

## USER MANUAL Fixturlaser GO Basic





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## **WELCOME TO OUR WORLD**

*Since the very beginning in 1984, ACOEM AB (formerly known as ELOS Fixturlaser AB) has helped industries throughout the world to achieve more profitable and sustainable production. We have reached where we are today by having the courage to think beyond the norm and follow slightly unconventional paths. We have had the courage to make mistakes and find new directions. Through our resolve, ambition and knowledge we have become a global player and a leader in innovative, user-friendly shaft alignment.*

## **SUSTAINABLE INNOVATIONS**

During our 30 years in this industry, we have explored, tweaked and tested more than anyone. Some might say we are incurable innovators whereas others might

say that we are highly focused. They both probably have a point. If we had not been devoted and ambitious, we would not have been the first in the industry to have a touch screen. Nor would we have been pioneers in the use of visible lasers and dual measurement heads.

Over the years, we have learnt to never compromise on quality and we are constantly in search of new, unexplored opportunities by combining advanced technology with design and function. By doing so, we have become the leading innovator in our industry. Not only do we minimize wear, production stoppages and costs, we also help save the environment. Natural resources are in short supply and if we can contribute to a more sustainable

world by making it a little bit straighter, we couldn't be happier.

## **TRUE COMMITMENT**

One reason for our success is our solid commitment. We have ensured that we remain attentive to constantly pick up on the needs of the market. Our expert employees and dedicated dealers in over 70 countries are undoubtedly our most important asset. Satisfaction and team spirit are of particular importance to us and are consistently at the top of our priority list. With experience from a wide range of industries and manufacturing processes, we are fully aware of the problems and needs of our end-customers. We are passionate about what we do and we are driven by the desire to eliminate anything in the industry

worldwide that may be even slightly out of line.

## **PURE USABILITY**

Our design and user-friendliness are carefully interwoven. As we develop new products, they also become cleaner, smarter, more functional and more robust. An industrial environment is demanding, infinitely more difficult to work in and inevitably subject to time pressure. There is no place for equipment with unnecessary functions, complicated interfaces and that is difficult to assemble.

Usability and user friendliness mean everything, not only to us but also to our customers. We have designed products that are easy to learn and can be incorporated quickly. By removing non-essential functions,

we make life less difficult for our users – and probably a little more difficult for our competitors.

## **END USER LICENSE AGREEMENT**

The rights to use the software in this product are offered only on the conditions that you agree to all the terms stated below, i.e. the end user agreement. By using this product you agree to be bound by this agreement. If you do not accept this agreement your sole remedy is to return the entire unused product, hardware and software, promptly to your place of purchase for a refund.

The user is granted a single license to use the software contained in this product. Use is only permitted on the hardware it has been installed on at the time of purchase. The software may not be removed from the hardware.

The software contained in the system is the property of ACOEM AB, any copying or redistribution is strictly prohibited.

Modifying, disassembling, reverse engineering or decompiling the system or any part thereof is strictly prohibited.

Disclaimer of warranties: To the maximum extent permitted by applicable law, ACOEM AB and its suppliers provide the software contained in this product 'as is' and with all faults, and hereby disclaim all other warranties either expressed, implied or statutory.

Limited liability: No liability shall exceed the price of the product, and the sole remedy, if any, to any claim shall be a right of return and refund.



ACOEM AB or its suppliers shall, to the maximum extent permitted by applicable law, not be liable to any indirect, special, incidental, punitive, and consequential damages arising from the use of the system or any part thereof, authorized or unauthorized.

ACOEM AB (formerly known as Elos Fixturlaser AB) is since mid-2014 a fully owned subsidiary of ACOEM Group, headquartered in Lyon, France. Other brands within ACOEM Group are 01dB, ONEPROD and METRAVIB. For more information please visit [www.acoemgroup.com](http://www.acoemgroup.com)



## **DECLARATION OF CONFORMITY**

In accordance with the EMC Directive 2004/108/EC, the Low Voltage Directive 2006/95/EC, including amendments by the CE-marking Directive 93/68/EEC & EC directives RoHS 2011/65/EU.

### **Type of equipment**

Alignment System

### **Brand name or trade mark**

FIXTURLASER GO Basic

### **Type designation(s)/Model no(s)**

I-0961 FIXTURLASER GO Basic D

I-0808 FIXTURLASER M2

I-0809 FIXTURLASER S2

### **Manufacturer's name, address, telephone & fax no**

ACOEM AB

Box 7

SE-431 21 Mölndal

Sweden

Tel: +46 31 7062800

Fax: +46 31 7062850

The following standards and/or technical specifications, which comply with good engineering practice in safety matters in force within the EEA, have been applied:

### **Standard/Test report/Technical construction file/Normative document**

Emission: EN 61000-6-3:2007.

Immunity: EN 61000-6-2:2005, EN 61000-4-2, -3, -4, -5, -6, -11.

EN 61010-1:2010

ISO9001:2008 Ref. No/ Issued by: DNV  
Certification AB Certification No. 2009-  
SKM-AQ-2704/2009-SKM-AE-1419.

The laser is classified in accordance with the  
International Standard IEC-60825-1:2007,  
USA FDA Standard 21 CFR, Ch I, Part  
1040.10 and 1040.11 except for deviations  
pursuant to laser notice No. 50, dated June  
24, 2007.

#### **Additional information**

The product was CE-marked in 2014.

As manufacturer, we declare under our sole  
responsibility that the equipment follows the  
provisions of the Directives stated above.

#### **Date and place of issue**

Möln dal 2014-09-01

#### **Signature of authorized person**

A handwritten signature in black ink, appearing to read 'Hans Svensson', written in a cursive style.

Hans Svensson, Managing Director

## **SAFETY**

Retain and follow all product safety and operating instructions. Observe all warnings on the product and in the operating instructions.

Failure to observe the safety pre-cautions and operating instructions can cause bodily injury, fire, and damage to the equipment.

Do not disassemble, modify or use the equipment in other ways than explained in the operating instructions. ACOEM AB will not accept any liability for such use.



## **WARNING!**

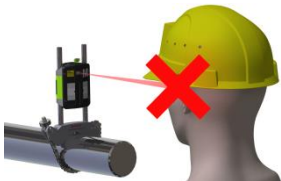
Do not mount equipment on running machines and take all appropriate measures to prevent unintentional start-up of machines. Make sure to fully comply with all appropriate shut down procedures, safety measures and regulations at worksite and local regulations regarding safety in a machine environment.

