YOKOGAWA

Mixed Signal Oscilloscope

DLM6000 Series

DL6000 Series

Digital Oscilloscope

4CH Analog + 32-bit Logic
Lineup includes 500MHz, 1GHz, 1.5GHz bandwidth models
High speed waveform acquisition and History Memory
Intuitive Operation and High Performance

	DLM6054	DLM6104	DL6054	DL6104	DL6154
Frequency bandwidth	500MHz	1GHz	500MHz	1GHz	1.5GHz
Analog input channels	4CH	4CH	4CH	4CH	4CH
Logic input	16/32bit	16/32bit	—	—	—

DLM6000 DL6000

For more information, go to
tmi.yokogawa.com
Test & Measurement Instruments

3-Year Warranty CE

Bulletin DLM6000-00E

Intuitive Operation and High Performance Waveform Analysis Tool

Your best tool for developing embedded systems

High-speed oscilloscope - wide bandwidth, compact and lightweight.

4CH Analog +16/32bit Logic
High performance MSO

	DLM6054	DLM6104
Analog frequency bandwidth	500MHz	1.0GHz
Maximum sampling rate	5GS/s	5GS/s

4CH Analog
High speed acquisition and analysis

	DL6054	DL6104	DL6154
Analog frequency bandwidth	500MHz	1.0GHz	1.5GHz
Maximum sampling rate	5GS/s	5GS/s	10GS/s

Mixed Signal Oscilloscope

DLM 6000 Series

Digital Oscilloscope

DL 6000 Series

Never miss the waveform you want

Quickly analyze information 'hiding' in waveforms

- Search and Dual Zoom functions enable you to locate and confirm details
- A high waveform update rate which does not decline with Logic signals displayed
- 4CH analog + 32bit Logic with Bus display and State display capabilities

32 bit

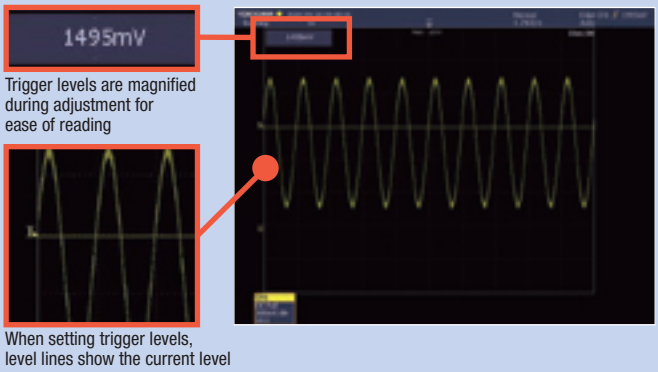
- Abundant library of waveform analysis and computation functions
- Auto Setup function
  Immediately set up and start analysis, including automatic detection of serial bus settings
- Jog shuttle, with spring loaded outer dial and fine inner dial, provides intuitive cursor and zoom movements
- History Memory function
  Preserves up to 2000 past waveforms in memory, and always activated
- A variety of trigger functions
  Reliably capture only the signals of interest
- Basic operations retain the feel of analog scopes
- Ports for USB memory, keyboard, mouse, and other peripherals
  Mouse controls for most instrument functions

Abundant trigger functions — reliably capture the waveforms you want

- A Trigger
  - Edge
  - Enhanced
    - Edge/State
    - Pulse/State Width
    - Serial Bus
    - TV
    - Event Interval
- B Trigger
  - Edge

To capture desired waveforms easily and reliably, the DL6000/DLM6000 offers a variety of application-oriented triggers from simple edge triggers to multi-criteria combination and time difference triggers.

Intuitively set trigger levels with a dedicated knob and level display



Trigger levels are magnified during adjustment for ease of reading

When setting trigger levels, level lines show the current level

- Action On Trigger function — Capture, save, and send notifications of abnormal data, even overnight

When you want to capture intermittently occurring phenomena, you can use the Action On trigger function to automatically save waveform data when trigger conditions become true, and send notification thereof to a previously specified e-mail address. Even for phenomena that occur perhaps only once per day, you can be sure that a record of the data, including the date and time, will be kept.

- Buzzer
- Waveforms printed to built-in printer
- Waveform data saved to internal storage
- E-mail sent to specified recipient

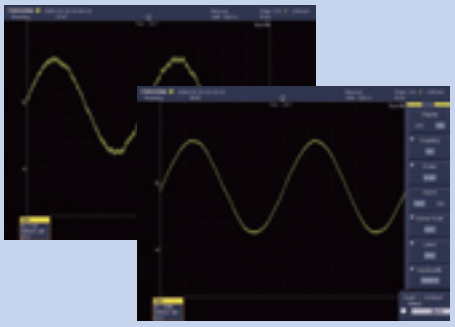
Check for occurrences of the target phenomenon, and examine the saved data in detail

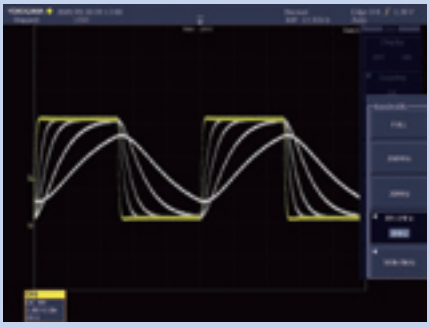
Real time filter and High resolution mode — precision waveform observation

- Input filters

The DLM6000/DL6000 filters out unwanted components from signals with a lot of noise before you observe them.

- **Analog filters:**
  200 MHz/20 MHz
- **Digital filters:**
  8 MHz/4 MHz/2 MHz/1 MHz/500 kHz/250 kHz/125 kHz/62.5 kHz/32 kHz/16 kHz/8 kHz





- High Resolution mode

Most digital oscilloscopes provide a vertical (voltage) resolution of 8bits, but in High Resolution mode you can measure waveforms with a resolution of up to 12 bits.

- Switching waveform measurement

—High resolution mode enables highly precise measurements

When measuring switching waveforms, highly precise evaluation is impossible due to the insufficient dynamic range offered by 8-bit resolution. In such cases, you can use High Resolution mode to raise the precision of the waveform as well as of any computed results.

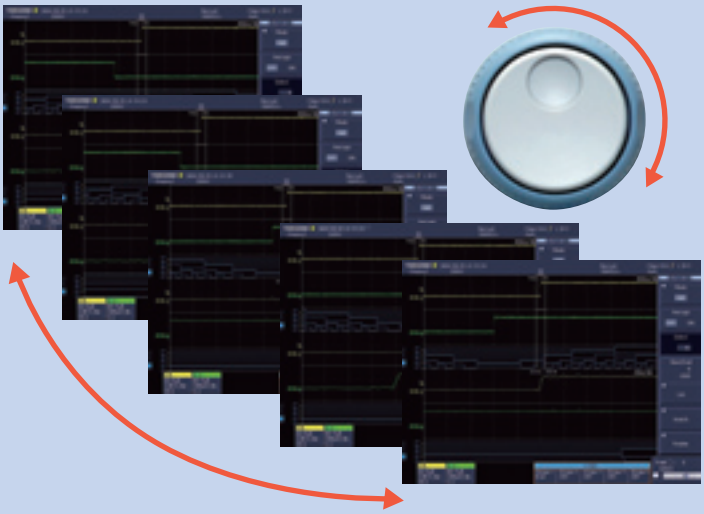
High-Speed acquisition and History Memory — Never miss the waveforms you want

- High waveform update rate unaffected even when displaying logic signals

- During continuous measurement : Up to 250,000 times per second per channel
- In N Single mode : Up to 2.5 million times per second per channel

Maximize your probability of catching anomalies with the industry-leading waveform update rate, which does not decrease even when you observe analog and logic signals simultaneously.

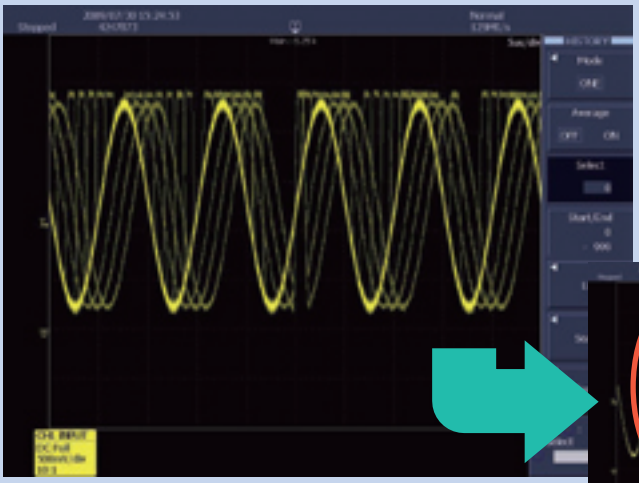
Waveforms captured during high-speed acquisition can be reviewed one-by-one from History Memory.
You can also fast-forward, rewind, and scroll using the jog shuttle.



- High waveform update rate with History Memory function

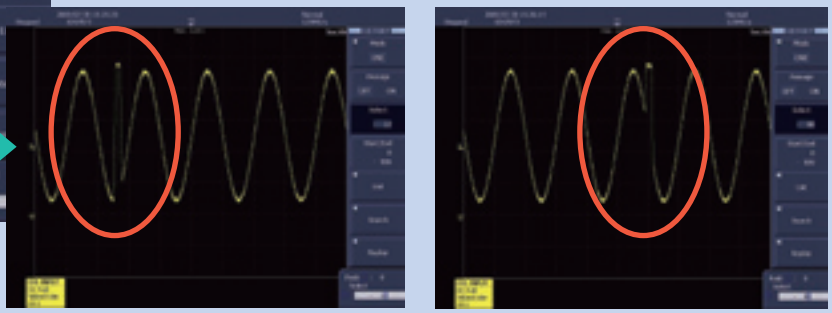
- Hold up to 2000 screens worth of actual waveform data (not screen images)
- After measurement has stopped, you can recall individual waveforms for detailed analysis

- Search and Zoom
- Automated measurement of waveform parameters
- Variety of advanced computations



- High-speed acquisition means you can find abnormalities the first time they occur, and proceed with detailed analysis.

