

# RIGOL



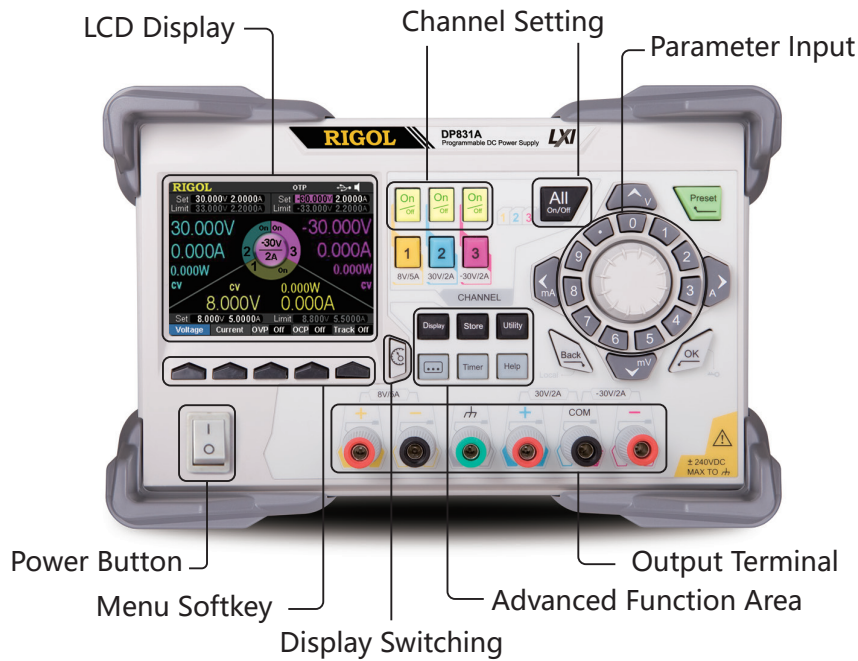
## DP800 Series Programmable Linear DC Power Supply

- DP832A/DP832: 3 outputs, 30V/3A || 30V/3A, 5V/3A, total power up to 195W
- DP831A/DP831: 3 outputs, 8V/5A || 30V/2A, -30V/2A, total power up to 160W
- DP822A/DP822: 2 outputs, 20V/5A || 5V/16A, with remote Sense, total power up to 180W
- DP821A/DP821: 2 outputs, 60V/1A || 8V/10A, with remote Sense, total power up to 140W
- DP813A/DP813: 1 output, 8V/20A (Low Range), 20V/10A (High Range), with remote Sense, total power up to 200W
- DP811A/DP811: 1 output, 20V/10A (Low Range), 40V/5A (High Range), with remote Sense, total power up to 200W
- Low ripple and noise:  
DP832A/DP832/DP831A/DP831/DP822A/DP822/DP821A/DP821: <350uVrms/2mVpp  
DP813A/DP813/DP811A/DP811: <350uVrms/3mVpp
- Excellent linear regulation rate and load regulation rate
- Fast transient response time: <50µs
- Some channels are isolated
- Standard OVP/OCV/OTP protection functions
- Standard timing output
- Built-in V,A,W measurements and waveform display
- Independent control for each channel
- Support more advanced functions: timer and delay output(standard), recorder/analyzer/monitor/trigger(standard for "+A" models and optional for other models)
- 3.5-inch TFT display
- Various interfaces: USB Host&Device(standard), USB-GPIB (optional), LAN/RS232/Digital IO(standard for "+A" models and optional for other models)

# Design Features

## ► Wide-screen Display, User-friendly Interface, Easy Operation

Observable Clean Stable Reliable Affordable



## ► Complete Connectivity

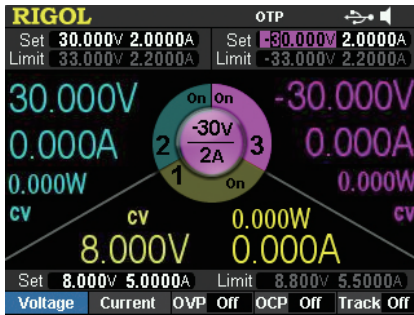


Product Dimensions: Width × Height × Depth = 239mm x 157mm x 418mm  
Weight: 9.75kg (DP831A)