## LASER PRECAUTIONS

FIXTURLASER GO Basic uses laser diodes with a power output of  $< 1.0$  mW. The laser classification is Class 2.

Class 2 is considered safe for its intended use with only minor precautions required. These are:

- Never stare directly into the laser transmitter.
- Never shine the laser directly into anyone else's eyes.



COMPLIES WITH 21 CFR 1040.10 AND 1040.11  
EXCEPT FOR DEVIATIONS PURSUANT TO  
LASER NOTICE No. 50, DATED JUNE 24, 2007



### CAUTION!

USE OF CONTROLS OR ADJUSTMENTS OR PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Your system complies with the requirements in:

- IEC-60825-1:2007
- British Standard BS EN 60825-1
- DIN EN 60825-1

USA FDA Standard 21 CFR, Ch I, Part 1040.10 and 1040.11

## POWER SUPPLY

FIXTURLASER GO Basic is powered by three 1.5V LR-14 (C) Alkaline batteries or by corresponding 1.2V NiMH HR-14 Rechargeable Nickel Metal Hydride cells.

Only use high performance alkaline batteries.

Remove batteries when the system is stored for prolonged periods of time.



### **WARNING!**

USE OF ANY OTHER BATTERIES THAN THOSE SPECIFIED BY FIXTURLASER WILL CAUSE SEVERE DAMAGE TO THE DISPLAY UNIT AND CAN CAUSE

## RISK FOR PERSONAL INJURY!

Handle any batteries with care. Batteries pose a burn hazard if handled improperly. Do not disassemble and keep away from heat sources. Handle damaged or leaking batteries with extreme care. Please keep in mind that batteries can harm the environment. Dispose of batteries in accordance with local regulatory guidelines, if in doubt contact your local sales representative.



# CARE

## PACKING THE CASE



Space for optional accessories  
I-0083 Magnetic base ON/OFF  
I-0767 Extension fixture 49mm

## CLEANING

The system should be cleaned with a cotton cloth or a cotton bud moistened with a mild soap solution, with the exception of the detector and laser window surfaces, which should be cleaned with alcohol.



For the best possible function, the laser diode apertures, detector surfaces and connector terminals should be kept free from grease or dirt. The display unit should be kept clean and the screen surface protected from scratches.



Do not use paper tissue, which can scratch the detector surface.



Do not use acetone.

The chains on the V-block fixtures are delivered dry. If the system is used in highly corrosive environments, the chains should be oiled.

## **DATE OF CALIBRATION DISCREPANCY**

Our instruments store the electronic date of the latest calibration of the instrument. Due to production processes and storage time, this date will differ from the date of the calibration certificate. Hence, it is the date of the calibration certificate which is important and that indicates when the next calibration is due.

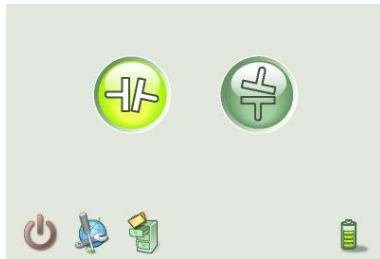


## MAIN MENU

The FIXTURLASER GO Basic is provided with different programs for specific purposes.



Press the red On/Off button to start the system and the Main Menu appears.



In the Main Menu you can select the program that you want to use.

In the Main Menu you will also find the Memory Manager and Global Settings.



Select icon with the arrow buttons and confirm with the OK button.

## APPLICATION PROGRAMS



Shaft Alignment Horizontal  
Machines



Shaft Alignment Vertical Machines

## MEMORY MANAGER



Memory Manager

## SYSTEM FUNCTIONS



Global Settings



Off

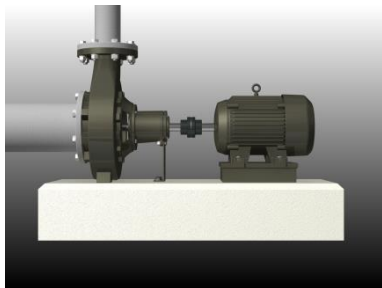


Battery indicator

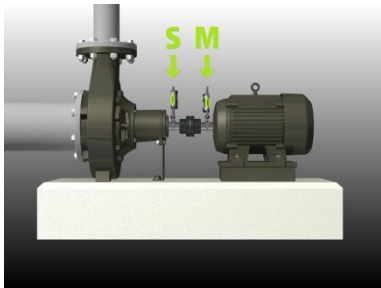
# SHAFT ALIGNMENT HORIZONTAL MACHINES

## INTRODUCTION

Shaft alignment: Determine and adjust the relative position of two machines that are connected, such as a motor and a pump, so that the rotational centers of the shafts are collinear, when the machines are working in a normal operating condition. Correction of horizontal shaft alignment is done by moving the front and the rear pair of one machine's feet, vertically and horizontally, until the shafts are aligned within the given tolerances. A tolerance table is available in the system.



The FIXTURLASER GO Basic system has two measuring units that are placed on each shaft by using the fixtures supplied with the system.



After rotating the shafts into different measuring positions the system calculates the relative distance between the two shafts in two planes. The distances between the two measuring planes, distance to the coupling and distances to the machine feet are entered into the system. The display box then shows the actual alignment condition together with the position of the feet.

Adjustment of the machine can be made directly, according to the displayed values.

The alignment results can be saved in the memory manager. The measurements in the memory manager can easily be transferred to a PC for further documentation purposes.



## PRE-ALIGNMENT FUNCTIONS

In an effort to obtain the best possible conditions for shaft alignment, it is necessary to perform some pre-alignment checks. In many cases it is necessary to make these checks in order to obtain precise alignment. It is often impossible to reach the desired alignment results if you do not make any pre-alignment checks.

Before going on site, check the following:

- What are the required tolerances?
- Any offsets for dynamic movements?
- Are there any restrictions for mounting the measuring system?
- Is it possible to rotate the shafts?
- What shim size is needed?

Before setting up the alignment system on the machine, check the machine foundation, bolt and shim condition. Also check if there are any restrictions in adjusting the machine (if e.g. there is enough space to move the machine).

After the visual checks have been performed, there are some conditions that have to be considered:

- Check that the machine has the right temperature for alignment.
- Take away old rusty shims (check that you can remove shims).
- Check coupling assembly and loosen the coupling bolts.
- Check soft foot conditions.

