

All Wide Range

iDRC

Wide-Range Input and Wide-Range Output Programmable DC Power Supply

Precision Power for Test & Measurement



DSP-WR Series



Environmental Mission / iDRC and the Environment

We are devoted to product innovation and development while also protecting the environment and maintaining our social responsibility. We focus on reducing the impact to the environment throughout the product lifecycle, during product design, material use, manufacturing, packaging, product use and recycling.

● Purpose of Design

Our goal in designing our products is to allow every customer to have more efficient use of energy and be able to obtain power in an environmentally friendly way. Our products help our customers precisely design and develop their own remarkable energy efficient products.

Our products include DC Power Supplies, AC Power Sources, and Power Analyzers. They are primarily used in wind, solar, and other green power energy research and development laboratories, and all kinds of electric vehicles, home appliances, and IT products. We help all of our customers to design and develop low energy consumption products that meet industry standards and help reduce gas emissions.

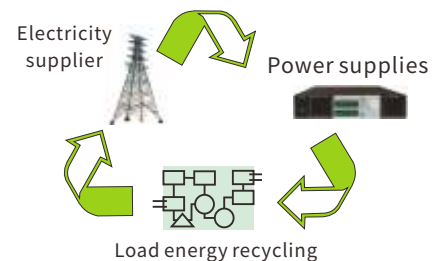


● Eliminating Toxic Materials/Substances

We are very strict in selecting materials that we use. We do not use any harmful or toxic substances in our products or packaging. All our products and packaging strictly follow the rules of RoHS Directive, WEEE, and other environmental laws and regulations. We avoid using harmful toxins, we also seek to exclude the possibility of using harmful materials in our products.

● High Efficiency

Throughout our development process we strive to meet our goals of high energy efficiency. We use low energy consumption equipment for design, for example information equipment that meets EAP energy efficiency requirements. We use power regeneration load when testing and manufacturing to reduce energy consumption. We also select low-power components and apply the latest technology to reduce energy conversion losses. Applying Active Power Factor Correct (APFC) into the products makes the PF of the products higher than 0.99 which improves the electricity quality of each product and reduces the energy waste by 20-50%.



● Smaller Volume、Less energy waste

Designing small, compact, efficient products is another way iDRC reduces energy consumption. More compact products require fewer packaging materials and allow more efficient transportation. CO2 emissions produced during transportation are efficiently reduced.

● Life

Our high quality components and iDRC's proprietary design provide greater durability and reliability. A longer product life means reduced CO2 emissions and waste produced during transportation, maintenance, and replacement. A longer product life provides our customers with reduced life-cycle costs through flexibility and reliability.

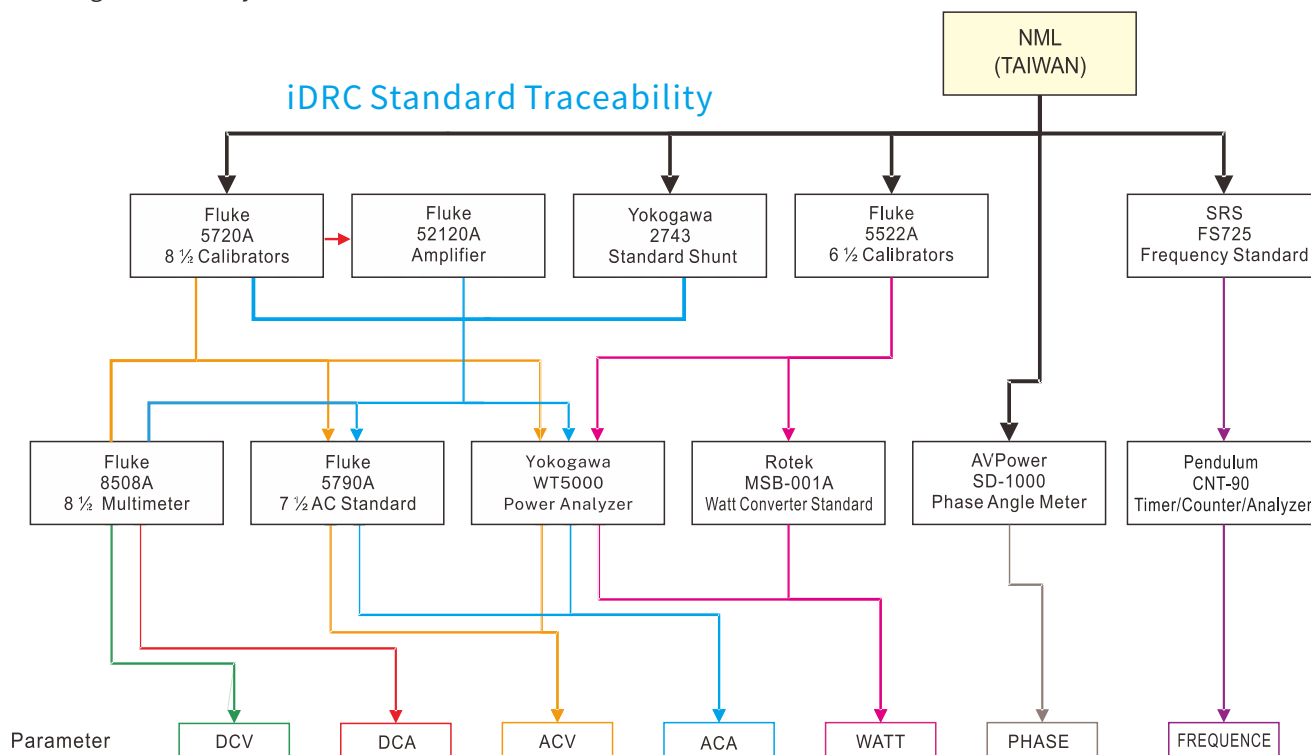


● Recycle

The recyclability of our products is higher than 85%. That means the impact of non-recyclable components on the environment is reduced.

Guarantee

iDRC commits to producing the highest quality products. We use industry leading test equipment to aid our designs and verify our results.



Calibration Equipment

FLUKE : 5720A, 5700A, 5522A, 5520A, 5500A, 52120A, 5790A, 8508A 、 **HP** 3458A 、 **Guildline** 7620 、 **SRS** : FS725, SR620 、 **Pendulum** CNT-90 、 **Yokogawa** : WT5000, WT3000, 2743 [2A, 5A, 10A, 20A, 50A, 100A] 、 **Danisense** Fluxgate DCCT : DR10000IM, DR5000IM, DL2000ID, DM1200ID, DN1000ID, DS600ID, DS200ID, DT100ID, DP50IP-B, DS50ID 、 **ROTEK** MSB-001A 、 **AVPower** SD-1000 ..等等

Development Instrumentation

Keysight/Agilent/HP : PA2201A, PA2203A, MSOX6004A, 53230A, 33522B, B2962A, 34470A, 34420A, 34461A, 34401A, L4534A, L4532A, U1620A, 3245A, 4284A+42841A 、 **ADCMT** 7461A 、 **AudioPrecision** APx525 、 **Fluke** : 8842A, 8846A, 190-104 、 **Tektronix** : 370A, TPS2024, TPS2014 、 **Keithley** : 2000, 2015 、 **Hioki** : 3390, 3196, 3197, PW3198 、 **IWATSU** : CS3100, CS3200, CS3300, DG-8000, VOAC7602 、 **Kikusui** : TOS-9201, TOS-6200, TOS-7200, TOS-3200, TOS-5101 、 **Lecroy** : HDO8108A-MS, MDA810A, HDO6104A-MS, HDO4054A-MS, WR66Zi-HRO, DA1855A, DA1855A-PR2 、 **NF** : FRA5097, FRA5087, WF1948, WF1974, WF1946, CK1620 、 **R&S** AM300 、 **SRS** DS360 、 **Tabor** WW2074 、 **Yokogawa** : WT5000, WT3000, WT1800, PX8000, DL950, DL750, SB5710, SL1000, DL7480 ..etc

note: The names and logos mentioned in this catalog are the property of the mentioned companies

The image displays a horizontal sequence of seven historical documents, each representing a different nation's patent or official decree. From left to right: 1. A British Patent of Nobility for John Roan, featuring a red wax seal and the text 'Patent of Nobility'. 2. A French royal decree from 1791, signed by Louis XVI, regarding the organization of the National Assembly. 3. A Chinese patent from the Qing Dynasty, featuring a red seal and traditional Chinese text. 4. A Japanese patent from the Meiji era, featuring a red seal and Japanese text. 5. A German patent from the Prussian era, featuring a red seal and German text. 6. A French patent from the 19th century, featuring a red seal and French text. 7. A Russian patent from the 19th century, featuring a red seal and Russian text.

