

Operating manual
TELIS 9000

Version of 03/30/2023

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Technical characteristics

Universal input





Universal power supply



Hot-swappable plug in and out



Sensor power supply



ModBus RTU

Presentation

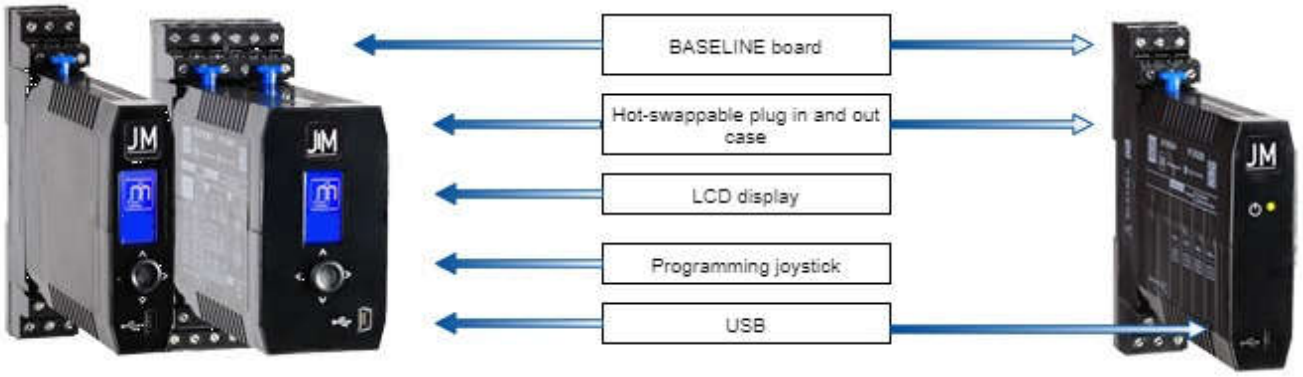
TELIS 9000 is a universal input transmitter with quadruple galvanic isolation, 24-bit conversion for inputs and 16-bit conversion for outputs, and accurate cold junction compensation at ± 1°C for thermocouple inputs.

TELIS 9000 is guaranteed for **5 years**

Range

*: 1 universal input or 2 current passive mA inputs with calculation mode

Transmitter with graphic display	**Input***	**Outputs**						**Communication**	**Case width (mm)**		Transmitter without graphic display
		Number of Analog		Number of Relay							
		1	2	1	2	3	4	RS485 USB	22.5	45	
TELIS 9000U0	✓							✓	✓		TELIS 9000T0
TELIS 9000U1	✓	✓						✓	✓		TELIS 9000T1
TELIS 9000U2	✓		✓					✓	✓		TELIS 9000T2
TELIS 9100U0	✓			✓				✓	✓		TELIS 9100T0
TELIS 9150U1	✓	✓		✓				✓	✓		TELIS 9150T1
TELIS 9250U0	✓				✓			✓	✓		TELIS 9250T0
TELIS 9200U0	✓				✓			✓		✓	TELIS 9200T0
TELIS 9200U1	✓	✓			✓			✓		✓	TELIS 9200T1
TELIS 9200U2	✓		✓		✓			✓		✓	TELIS 9200T2
TELIS 9300U0	✓					✓		✓		✓	TELIS 9300T0
TELIS 9300U1	✓	✓				✓		✓		✓	TELIS 9300T1
TELIS 9400U0	✓						✓	✓		✓	TELIS 9400T0
TELIS 9400U1	✓	✓					✓	✓		✓	TELIS 9400T1
TELIS 9400U2	✓		✓				✓	✓		✓	TELIS 9400T2



Factory settings

Input	Output 1 & 2	Relays (1 RT or 1T)
4-20mA	4-20mA	Alarm: High
Display: 0-100		Threshold: 50

Communication speed: 9600 bauds, Slave address: n°1

Other settings on demand

Inputs - Outputs

Input gauges

Current (continuous)	Standard scales: 0-1mA ; 0-10mA ; 0-20mA ; 4-20mA ; ±1mA ; ±10mA ; ±20mA Adjustable scales: from -22 to 22mA
Voltage (continuous)	Standard scales: 0-100mV ; 0-1V ; 0-5V ; 1-5V ; 0-10V ; 2-10V ; ±100mV ; ±1V ; ±5V ; ±10V Standard scales: 0-50V ; 0-100V ; 0-200V ; 0-500V ; 0-1000V ; ±50V ; ±100V ; ±200V ; ±500V ; ±1000V Adjustable scales: From -110 to 110mV, from -2 to 11V Adjustable scales: From -1000 to 1000V
Variable resistance thermometer	Standard scales: CU50 ; CU53 ; CU100 PT10 ; PT100 ; PT1000 ; Ni100 ; Ni1000 2 or 3 wires Adjustable scales: CU50 ; CU53 ; CU100 PT10 ; PT100 ; PT1000 ; Ni100 ; Ni1000 2 or 3 wires
Resistance 2 wires	Standard scales: 200Ω ; 1KΩ ; 10KΩ ; 50KΩ
Special table for NTC PTC	Adjustable scales: 200Ω ; 1KΩ ; 10KΩ ; 50KΩ Programmable with IXLOG software Unit: °C or °F
Thermocouple	Standard scales: J, K, R, S, T, E, B, N, W3/D, W5/C, Mo, P Adjustable scales: J, K, R, S, T, E, B, N, W3/D, W5/C, Mo, P Unit: °C or °F Cold junction compensation: internal or external
Potentiometer	From 0-100Ω to 0-100KΩ Other values on request
Sensor supply	2 or 3 wires sensor 24V - 32mA max Only in 1 channel input mode

Output gauges

Output Current 1 & 2	Standard scales: 0-10mA ; 0-20mA ; 4-20mA Adjustable scales: from 0 to 20mA
Output Voltage 1	Standard scales: 0-10V ; ±10V (except TELIS 9150X1 and TELIS 9300X1) ; 0-5V ; 1-5V ; 2-10V Adjustable scales: from -10 to 10V (except TELIS 9150X1 and TELIS 9300X1)
Output Voltage 2	Standard scales: 0-5V ; 1-5V ; 2-10V ; 0-10V Adjustable scales: from 0 à 10V
Output Relay	Relay 1RT or 1T: 2A-250Vac
Communication	Isolated USB in Front Panel / Isolated RS485 Modbus RTU

Characteristics

Display	
Type	Backlit LCD
Color	Blue
Number of characters	5
Numbers of lines	5
Programming joystick	5 positions
Input characteristics	
Current input impedance	5.6Ω
Voltage input impedance	U<10V: >10MΩ U±10V ou >10V: 6MΩ
Current input PT100 ; Ni100	Current: <1mA
Current input PT1000 ; Ni1000	Current: <0.8mA
Current input resistance 2 wires R=200Ω ; R=1kΩ	Current: <1mA
Current input resistance 2 wires R=10kΩ	Current: <0.2mA
Output characteristics	
Permissible impedance on the current output	Output 1 & 2: <1kΩ
Permissible impedance on the voltage output	Output 1 & 2: >1kΩ
Isolation	
Supply / Input-Output(s)-Relay- RS485-USB	4200Vrms, 50Hz, 1mn
Input / Output 1 / Output 2 / Relay / RS485	2500Vrms, 50Hz, 1mn
USB / Input	2500Vrms, 50Hz, 1mn
USB / Output 2	Without
USB / Output 1-relay	2500Vrms, 50Hz, 1mn
USB / RS485	2500Vrms, 50Hz, 1mn
Auxiliary source	
Voltage supply	22-240Vdc or 90-230Vac 50/60Hz

General characteristics	
Precision class	0.1
Input analog / digital conversion	24 bits
Output analog / digital conversion	16 bits
Response time	Process input, Thermocouple, 2 wires resistor: <80ms RTD potentiometer: <160ms
Thermal drift	<25ppm
Residual ripple on current output	<20µA
Residual ripple on voltage output	<10mV
Maximum of consumption	<10VA
Operating temperature	-10°C … +60°C
Storage temperature	-25°C … +80°C
Protection factor	IP20 Black self-extinguishing polyamide housing V0

Options listing

Option	Device code
Tropicalization for 22,5mm or 45mm cases	TELIS 9XXXXX-T
Auxiliary source 22-60Vac	TELIS 9XX9XX
Passive output only on the calibre 4-20mA Permissible voltage on the passive output: 15V<U<36V	TELIS 9XXXXX-PAS11 (output 1 passive) TELIS 9XXXXX-PAS12 (output 2 passive) TELIS 9XXXXX-PAS22 (2 passive outputs)

Functions

Display functions	
LCD display	Graphic display by LCD screen
LED indicators	1 green LED on devices without display
5 positions joystick	Allows you to configure the parameters displayed on the front panel screen
Programming lock	Locking of the programming on the front panel or by the **IXLOG** software Unlock by long press on the joystick
Programming	Programming via joystick on the front panel, or via USB with **IXLOG** software
Memory Mini / Maxi	Storage of the maximum and minimum value of the measurement on each input channel
Customizing the display	Resolution, Comma, Contrast adjustment, Display off
Input	
Inputs display	The display allows to visualize the input in physical value and in programmed value
Adjustable input scale	Allows to zoom on the input either in manual or automatic mode
Offset	Manual adjustment of the input offset
Taring	Taring function at process input (by validation)
Cut-off	Threshold below which the input is considered as null

Smart functions	
Sensor signal loss	Translates the sensor signal loss on: • the display, • each of the analog outputs, • the digital output, • the status of the relays
Filtering	Integration of the measurement over the defined time (in seconds)
Calculation mode	Rule calculation (+, -, x, /), result on input 3
Square root	The output(s) are function of the square root of the input
Absolute value	The output(s) are a function of the absolute value of a bidirectional input
Pilot function/simulation	The pilot function makes it possible to act on the display value influencing the output(s), independently of the input The Pilot function is activated either by the digital link (RS485 or USB) or by the joystick on the front panel
Segmentation in 99 points	Linearization in 99 points (free choice for each point), allows to create an output function by segmentation of the signal of each input channel
Segmentation PTC-NTC resistive	Allows to create the PTC or NTC curve by segmentation of the input signal (programmable only by the IXLOG software)
CJC	Cold junction compensation by 16 bit digital sensor
Outputs	
Visualization of the outputs	The display allows to visualize the outputs, in physical value and percentage; as well as the status of the relays
Output assignment	Assignment of outputs to inputs or to the control function, independently for each channel
Adjustable output scale	Allows you to zoom in on the outputs
Output limitation	Possibility to limit the value of the outputs - High limit and Low limit
Relay assignment	Assignment of relays to inputs or to the control function, independently for each channel
Thresholds	Single or band mode, with positive or negative safety Adjustment of thresholds, hysteresis and time delay (independent on rise or fall) Direct access to the thresholds
Acknowledgement of alarms	Independently for each alarm
Storage of alarms and/or relay status	Independently for each alarm

Links and communication	
RS485 MODBUS RTU	RS485 MODBUS RTU bidirectional digital link allowing to: • recover the measurements and transmit them in digital format • configure and control the device
Digital bus	Access to the digital bus via the USB socket (when transmitters are used on the interface boards)
USB front	USB front panel to connect directly to the USB port of a PC for programming via the **IXLOG** software
Mapping of Modbus addresses	Mapping of Modbus addresses, allowing you to choose your own variable address

Safety precautions

Introduction

To ensure the conditions of quality, precision and safety, the user must carefully read and comply with the rules of assembly and operation indicated in this manual.

Safety

Qualification of staff

This manual must be read by qualified and authorized personnel in charge of installation, operation, maintenance and cleaning.

Symbols on the product

	Triangle with exclamation mark: Read this user manual before operating the equipment to know the nature of the potential HAZARDS and all the measures to be taken to avoid them
	Double insulation symbol: Equipment protected everywhere by DOUBLE INSULATION
	CE symbol: indicates that the module complies with the requirements of the CE directives

General safety measures

If the commissioning of the equipment differs from that described by the manufacturer, the protection provided by the equipment may be impaired. Do not turn on the module under high Voltages until it is fixed.

Any installation that does not correspond to the installation requirements will void the warranty. Any opening of the product will immediately void the warranty.

If a high voltage is connected to the inputs/outputs of the device, respect sufficient insulation between the wires, terminal blocks and the housing with the surrounding environment to maintain protection against electric shock.

Handling and maintenance operations must be carried out only by qualified and authorized personnel.

Receipt and storage of the product

Upon receipt of the device, check that it has not been damaged during transportation

It must be stored in its packaging in a room protected from dust, moisture, and mechanical vibration.

The storage temperature must be between -25°C and 80°C

Maintenance and Repair

To clean any marking on the device, switch off the device and then use a cloth slightly moistened with distilled water.

If a device can no longer be used under optimal safety conditions, it must be taken out of service and protected against inadvertent use, then returned to JM Concept.

⚠
- Never open the case
- Repairs are only to be carried on JM Concept's premises.

Operating environment

The product must be installed and used indoors, in an electrical box.

It must not be exposed to temperatures outside the limits prescribed for ambient temperatures (-10°C ... +60°C).

The product is not intended to operate at altitudes higher than 2000m.

It can be installed in an environment of pollution degree 2 and withstand transient surges of the power supply network of Category II.

It can withstand grid fluctuations of +/-10% on its voltage supply. The product is designed for a temporary voltage level between phase and earth according to EN/IEC61010.

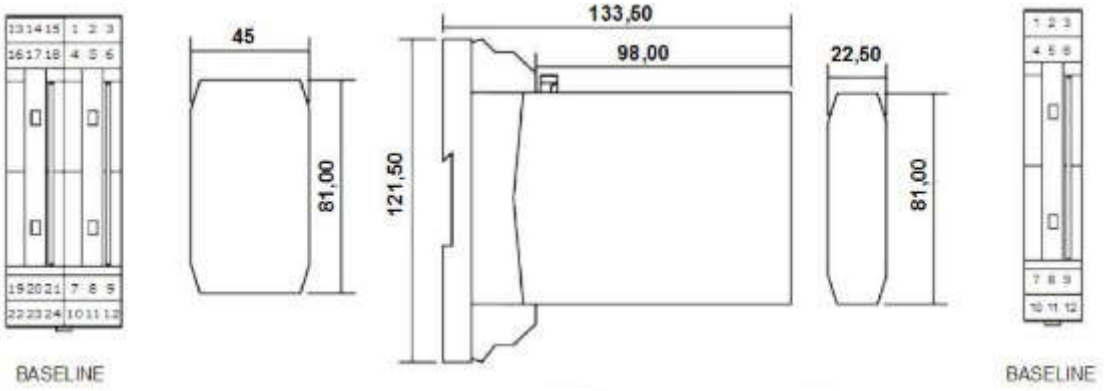
The circuits for measurements, inputs, and outputs are meant for connection to SELV (Safety extra low voltage) circuits only: 60Vdc max / 42.4V peak max / 30Vrms max).

The insulation level of external circuits plugged into the inputs and outputs should be of **2500Vrms** in order to maintain the existing insulation in the device between the different interfaces.

Since the bottom of the product enclosure has openings, it is not considered a fireproof enclosure.

Dimensions and wiring

Dimensions

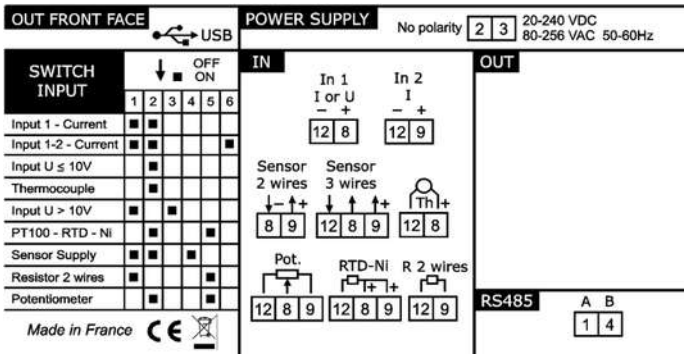


Dimensions: Width : 22.5 or 45 mm - Height: 81 mm - Depth: 98 mm

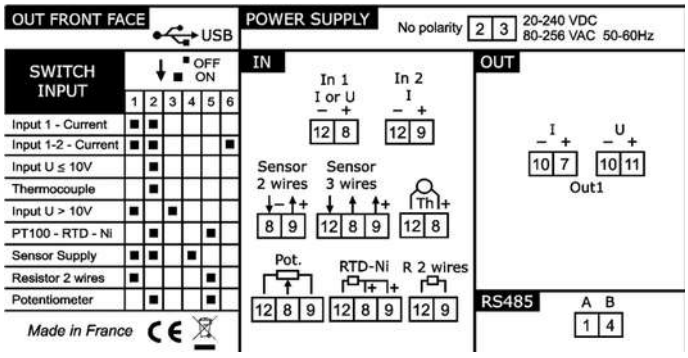
BASELINE boards are to be ordered separately
22.5 mm Case: Reference BL01ALV ; 45 mm Case: Reference BL02ALV
For multi-transmitter boards, please consult us.