- Mechanical looseness.
- Check coupling and shaft run-out.
- Pipe work strain.
- Coarse alignment.
- Check coupling gap (axial alignment).

## MOUNTING

The sensor marked “M” should be mounted on the movable machine and the sensor marked “S” on the stationary machine. The sensors shall be assembled on their V-block fixture, and placed on each side of the coupling.

Hold the V-block fixture upright and mount it on the shafts of the measurement object.



Lift the open end of the chain, tension it so that the slack is removed and attach it to the hook.



Firmly tighten the chain with the tensioning screw. If necessary, use the supplied tensioning tool. Do not over-tighten. If the shaft diameter is too large the chains can be extended with extension chains.



Adjust the height of the sensor by sliding it on the posts until a line of sight is obtained for both lasers. Secure its position by locking both clamping devices on the back of both units



Connect the cables from the sensor units to the connectors on the display unit.

## STARTING THE PROGRAM



Start the program by selecting the Horizontal Shaft Alignment icon in the Main Menu and press OK.

When the program is started, a tolerance table will be displayed first.




Select tolerance and press OK.




Go to settings for selecting settings.

## TOLERANCE TABLE

Alignment tolerances depend to a large extent on the rotation speed of the shafts. Machine alignment should be carried out within the manufacturer's tolerances. The table provided in FIXTURLASER GO Basic can be helpful if no tolerances are specified. The suggested tolerances can be used as a starting point for developing in-house tolerances when the machinery manufacturer's recommended tolerances are not available. The tolerances are the maximum allowed deviation from desired values.

	 rpm	 mm/100	 mm
	-2000	0.08	0.10
▶	2000-3000	0.07	0.07
	3000-4000	0.06	0.05
	4000-6000	0.05	0.03
	MY TOL	0.06	0.08



### Select tolerance

The arrow to the left indicates selected tolerance.

Select tolerance by scrolling up/down and press OK.

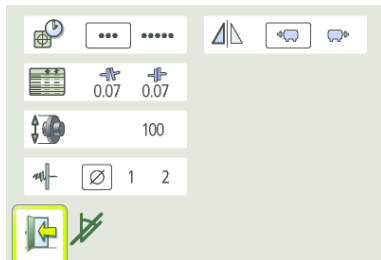


Select the OK icon and press OK to continue to shaft alignment.

## Enter a customized tolerance

1. Scroll down to the last row.
2. Enter tolerance name/rotation speed and press OK or scroll to the right.
3. Enter tolerance for the angle values and press OK or scroll to the right.
4. Enter tolerance for the offset values and press OK or scroll to the right.

## SETTINGS



These settings are unique for this application.

### Sampling time



Select normal or long sampling time.

To change sampling time, select the sampling time icon and press OK. Select normal or

long sampling time with the left/right buttons and press OK.

Long sampling time is suitable for high vibration environments.

### Tolerance table



Open the tolerance table by selecting the tolerance table icon and press OK.

### Unit of angularity



To change unit of angularity, select the unit of angularity icon and press OK. Enter another unit of angularity and press OK.



## Adjustable screen filter



Select filter off, filter type 1, or filter type 2.

To change adjustable screen filter, select the adjustable screen filter icon and press OK. Select filter off, filter type 1, or filter type 2 with the left/right buttons and press OK.

Note: For normal operation, the adjustable screen filter should be deactivated, and only activated in environments with severe vibrations.

## Screen flip



Select normal screen or screen flip.

To flip the screen, select the screen flip icon and press OK. Select normal screen or screen flip with the left/right buttons and press OK.

## Turn off inclinometers

If the inclinometers are not functioning properly, e.g. in high vibrations, they can be disabled.



Turns off the inclinometers.

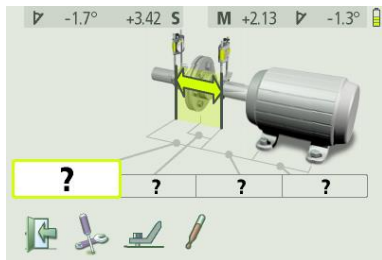
Measurement with disabled inclinometers is described at the end of this chapter.

## Exit



Exits the Settings and returns to the application.

## ENTER DIMENSIONS



The screen displays the movable machine.



Select the dimension boxes to enter dimensions.

Measure and enter dimensions.

You must enter all the distances. The distance between the sensors, the distance between the centre of the coupling and the M-sensor, the distance between the M-sensor and the first pair of feet and the distance between the first and the second pairs of feet.

## SOFTCHECK



Go to Softcheck for checking soft foot conditions.

See chapter “Softcheck”.

## TARGET VALUES



Go to Target Values for entering target values.

See chapter “Target Values”.

## MEASUREMENT METHOD



### Tripoint™ method

In the Tripoint method, the alignment condition can be calculated by taking three points while rotating the shaft at least 90°.

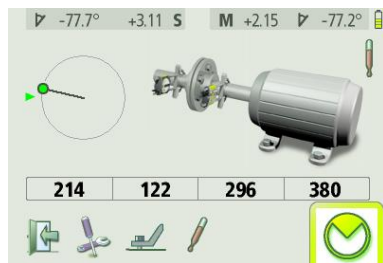
NOTE: The shafts should be coupled during measurement in order to achieve as reliable and accurate results as possible, when using the Tripoint method.

TIP: The larger the angle over which the three points are measured, the fewer moves and repeat measurements will have to be made. Minimum angle between readings is 45°.



A green flashing arrow suggests suitable measurement positions.

## MEASUREMENT POINT REGISTRATION

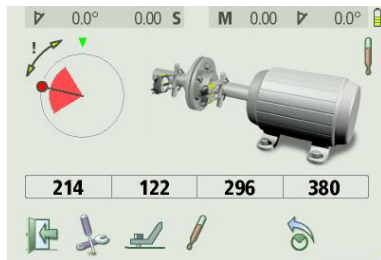


Set the sensors so that they are approximately at the same rotational angle at the first measurement position.



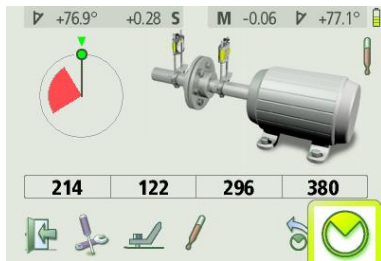
Select the register icon and press OK.

This registers the first reading.



Rotate the shafts to the next position. The shafts must be rotated over a minimum of  $45^\circ$ .