(Total 207 patents including 39 invention patents)

China	ZL 2014 2 0064432.4, ZL 2014 2 0539916.X, ZL 2014 3 0130259.9, ZL 2014 3 0490203.4, ZL 2014 3 0490204.9, ZL 2015 2 0136770.9, ZL 2015 2 0150534.2, ZL 2015 2 0229375.5, ZL 2015 2 0573475.X, ZL 2015 2 0573543.2, ZL 2015 3 0432790.6, ZL 2015 3 0435062.0, ZL 2015 1 0071335.7, ZL 2016 2 0154125.4, ZL 2016 2 0353605.3, ZL 2016 2 0358539.9, ZL 2016 2 0639352.6, ZL 2016 3 0005985.7, ZL 2016 3 0060739.1, ZL 2016 3 0135663.4, ZL 2017 1 0756181.4, ZL 2017 3 0134857.7, ZL 2018 2 0225014.7, ZL 2018 2 1265923.X, ZL 2018 3 0482951.6, ZL 2018 3 0482965.8, ZL 2018 3 0483295.1, ZL 2018 3 0483561.0, ZL 2018 3 0483597.9, ZL 2018 3 0693371.1, ZL 2019 2 0371250.4, ZL 2019 2 0389562.8, ZL 2019 3 0706094.8, ZL 2020 2 0252037.4, ZL 2020 2 0700402.3, ZL 2021 2 0577034.2, ZL 2021 3 0051475.4, ZL 2017 3 0601155.5, ZL 2017 3 0659600.3, ZL 2018 2 0461773.3, ZL 2018 2 0801460.8, ZL 2019 2 0405909.3, ZL 2019 1 0949831.6, ZL 2022 3 0024760.1
Germany	Nr 10 2015 002824.3, Nr 10 2017 008 759, Nr 20 2013 011 929.2, Nr 20 2014 100 958.2, Nr 20 2014 104 818.9, Nr 20 2015 102 036, Nr 20 2015 103 503, Nr 20 2015 103 504, Nr 20 2015 105 008, Nr 20 2015 105 009, Nr 20 2016 101 440.9, Nr 20 2016 102 507, Nr 20 2016 102 535, Nr 20 2016 103 687, Nr 20 2018 000 645, Nr 20 2018 001 864, Nr 20 2018 002 885, Nr 20 2018 003 769, Nr 20 2019 001 474, Nr 20 2019 001 672, Nr 20 2020 101 721, Nr 20 2020 102 962, Nr 20 2021 105 656, Nr. 20 2020 005 508, Nr. 20 2019 001 669
European Union	002468934-0001, 002597591-0001, 002597617-0001, 002844431-0001, 002847640-0001, 002941997-0001, 003004233-0001, 003076587-0001, 003935154-0001, 004508851-0001, 004561694-0001, 005616596-0001, 005616638-0001, 005616646-0001, 005616679-0001, 005616687-0001, 005831799-0001, 007772942-0001, 008229447-0001, 008418511-0001
Japan	3215943, 1631063, 1631064, 3220684, 3220912, 3221909, 3222336, 6633722, 6639599, 3227818, 3229187, 1689613, 7016005, 1711352, 3238001, 3241835, 7287693
Taiwan	D 170155, D 172385, D 172386, D 174708, D 186590, D 196231, D 196232, D177237, D177781, D180503, D184678, D187992, D191439, D195785, D195786, D197453, D204982, D212629, D214445, I 472141, I 467529, I 530981, I 741716, I610507, I722518, M 512157, M486210, M490169, M500915, M504972, M505753, M512253, M520767, M524947, M524948, M524949, M528454, M560044, M566456, M569109, M577968, M582224, M593686, M598027, M618029, I770853
United Kingdom	90030042330001, 90030765870001, 6130954, 90045088510001, 90039351540001, 90077729420001, 90024689340001, 90028476400001, 90025976170001, 90025975910001
United States	US 10,063,038, US 10,123,442 B1, US 10,264,709 B1, US 10,383,245 B1, US 10,547,161 B1, US 10,609,846 B1, US 10,788,159 B1, US 10,925,173 B1, US 11,108,243 B1, US 11,116,115 B1, US 11,183,776 B2, US 9,240,730 B2, US 9,287,769 B1, US 9,489,011 B2, US 9,513,500 B2, US 9,538,679 B1, US 9,621,066 B2, US 9,632,548 B1, US 9,674,973 B1, US 9,681,564 B2, US 9,748,055, US 9,787,189, US 9,801,292, US D735,149S, US D770396, US D771577, US D779,837 S, US D782,417 S, US D782,424 S, US D785,710 S, US D785,711 S, US D815,608, US D848,945 S, US D870,678 S, US D870,679, US D870,681 S, US D870,682, US D870,683, US D881,825 S, US D881,910 S, US D925,479 S, US D937,888 S, US 11,316,422 B1, US D962,747 S, US 11,526,202 B2

Electromagnetic Compatibility



DSP-Wx series

PDU series

Low Voltage Directive



DSP-Wx series

PDU series

DSP-WR 1U series : Vibration Test & Filled Transport Packages



DSP-WR Series

Wide Range Programmable DC Power Supply **LXI** **CE**



Features

- Wide Range Output : DC output 0~80V/128A to 0~1500V/6.8A^{*1}
- Wide Range Input : Max. : AC mains 85~305V (47~63Hz), Rating : 100V~277Vac (50/60Hz)
- Power Regulated by Input Voltage : AC180~305V(3.4kW) ; AC90~132V(1.5kW)
- True parallel operation allows the master unit to set and display the total output current.
- Internal clock rate synchronization reduces electromagnetic interference, enhancing system stability and overall efficiency.
- Built-in patented synchronizing circuitry allows easy integration of 32 units.
- High Active Power Factor Correction. Totem-Pole PFC design, PF > 0.99
- Efficiency has nearly 95%. (each stage PFC, D2D, BUCK > 98%)^{*2*3}

Electrical

- 400kHz switching frequency for extremely low output ripple and noise.
- Multiple 32 bit ARM-based embedded system, enabling fast boot time of less than 10 seconds.
- Use Wide Bandgap power semiconductors (SiC MOSFET SBD) for better performance and higher efficiency at lower temperature.
- Programmable output voltage, current and power.
- Operation modes: Constant Voltage(CV), Constant Current(CC) and Constant Power(CP).
- Support CV, CC, or CP working priority setting function.
- With internal resistance adjustment function to simulate characteristic of battery.
- 18 bit DAC for Setting and SAR ADC for Measurement.
- Remote sense functionality for voltage compensation.

