Oscilloscopes

Waveform Measuring ScopeCorder Series Selection Guide (*1)

■ The ScopeCorder series can be used to capture single-shot or infrequently recurring signals.
They can also execute computations on repetitive waveforms, and automatically extract waveform parameters.
The ScopeCorder series offers an extensive selection with large-capacity memories, powerful triggering functions, and internal printers. It also can save and load data to and from internal or external media.
SL1400 can provide big paper output capability for many applications in the field.

Model / Item		DL850E/DL850EV ...P8	SL1400 ...P10 Note: SL1400 is scheduled to be discontinued in June, 2014.
Features		• Powerful mobile data acquisition recorders • Measure & analyze dynamic behavior of electromechanical systems • Flexible modular inputs for voltage, current, sensors and CAN/LIN bus • Trend & Trigger on electrical power calculations (optional)	• Compact, 16 ch isolated inputs (8 module slots) • Eleven kinds of plug-in input modules • Web server functions • A4 (210 mm) Big Printer • Probe power connectors
Max. sampling rate		100 MS/s (*2)	10 MS/s (*2)
Bandwidth		20 MHz (*2)	3 MHz (*2)
Number of analog input channels		128 ch max (when using eight 720220 modules)	Plug-in module: 16 ch (isolation)
Logic input		128 bits max (when using eight 720230 modules)	St'd: 16 (8 bits × 2)
Max. vertical sensitivity (1:1)		100 µV/div (*2)	1 mV range
Vertial axis resolution		16 bit (*2)	Max. 16 bits (*2)
Max. sweep sensitivity		100 ns/div (*2)	100 µs Setting
Max. record length	St'd	250 Mpts (MW) max/10 Mpts (MW) (16 ch)	50 MW max/2.5 MW (16 ch)
	Optional	2 Gpts (GW) max / 100 Mpts (MW) (16 ch)	—
Internal media drive	selectable	SD memory card slot	PC card
Internal HDD	Optional	Internal 500 GB or external HDD	40 GB
Interface	St'd	USB2.0/ Ethernet (1000BASE-T)	USB/GP-IB/RS232/SCSI
	Optional	GPIB	Ethernet
Internal printer		112 mm width (optional)	210 mm width (st'd)
Others	Optional	• 17 types of plug-in modules • IRIG interface • GPS interface • User-defined math function • Real time math function • Probe power (4-output) • Power math function • DC 12V Power drive (DL850EV only)	• Probe Power Connectors
Display (TFT LCD)		10.4-inch color XGA	10.4-inch color, SVGA
External dimensions W × H × D (mm)		355 × 259 × 180	355 × 250 × 225
Weight (kg)		Approx. 6.5 (*3)	Approx. 8.0 (*3)

*1: See each product catalog for more detaled specifications *2: Depends on input module *3: Plug-in modules are not included

Plug-in Module Selection Guide*1

Input	Model No.	Sample Rate	Resolution	Bandwidth	Number of Channels	Isolation	Maximum Input Voltage (DC+ACpeak)	DC Accuracy	Note
Analog Voltage	720210	100 MS/s	12-Bit	20 MHz	2	Isolated	1000 V*2 200 V*3	±0.5%	High speed · High voltage · Isolated Max. four (4) modules can be installed in a main unit.*6
	701250*5	10 MS/s	12-Bit	3 MHz	2	Isolated	600 V*2 200V*3	±0.5%	high noise immunity
	701251	1 MS/s	16-Bit	300 kHz	2	Isolated	600 V*2 140 V*3	±0.25%	High sensitivity range (1mV/div), low noise (±100 μVtyp.), and high noise immunity
	701255*5	10 MS/s	12-Bit	3 MHz	2	Non-Isolated	600 V*4 200V*3	±0.5%	non-isolation version of model 701250
	701267	100 kS/s	16-Bit	40 kHz	2	Isolated	850 V*3	±0.25%	with RMS, and high noise immunity
	720220	200kS/s	16-Bit	5 kHz	16	Isolated(GND-terminal) non-isolated (CH-CH)	42V*3	±0.3%	16CH voltage measurement (Scan-type)
Temperature	701261	100 kS/s (Voltage), 500 S/s (Temperature)	16-Bit (Voltage), 0.1: (Temperature)	40 kHz (Voltage), 100 Hz (Temperature)	2	Isolated	42 V	±0.25% (Voltage)	thermocouple (K, E, J, T, L, U, N, R, S, B, W, iron-doped gold/chromel)
	701262	100 kS/s (Voltage), 500 S/s (Temperature)	16-Bit (Voltage), 0.1: (Temperature)	40 kHz (Voltage), 100 Hz (Temperature)	2	Isolated	42 V	±0.25% (Voltage)	thermocouple (K, E, J, T, L, U, N, R, S, B, W, iron-doped gold/chromel), with AAF
	701265	500 S/s (Voltage), 500 S/s (Temperature)	16-Bit (Voltage), 0.1: (Temperature)	100 Hz	2	Isolated	42 V	±0.08 (Voltage)	thermocouple (K, E, J, T, L, U, N, R, S, B, W, iron-doped gold/chromel), high sensitivity range (0.1mV/div), and low noise (±4 μVtyp.)
	720221*8	10 S/s	16-Bit	600 Hz	16	Isolated	42 V	±0.15% (Voltage)	16-CH voltage or temperature measurement (scan method) Thermocouple (K, E, J, T, L, U, N, R, S, B, W, Au-Fe-chromel)
Strain	701270	100 kS/s	16-Bit	20 kHz	2	Isolated	10 V	±0.5% (Strain)	Supports strain NDIS, 2, 5, 10 V built-in bridge power supply
	701271	100 kS/s	16-Bit	20 kHz	2	Isolated	10 V	±0.5% (Strain)	Supports strain DSUB, 2, 5, 10 V built-in bridge power supply, and shunt CAL
Analog Voltage, Acceleration	701275	100 kS/s	16-Bit	40 kHz	2	Isolated	42 V	±0.25% (Voltage) ±0.5% (Acceleration)	built-in anti-aliasing filter, Supports built-in amp type acceleration sensors (4 mA/22 V)
Frequency	701280	25 kS/s	16-Bit	resolution 50 ns	2	Isolated	420 V*2 42 V*3	±0.1% (Frequency)	Measurement frequency of 0.01 Hz to 200 kHz, Measured parameters (frequency, rpm, period, duty, power supply frequency, distance, speed)
Logic	720230	10 MS/s	—	—	8-bit x 2 ports	non-isolated	depend on logic probe used.	—	(8-bit/port) x 2, compatible with four-type of logic probe (sold separately)
CAN	720240	100 kS/s	—	—	(60signalsx2) port	Isolated	10 V	—	CAN Data of max. 32-bit allowable It is available for DL850EV only. Max two (2) modules can be installed in a main unit.*6 *7
CAN, LIN	720241	100 kS/s	—	—	(60signalsx2) port	Isolated	10 V (CAN port) 18 V (LIN port)	—	CAN port x 1, LIN port x 1 Available for DL850EV only, up to 2 modules*6 *7

*1: Probes are not included with any modules. *2: In combination with 10:1 probe model 700929 *3: Direct input *4: In combination with 10:1 probe model 701940
*5: Some of the models 701250/701255 shipped on or before July, 2007 may require factory rework. *6: Any other modules can be installed in the remaining slots.
*7: Up to two CAN Bus Monitor Modules (720240) or CAN & LIN Bus Monitor Modules (720241) in total can be used on a single main unit. *8: The 16-CH Scanner Box (701953) is required for measurement.

Compatibility of the plug-in modules with the main units.

Plug-in Module		Main Unit			
Model	Name	DL850E	DL850EV	SL1000	SL1400
701250	High-speed 10 MS/s 12-Bit Isolation Module	available	available	available	available
701251	High-speed 1 MS/s 16-Bit Isolation Module	available	available	available	available
701255	High-speed 10 MS/s 12-Bit non-Isolation Module	available	available	available	available
701261	Universal Module	available	available	available	available
701262	Universal Module (with Anti-Aliasing Filter)	available	available	available	available
701265	Temperature/high-precision voltage Module	available	available	available	available
701267	High-voltage 100 kS/s 16-Bit Isolation Module (with RMS)	available	available	available	available
701270	Strain Module (NDIS)	available	available	available	available
701271	Strain Module (DSUB, Shunt-CAL)	available	available	available	available
701275	Acceleration/Voltage Module (with Anti-Aliasing Filter)	available	available	available	available
701280	Frequency Module	available	available	available	available
720210	High-speed 100 MS/s 12-Bit Isolation Module	available	available	available	NA
720220	Voltage Input Module (16 ch)	available	available	NA	NA
720221	Temperature/Voltage Input Module (16 ch)	available	available	NA	NA
720230	Logic Input Module	available	available	NA	NA
720240	CAN Bus Monitor Module	NA	available	NA	NA
720241	CAN & LIN Bus Monitor Module	NA	available	NA	NA

Note 1: The firmware versions indicated below are required for using the 701267 module.
SL1400: version.6.56 or later
SL1000: version.2.10 or later
Note 2: Max. four 720210 modules can be installed in a DL850E/DL850EV main unit.
Max. eight 720210 modules can be installed in a SL1000 main unit.
Note 3: The use of a 720221 module always requires the External Scanner Box (model 701953).
Note 4: Up to two 720240 or 720241 modules in total can be installed in a single DL850EV main unit.