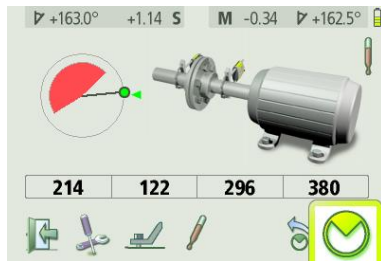
Green sector show permitted positions. Red sector show forbidden positions. The Register icon is not shown if the rotation is less than  $45^\circ$ .



Select the register icon and press OK.

This registers the second reading.

Rotate the shafts to the third position.

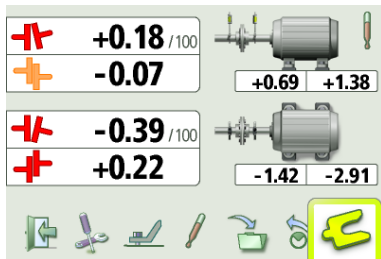


Select the register icon and press OK.

This registers the third reading.

TIP: By registering the third reading at the position 3 o'clock, the sensors will already be in the right position for horizontal alignment.

## MEASUREMENT RESULTS



The Measurement Result screen shows coupling values and foot values in both the vertical and horizontal direction.

The symbol to the left of the coupling values indicates the angular direction and offset, and also if the values are within tolerance.



Within tolerance (green).



Within double tolerance (yellow).



Out of double tolerance (red).

A symbol at the coupling indicates the status of the coupling.



Within tolerance.



## EVALUATING THE RESULT

The angle and offset values are used to determine the alignment quality. These values are compared with the alignment tolerances to determine whether correction is necessary. If suitable tolerances are selected in the tolerance table, the symbols described above indicate if the angle and offset values are within tolerance or not.

The foot values indicate the movable machine's foot positions where corrections can be made.

Depending on the result, the program will also guide the user.

First, the program will always recommend the user to save the measurement.

Then, if the measurement result shows that the machine is misaligned, the user will be recommended to go to shimming.

If the measurement result is within tolerance, the system will recommend the user to exit the measurement.

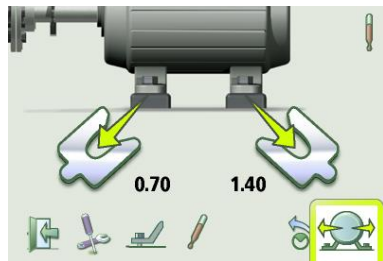


Save the measurement result.



Go to shimming.

## SHIMMING



When shimming is completed, continue to alignment for adjustments in the horizontal direction.



Go to alignment.

The Shimming screen shows foot values in the vertical direction as suitable shim values.

The arrows show if shims must be added or removed to adjust the machine in the vertical direction.

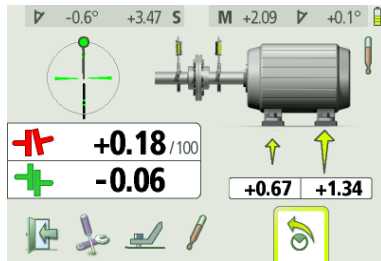
The check signs show that shimming is not needed.

## ALIGNMENT

If the machine has been adjusted vertically in the shimming screen, go directly to alignment in the horizontal direction.

If the machine has not been adjusted in the shimming screen, alignment in the vertical direction has to be done first.

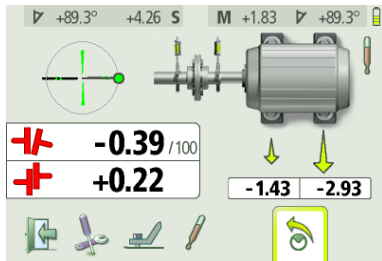
### Vertical direction



Rotate the shafts to the 12 or 6 o'clock position to make adjustments in the vertical direction. The angle guide helps you to reach the right position.

Adjust the machine vertically until the values for both angular and parallel alignment are within tolerance. The arrows at the feet show in which direction the machine shall be moved.

## Horizontal direction



Rotate the shafts to the 3 or 9 o'clock position to make adjustments in the horizontal direction. The angle guide helps you to reach the right position.

Adjust the machine horizontally until the values for both angular and parallel alignment are within tolerance. The arrows at the feet show in which direction the machine shall be moved.

## Check and re-measure

Rotate the shafts back to the 12 or 6 o'clock position and check that the machine is still within tolerance.

Alignment is now completed. To confirm the result, re-do the measurement.



Re-measure.

## OTHER FEATURES

### Looseness indicator



The system has a function for detecting coupling backlash and looseness in order to achieve optimal accuracy. The system will display the looseness indicator if one of the following conditions is met:

- The M and S units are more than  $3^\circ$  apart.
- The mutual angular position of the M and S units changes more than  $0.7^\circ$  at the following measurement points, compared to the first measurement point.

When the coupling backlash or looseness is eliminated to avoid any of the above conditions, the looseness indicator will automatically disappear.

### Target Value symbol



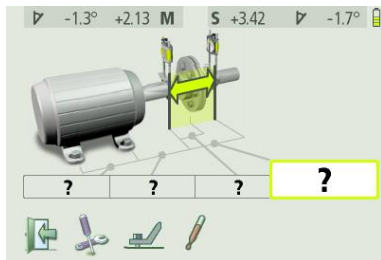
When Target Values are used in the measurement, this is indicated with the Target Value symbol in the upper right corner of the screen.

## Screen flip



The screen can be flipped to get the motor at the left side.

Select screen flip in settings.



## Measurement with disabled inclinometers

If the inclinometers are not functioning properly, e.g. in high vibrations, they can be disabled.

- Turn off the inclinometers in Settings.

When the inclinometers are disabled the system will work as normal with the following exceptions:

- The readings have to be registered according to the "clock method". Register the first reading at 9 o'clock, rotate the shafts 180° and register the second reading at 3 o'clock, rotate 90° back to 12 o'clock to register the third and final reading.

- During alignment, use the up and down buttons to change from horizontal to vertical view of the machine and vice versa.



Change view.





# SHAFT ALIGNMENT VERTICAL MACHINES

## INTRODUCTION

Shaft alignment: Determine and adjust the relative position of two machines that are connected, such as a motor and a pump, so that the rotational centers of the shafts are collinear, when the machines are working at a normal operating temperature. Correction of vertical shaft alignment is done by moving the flange of the machine until the shafts are aligned within given tolerances. A tolerance table is available in the system.



