

TEXIO

Test and Measurement Solutions



Power Supplies
Electronic Loads
Oscilloscopes
Test & Measuring Instruments

DIGEST CATALOG

2020 Vol.1

TEXIO TECHNOLOGY CORPORATION

INTRODUCTION

The products described in the TEXIO General Catalog are listed in a separate selection guide, which classify the products according to the instrument types and groups, and shows the features and specifications of each. Please use this catalog as a guide when ordering.

- All of the products listed in this catalog may not be marketed in your local area or country. Please check with your TEXIO distributor or send an inquiry to us through our web-site, <http://www.texio.co.jp>.
- Readers are able to learn about new products released after the publication of this catalog through your TEXIO distributor or dealer. We are able to also provide you with new product information on our web-site.
- The design and specifications of the products listed in this catalog are subject to change without prior notice. In addition, please note that some of the products may be discontinued without prior notice.
- For product prices and available services, please contact your local TEXIO dealer.

* In producing this catalog we have made maximum efforts to provide as correct information as possible. However, should you find any misprints or errors, please let us know.

TEXIO...

Providing Industry with the Most Valuable Measurement Technology.

Nowadays, new products featuring high-tech advances appear in dizzying succession. As we head toward a new age in technology, advances in electronics-oriented leading-edge fields in particular continue to accelerate. Supporting this new wave of the technical revolution from the bottom up is electronic measurement technology. TEXIO's initial technological and industrial triumphs were in the field of general purpose measurement equipments for audio manufacturers. Following those first successes, TEXIO went on to develop multiple-output Regulated DC Power Supplies for electric engineers in rapid succession. Those developments led in turn to develop various Regulated DC Power Supplies and Test and Measuring Instruments.

In a constant pursuit of better performance and quality for its products, which are the pride of those ages, TEXIO has made continuous and solid progress in the area of measurement technology. Indeed, we could say that TEXIO's advances in product development technology resulted from the evolution of measurement technology. Electronic measurement technology of this sort has consistently supported and equipment made their way to the market as TEXIO moved forward. That is the main reason why TEXIO has continued to lead the market in these leading-edge fields. Never content to rest on its laurels, TEXIO draws on its hi-tech achievements to introduce technology using advanced technology, all the while working steadily to open up new fields of endeavor.

"Technological evolution and the technology to support it" The geometric effect accruing from this combination has become the foundation for TEXIO's outstanding creativity and far-sightedness.

TEXIO considers "superior precision and superior quality" as essential to ongoing progress. Relying on a foundation of precision measurement technology, outstanding technical know-how and quick response to developments in leading-edge technology, TEXIO continues to make major contributions in many fields toward technical advances, superior reliability and rationalization by providing the "mother tools" of industry.

Proud of its achievements, TEXIO will redouble its efforts to remain a trailblazer in the field of leading-edge electronic technology.

TEXIO TECHNOLOGY CORPORATION

Corporate Profile

Company name	TEXIO TECHNOLOGY CORPORATION
Founded	October 2012
Capital	J. Yen 90 million
President	Tsung-Huei Teng (Mr.)
Holding company	GOOD WILL INSTRUMENT CO., LTD.
Business categories	Test and Measuring Instruments and DC Power Supplies design, development, manufacturing and distribution
Products	Regulated DC Power Supplies, Electronic Loads, Oscilloscopes, Electronic measurement devices and others
Employees	44 (as of April 2020)
Transaction bank	Sumitomo Mitsui Banking Corporation MUFGBank, Ltd.
Headquarters	7F Towa Fudosan Shin Yokohama Bldg., 2-18-13 Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa, 222-0033 Japan TEL +81(0)45-620-2305 FAX +81(0)45-534-7181
URL	https://www.texio.co.jp/
Japan Domestic offices	KITA - NIHON Sales Office (Omiya) HIGASHI - NIHON Sales Office (Yokohama) NAKA - NIHON Sales Office (Nagoya) NISHI - NIHON Sales Office (Osaka)

History

1954	Produced 1st measurement device SG-1/RS-1 (Kasuga Musen)
1965	Developed 1st oscilloscope CO-130 (TRIO)
1973	Developed regulated DC power supply PR-601/PR602 (TRIO)
1988	Developed digital storage oscilloscope CS-8010 (Kenwood)
1989	Developed multiple-output regulated DC power supply PW series (Kenwood)
1992	Developed switching power supply PS series (Kenwood)
1996	Established Kenwood TMI Corporation.
1999	Developed Electronic load device PEL-201 series (Kenwood)
2002	Nikke group acquires 100% of shares, became part of Nikke Group
2006	Developed flexible range regulated DC power supply PSF-L series (Kenwood) Changed name to Texio Corporation.
2009	Nikke regrouped subsidiary companies and established Nikke Techno System Co., Ltd. TEXIO was incorporated into the company as TEXIO division.
2012	Developed Electronic load LSA series (TEXIO) GOOD WILL INSTRUMENT CO., LTD took over TEXIO division of Nikke Techno System and established TEXIO TECHNOLOGY CORPORATION. Developed hybrid method regulated DC power supply PDS-A series. (TEXIO)
2014	TEXIO TECHNOLOGY CORPORATION merged with INSTEK JAPAN CORPORATION on January.
2015	Developed Digital Storage Oscilloscope DCS-2000E Series. (TEXIO) Developed Programmable AC power source APS-7000 Series.(GW)
2016	Developed Arbitray function generator AFG-303x Series.(GW)
2017	Developed Power meter GPM-8213.(GW)
2018	Developed Digital Storage Oscilloscope MDO-2000E Series.(GW) Developed Multi-Range D.C. Power Supply PFR-100 Series.(TEXIO)
2019	Developed Digital Multimeter GDM-906x Series.(GW) Developed High voltage Electronic Load LSG-H Series.(TEXIO) Developed multiple-output regulated DC power supply GPP series(GW)

Multi-Range DC Power Supplies

PSW-360L30	(360W 30V/12A-10V/36A)
PSW-720L30	(720W 30V/24A-10V/72A)
PSW-1080L30	(1080W 30V/36A-10V/108A)
PSW-360L80	(360W 80V/4.5A-26.6V/13.5A)
PSW-720L80	(720W 80V/9A-26.6V/27A)
PSW-1080L80	(1080W 80V/13.5A-26.6V/40.5A)
PSW-360M160	(360W 160V/2.25A-50V/7.2A)
PSW-720M160	(720W 160V/4.5A-50V/14.4A)
PSW-1080M160	(1080W 160V/6.75A-50V/21.6A)
PSW-360M250	(360W 250V/1.44A-80V/4.5A)
PSW-720M250	(720W 250V/2.88A-80V/9A)
PSW-1080M250	(1080W 250V/4.32A-80V/13.5A)
PSW-360H800	(360W 800V/0.45A-250V/1.44A)
PSW-720H800	(720W 800V/0.9A-250V/2.88A)
PSW-1080H800	(1080W 800V/1.35A-250V/4.32A)

The PSW-Series is a single-output multi-range programmable switching DC Power Supply covering a power range up to 1080W.

This series of products include fifteen models with the combination of 30V, 80V, 160V, 250V and 800V rated voltages and 360W, 720W and 1080W maximum output powers.

- Voltage Rating: 30V/80V/160V/250V/800V, Output Power Rating: 360W to 1080W
- Constant Power Output for Multiple Range (V&I) Operation
- CV/CC Priority; Particularly Suitable for the Battery and LED Industry
- Adjustable Slew Rate
- Series Operation: Up to 2 units (30V, 80V, 160V models only)
- Parallel Operation: Up to 3 units
- High Efficiency and High Power Density
- 1/2, 1/3, 1/6 Rack Mount Size Design (EIA/JIS Standard) for 360W/720W/1080W
- Standard Interface: LAN, USB, Analog Control Interface
- Optional Interface: GPIB-USB Adaptor, RS-232C-USB Adaptor
- LabView Driver

Specifications

Model	Output Rating		Ripple		Line regulation		Load regulation		Dimensions W×H×D(mm)	Max. dimensions W×H×D(mm)	Power consumption VA(approx.)	Weight kg (approx.)
	Power	Voltage/Current	CV mVrms	CC mArms	CV mV	CC mA	CV mV	CC mA				
PSW-360L30	360W	0-30V/0-36A	7	72	18	41	20	41	71×124×350	71×137×400	500VA	3
PSW-720L30	720W	0-30V/0-72A	11	144	18	77	20	77	142×124×350	142×137 x 400	1000VA	5
PSW-1080L30	1080W	0-30V/0-108A	14	216	18	113	20	113	214×124×350	214×137×400	1500VA	7
PSW-360L80	360W	0-80V/0-13.5A	7	27	43	18.5	45	18.5	71×124×350	71×137×400	500VA	3
PSW-720L80	720W	0-80V/0-27A	11	54	43	32	45	32	142×124×350	142×137×400	1000VA	5
PSW-1080L80	1080W	0-80V/0-40.5A	14	81	43	45.5	45	45.5	214×124×350	214×137×400	1500VA	7
PSW-360M160	360W	0-160V/0-7.2A	7	15	83	12.2	85	12.2	71×124×350	71×137×400	500VA	3
PSW-720M160	720W	0-160V/0-14.4A	15	30	83	19.4	85	19.4	142×124×350	142×137×400	1000VA	5
PSW-1080M160	1080W	0-160V/0-21.6A	20	45	83	26.6	85	26.6	214×124×350	214×137×400	1500VA	7
PSW-360M250	360W	0-250V/0-4.5A	15	10	128	9.5	130	9.5	71×124×350	71×137×400	500VA	3
PSW-720M250	720W	0-250V/0-9A	15	20	128	14	130	14	142×124×350	142×137×400	1000VA	5
PSW-1080M250	1080W	0-250V/0-13.5A	15	30	128	18.5	130	18.5	214×124×350	214×137×400	1500VA	7
PSW-360H800	360W	0-800V/0-1.44A	30	5	403	6.44	405	6.44	71×124×350	71×137×400	500VA	3
PSW-720H800	720W	0-800V/0-2.88A	30	10	403	7.88	405	7.88	142×124×350	142×137×400	1000VA	5
PSW-1080H800	1080W	0-800V/0-4.32A	30	15	403	9.32	405	9.32	214×124×350	214×137×400	1500VA	7

Options

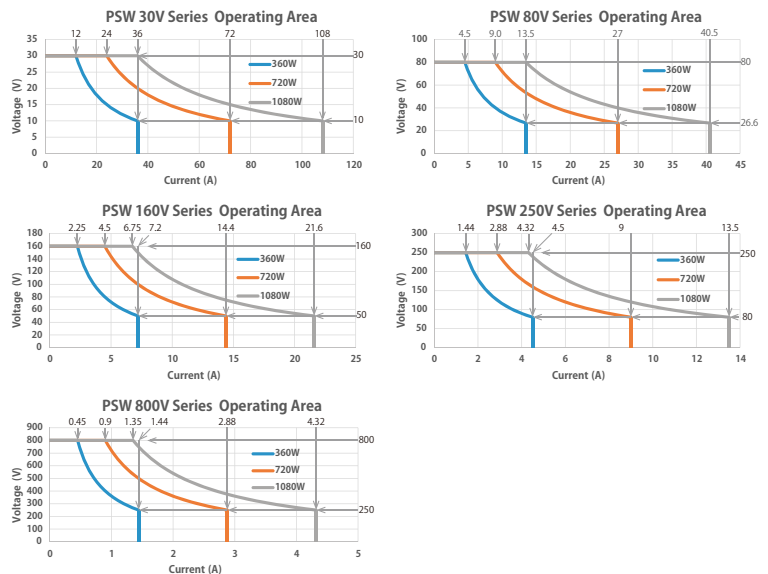
GUR-001	RS-232C Interface	PSW-006	Connection cable for PSW in parallel connection (2unit)	GET-001	Extension Output Terminal (Under 160V)
GUG-001	GP-IB Interface	PSW-007	Connection cable for PSW in parallel connection (3unit)	GET-002	Extension Output Terminal (Over 250V)
PSW-001	Connector kit for PSW Series analog control	GTL-123	Test lead (Max.40A)	GRA-410-J	Rack Mount Kit (JIS)
PSW-005	Connection cable for PSW in series connection	GTL-130	Test lead for PSW 250V/800V	GRA-410-E	Rack Mount Kit (EIA)

PSW Series

Switching



Multi-Range Operation



Fanless Multi-Range DC Power Supplies

PFR-100L50	(100W 50V/2A-10V/10A)
PFR-100L50G*	(100W 50V/2A-10V/10A)
PFR-100M250	(100W 250V/0.4A-50V/2A)
PFR-100M250G*	(100W 250V/0.4A-50V/2A)

*G Type: With GP-IB/LAN interface

PFR Series

Switching

LabVIEW CE

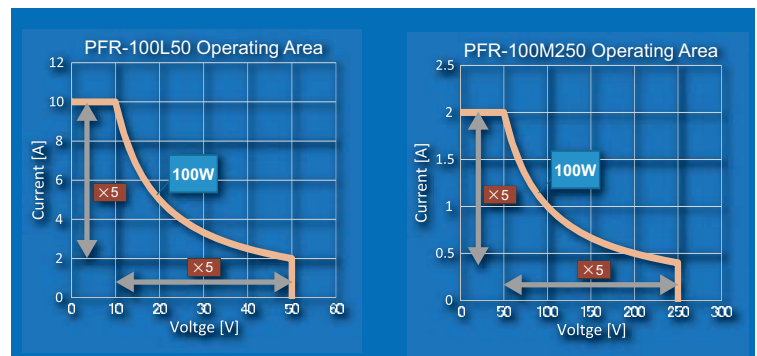


LAN OPTION USB STANDARD GP-IB OPTION RS-232C STANDARD

The PFR-100 series, a small and high-performance programmable D.C. power supply, adopts natural convection design to dissipate heat. The PFR-100 series is a power supply with a five-fold rated power that allows users to self-define voltage and current under rated power conditions so as to satisfy them with wider voltage and current operational ranges. The PFR-100 series, with rated 100W, provides two models: PFR-100L50 maximum output voltage of 50V (at 2A) or maximum output current of 10A (at 10V); PFR-100M250 maximum output voltage of 250V (at 0.4A) or maximum output current of 2A (at 50V).

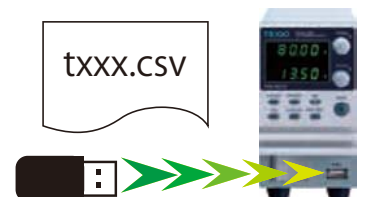
- Constant Power Output for 5 Times Multi-range(V&I) Operation
- Natural Convection Cooling Design (Fanless Structure)
- Preset Memory Function
- Output ON/OFF Delay Function
- CV, CC Priority Mode
- Adjustable Slew Rate For Voltage and Current
- Bleeder Circuit Control
- Protections: OVP, OCP, AC FAIL and OTP
- Support Front and Rear Panel Output
- Test mode function (Sequence)
- Built-in USB and RS-232/485 Interface
- Built-in LAN and GPIB Interface (G Type)
- Web Server Monitoring and Control
- External Analog Control and Monitor Function
- Remote Sensing Function
- Dimension 71 x 124 x 301(mm), Weight Approx 2.5(kg)
- LabVIEW Driver

Multi-Range Operation



Test mode Function

The test mode is a function to automatically update voltage and current settings according to the time. The setting creates a CSV file on the PC and loads it into PFR using the USB flash drive, so it can use it without difficult operation..



Specifications

Model	Rating Power	Output	Ripple		Line regulation		Load regulation		Dimensions W×H×D(mm)	Max. dimensions W×H×D(mm)	Power consumption W/VA(approx.)	Weight kg (approx.)
		(Voltage,Current)	CV mVrms	CC mA rms	CV mV	CC mA	CV mV	CC mA				
PFR-100L50	100W	0V-50V, 0A-10A	4	10	8	8	10	10	71×124×301	71×143×320	150VA	2.5
PFR-100M250	100W	0V-250V, 0A-2A	15	2	30	1.2	33	3.2	71×124×301	71×143×320	150VA	2.5

High voltage Flexible range Regulated DC Power Supplies

PSF-400H (800V/3A/400W)

PSF-800H (800V/6A/800W)

● Main Applications

High-voltage capacitors or relays used for hybrid cars, electric cars, solar power system and high-voltage LED lighting equipment.

● 6 times of flexible output range

PSF-800H covers output for several units of conventional type regulated power supplies within 800W (max voltage 800V, max current 6A.).

● Constant Power Control

CP mode is available in addition to CV and CC modes.

● Changeable setting style

Vertical or horizontal setting by 90°rotating panel.

● Sequence Operation

Stand-alone sequence is available with the insidememory programmed by PC, through the optional control board (IF-60GP, IF-60RU).

● Master-slave parallel operation

Possible to increase the output current by master-slave parallel connection of the same model (up to 2 units).

● Various functions are available

Output OFF timer, 3-point preset memory, Remote sensing, External analog control, OVP/OC/OPP protections

PSF-H Series

90° Rotating Panel



GP-IB OPTION RS-232C OPTION USB OPTION

Options

IF-60GP	GP-IB control board
IF-60RU	RS-232C/USB control board
HK-10	Handle kit
OP-22P	Parallel connection cable

Specifications

Model	Rating Power	Output (Voltage,Current)	Ripple		Line regulation		Load regulation		Dimensions W×H×D(mm)	Max. dimensions W×H×D(mm)	Power consumption W/VA(approx.)	Weight kg (approx.)
			CV mVrms	CC mA	CV mV	CC mA	CV mV	CC mA				
PSF-400H	400W	0V-800V, 0A-3A	20	15	100	11.5	110	16.5	210×124×290	229×143×304	560VA	5
PSF-800H	800W	0V-800V, 0A-6A	25	20	100	13	110	18	210×124×290	229×143×304	1120VA	6

Options

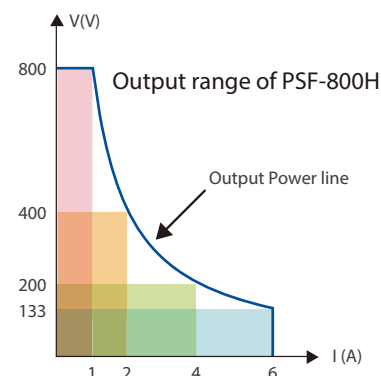
IF-60GP	GP-IB control board
IF-60RU	RS-232C/USB control board
OP-22P	Parallel connection cable
JK-10	Joint kit
HK-10	Handle kit



GP-IB control board
IF-60GP



RS-232C/USB control board
IF-60RU



PSF series combination lineup list

	Model name	Specifications			Necessary items								
		V	A	W	PSF-400L	PSF-800L	PSF-800LS	PSF-400H	PSF-800H	OP-21A/B	OP-22P	OP-22S	JK-10
Single use	PSF-400L	80	40	400	1								
	PSF-800L	80	80	800		1							
	PSF-400H	800	3	400				1					
	PSF-800H	800	6	800					1				
Parallel operation	PSF-1200L	80	120	1200	1		1			1			
	PSF-1600L	80	160	1600		1	1			1			
	(2000W)	80	200	2000	1		2				2		2
	(2400W)	80	240	2400		1	2				2		2
	(2800W)	80	280	2800	1		3				3		3
	(3200W)	80	320	3200		1	3				3		3
	(800W)	800	6	800				2			1		1
	(1600W)	800	12	1600					2		1		1
Series operation	(800W)	160	40	800	2							1	1
	(1600W)	160	80	1600		2						1	1

* Parallel connection kit, OP-21A (for horizontal installation) / OP-21B (for vertical installation) includes a Bus bar, OP-22P and JK-10.

