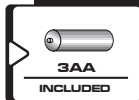
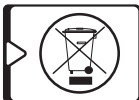
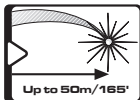
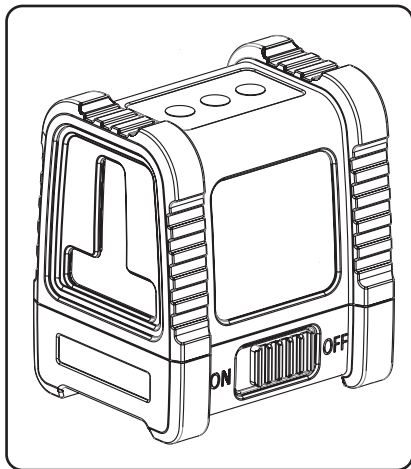




Prolaser® Plus

Model No. 870

User Manual

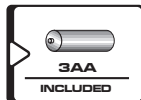
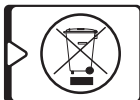
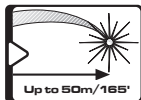


Thank you for purchasing Kapro's 870 Prolaser® Plus. You now own one of the most advanced laser tools available. This manual will show you how to get the most out of your laser tool.

APPLICATIONS

The 870 Prolaser® Plus is innovatively designed for a very broad range of professional and DIY jobs, including:

- Aligning tiles, cabinets, borders, moldings and trimmings
- Doors and windows installation
- All types of DIY jobs, including hanging shelves, pictures and more



NOTE

Keep this user manual for future reference.

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FEATURES

- This laser tool is automatically determines the horizontal and the vertical plans
- The laser projects intersecting horizontal and vertical lines
- Self-level in automatic mode when the laser is positioned within its self-leveling range.
- Visual and audible “out of leveling range” warning
- Pulse mode emits pulses that can be detected by a detector
- The max. Detectable range of the laser in pulse mode is 50m (165')
- Manual mode allows angular layout/markings
- IP65 Rated for water and dust protection
- Locking mechanism to protect the pendulum during transportation.
- 1/4" tripod adaptor
- Shock resistant rubber casing
- Compact size – fits in your toolbox

NOTE

This device contain precision components that are sensitive to external shock, impact or drop that may compromise its functionality – handle with care to maintain its accuracy.

SAFETY INSTRUCTIONS



WARNING

**This product is emitting radiation that is classified
As class II according to EN 60825 -1**

The laser radiation can cause serious eye injury



- Do not stare into the laser beam
- Do not position the laser beam so that it unintentionally blinds you or others.
- Do not operate the laser level near children or let children operate the laser level.
- Do not look into a laser beam using magnifying optical devices such as binoculars or a telescope, as this will increase the level of eye injury.



WARNING: This product contains lead in solder and certain Electrical parts contain chemicals which are known to the State of California to cause cancer, birth defects or other Reproductive harm.

(California Health & Safety Code Section 25249.6- Proposition 65)



NOTE

The red goggles are intended to enhance the visibility of the Laser beam. They will not protect your eyes against laser radiation.



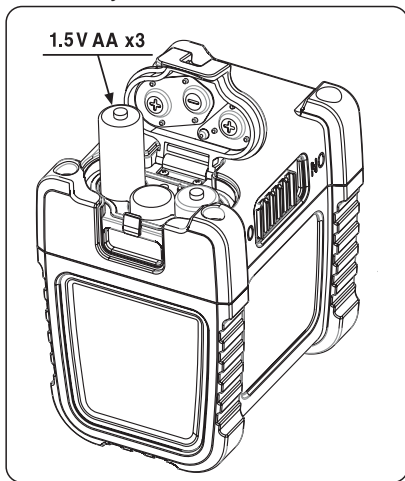
- Do not remove or deface warning labels on the laser level.
- Do not disassemble the laser level, laser radiation can cause serious eye injury.
- Do not drop the laser.
- Do not use solvents to clean the laser.
- Do not use in temperatures below -10°C or above 45°C (14°F / 113°F)
- Do not operate the laser in explosive atmospheres such as flammable liquids, gases or dust. Sparks from the tool can cause ignition.
- When not in use, turn off the power, engage the pendulum lock and place the laser in the carrying pouch.
- Make sure the pendulum lock mechanism is engaged before transporting the laser.

NOTE

If the Pendulum lock mechanism is not engaged before Transportation, internal mechanical damage can occur.


BATTERY INSTALLATION & SAFETY

1. Press on the latch and open the battery cover.
2. Insert 3 new AA batteries of the same brand, according to the polarity diagram on the inside of the lid of the battery compartment.
3. Reclose the battery cover.



NOTE

If the laser level will not be used for a long period, remove the batteries from the battery compartment. This will prevent batteries from leaking and corrosion damage.

