTROLLER



SOLID STATE RELAY



FOOT SWITCH



POWER PUSH BUTTON SWITCH



CAM / MONO LEVER SWITCH



REVOLVING LIGHT
LED TURN LIGHT
SIGNAL LIGHT
CUBE TOWER LIGHT



LEADING HIGH-TECH CORPORATION IN CONTROL & MEASUREMENT



MAIN QUALITY COMPETITION

- ISO 9001 CERTIFIED BY TUV RHEINLAND GERMANY
- UL / CE CERTIFIED
- ERP (ENTERPRISE RESOURCES PLANNING)
- SELECTED AS SUPERIOR QUALITY ENTERPRISE TOP 50
- TOP QUALITY ENTERPRISE AWARD
- WIN THE PRIZE FOR NATIONAL QUALITY MANAGEMENT

MAIN PRODUCTS & TECHNOLOGY

- TEMPERATURE CONTROLLER, PROGRAMMABLE CONTROLLER, TEMPERATURE & HUMIDITY CONTROLLER, MOLD TEMPERATURE CONTROLLER, DIGITAL COUNTER / TIMER, ROTARY ENCODER, ETC (250 KINDS OF VARIOUS PRODUCTS).
- ESTABLISHMENT OF EFFICIENT PRODUCTION METHOD.
- AUTOMATIC CORRECTION FACILITY TO ENSURE PRECISION OF PRODUCTS.
- WORLD WIDE SALES NETWORK



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Temperature Controller/Recorder/Digital Counter.Timer/Analog Timer/Panel Meter/Multi PulseMeter/Sensor
Rotary Encoder/TPR/SSR/Control Switch/Micro Switch/Limit Switch/Cam Switch/MonoLeverSwitch/HoistSwitch
Main Switch/LED Sign Tower/Turn Light/Signal Light/Terminal Block/Fuse Holder/Control Box



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All specifications are subject to change without prior notice, and when you place order, please consult HANYOUNG NUX CO.,LTD.