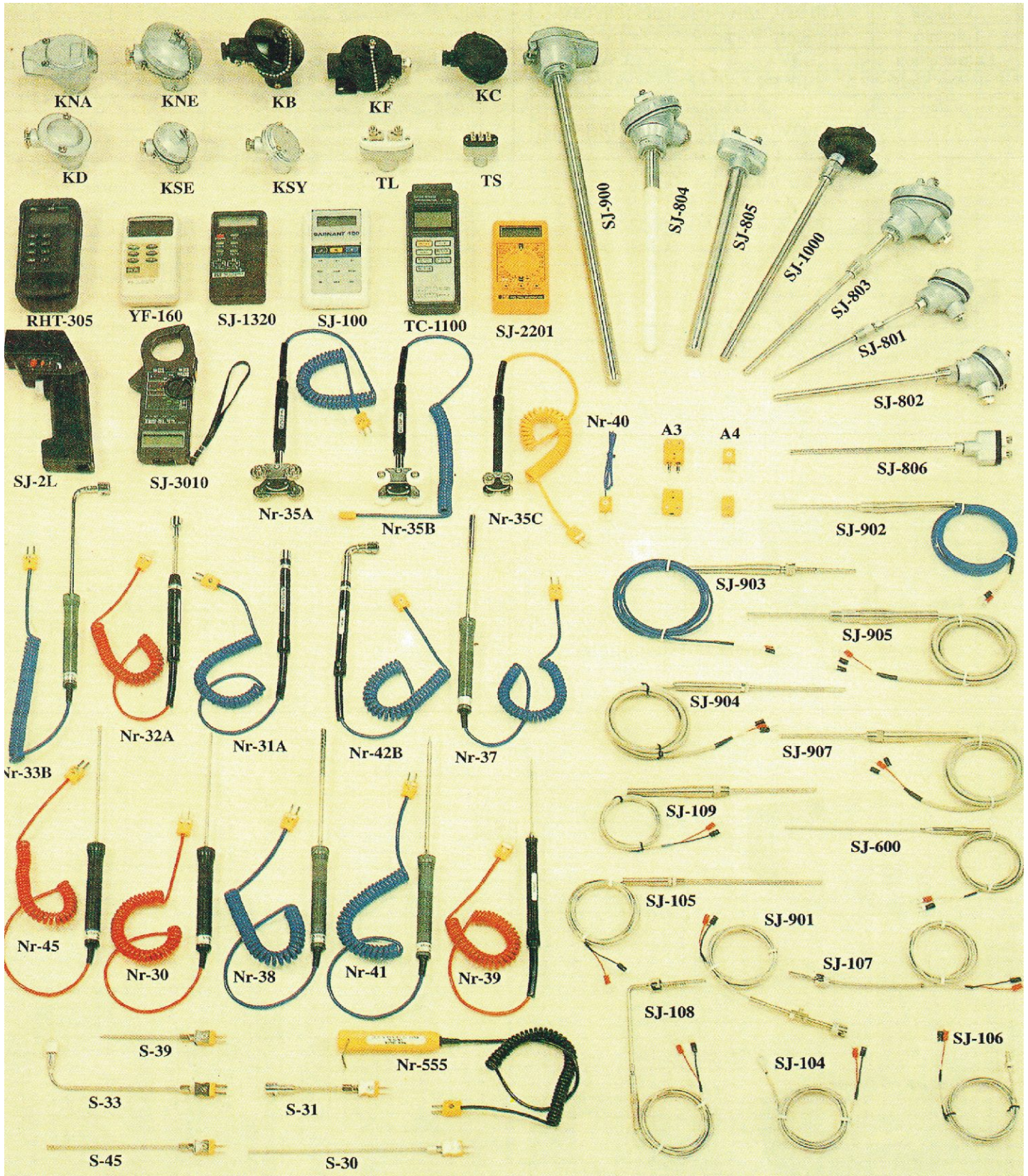


THERMOCOUPLE & BEAD WIRE



※More detail specifications upon request.

Push Button Switch,
Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch,
Warning Light, Alarm

Thermocouple, Temperature
Controller, Sensor

Panel Meter,
Can Switch, C.T.





Hoist Push Button, Enclosure,
Fan, Lock, Bus Bar Insulator

MCCB, Magnetic Contactor,
Overload Relay

TEMPERATURE CONTROLLER

RT-5




DIN48mm x 48mm

| ITEM NO. | RT-501 | RT-505 | RT-555 | RT-535 |
|-------------------|--|--|---|--|
| Setting method | Knob | 3-digital push switch | 3-digital push switch | Non setting |
| Indication mode | no indication | no indication | 3-LED digital display | 3-LED digital display |
| Temperature range | 100, 200, 400, 600°C | 99.9, 199, 399, 599, 999°C | 99.9, 199, 399, 599, 999°C | 399, 999°C |
| Appearance |  with dust cover |  with dust cover |  with dust cover |  with dust cover |
| Dimensions (mm) | 50.5 W x 50.5 H x 101 L (87mm behind panel), panel cut out : 45.5 W x 45.5 H | | | |
| Mounting Socket | Flush mounting : P3G-08, surface mounting : PF083A | | | |

TEMPERATURE CONTROLLER

RT-4

DIN48mm x 96mm

| ITEM NO. | RT-486 | RT-488 | RT-434 |
|-------------------|--|---|--|
| Setting method | 3-digital push switch | 3-digital push switch | Non setting |
| Indication mode | deviation meter | 3-LED digital display | 3-LED digital display |
| Temperature range | 199, 399°C | 199, 399°C | 199, 399°C |
| Appearance |  with dust cover |  with dust cover |  with dust cover |
| Dimensions (mm) | 48 W x 96 H x 128.5 L (110mm behind panel), panel cut out : 45 W x 89 H | | |

Specifications

| | |
|-----------------------|---|
| Rated voltage | K, J, R sensor : 50/60Hz 110-120/220-240VAC RT100 3W RTD :50/60Hz 110-120,220-240VAC |
| Sensor input | K(CA), J(IC), R(PR), PT100 3W |
| Control mode | On/Off control, Proportioning control |
| Output mode | Relay, 0-12VDC, 4-20mADC |
| Relay contact | 1C 5A 250AVC resistive |
| Alarm output | Relay (1C 5A 250AVC resistive), Optional |
| Power consumption | < 5VA |
| Insulation resistance | > 20MΩ (500VDC tester) |
| Dielectric strength | 60Hz 1500VAC 1-min. |
| Ambient temperature | operating : -10°C to 55°C storage : -25°C to 65°C |
| Ambient humidity | 45% to 85% RH |
| Enclosure | front panel-IP50, body-IP40, terminal-IP00 |

Characteristics

| | |
|-----------------------------|--------------------------------|
| Setting accuracy | < ±1.0% of range span |
| Analog indication accuracy | < ±1.5% of range span |
| Digital indication accuracy | < ±1.5% of range span +1 digit |
| On/Off differential | 2.5°C (set point ±1.25°C) |
| Proportioning bandwidth | 10°C (set point ±5°C) |
| Proportioning cycle | 15 seconds |
| Sensor broken protection | control output off |

RT-5:alarm function is not available





To order, Specify





- Model
- Rated voltage
- Temperature range
- Sensor input
- Control mode
- Output mode
- Others, special request