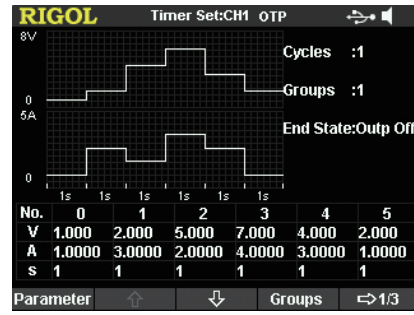
## ► Typical Applications

- R&D lab general purpose testing
- Quality control and assessment
- Pure power for RF/MW circuits or components
- Power supply for automobile electronic circuit test
- Production automation testing
- Device or circuit characteristic verification and troubleshooting
- Educational experiment

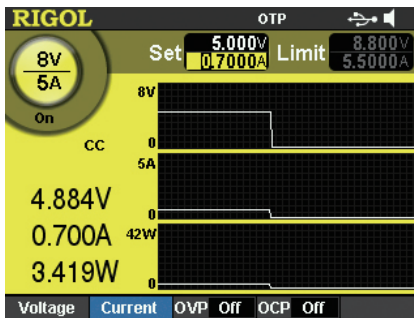
## ► Intuitive User Interface



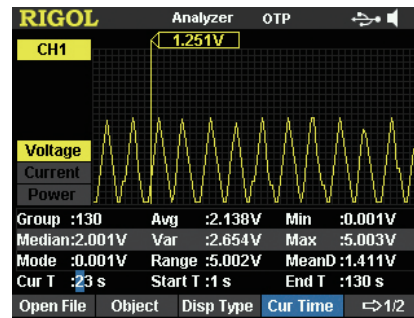
DP831A GUI



Timing Output Setting



V/A/W Waveform Display



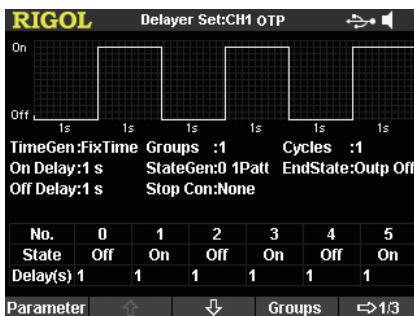
Output Analysis



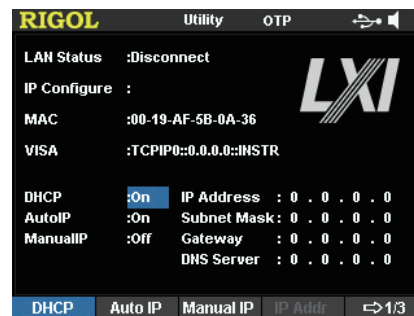
Output Monitor Setting



Trigger In/Out



Output On/Off Delay



LAN Setting

## ► Specifications

All the specifications are guaranteed when the instrument has been working for more than 30 minutes under the specified operation temperature. Unless otherwise noted, the specifications are applicable to all the channels of the specified model.

### DP832A/DP831A/DP822A/DP821A/DP813A/DP811A Specifications

Model	Number of Channels
DP832A	3
DP831A	3
DP822A	2
DP821A	2
DP813A	1 (two output ranges)
DP811A	1 (two output ranges)

DC Output (0°C to 40°C)			
Channel (Range)		Voltage/Current	OVP/OCP
DP832A	CH1	0 to 30V/0 to 3A	1mV to 33V/1mA to 3.3A
	CH2	0 to 30V/0 to 3A	1mV to 33V/1mA to 3.3A
	CH3	0 to 5V/0 to 3A	1mV to 5.5V/1mA to 3.3A
DP831A	CH1	0 to 8V/0 to 5A	1mV to 8.8V/0.1mA to 5.5A
	CH2	0 to 30V/0 to 2A	1mV to 33V/0.1mA to 2.2A
	CH3	0 to -30V/0 to 2A	-1mV to -33V/0.1mA to 2.2A
DP822A	CH1	0 to 20V/0 to 5A	1mV to 22V/1mA to 5.5A
	CH2	0 to 5V/0 to 16A	1mV to 5.5V/1mA to 16.8A
DP821A	CH1	0 to 60V/0 to 1A	1mV to 66V/0.1mA to 1.1A
	CH2	0 to 8V/0 to 10A	1mV to 8.8V/1mA to 11A
DP813A	Range1	0 to 8V/0 to 20A	1mV to 8.8V/1mA to 22A
	Range2	0 to 20V/0 to 10A	1mV to 22V/1mA to 11A
DP811A	Range1	0 to 20V/0 to 10A	1mV to 22V/0.1mA to 11A
	Range2	0 to 40V/0 to 5A	1mV to 44V/0.1mA to 5.5A