The FIXTURLASER system has two measuring units that are placed on each shaft by using the fixtures supplied with the system.



After rotating the shafts to different measuring positions, the system calculates the relative distance between the two shafts in two planes. The distances between the two measuring planes, distance to the coupling, number of bolts and pitch circle diameter are entered into the system. The display box then shows the actual alignment condition together with the position of the feet. Adjustment of the machine can be

made according to the values displayed. The angular misalignment is corrected by placing shims under the bolts and offset is corrected by moving them laterally.

The alignment results can be saved in the memory manager. The measurements in the memory manager can easily be transferred to a PC for further documentation purposes.

## PRE-ALIGNMENT FUNCTIONS

In an effort to obtain the best possible conditions for shaft alignment, it is necessary to perform some pre-alignment checks. In many cases it is necessary to make these checks in order to obtain precise alignment. It is often impossible to reach the desired alignment results if you do not make any pre-alignment checks.

Before going on site, check the following:

What are the required tolerances?

Any offsets for dynamic movements?

Are there any restrictions for mounting the measuring system?

Is it possible to rotate the shafts?

What shim size is needed?

Before setting up the alignment system on the machine, check the machine foundation, bolt and shim conditions. Also check if there are any restrictions in adjusting the machine (if e.g. there is enough space to move the machine).

After the visual checks have been performed, there are some conditions that have to be considered:

- Check that the machine has the right temperature for alignment?
- Take away old rusty shims (check that you can remove shims).
- Check coupling assembly and loosen the coupling bolts.
- Check soft foot conditions.

- Mechanical looseness.
- Check coupling and shaft run-out.
- Pipe work strain.
- Coarse alignment.
- Check coupling gap (axial alignment).

## **MOUNTING**

The sensors are mounted as described in chapter “Shaft Alignment Horizontal Machines”.

## STARTING THE PROGRAM

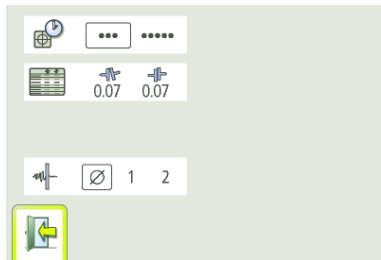


Start the program by touching the Vertical Shaft Alignment icon in the Main Menu.



Go to Settings for selecting measurement method and other settings.

## SETTINGS



These settings are unique for this application.

### Sampling time



Select normal or long sampling time.

To change sampling time, select the sampling time icon and press OK. Select normal or

long sampling time with the left/right buttons and press OK.

Long sampling time is suitable for high vibration environments.

### Tolerance table



Open the tolerance table by selecting the tolerance table icon and press OK.

The tolerance table is described in the chapter “Shaft Alignment Horizontal Machines”.

## Adjustable screen filter



Select filter off, filter type 1, or filter type 2.

To change adjustable screen filter, select the adjustable screen filter icon and press OK.

Select filter off, filter type 1, or filter type 2 with the left/right buttons and press OK.

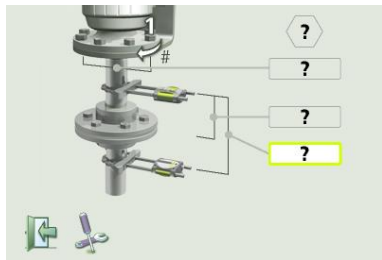
Note: For normal operation, the adjustable screen filter should be deactivated, and only activated in environments with severe vibrations.

## Exit

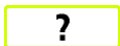


Exits the Settings and returns to the application.

## ENTER DIMENSIONS



The screen displays the movable machine.



Select the dimension boxes to enter dimensions.

Measure and enter dimensions.

You must enter all the distances. The distance between the sensors, the distance between the centre of the coupling and the M-sensor, and the pitch circle diameter and the number of bolts.

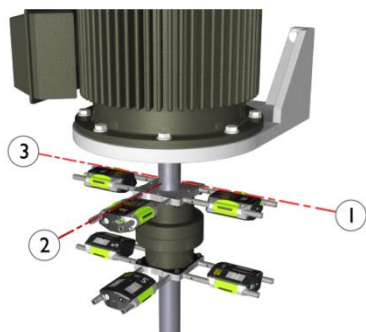
Up to 8 bolts can be entered.

## MEASUREMENT METHOD

In the Vertical Shaft Alignment program, machinery positions are calculated by taking three points with 180° of rotation.

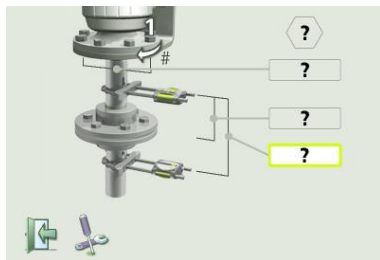


## MEASUREMENT POINT REGISTRATION



Place yourself at the position corresponding to the second measurement position, where it is easiest to turn the shafts through 180°.

Tip: Mark the positions 1, 2 and 3 before you start measuring.



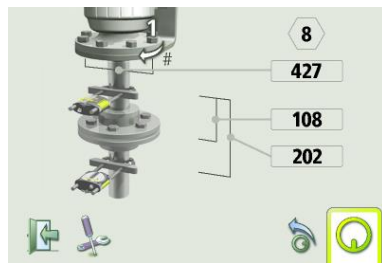
Set the sensors at approximately the same rotational angle at the first measurement position, with bolt number 1 to the right.



Select the register icon and press OK.

This registers the first reading.

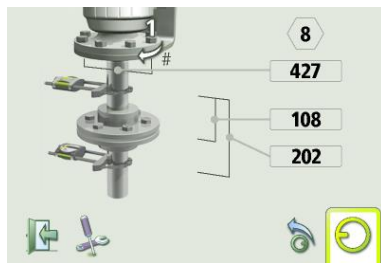
Rotate the shafts 90° to the second position (where you are standing).



Select the register icon and press OK.

This registers the second reading.

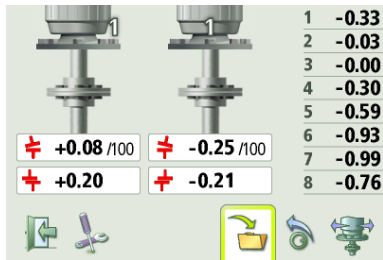
Rotate the shafts 90° to the third position, to the left.



