PLUG-IN 1 OUTPUT TYPE   Signal/Sensor/AC transducer

Product	Type code	Outlines	Withstand voltage
Isolator	TP2 -☐	Converts a DC input signal into a unified signal which was isolated. Response time 0.5s/99%	AC2000V
Ultrahigh speed isolator	HSTP1 - ☐	Converts a DC input signal into a unified signal which was isolated. Response time 500μ s/90%	AC1500V
Pulse isolator	PPTP2 -	Outputs a pulse input signal through an isolated 2-output relay contact or an isolated open collector.	AC2000V
DC transducer	TP -☐	DC signal V- conversion. Input and output not insulated.	-
Insulation type distributor	DTP2 -C1	Supplies electric power to a 2-wire transmitter insulates and converts signal from the transmitter into a proportional DC signal.	AC2000V
Distributor	DTP -C10	Supplies electric power to a two-wire transmitter, converts signal (4-20mA) from the transmitter into 1-5V by a precise resistance.	-
Linearizer	LTP1 - ☐	Converts a nonlinear DC signal into a linearized output signal.	AC1500V
Square transducer	SQTP1 - ☐	Converts a DC signal into another one which was proportional to the square of the former one.	AC1500V
Square root extraction transducer	SRTP1 - ☐	Converts a DC signal into another one which was proportional to the square root of the former one.	AC1500V
Multiplying transducer	MTP1 -☐	Outputs a DC signal which is equivalent to multiplication of two DC signals.	AC1500V
Dividing transducer	DITP1 - ☐	Outputs a DC signal which is equivalent to quotient of two DC signals.	AC1500V
Analog limiter	ALTP - ☐	Sets upper/lower limit for the proportional outputs.	-
Adding transducer	ADTP1 - ☐	Outputs a DC signal which is equivalent to sum of two DC signals.	AC1500V
Constant response	CRTP - ☐	Output converts at a constant speed being set.	-
Analog memory	AMTP -☐	Holds output when "HOLD" terminal is turned OFF.	-
Isolator with lower limiter	TP2 - ☐ L	A transducer that has a limiter (fixed) function only for the lower limit.	AC2000V
Reverse isolator	RVTP2 -☐	Reverses gradients of input/output signal, then outputs them.	AC2000V
Analog pulse transducer	VFTP2 -	Outputs a pulse which frequency was proportional to a DC input signal.	AC2000V
Ultraslow pulse transducer	UGTP2 -	Outputs a DC signal which was proportional to frequency of an ultraslow pulse.	AC2000V
Pulse rate transducer	PRTP2 -	It converts a pulse signal into another pulse signal which frequency was divided by n.	AC2000V
Thermoelectric temperature transducer	HTP1 -	Converts thermal electromotive force of a thermocouple into a DC signal which was proportional to temperature.	AC1500V
Resistance temperature transducer	RHTP2- ☐	Converts resistance of a three-wire thermal resistance into a DC signal which was proportional to temperature.	AC2000V
Potentiometer transducer	RTP2 -	Outputs a DC signal which was proportional to resistance of a potentiometer.	AC2000V
Revolution-speed transducer (Frequency proportion type)	GTP2 -	Outputs a DC signal which was proportional to Revolution-speed (frequency) of a tacho generator.	AC2000V
Revolution-speed transducer (AC voltage proportion type)	GVTP2 -	Outputs a DC signal which was proportional to Revolution-speed (voltage) of a tacho generator.	AC2000V
Selsyn transducer	STP1 -	Converts displacement of a Revolution angle of a selsyn transmitter into a DC signal.	AC1500V
AC current transducer	AETP2 -	Outputs a DC signal which was proportional to RMS value of an AC current input.	AC2000V
AC voltage transducer	VETP2 -	Outputs a DC signal which was proportional to RMS value of an AC voltage input.	AC2000V
Frequency transducer	FTP2 -	Outputs a DC signal which was proportional to frequency.	AC2000V
AC current transducer	ATP2 -	Outputs a DC signal which was proportional to AC current. Power-free Constant current output	AC2000V
AC voltage transducer	VTP2 -	Outputs a DC signal which was proportional to AC voltage. Power-free Constant current output	AC2000V
AC current transducer	AP2 -	Outputs a DC signal which was proportional to AC current. Power-free Load fixed type.	AC2000V
AC voltage transducer	VP2 -	Outputs a DC signal which was proportional to AC voltage. Power-free Load fixed type.	AC2000V
DC power transducer	DWP1 -	Outputs a DC signal which was proportional to DC power.	AC1500V

PLUG-IN 2-OUTPUT TYPE Signal/Sensor/AC transducer

Product	Type code	Outlines	Withstand voltage
Isolator	WTP2 -▢	Converts a DC input signal into a unified signal which was isolated.	AC2000V
Distributor	WDTP2 -C7	Supplies electric power to a 2-wire transmitter and converts signal from the transmitter into a proportional DC signal.	AC2000V
Distributor with square root extraction	WSRDTP2-C7	Supplies electric power to a 2-wire transmitter and converts signal from the transmitter into a DC signal which was proportional to the square root of the signal.	AC2000V
Thermoelectric temperature transducer	WHTP2 -	Converts thermal electromotive force of a thermocouple into a DC signal which was proportional to temperature.	AC2000V
Resistance temperature transducer	WRHTP2-	Converts resistance of a 3-wire thermal resistance into a DC signal which was proportional to temperature.	AC2000V
Potentiometer transducer	WRTP2 -Z	Outputs a DC signal which was proportional to resistance of a potentiometer.	AC2000V
AC current transducer	WAETP2 -	Outputs a DC signal which was proportional to RMS value of an AC current input.	AC2000V
AC voltage transducer	WVETP2 -	Outputs a DC signal which was proportional to RMS value of an AC voltage input.	AC2000V
Frequency transducer	WFTP2 -	Outputs a DC signal which was proportional to frequency.	AC2000V

Soft spec type

Product	Type code	Outlines	Withstand voltage
Adding/subtracting transducer	CADTP1 -▢	Does adding and subtracting of three inputs, and then outputs a DC signal equivalent to the value. Parameters can be changed by CCM-1.	AC1500V
Multiplying/dividing transducer	CMLTP1 -▢	Does multiplication and division of three inputs, and then outputs a DC signal equivalent to the value. Parameters can be changed by CCM-1.	AC1500V
Temperature/pressure correcting transducer	CLTP1 -▢	Processes temperature/pressure condition and converts it into a DC signal which was proportional to flow rate. Parameters can be changed by CCM-1.	AC1500V
Function generating transducer	CFGTP1 -▢	Does broken line operation of a DC input 15 polygonal lines maximum. Parameters can be changed by CCM-1	AC1500V
Analog backup transducer	CAMTP1 -▢	Provides output with a backup when a computer or a PID controller was down. Follow-up movement and output backup are settable by CCM-1.	AC1500V
Voltage pulse transducer	CVFTP1 -▢	Outputs a pulse of frequency which was proportional to a DC input. Pulse frequency, pulse width and output cut against a low input are settable by CCM-1.	AC1500V

Alarm setter

Product	Type code	Outlines	Withstand voltage
Alarm setter (digital % scale)	SDD- - 105 -▢	Compares a preset value of digital % scale with a direct input signal, and outputs a contact signal.	AC1500V
Alarm setter (actual scale)	SD- - 105 - ▢	Compares value of an actual scale setter with a direct input signal, and outputs a contact signal.	AC1500V
Alarm setter (LCD)	SDLC-105- ▢	Compares a preset value with a direct input signal, and then outputs a contact signal. 4 digit LCD indication. Actual scale indication is settable.	AC2000V
Deviation alarm setter (LCD)	SDDV-105- ▢	Compares deviation between two DC signal inputs and deviation of each input with a preset value, and then outputs a contact signal.	AC2000V
AC voltage alarm setter	SVD- - 105 -	Inputs AC voltage and outputs a contact signal	AC2000V

§ PLUG-IN TRANSDUCER §

COMMON STANDARD SPECIFICATION/TYPE CODE DESIGNATION

Common standard specifications
High quality/high reliability
Highly reliable electronic parts are adopted.
Aging tests of each part as well as burn-in aging test of the product under a high temperature are implemented.
PCB treatment
In order to reinforce insulation resistance stability of PCB surfaces and prevent the surfaces from insulation deterioration, B side of the PCB was cleaned and coated with high humidity resistant varnish after parts installation.
Output limiter circuit
Even if an excessive input is applied, the product confines the output to about 1.5 times of rating and protects the output side equipments.

Item	Specification	
Tolerance	% against output span	
Influence of temperature	23± 10 tolerance %	
Influence of frequency	45-65Hz tolerance %　(Reference) IEC, rated Hz±10% tolerance %	
Characteristics	In conformity with JIS C 1111-1989 in tolerance	
Response time	Time it takes to fall within ±1% of the final steady-state when applied a stepped input. Standard : 1.0. sec. (Insulation transducer only: 0.5 sec.)	
Output ripple	1%p-p against output span	
External adjustment of output	± 5% adjustable	
Auxiliary supply	AC100V or AC200V ±10% (50, 60Hz) (DC100/110V is manufacturable only for TP2)	
Overvoltage	Input	2 times (10 sec.), 1.2 times (continuity) of rated voltage
	Aux.supply	1.5 times (10 sec.), 1.1 times (continuity) of rated voltage
Over current	AC transducer	40 times (1 sec.), 20 times (4 sec.) 10 times (16 sec.), 1, 2 times (continuity) of rated current
	Signal transducer	10 times (5 sec.)
Insulation resistance	Between input terminal, output terminal, (auxiliary supply terminal) and outer case (earth)　50M　at DC500V. Non-insulation type: input terminal and output terminal conducted.	
Material of outer case	Fire-retardant ABS resin	
Appearance color	Outer case	Black (N 1.5)
	Rating plate	Dark blue (5PB 2/6)
Operating temperature/ humidity range	-10-　55　, 30-85%RH	
Storage temperature range	-40-　70	

Type code designation

1 output type

Signal transducer

(1)　P　(2)　–　(3)　(4)　(5)

DAIICHI ELECTRONICS CO., LTD. http://www.daiichi-ele.co.jp　Transducer Catalog　e-98-099b　3

§ PLUG-IN TRANSDUCER §

COMMON STANDARD SPECIFICATION/TYPE CODE DESIGNATION

(1) Product (kind of conversion)

Mark	Product (kind of conversion)	Mark	Product (kind of conversion)
T	Isolator	CRT	Constant response (constant speed response)
HST	Ultrahigh speed isolator	AMT	Analog memory
DT	Distributor	T***L	Isolator with lower limiter
LT	Linearizer	RVT	Reverse isolator
SQT	Square	VFT	Analog pulse
SRT	Square root extraction	R	Signal switch
MT	Multiplying	UGT	Ultraslow pulse
DIT	Dividing	PRT	Pulse rate
ALT	Analog limiter	PPT	Pulse isolator (2-output)
ADT	Adding		

(2) Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
None	Non-insulation
1	AC1,500V between input/output, for 1 min.
2	AC2,000V between input/output, for 1 min.

(3) / (4) / (5) Specification code

Input/output/auxiliary supply

Sensor transducer

(1)　TP　(2)　–　(3)　(4)　(5)

(1) Product (kind of input)

Mark	Product (kind of input)
H	Thermoelectric temperature
RH	Resistance temperature
R	Potentiometer
G	Revolution-speed (Frequency proportion)
GV	Revolution-speed (Voltage proportion)
S	Selsyn
SH	Thermoelectric alarm
SRH	Platinum alarm

(2) Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
1	AC1,500V between input/output, for 1 min.
2	AC2,000V between input/output, for 1 min.

(3) / (4) / (5) Specification code

Kind of thermocouple, input, output, power source
Kind of thermal resistance, input, output, power source
Input, output, power
Input, normal operating voltage, output, power source

AC transducer

(1)　P2　–　(2)　(3)　(4)

(1) Product (kind of input)

Mark	Product (kind of input)
V	AC voltage (with waveform compensation, load fixation, need no power source)
VT	AC voltage (with waveform compensation, need no power source)
VET	AC voltage (RMS value)
A	AC current (with waveform compensation, load fixation, need no power source)
AT	AC current (with waveform compensation, need no power source)
AET	AC current (RMS value)
FT	Frequency

Dielectric strength voltage

AC2,000V(50/60Hz) between input/output, for 1 min.

(2) / (3) / (4) Specification code

Input, output, power

DC power transducer

DWP1 – (1)　(2)　(3)　(4)　(5)

Dielectric strength voltage

AC1,500V(50/60Hz) between input/output, for 1 min.

(1) / (2) / (3) / (4) / (5) Specification code

Electric power, input 1, input 2, output, power source

2-output type

Signal transducer

W (1) P (2) – (3) (4) (5) (6)

(1)Product (kind of conversion)

Mark	Product (kind of conversion)
T	Isolator
DT	Distributor
SRDT	Square root extraction distributor

(2) Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
2	AC2,000V between input/output, for 1 min.

(3) / (4) / (5) / (6) Specification code

Input, output, power source

Sensor transducer

W (1) P (2) - (3) (4) (5) (6) (7)

(1)Product (kind of input)

Mark	Product (kind of input)
HT	Thermoelectric temperature
RHT	Resistance temperature
RT	Potentiometer

(3) / (4) / (5) / (6) / (7) Specification code

Kind of thermocouple, input, output, power source
Kind of thermal resistance, input, output, power source
Input, output, power
Input, normal operating voltage, output, power source

(2)Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
2	AC2,000V between input/output, for 1 min.

AC transducer

W (1) P (2) – (3) (4) (5) (6) (7)

(1)Product (kind of input)

Mark	Product (kind of conversion)
VET	AC voltage (RMS value)
AET	AC current (RMS value)
FT	Frequency

(2) Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
2	AC2,000V between input/output, for 1 min.

(3) / (4) / (5) / (6) / (7) Specification code

Input, rated voltage (current), output, power source

Soft spec. type

Signal transducer

C (1) P (2) – (3) (4) (5)

(1)Product (kind of conversion)

Mark	Product (kind of conversion)
ADT	Adding/subtracting
MLT	Multiplying/dividing
LT	Temperature/pressure correction
FGT	Function generating
AMT	Analog backup
VFT	Voltage pulse

(2) Dielectric strength voltage

Mark	Dielectric strength voltage (50/60Hz)
1	AC1,500V between input/output, for 1 min.

(3) / (4) / (5) Specification code

Input, output, power source

Programming unit
CCM-1

Alarm setter

(1)　　　(2)　　　105　(3)　　　(4)　(5)

(1) Scale

Mark	Scale
SD	Actual scale
SDD	Digital % scale

(2) Setting

Mark	Setting
HL	Upper/lower limit setting
HH	Upper/upper limit setting
LL	Lower/lower limit setting
H	Upper limit setting
L	Lower limit setting

(3) Option

Mark	Option
No mark	Standard
D	With contact delay circuit

(4) Input　　　(5) Control power source

Digital LCD type

SDLC – 105　　(1)　(2)

(1) Input
(2) Control power source

Deviation alarm setter

SDDV 105　　(1)　(2)

(1) Input
(2) Control power source

Pulse isolator

PPTP2　　(1)　(2)

(1) Input
(2) Control power source

Power source arrester

AR　　(1)

(1) Rated line voltage

Mark	Rated line voltage
100	AC100/110V
200	AC200/220V

DA　　1 (1)

Kind of power source rating

Mark	Power source rating
1	AC125V/DC180V
2	AC250V
3	DC30V

DA　　2 (1)

Kind of power source rating

Mark	Power source rating
1	AC125V/DC180V
2	AC250V

Signal arrester

DA　　(1)

(1) Product (kind of conversion)

Mark	Product (kind of conversion)
TP	DC4-20mA
HT	Thermocouple
RH	Thermal resistance
RT	Potentiometer
GT	Pulse

§ PLUG-IN TRANSDUCER §   *1 OUTPUT TYPE*   *SIGNAL TRANSDUCER*

ISOLATOR

TP2 - ☐ ☐ ☐ ☐

Use

 Amplifies various kinds of DC signals and converts them into a unified intersystem signal. With input and output insulated, the product offers full advantages in transmitting insulated signals between measuring systems, cutoff of noise, protecting a control circuit from a sneak current, and transmitting an output directly to a distant place.

Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.
4. With output line surge protection. (2, 000A, ±8/20µs)

TP2-C7F5
(80× 50× 121mm/300g)

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10µ A (100mV) *1	1 : DC0-100mV （ 200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100µ A (100mV)	2 : DC0-1V （ 200)	2 : AC110V±10%, 50/60Hz	Response time: 0.5sec./99%
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V （ 1k)	3 : AC200V±10%, 50/60Hz	Consumption VA:
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V （ 2k)	4 : AC220V±10%, 50/60Hz	AC power source:3VA
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V （ 1k)		DC power source:4W
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	6 : DC± 5V （ 1k)	5 : DC24V±10%	Weight:
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	7 : DC± 10V （ 2k)	6 : DC48V±10%	AC power source:700g
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10µ A (± 100mV)*1	A : DC0-1mA （ 10k)	7 : DC100V/110V (88-143V)	DC power source:300g
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100µ A (± 100mV)	B : DC0-5mA （ 2k)		
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500µ A (± 100mV)	C : DC0-10mA （ 1k)	0 : other than those above	
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	D : DC0-16mA （ 600)		
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	E : DC1-5mA （ 3k)		
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)	F : DC4-20mA （ 750)		
B6 : DC± 5V (approx.1MΩ)	00 : other than those above	0 : other than those above		
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage 15V for an input of 10µ A.

*2. Tolerance becomes ±0.5% when input voltage is less than 50mV, input current is less than 100µA.

 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. 25V occurs on the output terminal.

Option: surge absorber (5kV, 1.2/50µs positive/negative polarity)

 When an inductive lightning surge occurs from input or output side, this device absorbs the surge and protects connected equipments.