Operational

- 320x240 display resolution with rotary knobs and buttons give a clear and intuitive control.
- Patented dual-function key design for enhanced operation convenience.
- Independent voltage and current control with rotary encoder ; adjustable digit resolution on panel for precise operation.
- Two panel output adjustment modes: real-time or confirmation required
- Supports output ramp-up and ramp-down and slew rate control of voltage, current and power.
- Programmable over-voltage and over-current protection.
- Provides time-stamped operation log for traceability

Applications

- | | | | |
|--------------------------------|-----------------------|--------------------------|-------------------|
| ■ Aerospace and Satellite Test | ■ Battery Testing | ■ Sputtering and Coating | ■ Heat Processing |
| ■ Semiconductor Equipments | ■ Vehicle Electronics | ■ Chemical Treatment | ■ QC Testing |
| ■ Solar Cell/Array Application | ■ DC to DC Convertors | ■ Water Purification | ■ LED Testing |
| ■ Contact/Connector Testing | ■ DC to AC Invertors | ■ Electronic Anti-rust | ■ Lighting |
| ■ Telecom and IT Industries | ■ New Energy R&D | ■ Factory Automation | ■ MOCVD |
| ■ Automated Test Equipment | | | |

Safety

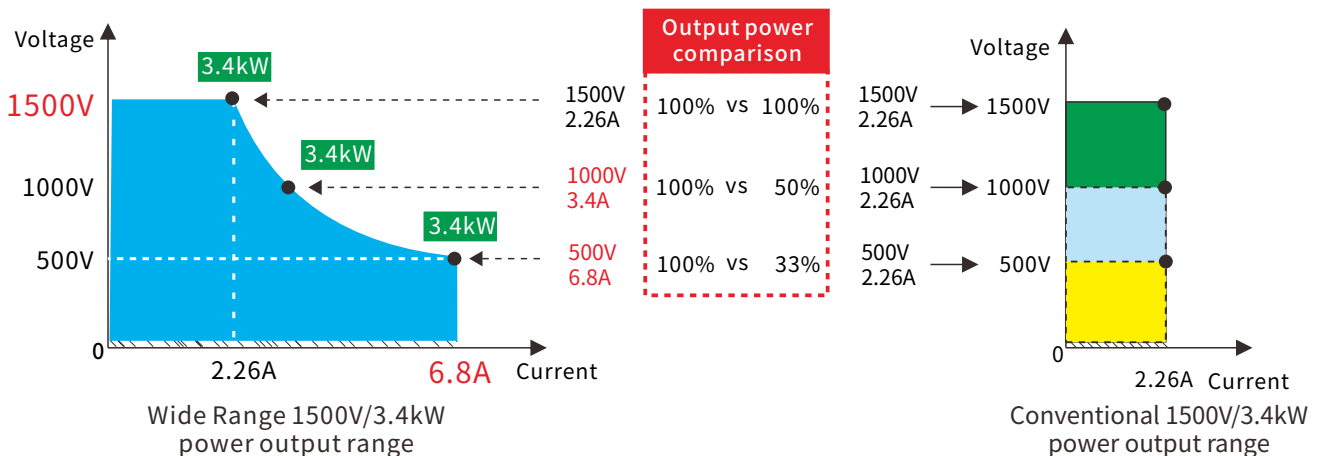
- Intelligent speed-controlled fan to reduce acoustic noise effectively.
- Seamless parallel stacking to save space.
- All models are equipped with equip with auto-discharge circuit, discharge voltage to safe range within 10 seconds after output OFF(<60V).
- Built-in timer allows voltage and current runtime settings and countdown function
- Settable power-on output mode to prevents test interruption or DUT damage after power recovery
- Firmware upgrade via USB/LAN without opening the case; protected against power loss
- Built-in RTC; Supports network time synchronization with user-defined NTP server and maintains accuracy without connection
- CE approved.
- ISTA 3A Vibration Test and Filled Transport Packages Test approved.

Interface

- Dual LAN ports as standard (LXI 1.6 compliant); interface response time as fast as 3 ms.
- National Instruments certified IVI-C Driver provided.
- Alarm signal output and InterLock control contacts for integration with external control systems to enhance operational safety.
- SCPI compatible

Output Characteristic

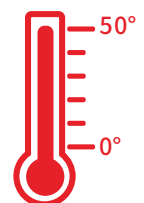
The DSP-WR series delivers various voltage and current combinations at full power, making it ideal for a wide range of applications and replacing conventional DC power supplies.



Maximum Power

1. DSP-WR 1U Series Output Rating at 50 °C Ambient Temperature.
2. 3.4kW Models Output Rating Power with 200-277Vac Lines
3. When inputting 100V~120V, 1.5kW power output can still be achieved

AC INPUT	100V	110V	120V	200V	220V	240V	277V	305V
DC OUTPUT	1.5kW	1.5kW	1.5kW	3.4kW	3.4kW	3.4kW	3.4kW	3.4kW



Power rating

Output Power (6 models)	Models	Max. Voltage	Current@Max. Voltage	Voltage@Max. Current	Max. Current
		V1	A1	V2	A2
3.4kW AC200~277V	DSP80-128WR	80 V	42.5 A	26.56 V	128 A
	DSP160-64WR	160 V	21.25 A	53.13 V	64 A
	DSP250-41WR	250 V	13.6 A	82.93 V	41 A
	DSP500-20WR	500 V	6.8 A	165.85 V	20.5 A
	DSP750-13WR	750 V	4.53 A	250 V	13.6 A
	DSP1500-6WR	1500 V	2.26 A	500 V	6.8 A
1.5kW ^{*6} AC100~120V	DSP80-128WR	80 V	18.75 A	11.7 V	128 A
	DSP160-64WR	160 V	9.37 A	23.44 V	64 A
	DSP250-41WR	250 V	6 A	36.59 V	41 A
	DSP500-20WR	500 V	3 A	73.17 V	20.5 A
	DSP750-13WR	750 V	2 A	110.29 V	13.6 A
	DSP1500-6WR	1500 V	1 A	220.58 V	6.8 A

*1. Power rating varies by model.

*2. Efficiency varies by model and input voltage.

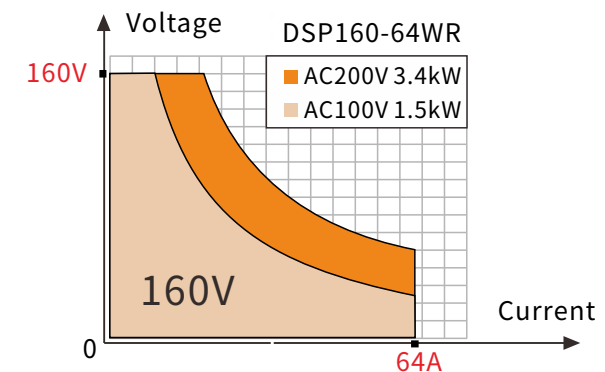
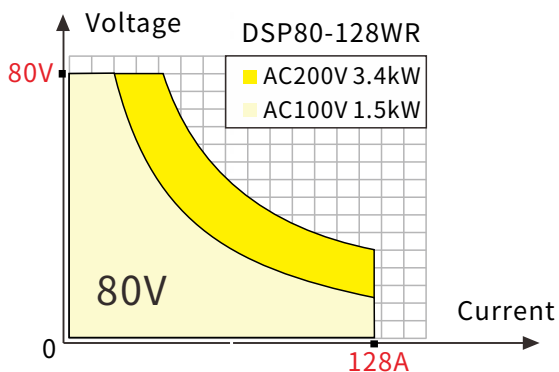
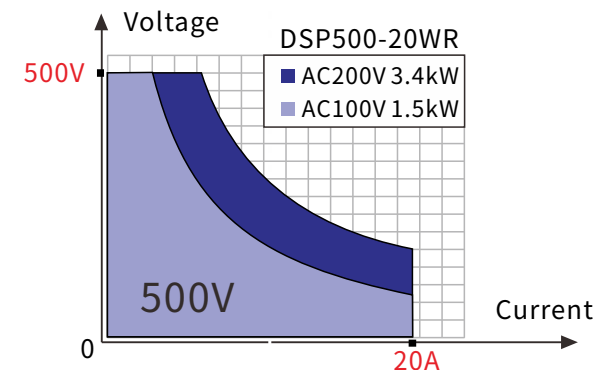
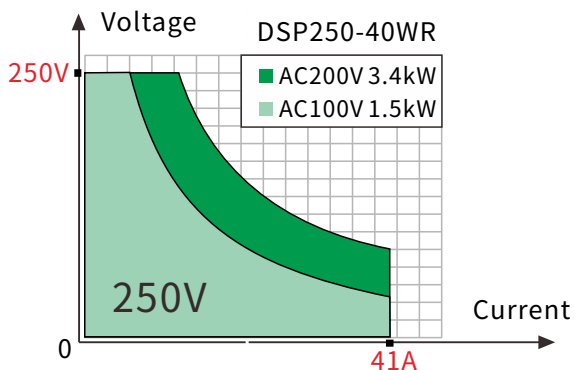
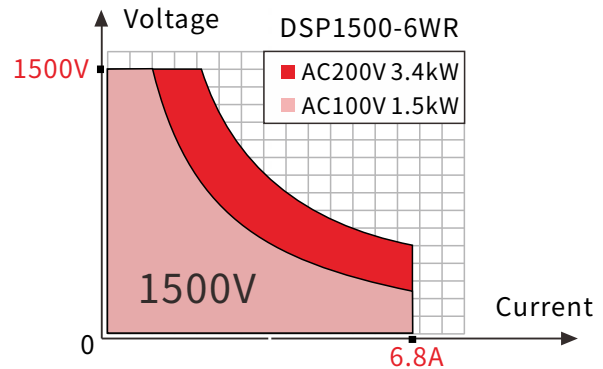
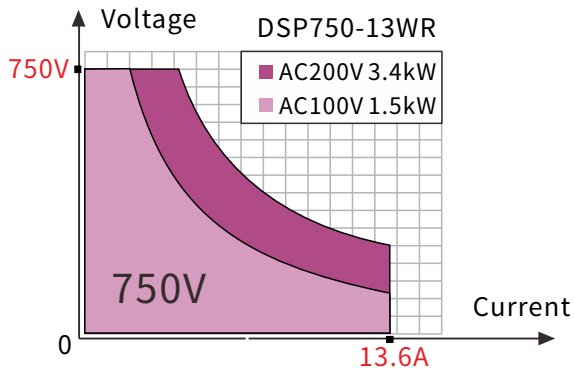
*3. Rated efficiency is achieved at AC 277V input for some models.

