

Multimeter Mode

The Keys



Press the key *opposite* to select the "**Multimeter**" mode.

4 "UTILITY" keys or key pads



Direct access to LCD **light** adjustment.




No action.



Triggers a **hardcopy** in accordance with the configuration chosen in the "Util" and "Hardcopy" menus.

A second press before the end of the process will interrupt the current printout. If printing is impossible, a "Printing error" message will be sent.

The "  " symbol is displayed in front of the settings display zone when printing is in progress.



No action.

1 "AUTOSET" key



No action.

Selective "AUTOSET"



+



No action.

4 "TRIGGER" keys



No action.



No action.



No action.



To lock / unlock the display of the measurements. Plotting of the traces never stops.

Multimeter Mode (cont'd)

3 "MEASURE" keys



No action.



For changing the reference trace to which the cursor refers (successive presses).



No action.

3 "HORIZONTAL" keys or key pads



Duration of the recording in the display window: > **5', 15', 30', 1h, 6h, 12h, 24h, week, month.**



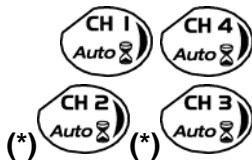
No action.



- If the instrument is equipped with the "EXTENDED ACQUISITION MEMORY" option:
pressing on this key will display the last 2,700 measurements on the curve and pressing again will display the 27,000 acquisition memory measurements.
- If not, this key will not have any effect.

5 "VERTICAL" keys or key pads

The instrument contains as many independent multimeters as there are channels in "Oscilloscope" mode (2 or 4).



Same function as in "Oscilloscope" mode.

A long press enables or disables the autorange on the channel concerned.

The channel is displayed and selected.

(*) only OX 7204



No action.



If a channel is activated and selected, this key can be used to change the input coupling of the channel. By successive presses, the coupling can be changed from AC to DC to AC+DC.

The coupling is indicated in the multimeter window of the channel concerned.

When selected for ohmmeter, continuity or capacimeter measurements, component testing or temperature measurements on channel 1, the key has no effect, as the input coupling in these functions cannot be adjusted.



Manual modification of the measurement range



If the autorange mode is activated, the manual adjustment has no effect: the autorange will automatically reset the instrument to the measurement range best suited to the input signal.



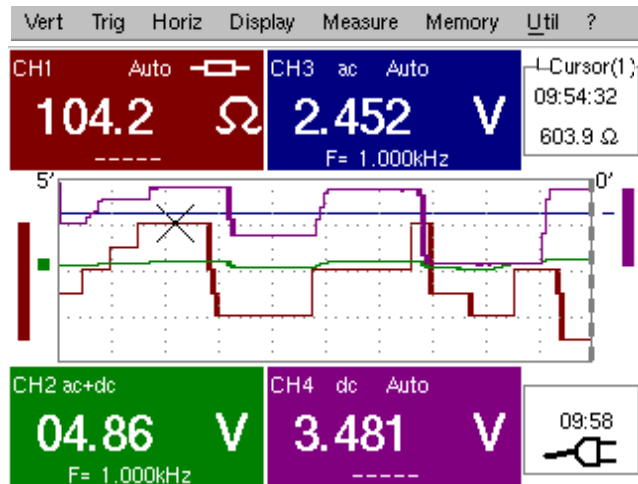
No action.



Multimeter Mode (cont'd)

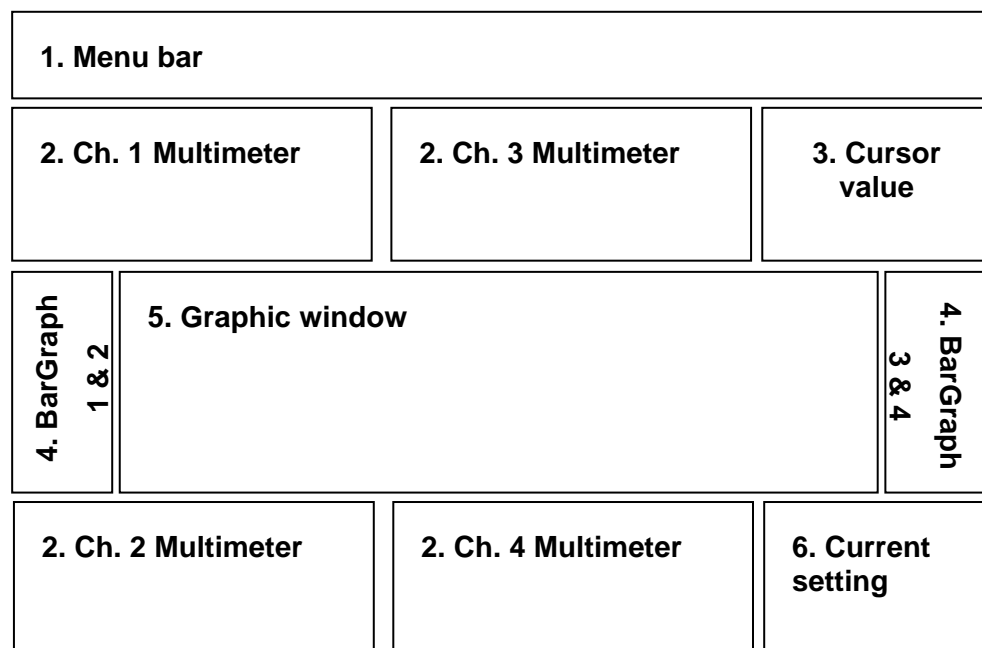
Display

Display



Composition

The multimeter display is divided into 6 functional areas:



