TEMPERATURE INPUT LIMIT ALARM
(digital adjustments; dual alarm trip)

MODEL **KS2TR2**

BEFORE USE ....

Thank you for choosing us. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact our sales office or representatives.

■ PACKAGE INCLUDES:

Limit alarm (body + base socket) ....(1)
Mounting bracket...(1)
Engineering unit label ....(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ CONFORMITY WITH EU DIRECTIVES

• This equipment is suitable for Pollution Degree 2, Installation Category II (AC power, transient voltage 2500V) and Measurement Category II (output, transient voltage 2500V). Basic insulation (signal input to output to power: 300V) is maintained. Prior to installation, check that the insulation class of this unit satisfies the system requirements.
• Altitude up to 2000 meters.
• The equipment must be mounted inside a panel.
• The equipment must be installed such that appropriate clearance and creepage distances are maintained to conform to CE requirements. Failure to observe these requirements may invalidate the CE conformance.
• The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.
• In order to enable the operator to turn off the power input immediately, install a switch or a circuit breaker according to the relevant requirements in IEC 60947-2 and properly indicate it.
• Install lightning surge protectors for those wires connected to remote locations.

■ GENERAL HANDLING

1) Keep away from the following environments when installing the unit.
• Where the ambient temperature in operating the unit may reach beyond the range of -10 to +55°C or 14 to 131°F
• Where the relative humidity in operating the unit may reach beyond 30 – 90% RH
• Rapid temperature change or condensation

• Corrosive gases, sulfide and ammonia in particular, or flammable gases
• Vibration or mechanical shock
• Direct contact with water, oil, chemical materials, steam or vapor
• Exposure to air containing heavy dust particles, salt, chemical components, or iron particles
• Interference by static and magnetic noise
• Direct sunlight
• Heat accumulated by radiation or such
2) Mounting the unit
   Push in the mounting bracket from behind the panel until the main body is securely fit on to the panel surface.
   If there remains a play, tighten lightly the two screws to stabilize the unit. Do not tighten too much because the mounting bracket may be off the stopper by such force.

■ WIRING CONNECTION

1) Where the external wiring is subjected to noise interferences, protect the unit as follows:
• For connecting a contactor employed as load of alarm outputs, attach a surge absorber to the contactor on the coil side.
• An additional installation of isolating transformer and use of noise filter are recommended when an excessive noise exists in the power supply.
• Make sure that the noise filter is installed to a properly grounded panel or such place and that the wiring between the output side of the filter and the power supply terminals of the unit is made as short as possible.
• Do not install a switch or fuse on the output side of the filter because it will degrade effectiveness of the filter.
• Stranded power supply wires are effective for protection against noise. Better result will be expected with shorter stranding pitch.
2) The contact outputs require a set-up time when the power is turned on. If they are to be used for an external interlock circuit, add ON-delay relay.
3) Keep input signal and power wiring to the unit away from power supply or load lines in order to avoid inductive noise interference.
   Use shielded wires for input signal line and separate them from other wires.
4) Frequent switchings with the relay connected to a load for its maximum capability will shorten the relay life. An auxiliary relay is recommended.
5) Specifications of the unit
• Rated power supply: 100V (-15%) up to 240V (+10%) AC, 47 – 66 Hz; 24V DC ±10%
• Power consumption:
   ≤ 5VA at 100V AC
   ≤ 6VA at 200V AC
   ≤ 6VA at 264V AC
   ≤ 2.5W with DC power
• Alarm output[1]: SPDT (transfer) contacts, 220V AC or 30V DC @3A (resistive load)
*1. N.O. and N.C. contacts could be conductive at the same time. DO NOT connect both contacts at the same time.

■ KEY OPERATION AND OPERATION IN ABNORMALITIES

1) Prior to operation, test alarm functions to confirm correct alarm mode setting.

