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Test & Measurement

sales

- rentals
- calibration
- repair
- disposal

Complimentary Reference Material

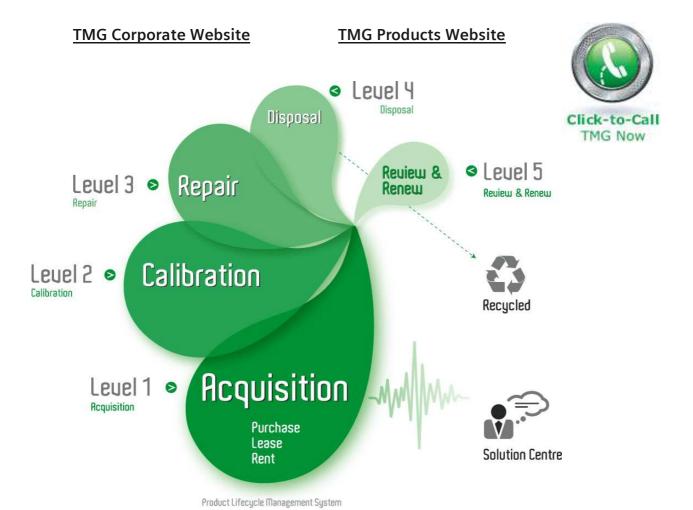
This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

If you click on the "Click-to-Call" logo below, you can all us for FREE!



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L750P Scope & Chart Recorder Two-in-One

Sometimes an Oscilloscope, Sometimes a Chart Recorder! The DL750P is equipped with a fully functional scope and chart recorder.



■ Chart Recorder Function

Access Settings Directly with the "RECORDER" Key

- · Set chart speed, chart length, and other settings in menu just like a chart recorder
- Automatic recording to memory

During real-time printing, the DL750P also automatically records the waveforms to memory in the background. Up to approximately 10 meters (1000 div) can be saved.

• "Reprint" function

Once measurement completed, you can change the print format, length, or other parameters and print the data again. The Reprint function means never worrying about printer failure or running out of paper.

■ The DL750P enables you to...

- ☐ Check results immediately while on site
 - High speed printer outputs an A4 size sheet in approximately 15 seconds (20 mm/sec)
- ☐ View multi-channel data in high resolution

The A4 size printer records all channels together, with 1600-dot vertical resolution.

☐ Print only what you need

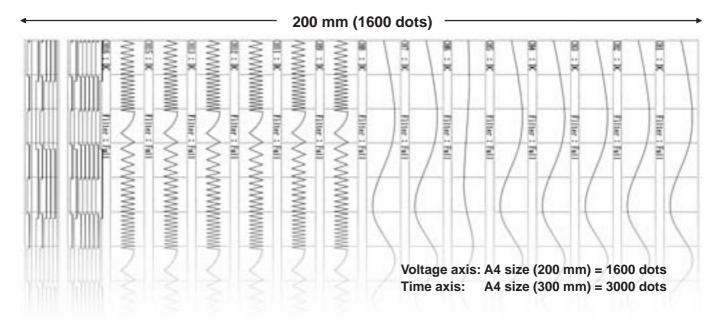
Using the DL750's GigaZoom function, you can instantly print out only the portions of waveforms that you need, thus saving paper.

☐ Record for long periods of time with high reliability

Waveforms can be printed out continuously in real time while the electronic data is also automatically saved (up to 1000 div or 10 meters).



■ DL750P Printout Example (A4 Size, High Resolution)



■ GigaZoom function + A4 Printer

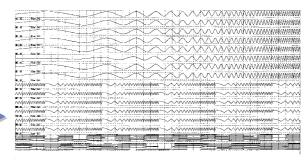
The GigaZoomEngine instantly displays up to 1 GW of data and zoom windows at the same time

Entire waveforms: MAIN

Zoom window

The state of the sta

Print any length of the zoomed waveforms in high resolution "Zoom Print" function



■ Prints XY Plots in High Resolution

- Includes dedicated mode for emulating an XY recorder (XY Recorder mode)
- Prints A4 size plots (200 mm x 200 mm) in high resolution
- Prints up to 4 pairs(of waveforms) at the same time
- Replaces XY recorders



