

# FRE-102AG

## INSTRUCTIONS



from **LASER LEVELS ONLINE** [www.laser-level.co.uk](http://www.laser-level.co.uk) Tel: 01246 269777

Thank you for purchasing the Fukuda **FRE-102AG GREEN** beam, rotary laser kit. These instructions are intended to explain the **quick basics** to operating this equipment. Please read them carefully.

If you need any more help/advice or the instrument requires calibration or repair, then please contact our Service Dept on tel. 01246 269 777 or fax 01246 260 007. We would be pleased to help.

### **Power source:**

The FRE-102AG has a special battery pack located in the front base of the laser. To change: unscrew the silver lock, slide out to remove & carefully refit.

It contains 4pc x "sealed for life" Ni-MH type C, 4000mAh, 1.2V cells. Please note that this battery pack can be charged either in or outside of the laser.

The Mains Charger (supplied) will charge these batteries in around 7 - 8 hours to give up to 30 hrs of continuous use. It takes 4 to 5 charge/discharge cycles for this battery pack to reach its maximum capacity. Spare batteries are available.

### **Mains Charger:**

The general procedure to adopt is to use the laser during the working day & charge-up overnight. You cannot damage the system by "over-charging" the batteries.

When plugged into a 230V mains supply, the red LED flashes every 1 sec. Connect to the rubber protected socket (located on the front of the battery pack), then the Charger's LED should be ON continuously:

ie. Red LED = charging; Green LED = sufficient charge to operate.

Even though the Green light is ON, we still recommend a full 8 hour charge.

The FRE-102AR can be operated with the charger connected to the mains supply, if required. On receipt of your **new** laser, we suggest charging the batteries fully for 7 - 8 hours.

A Spare Battery holder is included in the kit & used as a "back-up" power source. Four type C, 1.5V Alkaline batteries can be used instead or in an emergency; but do NOT attempt to recharge them, otherwise serious damage will occur.



### **Positioning the Laser:**

Mount the FRE-102AG on a generally level, firm surface or 5/8" threaded Tripod. To operate correctly this surface must be within +/-5 deg of true horizontal. The laser can be used Indoors or Outdoors, where it is waterproof to IP55.

### **Controls:**

Power ON/OFF is via the red button. The laser takes approx. 15 to 25 seconds to auto level, then the prism head rotates & projects a visible green laser beam. The rotational speed is variable in 4 increments. Adjust head speed using the top right hand button & when pressed, it stops the red dot then increases the head's rotational speed in 4 steps up to a maximum speed of 1,000rpm.

For Interior work, we suggest using slower speeds, where the laser beam is easier to see by eye; but for Exterior Groundworks – run the FRE-102AG at its maximum speed of 1,000rpm, which gives the best working range when used

with the supplied Laser Detector. Even with its intensely bright green beam, the detector will still be required for most outdoor work.

### **SCAN function - for Interior setting-out:**

The top button on the left of the keypad is the Scan function. The User can set a static dot, 10, 45, 90, 180 degree lines as required & use the two buttons beneath (marked with rotational arrows) to move these lines around the room.

**AS THIS LASER AUTO LEVELS BOTH HORIZONTALLY & VERTICALLY, all the control settings above operate in either mode.** (Vertical leveling, with the laser positioned on its side, is often referred to as "**Laydown**"; where the User can project vertical laser lines or for setting-out: Site SQUARING (90 deg).

### **Grading:**

This is a **DUAL GRADE** facility laser level. This means that the FRE-102AG can be switched to "Manual" to over-ride the level sensors (via the auto/man button) and then the User can set a grade (incline/slope) in the X axis only, Y axis only or both together. The max. settable slope is an approx. fall of 1m over 10m. For X & Y alignment, please see the case markings on the TOP of the laser body, where an arrow points in the direction of the axis being set.

### **Setting a single axis slope -**

This sets a grade in the X axis.

Procedure – switch ON; the FRE-102AG then auto levels. Press the "auto/man" button on laser's keypad (bottom left hand side) & the green "X" LED illuminates. Using the up & down Arrow buttons, set the % slope (fall) required - as measured on your staff. The same buttons can be found on the Remote Control.

