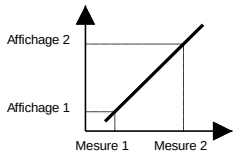
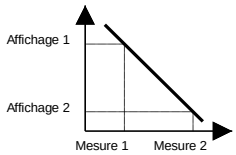
1. Operation

1.1. Display range

Setting the display range allows the input signal to be scaled to obtain a reading in the desired unit. This consists of defining 2 measurement points/display to establish a proportional relationship between the input signal value and the display value.



Normal scale



Reverse scale

It is always preferable to choose the 2 measurement/display points at both ends of the signal evolution to obtain the best possible accuracy. The coordinates of these 2 points can be entered directly from the keyboard or by learning by matching a value measured by the indicator to the displayed value.

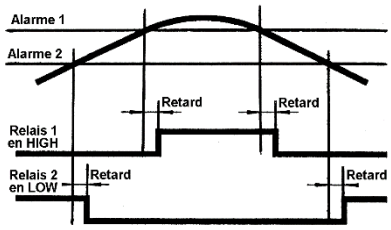
1.2. Alarm outputs

As an optional extension, the display can offer relay outputs or static outputs (2 or 4 alarms with relay outputs or 4 alarms with PNP or NPN static outputs). The activation of the outputs is programmable in HIGH mode, i.e. when the displayed value passes the threshold in the increasing direction, or in LOW mode, i.e. when the displayed value passes the threshold in the decreasing direction.

The operating mode of the alarms is also programmable :

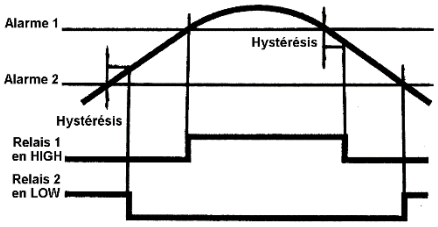
a) Delayed output

The time delay acts on either side of the alarm threshold when the display value passes through it in an ascending or descending direction. This delay can be programmed in seconds from 0 to 99.



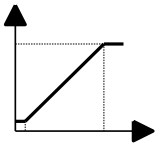
b) Asymmetrical hysteresis

Activation of the output is immediate when the display value passes the alarm threshold, but deactivation of the output is effected after the hysteresis band programmed in display units from 0 à 9999.

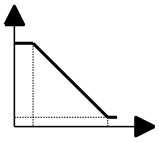


1.3. Analogue output 0-10V or 4-20mA

As an option, the indicator can be equipped with an analogue output that delivers a 0-10V or 4-20mA signal directly or indirectly proportional to the evolution of the display.

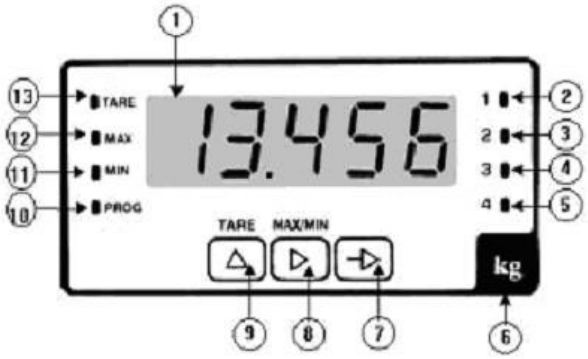


Normal output



Reverse output

2. Keyboard and display presentation



N°	Designation	RUN function	PROG function
1	DISPLAY	Data display area	
2	LED 1	Activation of output 1	
3	LED 2	Activation of output 2	Program. alarm 2
4	LED 3	Activation of output 3	Alarm program 3
5	LED 4	Activation of output 4	Alarm program 4
6	LABEL	Slot for sticking the unit label	
7	TOUCH →	Entering PROG mode	Selection of the lines to be programmed
8	TOUCH ▷	Display of MIN and MAX values	Selection of the digit to be modified
9	TOUCH	TARE registration	Incrementing of the selected digit
10	LED PROG		PROG mode active
11	LED MIN	MIN value display	
12	LED MAX	Display MAX value	
13	LED TARE	TARE memory	

3. Consultation and programming

CONSULTATION mode
The indicator is in this mode when the power is turned on. It is in this mode that the recorded MIN and MAX values and the values of the 4 alarm thresholds can be viewed.