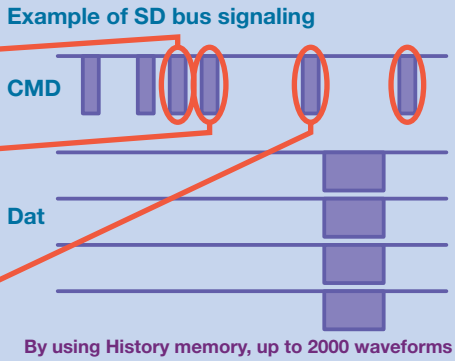
On most oscilloscopes, to isolate and observe abnormalities such as unpredictable noise in detail, you have to devise clever trigger settings and re-measure the event. But with the DL6000/DLM6000 there is no need to re-measure the phenomena because you can use the History Memory function to recall any abnormal waveforms that were briefly displayed on screen.



Searching the the History Memory for abnormal waveforms

- Example of the usefulness of observing intermittent signals : Observation of SD bus commands

SD card bus commands are sent intermittently, and the non-signal portions of these waveforms do not need to be analyzed.
To be able to extract the SD card bus commands from such signals, you can set a serial bus trigger and use the History memory to acquire up to 2000 waveforms that match the trigger conditions.
These matches are stored into History Memory, while the non-signal waveforms are ignored.
Rather than acquiring a single waveform to the entire acquisition memory, you can acquire multiple waveforms of only the needed command, and analyze them.



By using History memory, up to 2000 waveforms of just the command portion (CMD) are held.

Search & Zoom — *Extract the desired waveforms for detailed analysis*

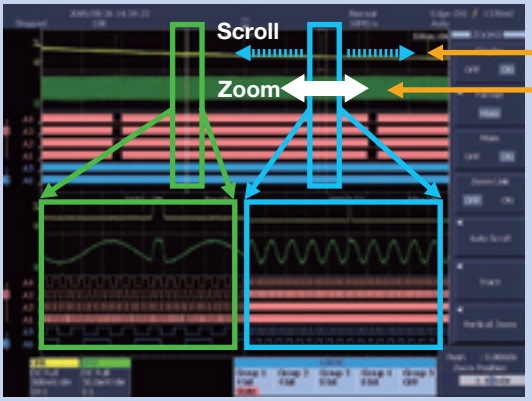
Search for address and data on I²C bus

Quickly extract locations and abnormalities you wish to analyze from the acquired waveform data, and zoom in anywhere on waveform details. The DL6000/DLM6000 series has enhanced Search and Zoom functions that allow you to search for desired portions of waveform data and observe those waveforms in detail.

- Search function for extracting abnormal phenomena

The Search function can search both analog and logic signals in History Memory (History search).

Main search functions:
- State search (Hi/Lo setting of each channel)
- Serial pattern (I²C, SPI, CAN, general-use pattern) search
- Polygon zone search
- Waveform zone search
- Parameter search (Measured parameters, FFT, etc.)



- Display two zoomed areas simultaneously

Because the DL6000/DLM6000 series lets you set zoom factors independently, you can display two zoomed waveform areas with different time axis scales at the same time.

- Zoom and scroll with the zoom knob and jog shuttle

Intuitively adjust the zoom factor with the zoom knob, and the scroll with the jog shuttle. You can also scroll the zoom window automatically with the Auto Scroll function.

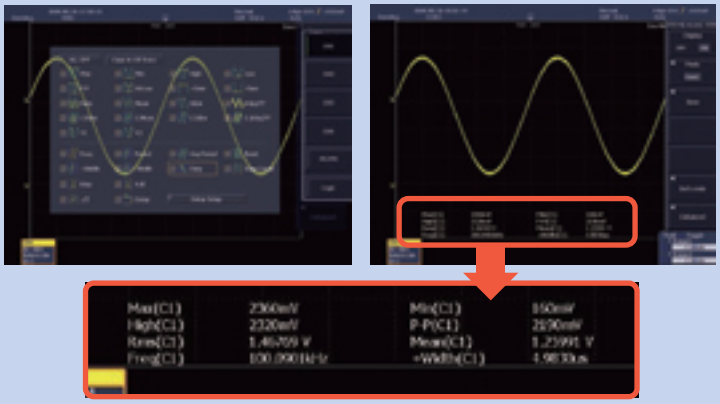
Automated measurement of waveform parameters — *Automatically display numeric values*

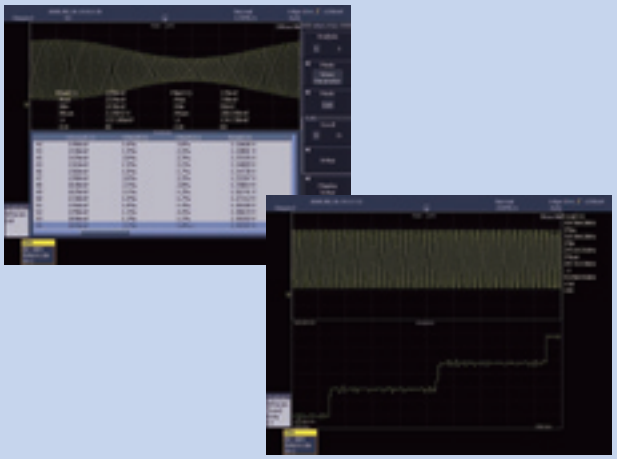
Automated measurement of waveform parameters -Automatically display waveform values

- Vertical waveform parameters such as amplitude, RMS
- Time axis waveform parameters such as frequency, startup time
- Delay time between specified signal edges
- Automatic measurement of time axis waveform parameters is even possible on logic signals
- Measurement Location Indicator indicates the measured location of a specified item
- Display the statistics on the automated measurement values of waveform parameters.
  - **Normal statistical processing (Continuous)**
  - **Statistical processing for each period (Cycle)**
  - **Statistical processing of history waveforms (History)**

- Measure a variety of parameters automatically

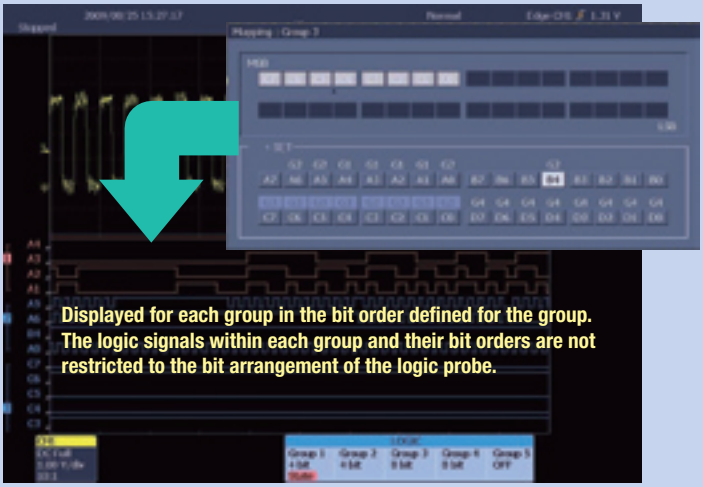
Simply select the check boxes of the parameters you wish to measure automatically in the setting screen's parameter list.
Simultaneously display up to 16 measured parameters during acquisition. Additional measured values can be obtained in the analysis screen, or via PC communication.





You can measure waveform parameters of periodic waveforms each period, and display them in lists and trend graphs. This is useful when evaluating period-by-period waveform fluctuations or loss in switching circuits.

Logic signal measurement and analysis — Making 32-bit logic signals easy to read and understand

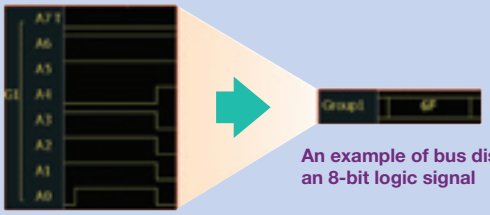


- Observing up to 32-bit logic signals together with analog signals

Observing many signals simultaneously and checking their correlations and timing is an effective means of verifying increasingly complex embedded systems.
With the DLM6000 series, you can measure up to 32-bit logic signals and 4 channels of analog waveforms simultaneously, and investigate hidden data in waveforms using bus analysis and computation functions.

- Grouping logic signals to make them easy to read and understand

As many as 5 groups of logic signals can be defined. You can enter display settings for each group, and specify which bit in each group is the LSB or MSB regardless of the bit arrangement of the logic probe.
This means that even if pin assignments or signal arrangements change, you only need to change settings rather than to repeat the probing of the circuit.



An example of bus display of an 8-bit logic signal

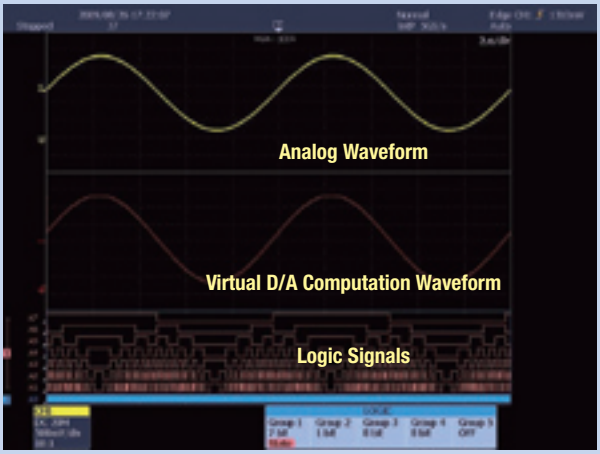
- Bus and State displays make logic signals easy to read and analyze

The DL6000/DLM6000 is not limited to displaying logic signals as waveforms. It can also show logic signals assigned to groups in a Bus display, or specified clock signals in a State display.
Therefore, parallel output values of an address bus or A/D converter can be read directly. Functions like these make analysis of logic signals easy, so that operating checks of the device under test can be performed more quickly and accurately.

