FC SERIES PT TYPE SIGNAL CONVERTER

DATA SHEET PTA

The FC series PT type signal converter converts inputs from a thermocouple, resistance bulb, DC voltage and current into a signal of isolated 1 to 5V DC or 4 to 20mA DC.

In addition, burnout protection in the event of thermocouple breakage, transmission function are avaiable.

Its structure is plug-in style.

SPECIFICATIONS

INPUT SPECIFICATION

Input signal: 1 point

Input signal	Type	Measuring range	Min. span width
Thermocouple	B(*1)	0 to 1700°C	900°C
	E	–200 to 800°C	100°C
	J	0 to 750°C	100°C
	K	–200 to 1200°C	100°C
	N(*2)	0 to 1300°C	100°C
	R	0 to 1600°C	400°C
	S	0 to 1600°C	400°C
	T	–200 to 350°C	100°C
Resistance bulb	Pt 100(*3)	–200 to 650°C	50°C
	JPt 100(*3)	–200 to 500°C	50°C
Voltage	mV	3 to 100mV	3mA
Current	mA	0.1 to 10mA	0.1mA
Potentiometer	POT	50 to 300Ω	20Ω

Note: (*1) : With the B thermocouple, accuracy guarantee is in the range of 600 to 1700°C.
(*2) : N : NICROSIL-NISIL (IEC584)
(*3) : Pt 100 : JIS C 1604, 1606, IEC751
JPt 100 : JIS C 1604, 1606 (OLD JIS Pt100)

Input type	Voltage	Thermocouple	Current	Resistance bulb	Potentiometer
Input resistance	1MΩ or more		10 to 250Ω	——	
Allowable wiring resistance	1kΩ or less		——	10Ω or less	

* : Zero elevation is ±25mV or less.

OUTPUT SPECIFICATION

Output signal: 2 points

Output type	Voltage	Current
Output signal	1 to 5V DC	4 to 20mA DC
Allowable load resistance	15kΩ or over	600Ω or less

TRANSMISSION SPECIFICATION

1. Data transmission

Interface: RS-485

Transmission system:
Start-stop synchronous system

Transmission speed:
2400, 4800, 9600, 19200bps

Connectable units:
31 units (Max.)

Code format: Data length……8 bits (binary)
Parity bit……even, odd, none
Stop bit……one or two bits

Transmission distance:
1 km (Max.)

2. Loader interface
RS-232C equivalent

POWER SUPPLY

Power supply: 24V DC (20 to 30V DC)
24V AC, +13%, –10%, (47 to 63Hz)
100V AC (85 to 132V AC /47 to 63Hz)
200V AC (187 to 264V AC /47 to 63Hz)
as specified.

Power consumption:
Approx. 3W (at DC power)
Approx. 6VA (at AC power)

OPERATION CONDITION

Ambient temperature:
0 to 50°C

Ambient humidity:
Less than 90%RH (no condensation)

Outline dimension (HxWxD):
96 x 52 x 130mm

Mass: Appox. 300g

Housing: Plastic housing (color: black)

Mounting method:
Panel mounting or DIN rail mounting

CHARACTERISTICS

Accuracy: Less than ±0.1% of full span
(in case of 10mV span or more)

Less than ±0.2% of full span
(in case of less than 10mV span)
Less than ±0.1% of full span or ±0.1°C, whichever is larger.
(in case of resistance bulb)

Linearizing error: Less than ±0.05% of full span

Referece junction compensation accuracy:
E, J, K, T ..... ±1°C
R, S, N ..... ±2°C

Response time: 0.3 sec.

Burnout time: 10 sec. or less

Ambient temperature effect:
Less than ±0.1% of full span/10°C

Power regulation effect:
Less than ±0.1% of full span

Dielectric strength:
1500V AC, 1 min.
(Input-Output-Transmission-Power-Ground)

Insulation resistance:
500V DC, 100MΩ or over
(Input-Output-Transmission-Power-Ground)