* PSF-H series can not connect a Bus bar because the output terminals are different from PSF-L series output terminals in shape.

Flexible range Regulated DC Power Supplies

PSF-400L (80V/40A/400W)

PSF-800L (80V/80A/800W)

PSF-400L2 (80V/40A/400W x 2)

PSF-800LS (80V/80A/800W) (Slave Model)

PSF-1200L (80V/120A/1200W)

PSF-1600L (80V/160A/1600W)

● Flexible output range

Possible to output voltage and current flexibly within the rating power. In case of PSF-800L, 10V/80A to 80V/10A, 20V/40A to 40V/20A, etc. are available corresponding to plural number of conventional regulated DC power supplies.

● 90°rotating panel operation part

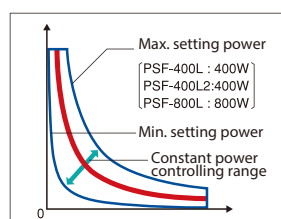
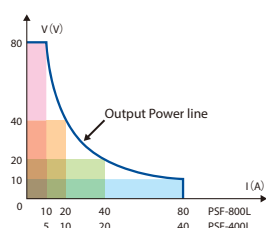
90°rotating panel installs the unit vertically or horizontally.

● Sequence function

Stand alone sequence operation is possible sending the sequence made with PC to the unit through optional IF-60GP or IF-60RU interface board.

● Control of constant power

In addition to constant voltage(CV) and constant current(CC), constant power(CP) is also available for use of supplying arbitrary power or as limit function to protect being added over power to load side.



Specifications

Model	Rating Power	Output (Voltage, Current)	Ripple		Line regulation		Load regulation		Dimensions W×H×D (mm)	Max. dimensions W×H×D (mm)	Power consumption W/VA (approx.)	Weight kg (approx.)
			CV	CC	CV	CC	CV	CC				
PSF-400L	400W	0V-80V, 0A-40A	4	30	10	6	11	11	210×124×290	229×143×338	560VA	5
PSF-800L	800W	0V-80V, 0A-80A	6	60	10	10	11	19	210×124×290	229×143×338	1120VA	7
PSF-400L2	400W x2ch	0V-80V, 0A-40A	4	30	10	6	11	11	210×124×290	229×143×338	1120VA	7
PSF-800LS	800W	0V-80V, 0A-80A	-	-	-	-	-	-	210×124×290	229×143×338	1120VA	7

Output rating

Model name	PSF-400L	PSF-800L	PSF-400L2	PSF-800LS
Rating output voltage	80.00V	80.00V	80.00Vx2CH	80.00V
Setting accuracy	0.1% setting ±2digit			
Resolution	10mV			
Display accuracy	0.2% reading ±2digit			
Rating output current	40.00A	80.00A	40.00Ax2CH	80.00A
Setting Accuracy	0.2% setting ±2digit			
Resolution	10mA			
Display accuracy	0.3% reading ±2digit			
Rating output power	400W	800W	400Wx2CH	800W
Setting Accuracy	±10W			
Resolution	10W			
Display accuracy	0.5% reading ±5digit			

Constant voltage characteristics

Model name	PSF-400L	PSF-800L	PSF-400L2
Line regulation	0.01%±2mV of rating voltage		
Load regulation	0.01%±3mV of rating voltage		
Ripple noise (p-p)	90mV	150mV	90mV
Ripple noise (rms)	4mV	6mV	1mV
Transient response (typ)	1ms		
Rising time (typ)	50ms (Rating load) 50ms (No load)		
Falling time (typ)	100ms (Rating load) 500ms (No load)		
Temperature coefficient (typ)	50ppm/°C (after 30 minute warming up)		

PSF-L Series

90° Rotating Panel



GP-IB OPTION RS-232C OPTION USB OPTION

● External control

Output voltage and current can be set through external voltage or PSF-L Series external resistor, and to control output on/off by external contact signal.

● Application software for making sequence program can be downloaded from our website.

● Others

Off timer function, 3-point preset function, monitor out function (voltage, current and status), protection function, delay function (PSF-400L2 only), and tracking function (PSF-400L2 only).

● Parallel/series operation

Including master unit, 4 units in parallel and 2 units in series connection can be controlled by one master unit. Current expansion model(exclusive slave unit) in parallel connection is available.



Horizontal installation (using OP-21A)

Vertical installation (using OP-21B)



PSF-400L/800L + PSF-800LS

Constant current characteristics

Model name	PSF-400L	PSF-800L	PSF-400L2
Line regulation	0.01%±2mA of rating voltage		
Load regulation	0.02%±3mA of rating voltage		
Ripple noise (rms)	30mA	60mA	30mA
Temperature coefficient (typ)	100ppm/°C (after 30 minute warming up)		

Constant power characteristics

Model name	PSF-400L	PSF-800L	PSF-400L2
Line regulation	0.5%±10W		

Input rating

Model name	PSF-400L	PSF-800L	PSF-400L2	PSF-800LS
Input voltage	single phase AC100V - AC240V frequency : 50Hz/60Hz			
Power consumption	560VA	1120VA	1120VA	1120VA
Power factor	0.99			
Rush current	35Amax	70Amax	70Amax	70Amax

Options

IF-60GP	GP-IB control board	HK-10	Handle kit
IF-60RU	RS-232C/USB control board	OP-22S	Series connection cable
OP-21A	Horizontal installation connection kit	OP-22P	Parallel connection cable
OP-21B	Vertical installation connection kit		

Regulated DC Power Supplies

PS-A / PS-AR Series

PS6-66A / PS6-66AR	(6V/66A)
PS6-133A / PS6-133AR	(6V/133A)
PS10-40A / PS10-40AR	(10V/40A)
PS10-80A / PS10-80AR	(10V/80A)
PS10-120A / PS10-120AR	(10V/120A)
PS20-20A / PS20-20AR	(20V/20A)
PS20-40A / PS20-40AR	(20V/40A)
PS20-60A / PS20-60AR	(20V/60A)
PS40-10A / PS40-10AR	(40V/10A)
PS40-20A / PS40-20AR	(40V/20A)
PS40-30A / PS40-30AR	(40V/30A)
PS60-6.6A / PS60-6.6AR	(60V/6.6A)
PS60-13.3A/PS60-13.3AR	(60V/13.3A)
PS60-20A / PS60-20AR	(60V/20A)

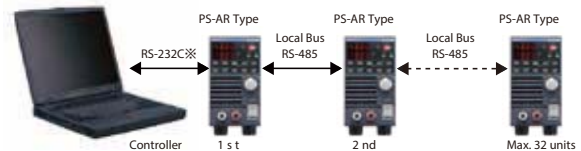
Switching



GP-IB OPTION
USB OPTION
RS-232C OPTION
 *Standard for PS-AR type

- Four digits LED display
The high resolution display can indicate output voltage and current and power value. Voltage and current values can be easy to set with "digit key" by selecting a digit to be changed.
- Three points preset memory function
Possible to preset three kinds of voltage and current values inside for easy reading of setting values.
- HI-R Function
This function is useful for not to discharge secondary cell, not to ungild plating and so on.
- Off timer function
Possible to turn off output automatically after a lapse of preset time.
- Controlling transient build-up current function
This function enables to control current at output on and prevents current overshoot.
- Sequence function
Stand-alone sequence operation is possible by loading maximum 1000 steps sequence program from PC into the unit through optional IF-70GU or IF-70RS interface board.
- Master slave operation
This function enable to operate plural same units in parallel up to 2400W (up to 800W for 6V series) and in series for two units.

- External analog control (PS-A type only)
The PS-A series can be controlled by external voltage or resistance for setting voltage and current values and by external contact for turning on/off output and selecting preset memory. PS-AR type dose not accommodate external analog control.
- Optional remote control interface boards
IF-70GU (GP-IB and USB), IF-71RS (RS-232C) and IF-70PS (compatible with PS series) are available.
- RS-232C standard PS-AR type
PS-AR type is included RS-232C control board. PS-AR type can connect max. 32 units and be controlled by PC. Simple and low-cost system can be provided.



* GP-IB or USB connection needs to install IF-70GU into the 1st unit (instead of RS-232C interface board).

	PS-AR Type	PS-A Type
External analog control	N/A	Standard equipment
RS-232C control	IF-70RS is enclosed. *	Option (IF-70RS)
GP-IB control	Option (IF-70GU)	Option (IF-70GU)
USB control	Option (IF-70GU)	Option (IF-70GU)

* IF-70RS enclosed to PS-AR must be installed before using PS-AR.

Specifications

Model	Output rating		Ripple		Line regulation		Load regulation		Power consumption W/VA(approx.)	Dimensions type *	Weight kg (approx.)
	Voltage (V)	Current (A)	CV (mVrms)	CC (mA rms)	CV (mV)	CC (mA)	CV (mV)	CC (mA)			
PS6-66A/PS6-66AR	0 - 6	0 - 66	10	120	8	125	11	125	630	Type I	3.2
PS6-133A/PS6-133AR	0 - 6	0 - 133	10	260	8	245	11	245	1250	Type II	5.3
PS10-40A/PS10-40AR	0 - 10	0 - 40	10	70	10	75	15	75	600	Type I	3.2
PS10-80A/PS10-80AR	0 - 10	0 - 80	10	160	10	150	15	150	1200	Type II	5.3
PS10-120A/PS10-120AR	0 - 10	0 - 120	10	220	10	225	15	225	1800	Type III	7.5
PS20-20A/PS20-20AR	0 - 20	0 - 20	10	40	15	41	25	41	600	Type I	3.2
PS20-40A/PS20-40AR	0 - 20	0 - 40	10	92	15	82	25	82	1200	Type II	5.3
PS20-60A/PS20-60AR	0 - 20	0 - 60	10	120	15	123	25	123	1800	Type III	7.5
PS40-10A/PS40-10AR	0 - 40	0 - 10	10	20	23	25	41	25	600	Type I	3.2
PS40-20A/PS40-20AR	0 - 40	0 - 20	10	60	23	50	41	50	1200	Type II	5.3
PS40-30A/PS40-30AR	0 - 40	0 - 30	15	80	23	75	41	75	1800	Type III	7.5
PS60-6.6A/PS60-6.6AR	0 - 60	0 - 6.6	10	12	35	17	65	17	550	Type I	3.2
PS60-13.3A/PS60-13.3AR	0 - 60	0 - 13.3	15	44	35	34	65	34	1100	Type II	5.3
PS60-20A/PS60-20AR	0 - 60	0 - 20	20	55	35	51	65	51	1650	Type III	7.5

* Dimensions (Max. Dimensions) W×H×D (mm)
 Type I : 70 × 124(139.5) × 364(415.5)
 Type II : 140 × 124(139.5) × 364(415.5)
 Type III : 210 × 124(139.5) × 364(415.5)

Options

IF-70GU	GP-IB/USB Interface card	CB-0603S	Modular cable (0.3m)	OP-23P3	Paralle connection signal cable(2 to 3units)
IF-71RS	RS-232C Interface card	CB-0615S	Modular cable (1.5m)	OP-23P6	Paralle connection signal cable(2 to 6units)
IF-70PS	PS Compatible Analog Control Card	CB-0630S	Modular cable (3m)	OP-23S	Series connection signal cable
HK-11	Handle kit	CB-06100S	Modular cable (10m)		

* IF-70PS is an analog control board which is compatible with previous model, PS series power supply.

Hybrid (Switching and Dropper) method Regulated DC Power Supplies

PDS20-10A (20V/10A)

PDS20-18A (20V/18A)

PDS20-36A (20V/36A)

PDS36-6A (36V/6A)

PDS36-10A (36V/10A)

PDS36-20A (36V/20A)

PDS60-6A (60V/6A)

PDS60-12A (60V/12A)

As compared with dropper-method DC power supplies, the unique switching and dropper circuit systems bring low output noise at same level, light weight less than half, and compact body. PDS-A power supply corresponds to EU RoHS regulation in consideration of environment. GP-IB, RS-232C, USB and LAN optional control boards are available and users are able to download API and drivers software from TEXIO web-site.

- Satisfying CE Mark Certification Requirements
- Series/Parallel Operation
- 3-points Voltage/Current Preset
- Various Protection Functions
- Off timer function
- Controlling transient build-up current function
- Sequence function
- External analog control function

Options

IF-70GU	GP-IB/USB Interface card
IF-71RS	RS-232C Interface card
IF-71LU	LAN/USB Interface card
OP-23P3	Parallel connection signal cable(2 to 3units)
OP-23S	Series connection signal cable
CB-0603S	Modular cable (0.3m)
CB-0615S	Modular cable (1.5m)
CB-0630S	Modular cable (3m)
CB-06100S	Modular cable (10m)
HK-11	Handle kit

Specifications

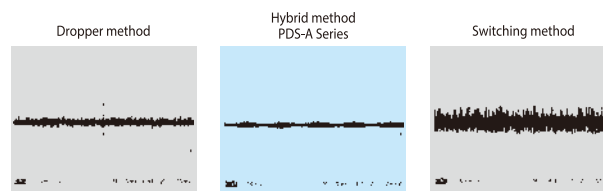
Model	Output (Voltage, Current)	Ripple		Line regulation		Load regulation		Dimensions W×H×D(mm)	Max. dimensions W×H×D(mm)	Power consumption VA(approx.)	Weight kg (approx.)
		CV mVrms	CC mA rms	CV mV	CC mA	CV mV	CC mA				
PDS20-10A	0V-20V, 0A-10A	0.5	10	2	5	3	5	140×124×364	140.8×141.2×415.5	340VA	5.2
PDS20-18A	0V-20V, 0A-18A	0.5	10	2	5	3	5	140×124×364	140.8×141.2×415.5	570VA	5.2
PDS20-36A	0V-20V, 0A-36A	0.5	10	2	10	3	5	210×124×364	210.8×141.2×415.5	1100VA	7.5
PDS36-6A	0V-36V, 0A-6A	0.5	5	2.8	1	3.8	5	140×124×364	140.8×141.2×415.5	330VA	5.2
PDS36-10A	0V-36V, 0A-10A	0.5	5	2.8	1	3.8	5	140×124×364	140.8×141.2×415.5	520VA	5.2
PDS36-20A	0V-36V, 0A-20A	0.5	10	2.8	5	3.8	5	210×124×364	210.8×141.2×415.5	1050VA	7.5
PDS60-6A	0V-60V, 0A-6A	0.5	5	4	1	5	5	140×124×364	140.8×141.2×415.5	510VA	5.2
PDS60-12A	0V-60V, 0A-12A	0.5	10	4	5	5	5	210×124×364	210.8×141.2×415.5	1000VA	7.5

PDS-A Series

Hybrid

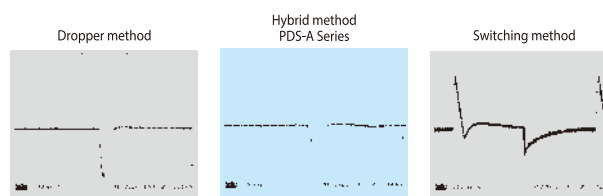


Low ripple / noise
0.5mVrms (30mVp-p) same as dropper method



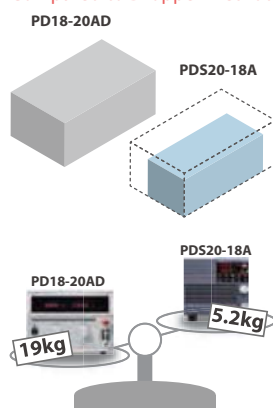
Comparing Ripple/ Noise (output: rated 36V/ 10A)

High speed transient response at 100μs(typ)
(Approx. 1ms for switching method power supplies)



Comparing transient response

Compared to Dropper method



* Compact size
Max. over 50% downsized compared
with PD-AD series

* Light weight

Multi-Output Regulated DC Power Supplies

4-Output

PW8-3AQP	(+8V/3A, +8V/3A, +8V/3A, +8V/3A)
PW18-1.8AQ	(+18V/1.8A, -18V/1.8A, +8V/2A, -6V/1A)
PW24-1.5AQ	(+24V/1.5A, -24V/1.5A, +8V/2A, +8V/2A)

3-Output

PW8-3ATP	(+8V/3A, +8V/3A, +18V/1.5A)
PW16-2ATP	(+16V/2A, +16V/2A, +16V/2.5A)
PW18-2ATP	(+18V/2A, +36V/1A, +8V/2A)

2-Output

PW16-5ADP	(+16V/5A, +6V/3A)
PW18-3AD	(+18V/3A, -18V/3A)
PW18-3ADP	(+18V/3A, +18V/3A)
PW36-1.5AD	(+36V/1.5A, -36V/1.5A)
PW36-1.5ADP	(+36V/1.5A, +36V/1.5A)

2 or 3-Output with Remote Sensing

PW18-1.3ATS	(+18V/1.3A, -18V/1.3A, +6V/5A)
PW26-1ATS	(+26V/1A, -26V/1A, +6V/5A)
PW8-5ADPS	(+8V/5A, +8V/5A)

● One-Dial Control

All setting conditions are selected at the single rotary-encoder.

● Tracking

Output voltage and current value of positive and negative can be adjusted from zero at the same time by the absolute value tracking.

● 4-Point Pair Presetting of Voltage and Current Value

● ON/OFF Delay Time

Delay-time can be set in each output.

● Output Selection

On and off of each output can be selected and set besides the main output key.

● Key Lock

A key lock function provides to hold all setting values except for power switch.

