

### SIGMA 310 THERMOCOUPLE OR DC VOLTAGE INPUT MODULE

# Sigma 310



- 20 input channels
- 2 poles per channel
- Thermocouple or DC voltage inputs
- Screw terminal connections with cable glands

#### SPECIFICATION

Full signal conditioning is provided in the Sigma 310 module, enabling any of the following parameters to be connected to any of the 20 channels. All valid thermocouple types shown below can be programmed on any channel.

Number of channels : 20  
 Poles per channel : 2  
 Input connections : Screw terminals with cable glands  
 Measurement modes : DC Volts, thermocouples

#### 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

#### Thermocouples:

Thermocouple types : K, J, T, R, S, E, B, N  
 Health monitor : Resistance measurement  
 Cold junction comp : Internal or external  
 Accuracy :

K	-100 to 500°C	0.5°C
K	500 to 1200°C	0.7°C
K	1200 to 1600°C	3.0°C
J	-50 to 360°C	0.5°C
J	360 to 800°C	0.7°C
T	-150 to 400°C	0.5°C
R	0 to 1600°C	2.0°C
S	0 to 1700°C	2.2°C
E	-50 to 290°C	0.7°C
E	290 to 1000°C	1.0°C
B	-200 to 1600°C	1.3°C
N	-100 to 580°C	1.1°C
N	580 to 1300°C	1.3°C

#### 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