



SA 32

Analogue data acquisition module  
with 8 / 32 channels in 2 or 4 wires

SA 32 analogue data acquisition system is dedicated to measurement, monitoring and recording of analogue signals on 32 channels in 2 wires or 8 channels in 4 wires.

- Voltage: 0-10 V
- Current: 0-20 and 4-20 mA with external shunts
- Thermocouples: Type K/T/J/S/B/N with or without cold junction compensation
- Resistance: 3000  $\Omega$
- RTD: Pt100 in 3 or 4 wires
- Dry contacts

## Description

SA 32 analogue data acquisition system is dedicated to measurement, monitoring and recording of analogue signals on 32 channels in 2 wires or 8 channels in 4 wires.

Designed with flexibility and precision, this system can be used in numerous applications, on site or in laboratory.

SA 32 allows 100 addresses to be programmed, which can be defined to measure real channels (up to 32 channels) or virtual channels used to perform calculations / maths functions.

Input channels are scanned by a CMOS logic circuit.

Scanning is organised in «tasks» or scanning procedures, defining what to scan (channels), how to scan (scanning start and stop, scanning rate), and how to process the results (mass storage, RS 232 output). The user has access to 16 tasks, therefore 16 different scanning subgroups.

The datalogger is completely programmable via keyboard and help menu on screen, or via RS 232 interface using LTC 32W software supplied with the unit.

Backlit LCD display shows 2 channels simultaneously either under digital or graphical format (150 points definition) on a time base adjustable between 1 s to 1 min. It also enables stored valued to be recalled on screen for display under digital or graphic format.

SA 32 perform measurement, monitoring and recording of analogue signals coming from sensors of physical or electrical values. These signals can be:

- Voltage: 0-10 V
- Current: 0-20 and 4-20 mA with external shunts
- Thermocouples: Type K/T/J/S/B/N with or without cold junction compensation
- Resistance: 3000  $\Omega$
- RTD: Pt100 in 3 or 4 wires
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# Specifications

## Specifications and performances in temperature @23°C ±1°C

Uncertainty is given in % of reading + fixed value.

### Resistive probes: Measurement

Type	Range	Resolution 7 samples / s	Resolution 20 samples / s	Resolution 50 samples / s	Accuracy / 1 year 7 samples / s	/ 1 year 20 samples / s	/ 1 year 50 samples / s
Pt100	-220°C to +850°C	0.01°C	0.1°C	1°C	0.025% RDG + 0.1°C	0.025% RDG + 0.15°C	0.04% RDG + 0.6°C

Accuracies are given for 4-wire mounted probes

Admissible measuring current: 1 mA

Admissible line resistance: 100 Ω per wire

Temperature coefficient: < 0.003% /°C

### Thermocouples: Measurement

Type	Range	Resolution 7 samples / s	Resolution 20 samples / s	Resolution 50 samples / s	Accuracy / 1 year 7 samples / s	Accuracy / 1 year 20 samples / s
K	-250 to -200°C -200 to -100°C -100 to +1370°C	0.5°C 0.2°C 0.1°C	0.5°C 0.2°C 0.1°C	1°C 1°C	0.01% RDG + 1°C 0.01% RDG + 0.4°C 0.01% RDG + 0.2°C	0.02% RDG + 1.4°C 0.02% RDG + 0.5°C 0.02% RDG + 0.3°C
T	-250 to -200°C -200 to -100°C -100 to +400°C	0.5°C 0.2°C 0.1°C	0.5°C 0.2°C 0.1°C	1°C 1°C	0.01% RDG + 0.8°C 0.01% RDG + 0.4°C 0.01% RDG + 0.2°C	0.02% RDG + 1°C 0.02% RDG + 0.5°C 0.02% RDG + 0.3°C
J	-210 to -120°C -120 to1100°C	0.2°C 0.1°C	0.2°C 0.1°C	1°C 1°C 1°C	0.01% RDG + 0.3°C 0.01% RDG + 0.2°C	0.02% RDG + 0.4°C 0.02% RDG + 0.3°C
S	-50 to +120°C +120 to +1768°C	1°C 1°C	1°C 1°C	1°C 1°C	0.01% RDG + 1.2°C 0.01% RDG + 0.7°C	0.02% RDG + 1.7°C 0.02% RDG + 1°C

B	+400 to +900°C +900 to +1820°C	1°C 1°C	1°C 1°C	1°C 1°C	0.01% RDG + 1.5°C 0.01% RDG + 0.8°C	0.02% RDG + 2°C 0.02% RDG + 1°C
N	-250 to -200°C -200 to -120°C -120 to +1300°C	1°C 0.2°C 0.1°C	1°C 0.2°C 0.1°C	1°C 1°C 1°C	0.01% RDG + 1.5°C 0.01% RDG + 0.6°C 0.01% RDG + 0.3°C	0.02% RDG + 2°C 0.02% RDG + 0.9°C 0.02% RDG + 0.4°C

Accuracy is given for reference @ 0°C.

When using the internal reference junction, add an additional uncertainty at 0°C of  $\pm 0.5$  °C in 2-wire measurement and  $\pm 1$  °C in 1-wire measurement.