Wiring

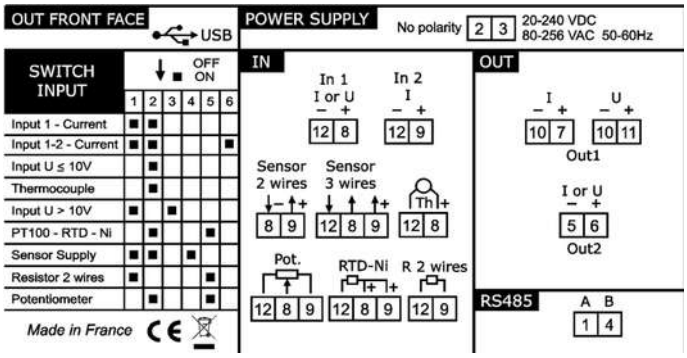
TELIS 9000U0



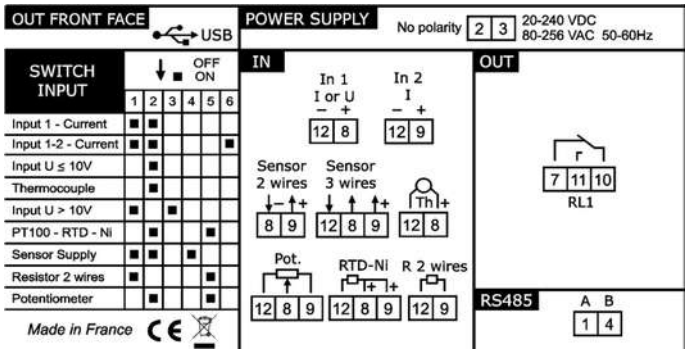
TELIS 9000U1



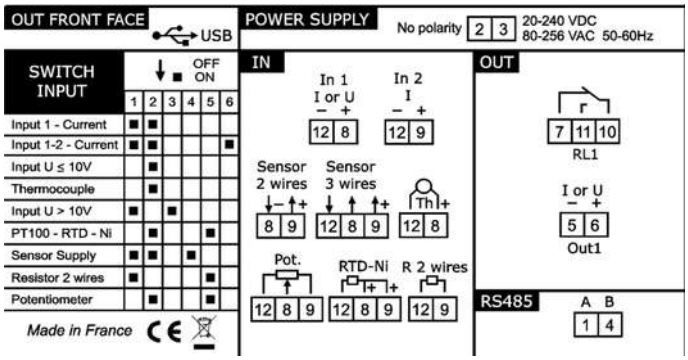
TELIS 9000U2



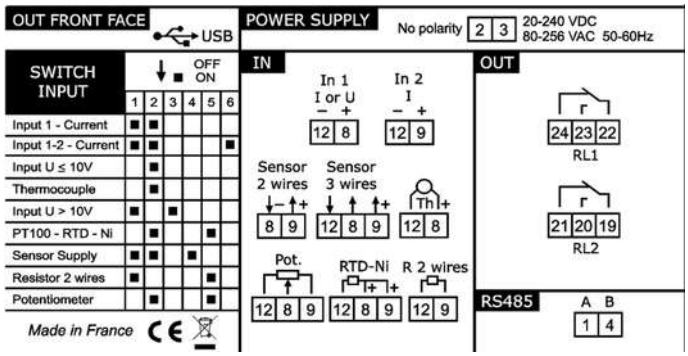
TELIS 9100U0



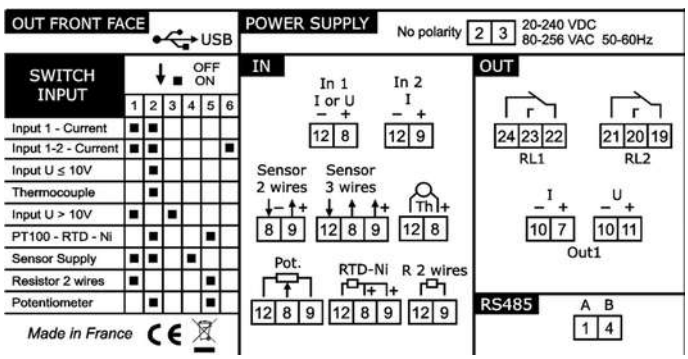
TELIS 9150U1



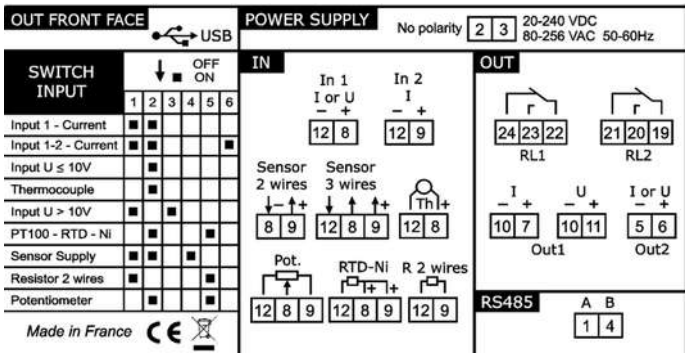
TELIS9200U0



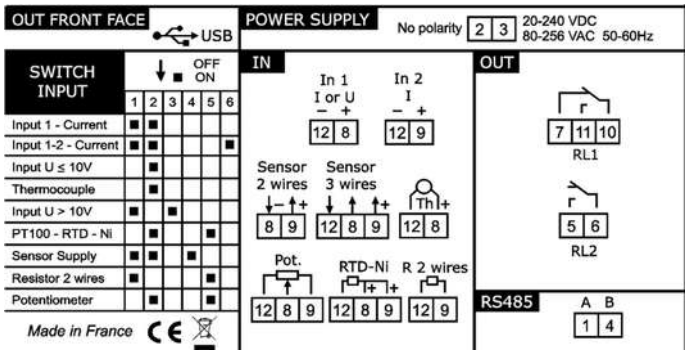
TELIS 9200U1



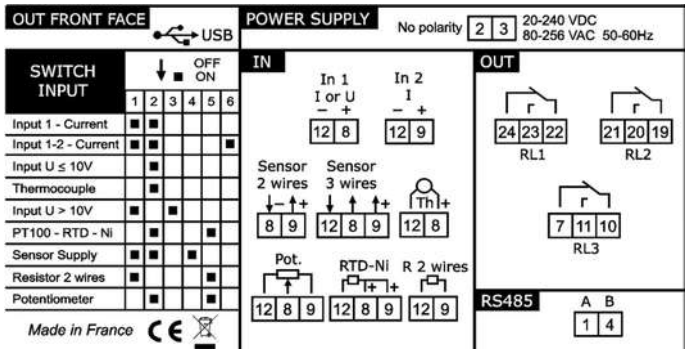
TELIS9200U2



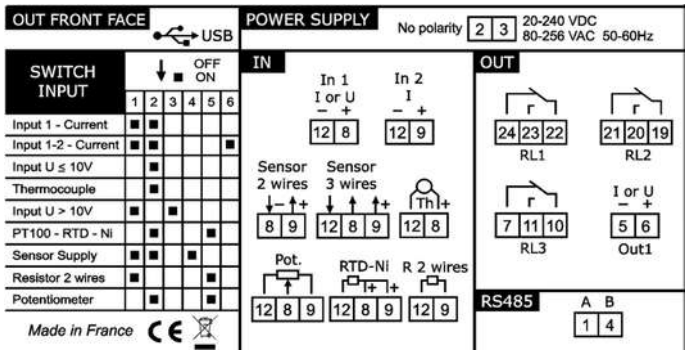
TELIS 9250U0



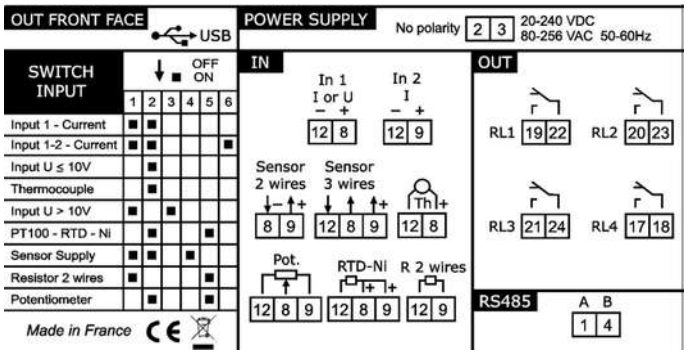
TELIS 9300U0



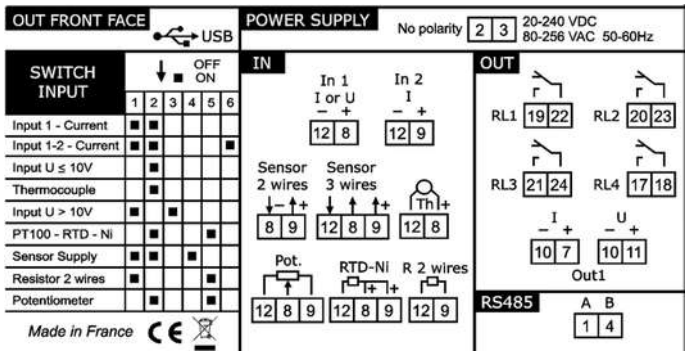
TELIS 9300U1



TELIS 9400U0



TELIS 9400U1



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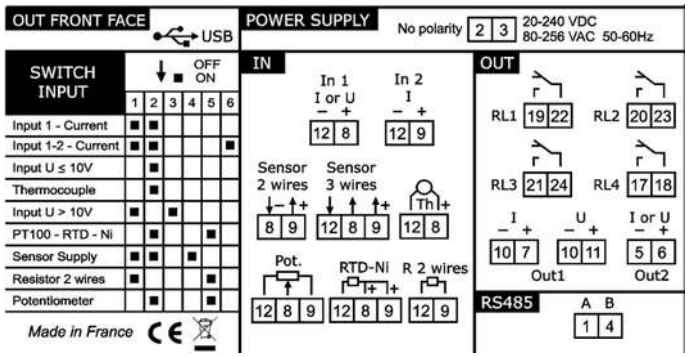


Installation

Prerequisite

Necessary equipment:

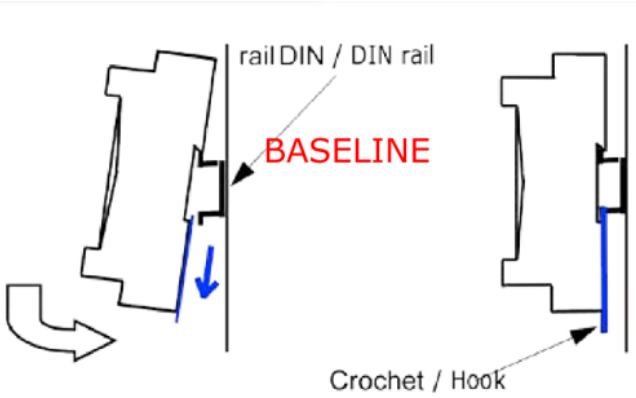
- DIN rail
- Screwdriver
- Copper wire of section 2.5 mm^2 max
- Cutting pliers
- Circuit breaker or equivalent

Mounting of the Baseline on the DIN rail

The baseline shall be mounted vertically on a DIN rail, placed horizontally.

Engage the top of the notch on top of the rail and push the base from the bottom until the plastic hook locks in place.

In case of temperature > 40°C or if the DIN rail is mounted in an upright position, a space of 5mm between 2 transmitters is recommended.



Mounting of the baseline on the DIN rail

A D-curve circuit breaker or equivalent must be placed close to the base and be easily accessible. This protection device must allow to cut the voltage of the power supply cables connected to the Baseline. Once the power is cut and the cables removed, the baseline can be unclipped.

To unclip the baseline from the DIN rail, pull the plastic hook down with a screwdriver, and pull the baseline towards yourself.

Before installing or removing the baseline on the DIN rail, it must be turned off and the products removed.

Setting up the transmitter on the baseline

The connection of the 22.5mm device is done by means of screw terminals distributed in 2 rows of 3 terminals marked from 1 to 6, at the top; and 2 rows of 3 terminals marked from 7 to 12, at the bottom.

The connection of the 45mm device is made by means of screw terminals distributed in 2 rows of 6 terminals identified from 1 to 6 and from 13 to 18, at the top; and 2 rows of 6 terminals identified from 7 to 12 and from 19 to 24 at the bottom.

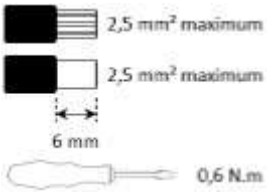
The power supply of the product is done via the baseline on terminals 2 and 3 marked in red.

> ⓘ Use wire section 2.5 mm² for the power supply (2 and 3).

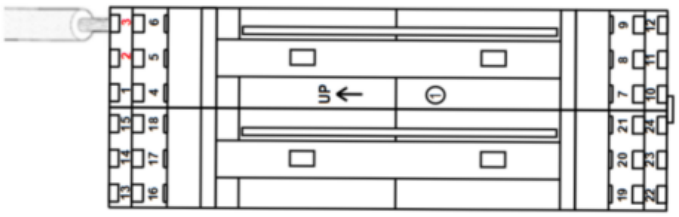
On other terminals, use a maximum of 2.5 mm² wire.

Strip cables over a length of 6mm

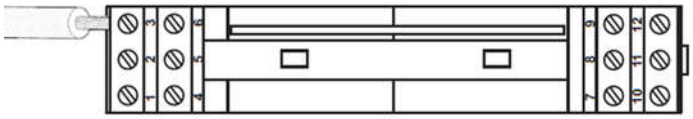
The tightening torque should be 0.6 Nm.



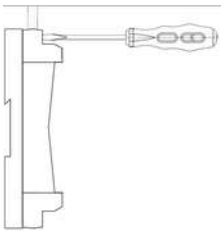
When connecting the power supply to the base, check that the power is turned off to avoid any risk to the operator.



Baseline 45, top view



Baseline 22.5, top view



Baseline, profile view

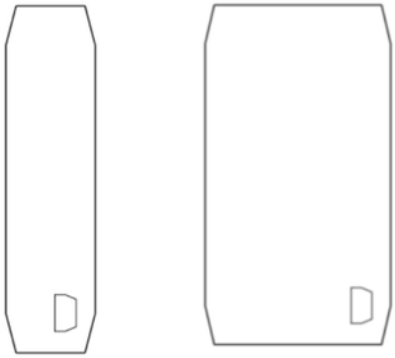
When the connection of the power supply, outputs and inputs is made, the transmitter module can be installed on its baseline.

Check that the transmitter module is in the right direction and matches the "UP" indication on the baseline.

Insert the product into the slot of the baseline until it is clicks and locks in top and bottom.

The device must be positioned in such a way as to facilitate the disconnection from its baseline, and this allowing the power cut-off of the module.

The mini-USB socket on the front of the product allows the connection to a PC for the product's configuration software.



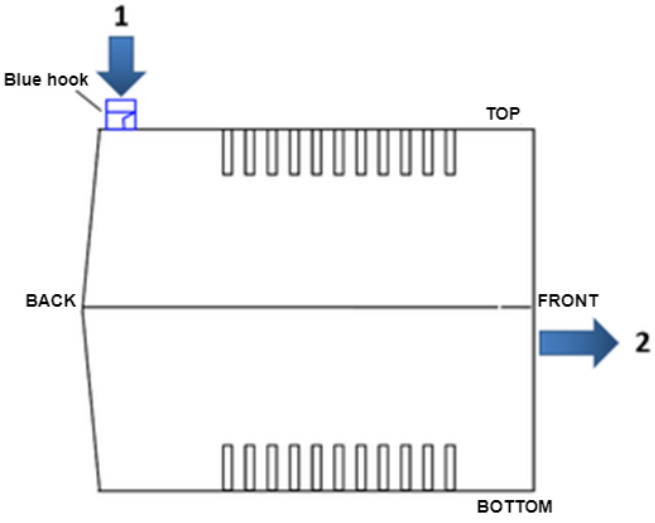
Front view: Baseline 22,5mm and Baseline 45mm

If the transmitter has an RJ45 socket on the front panel, it can be connected to the industrial network with an Ethernet cable.

Removing the transmitter module from its Baseline

Press the blue button to unlock the device.

Holding down the blue hook, pull the device out of the base.



Removing the transmitter

The product can be connected or disconnected from its base while powered.

Power Supply

The product has its own power supply.

The power supply conditions of the product (voltage, frequency, consumption) are available in the following sections "Technical characteristics" → "Characteristics" → "Auxiliary source" → "Power Supply voltage", and "Technical characteristics" → "Characteristics" → "General characteristics" → "Maximum consumption" of this document.

ⓘ Plan a protective fuse to protect the external power supply because the product is not equipped with one.
Install an external protective fuse, time-delayed of type T 500mA 250V with a high cut-off power.
The cut-off power of the protective fuse shall be greater than the short-circuit current that can be supplied by the power source.

Operating Instructions

Before operating the device, make sure you follow the steps below in order:

1. Install and wire the product, check the baseline (BL) if applicable. Refer to the "Installation" chapter of this manual.
2. Power the product. Refer to the "Installation" chapter → "Power Supply" of this manual.
3. Program the inputs/outputs of the product. Refer first to the chapter "Programming and keys functions " of this manual.
4. Configure the communications. Refer to the "Settings Menu" and "MODBUS Exchange Table" sections of this manual (depending on the product reference).

Programming and key functions

Introduction

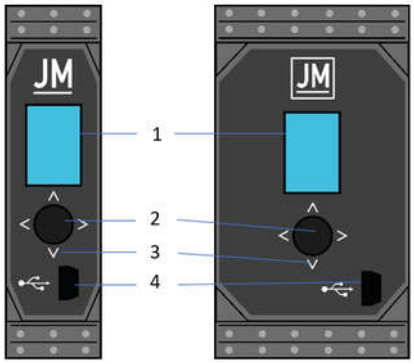
The principle of programming is that of drop-down menus in which it is enough to scroll through the available functions until the display of the one sought, and to validate this choice to proceed to the next step.
Scrolling can be done in 2 directions.
During programming, one or more presses on the button allows you to return to measure.
During programming, if no key is activated for one minute, the device returns to the measurement phase automatically.

The sequence to perform good programming is the following:

- Programming of the display and input: mode, type, scale, decimal point, resolution, function for process inputs and potentiometer, digital filter, cut-off.
- Programming of outputs:

→ analog outputs (gauge, beginning and end of scale, safety, limit)

→ relay (led, relay, alarm type, hysteresis, timing, breaking, memorization)



Front view 22.5 and 45mm case

1	Screen	**3**	Joystick positions up, down, left, right
2	Joystick	**4**	Direct USB port (or indirect for TELIS 6000, TELIS 8000 and GK 3000)

Use of the function keys in measurement mode

Element	Graphical representation in the manual	Function
Joystick button	●	Pressing the **button** allows: • to switch to programming mode • to reset the min / max and access the tare function • to access the alarm instructions setting
Joystick positions up, down, left, right	^ v > <	The **up**, **down**, **left**, **right** positions allow you to navigate between the different measurement pages

Use of the function keys in programming mode

Element	Graphical representation in the manual	Function
Joystick button	●	Pressing the **button** validates a choice of menu or configuration
Top, bottom joystick positions	^ v	The **up** and **down** positions allow you to choose a menu or the value of a parameter
Left joystick positions	<	The **left** position allows you to return to measurement mode (just back one step each time)

Symbols used in the manual

⚠ : Warning

ⓘ : Information / Recommendation

: Note

In the pages presenting the different drop-down menus, the main screen is framed green, and the menus accessible, if a special caliber is selected, framed orange.



Main screen - Special caliber screen

Programming by PC

Hardware Requirements

To be able to program the transmitter module with the PC, it is necessary to have a connection cable and the IXLOG software for the product.

Connecting cable

You need a USB cable between the USB socket on the front of the JM Concept transmitter module and the USB of the PC.

JM Concept transmitters can be programmed easily with our IXLOG software. Once the transmitter is programmed, it is also possible to connect and configure it via an Ethernet cable (Modbus TCP) or via the RS485 bus (depending on the product reference).

⚠ **For TELIS 6000, TELIS 8000 and GK 3000 series references**
These products do not have a direct USB connection and cannot work directly with a standard USB cable.
It is necessary to order from JM CONCEPT, the **USBLINE** cable.

IXLOG Software

To facilitate the configuration and programming of its products, JM Concept has designed a very advanced and user-friendly human/machine interface.
This software is free and available on our website:
http://www.jmconcept.com/

IXLOG software allows:

- Programming,
- The backup and the copy and paste of the configuration,
- The detection of devices on the network,
- Writing and reading the configuration,
- The communication with the device,
- The visualization of the measurement given by the transmitter

The IXLOG software is described and explained in more detail in the document IXLOG-FAQ-en.pdf directly in the help interface of the software.

