

ÉTUDES ET RÉALISATIONS
ÉLECTRONIQUES / INSTRUMENTATIONS / AUTOMATISME

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ARDETEM®

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PROGRAMMABLE SIGNAL CONDITIONERS

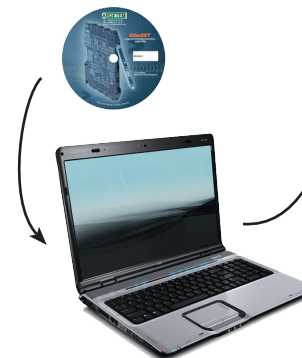
TPIv-SIN 40/41



version 02.x

LCD μ console

Software SlimSET



User handbook

ARDETEM - TA CO137 TPIv SIN - C 07/22 Any data in this documentation may be modified without prior notice.

UE CONFORMITY DECLARATION

■ Summary

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The manufacturer:

ARDETEM-SFERE
Route de Brindas
Parc d'activité d'Arbora n°2
69510 Soucieu en Jarrest
France

declares that the following products:

Name: Programmable signal conditioners
Type: TPIv-SIN 40/41
Marking:
II 3 (1) G Ex ec nC [ia Ga] IIC T4 Gc

comply with the following directives and standards:

The Low Voltage Directive 2014/35/UE

EN61010-1: 2011

The EMC Directive 2014/30/UE

EN61326-1: 2013

The directive ATEX 2014/34/UE

EN 60079-0: 2012/A11:2013(*)	IEC60079-0: 2011(*)
EN 60079-7: 2015	IEC60079-7:2015
EN 60079-11: 2012	IEC60079-11: 2011
EN 60079-15: 2010	IEC60079-15: 2010

ATEX/IECEx notification:

QPS
Canada

UE type test certificate n° :

SIRA 17 ATEX4222 X
IECEx CofC: CSA17.0025X

Soucieu en Jarrest, July 20, 2022



Jacques Huguet
Signature of the Manager

(*) An examination of the standards EN60079-0 (2018) and IEC60079-0 (2017) does not evidence any significant changes relevant for the equipment, therefore the standards EN60079-0 (2012) and IEC60079-0 (2011) still represent the «state of the art» rules.



The instrument may be connected to dangerous electrical voltages.
It must be mounted, connected and implemented respecting the current specific regulations, by a qualified technician, trained to the safety regulations, who will have read this manual.

This appliance has to be installed in an environment defined in pollution degree 2 / Overvoltage category II or better for a max. altitude of 2000 m.

Before any installation or maintenance work, make sure the power supply of the instrument is cut.

The module is powered by class 2 Limited Power Supply (LPS)
An external fuse of 3.15A is required.

Accessible parts are all communication ports (μ USB or RS485) and analog output.

The person who has designed the system (electrical installation including the instrument) is sole accountable for the safety and must make sure it has been designed according to the current safety standards.

This device is an Open Type Listed Process Control Equipment. To prevent injury resulting from accessibility to live parts the equipment must be installed in a cabinet.



This appliance contains electronic components and should not be disposed of with the domestic waste. It should be collected with the WEEE (Waste Electrical and Electronic Equipment), according to the current regulation.

1. INTRODUCTION

The series TPIv-SIN offers intrinsic safety inputs.

They are associated equipment, to be placed in safe area or area 2 (presence of an explosive atmosphere accidentally in case of misoperation or of short duration). They are provided with input circuits for connection to a sensor located in hazardous area and output circuits for connection in safe area only or area 2.

A converter can either operate in an autonomous way or belong to a local network consisting of other converters and modules of the range TPIs.

Each converter or module is latched on the DIN rail via a 5 points footing allowing the communication and the supply of the TPIv-SIN of the network (24Vdc \pm 30%). The modules allow to increase the number of analog or relay outputs associated with the measure of each converter of the network.
Up to 50 elements can be connected on the same bus and up to 200 different measures can be made to transit ; in this configuration the maximum scanning time is 200ms.

The series TPIv-SIN offers a complete range of measure interfaces, fully programmable either with the μ console or by PC via the configuration software and a standard USB/ μ USB cable.

The rear-lit tactile graphical LCD allows the visualisation of all the following information concerning the instrument:

- the value of the measure with its unit,
- the value of the analog output,
- the name of the product (TAG),
- the status of the relay outputs.

Scrolling message for programming help (programmable in several languages).
Programming protected by code (0000 on factory exit).
Programmable keys for direct access to some functions.

• Input features specific to the series TPIv-SIN 41

- Thermocouple inputs (J, K, B, R, S, T, E, N, L, W, W3, WRE5)
- Sensor inputs: Pt100, Ni 100 (2, 3 or 4 wire), Δ Pt100
- Resistive sensors: caliber 0-400 Ω and 0-10 k Ω
- Potentiometers: from 100 Ω to 10 k Ω

• Input features common to the series TPIv-SIN 40 and TPIv-SIN 41

- A bidirectional DC current or voltage input:
 \pm 100 mV, \pm 1V, \pm 10V, \pm 150V, \pm 270V, \pm 20mA.

Available options (specify on order)

- Isolated analog output: option A:

Active or passive current, or voltage output (programmable).

- Relay output R:

2 relays - Mode setpoint or mode window.
Recording of the alarms.
Time delay and hysteresis adjustable on each setpoint.
Alarm messages.

Coding

Type TPIv-SIN XXXX AR

Inputs: Outputs: A analog I/U isolated
TPIv-SIN 40 R 2 change-over relays
TPIv-SIN 41

Available versions:

TPIv-SIN 40/41	A	AR
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- CJC terminal (option): reference B1CSF-4
- Standard programming cable USB type A male to µUSB type B male: reference C1-µUSB

Features of the inputs

TPiv-SI		Types of INPUTS	Measure range adjustable from:		Permanent overload	Intrinsic error	Input impedance
40	41						
●	●	mA(1)	-2 to +22mA (U) ----- 22 to +22mA(B)		±100mA	< ±0.1% of the MR for inputs of the type (U) < ±0.05% of the MR for inputs of the type (B)	Max. drop 0.9V
●	●	mV(1)	-10 to +110mV (U) ----- -110 to +110mV (B)		±1V		≥ 1MΩ
●	●	V	-0.1 to +1.1V (U) ----- -1.1 à +1.1V (B)		±50V		
			-1 to +11V (U) ----- -11 to +11V (B)				
			-15 to +165V (U) ----- -165 to +165V (B)		±300V		
			-30 to +300V (U) ----- -300 to +300V (B)				
	●	Thermocouples(1) Standard IEC 581 J K B R S T E N L W W3 WRE5	°C -160/1200 -270/1370 200/1820 -50/1770 -50/1770 -270/410 -120/1000 0/1300 -150/910 1000/2300 0/2480 0/2300	°F -256/2192 -454/2498 392/3308 -58/3218 -58/3218 -454/770 -184/1832 -32/2372 -238/1670 1832/4172 32/4496 32/4172	-	<±0.1% ⁽³⁾ of the MR or 30µV typical (60µV max.)	≥ 1 MΩ
	●	Pt100Ω sensor (1)(2) Standard IEC 751 (DIN 43760)	°C -200/850	°F -328/1562	- -	<±0.1% of the MR	Current 250µA
	●	Ni 100 sensor (1)(2)	-60/260	-76/500	-		
	●	Differential measu- res from 2 sensors Pt100Ω 2 wire Standard IEC 751 (1)	-200/270	-328/518	-		
	●	Resistive sensors	Calibers 0-440 Ω(1)(2) and 0-10 kΩ		-	<±0.1% of the MR	Max. current 250µA
	●	Potentiometer	from 100Ω to 10 kΩ		-		Max. voltage 100mV
●	●	Supply for 2-wire sensor	27...17 Vdc / 0...20mA with protection from short-circuits : 25 mA.				
●	●	Special linearisation programming up to 20 points	On input: mV, V, mA, resistive sensor and potentiometer				
●	●	Extraction of the square root	On input mV, V or mA				

(1) Sensor break detection:
mA input (if down scale ≥ 3.5mA)
Other inputs: A 12µA pulsed current allows the detection of line or sensor break.

(2) Wiring in 2, 3 and 4 wire possible
The influence of the line resistance (0<Rl<<25Ω) is included in the announced intrinsic error.

(3) Efficiency of the CJC (-20°C to 60°C):
Internal CJC: ±2°C ±0.03°C/°C
CJC (option terminal): ±1°C

MR Measure range
Thermal drift <150ppm /°C

Code	Types of OUTPUTS		Features
A	1 analog	Current active/passive	Current: Direct or reversed 0-20mA Load impedance \leq Lr 600 Ω Voltage: Direct or reversed 0-10V Load impedance: \geq Lr5K Ω
		Voltage	Accuracy: 0.1% in relation to the display Ripple: 0.2% Response time in relation to the display: 40ms.
R	2 change-over relays		2 setpoints per relay configurable over the whole MR. Hysteresis programmable from 0 to 100%. Time delay programmable from 0 to 999,9 sec. (5A/250 VAC on resistive load)

Response time

(for a variation from 10 to 90% of the input signal)

Average response time 150 ms

(1) Add 40 ms for the response time on the analog output, or 10 ms for the response time on the relay outputs.

General features

Galvanic isolation:

3.8kV-50Hz-1min. between input and [supply/outputs]

3.0kV-50Hz-1min. between relay output 1 and [analog output/supply/relay output 2]

3.0kV-50Hz-1min. between relay output 2 and [analog output/supply/relay output 1]

Working voltage: 250 Vac/dc

PARAMETRES ELECTRIQUES RELATIFS A LA SECURITE SAFETY ELECTRICAL PARAMETERS						
Type de mesure Measure type	Câblage Wiring	Uo (V)	Io (mA)	Po (mW)	Co (μ F)	Lo (mH)
Alimentation capteur 2-wire sensor supply	G1-H1	28.4	90.5	643	0.077	4
mV, V, mA, Tc, RTD Résistance, potentiomètre Resistance, potentiometer	G1-G2-G3 G4-H2 H3-H4	8.0	2.0	2.0	8.4	>1000
Um < 250 Vdc and Um < 250 Vac						

Power supply:

Max. operating range	Power draw	Dielectric withstanding
16.8 to 31.2 Vdc	2.5 W max.	3.0KV-50Hz-1min.

Measure:

- Standard sampling time: 100 ms
- Common mode rejection rate: 130 dB
Serial mode rejection rate: 70 dB 50/60 Hz
- Self-calibration

Use:

- Operating temperature: -20 to 60°C
- Storage temperature: -20 to 70°C
- Use in pollution degree 2 and voltage surge category II or better
- Max. altitude: 2000m

Compliance with standards:

Directive LV 2014/35/UE EN 61010-1

Standard for UL electrical safety UL 61010-1

..... CSA C22.2 NO.61010-1-12

Directive ATEX 2014/34/UE EN 60079-0, EN60079-7

..... EN 60079-11, EN60079-15

IECEx IEC 60079-0, IEC 60079-7

..... IEC 60079-11, IEC 60079-15

Directive EMC 2014/30/UE EN 61326-1

Marking:



II 3(1)G Ex ec nC [ia Ga] IIC T4 Gc
SIRA 17ATEX4222 X
IECEx CSA 17.0025 X



ATEX
ZONE 2



LISTED

Process
Control
Equipment
E482453

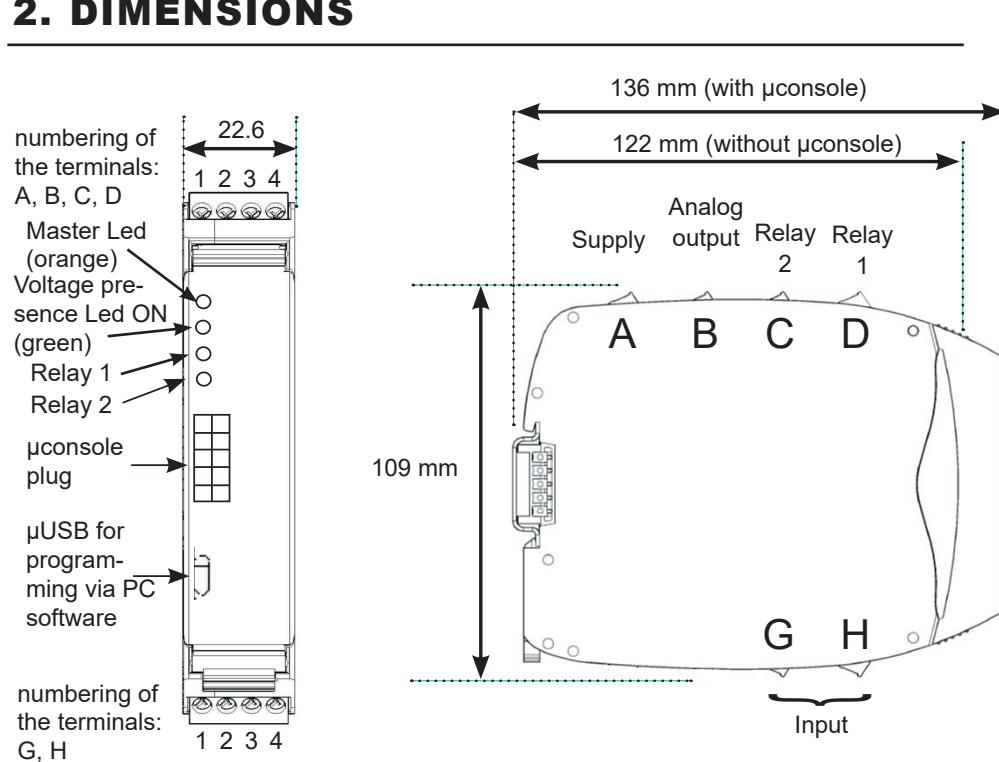
Housing:

