

R280

Bluetooth Laser Receiver

Instruction Manual



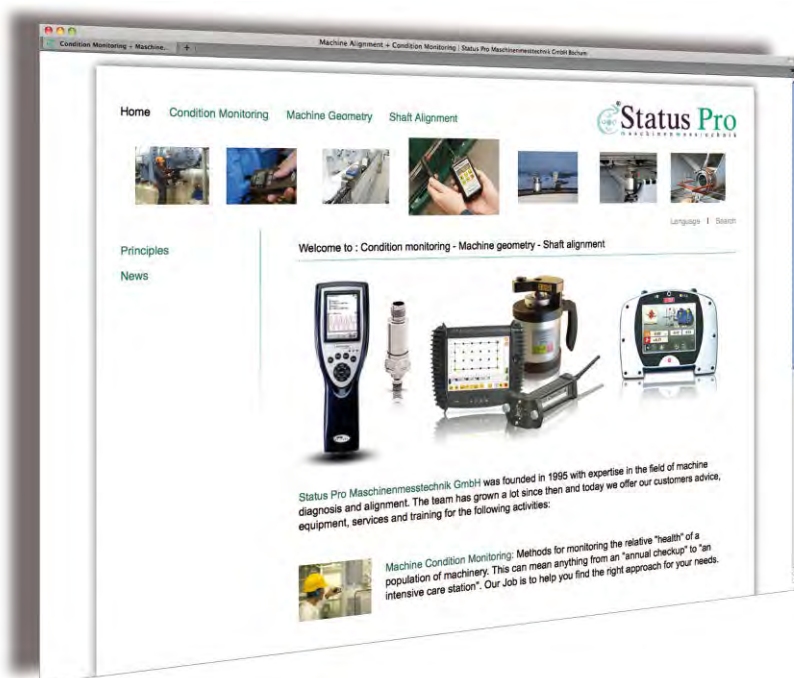
Instruction Manual – English

Laser Receiver R280 (BG 831500)

Software version V 1.00

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.



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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 Advice on batteries / rechargeable cells

If the equipment is being stored for a longer period of time or being powered using Mains, then the batteries should be removed to prevent damage of the instrument through leakage.

When using rechargeable cells always observe the specific charging procedures for the cells.

Rechargeable cells can be recharged around 1000times when treated correctly, but there is no guarantee!



Caution!

Do not try to recharge normal batteries. Do not expose batteries or rechargeable cells to fire or excess heat (Danger of explosion). Do not mix batteries and rechargeable cells. Always use batteries and cells of the same kind. Do not mix old and new batteries or cells.



Note

Help to protect the environment! Empty batteries do not belong in the household waste disposal system. Only deposit empty or damaged cells at a collection point specially designed for this purpose.

1.4 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.

1.5 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.

To ensure trouble-free processing, simply fill in the form you will find using the following link: www.statuspro.com/machine_geometry/service_support/calibration_repair



Advice

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-authorised personnel.

1.5 Calibration and repair

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 re-calibrated 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 fill in 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

2.1 Power Supply

The R280 can only be powered using a Type BT 800071 re-chargeable cell. A completely charged cell will provide enough energy for around 8 hours usage. A discharged cell can be recharged in approximately 1,5 hours using the external charger (BT 800072) . Constant operation is possible if a second cell is available (optional extra).

The battery pack (III) can be accessed by opening the rear cover (I) . To open the cover, simply pull, using the two indentations(II), the cover is held in place with a magnet.



The battery is placed in the housing with the contacts pointing to the middle of the sensor. The battery is placed correctly when the rear cover closes without any resistance. Due to the shape of the housing it is normally possible to fit the cell incorrectly.

