Main Specifications

signal Xplorer™ DL9000 Series

Models

Model name (No.)	Max. sampling rate	Freq. BW	Max. record length
DL9040 (701307)	5 GS/s	500 MHz	2.5 MW
DL9040L (701308)	5 GS/s	500 MHz	6.25 MW
DL9140 (701310)	5 GS/s	1 GHz	2.5 MW
DL9140L (701311)	5 GS/s	1 GHz	6.25 MW
DL9240 (701312)	10 GS/s	1.5 GHz	2.5 MW
DL9240L (701313)	10 GS/s	1.5 GHz	6.25 MW

Basic Specifications

Input channels: 4 (CH1 to CH4)
Input coupling: AC, DC, GND, DC50Ω
Input impedance: 1 MΩ ±1.0% approx. 20 pF (when using PB500 probe, 10 MΩ ±2.0%, approx. 14 pF)
50 Ω ±1.5%
Voltage axis sensitivity: For 1 MΩ input : 2 mV/div to 5 V/div (steps of 1-2-5) ranges
For 50 Ω input : 2 mV/div to 500 mV/div (steps of 1-2-5)
Maximum input voltage: For 1 MΩ input : 150 Vrms CAT I
For 50 Ω input : 5 Vrms or less and 10 Vpeak or less
DC offset max. setting range: For 1 MΩ input
(When probe attenuation set to 1:1)
2 mV/div to 50 mV/div : ±1 V
100 mV/div to 500 mV/div : ±10 V
1 V/div to 5 V/div : ±100 V
For 50 Ω input
2 mV/div to 50 mV/div : ±1 V
100 mV/div to 500 mV/div : ±5 V
Vertical (voltage) axis sensitivity:
DC accuracy[1]: For 1 MΩ input : ±(1.5% of 8 div + offset voltage accuracy)
For 50 Ω input : ±(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 5 V/div : ±(1% of setting + 20 mV)
Voltage standing-wave ratio (VSWR): 1.5 or less within frequency bandwidth (typical value[4])
Frequency characteristics[1, 2]
(Attenuation point of -3 dB when inputting a sinewave of amplitude ±2 div or equivalent)

For 50 Ω input	DL9040/9040L	DL9140/DL9140L	DL9240/DL9240L
0.5 V/div to 10 mV/div:	DC to 500 MHz	DC to 1 GHz	DC to 1.5 GHz
5 mV/div:	DC to 400 MHz	DC to 750 MHz	DC to 1 GHz
2 mV/div:	DC to 400 MHz	DC to 600 MHz	DC to 750 MHz
For 1 MΩ input (from the probe tip when using the PB500 dedicated passive probe)			
5 V/div to 10 mV/div:	DC to 500 MHz	DC to 500 MHz	DC to 500 MHz
5 mV/div to 2 mV/div:	DC to 400 MHz	DC to 400 MHz	DC to 400 MHz

Residual noise level[3]: 0.4 mV rms or 0.05 div rms, whichever is larger (typical value[4])
A/D conversion resolution: 8-bit (25 LSB/div)
Bandwidth limit: For each channel, select from FULL, 200 MHz, 20 MHz, 8 MHz, 4 MHz, 2 MHz, 1 MHz, 500 kHz, 250 kHz, 125 kHz, 62.5 kHz, 32 kHz, 16 kHz, and 8 kHz (separately configurable on each of channels CH1 to CH4); Limit implemented with analog (200 MHz, 20 MHz) and digital filters (IIR+ FIR).