*4. Ripple rate varies by model.

*5. Refer to the company website for program downloads.

*6. Derated output mode applies for AC input of 100V~120V.

Output Curve

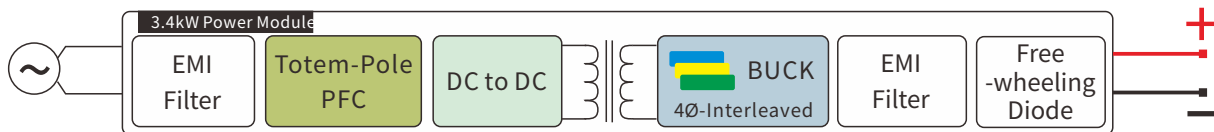


Block Diagram

Power Module

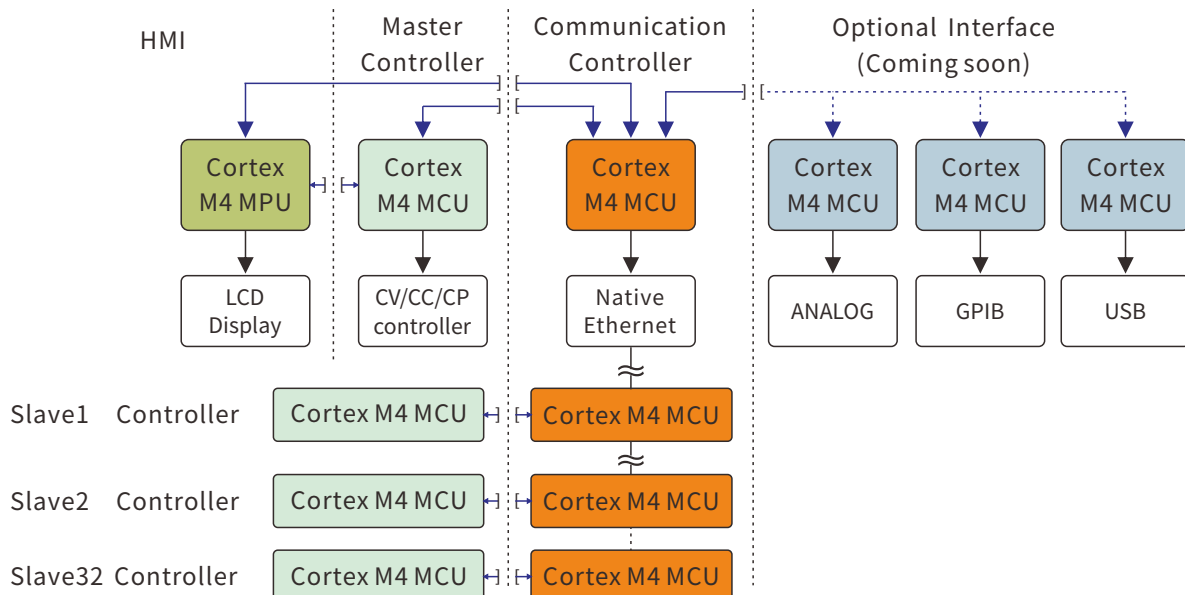
The power module of the DSP-WR 1U series uses a state-of-the-art SiC MOSFET/SBD and full 3-stage structure, with the following features:

1. Single-Phase Input: Supports a maximum input voltage of AC 305 V
2. Power modules are connected in series or parallel to form a 3.4 kW wide-range power supply unit.
3. Power modules are controlled by a single CV/CC circuit, eliminating chasing during transitions.
4. Full 3 stage structure delivers the best efficiency, with synergy efficiencies approaching 95%.
5. High Active Power Factor Correction. Totem-pole PFC design achieves PF > 0.99
6. The 2nd stage is an isolated with 99% high-efficiency DC to DC converter.
7. The 3rd stage BUCK circuit is with 4 x interleaved SiC MOSFET design, operating up to 400 kHz.



Control Module

1. The DSP-WR 1U series uses multiple 32-bit RAM MCUs and embedded RTOS. Each major control circuit has a dedicated embedded processor to ensure the highest performance, delivering the fastest response time in the industry.
2. Each control module signal and power circuit is completely isolated, delivering the best noise protection to ensure measurement accuracy and control stability.
3. The DSP-WR uses a Cortex M4 CPU to drive the built-in network capability for Main/SUBsidiary control. This design allows the DSP-WR family to parallel more than 32 units to form high output power systems, without additional devices.



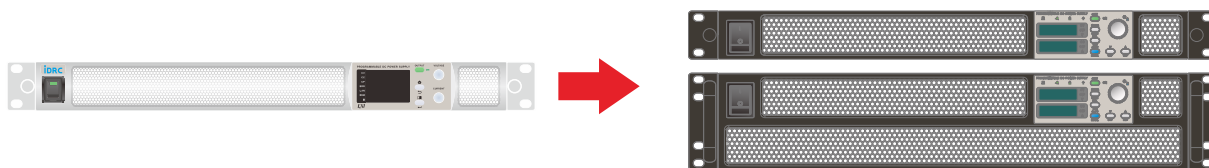
Internal Resistance Simulation

The DSP-WR 1U series includes built-in resistance simulation allowing users to replicate battery behavior, accurate to 5 digits.

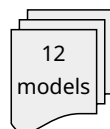
DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR	DSP750-13WR	DSP1500-6WR
0~0.6250Ω	0~2.5000Ω	0~6.0975Ω	0~24.390Ω	0~55.147Ω	0~220.58Ω

One model replaces Twelve models

The DSP-WR 1U series features a wide-range design, allowing a single power supply to replace 9 to 12 units under 3 kW, significantly reducing system complexity and saving space.