State display:Normalization based on a specified clock edge

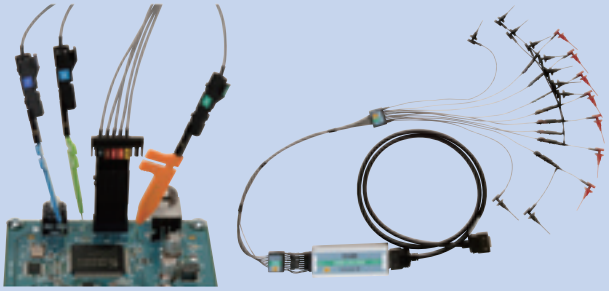
- Virtual D/A Computation function displays up to 32-bit logic signals as analog waveforms

The DL6000/DLM6000 includes a Virtual D/A Computation function, in which address bus signals or logic signals from data converter I/O can be converted to analog waveforms and displayed. You can display logic signals output from an A/D converter, and by comparing them with the original analog waveforms prior to conversion, you can investigate the general dynamic characteristics of the A/D conversion. Displaying the address bus signal as a waveform is also useful for identifying instances of abnormal memory access. D/A converted waveforms can undergo FFT analysis or have additional digital filtering computations applied to them.



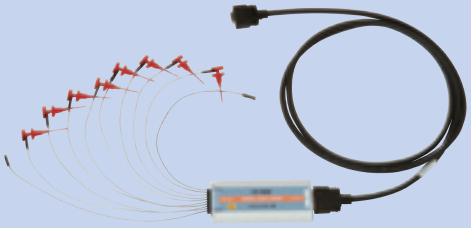
- Making logic signal measurement probing easier, and minimizing effects on the target

There are two different types of logic probe that can be used with the DLM6000, depending on the application.



- 250 MHz logic probe (model 701989, input impedance: 100 k)

The model 701989 is a 250 MHz logic probe with a tip shape designed for probing circuit boards. In addition to probing with the pincher tip, the tips can be stacked in the included holder, making it easy to connect to and disconnect from a 2.54 mm pitch box connector.



- High impedance logic probe

(model 701988, input impedance: 1 M , Max. toggle speed 100MHz)

The model 701988 is a 100 MHz general-purpose logic probe with an impedance of 1 M . Its high impedance gives it characteristics that make it difficult to influence the behavior of the target. Aside from pincher tip probing, the head with the tip removed can also be connected to a 2.54 mm pitch diameter connector.

Serial bus analysis function (option) — general purpose serial bus protocol analysis

You can add on I²C, SPI, CAN, LIN, and other serial bus-specific trigger and analysis functions to your DL6000/DLM6000 series instrument. With these functions, you can triggering on specific serial bus parameters, and display the waveforms along with protocol analysis indicating the decoded serial bus information.
Moreover, the DL6000/DLM6000 series also comes with a "Serial Bus Auto-Setup" function to eliminate the tedious task of entering settings when starting the analysis.

- Auto Setup Function for Serial Bus Analysis

Fast and Automatic Serial Bus Detection & Analysis with just one button :

1 Select the bus type **2 Press Auto Setup** **3 Done!**

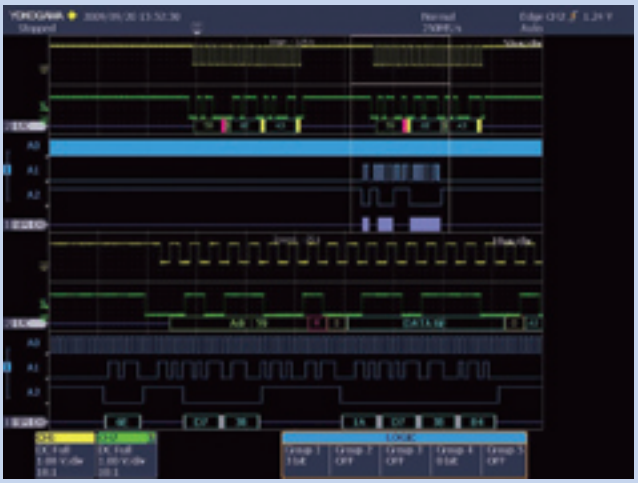
Serial Bus Setup Screen

Decode Display

Example of CAN bus analysis

- Display signal waveforms, protocol information, and decode information in real time

The DL6000/DLM6000's serial bus analysis function simultaneously displays these three pieces of information on screen in real time. You can link the protocol information with the waveform information, select data in the protocol list, and automatically display the corresponding part of the analog waveform.
Check the protocol list to see whether transferred information is correct.
If not, you can determine whether there were any electrical problems at the waveform level. In operational analysis of systems that include serial busses, this can be very useful for sorting out hardware from software problems.

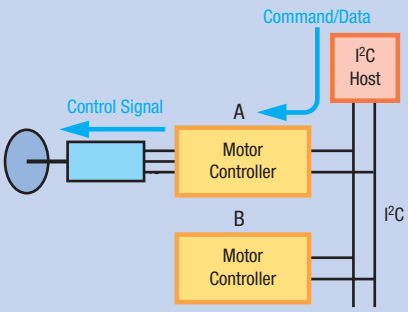


- Analyzing two busses at once

Both analog and logic inputs can be used for serial bus analysis. Also, two different serial busses can be analyzed at the same time. For example, you can analyze a CAN and LIN bus simultaneously, or use an MSO to analyze two SPI busses at once.

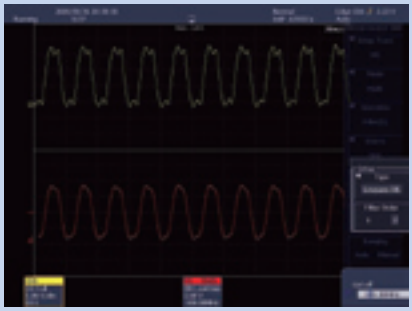
- Example: Behavioral analysis of an I²C control motor

You can trigger on specific data sent to a motor controller on an I²C bus and capture the waveform. Then, you can observe and analyze the content and timing of the data, plus the behavior of the activated motor. Together with that, you can use an MSO to observe control circuit logic signals, enabling you to evaluate the overall system.



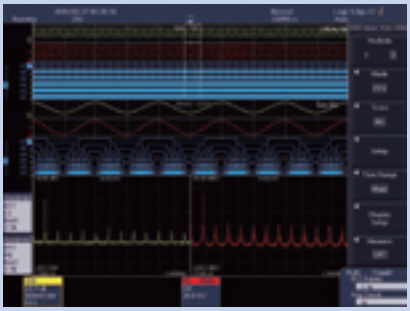
Computation functions — quickly analyze information 'hiding' in waveforms

Digital filters, integrals, edge, rotary count, logic signal DA conversion computation, and FFT computation functions come standard. As these computations are hardware-based, results appear on screen quickly. Even computations that traditionally needed to be sent to a separate PC for processing can now be executed at high speed on the oscilloscope, thus greatly reducing the time and effort involved in computing and analyzing waveform data.



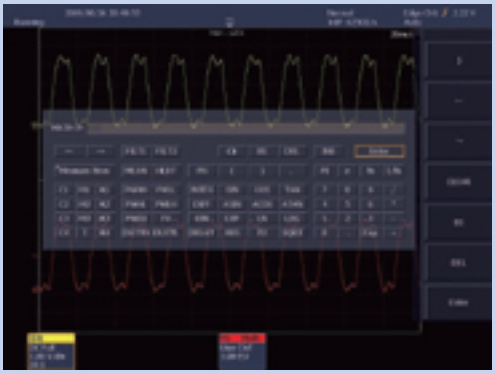
Digital filter computations

Delay, moving average, IIR low pass, and IIR high pass filter calculations can be applied to analog signal or DA computation waveforms. When designing circuits, you can carry out simulations or extract signal components for observation.



FFT computation

You can perform FFT computation for analog signal waveforms or DA computation waveforms. This includes not only signal spectra, but also coherent and transfer functions.



User defined MATH (option)

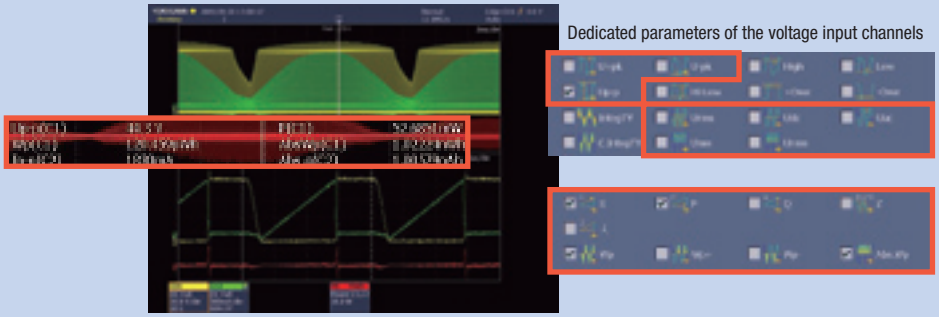
By combining basic math, trigonometric functions, differentials, digital filters, waveform parameters, and other values, you can define and execute equations and display the results along with the observed waveform.

DLM6000 Series DL6000 Series

Power supply analysis function (optional) — analyzing switching circuit characteristics

By using combinations of differential and current probes, you can evaluate switching loss or analyze safe operating area (SOA) in power supply waveforms. Through statistical computation you can also measure multiple switching waveforms and display loss on a per-week basis in lists and trends, or display statistics on aggregate loss of up to 2000 switching waveforms stored in History Memory. If precise calculations are required, a correction function and High Resolution mode are available.

