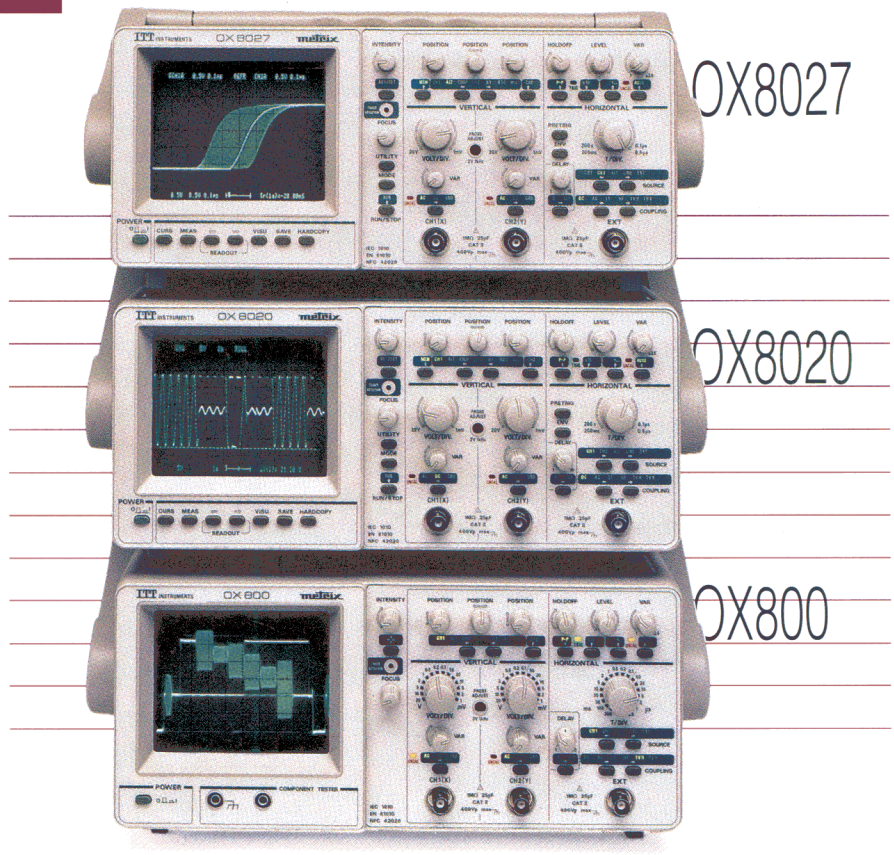
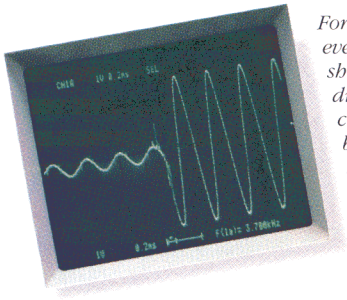
20 MHz Analog Scopes With 40 MS/s DSOs



Metrix OX80 Series Analog Oscilloscopes and Analog/DSOs deliver 20 MHz performance in an easy-to-use, programmable test instrument. OX80 Analog oscilloscopes and Analog/DSOs offer microprocessor-controlled digital interfaces for fast automatic setups.

AUTOSET And SCPI Programmability

OX80 Series oscilloscopes retain your setups in non-volatile RAM and their microprocessor-controlled, digital front panel includes an AUTOSET feature to automatically set both the vertical and time scale. Additionally, OX8020 and OX8027 Analog/DSOs are fully programmable with SCPI (Standard Commands for Programmable Instruments).



For single events, Single-shot mode displays conditions before the trigger.

Analog Advantages

OX80 Series oscilloscopes have the familiar look and feel of traditional analog oscilloscopes. Signals are displayed in real time with no delay for analog to digital conversion and storage. And because all of the signal is displayed rather than a set of points, technicians avoid misinterpretation due to undersampling, as can occur with digital oscilloscopes.