1. Menu bar

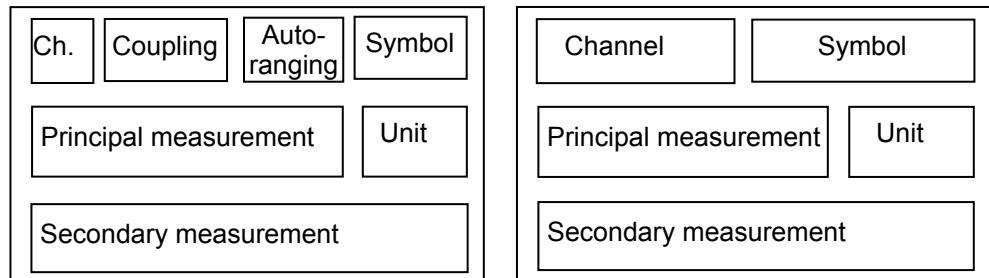


The tool bar gives access to the different menus of the "Multimeter" function.

Multimeter Mode (cont'd)

2. Channel (x) multimeter)

There is a display area reserved for each of the instrument's channels. In each of these, the following information is indicated:







Channel CH1, CH2, CH3 or CH4

Coupling The input coupling selected (see §. Vert. Menu) is indicated in this field. For the Ohmmeter, Capacimeter, Continuity, Component Test, Wattmeter, the coupling is not shown.

Autorange Indicates whether range changing is automatic.


Symbols A symbol is displayed corresponding to the type of selected measurement :

	Ohmmeter,
	Capacimeter,
	Continuity
	Component test
PT100	Temperature measurement

Main measurement If the channel is activated, the measurement result is displayed. Otherwise, the message '– X –' fills the unused space.

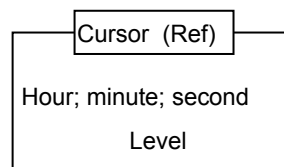
Unit Contains the measurement unit associated with the current measurement range.

Secondary measurement Selected through the "Display" menu.

 *If no display is selected or if the display is not possible (e.g. frequency measurement for a continuous signal, etc.), the character string '----' is displayed.*

If the channel is not selected, '– X –' is displayed.

3. Cursor value



Display of the absolute position of the cursor on the measurement reference channel.

Time position: hour, minute, second

Level position: depending on the type of measurement.

If your instrument is equipped with the "EXTENDED ACQUISITION MEMORY" option, an indication of the zoom status is also displayed (Zoom ON / Zoom OFF) in this zone.

Multimeter Mode (cont'd)

4. Bargraph

These graphs show the min. and max. values measured on the channels in the range during the observation period.

The bargraph is shown with the color of the channel.

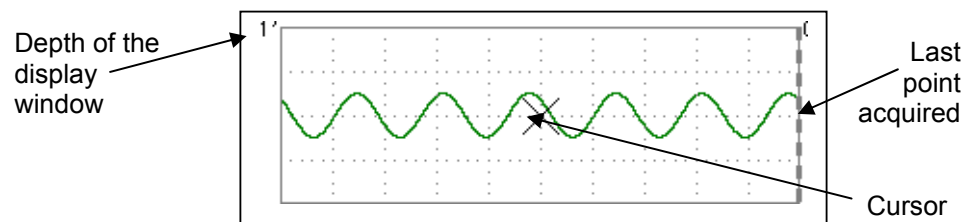
The zero level of the bargraph and the scale are adapted to suit the type of measurement and the range.



If the range is changed, the bargraph is reinitialized and the curve showing the evolution of the measurement is erased.

5. Graphic window

This window shows the evolution of the measurements as a function of time. The most recent measurement points are those on the right-hand side of the screen.



The depth of the window, which represents the observation period, can be programmed using the keys *opposite*.

Adjustments possible: 5', 15', 30', 1hr, 6hrs, 12hrs, 24hrs, 1 week, 1 month.

If ROLL mode is activated (see §. "HORIZ" menu), the curves are constantly updated; if the acquisition memory is full, the oldest measurements disappear and are replaced by recent measurements.

6. Current settings

Identical to OSCILLOSCOPE mode: indication and adjustment of the value of the latest parameter modified.