Statistical Computation Results Display



Dedicated parameters of the voltage input channels

Waveform parameter measurement function for power supply analysis

- Cycle-by-cycle switching loss statistics and trend display

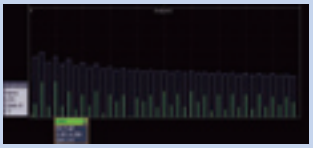
It can be extremely useful to check for fluctuations in switching frequency or voltage modulated by the commercial power input voltage on screen, at the same time as the waveform of that input voltage. Fluctuations in cycle-by-cycle loss, peak current, and other phenomena can be checked in lists and trend graphs thereby allowing you to identify excessive changes from power-ON to stable operation.

- Harmonic Analysis of Power Supply Current Based on EN61000-3-2 (IEC61000-3-2)

Bar graphs and lists of harmonics can be displayed together with the appropriate limits for the device under test as defined by the IEC standard (supports device classes A-D). Any measured value which exceeds the limit is highlighted.

Computed results (statistics) display

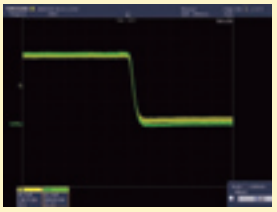
Graph display
(computed values and standard limit values)



Correction of Probe Propagation Delay Time (Auto Deskew)

For accurate measurement and computation of switching loss, the difference in the current probe and voltage probe signal propagation time (skew) can be automatically corrected. A separate deskew correction signal source is available.

Deskew correction signal source
(701935, sold separately)



- Related Accessories

701926 Differential Probe
DC~50MHz
5000Vrms/7000Vp-p

700924 Differential Probe
DC~100MHz
1000Vrms/±1400V

701928/701929 Current Probe
DC~100MHz(701928)
DC~50MHz(701929)
30 Arms

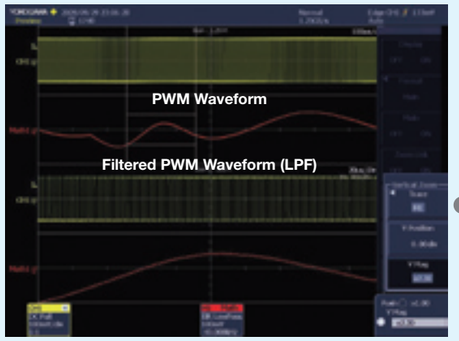
Includes cost- and time-saving features for embedded systems development

— Never miss the waveforms you want. Quickly reveal the information you need. —

**For evaluation of embedded systems that are becoming increasingly complicated, engineers want oscilloscopes that not only display waveforms, but also elucidate the meanings of those waveforms and aid in their understanding.
The DL6000/DLM6000 series shrink R&D and evaluation times and help reduce development costs for embedded systems.**

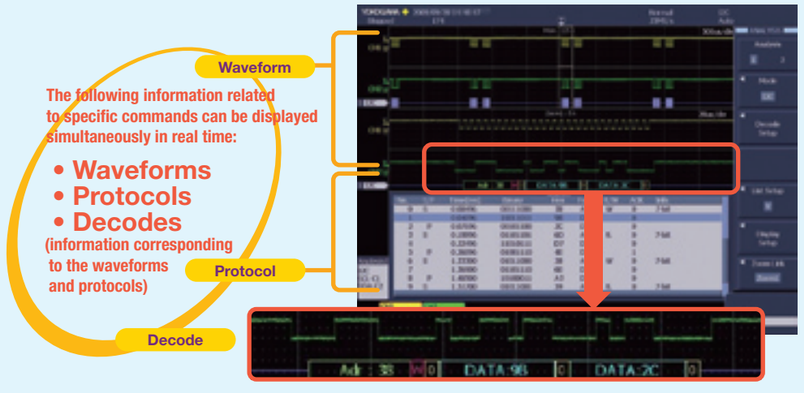
- Computing and observing actuator drive waveforms in real time

You can observe signals such as control signals to actuators and PWM waveforms that drive motors, and observe the resultant physical waveforms in real-time as they are converted through high-speed computation.
For particularly noisy signals, you can reject the noise with highly configurable input filters prior to observation



- Real-Time Serial Bus Analysis

In systems that control multiple devices using I²C, SPI, CAN, LIN, and other serial busses, engineers must verify whether each device is operating as designed. With the DL6000/DLM6000, you can capture specific commands and data on the serial bus with serial bus trigger functions, analyze the communication with protocol analysis functions, and simultaneously confirm the signal waveforms on the bus and the behavior of the controlled devices.

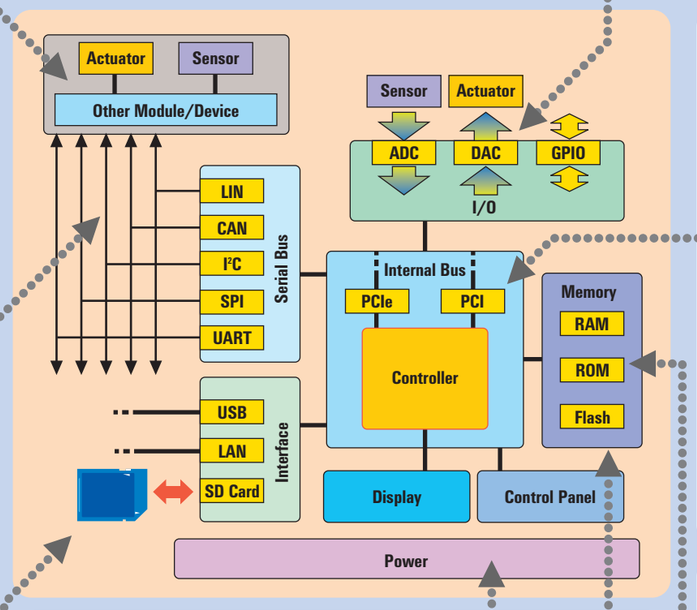


- Evaluation of SD card busses/SDIO

If you observe clock and command signals on analog channels and data bus (4-bit) with logic input, you can observe the behavior of commands and data transmission all at the same time.

- **Trigger on specific commands (serial pattern trigger)**
- **Easy-to-read displays of data bus values in binary and hexadecimal (logic signal Bus Display function)**

Example of Embedded System

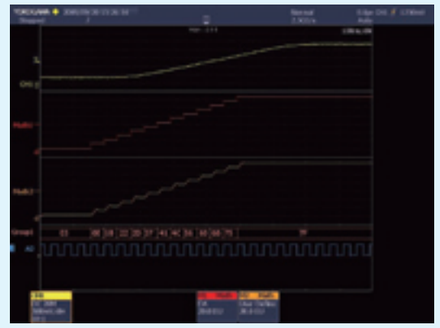


- Evaluating A/D conversion circuits with Virtual D/A computation

Not only can you observe the digital data before and after data conversion on logic input channels as waveforms, but you can also wholly convert the data to analog waveforms with Virtual D/A computation, display the waveforms, and perform additional computations on them.

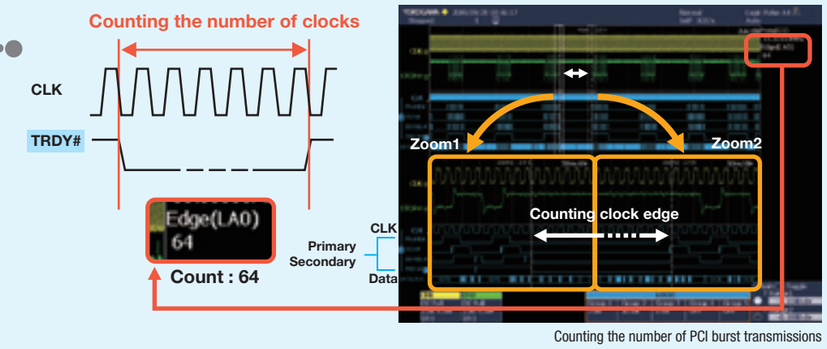
- **Conversion computation of up to 32 bits**
- **Digital filtering computations even on waveforms already converted from data**
- **High-speed processing enables real-time observation of computed waveforms**

With clock synchronization, you can display logic signals on the bus (state display), D/A conversion-computed waveforms, and low-pass filtering of these waveforms in real time.



- Check PCI bus performance with 32-bit logic input

You can measure the main signals using 32-bit logic + 4 analog channels to check control signal statuses or check transferring on the PCI bus.
The number of burst transfers on the PCI bus can usually be ascertained by counting the number of CLK pulses that occur during the period when TRDY is Lo. However, the DLM6000 series has a Pulse Count function that counts the number of clocks automatically.

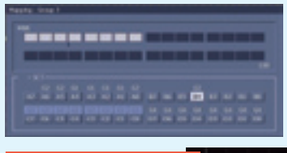


Counting the number of PCI burst transmissions

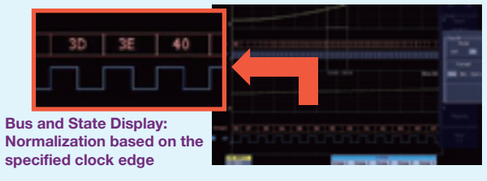
- Parallel bus observation

The DLM6000 enables observation and analysis of up to 32-bit logic signals along with 4 channels of analog signals, and this is useful for verifying operations on a parallel bus.

- **State Display function**
- **Bus Display function (binary, hexadecimal, symbol)**

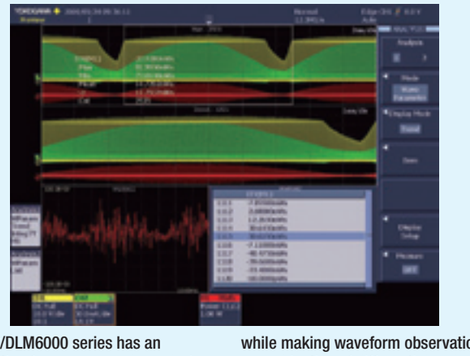


Bit arrangement in each group including MSB/LSB can be set independently of the bit arrangement of the logic probe



Bus and State Display: Normalization based on the specified clock edge

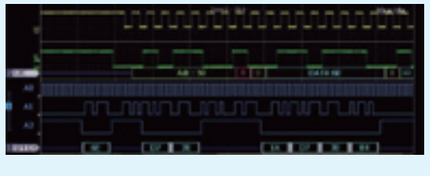
- Evaluation of switching power supply circuit characteristics



The DL6000/DLM6000 series has an available option for power supply analysis, and you can evaluate switching loss and analyze the SOA (safe operating area) while making waveform observations with a combination of differential and current probes.