 **WARNING:** Batteries can deteriorate, leak or explode, and can cause injury or fire.

1. Do not shorten the battery terminals.
2. Do not charge Alkaline batteries.
3. Do not mix old and new batteries.
4. Do not dispose of batteries into household waste.
5. Do not dispose batteries in fire.
6. Defective or dead batteries must be disposed according to local Regulations.
7. Keep the batteries out of reach from children.

OVERVIEW

1. On/Off Locking Switch

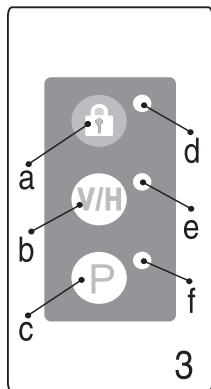
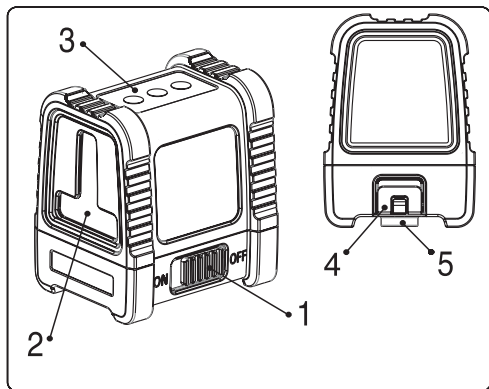
2. Laser output window

3. Keypad

- a. Manual Mode button
- b. Beam Selector button
- c. Pulse Mode button
- d. Manual Mode LED
- e. Laser beam LED
- f. Pulse mode LED

4. Battery cover

5. 1/4" tripod mount



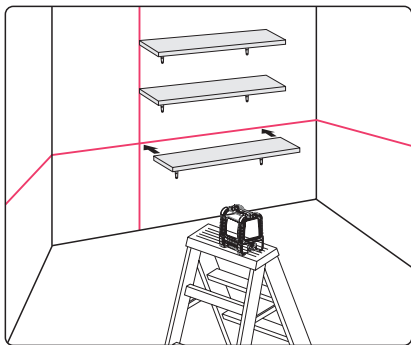


OPERATING INSTRUCTIONS

Working in Automatic mode (self-leveling):





In automatic mode the laser level will level itself at a $\pm 3^\circ$ range and will project horizontal or vertical beams or both beams simultaneously.

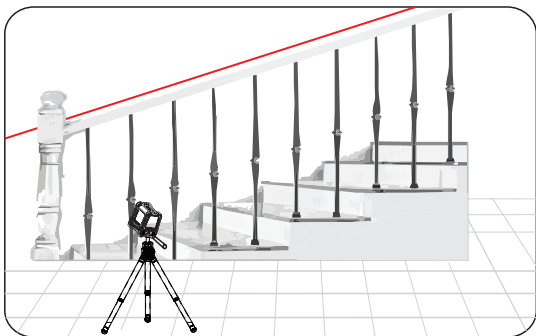
1. Remove the laser from the case and place it on a solid flat, vibration free surface or on a tripod.
2. Slide the locking switch #1 to the **ON** position - the laser level will generate the crossed horizontal and vertical beams and the green LED near the **V/H** button will light up.
3. Choose the beams that you want to work with by pushing the Beam button **V/H**
4. If the initial slope of the laser is beyond $\pm 3^\circ$ and the automatic mode is activated the laser lines will flash and a beeping alarm will be heard. In this case reposition the laser on a more leveled surface.
5. Before moving the laser level slide the locking switch #1 to the **OFF** position, this will lock the pendulum and protect your laser.



Working in Manual mode:

In Manual mode the 870's self-leveling mechanism is disabled and the laser lines can be set at any angle required.

1. Press the Manual mode button . The laser will project the cross lines and the red LED near the button  will light up. The green LED of the laser beams near **V/H** button will light up as well.
2. Choose the beams that you want to work with by pushing the Beam Selector button **V/H**
3. To mark a slope, tilt the laser to adjust the right angle and the height.
4. To turn the manual mode off, press again the Manual mode button 
5. While in Manual mode, turning the locking switch #1 from **OFF** to **ON** will turn off the Manual mode and the red LED near the  button. The automatic self-leveling will be activated if the laser level is within the $\pm 3^\circ$ self-leveling range.



Working in Pulse mode with a detector:

For outdoor work under direct sunlight, or bright conditions and for extended indoor ranges up to 50 meters, use the pulse mode with a Detector.

When the pulse mode is activated the laser lines will flash at very high frequency (Invisible to the human eye) this will allow the detector to detect the laser lines.

