



Only the values assigned with a tolerance or limits are guaranteed values (after half an hour warming up). Values without a tolerance are for information only.

Vertical deviation

| Characteristics | OX 7102 - OX 7104 |
|---|--|
| Number of channels | 4 channels: CH1 to CH4 (OX 7104) 2 channels: CH1 & CH4 (OX 7102) |
| Vertical ranges | 2.5 mV to 200 V/div. <i>Variation in steps (no continuous variable coefficient)</i> |
| BW at - 3dB on all vertical ranges from 2.5 mV to 200 V/div. | 100 MHz |
| |  <i>Measured on 50 Ω load with a 6 div. amplitude signal</i> |
| Max. input voltage | 600 VDC, 600 Vrms, 850 Vpk (DC + peak AC at 1 kHz) without 1/10 probe 1400 VDC, 1 kVrms with Probix HX0030 probe derating -20 dB/decade from 100 kHz to 100 MHz |
| Input Type | Probix safety connector: class 2, insulated inputs |
| Vertical offset dynamic | ± 10 divisions on all ranges |
| Input coupling | AC: 10 Hz to 100 MHz DC: 0 to 100 MHz GND: reference |
| Bandwidth limit | 15 MHz, 1.5 MHz, 5 kHz |
| Rise time on all vertical ranges 2.5 mV to 200 V/div. | < 3,5 ns |
| Cross-talk between channels | > 70 dB  <i>Same sensitivity on both channels</i> |
| Response to rectangular signals: 1 kHz and 1 MHz | Positive or negative overshoot Overshoot ≤ 3 % Aberrations ≤ 3 % |
| Peak-to-peak gain accuracy | ± 1 % (with averaging of 4) at 1 kHz |
| Vertical resolution of the display | ± 0.4 % of full scale (without ZOOM) 0.025 % in ZOOM mode (12 bits) |
| DC vertical measurement accuracy | ± [1 % x (reading - offset) + accuracy of vertical offset + (0.05 div.) x (V/div.)] |
| Resolution of the measurements | 12 bits |
| Accuracy of vertical offset | ± [1 % x (offset value) + 200 μV + (0.1 div.) x (V/div.)] |
| Probes | The probe's attenuation coefficient in the display is taken into account automatically when Probix probes are used. |
| Vertical ZOOM function on acquired or saved curve | ZOOM factors: 16 max. |
| Electrical safety (not for accessory) | 600V CAT III, 1000V CAT II, double insulation |
| Max. voltages (not for accessory) | floating: 600V CAT III, 1000V CAT II, from 50 to 400 Hz between channels: 600V CAT III, 1000V CAT II, from 50 to 400 Hz |
| Input impedance | 1 MΩ ± 0.5 % approx. 17 pF |
| Display modes | ch1, ch4 (OX 7102) • ch1, ch2, ch3, ch4 (OX 7104) |

Technical Specifications (cont'd)

« Oscilloscope » Function


Horizontal deflection (time base)

| Characteristics | OX 7102 - OX 7104 | |
|---------------------------|---|---|
| | without the EXTENDED ACQUISITION MEMORY option | with the EXTENDED ACQUISITION MEMORY option |
| Time base ranges | 35 ranges, from 1 ns to 200 s/div. | |
| Time base accuracy | ± 0.1 % | |
| Sampling rate | 1 GS/sec. in real time | |
| | 50 GS/sec. with repetitive signal | 40 GS/sec. with repetitive signal |
| Time measurement accuracy | ± [(0.02 div.) x (time/div.) + 0,005 x reading + 1 ns] | |
| Horizontal ZOOM | Zoom factor : from x1 to x5. recording memory capacity : 2,500 samples per channel | Zoom factor : from x 1 to x 100. recording memory capacity : 50,000 samples per channel |
| | In ZOOM and normal modes : the same sequence of time base range is used. The horizontal resolution of the screen is 500 samples for 10 divisions. | |
| Mode XY | The bandwidths are identical in X and in Y (refer to §. Vertical deflection). ☞ As in normal mode, the sample frequency depends on the time base value. | |
| Phase error | < 3° | |
| Representation | temporal or frequential (FFT) | |
| Fast Fourier Transform | <ul style="list-style-type: none"> • calculation on the traces present in the screen area • dynamic refreshment as a function of the signal observed in RUN mode • windowing: rectangle, Hamming, Hanning, Blackman • scales: logarithmic or linear • automatic adjustment with autoset function | |

Technical Specifications (cont'd)