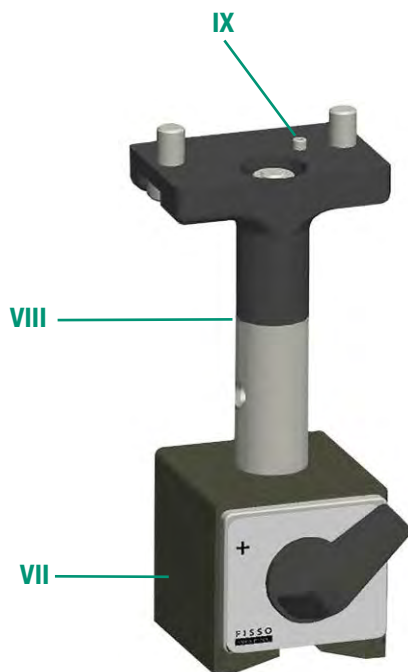


Please follow instructions below:

- ➔ Cell fitted correctly (Contacts deepest position in the housing)
- ➔ For use solely with cell type: BT 800071
- ➔ Remove cell before prolonged storage (Danger of corrosion)

2.2 Assembly

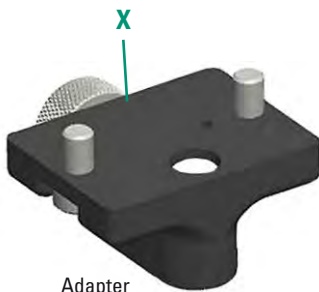
The R280 Laser receiver has two M8 threads (V) on the underside and two on the top side. The threads enable correct fitting of the Magnet Adapter Typ BG 831510, usually used when measuring objects. The Adapter consists of a switcheable magnet (VII) and a revolueable column (VIII). The adapter can be fitted at either end of the sensor.



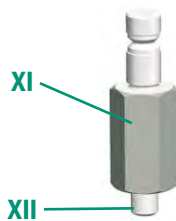
Adapter BG 831510

When fitting the Adapter to the underside of the sensor, the locating dowel (IX) and the drilling (VI) ensure correct positioning of the sensor. When fitting the Adapter to the above side, the locating dowel has to be removed (M3 Allen Screw). The BG 831510 Adapter facilitates rotation of the sensor in the Axis and is play-free, enabling accurate measurements.

Alternatively, the Adapter BG 831550 (X) can be mounted to the sensor enabling use of the M8 measuring adapter (BT 948336) (XI). The measuring adapter (XI) is fitted into the recess in the Adapter (X) and secured with the knurled screw (XIII). The asymmetrical groove on the M8 Adapter guarantees a constant and repeatable fitting of the sensor and thus, sensor height.



Adapter
BG 831550



M8 Adapter
BT 948336



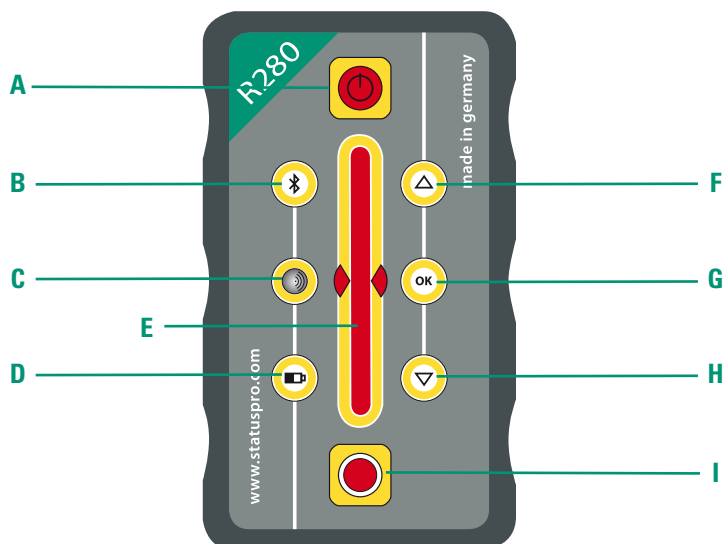
Adapter complete with
M8 Adapter mounted on
the switchable
Magnet BT 943092

The measurement adapter (XI) with its 8mm thread (XII) on the underside can be fitted to the larger switchable magnet (BT 943092) or directly screwed into existing or purpose cut threads on machine or other objects. The permanent fitting of the adapter allows periodic or constant measurements on machines or buildings for example, whereby the sensor does not have to stay in place if periodic and not constant measuring is required.