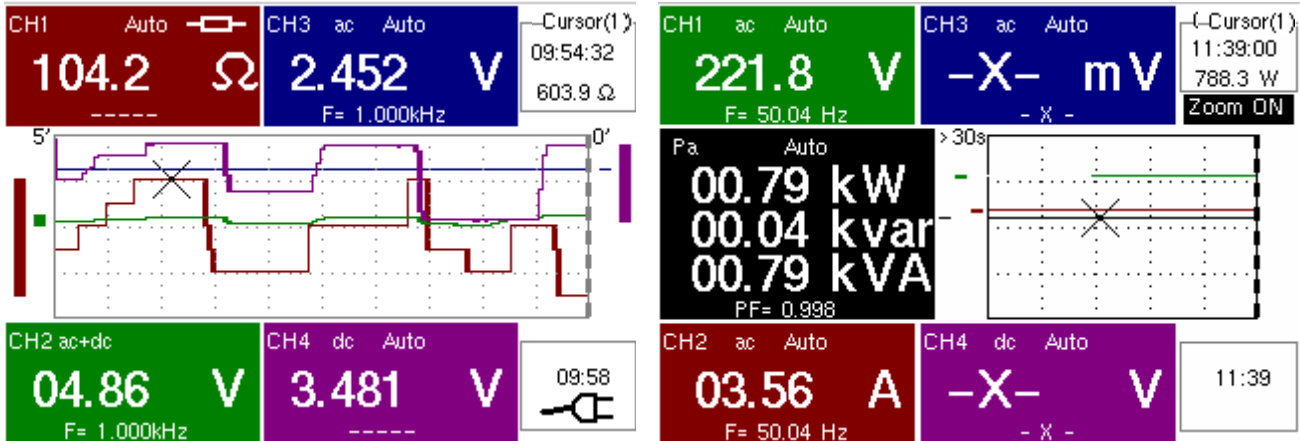
Multimeter Mode (cont'd)

The Menus

Presentation

- Screen display when measurements are possible on all the channels:

✎ Examples:



Resistance measurement on CH1 channel and amplitude measurement on other channels

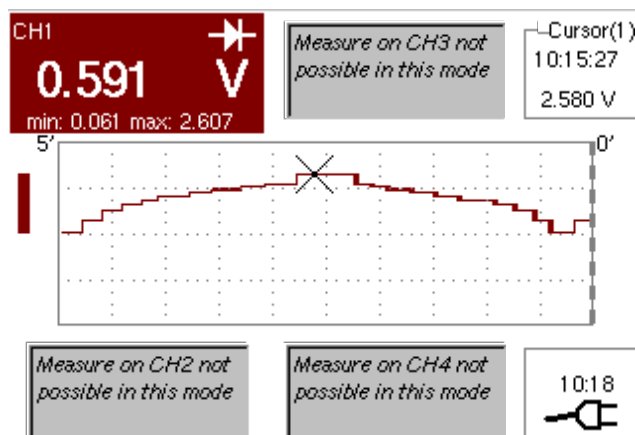
Monophased power measurement (if HX0075 option is installed)

- Screen display when measurements are possible on CH1 only:

✎ Example: CH1 is configured for a Component Test

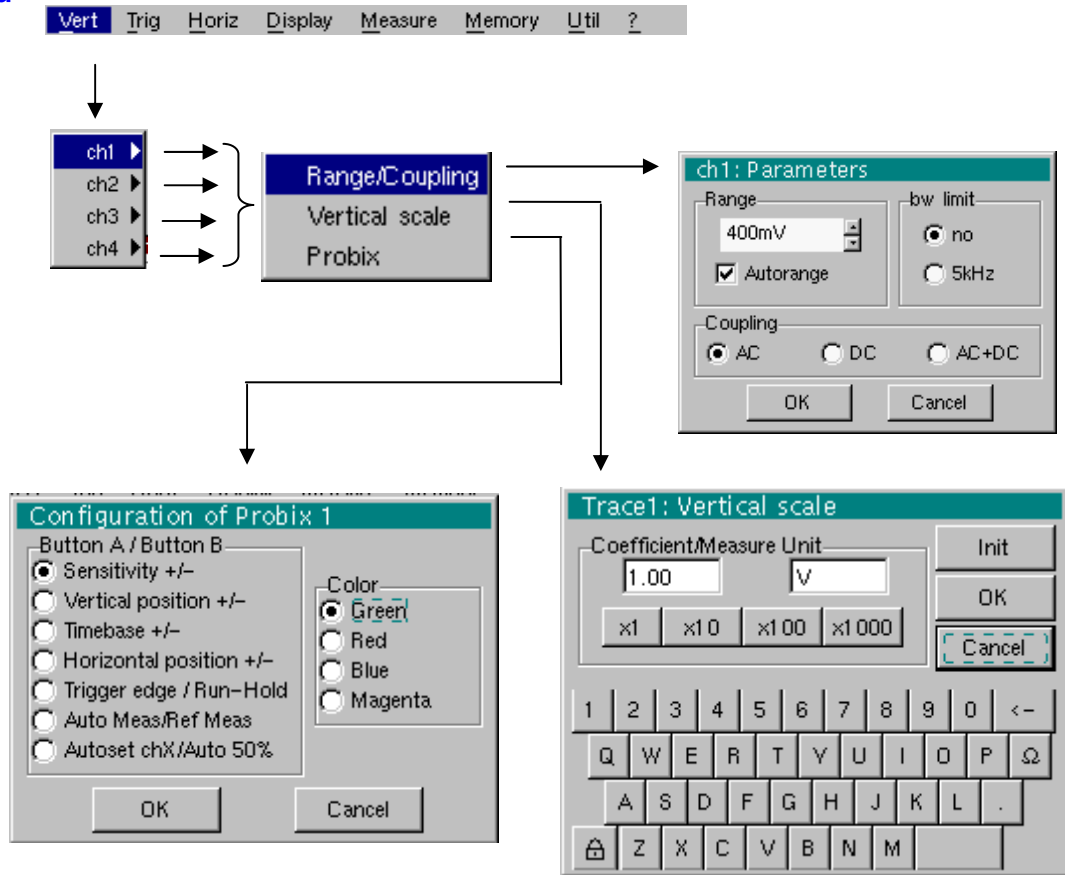
- ✎ The display is identical when CH1 is configured for capacitance or continuity measurement.