« Oscilloscope » Function

Trigger circuit

| Characteristics | OX 7042 - OX 7062 | OX 7104 - OX 7102 |
|--|---|-------------------|
| Trigger sources | CH1, CH2, CH3, CH4 (OX 7104) CH1, CH4 (OX 7102) | |
| Trigger mode | Automatic Triggered Single shot Auto Level 50% | |
| Trigger coupling without bandwidth limit | AC: BW 10 Hz to 200 MHz DC: BW 0 to 200 MHz HFreject: BW 0 to 10 kHz LFreject: BW 10 kHz to 200 MHz  <i>With bandwidth limitation activated, the bandwidth is limited to 20 MHz.</i> | |
| Trigger gradient | Falling or rising | |
| Trigger sensitivity | 0.6 div. at 1 kHz (noise rejection mode → inactive) | |
| Noise rejection | ≈ ±1.5 div. | |
| Trigger level Variation range | ±10 div. | |
| Trigger type | <u>on edge</u> | |
| | <u>on pulse width</u> < t ≈ t > t from 20 ns to 20 s | |
| | <u>Trigger after delay</u> of 120 ns to 20 s qualifier source: CH1 (CH2) (CH3) CH4 trigger source: CH1 (CH2) (CH3) CH4 | |
| | <u>Trigger after counting</u> 3 to 16,384 events qualifier source: CH1 (CH2) (CH3) CH4 counting source: CH1 (CH2) (CH3) CH4 trigger source: qualifier or counting source | |
| | <u>TV on CH1 only:</u> - Selection of line number and polarity, with 525 lines (PAL) and 625 lines (SECAM), even or odd line field - TV trigger sensitivity: > 1 div. | |
| HOLDOFF | Adjustable from 160 ns to 30 sec. | |

Technical Specifications (cont'd)

« Oscilloscope » Function

Acquisition chain

| Characteristics | OX 7102 - OX 7104 |
|-----------------------------------|--|
| | equipped with the EXTENDED ACQUISITION MEMORY option |
| ADC Resolution | 12 bits |
| Maximum sampling rate | 1 GS/s in real time 1 converter per channel |
| Transient capture MIN/MAX Mode | Minimum width of detectable glitches ≥ 2 ns |
| | On [1ns 5ms] range: 1250 MIN/MAX couples arranged in acquisition memory of 50,000 count. On [10ms 200s] range: 25 000 MIN/MAX couples |
| Acquisition memory depth | 50,000 count per channel |
| PRETRIG function | from 0 to 100% |

Technical Specifications (cont'd)

Oscilloscope Mode

Format of the various files

| Characteristics | OX 7102 - OX 7104 |
|--|---|
| | equipped with the EXTENDED ACQUISITION MEMORY option |
| Back-up memories | Managed in a file system Total size 2 Mb for storing various objects: <ul style="list-style-type: none"> - traces - text - configurations - mathematical functions - print files - image files - etc. |
| Trace files acquired in SCOPE mode Extension: .TRC | Binary format Size: ≈ 200 kb |
| Trace files acquired in RECORDER mode Extension: .REC | Binary format Size: ≈ 800 kb |
| Configuration files Extension: .CFG | Binary format Size: ≈ 1 kb |
| Print files Extension: .EPS .PRN .PCL | The format depends on the print type Size < 200 kb |
| Image files Extension: .BMP .GIF | Binary format Size .BMP: ≈ 40 kb .GIF: ≈ 5 kb |
| Mathematical function files Extension: .FCT | Text format Size: < 1kb |
| Files containing text Extension: .TXT | Text format .TXT extension files may contain measurements made in the instrument's various acquisition modes |
| .TXT file containing a trace acquired in SCOPE mode | Size ≈ 500 kb |
| .TXT file containing measurements in METER mode | Size ≈ 800 kb |
| .TXT file containing a trace acquired in RECORDER mode | Size ≈ 500 kb |

Technical Specifications (cont'd)

« Oscilloscope » Function

Processing of measurements

| | | |
|--|--|--|
| Mathematical functions | Equation editor (functions on channels or simulated) Addition, subtraction, multiplication, division and complex functions between channels. | |
| Automatic measurements | <p>Time measurements</p> <ul style="list-style-type: none"> rise time fall time positive pulse negative pulse cyclic ratio period frequency phase. counting integral | <p>Level measurements</p> <ul style="list-style-type: none"> DC voltage rms voltage peak-to-peak voltage amplitude max. voltage min voltage high plateau low plateau overshoot |
| Resolution of the measurements | 12 bits / display on 4 digits | |
| Measurements by cursors or automatic measurements | <p>DC vertical measurement accuracy $\pm [1\% (\text{reading} - \text{offset}) + \text{accuracy of vertical offset} + (0.05 \text{ div.}) + (V/\text{div.})]$</p> <p>Accuracy of 2-cursor time measurements $\pm [0.02 \times (t/\text{div.}) + 0.01 \% (\text{reading}) + 1 \text{ ns}]$</p> <p>The cursors are attached to the trace, but they can be detached to perform a measurement between channels (offset, delay, etc.)</p> <p>In XY mode, the cursors are not attached to the trace.</p> | |