● Limit & Status Key

The output voltage and current values can be confirmed by the limit-key. The trucking of each output and the condition of delay setting can be confirmed by the status-key.

● Various External Controls

ON/OFF of main output, PRESET 1 to 4 and alarm.

● Overheating Protection

● GP-IB, USB, RS-232C

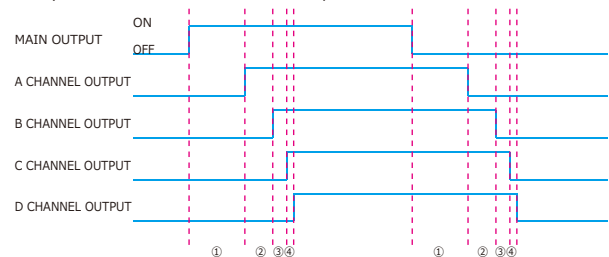
GP-IB/USB inter face card (IF-41GU), USB inter face card (IF-41USB) and RS-232C

PW-A Series

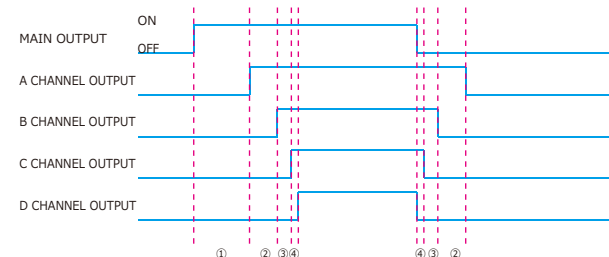
Multi Output



Delay Time function Time chart example



Delay Time function Time chart example(2)



Specifications

Model	Channels	Output				Ripple		Line regulation		Load regulation		Power consumption W/VA(approx.)
		(Voltage, Current)				CV	CC	CV	CC	CV	CC	
						mVrms	mA	mV	mA	mV	mA	
PW8-3AQP	4	+8V/3A	+8V/3A	+8V/3A	+8V/3A	0.5	1.5	1	2	2	5	245W/300VA
PW18-1.8AQ	4	+18V/1.8A	-18V/1.8A	+8V/2A	-6V/1A	0.5	1.5	1	2	2	5	191W/255VA
PW24-1.5AQ	4	+24V/1.5A	-24V/1.5A	+8V/2A	+8V/2A	0.6 *	1.5	1	2	2	5	220W/276VA
PW8-3ATP	3	+8V/3A	+8V/3A	+18V/1.5A		0.5	1.5	1	2	2	5	183W/240VA
PW16-2ATP	3	+16V/2A	+16V/2A	+16V/2.5A		0.5	1.5	1	2	2	5	210W/267VA
PW18-2ATP	3	+18V/2A	+36V/1A	+8V/2A		0.6 *	1.5	1	2	2	5	178W/242VA
PW18-1.3ATS	3	+18V/1.3A	-18V/1.3A	+6V/5A		0.5	1.5	1	2	2	5	179W/230VA
PW26-1ATS	3	+26V/1A	-26V/1A	+6V/5A		0.6 *	1.5	1	2	2	5	193W/250VA
PW8-5ADPS	2	+8V/5A	+8V/5A			0.5	1.5	1	2	2	5	214W/247VA
PW16-5ADP	2	+16V/5A	+6V/3A			0.5	1.5	1	2	2	5	212W/256VA
PW18-3AD	2	+18V/3A	-18V/3A			0.5	1.5	1	2	2	5	213W/278VA
PW18-3ADP	2	+18V/3A	+18V/3A			0.5	1.5	1	2	2	5	213W/278VA
PW36-1.5AD	2	+36V/1.5A	-36V/1.5A			0.6 *	1.5	1	2	2	5	189W/255VA
PW36-1.5ADP	2	+36V/1.5A	+36V/1.5A			0.6 *	1.5	1	2	2	5	189W/255VA

* 1: 0.5mVrms for the channels of $\pm 24V$ or less.

Voltage setting resolution	1mV (at $\pm 6V$, +8V output), 10mV (at $\pm 16V$, $\pm 18V$, $\pm 26V$, $\pm 36V$ output)
Current setting resolution	1mA
Voltage load regulation	2mV (with respect to change from 0 to 100%)
Current load regulation	5mA (with respect to change from 0 to 100%)
Voltmeter	4 digit, red LED
Ammeter	4 digit, red LED
Power requirement	AC100/115/200/230V $\pm 10\%$, 50/60Hz
Power consumption	Approx.220W
Case dimensions	138(W) \times 124(H) \times 380(D) mm
Weight	Approx.9.1kg
Accessories	Instruction manual x1, power cable x1, External control cable x1, Remote sensing connector lead x2 (PW26-1ATS, PW18-1.3ATS only)

Regulated DC Power Supplies

PAR18-6A (18V/6A)

PAR36-3A (36V/3A)

- Built-in microprocessor
- Remote sensing
- CV/CC power supply
- Rack-mount size
- Key Lock
- Limit Key
- GP-IB, USB, RS-232C

GP-IB/USB interface card (IF-41GU), USB interface card (IF-41USB) and RS-232C card (IF-41RS) provided as user option.

PAR-A Series

Remote Sensing



Specifications

Model	Output (Voltage, Current)	Ripple		Line regulation		Load regulation		Dimensions WxHxD(mm)	Max dimensions WxHxD(mm)	Power consumption W/VA(approx.)	Weight kg (approx.)
		CV(mVrms)	CC(mArms)	CV(mV)	CC(mA)	CV(mV)	CC(mA)				
PAR18-6A	0V-18V, 0A-6A	0.5	2	1	2	2	5	138x124x380	140x148x403	213W/278VA	9.1
PAR36-3A	0V-36V, 0A-3A	0.5	2	1	2	2	5	138x124x380	140x148x403	189W/255VA	9.1

● Setting Resolution

Voltage: 1mV (10mV: +16V, +/-18V, +/-24V, +/-26V, +/-36V)

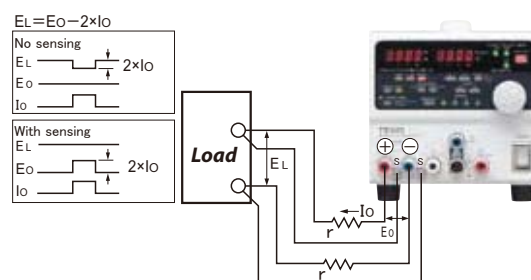
Current: 1mA



● Remote Sensing function

Remote Sensing function can compensate voltage drop caused by cable impedance.

PW26-1ATS, PW18-1.3ATS, PW8-5ADPS and PAR-A series only.



Options

IF-41GU	GP-IB/USB interface board
IF-41RS	RS-232C interface board
IF-41USB	USB interface board
TA-66	D-sub 9pin - Monular connector changer
CB-2420P	GP-IB cable

CB-0603S	Modular cable (0.3m)
CB-0615S	Modular cable (1.5m)
CB-0630S	Modular cable (3.0m)
CB-06100S	Modular cable (10m)

Regulated DC Power Supplies

PA10-5B	(10V/5A)	PA80-1B	(80V/1A)
PA18-1.2BVT	(18V/1.2A)	PA120-0.6B	(120V/0.6A)
PA18-2BVT	(18V/2A)	PA160-0.4B	(160V/0.4A)
PA18-3B	(18V/3A)	PA250-0.25B	(250V/0.25A)
PA18-5B	(18V/5A)	PA250-0.42B	(250V/0.42A)
PA36-1.2BVT	(36V/1.2A)	PA350-0.2B	(350V/0.2A)
PA36-2B	(36V/2A)	PA600-0.1B	(600V/0.1A)
PA36-3B	(36V/3A)		

- Low ripple, low noise
- Digital display of voltage and current at the same time
- Series/parallel operation
- Floating output/voltage remote sensing terminal
- External analog control

Specifications

Model	Output (Voltage,Current)	Ripple		Line regulation		Load regulation		Dimensions WxHxD(mm)	Max. dimensions WxHxD(mm)	Power consumption W/VA(approx.)	Weight kg (approx.)
		CV mVrms	CC mA rms	CV mV	CC mA	CV mV	CC mA				
PA10-5B	0V-10V, 0A-5A	0.5	5	1	2	5	5	104×124×350	106.2×144.3×368.3	120W/150VA	6.6
PA18-1.2BVT	0V-18V, 0A-1.2A	0.5	1	1	2	2	5	104×124×270	106.2×144.3×288.3	50W/60VA	4.7
PA18-2BVT	0V-18V, 0A-2A	0.5	1	1	2	2.5	5	104×124×270	106.2×144.3×288.3	75W/100VA	4.7
PA18-3B	0V-18V, 0A-3A	0.5	1	1	2	3	5	104×124×350	106.2×144.3×368.3	110W/140VA	6.6
PA18-5B	0V-18V, 0A-5A	0.5	5	1	2	5	5	104×124×350	106.2×144.3×368.3	165W/210VA	6.6
PA36-1.2BVT	0V-36V, 0A-1.2A	0.5	1	2	2	2	5	104×124×270	106.2×144.3×288.3	80W/105VA	4.7
PA36-2B	0V-36V, 0A-2A	0.5	2	2	2	3	5	104×124×350	106.2×144.3×368.3	130W/165VA	6.6
PA36-3B	0V-36V, 0A-3A	0.5	2	2	2	4	5	104×124×350	106.2×144.3×368.3	170W/220VA	6.6
PA80-1B	0V-80V, 0A-1A	1	2	5	2	5	5	104×124×350	106.2×144.3×368.3	140W/170VA	6.6
PA120-0.6B	0V-120V, 0A-0.6A	1.2	1	7	1	7	5	104×124×350	106.2×144.3×368.3	115W/155VA	6.6
PA160-0.4B	0V-160V, 0A-0.4A	1.6	1	8	1	8	5	104×124×350	106.2×144.3×368.3	100W/150VA	6.6
PA250-0.25B	0V-250V, 0A-0.25A	2.5	1	15	0.5	15	5	104×124×350	106.2×144.3×368.3	105W/140VA	6.6
PA250-0.42B	0V-250V, 0A-0.42A	2.5	1	15	1	15	5	104×124×350	106.2×144.3×368.3	150W/220VA	6.6
PA350-0.2B	0V-350V, 0A-0.2A	3.5	1	20	0.5	20	5	104×124×350	106.2×144.3×368.3	110W/150VA	6.6
PA600-0.1B	0V-600V, 0A-0.1A	5	1	30	0.5	30	2.5	104×124×350	106.2×144.3×368.3	100W/130VA	6.6

Options

GP-600B	GP-IB adapter
OP-18-PAB	Connection cable between PA-B and GP-600B (1pcs)
OP-20GC	Front output terminal guard cap (2pcs)

PA-B Series

Remote Sensing



GP-IB
OPTION

- Monitor output
- EIA rack size
- Option: GP-IB Adapter (GP-600B and OP-18-PAB)

GP-IB Adapter for PA-B / PD-AD Series Power Supplies

Specifications

GP-IB	
Interface function	SHA1, AH1, L3, T6, SR1, RL1, PP0, DC1, DT1, C0
Address setting	0 to 30 can be set with the address switch
Service request	GP-IB command/parameter errors, OVP operation and alarm functions (OCP, OTP and Power off), CV function, CC function and Output OFF key
Analog Output	
Channel	Output A&B (CH1), Output C&D (CH2)
Output voltage range	0 to 10V
Max. output current	3mA
D/A converter rez	12bit, 0.025%(2.4mV)
Rise Time	100μs or less (10% to 90%, 10kΩ load)

Options

OP-18-PAB	Connection cable between PA-B Series and GP-600B (1pcs)
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GP-600B

GP-IB Adapter for PA-B Series Power Supplies



DC Electronic Loads

LSG-175	(150V/35A/175W)
LSG-350	(150V/70A/350W)
LSG-1050	(150V/210A/1050W)
LSG-2100S	(150V/420A/2100W)(Booster for LSG-1050)

- Operating Mode : C.V/C.C/C.R/C.P/C.C + C.V/C.R + C.V/C.P + C.C .
- High Precision, High Resolution (10 A),High Speed Variable Slew Rate (16A/us).
- Sequence Function for High Efficient Load Simulations.
- Parallel Connection of Inputs for Higher Capacity. (With 4 Booster Units : Max 9.45kW or 4 Master Units)
- External Channel Control/Monitoring via Analog Control Connector.
- Program Mode to Create Work Routines for Repetitive Tests.
- Multiple-Interface : USB 2.0 Device/Host and GP-IB/RS-232C.
- Adjustable OPP/OCV/OVP Setting.

Specifications

CC Mode			
Model	LSG-175	LSG-350	LSG-1050
Operating Range			
H Range	0A~35A	0A~70A	0A~210A
M Range	0A~3.5A	0A~7A	0A~21A
L Range	0A~0.35A	0A~0.7A	0A~2.1A
Resolution			
H Range	1mA	2mA	10mA
M Range	0.1mA	0.2mA	1mA
L Range	0.01mA	0.02mA	0.1mA
Accuracy of Setting			
H, M Range	$\pm(0.2\% \text{ of set} + 0.1\% \text{ of f.s.}^{*1}) + \text{Vin}^2/500 \text{ k}\Omega$		
L Range	$\pm(0.2\% \text{ of set} + 0.1\% \text{ of f.s.}) + \text{Vin}^2/500 \text{ k}\Omega$		
Parallel Operating	$\pm(1.2\% \text{ of set} + 1.1\% \text{ of f.s.}^{*3})$		

*1 Full scale of H range

*2 Vin: input terminal voltage of electronic load

*3 M range applies to the full scale of H range

CR Mode			
Model	LSG-175	LSG-350	LSG-1050
Operating Range ^{*1}			
H Range	23.3336S~400uS (42.857m Ω ~2.5k Ω)	46.6672S~800uS (21.428m Ω ~1.25k Ω)	140.0016S~2.4mS (7.1427m Ω ~416.6667k Ω)
M Range	2.33336S~40uS (428.566m Ω ~25k Ω)	4.6667S~80uS (214.28m Ω ~12.5k Ω)	14.0001S~242.4uS (71.427m Ω ~4.16667k Ω)
L Range	0.233336S~4uS (4.28566 Ω ~250k Ω)	0.46667S~8uS (2.1428 Ω ~125k Ω)	1.40001S~24.24uS (714.27m Ω ~41.6667k Ω)
Resolution			
H Range	400uS	800uS	2.4mS
M Range	40uS	80uS	240uS
L Range	4uS	8uS	24uS

Accuracy of Setting^{*2}

H, M Range $\pm(0.5\% \text{ of set}^3 + 0.5\% \text{ of f.s.}^{*4}) + \text{Vin}^2/500 \text{ k}\Omega$

L Range $\pm(0.5\% \text{ of set}^3 + 0.5\% \text{ of f.s.}) + \text{Vin}^2/500 \text{ k}\Omega$

*1 Siemens[S] = Input current[A] / Input voltage[V] = 1 / resistance[Ω]

*2 Converted value at the input current. At the input current. It is not applied for the condition of the parallel operation.

*3 set = Vin / Rset

*4 f.s. = Full scale of High Range

*5 Vin = Input terminal voltage of electronic load

CV Mode			
Model	LSG-175	LSG-350	LSG-1050
Operating Range			
H Range	1.5V~150V	1.5V~150V	1.5V~150V
L Range	1.5V~15V	1.5V~15V	1.5V~15V
Resolution			
H Range	10mV	10mV	10mV
L Range	1mV	1mV	1mV

Accuracy of Setting^{*1}

H, L Range $\pm(0.1\% \text{ of set} + 0.1\% \text{ of f.s.})$

*1 At the sensing point during remote sensing under the operating range of the input voltage. It is also applied for the condition of the parallel operation.

LSG Series

High Capacity Electronic Load (Max. 9.45kW) **LabVIEW**



CP Mode			
Model	LSG-175	LSG-350	LSG-1050
Operating Range			
H Range	17.5W~175W	35W~350W	105W~1050W
M Range	1.75W~17.5W	3.5W~35W	10.5W~105W
L Range	0.175W~1.75W	0.35W~3.5W	1.05W~10.5W
Resolution			
H Range	10mW	10mW	100mW
M Range	1mW	1mW	10mW
L Range	0.1mW	0.1mW	1mW
Accuracy of Setting ^{*1}			
$\pm(0.6\% \text{ of set} + 1.4\% \text{ of f.s.}^{*2})$			

*1 It is not applied for the condition of the parallel operation.

*2 M range applies to the full scale of H range.