Max. sampling rate:	DL9040/9040L/9140/9140L	DL9240/9240L
Real time sampling mode:		
Interleave mode ON:	5 GS/s	10 GS/s
Interleave mode OFF:	2.5 GS/s	5 GS/s
Repetitive sampling mode:	2.5 TS/s	2.5 TS/s
Maximum record length	DL9040/9140/9240	DL9040L/DL9140L/DL9240L
	2.5 MW	6.25 MW

Time axis setting range: 500 ps/div to 50 s/div (steps of 1-2-5)
Time base accuracy[1]: ±0.001%
Time axis measurement accuracy[1]: ± (0.01% + 10 ps + 1 sample interval)
Max. acquisition rate[5]: When using 1.25 MW, 60 waveforms/sec/ch
When using 12.5 kW, 9000 waveforms/sec/ch
When using 2.5 kW, 25000 waveforms/sec/ch
Min. dead time (N single)[5]: 400 ns or less (equivalent to 2.5 M waveforms/sec)

Trigger Section

Trigger modes: Auto, Auto Level, Normal, Single, and N Single
Trigger source:
CH1 to CH4: Signals applied to measurement input terminals
LINE: Connected commercial power signal (only available with Edge trigger)
EXT: Signal input from EXT TRIG IN terminal
Trigger level range:
CH1 to CH4: ±4 divisions from the screen center
EXT: ±2 V (1:1), ±20 V (10:1 when used with a probe)
Trigger level setting resolution:
CH1 to CH4: 0.01 div
EXT: 5 mV (1:1), 50 mV (10:1 when used with a probe)
Window comparator: Separately configurable on each of channels CH1 to CH4
Center: ±4 divisions from the screen center
Width: ±4 divisions from Center

Trigger level accuracy
CH1 to CH41: ±(0.2 div + 10% of trigger level)
EXT[1]: ±(50 mV + 10% of trigger level)
Trigger sensitivity:

		DL9040/DL9040L	DL9140/DL9140L	DL9240/DL9240L
CH1 to CH41	1 divp-p	DC to 500 MHz	DC to 1 GHz	DC to 1 GHz
EXT[1]	100 mVp-p	DC to 100 MHz	DC to 100 MHz	DC to 100 MHz
where Edge OR1	1 divp-p	DC to 50 MHz	DC to 50 MHz	DC to 50 MHz

Trigger types:
Edge/State
Edge: Trigger occurs on the edge of a single trigger source.
Edge (Qualified): Trigger occurs on the edge of a single trigger source when Qualification condition is true.
Edge OR: Trigger occurs on the OR logic of the edge conditions set to multiple trigger sources.
State: Trigger occurs on ENTER/EXIT when the state condition is true.
Width
Pulse: Trigger occurs on a width of a single trigger source.
Pulse (Qualified): Trigger occurs on a width of a single trigger source when Qualification condition is true.
Pulse State: Trigger occurs on a width when the state condition is true.
Time width setting mode:
More than: Trigger occurs upon change in condition when the condition remains true longer than time T1.
Less than: Trigger occurs upon change in condition when the condition remains true shorter than time T1.
Between: Trigger occurs upon change in condition when the condition remains true longer than time T1 and shorter than time T2.
Out of Range: Trigger occurs upon change in condition when the condition remains true shorter than time T1 and longer than time T2.
Time out: Trigger occurs when the condition is true for duration longer than time T1.
Specified time (T1/T2): 1 ns to 10 s, 500 ps resolution
Time accuracy: ±(0.2% of setting + 1 ns)
Event Interval
Event Cycle: Trigger occurs when the event cycle is within the specified time range.
Event Delay: After Event 1 occurs, trigger occurs on 1st occurrence of Event 2 that satisfies the timing constraints. The trigger process is reset if Event 1 or Event 2 occurs before the timing constraints are satisfied.
Event Sequence: After Event 1 occurs, trigger occurs on 1st occurrence of Event 2 that satisfies the timing constraints. The trigger process is reset if Event 1 occurs before the timing constraints are satisfied.
Time width setting mode: Function identical to the time width setting mode for Width
Specified time (T1/T2): 1.5 ns to 10 s, 500 ps resolution
Time accuracy: ±(0.2% of setting + 1 ns)
Event types: Events can be selected from Edge, Edge Qualified, State, Pulse, Pulse Qualified, Pulse State, I²C, CAN, SPI, and Serial trigger types.
Enhanced:
TV: Trigger occurs on video signals of various broadcasting system formats
Mode: NTSC, PAL, HDTV, USER
Input CH: CH1-CH4
Sync Guard: Hsync 60 to 90% (increments of 1%)
Line: 5-1054 (NTSC), 2-1251 (PAL), 2-1251 (HDTV), 2-2048 (USER)
Field: 1/2/X
Frame Skip: 1/2/4/8
I²C: Triggers on I2C bus signals
Mode: NON ACK, Every Start, General Call, (Start byte/HS Mode), ADR&DATA
SPI: Triggers on SPI (serial peripheral interface) bus signals
Mode: 3 wire, 4 wire
CAN:
Bit rate: 1 Mbps, 500 kbps, 250 kbps, 125 kbps, 83.3 kbps
User (freely settable in 100 bps increments)
Input channel: CH1 to CH4: Input through differential probe
Mode: SOF, Frame ID, Data field, Remote Frame, Error Frame, Ack etc.
Serial pattern: Triggers on general-purpose serial communication signals.
Max. bit rate: 50 Mbps
Max. bit length: 128 bits

