

data acquisition and monitoring system

SA 10

Housed in a compact package suitable for benchtop or panel mounted installation, any of the ten inputs can be programmed separately, with ease, via keyboard or computer (type of input, alarm limits, scaling and channel scanning, etc).

It works as an independent data logger or can be linked to a computer.

PC compatible software can dialogue with the SA 10. The data acquisition system can be programmed from the PC, measurements can be displayed on the computer screen and stored on its hard disk for subsequent statistical analysis.

Applications are various:

- Measurement acquisition and monitoring.
- Input/output interface for a computer or a programmable controller.
- Networking the acquired measurements.



- 10 universal analogue inputs
- 1 counter input
- 22 alarms
- RS 232/RS 485 network interface
- MODBUS RTU Protocol
- PC compatible software packages

functions

The SA 10 comes in two versions:

SA 10 D: This version includes a keyboard to program and use the instrument as well as a front display panel. It operates as an independent data logger for monitoring inputs using a 20 channel relay output board. It may also be connected to a computer.

SA 10 B: This version comes without a visual display and is intended for connection with a computer.

Measurement

The SA 10 can receive up to 11 input channels via a detachable screw-terminal block. Channels 1 to 10 are universal and are easily programmed to measure and linearise stimuli from both platinum and thermocouple temperature sensors, AC or DC voltages as well as process data from pre-conditioned sensors. Channel 11 is dedicated to pulse count applications.

All measurement parameters are configured by software, without any need to modify internal hardware straps or swap components.

Monitoring

The SA 10 includes a powerful independent monitoring and alarm capability. The user can set 2 different alarm limits per channel with optional programmable hysteresis. If a threshold limit is exceeded, an integral alarm SPDT relay common to all channels is set and an alarm message transmitted over the network interface. Consequently, a LED lights on the display. An optional 20 channel relay output board (2 relays per channel) can be installed in the system, providing additional control over individual external devices and allowing the implementation of sophisticated alarm scenarios.

An internal clock gives the date and time,

showing the user when the limits are exceeded.

Scaling and Processing

Under program control, each process input can be scaled and smoothed to display a real measured value according to the stimuli received. Simple arithmetic operators such as + or - can be applied between channels.

Networking

The SA 10 is supplied with an RS 232 standard interface requiring no specific protocol. This interface can also be configured to work in MODBUS RTU protocol environments.

Optionally, the system can be delivered with a network interface module supporting several devices in a multi-drop environment. This network conforms to RS 485 and MODBUS RTU protocol.

specifications

Scanning

The SA 10 unit can be programmed to scan channels 1 to 11 in series or each channel can be inhibited or enabled individually.

Two scanning modes can be programmed:

- continuous scanning;
- scanning at a programmed time interval (for example 1 cycle every 10 minutes).

Inputs

Pulse counter (on channel 11)

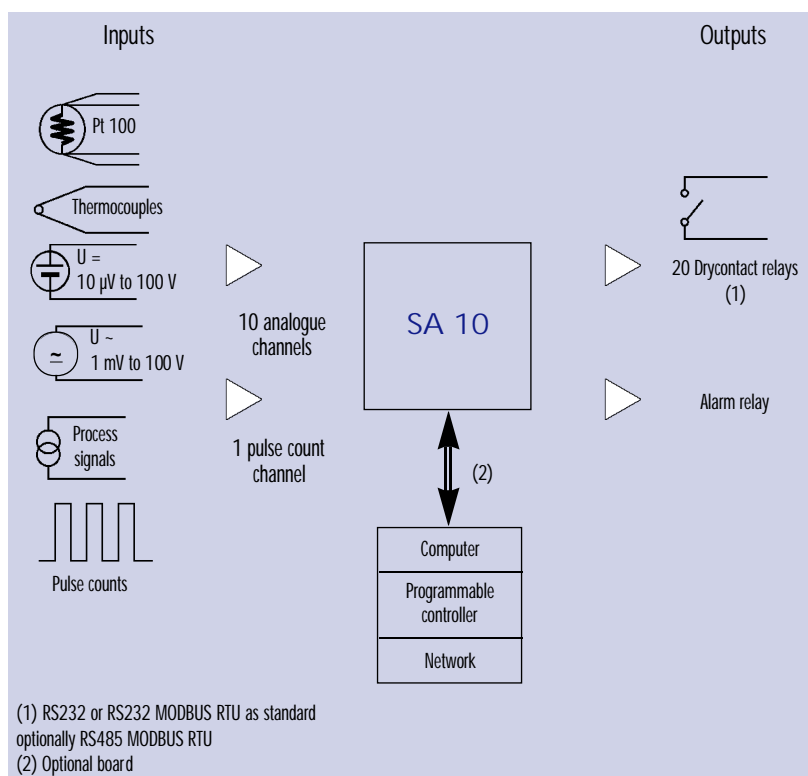
Voltage level 1 > 2.7 V

Voltage level 2 < 1 V

Maximum voltage 50 V

Input current 1.6 mA (TTL)

Maximum frequency 10 kHz.



