

# Digital butterfly laser diode controller



Koheron CTL200 is the digital version of the popular [CTL101 analog laser controller](#). It combines a low noise current driver with modulation and a temperature controller. The CTL200 fits in a 75 mm x 75 mm square, uses a single 5.9 V supply, and can operate between 0 and 50°C. The CTL200 is conduction-cooled. It comes with an aluminum base plate and a zero insertion force socket for easy mounting. The CTL200 is also available in a [screw terminal version](#).

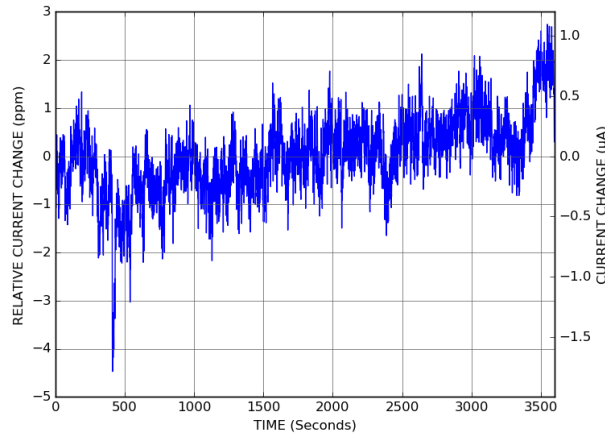
## Specifications

	B-100	B-200	B-400	B-600
<b>Current driver</b>				
Laser current	3 - 112 mA	5 - 225 mA	10 - 450 mA	15 - 675 mA
Laser current resolution	2.5 $\mu$ A	5 $\mu$ A	10 $\mu$ A	15 $\mu$ A
Compliance voltage at max. current	3.0 V	3.0 V	3.0 V	2.9 V
RMS noise (10 Hz - 1 MHz)	130 nA <sub>rms</sub>	220 nA <sub>rms</sub>	430 nA <sub>rms</sub>	650 nA <sub>rms</sub>
Current noise density (1 kHz)	120 pA/ $\sqrt$ Hz	230 pA/ $\sqrt$ Hz	450 pA/ $\sqrt$ Hz	670 pA/ $\sqrt$ Hz
Temperature coefficient	20 ppm/ $^{\circ}$ C	20 ppm/ $^{\circ}$ C	20 ppm/ $^{\circ}$ C	20 ppm/ $^{\circ}$ C
Modulation gains	125 $\mu$ A/V, 1.25 mA/V, 12.5 mA/V	250 $\mu$ A/V, 2.5 mA/V, 25 mA/V	500 $\mu$ A/V, 5 mA/V, 50 mA/V	750 $\mu$ A/V, 7.5 mA/V, 75 mA/V
3 dB modulation bandwidth	10 MHz	10 MHz	10 MHz	10 MHz
AC modulation cutoff frequency	80 kHz	80 kHz	80 kHz	80 kHz
<b>TEC controller</b>				
Maximum current	0.8 A	1.2 A	1.2 A	1.2 A
Compliance voltage	$\pm$ 3 V	$\pm$ 3 V	$\pm$ 3 V	$\pm$ 3 V
Temperature stability	0.002 $^{\circ}$ C/ $^{\circ}$ C	0.002 $^{\circ}$ C/ $^{\circ}$ C	0.002 $^{\circ}$ C/ $^{\circ}$ C	0.002 $^{\circ}$ C/ $^{\circ}$ C
<b>Laser power monitor</b>				
Photodiode current	0 - 2.5 mA	0 - 2.5 mA	0 - 2.5 mA	0 - 2.5 mA
<b>Other</b>				
Outside Dimensions	75 mm x 85 mm x 27 mm	75 mm x 85 mm x 27 mm	75 mm x 85 mm x 27 mm	75 mm x 85 mm x 27 mm
Weight	104 g	104 g	104 g	104 g
Supply voltage	5.7 V to 6.5 V	5.7 V to 6.5 V	5.7 V to 6.5 V	5.7 V to 6.5 V
Operating temperature	0 - 60 $^{\circ}$ C	0 - 60 $^{\circ}$ C	0 - 60 $^{\circ}$ C	0 - 50 $^{\circ}$ C
Compatible lasers	<a href="#">Floating diodes</a>	<a href="#">Floating diodes</a>	<a href="#">Floating diodes</a>	<a href="#">Floating diodes</a>