⚠ **For TELIS 6000, TELIS 8000 and GK 3000 series references**
These products are programmable with the SETLINE software, available on our website: http://www.jmconcept.com/

Error messages

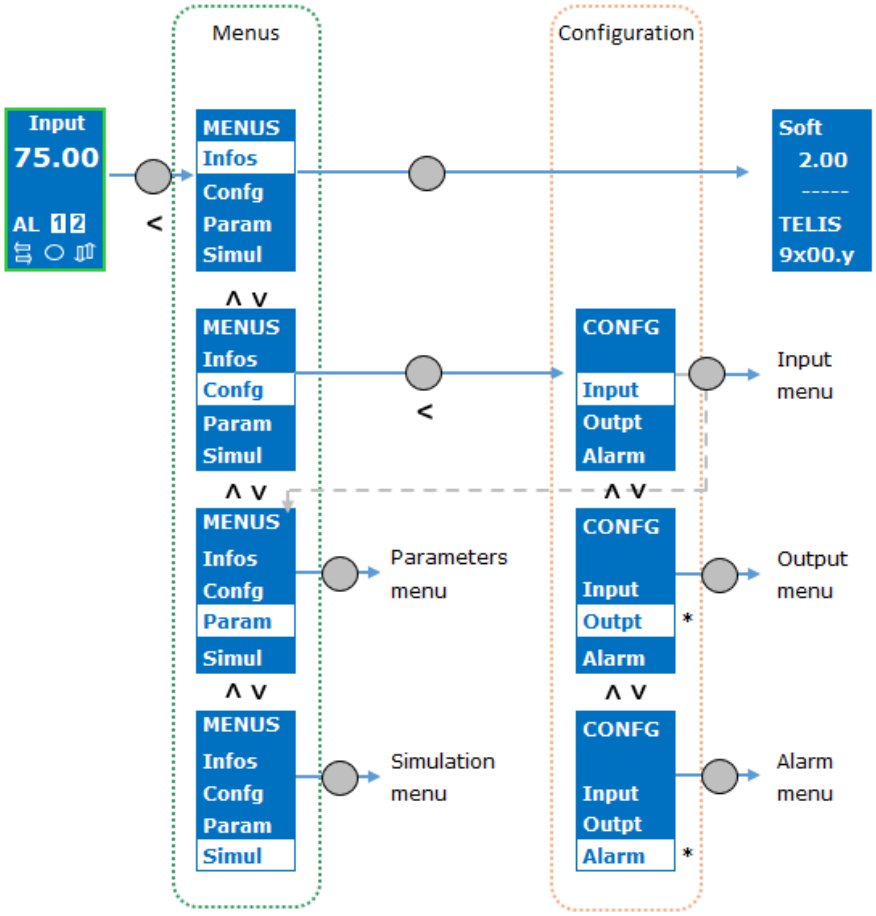
Message displayed	Description
---- `Overfl`	The ---- `Overfl` (OverFLow) message is shown flashing for an input signal higher than the selected gauge.
`ruPtr`	In the event of a sensor failure, the `ruPtr` message is shown flashing. The sensor failure is displayed: • on detection of an open circuit in the current (4-20mA only), voltage, resistance, potentiometer, thermocouple gauge. • if the measurement exceeds the gauge limits by 20%.
`Undrfl_____`	The message `Undrfl_____` (UnderFLow) is shown flashing for an input signal below the selected gauge.

Main menu

Diagram

This menu allows you to enter the programming mode and configure the input, analog outputs, and relays.

*Menus available according to product reference



Lexicon of screens

Menus

Screen	Value	Description
MENUS		Main menu
	Infos	Access to the product information
	Confg	Access to the configuration
	Param	Access to the settings menu
	Simul	Access to the simulation function

Configuration

Screen	Value	Description
CONFG		Access to the configuration
	Input	Access to the input menu
	Outpt	Access to the output menu
	Alarm	Access to the Alarm menu

Soft

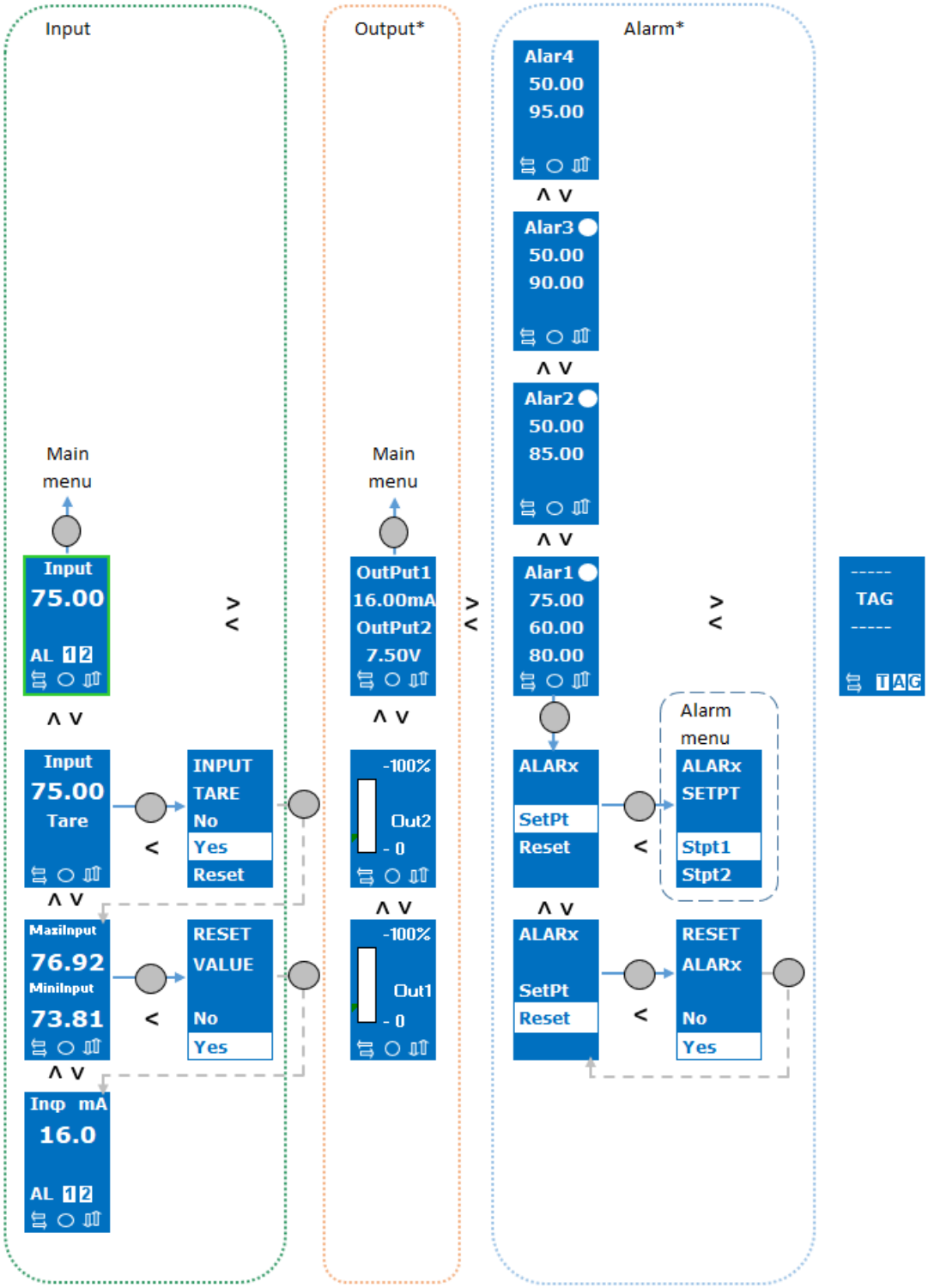
Screen	Value	Description
Soft		Access to the product information
	Line 2	Software version number
	Line 5	Product reference (x = number of relays, y = number of analog outputs)
	Return to the previous screen automatically after 5 seconds	

Measurements menu 1 input

Diagram

By default, the device is in measurement mode.
Value resets and tare values are accessible in this mode.

*Menus available according to product reference



Lexicon of screens

Input

Screen	Value	Description
Main screen		
	Input	Display of the input value
	Inφ	Display of the physical measurement
	AL	Alarm
	MaxiInput	Display of the max measured value
	MiniInput	Display of the min measured value
	Tare	Tare function only for current, voltage, and potentiometer input

Screen	Value	Description
RESET VALUE		Choice of reset
	Yes/No	
INPUT TARE		Choice of use of tare
	Yes/No	
	Reset	Reset

Output

Screen	Value	Description
OutPut x & Outx		Display of the output value

Alarm

Screen	Value	Description
Alarx		Display of the alarm. If the alarm is activated, a white circle is displayed
	Line 2	Measurement
	Line 3	Threshold 1
	Line 4	Threshold 2
ALARx		Access to the setting of thresholds
	SetPt	Access to the alarm threshold
	Reset	Reset

Screen	Value	Description
ALARx SETPT		Selection of the alarm threshold
	Stptx	Threshold n°x
RESET ALARx		Choice of reset
	Yes/No	

TAG

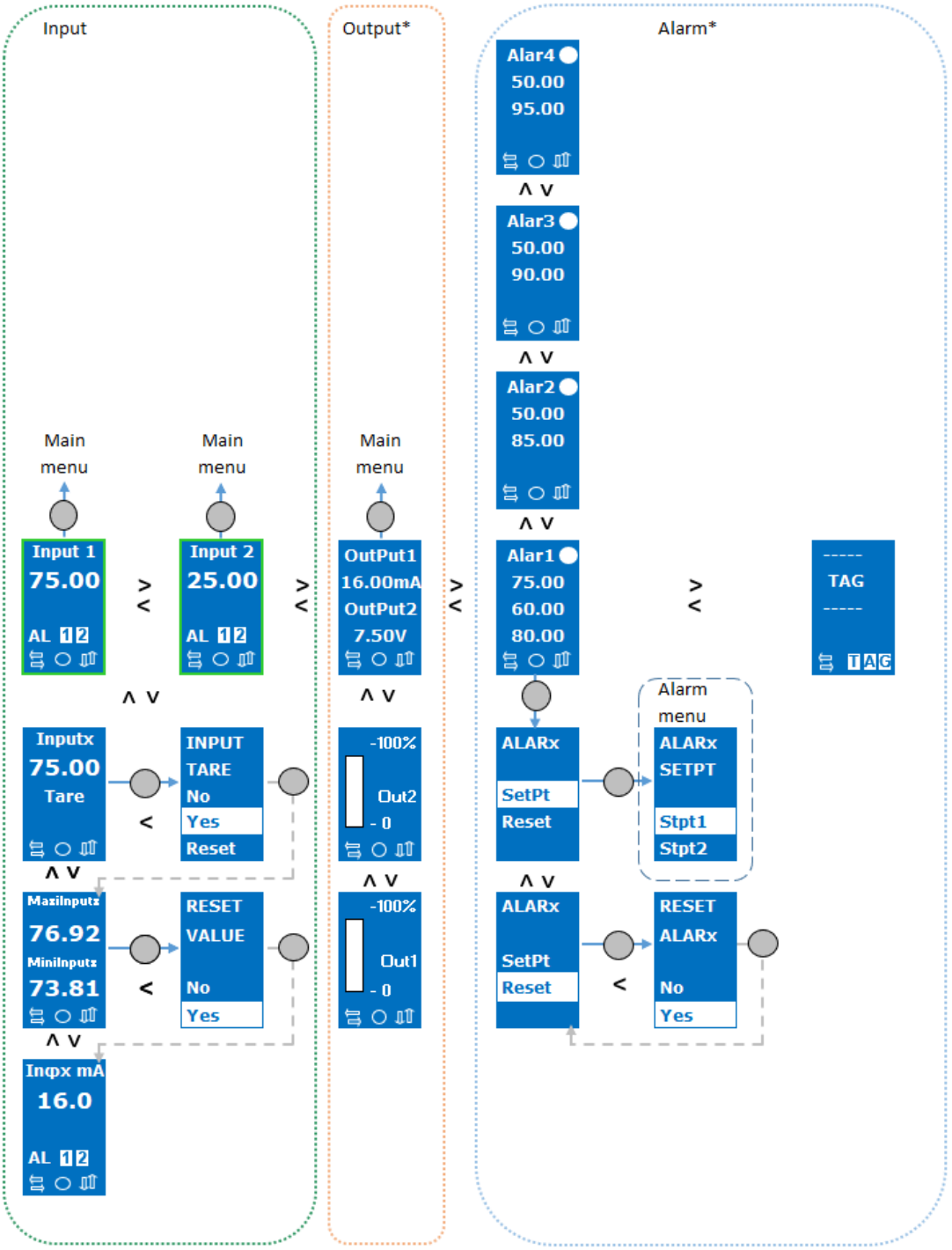
TAG display (TAG input only by IXLOG software)

Measurements menu 2 inputs

Diagram

The 2 inputs is only available for current inputs.

*Menu available according to product reference



Lexicon of screens

Input

Screen	Value	Description
Main screen		
	Inputx	Display of the input value
	Inφx	Display of the physical measurement
	AL	Alarm
	MaxiInput x	Display of the max measured value
	MiniInput x	Display of the min measured value
	Tare	Tare function only for current, voltage, and potentiometer input

Screen	Value	Description
RESET VALUE		Choice of reset
	Yes/No	
INPUT TARE		Choice of use of tare
	Yes/No	
	Reset	Reset

Sortie

Screen	Value	Description
OutPut x & Outx		Display of the output value

Alarme

Screen	Value	Description
Alarx		Display of the alarm. If the alarm is activated, a white circle is displayed
	Line 2	Measurement
	Line 3	Threshold 1
	Line 4	Threshold 2
ALARx		Access to the setting of thresholds
	SetPt	Access to the alarm threshold
	Reset	Reset

Screen	Value	Description
ALARx SETPT		Selection of the alarm threshold
	Stptx	Threshold n°x
RESET ALARx		Choice of reset
	Yes/No	

TAG

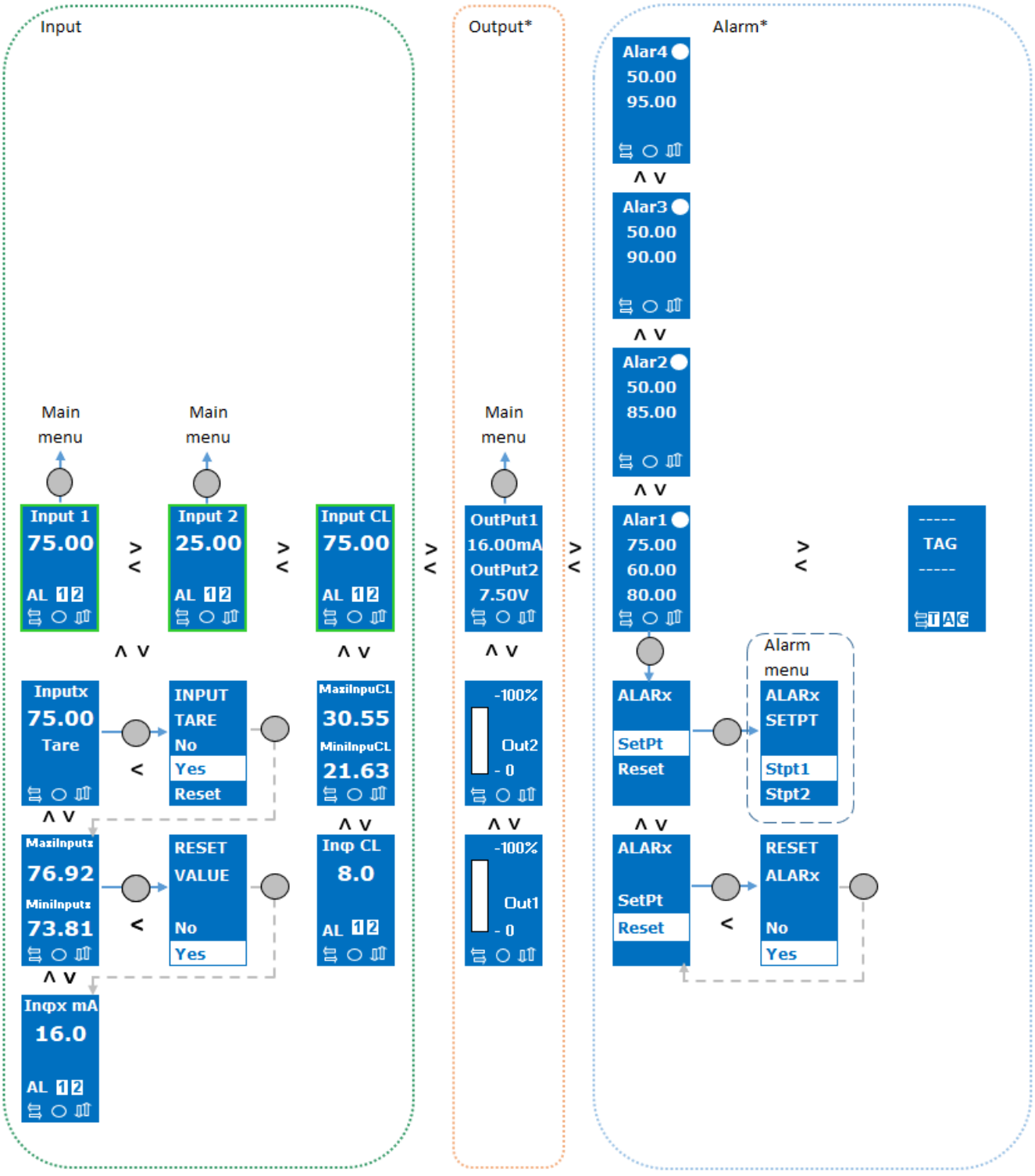
TAG display (TAG input only by IXLOG software)

Measurements menu 2 inputs + calculation

Diagram

The 2 inputs + calculation mode is only available for current inputs.

*Menus available according to product reference



Lexicon of screens

Input

Screen	Value	Description
Main screen		
	Inputx	Display of the input value
	Inφx	Display of the physical measurement
	AL	Alarm
	MaxiInput x	Display of the max measured value
	MiniInput x	Display of the min measured value
	Tare	Tare function only for current, voltage, and potentiometer input
	InputCL	Display of the calculated input value
	Inφ CL	Display of the calculated physical measurement

Screen	Value	Description
Main screen		
	MaxiInpuCL	Display of the max calculated value
	MiniInpuCL	Display of the min calculated value
RESET VALUE		Choice of reset
	Yes/No	
INPUT TARE		Choice of use of tare
	Yes/No	
	Reset	Reset

Output

Screen	Value	Description
OutPut x & Outx		Display of the output value

Alarm

Screen	Value	Description
Alarx		Display of the alarm. If the alarm is activated, a white circle is displayed
	Line 2	Measurement
	Line 3	Threshold 1
	Line 4	Threshold 2
ALARx		Access to the setting of thresholds
	SetPt	Access to the alarm threshold
	Reset	Reset

Screen	Value	Description
ALARx SETPT		Selection of the alarm threshold
	Stptx	Threshold n°x
RESET ALARx		Choice of reset
	Yes/No	

TAG

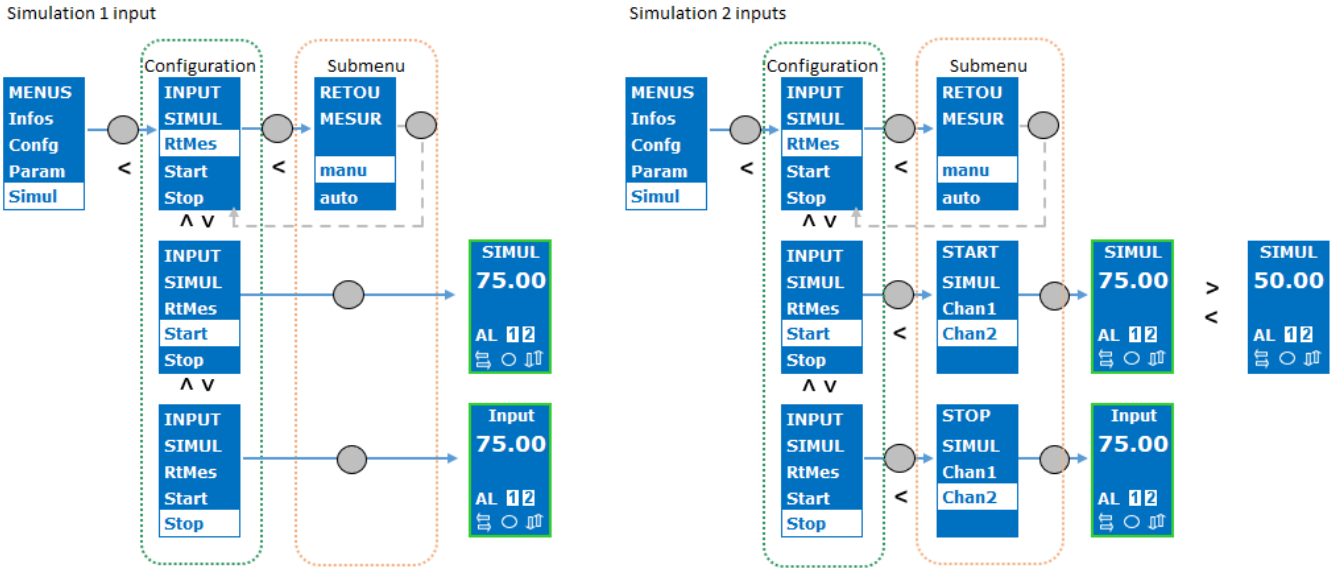
TAG display (TAG input only by IXLOG software)

Simulation function

Operating the simulation function

This function allows you to vary the simulation value (with the up/down arrows from the SIMUL screen) to change the analog output value and relays statuses.