Select the register icon and press OK.

This registers the third reading.

## MEASUREMENT RESULTS



The Measurement Result screen shows coupling values in both directions, and bolt values.

The symbol to the left of the coupling values indicates the angular direction and offset, and also if the values are within tolerance.



Within tolerance (green).



Within double tolerance (yellow).



Out of double tolerance (red).

A symbol at the coupling indicates the status of the coupling.



Within tolerance.

## EVALUATING THE RESULT

The angle and offset values are used to determine the alignment quality. These values are compared with alignment tolerances to determine if any correction is necessary. If suitable tolerances are selected in the tolerance table, the symbols described above indicate if the angle and offset values are within tolerance or not.

The foot values indicate the movable machine's foot positions where corrections can be made.

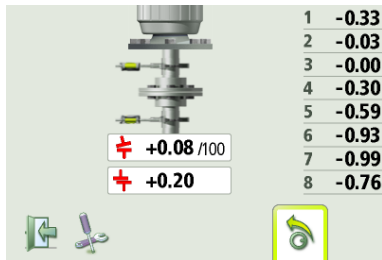


Save the measurement result.



Go to alignment.

## ALIGNMENT



Adjust the angular error by placing shims under the bolts as required (negative bolt value means that shims should be added.) The angular error is displayed live in the first direction when the sensors are placed in position number 1, and in the second direction when they are placed in position number 2.

Now adjust the parallel offset in both directions by moving the machine. The parallel offset is displayed live in the first direction when the sensors are placed in position number 1, and in the second direction when they are placed in position number 2.

Check that both the angular value and the parallel offset lie within the required tolerances once the adjustments are completed.

Alignment is now complete. To confirm the result, re-do the measurement.



Re-measure.



## SOFTCHECK™

### INTRODUCTION

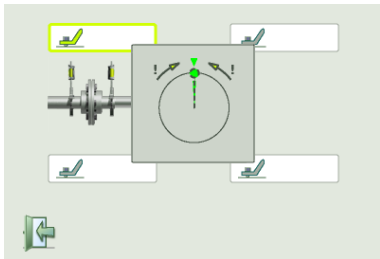
A soft foot condition needs to be corrected before any alignment takes place. If not, the measurement result will be of no value. It is more or less impossible to establish if there is a soft foot condition without using some kind of measurement tool. The FIXTURLASER Alignment System's built-in Softcheck program checks each foot and displays the result in mm or mils.

The Softcheck program is entered from the Horizontal Shaft Alignment program.

### STARTING THE PROGRAM



Start the Softcheck by selecting its icon in the Shaft Alignment program and press OK.

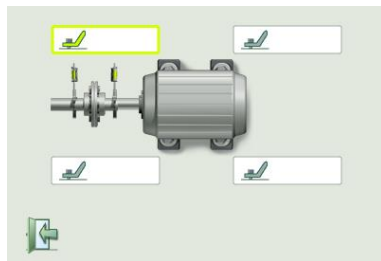


Place the sensors at the 12 o'clock position.

All the distances must be entered, before checking for soft foot.

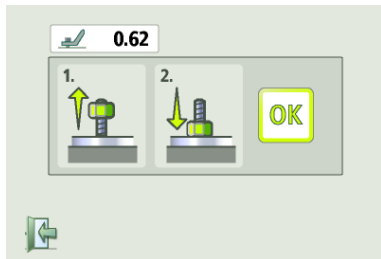
Check that all foot bolts are firmly tightened.

## MEASUREMENT VALUE REGISTRATION



Select a bolt of your choice and press OK.

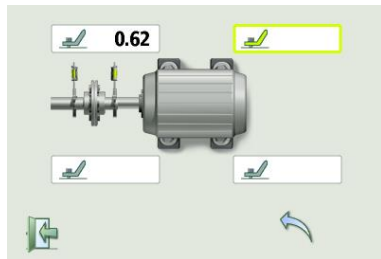




Loosen the bolt fully and then tighten it firmly, preferably with a dynamometric wrench.

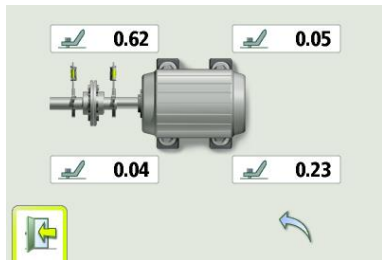


Press OK to register the measurement value.



Continue with the rest of the bolts.

Re-measurements can be done at any time by selecting the requested bolt again and press OK.



Make the necessary corrections and then check each foot again (the values show approximately how many shims that are needed to eliminate the soft foot).

## SHAFT ALIGNMENT



Return to shaft alignment by selecting the Exit icon and press OK.

# TARGET VALUES

## INTRODUCTION

Most machines develop a certain amount of heat while running. In the best case both the driving and the driven machine are affected equally requiring no input of compensation values. But in some applications the driven machine is either hotter, i.e. a pump for hot liquid, or cooler than the driving machine.

Machine manufacturers define the thermal expansion of machines differently, but in most cases you will find it as a factor of deliberate misalignment expressed in parallel offset and angular error.

In the FIXTURLASER GO Basic system, you can pre-set target values before starting

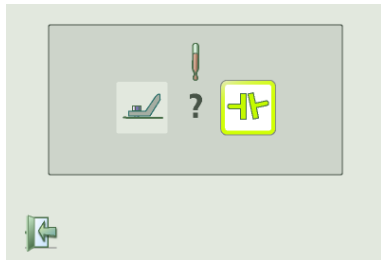
your alignment work. Accepted values are feet values and angle and offset values.

The entered values are target values. Target values mean that these are the values at which the machine should be positioned when not running (cold condition) in order to obtain correct alignment while the machine is running (hot condition).

## STARTING THE PROGRAM

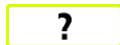
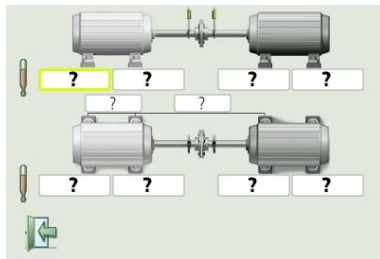


Start the Target Values program by selecting its icon in the Horizontal Shaft Alignment program and press OK.