2) When the input wires are broken, the unit displays UUUU or LLLL. Be sure to turn off the power supply before replacing the sensor.
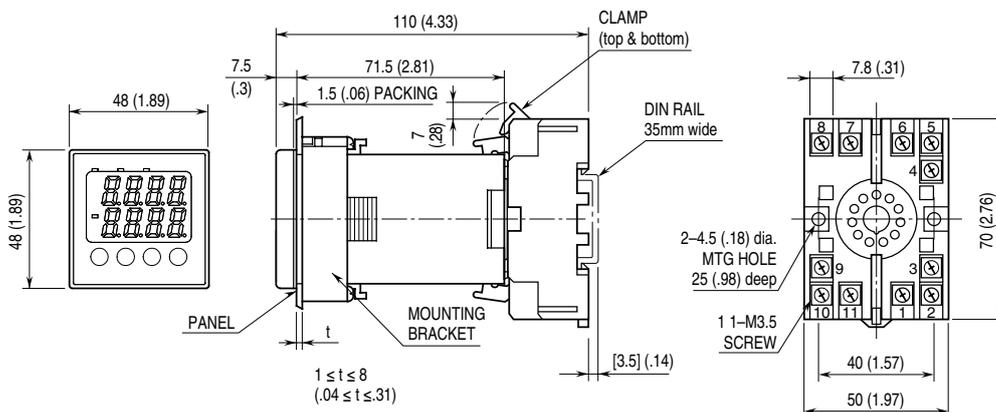
■ OTHERS

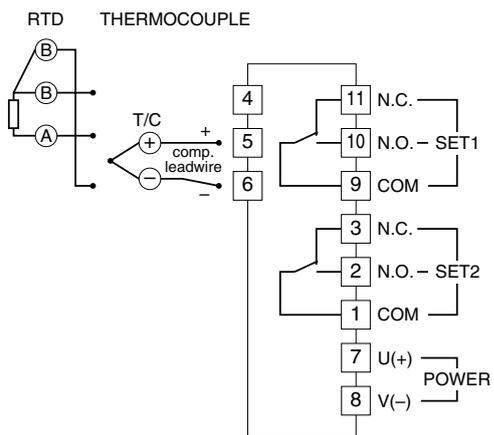1) Do not use organic solvents such as alcohol or benzine to clean the unit. Use a neutral detergent.

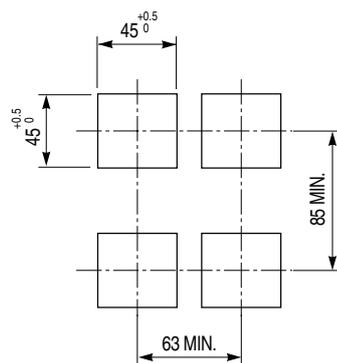# TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

■ EXTERNAL DIMENSIONS unit: mm (inch)

■ CONNECTION DIAGRAM

■ PANEL CUTOUT unit: mm

INSTALLATION

Detach the yellow clamps located at the top and bottom of the unit for separate the body from the base socket.

■ DIN RAIL MOUNTING

Set the base socket so that its DIN rail adaptor is at the bottom. Hang the upper hook at the rear side of base socket on the DIN rail and push in the lower. When removing the socket, push down the DIN rail adaptor utilizing a minus screwdriver and pull.
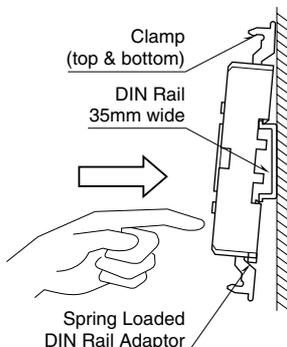
■ WALL MOUNTING

Refer to "EXTERNAL DIMENSIONS."

Shape and size of the base socket are slightly different with various socket types.

■ HOW TO MOUNT THE UNIT ON A PANEL

The watertight packing must be in place to hold the unit. Do not remove it.

1) Insert the unit into the panel cutout.