 However, the device is not necessary if the connected equipment is protected by an arrester or suchlike.
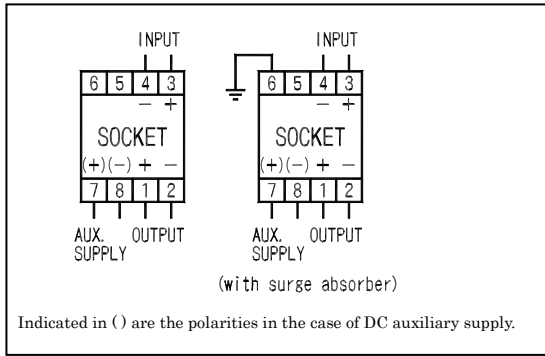
Built-in ripple filter

 Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal. Please consult with us for special wave patterns such as an inverter.
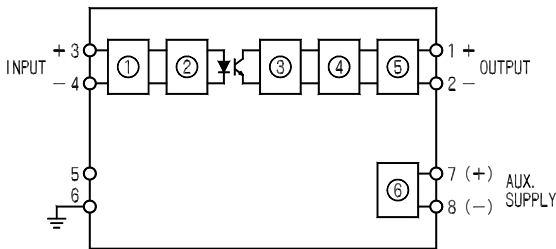
UR-1 precise resistance unit (selling separately)

 Please use a UR-1 combined with an isolator of voltage input. When changing the isolator in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Connection diagram

INPUT   INPUT

6 5 4 3   6 5 4 3
   − +   − +

SOCKET   SOCKET

(+)(−) + −   (+)(−) + −

7 8 1 2   7 8 1 2

AUX.   OUTPUT   AUX.   OUTPUT
SUPPLY   SUPPLY

(with surge absorber)

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Block diagram

INPUT   + 3   ① ② ③ ④ ⑤   1 +   OUTPUT
     − 4   2 −

5   ⑥   7 (+)   AUX.
6   8 (−)   SUPPLY

Low-drift amplifying circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Output line surge protection circuit
Insulated power source circuit

Purchase specifications

Type

TP2 - C 7 F 5 S

Input

Output

Auxiliary
supply

Surge absorber (option)
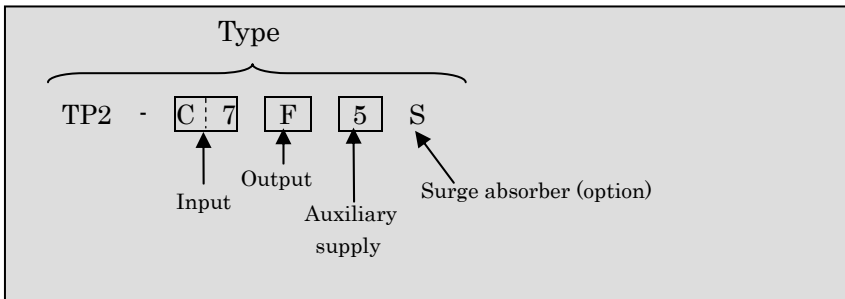
ULTRAHIGH SPEED ISOLATOR

HSTP1 - ☐ ☐☐ ☐

Use

Amplifies various kinds of DC signals and converts them into a unified intersystem signal at an ultrahigh speed. Because the device is high speed response (500μ s/90%), it can be used for insulating a feedback signal of a control circuit and so on.

Features

1. With built-in ultrahigh speed isolator.
2. Constant voltage/current output.
3. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC1, 500V (50/60Hz), complete insulation for 1 minute.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.
5. With output line surge protection. (2, 000A, ±8/20μs, positive/negative polarity)

HSTP1-C7F1
(80× 50× 121mm/400g)

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)		Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	500μ s/90%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		Consumption VA:
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	AC power source:3VA
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	6 : DC± 5V (1k)		DC power source:4W
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	7 : DC± 10V (2k)	4 : AC220V±10%, 50/60Hz	Weight:
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10μ A (± 100mV)*1	A : DC0-1mA (10k)		AC power source:400g
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100μ A (± 100mV)	B : DC0-5mA (2k)	5 : DC24V±10%	DC power source:300g
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500μ A (± 100mV)	C : DC0-10mA (1k)	6 : DC48V±10%	
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	D : DC0-16mA (600)	0 : other than	
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	E : DC1-5mA (3k)	those above	
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)	F : DC4-20mA (750)		
B6 : DC± 5V (approx.1MΩ)	00 : other than those above	0 : other than those above		
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage 15V for an input of 10μ A.

*2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μ A.
   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. 25V occurs on the output terminal.

Option: surge absorber (5kV, 1.2/50μs positive/negative polarity)

When an inductive lightning surge occurs from input or output side, this device absorbs the surge and protects connected equipments.

However, the device is not necessary if the connected equipment is protected by an arrester or suchlike.
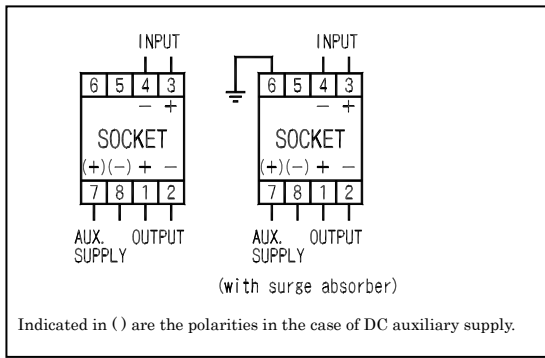
Ultrahigh speed response

Keep in mind that because this device is high speed response, its ripple-removal ability is not as high as those of other models.
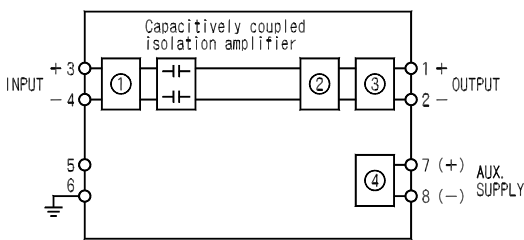
UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with an ultrahigh speed isolator of voltage input. When changing the ultrahigh speed isolator in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)
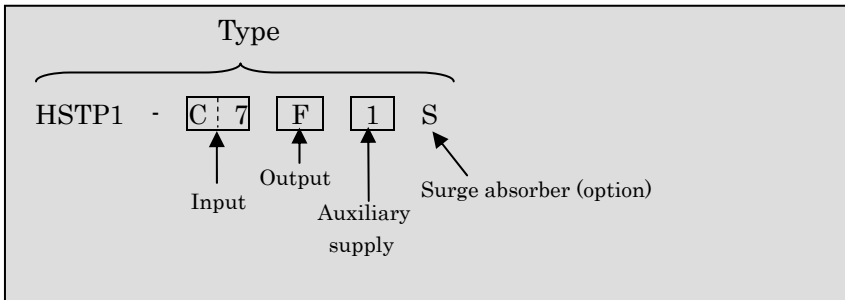
Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Block diagram

Low-drift amplifying circuit
Output circuit
Output line surge protection circuit
Insulated power source circuit

Purchase specifications

Type

HSTP1 - C 7 F 1 S

Input
Output
Auxiliary supply
Surge absorber (option)

PULSE ISOLATOR

PPTP2 - ☐☐

Use

Insulates and outputs an input pulse signal by a 2-output relay contact or an open collector.

Features

1. Withstand voltage between input, 1st output, 2nd output and power source is AC2, 000V (50/60Hz), complete insulation for 1 minute.
2. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.
3. Product with output by an open collector or a relay contact is manufacturable.

Connection diagram

Specification

Input	Mark	Output	Mark	Auxiliary supply		
No-voltage input Input conducting wire resistance 3k	2	Open connector output DC24V, 100mA	1	AC100V(-15%, +10%), 50/60Hz		
			2	AC110V(-15%, +10%), 50/60Hz		
			3	AC200V(-15%, +10%), 50/60Hz		
	3	Relay contact (2a) AC 100V 2A DC 24V 2A	4	AC220V(-15%, +10%), 50/60Hz		
			5	DC24V(-15%, +10%)		
			0	other than those above		
Maximum frequency Open collector output: 40Hz Relay contact output : 1Hz Minimum pulse width: 20ms		Response time Open collector output: 3ms Relay contact output: 10ms		Consumption VA: AC power source:2.5VA DC power source:1.5W	Weight: AC power source:500g DC power source:400g	
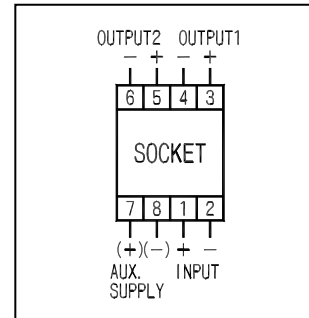
At the time of Tr. open collector output
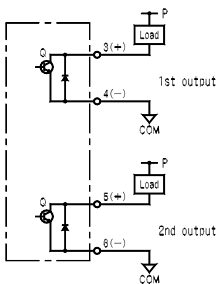
About output pulse
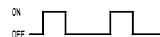
Load operates when internal transistor Q is ON.

Maximum switching capacity of internal transistor Q is DC24V, 100mA.

Do not apply a reverse polarity voltage.

At the time of relay contact output
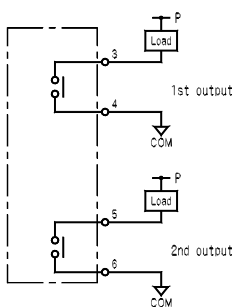
About output pulse

Load operates when contact is ON.

Relay capacity: AC 100V, 2A
                  DC 24V, 2
Mechanical life: 50,000,000 times
Electrical life: 100, 000 times (Rated load)

Block diagram

Input terminal open voltage 24V
Input terminal shot current 5mA
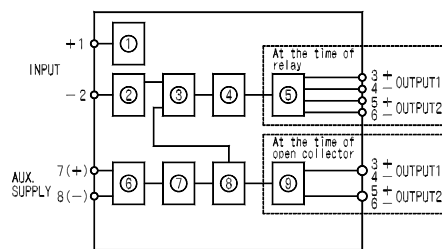
Constant current circuit   Voltage converter
Comparator   Switching circuit
Relay   Current insulating circuit
Power source circuit   Reference voltage circuit
Photo coupler

Purchase specifications

Item to specify

PPTP2 - ☐ ☐

Output   Auxiliary power

DC TRANSDUSER

TP - ☐ ┊ ☐ ☐ ☐

Use

Amplifies various kinds of DC signals and converts them into a unified intersystem signal. Can be used for unification of signals or V-I conversion in a system.
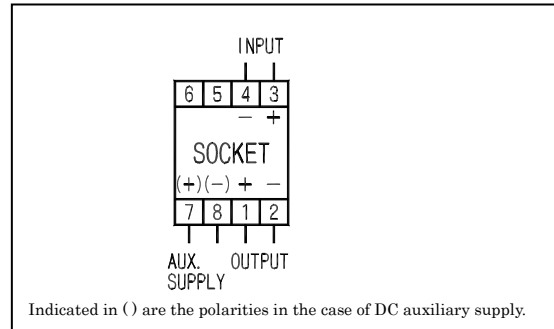
Features

1. Constant voltage/current output
2. Withstand voltage between electric circuit and outer case is AC2, 000V (50/60Hz) for 1 minute, or between input/output and auxiliary supply AC1, 500V (50/60Hz) for 1 minute. It is not insulated between input and output.
3. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

Specification

TP-C7F5

(80× 50× 121mm/250g)

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10µ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100µ A (100mV)	2 : DC0-1V (200)		
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	Response time:
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		0.5sec./99%
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	6 : DC± 5V (1k)		Consumption VA:
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	7 : DC± 10V (2k)	4 : AC220V±10%, 50/60Hz	AC power source:3VA
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10µ A (± 100mV)*1	A : DC0-1mA (10k)		DC power source:4W
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100µ A (± 100mV)	B : DC0-5mA (2k)	5 : DC24V±10%	
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500µ A (± 100mV)	C : DC0-10mA (1k)	6 : DC48V±10%	Weight:
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	D : DC0-16mA (600)	0 : other than those above	AC power source:400g
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	E : DC1-5mA (3k)		DC power source:250g
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)	F : DC4-20mA (750)		
B6 : DC± 5V (approx.1MΩ)	00 : other than those above	0 : other than those above		
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage 15V for an input of 10µ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV, input current is less than 100µA. 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. 25V occurs on the output terminal.

Built-in ripple filter

Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal. Please consult with us for special wave patterns such as an inverter.

Block diagram

Low-drift amplifying circuit
Output circuit
Insulated power source circuit

UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a DC transducer of voltage input. When changing the DC transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Purchase specifications

Item to specify

TP - C ┊ 7   F   5

Input   Output   Auxiliary supply
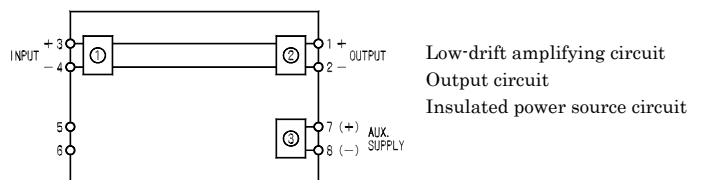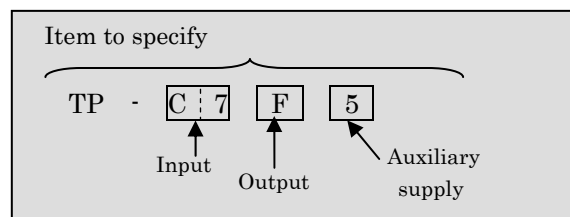
INSULATION TYPE DISTRIBUTOR

DTP2 – C 1 ☐ ☐

Use

Supplies electrical power to a 2-wire transmitter receives a DC4-20mA signal from the transmitter and outputs a proportional DC signal.
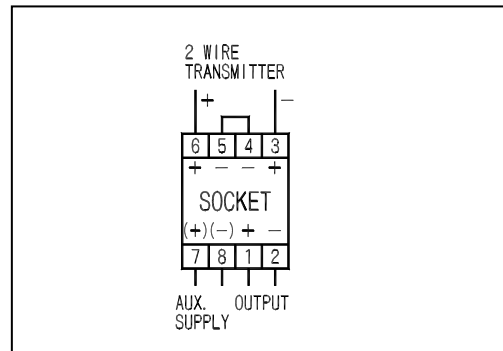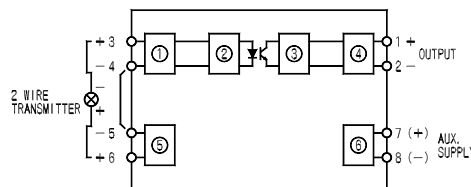
DTP2-C1F1
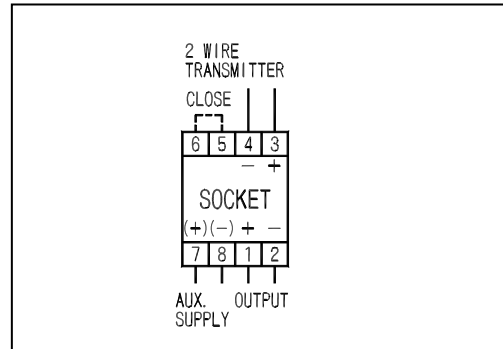(80× 50× 121mm/650g)

Features

1. Equipped with functions both of a distributor and a signal exchanger, the transducer is for a 2-wire transmitter's use.
2. Short-circuit protection function for transmitter circuit (30mA).
3. Supplies a 2-wire transmitter with a stable power source.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

Connection diagram

Specification

Input	Output (load resistance)	Auxiliary supply	Common specification
DC4-20mA (approx.100)	1 : DC0-100mV (200) 2 : DC0-1V (200) 3 : DC0-5V (1k) 4 : DC 0-10V (2k) 5 : DC1-5V (1k) A : DC0-1mA (10k) B : DC0-5mA (2k) C : DC0-10mA (1k) D : DC0-16mA (600) E : DC1-5mA (3k) F : DC4-20mA (750) 0 : other than those above	1 : AC100V±10%, 50/60Hz 2 : AC110V±10%, 50/60Hz 3 : AC200V±10%, 50/60Hz 4 : AC220V±10%, 50/60Hz 0 : other than those above DC power source is not manufacturable.	2-wire transmitter power source: DC24-28V (when there is no load) Current capacity: DC22mA MAX Tolerance: ± 0.25% Response time: 0.5sec./99% Weight: 650g Consumption VA: 5VA

Built-in ripple filter

Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal.
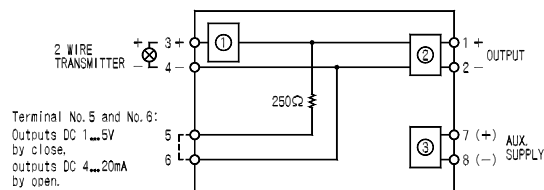
Withstand voltage

Between input/output/power source:
AC2, 000V for 1 min,
Between electric circuit and outer case:
AC2, 000V for 1 min,

Insulation resistance

Between input/output/power source:
50M (at DC500V)
Between electric circuit and outer case:
50M (at DC500V)

Block diagram

Input circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Power source circuit
Insulated power source circuit
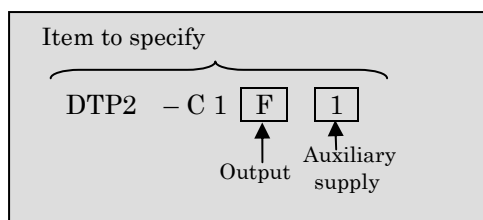
Purchase specifications

Item to specify

DTP2 – C 1 [F] [1]
Output   Auxiliary supply

DISTRIBUTOR

DTP – C 1 0 ☐

DTP-C102
(80× 50× 121mm/650g)

Use

 Supplies electrical power to a 2-wire transmitter receives a DC4-20mA signal from the transmitter and outputs a proportional DC signal.(DC1-5V)

Features

1. Supplies power to a 2-wire transmitter, receives a current output (DC4-20mA) from the transmitter and outputs a proportional DC signal (DC1-5V) by a precise resistance (250Ω)
2. Short-circuit protection function for transmitter circuit (30mA) .
3. Supplies a 2-wire transmitter with a stable power source.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case) positive/ negative polarity 3 times each is guaranteed.

Connection diagram

2 WIRE
TRANSMITTER
CLOSE

6	5	4	3

SOCKET

7	8	1	2

AUX.   OUTPUT
SUPPLY

Specification

Input (input resistance)	Output (load resistance)	Auxiliary supply	Common specification
C1 DC4-20mA (approx.250)	0 DC1-5V (250k)	1 : AC100V±10%, 50/60Hz 2 : AC110V±10%, 50/60Hz 3 : AC200V±10%, 50/60Hz 4 : AC220V±10%, 50/60Hz 0 : other than those above DC power source is not manufacturable.	Tolerance: ± 0.5% Response time: 0.5sec./99% 2-wire transmitter power source: DC24—28V (when there is no load) Current capacity: DC22mA MAX Output impedance: approx. 250Ω Allowable load resistance: 250k Weight: 650g Consumption VA: 2VA

 * There is no input/output specification for DTP. Please specify auxiliary supply only.

Built-in ripple filter

 Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal.

Withstand voltage

 Between input/output/power source:
  AC1, 500V for 1 min,
 Between electric circuit and outer case:
 AC1, 500V for 1 min,

Insulation resistance

 Between input/output/power source:
  50M   (at DC500V)
 Between electric circuit and outer case:
  50M   (at DC500V)

Block diagram

2 WIRE
TRANSMITTER

Terminal No. 5 and No. 6:
Outputs DC 1 5V
by close,
outputs DC 4 20mA
by open.

250Ω

1 + OUTPUT
2 –

7 (+) AUX.
8 (–) SUPPLY

Power shedding circuit
Output circuit
Insulated power source circuit

Purchase specifications

Item to specify

DTP – C 1 0 2

↑
Auxiliary
supply

LINEARIZER

LTP1 - ☐ ☐☐☐

LTP1-A6F5
(80× 50× 121mm/350g)
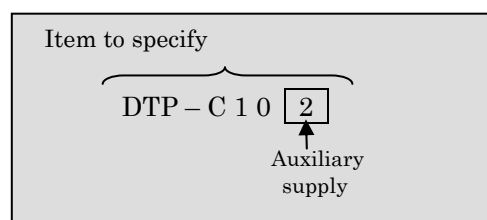
Use

Converts measurand into linear signal. Such as a differential pressure signal, a signal of weir-type flow meter or analyzer, or a signal unrelated to linearity.

