

SL1000

High-Speed Data Acquisition Unit



Maximum sample rate

100 MS/s
X16 ch

Max 128 ch (16 ch x 8 units)

Maximum sample rate 100 MS/s12bit

Isolated
iSoPRO™ Inputs

Linked Units &
Synchronous
Operation
of Multi-channels

Fast Acquisition, Transfer, and Storage Finally, a No-Compromise, High-Performance

Selecting a data acquisition platform for your electronics or mechatronics application has always been a balancing act. High speed digitizers lack the isolation, attenuation, or bit resolution necessary for power electronics testing. PC-based platforms with fast streaming throughput sacrifice noise immunity, signal conditioning, and hardware integrity.

Until now. The Yokogawa SL1000 is the only data acquisition system that delivers independent, isolated channel hardware at 100 MS/s rates, with no compromise in bit resolution, memory depth, or streaming performance.



Can operate "Standalone"

- Store data directly on the SL1000

Wide Library of Plug-In Modules

- Eight module slots are available in each unit
- Select now from thirteen different plug-in modules

Synchronous Operation with Linked Units

- Link up to eight units and enable synchronized measurement of up to 128 channels

High-Speed Data

High Performance Data Acquisition Unit

Capture

Transfer

Record

High Speed High Performance



Fast Acquisition

- Up to 100 MS/s on all channels (10 ns sampling interval)
- 100 MS/s 12-Bit 1 kV* isolation module with 20 MHz bandwidth
- Supports parallel testing: Perform measurements with up to four simultaneously independent sample rates

*: In combination with 702902 (10:1) / 700929 (10:1) / 701947 (100:1)

Fast Transfer and Storage

- Stream data to PC via high speed USB 2.0 or 1000BASE-T Gigabit Ethernet*¹
- Real time display on a PC (GIGAZOOM engine)*²
- Stream data to a PC hard disk or the SL1000's internal hard disk*¹ in real time (at speeds of 1.6 MS/s = 100 kS/s × 16ch)*²

*¹: Optional

*²: Speed depends on PC performance and measuring conditions.

Easy to use

- Easy to use Standard Acquisition Software
- Quick and Intuitive operation means that you can start measuring immediately
- Setup Wizard guides you through detailed settings

Acquisition Unit **SL1000**

High-Speed — Hardware —

High-Speed Capture

In the pursuit of isolated high-speed waveform measurement, Yokogawa has achieved a maximum sample rate of 100 MS/s (10 ns sampling interval). The SL1000 can accurately capture high-speed and high-voltage phenomena by using the 100 MS/s 12-Bit 20 MHz frequency range 1 kV* Isolation Module (model 720211). Furthermore, you can combine modules that support measurements of a variety of signals, giving you solutions for an extensive range of applications.

*: In combination with 702902/700929

Saving Data over Long Periods of Time

Data can be saved to the SL1000's internal acquisition memory over long durations, or it can also be streamed in real-time to a PC hard disk or the SL1000's internal hard disk**2.

*1: with the /HD1 Option *2: Maximum speed of real time hard disk recording depends on measuring conditions.

*3: Trigger mode: Single, measuring on 1 module, 2 channels.

Sample Rate	Maximum Recording Time*3
100 MS/s	0.5 seconds
10 MS/s	5 seconds
1 MS/s	50 seconds
100 kS/s	8 minutes 20 seconds
10 kS/s	1 hour 23 minutes 20 seconds
1 kS/s	13 hours 53 minutes 20 seconds
500 S/s	1 day 3 hours 46 minutes 40 seconds

- Amount of time data can be recorded with internal memory

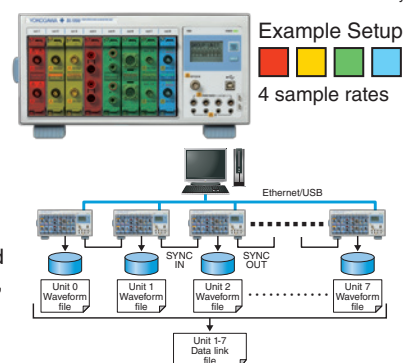
Supports parallel testing

Perform measurements with up to four simultaneously independent sample rates. The amount of data saved on hard disk can be reduced by optimizing the sample rate for the DUT on a module by module basis.

