DATA ACQUISITION SYSTEM

Acquisition, monitoring and data processing DATALOG 20/90/140

- INPUT and OUTPUT

- 1 to 2000 channels

- High accuracy system

- Statistics and calculations

- PCMCIA

- MODBUS/RTU

The DATALOG series is intended to measure, handle, process, monitor and record analogue and digital signals from all common types of physical sensors. The systems can be supplied in various configurations with a choice of input and output boards as well as options such as built-in display and printer.

Whatever system chosen, and thanks to the measurement metrological quality, the programming power offered by the internal functions, the DATALOG systems are well adapted to numerous applications, such as:
• Stand-alone data acquisition system without PC.
• Sensor calibration system.

• Testing bench.
• Conditioning chamber and autoclave validation.
• PC input/output interface.
• Acquisition module for programmable controller or standard supervisor.

Functions

Embedded software.................
The DATALOG series provides the user with a large amount of programming power.
This can be used or not depending upon the work to be carried out.
Channels......................................
Each module can address 2 000 channels.
These can be real channels (input or output) or virtual channels performing computations.
Monitoring...............................
4 programmable thresholds per channel.
A specific relay output or, if required, a conditional processing may be associated to each threshold.

Mathematical operations.......
Any mathematical, Boolean and statistical computations may be

defined on or between channels. 100 linearization table with 40 couples of counts each may be accessed by the user (measured value associated with computed value), thus allowing corrections of sensors.
Conditional processing......….......
IF, THEN, DO are accessible and authorise changes to constants, thresholds, tasks, i.e. condition scanning.
Channel scanning.........………........
The system is organised by "tasks" (up to 100) which define the inputs/outputs scanning and result output to peripherals.
Storage and PCMCIA........……….......
The DATALOG are equipped (as standard) with 6 storage memories of 8 000 measurements (1 per task over the first six tasks). All the DATALOG with the optional keypad are equipped

with a PCMCIA slot authorising loading of various configurations and large capacity storage.
Configuration and processing …...
All the DATALOG can be configured using PC software which enables the operator to collect the data stored for PC processing (curves, delayed computations, export to spreadsheets).
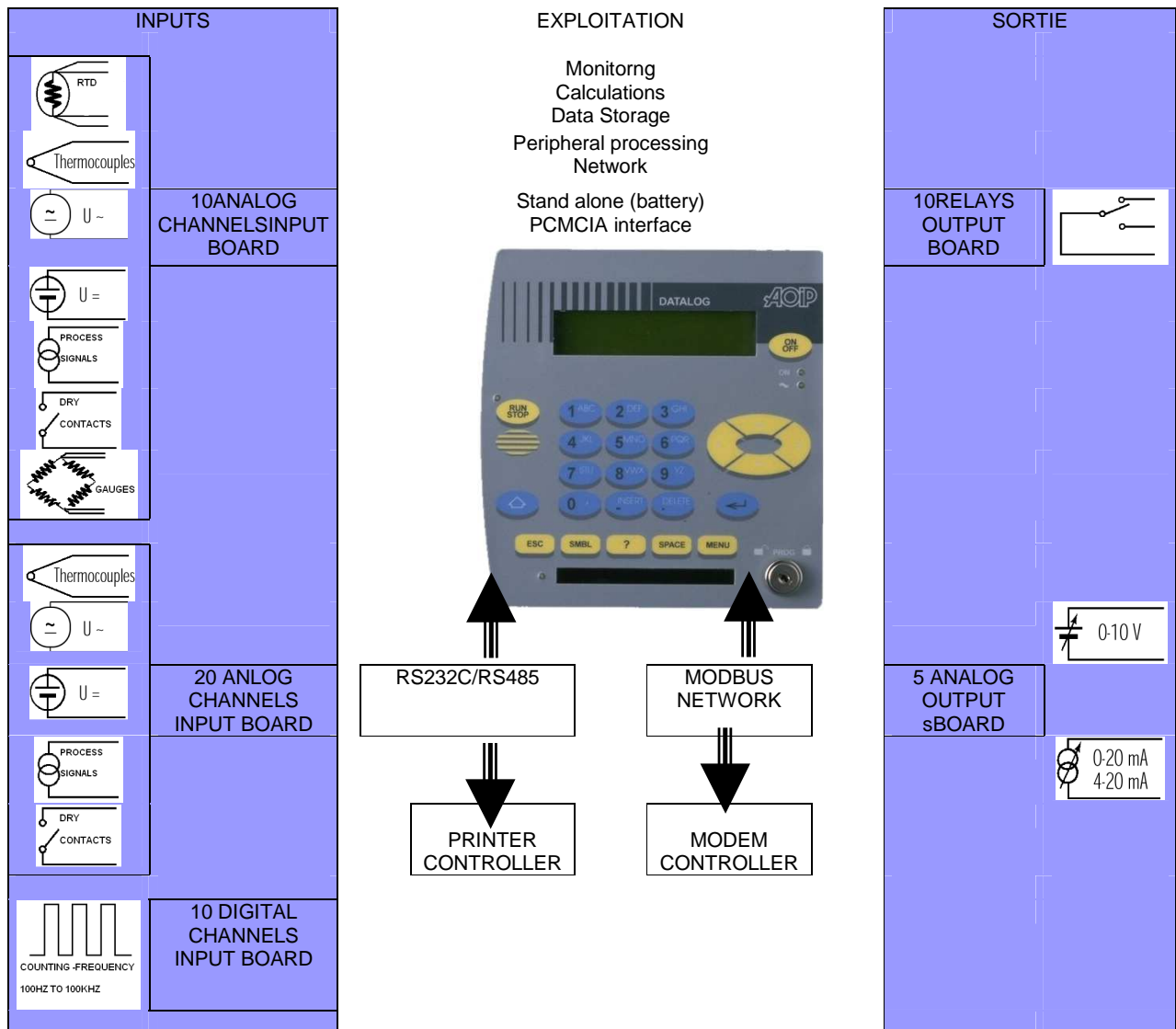**Software...**
In addition to the configuration and processing software, a real time supervisory software is available for networking.
Various utilities (automatic collecting of data via modem) a DLL library and a LABVIEW driver complete the range.