Digital Test Benefits

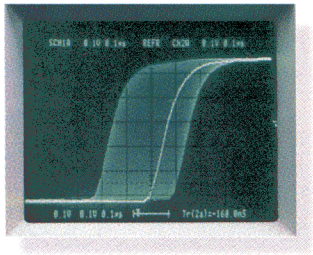
In digital mode, the 40 MS/s OX8020 and OX8027 oscilloscopes store waveforms in memory, allowing technicians to compare measured waveforms with "known-good" waveforms. For one-shot events, DSOs display conditions before the trigger. After acquisition, data can be manipulated and displayed in different ways. Time base and vertical position can be adjusted and portions of waveforms can be examined. Technicians can also interpolate or smooth waveforms. And because the OX8020 and OX8027 oscilloscopes are digital, measurements can be output to plotters, computer files and monitors.

Applications For OX80 Series

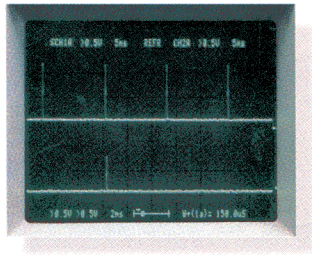
Quality assurance
Production testing
Service and repair
Education
R&D laboratories
Automation, control, regulation
Medical equipment testing
Physical sciences testing
Vibration testing
Mechanical testing
Power line analysis

Digital Functions

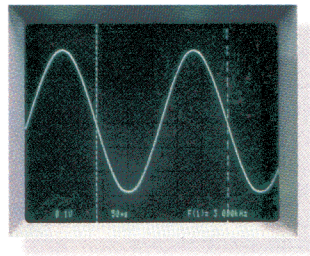
OX80 Series DSOs feature single-shot, envelope and glitch capture modes as well as cursor measurements for real-time and stored waveforms.



Envelope mode: Each sweep of a repetitive signal accumulates on screen, building up an envelope view of signal variations.



Glitch capture mode captures transients greater than 50 ns, reducing measurement errors caused by under sampling.



Two horizontal and vertical cursors allow choice of measurements on real time and stored waveforms.

OX80 Series scopes are compatible with PCs running LabVIEW® and LabWindows® software for interactive computer-controlled testing, product development and training.

Safety

The European Low Voltage Directive now requires all new laboratory measuring equipment to meet the IEC1010 safety standard. Metrix OX80 Series oscilloscopes fully comply with the IEC1010 standard which ensures the highest level of user safety and specifies overvoltage CAT II and degree of pollution 2.

Accuracy and traceability

To ensure that every instrument Metrix manufactures is traceable to national and International standards, Metrix maintains a COFRAC Etalonnage accredited calibration laboratory. All OX80 Series oscilloscopes are shipped with a declaration of conformity.

Specifications For OX80 And OX86 Series Oscilloscopes

Selector Guide (includes OX710D, see page 38, and OX2000, see pages 32 - 33 for details)

	OX710D	OX800	OX801	OX8020	OX8027	OX860	OX8620	OX8627	OX2000
Analog scope bandwidth	2 x 15 MHz	20 MHz	20 MHz	20 MHz	20 MHz	100 MHz	100 MHz	100 MHz	150 MHz
Digital scope S/s				40 MS/s	40 MS/s		40 MS/s	40 MS/s	200 MS/s
Digital memory				2X4 Kword	4X8 Kword		2X4 Kword	4X8 Kword	40 Kword
Glitch capture					>50 ns			>50 ns	>10 ns
RS232 interface		Optional	Optional	Yes	Yes	Optional	Yes	Yes	Yes
IEEE488.2 interface					Yes			Yes	Yes
Centronics printer output				Optional	Optional		Optional	Optional	Optional
Safety	IEC1010 Class 1	IEC1010 Class 1	IEC1010 Class 2	IEC1010 Class 1	IEC1010 Class 2	IEC1010 Class 1	IEC1010 Class 1	IEC1010 Class 1	IEC1010 Class 1