Meter			
Model	LSG-175	LSG-350	LSG-1050
Voltmeter			
H Range	0.00V~150.00V	0.00V~150.00V	0.00V~150.00V
L Range	0.000V~15.000V	0.000V~15.000V	0.000V~15.000V
Accuracy			
$\pm(0.1\% \text{ of rdg} + 0.1\% \text{ of f.s.})$			
Ammeter			
H, M Range	0.000A~35.000A	0.000A~70.000A	0.00A~210.00A
L Range	0.00A~350.00mA	0.00A~700mA	0.0000A~2.1000A
Accuracy			
$\pm(0.2\% \text{ of rdg} + 0.3\% \text{ of f.s.})$ Parallel Operation: $\pm(1.2\% \text{ of rdg} + 1.1\% \text{ of f.s.})$			
Wattmeter			
H, M Range	0.00W~175.00W	0.00W~350.00W	0.00W~1050W
L Range(CC/CR/CV)	0.000W~52.500W	0.000W~ 105.000W	0.00W~315.00W
L Range(CP)	0.0000W~ 1.7500W	0.0000W~ 3.5000W	0.000W~ 10.500W

General				
Model	LSG-175	LSG-350	LSG-1050	LSG-2100S
Input Range				
90VAC ~ 132VAC/180VAC ~ 250VAC Single-phase				
Input Frequency				
47 ~ 63Hz				
Power(max.)				
90VA 110VA 190VA 230VA				
Dimensions				
W	213.8 mm	213.8 mm	427.8 mm	427.7 mm
H	124.0 mm	124.0 mm	124.0 mm	127.8 mm
D	400.5 mm	400.5 mm	400.5 mm	553.5 mm
Weight(Approx.)				
7 kg 8 kg 15 kg 17 kg				

Options

GRA-413	Rack Mount Kit (EIA+JIS) for LSG-2100S
GRA-414-E	Rack Mount Kit (EIA) for LSG175/350/1050
GRA-414-J	Rack Mount Kit (JIS) for LSG175/350/1050
GTL-255	Frame Link Cable
PEL-004	GP-IB Control Board

DC Electronic Loads

LSG-175H	(800V/8.75A/175W)
LSG-350H	(800V/17.5A/350W)
LSG-1050H	(800V/52.5A/1050W)
LSG-2100SH	(800V/105A/2100W)(Booster for LSG-1050H)

- Operating Mode : C.V/C.C/C.R/C.P/C.C+C.V/C.R+C.V/C.P+C.C.
- High Precision, High Resolution , High Speed Variable Slew Rate.
- Sequence Function for High Efficient Load Simulations.
- Parallel Connection of Inputs for Higher Capacity. (With 4 Booster Units : Max 9.45kW or 4 Master Units)
- External Channel Control/Monitoring via Analog Control Connector.
- Program Mode to Create Work Routines for Repetitive Tests.
- Multiple-Interface : USB 2.0 Device/Host and GP-IB/RS-232C.
- Adjustable OPP/OCV/OVP Setting.
- Test mode for OCP/OPP/BATT

Specifications

CC Mode			
Model	LSG-175H	LSG-350H	LSG-1050H
Operating Range			
H Range	0A~8.75A	0A~17.5A	0A~52.5A
M Range	0A~0.875A	0A~1.75A	0A~5.25A
L Range	0A~0.0875A	0A~0.175A	0A~0.525A
Resolution			
H Range	0.3mA	0.6mA	2mA
M Range	0.03mA	0.06mA	0.2mA
L Range	0.003mA	0.006mA	0.02mA
Accuracy of Setting			
H, M Range	$\pm(0.2\% \text{ of set} + 0.1\% \text{ of f.s.}^1) + \text{Vin}^2/3.24\text{M}\Omega$		
L Range	$\pm(0.2\% \text{ of set} + 0.1\% \text{ of f.s.}) + \text{Vin}^2/3.24\text{M}\Omega$		
Parallel Operating	$\pm(1.2\% \text{ of set} + 1.1\% \text{ of f.s.}^3)$		
*1 Full scale of H range			
*2 Vin: input terminal voltage of electronic load			
*3 M range applies to the full scale of H range			
CR Mode			
Model	LSG-175H	LSG-350H	LSG-1050H
Operating Range ¹			
H Range	1.75S~30uS (571mΩ~33.3kΩ)	3.5S~60uS (285mΩ~16.6kΩ)	10.5S~180uS (95.2mΩ~5.55kΩ)
M Range	175mS~3uS (5.71Ω~333kΩ)	350mS~6uS (2.85Ω~166kΩ)	1.05S~18uS (952mΩ~55.5kΩ)
L Range	17.5mS~0.3uS (57.1Ω~3.33MΩ)	35mS~0.6uS (28.5Ω~1.66MΩ)	105mS~1.8uS (9.52Ω~555kΩ)
Resolution			
H Range	30uS	60uS	180uS
M Range	3uS	6uS	18uS
L Range	0.3uS	0.6uS	1.8uS
Accuracy of Setting ²			
H, M Range	$\pm(0.5\% \text{ of set}^3 + 0.5\% \text{ of f.s.}^4) + \text{Vin}^5/3.24\text{M}\Omega$		
L Range	$\pm(0.5\% \text{ of set}^3 + 0.5\% \text{ of f.s.}) + \text{Vin}^5/3.24\text{M}\Omega$		
*1 Siemens[S] = Input current[A] / Input voltage[V] = 1 / resistance[Ω]			
*2 Converted value at the input current. At the input current. It is not applied for the condition of the parallel operation.			
*3 set = Vin / Rset			
*4 f.s. = Full scale of High Range			
*5 Vin = Input terminal voltage of electronic load			
CV Mode			
Model	LSG-175H	LSG-350H	LSG-1050H
Operating Range			
H Range	5V~800V	5V~1800V	5V~800V
L Range	5V~80V	5V~80V	5V~80V
Resolution			
H Range	20mV	20mV	20mV
L Range	2mV	2mV	2mV
Accuracy of Setting ¹			
H, L Range	$\pm(0.2\% \text{ of set} + 0.2\% \text{ of f.s.})$		
*1 At the sensing point during remote sensing under the operating range of the input voltage. It is also applied for the condition of the parallel operation.			

LSG-H Series

High Voltage Electronic Load (Max. 9.45kW)



CP Mode			
Model	LSG-175H	LSG-350H	LSG-1050H
Operating Range			
H Range	17.5W~175W	35W~350W	105W~1050W
M Range	1.75W~17.5W	3.5W~35W	10.5W~105W
L Range	0.175W~1.75W	0.35W~3.5W	1.05W~10.5W
Resolution			
H Range	10mW	10mW	100mW
M Range	1mW	1mW	10mW
L Range	0.1mW	0.1mW	1mW
Accuracy of Setting ^{*1}			
	±(0.6 % of set + 1.4 % of f.s. ^{*2}) + Vin ^{*3} /3.24MΩ		
*1 It is not applied for the condition of the parallel operation.			
*2 M range applies to the full scale of H range. *3 Vin: input terminal voltage of electronic load			
Meter			
Model	LSG-175H	LSG-350H	LSG-1050H
Voltmeter			
H Range	0.00V~800.00V	0.00V~800.00V	0.00V~800.00V
L Range	0.000V~80.000V	0.000V~80.000V	0.000V~80.000V
Accuracy	±(0.1 % of rdg + 0.1 % of f.s.)		
Ammeter			
H Range	0.0000A~8.7500A	0.000A~17.500A	0.000A~52.500A
M Range	0.0000A~0.87500A	0.0000A~1.7500A	0.0000A~5.2500A
L Range	0.000mA~87.500mA	0.00mA~175.00mA	0.00mA~525.00mA
Accuracy	±(0.2 % of rdg + 0.3 % of f.s.) Parallel Operation: ±(1.2% of rdg +1.1% of f.s.)		
Wattmeter			
H, M Range	0.00W~175.00W	0.00W~350.00W	0.00W~1050W
L Range (C/C/CR/CV)	0.000W~52.500W	0.000W~ 105.000W	0.00W~315.00W
L Range(CP)	0.0000W~ 1.7500W	0.0000W~ 3.5000W	0.000W~ 10.500W

General				
Model	LSG-175H	LSG-350H	LSG-1050H	LSG-2100SH
Input Range				
90VAC ~ 132VAC/180VAC ~ 250VAC Single-phase				
Input Frequency				
47 ~ 63Hz				
Power(max.)				
90VA 110VA 190VA 230VA				
Dimensions				
W	213.8 mm	213.8 mm	427.8 mm	427.7 mm
H	124.0 mm	124.0 mm	124.0 mm	127.8 mm
D	400.5 mm	400.5 mm	400.5 mm	553.5 mm
Weight(Approx.)				
7.5 kg 9 kg 17 kg 24 kg				

Options

GRA-413	Rack Mount Kit (EIA+JIS) for LSG-2100S
GRA-414-E	Rack Mount Kit (EIA) for LSG175/350/1050
GRA-414-J	Rack Mount Kit (JIS) for LSG175/350/1050
GTL-255	Frame Link Cable
PEL-004	GP-IB Control Board

DC Electronic Loads

LW Series

LW75-151QV7A	(150V/15A/75W 4Channel)
LW75-151DV7A	(150V/15A/75W 2Channel)
LW151-151DV7A	(150V/30A/150W 2Channel)
LW301-151SV7A	(150V/60A/300W 1Channel)
LW301-151SV7B	(150V/60A/300W 1Channel)

- Multi-channel & individual control
Each channel is isolated and can be controlled individually.
- Low cost High performance
The CC, CR, CV, CP modes are standard.
- 4 points presetting
4 sets of frequently used value can be preset.
- Key lock
Key lock function provides to hold all setting values.
- Various remote controls (user option)
It is possible to add the interface function of GP-IB or USB after purchasing as user option.
- Front input terminal (A type only)
Maximum input current is 30A.
- Maximum 12 channel in full rack size

Multi Channel



Front terminal model

GP-IB
OPTION

USB
OPTION

Specifications

Model	Input Channel	Input			Constant Current		Constant Resistance		Constant Power	Constant Power		Input Terminal
		Voltage	Current	Power	L range	H range	L range	H range		L range	H range	
		V	A	W	A	A	Ω	Ω		W	W	
LW75-151QV7A	4ch	1 - 150	0 - 15	0 - 75	0 - 2.5	0 - 15	0.6 - 6k	0.1 - 1k	0.00 - 150	0.625 - 12.5	3.75 - 75	Front/Rear
LW75-151DV7A	2ch		0 - 15	0 - 75	0 - 2.5	0 - 15	0.6 - 6k	0.1 - 1k		0.625 - 12.5	3.75 - 75	Front/Rear
LW151-151DV7A	2ch		0 - 30	0 - 150	0 - 5	0 - 30	0.3 - 3k	0.05 - 500		1.25 - 25	7.5 - 150	Front/Rear
LW301-151SV7A	1ch		0 - 30	0 - 300	0 - 10	0 - 30	0.15 - 1.5k	0.025 - 250		2.5 - 50	15 - 300	Front/Rear
LW301-151SV7B	1ch		0 - 60	0 - 300	0 - 10	0 - 60	0.15 - 1.5k	0.025 - 250		2.5 - 50	15 - 300	Rear Only

Options

IF-50GP	GP-IB control board
IF-50USB	USB control board

Application Software "ESCAS"

(Easy Sequence Creator Application Software)

S-PL20

Charge/Discharge Test with using regulated DC power supplies and Electronic Loads with ease

This software is a sequence program creator software for regulated DC power supplies and electric loads and most suitable for charge/discharge testing for secondary cells. Anyone can conduct setup, test and analysis easily.

- Language characters are selectable, Japanese, English and (Simplified / Traditional) Chinese. (Descriptions can be displayed with "HELP" window written in Japanese or English only.)
- Max. 12ch Charge/Discharge system This software is compliant with 8 series of regulated DC power supplies and 3 series of electronic loads, and can control max. 12 sets of power supply and electronic load. (each power supplies and electronic loads must be same model. possible to control master-slave units.)
- TEST MODE function A measuring sampling rate is changed depend on a number of channels or models of power supplies and electronic load. TEST MODE can check suitable sampling rate before testing.
- Creating sequence patterns with ease
It is easy to create new sequence patterns, to edit saved patterns, and to copy saved patterns.
- CSV test data, Graphical analyzing
All test data is saved as csv text data. Graphical analyzing function is available.
- System Requirements
Microsoft Windows 10 (32bit/64bit)

ESCAS (Easy Sequence Creator Application Software)

Test mode



Sequence pattern creator/editor mode



Graphical analyzing mode



Regulated DC Power Supplies and Electronic Loads for ESCAS

- Regulated DC Power Supplies
PSF-L Series, PSF-H Series, PS-A Series, PU series, PDS-A series (with GP-IB or USB control board option), PSW Series, PSU Series and PFR Series



PSF-L Series, PSF-H Series



PDS-A Series



PS-A Series



PSW Series



PFR Series



PSU Series

- Electronic Loads

LSG Series, LSA Series with IF-80GUR and LW Series with IF-50GP/USB
※RS-232C interface of IF-80GUR does not be used (GP-IB and USB only).



LSG Series



LSA Series



LW Series

High rez Constant Voltage Regulated DC Power Supplies Unit

M-6150 (5V/300mA 12ch, GP-IB)

M-6151 (5V/300mA 14ch, GP-IB)

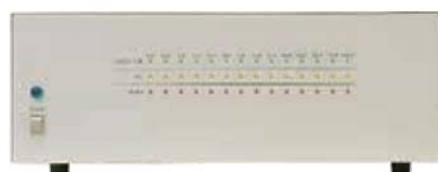
This unit has 12ch or 14 ch of 5V/300mA CV power supplies as like Li-ion battery cell. Each channels are isolated electrically and can be operated in series connection (up to 600V). It can simulate batteries and is very useful for testing ECU and BMS (Battery management system).

- 12ch type (M-6150) and 14ch type (M-6151)
Setting resolution: 0.1mV Measurement resolution: 0.1mV/0.01mA
Remote sensing function is available for all channels
- Each channel can be operated independently.
- Channels and Units can be connected in series operation (up to 600V)
- Optional Application Software
An optional application software is available and it can control max. 8 units of M-6150/6151, edit sequence test patterns, monitor status, save logging data as csv text, and display chart (voltage/current).
- GP-IB/USB interface
GP-IB and USB interfaces are equipped as standard for setting output voltages for each channel, capturing output voltage/current data and so on.
- Various protection functions are available OHP, OVP, OCP and CL



BATTERY CELL SIMULATOR (for BCM)

Multi Channel



Specifications

Output

Output channels	12ch/unit (M-6150), 14ch/unit (M-6151)
Output voltage	DC 0 to 5V /ch
Output current	DC 300mA /ch
Operating mode	CV (Constant voltage) mode only
Output terminals	M3 screw terminals (on rear panel)

Voltage regulation characteristics

Output stability (at output terminal)	Line regulation	within $\pm(0.01\%$ of setting + 2mV)
	Load regulation	within $\pm(0.01\%$ of setting + 3mV)
Ripple/Noise		within 1mVrms (at output 5V)

GP-IB

Setting voltage	Cycle	1sec (for setting all cahnnels)
	Resolution	0.1mV
	Accuracy	$\pm 1\text{mV}$
Measurement	Cycle	1sec (for reading all cahnnels)
	Voltage resolution	0.1mV
	Voltage accuracy	$\pm 1\text{mV}$
	Current resolution	10 μA
	Current accuracy	$\pm(0.2\%$ of F.S. + 0.2% of reading)

Others

Power requirement	100V $\pm 10\%$ AC, 50/60Hz, Single phase
Power consumption	210VA
Groundable voltage	DC 600V
Dimentions	430mm(W) x 150mm(H) x 500mm(D)
Weight	Approx. 17kg (including rack mount cramps)

1GS/s Digital Storage Oscilloscopes

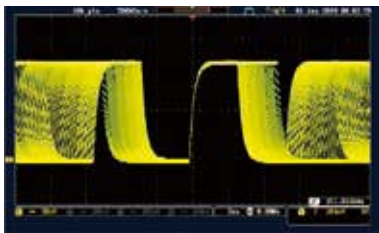
- DCS-1054B** (1GS/s 4ch 50MHz)
- DCS-1074B** (1GS/s 4ch 70MHz)
- DCS-1104B** (1GS/s 4ch 100MHz)
- DCS-1072B** (1GS/s 2ch 70MHz)
- DCS-1102B** (1GS/s 2ch 100MHz)

DCS-1000B Series

7" TFT WVGA color display



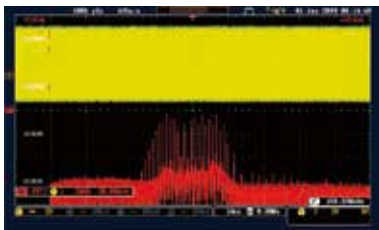
- 100MHz/70MHz/50MHz Digital Storage Oscilloscope
- Waveform update rate up to 50,000wfms/s



- 256 gradstion 7inches WVGA display



- 10M memory depth per channel independently
- 1M FFT mathematical sampling analysis mode



- Zoom In/Play and Pause Function
- Diversified Trigger Functions
- X-Y Mode Display
- Go/NoGo Function
- Data Log Function
- Digital Filter Function
- 36 Measurement Parameter Selections

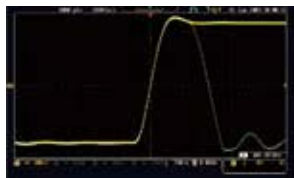
Specifications

	DCS-1054B	DCS-1072B	DCS-1074B	DCS-1102B	DCS-1104B
Vertical					
Channels	DCS-1xx4B : 4ch , DCS-1XX2B : 2ch+EXT				
Bandwidth	DC ~ 50MHz	DC ~ 70MHz	DC ~ 70MHz	DC ~ 100MHz	DC ~ 100MHz
Resolution	8 bit @1MΩ: 1mV~10V				
Input Impedance	1MΩ // 16pF				
DC Gain Accuracy	1mV: ±4% full scale, >2mV: ±3% full scale				
Waveform Signal Process	+, -, ×, ÷, FFT, FFTrms, User Defined Expression FFT: Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS, and FFT Window to Rectangular, Hamming, Hanning, or Blackman-Harris				
Trigger					
Source	CH1, CH2, CH3*, CH4*, Line, EXT** *four channel models only. **two channel models only.				
Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope), Timeout, Alternate, Event-Delay(1~65535 events), Time-Delay(Duration, 4n5~105), Bus				
Coupling	AC, DC, LF rej., HF rej., Noise rej.				
Sensitivity	1div				
External Trigger					
Range	±15V				
Sensitivity	DC ~ 100MHz Approx. 100mV				
Horizontal					
Time base Range	5ns/div ~ 100s/div (1-2-5 increments) ROLL: 100ms/div ~ 100s/div				
Pre-trigger	10 div maximum				
Post-trigger	2,000,000 div maximum.				
Real Time Sample Rate	1GSa/s max.				
Record Length	Max. 10Mpts				
Acquisition Mode	Normal, Average, Peak Detect, Single				
Peak Detection	2nS (typical)				
Average	selectable from 2 to 256				
X-Y Mode					
X-Axis Input	Channel 1; Channel 3*		*four channel models only		
Y-Axis Input	Channel 2; Channel 4*		*four channel models only		
Phase Shift	±3° at 100kHz				
Cursors and Measurement					
Cursors	Amplitude, Time, Gating available; Unit: Seconds(s), Hz(1/s), Phase(degree), Ration(%)				
Automatic Measurement	36 sets: Pk-Pk, Max, Min, Amplitude, High, Low, Mean, Cycle Mean, RMS, Cycle RMS, Area, Cycle Area, ROVShoot, FOVShoot, RPRESshoot, FPRESshoot, Frequency, Period, RiseTime, FallTime, +Width, -Width, Duty Cycle, +Pulses, -Pulses, +Edges, -Edges, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase				
Control Panel Function					
Autoset	Single-button, automatic setup of all channels for vertical, horizontal and trigger systems, with undo Autoset				
Save Setup	20set				
Save Waveform	24set				
Display					
TFT LCD Type	7" TFT WVGA color display 800 horizontal × 480 vertical pixels (WVGA)				
Waveform Update Rate	50,000 waveforms per second, maximum				
Interface					
USB Port	USB 2.0 High-speed host port X1, USB High-speed 2.0 device port X1				
Ethernet Port (LAN)	RJ-45 connector, 10/100Mbps with HP Auto-MDIX (4ch Model Only)				
General					
Dimensions	384mmX208mmX127.3mm				
Weight	2.8kg				
Power Source	100V~240V AC, 50Hz~60Hz, Auto selection, Power consumption: 30 Watts				