DATA ACQUISITION SYSTEM

Configuration

INPUTS	EXPLOITATION	SORTIE

INPUTS

10ANALOG
CHANNELSINPUT
BOARD

20 ANLOG
CHANNELS
INPUT BOARD

10 DIGITAL
CHANNELS
INPUT BOARD

EXPLOITATION

Monitorng
Calculations
Data Storage
Peripheral processing
Network

Stand alone (battery)
PCMCIA interface

RS232C/RS485	MODBUS NETWORK

PRINTER CONTROLLER	MODEM CONTROLLER

SORTIE

10RELAYS
OUTPUT
BOARD

5 ANALOG
OUTPUT
sBOARD

0-10 V

0-20 mA
4-20 mA

(1)Full, half- or quarter- bridge gauges. Need a power supply board which occupies 1 I/O slot.
(2) RS 485 or RS 232C network interface. MODBUS/RTU (binary) protocol. Up to 32 modules can be linked. D < 1 200 m.

DATA ACQUISITION SYSTEM

Functions

		D20	D90	D140	Caractéristiques - Observations
MECHANICAL SPECIFICATIONS	Size	149x160	149x291	149x393	Front panel dimensions in mm Depth:410 mm, 470 mm with protection cover
	I/O board slots	2	9	14	Universal analogue inputs, digital inputs Strain gauge power supply Relay outputs, analogue outputs
INTERNAL FUNCTIONS	Computations functions	✓	✓	✓	+, -, /, X, OR, AND, NOT, ≥, =, ≤, < >, square root, log, NL, absolute value, statistics: maximum, minimum, average, standard deviation, trigonometric function, time base in seconds
	Monitoring	✓	✓	✓	4 programmable thresholds per channel
	Bulk Storage	✓	✓	✓	In standard system version, storage of 6 blocks of 8 000 measurements PCMCIA slot with keypad versions
	RS232 Interface	✓	✓	✓	ASCII/MODBUS RTU programmable interface
	Network Interface	✓	✓	✓	MODBUS RTU (binary) protocol RS 485 support
	Alarm relays	✓	✓	✓	Dry relay contact alarms on first threshold
	Program backup	✓	✓	✓	Backup battery Life: approx. 1 month
	Keypad display	Option	Option	Option	Optional Liquid Crystal Display, 2 x 20 characters
	Internal printer	Non	Option	Option	Thermal Printer
	12 VDC supply -	✓	✓	✓	Consumption: 10 W approx. according to configuration
	Rechargeable Batteries	Non	Option	Option	Stand-alone operation. Typical life: 4 hours
I/O BOARDS Connection by removable screw connector	**Analogue input boards**	Option	Option	Option	10 or 20 configurable inputs Scanning speed up to 100 meas/s: - DC voltage from 1 µV to 100 V (600 000 counts) - AC voltage from 10 µV to 100 V (600 000 counts) - Resistance from 1 mW to 300 kW - Pt 25, 50, 100 and 1 000 W, Ni 100, resolution 1/10°C or 1/100°C - K, T, J, S, B, N, C, R, E, Mo, L, U, PI thermocouples - Process 4-20 mA, 0-20 mA, 1-5 V, 0-10 V - Contacts - Full, half-, quarter- bridge strain gauges
	Digital input board	Option	Option	Option	10 counter and frequency measurement inputs
	Relay output board	Option	Option	Option	10 outputs to dry contacts
	Analogue output board				5-12 bits programmable outputs ± 10 V, 4-20 mA or 0-20mA
PC SOFTWARE	Programming	✓	✓	✓	Windows Sofwtare
	Monitoring	Option	Option	Option	Windows Sofwtare

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Analogue input boards AN 5885-AN 5906-AN 5905-ATC 017

These boards are for universal inputs.
Each channel is configurable depending on the quantity to be measured. The connection is performed over a removable screw connector for 0.5 to 2.5 mm2 wires.