Oscilloscopes

ScopeCorder DL850E/DL850EV

Overview

A ScopeCorder is a powerful portable data acquisition recorder that can capture and analyze both transient events and trends up to 200 days. Using flexible modular inputs it combines the measurements of electrical and physical (sensor) signals, such as from CAN, LIN, and Serial buses and is also able to trigger on electrical power related calculations in real-time.

Flexible Inputs with Built-in Signal Conditioning

Choose from up to 17 input modules and gain a thorough insight into any application by synchronizing the measurement of multiple parameters.

- Voltage & Currents
- Sensor Outputs
- Temperature, Vibration / Acceleration, Strain, Frequency
- Logic Signals & CAN / LIN

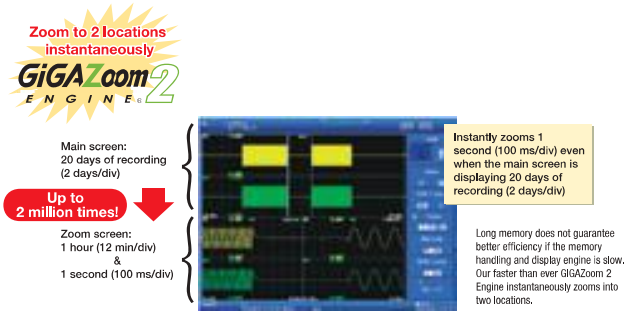
Basic Specifications

Max. sampling rate	100 MS/s (720210)(*1)
Frequency bandwidth	20 MHz (720210)(*1)
Number of channels	Max. 128 ch, Number of slots for the plug-in module: 8
Logic input	Max. 128 bits (When using eight 720230 modules)
A/D conversion resolution	16 or 12 bits (1*)
DC accuracy	±(0.5% of 10 div) (701250 and 701255)(*1)
Time axis setting	100ns/div to 20-day/div
Time axis accuracy	±0.005%
Max. record length	Standard 10 Mpts (MW)/ch, total 250 Mpts (MW) (with /M2 option) 100 Mpts (MW)/ch, total 2 Gpts (GW)
Channel-to-channel calculation function	Definable math waveforms 8
Automatic measurement of waveform parameters	Maximum number of measured parameters 32
Cycle statistical/historic process	Maximum number of cycles 64,000 Maximum number of parameters 64,000
Internal media drive	SD memory card slot (standard) 500 GB internal hard drive (option) External hard drive can be connected (option)
Communication interface	USB 2.0 (standard)/1000BASE-T Ethernet (standard) GP-IB (option)
Built-in printer(option)	112-mm width, A6 thermal printer
Other options	IRIG interface GPS interface User defined computation Real time math computation Power math computation Four probe power outputs DC 12V power drive (DL850EV only)
Display	10.4-inch TFT color LCD monitor
Display resolution	1024 × 768 pixels (XGA)
External dimensions	355 (W) × 259 (H) × 180 (D) mm (excluding handle and protrusions)
Weight	Approx. 6.5 kg to 9 kg (varies depending on the types and the number of modules used)

(*1): Varies depending on the module.

Large (2 GPoint) memory offers long duration measurement and two instantaneous zoom locations – 2 GPoint memory (/M2 option) –

Comes standard with 250 MPoints of memory, expandable with 1 or 2 GPoint options.
Large capacity memory does not only simply provide longer durations of measurement, but also higher sampling rate at the same measurement time or multi-channel at the same sampling rate.



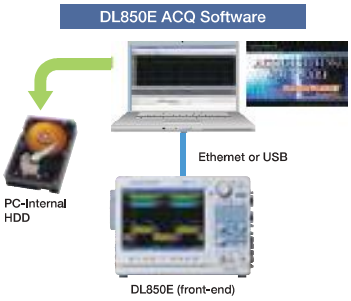
Long duration, continuous saving of waveforms – Hard disk recording (/HD0, /HD1 option) –

Measured data can be streamed directly to a built-in 500 GB hard disk (/HD1 option)*1 or through the external HDD interface (/HD0 option)*1. With long periods of evaluation testing, measurements can be performed at 100 kS/s on 16 channels simultaneously for 10 hours*2.

*1 The /HD0 and /HD1 options cannot be specified together.
*2 It depends on the external hard disk connected when using the /HD0 option.

Continuous data recording for durability test and/or surveillance test

Intuitive, user-friendly acquisition software comes standard. Continuous data recording into a PC Hard Disk Drive(HDD) can be performed by "free-run mode" with no restriction of recording time and file size. The Wizard automatically recognizes any connected DL850E and its' plug-in modules. Just click the Start button to start measuring right away--no complicated settings to enter.



Time synchronization for accurate measurements – GPS interface (/C30 option) –

A GPS antenna can be directly connected to the DL850E side panel. The DL850E time clock and the sampling clock can be adjusted accordingly.

Note: This option can be provided only for a nation that is not prohibited by the Radio Law.

Trend waveform monitor for power and harmonic parameters in real time – /G5 option –

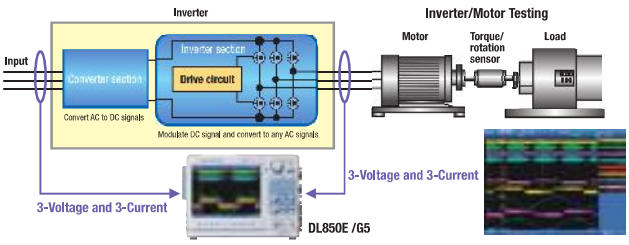
Max. 126-type power parameter can be calculated. The calculation results of these parameters can be displayed in DL850E screen as trend waveforms in real time. The raw signal waveforms along with calculated parameters(waveforms) can be displayed as trend waveforms with maximum data updating rate of 100 kS/s.
Trend waveforms of each orders of harmonics, bar-graphs and vector displays can be displayed.

[Power parameter trend display example]

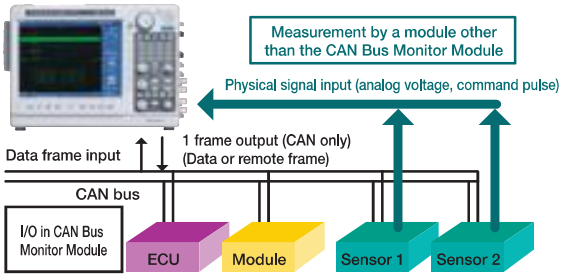
[Harmonic analysis example]

Once the "Analysis" key is pressed on the front panel, the dedicated set-up menu will appear on the screen which enables to setup easily.

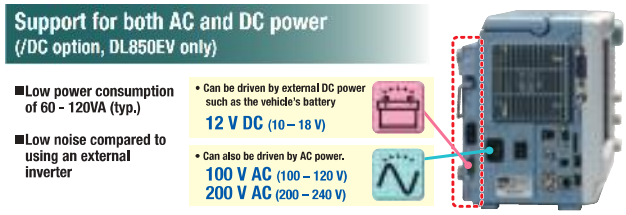
For example, 6-input(3-voltage and 3-current) waveforms for 2-line, which are total 12 raw signal waveforms, can be monitored simultaneously along with max. 126-parameter/1-line (or 54-parameters/2- line) can be calculated.



[Example of comparison and verification of a measured signal and CAN bus signal]



Note: There is a certain restriction when using the 720240 and/or 720241 modules together with the /G5 option. Please contact our sales representative.



Model Number and Suffix Codes

Models and Suffix Codes

Model	Suffix Codes	Description
DL850E		DL850E main unit, 250MPts(W) memory*1
DL850EV		DL850EV main unit, 250MPts(W) memory*1
Power Cord	-D	UL and CSA standard
	-F	VDE standard
	-R	AS standard
	-Q	BS standard
	-H	GB standard
	-N	NBR standard
Languages	-HE	English menu and panel
	-HJ	Japanese menu and panel
	-HC	Chinese menu and panel
	-HK	Korean menu and panel
	-HG	German menu and panel
	-HF	French menu and panel
	-HL	Italian menu and panel
	-HS	Spanish menu and panel
Options	/B5	Built-in printer (112mm)*5
	/DC	DC12 V power (10-18 V DC) (can be specified for DL850EV only)*5
	/M1	Memory expansion to 1GPts(W)*2
	/M2	Memory expansion to 2GPts(W)*2
	/HD0	External HDD interface*3
	/HD1	Internal HDD (500GB)*3
	/C1	GP-IB interface*4
	/C20	IRIG and GP-IB interface*4
	/C30	GPS interface*4, *7
	/G2	User-defined math function
	/G3	Real time math function*6
	/G5	Power math function (with including Real time math function)*6
	/P4	Four probe power outputs

*1: The main unit is not supplied with a plug-in module.
*2, *3, *4, *5, and *6: When selecting these, specify one of them.
*7: The /C30 option can be provided only for a nation that is not prohibited by the Radio Law.

Oscilloscopes

ScopeCorder LITE SL1400

Easily & Quickly Saves Data to Memory and Paper

Note: SL1400 is scheduled to be discontinued in June, 2014.

A perfect fit for manufacturing and maintenance departments!