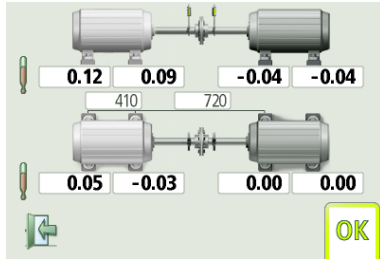


Select one of two ways to express the offset values: Feet values or angle and offset values.

## FEET VALUES

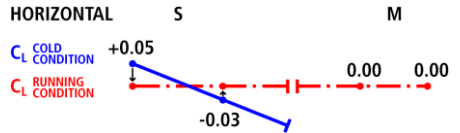
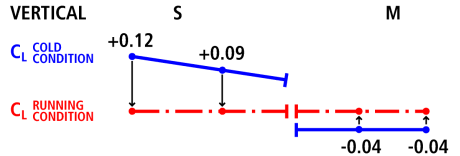


Select the feet value boxes. Enter target values for the feet in mm or mils according to the pre-set measurement unit together with the required distances.



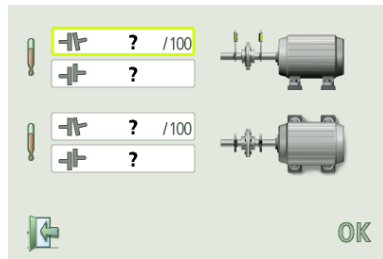
In the example above, the stationary machine will shrink vertically by 0.12 mm at the rear feet and 0.09 mm at front feet while the movable machine will expand 0.04 mm while running.

Horizontally, the rear feet will move 0.05 mm towards you and the front feet will move 0.03 mm away from you while the movable machine does not change its position while running.



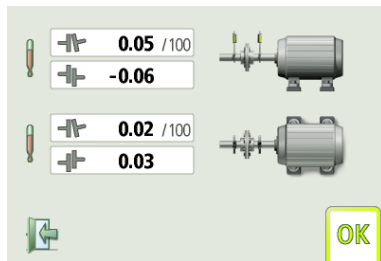
After having entered these feet values, the system calculates how the movable machine should be positioned (target position) in cold condition in order to obtain perfect alignment during running condition.

## ANGLE AND OFFSET VALUES



?

Select the value boxes and enter target values for the angles in mm/100 mm and target values for the offsets in mm, or mils/inch and mils, according to the pre-set measurement unit.



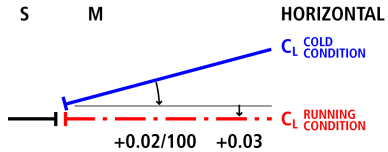
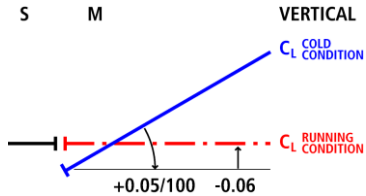
In the example above, the movable machine should be vertically adjusted to a position with an angular misalignment of +0.05 mm/100 mm and an offset of -0.06 mm.

Horizontally, the movable machine should be positioned with a +0.02 mm/100 mm angular misalignment and a +0.03 mm offset, in cold condition to obtain perfect alignment while running.

## SHAFT ALIGNMENT



Return to shaft alignment by selecting the Exit icon and press OK.











# MEMORY MANAGER

## FILE MANAGER

<b>M218 ALIGNED</b>	2010-10-20 11:12
<b>M218</b>	2010-10-20 10:55
<b>M217 ALIGNED</b>	2010-10-20 10:35
<b>M217</b>	2010-10-20 10:20
<b>M212</b>	2010-10-18 15:38
<b>M196</b>	2010-10-18 14:44
<b>M194</b>	2010-10-18 14:08
<b>M190</b>	2010-10-18 13:21

### Select file

Files can be selected by scrolling.



Scroll upwards.



Scroll downwards.

### Open file



Opens selected file.

### Archive



Goes to archive

(only available when it contains folders with older files).

### Delete



Deletes selected file.

### Exit

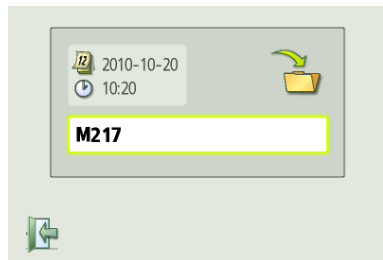


Exits the Memory Manager.

The Memory has the capacity to store approximately 1500 measurements. When the number of measurements, exceeds 100 measurements in the file manager, a folder with the older files will be automatically created. These folders can then be found in the archive.

NOTE: When there are a lot of files in the memory, processing can be slow.

## SAVE MEASUREMENT



When saving a measurement, both a text file and a picture file (bmp) are created.

### Enter file name

Enter file name with the keyboard, when the file name field is selected.

### Confirm



Confirm.

## TRANSFER FILES TO A PC

1. Turn on the display unit and stay in the Main Menu.
2. Attach the display unit to the PC with the USB cable. The display unit will be automatically detected and will appear as a mass storage device on the PC.

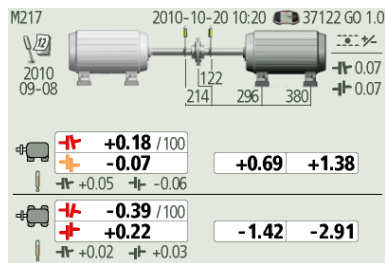
NOTE: The display unit must be turned on and in the Main Menu before it is connected to the PC in order for the display unit to appear on the PC.

3. The files in the display unit can be transferred to the PC using the ordinary functions in Windows Explorer (i.e. cut, copy or drag and drop).

In the PC there will be two files for each measurement; a picture file (.bmp) and a text file (.txt). The picture file shows the same picture as in the memory. The text file shows just the measurement data.

It is recommended that you delete the files from the display unit after they have been safely transferred in order to avoid full memory.

## SHAFT ALIGNMENT FOR HORIZONTAL MACHINES



The screen displays measurement results, dimensions, target values if any, file name, date and time, serial number of the display unit, program, program version, calibration date and tolerances.



Exits the measurement file.



Scrolls to measurement saved after the one displayed.

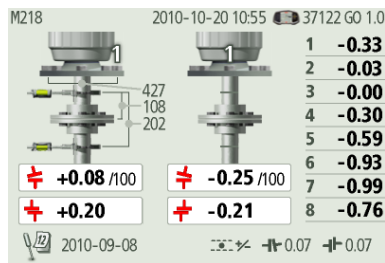


Scrolls to measurement saved prior to the one displayed.