AN 5885......................................
10 input channels authorising the following measurements:
DC voltages and currents.
AC voltages and currents.
Resistance using 3- or 4- wire configuration.
Platinum and Nickel RTDs.
Thermocouples
Dry contacts
Strain gauges (Need the AN 3700 board).

AN 5906......................................
10 input channels. Same functions as for the AN 5885, except Strain gauges measurements and voltage is limited to 60V.

ATC 017......................................
This board is to be used for energy source measurements. Resistors mounted in series on the inputs ensure the protection against accidental switching short-circuits.
It has 10 input channels for measuring as follows:
DC voltages and currents,
AC voltages and currents.

AN 5905......................................
20 input channels intended for measuring as follows:
DC voltages and currents,
AC voltages and currents,
Thermocouples,
Dry contact

Switching..............................
It is performed over the AN 5885, AN 5900 and ATC 017 boards by using 3-wire dry contact relay.
Differential resistance £ 40 mΩ.
Stray emf: ± 2.5 mV.
Life ³ 108 operations.
For the AN 5905, the switching is static and performed by means of optomos and the voltage between channels is limited to 60 VDC or AC.
For the other boards, the voltage between channels is limited to 150 VDC or AC.

Scanning speeds

Three integration times are programmable channel per channel. This criterion acts on the conversion and settling time, the lowest speed gives the maximum resolution and accuracy.

Canning speed	Integration time	Display capacity	Measurement counts	Representation unit (1)
7 meas/s	100 ms	690 000 cts	690 000 cts	1 RU
20 meas/s	20 ms	69 000 cts	69 000 cts	1 RU
50 meas/s	1 ms	6 900 cts	6 900 cts	1 RU
100 meas/s	(2)	6 144 cts	2 048 cts	3 RU

(1) RU = Representation Unit which cor responds to the minimum deviation between two displayed values. E.g.: for a decimal display
changing 3 counts per 3 counts, RU = 3.
(2) Analogue-to-digital converter, 12 bits with successive approximations. This speed is not available for strain gauges.
For lower speeds, converter ± 690 000 counts.

DC Voltage

Range	Resolution			Uncertainty at 7 m/s over90 days (1)		Uncertainty at 7 m/s over 1 yr (1)	
	7 m/s	**20 m/s**	**200 m/s**	**AN 5885 AN5906**	**AN 5905**	**AN 5885**	**AN 5905**
60 mV	1 µV	1 µV	30 µV	0,008 % +3 µV	0,03 % +5 µV	0,01 % +7 µV	0,06 % +7 µV
600 mV	1 µV	10 µV	300 µV	0,008 % +3 µV	0,03 % +5 µV	0,01 % +7 µV	0,06 % +7 µV
6 V	10 µV	100 µV	3 mV	0,008 % +20 µV	0,03 % +20 µV	0,01 % +40 µV	0,06 % +40 µV
60 V	100 µV	1 mV	30 mV	200 µV	0,03 % +200 µV	0,01 % +400 µV	0,06 % +400 µV
100 V	1 mV	10 mV	300 mV	0,008 % +2mV	0,03 % +2 mV	0,01 % +4 mV	0,06 % +4 mV

AN 5906 has same ucertainties as AN 5885, but a volatge range upto 60 V.
At 20 meas/s, the uncertainty is slightly reduced with regard to 7 meas/s.
At 50 meas/s, the uncertainty over one year is ranging 4 RU (measurement resolution).

At 100 meas/s, the uncertainty over one year is ranging 12 RU (measurement resolution).
The "process current" ranges need an external 50 Ω - 0.1% shunt.
Rejection level at 50 Hz ± 1% over 60 mV range at 7 and 20 meas/s:
- Normal mode > 60 dB
- Common mode > 140 dB.
Input impedance:

100 MΩ over ranges < 6 V
10 MΩ for upper ranges.
Temperature coefficient:
- From 0 to 35°C:
(0.0001% + 0.5 RU)/°C.
- From 35 to 50°C: (0.001% + 1 RU)°C.
Repeatability between two channels: <Constant C.