Load Regulation Rate, ± (Output Percentage + Offset)	
Voltage	<0.01% + 2mV
Current	<0.01% + 250μA

Linear Regulation Rate, ± (Output Percentage + Offset)	
Voltage	<0.01% + 2mV
Current	<0.01% + 250μA

Ripples and Noise (20Hz to 20MHz)	
Normal Mode Voltage	DP832A/DP831A/DP822A/DP821A: <350μVrms/2mVpp DP813A/DP811A: <350μVrms/3mVpp
Normal Mode Current	<2mArms

Annual Accuracy <sup>[1]</sup> (25°C ± 5°C), ± (Output Percentage + Offset)					
Channel		Programming		Readback	
		Voltage	Current	Voltage	Current
DP832A	CH1	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.15% + 5mA
	CH2	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.15% + 5mA
	CH3	0.1% + 5mV	0.2% + 5mA	0.1% + 5mV	0.15% + 5mA
DP831A	CH1	0.1% + 5mV	0.2% + 10mA	0.1% + 5mV	0.2% + 10mA
	CH2	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.1% + 5mA
	CH3	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.1% + 5mA
DP822A	CH1	0.1% + 25mV	0.2% + 10mA	0.1% + 25mV	0.15% + 10mA
	CH2	0.05% + 10mV	0.2% + 10mA	0.05% + 5mV	0.15% + 10mA

DP821A	CH1 CH2	0.1% + 25mV 0.05% + 10mV	0.2% + 10mA 0.2% + 10mA	0.1% + 25mV 0.05% + 5mV	0.15% + 10mA 0.15% + 10mA
DP813A	CH1	0.05% + 10mV	0.1% + 10mA	0.05% + 10mV	0.1% + 10mA
DP811A	CH1	0.05% + 10mV	0.1% + 10mA	0.05% + 10mV	0.1% + 10mA

### Resolution

Channel		Programming		Readback		Display	
		Voltage	Current	Voltage	Current	Voltage	Current
DP832A	CH1	1mV	1mA	0.1mV	0.1mA	1mV	1mA
	CH2	1mV	1mA	0.1mV	0.1mA	1mV	1mA
	CH3	1mV	1mA	0.1mV	0.1mA	1mV	1mA
DP831A	CH1	1mV	0.3mA	0.1mV	0.1mA	1mV	1mA
	CH2	1mV	0.1mA	0.1mV	0.1mA	1mV	1mA
	CH3	1mV	0.1mA	0.1mV	0.1mA	1mV	1mA
DP822A	CH1	1mV	1mA	1mV	0.1mA	1mV	0.1mA
	CH2	1mV	1mA	1mV	1mA	1mV	1mA
DP821A	CH1	1mV	0.1mA	1mV	0.1mA	1mV	0.1mA
	CH2	1mV	1mA	1mV	1mA	1mV	1mA
DP813A	CH1	1mV	1mA	1mV	1mA	1mV	1mA
DP811A	CH1	1mV	0.5mA	0.1mV	0.1mA	1mV	1mA

### Transient Response Time

Less than 50µs for output voltage to recover to within 15mV following a change in output current from full load to half load or vice versa.

