



# Beta TX Datasheet

# Beta-TX

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 with a bandwidth 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 lenses 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.

Two models are available, the Beta TX features connection via flying leads, an interlock and TTL enable input. The Beta TX HS has a modulation input via a co-axial cable with a BNC plug to improve frequency response.

A wide range of mounting clamps are also available to allow the user to mount the laser module securely to a machine or workbench while allowing parallel and vertical adjustment.



# Specifications

	Beta TX	Beta TX HS
<b>Mechanical Information</b>		
Mass (grams)	24	45
Dimensions (mm)	15 x 75	
Housing	Anodised Aluminium	
Isolated Body	Yes	
Lead Length (mm)	250	300 (BNC cable 350)
<b>Optical Information</b>		
Diode Power (mW)	0.8 to 200	
Wavelength (nm)	635 to 980	
Beam Size at Aperture (mm)	5 by 2.5	
Beam Divergence (mrad)	<5	
Minimum Focus Distance (mm)	25	
Spot Size @ Minimum Focus (µm)	<50	
Bore Sighting (mrad)	≤10	
<b>Environmental Information</b>		
Operating Case Temperature (°C)	635 & 650nm -10 to +45 (Note 1) 670, 785 & 850nm -10 to +55 (Note 1)	
Storage Temperature (°C)	-10 to +80	
Operating Humidity (%RH)	90 non condensing	
MTTF @ 25°C (hrs)	635nm >29,000 650nm >88,000 670nm > 100,000 785nm >90,000 850nm >88,000	
<b>Electrical Specifications</b>		
Input Voltage (Vdc)	-5 to -12	
Operating Current (mA)	<200 *	
Power Stability Over Temperature Range (Typical)	±6% #	
Reverse Polarity Protection	Yes	
Turn On Delay (seconds)	<1	
Connector Type	Flying Leads	Flying Leads + BNC Cable
Black Lead	Supply	Supply
Green Lead	0 Volts	0 Volts
Blue Lead	TTL Disable	N/A
White Lead	Interlock	N/A
Green & Yellow Twisted Pair	Modulation Input	N/A
BNC Lead	N/A	Modulation Input

## NOTES

\* Varies with model

# Varies with Laser Diode type and output power. This data is based on the Beta TX 670nm, 3mW

Note 1: The operating case temperature range is depended on the laser diode fitted. The quoted information is the range for standard models listed. Some wavelengths and powers may have a wider operating temperature range. Please contact us for the temperature range for individual models

All specifications are typical @ 25°C

# Power Supplies & Earthing

These laser modules can be run from a 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.

## Heatsink Requirements

To ensure the lifetime and the stability of the laser it is recommended that it is mounted in a suitable Heatsink/mount. The case temperature should be kept within the specified range at all times, failure to do this could result in shortened lifetime or catastrophic failure. As a guide, laser diode lifetime decreases by a factor of two (approx.) for every ten degree increase in operating temperature

## 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 500mV peak to peak signal is exceeded then premature failure could occur. The modulation input is ac coupled and has an input impedance of 50  $\Omega$  to which the signal source should be matched accordingly. It is important to note that the modulation input cables of the Beta TX (green & yellow twisted pair) should not be lengthened and any additional connection between them and the modulation source should be via a 50 $\Omega$  co-axial cable, otherwise modulation bandwidth could decrease. The Beta TX HS modulation input is via a co-axial cable with a 50 $\Omega$  BNC plug fitted as standard and any additional connection between the BNC plug and a modulation source should be via a 50  $\Omega$  co-axial cable.

Modulation Specification	
Modulation Input	AC Coupled
Input Impedance (Ohm)	50
Modulation Type	Analogue
Frequency Range	100Hz to 100Mhz
Frequency Bandwidth (-3db point)	10KHz to 50Mhz*
Modulation Depth	90%
Maximum pk to pk Signal	500 mV
NOTES * Modulation specification can vary with output power and wavelength All specifications are typical @ 25°C	

### TTL Disable (Beta TX Only)

A TTL Disable function is provided which can be used to turn the laser off and on. An input voltage of .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 1second. The off delay time for this input is  $\Omega$  1ms. 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 (Volts)	$\leq 0.8$
Laser Off (Volts)	$\geq 2.0$
Maximum TTL Pulse Rate (Hz)	0.2

### Interlock

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	
Laser On (Volts)	0
Laser Off (Volts)	Interlock wire disconnected