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AC Voltage

T-RMS value measurement (AC + DC mode). The accuracies (uncertainties) are given for a sine wave voltage without DC component.
Measurement minimum scanning time: 2 seconds.
Measurement range: 4 to 110% of range from 40 to 400 Hz.
Crest factor influence (CF): 1% for CF = 3.
Repeatability between two channels: < C.
Temperature coefficient:(0.05% + 0.5 RU)℃.

range	Resolution	Uncertainty at 1 m/s (1)	
		90days	1 yr
60 mV	10 µV	0,3 % +100 µV	0,5 % +100 µV
600 mV	100 µV	0,3 % +1 mV	0,5 % +1 mV
6V	1 mV	0,3 % +10 mV	0,5 % +10 mV
60V	10 mV	0,3 % +100 mV	0,5 % +100 mV
100V	100 mV	0,3 % +1 V	0,5 % +1 V

1) The uncertainty is given in ± (% rdg + C) at 23℃ ± 5 ℃
with rdg = reading and C = Constant.
Input impedance 100MΩ on ranges<6V
10MΩ fro upper ranges
Nota: boards AN 5905 and AN 5906 limited to 60V

Resistance
Not available for AN 5905
Connection 3 or 4 wires

range	Resolution			Uncertainty at 7 m/s on 0 days (1)	Uncertainty at 7m/s on 1 yr (1)
	7 m/s	20 m/s	50 et 200 m/s	AN 5885/5906	AN 5885/5906
60 Ω	1 mΩ	1 mΩ	30 mΩ	0,01 % +5 mΩ	0,02 % +7 mΩ
600 Ω	1 mΩ	10 mΩ	300 mΩ	0,01 % +5 mΩ	0,02 % +7 mΩ
3 kΩ	10 mΩ	100 mΩ	3 Ω	0,01 % +40 mΩ	0,02 % +60 mΩ
30 kΩ	100 mΩ	1 Ω		0,01 % +400 mΩ	0,02 % + 600mΩ
300 kΩ	2 Ω	10 Ω		0,01 % +4 Ω	0,02 % +6 Ω

(1)Inn ± (%R + C) à 23 ± 5℃. with R = Reading et C = constant.
The uncertainties at 20 meas/s are the same as for 7 meas/s.
At 50 meas/s, the uncertainty over one year is ranging 4 RU.
At 100 meas/s, the uncertainty over one year is ranging 12 RU.
When measuring with 3- wire configuration, add 100 mΩ to the uncertainties above and, if required, the possible line unbalance.
Measurement current: 1 mA for ranges
from 60 Ω to 3 kΩ and 10 µA for 30 kΩ
and 300 kΩ ranges.

Permissible line resistance: < 100 Ω per wire.
Repeatability between two channels:
3-wire < (100 mΩ + 3 RU)
4-wire < (10 mΩ + 3 RU).
1

RTD's
Unavailable with the AN 5905 input board.
Connection: 3- or 4- balanced wire.
RTD table according to IEC 751.

Type	Meas domain	Resolution			Uncertainty at 7 m/s on 0 days (1)	Uncertainty at 7m/s on 1 yr (1)
		7 m/s	20 m/s	50 et 200 m/s	AN 5885 et AN5906	AN 5885 et AN5906
Pt 25	- 220 à +1200℃				0,01 % + 0,05℃	0,02 % +0,07℃
Pt 50	- 220 à +1200℃				0,01 %+ 0,03℃	0,02 % +0,04℃
Pt 100	- 220 à +1200℃	0,01℃	0,1℃	1℃	0,01 % + 0,01℃	0,02 % +0,02℃
Pt 1000	- 220 à +600℃				0,01 % + 0,01℃	0,02 % +0,02℃
Ni 100	- 60 à +180℃				0,01 % + 0,01℃	0,02 % +0,01℃

(1)Inn ± (%R + C) à 23 ± 5℃. with R = Reading et C = constant.
The uncertainties at 20 meas/s are the same as for 7 meas/s.
At 50 meas/s, the uncertainty over one year is ranging 2 RU.
At 100 meas/s, the uncertainty over one year is ranging 3 RU.
When measuring with 3- wire configuration, add 0.25℃ to the uncertainties above and the line unbalance value converted in ℃.
Measurement current: 1 mA.
Permissible line resistance ≤ 100 Ω per wire.
Temperature coefficient: (0.002% + 0.0025℃)/℃.

Repeatability between two channels: ≤ 0,05℃ with 4 wires, ≤ 0,2℃ with 3 wires.

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Thermocouples

Three reference junction compensation modes are programmable: without RJC, with built-in RJC (1 Pt 100 per board), with remote RJC (1Pt 100 per board).

Thermocouple linearization according to IEC Publication 584-1.