Max 128 ch Synchronized (16 ch x 8 units)

Data files recorded by 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.

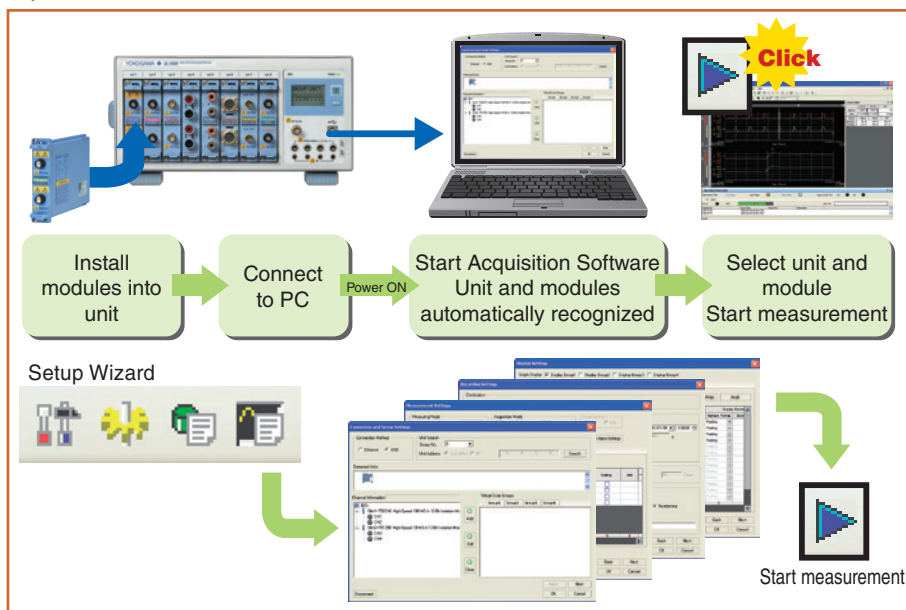


Easy to use — Software —

Intuitive, User-Friendly Acquisition Software

Setup Wizard Makes It Easy

The Wizard automatically recognizes any connected SL1000 and its plug-in modules. Just click the Start button to start measuring right away--no complicated settings to enter. The four screens of the Setup Wizard guide you easily through detailed settings for configuring the system, measuring, saving and displaying. Of course, you can save and recall your settings at any time.



Fast Acquisition

- Up to 100 MS/s on all channels
- 10 ns sampling interval
- Supports parallel testing

Fast Transfer and Storage

- USB 2.0 or 1000BASE-T (optional)
- Real time display on a PC (GIGAZoom engine)
- Save data to a hard disk in real time

Easy to use

Standard Acquisition Software

- Plug and Play: Auto-recognition of units and modules
- Quick and Intuitive operation
- Setup Wizard guides you through detailed settings

Analysis Functions

- Real time waveform analysis
- Offline waveform computation (optional)

High-Speed Data Acquisition Unit

SL1000

High-Speed Data Transfer & GIGAZoom Function for Instantaneous Full-Length Display of Large Quantities of Data

You can transfer data to PCs at high speed via USB 2.0 or Ethernet 1000BASE-T Gigabit Ethernet^{*1}. The SL1000's high-speed data compression engine (GIGAZoom engine) displays waveforms on the PC in real time^{*2}. It offers the same display updating and zooming performance as standalone measuring instruments, even with massive amounts of data at high sample rates.

^{*1}: with the /C10 Option

^{*2}: The number of channels from which waveforms can be displayed during measurement may be limited depending on the PC performance and measuring conditions.

Real Time Saving to Hard Disk

Continuously measured data can be saved in real time to a PC hard disk and/or the SL1000's internal hard disk^{*1}. File names are assigned automatically, freeing you from time consuming file operations. Data can be saved simultaneously-- and in real time--to both the PC's and SL1000's hard disks^{*1}. This bolsters the reliability of your data storage system, protecting your vital data. You can access the SL1000's internal hard disk^{*1} with Xviewer waveform viewer software (comes standard), or through an FTP client over Ethernet^{*2}.

^{*1}: with the /HD1 Option ^{*2}: with the /C10 Option

^{*3}: Typical values. Actual values depend on PC performance and measurement conditions.

