

HILTI

PM 2-P

Operating instructions

en

取扱説明書

ja

사용설명서

ko

操作說明書

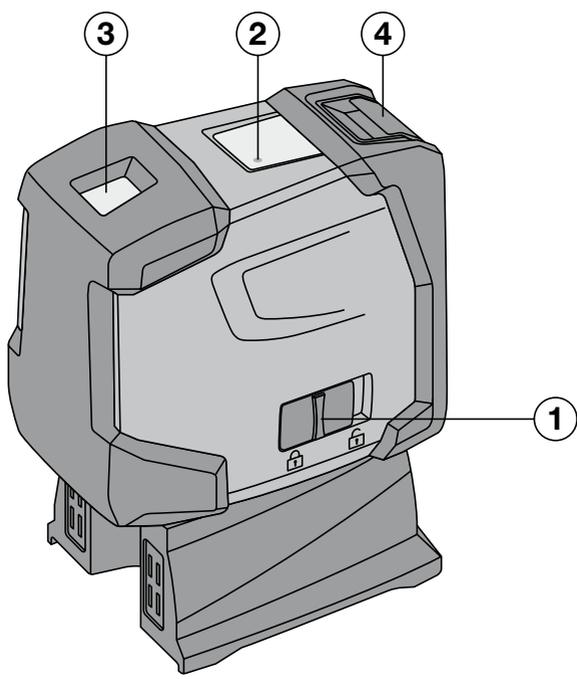
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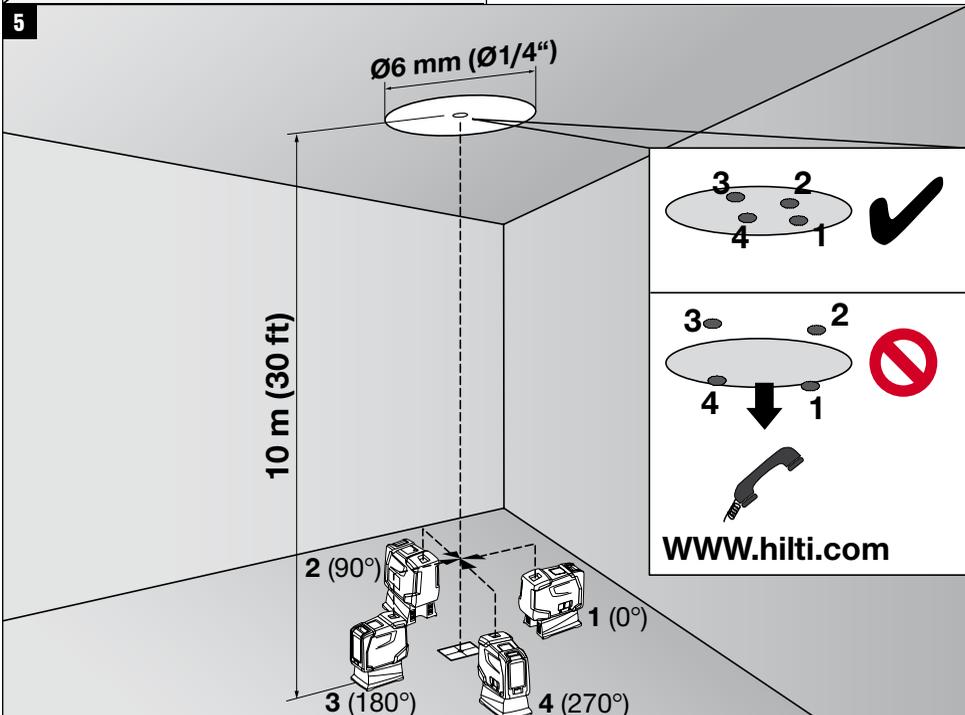
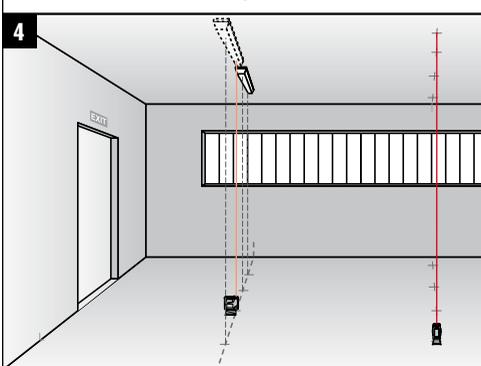
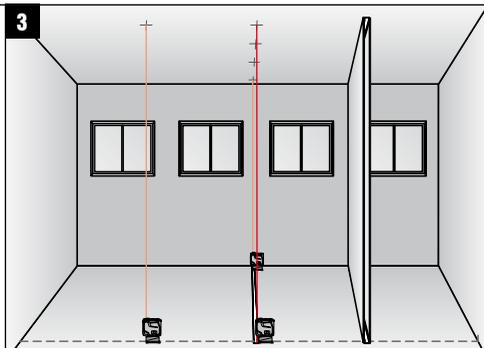
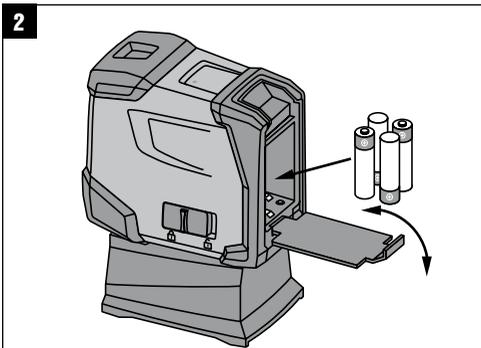
操作说明书