- Self-extinguishing case of black UL 94VO PA66
 - Mounting in switchbox: latching on symmetrical DIN rail.
 - Removable terminal blocks for screwed connections (2.5mm², flexible or rigid)
 - Screw thread M3
- Max. tightening torque: 0.5Nm / 4.5in.lbs
Min. solid/stranded conductor section: 0.2mm² / 26A WG
Max. solid/stranded conductor section: 2.5mm² / 14A WG
- Protection: case / terminals: IP20

Dimensions: without μ console: 109mm x 122mm
with μ console: 109mm x 136 mm

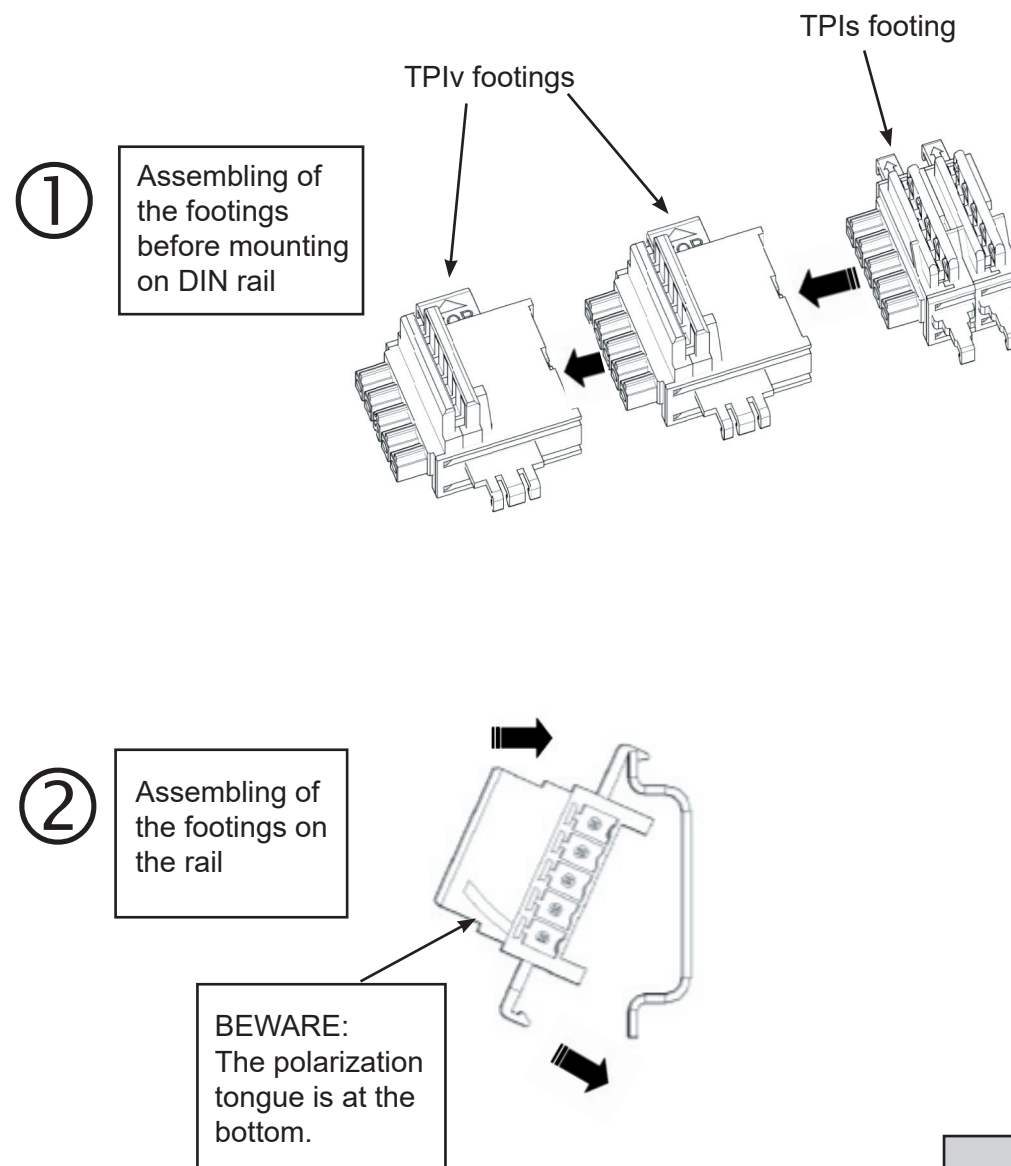
Max. weight: 290g (with packaging)

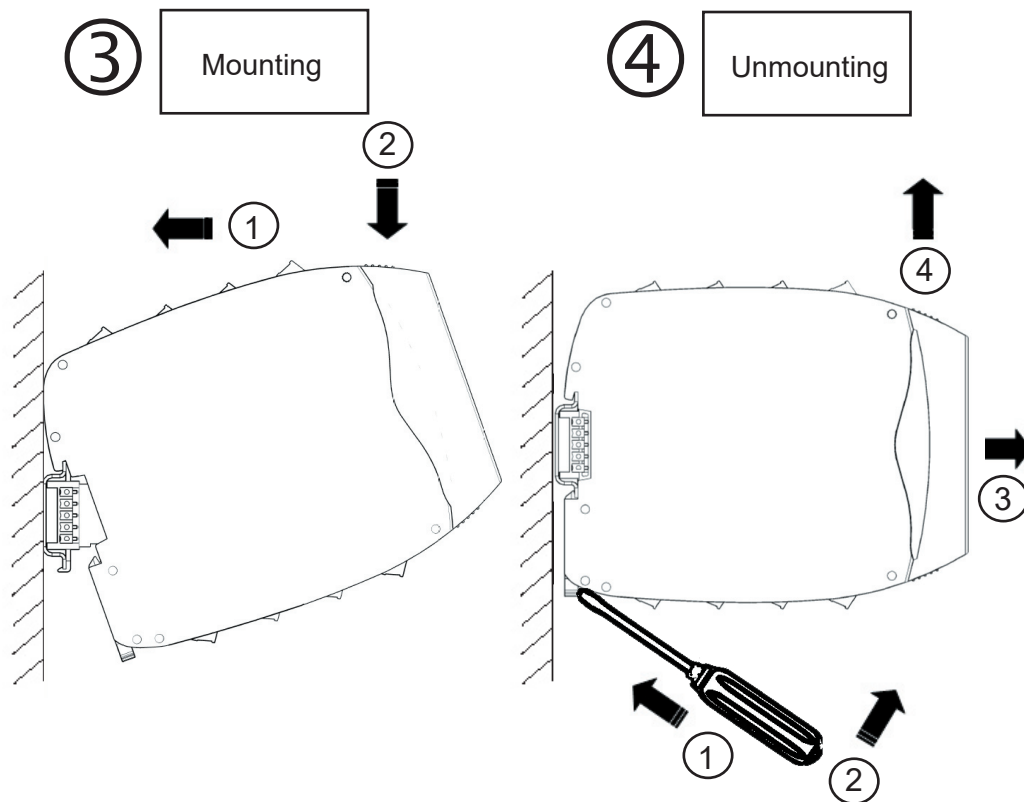
2. DIMENSIONS



3. MOUNTING

Instructions for assembling on 35mm DIN rail according to EN 60715



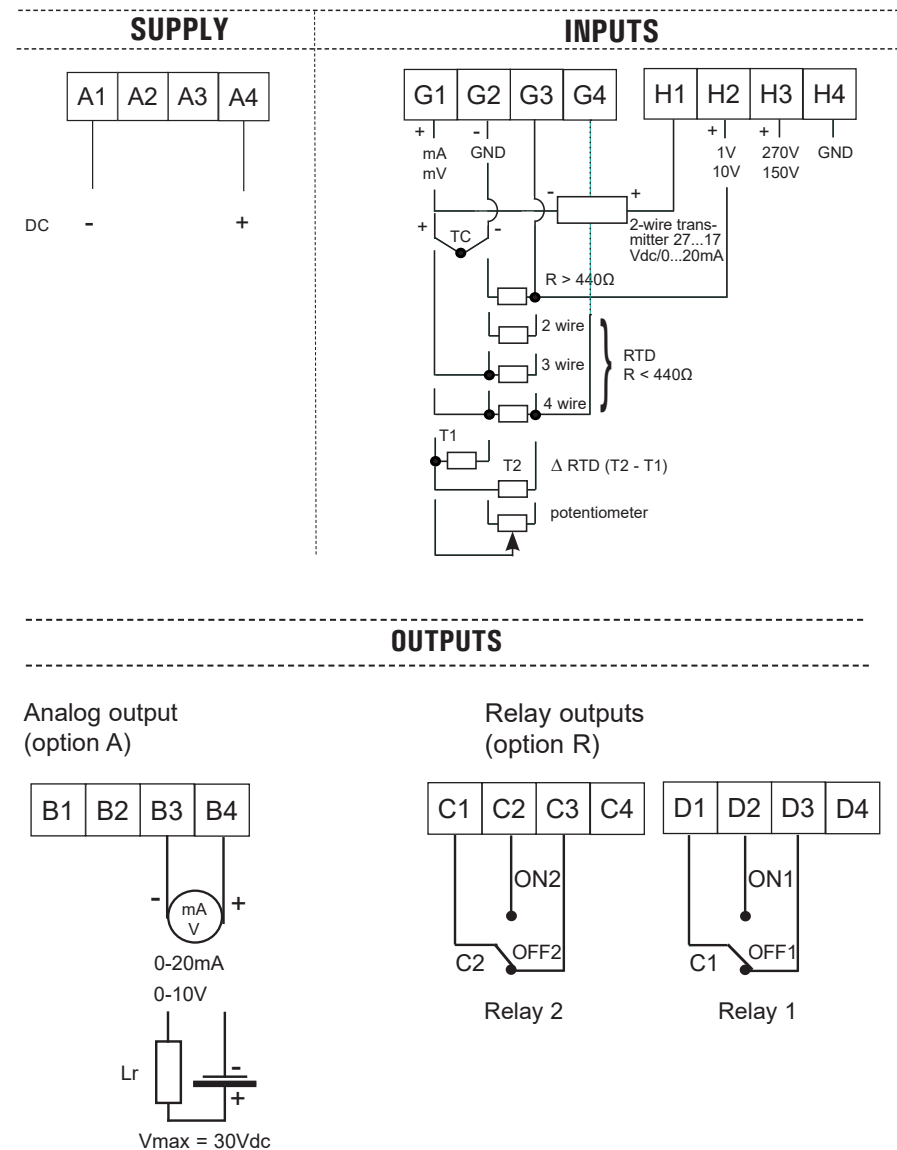


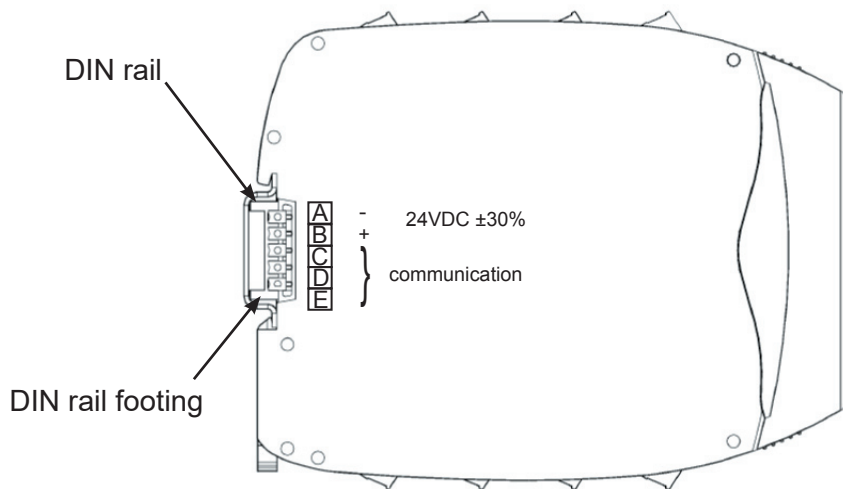
Supply for TPIs:

The TPIv SIN can be used to supply up to 50 TPIs modules through the rear connector (while respecting the limit of 3.0A available on the bus power). The power supply of 24VDC +/-30% must be class 2 LPS (Limited Power Supply).

An external fuse of 3.15A must be placed between the used power supply and the TPIv SIN. This fuse must be chosen to break after not more than 120 seconds with a current of 6.4A

4. CONNECTINGS





• INSTALLATION IN AREA 2(ATEX and IECEx):

The product must be installed by qualified staff, competent on the directives and the regulation applicable to the area 2.

In locations where high external humidity and internal temperature variations (e.g. frequent on-off cycles) may cause condensation inside the equipment, the interior should be periodically inspected.

When installed in the hazardous or non-hazardous area, the equipment shall be installed in a suitably-certified enclosure (Ex ec for gas applications Zone 2). When installed in a non-hazardous area, the equipment may alternatively be installed in a controlled environment that provides equivalent protection. The installer shall ensure that the maximum ambient temperature of the equipment when installed is not exceeded.