Settings for the Hard Disk Recording Function

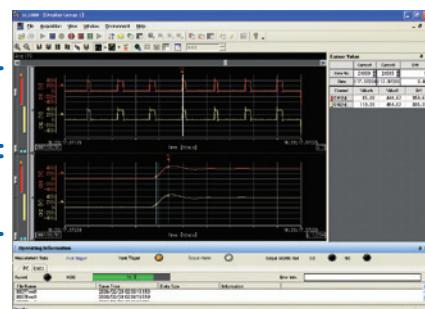
By specifying recording criteria, you can efficiently and automatically record only the data you need to the hard disk. Just specify the recording destination, recording start and stop conditions, conditions for repeating recording, and other criteria. With free run measurement, the specifiable parameters for the recording start condition are immediate, time, and alarm; for the recording stop condition, the parameters are continuous, time, recording time, and alarm; and for the repeating condition, recording interval and number of recordings^{*}. With triggered measurement, measured data is recorded upon each trigger. You can also manually save data from the SL1000's internal acquisition memory to PC hard disk.

^{*}: Max. file size per recording is 12 GB (recording on 4 channels, ≈ 1.5 GW/ch)

PC monitor display (triggered measurement)

Real time full-length display

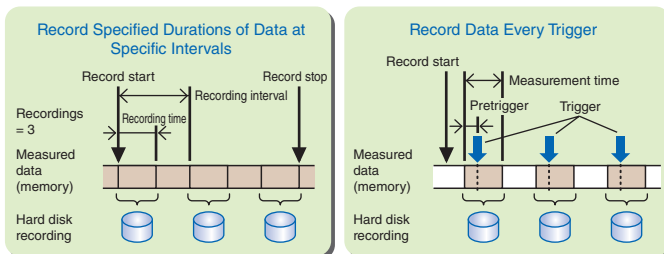
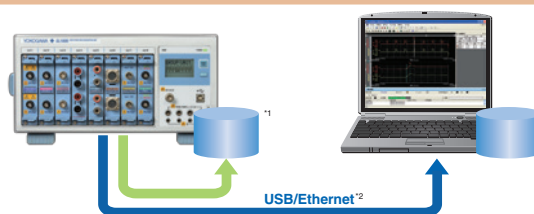
Zoom display
Instantaneous display,
whether stopped or running



Maximum speed for saving in real time^{*3}

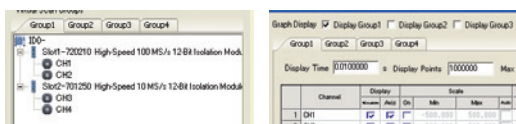
PC hard disk : 1.6 MS/s = 100 kS/s × 16ch

SL1000 internal hard disk^{*1}: 1.6 MS/s = 100 kS/s × 16ch



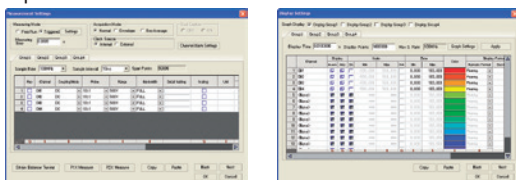
Individual Sample Rates for Each Measurement Channel Group

Up to four groups of measurement channels can be defined with individual measurement conditions and display settings. Even waveforms from groups with different sample rates can be displayed in the same window.



Easy Tabular Setup Screens

Measurement conditions and channel display settings can be viewed and set easily using a tabular format. Use drag and drop shortcuts to quickly setup multiple channels.

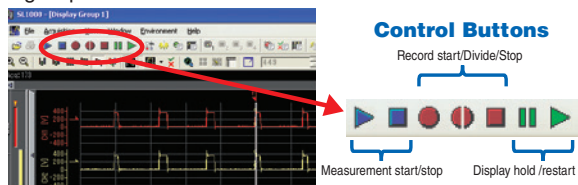


(Left) Measurement condition setting screen

(Right) Display setting screen

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.



Real Time Waveform Display and Analysis

You can display a zoomed portion of the waveform simultaneously with the overall waveform during triggered measurement. Even during live recording, you can use the display hold^{*} to review past data. You can also perform cursor measurements or automated measurement of waveform parameters (up to 26 during triggered measurement) in real time.

^{*}: The display hold may automatically switch to display resume depending on the measuring conditions.