■ Universal Modules (for Simultaneous Release with the DL750P*1)

 Multiple inputs of general-use voltage (100 kS/s, 16-bit) and temperature (thermocouple)

Two isolated inputs (voltage: 100 kS/s, 16-bit; temperature: 500 S/s) Two types of modules available: with or without AAF (anti-aliasing filter)

Key Specifications

Voltage range: 20 V/div-5 mV/div (for 10 div display, in steps of 1-2-5)

Temperature: Thermocouple

(K, E, J, T, L, U, N, R, S, B, W, iron-doped, gold/chromel)

Filters: AUTO (AAF), 4 kHz, 400 Hz, 40 Hz

^{*1.}The DL750 will support these new modules via a firmware upgrade which will be made available by the 3rd quarter 2005.







Universal with AAF 701262

■ DL750P Applications



☐ Maintenance (steel plants, power plants, cogeneration systems)

☐ On-board testing for railroads and other vehicles

☐ Heavy machinery development (industrial machinery, robotics, semiconductor manufacturing equipment)

■ Multichannel on-site observations (automobiles, automobile parts)

☐ Replacement for Yokogawa's AR, OR, and LR instruments (former models)

Main Unit Specifications

Basic Specifications

Input

Type Number of Slots Maximum sampling rate

Logic inputs Max. record length Standard /M3

Time axis accuracy Time axis setting range

 Acquisition modes Triggers

ug-in module (each unit has a built-in A/D converter) 8 (up to 16 channels) 10 MS/s (701250/701255), 1MS/s (701251) 100 kS/s (701260/61/62/70/71/75), 25 kS/s (701280), 500 S/s (701265)

16 (8 bits × 2) 2.5 MW/CH, 50 MW total

10 MW/CH, 250 MW total 25 MW/CH, 500 MW total 50 MW/CH, 1 GW total

±0.005% 500 ns-30 sec/div, 1 min-30 min/div, 1 h-12 h/div, 1 day-3 days/div (up to 30 days) Normal, Envelope, Averaging, Box average

Modes Simple trigger source Enhanced trigger source AUTO, AUTO LEVEL, NORMAL, SINGLE, SINGLE (n) CH1 to CH16, DSP1 to DSP6, LINE, EXT, LOGIC_A, LOGIC_B, Time A \rightarrow B(n), A delay B, B > Time, B < Time, B Time Out, Period, Window, Wave Window

Display

Display³ Display modes Split

10.4-inch color TFT liquid crystal display (SVGA 800 × 600 dots) Single, Dual, Triad, Quad, Octal, Hexadecimal (DL750P) Main, Main&Z1, Main&Z1&Z2, Main&Z2, Z1 ONLY, Z2 ONLY, Z1&Z2 Single Mode (X is fixed, Y is set by user), Quad Mode (XY1, XY2, XY3, XY4)

PERSIST Overlays in one color Accumulation

Printer (DL750P)

Pault-in printer
Printing method
Paper
Effective print width
Functions
High resolution printing of specified range
Maximum printing speed Thermal line-dot printing
A4 size roll (210 mm (W) × 20 meters)
200 mm (1600 dots)
Real-time printing, XY printing, Screen printing
Zoom print, Fine print (print specified range in high resolution)
viole

5 mm/min, 2 mm/min, 1 mm/min

Continuous, 20 cm, 50 cm, 1 m, 2 m

100 mm/h, 50 mm/h, 25 mm/h, 20 mm/h, 10 mm/h

15 min, 20 min, 30 min, 80 min
Print directions: Standard or rotated 180 degrees
Select from 1, 2, 3, 4, 8, or 16
Flexible zone function available when 1 division selected
Select 1 div=10 div printed or 1 div=10 mm printed
Gague display, upper/lower limits, channel markers, time
CH information, messages, CH data
Reprints after STOP (enables resetting of format and range specification)
PDF file output function
Specified length printed upon trigger (Single mode, Repeat(Normal)
mode)

GO/NO-GO terminal can be used for start/stop input (L=start, H=stop)