2) Push the mounting brackets into the grooves on both sides of the rear module, until they hit the panel's rear side.
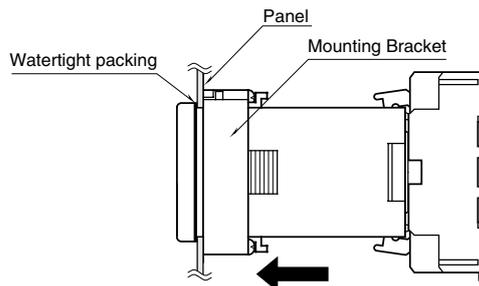
COMPONENT IDENTIFICATION
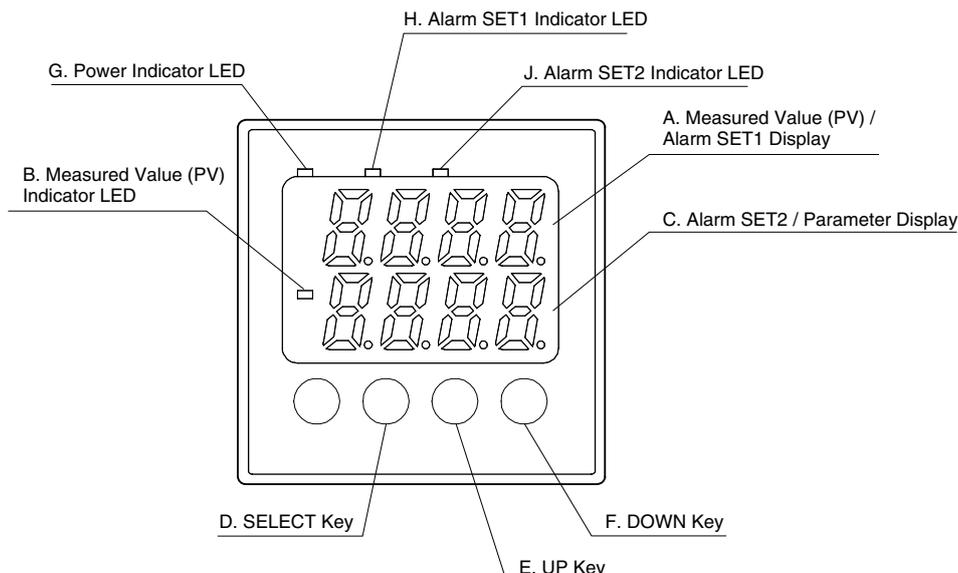
Ref.	Component Name	Function
A	Measured Value (PV) / Alarm SET1 Display	Displaying either of Measured Value (PV) or Alarm Setpoint Value (SET1)
B	Measured Value (PV) Indicator LED	LED turns on when the Measured Value (PV) is displayed.
C	Alarm SET2 / Parameter Display	Displaying either of Alarm Setpoint Value (SET2) or parameter type code.
D	SELECT Key	Used for confirming current setpoints and switching between parameter blocks.
E	UP Key	Pressing the key increases display values. They change continuously when it is kept pressed.
F	DOWN Key	Pressing the key decreases display values. They change continuously when it is kept pressed.
G	Power Indicator LED	LED turns on while the power is turned on.
H	Alarm SET1 Indicator LED	LED turns on when the Alarm SET1 is in tripped conditions.
I	Alarm SET2 Indicator LED	LED turns on when the Alarm SET2 is in tripped conditions.

PREPARING POWER-UP

When the power is turned on, the unit displays all segments on the Measured Value (PV)/Alarm Setpoint Value (SET1) Display and on the Alarm Setpoint Value (SET2)/Parameter Display before starting operation.

To ensure a proper operation of the unit, set the parameters before starting up according to the operating conditions.

Be sure to remove power of the final control element before parameters setting.

Wait for 10 minutes for warming up the unit before its temperature is stabilized and measuring is started.

HOW TO SET PARAMETERS

■ **CONFIRMING CURRENT MEASURED VALUE AND ALARM SETPOINT VALUES**

Pressing SEL key turns the display in order of SET1, SET2, PV, and blank.

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)*2	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Press the key once.	Display pattern 2 Upper = PV (value) Lower = blank
SEL	Press the key once.	Display pattern 3 Upper = blank Lower = blank
SEL	Press the key once.	Returning to Display pattern 1

*2. Which display pattern is to be displayed first after the power is turned on can be programmed in Parameter block 1.

■ **REGISTERING SETTING**

1) Data is registered automatically in 3 seconds after the data is set. Pressing SEL key also register the data.

