

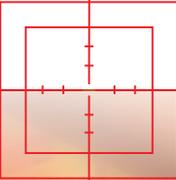
ROTALIGN[®] smart RS5 EX

The ultimate intrinsically safe shaft alignment system



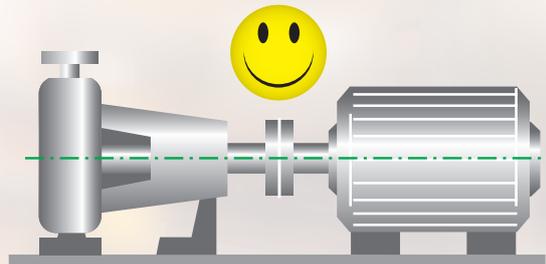
Always one step ahead

with precision shaft alignment



Benefits of laser shaft alignment

- ▶ Reduced energy consumption
- ▶ Reduction in bearing, seal, shaft and coupling failure
- ▶ Reduced bearing and coupling temperatures
- ▶ Reduced vibration
- ▶ No cracking or breaking of shafts
- ▶ Secure foundation bolts



RS5 technology

- ▶ 5-axis XL HD PSD
- ▶ Precision built-in MEMS inclinometer
- ▶ Ambient light compensation
- ▶ Faster data transmission
- ▶ Laser and sensor battery status warning
- ▶ Longer laser and sensor runtime



Bluetooth® communication

The optional ATEX/Ex/IECEX certified Bluetooth® module allows convenient and flexible wireless data transmission between sensor and computer.

This is a unique capability of PRUFTECHNIK alignment systems for hazardous areas.



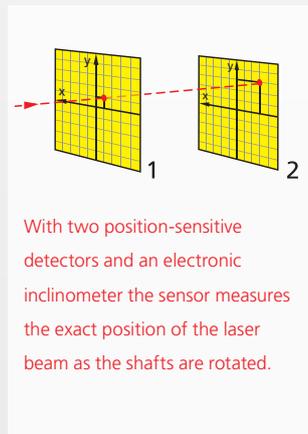
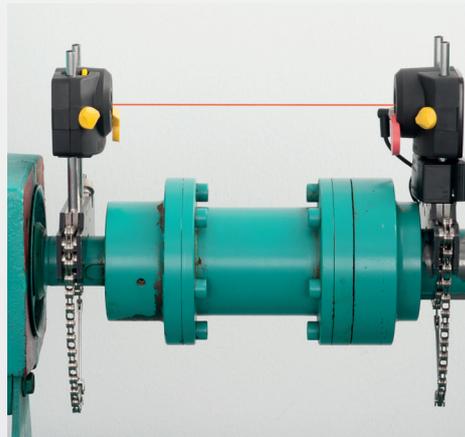
Faster and smarter shaft alignment

with ROTALIGN® smart RS5 EX technology

The measurement principle

ROTALIGN® smart RS5 EX uses a single laser and a 5-axis sensor. The ROTALIGN® RS5 EX sensor contains two fully-linearized XL HD position sensitive detectors and a MEMS inclinometer to precisely measure the exact position of the laser beam as the shafts are rotated.

This is a unique measurement principle, which allows simultaneous 'Live Move' monitoring of the vertical and horizontal machine corrections with the sensor at any angular position.