Prints XY plots in high resolution: emulates an XY plotter. 8 dots/mm × 200 mm=1600 dots 8 dots/mm × 200 mm=1600 dots Any group of 4 5 kS/s max. 1 MW/CH XY single (fixed T-Y not available)

Prints the cursor-specified range in high resolution

Maximum printing speed Real-time printing (chart recorder Functions

Horizontal Waveform printing Speeds

Print (record) waveforms in real time, and save automatically to (up to 1000 div) in background 8 dots/mm A4 size (200 mm)=1600 dots 10 dots/mm A4 size (300 mm)=3000 dots 20 mm/s (500 ms/div), 10 mm/s, 5 mm/s, 2 mm/s, 1 mm/s 100 mm/min, 50 mm/min, 25 mm/min, 20 mm/min, 10 mm/min, 50 mm/min, 20 mm/min, 20 mm/min, 10 mm/min, 50 mm/min, 20 mm Print length (shot length)

Finleum (sweepin Commobus, 20 cm, 1 m, 21 m, 1 m Memory length 2.5 M/CH fixed, max. 1000 div (depends on chart speed) Digital values Intervals: 1, s, 2, s, 5, s, 10, s, 15 s, 20 s, 30 s, 1 min, 2 min, 5 min, 10 min, 15 min, 20 min, 30 min, 60 min Numerical printing Digital values

Print format

Vert, axis format Extra information Annotations Reprint function

Print start/stop

XY recorder mode

Max. no. of recordable waveforms

Sampling rate
Memory length
Record format

Zoom Print/Fine print function

Waveforms can be printed in high resolution, also when not in real-time mode Zoom print Quickly prints the portion zoomed with the GigaZoomEngine in high Functions

Fine print Print format Vertical Horizontal

Screen Data Output (Image Saving) Output formats

Analysis Functions

Ch-to-ch calculation function

Calculable record length
Standard: Operators

Definable math waveforms: 8

Print length can be specified

PNG, JPEG, BMP, PostScript

XY single (fixed, T-Y not available)

Up to 800 kW (MATH1 only), up to 100 KW (MATH 1-8)
Addition, subtraction, multiplication, division, binary conversion, phase shifting, FFT PS (1000, 2000, 5000, 10000, 20000, 50000, or 100000 points)

FFT types FFT window Rectangular, Hanning, Flattop, Exponential User-defined math function (with /G2 option

32 option)
ABS, SQR, LOG, EXP, NEG, SIN, COS, TAN, ATAN, PH, DIF, DDIF, INTG, BIN
P2, P3, F1, F2, FV, PWHH, PWHL, PWLH, PWLL, PWXX
FILT1, FILT2, HLBT, MEAN,
MAG, LOGMAG, PHASE, REAL, IMAG
LS, PS, PSD, CS, TF, CH
s1000, 2000, 5000, 10000, 20000, 50000, 100000
Rectangular, Hanning, Flattop, Exponential

 Numerical monitoring function Numerically displays the waveform level (instantaneous) for approximately 1 sec interval. Horizontal, Vertical, Marker, Degree, H&V

24 P-P, Max, Min, High, Low, Avg, Rms, Amp, StdDiv, Operations +Oshot, -Oshot, Rise, Fall, Freq, Period, +Duty, +Width, -Width, Pulse,

Burst1, Burst2, Avg, Freq, Avg, Period Rdelay, Fdelay, Int1TY, Int2TY, Int1XY, Int2XY Max. no. of cycles: 48,000 (max. no. of parameters: 48,000) Zone, Parameter Cycle/history statistical processing

 History search functions
 GO/NO-GO
 Jud Parameter (16), Zone (4) Print, Save (Binary/ASCII), Beep, Mail Judgement Actions

External I/O

 LOGIC input specifications 8 bits × 2 (26 pin connector × 2) Maximum sampling rate 10 MS/s 8-bit non-isolated (700986), 8-bit isolated (700987) Compatible probes

EXT TRIG IN/EXT TRIG OUT EXT Clock IN USB peripheral terminal USB

8-bit non-isolated (700986), 8-bit isolated (7 RCA pin jack (TTL (0 to 5 V) input) RCA pin jack (TTL (0 to 5 V) input) USB mouse, USB keyboard, USB printer DL750P only (USB memory, USB storage) For control from PC via USB Complies with 100BASE-TX, 10BASE-T GP-IB, SERIAL (RS232), SCSI Modular jack (RJ11), TTL (0-5 V input) on) USB peripheral terminal C2 (Complies with Rev1.1) USB to PC Ethernet (with /C10 option)
 Other communication interfaces
 GO/NO-GO I/O

Probe power terminal (with /P4 optimax. no. of probes powered Compatible probes Max. no. of current probes allowed.)

