## **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

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supplement page 1 - 3 first.

Please read the operating instructions carefully before using the laser.

# FPM Holding GmbH

#### 1. Description

1.2 Handle

The laser emits an automatically levelled plumb laser beam as reference axis. This laser beam is, for example, represented as 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 uses are virtually unlimited.

## 1.1 Robust Light Metal Housing, 100 % watertight Plastic-coated, swept and filled with nitrogen

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 quard cap.

#### 1.7 Box Level

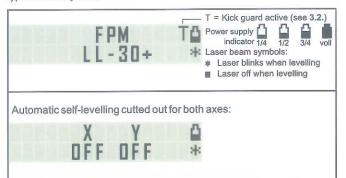
Build-up assistance LL32+/ 33+

### 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.



#### 1.10 Box Level Build-up assistance LL30+/ 31+

#### 2. Buttons



#### 2.1 = ON/OFF Button

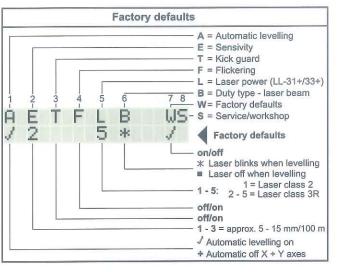
The device is switched on by pressing this button. The device and company data are shown, followed by the LCD operation display (see 1.9). The device is levels itself automatically.

After the levelling phase the laser beam and laser beam symbol stop blinking. If this does not happen, the device must be moved into the levelling range by tilting it forwards. The display illumination switches off automatically after approx. 30 seconds. The Illumination is switched on again by pressing the ON/OFF button shortly.

To switch off the device, press the ON/OFF button until "Auf Wiedersehen!" appears.

#### 2.2 = Select Menu Level

Keep the button pressed until the adjustment menu is shown:





#### Select Letter

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= The selected letter begins to blink. Yaxes 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 axes. X-A OFF + Y-A OFF is indicated on the display.

When the automatic is cut out, the laser can be positioned just as you like it. For electromotive fine/coarse adjustment of the laser beam, push the respective arrow buttons. Longer pushing changes the direction with increasing speed.

#### 3.2 Sensitivity Setting (Wind/Vibration)

The self-levelling function corrects even the smallest deviation. Additionally the laser beam and the laser beam symbol at 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 switched on. It becomes active after 30 sec. A T appears in front of the battery symbol at 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 T then begins to blink. The laser needs to be switched on again and the positioning checked and corrected, if necessary.

= Factory defaults: Kick guard switched off

#### 3.4 Laser Beam Flickering

= Flickering off (factory defaults)

= Flickering on. Flickering makes the laser beam significantly easier to see in unfavourable light conditions.

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

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

5

= 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 when levelling (factory defaults).

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

### 3.7 Factory Defaults

= All set to factory defaults.

## 3.8 Service/Workshop Notice

First off all, a phone no. for service/help appears.

Then authorized personnel only must enter a numerical code in order to access the adjustment mode.

#### 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

- · Carry out charging only with the power and charging unit, type NE- or a 12 V DC external rechargeable battery via connection cable 0117.02.
- · Keep charger dry and only use in rooms.
- · For charging take the laser out of the transport case.
- Permissible charging temperature 0°C to + 40°C, as best + 10°C to + 25°C.
- · After approx. 5 hours the charging time is finished. The display goes out 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.

- Align laser to the inclination axis.
- Switch off automatic levelling.
- Set inclination by points of reference, roughly more than ± 5 % by tilting forwards the device, finely with the arrow buttons.

#### 6. Adjustment

#### 6.1. Checking the Adjustment

Set up the laser standing 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 in the field without having to open the device. For safety reasons, however, adjustment should be carried out by authorized personnel only. 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 1/2 minutes, the device will switch off automatically.
- 4. Laser switched off automatically (kick guard) see 3.3.

#### 8. Maintenance

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The laser requires no 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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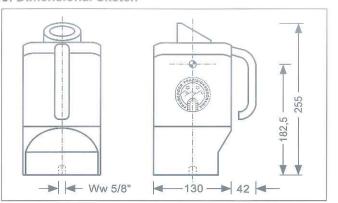
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#### 9. Dimensional Sketch



#### 10. Technical Specifications

Laser class LL30+/ 32+:
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:       ± 5 %         Permissible deviation:       ± 5 mm/100 m
Operating time with 7.4 V DC Li Ion recharg, battery:
External power supply: 11 to 14 V DC with cable 0117.020
Watertight:
Weight:
Guarantee:

### FPM Holding GmbH

Hainichener Str. 2a 09599 Freiberg GERMANY

T. +49 3731 271 435 F. +49 3731 271 266

info@fpm.de | www.fpm.de

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