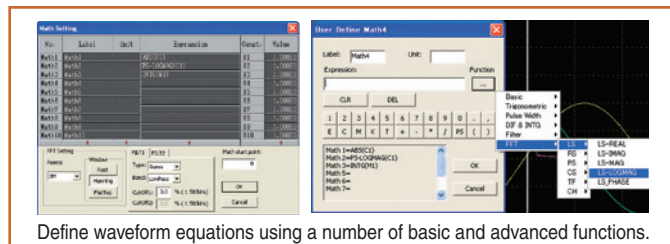
Xviewer Waveform Viewer Software (1 License of the Standard Version Comes Standard)

Offline Waveform Display & Data Conversion

Waveform data saved to hard disk can be manipulated on the PC in the same manner as in real time for waveform display, cursor measurement, automated measurement of waveform parameters, and X-Y display. Additionally, you can input comments anywhere in the displayed waveform window for printing. Waveform data can also be converted to CSV or Excel formats for use in spreadsheet programs.

Offline Waveform Computation (with the /XV1 Option)

You can define and display up to ten computed waveforms. In addition to basic arithmetic operations, you can use a variety of other functions in your definitions such as trigonometric functions, derivatives and integrals, pulse width computations, and FFTs.



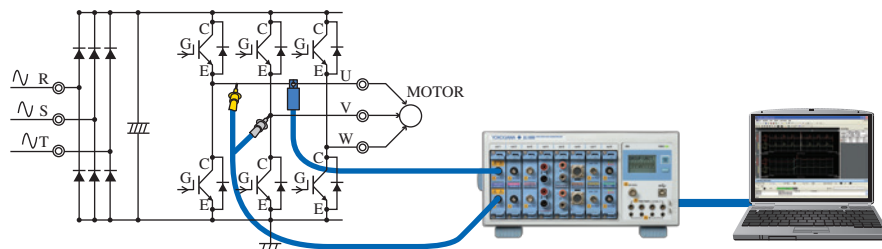
Define waveform equations using a number of basic and advanced functions.



Applications

Observation of Inverter Switching Waveforms

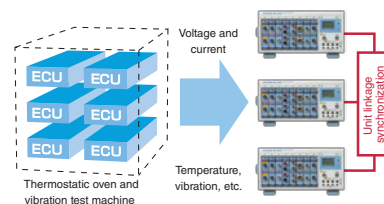
Inverter switching waveforms can be observed using the High-Speed 100 MS/s 12-Bit Isolation Module, offering more accurate waveform capture.



Environmental Testing of ECUs

In-vehicle ECUs are required to maintain high reliability even under severe environments.

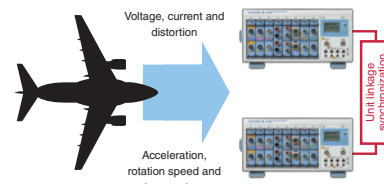
Synchronized operation of the SL1000 enables the user to measure a multiple samples at a high sampling rate under various environments for a long time, which improves verification efficiency.



Performance Evaluation of Large-sized Transport

In the case of measurement of aircrafts, trains, elevators, etc. measurement intervals are sometimes long due to the size of the target.

Since the SL1000 can separate intervals between units using a synchronization cable, it is able to measure a large number of channels and a variety of signals at a high resolution for a long time.



Modules

Modules for a Wide Variety of Signals and Sensors

Supports a total of 13 different ScopeCorder series modules, including the High-Speed 100 MS/s 12-Bit Isolation Module, enabling correlated measurements of high speed voltage, high voltage, high voltage accuracy, temperature, strain, acceleration, frequency, and other characteristics.

For more details, please refer to the Bulletin DL950-02EN



- Can operate “Standalone”
Store data directly on the SL1000
- A wide range of Plug-In Modules
8 module slots are available in each unit
Supports all 13 ScopeCorder series modules

High-Speed Data Acquisition Unit

SL1000

Module Selection

Input	Model No.
Analog Voltage	720211 ⁴
	720250
	701251
	701255
	720268
Temperature	701261
	701262
	701265
	720266
Acceleration	701275
Strain	701270
	701271
Frequency	720281

