

T250

Laser transmitter

User Guide



Instruction manual – English

Laser transmitter T250 (SP T250-P)

We would like to congratulate you on the purchase of your Status Pro R310 Laser receiver. Before initial usage you should carefully read the safety instructions as well as the user guidelines contained in this manual. We wish you every success when using this Measurement Instrument.

Please note: User Manuals can be amended when improvements or changes to the product range have been carried out. Use the link below to make sure you have the most up to date version of your User Manual. www.statuspro.com/machine_geometry/documents/

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1. Safety Instructions

1.1 Class of Laser

The laser light emitted from a Status Pro Laser has an Output Rating of $< 1,0$ mW. The Laser is placed in the category „Class 2“ and is classified as safe for the use as a Measurement instrument. There are however a few safety aspects to be observed:



Caution!

- Do not stare into the laser beam.
- Do not point the laser beam at other people.
- Observe the local safety guidelines on Site and if in doubt consult the Site safety Engineer.
- Do not use the equipment in damp or moist locations.
- Ensure shading of the equipment against direct sunlight or heat sources.
- Fluids or rain as well as extreme temperature conditions may damage the equipment.



Note

Do not violently shake the Laser or other sensors and always protect against falls. This can damage the structure or the optics of the instrument resulting in false measurements.

Do not touch rotating parts when in use!

1.2 Standards

All Status Pro Laser and Receiver Instruments are developed and manufactured according to the following CE Standards:

- EN 55 011
- EN 55 022
- EN 61 000-4-2
- EN 61 000-4-3
- EN 60 335



1.3 Instrument care

Your measurement instrument is designed for use in an industrial environment and can withstand water splashes or light spray as well as dust. Clean the equipment using a soft cotton cloth and a mild soap solution. Laser apertures as well as sensor areas should only be cleaned using a soft, dry and dust-free cloth. Do not use paper towels to clean glass surfaces as they could scratch. Avoid contact with grease, oil or oil-based solutions when handling the equipment.

1.4 Maintenance

The mechanical components of your equipment are prone to natural wear and tear! If the Instrument appears to have a technical defect, contact the Manufacturer. Do not try to repair or open the sensor casing. Attempted repairs through unauthorised personnel makes the guarantee null and void!

Always store the equipment under dry conditions and use the case for transportation.



Note

To be able to identify the equipment when seeking advice always quote the serial number of the equipment. The Manufacturer does not accept any responsibility for damage incurred through incorrect maintenance carried out by non-authorized personnel.

1.5 Calibration



To guarantee measurement accuracy, and reliable operation of your Status Pro Measurement System, it is of utmost importance that the recommended Service Intervals be adhered to. The System should be checked for serviceability, and recalibrated by the Status Pro workshops every 12 months.

Within the scope of the service checks, the complete system will also be examined for possible wear or damage, as well as receiving any software updates. The date of the next service check for your equipment is stamped on the Status Pro calibration sticker.

To ensure trouble-free processing of the service and calibration checks, simply use the form you will find using the following link:

www.statuspro.com/machine_geometry/service_support/calibration_repair/

1.6 Liability Exclusion

The Status Pro GmbH does not accept responsibility for damage incurred through incorrect use or handling of the equipment. To ensure correct usage, a founded knowledge of the equipment is essential. It is of the utmost importance that you read and understand the Handbook!

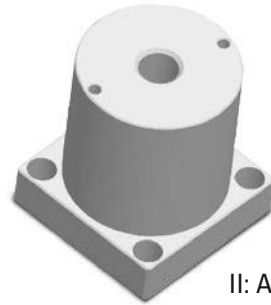
No responsibility will be accepted for damage incurred through ignorance or disregarding of the operating instructions.

2. Getting started

The T250 Laser transmitter package (SP T250-P) comprises of the T250 Laser transmitter (I - BG 830750), a mains power supply cable (III - BG800025), and an Adapter (II - 832050) enabling mounting of the T250 Laser when using a tripod, or when using the Borealign Kit (SP BOREALIGN).