Display

Display: 8.4-inch (21.3 cm) color TFT liquid crystal display
Display screen size: 170.5 mm (width) × 127.9 mm (height)
Total number of pixels: 1024 × 768 (XGA)
Waveform display resolution: 800 × 640

Digital Oscilloscopes
Xth Generation

Main Specifications

signal Xplorer™
DL9000 Series

Functions

Waveform Acquisition/Display Functions:

Acquisition modes:	Selectable from three acquisition modes – Normal, Average and Envelope
High resolution mode:	Vertical resolution is increased to max. 13 bits.
Repetitive sampling mode:	Allows switching between realtime and repetitive sampling in certain time axis settings.
Interpolate function:	Interpolates actual sampled data by up to 1000 times (or up to 2000 times in High-Res. mode) and increases the time resolution (up to 2.5 TS/s)
Roll mode:	Roll-mode display is enabled during the following time axis range when the trigger mode is Auto, Auto Level or Single: 100 ms/div to 50 s/div
Record length:	
DL9040L/9140L/9240L:	2.5 kW, 62.5 kW, 12.5 kW, 25 kW, 62.5 kW, 125 kW, 250 kW, 625 kW, 1.25 MW, 2.5 MW, 6.25 MW
DL9040/9140/9240:	2.5 kW, 62.5 kW, 12.5 kW, 25 kW, 62.5 kW, 125 kW, 250 kW, 625 kW, 1.25 MW, 2.5 MW
Accumulation:	Accumulates waveforms on the display. Choose Count/Time and Inten/Color.
Snapshot:	Retains the current displayed waveform on the screen.

