

USER MANUAL

# AT-100



**acoem**

CREATING ENVIRONMENTS OF POSSIBILITY



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## **WELCOME TO OUR WORLD**

*For more than 30 years, ACOEM 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 reliability solutions.*

## **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 field of laser alignment to have a touch screen. Nor would we have been pioneers in the use of visible lasers and dual measurement heads. Nor would we have been the first to bring a wireless vibration sensor for machine diagnostics. We are now the first to provide a combined alignment and diagnostic solution on standard mobile devices.

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, but 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 could not 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 group, 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 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.

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ACOEM 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 group is headquartered in Lyon, France. For more information, please visit [acoem.com](http://acoem.com)





## **DECLARATION OF CONFORMITY**

In accordance with  
2014/35/EU Low Voltage Directive  
2014/53/EU Radio Equipment Directive  
2012/19/EC Waste electrical and electronic  
equipment (WEEE)  
2011/65/EU Restriction of the use of certain  
hazardous substances (RoHS)  
2006/66/EU Battery Directive  
2001/95/EC CE marking directive

### **Type of equipment**

Alignment Tool

### **Brand name or trademark**

ACOEM

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

1-1238 M8

1-1239 S8

### **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**

EN 61000-6-3:2007.

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

EN 61010-1:2010

ISO9001:2015 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-60825-1:2014, USA FDA Standard 21 CFR, Ch 1, Part 1040.10 and 1040.11 except for deviations pursuant to laser notice No. 50, dated June 24, 2007.

The wireless device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions;

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**Additional information**

The product was CE-marked in 2021.

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

**Date and place of issue**

Mölnadal 2021-11-01

**Signature of authorized person**A handwritten signature in black ink, appearing to be '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

The system 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  
PERFORMANCE OF  
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 1, Part 1040.10 and 1040.11

## POWER SUPPLY

The sensors are powered by high-capacity rechargeable Li-Ion batteries mounted in the sensors or by the external power unit.



The sensors (M8 and S8) can be connected to their charger and charged while lying in the case. It is important that the lid of the case is open during the charging and that the charger is placed outside the case or else the system will not be charged properly and might be damaged.

Do not expose the power adapter to rain or wet conditions.

Always unplug the charger from the electrical outlet after charging.

Leaving a display unit or a measurement unit with an empty battery for a prolonged time can reduce the capacity of the battery or even damage the battery.

If the system is not used for a long time, charge the batteries to approximately 50-75% before storing the system, if kept in storage repeat this every 3-4 month (if needed).

When used in typical conditions the battery will sustain good capacity for approximately 2-3 years before needing replacement. Contact your sales representative for battery replacement.

The batteries contain safety circuitry to operate safely with the display unit. The unit can therefore only be used with the Li-Ion batteries supplied by ACOEM.

Improper replacement of batteries can cause damage and risk for personal injury.





## **WARNING!**

BATTERY REPLACEMENT  
SHALL ONLY BE  
PERFORMED BY  
AUTHORIZED ACOEM  
REPRESENTATIVES.

USE OF ANY OTHER  
BATTERIES THAN THOSE  
SUPPLIED BY ACOEM WILL  
CAUSE SEVERE DAMAGE TO  
THE SENSOR 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.

Only use the external power adapters supplied by ACOEM for use with the sensors. Using other power adapters can cause damage to the unit and personal injury.

## WIRELESS TRANSCEIVER

The sensors are fitted with Bluetooth wireless transceivers.

Make sure that there are no restrictions on the use of radio transceivers at the site of operation before using the wireless transceivers.



### **WARNING!**

Before using the wireless transceivers make sure that there are no restrictions on the use of radio transceivers at the site. Do not use on aircraft.

## CARE

### PACKING THE CASE



## CLEANING

The system should be cleaned with a cotton cloth, or a cotton bud moistened with a mild soap solution, except for 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.



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



Do not use acetone.

The chains on the V-brackets 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.

## APP

The following app can be available in the AT-100 system.



Horizontal Shaft Alignment



Download the app from Google Play or App Store.