I: Laser transmitter T250



II: Adapter



III: Power supply cable

2.1 Power supply

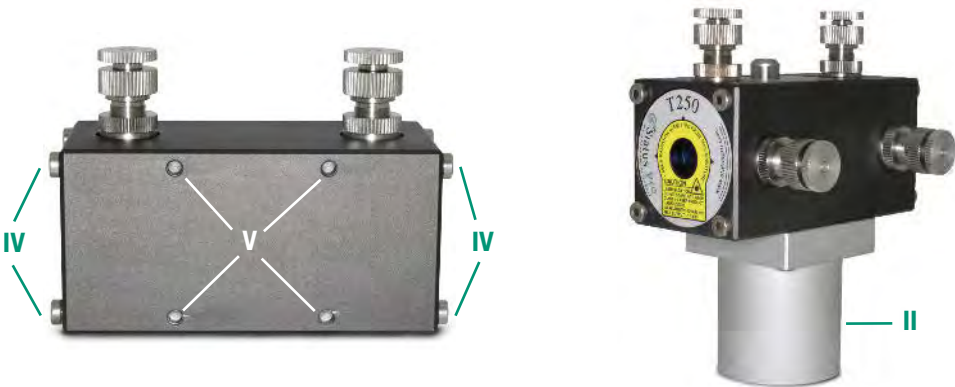
To operate the T250, connect the power supply cable to the mains, and to the socket on the T250 housing.

Ensure that the red markings on the plug and the socket are correctly aligned. This ensures correct polarity.



2.2 Assembly

To use the T250 with a tripod, fasten the Adapter (II) to the holes on the lower face of the housing (V) using four of the screws delivered (IV). When delivered, the T250 will have four screws on the front and the back facing.



The cylindrical face of the adapter has a 5/8" thread for use with a tripod fitting.

To enable mounting on a vertical surface or for use with the Borealign kit, the Adapter (II) can be fitted to the front or the rear facing, again using the supplied screws. The 5/8" thread is continuous, so the laser beam has sight through the Adapter (II).

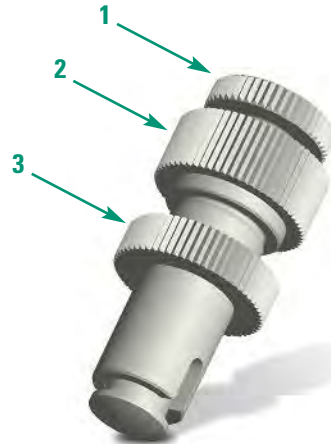


3. Operation

3.1 Aligning the laser beam

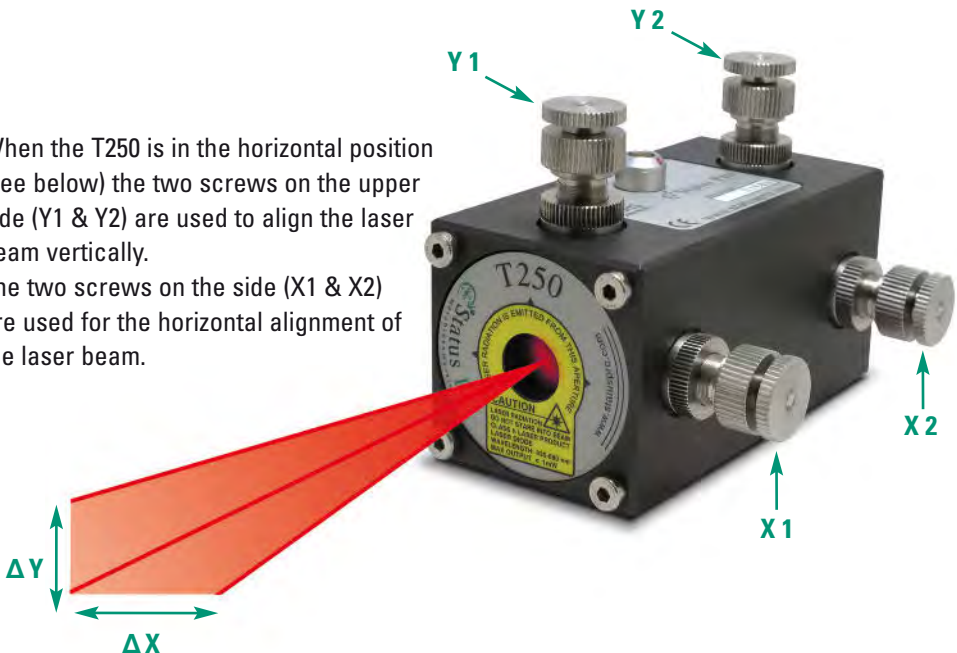
There are four adjusting screw assemblies in the housing of the T250 enabling alignment of the laser beam. Each of these assemblies comprises of a fine adjustment screw (1), a coarse adjustment screw (2), and a locking nut for the coarse adjustment screw (3).