The SL1400 Key Application Areas

- ☐ Maintenance (steel plants, power plants, co-generation systems)
- ☐ Heavy machinery (industrial machinery, robotics, semiconductor manufacturing equipment)
- ☐ Multichannel on-site observations (automobiles, automobile parts)
- ☐ On-board testing for railroads and other vehicles
- ☐ Power supply quality monitoring (power line monitoring)

Basic Specifications

Input	
Type	Isolated plug-in module
Slots	8 (16 channels)
Logic inputs	16 (8 bits × 2)
Sweep time	100 us to 30 days
Display	10.4-inch color TFT liquid crystal display
Built-in printer	
Printing method	Thermal line-dot printing
Paper width	210 mm (Effective print width 200 mm)
Communication interface	GP-IB, USB peripheral equipment jacks (USB keyboards and USB printers), USB (compiles with Rev. 1.1, for connection to PC), Ethernet (complies with 100 BASE-TX and 10 BASE-T; with /C10 option), serial (RS232), and SCSI
Internal media drives	PC card or Drive less (choose one), and 40GB hard drive (with /C8 option)
External dimensions	355(W) × 250(H) × 225(D) mm
Weight	Approx. 8.0 kg (main unit with full options, including C8, C10 and P4) Approx. 10.3 kg (main unit and eight 701250 modules)

Overview

A plug-in module type chart recorder with a large built-in A4 sized high-resolution thermal printer

Features

- Easy-to-operate
- Standard high resolution A4 size thermal printer
- Effective print width is 200 mm (1600-dot resolution)
- Compact body and isolated 16 analog channels, 8 slots and 16-bits logic input
- Eleven kinds of plug-in modules offers high accuracy and low noise measurement and also offer various measurement, Voltage/ Current/Temperature/Strain/Vibration/Frequency
- 50MW large memory and 30 days observation
- Cycle statistical calculation
- Many Ethernet functions (Web server/FTP server/E-mail)
- Various communication interface USB/Ethernet/GP-IB/RS-232/ SCSI
- PC card drive is available
- 40 GB internal hard drive
- USB storage function is available

Real-Time Hard Drive Recording (with the /C8 Option)

With the optional internal hard drive, you can record measurements to the hard drive in real time. This makes it easy to manage and analyze data using a PC.
Maximum data capacity: 1 GW
Maximum sampling rate: 100 kS/s
(using 1 channel only)

PDF Output for Printing A4-Sized Reports

Color PDF Output

When performing on-site measurements, you can print out the data and hand-write memos on the paper. Since the SL1400 simultaneously stores data to internal memory while printing, you can keep electronic and hard copy records with just a single action. (Remember that with thermal-sensible paper, it is vital to make photocopies for long-term preservation.)
The SL1400 allows you to export results to files in PDF format, making it easy to save data for long periods of time, transfer the data to distant locations, or load them onto a PC. It is also easy to create reports since waveform data can be converted to an A4-size layout.

Model Number and Suffix Codes

Model	Suffix Code	Description
701240		SL1400 main unit (16 isolated Channels, 8 slots + 16-bit logic)[1] 210 mm width A4 thermal printer built-in
Power cord[2]	-D	UL/ CSA standard
	-F	VDE standard
	-R	AS standard
	-Q	BS standard
	-H	GB standard (Complied with CCC)
Internal media drive[2]	-J0	non Drive
	-J3	PC card drive
Language[2]	-HE	English, Panel in English
	-HJ	Japanese, Panel in Japanese
	-HC	Chinese, Panel in English
	-HG	German, Panel in English
	-HF	French, Panel in English
	-HL	Italian, Panel in English
	-HK	Korean, Panel in English
	-HS	Spanish, Panel in English
Other specifications	/C8	Internal 40 GB HDD (FAT32)
	/C10	Ethernet option
	/P4	Probe power (4-output)

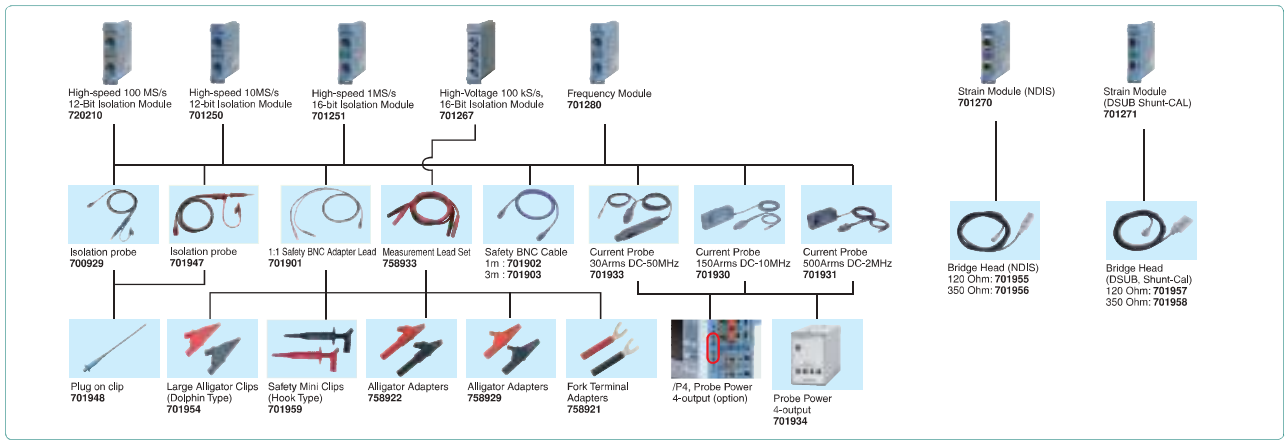
1. Plug-in modules are not included.
2. Choose only one.

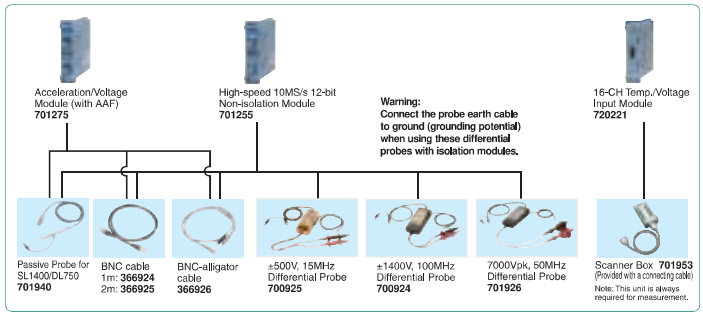
Waveform Measuring ScopeCorder Accessories

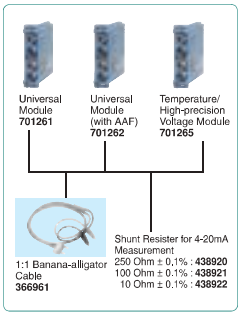
Product	Model No.	Description*1	
Differential Probe	700925	DC to 15 MHz, 1/10-1/100 selector switch, max. allowable differential voltage ±500 V (DC + ACpeak)	
Differential Probe	700924	DC to 100 MHz, 1/100-1/1000 selector switch, max. allowable differential voltage ±1400 V (DC + ACpeak) or 1000 Vrms (1/1000 range)	
Current Probe	701933	30 Arms, DC to 50 MHz, supports probe power	
Current Probe	701930	150 Arms, DC to 10 MHz, supports probe power	
Current Probe	701931	DC to 2MHz, , 500Arms	
Current Probe	701932	DC to 100MHz, 30Arms	
Probe Power Supply	701934	Supply (4 outputs),large current output, external probe power	
10:1 Probe (for Isolated BNC Input)	700929	1000 Vrms-CAT II	
1:1 Safety BNC Adapter Lead (in combination with followings)	701901	1000 Vrms-CAT II	
Safety Mini-Clips (Hook type)	701959	1000 Vrms-CAT II, 1 set each of red and black	
Large Alligator-Clips (Dolphin type)	701954	1000 Vrms-CAT II, 1 set each of red and black	
Passive Probe (10:1)*2	701940	Non-isolated 600 Vpk	
1:1 BNC-Alligator Cable	366926	Non-isolated 42 V or less, 1m	

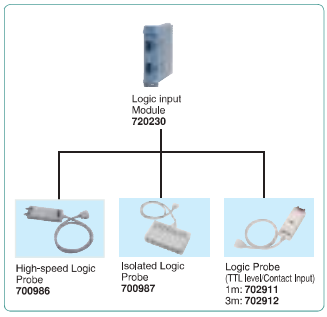
*1 Actual allowable voltage is the lower of the voltages specified for the main unit, probe and cable.
*2 42 V is safe when using the 701940 with an isolated type BNC input.