The measurement screens of the 1 input and 2 inputs measurements menus are available when simulation is activated.



Lexicon of screens

Configuration

Screen	Value	Description
INPUT SIMUL		
	RtMes	Access to the preferences for returning to the measurement mode
	Start	Starting the simulation mode. Back to the main screen in simulation mode
	Stop	Stop the simulation mode. Return to the main screen in measurement mode

Submenu - simulation 1 input

Screen	Value	Description
RETOU MESUR		Selection of the return to measurement mode
	manu	Return to manual measurement mode
	auto	Return to measurement mode after 10 minutes
START SIMUL		Enable simulation
		Starting the simulation on input 1 and return to the main screen in simulation mode
STOP SIMUL		Disable simulation
		Stop the simulation on input 1 and return to the main screen in measurement mode

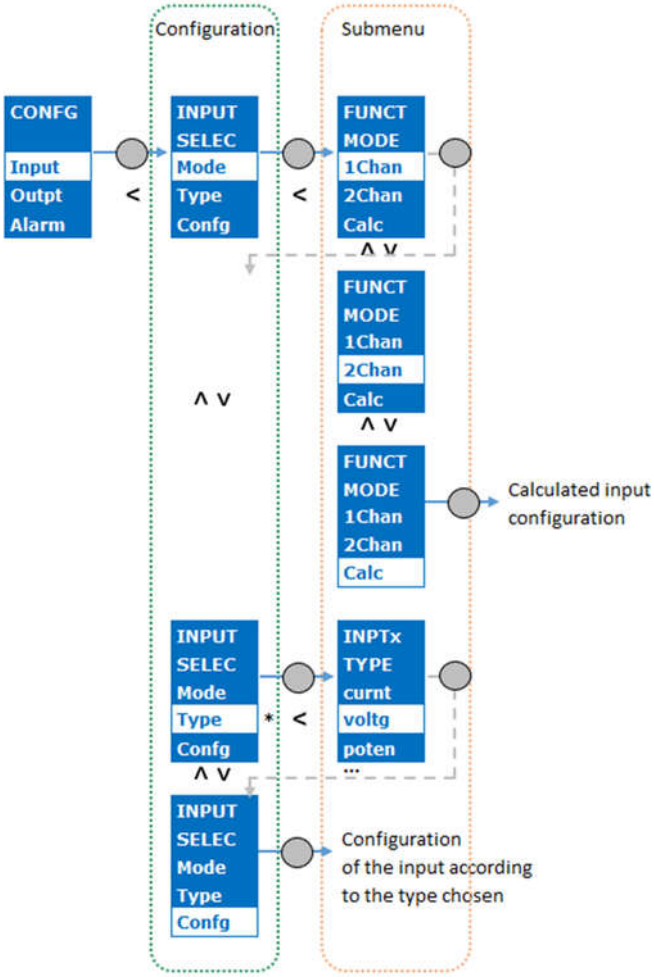
Submenu - simulation 2 inputs

Screen	Value	Description
RETOU MESUR		Selection of the return to measurement mode
	manu	Return to manual measurement mode
	auto	Return to measurement mode after 10 minutes
START SIMUL		Selection of the input to simulate
	Chan1	Starting the simulation on input 1 and return to the main screen in simulation mode
	Chan2	Starting the simulation on the 2 inputs and return to the main screen in simulation mode
STOP SIMUL		Selection of the controlled input to stop
	Chan1	Stop the simulation on input 1 and return to the main screen in measurement mode
	Chan2	Stop the simulation on both inputs and return to the main screen in measurement mode

Input menu

Diagram

*Menu available if 1Chan mode selected



Lexicon of screens

Configuration

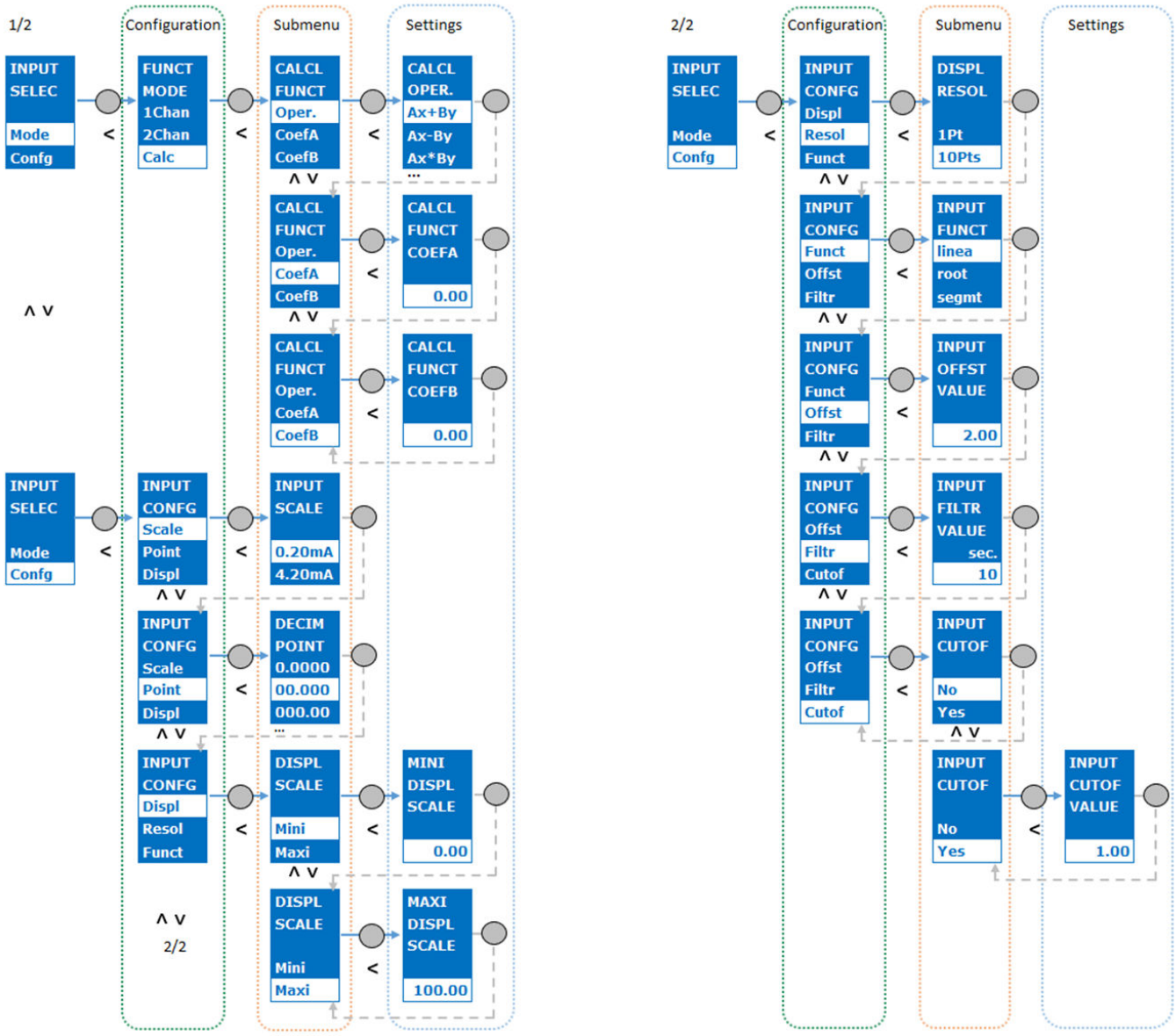
Screen	Value	Description
INPUT SELECT		Inputs Selection
	Mode	Access to the choice of input mode
	Type	Access to the choice of input type
	Confg	Access to the configuration of the chosen input

Submenu

Screen	Value	Description
FUNCT MODE		Mode selection
	1Chan	1 input
	2Chan	2 inputs
	Calc	Calculation
INPUTx TYPE		Selection of the input type
	curnt	Current input
	voltg	Voltage input
	poten	Potentiometer input
	resis	Resistance input
	R.T.D	RTD input
	therm	Thermocouple input

Calculated input configuration

Diagram



Lexicon of screens

Configuration

Screen	Value	Description
FUNCT MODE		Mode selection
	1Chan	1 input
	2Chan	2 inputs
	Calc	Calculation
INPUT CONFG		Input configuration
	Scale	Access to the choice of input gauges
	Point	Access to the comma position setting
	Displ	Access to the display scales
	Resol	Accessing the resolution configuration
	Funct	Access to the function configuration
	Offst	Access to the offset configuration
	Filtr	Access to the filtering configuration
	Cutof	Access to the cut-off configuration

Submenu

Screen	Value	Description
CALCL FUNCT		Calculation selection
	Oper.	Access to the choice of operation
	CoefA	Access to the setting of coefficient A
	CoefB	Access to the setting of coefficient B
INPUT SCALE		Gauges Selection
	0-20mA ; 4-20mA	
DECIM POINT		Gauges Selection
	x.xxxx	Comma position
DISPL SCALE		Setting of the display scale
	Mini	Access to the min value setting
	Maxi	Access to the max value setting

Screen	Value	Description
DISPL RESOL		Selection of the display resolution
	XPt(s)	Number of points
INPUT FUNCT		Function Selection
	linea	Linear function
	root	Square root function - inactive in compute mode and 2-channel mode
	segmt	Segment function access - inactive in both compute mode and 2-inputs mode
INPUT OFFST VALUE		Offset Setting
	from -19999 to 99999	
INPUT FILTR VALUE		Setting of the filter value
	from 0 to 250	
INPUT CUTOF		Choice of use of the cut-off
	Yes/No	

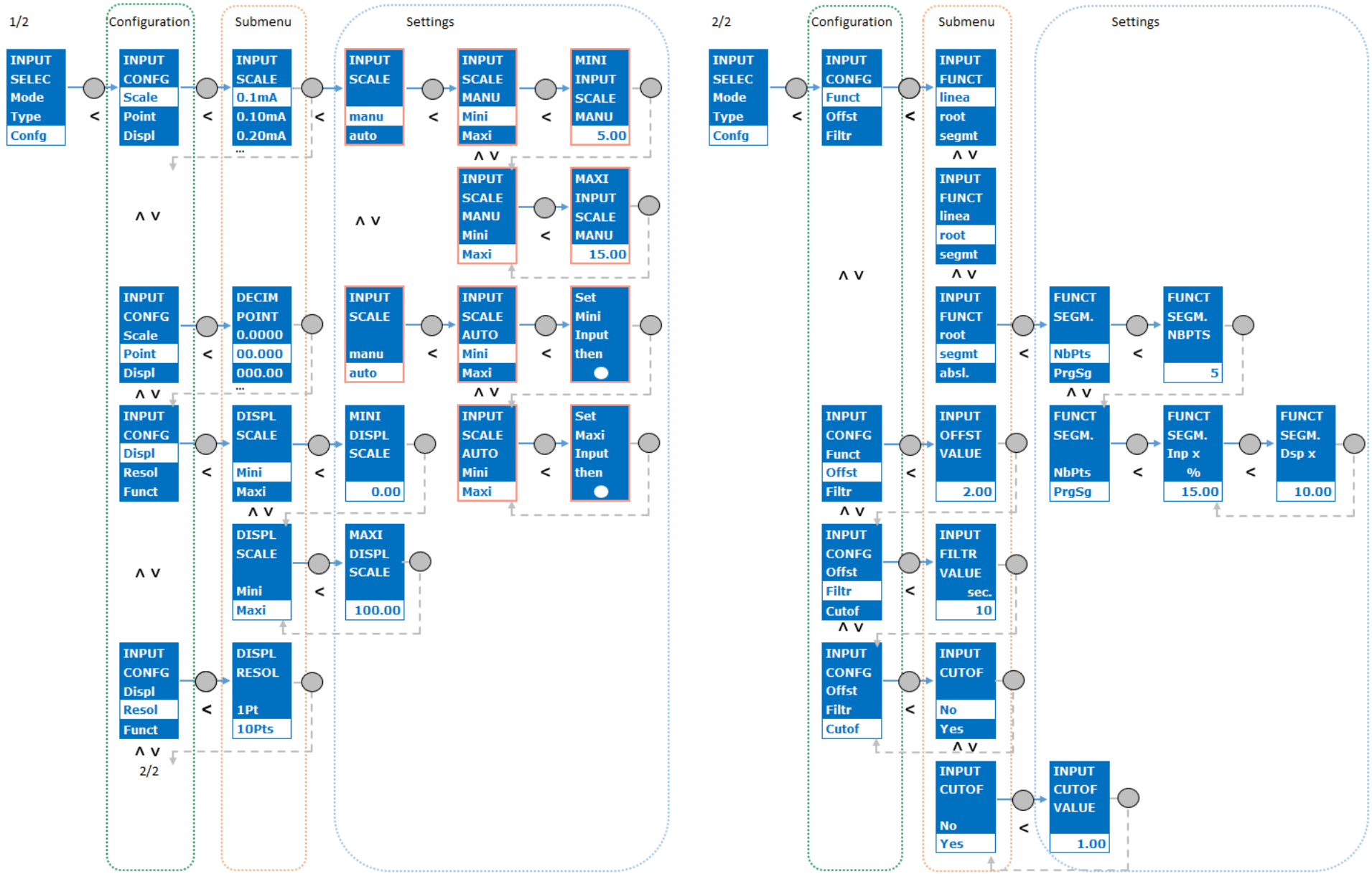
Settings

Screen	Value	Description
CALCL FUNCT		Calculation selection
	Oper.	Access to the choice of operation
	CoefA	Access to the setting of coefficient A
	CoefB	Access to the setting of coefficient B
CALCL OPER.		Operation selection
	Ax+By	Calculation Ax+By
	Ax-By	Calculation Ax-By
	Ax*By	Calculation Ax*By
	Ax/By	Calculation Ax/By
CALCL FUNCT COEFA		Setting of the A coefficient
	from -1.000 to 1.000	

Screen	Value	Description
CALCL FUNCT COEFB		Setting of the B coefficient
	from -1.000 to 1.000	
MINI DISPL SCALE		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI DISPL SCALE		Setting of the maximum value of the display scale
	from -19999 to 99999	
INPUT CUTOF VALUE		Setting of the cut-off value
	from -19999 to 99999	

Current input configuration 1 input

Diagram



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPUT CONFG		Input configuration			
	Scale	Access to the choice of input gauges		Funct	Access to the function configuration
	Point	Access to the comma position setting		Offst	Access to the offset configuration
	Displ	Access to the display scales		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration		Cutof	Access to the cut-off configuration

Submenu

Screen	Value	Description		Screen	Value	Description
INPUT SCALE		Gauges Selection		INPUT FUNCT		Function Selection
	XX	Standard gauges			linea	Linear function
	Spe.XX	Special gauges			root	Square root function
DECIM POINT		Selection of the position of the comma			segmt	Segment function access
	x.xxxx	Comma position			absl.	Absolute value function
DISPL SCALE		Setting of the display scale		INPUT OFFST VALUE		Offset Setting
	Mini	Access to the min value setting			from -19999 to 99999	
	Maxi	Access to the max value setting		INPUT FILTR VALUE		Setting of the filter value
DISPL RESOL		Selection of the display resolution			from 0 to 250	
	XPt(s)	Number of points		INPUT CUTOF		Choice of use of the cut-off
					Yes/No	

Settings

Screen	Value	Description
INPUT SCALE		Mode selection Setting
	manu	Manual Setting
	auto	Automatic Setting
INPUT SCALE MANU		Manual Setting of the special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
MINI INPUT SCALE MANU		Manual Setting of the minimum value
	from -22 to 22	
MAXI INPUT SCALE MANU		Manual Setting of the maximum value
	from -22 to 22	
INPUT SCALE AUTO		Automatic Setting for special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
Set Mini Input then		Setting of the minimum value of the input signal with a connected sensor
Set Maxi Input then		Setting of the maximum value of the input signal with a connected sensor

Screen	Value	Description
MINI DISPL SCALE		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI DISPL SCALE		Setting of the maximum value of the display scale
	from -19999 to 99999	
FUNCT SEGMT.		Function
	NbPts	Access to the configuration of the number of points
	PrgSg	Access to the points configuration
FUNCT SEGMT NBPTS		Setting of the number of points
	from 1 to 99	
FUNCT SEGM Inp x		Setting of the percentage of the point x input scale
	from 0 to 100%	
FUNCT SEGM Dsp x		Setting of the display value of point x
	from -19999 to 99999	
INPUT CUTOF VALUE		Setting of the cut-off value
	from -19999 to 99999	

Definition of functions

Square root

The output(s) are function of the square root of the input

Segment Function

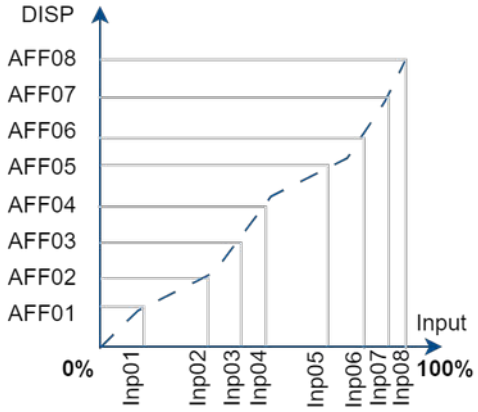
Linearization in 99 points (free choice for each point), allows to create an output function by segmentation of the signal of each input channel.

