# Alpha 911

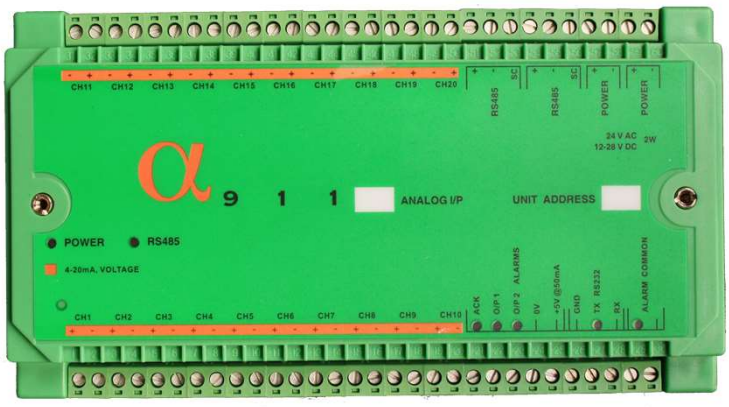
VOLTAGE AND CURRENT INPUT MODULE

## What is the Alpha 911 Voltage and Current Input Module?

The 911 provides 20 channels of voltage and current measurement at up to 19 bit resolution and 1uV integrity. It can be used to measure standard 4-20mA current loops and has a number of internal current shunts for this purpose. The number of channels committed to current measurement is determined when the module is built. Each channel has independent calibration parameters. Without current shunts fitted, this module provides voltage measurement at lower cost than the 910 with the added convenience of disconnectable screw terminals. External current shunts can be used but accuracy is dependent on the integrity of connection and shunt used. The module is fitted with high quality cage clamp, two part screw terminals for all connections.
The module can be programmed to integrate signals to be measured over one or more complete supply cycles (50 - 60 Hz) allowing the 911 to reject large levels of mains borne interference super imposed on microvolt 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 911 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 user software. Communications data rates up to 153.6KB are supported. All programming is stored in Flash memory.

**AUXILIARY INPUT/OUTPUTS**

The 911 has three digital outputs and one digital input that can be used by a host for general purpose I/O or internally by firmware for a local function. Example uses include synchronisation to an external signal, local indication of events or status of input signals. Specific function can be easily programmed for custom applications.




## Features

**Voltage and Current measurements in compact DIN rail module.**

**20 Channels per Module**

**13 to 19 bit resolution.**

**10 to 200 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:** | 20 |
| **Number of poles / channel:** | 2 |
| **Connector type input channel:** | Cage clamp two part screw terminal |
| **Measurement modes:** | uV DC<br>mV DC<br>current<br>4-20 mA |

## A-D Converter

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|---|---|
| **5 Measurement resolutions are supported:** | 19 bits at 10 measurements/s<br>18 bits at 20 measurements/s<br>17 bits at 40 measurements/s<br>15 bits at 100 measurements/s<br>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

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|---|---|
| **Input voltage ranges** | +10V to-10V<br>+1.5V to-1.5V<br>+180mV to-180mV<br>+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 and °F |
| **Measurement sensitivity** | <0.5uV on +23mV>-23mV range at 17bits |

Note: Displayed sensitivity depends on reporting format.
Additional error at 200/sec mode of 0.06% of range.

## Current Measurement

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|---|---|
| Ranges: | 4-20 mA<br>0 -+/-20mA<br>0-+/-2.5mA |
| Accuracy: | +/-0.1%<br>(internal shunts) |
| Resolution: | 0.3 uA at 17bit<br>On 20mA range |

## Interference Rejection

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|---|---|
| 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

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|---|---|
| **Channel Overload Protection** | Passive<br>50V continuous<br>150V for short periods |

## Isolation

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

## Auxiliary Channel Specification:

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|---|---|
| **Output switch ratings:** | |
| Outputs 1,2: | 50mA @ 28VDC max<br>Non isolated<br>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<br>External switch must be isolated |

## Power Requirement

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|---|---|
| **Connector** | 2-pole screw terminal |
| **Voltage** | 24V AC<br>12 to 28V DC |
| **Current** | 200mA at 12V<br>120mA at 24V |

## General

| | |
|---|---|
| RS485 INTERFACE | Standard specification<br>Baud rates to 153KB supported |
| RS232 INTERFACE | RS232 Compatible Signals<br>RX TX 0 to 5-volt signal levels<br>9k6, 19k2, 38.4k Baud<br>8 bits, even parity, one stop bit<br>3 pole screw connector |
| STATUS LED's | 7 |
| Function | Power / Fault<br>Communication RS485<br>Communication RS232<br>Outputs 1-3<br>Dig. Input 1 |
| Size | 180*100*40mm |
| Weight | 400g |
| Mounting | DIN rail<br>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 |