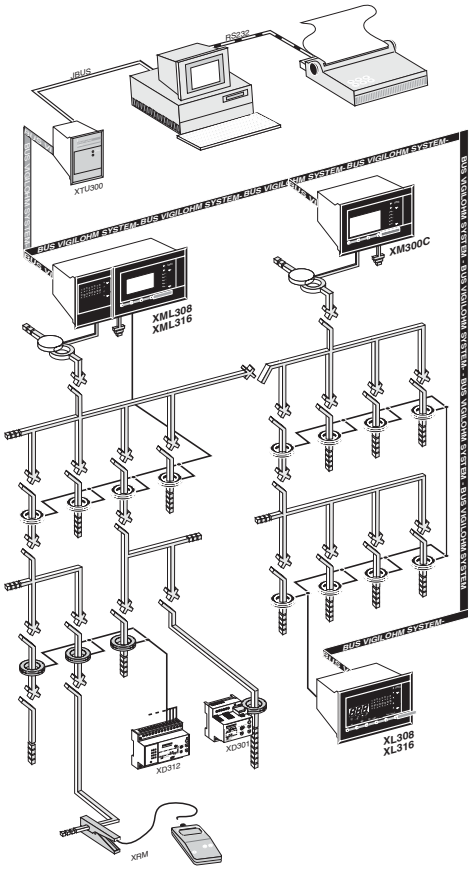
Vigilohm System

XM300C
XML308 / XL308
XML316 / XL316

Permanent insulation monitoring

User’s manual



Schneider Electric™

Content

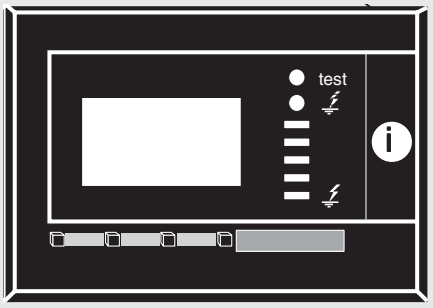
introduction

This manual regroups the information on the three types of devices forming the **Vigilohm System** series.

description of your device

type: **XM300C**
function: communicating **CPI**
principle:

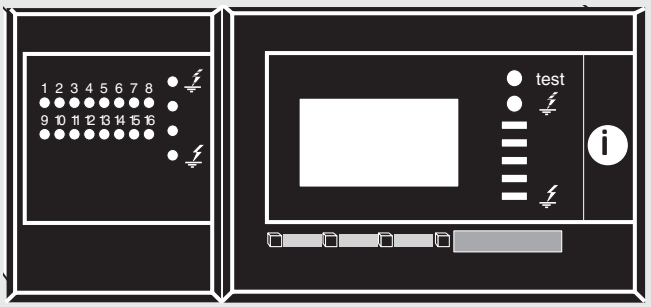
ensures overall insulation monitoring by continually measuring the insulation resistance value and the earth coupling capacitance of the network.
Enables interchange with devices of the **Vigilohm system** series. (XM, XML, XL).



type: **XML308 / 316**
function: communicating **CPI**
principle: + 8 / 16 channel **localizer**

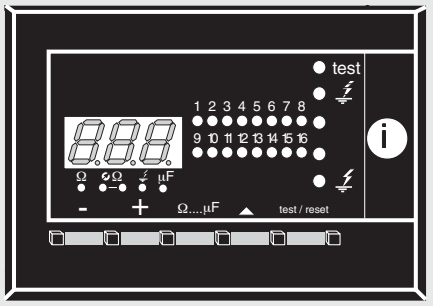
ensures overall insulation monitoring by continually measuring the insulation resistance value and earth coupling capacitance of the network.
Enables interchange with devices of the **Vigilohm system** series (XM, XML, XL).

The localizer part continually measures the insulation resistance value and earth coupling capacitance of each monitored feeder.



type: **XL308 / 316**
function: 8 / 16 channel **localizer**
principle:

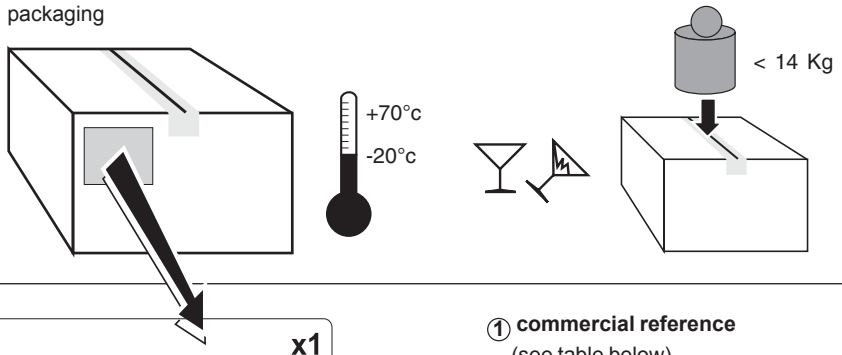
associated with a CPI (XM300C or XML), ensures local insulation monitoring by continually measuring the insulation resistance value and earth coupling capacitance of each monitored feeder.



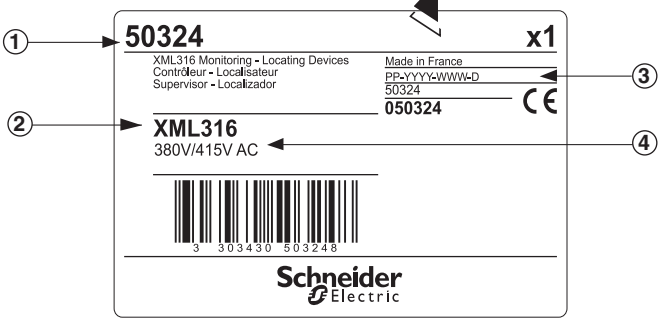
discover your device

protect the qualities of your device prior to installation

packaging



identify your device



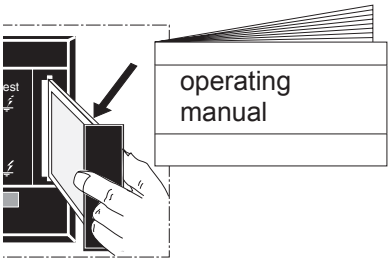
① **commercial reference** (see table below)
② **commercial name**
③ **manufacturing code**
④ **auxiliary supply**

example:
① commercial reference: **50541** (see opposite table)
② commercial name: **XM300C**
③ manufacturing code: n/a
④ auxiliary supply: **220 V/240 V AC**

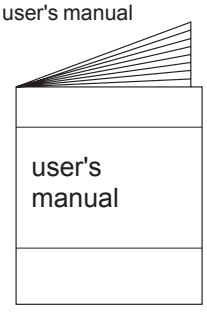
auxiliary supply	ref. **XM300C**	ref. **XML316**	ref. **XML308**	ref. **XL308**	ref. **XL316**
AC 50 / 60 Hz 115 V / 127 V AC	**50540**	**50490**	**50322**	**50606**	**50615**
220 V / 240 V AC	**50541**	**50491**	**50323**	**50607**	**50616**
380 V / 415 V AC	**50542**	**50492**	**50324**	**50608**	**50617**

check the content of the parcel

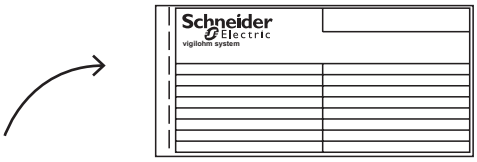
1- pull-out drawer containing a simplifed keyboard / screen operating manual



2- user's manual



3- device address and feeder locating table



4- connectors

	output relays 9 points	auxiliary supply 3 points	earth faston terminal	system 2 points	BUS 4 points	toroids 16 points	circuit-breaker contact 3 points
XM300C	**1**	**1**	**1**	**1**	**1**	**0**	**1**
XML308	**1**	**1**	**1**	**1**	**1**	**1**	**1**
XML316	**1**	**1**	**1**	**1**	**1**	**2**	**1**
XL308	**1**	**1**	**1**	**0**	**1**	**1**	**0**
XL316	**1**	**1**	**1**	**0**	**1**	**2**	**0**

install
your device

systems to be monitoring

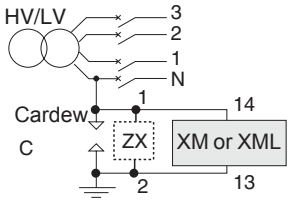
■ alternating or mixed system with ungrounded neutral or grounded by impedance of the ZX type.
phase to phase voltage:

available neutral	< 760V*~
unavailable neutral	< 440V*~
frequency	45 - 1000 Hz

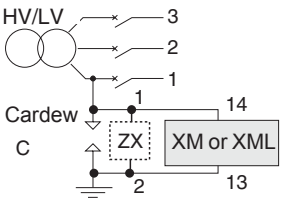
■ ungrounded DC or rectified system.
phase to phase voltage < 500V ⎓

* for higher voltage, use an additionnal plate PHT 1000 (consult our catalogue).

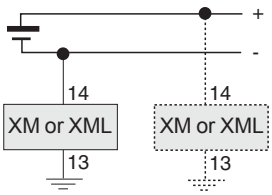
U < 760V ~

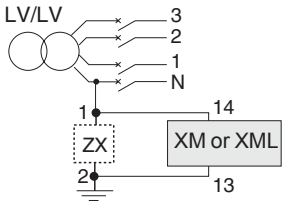


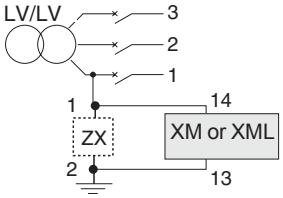
U < 440V ~



U < 500V ⎓







Interfaces to use

		type of system to be monitored (device number)		
		1 XL or 1 XM	XM or XML ⩽ 4 and XL ⩽ 8	
			with coupling	without coupling
communication function	link to printer	**XLI300 + supervisor**	**XLI300 + supervisor**	**XTU300 + supervisor**
	JBUS link	**XLI300**	**XLI300** 1	**XTU300** 2
		nothing	**XAS** 3	**XTU300**

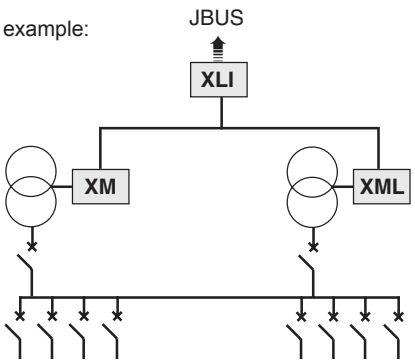
■ **XPI300:** printer interface
■ **XLI300:** supervisor interface.
■ **XTU300:** supervisor interface (busbar coupling).
■ **XAS:** Bus supply box (if no XLI 300, XPI 300, XTU 300).

interface references

aux. supply	ref. XPI 300	ref. XLI 300	ref. XTU 300	ref. XAS
115-127 V	**50525**	**50515**	**50545**	**50520**
220-240 V	**50526**	**50516**	**50546**	**50521**
380-415 V	**50527**	**50517**	**50547**	**50522**
500-525 V	**50528**	**50518**	**50548**	**50523**

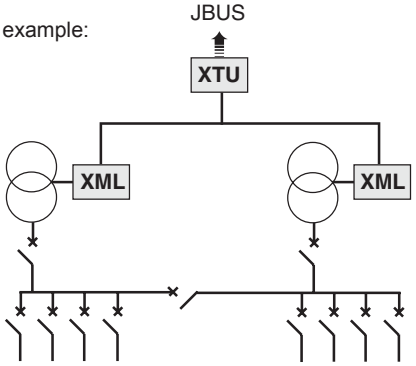
1 without coupling

example:



2 with coupling

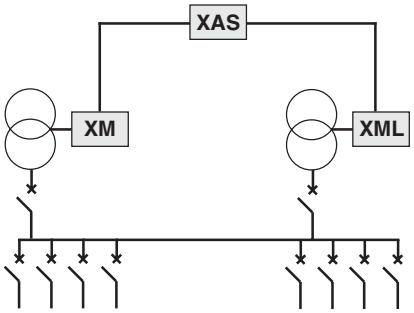
example:



3 without coupling

■ no communication with outside without interface

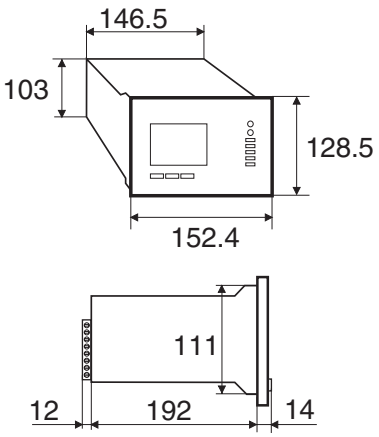
example:

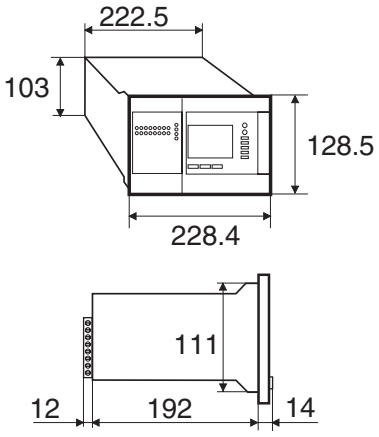


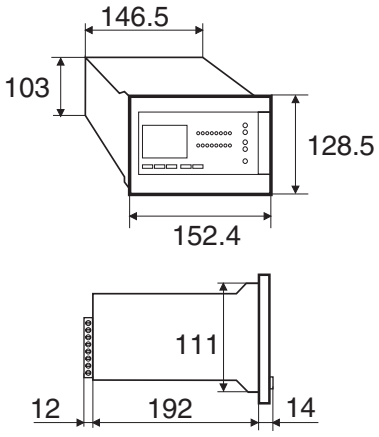
install
your device

XM 300C	XML 308 / 316	XL 308 / 316

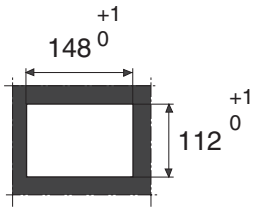
dimensions

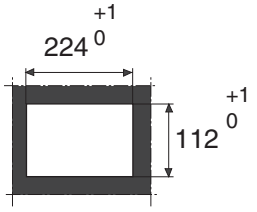


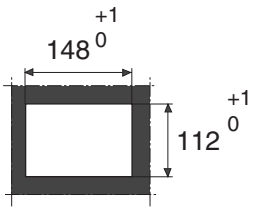




cutouts





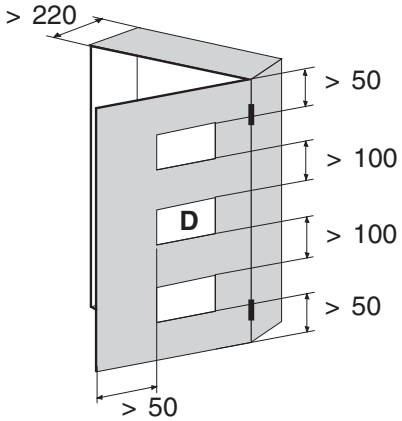


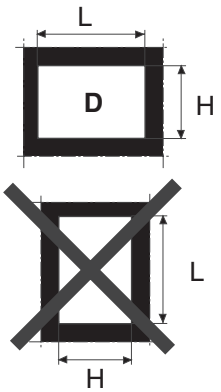
precautions

■ **respect**
the distances between devices

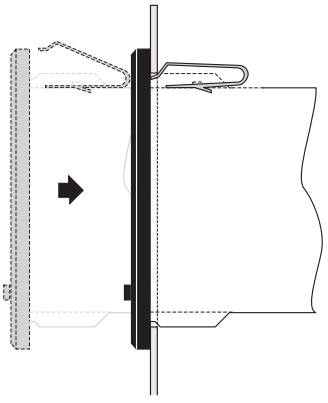
■ **mount**
the devices horizontally

note: to ensure a good legitibility of display, it is best to place the device at least 1 m 70 from the ground.

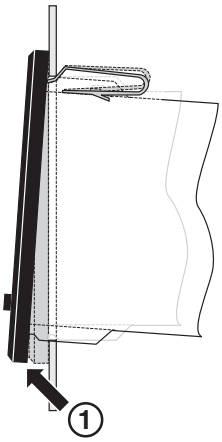


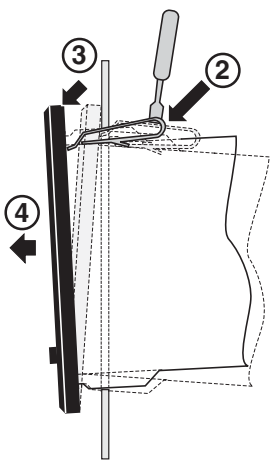


securing



dismantling





use the specific accessories for mounting in Prisma P cabinet

XM 300C

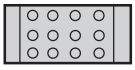
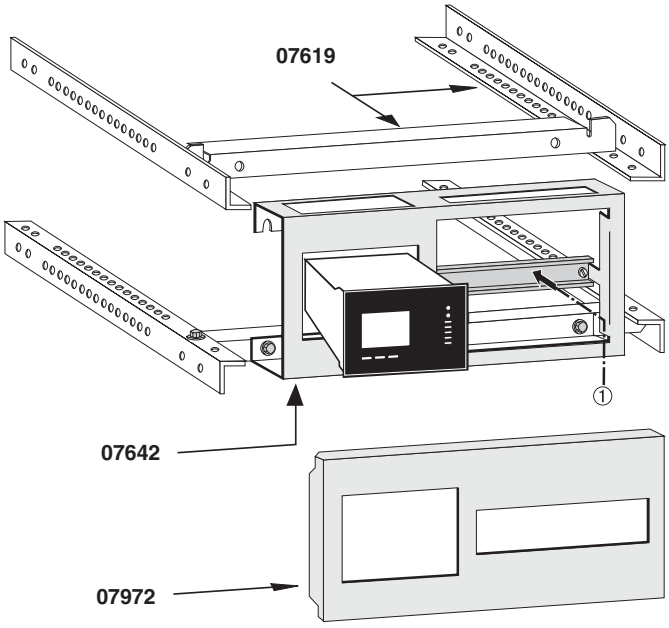


plate
reference:
07642

front cover
reference:
07972

securing accessories: 2 supports + 4 crosspieces
reference: **07619**

■ for further information, consult the Prisma P design block catalogue.
ref: **01302**



① - DIN rail for mounting Multi 9 type box.