Analysis Functions

Search and Zoom function:	Zooms the displayed waveform along the time (Horizontal Zoom) and voltage (Vertical Zoom) axes. Independent zooming factors can be applied to two zoom areas.
Voltage axis zoom factor:	1 to 10 times
Time axis zoom factor:	1 time to 1data/div
Auto scroll function:	Automatically scrolls the zoom window along the time axis
Search function:	Searches the currently displayed waveform for a specified portion occurring beyond a specified time, and displays the zoomed result on the screen.
Search types:	Edge, Edge Qualified, State, Pulse, Pulse Qualified, Pulse, State, Serial Pattern, I²C (optional), SPI (optional)
History memory:	
Max data:	DL9040L/9140L/9240L: 2000 (2.5 kW), when using history 1600 (2.5 kW), when in N single mode DL9040/9140/9240: 1000 (2.5 kW), when using history 800 (2.5 kW), When in N single mode
History search:	Searches for and displays waveforms from the history memory that meet specified conditions.
Search types:	Rect, WAVE, Polygon, Parameter (Measure/FFT/XY)
Replay:	Automatically replays history waveforms.
Display:	Selected acquisition (#) or Average (Avg)
Cursor measurements:	The following five cursors can be selected: Vertical, Horizontal, VT, Marker, Serial
Automatic measurement of waveform parameters:	Performs automated measurement of the following waveform parameters.
Items unrelated to cycle which will be derived out of all data in the range.	MAX, MIN, HIGH, LOW, P-P, HIGH-LOW, +OVER, -OVER, RMS, MEAN, Sdev, IntegTY
Items related to cycle which will be derived out of all data in the range.	C.rms, C.mean, C.Sdev, C.IntegTY, (1/FREQ), FREQ, COUNT, BURST
Items which will be derived from the first encounter from the beginning of the specified range.	+WIDTH, -WIDTH, PERIOD, DUTY, RISE, FALL, DELAY
Telecom test:	Performs mask test and eye pattern measurement
Mask test items:	Wave Count, Wave Count%, Sample Point Count, Sample Point Count%
Eye pattern items:	Vtop, Vbase, stop, sbase, Tcrossing1, Tcrossing2, Vcrossing, Crossing%, Eye Height, Eye Width, Q Factor, Jitter, Duty Cycle Distortion%, Ext Rate dB, Rise, Fall
Computation functions:	Computes up to eight traces (CH1-CH4/M1-M4) +, -/*, INTEG, COUNT (EDGE), COUNT (ROTARY), Through, Delay, Moving Avg, LowPass, High Pass, Stuff Bit (CAN option)
Reference functions:	Display and analysis (computation and cursors) of up to four traces (M1-M4) of the saved waveform data. Waveforms including history can also be loaded for history searches or replay. Various parameters can be changed (however waveforms are not affected by T/Div changes).
Action-on-trigger:	Automatically measured waveform parameters and waveform zones are determined, and the selected action is carried out each time conditions are met.
Modes:	OFF, All Condition, (GO/NOGO Zone/Param), GO/NOGO Telecom Test)
Actions:	Buzzer, Print, Save, Mail
All conditions:	After EXEC is pressed, the specified action is performed upon each acquisition
GO/NOGO zone:	Determines whether or not the acquired waveform passes through the specified area
Zone types:	RECT, Polygon, WAVE
GO/NOGO parameter:	Determines whether or not the specified parameter of the acquired waveform is within the specified range
Param:	Choose Measure, FFT, or XY
GO/NOGO telecom test:	Performs judgment using the conditions specified in the telecom test.
ANALYSIS:	Selectable from XY, FFT, Wave Parameter, Accum Histogram and Serial Bus
X-Y:	displays XY1, XY2 and T-Y simultaneously
FFT:	supports up to 250 k points FFT
Wave parameter:	Single wave parameters can be viewed in one of the following formats. (Histogram, Trend and List)
Accum histogram:	A histogram of the selected area can be displayed for a continuous signal.
Serial bus:	I²C, SPI and CAN buses can be analyzed and the analysis results displayed (optional).

I²C Bus Analysis Functions (optional)

•Applicable bus:	I²C bus:	Bus speed : Max. 3.4 Mbit/s Address mode : 7 bit/10 bit
	SM bus:	complies with System Management bus
•Trigger function (standard):	Source	: SCL : CH1 to CH4 : SDA : CH1 to CH4
Type:		Selectable from the following five options:
- Address & data:		trigger on combination of assigned address & data pattern
- Non-Ack:		trigger on non acknowledge condition
- Every start:		trigger on start condition
- General call:		trigger on general call and the following byte
- Start byte / HS mode:		trigger on Start byte and HS mode
•Analysis function:		
Signal input:		CH1 to CH4, M1 to M4 can be configured
Detailed data display mode:		Time from the reference point, data (simultaneous binary and hex representations), presence/absence of ACK, R/W, address or data, start condition
Simple display mode:		Data (hex representation), R/W, start condition, presence/absence of ACK, address or data
Analyzable number of data items:		40,000 bytes max.
•Search function:		
Pattern search:		Searches data that agrees with the preset address pattern, data pattern and acknowledge bit condition.
•Analysis result save function:		
Storage of analysis list data:		The data can be saved to CSV-format files.

