OD-590 Series Digital Oscilloscopes

200 MHz / 100 MHz Digital Storage Oscilloscopes

200 MHz | **GPIB** IEE 488.2 | **USB** | **5.6" TFT COLOR**

- ↘ **Large 5.6-in TFT Color Display**
- ↘ **200 / 100 MHz Bandwidth**
- ↘ **2 and 4 input channels**
- ↘ **1 GS/s Real-Time and 25 GS/s Equivalent-Time Sampling**
- ↘ **25k Points Record Length Maximum**
- ↘ **27 Automatic Measurements**
- ↘ **Three Math Functions: "+", "-" and "FFT"**
- ↘ **Multi-Language Support**
- ↘ **USB Host: Flash Drive Storage and External Printer**
- ↘ **USB Device: PC Remote Control**
- ↘ **Battery Power Operation (Optional)**
- ↘ **GPIB & RS-232C Interface**

Introducing a new Standard for the DSO market

The new **OD-590** / **OD-591** / **OD-592** Oscilloscopes from PROMAX comes along with *All-In-One* design, including 1 GS/s sampling rate, 25k record length, 2 and 4 channel selection, TFT color LCD display, USB support, color printout, and remote control, Battery power operation and powerful Auto-Measurement functions.

This new PROMAX Oscilloscope series carries bandwidths of 200 MHz & 100 MHz and inputs of 2 and 4 channels. The combination of 1 GS/s sampling rate (25 GS/s for ET sampling) and 25k points record length provides the highest value platform among all equivalent products available in the market today.

optional GPIB interface for remote control

2xUSB ports for remote controling, external USB storage device & external printer

↘ key features

- 5.6" TFT Color Display
- 200 MHz / 100 MHz Bandwidth
- 2 or 4 Input Channels
- 1 GS/s Real-Time Sampling Rate
- 25k Points Record Length
- 27 Automatic Measurements
- Advanced Triggering
- Three Math Functions
- 2 x USB ports
- RS-232C & Optional GPIB Interface
- Remote control software
- Battery Power Operation (optional)
- Sequence & Go/NoGo Testing

↘ 4 CH & 2 CH selection

4-channel models have joined the product lineup in addition to the traditional 2-channel models, doubling the spot range. All vertical scales of each channel carry a full bandwidth among the selection of 200MHz and 100MHz, depending on the model. The flexible solution of channel and bandwidth combination extends the **OD-590** Series application range into various market sectors. The 4 channel applications for the tests of switching power supply, automotive and test of electrical motors are typical examples.

↘ On-Line Help & Multi-language

To provide a friendly operation environment, **OD-590** Series Offers On-Line Help through the on-screen manual. Press "Help" button to get into the On-Line Help mode, then press any other button to get its instructions on the screen. **OD-590** Series screen menu and the On-Line Help Manual can be switched among the selections of multiple languages such as English, Spanish, Traditional Chinese, Simplified Chinese etc. This gives a localized help to the users and offers an easy environment for multicultural joint-projects.
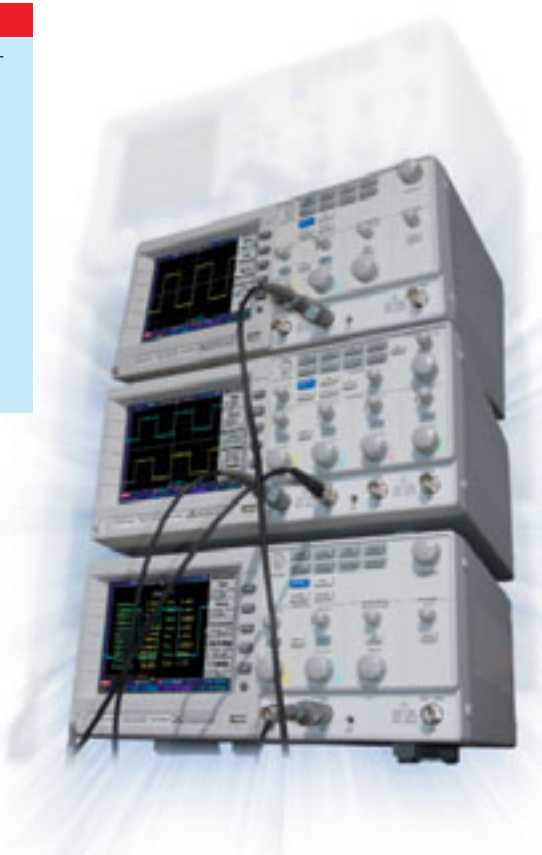
↘ TFT color LCD display