Accessories Combinations









Oscilloscopes

High-Speed Data Acquisition Unit **SL1000**

Fast Acquisition, Transfer, and Storage High-Performance Data Acquisition Unit

Basic Specifications

Plug & Play: Auto-recognition of units and modules
Input type: Plug-in module
(A/D converters built in to each unit)
Maximum number of input channels:
16 (One unit operation)
128 (8 units synchronous operation)
Maximum sample rate: 100 MS/s on all channels
Measuring mode: Free Run and Triggered
Clock source: Internal and external
Maximum record length (internal memory):
In Free Run mode 1 module: 32 MW/ch
2 modules: 16 MW/ch
3 to 4 modules: 8 MW/ch
5 to 8 modules: 4 MW/ch
In Single Trigger mode 1 module: 50 MW/ch
2 modules: 25 MW/ch
3 to 4 modules: 10 MW/ch
5 to 8 modules: 5 MW/ch
Measuring groups: Up to 4 groups definable with independent sample rates
Trigger mode: Normal, Single, and Single(N)
Trigger source: Input channel, External, LINE , Time
Record conditions:
For Free Run mode Immediate, abs. time, time divided, alarm, and external trigger
For Trigger mode Each trigger
Internal hard disk: 40 GB (with the /HD1 option)
Maximum real-time hard disk recording speed:
Internal hard disk 1.6 MS/s
(= 200kS/s × 8ch = 100 kS/s × 16ch)

Maximum measuring time (unit: sec) at Single triggered measurement

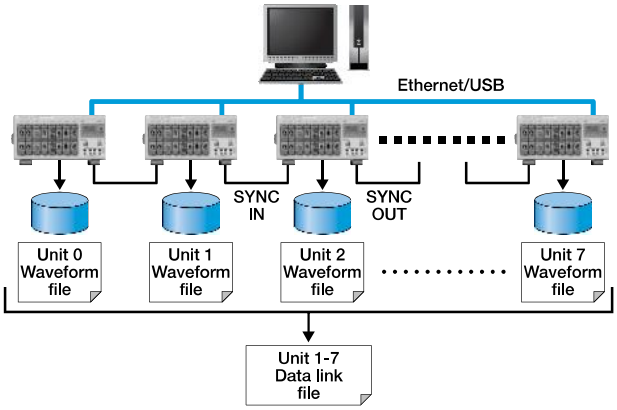
		Number of Measuring Channels			
		2ch	4ch	8ch	16ch
Sampling rate	100MS/s	0.5	0.25	0.1	0.05
	50MS/s	1	0.5	0.2	0.1
	10MS/s	2.5	1.25	0.5	0.25
	1MS/s	25	12.5	5	2.5
	500kS/s	100	50	20	10
	200kS/s	250	125	50	25
	1kS/s	50000	25000	10000	5000

Features

- **Fast Acquisition**
  - Up to 100 MS/s on all channels (10 ns sampling interval)
  - Supports parallel testing: Perform measurements with up to four simultaneously independent sample rates
- **Fast Transfer and Storage**
  - Stream data to PC via high speed USB 2.0 or 1000BASE-T Gigabit Ethernet
  - Stream data to a PC hard disk or the SL1000's internal hard disk in real time (at speeds of 1.6 MS/s = 100 kS/s × 16ch)[1]
  - Maximum 8 synchronized units

1: Speed depends on PC performance and measuring conditions.

- **Easy to use**
  - Easy to use Standard Acquisition Software
- **Max 128ch Synchronized (16ch x 8 units)**
  - Data files recorded my multiple units, in synchronized mode, are all linked together by a common LINK file, thereby facilitating batch processing. Using this LINK file, data from all units can be processed and analyzed, as one, at the same time.



- **Stand-Alone Recording**
  - Normally, SL1000 is controlled by PCs. However, SL1000 can record data even without PCs (/HD1 option is required). This stand-alone recording function is useful for the measurement in the severe environment.

Model Number and Suffix Codes

Model/Options	Suffix Code	Description
720120		SL1000 High-Speed Data Acquisition Unit*1 Including Xviewer Standard Edition (1 license)(701992-SP01)
Power cable	-D	UL and CSA standard
	-F	VDE standard
	-R	AS standard
	-Q	BS standard
	-H	GB standard (Complied with CCC)
Others	/HD1	Internal 80 GB HDD
	/C10	Ethernet Interface
	/P4	Probe power (4-output)
	/XV0	Without Xviewer
	/XV1	With the Xviewer Math Edition (1 license)(701992-GP01)

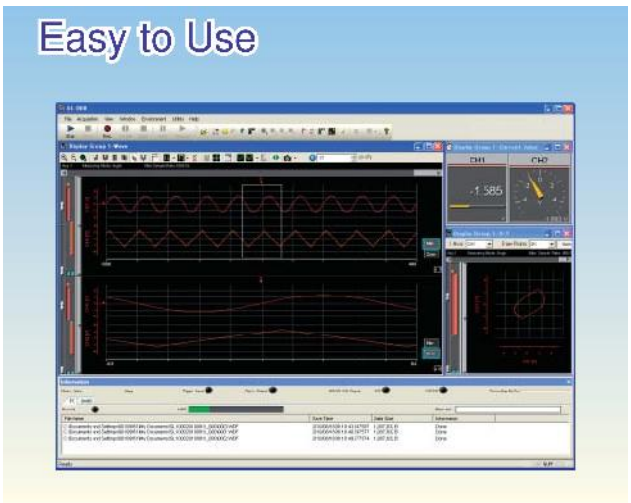
*1: Plug-in modules and PC not included with the SL1000.

Model	Description
720210	High-speed 100MS/s 12-Bit Isolation Module (2ch)
701250	High-speed 10MS/s 12-Bit Isolation Module (2ch)
701251	High-speed 1MS/s 16-Bit Isolation Module (2ch)
701255	High-speed 10MS/s 12-Bit non-Isolation Module (2ch)
701260	High-voltage 100kS/s 16-Bit Isolation Module (with RMS, 2ch)
701261	Universal Module (2ch)
701262	Universal Module (with Anti-Aliasing Fileter, 2ch)
701265	Temparature / High-precision voltage Module (2ch)
701275	Acceleration / Volatage Module (with Anti-Aliasing Filter 2ch)
701270	Strain Module (NDIS, 2ch)
701271	Strain Module (DSUB, Shunt-CAL, 2ch)
701280	Frequency Module

Product	Model No.	Description
Synchronized connection cable	720901-01	For SL1000 (1 m)
	720901-02	For SL1000 (3 m)
Rack mounting kit	751541-E4	EIA standard
	751541-J4	JIS standard

High-Speed Data Acquisition Unit

SL1000 Acquisition Software



Main Specifications of Acquisition Software

Plug and Play	Auto-recognition of units and modules
Measurement modes	Freerun and Triggered
ACQ modes	Normal, envelope, and box average
Clock sources	Internal and external
Measurement groups	Up to 4 groups definable with independent sample rates
Trigger modes	Normal, single, and single(N)
Trigger sources	CH1-CH16, LINE, Time, and External
Other trigger functions	Combination trigger, hold-off, pretriggers, and trigger delay
Save conditions	Manual operation, or based on time, or alarms
Other save functions	Manual save (file division), specify no. of saves, save all data in memory, and save simultaneously to PC's hard disk and SL1000's internal hard disk (with /HD1 option)
Save format	Binary data file (original, *.wdf)
Waveform data conversion (Xviewer)	Binary data file(s) can be converted to ASCII (*.csv) or Excel (*.xls) format
Maximum speed for saving in real time	
PC hard disk	1.6 MS/s (= 100 kS/s × 16 channels)*1
Waveform monitor	Trend display (displays measured waveforms of different sample rates simultaneously)*2, and instantaneous value displays (digital, bar graph, meter, and thermometer)
X-Y display	X-axis channel settings, selection of main or zoomed waveform (in Triggered mode), and selection of the number of data points to draw (2 K, 10 K, 100 K)
Mark display (Free run mode)	Setting of marks (up to 128 marks, each mark can display up to 16 characters), display color setting, mark editing, deletion of marks, mark list, collectively saving mark data with the same file name as the waveform data, and loading mark data into Xviewer.
Accumulation display	Accumulates T-Y and X-Y waveforms
Snapshot	Waveform that is currently being displayed can be retained on the screen as a snapshot waveform. Display color setting and snapshot waveform deletion
Display groups	Up to 4 display groups
Other display functions	History waveform, arbitrary axis divisions, and horizontal axis scaling + specifiable units (external clock)
Waveform analysis	Cursor and parameter measurement*3
Offline waveform computation (with /XV1 option)	
Max. Number of displayed waveforms (CHs)	10 waveforms (Math1 to Math 10)
Operations	+, -, ×, /, trigonometry, differentiation/integration, FFT, and others
Alarms	Channel (alarm display and alarm history analysis)*4, system alarm, and alarm output
GO/NO-GO determination*3	Waveform parameter judgment and judgment output
System requirements	
OS	Windows XP (SP2 or later) /Windows Vista (32-bit) /Windows 7 (32 bit /64 bit) /Windows 8 (32 bit /64 bit)
CPU	Core 2 Duo 2 GHz or better
Memory	1 GB or more
Hard disk	500 MB or more of free space (40 GB or more when using the auto-save function)
Communication interfaces	USB 2.0/Ethernet 1000BASE-T (with /C10 option)
Display	XGA or better, Color: 65536 colors or better
Other	CD-ROM drive and mouse

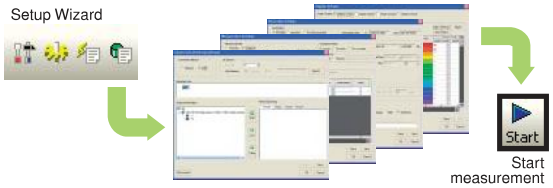
*1: Typical values. Actual values depend on PC performance and measurement conditions.
*2: When the measurement mode is Free run, the trigger mode is Single(N), and the number of measurements is Infinite, there may be a limit to the number of channels that can be trend-displayed during measurement.
*3: Triggered measurement
*4: Free run measurement

For details on 701992 Xviewer, see page 21.

Intuitive Operation

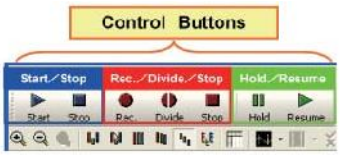
Setup Wizard Makes It Easy

The four screens of the Setup Wizard guide you easily through detailed settings for configuring the system, measuring, saving, and displaying. You can save and recall your settings at any time.