TEMPERATURE CONTROLLER

RT-6

DIN72mm x 72mm

| ITEM NO. | RT-601B | RT-601 | RT-602 | RT-603 |
|-------------------|---|--|---|--|
| Setting method | Knob | Knob | Knob | Knob |
| Indication mode | no indication | no indication | deviation meter | full indication meter |
| Temperature range | 100, 200, 400, 600°C | 100, 200, 400, 600°C | 200, 400°C | 100, 200, 400°C |
| Appearance |  |  with dust cover |  with dust cover |  with dust cover |
| Dimensions (mm) | 72 W x 72 H x 125.5 L (110mm behind panel), panel cut out : 67 W x 67 H | | | |

| ITEM NO. | RT-607 | RT-606 | RT-608 | RT-636 |
|-------------------|--|--|---|---|
| Setting method | Knob | 3-digital push switch | 3-digital push switch | Non setting |
| Indication mode | 4-LED digital display | deviation meter | 4-LED digital display | 4-LED digital display |
| Temperature range | 100, 200, 400, 600°C | 199, 399°C | 99.9, 199, 399, 799, 999°C | 399, 999°C |
| Appearance |  with dust cover |  with dust cover |  with dust cover |  digital thermometer with dust cover |
| Dimensions (mm) | 72 W x 72 H x 125.5 L (110mm behind panel), panel cut out : 67 W x 67 H | | | |

Specifications

| | |
|-----------------------|--|
| Rated voltage | 50/60Hz 110-120,220-240VAC |
| Sensor input | K(CA), J(IC), R(PR), PT100 3W |
| Control mode | On/Off control, Proportioning control |
| Output mode | Relay, 0-12VDC, 4-20mADC |
| Relay contact | 1C 5A 250AVC resistive |
| Alarm output | Relay (1C 5A 250AVC resistive), Optional |
| Power consumption | < 5VA |
| Insulation resistance | > 20MΩ (500VDC tester) |
| Dielectric strength | 60Hz 1500VAC 1-min. |
| Ambient temperature | operating : -10°C to 55°C storage : -25°C to 65°C |
| Ambient humidity | 45% to 85% RH |
| Enclosure | front panel-IP50, body-IP40, terminal-IP00 |

Characteristics

| | |
|-----------------------------|--------------------------------|
| Setting accuracy | < ±1.0% of range span |
| Analog indication accuracy | < ±1.5% of range span |
| Digital indication accuracy | < ±1.5% of range span +1 digit |
| On/Off differential | 2.5°C (set point ±1.25°C) |
| Proportioning bandwidth | 10°C (set point ±5°C) |
| Proportioning cycle | 15 seconds |
| Sensor broken protection | control output off |

To order, Specify

- Model
- Rated voltage
- Temperature range
- Sensor input
- Control mode
- Output mode
- Others, special request

TEMPERATURE CONTROLLER

RT-7

DIN96mm x 96mm

| ITEM NO. | RT-701 | RT-702 | RT-703 | RT-727 |
|-------------------|---|-----------------|-----------------------|-----------------------|
| Setting method | Knob | Knob | Knob | Knob |
| Indication mode | no indication | deviation meter | full indication meter | 4-LED digital display |
| Temperature range | 100, 200, 400, 600°C | 200, 400°C | 200, 400°C | 100, 200, 400°C |
| Appearance | | | | |
| Dimensions (mm) | 96 W x 96 H x 150.5 L (124mm behind panel), panel cut out : 89 W x 89 H | | | |

| ITEM NO. | RT-706 | RT-747 | RT-748 | RT-737 |
|-------------------|---|-----------------------|----------------------------|-----------------------|
| Setting method | 3-digital push switch | 3-digital push switch | Dual 3-digital push switch | Non setting |
| Indication mode | deviation meter | 4-LED digital display | 4-LED digital display | 4-LED digital display |
| Temperature range | 99.9, 199, 399, 599°C | 99.9, 199, 399, 599°C | 99.9, 199, 399, 599°C | 399, 599, 999°C |
| Appearance | | | | |
| Dimensions (mm) | 96 W x 96 H x 150.5 L (124mm behind panel), panel cut out : 89 W x 89 H | | | |

Specifications

| | |
|-----------------------|---|
| Rated voltage | K, J, R sensor : 50/60Hz 110-120/220-240VAC RT100 3W RTD :50/60Hz 110-120,220-240VAC |
| Sensor input | K(CA), J(IC), R(PR), PT100 3W |
| Control mode | On/Off control, Proportioning control |
| Output mode | Relay, 0-12VDC, 4-20mADC |
| Relay contact | 1C 5A 250AVC resistive |
| Alarm output | Relay (1C 5A 250AVC resistive), Optional |
| Power consumption | < 5VA |
| Insulation resistance | > 20MΩ (500VDC tester) |
| Dielectric strength | 60Hz 1500VAC 1-min. |
| Ambient temperature | operating : -10°C to 55°C storage : -25°C to 65°C |
| Ambient humidity | 45% to 85% RH |
| Enclosure | front panel-IP50, body-IP40, terminal-IP00 |

Characteristics

| | |
|-----------------------------|--------------------------------|
| Setting accuracy | < ±1.0% of range span |
| Analog indication accuracy | < ±1.5% of range span |
| Digital indication accuracy | < ±1.5% of range span +1 digit |
| On/Off differential | 2.5°C (set point ±1.25°C) |
| Proportioning bandwidth | 10°C (set point ±5°C) |
| Proportioning cycle | 15 seconds |
| Sensor broken protection | control output off |





To order, Specify





- Model
- Rated voltage
- Temperature range
- Sensor input
- Control mode
- Output mode
- Others, special request

TEMPERATURE CONTROLLER

RT-9

DIN96mm x 96mm

| ITEM NO. | RT-901 | RT-902 | RT-903 | RT-907 |
|-------------------|--|--|---|--|
| Setting method | Knob | Knob | Knob | Knob |
| Indication mode | no indication | deviation meter | full indication meter | 4-LED digital display |
| Temperature range | 100, 200, 400, 600, 1200°C | 200, 400°C | 200, 400°C | 100, 200, 400°C |
| Appearance |  with dust cover |  with dust cover |  with dust cover |  with dust cover |
| Dimensions (mm) | 96 W x 96 H x 128 L (106mm behind panel), panel cut out : 91 W x 91 H | | | |

| ITEM NO. | RT-907A | RT-906 | RT-908 | RT-939 |
|-------------------|---|--|---|---|
| Setting method | Knob | 3-digital push switch | 3-digital push switch | Non setting |
| Indication mode | 4-LED digital display | deviation meter | 4-LED digital display | 4-LED digital display |
| Temperature range | 400°C | 99.9, 199, 399, 599, 999°C | 99.9, 199, 399, 799, 999°C | 399, 599, 999°C |
| Appearance |  T80 for 80°C ambient |  with dust cover |  with dust cover |  digital thermometer with dust cover |
| Dimensions (mm) | 96 W x 96 H x 128 L (106mm behind panel), panel cut out : 91 W x 91 H | | | |