Technical Specifications (cont'd)

Oscilloscope Mode

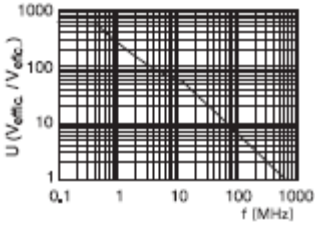

Display

| Characteristics | OX 7102-C - OX 7104-C |
|---------------------------------|--|
| Display screen | LCD 5.7" STN (colour display) CCFL back-lighting |
| Contrast | Continuous adjustment |
| Resolution | 1/4 VGA, i.e. 320 pixels horizontally x 240 pixels vertically |
| Screen saver | Delay can be selected in the Util Menu → Configuration 15', 30', 1hr or none |
| Window displayed in normal mode | Complete memory: 2500 500 counts out of the 2500 of the whole memory |
| Horizontal ZOOM | |
| Display modes | <p>Vector Points acquired, interpolated points, averaging, linear interpolation between 2 pts acquired.</p> <p>Envelope Display of min. and max. on each abscissa, acquired in several bursts</p> <p>Averaging Range of factors: none, 2, 4, 16, 64</p> <p>All acquisition Display of all the samples acquired in a burst with linear interpolation between 2 pts acquired</p> |
| Graticule | Complete or Edges |
| Indications on screen | <p>Triggering Trigger level position (with coupling and overshoot indicator) Position of the Trigger point on the bargraph and on the top edge of the screen (with overshoot indicators)</p> <p>Traces Trace identifiers, activation of the traces Position, Sensitivity Ground reference High and low overshoot indicators if traces are off screen</p> |

Miscellaneous



| | |
|--|--|
| 1/10th probe calibration signal | Form: rectangular Amplitude: $\approx 0-3\text{ V}$ Frequency: $\approx 1\text{ kHz}$ Dual insulation / channels: 600V CAT III, 1000V CAT II 🖱 Connect the cold point of the probe to the cold point of the probe calibration output. |
| Autoset | Search time $< 5\text{ s}$ Frequency range $> 30\text{ Hz}$ Range of amplitude 15 mVpp to 400 Vpp Cyclic ratio limits from 20 to 80 % |

Technical Specifications (cont'd) Accessories

| Probix | <i>These specifications apply to following PROBIX and development.</i> | |
|---|--|--|
| <p>HX0030 - 1/10 Probe</p>  | <p>1/10 probe equipped with a LED and programmable control buttons</p> <p>Measurement categories 600V CAT III, 1000V CAT II</p> <p>Accuracy $\pm 1\%$ (VDC)</p> <p>Bandwidth DC at 250 MHz</p> <p>Input capacity 15 pF</p> <p>Compensation range 12 pF to 25 pF</p> <p>Rise time 1.2 ns</p> <p>Input impedance 10 MΩ at 1%</p> <p>DERATING see curve opposite</p> | |
| <p>HX0031 - BNC</p> | <p>Probix for BNC cable connection</p> <p>Measurement category 600V CAT III, 1000V CAT II</p> <p>Accuracy $\pm 1\%$ (VDC)</p> <p>Bandwidth 250 MHz</p> | |
| <p>HX0032 - BNC 50 Ω</p> | <p>50 Ω Probix for BNC cable connection</p> <p>Measurement category 600V CAT III, 1000V CAT II</p> <p>Max. output 2 W max. (i.e 10 VDC on 50 Ω)</p> <p>Accuracy $\pm 1\%$ (VDC)</p> <p>Bandwidth 250 MHz</p> | |
| <p>HX0033 - Banana</p> | <p>Probix for connection to 'banana' type cables</p> <p>Measurement category 600V CAT III, 1000V CAT II</p> <p>Accuracy $\pm 1\%$ (VDC)</p> <p>DERATING 20 dB/decade for F >100 kHz</p> | |
| <p>HX0034 - Current clamp</p> | <p>20 mV/A Current clamp 80 A peak, AC/DC</p> <p>Measurement category 600V, CAT II</p> <p>Accuracy $\pm 1.5\%$ ± 2 mA from 0 to 45 A peak $\pm 4\%$ from 45 to 80 A peak</p> <p>Bandwidth 500 kHz @ -1dB, 1 MHz @ -3dB 8 A max. @ 0.5 MHz (*)</p> <p>Rise time 350 ns from 10% to 90%</p> <p>DERATING 40 A max. @ 100 kHz 4 A max. @ 1 MHz</p> <p>Phase error $\pm 1^\circ$</p> <p>Output voltage for $\leq \pm 0.3$ mVDC i.e. ± 15 mADC</p> <p>(*) $I_p = 0$</p> <div style="text-align: center;">  </div> <p>With the HX0034 current clamp, the service voltage between channels becomes 600V CAT II.</p> | |