CODE SYMBOLS

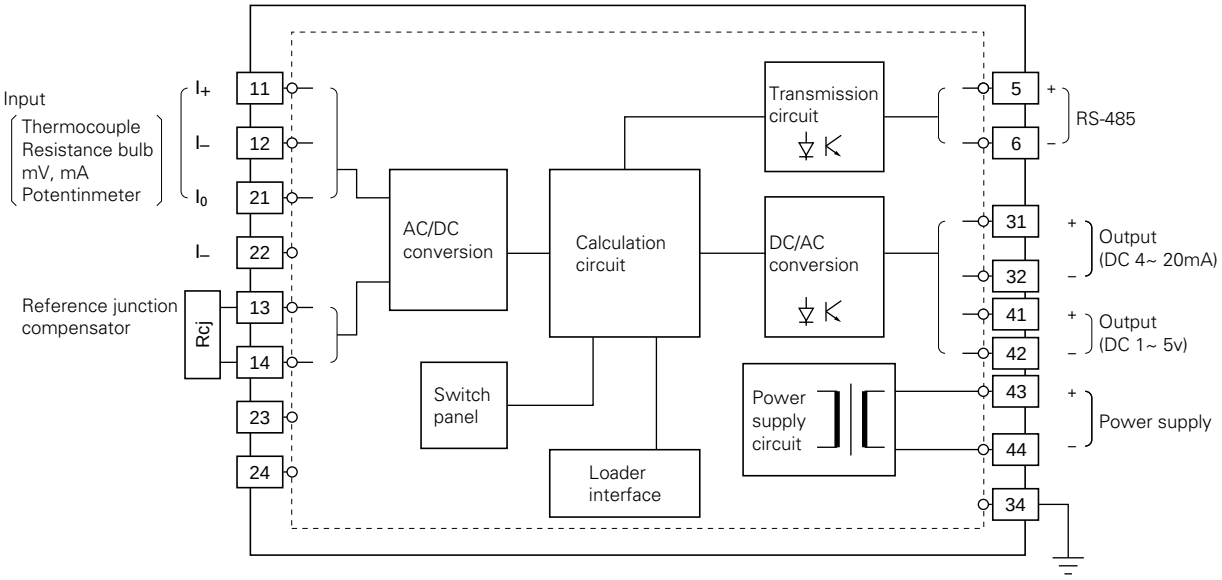
1	2	3	4	5	6	7	8	9	10	11	Description
P	T	A	W			1	-		R		
			1								**Input signal**
			2								Voltage (mV)
			3								Current (mA)
			4								Thermocouple
			5								Resistance bulb
											Potentiometer (3-wire system)
				W							**Output signal**
											1 to 5V DC/4 to 20mA DC
					Y						**Burnout**
					L						Without
					H						Down-scale
											Up-scale
						1					**Power supply**
						2					24V DC/24V AC (50/60Hz)
						3					100V AC (50/60Hz)
											200V AC (50/60Hz)
								Y			**Application**
								A			For general
											For zener barrier connection
									R		**Transmission function**
											With RS-485
										Y	**Loader interface**
											Without

STANDARD INPUT RANGE

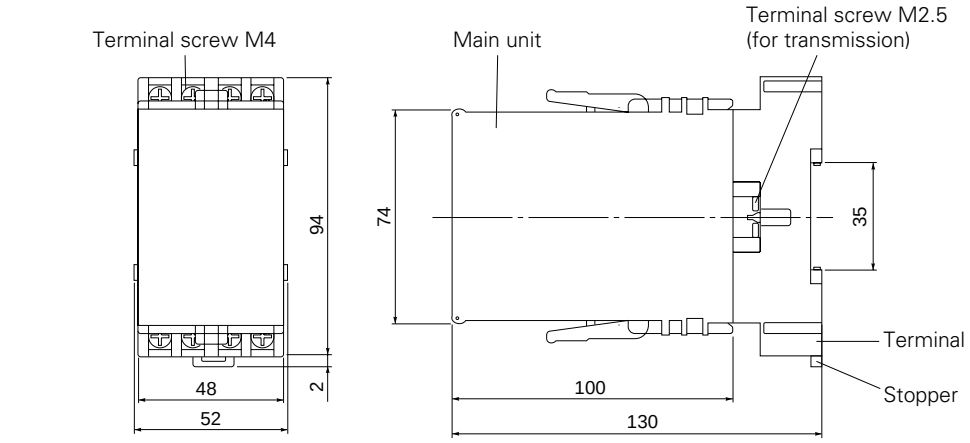
The input signal and measuring range below can be selected with a front switch. For others, specify separately.

