T310

Self-Leveling
Measuring and Alignment Laser
For Machine Assembly Professionals

Status Pro
maschinenmesstechnik

T310 Alignment Laser

The leveling laser T310 makes even difficult measuring tasks easy! A laser sender functions as encoder, a detector measures the beam position. That's it!

These few, but definitive, features combine accuracy, self-leveling and detector intelligence, making this product entirely unique in the marketplace. These features provide astonishing benefits, measuring flatness and straightness with all their sub-diciplines. The accuracy meets all requirements that engineers working with machine installations, adjustments and fitting might have. The innovative combination of state-of-the-art components makes it easy to accomplish alignment and leveling quickly and easily, yet precisely. All by yourself.

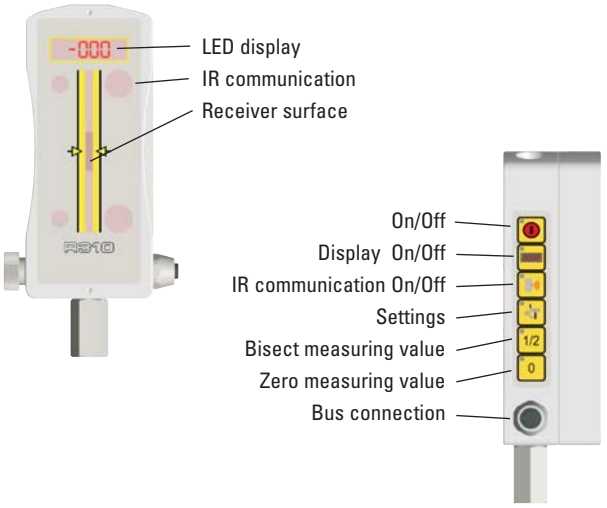
Additional survey personnel are not required. The laser beam rotates, thus automatically creating a leveling measuring level, with an exactness of 0.025 mm/m. The measuring values are then recorded with the receiver and the measuring values are saved.
The results are immediately displayed.

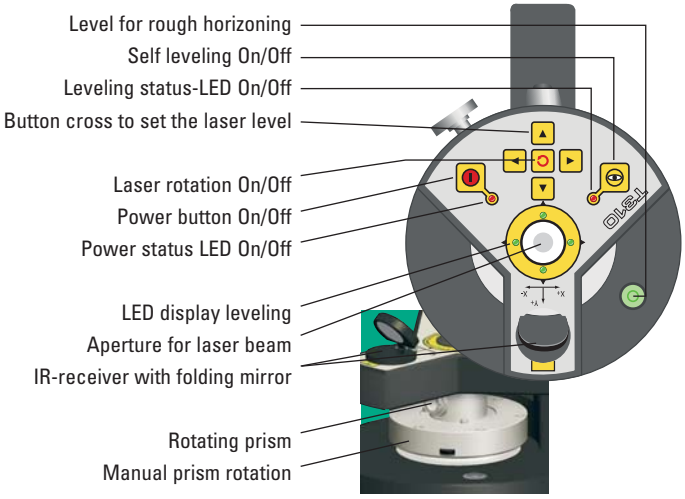
The laser transmitter scans and automatically generates a laser plane within 0.02 mm/m in level, while you walk around collecting measurement values with the handheld receiver. The result is displayed instantly. The laser plane can either be set to level or plumb to level, or locked to specific references. The receiver intelligence communicates to the transmitter, via IR or cable, maintaining the laser plane position. This is valuable while performing an alignment or measurement on moving objects, e.g., on board a ship, or on top of a harbor crane. The laser transmitter is also provided with a laser beam perpendicular to the generated laser plane, for measurement and alignment.

The measuring system, in its basic configuration, consists of a laser sender and a receiver. However, it is also possible to take measurements simultaneously with several receivers, e.g. to save time or in case of tricky measuring situations. The receiver corresponds optimally with the DU-310 display unit for straightness and levelness measurements – with full compatibility for receiving and recording measuring values. The system is available with a resolution of 0.02 mm/m to 0.001 mm/m, infrared communication is optional.

