

Beta-TX

Laser Diode Module

A HIGH SPEED MODULATABLE LASER WITH SPEEDS UP TO 50 MHZ

Features

- Modulation speeds up to 50 MHz
- Visible and Infra red versions
- Powers from 1mW to 100 mW
- Flexible design accommodating wide range of lens and diode options
- Electrically isolated case
- Reverse polarity protection
- User adjustable focus
- Rugged & reliable
- 5 V to - 12 V operation
- Broadband modulation
- Safety Interlock
- TTL disable

Applications

- Graphics Displays
- Vision Systems
- Telemetry
- Dynamic Lighting
- Sensors
- Laboratory Testing
- Smoke & Fog Detectors
- Safety & Security
- Data Transmission
- Audio & Video Communications



The Beta-TX is a complete self contained laser diode system which can operate in both CW and modulation modes. The Beta-TX features high speed modulation and modulates up to speeds of 50 MHz. The Beta-TX can be supplied in a range of wavelengths and output powers from the visible red to infrared. A high performance aspheric lens is fitted as standard but other lens are available including beam circularizers and line generators. Focusing is achieved using a simple key to prevent unauthorized adjustments.

The modulation capability of the Beta-TX offers significant advantages to a number of different applications. It is ideal for all types of sensing systems, especially distance measurement by 'time of flight' where the high frequency modulation and the increased signal discrimination are a significant benefit. The broadband modulation also makes the Beta-TX ideal for the transmission of audio, video or data information, particularly in free space communications.



SPECIFICATIONS

MECHANICAL SPECIFICATIONS

	Beta-TX
Mass	24 grams
Dimensions	15 mm diameter by 75 mm
Housing	Anodised Aluminium
Isolated Body	Yes
Lead length	250 mm

OPTICAL SPECIFICATIONS

Diode Power	0.8 mW to 100 mW *
Wavelength	635 nm to 850 nm *
Beam Size at Aperture	5 mm by 2 mm *
Pointing Accuracy	≤ 10 mrad

ENVIRONMENTAL SPECIFICATIONS

Operating Case Temperature	-10°C to +45°C*
Storage Temperature	-10°C to +80°C
Operating Humidity (%RH)	90 non condensing
MTTF at 25°C	>30,000 hours *

ELECTRICAL SPECIFICATIONS

Input voltage	-5 Vdc to -12 Vdc
Operating Current	30 mA to 150 mA *
Power stability vs. Case Temperature	0.28% per Degree
Connector type	Flying Leads
Input Leads	6, Black (-V), Green (0V), Blue (TTL enable / disable), White (Interlock), Green/ Yellow twisted pair (Modulation)
Reverse - Polarity protection	Yes
Electrically Isolated Case	Yes

* = *Varies with model*

Specifications are typical at 25°C unless otherwise stated

POWER SUPPLIES AND EARTHING

The Beta-TX laser module is operated from a voltage supply within the range of -5 to -12 Volts. By operating at the lower end of the power supply range (-5 Volts), less heat will be dissipated within the device and hence the expected life will increase. This may be particularly necessary for applications where they operate in a high ambient temperature. It is advisable for any floating power supplies to have the '0' Volts connection (and if used, the heatsink) taken to ground. If this is not done, then in electrically noisy environments, the power supply leads can act as aerials. Under these conditions any noise picked up can damage the laser module. If a heatsink is not used, then the barrel of the laser module should be grounded. For all laser modules, the case is isolated from the supply voltages.

HEAT SINK REQUIREMENTS

If the case temperature is likely to exceed the maximum specified rating of the model, additional heat sinking may be required. Exceeding the operating case temperature of the module can cause premature of the device.

MODULATION

The modulation signal applied may be of any waveform. The output will be inverting and modulating around a mean carrier. It is essential however that the DC component voltage does not exceed +7 Volts or go below -1 Volt relative to the 0 Volt connection. If the 500 mV peak to peak signal is exceeded then premature failure could occur. The modulation input is ac coupled and has an input impedance of 50 Ohms to which the signal source should be matched accordingly. It is important to note that the modulation input cables (green & yellow twisted pair) should not be lengthened and any additional connection between them and the modulation source should be via a 50 Ohms co-axial cable, otherwise the modulation bandwidth could decrease.

