

SIGMA 312A VOLTAGE, CURRENT AND RESISTANCE INPUT MODULE

Sigma 312a



- 10 input channels
- 8 poles per channel
- DC voltage, DC current, PT100, Resistance and 0/4-20mA transmitter inputs + power supply
- Connector inputs for fast set-up

SPECIFICATION

Full signal conditioning is provided in the Sigma 312a module, enabling any of the following transducers to be connected to any of the 10 channels using the 8 pin circular connectors mounted on the front panel.

Number of channels :	10
Poles per channel :	8
Input connections :	8 pin circular sockets
Measurement modes :	DC voltage, DC current, PT100, Resistance and 0/4-20mA transmitters

DC Voltage

Range : ±10V	Sensitivity : 0.2mV
± 1.5V	25µV
± 180mV	3µV
± 23mV	0.35µV
Accuracy (@23°C) :	±0.015% reading + 0.1% range + 6µV
Temp coefficient :	0.0025% reading + 0.1µV/°C
Additional error :	0.05% range at 200/sec

DC Current

Shunt resistor :	62 (internal)
Accuracy :	0.005%
Stability :	3ppm/°C

PT100

Configuration :	2, 3 or 4 wire
Accuracy :	-50 to 400°C - ±0.2°C 150 to 600°C - ±0.4°C

Resistance

Configuration :	2 or 4 wire
Measurement ranges :	2000 , 256 and 23
Accuracy :	0.03% rdg + 0.015% rng +3m
Sensing current :	0.75mA pulsed

Transmitters

Each channel provides 24Vdc to energise programmable transmitters. The DC supply is indicated by a front panel LED. Transmitters can be configured in two ways :-

2-wire Each transmitter is connected in series with the 24V supply and a high stability shunt resistor. The resulting current is proportional to the measured parameter and is converted into a DC voltage suitable for measurement by the Sigma module.

4-wire For each channel, 2 wires provide 24V to energise the transmitter and 2 separate wires feed back the measured value in the form of a 4-20mA signal. The result is measured across the internal resistor.

A-D Converter

Resolution	Channels per second	SMR
19 bits	10	>60dB
18 bits	20	>60dB
17 bits	40	>60dB
15 bits	100	0dB
13 bits	200	0dB

Interference rejection

AC common mode rejection ratio (channel group) :	>140dB
AC single channel common mode rejection ratio :	>120dB
DC channel common mode rejection ratio :	>108dB
AC series mode rejection ratio 50 or 60Hz (±0.05%) :	>60dB

Maximum operating voltages

Max voltage between any + and all - inputs :	12V
Max voltage between any two - inputs :	11V
Max voltage between any two terminals :	22V
Channel overload protection (continuous) :	50V
Isolation between channel group and RS485 :	1500V

Power requirements

Operating voltage :	12 to 28V
Power consumption :	3W

Note : The DC voltage for this module is provided by the Sigma 381 interface and is supplied over the communication cable. When any of the channels are programmed for transmitter measurements a local mains supply must be used in order to produce the 24Vdc transmitter energisation.

Transmitter energisation	24Vdc, generated from local 230Vac 50W supply
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System architecture

Communications interface :	RS485
Maximum Baud rate :	153kB
Max number of Sigma modules on network :	99
Maximum length of network:	1Km

General

Connection for comms and power in :	5 pin connector
Connection for comms and power out :	5 pin connector
Connection for local display :	5 pin connector
Status lights :	Power & comms

Operating Conditions

Temperature range :	-20 to +70°C
Relative humidity (0 to 40°C) :	<90%
Vibration (0 to 400Hz) :	3g in 3 planes

Mechanical

Casing :	Aluminium sealed to IP55
Size (w x d x h) :	250 x 215 x 68mm
Weight :	2.2 Kg

Accessories

Cable plug for communications and power in
 Cable plug for communications and power out
 Cable plug for thermocouple input
 Dust cap for local display socket
 Dust cap for signal input sockets
 AC power cord for local 230Vac