

# Quick Start FRE-301R INSTRUCTIONS



***(Instrument colours may vary)***

from P.R.Engineering Ltd [www.laser-level.co.uk](http://www.laser-level.co.uk) Tel: 01246 269777

Thank you for purchasing the Fukuda **FRE-301R RED** beam, rotary laser kit. These instructions are intended to explain the **quick basics** to operating this equipment. Please read them in conjunction with the Manufacturer's User Manual included in the kit. 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:**

This is a special battery pack located in the base of the laser. Remove & refit via a central screw - finger tight (no tools are required). 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 most batteries in around 7 hours to give around 40 hrs of continuous use. It takes 4 to 5 charge/discharge cycles for these battery packs to reach their maximum capacity.

## **Mains Charger:**

The general procedure to adopt is use the laser during the 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 in the corner / base of the battery pack) & this 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-301R 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 overnight.

A Spare Battery holder is an optional extra & 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-301R 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 IP54.

### **Controls:**

Power ON/OFF is via the black button. The laser takes approx. 15 to 25 seconds to auto level & then the head rotates & projects a visible red laser beam. The rotational speed is variable in 4 increments. Adjust head speed using the yellow speed control button (right hand side in centre) & when pressed, it stops the red dot then increases the head's rotational speed in 4 steps up to a maximum speed of 600rpm.

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-301R @ its maximum speed of 600rpm, which gives the best working range when used with the supplied Laser Detector. Even with its bright Red beam, a detector will still be required for most outdoor work.

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

The top button on the right of the keypad is the Scan function. The User can set a Dot, or 10, 45, 90, 180 degree lines as required & use the two buttons (top left hand side of the keypad) to move these "lines" around the room.

**AS THIS LASER AUTO LEVELS BOTH HORIZONTALLY & VERTICALLY, all the control settings above operate in either mode.**

### **Grading:**

This is a **DUAL GRADE** facility laser level. This means that the FRE-301R can be switched to "Manual" (to over-ride the level sensors) 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-301R then auto levels. Press the "Manual" button on laser's keypad (bottom left hand side) & the green LED illuminates. Using the left & right 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 (green LED turns 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-301R then auto levels. Press the "Manual" button on laser's keypad (bottom left hand side) & the green 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.

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

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

Proceed as above, but use all four arrow buttons - as required.

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

Operated via bottom, right-hand yellow button, showing a "picture of a tilted instrument".

Once the FRE-301R is ON and rotating in the auto (self) levelled mode, the automatic drift system can be activated. Press the button & the green LED will flash continually. **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 ADS button again & the laser will reset to AUTO level.

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

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

*(Remote Control is pictured on the left*



### 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 middle button.
5. Four ARROW buttons to set 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.

Detector..

Fit the supplied 9V battery, polarity marked. Power up via ON/OFF button.

The top button switches the sounder' volume ON or OFF - if required.

The middle button sets coarse (+/-2mm) or fine (+/-1mm) red pick-up window resolution.

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 & "find" rotating laser beam via the red pick-up window.

If the sun is low in the sky & shining into the red window, shield it with a cupped hand to prevent false readings. Positioning the FRE-301R 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 2 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-301R 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 between 5-30 deg

C.

Remove all batteries before long term storage, to prevent internal damage.

**Key Specifications:**

Laser accuracy +/-3mm @ 30m.

Operating range 20m (visible) or 300m diameter with 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, screeding poles & wall brackets etc.

Please contact us:

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