§ BOX TRANSDUCER §
TYPE CODE DESIGNATION

● SENSOR TRANSDUCER

TT-A series ① TT ② - ③ A

① Kind of input

Mark	Kind of input
H	Thermoelectric temperature
RH	Resistance temperature
R	Potentiometer
G	Revolution-speed (Frequency proportion)
GV	Revolution-speed (AC voltage proportion)

② Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
No number	Non-insulated between input and output
2	AC2,000V for 1 min. between input and output

③ Kind of outer case and its dimensions

Mark	Material of outer case	Dimensions (mm) Length × Width × Height
82	Fire-retardant ABS resin	120× 56×130
83	Fire-retardant ABS resin	120×110×130

● SIGNAL TRANSDUCER

T-A series ① ② - ③ A

① Kind of conversion

Mark	Kind of conversion
ADTT	Adding
SCTT	Scaling (option)
VF	Analog/Pulse
SE	Input switching

② Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
No number	Non-insulated between input and output
2	AC2,000V for 1 min. between input and output

③ Kind of outer case and its dimensions

Mark	Material of outer case	Dimensions (mm) Length × Width × Height
82	Fire-retardant ABS resin	120× 56×130
83	Fire-retardant ABS resin	120×110×130

THERMOELECTRIC TEMPERATURE TRANSDUCER

HTT2-82A/ HTT2-83A (DC110V power source)

Use

With thermal electromotive force of various thermocouples according to JIS as input, convert temperature with insulation into DC signal in proportion to temperature with insulation.

Features

1. Withstand voltage 2, 000V AC (between input/output/auxiliary supply/earth).

2. Impulse withstand voltage 5kV 1.2/50μs (electric circuit/earth), positive/ negative polarity 3 times each is guaranteed.

3. With output line surge protection (2, 000A, ±8/20μs), can transmit an output directly to a distant place.

4. Constant voltage/current output.

Connection diagram

HTT2-82A
(120× 56× 130mm/800g)

In the case of DC auxiliary supply, connect with S1 as ( ), S2 as ( ).
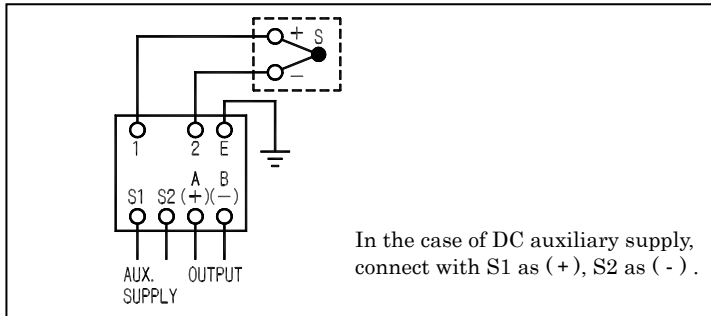
Specification and performance

Kind of thermo-couple	Standard input range	Input	Output (load resistance)	Auxiliary supply	Common specification
B	7 9	1 : 0-200	1 : DC0-100mV (200)	1 : AC100V±15%, 50/60Hz	Tolerance: 0.5%
R	7 9	2 : 0-300	2 : DC0-1V (200)	2 : AC110V±15%, 50/60Hz	
S	7 9	3 : 0-400	3 : DC0-5V (1k)	3 : AC200V±15%, 50/60Hz	Response time:
K	2 8	4 : 0-500	4 : DC 0-10V (2k)	4 : AC220V±15%, 50/60Hz	1sec. (± 1%)
E	1 5	5 : 0-600	5 : DC1-5V (1k)	5 : DC24V±15%	
J	1 5	6 : 0-800	A : DC0-1mA (10k)	6 : DC48V±15%	Consumption VA:
T	1 2	7 : 0-1,000	B : DC0-5mA (2k)	7 : DC110V (88-143V)	AC power source 3.5VA
		8 : 0-1,200	C : DC0-10mA (1k)	0 : other than those above	DC power source 3.5W
		9 : 0-1,400	D : DC0-16mA (600)		DC 110V 4.5W
		0 : other than those above	E : DC1-5mA (2k)		Weight: 800g
			F : DC4-20mA (500)		
			0 : other than those above		

Open of current output: even if the current output terminal is used in a state of regular open, there is no problem.
Also, a voltage of approx. 15V occurs on the output terminal.
DC 110V power: Type is HTT2-83A.
Have a consultation with us for N thermocouple.

Built-in linearizer

Thermal electromotive force of a thermocouple is not proportional to temperature.
The linearizer converts thermal electromotive force into an output proportional to temperature.