Input impedance: > 1000 M $\Omega$

Measuring current: < 5 nA (typical: 300 pA)

Admissible line resistance: 100  $\Omega$  per wire

Temperature coefficient: < 10% of accuracy /°C

## Specifications and performances in process @23°C $\pm 1$ °C

### DC voltage: Measurement

Range	Resolution 7 samples / s	Resolution 20 samples / s	Resolution 50 samples / s	Accuracy / 1 year 7 samples / s	Accuracy / 1 year 20 samples / s
60 mV	1 $\mu$ V	1 $\mu$ V	20 $\mu$ V	0.02% RDG + 6 $\mu$ V	0.02% RDG + 6 $\mu$ V
600 mV	2 $\mu$ V	10 $\mu$ V	100 $\mu$ V	0.02% RDG + 10 $\mu$ V	0.02% RDG + 30 $\mu$ V
6 V	20 $\mu$ V	100 $\mu$ V	1 mV	0.02% RDG + 0.1 mV	0.02% RDG + 0.3 mV
0-10 V	20 $\mu$ V	100 $\mu$ V	1 mV	0.02% RDG + 0.1 mV	0.02% RDG + 0.3 mV

Input impedance: > 1000 M $\Omega$

Measuring current: < 5 nA (typical: 300 pA)

Acceptable maximum voltage in common mode: 50 V- or ~ peak

Acceptable maximum voltage between different inputs: 50 V- or ~ peak

Temperature coefficient: < 10% of accuracy /°C

### DC current: Measurement

With or without loop supply

Range	Measuring range	Accuracy / 1 year 7 samples / s	Accuracy / 1 year 20 samples / s
0-20 mA	0 mA to 20 mA	0.1% RDG	0.1% RDG

4-20 mA	4 mA to 20 mA	0.1% RDG	0.1% RDG
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With 50  $\Omega$  external shunt

### Resistance: Measurement

Range	Resolution 7 samples / s	Resolution 20 samples / s	Resolution 50 samples / s	Accuracy / 1 year 7 samples / s	Accuracy / 1 year 20 samples / s
60 $\Omega$	1 m $\Omega$	1 m $\Omega$	10 m $\Omega$	0.025% RDG + 6 m $\Omega$	0.025% RDG + 6 m $\Omega$
600 $\Omega$	2 m $\Omega$	10 m $\Omega$	100 m $\Omega$	0.025% RDG + 10 m $\Omega$	0.025% RDG + 30 m $\Omega$
3000 $\Omega$	20 m $\Omega$	100 m $\Omega$	1 $\Omega$	0.025% RDG + 0.1 $\Omega$	0.025% RDG + 0.3 $\Omega$

Uncertainties given for 4-wire measurement

Measuring current: 1 mA

Admissible line resistance: 100  $\Omega$  per wire

### Dry contacts: Measurement

Measuring current: 1 mA

Level 0: line resistance R0  $\geq$  100 k $\Omega$

Level 1: line resistance R1  $\leq$  1 k $\Omega$

### Relay outputs

Relay breaking capacity on resistance load: 48 V, 1 A or 30  $\Omega$

Switching life: 5.105

Relays are triggered on alarm presence, conditional signal or command from the communication interface.

### Analogue output

Range	Measuring range	Accuracy / 1 year
0-2.55 V	10 mV	10 mV

Admissible load resistance: 2.5 k $\Omega$

### Further features

Scanning rate

## Models and accessories

### Instrument:

SA32 C58                      Data acquisition system with keyboard and 64,000 memory capacity

Delivered in standard with:

- User manual
- Power cable
- CD with configuration software
- RS 232 cable

### Accessories:

ER48358-000	Measurement connector interface
ER48345-004	Four pin connector
ER44007-024	50 $\Omega$ shunt for process current measurement
AN 5883	Bracket mounting for panel installation (T2 box type)
AN 5884	Rack mounting kit for rack installation (T2 box type)
AN 5876	RS232 25p printer cable
AN 6901	Case for bench top instruments
ATC061	Converter RS 232 / USB

### Software:

VISULOG	Monitoring & data processing software full version – 1 licence
VISULOG-ETAL	Monitoring & data processing software full version – 1 licence + Calibration module
VISULOG-PHARMA	Monitoring & data processing software full version – 1 licence + Module for advanced management of access rights, 21 CFR Part 11 compliant
VISULOG-ETAL-PHARMA	Monitoring & data processing software full version – 1 licence + Calibration module + Module for advanced management of access rights, 21 CFR Part 11 compliant

### Software licences:

LIC VISU	Additional license for VISULOG
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LIC VISU ETAL Additional license for VISULOG with ETAL optional module

LIC VISU PHARMA Additional license for VISULOG with PHARMA optional module

LIC VISU ETAL PHARMA Additional license for VISULOG with ETAL and PHARMA optional module

LIC VISULOG WEB License for VISULOG WEB

## Certification:

QMC11 COFRAC certificate of calibration

With all relevant data points where the device has been tested

## Packing information:

Size 225 x 88 x 310 mm

Weight 3 kg