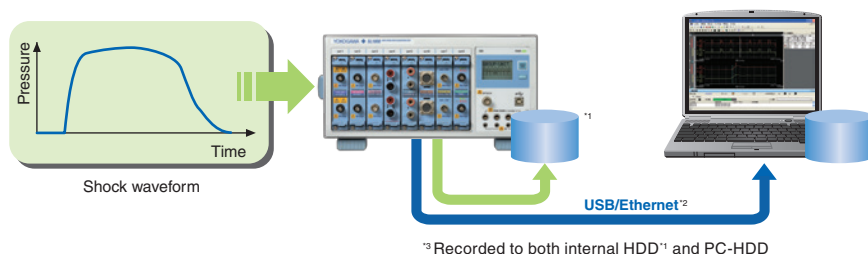
Surge Waveform Recording & Power Monitoring

You can observe and record waveforms of noise (surge) that is imposed upon power supply and signal lines when the power switch is turned ON and OFF, or due to lightning and other external events. Taking advantage of the SL1000's high speed, high resolution, isolation, and standalone characteristics, you can check and automatically record voltage waveforms during monitoring and surge immunity testing.



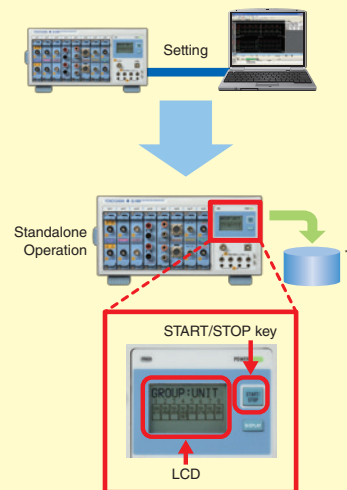
Acquisition of Explosion and Combustion Data

The SL1000 has the high speed and high resolution required for use in the performance evaluation of rockets, airbags, and other combustion-related applications. Measured data can also be saved to both³ the PC's hard disk and the SL1000's internal hard disk¹. This bolsters the reliability of your data storage system. Standalone measurement or remote data acquisition via Ethernet² is also possible.



Standalone Operation

Once settings are entered, the SL1000 can be used "standalone". You can start and stop measurement and recording by using the START/STOP key on the SL1000 or by using the REMOTE input. The instrument includes a convenient LCD for display during standalone use. The LCD shows you the system status, module status, communication parameters, and other information.



¹: with the /HD1 Option ²: with the /C10 Option

³: with one SL1000 unit only.

Only HDD of either PC's or SL1000 internal when multi units synchronization.

ction

Description	Sample Rate	Resolution	Bandwidth	Number of Channels	Isolation	Maximum Input Voltage (DC+ACpeak)	DC Accuracy	Note
High-speed 100 MS/s 12-Bit Isolation Module	100 MS/s	12 bit	20 MHz	2	Isolated	1000 V ¹ 200 V ²	±0.5%	High speed · High voltage · Isolated
High-speed 10 MS/s 12-Bit Isolation Module	10 MS/s	12 bit	3 MHz	2	Isolated	800 V ¹ 200 V ²	±0.5%	High noise immunity
High-speed 1 MS/s 16-Bit Isolation Module	1 MS/s	16 bit	300 kHz	2	Isolated	600 V ¹ 140 V ²	±0.25%	High sensitivity range (1 mV/div), low noise (±100 µVtyp.), and high noise immunity
High-speed 10 MS/s 12-Bit non-Isolation Module	10 MS/s	12 bit	3 MHz	2	Non-isolated	600 V ³ 200 V ²	±0.5%	High speed · Non-isolation
High-voltage 100 kS/s 16-Bit Isolation Module (with AAF, RMS)	1 MS/s	16 bit	300 kHz	2	Isolated	850 V ²⁻⁵	±0.25%	with AAF, RMS, and high noise immunity
Universal Module	100 kS/s (Voltage), 500 S/s (Temperature)	16 bit (Voltage), 0.1°C (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)
Universal Module (with AAF)	100 kS/s (Voltage), 500 S/s (Temperature)	16 bit (Voltage), 0.1°C (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
Temperature/high-precision voltage Module	500 S/s (Voltage), 500 S/s (Temperature)	16 bit (Voltage), 0.1°C (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 (1 mV)
Temperature/high-precision voltage Module	125 S/s	16 bit (Voltage), 0.1°C (Temperature)	15 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 (1 mV), and low noise
Acceleration / Voltage Module (with AAF)	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)
Strain module (NDIS)	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
Strain module (DSUB, Shunt-CAL)	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
Frequency Module	1 MS/s	16 bit	Minimum measurement resolution 625 ps	2	Isolated	420 V ¹ 42 V ²	±0.1% (Frequency)	Measurement frequency of 0.01 Hz to 500 kHz, Measured parameters (frequency, rpm, period, duty, power supply frequency, pulse width, pulse integration, velocity)