# Powers & Wavelengths

Standard Wavelengths & Output Power Options	
635nm	2.8mW
650nm	2.8mW
670nm	0.8, 2.8mW
785nm	2.8mW
850nm	2.8mW
Other Wavelengths & Diode Power Options	
635nm	up to 40mW
650nm	up to 100mW
670nm	up to 10mW
685nm	up to 50mW
785nm	up to 90mW
808nm	up to 200mW
850nm	up to 50mW
980nm	up to 50mW
Custom	Please call with your requirements
<i>Please note that all wavelength tolerance can vary typically by <math>\pm 10\text{nm}</math></i>	
<i>The listed powers are laser diode powers. Output powers will be lower and not all powers will be available with all the lens options.</i>	
<i>Modulation specification can vary with output power and wavelength.</i>	

# Lens Options

## Standard Lens:-

S Lens: Produces an elliptical collimated beam or elliptical focused spot.

## Optional Collimating Lenses:-

C1 Lens: Collimating lens with an aperture of 1mm which produces a circular collimated beam or focused spot.

C1.5 Lens: Collimating lens with an aperture of 1.5mm which produces a circular collimated beam or focused spot.

C2 Lens: Collimating lens with an aperture of 2mm which produces a circular collimated beam or focused spot.

C3 Lens: Collimating lens with an aperture of 3mm which produces a circular collimated beam or focused spot.

HG Lens: High quality glass aspheric lens which produces a elliptical collimated beam or well defined spot over longer working distance.

## Line Lens Assemblies:-




L4 Line Lens: Produces a gaussian line with a full fan angle of typically 8°

L8 Line Lens: Produces a gaussian line with a full fan angle of typically 16°

LW53: Produces a gaussian line with full fan angle of typically 90°

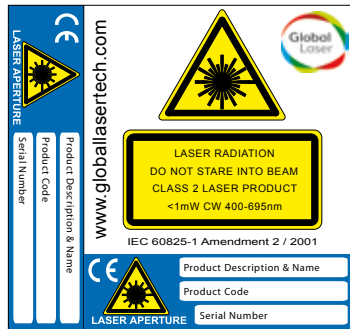
*Please note other fan angles are available on request.*

# Mounting Options

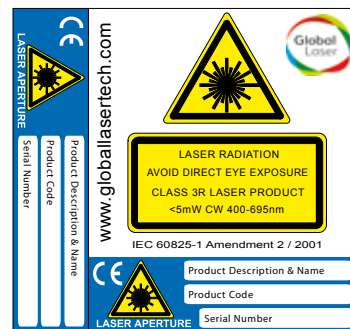
Mounting Accessories		
<b>Heavy Duty Mounting Clamp</b>	Heavy duty mounting clamp allows the Beta TX to be securely fixed at any required direction or angle. The base plate has a series of threaded holes which allows the clamp to be fixed directly onto a machine or workbench.	
<b>Magnetic Base</b>	The Magnetic base is an accessory which allows the heavy duty mounting clamp to be magnetically attached to a ferrous surface, negating the need for any mounting holes.	
<b>Swivel Mounting Clamp</b>	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 + 45° 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 60825-1:2007 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.



