

Programmable digital panel meters 48 x 96 mm format



- 1 product, 3 functions
- 3 display colours
- 4 alarm thresholds
- Storage of mini and maxi values
- Linearisation of input signal over 10 segments
- Instant mounting, no tools required
- Rapid connection with adjustable connectors
- Simplified programming
- Serial connection for remote processing of measurements
- IP65 front panel watertightness

Applications



The **C.A 2150-M** is a **3-in-1 panel meter** that can be configured for process, temperature or load cell signals.



- **Process input:** designed for measuring process signals emitted by the most frequently used high-level sensors in the $\pm 10V$ or $\pm 20mA$ range. The panel meter can also be connected to a potentiometric type converter for measuring displacement, length, etc.

- **Temperature input:** dedicated to temperature measurement using thermocouple (J, K and T) probes and Pt100 Ω . Measurements can be displayed in $^{\circ}C$ or $^{\circ}F$, with a resolution of one degree or one tenth degree.

- **Load cell input:** suitable for load measurement (mass, strength, couple, pressure, etc.) using strain gauge type low-level sensors.

The **C.A 2150-M** can be directly programmed on its front panel and data display can be linearised on 10 segments. It is possible to totally or partially block configuration. Three display colours are available: green, amber and red. The user can choose a specific colour for measurement data, alarm information and programming. 2 brightness levels are available.

The **C.A 2150-M** can acquire an **OFFSET** directly via the front panel keys by simple acquisition of the value measured. This function is mainly used for correcting sensor errors.

The **C.A 2150-M** has a **24 V sensor excitation output** for process input and a 10 or 5 V sensor excitation output for load cell input. It also has 3 logical inputs that authorise up to 3 remote commands to be chosen from among 12 pre-programmed commands.

The **C.A 2150-M** can be remotely configured from a PC. **Free CA2150-PRG configuration software** is available in the Software Support Section of the www.enerdis.com site. It incorporates ASCII, ISO1745 and MODBUS-RTU type communications.

THE 12 CONTROL FUNCTIONS

The **C.A 2150-M** has 3 inputs that are isolated using optocouplers and can be programmed by the user, to be selected from 12 inputs. By closing a contact, these logical inputs make it possible to remotely control display block (HOLD), display of MINI and MAXI values and zero reset of MAXI and MINI values.

N°	Function	Definition	Activation
0	None	Not applicable	No
1	TARE or OFFSET	Records the displayed value in memory and resets zero	Impulsive
2	Reset TARE	Erases tare memory and adds it to display.	Impulsive
3	MAX	Calls up MAXI value. A new pulse restores normal reading.	Impulsive
4	MIN	Calls up MINI value. A new pulse restores normal reading.	Impulsive
5	RESET MIN & MAX	Resets MAXI & MINI memories at zero (if values are displayed).	Impulsive
6	HOLD	Blocks display while outputs are activated.	Maintained
7	PRINT	Transfers display value to printer.	Impulsive
8	PRINT GROSS	Transfers gross value to printer (net + tare).	Impulsive
9	PRINT TARE	Transfers tare value to printer.	Impulsive
10	SEND ASCII	Sends the last 4 digits to an ASCII display every second.	Impulsive or Maintained
11	DISPLAY INTENSITY	Selects, between two levels, display brightness.	Maintained
12	THRESHOLD VALUE	Displays the threshold value selected while the function is activated.	Maintained

PROGRAMMING: SIMPLICITY ABOVE ALL

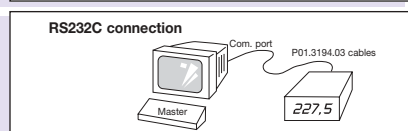
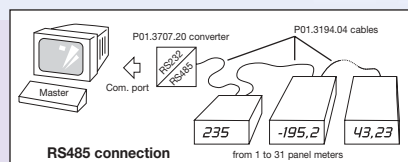
As only the instructions necessary for your application (process, temperature, load cell) are available, the risk of error is limited.

Five steps suffice, depending on options installed

- input signal
- display law

- alarms (if option)
- analog outputs (if option)
- serial connection (if option)

DIGITAL COMMUNICATION: PICK YOUR CHOICE



With their serial communication options, the **C.A 2150-M** panel meters can be operated with PC supervision, automatically or with any other "master" system.

RS232C and RS485 connections enable:

- remote reading of values stored in the panel meter (MAXI, MINI, OFFSET, thresholds).
- transmission of orders (requests, Reset stored values, OFFSET acquisition).
- modification of alarm thresholds

Transmission is made in half-duplex mode, according to several protocol choices: ISO 1745 (standard), C.A (simplified protocol) or MODBUS-RTU, at a speed ranging from 1,200 to 19,200 bauds.

AVAILABLE OPTIONS

If they are ordered at the same time as the **C.A 2150-M**, options are installed at the plant. If they are ordered later, they can be easily installed by the user.