MAX/MIN keys
Each press of this key displays the MAX and MIN values in succession and then returns to the display of the current measurement value. The displayed MAX or MIN value can be reset by pressing and holding the key for 3 seconds. The MAX and MIN values are not saved in the event of a power failure.

TARE key
The TARE key (**Δ)** allows the display to be reset at any time with the input signal value stored as offset; as soon as a tare has been performed the TARE LED lights up. The TARE memory can be reset by holding down the TARE key for 3 seconds. The TARE function can be disabled by programming.

PROGRAMMING mode
The programming mode allows you to fully configure the operation of the indicator. It is divided into 6 modules :

- **CnInP** input configuration
- **CndSP** display configuration
- **SEtP** alarm outputs configuration
- **Anout** analog output configuration
- **rSout / EtnEt** serial link or Ethernet link configuration
- **LoGIn** control inputs configuration

Access to the programming mode, to a configuration module and the scrolling of the different lines to be programmed is done with the → key.
The selection of a configuration module to be programmed, an operating option or a digit to be changed is made with the ▷ key.

The selected digit is incremented with the Δ key

Operating mode
1° Press the → key, the message [Pro] is displayed and the LED PROG is lit.

2° Use the key ▷ to select the module to be programmed, the identification of the different modules is done by name.

3° Confirm the selected module with the → key and program the different lines with the keys →, Δ, and ▷

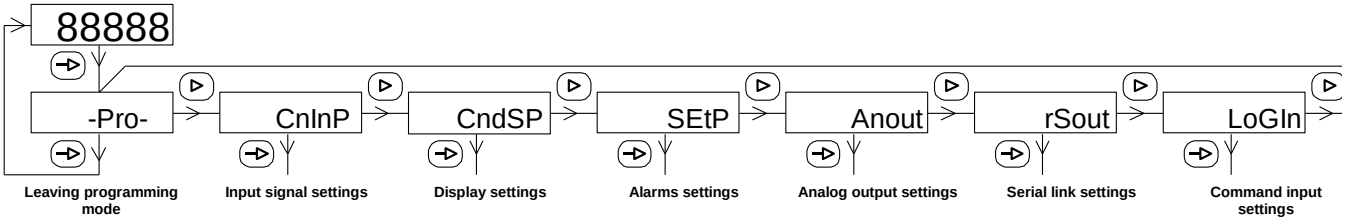
After a module is programmed, the indicator stores the changes by displaying the [StorE] message while saving, and automatically exits the programming mode.

4° If necessary, program the other modules.

5° Lock the programming mode, if necessary, using a password.
See the "Programming access control" chapter.

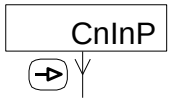
Once the programming is locked, it will still be possible to access the various configuration modules to check their contents. In this case, [DAtA] will be displayed instead of [Pro] when entering the programming mode.

Configuration modules synoptic



The serial link, analo-analytical output and alarm output configuration modules are only accessible if the indicator is equipped with the corresponding options.

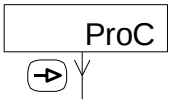
1. Input signal settings



In the first step of the module you can select ▷ key. It is identified by a name.

ProC	Process Signal or Potentiometer
LoAd	Load cell signal
tEMP	Pt100 probe or Thermocouple

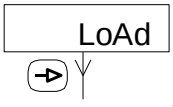
1.1. Process input



Process

10 U	Voltage input ± 0-10 V or potentiometer
20nA	Current input ± 0-20 mA

1.2. Load cell input



Voltage input range

15nU	± 15 mV
30nU	± 30 mV
150nU	± 150 mV

1.3. Entrée Température

tEMP

Probe type

Pt100	Pt100 probe
-tC-	Thermocouple J, K, T, N

1.3.1 Pt100 probe

Pt100

Display unit

-°C-	Celsius degrees
-°F-	Fahrenheit degrees

Display resolution

1°	1° resolution
0.1°	0.1° resolution

Display Offset

00.0	Programmable value from -19.9 to +99.9 units display according to the selected resolution

The display offset is used to compensate for a possible discrepancy between the actual value and the measured value.

