

# Multifunctional Signal Conditioner RSC



The RSC is a specially designed signal conditioner which can accept an input from an universal input and output the conditioned signal. The universal input is fully programmable for linear voltage, linear current, PT100 and thermocouple types J, K, T, E, B, R, S, N, L, U, P, C and D input. The input signal is digitized by using an 18-bit A to D converter. Its fast sampling rate allows the signal conditioner to condition and retransmit the signal faster. The device can output maximum of 3 conditioned output from single input.

## ***Features***

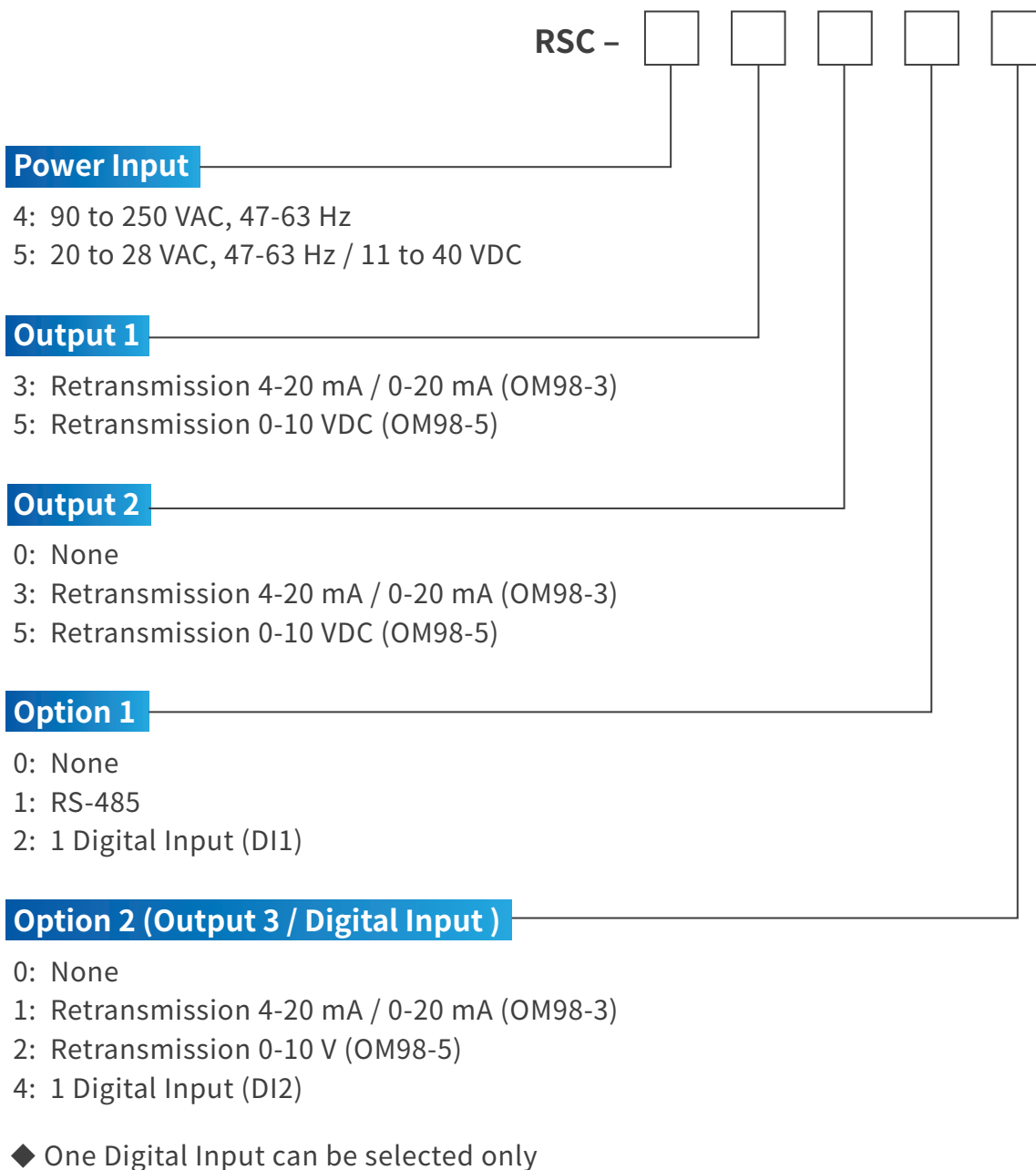
- One Input to 3 Output Retransmission with 15 Bit Resolution
- 18 Bit High Accuracy Universal Input
- Individual Scaling for each Output
- One Digital Input
- Individual Square Root Function
- Dual LCD Display
- RS-485 Communication
- DIN Rail Mount
- Various Display Modes