Electrical measurement and process signals

Function	Range	Resolution	Accuracy (1)	Input resistance
DC voltage	50 mV	10 µV	0.2% + 3	> 1000 M
	500 mV	100 µV	0.2% + 2	> 1000 M
	5 V	1 mV	0.2% + 2	1 M
	50 V	10 mV	0.2% + 2	1 M
	100 V	100 mV	0.2% + 2	1 M
AC voltage	5 V	1 mV	0.5% + 6	1 M
	50 V	10 mV	0.5% + 6	1 M
	100 V	100 mV	0.5% + 6	1 M
DC current	0-20 mA		0.3% + 3	with shunt 10 - 0.1%
	4-20 mA		0.3% + 3	

Nota : programmable scaling ± 99 999.

(1) ± (% of reading + number of representation units) over 1 year.

Temperature measurement

Sensor	Range (1)	Resolution	Accuracy (2)
100 RTD (3)	- 220 to + 950°C	0.1°C	0.2% + 0.4°C
K	- 100 to + 1 372°C	0.1°C	0.2% + 1 °C
T	- 100 to + 400°C	0.1°C	0.2% + 1 °C
J	- 120 to + 1 100°C	0.1°C	0.2% + 0.7°C
R	- 50 to + 120°C	1°C	0.2% + 6 °C
	+ 120 to + 1 768°C	1°C	0.2% + 3 °C
S	- 50 to + 450°C	1°C	0.2% + 7 °C
	+ 450 to + 1 768°C	1°C	0.2% + 4 °C

(1) For a given type of sensor, range and accuracy selection can be automatic. Range overrun is possible with lower accuracy.

Display in °C or °F is programmable.

(2) ± (% of reading + number of degrees C) over one year without RJC. The error induced by the RJC device is < 1°C.

(3) 100 RTD 3 wire or 4 wire sensor.

general specifications

Display (SA 10 D only)
The SA 10 D displays the channel number and the measurement value on the 14 mm LED.

Measurements counts: 6 000.

Channels over the limit are indicated by a red light.

The user can continually display one channel while the others are measured and monitored, with any alarms being noted. Any range overstepping is indicated by an error number.

Also, the instrument signals if there is a fault on one of the scanned channels (eg. thermocouple break, current loop break ...).

Programming.....

Parameter programming of each channel and function mode is done using five keys on the front panel (SA 10 D only).

Access to programming is secured by an entry code and the programmed informa-

tion is stored in the memory. In the event of any power cut, the programmed configuration is saved.

Programming may also be done via the computer.

Protection.....

Mechanical: to IP40 standard; optionally, an air and watertight front panel and joint can be supplied to IP55 standard.

Rejection.....

Common mode rejection ratio: 130 dB at 50 and 60 Hz.

Serial mode rejection ratio > 60 dB at 50 and 60 Hz.

Maximum allowable voltage between 2 channels: 200 VDC or VAC peak.

Maximum allowable common mode voltage: 200 VDC or VAC peak.

Operating conditions.....

Reference range: $23 \pm 1^\circ\text{C}$, 45 to 70% relative humidity.

Nominal range and limits: 0 to 50°C , relative humidity 20 to 80% without condensation.

Temperature coefficient < 10% of resolution per degree C.

Power Supply.....

110 to 260 VAC, 50 or 60 Hz.

Presentation.....

Table case 144 x 72 x 200 mm.

Rack or Panel mountable (cut-out 138 x 66 mm).

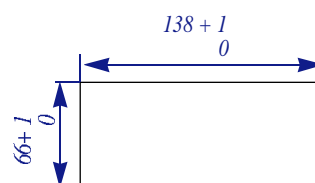
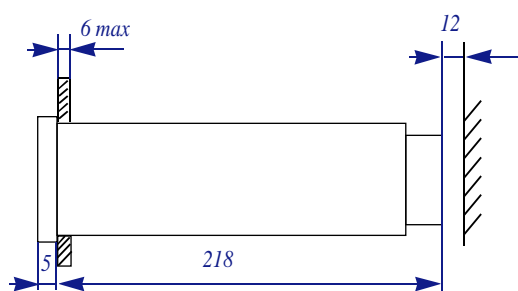
Weight: 1.3 kg.

Optional DIN rail mounting kit (SA 10 B).

Connections.....

