



**Advanced Test Equipment Rentals**  
**www.atecorp.com 800-404-ATEC (2832)**



## **smartALIGN®**

**Laser shaft alignment goes smart**



**From the inventors of  
laser shaft alignment!**

# Guaranteed and patented

Why have customers made PRÜFTECHNIK the market leaders in laser shaft alignment? Simple. Apart from being the pioneers of laser alignment technology, their 200 plus patents which include single-beam technology, continuous sweep, multipoint, In-finiRange® and TolChek®, are not only published, but also incorporated as standards in PRÜFTECHNIK products. smartALIGN® benefits from these and many other developments to make the alignment of rotating machinery simpler than ever before.



smartALIGN® is made for daily industrial use and is resistant to water and dust (IP 65).

## What you see is what you get

### Menu-operated system



The system's on-screen menu and status line guide the user through the alignment procedure and the many extra features and functions loaded within the device.

### Graphical results



Graphic representation and smiley, further aided by the corresponding LED indicators make the interpretation of results clear and understandable.

### Dynamic tolerance

1500rpm	ON	
	acceptable	excellent
gap	0.07	0.05
offset	0.09	0.06
Tolerance Status	mm	

Depending on the RPM selected, the dynamic tolerance defines a clear-cut 'GO - NO GO' alignment condition.

### On-screen help



On-screen help is available to assist the user through the system's various functions.

# smartALIGN®: The handy alignment partner

actual size



#### 4-way LED system

Monitor the alignment condition and laser beam position via the four LEDs. Note the LED colours: blue (excellent), green (good), amber (poor), red (bad).

#### Display screen

Clear and easy to use as it features a combination of both high contrast and backlit screen.

#### Joystick smart navigation

Ergonomic and practical. The joystick used in conjunction with the two function buttons are the only operating controls required.





# smart capabilities



Aligns horizontal machines



Aligns vertical machines



Aligns coupled and uncoupled shafts



Measures soft foot



Overcomes shaft rotation restrictions



Patented InfiniRange® extends effective detector measurement range to handle gross misalignment



Handles problems arising from machine movement restrictions



Alignment of 3-machine-trains using smartEDITOR the PC software



Thermal growth and coupling targets for both machines taken into account



Quick laser beam adjustment due to patented UniBeam®. Use of only one cable eliminates tangling



Pre-assembled brackets designed for quick and rigid set-up



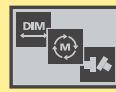
Measures alignment of shafts mounted on rolling or sleeve bearings



Unaffected by backlash



Designed for use in industrial environments. Rugged, resists water/dust/grease/shock (IP65 / IP67)



Smart 3-key operation:  
1. Enter dimensions – 2. Rotate shafts – 3. Read results



TolChek® - automatic and dynamic check of alignment condition



Active LED system indicates the alignment condition during measure and live move



Easy-to-interpret graphical results



Horizontal & vertical live move for misalignment corrections



Data auto save  
Files are reusable and can be edited



smartREADER the one-way communication PC software is part of the standard smartALIGN® package



smartEDITOR allows two-way communication between smartALIGN® and a PC



Unlimited report generation either directly from the device or using the alignment printing tool

## Power solution

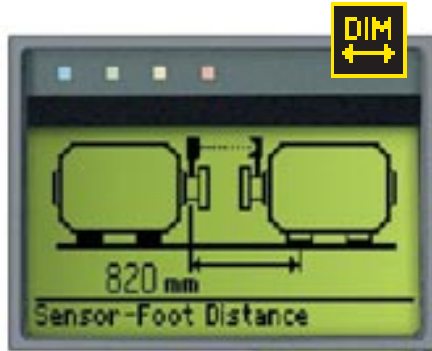
The rechargeable battery offers smartALIGN® a long operating time.



# Alignment readings in three smart steps

## Dimension

The graphic display and the status line ensure simple entry of machine dimensions.



## Measure

On-screen beam adjustment is assisted by the computer LEDs. The auto start / stop allows measurement to start at any shaft position and in any direction.



## Result

The alignment condition is described fully by the LED indicators, the smiley, the graphical display and the coupling and foot results.



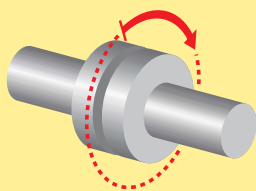
## Live move

Both horizontal and vertical live move can be monitored on the display. The bold arrow indicates the direction to move the machine feet.