Cable entries and blanking elements shall fulfil the same requirements.

When the device is mounted in an hazardous area, connection and disconnection of the module from the rail or any of its connectors while live is only permitted if the potentially explosive atmosphere is shown to be absent.

The field installation shall be undertaken in a controlled environment with suitably reduced pollution, limited to pollution degree 2 or better as stated in manufacturer's documentation.

The non-intrinsically safe circuits may only be connected to an overvoltage category I or II power source, as defined in IEC 60664-1.

The supply shall be protected such that transients are limited to a maximum of 140% of the rated voltage; no such protection is required for the signal lines.

5. PROGRAMMING

• With the micro-console

(LxhxD= 23.3 x 89.5 x 24.3 mm)

This µconsole for clipping on the front face allows the visualisation of the measure or occasional modifications of the programming via its tactile keyboard. It also allows the teleloading of a programming file to other products of the ARDETEM range.

The programming menus and the functions which can be accessed from the console are detailed in the following pages.

The graphical rear-lit LCD allows the visualisation of 3 pieces of information:

- the value of the measure (5 mm high) with its unit,
- the value of the analog output) and the name of the product (TAG),
- the status of the relay outputs.

- Scrolling message for programming help (programmable in several languages)

- Protection of the programming by code.

- Programmable keys for direct access.

• Via the configuration software SlimSET

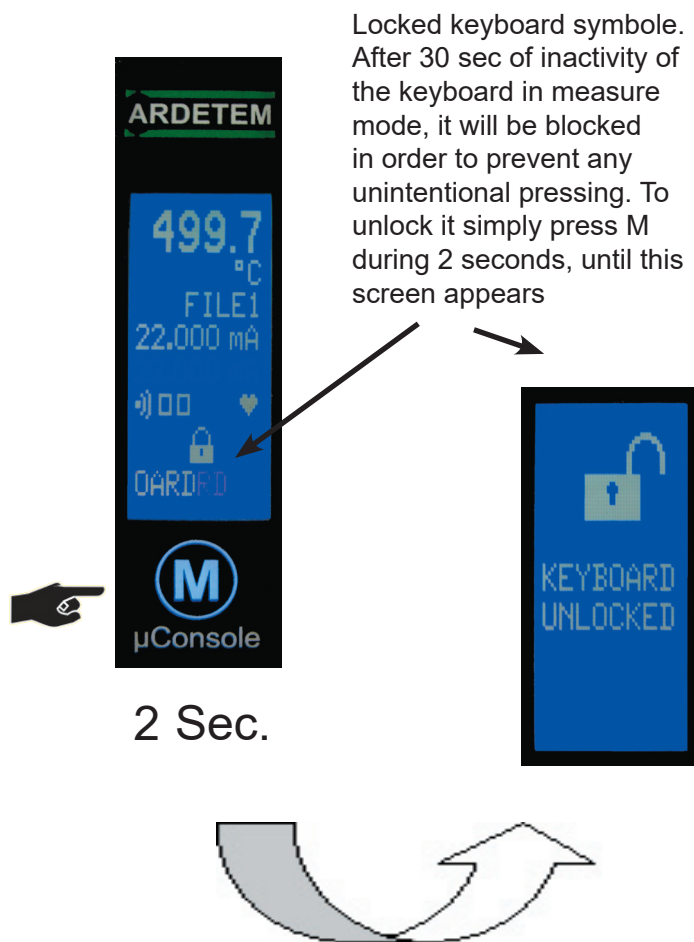
To communicate with the series TPIV-SIN from a PC you will need a connection cable (USB / µUSB standard). To connect this cable to the TPIV-SIN, unclip the front face and insert the µUSB plug into the especially foreseen USB connector. Then connect the USB plug on a USB port of the PC.

The software SlimSET allows the reading of the measures or the modification of the converter configuration.

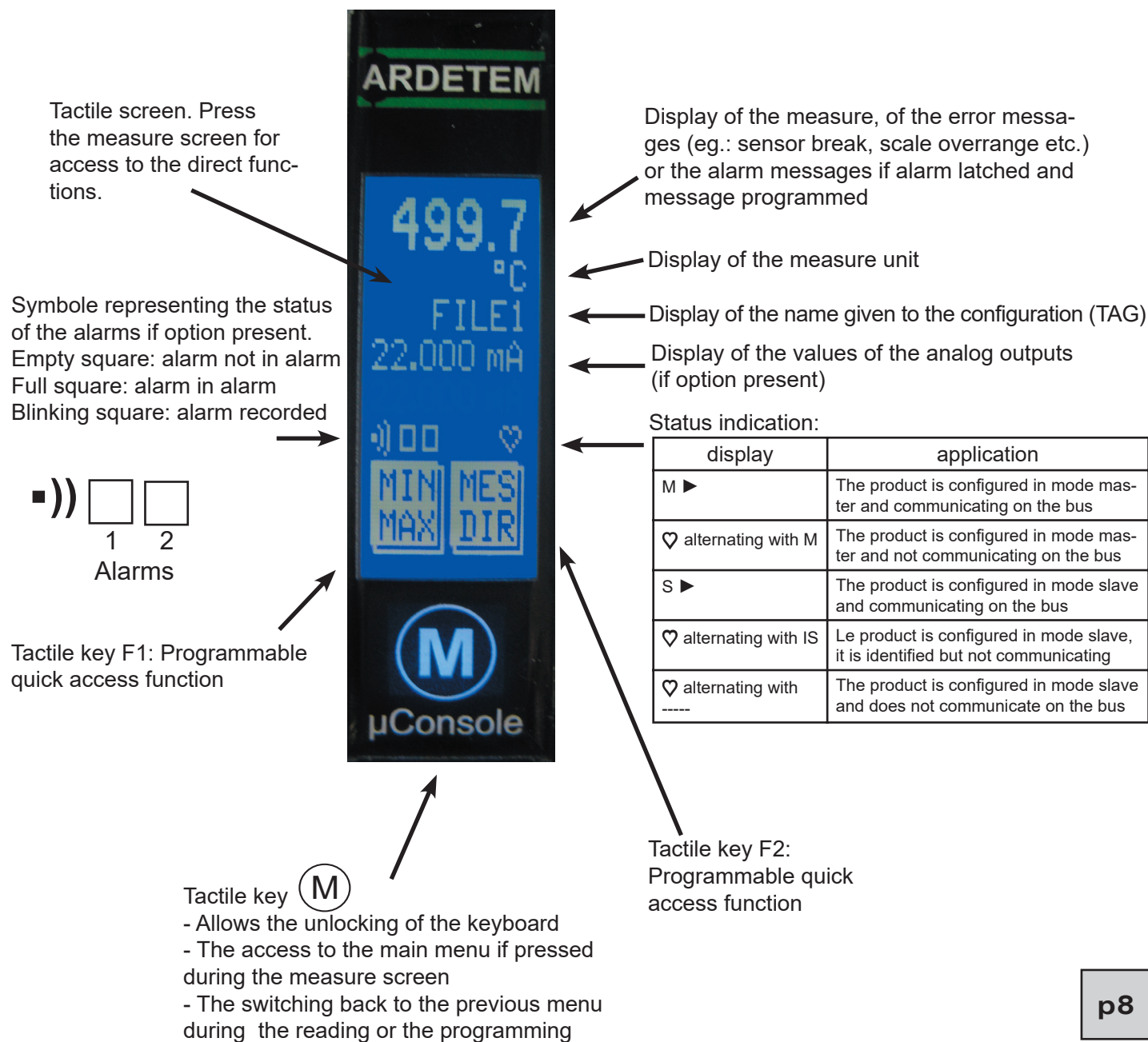
Each configuration is kept as a file stored on disk. These files can be consulted, modified, duplicated or loaded into the converters. The files can be created with or without having a converter connected. This software also allows the saving of existing configurations from the instruments already in service. All the files can be edited on any type of printer.

Measure screen

Unlocking of the keyboard

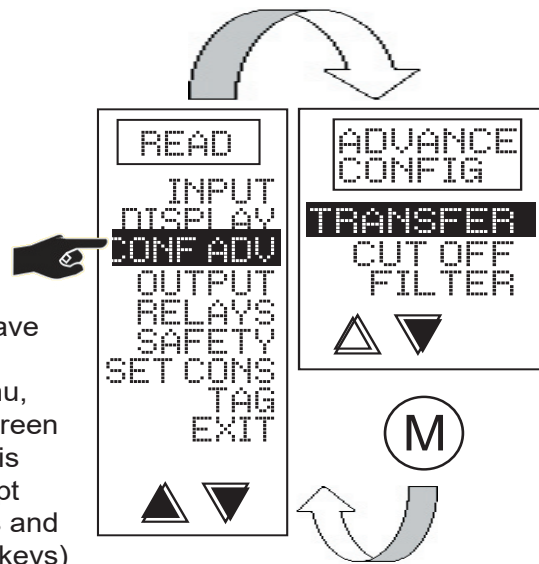
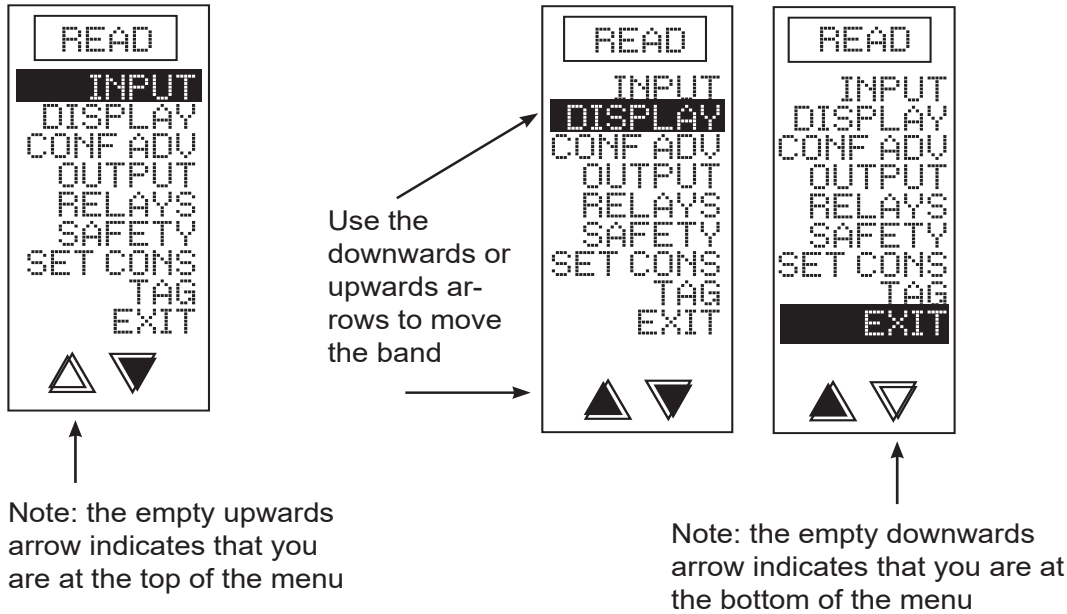


Description



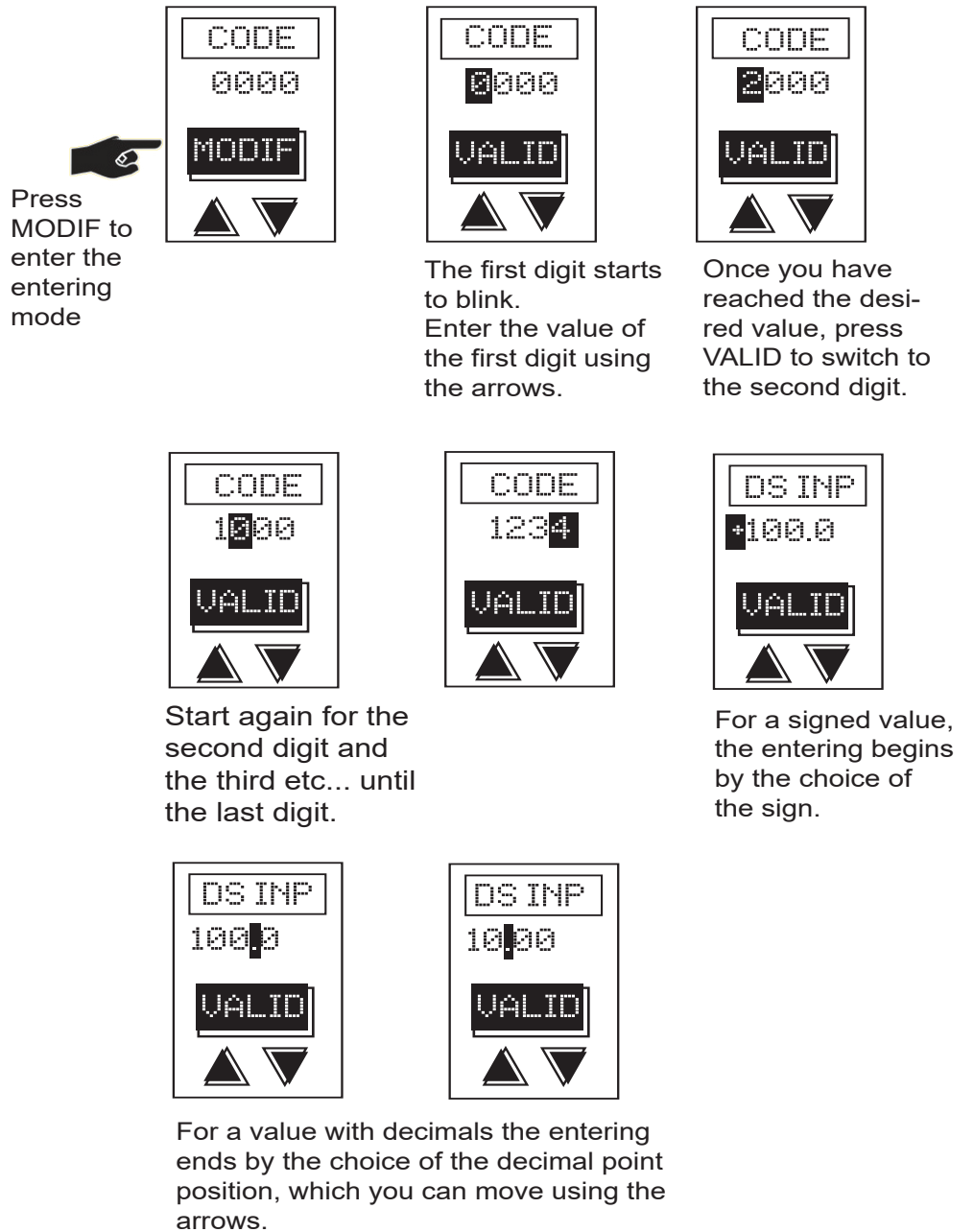
Moving through the list menus:

Eg.:



You will then enter the chosen menu. Press M to come back to the previous menu.

