ADC_R SDI-12 probe

ADC_R SDI-12 probe has been designed for measurement of analogue values such as voltage or resistivity where I2C interface cannot be used due to cable length limitation. SDI-12 interface can easily reach up to 150m and provide reliable results.

The ADC_R SDI-12 probe is available in ABS enclosure and meets IP65 protection requirements. There are up to 4 analogue individuals available on a screw connector. The probe consists of following parts:

- ADS1115 16 bits ADC
- MCU based on Atmel Xmega32E5 with application FW for measurement and SDI-12 interface
- Calibration constants EEPROM memory
- Step down power unit

Usage

- 3 channels resistivity measurement
- 4 channels voltage measurement 0-3V by default, divider to 0-10V or other ranges possible, specify upon order
- 2 x current loop measurement 4 -20mA

ADC_R SDI-12 probe	Parameter
Protection	IP65
Operating temperature	-40 to +85°C
Power supply	2.4 to 16V, polarity reversal protection
Power consumption	2.1mA in normal/measurement mode
Interface	SDI-12, version 1.3
Dimensions in mm	Probe: 70 x 50 x 37mm + 25mm glands from each side, cable length 4m (defaullt)
Weight	155g including default cable
Chip	ADS1115
Precision	0.5% from the range of measured analogue value
Resistivity range	0 to 65k ohms
Voltage range	0 – 3V by default, 0- 10V or other range upon request
Current range	4 – 20mA

SDI-12 Interface

Default address: 1
Supported commands: aI!, aM!, aC!, aAB!, ?!
Results of measurement can be found in D0 register and following string is returned: a+CH1+CH2+CH3+CH4
Based on FW specification, following responses can be expected:

- 3 channels R measurement: a+R1+R2+R3
- 4 channels voltage measurement: a+V1+V2+V3+V4
- 2 channels current loop measurement: a+C1+C2

Typical waiting time: 0s

Example of the probe response connected to Solidus Tech Cloud logger:

```
Probe0:
1,1,0,0,0E/
******************************
Deparsing node 1
Probe addr:1
SDI cmd:0
ID: 113 SOLIDUS_ADC_3R_001_25032024
M response:10003
Register D0:
1+4648.5+2685.0+17458.9
SDI addr:1
Measurement cmd:!1M
Register:D0
Mask:0x0E
******************************
Node content:4648.500
Node content:2685.000
Node content:17458.900
End!
******************************
```

Wiring