By detachable screw-terminal connector block complete with detachable RJC module.

dimensions



Panel cutout

Dimensions in mm

options

Two option boards can be installed in the SA 10.

20 alarm relay board.....

Each relay can be assigned to an alarm limit and programmed to set or reset on overrun.

Relay specifications: 1 A - 48 V - 30 W.

The relays are bi-stable devices which maintain their state during power outages. Wiring is by screw-terminal connector block.

RS485 interface board.....

This interface handles communications between the SA 10 and a network. Trans-

mission takes place according to RS485 electrical specifications and to the Modbus RTU data exchange protocol. (Modbus is a registered trade mark of AEG-Modicon Inc. All rights reserved). Wiring is by screw-terminal connector block.

accessories

Transparent door.....

Transparent door for air and watertight panel installation ref. AR 7105.

Shunt.....

10 Ω , 0.1% for 20 mA current measurements.

Benchtop printer.....

Print of

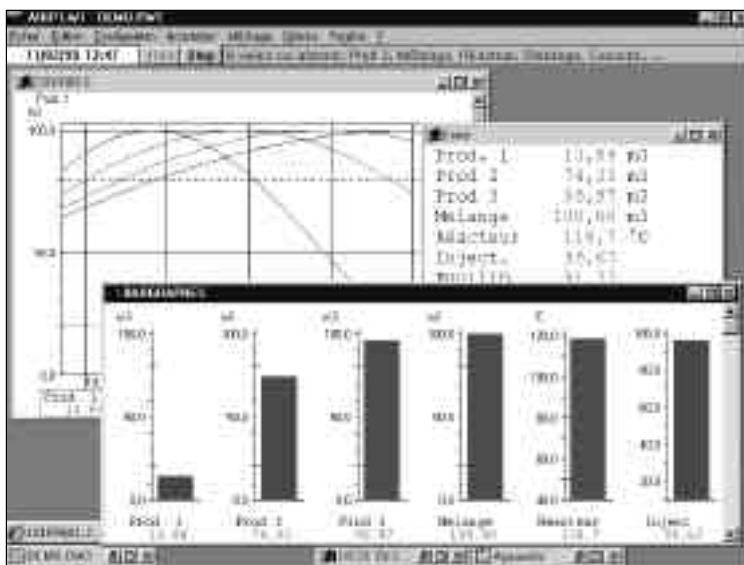
- date and time
- channel number
- measurement value with unit
- alarms.

software .

A library of utility software in English is available for PC compatible computers running MS-DOS; they considerably simplify programming and use of the data acquisition system and immensely increase storage and statistical processing possibilities.

LS 10

This software package allows the user to program an SA 10 from any PC compatible computer. Using multiple choice menus, the operator is helped through all tasks by a question/response programming style. Data can be displayed as curves in different time, or stored on a PC. This software also allows acquisition and storage of measurement files on a PC in the form of .PRN files which can be subsequently collated and re-processed on most standard spreadsheets (Excel, Lotus...).



Visulog

This supervisory software authorises the real time measurement representation in the form of graphic animations, curves, bargraphs and numerical tables, the recording of values and highest alarms in a logbook. Result files can be created on the PC hard disk and processed without stopping the acquisition.

A remote monitoring function is available for calling the duty operators and signalling the alarms on Minitel.

Utilities

In order to simplify all specific developments, a wide range of utilities is available:

- Visulog DDE links with Windows environment.
- DLL library, 16 and 32 bits.
- Labview driver.

ordering instructions .

- 11 channel data acquisition system with display SA 10D
- 11 channel data acquisition system without display SA10B

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- Benchtop 1
- Panel mounted 2
- 20 relay output board
 - without 0
 - with 1
- RS485 network interface board
 - without 0
 - with 1
- Plug
 - European 0
 - British 2
 - North American 3

Accessories

- | | |
|-------------------------------------|-------------|
| Enclosure for 144 x 72 mm | AR 7105 |
| Programming software | LS 10 |
| Graphic software | LS 23 |
| Windows software | LW1 |
| DLL library | LTC001 |
| LABVIEW driver | LTC003 |
| RS 232 printer cable | AN 1122 |
| RS 232 PC cable | AN 1120 |
| RS 232 VDU cable | AN 1121 |
| RS 485 board for PC | AN 1130 |
| 9/25 pin adapter | AN 5894 |
| Input connector | ER48209-201 |
| Relay output connector | ER48209-202 |
| Shunt 20 mA for current measurement | ER44007-030 |
| Panel printer | AN 1131 |
| 10 paper rolls for AN1131 | RVE 40133 |
| 40 columns serial printer | ATC001 |
| 10 paper rolls for penplus printer | ATC002 |



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