1.3.2 Thermocouple input

tC

Thermocouple type

-J-	J type thermocouple
-µ-	K type thermocouple K
-t-	T type thermocouple
-n-	N type thermocouple

Display unit

-°C-	Celsius degrees
-°F-	Fahrenheit degrees

Display resolution

0.1°	1° resolution
1°	0.1° resolution

Display Offset

00.0	Programmable value from -19.9 to +99.9 units display according to the selected resolution

The display offset is used to compensate for a possible discrepancy between the actual value and the measured value.

2. Configuration de l'affichage

CndSP

In the first step of the module you can select ▷ key. It is identified by a name.

SCAL	Keyboard mode scale
tEACH	Teach mode scale
FILtP	Stabilisation filter
round	Display variation
diSPL	Display options
ModtA	Operation of the Tare input
InErr	Display if no input signal is present

Note :
For Pt100 and Thermocouple input signals, only the submodules "FILtP", "round" and "diSPL" are available.

2.1. Keyboard display range

SCAL

InP 1	**Value 1st measuring point**
00000	Programmable value from -19999 to 99999

---

dSP 1	**Value 1st display point**
00000	Displayed value for signal value input defined in the previous step, programmable from -19999 to 39999

Decimal point of dSP1

0000.0	Position of the decimal point for the value dSP1 defined in the previous step

---

InP 2	**Value 2nd measuring point**
00000	Programmable value from -19999 to 99999

---

dSP 2	**Value 2nd display point**
00000	Displayed value for signal value input defined in the previous step, programmable from -19999 to 39999; the position of the decimal point is fixed by the decimal point of the value of the 1st display point

Multiple linearisation
If the input signal is not linear over the entire measuring range, up to 10 frames or 11 measuring points/display points can be defined by means of the linearisation function.

To access the programming of the other measuring points/displays, press the → key, for 3 sec. after programming the display of the 2nd point in the previous step. The new values of measurement points/display are identified by [Inp xx] and [dSP xx] where xx is the point number (03 to 11).

InP xx	**Value xx measuring point**
00000	Programmable value from -19999 to 99999

---

dSP xx	**Value xx display point**
00000	Displayed value for signal value input defined in the previous step, programmable from -19999 to 39999

To interrupt the programming of the measuring points/display and to save the values already entered, press the → key for 3 sec after programming the xx point display in the previous step.

WARNING :
The values to be programmed for each measuring point/display must always be in ascending or descending order.

2.2. Teach display range

-tEACH

tCH 1	**Value 1st measured point**
00000	The value of the signal applied to the input is taken into account
dSP 1	**Value 1st displayed point**
00000	Display value for the input signal value defined in the previous step, programmable from -19999 to 39999
	Decimal point of dSP1
0000.0	Position of the decimal point for the dSP1 value defined in the previous step
tCH 2	**Value 2nd measured point**
00000	The value of the signal applied to the input is taken into account
dSP 2	**Value 2nd displayed point**
00000	Display value for the input signal value defined in the previous step, programmable from -19999 to 39999; the position of the decimal point is fixed by the decimal point of the value of the 1st display point

Multiple linearisation

If the input signal is not linear over the entire measuring range, up to 10 frames or 11 measuring points/display points can be defined by means of the linearisation function. See the programming principle described in chapter 2.1

2.3. Stabilisation filter

FILtP

Filter value

0	Programmable value from 0 to 9 using the ▷ key

The stabilisation filter prevents unwanted fluctuations in the display. Increasing the value of the filter results in a smoother response of the display to changes in the input signal. A value of 0 deactivates the stabilisation filter.

2.4. Display variation

round

Display evolution

01	Variation in steps of 1 unit
05	Variation in steps of 5 units
10	Variation in steps of 10 units

2.5. Display settings

diSPL

brIGHt	**Display brightness**
-Hi-	High brightness
-Lo-	Low brightness
Color	**Display colours**
run	In consultation mode - red, green, orange
Pro	In programming mode - red, green, orange
ECo	**Switching off the display**
-oFF-	ECO mode disabled
-on-	ECO mode enabled
10	Time to ECO mode, from 1 to 99 minutes

In ECO mode, the display is switched off after the programmed time, only the decimal point of the right digit flashes. Pressing one of the keys on the keypad causes the display to reappear.