Technical Specifications (cont'd)

Accessories

| | |
|---|--|
| <p>HX0035 - K Thermocouple</p>  | <p>Adaptor for K Thermocouple, 2 mV/°C</p> <p>Measurement category 30V CAT I</p> <p>Measuring range -40°C to 1,250°C</p> <p>Accuracy ± 1 % ± 3.5°C typical</p> <p><i>Electric insulation between thermocouple and earth. No electrical insulation between 2 thermocouples, the service voltage between channels becomes 600V CAT II.</i></p> |
| <p>HX0036 - PT100</p>  | <p>Adaptor for PT100 2 mV/°C</p> <p>Measurement category 30V CAT I</p> <p>Measuring range - 100°C to + 500°C</p> <p>Accuracy ± 1 % ± 1.5°C typical</p> <p><i>Electric insulation between PT100 captor and earth. No electrical insulation between 2 PT100 captors, the service voltage between channels becomes 600V CAT II.</i></p> |

Technical Specifications (cont'd)

Accessories

| | | |
|-----------------------------------|-------------------------------------|---|
| HX0072 - AmpFLEX Probe | Standards applied | IEC 61010-2-032 : 2002 EN 61326-1 (07/1997) + A1 (10/1998) + A2 (09/2001) |
| | Reference conditions | Only one conductor inserted in the flexible toroid Conductor position: centred Clamping : \varnothing 240 mm Temperature : from 18°C to 28°C Relative humidity: from 20 % to 75 % Frequency range: 40 Hz to 400 Hz Start-up before measurement: 1min External DC magnetic field: < 40 A/m No external AC magnetic field No external electric field Sinusoidal signal |
| | Use conditions | Altitude < 2000 m, indoors |
| | Range for use | from 1 A to 3500 A _{RMS} |
| | Specified range | from 5 A to 3000 A _{RMS} |
| | Accuracy in the measurement range | 1 % \pm 0.5 A |
| | 50 Hz dephasing | 1.3° max. (1° typ.) |
| | Residual current at I = 0 A (noise) | 1.5 A _{RMS} max. (0.5 A _{RMS} typ.) |
| | Bandwidth at -3 dB | 10 Hz to 200 Hz |
| | Power-up and to-idle time | 1.5 μ s |
| | Residual DC current | 20 A max. (invisible with AC coupling) |
| | Delay time | 1.2 μ s max. |
| | Frequency derating | 3000 A if 10 Hz < Freq. < 10 kHz 50A if Freq. = 200 kHz |
| | Electromagnetic immunity at 10 V/m | error < 3 % of measurement extent |
| | Operating temperature | -10°C to +55°C |
| HX0073 - MiniAmpFLEX Probe | Standards applied | IEC 61010-2-032 : 2002 EN 61326-1 (07/1997) + A1 (10/1998) + A2 (09/2001) |
| | Reference conditions | Only one conductor inserted in the flexible toroid centred Conductor position: centred Clamping : \varnothing 35 mm Temperature : from 18°C to 28°C Relative humidity: from 20 % to 75 % Frequency range: 40 Hz to 400 Hz Start-up before measurement: 1min External DC magnetic field: < 40 A/m No external AC magnetic field No external electric field Sinusoidal signal |
| | Use conditions | Altitude < 2000 m, indoors |
| | Range for use | from 0.2 A to 350 A _{RMS} |
| | Specified range | from 1 A to 300 A _{RMS} |
| | Accuracy in the measurement range | 1 % \pm 70 mA |
| | 50 Hz dephasing | 1.3° max. (1° typ.) |
| | Residual current at I = 0 A (noise) | 0.2 A _{RMS} max. (0.1 A _{RMS} typ.) |
| | Bandwidth at -3dB | 10 Hz to 3 MHz typical |
| | Power-up and to-idle time | < 110 ns |
| | Residual DC current | 2 A max. (invisible with AC coupling) |
| | Delay time | 600 ns max. |
| | Frequency derating | 300 A if 10Hz < Freq. < 100 kHz 10 A if Freq. > 1 MHz |
| | Electromagnetic immunity at 10 V/m | error < 3 % of measurement extent |
| | Operating temperature | -10°C to +55°C |

