RIGOL

DP2000 Series

Programmable Linear DC Power Supply

Data Sheet

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DP2000 Series
Programmable Linear DC Power Supply

DP2000 Features

- 4.3-inch LCD color touch screen
- 3 independent channels: 32V/3A || 32V/3A || 6V/5A (10A)
- High resolution for measurement of 1 μA low current
- Capability to measure and display wide dynamic ranges of current
- Front and rear output terminals
- Minimum dwell time in Arb editor: 1 ms
- Low output ripple and noise <350 μVrms/2 mVpp
- Auto series/parallel connections
- LAN, USB, RS232, GBIP (optional), and Digital I/O
- Over voltage, over current, and over temperature protection

Applications

Low-power IoT Device Testing

Minimum Dwell Time: 1 ms

4.3-inch Touch Screen

ATE Testing

DP2000 Series
Programmable Linear DC Power Supply

Item	Description
1	4.3-inch LCD color touch screen
2	Channel selection keys and output On/Off keys
3	Parameter input area
4	Enter key (used to confirm the entry; long press the key to lock the touch screen)
5	Back key (used to cancel the entry; press the key to return to local operation from remote control)
6	Earth ground reference
7	Function menu
8	Output terminal
9	USB port
10	Power switch key

DP2000 Series
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Item	Description
1	LAN port
2	USB DEVICE (connect the instrument as "slave" device to external USB device)
3	Digital I/O port
4	USB HOST (connect the instrument as "host" device to external USB device)
5	CH3 output terminal ports and Sense terminals
6	AC selector
7	AC power inlet socket
8	Fuse
9	Fan ventilation hole
10	CH1&CH2 output terminal ports and Sense terminals
11	GPIB/RS232 port (RS232 standard, GPIB optional)

Product Introduction

Product Features

- DP2031: 32 V/3 A || 32 V/3 A || 6 V/5 A (10 A)[1]
- 3 electrically isolated independent channels with a maximum total power of 222 W
- 4.3-inch LCD color touch screen
- Internal series/parallel connections for CH1 and CH2
- High resolution for measurement of 1 μA low range current
- Capability to measure and display wide dynamic ranges of current
- Excellent programming/readback accuracy
- Transient response time <50 μs
- Front and rear output terminals
- 2-wire or 4-wire remote sense
- A maximum of 512 arbitrary points with dwell time down to 1 ms; various built-in basic waveforms
- Low output ripple and noise <350 μV_{rms}/2 mV_{pp}
- Command processing time <10 ms
- Automatic switchover between low and high range measurement
- Timing output, energy consumption analysis (IoT), data logging and analysis
- Capability to measure the minimum of 1 ms pulse current
- Three rack-units (3U), 1/2-rack form factor
- Software control
- Over voltage, over current, and over temperature protection
- Various interfaces available: USB HOST, LAN, Digital I/O, and RS232 standard; GPIB optional[2]

Note[1]: The CH3 of DP2031 has two ranges: 6 V/5 A and 6 V/10 A (optional). When it switches to 6 V/10 A, both CH1 and CH2 switch to 32 V/2 A from 32 V/3 A.

Note[2]: The GPIB and RS232 share the same port. The optional GPIB interface can be installed in place of the RS232 interface.

