Main Specifications

Basic Specifications

Input channels	4 (701730, 701740) 2 (701715)
Input coupling	AC 1 MΩ, DC 1 MΩ, DC 50 Ω, GND
Input impedance	1 MΩ±1.0%, 50 Ω±1.0%
Voltage axis sensitivity setting Range	
	For 1 MΩ input: 2 mV/div to 10 V/div (steps of 1, 2, or 5)
	For 50 Ω input: 2 mV/div to 1 V/div (steps of 1, 2, or 5)
Maximum input voltage	For 1 MΩ input (frequency of 1 kHz or less): 400 V (DC + ACpeak)(282 Vrms CAT II)
	For 50 Ω input: 5 Vrms or 10 Vpeak (and neither are exceeded)
Frequency characteristics [1]	For 1 MΩ input (using passive probe model 700988; specified at probe tip):
	10 V/div to 10 mV/div: DC to 400 MHz
	5 mV/div to 2 mV/div: DC to 300 MHz
	For 50 Ω:
	1 V/div to 10 mV/div: DC to 500 MHz
	5 mV/div to 2 mV/div: DC to 400 MHz
A/D conversion resolution	8 bits (24 LSB/div)
Maximum sampling rate	Real-time sampling mode
	Interleave mode ON: 1 GS/s [2]
	Interleave mode OFF: 500 MS/s
	Repetitive sampling mode: 100 GS/s
Maximum record length	701715
	Interleave mode ON: 1 MW/CH [2]
	Interleave mode OFF: 500 kW/CH
	701730
	Interleave mode ON: 2 MW/CH [2]
	Interleave mode OFF: 1 MW/CH
	701740
	Interleave mode ON: 8 MW/CH [2]
	Interleave mode OFF: 4 MW/CH
DC accuracy [1]	±(1.5% of 8 div + offset voltage accuracy)
Offset voltage axis 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 10 V/div: ±(1% of setting + 20 mV)
Time axis setting range	1 ns/div to 50 s/div (for record length of 10 kW or greater)
	1 ns/div to 5 s/div (for record length of 1 kW)
Time base accuracy [1]	±0.005%
External clock input	Input frequency range: 40 Hz to 20 MHz (continuous clock signal only)

Trigger

Trigger modes	Auto, Auto Level, Normal, Single, Single (N)
Trigger source	CH1 to CH4 (or CH1 to CH2 for the 701715), LINE (connected commercial power signal), EXT (signal input from the EXT TRIG IN terminal)
Trigger types	Edge, A->B(N), A Delay B, OR, Pattern, Pulse width, TV, I²C (optional), SPI (optional)

Display

Screen updating rate	Maximum 60 times per second (for 10 kW all-points display)
	Maximum 30 times per second (for 1 MW all-points display)
Display	6.4-inch color TFT liquid crystal display

* Note that an LCD may contain some pixels which always glow or never glow or may have uneven brightness due to its characteristics. These are not indications of an equipment problem.

Functions

• Vertical/Horizontal Axis Setting

Input filter	Band limit of 100 MHz or 20 MHz can be set independently on each channel (CH1 to CH4, or CH1 to CH2 for the 701715)
Roll mode	The roll display mode is enabled when the trigger mode is auto, auto level, or single and the time axis is as follows:
	For record lengths of 1 MW or less: 50 ms/div-50 s/div
	(or 50 ms/div-5 s/div in the case of 1 kW only)
	For a record length of 2 MW: 100 ms/div-50 s/div
	For a record length of 4 MW: 200 ms/div-50 s/div
	For a record length of 8 MW: 500 ms/div-50 s/div

• Waveform Acquisition/Display Functions

Acquisition modes	Normal, Envelope, Averaging, Box Average
Zoom	Zoom in on displayed waveforms along the time axis (one or two zoom windows with separate enlargement ratios)
X-Y display	Two X-Y waveform displays are available, XY1 and XY2 (only XY1 is available on the 701715).

• Analysis Function

Search and Zoom function	Edge, serial pattern, parallel pattern, pulse width, auto scroll, I²C (optional), SPI (optional)
History search functions	Zone, parameter
Cursor measurements	Horizontal, Vertical, Marker, Degree
Automatic Measurement of Waveform Parameters Function	
	P-P, Max, Min, Avg, Rms, Sdev, High, Low, +OShot, -OShot, Int1TY, Int2TY, Int1XY, Int2XY, Freq, Period, Rise, Fall, +Width, -Width, Duty, Burst1, Burst2, Pulse, AvgFreq, AvgPeriod,
	Delay (between channels)
	Also, the following statistical processes can be performed
	Source items: The above parameters
	Statistics: Min, Max, Avg, Cnt, Sdv
	Statistical mode: Normal, Cycle, History
Computation Functions	+, -, x, binary computation, inversion, differentiation, integration, power spectrum (FFT)

GO/NO-GO judgment

GO/NO-GO judgment	Evaluation based on automatically measured waveform parameter values and waveform zones

• Output Screen Image Data

Built-in printer (optional)	Paper width: 112 mm
	Output formats: Normal, Long
External printer	Outputs to an external printer via the USB PERIPHERAL terminal or Ethernet [3].
	Supports the following printer formats: ESC/P, ESC/P2, LIPS3, PCL5, BJ, PostScript (via Ethernet only [3])
Floppy disk / PC card / Network Drive (via Ethernet [3] / USB Storage	
	Output data formats: PostScript, TIFF, BMP, JPEG, PNG

I²C Bus Analysis Function (Option for the DL1740E and DL1740EL)

• Applicable Bus

I²C bus	Bus transfer rate: Up to 3.4 Mbit/s
	Address mode: 7 bit
SM bus	System Management Bus compliant

• Trigger Function

Trigger source	CH1: SCL
	CH2: SDA
	CH3, CH4: Analog signal input
Start Condition	Triggers on Start conditions
Address	Trigger on user-defined address
Data 1	Triggers on user-defined data byte immediately after address
Byte Count	Up to 9,999 can be specified
Data 2	Triggers on user-defined date byte after byte count has elapsed, up to 2 bytes can be specified
Non-ACK trigger	Triggers when no acknowledgment is given
Combination trigger	Analog signals on CH3 and CH4 can be combined with the I²C bus trigger.

• Analysis Functions

Waveform & data display	Simultaneous display of data (hex display) and waveforms
Detailed data display	Time from a reference point, data (simultaneous display in binary and hex), and presence or absence of ACK
Number of analyzable data	Up to 40,000 bytes worth (20,000 bytes before and after the reference point)
Analysis channels	SCL: CH1, CH3 SDA: CH2, CH4
	Enables switching of analysis between two pairs of busses

SPI Bus Analysis Function (Option for the DL1740E, DL1740EL)

• Trigger Functions

Trigger source	CH1: SCK
	CH2: MOSI
	CH3: MISO
	CH4: SS
Assertion of SS	Triggers on SS assertion
A Pattern	Triggers on user-defined MOSI data directly after SS assertion, up to 8 bytes can be specified
Byte Count	Up to 1,000 times can be specified
B Pattern	Triggers on user-defined data after byte count has elapsed, up to 8 bytes can be specified

• Analysis Function

Waveform & data display	Simultaneous display of data (hex display) and waveforms
Detailed data display	Time from a reference point, data (binary or hex), and CS signal condition
Number of analyzable data	Up to 80,000 bytes worth (40,000 bytes before and after the reference point)
Analysis channels	CH1: Clock signal (SCK)
	CH2: Data1 (MOSI)
	CH3: Data2 (MISO)
	CH4: CS signal (SS)

Rear Panel I/O Section

USB PERIPHERAL Interface	Compliant with USB Rev. 1.1
	Accepts a USB compatible flash memory device, hard drive, MO drive, mouse, keyboard, or printer.
Computer interface	GP-IB, USB-PC connector (USB Rev 1.1 compliant), Ethernet (100BASE-TX/10BASE-T compliant, optional)
Signal I/O	External trigger input/external clock input/trigger gate input, trigger output, RGB video signal output (VGA), GO/NO-GO output
Probe power terminal (optional)	
	No. of terminals: 4 (701730, 701740) 2 (701715)
	Output voltage: ±12 V

General Specifications

Rated supply voltage	100-120 VAC/220-240VAC (switches automatically)
Rated supply frequency	50/60 Hz
Maximum power consumption	
	200 VA
External dimensions	220 mm (W) × 265.8 mm (H) × 264.1 mm (D)
	(when the printer cover is closed; does not include handle and protrusions)
Weight	Approximately 5.5 kg (with all options)
	Approximately 5.4 kg (without options)
Operating temperature range	5-40°C

1: Measured value under standard operating conditions (below) after warming up the instrument, performing calibration, and setting the time base to internal clock.
   Standard operating conditions   Ambient temperature: 23 ±2°C
                                     Ambient humidity: Humidity: 55 ±10% RH
2: When Interleave mode is ON, the number of available channels is reduced by half.
3: With the /C10 option

The specifications can be viewed at the following URL. http://www.yokogawa.com/tm/DL1700E/

DL1720E, DL1740E, DL1740EL Model Number and Suffix Codes

Model	Suffix Code	Description
701715		DL1720E digital oscilloscope with 2 ch input and maximum 1 MW memory
701730		DL1740E digital oscilloscope with 4 ch input and maximum 2 MW memory
701740		DL1740EL digital oscilloscope with 4 ch input and maximum 8 MW memory
Power cable	-D	UL and CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	AS standard
	-H	GB standard
Internal storage drive	-J1	Floppy disk drive[1]
	-J3	PC card interface (type II)[1]
Options	/B5	Built-in printer
	/P2	Probe power for model 701715 [2]
	/P4	Probe power for models 701730 and 701740 [2]
	/C10	Ethernet interface
	/F5	I²C + SPI bus analysis function [3]

The instrument comes standard with passive probes (700988). Four probes are included with the 701730 and 701740, and two probes are included with the 701715.
1. One or the other must be selected.
2. Select /P2 for model 701715, or /P4 for models 701730 and 701740.
3. Option for models 701730 and 701740 only.

Standard Accessories

Name	Quantity
Power cable	1
Passive probe (700988)	1 per channel
Power fuse	1
Front cover (transparent type)	1
Soft case for probe	1
Printer roll paper (when the /B5 option is specified)	1
User's manual (one set)	1

Supplies

Name	Part number	Description	Order Quantity
Printer roll paper	B9850NX	30 meter roll (1 roll per package)	5
Passive probe	700988	10 MΩ (10:1), 400 MHz band,1.5 m (1 probe per package)	1
Front cover	B9989FA	LCD, protects front panel	1

Accessories (Optional)

Name	Model	Description
FET probe	700939	900 MHz
100:1 probe	700978	100 MHz
Current probe	700937	DC to 50 MHz, 15 Apeak
Current probe	701932	DC to 100 MHz, 30 Arms
Current probe	701930	DC to 10 MHz, 150 Arms
Current probe	701931	DC to 2 MHz, 500 Arms
Differential probe	700925	DC to 15 MHz
Differential probe	700924	DC to 100 MHz
Differential probe	701921	DC to 100 MHz
Differential probe	701922	DC to 200 MHz
Differential probe	701920	DC to 500 MHz

Exterior Dimensions

Unit:mm (inch)

220 (8.66)
265.8 (10.46)
267.8 (10.54)
8 (0.32)
264.1 (10.40)
29 (1.14)
305.6 (12.03)

Related Products

DL7400 Series Digital Oscilloscopes — SignalExplorer

DL1600 Series Digital Oscilloscopes — SignalExplorer

DL750 ScopeCorder — ScopeCorder
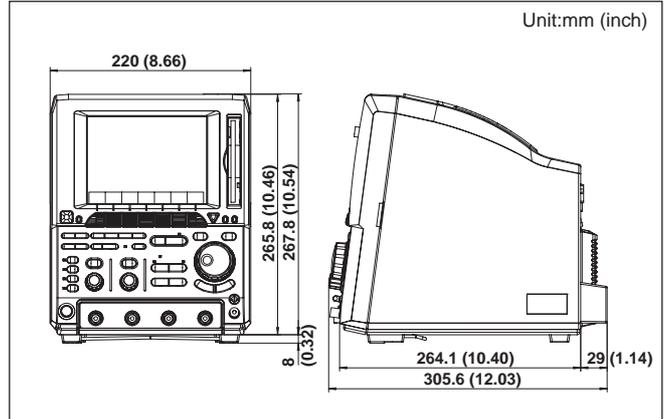
Yokogawa's Approach to Preserving the Global Environment
- Yokogawa's electrical products are developed and produced in facilities that have received ISO14001 approval.
- In order to protect the global environment, Yokogawa's electrical products are designed in accordance with Yokogawa's Environmentally Friendly Product Design Guidelines and Product Design Assessment Criteria.

NOTICE
- Before operating the product, read the user's manual thoroughly for proper and safe operation.
- If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.