General Specifications for OX80 and OX86 Series*

Safety: IEC1010-1 class 1 (OX801 Class 2); overvoltage category II; pollution degree 2
EMC: IEC801, level 2; EN55011 class B
Operating: 0° C to + 40° C
Storage: - 20° C to + 70° C
Reference: + 18° C to + 28° C
Humidity: < 80% relative humidity at + 40° C
Power supply: 110-230-240 V ± 10% (50/60 Hz) for OX80; 94 V - 264 V (48/440 Hz) for OX86 series.
Consumption: 80 W max. for OX8020, OX8027; 50 W max. for OX800, OX801. < 50 W max. for OX 860; < 70 W max. for OX 8620, OX 8627.
Dimensions: 450 x 340 x 155 mm
Weight: OX800, OX801: 6.3 kg.; OX8020, OX8027: 7.2 kg.; OX 860: 5.5 kg; OX 8620, OX 8627: 6 kg

AUTOSET
Automatic vertical and horizontal configuration of the instrument to match the signals on inputs CH1 and CH2.

CALIBRATOR
Waveform: square wave
Amplitude: 2 V ± 1% (OX80); 0.5 V ± 1% (OX86)
Frequency: 1 kHz ± 1% (OX80); 10 Hz to 50 kHz (according to sweep time) for OX86 series.
Symmetry: 50% ± 1 %

CRT
Screen: 8 x 10 cm, internal graticule
Accelerating voltage: 2 kV approx. (OX80); 15.5 kV approx. (OX86).
Trace rotation

Z-MODULATION
Input (rear panel): BNC
Zin: 2 kΩ (OX80); 10 kΩ (OX86).
Sensitivity: TTL level max. ± 20 VDC (OX80); TTL level max. ± 50 VDC (OX86).
Input frequency: 4 MHz max. (OX80); 20 MHz max. (OX86).

INTERFACES
RS 232 serial interface (25-way male D-connector) for OX8020, OX8027, OX8620, OX8627.
IEEE 488-2 interface for OX8027, OX 8627
Fully programmable with standard SCPI (OX8020, OX8027, OX8620 and OX8627).
HPGL screen hard copy plotter output (OX8020/27/8620/27): RS232 (IEEE 488.2: OX8027, OX8627)
Optional HS1251 converter: for screen hard copy to Centronics printer
Optional HA1259 converter: RS 232 interface for OX860; HA1255 for OX800; HA1256 for OX801.

WARRANTY : 2 years

Analog functions

VERTICAL AMPLIFIERS
Bandwidth (- 3 dB):
AC coupled: 10 Hz to 20 MHz (OX80); 10 Hz to 100 MHz (2 mV to 5 V/div.) for OX86.
DC coupled: 0 to 20 Hz (OX80); 0 Hz to 100 MHz (2 mV to 5 V/div.) for OX86.
Sensitivity: 1 mV to 20 V/div. (OX800/8020/8027); 2 mV to 20 V/div. (OX801); 2 mV to 5 V/div. ± 3 % (1-2-5) for OX86.
Fine adjustment: 1 to 1/2.5 (with "UNCAL" LED)
Input impedance: 1 MΩ ± 1% /25 pf (OX80); 1 MΩ / 15 pF (OX86).
Rise time: < 17.5 ns (OX80); < 3.5 ns (2 mV to 5V/div.) for OX86.
Operating modes: CH1; ± CH2 ; CH1 and ± CH2 alternate or chopped; add/subtract
Max input voltage: ± 400 V max., (DC or AC peak at 1 kHz) ; Cat. II
Bandwidth limit: 20 MHz

X-Y OPERATION
Mode: CH1 in X-axis ; CH2 in Y-axis
Sensitivity: 1 mV to 20 V/div. (OX800/8020/8027); 2 mV to 20 V/div. (OX801); 2 mV/div. to 5 V/div. (OX86).
Bandwidth channel X (- 3 dB): 0 to 2 MHz (OX80) 0 to 4 MHz (OX86).
Input impedance: 1 MΩ/25 pf (OX80); 1 MΩ/15 pF (OX86).
Phase difference: < 3° to 120 kHz (all models)