Features

1. A digital linearizer that uses ADC, ROM and DAC.
2. Constant voltage/current output.
3. Withstand voltage between electric circuit and outer case is AC2, 000V (50/60Hz) for 1 minute, or between input and output is AC1, 500V (50/60Hz) for 1 minute.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)		Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	0.5sec./99%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		Resolution: 1/4000
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	Consumption VA:
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	6 : DC± 5V (1k)		AC power source:3VA
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	7 : DC± 10V (2k)	4 : AC220V±10%, 50/60Hz	DC power source:4W
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10μ A (± 100mV)*1	A : DC0-1mA (10k)		Weight:
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100μ A (± 100mV)	B : DC0-5mA (2k)	5 : DC24V±10%	AC power source:700g
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500μ A (± 100mV)	C : DC0-10mA (1k)	0 : other than	DC power source:350g
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	D : DC0-16mA (600)	those above	
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	E : DC1-5mA (3k)		
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)	F : DC4-20mA (750)		
B6 : DC± 5V (approx.1MΩ)	00 : other than those above	0 : other than those above		
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage   15V for an input of 10μ A.

*2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA.

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. 25V occurs on the output terminal.
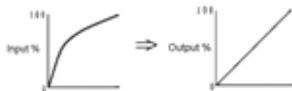
Input signal

Orifice, venturi … input
Palmer Bowrus, partial flume … (input)[a]
Triangular weir … (input)
Rectangular weir, Full Width Weir … (input)

In the case of other signal, specify operational expression or kinked point of input/output characteristics. Product shall be manufactured in accordance with specifications.
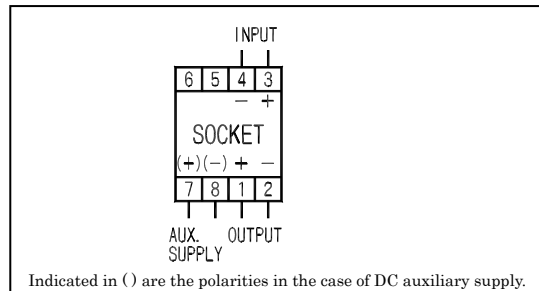

UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a linearizer of voltage input. When changing the linearizer a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)
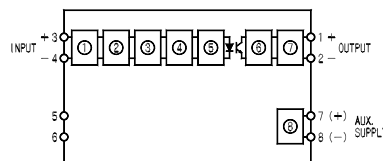
Block diagram

Low-drift amplifying circuit
AD   Memory   DA
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Power source circuit

Purchase specifications

Item to specify

Type

LTP1 - A 6 F 5

Input   Output   Auxiliary supply

Operational expression or kinked point of input/output characteristics.

SQUARE TRANSDUCER

SQTP1 - ☐ ☐ ☐

Use

Outputs a DC signal in proportion to square of various kinds of DC signals.

Features

1. Constant voltage/current output.
2. Withstand voltage between electric circuit and outer case is AC1, 500V (50/60Hz) for 1 minute, or between input and output is AC1, 500V (50/60Hz) for 1 minute.
3. Plus/minus input is not manufacturable.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

SQTP1-A8F5

(80× 50× 121mm/350g)

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ) A2 : DC0-50mV (approx.1MΩ) A3 : DC0-60mV (approx.1MΩ) A4 : DC0-100mV (approx.1MΩ) A5 : DC0-1V (approx.1MΩ) A6 : DC0-5V (approx.1MΩ) A7 : DC0-10V (approx.1MΩ) A8 : DC1-5V (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1 C2 : DC0-100μ A (100mV) C3 : DC0-1mA (approx.100Ω) C4 : DC0-5mA (approx.100Ω) C5 : DC0-10mA (approx.100Ω) C6 : DC0-16mA (approx.100Ω) C7 : DC4-20mA (approx.100Ω) 00 : other than those above	1 : DC0-100mV (200) 2 : DC0-1V (200) 3 : DC0-5V (1k) 4 : DC 0-10V (2k) 5 : DC1-5V (1k) A : DC0-1mA (10k) B : DC0-5mA (2k) C : DC0-10mA (1k) D : DC0-16mA (600) E : DC1-5mA (3k) F : DC4-20mA (750) 0 : other than those above	1 : AC100V±10%, 50/60Hz 2 : AC110V±10%, 50/60Hz 3 : AC200V±10%, 50/60Hz 4 : AC220V±10%, 50/60Hz 5 : DC24V±10% 6 : DC48V±10% 0 : other than those above	Tolerance: ± 0.25% *2 Response time: 0.5sec./99% Consumption VA: AC power source:3VA DC power source:4W Weight: AC power source:700g DC power source:350g

*1. Circuit voltage   15V for an input of 10μ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA. 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. 25V occurs on the output terminal.

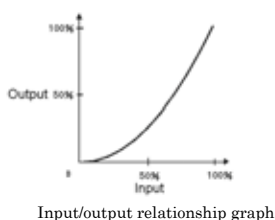### UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a square transducer of voltage input. When changing the square transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Operational expression

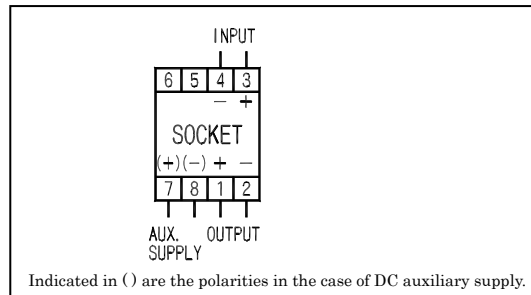Input: IB   IM
Output: OB   OM

$$O= \left(\frac{I \cdot IB}{IM \cdot IB} \right)^2 \times \quad OM \cdot OB \quad +OB$$

IB: Min. input value.
IM: Max. input value.
OB: Min. output value.
OM: Max. output value
I: Input value.
O: Output value.

Input/output relationship graph
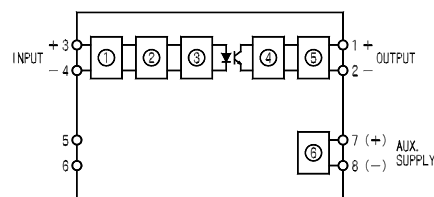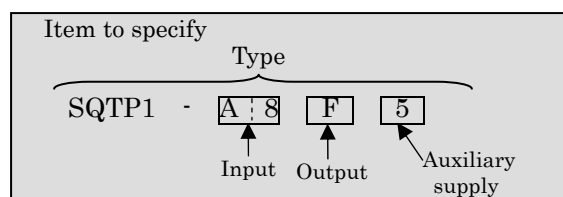
Block diagram

Input circuit
Square circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Insulated power source circuit

Purchase specifications

Item to specify

Type

SQTP1 - A 8   F   5

Input   Output   Auxiliary supply

SQUARE ROOT EXTRACTION TRANSDUCER

SRTP1 - ☐ ☐ ☐

SRTP1-C5F5

(80× 50× 121mm/350g)

Use

Outputs a DC signal in proportion to square root of various kinds of DC signals.

Features

1. Constant voltage/current output.
2. Withstand voltage between electric circuit and outer case is AC1, 500V (50/60Hz) for 1 minute, or between input and output is AC1, 500V (50/60Hz) for 1 minute.
3. Output less than or equal to 10% shall be clamped at 0%.
4. Plus/minus input is not manufacturable.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)		Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	0.5sec./99%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		Consumption VA:
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	AC power source:3VA
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	A : DC0-1mA (10k)		DC power source:4W
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)	4 : AC220V±10%, 50/60Hz	Weight:
A8 : DC1-5V (approx.1MΩ)	00 : other than those above	C : DC0-10mA (1k)		AC power source:700g
		D : DC0-16mA (600)	5 : DC24V±10%	DC power source:350g
		E : DC1-5mA (3k)	6 : DC48V±10%	
		F : DC4-20mA (750)	0 : other than those above	
		0 : other than those above		

*1. Circuit voltage 15V for an input of 10μ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA. 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. 25V occurs on the output terminal.

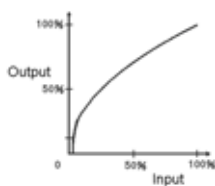### UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a square root extraction transducer of voltage input. When changing the square root extraction transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Block diagram

Input circuit
Square circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Insulated power source circuit

Operational expression

Input: IB IM
Output: OB OM

$$O = \overline{(I\text{-}IB)/(IM\text{-}IB)} \times \quad OM\text{-}OB \quad +OB$$

IB: Min. input value.
IM: Max. input value.
OB: Min. output value.
OM: Max. output value.
I: Input value.
O: Output value.

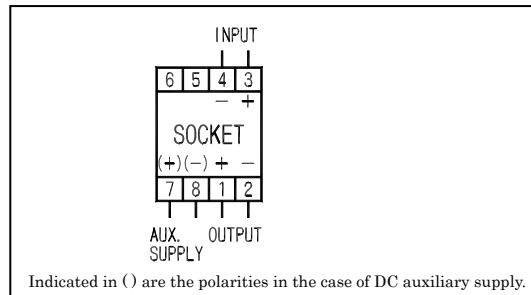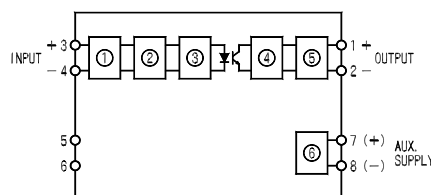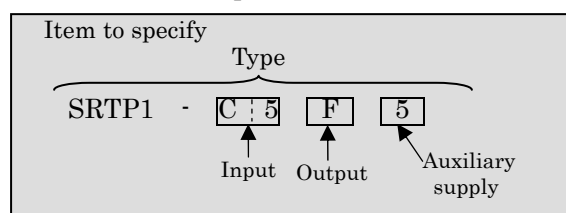Input/output relationship graph

Purchase specifications

Item to specify

Type

SRTP1 - C : 5   F   5

Input   Output   Auxiliary supply

MULTIPLYING TRANSDUCER

MTP1 - ☐ ☐☐☐

Use

Multiplies two DC signals and outputs a DC signal equivalent to the product.

Features

1. Constant voltage/current output.
2. Withstand voltage between electric circuit and outer case, and between input/output and auxiliary supply are AC1, 500V (50/60Hz) for 1 minute, or between input and output is AC1, 500V (50/60Hz) for 1 minute.
3. ⊖ of Input X and Y are conducted inside the device.
4. Plus/minus input is not manufacturable.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

MTP1-A6F5
(80× 50× 121mm/350g)

Connection diagram

```
        INPUT Y  INPUT X
        ┌─┬─┬─┬─┐
        │6│5│4│3│
        └─┴─┴─┴─┘
         - + - +
        ┌─────────┐
        │ SOCKET  │
        └─────────┘
        (+)(-) + -
        ┌─┬─┬─┬─┐
        │7│8│1│2│
        └─┴─┴─┴─┘
      AUX.    OUTPUT
      SUPPLY
```

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)		Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	0.5sec./99%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		Consumption VA:
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	AC power source:4VA
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	A : DC0-1mA (10k)		DC power source:4W
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)	4 : AC220V±10%, 50/60Hz	Weight:
A8 : DC1-5V (approx.1MΩ)	00 : other than those above	C : DC0-10mA (1k)		AC power source:700g
		D : DC0-16mA (600)	5 : DC24V±10%	DC power source:350g
		E : DC1-5mA (3k)	6 : DC48V±10%	
		F : DC4-20mA (750)	0 : other than those above	
		0 : other than those above		

*1. Circuit voltage   15V for an input of 10μ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA. 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. 25V occurs on the output terminal. *3. Please specify the identical input X and Y.
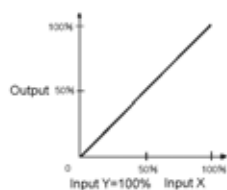
UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a multiplying transducer of voltage input. When changing the multiplying transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Operational expression

Input: IB   IM
Output: OB   OM

$$O=(\frac{XI\text{-}IB}{IM\text{-}IB})\times\ (\frac{YI\text{-}IB}{IM\text{-}IB})\ \times\ \ OM\text{-}OB\ \ +OB$$

IB: Min. input value.
IM: Max. input value.
OB: Min. output value.
OM: Max. output value.
 I: Input value.
 O: Output value.

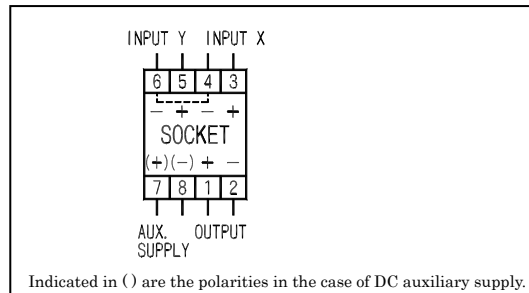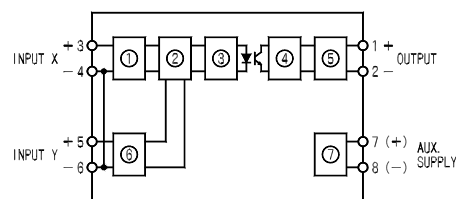Input/output relationship graph

Block diagram

X input circuit
Multiplying circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Y input circuit
Insulated power source circuit

Purchase specifications

Item to specify

Type

MTP1 - [A 6] [F] [5]
         Input Output Auxiliary supply

DIVIDING TRANSDUCER

DITP1 - ☐ ☐ ☐ ☐

Use

Divides two DC signals and outputs a DC signal equivalent to the product.
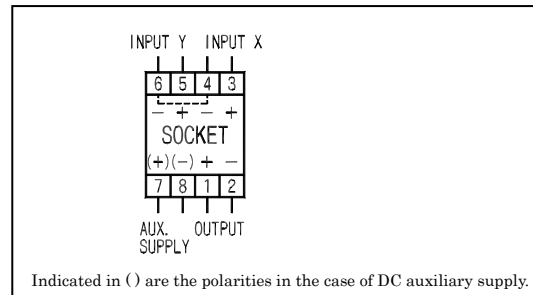
Features

1. Constant voltage/current output.
2. Withstand voltage between electric circuit and outer case, and between input/output and auxiliary supply are AC1, 500V (50/60Hz) for 1 minute, or between input and output is AC1, 500V (50/60Hz) for 1 minute.
3. There is no regulation when input Y is less than or equal to 20%.
4. ⊖ of Input X and Y are conducted inside the device.
5. Plus/minus input is not manufacturable.
6. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

DITP1-C7F5
(80× 50× 121mm/350g)

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)	2 : AC110V±10%, 50/60Hz	Response time: 0.5sec./99%
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	3 : AC200V±10%, 50/60Hz	Consumption VA:
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)	4 : AC220V±10%, 50/60Hz	AC power source:4VA
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	5 : DC24V±10%	DC power source:4W
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	A : DC0-1mA (10k)	6 : DC48V±10%	Weight:
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)	0 : other than those above	AC power source:700g
A8 : DC1-5V (approx.1MΩ)	00 : other than those above	C : DC0-10mA (1k)		DC power source:350g
		D : DC0-16mA (600)		
		E : DC1-5mA (3k)		
		F : DC4-20mA (750)		
		0 : other than those above		

*1. Circuit voltage   15V for an input of 10μ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA. 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. 25V occurs on the output terminal. *3. Please specify the identical input X and Y.

### UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a dividing transducer of voltage input. When changing the dividing transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Operational expression
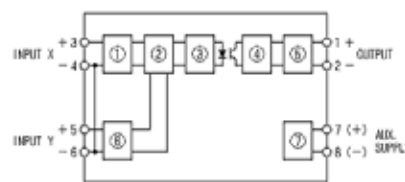
Input: IB IM
Output: OB OM

$$O = (\frac{XI\text{-}IB}{IM\text{-}IB}) / (\frac{YI\text{-}IB}{IM\text{-}IB}) \times \quad OM\text{-}OB \quad +OB$$

IB: Min. input value.
IM: Max. input value.
OB: Min. output value.
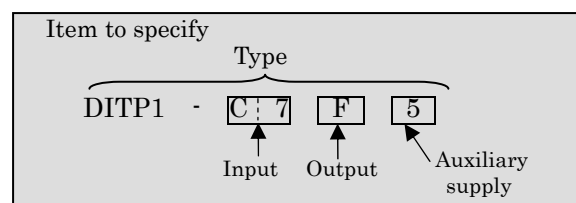OM: Max. output value.
XI: Input X
YI: Input Y
O: Output value.
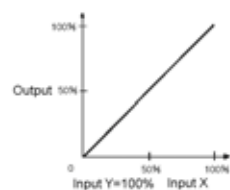
Input/output relationship graph

Block diagram

X input circuit
Dividing circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Y input circuit
Insulated power source circuit

Purchase specifications

Item to specify

Type

DITP1 - C 7 F 5

Input   Output   Auxiliary supply

ANALOG LIMITER

ALTP - ☐ ☐ ☐ ☐

Use

By setting upper/lower limit for various kinds of DC input signals, this device prevents output from exceeding the preset value. The device outputs a DC signal which is proportional to input within the preset value.
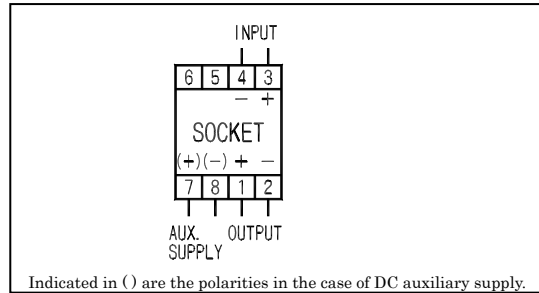
Features

1. Constant voltage/current output.
2. Volume setting is possible by front check terminal.
3. Withstand voltage between electric circuit and outer case is AC2, 000V (50/60Hz) for 1 minute, or between input/output and auxiliary supply is AC1, 500V (50/60Hz) for 1 minute. Non-insulated between input and output.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

ALTP-C7F5
(80× 50× 121mm/450g)

Connection diagram

INPUT
6 5 4 3
SOCKET
(+)(−) + −
7 8 1 2
AUX. SUPPLY   OUTPUT

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)		Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	0.5sec./99%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		Consumption VA:
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	AC power source:3VA
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	A : DC0-1mA (10k)		DC power source:4W
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)	4 : AC220V±10%, 50/60Hz	Weight:
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10μ A (± 100mV)*1	C : DC0-10mA(1k)		AC power source:450g
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100μ A (± 100mV)	D : DC0-16mA(600)	5 : DC24V±10%	DC power source:300g
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500μ A (± 100mV)	E : DC1-5mA (3k)	0 : other than those above	
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	F : DC4-20mA (750)		
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	0 : other than those above		
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)			
B6 : DC± 5V (approx.1MΩ)	00 : other than those above			
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage   15V for an input of 10μ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA. 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. 25V occurs on the output terminal.

### UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with an analog limiter of voltage input. When changing the analog limiter a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Block diagram

INPUT + 3 ① ② ③ ④ 1 + OUTPUT
− 4 2 −
5
6 ⑤ 7 (+) AUX.
8 (−) SUPPLY

Input circuit
Lower limit setting circuit
Upper limit setting circuit
Output circuit
Insulated power source

Limit setting method

Connect the measuring instrument to the front check terminal. (Upper limit: H-COM, Lower limit: L-COM), then convert output DC 0-10V into 0-100%, and set the upper/lower limit by volumes (ADJ) respectively. (Setting range is -5-+105% respectively).
Initial setting: upper limit 80%, lower limit 20%.