* Probes are not included with any modules. *1: In combination with 702902(10:1), 700929(10:1) and 701947(100:1) *2: Direct input *3: In combination with 701940(10:1)

*4: Class 1 Laser Product, IEC60825-1:2014+A11:2021, IEC 60825-1:2007, GB 7247.1-2012

*5: When using this module other than DL850, DL850V, DL850E, DL850EV, DL950 or SL1000, the maximum voltage is 1000 Vrms.

High-Speed Data Acquisition Unit SL1000

Main Specifications (SL1000 Main Unit)

Basic Specifications

Input format	Plug-in module (A/D converters built in to each unit)
Number of slots	8
Max number of channels	16
Maximum sample rate ¹	100 MS/s on all channels
Max. recording length (internal memory)	50 MW/ch (trigger mode: Single, measuring on 1 module, 2 channels)
Build-in hard disk	500 GB (with /HD1 option)
Build-in hard disk	1.6 MS/s (=100 kS/s × 16ch, with /HD1 option) ²
Signal I/O	External clock input :BNC × 1 External trigger input :BNC × 1 Trigger output :BNC × 1 Alarm output :Screwless terminal × 1 GO/NO-GO output :Screwless terminal × 1 REMOTTE input :Screwless terminal × 1 Supplies up to 4 probes (with /P4 option) Conforms to USB Revision 2.0 1000 BASE-T compliant (with /C10 option)
Probe power terminal	
USB communication	
Ethernet	

General Specifications

Rated supply voltage	100-120 VAC/220-240 VAC (switches automatically)
Rated supply frequency	50/60 Hz
Power consumption	300 VA max (including modules)
External dimensions	319 mm (W) × 154 mm (H) × 350 mm (D), excluding protrusions
Weight	Approx. 6 kg (SL1000 main unit only)
Operating temperature range	5 to 40°C

*1: Maximum sample rate differs depending on the type of module. If the sampling frequency exceeds the maximum sample rate of the module, identical data will be recorded.
*2: Typical values. Actual values depend on measurement conditions.

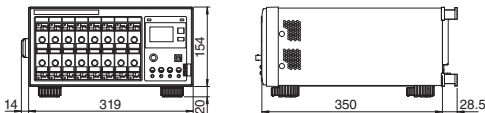
Main Specifications (Acquisition Software is Standard)

Plug and Play	Auto-recognition of units and modules
Measurement modes	Freerun and triggered
ACQ mode	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 to 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, and save all data in memory Save simultaneously to PC's hard disk and SL1000's internal hard disk (with /HD1 option) Binary data files (original, *.wdf)
Save format	Binary data file(s) can be converted to ASCII (*.csv) or Excel (*.xls) format
Waveform data conversion (Xviewer)	
Maximum speed for saving in real time	1.6 MS/s (= 100 kS/s × 16 ch) ^{*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/zoomed waveform (in Triggered mode), and selection of the number of display points (Freerun 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.
Mark display	
Accumulation display	Accumulates T-Y and X-Y waveforms
Snapshot	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 (ext. 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, and alarm output
GO/NO-GO determination ^{*5}	Waveform parameter judgment and judgment output
System requirements	
OS	Windows 10, Windows 11
CPU	Core 2 Duo, 2 GHz or faster (3.2 GHz or faster recommended)
Memory	1 GB or more (2 GB recommended)
Hard disk	500 MB or more of free space (40 GB or more recommended)
Communication interfaces	USB 2.0, Ethernet 1000 BASE-T (with /C10 option)

*1: Typical values. Actual values depend on PC performance and measurement conditions.
*2: When the measurement mode is Freerun, 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:Freerun measurement

Exterior Dimensions

(Unit: mm)



SL1000 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 cord	-D	UL and CSA standard
	-F	VDE standard
	-R	AS standard
	-Q	BS standard
	-H	GB standard (Complied with CCC)
Others	/HD1	Internal 500 GB hard drive
	/C10	Ethernet Interface
	/P4	Probe power (4-output)
	/XV0 ^{*2}	Without Xviewer
	/XV1 ^{*2}	With the Xviewer Math Edition (1 license)(701992-GP01)

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

*2: Only one from the each note can be selected.