■ **front cover configuration:**

1 XM300C + 3 XD301 or
1 XM300C + 2 XD312 or
1 XM300C + 1 XD301 and 1 XD312

XML 308 / 316 - XL 308 / 316

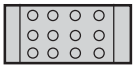
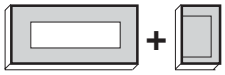


plate
reference:
07643

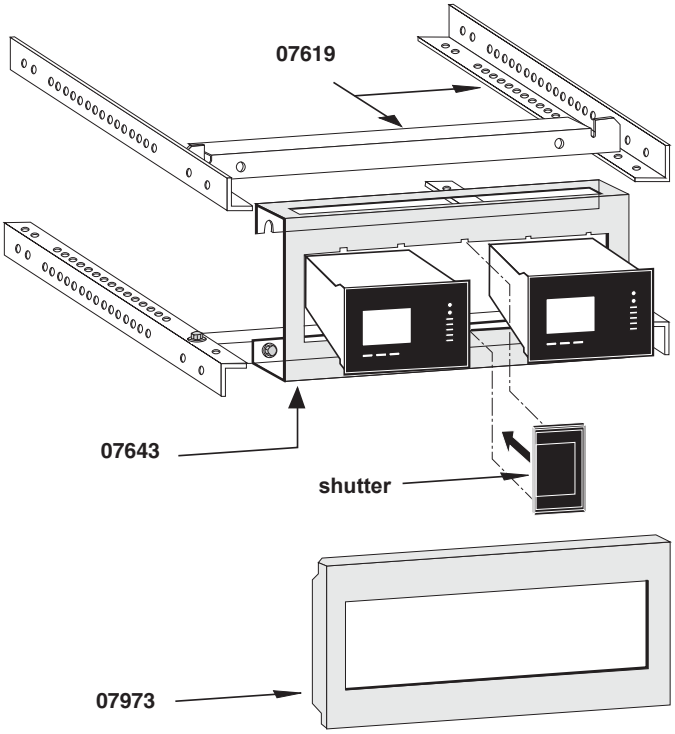


front cover
reference:
07973

shutter

securing accessories: 2 supports + 4 crosspieces
reference: **07619**

■ for further information, consult the Prisma P design block catalogue.
ref: **01302**



■ **front cover configuration:**

- 1 XML 308 /116 or XM300C + 2 interfaces
(XTU300, XLI300, XPI300, XAS type)

- 1 XML 308 /316 or XM300C + 1 XL308 or XL316

install
your device

connect your XM300C

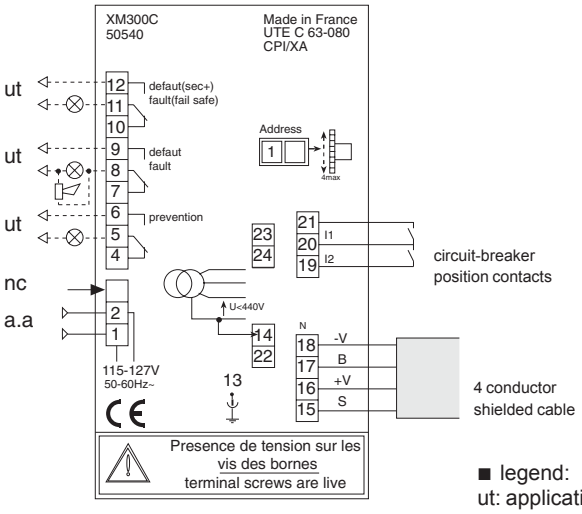


diagram 1

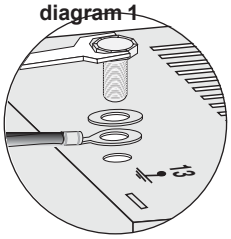


diagram 1

■ legend:
ut: application
nc: not connected
a.a. auxiliary supply ∼

terminal n°	function
4-5-6	prevention setting relay
7-8-9	1st fault setting relay
10-11-12	2nd failsafe fault setting relay. The relay is de-energized if a fault occurs, in the case of accidental loss of auxiliary supply voltage or should the device breakdown.
1-2	auxiliary supply
13	device frame grounded
14	system / neutral or phase
15-16-17-18	Bus communication output
19-20-21	circuit-breaker position contact inputs
	code wheel / addressing

connect your XML308 or XML316

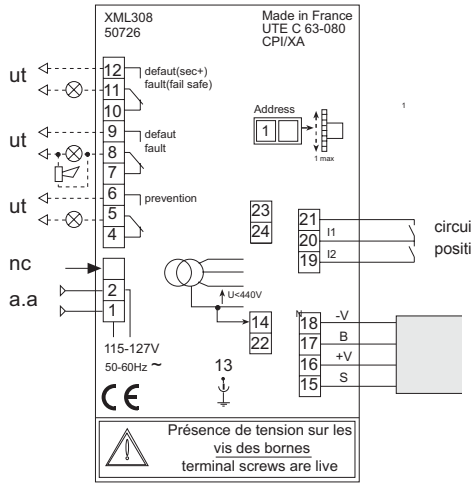
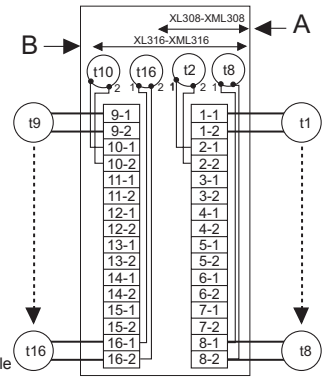


diagram 1



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1-2	auxiliary supply
13	device frame grounded
14	system / neutral or phase
15-16-17-18	Bus communication output
19-20-21	circuit-breaker position contact inputs
	code wheel / addressing

A- toroid wiring for 8 channel devices (XML308, XL308).
B- toroid wiring for 16 channel devices (XML316, XL316).

connect your XL308 or XL316

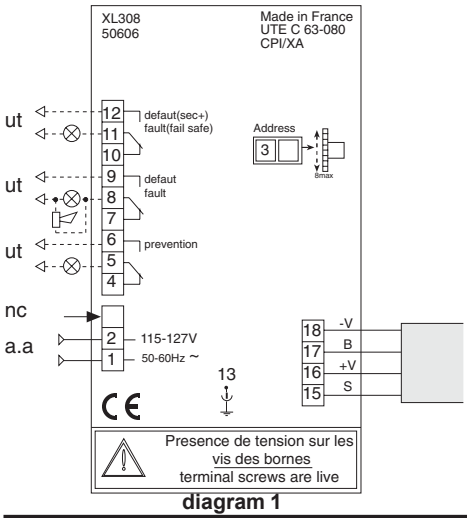
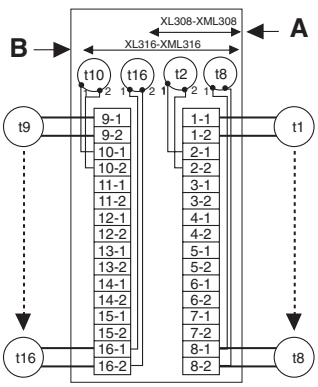


diagram 1



■ legend:
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nc: not connected
a.a. auxiliary supply ∼

terminal n°	function
7-8-9	1st fault setting relay
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1-2	auxiliary supply
13	device frame grounded
15-16-17-18	Bus communication output
	code wheel / addressing

A- toroid wiring for 8 channel devices (XML308, XL308).
B- toroid wiring for 16 channel devices (XML316, XL316).

install
your device

identify your feeders

■ A self-adhesive label, provided with your operating manual enables you to identify your feeders.

Schneider Electric
Vigilohm System

adresse / 31
address

tor 1: escalator 1	tor 9:
tor 2: electric oven 1	tor 10:
tor 3: electric oven 2	tor 11:
tor 4: electric oven 3	tor 12:
tor 5: air conditioning 1	tor 13:
tor 6: desk 1st step	tor 14:
tor 7: escalator 2	tor 15:
tor 8: escalator 3	tor 16:

wiring rules

■ communication bus: we recommend precaution you make a loop

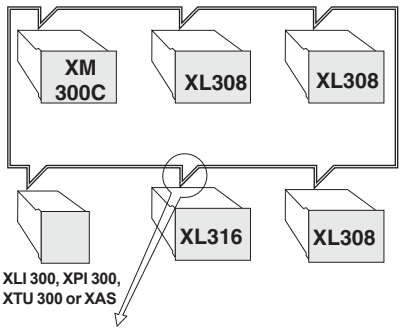
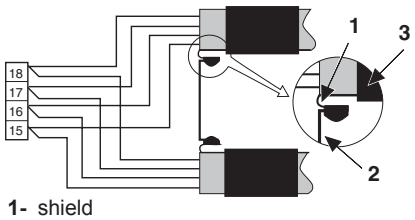


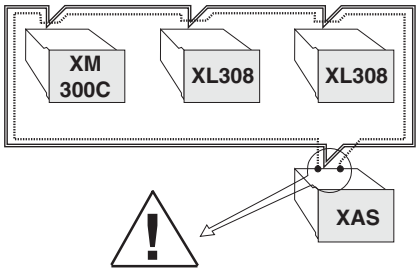
diagram 1: 4 cable wiring

connection detail

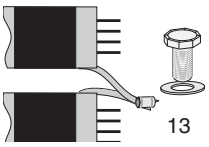


1- shield
2- 0.35 mm² wire welded at shield
3- thermoretractable sleeve

■ precaution

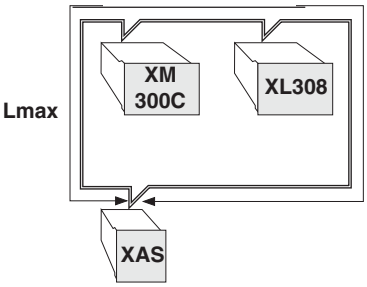


connect the shield to a device frame at one end only. (preferably with the interface, in this case **XAS**).



■ maxi. wiring lenght:

the limit lenght to be respected is the maximum lenght of the loop.



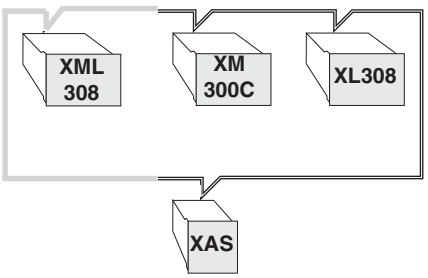
■ Capacity between ligne must be less than 100 nF.

■ Total resistor must be less than 12 Ω.

installing a new device on an operational system

■ Without XTU300, the system automatically takes into account the presence of a new device.

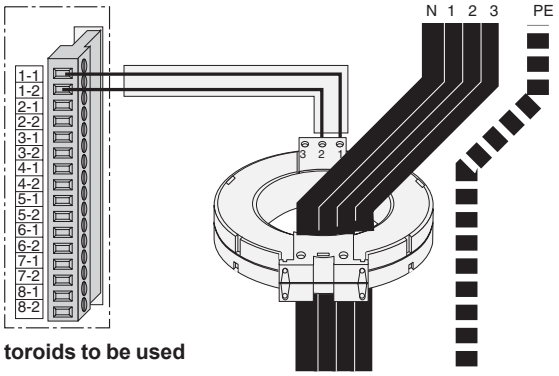
■ You can add a device in a system with XTU 300, if the device has been taken into account in XTU programming.



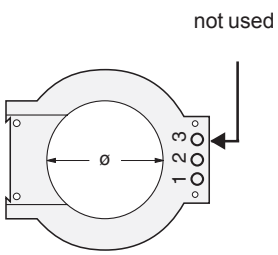
install your device

toroid transformer

XML308 / 316 - XL308 / 316



toroids to be used



compatible toroids (if you are already equipped with).

■ cable to be used
2 conductors shielded cable
L max: 100 m

L (m)	ref.
20	**50137**
100	**50136**

nota: do not use the shielding.

■ A toroids range

dia. type	mm	ref.
TA30	30	**50437**
PA50	50	**50438**
IA80	80	**50439**
MA120	120	**50440**
SA200	200	**50441**
GA300	300	**50442**

■ OA opening toroids range

dia. type	mm	ref.
POA	46	**50485**
GOA	100	**50486**

■ XS toroids range

dia. type	mm	ref.
XS30	30	**50420**
XS50	50	**50421**
XS80	80	**50422**
SX120	120	**50423**
SX200	200	**50424**

■ N toroids range

dia. type	mm	ref.
TN30	30	**50105**
PN50	50	**50106**
IN80	80	**50107**
MN120	120	**50108**
SN200	200	**50109**

circuit-breaker position contacts

XM300C - XML308 / 316

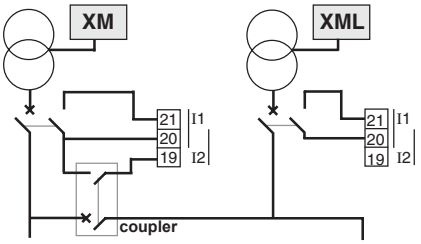
wiring

■ 1st case:
only 1 **CPI**: no position contact required
(these inputs only function when there is a XAS, XLI300, XPI300 or XTU300 interface).

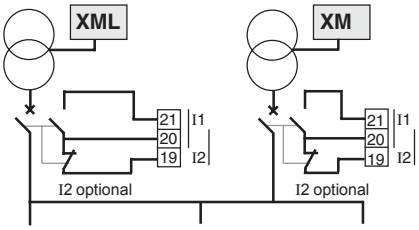
cable to use:
section: ≥ 0.75 mm² and ≤ 1.5 mm²
Lmax = 300 m
simple twisted cable

note: for operating mode by changing circuit - breaker position, see interface manual (XLI300, XTU300).

■ 2nd case:
you have 1 **XTU300** or 1 **XCU10**



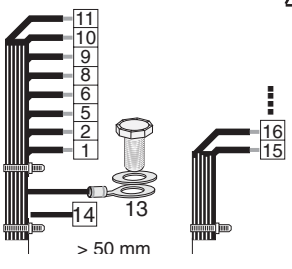
■ 3rd case:
you have 1 **XLI300** or 1 **XPI300** or 1 **XAS**



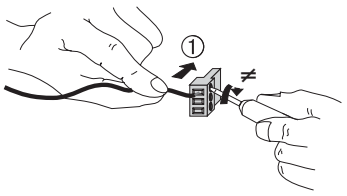
Maxi time between closing switch I1 and switch I2: 200 ms

XM300C - XML308 / 316 - XL308 / 316

wiring precautions

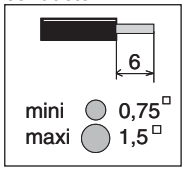


distance to respect

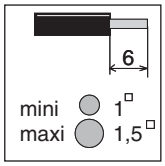


cable cross section to used

flexible conductor



rigid conductor



■ **do not secure the stands on the device.**

electrical data

breaking capacity of output contacts	
CA 380v cos. φ = 0.7	3 A
CA 220v cos. φ = 0.7	5 A
CC 220v L/R = 0	0.45 A
CC 120v L/R = 0	0.65 A
CC 48v L/R = 0	2.5 A
CC 24v L/R = 0	10 A

auxiliary supply	
auxiliary supply operating range	0.85 - 1.1 Un
frequency	45 - 65 Hz
rush current on switch-on	1.5 A
maxi. own consumption	40 VA

connection to system	
measuring voltage (2.5 Hz)	5 V Eff
measuring current	5 mA
50 Hz impedance	20 kΩ
DC resistance	20 kΩ

auxiliary contacts of circuit breaker	
contact voltage	24 V
maxi current	10 mA
maxi loop resistance	50 Ω

standards (UTE C63-080)

- protection index IP 30
- protection index front panel: IP40
- operating temp. -5 C° to +50 C°
- vibration withstand IEC 68 - 2 - 6

- amplitude: 0.075 mm or 2 g
- frequency: 10 to 65 Hz
- 5 sweepings per axis

- climatic conditions:

(tropicalization type T2)
-damp heat:
55 C°, 95 % relative humidity, 6 cycles
(according to standard IEC 68-2-30)
- salt spray:
5 % Na Cl, 48 hours, 3 months storage
(according to standard IEC 68-2-11)

auxiliaries

Cardew C

■ **principle:**

Connected to the secondary of the HV/LV transformer on an ungrounded or impedance-grounded neutral system, it protects LV installations against overvoltage hazards. It clips weak overvoltages and drains off to the ground the high energy resulting from internal breakdown of the transformer or from atmospheric phenomena. It can withstand the transformer short-circuit current.

■ **standard:**

N.F.C. 63-150
N.F. C 15-100
Compulsory in France and in certain countries.

■ **connection:**

By cable or busbar, the cross section of which is calculated according to the power P of the transformer (IEC and UTE standard).

■ **reference**

base	**50169**
cardew C 250 V	**50170**
cardew C 440 V	**50171**
cardew C 660 V	**50172**
cardew C 1000 V	**50173**

Cardew C base

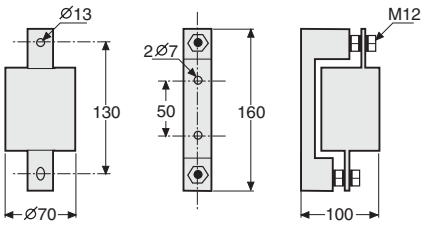


plate ZX

■ **principle:**
limitation impedance. Creates an impedance-grounded neutral.

■ impedance: 1 500 Ω to 50 Hz
100 000 Ω to 2.5 Hz

■ reference: **50159**

plate ZX
1 kg

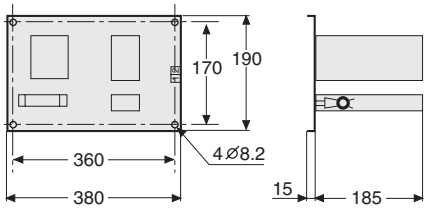


plate PHT1000

■ **principle:**
With the plate PHT 1000, you can use your CPI on networks:
- accessible neutral
760 V < U between phases < 1700 V
- unaccessible neutral
440 V < U between phases < 1000 V
- direct current network
500 V DC < U < 1200 V DC

■ reference: **50248**

■ **connection:**

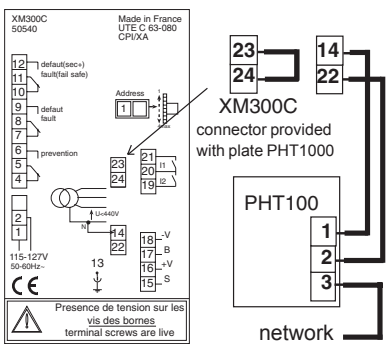
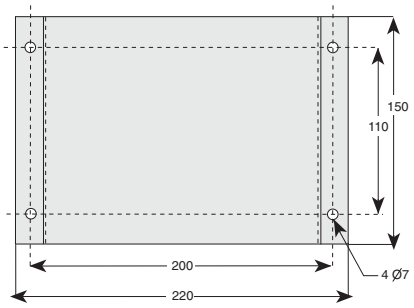


plate PHT1000



address your device

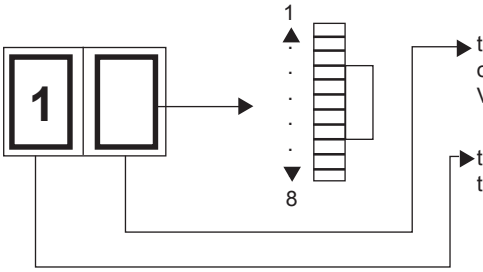
communication

Communication is ensured by means of a BUS. All exchanges transit via the BUS and enable the devices to intercommunicate.

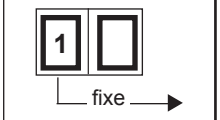
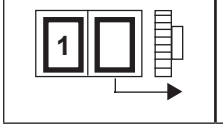
note: The device protocol is of the **"random access"** type and all the devices in the system must be addressed

addressing your device

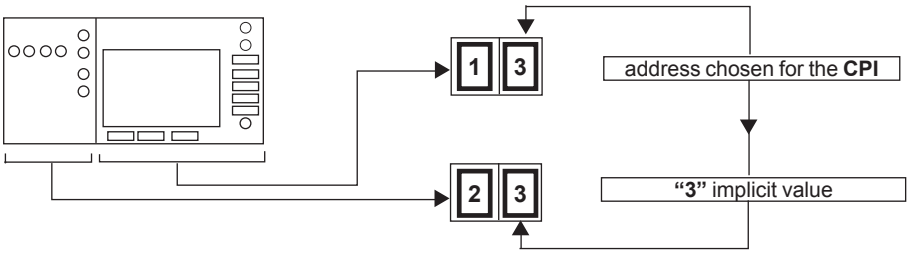
The code wheel found on the rear panel of each device is used to address the devices.



determining the address

	device addressing			
	XM300C	XML308 / 316		XM300C
		CPI	localizer	
	1	1	2	3
	1 to 4	1 to 4	**takes the value of the CPI** see example	1 to 8

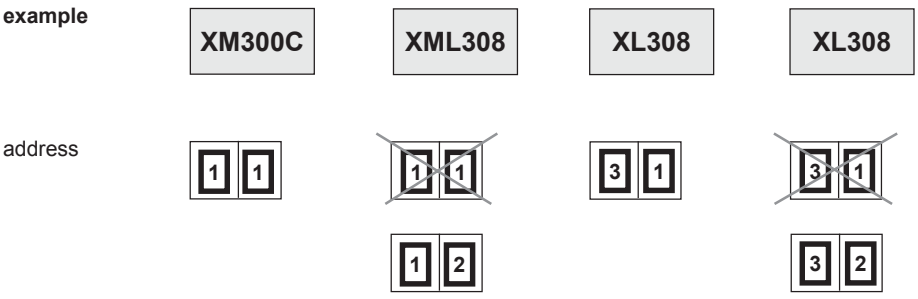
example:
The second figure in the address of the XML localizer part is implicitly fixed at the value chosen for the CPI part.



precaution

Two **CPI** (XM300C and XML) or two localizers cannot have the same address.

note: this type of anomaly is not detected and results in malfunctioning.