Purchase specifications

Item to specify
Type
ALTP - C 7 F 5
Input Output Auxiliary supply
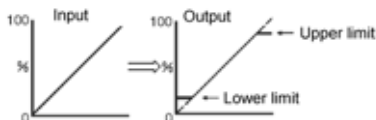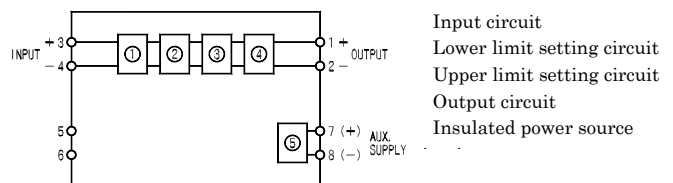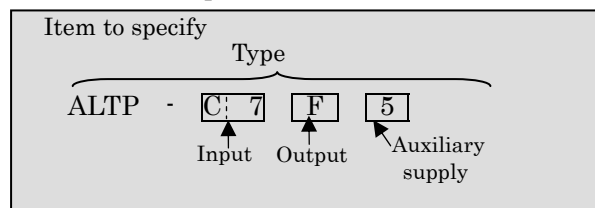
ADDING TRANSDUCER

ADTP1 - ☐ ☐ ☐ ☐

Use

Adds two DC signals and outputs a DC signal equivalent to the sum.

Features

1. Constant voltage/current output.
2. Withstand voltage between input/output and auxiliary supply, and between input and output are AC1, 500V (50/60Hz) for 1 minute, or between electric circuit and outer case is AC2, 000V (50/60Hz) for 1 minute.
3. ⊖ of Input 1 and 2 are conducted inside the device.
4. Plus/minus input is manufacturable.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

ADTP1-C7F5
(80× 50× 121mm/350g)

Connection diagram

```
        INPUT2 INPUT1
       ┌───┬───┬───┬───┐
       │ 6 │ 5 │ 4 │ 3 │
       │ ─   +   ─   + │
       │    SOCKET     │
       │(+)(─)  +   ─  │
       │ 7 │ 8 │ 1 │ 2 │
       └───┴───┴───┴───┘
        AUX.     OUTPUT
       SUPPLY
```

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.500Ω)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.2.5kΩ)	C2 : DC0-100μ A (100Ω)	2 : DC0-1V (200)		Response time:
A3 : DC0-60mV (approx.3kΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	0.1sec./99%
A4 : DC0-100mV (approx.5kΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		Consumption VA:
A5 : DC0-1V (approx.50kΩ)	C5 : DC0-16mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	AC power source:4VA
A6 : DC0-5V (approx.50kΩ)	C6 : DC0-20mA (approx.100Ω)	A : DC0-1mA (10k)		DC power source:4W
A7 : DC0-10V (approx.50kΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)	4 : AC220V±10%, 50/60Hz	Weight:
A8 : DC1-5V (approx.50kΩ)	00 : other than those above	C : DC0-10mA (1k)		AC power source:500g
		D : DC0-16mA (600)	5 : DC24V±10%	DC power source:350g
		E : DC1-5mA (3k)	6 : DC48V±10%	
		F : DC4-20mA (750)	0 : other than those above	
		0 : other than those above		

*1. Circuit voltage 15V for an input of 10μ A. *2. Tolerance becomes ±0.5% when input voltage is less than 50mV; input current is less than 100μA. 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. 25V occurs on the output terminal.

*3. Please specify the identical input 1 and 2. Even if the input circuit is broken as 4-20mA input or 1-5V input becomes 0mA (0V), it is processed a signal as 4mA (1V) input equivalency.

Item to be specified

(1)Addition ratio standard 1: 1= 2
Example: electric power
      Input 1 (1kW) 5V
      Input 2 (1kW) 5V
      Output (2kW) 5V
(2) Addition ratio special 1: 1= 1
      Input 1 (1kW) 5V
      Input 2 (1kW) 5V
      Output (1kW) 5V
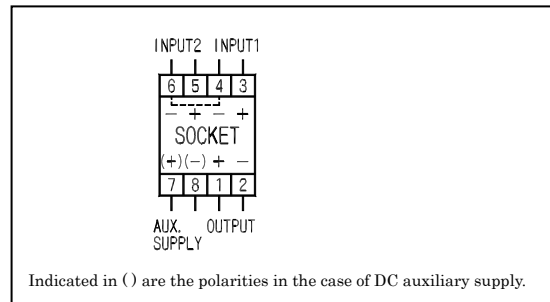However, the 5V output saturates at about 150% (7.5V).
(3) Addition ratio special 1: 2 = 3
      Input 1 (1kW) 5V
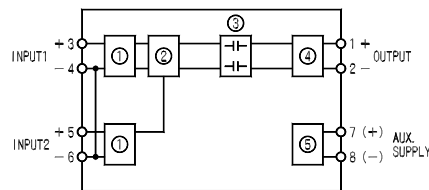   Input 2 (2kW) 5V
      Output (3kW) 5V

Block diagram

```
            ③
INPUT1 +3 ┌──┬──┬─┤├─┬──┐ 1 +
       -4 │① │② │ │├ │④ │ 2 - OUTPUT
          │  │  │    │  │
INPUT2 +5 │①│       │⑤ │ 7 (+) AUX.
       -6 └──┘       └──┘ 8 (─) SUPPLY
```
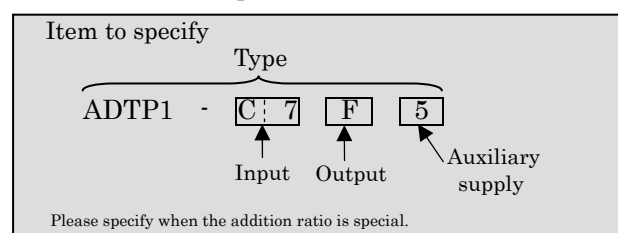
Input circuit
Adding circuit
Capacitively coupled isolation amplifier
Output circuit
Insulated power source circuit

Purchase specifications

Item to specify
Type

ADTP1 - [C 7] [F] [5]
           ↑   ↑   ↑
     Input Output Auxiliary supply

Please specify when the addition ratio is special.

CONSTANT RESPONSE

CRTP -☐☐☐☐

CRTP-C6F5

(80× 50× 121mm/450g)

Use

Against various kinds of DC input signals which are taking a sudden change, this converter provides a DC output changing at a preset constant speed.

Features

1. Time is settable from front.
2. Constant voltage/current output.
3. Withstand voltage between electric circuit and outer case is AC2, 000V (50/60Hz) for 1 minute, or between input/output and auxiliary supply is AC1, 500V (50/60Hz) for 1 minute. Non-insulated between input and output.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.5% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)		Consumption VA:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%, 50/60Hz	AC power source:3VA
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)		DC power source:4W
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%, 50/60Hz	Weight:
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	A : DC0-1mA (10k)		AC power source:450g
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)	4 : AC220V±10%, 50/60Hz	DC power source:300g
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10μ A (± 100mV)*1	C : DC0-10mA (1k)		
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100μ A (± 100mV)	D : DC0-16mA (600)	5 : DC24V±10%	
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500μ A (± 100mV)	E : DC1-5mA (3k)	0 : other than those above	
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	F : DC4-20mA (750)		
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	0 : other than those above		
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)			
B6 : DC± 5V (approx.1MΩ)	00 : other than those above			
B7 : DC± 10V (approx.1MΩ)				

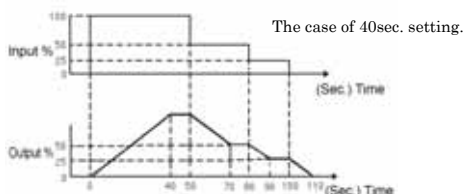*1. Circuit voltage 15V for an input of 10μ A.

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. 25V occurs on the output terminal.

UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with a constant response of voltage input. When changing the constant response a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)
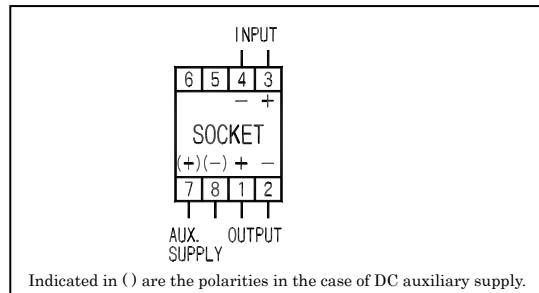
Response speed

Range of response time is 0.5-40 sec. (when changing input from 0 to 100%). Set it with the front volume.
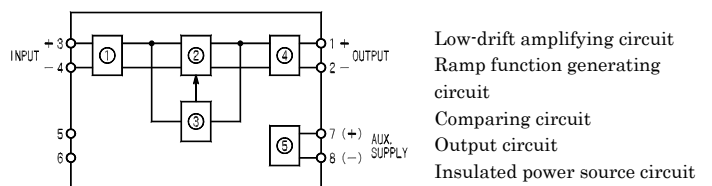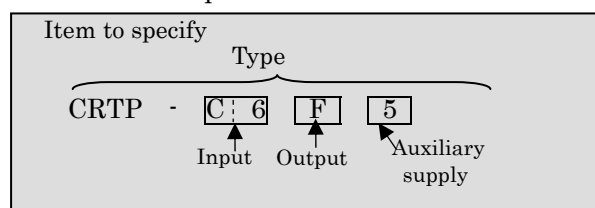

The case of 40sec. setting.

Block diagram

Low-drift amplifying circuit
Ramp function generating circuit
Comparing circuit
Output circuit
Insulated power source circuit

Purchase specifications

Item to specify

Type

CRTP - C 6 F 5

Input   Output   Auxiliary supply

ANALOG MEMORY

AMTP - ☐ ☐ ☐ ☐

AMTP-C7F5
(80× 50× 121mm/650g)

Use

Amplifies various kinds of DC signals and converts them into a unified intersystem signal. By ON OFF operation between HOLD terminals, the device can hold the output at that time on a permanent basis.

Features

1. Constant voltage/current output.
2. Withstand voltage between electric circuit and outer case is AC2, 000V (50/60Hz) for 1 minute, or between input/output and auxiliary supply is AC1, 500V (50/60Hz) for 1 minute. Non-insulated between input and output.
3. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10µ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.5% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100µ A (100mV)	2 : DC0-1V (200)	2 : AC110V±10%, 50/60Hz	Response time: 0.5sec./99%
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	3 : AC200V±10%, 50/60Hz	Consumption VA:
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)	4 : AC220V±10%, 50/60Hz	AC power source:3VA
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	5 : DC24V±10%	DC power source:4W
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	A : DC0-1mA (10k)	0 : other than those above	Weight:
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	B : DC0-5mA (2k)		AC power source:650g
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10µ A (± 100mV)*1	C : DC0-10mA (1k)		DC power source:300g
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100µ A (± 100mV)	D : DC0-16mA (600)		
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500µ A (± 100mV)	E : DC1-5mA (3k)		
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	F : DC4-20mA (750)		
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	0 : other than those above		
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)			
B6 : DC± 5V (approx.1MΩ)	00 : other than those above			
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage 15V for an input of 10µ A.

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. 25V occurs on the output terminal.
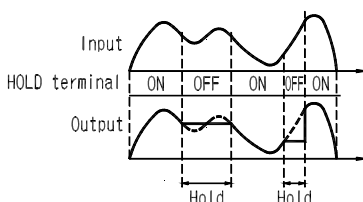
UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with an analog memory of voltage input. When changing the analog memory a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)

Block diagram

Input circuit
Counter
DA converter
Output circuit
Comparator
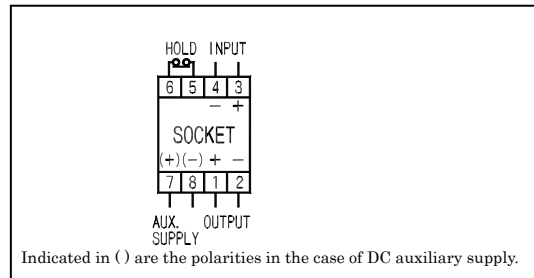Insulated power source circuit

Limit setting method

Output becomes corresponding to input by turning HOLD terminal 5-6 ON, and it becomes HOLD output when HOLD terminal is turned OFF.

Use a no-voltage contact input for input of HOLD terminal. Also, output becomes indefinite if reset power source in memory state.
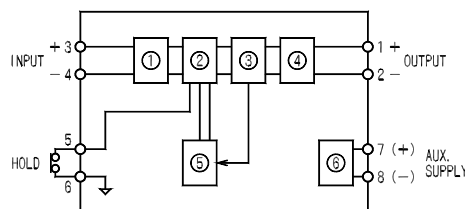

Purchase specifications

Item to specify

Type

AMTP - C 7 F 5

↑ Input   ↑ Output   ↑ Auxiliary supply

ISOLATOR WITH LOWER LIMITER

TP2 - ☐☐☐☐ L

TP2-C7F5L
(80× 50× 123mm/300g)
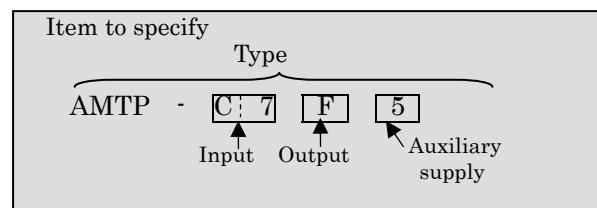
Use

 A transducer which has a lower limit limiter (fixed) function included in output which is proportional to input.

Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Input/output line surge protection (2,000A, 8/20μs, positive/negative polarity)
4. Lower limit limiter function.
   Output less than -1% against output 0—100% is not available.
   Consult us for a limiter value equal to or less than -1%.

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC0-100mV (200)	1 : AC100V±10%,	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC0-1V (200)	50/60Hz	Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC0-5V (1k)	2 : AC110V±10%,	0.5sec./99%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC 0-10V (2k)	50/60Hz	Consumption VA:
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC1-5V (1k)	3 : AC200V±10%,	AC power source:3VA
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	6 : DC± 5V (1k)	50/60Hz	DC power source:3.5W
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	7 : DC± 10V (2k)	4 : AC220V±10%,	Weight:
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10μ A (± 100mV)*1	A : DC0-1mA (10k)	50/60Hz	AC power source:400g
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100μ A (± 100mV)	B : DC0-5mA (2k)	5 : DC24V±10%	DC power source:300g
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500μ A (± 100mV)	C : DC0-10mA (1k)		
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	D : DC0-16mA (600)	0 : other than	
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	E : DC1-5mA (3k)	those above	
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)	F : DC4-20mA (750)		
B6 : DC± 5V (approx.1MΩ)	00 : other than those above	0 : other than those above		
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage   15V for an input of 10μ A.

*2. Tolerance becomes ±0.5% when input voltage is less than 50mV, input current is less than 100μA.
   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. 25V occurs on the output terminal.

Impulse withstand voltage

 Impulse withstands voltage between electric circuit and outer case (earth) 5kV, 1.2/50μs, and positive/negative polarity 3 times each is guaranteed.

Option: surge absorber (5kV, 1.2/50μs positive/negative polarity 3 times each.)

 When an inductive lightning surge occurs from input or output side, this device absorbs the surge and protects connected equipments.

 However, the device is not necessary if the connected equipment is protected by an arrester or suchlike.
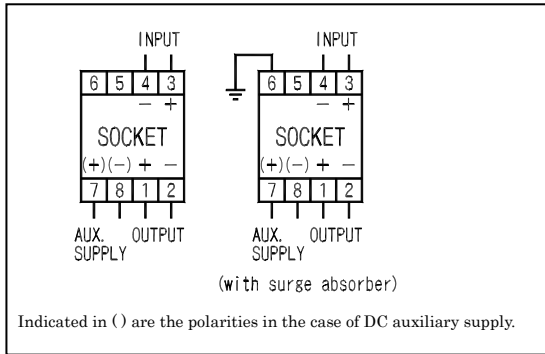
Built-in ripple filter

 Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal. Please consult with us for special wave patterns such as an inverter.
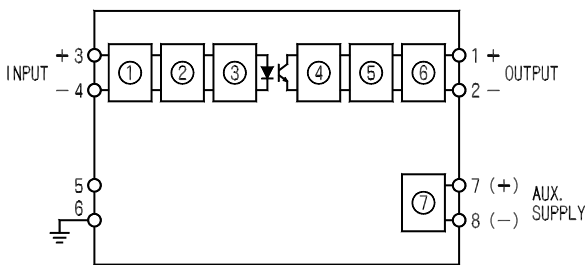
UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with an insulated transducer of voltage input. When changing the insulated transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)
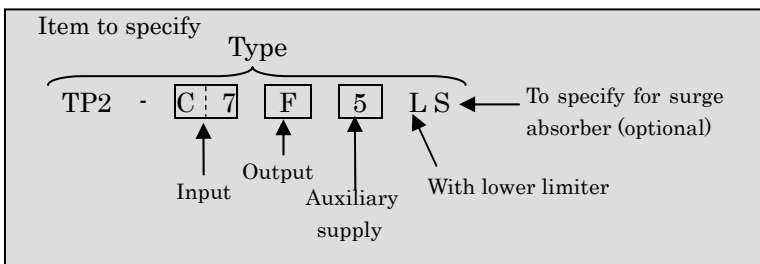
Connection diagram

INPUT   INPUT

| 6 | 5 | 4 | 3 | | 6 | 5 | 4 | 3 |
| | | − | + | | | | − | + |

SOCKET   SOCKET

(+)(−) + −   (+)(−) + −

| 7 | 8 | 1 | 2 | | 7 | 8 | 1 | 2 |

AUX.   OUTPUT   AUX.   OUTPUT
SUPPLY   SUPPLY

(with surge absorber)

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Block diagram

INPUT +3 ─ ① ② ③ ④ ⑤ ⑥ ─ 1 + OUTPUT
      −4   2 −

5
6

⑦ 7 (+) AUX.
   8 (−) SUPPLY

Low-drift amplifying circuit
Low limit circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Output line surge protection circuit
Insulated power source circuit

Purchase specifications

Item to specify

Type

TP2 - C 7 F 5 L S ← To specify for surge absorber (optional)

Input   Output   Auxiliary supply   With lower limiter

REVERSE ISOLATOR

RVTP2 - ☐☐☐☐

Use

Converts and outputs various kinds of DC input and output signals into reverse relationship.

Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Input/output line surge protection (2,000A, 8/20μs, positive/negative polarity)

RVTP2-C7F5
(80× 50× 123mm/300g)

Specification

Input (input resistance or voltage drop)		Output (load resistance)	Auxiliary supply	Common specification
A1 : DC0-10mV (approx.1MΩ)	C1 : DC0-10μ A (100mV) *1	1 : DC100-0mV (200)	1 : AC100V±10%,	Tolerance: ± 0.25% *2
A2 : DC0-50mV (approx.1MΩ)	C2 : DC0-100μ A (100mV)	2 : DC1-0V (200)	50/60Hz	Response time:
A3 : DC0-60mV (approx.1MΩ)	C3 : DC0-1mA (approx.100Ω)	3 : DC5-0V (1k)	2 : AC110V±10%,	0.5sec./99%
A4 : DC0-100mV (approx.1MΩ)	C4 : DC0-5mA (approx.100Ω)	4 : DC10-0V (2k)	50/60Hz	Consumption VA:
A5 : DC0-1V (approx.1MΩ)	C5 : DC0-10mA (approx.100Ω)	5 : DC5-1V (1k)	3 : AC200V±10%,	AC power source:3VA
A6 : DC0-5V (approx.1MΩ)	C6 : DC0-16mA (approx.100Ω)	6 : DC± 5V (1k)	50/60Hz	DC power source:3.5W
A7 : DC0-10V (approx.1MΩ)	C7 : DC4-20mA (approx.100Ω)	7 : DC± 10V (2k)	4 : AC220V±10%,	Weight:
A8 : DC1-5V (approx.1MΩ)	D1 : DC± 10μ A (± 100mV)*1	A : DC1-0mA (10k)	50/60Hz	AC power source:400g
B1 : DC± 10mV (approx.1MΩ)	D2 : DC± 100μ A (± 100mV)	B : DC5-0mA (2k)	5 : DC24V±10%	DC power source:300g
B2 : DC± 50mV (approx.1MΩ)	D3 : DC± 500μ A (± 100mV)	C : DC10-0mA (1k)	0 : other than	
B3 : DC± 60mV (approx.1MΩ)	D4 : DC± 1mA (approx.100Ω)	D : DC16-0mA (600)	those above	
B4 : DC± 100mV (approx.1MΩ)	D5 : DC± 5mA (approx.100Ω)	E : DC5-1mA (3k)		
B5 : DC± 1V (approx.1MΩ)	D6 : DC± 10mA (approx.100Ω)	F : DC20-4mA (750)		
B6 : DC± 5V (approx.1MΩ)	00 : other than those above	0 : other than those above		
B7 : DC± 10V (approx.1MΩ)				

*1. Circuit voltage   15V for an input of 10μ A.