Type	Meas Range	Resolution			Uncertainty at 7 m/s over 90 days (1)		Uncertainty at 7 m/s over 1 yr (1)	
		7 m/s	20 m/s	50 et 200 m/s	AN 5885 and AN5096	AN 5905	AN 5885 and AN5906	AN 5905
K	- 250 à - 200℃	0,5℃	0,5℃	1℃	0,008 %+1,0℃	0,03 % + 1 ℃	0,01 %+ 1,5℃	0,06 %+ 1,5℃
	- 200 à - 100℃	0,2℃	0,2℃	1℃	0,008 % +0,4℃	0,03 % + 0,5℃	0,01 %+ 0,6℃	0,06 %+ 0,7℃
	- 100 à +1 370℃	0,1℃	0,1℃	1℃	0,008 %+0,2℃	0,03 % + 0,3℃	0,01 %+ 0,3℃	0,06 %+ 0,3℃
T	- 250 à - 200℃	0,5℃	0,5℃	1℃	0,008 % + 1 ℃	0,03 % + 1 ℃	0,01 %+ 1,5℃	0,06 %+ 2 ℃
	- 200 à - 100℃	0,2℃	0,2℃	1℃	0,008 % +0,4℃	0,03 % + 0,5℃	0,01 %+ 0,5℃	0,06 %+ 0,6℃
	- 100 à + 400℃	0,1℃	0,1℃	1℃	0,008 % +0,2℃	0,03 % + 0,3℃	0,01 %+ 0,3℃	0,06 %+ 0,3℃
J	- 210 à - 120℃	0,2℃	0,2℃	1℃	0,008 % +0,3℃	0,03 % + 0,4℃	0,01 %+ 0,4℃	0,06 %+ 0,5℃
	- 120 à + 1 100℃	0,1℃	0,1℃	1℃	0,008 % +0,2℃	0,03 % + 0,2℃	0,01 %+ 0,3℃	0,06 %+ 0,3℃
S	- 50 à + 550℃	1℃	1℃	1℃	0,008 % +1,5℃	0,03 % + 1,5℃	0,01 %+ 2 ℃	0,06 %+ 2 ℃
	+ 550 à + 1 768℃	0,5℃	0,5℃	1℃	0,008 % +0,6℃	0,03 % + 1 ℃	0,01 %+ 0,8℃	0,06 %+ 1 ℃
B	- 400 à + 900℃	1℃	1℃	1℃	0,008 % +1,5℃	0,03 % + 1,5℃	0,01 %+ 2 ℃	0,06 %+ 2 ℃
	+ 900 à + 1 820℃	0,5℃	0,5℃	1℃	0,008 % + 1 ℃	0,03 % + 1 ℃	0,01 %+ 1 ℃	0,06 %+ 1 ℃
N	- 250 à - 200℃	1℃	1℃	1℃	0,008 % +1,5℃	0,03 % + 1,5℃	0,01 %+ 2 ℃	0,06 %+ 2,5℃
	- 200 à - 100℃	0,5℃	0,5℃	1℃	0,008 % +0,6℃	0,03 % + 0,7℃	0,01 %+ 0,8℃	0,06 %+ 1 ℃
	- 100 à 0℃	0,2℃	0,2℃	1℃	0,008 % +0,3℃	0,03 % + 0,3℃	0,01 %+ 0,4℃	0,06 %+ 0,4℃
	0 à + 1 300℃	0,1℃	0,1℃	1℃	0,008 % +0,2℃	0,03 % + 0,2℃	0,01 %+ 0,3℃	0,06 %+ 0,3℃
E	- 250 à + 1 000℃	0,1℃	0,1℃	1℃	0,008 % +0,8℃	0,03 % + 1 ℃	0,01 %+ 1 ℃	0,06 %+ 1,5℃
C	- 20 à + 2 320℃	0,2℃	0,2℃	1℃	0,008 % +0,4℃	0,03 % + 0,4℃	0,01 %+ 0,6℃	0,06 %+ 0,6℃
Mo	0 à + 1 375℃	0,1℃	0,1℃	1℃	0,008 % +0,2℃	0,03 % + 0,2℃	0,01 %+ 0,2℃	0,06 %+ 0,2℃
R	- 50 à + 550℃	1℃	1℃	1℃	0,008 % +1,5℃	0,03 % + 1,5℃	0,01 %+ 2 ℃	0,06 %+ 2 ℃
	- 550 à + 1 768℃	0,5℃	0,5℃	1℃	0,008 % +0,5℃	0,03 % + 0,6℃	0,01 %+ 0,7℃	0,06 %+ 0,8℃
L	- 200 à + 900℃	0,1℃	0,1℃	1℃	0,008 % +0,2℃	0,03 % + 0,3℃	0,01 %+ 0,3℃	0,06 %+ 0,4℃
U	- 200 à - 100℃	0,2℃	0,2℃	1℃	0,008 % +0,3℃	0,03 %+ 0,4℃	0,01 %+ 0,4℃	0,06 %+ 0,5℃
	- 100 à + 600℃	0,1℃	0,1℃	1℃	0,008 % +0,2℃	0,03 %+ 0,3℃	0,01 %+ 0,3℃	0,06 %+ 0,3℃
PI	- 100 à + 1 400℃	0,1℃	0,1℃	1℃	0,008 % +0,3℃	0,03 %+ 0,3℃	0,01 %+ 0,4℃	0,06 %+ 0,4℃

Expressed in ± (% rdg + C) at 23℃ ± 5℃ with rdg = r eading and C = Constant..