To rotate the R280 in the laser axis when using the BG 831550 (X) Adapter, simply loosen the knurled screw (XIII), rotate as wished and then re-tighten the knurled screw. Remember, the R280 should always face the T330 in an orthogonal fashion.

3. Handling

3.1 Button Panel of the R280



- | | |
|--|--|
| A On / Off Button | F Laser position LED above centre |
| B Bluetooth LED | G OK LED |
| C Infra-red aperture | H Laser position LED below centre |
| D Battery and Sensor status LED | I Measurement triggering button |
| E Detection area | |

To turn on the R280 simply press the On/Off button, to turn Off press and hold for 1 second or longer. The rotating beam of the laser sweeps across the detector area(E) and a value is delivered to the Display Unit over BlueTooth. When BlueTooth communication is active, the BT LED (B) will flash intermittently (BlueLED). The position of the laser beam in respect to the centre or Zero position of the detection area (E) is signified over the two direction LED´s (F&H). When the Measurement Trigger button (I) is pressed, the sensor measures the values over the pre-set period entered in the software, then recorded. During measurement the sensor should not be moved or disturbed. The Battery LED (D) shows the power capacity available.

3.2 LED Signals from the R280



Bluetooth LED

When a BlueTooth has been established, the LED lights constantly blue. When a measurement has been triggered and data is being sent from sensor to the PC, the LED flashes intermittently.



Infra-red LED

The Infra-red LED sends a signal to the T330 Laser (invisible). The T330 can be remotely controlled with this function.



Battery condition LED

After turning on the sensor (Button A) this LED signifies the condition of the Battery Pack and measurement availability of the R280:



Constant green: Power good – Constant use possible



Flashing green with 1Hz (once per second): ca. 30 minutes of battery power remaining – think about ending measurement.



Flashing green with 5Hz (five times per second):

Battery Pack almost empty – change or charge battery.



If the sensor status LED (D) flashes: 3 times, pause, 3 times, pause, this signifies a system error. Turn the Sensor off and then on again. If the condition continues, contact Status Pro Repair and Calibration Dept.



Laser position LED above Zero

This LED lights when the laser beam meets the detection area above zero (Centre)



OK LED

At present, not in use.



Laser position LED below Zero

This LED lights when the laser beam meets the detection area below zero (Centre)


Laser position LED´s Above / Below

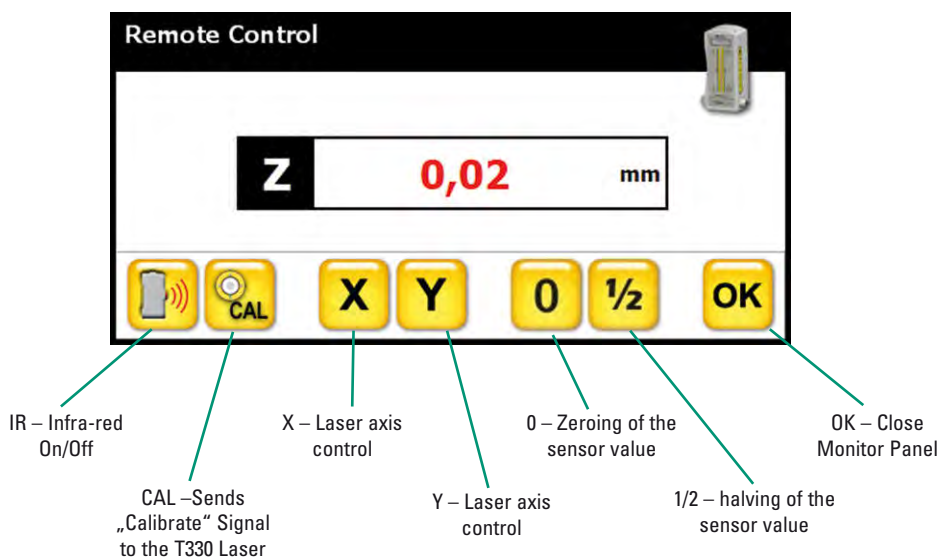
If the laser beam is within $-0,03$ to $+0,03$ mm of the Zero, one of the position LED´s will light up constantly and one will flash, the constantly lit LED shows if the beam is above or below centre.

