OPTALIGN® smart RS

The Real Sense in machinery alignment

PRÜFTECHNIK 40 Years 1972 2012

Many decades of experience

in precision shaft alignment

PRÜFTECHNIK Alignment Systems, the inventor of laser alignment, has many decades experience developing, manufacturing and applying laser-based alignment systems.

Our measurement systems are used in various alignment applications for rotating machinery within all industries.

Expertise present in all industries ...








Benefit of precision shaft alignment

Machines that are well aligned at the commissioning stage and thereafter regularly maintained, will quickly reduce both plant operating and maintenance costs.

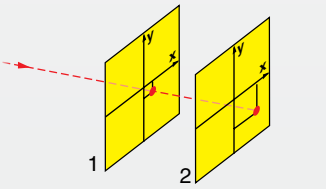
Laser precision alignment extends machine availability as the Mean Time Between Failure (MTBF) increases. It protects assets and increases product quality, as vibration is reduced to very low levels.

Extend machine availability and efficiency

with impressive OPTALIGN® smart RS technology

The measurement principle

OPTALIGN® smart RS 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.



The sensor contains two position sensitive detectors and an electronic inclinometer, which measure the exact position of the laser beam, as the shafts are rotated.

The SWEEP measurement mode

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

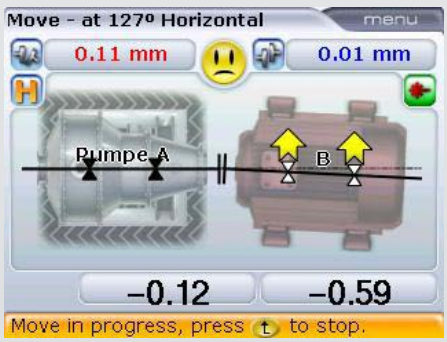
SWEEP™

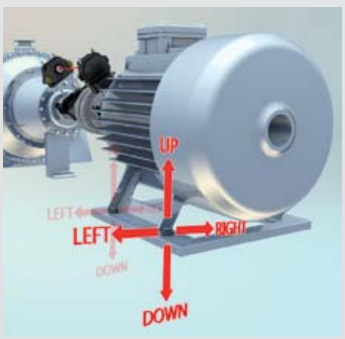
Wireless Communication

OPTALIGN® smart RS integrates an RF-module for convenient and flexible wireless data transmission.

Concurrent Live Move

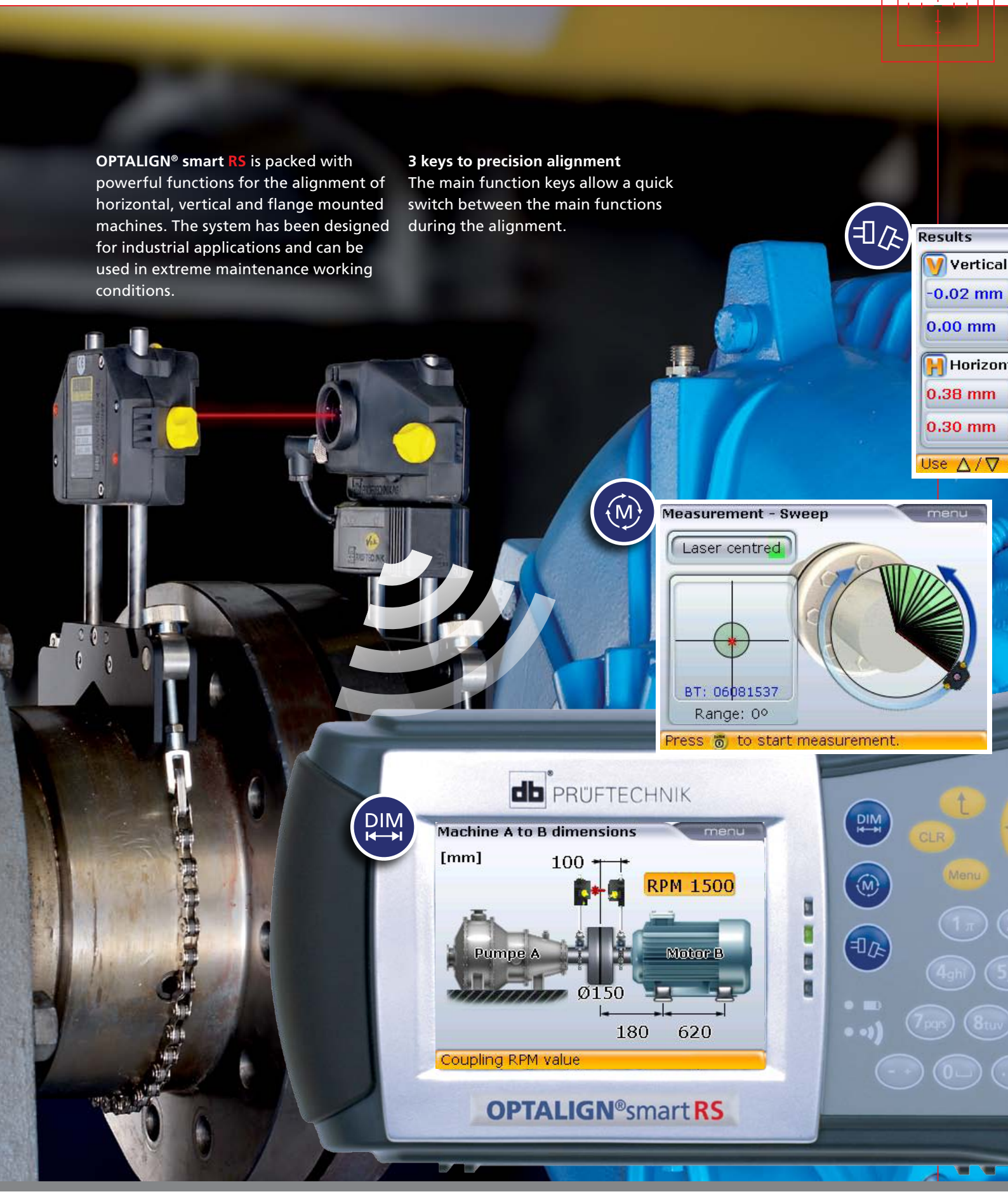
Monitor the machine corrections concurrently in both horizontal and vertical directions with laser and sensor mounted at any angular position on the shaft.