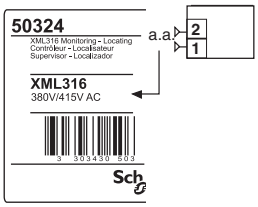


take care

XM300C - XML308 / 316	XL308 / 316
When conducting the dielectric test (of the assembly in which your device is mounted), terminals 1, 2 and 14 must absolutely be disconnected. After the dielectric test, reconnect terminals 1, 2 and 14, then switch on.	**When conducting the dielectric test (of the assembly in which your device is mounted), terminals 1 and 2 must absolutely be disconnected. After the dielectric test, reconnect terminals 1 and 2, then switch on.**

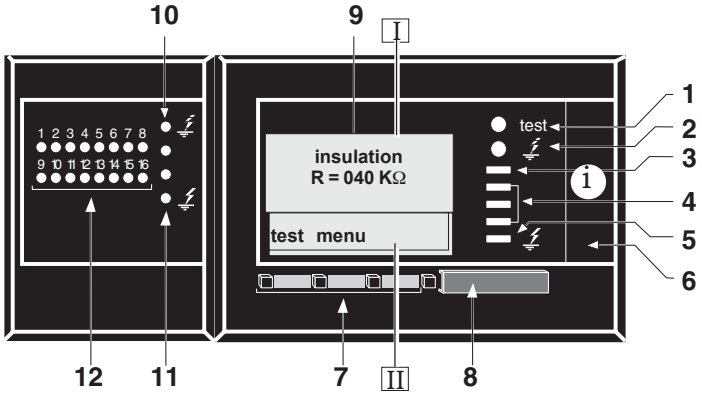
before switching on, ensure:

1 - the voltage coherence of your device.



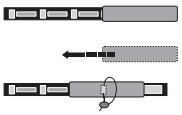
2 - that all the devices are correctly addressed.
3 - that the wiring of both the communication BUS and the toroids is correct.

presentation of the front panel



1. self-diagnostic red indicator light.
Reports CPI internal failures.
2. orange indicator light. Reports presence of intermittent faults.
3. "correct insulation" green indicator light.
4. luminous scale. Reports an insulation drop. The number of indicator lights on is proportional to the insulation drop.
5. "insulation fault" red indicator light.
6. pull-out drawer containing an operating manual.
7. interchange keys

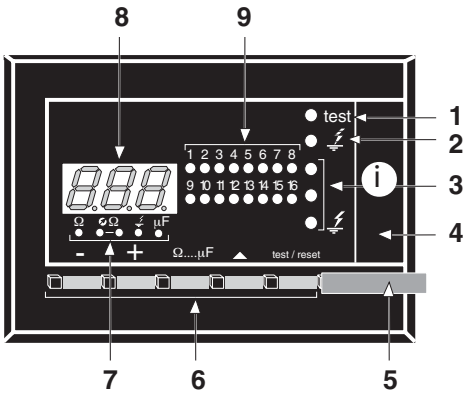
8. sealable cap
(locking of settings)



9. screen displaying operating measurements and parameters.

I: **zone displaying** the various screens to be visualized or modified.

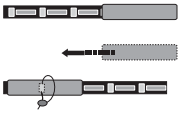
II: **interchange zone**, giving the function of each key.
10. Orange indicator light. Reports presence of intermittent faults.
11. visualization of the insulation state of each feeder:
- green light "correct insulation"
- orange light not used
- red light "insulation fault"
12. Indicator lights locating the faulty feeder.



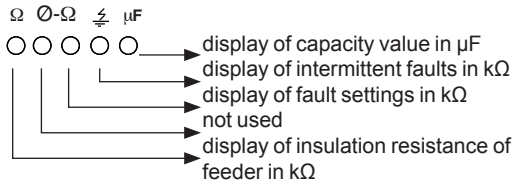
1. self-diagnostic red indicator light.
Reports XL internal failures.
2. orange indicator light. Reports presence of intermittent faults.
3. visualization of the insulation state of the feeders:
- green indicator light "correct insulation".
- orange indicator light "insulation drop".
- red indicator light "insulation fault".

4. pull-out drawer containing an operating manual.

5. sealable cap
(locking of settings)



6. interchange keys
7. lights indicating the measurements displayed:



8. Measurement display screen
9. Indicator lights locating the faulty feeder.

switching on

Whatever the order in which the devices are switched on, they all carry out their self-test and communicate with the others to inform them of their presence on the system.

System consideration time:
- switching on of all the devices at the same time: **1 mn 06 s**
- addition of a localizer to a system already switched on: **1 mn 06 s**
- addition of a toroid on a localizer:

Briefly switch off the auxiliary supply of the device in question and wait for the end of the autotest.

self-test

This self-test enables the internal electronics of your device to be tested.

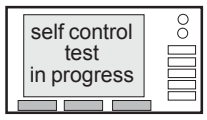
The self-test is carried out for each device:
- each time the device is switched on (without relay)
- every 6 hours (without relay)
- on the operator's request (with or without relay).

note: the values displayed on the screens shown in this manual are purely fictitious and act as a guide only.

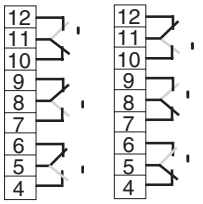
XM300C

duration: 40 seconds

1. XM electronics test

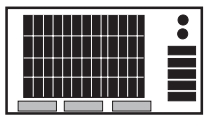


2. output relays test (if the operator requests it. See page 27).



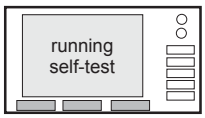
duration: 1 second

3. indicator light and screen test



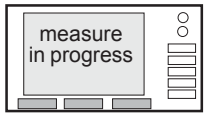
duration: 5 seconds

4. self-test correct



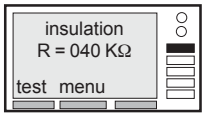
duration: 20 seconds

5. measuring the equivalent insulation resistance of the system (**Risol**).



main screen

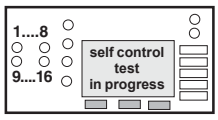
6. Risol display.



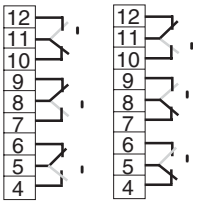
XML308 / 316

duration: 40 seconds

1. XML electronics test

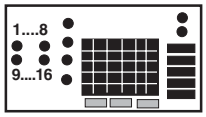


2. output relays test (if the operator requests it. See page 27).



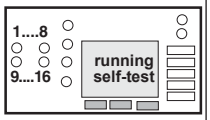
duration: 1 second

3. indicator light and screen test



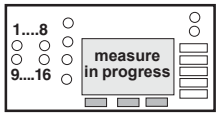
duration: 5 seconds

4. self-test correct



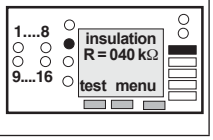
duration: 20 seconds

5. measuring the equivalent insulation resistance of the system (**Risol**).



main screen

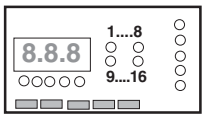
6. Risol display.



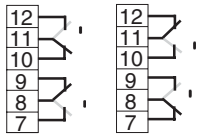
XL308 / 316

duration: 40 seconds

1. XL electronics test

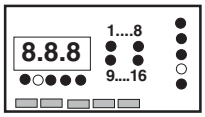


2. output relays test (if the operator requests it. See page 27).



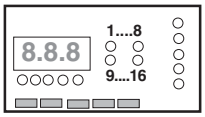
duration: 1 second

3. indicator light and screen test



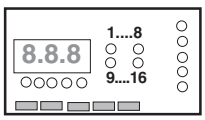
duration: 5 seconds

4. self-test correct



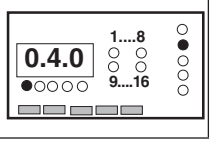
duration: 20 seconds

5. measuring the equivalent insulation resistance of the system (**Risol**).



main screen

6. Risol display.



If you have a problem during the autotest, follow the instructions on pages 52 and 53.

determine your operating thresholds

definitions

Tp: "prevention" insulation threshold beneath which an alarm is tripped to warn the maintenance department. Tp is determined according to the lowest insulation level authorized before intervention. Bear in mind that insulation reduction depends on:
■ the quality of the insulating materials and the design of the installation, switchgear and receivers.
■ the age of the network.
- the severity of the network environment (dust, humidity, overvoltage...)

Td: "fault" insulation threshold . Td is determined by the maintenance department (in agreement with the monitoring organization). When overshot, it trips a general alarm (Maintenance Department + Operator) without causing operation to shut down. The maintenance department must then take immediate action to locate and clear the fault (if a second fault were to occur between the general alarm and clearance of the first fault, the installation would be automatically switched off and the service continuity objective wouldn't be achieved).

Io max: maximum earth leakage current tolerable in the installation (resistive current + capacitive current).
Risol: insulation resistance measured by the CPI.

Intermittent fault: faults disappearing before clearing (by "reset" button) are known as intermittent faults. Intermittent faults are stored and can be consulted. An orange indicator light on the front face indicates that a intermittent fault is stored.

pilot CPI: the CPI pilots localizers when it injects on the installation part where they are located (XL).

threshold settings

Each CPI has a fault threshold and a prevention threshold.
All the localizer feeders (XL or XML) only have a fault Threshold .

■ presetting **Tp** in the plant

Td = 30 kΩ

Tp setting tip

Tp = 0.8 x Risol
Tp > 1.1 Sd

■ presetting **Td** in the plant

Td = 02 kΩ

Td setting tip

The optimal setting value is 1 kΩ because this value is compatible with the XD detection function.

■ read range for the insulation resistance measured by the device:

CPI (XM XML):	from 0.1 kΩ to 999 kΩ
XL:	from 0.1 kΩ to 300 kΩ

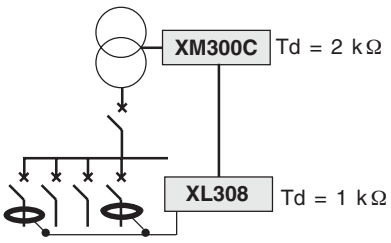
■ CPI threshold setting range (XM and XML)	**Td:**	from 0.2 kΩ to 99.9 kΩ
	Tp:	from 1 kΩ to 300 kΩ
■ Td setting range for XL	**Td:**	from 0.2 kΩ to 99.9 kΩ

setting coherence

■ We recommend you set all the fault thresholds to the same value, exept if there are other specifications.

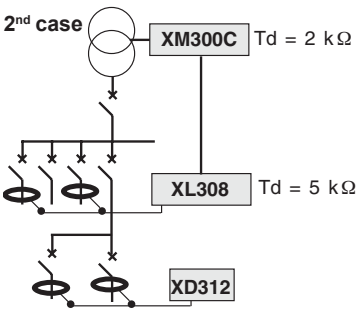
■ Use the self-setting function to set at the same time all the fault and prevention thresholds to the same value (see page 41).

special cases
1st case



The fault threshold on a XL feeder is lower than the fault Threshold of the continuous insulation monitor:
■ **consequence:**
If the fault lies between the two fault thresholds, only the CPI reports the fault.

2nd case



The fault threshold on a XL feeder is greater than the fault threshold of the continuous insulation monitor.
■ **consequence:**
If the fault lies between the two fault thresholds, the CPI does not report the fault.

introduction

The Vigilohm System devices (XM300C - XML 308/316 - XL308/316) enable you to measure permanently the insulation resistance and the earth coupling capacitance of your network.

Why measuring the resistance between your network and earth?

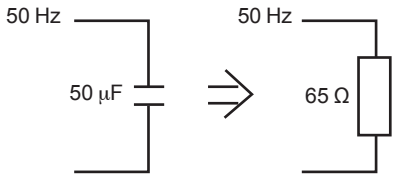
When your network insulation is degrading, it is your network insulation resistance which is growing down, that's why it important to measure it permanently.

Why measuring the earth coupling capacitance?

If your network earth coupling capacitance is too high, it could be an important risk factor for your network.

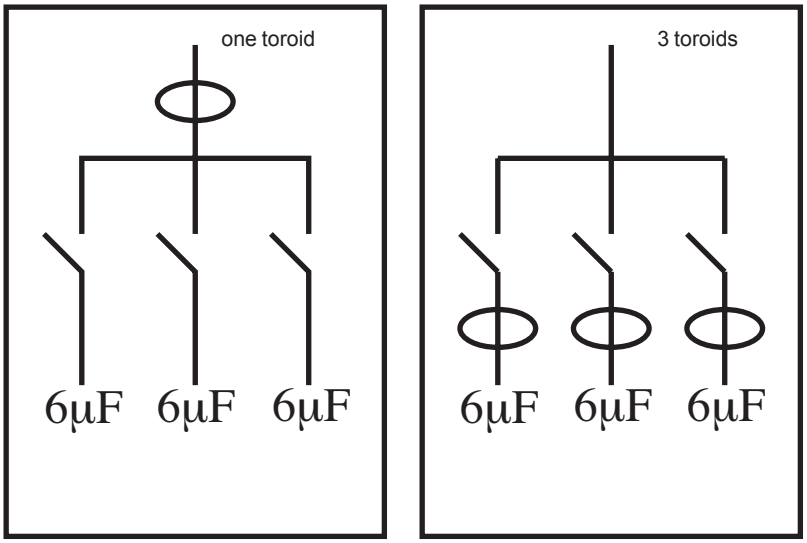
Example:

A total capacitance of 50 µF equals to a capacitive impedance of 65 Ω (at 50 Hz). In case of insulation fault, this capacitance enables differential current circulation which can damage your network.



Limit your network capacitance impedance

On high capacitive feeder, segment your fault search.



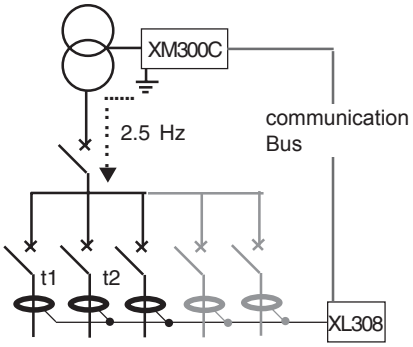
configuration 1 configuration 2

If your total capacitance is higher tant 15 µf, use the 2nd configuration.

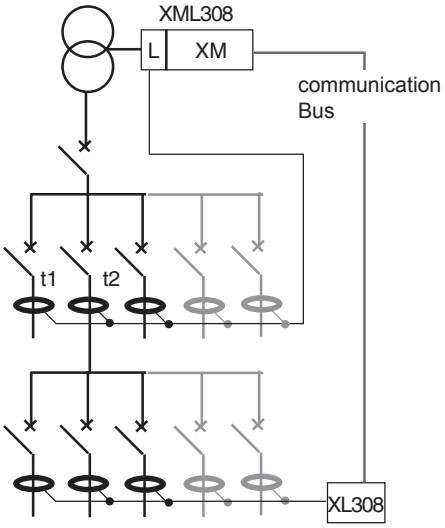
(A too important differential current (> 3 A) may degrade localizer performances).

operation

■ The CPI injects permanently a 2.5 Hz voltage and measures the insulation resistance of the network.
The localizer (XL part of XML or XL) is in continuous communication with the CPI and measures the insulation resistance of each feeder.



■ When the communication BUS connection is cut or when the CPI is faulty and thus stops communicating with the localizer (XL part of XML or XL), the latter changes over to **safety operation.**
So as to avoid breakdown risks, we recommend you use loop wiring.



response time: time required between two measurements:
■ CPI
XM300C: 10 seconds
XML: 15 seconds

■ XL localizer:

TR = (10 sec.) x N*

so the maximum time is:
XL308: 10 sec. x 8 = 1 mn. 20 sec.
XL316: 10 sec. x 16 = 3 mn. 7 sec.

* N is the number of toroid connected

■ XML localizer:

TR = (15 sec.) x N*

so the maximum time is:
XML308: 15 sec. x 8 = 2 mn.
XML316: 15 sec. x 16 = 4 mn.

* n is the number of toroid connected

safety operation

The localizer is in this status for 2 raisons:

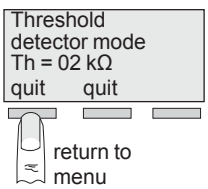
■ the CPI is faulty: in this case, the CPI has to be repaired
■ the communication bus is cut: check out the wiring

XM300C - XML308 / 316

consequence on the display

■ visualization of localizer fault setting of your XML.

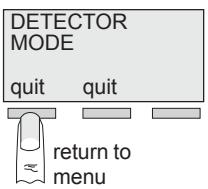
the final screen becomes:



The value of **Td** is automatically set at 2 kΩ.

return to menu

■ visualization of R and C and modification of the fault setting of your internal localizer are not possible. The localizer part of your XML operates like a XD301 or XD312. It detects the current injected by the CPI and signals if the feeder is on fault. The final screen becomes:

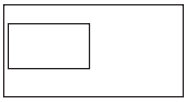


return to menu

XL308 / 316

consequence on the display

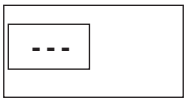
■ when a localizer is in the detector mode all the fault settings are set to 2 kΩ, the screen becomes:



• ←test LED lit up

In this case, the localizer operates like a XD301/XD312 and compares the value of the current with a given setting (2 kΩ).