Specifications

| | |
|-----------------------|--|
| Rated voltage | 50/60Hz 110-120,220-240VAC |
| Sensor input | K(CA), J(IC), R(PR), PT100 3W |
| Control mode | On/Off control, Proportioning control |
| Output mode | Relay, 0-12VDC, 4-20mADC |
| Relay contact | 1C 5A 250AVC resistive |
| Alarm output | Relay (1C 5A 250AVC resistive), Optional |
| Power consumption | < 5VA |
| Insulation resistance | > 20MΩ (500VDC tester) |
| Dielectric strength | 60Hz 1500VAC 1-min. |
| Ambient temperature | operating : -10°C to 55°C storage : -25°C to 65°C |
| Ambient humidity | 45% to 85% RH |
| Enclosure | front panel-IP50, body-IP40, terminal-IP00 |

Characteristics

| | |
|-----------------------------|---------------------------------|
| Setting accuracy | < ±1.0% of range span |
| Analog indication accuracy | < ±1.5% of range span |
| Digital indication accuracy | < ±1.5% of range span + 1 digit |
| On/Off differential | 2.5°C (set point ±1.25°C) |
| Proportioning bandwidth | 10°C (set point ±5°C) |
| Proportioning cycle | 15 seconds |
| Sensor broken protection | control output off |

To order, Specify

- Model
- Rated voltage
- Temperature range
- Sensor input
- Control mode
- Output mode
- Others, special request

PID + FUZZY INTELLIGENT TEMPERATURE CONTROLLER

- Output volume display
- Load current display
- Turn off control function
- Fast auto-tuning setting
- Soft start function
- Ramp control function
- Manual output control function
- Communication function available



(35mm Din Rail)



INDEX OF ITEM NUMBER

| Ex. | NT | - 48 | R | - CT | - RS | |
|-----|----------------------|---|--------------|-----------------|------|--|
| | 1 | 2 | 3 | 4 | 5 | |
| 1 | Series | NT: New generation Temperature controller | | | | |
| 2 | Outline (Unit:mm) | 20: 48x96x60 | 21: 96x48x60 | 22: 22.6x75x100 | | |
| | | 48: 48x48x72 | 72: 72x72x60 | 96: 96x96x60 | | |
| 3 | Output method | R: Relay (3A/250VAC) V:SSR(20mA/12V) L:Linear output(4~20mA) | | | | |
| 4 | Optioned | CT: With Heater break detecting mA: DC current input mV: DC Voltage input | | | | |
| 5 | Optioned | RS: With RS-485 communication (MODBUS protocol) S: PV transmitter | | | | |

How to set the function or parameter

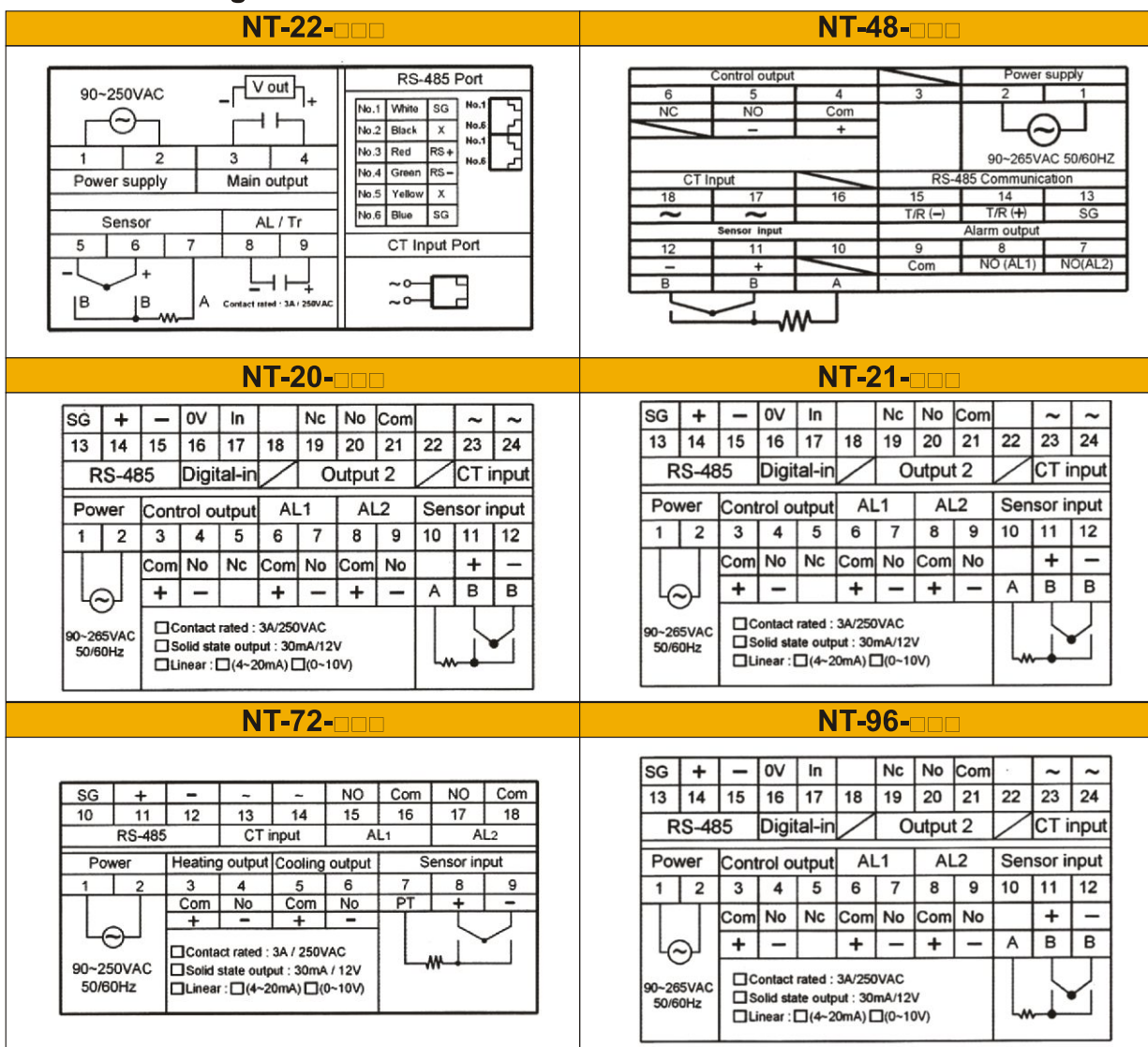
1. **Temperature setting status** : Press 「SET」 key instantaneously to enter into the temperature setting status.
2. **Auto-tuning status** : Press 「▲」 key 3 sec to set 「Auto-tuning」, then press 「▲」 key 3 sec to reset it.
3. **Manu-output status** : Press 「▼」 key 3 sec to turn off the output control, then press the 「SET」 key to set the 「Manu-output volume」. If press 「▼」 key 3 sec may to release 「Manu-output status」.
4. **Display mode Selecting** : Press 「SET」 key 3 sec to select display mode
 - 4-1. Without CT type : Display 「output volume」 (u.xx) → then press 「SET」 key 3 sec → to display 「Temperature set value」
 - 4-2. With CT type : Display 「output volume」 (u.xx) → then press 「SET」 key 3 sec → to display 「Load current」 (xx.xx) → then press 「SET」 key 3 sec → to display 「Temperature set value」
5. **Parameter setting status** : Press 「F」 key 3 sec to enter into the parameter setting status.
6. **Alarm setting status** : Press 「SET」 & 「F」 key 3 sec to enter into the Alarm setting status.
7. **Communication setting status** : Press 「SET」 & 「▼」 key 3 sec to enter into the Communication setting status.
8. **Soft start function** : At the final parameter of 「setting of alarm」, Press 「SET」 key 3 sec to set the **soft start setting value 「SV2」**
the fixed output volume is set by the manual output volume.
9. **Ramping control** : At the 「rAP」 parameter in the 「setting of alarm」 level, if 「rAP=0」, it has not the ramping control function.
If 「rAP≠0」, it will perform the ramping control function.
10. **Display mode setting** : At the 「Sdc」 parameter in the 「Setting of parameter」 level, if 「Sdc=n」, it will be kept on the selected display mode, if 「Sdc=A」, it will be returned to the Temperature set value mode after 10 seconds.