Measurements on channels 2, 3 and 4 are impossible.



Multimeter Mode (cont'd)

The "Vert" Menu



ch1 ch2
ch3 ch4

Modification of:

- the parameters of channels **ch1**, **ch2**, **ch3** and **ch4**, independently
- the vertical scale of the selected trace
- the parameters of the **Probig** probe connected.

Sensitivity/Coupling

Modifies the parameters of the selected channel.

Each measurement display zone on the main screen indicates the coupling and bandwidth limitation parameters used on each channel.

Range

Choice of the measurement range. The unit displayed depends on:

- the type of measurement selected: amplitude (available on all channels), ohmmeter, continuity, capacimeter, PT100 temperature probe (available only on channel 1, see §. Measure Menu),
- the **Probig** probe connected to the input,
- the parameters of the "Vertical Scale" menu (if they have been modified since connection of the **Probig** probe).



For the ranges available for each type of measurement, refer to the technical specifications of the "Multimeter" function.

The Range / Coupling menu is displayed in light grey when the range is not modifiable (single range).

Multimeter Mode (cont'd)

Autorange When this option is selected, the measurement range changes automatically.



The "✓" symbol shows that it is active.



If the option is disabled, the range can be modified manually, using the keys *opposite* or the "Range" menu, depending on the type of measurement being performed.

Coupling

Modification of the AC, DC or AC+DC coupling for amplitude measurement.

AC: AC voltage measurement

DC: DC voltage measurement

AC + DC: Measurement of AC voltage with a DC component



For AC and AC+DC measurements, the menu "Display → Frequency" can be used to display the frequency of the signal in the secondary display field.

The "⊙" symbol indicates the type of coupling selected.

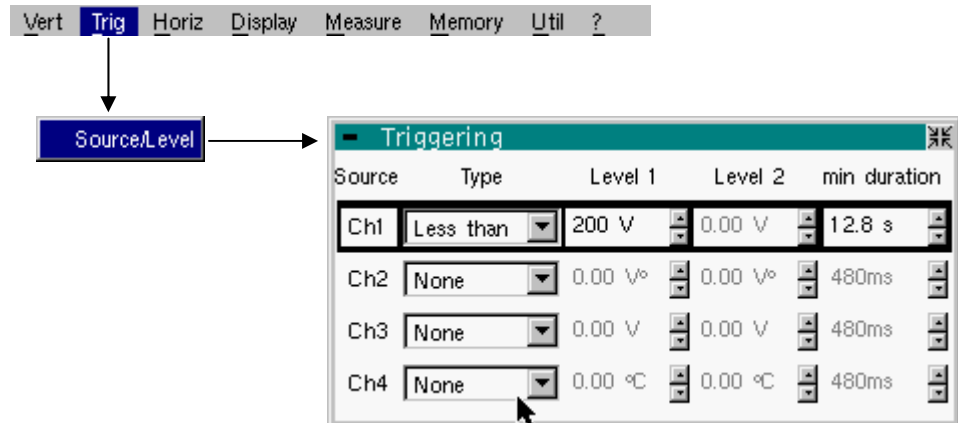
The coupling is updated in the modified channel parameter display zone.

Bandwidth limit

If the channel measures an AC or AC+DC voltage (see Coupling), it is possible to filter the signal with a low-pass analogical filter whose cut-off frequency is 5 kHz.

Multimeter Mode (cont'd)

The "Trig" Menu



Source/Level

Selection of trigger type and level on each channel. Triggering takes place if a condition described by a line of the "Trigger" table is verified.

The trigger level should be defined in the channel measurement dynamic.

Trigger leads to the logging of the instant and trigger characteristics.

The events logged can be accessed from the "Disp." → "Defaults" menu.

Source The channel number.

Type The type of trigger for each channel.

There are several possible types:

- None (no triggering)
- Lower than
- Higher than
- Lower/Higher
- Exterior

In "Multimeter" mode, several conditions are monitored simultaneously.