SPI Bus Analysis Functions (optional)

•Trigger function:		
Mode:	3 wire/4 wire	
Bit order:	MSB/LSB	
Source:	Clock signal (SCK)	CH1 to CH4
	Data 1 (MOSI)	CH1 to CH4
	Data 2 (MISO)	CH1 to CH4
	CS signal (SS)	CH1 to CH4
•Analysis function:		
Analyzable number of data items:		40,000 bytes max.
Display of analysis results:		Analysis results can be displayed using the following 2 methods
- Simple analysis result list:		Data (hex representation), CS signal status
- Detailed analysis result display:		Detailed analysis result list, time from the reference point, data (select and show either Binary or Hex data), and CS signal status can be displayed.
•Search function:		
- Pattern search:		Waveforms can be searched by specifying data pattern. When a waveform that agrees with the pattern is found, the zoom box moves to the position of that waveform to show the specified waveform.
•Analysis result save function:		
Storage of analysis list data:		The data can be saved to CSV-format files.

CAN Bus Analysis Functions (optional)

•Applicable bus:	CAN version 2.0 A/B
	High-speed CAN (ISO11898)
	Low-speed CAN (ISO11519-2)
•Bit rate:	1 Mbps, 500 kbps, 500 kbps, 250 kbps, 125 kbps, 83.3 kbps, user-defined
•Trigger function (standard):	
Source:	CH1 to CH4, Input through differential probe
Type:	SOF trigger
	Frame ID trigger
	Data field trigger: Selectable up to 8 bytes
	Remote Frame trigger
	Error Frame trigger
	Ack trigger
	Frame ID. Data OR trigger, (Specify up to four ID, Data or Ack trigger conditions to set triggers on a logical OR condition.)
	Event Interval trigger
•Analysis function:	
Analyzable number of frames:	3,000 max.
Analysis result display:	Waveform and analysis list display
	Detailed analysis list display
	(Analysis display items: Frame type, time from trigger point, frame ID, DLC, Data, CRC, presence/absence of ACK)
•Analysis support functions:	
	Data search
	Field jump
	Stuff bit calculation
•Analysis result save function:	
Storage of analysis list data:	The data can be saved to CSV-format files.

Built-in Printer (/B5 Option)

Printing method	Thermal line-dot
Paper width	112 mm
Effective print width	104 mm (832 dots)

Auxiliary I/O Section

Rear panel I/O signal:	Ext. trigger input, ext. trigger output, trigger comparator output, GO/NO-GO I/O, video output
Probe interface terminal (front panel)	
No. of terminals:	4
Supported probes:	PBA2500, PBD2000, PB500
Probe power terminal (/P2 option, rear panel):	
No. of terminals:	2
Supported probes:	FET probe (700939), current probes (701930, 701931, 701932, 701933), and differential probes (701920, 701921, 701922)

Storage

Internal storage media:	
Capacity:	90 MB (Flash ROM)
Usage:	Saving and loading of waveforms and panel settings

Internal Hard Drive (/C8 Option)

Capacity/file system:	40 GB FAT32
File name:	Supports long file names of up to 256 ASCII characters

USB Peripheral Connection Ports

Connector:	USB-type A connector × 2
Supported transmission standards:	LS (Low Speed) mode (1.5 Mbps), FS (Full Speed) mode (12 Mbps)
Supported devices:	USB HID Class Ver1.1-compliant mouse/109 keyboard
	USB Printer Class Ver.1.0-compliant printers
	EPSON: Ink Jet Printers
	HP: PCL Ink Jet Printers
	USB Mass Storage Class Ver.1.1-compliant mass storage device
	USB hub device (1 unit only)
	* Please contact your local Yokogawa sales office for model names of verified devices
Max. No. of devices:	4