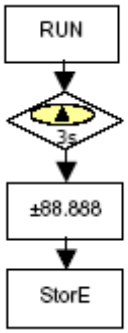
2.6. Tare mode

ModtA

Tare processing mode

tArE1	Pressing the key transfers the displayed value as the TARE value. The tare can be reset to zero by holding down the Δ key for 3 seconds.
tArE2	The TARE value to be subtracted from the input signal value is programmed on the keypad **(*)**.
tArE3	The TARE value from which the input signal will evolve is programmed on the keypad **(*)**.

(*) Programming the Tare in the Consultation mode



Example :
Programmed value = 100

Tare2 mode
Displayed value = 1000 before programming.
Displayed value = 1000 -100 = 900 after Tare programming.

Tare3 mode
Displayed value = 1000 before programming.
Displayed value = 100 after Tare programming.

2.7. Display when no input signal

InErr

no	Error display enabled
YES	Error display disabled

Displaying '- - - - - - - - -' when :
- running process mA or V and load cell mode, the value of the input signal = 0
- running PT100 or TC temperature mode, the temperature sensor is in open or short circuit.

The 'InErr' option does not appear in temperature mode and the display '- - - - - - - - - -' is always on.

3. Alarm outputs settings

SEtP

In the first step of the module you can select ▷ key. It is identified by a name.

SEt1	Alarm threshold nr.1
SEt2	Alarm threshold nr.2
SEt3	Alarm threshold nr.3
SEt4	Alarm threshold nr.4

Note :
If the indicator is equipped with the option 2 relay outputs, only the corresponding sub-modules can be configured.

3.1. Alarm threshold nr.1

SEt 1

Using the alarm threshold

-on-	Alarm enabled
-oFF-	Alarm disabled, in this case the following steps are not accessible

---

Threshold value

00000	Programmable from -19999 to 39999

Threshold function

nEt	The threshold value is compared to the measured value + Tare
GroS	The threshold value is compared with the value of the measurement without tare

---

Enabling alarm threshold

-HI-	Activation of the output in HIGH
-Lo-	Activation of the output in LOW

Idle state of relays outputs

no	Normally Open
nc	Normally Closed

Relays operating mode

-dLY-	Delayed action by tempo
-HYS-	Hysteresis

Configuration value

00000	Programming of the delay (dLY) from 0 to 99 sec or hysteresis (HYS) in dots over the entire display range

---

Alarm display colour

no CH	The display colour is unchanged
ALArM	RED display for threshold reached
ALArM	GREEN display for threshold reached
ALArM	AMBER display for threshold reached

3.2. Alarm threshold nr2, 3 and 4

The principle of configuration of alarm thresholds n°2, 3 and 4 is identical to alarm threshold nr.1.

4. Analog output configuration

Anout

Output evolution range

outHI	**High threshold**
00000	The full scale of the output will be reached at this value set between -19999 and 39999

---

outLo	**Low threshold**
00000	The output will start to evolve from this value set between -19999 and 39999

---

oVr.nG	**Display range exceeded OVER**
-HI-	Forced output at 21 mA or 11 V
-Lo-	Forced output at < 3.4 mA or < -1 V

The analog output is forced to HI or Lo in case of failure of display capability or signal value.

5. Serial link configuration

rSout

In the first step of the module you can select ▷ key. It is identified by a name.

bAud	Transmission configuration
trAnS	Protocol selection
dLY	Response time **(*)**

(*) This configuration sub-module does not appear with the RS232 serial link option.

5.1. Transmission settings

bAud

Baud rate

1200	1200 bauds
2400	2400 bauds
4800	4800 bauds
9600	9600 bauds
19200	19200 bauds

Adr	**Device address**
01	Value between 01 and 99

5.2. Communication protocol

trAnS

Communication protocol

Prt 1	ASCII protocol
Prt 2	ISO 1745 protocol
Prt 3	MODBUS (RTU) protocol

5.3. Serial link response time

dLY

Response time delay

1	0 ms delay
2	30 ms delay
3	60 ms delay
4	100 ms delay

6. Command inputs settings

LoGIn

In the first step of the module you can select ▷ key. It is identified by a name.