Technical Specifications (cont'd)

Accessories

| | |
|------------------------------|--|
| HX0061 | Powered from a vehicle battery |
| | Compliant with 'European Directive 2004/104/CE' 2004 Issue standard |
| Max. input voltage | From 11 VDC to 60 VDC |
| Output voltage | From 115 VDC to 155 VDC |
| Output supplied | 32 W max. |
| Power consumed | < 1.25 * power supplied |
| Unit potential | If the battery is correctly connected, same potential as the negative pole of the battery. |
| Operating temperature | Ambient temperature: 10°C to 55°C Unit temperature ≈ Ambient temperature + 20°C |
| Fuse protection | 2 - 5 x 20 0.63 A ceramic 250 VT fuses (AT0080 x 2) To replace a fuse: <ul style="list-style-type: none"> • Disconnect the HX0061 (oscilloscope and car power socket), • Unscrew the 4 screws in the top lid • Replace the blown fuse(s) |
| Heat protection | If temperature > 70°C → output current cuts out |
| Polarity protection | The HX0061 is protected if the power supply polarity is reversed. |
| Warning | The HX0061 should only be used with compatible CHAUVIN ARNOUX and METRIX instruments (such as SCOPIX ...). |



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Technical Specifications

« Multimeter » Function

Only the values assigned with a tolerance or limits are guaranteed values (after half an hour warming up). Values without a tolerance are for information only.

| | | | | | | |
|-------------------------------------|---|-------------------|--------------------------|-------|----------------|---------------------|
| Display | 4,000 counts in voltmeter | | | | | |
| Input impedance | 1 M Ω | | | | | |
| Max. input voltage | 600 Vrms sinus and 800 VDC, without probe 1000 Vrms et 1400 VDC, with HX0030 probe | | | | | |
| Floating max. voltage | 600 Vrms up to 400 Hz CAT III, 1000 V CAT II | | | | | |
| DC measurement | | | <u>HX0030 probe</u> | | | |
| Ranges | 0.4 V | 4 V | 40 V | 400 V | 800 V | 8 kV |
| Resolution | 0.1 mV | 1 mV | 10 mV | 0.1 V | 1 V | 1 V |
| Accuracy | 0.5 % \pm 5 D in DC from 10 % to 100 % of scale | | | | | |
| Common mode rejection | > 70 dB at 50 or 60 or 400 Hz | | | | | |
| AC, AC+DC measurements | | | | | | <u>HX0030 probe</u> |
| Ranges | 0.3 V | 3 V | 30 V | 300 V | 600 Vrms sinus | 6 kVrms |
| | 0.4 V | 4 V | 40 V | 400 V | 800 Vpeak | 8 kVDC |
| Resolution | 0.1 mV | 1 mV | 10 mV | 0.1 V | 1 V | 1 V |
| Accuracy with AC+DC coupling | 1 % \pm 15 D from DC to 5 kHz from 10 % to 100 % of scale (to 580 Vrms) | | | | | |
| | 2 % \pm 15 D from 5 to 10 kHz id. | | | | | |
| | 3 % \pm 15 D from 10 to 200 kHz id. | | | | | |
| AC | 1 % \pm 15 D from 40 Hz to 5 kHz id. | | | | | |
| | 2 % \pm 15 D from 5 to 10 kHz id. | | | | | |
| | 3 % \pm 15 D from 10 to 200 kHz id. | | | | | |
| Common mode rejection | > 70 dB at 50 or 60 or 400 Hz | | | | | |
| Resistance measurement | On Channel 1 | | | | | |
| Ranges (end of scale) | Ohmmeter | Resolution | Measuring current | | | |
| | 80 Ω | 0.01 Ω | 0.5 mA | | | |
| | 800 Ω | 0,1 Ω | 0.5 mA | | | |
| | 8 k Ω | 1 Ω | 5 μ A | | | |
| | 80 k Ω | 10 Ω | 5 μ A | | | |
| | 800 k Ω | 100 Ω | 500 nA | | | |
| | 8 M Ω | 1000 Ω | 50 nA | | | |
| | 32 M Ω | 10 k Ω | 50 nA | | | |
| Accuracy | \pm 0.5 % + 25 D from 10 % to 100 % of scale | | | | | |
| Open circuit voltage | \approx 3 V | | | | | |
| Continuity measurement | On Channel 1 | | | | | |
| Beeper | < 30 Ω \pm 5 Ω | | | | | |
| Measuring current | \approx 0.5 mA | | | | | |
| Beeper response | < 10 ms | | | | | |
| Diode test | On Channel 1 | | | | | |
| Voltage | in open circuit : \approx + 3.3 V | | | | | |
| Accuracy | 0.5 % + 5 D | | | | | |
| Measuring current | \approx 0.6 mA | | | | | |