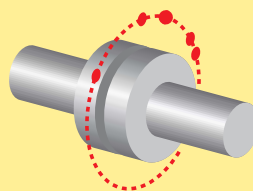
## Measurement flexibility

Master all alignment challenges!



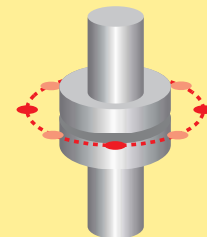
### Continuous sweep mode

Readings are taken continuously during rotation. This mode is ideal for standard machines and requires a shaft rotation of as little as 60°.



### Multipoint mode

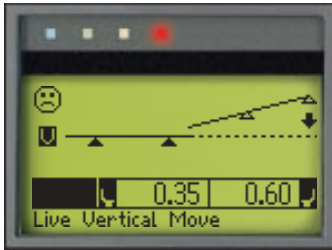
For shafts that are mounted on sleeve bearings. Measurement requires 3 points or more at any position over 60° rotation.



### Static mode

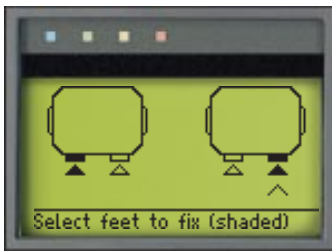
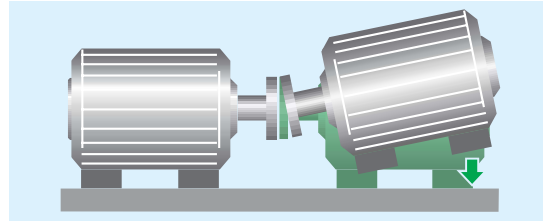
This is the ideal measurement mode for vertical alignment. Measurement requires 3 or more of the 8 available measurement positions.

# Ultimate alignment convenience



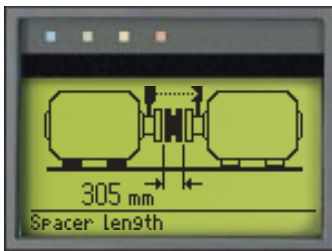
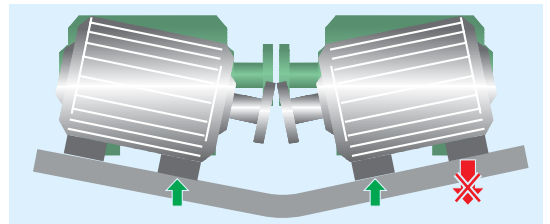
## Live move

As foot positions are adjusted, the LEDs indicate the alignment condition as they change from red (bad) to green (good) and the smiley switches from a 'sad face' to a 'happy face'.



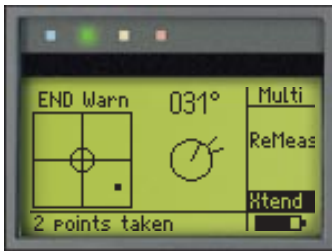
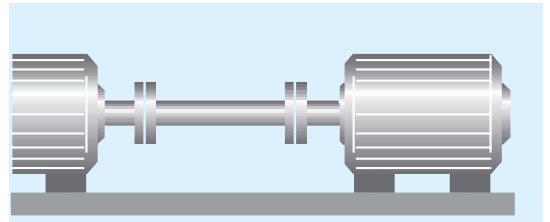
## Movement restrictions

Problems arising from base-bound or bolt-bound feet are resolved by redefining fixed feet.



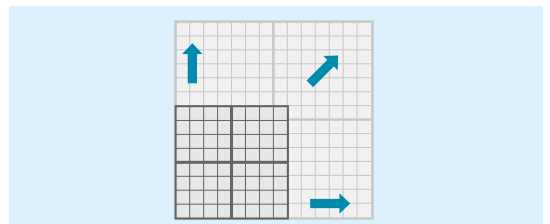
## Choose coupling type

Accuracy of results is ensured as the type of coupling used is taken into account and the true offsets are calculated at the real coupling planes.



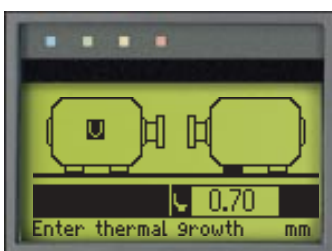
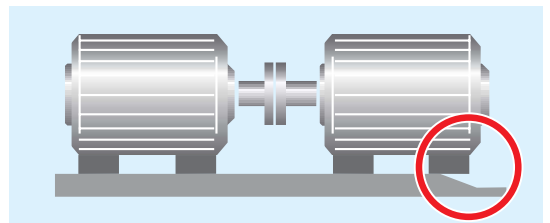
## InfiniRange®

The detector measurement area is automatically extended to allow alignment of grossly misaligned machines and for long spans.