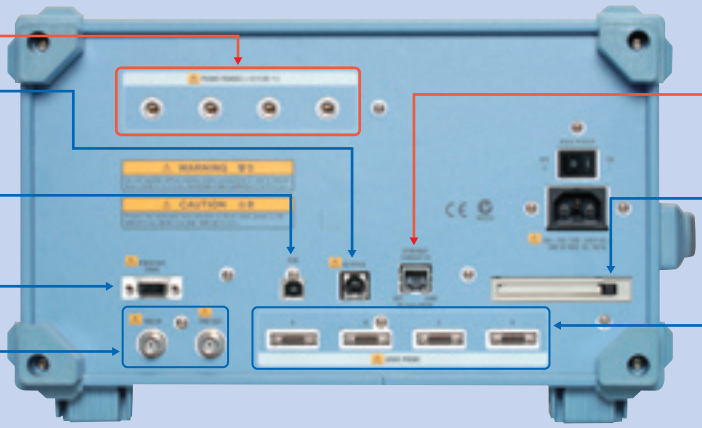
- Analysis of serial interface memory communications

Flash memory that uses I²C or SPI as its interface is often found in embedded systems. Using the DL6000/DLM6000 which can simultaneously display three sets of data (waveforms, protocols, and decodes) in real-time means highly efficient verification of system operations, including the status of the serial bus.



Diverse connectivity — remote control, data transfer, and data saving

DLM6000



Probe power
(Factory-set option)

GO/NO-GO I/O
Can be used to output the results of either GO/NO-GO tests or mask tests for communication purposes as a TTL level signal.

USB-PC connection port
Can be used to control DLM6000 MSO models externally or to upload data from the DLM6000 to a PC.

Video OUT
Can be connected to an external monitor

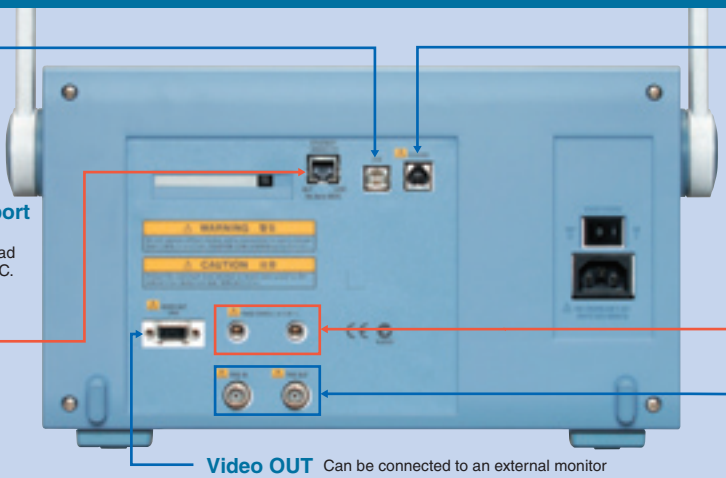
Trigger I/O
Separate ports available for external trigger input and output.

100BaseTX/10BaseT Ethernet
(Factory-set option)

PC Card Slot
A PC card slot is standard.
A National Instruments' PCMCIA-GPIB card is required to be able to use the GPIB interface.

Logic Inputs
Logic probe connectors. Two or Four 8-bit logic probes can be connected. (701980 or 701981)

DL6000



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GPIB interface
A PC card slot is standard.
A National Instruments' PCMCIA-GPIB card is required to be able to use the GPIB interface.

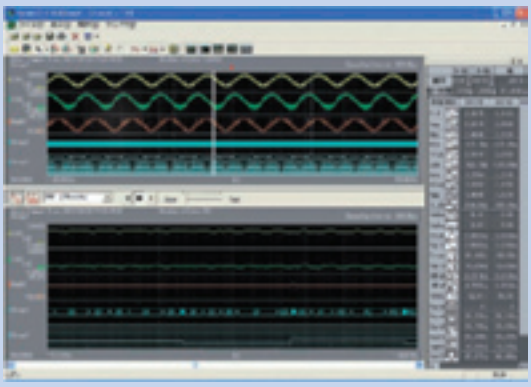
Software — easy and efficient offline analysis

- Xviewer (701992, sold separately)

This PC software program displays and analyzes analog and logic waveforms captured by a DL series instrument (including the DL6000 and DLM6000). It supports measurement of waveform parameters, FFT and user-defined computation functions, logic signal bus display, Virtual D/A and display, and other functions.
Xviewer is a high cost-performance, integrated waveform analysis tool offering oscilloscope control, measurement, data transfer, waveform observation, and analysis.

- **Measurement of waveform parameters**
- **FFT and user-defined computation functions**
- **Analog and logic waveforms can be placed anywhere on the screen**
  - Overlay display of analog and logic waveforms
  - Displaying logic signals in three different formats (waveform, bus, and D/A) at the same time.
- **Control of the DL6000/DLM6000 via USB or Ethernet**

Control a DLM6000/DL6000 via USB or Ethernet. Provides simple control and transfer of waveform data to a PC through an intuitive man-machine interface.



You can freely define on-screen display methods to match your objectives and ensure easy-to-see, easy-to-evaluate display of multichannel signals.

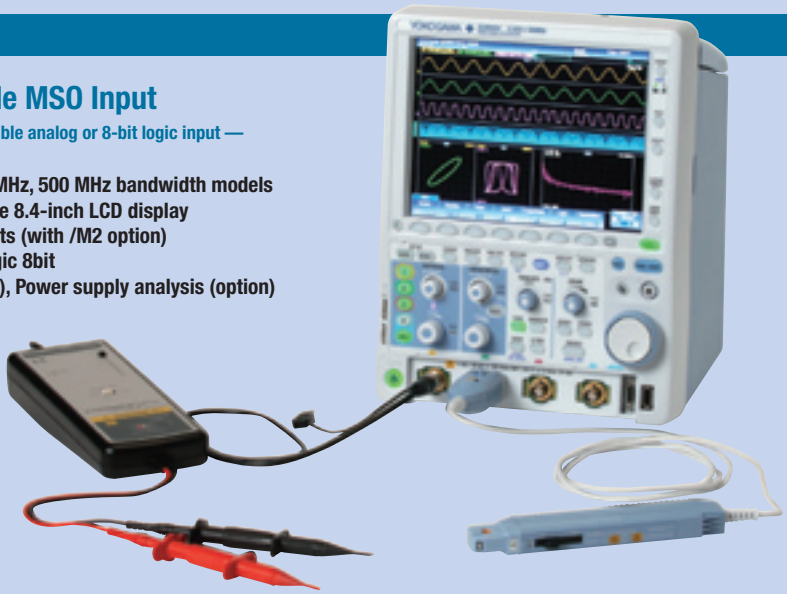
Related Products

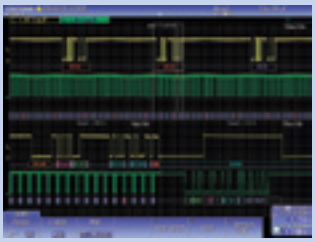
DLM2000 Series

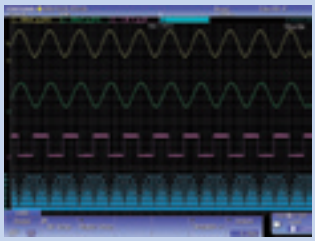
Analog 4CH/2CH Flexible MSO Input

— Capture mixed signals with a selectable analog or 8-bit logic input —

- Lineup includes 200 MHz, 350 MHz, 500 MHz bandwidth models
- Lightweight and compact, Large 8.4-inch LCD display
- Long memory: Up to 125M points (with /M2 option)
- Analog 4CH or Analog 3CH+Logic 8bit
- Serial analysis function (option), Power supply analysis (option)







DL7480

Analog 8CH+Logic 16bit

- Max 5GS/s, 500MHz bandwidth
- Long memory: Up to 16M pts

ScopeCorder Series -DL750/DL750P/SL1400

Isolated Analog Max.16CH+Logic 16bit

- Max.10MS/s
- Select from 11 different plug-in modules

ScopeCorder
DL750

Scope & Chart Recorder Two-in-One
DL750P

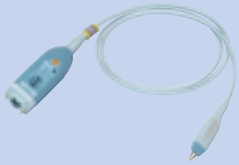
An easy-to-use
plug-in module type chart recorder
SL1400

Optional Accessories

PBA2500/1500/1000 Active Probe

DC ~ 1GHz(PBA1000)
DC ~ 1.5GHz(PBA1500)
DC ~ 2.5GHz(PBA2500)
±7V

PBD2000 2.0GHz Differential Probe



DC ~ 2GHz
±5V

PBDH1000 1.0GHz Differential Probe

DC ~ 1GHz
±25V

700924 Differential Probe

DC ~ 100MHz
1000Vrms/±1400V

701921 Differential Probe

DC ~ 100MHz
±700V

701926 Differential Probe

DC ~ 50MHz
5000Vrms/±7000V

701928/701929 Current Probe

DC ~ 100MHz(701928)
DC ~ 50MHz(701929)
30 Arms

701944/701945 100:1 Voltage Probe

DC ~ 400MHz(701944)
DC ~ 250MHz(701945)
1000Vrms

701919 Probe Stand

Main Specification

Model

Model name	Max. sample rate	Frequency bandwidth	Max. record length
DL6054	5GS/s	500MHz	6.25Mpts
DLM6054	5GS/s	500MHz	6.25Mpts
DL6014	5GS/s	1GHz	6.25Mpts
DLM6014	5GS/s	1GHz	6.25Mpts
DL6154	10GS/s	1.5GHz	6.25Mpts

