

# Specifications

Input channels:	4/8 analog (depends on model), and 16-bit logic (optional)
Input coupling settings:	AC 1 M $\Omega$ , DC 1 M $\Omega$ , GND, DC 50 $\Omega$
Input impedance:	1 M $\Omega$ $\pm$ 1.0%, 50 $\Omega$ $\pm$ 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 less and 10 Vpeak or less
Frequency characteristic <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: 2 GS/s <sup>2</sup> Interleave mode off: 1 GS/s Equivalent time sampling mode: 100 GS/s
Maximum record length:	
701450/701470	Interleave mode on: 4 MW/channel <sup>2</sup> Interleave mode off: 2 MW/channel
701460/701480	Interleave mode on: 16 MW/channel <sup>2</sup> Interleave mode off: 8 MW/channel
DC accuracy <sup>1</sup> :	$\pm$ (1.5% of 8 div + offset voltage accuracy)
Offset voltage axis accuracy <sup>1</sup> :	2 mV/div to 50 mV/div $\pm$ (1% of setting + 0.2 mV) 100 mV/div to 500 mV/div $\pm$ (1% of setting + 2 mV) 1 V/div to 10 V/div $\pm$ (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> :	$\pm$ 0.005%
External clock input:	Input frequency range: 0 Hz to 20 MHz (continuous clock signal only)

## Trigger

Trigger modes:	Auto, Auto Level, Normal, Single, Single (N)
Trigger sources:	CH1 through CH8 (the number of channels depends on the model; signals input to individual input terminals), LINE (connected utility power signal), EXT (signal input from EXT TRIG IN terminal)
Trigger types:	Edge, A $\rightarrow$ B (N), A Delay B, OR, Pattern, Pulse Width, TV, Logic

## 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:	8.4-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 function
 

Input filters:	100 MHz or 20 MHz band limits can be set independently for CH1 through CH8 (the number of channels depends on the model).
Roll mode:	Roll mode display on the time axes shown below when trigger mode is Auto, Auto Level, or Single For record length of 1 MW or less: 50 ms/div to 50 s/div (or 50 ms to 5 s/div for 1 kW) For record length of 2 MW: 100 ms/div to 50 s/div For record length of 4 MW: 200 ms/div to 50 s/div For record length of 8 MW: 500 ms/div to 50 s/div For record length of 16 MW: 1 s/div to 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 (XY1 and XY2)

## ● Analysis functions

- SPI signal analysis and search functions:
- |   |   |
|---|---|
| Analysis function:                            | Analyzes and searches for data based on the following inputs: CH1: CLOCK, CH2: DATA1, CH3: DATA2, CH4-CH8 or PODA: CS<br>DATA1, DATA2 and CS statuses are displayed in increments of serial data bytes (8 bits). Analysis results can be output to files.   |
| Search function:                              | Automatically searches for undefined values or specified byte pattern based on analysis results.  |
| Search-and-zoom functions:                    | Edge, serial pattern, parallel pattern, pulse width, auto scroll  |
| History search functions:                     | Zone, parameter   |
| Cursor measurements:                          | Horizontal, Vertical, Marker, Degree  |
| Automatic measurement of waveform parameters: | P-P, Max, Min, Ave, Rms, Sdev, High, Low, +OShot, -OShot, Freq, Period, Rise, Fall, +Width, -Width, Duty, Burst1, Burst2, Pulse, AveFreq, AvePeriod, Int1TY, Int2TY, Int1XY, Int2XY, Delay (between channels)<br>The following statistical processes can also be performed.<br>Covered parameters: Those listed above.<br>Statistic types: Min, Max, Ave, Cnt, Sdv<br>Statistic modes: Normal, Cycle, History |
| Mathematical functions:                       | Addition, subtraction, multiplication, binary conversion, inversion, differentiation, integration, power spectrum   |
| User-defined calculations (optional):         | Equations can be set based on user-defined combinations of operators.<br>Addition, subtraction, multiplication, division, ABS, SQR, LOG, EXP, NEG, SIN, COS, TAN, ATAN, PH, DIF, INTG, BIN, P2, P3, F1, F2, FV, PWHH, PWHL, PWLH, PWLL, PWXX, FILT1, FILT2, HLB, MEAN, MAG, LOGMAG, PHASE, REAL, IMAG<br>FFT types: LS, PS, PSD, CS, TF, CH   |
| GO/NO-GO judgment:                            | Evaluation based on automatically measured waveform parameter values and waveform zones   |

## ● Screen data output

- |   |  |
|---|--|
| Built-in printer (optional):                              | Paper width: 112 mm<br>Output formats: Normal, Long  |
| External printers:  | Output to external printers through the USB peripheral port or Ethernet port.<br>Supported printer commands: ESC/P, ESC/P2, LIPS3, PCL5, B.J, PostScript (through Ethernet only) |
| Floppy disk/Zip <sup>®</sup> /SCSI/Network drive/PC card: | Output formats: PostScript, TIFF, BMP, JPEG, PNG   |

## Rear Panel I/O

Interfaces:	GP-IB, USB-PC connector, USB peripheral connector, Ethernet (100BASE-TX, 10BASE-T; optional), SCSI (optional)
Signal I/O:	One for external trigger input/external clock input/trigger gate input, one trigger output, one RGB video signal output (VGA)
Logic input (optional):	Measured with 701981 logic probe (8 bits). Number of inputs: 16 bits (using two logic probes)
Logic probe (701981, sold separately)	
Number of inputs:	8
Maximum foggie frequency:	250 MHz
Input voltage range:	$\pm$ 10 V (DC + AC peak)
Probe power connectors:	Output connectors: 4 (an additional 4 are available as an option with 701470 and 701480)
Output voltage:	$\pm$ 12 V