■ in the insulation visualization mode, the screen becomes:



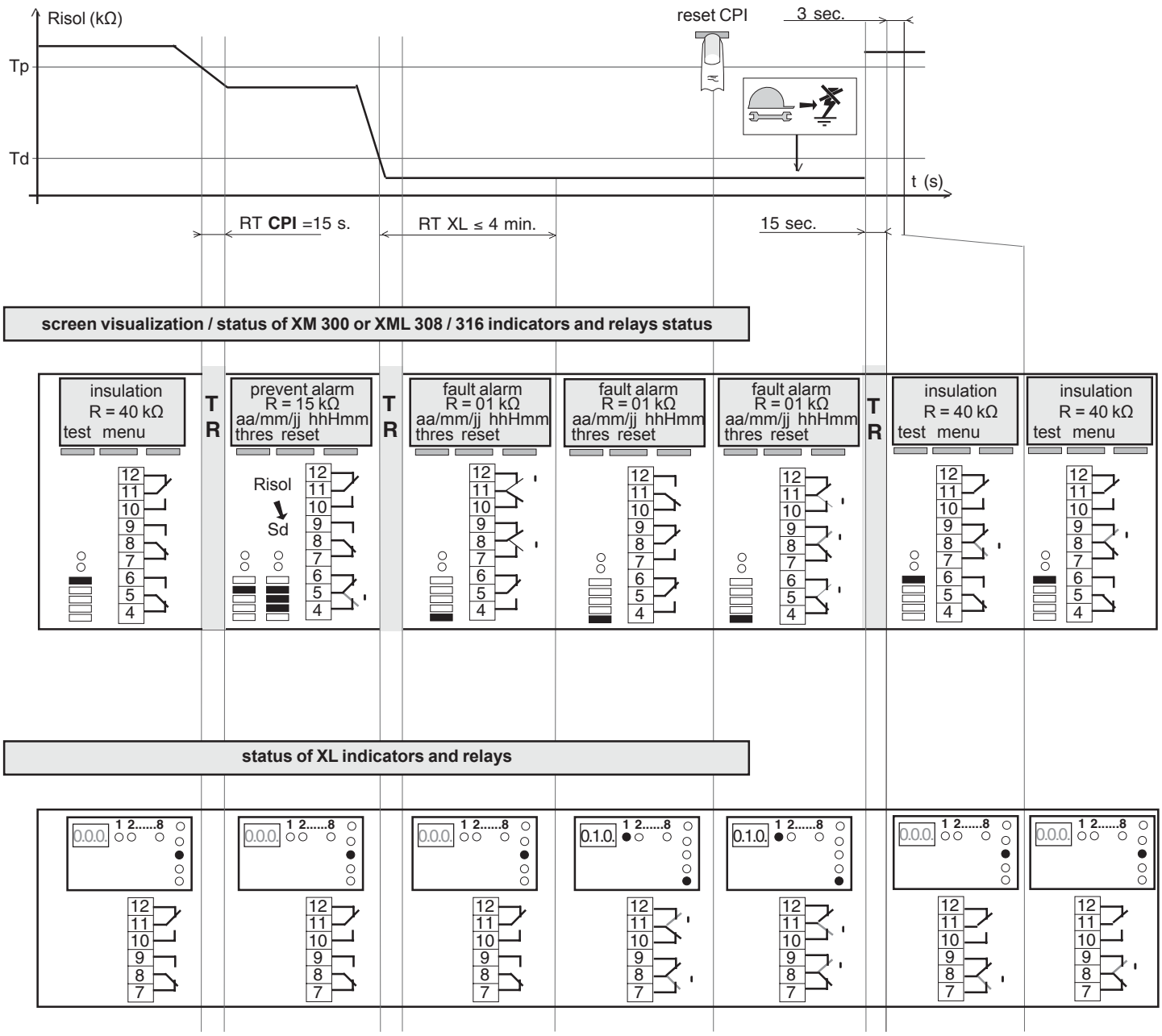
• ←test LED lit up

Note: this operation mode is not the normal one and needs a checking lof the system (see page 52).

operating examples

example 1: prevention threshold overshooting followed by alarm threshold overshooting

legend: led lit up

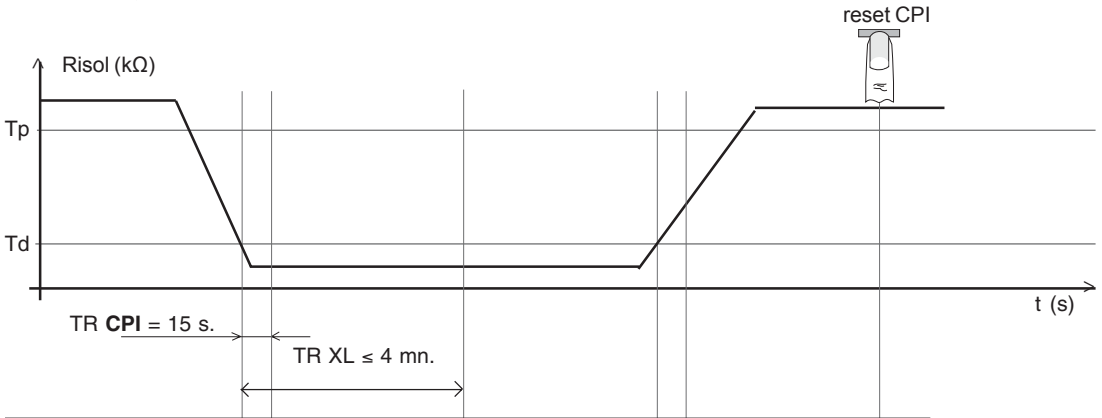


operating examples

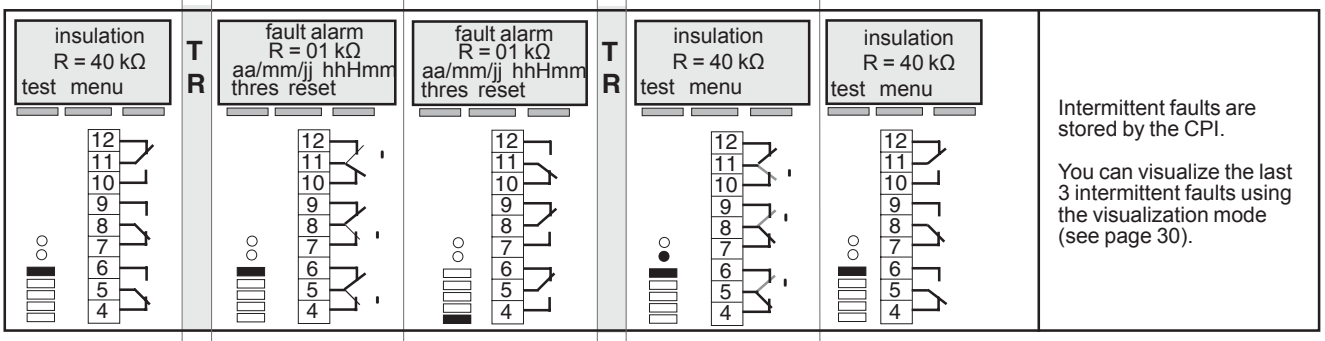
example 2: intermittent fault appearance an disappearing

legend: led lit up

led flashing



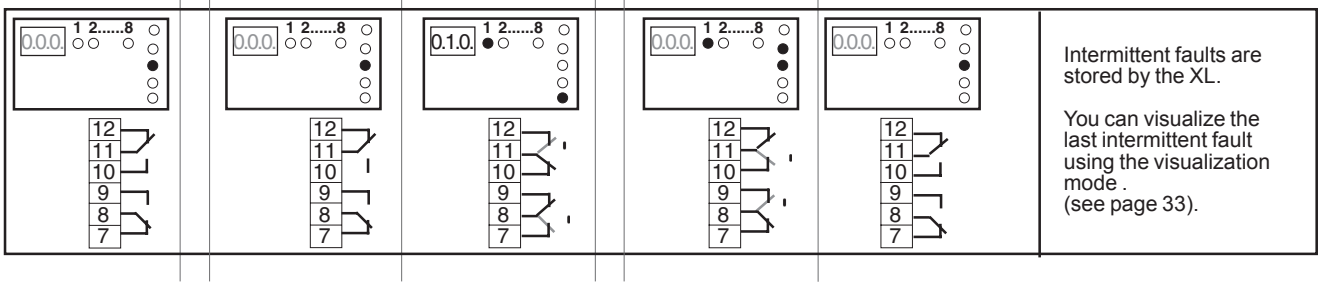
screen visualization / XM 300 or XML 308 / 316 indicators and relays status



Intermittent faults are stored by the CPI.

You can visualize the last 3 intermittent faults using the visualization mode (see page 30).

XL indicators and relays status

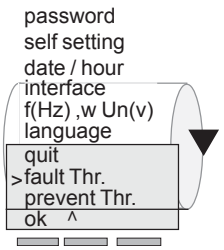


Intermittent faults are stored by the XL.

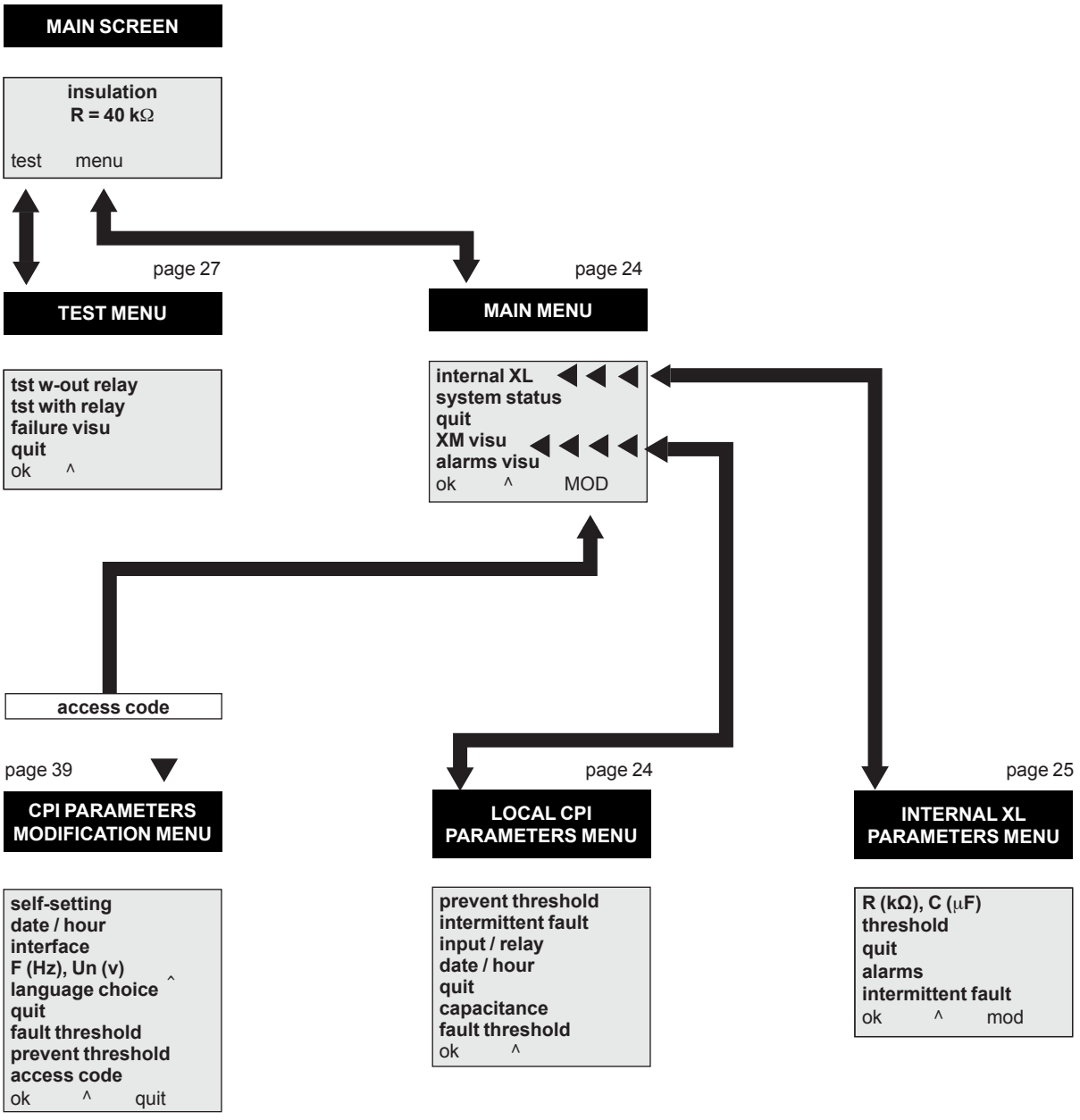
You can visualize the last intermittent fault using the visualization mode .
(see page 33).

operating

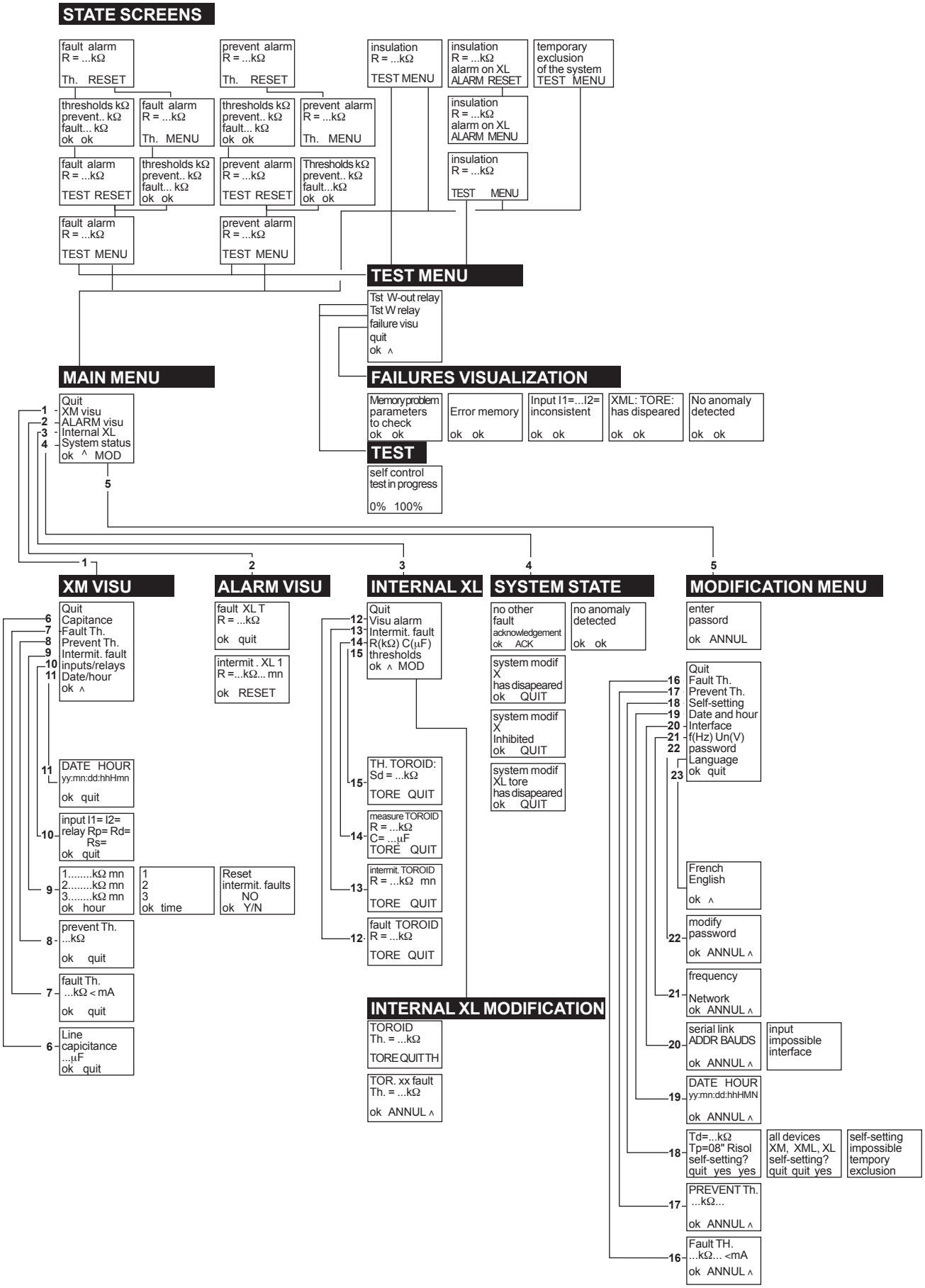
The communication with your device is executed with unidirectional scroll menus. The key ^ enables you to obtain the different possible options. The key ok enables you to valid your move in the menu block diagram. When no key is pressed, your device present you an initial status screen (see description page 22).



menu block diagram



screen block diagram



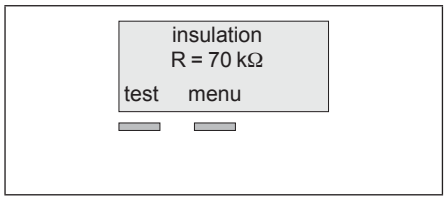
initial status screen

Without using keyboard, the device informs you of its status. The next screens are possible:

- display of the system insulation resistance value
- display of fault presence on the system
- display of prevent alarm on the system
- display of fault presence on the system without CPI detection
- display of temporary exclusion of the system.

display of the system insulation resistance value

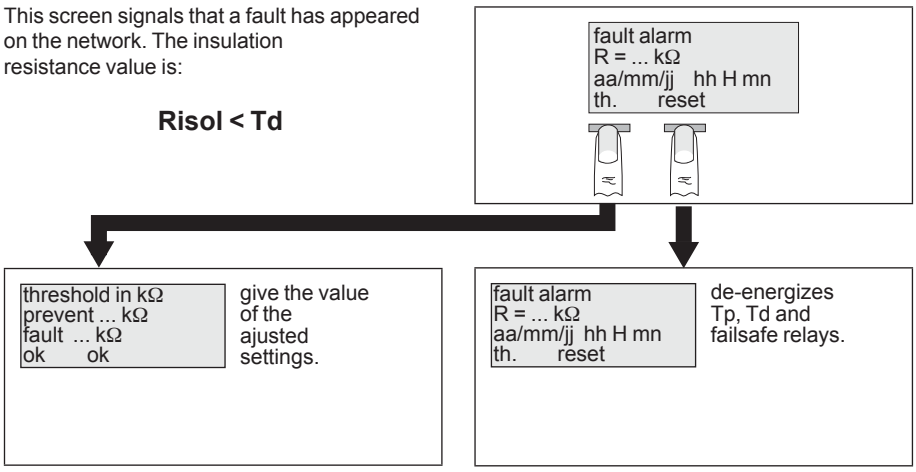
This configuration is normal there is no insulation fault on the network.



display of insulation fault on the network

This screen signals that a fault has appeared on the network. The insulation resistance value is:

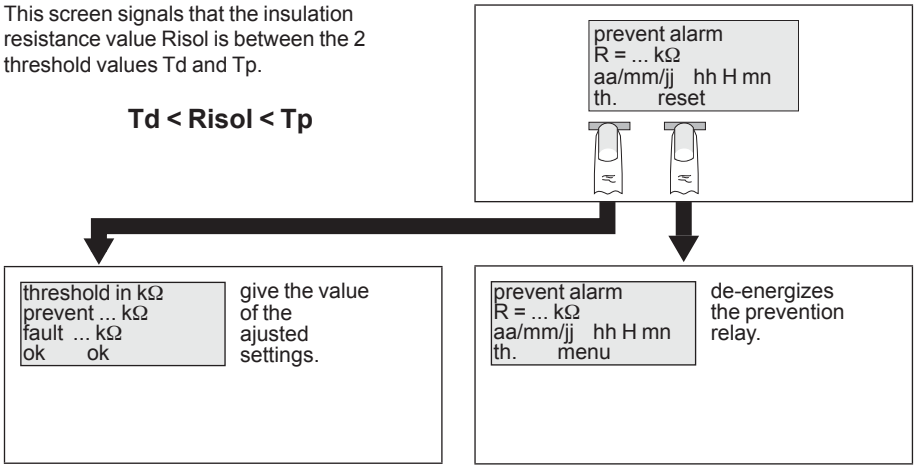
Risol < Td



display of prevent threshold overshooting

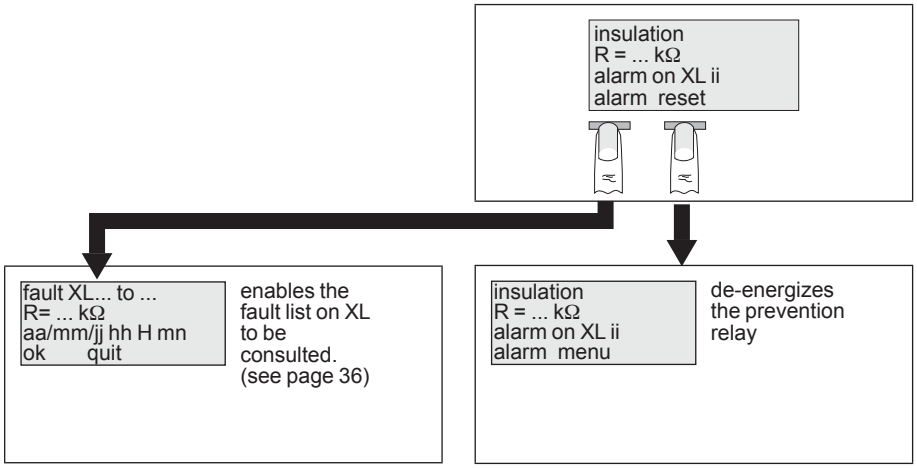
This screen signals that the insulation resistance value Risol is between the 2 threshold values Td and Tp.

Td < Risol < Tp



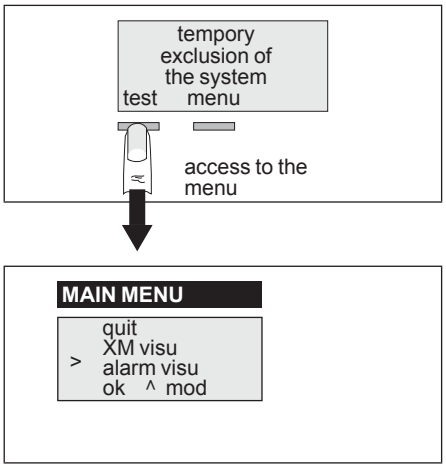
initial status screen

fault reported on a feeder although the CPI does not detect any fault



display of tempory exclusion

This screen signales that your device is excluded. Another CPI injects on the network. You can have access to the menu.