Basic Specifications

Input channels: DL6000 series: 4 analog; DLM6000 series: 4 analog + 16 or 32 logic

Analog input
- Input coupling setting: AC, DC, GND, DC50 Ω
- Input impedance: 1 MΩ±1.0%, approximately 20 pF; 50 Ω±1.5%
- Voltage axis sensitivity setting range: 1 MΩ: 2 mV/div to 5 V/div (steps of 1-2-5); 50 Ω: 2 mV/div to 500 mV/div (steps of 1-2-5)
- Max. input voltage: 1 MΩ: 150 Vrms CATI (when frequency is 1 kHz or less); 50 Ω: Must not exceed 5 Vrms or less, or 10 Vpeak
- Max. DC offset setting range (when probe attenuation is set to 1:1): 1 MΩ: 2 mV/div to 50 mV/div: ±1 V; 100 mV/div to 500 mV/div: ±10 V; 1 V/div to 5 V/div: ±100 V. 50 Ω: 2 mV/div to 50 mV/div: ±1 V; 100 mV/div to 500 mV/div: ±5 V
- Vertical (voltage) accuracy
  - DC accuracy*1: 1 MΩ: ±(1.5% of 8 div + offset voltage accuracy); 50 Ω: ±(1.5% of 8 div + offset voltage accuracy)
  - Offset voltage accuracy*1: 2 mV/div to 50 mV/div: ±(1% of setting + 0.2 mV); 100 mV/div to 500 mV/div: ±(1% of setting + 2 mV); 1 V/div to 5 V/div: ±(1% of setting + 20 mV)
- Voltage standing-wave ratio (VSWR): Within frequency band 1.5 or less (typical value*4)
- Frequency characteristics*1*2 (-3 dB attenuation when inputting a sinewave equivalent in amplitude to ±2 div)

50 Ω	DL6054/DLM6054	DL6104/DLM6104	DL6154
0.5 V/div to 10 mV/div	DC to 500 MHz	DC to 1GMHz	DC to 1.5 GHz
5 mV/div	DC to 400 MHz	DC to 750 MHz	DC to 1 GHz
2 mV/div	DC to 400 MHz	DC to 600 MHz	DC to 750 MHz

1 MΩ (with standard passive probe, regulated form the probe tip)

5 V/div to 10 mV/div	DC to 500 MHz	DC to 500 MHz	DC to 500 MHz
5 mV/div to 2 mV/div	DC to 400 MHz	DC to 400 MHz	DC to 400 MHz

- Residual noise level*2: The larger of 0.4 mV rms or 0.05 div rms (typical value*4)
- A/D resolution: 8 bit (25LSB/div)
- Bandwidth limit: FULL/200 MHz/20 MHz/8 MHz/4 MHz/2 MHz/1 MHz/500 kHz/250 kHz/125 kHz/62.5 kHz/32 kHz/16 kHz/8 kHz (can be set for each channel, can be set independently on CH1 to CH4)

Logic input (DLM6054/DLM6104 only)
- Number of inputs: 16 or 32 bits
- Maximum toggle frequency*1: Model 701988: 100 MHz; Model 701989: 250 MHz
- Compatible probes: 701988, 701989 (8 bit input) (701980, 701981 also available)
- Min. input voltage: Model 701988: 500mVp-p; Model 701989: 300 mVp-p
- Input range: Model 701988: ±40 V; Model 701989: Threshold ±6 V
- Max. nondestructive input voltage: ±40 V (DC + ACpeak) or 28 Vrms (when using 701989)
- Threshold level setting range: Model 701988: ±40 V (setting resolution of 0.05 V); Model 701989: ±6 V (setting resolution of 0.05 V)
- Input impedance: Model 701988: Approx. 1 MΩ/approx. 10 pF; Model 701989: Approx. 100 kΩ/approx. 3 pF

Maximum sampling rate

Real time sampling mode	DL6054/DL6104/DLM6054/DLM6104	DL6154
Interleave mode ON	5 GS/s	10 GS/s
Interleave mode OFF	2.5 GS/s	5 GS/s
Repetitive sampling mode	2.5TS/s	2.5TS/s
Max. record length	6.25 Mpts	6.25 Mpts

- Time axis setting range: 500 ps/div to 50 s/div (steps of 1-2-5)
- Time base accuracy*1: ±0.001%
- Time axis setting accuracy*1: ±(0.001% + 10 ps + 1 sample time)
- Max. acquisition rate*5: 1.25 Mpts: 60 waveforms/sec/ch; 12.5 kpts: 9,000 waveforms/sec/ch; 2.5 kpts: 25,000 waveforms/sec/ch
- Dead time in N Single mode*5: Min. 400 ns or less (equivalent to 2.5 million waveforms/sec)

Triggers

- Trigger modes: Auto, Auto Level, Normal, Single, N Single
- Trigger source: DL6054/6104/6154 CH1 to CH4, LINE, EXT; DLM6054/DLM6104 CH1 to CH4, LINE, Logic, EXT

Trigger level setting range
- CH1 to CH4: ±4 div from center of screen
- EXT: ±2 V(1:1), ±20 V (with 10:1 probe)

Trigger level setting resolution
- CH1 to CH4: 0.01div
- EXT: 5 mV(1:1), 50 mV (with 10:1 probe)

Window Comparator: Can be set on individual channels from CH1 to CH4
- Center: ±4 div from center of screen
- Width: ±4 from Center

Trigger level accuracy
- CH1 to CH4*1: ±(0.2 div + 10% of trigger level)
- EXT*1: ±(50 mV + 10% of trigger level)

Trigger sensitivity

		DL6054/DLM6054	DL6104/DL6154/DLM6104
CH1 to CH4*1	1 div p-p	DC to 500 MHz	DC to 1 GHz
EXT*1	100 mV p-p	DC to 100 MHz	DC to 100 MHz
Edge OR*1	1 div p-p	DC to 50 MHz	DC to 50 MHz

Trigger type (A trigger)

Edge
- Edge: Triggers on edge of single trigger source (CH1-CH4, Logic, Ext, Line)

Enhanced

Edge/State
- Edge (Qualified): Triggers on edge of single trigger source when Qualification conditions are true (CH1-CH4)
- Edge OR: Triggers on edge conditions (OR relationship) of multiple trigger sources (Max 50 MHz) (CH1-CH4)
- State: Triggers on ENTER/EXIT when State conditions are true (CH1 to CH4)
- Logic Edge (Qualified): Edge (Qualified) trigger (Logic) with Logic signal as the trigger source
- Logic State: State trigger (Logic) with Logic signal as the trigger source

Width
- Pulse: Triggers on width of a single trigger source (CH1 to CH4)
- Pulse (Qualified): Triggers on width of a single trigger source when Qualification conditions are true (CH1-CH4)
- Pulse State: Triggers on width when State conditions are true (CH1 to CH4)
- Logic Pulse: Triggers on width of specified Logic signal pattern (Logic)
- Logic Pulse State: Pulse State trigger (Logic) with Logic signal as the trigger source
- Time width setting mode
  - More than: Triggers when condition changes while time that condition is true is longer than T1
  - Less than: Triggers when condition changes while time that condition is true is shorter than T1
  - Between: Triggers when condition changes while time that condition is true is longer than T1 and shorter than T2
  - Out of Range: Triggers when condition changes while time that condition is true is shorter than T1 or longer than T2
  - Time out: Triggers when time that condition is true exceeds T1
- Setting time (T1/T2): 1 ns to 10 s, 500 ps resolution
- Time accuracy: ±(0.2% of setting value + 1 ns)

Serial Bus
- Serial Pattern: General purpose serial communication trigger. Max. bit rate: 50 Mbps; Max. bit length: 128 bits
- I²C (optional): (see I²C bus signal analysis function)
- SPI (optional): (see SPI bus signal analysis function)
- CAN (optional): (see CAN bus signal analysis function)
- LIN (optional): (see LIN bus signal analysis function)
- UART (optional): (see UART bus signal analysis function)

TV: Triggers on various types of broadcast system video signals
- Mode: NTSC/PAL/SDTV/HDTV/UserdefTV
- Input CH: CH1-CH4
- Sync Guard: 60 to 90% of Hsync, steps of 1%
- Line: 5-1054(NTSC) 2-1251(PAL) 8-2251(SDTV) 2-2251(HDTV) 2-2251(UserdefTV)
- Field: 1/2/X
- Frame: Skip 1/2/4/8

Event Interval
- Event Cycle: Triggers when the event cycle is within the specified time range.
- Event Delay: After Event 1 occurs, trigger occurs on 1st occurrence of Event 2 that satisfies the timing constraints. The trigger process is reset if Event 1 or Event 2 occurs before the timing constraints are satisfied.
- Event Sequence: After Event 1 occurs, trigger occurs on 1st occurrence of Event 2 that satisfies the timing constraints. The trigger process is not reset if Event 1 occurs before the timing constraints are satisfied.
- Setting time (T1/T2): 1.5ns to 10 s, 500 ps resolution
- Time accuracy: ±(0.2% of setting value + 1 ns)
- Event type: Edge/Edge Qualified/State/Pulse/Pulse Qualified/Pulse State/I²C/CAN/SPI/Serial

Trigger type (AB triggers)
- A Delay B: 10 ns to 10 s (B trigger can only be set to Edge)
- A to B(N): 1 to 10⁸ (B trigger can only be set to Edge)

Display

- Display: 8.4-inch (21.3 cm) TFT color liquid crystal display
- Screen size: 170.5 mm (W) × 127.9 mm (H)
- Total pixels: 1024×768 (XGA) (waveform display pixels 800×640)