0% = _Display ; 100% = ¯Display

AFF01, AFF02, … = Display value

INP01, INP02, … = % of the input value

In the example opposite, 8 points (+0% & 100%) correspond to 9 segments



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Absolute value

The output(s) are a function of the absolute value of a bidirectional input

Offset

Manual adjustment of the input offset

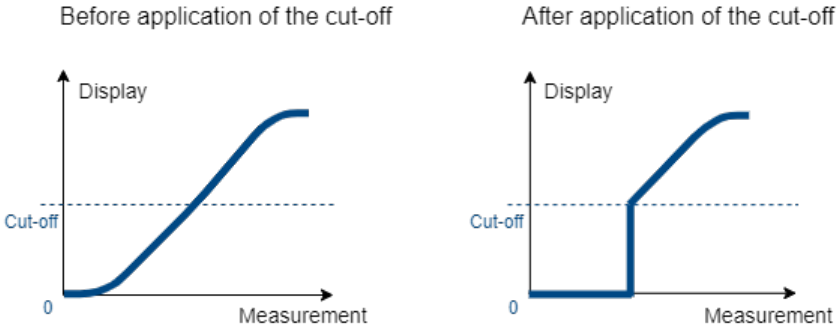
Filtering

Integration of the measurement over the defined time (in seconds)

Cut-off

Threshold below which the input is considered as null

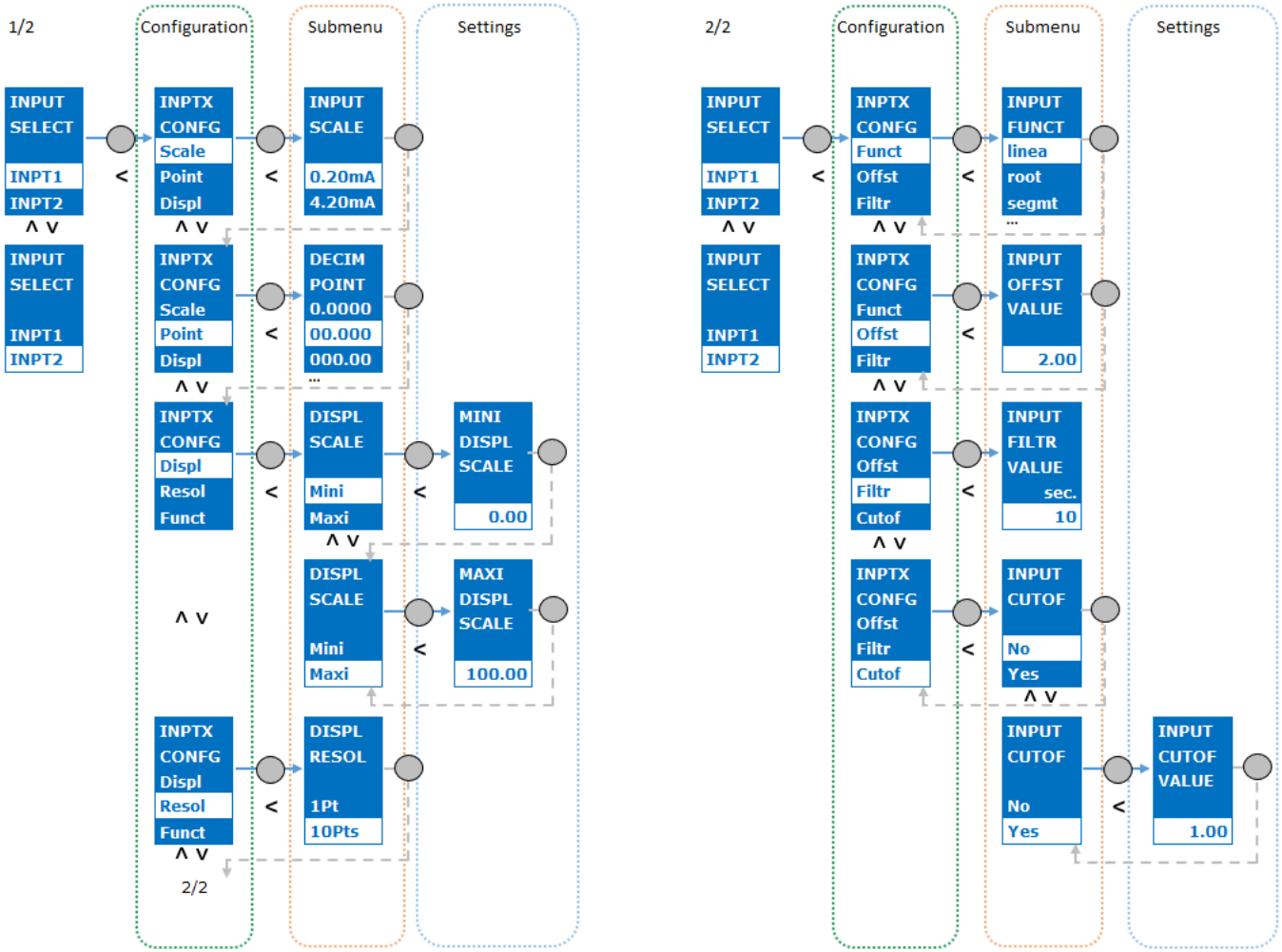
If Display value < Cut-off value, then Display value = Minimum display



Current input configuration 2 inputs

Diagram

In 2-input mode, the entries have the same configuration.



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPXT CONFG		Input configuration			
	Scale	Access to the choice of input gauges		Funct	Access to the function configuration
	Point	Access to the comma position setting		Offst	Access to the offset configuration
	Displ	Access to the display scales		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration		Cutof	Access to the cut-off configuration

Submenu

Screen	Value	Description		Screen	Value	Description
INPUT SCALE		Gauges Selection		INPUT FUNCT		Sélection de la fonction
	0-20mA ; 4-20mA				linea	Linear function
DECIM POINT		Selection of the position of the comma			root	Square root function - inactive in compute mode and 2-channel mode
	x.xxxx	Comma position			segmt	Segment function access - inactive in both compute mode and 2-inputs mode
DISPL SCALE		Setting of the display scale			absl.	Absolute value function - inactive in calculation mode and 2-channel mode
	Mini	Access to the min value setting		INPUT OFFST VALUE		Offset Setting
	Maxi	Access to the max value setting			from -19999 to 99999	
DISPL RESOL		Selection of the display resolution		INPUT FILTR VALUE		Setting of the filter value
	XPt(s)	Number of points			from 0 to 250	
				INPUT CUTOF		Choice of use of the cut-off
					Yes/No	

Settings

Screen	Value	Description
MINI DISPL SCALE		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI DISPL SCALE		Setting of the maximum value of the display scale
	from -19999 to 99999	

Screen	Value	Description
INPUT CUTOF VALUE		Setting of the cut-off value
	from -19999 to 99999	

Definition of functions

Offset

Manual adjustment of the input offset

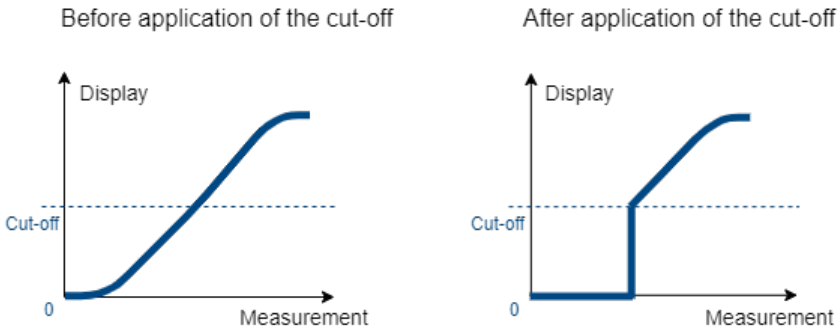
Filtering

Integration of the measurement over the defined time (in seconds)

Cut-off

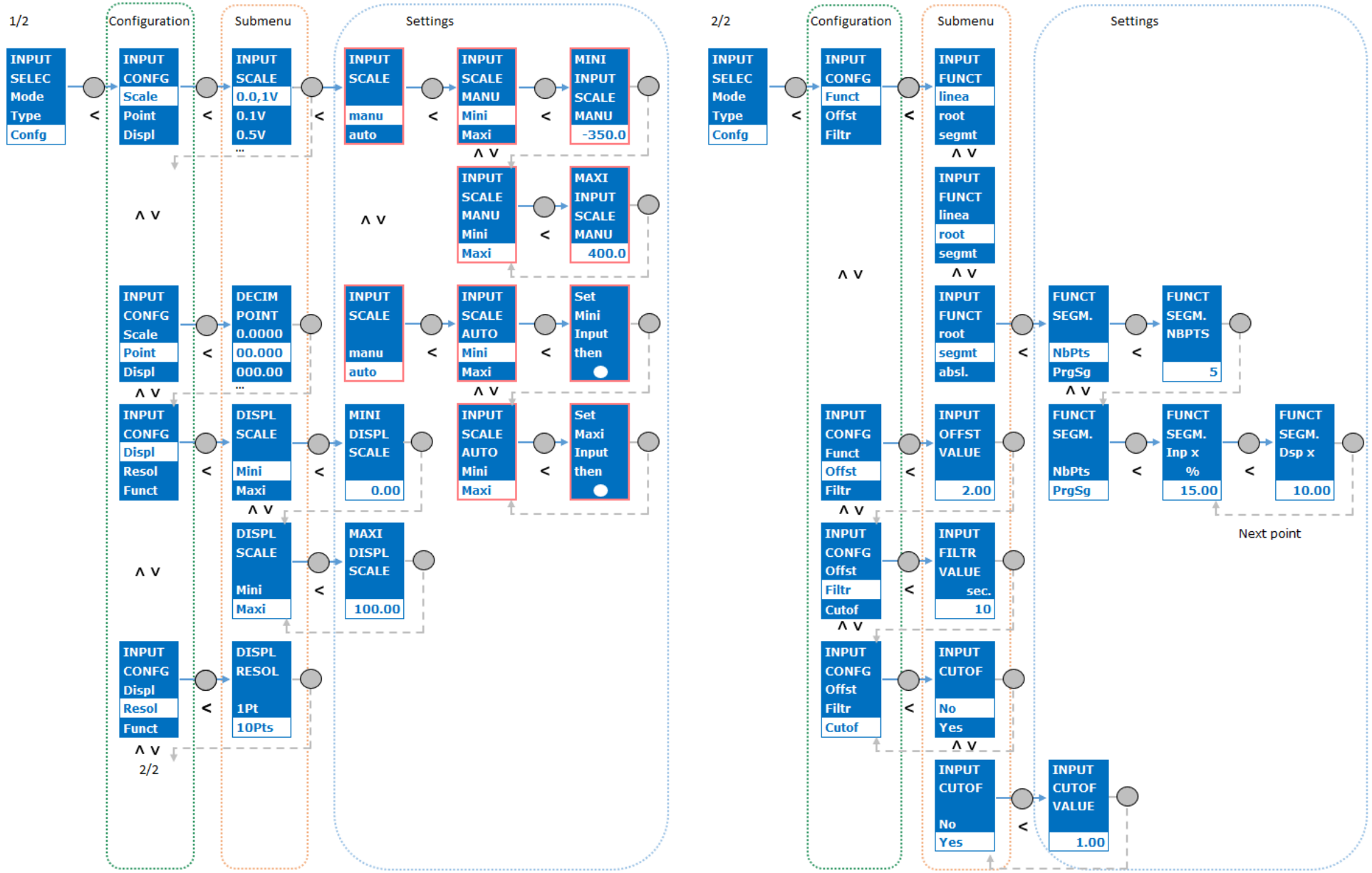
Threshold below which the input is considered as null

If Display value < Cut-off value, then Display value = Minimum display



Voltage input configuration

Diagram



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPXT CONFG		Input configuration			
	Scale	Access to the choice of input gauges		Funct	Access to the function configuration
	Point	Access to the comma position setting		Offst	Access to the offset configuration
	Displ	Access to the display scales		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration		Cutof	Access to the cut-off configuration

Submenu

Screen	Value	Description		Screen	Value	Description
INPUT SCALE		Gauges Selection		INPUT FUNCT		Function Selection
	XX.	Standard gauges			linea	Linear function
	Spe.XX	Special gauges			root	Square root function
DECIM POINT		Selection of the position of the comma			segmt	Segment function access
	x.xxxx	Comma position			absl.	Absolute value function
DISPL SCALE		Setting of the display scale		INPUT OFFST VALUE		Offset Setting
	Mini	Access to the min value setting			from -19999 to 99999	
	Maxi	Access to the max value setting		INPUT FILTR VALUE		Setting of the filter value
DISPL RESOL		Selection of the display resolution			from 0 to 250	
	XPt(s)	Number of points		INPUT CUTOF		Choice of use of the cut-off
					Yes/No	

Settings

Screen	Value	Description
INPUT SCALE		Mode selection Setting
	manu	Manual Setting
	auto	Automatic Setting
INPUT SCALE MANU		Manual Setting of the special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
MINI INPUT SCALE MANU		Manual Setting of the minimum value
	from -100mV to 110mV ; from -2V to 11V ; from -1000V to 1000V	
MAXI INPUT SCALE MANU		Manual Setting of the maximum value
	from -100mV to 110mV ; from -2V to 11V ; from -1000V to 1000V	
INPUT SCALE AUTO		Automatic Setting for special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
Set Mini Input then		Setting of the minimum value of the input signal with a connected sensor
Set Maxi Input then		Setting of the maximum value of the input signal with a connected sensor

Screen	Value	Description
MINI DISPL SCALE		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI DISPL SCALE		Setting of the maximum value of the display scale
	from -19999 to 99999	
FUNCT SEGMT.		Configuration of the Segments Function
	NbPts	Access to the configuration of the number of points
	PrgSg	Access to the points configuration
FUNCT SEGMT NBPTS		Setting of the number of points
	from 1 to 99	
FUNCT SEGM Inp x		Setting of the percentage of the point x input scale
	from 0 to 100%	
FUNCT SEGM Dsp x		Setting of the display value of point x
	from -19999 to 99999	
INPUT CUTOF VALUE		Setting of the cut-off value
	from -19999 to 99999	

Definition of functions

Square root

The output(s) are function of the square root of the input

Segment Function

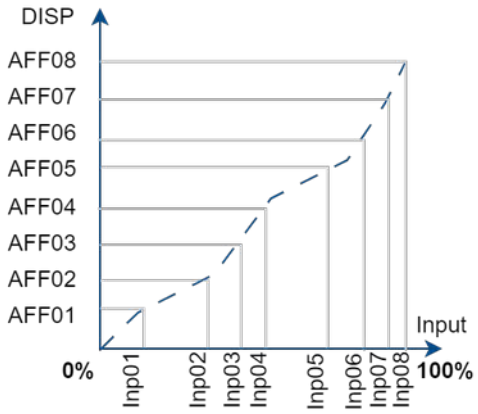
Linearization in 99 points (free choice for each point), allows to create an output function by segmentation of the signal of each input channel.

0% = _Display ; 100% = ¯Display

AFF01, AFF02, … = Display value

INP01, INP02, … = % of the input value

In the example opposite, 8 points (+0% & 100%) correspond to 9 segments



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Absolute value

The output(s) are a function of the absolute value of a bidirectional input

Offset

Manual adjustment of the input offset

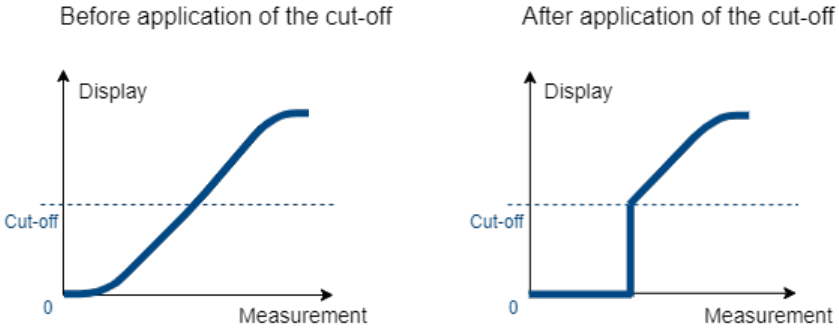
Filtering

Integration of the measurement over the defined time (in seconds)

Cut-off

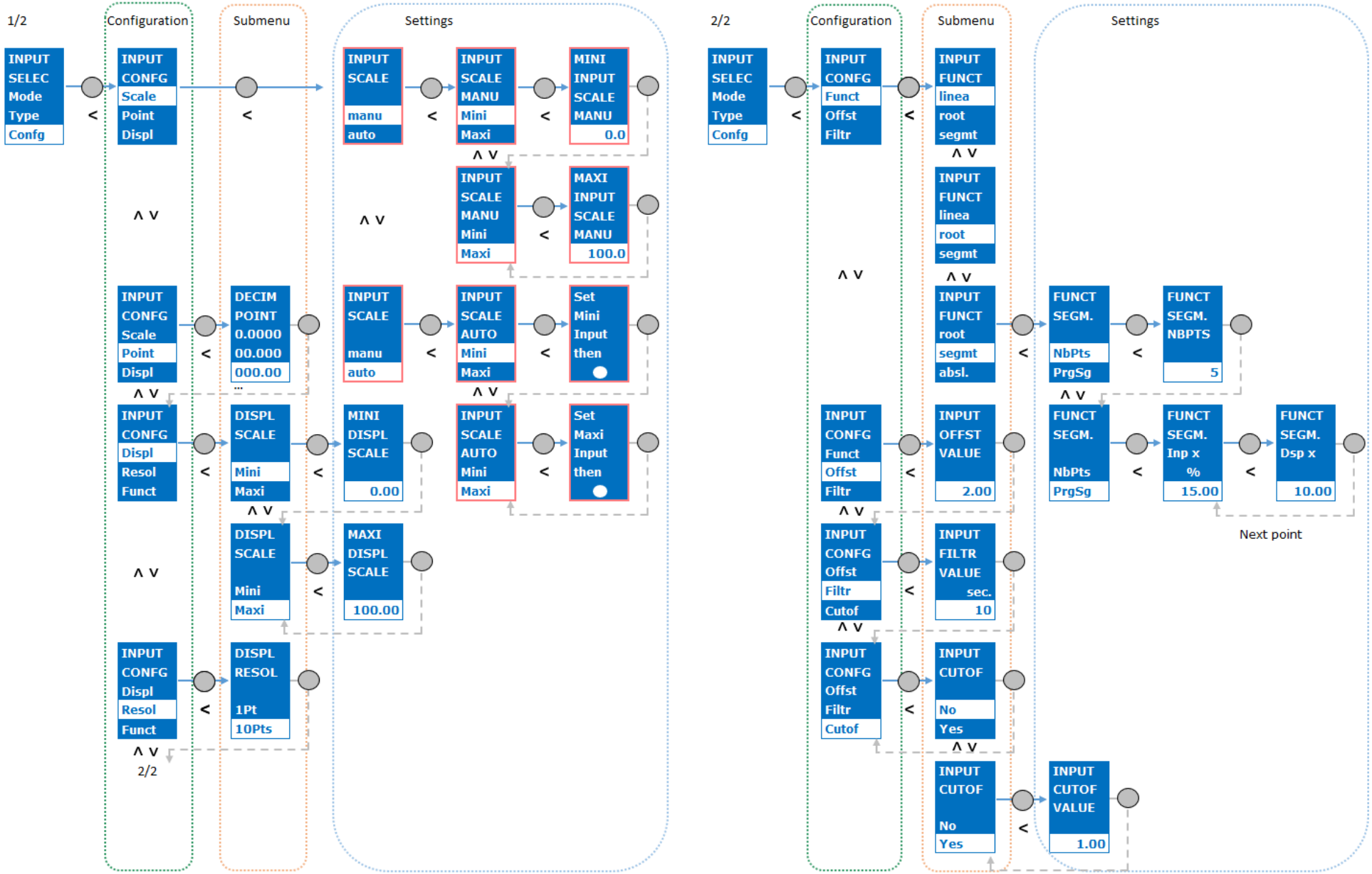
Threshold below which the input is considered as null

If Display value < Cut-off value, then Display value = Minimum display



Potentiometer input configuration

Diagram



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPUT CONFG		Input configuration			
	Scale	Access to the choice of input gauges		Funct	Access to the function configuration
	Point	Access to the comma position setting		Offst	Access to the offset configuration
	Displ	Access to the display scales		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration		Cutof	Access to the cut-off configuration

Submenu

Screen	Value	Description
DECIM POINT		Selection of the position of the comma
	x.xxxx	Comma position
DISPL SCALE		Setting of the display scale
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
DISPL RESOL		Selection of the display resolution
	XPt(s)	Number of points

Screen	Value	Description
INPUT FUNCT		Function Selection
	linea	Linear function
	root	Square root function
	segmt	Segment function access
	absl.	Absolute value function
INPUT OFFST VALUE		Offset Setting
	from -19999 to 99999	
INPUT FILTR VALUE		Setting of the filter value
	from 0 to 250	
INPUT CUTOF		Choice of use of the cut-off
	Yes/No	

Settings

Screen	Value	Description
INPUT SCALE		Mode selection Setting
	manu	Manual Setting
	auto	Automatic Setting
INPUT SCALE MANU		Manual Setting of the special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
MINI INPUT SCALE MANU		Manual Setting of the minimum value
	from 0 to 110%	
MAXI INPUT SCALE MANU		Manual Setting of the maximum value
	from 0 to 110%	
INPUT SCALE AUTO		Automatic Setting for special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
Set Mini Input then		Setting of the minimum value of the input signal with a connected sensor
Set Maxi Input then		Setting of the maximum value of the input signal with a connected sensor

Screen	Value	Description
MINI DISPL SCALE		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI DISPL SCALE		Setting of the maximum value of the display scale
	from -19999 to 99999	
FUNCT SEGMT.		Configuration of the Segments Function
	NbPts	Access to the configuration of the number of points
	PrgSg	Access to the points configuration
FUNCT SEGMT NBPTS		Setting of the number of points
	from 1 to 99	
FUNCT SEGM Inp x		Setting of the percentage of the point x input scale
	from 0 to 100%	
FUNCT SEGM Dsp x		Setting of the display value of point x
	from -19999 to 99999	
INPUT CUTOF VALUE		Setting of the cut-off value
	from -19999 to 99999	

Definition of functions

Square root

The output(s) are function of the square root of the input

Segment Function

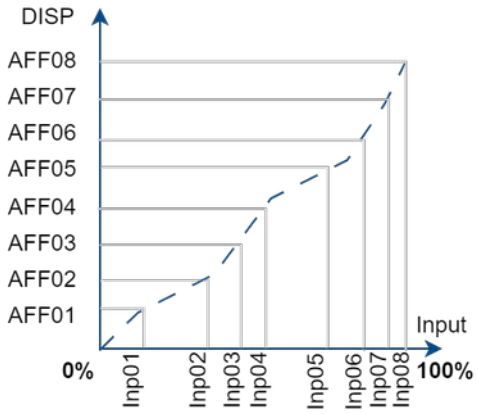
Linearization in 99 points (free choice for each point), allows to create an output function by segmentation of the signal of each input channel.