Current probes: 701933 (30 A), 701930 (150 A), 701931 (500 A), others See: http://www.yokogawa.com/tm/probe/

Media Drives

Selectable form floppy drive or PC card (Zip not available with the DL750P) 30 GB hard drive (with /C8 option) Internal media drives FDD/PC card

DSP Channel Function (with the /G3 Option)

DSP channels Maximum sampling rate

Operators

100 kS/s (when exceeding 100 kS/s, the data is resampled at 100 kS/s) 100 kS/s (when exceeding 100 kS/s, the data is resampled at 100 kS/s

■ Calculation of 2 items between channels (addition, subtraction,
multiplication, division) ■ Differentiation (w/ LPF) ■ Integration

■ Digital filtering (LPF, HPF, BPF, FIR type, IIR type, variable cutoff
frequency) ■ Knocking filter function (filter calculations and bulb noise
rejection function)

Real-Time Hard Disk Recording (with /C8 Option)

Max usable space per single save 1 GW 100 kS/s (1 CH) Maximum sampling rate

DualCapture Function

This function captures the same waveform data at two different sampling rates.

Main (low-speed)

Max. sampling rate: 100 kS/s, max. memory length: 100 MW Sub (high-speed) Max. sampling rate: 10 MS/s, max. memory length: 10 KW (fixed) Sub maximum no. of captured screens 500 (/M3, /M2), 250 (/M1), 100 (with standard memory)

Voice Memo Function Voice memo Stores voice data during roll mode, plays back from microphone terminal and speaker output terminal.

 Voice comment **Acquisition Memory Backup**

Backs up acquisition memory and voice data, maintained by four AA alkaline batteries Functions Approximately 10 hours (with /M3 option) Backup duration (reference value)2

Stores voiced comments when saving images

General Specifications

Rated supply voltage Rated supply frequen Power consumption Withstand voltage Insulating resistance

Exterior dimensions

100 to 120 VAC/200 to 240 VAC (automatically switched) 50/60 Hz Approximately 200 VA-MAX 1500 VAC for one minute across power supply and ground 10 M Ω or greater at 500 VDC across power supply and ground 355 mm (W) \times 250 mm (H) \times 225 mm (D) excluding handle and protrusions

protrusions Approx 7.9 kg (main unit only), approx 10.3 kg (main unit + 701250 \times 8) Approximately 300 g per module (average) 5 to 40°C Operating temperature range

Maximum sampling rate depends on the type of modules used.
 If the sampling frequency exceeds the max. sampling rate of the module, the same data is inserted.
 Standard operating conditions, ambient temp. 23°C ±5°C, ambient humidity 55 ±10%RPI
 Some pixels of the LCD display may be permanently illuminated or non-illuminated. Also, due to the characteristics of LCDs there may be gradients in brightness. Please understand that these phenomena do not indicate a defective display.

Universal (Voltage/Temperature) Modules (701261/701262)

Input channels

AF (anti-aliasing filter)
Input signals

AF (anti-aliasing filter)
Input signals

AF (anti-aliasing filter)
Input toypels
Input types

DC offset (voltage) DC accuracy¹ (voltage) Temp, measured range/accuracy1,2

±5 div ±(0.25% of 10 div)

