CONVY

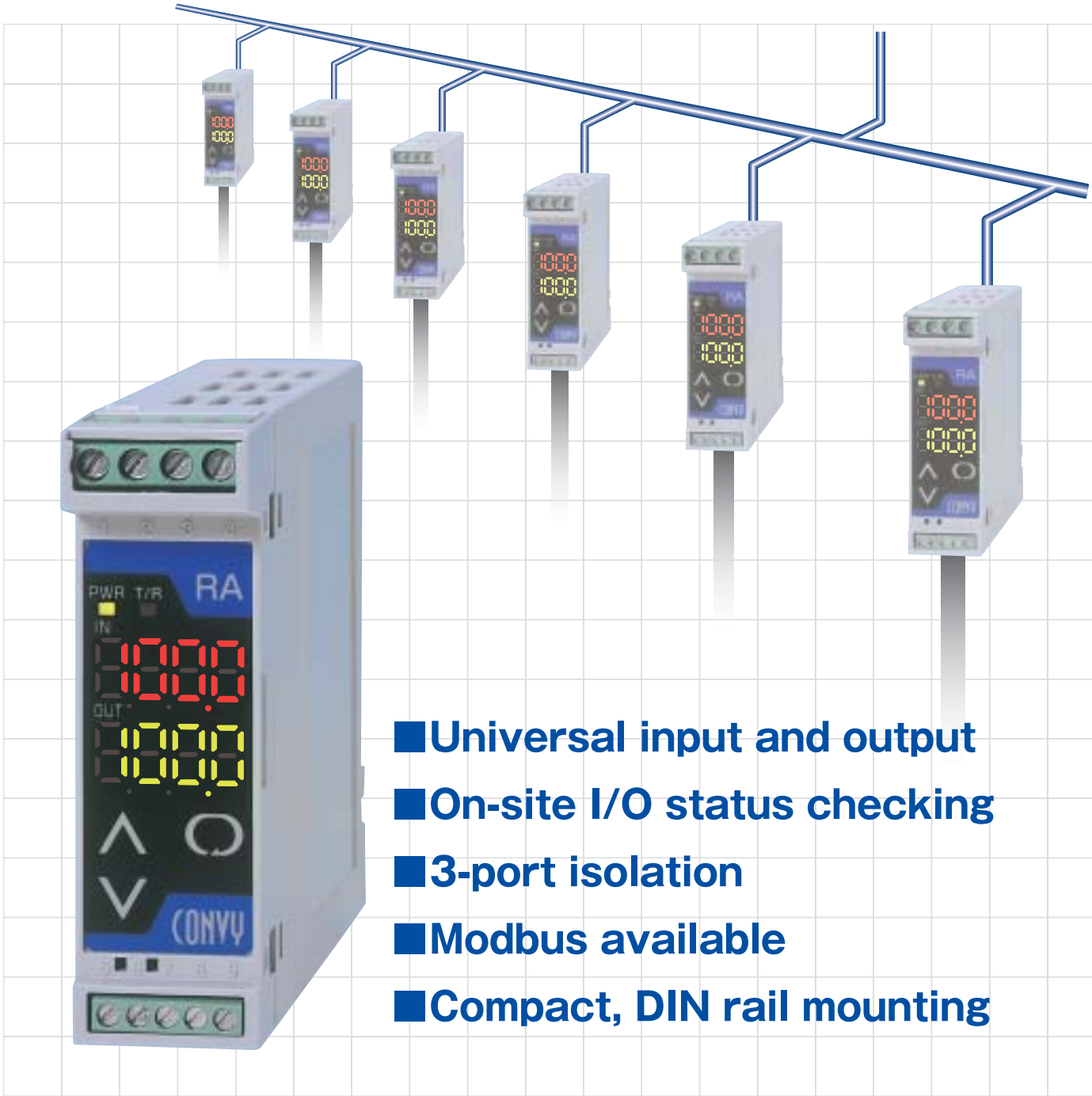
NEW PRODUCTS

ISO 9001
KEMA
CERT. No.60033
DUTCH COUNCIL FOR ACCREDITATION

Remote I/O

RA series

I/O signal conversion for networks



- Universal input and output
- On-site I/O status checking
- 3-port isolation
- Modbus available
- Compact, DIN rail mounting