InP-1	Command input on pin nr.2
InP-2	Command input on pin nr.3
InP-3	Command input on pin nr.4

6.1. Command input on pin nr.2

InP-1

Function number

1	Value between 00 and 13

6.2. Entrée de commande borne n°3

InP-2

Function number

2	Value between 00 and 13

6.3. Entrée de commande borne n°4

InP-3

Function number

6	Value between 00 and 13

AVAILABLE FUNCTIONS LIST

N°	Description	Description	(*)
00	Input disabled	Entrée désactivée	F
01	TARE **(**)**	TARE **(**)**	F
02	Reset the TARE **(**)**	RAZ de la TARE **(**)**	F
03	Reset the selected value (1)	RAZ de la valeur sélectionnée (1)	N
04	Display of the selected value (1)	Affichage de la valeur sélectionnée (1)	N
05	Printing the selected value (1)	Impression de la valeur sélectionnée (1)	F
06	HOLD of the display	HOLD de l'affichage	N
07	Changes the display brightness	Change la luminosité de l'affichage	F
08	Change display colour Green, RED, Amber	Change la couleur d'affichage Vert, Rge, Ambre	F
09	Programming the selected value	Programmation de la valeur sélectionnée	F
10	Fictitious thresholds if the thresholds option does not exist	Seuils fictifs si l'option seuils inexistante	F/N
11	Keyboard key simulation (2)	Simulation touche du clavier (2)	N
12	Reserved	Réservé	N

(*) Function activated on Level - N or on Front – F

(**) Only with mode Tare1 and Tare3
(1) MIN(VAL), MAX(PEAK), TARE, NET, GROSS), SET1, SET2, SET3, SET4
(2) INP1= key →▷, INP2 = key ▷, INP3 = key Δ

4 Alarm threshold settings

This programming is independent of the programming of the configuration modules and can be carried out at any time.

Operating mode

1° Press the →▷ key, the message [Pro] is displayed and the LED PROG is lit.

2° Press the Δ key to access the modification of the first threshold.

Alarm no. 1 ☞LED 1 on

00000 Value of threshold n°1, to be modified using the ▷ and Δ keys

3° Press the →▷ key, to access the modification of the second threshold.

Alarm n°2 ☞LED 2 on

00000 Value of threshold n°2, to be modified using the ▷ and Δ keys

4° Appuyer sur la touche →▷, pour accéder à la modification du troisième seuil.

Alarm no. 3 ☞LED 3 on

000000 Value of threshold n°3, to be modified using the ▷ and Δ keys

5° Appuyer sur la touche →▷, pour accéder à la modification du quatrième seuil.

Alarm no. 4 ☞LED 4 on

000000 Value of threshold n°4, to be modified using the ▷ and Δ keys

6° Press the →▷ key , to confirm the programmed thresholds and return to consultation mode.

5 Programming access control

To prevent unintentional changes to the indicator's programming, the programming can be protected.

- **Totally protected**
  Once the programming is locked, it will still be possible to access the various configuration modules to check their contents. In this case, [DAtA] will be displayed instead of [Pro] when entering the programming mode.
- **Partially protected**, by selecting the configuration modules to be locked. Once the programming is locked, it will still be possible to access the different configuration modules to check their contents.

Operating mode

1° press the → key for 3 seconds, and [CodE] is displayed.

2° Entering the access code protecting the programming access control configuration module. The factory access code is "**0000**".
Valeur à saisir à l'aide des touches ▷ et △

3° The next step in this module allows you to select▷key. It is identified by a name.

LISt	List of editable menus and sub-menus
CHAnG	Changing the access code

LISt

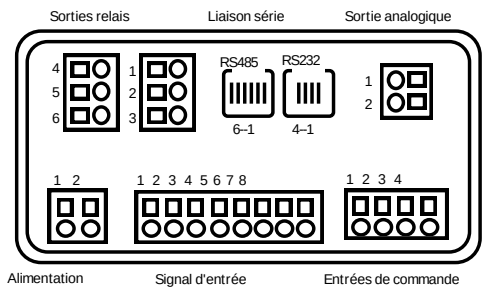
totLC	**Programming lock**
0	Partial: the sub-modules can be configured independently
1	Total: the indicator memorises the option and exits programming mode
SEt1	Programming threshold 1
SEt2	Programming threshold 2
SEt3	Programming threshold 3
SEt4	Programming threshold 4
InPut	Input settings
dISP	Display range settings
CoLor	Display color settings
SPVAL	Alarms threshold settings
rSout	Serial link settings
Anout	Analog output settings
LoGIn	Command input settings
tArE	TARE key settings
MAHMn	Displaying MIN and MAX value

Lines appear only if the indicator is equipped with the corresponding options.

