

## Chapter 5 Specifications

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

DC Input (0°C~40°C)				
Model	Voltage	Current	Maximum Power	Minimum Operating Voltage (DC)
<b>DL3021</b>	0 ~ 150 V	0 ~ 40 A	200 W	40 A@1 V
<b>DL3021A</b>				
<b>DL3031</b>	0 ~ 150 V	0 ~ 60 A	350 W	60 A@1.3 V
<b>DL3031A</b>				

CC Mode				
Model	Range	Programmable Resolution	Programmable Accuracy <sup>[1]</sup>	Programmable Temperature Coefficient
<b>DL3021</b>	0 ~ 4 A	1 mA	$\pm(0.05\%+0.05\%FS)^{[2]}$	100 ppm/°C
<b>DL3021A</b>	0 ~ 40 A			
<b>DL3031</b>	0 ~ 6 A	1 mA	$\pm(0.05\%+0.05\%FS)$	100 ppm/°C
<b>DL3031A</b>	0 ~ 60 A			

CV Mode				
Model	Range	Programmable Resolution	Programmable Accuracy	Programmable Temperature Coefficient
<b>DL3021</b>	0 ~ 15 V	1 mV	$\pm(0.05\%+0.02\%FS)$	50 ppm/°C
<b>DL3021A</b>	0 ~ 150 V	5 mV	$\pm(0.05\%+0.025\%FS)$	
<b>DL3031</b>	0 ~ 15 V	1 mV	$\pm(0.05\%+0.02\%FS)$	50 ppm/°C
<b>DL3031A</b>	0 ~ 150 V	5 mV	$\pm(0.05\%+0.025\%FS)$	

CR Mode			
Model	Range <sup>[3]</sup>	Programmable Resolution	Programmable Accuracy <sup>[4]</sup>
<b>DL3021</b>	0.08 Ω~15 Ω (0.0667 S~12.5 S) 2 Ω~15 kΩ (0.0000667 S~0.5 S)	2 mA/Vsense	Vin/Rset*(0.2%)+0.2%IFS
<b>DL3021A</b>			
<b>DL3031</b>	0.08 Ω~15 Ω (0.0667 S~12.5 S) 2 Ω~15 kΩ (0.0000667 S~0.5 S)	2 mA/Vsense	Vin/Rset*(0.2%)+0.2%IFS
<b>DL3031A</b>			

CP Mode		
Model	Range	Resolution
<b>DL3021</b>	0 ~ 200 W	100 mW
<b>DL3021A</b>		
<b>DL3031</b>	0 ~ 350 W	100 mW
<b>DL3031A</b>		

Con Mode				
Model	Frequency Range	Frequency Resolution	Frequency Accuracy	Duty Cycle Range
<b>DL3021</b>	0.001 Hz~15 kHz	0.8%	±0.5%	5%~95%, 1%
<b>DL3021A</b>	0.001 Hz~30 kHz			
<b>DL3031</b>	0.001 Hz~15 kHz			
<b>DL3031A</b>	0.001 Hz~30 kHz			

Current Slew Rate <sup>[5]</sup>			
Model	Range	Resolution	Accuracy
<b>DL3021</b>	0.001 A/μs~0.25 A/μs 0.001 A/μs~2.5 A/μs (>5 V) <sup>[6]</sup>	0.001 A/μs	5%+10 μs
<b>DL3021A</b>	0.001 A/μs~0.3 A/μs 0.001 A/μs~3 A/μs (>5 V)		
<b>DL3031</b>	0.001 A/μs~0.25 A/μs 0.001 A/μs~2.5 A/μs (>5 V)	0.001 A/μs	5%+10 μs
<b>DL3031A</b>	0.001 A/μs~0.5 A/μs 0.001 A/μs~5 A/μs (>5 V)		

Readback Current				
Model	Range	Resolution	Accuracy	Temperature Coefficient
<b>DL3021</b>	0 ~ 40 A	1 mA	±(0.05%+0.05%FS)	50 ppm/°C
<b>DL3021A</b>		0.1 mA		
<b>DL3031</b>	0 ~ 60 A	1 mA	±(0.05%+0.05%FS)	50 ppm/°C
<b>DL3031A</b>		0.1 mA		