2-alarm relay card

The two channels can be configured separately and can be declared high or low alarms. Alarms can be attributed to measurement and MINI or MAXI values. Outputs are made via inverter relays, with an adjustable time-lag or hysteresis.

Outputs	2 x 1RT relays
Maxi voltage	250 VAC or 12 VDC
Maxi current	8 A under 250 VAC or 8 A under 24 VDC

4-alarm relay card

Similarly, enables programming of four separate alarms or of two separate alarms with two follower alarms.

Outputs	4 x 1T relays
Maxi voltage	250 VAC or 50 VDC
Maxi current	500 mA under 125 VAC or 1 A under 30 VAC

4 NPN transistor alarm card

Identical to the previous, except for outputs, which are made via, optocouplers.

Outputs	4 NPN optocouplers
Maxi Voltage	50 Vdc
Maxi Current	50 mA under 50 Vac

Analogue output cards

Two cards are proposed, 4-20mA or 0-10V output. They deliver a continuous, linear signal that is proportionate to a display range defined by programming. The output then retransmits the variations in display between the two programmed points.

If the low value of the display range is attributed to the upper output value and the high value of the display range is attributed to the lower output value, the analogue output can also differ inversely to the display. Analog output cards' response time is 50 ms.

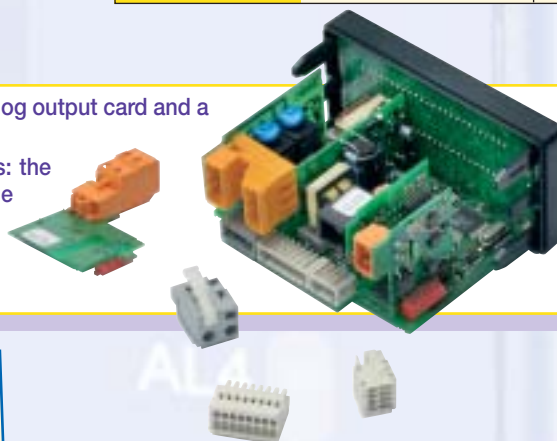
Output signal	0...10V	4...20 mA
Accuracy	0.1% ± 1 digit	
Temp. coeff.	0.2 mV per K	0.5 µA per K
Maxi load	> 500 Ω	> 800 Ω

Communication cards

Two cards are available, one with RS232C output, the other with RS485. These options make it possible to set up an RS232 or RS485 digital connection with a master instrument. The RS232 connection will be used to set up a single point connection (1 panel meter), and the RS485 to set up an instrument network (up to 31).

Type of connection	RS232C	RS485
Protocol	ISO1745, C.A protocol or ModBus/RTU	
Flow	1,200, 2,400, 4,800, 9,600 or 19,200 bauds	
Output connector	RJ9-4	RJ11-6, with double adapter (incoming + outgoing)

- It is possible to simultaneously install an alarm card, an analog output card and a communication card.
- No calibration is necessary after installing the option cards: the programme automatically recognises them and activates the instructions necessary to set them.
- All the option-card outputs are isolated from the input signal by optocouplers.



The option cards are very easy to install.

**3-YEAR
GUARANTEE**

The C.A 2150-M panel meters are guaranteed 36 months for manufacturing flaws.

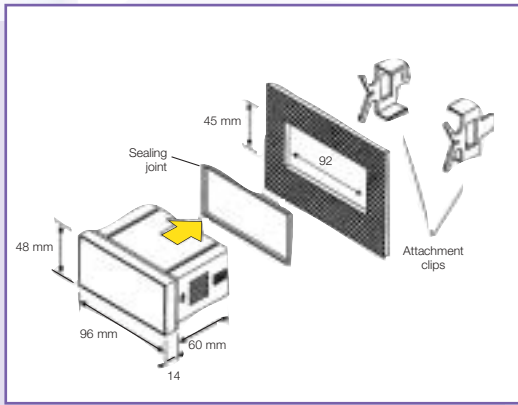
PROGRAMMING SOFTWARE: CA2150-PRG

This software works with Windows and enables direct reading of the measurement and remote configuration of one or several connected **C.A 2150-M** panel meters. It also enables backup and recovery of configuration from an existing instrument.

This software can be downloaded free on the www.enerdis.com site in the Software Support Section.



DIMENSIONS AND INSTALLATION



Mounting and connection of the panel meters has been made as simple as possible.

They can be mounted instantly, without any tools, using two flexible clamps that clip on to the case.

Connection is made via "fast" connectors using spring cage technology. These connectors are adjustable and make mounting and demounting of the panel meters easier.