1U-3400W
DSP80-128WR



1U-1500W	2U-3000W
<u>DSP-012.5-120HR</u>	
<u>DSP-020-076HR</u>	
<u>DSP-030-050HR</u>	<u>DSP-030-100HR</u>
<u>DSP-040-038HR</u>	<u>DSP-040-076HR</u>
<u>DSP-050-030HR</u>	<u>DSP-050-060HR</u>
<u>DSP-060-025HR</u>	<u>DSP-060-050HR</u>
<u>DSP-080-019HR</u>	<u>DSP-080-038HR</u>

1U-3400W
DSP750-13WR



1U-1500W	2U-3000W
<u>DSP-150-010HR</u>	
<u>DSP-300-005HR</u>	<u>DSP-300-010HR</u>
<u>DSP-350-04.2HR</u>	<u>DSP-350-08.4HR</u>
<u>DSP-450-03.4HR</u>	<u>DSP-450-06.8HR</u>
<u>DSP-600-02.5HR</u>	<u>DSP-600-005HR</u>

Built-in Measurement Functions

The product features a built-in power meter that measures frequency, voltage, and current, and provides efficiency, kWh, and carbon emission data. Key monitoring parameters include:

Input Measuring Function

Frequency	Resolution	0.01Hz
	Accuracy	± 0.01%
Voltage	Range	310V ~ 85V
	Resolution	0.25V
	Accuracy	± 0.5%
Current	Range	22.5A ~ 0A
	Resolution	0.03125A
	Accuracy	± 0.5%
Power (P)	Resolution	4W
	Accuracy	± 1%

CV			
CC	Freq.:	60.00	Hz
CP	Voltage:	220.00	V
ERR	Current:	16.00	A
LAN	Power:	3500	W
REM			

Output Measuring Function

Power (P)	Resolution	0.1W
	Accuracy	± 1%
Efficiency	Resolution	0.1%
	Accuracy	± 2%
Kilo-Watt-Hour	Resolution	0.1kWh
	Accuracy	± 1%
CO ₂ emission	Resolution	0.1kg
	Accumulation	± 1%

CV			
CC	Effi.:	94.8	%
CP	Energy:	9999.9	kWh
ERR	Time:	9999.9	hour
LAN			
REM			
	Start	Stop	Reset

CV			
CC	CO ₂ .R:	2.499	kg/h
CP	T.CO ₂ :	9999.9	kg
ERR	Coeff.:	0.666	kg/kWh
LAN			
REM			
	Start	Stop	Reset

*1. Simulation image. Actual display and parameter arrangement may differ from the illustration.

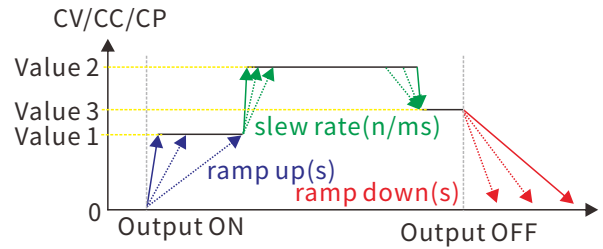
Output Capacitance

DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR	DSP750-13WR	DSP1500-6WR
3760μF	940μF	900μF	225μF	50μF	12.5μF

Adjustable Output On/Off Slope

The output slope is based on the Slew Rate setup. If the Ramp Up/Down is more rapid than the Slew Rate, the DSP-WR will default to Slew Rate settings.

In the example below, the Ramp Up setting is higher than the Slew Rate, so the output voltage increases more gradually.



*1. Exact Ramp Down time may be affected by settings and load characteristics.

Adjustable Output On/Off Slope

The power supplies allow you to specify the slew rates for Voltage, Current, and Power. The supported slew rates are shown in the charts below.

1. Setting ranges for Voltage slew rates :

DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR	DSP750-13WR	DSP1500-6WR
0.008V/ms~80V/ms	0.02V/ms~160V/ms	0.03V/ms~250V/ms	0.05V/ms~500V/ms	0.08V/ms~750V/ms	0.2V/ms~1500V/ms

2. Setting ranges for Current slew rates :

DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR	DSP750-13WR	DSP1500-6WR
0.01A/ms~128A/ms	0.006A/ms~64A/ms	0.004A/ms~41A/ms	0.002A/ms~20.5A/ms	0.001A/ms~13.6A/ms	0.7mA/ms~6.8A/ms

3. Setting ranges for Power slew rates :

DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR	DSP750-13WR	DSP1500-6WR
0.3W/ms~340W/ms	0.3W/ms~340W/ms	0.3W/ms~340W/ms	0.3W/ms~340W/ms	0.3W/ms~340W/ms	0.3W/ms~340W/ms

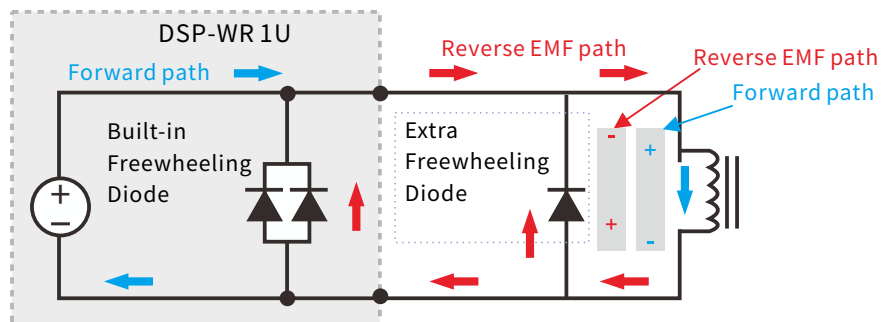
*1. Exact Slew Rate may be affected by other settings and load characteristics.

*2. For an explanation of Slew Rate, please refer to page 9 "Adjustable Output On/Off Slope."

*3. For higher Slew Rates, please contact Delta.

Output Protection

The DSP-WR 1U series is fully protected from Reverse EMF through thoughtful design, as shown below. The freewheeling diodes are rated 20% above any anticipated load.



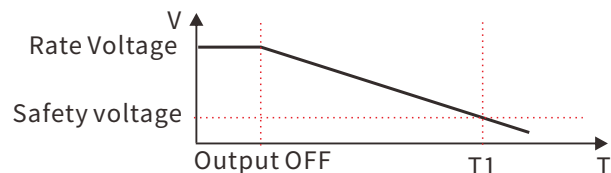
*1. For high-inductance loads or long duty cycles, install a freewheeling diode close to the load. The diode should be rated at least 1.2 times the power supply's rated output current or match the load capacity.

Auto-discharge

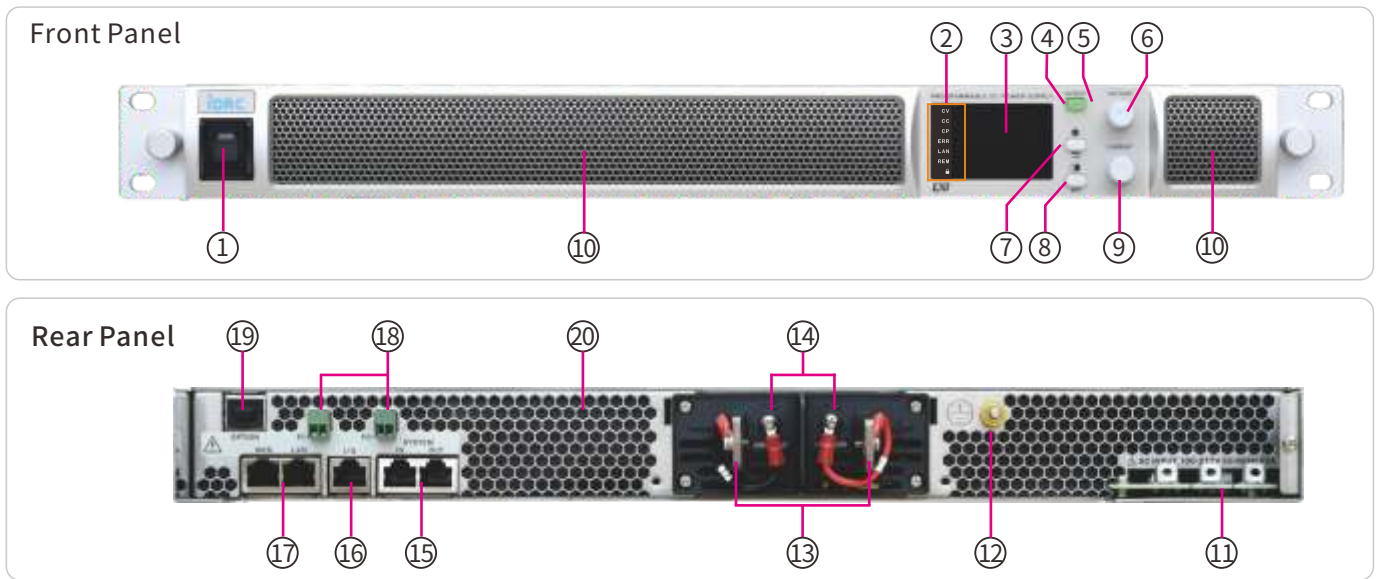
The DSP-WR 1U series automatically dissipates energy to about 60V or less within 10 seconds of Output OFF.