Functions

- Waveform acquisition/display
- Acquisition modes: Normal, Envelope, Average
- Other waveform acquisition functions: High Resolution mode (Max. 12 bit equivalent), Repetitive Sampling mode,Interpolation mode (interpolates up to 1000 times the actually sampled data), Roll mode (when the trigger mode is Auto, Auto level, or Single, and the time width is 100 ms/div to 50 s/div)
- Record length: 2.5 kpts/6.25 kpts/12.5 kpts/25 kpts/62.5 kpts/125 kpts/250 kpts/625 kpts/1.25 Mpts/2.5 Mpts/6.25 Mpts
- Display format: Analog waveforms can be split into 1, 2, 3, or 4 windows. Split display of analog and logic waveform domains (select ratio of 1:1, 1:3, or 3:1). Bus and State display of logic waveforms.
- Accumulation: Select waveform overlapping by Count/Time or Intensity/Color
- Snapshot: Currently displayed waveform can be retained on screen

Analysis Functions

- Search and Zoom: Zoom up to 2 areas of the displayed waveform along the time axis (Horizontal Zoom) and voltage axis (Vertical Zoom), with independent zoom factors.
- Auto Scroll: Automatically scroll the zoom window along the time axis
- Search functions: Search for specific portions of the displayed waveform and display in the zoom window
  - Search Type: Edge/Edge Qualified/State/Pulse/Pulse Qualified/Pulse State/Serial Pattern/Logic Edge/Logic Edge Qualified/Logic Width/Logic State/I²C (optional)/SPI (optional)/CAN (optional)/LIN (optional)

History memory
- Max. data: 2000(2.5 kpts) History; 1600(2.5 kpts) N Single
- History search: Search for and display waveforms in History memory matching specified conditions
  - Search types: Rect/Wave/Polygon/Parameter (Measure/FFT/XY)
  - Replay: Automatically displays the history waveforms sequentially
  - Display: Select specified acquisition (#) or average (Avg)
- Cursor measurement: Vertical/Horizontal/H&V/VT/Marker/Serial
- Automated measurement of waveform parameters: Max/Min/High/Low/PP/HighLow/+Over/Over/Rms/Mean/Sdev/IntegTY/C.Rms/C.Mean/C.Sdev/C.IntegTY/Freq/EdgeCount/Burst/+Width/-Width/Period/Avg Period/Duty/Rise/Fall/Delay (the following are valid when specifying the power supply analysis option) Umn/Urmn/S/P/Q/Z/λ/Wp/Wp+/Wp-/Abs.Wp/Up-p(P-P)/U+pk(Max)/U-pk(Min)/Udc(C.Mean)/Urms(C.Rms)/Uac(C.Sdev)/Imn/Irmn/q/q+/q-/Ads.q/I2t/Ip-p(P-P)/I+pk(Max)/I-pk(Min)/Idc(C.Mean)/Irms(C.Rms)/Iac(C.Sdev)
- Mask test: Performs Mask Test/Eye Pattern measurement
  - Mask Test Item: Wave Count/Wave Count%/Sample Point Count/Sample Point Count%
  - Eye pattern Item: Vtop/Vbase/σtop/σbase/Tcrossing1/Tcrossing2/Vcrossing/Crossing%/EyeHight/EyeWidth/QFactor/Jitter/DutyCycle/Distortion%/Ext Rate dB/Rise/Fall
- Computations (MATH): Up to 4 traces (M1 to M4) +/-/×/Integ/Count(Edge)/Count(Rotary)/Delay/Moving Avg/LowPass/High Pass/DA/User Defined (user defined MATH option) Power/Z/I2t (power supply analysis option)
- User defined MATH (option): The following operators can be arbitrarily combined in equations +, -, ×, /, SIN, COS, TAN, ASIN, ACOS, ATAN, INTEG, DIFF, ABS, SQRT, LOG, EXP, LN, BIN, DELAY, P2 (square), PH, MEAN, HLBT, PWHH, PWLL, PWHL, PWLH, PWXX, FV, DUTYH, DUTYL, FILT1, FILT2
- Reference function: Up to 4 traces (M1 to M4) of saved waveform data can be displayed and analyzed (MATH, cursors). Allows loading and replaying of waveforms in History.
- Action ON trigger: Judges based on automatically measured values of waveform parameters or waveform zones, and performs the selected action every time judged to be true.
  - Modes: All Condition/(GO/NOGO Zone/Param)/(GO/NOGO Mask Test)
  - Actions: Buzzer/Print/Save/Mail
- Analysis: XY, Wave Parameter, Accum Histogram, Serial Bus (optional), Power Analysis(optional)
  - FFT: PS(Up to 250kpts) Available with /G2 or /G4 option: LS, RS, PSD, CS, TF, CH

I²C Bus Signal Analysis Function (Optional)

- Applicable bus: I²C bus: Bus transfer rate: 3.4 Mbit/s max. Address mode: 7bits / 10bits; SM bus: Complies with System Management Bus
- Trigger function
  - Trigger source: CH1 to CH4, Logic
  - Trigger types: Address & Data, Non-Ack, Every Start, General Call,Start Byte, HS mode
- Analyzable no. of data: 40,000 bytes max.
- Analysis signal input: CH1 to CH4, Logic, MATH waveforms (M1 to M4)
- Analysis results displays: Decode and List displays. Time from reference point, data (Binary/Hex displayed together), Presence/absence of ACK, R/W, address or data, start condition
- Search function: Searches for address patterns, data patterns, and acknowledge bits
- Analysis results save function: Analysis list data can be saved to CSV-format files

SPI Bus Signal Analysis Function (Optional)

- Trigger function
  - Trigger source: CH1 to CH4, Logic
  - Modes: 3 wire / 4wire
  - Bit order: MSB / LSB
- Analyzable no. of data: 40,000 bytes max.
- Analysis signal input: CH1 to CH4, Logic, Assignable to MATH waveforms (M1 to M4)
- Analysis results displays: Decode and List displays. Time from reference point, data (select Binary or Hex display), CS signal status
- Search function: Search for data
- Analysis result save function: Analysis list data can be saved to CSV-format files

CAN Bus Signal Analysis Function (Optional)

- CAN bus: CAN version 2.0A/B; Hi-Speed CAN (ISO11898), Low-Speed CAN (ISO11519-2)
  - Bit rate: 1Mbps / 500 kbps / 250 kbps / 125 kbps / 83.3 kbps / User (can be arbitrarily set with resolution of 100 bps)
- Trigger function
  - Trigger source: CH1 to CH4 (input with differential probe)
  - Trigger types: SOF, Error Frame, ID Std/Data, ID Ext/Data, ID/Data OR, Msg/Signal
- Analyzable no. of frames: 3,000 frames max.
- Analysis signal input: CH1 to CH4 or MATH waveforms (M1 to M4)
- Analysis results displays: Decode and List displays. Frame type, time from trigger point, Frame ID, DLC, Data, CRC, presence or absence of Ack
- Auxiliary analysis functions: Data search, field jump, and stuff bit computation functions
- Analysis result save function: Analysis list data can be saved to CSV-format files

LIN Bus Signal Analysis Function (Optional)

- LIN bus: LIN 1.3 or LIN 2.0
  - Bit rate: 1200 bps, 240 0bps, 4800 bps, 9600 bps, 19200 bps, User, or an arbitrary bit rate from 1 k to 20 k[bps] (setting resolution of 10 bps).
- Trigger function
  - Trigger source: CH1 to CH4, or Logic
  - Trigger types: Break: Triggers when Break
- Analysis signal input: CH1 to CH4, Logic, or MATH waveforms (M1 to M4)
- Analyzable no. of frames: 3,000 frames max. (1,500 frames before and after trigger point)
- Analysis results displays: Decode and List displays. Break, Synch, ID, Data, Checksum, added information (ID parity error, Checksum error, Wakeup signal)
- Auxiliary analysis functions: Data search, field jump, and simultaneous analysis (both rev's) functions
- Analysis result save function: Analysis list data can be saved to CSV-format files

UART Signal Analysis Function (Optional)

- Bit rate: 1200bps, 2400bps, 4800bps, 9600bps, 19200bps, 38400bps, Select 57600 bps, 115200 bps, User, or an arbitrary bit rate from 1 k to 200 k[bps] (setting resolution of 0.1 kbps)
- Trigger function
  - Trigger source: CH1 to CH4, or Logic
  - Data format: 8bit Data (Non Parity); 7bit Data + Parity bit; 8bit Data + Parity bit
  - Trigger types: Every Data: Triggers on Stop Bit position of all data
- Analysis signal input: CH1 to CH4, Logic, or MATH waveforms (M1 to M4)
- Analyzable no. of frames: 3,000 bytes max. (1,500 bytes before and after trigger point)
- Analysis results displays: Decode and List displays. Data, added information (Parity error, Framing error)
- Auxiliary analysis functions: Data search and field jump functions, ASCII display,and grouping display
- Analysis result save function: Analysis list data can be saved to CSV-format files

Power Supply Analysis (Optional)

- Propagation time difference correction (deskew): The difference in propagation time of voltage and current probe signals can be automatically or manually corrected. Correction range is ±80 ns (0.01 ns resolution)
- Automated measurement of power supply analysis parameters:
  - Voltage channels: Umn, Urmn, S, P, Q, Z, λ, Wp, Wp+, Wp-, Abs.Wp, Up-p(P-P), U+pk(Max), U-pk(Min), Udc(C.Mean), Urms(C.Rms), Uac(C.Sdev)
  - Current channels: Imn, Irmn, q, q+, q-, Abs.q, I2t, Ip-p(P-P), I+pk(Max),I-pk(Min), Idc(C.Mean), Irms(C.Rms), Iac(C.Sdev)
- Statistical processing of measured values: Enables computation of statistics (Min, Max, Ave, σ) from measured values of power supply analysis items
- Waveform computation of power supply analysis parameters: Active power, impedance, Joule-integral, and FFT waveform computation can be performed simultaneously with standardwaveform computations.
- Harmonic analysis: Allows for easy comparison with limit values per harmonic current emission standard IEC 61000-3-2 edition 2.2 (EN61000-3-2 (2000))
- Display of the Area of Voltage-Current Operation: Allows for checking whether it is within the ASO (area of safe operation)
- Saving harmonic analysis results: Results of harmonic analysis can be saved to CSV files