Readback Voltage				
Model	Range	Resolution	Accuracy	Temperature Coefficient
<b>DL3021</b>	0 ~ 150 V	1 mV	±(0.05%+0.02%FS)	20 ppm/°C
<b>DL3021A</b>				
<b>DL3031</b>	0 ~ 150 V	1 mV	±(0.05%+0.02%FS)	20 ppm/°C
<b>DL3031A</b>				

<b>Readback Resistance</b>		
Model	Range	Resolution
<b>DL3021</b>	0.08 $\Omega$ ~15 k $\Omega$ (0.0667 S~0.5 S)	2 mA/Vsense
<b>DL3021A</b>		
<b>DL3031</b>	0.08 $\Omega$ ~15 k $\Omega$ (0.0667 S~0.5 S)	2 mA/Vsense
<b>DL3031A</b>		

<b>Readback Power</b>		
Model	Range	Resolution
<b>DL3021</b>	0 ~ 200 W	100 mW
<b>DL3021A</b>		
<b>DL3031</b>	0 ~ 350 W	100 mW
<b>DL3031A</b>		

<b>Protection Function</b>
Overcurrent protection (OCP), overvoltage protection (OVP), overpower protection (OPP), overtemperature protection (OTP), as well as local/remote reverse voltage (LRV/RRV) protection.

<b>Stability<sup>[7]</sup></b>		
Model	Current	Voltage
<b>DL3021</b>	$\pm(0.01\%\pm 10 \text{ mA})$	$\pm(0.01\%\pm 10 \text{ mV})$
<b>DL3021A</b>		
<b>DL3031</b>	$\pm(0.01\%\pm 10 \text{ mA})$	$\pm(0.01\%\pm 10 \text{ mV})$
<b>DL3031A</b>		

<b>Input Resistance</b>
350 k $\Omega$

<b>Mechanical</b>	
Dimensions	239 mm(W) x 157 mm(H) x 442 mm(D)
Weight	Net weight: 7.58 kg

<b>Power</b>	
AC Input (50 Hz~60 Hz)	115 Vac $\pm 10\%$ , 230 Vac $\pm 10\%$ (max: 250 Vac)
Maximum Input Power	<30 VA

<b>Interface</b>	
USB Device Interface	1
USB Host Interface	1
LAN Interface	1 (optional)
RS232	1

Digital I/O	1 (optional)
GPIB	1 (optional, USB-GPIB interface converter)

### Environment

Cooling Method	Fan Cooled
Operating Temperature	0°C~40°C
Storage Temperature	-40°C ~70°C
Humidity	5%~80% RH (without condensation)
Altitude	Below 2,000 m

### Certification Information

EMC	Complies with the requirements of the following directive and standards. EMC Directive 2014/30/EU EN 61326-1 EN 61000-3-2 EN 61000-3-3
	Under following condition. The maximum length of all connecting cables and wires to the DL3000 series are less than 3 m.
Safety	Complies with the requirements of the following directive and standard. Low Voltage Directive 2014/35/EU EN 61010-1:2010 IP Degree: IP20 Pollution Degree: PD 2 Over Voltage Category: OVC II Operation Location: Indoor use only; not for wet condition

**Note<sup>[1]</sup>:** Data measured after 30-second current sinking at the programming value (applicable to the programming accuracy in CC mode and CV mode).

**Note<sup>[2]</sup>:** FS indicates the full scale.

**Note<sup>[3]</sup>:** The input voltage for the low range in CR mode should be smaller than 8 V.

**Note<sup>[4]</sup>:** The programming accuracy in CR mode is also determined by the input voltage accuracy.

**Note<sup>[5]</sup>:** Current slew rate: rising slew rate for 10%~90% of the current (0-maximum current).

**Note<sup>[6]</sup>:** When the input voltage is greater than 5 V, the maximum current slew rate is 5 A/μs;  
when the input voltage is greater than 4 V, the maximum current slew rate is 2.5 A/μs;  
when the input voltage is greater than 2 V, the maximum current slew rate is 0.1 A/μs.

**Note<sup>[7]</sup>:** Following a steady 30-minute current sinking, change in current/voltage sinking over 8 hours under constant load, line, and ambient temperature.