The Horizontal Shaft Alignment app works with the sensors M8 and S8.

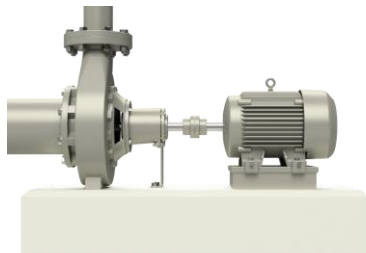




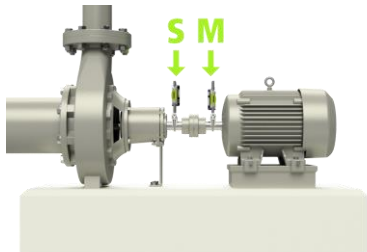
## **SHAFT ALIGNMENT HORIZONTAL MACHINES**

### **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 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 for further documentation purposes.



## PRE-ALIGNMENT FUNCTIONS

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 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 must 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).

The Softcheck function can be used for checking soft foot conditions.

## STARTING

Turn on the sensors.

Turn on the tablet.



Start the Horizontal Shaft Alignment app.

Go to settings for connecting the sensors if they are not already connected.



Settings.

Settings are described in the end of the chapter.

## 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-bracket and placed front to front on each side of the coupling.

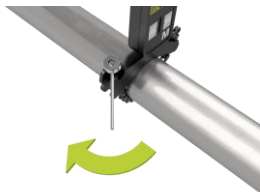
Hold the V-bracket upright and mount it on the shafts of the measurement object.



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. Use the supplied tensioning tool. Do not over-tighten. If the shaft diameter is too large the chains can be extended with extension chains.



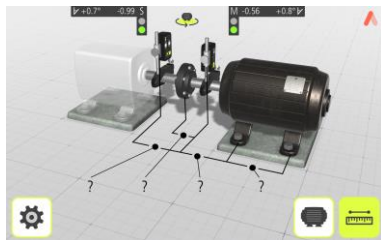
Adjust the height of the sensor by sliding it on the post until a line of sight is obtained for both lasers. Secure its position by locking the screw on the side of both units.



## MACHINE CONFIGURATION

The screen displays the movable machine.

The traffic lights show green when the laser hits the detector.

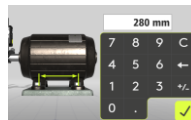
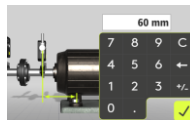
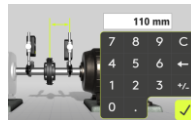
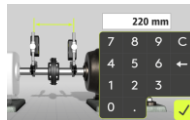


Enter distances and tolerances.



Touch the distance icon, to enter distances and tolerances.

## Measure and enter distances



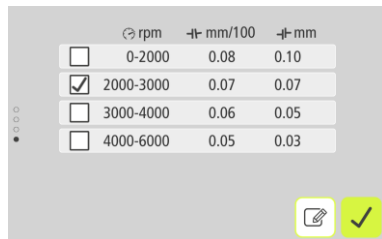
You must enter all the distances. The distance between the sensors, the distance between the center of the coupling and the M-sensor, the distance between the M-sensor and the first pair of feet and the distance between the first and the second pairs of feet.

## Enter tolerances

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.

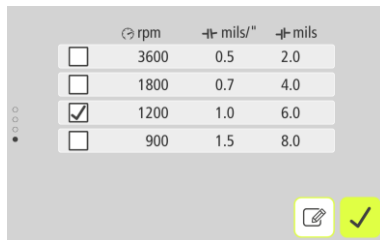
The provided table can be helpful if no tolerances are specified. It is also possible to enter customized tolerances.