If both LED´s are lit constantly, the beam is exactly at Zero (0,00)

3.3 R280 Monitor – Control Software

The R280 can be remotely controlled using the Status Pro Software. The Software offers the following possibilities:

The User Panel can be started by pressing the  Button in the Toolbox:






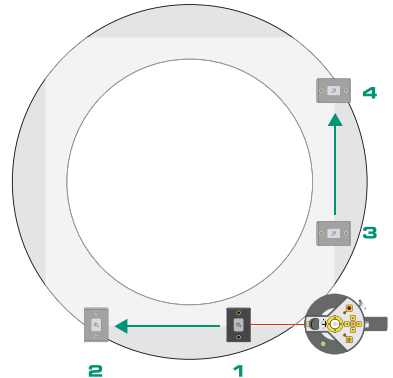
Remote Controlling of the sensor, for example when adjusting the Laser to an object or surface, is also possible in the Software Modules . Please observe the appropriate Software User Manual.

4. Measurements

4.1 Setting up a laser plane

To „align“ the laser plane parallel to a surface or a flange, proceed either manually by pressing the buttons on the T330 Laser or automatically using the R280 as a IR remote control for the laser:





- Mount the T330 Laser near the reference surface on a tripod at an appropriate height, or if necessary, place the laser on the flange/ reference surface.
- Place the R280 with the magnet adapter next to the Laser (POS 1).
- Start the Software Monitor and press the  button.
- Press the  button in the Monitor.
- Position the R280 Receiver as far away as possible from the Laser in the same Laser axis, (POS 2) then turn the IR mirror  on the laser towards the R280.



Manual:

- Navigate the laser plane towards 0,00 in the Monitor using the arrow buttons on the Laser panel or use the Remote Control RC310. When the value at positions 1 and 2 is 0,00 the axis is adjusted.
- Repeat this procedure at points 3 and 4 for the second laser axis.

Automatic:

- Choose the axis to be adjusted:  or  using the Software, then press the  button to trigger the automatic adjustment.
- Wait until the axis has been corrected to 0,00 then press the  button to deactivate the auto-adjustment.
- Repeat this procedure for the second laser axis (3 + 4).

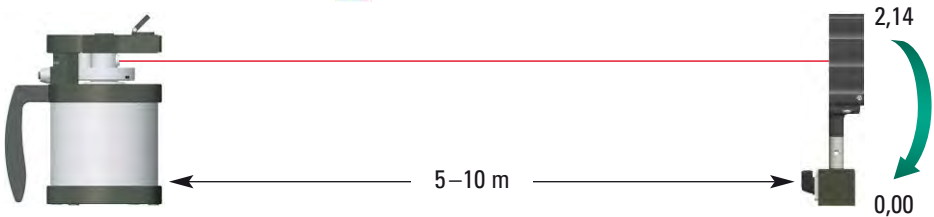
Note: If the inaccuracy of an axis was greater than 1mm it is advisable to check the axes more than once, after correction.

4.2 Checking and calibrating the T330 Self-Levelling function

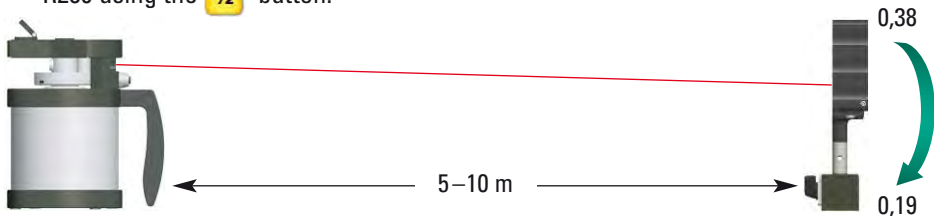
After being transported, it makes sense to check and if necessary, re-calibrate the levelling exactness of the T330 Laser before attempting an exact measurement. To achieve this, start the R280 „Remote Control“ using your software.