The uncertainties above are given for an RJC at 0℃.
Using the built-in RJC, add to the uncertainties above:

0.2℃ for the AN 5885 et AN5906 boards
0,3℃ for AN 5905 board.
Repro Repeatability between two channels:
- over a same board: 1 RU,

between two different boards:
1 RU plus the RJC error.
Input resistance ≥100M Ω
Permissible line resistance: KΩ per wire

DATA ACQUISITION SYSTEM

Strain gauges AN3700+AN5885

Sensor power.......................................

A specific power board common to all "gauge" channels occupies one standard slot in the system. Available voltage: 2 V or 10 V switched to each bridge measured. Measurement current: 1 mA or 8 mA switched to each half- or quarter- bridge measured. Voltage and current are selected by switches located on the gauge power board. Three compensation gauges can be connected to three quarter- bridge configurations. Measured signals applied to the standard inputs of the analogue input boards as follows: one channel per quarter- bridge, two consecutive channels per half- or full bridge. Free channels can still be used for other purposes. Sensors: minimum 120 Ω gauges or transducers, maximum voltage drop permissible in one gauge: 3.2 V.

Permissible unbalanced voltages compatible with the 30 mV and 300 mV ranges of the system voltmeter. Measurement rate: 7 meas/s, 20 meas/s or 50 meas/s. Note: The system can measure in full bridge configuration with externally supplied power, in this case, the gauge power board is not necessary.

Configuration	range	power	Measurent range(2)	Resolution at 7 meas/s (2)	Uncertainty at 7 m/s (1)	
					90 jours	1 an
Full bridge	30 mV	10 V	±6 000	0,2 με	0,05 % +0,4ε	0,08 % +0,6 ε
	30 mV	2 V	±30 000	1με	0,05 % + 10με	0,08 % + 12με
	300 mV	10 V	±60 000	0,2 με	0,04 % +0,6ε	0,06 % +1με
	300 mV	2 V	± 300 000	1μ ε	0,04 % + 15ε	0,06 % + 20με
Half bridge	30 mV	8 mA	±6 000	0,2 με	0,05 % +2,4ε	0,08 % +3,6 ε
	30 mV	1 mA	±40 000	1μ ε	0,05 % + 20με	0,08 % + 27με
	300 mV	8 mA	±60 000	0,2 με	0,04 % +2,6ε	0,06 % +4με
	300 mV	1 mA	± 400 000	2με	0,04 % + 25με	0,06 % + 40με
Quater bridge	30 mV	8 mA	±6 000	0,2 με	0,05 % +2,6 ε	0,08 % +4με
	30 mV	1 mA	±40 000	1μ ε	0,05 % + 27με	0,08 % +37με
	300 mV	8 mA	±60 000	0,2 με	0,04 % +2,8ε	0,06 % +4,4 με
	300 mV	1 mA	± 400 000	2μ ε	0,04 % + 32με	0,06 % +50με

(1) Expressed in ± (% rdg + n units) at 23 ± 5°C.
(2) Measurement range and resolution are given for 350 Ω gauges and a gauge factor NGF = 2.

Digital input board AN5886

This board counts pulses or measures frequencies of ten periodic signals. Each channel is coil-insulated from other channels of the data acquisition system. Input voltage for any channel:
Level 1: CH1 > + 2.9 V.
Level 0: CH0 < + 1 V.
Maximum usable voltage: ± 50 VDC or AC peak.
Input current for level 1: 1.6 mA typical.
Input insulation: 100 VDC or AC RMS max. between each channel.

Counter inputs ....
Count positive transitions on the inputs. User selectable bounce filtering time: 500 µs and 1 ms (typical) by a switch located on the digital input board. The filter on channels 1 and 2 can be eliminated to permit high-speed counting. A jumper on the digital input board allows the use of channel input 10 as a trigger to validate or inhibit other counter inputs on the same board.

Channel number

	1 - 2	1 à 10	
Filetr on	None	500 µs	1 ms
Max counting frequency	100 kHz	180 Hz	50 Hz
Mnimum pulse duration	5 µs	2 ms	2 ms
Durée minimale entre impulsions	5 µs	2 ms	2 ms

Frequency inputs ....
Uncertainty: 0.02% + 2 RU.
Temperature coefficient: 0.0004%/°C.
NB: No filter is provided on frequency inputs. A cyclic ratio of approx. 50% (square signal) is advisable to obtain stable measurements but the pulse duration should always be above 5 µs.