MAIN TIME BASE TB 1
Sweep time: 50 ns/div. to 0.1 s/div. ± 3% (1-2-5 sequence)
Fine adjustment: 1 to 2.5 (with "UNCAL" LED) up to 0.25 s/div.
Expansion x 10: max. sweep 5 ns/div. ± 5%
Hold-off: variable 1 - 10

DELAYED TIME BASE TB 2
Sweep time: 0.5 µs/div. to 0.2 s/div. ± 3% (1-2-5 sequence) for OX80; 50 ns/div. to 0.1 s/div. ± 3% (1-2-5 sequence) for OX86.
Horizontal modes: Intensified alternate; delayed
Run after delay
Trig after delay
Fine adjustment: 1 to 2.5 (with "UNCAL" LED) up to 0.2 µs/div. for OX800/8000.
Expansion x10: Max. sweep 20 ns/div. ± 5%
Hold off: Variable 1 - 10 div.

TRIGGERING
Trigger indication: "TRIG" LED
Sources: CH1, CH2, ALT (CH1 and CH2 alternate), EXT (external), LINE (net)

Frequency range	CH1, CH2, ALT	EXT
OX80 Series		
0-10 MHz	0.5 div.	50 mVeff
10-20 MHz	1 div.	100 mVeff
20-30 MHz	2 div.	200 mVeff
30-40 MHz	3 div.	300 mVeff
OX86 Series		
1 kHz	0.5 div.	100 mVRMS
100MHz	1 div.	200 mVRMS
160MHz	2 div.	300 mVRMS

Sensitivity: CH1, CH2, ALT, EXT
Modes: normal - peak to peak; triggered - delayed
Coupling: DC, AC, filters LF, HF (10 kHz), TV-V, TV-H
Slope: positive, negative
Apparent delay: 20 ns
Trigger delay: TB 2 with intensified trace (OX86).
Variable delay: 1 to 10 div.
TB 2 triggered on the same signal (OX86).
Autoranging delayed sweep with intensified trace in search mode (OX800/8000).

Digital functions (OX8020, OX8027, OX8620, 8627 only)

ACQUISITION
Analog to digital conversion:
Vertical resolution is 8-bit (256 levels)
Individual converter for each channel
Accuracy: ± 3 % overall
Sampling rate: 40 M samples/sec. max.
Memory: OX 8020/8620: two 4 k word buffers; OX 8027/8627: four 8 k word buffers
Save and compare stored waveforms
Acquisition modes:
ROLL: 500 ms to 200 s/div. (OX80); 200 ms to 200 s/div. (OX86)
REFRESH: 0.1 µs to 200 s/div. (all models)
SINGLE SHOT: 0.1 µs to 200 s/div. (all models)
Pre-trigger: 1 k word steps (0 to 4 k: OX8020/8620 ; 0 to 8 k: OX8027/8627)
Envelope mode: all models
Glitch capture: > 50 ns (from 10µs/div to 200 ms/div) for OX8027; > 50 ns (from 10µs/div to 100 ms/div) for OX8627.

DISPLAY
Readout: Applicable in analog and digital modes
Trace selection: depends on the vertical mode (CH1 - CH2 - ALT - CHOP - ADD - XY)
Waveform analysis:
Bargraph indication of the expansion and position of the displayed window
Linear and sinusoidal interpolation
Analog smoothing ("Dot Join")
Vertical shift: display of the vertical shift position (during and after acquisition)

MEASUREMENTS
By cursors: ΔV, ΔT, F, ø (in analog and digital modes) reference selection (CH1 or CH2) for OX8020/27/86)
Automatic measurements: tr, tf, F, T, W+, W-, Vrms, Vavg, Vamp, Vlow, Vh, Vpp, Vmax, Vmin, DC+, DC-, ø (phase) on digitized stored waveforms. Values displayed at bottom of screen in analog and digital modes.

*Specifications apply to all models except where noted.