Alpha 912

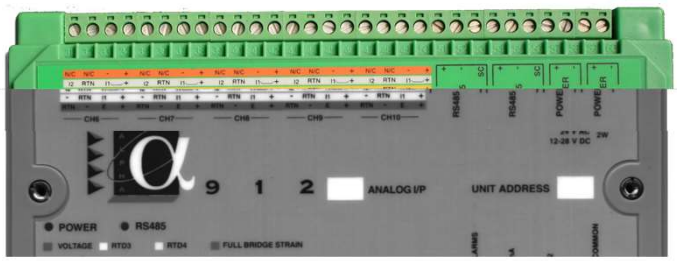
RTD, RESISTANCE AND VOLTAGE INPUT MODULE

What is the Alpha 912 RTD, Resistance and Voltage Input Module?

The 912 provides 10 measurement channels at up to 19 bit resolution and 0.5uV integrity. It is fitted with general purpose disconnectable screw terminals and can be used to measure voltages, currents (using external shunts) , standard Platinum RTD's in 2, 3 or 4 wire configurations and full bridge strain gauges. The resistance mode can also be used for other resistive transducers. Strain gauge bridge offsets can be initialised.
The module can be programmed to integrate signals to be measured over one or more complete mains cycle (50 - 60 Hz) allowing the 912 to reject large levels of mains borne interference super imposed on micro-volt signals. A choice of integration times and a digital filter that can be applied to any channel., together with the high stability circuitry achieve excellent noise performance and rejection.
The 912 supports an automatic range selection facility that enables maximum measurement sensitivity to be maintained for inputs that cross range thresholds. Measurements are made continuously and can be returned in one of several formats most convenient for the supervisory software. Communications data rates up to 153KB are supported. All programming is stored in secure flash memory.

AUXILIARY INPUT/OUTPUTS

The 912 has three digital outputs and one digital input which can be used by a host as general purpose I/O or used internally by the firmware for a local function. Example uses include, synchronisation to an external signal , or local indication of events or alarm conditions . The standard firmware implements an alarm function that can be locally or remotely acknowledged Specific operation can be easily programmed for custom applications.



Features

Voltage , Current, Resistance and Strain

3 and 4 Wire RTD measurements in ° C or ° F

13 to 19 bit resolution. 200 to 10 measurements per second

Programmable Measurement Types

Auxiliary I/O

Scaling, alarm levels, filter functions

Second local programming and diagnostic Interface

High speed communications

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Specifications Details

Number of channels / module:	10
Number of poles / channel:	4
Connector type input channel:	Cage clamp two part screw terminal
Measurement modes:	
Voltage	uV DC mV DC
Resistance	Resistance 2 terminal Resistance 4 terminal PT100 3 terminal PT100 4 terminal
Strain full bridge	350R, 120R

A-D Converter

5 Measurement resolutions are supported:	19 bits at 10 measurements/s 18 bits at 20 measurements/s 17 bits at 40 measurements/s 15 bits at 100 measurements/s 13 bits at 200 measurements/s

In addition a channel filter function can be applied to any channel. This can average the most recent four measurements.

Voltage Measurement

Input voltage ranges	+10V to-10V +1.5V to-1.5V +180mV to-180mV +23mV to-23mV

Automatic range selection is supported.

DC measurement accuracy	+/- 0.015% of reading + 0.01% of range + 6uV
Temperature coefficients DC voltage	25ppm rdg + 0.1uV/ ° C
Measurement sensitivity	<0.5uV on +23mV>-23mV range at 17bits

Note: Displayed sensitivity depends on reporting format. Additional error at 13bit 200/sec mode of 0.05% of range.

Resistance Measurement

Measurement Ranges:	2000 ohm 256 ohm 32 ohm
Sensing Current:	<0.75 mA (switched)
Accuracy 0.3%rdg + 0.015% rng	+3 mohm
Accuracy (max):	1 mohm

RTD Measurement

PT100	-50 to 400°C	+/-0.2°C
	-150 to 600°C	+/-0.4°C

Full Strain Measurement

350 ohm Bridges	
Accuracy full bridge (repeatability)	5uE
Sensitivity at 18 bits	0.2uE (1 active gauge
GF=2)	
Energisation	5mA pulsed
120 OHM Bridges	
Accuracy full bridge (repeatability)	10uE
Sensitivity at 18bits	0.6uE (1 active gauge
GF=2)	
Energisation	5mA pulsed

All specifications subject to change without notice; correct at time of publication. Issue 3 specification relates to 1.01 firmware fit.

Interference Rejection

AC Common mode rejection ratio channel group:	<0.1uV/V
AC Single channel common mode rejection ratio:	<1uV/V
DC channel common mode rejection ratio:	<5uV.V
AC series mode rejection ratio 50 or 60 Hz +/- 0.05% (Applies to 17,18,19 bit measurements).	<1 mV/V
Maximum voltages operating:	
Max. voltage between any (+) and (-) inputs:	12V
Max. voltage between any two (-) input terminals:	11V
Max. voltage between any two terminals:	22V

Overload Protection

Channel Overload Protection	Passive 50V continuous 150V for short periods

Isolation

Isolation test voltage between channel group and power supply or RS485:	Tested at 1500V at normal temperature and humidity

Auxiliary Channel Specification:

Output switch ratings:	
Outputs 1,2:	50mA @ 28VDC max Non isolated Suitable for driving small relays with isolated external supply.
Output 3 Relay outputs:	1.0A at 48V AC/DC
Digital input:	Contact closure to 0v External switch must be isolated

Power Requirement

Connector	2-pole screw terminal
Voltage	24V AC 12 to 28V DC
Current	200mA at 12V 120mA at 24V

General

RS485 INTERFACE	See Manual Baud rates to 153KB
RS232 INTERFACE	RS232 Compatible Signals RX TX 0 to 5-volt signal levels 9k6, 19k2 Baud 8 bits, even parity, one stop bit 3 pole screw connector
STATUS LED's	7
Function	Power / Fault Communication RS485 Communication RS232 Outputs 1-3 Dig. Input 1
Size	180*100*40mm
Weight	400g
Mounting	DIN rail Stackable
Operating Temperature Range	-20 to 70°C
Relative Humidity (noncondensing)	<90% 0 to 40°C
Vibration	3g 0hz to 400Hz in 3 planes
Programming storage	Secure flash memory

Stated Accuracy's are at 23° C