- Compatible with all Status Pro products
- Self-leveling,
  horizontally as well as vertically
- One-man operation
- Reference level can be fixed
  at any two points
- Network-independent battery operation
- Measuring results can be documented

Technical Data





Receiver R310*

Receiver size	80 mm (3.15 in)
Resolution	0.01 mm
Exactness	0.1% of the measuring value
Operating time (internal power supply)	>18 hrs. continuous operation
Range	0.328 to 328 ft (depending on environment)
Temperature range	23°F to 113°F
Interface input	Buttons and RS 485 Bus
Interface output	IR laser control, RS 485 Bus and LED display (readable from a distance of 9.8 ft)
Power supply	6 x alkaline AA or AC-adapter
Dimensions	5.9 x 2.6 x 1.2 ft
Weight	0.88 lbs

***Specifications subject to change without notice.**

Laser sender T310*

Laser type	630-670 nm, 1mW (visible beam, red)
Angle resolution between standing beam and measurement level	± 0.02 mm/m
Step error max.	0.05 mm / 360°
Conic error max.	0.02 mm/m
Level error max.	0.025 mm/m
Rotation speed	300 Upm
Operating time (internal power supply)	> 12 hrs. continuous operation
Laser range	328 ft
Temperature range	23°F to 113°F
Interface input	IR-Infrared interface and RS 485 Bus
Power supply	6 x alkaline AA or AC-adapter
Dimensions	4.9 x 6.7 x 7.3 ft
Weight	5.29 lbs

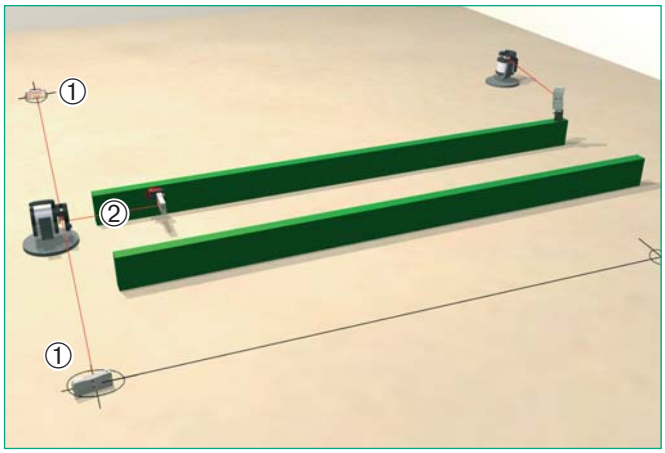
Example scope of delivery Level 30 Package *

Number	Part No.	Description
1	BT 990006	SP laser case very robust IP 65 with wheels and telescope handle
1	BT 990010	Foam rubber insert lid for laser case
1	BT 990007	Foam rubber insert for laser case for T310, RC310 , Disto and accessories
1	BG 830200/1	T310 Self-leveling rotational laser
1	BG 830205	Rotation and swivel adapter complete T310 accessories
1	BG 830930	Remote control for T310 or R310 monitor type: RC310
1	BG 800110	Power pack 12V for T310 und R310 power supply
14	BT 800100	Battery LR6 / mignon / AA / 1.5 Volt
1	BT 800160	Battery E-Block / 9 Volt alkaline industrial/ 6LR61
1	BT 990008	Foam rubber insert for laser case for 3x R310 + 3xBG 830117
1	BG 830100	Laser receiver R310 80mm measuring surface / display & keyboard
1	BG 830111	Battery compartment complete for R310 for Level Laser
1	BG 830117	Floor and wall holder for R310, R310 accessories
1	FIX 1-0083	Magnet foot with flat surface
1	FIX 1-0629	Measuring adapter M8 for R310
1	BT 990011	Foam rubber insert for laser case stowing compartment
1	SP R520-P	Battery-operated laser position detector with radio transmission
1	BT 948138	Holder fastening rods
2	FIX MAA-20	Fastening rods 5.9 in

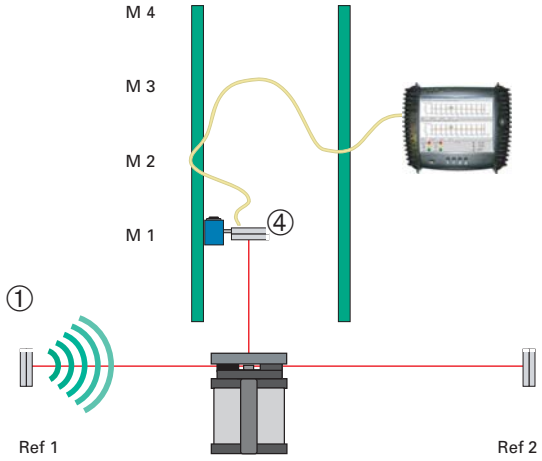
Accessories: *

- SP DU-310 Display unit with user software
- Bluetooth connection option
- IR-Infrared interface
- Remote control with display
- Tripods
- Bus power supply / RS485-RS232 PC-module
- Cable for PC communication
- Measuring adapter
- Angle prism
- Large display
- Batteries
- Carrying strap
- Customer-specific special solutions

