

# FR 77-MM & FR 77-MM Tracking

## USER MANUAL



Dear customer,

Thank you for your confidence in us having purchased a **geo-FENNEL** instrument.  
This manual will help you to operate the instrument appropriately.

Please read the manual carefully - particularly the safety instructions. A proper use only guarantees a longtime and reliable operation.

geo-FENNEL  
Precision by tradition.

1. Supplied with	<b>A</b>
2. Features	<b>B</b>
3. Power supply	<b>C</b>
4. Operation	<b>D</b>
5. Safety notes	<b>E</b>

## **A** SUPPLIED WITH

- Laser receiver FR 77-MM
- 4 x AA alkaline batteries
- Clamp for levelling rod
- Special mount
- User manual

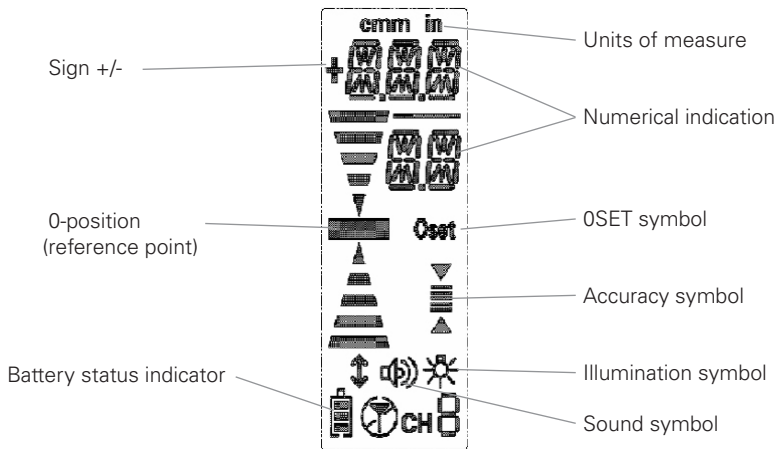
3 accuracy settings	$\pm 2 \text{ mm} / \pm 5 \text{ mm} / \pm 9 \text{ mm}$
mm-indication accuracy	$\pm 1 \text{ mm}$
Working range with class 2 laser	150 m
Working range with class 3R laser	350 m
Length of the receiving window	125 mm
Length of the receiving area for mm-indication	100 mm
Offset range (OSET) / from reference point	$\pm 20 \text{ mm}$
Measuring units	mm, cm, in, in-fraction
Signal tones	3
LCD display	front, rear
LED height indicators	front, side, rear
Power supply / Operating times	Alkaline / 110 h
Temperature range	$-10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$
Display illumination	yes
Magnets	top, side
Bubble vials	top, side
Dust / water protection	IP 67
Dimensions	170 x 77 x 32 mm
Weight	0,5 kg

## FEATURES

- For use with red beam rotating lasers
- Extra long receiving window
- mm-indication of height difference between the laser plane and the reference point
- The segments of the display increase / decrease proportionally
- The „0“ position can be changed (Offset)
- Display illumination (front and rear)
- Robust clamp
- Special mount for diverse connections, e. g. scaffolding

# B FEATURES





ON/OFF button

Power ON/OFF the receiver



Accuracy button

Select accuracy setting



UNITS button

Select units of measure



Sound/illumination button

Sound and/or illumination ON/OFF



OSET button

Set a relative ZERO position

## C POWER SUPPLY

### INSERT / REPLACE BATTERIES

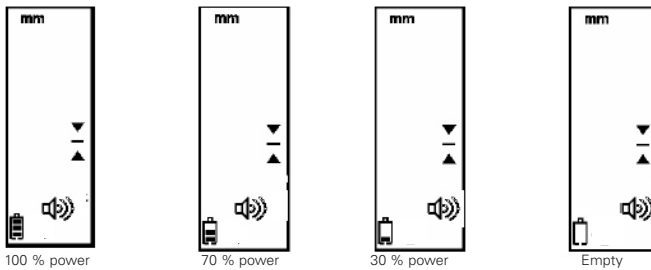
Open the battery compartment cover on the rear of the receiver and insert 4 x AA alkaline batteries. Refer to the battery compartment diagram to ensure correct polarity. Close the battery compartment cover.

Always remove the batteries if the receiver will not be used for a long period of time to avoid leakage.