CHAnG

- - - -	**Access code** If the access code is changed, the indicator stores the code and exits programming mode

6 Connection



- **Power supply**

Version	VAC	VDC
Borne 1 :	phase	-
Borne 2 :	neutre	+

- **Input sgnal**

⇒ ***Signal from PROCESS***

Pin 1 :	Excitation -
Pin 2 :	Excitation +24V
Pin 3 :	Excitation +5V or +10V
Pin 4 :	NC
Pin 5 :	I IN +
Pin 6 :	V IN +
Pin 7 :	NC
Pin 8 :	IN -

⇒ ***Signal from LOAD CELL***

Pin 1 :	Excitation -
Pin 2 :	NC
Pin 3 :	Excitation +5V or +10V
Pin 4 :	NC
Pin 5 :	NC
Pin 6 :	NC
Pin 7 :	mV +
Pin 8 :	mV -

⇒ ***Signal from Pt 100***

Pin 1 :	NC
Pin 2 :	NC
Pin 3 :	NC
Pin 4 :	Pt100 A
Pin 5 :	NC
Pin 6 :	NC
Pin 7 :	Pt100 B
Pin 8 :	Pt100 B Common

⇒ ***Signal from THERMOCOUPLE***

Pin 1 :	NC
Pin 2 :	NC
Pin 3 :	NC
Pin 4 :	NC
Pin 5 :	NC
Pin 6 :	NC
Pin 7 :	Thermo +
Pin 8 :	Thermo -

⇒ ***Signal from POTENTIOMETER***

Pin 1 :	Excitation -
Pin 2 :	NC
Pin 3 :	Potentiometer HI
Pin 4 :	NC
Pin 5 :	NC
Pin 6 :	Potentiometer wiper
Pin 7 :	NC
Pin 8 :	Potentiometer LO

- **Analog output**

Pin 1 :	- 4-20 mA / 0-10 V
Pin 2 :	+ 4-20 mA / 0 V

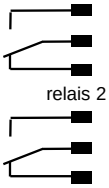
- **Serioal link**

Liaison	RS 232	RS 485
Pin 1 :	NC	---
Pin 2 :	TxD	NC
Pin 3 :	RxD	TR B
Pin 4	GND	TR A
Pin 5 :		GND
Pin 6 :		---

- **Alarms outputs**

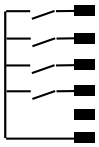
⇒ ***2 relays extension***

Pin 1 :	NO switch	relais 1
Pin 2 :	commun	
Pin 3 :	NC switch	
		relais 2
Pin 4 :	NO switch	
Pin 5 :	Common	
Pin 6 :	NC switch	



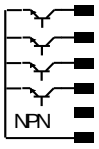
⇒ ***4 relays extension***

Pin 1 :	C1 switch
Pin 2 :	C2 switch
Pin 3 :	C3 switch
Pin 4 :	C4 switch
Pin 5 :	NC
Pin 6 :	Common



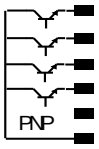
⇒ ***4 NPN outputs extension***

Pin 1 :	opto C1
Pin 2 :	opto C2
Pin 3 :	opto C3
Pin 4 :	opto C4
Pin 5 :	NC
Pin 6 :	Common



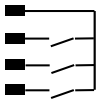
⇒ ***4 PNP outputs extension***

Pin 1 :	opto C1
Pin 2 :	opto C2
Pin 3 :	opto C3
Pin 4 :	opto C4
Pin 5 :	NC
Pin 6 :	Common



- **Command inputs (default settings)**

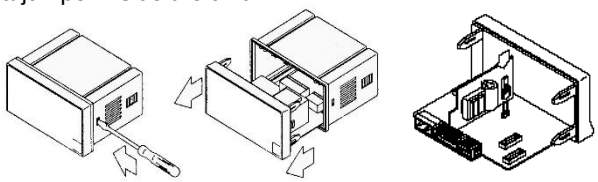
Pin 1 :	Common
Pin 2 :	TARE
Pin 3 :	RESET TARE
Pin 4 :	HOLD



The use of the electrical inputs TARE and RESET TARE is identical to the use of the keyboard keys, while the HOLD input is used to temporarily freeze the display. These inputs are optocoupled and the active logic level is 0.

