

# OPTALIGN® smart RS5

The power of precision shaft alignment



# Always one step ahead

with precision shaft alignment



## RS5 technology

- 5-axis XL HD PSD
- Precision built-in inclinometer
- Ambient light compensation
- 2-axis straightness application
- Faster data transmission
- Laser and sensor battery status warning
- Longer laser and sensor runtime
- Bluetooth® communication

## Benefits of laser shaft alignment

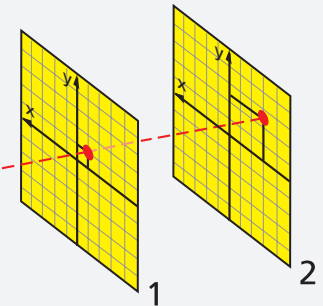
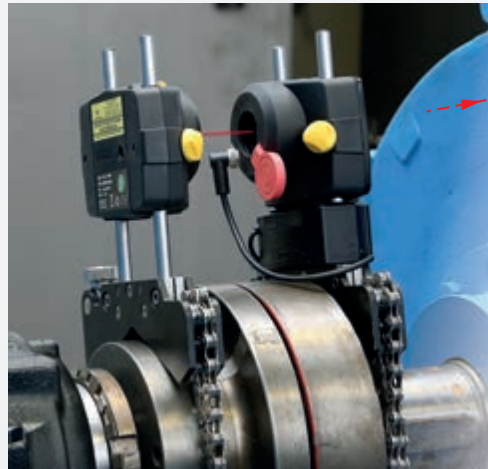
- ▶ Reduced energy consumption
- ▶ Reduction in bearing, seal, shaft and coupling failure
- ▶ Reduced bearing and coupling temperatures
- ▶ Reduced vibration
- ▶ No cracking or breaking of shafts
- ▶ Secure foundation bolts

# Faster and smarter shaft alignment

with OPTALIGN® smart RS5 technology

## The measurement principle

OPTALIGN® smart RS5 uses a single laser and a 5-axis sensor. The sensor contains two fully-linearized biaxial position detectors and a precision inclinometer. It can precisely measure relative shaft movement in five degrees of freedom. This measurement principle is the only one which allows 'Live Move' with concurrent monitoring of the vertical and horizontal machine corrections and with the sensor at any angular position.



With two position-sensitive detectors and an electronic inclinometer the sensor measures the exact position of the laser beam as the shafts are rotated.

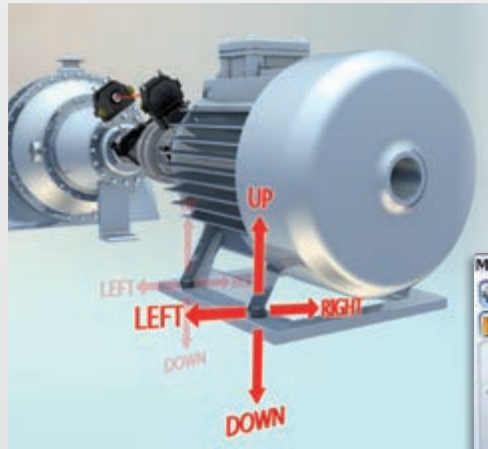
## The SWEEP measurement mode

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.



## Concurrent Live Move

Monitor the machine corrections concurrently in both horizontal and vertical directions with laser and sensor mounted at any angular position on the shaft.



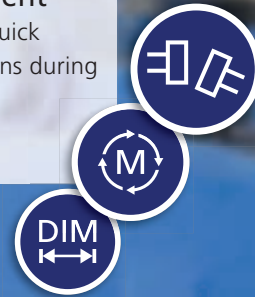
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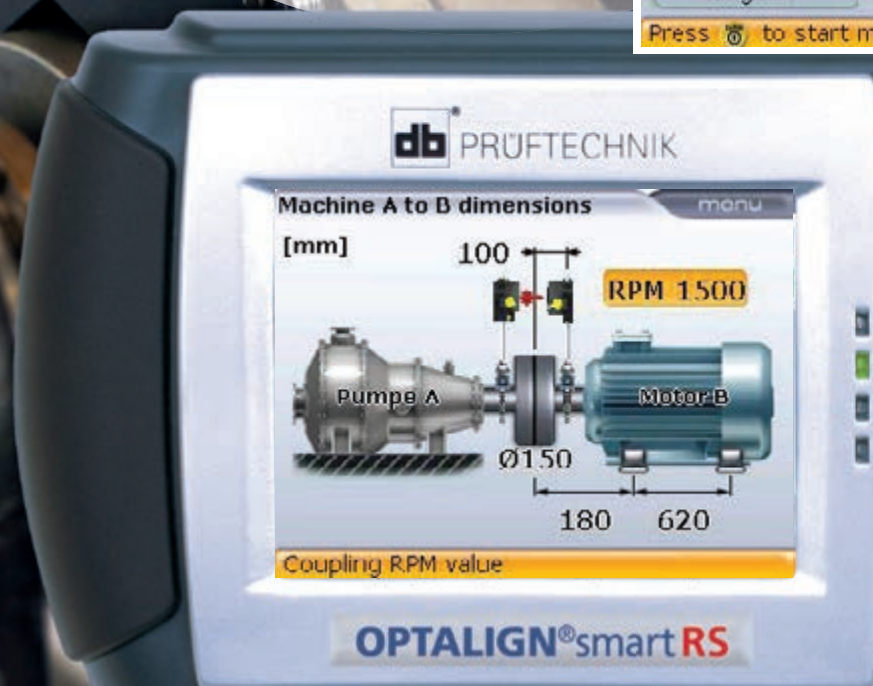
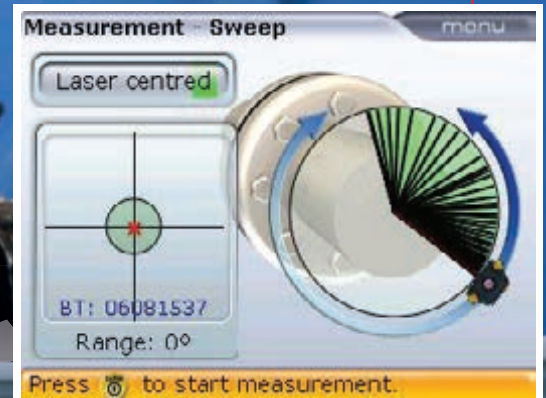
OPTALIGN® smart RS5 is packed with powerful functions for the alignment of horizontal, vertical and flange-mounted machines. The system has been designed for industrial applications and can be used in extreme maintenance working conditions.