In order to guarantee a crisp and clear view in any situation, **OD-590** Series adopts a TFT Color LCD display. With faster frame update rate compared to STN type of display, TFT panel reduces the flicker and gives a smooth signal view. In addition, the 45 degrees wide view angle of TFT LCD facilitates the team work and group discussion in front of the DSO screen. The bright and colorful display is extremely necessary when dealing with signal analysis and comparison of multiple waveforms shown on the screen at the same time . The TFT Color LCD display of **OD-590** Series makes the 4 Channel inputs more meaningful.
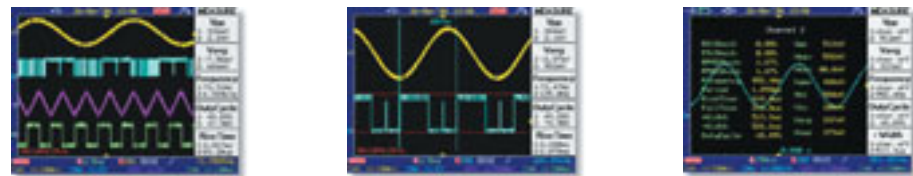
PROMAX

1 ... **3**
2 ... **4**

5

7 ... **8**

6

9 ... **11**
10 ... **12**
... **13**
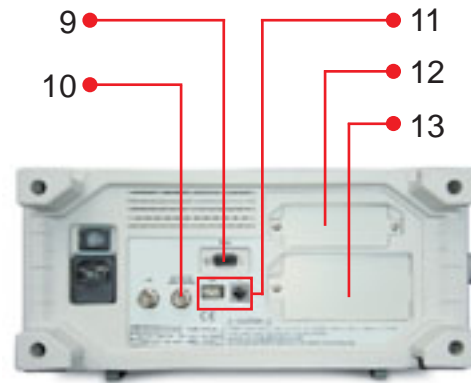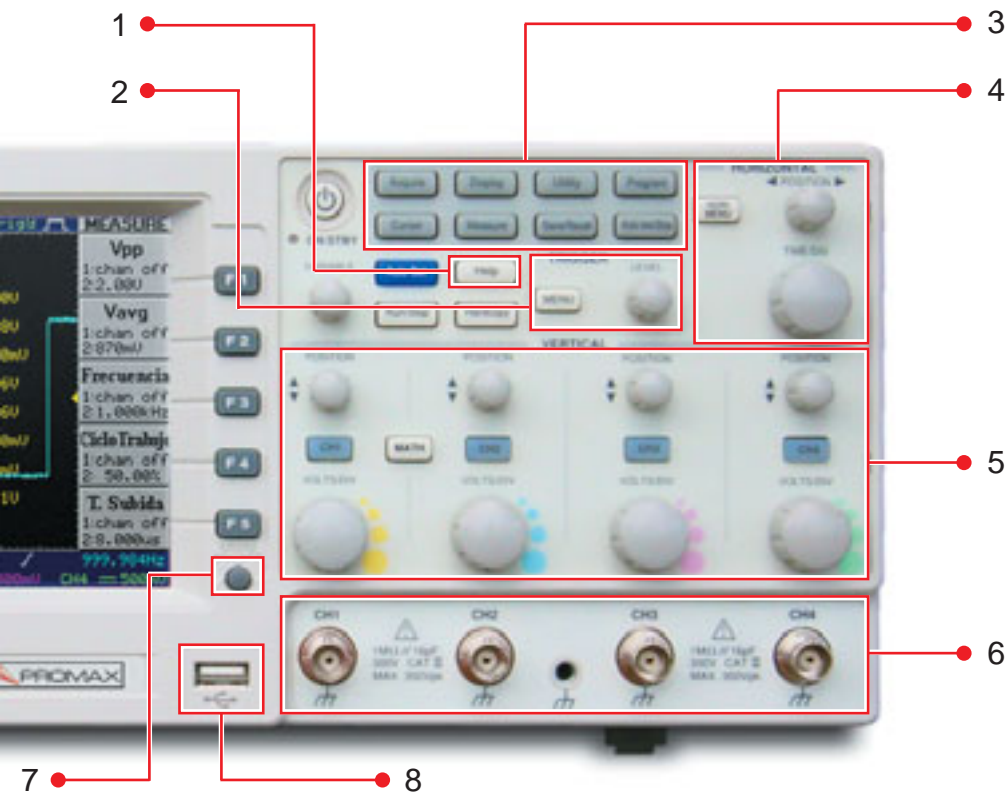
↘ rear pannel