Technical Specifications (cont'd)

« Multimeter » Function

| | | | |
|---|---|-------------------|--------------------------|
| Capacitance measurement | On Channel 1 | | |
| Ranges | Capacimeter | Resolution | Measuring current |
| | 5 mF | 1 μ F | 500 μ A |
| | 500 μ F | 0.1 μ F | 500 μ A |
| | 50 μ F | 0.01 μ F | 500 μ A |
| | 5 μ F | 1 nF | 500 μ A |
| | 500 nF | 100 pF | 5 μ A |
| | 50 nF | 10 pF | 5 μ A |
| | 5 nF | 1 pF | 500 nA |
| Accuracy | - on 5 nF range (measurement with a shielded cord) : from 500 pF to 1 nF : $\pm 6 \% + 10$ UR from 1 nF to 2 nF : $\pm 4 \% + 10$ UR > 2 nF : $\pm 2 \% + 10$ UR - on other ranges : $\pm 2 \% + 10$ D from 10 % to 100 % of full scale | | |
| Cancellation of series and parallel Rs | Parallel R > 10 k | | |
| Frequency measurement | 20 Hz to 200 kHz on a square and sinus signal 20 Hz to 20 kHz on a triangle signal Accuracy : 0.1 % | | |

Operating modes

| | |
|---|---|
| Relative mode | Relative, Monitoring and Frequency modes are exclusive. |
| Monitoring (statistics) | |
| Frequency | |
| Time interval between 2 measurements | adjustable from 1 second to 1 hour |
| Record duration | from 5' 24" to one month |
| Measurement log | Measurement display = f (time) default window of 4 min (4 measurements per second) |
| RUN | Initiation of the measurements |
| HOLD | Freezing of the measurement |

Technical specifications (cont'd)

« Multimeter » Function

| Display | |
|--|---|
| Oscilloscope not equipped with the EXTENDED ACQUISITION MEMORY option | |
| In numeric form | Principal measurement → large-size display Secondary measurement → small-size display The touch-sensitive screen allows you to select the secondary measurement via a menu. |
| Graphic trace | History of the measurements over time Objective: Presentation of the measurements as an amplitude histogram. |
| Number of measurements represented on a trace | 27 000 |
| Zoom | x1, x10 |

| Trigger | |
|--|--|
| Oscilloscope equipped with the EXTENDED ACQUISITION MEMORY option | |
| Trigger type | Triggering search by measurement analysis Recording of the trigger event (default) Triggering if detection of: <ul style="list-style-type: none"> • Measurement above threshold • Measurement below threshold • Measurement below or above threshold • Measurement outside of two defined limits |
| Trigger event period | Trigger if the condition is verified during a parameterizable period: |
| <i>Min. value of the period</i> | Recording period / 12500 |
| <i>Max. value of the period</i> | Recording period / 4 |

Technical Specifications

Mains « Harmonics » Analysis Mode

| | |
|---|---|
| 2-page display of "Harmonics" | Selection of the page in the "Display" menu |
| <i>Even harmonics</i> | 2 to 30 + Fundamental |
| <i>Odd harmonics</i> | 3 to 31 + Fundamental |
| 1-page display of "Harmonics" | Selection of the page in the "Display" menu |
| <i>Harmonics</i> | 16 + Fundamental |
| Fundamental Frequency of the signal analyzed | 40 to 450 Hz |
| Measurement accuracy | |
| <i>Level of Fundamental</i> | ± 2 % ± +10 D |
| <i>Level of Harmonics</i> | ± 3 % ± +10 D |
| <i>Harmonic Distortion</i> | ± 4 % |