Range	Resolution	F min.		Meas domain F max.
		Temps d'intégration		
		1 seconde	0,2 seconde	
100 Hz	0,001 Hz	1Hz	5Hz	99,999Hz
1 000 Hz	0,01Hz	1Hz	5Hz	999,99Hz
10 kHz	0,1Hz	0,01 kHz	0,05 kHz	9,9999 kHz
100 kHz	1Hz	0,1kHz	0,5kHz	99,999kHz

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Analogue output board AN 5888

The board is made up of 5 digital/analogue converters (12 bits) each providing two output quantities, a voltage - 10 to + 10 V and a current 0-20 mA or 4- 20 mA.
As voltage and current quantities come from the same converter, they cannot be used simultaneously. Voltage and current channels of the same board are coil-insulated and also are insulated from other system input/outputs.

Range	Resolution	Uncertainty
± 10 V	1 mV	± 5 mV
0 - 20 mA	0,01 mA	± 0,02 mA
4 - 20 mA	0,01 mA	± 0,02 mA

Voltage output...........................
Minimum permissible load resistance: : 5 kΩ.
Current output...........................
 - Internal power:
 Maximum permissible load resistance: 500 Ω.
Ten Open circuit voltage: 12 V.

- External power:
Supply voltage: $15V \leq V_{supply} \leq 50V$.
Max. permissible load resistance $Rmax = (V supply - 2)/0.02$.
Max. permissible common mode voltage
between analogue channels and other system
I/O channels: 150 VDC or VAC peak

Average processing time: 20 ms.
Signal risetime to resistance load: 20 µs/V.
Maximum load capacity: 10 µF.
Temperature coefficient: 0.01% per °C.

Dry relay output board AN 5887

Capacity: 10 bistable relays per board.
Wired to removable screw terminal connector.
Contact resistance load: 48 V or 1 A or 30 Ω.
.

Number of operations: 5.105 in the following conditions.
Each contact is either common, on or off.
The relays are controlled according to system program, for example:

- on a specific alarm limit action;
- remote controlled from one of the communication interfaces
- on a conditional processing.

Communication Interfaces

The DATALOG are equipped in standard
with two communication interfaces, each configurable in RS 232 by means of a DB9 female connector or RS 485 using a 5-pin screw terminal block.

Data format: 8 bits, 1 stop bit, no parity.
Addresses are programmable from 1 to 15 and transmission rates from 9 600 to 56 000 bauds.
P1 interface ....
MODBUS RTU protocol either as master (for reading other instruments) or as slave.

P2 interface ....
Operation configurable in ASCII RS 232 (printer management for example) or MODBUS RTU (slave only).
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Internal Printer

Option only available with DATALOG 90 and 140.

Thermal printer, 24 characters per line.
Printing speed: 1.5 line per second.

Paper roll: 80 mm wide, 50 m long, and diameter 65 mm.

PCMCIA Interface

The DATALOG with keypad version, are equipped with a PCMCIA interface, type 2. This
interface enables the operator to read and write on memory cards of RAM STATIC technology and FLASH card
of ATA type. These cards allow to save and load configuration files as well as to create result files.

DATA ACQUISITION SYSTEM

Main Characteristics

Operating conditions ....
Reference range: 23°C ± 5°C.
Operating nominal range: 0°C to 50°C, 20% to 80% RH non-condensing.

Power requirements ....
100 to 230 VAC ± 10%, 50 Hz to 60 Hz.
Consumption: 40 VA.
Input available for 11 V to 28 VDC supply.

Optional battery pack with built-in charger. Life: 3 hours approximately.
Unregulated output available for sensor supply. Rated voltage 24 V, current 100 mA.

Presentation..
The systems are delivered with a carrying handle to be removed for panel mounting with optional accessories. A protective cover located at back of the system enables the operator to measure voltages

above 60 V in accordance with the EMC and low voltage directives.
The systems can be delivered with various options (refer to the table).

Weight..
From 3 kg to 9 kg depending on models

and options..

Dimensions...................................

470

160x39
3
160x29
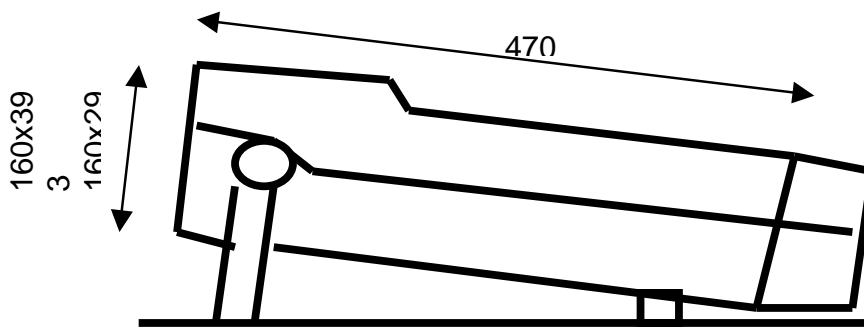
Software

Various utilities for Windows from 3.1 to NT are available.