2) The display automatically returns to the display pattern preset by PTn parameter when the unit is left for approx. 30 seconds with no access.

■ **DEFAULT PARAMETER SETTING**

Param. Block	Name	Default setting	Unit	Programmable range	Explanations of function
1*3	ST1	1200	Engineering unit*6	-5 to +105 % FS	Alarm setpoint value SET1
	ST2	0	Engineering unit*6	-5 to +105 % FS	Alarm setpoint value SET2
	PTn	1	N/A	1, 2, 3	Display pattern
2*4	HYS1	1	Deviative engineering unit*6	0 to 102 % FS	Deadband (hysteresis) for SET1
	HYS2	1	Deviative engineering unit*6	0 to 102 % FS	Deadband (hysteresis) for SET2
	P-n2	3	N/A	0 to 8, 12 to 14	Input type
	P-SL	0	Engineering unit*6	-1999 to 9999	Scaling, lower range
	P-SU	1200	Engineering unit*6	-1999 to 9999	Scaling, upper range
	P-dP	0	N/A	0 to 1	Decimal point position
	P-A1	1	N/A	0 to 8	Alarm mode for SET1
	P-A2	2	N/A	0 to 8	Alarm mode for SET2
	bUrn	H	N/A	H/L/norm	Burnout protection (upscale or downscale)
	P-F	°C	°C/°F	°C/°F	Temperature unit
	P-d1	1	Seconds	1 to 999	Switching delay timer for SET1
	P-d2	1	Seconds	1 to 999	Switching delay timer for SET2
3*5	P-dF	5.0	Seconds	5.0 to 900.0*7	Time constant for the input filter
	CJM	ON	ON/OFF	ON/OFF	Cold junction compensation
	ADJ0	0	Deviative engineering unit*6	-50 to +50 % FS	User's ZERO adjustment
	ADJS	0	Deviative engineering unit*6	-50 to +50 % FS	User's SPAN adjustment
	P-d0	0	Seconds	0 to 20	Power ON delay time
	REST	OFF		ON/OFF*8	Resetting parameter
	Ver	X.XX			Firmware version

*3. Pressing SEL key for 3 seconds turn the unit into setting mode for Parameter block 1.
*4. Pressing SEL key for 7 seconds turn the unit into setting mode for Parameter block 2.
*5. Pressing SEL key for 9 seconds turn the unit into setting mode for Parameter block 3.
*6. Parameters set with "Engineering unit" or "Deviative engineering unit" shift according to changes in P-SL or P-SU setting.
*7. Be sure to set at the minimum of 5.0 or a larger value though the unit accepts one smaller than 5.0.
*8. 3 sec. after REST to ON or by pressing SEL key, "Resetting parameter" is performed to reset parameters to default settings regardless of the setting with ordering information sheet.

■ HOW TO SET PARAMETER BLOCK 1

Press SEL key for 3 seconds until the display turns to the setting mode for Parameter block 1.

Alarm SET 1 parameter
[Example]
Changing alarm setpoint (ST1) for SET1 from 100 to 200.

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 3 seconds. →Maintain while the display indicates Pattern 2, Pattern 3.	Upper = blank Lower = ST1
SEL	Press the key once. →ST1 is replaced with current setting.	Upper = blank Lower = 100
UP DOWN	Press the keys until the display indicates 200. tes 200. (New value is registered if the unit is not accessed for 3 seconds.)	Upper = blank Lower = 200
SEL	Press the key once. →The lower display indicates the parameter name (ST1) again.	Upper = blank Lower = ST1
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

Alarm SET 2 parameter
[Example]
Changing alarm setpoint (ST2) for SET2 from 100 to 50.

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 3 seconds. →Maintain while the display indicates Pattern 2, Pattern 3.	Upper = blank Lower = ST1
DOWN	Press the key once. →Next parameter name is displayed.	Upper = black Lower = ST2
SEL	Press the key once. →ST2 is replaced with current setting.	Upper = blank Lower = 100
UP DOWN	Press the keys until the display indicates 50. (New value is registered if the unit is not accessed for 3 seconds.)	Upper = blank Lower = 50
SEL	Press the key once. →The lower display indicates the parameter name (ST2) again.	Upper = blank Lower = ST2
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

Display pattern

Selecting which display pattern should be indicated first after the power is turned on, or when the unit returns to display mode from setting mode.