Class 2 Laser Label



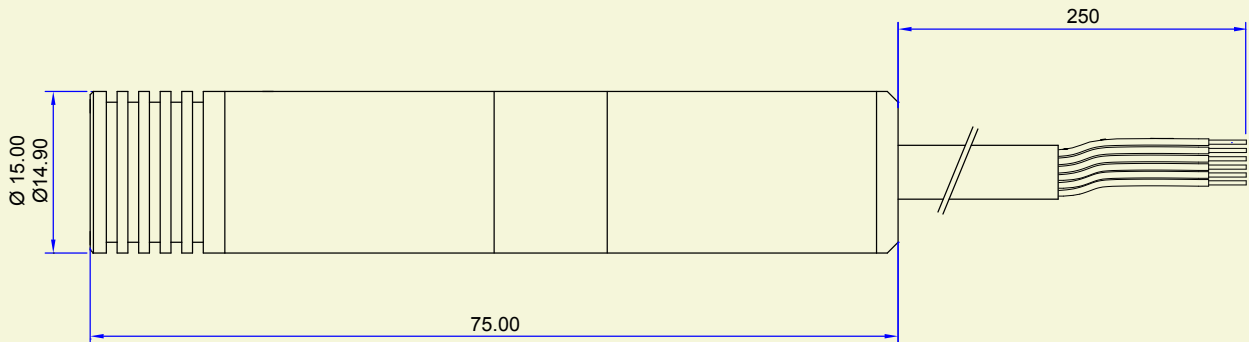
Class 3R Laser Label

# Quality & Warranty

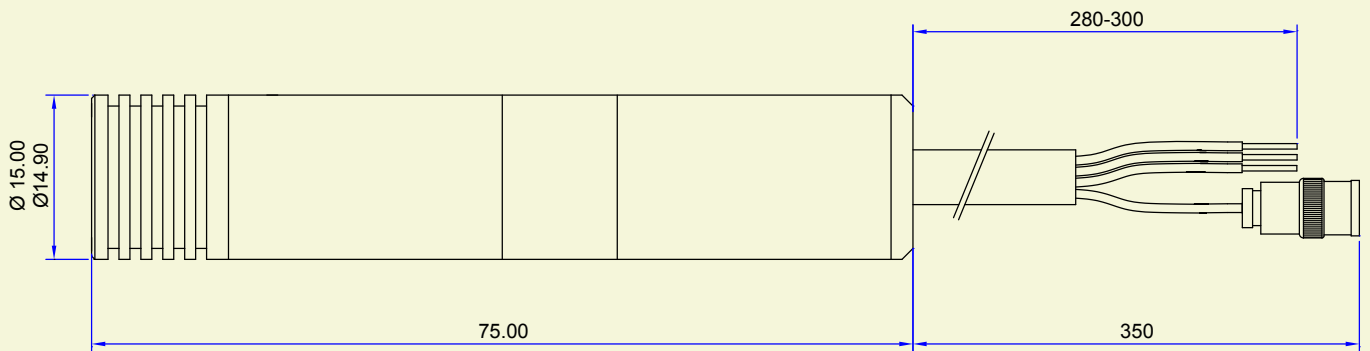
The Beta-TX is supplied with a 12 month parts and labour warranty. Our manufacturing operations are certified to ISO9001.

# Mechanical Drawings

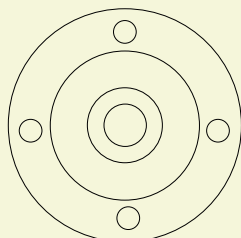
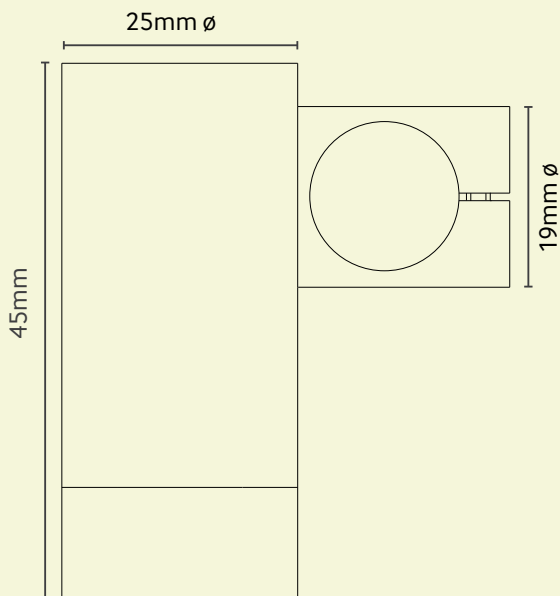
## Beta-TX



## Beta-TX HS with BNC Connector

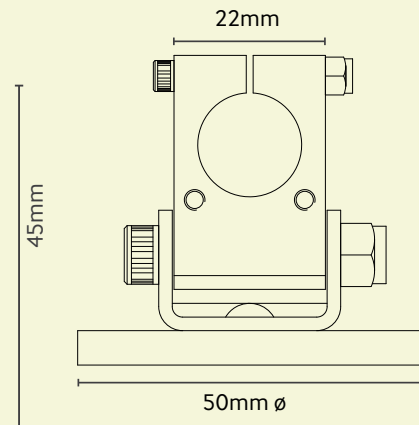


## Heavy Duty Mounting Clamp

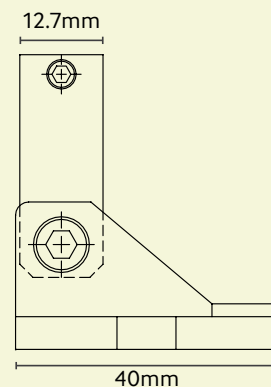


*M5 Mounting hole on base*

## Swivel Clamp



*Mounting hole on base 4 x 4.5mm*



*Drawings not to scale*

# Notes

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



For further information about any of our products please contact your local distributor or you can contact Global Laser in the UK. Your Local Distributor Is:

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