Excitation : switching between 5 V and 10 V

The 10V excitation voltage can be changed to 5V by placing a jumper inside the unit.

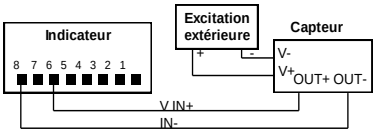


Jumper OFF = Excitation 10 V
Jumper ON = Excitation 5 V

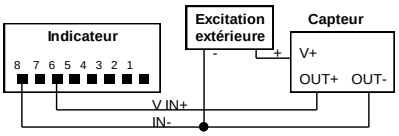
Exemples for connection

⇒ ***PROCESS input with Voltage signal***

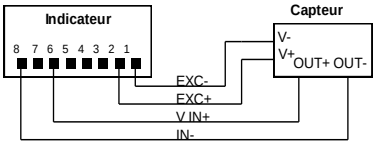
4-wire sensor with external excitation



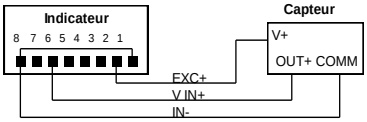
3-wire sensor with external excitation



4-wire sensor

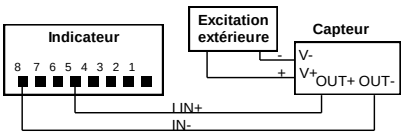


3-wire sensor

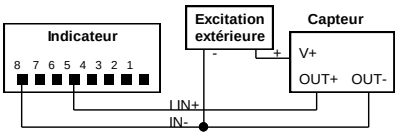


⇒ ***PROCESS input with Current signal***

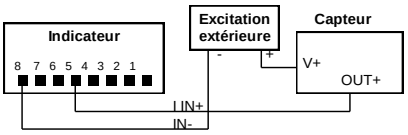
4-wire sensor with external excitation



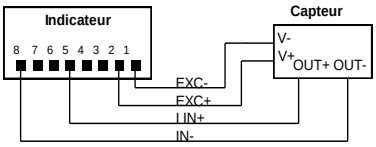
4-wire sensor with external excitation



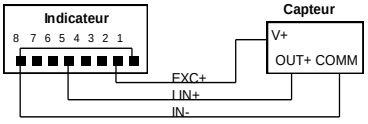
2-wire 4~20 mA sensor with external excitation



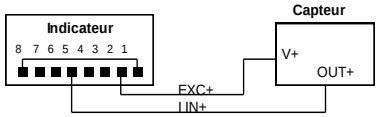
4-wire sensor



3-wire sensor

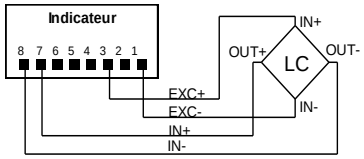


2-wire sensor



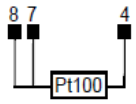
Note : In this connection example, the analog indicator supplies the current loop with power.

⇒ ***LOAD CELL input***

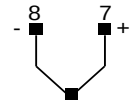


Up to 2 load cells can be connected in parallel without an external power source. The sensor excitation voltage delivered by the indicator must be 5 V or 10 V / max. current 60mA.

⇒ ***Pt100 probe input***

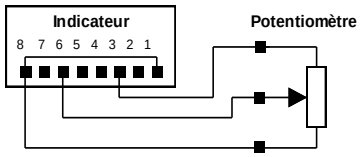


⇒ ***THERMOCOUPLE input***



Thermocouple

⇒ ***POTENTIOMETER input***



The sensor excitation voltage delivered by the indicator must be 10 V.