

Model 8016 High-Density Laser Diode Controller

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Combination LDD & TEC Module Specification

Laser Diode Driver Selection	8605.16C	8610.16C
Laser Output		
Output Current Range (mA)	0–500	0–1000
Output Current Resolution (mA)	0.0076	0.0153
Output Current Accuracy ⁽¹⁾	±(0.03% + 15 μA)	±(0.03% + 30 μA)
Compliance Voltage (V) ⁽³⁾	3	
Temperature Coefficient (ppm FS/°C)	<50	
Short-Term Stability (1 h) (ppm FS)	<10	
Long-Term Stability (24 h) (ppm FS)	<10	
Noise/Ripple (rms) (μA) ⁽⁴⁾	<2	<5
Current Limit		
Range (mA)	0–500	0–1000
Resolution (mA)	0.000–3.000	
Accuracy (mA)	±2	
Internal Function Generator		
Waveforms	Triangle, Sinewave, Squarewave	
Frequency Range ⁽⁵⁾	200 Hz–300 kHz	
Squarewave Duty Cycle	50 ±5	
Independent Output Set Points	I _{max} , I _{min}	
Frequency Jitter	<1	
Frequency Accuracy	±5	
Amplitude Accuracy	±5	
Sinewave THD	<2%	
Squarewave Risettime (μsec)	<5	<10
Photodiode Input		

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Monitor Current Range (mA)	0–5	
Monitor Current Stability (24 h)	±0.02	
Monitor Current Accuracy ⁽¹⁾	±(0.004% + 0.5 μA)	
Temperature Coefficient	<0.02% FS/°C	
Photodiode Reverse Bias	None	
Measurement Display		
Output Current Range (mA)	0–500.00	0–1000.0
Output Current Resolution (mA)	0.01	0.1
Output Current Accuracy ⁽¹⁾	±(0.02% + 20 μA)	±(0.02% + 200 μA)
Forward Voltage Range (V)	0.000–3.000	
Forward Voltage Resolution (mV)	1	
Forward Voltage Accuracy ⁽¹⁾	±(0.005% + 1 mV)	
Photodiode Current Range (μA)	5–5000	
Photodiode Current Resolution (μA)	0.1	
Photodiode Current Accuracy ⁽¹⁾	±(0.01% + 0.5 μA)	
PD Response Range (μA/mW)	0.00–600.00	
PD Response Resolution (μA/mW)	0.01	
Optical Power Range (mW)	0.00–500.00	0.00–1000.0
Optical Power Resolution (mW)	0.01	0.1

Temperature Controller Specifications (all modules)

TEC Output	
Type	Bipolar, low noise
Maximum Current (A)	2
Maximum Voltage (V)	4
Typical Power (W)	8
Current Limit	
Range (A)	0–2.0
Accuracy (mA)	±10
Ripple/Noise (rms) (mA)	<1
Short-Term Stability (1 h)	0.0005°C
Long-Term Stability (24 h)	0.001°C
Temperature Coefficient	<0.05°C/°C
TEC Measurement Display	
Range	

Temperature	-100.00 to +240.00°C
Resistance (10 µA) (kΩ)	0.01–495
Resistance (100 µA) (kΩ)	0.001–49.5
TE Current (A)	-2.000 to +2.000
Resolution	
Temperature	0.01°C
Resistance (10 µA) (Ω)	10
Resistance (100 µA) (Ω)	1
TE Current (mA)	1
Accuracy	
Temperature ⁽²⁾	Typical ±0.1°C
Resistance (10 µA) ⁽¹⁾	±(0.04% + 16Ω)
Resistance (100 µA) ⁽¹⁾	±(0.05% + 8Ω)
TE Current ⁽¹⁾	±(0.3% + 2 mA)
Temperature Sensor	
Sensor Type	NTC, 2-wire Thermistor
Sensor Bias (µA)	10/100
Thermistor Calibration $1/T = (C1 \times 10^{-3}) + (C2 \times 10^{-4})(\ln R) + (C3 \times 10^{-7})(\ln R)^3$	

1) ± (x% Reading + Fixed Error)

2) Temperature is a value derived from the sensor's parameter (resistance) using the thermistor calibration equation. Accuracy can be computed by applying the sensor's parameter to the above equation at the temperature in question.

3) May be less with common laser anode/thermistor package

4) True rms, 3 Hz–300 kHz, 1/2 FS, resistive load

5) Output current may begin to roll-off at higher frequencies

6) All LDD modules configured for Common-Cathode. Please call for Common-Anode configuration

Mainframe Specifications

Display Type	LCD graphics display, 128 H x 240 W pixels
Display Backlighting	Green LED
Display Controls	Brightness, contrast (contrast optimizes viewing angle) and invert screen
Laser Diode On Indicator	Green LASER ACTIVE LED indicates at least one laser diode is on
Output Connector	15-pin female D-sub
Chassis Ground	4 mm banana jack
GPIO	24-pin IEEE-488
RS-232C	9-pin male D-sub
Power Requirements	90–132 V (max. 5 A), 198–250 V (max. 2.5 A), 50–60 Hz
Size (H x W x D) [in. (mm)]	5.25 (133) x 16.75 (426) x 14 (356)
Mainframe Weight [lb (kg)]	31.5 (14.3)
Module Weight [lb (kg)]	3.5 (1.6) typical

Operating Temperature	0 °C to 40 °C (<70% relative humidity non-condensing)
Storage Temperature	-20 °C to + 60 °C (<90% relative humidity non-condensing)
Laser Safety Features	Laser enable keyswitch, interlock, output delay (meets CDRH US21 CFR 1040.10)
Isolation/Crosstalk	All modules electrically isolated from earth ground

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