PID + FUZZY INTELLIGENT TEMPERATURE CONTROLLER

General Specification

| Fixed method | Panel type | | | | | Rail type |
|-----------------------|--|----------|----------|----------|----------|--------------|
| Model | NT-48 | NT-20 | NT-21 | NT-72 | NT-96 | NT-22 |
| Outline (Unit:mm) | 48x48x72 | 48x96x60 | 96x48x60 | 72x72x60 | 96x96x60 | 22.6x75x100 |
| Alarm output | Two alarm | | | | | Single alarm |
| Power supply | 90~265 VAC/ 50/60Hz or 24VDC/AC (Optional) | | | | | |
| Power consumption | 5 VA max. Or 100mA max. (24VDC/AC) | | | | | |
| Input method | PT/K/J/R/S/T/B/E/N/L(Selectable) or 4~mA or 0~10VDC (Optional) | | | | | |
| Control method | Fuzzy + PID or ON / OFF selectable | | | | | |
| Control output | Relay or SSR or 4~20mA (Optional) | | | | | |
| Alarm output | Relay 1a (5A/250VAC SPDT) | | | | | |
| Display range | -999~9999 | | | | | |
| Accuracy of display | ±(0.1% OF F.S. +1 DIGIT) | | | | | |
| Setting range | -999~9999 | | | | | |
| Memory method | EEPROM | | | | | |
| Insulation resistance | OVER 50MΩ / 500VDC | | | | | |
| Dielectric strength | OVER 2.5 KV / 1MINUTE | | | | | |
| Operating circum. | -25°C~80°C ; 35%~85% RH | | | | | |
| EMC standard | ESD : 8KV Air Discharge(Level 3) / EN-61000-4-2 RF Interference : 10V/M/ENV-50140 Burst test : 2KV / EN61000-4-4 | | | | | |

Connection diagram












Push Button Switch, Pilot Lamp
 Terminal Block
 SSR, Socket, Relay, Timer
 Limit Switch, Warning Light, Alarm
 Thermocouple, Temperature Controller, Sensor
 Panel Meter, Can Switch, C. I.
 Hoist Push Button, Enclosure, Fan, Lock, Bus Bar Insulator
 MCCB, Magnetic Contactor, Overload Relay

PROXIMITY SENSOR

SPECIFICATION

- DC type with **short circuit protection** and **polarity reversed protection**.
- AC type with **surge absorbing circuit** may avoid surge damaged.
- High solid compact structure IP-67 suited to be applied in the poor circumstance.
- All models with operation LED, easy to adjust.
- With 2M length cable.

| PICTURE | ITEM NO. | METHOD | SENSING DISTANCE | VOLTAGE | INDEX OF ITEM NUMBER |
|---|----------|--------|------------------|-----------|--|
|  | LS-04N | NPN | 4.0mm | 10~30 VDC | EX: PS-04NB-V ① ② ③ ④ ⑤ ① TYPE PS: SQUARE TYPE PL: LONG TYPE PP: PLATE TYPE SP: SMALL PLATE TYPE LS: RECTANGLE BS: MICRO TYPE ② SENSING DISTANCE 02: 2.0mm 04: 4.0mm 05: 5.0mm 08: 8.0mm 10: 10.0mm 15: 15.0mm ③ OUTPUT METHOD N: NPN P: PNP S: SCR ④ OUTPUT STATUS B: NC TYPE NON: NO TYPE ⑤ SENSING DIRECTION V: VERTICAL TYPE NON: HORIZONTAL TYPE |
| | LS-04P | PNP | | | |
| | LS-04N-V | NPN | | | |
| | LS-04P-V | PNP | | | |
|  | BS-02N | NPN | 2.0mm | 10~30 VDC | |
| | BS-02P | PNP | 4.0mm | | |
| | BS-04N | NPN | | | |
| | BS-04P | PNP | | | |
|  | SP-05N | NPN | | 5.0mm | |
| | SP-05P | PNP | 8.0mm | | |
| | SP-08N | NPN | | | |
| | SP-08P | PNP | | | |
|  | PP-05N | NPN | | 5.0mm | 10~30 VDC |
| | PP-05P | PNP | 8.0mm | | |
| | PP-08N | NPN | | | |
| | PP-08P | PNP | | | |
|  | PS-05N | NPN | | 5.0mm | 10~30 VDC |
| | PS-05P | PNP | 8.0mm | | |
| | PS-08N | NPN | | | |
| | PS-08P | PNP | | | |
|  | PL-05N | NPN | | 5.0mm | 10~30 VDC |
| | PL-05P | PNP | 8.0mm | | |
| | PL-08N | NPN | | | |
| | PL-08P | PNP | | | |
|  | PS-05S | SCR | | 5.0mm | 90~250 VAC |
| | PS-08S | | 8.0mm | | |
|  | PS-10N | NPN | 10.0mm | 10~30 VDC | |
| | PS-10P | PNP | 15.0mm | | |
| | PS-15N | NPN | | | |
| | PS-15P | PNP | | | |
|  | PS-10S | SCR | | 10.0mm | 90~250 VAC |
| | PS-15S | | 15.0mm | | |

PROXIMITY SENSOR

SQUARE TYPE (PLASTIC HOUSING)

| OUTLINE DIMENSION mm | ITEM NO. | OUTPUT METHOD | SENSING DISTANCE | MOUNTING METHOD | SENSING DIRECTION | OPERATING VOLTAGE | RESPONSE FREQUENCY |
|-------------------------|----------|---------------|------------------|-----------------|-------------------|-------------------|--------------------|
| | LS-04N | NPN | 4.0mm | Non-flushed | Horizontal | 10~30 VDC | 2KHz |
| | LS-04P | PNP | | | Vertical | | |
| | LS-04N-V | NPN | | | | | |
| | LS-04P-V | PNP | | | | | |
| | BS-02N | NPN | 2.0mm | Flushed | Vertical | 10~30 VDC | 2KHz |
| | BS-02P | PNP | | | | | |
| | BS-04N | NPN | 4.0mm | Non-flushed | Horizontal | | |
| | BS-04P | PNP | | | | | |
| | SP-05N | NPN | 5.0mm | Flushed | Vertical | 10~30 VDC | 800Hz |
| | SP-05P | PNP | | | | | |
| | SP-08N | NPN | 8.0mm | Non-flushed | Horizontal | | |
| | SP-08P | PNP | | | | | |
| | PP-05N | NPN | 5.0mm | Flushed | Vertical | 10~30 VDC | 800Hz |
| | PP-05P | PNP | | | | | |
| | PP-08N | NPN | 8.0mm | Non-flushed | Horizontal | | |
| | PP-08P | PNP | | | | | |
| | PS-05N | NPN | 5.0mm | Flushed | Horizontal | 10~30 VDC | 800Hz |
| | PS-05P | PNP | | | | | |
| | PS-08N | NPN | 8.0mm | Non-flushed | Horizontal | | |
| | PS-08P | PNP | | | | | |
| | PL-05N | NPN | 5.0mm | Flushed | Horizontal | 10~30 VDC | 800Hz |
| | PL-05P | PNP | | | | | |
| | PL-08N | NPN | 8.0mm | Non-flushed | Horizontal | | |
| | PL-08P | PNP | | | | | |
| | PS-05S | SCR | 5.0mm | Flushed | Horizontal | 90~250 VAC | 20Hz |
| | PS-08S | SCR | 8.0mm | Non-flushed | | | |
| | PS-10N | NPN | 10.0mm | Non-flushed | Horizontal | 10~30 VDC | 500Hz |
| | PS-10P | PNP | | | | | |
| | PS-15N | NPN | 15.0mm | | | | |
| | PS-10S | SCR | 10.0mm | | | 90~250 VAC | 20Hz |
| | PS-15S | SCR | 15.0mm | | | | |