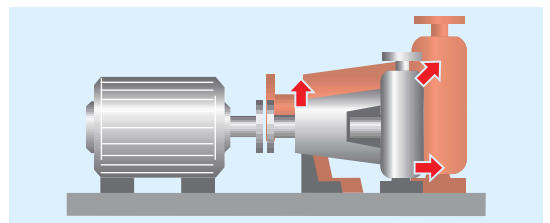
## Check soft foot

Soft foot values are displayed on the screen for evaluation. These values also appear on the printed report.

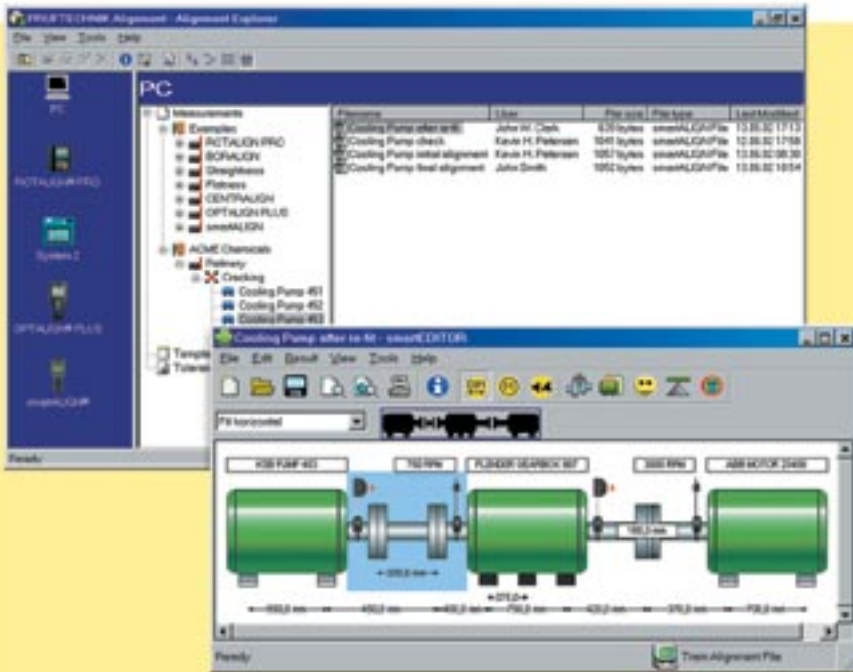


## Thermal growth

Thermal growth at the feet and at the coupling can be input for both machines to take into account thermal and dynamic load growth.



# PC partner: smartREADER & smartEDITOR



The Alignment Explorer is the software platform that allows communication between a PC and current PRÜFTECHNIK alignment instruments. smartREADER and smartEDITOR are the interface software used with smartALIGN®. Both levels operate under the Alignment Explorer. smartREADER supports one-way communication allowing measurement data be transferred to a PC for viewing, printing and archiving. smartEDITOR supports two-way communication allowing advance file preparation as well as editing, printing and archiving. The 'join' function can be used to analyse the alignment condition of 3-machine trains.

# Customize your measurement reports

Measurement reports can be customised to include company information and logo. Using smartEDITOR measurement results and a linked photo can be presented in HTML format in a wide range of styles that can be viewed with any browser. Reports are also exportable in XML format for data exchange.



**ACME CHEMICALS**

**File Information**

Company:	ACME CHEMICALS
Customer:	ACME CHEMICALS
Plant:	Refinery
Area:	Cracking
Machine Train:	Cooling Pump
Project Measurement:	4/10/2012 9:59:42 AM
Project Operator:	John Miller
Estimate:	John Miller

**Aggregate description**

Machine	Type	Name	Support
Machine 1	Standard	KSB PUMP 401	Four feet
Cooling 1 - 2	Spacer shaft		
Machine 2	Standard	PULVERISATOR 907	No feet
Cooling 2 - 3	Short shaft		
Machine 3	Standard	ABB MOTOR 2040	Four feet


**Dimension Setup**


**Aggregate dimension**


Machine 1	Value	Unit
Spacer Shaft Length	250.0	mm
Distance to left machine	450.0	mm
Distance to right machine	450.0	mm
Value	750.0	mm
Cooling Diameter	150.0	mm
Distance to left machine	450.0	mm
Distance to right machine	450.0	mm
Value	900.0	mm
Machine 2		
Distance left foot to right foot	950.0	mm
Machine 3		
Distance left foot to right foot	750.0	mm
Distance left foot to middle foot	375.0	mm
Distance left foot to right foot	750.0	mm