[Example] Changing display pattern (PTn) 1 to 3.

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 3 seconds. →Maintain while the display indicates Pattern 2, Pattern 3.	Upper = blank Lower = ST1
DOWN	Press the key twice. →Next parameter name is displayed.	Upper = blank Lower = PTn
SEL	Press the key once. →PTn is replaced with current setting.	Upper = blank Lower = 1
UP DOWN	Press the keys until the display indicates 3. (New value is registered if the unit is not accessed for 3 seconds.)	Upper = blank Lower = 3
SEL	Press the key once. →The lower display indicates the parameter name (PTn) again.	Upper = blank Lower = PTn
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 3 Upper = blank Lower = blank

■ HOW TO SET PARAMETER BLOCK 2

Press SEL key for 7 seconds until the display turns to the setting mode for Parameter block 2.

Deadband (hysteresis) for SET1
[Example]
Changing deadband (hysteresis) (HYS1) for SET1 from 1 to 5.

Key	Status or Operation	Display
	Current display (PTn = 3 in this example)	Display pattern 3 Upper = blank Lower = blank
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
SEL	Press the key once. →HYS1 is replaced with current setting.	Upper = blank Lower = 1
UP DOWN	Press the keys until the display indicates 5. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 5
SEL	Press the key once. →The lower display indicates the parameter name (HYS1) again.	Upper = blank Lower = HYS1
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 3 Upper = blank Lower = blank

Deadband (hysteresis) for SET2
[Example]
Changing deadband (hysteresis) (HYS2) for SET2 from 1 to 3.

Key	Status or Operation	Display
	Current display (PTn = 3 in this example)	Display pattern 3 Upper = blank Lower = blank
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key once. →Next parameter name is displayed.	Upper = blank Lower = HYS2
SEL	Press the key once. →HYS2 is replaced with current setting.	Upper = blank Lower = 1
UP DOWN	Press the keys until the display indicates 3. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 3
SEL	Press the key once. →The lower display indicates the parameter name (HYS2) again.	Upper = blank Lower = HYS2
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 3 Upper = blank Lower = blank

Input type
[Example] Changing input type (P-n2) from K (3) to J (2).

Key	Status or Operation	Display
	Current display (PTn = 2 in this example)	Display pattern 2 Upper = PV Lower = blank
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Pattern Lower = HYS1
DOWN	Press the key twice. →Next parameter name is displayed.	Upper = blank Lower = P-n2
SEL	Press the key once. →P-n2 is replaced with current setting.	Upper = blank Lower = 3
UP DOWN	Press the keys until the display indicates 2. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 2
SEL	Press the key once. →The lower display indicates the parameter name (P-n2) again.	Upper = blank Lower = P-n2
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 2 Upper = PV Lower = blank

Scaling (P-SL, P-SU)
[Example]
Changing scale (input range) from 0 – 400 to -100 – 200.

Key	Status or Operation	Display
	Current display (PTn = 2 in this example)	Display pattern 2 Upper = PV Lower = blank
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key three times. →Next parameter name is displayed.	Upper = blank Lower = P-SL
SEL	Press the key once. →P-SL is replaced with current setting.	Upper = blank Lower = 0
UP DOWN	Press the keys until the display indicates -100. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = -100
SEL	Press the key once. →The lower display indicates the parameter name (P-SL) again.	Upper = blank Lower = P-SL
DOWN	Press the key once. →Next parameter name is displayed.	Upper = blank Lower = P-SU
SEL	Press the key once. →P-SU is replaced with current setting.	Upper = blank Lower = 400
UP DOWN	Press the keys until the display indicates 200. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 200
SEL	Press the key once. →The lower display indicates the parameter name (P-SU) again.	Upper = blank Lower = P-SU
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 2 Upper = PV Lower = blank

[Example]
Changing decimal point position (P-dP) from XXX to XXX.X.