### 3 keys to precision alignment

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



| Results                 |          |
|-------------------------|----------|
| <b>V</b> Vertical       | -0.02 mm |
|                         | 0.00 mm  |
| <b>H</b> Horizontal     | 0.38 mm  |
|                         | 0.30 mm  |
| Use $\Delta$ / $\nabla$ |          |



# Machine shaft alignment with a twist

Only three steps to the perfect alignment



## Laser / Sensor

The OPTALIGN® smart RS5 measurement principle is based on the patented single laser beam technology which uses one laser and a sensor including two biaxial position detectors and an electronic inclinometer.

## Computer

The OPTALIGN® smart RS5 computer features a high resolution TFT colour display for clear information readability even in unfavourable light conditions. The computer is operated by disposable or Li-Ion rechargeable batteries. 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 navigations 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.

### ▶ Bluetooth® communication

Convenient and flexible wireless data transmission.

### ▶ SWEEP measurement mode

Automatic collection of alignment data during shaft rotation.

### ▶ Concurrent 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

The 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.

# OPTALIGN® smart RS5 powerful features

## Standard features

- Bluetooth® module for wireless data transmission
- Live Move – concurrently monitors horizontal and vertical corrections
- Alignment of horizontal, vertical and flange-mounted machines
- Alignment of coupled, uncoupled and non rotatable shafts
- Fixed feet selection – resolves base-bound or bolt-bound problems
- Soft foot check – measure, correct and save results
- Automatic continuous measurement as shaft is rotated – start and stop rotation at any position
- Automatic evaluation of alignment condition with TolChek® and user-defined tolerances
- Results table to verify measurement repeatability
- Flip machines to swap the position of the machines e.g. motor and pump
- InfiniRange® extends detector measurement range to handle any amount of misalignment
- Checking the effects of pipe strain on machine
- Static measurement mode – requires any 3 of the 8 available 45° measurement positions
- Save reports as PDF directly to a USB stick
- Data protection – auto save and resume capability

## Powerful options

- 3-machine train alignment
- Enter alignment targets and thermal growth values including input of dial indicator readings
- 2D straightness application
- Multipoint mode – measurement at any 3 or more positions over 60° rotation or more
- Alignment of cardan and spacer shafts
- Heavy-duty rechargeable Li-Ion battery
- ALIGNMENT CENTER software to manage measurement files and create reports





# OPTALIGN® smart RS5 technical data

|                          |   |
|--------------------------|---|
| <b>Computer</b>          |   |
| CPU                      | Intel XScale PXA270 running at 520 MHz  |
| Memory                   | 64 MB RAM, 64 MB Flash  |
| Display                  | Type: TFT, transfective (sunlight-readable), 65 535 colours, backlit LED<br>Resolution: 320 x 240 Pixel; Dimensions: 3.5 inch diagonal<br>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<br>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)<br>Disposable batteries:<br>5 x 1.5 V IEC LR6 ("AA") with typical operating time of 10 hours (based upon an operating cycle of 25% measurement, 25% computation and 50% 'sleep' mode)<br>Lithium-Ion rechargeable battery (optional): 7.2 V / 2.4 Ah with typical operating time of 18 hours (based upon an operating cycle of 25% measurement, 25% computation and 50% 'sleep' mode) |
| External interface       | USB host<br>USB slave<br>RS232 (serial) for transducer<br>Integrated wireless communication, class 1, transmitting power 100 mW<br>AC adapter/charger socket  |
| Environmental protection | IP 65 (dustproof and water spray resistant), shockproof. Relative humidity 10% to 90%   |
| Temperature range        | Operation: -10°C to 50°C [14°F to 122°F]<br>Storage: -20°C to 60°C [-4°F to 140°F]  |
| Dimensions               | Approx. 214 x 116 x 64 mm [8 7/16" x 4 7/16" x 2 1/2"]  |
| Weight                   | 865 g [1.9 lb]  |
| CE conformity            | EC guidelines for electric devices (2004/108 EWG) are fulfilled   |
| <b>Sensor</b>            |   |
| 5-axis sensor            | 2 planes (4 displacement axes and angle)  |
| Environmental protection | IP 65 (dustproof and water spray resistant), shockproof. Relative humidity 10% to 90%   |
| Ambient light protection | Yes   |
| Storage temperature      | -20°C to 80°C [-4°F to 176°F]   |
| Operating temperature    | -10°C to 60° [14°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 3/4 oz.]   |
| Measurement area         | Unlimited, dynamically extendible (U.S. Patent 6,040,903)   |
| Resolution               | 1 µm (0.04 mil) and angular 10 µRad   |
| Accuracy                 | > 98%   |
| Inclinometer resolution  | 0.1°  |
| Inclinometer error       | 0.3% full scale   |