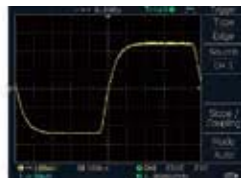
1GS/s Digital Storage Oscilloscopes

DCS-2074E	(1GS/s 4ch 70MHz)
DCS-2104E	(1GS/s 4ch 100MHz)
DCS-2204E	(1GS/s 4ch 200MHz)
DCS-2072E	(1GS/s 2ch 70MHz)
DCS-2102E	(1GS/s 2ch 100MHz)
DCS-2202E	(1GS/s 2ch 200MHz)

- 200MHz/100MHz/70MHz Digital Storage Oscilloscope
- Waveform update rate up to 120,000wfms/s

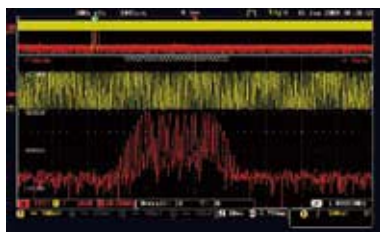


120,000wfms/s



500wfms/s

- 256 gradation 8inches WVGA display
- 10M memory depth per channel independently
- 1M FFT mathematical sampling analysis mode



- Zoom In/Play and Pause Function



- Diversified Trigger Functions
- X-Y Mode Display
- Go-NoGo function
- Data Log Function
- Digital Filter Function
- 36 Measurement Parameter Selections

DCS-2000E Series

8" TFT WVGA color display



Specifications

	DCS-2072E	DCS-2074E	DCS-2102E	DCS-2104E	DCS-2202E	DCS-2204E
Vertical						
Channels	DCS-2xx4E: 4ch, DCS-2XX2E: 2ch+EXT					
Bandwidth	DC ~ 70MHz		DC ~ 100MHz		DC ~ 200MHz	
Resolution	8 bits : 1mV~10V					
Input Impedance	1MΩ // 16pF					
DC Gain Accuracy	1mV: ±5% full scale, >2mV: ±3% full scale					
Waveform Signal Process	+, -, X, √, FFT, FFTms, User Defined Expression FFT: Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS, and FFT Window to Rectangular, Hamming, Hanning, or Blackman-Harris					
Trigger						
Source	CH1, CH2, CH3*, CH4*, Line, EXT** *four channel models only. **two channel models only.					
Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope), Timeout, Alternate, Event-Delay(1~65535 events), Time-Delay(Duration, 4nS~10S), Bus					
Coupling	AC, DC, LF rej., Hf rej., Noise rej.					
Sensitivity	1div					
External Trigger						
Range	±15V					
Sensitivity	DC ~ 100MHz Approx. 100mV 100MHz ~ 200MHz Approx. 150mV					
Horizontal						
Time base Range	1ns/div ~ 100s/div (1-2-5 increments) ROLL: 100ms/div ~ 100s/div					
Pre-trigger	10 div maximum					
Post-trigger	2,000,000 div maximum.					
Real Time Sample Rate	1GSa/s max.					
Record Length	Max. 10Mpts					
Acquisition Mode	Normal, Average, Peak Detect, Single					
Peak Detection	2nS (typical)					
Average	selectable from 2 to 256					
X-Y Mode						
X-Axis Input	Channel 1; Channel 3*		*four channel models only			
Y-Axis Input	Channel 2; Channel 4*		*four channel models only			
Phase Shift	±3° at 100kHz					
Cursors and Measurement						
Cursors	Amplitude, Time, Gating available; Unit: Seconds(s), Hz(1/s), Phase(degree), Ration(%)					
Automatic Measurement	36 sets: Pk-Pk, Max, Min, Amplitude, High, Low, Mean, Cycle Mean, RMS, Cycle RMS, Area, Cycle Area, ROVShoot, FOVShoot, RPRESshoot, FPRESshoot, Frequency, Period, RiseTime, FallTime, +Width, -Width, Duty Cycle, +Pulses, -Pulses, +Edges, -Edges, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF, Phase					
Control Panel Function						
Autoset	Single-button, automatic setup of all channels for vertical, horizontal and trigger systems, with undo Autoset					
Save Setup	20set					
Save Waveform	24set					
Display						
TFT LCD Type	8" TFT WVGA color display 800 horizontal × 480 vertical pixels (WVGA)					
Waveform Update Rate	120,000 waveforms per second, maximum					
Interface						
USB Port	USB 2.0 High-speed host port X1, USB High-speed 2.0 device port X1					
Ethernet Port (LAN)	RJ-45 connector, 10/100Mbps with HP Auto-MDIX					
General						
Dimensions	384mm X 208mm X 127.3mm					
Weight	Approx 2.8kg					
Power Source	100V~240V AC, 48Hz~63Hz, Auto selection, Power consumption 30Watts					

250MS/s Digital Storage Oscilloscopes

DCS-4605 (250MS/s 2ch 50MHz)

- Automatic measurement functions
19 kinds of automatic measurement functions are available and five parameters can be displayed on the LCD display at same time.
- Automatic calculation functions
Versatile calculation (+, -, x, FFT) functions are available.
- Built-in memory
The DCS-4605 can memories front panel setting and wave forms data by themselves using the memory.
- Clear display
The DCS-4605 have a broad outlook 5.6 inch color LCD display (TFT) and LED back light.
- Support voltage and current probes
Enable to set measuring scales of voltage / current (vertical axis) at from x0.1 to x2000 (1-2-5 steps) according to probes.
- Various trigger functions
Edge trigger, Video trigger and Pulse trigger functions are available.
- An "educational mode" function can be used in order to prevent a student from using an automatic calculation function.
- Application software; FreeWave
The software enables to control the DCS-4605 by PC (through USB). It can display wave forms on PC display in real time and save wave forms data as not only still picture but also motion picture by PC.
- Go-NoGo function
- Data logger function (with using USB flash drive)

Color TFT LCD

LabVIEW CE



USB STANDARD

Specifications

Model		DCS-4605
Vertical axis		
Sensitivity		2mV/div to 10V/div (1-2-5 steps)
Accuracy		$\pm(3\% \times [\text{Readout}] + 0.1\text{div} + 1\text{mV})$
Bandwidth(-3dB)	DC(AC)Coupling	DC (10Hz) to 50MHz
Rise time		7.0ns max
Input impedance		1M Ω \pm 2%, Approx. 15pF
Maximum input voltage		300V (DC + AC peak), Installation Category II
20MHz bandwidth (-3dB) function		Available
Trigger		
Sources		CH1,CH2, LINE, EXT
Modes		AUTO, NORMAL, SINGLE, TV(Video), Edge, Pulse Width, Forcing
Coupling		AC, DC, Low/High Frequency rejection, Noise rejection
Trigger sensitivity	0.5div (5mV min.)	DC to 25MHz
Ext. Trigger sensitivity	1.5div (5mV min.)	25MHz to 50MHz
Horizontal axis		
Range		1ns/div to 50s/div, 1-2-5steps (50ms/div to 50s/div at Roll mode)
Modes		Main, Area magnification, Magnification, Roll, X-Y
Accuracy		$\pm 0.01\%$
Delay range	Pre-trigger	10 div max.
	Post-trigger	1000div
Signal Acquisition System		
Sample rate	Real-time	250MS/s max. (1ch)
	Equivalent	25GSs/s max.
Vertical resolution		8bits, 25levels/div
Record length		4000 points
Acquisition modes		Normal, Peak Detect, Average
Peak detection		10ns (500ns/div to 50s/div)
Average		2, 4, 8, 16, 32, 64, 128, 256
Cursors and Measurement		
Automatic measurement functions	Vertical axis	Peak-to-peak, Max, Min, Amp, High, Low, Average, Rms Upper/Lower overshoot, Upper/Lower preshoot
	Horizontal axis	Frequency, Period, Rise time, Fall time, Positive pulse width, Negative pulse width, Duty cycle
Cursors measurement		Voltage / Time difference between cursors (V, Δ T, 1/ Δ T)
Frequency counter		Resolution : six digits, Accuracy : $\pm 2\%$ (cannot measure below two Hz)
Interfaces		
USB Host /USB Slave*		USB Flash Drive Max 32GB / USB 2.0 Full speed(USB-CDC) *Not support via USB3.0 or above
General		
Power requirements		100V to 240V AC, 47Hz to 63Hz
Power consumption		18Watts, 40VA max
Dimensions		341.5(W) \times 162.3(H) \times 159(D)mm
Weight		Approx. 2.5kg
Accessories		Probe x2, AC power cable, CD-ROM (instruction manual, APP software: FreeWave)

Electrical Safety Testers

STW-9901 (AC 500VA) / **STW-9801** (AC 200VA)
Withstanding Voltage Tester

STW-9902 (AC 500VA) / **STW-9802** (AC 200VA)
AC/DC Withstanding Voltage Tester

STW-9903 (AC 500VA) / **STW-9803** (AC 200VA)
AC/DC Withstanding Voltage/Insulation Resistance Tester

STW-9904 (AC 500VA)
AC/DC Withstanding Voltage/Insulation Resistance/Ground Bond Tester

- 500VA and AC Test Capacity
- 240 x 64 Ice Blue Dot Matrix LCD
- Manual/Auto Mode
- Function Key for Quick Selecting
- High Intensity Flash for Caution & Status Indication
- Safety Interlock Function
- Zero Crossing Turn-on Operation
- Controllable Ramp-up Time

Specifications

Environment		
Range	Temperature	Humidity
Warranty	15°C ~ 35°C	≤70% (No condensation)
Operation	0°C ~ 40°C	≤70% (No condensation)
Storage	-10°C ~ 70°C	≤85% (No condensation)
Installation Location	Indoors at an amplitude of up to 2000m.	
AC Withstanding Voltage	STW-9801/9802/9803	STW-9901/9902/9903/9904
Output Voltage Range	0.100kV~ 5.000kV	
Output Voltage Resolution	2V/step	
Output Voltage Accuracy	± (1% of setting +5V) with no load	
Maximum Rated Load (Table1)	200 VA (5kV/100mA)	500 VA (5kV/100mA)
Maximum Rated Current	10mA(0.1kV≤V≤0.5kV) 40mA(0.5kV<V≤5kV)	10mA(0.1kV≤V≤0.5kV) 100mA(0.5kV<V≤5kV)
Output Voltage Waveform	Sine wave	
Frequency	50 Hz / 60 Hz	
Voltage Regulation	± 1% +5V [Maximum rated load → no load]	
Voltmeter Accuracy	± (1% of reading+ 5V)	
Current Measurement Range	0.001mA~40.0mA	0.001mA~100.0mA
Current Best Resolution	0.001mA(0.001mA~0.999mA)	0.001mA(0.001mA~1.100mA)
	0.01mA(0.01mA~0.999mA)	0.01mA(0.01.11mA~11.00mA)
	0.1mA(0.10.0~0.40.0mA)	0.1mA(0.11.1~100.0mA)
Current Measurement Accuracy	± (1.5% of rdg + 30 counts) HI SET<1.00mA ± (1.5% of rdg + 3 counts) HI SET≥1.00mA	± (1.5% of rdg + 30 counts) HI SET<1.11mA ± (1.5% of rdg + 3 counts) HI SET≥1.11mA
Window Comparator Method	Yes	
ARC DETECT	Yes	
Rise-time Control Function	Yes	
RAMP (Ramp Time)	0.1s~999.9s	
TIMER (Test Time)	OFF*, 0.5s~999.9s	
GND	ON/OFF	
* The timer can only be turned off under special MANU mode (MANU=***-000)		
DC Withstanding Voltage	STW-9802/9803	STW-9902/9803/9804
Output Voltage Range	0.100kV~ 6.000kV	
Output Voltage Resolution	2V	
Output Voltage Accuracy	± (1% of setting +5V) with no load	
Maximum Rated Load (Table1)	50W (5kV/10mA)	100W (5kV/20mA)
Maximum Rated Current	2mA (0.1kV≤V≤0.5kV) 10mA (0.5kV<V≤6kV)	2mA (0.1kV≤V≤0.5kV) 20mA (0.5kV<V≤6kV)
Voltmeter Accuracy	± (1% of reading+ 5V)	
Voltage Regulation	± 1% +5V [Maximum rated load → no load]	
Current Measurement Range	0.001mA~010.0mA	0.001mA~020.0mA
Current Best Resolution	0.001mA(0.001mA~0.999mA)	0.001mA(0.001mA~1.100mA)
	0.01mA(0.01.0mA~9.99mA)	0.01mA(0.01.11mA~11.00mA)
	0.1mA(0.10.0mA)	0.1mA(0.11.0mA~020.0mA)
Current Measurement Accuracy	± (1.5% of rdg + 30 counts) HI SET <1.00mA ± (1.5% of rdg + 3 counts) HI SET ≥1.00mA	± (1.5% of rdg + 30 counts) HI SET <1.11mA ± (1.5% of rdg + 3 counts) HI SET ≥1.11mA
Window Comparator Method	Yes	
ARC DETECT	Yes	
Rise-time Control Function	Yes	
RAMP (Ramp Time)	0.1s~999.9s	
TIMER (Test Time)	OFF*, 0.5s~999.9s	
GND	ON/OFF	
* The timer can only be turned off under special MANU mode (MANU=***-000)		

STW-9900/9800 Series (Stock only)

500VA and 200VA AC Test Capacity

LabVIEW



RS-232C
STANDARD

USB
STANDARD

GP-IB
OPTION

- True RMS Current Measurement
- High Resolution : 1μA for Measuring Current, 2V for Setting Voltage
- PWM Switching Amplifier to Enhance the Power Efficiency and Reliable Testing
- Max. 100 Memory Block for Test Condition (Step) Setting. And Each Step can be Named Individually
- Remote Terminal on the Front Panel for "Start" and "Stop" Control by External
- Interface: RS-232C, USB Device, Signal I/O and GP-IB (Option: OPT.1)

Insulation Resistance Test	STW-9803/9903/9904		
Output Voltage	50V~1000V		
Output Voltage Resolution	50V		
Output Voltage Accuracy	(1% of setting+5V) with no load		
Resistance Measurement Range (STW-9803)	1MΩ~ 9500MΩ		
	Test Voltage	Measurement Range	Accuracy
	50V≤Vs≤450V	0.001GΩ~0.050GΩ 0.051GΩ~2.000GΩ	±(5% of reading +1 count) ±(10% of reading +1 count)
	500V≤Vs≤1000V	0.001GΩ~0.500GΩ 0.501GΩ~9.500GΩ	±(5% of reading +1 count) ±(10% of reading +1 count)
Resistance Measurement Range (STW-9903/ 9904)	1MΩ~ 50GΩ		
	Test Voltage	Measurement Range	Accuracy
	50V≤Vs≤450V	0.001GΩ~0.050GΩ 0.051GΩ~2.000GΩ	±(5% of reading +1 count) ±(10% of reading +1 count)
	500V≤Vs≤1000V	0.001GΩ~0.500GΩ 0.501GΩ~9.999GΩ 10.00GΩ~50.00GΩ	±(5% of reading +1 count) ±(10% of reading +1 count) ±(20% of reading +1 count)
Output Impedance	600kΩ		
Window Comparator Method	Yes		
Rise-time Control Function	Yes		
RAMP (Ramp Time)	0.1s~999.9s		
TIMER (Test Time)	1s~999.9s		
GND	OFF		
Ground Bond Test	STW-9904		
Output Current Range	03.00A~32.00A		
Output Current Accuracy	± (1% of reading +0.2A) when 3A ≤ I ≤ 8A ± (1% of reading +0.05A) when 8A < I ≤ 32A		
Output Current Resolution	0.01A		
Frequency	50Hz/60Hz selectable		
Ohmmeter Measurement Accuracy	± (1% of reading +2mΩ)		
Ohmmeter Measurement Range	10mΩ~650.0mΩ (depending on output current)		
Test Voltage	Max. 6V(AC)open - circuit		
Ohmmeter Measurement Resolution	0.1mΩ		
Windows Comparator Method	Yes		
TIMER (Test Time)	0.5s~999.9s		
GND	OFF		
Interface			
REMOTE (Remote terminal)	Yes		
SIGNAL IO	Yes		
RS-232C	Yes		
USB (Device)	Yes		
GPIO	Yes (OPTION)		
General			
DISPLAY	240 x 64 dot matrix LED back light LCD		
MEMORY	AUTO/MANU mode 100 memory blocks total		
POWER SOURCE	AC100V/120V/220V/230V ±10% 50Hz/60Hz		
ACCESSORIES	Power cord x1, User Manual x1 (CD), GHT-114x1 (GTL-115x1 for STW-9904)		
DIMENSIONS & WEIGHT	STW-9801/9802/9803: Approx. 322(W) x 148(H) x 452(D)mm(Max) 24kg(Max)		
	STW-9901/9902/9903: Approx. 322(W) x 148(H) x 482(D)mm(Max) 24kg(Max)		
	STW-9904: Approx. 322(W) x 148(H) x 594(D) mm (Max.) 27kg(Max)		

Multiplex Scanner Box for STW-9900/9800 Series

STW-S1

8CH High Voltage Scanner Box

STW-S2

6CH High Voltage and 2CH Ground Bond Scanner Box

This scanner box handles withstanding voltage 5kVac / 6kVdc and insulation resistance voltage 1kVdc as well as the ground bond current 40Aac supplied from safety tester proper. Each scanner box extends the output to 8 channels, a potential HI, LO or X can be set for each channel and AC/DC withstanding voltage, insulation resistance or ground bond test can be conducted depending on the model of scanner box.

A maximum 4 scanner boxes can be connected to one STW-9900/9800 series, it allows the output channel can be extended up to 32 channels. It is particularly well suited for multi-point safety testing as well for volume testing on factory floors.