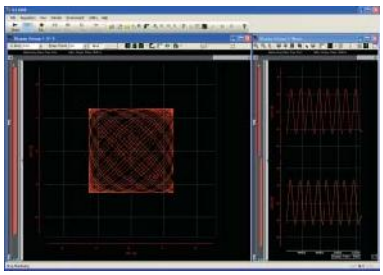
Control Buttons—Just Like Your DVD Remote

Measurement and saving can be started and stopped using the same familiar buttons found on a DVD remote control. Start using the instrument on the same day you receive it, with absolutely no programming required.



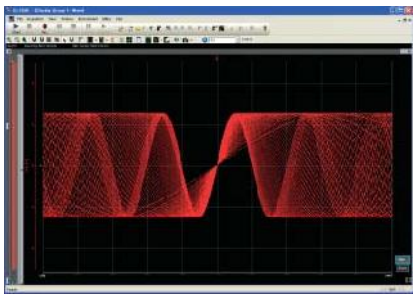
Displaying X-Y Waveforms

You can view both T-Y waveform display and X-Y waveform display. Using its fast update feature, you can evaluate data quickly and easily.



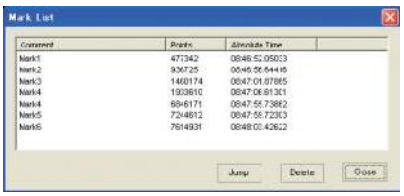
Accumulating Waveforms

Using the accumulation feature, you easily view unevenness of repetitive data.



Setting Marks

You can enter comments in the Mark area when monitoring over long periods of time (Free run mode).



Oscilloscopes

Waveform Measuring

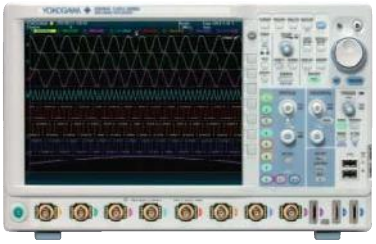
Digital and Mixed Signal Oscilloscopes Selection Guide

■ The DLM series digital oscilloscopes have high-speed sampling and a wide range of bandwidths that can be utilized for design and development of electronic devices.
They can also execute computations on repetitive waveforms and automatically extract waveform parameters.
The DLM Series offers an extensive selection of digital oscilloscopes with large-capacity memories, powerful triggering functions, unique History Memory function and built-in printers. It also can save and load data to and from internal or external media.

DLM 2000

Hybrid Channel

DLM 4000



Hybrid Channel

Item \ Model		DLM4000 Series ...P18	DLM2000 Series ...P16
Features		Analog 8ch/Analog 7ch+Logic 8bits Long memory UART,I²C,SPI,CAN,LIN and FlexRay bus analysis functions Power supply analysis functions Large display	Compact & lightweight Analog 4ch/Analog 3ch+Logic 8bits Long memory UART,I²C,SPI,CAN LIN and FlexRay bus analysis functions Power supply analysis functions
Max. sampling rate		2.5 GS/s	2.5 GS/s
Bandwidth		500 MHz(*2)	500 MHz(*2)
Number of analog input channels		8	DLM2022,DLM2032,DLM2052:2 DLM2024,DLM2034,DLM2054:4
Logic input	St'd	8 bits	DLM2024, DLM2034, DLM2054: St'd 8 bits
	Optional	24 bits	
Max. vertical sensitivity (1:1)		2 mV/div	2 mV/div
Vertial axis resolution		8 bits	8 bits
Max. sweep sensitivity		1 ns/div	1 ns/div
Max. record length	St'd	12.5 Mpoints	12.5 Mpoints
	Optional	125 Mpoints	125 Mpoints
Internal storage	St'd	Approx. 1.8 GB	Approx. 100 MB
	Optional	Approx. 7.2 GB	Approx. 1.8 GB
Interface	St'd	USB/Ethernet	USB
	Optional	GP-IB	Ethernet/GP-IB
Built-in printer	Optional	112 mm width	112 mm width
Others	Optional	I²C bus analysis SPI bus analysis CAN & LIN bus analysis FlexRay bus analysis UART bus analysis Probe Power Power Supply analysis functions User-defined math functions	I²C bus analysis SPI bus analysis CAN & LIN bus analysis FlexRay bus analysis UART bus analysis Probe Power Power supply analysis functions User-defined math functions
Display (TFT LCD)		12.1-inch color XGA	8.4-inch color, XGA
External dimensions W × H × D (mm)		426 x 266 x 178	226 × 293 × 193
Weight (kg)		Approx. 6.6	Approx. 4.2

*1: See each product catalog for more detaled specifications.
*2: Depends on model

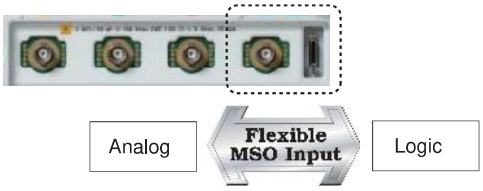
Common Features of DL/DLM Series

Multichannel

This feature meets the need to measure as many signals as possible simultaneously with one oscilloscope.

- DLM2000/DLM4000 series

  The DLM2000 (DLM4000) series usually functions as 4 (8) channel analog, and is able to switch CH 4 (8) of analog input to 8-bit logic quickly whenever the need arises.



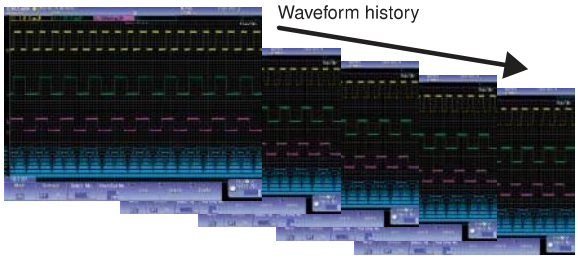
- DLM4000 series

  Up to 8 channels of analog signals can be measured.

ScopeCorder Series is available for customers that require more channels for measurement (see page 6). The DL850E supports up to 128 channel measurement.

Long Memory

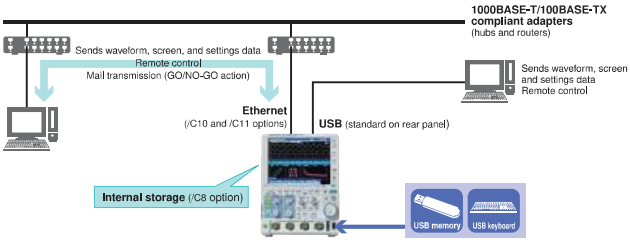
When the sample rate is increased with oscilloscopes with less memory, the observation time may run out. All of Yokogawa's oscilloscope models are equipped with large capacity memory. For example, the DLM2000/DLM4000 offers long memory of up to 125 Mpoints for measurement.
Even at a fast sample rate of 1.25 GS/s, waveforms for 0.1 seconds can be captured.
The history memory function that divides the long memory can redisplay past waveforms that have disappeared from the screen.
With the DLM2000/DLM4000 series, up to 20,000 previously captured waveforms can be saved in memory.



Since a large amount of data is also processed at high speed by dedicated hardware, the long memory can be used comfortably without sacrificing response time.

Connection with a PC

To facilitate the use of a PC, various interfaces such as USB, Ethernet, and GP-IB are available as standard or an option.
In addition, various software is available to support remote control, file transfer, and data processing on a PC.
USB memory and peripheral devices, such as keyboard and mouse, can be connected, and connecting to a PC using a USB cable enables it to be used as the external storage of the PC.



Built-in Printer

With a small built-in printer, measured waveforms can be printed to paper immediately.

A Variety of Triggers and Analysis Functions

- **A variety of triggers capture complex waveforms**
- **Real time digital fi lter with optimum noise reduction**
- **Zooms into two different points simultaneously**
- **Automated measurement of waveform parameters and statistical processing function**
- **Frequency analysis by FFT computation**
- **Go/No-Go function and action on trigger function to determine abnormal waveforms and save files.**
- **Analysis functions for specific applications, such as serial bus analysis and power supply analysis**

Oscilloscopes

Mixed Signal Oscilloscope **DLM2000 Series**

Easy-to-Use, Portrait Body, Compact, and Large Screen Personal Mixed Signal Oscilloscope Offers Convenience with Logic Inputs

DLM2000

Basic Specifications

Analog Signal input

Input channels	Analog input	DLM20x2: CH1, CH2 DLM20x4: CH1 to CH4 (CH1 to CH3 when using logic input)
Input coupling setting		AC, DC, DC50 Ω, GND
Input impedance	Analog input	1 MΩ ±1.0%, approximately 20 pF 50 Ω ±1.0% (VSWR 1.4 or less, DC to 500MHz)
Voltage axis sensitivity setting range	1 MΩ	2 mV/div to 10 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 (CAT I)
	50 Ω	Must not exceed 5 Vrms or 10 Vpeak

Frequency characteristics (-3 dB attenuation when inputting a sinewave of amplitude ±3div)*1*2

		DLM202x	DLM203x	DLM205x
1 MΩ (when using passive probe)				
	100 mV to 100 V/div	DC to 200 MHz	DC to 350 MHz	DC to 500 MHz
	20 mV to 50 mV/div	DC to 150 MHz	DC to 300 MHz	DC to 400 MHz
50 Ω				
	10 mV to 500 mV/div	DC to 200 MHz	DC to 350 MHz	DC to 500 MHz
	2 mV to 5 mV/div	DC to 150 MHz	DC to 300 MHz	DC to 400 MHz