*2. Tolerance becomes ±0.5% when input voltage is less than 50mV, input current is less than 100μA.

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. 25V occurs on the output terminal.

Impulse withstand voltage

Impulse withstands voltage between electric circuit and outer case (earth) 5kV, 1.2/50μs, and positive/negative polarity 3 times each is guaranteed.

Option: surge absorber (5kV, 1.2/50μs positive/negative polarity 3 times each.)

When an inductive lightning surge occurs from input or output side, this device absorbs the surge and protects connected equipments.

However, the device is not necessary if the connected equipment is protected by an arrester or suchlike.
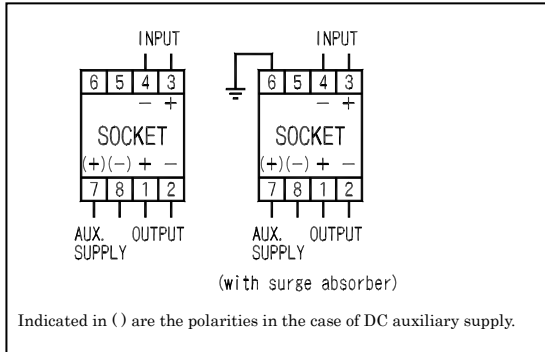
Built-in ripple filter

Even if a ripple of single-phase AC full rectification wave (50/60Hz) degree is included in input wave, it still converts the wave into a smoothed DC signal. Please consult with us for special wave patterns such as an inverter.
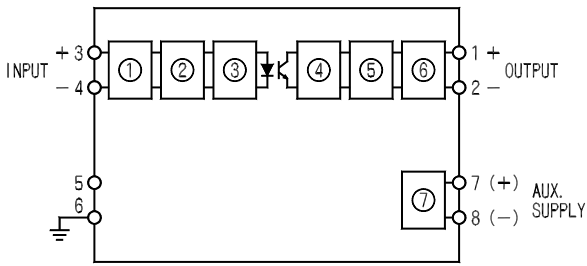
UR-1 precise resistance unit (selling separately)

Please use a UR-1 combined with an insulated transducer of voltage input. When changing the insulated transducer in a hot line state at the time of current input, if measures against open are necessary, connect UR-1 to socket and convert it into a voltage signal before using it. (UR-1, the resistance specified)
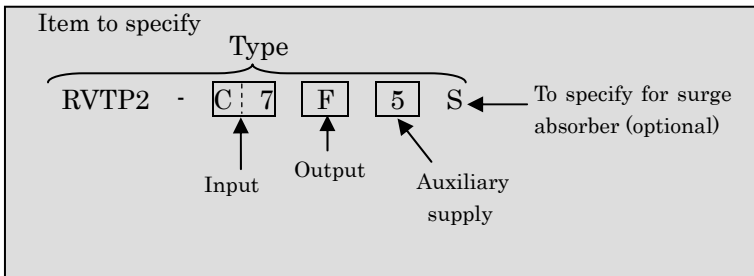
Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Block diagram

Low-drift amplifying circuit
Low limit circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Output line surge protection circuit
Insulated power source circuit

Purchase specifications

RVTP2 - C 7 F 5 S ← To specify for surge absorber (optional)

Input   Output   Auxiliary supply

ANALOG PULSE TRANSDUCER

VFTP2 – ☐☐☐

VFTP2 -915
(80× 50× 133mm/400g)

Use

Inputs a DC signal of electric power or a current transducer, and converts the signal into a pulse of proportional frequency.

Features

1. Either one of open collector output, voltage output and contact output is selectable as output signal method. In addition, in the case of AC auxiliary supply and open collector output, product equipped with a power source for external relay's (DC24V, 40mA MAX) is manufacturable.
2. Function of cutting output against low input 1-10%.
3. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth) positive/ negative polarity 3 times each is guaranteed.

Specification

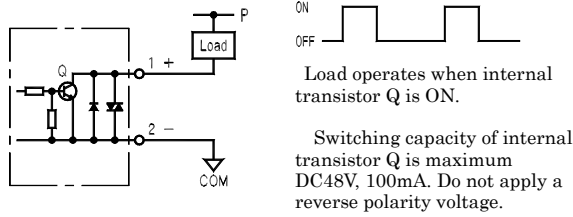| Kind of input (input resistance)	Output signal method	Auxiliary supply	Common specification
1 : 0-1V　(approx.1MΩ) 2 : 0-5V　(approx.1MΩ) 3 : 0-10V　(approx.1MΩ) 4 : 1-5V　(approx.1MΩ) 5 : 0-1mA　(approx.100Ω) 6 : 0-5mA　(approx.100Ω) 7 : 0-10mA　(approx.100Ω) 8 : 0-16mA　(approx.100Ω) 9 : 4-20mA　(approx.100Ω) 0 : other than those above	1 : Voltage pulse 　10Vp (load 2k) 2 : Tr. open collector(O.C.) 　DC48V, 100mA 3 : 1a contact (non-voltage contact) 　DC30V,2A 4 : With power source for external relay. 　Tr. open collector(O.C.) 　DC24V, 40mA MAX, in the case of AC 　auxiliary supply only,	1 : AC100V+10%, -15% 　50/60Hz 2 : AC110V+10%, -15% 　50/60Hz 3 : AC200V+10%, -15% 　50/60Hz 4 : AC220V+10%, -15% 　50/60Hz 5 : DC24V+10%, -15% 6 : DC48V+10%, -15% 0 : other than those 　above	Tolerance: ± 0.25% Response time: $100ms + \dfrac{1}{Output\ frequency}$ Consumption VA: AC power source:2.5VA DC power source:3W With power source for external relay AC power source:3.5VA Weight:　AC power source:500g 　　　　DC power source:400g

Output pulse number

F.S output of transistor open collector output, voltage pulse output is 0.004306-277.8pps; F.S output of 1a contact output, transistor open collector output with power source for external relay is 0.00001667-1.000pps.
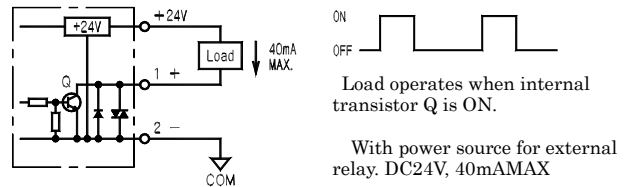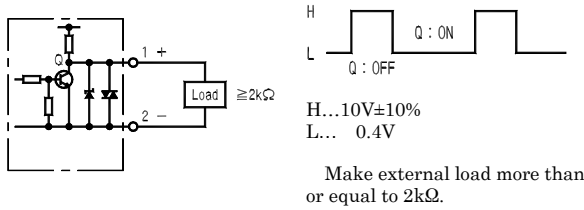
Output pulse width

F.S. Output　5pps	F. S. Output　5pps
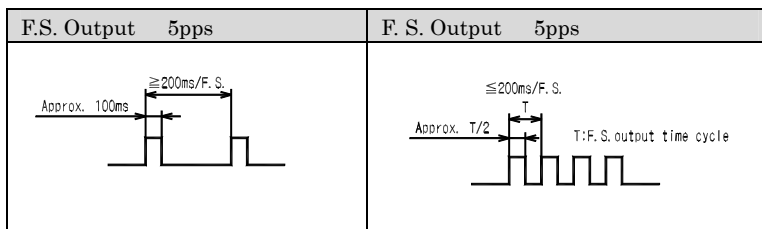
Block diagram according to output

At the time of Tr. open collector output

ON / OFF

Load operates when internal transistor Q is ON.

Switching capacity of internal transistor Q is maximum DC48V, 100mA. Do not apply a reverse polarity voltage.

At the time of Tr. open collector output with power supply for external relay.

ON / OFF

Load operates when internal transistor Q is ON.

With power source for external relay. DC24V, 40mAMAX

At the time of voltage pulse output

H   Q : ON
L   Q : OFF

H...10V±10%
L... 0.4V

Make external load more than or equal to 2kΩ.

At the time of 1a contact output

ON / OFF

Load operates when contact is ON.

Contact capacity
AC120V, 1A (load resistance)
DC30V, 2A (Resistance load)
Electrical life: 500,000 times.
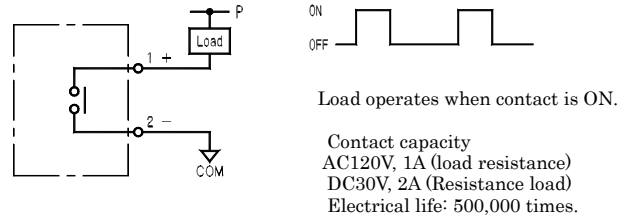
Block diagram of front panel
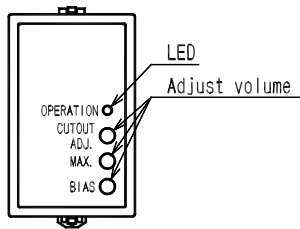
Output cut against low input
Adjusts output to zero with CUTOUT ADJ/VR against 1-10% of rated input.

OPERATION LED
LED turns off during output cut against low input. LED turns on during pulse output. (Green)
It turns on when there is an input which value is greater than low input cut value.

Connection diagram
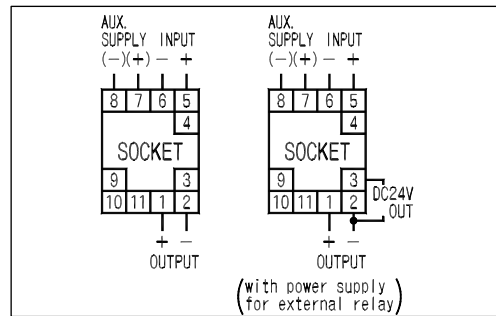
Block diagram
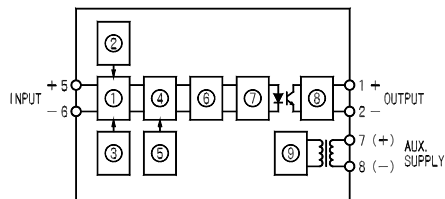
Scaling
External span VR
External bias VR
VIF conversion
Cutout ADJ.
2n frequency dividing
Pulse width
Output circuit
Power source

Purchase specifications

Item to specify   Type

VFTP2 – 9   1   5

Input   Output signal method   Auxiliary supply

Number of output pulse in pps
Cut value for low input (1-10%)
It shall be 1% if not being specified.
Please specify output pulse number by 4 effective digits.
For example: 0.2778pps in the case of 0.27777…pps

ULTRASLOW PULSE TRANSDUCER

UGTP2 - ☐☐☐

Use

Converts an input into a DC signal in proportion to input pulse number, and outputs it. Input signal method is selectable from open collector, voltage pulse and 1a contact.
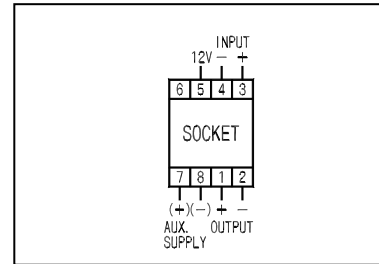
Features

1. High accuracy transducer with tolerance of ± 0.25%
2. Security design to have withstood voltage AC2, 000V between input, output and power source.
3. Function of slowing down output when input pulse stops.
4. Function of cutting low input frequency. (If cut value is not specified, it does cut when input frequency is equal to or less than 0.5% and returns at 1 %.)
5. By sufficient derating of parts used and reduction of internal heat generation, a long product life is guaranteed.
6. Product with a selector to switch an output between DC4-20mA/DC1-5V is manufacturable.

UGTP2-1F1

(80× 50× 123mm/500g)

Connection diagram

Specification

Input signal method	Output (load resistance)	Auxiliary supply	Common specification
1 : Open collector 　DC12V, 30mA	1 : DC0-100mV　(　200　) 2 : DC0-1V　　(　200　) 3 : DC0-5V　　(　1k　) 4 : DC 0-10V　(　2k　)	1 : AC100V (+10%, -15%) 50/60Hz 2 : AC110V (+10%, -15%) 50/60Hz 3 : AC200V (+10%, -15%) 50/60Hz 4 : AC220V (+10%, -15%) 50/60Hz	Tolerance: ± 0.25% Sensor power: DC12V±10%, 30mA Consumption VA:
2 : Voltage pulse 　50Vp (　12k　)	5 : DC1-5V　　(　1k　) A : DC0-1mA　(　12k　)	5 : DC24V (+10%, -15%) 0 : other than those above	AC power source:2.5VA DC power source:3.0W
3 : Non-voltage contact 　DC12V, 30mA	B : DC0-5mA　(　2.4k　) C : DC0-10mA　(　1.2k　)		Weight: AC power source:500g
0 : other than those above	D : DC0-16mA　(　750　) E : DC1-5mA　　(　3k　) F : DC4-20mA　(　750　) H : DC4-20mA　(　800　) 　DC1-5V　(　250k　) SW switching 0 : other than those above		DC power source:400g

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. 31V occurs on the output terminal.

Block diagram
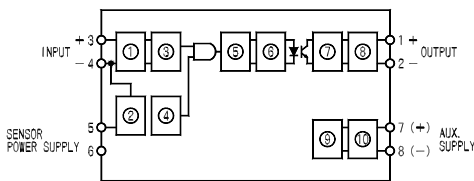
Input circuit

Constant voltage circuit

Input pulse width fixation circuit

Reference block

Pulse counter

CPU operational circuit

Pulse width demodulation

Output part

Power source circuit

Insulation transformer

Common specification

Range of input pulse number: minimum range 0-0.01pps, maximum range 0-50pps.

Input pulse width: 30-80% of duty ratio of rated input frequency.

Open collector input

Detection level:　ON　200

　　　　　　　　OFF　100k

Voltage input

Detection level: H level 5-50V

　　　　　　　　L level 0-2V

No-voltage 1a contact input

Detection level:　ON　200

　　　　　　　　OFF　100k

Purchase specifications

Item to specify	Type
	UGTP2 - [1] [F] [1]

Number of output pulse in pps
Cut value for low input (1-10%)
It shall be 1% if not being specified.
(cut when lower than or equal to 0.5%, returns at 1%)

Input signal method / Output / Auxiliary supply

PULSE RATE TRANSDUCER

PRTP2 - ☐☐☐

Use

Converts a pulse signal into another one with dividing the former one by n. Input is selectable from open collector, voltage pulse, 1a contact, output is selectable from open collector, voltage pulse, 1a contact and photo MOS relay.
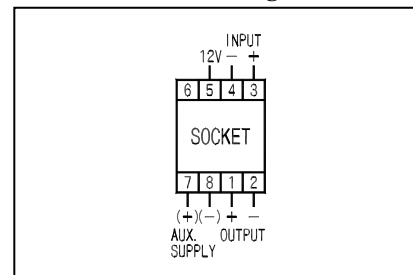
Features

1. Security design to have withstood voltage AC2, 000V between input, output and power source.
2. A sensor power source DC12V, 30mA as standard equipment.
3. Input within frequency 0.01—1kHz can be applied commonly.
4. Abundant specifications to have input selectable from voltage pulse, open collector no-voltage contact and output selectable from voltage pulse, open collector, 1a contact and photo MOS relay.
5. By sufficient derating of parts used and reduction of internal heat generation, a long product life is guaranteed.

PRTP2-141
(80× 50× 123mm/500g)

Connection diagram

Specification

Input signal method	Output (load resistance)	Auxiliary supply	Common specification
1 : Open collector DC12V, 30mA 2 : Voltage pulse 50Vp (approx.12k) 3 : Non-voltage contact DC12V, 30mA 0 : other than those above	1 : Voltage pulse 10Vp (2k) 2 : Open collector DC48V, 100mA MAX. 3 : No-voltage 1a contact (1Hz) DC30V, 200mA 5,000,000 times (resistance load) AC125V, 200mA 2,000,000 times (COSφ=1) 4 : Photo MOS relay AC/DC125V, 70mA MAX. (resistance load) 5 : other than those above	1 : AC100V (+10%, -15%) 50/60Hz 2 : AC110V (+10%, -15%) 50/60Hz 3 : AC200V (+10%, -15%) 50/60Hz 4 : AC220V (+10%, -15%) 50/60Hz 5 : DC24V (+10%, -15%) 0 : other than those above	Sensor power: DC12V±10%, 30mA Consumption VA: AC power source:3.0VA DC power source:3.5VA Weight: AC power source:500g DC power source:400g

Block diagram
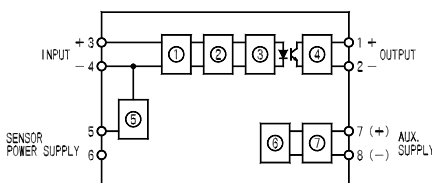
Input circuit
Input pulse width fixation circuit
CPU operational circuit
Output part
Constant voltage circuit
power source circuit
Insulation transformer

Common specification

Input frequency range: minimum range 0-0.01Hz, maximum range 0-1kHz
Input pulse width: 30-80% of duty rate of rated input frequency (1/frequency)
Frequency dividing ratio (integer): 1-10^5

Open collector input
Detection level: ON   200
           OFF   100k

Voltage input
Detection level: H level   5-50V
           L level   0-2V

No-voltage 1a contact input
Detection level::   ON   200
            OFF   100k

Purchase specifications

Item to specify	Type
	PRTP2 - [1] [4] [1] Input signal method Output Auxiliary supply

Frequency dividing ratio (integer)
Specify output pulse width within 0.5-300ms (±20%)
*Output3 :50-300ms

THERMOELECTRIC TEMPERATURE TRANSDUCER

HTP1 - ☐ ☐ ☐ ☐

HTP1-K8F5
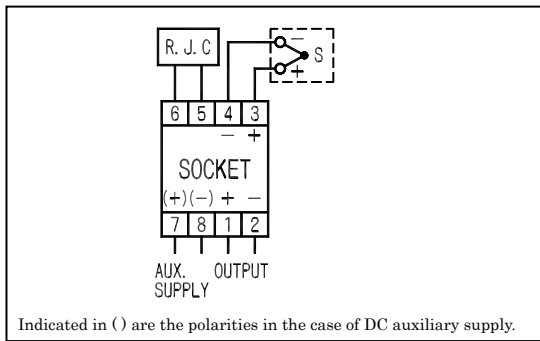(103(w/R.J.C)×50×121mm/350g)

■ Use

By inputting thermal electromotive forces of various kinds of thermocouples based on the JIS, the device insulates and converts thermal electromotive force into an output proportional to temperature.

■ Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC1, 500V (50/60Hz), complete insulation for 1 minute.
3. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.
4. With output line surge protection (2,000A, 8/20μs, positive/negative polarity), can transmit an output directly to a distant place.

■ Connection diagram

```
      ┌─────┐      ┌ ─ ─ ─ ┐
      │R.J.C│──────┤  ⊸  S │
      └─────┘      │   +   │
                   └ ─ ─ ─ ┘
      ┌──┬──┬──┬──┐
      │ 6│ 5│ 4│ 3│
      └──┴──┴──┴──┘
          SOCKET
      (+)(−) + −
      ┌──┬──┬──┬──┐
      │ 7│ 8│ 1│ 2│
      └──┴──┴──┴──┘
      AUX.       OUTPUT
      SUPPLY
```

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

■ Specification

Kind of thermocouple	Standard input range	Input	Output (load resistance)	Auxiliary supply	Common specification
B	7 - 9	1 : 0-200℃	1 : DC0-100mV (≧200Ω)	1 : AC100V±10%, 50/60Hz	Tolerance: ±0.5% *2
R	7 - 9	2 : 0-300℃	2 : DC0-1V (≧200Ω)	2 : AC110V±10%, 50/60Hz	Response time:
S	7 - 9	3 : 0-400℃	3 : DC0-5V (≧1kΩ)	3 : AC200V±10%, 50/60Hz	≦1sec./99%
		4 : 0-500℃	4 : DC 0-10V (≧2kΩ)	4 : AC220V±10%, 50/60Hz	Consumption VA:
K	2 - 8	5 : 0-600℃	5 : DC1-5V (≧1kΩ)	5 : DC24V±10%	AC power source:3VA
		6 : 0-800℃	A : DC0-1mA (≦10kΩ)	6 : DC48V±10%	DC power source:4W
E	1 - 5	7 : 0-1000℃	B : DC0-5mA (≦2kΩ)	0 : other than those above	Weight:
		8 : 0-1200℃	C : DC0-10mA (≦1kΩ)		AC power source:700g
J	1 - 5	9 : 0-1400℃	D : DC0-16mA (≦600Ω)		DC power source:350g
		0 : other than those above	E : DC1-5mA (≦3kΩ)		
T	1 - 2		F : DC4-20mA (≦750Ω)		
			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. 25V occurs on the output terminal.
●Please consult with us for N thermocouple.

●**Built-in linearizer**

  Thermal electromotive force of a thermocouple is not proportional to temperature. Thermal electromotive force is converted into an output proportional to temperature by a linearizer.

●**Built-in burnout**

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

●**Cold junction compensation**

  In principle, a thermocouple generates a thermal electromotive force equivalent to V (T1℃) −V (T2℃) as the Vin.

  A sensor for compensation compensates for a thermal electromotive force equivalent to V (T2℃)

  In the case of cold junction compensation, the sensor for compensation is connected to terminal part (5・6), and it compensates for temperature of terminal (5・6) as temperature of input terminal (3・4).

●**Compensating wire**

  A compensating wire compensates for the temperature difference between thermocouple terminals and transducer terminals. Because color (material) of compensating wire varies according to thermocouple type, choose a compensating wire compatible with thermocouple. Match positive/negative polarities when connecting.
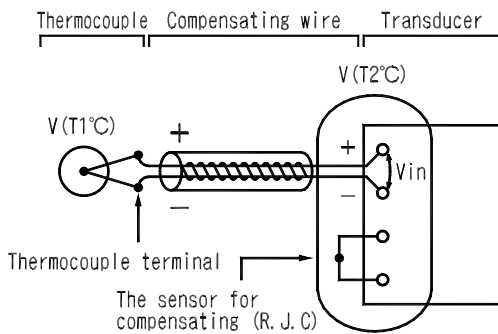
●**External resistance range**

  External resistance range is the resistance value of a reciprocating circuit. The reciprocating circuit consists of thermocouple, compensating wire and connecting wire connected to a transducer. Use the product within an external resistance range less than or equal to 25Ω.

●**Input wiring**

  Because a signal of input wiring is very weak, try to make the wirings away from noise sources such as an electrical power line, a precipitous voltage or a line with current fluctuation.

■　**Purchase specification**

●Item to specify
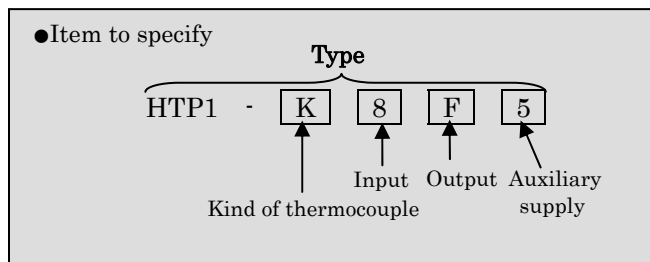
RESISTANCE TEMPERATURE TRANSDUCER

RHTP2 - ☐☐ ┆ ☐ ☐ ☐

■ Use

By inputting resistance value of a 3-wire thermal resistance based on the JIS, this device insulates and converts the resistance value into a DC signal proportional to temperature.
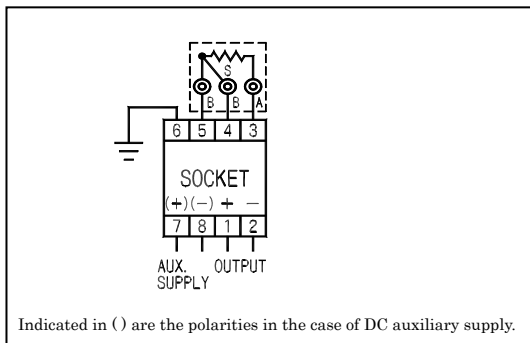
RHTP2-1A7A1
(80×50×121mm/450g)

■ Features

1. Constant voltage/current output.
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth), and positive/negative polarity 3 times each is guaranteed.
4. With output line surge protection. (2, 000A, 8/20μs, positive/negative polarity)，can transmit an output directly to a distant place.

■ Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

■ Specification

Kind of thermal resistance	Temperature span (specified current)	Input *		Output (load resistance)	Auxiliary supply	Common specification
1 : Pt, 100Ω at 0℃	≧50℃ (2mA)	A1 : 0-50℃	C5 : -20-100℃	1 : DC0-100mV (≧200Ω)	1 : AC100V±10%, 50/60Hz	Tolerance: ±0.5% Response time:
2 : Pt, 50Ω at 0℃	≧100℃ (2mA)	A2 : 0-60℃	C6 : -20-120℃	2 : DC0-1V (≧200Ω)	2 : AC110V±10%, 50/60Hz	≦1sec./99% Consumption VA:
3 : other than those above		A3 : 0-80℃	D1 : -30-50℃	3 : DC0-5V (≧1kΩ)	3 : AC200V±10%, 50/60Hz	AC power source:3VA DC power source:4W
Ni is manufacturable. Cu is not manufacturable.		A4 : 0-100℃	D2 : -30-60℃	4 : DC 0-10V (≧2kΩ)	4 : AC220V±10%, 50/60Hz	Weight: AC power source:450g
		A5 : 0-120℃	D3 : -30-80℃	5 : DC1-5V (≧1kΩ)	5 : DC24V±10%	DC power source:300g
		A6 : 0-150℃	E1 : -50-50℃	A : DC0-1mA (≦10kΩ)	6 : DC48V±10%	
		A7 : 0-200℃	E2 : -50-60℃	B : DC0-5mA (≦2kΩ)	0 : other than those above	
		A8 : 0-300℃	E3 : -50-80℃	C : DC0-10mA (≦1kΩ)		
		B1 : -10-40℃	E4 : -50-100℃	D : DC0-16mA (≦600Ω)		
		B2 : -10-50℃	E5 : -50-120℃	E : DC1-5mA (≦3kΩ)		
		B3 : -10-60℃	E6 : -50-150℃	F : DC4-20mA (≦750Ω)		
		C1 : -20-40℃	F1 : -70-30℃	0 : other than those above		
		C2 : -20-50℃	F2 : -70-80℃			
		C3 : -20-60℃	G1 : -100-100℃			
		C4 : -20-80℃	00 : other than those above			

*Operating temperature range of thermal resistance is -200＋650℃.

●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. 25V occurs on the output terminal.

●Built-in linearizer

Resistance value of a thermal resistance is not proportional to temperature. It is converted into an output proportional to temperature by a linearizer.

●Built-in burnout

Detects disconnection of a thermal resistance and does scale-out of output to positive (+) side.

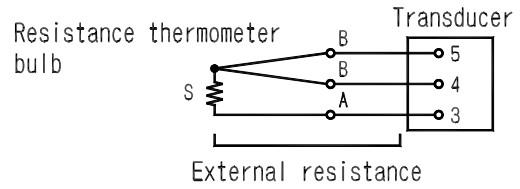Scale-out to negative side is also manufacturable if specified.

●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.
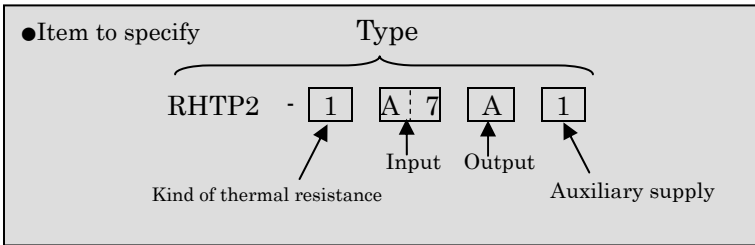
Standard specified current is 2mA.

■ Purchase specifications

●Item to specify   Type

RHTP2 - 1 A 7 A 1

Kind of thermal resistance

Input   Output

Auxiliary supply

●Compensating wire

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

Resistance thermometer bulb

Transducer

External resistance

Thermal resistance	External resistance	
	Input span ≧100℃	50℃≦Input span < 100℃
Pt 100Ω	≦10Ω/line	≦5Ω/line
Pt 50Ω	≦5Ω/line	≦2.5Ω/line

POTENTIOMETER TRANSDUCER

RTP2 - ☐☐☐

RTP2-ZF2
(80×50×121mm/450g)

■ Use

Replaces the input of mechanical displacement of an angle or a position with resistance value change, then insulates and converts it into a proportional DC signal.
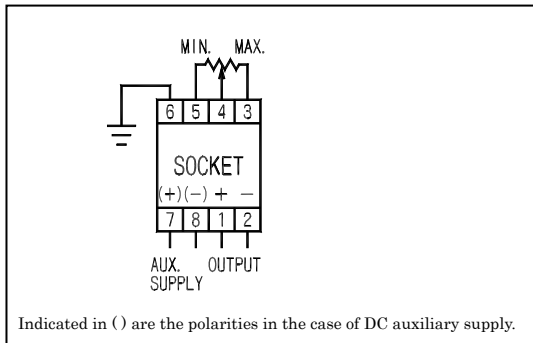
■ Features

1. Constant voltage/current output.
2. Can cope with resistance range 100Ω-10kΩ of a potentiometer. (RTP2-Z type)
3. Withstand voltage between input, output, auxiliary supply and earth is AC2,000V (50/60Hz), complete insulation for 1 minute.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/negative polarity 3 times each is guaranteed.
5. With output line surge protection. (2,000A, 8/20μs, positive/negative polarity), can transmit an output directly to a distant place.

■ Connection diagram

```
        MIN.  MAX.
          \/\/\
     ┌──┬──┬──┬──┐
  ⏚  │ 6│ 5│ 4│ 3│
     ├──┴──┴──┴──┤
     │  SOCKET   │
     │(+)(−) +  −│
     ├──┬──┬──┬──┤
     │ 7│ 8│ 1│ 2│
     └──┴──┴──┴──┘
      AUX.   OUTPUT
     SUPPLY
```

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

■ Specification

Normal total resistance	Input (specified current)	External resistance	Output (load resistance)	Auxiliary supply	Common specification
50Ω *1	A :0-50Ω(5mA)	≦5Ω/1line	1 : DC0-100mV (≧200Ω)	1 : AC100V±10%, 50/60Hz	Tolerance: ±0.5%
80Ω *1	B :0-80Ω(5mA)	≦8Ω/1line	2 : DC0-1V (≧200Ω)		Response time:
100Ω *1	Z :100Ω-10kΩ		3 : DC0-5V (≧1kΩ)	2 : AC110V±10%, 50/60Hz	≦1sec./99%
135Ω *1	Any potentiometer of range 100Ω-10kΩ can be used under the following adjustment range.	−	4 : DC 0-10V (≧2kΩ)	3 : AC200V±10%, 50/60Hz	Consumption VA:
200Ω *1			5 : DC1-5V (≧1kΩ)		AC power source:3.5VA
400Ω *1	0 :other than those above	−	A : DC0-1mA (≦10kΩ)	4 : AC220V±10%, 50/60Hz	DC power source:4W
500Ω *1			B : DC0-5mA (≦2kΩ)		Weight:
1kΩ *1			C : DC0-10mA (≦1kΩ)	5 : DC24V±10%	AC power source:450g
2kΩ *1			D : DC0-16mA (≦600Ω)	6 : DC48V±10%	DC power source:300g
3kΩ *1			E : DC1-5mA (≦3kΩ)	0 : other than those above	
5kΩ *1			F : DC4-20mA (≦750Ω)		
10kΩ *1			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. 25V occurs on the output terminal.

*1.Variable range of BIAS MAX for the following potentiometers are assumed to be ±15%:
50Ω, 80Ω,100Ω, 200Ω, 400Ω,500Ω, 1kΩ, 2kΩ,3kΩ, 5kΩ, 10kΩ.

●Adjustment range of output signal

Specify the actual use range and the normal resistance value of a potentiometer in the case of use range other than those above.

Input form BIAS adjustment range: 0-50% of input span
Z   (can be changed from the front of converter.)
           MAX adjustment range: 50-100% of input span
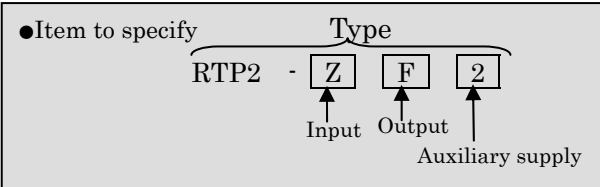   (can be changed from the front of converter.)

Input method
Z
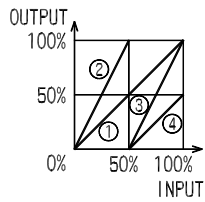
Input method
A.B.O
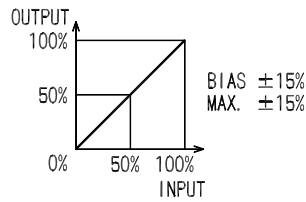
①BIAS……0%, MAX.……100% Standard
②BIAS……0%, MAX.……50%
③BIAS……50%, MAX.……50% (parallel shift of ②)
④BIAS……50%, MAX.……100% (parallel shift of ①)
*Being within 0-50% of input value is sufficient for adjusting the output value to 0%.

■ Purchase specifications

```
●Item to specify          Type
                 RTP2 - Z  F  2
                         |  |  |
                     Input Output |
                            Auxiliary supply
```

■ Block diagram (RTP2-Z type) Those other than Z type are of constant current method.
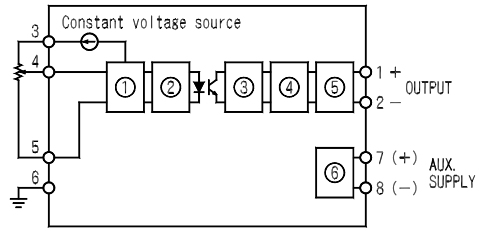
①Low-drift voltage amplifying circuit
②Pulse width modulation circuit
③Pulse width demodulation circuit
④Output circuit
⑤Output line surge protection circuit
⑥Insulated power source circuit

●Because this device is potential-free type, product is shipped in input of 0-10kΩ/output of graph ① (standard) above.
  Notes: this device can not be used with a 2-wire potentiometer.

REVOLUTION－SPEED TRANSDUSER

GTP2 - ☐☐☐☐

FREQUENCY PROPORTION TYPE

GTP2-H4F5
(80×50×121mm/450g)

■ Use

Inputs from a tacho-generator installed on a dynamo or suchlike, and convert the input into a DC signal in proportion to the number of revolutions (frequency).
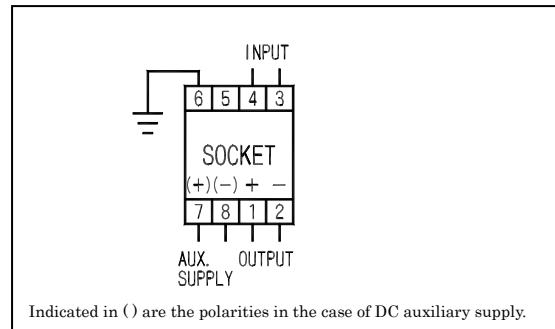
■ Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
4. With output line surge protection. (2, 000A, 8/20μs, positive/negative polarity)，can transmit an output directly to a distant place.

■ Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

■ Specification

Kind of input	Response (99%)	Normal operating voltage range (input resistance)	Output	Auxiliary supply	Common specification
A :0-33.3Hz	≦2sec.	1 : 1-25V (approx.25kΩ)	1 : DC0-100mV (≧200Ω)	1 : AC100V±10%, 50/60Hz	Tolerance: ±0.5%
B :0-40Hz		2 : 2-50V (approx.50kΩ)	2 : DC0-1V (≧200Ω)		Consumption VA:
C :0-50Hz	≦1.5sec.	3 : 5-110V (approx.110kΩ)	3 : DC0-5V (≧1kΩ)	2 : AC110V±10%, 50/60Hz	AC power source:1.5VA
D :0-55Hz		4 : 10-220V (approx.220kΩ)	4 : DC 0-10V (≧2kΩ)		DC power source:3W
E :0-60Hz		0 : other than those above	5 : DC1-5V (≧1kΩ)	3 : AC200V±10%, 50/60Hz	Weight:
F :0-65Hz			A : DC0-1mA (≦10kΩ)		AC power source:800g
G :0-66.6Hz	≦1sec.		B : DC0-5mA (≦2kΩ)	4 : AC220V±10%, 50/60Hz	DC power source:450g
H :0-100Hz			C : DC0-10mA (≦1kΩ)		
I :0-120Hz			D : DC0-16mA (≦600Ω)	5 : DC24V±10%	
J :0-166.6Hz			E : DC1-5mA (≦3kΩ)	6 : DC48V±10%	
K :0-200Hz	≦0.5sec.		F : DC4-20mA (≦750Ω)	0 : other than those above	
L :0-333.3Hz			0 : other than those above		
M :0-500Hz					
N :0-1kHz					
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. 25V occurs on the output terminal.

●Cutoff power (dead band voltage)

At the time of zero revolution or a whit input, to prevent malfunction in normal mode caused by an induced voltage, it makes output equivalent to zero revolution as cutoff voltage when input is less than or equal to half of the minimum normal operating voltage. Specify the cutoff voltage if the induced voltage exceeds it, please.

●In the case of a special input waveform

Because this device does detection by a zero-cross point, use GVTP2 for a special input waveform such as an inverter.

