

## Chapter 5 Specifications

All the specifications are guaranteed when the instrument has been working for more than 30 minutes under the specified operation temperature.

**Note:** Unless otherwise noted, the specifications are applicable to all the channels of the specified model.

DC Output (0°C to 40°C)			
Channel (Range)		Voltage/Current	OVP/OCP
<b>DP832</b>	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
<b>DP831</b>	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
<b>DP822</b>	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
<b>DP821</b>	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
<b>DP813</b>	Range1	0 to 8V/0 to 20A	10mV to 8.8V/10mA to 22A
	Range2	0 to 20V/0 to 10A	10mV to 22V/10mA to 11A
<b>DP811</b>	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 $\pm$ (Output Percentage+Offset)	
Voltage	<0.01%+2mV
Current	<0.01%+250 $\mu$ A

Linear Regulation Rate $\pm$ (Output Percentage+Offset)	
Voltage	<0.01%+2mV
Current	<0.01%+250 $\mu$ A

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

Annual Accuracy <sup>[1]</sup> (25°C $\pm$ 5°C) $\pm$ (Output Percentage+Offset)				
Channel	Programming		Readback	
	Voltage	Current	Voltage	Current

<b>DP832</b>	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
<b>DP831</b>	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
<b>DP822</b>	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
<b>DP821</b>	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
<b>DP813</b>	CH1	0.05%+10mV	0.1%+10mA	0.05%+10mV	0.1%+10mA
<b>DP811</b>	CH1	0.05%+10mV	0.1%+10mA	0.05%+10mV	0.1%+10mA

<b>Resolution</b>							
Channel		Programming		Readback		Display	
		Voltage	Current	Voltage	Current	Voltage	Current
<b>DP832</b>	CH1 CH2 CH3	Standard					
		10mV	1mA	10mV	1mA	10mV	10mA
		10mV	1mA	10mV	1mA	10mV	10mA
		10mV	1mA	10mV	1mA	10mV	10mA
		With the high-resolution option					
		1mV	1mA	0.1mV	0.1mA	1mV	1mA
1mV	1mA	0.1mV	0.1mA	1mV	1mA		
1mV	1mA	0.1mV	0.1mA	1mV	1mA		
<b>DP831</b>	CH1 CH2 CH3	Standard					
		1mV	1mA	1mV	1mA	10mV	10mA
		10mV	1mA	1mV	1mA	10mV	10mA
		10mV	1mA	1mV	1mA	10mV	10mA
		With the high-resolution option					
		1mV	0.3mA	0.1mV	0.1mA	1mV	1mA
1mV	0.1mA	0.1mV	0.1mA	1mV	1mA		
1mV	0.1mA	0.1mV	0.1mA	1mV	1mA		
<b>DP822</b>	CH1 CH2	Standard					
		10mV	10mA	10mV	1mA	10mV	10mA
		10mV	10mA	10mV	10mA	10mV	10mA
		With the high-resolution option					
1mV	1mA	1mV	0.1mA	1mV	0.1mA		
1mV	1mA	1mV	1mA	1mV	1mA		
<b>DP821</b>	CH1 CH2	Standard					
		10mV	1mA	10mV	1mA	10mV	1mA
		10mV	10mA	10mV	10mA	10mV	10mA
		With the high-resolution option					

		1mV 1mV	0.1mA 1mA	1mV 1mV	0.1mA 1mA	1mV 1mV	0.1mA 1mA
<b>DP813</b>	CH1	Standard					
		10mV	10mA	10mV	10mA	10mV	10mA
		With the high-resolution option					
		1mV	1mA	1mV	1mA	1mV	1mA
<b>DP811</b>	CH1	Standard					
		10mV	10mA	1mV	1mA	10mV	10mA
		With the high-resolution option					
		1mV	0.5mA	0.1mV	0.1mA	1mV	1mA

**Transient Response Time**

Less than 50 $\mu$ s 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 [2]**

<118ms

**OVP/OCV**

Accuracy  $\pm$ (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
<b>DP832</b>	CH1	<50ms	<33ms	<46ms	<400ms
	CH2	<50ms	<38ms	<46ms	<400ms
	CH3	<15ms	<14ms	<24ms	<100ms
<b>DP831</b>	CH1	<18ms	<17ms	<20ms	<200ms
	CH2	<33ms	<36ms	<44ms	<400ms
	CH3	<35ms	<42ms	<45ms	<400ms
<b>DP822</b>	CH1	<30ms	<30ms	<30ms	<1000ms
	CH2	<15ms	<15ms	<15ms	<250ms
<b>DP821</b>	CH1	<110ms	<30ms	<110ms	<800ms
	CH2	<15ms	<15ms	<20ms	<400ms
<b>DP813</b>	CH1	<30ms	<30ms	<20ms	<1500ms
<b>DP811</b>	CH1	<45ms	<42ms	<51ms	<1089ms

**Temperature Coefficient per  $^{\circ}$ C (Output Percentage+Offset)**

Channel		Voltage	Current
<b>DP832</b>	CH1	0.01%+5mV	0.01%+2mA
	CH2	0.01%+5mV	0.01%+2mA
	CH3	0.01%+2mV	0.01%+2mA

<b>DP831</b>	CH1	0.01%+2mV	0.02%+3mA
	CH2	0.01%+2mV	0.02%+3mA
	CH3	0.01%+2mV	0.02%+3mA
<b>DP822</b>	CH1	0.02%+1mV	0.1%+1mA
	CH2	0.02%+1mV	0.1%+1mA
<b>DP821</b>	CH1	0.01%+3mV	0.02%+3mA
	CH2	0.01%+3mV	0.02%+3mA
<b>DP813</b>	CH1	0.02%+1mV	0.1%+2mA
<b>DP811</b>	CH1	0.01%+3mV	0.02%+3mA

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

Channel		Voltage	Current
<b>DP832</b>	CH1	0.02%+2mV	0.05%+2mA
	CH2	0.02%+2mV	0.05%+2mA
	CH3	0.01%+1mV	0.05%+2mA
<b>DP831</b>	CH1	0.03%+1mV	0.1%+3mA
	CH2	0.02%+2mV	0.05%+1mA
	CH3	0.02%+2mV	0.05%+1mA
<b>DP822</b>	CH1	0.02%+1mV	0.1%+1mA
	CH2	0.02%+1mV	0.1%+1mA
<b>DP821</b>	CH1	0.02%+1mV	0.1%+1mA
	CH2	0.02%+1mV	0.1%+1mA
<b>DP813</b>	CH1	0.02%+1mV	0.1%+2mA
<b>DP811</b>	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

<b>I/O</b>	
USB Device	1
USB Host	1
LAN	1 (optional)
RS232	1 (optional)
Digital IO	1 (optional)
USB-GPIB	1 (optional, extend a GPIB interface using the USB-GPIB interface converter option)
Rear Output Interface	1 (DP811/DP813)

<b>Environment</b>	
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.