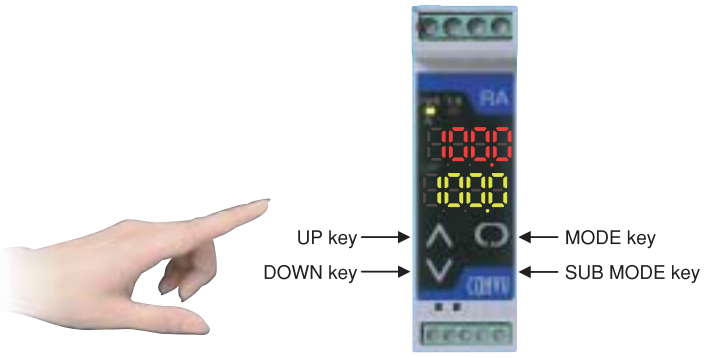
Remote I/O

The RA series: Your problems solved.

- **We need 1 point, remote I/O for our several point system.**
  →The RA series is usable from 1 to a maximum of 31 points (units).
- **We want to add a few new sensor signals to our existing MODBUS system.**
  →From 1 point (1 unit), required points can be added.
- **We need extra units as stock, however, we cannot keep stock of various inputs due to cost.**
  →The universal input type (RAU) is ideal. It has 4 input types (DC, TC, RTD, potentiometer).

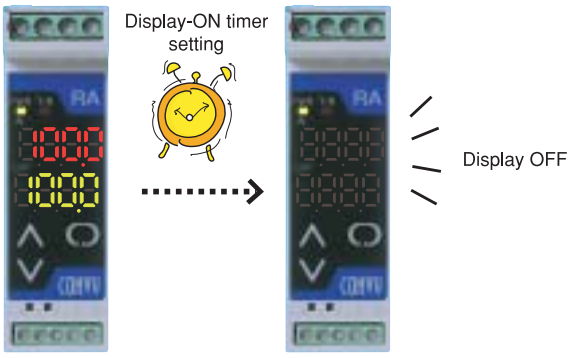
Feature 1 I/O configurable

Input, output specifications can be changed via communication as well as by front 4 keys (UP, DOWN, MODE, SUB MODE). Settings and changes can be conducted whilst checking the front display. Set value lock function prevents mis-operation.



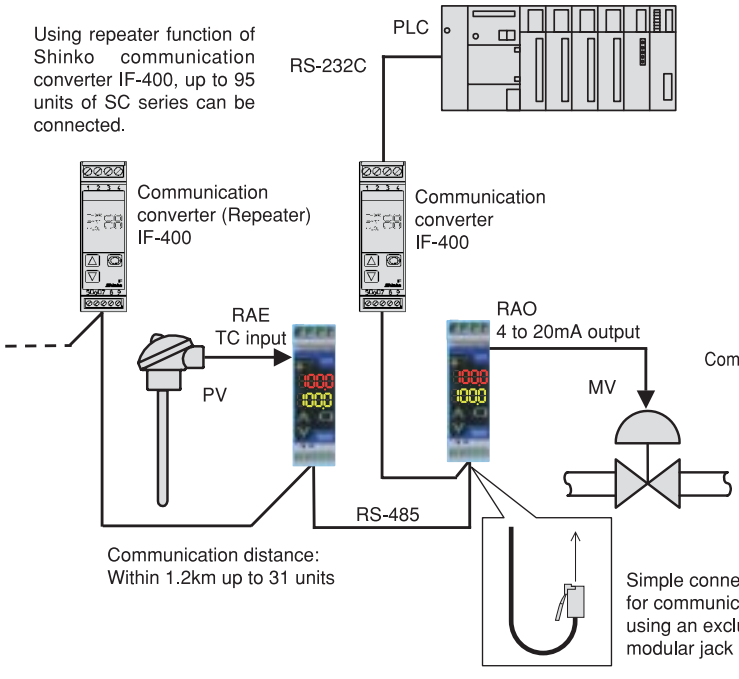
Feature 2 I/O front display Energy-saving function

Input value and percentage for the input unit, output characters and value for the output unit are front-display indicated. Energy-saving, pre-settable display-ON timer.