## Current driver

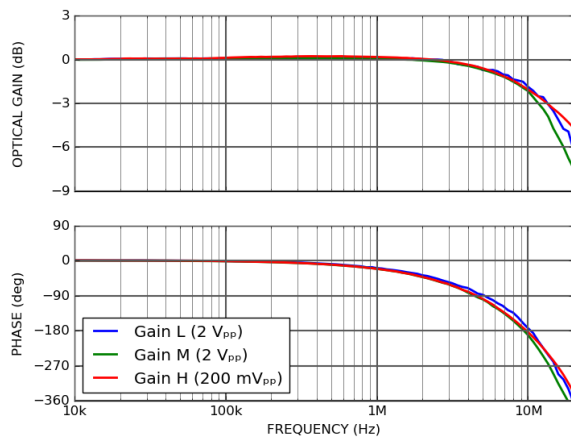
### Current stability

Current stability over 1 hour of a B-400 controller operated at 400 mA.

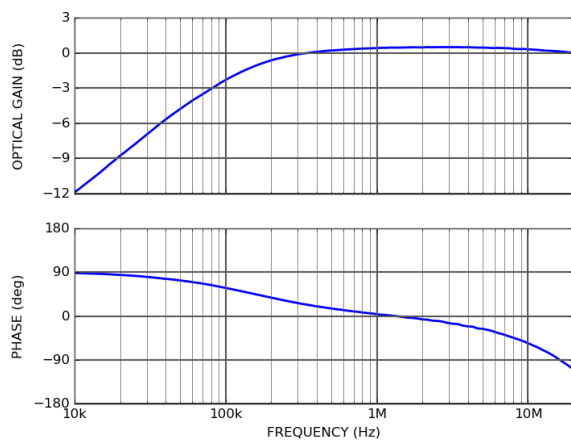


## Current modulation

The CTL200 controller has two current modulation inputs available on SMA connectors. The DC modulation input allows to modulate the current setpoint between DC and 10 MHz.

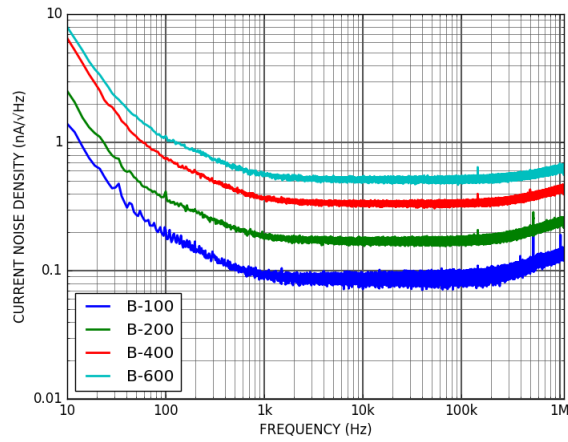


The AC modulation input can be used to modulate the laser above 100 kHz with a modulation gain of 20 mA/V:



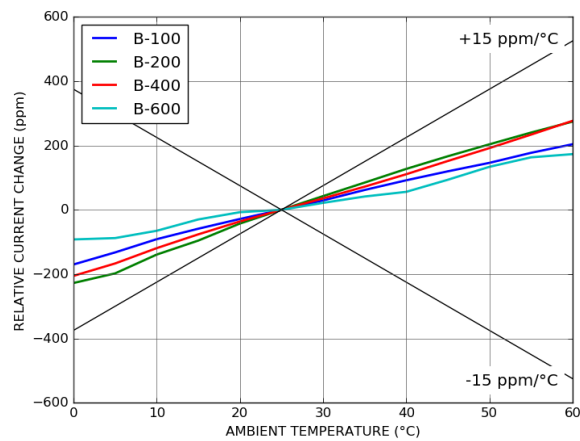
## Current noise

The figure below shows the current noise of the CTL200 controller operating at rated current with the modulation gain set to medium:



### Temperature stability

The figure below shows the variation of the output current against the ambient temperature for controllers operating at rated current:



## Ordering codes

- CTL200-1-B-100: Laser type 1 / Laser current 100 mA
- CTL200-1-B-200: Laser type 1 / Laser current 200 mA
- CTL200-1-B-400: Laser type 1 / Laser current 400 mA
- CTL200-1-B-600: Laser type 1 / Laser current 600 mA
- CTL200-2-B-100: Laser type 2 / Laser current 100 mA
- CTL200-2-B-200: Laser type 2 / Laser current 200 mA
- CTL200-2-B-400: Laser type 2 / Laser current 400 mA
- CTL200-2-B-600: Laser type 2 / Laser current 600 mA