

# SPECIFICATIONS

## Vertical section

Number of input channels:	4 (DL1540/DL1540L); 2 (DL1520/DL1520L)
Vertical resolution:	8 bits (normal) (25LSB/div) 9 bits (smoothing) 12 bits (after averaging with 256 weight)
Max sampling rate:	
Normal	200 MS/s (when half of the number of available channels are in use) 100 MS/s (when all channels are in use) Equivalent time 20 GS/s
Effective storage frequency (-3 dB):	
Repetitive waveform	DC to 150 MHz * <sup>1</sup>
Single shot waveform	DC to 80 MHz * <sup>2</sup> (When half of the number of available channels are in use) DC to 40 MHz * <sup>2</sup> (When all channels are in use)
Sensitivity:	1 mV/div * <sup>3</sup> to 5 V/div (DL1540/DL1540L) 2 mV/div to 5 V/div (DL1520/DL1520L)
DC accuracy * <sup>4</sup> :	100 mV/div ±(1.5% of 8 div + 1 LSB) 1 mV/div ±(5% of 8 div + 1 LSB) Other ranges ±(2.5% of 8 div + 1 LSB)
Offset voltage accuracy:	1 m to 50 mV/div ±(2.5% of set value + 0.2 mV) 100 m to 500 mV/div ±(1% of set value + 2 mV) 1 to 5 V/div ±(2.5% of set value + 20 mV)
Interchannel isolation:	-40 dB (typical value * <sup>5</sup> in the same range)
Max input voltage:	250 V (DC + AC peak) (1 kHz max) (CAT I & II, 177 Vrms)
Input impedance:	1 MΩ±1.5% (approx. 25 pF)
Input coupling:	AC/DC/GND

## Horizontal section

Sweep time:	5 ns/div to 50 s/div
Time axis accuracy:	±(0.01% + 500 ps)* <sup>6</sup>
Max record length (DL1540L):	2M words (2 channels use) 1M word (3 or 4 channels use)
Max record length (DL1520L):	1M words (1 channel use) 400k word (2 channels use)
Max record length (DL1540):	120k words (2 channels use) 56k words (3 or 4 channels use)
Max record length (DL1520):	20k words (roll mode) 10k words (other mode)
External clock input:	
(DL1540/DL1540L):	EXT CLOCK IN input 40 Hz to 15 MHz * <sup>7</sup> CH4 input * <sup>11</sup> 40 Hz to 80 MHz * <sup>7</sup>
(DL1520/DL1520L):	40 Hz to 80 MHz

## Trigger

Mode:	AUTO/AT-LVL/NORMAL SGL(S) * <sup>9</sup> /SGL(L) * <sup>9</sup> SINGLE * <sup>10</sup> /N-SGL: Sequential store * <sup>12</sup>
Source:	CH1 /CH2 /CH3 * <sup>11</sup> /CH4 * <sup>11</sup> /EXT /LINE
Slope:	Rise/Fall/Both
Coupling:	AC/DC/HFRej
Sensitivity:	1 div p-p (DC to 150 MHz)
Type:	Edge TV * <sup>8</sup> NTSC/PAL/HDTV * <sup>11</sup> Window * <sup>8</sup> OR (option * <sup>11</sup> ) Pattern (option * <sup>11</sup> ) Pulse width (option * <sup>11</sup> )

## External trigger input

(DL1540/DL1540L):	
Range	±6 V
Level	1.5 V/ 0.15 V
Frequency range	DC to 15 MHz
(DL1520/DL1520L):	
Range	±10 V/±1 V
Level	
Range	±10 V range: ±10 V ±1 V range: ±1 V
Resolution	±10 V range: 40 mV ±1 V range: 4 mV
Input sensitivity (DC to 100 MHz)	±10 V range: 2 Vp-p ±1 V range: 200 mVp-p

## Screen update speed

1 channel in use:	Max 60 screens/s
All channels in use:	Max 60 screens/s

# DL1540/DL1540L/DL1520/DL1520L

## Display

CRT: 7-inch, raster scan, amber (540 × 432 dots)  
Number of displayed traces: Max 8 traces (zoom mode) (**DL1540/DL1540L**)  
(4 captured + 4 magnified) traces  
Max 6 traces (zoom mode) (**DL1520/ DL1520L**)  
(2 captured + 2 magnified + 2Math) traces

## Extension functions

Computation: +, -, ×, FFT (1000-point power spectrum)  
GO/NO-GO function: Zone: Up to 4 traces  
Parameter: Up to 4 parameters  
Automatic waveform parameter measurement:  
Up to 21 items for each trace. Parameters for all traces can be measured simultaneously, and the result of automatic measurement displayed. Up to 24 items can be displayed.  
Image format saving: HP-GL, PostScript, TIFF, and BMP formats  
Snapshot: By pressing the snapshot key, an infinite number of waveforms can be kept on the CRT screen.  
Accumulation: 0.1 to 60 s, INFINITE (infinite period)

## Communication

### GP-IB interface

Electrical and mechanical specifications: Conform to IEEE st'd. 488-1978  
Protocol: Conforms to IEEE st'd 488.2-1987

### RS-232-C interface

[RS-232-C interface unit (optional accessory) required for use with the **DL1540** and the **DL1540L**]

Baud rate: 75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 bps

### Centronics interface

[Available for the -C3 model of the **DL1520** and the **DL1520L**]  
Supported printer commands: ESC/P, LIPS3, PC-PR201, PCL5

### SCSI interface

[SCSI interface unit (optional accessory) required for the **DL1540** and the **DL1540L**. Available for -C4 model of the **DL1520L**.]