Deletes the measurement file.

## SHAFT ALIGNMENT FOR VERTICAL MACHINES



The screen displays measurement results, dimensions, file name, date and time, serial number of the display unit, program, program version, calibration date and tolerances.



Exits the measurement file.



Scrolls to measurement saved after the one displayed.



Scrolls to measurement saved prior to the one displayed.



Deletes the measurement file.

## GLOBAL SETTINGS



The global settings menu includes settings that are universal for all applications.

For most of the settings, the current selection is shown in the icon.

The program version number is also shown on this screen.

### Date



#### Date settings

To change date, select the date icon and press OK. Enter year and press OK. Enter month and press OK. Enter day and press OK.

### Time



#### Time settings

To change time, select the time icon and press OK. Enter hour and press OK. Enter minute and press OK.

## Measurement unit



Changes between mm mode and inch mode

To change measurement unit, select the measurement unit icon and press OK. Select mm or inch with the left/right buttons and press OK.

## Battery type



Changes between standard batteries and rechargeable batteries

To change battery type, select the battery type icon and press OK. Select standard batteries or rechargeable batteries with the left/right buttons and press OK.

## Exit



Exits the global settings.



## DISPLAY UNIT GO BASIC D



1. Alfa-numeric keyboard
2. LED indicator
3. On/Off button
4. Navigation buttons
5. USB slave



## OPERATING MODES

The display unit has two operating modes: On and Off.

The display unit is turned on by a short press on the On/Off button.



To turn off the unit, select the Off icon in the main menu and press OK or while in the main menu press the On/Off button on the front.

In case the system fails to respond, remove the batteries and reinstall them.

## CONNECTIONS

- USB slave; for attaching the DU to a PC.



### **WARNING!**

To fulfill the IP 54 classification, the lids protecting the USB port must be properly sealed. Do not use the USB connection in wet conditions.

## **POWER SUPPLY**

FIXTURLASER GO Basic is powered by three 1.5V LR-14 (C) Alkaline batteries or by 1.2V NiMH HR-14 Rechargeable Nickel Metal Hydride cells.

Only use high performance alkaline batteries.

The operating time of the batteries is approximately 30 hours when the system is used for a typical alignment job. The power indicator in the main menu displays the capacity of the batteries. When the capacity is low, a battery low warning appears on the screen.

Remove batteries when the system is stored for prolonged periods of time.

## **BACKLIGHT**

If no button is pressed within 15 minutes the backlight will turn off automatically.

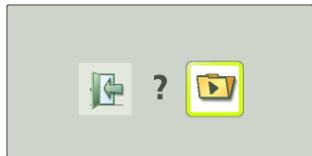
Press one of the navigation buttons to turn the backlight on again.

## **AUTO-OFF**

If no button is pressed within 60 minutes the system will turn off automatically.

## RESUME FUNCTION

If the system is turned off due to low power or auto-off, the resume function will save the data.



When the system is turned on again after battery exchange or auto-off, you will be prompted to choose whether to return to the stage when the system was turned off (i.e. resuming operation without loss of data) or start the main menu.

## UPGRADING THE SOFTWARE

Any upgrades of the software will be distributed or made available for download on our website.

1. Turn on the display unit and stay in the Main Menu.
2. Attach the display unit to the PC with the USB cable. The display unit will be automatically detected and will appear as a mass storage device on the PC.

NOTE: The display unit must be turned on and in the Main Menu before it is connected to the PC in order for the display unit to appear on the PC.

3. Copy the file containing the new software to the display unit.

NOTE: A zipped file must be unzipped before copying it to the display unit.

4. Disconnect the display unit from the PC and wait until the display unit turns itself off (this can take several minutes).
5. Turn on the display unit. The upgrade file will be automatically detected and installed. This can take approximately one minute. Wait until the Main Menu is displayed, and the DU is then ready to be used again.

Settings and stored measurements will not be affected by an upgrade.

The upgrade file will be automatically deleted from the display unit when the upgrade is completed.



## TECHNICAL SPECIFICATION – FIXTURLASER GO BASIC D

### Part. No. I-096 I

Housing material	High impact ABS plastic and TPE rubber
Operating temperature	-10 to 60°C ( 14 to 140°F)
Storage temperature	-20 to 70°C ( -4 to 158°F)
Relative humidity	10 – 90%
Weight	0.7 kg (1.54 lbs) with batteries
Dimensions	205 mm x 116 mm x 56 mm (8.1 in x 4.6 in x 2.2 in)
Environmental protection	IP 54
Flash storage memory	500 MB
Display	Colour TFT-LCD backlit
Display size	4” diagonal (84 x 56 mm)
Display resolution	400x272 pixels
Colour depth	16 000 000 colors
Interface	Membrane Switch Keyboard
Peripherals	1 USB slave port
Power supply	3 x 1.5V LR-14 (C) Alkaline batteries or 1.2V NiMH HR-14 Rechargeable Nickel Metal Hydride cells
Operating time	30 hours typical use

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LED indicator

Green/Red

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## TECHNICAL SPECIFICATION – M2 AND S2

### Part. No. M2 I-0808, S2 I-0809

Housing Material	Anodized aluminum and high impact ABS plastic over molded with TPE rubber
Operating Temp	-10 to 60°C (14 to 140°F)
Storage Temp	-20 to 70°C (-4 to 158°F)
Relative humidity	10 – 90%
Weight	170 g (6.0 oz)
Dimensions	79 mm x 77 mm x 34 mm (3.1 in x 3.0 in x 1.3 in)
Environmental protection	IP65 (Dust tight and protected against water jets)
Laser	650 nm class II diode laser
Laser line fan angle	6°
Laser line width (1/e <sup>2</sup> )	1.6 mm
Laser line divergence (full angle)	0.25 mrad
Laser power	< 1 mW
Measurement distance	Up to 5m
Detector	CCD
Detector length	30mm ( 1,2 in )
Detector angular subtense	30mrad/m (3mm/100mm per meter)

Detector resolution	1 $\mu\text{m}$
Measurement accuracy	0,3% $\pm$ 7 $\mu\text{m}$
Ambient light protection	Optical filtering and digital ambient light signal rejection
Inclinometer resolution	0,1 $^{\circ}$
Inclinometer accuracy	$\pm$ 0.5 $^{\circ}$
LED indicators	Laser transmission and status indicators

Specifications are subject to change without notice.





Brand of ACOEM

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