0% = _Display ; 100% = ¯Display

AFF01, AFF02, … = Display value

INP01, INP02, … = % of the input value

In the example opposite, 8 points (+0% & 100%) correspond to 9 segments



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Absolute value

The output(s) are a function of the absolute value of a bidirectional input

Offset

Manual adjustment of the input offset

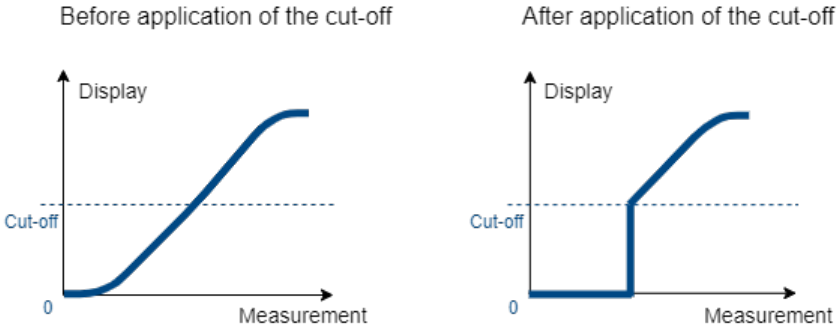
Filtering

Integration of the measurement over the defined time (in seconds)

Cut-off

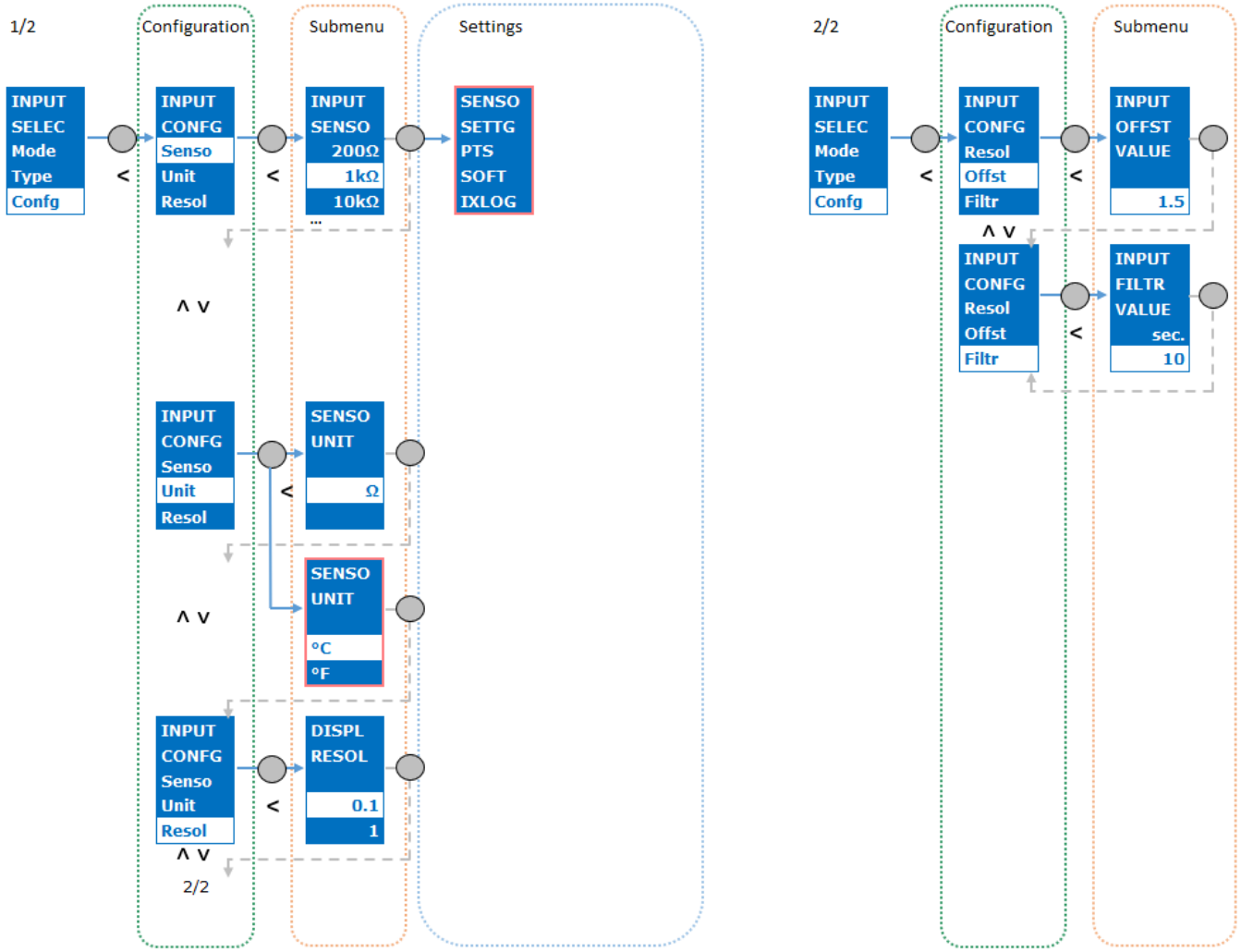
Threshold below which the input is considered as null

If Display value < Cut-off value, then Display value = Minimum display



Resistance input configuration

Diagram



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPUT CONFG		Input configuration			
	Senso	Access to the choice of input gauges		Offst	Access to the offset configuration
	Unit	Access to unit configuration		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration			

Submenu

Screen	Value	Description		Screen	Value	Description
INPUT SENSO		Gauges Selection		DISPL RESOL		Selection of the display resolution
	XX	Standard gauges			0.1/1	No change possible if 50KΩ choice
	SXX	Special gauges		INPUT OFFST VALUE		Offset Setting
SENSO UNIT		Unit Selection			from -19999 to 99999	
	Ω	for the standard gauges		INPUT FILTR VALUE		Setting of the filter value
	°C /°F	for the special gauges			from 0 to 250	

Settings

Screen	Value	Description
SENSO SETTG PTS SOFT IXLOG		Special curve Setting with the IXLOG software
Return to the previous screen automatically after 5 seconds		

Definition of functions

Offset

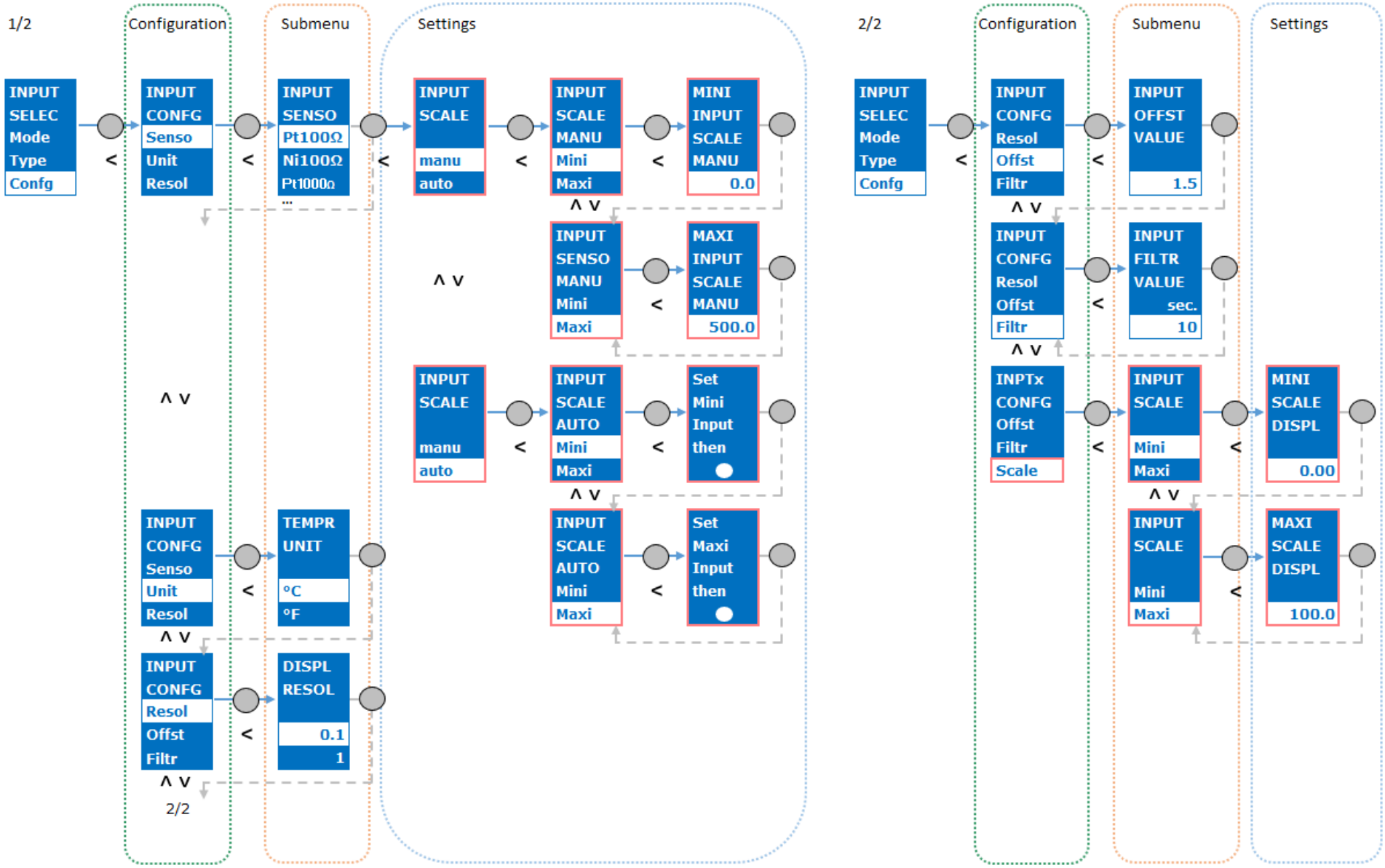
Manual adjustment of the input offset

Filtering

Integration of the measurement over the defined time (in seconds)

RTD input configuration

Diagram



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPUT CONFG		Input configuration			
	Senso	Access to the choice of input gauges		Offst	Access to the offset configuration
	Unit	Access to unit configuration		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration		Scale	Access to the display scales

Submenu

Screen	Value	Description		Screen	Value	Description
INPUT SENSO		Gauges Selection		INPUT OFFST VALUE		Offset Setting
	XX	Standard gauges			from -19999 to 99999	
	SPXX	Special gauges		INPUT FILTR VALUE		Setting of the filter value
TEMPR UNIT		Unit Selection			from 0 to 250	
	°C/°F			INPUT SCALE		Setting of the display scale
DISPL RESOL		Selection of the display resolution			Mini	Access to the min value setting
	0.1/1				Maxi	Access to the max value setting

Settings

Screen	Value	Description
INPUT SCALE		Mode selection Setting
	manu	Manual Setting
	auto	Automatic Setting
INPUT SCALE MANU		Manual Setting of the special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
MINI INPUT SCALE MANU		Manual Setting of the minimum value
	from -19999 to 99999	
MAXI INPUT SCALE MANU		Manual Setting of the maximum value
	from -19999 to 99999	

Screen	Value	Description
INPUT SCALE AUTO		Automatic Setting for special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
Set Mini Input then		Setting of the minimum value of the input signal with a connected sensor
Set Maxi Input then		Setting of the maximum value of the input signal with a connected sensor
MINI SCALE DISPL		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI SCALE DISPL		Setting of the maximum value of the display scale
	from -19999 to 99999	

Definition of functions

Offset

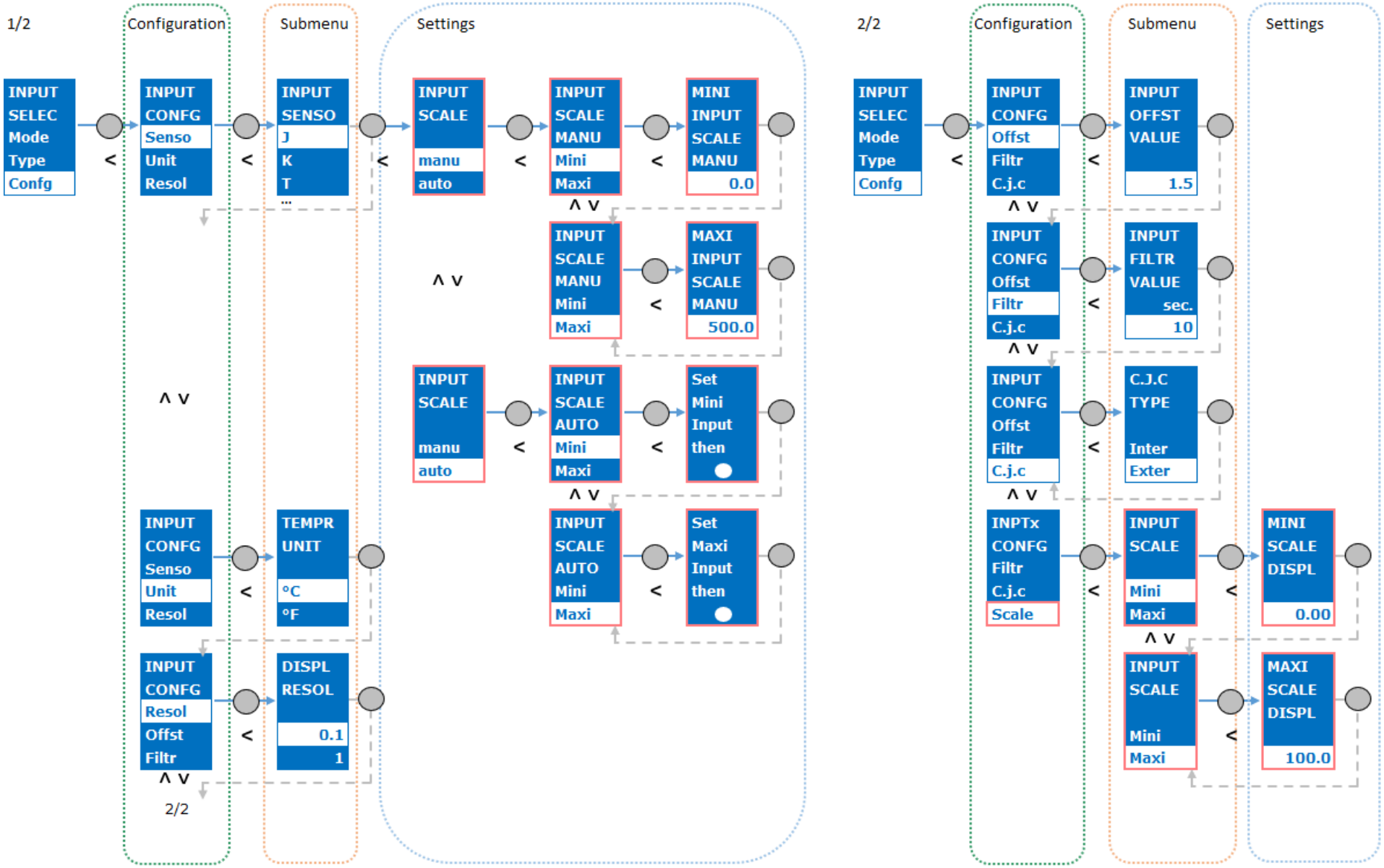
Manual adjustment of the input offset

Filtering

Integration of the measurement over the defined time (in seconds)

Thermocouple input configuration

Diagram



Lexicon of screens

Configuration

Screen	Value	Description		Value	Description
INPUT CONFG		Input configuration			
	Senso	Access to the choice of input gauges		Offst	Access to the offset configuration
	Unit	Access to unit configuration		Filtr	Access to the filtering configuration
	Resol	Accessing the resolution configuration		C.j.c	Access to cold junction compensation
				Scale	Access to the display scales

Submenu

Screen	Value	Description		Screen	Value	Description
INPUT SENSO		Gauges Selection		INPUT FILTR VALUE		Setting of the filter value
	XX	Standard gauges			from 0 to 250	
	SPXX	Special gauges		C.J.C. TYPE		CJC type selection
TEMPR UNIT		Unit Selection			Inter	Internal
	°C/°F				Exter	External
DISPL RESOL		Selection of the display resolution		INPUT SCALE		Setting of the display scale
	0.1/1				Mini	Access to the min value setting
INPUT OFFST VALUE		Offset Setting			Maxi	Access to the max value setting
	from -19999 to 99999					

Settings

Screen	Value	Description
INPUT SCALE		Mode selection Setting
	manu	Manual Setting
	auto	Automatic Setting
INPUT SCALE MANU		Manual Setting of the special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
MINI INPUT SCALE MANU		Manual Setting of the minimum value
	from -19999 to 99999	
MAXI INPUT SCALE MANU		Manual Setting of the maximum value
	from -19999 to 99999	

Screen	Value	Description
INPUT SCALE AUTO		Automatic Setting for special gauges
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
Set Mini Input then		Setting of the minimum value of the input signal with a connected sensor
Set Maxi Input then		Setting of the maximum value of the input signal with a connected sensor
MINI SCALE DISPL		Setting of the minimum value of the display scale
	from -19999 to 99999	
MAXI SCALE DISPL		Setting of the maximum value of the display scale
	from -19999 to 99999	