9 RS-232C
10 Go/NoGo Output
11 USB Host/Device
12 GPIB (optional)
13 Batery Operation (optional)

↘ front pannel

1 Online help Function
2 Trigger System
3 Function Keys
4 Horizontal System
5 Vertical System
6 4 Channel Inputs
7 12 div Screen
8 USB host

5.6 " TFT COLOR

*oversized color
TFT screen,
wide view angle*

↘ Data storage & transfer and USB printing support

USB Printer

FLASH DRIVE

OD-590 Series

USB

OD-590 Series

RS-232C

GPIB

PC Remote Control

20 sets of waveform data, 20 sets of panel setup and 4 sets of reference waveform data can be saved into **OD-590** Series internal memory for later recall and display. All the waveform data, panel setup and the screen image can be saved into or recalled from a popular Flash Drive via USB Host Port.

With a PC software package offered by PROMAX Electronica, the **OD-590** Series waveform data, screen image and the screen record over a period of time can be transferred to the PC for further utilization. **OD-590** Series offers the USB direct printing support. The color printout of screen image with grayscale can be done via USB connection to a color printer directly.

↘ Battery power operation

Battery power operation

Li-Ion Battery Pack

The battery power operation feature (optional) extends **OD-590** Series market coverage to the field application areas where AC power is not available.

After full charge, the two light-weight battery packs keep **OD-590** Series running under normal operation for over 3 hours.

The built-in battery charger automatically recharges the battery packs whenever the AC power is connected to the oscilloscope.

↘ 27 automatic measurements

The automatic waveform measurement feature includes 27 frequently used measurement items in three groups: Voltage, Time (Frequency), and Delay. 10 measurement results maximum with their continuous updates can be shown on the screen menu

area simultaneously. A snapshot of all time & voltage related Auto Measurement readings of a designated input signal can be displayed on the screen as a very effective way to get a real-time and overall monitoring on the characteristics of a signal.

↘ 1 GS/s real-time & 25 GS/s equivalent-time sampling
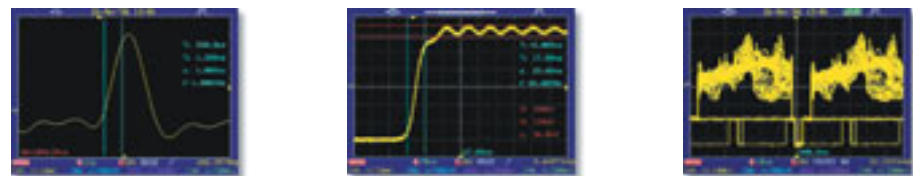
1 GS/s Real-Time Sampling allows you to deal with high frequency waveform capture in an accurate way. A higher sampling rate help acquire more waveform data in a short period of time. It is especially useful for the single-shot waveform capture and observation, as the more the waveform data can be acquired the better the waveform reconstruction can be done for a non-repetitive signal.