■ Purchase specifications

●Item to specify   Type

GTP2 - H 4 F 5

Input
Normal operating voltage
Output
Auxiliary supply
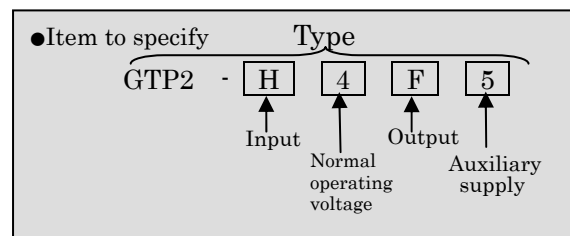
REVOLUTION－SPEED TRANSDUSER

GVTP2 - □□□□

AC VOLTAGE PROPORTION TYPE

■ Use

 Inputs from a tacho-generator installed on a dynamo or suchlike, and convert the input into a DC signal in proportion to the number of revolutions (AC voltage).

■ Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
4. With output line surge protection. (2, 000A, 8/20µs, positive/negative polarity)，can transmit an output directly to a distant place.

GVTP2-H0F5
(80×50×121mm/350g)

■ Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

■ Specification

Kind of frequency	Response (99%)	Input voltage	Output	Auxiliary supply	Common specification
A :0-33.3Hz	≦2sec.	1 : 0-25V	1 : DC0-100mV (≧200Ω)	1 : AC100V±10%, 50/60Hz	Tolerance: ±0.5%
B :0-40Hz		2 : 0-50V	2 : DC0-1V (≧200Ω)	2 : AC110V±10%, 50/60Hz	Consumption VA:
C :0-50Hz		3 : 0-100V	3 : DC0-5V (≧1kΩ)	3 : AC200V±10%, 50/60Hz	Input: 1.5VA
D :0-55Hz	≦1.5sec.	4 : 0-120V	4 : DC 0-10V (≧2kΩ)	4 : AC220V±10%, 50/60Hz	AC power source:3VA
E :0-60Hz		5 : 0-35V	5 : DC1-5V (≧1kΩ)	5 : DC24V±10%	DC power source:4W
F :0-65Hz		0 : other than those above	A : DC0-1mA (≦10kΩ)	6 : DC48V±10%	Weight:
G :0-66.6Hz		Voltage signal:	B : DC0-5mA (≦2kΩ)	0 : other than those above	AC power source:450g
H :0-100Hz	≦1sec.		C : DC0-10mA (≦1kΩ)		DC power source:350g
I :0-120Hz		10V≦ Input span ≦300V	D : DC0-16mA (≦600Ω)		
J :0-166.6Hz			E : DC1-5mA (≦3kΩ)		
K :0-200Hz			F : DC4-20mA (≦750Ω)		
L :0-333.3Hz	≦0.5sec.		0 : other than those above		
M :0-500Hz					
N :0-1kHz					
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. 25V occurs on the output terminal.
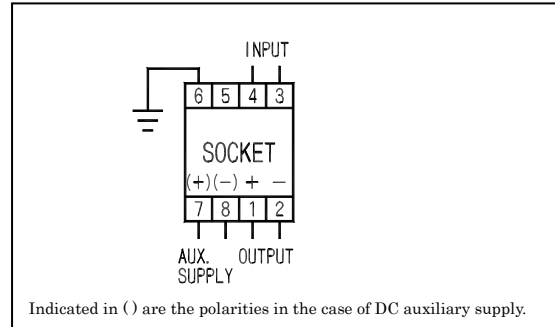
●Input range

 Specify input voltage ranging from AC0-10V to AC0-300V, and frequency listed in the table above (kind of input).
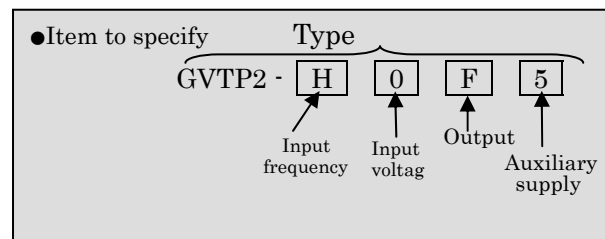
■ Purchase specifications

●Item to specify   Type

GVTP2 - | H | 0 | F | 5 |

Input frequency   Input voltag   Output   Auxiliary supply

SELSYN TRANSDUSER

STP1 - ☐☐☐

■ Use

It replaces displacement of a revolution angle or a position of a selsyn communicator by DC signal of fine linearity.
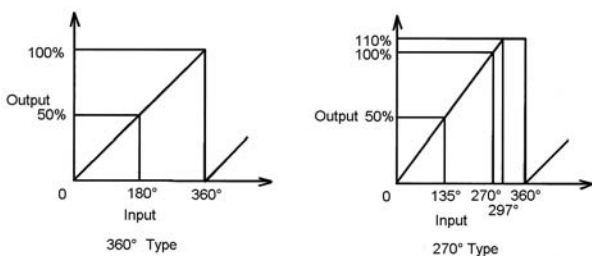
STP1-151
(80×50×121mm/500g)

■ Features

1. Constant voltage/current output
2. Withstand voltage between electric circuit and outer case; and between input, output, auxiliary supply is AC2, 000V (50/60Hz), or AC1, 500V (50/60Hz) for 1 minute between input and output.
3. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
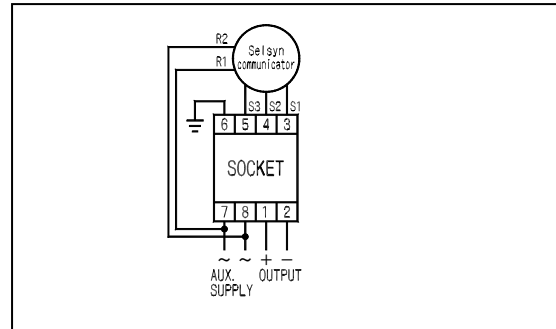
■ Connection diagram

■ Specification

Input	Output (load resistance)	Auxiliary supply	Common specification
Selsyn signal 1 : 0-360°, 60Hz 2 : 0-360°, 50Hz 3 : 0-270°, 60Hz 4 : 0-270°, 50Hz 5 : 0-240°, 60Hz 6 : 0-240°, 50Hz 0 : other than those above	1 : DC0-100mV (≧200Ω) 2 : DC0-1V (≧200Ω) 3 : DC0-5V (≧1kΩ) 4 : DC 0-10V (≧2kΩ) 5 : DC1-5V (≧1kΩ) 6 : DC±5V (≧1kΩ) 7 : DC±10V (≧2kΩ) A : DC0-1mA (≦10kΩ) B : DC0-5mA (≦2kΩ) C : DC0-10mA (≦1kΩ) D : DC0-16mA (≦600Ω) E : DC1-5mA (≦3kΩ) F : DC4-20mA (≦750Ω) 0 : other than those above	1 : AC100V±10% 2 : AC110V±10% 3 : AC200V±10% 4 : AC220V±10% 0 : other than those above Power frequency becomes identical to input frequency.	Tolerance: ±0.5% Response time: ≦1sec./99% Consumption VA: AC power source:3.5VA Weight: AC power source:500g

●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. 25V occurs on the output terminal.
●Manufacturable range (maximum value) is from 210° to 360° by a step of 30°.
●VR variable range ±20°-±30° is manufacturable.
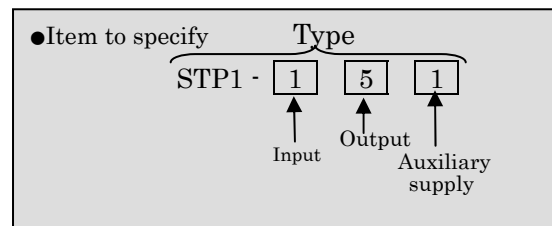
●Input/output relationship diagram

■ Purchase specifications

●Item to specify   Type

STP1 - ☐1 ☐5 ☐1

Input   Output   Auxiliary supply

AC CURRENT TRANSDUSER

AETP2 - ☐☐☐

CONSTANT VOLTAGE/CURRENT OUTPUT RMS VALUE TYPE

Use

Converts AC current in an electric power system into a DC signal in proportion to input.
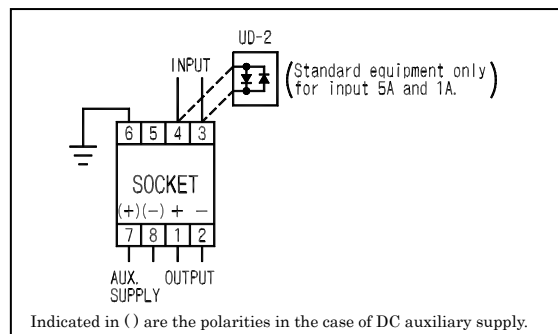
Features

1. A type with auxiliary supply.
2. Constant voltage/current output. 4-20mA output is manufacturable.
3. Being a RMS type by adopting a hybrid IC, can be used for a distortion or a SCR waveform input.
4. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
5. Electrostatic shield between primary and secondary protects output side equipments from a lightning surge or suchlike from input side.
6. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
7. With output line surge protection. (2, 000A, 8/20μs, positive/negative polarity) can transmit an output directly to a distant place.

AETP2-3F2

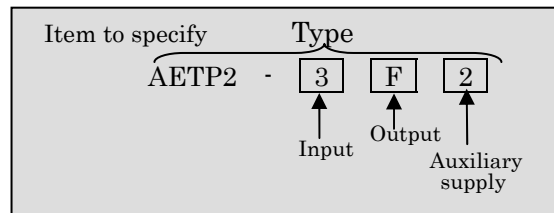(108(w/UD-2)× 50× 121mm/450g)

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input	Output	Auxiliary supply	Common specification
1 : AC0-100mA	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.5%
2 : AC0-1A	2 : DC0-1V (200)	2 : AC110V±10%, 50/60Hz	Consumption VA:
3 : AC0-5A	3 : DC0-5V (1k)	3 : AC200V±10%, 50/60Hz	Input: 1VA
4 : AC0-6A	4 : DC 0-10V (2k)	4 : AC220V±10%, 50/60Hz	AC power source:3VA
0 : other than those above	5 : DC1-5V (1k)	5 : DC24V±10%	DC power source:4W
	A : DC0-1mA (10k)	6 : DC48V±10%	Weight:
	B : DC0-5mA (2k)	0 : other than those above	AC power source:450g
	C : DC0-10mA (1k)		DC power source:400g
	D : DC0-16mA (600)		Response time: 1sec/99%
	E : DC1-5mA (3k)		
	F : DC4-20mA (750)		
(rating frequency: 50/60Hz)	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. 25V occurs on the output terminal.

UD-2 Diode unit (Standard equipment only for rating 5A and 1A)

A diode unit for protecting primary CT when changing the current transducer in a hot line state. Because the changing time is diode protecting method, try to make it as short as possible.

Purchase specifications

Item to specify   Type

AETP2 - ☐3 ☐F ☐2

↑ Input
↑ Output
↑ Auxiliary supply

AC VOLTAGE TRANSDUSER

VETP2 - ☐ ☐ ☐

CONSTANT VOLTAGE/CURRENT OUTPUT RMS VALUE TYPE

Use

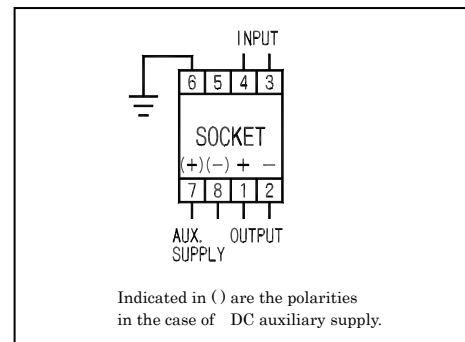Converts AC voltage in an electric power system into a DC signal in proportion to input.

Features

1. A type with auxiliary supply.
2. Constant voltage/current output. 4-20mA output is manufacturable.
3. Being a RMS type by adopting a hybrid IC, can be used for a distortion or a SCR waveform input.
4. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
5. Electrostatic shield between primary and secondary protects output side equipments from a lightning surge or suchlike from input side.
6. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
7. 2kV, 1.2/50μs positive/negative polarity between input terminals (3/4), positive/negative polarity 3 times each is guaranteed.
8. Consult with us for an impulse withstand voltage between input terminals exceeds above values
9. With output line surge protection. (2, 000A, 8/20μs, positive/negative polarity)   can transmit an output directly to a distant place.
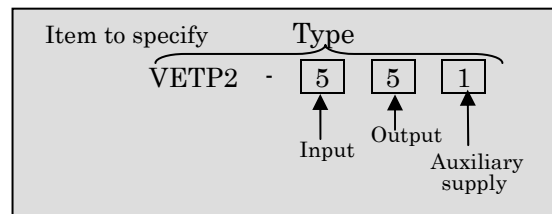
VETP2-551
(80× 50× 121mm/400g)

Connection diagram

```
         INPUT
        6 5 4 3
        SOCKET
       (+)(−) + −
        7 8 1 2
      AUX.    OUTPUT
     SUPPLY
```

Indicated in ( ) are the polarities
in the case of   DC auxiliary supply.

Specification

Input	Output	Auxiliary supply	Common specification
1 : AC0-63.5V	1 : DC0-100mV (200)	1 : AC100V±10%, 50/60Hz	Tolerance: ± 0.5%
2 : AC0-86.6V	2 : DC0-1V (200)	2 : AC110V±10%, 50/60Hz	Consumption VA:
3 : AC0-110V	3 : DC0-5V (1k)	3 : AC200V±10%, 50/60Hz	Input: 1.5VA
4 : AC0-127V	4 : DC 0-10V (2k)	4 : AC220V±10%, 50/60Hz	AC power source:3VA
5 : AC0-150V	5 : DC1-5V (1k)	5 : DC24V±10%	DC power source:4W
6 : AC0-173.2V	A : DC0-1mA (10k)	6 : DC48V±10%	Weight:
7 : AC0-220V	B : DC0-5mA (2k)	0 : other than those above	AC power source:400g
8 : AC0-300V	C : DC0-10mA (1k)		DC power source:350g
0 : other than those above	D : DC0-16mA (600)		Response time: 1sec/99%
	E : DC1-5mA (3k)		
	F : DC4-20mA (750)		
(rating frequency: 50/60Hz)	0 : other than those above		

Purchase specifications

Item to specify   Type

VETP2 - [5] [5] [1]

Input   Output   Auxiliary supply

FREQUENCY TRANSDUSER

FTP2 - ☐ ☐ ☐ ☐

CONSTANT VOLTAGE/CURRENT OUTPUT TYPE
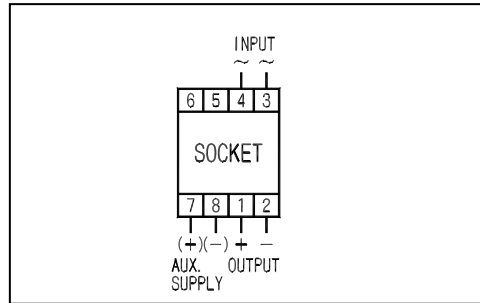
Use

Converts frequency in an electric power system into a DC signal in proportion to input.
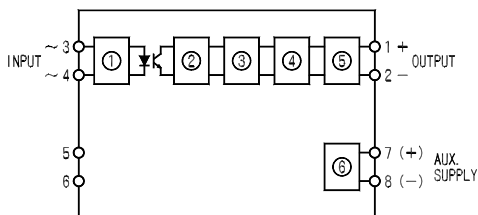
Features

1. Constant voltage/current output
2. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
3. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and outer case), and positive/ negative polarity 3 times each is guaranteed.

FTP2-11F1

(80× 50× 123mm/500g)

Connection diagram

Specification

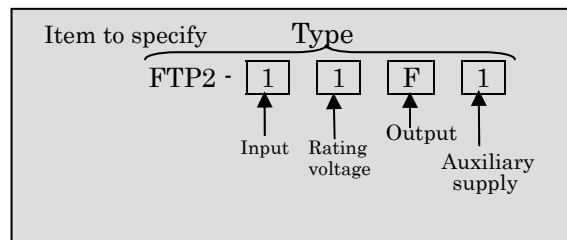| Input	Rating	Output (load resistance)	Auxiliary supply	Common specification
1 :45-55Hz 2 :55-65Hz 3 :45-65Hz 0 :other than those above	1 : AC110V± 10% 2 : AC220V± 10% 0 : other than those above	1 : DC0-100mV (200) 2 : DC0-1V (200) 3 : DC0-5V (1k) 4 : DC 0-10V (2k) 5 : DC1-5V (1k) A : DC0-1mA (10k) B : DC0-5mA (2k) C : DC0-10mA (1k) D : DC0-16mA (600) E : DC1-5mA (3k) F : DC4-20mA (750) 0 : other than those above	1 : AC100V±10%, 50/60Hz 2 : AC110V±10%, 50/60Hz 3 : AC200V±10%, 50/60Hz 4 : AC220V±10%, 50/60Hz 5 : DC24V±10% 0 : other than those above	Tolerance: ± 0.5% Response time: 0.5sec/90% Consumption VA: Input: 0.7VA(110V) 1.4VA(220V) AC power source:3VA DC power source:3.5W Weight: AC power source:500g DC power source:400g
		H : DC4-20mA (800) DC1-5V (250k) With output switching function	1 : AC100V+10%,-15% 50/60Hz 2 : AC110V+10%, -15% 50/60Hz 3 : AC200V+10%, -15% 50/60Hz 4 : AC220V+10%, -15% 50/60Hz 5 : DC24V+10%,-15%	

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. 25V occurs on the output terminal.

Block diagram

Input circuit
Pulse conversion DC circuit
Output circuit

Monostable detecting circuit
Smoothing circuit
Insulated power source circuit

Purchase specifications

Item to specify   Type

FTP2 - 1 1 F 1

Input   Rating voltage   Output   Auxiliary supply

AC CURRENT TRANSDUSER

ATP2 - ☐☐

CONSTANT CURRENT OUTPUT /AUXILIARY SUPPLY FREE TYPE
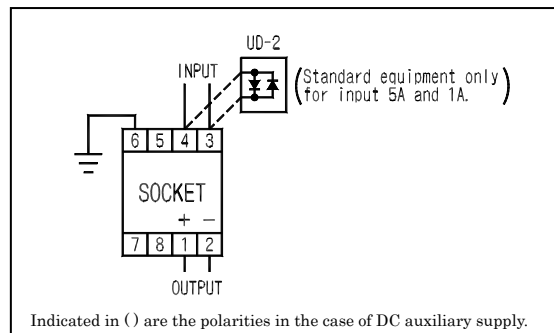
WITH WAVEFORM COMPENSATION   rd HARMONICS 5%

Use

Converts AC current in an electric power system into a DC signal in proportion to input.

Features

1. Auxiliary supply free type.
2. Constant voltage/current output.
3. Withstand voltage between input, output, auxiliary supply and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
4. Electrostatic shield between primary and secondary protects output side equipments from a lightning surge or suchlike from input side.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
6. With output line surge protection. (2, 000A, 8/20μs, positive/negative polarity) can transmit an output directly to a distant place.
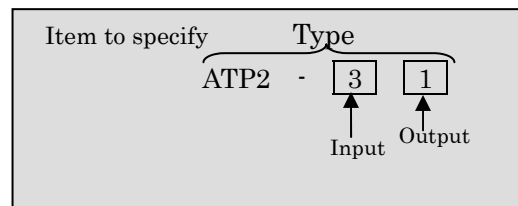
ATP2-31

(108(w/UD-2)× 50× 121mm/400g)

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Input	Output (load resistance)	Common specification
1 : AC0-100mA	1 : DC0-1mA (10k)	Tolerance: ± 0.5%
2 : AC0-1A	2 : DC0-2mA (5k)	Consumption VA: Input: 2VA
3 : AC0-5A	3 : DC0-5mA (2k)	Weight: :400g
4 : AC0-6A	0 : other than those above	Response time: 1sec/99%
0 : other than those above	(but, MAX5mA)	
(rating frequency: 50/60Hz)		

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.