Built-in burnout

The device detects disconnection of a thermocouple and does scale-out of output to positive (+) side.
Scale-out to negative side is also manufacturable if specified.

Built-in cold junction compensation

In principle, a thermocouple generates a thermal electromotive force equivalent to $V(T_1)$ $V(T_2)$ as Vin.
Compensating sensor compensates a thermal electromotive force equivalent to T_2.
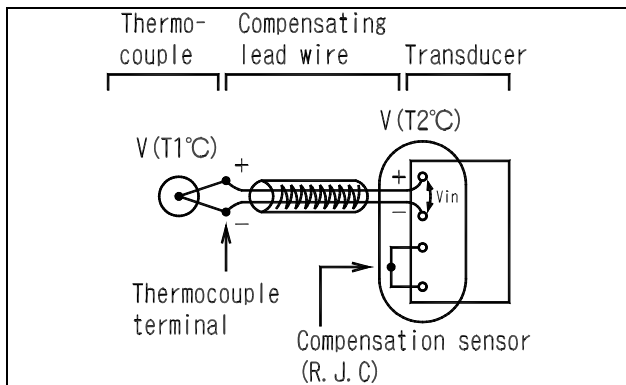

Compensating wire

A compensating wire compensates temperature difference between thermocouple terminals and transducer terminals. Because color (material) of compensating wire varies according to thermocouple type, choose a compensating wire in accordance with thermocouple. Match positive and negative polarities when connecting.

External resistance range

An External resistance value is the resistance value of a reciprocating circuit which consists of thermocouple connected to the transducer, compensating wire, connecting wires and so on.
Use the product within a reciprocal circuit resistance less than or equal to 25Ω.
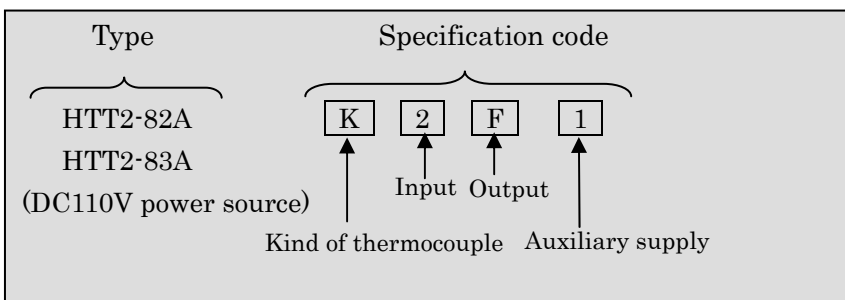
Purchase specifications

RESISTANCE TEMPERATURE TRANSDUCER

RHTT2-82A/ RHTT2-83A (DC110V power source)

Use

With resistance value of three-wire thermal resistance according to JIS as input, convert the input to DC signal in proportion to temperature with insulation.

Features

1. Withstand voltage 2, 000V AC (between input/output/auxiliary supply/earth).

2. Impulse withstand voltage 5kV 1.2/50μs (electric circuit/earth), positive/ negative polarity 3 times each is guaranteed.

3. With output line surge protection (2, 000A, ±8/20μs), can transmit an output directly to a distant place.

4. Constant voltage/current output.

Connection diagram

In the case of DC auxiliary supply, connect with S1 as (   ), S2 as (   ) .
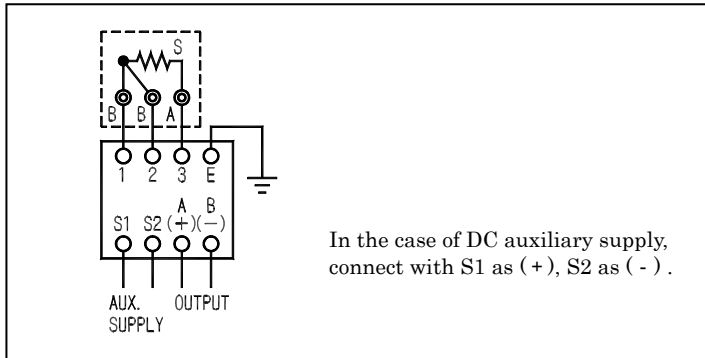
RHTT2-82A
(120× 56× 130mm/800g)