Key	Status or Operation	Display
	Current display (PTn = 2 in this example)	Display pattern 2 Upper = PV Lower = blank
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key five times. →Next parameter name is displayed.	Upper = blank Lower = P-dP
SEL	Press the key once. →P-dP is replaced with current setting.	Upper = blank Lower = 0
UP DOWN	Press the keys until the display indicates 1. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 1
SEL	Press the key once. →The lower display indicates the parameter name (P-dP) again.	Upper = blank Lower = P-dP
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 2 Upper = PV Lower = blank

■ SETPOINT v.s. DECIMAL POINT POSITION

Code	Decimal point position	Notes
0	XXXX	No decimal point
1	XXX.X	One-place decimal

Alarm mode for SET1 and SET2 (P-A1, P-A2)
Changing trip operation, latching hold and relay & LED behavior for SET1 and SET2.
[Example]
SET1: High trip, without latching hold, coil energized (1)
    → High trip, with latching hold, coil energized (3)
SET2: Low trip, with latching hold, coil energized (4)
    → Low trip, without latching hold, coil de-energized (6)

Key	Status or Operation	Display
	Current display (PTn = 2 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key six times. →Next parameter name is displayed.	Upper = blank Lower = P-A1
SEL	Press the key once. →P-A1 is replaced with current setting.	Upper = blank Lower = 1
UP DOWN	Press the keys until the display indicates 3. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 3
SEL	Press the key once. →The lower display indicates the parameter name (P-A1) again.	Upper = blank Lower = P-A1
DOWN	Press the key once. →Next parameter name is displayed.	Upper = blank Lower = P-A2
SEL	Press the key once. →P-A2 is replaced with current setting.	Upper = blank Lower = 4
UP DOWN	Press the keys until the display indicates 6. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 6
SEL	Press the key once. →The lower display indicates the parameter name (P-A2) again.	Upper = blank Lower = P-A2
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

Burnout protection (bUrn)
[Example] Changing internal input value in case of burnout (over-range included) from downscale (L) to upscale (H).

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key 8 times. →Next parameter name is displayed.	Upper = blank Lower = bUrn
SEL	Press the key once. →bUrn is replaced with current setting.	Upper = blank Lower = L
UP DOWN	Press the keys until the display indicates H. (New value is registered if the unit is not accessed for 3 seconds.)	Upper = blank Lower = H
SEL	Press the key once. →The lower display indicates the parameter name (bUrn) again.	Upper = blank Lower = bUrn
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

Temperature unit
[Example] Changing temperature unit (P-F) from °C to °F.

Key	Status or Operation	Display
	Current display (PTn = 2 in this example)	Display pattern 2 Upper = PV Lower = blank
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key nine times. →Next parameter name is displayed.	Upper = blank Lower = P-F
SEL	Press the key once. →P-F is replaced with current setting.	Upper = blank Lower = °C
UP DOWN	Press the keys until the display indicates °F. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = °F
SEL	Press the key once. →The lower display indicates the parameter name (P-F) again.	Upper = blank Lower = P-F
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 2 Upper = PV Lower = blank

Switching delay time for SET1 and ST2
Changing switching delay time (P-d1, P-d2) for SET1 and SET2.
[Example] SET1: 1 sec. → 10 sec.   SET2: 1 sec. → 4 sec.

Key	Status or Operation	Display
	Current display (PTn = 2 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 7 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, until HYS1 is on the display.	Upper = blank Lower = HYS1
DOWN	Press the key ten times. →Next parameter name is displayed.	Upper = blank Lower = P-d1
SEL	Press the key once. →P-d1 is replaced with current setting.	Upper = blank Lower = 1
UP DOWN	Press the keys until the display indicates 10. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 10
SEL	Press the key once. →The lower display indicates the parameter name (P-d1) again.	Upper = blank Lower = P-d1
DOWN	Press the key once. →Next parameter name is displayed.	Upper = blank Lower = P-d2
SEL	Press the key once. →P-d2 is replaced with current setting.	Upper = blank Lower = 1
UP DOWN	Press the keys until the display indicates 4. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 4
SEL	Press the key once. →The lower display indicates the parameter name (P-d2) again.	Upper = blank Lower = P-d2
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

■ HOW TO SET PARAMETER BLOCK 3
Press SEL key for 9 seconds until the display turns to the setting mode for Parameter block 3.

