USER MANUAL MEAX Level

CONTENT

WELCOME TO OUR WORLD

Since the very beginning in 1984, ACOEM 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 measurement tools.

MEAX

As ever-increasing demands are being placed on machine tools, we have arrived at the conclusion that an optimally functional machine forms the basis for better business. Modern machine tools must maintain a high level of flexibility, a high degree of utilization and a minimum downtime which calls for the correct geometry in all the machine's movements.

So we created MEAX and started to sketch solutions for machine tool measurements that, in our opinion, are so self-evident that they should have been developed a long time ago.

By performing fast measurements, possessing a logical user interface, smart applications and fewer complicated functions, we can now build a future for machine tool measurement.

END USER LICENSE AGREEMENT

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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

Levelling System

Brand name or trade mark

MEAX Instruments

Type designation(s)/Model no(s)

1-0984 MEAX LM 201

1-0985 MEAX LR 201

Manufacturer's name, address & phone no

ACOEM AB
Box 7
SE-431 21 Mölndal
Sweden

Phone: +46 31 7062800

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

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

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 2015.

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

Date and place of issue

Mölndal 2015-06-01

Signature of authorized person

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!

Make sure to fully comply with all appropriate safety measures and regulations at worksite and local regulations regarding safety in a machine environment. Do not operate a machine such as a lathe, if you have not received safety instructions and understand how to use the machine. Take all appropriate measures to prevent unintentional start-up of machines.

POWER SUPPLY

The MEAX equipment is powered by a high-capacity rechargeable Li-Ion pack mounted in the sensor.

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 sensor. The sensor can therefore only be used with the Li-Ion batteries supplied by MEAX.

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

WARNING!

BATTERY REPLACEMENT SHALL ONLY BE PERFORMED BY AUTHORIZED MEAX REPRESENTATIVES.

USE OF ANY OTHER BATTERIES THAN THOSE SUPPLIED BY MEAX 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 adapter supplied by MEAX. Using other power adapters can cause damage to the unit and personal injury.

WIRELESS TRANSCEIVER

The MEAX system is fitted with a Bluetooth wireless transceiver.

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

Make sure to use the supplied case when transporting the sensor unit.

Make sure to clean the bottom surface of the inclination sensors so no dust or dirt affects the measurements.

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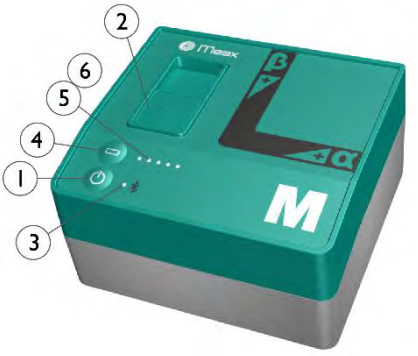
SENSORS MEAX LM 201 AND LR 201



1. ON/OFF button with status indication LED
    a. Continuously green – On
2. Mini USB for charging
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 button – press to instantly show the battery status (also works when the unit is switched off).
5. Battery status LED
    a. One LED flashing red – less 10% charge left.
    b. One LED double flashing red – less than 5% charge left.

c. One LED continuously orange – charging

d. One LED continuously green – fully charged.

6. Battery status LED when battery button is pressed

   a. Continuously green – battery status

   b. Rolling green – battery charging

7. Reference plane

8. Hole pattern for spindle holder

9. α reference

OPERATING MODES

MEAX LM 201 and LR 201 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 main connection for LM 201 and LR 201 units is the built in Bluetooth connection.

See Bluetooth settings in the chapter “MEAX Level App” for instructions on how to pair measurement units with the app.

POWER SUPPLY

The LM 201 and LR 201 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 measurement work (continuously on).

The LM 201 and LR 201 units can be charged with the supplied combined charger or any 5V USB charger or battery life extender.

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

The charging time is approximately 8 hours for fully drained batteries. (Charging to 50% takes approximately 2 hours.) The charging

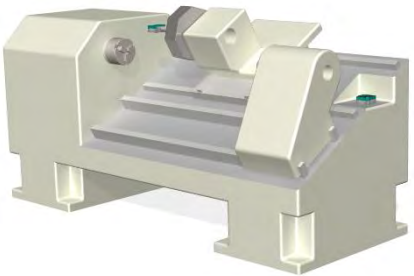
time will be longer if the unit is turned on while being charged.

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 MEAX. Improper replacement of batteries can cause damage and risk for personal injury. Please refer to the chapter on safety for further instructions.

MEAX LEVEL APP

INTRODUCTION



Download the MEAX Level app from Google Play or App Store.

See also www.meaxinstruments.com

The MEAX Level app is a companion app for performing high precision levelling measurements of machinery or other mechanical components. The app can also be used for pitch and roll measurements on moveable machine components or setting two objects parallel to each other, using the MEAX Level products.