Logidat ....

Used to configure the DATALOG and process the values stored in memory from compatible PC. Easy to use thanks to menu-guided operation.

Processing the result files offers possible delayed computations, graphic form, sort and export to spreadsheets.

Connection to the systems can be performed by modems.

Visulog ....

Real time Monitoring software for DATALOG; ot shows measurement in realtime as mimic diagrams, values or curves. Storage of values and alarms in traceability files and in Log files. Data management and exploitation can be performed without stopping acquisition. Refer to the specific documentation of Visulog for more details.

Email sending on alarm.

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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.
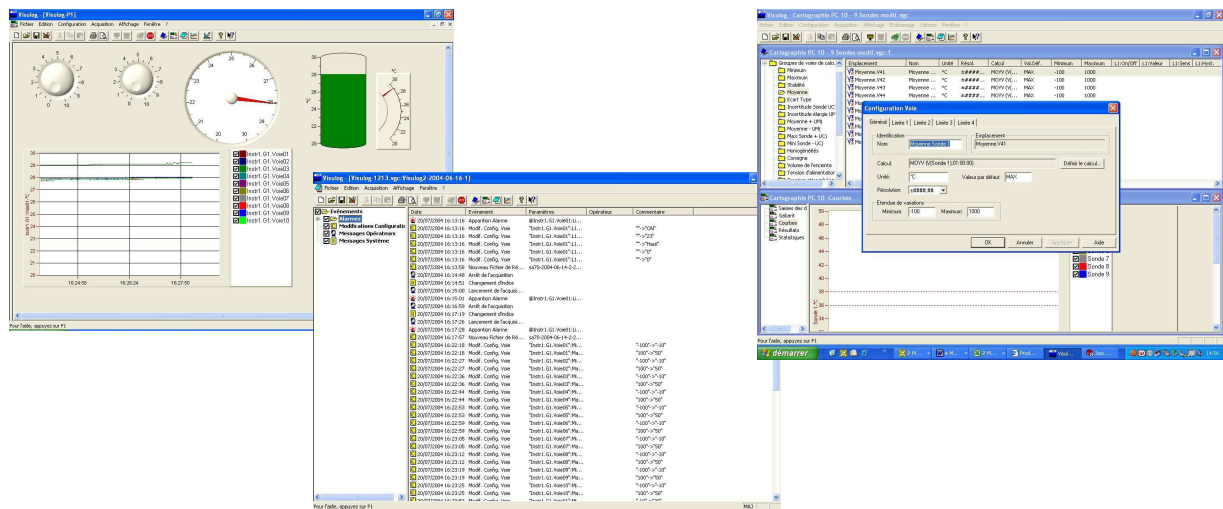
SYSTEMES D'ACQUISITION

Instructions pour commander

System 2 I/O without keypad and display	D2AO
System 2 I/O with keypad and display	D2CO
System 9 I/O without keypad and display	D9AO
System 9 I/O without keypad and display but with rechargeable battery	D9AB
System 9 I/O with keypad and display (1)	D9CO
System 9 I/O with keypad, display and rechargeable battery (1)	D9CB
System 9 I/O with keypad, display and internal printer (1)	D9CI
System 14 I/O without keypad and display	D14AO
System 14 I/O without keypad and display but with rechargeable battery	D14AB
System 14 I/O with keypad and display (1)	D14CO
System 14 I/O with keypad, display and rechargeable battery (1)	D14CB
System 14 I/O with keypad, display and internal printer (1)	D14CI
10-channel analogue input board	AN 5885
10-channel simplified analogue input board	AN 5906
10-channel protected analogue input board	ATC 017
20-channel analogue input board, 2-wire	AN 5905
Strain gauge board	AN 3700
10-channel digital input board	AN 5886
10-channel relay output board	AN 5887
5-channel analogue output board	AN 5888

Accessoires

Removable terminal block for I/O boards, 10 channels	ER 48276-000
Removable terminal block for I/O boards, 20 channels	ER 48402-000
PCMCIA flash card	ATC013
Shunt for process current measurement	ER 44007-024
Set of 10 paper rolls for DATALOG	ATC030
IEEE mechanical adapter for ATC 006	ATC020
Voltmeter and CPU for DATALOG	ATC031
Supply for DATALOG	ATC032
Protection cover for DATALOG 20	ATC023
Protection cover for DATALOG 90	ATC024
Protection cover for DATALOG 140	ATC025
Rack kit for DATALOG 20	ATC026
Rack kit for DATALOG 90	ATC027
Rack kit for DATALOG 140	ATC028
12-thermocouple cone for autoclave	ATC033
12-platinum probe cone for autoclave	ATC034
Specific cone for autoclave	ATC035

Software

Windows configuration software	LOGIDAT
Real-time monitoring windows software	VISULOG
Additional licence for VISULOG	LICVISU1

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