Type	Measured Range	Accuracy
K	-200°C to 1300°C	±(0.1% of reading + 1.5°C)
E	-200°C to 800°C	However, for -200°C to 0°C,
J	-200°C to 1100°C	±0.2% of reading + 1.5°C)
T	-200°C to 400°C	
L	-200°C to 900°C	
U	-200°C to 400°C	
N	0°C to 1300°C	
R, S	0°C to 1700°C	±(0.1% of reading + 3°C)
		However, 0°C for 200°C: ±8°C
		200°C for 800°C: ±5°C
В	0°C to 1800°C	±(0.1% of reading + 2°C)
		However, 400°C to 700°C: ±8°C
		Effective range.: 400°C to 1800°C
W	0°C to 2300°C	±(0.1% of reading + 3°C)
Gold/chromel		0 K to 300 K 0 to 50 K: ±4 K

50 to 300 K: ±2.5 K

Max. input voltage (1 kHz or less)

Max. allowable common mode volt. (1 kHz or less)

42 V (DC+ACpeak): for satisfying safety standards³ 150 V (DC+ACpeak): allowable maximum4 42 V (DC+ACpeak) (CAT I & CAT II, 30 Vrms)

1. Under reference operating conditions (ambient temp. of 23°C ±5°C, ambient humidity of 55% ±10%RH, after 30-minute warmup period and calibration).
2. Does not include reference junction/temperature compensation accuracy.
3. Since the input connecter is of a binding post type, it is possible to touch the metal part of the connector. Therefore, for safety reasons, the maximum value is 42 V (DC+ACpeak).
4. Maximum value at which the input circuit will not be damaged.
5. When Is-5 DH zto 100 KHz. When Iss50 Hz, fc=20 Hz (fixed).
6. Except when filters set to AUTO.

DL750/DL750P Model Numbers and Suffix Codes

Model	Su	ıffix Code		Description
701210			"DL750 main unit (16 isolated channels + 16-bit logic)1	
				112 mm width A6 thermal printer built-in"
701230			"DL750P main unit (16 isolated channels + 16-bit logic) ¹	
			210 mm width A4 thermal printer built-in"	
Power cable	Power cable -D			UL/ CSA standard
	-F			VDE standard
	-R			AS standard
	-Q	!		BS standard
	-H			GB standard(Complied with CCC)
Internal media drive ²	Ŀ	-J1		Floppy drive
		-J2		Zip® drive (available for the DL750 only)3
		-J3		PC card drive
Default Help language	9 -	-HE		English online help
		-HJ		Japanese online help
		-HC		Chinese online help
		-HG		German online help
		-HF		French online help
		-HL		Italian online help
		-HK		Korean online help
Memory expansion		/M1		Memory expansion to 10 MW/CH ⁴
		/M2		Memory expansion to 25 MW/CH ⁴
		/M3		Memory expansion to 50 MW/CH ⁴
Other specifications /C8			Internal 30 GB hard drive (FAT32)	
/C10		10	Ethernet interface	
		/	G2	User-defined math function
			/G3	DSP channel function
			/P4	Probe power (4-output)
			/DC	DC12 V power (DC10-18 V) (DL750 only) ³

Plug-in modules are not included.

Choose only one.
 Choose only one.

Standard Accessories

Product		Order Qty.
Power cable		1
User's manuals (one set)		1
Transparent front cover		1
Printer roll paper	DL750 (A6 10 m/roll)	3
Filliter foli paper	DL750P (A4 20 m/roll)	1
Cover panel (for blank module slots)		8
Rubber feet (four per set)		1
Soft case (for storing accessories)		1

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Plug-in Module Model Numbers⁵

Model No.	Description	Firmware
701250	High-speed 10 MS/s 12-bit isolation module (2 CH)	1.07 or later
701251	High-speed 1 MS/s 16-bit isolation module (2 CH)	1.07 or later
701255	High-speed 10 MS/s 12-bit non-isolation module (2 CH)	2.02 or later
701260	High-voltage 100 kS/s 16-bit isolation module (2 CH, with RMS)	2.02 or later
701261	Universal Module (2 CH)	5.01 or later ⁷
701262	Universal Module (with AAF 2 CH)	5.01 or later ⁷
701265	Temperature/high-precision voltage module (2 CH)	1.07 or later
701270	Strain module (NDIS, 2 CH)	2.02 or later
701271	Strain module (DSUB, Shunt-CAL, 2 CH)	2.02 or later
701275	Acceleration/voltage module (with AAF, 2 CH)	3.01 or later
701280	Frequency module (2 CH)	3.01 or later

5. Probes are not included with any modules.
6. The latest firmware for the DL750 series is available on our Web site. http://www.yokogawa.com/mr/DL750/
7. Only supported by the initially-released DL750P (ver. 5.01 or later). DL750 support to be offered by 3rd quarter 2005 (ver. 6.01 or later).