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ORIGINAL OPERATING INSTRUCTIONS

PM 2-P point laser

It is essential that the operating instructions are read before the tool is operated for the first time.

Always keep these operating instructions together with the tool.

Ensure that the operating instructions are with the tool when it is given to other persons.

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1 These numbers refer to the corresponding illustrations. The illustrations can be found on the fold-out cover pages. Keep these pages open while studying the operating instructions.

In these operating instructions, the designation "the tool" always refers to the PM 2-P point laser.

Parts, operating controls and indicators **1**

- ① On/off switch combined with pendulum locking mechanism
- ② LED
- ③ Laser exit window
- ④ Battery compartment

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1 General information

1.1 Safety notices and their meaning

DANGER

Draws attention to imminent danger that will lead to serious bodily injury or fatality.

WARNING

Draws attention to a potentially dangerous situation that could lead to serious personal injury or fatality.

CAUTION

Draws attention to a potentially dangerous situation that could lead to slight personal injury or damage to the equipment or other property.

NOTE

Draws attention to an instruction or other useful information.

1.2 Explanation of the pictograms and other information

Warning signs



General warning

Symbols



Read the operating instructions before use.



Disposal of power tools or appliances and batteries together with household waste is not permissible.

On the tool



Do not stare into the beam.
Laser warning plates for the USA in accordance with CFR 21 § 1040 (FDA).

On the tool



Laser radiation. Do not look into the beam. Laser class 2.

Laser warning plate according to IEC60825/EN60825-1:2007

Location of identification data on the tool

The type designation and serial number can be found on the type identification plate on the tool. Make a note of this data in your operating instructions and always refer to it when making an enquiry to your Hilti representative or service department.

Type: _____

Generation: 01 _____

Serial no.: _____

2 Description

2.1 Use of the product as directed

The PM 2-P is a self-leveling point laser which allows a single person to carry out vertical alignment work quickly and accurately. The tool features two coincident laser beams (beams that originate from the same point). All beams have the same range of 30 m (range depends on the brightness of ambient light).

The tool is designed to be used to mark plumb points, mainly in interiors.

When used for outdoor applications, care must be taken to ensure that the general conditions are similar to those encountered indoors. Possible applications are:

Transferring measuring marks from the floor to the ceiling.

Modification of the tool is not permissible.

Observe the information printed in the operating instructions concerning operation, care and maintenance.

To avoid the risk of injury, use only genuine Hilti accessories and insert tools.

The tool and its ancillary equipment may present hazards when used incorrectly by untrained personnel or when used not as directed.

2.2 Features

The PM 2-P levels itself automatically within a range of approx. 4°.

Self-leveling takes only approx. 3 seconds.

When the self-leveling range is exceeded, the laser beam blinks to warn the user.

The PM 2-P is characterized by its ease of operation and use, its rugged plastic casing and ease of transport due to its compact dimensions and light weight.

When in normal operating mode, the tool switches itself off after 15 minutes. Sustained operating mode is possible by switching on, switching off and switching on again within 3 seconds.

2.3 Information displayed during operation

LED	The LED doesn't light.	The tool is switched off.
	The LED doesn't light.	The batteries are exhausted.
	The LED doesn't light.	The batteries are inserted incorrectly.
	The LED lights constantly.	The laser beam is switched on. The tool is in operation.
	The LED blinks twice every 10 seconds.	The batteries are almost exhausted.