PC Card Interfaces

Number of slots:	2 (front panel (1), rear panel (1))
Supported cards:	GPIB card (National Instruments NI PCMCIA-GPIB card), Flash ATA memory card (PC card TYPE II), CF card + adapter card, and various hard disk type PC cards
	* Please contact your local Yokogawa sales office for model names of verified devices

USB-PC Connection Ports

Connector:	USB-type B connector × 1
Supported transmission standards:	HS (High Speed) mode, FS (Full Speed) mode
Supported class:	Operates as a multifunctional device simultaneously supporting the following two protocols: USBTMC-USB488 (USB Test and Measurement Class Ver.1.0)
	A USB bus can be employed to use GPIB commands.
	Mass Storage Class Ver.1.1
	The DL9000's internal storage media, hard disk, PC card, and USB mass storage device can be accessed (read/write) from a PC (formatting is not supported).

Ethernet Communication (/C10 and /C8 Options)

Connector type:	RJ-45 connector × 1
Transmission method:	Ethernet (100BASE-TX/10BASE-T)
Supported services:	DHCP, DNS, Microsoft network file sharing server & client, FTP server, SNTP client, SMTP client, Firewall functions (network printers will be supported in the near future)

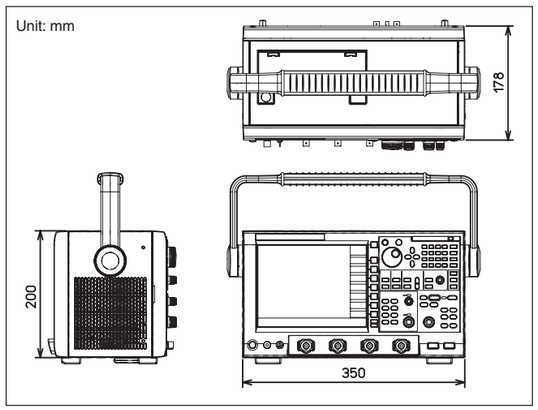
General Specifications

Rated supply voltage:	100 to 120 V AC/200 to 240 V AC (automatically selected)
Allowable supply voltage fluctuation range:	90 to 132 V AC/180 to 264 V AC
Rated supply frequency:	50/60 Hz
Allowable power supply frequency variation:	48 to 63 Hz
Maximum power consumption:	300 VA
Withstanding voltage (between power supply and case):	1.5 kV AC for one minute.
External dimensions:	350 (W) × 200 (H) × 178 (D) mm (when printer cover is closed; excluding handle and protrusions)
Weight:	Approx. 6.5 kg (including printer)
Battery backup:	Setup data and clock are backed up by an internal lithium battery
Battery life:	Approximately 5 years (at an ambient temperature of 25°C)
Operating temperature range:	5–40°C

1. Measured value under standard operating conditions after a 30-minute warm-up followed by calibration.
   Standard operating conditions:
   Ambient temperature: 23 ±5°C
   Ambient humidity: 55 ±10%
   Error in supply voltage and frequency: Within 1% of rating
2. Value in the case of a repetitive signal
   The frequency bandwidth of a single-shot phenomenon is the smaller of the two values, DC to sampling frequency/2.5 or the frequency bandwidth of the repetitive phenomenon.
3. When the input section is shorted, the acquisition mode is set to normal, the interleave mode is OFF, accumulation is OFF, and the probe attenuation is set to 1:1.
4. Typical value denotes a representative or average value and is not strictly guaranteed.
5. The parallel acquisition architecture of the DL9000 series ensures no decrease in acquisition rate for multi-channel use.