RIGOL DP Family Overview

	DP800	DP900	DP2000
Number of Channels	1/2/3	3	3
Channel-to-channel Isolation	Partially isolated	Fully isolated	Fully isolated
Auto Series/ Parallel Connection	Not available	Available (CH1, CH2)	Available (CH1, CH2)
Screen	3.5-inch screen	4.3-inch touch screen	4.3-inch touch screen
Total Power	140 W to 200 W	210 W	222 W
Output Ripple and Noise	<350 μV_{rms}/2 mV_{pp} <2 mA_{rms}	<350 μV_{rms}/2 mV_{pp} <2 mA_{rms}	<350 μV_{rms}/2 mV_{pp} <2 mA_{rms}
Programming Accuracy 12 Months (25°C±5°C)	CH1, CH2: 0.05%+20 mV 0.2%+5 mA CH3: 0.1%+5 mV 0.2%+5 mA[2]	CH1, CH2: 0.05%+10 mV[1] 0.2%+5 mA CH3: 0.1%+5 mV 0.2%+5 mA	CH1, CH2: 0.03%+8 mV 0.15%+5 mA CH3: 0.04%+4 mV 0.15%+10 mA
Readback Accuracy 12 Months (25°C±5°C)	CH1, CH2: 0.05%+10 mV 0.15%+5 mA CH3: 0.1%+5 mV 0.15%+5 mA[2]	CH1, CH2: 0.05%+10 mV[1] 0.15%+5 mA CH3: 0.1%+5 mV 0.15%+5 mA	CH1, CH2: 0.05%+8 mV 0.15%+5 mA 0.25%+28 μA (low range current) CH3: 0.08%+3 mV 0.15%+10 mA

	DP800	DP900	DP2000
Programming Resolution	1 mV/1 mA[2]	1 mV/1 mA	CH1, CH2: 1 mV/0.1 mA CH3: 1 mV/1 mA
Readback Resolution	0.1 mV/0.1 mA[2]	0.1 mV/0.1 mA	0.1 mV/0.1 mA (Low range current: 1 μA)
Command Processing Time	118 ms	10 ms[3]	10 ms[3]
Minimum Dwell Time	1000 ms	100 ms (the highest level)	1 ms (the highest level)
Interface	USB/LAN/RS232/Digital IO	USB/LAN/Digital IO	USB/LAN/RS232/Digital IO
GPIB	Optional (USB-GPIB)	Not available	Optional[4]
Rear Output Terminals	Available on DP811 and DP813 only (for 1 channel)	Not available	Available (for 3 channels)
Weight	9.75 kg to 10.5 kg	9.15 kg	9.95 kg
Dimension (W x H x D)	239 mm×157 mm×418 mm	239 mm×157 mm×419 mm	239 mm×157 mm×419 mm

Note[1]: Voltage readback/programming accuracy 12 months for DP932U: 0.05%+20 mV.

Note[2]: for DP832A.

Note[3]: the time required for the output to change accordingly after receiving the APPLy and SOURce commands.

Note[4]: The optional GPIB interface can be installed in place of the RS232 interface. Those two interfaces cannot be used concurrently.

Specifications

All the specifications[1] can only be guaranteed when the instrument is operated continuously for more than 30 minutes under the specified operation temperature.

Number of Channels

Model	Number of Channels
DP2031	3

DC Output (0℃~40℃)

DC output (0℃~40℃)			
		Voltage/Current	OVP/OCP
Range1	CH1	0 to 32 V/0 to 3 A	1 mV to 35.2 V/1 mA to 3.3 A
	CH2	0 to 32 V/0 to 3 A	1 mV to 35.2 V/1 mA to 3.3 A
	CH3	0 to 6 V/0 to 5 A	1 mV to 6.6 V/1 mA to 5.5 A
Range2 (Optional)	CH1	0 to 32 V/0 to 2 A	1 mV to 35.2 V/1 mA to 2.2 A
	CH2	0 to 32 V/0 to 2 A	1 mV to 35.2 V/1 mA to 2.2 A
	CH3	0 to 6 V/0 to 10 A	1 mV to 6.6 V/1 mA to 11 A

Internal Series/Parallel Mode

Internal series/parallel mode	
Series mode voltage	64 V
Parallel mode current	6 A

Load Regulation Rate

Load regulation rate, ± (% of output + offset)	
Voltage	<0.01%+2 mV
Current	<0.01%+250 μA

Line Regulation Rate

Line regulation rate, ± (% of output + offset)	
Voltage	<0.01%+2 mV
Current	<0.01%+250 µA

Output Ripple and Noise

Output ripple and noise (20 Hz to 20 MHz)	
Normal mode voltage	<350 μV_{rms}/2 mV_{pp}
Normal mode current	<2 mA_{rms}