Push Button Switch,
Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch,
Warning Light, Alarm

Thermocouple, Temperature
Controller, Sensor









Panel Meter,
Can Switch, C.T.

Hoist Push Button, Enclosure,
Fan, Lock, Bus Bar Insulator

MCCB, Magnetic Contactor,
Overload Relay

PROXIMITY SENSOR

M8/M12/M18/M30 TUBULAR TYPE

| PICTURE | ITEM NO. | OUTPUT | SENSING DISTANCE | VOLTAGE | INDEX OF ITEM NUMBER |
|---|---|------------|------------------|------------|--|
|  | PM08-01N | NPN | 1.0mm | 10~30 VDC | EX: PM 12-04 NB-S ① ② ③④⑤⑥ ① TYPE PM: SCREW TYPE WITH 2M CABLE ② OUTLINE DIAMETER 08: M8 12: M12 18: M18 30: M30 ③ SENSING DISTANCE 01: 1.0mm 02: 2.0mm 04: 4.0mm 05: 5.0mm 08: 8.0mm 10: 10.0mm 15: 15.0mm ④ OUTPUT METHOD N: NPN P: PNP S: SCR ⑤ OUTPUT STATUS B: NC TYPE NON: NO TYPE ⑥ LENGTH OF PRODUCT S: SHORT TYPE NON: STANDARD TYPE |
| | PM08-01P | PNP | | | |
| | PM08-02N | NPN | 2.0mm | | |
| | PM08-02P | PNP | | | |
|  | PM12-02N-S | NPN | 2.0mm | 10~30 VDC | |
| | PM12-02P-S | PNP | | | |
| | PM12-04N-S | NPN | 4.0mm | | |
| | PM12-04P-S | PNP | | | |
|  | PM12-02N | NPN | 2.0mm | 10~30 VDC | |
| | PM12-02P | PNP | | | |
| | PM12-04N | NPN | 4.0mm | | |
| | PM12-04P | PNP | | | |
| | PM12-02S | SCR | 2.0mm | 90~250 VAC | |
| | PM12-04S | | 4.0mm | | |
| |  | PM18-05N-S | NPN | 5.0mm | 10~30 VDC |
| | | PM18-05P-S | PNP | | |
| PM18-08N-S | | NPN | 8.0mm | | |
| PM18-08P-S | | PNP | | | |
|  | PM18-05N | NPN | 5.0mm | 10~30 VDC | |
| | PM18-05P | PNP | | | |
| | PM18-08N | NPN | 8.0mm | | |
| | PM18-08P | PNP | | | |
| | PM18-05S | SCR | 5.0mm | 90~250 VAC | |
| | PM18-08S | | 8.0mm | | |
|  | PM30-10N-S | NPN | 10.0mm | 10~30 VDC | |
| | PM30-10P-S | PNP | | | |
| | PM30-15N-S | NPN | 15.0mm | | |
| | PM30-15P-S | PNP | | | |
|  | PM30-10N | NPN | 10.0mm | 10~30 VDC | |
| | PM30-10P | PNP | | | |
| | PM30-15N | NPN | 15.0mm | | |
| | PM30-15P | PNP | | | |
|  | PM30-10S | SCR | 10.0mm | 90~250 VAC | |
| | PM30-15S | | 15.0mm | | |

Push Button Switch,
Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch,
Warning Light, Alarm

Thermocouple, Temperature
Controller, Sensor

Panel Meter,
Can Switch, C.T.

Hoist Push Button, Enclosure,
Fan, Lock, Bus Bar Insulator

MCCB, Magnetic Contactor,
Overload Relay

PROXIMITY SENSOR

M8/M12 TUBULAR TYPE

| OUTLINE DIMENSION mm | ITEM NO. | OUTPUT STATUS | OUTPUT METHOD | OPERATING VOLTAGE | SENSING DIRECTION | RESPONSE FREQUENCY | MOUNTING METHOD |
|-------------------------|---------------|---------------|---------------|-------------------|-------------------|--------------------|-----------------|
| | PM08-01N | NO | NPN | 10~30 VDC | 1.0mm | 2.5KHz | Flushed |
| | PM08-01NB | NC | | | | | |
| | PM08-01P | NO | PNP | | | | |
| | PM08-01PB | NC | | | | | |
| | PM08-02N | NO | NPN | 10~30 VDC | 2.0mm | 2.5KHz | Non-flushed |
| | PM08-02NB | NC | | | | | |
| | PM08-02P | NO | PNP | | | | |
| | PM08-02PB | NC | | | | | |
| | PM12-02N-S | NO | NPN | 10~30 VDC | 2.0mm | 2.5KHz | Flushed |
| | PM12-02NB-S | NC | | | | | |
| | PM12-02P-S | NO | PNP | | | | |
| | PM12-02PB-S | NC | | | | | |
| | PM12-04N-S | NO | NPN | 10~30 VDC | 4.0mm | 2.5KHz | Non-flushed |
| | PM12-04NB-S | NC | | | | | |
| | PM12-04P-S | NO | PNP | | | | |
| | PM12-04PB-S | NC | | | | | |
| | PM12-02N | NO | NPN | 10~30 VDC | 2.0mm | 2.5KHz | Flushed |
| | PM12-02NB | NC | | | | | |
| | PM12-02P | NO | PNP | | | | |
| | PM12-02PB | NC | | | | | |
| | PM12-04N | NO | NPN | 10~30 VDC | 4.0mm | 2.5KHz | Non-flushed |
| | PM12-04NB | NC | | | | | |
| | PM12-04P | NO | PNP | | | | |
| | PM12-04PB | NC | | | | | |
| | PM12-02S | NO | SCR | 90~250 VAC | 2.0mm | 20KHz | Flushed |
| | PM12-02SB | NC | | | | | |
| | PM12-04S | NO | SCR | 90~250 VAC | 4.0mm | 20Hz | Non-flushed |
| | PM12-04SB | NC | | | | | |
| | PM12-02N-M12 | NO | NPN | 10~30 VDC | 2.0mm | 2.5KHz | Flushed |
| | PM12-02NB-M12 | NC | | | | | |
| | PM12-02P-M12 | NO | PNP | | | | |
| | PM12-02PB-M12 | NC | | | | | |
| | PM12-04N-M12 | NO | NPN | 10~30 VDC | 4.0mm | 2.5KHz | Non-flushed |
| | PM12-04NB-M12 | NC | | | | | |
| | PM12-04P-M12 | NO | PNP | | | | |
| | PM12-04PB-M12 | NC | | | | | |

Push Button Switch,
Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch,
Warning Light, Alarm

Thermocouple, Temperature
Controller, Sensor

Panel Meter,
Can Switch, C.T.