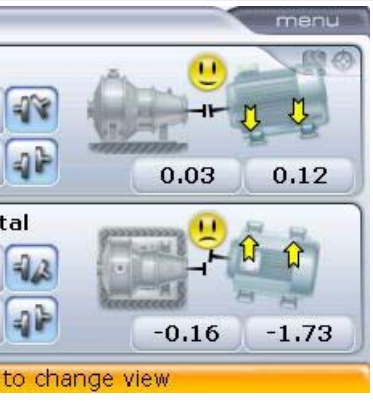
OPTALIGN® smart RS is packed with powerful functions for the alignment of horizontal, vertical and flange mounted machines. The system has been designed for industrial applications and can be used in extreme maintenance working conditions.

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



Precision laser alignment with a twist

Only three steps to the perfect alignment



Laser / Sensor
The OPTALIGN® smart RS 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 RS 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 connection to a PC and other peripheral devices such as a printer is via a USB interface.

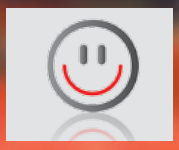
Operation and user interface
The alphanumeric keyboard and the navigations keys ensure comfortable operation of the measurement system. With the context menu the user can easily access all required options. The status line text provide valuable guidance for the beginners. The alignment results are clearly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

- **Wireless 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 concurrently in both horizontal and vertical directions with laser and sensor mounted 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 progressively to determine the machinery alignment condition and its tolerance evaluation.
- **Alignment tolerances**
  Dynamic tolerances based upon the machine RPM (TolChek®) or user defined values.
- **Automatic evaluation of alignment**
  The Smiley and an LED provide visual indication of the alignment condition and a live update status during machine correction.
- **Soft foot check**
  Measure, correct and save results.
- **File management**
  Save measurement files in the device and generate reports as PDF to a USB memory stick.
- **Data protection**
  Auto save and resume capability.

OPTALIGN® smart RS powerful features

Standard features
RF 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
Soft foot check – measure, correct and save results
Continuous SWEEP measurement mode: automatically activated as shaft is rotated – start and stop rotation at any position
Automatic evaluation of alignment condition with TolChek® and user-defined tolerances
InfiniRange® extends detector measurement range to handle gross misalignment and large coupling separation distances
QuickCheck – uses a single dimension to display both horizontal and vertical coupling values
Checking the effects of pipe strain on machine
Static measurement mode – requires any 3 of the 8 available 45 degrees measurement positions for vertical or inclined mounted machines
Result table to verify measurement repeatability
Save up to 500 measurement files in the device
Save measurement reports as PDF to a USB memory 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
Fixed feet selection – resolves base-bound and bolt-bound problems
Multipoint mode – measurement at any 3 or more positions. This measurement mode is suitable for all bearing types
Alignment of cardan and spacer shafts
Heavy-duty rechargeable Li-Ion battery
PC software ALIGNMENT CENTER is used for preparing, analysing, archiving measurement files and printing professional reports