### Command Processing Time<sup>[2]</sup>

<118ms

### OVP/OCV

Accuracy, ± (Output Percentage + Offset) 0.5% + 0.5V/0.5% + 0.5A

### Voltage Programming Control Speed (1% within the total variation range)

Channel		Rise		Fall	
		Full Load	No Load	Full Load	No Load
DP832A	CH1	<50ms	<33ms	<46ms	<400ms
	CH2	<50ms	<38ms	<46ms	<400ms
	CH3	<15ms	<14ms	<24ms	<100ms
DP831A	CH1	<18ms	<17ms	<20ms	<200ms
	CH2	<33ms	<36ms	<44ms	<400ms
	CH3	<35ms	<42ms	<45ms	<400ms
DP822A	CH1	<30ms	<30ms	<30ms	<1000ms
	CH2	<15ms	<15ms	<15ms	<250ms
DP821A	CH1	<110ms	<30ms	<110ms	<800ms
	CH2	<15ms	<15ms	<20ms	<400ms
DP813A	CH1	<30ms	<30ms	<20ms	<1500ms
DP811A	CH1	<45ms	<42ms	<51ms	<1089ms

### Temperature Coefficient per °C, (Output Percentage + Offset)

Channel		Voltage	Current
DP832A	CH1	0.01% + 5mV	0.01% + 2mA
	CH2	0.01% + 5mV	0.01% + 2mA
	CH3	0.01% + 2mV	0.01% + 2mA
DP831A	CH1	0.01% + 2mV	0.02% + 3mA
	CH2	0.01% + 2mV	0.02% + 3mA
	CH3	0.01% + 2mV	0.02% + 3mA

DP822A	CH1	0.01% + 3mV	0.02% + 3mA
	CH2	0.01% + 3mV	0.02% + 3mA
DP821A	CH1	0.01% + 3mV	0.02% + 3mA
	CH2	0.01% + 3mV	0.02% + 3mA
DP813A	CH1	0.01% + 3mV	0.02% + 3mA
DP811A	CH1	0.01% + 3mV	0.02% + 3mA

### Stability<sup>[3]</sup>, ± (Output Percentage + Offset)

Channel		Voltage	Current
DP832A	CH1	0.02% + 2mV	0.05% + 2mA
	CH2	0.02% + 2mV	0.05% + 2mA
	CH3	0.01% + 1mV	0.05% + 2mA
DP831A	CH1	0.03% + 1mV	0.1% + 3mA
	CH2	0.02% + 2mV	0.05% + 1mA
	CH3	0.02% + 2mV	0.05% + 1mA
DP822A	CH1	0.02% + 1mV	0.1% + 1mA
	CH2	0.02% + 1mV	0.1% + 1mA
DP821A	CH1	0.02% + 1mV	0.1% + 1mA
	CH2	0.02% + 1mV	0.1% + 1mA
DP813A	CH1	0.02% + 1mV	0.1% + 2mA
DP811A	CH1	0.02% + 1mV	0.1% + 1mA

### Mechanical

Dimensions	239mm(W) x 157mm(H) x 418mm(D)
Weight	DP832A: 10.5kg DP831A: 9.75kg DP822A: 10.5kg DP821A: 10.0kg DP813A: 10.5kg DP811A: 10.3kg

### Power

AC Input (50Hz to 60Hz)	100Vac ± 10%, 115Vac ± 10%, 230Vac ± 10% (maximum 250Vac)
Maximum Input Power	DP832A: 521VA DP831A: 416VA DP822A: 500VA DP821A: 450VA DP813A: 510VA DP811A: 503VA

### I/O

USB DEVICE	1
USB HOST	1
LAN	1
RS232	1
Digital IO	1
USB-GPIB	1 (Option, extend a GPIB interface using the USB-GPIB interface converter)
Rear Output Interface	1 (DP813A/DP811A)

### Environment

Cooling Method	Fan Cooling
Working Temperature	0°C to 40°C
Storage Temperature	-40°C to 70°C
Humidity	5% to 80% relative humidity
Altitude	Below 1,500m

Note<sup>[1]</sup>: The accuracy parameters are acquired via calibration under 25°C after 1-hour warm-up.

Note<sup>[2]</sup>: The maximum time required for the output to change accordingly after receiving the APPLy and SOURce commands.

Note<sup>[3]</sup>: The variation of the output within 8 hours after 30-minute warm-up when the load circuit and environment temperature are constant.