When it comes to the repetitive waveform capture, the Equivalent-Time Sampling, however, becomes a better tool than Real-Time Sampling. By acquiring data from repetitive waveform cycles, the ET Sampling Technology accurately reconstructs the waveform at the resolution of only 40ps. **OS-590** Series performs 25 GS/s sampling rate for the repetitive waveform acquisition and reconstruction besides its Real-Time Sampling capability at 1 GS/s rate.
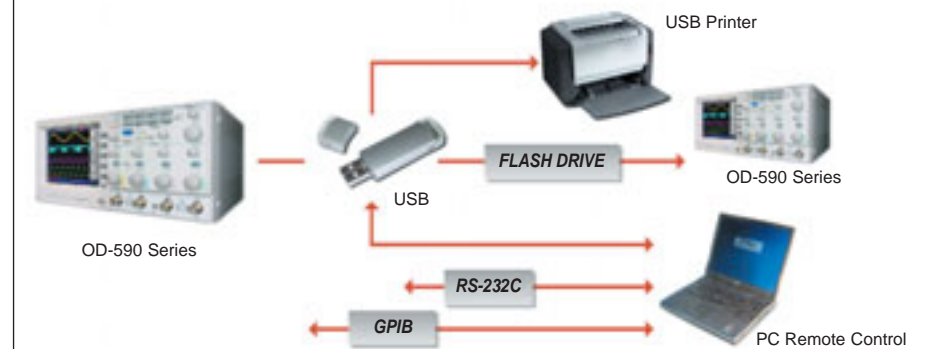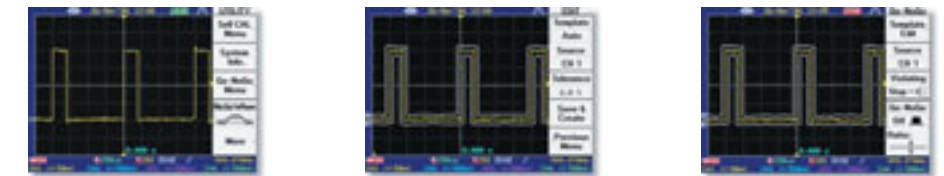
↘ 25,000 points of waveform memory
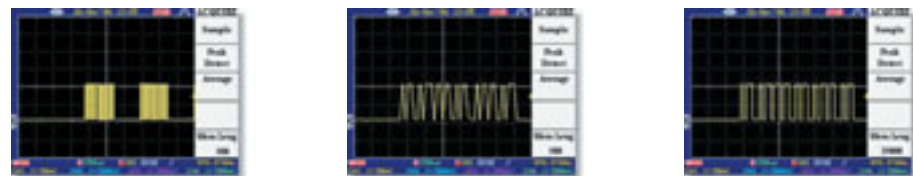
Longer memory helps the waveform acquisition system get more data in a certain period of time. The 25k memory length of **OD-590** Series lets users view more signal details on the screen. The above left figure shows a serial digital signal transferred in a system.

When using a short memory of 500 points, the DSO displays only a very rough and distorted waveform for this signal due to the inadequate details being captured (aboce center figure). When using 25k point memory, **OD-590** Series captures and rebuilds the signal waveform in an accurate way (above right figure).

↘ Go/NoGo testing

Go/NoGo testing function checks whether the incoming signal violates the user-defined template. Setting the template is simply a two-step process. Pick up the reference waveform from input signal or waveform file and configure the violation tolerance in reference to the waveform, the Go/NoGo testing is ready to go. **OD-590** Series compares the input signal with template

in real time and shows the test result on the screen. Both the type of violation and the DSO reaction toward violation can be selected to meet the requirements of various applications. The violation is indicated either giving a buzzer sound or sending a control signal to the external device via a BNC terminal on the rear of the DSO.

