

### SIGMA 314 VOLTAGE, CURRENT AND STRAIN GAUGE MODULE

# Sigma 314



- 8 x 6 pole or 16 x 3 pole input channels
- DC voltage (3 pole) input or
- 1/4, 1/2 or full bridge strain gauge (6 pole) input
- Screw terminal connections with cable glands

#### SPECIFICATION

Full signal conditioning is provided in the Sigma 314 module, enabling any of the following parameters to be connected to any of the 16 (8) channels.

Number of channels : up to 16 x 3 pole (DC Voltage)  
up to 8 x 6 pole (Strain gauge)

Input connections : Screw terminals with cable glands

Measurement modes : DC Volts, DC current  
1/4, 1/2 and full bridge strain gauge.

#### DC Voltage

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

#### DC Current

with external shunt

#### Strain Gauge

Bridge configurations :

Full 350R
Half 350R
Full 120R (option)
Half 120R (option)
Quarter external dummy

Bridge supply : Voltage remote sensed

Bridge voltage : 1.7V to 5.0V (depends on mode and resistance)

Accuracy :	350R Full	0.05%reading +3uE
	350R Half	0.05%reading +5uE
	120 Full	0.05%reading +6uE
	120R Half	0.05%reading +5uE

Repeatability 24hrs : 2uE

Sensitivity :

350R half, full, 120R half	
0-7000uE	: 0.1uE
7000-12000uE	: 0.8uE

Temperature coefficient :

350R full	0.003% reading/°C
350R half	0.003% reading+2uE/°C
120R full	0.003% reading/°C
350R half	0.003% reading+2uE/°C

Accuracies are stated for gauge factor 2 with 2 active gauges. 18 bit ADC at 23°C for 1 year

#### 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. No local power supply is required.

#### System architecture

Communication 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 :	1.8 Kg

#### Accessories

Cable plug for communications and power in

Cable plug for communications and power out

Dust cap for local display socket