Specification and performance

Kind of thermal resistance	Temperature span (specified current)	Input*		Output (load resistance)	Auxiliary supply	Common specification
1 : Pt, 100 at 0		A1 : 0-50	C5 : -20-100	1 : DC0-100mV (200)	1 : AC100V±15%, 50/60Hz	Tolerance: ± 0.5%
2 : Pt, 50 at 0		A2 : 0-60	C6 : -20-120	2 : DC0-1V (200)	2 : AC110V±15%, 50/60Hz	Response time: 1sec. (± 1%)
3 : Cu, 100 at 0	1 { 100 (2mA) 3 { 50 (5mA)	A3 : 0-80	D1 : -30-50	3 : DC0-5V (1k)	3 : AC200V±15%, 50/60Hz	
		A4 : 0-100	D2 : -30-60	4 : DC 0-10V (2k)		Consumption VA:
		A5 : 0-120	D3 : -30-80		4 : AC220V±15%, 50/60Hz	AC power source:
4 : Cu, 50 at 0		A6 : 0-150	E1 : -50-50	5 : DC1-5V (1k)		3.5VA
		A7 : 0-200	E2 : -50-60	A : DC0-1mA (10k)	5 : DC24V±15%	DC power source: 3.5W
5 : Cu, 25 at 0	2 { 200 (2mA) 4 { 100 (5mA) 7 { 50 (10mA)	A8 : 0-300	E3 : -50-80			DC110V: 4.5W
		B1 : -10-40	E4 : -50-100	B : DC0-5mA (2k)	6 : DC48V±15%	
6 : Cu, 10 at 0		B2 : -10-50	E5 : -50-120			Weight: 800g
		B3 : -10-60	E6 : -50-150	C : DC0-10mA (1k)	7 : DC110V (88-143V)	
7 : Cu, 50 at 25	5 { 50 (10mA) 8 { 200 (5mA)	C1 : -20-40	F1 : -70-30	D : DC0-16mA (600)		
		C2 : -20-50	F2 : -70-80		0 : other than those above	
8 : Cu, 25 at 25		C3 : -20-60	G1 : -100-100			
		C4 : -20-80	00 : other than those above	E : DC1-5mA (2k)		
9 : Cu, 10 at 25	6 { 100 (10mA) 9 {			F : DC4-20mA (500)		
0 : other than those above				0 : other than those above		

Operating temperature range of thermal resistance: Pt: -200- 650 ; Cu: -25- 120 . Ni also can be manufactured.
Open of current output: even if the current output terminal is used in a state of regular open, there is no problem.
 Also, a voltage of approx. 15V occurs on the output terminal.
DC110V power source: Type code is RHTT2-83A.

Built-in linearizer

The resistance value of a measurement temperature resistance is not proportional to temperature.
The linearizer converts a measurement temperature resistance into an output proportional to temperature.

Built-in burnout

The device detects disconnection of a measurement temperature resistance and does scale-out of output to positive (+) side. Scale-out to negative side is also manufacturable if specified.

Specified current

Specified current is a current flowing into a thermal resistance. Change of resistance value can be measured by voltage drop caused by the specified current. In the case of Pt, though standard specified current is 2mA, 5mA is also manufacturable if specified.

Built-in external conducting wire resistance compensating circuit

External conducting wire resistance is the resistance value of conducting wires excluding the resistance value of element S. As the influence of external conducting wire resistance, it does compensate when resistance values of all conducting wires are equivalent, but it becomes an error when resistance values of all conducting wires are different. Generally, taking into consideration the variousness of conducting wires, use the product under ranges listed in the table below.
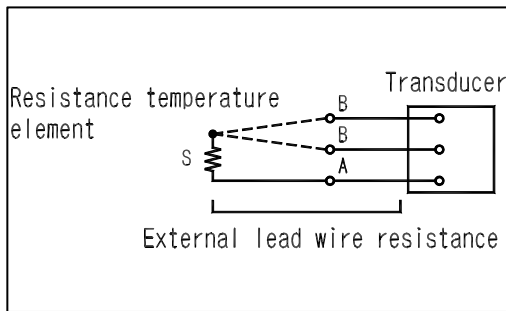
Thermal resistance	External conducting wire resistance	
	Input span 100 50	Input span < 100
Pt 100Ω	10 /line	5 /line
Pt 50Ω	5 /line	2.5 /line
Cu 100Ω	10 /line	5 /line
Cu 25Ω	2.5 /line	1 /line
Cu 10Ω	1 /line	-

Purchase specifications
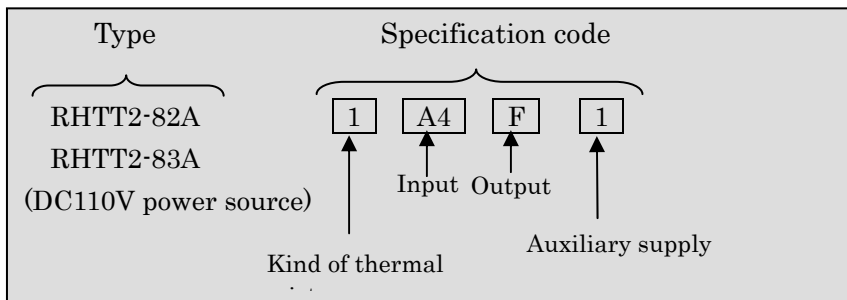
POTENTIOMETER TRANSDUCER

RTT2-82A/ RTT2-83A (DC110V power source)

Use

By replacing mechanical angle and displacement with resistance value change as input, then insulates and converts the input to a DC signal in proportion to displacement.