|  |   |
|--|---|
| <b>Laser</b>                             |   |
| Type                                     | Semiconductor laser diode   |
| Beam divergence                          | 0,3 mrad  |
| Environmental protection                 | IP 65 (dustproof and water spray resistant), shockproof<br>Relative humidity 10% to 90% |
| Beam power                               | < 1 mW  |
| Wavelength                               | 670 nm (typical) (red, visible)   |
| Safety class                             | Class 2, IEC/EN 60825-1:2007  |
| Safety precautions                       | Do not look into laser beam   |
| Power supply                             | Batteries 2 x 1.5V IEC LR6 ("AA")   |
| Operating time                           | 180 hours   |
| Storage temperature                      | -20°C to 80°C [-4°F to 176°F]   |
| Operating temperature                    | -10°C to 50°C [14°F to 122°F]   |
| Dimensions                               | approx. 105 x 74 x 47 mm<br>[4 9/64" x 2 29/32" x 1 27/32"]                             |
| Weight                                   | approx. 227 g (8 oz.) including batteries   |
| <b>Bluetooth® module</b>                 |   |
| Class 1 connectivity, transmitting power | 100 mW  |
| Transmission distance                    | Up to 30 m [98 ft.] direct line of sight  |
| Complies with                            | FCC rules part 15   |
| LED indicators                           | 1 LED for wireless communication, 3 LEDs for battery status                             |
| Power supply                             | Batteries 2 x 1.5 V IEC LR6 ("AA")  |
| Operating time                           | 17 hours typical use (based upon an operating cycle of 50% measurement, 50% standby)    |
| Operating temperature                    | -10°C to 50°C [14°F to 122°F]   |
| Environmental protection                 | IP 65 (dustproof and water spray resistant), shockproof protection                      |
| 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                                   |
| <b>Carrying case</b>                     |   |
| Standard                                 | ABS, drop tested 2 m [6 1/2 ft])  |
| Dimensions                               | Approx. 470 x 400 x 195 mm<br>[18 1/2" x 15 3/4" x 7 3/4"]                              |

## Services and customer support

- ▶ Alignment high-tech lab
- ▶ Customized product training
- ▶ Machinery service – worldwide
- ▶ Calibration and repair



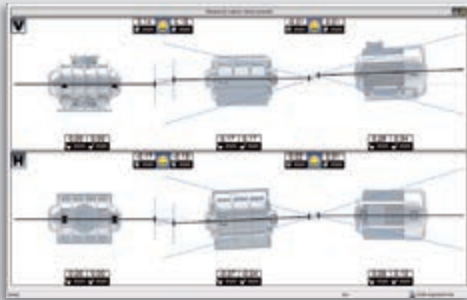
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# ALIGNMENT CENTER PC software

Manage your alignment data the most convenient way

**ALIGNMENT CENTER** is a Windows® based common PC software platform for all current PRÜFTECHNIK alignment systems and applications.

In a nutshell, you can use ALIGNMENT CENTER to manage your measurement files in a central database. Map your plants and share files across users. Use the two-way communication to transfer files from your PC to the device and back.



Graphic display of measurement results.



Customized professional reports (example)

## Set-up

- Create user-specific templates to suit the measurement job
- Set up file information to include file and user names, company, plant, area and machine train
- Prepare file in advance on a PC and transfer to the instrument via the two-way communication
- Transfer measurement results from the device back to the PC

## Analysis and reporting

- 2D or 3D display depending on application
- Customize measurement reports to include company information and logo
- Realistic machine graphics and customized digital images for machines and coupling
- Evaluate results using the measurement table
- Move simulator for machine feet corrections
- Simulate measurement results by entering manual coupling values
- Optimise alignment by redefining fixed feet
- Conversion of dial gauge readings

## Archiving

- Create a backup of measurement files
- Restore files saved in the backup
- Organize files in a tree structure with unlimited hierarchy
- Any file type can be stored in the tree structure
- Comprehensive database search
- Ability to import and export data

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