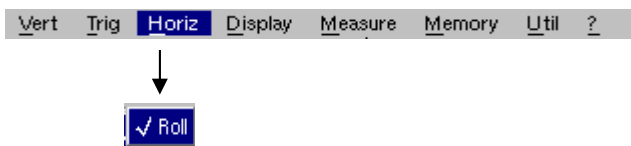
Level 1 Adjustment of the main trigger level using the stylus.

Level 2 Adjustment of the auxiliary trigger level using the stylus.
This tab is enabled only if the "External" trigger type is selected.

min duration > The fault will be evidenced if the fault condition defined by the type and levels is present for a parameterisable period from 480 ms to 670 ks according to the selected recording duration (48 ms to 670 ks if your instrument is equipped with the EXTENDED ACQUISITION MEMORY option).

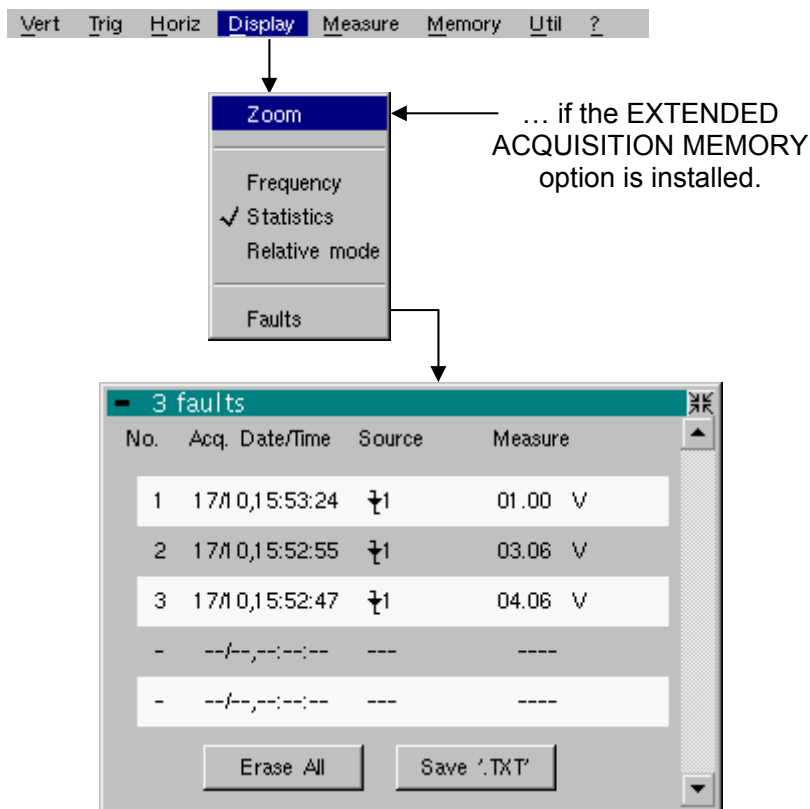
Multimeter Mode (contd.)

The "Horiz" Menu



- Roll**
- If this mode is activated (presence of "✓" symbol), the measurement history curve is constructed continuously. The oldest points disappear on the left-hand side of the screen, while the most recent ones appear on the right.
 - If this mode is deactivated, the point display stops as soon as the first point acquired reaches the left-hand edge of the window. However, the measurements continue and are still refreshed in the area 'Multimeter Channel'x'.

The "Disp" Menu



Zoom

If ...	then ...
If your instrument is equipped with the "EXTENDED ACQUISITION MEMORY" option,	display of the last 2700 measurements <u>OR</u> display of the entire acquisition memory (27000 measurements)
If your instrument is not equipped with this option,	the ZOOM entry does not exist on the menu.

Multimeter Mode (contd.)

Frequency In the event of alternative amplitude, display of the frequency of the signal measured (if possible and coherent) as a secondary measurement on each channel.

Statistics Display of the Min and Max values of the measurements taken as secondary measurements on each channel.

Relative mode Display of variance as secondary measurement on each channel.
The variance displayed is the difference between the value measured and the value displayed when this option was selected.



The "✓" symbol indicates the secondary function selected.

Faults Display of the characteristics of all faults (maximum of 100) acquired:

- Fault detection instant,
- Fault type,
- Measurement that triggered a fault.