To roughly adjust the laser beam, loosen the locking nut, align the laser beam with the coarse screw (2) and then tighten up the locking nut again. Fine adjustment is carried out with locking nut tightened up.

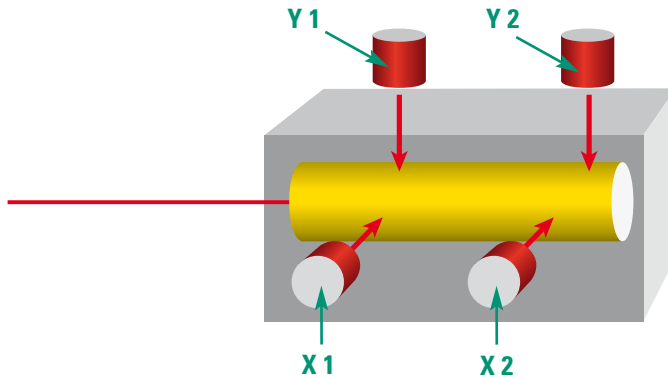


When the T250 is in the horizontal position (see below) the two screws on the upper side (Y1 & Y2) are used to align the laser beam vertically.

The two screws on the side (X1 & X2) are used for the horizontal alignment of the laser beam.

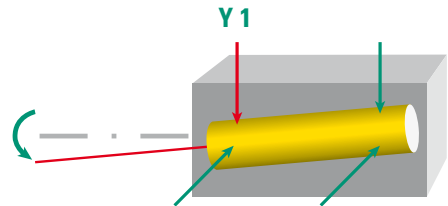


Simply explained, the laser beam of the T250 is housed in a tube. Four screws are attached to this tube, two on the side and two on top. This arrangement enables alignment of the laser angle as well as the parallel shift in both the vertical and the horizontal plane.

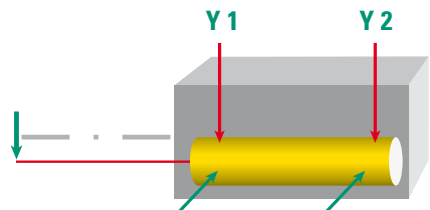


Example:

1) If the Y1 screw is moved downwards (screwed in) then the angle of the laser beam will also slope downwards



2) If both Y1 and Y2 are moved downwards (screwed in) then the laser beam will move parallelly downwards = parallel shift



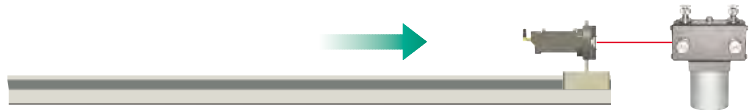
The adjustments in the horizontal plane (X1 & X2) are carried out in exactly the same way.

3.2 Setting up the T250 for straightness measurements

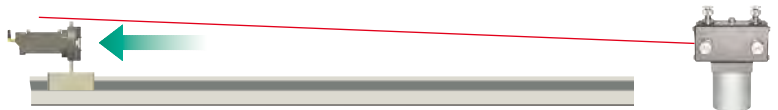
A common task would be to measure a Linear Guide for straightness in the X and Y axes. To be able to carry out this measurement, the laser beam has to be aligned, to make sure that the laser beam hits the detector over the complete length of the guide.