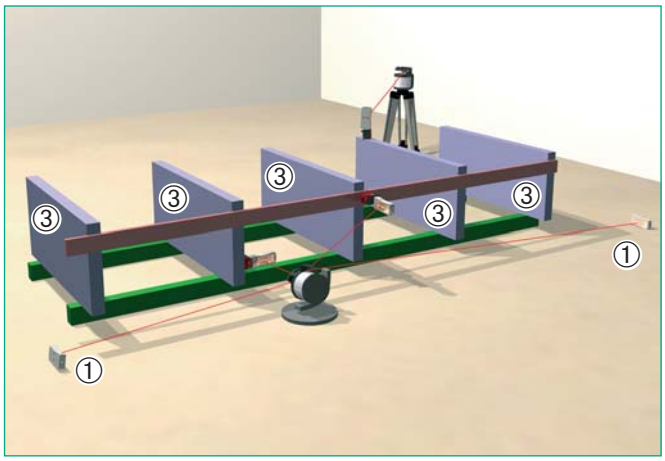
Example: Machine Assembly and Alignment



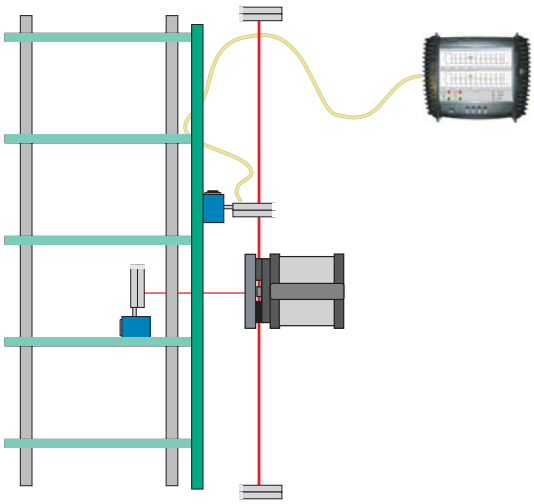
The illustration shows how the foundation – in this case consisting of two rails – is positioned according to the reference markers ①. First, the rails are aligned parallel to each other. The receivers on the basic markers represent the reference. The “upright” laser beam ② of the laser sender is perpendicular to the reference points (basic markings). The rear laser sender levels the overall arrangement. The use of two receivers simplifies and accelerates the measuring process; however it is also possible to use one receiver only.



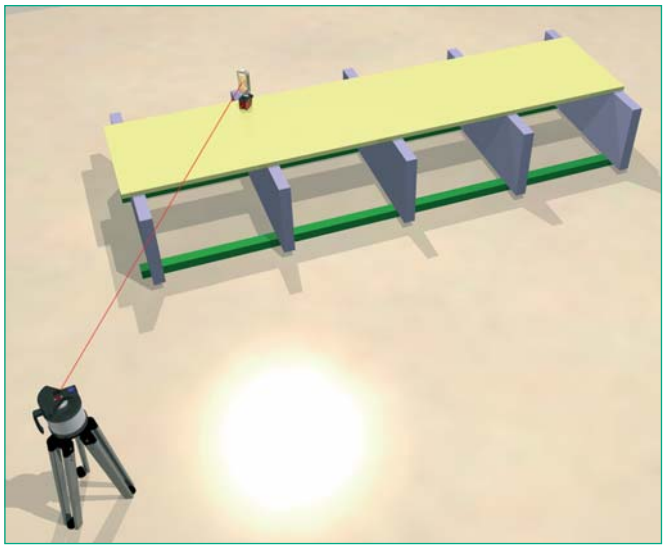
In order to align the laser to the basic markings (basic setting,) only one of the receivers (ref. 1) must be zeroed digitally; then the laser sender must be mechanically adjusted to ZERO or to a fixed value of the second receiver. The receiver at ref 1 fixes the laser level by monitoring the position by means of infrared communication, exactly tracing it. The measuring procedures are carried out along the rail. If receiver ④ is zeroed at the first measuring position M1, the rail can be easily adjusted to ZERO in all the other measuring points.