« Recorder » Mode


| | |
|--------------------------------------|---|
| | Oscilloscope equipped with the EXTENDED ACQUISITION MEMORY option |
| Recording period | from 2 seconds to 1 month |
| Sampling rate | From 40µs to 53.5 secs |
| Fault capture | 100 faults in memory up to 200 faults in files |
| Triggering | Triggering search by sample analysis; Trigger if Detection of: <ul style="list-style-type: none"> • Signal above threshold • Signal below threshold • Signal below or above threshold • Signal outside of two defined limits |
| Trigger event period | Trigger if the condition is verified during a parameterizable period: |
| <i>Min. value of the period</i> | Recording period / 12500 |
| <i>Max. value of the period</i> | Recording period / 4 |
| Display | Search for minimum and maximum Fault search |
| Vertical, horizontal accuracy | Identical specifications to those in "Oscilloscope" mode |

Technical Specifications (cont'd)

Communication interfaces

| | |
|---|--|
| RS232C link configuration | <p><u>Selection of speed in Bauds</u> 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200</p> <p><u>Parity selection</u> None, even, odd</p> <p><u>Word length selection</u> 8 bits or 7 bits</p> <p><u>Stop bit number selection</u> 1 or 2 stop bits</p> <p><u>Protocol selection</u> Hard (for RTS and CTS lines) Soft (for XON and XOFF characters) None (no protocol)</p> |
| ETHERNET Interface | <p><u>Type</u> 10BASE-T (Twisted Pair)</p> <p><u>Lead</u> Interface scope / RJ45 8 count</p> <p><u>Standard</u> IEEE 802.3</p> |
| RS232 / ETHERNET Interface Connector | <p>Double insulation, 600 V CAT III, 1000 V CAT II / inputs</p> <p>Location: right-hand side of the instrument</p> <p>with: 1 RS232C interface cable (HX0042) 1 twisted ETHERNET interface cable (HX0040)</p> |

Remote programming of the instrument by a PC

| | |
|---|---|
|  | <p>Programming of the instrument via the RS232C or ETHERNET interface with SCPI commands</p> <p>IP protocol available on ETHERNET: FTP server, TELNET, HTTP server, LPD client, DHCP client.</p> <p><i>Refer to the remote programming manual for the list of commands.</i></p> |
|---|---|

Warning!

| | |
|-----------------------|---|
| Error Messages | <p>If one of those codes (or the addition of several codes) is present when getting started : → a default has been detected. In this case, contact your closest distributor (See §. Maintenance).</p> <p>Autotest : Error n° 0001 : Micro Problem Autotest : Error n° 0002 : Flash Problem Autotest : Error n° 0004 : RAM Problem Autotest : Error n° 0008 : FPGA Problem Autotest : Error n° 0010 : Numerization problem on channel 1 Autotest : Error n° 0020 : Numerization problem on channel 2 Autotest : Error n° 0040 : Numerization problem on channel 3 Autotest : Error n° 0080 : Numerization problem on channel 4 Autotest : Error n° 0100 : Analog problem on channel 1 Autotest : Error n° 0200 : Analog problem on channel 2 Autotest : Error n° 0400 : Analog problem on channel 3 Autotest : Error n° 0800 : Analog problem on channel 4 Autotest : Error n° 1000 : Problem on ETHERNET link</p> |
|-----------------------|---|

General specifications

Environment

- Reference temperature 18°C to 28°C
- Operating temperature 0°C to 40°C
- Storage temperature -20°C to +60°C
- Utilization indoors
- Altitude < 2000 m
- Relative humidity < 80 % up to 31°C

Power supply

- **Battery** 9.6 V ; 3.5 Ah
 - Type Ni-MH
 - Charge time ≈ 2,30 hours with instrument switched off
≈ 5 hours with instrument operating
 - Charge life **OX 7104** (4 channels) approximately 2 hours 30 minutes
OX 7102: approx. 4h
in standby mode: approx. 10h
 - Screen saver (automatic standby mode) adjustable by menu: 15', 30', 1h or none
 - Auto power-off adjustable by menu: 30', 1h, 4h, 24h
- **External power supply (battery charger)**
 - Mains voltage 98 V to 264 V
 - Frequency from 50 to 60 Hz
 - Consumption < 60 VA for fast battery charging



Safety

As per IEC 61010-1 (2001):

- Insulation class 2
- Pollution level 2
- "Measurement" input overvoltage category 600 V CAT III, 1000 V CAT II

EMC

This instrument conforms the EMC NF EN 61326-1, 07/97+A1, 10/98 norm :

- Emission class A instrument
- Immunity influence magnitude: 2 div. in the presence of a 10 V/m electromagnetic field.