Entering of a value:

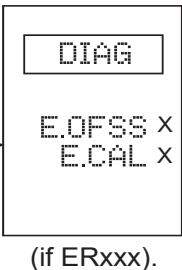


Press M during the entering to revert to the former value

MEASURE SCREEN



Press the screen in measure mode to access the menu of the direct functions or the display of the details of the latched self-diagnosis errors: ERxxx (see page 26).



Menu of the functions with direct access see page 14

Press the key M on the measure screen to access the main menu.



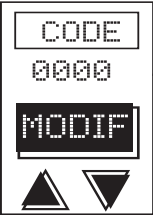
access to the configuration



READ:
Access to the reading of the configuration.
Menu identical to the programming of the configuration, but modification impossible (the key MO-DIF disappears in the entering of the parameters). The keys ▲ ▼ are replaced by the keys ◀ ▶ when you access the chosen parameter, these keys allowing to come back to the previous menu or to access the next parameter.
Press the screen to scroll the reading of the configuration parameter after parameter.

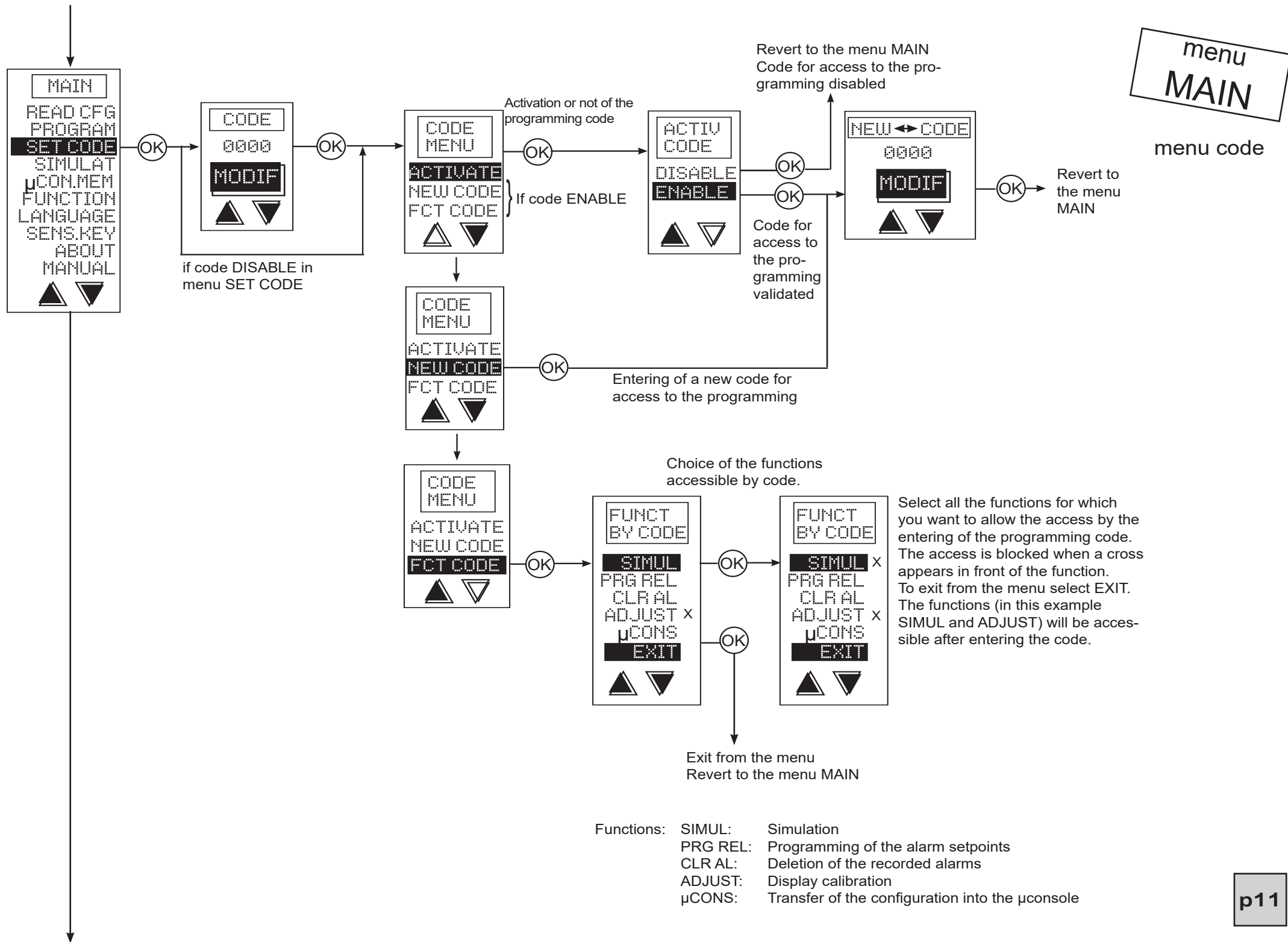


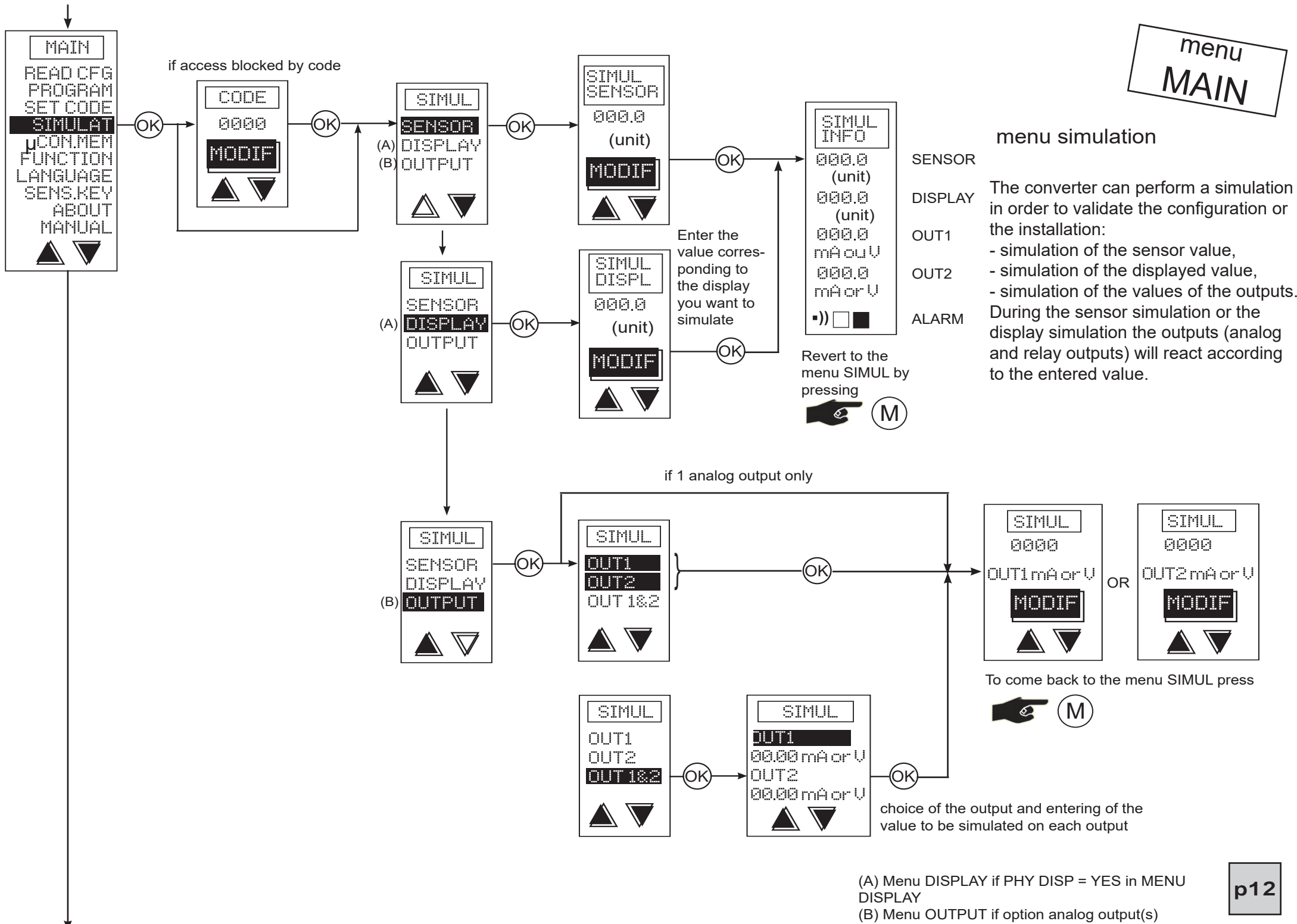
Default code:
0000
if code DISABLE in menu SET CODE

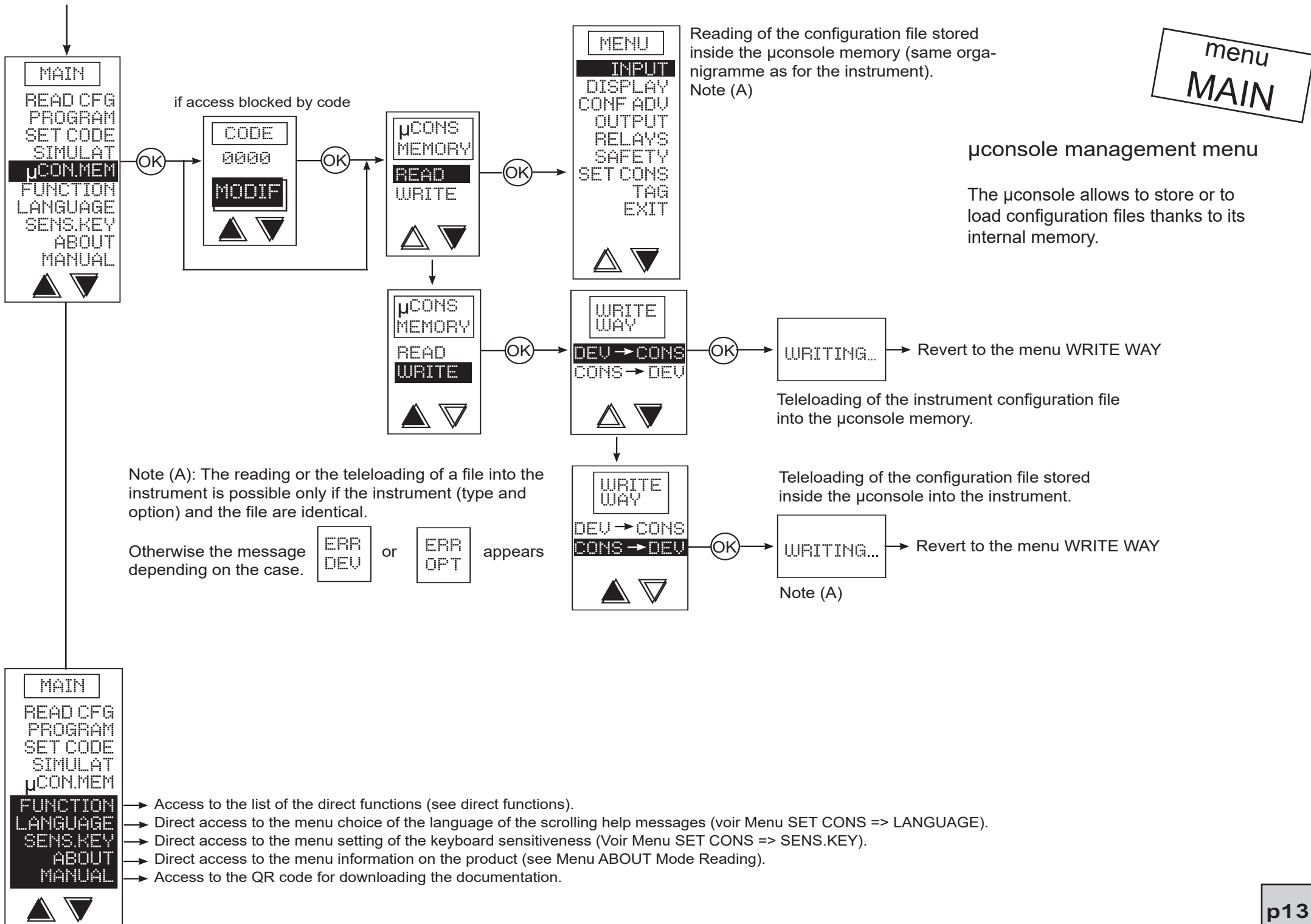


PROG:
Access to the programming of the instrument configuration see page 16.