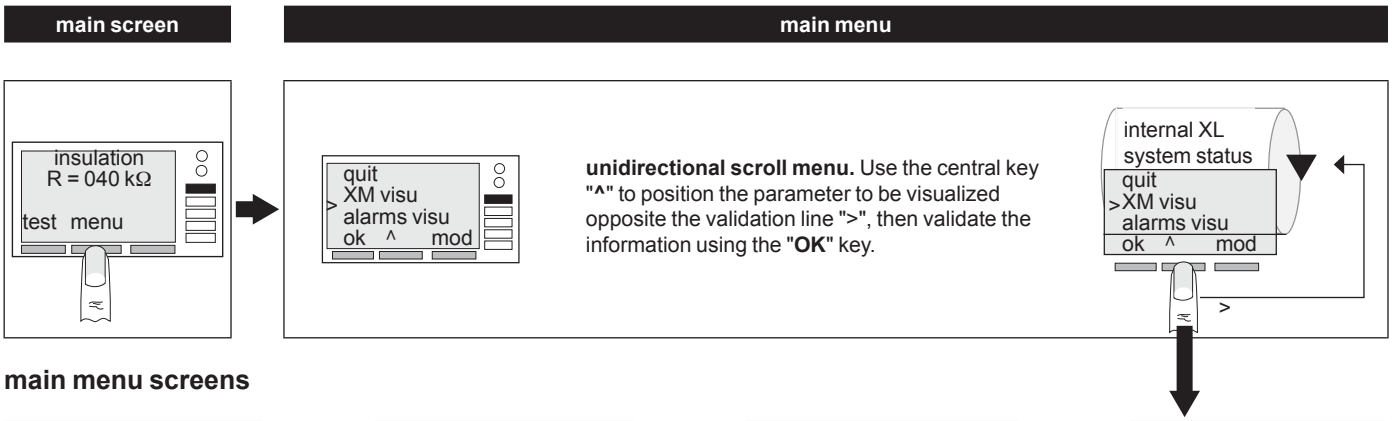
operate your XM or XML

To improve understanding of the operation of your device, do not forget to refer to the menu block diagram on page 20, when faced with **writing on black background**.

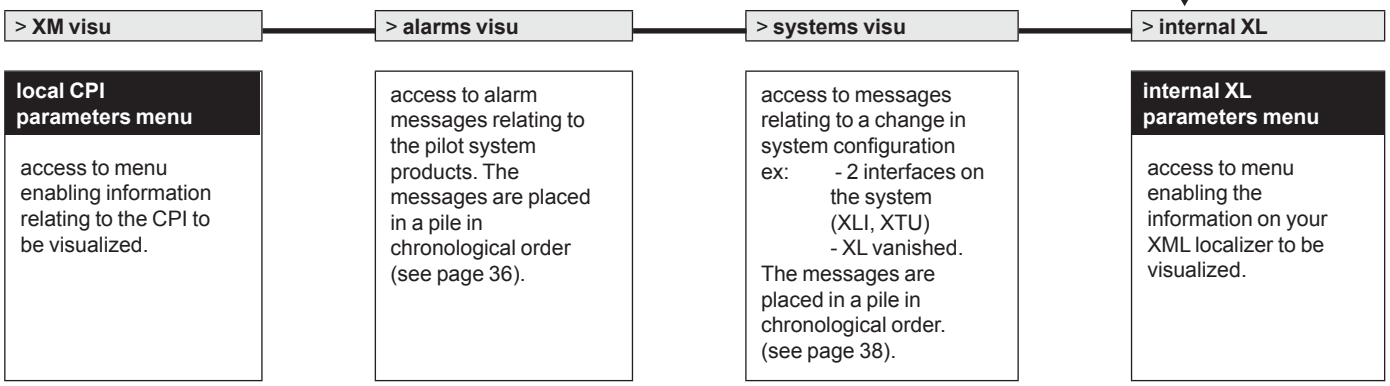
description

main menu description

Using the main menu you can visualize the information relating to the CPI and the other system products (XL, XML).



main menu screens



description of local CPI parameters menu screens

parameter to be validated	screen visualized	comments
local CPI parameters menu		
> fault threshold	fault th. ..... kΩ aa/mm/jj hh H mn ok quit	display of fault setting value (see p 28).
> prevent threshold	prevention th. ..... kΩ aa/mm/jj hh H mn ok quit	display of the prevention threshold value (see p 29).
> capacitance	line capacitance in µF ok quit	display of the network capacitance (see p 31).
> intermit. fault	1 .... kΩ : .... mn 2 .... kΩ : .... mn 3 .... kΩ : .... mn ok hour	display of the last three intermittent faults. If XTU 300, XLI 300 or XPI 300 exists, the date and hour of faults are displayed (see p 30).
> date / hour	date hour aa/mm/jj hh H mn aa/mm/jj hh H mn ok quit	display of date and hour. See page 42 to enter date and hour.
> input / relay	input I1=01 I2=0/1 relay RP=0/1 RD=0/1 RS=0/1 ok quit	display of relay position and circuit-breaker position output status (prevention, fault, failsafe).

description of internal XL screens

parameter to be validated	screen visualized	comments
XL internal parameters menu		
> R (kΩ) , C (μF)	measures toroid: ... R = ... kΩ C = ... μF tor. quit	visualization of resistance and capacitance of each feeder. See page 35
> threshold	threshold toroid: ... Td = ... kΩ tor. quit	Visualization of fault threshold for each feeder (see page 34).
> alarms	fault toroid: ... R = ... kΩ aa/mm/jj hh H mn tor. quit	Visualization of fault resistance for each feeder (see page 32).
> intermit. fault	intermit. toroid: ... R = ... kΩ aa/mm/jj hh H mn tor. reset	Visualization of intermittent faults on all feeders (see page 33).

description of alarm visu screens

parameter to be validated	screen visualized	comments
main menu		
> alarms visu	alarm XL ... T ... R = ... kΩ aa/mm/jj hh H mn ok quit	visualization of fault resistance (fault / device and toroid), see page 36 ex: XL31 TO1.If XTU 300, XLI 300 or XPI 300 exist, the date and hour are displayed.
	intermittent XL ... T ... R = ... kΩ aa/mm/jj hh H mn ok reset	visualization of intermittent faults (fault / device and toroid). If XTU 300, XLI 300 or XPI 300 exists, date and hour of occurrence of the intermittent faults are displayed.

description of the system state screens

parameter to be validated	screen visualized	comments
main menu		
> system status	system modif X... (PI - LI - TU) inhibited ok quit	visualization of the inhibited interface (see page 38). ex: if there are 2 interfaces on the same system, the system automatically inhibits one interface (order of priority: XTU 300, XLI 300).
	system modif X... (**M-ML-L-PI-LI-TU-XCU10**) has disappeared ok quit	visualization of the products which, during operation, no longer reply. ex.: supply loss, Bus cut off, device failure.
	system modif XL... TOROID has disappeared ok quit	visualization of the toroids which no longer reply, plus the device on which it occured ex: XL32 TOROID 02.

COMMUNICATION

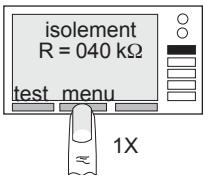
communicate in English with your XM300C ou XML308/316

The device you have just installed is programmed in French. You can easily program it in English using the modification screen.

COMMUNICATE IN ENGLISH WITH YOUR XM300C OR XML308/316

1

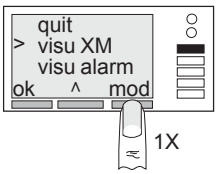
MAIN SCREEN



HAVE ACCESS TO THE MAIN MENU

2

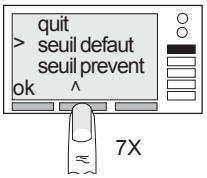
MAIN MENU



HAVE ACCESS TO THE MODIFICATION MENU

3

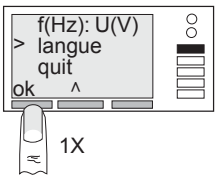
CPI PARAMETERS MODIFICATION MENU



SELECT "langue"

4

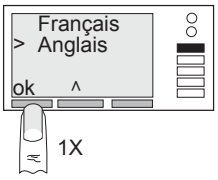
CPI PARAMETERS MODIFICATION MENU



VALIDATE YOUR CHOICE

5

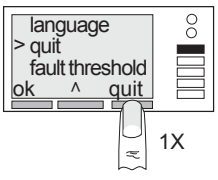
LANGUAGE MENU



SELECT "Anglais"
AND VALIDATE

6

CPI PARAMETERS MODIFICATION MENU



QUIT

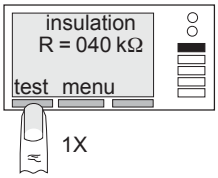
COMMUNICATION

test the state of order of your device

TEST THE STATE OF ORDER OF YOUR DEVICE

1

MAIN SCREEN

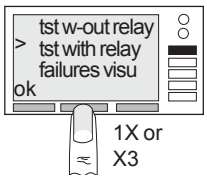


1X

HAVE ACCESS TO TEST MENU

2

TEST MENU

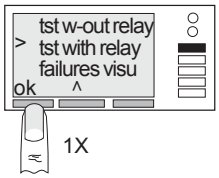


1X or
X3

SELECT YOUR TEST

3

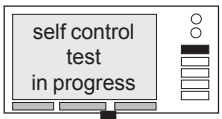
TEST MENU



1X

VALIDATE YOUR CHOICE

4



IN FUNCTION OF YOUR CHOICE

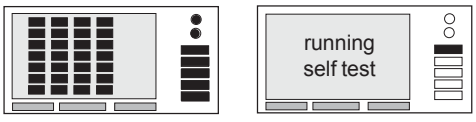
> tst with relay

If you have a password it must be entered for autotest with relay.
Self-test identical to the operation of the switching on autotest.
(idem page 14).

> tst w-out relay

Self-test identical to the operation of the switching on self-test without relay activation
(idem page 14).

5



END OF TEST.

VISUALIZATION

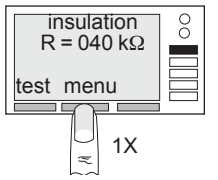
local CPI visualization

local CPI fault threshold visualization Td

LOCAL CPI FAULT THRESHOLD VISUALIZATION Td

1

MAIN SCREEN

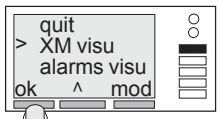


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

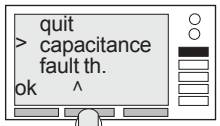


1X

VALIDATE "XM visu" AND
VALIDATE YOUR CHOICE

3

LOCAL CPI PARAMETERS MENU

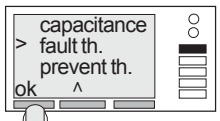


1X

SELECT "fault th."

4

LOCAL CPI PARAMETERS MENU

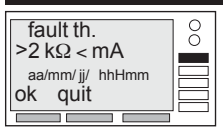


1X

VALIDATE YOUR CHOICE

5

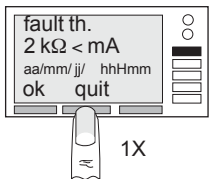
VISUALIZATION OF THE FAULT THRESHOLD



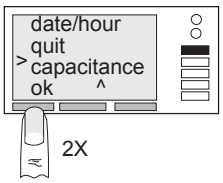
VISUALISE
If U and F have been entered, the value of the maxi leakage current flowing in the fault in absence of unbalanced capacity, is displayed.If XTU 300, XPI 300 or XLI 300 exists, date and hour of threshold modification are displayed.

6

VISUALIZATION OF THE FAULT THRESHOLD



1X



2X

QUIT

VISUALIZATION

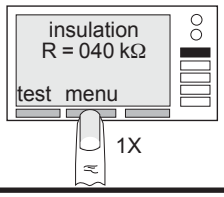
local CPI visualization

local CPI prevention threshold visualization

LOCAL CPI PREVENT THRESHOLD VISUALIZATION Tp

1

MAIN SCREEN

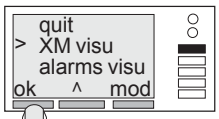


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

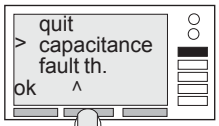


1X

SELECT "XM visu" AND VALIDATE

3

LOCAL CPI PARAMETERS MENU

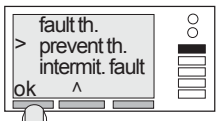


2X

SELECT "prevent th."

4

LOCAL CPI PARAMETERS MENU

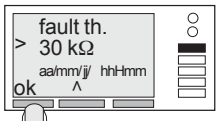


1X

VALIDATE YOUR CHOICE

5

PREVENT THRESHOLD MENU



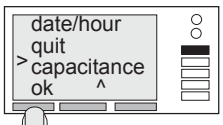
1X

VISUALISE
If XTU300, XPI300 or XLI300 exists, date and hour of threshold modification are displayed.

6

PREVENT THRESHOLD MENU

1X



2X

QUIT

VISUALIZATION

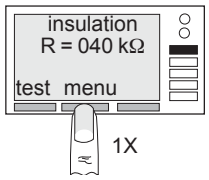
local CPI visualization

local CPI intermittent faults visualization and reset

LOCAL CPI INTERMITTENT FAULTS VISUALIZATION AND RESET

1

MAIN SCREEN

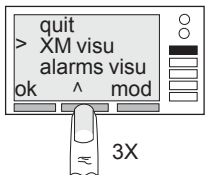


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

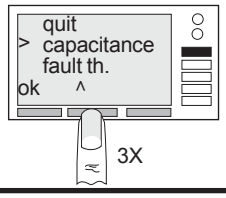


3X

SELECT "XM visu" AND VALIDATE

3

LOCAL CPI PARAMETERS MENU

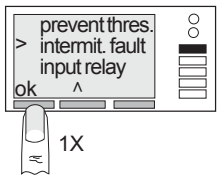


3X

SELECT "intermit. fault"

4

LOCAL CPI PARAMETERS MENU

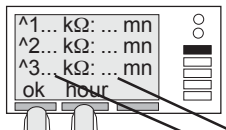


1X

VALIDATE YOUR CHOICE

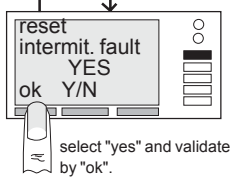
5

INTERMITTENT FAULTS VISUALIZATION

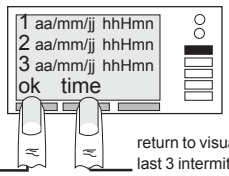


VISUALISE the last 3 intermittent faults

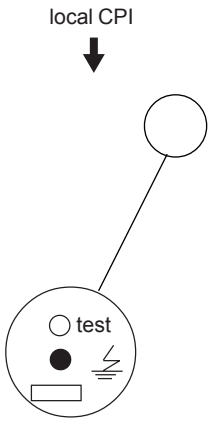
intermittent fault duration
intermittent fault value



select "yes" and validate by "ok".



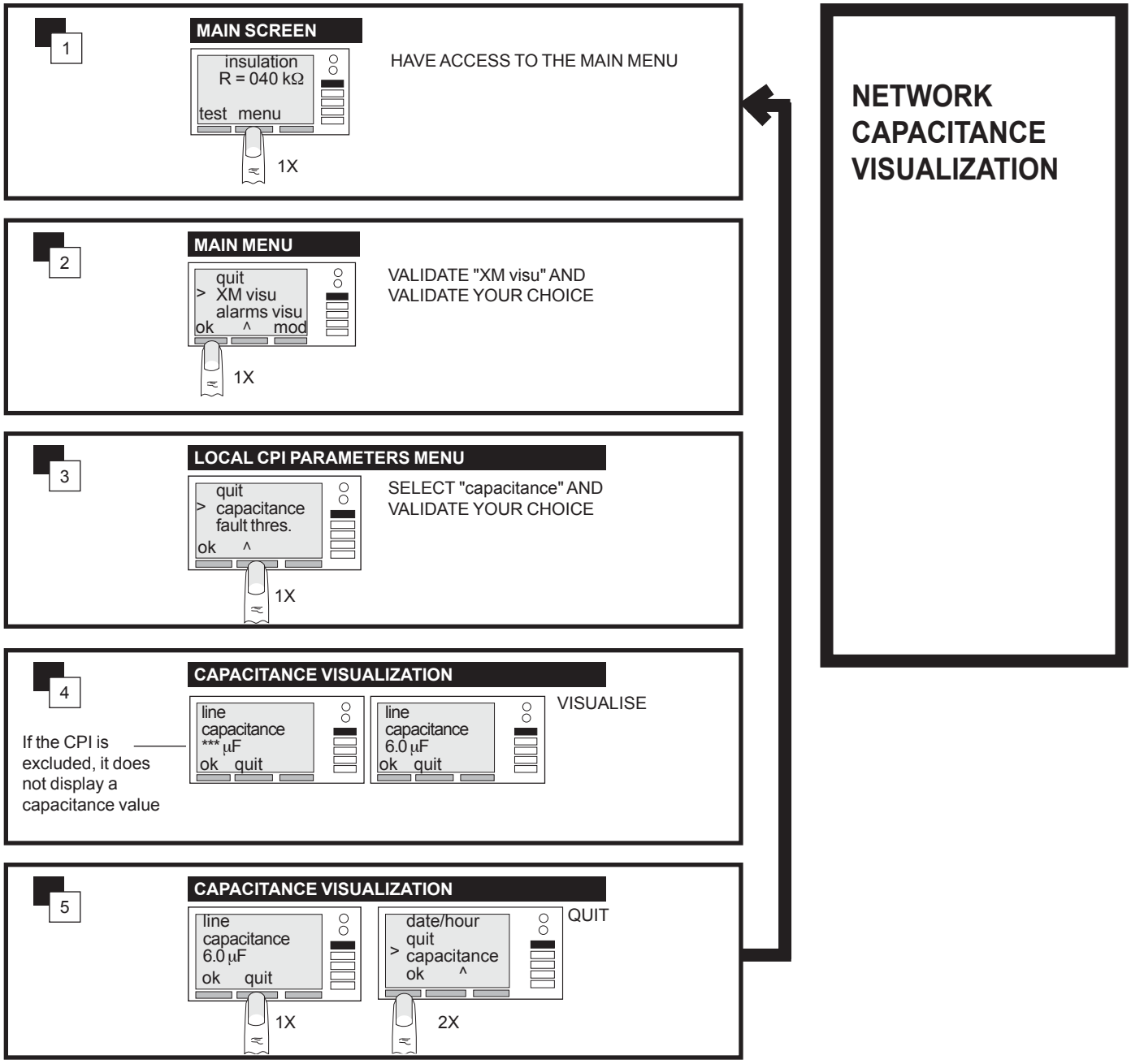
return to visualization of the last 3 intermittent faults.