Cable cross section: $0.25 \text{ mm}^2 \leq \varnothing \leq 2.5 \text{ mm}^2$

No tightening of screws, which means long term resistance to wear and tear and possibility of setting up the instruments without even a screwdriver. (Comes with insertion tools)

TECHNICAL FEATURES

STANDARDS

- Isolation - dielectric
EN 611010-1 (category II installation)
- EMC Immunity EN 61000-4-2,
EN 61000-4-3, EN 61000-4-4,
EN 61000-4-5, EN 61000-4-6,
EN 61000-4-11
- EMC Emission EN 55022

SPECIAL FUNCTIONS

- Return to plant configuration
- Change of display colour by activating alarm (programmable)
- Total or partial blocking of programming with code

ACCURACY

- Temperature coefficient 100 ppm/°C
- Heating time 10 minutes

SUPPLY

- UNIVERSAL 85-265VAC/100-300VDC
- Low voltage 10.5-70 VDC/22-53 VAC.
- Burden 5 W without options, 8 W maxi.

A/D CONVERSION

- Technical Sigma-Delta
- Resolution ± 15 bits
- Pace 20/s

FILTERS

- Filter P (1 to 9)
- Power-outage frequency from 16 Hz to 0.67 Hz
- Slope 20 dB/10

DISPLAY

- Range -19999/19999
- Digits 5 x 14mm LEDs
- Programmable colour (Red, Green, Amber)
- LEDs 8 functions and output conditions display refreshment
- Process/Load cell 20/s
- Pt100 4/s
- CT 10/s
- Indication of scale overshoot by input or display -oUEr

ENVIRONMENT

- Operating temperature -10°C to +60°C
- Storage temperature -25°C to 80°C
- Non-condensated relative humidity <95% to 40°C
- Maximum altitude 2,000 m

MECHANICS

- Dimensions 1/8 DIN 96 x 48 x 60 mm
- Weight 160 g
- Case material UL 94 V-0 polycarbonate
- Front panel watertightness IP65 (Indoor use)

INPUT SIGNALS

- Configuration asymmetric differential

PROCESS VOLTAGE CURRENT

- Input ± 10 V DC ± 20 mA DC
- Resolution 1 mV 1 μ A
- Input impedance 1M Ω 12,1 Ω
- Excitation 24 V (60 mA) .. 10 V/5 V (60 mA)

LOAD CELL

- Input ± 15 mV, ± 30 mV, ± 150 mV
- Maxi. resolution 1 μ V
- Input impedance 100 M Ω
- Excitation 10 V (60 mA), 5 V (60 mA)

POTENTIOMETER

- Display resolution 0.005%
- Input impedance 1 M Ω
- Excitation 10 V (60 mA)

TEMPERATURE

- Cold joint compensation -10°C to 60°C
- Pt100 excitation current < 1 mA DC
- Maxi Wire resistance 40 Ω /cable, balanced
- Selectable scale (Celsius) / (Fahrenheit)
- Selectable resolution 0.1°/1°
- Programmable offset $\pm 9.9^\circ/\pm 99^\circ$

Sensors Measurement ranges

- J thermocouple (Fe-CuNi) -50°C to +850°C
..... -58°F to +1562°F
- K thermocouple (NiCr-NiAl) -50°C to +1250°C
..... -58°F to +2282°F
- T thermocouple (Cu-CuNi) 200°C to +400°C
..... -328°F to +752°F
- Pt100 -100°C to +800°C
..... -148°F to +1472°F

TO ORDER

Use the coding tables opposite to order the panel meters with their installed options.

For accessories that are sold separately, use references listed below.

Accessories

- Multiposition attachment with 2 DIN rail adapters ref. P01.3194.01
- Connector + RS232 1m cable ref. P01.3194.03
- Connector + RS485 1m cable ref. P01.3194.04

Option-cards

Use references below to order extra option-cards

- CA2XXX AL 2-relay card ref. P01.3193.01
- CA2XXX AL 4-relay card ref. P01.3193.03
- CA2XXX AL 4 NPN card ref. P01.3193.04
- CA2XXX RS232 COM card ref. P01.3193.06
- CA2XXX RS485 COM card ref. P01.3193.07
- CA2150 0-10V output card ref. P01.3193.10
- CA2150 4-20 mA output card ref. P01.3193.11

C.A 2150 Panel Meter -		
Type	P - T - C	M
Supply	85 - 265 VAC & 100 - 300 VDC 22 - 53 VAC & 10.5 - 70 VDC	1 2
Alarms	none 2 relays 4 relays 4 transistors	X 1 2 3
Analog outputs	none 4 - 20 mA. 0 - 10 V	X 1 2
Digital communication	none RS-232 RS-485	X 1 2

FRANCE

Enerdis
1-9, rue d'Arcueil - BP 675
92542 MONTROUGE Cedex
Tel: +33 1 47 46 78 85
Fax: +33 1 47 35 01
33export@enerdis.fr
www.enerdis.fr

UNITED KINGDOM

Chauvin Arnoux Ltd
Waldeck House - Waldeck Road
MAIDENHEAD SL6 8BR
Tel: +44 1628 788 888
Fax: +44 1628 628 099
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.co.uk

MIDDLE EAST

Chauvin Arnoux Middle East
P.O. BOX 60-154
1241 2020 JAL EL DIB (BEIRUT)
Tel: +961 1 890 425
Fax: +961 1 890 424
camie@chauvin-arnoux.com
www.chauvin-arnoux.com