Aligning the T250 to carry out the measurement of a Linear guide:

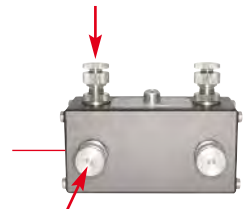
- 1) Mount the T250 on a tripod or directly on the machine to be measured.



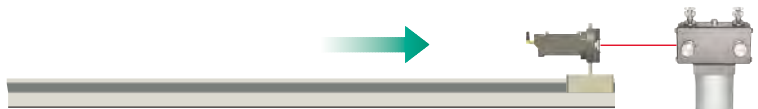
- 2) Connect the T250 to an appropriate power supply.
- 3) Position the sensor on the guide as close as possible to the T250.
- 4) Carry out a rough adjustment of the T250 Laser itself so the laser beam meets the centre of the detector.
- 5) Move the detector as far away as possible from the the T250 Laser.



- 6) Adjust the angle of the laser beam using the (X1 / Y1) screws until the laser beam hits the centre of the sensor again.



- 7) Move the sensor as close to the laser as possible.

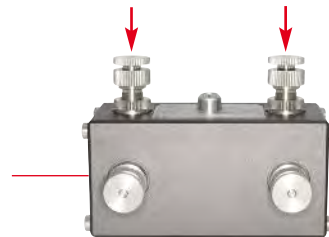


8) Adjust the laser beam parallelly to the centre of the sensor using the (X1 + X2 / Y1 + Y2) screws (equally):

a. Laser point hits the top left hand corner (X - / Y -).



Screw in both the Y-screws equally in a clockwise manner. The beam is moved in a parallelly downwards.



b. Now the laser beam is corrected in the height, but still hits the sensor left of the centre.



Screw in both the X-screws equally in a clockwise manner. The beam is moved parallelly sideways.



c. Now the laser beam is corrected vertically and horizontally.



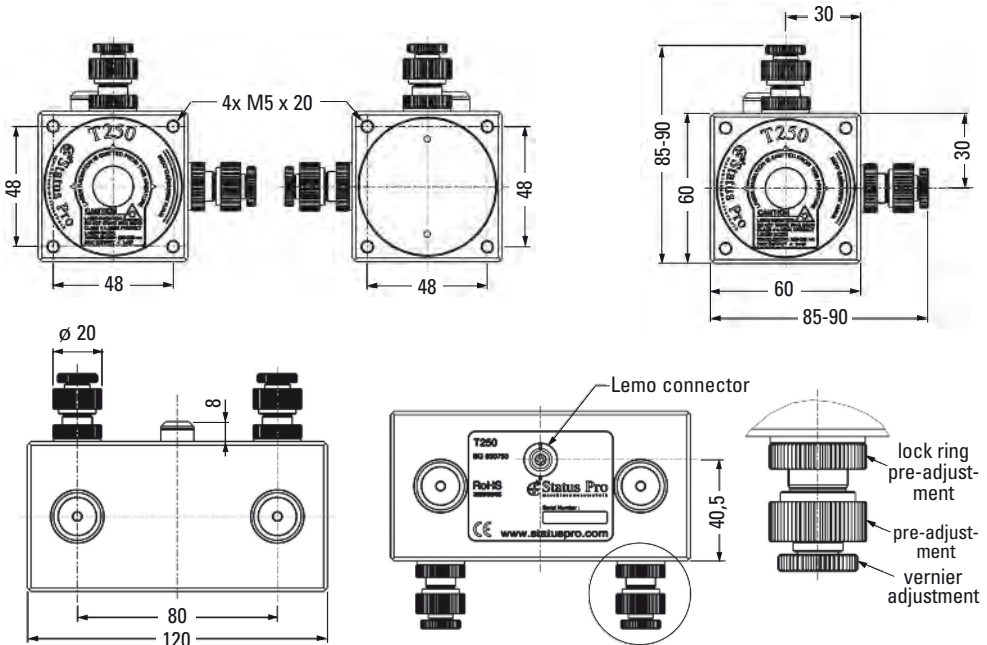
9) Move the sensor as far as possible from the laser again, and check the position of the laser point on the sensor, if necessary, repeat steps 6-8.