VISUALIZATION

local CPI visualization

network capacitance visualization



VISUALIZATION

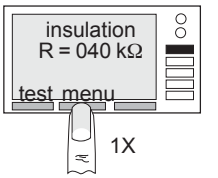
Internal localizer visualization

internal localizer alarms visualization

INTERNAL LOCALIZER ALARMS VISUALIZATION

1

MAIN SCREEN

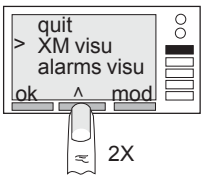


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

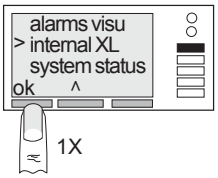


2X

SELECT "internal XL"

3

MAIN MENU

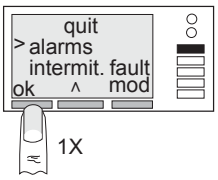


1X

VALIDATE YOUR CHOICE

4

INTERNAL XL PARAMETERS MENU

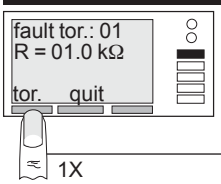


1X

SELECT " alarms"
AND VALIDATE YOUR CHOICE

5

INTERNAL XL ALARMS VISUALIZATION



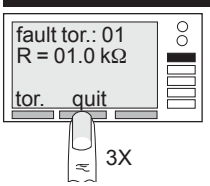
VISUALISE

1X

visualise the other fault

6

INTERNAL XL ALARMS VISUALIZATION



3X

QUIT

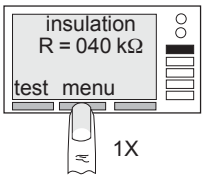
VISUALIZATION

internal localizer visualization

internal localizer intermittent faults visualization

1

MAIN SCREEN

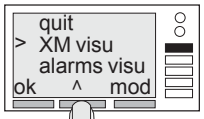


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

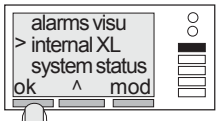


2X

SELECT "internal XL"

3

MAIN MENU

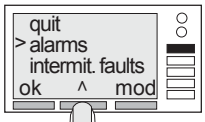


1X

VALIDATE YOUR CHOICE

4

INTERNAL XL PARAMETERS MENU

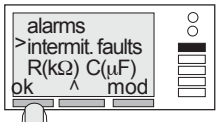


1X

SELECT "intermit. fault"

5

INTERNAL XL PARAMETERS MENU



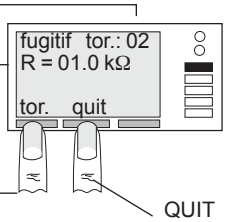
1X

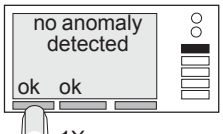
VALIDATE YOUR CHOICE

6

INTERMITTENT FAULTS VISUALIZATION

on feeder n° 2
intermittent fault
of 1 kΩ





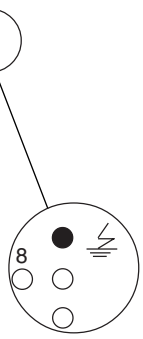
1X

visualise
the other
intermitent faults

QUIT

INTERNAL LOCALIZER INTERMITTENT FAULTS VISUALIZATION

internal localizer

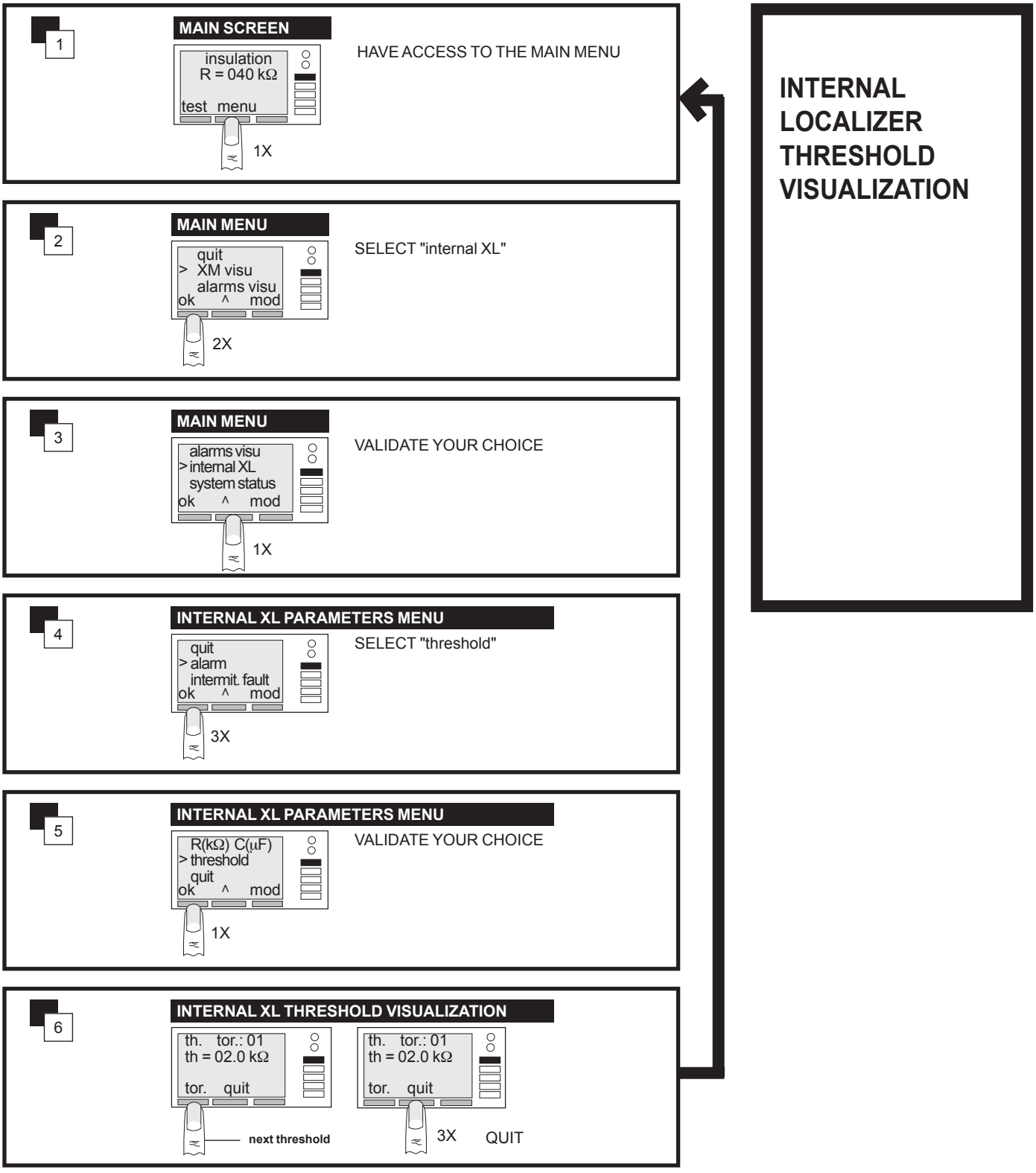


Reset of the internal localizer intermittent faults is performed in the "alarms visu" menu of the CPI main menu.

VISUALIZATION

Internal localizer visualization

internal localizer threshold visualization



VISUALIZATION

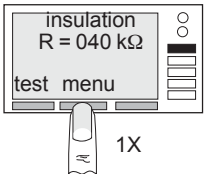
Internal localizer visualization

internal localizer R an C visualization

INTERNAL LOCALIZER R and C VISUALIZATION

1

MAIN SCREEN

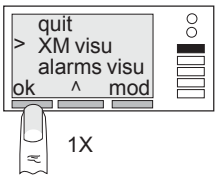


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

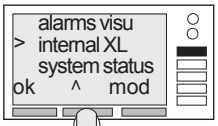


1X

SELECT "internal XL"

3

MAIN MENU

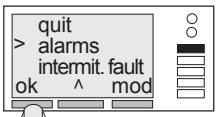


1X

VALIDATE YOUR CHOICE

4

INTERNAL XL PARAMETERS MENU

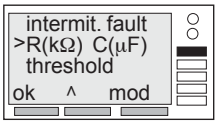


2X

SELECT "R(Ω) C(μf)"

5

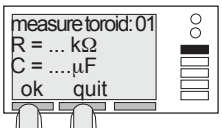
INTERNAL LOCALIZER R and C VISUALIZATION



VALIDATE YOUR CHOICE

6

INTERNAL LOCALIZER R and C VISUALIZATION



visualise the other value

2X

VISUALISE: If display marked:

. . kΩ

. . μF

The CPI is fault. The fault is not located on the channel selected.

quit

VISUALIZATION

Localizer piloted by the CPI visualization

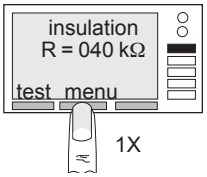
localizer piloted by the CPI intermittent fault and alarms visualization

Reset of intermittent faults of localizers is performed in this menu

LOCALIZER PILOTED BY THE CPI INTERMITTENT FAULTS AND ALARMS VISUALIZATION

1

MAIN SCREEN

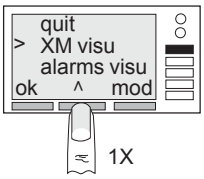


1X

HAVE ACCESS TO THE MAIN MENU

2

MAIN MENU

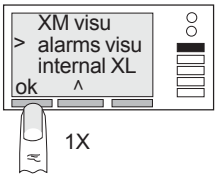


1X

SELECT "alarms visu"

3

MAIN MENU

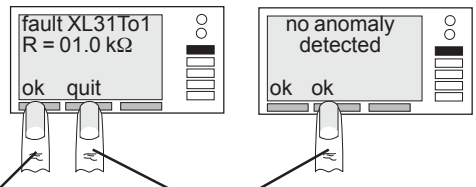


1X

VALIDATE YOUR CHOICE

4

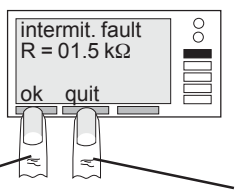
ALARMS VISUALIZATION



VISUALISE THE ALARMS

QUIT

Visualise the next screen. When all the fault have been visualised. you visualise the intermittent fault.



When all the intemittent fault have been visualised, the press on ok provoke the return to previous menu.

Reset the intermittent displayed fault and display the next fault. When all the fault shave been visualised, the press on ok provoke the return to previous menu.

VISUALIZATION

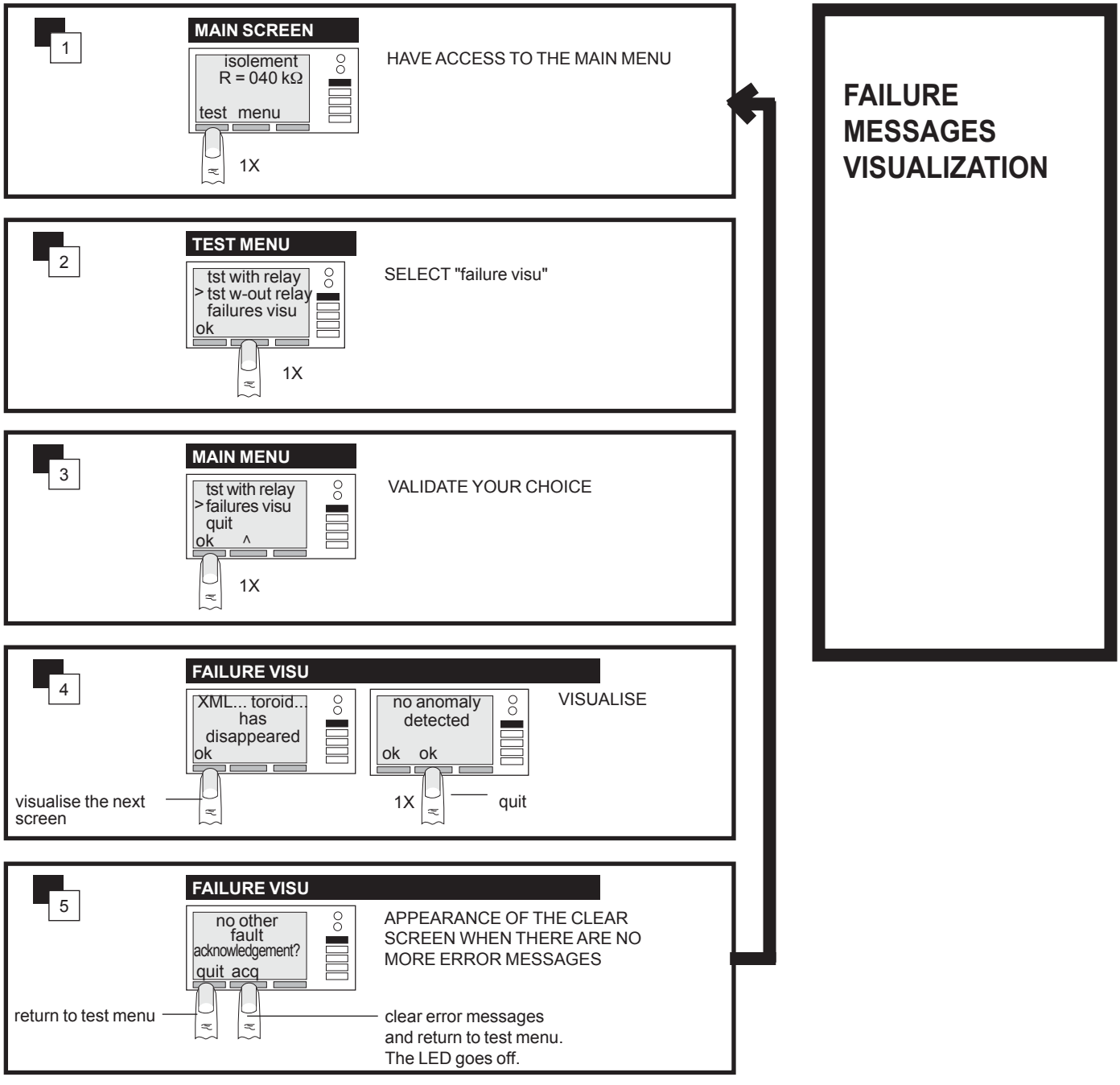
Error messages and system state visualization

Error messages visualization

All these messages result from tests carried out on the operation of your device together with tests carried out on the system part of your installation (see page 50).

■ The blocking messages interrupt the operation of your device and requiere immediate intervention. These messages are not stored.

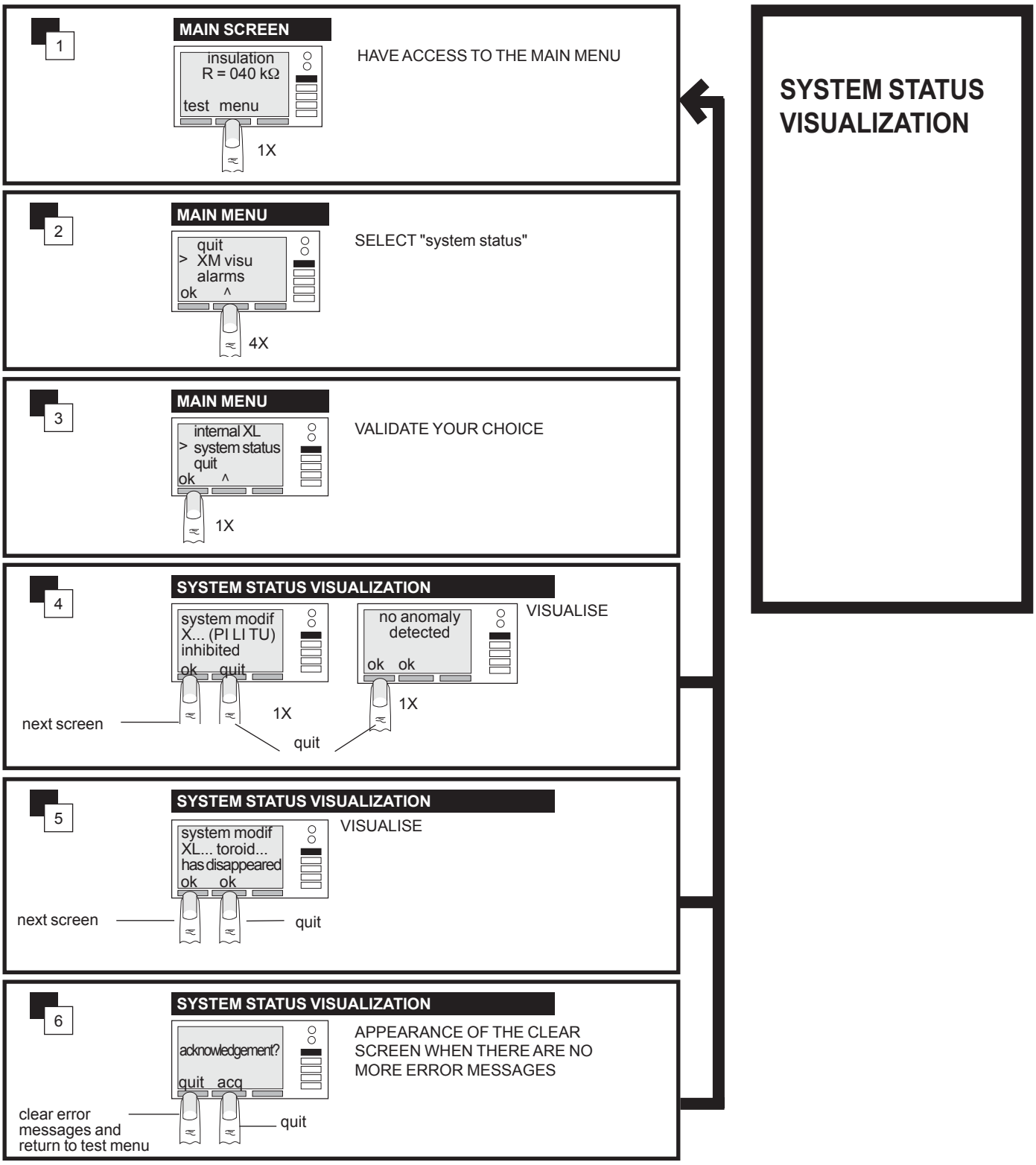
■ The no blocking messages are stored and do not interrupt operation of your device. They can be visualized in "FAILURES VISU".



VISUALIZATION

system state visualization

Visualization of messages concerning system configuration modifications.
These messages are stored in "system state".



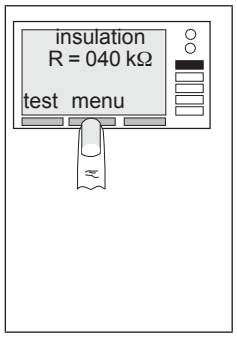
set the parameters of your XM or XML

To improve understanding of the operation of your device, do not forget to refer to the menu block diagram on page 20, when faced with **writing on black background** .

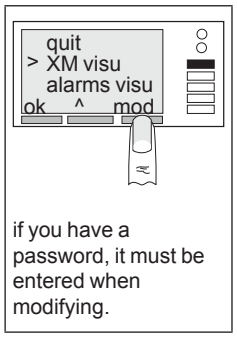
modification of CPI parameters

Only parameters relating to the CPI and the internal XL can be modified.

main screen

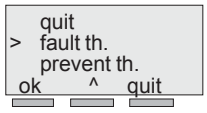


main screen

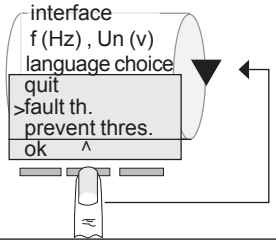


if you have a password, it must be entered when modifying.

CPI parameters modification menu



unidirectional scroll menu
use the central key "**^**" to position the parameter to be visualized opposite the validation line "**>**" then validate the information using the "**OK**" key.