## General Specifications

Rated supply voltage:	100-120 VAC/220-240 VAC (switches automatically)
Rated supply frequency:	50/60 Hz
Maximum power consumption:	320 VA
External dimensions:	373 mm (W) $\times$ 210.5 mm (H) $\times$ 355.3 mm (D) (when the printer cover is closed; does not include knobs and protrusions)
Weight:	Approximately 11 kg (24.2 lbs, including printer; does not include logic inputs)

1: Measurements are obtained following calibration with the internal clock as the time base after the warmup period under the reference operating conditions (see below).  
Reference operating conditions

Ambient temperature: 23  $\pm$  2°C  
Ambient humidity: 55  $\pm$  10% RH  
Supply voltage/frequency tolerance: Within 1% of rating

2: When interleave mode is on, the number of available channels is half the installed number of channels.

For further details, visit our homepage at

<http://www.yokogawa.com/tm/Bu/DL7400/>

## Model and Suffix Codes

Model	Suffix Code	Description
701450		DL7440 digital oscilloscope with 4 CH input and maximum 4 MW memory
701460		DL7440 digital oscilloscope with 4 CH input and maximum 16 MW memory
701470		DL7480 digital oscilloscope with 8 CH input and maximum 4 MW memory
701480		DL7480 digital oscilloscope with 8 CH input and maximum 16 MW memory
Power cable	-D	UL and CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	SAA standard
Internal storage drive	-J1	Floppy disk drive <sup>1</sup>
	-J2	Zip <sup>®</sup> drive <sup>1</sup>
Options	/B5	built-in printer
	/E4	Four additional passive probes(701470, 701480 only) <sup>2</sup>
	/P4	Four additional probe power connectors(701470, 701480 only) <sup>3</sup>
	/N3	Logic input for 701450/701470 <sup>4</sup>
	/N4	Logic input for 701460/701480 <sup>4</sup>
	/C7	SCSI interface
	/C10	Ethernet interface
	/G2	User-defined math

1: Select one only.

2: The DL7400 Series is standard-equipped with four passive probes (700988).

3: The DL7400 Series is standard-equipped with four probe power connectors.

4: Select /N3 for models 701450 and 701470, and /N4 for models 701460 and 701480. Logic probes are sold separately. Purchase logic probe model 701981 (shown below under "Accessories (Optional)").

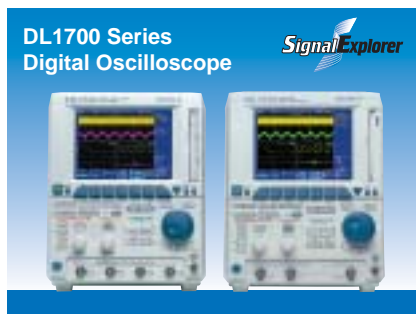
## Standard Accessories

Name	Q'ty
Power cable	1
Passive probes (700988)	4
Printer roll paper (when option /B5 is specified)	1
User's manual (one set)	1
Front cover (transparent)	1
Soft carrying case (for probes, etc.)	1

## Accessories (Optional)

Name	Model	Specifications
Passive probe	700988	10 M $\Omega$ (10:1), 400 MHz, 1.5 meters (one per unit)
FET probe	700939	900 MHz band
Logic probe (for DL7400)	701981	8-bit input, 250 MHz toggle frequency
100:1 probe	700978	100 MHz band
Differential probe	700925	DC to 15 MHz band
Differential probe	700924	DC to 100 MHz band
Differential probe	701920	DC to 500 MHz band
Current probe	700937	DC to 50 MHz band, 15 Apeak
Current probe	701930	DC to 10 MHz band, 150 Arms

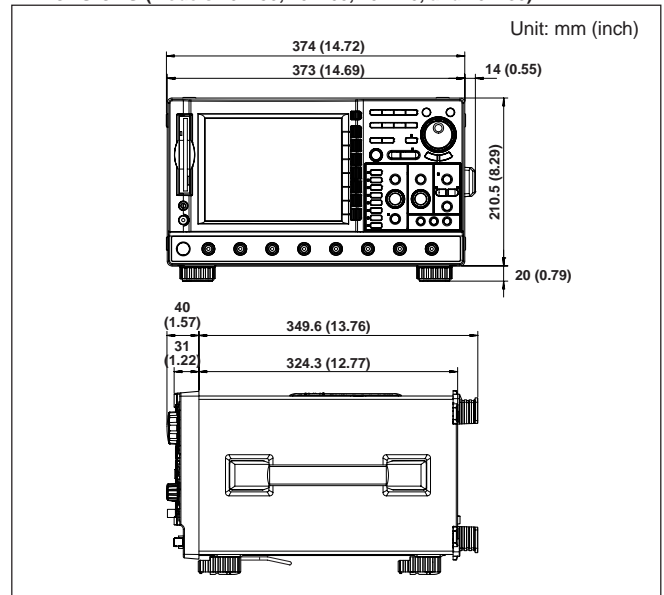
## Related Products



## 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.

## Dimensions (Models 701450, 701460, 701470, and 701480)



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## 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.