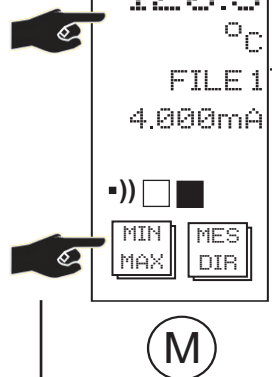
Note:
The instrument will revert to the Measure screen if no key is pressed during 1min. in mode programming and 20 sec. in mode reading.



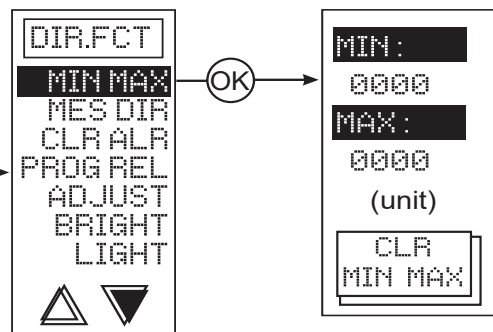




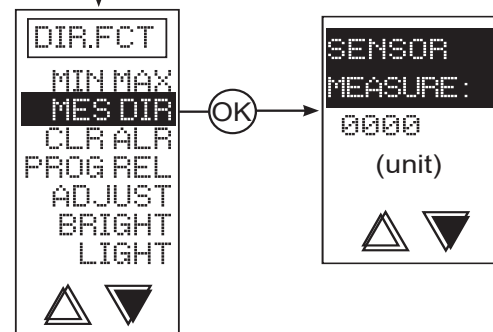
MEASURE SCREEN



Direct access to the function of the key, in this example the display of the measured MIN and MAX.



Press the key CLR MIN MAX to delete the recorded min and max.



Direct display of the measure without processing:
in mV, V or mA for the Process inputs
in mV for the thermocouple inputs
in Ω for the inputs PT100, NI100 or resistance
in % for the Potentiometer inputs

menu
DIR.FCT

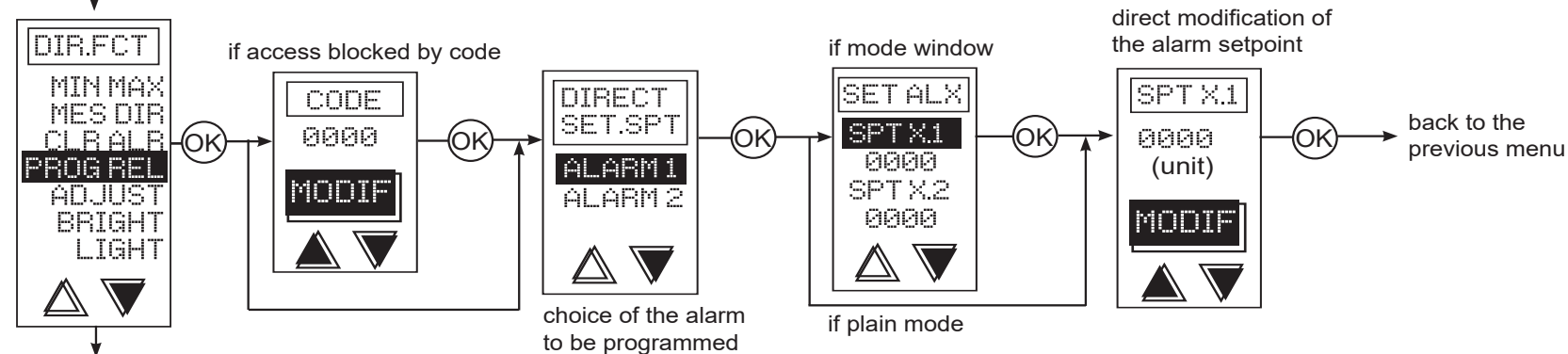
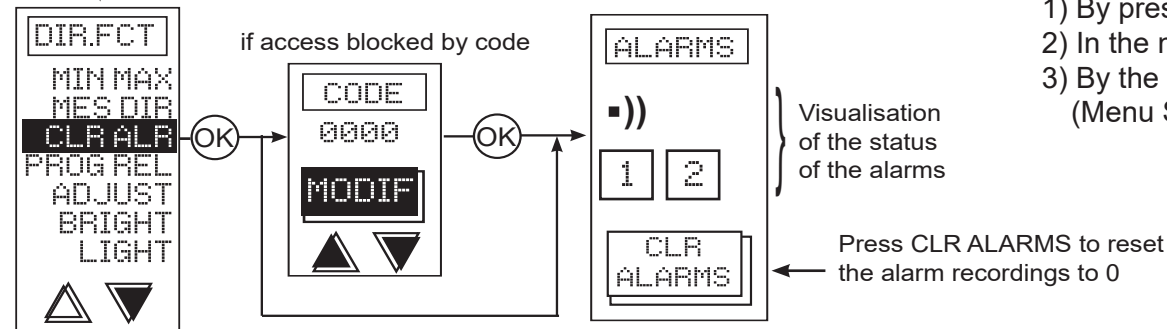
Functions with direct access

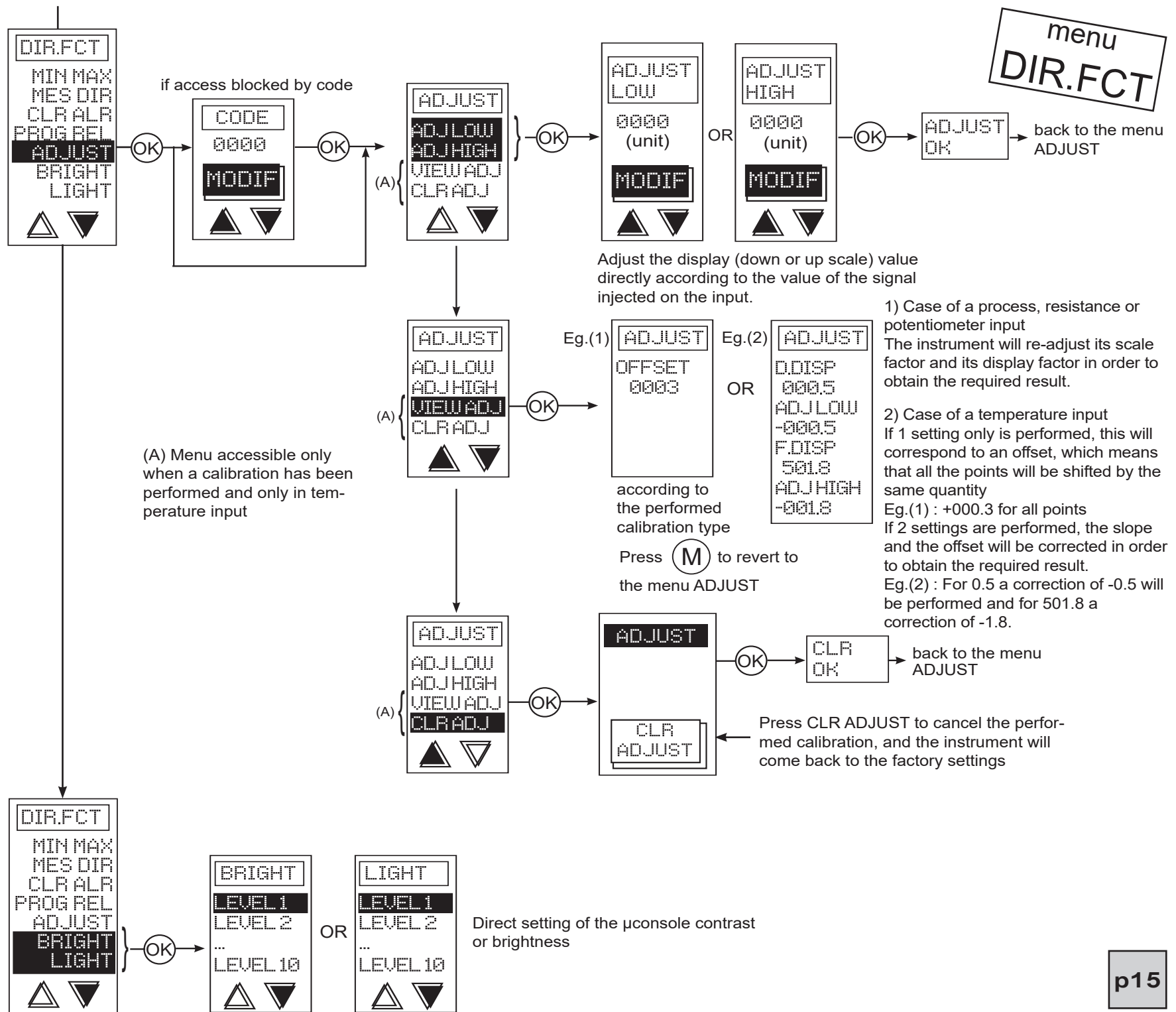
To simplify the use, some functions can be accessed in a more direct way. These functions are:

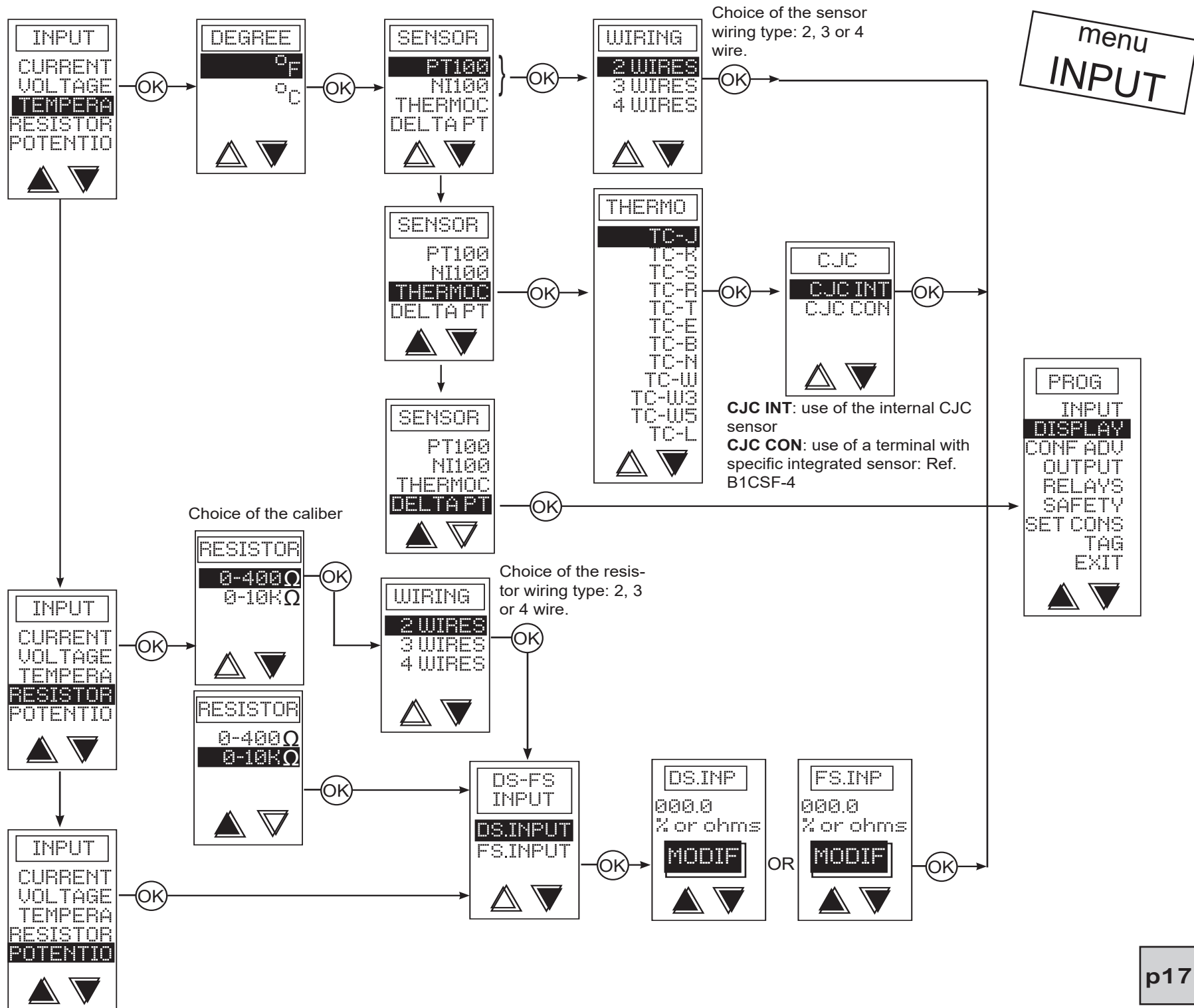
- the display and the 0 reset of the measure, min. and max.,
- the direct display of the electrical value of the sensor (unprocessed value),
- the 0 reset of the alarm recordings,
- the programming of the alarm setpoints,
- the adjusting of the display in relation to the measure (process calibration),
- the setting of the contrast,
- the setting of the brightness.