MODULATION SPECIFICATION

Modulation Input	AC coupled
Input Impedance	50 Ohm
Modulation Type	Analogue
Frequency Range	100 Hz to 100 Mhz
Frequency bandwidth (-3dB point)	100 Hz to 50 Mhz *
Modulation depth	90%
Maximum pk to pk signal	500 mV

TTL ENABLE / DISABLE

A TTL Disable function is provided which can be used to turn the laser off and on. An input voltage of 0.8 Volts and below will turn the laser on. An input voltage of 2 Volts and above will turn the laser off. The on delay time for this input is approximately 1 second. The off delay time for this input is ≤ 1 ms. When not in use, this input can be left floating or if preferred connected to 0 Volts. The maximum on voltage should not exceed +7 Volts. The maximum off voltage should not exceed -3 Volts.

TTL DISABLE SPECIFICATION

Laser on	≤ 0.8 Volts
Laser off	≥ 2.0 Volts
Maximum TTL pulse rate	0.2 Hz

INTERLOCK (WHITE LEAD)

The interlock input is provided to allow a mechanical switch (such as a key switch) to be used to turn the laser on or off. The interlock input must be connected to 0 Volts to 'enable' the laser. The 'enable' time for this input is approximately 1 second.

INTERLOCK SPECIFICATION

Laser on	0 Volts
Laser off	Interlock wire disconnected

LENS OPTIONS

3 standard user adjustable lens types are available for the Beta-TX range. These are as follows:

S Lens: Produces elliptical collimated beam or focused spot

C2 Lens: Produces circular collimated beam or elliptical focused spot

L8 Lens: Produces Gaussian line with full fan angle of typically 16 degrees. Please note other fan angles are available on request.

STANDARD WAVELENGTHS AND OUTPUT POWER OPTIONS

635 nm	2.8 mW
650 nm	2.8 mW
670 nm	0.8, 2.8 mW
785nm	2.8 mW

Please note wavelength tolerance can vary typically by $\pm 10\text{nm}$.

OTHER WAVELENGTHS AND DIODE POWER OPTIONS

635 nm	up to 35 mW
660 nm	up to 50 mW
670 nm	up to 10 mW
685 nm	up to 50 mW
785 nm	up to 90 mW
808 nm	up to 100 mW
850 nm	up to 10 mW
Custom	Please call for further details

Please note wavelength tolerance can vary typically by $\pm 10\text{nm}$.

Modulation specification can vary with output power and wavelength.

EXTRA OPTIONS

Heavy Duty Mounting clamp

The optional heavy duty mounting clamp allows the Beta-TX range to be securely fixed at any required direction or angle. The base plate has a series of threaded holes which allows the clamp to be fixed directly onto a machine or workbench.

Swivel Mount Clamp

The optional lower cost swivel clamp allows the Beta-TX to be mounted securely. It offers the user up and down movement as well as $\pm 45^\circ$ swivel. The base plate has a series of holes which allows the clamp to be fixed directly onto a machine or workbench.

LASER SAFETY

Our lasers are compliant to IEC 60825-1 standards. The lasers fall within one of the following classifications depending on power, wavelength and fan angle. The labels supplied with the units are shown below.