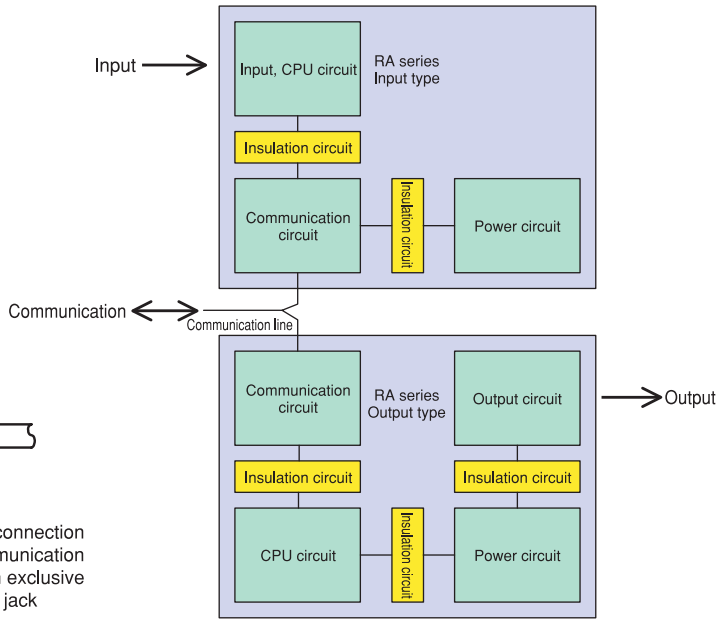
Feature 3 Convertable output

Using an output unit (Model: RAO), digital input can be converted to analog output for operating actuators.



Feature 4 3-port isolation

Input (Output) - Communication - Power supply
Harmful effects on communication due to noise caused from the input, output and power supply can be reduced to a minimum.



■Model

R A □ — □			Series name: RA series (W22.5 x H75 x D100mm)
Remote I/O Input type	U		Universal　Conversion accuracy: Within ±0.1% of each input span
	E		Thermocouple　Conversion accuracy: Within ±0.1% of each input span
	R		RTD　Conversion accuracy: Within ±0.1% of each input span
	A		DC current　Conversion accuracy: Within ±0.1%
	V		DC voltage　Conversion accuracy: Within ±0.1%
	P		Potentiometer　Conversion accuracy: Within ±0.1%
Remote I/O Output type	O		DC voltage, DC current　Conversion accuracy: Within ±0.1%
		0	100 to 240V AC　Allowable voltage fluctuation range: 85 to 264V AC
		1	24V AC/DC　Allowable voltage fluctuation range: 20 to 28V AC/DC

■General specifications

External dimensions	22.5 x 75 x 100mm (W x H x D)
Mounting	DIN rail mounting
Case	Flame-resistant resin　Color, Light gray
Panel	Membrane sheet
Display	Input value (Output setting characters: RAO only): 7-segment Red LED display 4 digits, Character size, 7.4 x 4mm (H x W) Input in percentage (Output volume: RAO only)　: 7-segment Green LED display 4 digits, Character size, 7.4 x 4mm (H x W)
Conversion accuracy	Within ±0.1% of each input span (RAU, RAE, RAR),　Within ±0.1% (RAA, RAV, RAP, RAO)
Reference accuracy	Within ±1 digit of the conversion accuracy
Cold junction compensation accuracy	Within ±1℃ at −5 to 55℃ [RAU, RAE (only thermocouple input)]
Conversion time	250ms
Response time	0.5seconds (typ.) (0→90%) (RAO only)
Temperature coefficient	±0.015%/℃
Insulation resistance	Input − Communication − Power : 10MΩ or more, at 500V DC (Not available for RAO)　Output − Communication − Power: 10MΩ or more, at 500V DC (RAO only)
Dielectric strength	Input − Communication − Power : 2000V AC for 1 minute (Not available for RAO)　Output − Communication − Power: 2000V AC for 1 minute (RAO only)
Power supply	100 to 240V AC (85 to 264V AC) 50/60Hz, 24V AC/DC (20 to 28V AC/DC) 50/60Hz
Operating temperature	−5 to 55℃
Operating humidity	35 to 85%RH (Non condensing)
Weight	Approx. 120g

■Input specifications

RAU, RAE (Thermocouple)　Input resistance: 1MΩ or more
External resistance: 100Ω or less, however, B, 40Ω or less