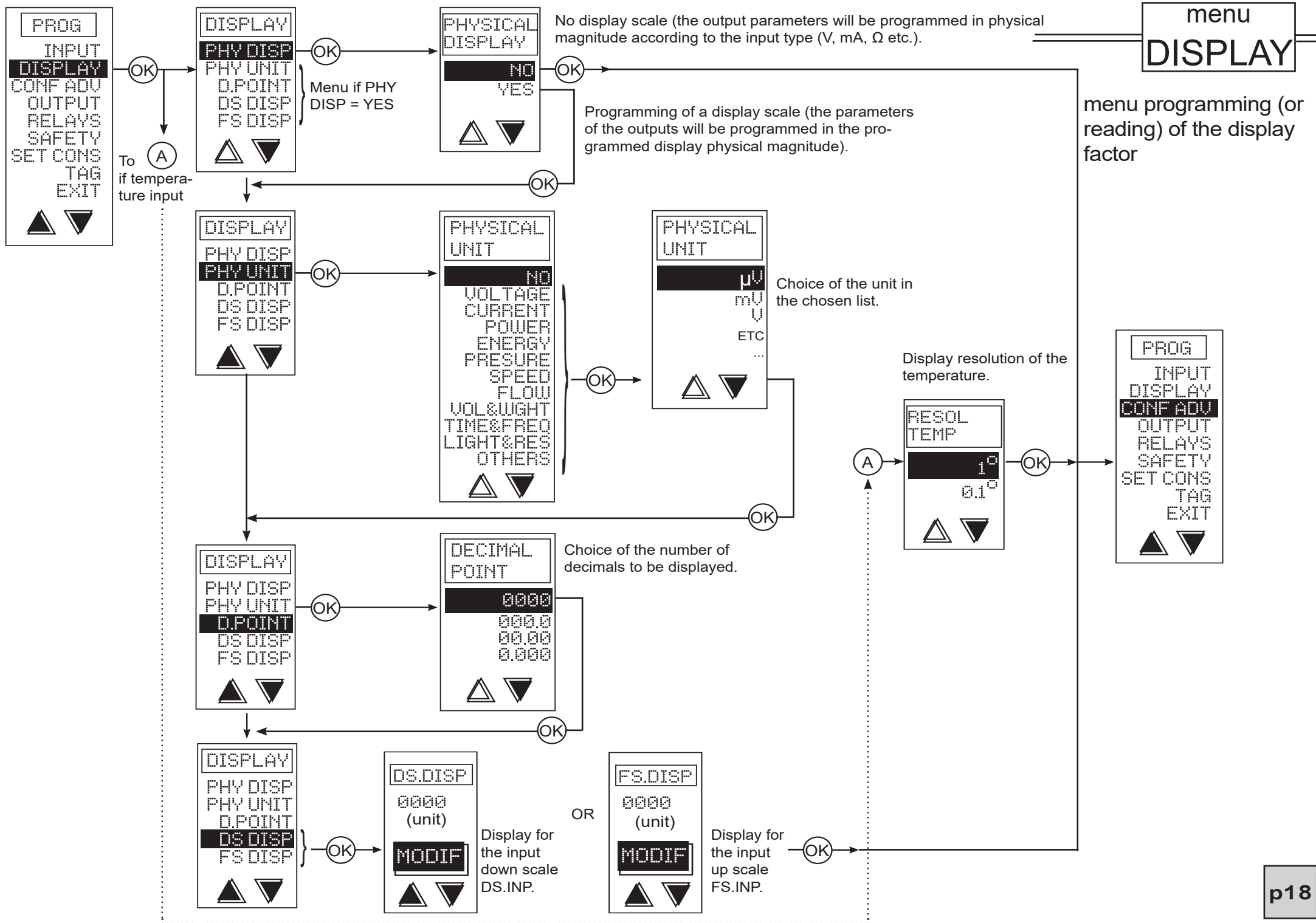
These functions can be accessed in 3 different ways:

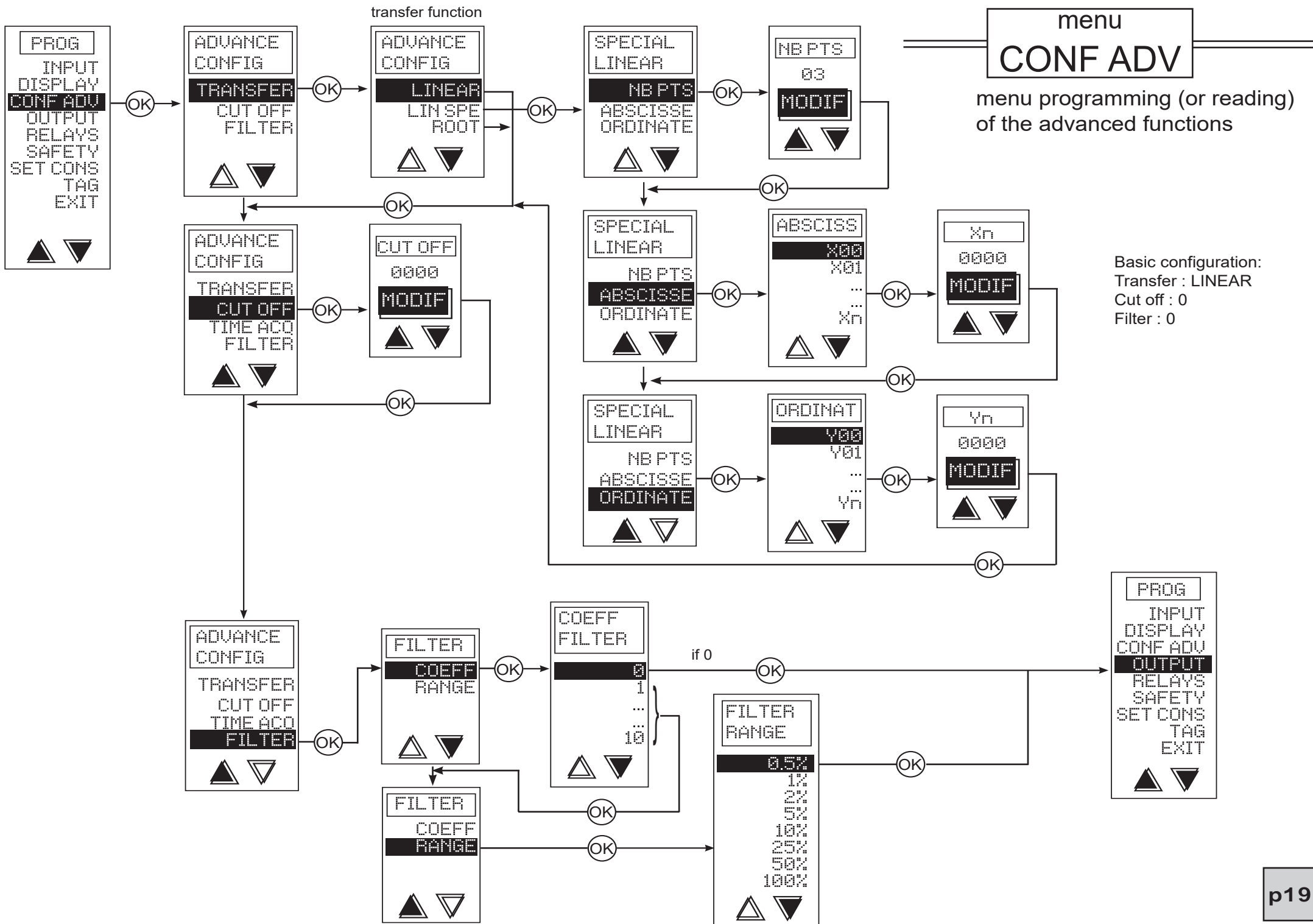
- 1) By pressing the screen in mode measure.
- 2) In the menu MAIN => FUNCTION.
- 3) By the 2 programmable keys of the measure screen (Menu SET CONS, keys F1 and F2).











TRANSFER

LINEAR: Linear function

ROOT: extraction of the square root
√ of the measure brought back in % of the programmed measure range.
Eg.: Input 4-20mA => 12mA gives 0.707 (√0,5)
The function square root tends to amplify the input signal background noise when getting near zero.
To avoid the ripples caused by this noise, simply programme a cut-off value.

LINSPE: Special linearisation

Special linearisations:

For specific applications such as the measurement of volumes, the converter can memorise an unlinear curve programmable in X and in Y.

The curve resulting from your equation can be replaced by a series of linear segments with a maximum of 20 points (19 segments).

Note:

The values of the abscisses (x) must go increasing: value of X00 < value of X01...

Example:

For a layed cylindric tank, 1 meter high (h) and 1 meter long (l); a 0-20 mA linear sensor measures the height of the liquid surface line:

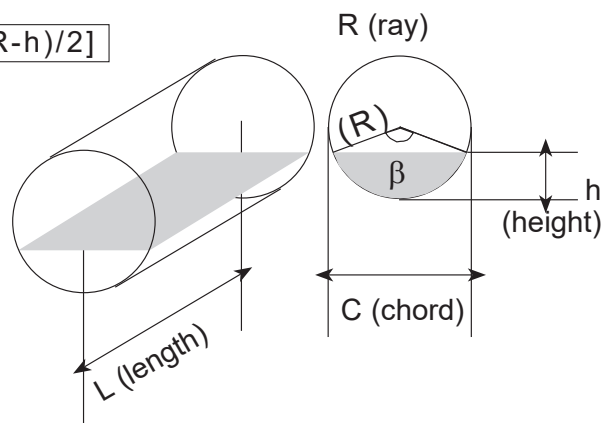
0 meter -> 0 mA (empty tank) 1 meter -> 20 mA (full tank)

with $\cos \beta/2 = (R-h)/R$ and $\sin \beta/2 = C/2R$

Empty tank volume = 0.000

Full tank volume = 0.785

$$\text{Volume} = L [\pi R^2 \beta/360 - C(R-h)/2]$$



Say a curve of 10 equally long segments:
Measure range / number of segments = 20mA/10 = 2mA length of the segment.
For 10 segments nb = 11 (number of linearisation points).

Input mA	Height m	Angle Degree	Chord m	Volume m ³	Outputs in mA
X00 0	0.0	0.00	0.00	Y00 0.000	00.00
X01 2	0.1	73.74	0.60	Y01 0.041	01.04
X02 4	0.2	106.26	0.80	Y02 0.112	02.85
X03 6	0.3	132.84	0.92	Y03 0.198	05.04
X04 8	0.4	156.93	0.98	Y04 0.293	07.47
X05 10	0.5	180.00	1.00	Y05 0.393	10.00
X06 12	0.6	203.07	0.98	Y06 0.492	12.54
X07 14	0.7	227.16	0.92	Y07 0.587	14.96
X08 16	0.8	253.74	0.70	Y08 0.674	17.17
X09 18	0.9	286.76	0.60	Y09 0.745	18.98
X10 20	1.0	360.00	0.00	Y10 0.785	20.00

Programming:

X00 = 0 mA

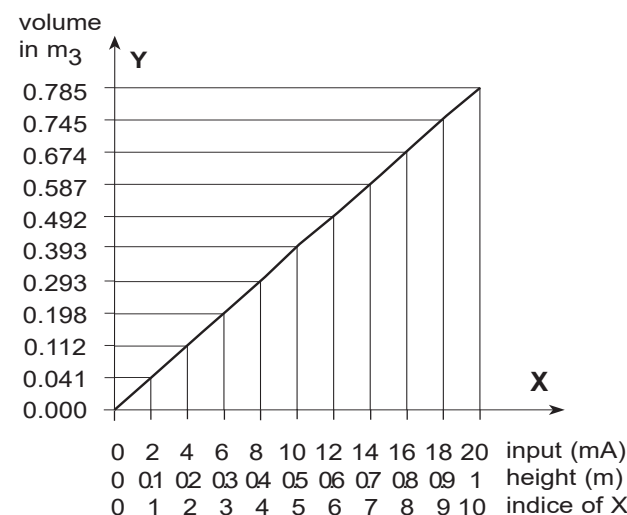
X10 = 20 mA

nb = 11

Y00 = 0,000 m³

Y10 = 0,785 m³

Programming from X00 to X10 and from Y00 to Y10 according to the table.



CUT OFF: Programming of the Cut Off value

- If the display up scale > display down scale and if the display is ≤ to the cut off value then it will be held at the down scale.
- If the display up scale < display down scale and if the display is ≥ to the cut off value then it will be held at the down scale.