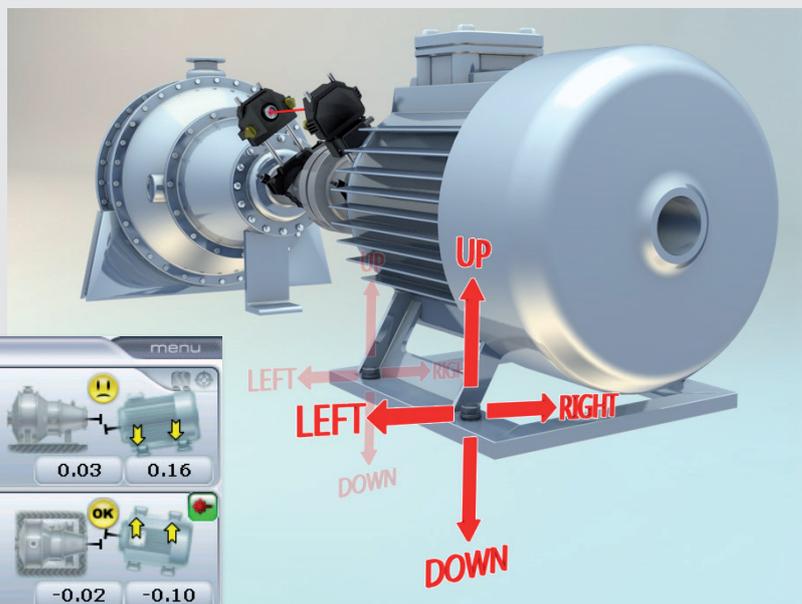
The SWEEP measurement mode

With this exclusive and patented measurement mode, data is automatically and continuously collected as the shafts are rotated. During shaft rotation, a large number of measurement points are captured to accurately determine the alignment condition. Measurement can start at any position and in any direction.



Simultaneous Live Move

The machine corrections are monitored simultaneously in both horizontal and vertical directions with laser and sensor mounted at any angular position on the shafts.



ROTALIGN® smart RS5 EX is a high-end laser shaft alignment system designed for the use in hazardous areas. It is ATEX/IECEx certified for zone 1.

The system is packed with powerful functions for the alignment of horizontal, vertical and flange-mounted machines and features the unique benefits of the 5-axis ROTALIGN® measurement technology.

3 keys to precision alignment

DIM



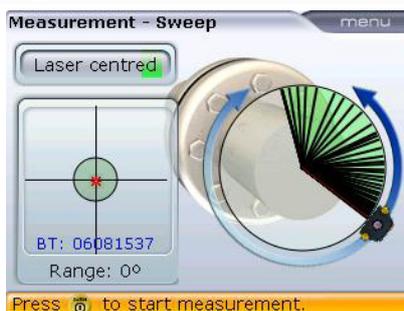
Machine shaft alignment with a SWEEP

Only three steps to the perfect alignment

Dimensions



Measurement



Results



The main function keys allow a quick switch between the main functions during the alignment.

Laser/Sensor

The RS5 EX measurement principle is based on the patented single laser beam technology, which uses one laser and a sensor including two biaxial position detectors and a MEMS inclinometer.

Computer

The ROTALIGN® computer features a high resolution TFT colour display for clear information readability even in unfavourable light conditions. The USB interface enables easy connection to a PC and other peripheral devices such as a printer.

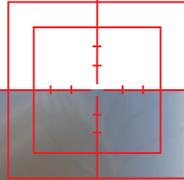
Operation and user interface

The alphanumeric keyboard and the navigation keys ensure comfortable operation of the measurement system. With the context menu the user can easily access all required options. The status line text provides valuable guidance for beginners. The alignment results are clearly displayed in graphic and digital formats.

- ▶ **SWEEP measurement mode**
Automatic collection of alignment data during shaft rotation.
- ▶ **Simultaneous Live Move**
Monitor the machine corrections in both horizontal and vertical directions with laser and sensor at any angular position on the shaft.
- ▶ **Single laser technology**
Patented single laser/sensor technology for easy set-up.
- ▶ **InfiniRange®**
This function extends the detector surface, making it possible to measure machines with severe angular misalignment or distant from each other. Rough alignment is not necessary, and the initial alignment condition is recorded and documented.
- ▶ **Intuitive user guidance**
The system guides the user step-by-step to determine the machinery alignment condition and its tolerance evaluation.
- ▶ **Flip machines**
Swap the position of the machines e.g. motor and pump, together with machine dimensions.
- ▶ **Automatic evaluation of alignment**
Smiley and LED provide visual indication of the alignment condition and a live status update during machine correction.
- ▶ **Soft foot check**
Measure, correct and save results.
- ▶ **File management**
Save measurement files in the device or transfer reports as PDF to a USB memory stick.
- ▶ **Data protection**
Auto save and resume capability.