T330: Calibration check

1. Place the T330 and R280 on an appropriate surface and turn them on (Distance between instruments ca. 5-10 m).
2. Activate the self-levelling function on the T330. (Sensor reading, eg.: 2,14)
3. „Zero“ the R280 using the **0** button. (Sensor reading, eg: 0,00)





4. Rotate the T330 through 180°.
5. Re-activate the self-levelling function on the T330.
6. The displayed value is the doubled levelling error. (eg: 0,38) Halve the value on the R280 using the **½** button.

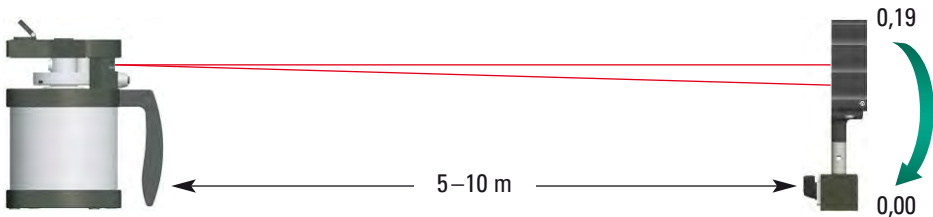



The value has now been halved (0,19) , divide this value by the distance in metres between Laser and Sensor and you have the accuracy in millimeters per metre.

After carrying out this test, decide if the accuracy is up to the task at hand, if not carry on with the Laser calibration.

Calibrating the T330 Laser

7. Activate the Y-Axis control  from the Menu/Toolbox.
8. Press the Infra-Red button  --> The T330 will be controlled down to 0,00 in the Y-Axis through the IR Signal emitted from the R280.



9. After the T330 has reached 0,00, give a „Calibrate“ Signal to the Laser by pressing the  button. The Laser will cease rotation when the command has been accepted.
10. Repeat steps 7-19 for the second Laser axis, remembering to change the Axis control in the Menu/Toolbox.