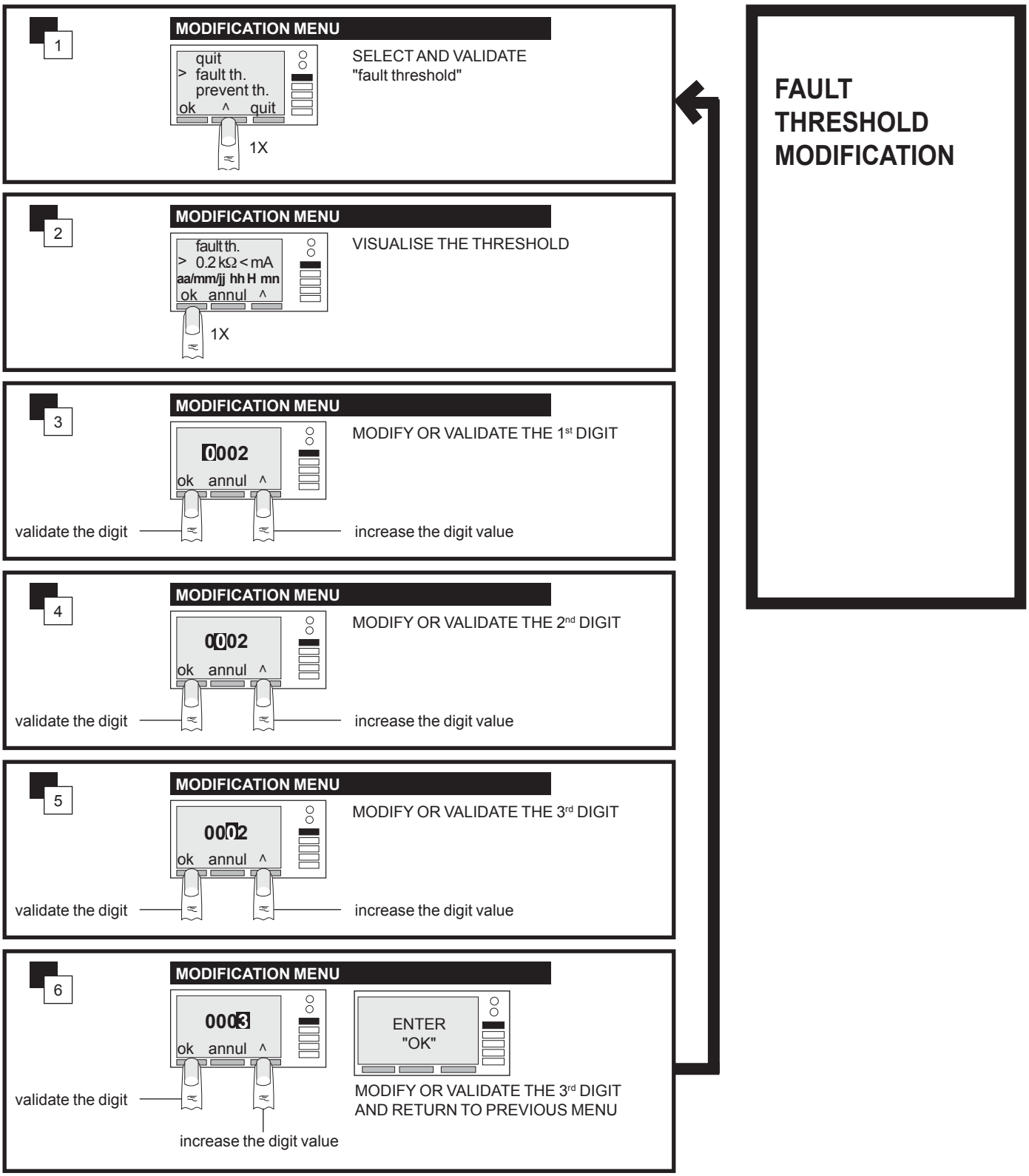


description of the CPI parameters modification menu screens

parameter to be validate	screen visualize	comments
CPI parameters modification menu		
> fault th.	fault th. ..... kΩ mA aa/mm/jj hh H mn ok annul ^	when it leaves the plant, the fault threshold is preset at 2 kΩ. Setting range: 0.2 kΩ < Td < 99.9 kΩ
> prevent thres.	prevent th. ..... kΩ mA aa/mm/jj hh H mn ok annul ^	when it leaves the plant, the prevention setting is preset at 30 kΩ. Setting range: 1 kΩ < Tp < 300 kΩ
> self-setting	Td = ...kΩ Tp = 0.8 * R self setting ? quit quit yes → all devices XM, XML, XL self-setting ? quit quit yes	enables remote setting of all the **Td** of the system devices at the same value in one single operation together with **Tp** on all CPI.
> date / hour	date hour aa/mm/jj hh H mn aa/mm/jj hh H mn ok annul ^	If XTU 300, XLI 300 or XPI 300 exists this menu enables to enter date and hour.
> interface	serial link addr bauds xx yyyy ok annul ^	enables addressing of your interface “01” to “FE”, and choice of the transmission rate of the JBUS link.
> f (Hz), Un (v)	frequency 50 Hz Un network.....V ok annul ^	When entering the system voltage and frequency value, the fault current value is displayed in mA on the "fault threshold" screen. frequency setting range: 50 Hz, 60 Hz, DC. voltage setting range: from 0 to 999 V.
> password	enter the password 0000 ok annul ^	when leaving the factory, the password is set at "0000". If this password is modified, the new password must be entered before changing parameters.
> language choice	French English ok ^	language modification screen, see page 26.

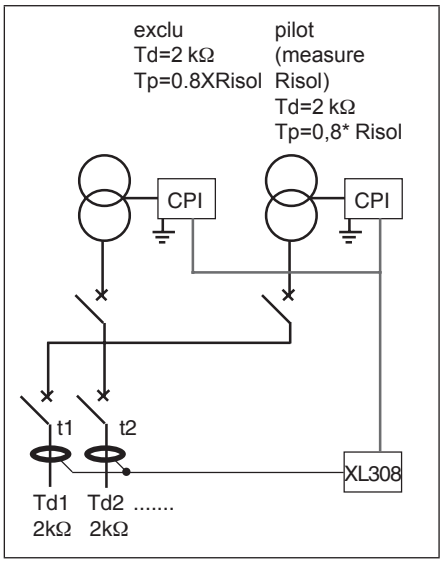
MODIFICATION

CPI faut threshold modification



SELF SETTING

fault threshold modification

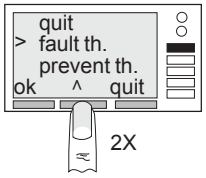


This function is available on devices XM or XML. It enables remote setting of all fault thresholds to the same value on the other system devices (XL, XM, XML) from the pilot CPI.
It enables automatic calculation of prevention threshold (Tp = 0,8 x Risol) of all CPI (Risol is the insulation resistance measurement of the CPI on which self-setting is performed).
The fault threshold send to all devices (CPI and localizers) is the fault threshold of the CPI on which self setting is performed.

nota: Self-setting can not be performed on a CPI which is in exclusion mode.

1

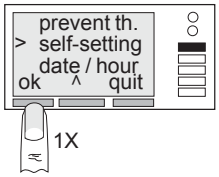
MODIFICATION MENU



SELECT "self setting"

2

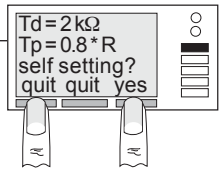
MODIFICATION MENU



VALIDATE YOUR CHOICE

3

MENU MODIFICATION

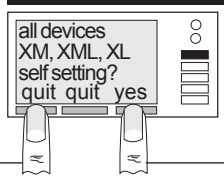


VALIDATE THE SELF SETTING VALUE OR QUIT

display of the existing fault threshold value. If it is not the required value "QUIT" and modify the fault threshold.

5

MENU MODIFICATION



VALIDATE THE SELF-SETTING OF ALL DEVICES OR QUIT

quit

validate

SELF-SETTING

MODIFICATION

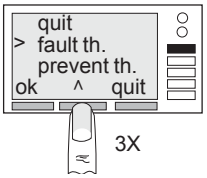
Date / hour modification

If you have a XLI 300, XTU 300, or XPI 300 interface in your system, you can then enter the date and hour in order to date events.

DATE / HOUR MODIFICATION

1

MODIFICATION MENU

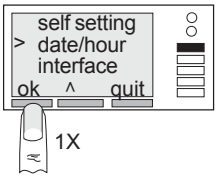


SELECT "date / hour"

3X

2

MODIFICATION MENU

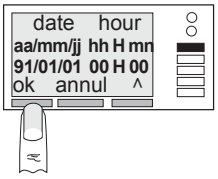


VALIDATE YOUR CHOICE

1X

3

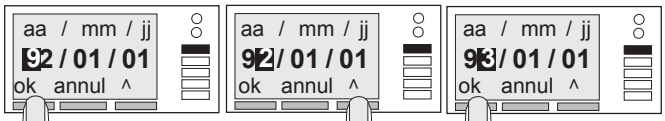
MODIFICATION MENU



VISUALISE THE PREVIOUS PARAMETERS

4

DATE MODIFICATION DETAIL



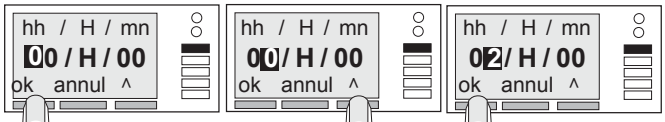
validate the 1st digit

modify the 2nd digit

MODIFY THE DATE

5

HOUR MODIFICATION DETAIL



validate the 1st digit

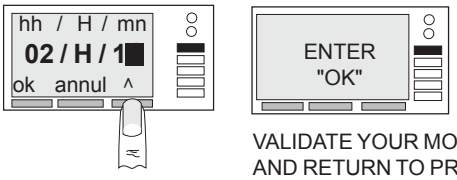
modify the 2nd digit

2X

MODIFY HOUR

6

MODIFICATION MENU



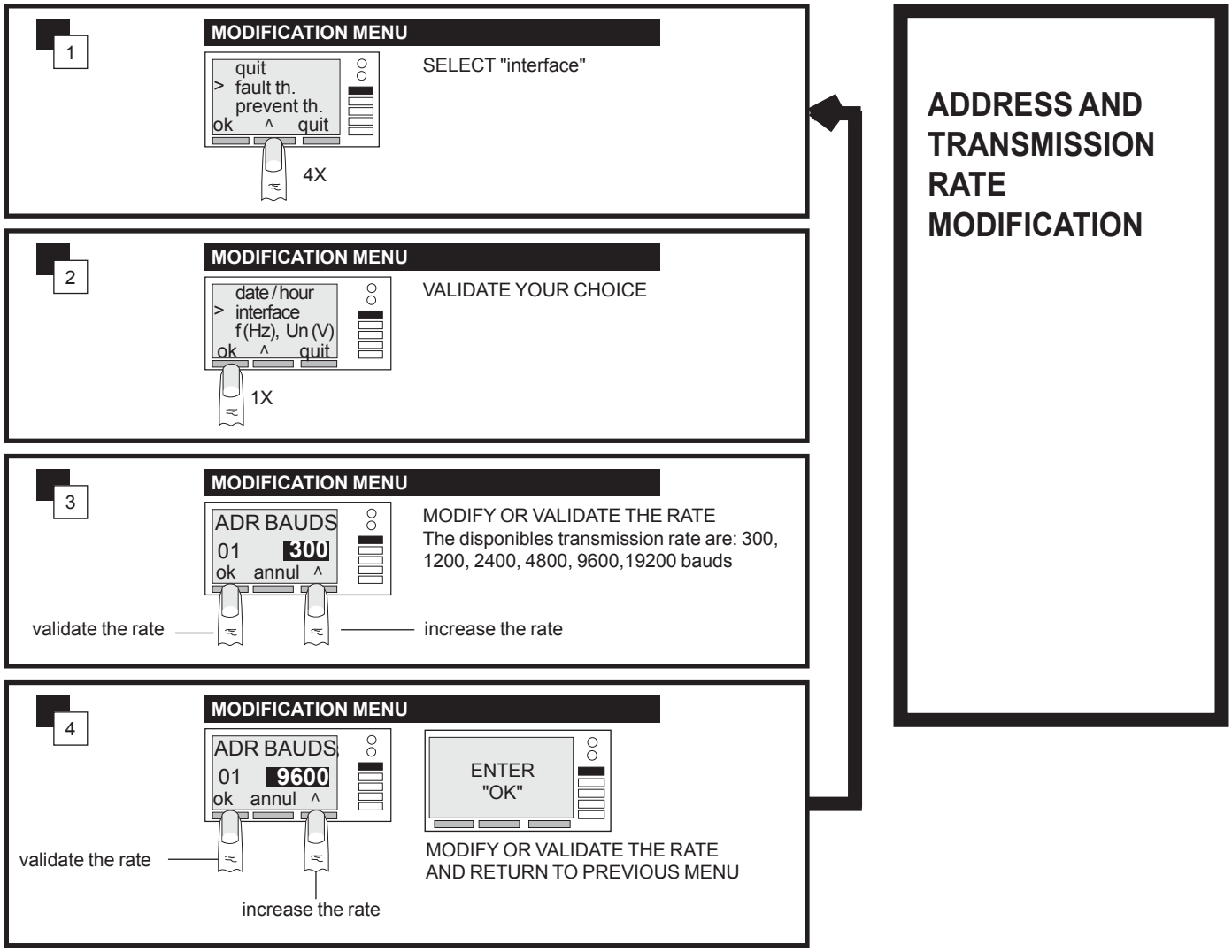
VALIDATE YOUR MODIFICATIONS AND RETURN TO PREVIOUS MENU

MODIFICATION

Interfaces (JBUS) address and transmission rate modification

If you have an XLI 300, XTU 300, or XPI 300 in your system, you must enter:
- for XLI 300, XTU 300, XCU10: address and rate
- for XPI 300: address only

The values set by default are: address = 01 rate = 9600 bauds



MODIFICATION

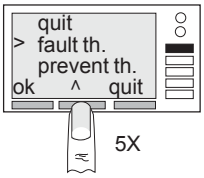
voltage and frequency of the monitored network entering

This is optional and means that you can obtain on the fault threshold screen, the maximum value of the current flowing in the fault in absence of unbalanced capacity.

VOLTAGE AND FREQUENCY ENTERING

1

MODIFICATION MENU

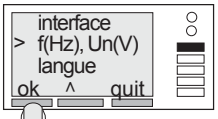


5X

SELECT "f (Hz) , Un (V)"

2

MODIFICATION MENU

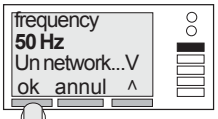


1X

VALIDATE YOUR CHOICE

3

MODIFICATION MENU

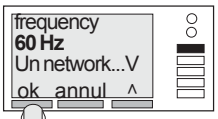


1X

MODIFY THE FREQUENCY

4

MODIFICATION MENU

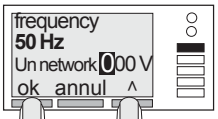


1X

VALIDATE YOUR MODIFICATION

5

MODIFICATION MENU



MODIFY THE VOLTAGE VALUE

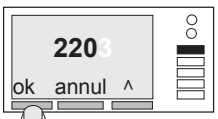
(see fault threshold modification)

validate the digit

increase the digit value

6

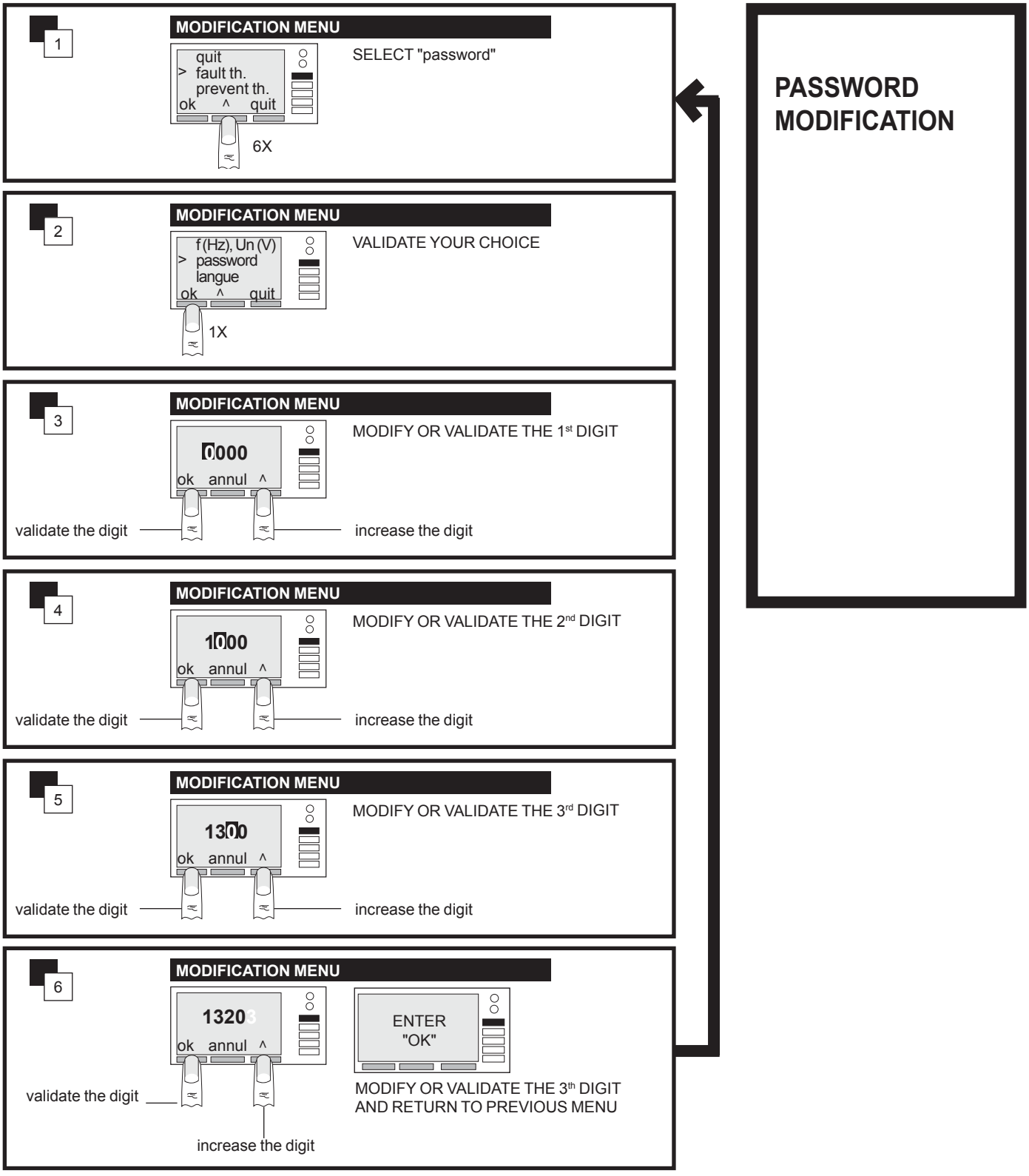
MODIFICATION MENU



VALIDATE YOUR MODIFICATION
AND RETURN TO PREVIOUS MENU

MODIFICATION

password modification



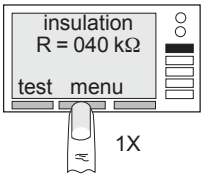
INTERNAL XL PARAMETERS MODIFICATION

On an internal localizer you can only modify the fault threshold.

INTERNAL XL PARAMETERS MODIFICATION

1

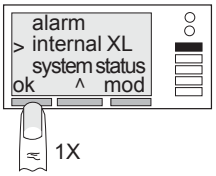
MAIN MENU

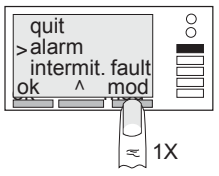


HAVE ACCESS TO THE MAIN MENU

2

MODIFICATION MENU

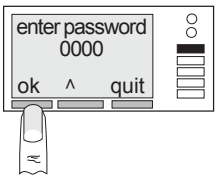




SELECT MODIFICATION MODE

3

MODIFICATION MENU

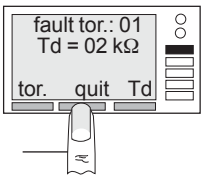


ENTER YOUR PASSWORD

nota: This screen only appears if you have already entered a password

4

MODIFICATION MENU

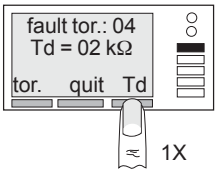


SELECT THE FEEDER

nota: If you wish to adjust all the feeders to the same setting value, press TOR. until toroid XX appears, then adjust the setting value as shown below.

5

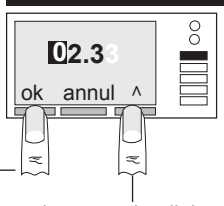
MODIFICATION MENU

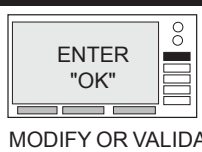


HAVE ACCESS TO THE THRESHOLD VALUE MODIFICATION

6

MODIFICATION MENU

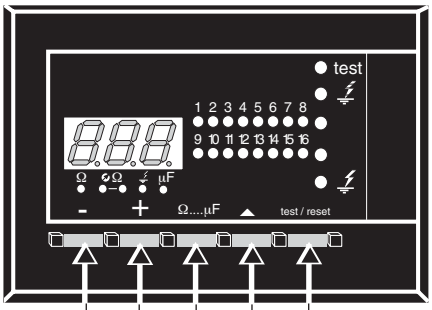




MODIFY OR VALIDATE THE 3rd DIGIT AND RETURN TO PREVIOUS MENU

legend:
- ● led lit up
- led flashing

use of the XL keyboard



Ω ∅-Ω ⏚ µF
- display of capacity value in µF
- display of intermittent faults in kΩ
- display of fault settings in kΩ
- not used
- display of insulation resistance of feeder in kΩ

∅-Ω

enables decrementation of the threshold Td

Td maxi
99.9 kΩ

56.5 (−)

the displayed value decreases

43.5

Td mini
0.2 kΩ

enables incrementation of the threshold Td

Td mini
0.2 kΩ

56.5 (+)

the displayed value increases

60.0

Td maxi
99.9 kΩ

enables selection of the parameter to be visualised

Ω ...µF Ω ∅-Ω ⏚ µF
press once

Ω ...µF Ω ∅-Ω ⏚ µF
press twice

Ω ...µF Ω ∅-Ω ⏚ µF
press 3 times

Ω ...µF Ω ∅-Ω ⏚ µF
press 4 times

enables selection of the toroid to be visualised

1 2 3 4 5 6 7 8
press once

1 2 3 4 5 6 7 8
press twice

1 2 3 4 5 6 7 8
press 3 times

the led of the selected toroid flashes if the toroid is connected.

enables self-test or reset

test / reset

If there is no fault, the test key validates the **self-test** function.The self-test is identical to the operation of the commissioning self-test (see page14).

test / reset

If faults are present, the key validates the **reset** function. Enables resetting of intermittent faults.

fault threshold adjustment detail

The setting is modified by variable **"steps"**. You MUST keep the" **+** " or " **-** " key pressed down.