ROTALIGN® smart RS5 EX

A flexible modular system



Standard features

- Continuous SWEEP measurement mode: Automatic collection of alignment data during shaft rotation
- Static measurement mode – requires any 3 of the 8 available 45° measurement positions
- Soft foot check – measure, correct and save results
- Flip machines to swap the position of the machines e.g. motor and pump
- Tolerances: Automatic evaluation of alignment condition with ‚Smiley‘ and LEDs
- User defined tolerances
- InfiniRange® extends detector measurement range to handle gross misalignment
- Static feet selection to resolve base-bound and bolt-bound problems
- Results table (3 rows view) to verify measurement repeatability
- Live move: Live monitoring of horizontal and vertical machine corrections
- Multiple feet correction (6 and more feet machines)
- Vertical machine alignment
- High memory capacity
- Data protection - auto save and resume capability
- Save measurement reports as PDF to a USB memory stick
- Averaging number of readings
- X/Y-View: Shows laser coordinates and rotational angle
- Pipe strain - checks the effects of pipe strain on machine

Powerful options

- Multipoint mode – measurement at any 3 or more positions over 60° rotation or more
- Alignment targets and thermal growth values including input of dial indicator readings and thermal growth calculator
- Alignment of cardan and spacer shafts (cardan requires a special bracket)
- 3-machine-train alignment

Advanced options

- Pass mode: Convenient measurement mode for uncoupled machines
- Live simultaneous Move in both horizontal and vertical directions, in one Screen
- Enhanced result table: Listing of up to 15 coupling results
- Tolerance envelopes for better machine correction evaluation
- Selection of type of machine: Realistic machine graphics
- Machine train alignment up to 6 machines

PC Software

- PC alignment software to manage measurement files and create reports

ROTALIGN® smart RS5 EX technical data

RS5 EX sensor	
Type	5-axis receiver: 2 planes (4 displacement axes and angle) Measurement area: unlimited, dynamically extendible (U.S. Patent 6,040,903) Resolution: 1 µm (0.04 mil) and angular 10 µRad Accuracy (avg): > 98% Measurement rate: approx. 20 Hz
Environmental protection	IP 65 (dustproof and water jets resistant)
Ambient light protection	Yes
Temperature range	Operation: -10°C to 50°C [14°F to 122°F] Storage: -20°C to 60°C [-4°F to 140°F]
Dimensions	Approx. 105 x 74 x 53 mm [4 9/64" x 2 29/32" x 2 3/32"]
Weight	Approx. 220 g [7.7 oz.]
EU declaration of conformity	Refer to the CE compliance certificate in www.pruftechnik.com
Intrinsic safety	II 2G Ex ib IIC T4 Gb, Zone 1 Certificate numbers: EPS 15 ATEX 1074X; IECEXEPS 15.0067X
RS5 EX Laser	
Type	Semiconductor laser diode
Environmental protection	IP 65 (dustproof and water jets resistant), shockproof Relative humidity 10% to 90%
Beam power	< 1 mW
Wavelength	630 – 680 nm (red, visible)
Beam divergence	0.3 mrad
Safety class	Class 2 according to IEC 60825-1 2014 The laser complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
Safety precautions	Do not look into laser beam
Power supply	2 x 1.5 V IEC LR6 ("AA") Batteries Only use MN1500 from Duracell or Energizer E91 Operating time: 120 hours
Temperature range	Operation: -10°C to 50°C [14°F to 122°F] Storage: -20°C to 60°C [-4°F to 140°F]
Dimensions	Approx. 105 x 74 x 47 mm [4 5/32" x 2 15/16" x 1 55/64"]
Weight	Approx. 225 g [8 oz.]
EU declaration of conformity	Refer to the CE compliance certificate in www.pruftechnik.com
Intrinsic safety	II 2G Ex ib op is IIC T4 Gb, Zone 1 Certificate number: EPS 15 ATEX 1 075; IECEX EPS 15.0068
RF module for wireless communication with sensor (optional)	
Type	2.4 GHz, Class 1 connectivity, transmitting power 100 mW, Contains FCC-ID POOWML-C40
Transmission distance	Up to 10 m [33 ft.] direct line of sight
LED indicators	1 LED for wireless communication 3 LEDs for battery status
Power supply	2 x 1.5 V IEC LR6 ("AA") Batteries Only use MN1500 from Duracell Operating time: 14 hours typical use (based upon an operating cycle of 50% measurement, 50% standby)
Temperature range	Operation -10°C to 40°C [14°F to 104°F]
Environmental protection	IP 65 (dustproof and water jets resistant), shockproof
Dimensions	Approx. 81 x 41 x 34 mm [3 1/8" x 1 11/16" x 1 5/16"]
Weight	Approx. 133 g [4.7 oz.] including batteries and cable
EU declaration of conformity	Refer to the EU declaration of conformity in www.pruftechnik.com
Intrinsic safety	II 2G Ex ib IIC T4 Gb, Zone 1 Certificate number: IECEX ZLM 11.0009