No load down time

Model	T1	Model	T1
DSP80-128WR	5 sec	DSP500-20WR	10 sec
DSP160-64WR	5 sec	DSP750-13WR	5 sec
DSP250-41WR	10 sec	DSP1500-6WR	5 sec



Front Panel & Rear Panel



Front Panel Description

1. Power Switch
2. Status indicator
3. TFT LCD
4. ON/OFF Switch
5. Output indicator
6. Voltage Setting
7. HOME / BACK Hybrid Switch
8. MENU / ENTER Hybrid Switch
9. Current Setting
10. Stainless Mesh

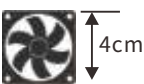
Rear Panel Description

11. AC input terminals
12. Ground terminal
13. Output terminals and cover
14. Remote sense terminal
15. System IN/OUT
16. Digital I/O
17. LAN (LXI) connector
18. Current sharing
19. Optional interface
20. Stainless Mesh

Features

- 1**  A robust power switch has a safety guard to prevent accidental operation.

- 2**  HOME key gives rapid access to previous page or hold for 1.5 sec. to return to the Main page.

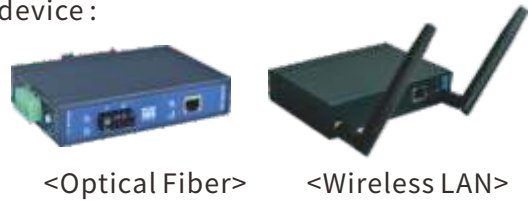
- 3**  High-airflow speed-controlled fans effectively reduce noise, temperature and standby power consumption.

- 4**  Featuring an audiophile-grade curved panel design crafted from anodized sandblasted aluminum. Stainless case and the entire unit is free of plating, paint, and printing, making it more environmentally friendly.

- 5**  **Front panel** **Rear panel**
Both the front and back panels feature honeycomb ventilation mesh, providing an ultra-high ventilation rate.

Interface Support

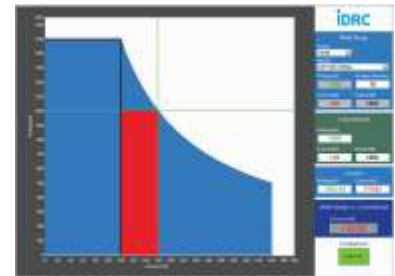
- Standard built-in 2 LAN(LXI) ports minimize wiring and reduce network complexity.
- Multi-purposed slot for optional interface, GPIB/Serial Port/Isolated Analog.
- Supporting external interfaces with physical isolation device :



Wide Range Power Supply versus Conventional Power Supply

This application software is compatible with DSP-WR Series Wide Range Programmable DC Power Supply.

- Display output characteristic curve.
- Compare power range of Wide Range Model with Conventional Model
- Display value anywhere on the curve.
- Show off the output value including :
 1. Current at max. voltage
 2. Voltage at max. current
 3. The difference in current
 4. Report Printing



GUI Software

- This application software is compatible with DSP-WR series Wide Range programmable DC Power Supply.
- Synchronously control up to 16 units of DSP-Wx Series. (*1)
- Simulation panel control of output voltage, current, power and other parameters.
- Provide 16 sets Sequence Group containing 500 step of each Sequence, have loop and Random Sequence setting.



Firmware Update

Update firmware easily with PC and WR-OPT-FUA adaptor.

RISK FREE

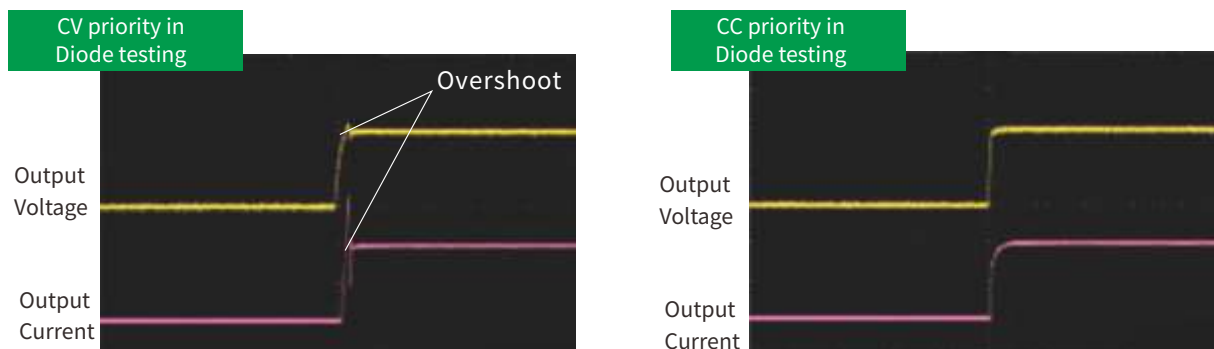
Enhanced safety mechanism to prevent any firmware update failure.



Application

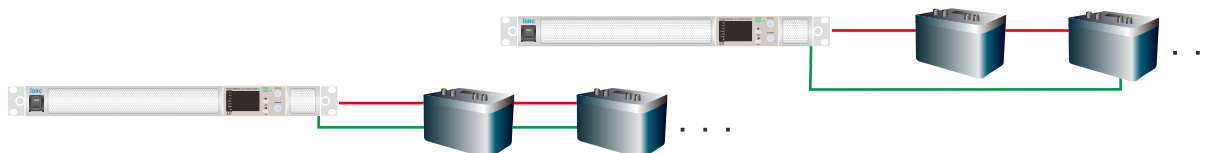
Diode, Laser Diode, LED, Power Chip Testing

DSP-WR series provides CV(Constant Voltage), CC(Constant Current) and CP(Constant Power) modes; users can select the mode suitable to their test requirements. Below shows an application of CC mode avoiding any current/voltage overshoot during diode validation.



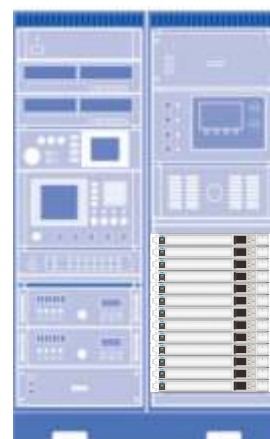
Lead Acid /Lithium Battery Testing

- DSP-WR series can adjust output range to fit various battery layouts. The DSP-WR series reduces the cost of purchasing purpose-built power supplies.
- By using DSP-WR series, one unit can reach high voltage/low current and low voltage/high current, significantly reducing the cost and space requirements of test equipment.
- DSP-WR series with sufficient current and voltage capacity to test batteries in parallel or series.