The values slowly scroll down at the beginning, speeding up until the key is released.

display state

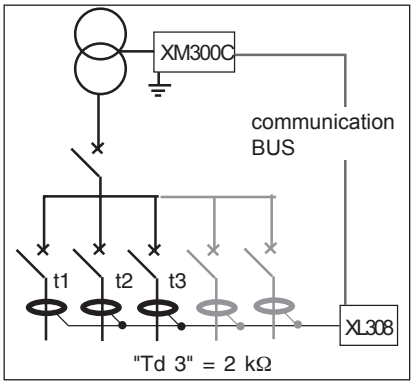
Without using the keyboard, your device informs you by messages of the problem detected.

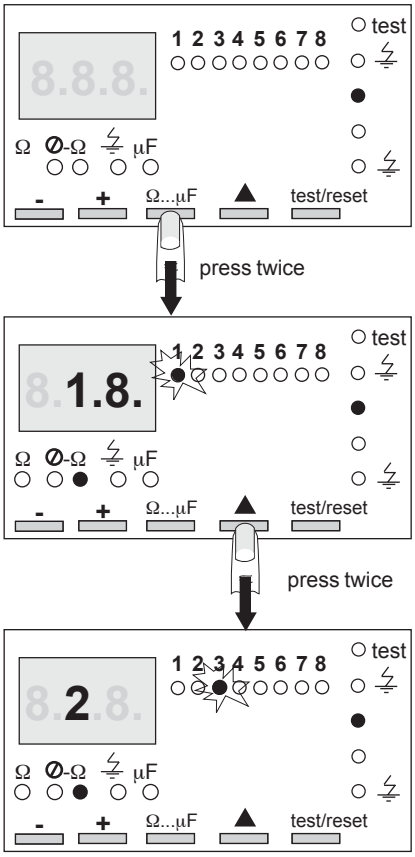
message		1.5 ● ⏚ red	 ● test	tor ● test led voie		▬ ▬ ▬ ● test	▪ ▪
meaning	the display is off. On all feeders Ri > Td.	value of the insulation resistance detected in fault.	the pilot CPI does not reply or incorrect self-test. The device continues to work.	localizer toroid link disconnected or short-circuited.	address of another XL with a faulty feeder.	important problem during the autotest. the device loops in self-test.	measurement impossible. the CPI is a fault. the fault is not on the channel selected.

visualization

you can use the keyboard to visualize the parameters for your device.
- Ω : insulation resistance
- Td: fault threshold
- ⏚ : intermittent fault
- µF: insulation capacity

example: visualization of the fault setting for feeder 3.





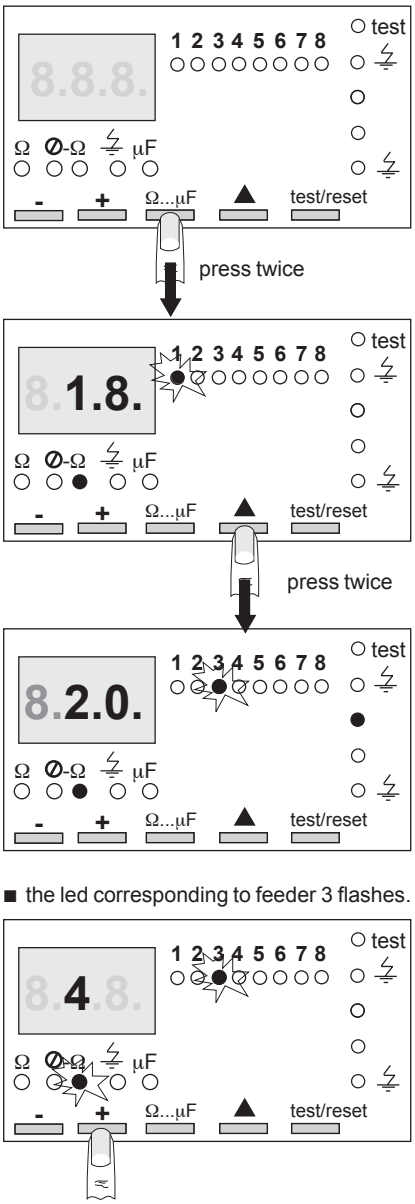
- the led corresponding to feeder 3 flashes.
- display of Td in kΩ

the device returns to the normal mode if no key is pressed for 2 mn.

modification

you can use the keyboard to modify the fault threshold for each feeder.

example: modification of the fault setting of feeder 3 to 4 kΩ.



- the led corresponding to feeder 3 flashes.

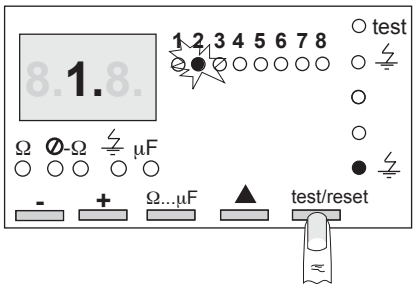
keep the key pressed down. The value increases gradually then quicker and quicker. When you approach the required value, release the key and advance by successive **"steps"**.
Once the value has been set, the led Ø-Ω flashes for 6 secondes. You can then set all the feeders at this same value by pressing simultaneously on

+ and ▲. The toroid leds flash inturn and each feeder is automatically set at the same value until both keys are released.

signalling

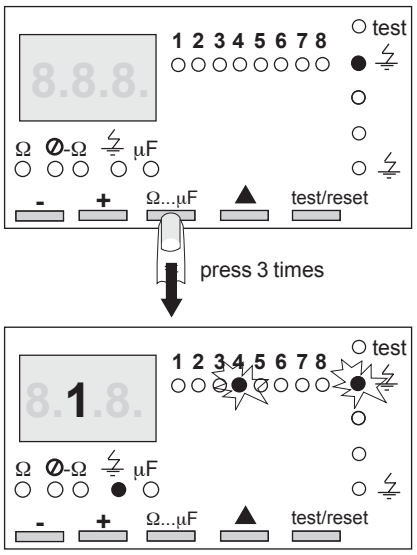
example 1: alarm fault feeder 2

for a fault alarm, the fault value is automatically displayed.



- reset de-energizes the fault and failsafe relays.

example 2: intermittent fault feeder 4



display of the intermittent fault.

- both leds flash.
- the display shows 1 kΩ.

Reset of the intermittent faults (see next page).

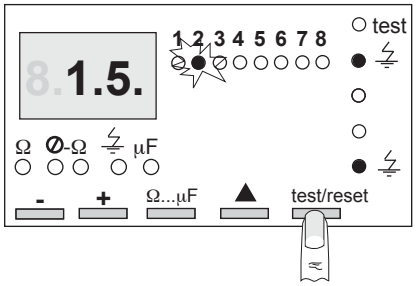
legend:

- ● led lit up
- ✸ led flashing

signalling

example 3: alarm fault feeder 2 and intermittent fault feeder 4.

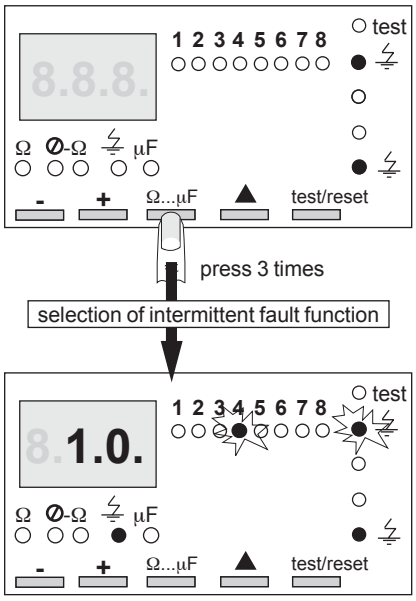
for a fault alarm, the fault value is automatically displayed.



■ reset de-energizes the fault and failsafe relays.

---

look for intermittent fault.



display of the intermittent fault.

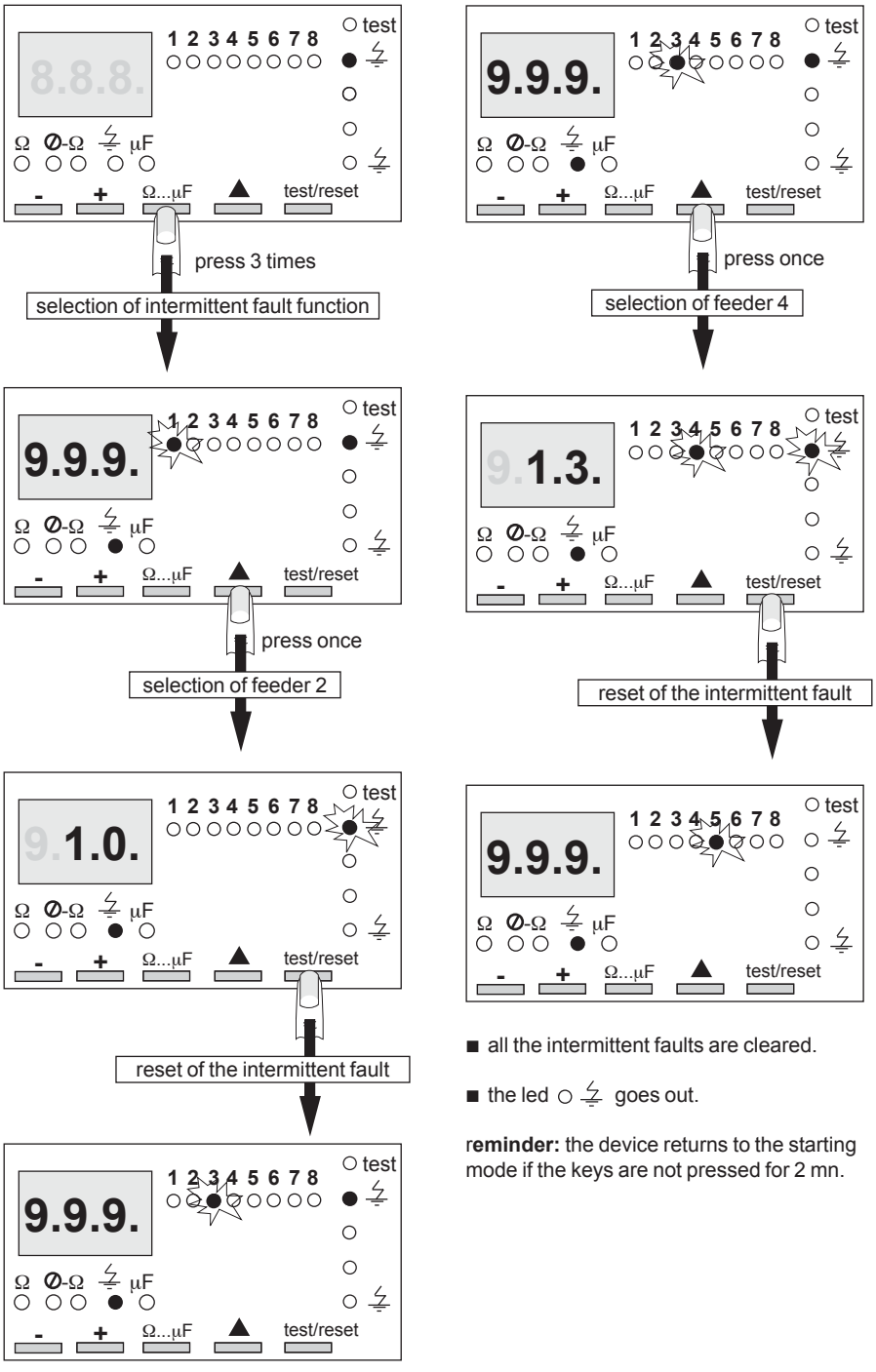
■ both leds flash.
■ the display shows 1 kΩ.

Reset of the intermittent faults, see opposite.

clearing intermittents fauts

intermittent faults are reset feeder by feeder.

example: intermittent faults on feeders 2 and 4.



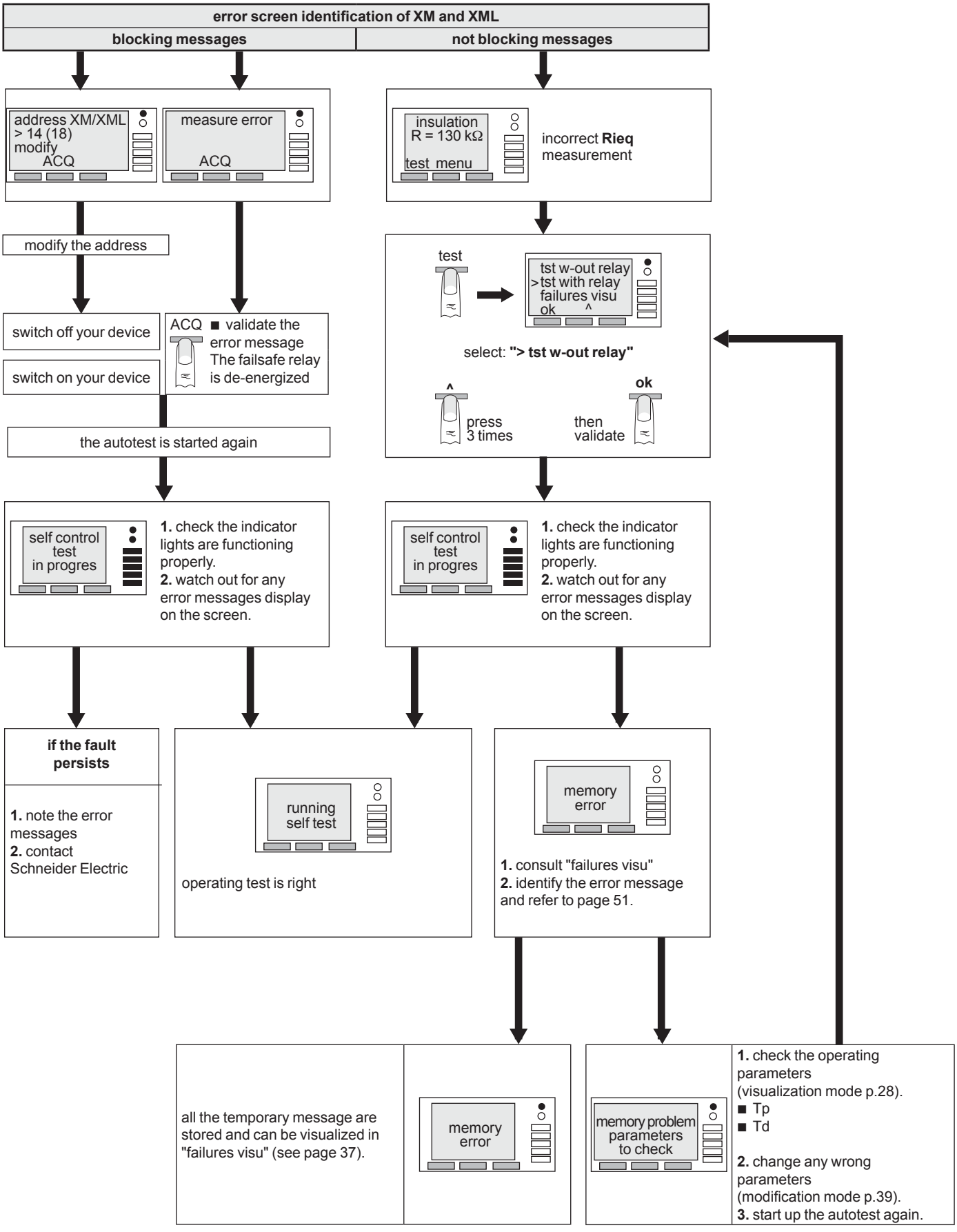
the device displays 999 and moves to the following feeder (if the following feeder is not used, the device automatically movest o the one after).

■ all the intermittent faults are cleared.

■ the led ○ ⚡ goes out.

r**eminder:** the device returns to the starting mode if the keys are not pressed for 2 mn.

problems
during the autotest



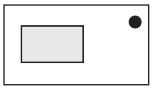
problems during the autotest

identification of error messages

XM300C - XML308 - XML316

messages		interpretation and action	visualization	signalling	
not blocking	**blocking**				
input i1 = I2 = 1 inconsistent XM is inhibited		incorrect wiring circuit-breaker position contact	"failures visu"	red led	
XML... tore... has disappeared		toroid short-circuited or disconnected	"failures visu"	red led	
memory problem check parameters		check the operating parameters Tp, Td	"failures visu"	red led	
	address XM/XML > 14 (18) correct	correct the address ACQ startup the autotest again		red led + failsafe relay	
	measurement error	contact Schneider Electric		red led + failsafe relay	
memory error		RAM problem contact Schneider Electric	"failures visu"	red led	
	no measurement possible	contact Schneider Electric		red led + failsafe relay	

XL308 - XL316

visualization		interpretation	signalling	
		the device continually loops on the autotest	red led + failsafe relay	
		autotest problem. the device continues to operate or safe operate mod, check the bus wiring	red led + failsafe relay	
		toroid short-circuited or disconnected, check the connection between toroid and relays	red led + failsafe relay	

seek out the cause

■ **XM- XML**
□ **XL**

symptoms		probable causes	solutions
The device displays nothing when switched on.	■ □	The device is not supplied.	Check the auxiliary supply is present.
		The auxiliary supply does not comply.	Check the value of the auxiliary voltage. 0.85 Un < U < 1.1 Un.
The device continuously displays 999 KΩ when switched on	■	Incorret connection of the injection circuit, insulation of your system exceeds 999 kΩ.	Check that the fast-on terminal 13 is connected to the ground and terminal 14 to the neutral or a phase (unavailable neutral).
You deliberately create an insulation fault. The device still shows the same insulation value.	■	The XM or XML injection circuit is cut off.	Check connection on terminals 13 and 14
		Incorrect grounding connections.	Check interconnection of all grounds.
		The resistance value used to simulate the.fault is greater than the value of the fault setting.	Take a value of R < **Td** or change **Td**.
		The fault was not made to occur between phase and ground.	Start again ensuring you are between phase and ground.
The monitoring device on the failsafe output (3) is continuously activated (alarm or indicator light)	■ □	Removal or drop of auxiliary supply.	Check the auxiliary supply is greater than 0.85 Un.
		Incorrect failsafe relay output wiring.	Check that outputs wired are: 11 and 10 or 11 and 12.
The monitoring device on the output (3) is not activated when the auxiliary supply is removed.	■ □	The alarm or indicator light is not supplied.	Start resupplying the failsafe device.
		Incorrect failsafe relay output wiring.	Check that outputs wired are: 11 and 10 or 11 and 12.
The monitoring device on the output (1) "prevent alarm" is continuously activated.	■	Incorrect "prev" relay output wiring.	Check that outputs used are: 5 and 6, or 5 and 4.
The monitoring device on the output (3) "prevent alarm is not activated when Risol < Tp	■	The "prevent alarm" device is not supplied.	Start resupplying prevention.
The monitoring device on the output (2) "fault alarm" is continuously activated.	■ □	Incorrect "fault" relay output wiring.	Check that outputs used are: 8 and 9, or 8 and 7.
The monitoring device on the output (2) "fault alarm" is not activated when Risol < Td.	■ □	The response time is not over. incorrect "fault relay" output wiring.	Wait for the end of the response time. Check that outputs used are: 8 and 9, or 8 and 7.
		The fault device is not supplied.	Check supply of the "fault" device.
The corresponding indicator lights do not come on for anomalies and faults.	■ □	Faulty indicator lights.	Start up the autotest again and check that all the indicator lights come on briefly.

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