Time constant for the input filter
[Example] Changing time constant for the input filter (P-dF) from 5.0 sec. to 10.0 sec.

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 9 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, 2, until P-dF is on the display.	Upper = blank Lower = P-dF
SEL	Press the key once. →P-dF is replaced with current setting.	Upper = blank Lower = 5.0
UP DOWN	Press the keys until the display indicates 10.0. (New value is registered if the unit is not accessed for 3 seconds.)	Upper = blank Lower = 10.0
SEL	Press the key once. →The lower display indicates the parameter name (P-dF) again.	Upper = blank Lower = P-dF
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

Cold junction compensation
[Example] Changing cold junction compensation (CJM) ON (internal) to OFF (external).

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 9 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, 2, until P-dF is on the display.	Upper = blank Lower = P-dF
DOWN	Press the key once. →Next parameter name is displayed.	Upper = blank Lower = CJM
SEL	Press the key once. →CJM is replaced with current setting.	Upper = blank Lower = ON
UP DOWN	Press the keys until the display indicates OFF. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = OFF
SEL	Press the key once. →The lower display indicates the parameter name (CJM) again.	Upper = blank Lower = CJM
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

User's ZERO adjustment
[Example]
Calibrate display value with 0% input (ADJ0) from 2 to 0.
ADJ0: 0 → -2

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 9 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, 2, until P-dF is on the display.	Upper = blank Lower = P-dF
DOWN	Press the key twice. →Next parameter name is displayed.	Upper = blank Lower = ADJ0
SEL	Press the key once. →ADJ0 is replaced with current setting.	Upper = blank Lower = 0
UP DOWN	Press the keys until the display indicates -2. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = -2
SEL	Press the key once. →The lower display indicates the parameter name (ADJ0) again.	Upper = blank Lower = ADJ0
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

User's SPAN adjustment
[Example] Calibrate display value with 100% input (ADJS) from 99 to 100.
ADJS: 0 → 1

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 9 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, 2, until P-dF is on the display.	Upper = blank Lower = P-dF
DOWN	Press the key three times. →Next parameter name is displayed.	Upper = blank Lower = ADJS
SEL	Press the key once. →ADJS is replaced with current setting.	Upper = blank Lower = 0
UP DOWN	Press the keys until the display indicates 1. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 1
SEL	Press the key once. →The lower display indicates the parameter name (ADJS) again.	Upper = blank Lower = ADJS
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

Power ON delay time (P-d0)
[Example]
Changing power ON delay time (the time interval for the alarm outputs to be enabled after the power is turned on.) from 0 sec. to 3 sec.

Key	Status or Operation	Display
	Current display (PTn = 1 in this example)	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)
SEL	Keep pressing the key for 9 seconds. →Maintain while the display indicates Pattern 2, Pattern 3, and Parameter block 1, 2, until P-dF is on the display.	Upper = blank Lower = P-dF
DOWN	Press the key four times. →Next parameter name is displayed.	Upper = blank Lower = P-d0
SEL	Press the key once. →P-d0 is replaced with current setting.	Upper = blank Lower = 0
UP DOWN	Press the keys until the display indicates 3. (New value is registered if the unit is not accessed for 3 sec.)	Upper = blank Lower = 3
SEL	Press the key once. →The lower display indicates the parameter name (P-d0) again.	Upper = blank Lower = P-d0
SEL	Keep pressing the key for 3 seconds. →Maintain while the display changes.	Display pattern 1 Upper = ST1 (setpoint) Lower = ST2 (setpoint)

APPENDIX

■ INPUT TYPE v.s. PARAMETER CODE NO.