DL750/DL750P Accessories

Product	Model No.	Description1	
Isolated probe	700929	1000 Vrms-CATII for 701250, -51, and -60 (10:1)	
"1:1 BNC safety adapter lead	701901	1000 Vrms-CATII for 701250, -51, and -60	
(in combination with the following)"		1000 VIIIIS-CATII 101 /01250, -51, and -60	
Safety mini clip (hook type)	701959	1000 Vrms-CATII, 1 set each of red and black	
Large Alligator clip (dolphin type)	701954	1000 Vrms-CATII, 1 set each of red and black	
Alligator adapter (rated volt.: 1000 V)	758929	1000 Vrms-CATII, 1 set each of red and black	
Alligator adapter (rated volt.: 300 V)	758922	300 Vrms-CATII, 1 set each of red and black	
Fork terminal adapter	758921	1000 Vrms-CATII, 1 set each of red and black	
Passive probe for DL750/750P ²	701940	Non-isolated 600 Vpk (701255) 42 V or less (other) (10:1)	
1:1 BNC-alligator cable	366926	Non-isolated 42 V or less, for 701250, -51, -55, 1 m	
1:1 Banana-alligator cable	366961	Non-isolated 42 V or less, for 701261, -62, -65, 1.2 m	
Current probe ³	701933	30 Arms, DC to 50 MHz, supports probe power	
Current probe ³	701930	150 Arms, DC to 10 MHz, supports probe power	
Current probe ³	701931	500 Arms, DC to 2 MHz, supports probe power	
Probe power ⁴	701934	Large current output, external probe power supply (4 outputs)	
Differential probe	700924	1400V pk, 1000 Vrms-CAT II	
Bridge head (NDIS, 120 Ω/350 Ω)	701955/56	With 5 m cable	
"Bridge head	701957/58	With 5 m cable	
(DSUB, Shunt-cal 120 Ω/350 Ω)"			
GO/NO-GO cable	366973	For GO/NO-GO I/O and start input	
Safety BNC-banana adapter	758924	500 Vrms-CATII, for 701250, -51, -55, -60	
Printer roll paper	B9988AE	DL750, A6 size (120 mm wide × 10m), include 10 rolls	
Printer roll paper	701966	DL750P, A4 size (210 mm wide × 20m), include 6 rolls	
High-speed logic probe ⁵	700986	8-bit, non-isolated, response speed: 1μs	
Isolated logic probe6	700987	8-bit, each channel isolated, response speed: 20 ms (for AC)	
-t	758917	"Isolated logic measurement leads (2 per set)	
Isolated logic measurement leads		Alligator clip required separately. "	
Conversion adaptor	366928	BNC (jack)-RCA (plug) conversion	
Safety BNC cable (1 meter)	701902	1000 Vrms-CATII (BNC-BNC)	
Safety BNC cable (2 meters)	701903	1000 Vrms-CATII (BNC-BNC)	
Soft carrying case	701963	For DL750, with 3 storage pockets	
Soft carrying case	701967	For DL750P, with 3 storage pockets	

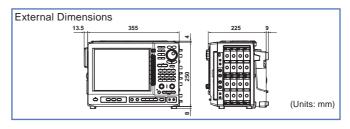
1. Actual allowable voltage is the lower of the voltages specified for the main unit and the cable 2. 42 V is safe when using the 701940 with a Non isolated type BNC input.

3. The number of current probes that can be powered from the main unit probe power is limited. See the following for details. http://www.yokogawa.com/tm/probe/

4. There is no limit to the number of externally powered probes that can be used.

5. One of each connection lead (B9879PX and B9879KX) is included.

6. 758917, and either 758922 or 758929 is required for measurement.





Before operating the product, read the user's manual thoroughly for proper and safe operation.



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