

## 4. Power Supply

7.4 V DC internal lithium ion rechargeable battery or 12 V DC external rechargeable battery via connection cable 0117.02.

### 4.1 Battery Charging

- Only charge using the NE-type or a 12 V DC external rechargeable battery via connection cable 0117.02.
- Keep charger dry and only use indoors.
- Take the laser out of the carrying case when charging
- Permissible charging temperature 0°C to + 40°C, as best + 10°C to + 25°C.
- After approx. 5 hours the device is fully charged. The display turns off or the battery symbol shows a full battery.
- Low ambient temperatures reduce the running time, high temperatures reduce the battery life.
- Damaged batteries must be disposed.

## 5. Inclination Works in x and/or y Axes

**Please note:** Inclination setting is only possible without automatic levelling function.

- Align your plumb laser to the inclination axis.
- Disable automatic levelling function
- Set inclination by points of reference, roughly more than  $\pm 5\%$  by gently tilting the device forwards - finely with the arrow buttons.

## 6. Adjustment

### 6.1. Checking the Adjustment

Set up the instrument upright and mark the laser beam at the required measuring distance. Turn the laser by 180° and mark again. If the adjustment is correct, the first marking does not deviate from the second.

If there is a deviation, the target axis is located in the middle between the first and second marking.

### 6.2. Adjustment

The laser can be adjusted on site without having to open the device. For safety reasons, however, adjustment should only be carried out by authorized personnel. See special adjustment instructions for more information.

## 7. Troubleshooting

1. No laser beam - check battery charge.
2. Low range - clean laser beam exit window.
3. Laser beam blinks slowly - move device into the levelling range by tilting it forwards. If the error is not corrected within a time frame of 2 ½ minutes, the device will switch off automatically.
4. Laser switched off automatically (kick guard) - see 3.3.

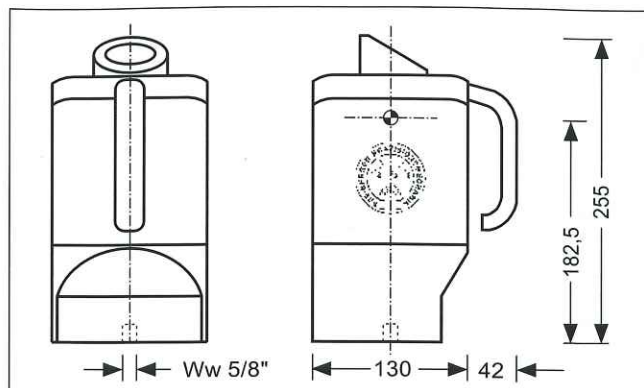
## 8. Maintenance

The laser does not require special maintenance. Keep the electrical connections clean. Do not clean with water spray. Clean glass parts with a soft, clean cloth. Store dry. Always transport the laser in its original case.

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## 9. Dimensional Sketch



## 10. Technical Specifications

Laser class LL30+/- 32+:	2, < 1 mW
Laser class LL31+/- 33+:	3 R, < 5 mW
Laser:	diode laser, visible red, 635 nm
Beam diameter:	13 mm at laser
Range LL-30+/-32+:	to 200 m
Range LL-31+/-33+:	to 500 m
Self-levelling range:	$\pm 5\%$
Permissible deviation:	$\pm 5\text{ mm}/100\text{ m}$
Operating time with 7.4 V DC Li Ion recharg. battery:	
LL-30+/-32+:	to 60 hours
LL-31+/-33+:	to 45 hours
External power supply:	11 to 14 V DC with cable 0117.020
Watertight:	to 3.5 m
Temperature range:	- 10° C to + 50° C
Weight:	3.4 kg
Adjustment:	possible on site without having to open the device
Guarantee:	24 months
CE:	certificate

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# Operating Instructions

**Zenith Plummet: LL30+/- 31+  
Nadir Plummet: LL32+/- 33+**



**Congratulations on the purchase of your new FPM laser plummet!**

This manual includes **important safety information** adding up to the general information on how to use the laser plummet.

**Please note:** Read the safety instructions on the supplement page **1 - 3** first.

Please read the operating instructions carefully before using the laser.

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## 1. Description

The instrument emits an automatically levelled plumb laser beam as reference axis. This laser beam is, for example, represented as a dot on a target. If the target is connected to a sliding moulding, the moulding can be controlled according to the position of the laser dot. The LL is a special laser for all types of plumbing operations. Its possible field of usage is virtually unlimited.

### 1.10 Box Level

Build-up assistance LL30+/ 31+

### 1.1 Robust Light Metal Housing, 100 % watertight

Plastic-coated, swept and filled with nitrogen

### 1.2 Handle

For easy handling, safe transport and simple set-up.

### 1.3 Laser Warning Sign

LL30+/ 32+: Laser class 2, < 1 mW  
LL31+/ 33+: Laser class 3R, < 5 mW

### 1.4 Keyboard

Clear layout. Big, user-friendly, self-explanatory keys.

### 1.5 Identification

### 1.6 Charging Socket

Behind the dust guard cap.