### BATTERY STATUS INDICATOR

The FR 77-MM front LCD display has four power status symbols. The receiver will automatically power off when the batteries are empty.



### AUTOMATIC POWER-OFF

If the receiver does not receive a laser beam or is not operated for 10 minutes it will automatically power off.

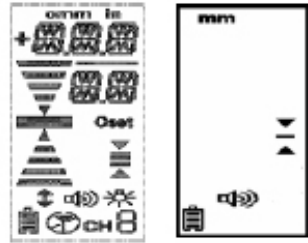
## OPERATION

D

### POWER ON

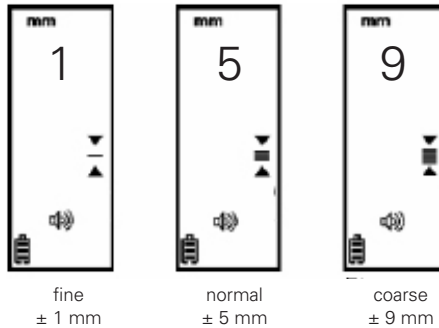
Press the ON/OFF button once to power on the receiver. The LCD display will initialise taking about 0.5 seconds when all the display symbols are illuminated (see diagram, left).

The receiver is now ready for use (see diagram, right).



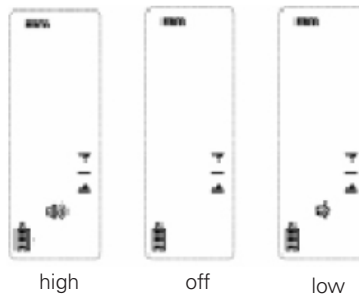
### SELECT ACCURACY SETTING

Power on the unit and select the receiving accuracy fine, normal or coarse by pressing the „accuracy button“. The default accuracy setting following Power is „Fine“.



### SWITCH ON /OFF THE SOUND

Power on the receiver and press the button „Sound/illumination“ to select the sound and volume required. The symbols in the LCD display show the status of the sound and volume.



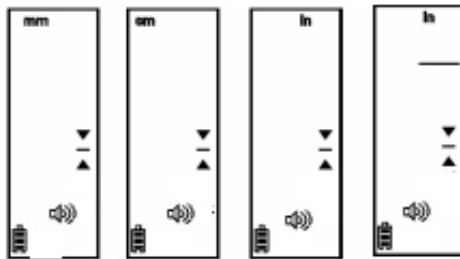
### SWITCH ON/OFF THE DISPLAY ILLUMINATION

Power on the receiver and keep the button „Sound/illumination“ pressed until the illumination is on.



### SELECT THE UNITS

Power on the receiver and press the „UNITS“ button successively until the required unit symbol appears in the display.



Millimetre

Centimetre

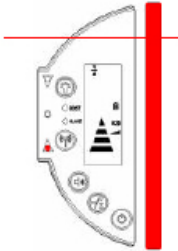
Inch

Inch (fraction)



## RECEIVE A LASER BEAM

Power on the receiver and make all required settings (i. e. accuracy fine, sound high). Carefully move the receiver up and down to detect the laser beam.



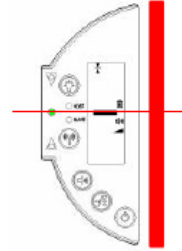
Indication 1

The laser beam is high  
„arrow“ is illuminated.  
Acoustic signal:  
Slow beep.  
->Move the receiver up.



Indication 2

The laser beam is low  
„arrow“ is illuminated.  
Acoustic signal:  
Fast beep.  
->Move the receiver down.



Indication 3

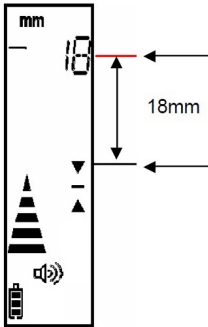
The LED „0-position“  
bar is illuminated.  
Acoustic signal:  
Continuous beep.  
-> On level.

## PLEASE NOTE:

If the distance between the rotating laser and the receiver is less than 1 m erroneous measurements may occur.

## MM INDICATION

If the reference level of the receiver is e. g. 18 mm below the laser beam this height difference will be displayed by an exact numerical value (see the left diagram).



further examples



The laser beam is exactly on-level.



