Model Number	
300-0670-00	785nm 50.0mW TE Cooled Module
Specification	
Wavelength	785nm ±10nm
Output Power	50.0mW (adjustable)
Power Stability	<1%
Beam Size	6 x 2.2 mm
Beam Divergence	0.2 x 0.4 mrad
RMS Noise	<1%
Operating Voltage	+5V ±0.25V DC
Operating Current	2.5A maximum (laser diode 500mA maximum)
Ambient Temp. Range	+10°C to +30°C
Temperature Stability	±0.05°C
Setpoint Temp Range	+15°C to +25°C (factory set to +20°C)
Analogue Power Control	0V to 5V input adjusts power from 100% to 0%
Analogue Modulation	0Hz to 10KHz, 0V to 5V input - low=100%, high=approx 0%
Digital Modulation	50Hz to 1MHz, TTL input - low=100%, high=approx 0%
Mechanical	38mm ±0.1mm diameter, 165mm length



Laser Safety

The light emitted from these devices has been set in accordance with IEC60825. However, staring into the beam, whether directly or indirectly, must be avoided. IEC60825 classifies laser products into three different categories depending on light emitted, wavelength and eye safety.

CLASS II
"Caution", visible laser light less than 1.0mW. Considered eye safe, normal exposure to this type of beam will not cause permanent damage to the retina.

CLASS IIIR
"Danger", visible laser light between 1.0mW and 5.0mW. Considered eye safe with caution. Focusing of this light into the eye could cause some damage.

CLASS IIIB
"Danger", infrared (IR), and high power visible lasers considered dangerous to the retina if exposed.

NB: It is important to note that while complying with the above classifications, unless otherwise stated, our laser diode products are not certified and are designed solely for use in OEM products. The way in which the device is used in the final product may alter its original design classification, and it is the responsibility of the OEM to ensure compliance with the relevant standards.

the **Laser Diode** specialists

PHOTONIC PRODUCTS UK LIMITED
Unit 1 Twyford Business Centre, London Road
Bishops Stortford, Hertfordshire. CM23 3YT, UK
Telephone: **+44 (0) 1279 719190**
Facsimile: **+44 (0) 1279 719191**
E-mail: **sales@photonic-products.com**
www.photonic-products.com

PHOTONIC PRODUCTS USA LIMITED
400 Continental Boulevard, 6th floor,
El Segundo, CA 90245, USA
Telephone: **310-426-2952**
Facsimile: **310-426-2001**
E-mail: **salesusa@photonic-products.com**
www.photonic-products.com

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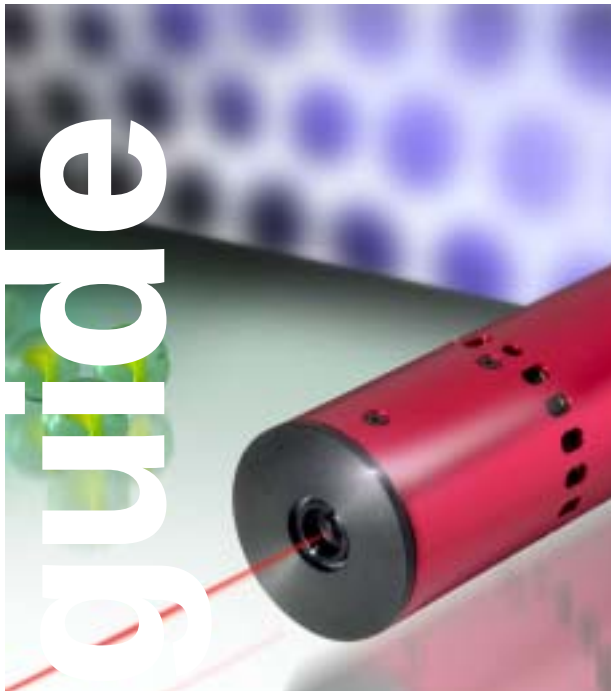


user guide

temperature controlled module

Part Number: 300-0670-00

the **Laser Diode** specialists

temperature controlled module

Product Information

The 300-0670-00 temperature controlled module incorporates a 785nm 50.0mW laser diode, laser driver / temperature control electronics, heatsink, internal cooling fan and collimating optic in a robust, compact industrial housing. The unit offers a host of features including safety interlock, analogue and digital modulation. analogue power control and an RS232 interface so that the module can be controlled via computer.

Please read the following user instructions carefully before operating the 300-0670-00 temperature controlled module.