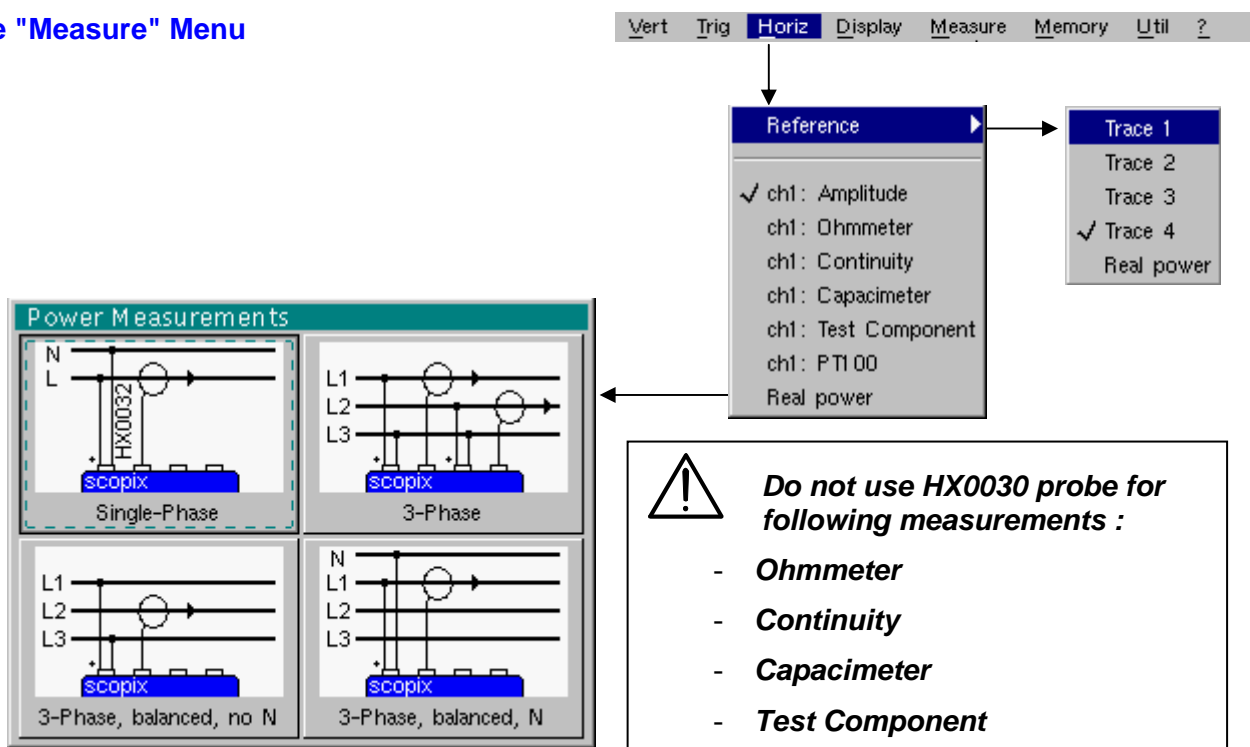
Faults are defined in the "Trigger" menu.

Use the "Erase" button to reinitialize this list.

Use the "Save '.TXT'" button to save all the faults on this table to a .TXT format file. A dialogue window is displayed to request the name of the file to be generated.

Multimeter Mode (cont'd)

The "Measure" Menu



Reference

The reference is used to select the measurement trace on which the cursor is positioned. The cursor value is therefore relative to the measurement on this channel.

It is only possible to choose the reference on activated channels: channels that are not activated are displayed in a lighter colour in the sub-menu.

 The " ✓" symbol indicates the reference selected.

ch1: Amplitude


Channel CH1 is used as a voltmeter and therefore measures the amplitude of the signal present on the input of this channel.

ch1: Ohmmeter

Channel CH1 is used as an ohmmeter and therefore measures the resistance of the dipole wired to the input.


ch1: Continuity

Channel CH1 is used as a continuity tester: there is a beep if the input resistance is less than ≈ 30 Ohms.

 In this mode, measurements are impossible on the other channels.


ch1: Capacimeter

Channel CH1 is used as a capacitance meter and therefore measures the capacitance of the dipole wired to the channel's input.

 In this mode, measurements are impossible on the other channels.

ch1: Component Test

Channel CH1 is used as a component tester. This mode measures the threshold of the diode wired to the input.

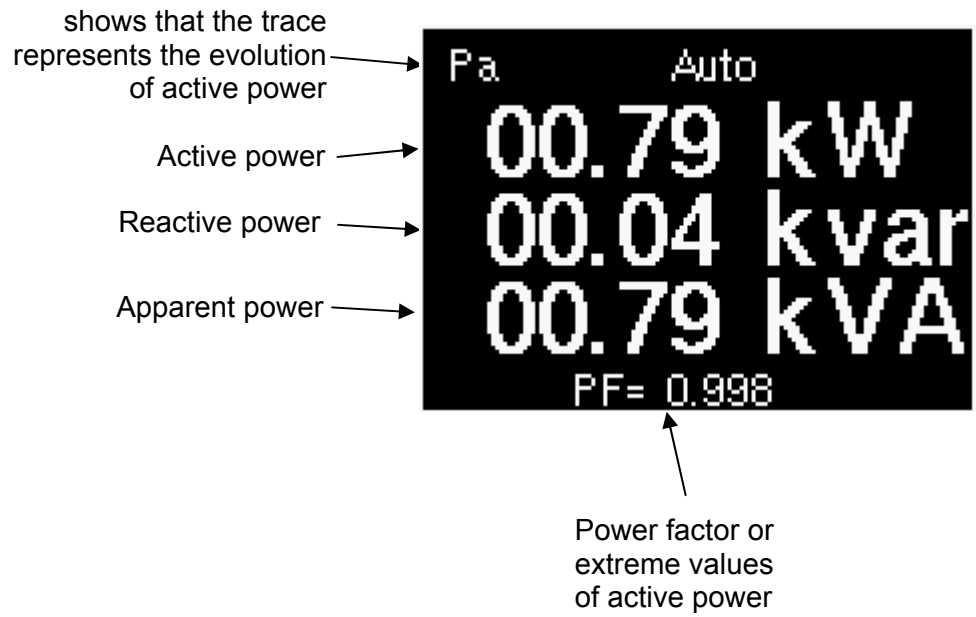
 In this mode, measurements are impossible on the other channels.

ch1: PT100

These configurations measure a temperature using a 100Ω (PT100) resistive sensor.