Features

1. Withstand voltage 2, 000V AC (between input/ output/ auxiliary supply/ earth).
2. Impulse withstand voltage 5kV 1.2/50μs (electric circuit/earth), positive/ negative polarity 3 times each is guaranteed.
3. With output line surge protection (2, 000A, ±8/20μs), can transmit an output directly to a distant place.
4. Constant voltage/current output.

RTT2-82A
(120× 56× 130mm/800g)

Connection diagram

In the case of DC auxiliary supply, connect with S1 as ( ), S2 as ( ) .
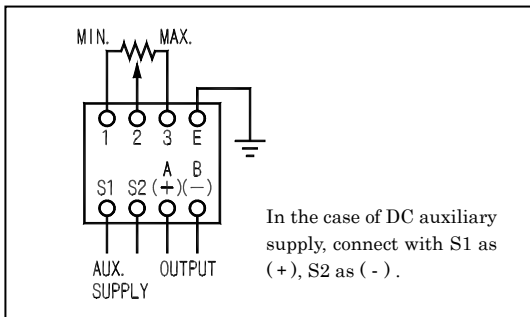
Adjustment range of output signal

Output can be adjusted within input range 0-100 %. Output can be adjusted up to ±15% by BIAS adjustment and MAX adjustment. If range of use is beyond above-mentioned, specify actual range of use and potentiometer total nominal resistance value.

Specified current

Specified current is a current flowing into a thermal resistance. Change of resistance value can be measured by voltage drop caused by the specified current.

Specification and performance

Total nominal resistance value	Input (specified current)	External resistance	Output	Auxiliary supply	Common specification
50	A : 0-50Ω(10mA)	12.5 /line	1 : DC0-100mV (200)	1 : AC100V±15%, 50/60Hz	Tolerance: ±0.5%
80	B : 0-80Ω(10mA)	12.5 /line	2 : DC0-1V (200)	2 : AC110V±15%, 50/60Hz	Response time: 1sec. (± 1%)
100	C : 0-100Ω(10mA)	25 /line	3 : DC0-5V (1k)	3 : AC200V±15%, 50/60Hz	
135	D : 0-135Ω(10mA)	25 /line	4 : DC 0-10V (2k)		
200	E : 0-200Ω(10mA)	25 /line	5 : DC1-5V (1k)	4 : AC220V±15%, 50/60Hz	Consumption VA: AC power source 3.5VA
400	F : 0-400Ω(7.5mA)	25 /line	A : DC0-1mA (10k)		
500	G : 0-500Ω(6mA)	25 /line	B : DC0-5mA (2k)	5 : DC24V±15%	DC power source 3.5W
1k	H : 0-1kΩ(3mA)	25 /line	C : DC0-10mA (1k)	6 : DC48V±15%	DC110V4.5W
2k	I : 0-2kΩ(1.5mA)	25 /line	D : DC0-16mA (600)	7 : DC110V (88-143V)	
3k	J : 0-3kΩ(1mA)	25 /line	E : DC1-5mA (2k)		Weight: 800g
5k	K : 0-5kΩ(0.6mA)	25 /line	F : DC4-20mA (500)	0 : other than those above	
10k	L : 0-10kΩ(0.3mA)	25 /line	0 : other than those above		
-	0 : other than those above	-			

Open of current output: even if the current output terminal is used in a state of regular open, there is no problem.
Also, a voltage of approx. 15V occurs on the output terminal.
DC 110V power: Type is RTT2-83A.

Built-in external conducting wire resistance compensating circuit

When each resistance values are equal of wire which is connected to potentiometer and transducer, resistance values can be compensated. However those value become error when resistance values are different, Use this product in the range of the table above considering wire dispersion.