## DP832/DP831/DP822/DP821/DP813/DP811 Specifications

Model	Number of Channels
DP832	3
DP831	3
DP822	2
DP821	2
DP813	1 (two output ranges)
DP811	1 (two output ranges)

DC Output (0°C to 40°C )			
Channel (Range)		Voltage/Current	OVP/OCP
DP832	CH1	0 to 30V/0 to 3A	10mV to 33V/1mA to 3.3A
	CH2	0 to 30V/0 to 3A	10mV to 33V/1mA to 3.3A
	CH3	0 to 5V/0 to 3A	10mV to 5.5V/1mA to 3.3A
DP831	CH1	0 to 8V/0 to 5A	10mV to 8.8V/1mA to 5.5A
	CH2	0 to 30V/0 to 2A	10mV to 33V/1mA to 2.2A
	CH3	0 to -30V/0 to 2A	-10mV to -33V/1mA to 2.2A
DP822	CH1	0 to 20V/0 to 5A	10mV to 22V/1mA to 5.5A
	CH2	0 to 5V/0 to 16A	10mV to 5.5V/1mA to 16.8A
DP821	CH1	0 to 60V/0 to 1A	10mV to 66V/10mA to 1.1A
	CH2	0 to 8V/0 to 10A	10mV to 8.8V/10mA to 11A
DP813	Range1	0 to 8V/0 to 20A	10mV to 8.8V/10mA to 23A
	Range2	0 to 20V/0 to 10A	10mV to 22V/10mA to 11A
DP811	Range1	0 to 20V/0 to 10A	10mV to 22V/10mA to 11A
	Range2	0 to 40V/0 to 5A	10mV to 44V/10mA to 5.5A

Load Regulation Rate, ± (Output Percentage + Offset)	
Voltage	<0.01% + 2mV
Current	<0.01% + 250µA

Linear Regulation Rate, ± (Output Percentage + Offset)	
Voltage	<0.01% + 2mV
Current	<0.01% + 250µA

Ripples and Noise (20Hz to 20MHz)	
Normal Mode Voltage	DP832/DP831/DP822/DP821: <350µVrms/2mVpp DP813/DP811: <350µVrms/3mVpp
Normal Mode Current	<2mArms

Annual Accuracy <sup>[1]</sup> (25°C ± 5°C ), ± (Output Percentage + Offset)					
Channel		Programming		Readback	
		Voltage	Current	Voltage	Current
DP832	CH1	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.15% + 5mA
	CH2	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.15% + 5mA
	CH3	0.1% + 5mV	0.2% + 5mA	0.1% + 5mV	0.15% + 5mA
DP831	CH1	0.1% + 5mV	0.2% + 10mA	0.1% + 5mV	0.2% + 10mA
	CH2	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.1% + 5mA
	CH3	0.05% + 20mV	0.2% + 5mA	0.05% + 10mV	0.1% + 5mA
DP822	CH1	0.1% + 25mV	0.2% + 10mA	0.1% + 25mV	0.15% + 10mA
	CH2	0.05% + 10mV	0.2% + 10mA	0.05% + 5mV	0.15% + 10mA
DP821	CH1	0.1% + 25mV	0.2% + 10mA	0.1% + 25mV	0.15% + 10mA
	CH2	0.05% + 10mV	0.2% + 10mA	0.05% + 5mV	0.15% + 10mA
DP813	CH1	0.05% + 10mV	0.1% + 10mA	0.05% + 10mV	0.1% + 10mA
DP811	CH1	0.05% + 10mV	0.1% + 10mA	0.05% + 10mV	0.1% + 10mA

