Control Panel - ML 10x

Power button

Battery indicator

+
-
M

Only for use in the User Menu

Battery

The laser is powered by a rechargeable 7.2VNi-Cd Makita™ type battery.
A complete recharge of the battery in the supplied charger takes about one hour.
The red LED on the charger will light during charging.
When the LED goes out, the battery is fully recharged.
A fully recharged battery has a capacity of approx. 20 hours of operation.

Inserting the battery

Open the battery compartment by pushing in the ribbed button.
The battery hatch will swing open, as shown.
Insert the battery into the laser with the contact end first and the ridge facing upwards.
Push the battery until it clicks into place.
Close the hatch - it will also click into place.

Laser Set Up

The laser can be placed on any surface which is within ±5° of horizontal. If the laser is outside of this working range, it will not be able to level and the LIMIT alarm will be shown.

When the laser starts rotating, it is ready for use.

Operating Instructions

Turn the laser on by pushing the Power button.

The battery indicator in the bottom left corner of the display shows the battery level:

= flat battery = full battery

If the battery indicator is empty and flashing, then there is only a very short working time remaining.

Whenever the laser is turned on, it always starts in full automatic mode.

The laser will automatically self-level. During self-levelling, the laser stops rotating and the beam flashes to indicate that the laser is not yet level. This will also occur if the laser is disturbed at any time while running in full automatic mode.

When the laser is level, it starts rotating with the fixed RPM of 600.

If the laser is positioned beyond its levelling range of ±5°, it won't be able to self-level and the display will show the message LIMIT until the laser is repositioned within this range.

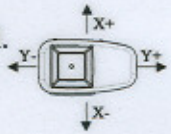
LIMIT

Checking and Adjusting the Rotor Laser

It is important that the precision of the rotor laser's horizontal calibration is checked periodically, particularly when the laser has been transported over long distances or, for example, been sent by post.
In most cases, any adjustment necessary can be made by the user.
Please follow the methods of checking and adjusting the laser described below:

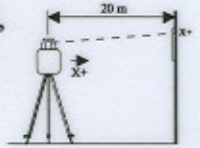
Checking calibration

1. Set up a level tripod 20m from a wall. Mount the laser on the tripod, facing the X+ direction towards the wall.



2. Turn the laser on and wait for self-levelling to complete.

3. Tape a piece of paper onto the wall, where the hand sensor receives the laser beam and mark the On Grade position (X+).



4. Turn the laser through 180°, so that X- is now facing the wall. Be careful not to alter the height of the laser while turning.

Checking calibration, cont

5. Mark the position where the hand sensor signals the On Grade position (X-).

6. Measure the difference between the two marked positions, X+ and X-. If the difference is 4 mm or less, then no calibration is necessary.

7. Repeat the above procedure for the Y-axis

Adjusting calibration

If the difference between the marks is more than 4 mm, then follow the procedure below to adjust the calibration.
If the difference between the marks is more than can be adjusted in calibration mode, then please contact your MIKROFYN dealer.

1. Push the M sign on the Control Panel to enter calibration mode.
CALBRT appears in the middle line of the display.

2. Continue to hold down the M sign and push the + sign to select the axis to be calibrated.
Push once to select the X-axis (X BIAS).

Adjusting calibration, cont

3. Release the M sign and a number will appear in the middle line of the display. This number corresponds to the correction made to the laser beam in mm per 100 m. i.e. every time the number is changed by 1, the beam moves 1 mm when measured at a distance of 100 m from the laser. The maximum correction possible is ±30 mm at 100 m.

4. Now, use the + or - signs to alter the correction. Move the laser beam up or down, as required, until it is centered between the two marks made when the calibration was checked.

When calibrating in the X+ direction, increasing the correction raises the beam, while decreasing the correction lowers the beam. The opposite is true when calibrating in the X- or Y- direction.

As soon as the adjustment has been made, the laser will self-level at the new position, allowing any further adjustment to be made.

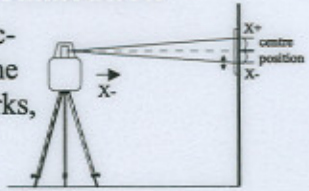
Adjusting calibration, cont

5. When the beam has been centered, leave calibration mode by holding down the M sign, X BIAS will appear in the display.
Push the - sign until CALBRT appears, then release the M sign.

6. Repeat the **Checking calibration** procedure to confirm that the calibration has been adjusted correctly.

Example of Adjusting calibration

The calibration in the X direction has been checked, and the difference between the 2 marks, X+ and X-, was 8 mm.