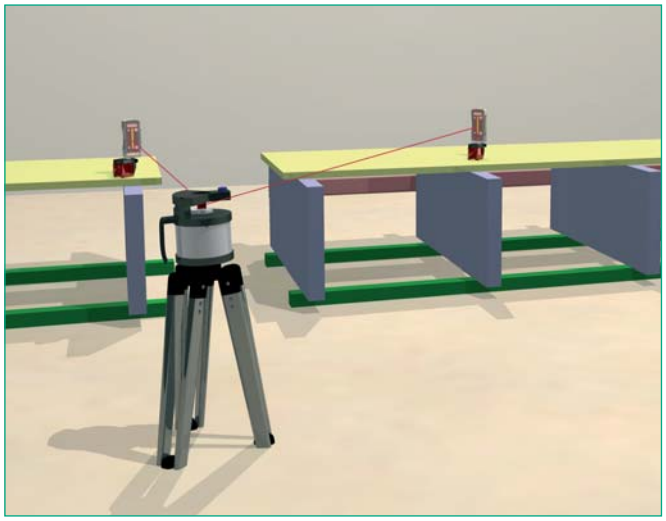
Now the second machine part is commissioned. To do so, the connecting elements ③ are aligned parallel to each other and in one level. The laser sender is guided along the level determined by the reference receivers ① along the machine. The upright beam of the laser is always at right angles to the reference level. In the same orientation, the vertical orientation and the front level of the components ③ is aligned. The third receiver ensures that the connecting elements are checked.



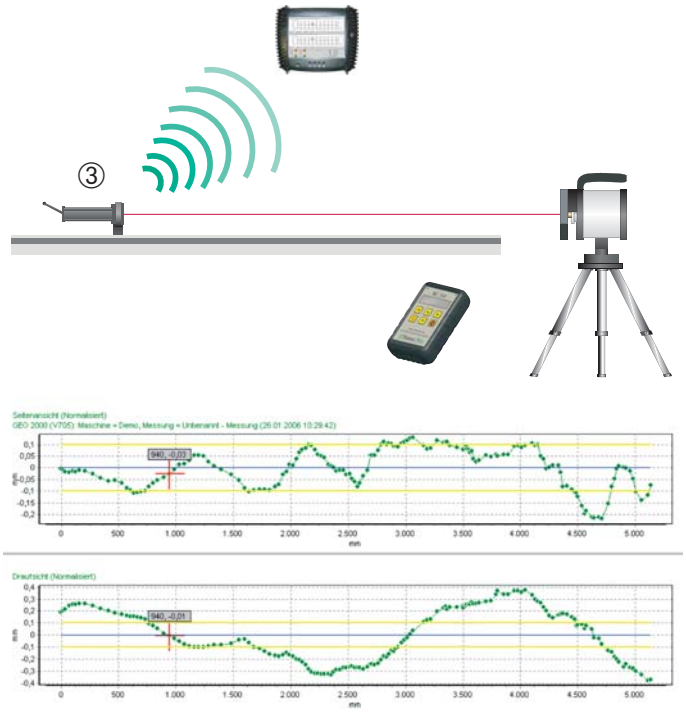
The DU 310 display unit can have level as well as alignment measuring procedures implemented on the software side. Using the full function scope of the display will result in considerable advantages concerning traceability and documentation of measuring procedures. Measuring procedures can be saved and printed; data transfer to the PC to generate alignment records is also possible.



Then the surface is checked for levelness. The DU 310 display unit provides a full status image with its level measuring program; possibly necessary corrections are immediately visible. The live display of the measuring values makes alignment simple and traceable. The upper width of the machine bed can be adjusted by means of underlays until the target values are reached on the display – alignment is now perfect!



As a reference, it is also possible to use an already aligned neighboring unit. The laser measuring level is simply adjusted to the receiver that is mounted on the neighboring unit and “fixed”. This receiver checks and controls the level position of the laser sender via infrared or cable. This procedure is especially advantageous in case of unstable environmental influences such as occur on ships or wind-exposed tall structures.



As a final control, the guide surface is checked with a 2-axis sensor ③ for exactness. The X, Y and Z – axes are automatically captured and transmitted wirelessly to an operating unit. The measuring values can be represented as raw data on two freely selectable zero points or as a normalized line. Due to continuous online display, corrections on the machine can be easily done.

The swivel adapter ensures the highest possible degree of flexibility for laser installation. The laser can be mounted horizontally or vertically. It can also be used to mount the laser on a standard tripod.

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