Resolution								
Channel			Programming		Readback		Display	
			Voltage	Current	Voltage	Current	Voltage	Current
DP832	Standard	CH1 CH2 CH3	10mV 10mV 10mV	1mA 1mA 1mA	10mV 10mV 10mV	1mA 1mA 1mA	10mV 10mV 10mV	10mA 10mA 10mA
	With the high-resolution option	CH1 CH2 CH3	1mV 1mV 1mV	1mA 1mA 1mA	0.1mV 0.1mV 0.1mV	0.1mA 0.1mA 0.1mA	1mV 1mV 1mV	1mA 1mA 1mA
DP831	Standard	CH1 CH2 CH3	1mV 10mV 10mV	1mA 1mA 1mA	1mV 1mV 1mV	1mA 1mA 1mA	10mV 10mV 10mV	10mA 10mA 10mA
	With the high-resolution option	CH1 CH2 CH3	1mV 1mV 1mV	0.3mA 0.1mA 0.1mA	0.1mV 0.1mV 0.1mV	0.1mA 0.1mA 0.1mA	1mV 1mV 1mV	1mA 1mA 1mA
DP822	Standard	CH1 CH2	10mV 10mV	10mA 10mA	10mV 10mV	1mA 10mA	10mV 10mV	10mA 10mA
	With the high-resolution option	CH1 CH2	1mV 1mV	1mA 1mA	1mV 1mV	0.1mA 1mA	1mV 1mV	0.1mA 1mA
DP821	Standard	CH1 CH2	10mV 10mV	1mA 10mA	10mV 10mV	1mA 10mA	10mV 10mV	1mA 10mA
	With the high-resolution option	CH1 CH2	1mV 1mV	0.1mA 1mA	1mV 1mV	0.1mA 1mA	1mV 1mV	0.1mA 1mA
DP813	Standard	CH1	10mV	10mA	10mV	10mA	10mV	10mA
	With the high-resolution option	CH1	1mV	1mA	1mV	1mA	1mV	1mA
DP811	Standard	CH1	10mV	10mA	1mV	1mA	10mV	10mA
	With the high-resolution option	CH1	1mV	0.5mA	0.1mV	0.1mA	1mV	1mA

### Transient Response Time

Less than 50µs for output voltage to recover to within 15mV following a change in output current from full load to half load or vice versa.

### Command Processing Time <sup>[2]</sup>

<118ms

### OVP/OCP

Accuracy, ± (Output Percentage + Offset)      0.5% + 0.5V/0.5% + 0.5A

### Voltage Programming Control Speed (1% within the total variation range)

Channel		Rise		Fall	
		Full Load	No Load	Full Load	No Load
DP832	CH1	<50ms	<33ms	<46ms	<400ms
	CH2	<50ms	<38ms	<46ms	<400ms
	CH3	<15ms	<14ms	<24ms	<100ms
DP831	CH1	<18ms	<17ms	<20ms	<200ms
	CH2	<33ms	<36ms	<44ms	<400ms
	CH3	<35ms	<42ms	<45ms	<400ms
DP822	CH1	<30ms	<30ms	<30ms	<1000ms
	CH2	<15ms	<15ms	<15ms	<250ms
DP821	CH1	<110ms	<30ms	<110ms	<800ms
	CH2	<15ms	<15ms	<20ms	<400ms
DP813	CH1	<30ms	<30ms	<20ms	<1500ms
DP811	CH1	<45ms	<42ms	<51ms	<1089ms



Temperature Coefficient per °C (Output Percentage + Offset)			
Channel		Voltage	Current
DP832	CH1	0.01% + 5mV	0.01% + 2mA
	CH2	0.01% + 5mV	0.01% + 2mA
	CH3	0.01% + 2mV	0.01% + 2mA
DP831	CH1	0.01% + 2mV	0.02% + 3mA
	CH2	0.01% + 2mV	0.02% + 3mA
	CH3	0.01% + 2mV	0.02% + 3mA
DP822	CH1	0.01% + 3mV	0.02% + 3mA
	CH2	0.01% + 3mV	0.02% + 3mA
DP821	CH1	0.01% + 3mV	0.02% + 3mA
	CH2	0.01% + 3mV	0.02% + 3mA
DP813	CH1	0.01% + 3mV	0.02% + 3mA
DP811	CH1	0.01% + 3mV	0.02% + 3mA

Stability <sup>[3]</sup> , ± (Output Percentage + Offset)			
Channel		Voltage	Current
DP832	CH1	0.02% + 2mV	0.05% + 2mA
	CH2	0.02% + 2mV	0.05% + 2mA
	CH3	0.01% + 1mV	0.05% + 2mA
DP831	CH1	0.03% + 1mV	0.1% + 3mA
	CH2	0.02% + 2mV	0.05% + 1mA
	CH3	0.02% + 2mV	0.05% + 1mA
DP822	CH1	0.02% + 1mV	0.1% + 1mA
	CH2	0.02% + 1mV	0.1% + 1mA
DP821	CH1	0.02% + 1mV	0.1% + 1mA
	CH2	0.02% + 1mV	0.1% + 1mA
DP813	CH1	0.02% + 1mV	0.1% + 2mA
DP811	CH1	0.02% + 1mV	0.1% + 1mA