FILTER

COEFF: integration indice of the digital filtering

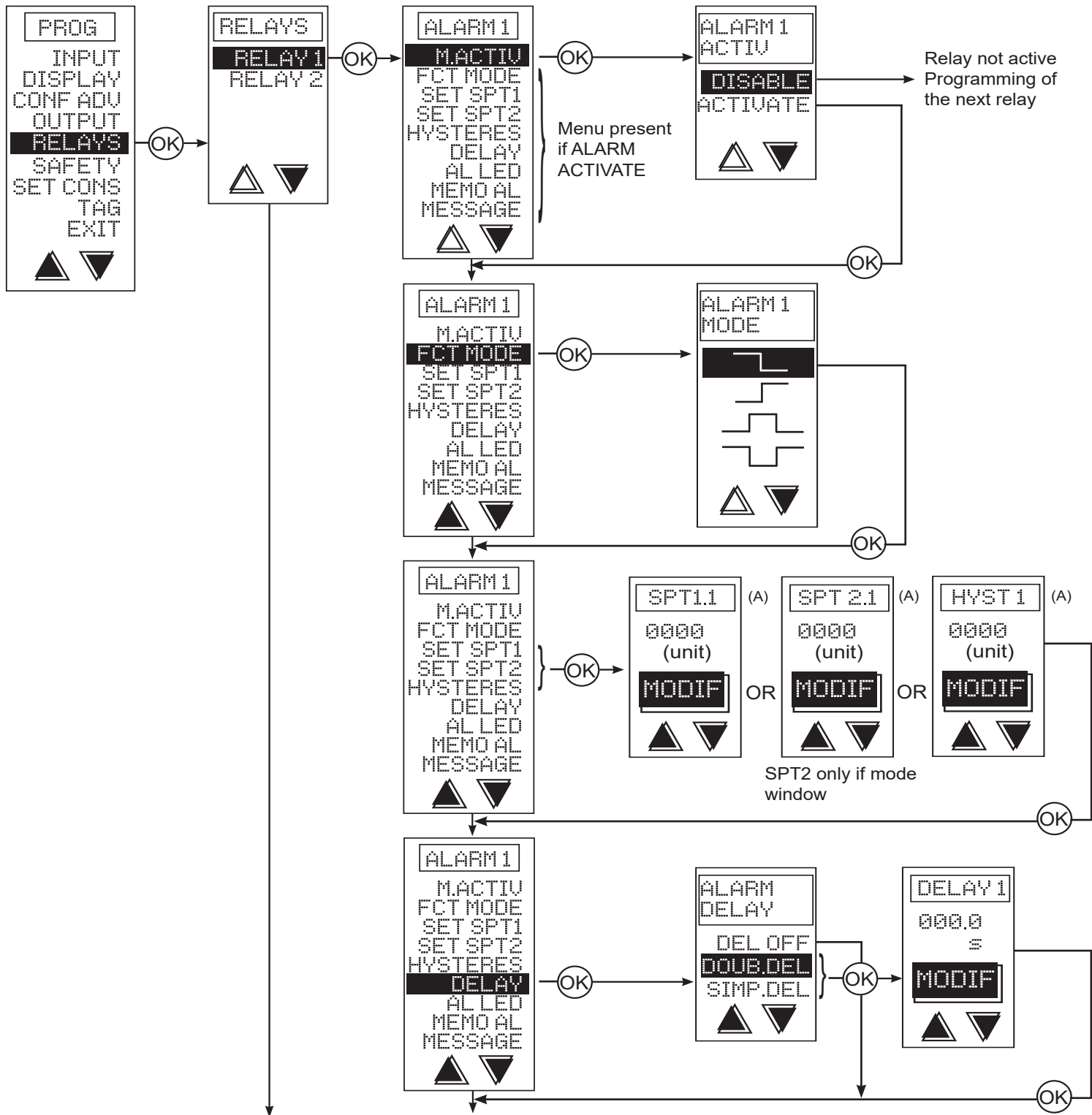
Programmable from 0 to 10, for use in case of unsteady input

RANGE: Percents of variation of the measure on which the filter will be active

Eg.: COEFF: 3 RANGE: 0.5%

The filter with indice 3 is active when the measure varies by ± 0,5%. When it exceeds 0.5% it will no longer be filtered. This allows to obtain a minimum response time, while eliminating any parasite noise of ± 0.5% superimposed to the signal, rendering the measure unsteady. If RANGE = 100% the filter will then be active on the whole measure range.



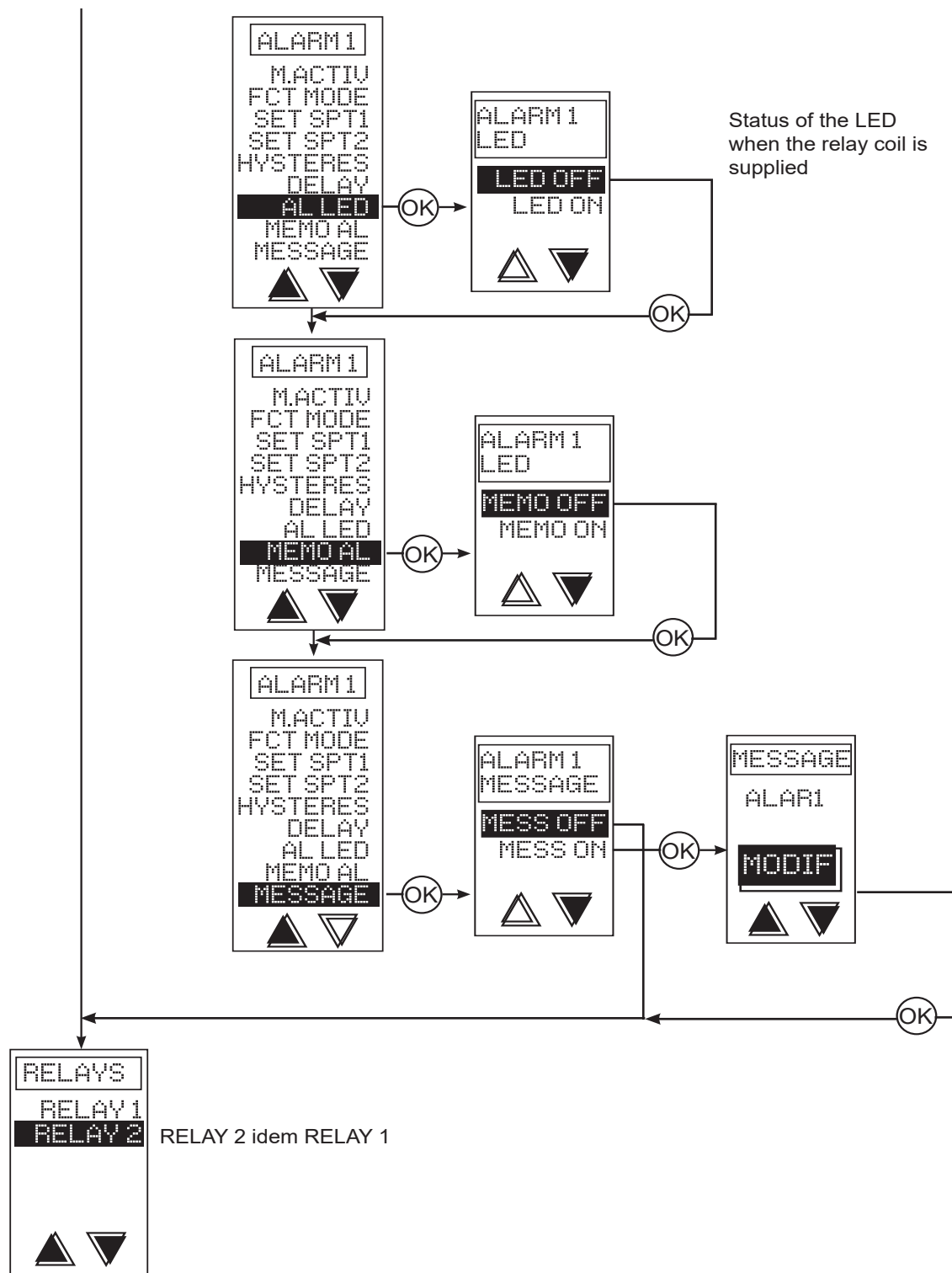


menu programming (or reading) of the relay outputs (if option present)

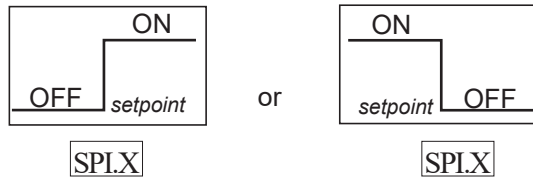
menu RELAYS

(A) in display points or in input points, depending on PHY DIS P = YES or NO

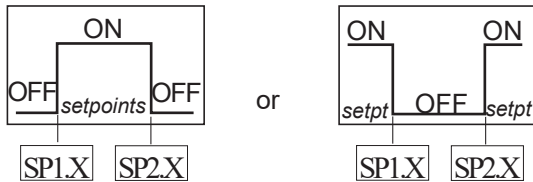
menu RELAYS



• Mode setpoint



• Mode window

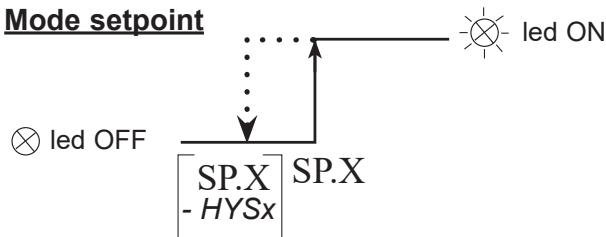


HYSTx

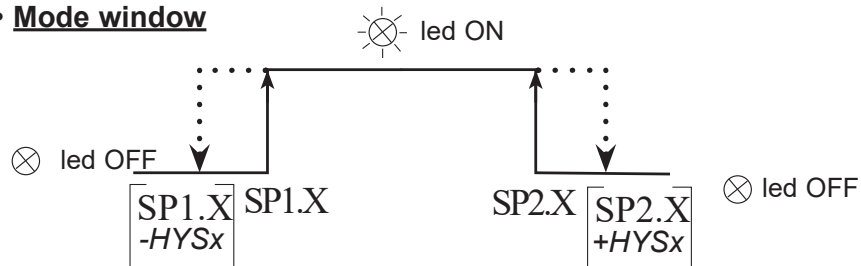
• Setting of the hysteresis

The hysteresis is activated on switching from led ON to led OFF; that is to say on switching out of alarm, since the led represents the alarm status.

• Mode setpoint



• Mode window



DLAx

• Time delay on the alarm

Setting of the delay from 0 to 999,9 sec.

DOUB DEL: delay on switching on alarm and off alarm

SIMP DEL: delay only on switching on alarm

AILED

- Choice of the status of the relay associated led when the relay coil is supplied

ALARM MEMORY

• Alarm recording

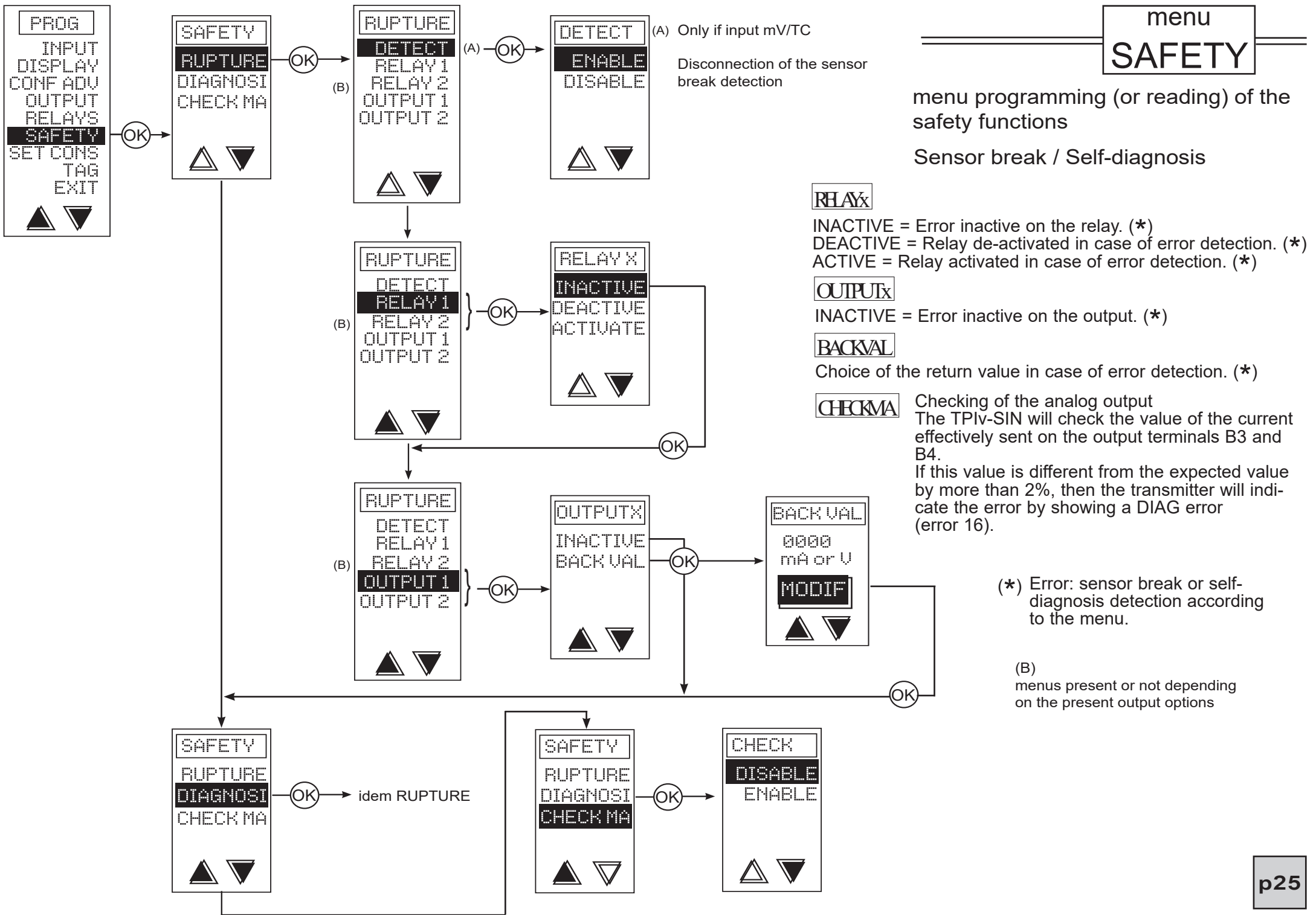
Allows the recording of the alarm after a setpoint has been passed. When the measure reverts below the alarm setpoint, the relay remains ON and the led blinks to warn the user that the setpoint has been passed (to set the alarm recordings to 0 see the menu CLRALR in the direct functions).