Maximum sample rate		
Real time sampling mode	Interleave OFF	1.25 GS/s
	Interleave ON	2.5 GS/s
Repetitive sampling mode		125 GS/s
Maximum record length	2 ch model (Standard)	Repeat/Single/Single Interleave: 1.25 M/6.25 M/12.5 MPoints
	2 ch model (/M1S)	Repeat/Single/Single Interleave: 6.25 M/25 M/62.5 MPoints
	4 ch model (Standard)	Repeat/Single/Single Interleave: 1.25 M/6.25 M/12.5 MPoints
	4 ch model (/M1)	Repeat/Single/Single Interleave: 6.25 M/25 M/62.5 MPoints
	4 ch model (/M2)	Repeat/Single/Single Interleave: 12.5 M/62.5 M/125 MPoints

Logic Signal Input (4 ch model only)

Number of inputs	8 bit (excl. 4 ch input and logic input)
Maximum toggle frequency*1	Model 701988: 100 MHz Model 701989: 250 MHz
Compatible probes	701988, 701989 (8 bit input) (701980, 701981 can also be used)
Display	8.4-inch TFT color liquid crystal display 1024 × 768 (XGA)
Rated supply voltage	100 to 240 VAC
Rated supply frequency	50 Hz/60 Hz
Maximum power consumption	170 VA
External dimensions	226 (W) × 293 (H) × 193 (D) mm (when printer cover is closed, excluding protrusions)
Weight	Approx.4.2kg With no options
Operating temperature range	5°C to 40°C

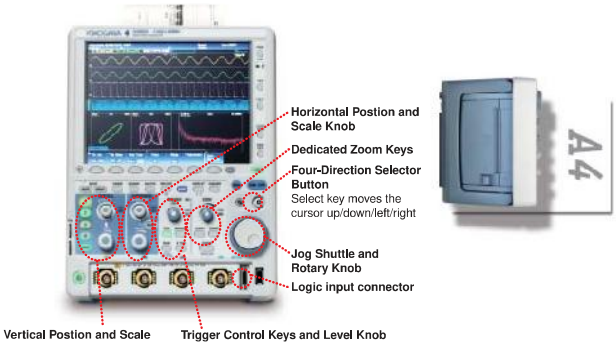
*1 Measured under standard operating conditions after a 30-minute warm-up followed by calibration.
*2 Value in the case of repetitive phenomenon.

Features

Easy-to-Use & Easy-to-See

- Easy to use. Portrait body + large screen makes display easy to see.

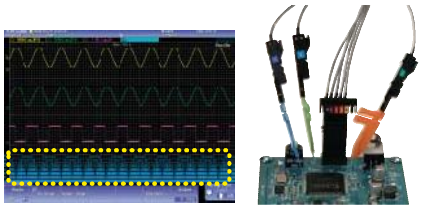
We elevated the large (8.4-inch) LCD screen up into the line of sight. Also, the portrait format saves space on the desk or test bench. A compact personal oscilloscope designed for easy viewing and ease of use.



Signal observation on 4 channels or more...

- Flexible MSO Input

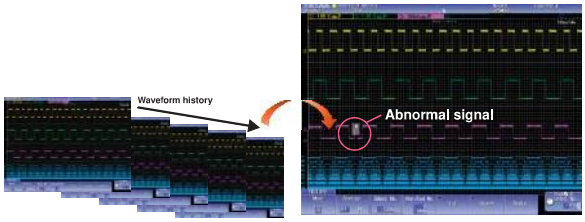
Four channels is not sufficient to view the functioning of digital control circuits. The DLM2000 series converts 4 channels of analog input to 8-bit logic, and functions as a 3 channel analog + 8-bit logic MSO (mixed signal oscilloscope).



You can replay waveforms later on, so you'll never miss an abnormal waveform

- History function

With the DLM2000 series, up to 20,000 previously captured waveforms can be saved in the acquisition memory. With the History function, you can display just one or all of the previously captured waveforms (history waveforms) on screen. You can also perform cursor measurement, computation, and other operations on history waveforms. Using the History function, you can analyze rarely-occurring abnormal signals.



Even complex waveforms can be captured

- Variety of triggers combining analog and logic inputs

The DLM2000 series comes with a variety of triggers ranging from an easy and simple Edge trigger through to sophisticated Enhanced and B triggers. In particular, its ability to freely combine analog and logic inputs is a great feature of this mixed signal oscilloscope equipped with a hybrid channel.

Edge trigger — Edge

Enhanced triggers
- Edge OR
- Edge (qualified)
- State
- Pulse width
- State width
- Serial: (option) FlexRay/CAN/LIN/UART/I²C/SPI
  : (standard) user-defined
- TV: NTSC/PAL/SDTV/HDTV/user-defined

B triggers
- A Delay B
- A to B(n)
- Dual bus (combination trigger of 2 serial busses)

Optimum noise reduction

- Real time filters and filters based on MATH functions

The DLM2000 series has two types of filters, one real time processed at the input circuit and one based on MATH functions. Since the cutoff frequency can also be finely set, these filters are effective in rejecting unwanted signals and observing only the desired signals.

Waveform zoom and search functions

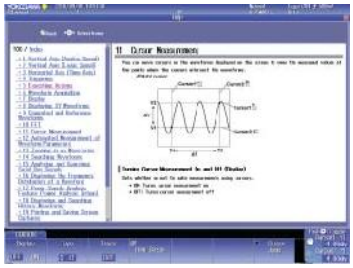
- Zoom two locations simultaneously, zoom search and history search

Because the DLM2000 series lets you set zoom factors independently, you can display two zoomed waveforms with different time axis scales at the same time. Also, using the search functions, you can search the long memory and history memory and instantaneously find desired waveforms that meet the search criteria.

Can check functions with graphical help

- Graphical online help

You can view detailed graphical explanations of the oscilloscope's functions and operations by pressing the "?" key in the lower left of the screen. This lets you get help on functions and operations on screen without having to consult the user's manual.



Analysis Functions

FlexRay/UART/CAN/LIN/I2C/SPI

- Serial analysis function options

A wide variety of trigger conditions can be set, such as ID/Data trigger combinations and combinations of serial bus triggers with normal edge triggers. Up to four busses with different types and speeds can be analyzed simultaneously and decode display can be shown in real time.

Switching loss, joule integral, SOA analysis, and harmonic current based on EN61000-3-2

- Power supply analysis option

Voltage and current waveforms can be input to the 62.5 MW (max.) long memory (/M2 models) for computation of switching loss (V(t) X i(t)). A wide variety of switching loss analyses are supported, including turn on/off loss calculation, loss including conduction loss, and loss over long cycles (50 Hz/60 Hz). Using the cycle mode, you can perform more accurate analysis by cutting out the area of integration to calculate the loss by the switching period. Various other power supply analysis functions are also available.

Models and Suffix Codes

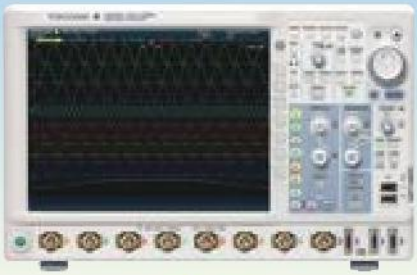
Model	Suffix code	Description
710105		Digital Oscilloscope DLM2022 2ch, 200MHz
710110*1		Mixed Signal Oscilloscope DLM2024 4ch, 200MHz
710115		Digital Oscilloscope DLM2032 2ch, 350MHz
710120*1		Mixed Signal Oscilloscope DLM2034 4ch, 350MHz
710125		Digital Oscilloscope DLM2052 2ch, 500MHz
710130*1		Mixed Signal Oscilloscope DLM2054 4ch, 500MHz
Power cord	-D	UL/CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	AS standard
	-H	GB standard
Language	-HE	English Menu and Panel
	-HC	Chinese Menu and Panel
	-HK	Korean Menu and Panel
	-HG	German Menu and Panel
	-HF	French Menu and Panel
	-HL	Italian Menu and Panel
	-HS	Spanish Menu and Panel
Option	/LN	No switchable logic input (4 ch model only)
	/B5	Built-in printer
	/M1*2	Memory expansion option (4 ch model only) During continuous measurement: 6.25 Mpoints; Single mode: 25 Mpoints (when interleave mode ON: 62.5 Mpoints)
	/M2*2	Memory expansion option (4 ch model only) During continuous measurement: 12.5 Mpoints; Single mode: 62.5 Mpoints (when interleave mode ON: 125 Mpoints)
	/M1S	Memory expansion option (2 ch model only) During continuous measurement: 6.25 Mpoints; Single mode: 25 Mpoints (when interleave mode ON: 62.5 Mpoints)
	/P2*3	Probe power for 2 ch models
	/P4*3	Probe power for 4 ch models
	/C1*4	GP-IB Interface
	/C10*4	Ethernet Interface
	/C11*4	GP-IB + Ethernet Interface
	/C8	Internal storage (1.8 GB)
	/G2*5	User defined math (4 ch model only)
	/G4*5	Power supply analysis function (includes /G2) (4 ch model only)
	/F1*6	UART trigger and analysis (4 ch model only)
	/F2*6	I²C + SPI trigger and analysis (4 ch model only)
	/F3*6	UART + I²C + SPI trigger and analysis (4 ch model only)
	/F4*7	CAN + LIN trigger and analysis (4 ch model only)
	/F5*7	FlexRay trigger and analysis (4 ch model only)
	/F6*7	FlexRay+CAN+LIN trigger and analysis (4 ch model only)
	/EX22*8	Attach two 701946 probes (For 2ch, 200 MHz models)
	/EX24*8	Attach four 701946 probes (For 4ch, 200 MHz models)
	/EX52*9	Attach two 701946 probes (For 2ch, 350/500 MHz models)
	/EX54*9	Attach four 701946 probes (For 4ch, 350/500 MHz models)

*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 differential probes that don't support probe interface.
*4: Only one of these may be selected at a time.
*5: Only one of these may be selected at a time.
*6: Only one of these may be selected at a time.
*7: Only one of these may be selected at a time.
*8: The 701938 probes are not included when this option is specified.
*9: The 701939 probes are not included when this option is specified.