1. The pulse mode can be activated in Automatic and Manual modes.
2. To switch on the Pulse Mode press the **P** button, the green LED near the **P** push button will light up.
3. When the pulse mode is switched on, the visibility of the laser lines are reduced a little bit.
4. To switch off the Pulse Mode press the **P** button again, the green LED near the **P** push button will go off.

MAINTENANCE

To maintain the accuracy of your project, check the accuracy of your laser level according to the field calibration tests procedures.

- Change the batteries when the laser beams begin to dim.
- Wipe the aperture lens and the body of the laser level with a clean soft cloth. Do not use solvents.
- Although the laser level is dust and dirt resistant to a certain degree do not store in dusty places as a long term exposure may damage internal moving parts.
- If the laser level is exposed to water, dry the laser level before returning it to the carrying case to prevent corrosion damages.
- Remove the batteries if the laser level is unused for a long period of time to prevent corrosion damages.

This laser level left the factory fully calibrated.

Kapro recommend that the user will check the accuracy of the laser periodically, or if the unit falls or is mishandled.

To do so first check the height accuracy of the horizontal line, then check the levelling accuracy of the horizontal line, and finally check the leveling accuracy of the vertical line.

Checking the Height Accuracy of the Horizontal Line. (Up and down deviation)

- 1) Set up the laser on a tripod or on a solid surface between two walls **A** and **B**, approximately 5 meters apart.
- 2) Position the laser level approximately 0.5 meter from wall **A**
- 3) Unlock the pendulum and press the button to project the horizontal and the vertical cross lines towards wall **A**.
- 4) Mark on the wall the center of the cross lines as **a1** (see figure # 1).

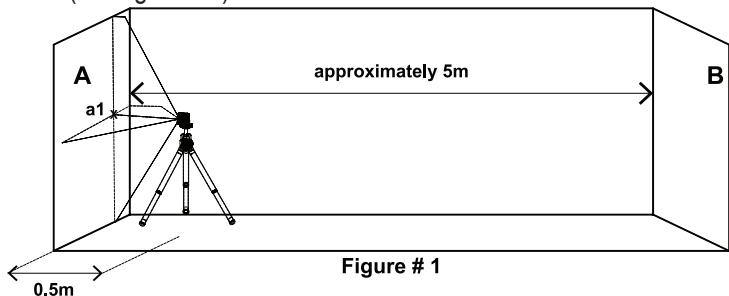


Figure # 1

- 5) Turn the laser 180° towards wall **B**, and mark on the wall the center of the cross lines as **b1** (see figure 2).

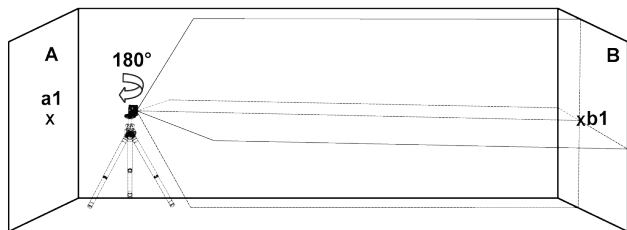


Figure # 2

- 6) Move the laser level towards wall **B** and position it approximately 0.5 meter from wall **B**.
- 7) Mark on wall **B** the center of the cross lines as **b2** (see figure 3).

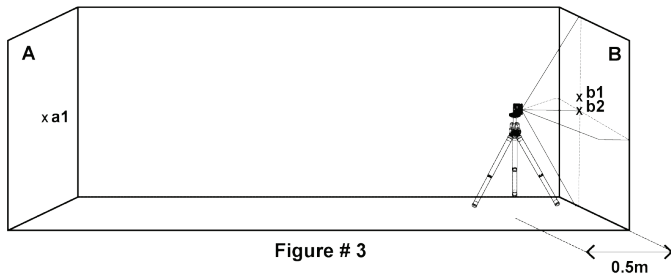


Figure # 3

- 8) Turn the laser 180° towards wall **A**, and mark on the wall the center of the cross lines as **a2** (see figure 4).

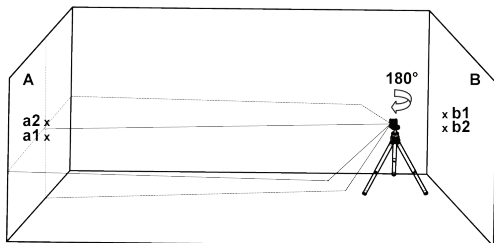


Figure # 4

- 9) Measure the distances:

$$\Delta a = |a2 - a1|$$

$$\Delta b = |b1 - b2|$$

- 10) The difference $|\Delta a - \Delta b|$ should not be more than 2 mm, otherwise to send the laser level to a qualified technician for repairs.

