

## Temperature Controller Specifications (all modules)

### TEC Output

|                        |                    |
|------------------------|--------------------|
| Type                   | Bipolar, low noise |
| Maximum Current (A)    | 2.5                |
| Compliance Voltage (V) | >6                 |
| Typical Power (W)      | 15                 |

### Current Limit

|                            |            |
|----------------------------|------------|
| Range (A)                  | 0–2.5      |
| 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

|                                    |                      |
|------------------------------------|----------------------|
| 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)                     | -2.500 to +2.500     |
| Temperature                        | 0.01°C               |
| Resistance (10 µA) (Ω)             | 10                   |
| Resistance (100 µA) (Ω)            | 1                    |
| TE Current (mA)                    | 1                    |
| Temperature <sup>(4)</sup>         | Typical ±0.1°C       |
| Resistance (10 µA) <sup>(5)</sup>  | ±(0.04% + 16Ω)       |
| Resistance (100 µA) <sup>(5)</sup> | ±(0.05% + 8Ω)        |
| TE Current <sup>(5)</sup>          | ±(0.3% + 2 mA)       |

### Temperature Sensor

|                                                                                        |                        |
|----------------------------------------------------------------------------------------|------------------------|
| Sensor Type                                                                            | NTC, 2-wire Thermistor |
| Sensor Bias (µA)                                                                       | 10/100                 |
| Thermistor Calibration                                                                 |                        |
| $1/T = (C1 \cdot 10^{-3} + (C2 \times 10^{-6})(\ln R) + (C3 \times 10^{-7})(\ln R)^2)$ |                        |

- 1) True rms, 3 Hz–300 kHz, 1/2 FS, resistive load
- 2) Fixed—If desired, specify 0–5 V at time of order
- 3) ± (x% Reading + Fixed Error)
- 4) Temperature is a value derived from the sensor's parameter (resistance) using the thermistor calibration equations. Accuracy can be computed by applying the sensor's parameter to the above equation at the temperature in question.
- 5) May be lower with common anode/thermistor package
- 6) Output current may begin to roll-off at higher frequencies

## Combination LDD & TEC Module Specifications

|                                            | 8605<br>8605-SO<br>8605-5V                                 | 8610<br>8610-SO<br>8610-5V          | 8630<br>8630-SO<br>8630-5V |
|--------------------------------------------|------------------------------------------------------------|-------------------------------------|----------------------------|
| Laser Diode Driver Selection               |                                                            |                                     |                            |
| Laser Output                               |                                                            |                                     |                            |
| Output Current Range (mA)                  | 0–500                                                      | 0–1000                              | 0–3000                     |
| Output Current Resolution (mA)             | 0.0076                                                     | 0.0153                              | 0.0458                     |
| Output Current Accuracy <sup>(3)</sup>     | ±(0.03% + 15 µA)                                           | ±(0.03% + 30 µA)                    | ±(0.03% + 90 µA)           |
| Compliance Voltage (V) <sup>(6)</sup>      | 7                                                          | 7                                   | 5                          |
| Temperature Coefficient (ppm FS/°C)        |                                                            | <50                                 |                            |
| Short-Term Stability (1 h) (ppm FS)        |                                                            | <10                                 |                            |
| Long-Term Stability (24 h) (ppm FS)        |                                                            | <50                                 |                            |
| Noise/Ripple (rms) (µA) <sup>(1)</sup>     | <2                                                         | <5                                  | <10                        |
| Current Limit                              |                                                            |                                     |                            |
| Range (mA)                                 | 0–500                                                      | 0–1000                              | 0–3000                     |
| Resolution (mA)                            |                                                            | 1                                   |                            |
| Accuracy (mA)                              | ±2                                                         | ±2                                  | ±4                         |
| Internal Function Generator                |                                                            |                                     |                            |
| Waveforms                                  |                                                            | Sinewave, Squarewave                |                            |
| Frequency Range <sup>(6)</sup>             |                                                            | 200 Hz –300 kHz                     |                            |
| Squarewave Duty Cycle                      |                                                            | 50 ±5%                              |                            |
| Independent Output Set Points              |                                                            | I <sub>max</sub> , I <sub>min</sub> |                            |
| Frequency Jitter                           |                                                            | <1%                                 |                            |
| Frequency Accuracy                         |                                                            | ±5%                                 |                            |
| Amplitude Accuracy                         |                                                            | ±5%                                 |                            |
| Sinewave THD                               |                                                            | <2%                                 |                            |
| Squarewave Risettime (µsec)                | <1                                                         | <5                                  | <10                        |
| Photodiode Input                           |                                                            |                                     |                            |
| Monitor Current Range (mA)                 | 0–5                                                        | 0–5                                 | 0–20                       |
| Monitor Current Stability (24 h)           |                                                            | ±0.02% FS                           |                            |
| Monitor Current Accuracy <sup>(3)</sup>    | ±(0.004% + 0.5 µA)                                         | ±(0.004% + 0.5 µA)                  | ±(0.004% + 1 µA)           |
| Temperature Coefficient                    |                                                            | <0.02% FS/°C                        |                            |
| Photodiode Reverse Bias <sup>(5)</sup>     | 5 VDC for “-5V” versions. The others have PD bias of zero. |                                     |                            |
| Measurement Display                        |                                                            |                                     |                            |
| Output Current Range (mA)                  | 0–500.00                                                   | 0–1000.0                            | 0–3000.0                   |
| Output Current Resolution (mA)             | 0.01                                                       | 0.1                                 | 0.1                        |
| Output Current Accuracy <sup>(3)</sup>     | ±(0.02% + 20 µA)                                           | ±(0.02% + 200 µA)                   | ±(0.02% + 200 µA)          |
| Forward Voltage Range (V)                  | 0.000–7.000                                                | 0.000–7.000                         | 0.000–5.000                |
| Forward Voltage Resolution (mV)            |                                                            | 1                                   |                            |
| Forward Voltage Accuracy <sup>(3)</sup>    |                                                            | ±(0.005%+1 mV)                      |                            |
| Photodiode Current Range (µA)              | 5–5000                                                     | 5–5000                              | 15–20,000                  |
| Photodiode Current Resolution (µA)         |                                                            | 0.1                                 |                            |
| Photodiode Current Accuracy <sup>(3)</sup> | ±(0.01% + 0.5 µA)                                          | ±(0.01% + 0.5 µA)                   | ±(0.01% + 1 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                                                | 0.00–1000.00                        | 0.00–3000.00               |
| Optical Power Resolution (mW)              | 0.01                                                       | 0.01                                | 0.1                        |

"-SO" Combo modules indicate the Sync Out version, enabling synchronized modulation among modules.

"-5V" Combo modules are provided with a permanent 5 VDC bias applied across the monitor photodiode pins. Note that this is not user adjustable.