Specifications

Model	STW-S1	STW-S2
High Voltage Rating	5kV AC / 6kV DC	5kV AC / 6kV DC
High Current Rating	---	40AAC
Number of H.V. Channels	8	6
Number of G. Channels	---	2
Maximum Number of Scanners	4 Scanners (up to 32 channels)	
Interface	RS-232C for connection between tester or scanner box	
Power Source	AC 100-240V $\pm 10\%$, 50/60Hz 50VA MAX	
Dimensions (W x H x D)mm	330 x 101 x 399	330 x 101 x 413
Weight	Approx. 5.5kg	

Multiplex Scanner Box

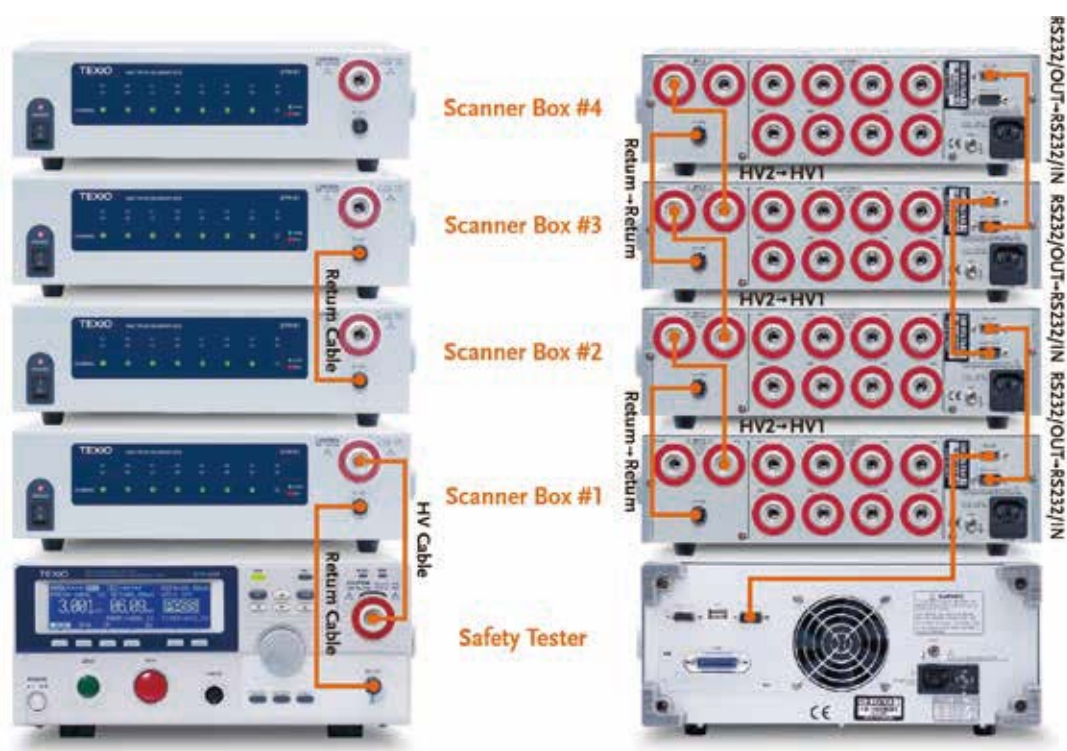
500VA AC Test Capacity



RS-232C
STANDARD

- Multi-channel Outputs for Withstanding Voltage, Insulation Resistance, Ground Bond Tests
- High-intensity LED for Channel, Status & Judgment Indications
- Front & Rear Input Connector Design is Suitable for the STW-9900/9800 Series

Accessories	Model	STW-S1	STW-S2
Quick Start Guide		x1	x1
Power Cord		x1	x1
CD (Complete user manual)		x1	x1
H.V. Wiring Lead	GHT-108	x1	x1
G.B. Wiring Lead	GHT-109		x1
Test Lead (Red)	GHT-116R	x8	x6
Test Lead (Black)	GHT-116B	x1	x1
Test lead for GB H (Red)	GTL-116R		x2
Test lead for GB L (Black)	GTL-116B		x1
Communication Cable	GTL-235	x1	x1



Color Pattern Generators

CG-971

Color pattern Generator

- Analog video signal/Audio signal output
- Conformity with NTSC,PAL,PAL-M and TNSC-4.43
- Selectable sync level
- Available for various setting and output patterns by system file
- Each staircase level in step pattern settable by voltage
- Natural image and Monoscope pattern output
- Max. 24 pattern installation
- Auto sequence mode
- RS-232C, and Digital IF (TTL) for remote control
- Half rack size of 19 inch EIA 2U

CG-971

NTSC / PAL



RS-232C
STANDARD

Specifications

Image		
Basic patterns	Raster, window, cross hatch, dot, cross & dot, checker, stripes (vertical / horizontal), step (division input / level input), character, color bar (split / SPTE), and monoscope	
Natural Image data	712 X 574 dots, 1-,4-,8-,24- and 32-bit color BMP file format (Incompatible with RLE compression.)	
Output functions	Reversing, luminance component ON/OFF and chrominance component ON/OFF functions	
Image formats	NTSC-M, NTSC-J, NTSC-4.43, PAL-B/D/G/H/I, PAL-M	
Video output (CVBS)	75Ω, BNC connector. 1.0V(p-p) : NTSC-M/J/4.43, PAL-M (0.714+0.286V(p-p)), PAL-B/D/G/H/I (0.7+0.3V(p-p)) Setup level : 7.5% NTSC-M, and PAL-M only, 0% Others	
S connector (Y/C)	Y+S (SYNC to 100% white) : 1.0V(p-p) (Differences according to the formats are equivalent to those of CVBS) Accuracy = larger value of ±5% and ±20mV, 75Ω C (burst) : 300mV(p-p), Accuracy = ±5%, 75Ω	
RGB output (Not for PC use)	700mV(p-p), Accuracy = ±5%, 75Ω BNC connector	
SYNC output	Front : V-SYNC/C-SYNC switching, TTL output, BNC connector, polarity may be switched by system file setting Rear H.V sync output : TTL output, BNC connector, polarity may be changed by system file setting	
Audio output		
Audio level	0.1V to 2.0V (Rand L may be set independently in 0.1V steps), Accuracy = ±10% (with no termination at full scale)	
Audio frequency	100Hz to 20kHz (R and L may be set independently in 100Hz steps), Accuracy = ±10% (open end at full scale)	
Outpt connectors	RCA pin jacks, 2-channel (stereo), unbalance, 600Ω	
Others		
Sequence	24 steps max. May be changed up to maximum of 60 seconds in units of 1 second per step. Automatic and step operation are selectable.	
Compatible CF cards	FAT12, FAT16 and FAT32 only. Not compatible with NTFS. Capacity is 2GB or less. ※ <u>We use 2GB or smaller-capacity CF cards made by SAN DISK CO., LTD. To check operations.</u> <u>It will not warrant the performance if the user uses other CF cards.</u>	
LCD display	2-line, 40-digit LCD (with LED backlight)	
External control	RS-232C and digital interface (TTL level, parallel) are selectable.	
Accessories	Instruction manual, power cord, and application disc ※ <u>Setup application software : Compatible with MS Windows 98/ME and Windows 2000/XP/VISTA</u> ※ <u>CF card is not included as standard equipment</u>	
Power source	AC 100V to 240V, 50Hz or 60Hz	
Temp. / humid range	Operating	0°C to 40°C RH85% or less (No dew condensations)
	Spec.	10°C to 35°C RH85% or less
Dimension and Weight	210(W)×98(H)×315(D)mm Approx. 2.5kg	

Examples of signal patterns



■ Raster
(Red, Green, blue, Yellow,
Magenta, Cyan, White
20/50/75/100%)



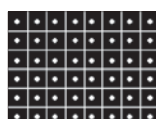
■ Window



■ Cross hatch



■ Dot



■ Cross & Dot



■ Checker



■ Stripes
(Vertical/Horizontal)



■ Step
(Division/Level input)



■ Ramp



■ Character



■ Color bar
(75/100% split)



■ Color bar (SMPTE)



■ Monoscope



■ Natural image data

2ch Arbitrary Function Generator

FGX-2220

2ch Arbitrary Function Generator

- DDS Function Generator series
- 1μHz high frequency resolution maintained at full range
- 20ppm frequency stability
- Arbitrary Waveform Capability
- Sine, Square, Ramp, Pulse, Noise, standard waveforms
- Internal and external LIN/LOG sweep with marker output
- Int/Ext AM, FM, PM, FSK, SUM modulation
- Burst function with internal and external triggers without marker output
- Store/recall 10 groups of setting memories
- Output overload protection
- USB interface as standard
- 3.5 inch Color TFT LCD (320 X 240) graphical user interface

FGX-2220

20MHz 2ch Arbitrary Function Generator

LabVIEW



USB
STANDARD

Specifications

		CH1	CH2
Waveforms		Sine, Square, Ramp, Pulse, Noise, ARB	
Arbitrary Functions			
Sample Rate		120 MSa/s	
Repetition Rate		60 MHz	
Waveform Length		4k points	
Amplitude Resolution		10 bits	
Non-Volatile Memory		4k points	
Frequency Characteristics			
Range	Sine, Square	1uHz to 20MHz	
	Ramp	1MHz	
Resolution		1uHz	
Accuracy	Stability	±20 ppm	
	Aging	±1 ppm, per 1 year	
	Tolerance	≤1 mHz	
Output Characteristics			
Amplitude	Range	1mVpp to 10 Vpp (into 50Ω), 2mVpp to 20 Vpp (open-circuit)	
	Accuracy	±2% of setting ±1 mVpp (at 1 kHz)	
	Resolution	1mV or 3 digits	
	Flatness	±1% (0.1dB) ≤100kHz, ±3% (0.3 dB) ≤5MHz, ±5% (0.4 dB) ≤12MHz, ±10% (0.9dB) ≤20MHz (sine wave relative to 1kHz)	
Offset	Units	Vpp, Vrms, dBm	
	Range	±5 Vpk ac +dc (into 50Ω), ±10Vpk ac +dc (Open circuit)	
Waveform	Accuracy	2% of setting + 20mV+ 0.5% of amplitude	
	Output Impedance	50Ω typical (fixed), > 10MΩ (output disabled)	
Sine wave Characteristics			
Harmonic distortion		≤ -55 dBc DC to 200kHz, Ampl ≥ 0.1Vpp, ≤ 0 dBc 200kHz to 1MHz, Ampl > 0.1Vpp, ≤ 35 dBc 1MHz to 5MHz, Ampl > 0.1Vpp, ≤ -30 dBc 5MHz to 20MHz, Ampl > 0.1Vpp	
Square wave Characteristics			
Rise/Fall Time		≤25ns at maximum output. (into 50 Ω load)	
Overshoot		5%	
Asymmetry		1% of period +5 ns	
Variable Duty Cycle		1.0% to 99.0% ≤100kHz, 10% to 90% ≤ 1MHz, 50% ≤ 20MHz	
Ramp Characteristics			
Linearity		< 0.1% of peak output	
Variable Symmetry		0% to 100% (0.1% Resolution)	
Pulse Characteristics			
Period		40ns to 2000s	
Pulse Width		20ns to 1999.9s	
Overshoot		<5%	
Jitter		20ppm +10ns	
Modulation		AM Modulation, FM Modulation, Sweep, FSK, PM, SUM	
External Trigger Input			
Type		For FSK, Burst, Sweep	
Input Level		TTL Compatibility	
Slope		Rising or Falling(Selectable)	
Pulse Width		>100ns	
Input Impedance		10kΩ, DC coupled	

External Modulation Input		
Type	For AM, FM, PM, SUM	
Voltage Range	±5V full scale	
Input Impedance	10kΩ	
Frequency	DC to 20kHz	
Trigger Output		
Type	For Burst, Sweep, Arb	
Level	TTL Compatible into 50Ω	
Pulse Width	>450ns	
Maximum Rate	1MHz	
Fan-out	≥4 TTL Load	
Impedance	50Ω Typical	
Dual Channel Function		
Phase	-180° to 180°, Synchronize phase	-180° to 180°, Synchronize phase
Track	CH2=CH1	CH1=CH2
Coupling	Frequency(Ratio or Difference) Amplitude & DC Offset	Frequency(Ratio or Difference) Amplitude & DC Offset
Burst		
Waveforms	Sine, Square, Ramp	Sine, Square, Ramp
Frequency	1uHz to 20MHz	1uHz to 20MHz
Burst Count	1 to 65535 cycles or Infinite	1 to 65535 cycles or Infinite
Start/Stop Phase	-360° to +360°	-360° to +360°
Internal Period	1ms to 500s	1ms to 500s
Gate Source	External Trigger	External Trigger
Trigger Source	Single, External or Internal Rate	Single, External or Internal Rate
Trigger Delay		
N-Cycle, Infinite	0s to 655350ns	0s to 655350ns
Frequency Counter		
Range	5Hz to 150MHz	
Accuracy	Time Base accuracy±1 count	
Time Base	±20ppm (23°C ±5°C) after 30 minutes warm up	
Resolution	The maximum resolution is:100nHz for 1Hz, 0.1Hz for 100MHz.	
Input Impedance	1kΩ/1pf	
Sensitivity	35mVrms to 30Vrms (5Hz to 150MHz)	
Save/Recall		
	10 Groups of Setting Memories	
Interface		
	USB Host : USB Flash Drive, USB Device : USB-CDC Class	
Display		
	3.5" TFT LCD	
General Specifications		
Power Source	AC100 to 240V, 50 to 60Hz	
Power Consumption	25 Watts (Max)	
Operating Environment		
Temperature to satisfy the specification : 18 to 28°C, Operating temperature : 0 to 40 °C, Relative Humidity : <80%, 0 to 40°C, Installation category : CAT II		
Operating Altitude	2000 Meters	
Storage Temperature	-10 to 70°C, Humidity: ≤70%	
Dimensions	266(W) x 107(H) x 293(D) mm	
Weight	Approx. 2.5kg	
Accessories	GTL-101×2, Quick Start Guidex1, CD (user manual + software)×1, Power cord×1	

Arbitrary Function Generators

FGX-2005

5MHz Arbitrary Function Generator

- 0.1Hz ~ 5 MHz with in 0.1Hz Resolution
- Sine, Square, Ramp, Noise and Arbitrary Waveform
- 20MSa/s Sampling Rate, 10 bit Vertical Resolution and 4k point Memory for Arbitrary Waveform
- 1% ~ 99% Adjustable Duty Cycle for Square Waveform
- Waveform Parameter Setting Through Numeric Keypad Entry & Knob Selection
- Amplitude, DC Offset and Other Key Setting Information Shown on the 3.5" LCD Screen Simultaneously

Specifications

Waveforms		
Type	Sine, Square, Ramp, Noise, ARB	
Arbitrary Functions		
	Sample Rate	20 MSa/s
	Repetition Rate	10MHz
	Waveform Length	4k points
	Amplitude Resolution	10 bits
	Non-Volatile Memory	4k points
Frequency Characteristics		
Range	Sine	0.1Hz~5MHz
	Square	0.1Hz~5MHz
	Triangle, Ramp	1MHz
Resolution	0.1Hz	
Accuracy	Stability	±20 ppm
	Aging	±1 ppm, per 1 year
	Tolerance	≤ 1 mHz
Output Characteristics		
Amplitude	Range	1 mVpp to 10 Vpp (into 50Ω) 2 mVpp to 20 Vpp (open-circuit)
	Accuracy	± 2% of setting ±1 mVpp (at 1 kHz)
	Resolution	1 mV or 3 digits
	Flatness	± 1% (0.1dB) ≤100kHz ± 3% (0.3 dB) ≤5MHz ± 5% (0.4 dB) ≤12MHz (sine wave relative to 1 kHz)
	Units	Vpp, Vrms, dBm
Offset	Range	±5 Vpk ac +dc (into 50Ω) ±10Vpk ac +dc (Open circuit)
	Accuracy	2% of setting + 10 mV+ 0.5% of amplitude
Waveform Output	Impedance	50Ω typical (fixed) > 300kΩ (output disabled)
	Attenuator	—
	Protection	Short-circuit protected Overload relay automatically disables main output
SYNC Output	Level	TTL-compatible into >1kΩ
	Impedance	50Ω nominal
	Fan Out	—
	Rise of Fall Time	≤ 25ns
Sine wave Characteristics		
	Harmonic distortion	−55 dBc DC ~ 200kHz, Ampl > 0.1Vpp −50 dBc 200kHz ~ 1MHz, Ampl > 0.1Vpp −35 dBc 1MHz ~ 5MHz, Ampl > 0.1Vpp −30 dBc 5MHz ~ 12MHz, Ampl > 0.1Vpp
Square wave Characteristics		
	Rise/Fall Time	≤25ns at maximum output.(into 50 Ω load)
	Overshoot	< 5%
	Asymmetry	1% of period +1 ns
	Variable duty Cycle	1.0% to 99.0% ≤100kHz 20.0% to 80.0% ≤ 5MHz 40.0% to 60.0% ≤ 10MHz 50% ≤ 12MHz
Ramp Characteristics		
	Linearity	< 0.1% of peak output
	Variable Symmetry	0% to 100% (0.1% Resolution)

FGX-2005

Arbitrary Function Generator

LabVIEW



USB
STANDARD

- USB Device Interface for Remote Control and Waveform Editing
- PC Arbitrary Waveform Editing Software

Other		
Save / Recall		10 Groups of Setting Memories (Locations 0~9 only for instrument state, Locations 10~19 only for ARB data)
Interface		USB (CDC Device)
Display		LCD
General Specifications		
	Power Source	AC100~240V, 50~60Hz
	Power Consumption	25 VA (Max)
	Operating Environment	Temperature to satisfy the specification : 18 ~ 28 °C Operating temperature :0 ~ 40 °C Relative Humidity: ≤ 80%, 0 ~ 40 °C ≤ 70%, 35 ~ 40 °C Installation category : CAT II
	Operating Altitude	2000 Meters
	Storage Temperature	-10~70 °C, Humidity: ≤80%
	Dimensions (WxHxD)	266(W) x 107(H) x 293(D) mm
	Weight	Approx. 2.5kg
	Accessories	BNC-Alligator cable × 1
		CD (user manual + software) ×1 Power cord×1

50MHz Arbitrary Function Generator

FGX-295

50MHz Arbitrary Function Generator

- Output range up to 50MHz for sine waveform and 25MHz for square waveform.
- 5 standard waveform: Sine, Square, Ramp, Pulse and Noise
- Arbitrary waveform function with 14bits, 125Mega sampling per sec.
- Flexible frequency sweep, burst waveform and modulation (AM, FM, PM, FSK and PWM) function.
- Standard equipment of USB, LAN and GP-IB
- Standard equipment of a useful PC application
- Memorizes up to 4kinds of an arbitrary waveform with 256 points.