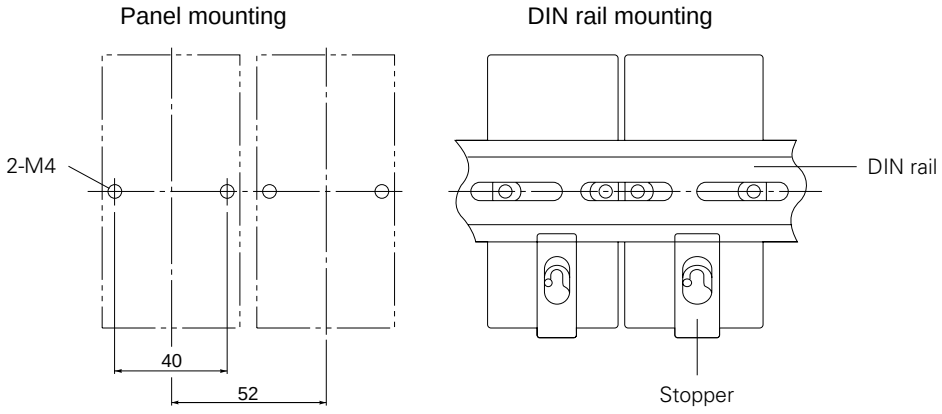
Input signal		Measuring range
Thermocouple [°C]	B	0 to 1700, 600 to 1700
	R	0 to 1000, 0 to 1200, 0 to 1400, 0 to 1600, 400 to 1400, 600 to 1600, 800 to 1600
	S	0 to 1000, 0 to 1200, 0 to 1400, 0 to 1600, 400 to 1400, 600 to 1600, 800 to 1600
	K	–200 to 100, 0 to 300, 0 to 400, 0 to 500, 0 to 600, 0 to 800, 0 to 1000, 0 to 1200, 300 to 600, 400 to 800, 500 to 1000, 600 to 1200
	E	–200 to 100, 0 to 200, 0 to 300, 0 to 400, 0 to 500, 0 to 600, 0 to 800, 200 to 400, 300 to 600
	J	0 to 200, 0 to 300, 0 to 400, 0 to 500, 0 to 600, 200 tp 400, 300 to 600
	T	–200 to 100, 0 to 300
	N	0 to 300, 0 to 400, 0 to 500, 0 to 600, 0 to 800, 0 to 1000, 0 to 1200, 300 to 600, 400 to 800, 500 to 1000, 600 to 1200
Resistance bulb [°C]	Pt 100	0 to 50, 0 to 100, 0 to 150, 0 to 200, 0 to 300, 0 to 400, 0 to 500, 100 to 300, 200 to 400, 300 to 500, –20 to 30, –50 to 50, –50 to 100, –200 to 50, –200 to 100
	JPt 100	0 to 50, 0 to 100, 0 to 150, 0 to 200, 0 to 300, 0 to 400, 0 to 500, 100 to 300, 200 to 400, 300 to 500, –20 to 30, –50 to 50, –50 to 100, –200 to 50, –200 to 100
Potentionmeter [Ω]		10–100–10, 0–100–0, 10–135–10, 0–135–0
Voltage [mV]		0 to 5, 0 to 10, 0 to 20, 0 to 30, 0 to 50, 0 to 100
Current [mA]		4 to 20, 0 to 20, 0 to 10

FUNCTIONAL DIAGRAM



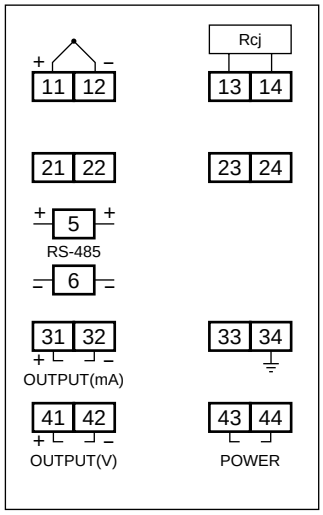
OUTLINE DIAGRAM (Unit: mm)



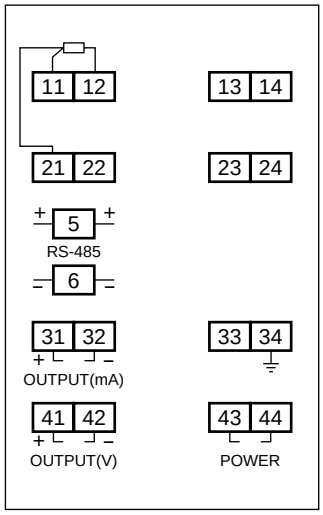


EXTERNAL CONNECTION DIAGRAM

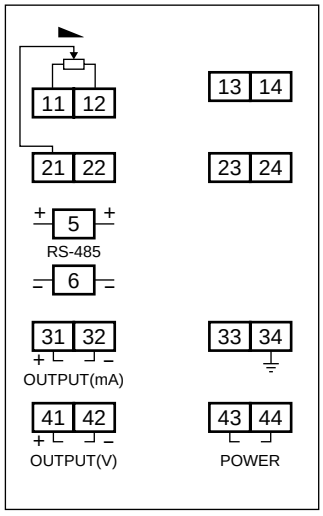
Thermocouple input



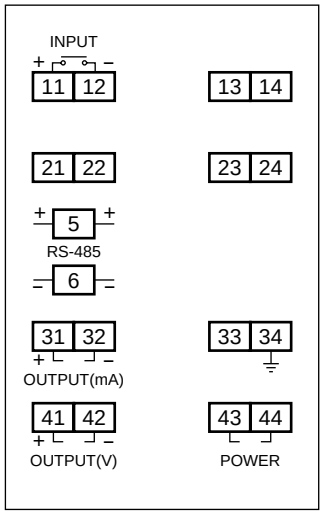
Resistance bulb input



Potentiometer Input



Voltage•Current Input



RANGE OF DELIVERY

Main unit and socket

ORDERING INFORMATION

1. Input signal specification
2. Measuring range

⚠ Caution on Safety

*Before using this product, be sure to read its instruction manual in advance.

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