Note: An exit from the mode programming with saving of the configuration will reset the alarm recordings to 0.

ALARM MESSAGE

• Display of the alarm messages

A programmed alarm message can be made to appear alternating with the measure. The message will appear only during the alarm that is to say while the associated led is lit.



SAFETIES: SAFETY

• **Sensor break**

The sensor break can be detected on the inputs mV, Tc, Pt100, Ni100, ΔPT100, resistance (<400Ω) and current if the down and up scale <3,5mA.

On the μconsole: the message **OPEN** appears

On the converter: The LED ON blinks (approx. 4Hz)

Disconnection of the sensor break detection: (if input mV or temperature)

The sensor break detection can be disconnected in order not to disturb some calibrators which may be sensitive to the rupture detection current.

• **Self-diagnosis**

The converter permanently watches any drifts of its components. The self-diagnosis serves to warn the user in case of abnormal increase of these drifts before they may provoke false measures.

The self-diagnosis error information can be reported:

• On the display: An error message appears alternating with the measure.

Coding:

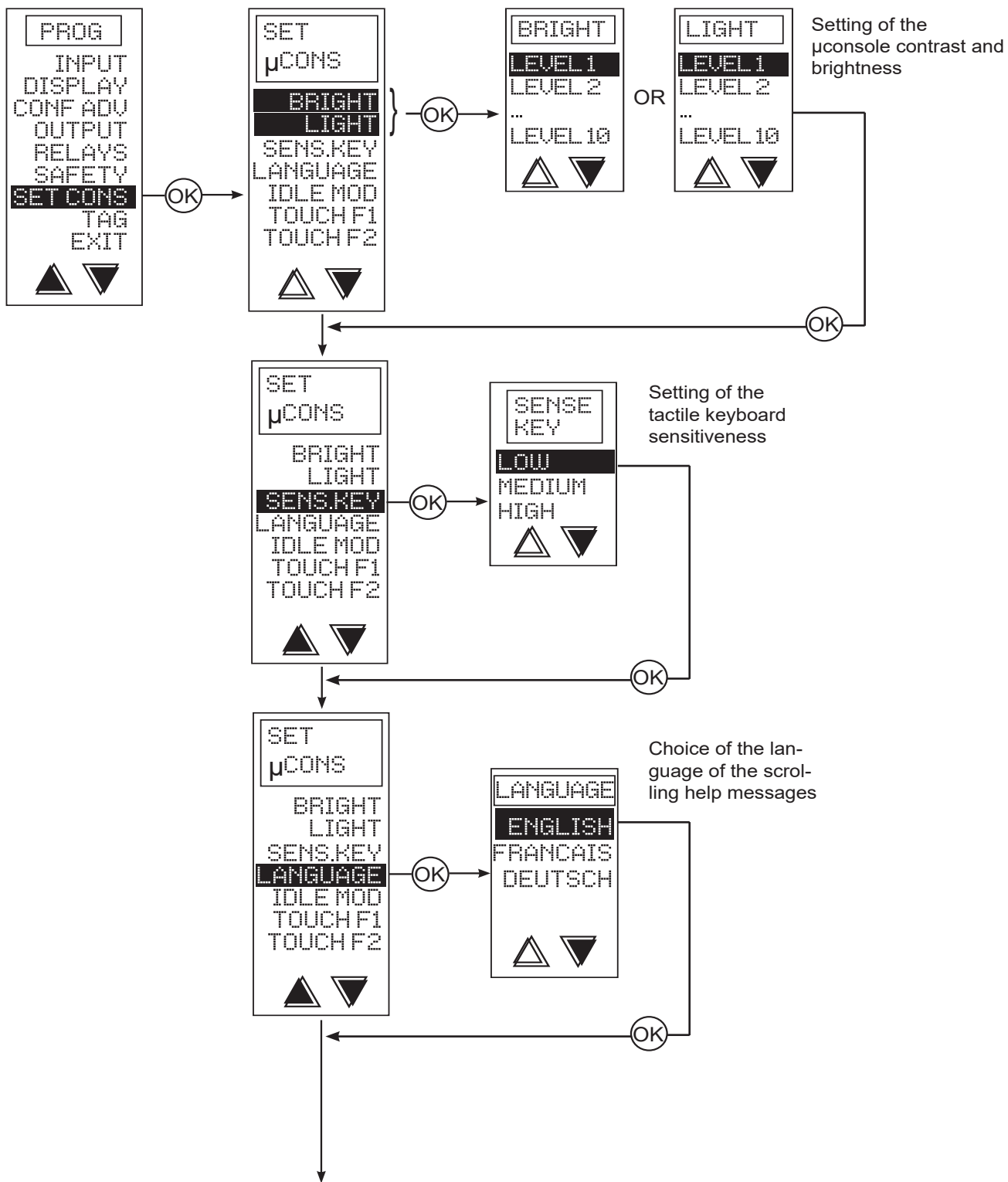
- 1 : Programming error (incoherent programming parameter) (E.PROG)
- 2 : Error on internal self-reference (E.REF)
- 4 : Error on internal offset (excessive drift) (E.OFFS)
- 8 : Calibration error (E.CAL)
- 16 : Checking error of the value of the current sent on the analog output (E.OUT).
This error appears systematically if the connector of the analog output (terminal B) is disconnected or if the current output loop is open (with a current different from zero).
- 32 : Error on the CJC (excessive drift or incoherence between the presence or not of the specific terminal «B1CSF-4» and the programming of «CJC» (INT or CON)) (E.CSF)
- 64 : Upper or lower electrical overstepping of the input. (E.OVRG)
- 128 : Bus error (E.BUS)

If the instrument detects for instance an offset error (4) and a programming error (1) **the value of the error code will be 5 (4+1)**.

Press the screen in mode measure to access the display of the details of the latched self-diagnosis errors.

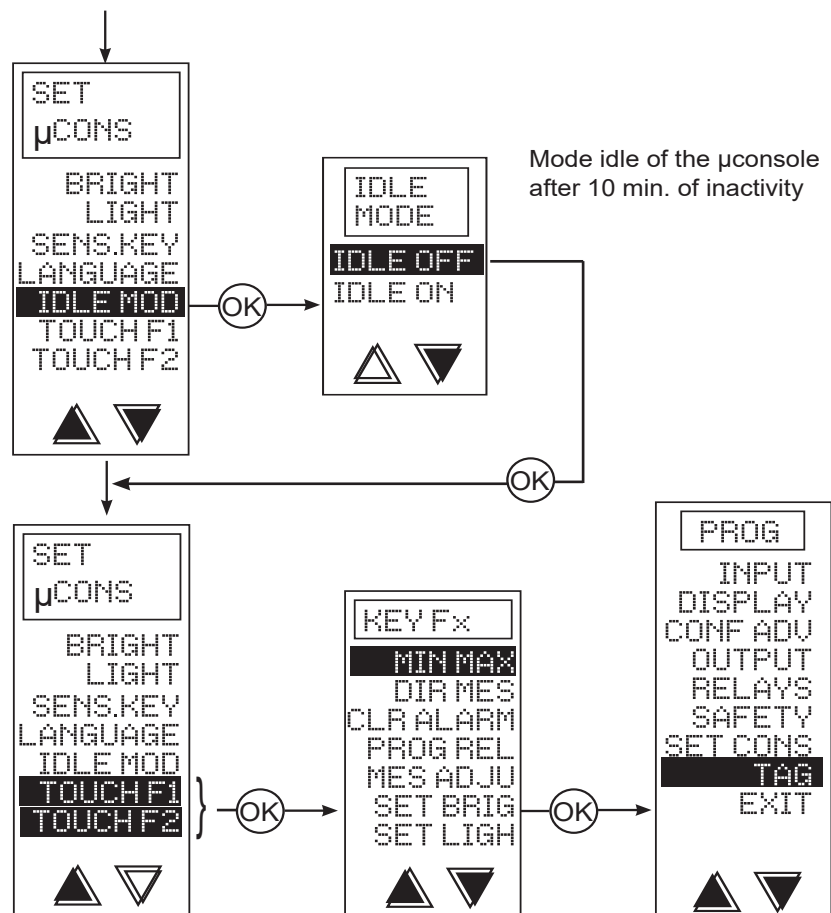
• On the converter:

The LED ON blinks (approx. 4Hz)



menu
SET CONS

menu programming (or reading) of the functions concerning the μconsole



Choice of the functions associated with the direct access keys on the measure screen:

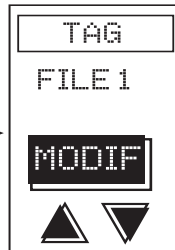
F1: left hand key

F2: right hand key

- MIN MAX: Display and 0 reset of the recorded min. and max.
- DIR MES: Direct measure of the sensor.
- CLR ALARM: 0 reset of the alarm recordings.
- PROG REL: Direct setting of the alarm setpoints.
- MES ADJU: Access to the adjusting of the input scale.
- SET BRIG: Setting of the contrast.
- SET LIGH: Setting of the brightness.



OK

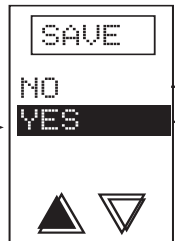


Entering of the name given to the configuration (8 characters max.) displayed on the measure screen

OK



OK



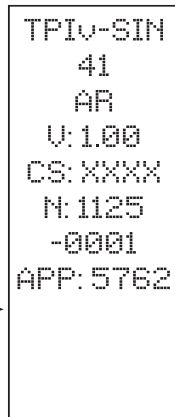
→ Exit from the programming menu without saving the modifications.
→ Exit from the programming menu and save the modifications.



mode programming only



OK



} reference of the instrument type
→ available options
Programme version number
Value of the programme CHECK SUM
} Serial number
N° of the instrument



mode reading only

6. ERROR MESSAGES

2000	Measure in overrange	----	Upper or lower electrical overstepping of the input
OPEN	Sensor break	OL	Displayable value overload
ERR1	Value set out of range	ERxx	Self-diagnosis error (see p26)

	Blinking of the green LED: voltage presence
Self-diagnosis	100 ms + display of ErXX
Sensor break	100 ms + display of OPEN
Upper or lower electrical overstepping of the input	10 ms + display of ---- and ER64
Network communication	20 ms
no communication	fixed
Mode transparent (dialogue through the master)	Morse code: twice on, and once off
Converter blocked in mode SIMU or GENE	1 s

	Blinking of the orange LED (master)
Slave	Off
Master	On no dialogue
Master	20 ms network dialogue
Network error	100 ms

7. OPERATING IN LOCAL NETWORK

First start by launching the configuration software SlimSet. The purpose is to define your network using the software.

1) Connect a USB cable the instrument which will be the master on the bus. Click on «communication with the devices» and then on «add the connected device to the architecture».

The instrument will be recognized, and the software will ask its position in the architecture. Enter the position (if relevant), and programme it as master (the orange led becomes active).

Important:

The configuration of the instruments of the bus can be accessed directly from the master.

In this case connect first the instrument defined as master, programme it as master and click on «communication through the master» and then «add or remove devices».

The software will then take up all the instruments which are present on the bus and read their configuration one by one.

For each detected instrument, the SlimSet will ask for its position in the architecture. This position can be determined by a specific blinking of the green led of the concerned instrument (morse code blinking: twice on, once off).

2) Then programme each of the instruments, as well as the links between instruments:

For each output of the output modules (TPIs 4R, TPIs 2A/4A ...) you must define the converter associated with this output, as well as the measure associated with this output.

Number of the TPIv-SIN 40/41 measure	Type of measure
0	Measure from the sensor
1	Physical measure with scale factor
2	Min. value of the physical measure
3	Max. value of the physical measure

4) Then transfer the programming of all the instruments of the bus.

Important:

The programming of the modules or converters can be transferred directly from the master.

For this purpose, connect yourself on the master and click on «communication with the devices» and then «communication through the master» and «send the configuration of all devices».

Then transfer the programming of the master.

5) Then validate the bus. For this purpose connect yourself on the master, click on «validate the bus».

This will save the configuration of the bus in order to point out any error (loss of a module for example).



The network must always be validated after adding / removing an instrument and after the modification of all the links between instruments.

8. GENERAL WARRANTY TERMS

WARRANTY applying and duration

This instrument is under warranty for a duration of 1 year against any design or manufacturing defects, under normal operating conditions.

Processing conditions * : The processing not under warranty will be submitted to the acceptance of a repair estimate. The customer will return the products at his charge, and they will be restored to him after processing. Without a written agreement on the repair estimate within 30 days, the products will not be held.

** Complete warranty terms and details available on request.*