Accuracy 12 months (25°C±5°C)

Accuracy 12 months (25°C±5°C)[2], ± (% of output + offset)					
	Programming		Readback		
	Voltage	Current	Voltage	Current	Low range current[3]
CH1	0.03%+8 mV	0.15%+5 mA	0.05%+8 mV	0.15%+5 mA	0.25%+28 µA
CH2	0.03%+8 mV	0.15%+5 mA	0.05%+8 mV	0.15%+5 mA	0.25%+28 µA
CH3	0.04%+4 mV	0.15%+10 mA	0.08%+3 mV	0.15%+10 mA	Not available

Resolution

Resolution								
	Programming		Readback			Display		
	Voltage	Current	Voltage	Current	Low range current[3]	Voltage	Current	Low range current[3]
CH1	1 mV	0.1 mA	0.1 mV	0.1 mA	1 µA	1 mV	0.1 mA	1 µA
CH2	1 mV	0.1 mA	0.1 mV	0.1 mA	1 µA	1 mV	0.1 mA	1 µA
CH3	1 mV	1 mA	0.1 mV	0.1 mA	Not available	1 mV	0.1 mA	Not available

Transient Response Time

Transient response time
Less than 50 µs of time to recover to within the ±15 mV settling band following a load change from 50% to 100% or from 100% to 50% of full load.

Command Processing Time

Command processing time[4]
<10 ms

OVP/OCP Accuracy

OVP/OCP accuracy, ± (% of output + offset)	
OVP accuracy, ± (% of output + offset)	0.2%+20 mV
OCP accuracy, ± (% of output + offset)	0.5%+20 mA

Voltage Programming Response Time (Within 99% of the Total Variation Range)

Voltage programming response time (within 99% of the total variation range)				
Channel	Full Load (Up)	No Load (Up)	Full Load (Down)	No Load (Down)
CH1	<50 ms	<30 ms	<50 ms	<400 ms
CH2	<50 ms	<30 ms	<50 ms	<400 ms
CH3	<15 ms	<14 ms	<20 ms	<100 ms

Temperature Coefficient Per °C

Temperature coefficient per °C, ± (% of output + offset)		
Channel	Voltage	Current
CH1	0.01%+4 mV	0.01%+2 mA
CH2	0.01%+4 mV	0.01%+2 mA
CH3	0.01%+4 mV	0.01%+3 mA

Mechanical Characteristics

Mechanical characteristics	
Dimension	239 mm (W) x 157 mm (H) x 419 mm (D)
Weight	9.95 kg
Rack mount kit	Three rack-units (3U), 1/2-rack form factor

Power Source

Power source	
AC input (50 Hz to 60 Hz)	100 V_{ac}±10% 120 V_{ac}±10% 220 V_{ac}±10% 230 V_{ac}±10% (max. 250 V_{ac})
Maximum input power	650 VA

Interface

Interface	
USB DEVICE	1
USB HOST	2 (1 for front panel and 1 for rear panel)
LAN	1
RS232	1
Digital IO	1 (optional for DP932U; not available for DP932E)
GPIB	1 (optional)
Rear Output Terminals	3

Environmental Conditions

Environmental conditions	
Cooling Method	Fan cooling
Operating Temperature	0°C to +40°C

Environmental conditions	
Storage Temperature	-40°C to +60°C
Humidity	5% to 80% relative humidity
Altitude	Below 1500 meters
IP Rating	IP20
Pollution Degree	PD2
Overvoltage Categories	OVC II
Operating Environment	For indoor use only and non-operating in humid environment.

Warranty and Calibration Interval

Warranty and calibration interval	
Warranty	3 years (excluding the accessories)
Recommended calibration interval	Every 12 months

Note[1]:

- Unless otherwise stated, the specifications are applicable to all the channels of the specified model.
- All parameters are measured at rear output terminals.
- Not applicable in series/parallel connection mode.

Note[2]: The accuracy parameters are acquired via calibration under 25℃ after 1-hour warm-up.