Multimeter Mode (cont'd)

*Display of
power values*



Multimeter Mode (cont'd)

With the POWER MEASUREMENTS option, the following measurements are possible :

Single phase output

Display of the active output calculation result measured using CH1 to measure voltage and CH2 to measure current.

Three-phase output on balanced network, without a neutral

The displayed value shows the three-phase active output calculated from the selected wiring.

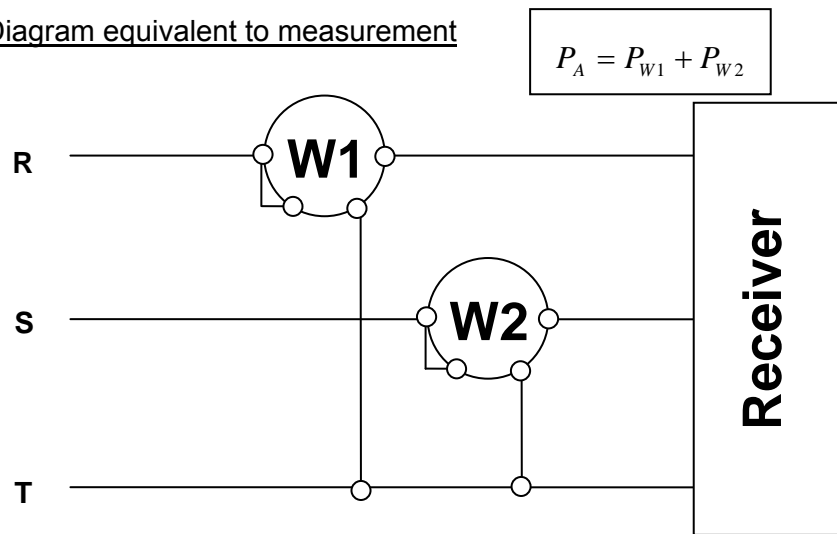
Three-phase output on balanced network, with a neutral

The displayed value is equal to 3 times the active power measured on a phase.

Three-phase output 3 wires

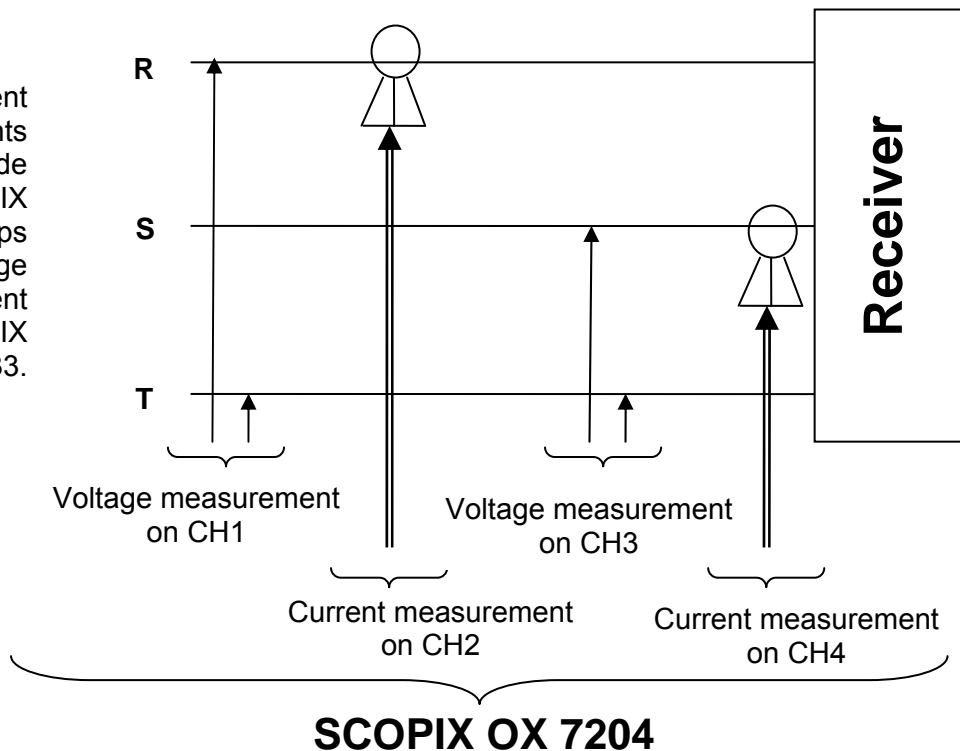
Display of the three-phase active output calculation result measured by the method using two wattmeters on a installation without a neutral.