Specifications

Output waveform			
Standard	Sine, Square, Ramp, Triangle, Pulse, Noise, DC		
Incorporated arbitrary	Exponential rise, Exponential fall, Reverse ramp, Sinc, Heart Pulse		
Waveform characteristics			
Sine	Frequency	1μHz to 50MHz	
Square	Frequency	1μHz to 25MHz	
Ramp, Triangle	Frequency	1μHz to 200kHz	
Pulse	Frequency	500μHz to 10MHz	
Noise	Bandwidth	approx. 20MHz	
Arbitrary	Frequency	1μHz to 10MHz	
	Waveform length	2K to 256K points	
	Amplitude resolution	14bits (including marks)	
	Sampling rate	125MS/s	
Common characteristics			
Frequency	Resolution	1μHz	
Amplitude	Range	50Ω termination	10mV(p-p) to 10V(p-p)
DC offset, DC	Range (peak AC+DC)	50Ω termination	±5V(p-p)
Main output	Impedance	Approx. 50Ω	
Sync output	Level	TTL (Impedance : approx. 50Ω)	
Internal frequency standard	Accuracy	±10ppm (90days)	±20ppm (1year)
External frequency standard (input)	Lock range	10MHz ±500Hz	
	Level	100mV(p-p) to 5V(p-p)	
External frequency standard (output)	Lock range	10MHz	
	Level	approx. 632mV(p-p) (0dBm)	
Phase offset	Range	-360 degree to +360 degree	
	Resolution	0.001 degree	
Modulation			
	Internal modulation	Sine, Square, Ramp, Triangle, Noise, Arbitrary	
	Frequency(Internal)	2mHz to 20kHz	
AM	Modulation	0.0% to 120.0%	
FM	Deviation	DC to 25MHz	
PM	Deviation	0.0 degree to 360 degree	
PWM	Deviation	0.0 degree to 360 degree	
FSK	Internal modulation	duty cycle 50% square	
	Frequency(Internal)	2mHz to 100kHz	
External modulation input	Voltage range	±5V full scale	
	Input resistance	approx. 8.7kΩ	
	Bandwidth	DC to 20kHz	
Sweep	Waveform	Sine, Square, Ramp, Arbitrary	
	Sweep time	1ms to 500 second	
Burst	Waveform	Sine, Square, Ramp, Triangle, Noise, Arbitrary	
	Start/Stop, Phase	-360 degree to +360 degree	
	Internal period	1us to 500 second	

FGX-295

50MHz Arbitrary Function Generator

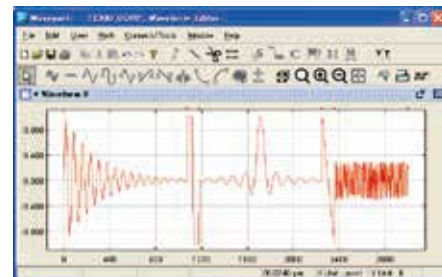


Limited sales area :China, Korea, Singapore, Malaysia, Thailand, Vietnam

Trigger		
Trigger input	Level	TTL compatible
Trigger output	Level	TTL compatible, Termination more than 1kΩ
	Max. speed	1MHz
Parallel output		
Clock output	Frequency	1μHz to 50MHz
Data output	Level	TTL compatible, Termination more than 2kΩ
General specification		
Power source	Voltage range	100V to 240V (50Hz/60Hz) 100V to 120V (400Hz)
	Power consumption	max. 80VA
Operational circumstances	Spec guaranty temperature range	18 degree. To 28 degree. (Humidity less than 80%, no condensation)
	Interface	USB (Type-B), GP-IB, LAN
Others	Dimensions	224 (W)×107(H)×380(D)mm
	Weight	Approx. 3.6kg

● Application Software "WAVEPATT"

This application software enables to create on the PC, an arbitrary waveform that outputs from FGX-295. The created waveform is to be transmitted to FGX-295 through GP-IB, LAN or USB.



Digital Multimeters

DL-1060VG

Digital Multimeter

(With USB/GP-IB function)



DL-1060VR

Digital Multimeter

(With USB/RS-232C function)



DL-1060

Digital Multimeter

(With USB function)



- High-speed sampling rate (50000 Rds/sec. at NPLC 0.001)
- Direct Thermocouple Measurement
(Built-In Cold Junction to improve Accuracy)
- Dual Measurement & Dual Display
(Including Thermocouple Measurement)
- Capacitance Measurement
- Several Measurements & Mathematic Functions
- Wide Range Current Measurement (Up to 10A)

Specifications

DC Characteristic Accuracy ± (% of reading * % pf range) *1

Function	Range *2	Resolution	Input resistance	1Year (23°C±5°C)
DC Voltage	100.0000mV	0.1μV	10MΩ	0.008 + 0.0045
	1.000000V	1μV	10MΩ	0.009 + 0.001
	10.00000V	10μV	10MΩ	0.012 + 0.002
	100.0000V	100μV	10MΩ	0.012 + 0.002
	1000.000V	1mV	10MΩ	0.02 + 0.003
Function	Range *2	Resolution	Shunt resistance	1Year (23°C±5°C)
DC Current	10.00000mA	10nA	5.1Ω	0.05 + 0.005
	100.0000mA	100nA	5.1Ω	0.05 + 0.01
	1.000000A	1μV	0.1Ω	0.15 + 0.02
	3.00000A	10μV	0.1Ω	0.2 + 0.03
	10.00000A	10μV	0.005Ω	0.25 + 0.05
Function	Range	Resolution	Test Current	1Year (23°C±5°C)
Resistance *3	100.0000Ω	100μΩ	1mA	0.02 + 0.005
	1.000000kΩ	1mΩ	1mA	0.02 + 0.002
	10.00000kΩ	10mΩ	100μA	0.02 + 0.002
	100.0000kΩ	100mΩ	10μA	0.02 + 0.002
	1.000000MΩ	1Ω	1μA	0.02 + 0.004
	10.00000MΩ	10Ω	0.1μA	0.1 + 0.004
	100.0000MΩ	100Ω	0.1μA (parallel 10MΩ)	1.5 + 0.005
Diode test	1.0000V	10μV	1mA	0.02 + 0.02
Continuity	1000.00Ω	10mΩ	1mA	0.02 + 0.03

Frequency and Period Characteristics *4

Function	Range*2	Frequency Hz	1 Year Aging
Frequency & Period	100mV to 750V *4	10 to 40	0.03
		40 to 300k	0.02

AC Characteristic Accuracy ± (% of reading + % of range) *1

Function	Range*2	Resolution	Frequency Hz	1Year (23°C±5°C)
AC Voltage (TRMS) *5	100.0000mV	0.1μV	10 to 20k	0.12 + 0.05
			20k to 50k	0.25 + 0.05
			50k to 100k	0.65 + 0.08
			100k to 300k	4.8 + 0.8
	1.000000V to 750.000V *4	1μV to 1mV	10 to 20k	0.12 + 0.04
			20k to 50k	0.25 + 0.05
			50k to 100k	0.65 + 0.08
AC Current (TRMS) *5	1.000000A	1μV	10 to 20k	0.12 + 0.04
			20k to 50k	0.25 + 0.05
			50k to 100k	0.65 + 0.08
			100k to 300k	4.8 + 0.8
	3.00000A	10μV	10 to 1k	0.3 + 0.06
			1k to 5k	1.5 + 0.15
			10 to 1k	0.5 + 0.12
	10.00000A	10μV	1k to 5k	2.5 + 0.2

DL-1060 Series

Dual Display



Limited sales area: China, Korea, Singapore, Malaysia, Thailand, Vietnam

- DCV Accuracy (0.012% in 1year)
- High Sensitivity (DCV: 0.1μV & Resistance: 100μΩ)
- Plug & Play Interface: Built-in USB (USBTMC)
- High Storage Memory (Up to 2000 Readings)
- Free Application Software

Capacitance Characteristic Accuracy ± (% of reading + % of range) *1

Function	Range	Test Current	1Year (23°C±5°C)
Capacitance *6	1nF	10μA	2.0 + 0.80
	10nF	10μA	1.0 + 0.50
	100nF	100μA	1.0 + 0.50
	1μF	100μA	1.0 + 0.50
	10μF	100μA	1.0 + 0.50
	100μF	1mA	1.0 + 0.50
	1mF	1mA	1.0 + 0.50
	10mF	1mA	1.0 + 0.50

Thermocouple Characteristic*1

Function	Type	Range	1Year (23°C±5°C)
Thermocouple *7	B	600°C to 1820°C	1.5°C
	C	0°C to 2316°C	1.5°C
	E	-250°C to 1000°C	1.5°C
	J	-210°C to 1200°C	1.0°C
	K	-200°C to 1372°C	1.0°C
	N	-200°C to 1300°C	1.0°C
	R	0°C to 1767°C	1.5°C
	S	0°C to 1767°C	1.5°C
	T	-250°C to 400°C	1.5°C

General information

Power supply	100V / 120V / 220V / 240V ± 10%
Power frequency	50/60Hz ± 10%
Power consumption Max	25VA
Operating temperature	0°C to 50°C
Operating humidity	0°C to 31°C 80% RH
Stock temperature	-10°C to 60°C
Operating altitude	Up to 2000m
Dimension	214.6(W)×88.6(H)×280.7(D)mm
Weight	Approx. 2.7kg
Safety regulation	EN61010-1:2010 (3rd Edition)
EMC regulation	EN61326-1:2013
Accessories	Power cable, USB cable, Test lead, Fuse, CD-ROM (Application & Instruction Manual)

*1 : Specifications are for 2-hour warm-up condition, 10PLC and they are relative to calibration standards.

*2 : 20% over range on all ranges except 1000VDC and 3A/10A range.

*3 : Specifications are for 4-wire or 2-wire when a Null operation is used

*4 : The range 750VAC is limited to 100kHz.

*5 : Specifications are for sine wave input > 5% of range. (3Hz bandwidth)

*6 : The Null function must be used.

*7 : The measurement accuracy excluded the error of test leads.

Options

GTL-108A	4-wire Test lead
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Digital Multimeters

DL-2060VG

Digital Multimeter

(With USB/GP-IB function)



DL-2060VR

Digital Multimeter

(With USB/RS-232C function)



DL-2060

Digital Multimeter

(With USB function)



● Tricolor Vacuum Fluorescent Display (VFD)

High resolution of 5x7-dot matrix tricolor (red, yellow, white) display shows measurement values with measuring units in upper part and for measurement range in lower part simultaneously.

● Upper and Lower Limit Level Function

Automatic judgment of measurement adequacy in accordance with setting range from the points of upper/lower limit. If judged false, the unit beeps and displays a message "HI" or "LO".

Deactivating USB interface setting, a pulse signal generated by limit test is transmitted through the USB terminal to the external device directly.

● USB and GP-IB (GP-IB is equipped with DL-2060G only) interface

USB interface as standard equipment. The DL-2060G is equipped with both GP-IB and USB interface. Digital multimeter is controlled by SCPI command.

Specifications

DC Characteristic Accuracy +/- (Rdg% + range%) *1

Function	Range *2	Resolution	Input R	Year (23C+/-5C)
DC Voltage *3	100.0000mV	0.1μV	>10GΩ	0.0050 + 0.0035
	1.000000V	1.0μV	>10GΩ	0.0040 + 0.0007
	10.00000V	10μV	>10GΩ	0.0035 + 0.0005
	100.0000V	100μV	10MΩ	0.0045 + 0.0006
	1000.000V	1mV	10MΩ	0.0045 + 0.0010
Function	Range *2	Resolution	Shunt R	Year (23C+/-5C)
DC Current	10.00000mA	10nA	5.1Ω	0.050 + 0.020
	100.0000mA	100nA	5.1Ω	0.050 + 0.005
	1.000000A	1μA	0.1Ω	0.100 + 0.010
	3.00000A	10μA	0.1Ω	0.120 + 0.020
Function	Range	Resolution	Test Current	Year (23C+/-5C)
Resistance	100.0000Ω	100μΩ	1mA	0.010 + 0.004
	1.000000kΩ	1mΩ	1mA	0.010 + 0.001
	10.00000kΩ	10mΩ	100μA	0.010 + 0.001
	100.0000kΩ	100mΩ	10μA	0.010 + 0.001
	1.000000MΩ	1Ω	5μA	0.010 + 0.001
	10.00000MΩ	10Ω	500nA	0.040 + 0.001
	100.0000MΩ	100Ω	500nA/10MΩ	0.800 + 0.010
Diode test	1.0000V	10μV	1mA	0.010 + 0.020
Continuity	1000.00Ω	10mΩ	1mA	0.010 + 0.030

AC Characteristic Accuracy +/- (Rdg% + range%) *7

Function	Range *6	Resolution	Frequency Hz	Year (23C+/-5C)
AC Voltage (TRMS)	100.0000mV	0.1μV	3 to 5	1.00 + 0.04
			5 to 10	0.35 + 0.04
			10 to 20k	0.06 + 0.04
			20k to 50k	0.12 + 0.05
			50k to 100k	0.60 + 0.08
	1.000000V 10.00000V 100.0000V 750.000V *9	1.0μV to 1mV	100k to 300k	4.00 + 0.50
			3 to 5	1.00 + 0.03
			5 to 10	0.35 + 0.03
			10 to 20k	0.06 + 0.03
			20k to 50k	0.12 + 0.05
AC Current (TRMS)	1.000000A	1μV	50k to 100k	0.60 + 0.08
			100k to 300k	4.00 + 0.50
			3 to 5	1.00 + 0.04
	3.00000A	10μV	5 to 10	0.30 + 0.04
			10 to 5k	0.10 + 0.04
			3 to 5	1.10 + 0.06
			5 to 10	0.35 + 0.06
			10 to 5k	0.15 + 0.06

DL-2060 Series

High Resolution

LabVIEW



Limited sales area: China, Korea, Singapore, Malaysia, Thailand, Vietnam

● Multipoint Scanner Card up to 20 channels

With an optional multipoint scanner card OP-42 (OP-41), different input signals up to 20 (10) channels can be automatically changed for measurement. Scanning channels, scanning times and scanning intervals are selectable. The unit can be installed by users easily. (DC voltage, AC voltage, resistance, frequency, cycle can be measured by OP-42 and OP-41)

● Useful Application Software

The application software (DL-TOOL & DL-LINK) attached to the DL-2060 / DL-2060G can control panel setting and send measured data to Microsoft Excel and Word.

Frequency and Period Characteristics *5

Function	Range	Frequency Hz	1 Year Aging
Frequency and Period	100mV to 750V	3 to 5	0.1
		5 to 10	0.05
		10 to 40	0.03
		40 to 300k	0.01

General information

Power input	100V / 220V ± 10%
Power frequency	50 / 60Hz ± 10%
Power consumption Max	25VA
Operating temperature	0°C to 50°C
Operating humidity	0°C to 31°C 80% RH
Stock temperature	-10°C to 60°C
Maximum elevation	Max 2000m
Dimension	224(W)×113(H)×373(D)mm
Weight	Approx. 4.4kg
Interface	USB (Type-B) GP-IB (DL-2060G only)
Safety regulation	EN61010-1:2010(3rd Edition)
EMC regulation	EN61326-1:2013
Attached accessories	Power cable, USB cable, Test lead, Fuse, Manual

*1: Specifications are for 6 1/2 digit and two hours warm up.

*2: 20% over range on all ranges except 100VDC and 3A range.

*3: a. Using continuous triggering for A/D Converter

b. Input current have to be less than 30 pay at 25 C/deg.

c. Input protection for all range is 1000Vpk.

*4: a. Specification for 4 and 2 wire ohms use math Null function

b. Lead cable resistance are less than 10% at 100 and 1k ranges

c. Input protection for all range is 1000Vpk

*5: Specifications are for 6 1/2 digit and two hours warm up.

*6: 20% over range on all ranges except 750VAC range

*7: Specifications are for 6 1/2 digit and two hours warm up, 3Hz filter

*8: 20% over range on all ranges except 750VAC range

*9: 750VAC range limit is 100kHz

Options

OP-41T	Multi-Point Scanner Card (10ch) (supporting thermo couple)
OP-41	Multi-Point Scanner Card (10ch)
OP-42	Multi-Point Scanner Card (20ch)
GTL-205	Test lead : Temperature probe adapter with thermocouple (K-type)
GTL-108A	4-wire Test lead

Digital Multimeters

DL-2141 (with USB Device)

4 1/2 Digital Multimeter 

DL-2142 (with USB Storage/Device)

4 1/2 Digital Multimeter 

DL-2142G (with USB Storage/Device and GPIB)

4 1/2 Digital Multimeter  

- 50,000 counts, VFD display
- Dual measurement/dual display
- Selectable measurement speeds, the maximum: 40 Readings/s for DCV
- The basic precision of DC voltage: 0.02%
- Auto/manual range selection
- True RMS (AC, AC+DC) measurements
- 11 different measurement functions
- Max./Min., REL/REL#, MX+B, 1/X, Ref%, Compare, Hold, dB, dBm

Specifications

DC Voltage

Range	Resolution	Full Scale	Accuracy (1 year 23°C ±5°C)	Input Resistance
500mV	10uV	510	0.02%+4	10MΩ or >10GΩ
5V	100uV	5.1		10MΩ or >10GΩ
50V	1mV	51		11.1MΩ
500V	10mV	510		10.1MΩ
1000V	100mV	1020		10MΩ

- * When the input value exceeds the full scale of the selected range, the display will show -OL- (over load) on the display.
- * The specifications are guaranteed to an input voltage of 1000V. A beeping alarm will go off when the input voltage is higher than 1000V.
- * 1000V protection of 1000V peak on all ranges.
- * DC Common Mode Rejection Ratio >90 dB at dc, 50 or 60Hz ±0.1% (1KΩ unbalanced, slow rates)

DC Current

Range	Resolution	Full Scale	Accuracy (1 year 23°C ±5°C)	Shunt Resistance	Burden Voltage
500uA	10nA	510	0.05%+5	100Ω	0.06V max
5mA	100nA	5.1	0.05%+4	100Ω	0.6V max
50mA	1uA	51	0.05%+4	1Ω	0.14V max
500mA	10uA	510	0.10%+4	1Ω	1.4V max
5A	100uA	5.1	0.25%+5	10mΩ	0.5V max
10A	1mA	12	0.25%+5	10mΩ	0.8V max

- * 500uA~500mA range has a 3.6V voltage limit protection and 0.5A fuse protection. And 10A range has a 12A fuse protection.
- * When the input value exceeds the full scale of the selected range, the display will show -OL- (over load) on the display.
- * The specifications are guaranteed to an input of 10A. A beeping alarm will go off when the input value is higher than 10A.