Laser beam	The laser beam blinks twice every 10 seconds.	The batteries are almost exhausted.
	The laser beam blinks five times and then remains permanently on.	Automatic power-off has been deactivated.
	The laser beam blinks rapidly.	The tool cannot level itself.

2.4 Items supplied with the point laser (cardboard box version)

- 1 Point laser PM 2-P
- 1 Soft pouch
- 4 Batteries
- 1 Operating instructions
- 1 Manufacturer's certificate

3 Accessories

Designation	Short designation	Description
Tripod	PMA 20	
Target plate	PMA 54/55	
Telescopic brace	PUA 10	
Universal adapter	PMA 78	
Laser visibility glasses	PUA 60	The laser visibility glasses are not protective glasses and thus do not protect the eyes from laser beams. As the laser visibility glasses restrict color vision, they should be worn only when working with the PM 2-P laser tool. Do not wear the laser visibility glasses while driving a vehicle on a public road.

4 Technical data

Right of technical changes reserved.

Range of the points	30 m
Accuracy ¹	±3 mm at 10 m
Self-leveling time	3 s (typical)
Laser class	Class 2, visible, 620 - 690 nm, ±10 nm (EN 60825-1:2007 / IEC 60825 - 1:2007); class II (CFR 21 §1040 (FDA))
Beam diameter	Distance 5 m: < 4 mm Distance 20 m: < 16 mm
Self-leveling range	±4° (typical)
Automatic power-off	Activated after: 15 min
Operating status indicator	LED and laser beams
Power supply	AA-size batteries, Alkaline batteries: 4

¹ Influences such as particularly high temperature fluctuations, dampness, shock, dropping, etc. can affect accuracy. Unless stated otherwise, the tool was adjusted or calibrated under standard ambient conditions (MIL-STD-810F).

Battery life	Alkaline battery 2,500 mAh, Temperature +24°C: 50 h (Typical)
Operating temperature range	Min. -10°C / Max. +50°C
Storage temperature	Min. -25°C / Max. +63°C
Dust and water spray protection (except battery compartment)	IP 54 as per IEC 529
Tripod thread (tool)	UNC 1/4"
Tripod thread (foot)	BSW 5/8" UNC 1/4"
Dimensions	63 x 107 x 137 mm
Weight	With foot and batteries: 590 g

¹ Influences such as particularly high temperature fluctuations, dampness, shock, dropping, etc. can affect accuracy. Unless stated otherwise, the tool was adjusted or calibrated under standard ambient conditions (MIL-STD-810F).

5 Safety instructions

WARNING: Ensure that you read all safety precautions and instructions. Failure to observe the safety precautions and instructions may result in electric shock, fire and/or serious injury. **Retain all safety precautions and instructions for future reference.**

5.1 General safety rules

- a) Check the accuracy of the tool before using it to take measurements.
- b) The tool and its ancillary equipment may present hazards when used incorrectly by untrained personnel or when used not as directed.
- c) To avoid the risk of injury, use only genuine Hilti accessories and additional equipment.
- d) Stay alert, watch what you are doing and use common sense when operating the machine. Don't use the machine when you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating machines may result in serious personal injury.
- e) Modification of the tool is not permissible.
- f) Observe the information printed in the operating instructions concerning operation, care and maintenance.
- g) Do not render safety devices ineffective and do not remove information and warning notices.
- h) Keep laser tools out of reach of children.
- i) Take the influences of the surrounding area into account. Do not expose the tool to rain or snow and do not use it in damp or wet conditions. Do not use the tool where there is a risk of fire or explosion.
- j) Maintain the machine carefully. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the machine's operation. If damaged, have the machine repaired before use. Poor maintenance is the cause of many accidents.
- k) Have your power tool serviced by a qualified repair person using only identical replacement parts.

This will ensure that the safety of the power tool is maintained.

- l) The user must check the accuracy of the tool after it has been dropped or subjected to other mechanical stresses.
- m) When the tool is brought into a warm environment from very cold conditions, or vice-versa, allow it to become acclimatized before use.
- n) Make sure that the tool is mounted securely when adapters or accessories are used.
- o) Keep the laser exit aperture clean to avoid measurement errors.
- p) Although the tool is designed for the tough conditions of jobsite use, as with other optical and electronic instruments (e.g. binoculars, spectacles, cameras) it should be treated with care.
- q) Although the tool is protected to prevent entry of dampness, it should be wiped dry each time before being put away in its transport container.
- r) Check the accuracy of the measurements several times during use of the tool.