The tolerances are the maximum allowed deviation from desired values.



	rpm	mm/100	mm
<input type="checkbox"/>	0-2000	0.08	0.10
<input checked="" type="checkbox"/>	2000-3000	0.07	0.07
<input type="checkbox"/>	3000-4000	0.06	0.05
<input type="checkbox"/>	4000-6000	0.05	0.03

Tolerance Table mm-mode



	rpm	mils/in	mils
<input type="checkbox"/>	3600	0.5	2.0
<input type="checkbox"/>	1800	0.7	4.0
<input checked="" type="checkbox"/>	1200	1.0	6.0
<input type="checkbox"/>	900	1.5	8.0

Tolerance Table inch-mode



Select the tolerance to use in the alignment by touching its check box to the left.



Confirm.



Touch the edit icon to enter and edit customized tolerances.

rpm  $\pm$  mm/100  $\pm$  mm

<input type="checkbox"/>	0-2000	0.08	0.10
<input checked="" type="checkbox"/>	2000-3000	0.07	0.07
<input type="checkbox"/>	3000-4000	0.06	0.05
<input type="checkbox"/>	4000-6000	0.05	0.03
<input type="checkbox"/>	?	?	?

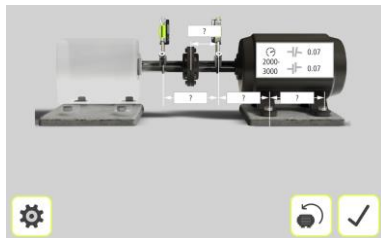
Editing mode for customized tolerances



## CONFIGURATION SCREEN



Go to the configuration screen for editing distances and tolerances.



### Distances



Opens window for entering distance.

### Tolerance table

⌚	⚖	0.07
2000-		
3000	⚖	0.07

Opens the tolerance table.

### Restart



Deletes all entered data and restarts the app.

### Confirm



Confirms the machine configuration.

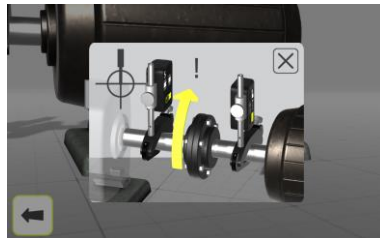
## SOFTCHECK™



Go to Softcheck for checking soft foot conditions.

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 Softcheck application checks each foot and displays the result in mm or mils.

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

The application will guide you to the different feet.

The first foot.

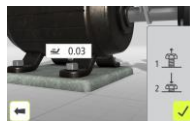


1. Loosen the bolt fully and wait a few seconds.
2. Tighten the bolt firmly, preferably with a torque wrench.
3. Register the measurement value.

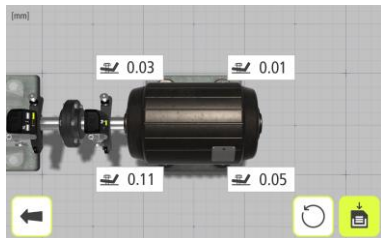


Touch the confirmation icon.

Repeat the procedure at the rest of the feet.



## Measurement result and Corrections



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).

Re-measurements can be done by touching the re-measure icon to re-measure all feet, or by touching a single foot to re-measure just that foot.



Re-measure all feet.



Re-measure a single foot.

The Softcheck result can be saved separately.



Touch the save icon to save the result.

(The measurement is saved in the app and can be handled further by generating a PDF report.)

## MEASUREMENT METHOD



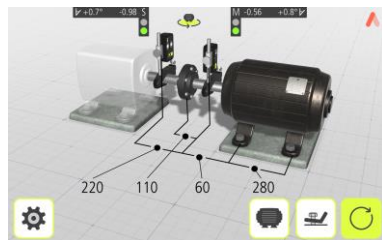
### **Tripoint™ method**

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

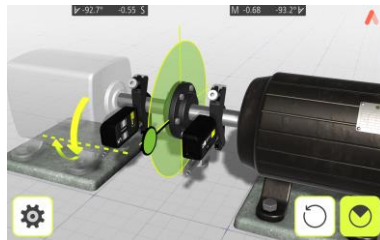
**NOTE:** The shafts should be coupled during measurement to achieve as reliable and accurate results as possible, when using the Tripoint method.

**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°.

## MEASUREMENT POINT REGISTRATION



Go to measurement.