### 1.7 Box Level

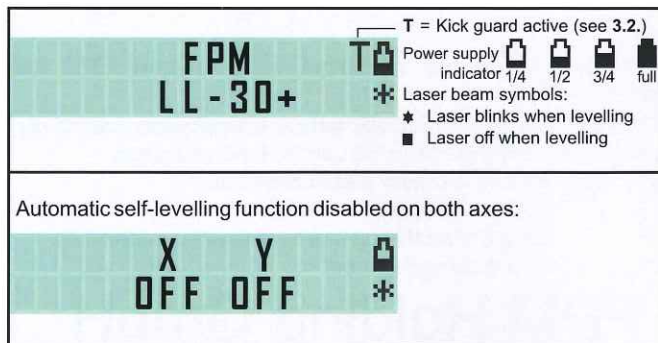
Build-up assistance LL32+/ 33+

### 1.8 Bulging Ground Area, niro St.

Protects against damages of coat and guarantees a secure stand. Central fastening thread 5/8".

### 1.9 LCD Display

Clearly legible, illuminated display for on/off, company data, device data, duty type and battery level.



## 2. Buttons



### 2.1 = ON/OFF Button

Press the button to switch on the plumb laser. Device and company data are shown, followed by the LCD operation display (see 1.9).

The instrument begins to level itself automatically.

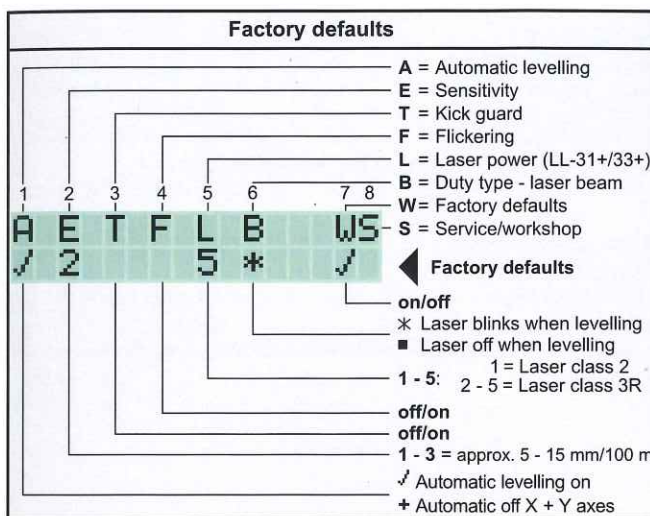
After the levelling phase, the laser beam and laser beam symbol stop blinking. If this is not the case, move the instrument into the levelling range by gently tilting it forwards.

The display illumination switches off automatically after approx. 30 seconds. Switch it on again by briefly pressing the ON/OFF button. Press the ON/OFF button longer to switch off the device. The font "Auf Wiedersehen!" (= "Good Bye") appears.



### 2.2 = Select Menu Level

Keep button pressed until the settings menu shows up:



or



### Select Letter

**2.3 =** The selected letter begins to blink.

**Y axis inclination setting (see 3.1)**



or



### Change Settings

**2.4 =** X axis inclination setting (see 3.1)



**=** Back to Operating Display

## 3. Device Settings

### 3.1 Automatic Levelling Cut-Out



= Automatic levelling switched on (factory defaults)



= Automatic self-levelling cut out for both axis.  
**X-A OFF + Y-A OFF** is indicated on the display.

When the automatic function is disabled, the laser can be positioned according to your preference. For electromotive fine/coarse adjustment of the laser beam, push the respective arrow button. Press longer to increase the interval speed of changes.

### 3.2 Sensitivity Setting (Wind/Vibration)

The self-levelling function corrects even the smallest deviation.

Additionally, laser beam and laser beam symbol on the operating mode display blink when the limit values of step 1 to 3 are exceeded, i. e. by influence of wind and/or vibration.

1 = 0.005 % no effect

2 = 0.010 % weak effect (factory defaults)

3 = 0.015 % strong effect

### 3.3 Kick Guard (Automatic Laser Cut-Out)



= Kick guard enabled. It becomes active after 30 sec. The letter **T** appears in front of the battery symbol on the operating mode display.

This means the laser is switched off automatically as a precautionary measure in the event of a jerky movement (bump). The letter **T** then starts to blink. Your plumb laser has to be switched on again. Make sure to check its position and make corrections, if necessary.



= Factory defaults: Kick guard disabled.

### 3.4 Laser Beam Flickering



= Flickering off (factory defaults)



= Flickering on. The flickering mode makes it significantly easier to observe the laser spot in unfavourable light conditions.

### 3.5 Laser Power (only LL-31+/33+)

The laser power can be adjusted in 5 steps from < 1 mW to 5 mW.



= < 1 mW



= step 5, equivalent to < 5 mW (factory defaults)

### 3.6 Operating Mode Laser Beam



= Laser beam and laser beam symbol blink on the operating mode display during levelling process (factory defaults).



= Laser beam is turned off when levelling. However the symbol blinks on the operating mode display.

### 3.7 Factory Defaults



= All settings are set back to factory defaults.

### 3.8 Service/Workshop Notice

First off all, a phone no. for service/help appears. Then authorized personnel only are prompted to enter a numerical code in order to access the adjustment mode.