To return to Auto level, switch the Manual button to OFF (both LEDs turn off). The Laser will wait to find true level, then automatically restart, self-levelled.

### **Setting Y axis slope -**

This sets a grade in the Y axis.

Procedure – switch ON; the FRE-102AG then auto levels. Press the "Manual" button twice on laser's keypad (bottom left hand side) & the green "Y" LED illuminates. Using the up & down Arrow buttons, set the % slope (fall) required - as measured on your staff. Again, the same buttons can be found on the Remote Control.

To return to Auto level, switch the Manual button to OFF (both LEDs turn off). The Laser will pause whilst it finds true level, then automatically restart, self-levelled.

### **Setting both X & Y axis slope (dual grade) -**

Proceed as above, but set BOTH "X" and "Y" axis - as required.

### **Automatic Drift System (ADS):**

Operated via bottom, right-hand button, marked "tilt".

Once the FRE-102AG is ON and rotating in the auto (self) levelled mode, the automatic drift system can be activated. Press the button & the green LED will illuminate. **ADS is now ON.**

If the Laser is knocked or caught by a gust of wind for example, the laser head will stop rotating and the green **ADS** LED will flash quickly in alarm condition. Check all is OK; press the "tilt" button again & the laser will reset to AUTO level.

**IMPORTANT NOTE: The ADS function cannot be set when Grading.**

### **Laser Detector & Remote Control:**

*(The remote control is pictured on the right)*



### **Remote Control:**

Fit the supplied 2pc x AA alkaline batteries, taking care with correct polarity.

The Remote's keypad can set the following functions:

1. Rotating speed in increments: slow for Indoors, fast (max) for Outdoors.
2. Scan angles in increments.
3. Scan line position around the room.

4. Auto / Manual (grade) settings via top button (auto/man).
5. Two ARROW buttons to set the required X/Y grades.

*TIP* - it is often better to use the Remote Control rather than the instrument's keypad, because then, you do not disturb the laser's sensitive mechanism.

### **FRD400G Detector:**

Fit the supplied 9V battery, polarity marked. Power up via ON/OFF button. The middle button switches the sounder's volume ON (loud/quiet) or OFF. The right hand button sets *sensitivity*: coarse (+/-2mm) or fine (+/-1mm) of the red pick-up window.

A rear LCD repeats the main front display.

Note: the case markings & setting notches.

You can use the detector with or without its staff mounting bracket.

**Detector Procedure** – face towards rotating laser to "find" the rotating laser beam, via the green pick-up window.

If the sun is low in the sky & shining into the green window, shield it with a cupped hand to prevent false readings. Positioning the FRE-102AG itself in full sun is no problem but the detector window can, in some instances, be affected by direct bright sunlight or reflections. So please take extra care!

### **SAFETY PRECAUTIONS:**

Comply with class 3R laser operating safety procedures. See main Manual. Display a **Laser Safety Notice** in the work area.

### **General Advice:**

This is an accurate measuring device - so to give good service, look after it! Prevent the FRE-102AG from receiving severe knocks, bangs or vibration. Store the laser & its accessories in the supplied carry case. If wet, **dry before storing** & keep in storage temperatures within 5-30 deg C. Remove all batteries before long-term storage, to prevent internal damage.

### **Key Specifications:**

Laser accuracy +/-2.25mm @ 30m.

Operating range 25m (visible) or 600m diameter with the supplied detector.

IR Remote control range: 20m

*...for full details, see main Manufacturer's User Manual*

**There are NO User Serviceable Parts.**

*(This would void the warranty)*



We offer a full Back-up service including repairs, calibration & usage advice.  
Accessories for the various Trades are also available - on request.  
eg. Tripods, staffs, poles kits & wall brackets etc.

Please contact us:

**Laser Levels Online**, Unit 35 Bridge Business Centre,  
Beresford Way, CHESTERFIELD, S41 9FG. England.

Tel: 01246 269777 / Fax: 01246 260007

[sales@laser-level.co.uk](mailto:sales@laser-level.co.uk) [www.laser-level.co.uk](http://www.laser-level.co.uk)

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