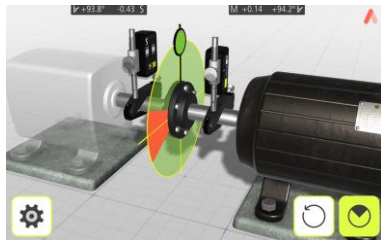
Set the sensors at approximately the same rotational angle at the first measurement position.



Touch the measurement icon, to register the first position.

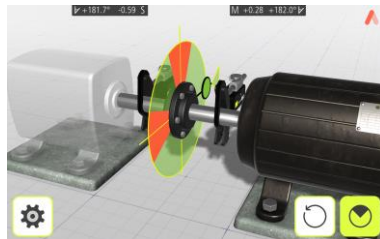
Rotate the shafts to the next position. The shafts must be rotated over a minimum of  $45^\circ$ .

Red sector shows already measured zone. The Register icon is not shown if the rotation is less than  $45^\circ$ .



Touch the measurement icon, to register the second position.

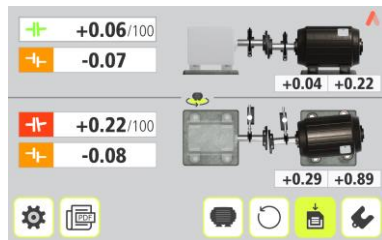
Rotate the shafts to the third position.



Touch the measurement icon, to register the third position.

TIP: When registering the third position at the 3 o'clock position, 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 if the values are within tolerance.



Within tolerance (green).



Within double tolerance (yellow and inverted).



Out of double tolerance (red and inverted).



When a coupling is in tolerance in one direction, this is indicated with a check symbol at the motor.



## EVALUATING AND SAVING 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 guide the user to save the measurement.



Touch the save icon to save the result.

(The measurement is saved in the app and can be handled further by generating a PDF report.)

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

If the measurement result is within tolerance and has been saved, the user will be guided to do a PDF report.

**NOTE:** It is necessary to make a PDF report for documenting and exporting the measurement from the app.

## VERTIZONTAL™

Align faster with the VertiZontal Moves feature.



First correct the vertical misalignment in the shimming screen. The system shows how much you need to remove or add shims to correct the machine vertically.



Next correct the horizontal misalignment in the alignment screen. The system goes live and will deliver real time values during the adjustment phase.

## SHIMMING



The Shimming screen shows foot values in the vertical direction as suitable shim values (0.05 mm / 1 mil).

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.

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



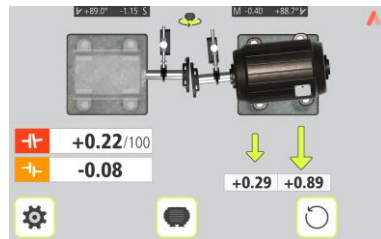
Go to alignment.

## ALIGNMENT

If the machine has been adjusted vertically in the shimming screen, only the horizontal direction remains to align.

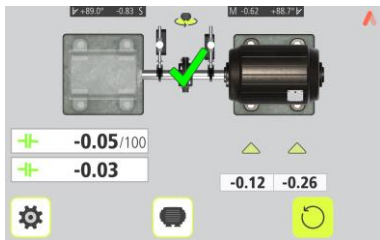
If the machine has not been adjusted in the shimming screen, alignment in the vertical direction must be done first.

### Horizontal direction



Rotate the shafts to the 3 or 9 o'clock position, if they are not already positioned there. 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 by the feet show in which direction the machine should be moved.

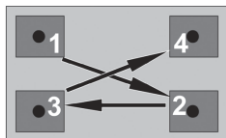


Alignment is now completed. To confirm the result, re-do the measurement.



Re-measure.

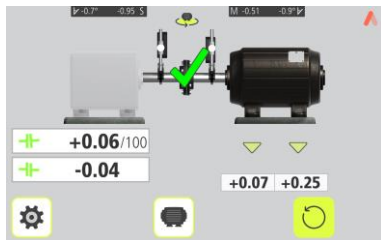
Tighten the bolts using the tightening sequence, as below.