Thermocouple	Input range	
K	−200 to 1370℃	−328 to 2498℉
J	−200 to 1000℃	−328 to 1832℉
R	−50 to 1760℃	−58 to 3200℉
S	−50 to 1760℃	−58 to 3200℉
B	0 to 1820℃	32 to 3308℉
E	−200 to 800℃	−328 to 1472℉
T	−200 to 400℃	−328 to 752℉
N	−200 to 1300℃	−328 to 2372℉
PL-II	0 to 1390℃	32 to 2534℉
W5Re/W26Re	0 to 2315℃	32 to 4199℉
W3Re/W25Re	0 to 2315℃	32 to 4199℉

RAU, RAR (3-wire RTD)
Input detection current: Approx. 0.2mA, Allowable lead wire resistance: 10Ω or less per wire

RTD	Input range	
Pt100	−200 to 850℃	−328 to 1562℉
JPt100	−200 to 500℃	−328 to 932℉

RAU, RAP (Potentiometer)

All resistance	Reference voltage
100Ω to 10kΩ	1.0V DC

RAU, RAV (DC voltage)

Input	Input resistance	Allowable signal source resistance
0 to 10mV DC	1MΩ	20Ω or less
−10 to 10mV DC		40Ω or less
0 to 50mV DC		200Ω or less
0 to 60mV DC		
0 to 100mV DC		
0 to 1V DC		2kΩ or less
0 to 5V DC		1kΩ or less
1 to 5V DC		
0 to 10V DC		

RAU, RAA (DC current)

Input	Shunt resistor
4 to 20mA DC	50Ω
0 to 20mA DC	
0 to 16mA DC	
2 to 10mA DC	100Ω
0 to 10mA DC	
1 to 5mA DC	200Ω
0 to 1mA DC	1kΩ

Connect a shunt resistor (sold separately) between input terminals

Shunt resistor (Required for DC current input type, sold separately)　Specify the model according to the input range.

Input	Model	Specifications
4 to 20mA DC, 0 to 20mA DC, 0 to 16mA DC	RES-S02-050	50Ω　±0.1%
2 to 10mA DC, 0 to 10mA DC	RES-S02-100	100Ω　±0.1%
1 to 5mA DC	RES-S02-200	200Ω　±0.1%
0 to 1mA DC	RES-S02-01K	1kΩ　±0.1%

■Output specifications (RAO only)

・Output selectable using front keys.

DC current

Output	Allowable load resistance	Zero adjustment range	Span adjustment range
4 to 20mA DC	700Ω or less	−5 to 5%	95 to 105%
0 to 20mA DC	700Ω or less	0 to 5%	95 to 105%
0 to 12mA DC	1.2kΩ or less	0 to 5%	95 to 105%
0 to 10mA DC	1.2kΩ or less	0 to 5%	95 to 105%
1 to 5mA DC	2.4kΩ or less	−5 to 5%	95 to 105%

DC voltage

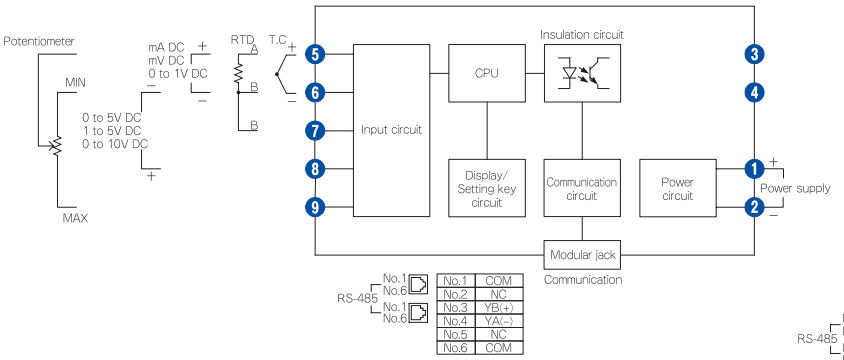
Output	Allowable load resistance	Zero adjustment range	Span adjustment range
0 to 1V DC	100Ω or more	0 to 5%	95 to 105%
0 to 5V DC	500Ω or more	0 to 5%	95 to 105%
1 to 5V DC	500Ω or more	−5 to 5%	95 to 105%
0 to 10V DC	1kΩ or more	0 to 5%	95 to 105%