When using the ProLine Software, measurement points can be „zeroed“ at will to obtain the straightness of the guide in respect to these two points.

4. Technical Details

Laser type:	Class 2a
Laser output:	0.5 mW (max. < 1mW)
Laser frequency:	630-680 nm
Laser range:	100 m
Temperature range:	0° - 50°C
Socket type:	Lemo
Housing:	Aluminium, anodised
Protection class:	IP 54
Dimensions:	120 x 90 x 90
Weight:	950g

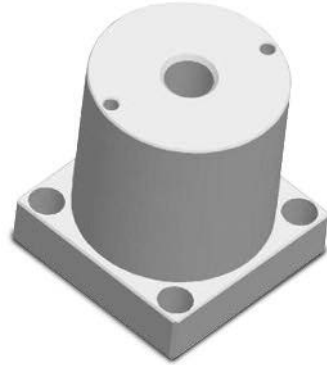
Attachment possibilities: Four M5 threads on the Front, Back and Underside.



5. Accessories

Mounting adapter (BG 832050)

Fitted with a 5/8" thread for mounting on a tripod as well as two M5 threads for use with the Borealign Kit or other attachments.



Power supply cable (BG 800025)

Mains supply with Lemo plug for the T250 Laser. The supply is delivered with various adapters for global use and is CE certified.



Bore Measurement kit (SP BOREALIGN)

Package for measuring boreways on marine engines or rudder tubes etc. Measurements on Bore diameters from 60 mm up to several metres is possible. Fitting of the laser and sensor in the bores as well as on the facing is possible. The sensor attachment has a four-point contact fitting, ensuring maximum reliability.



Laser receiver R545 (BG 830450)

Dual axis Laser receiver with wireless communication. Incl. Display unit Mobi 940, Antenna and charging cable.

Detector size 16 x 16mm, Resolution: 1µm.

With fitted Inclinometer.

Optical alignment aid 22 x 22 mm.

**Display Unit DU 320 (IT 200410)**

Incorporates a robust touch-screen and rubber housing protection as well as a screen protector. Fixed internal cells as well as a "hot swap" external recharge-able battery pack. Suitable for field use.

Communication with Status Pro sensors using USB and Bluetooth.

**Tripods for the Laser or sensors**

(FIX STATIV-01-P ... FIX STATIV-04-P)

Tripod 01-P: Adjustment range 545-935 mm,
Weight 5,5 kg

Tripod 1.5-P: Adjustment range 760-1700 mm,
Weight 12 kg

Tripod 02-P: Adjustment range 870-1900 mm,
Weight 12 kg

Tripod 03-P: Adjustment range 1160-2520mm,
Weight 13 kg

Tripod 04-P: Adjustment range 1880-3910mm,
Weight 19 kg



6. Products and Service

Geometrical measurement techniques and alignment have been an issue since the pyramids.

Today the measurement and alignment of machinery components is an integral part of the assembly and quality control process. Be it linear guides, presses, flange connections, drive shafts or cylinder rolls, the precision of the alignment has a significant effect on the functionality of the component. The alignment of these machinery components will often affect the quality of the manufactured product and also the life-time of the machine components themselves. The use of a laser beam reference together with tradition industrial measurement techniques has made it possible to build tools which simplify these alignment procedures.

Status Pro develops and manufactures laser alignment equipment and we are committed to this process.

Most of our customers are machine builders, assembly and quality control people. Typically our customers require a complete solution package including on-site training and support. When a customised solution is required, modifications are often necessary, be it in software, mechanical adaptations or the sensor housing itself in order to meet customer requirements.

We and our partner companies all over the world also provide alignment and industrial surveying services.

We invite you to visit our web site www.statuspro.com
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