Definition of functions

Offset

Manual adjustment of the input offset

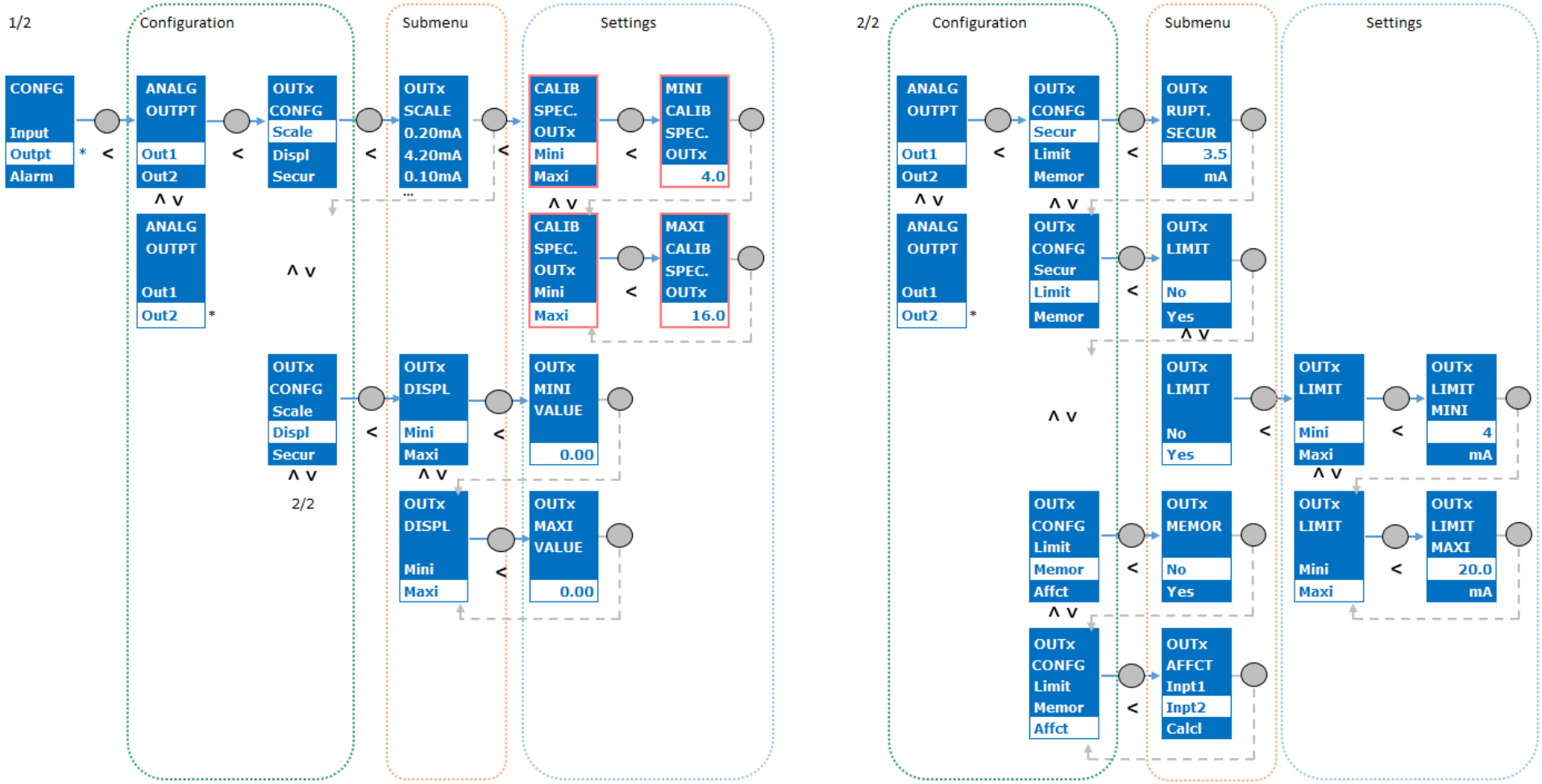
Filtering

Integration of the measurement over the defined time (in seconds)

Output menu

Diagram

*Menus available according to product reference



Lexicon of screens

Configuration

Screen	Value	Description
ANALG OUTPT		Output Selection
	Outx	Output n°x
OUTx CONFG		Output Configuration
	Scale	Access to the choice of output gauges
	Displ	Access to the display scales
	Secur	Security access
	Limit	Access to the Limit setting
	Memor	Access to the storage settings
	Affct	Assignment access

Submenu

Screen	Value	Description
OUTx SCALE		Gauges Selection
	XX	Standard gauges
	Spe.XX	Special gauges
OUTx DISPL		Setting of the display scale
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
OUTx RUPT. SECUR		Setting of the sensor safety value
	from 0 to 21mA ; from -11 to 11V for output 1 ; from 0 to 11 for output 2	

Screen	Value	Description
OUTx LIMIT		Choice of use of the limitation
	Yes/No	
OUTx MEMOR		Choice of use of memorization
	Yes/No	
OUTx AFFCT		Selection of the input to assign
	Inptx	Input n°x
	Calcl	Calculated input

Settings

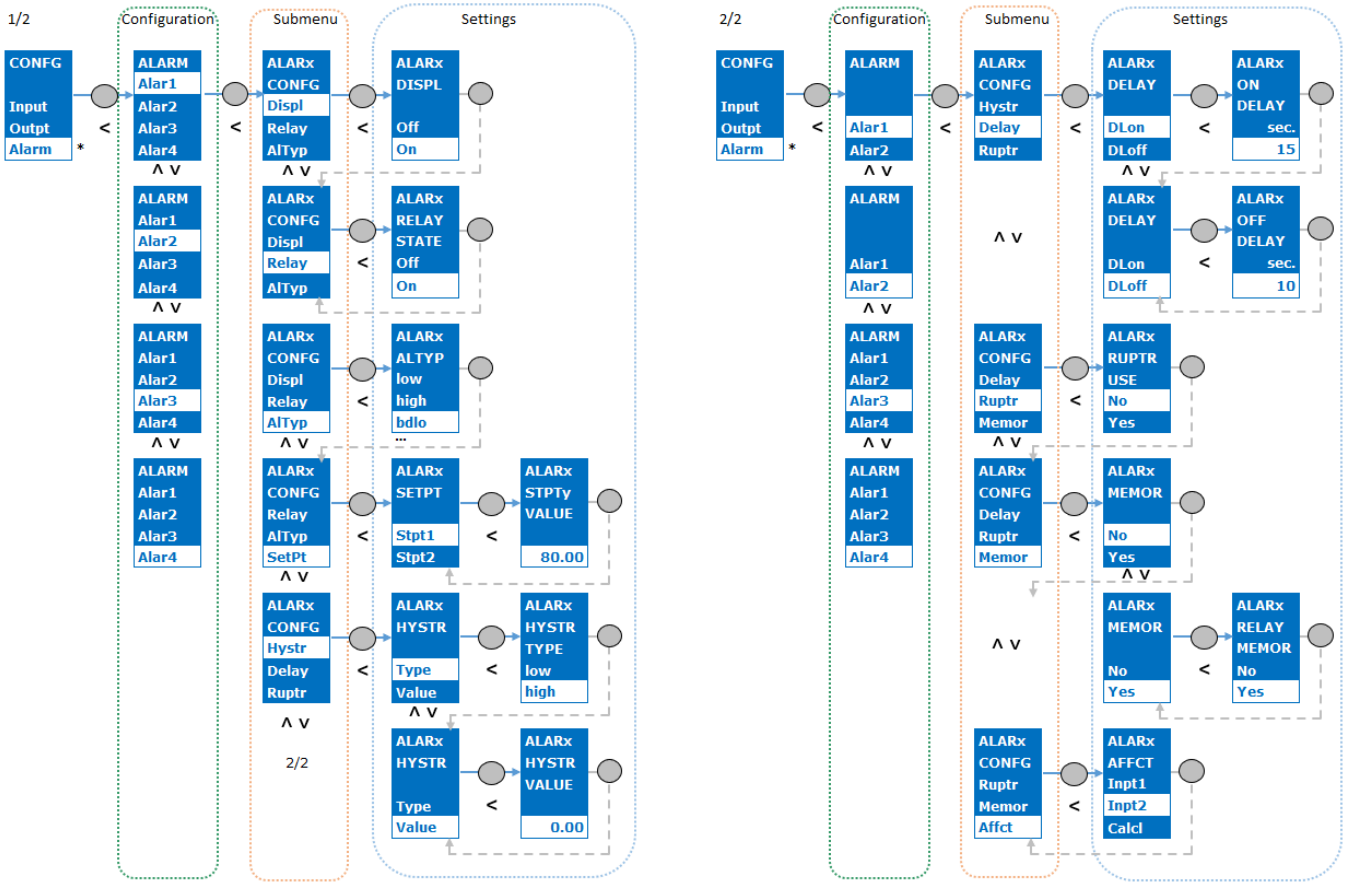
Screen	Value	Description
CALIB SPEC. OUTx		Setting of Special gauge
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
MINI CALIB SPEC. OUTx		Setting of the minimum value of the special gauge
	from 0 to 20mA ; from -10 to 10V for output 1 ; from 0 to 10 for output 2	
MAXI CALIB SPEC. OUTx		Setting of the maximum value of the special gauge
	from 0 to 20mA ; from -10 to 10V for output 1 ; from 0 to 10 for output 2	
OUTx MINI VALUE		Minimum display value Configuration
	from -19999 to 99999	

Screen	Value	Description
OUTx MAXI VALUE		Maximum display value Configuration
	from -19999 to 99999	
OUTx LIMIT		Limitation Setting
	Mini	Access to the min value setting
	Maxi	Access to the max value setting
OUTx LIMIT MINI		Setting of the minimum value of the limitation
	from 0 to 21mA ; from -11 to 11V for output 1 ; from 0 to 11 for output 2	
OUTx LIMIT MAXI		Setting of the maximum limitation value
	from 0 to 21mA ; from -11 to 11V for output 1 ; from 0 to 11 for output 2	

Alarm menu

Diagram

*Menu available according to product reference



Lexicon of screens

Configuration

Screen	Value	Description
ALARM		Alarm selection
	Alarx	Alarm n°x (the number of relays available depends on the product reference)

Submenu

Screen	Value	Description		Value	Description
ALARx CONFG		Alarm configuration			
	Displ	Access to the choice of display		Delay	Access to the time delay setting
	Relay	Access to the choice of relay status		Ruptr	Access to the parameterization of the sensor break-up
	AlTyp	Access to the choice of alarm type		Memor	Access to the storage settings
	SetPt	Access to the setting of thresholds		Affct	Access to the choice of alarm assignment
	Hystr	Access to the hysteresis settings			

Settings

Screen	Value	Description
ALARx DISPL		Choice of the alarm display
	On/Off	
ALARx RELAY STATE		Choice of relay activation
	On/Off	
ALARx ALTYP		Selection of the type of alarm
	low	Low threshold alarm
	high	High threshold alarm
	bdlo	Low band alarm
	bdhi	High band alarm
ALARx SETPT		Selection of the alarm threshold
	Stptx	Threshold n°x
ALARx HYSTR		Hysteresis configuration
	Type	Access to the choice of the hysteresis type
	Value	Access to the hysteresis value setting
ALARx DELAY		Time delay configuration
	DLon	Access to the setting of the time delay when the alarm is activated
	DLoff	Access to the setting of the time delay when the alarm is deactivated

Screen	Value	Description
ALARx RUPTR USE		Choice of use of the sensor break-up
	Yes/No	
ALARx MEMOR		Choice of use of memorization
	Yes/No	
ALARx SETPTy VALUE		Setting the alarm threshold
	from -19999 to 99999	
ALARx HYSTR TYPE		Selection of the hysteresis type
	low	Low hysteresis
	high	High hysteresis
ALARx HYSTR VALUE		Setting of the hysteresis value
	from 0 to 99999	
ALARx ON/ OFF DELAY		Setting of the time delay value
	from 0 to 250	
ALARx RELAY MEMOR		Choice of whether to maintain the relay after the alarm disappears
	Yes/No	
ALARx AFFCT		Selection of the input to assign
	Inptx	Input n°x
	Calcl	Calculated input

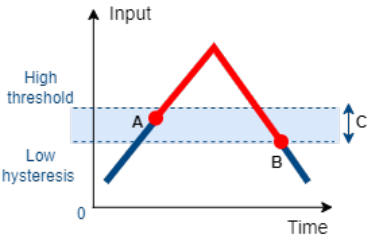
Definition of hysteresis

Hysteresis makes it possible to define, near a certain threshold, an area in which the alarm is insensitive to variations of the input and does not change state.

This makes it possible to limit changes of the alarm state when the input undergoes variations in value is close to the alarm threshold.

The defined hysteresis value is a value relative to the threshold value.

- High type: the insensitive area extends from the alarm threshold to the higher values
- Low type: the insensitive area extends from the alarm threshold to the lower values

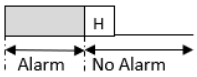


A: Start of alarm

B: End of alarm

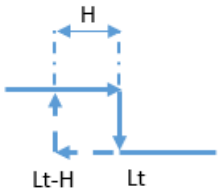
C: Insensitive area

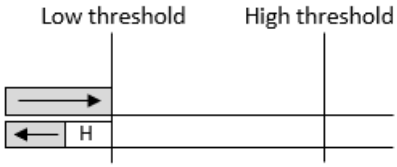
Low hysteresis



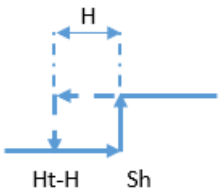
H: Hysteresis

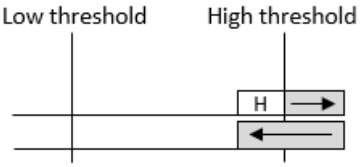
- Low threshold (Lt) alarm



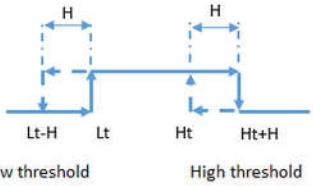


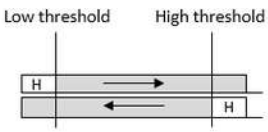
- High threshold (Ht) alarm



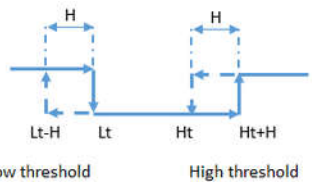


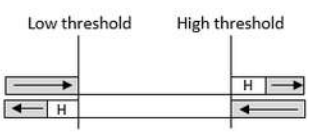
- Low band alarm



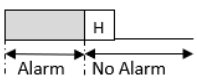


- High band alarm



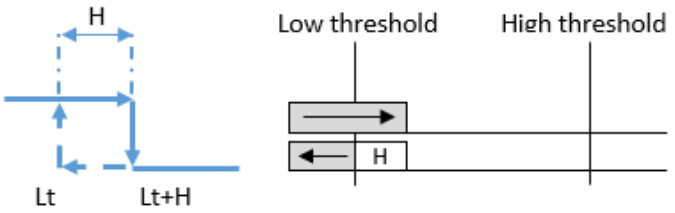


High hysteresis

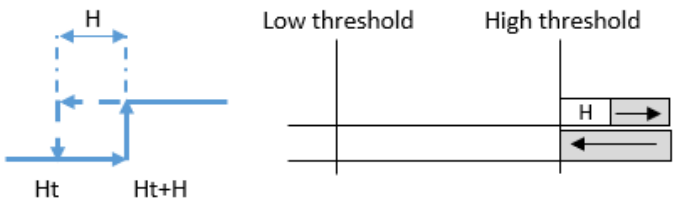


H: Hysteresis

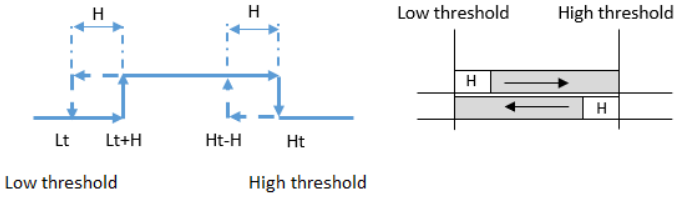
- Low threshold (Lt) alarm
- High threshold (Ht) alarm

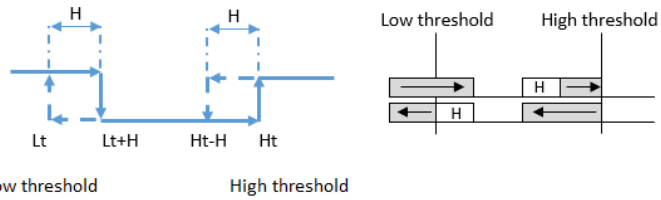


- Low band alarm



- High band alarm





MODBUS Protocol

Introduction

The products developed by JM Concept use the MODBUS RTU communication protocol on their backplane bus, to exchange information between different devices. The physical link used for this communication is the RS485 link.

JM Concept devices are generally considered slave devices on the MODBUS RTU line, responding only to queries. Some JM Concept devices allow to interface on the MODBUS RTU line (LINE, WK 6000IS, WK 6000MUX, UHLIS 3000TCP, UHLIS 3000MUX), they are considered master devices, generating queries on the bus.

A PLC communicating in MODBUS RTU can be directly interfaced on the MODBUS RTU as a master.

For PLCs communicating with other protocols such as Profinet, Ethernet IP, MODBUS TCP, Profibus, there are protocol conversion solutions.

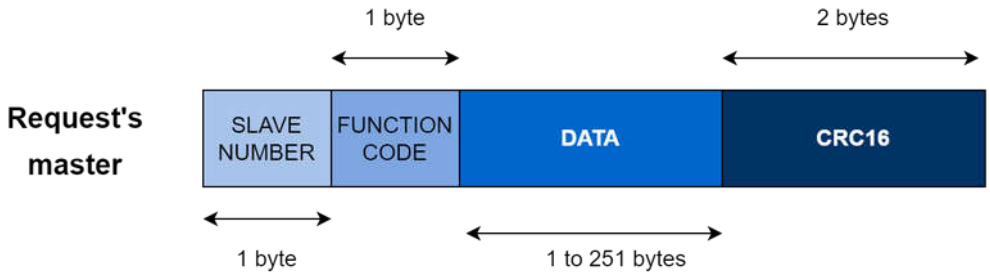
- The LINE product is a communication hub. It retrieves all the information of the JM Concept devices present on the MODBUS RTU line and makes them available to PLC via the Profinet, Ethernet IP, Modbus TCP, Profibus or MODBUS RTU protocols.
- The WK 6000IS WK 6000MUX, UHLIS 3000TCP and UHLIS 3000MUX products act as MODBUS TCP gateways to MODBUS RTU. They therefore allow a PLC communicating in MODBUS TCP to interact directly with a JM Concept device on the MODBUS RTU line.

The Modbus protocol is a communication protocol based on a hierarchical structure between a master and several slaves. The master can only talk to one slave at a time and waits for its response.

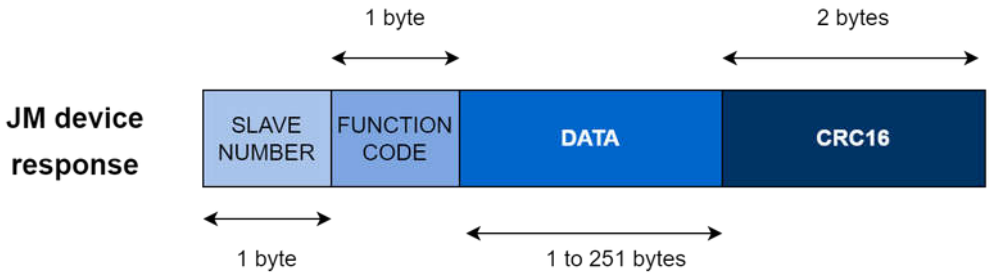
RS485 communication settings	Description
Configurable slave number	1 to 247
Communication speed (bauds)	1200, 2400, 4800, 9600,19200, 38400,115200
Type of transmission	RTU mode
Type of data transmitted	8-bit encoded characters
Bit of controls verifying the integrity of MODBUS frames	• 1 start bit and 1 stop bit • No control of the frame according to the parity criterion (except MRSLINE even parity)
Number of slave devices (maximum) connected to 1 master device	• 32 (maximum number of devices) • 24 (maximum number of devices connected to a product of the LINE range)
Maximum line length	1200m
Link type	Multipoint link

MODBUS Messages - Structures and Data Types

The master begins the communication by sending a request to the desired slave in the following frame format:



Following the receipt of a request sent by a master device, JM devices return the requested information in the same frame format:

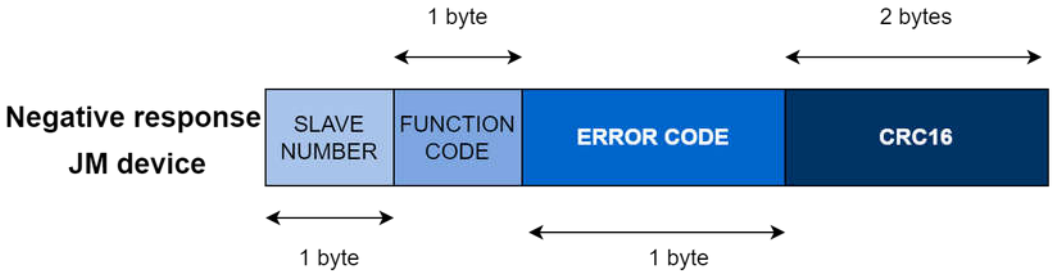


- Slave number: The slave number of the JM Concept device queried (1 to 247)
- Function code: Action requested from the slave, read, or write. JM Concept products support 4 codes depending on the MODBUS protocol:

Function codes	Description
Function code: 1	N-bit playback (access per 1-byte multiple)
Function code: 3	Reading n 16-bit words (2-byte multiple access)
Function code: 15	Writing n bits (access by multiple of 1 byte)
Function code: 16	Writing n 16-bit words (access by multiple of 4 bytes)

- Data: Contains data relative to the function
  - Request:
    - For a read: address and number of data to read.
    - For a write: address, number of values, and values to write.
  - Answer:
    - For a read: Number of data and data read.
    - For a write: address and number of data written.
- CRC16: Control Field

In the event of an error in communication, JM devices will return an error message, following the following frame format:



- The function code returned is the function code of the last program command executed, with the MSB (most significant Bit) forced to 1 if an error was detected at runtime.
- An error code is sent to the master device specifying the detected error:

Error code	Description
Error code: 1	Unknown function code
Error code: 2	Incorrect
Error code: 3	Incorrect data
Error code: 4	Slave device not ready

The data available for reading and writing are referenced in the "MODBUS exchange table" section below.

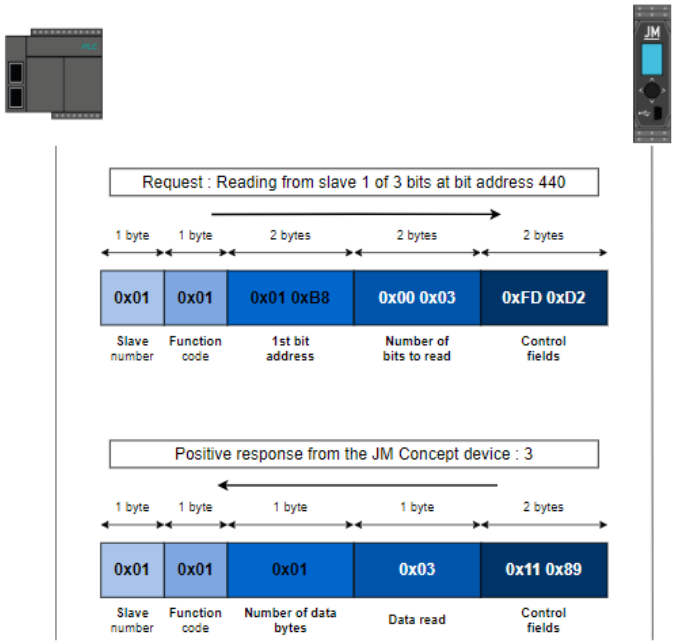
The data is stored in the product's memory in big-endian format, the most significant bytes are placed in the lead and therefore occupy memory locations with smaller addresses. Depending on the devices interfaced with JM Concept products, it may be necessary to reverse the 2 words of 16 bits when reading a float.

Example of in-memory storage of the float 10000 :

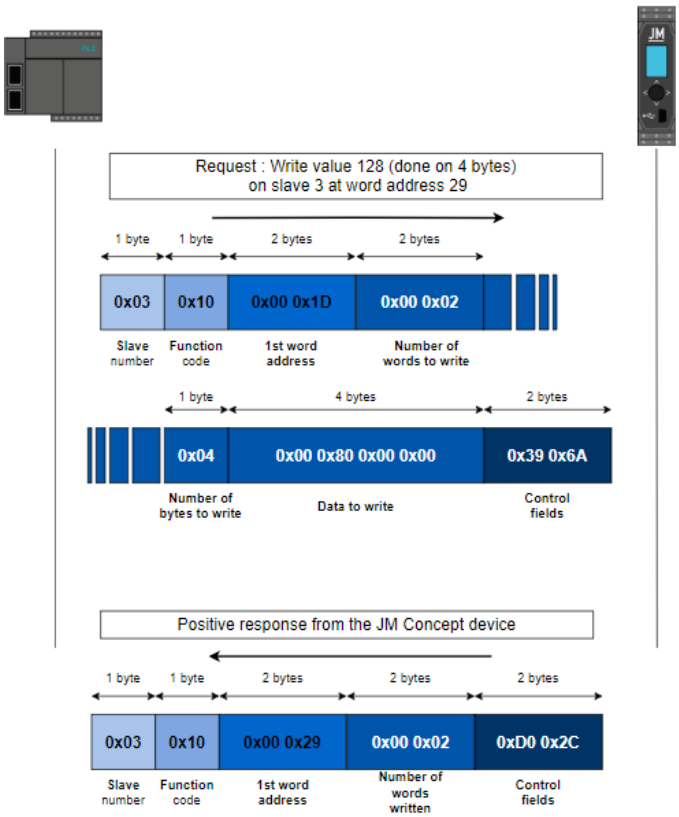
16-bit word memory address	Memory address in byte	Data	MSB and LSB arrangement
0	0	0x47	Most significant MSB
	1	0xC3	
2	2	0050	
	3	0x00	Least significant LSB

Some use cases

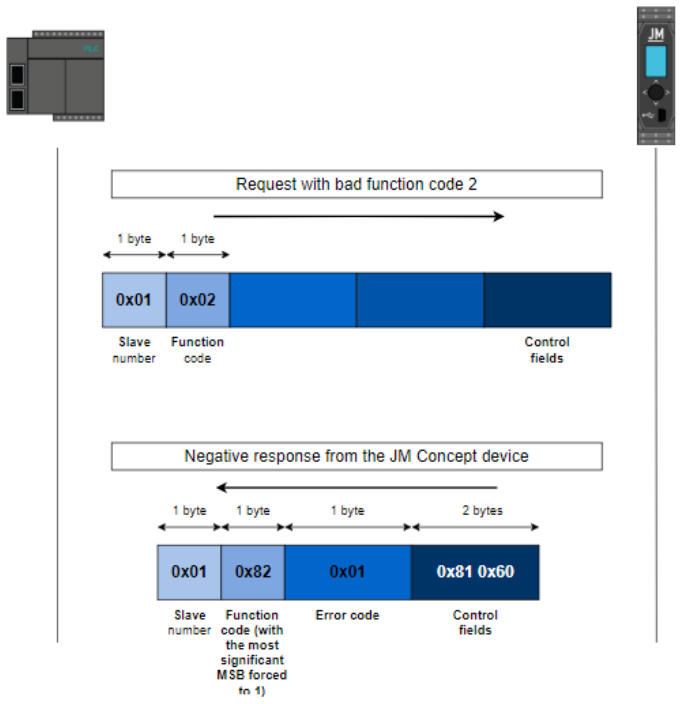
Reading n bits - Positive response



Writing n words - Positive response



Function code error - Negative response



MODBUS exchange table

The “P” column (for Permissions) indicates the type of access that can be performed on each variable. R=read ; W=write ; R/W=read and write.

Measurement values

@Jbus word	@Jbus bit	Variable designation	Format	P
0		Instant measurement of input 1	Float	R
2		Minimum measurement of input 1	Float	
4		Maximum measurement of input 1	Float	
6		Instant measurement of input 2	Float	
8		Minimum measurement of input 2	Float	
10		Maximum measurement of input 2	Float	
12		Instant measurement of the "calculation" channel	Float	
14		Minimum measurement of the calculation channel	Float	
16		Maximum measurement of the calculation channel	Float	

Device identification

@Jbus word	@Jbus bit	Variable designation	Format	P
18	288	Serial number, current year	Byte	R
	296	Serial number, current month	Byte	
19		Serial number, rank in the month	Int	
20		Device type	Int	
21	336	Options installed	Byte	
	344	Software version	Byte	

Modbus settings

@Jbus word	@Jbus bit	Variable designation	Format	P
23	368	Modbus network n° slave	Byte	R/W
	376	Baud rate	Byte	

Protection Configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
24	384	Configuration lock	Byte	R/W
	392	Access to configuration	Byte	

Display settings

@Jbus word	@Jbus bit	Variable designation	Format	P
25	400	Backlight off	Byte	R/W
	408	LCD contrast	Byte	

Simulation/remote-control settings

@Jbus word	@Jbus bit	Variable designation	Format	P
26	416	Simulation/Remote-control mode	Byte	R/W
	424	Return to measurement after simulation/Remote-control	Byte	

Inputs configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
27	432	Input use mode	Byte	R/W

Input 1 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
27				R/W
	440	Input type	Byte	
28	448	Gauge for Current	Byte	
	456	Gauge for Voltage	Byte	
29	464	Sensor for resistance input	Byte	
	472	Sensor for RTD input	Byte	
30	480	Sensor for thermocouple input	Byte	
	488	Function for input	Byte	
31	496	Display resolution	Byte	
	504	Comma position	Byte	
32	512	Unit input (if Pt100Ω)	Byte	
	520	C.J.C type (if thermocouple input)	Byte	
33	528	Use of the cut-off	Byte	
	536	Digital filter	Byte	
34		Minimum gauge value	Float	
36		Maximum gauge value	Float	
38		Minimum display value	Float	
40		Maximum display value	Float	
42		Cut-off value	Float	
44		Offset value	Float	

Current input 2 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
48	768	Gauge for Current	Byte	R/W
	776	Comma position	Byte	
49	784	Display resolution	Byte	
	792	Use of the cut-off	Byte	
50	800	Digital filter	Byte	
	808	Operation for the calculation function	Byte	
51		Minimum gauge value	Float	
53		Maximum gauge value	Float	
55		Minimum display value	Float	
57		Maximum display value	Float	
59		Cut-off value	Float	
61		Offset value	Float	

calculation virtual channel configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
65		Coefficient A for the calculation function	Float	R/W
67		Coefficient B for the calculation function	Float	
69		Minimum display value on the calculation channel	Float	
71		Maximum display value on the calculation channel	Float	

Output measurements

@Jbus word	@Jbus bit	Variable designation	Format	P
73		S.A1 Instant output level	Float	R
75		S.A2 Instant output level	Float	
77				
78		Output S.A1 level memorization	Float	R
80		Output S.A2 level memorization	Float	

Acquisition of alarms and relays (values and acknowledgement)

@Jbus word	@Jbus bit	Variable designation	Format	P
82	1312	Acknowledgment of alarms and reset of min / max	Byte	R/W
83	1328	Relay RL1 status	Byte	R
	1336	Relay RL2 status	Byte	
84	1344	Relay RL3 status	Byte	
	1352	Relay RL4 status	Byte	
85	1360	Instant alarms status	Byte	
	1368	Memorized states of alarms	Byte	

Input measurements

@Jbus word	@Jbus bit	Variable designation	Format	P
87		Physical measurement of the calculation channel	Float	R
89		Simulated/Remote-controlled measurement of the calculation channel	Float	R/W
91		Physical measurement of input 2	Float	R
93		Simulated/Remote-controlled measurement of the input 2	Float	R/W
95		Physical measurement of input 1	Float	R
97		Simulated/Remote-controlled measurement of the input 1	Float	R/W

Output S.A1 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
99	1584	Gauge	Byte	R/W
	1592	Output assignment	Byte	
100		Minimum gauge value	Float	
102		Maximum gauge value	Float	
104		Minimum display value	Float	
106		Maximum display value	Float	
108	1728	Use of the output limitation	Byte	
	1736	Last value memorization (anomaly)	Byte	
109		Output safety value (input break-up)	Int	
110		Low limitation	Float	
112		High limitation	Float	

Output S.A2 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
114	1824	Gauge	Byte	R/W
	1832	Output assignment	Byte	
115		Minimum gauge value	Float	
117		Maximum gauge value	Float	
119		Minimum display value	Float	
121		Maximum display value	Float	
123	1968	Use of the output limitation	Byte	
	1976	Last value memorization (anomaly)	Byte	
124		Output safety value (input break-up)	Int	
125		Low limitation	Float	
127		High limitation	Float	

Relay RL1 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
129	2064	Alarm AL1 memorization	Byte	R/W
	2072	Memorization of the state of relay RL1	Byte	
130	2080	Visualization of the alarm AL1	Byte	
	2088	Relay RL1 status in alarm	Byte	
131	2096	AL1 operating mode	Byte	
	2104	AL1 hysteresis direction	Byte	
132	2112	Time delay "on" on AL1	Byte	
	2120	Time delay "off" on AL1	Byte	
133	2128	Use of AL1 if input break-up	Byte	
	2136	Alarm AL1 assignment	Byte	
134		Threshold 1 value of AL1	Float	
136		Threshold 2 value of AL1	Float	
138		AL1 hysteresis value	Float	

Relay RL2 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
140	2240	Alarm AL2 memorization	Byte	R/W
	2248	Memorization of the state of relay RL2	Byte	
141	2256	Visualization of the alarm AL2	Byte	
	2264	Relay RL2 status in alarm	Byte	
142	2272	AL2 operating mode	Byte	
	2280	AL2 hysteresis direction	Byte	
143	2288	Time delay "on" on AL2	Byte	
	2296	Time delay "off" on AL2	Byte	
144	2304	Use of AL2 if input break-up	Byte	
	2312	Alarm AL2 assignment	Byte	
145		Threshold 1 value of AL2	Float	
147		Threshold 2 value of AL2	Float	
149		AL2 hysteresis value	Float	

Relay RL3 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
151	2416	Alarm AL3 memorization	Byte	R/W
	2424	Memorization of the state of relay RL3	Byte	
152	2432	Visualization of the alarm AL3	Byte	
	2440	Relay RL3 status in alarm	Byte	
153	2448	AL3 operating mode	Byte	
	2456	AL3 hysteresis direction	Byte	
154	2464	Time delay "on" on AL3	Byte	
	2472	Time delay "off" on AL3	Byte	
155	2480	Use of AL3 if input break-up	Byte	
	2488	Alarm AL3 assignment	Byte	
156		Threshold 1 value of AL3	Float	
158		Threshold 2 value of AL3	Float	
160		AL3 hysteresis value	Float	

Relay RL4 configuration

@Jbus word	@Jbus bit	Variable designation	Format	P
162	2592	Alarm AL4 memorization	Byte	R/W
	2600	Memorization of the state of relay RL4	Byte	
163	2608	Visualization of the alarm AL4	Byte	
	2616	Relay RL4 status in alarm	Byte	
164	2624	AL4 operating mode	Byte	
	2632	AL4 hysteresis direction	Byte	
165	2640	Time delay "on" on AL4	Byte	
	2648	Time delay "off" on AL4	Byte	
166	2656	Use of AL4 if input break-up	Byte	
	2664	Alarm AL4 assignment	Byte	
167		Threshold 1 value of AL4	Float	
169		Threshold 2 value of AL4	Float	
171		AL4 hysteresis value	Float	

Segments function for input 1

@Jbus word	@Jbus bit	Variable designation	Format	P
173	2768	Number of linearization points	Byte	R/W
174		% Input point 1	Float	
176		Display of point 1	Float	
…		…	…	
170+4N		% Input point N	Float	
172+4N		Display of point N	Float	
…		…	…	R/W
566		% Input point 99	Float	
568		Display of point 99	Float	

Customer mapping zone

@Jbus word	@Jbus bit	Variable designation	Format	P
6 000		174 bytes of client mapping	Byte	R/W
			Byte	
…			…	
6 086			Byte	
			Byte	

Tag zone

@Jbus word	@Jbus bit	Variable designation	Format	P
6 118		20 bytes tag	Byte	R/W
			Byte	
…			…	
6 127			Byte	
			Byte	

Device comments zone

@Jbus word	@Jbus bit	Variable designation	Format	P
6 128		80 bytes comment	Byte	R/W
			Byte	
…			…	
6 167			Byte	
			Byte	

Input 1 Special resistances table

@Jbus word	@Jbus bit	Variable designation	Format	P
7021		Number of points	Byte	R/W
7023		Coordinate X of point 1	Float	
7025		Coordinate Y of point 1	Float	
…		…	…	
7421		Coordinate X of point 100	Float	
7423		Coordinate Y of point 100	Float	

Guarantee certificate

CERTIFICAT DE GARANTIE - 5 ans

GUARANTEE CERTIFICATE - 5 years

GAMME TELIS / TELIS RANGE

Nous vous garantissons que ce produit est conforme aux règlementations en vigueur, et qu'il ne présente aucun défaut de conception et de fabrication au moment du contrôle individuel.

We guarantee that this product complies with the regulations in force, and that it has no design defect and workmanship at the time of individual control.

CONDITIONS D'APPLICATION

Les opérations de manutention et de maintenance devront être effectuées uniquement par du personnel qualifié et autorisé.

Toute ouverture de produit entraîne immédiatement l'annulation de la garantie.

Si un appareil ne peut plus être utilisé dans les conditions de sécurité optimales, il doit être mis hors service et protégé contre toute utilisation par inadvertance, avant d'être retourné chez JM Concept.

Les réparations se font uniquement dans les locaux de JM Concept.

Toute installation ne correspondant pas aux impératifs de montage entraîne l'annulation de la garantie.

CONDITIONS OF APPLICATION

Handling or maintenance operations should only be carried out by qualified and authorized staff.

Once product is opened, it immediately invalidates the guarantee.

If a device can no longer be used with optimal safety conditions, it should be put of order and protected against any inadvertent use, before it is returned to JM Concept.

All repairs are made solely in our factory.

The installation must correspond with the assembly imperatives in order to ensure the validation of guarantee.

UE declaration of conformity

Déclaration de conformité UE

EU declaration of conformity

La déclaration de conformité UE s'applique aux appareils suivants :

The UE declaration of conformity applies to the following units :

Modèle transmetteur marque JM Concept	Transmitter model Brand JM Concept
TELIS	

Nous, JM Concept, fabricant, confirmons sous notre seule responsabilité, la conformité aux exigences essentielles des directives européennes :

As manufacturer JM Concept confirm under our sole responsability, the conformity to the essential requirements of the European directives :

DBT/LVD : 2014/35/UE

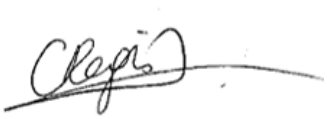
CEM/EMC : 2014/30/UE

RoHS : 2011/65/UE & 2015/863

L'objet de la déclaration décrit ci-dessus est conforme à la directive 2011/65/UE (RoHS) du Parlement européen et du Conseil du 8 juin 2011 relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques.

The purpose of the declaration described above complies with Directive 2011/65 / EU (RoHS) of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Brignais, 16/05/2022



Carole REGIS, responsable qualité/quality manager

This declaration complies with the Directive 2014/53/UE