OEM Laser Label



Class 2 Laser Label



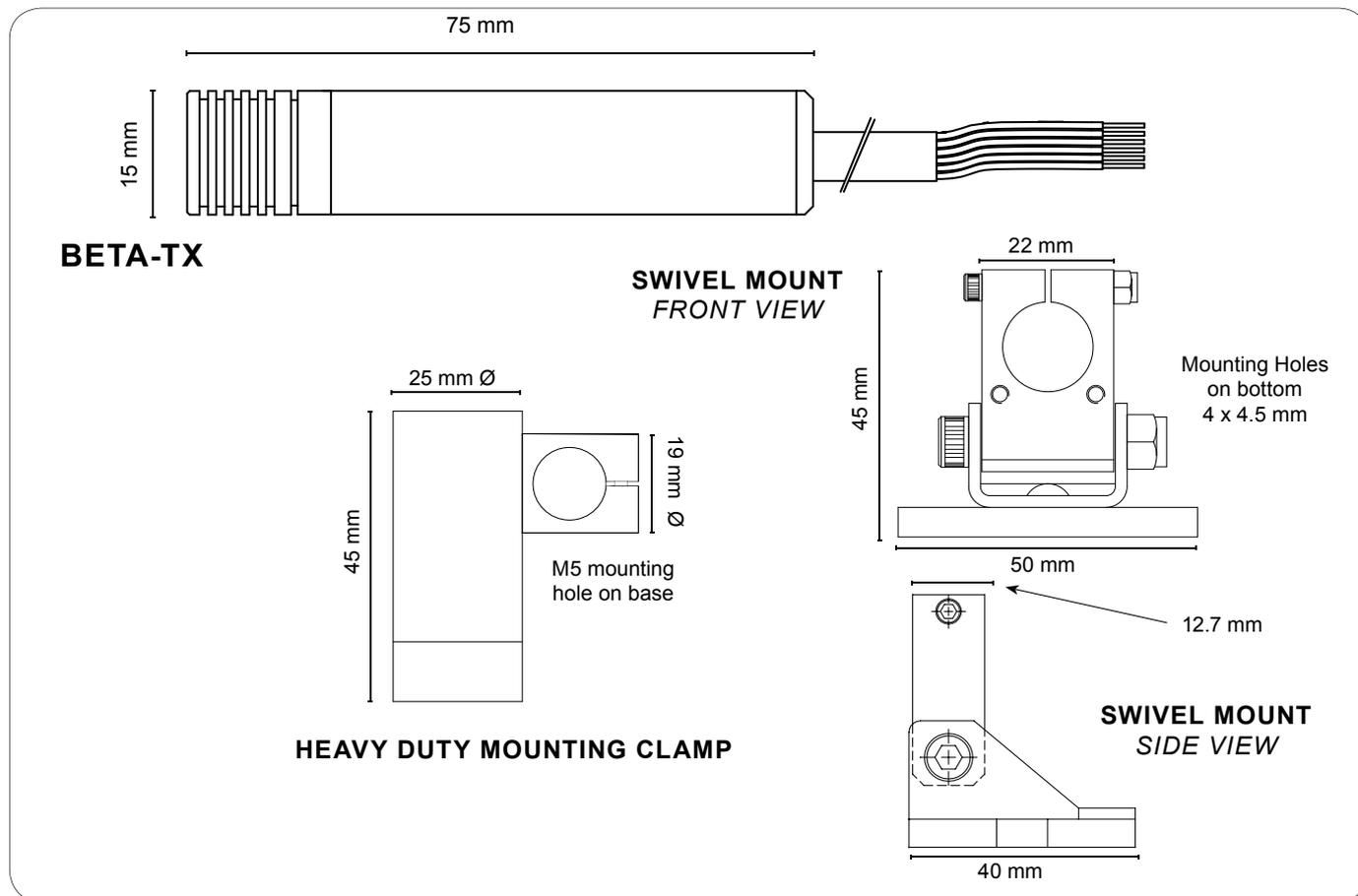
Class 3R Laser Label

QUALITY & WARRANTY

The Beta-TX is supplied with a 12 month parts and labour warranty. Our manufacturing operations are certified to ISO9001.



DIMENSIONS



Please note: Global Laser reserve the right to change descriptions and specifications without notice



Global Laser Ltd
Cwmtilly Industrial Estate
Abertillery, Gwent, UK. NP13 1LZ

T: +44 (0)1495 212213
F: +44 (0)1495 214004
E: sales@globallasertech.com
www.globallasertech.com

For further information about the Beta-TX you can contact your local distributor or you can contact Global Laser in the UK.

Your Local Distributor Is: