

## Main Specifications

### Basic Specifications

Input channels	4 (701730, 701740) 2 (701715)
Input coupling	AC 1 M $\Omega$ , DC 1 M $\Omega$ , DC 50 $\Omega$ , GND
Input impedance	1 M $\Omega$ ±1.0%, 50 $\Omega$ ±1.0%
Voltage axis sensitivity setting	Range For 1 M $\Omega$ input: 2 mV/div to 10 V/div (steps of 1, 2, or 5) For 50 $\Omega$ input: 2 mV/div to 1 V/div (steps of 1, 2, or 5)
Maximum input voltage	For 1 M $\Omega$ input (frequency of 1 kHz or less): 400 V (DC + ACpeak)(282 Vrms CAT II) For 50 $\Omega$ input: 5 Vrms or 10 Vpeak (and neither are exceeded)
Frequency characteristics <sup>1</sup>	For 1 M $\Omega$ 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 $\Omega$ input: 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 <sup>2</sup> Interleave mode OFF: 500 MS/s Repetitive sampling mode: 100 GS/s
Maximum record length	701715 Interleave mode ON: 1 MW/CH <sup>2</sup> Interleave mode OFF: 500 kW/CH 701730 Interleave mode ON: 2 MW/CH <sup>2</sup> Interleave mode OFF: 1 MW/CH 701740 Interleave mode ON: 8 MW/CH <sup>2</sup> Interleave mode OFF: 4 MW/CH
DC accuracy <sup>1</sup>	±(1.5% of 8 div + offset voltage accuracy)
Offset voltage axis accuracy <sup>1</sup>	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 <sup>1</sup>	±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, I <sup>2</sup> C (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-50 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, I<sup>2</sup>C (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 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<sup>3</sup>.  
Supports the following printer formats: ESC/P, ESC/P2, LIPS3, PCL5, BJ, PostScript (via Ethernet only<sup>3</sup>)  
Floppy disk / PC card / Network Drive (via Ethernet<sup>3</sup> / USB Storage)  
Output data formats: PostScript, TIFF, BMP, JPEG, PNG

### I<sup>2</sup>C Bus Analysis Function (Option for the DL1740E and DL1740EL)

#### • Applicable Bus

I<sup>2</sup>C bus Bus transfer rate: Up to 3.4 Mbit/s  
Address mode: 7 bit  
System Management Bus compliant

#### SM bus

#### • 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 data 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 I<sup>2</sup>C 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 <sup>1</sup>
	-J3	PC card interface (type II) <sup>1</sup>
Options	/B5	Built-in printer
	/P2	Probe power for model 701715 <sup>2</sup>
	/P4	Probe power for models 701730 and 701740 <sup>2</sup>
	/C10	Ethernet interface
	/F5	I <sup>2</sup> C + SPI bus analysis function <sup>3</sup>

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 M $\Omega$ (10:1), 400 MHz band, 1.5 m (1 probe per package)	1
Front cover	B9989FA	LCD, protects front panel	1

## Related Products



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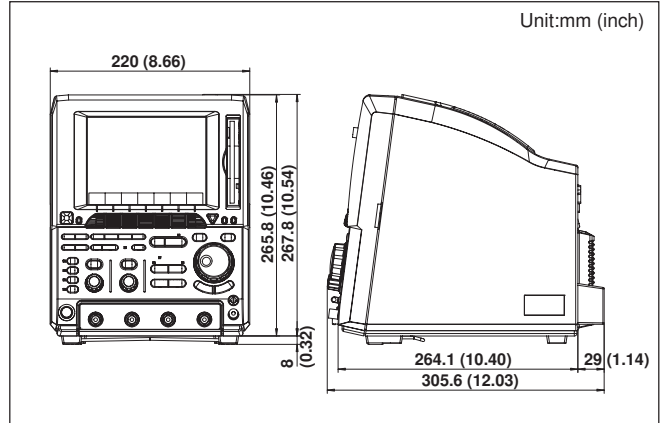
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## Accessories (Optional)

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



# YOKOGAWA

YOKOGAWA ELECTRIC CORPORATION

Test and Measurement Business Div./Phone: (81)-55-243-0313, Fax: (81)-55-243-0396

E-mail: tm@csv.yokogawa.co.jp

YOKOGAWA CORPORATION OF AMERICA

YOKOGAWA EUROPE B.V.

YOKOGAWA ENGINEERING ASIA PTE. LTD

Phone: (1)-770-253-7000, Fax: (1)-770-251-2088

Phone: (31)-33-4641806, Fax: (31)-33-4641807

Phone: (65)-62419933, Fax: (65)-62412606

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