Supported SCSI devices and conditions

HD drive: Drive formattable by the EZ-SCSI  
MO drive: Up to 640MB type which is formattable by the EZ-SCSI  
Zip drive: Iomega Zip drive compatible

## Signal input/output

TRIG OUT \*11: TTL level  
GO/NO-GO evaluation output \*11: TTL level (from option box control connector)  
GO/NO-GO operation condition output \*11: TTL level (from option box control connector)  
Calibration output: 1 kHz, 1 Vp-p, square wave

## 3.5-inch FDD

Types of supported disks: 640 KB, 720 KB, 1.2 MB, 1.44 MB  
Format: MS-DOS

## Built-in printer (option)

Printing method: Thermal line dot method  
Dot density: 6 dots/mm  
Paper width: 112 mm  
Realtime printing: Max 16.7 mm/s chart speed (Available from a time axis range of 500 ms/div and slower)

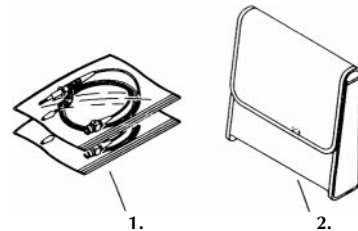
## General specifications

Operation temperature range: 5 to 40°C  
Operation humidity range: 20 to 85% RH (when not using the printer)  
35 to 85% RH (when using the printer)  
Supply voltage: 100 to 120 V AC/ 220 to 240 V AC  
**DL1540/DL1540L** Automatically switched  
**DL1520/DL1520L** Select from the above  
Supply frequency: 50/60 Hz  
Power consumption: 280 VA max  
External dimensions: 215(W) × 268(H) × 295(D) mm  
(Excluding projections)  
Weight: Approx. 5 kg (**DL1540** only)  
Approx. 6 kg  
(**DL1540L/DL1520/DL1520L** main unit only)

- \*1: Between 5 V/div and 10 mV/div ranges.  
For 5 mV/div: DC to 80 MHz. For 2 mV/div and 1 mV/div: DC to 20 MHz.  
\*2: Between 5 V/div and 5 mV/div ranges.  
For 2 mV/div and 1 mV/div: DC to 20 MHz.  
\*3: 1 mV/div is realized by zooming of 2 mV/div.  
\*4: Standard operating conditions (23±2°C, 55±10% RH).  
After 30 minutes warmup, and after calibration.  
\*5: A "typical" value is a representative or average value. It is not a strictly guaranteed value.  
\*6: Standard operating conditions (23±2°C, 55±10% RH).  
After 30 minutes warmup.  
\*7: Continuous clock signal only.  
\*8: Supported by CH1 only.  
\*9: **DL1540** only.  
\*10: **DL1540L/DL1520/DL1520L** only.  
\*11: **DL1540/DL1540L** only.  
\*12: **DL1540/DL1540L/DL1520L** only.

## Standard Accessories

No.	Item	Quantity
-	Power cable	1
1.	Probe	2
-	Set of manuals	1
2.	Soft case (for storing probes, etc.)	1
-	Front cover ( <b>700916</b> )	1



# DL1540/DL1540L/DL1520/DL1520L

## AVAILABLE MODELS

### DL1540/DL1540L

Model	Suffix code	Description
701510		DL1540 digital oscilloscope
701520		DL1540L digital oscilloscope
Power voltage	-1	100 to 120 V AC
	-5	220 to 240 V AC
Power cable	-D	UL, CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	SAA standard
Options	/B5	Built-in printer
	/F1	Enhanced trigger
	/E1	Two additional 700998 probes

### DL1520 / DL1520L

Model	Suffix code	Description
701505		DL1520 digital oscilloscope
701515		DL1520L digital oscilloscope
Power voltage	-1	100 to 120 V AC
	-5	220 to 240 V AC
Power cable	-D	UL, CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	SAA standard
Communication	-C1	GP-IB interface
	-C2	RS-232-C interface
	-C3	GP-IB & Centronics interface
	-C4	GP-IB & SCSI interface*1
Options	/B5	Built-in printer

\*1: Available for the DL1520L only.

### Accessories (optional)

Item	Code	Description	Order Q'ty
50Ω terminator	700976	Through type	1
Carrying case	700915	340(W)×290(H)×225(D) mm	1
RS-232-C unit	700927	Exclusively for DL1540/DL1540L	1
TV signal output unit	700928	Exclusively for DL1540/DL1540L*1	1
SCSI interface unit	700930	Exclusively for DL1540/DL1540L*2	1

\*1: For the DL1540, the firmware version 1.10 or later is required.

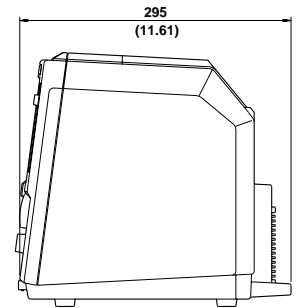
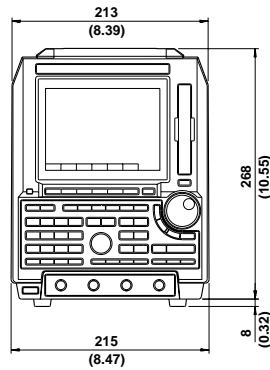
\*2: For the DL1540 and the DL1540L, the firmware version 1.20 or later is required.

### Spare Parts

Item	Code	Description	Order Q'ty
Roll paper for printer	B9850NX	30 m (one roll/unit)	5
150 MHz passive probe	700998	10 MΩ (10:1), 1.5 m (1/unit)	1
Soft case	B9918EZ	For storing probes, etc.	1
Front cover	700916	For protecting the CRT and the front panel	1
Printer connecting cable	B9916TB	1 m (exclusively for DL1520)	1

## DIMENSIONS

Unit: mm (inch)



Carrying case



RS-232-C unit



TV signal output unit



SCSI interface unit