■Communication specifications

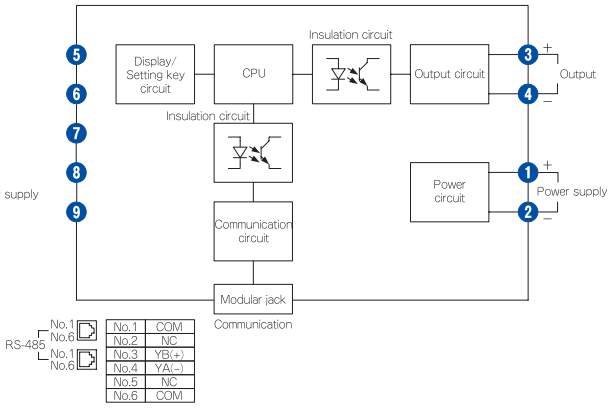
Communication line	EIA RS-485
Communication system	Half-duplex communication start-stop synchronous
Communication speed	2400, 4800, 9600, 19200bps
Parity	Even/Odd/No parity
Stop bit	1, 2
Communication protocol	Private protocol/Modbus ASCII/Modbus RTU

■Terminal arrangement, Circuit configuration

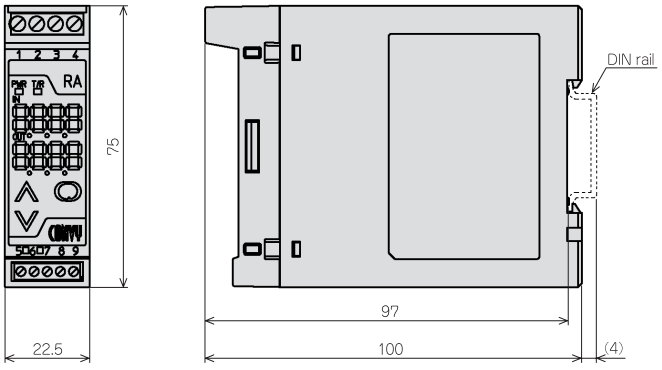
RAU, RAE, RAR, RAA, RAV, RAP
Input signals (Thermocouple, RTD, DC current, DC voltage, Potentiometer)



RAO
(Output signal 1 point)



■External dimensions (Unit: mm)

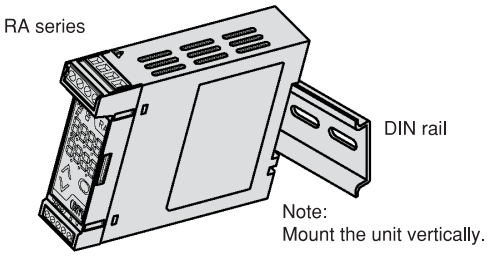


■Recommended ferrules (for mounting terminals)

Terminal number	Terminal screw	Ferrules with insulation sleeve	Conductor cross sections	Tightening torque	Crimping pliers
① to ④	M2.6	AI 0.25-8 YE	0.2 to 0.25mm²	0.5 to 0.6N·m	CRIMPFOX ZA 3 CRIMPFOX UD 6
		AI 0.34-8 TQ	0.25 to 0.34mm²		
		AI 0.5-8 WH	0.34 to 0.5mm²		
		AI 0.75-8 GY	0.5 to 0.75mm²		
		AI 1.0-8 RD	0.75 to 1.0mm²		
		AI 1.5-8 BK	1.0 to 1.5mm²		
⑤ to ⑨	M2.0	AI 0.25-8 YE	0.2 to 0.25mm²	0.22 to 0.25N·m	
		AI 0.34-8 TQ	0.25 to 0.34mm²		
		AI 0.5-8 WH	0.34 to 0.5mm²		

Use the ferrules and crimping pliers made by Phoenix Contact GMBH &CO.

■Mounting to the DIN rail



Note:
Mount the unit vertically.

■Recommended fastening plates (for DIN rail)

Manufacturer	Model	
Omron Corporation	End plate	PFP-M
IDEC Corporation	Fastening plate	BNL6
Matsushita Electric Works, LTD.	Fastening plate	ATA4806

SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand the manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after consulting purpose of use with our agency or main office.
  (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices such as protection equipment against excessive temperature rise, etc. must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Also proper periodic maintenance is required.
- This instrument must be used under the conditions and environment described in the manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in the manual.

Caution with respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument.
In the case of resale, ensure that this instrument is not illegally exported.

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· This catalog is as of February 2006, and its contents are subject to change without notice.
· If you have any inquiries, please consult us or our agency.

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