Built-in Printer (/B5 Option)

- Print type: Thermal line/dot matrix
- Paper width: 112 mm
- Effective print width: 104 mm (832 dots)

Auxiliary Input

- Rear panel I/O signal: External trigger input, external trigger output, GO/NO-GO output, video output
- Probe interface terminal (front panel): 4 terminals
- Probe power terminal (rear panel): DL6000 series (with /P2 option): 2 terminals; DLM6000 series (with /P4 option): 4 terminals

Storage

- Built-in storage media (Flash ROM): Capacity Standard: approximately 390 MB; Option (when /C9 specified): approximately 3.7 GB; Application Saving and loading waveforms/panel settings

USB Peripheral Connection Terminal

- Connector: USB type A connectors × 2
- Supported transfer standards: LS (Low Speed), FS (Full Speed, 12 Mbps)
- Supported devices: USB HID Class Ver 1.1 compliant mouse, 101 keyboard (English); USB Printer Class Ver 1.0 compliant; USB Mass Storage Class Ver. 1.1 compliant mass storage devices
  * Please contact your local Yokogawa sales office for model names of verified devices

PC Card Interface

- Slots: 1 (rear panel)
- Supported card: GPIB (National Instruments NI PCMCIA-GPIB card or compatible); Flash ATA memory card (PC card TYPE II), CF card + adapter card, various HDD type PC cards
  * Please contact your local Yokogawa sales office for model names of verified devices

USB-PC Connection Terminal

- Connector: USB type B connector x 1
- Supported transfer standards: HS (Low Speed), FS (Full Speed)
- Supported class: Operates as a multifunction device simultaneously supporting the following 2 protocols. USBTMC-USB488(USB Test and Measurement Class Ver.1.0); Mass Storage Class Ver.1.1 (cannot be formatted)

Ethernet (/C12 and /C9 Options)

- Connector: RJ-45 connector x 1
- Transmission methods: Ethernet (100BASE-TX/10BASE-T), LXI 1.2 Class C
- Supported services: DHCP, DNS, Microsoft network file sharing server & client, FTP server, SNTP client, SMTP client, firewall functions

General Specifications

- Rated supply voltage: 100 to 120 VAC/200 to 240 VAC (auto switching)
- Rated supply frequency: 50/60Hz
- Maximum power consumption: 300 VA
- Withstand voltage (power supply to case): 1.5 kVAC, for one minute
- External dimensions: DL6054/DL6104/DL6154 350(W) × 200(H) × 178(D) mm; DLM6054/DLM6104 350(W) × 200(H) × 285(D) mm (when printer cover closed, excluding protrusions)
- Weight: DL6054/DL6104/DL6154 Approx. 6.5 kg (including printer); DLM6054/DLM6104 Approx. 7.7 kg (including printer)
- Operating temperature range: 5℃ to 40℃

*1: Measured under standard operating conditions after a 30-minute warm-up followed by calibration.
Standard operating conditions
Ambient temperature: 23℃ ±5℃
Ambient humidity: 55 ±10% RH
Error in supply voltage and frequency: Within 1% of rating
*2: Value in the case of repetitive phenomenon. The frequency bandwidth of a single-shot phenomenon is the smaller of the two values, DC to sampling frequency/2.5 or the frequency bandwidth of the repetitive phenomenon
*3: When the input section is shorted, the acquisition mode is set to Normal, interleave mode is OFF, accumulation is OFF, and the probe attenuation is set to 1:1.
*4: A typical value is a typical or average value. It is not strictly guaranteed.
*5: Acquisition rate does not vary with the increase or decrease in channels.

Model and Suffix Codes

DL6054/6104/6154

Model	Suffix Code	Description
DL6054		4CH 500MHz,Max. 5GS/s(2.5GS/s/CH), 6.25 Mpts/CH
DL6104		4CH 1GHz,Max. 5GS/s(2.5GS/s/CH), 6.25 Mpts/CH
DL6154		4CH 1.5GHz,Max. 10GS/s(5GS/s/CH), 6.25 Mpts/CH
Power cable	-D	UL/CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	AS standard
	-H	GB standard
Help language	-HE	English Help (Menu and Panel)
	-HC	Chinese Help (Menu and Panel)
	-HK	Korean Help (Menu and Panel)
	-HG	German Help (Menu and Panel)
	-HF	French Help (Menu and Panel)
	-HL	Italian Help (Menu and Panel)
	-HS	Spanish Help (Menu and Panel)
Option	/B5	Built-in printer
	/P2*3	Probe power
	/C9*4	Internal storage + LXI compliant LAN
	/C12*4	LXI compliant LAN
	/G2*5	User defined Math
	/G4*5	Power supply analysis function (includes /G2)
	/F3	UART+I²C+SPI trigger and analysis
	/F4	UART+CAN+LIN trigger and analysis

DLM6054/6104

Model	Suffix Code	Description
DLM6054 *1		4CH 500MHz+Logic16/32bit, Max. 5GS/s(2.5GS/s/CH), 6.25Mps/CH
DLM6104 *1		4CH 1GHz+Logic 16/32bit, Max. 5GS/s(2.5GS/s/CH), 6.25Mps/CH
Power cable	-D	UL/CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	AS standard
	-H	GB standard
Help Language	-HE	English Help (Menu and Panel)
	-HC	Chinese Help (Menu and Panel)
	-HK	Korean Help (Menu and Panel)
	-HG	German Help (Menu and Panel)
	-HF	French Help (Menu and Panel)
	-HL	Italian Help (Menu and Panel)
	-HS	Spanish Help (Menu and Panel)
Logic input	-L16 *2	Logic 16bit (Logic probe interface x 2)
	-L32 *2	Logic 16bit (Logic probe interface x 4)
Option	/B5	Built-in printer
	/P4 *3	Probe power
	/C9 *4	Internal storage + LXI compliant LAN
	/C12 *4	LXI compliant LAN
	/G2 *5	User defined Math
	/G4 *5	Power supply analysis function (includes /G2)
	/F3	UART+I²C+SPI trigger and analysis
	/F4	UART+CAN+LIN trigger and analysis

Standard Accessories

Name	Qty
Power cord (with 3-prong to 2-prong adapter)	1
Passive probe, model 701939 (500 MHz, 1.3 m)	4
Protective front cover	1
Soft carrying case for probes	1
Printer roll paper (for /B5 option)	1 roll
Rubber leg cap	1 set
User's manuals	1 set

Accessories (Optional)

Name	Model	Specifications
Passive probe	701939	10 MΩ (10:1), 500 MHz, 1.3 m
FET probe	700939	DC to 900 MHz bandwidth/2.5M/1.8pF
Active probe (PBA1000)	701912	DC to 1 GHz bandwidth/100kΩ/0.9pF
Active prove (PBA1500)	701914	DC to 1.5 GHz bandwidth/100kΩ/0.9pF
Active prove (PBA2500)	701913	DC to 2.5 GHz bandwidth/100kΩ/0.9pF
100:1 voltage probe	701944	DC to 400 MHz, 1.2 m, 1000 Vrms
100:1 voltage probe	701945	DC to 250 MHz, 3 m, 1000 Vrms
Differential probe	701920	DC to 500 MHz bandwidth/max. ±12 V
Differential probe	701921	DC to 100 MHz bandwidth/max. ±700 V
Differential probe	701922	DC to 200 MHz bandwidth/max. ±20 V
Differential probe (PBD2000)	701923	DC to 2GHz bandwidth/50kΩ, ±5 V
Differential probe (PBDH1000)	701924	DC to 1 GHz bandwidth/1MΩ/max. ±25 V
Differential probe	701926	DC to 50MHz bandwidth/50MΩ/ max. ±5000 Vrms
Differential probe	700924	DC to 100 MHz bandwidth/max. ±1400 V
Differential probe	700925	DC to 15 MHz bandwidth/max. ±500 V
Current probe	701929	DC to 50 MHz bandwidth, 30 Arms
Current probe	701928	DC to 100 MHz bandwidth, 30 Arms
Current probe	701930	DC to 10 MHz bandwidth, 150 Arms
Current probe	701931	DC to 2 MHz bandwidth, 500 Arms
Mini clip converter	700971	For models 701938 and 701939
BNC adapter	700972	For models 701938 and 701939
PCB adapter	366945	For models 701938 and 701939,10 per set
Solder-in adapter	366946	For models 701938 and 701939, 1 adapter,red/black cables (3 ea.)
Printer roll paper	B9988AE	Lot size is 10 rolls,10 meters each
Printer roll paper	B9850NX	Lot size is 5 rolls, 30 meters each (for DLM6000)
Xviewer	701992-SP01	For DL/WE series, standard type
	701992-GP01	For DL/WE series, with MATH functions
Probe stand	701919	Round base, 1 arm
Rack mount kit	701983-01	EIA standard-compliant
	701983-02	JIS standard-compliant

Logic Probes for DLM6054/6104

Name	Model	Specification
Logic probe (PBL100)	701988	1 MΩ input resistance, toggle frequency of 100 MHz
Logic probe (PBL250)	701989	100 kΩ input resistance, toggle frequency of 250 MHz
Accessory kit	701909	Accessory kit for 701989(PBL250)

*1: Logic probes sold separately. Please order the model 701988/701989 accessory logic probes separately.
*2: Only one of these may be selected at a time.
*3: Specify this option when using current probes or other differential probes such as models 701920 or 701922.
*4: Only one of these may be selected at a time.
*5: Only one of these may be selected at a time.

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