Note[3]: The low range current mode is applicable to measurement of current lower than 10 mA.

Note[4]: the time required for the output to change accordingly after receiving the APPLy and SOURce commands.

Order Information and Warranty Period

Order Information

Order Information	Order No.
Base Unit	
Programmable linear DC power supply, triple-output, high precision	DP2031
Standard Shipped Accessory	
USB cable	CB-USBA-USBB-FF-150
One fuse	— —
Power cord (based on destination country)	— —
Two pairs of connecting wires (10 A)	10A-Testing-Cable
Optional Accessory	
GPIB user installable interface module	DP2000-GPIB
CH3 10 A high range mode	DP2000-10A
7.5 kSa/s high-speed sampling option	DP2000-HADC
DP2000 Rack Mount Kit (for a single instrument)	RM-1-DP800
DP2000 Rack Mount Kit (for two instruments side-by-side)	RM-2-DP800

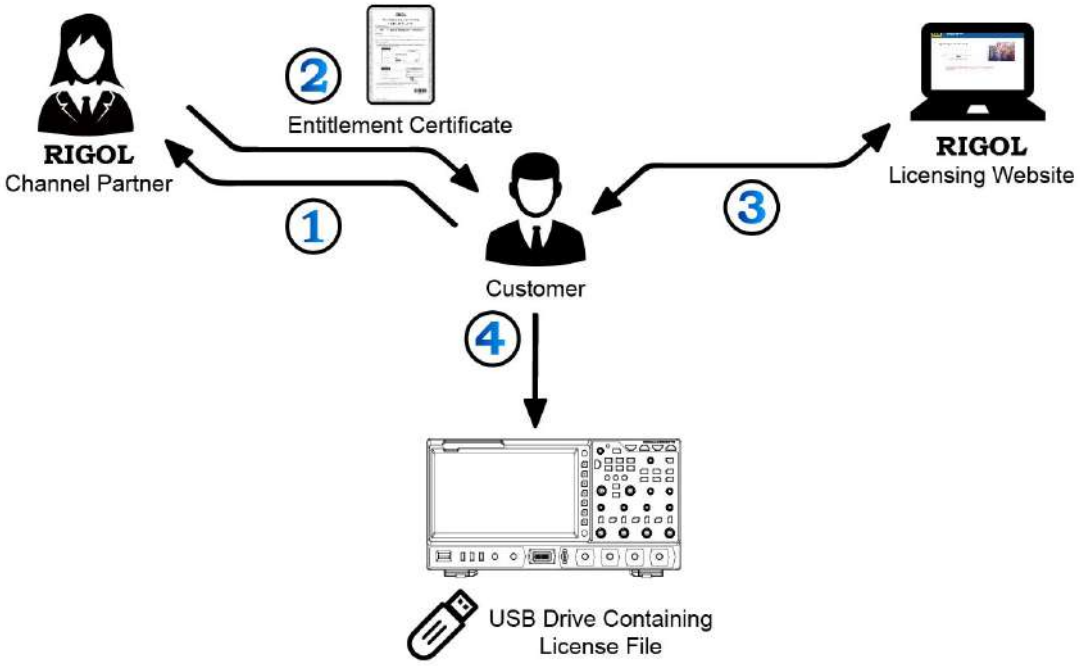
NOTE:

For purchasing models, accessories, and options, please contact local RIGOL office.

Warranty Period

Three years for the mainframe, excluding the accessories.

Option Ordering and Installation Process



1. According to the usage requirements, please purchase the specified function options from **RIGOL Sales Personnel**, and provide the serial number of the instrument that needs to install the option.
2. After receiving the option order, the **RIGOL** factory will mail the paper software product entitlement certificate to the address provided in the order.
3. Log in to **RIGOL** official website for registration. Use the software key and instruments serial number provided in the entitlement certificate to obtain the option license code and the option license file.
4. Download the option license file to the root directory of the USB storage device, and connect the USB storage device to the instrument properly. After the USB storage device is successfully recognized, the **Option install** menu is activated. Press this menu key to start installing the option.

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