Operation

Connect the 9 way 'D' connector to the mating connector on the module back panel. Power connections are made via the red (+5V) and black (0V) wires. The module is activated via the ON/OFF switch on the rear panel. When activated, the module will stabilise the temperature of the internal laser diode to the setpoint temperature (factory set to 20 degrees C), however the laser will not operate unless the interlock is enabled. With power connected to the module, the green "POWER" LED will flash if the interlock is disabling the laser. If the green "POWER" LED is continuously ON then this indicates that the laser is active. The red "TEMP OK" LED will illuminate when the laser diode temperature has reached the setpoint temperature ± 0.1 degrees C. Whilst the module is stabilising the laser diode temperature, the laser power will be reduced to approximately 5% of full power until the temperature is in the range of ± 0.5 degrees C of the setpoint temperature, at which time the laser power will then increase to full power.

Temperature Setpoint

This is factory set to 20 degrees C. It can be adjusted by inserting a small adjuster into the hole marked "SETPOINT TEMP" on the module housing and adjusting the internal trimmer. The setpoint temperature can be read via the RS232 interface using the report command - see heading "RS232 Commands".

Temperature Limits

Operation of the laser diode outside the temperature limits of 10 to 30 degrees C will cause the laser diode to be turned off, (to prevent damage). This will be indicated by the red "TEMP OK" LED flashing. In this condition the module should not be operated until the laser diode temperature is within the specified range.

Tube Temperature

Heat generated by the laser diode and cooling process is radiated by the module tube.

CAUTION **- The tube may feel warm to the touch and at higher ambient temperatures could feel HOT to the touch.**

Laser Power Adjustment

Laser diode output power is factory set to maximum. The laser diode output power can be adjusted by inserting a small adjuster into the hole marked "POWER ADJUST" on the module housing and adjusting the internal trimmer. Please note that internally the current supply to the laser diode has been limited to prevent damage due to over current.

Interlock

The interlock allows the external enabling and disabling of the laser diode.
Connection from the interlock pin (yellow) to unit 0V (green) wires = LASER ON,
NO connection to the interlock pin = LASER OFF.

Modulation

Modulation signal can be applied to the laser module either as a digital input via the SMB connector on the rear panel or as a 0-5V analogue voltage applied between pin 5 (white) & pin 7 (green) wires on the 9 way 'D' plug. The module has been configured to accept simultaneous digital and analogue modulation.

Analogue Power Control

The laser diode output power can be adjusted via the analogue input pin 5, (white), and pin 7 (green) wires 0V = FULL POWER, 5V = LASER OFF.
The response is linear.

Lens Adjustment

The output beam is factory set for collimation, but it can be adjusted to suit your requirements. Insert the supplied tool into the front of the module and rotate to adjust output beam.

RS232 Commands

From the 9 way 'D' plug on the rear panel, connect the RS232 "transmit" and "receive" pins, (see Connections), directly to a COM port on a PC via "Hyperterminal" or similar software. RS232 settings are 19200 baud, no parity, no handshaking. Use the following commands to control or obtain information from the module.

T = Temperature control ON/OFF

L = Laser ON/OFF

R = Get a report on the module status (sensor temperature, setpoint temperature, laser operating current)

LED Signals

POWER LED - green

OFF = unit off

ON = unit on, laser active

FLASHING = unit on, interlock enabled

TEMPERATURE LED - red

OFF = laser temperature not stabilised

ON = laser temperature stabilised

FLASHING = temperature fault

Connections

(see figure 1 below)

SMB plug TTL modulation

9 way 'D' plug mounted on rear panel

Pin 1	+5V (red wire)
Pin 2	+5V (red wire)
Pin 3	RS232 transmit (brown wire)
Pin 4	RS232 receive (violet wire)
Pin 5	Analogue input (white wire)
Pin 6	0V (black wire)
Pin 7	0V (green wire)
Pin 8	Interlock (yellow wire)
Pin 9	No connection

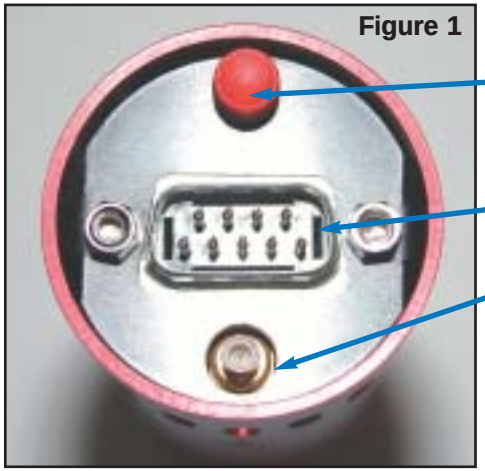
Laser Safety

The 300-0670-00 temperature controlled module is a CLASS 3B laser product.

CAUTION **- use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.**

If you do not understand any of the instructions in this user guide please contact Photonic Products on +44 (0)1279 719190.

Figure 1



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Laser Diode specialists
www.photonic-products.com