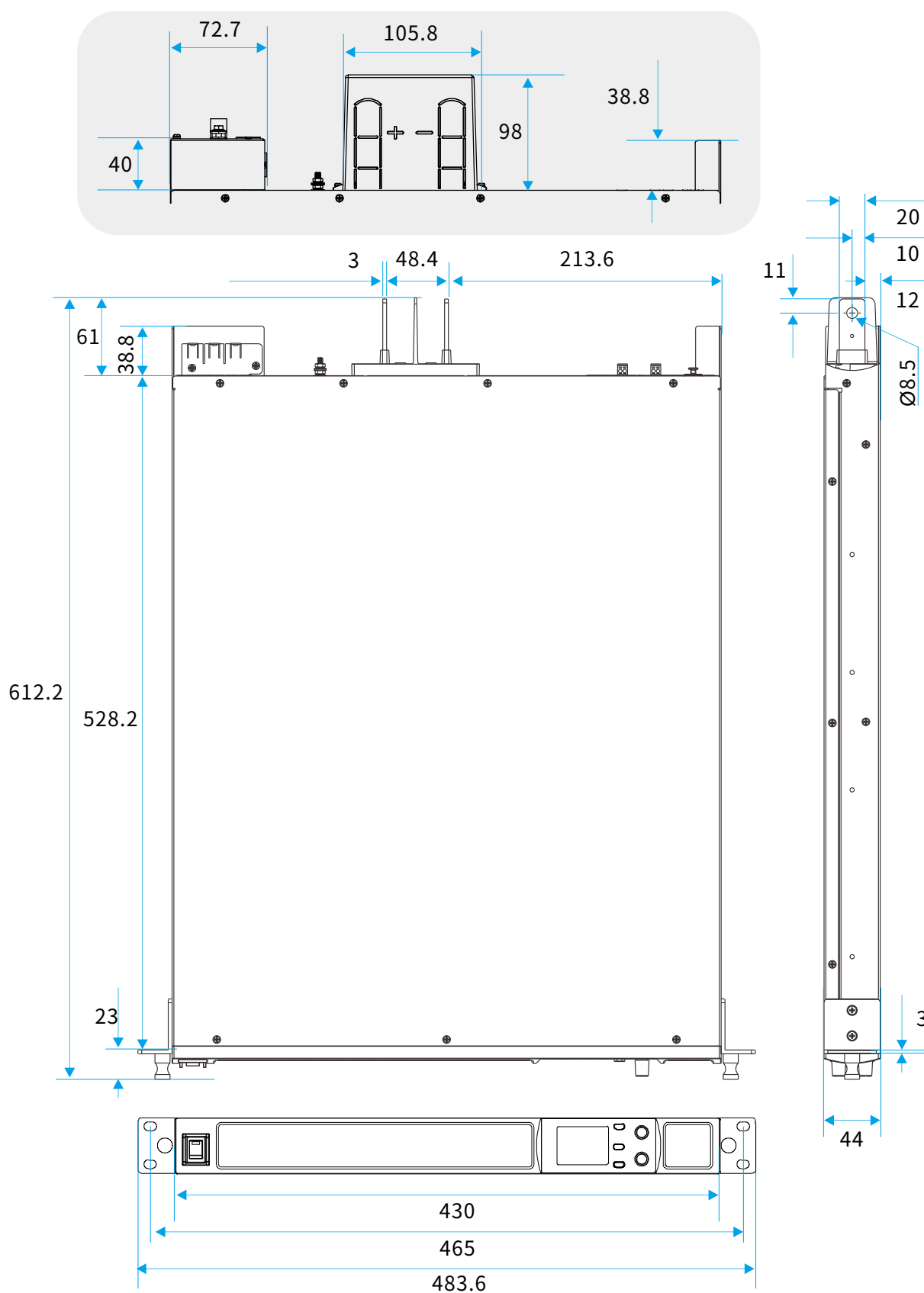


ATE Integration

- 1U height, supports zero-gap stacking for flexible system configuration.
- Input voltage: AC 200–277 V, rated output power up to 3.4 kW.
- Input voltage: AC 100–120 V, maintains 1.5 kW output, with maximum output voltage or current still reaching rated values.
- Available in six output voltage models, covering DC 27V to 1500V.
- True parallel technology: the master unit displays and sets total parallel current without calculation.
- Compliant with LXI 1.6 standard, providing fast interface response and simplified wiring.
- Supports up to 32 units in parallel.
Maximum parallel power: 109 kW.
Maximum current: 4096 A (80 V model).



Dimensions (mm)



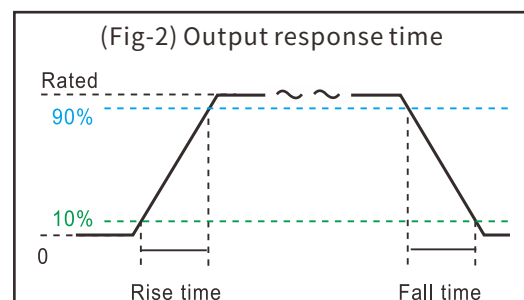
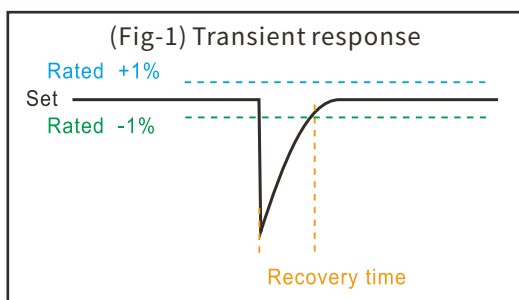
80V ~ 500V Specifications

Rated Power	3.4kW	3.4kW	3.4kW	3.4kW
Model number	DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR
Rated Voltage	80V	160V	250V	500V
Rated Current	128A	64A	41A	20.5A
Constant Voltage				
Rated value	0~80V	0~160V	0~250V	0~500V
Settable range	0~84V	0~168V	0~262.5V	0~525V
Over voltage protection (OVP)	0%~110% of rated output voltage			
Voltage @ Max. Current	26.56V	53.13V	82.93V	165.85V
Programming resolution	5 digits			
Programming accuracy(*2)	±0.1% of rated voltage			
Meter resolution	5 digits			
Meter accuracy(*2)	± 0.1% of rated voltage			
Line regulation(*6)	±0.02% of rated voltage (with local sense)			
Load regulation(*7)	±0.05% of rated voltage (with local sense)			
Temp. coefficient for set values	100ppm/°C of rated output voltage, after a 30 minutes warm-up			
Ripple & noise(*3)(*4) (with local sense)(CV Mode)	Vpp	<180mV	<432mV	<270mV
	Vrms	<20mV	<35mV	<50mV
Full load up	<30ms			
Full load down	<80ms			
No load down	<5s	<5s	<10s	<10s
Transient response(*5)	<1.5ms			
Remote compensation(5%)	3.84V	7.68V	12V	24V
Constant Current				
Rated value	0~128A	0~64A	0~41A	0~20.5A
Settable range(*10)	0~134.4A	0~67.2A	0~43.05A	0~21.52A
Over current protection (OCP)	0%~110% of rated output current			
Current @ Max. Voltage	42.5A	21.25A	13.6A	6.8A
Programming resolution	5 digits			
Programming accuracy(*2)	±0.2% of rated current			
Meter resolution	5 digits			
Meter accuracy(*2)	± 0.2% of rated current			
Line regulation(*6)	±0.05% of rated current			
Load regulation(*7)	±0.15% of rated current			
Temp. coefficient for set values	100ppm/°C of rated output voltage, after a 30 minutes warm-up			
Ripple & noise(*3)(*4) (with local sense)(CC Mode)	Arms	72mA	20mA	16mA
Constant Power				
Rated value	0~3.4kW	0~3.4kW	0~3.4kW	0~3.4kW
Settable range(*9)	0~3468W	0~3468W	0~3468W	0~3468W
Over power protection (OPP)	0%~110% of rated output current			
Programming resolution	5 digits			
Programming accuracy	< 1% of rated power			
Meter resolution	5 digits			
Meter accuracy(*2)	± 0.5% of rated power			
Line regulation(*6)	< 0.05% of rated power			
Load regulation(*7)	< 0.75% of rated power			