Standard Accessories

Power cord (1 set), Software CD-ROM (Acquisition Software and Xviewer 701992, 1 set), User's manuals (1 set), Cover panels for blank module slots (8 set), Rubber feet (1 set), Soft case for storing accessories (1 set)

Accessories

Product	Model No.	Description ^{*1}
Synchronous cable	720901-01	1 m for SL1000
	720901-02	2 m for SL1000
Rack mounting kit	751541-E4	EIA
	751541-J4	JIS
10:1 Passive Probe (for isolated BNC input) (Wide operating temperature range)	702902	1000 V (DC+ACpeak) CAT II, -40 to +85°C, total length 2.5 m
10:1 Probe (for isolated BNC input)	700929	1000 Vrms CAT II, total length 1.5 m
100:1 Probe (for isolated BNC input)	701947	1000 V (DC+ACpeak) CAT II
1:1 Safety BNC Adaptor Lead	701901	1000 Vrms CAT II
1:1 Safety Adaptor Lead (in combination with followings)	701904	1000 Vrms CAT II, 600 Vrms CAT III
Pincher tip (Black)	B9852MN	1000 Vrms CAT III
Pincher tip (Red)	B9852MM	1000 Vrms CAT III
Large Alligator-Clip (Dolphin type)	701954	1000 Vrms CAT II, 1 set each of red and black
Alligator Clip Adaptor Set (Rated Voltage 1000 V)	758929	1000 Vrms CAT II, 1set each of red and black
Alligator Clip Adaptor Set (Rated Voltage 300 V)	758922	300 Vrms CAT II, 1set each of red and black
Fork Terminal Adaptor Set	758921	1000 Vrms CAT II, 1 set each of red and black
Passive Probe ^{*2}	701940	Non-isolated 600 Vpk (701255)(10:1)
1:1 BNC-Alligator Cable	366926	Non-isolated 42 V or less, 1 m
1:1 Banana-Alligator Cable	366961	Non-isolated 42 V or less, 1.2 m
Current Probe ^{*3}	701917 ^{*5}	5 Arms, DC to 50 MHz
Current Probe ^{*3}	701933	30 Arms, DC to 50 MHz
Current Probe ^{*3}	701930	150 Arms, DC to 10 MHz
Current Probe ^{*3}	701931	500 Arms, DC to 2 MHz
Probe Power Supply ^{*4}	701934	Large current output, external probe power supply (4 outputs)
Bridge Head (NDIS-120 Ω)	701955	With 5 m cable
Bridge Head (NDIS-350 Ω)	701956	With 5 m cable
Bridge Head (DSUB-120 Ω, Shunt-CAL)	701957	With 5 m cable
Bridge Head (DSUB-350 Ω, Shunt-CAL)	701958	With 5 m cable
BNC Conversion Adaptor	758924	500 Vrms CAT II
Safety BNC-BNC Cable (1 m)	701902	1000 Vrms CAT II (BNC-BNC)
Safety BNC-BNC Cable (2 m)	701903	1000 Vrms CAT II (BNC-BNC)

*1: Actual allowable voltage is the lower of the voltages specified for the main unit and cable.

*2: 42 V is safe when using the 701940 with an isolated type BNC input.

*3: The number of current probes that can be powered from the main unit's probe power supply is limited. For details, please refer to <http://tmi.yokogawa.com/products/oscilloscopes/current-probes/>

*4: Any number of externally powered probes can be used.

*5: When using with SL1000 series, there is a space limitation issue.

This is a Class A instrument based on Emission standards EN61326-1 and EN55011, and is designed for an industrial environment. Operation of this equipment in a residential area may cause radio interference, in which case users will be responsible for any interference which they cause.

* Any company's names and product names mentioned in this document are trade names, trademarks or registered trademarks of their respective companies.

NOTICE

- Before operating the product, read the user's manual thoroughly for proper and safe operation.

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