## Vertical direction

To check or align in the vertical direction, rotate the shafts to the 12 or 6 o'clock position. 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 by the feet show in which direction the machine should be moved.

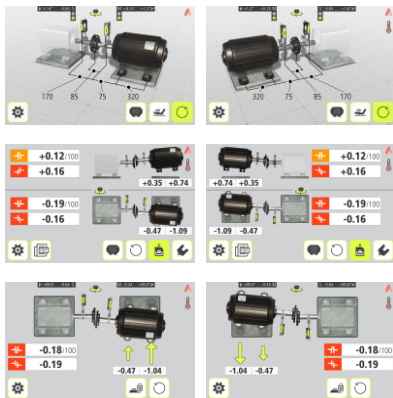


## SCREEN FLIP

Screen Flip enables the user to see the machine set-up from the actual view.



Touch the Screen Flip icon to change view.



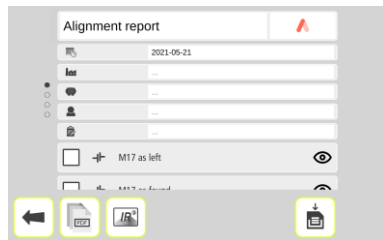
## PDF REPORT

A PDF report with several measurements can be generated.



Touch the PDF icon to create a PDF report.

(The PDF icon is found in the result screen and in the setting screen.)



## Enter data

Touch the white field at the top to enter a header for the PDF report.

Touch the white fields to enter date, site, machine, user and note.

## Select files



Touch the check box to the left to select files.

## Generate and save the PDF report



Touch the save icon to generate and save the PDF report.

Enter a file name and confirm.

The PDF report will then be shown, for further handling. It can be downloaded or shared using standard features of the tablet.



## View a file



Touch the eye to view a file.

## PDF-report list



Touch the PDF list icon to view existing PDF-reports.

## Customized logo

Touch the logo up to the right to change it.

Add your logo as a PNG or JPG file.

Maximum recommended file size is 500 kB.

Maximum space for logo on the PDF report is  
51 x 17 mm.

## OTHER FEATURES

### Looseness indicator



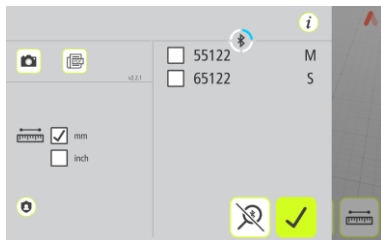
The system has a function for detecting coupling backlash and looseness to achieve optimum accuracy. The system will display the looseness indicator if one of the following conditions is met:

- The M and S units are more than  $3^\circ$  apart.

- The mutual angular position changes more than  $0.7^\circ$  from that when the first measurement point was taken.

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

## SETTINGS



### Info



Touch the Info icon to go to website for downloading user manual.

### Photo



Touch the Photo icon to take a photo.

## PDF report



Touch the PDF icon to create a PDF report.

## Privacy policy



Touch the Privacy Policy icon to go to website for information about privacy policy.

## Measurement unit

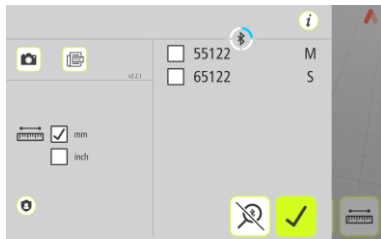


Select mm or inch.

## Bluetooth settings

When entering settings, the system starts searching for pairable sensors.

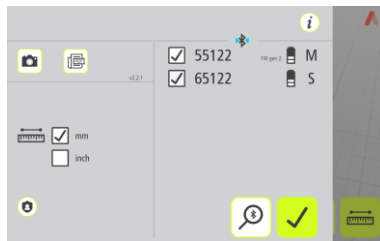
Only ACOEM sensors, that are switched on, will be discovered.



Pairable sensors will appear in the list.



Select the sensors to pair.  
(Maximum two units.)



Paired units are marked with a check mark.

If there are units paired to the app, they must be unpaired before it is possible to pair new units.