Diagram equivalent to measurement



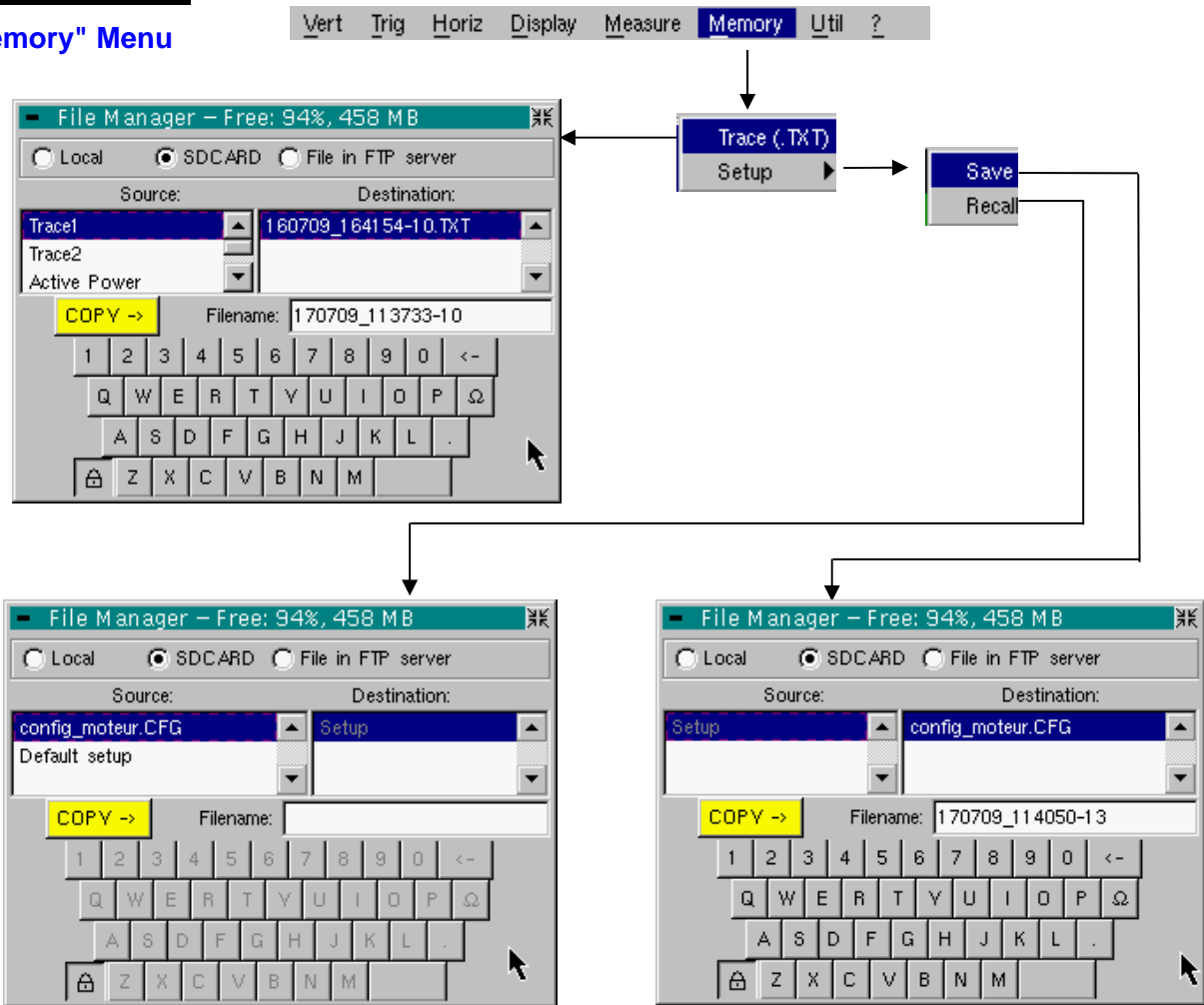
Measurement carried out with SCOPIX

Current measurements can be made with PROBIX HX0034 clamps and voltage measurement with PROBIX HX0033.



Multimeter Mode (cont'd)

The "Memory" Menu



Trace (.TXT) In "Multimeter" mode, it is only possible to save a trace in non-volatile memory in .TXT format.

Files saved with the suffix .TXT can be exported onto a PC (see §. Util Menu → Files) for processing with other software (spreadsheet, etc.).

Configuration This function is identical to the one in "Oscilloscope" mode.

The "Util" Menu

This menu is identical to the one in "Oscilloscope" mode, except :

Configuration

Screen saver

- If the recording time is equal or over 15 minutes, the screen saver will never be activated.
- If the recording time is minimal (5 min. 24 sec.), the screen saver and settings operate as in "Oscilloscope" mode.

Standby

- If the recording time is equal or over 15 minutes, standby will never be activated.
- If the recording time is minimal (5 min. 24 sec.), standby and settings operate as in "Oscilloscope" mode.

The "?" Menu

This function is identical to the one in "Oscilloscope" mode.