AC Voltage, ACV+DCV^[3] (AC Coupled)

Range	Resolution	Full Scale	Accuracy (1 year 23°C ±5°C) ^[1]			
			30Hz-50Hz	50Hz-10kHz	10kHz-30kHz	30kHz-100kHz
500mV	10uV	510	1.00%+40	0.50%+40	2.00%+60	3.00%+120
5V	100uV	5.1	1.00%+20	0.35%+15	1.00%+20	3.00%+50
50V	1mV	51	1.00%+20	0.35%+15	1.00%+20	3.00%+50
500V	10mV	510	x	0.5%+15	1.00%+20 ^[2]	3.00%+50 ^[2]
750V	100mV	765	x	0.5%+15	x	x

[1] Specifications are for sine wave inputs that are greater than 5% range.

[2] Input voltage <300Vrms.

[3] The accuracy of ACV+DCV is equal to ACV's with 10 more digits added.

- * The specifications are guaranteed to an input of 750V. A beeping alarm will go off when the input value is higher than 750V.

- * Input protection of 1000V peak on all ranges.

- * AC-coupled true RMS – measures the AC component of the input with up to 400Vdc of bias on any range.

- * AC Common Mode Rejection Ratio >60 dB, 50 or 60Hz ±0.1% (1KΩ unbalanced, slow rates)

AC Current, ACI+DCI^[3] (AC Coupled)

Range	Resolution	Full Scale	Accuracy (1 year 23°C ±5°C) ^[1]				Burden Voltage
			30Hz-50Hz	50Hz-2kHz	2kHz-5kHz	5kHz-20kHz	
500uA	10nA	510	1.50%+50	0.50%+40	1.50%+50	3.00%+75	0.06V max
5mA	100nA	5.1	1.50%+40	0.50%+20	1.50%+40	3.00%+60	0.6V max
50mA	1uA	51	1.50%+40	0.50%+20	1.50%+40	3.00%+60	0.14V max
500mA	10uA	510	1.50%+40	0.50%+20	1.50%+40	3.00%+60 ^[2]	1.4V max
5A	100uA	5.1	2.0%+40	0.50%+30	x	x	0.5V max
10A	1mA	12	2.0%+40	0.50%+30	x	x	0.8V max

[1] The 500uA range requires an input of >35uA to meet specifications. The 5mA~10A ranges need more than 5% of full scale range to meet specifications.

[2] Input current (5kHz ~ 20kHz)<330Arms.

[3] The accuracy of ACI+DCI is equal to ACI's with 10 more digits added.

- * The specifications are guaranteed to 10A. A beeping alarm will go off when the input current being measured is higher than 10A.

Diode

Range	Resolution	Full Scale	Test Current	Accuracy (1 year 23°C ±5°C)
5V	100uV	5.1	0.83mA	0.05%+5

- * Input protection of 500V peak. *Open circuit voltage approximates 6V.

DL-2140 Series

Dual Display and USB storage function

LabVIEW



USB
STANDARD

GPIB
STANDARD
DL-2142G only

- Standard USB device interface to connect with a computer
- Temperature measurement function (DL-2142/ DL-2142G)
- USB storage function (DL-2142/ DL-2142G)
- GPIB interface (DL-2142G only)

Continuity

Range	Resolution	Full Scale	Test Current	Accuracy (1 year 23°C ±5°C)
5000.0Ω	100mΩ	5100	0.83mA	0.1%+5

- * Input protection of 500V peak. *Open circuit voltage approximates 6V.

Resistance

Resistance	Resolution	Full Scale	Test Current	Accuracy ^[2] (1 year 23°C ±5°C)
500Ω	10mΩ	510	0.83mA	0.1%+5 ^[1]
5kΩ	100mΩ	5.1	0.83mA	0.1%+3 ^[1]
50kΩ	1Ω	51	83uA	0.1%+3
500kΩ	10Ω	510	8.3uA	0.1%+3
5MΩ	100Ω	5.1	830nA	0.1%+3
50MΩ	1KΩ	51	560nA/10MΩ	0.3%+3

[1] Using the REL function. If you don't use the REL function then increase the error by 0.2Ω.

[2] When measuring resistances greater than 500kΩ, please use shielded test leads to eliminate the noise interference that may be induced by standard test leads.

- * Open circuit voltage approximates 6V max on 500Ω~5MΩ range, approximates 5.5V max on 50MΩ range.

- * Input protection of 500V peak on all ranges.

Capacitance

Range	Resolution	Full Scale	Test Current	Accuracy ^[1] (1 year 23°C ±5°C)
5nF: 0.5nF~1nF ^[2]	0.001nF	5.1	8.3uA	2.0%+20
5nF: 1nF~5nF ^[2]				2.0%+10
50nF: 5nF~10nF ^[2]	0.01nF	51	8.3uA	2.0%+30
50nF: 10nF~50nF ^[2]				2.0%+10
500nF	0.1nF	510	83uA	2.0%+4
5uF	1nF	5.1	0.56mA	
50uF	10nF	51	0.83mA	

[1] For the 5nF ~ 50uF range make sure that the input is greater than 10% of the range.

[2] Need to use the REL function.

- * Input protection of 500V peak on all ranges.

Frequency

Measurement Range	Accuracy (1 year 23°C ±5°C)
10Hz ~ 500Hz	0.01%+5
500Hz ~ 500KHz	0.01%+3
500KHz ~ 1MHz	0.01%+5

- * AC + DC measurements do not allow frequency measurements.

- * Input protection of 1000V peak on all ranges.

Temperature Specifications (DL-2142 Only)















Sensor	Type	Measurement Range	Resolution	Accuracy (1 year 23°C ±5°C)
Thermocouple	J,K,T	-200 ~ +300°C	0.1°C	2°C




- * Note: The temperature specifications do not include sensor error.

General Specifications

Specification Conditions:	Temperature: 23°C±5°C Humidity: <80%RH, 75%RH for resistance measurement readings greater than 10MΩ.
Operating Environment: (0~50°C)	Temperature Range: 0~35°C, Relative Humidity: <80%RH; >35°C, Relative Humidity: <70%RH Indoor use only, Altitude: 2000 meters, Pollution degree 2
Storage Conditions (-10~70°C)	Temperature Range: 0~35°C, Relative Humidity: <90%RH; >35°C, Relative Humidity: <80%RH
General:	Power Consumption: Max 15VA AC100V ~ 240V ±10%, 50/60Hz Dimensions: 265 mm (W) X 107 mm (H) X 302 mm (D) Weight: Approximately 2.9 kg
Accessories	Accessories CD-ROMx1, Test leadsx1, Power cordx1

Accessory & Option Parts for Power Supplies and Electronic Loads

Description	Model	Remarks
Conector kit	PSW-001	PSW
GP-IB Adapter	GP-600B	PA-B 
GP-IB Interface	GUG-001	PSW 
RS232C Interface	GUR-001	PSW approx. 40cm 
GP-IB/USB Control Board	IF-41GU	PW-A/PAR-A 
RS-232C Control Board	IF-41RS	PW-A/PAR-A 
USB Control Board	IF-41USB	PW-A/PAR-A 
GP-IB Control Board	IF-50GP	LW 
USB Control Board	IF-50USB	LW 
GP-IB Control Board	IF-60GP	PSF-L/H 
RS-232C/USB Control Board	IF-60RU	PSF-L/H 
GP-IB/USB Control Board	IF-70GU	PS-A/PDS-A 
Analog Control Board (compatible with PS series)	IF-70PS	PS-A/PDS-A
LAN/USB Control Board	IF-71LU	PDS-A 
RS-232C Control Board	IF-71RS	PS-A/PDS-A 
GP-IB/USB/RS-232C Control Board	IF-80GUR	LSA 
Connecting Cable for GP-600B (1pc)	OP-18-PAB	PA-B
GP-IB Control Board	PEL-004	LSG

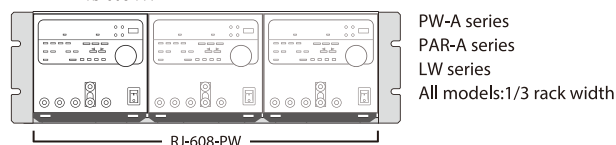
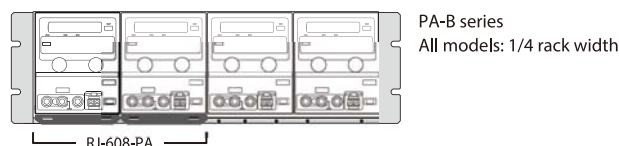
Description	Model	Remarks
Guard Cap (2pcs)	OP-20GC	PA-B 
Modular Cable	CB-0603S CB-06100S CB-0615S CB-0630S	PW-A/PAR-A/ PS-A/PDS-A/ PSF-L/PSF-H/ LSA approx. 0.3m approx. 10m approx. 1.5m approx. 3m
D-sub 9pin Modular Connector	TA-66	PW-A/PAR-A/ PS-A/PDS-A/ PSF-L/PSF-H/ LSA 
Handle Kit	HK-10	PSF-L/H 
Handle Kit	HK-11	PS-A/PDS-A
Test Lead	GTL-104A	Max. 10A, approx. 1m 
Test Lead	GTL-105A	Max. 3A, approx. 1m 
Test Lead for PSW30V/80V/160V	GTL-123	PSW Max. 40A, approx. 1m 
Test Lead for PSW250V/800V	GTL-130	PSW 
Extention Output Terminal for PSW30V/80V/160V	GET-001	PSW Max. 30A, approx. 60cm 
Extention Output Terminal for PSW250V/800V	GET-002	PSW 
Parallel connection cable	OP-22P	PSF-L/H, LSA
	OP-23P3	PS-A/PDS-A for 2 or 3 sets
	OP-23P6	PS-A/PDS-A for max. 6 sets
	PSW-006	PSW for 2 sets
	PSW-007	PSW for 2 or 3 sets
Serial connection cable	GTL-255	LSG
	OP-22S	PSF-L for 2 sets
	OP-23S	PS-A/PDS-A for 2 sets
Joint kit	PSW-005	PSW for 2 sets
Connection kit for parallel operation	JK-10	PSF-L/H
	OP-21A	Horizontal installation for 2sets
	OP-21B	Vertical installation for 2sets
GP-IB cable	CB-2420P	approx. 2m
USB cable	GTL-246	A-B

Accessory & Option Parts for Power Supplies and Electronic Loads

Rack Mount Adapter Option List

Intended model	Rack mount & Adapter/ Rack clamp	Rack mount clamp (Fixing attachment)		Blank panel	
	Model	Model	Remarks	Model	Width
For PA-B series	RM-608J (JIS) RM-608E (EIA)	RJ-608-PA	for 2 units	RB-608A RB-608B RB-608C RB-608D RB-608E	1/2 1/3 1/4 1/6 1/12
For PW-A, PAR-A & LW series		RJ-608-PW	for 3 units		
For GP-600B		RJ-608-GP	for 1 unit		
For PSF-L/H series		RJ-608-1/2	For 1/2 rack width		
For PS-A, PDS-A series		RJ-608-1/2 RJ-608-1/3	For 1/2 rack width For 1/3 rack width		
For LSA-165/165V1/330		RJ-608-1/3	For 1/3 rack width		
For LSA-1000		RJ-608-1/2 (2pcs)	For 1/2 rack width	-	-
For PSW series	GRA-410-J (JIS) GRA-410-E (EIA)	Enclosed in GRA-410-J/E		Enclosed in GRA-410-J/E	
For LSG-2100S	GRA-413	Enclosed in GRA-413		-	-
For LSG-175/350/1050	GRA-414-J (JIS) GRA-414-E (EIA)	Enclosed in GRA-414-J/E		Enclosed in rack mount adapter	
For STW-99/98	GRA-417	Enclosed in GRA-417		-	

● PA-B/PW-A/PAR-A/LW series and GP-600B



RJ-608-GP

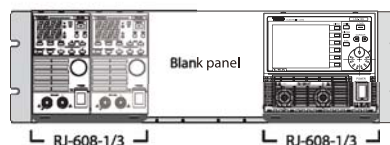
Fixing attachments are not supplied with rack mount adapters for these 4 series and GP-600B. Please use a rack mount adapter and also necessary fixing attachments. RJ-608-PA includes attachments for 2 units installation and RJ-608-PW includes attachments for 3 units installation.

● PSF/PS-A/PDS-A/LSA series (with using RJ-608-1/3, 1/2)

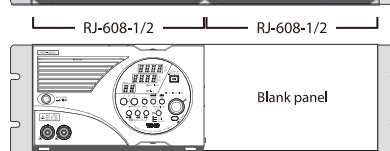
Series	1/6	1/3	1/2	1/1
PS-A	○	○	○	
PDS-A		○	○	
PSF-L			○	
PSF-H			○	
LSA		○		○

Blank panels

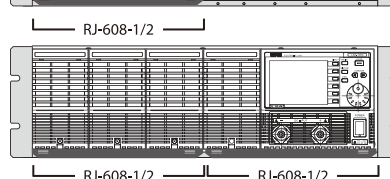
RB-608A 1/2
RB-608B 1/3
RB-608C 1/4
RB-608D 1/6
RB-608E 1/12



These series use fixing attachments, RJ-608-1/3 or RJ-608-1/2. RJ-608-1/3 can fix 1/3 rack width unit or 1/6 rack width unit (1 or 2 units). RJ-608-1/2 can fix 1/2 rack width unit, 1/3 rack width unit or 1/6 width unit (up to 3 units). Rack mount width unit (LSA-1000) needs two sets of RJ-608-1/2 for fixing.



Five kinds of blank panels are available so that various units can be mounted.



Accessory & Option Parts for Oscilloscopes



Probes List

Model	Attenuator	Applied capacity	Input impedance ^{※1}	Bandwidth	Rise time	Max input voltage	Read out	Oscilloscopes/Remarks
GTP-350A-2	× 10	10 ~ 25pF	10M Ω /approx.13pF	350MHz	1ns	500V ^{※3}	—	
	× 1	—	1M Ω / α +approx.46pF ^{※2}	6MHz	58ns	300V ^{※4}	—	
GTP-250B-2	× 10	10 ~ 35pF	10M Ω /approx.17pF	250MHz	1.4ns	500V ^{※3}	—	
	× 1	—	1M Ω / α +approx.47pF ^{※2}	6MHz	58ns	300V ^{※4}	—	
GTP-200B-4	× 10	5 ~ 30pF	10M Ω /10.5pF ~ 17.5pF	200MHz	1.8ns	600Vpk	—	DCS-2204E DCS-2202E
	× 1	—	1M Ω /65pF ~ 105pF	10MHz	35ns	200Vpk	—	
GTP-150B-4	× 10	10 ~ 35pF	10M Ω /approx.17pF	150MHz	2.3ns	500V ^{※3}	—	
	× 1	—	1M Ω / α +approx.47pF ^{※2}	6MHz	58ns	300V ^{※4}	—	
GTP-100B-4	× 10	10 ~ 35pF	10M Ω /approx.17pF	100MHz	3.5ns	500V ^{※3}	—	DCS-2104E/DCS-2102E DCS-1104B/DCS-1102B
	× 1	—	1M Ω / α +approx.47pF ^{※2}	6MHz	58ns	300V ^{※4}	—	
GTP-070B-4	× 10	10 ~ 35pF	10M Ω /approx.17pF	60MHz	5.8ns	500V ^{※3}	—	DCS-2074E/72E、DCS-1074B/72B DCS-4605
	× 1	—	1M Ω / α +approx.47pF ^{※2}	6MHz	58ns	300V ^{※4}	—	
PC-59	× 10	20 ~ 35pF	10M Ω /12.5pF	150MHz	2.3ns	DC600V	—	
PC-54	× 10	20 ~ 45pF	10M Ω /22pF	60MHz	5.8ns	DC600V	—	
	× 1	—	1M Ω /200pF or less	6MHz	58ns	—	—	
PC-52	× 10	20 ~ 35pF	10M Ω /14pF	100MHz	3.5ns	DC600V	—	
	× 1	—	1M Ω /150pF or less	6MHz	58ns	—	—	
PC-26	× 10	20 ~ 35pF	10M Ω /13pF	150MHz	2.3ns	DC600V	○	BNC-BNC








※ 1 : Using for 1M Ω input oscilloscope

※ 2 : α = Input capacity for oscilloscope

※ 3 : Level will be down when frequency 500V CAT I /300V CAT II (DC + peak AC)





※ 4 : Level will be down when frequency 300V CAT I /150V CAT II (DC + peak AC)




Accessory & Option Parts for Electrical Safty Testers

Description	Model	Remarks
GP-IB card	OPT.1	STW-99/98 
High Voltage Test Pistol approx. 2m	GHT-113	STW-99/98 DC10kV/AC8kV 
High Voltage Test Probe	GHT-205-G	STW-99/98 
High Voltage Test lead	GHT-114	STW-99/98 
Test lead for Groud Bond approx. 1m	GTL-115	STW-9904 
Test lead approx. 500mm	GHT-108	STW-S1 STW-S2 
Test lead for Scanner Box approx. 1.5m (Red)	GHT-116R	STW-S1 STW-S2 

Description	Model	Remarks
Test lead for Scanner Box approx. 1.5m (Black)	GHT-116B	STW-S1 STW-S2 
Groud Bond Wiring lead approx. 450mm	GHT-109	STW-S2 
Test lead for GB H approx. 1.5m (Red)	GTL-116R	STW-S2 
Test lead for GB L approx. 1.5m (Black)	GTL-116B	STW-S2 
RS-232C cable approx. 700mm	GTL-235	STW-S1/STW-S2 
USB cable (A-A) approx. 1.8m	GTL-247	STW-99/98 



Accessory & Option Parts for Digital Multimeters

Description	Model	Remarks
4-wire Test lead	GTL-108A	DL-2060/1060 
Test lead Temperature probe adapter with thermocouple (K-type), approx. 1m	GTL-205A	DL-2140/2060/1060 
Test lead	GTL-207A	DL-2140 
10chMulti-Point Scanner Card	OP-41	DL-2060 

Description	Model	Remarks
10chMulti-Point Scanner Card with supprotting thermocouple	OP-41T	DL-2060 
20ch Multi-Point Scanner Card	OP-42	DL-2060 
Test lead	UT-2660CA001	DL-2060/1060 

Accessory & Option Parts

Description	Model	Remarks
BNC-alligator clip	GTL-101	approx. 1m
BNC-BNC	GTL-110	approx. 1m
Banana plug-alligator clip cable	GTL-103	approx. 1.2m

Description	Model	Remarks
50 Ω Terminator DC ~ 1GHz,VSWR1.1	TA-57	
GP-IB cable 2m	CB-2420P	



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- The design and specifications of the products listed in the catalog are subject to change without prior notice. Also please note that some of the products may be discontinued without prior notice.

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