5.2 Proper organization of the work area

- a) Secure the area in which you are working and take care to avoid directing the beam towards other persons or towards yourself when setting up the tool.
- b) Avoid unfavorable body positions when working from ladders. Make sure you work from a safe stance and stay in balance at all times.
- c) Measurements taken through panes of glass or other objects may be inaccurate.
- d) Ensure that the tool is set up on a steady, level surface (not subject to vibration).
- e) Use the tool only within its specified limits.
- f) If several laser tools are used in the same working area, care must be taken to avoid confusing the beams.

- g) Magnetic fields may affect the accuracy of the tool. It must thus be kept away from magnetic objects. The tool is not affected by the Hilti universal adapter.

5.3 Electromagnetic compatibility

NOTE

Only for Korea: This is a Class B Device and is registered for EMC requirements for residential use. This device can be used not only in residential areas but in all other areas.

Although the tool complies with the strict requirements of the applicable directives, Hilti cannot entirely rule out the possibility of the tool being subject to interference caused by powerful electromagnetic radiation, leading to incorrect operation. Check the accuracy of the tool by taking measurements by other means when working under such conditions or if you are unsure. Likewise, Hilti cannot rule out the possibility of interference with other devices (e.g. aircraft navigation equipment).

5.4 Laser classification for laser class 2 / class II appliances

Depending on the version purchased, the tool complies with Laser Class 2 in accordance with IEC825-1:2007 / EN60825-1:2007 and Class II in accordance with CFR 21 § 1040 (FDA). This tool may be used without need for further protective measures. The eyelid closure reflex protects the eyes when a person looks into the beam unintentionally for a brief moment. This eyelid closure reflex, however, may be negatively affected by medicines, alcohol or drugs. Nevertheless, as with the sun, one should not look directly into sources of bright light. Do not direct the laser beam toward persons.

5.5 Electrical



- a) Insulate or remove the batteries before shipping the tool.
- b) **To avoid pollution of the environment, the tool must be disposed of in accordance with the currently applicable national regulations. Consult the manufacturer if you are unsure of how to proceed.**
- c) **Keep the batteries out of reach of children.**
- d) **Do not allow the batteries to overheat and do not expose them to fire.** The batteries may explode or release toxic substances.
- e) **Do not charge the batteries.**
- f) **Do not solder the batteries into the tool.**
- g) **Do not discharge the batteries by short circuiting as this may cause them to overheat and present a risk of personal injury (burns).**
- h) **Do not attempt to open the batteries and do not subject them to excessive mechanical stress.**
- i) **Do not use damaged batteries.**
- j) **Do not mix old and new batteries. Do not mix batteries of different makes or types.**

5.6 Liquids

Under abusive conditions, liquid may leak from the battery. **Avoid contact. If contact accidentally occurs, flush with water. In the event of the liquid coming into contact with the eyes, rinse the eyes with plenty of water and consult a doctor.** Liquid ejected from the battery may cause irritation or burns.

6 Before use



6.1 Inserting the batteries 2

DANGER

Use only new batteries.

1. Open the battery compartment.
2. Remove the batteries from the packaging and insert them in the tool.
NOTE Only batteries recommended by Hilti may be used to power the tool.
3. Check that the battery terminals are positioned correctly as shown on the underside of the unit.
4. Close the battery compartment. Check that the catch engages properly.

7 Operation



7.1 Operation

7.1.1 Switching the laser beams on

Slide the on/off switch backwards.

7.1.2 Switching the tool / laser beams off

Slide the on/off switch forwards.

NOTE

The tool switches itself off automatically after approx. 15 min.

7.1.3 Deactivating the automatic power-off feature

Switch the tool on, then off and on again within 3 seconds. The laser beam blinks five times to confirm deactivation.

NOTE

The tool will be switched off when the on/off switch is slid forward or when the batteries are exhausted.

7.2 Examples of applications

7.2.1 Setting out drywall track for a partition wall

7.2.2 Setting up lighting elements

7.3 Checking

7.3.1 Checking the plumb point

1. Make a mark on the floor (a cross) in a high room (e.g. in a stairwell or hallway with a height of 5–10 m).
2. Place the tool on a smooth, level (horizontal) surface.
3. Switch the tool on.
4. Position the tool with the lower beam on the center of the cross.

5. Mark the position of the vertical beam on the ceiling. Attach a piece of paper to the ceiling before making the mark.
6. Pivot the tool through 90°.