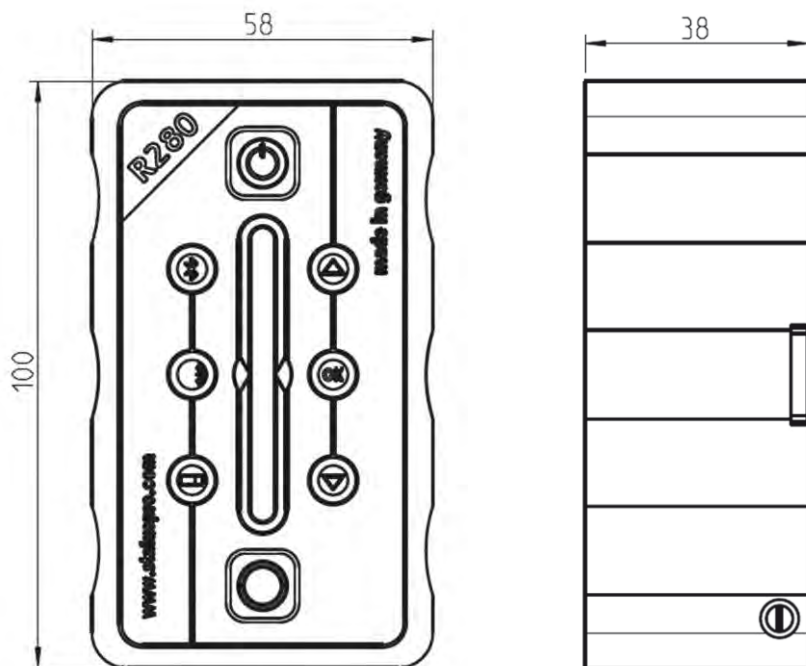
Note

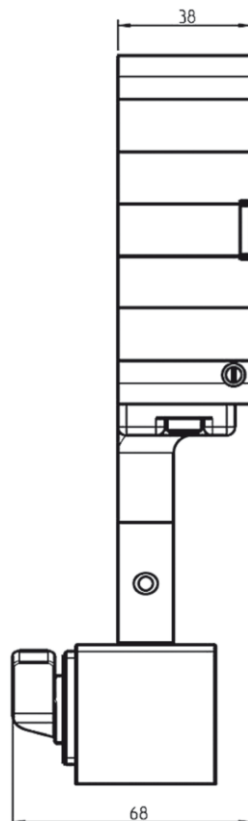
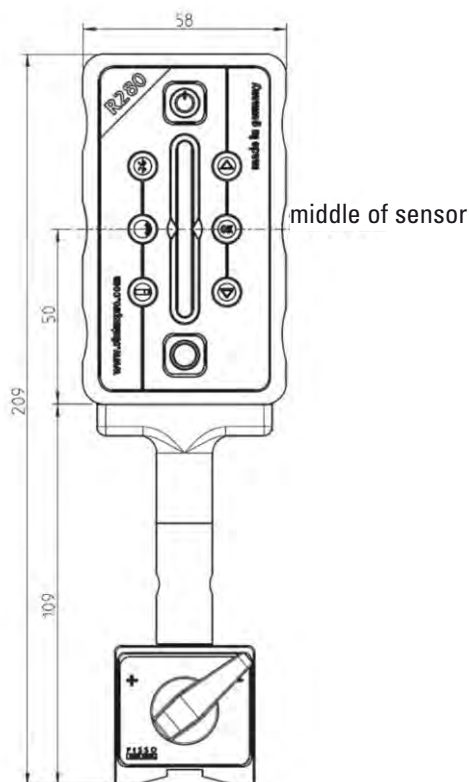
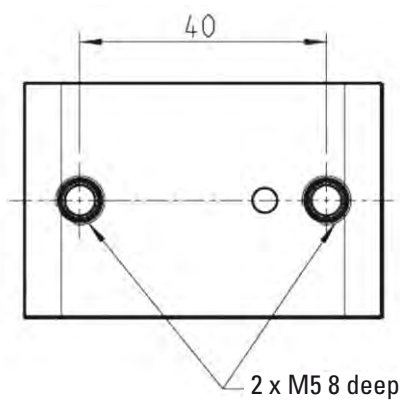
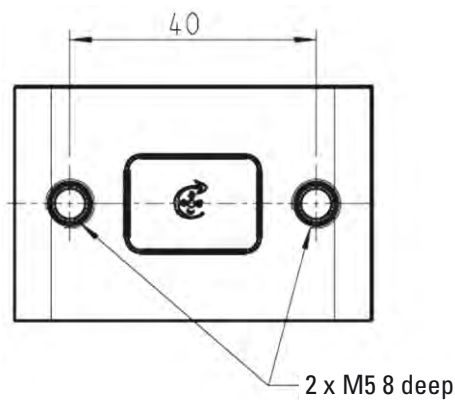
This test solely for checking the self-Levelling of the T330 Laser. All other tests and checks are carried out before delivery and within the designated service intervals by Status Pro personnel (R&K).

Be sure to attend the appropriate training courses at Status Pro or by arrangement in your company. This ensures best possible handling and usage of your equipment and of your measurement needs!

5. Technical Data

Display:	LED Type
Sensor Type:	40 mm CCD
Resolution:	0.01 mm
Accuracy:	$\pm 0.02 \text{ mm} + 1\% \text{ Linearity}$
Meas. Distance:	Up to 50 m
Protection Class:	IP 54
Weight:	298 g (without Battery)
Weight:	343 g (with Battery)
Housing:	Aluminium, anodised
Dimensions (b x h x d):	58 x 100 x 38 mm

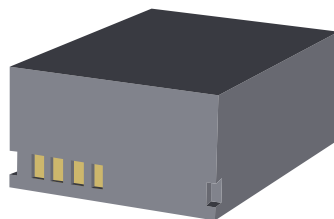




6. Accessories

Battery Pack (BT 800071)

Power cell for the R280. A fully charged cell offers around 8 hours of operation.