	OD-590	OD-591	OD-592
Bandwidth	100 MHz	200 MHz	200 MHz
Channels	2	2	4
Display	5.6" TFT Color LCD		
Sample Rate	1 GS/s		
Record length	25k pts		
Trigger	Pulse Width, TV Line, Event Delay, Time Delay		
Valued features	Multi-Language, FFT, Go/NoGo, Auto Setup, 27 Auto-Measures		
Interfaces	2xUSB (Host/Device), RS-232C, Go/NoGo Output, GPIB (optional)		
OSD	Multi-Language Menu Multi-Language Online Help		
Power Source	AC 100 ~ 240 V Optional Li-Ion battery pack		

↘ **OD-592**
200 MHz | **4** channels

↘ **OD-591**
200 MHz | **2** channels

↘ **OD-590**
100 MHz | **2** channels

Signal detection

OD-590 Series are powered by 1 GS/s real time and 25 GS/s equivalent time sampling rate combined with 3 types of acquisition modes. 25k points of deep memory guide us into further signal details. 4 types of flexible triggers add another signal capturing flexibility.

Data Transfer and Printout

OD-590 USB host connector transfers data quickly and easily between USB flash drive, which guarantees almost unlimited amount of memory. Internal storage includes 4 sets of reference waveform and 20 sets of general-use memory area. **OD-590** Series handle three types of data: BMP image for viewing waveform shape and pasting into documents and presentations, panel setting for saving and restoring system setup, and waveform configuration for further analysis of signal information. Printout of display image, is available through the printer connected to the USB host port.

Remote Access

IEEE remote control commands include most of the panel operations and the syntax conforms to IEEE 488.2 standard. PC software allows you to use your oscilloscope utilizing the larger PC screen. Three types of remote control interface are provided: USB, RS-232C and GPIB (optional).

Measurement functions

A variety of measurement shortcuts drastically reduce repetitive manual operations. Autoset automatically configures the horizontal & vertical scale and the trigger, giving an instant view of almost any signal. 27 types of automatic measurements include voltage, frequency, and delay. **OD-590** Series run and update results of all the relevant measurements in real time. Add and subtract math operation, with 4 types of FFT are also provided. Go/NoGo test function detects a user-defined incoming waveform shape, and can also send a signal to external devices in case of detection. *Program & play* feature automatically runs predefined sequence and setup, boosting productivity in routine measurements.

Setup Recovery and Transfer

The last panel setting is internally stored in non-volatile memory, ready to be recovered on the next power up . If you want to transfer the setup to another **OD-590** Series, you can save and recall setup files using USB flash drive. You can always recover the default system setting.

Portability & Friendly user Interface

Battery power operation option with typical 3 hours of running time gives a much-desired mobility. Built-in self-calibration and probe compensation help maintaining maximum accuracy. You can make the oscilloscope talk your language by choosing between a variety of languages.