External Dimensions (Common to All Models)

Unit: mm



For detailed specifications, visit our homepage at
http://www.yokogawa.com/tm/DL9000

Power Supply Analysis and User-Defined Math Function Specifications

• Power supply analysis function (/G4 option)

Propagation time difference correction (deskew):
The difference in propagation time of voltage and current probe signals can be automatically or manually corrected. Correction range is ±80 ns (0.01 ns resolution)

Automated measurement of power supply analysis parameters:
Power supply analysis parameters can be measured automatically and simultaneously with standard measurement items (waveform parameters)
Voltage channels:
Umn, Urmn, S, P, Q, Z, λ, Wp, Wp+, Wp-, Abs.Wp, UP-P(P-P), U+pk(Max), U-pk(Min), Udc(C.Mean), Urms(C.Rms), Uac(C.Sdev)
Current channels: Imn, Irmn, q, q+, q-, Abs.q, I2t, IP-P(P-P), I+pk(Max), I-pk(Min), Idc(C.Mean), Irms(C.Rms), Iac(C.Sdev)
Automated measurement of two areas is also possible

Statistical processing of measured values:
Enables computation of statistics (Min, Max, Ave, σ) from measured values of power supply analysis items

Waveform computation of power supply analysis parameters:
Active power, impedance, Joule-integral, and FFT waveform computation can be performed simultaneously with standard waveform computations.

Harmonic analysis:
Allows for easy comparison with limit values per harmonic current emission standard IEC 61000-3-2 edition 2.2 and EN61000-3-2 (2000)

Trend display:
Changes over time of waveform parameter values measured every cycle can be displayed as trends (in a list and graph).

History search:
History search can be performed using power supply analysis parameters in the same manner as standard measurement parameters

GO/NO-GO judgment:
GO/NO-GO judgments can be made using power supply analysis parameters as well as standard measurement parameters

Saving harmonic analysis results:
Results of harmonic analysis can be saved to CSV files

• User-defined math（/G2）
The following operators can be arbitrarily combined in equations:
+, −, ×, /, ABS, SQRT, LOG, EXP, LN, SIN, COS, TAN, ASIN, ACOS, ATAN, INTEG, DIFF, BIN, DELAY, P2 (value squared)

CAN & LIN Bus Analysis Function Specifications

Applicable bus:
CAN version 2.0A/B (ISO11898, ISO11519-2)
LIN rev. 1.3, 2.0

Bitrate:
CAN: 1 Mbps/500 kbps/250 kbps//125 kbps/83.3 kbps/33 kbps
User (can be set arbitrarily at 100 bps resolution）
LIN: 19.2 kbps/9.6 kbps/4.8 kbps/2.4 kbps/1.2 kbps/
User (can be set arbitrarily at 10 bps resolution）

• Trigger functions（come standard）

Trigger source:
CH1-CH4:（CAN input via differential probe）

Trigger types (CAN):
SOF, frame ID, data field (can be specified with up to 8 bytes), remote frame, error frame, Ack, frame ID/data OR, (up to four ID, data, and Ack trigger conditions can be specified in an OR relationship)

Trigger type (LIN):
Synch break

CAN/LIN triggers:
Event interval

• Analysis functions

No. of analyzable frames:
3,000 max.

Analysis results display:
Waveform and analysis list display, detailed analysis list display, decode display

CAN analysis, display items:
Frame type, time from trigger point, frame ID, DLC, data, CRC, presence/absence of Ack

LIN analysis, display items:
ID, ID-field, data, checksum, information

• Auxiliary analysis functions
Data search functions
Search conditions (CAN): Top of frame, ID, data, remote frame, error frame
Search conditions (LIN): Synch field, ID, data
field jump function (CAN)
Stuff bit computation function (CAN)