External charger (BT 800072)

Charger (BT 800071) for the R280.

The Battery Pack will be fully charged in around 1,5 hours.



Magnet Adapter (BG 831510)

The standard adapter for the R280.

This sturdy rotatable adapter enables a sure fitting to the measurement object. The axis of rotation lies within the laser axis and causes no change of value due to rotation.



Switchable Magnet M6 (BT 943105)

Magnet with a prism base for use with the rotatable adapter for the R280.

Adhesive force: 600N.

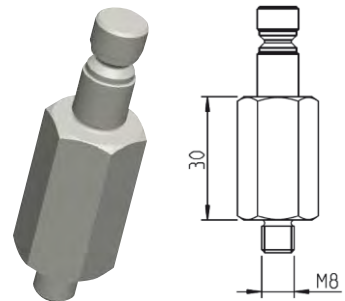
40 x 40 x 40mm.


Fitting for Adapter (BG 831550)

This adapter enables use of the R280 with all fittings for the R310 Sensor enabling a greater range of mounting possibilities. Fit Adapter to the Screw Adapter (BT 948336) and tighten using knurled screw.


Measuring Adapter M8 (BT 948336)

The Measuring adapter provides the mounting for the R310 Sensor. The M8 thread enables fixing of the Sensor on machine parts to be measured or using the magnet base as a mobile Mounting.


FIX 1-0658-080

Extension for BT 948336, M8, 80 mm

FIX 1-0658-300

Extension for BT 948336, M8, 300 mm

FIX 1-0658-600

Extension for BT 948336, M8, 600 mm



Switchable Magnet M8 (BT 943092)

The block magnet with its prism base enables mounting on cylindrical as well as flat surfaces. The magnet has an 8mm thread enabling fitting of the Measuring adapter (BT 948336) and subsequent mounting of the Adapter BG 831550



Block magnet with probe tip (BG 830175)

The probe tip acts as an extension of the R310 Sensor enabling exact measurements of points within a measurement grid. The magnet ensures a vertical and therefore reproducible mounting on the measurement object.



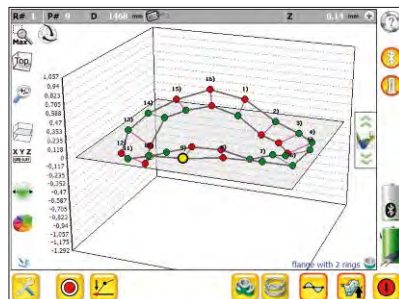
Block magnet with spring-loaded probe tip (BG 830195)

The probe tip acts as an extension of the R310 Sensor enabling exact measurements of points within a measurement grid. The magnet ensures a vertical and therefore reproducible mounting on the measurement object. The spring facilitates a permanent contact of the probe tip with the measurement surface even when working upside down.



Software from Status Pro

Status Pro software has been developed specially for use with Status Pro Instruments. The sensors connect automatically with the PC and deliver secure and stable measuring. The software offers comfortable documenting and exporting of the taken measurements.



- ProLine[®]v2** – Straightness software
- ProLevel[®]v2** – Software for flatness and level
- ProOrbit[®]v3** – Alignment software for bores and bearings
- ProFlange[®]v3** – Software for measurements of flanges
- ProRoll[®]v2** – Software for roll parallelism

Display unit DU 320 (IT 200410)

Display unit / ultramobile - PC based. For industrial use; with protector grips. The PC has internal and external batteries, with "hot swap" feature and communication over Bluetooth.



Alignment Packages

SP ProFlange 10

Starter Package for
Flange Flatness



SP ProFlange 20

Starter Package with
IT for Flange
Flatness



SP ProFlange 30

Professional Package
with IT for Flange
Flatness and Parallelism



7. 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
For more information or just call us at + 49 (0) 2327 - 9881 - 0





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