Hoist Push Button, Enclosure,
Fan, Lock, Bus Bar Insulator

MCCB, Magnetic Contactor,
Overload Relay

PROXIMITY SENSOR

M18 TUBULAR TYPE

| OUTLINE DIMENSION mm | ITEM NO. | OUTPUT STATUS | OUTPUT METHOD | OPERATING VOLTAGE | SENSING DIRECTION | RESPONSE FREQUENCY | MOUNTING METHOD |
|-------------------------|---------------|---------------|---------------|-------------------|-------------------|--------------------|-----------------|
| | PM18-05N-S | NO | NPN | 10~30 VDC | 5.0mm | 800Hz | Flushed |
| | PM18-05NB-S | NC | | | | | |
| | PM18-05P-S | NO | PNP | | | | |
| | PM18-05PB-S | NC | | | | | |
| | PM18-08N-S | NO | NPN | 10~30 VDC | 8.0mm | 800Hz | Non-flushed |
| | PM18-08NB-S | NC | | | | | |
| | PM18-08P-S | NO | PNP | | | | |
| | PM18-08PB-S | NC | | | | | |
| | PM18-05N | NO | NPN | 10~30 VDC | 5.0mm | 800Hz | Flushed |
| | PM18-05NB | NC | | | | | |
| | PM18-05P | NO | PNP | | | | |
| | PM18-05PB | NC | | | | | |
| | PM18-08N | NO | NPN | 10~30 VDC | 8.0mm | 800Hz | Non-flushed |
| | PM18-08NB | NC | | | | | |
| | PM18-08P | NO | PNP | | | | |
| | PM18-08PB | NC | | | | | |
| | PM18-08N-P | NO | NPN | 10~30 VDC | 8.0mm | 800Hz | Non-flushed |
| | PM18-08NB-P | NC | | | | | |
| | PM18-08P-P | NO | PNP | 10~30 VDC | 8.0mm | 800Hz | Non-flushed |
| | PM18-08PB-P | NC | | | | | |
| | PM18-08S-P | NO | SCR | 90-250 VAC | 8.0mm | 20Hz | Non-flushed |
| | PM18-08SB-P | NC | | | | | |
| | PM18-05S | NO | SCR | 90~250 VAC | 5.0mm | 20Hz | Flushed |
| | PM18-05SB | NC | | | | | |
| | PM18-08S | NO | SCR | 90~250 VAC | 8.0mm | 20Hz | Non-flushed |
| | PM18-08SB | NC | | | | | |
| | PM18-05N-M12 | NO | NPN | 10~30 VDC | 5.0mm | 800Hz | Flushed |
| | PM18-05NB-M12 | NC | | | | | |
| | PM18-05P-M12 | NO | PNP | | | | |
| | PM18-05PB-M12 | NC | | | | | |
| | PM18-08N-M12 | NO | NPN | 10~30 VDC | 8.0mm | 800Hz | Non-flushed |
| | PM18-08NB-M12 | NC | | | | | |
| | PM18-08P-M12 | NO | PNP | | | | |
| | PM18-08PB-M12 | NC | | | | | |

Push Button Switch,
Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch,
Warning Light, Alarm

Thermocouple, Temperature
Controller, Sensor

Panel Meter,
Can Switch, C.T.

Hoist Push Button, Enclosure,
Fan, Lock, Bus Bar Insulator

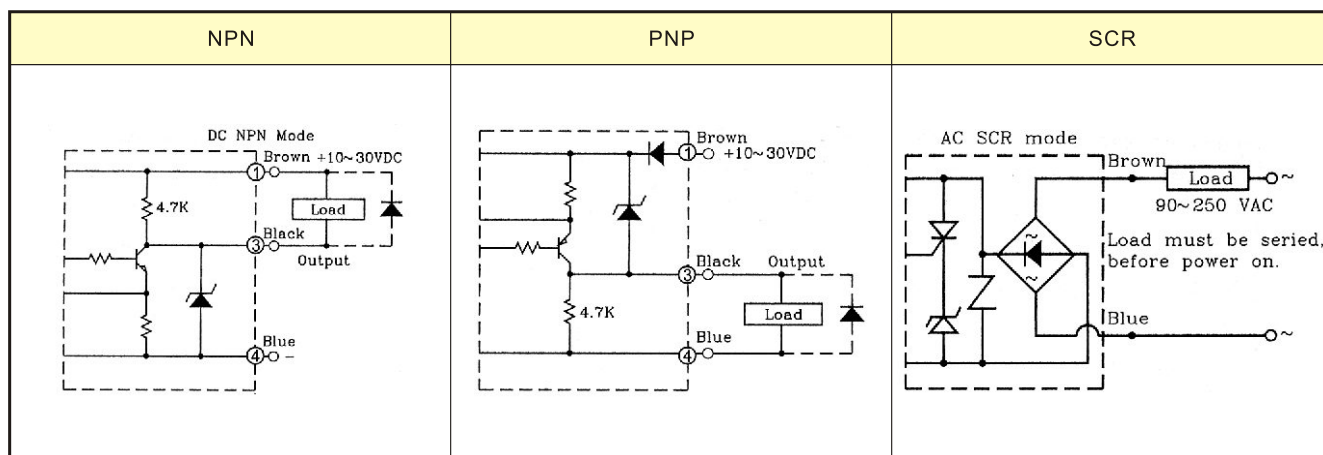
MCCB, Magnetic Contactor,
Overload Relay

PROXIMITY SENSOR

M30 TUBULAR TYPE

| OUTLINE DIMENSION mm | ITEM NO. | OUTPUT STATUS | OUTPUT METHOD | OPERATING VOLTAGE | SENSING DIRECTION | RESPONSE FREQUENCY | MOUNTING METHOD |
|-------------------------|-------------|---------------|---------------|-------------------|-------------------|--------------------|-----------------|
| | PM30-10N-S | NO | NPN | 10~30 VDC | 10.0mm | 500Hz | Flushed |
| | PM30-10NB-S | NC | | | | | |
| | PM30-10P-S | NO | PNP | | | | |
| | PM30-10PB-S | NC | | | | | |
| | PM30-15N-S | NO | NPN | 10~30 VDC | 15.0mm | 500Hz | Non-flushed |
| | PM30-15NB-S | NC | | | | | |
| | PM30-15P-S | NO | PNP | | | | |
| | PM30-15PB-S | NC | | | | | |
| | PM30-10N | NO | NPN | 10~30 VDC | 10.0mm | 500Hz | Flushed |
| | PM30-10NB | NC | | | | | |
| | PM30-10P | NO | PNP | | | | |
| | PM30-10PB | NC | | | | | |
| | PM30-15N | NO | NPN | 10~30 VDC | 15.0mm | 500Hz | Non-flushed |
| | PM30-15NB | NC | | | | | |
| | PM30-15P | NO | PNP | | | | |
| | PM30-15PB | NC | | | | | |
| | PM30-10S | NO | SCR | 90~250 VAC | 10.0mm | 20Hz | Flushed |
| | PM30-10SB | NC | | | | | |
| | PM30-15S | NO | SCR | 90~250 VAC | 15.0mm | 20Hz | Non-flushed |
| | PM30-15SB | NC | | | | | |

OUTPUT CIRCUIT & CONNECTION DIAGRAM:



Push Button Switch, Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch, Warning Light, Alarm

Thermocouple, Temperature Controller, Sensor

Panel Meter, Can Switch, C.T.