Computer	
CPU	Marvell PXA270 running at 312 MHz
Memory	64 MB RAM, 64 MB Flash
Display	Type: TFT, transfective (sunlight-readable), 65 535 colours, backlit LED Resolution: 320 x 240 Pixel Dimensions: 3.5 inch diagonal Keyboard elements: Navigation cursor cross with up, clear and menu keys; Alphanumeric keyboard with dimensions, measure and results hard keys
LED indicators	4 LEDs for laser status and alignment condition 2 LEDs for wireless communication and battery status
Power supply	Operating time: 18 hours typical use (based upon an operating cycle of 25% measurement, 25% computation and 50% 'sleep' mode) Only use 6 x 1.5 V IEC LR6 ("AA") MN1500 from Duracell
External interface	USB host USB slave RS232 (serial) for sensor 2.4 GHz, integrated wireless communication, Class 1, transmitting power 100 mW AC adapter/charger socket Adapter box external interface: USB host, USB client, power socket, USB host for USB memory stick
Environmental protection	IP 65 (dustproof and water jets resistant), shockproof Relative humidity 10% to 90%
Intrinsic safety	II 2G Ex ib [ib] IIC T4, Zone 1 Certificate numbers: TÜV 08 ATEX 554162, IECEX TUN 08.0006
Temperature range	Operation: -10°C to 50°C [14°F to 122°F] Storage: -20°C to 60°C [-4°F to 140°F]
Dimensions	Approx. 214 x 116 x 64 mm [8 7/16" x 2 1/2"]
Weight	865 g [1.9 lb]
EU declaration of conformity	Refer to the EU declaration of conformity in www.pruftechnik.com
Carrying case	
Particulars	Dimensions: approx. 550 x 400 x 168 mm [21 21/32" x 15 3/4" x 6 39/64"] Weight, excluding all standard parts: approx. 3.6 kg [7.9 lb.] Weight, including all standard parts: approx. 8.3 kg [18.3 lb.]



ROTALIGN® smart RS5 EX system is delivered in a robust light-aluminum case. The case and its foams are suitable for hazardous areas.

PRUFTECHNIK

Proven technology for all industries

With our products, processes and services for alignment applications, condition monitoring and availability optimization, we help ensure that your machines run smoothly and generate an output of consistently high quality. This also

includes systems for automatic process control and quality assurance that are integrated directly in your production process.

PRUFTECHNIK delivers maintenance solutions worldwide



Laser measurement systems and services for optimum alignment of machines and systems.

Vibration measurement systems for machine condition monitoring – including services such as machinery fault diagnosis.

Systems and services for quality assurance and process control in production.

We offer professional services anywhere in the world to support our customers with alignment and condition monitoring.

www.pruftechnik.com

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