Input type	Sensor type	Parameter code No. (P-n2)
RTD	JPt 100 (JIS'89)	0
	Pt 100 (IEC, JIS'97)	1
Thermocouple	J (IC)	2
	K (CA)	3
	R	4
	B (RH)	5
	S	6
	T (CC)	7
	E (CRC)	8
	N	12
	P (Platinel II)	13
	C (WRe 5-26)	14

■ INPUT RANGE

Sensor type	Range °C	Range °F	Decimal °C	Decimal °F
RTD Pt 100 (IEC, JIS'97)				
Pt 100	0 to 150	32 to 302	Y	Y
Pt 100	0 to 300	32 to 572	Y	Y
Pt 100	0 to 500	32 to 932	Y	Y
Pt 100	0 to 600	32 to 1112	Y	N
Pt 100	-50 to 100	-58 to 212	Y	Y
Pt 100	-100 to 200	-148 to 392	Y	Y
Pt 100	-150 to 600	-238 to 1112	Y	N
Pt 100	-150 to 850	-238 to 1562	N	N
RTD JPt 100 (JIS'89)				
JPt	100 0 to 150	32 to 302	Y	Y
JPt	100 0 to 300	32 to 572	Y	Y
JPt	100 0 to 500	32 to 932	Y	Y
JPt	100 0 to 600	32 to 1112	Y	N
JP	100 -50 to 100	-58 to 212	Y	Y
JPt	100 -100 to 200	-148 to 392	Y	Y
JPt	100 -150 to 600	-238 to 1112	Y	N
Thermocouple				
J (IC)	to 400	32 to 752	Y	Y
J (IC)	0 to 800	32 to 1472	Y	N
K (CA)	to 400	32 to 752	Y	Y
K (CA)	to 800	32 to 1472	Y	N
K (CA)	to 1200	32 to 2192	N	N
R	0 to 1600	32 to 2912	N	N
B (RH)	to 1800	32 to 3272	N	N
S	0 to 1600	32 to 2912	N	N
T (CC)	-199 to 200	-328 to 392	Y	N
T (CC)	-150 to 400	-238 to 752	Y	N
E (CRC)	0 to 800	32 to 1472	Y	N
E (CRC)	-199 to 800	-328 to 1472	Y	N
N	0 to 1300	32 to 2372	N	N
P (Platinel II)	0 to 1300	32 to 2372	N	N
C (WRe 5-26)	0 to 2300	32 to 4172	N	N

■ ALARM MODE v.s. PARAMETER CODE NO.

Param. code (P-A1) (P-A2)	Alarm modes			
	Trip operation	Set value	Latching hold*9	Relay & LED behavior in tripped conditions
0	No alarm	----	----	----
1	High	Absolute value	Without	LED ON Coil energized
2	Low	Absolute value	Without	LED ON Coil energized
3	High	Absolute value	With	LED ON Coil energized
4	Low	Absolute value	With	LED ON Coil energized
5	High	Absolute value	Without	LED ON Coil de-energized
6	Low	Absolute value	Without	LED ON Coil de-energized
7	High	Absolute value	With	LED ON Coil de-energized
8	Low	Absolute value	With	LED ON Coil de-energized

*9. Without latching hold function, the unit is tripped upon starting operation (e.g. at 25°C) when the unit is set to Low alarm (e.g. 100°C).
With the function, the unit is NOT tripped until the temperature goes once above and then below the setpoint (100°C).

ERROR MESSAGES

DISPLAY	ERROR DESCRIPTION	WHAT TO DO
UUUU	The input exceeds 105%. Input line is broken. (Burnout protection is set to upscale (H).)	Return the input signal not exceed 105%. Check the input lines.
LLLL	The input exceeds lower limit of -5%. Input line is broken. (Burnout protection is set to downscale (L).)	Return the input signal -5% or more. Check the input lines.
Err	Upper scaling (P-SU) ≤ Lower scaling (P-SL)	Set 'Upper scaling (P-SU) > Lower scaling (P-SL)'.
iErr	Internal data error	Repair is needed if the display does not recover after the power is reset.
rErr	Memory reading error	Perform parameter reset with parameter block 3.*1
WErr	Memory writing error	Perform parameter reset with parameter block 3.*1

*1. All setting parameters are initialized. Repair is needed if it does not recover.

CHARACTER SET

0	1	2	3	4	5	6	7	8	9	-	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

LIGHTNING SURGE PROTECTION

We offer a series of lightning surge protector for protection against induced lightning surges. Please contact us to choose appropriate models.