Purchase specifications

Type | Specification code

RTT2-82A
RTT2-83A
(DC110V power source)

H | F | 1
Input | Output | Auxiliary supply
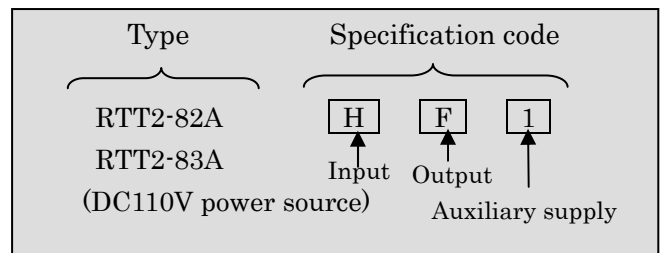
REVOLUTION SPEEDTRANSDUCER
FREQUENCY PROPORTION TYPE GTT2-83A
VOLTAGE PROPORTION TYPE GVTT2-83A

Use

 AC voltage which is outputted by tachogenerator connected to generator, etc.
is inputted and converted to DC signal in proportion to frequency or voltage.

Features

1. Withstand voltage 2, 000V AC (between input/output/auxiliary supply/earth).
2. Impulse withstand voltage 5kV 1.2/50µs (electric circuit/earth), positive/
    negative polarity 3 times each is guaranteed.
3. With output line surge protection (2, 000A, ±8/20µs), can transmit an output
    directly to a distant place.
4. Constant voltage/current output.

GTT2-83A

(120× 110× 130mm/800g)

Connection diagram

In the case of DC auxiliary
supply, connect with S1 as
( ), S2 as ( ).
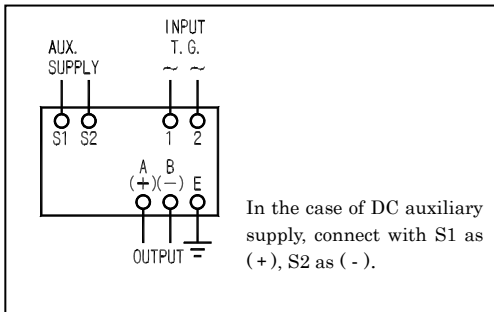
Cut-off voltage (dead band voltage/GTT2-83A)

 In order to prevent false operation in normal mode/inductive
voltage at zero rotation or fine input, output is made to be
equivalent to zero rotation output as cut-off voltage when below
50% of min. value of normal operating voltage. Specify when
inductive voltage exceeds cut-off voltage.

In the case of a special input waveform (GTT2-83A)

 Because this product does detection by zero cross point, consult
with us for a special input waveform such as inverter.

Specification and performance

Kind of input	Response (±1%)	GTT2-83A Normal operating voltage range (input resistance)	Output	Auxiliary supply	Common specification
A : 0-33.3Hz	2sec.	1 : 1-25V (approx.25k)	1 : DC0-100mV (200)	1 : AC100V±5%, 50/60Hz	Tolerance: ±0.5%
B : 0-40Hz		2 : 2-50V (approx.50k)	2 : DC0-1V (200)		
C : 0-50Hz		3 : 5-110V (approx.110k)	3 : DC0-5V (1k)	2 : AC110V±5%, 50/60Hz	Consumption VA:
D : 0-55Hz	1.5sec.	4 : 10-220V (approx.220k)	4 : DC 0-10V (2k)		AC power source
E : 0-60Hz		5 : 20-440V (approx.440k)	5 : DC1-5V (1k)	3 : AC200V±5%, 50/60Hz	3VA
F : 0-65Hz		0 : other than those above	A : DC0-1mA (10k)		DC power source
G : 0-66.6Hz			B : DC0-5mA (2k)	4 : AC220V±5%, 50/60Hz	3.5W
H : 0-100Hz	1sec.	GVTT2-83A Input voltage	C : DC0-10mA (1k)		
I : 0-120Hz			D : DC0-16mA (600)	5 : DC24V±5%	Weight: 800g
J : 0-166.6Hz		1 : 0-25V	E : DC1-5mA (2k)	6 : DC48V±5%	(GTT2-83A)
K : 0-200Hz		2 : 0-50V	F : DC4-20mA (500)	7 : DC110V	: 1kg
L : 0-333.3Hz		3 : 0-100V	0 : other than those above	(88-143V)	(GVTT2-83A)
M : 0-500Hz	0.5sec.	4 : 0-120V		0 : other than	
N : 0-1kHz		5 : 1-35V		those above	
0 : other than above	-	0 : other than those above			

 Open of current output: even if the current output terminal is used in a state of regular open, there is no problem.
  Also, a voltage of approx. 15V occurs on the output terminal.
 * Product of pulse input can be manufactured (input frequency upper limit: 10 kHz).

Purchase specifications

Type	Specification code			
GTT2-83A GVTT2-83A	H	3	F	1
	Input	Normal operating voltage	Output	Auxiliary supply