• Analysis results saving function

Detailed analysis list:
Can be saved to file in CSV format

Model and Suffix Codes of DL9010/9010/9240

Model	Suffix Code	Description
701307		DL9040 digital oscilloscope 500 MHz max. 5 GS/s (2.5 GS/s/ch), 2.5 Mword/ch
701308		DL9040L digital oscilloscope 500 MHz max. 5 GS/s (2.5 GS/s/ch), 6.25 Mword/ch
701310		DL9140 digital oscilloscope 1 GHz max. 5 GS/s (2.5 GS/s/ch), 2.5 Mword/ch
701311		DL9140L digital oscilloscope 1 GHz max. 5 GS/s (2.5 GS/s/ch), 6.25 Mword/ch
701312		DL9240 digital oscilloscope 1.5 GHz max. 10 GS/s (5 GS/s/ch), 2.5 Mword/ch
701313		DL9240L digital oscilloscope 1.5 GHz max. 10 GS/s (5 GS/s/ch), 6.25 Mword/ch
Power cable	-D	UL/CSA standard
	-F	VDE standard
	-Q	BS standard
	-R	AS standard
	-H	GB standard
Help menu language	-HE	English Help
	-HC	Chinese Help
	-HK	Korean Help
Options	/B5	Built-in printer
	/P2[1]	Probe power connections on rear panel (2 outputs for 900 MHz FET probe and current probe)
	/C8[2]	Built-in hard disk + Ethernet interface
	/C10[2]	Ethernet interface
	/G2[2]	User-defined math
	/G4[2]	Power supply analysis function (includes user-defined math function)
	/F5[3]	I²C + SPI bus analysis function
	/F7[3]	CAN + LIN + SPI bus analysis function
	/F8[3]	I²C + CAN + LIN + SPI bus analysis function

1: Specify this option when using current probes or differential probes such as models 701920 or 701922.
2: When specifying, one of each must be specified.
3: When specifying, one or the other must be specified. I²C, CAN, LIN and SPI bus triggers come standard.

Standard Accessories

Name	Qty
Power cable	1
3 prong-to-2 prong adapter	1
PB500 passive probe	4
Printer roll paper (when option /B5 is specified)	3
User's manual (1 set)	1
Front panel cover	1
Rubber leg cap	6
Soft case	1

Accessories (Optional)

Name	Model	Specification
PB500 (10:1 passive probe)	701943	10 MΩ (10:1), 500 MHz, 1.5 m (one per order)
Mini-clip converter	700971	For use with PB500
BNC adapter	700972	For use with PB500
Grounding lead	700973	For use with PB500
PBA2500 (2.5 GHz active probe)	701913	2.5 GHz BW
PBL5000 (5 GHz probe)	701974	5 GHz BW
DC block	701975	For 50 Ω input, SMA connector
FET probe*	700939	900 MHz BW
100:1 probe	700978	100 MHz BW
Differential probe	701921	DC to 100 MHz BW/±700 V Max.
Differential probe*	701922	DC to 200 MHz BW/±20 V Max.
PBD2000 (2 GHz differential probe)	701923	2 GHz BW
Differential probe	700924	DC to 100 MHz BW/±1400 V Max.
Differential probe*	701920	DC to 500 MHz BW/±30 V Max.
Current probe*	701933	DC to 50 MHz BW, 30 Arms
Current probe*	701932	DC to 100 MHz BW, 30 Arms
Printer roll paper	B9988AE	10 m roll, 10 rolls/order
Rack mount kit	701984-01	EIA standard-compliant
	701984-02	JIS standard-compliant

* requires /P2 option on the DL9000.

Accessories (sold separately) for Power Supply Analysis (/G4) option

Name	Model	Specification
Deskew crct. sig. src.	701935	Approx. 0 to 5 V, approx. -100 to 0 mA
Differential probe	700924	DC to 100 MHz BW/±1400 V Max.
Differential probe	701921	DC to 100 MHz BW/±700 V Max.
Current probe	701933	DC to 50 MHz BW, 30Arms
Current probe	701932	DC to 100 MHz BW, 30 Arms
Probe power supply	701934	Cnctrs: 4, ±12V±0.5 V out