The app guides the user through the complete measurement and evaluation process when using the high precision 2-axis MEAX Level sensors. Together, this simplifies the otherwise cumbersome and time consuming task to measure and adjust an entire machine or component into perfect levelling, setting it parallel to another object or making sure that it has no twist during movement.

The MEAX Level app works with the measurement units MEAX LM 201 and MEAX LR 201.

The app can be used either with both of the measurement units or just with MEAX LM 201.

When the app is used with both of the measurement units, MEAX LR 201 is used as reference and the values from MEAX LM 201 are shown relatively to the reference.

STARTING THE APP

Starting MEAX Level App.

MEASUREMENT

When entering the measurement screen raw data from the connected sensor(s) are displayed.

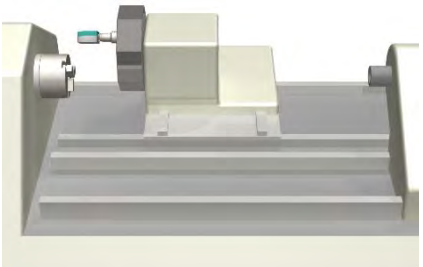
Functions before zeroing

Settings.

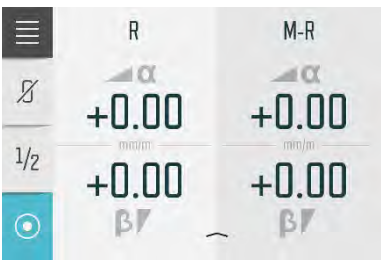
Zero the values.

Register a measurement point.

Go to list screen



Zero values.



Functions after zeroing

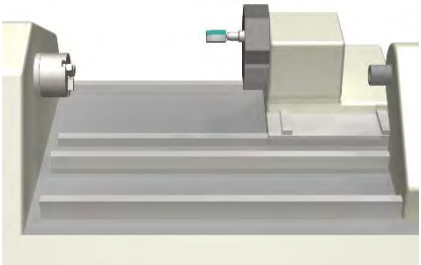
Settings.

Reset the values to raw data.

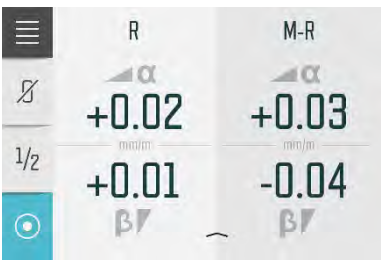
Halve the values.

Register a measurement point.

Go to list screen



Register measurement points.



LIST

Registered measurement points are collected in the list.

	T		α R	β R	α M-R	β M-R
1	11:12	REL	+0.00	-0.00	-0.00	+0.00
2	11:16	REL	+0.02	+0.01	+0.02	-0.01
3	11:16	REL	+0.02	+0.01	+0.03	-0.04
4	11:17	REL	+0.02	+0.01	+0.03	+0.02

Point number, time stamp, ABS/REL*, αR-value, βR-value, αM-R-value and βM-R-value are shown for each measurement point.

*) ABS = Absolute (raw), REL = Relative

Functions

Settings.

Delete

Share (Android)

List is shared as text file.

Share (iOS)

List is shared as text file.

Go to measurement screen

SETTINGS

Bluetooth settings

Touch the search icon to search for units that are pair able.

Search for Bluetooth units.

Pair able units will appear in the list.

Touch the white icon beside the units to pair.

Paired units are marked with a check mark.

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

TECHNICAL SPECIFICATION – MEAX LM 201 AND LR 201

Part No LM 201: 1-0984, LR 201: 1-0985

Housing material	Anodized Aluminum and ABS plastic
Operating temp	15 to 30°C (59 to 86°F)
Storage temp	-20 to 70°C (-4 to 158°F)
Battery charging temp	0 to 40°C (32 to 104°F)
Relative humidity	10 – 90%
Weight	386 g (13.6 oz)
Dimensions	77 mm x 84 mm x 45 mm (3.0 in x 3.3 in x 1.8 in)
Environmental protection	IP 65 (Dust tight and protected against water jets)
Inclinometer	High performance MEMS inclinometers
Calibrated measuring range	±50 mm/m
Internal resolution	0.001 mm/m
Displayed resolution*	0.01 mm/m
Inclinometer accuracy	1% ± 0.005 mm/m
Temperature error	0.015 mm/m/°C
Stabilization time	18 s

Warming up time	30 min
Wireless communication	Class I Bluetooth transceiver with multi-drop capability. BLE Bluetooth Low Energy (BT 4.0) and Classic Bluetooth.
Communication range	10 m (33 ft)
Peripherals – User accessible	1 USB Mini port; Charging: 5V, 0,5A
Power supply	High performance Li Ion battery or external power.
Operating time	12 hours continuously
Battery charging time (system off, room temp)	8 h
Battery capacity	10.4 Wh
LED indicators	Unit state, battery status and Bluetooth status.

*) Using MEAX Level app

Specifications are subject to change without notice.

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www.meaxinstruments.com