Mechanical	
Dimensions	239mm(W) x 157mm(H) x 418mm(D)
Weight	DP832: 10.5kg DP831: 9.75kg DP822: 10.5kg DP821: 10.0kg DP813: 10.5kg DP811: 10.3kg

Power	
AC Input (50Hz-60Hz)	100Vac ± 10%, 115Vac ± 10%, 230Vac ± 10% (maximum 250Vac)
Maximum Power	DP832: 521VA DP831: 416VA DP822: 500VA DP821: 450VA DP813: 503VA DP811: 503VA

I/O	
USB DEVICE	1
USB HOST	1
LAN	1 (Option)
RS232	1 (Option)
Digital IO	1 (Option)
USB-GPIB	1 (Option, extend a GPIB interface using the USB-GPIB interface converter)
Rear Output Interface	1 (DP813/DP811)

Environment	
Cooling Method	Fan Cooling
Working Temperature	0°C to 40°C
Storage Temperature	-40°C to 70°C
Humidity	5% to 80% relative humidity
Altitude	Below 1500m

**Note**<sup>[1]</sup>: The accuracy parameters are acquired via calibration under 25°C after 1-hour warm-up.

**Note**<sup>[2]</sup>: The maximum time required for the output to change accordingly after receiving the APPLY and SOURce commands.

**Note**<sup>[3]</sup>: The variation of the output within 8 hours after 30-minute warm-up when the load circuit and environment temperature are constant.

## ► Ordering Information

	Description	Order NO.
<b>Models</b>	Programmable Linear DC Power Supply (Three-channel)	DP832A
	Programmable Linear DC Power Supply (Three-channel)	DP832
	Programmable Linear DC Power Supply (Three-channel)	DP831A
	Programmable Linear DC Power Supply (Three-channel)	DP831
	Programmable Linear DC Power Supply (Dual-channel)	DP822A
	Programmable Linear DC Power Supply (Dual-channel)	DP822
	Programmable Linear DC Power Supply (Dual-channel)	DP821A
	Programmable Linear DC Power Supply (Dual-channel)	DP821
	Programmable Linear DC Power Supply (Single-channel)	DP813A
	Programmable Linear DC Power Supply (Single-channel)	DP813
	Programmable Linear DC Power Supply (Single-channel)	DP811A
	Programmable Linear DC Power Supply (Single-channel)	DP811
<b>Standard Accessories</b>	Power Cord	--
	USB Cable	CB-USBA-USBB-FF-150
	Fuse 50T-032H 250V 3.15A (DP832A/DP832/DP822A/DP822/DP813A/DP813/DP811A/DP811) Fuse 50T-025H 250V 2.5A (DP831A/DP831/DP821A/DP821)	--
	Short-circuit Equipment (DP822A/DP822/DP821A/DP821/DP813A/DP813/DP811A/DP811)	--
	Digital I/O Interface Connecting Terminal	Terminal-Digital I/O-DP800
<b>Optional Accessories</b>	Provide high-resolution setting (for DP832/DP831/DP822/DP821/DP813/DP811; for the other models, this is a standard accessory)	HIRES-DP800
	Provide 4 trigger input and output channels (for DP832/DP831/DP822/DP821/DP813/DP811; for the other models, this is a standard accessory)	DIGITALIO-DP800
	Provide on-line monitor and analysis functions (for DP832/DP831/DP822/DP821/DP813/DP811; for the other models, this is a standard accessory)	AFK-DP800
	Provide RS232 and LAN communication interfaces (for DP832/DP831/DP822/DP821/DP813/DP811; for the other models, this is a standard accessory)	INTERFACE-DP800
	USB to GPIB Interface Converter	USB-GPIB
	DP800 Series Rack Mount Kit (Single Instrument)	RM-1-DP800
	DP800 Series Rack Mount Kit (Two Instruments)	RM-2-DP800
	DP800 Series Red Safety Plug	SPR-DP800
	DP800 Series Black Safety Plug	SPB-DP800
DP800 Series Green Safety Plug	SPG-DP800	

## Warranty

Three-year warranty, excluding accessories.

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