Vertical deviation

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.

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. *Variation in steps (no continuous variable coefficient)*
BW at - 3dB on all vertical ranges from 2.5 mV to 200 V/div.	100 MHz
	☝ *Measured on 50 Ω load with a 6 div. amplitude signal*
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 ☝ *Same sensitivity on both channels*
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 Fast Fourier Transform	temporal or frequential (FFT) • 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 ☝ *With bandwidth limitation activated, the bandwidth is limited to 20 MHz.*	
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**	on edge	
	on pulse width < t ≈ t > t from 20 ns to 20 s	
	Trigger after delay of 120 ns to 20 s qualifier source: CH1 (CH2) (CH3) CH4 trigger source: CH1 (CH2) (CH3) CH4	
	Trigger after counting 3 to 16,384 events qualifier source: CH1 (CH2) (CH3) CH4 counting source: CH1 (CH2) (CH3) CH4 trigger source: qualifier or counting source	
	TV on CH1 only: - 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: - 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	**Time measurements** rise time fall time positive pulse negative pulse cyclic ratio period frequency phase. counting integral	**Level measurements** 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		
DC vertical measurement accuracy	± [1% (reading - offset) + accuracy of vertical offset + (0.05 div.) + (V/div.)]	
Accuracy of 2-cursor time measurements	± [0.02 x (t/div.) + 0.01 % (reading) + 1 ns] The cursors are attached to the trace, but they can be detached to perform a measurement between channels (offset, delay, etc.) In XY mode, the cursors are not attached to the trace.	

Technical Specifications (cont'd)
Oscilloscope Mode

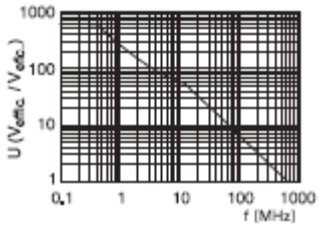
Display

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 **Horizontal ZOOM**	Complete memory: 2500 500 counts out of the 2500 of the whole memory
Display modes	
Vector	Points acquired, interpolated points, averaging, linear interpolation between 2 pts acquired.
Envelope	Display of min. and max. on each abscissa, acquired in several bursts
Averaging	Range of factors: none, 2, 4, 16, 64
All acquisition	Display of all the samples acquired in a burst with linear interpolation between 2 pts acquired
Graticule	Complete or Edges
Indications on screen	
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)
Traces	Trace identifiers, activation of the traces Position, Sensitivity Ground reference High and low overshoot indicators if traces are off screen

Miscellaneous

1/10th probe calibration **signal**	Form: rectangular Amplitude: ≈ 0- 3 V Frequency: ≈ 1kHz 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 s
Frequency range	> 30 Hz
Range of amplitude	15 mVpp to 400 Vpp
Cyclic ratio limits	from 20 to 80 %

Technical Specifications (cont'd)
Accessories

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

Technical Specifications *(cont'd)*
Accessories

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

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 : ∅ 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 % ± 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 µs
	Residual DC current	20 A max. (invisible with AC coupling)
	Delay time	1.2 µs 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 : ∅ 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 % ± 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: • 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 …).

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 MΩ					
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						HX0030 probe
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 % ± 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						HX0030 probe
Ranges	0.3 V 0.4 V	3 V 4 V	30 V 40 V	300 V 400 V	600 Vrms sinus 800 Vpeak	6 kVrms 8 kVDC
Resolution	0.1 mV	1 mV	10 mV	0.1 V	1 V	1 V
Accuracy with AC+DC coupling	1 % ± 15 D from DC to 5 kHz from 10 % to 100 % of scale (to 580 Vrms) 2 % ± 15 D from 5 to 10 kHz id. 3 % ± 15 D from 10 to 200 kHz id.					
AC	1 % ± 15 D from 40 Hz to 5 kHz id. 2 % ± 15 D from 5 to 10 kHz id. 3 % ± 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 kΩ	1 Ω	5 µA
	80 kΩ	10 Ω	5 µA
	800 kΩ	100 Ω	500 nA
	8 MΩ	1000 Ω	50 nA
	32 MΩ	10 kΩ	50 nA

Accuracy	± 0.5 % + 25 D from 10 % to 100 % of scale
Open circuit voltage	≈ 3 V

Continuity measurement — ***On Channel 1***

Beeper	< 30 Ω ± 5 Ω
Measuring current	≈ 0.5 mA
Beeper response	< 10 ms

Diode test — ***On Channel 1***

Voltage	in open circuit : ≈ + 3.3 V
Accuracy	0.5 % + 5 D
Measuring current	≈ 0.6 mA

Technical Specifications (cont'd)
« Multimeter » Function

Capacitance measurement

On Channel 1

Ranges

Capacimeter	Resolution	Measuring current
5 mF	1 µF	500 µA
500 µF	0.1 µF	500 µA
50 µF	0.01 µF	500 µA
5 µF	1 nF	500 µA
500 nF	100 pF	5 µA
50 nF	10 pF	5 µA
5 nF	1 pF	500 nA

Accuracy

- on 5 nF range (measurement with a shielded cord) :
  - from 500 pF to 1 nF : ± 6 % + 10 UR
  - from 1 nF to 2 nF : ± 4 % + 10 UR
  - > 2 nF : ± 2 % + 10 UR
- on other ranges : ± 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: • 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:
Min. value of the period	Recording period / 12500
Max. value of the period	Recording period / 4

Technical Specifications
Mains « Harmonics » Analysis Mode

2-page display of "Harmonics"	Selection of the page in the "Display" menu
Even harmonics	2 to 30 + Fundamental
Odd harmonics	3 to 31 + Fundamental
1-page display of "Harmonics"	Selection of the page in the "Display" menu
Harmonics	16 + Fundamental
Fundamental Frequency of the signal analyzed	40 to 450 Hz
Measurement accuracy	
Level of Fundamental	± 2 % ± +10 D
Level of Harmonics	± 3 % ± +10 D
Harmonic Distortion	± 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: • 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:
Min. value of the period	Recording period / 12500
Max. value of the period	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*	Selection of speed in Bauds 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 Parity selection None, even, odd Word length selection 8 bits or 7 bits Stop bit number selection 1 or 2 stop bits Protocol selection Hard (for RTS and CTS lines) Soft (for XON and XOFF characters) None (no protocol)
***ETHERNET** Interface*	Type 10BASE-T (Twisted Pair) Lead Interface scope / RJ45 8 count Standard IEEE 802.3
***RS232** / **ETHERNET** Interface Connector*	Double insulation, 600 V CAT III, 1000 V CAT II / inputs Location: right-hand side of the instrument with: 1 RS232C interface cable *(HX0042)* 1 twisted ETHERNET interface cable *(HX0040)*

Remote programming of the instrument by a PC

	Programming of the instrument via the RS232C or ETHERNET interface with SCPI commands IP protocol available on ETHERNET: FTP server, TELNET, HTTP server, LPD client, DHCP client.
☞	*Refer to the remote programming manual for the list of commands.*

Warning!

Error Messages	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). 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

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

CE

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

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**