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SPECIFICATIONS	OD-590	OD-591	OD-592
VERTICAL			
Channels	2	2	4
Bandwidth	DC ~ 100 MHz (-3 dB)	DC ~ 200 MHz (-3 dB)	
Rise Time	3.5 ns Approx.	1.75 ns Approx.	
Sensitivity	2 mV / div ~ 5V/div (1-2-5 increments)		
Accuracy	± (3% x |Readout| + 0.05 div x Volts/div + 0.8 mV)		
Input Coupling	AC, DC & Ground		
Input Impedance	1 MΩ ± 2%, ~16 pF		
Polarity	Normal & Invert		
Maximum Input	300 V (DC + AC peak), CAT II		
Waveform Signal Process	+, -, FFT		
Offset Range	2 mV/div ~ 20 mV/div: ± 0.5 V		
	50 mV/div ~ 200 mV/div: ± 5 V		
	500 mV/div ~ 2V/div: ± 50 V		
	5 V/div: ± 300 V		
Bandwidth Limit	20 MHz (-3 dB)		
TRIGGER			
Sources	CH1, CH2, Line, EXT	CH1, CH2, CH3, CH3, Line	
Modes	Auto-Level, AUTO, NORMAL, SINGLE, TV, Edge,		
	Pulse Width Time-delay (2 CH Only), Event-Delay (2 CH Only)		
Coupling	AC, DC, LF rej., HF rej., Noise rej.		
Sensitivity	DC ~ 25 MHz: approx 0.5 div or 5 mV		
	25 MHz ~ 100 / 200 MHz: Approx. 1 div or 10 div		
EXT TRIGGER			
Range	+ 15 V		
Sensitivity	DC ~ 30 MHz: ~ 50 mV		
	30 MHz ~ 100 / 200 MHz: ~ 100 mV		
Input Impedance	1 MΩ ~ 2%, ~ 16 pF		
Maximum Input	300 V (DC + AC peak), CAT II		
HORIZONTAL			
Range	1 ns / div ~ 10 s/div (1-2-5 increments); ROLL: 250 ms/div ~ 10s/div		
Modes	MAIN, WINDOW, WINDOW ZOOM, ROLL, SCN, X-Y		
Accuracy	± 0.01%		
Pre-Trigger	20 div maximum		
Post-Trigger	1000 div		
X-Y MODE			
X-Axis Input	Channel 1 (X-Axis Input); Channel 2 (Y-Axis Input)		
Phase Shift	±3º at 100 kHz		
SIGNAL ACQUISITION			
Real-Time Sample Rate	1 GS/s maximum		
Equivalent Sample Rate	25 GS/s maximum		
Vertical Resolution	8 bits		
Record Length	25 K Dots maximum		
Acquisition Mode	Normal, Peak Detect, Average		
Peak Detection	10 ns		
Average	2, 4, 8, 16, 32, 64, 128, 256		
CURSORS AND MEASUREMENT			
Voltage Measurement	V_{pp}, V_{amp}, V_{avg}, V_{rms}, V_{hi}, V_{lo}, V_{max}, V_{min}, Rise Preshoot / Overshoot, Fall Preshoot / Overshoot		
Time Measurement	Freq, Period, Rise time, Fall Time, Positive Width, Negative Width, Duty Cycle		
Delay Measurement	Eight different delay measurement		
Cursors Measurement	Voltage difference between cursors (ΔV) Time Difference between cursors (ΔT)		
Auto Counter	Resolution: 6 digits; Accuracy: ± 2%		
	Signal Source: All Available trigger source except the Video Trigger mode		
CONTROL PANEL FUNCTION			
Autoset	Adjust Vertical VOLT/DIV, Horizontal TIME/DIV, and Trigger level automatically		
Save Setup	Up to 20 sets of measurement conditions		
Save Waveform	24 sets of waveform		
DISPLAY			
Color TFT LCD Type	5.6 inch		
Display Resolution	234 (Vertically) x 320 (Horizontally) Dots		
Display Reticule	8x10 divisions; 8x12 divisions (menu off)		
Display Brightness	Adjustable		
INTERFACE			
Go/NoGo Output	5 V Maximum / 10 mA TTL Open Collector Output		
RS-232 Interface	DB 9-pin male DTE RS-232 interface		
GPIG Interface (Option)	Fully programmable with IEEE 488.2 compliance		
USB	USB Host/Device 2.0 full speed supported		
POWER SOURCE			
Line Voltage Range	AC 100 ~ 240 V, 48 ~ 63 Hz, Auto selection		
Battery Power (Option)	Battery: 11.1 V Li-Ion battery pack		
	Charge Time: 8 hours (Power ON); Operating Time: 3 hours, depending on operating condition		
MISCELLANEOUS			
Multi-Language Menu & Online Help	Available		
Time Clock	Time and Date, Provide the Date/Time for the saved data		
DIMENSIONS & WEIGHT	243 D. x 142 H. x 310 W. (mm); approx. 4.3 kg		

Specifications subject to change without notice.   0 IP4584

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