**Make sure you get the most from laser shaft alignment by insisting on the features you need**


 Get the job done fast thanks to easy set-up, continuous sweep measurement and quick, reliable results


 UniBeam® laser system and the measurement principle for rapid set-up and high accuracy


 InfiniRange® takes care of extreme misalignment and enables measurement over long distance


 TolChek® automatic tolerances as shown by LEDs and smiley

 Machine correction restrictions are solved by use of the 'fixed feet' function

 No loss of data due to auto save and the resume function

 Coupling type - short/ spacer shaft can be selected

 Thermal growth compensation as defined by machine manufacturer

 Document measurement results by printing directly or transfer to PC for analysis and editing

**smartALIGN® technical data**

**Computer**

**Display**  
 Type Graphical pixel display  
 backlite  
 Dimensions 54 x 27 mm/ 2 1/8 in x 1 1/8 in  
 64 x 128 pixels  
 Contrast Adjustable  
 Illumination Adjustable

**Operating elements**  
 1 joystick (Cursor & ENTER function)  
 2 buttons (Escape and Menu)

**LED indicators**  
 4 LEDs for laser status & alignment condition

**Power supply**  
 NiMH rechargeable  
 battery (7.2 V / 1.5 Ah)  
 Operating time approx. 10 hours (Based upon an  
 operating cycle of 25% active,  
 25% standby and 50% 'sleep'  
 mode)  
 Charge time approx. 6 hours  
 Charg. display 2 LEDs (green, red)  
 Charging temp. 10 °C to 40 °C (50 °F to 104 °F)  
 'Sleep' mode Adjustable

**Memory**  
 4 MB

**Outputs**  
 RS 232 (PC/Transducer)

**Housing**  
 ABS strengthened with steel fiber

**Environmental protection**  
 IP 65

**Relative humidity**  
 10% to 90%

**Temperature range**  
 Operation 0 °C to 60 °C (32 °F to 140 °F)  
 Storage -20 °C to 65 °C (-4 °F to 160 °F)

**Dimensions (HxWxD)**  
 220 x 100 x 55 mm / 8 5/8 in x 4 in x 2 1/5 in

**Weight**  
 approx. 690 g / 24 oz.

**CE conformity (for cable length < 3 m)**  
 Interference  
 emission EN 50081-1 (residential area)  
 Interference EN 50082-1

**User interface**  
 Menu-driven  
 Status line  
 On-screen help  
 Graphical results

**Units**  
 SI and US measurement units

**Comments**  
 User help files

**Language**  
 Several available



**Transducer**

Measurement principle Coaxial, reflected laser beam  
 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 55 °C (32 °F to 131 °F)  
 Dimensions approx. 107 x 70 x 49 mm  
 4 1/4 in x 2 3/4 in x 2 in

Weight approx. 177 g / 6 1/2 oz.

**Laser**

Laser type Ga-Al-As semiconductor laser  
 Wavelength (typical) 675 nm (red, visible)  
 Safety class Class 2; FDA 21CFR 1000 &  
 1040  
 Beam power < 1 mW  
 Safety precautions Do not look into laser beam

**Detector**

Measurement area unlimited,  
 dynamically extendible

Resolution 1 µm  
 Accuracy error less than 2.0%

**Inclinometer**

Measurement range 0° to 360°  
 Resolution ≤ 1°

**Reflector**

Type 90° roof prism  
 Accuracy error less than 1.0%  
 Environmental protection IP 67 (submersible, dustproof)  
 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. 100 x 41 x 35 mm  
 4 in x 1 5/8 in x 1 3/8 in  
 Weight: approx. 65 g / 2 1/2 oz.

**Carrying case**

Standard ABS, drop tested  
 (2 m / 6 1/2 ft.)  
 Case dimensions approx. 470 x 400 x 195 mm  
 18 1/2" x 15 3/4" x 7 3/4"

Weight, including all standard parts approx. 8.7 kg (19.2 lb)



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PRÜFTECHNIK Alignment  
 P.O. Box 12 63  
 D-85730 Ismaning, Germany  
[www.pruftechnik.com](http://www.pruftechnik.com)  
 Phone: +49 (0)89 99 61 60  
 Fax: +49 (0)89 99 61 62 00  
 eMail: [info@pruftechnik.com](mailto:info@pruftechnik.com)