Technical data

Computer	
CPU	Intel XScale PXA270 running at 520 MHz
Memory	64 MB RAM, 64 MB Flash
Display	Type: TFT, transflective (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)
	Disposable batteries: 6 x 1.5 V IEC LR6 ("AA")
	Lithium-Ion rechargeable battery: 7.2 V / 2.4 Ah (optional)
External interface	USB host
	USB slave
	RS232 (serial) for transducer
	Integrated wireless communication, class 1, transmitting power 100 mW
	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]
	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
Sensor	
5-axis sensor	2 planes (4 displacement axes and angle)
Environmental protection	IP 67 (submersible, dustproof)
Ambient light protection	Yes
Storage temperature	-20°C to 80°C [-4°F to 176°F]
Operating temperature	0°C to 60°C [32°F to 140°F]
Dimensions	Approx. 105 x 67 x 47 mm [4 5/32" x 2 5/8" x 1 55/64"]
Weight	Approx. 190 g [6 7/10 oz.]
Measurement area	Unlimited, dynamically extendible (U.S. Patent 6,040,903)
Resolution	1 µm (0.04 mil) and angular 10 µRad
Accuracy (avg)	> 98%

Laser	
Type	GaAlAs semiconductor laser
Beam divergence	0.3 mrad
Environmental protection	IP 67 (submersible, dustproof)
Beam power	< 1 mW
Wavelength	675 nm (typical) (red, visible)
Safety class	Class 2, FDA 21 CFR 1000 and 1040
Safety precautions	Do not look into laser beam
Power supply	9V block battery (IEC 6LR61, alkali or lithium)
Storage temperature	-20°C to 80°C [-4°F to 176°F]
Operating temperature	-20°C to 60°C [-4°F to 140°F]
Dimensions	Approx. 105 x 67 x 47 mm [4 5/32" x 2 5/8" x 1 55/64"]
Weight	Approx. 165 g [5 13/16 oz.]
RF module for wireless communication with sensor	
Class 1 connectivity, transmitting power	100 mW
Transmission distance	10 m [33 ft.]
Complies with	FCC rules part 15.247
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	14 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
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
Carrying case	
Standard	ABS, drop tested 2 m [6 1/2 ft])
Dimensions	Approx. 470 x 400 x 195 mm [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

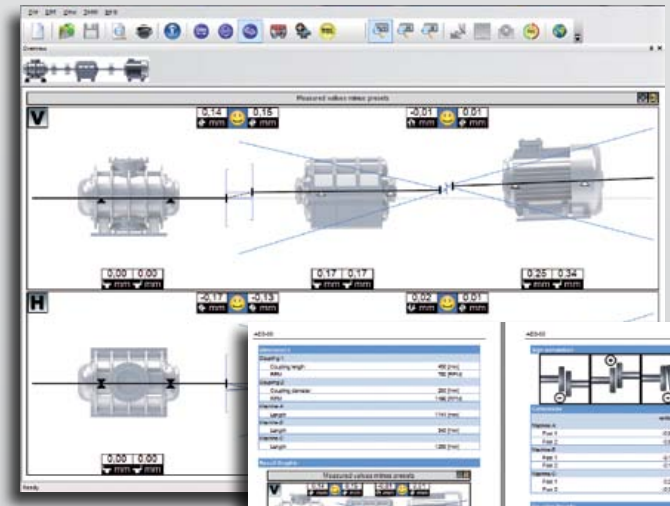
Maintaining high standards in machinery alignment

ALIGNMENT CENTER PC software

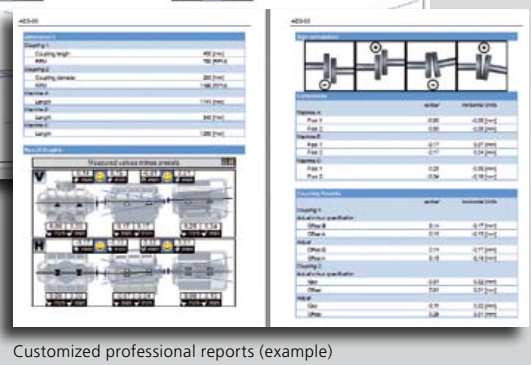
Document your job the most convenient way

ALIGNMENT CENTER

The PC software platform is used for all PRÜFTECHNIK Alignment instruments and applications. It is the perfect solution for preparing, analysing, organising and archiving measurement files. All alignment and measurement specifications including thermal growth compensation, alignment presets and tolerances are saved for future use. The files can be transferred from the PC to the instrument and vice versa. The software is also used for professional reporting capabilities.



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

Analysis and Reporting

- Customize measurement reports to include company information and logo
- Realistic machine graphics and customised 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 reading

Archiving

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

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