To unpair units, touch the  
check mark icon beside the  
units.

### **Search**



Starts searching for pairable sensors.

### **Cancel search**



Stops searching for pairable sensors.

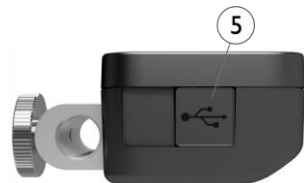
### **Confirm**



Exits the Settings and returns to the application.



## SENSORS M8 AND S8



1. ON/OFF button
2. Laser transmission indication LED
  - a. Green – laser transmission
3. Bluetooth indication LED
  - a. Continuously blue – paired and ready.
  - b. Flashing blue – searching/ready to pair
  - c. No light – Bluetooth disabled.
4. Battery status LED
  - a. One LED continuously red – less than 10% charge left.
  - b. One LED flashing red – less than 5% charge left.
  - c. One LED continuously orange – charging
  - d. One LED continuously green – fully charged.
5. Mini USB for charging



## **OPERATING MODES**

M8 and S8 units has two operating modes:  
On and Off.

Turn the units on and off by pressing the  
ON/OFF button firmly.

In case the units fail to respond, it is possible  
to turn it off by pressing down the ON button  
for more than 10 seconds.

## **CONNECTIONS**

### **Bluetooth connection**

The M8 and S8 units are connected by the  
built in Bluetooth connection. The units will  
automatically connect to the app when turned  
on if they are paired. See chapters about  
apps for instructions on how to pair  
measurement units.

## POWER SUPPLY

The M8 and S8 units are powered by a high-capacity rechargeable Li-Ion cell, or by the external power unit.

The operating time of the batteries is approximately 12 hours when the system is used for a typical alignment work (continuously on).

The M8 and S8 units can be charged with the supplied charger.

When the external power supply is connected, the unit will automatically start charging the batteries. This will be indicated by the battery status LED turning orange, when the unit is fully charged the LED will turn green.

The charging time is approximately 8 hours for fully drained batteries. The charging time will be longer if the unit is turned on while being charged.

When used in typical conditions the batteries will sustain good capacity for approximately 2-3 years before needing replacement. Contact your sales representative for battery replacement.

The batteries contain safety circuitry to operate safely with the unit. The unit can therefore only be used with the Li-Ion batteries supplied by ACOEM. Improper replacement of batteries can cause damage and risk for personal injury. Please refer to the chapter on safety for further instructions.

## TECHNICAL SPECIFICATION – M8 AND S8

### Art. No. M8 1-1238, S8 1-1239

Housing Material	Anodized Aluminum frame and ABS plastic
Operating Temp	0 to 50°C (32 to 122°F)
Storage Temp	-20 to 70°C (-4 to 158°F)
Long term storage temp	Room temp. 18 to 28°C (64 to 82°F)
Battery Charging Temp	0 to 40°C (32 to 104°F)
Relative humidity	10 – 90%
Weight	222 g (7.8 oz)
Dimensions	94 mm x 87 mm x 37 mm (3,7 in x 3,4 in x 1,4 in)
Environmental protection	IP54
Laser	650 nm class II diode laser
Laser power	< 1 mW
Measurement distance	Up to 2 m
Detector	Digital line sensor
Detector length	20 mm (0,8 in)
Detector resolution	0.01 mm
Measurement accuracy	1% ± 1 digit
Measurement error	< 0.5%±5µm
Inclinometer resolution	0.1°
Inclinometer accuracy	±3°
Wireless communication	Class I Bluetooth transmitter

Communication range	10 m (33 ft)
Connectors	1 USB Mini port; Charging: 5V, 0,5A
Power supply	High performance Li Ion battery or external power.
Operating time	12 hours continuous use (measuring)
Battery Charging time (system off, room temperature)	8 h
Battery Capacity	10.4 Wh
LED indicators	Wireless communication, laser transmission and battery status indicators

Specifications are subject to change without notice.





**acoem**

CREATING ENVIRONMENTS OF POSSIBILITY

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