Oscilloscopes

Mixed Signal Oscilloscopes **DLM4000**

The world's only eight analog channel 500 MHz oscilloscope for faster and more advanced power electronics, automobile electronics, and mechatronics development.



DLM4000
Catalog: Bulletin DLM4000-00EN

Features

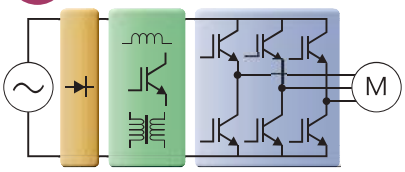
Yokogawa's proprietary new enhanced eight channel oscilloscope comes with a larger display to enable waveforms to be easily viewed and the latest functions.

- 8 analog channels or 7 analog channels + 8-bit logic input
- Optional 16-bit logic input
- Up to 2.5 GS/s
- 350 MHz or 500 MHz frequency bandwidth
- 12.1-inch large display
- Large memory of up to 125 Mpoints
- Light, slim, and compact design

Applications

8ch

Motor Control and Inverter/IPM Circuit Development



Simultaneous multi-channel measurements are a necessity for the development of control circuits, Intelligent Power Module (IPM), and inverter electronics, which are the key to more efficient, compact, and reliable high-performance motors. Up to 8-channel analog waveform measurement of the DLM4000 empowers engineers in this field.

Examples

- Simultaneous measurement of the 3-line voltage and 3-phase current of a 3-phase motor
- Simultaneous measurement of the gate control signals of 6 IGBTs within an inverter

4ch

Limitations of 4ch Scope

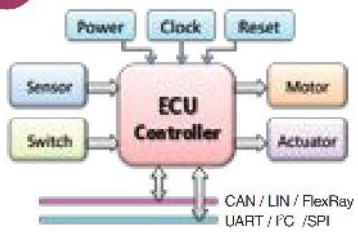
Whole-system measurement is impossible due to a lack of analog input channels when, for example, measuring the overall timing of the control signals, checking an error of the phase-to-phase balance between 3 phases, and simultaneously measuring the I/O signals of a motor driver IC.

Limitations of Two Synchronized 4ch Scopes

Eight channel measurement using two trigger-synchronized oscilloscopes is a possible solution but it does not help increase efficiency because there are various problems. For example, the data is not reliable due to the lack of guarantee of the synchronization of two oscilloscopes. Double the space is required and they are difficult to carry around. The different design and operations of each of the two oscilloscopes are cumbersome. The response is slow and handling of the measurement data is tricky.

8ch

Automobile ECU and Integrated Mechatronics Device Development



Electronic Control Unit (ECU) and controller I/O signals must be measured simultaneously at high speed. To meet this requirement, the DLM4000 offers eight analog channels, logic measurement, and protocol analysis (communication data decoding) functions such as UART (RS232), I2C, SPI, CAN, and LIN to help speed up the R&D process.

Examples

- Simultaneous measurement of controller I/O signals and serial bus signals
- Measurement of the analog behavior of logic signals and serial bus signals

4ch

Limitations of 4ch + 16-bit MSO

ECUs, controllers, and driver ICs handle many I/O signals but the 4-channel + 16-bit MSO cannot measure all the signals. Furthermore, it measures bus communication signals and digital signals using logic input so it cannot measure waveform quality and noise margin. Therefore, it is difficult to increase stability and reliability.

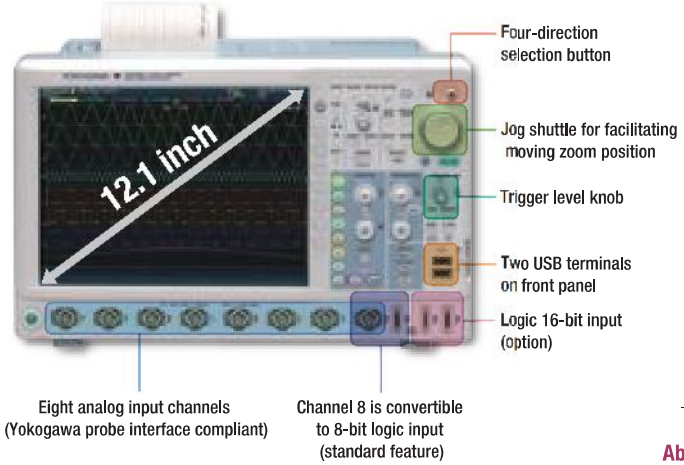
Recorder

Limitations of Memory Recorder

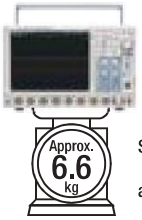
A memory recorder is generally suitable for long-time multi-channel measurement, but due to its low sampling rate and slow waveform update speed, its performance is not adequate for measuring high-speed signals and communication signals of CPUs and FPGAs, or detecting noise that causes problems or error signals.

The portable eight-channel DLM4000 is the daily instrument of choice. Maximum easiness of use coupled with minimum depth and weight

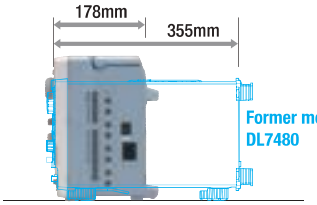
12.1-inch large LCD display enables eight waveforms to be easily viewed



Portable



Soft carrying case (sold separately) available



Modest 178 mm depth
About half of the former model DL7480

Specifications

Input Channels: 8 analog channels, or 7 analog channels + 8 logic channels (standard)
8 analog channels + 16 logic channels, or 7 analog channels + 24 logic channels (/L16 option)

Analog Input:
Frequency bandwidth: 350 MHz (DLM4038) or 500 MHz(DLM4058)
Voltage axis sensitivity setting range:
2 mV/div to 10 V/div for 1 M ohm
2 mV/div to 500 m V/div for 50 ohm
Voltage axis DC accuracy: ±(1.5% of 8 div + offset voltage accuracy)
A/D conversion resolution: 8-bit

Logic Input
Maximum toggle frequency: 100 MHz (701988) or 250 MHz (701989)
Probes that can be used: 701988 and 701989 (701980 and 701981)
Minimum input voltage: 500 mVp-p (701988) or 300 mVp-p (701989)
Input range: ±40 V (701988)
Threshold level ±6 V (701989)
Maximum non-destructive input voltage:
±40 V (DC + AC peak) or 28 Vrms (701989)
Threshold level setting range: ±40 V (701988) or ±6 V (701989)

Common Specifications
Maximum sampling rate
Real-time sampling mode: Interleave OFF: 1.25 GS/s
Interleave ON: 2.5 GS/s
Repetitive sampling mode: 125 GS/s
Time axis setting range: 1 ns/div to 500 s/div
Maximum record length: Repeat: 1.25 Mpoints, Single: 6.25 Mpoints, Single Interleave: 12.5 Mpoints (standard)
Repeat: 12.5 Mpoints, Single: 62.5 Mpoints, Single Interleave: 125 Mpoints (/M2 option)
History memory maximum data:
2,500 (record length 1.25 kPoints; standard)
20,000 (record length 1.25 kPoints; /M2 option)
Trigger modes: Auto, Auto Level, Normal, Single, N-Single
Trigger types: Edge, Edge OR, Edge Qualified, State, Pulse Width, State Width, TV, Serial Bus (I2C/SPI/UART/CAN/LIN/FlexRay/UserDefine), A Delay B, A to B (N), Dual Bus, Force
Internal storage: 1.8 GB (standard) or 7.2 GB (/C8 option)
Interfaces: USB peripheral connection terminal x2
USB-PC connection terminal x1
Ethernet (standard), GP-IB (option)
Build-in printer: 112 mm wide, monochrome, thermal
Display: 12.1-inch color TFT LCD 1024 x 768 (XGA)
Dimensions: 426 (W) x 266 (H) x 178 (D) mm
Weight: approx. 6.6 kg (with no options)