Mechanical Specifications

Casing

- Dimensions 265 mm x 195 mm x 56 mm
- Weight 1.9 kg with battery
- Ext. power supply weight 450 g
- Sealing
 - IP 41 **OX 7104**
 - IP 51 **OX 7102** with **Probix**
probes connected and cap of the side connector closed

Packaging

- Dimensions 345 mm x 275 mm x 200 mm

Ordering Information

Portable Oscilloscope Model OX 7102-C^{II} Kit (2 x 100MHz, Color)..... Cat. #2124.57

Includes: Oscilloscope; two PROBIX PRHX1 1/10 Probes 250MHz, 600V CAT III; two PROBIX 4mm banana plug adapter; one US power adapter (115V, 60Hz); one battery pack, NiMH 9.6V, 3.8Ah; two set-of-two color-coded leads, 1.5m (red/black) with needle probe tips; two Ethernet cables (one straight / one crossed); two set-of-two grip probes (red/black); two stylus; aluminum carrying case, SX-METRO data processing and analysis software; Recorder/Harmonic/Power/50K memory option (installed); three-year product warranty and registration card, and user manual on CD-ROM.

Portable Oscilloscope Model OX 7104-C^{II} Kit (4 x 100MHz, Color)..... Cat. #2124.65

Includes: Oscilloscope; four PROBIX PRHX1 1/10 Probes 250MHz, 600V CAT III; four PROBIX 4mm banana plug adapter; one US power adapter (115V, 60Hz); one battery pack, NiMH 9.6V, 3.8Ah; four set-of-two color-coded leads, 1.5m (red/black) with needle probe tips; two Ethernet cables (one straight / one crossed); four set-of-two grip probes (red/black); two stylus; aluminum carrying case; SX-METRO data processing and analysis software; Recorder/Harmonic/Power/50K memory option (installed); three-year product warranty and registration card, and user manual on CD-ROM.

Oscilloscope C^{II} Series Power Kit..... Cat. #2124.94

Includes: One PROBIX K Thermocouple adapter; three MiniFlex[®] 0.5A to 300A, 3MHz sensors; three set-of-two color-coded leads, 1.5m (red/black) with color-coded alligator clips; small classic tool bag.

Accessories and Replacement Parts

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|---|----------------------|
| SX-METRO/P software, data retrieval processing | Cat. #2124.70 |
| PROBIX PRHX1, 1/10 Probe, 250MHz, 1000V Cat. II (600V Cat. III) (HX0030)..... | Cat. #2124.73 |
| PROBIX PRHX4, BNC adapter (HX0031)..... | Cat. #2124.74 |
| PROBIX PRHX5, 50Ω adapter (HX0032) | Cat. #2124.75 |
| PROBIX banana plug (4mm) adapter (HX0033) | Cat. #2124.76 |
| PROBIX current probe, 20mA-20A, 100kHz (HX0034)..... | Cat. #2124.77 |
| PROBIX PRHX7 K thermocouple adapter (HX0035) | Cat. #2124.78 |
| Carrying case, aluminum with foam cut-outs | Cat. #2124.79 |
| Cable – Ethernet cable, straight for use only with OX Oscilloscope Series | Cat. #2124.80 |
| Cable – Ethernet cable, crossed for use only with OX Oscilloscope Series | Cat. #2124.81 |
| RS-232 Adapter/Centronics..... | Cat. #2124.82 |
| Cable – RS-232/9-Pin D-SUB Cable for use with OX Oscilloscopes Series..... | Cat. #2124.83 |
| Lead - set of two, color-coded (1.5m) (4mm straight, 4mm right angle) with color-coded alligator clips | Cat. #2124.84 |
| Lead – Set of 2, 5 ft Color-coded Leads (red/black), 4mm Right-angle Plug, Probe w/tips for use with DMM and OX Series Scopes {Rated 600V CAT IV, 1000V CAT III 15A} | Cat. #2124.85 |
| Grip Probes - set of two, color-coded (red/black) | Cat. #2124.86 |
| Oscilloscope C ^{II} Series Power Kit | Cat. #2124.94 |
| 600V Probe Adapter Set (HX0071) | Cat. #2124.90 |
| AmpFlex [®] 0.5A to 3kA, 200kHz (HX0072) | Cat. #2124.91 |
| MiniFlex [®] 0.5A to 300A, 3MHz (HX0073)..... | Cat. #2124.92 |
| Power Adapter 115V US | Cat. #5000.15 |
| Battery Pack 9.6V, 3.8 Ah NiMH | Cat. #2140.19 |
| Stylus - Replacement, set of five | Cat. #5000.17 |



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