Checking the Level Accuracy of Horizontal Line. (Side to side inclination)

- 1) Set up the laser on a tripod or on a solid surface at a distance of approximately 1.5 meters from a wall 5 meter long.
- 2) Unlock the pendulum and press the button to project the horizontal and the vertical cross lines towards the wall.

- 3) Mark point **a1** on the wall, in the middle of the horizontal line at the left edge of the horizontal line (see figure 5).

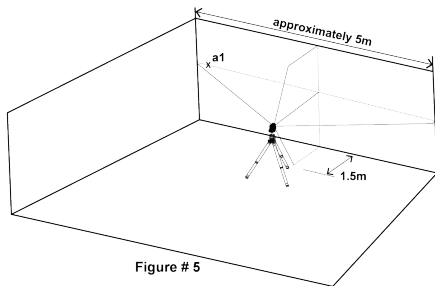


Figure # 5

- 4) Turn the laser level counterclockwise until the right edge of the horizontal line reach's near **a1**, mark a point **a2** on the wall in the middle of the horizontal line (see figure 6).

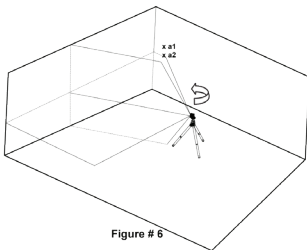
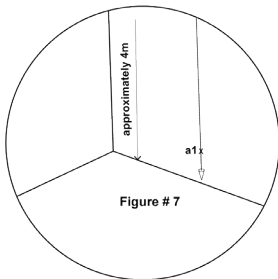


Figure # 6

- 5) The distance between **a1** and **a2**, should not be more than 1 mm otherwise to send the laser level to a qualified technician for repairs.

Checking the Accuracy of the Vertical line.

- 1) Hang approximately 4 meter plumb line on a wall.
- 2) After the plumb line has settled, Mark point **a1** on the wall behind the plumb line near the plumb cone. (see figure 7).



- 3) Set up the laser on a tripod or on a solid surface in front of the wall at a distance of approximately 2 meters.
- 4) Unlock the pendulum, and press the button to project the vertical line toward the plumb line.
- 5) Turn the laser so that the vertical line will merge with the plumb line below the hanging point.

- 6) Mark point **a2** on the wall, in the middle of the vertical line at the same height of **a1**. (see figure 8).

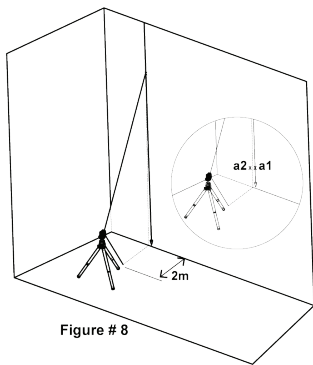


Figure # 8

- 7) The distance between **a1** and **a2**, should not be more than 1mm, otherwise to send the laser level to a qualified technician for repairs.



SPECIFICATIONS

Laser beams output pattern	Vertical and horizontal cross lines Horizontal line Vertical line
Laser range	<ul style="list-style-type: none">• Indoor - 30m (100ft)• Outdoor with detector 50m (165ft)
Accuracy	$\pm 0.2\text{mm/m}$ ($\pm 0.0002\text{in/in}$)
Fan angle	$120^\circ \pm 5^\circ$
Self-leveling range	$\pm 3^\circ$
Laser line width	2 mm $\pm 0.5\text{mm}/5\text{m}$ (0.10" ± 0.02 " at 20')
Wavelength	635 $\pm 5\text{nm}$ - Laser Class II
Power supply	3 AA batteries (included)
Battery life	20 hours of continuous operation
Operating temp	-10° C + 45° C (14°F +113°F)
Storage temp	-20° C +70° C (-4°F +158°F)
Water & dust proof	IP65
Dimensions	10cm x 9cm x7cm (3.9" x 3.5" x 2.8")
Weight including batteries	415gr $\pm 10\text{gr}$ (0.92lbs $\pm 0.35\text{oz}$)

WARRANTY

This product is covered by a two-year limited warranty against defects in materials and workmanship. It does not cover products that are used improperly, altered or repaired without Kapro approval.

In the event of a problem with the laser level you have purchased, please return the product to the place of purchase with the proof of purchase.

Model #870

The serial number sticker is positioned on the lid of the battery compartment.

CE CONFORMITY CERTIFICATE

This product meets the standards of the Electromagnetic Compatibility (EMC) established by the European Directive 2014/30/EU and the Low Voltage Directive (LVD) 2014/35/EU

EC DECLARATION OF CONFORMITY

We declare under our responsibility that the product 870 is in accordance with the requirements of the Community Directives and Regulations:

2014/30/EU

2011/65/EU

EN60825-1: 2014

EN61326-1: 2013