UD-2 Diode unit
(Standard equipment only for rating 5A and 1A)

A diode unit for protecting primary CT when changing the current transducer in a hot line state. Because the changing time is diode protecting method, try to make it as short as possible.

Purchase specifications

Item to specify   Type

ATP2 - 3 1

Input Output

AC VOLTAGE TRANSDUSER

VTP2 - □□

CONSTANT CURRENT OUTPUT /AUXILIARY SUPPLY FREE TYPE

WITH WAVEFORM COMPENSATION   rd HARMONICS 5%

Use

 Converts AC voltage in an electric power system into a
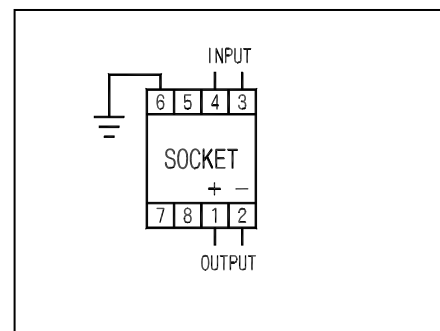DC signal in proportion to input.

Features

1. Auxiliary supply free type.
2. Constant voltage/current output.
3. Withstand voltage between input, output, auxiliary supply and outer
   case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
4. Electrostatic shield between primary and secondary protects output
   side equipments from a lightning surge or suchlike from input side.
5. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit
   and earth), and positive/ negative polarity 3 times each is
   guaranteed.
6. 2kV, 1.2/50μs positive/negative polarity between input terminals (3/4),
   3 times each is guaranteed.
7. Consult with us for an impulse withstand voltage between input
   terminals exceeds above values
8. With output line surge protection. (2, 000A, 8/20μs, positive/negative
   polarity)   can transmit an output directly to a distant place.

**VTP2-53**

(80× 50× 121mm/400g)

Connection diagram

Specification

Input	Output	Common specification
1 : AC0-63.5V	1 : DC0-1mA (10k)	Tolerance: ± 0.5%
2 : AC0-86.6V	2 : DC0-2mA (5k)	Consumption VA: Input: 3VA
3 : AC0-110V	3 : DC0-5mA (2k)	Weight: :400g
4 : AC0-127V	0 : other than those above	Response time: 1sec/99%
5 : AC0-150V	(but, MAX5mA)	
6 : AC0-173.2V		
7 : AC0-220V		
8 : AC0-300V		
0 : other than those above		
(rating frequency: 50/60Hz)		

 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.

Purchase specifications

Item to specify   Type

VTP2 - | 5 | | 3 |

Input   Output
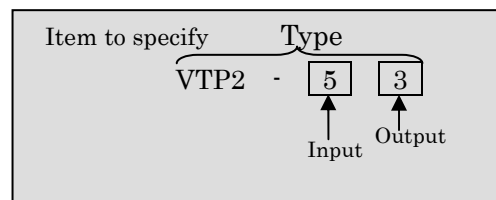
AC CURRENT TRANSDUSER

AP2 - ☐☐

FIXED LOAD/MODERATE PRICE TYPE

WITH WAVEFORM COMPENSATION   rd HARMONICS 5%

Use

Converts AC current in an electric power system into a DC signal in proportion to input.

AP2-34

(108(w/UD-2)× 50× 121mm/400g)

Features

1. Auxiliary supply free type.
2. Specified load resistance type.
3. Withstand voltage between input, output and outer case (earth) is AC2, 000V (50/60Hz), complete insulation for 1 minute.
4. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and earth), and positive/ negative polarity 3 times each is guaranteed.
5. Electrostatic shield between primary and secondary protects output side equipments from a lightning surge or suchlike from input side.

Connection diagram
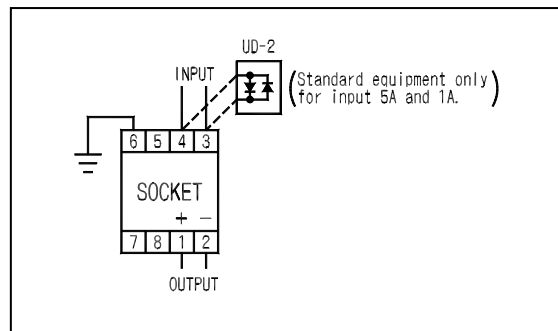
Specification

Input	Output (load resistance)	Common specification
1 : AC0-100mA	1 : DC0-100mV (fixed at 50k) *1	Tolerance: ± 0.5%
2 : AC0-1A	2 : DC0-1V (fixed at 50k) *1	Consumption VA: Input: 1VA
3 : AC0-5A	3 : DC0-5V (fixed at 50k) *1	Weight: :400g
4 : AC0-6A	4 : DC0-1mA (fixed at 5k) *2	Response time: 1sec/99%
0 : other than those above	0 : other than those above (but, MAX1mA,MAX5V)	
(rating frequency: 50/60Hz)		

*1 Please specify a load resistance more than or equal to 50kΩ for voltage output.

*2 Please specify a load resistance less than or equal to 5kΩ for current output.

It may lead to an output error if use the product with a load resistance other than specified ones. Also, a load resistance can be adjusted by an external VR if it is within ±5% of specification. There is the case that even an external VR cannot adjust a load resistance if it exceeds ±5%.

UD-2 Diode unit (Standard equipment only for rating 5A and 1A)

A diode unit for protecting primary CT when changing the current transducer in a hot line state. Because the changing time is diode protecting method, try to make it as short as possible.

Purchase specifications

Item to specify   Type

AP2   -   3   4

Input   Output
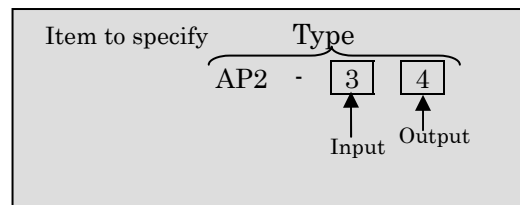
AC VOLTAGE TRANSDUSER

VP2 - ☐☐

FIXED LOAD/MODERATE PRICE TYPE

WITH WAVEFORM COMPENSATION   rd HARMONICS 5%

Use

  Converts AC voltage in an electric power system into a
DC signal in proportion to input.
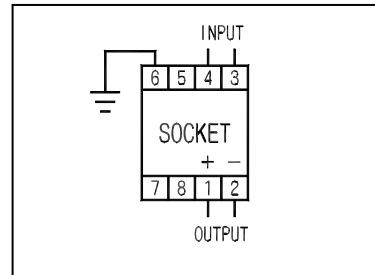
Features

1. Auxiliary supply free type.
2. Specified load resistance type.
3. Withstand voltage between input, output and outer case (earth) is
    AC2, 000V (50/60Hz), complete insulation for 1 minute.
4. Impulse withstands voltage 5kV, 1.2/50μs (between electric circuit
    and earth), and positive/ negative polarity 3 times each is guaranteed.
5. Electrostatic shield between primary and secondary protects output
    side equipments from a lightning surge or suchlike from input side.

**VP2-53**

(80× 50× 121mm/400g)

Connection diagram

```
            INPUT
        ┌────────────┐
        │ 6  5  4  3 │
   ⏚────┤            │
  ═══    │  SOCKET    │
        │        + ─ │
        │ 7  8  1  2 │
        └────────────┘
           OUTPUT
```

Specification

Input	Output (load resistance)	Common specification
1 : AC0-63.5V	1 : DC0-100mV (fixed at 50k) *1	Tolerance: ± 0.5%
2 : AC0-86.6V	2 : DC0-1V (fixed at 50k) *1	Consumption VA: Input: 1.5VA
3 : AC0-110V	3 : DC0-5V (fixed at 50k) *1	Weight: :400g
4 : AC0-127V	4 : DC0-1mA (fixed at 5k) *2	Response time: 1sec/99%
5 : AC0-150V	0 : other than those above (but, MAX1mA,MAX5V)	
6 : AC0-173.2V		
7 : AC0-220V		
8 : AC1-300V		
0 : other than those above		
(rating frequency: 50/60Hz)		

*1 Please specify a load resistance more than or equal to 50kΩ for voltage output.

*2 Please specify a load resistance less than or equal to 5kΩ for current output.

It may lead to an output error if use the product with a load resistance other than specified ones. Also, a load resistance can be adjusted by an external VR if it is within ±5% of specification. There is the case that even an external VR cannot adjust a load resistance if it exceeds ±5%.

Purchase specifications

```
Item to specify      Type
                  ┌──────┐
  VP2   -    │ 5 │ │ 3 │
                ↑      ↑
              Input   Output
```
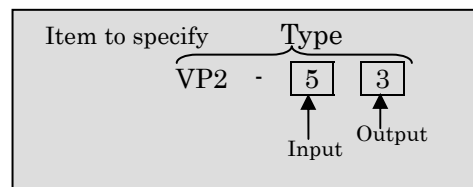
DC POWER TRANSDUSER

DWP1 - ☐☐☐☐☐

Use

Outputs a DC signal in proportion to DC power in an electric power system.
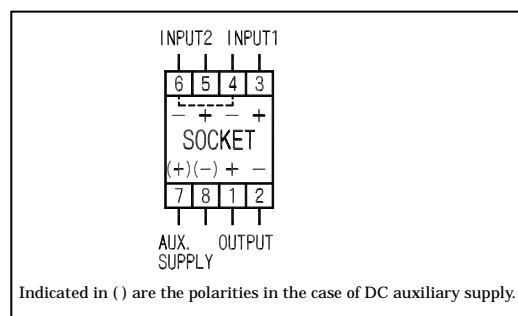
Features

1. High noise rejection ratio both in normal mode and common mode.
2. Because the product makes various kinds of outputs such as a DC current signal for industrial instrumentation, it can be used as a direct input to a computer or other industrial instruments.
3. Withstand voltage between electric circuit and outer case, input/ output and auxiliary supply is AC1, 500V (50/60Hz), complete insulation for 1 minute, or AC1, 500V (50/60Hz) for 1 minute between input and output.
4. ⊖ of voltage input 1 and the ⊖ of current input 2 are conducted inside the product. Make sure the connection is a minus common.
5. Impulse withstands voltage 5kV, 1.2/50µs (between electric circuit and outer case), and positive/ negative polarity 3 times each is guaranteed.

DWP1-100F2
(80× 50× 121mm/350g)

Connection diagram

Indicated in ( ) are the polarities in the case of DC auxiliary supply.

Specification

Power	Power input 1 (input resistance)	Power Input 2 (input resistance)	Output (load resistance)	Auxiliary supply
1 :K=1 When Voltage V × Current A= Power W Product which full power= 100% output 0 :other than those above [other than K = 1] *Range of intrinsic sensitivity Power W = K (voltage V × current A) K = 0.6-1.2	A : DC0-100mV (approx.1M) B : DC0-1V (approx.1M) C : DC0-5V (approx.1M) D : DC0-10V (approx.1M) 0 : other than those above *When using primary voltage as a direct input, voltage which is more than 100V but less than 600V needs an external box DM-1 as ☐V/1mA.	1 : DC0-1mA (approx.100) 2 : DC0-5mA (approx.100) 3 : DC0-10mA (approx.100) 4 : DC 0-20mA (approx.100) 0 : other than those above [In the case of a shunt input] *It is 50mVMIN in the case of a shunt input.	1 : DC0-100mV (200) 2 : DC0-1V (200) 3 : DC0-5V (1k) 4 : DC 0-10V (2k) 5 : DC1-5V (1k) A : DC0-1mA (10k) B : DC0-5mA (2k) C : DC0-10mA (1k) D : DC0-16mA (600) E : DC1-5mA (3k) F : DC4-20mA (750) 0 : other than those above	1 : AC100V±10%, 50/60Hz 2 : AC110V±10%, 50/60Hz 3 : AC200V±10%, 50/60Hz 4 : AC220V±10%, 50/60Hz 5 : DC24V±10% 0 : other than those above

	⊖ of input 1 and input 2 are conducted inside the product.			**Common specification**
				Tolerance: ± 0.5%
				Response time: 0.5sec/99%
				Consumption VA:
				  AC power source:4.5V
				  DC power source:5W
				Weight: AC power source:700g
				  DC power source:350g

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. 25V occurs on the output terminal.

Operational expression
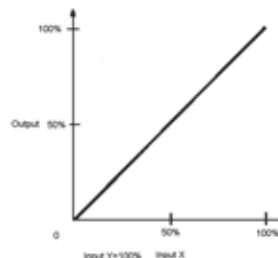
Maximum W   (V× A rated W)
Input1:   V
Input2:   A
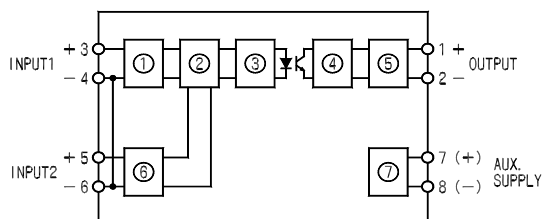Output: OUT (0-100% output)

Output value = Constant number K × $\dfrac{\text{input V} \times \text{input A}}{\text{Maximum W}}$ × Rated output

$\underline{\text{Rated W}}$
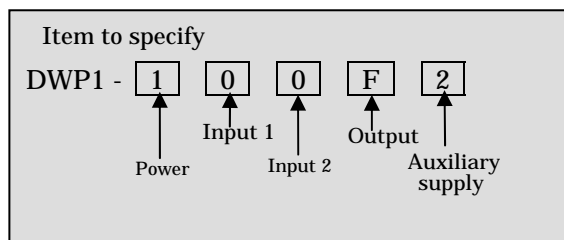
K : When <u>rated V</u> × <u>rated A</u> = maximum W, K=1.

Block diagram

Input circuit
Multiplying circuit
Pulse width modulation circuit
Pulse width demodulation circuit
Output circuit
Input circuit
Insulated power source circuit

Purchase specifications

Item to specify

DWP1 - [1] [0] [0] [F] [2]

Power
Input 1
Input 2
Output
Auxiliary supply

Dimensions (mm)

Fig.1

Main body   8-pin type

Socket (Type code: 8PFA by OMRON)

Also compatible with the following socket:
Type code: 8PFA-W by Omron

*1: accessory for thermoelectric
     temperature transducer
*2: diode unit for current transducer

Fig.2

Main body   8-pin type

Socket (Type code: 8PFA by OMRON)

Also compatible with the following socket:
Type code: 8PFA-W by Omron

Fig.3

Main body   11-pin type

Socket (Type code: 11PFA by OMRON)

Also compatible with the following socket:
Type code: 11PFA-W by Omron
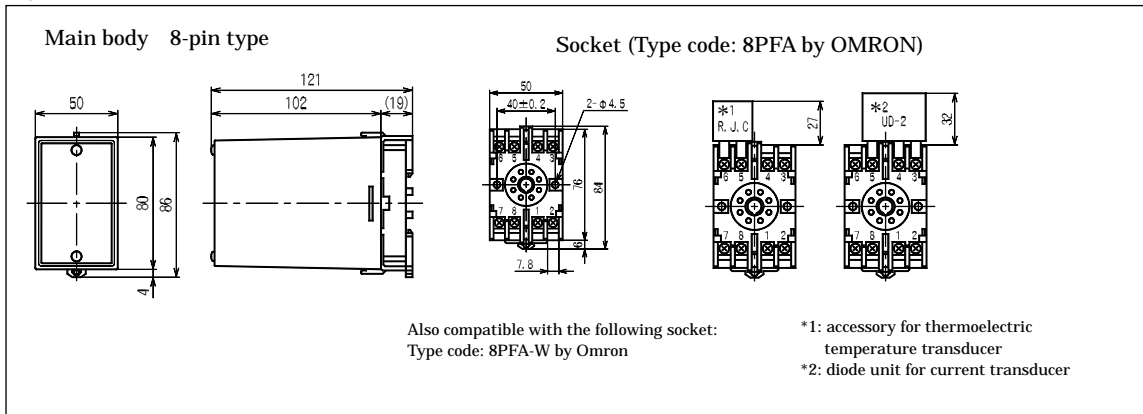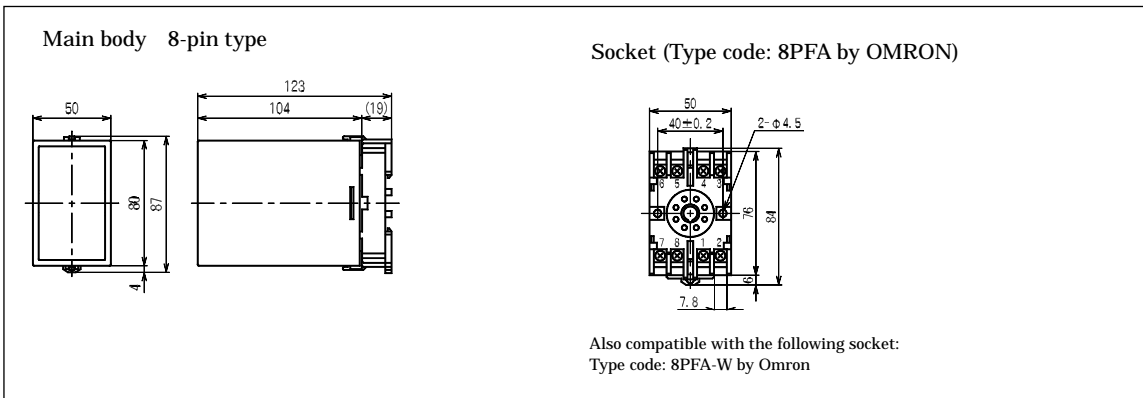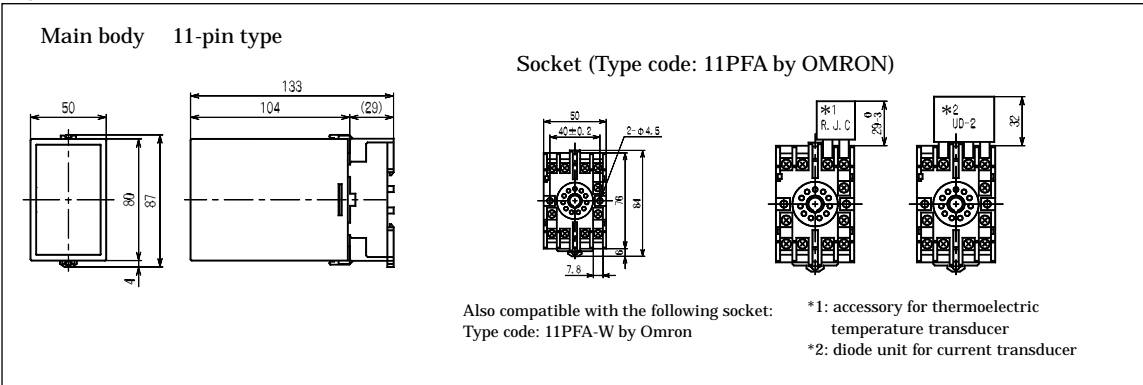
*1: accessory for thermoelectric
     temperature transducer
*2: diode unit for current transducer

Multiple unit installation (mm)

Panel mounting

Rail mounting

Multiplier (DM-1)

In consideration of radiation of heat by a natural convection of air, please establish metric spaces more than those mentioned above.

Use a DIN standard 35mm rail.