Models and Suffix Codes

Model	Suffix Code	Description
DLM4038*1		Mixed Signal Oscilloscope: 8ch, 350 MHz
DLM4058*1		Mixed Signal Oscilloscope: 8ch, 500 MHz
Power cord	D	UL/CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	AS standard
	-H	GB standard
	-N	NBR standard
Language	-HE	English Message and Panel
	-HC	Chinese Message and Panel
	-HK	Korean Message and Panel
	-HG	German Message and Panel
	-HF	French Message and Panel
	-HL	Italian Message and Panel
	-HS	Spanish Message and Panel
Option	/L16	Logic 16-bit
	/B5	Built-in printer
	/M1*2	Memory expansion During continuous measurement: 6.25 Mpoints; Single mode: 25 Mpoints (when interleave mode ON: 62.5 Mpoints)
	/M2*2	Memory expansion During continuous measurement: 12.5 Mpoints; Single mode: 62.5 Mpoints (when interleave mode ON: 125 Mpoints)
	/P8*3	Eight probe power connectors
	/C1	GP-IB Interface
	/C8	Internal storage (7.2 GB)
	/G2*4	User defined math
	/G4*4	Power supply analysis function (includes /G2)
	/F1*5	UART trigger and analysis
	/F2*5	I²C+SPI trigger and analysis
	/F3*5	UART+I²C+SPI trigger and analysis
	/F4*6	CAN+LIN trigger and analysis
	/F5*6	FlexRay trigger and analysis
	/F6*6	FlexRay+CAN+LIN trigger and analysis
	/E1*7	Four additional passive probes (8 in total)
	/E2*7	Attach four 701946 probes*8
	/E3*7	Attach eight 701946 probes*8

*1: Logic probes are not included. Please order the accessory logic probe 701988/701989 sold separately.
*2: Only one of these options can be selected at a time.
*3: Specify this option when using current probes or differential probes that don't support probe interface.
*4: Only one of these options can be selected at a time.
*5: Only one of these options can be selected at a time.
*6: Only one of these options can be selected at a time.
*7: Only one of these options can be selected at a time.
*8: The 701939 passive probes are not included when this option is specified.

Oscilloscopes

Waveform Measuring Oscilloscopes Accessories

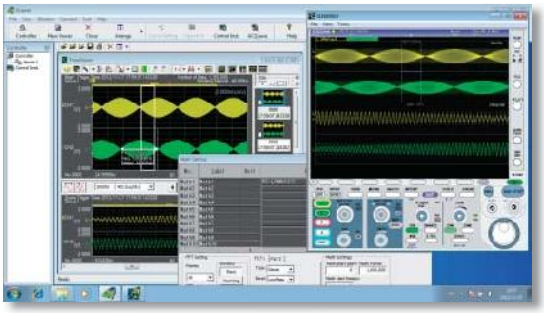
Classification	Product	Model No.	Power supply: Probe interface terminal (front panel)(*2)	Power supply: Probe power (option) probe power supply (sold separately)	Description	
Passive	200MHz passive probe	701938			DC to 200 MHz, 10:1, 1.5 meters	
	500MHz passive probe	701939			DC to 500 MHz, 10:1, 1.3 meters	
	500 MHz Miniature passive probe	701946			DC to 500 MHz, 10:1, 1.2 meters	
Passive (High-voltage)	100:1 High voltage probe	701944			DC to 400 MHz, 100:1, 1.2 meters	
	100:1 High voltage probe	701945			DC to 250 MHz, 100:1, 3.0 meters	
Active, FET	PBA2500 (2.5 GHz active probe)	701913	○		DC to 2.5 GHz, 10:1, 1.2 meters	
	PBA1500 (1.5 GHz active probe)	701914	○		DC to 1.5 GHz, 10:1, 1.2 meters	
	PBA1000 (1.0 GHz active probe)	701912	○		DC to 1.0 GHz, 10:1, 1.2 meters	
	900 MHz FET Probe	700939		○	DC to 900 MHz, 1.5 meters	
Resistance	PBL5000 (5 GHz low capacitance probe)	701974			DC to 5 GHz, 10:1, 20:1, 0.95 meters	
Differential	PBD 2000 (2 GHz differential probe)	701923	○		DC to 2 GHz, 10:1, Max. differential input voltage: ±5 V, 1.2 meters	
	PBDH 1000 1GHz differential probe	701924	○		DC to 1 GHz, 50:1 Max. differential input voltage: ±25V	
	PBDH 0150 150 MHz differential probe	701927	○		DC to 150 MHz, 50:1, 500:1 Max. differential input voltage: ±140 V (50:1), ±1400 V (500:1)	
	500 MHz differential probe	701920		○	DC to 500 MHz, 10:1, Max. differential input voltage: ±12 V	
	200 MHz differential probe	701922		○	DC to 200 MHz, 10:1, Max. differential input voltage: ±20 V	
	100 MHz differential probe	701921		○ (*3)	DC to 100 MHz, 10:1, 100:1, Max. differential input voltage: ±70 V (10:1), ±700 V (100:1)	
	100 MHz differential probe	700924		○ (*4)	DC to 100 MHz, 100:1, 1000:1, Max. differential input voltage: ±350 V (100:1), ±1400 V (1000:1)	
	50MHz high voltage differential probe	701926		○ (*3)	DC to 50 MHz, 100:1, 1000:1, Max. differential input voltage: 700Vpeak(100:1), 7000Vpeak(1000:1)	
	15 MHz differential probe	700925		○ (*4)	DC to 15 MHz, 10:1, 100:1, Max. differential input voltage: ±50 V (10:1), ±500 V (100:1)	
Current	PBC100 Current probe	701928	○		DC to 100MHz 30 Arms	
	PBC050 Current probe	701929	○		DC to 50MHz 30 Arms	
	Current probe	701932		○	DC to 100 MHz, 30 Arms	
	Current probe	701933		○	DC to 50 MHz 30 Arms	
	Current probe	701931		○	DC to 2 MHz, 500 Arms	
	Current probe	701930		○	DC to 10 MHz 150 Arms	
Logic	PBL100 (100MHz Logic probe)	701988			Input impedance 1 MΩ Max. toggle frequency: 100 MHz	
	PBL250 (250MHz Logic probe)	701989			Input impedance: 100 kΩ Max. toggle frequency: 250 MHz	
Other	De-skew correction signal source	701936			Voltage/current signal de-skew Supports through-type current transformers and a variety of current probes, including large current probes	
	Probe power supply	701934			Large current output, external probe power supply (4 outputs)	
	Probe stand	701919			Diameter of attachable probe ø8 to 13mm Weight : Approx. 1.5 kg	

*1: These specifications are a summary. For details, please refer to the Web site, catalog, and other documentation. *2: Available as standard for the DLM2000, DLM6000, DL6000 and DLM4000 series.
*3: Can also be battery operated. *4: A power cable (B9852MJ) sold separately is required. Can also be battery operated.
In addition to those listed above, there are other accessories available. For details, please refer to the Web site.
When using multiple current probes using the probe power of the main unit, ensure that the total power supply current of the current probes does not exceed the maximum output current of the probe power.

Oscilloscope Application Software

Xviewer/MATLAB tool kit

Instrument control & data analysis on Your PC



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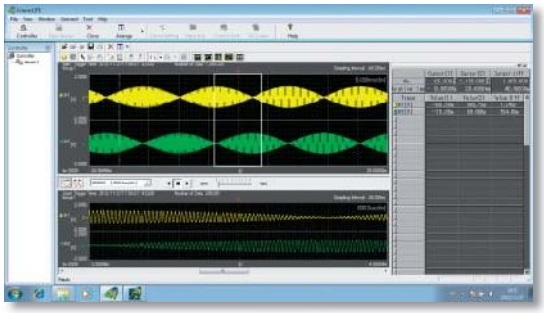
Xviewer

Xviewer is a PC software application designed to work with Yokogawa's DL/DLM Series and the ScopeCorders. Xviewer allows you to display DL-acquired waveform data (using the "Viewer" function), perform file transfers, and control DL/DLM Series from a PC.

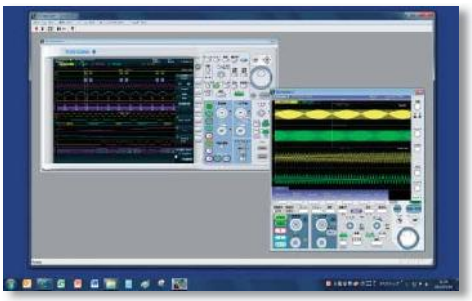
Free data viewer



XviewerLITE
(Free software)

XviewerLITE is a free data viewer software with no restriction for period of service for DLM/DL/SL series. It allows you to display acquired ware form on a PC. Zoom, vertical cursor measuremet and CSV format conversion are possible.

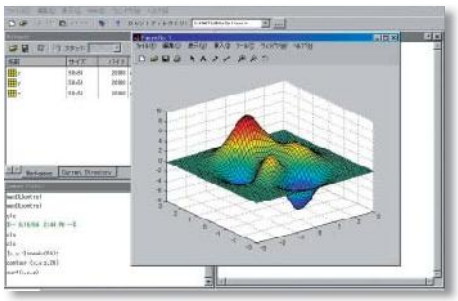
Remote Control Measuring Instrument on Your PC



XWirepuller/Wirepuller
(Free software)

With this software, you can display the front panel of the DLM/DL/SL series on the screen of a PC, and monitor waveform signals. You can perform control from the PC using the mouse and keyboard in the same way as you operate the main unit.

Plug-in for MATLAB software



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MATLAB tool kit

The MATLAB tool kit for the DL Series is a plug-in for MATALAB software. The toolkit can be used to control supported instruments using MATLAB or to acquire data from the instruments to use in MATLAB via a communication interface (GP-IB, USB, Ethernet).

In addition to the above, various kinds of accessory software, free software, LabVIEW drivers, and LabWindows/CVI drivers, can be downloaded from our web site.