Hoist Push Button, Enclosure, Fan, Lock, Bus Bar Insulator

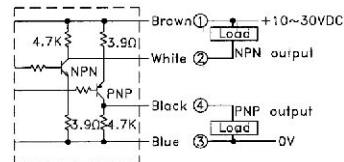
MCCB, Magnetic Contactor, Overload Relay

PHOTO SENSOR M18 TUBULAR TYPE

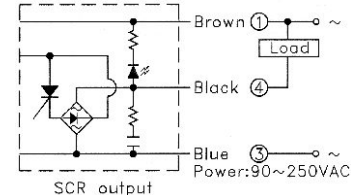
SPECIFICATION

- All type with sensitivity adjuster, easy to get the best sensing condition.
- All DC type with NPN & PNP output, meet any control requirement.
- All DC type have over load protection, and polarity reversed protection.
- All AC type with surge protection to avoid damage.
- Unique vertical type can save mounted space.
- High solid compact structure, IP66 can resist in poor circumstance.

DC Type NPN & PNP Output



AC Type SCR Output



| PICTURE | ITEM NO. | VOLTAGE | SENSING DISTANCE | INDEX OF ITEM NUMBER |
|--|---------------|-----------|------------------|--|
|  <p>REFLEX TYPE</p> | CDR-10X | 10~30VDC | 10cm | EX: CDR-30X-B-V-M12 ① ②③④⑤ ⑥ ① TYPE CDR: DC REFLEX TYPE CAR: AC REFLEX TYPE CDM: DC MIRROW REFLEX TYPE CAM: AC MIRROW REFLEX TYPE CDT: DC THRU BEAM TYPE ② SENSING DISTANCE 10: 10cm 30: 30cm 1M: 1METER 2M: 2METER 10M: 10METER ③ LIGHT SOURCE X: INFRARED LED R: RED LED ④ OUTPUT STATUS NON: NO TYPE B: NC TYPE ⑤ SENSING DIRECTION NON: HORIZONTAL V: VERTICAL ⑥ CONNECTOR TYPE NON: 2M CABLE M12: M12X1.0 |
| | CDR-30X | | 30cm | |
| | CDR-10X-V | | 10cm | |
| | CDR-30X-V | | 30cm | |
| | CAR-10X | 90~250VAC | 10cm | |
|  <p>REFLEX TYPE M12 CONNECTOR</p> | CDR-10X-M12 | 10~30VDC | 10cm | |
| | CDR-30X-M12 | | 30cm | |
| | CDR-10X-V-M12 | | 10cm | |
| | CDR-30X-V-M12 | | 30cm | |
|  <p>MIRROW REFLEX TYPE</p> | CDM-1MR | 10~30VDC | 1M | |
| | CDM-1MRB | | 1M | |
| | CDM-2MX | | 2M | |
| | CDM-2MX-V | | 2M | |
| | CAM-2MX | 90~250VAC | 2M | |
| | CAM-2MX-V | | | |
|  <p>MIRROW REFLEX TYPE M12 CONNECTOR</p> | CDM-2MX-M12 | 10~30VDC | 2M | |
| | CDM-2MX-V-M12 | | 2M | |
|  <p>THRU BEAM TYPE</p> | CDT-10MX | 10~30VDC | 10M | |
| | CDT-6MX-V | | 6M | |
|  <p>THRU BEAM TYPE M12 CONNECTOR</p> | CDT-10MX-M12 | 10~30VDC | 10M | |
| | CDT-6MX-V-M12 | | 6M | |

Push Button Switch, Pilot Lamp, Terminal Block, SSR, Socket, Relay, Timer, Limit Switch, Warning Light, Alarm, Thermocouple, Temperature Controller, Sensor, Panel Meter, Can Switch, C.T., Hoist Push Button, Enclosure, Fan, Lock, Bus Bar Insulator, MCCB, Magnetic Contactor, Overload Relay

PHOTO SENSOR M18 TUBULAR TYPE

REFLEX TYPE:

| Type | ITEM NO. | Output Status | Sensing Direction | Sensing Distance | Operating Voltage | Current Consumption | Output Method | Sensitivity Adjuster |
|-----------|----------------|---------------|-------------------|------------------|----------------------|---------------------|-------------------------|----------------------|
| Lead Wire | CDR-10X | NO | Horizontal | 10cm | 10~30VDC | 25mA max. | NPN & PNP 150mA max. | 270 ° Trimmer |
| | CDR-10XB | NC | | | | | | |
| | CDR-30X | NO | | 30cm | | | | |
| | CDR-30XB | NC | | | | | | |
| | CDR-30X-V | NO | Vertical | 30cm | | | | |
| | CDR-30XB-V | NC | | | | | | |
| Lead Wire | CAR-10X | NO | Horizontal | 10cm | 90~250VAC 50/60Hz | 0.5VA max. | SCR 100mA | 270 ° Trimmer |
| | CAR-10XB | NC | | | | | | |
| | CAR-10X-V | NO | Vertical | 10cm | | | | |
| | CAR-10XB-V | NC | | | | | | |
| Connector | CDR-10X-M12 | NO | Horizontal | 10cm | 10~30VDC | 25mA max. | NPN & PNP 150mA max. | 270 ° Trimmer |
| | CDR-10XB-M12 | NC | | | | | | |
| | CDR-30X-M12 | NO | Horizontal | 30cm | | | | |
| | CDR-30XB-M12 | NC | | | | | | |
| | CDR-30X-V-M12 | NO | Vertical | 30cm | | | | |
| | CDR-30XB-V-M12 | NC | | | | | | |

MIRROR REFLEX TYPE:

| Type | ITEM NO. | Output Status | Sensing Direction | Sensing Distance | Operating Voltage | Current Consumption | Output Method | Sensitivity Adjuster |
|-----------|----------------|---------------|-------------------|------------------|-------------------|---------------------|-------------------------|----------------------|
| Lead Wire | CDM-1MR | NO | Horizontal | 0.1M~1.6M | 10~30VDC | 20mA max. | NPN & PNP 150mA max. | 270 ° Trimmer |
| | CDM-1MRB | NC | | | | | | |
| | CDM-2MX | NO | | 0.1M~2.5M | | | | |
| | CDM-2MXB | NC | | | | | | |
| | CDM-2MX-V | NO | Vertical | 0.1M~2.0M | | | | |
| | CDM-2MXB-V | NC | | | | | | |
| Lead Wire | CAM-2MX | NO | Horizontal | 0.1M~2.0M | 90~250VAC | 0.5VA max. | SCR 100mA | 270 ° Trimmer |
| | CAM-2MXB | NC | | | | | | |
| | CAM-2MX-V | NO | Vertical | | | | | |
| | CAM-2MXB-V | NC | | | | | | |
| Connector | CDM-2MX-M12 | NO | Horizontal | 0.1M~2.5M | 10~30VDC | 20mA max. | NPN & PNP 150mA max. | 270 ° Trimmer |
| | CDM-2MXB-M12 | NC | | | | | | |
| | CDM-2MX-V-M12 | NO | Vertical | 0.1M~2.0M | | | | |
| | CDM-2MXB-V-M12 | NC | | | | | | |