Model number	DSP80-128WR	DSP160-64WR	DSP250-41WR	DSP500-20WR
Output Capacitance				
Output Capacitance	3760μF	940μF	900μF	225μF
Internal resistance				
Adjustment range	0~0.6250Ω	0~2.5000Ω	0~6.0975Ω	0~24.390Ω
Programming resolution	0.0001Ω	0.0001Ω	0.0001Ω	0.001Ω
Programming accuracy(*2)	≤ 2.3% of max. resistance			
Input				
Nominal input rating	100-277V 50Hz/60Hz 1-phase 2 wires			
Input voltage range	85-305VAC 50Hz/60Hz 1-phase 2 wires			
Input frequency range	47Hz~63Hz			
Current (Max.)(Input 85V/180V)	22.5A	22.5A	21A	21A
Inrush current	40A	40A	40A	40A
Input Power (Maximum)	4kVA	4kVA	3.8kVA	3.8kVA
Efficiency(*15) 100% Vdc output	≤93.2%	≤93.3%	≤95%	≤95%
@277Vin/3.4kW 100% Idc output	≤89.3%	≤89.2%	≤92.3%	≤92.3%
Leakage current	< 3.5 mA			
Power Factor	0.99 typ.(100V - 277V input)			
Insulation				
Primary - Chassis	DC 2500V			
Primary - Secondary	DC 2500V			
Secondary - Chassis	DC750V	DC750V	DC750V	DC1000V
Weight and dimensions				
Dimensions(WxHxD)	Enclosure : 430 x 44 x 528.2 mm , Total : 483.6 x 44 x 612.2 mm			
Package Dimensions(WxHxD)	600 x 190 x 820 mm			
Net weight (kg)	11.2	11.2	11.2	11.2
Gross weight (kg)	15.2	15.2	15.2	15.2

General Specifications

Environment	
Operating environment	Indoor use
Operating temperature / humidity	0°C ~ 50°C , 30%Rh ~ 80%Rh (non-condensing)
Storage temperature / humidity	-20°C ~ 70°C , 10%RH ~ 80%RH (non-condensing)
Altitude	Up to 2000m
Cooling method	Forced air cooling by speed controlled fan
Ground polarity	Capable of Negative ground or Positive ground
Standard Interface	
LAN interface	LXI 1.6
Digital I/O	Input : Interlock , Output ON/OFF , SHUT OFF Output : Alarm signal , Output voltage downward signal



750V ~ 1500V Specifications

Rated Power	3.4kW	3.4kW		
Model number	DSP750-13WR	DSP1500-6WR		
Rated Voltage	750V	1500V		
Rated Current	13.6A	6.8A		
Constant Voltage				
Rated value	0~750V	0~1500V		
Settable range	0~787.5V	0~1575V		
Over voltage protection (OVP)	0%~110% of rated output voltage			
Voltage @ Max. Current	250V	500V		
Programming resolution	5 digits			
Programming accuracy(*2)	±0.1% of rated voltage			
Meter resolution	5 digits			
Meter accuracy(*2)	± 0.1% of rated voltage			
Line regulation(*6)	±0.02% of rated voltage (with local sense)			
Load regulation(*7)	±0.05% of rated voltage (with local sense)			
Temp. coefficient for set values	100ppm/°C of rated output voltage, after a 30 minutes warm-up			
Ripple & noise(*3)(*4) (with local sense)(CV Mode)	Vpp	<830mV	<2160mV	
	Vrms	<196mV	<510mV	
Full load up	<30ms			
Full load down	<80ms			
No load down	<5s	<5s		
Transient response(*5)	<1.5ms			
Remote compensation(5%)	36V	72V		
Constant Current				
Rated value	0~13.6A	0~6.8A		
Settable range(*10)	0~14.28A	0~7.14A		
Over current protection (OCP)	0%~110% of rated output current			
Current @ Max. Voltage	4.53A	2.26A		
Programming resolution	5 digits			
Programming accuracy(*2)	±0.2% of rated current			
Meter resolution	5 digits			
Meter accuracy(*2)	± 0.2% of rated current			
Line regulation(*6)	±0.05% of rated current			
Load regulation(*7)	±0.15% of rated current			
Temp. coefficient for set values	100ppm/°C of rated output voltage, after a 30 minutes warm-up			
Ripple & noise(*3)(*4) (with local sense)(CC Mode)	Arms	15mA	15mA	
Constant Power				
Rated value	0~3.4kW	0~3.4kW		
Settable range(*9)	0~3468W	0~3468W		
Over power protection (OPP)	0%~110% of rated output current			
Programming resolution	5 digits			
Programming accuracy	< 1% of rated power			
Meter resolution	5 digits			
Meter accuracy(*2)	± 0.5% of rated power			
Line regulation(*6)	< 0.05% of rated power			
Load regulation(*7)	< 0.75% of rated power			

Model number	DSP750-13WR	DSP1500-6WR		
Output Capacitance				
Output Capacitance	50μF	12.5μF		
Internal resistance				
Adjustment range	0~55.147Ω	0~220.58Ω		
Programming resolution	0.001Ω	0.01Ω		
Programming accuracy(*2)	≤ 2.3% of max. resistance			
Input				
Nominal input rating	100-277V 50Hz/60Hz 1-phase 2 wires			
Input voltage range	85-305VAC 50Hz/60Hz 1-phase 2 wires			
Input frequency range	47Hz~63Hz			
Current (Max.)(Input 85V/180V)	21A	21A		
Inrush current	40A	40A		
Input Power (Maximum)	3.75kVA	3.75kVA		
Efficiency(*15) 100% Vdc output	≤93.9%	≤93.8%		
@277Vin/3.4kW 100% Idc output	≤92.5%	≤92.5%		
Leakage current	< 3.5 mA			
Power Factor	0.99 typ.(100V - 277V input)			
Insulation				
Primary - Chassis	DC 2500V			
Primary - Secondary	DC 2500V			
Secondary - Chassis	DC1500V	DC2000V		
Weight and dimensions				
Dimensions(WxHxD)	Enclosure : 430 x 44 x 528.2 mm , Total : 483.6 x 44 x 612.2 mm			
Package Dimensions(WxHxD)	600 x 190 x 820 mm			
Net weight (kg)	10.1	10.1		
Gross weight (kg)	14.2	14.2		

Notes:

- *1) The output voltage and current ranges can be set to 105% of the rated value, but the total output will be less.
The extra capacity is used to compensate for external wiring loss and cannot be used as a regular value.
- *2) Measured at room temperature of $23 \pm 5^\circ\text{C}$.
- *3) rms value of ripple & noise was measured at meter bandwidth 300kHz
- *4) Peak value of ripple & noise was measured at meter bandwidth 20MHz.
- *5) The time for the output voltage to reach $\pm 1\%$ of the setting value at 10% - 90% of rated voltage, and 10% and above of rated power, with a resistance load. (Fig. 1)
- *6) Input voltage variation between 200~277VAC with a fixed loading 1~100%.
- *7) CV Mode: Constant line voltage; output current variation between 10% - 90% of the rated value.
CC Mode: Constant line voltage; output voltage variation between 10% - 90% of the rated value.
CP Mode: Constant line voltage; output voltage*current variation between 10% - 90% of the rated value.

General Remarks:

- a) All data were measured at the output terminal with local sensing, at 2% - 100% of rated voltage, 1% - 100% of rated current, after 30 minutes warm-up, in a room at 50°C and 80% RH.
- b) "Rise Time" means the time from 10% to 90% of rated voltage;
"Fall Time" is the time to drop from 90% to 10% of rated voltage.
- c) The performance will be affected the character of the external wiring for multi-unit paralleling.
- d) LXI interface with minimum 3ms response time. The actual response time will be affected by your network's connection quality and LAN speed.
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iDRC CHYNG HONG ELECTRONIC CO., LTD.

Taipei Taiwan

4th F, 3-3 Baohong Rd., Hsin Tien District, New Taipei City
TEL:+886-2-2918-4785 FAX:+886-2-2918-6927

Taichung Taiwan

No.80, Lane 258, Sec. 3, Hansi W. Rd., Beitun District, Taichung City
TEL:+886-4-2437-6268 FAX:+886-4-2437-6266

Beijing China

TEL:+86-10-6498-6421 FAX:+86-10-6498-6411

Guangdong China

TEL:+86-757-8623-9927 FAX:+86-757-8639-1132

Suzhou China

TEL:+86-512-6252-9029 FAX:+86-512-6252-7013

For more information, please visit <https://www.idrc.com.tw>
or contact us E-mail : sales@idrcms.com.tw

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