In calibration mode, select X BIAS.
In this example, the laser beam is too low in the X- direction.
To raise the beam, reduce the X BIAS correction.

Moving the beam 1 mm at a distance of 20 m from the laser is the same as moving the beam 5 mm at a distance of 100 m. Since the correction has units of mm per 100 m, it must be altered by 5 to move the beam 1 mm at 20 m.

In this case, the beam must be raised by approx. 4 mm to centre it between the two marks, and the X BIAS correction must be reduced by approx. 20 to do this. Once the adjustment has been made, the laser will self-level with the new setting, and any further adjustments to X BIAS can be made.

When the beam position is satisfactory, leave calibration mode and repeat the **Checking calibration** procedure to confirm that the calibration has been adjusted correctly.

User Menu

To enter the User Menu: Push the M sign and hold it down for about 2 seconds.

You select a Menu Option by holding the M sign down at the same time as you push the + or - signs.

Once you have found the Menu Option you want to change, you must let go of the M sign. You will now be at a selected Menu Option.

Each Menu Option has various values.

You can change these values by pushing the + or - signs.

Once you have changed the value in the menu, you save the setting by turning off the laser.

The Menu Options in the User Menu will be described on the following pages.
The names of the Menu Options may vary, if the language has been changed.

User Menu, cont

Contents of User Menu:

CALBRT
X BIAS
Y BIAS
LEVEL ALERT
LANGUA

CALBRT

This menu option just indicates that you have entered the User Menu.

X BIAS

This menu option is used to calibrate the X Bias.
The calibration of the X Bias is described at page 8.

Y BIAS

This menu option is used to calibrate the Y Bias.
The calibration of the Y Bias is described at page 8.

User Menu, cont

LEVEL ALERT

This menu option is used to alert the user if the laser is disturbed while operating in self-levelling mode. This allows the position of the laser to be checked before work is continued.

You can choose between **ON** and **OFF**.

The default setting is **OFF**

As the display only has six characters, the name "LEVEL ALERT" is displayed as rolling text.

User Menu, cont

LANGUA

This menu option is used to choose between various languages.

For the moment, you can choose between **ENGLISH, FRENCH** and **DANISH**.

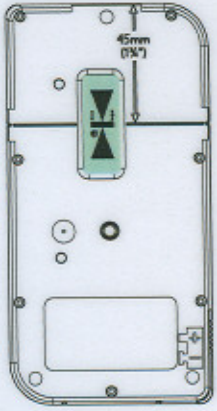
The default setting is **ENGLISH**.

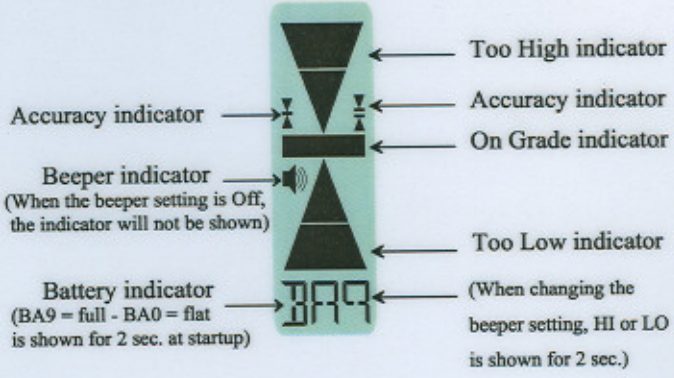
Within a short time more languages will be added to this menu option.

HS 10 Hand-held Receiver

Control Panel

Back





HS 10 Hand-held Receiver

Functions

Power button

Accuracy button
The HS 10 has 2 settings for accuracy.
The left indicator indicates the closest accuracy.

Beeper button
The HS 10 has 3 settings for the Beeper.
High, Low and Off.
The beeper will beep quickly when too high, slowly when too low and constantly when on-grade.

Save setting
1. Adjust the HS 10 to the settings you desire to use continually.
2. Push the and at the same time, holding them down while you push the .

Technical Specifications

Working range (with laser sensor):	150 m
Accuracy:	5mm/100m
Levelling range:	±5°
Rotational speed, rpm:	600
Laser/Optics:	
Diode:	635 nm
Maximum output:	2.5 mW
Laser class:	Class 3A
Battery:	
7.2V, 1.4Ah, Makita™ type	
Battery life, approx:	20 hours
Water Resistant:	Yes (IP67)
Dimensions (L×W×H), mm:	195×110×180
Weight:	1800 g