THRU BEAM:

| Type | ITEM NO. | Output Status | Sensing Direction | Sensing Distance | Operating Voltage | Current Consumption | Output Method | Sensitivity Adjuster |
|-----------|----------------|---------------|-------------------|------------------|-------------------|---------------------|--------------------|----------------------|
| Lead Wire | CDT-10MX | NO | Horizontal | 10M | 10~30VDC | P<20mA R<25mA | NPN & PNP 150mA | 270 ° Trimmer |
| | CDT-10MXB | NC | | | | | | |
| | CDT-6MX-V | NO | Vertical | 6M | | | | |
| | CDT-6MXB-V | NC | | | | | | |
| Connector | CDT-10MX-M12 | NO | Horizontal | 10M | 10~30VDC | P<20mA R<25mA | NPN & PNP 150mA | 270 ° Trimmer |
| | CDT-10MXB-M12 | NC | | | | | | |
| | CDT-6MX-V-M12 | NO | Vertical | 6M | | | | |
| | CDT-6MXB-V-M12 | NC | | | | | | |

Push Button Switch,
Pilot Lamp

Terminal Block

SSR, Socket, Relay, Timer

Limit Switch,
Warning Light, Alarm

Thermocouple, Temperature
Controller, Sensor

Panel Meter,
Can Switch, C.T.

Hoist Push Button, Enclosure,
Fan, Lock, Bus Bar Insulator

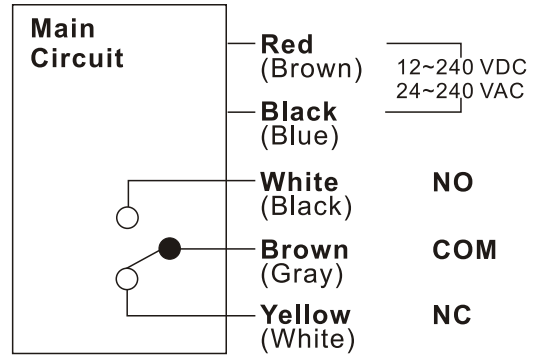
MCCB, Magnetic Contactor,
Overload Relay

FREE POWER PHOTO SENSOR

SPECIFICATION

- Extensive operating voltage
DC 12~240V or AC 24~240V
- High capacity relay output 3A/250VAC
- High compact structure IP-65
- Multi surge killer circuit effectively protects from surging damage
- B type (Normal close type)
Have no stock possibly, accepted order to manufacture
Model: A3R-30XB, A3R-1MXB, A3R-2MXB, A3G-2MRB, A3G-4MXB, A3T-10MXB, A3T-20MXB

CONNECTING DIAGRAM



| PICTURE | ITEM NO. | SENSING ADJUSTMENT | SENSING DISTANCE | INDEX OF ITEM NUMBER |
|---|-----------|--------------------|------------------|--|
|  REFLEX TYPE IP65 | A3R-30X | Y | 30cm | EX: A3 R-30 XB-P ① ② ③ ④ ⑤ ⑥ ① TYPE A3: DC12~240V or AC24~240V with 2M cable ② SENSING TYPE R: REFLEX TYPE G: MIRROW REFLEX TYPE T: THRU BEAM TYPE ③ SENSING DISTANCE 30: 30cm 1M: 1 METER 2M: 2 METER 10M: 10METER ④ LIGHT SOURCE X: INFRARED LED R: RED LED ⑤ OUTPUT STATUS NON: NO TYPE B: NC TYPE ⑥ IP NON: IP65 P: IP67 |
| | A3R-1MX | Y | 1M | |
| | A3R-2MX | Y | 2M | |
|  REFLEX TYPE IP67 | A3R-30XP | Y | 30cm | |
| | A3R-1MXP | Y | 1M | |
| | A3R-2MXP | Y | 2M | |
|  MIRROW REFLEX TYPE IP65 | A3G-2MR | Y | 2M | |
| | A3G-4MX | N | 4M | |
|  MIRROW REFLEX TYPE IP67 | A3G-2MRP | Y | 2M | |
| | A3G-4MXP | N | 4M | |
|  THRU BEAM TYPE IP65 | A3T-3MX | N | 3M | |
| | A3T-10MX | N | 10M | |
| | A3T-20MX | N | 20M | |
|  THRU BEAM TYPE IP67 | A3T-3MXP | N | 3M | |
| | A3T-10MXP | N | 10M | |
| | A3T-20MXP | N | 20M | |

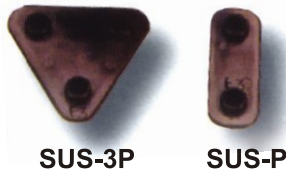
FLOATLESS RELAYS



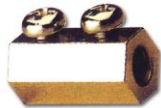
91F-G



PS-3S
ELECTRODE HOLDER



SUS-3P SUS-P



SUS-S
CONNECTING NUT

SUS-A
ELECTRODE ROD
(1 Meter Length)

ITEM NO: 91F-G

• **Function:** Automatic level control.

• **Features:**

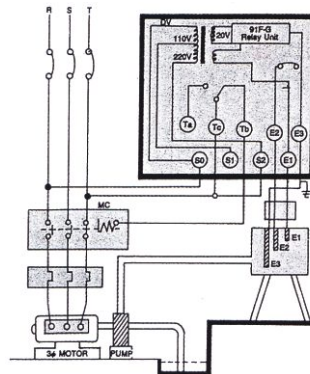
1. Suitable for water supply and drainage.
2. Plug in assembly, compact volume, easy for installation and replacement.
3. Probes E1-E3 are live with low voltage (A.C.8 volts).
4. LED are provided to indicate operating condition.

• **Installation:**

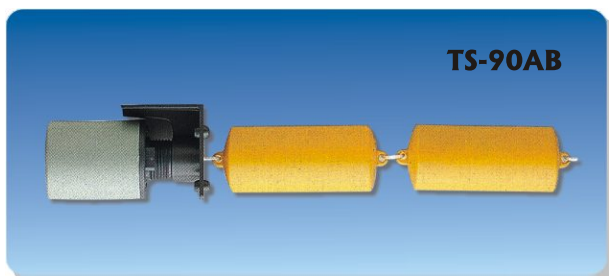
1. Inner unit wiring should be done according to the illustrated circuit diagram.
2. For three phase 220V power source, Connect terminal S2 to Feeder T, otherwise connect terminal S1 instead when single phase 110V power source is used.
3. For water supply, connect electromagnetic switch coil terminal A to Tb. For drainage, connect terminal A to Ta.

• **Note:**

Probes E1-E3 are live with A.C. 8 volts, do not test them with an MΩ meter. Be sure to ground terminal E3.



FLOATLESS RELAYS



TS-90AB

• **Note:**

- (1) A1 ⊖ - supply - ⊖ A2
B1 ⊖ - sump - ⊖ B2
- (2) Applicable to 1 HP and less power rating pumps.

CONNECTION DIAGRAM