## Specifications

Specification	RSC			
Power Supply	90 to 250 VAC, 47 to 63 Hz, 20 to 28 VAC, 47-63 Hz / 11 to 40 VDC			
Power Consumption	10 VA, 5 W Maximum			
Signal Input				
Type	Thermocouple (J, K, T, E, B, R, S, N, L, U, P, C, D), RTD (PT100 (DIN), PT100 (JIS)), Current (mA), Voltage (Volts)			
Resolution	18 Bits			
Sampling Rate	5 Times / Second (200 msec)			
Maximum Rating	-2 VDC minimum, 12 VDC maximum			
Input Characteristics	Type	Range	Accuracy @ 25°C	Input Impedance
	J	-120°C to 1000°C (-184°F to 1832°F)	±2°C	2.2 MΩ
	K	-200°C to 1370°C (-328°F to 2498°F)	±2°C	2.2 MΩ
	T	-250°C to 400°C (-418°F to 752°F)	±2°C	2.2 MΩ
	E	-100°C to 900°C (-148°F to 1652°F)	±2°C	2.2 MΩ
	B	0°C to 1820°C (32°F to 3308°F)	±2°C (200°C to 1800°C)	2.2 MΩ
	R	0°C to 1767.8°C (32°F to 3214°F)	±2°C	2.2 MΩ
	S	0°C to 1767.8°C (32°F to 3214°F)	±2°C	2.2 MΩ
	N	-250°C to 1300°C (-418°F to 2372°F)	±2°C	2.2 MΩ
	L	-200°C to 900°C (-328°F to 1652°F)	±2°C	2.2 MΩ
	U	-200°C to 600°C (-328°F to 1112°F)	±2°C	2.2 MΩ
	P	0°C to 1395°C (32°F to 2543°F)	±2°C	2.2 MΩ
	C	0°C to 2300°C (32°F to 4172°F)	±2°C	2.2 MΩ
	D	0°C to 2300°C (32°F to 4172°F)	±2°C	2.2 MΩ
	PT100 (DIN)	-200°C to 850°C (-328°F to 1562°F)	±0.4°C	1.3 KΩ
	PT100 (JIS)	-200°C to 600°C (-328°F to 1112°F)	±0.4°C	1.3 KΩ
mA	-3 mA to 27 mA	±0.05%	2.5 Ω	
VDC	-1.3 VDC to 11.5 VDC	±0.05%	1.5 MΩ	
Temperature Effect	1.5 μV / °C for all inputs except mA input, 3.0 μV / °C for mA			
Sensor Lead Resistance Effect	<b>Thermocouple:</b> 0.2 μV / Ω ; 3-wire RTD: 2.6°C / Ω of difference of resistance of two leads <b>2-wire RTD:</b> 2.6°C / Ω of sum of resistance of two leads			
Burn-out Current	200 nA			
Common Mode Rejection Ratio(CMRR)	120 dB			
Normal Mode Rejection Ratio (NMRR)	55 dB			
Sensor Break Detection	Sensor open for Thermocouple, RTD and mV inputs, sensor short for RTD input, below 1 mA for 4-20 mA input, below 0.25 VDC for 1-5 VDC input, not available for other inputs			
Sensor Break Response Time	Within 4 seconds for Thermocouple, RTD and mV inputs, 0.1 second for 4-20 mA and 1-5 VDC inputs			
Digital Input (DI1 or DI2)				
Number of DI	1			
Logic Low	-10 VDC minimum, 0.8 VDC maximum			
Logic High	2 VDC minimum, 10 VDC maximum			
Functions	See availability table			

<b>Analog Retransmission Output 1 / Output 2 / Output 3</b>	
Number of Outputs	3
Output Signal	4-20 mA, 0-20 mA, 0-10 VDC
Resolution	15 Bits
Accuracy	$\pm 0.05\%$ of Span $\pm 0.0025\%$ / °C
Load Resistance	0 to 500 $\Omega$ for current output, 10 K $\Omega$ minimum for voltage output
Output Regulation	0.01% for full load change
Output Setting Time	0.1 Second (stable to 99.9%)
Isolation Breakdown	1000 VAC minimum
Integral Linearity Error	$\pm 0.005\%$ of span
Temperature Effect	$\pm 0.0025\%$ of span / °C
Saturation Low	0 mA or 0 VDC
Saturation High	22.2 mA or 5.55 VDC, 11.1 VDC minimum
Linear Output Ranges	0-22.2 mA (0-20 mA / 4-20 mA), 0-5.55 VDC (0-5 VDC, 1-5 VDC), 0-11.1 VDC (0-10 VDC)
<b>Data Communication</b>	
Interface	RS-485
Protocol	Modbus RTU (Slave Mode)
Address	1 to 247
Baud Rate	2.8 KBPS to 115.2 KBPS
Parity Bit	None, Even or Odd
Stop Bit	1 or 2 Bits
Data Length	7 or 8 Bits
Communication Buffer	160 Bytes
<b>User Interface</b>	
Keypad	4 Keys
Display Type	4 Digit LCD Display
No of Display	2
Upper Display Size	0.58" (15 mm)
Lower Display Size	0.3" (7.8 mm)
<b>Programming Port</b>	
Interface	Micro USB
PC Communication Function	Firmware upgrade
<b>Digital Filter</b>	
Function	First Order
Time Constant	0, 0.2, 0.5, 1, 2, 5, 10, 20, 30, 60 seconds, programmable
<b>Environmental and Physical Specifications</b>	
Operating Temperature	-10°C to 50°C
Storage Temperature	-40°C to 60°C
Humidity	0 to 90% RH (Non-Condensing)
Altitude	2000 meters maximum
Pollution	Degree II
Insulation Resistance	20 M $\Omega$ minimum (@500 VDC)
Dielectric Strength	2000 VAC, 50 / 60 Hz for 1 Minute
Vibration Resistance	10 to 55 Hz, 10 m / s <sup>2</sup> for 2 Hours
Shock Resistance	200 m / s <sup>2</sup> (20g)
Dimensions (W*H*D) (mm)	22.5*96*83
Weight (grams)	160
<b>Approval Standards</b>	
Safety	UL61010-1, CSA 22.2 No.61010-1-12, EN61010-1 ( IEC1010-1 )
Protective Class	IP65 for Panel (in process), IP20 for terminals and housing, all indoor use
EMC	EN61326

## Ordering Code



## Accessories

**OM98-3** = Isolated 4-20 mA / 0-20 mA Retransmission Module

**OM98-5** = Isolated 0-10 VDC Retransmission Module

**PA98-1** = USB Programming Adaptor

**CC98-1** = Programming Port Cable (1.5 m)