

High Definition Oscilloscope

DLM3000HD DLM5000HD

The DLM3000HD and DLM5000HD High Definition Oscilloscopes were developed to meet the need for more accurate high-speed waveform measurements required for next-generation power devices (SiC, GaN).



DLM3000HD



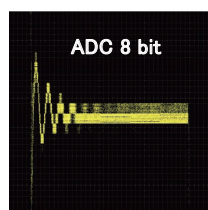
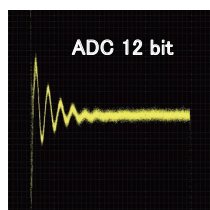
DLM5000HD

MAIN FEATURES

■ 12-Bit High-Resolution Measurement

The rising waveforms of SiC and GaN used in next-generation power devices are extremely fast. As a result, large surges and ringing occur between the drain and source due to the effects of device package inductance, wiring inductance of surrounding circuits, and parasitic capacitance of the devices.

For example, when measuring a 1000-V surge by selecting a voltage range of 250 V/div, one division corresponds to 25 least significant bits (LSB) in the analog-to-digital converter (ADC) of a conventional 8-bit oscilloscope, resulting in a minimum resolution of 10 V. However, an increasing number of observers feel that this resolution is insufficient for measuring SiC or GaN waveforms. Such situations require the DLM3000HD or DLM5000HD equipped with a 12-bit ADC. These models have a minimum resolution of 0.625 V, one-sixteenth that of conventional models, enabling accurate measurement of phenomena below 10 V.



Difference in waveform appearance due to vertical resolution

■ Improved Accuracy of Switching Loss Measurement Function

Switching loss in power devices is generally determined by multiplying voltage and current during the turn-on and turn-off intervals, and by performing power calculations using the current during the conduction interval together with constants such as the ON resistance (R_{ds}) and saturation

voltage (V_{ce}). While these calculations can be performed easily using the power analysis functions of the DLM series, use of the DLM3000HD or DLM5000HD enables calculations with even higher accuracy.

■ Synchronized Operation Function for Further Multi-Channel Measurements (DLMsync)

Because inverters use a large number of switching power devices, the number of measurement points tends to increase. By connecting two DLM3000HD units or two DLM5000HD units with a dedicated cable, simultaneous measurement with up to 16 analog channels and 64-bit logic becomes possible. Synchronization is achieved using the trigger of the main unit, and common settings such as record length, sample rate, and horizontal timebase scale are linked, allowing the system to be used as if it were a single oscilloscope.

■ Time Synchronization IEEE 1588 Master Function

The DLM3000HD and DLM5000HD can function as master devices for time-synchronized measurements using IEEE 1588. In addition, the integrated measurement software platform IS8000 enables integrated analysis of measurement data from multiple synchronized power analyzers and ScopeCorders on a common time axis.

MAIN SPECIFICATIONS

Sample rate: Up to 2.5 GS/s

Bandwidth: 500 MHz, 350 MHz

Number of channels: DLM3000HD, 4 channels;
DLM5000HD: 4/8 channels

Record length: Up to 1 G point

Maximum input voltage: Must not exceed 300 Vrms or 400 Vpeak (with 1 M Ω input)

Voltage axis sensitivity range: 0.5 mV/div to 10 V/div (with 1 M Ω input)

DC accuracy: $\pm 1.5\%$

Analog/digital resolution: 12 bit (400 LSB/div)

Up to 16-bit (in high-resolution mode)

Supported standards for serial bus signal analysis function (optional):

UART/I2C/SPI/CAN/CAN FD/LIN/FlexRay/SENT/CXPI/PSI5 Airbag

Display: DLM3000HD, 8.4-inch XGA touchscreen
DLM5000HD, 12.1-inch XGA touchscreen

Dimensions: DLM3000HD, 226 (W) $\times$ 293 (H) $\times$ 193 (D) mm
DLM5000HD, 426 (W) $\times$ 266 (H) $\times$ 180 (D) mm

Contact us:

Yokogawa Test & Measurement Corporation

Global Sales Dept.

Email: tm@cs.jp.yokogawa.com

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