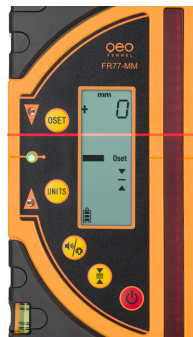
The laser beam is 19 mm above the reference point (move the receiver up).



The laser beam is 35 mm below the reference point (move the receiver down).

## RELATIVE 0-POSITION (REFERENCE POINT)

Within the range of  $\pm 20$  mm of the standard reference point (0-position) a relative 0-position can be set. Press the „0SET“ button when the laser beam hits the receiving window (the „0SET“ symbol will flash on the display). This current position of the laser beam is now set as the relative 0-position on the receiver. Press the „0SET“ button to return to the default mode.



## APPLICATION

Connect the clamp to the receiver for use with a laser pole, levelling staff or similar accessory. For optimum accuracy always level the bubble vials on the receiver before taking measurements.

## SPECIAL MOUNT

To increase the versatility and scope of the receiver a special mount is provided (see illustrations).



## E SAFETY NOTES

### SAFETY INSTRUCTIONS

- Follow up the instructions given in the user manual.
- Do not stare into the beam. The laser beam can lead to eye injury. A direct look into the beam (even from greater distance) can cause damage to your eyes.
- Do not aim the laser beam at persons or animals.
- The laser plane should be set up above the eye level of persons.
- Use the instrument for measuring jobs only.
- Do not open the instrument housing. Repairs should be carried out by authorized workshops only. Please contact your local dealer.
- Do not remove warning labels or safety instructions.
- Keep the instrument away from children.
- Do not use the instrument in explosive environment.
- The user manual must always be kept with the instrument.

### CARE AND CLEANING

Handle measuring instruments with care. Clean with soft cloth only after any use. If necessary damp the cloth with some water. If the instrument is wet clean and dry it carefully. Pack it up only if it is perfectly dry. Transport in original container / case only.

### SPECIFIC REASONS FOR ERRONEOUS MEASURING RESULTS

Measurements through glass or plastic windows; dirty laser emitting windows; after the instrument has been dropped or hit. Please check the accuracy.

Large fluctuation of temperature: If the instrument will be used in cold areas after it has been stored in warm areas (or the other way round) please wait some minutes before carrying out measurements.

### ELECTROMAGNETIC ACCEPTABILITY (EMC)

It cannot be completely excluded that this instrument will disturb other instruments (e.g. navigation systems); will be disturbed by other instruments (e.g. intensive electromagnetic radiation nearby industrial facilities or radio transmitters).

### CE-CONFORMITY

The instrument has the CE-mark according to EN 61000-6-3:2007, EN 61000-6-1:2007, IEC 60825-1:2008-05.

## WARRANTY

This product is warranted by the manufacturer to the original purchaser to be free from defects in material and workmanship under normal use for a period of two (2) years from the date of purchase. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or similar model at manufacturers option), without charge for either parts or labour. In case of a defect please contact the dealer where you originally purchased this product. The warranty will not apply to this product if it has been misused, abused or altered. Without limiting the foregoing, leakage of the battery, bending or dropping the unit are presumed to be defects resulting from misuse or abuse.

## EXCEPTIONS FROM RESPONSIBILITY

1. The user of this product is expected to follow the instructions given in the user manual. Although all instruments left our warehouse in perfect condition and adjustment the user is expected to carry out periodic checks of the product's accuracy and general performance.
2. The manufacturer, or its representatives, assumes no responsibility of results of a faulty or intentional usage or misuse including any direct, indirect, consequential damage, and loss of profits.
3. The manufacturer, or its representatives, assumes no responsibility for consequential damage, and loss of profits by any disaster (earthquake, storm, flood etc.), fire, accident, or an act of a third party and/or a usage in other than usual conditions.
4. The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits due to a change of data, loss of data and interruption of business etc., caused by using the product or an unusable product.
5. The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits caused by usage other than explained in the user' manual.
6. The manufacturer, or its representatives, assumes no responsibility for damage caused by wrong movement or action due to connecting with other products.

**geo-FENNEL GmbH**

Kupferstraße 6

D-34225 Baunatal

Tel. +49 561 / 49 21 45

Fax +49 561 / 49 72 34

info@geo-fennel.de

www.geo-fennel.de

**Technische Änderungen vorbehalten.  
All instruments subject to technical changes.  
Sous réserve de modifications techniques.**



04/2014

**Precision by tradition.**

**geo**  
F E N N E L