NOTE The lower plumb beam must remain on the center of the cross.
7. Mark the position of the vertical beam on the ceiling.
8. Repeat the procedure after pivoting the tool through 180° and 270°.

NOTE The resulting 4 marks form a circle in which the intersection of the diagonals d1 (1-3) and d2 (2-4) marks the exact center of the plumb point.
9. Calculate the accuracy as described in section 7.3.1.1.

7.3.1.1 Calculation of accuracy

$$R = \frac{10}{RH [m]} \times \frac{(d1 + d2) [mm]}{4} \quad (1)$$

$$R = \frac{30}{RH [ft]} \times \frac{(d1 + d2) [inch]}{4} \quad (2)$$

The result (R) provided by this formula (RH = room height) refers to the tool's accuracy "in mm at 10 m" (formula (1)). This result (R) should be within the specification for the tool: 3 mm at 10 m

8 Care and maintenance

8.1 Cleaning and drying

1. Blow dust off the glass.
2. Do not touch the glass with the fingers.
3. Use only a clean, soft cloth for cleaning. If necessary, moisten the cloth slightly with pure alcohol or a little water.

NOTE Do not use any other liquids as these may damage the plastic components.
4. Observe the temperature limits when storing your equipment. This is particularly important in winter / summer if the equipment is kept inside a motor vehicle (-25°C to +60°C).

8.2 Storage

Remove the tool from its case if it has become wet. The tool, its carrying case and accessories should be cleaned and dried (at maximum 40°C / 104°F). Repack the equipment only once it is completely dry. Check the accuracy of the equipment before it is used after a long period of storage or transportation. Remove the batteries from the tool before storing it for a long period. Leaking batteries may damage the tool.

8.3 Transport

Use the original packaging or packaging of equivalent quality for transporting or shipping your equipment.

CAUTION

Always remove the batteries before shipping the tool.

8.4 Hilti calibration service

We recommend that the tool is checked by the Hilti calibration service at regular intervals in order to verify its reliability in accordance with standards and legal requirements.

Use can be made of the Hilti calibration service at any time, but checking at least once a year is recommended. The calibration service provides confirmation that the tool is in conformance, on the day it is tested, with the specifications given in the operating instructions.

The tool will be readjusted if deviations from the manufacturer's specification are found. After checking and adjustment, a calibration sticker applied to the tool and a calibration certificate provide written verification that the tool operates in accordance with the manufacturer's specification.

Calibration certificates are always required by companies certified according to ISO 900x.

Your local Hilti Center or representative will be pleased to provide further information.

9 Troubleshooting

Fault	Possible cause	Remedy
The tool cannot be switched on.	The battery is exhausted.	Replace the battery.
	The battery is inserted the wrong way round (incorrect polarity).	Insert the battery correctly.
	The battery compartment is not closed.	Close the battery compartment.
	Tool or on/off switch faulty.	If necessary, the power tool should be repaired by Hilti Service.
Individual laser beams don't function.	The laser source or laser control unit is faulty.	If necessary, have the power tool repaired by Hilti Service.
The tool can be switched on but no laser beam is visible.	The laser source or laser control unit is faulty.	If necessary, have the power tool repaired by Hilti Service.
	The temperature is too high or too low.	Allow the tool to cool down or warm up.
Automatic leveling doesn't function.	The tool is set up on an excessively inclined surface.	Set up the tool on the level.
	The pendulum is locked.	Release the pendulum.
	Extraneous light is too bright.	Reduce extraneous light.
	The tilt sensor is faulty.	If necessary, have the power tool repaired by Hilti Service.

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10 Disposal

WARNING

Improper disposal of the equipment may have serious consequences:

The burning of plastic components generates toxic fumes which may present a health hazard.

Batteries may explode if damaged or exposed to very high temperatures, causing poisoning, burns, acid burns or environmental pollution.

Careless disposal may permit unauthorized and improper use of the equipment. This may result in serious personal injury, injury to third parties and pollution of the environment.



Most of the materials from which Hilti tools or appliances are manufactured can be recycled. The materials must be correctly separated before they can be recycled. In many countries, Hilti has already made arrangements for taking back old tools or appliances for recycling. Ask Hilti Customer Service or your Hilti representative for further information.



For EC countries only

Disposal of electric tools together with household waste is not permissible.

In observance of European Directive 2012/19/EU on waste electrical and electronic equipment and its implementation in accordance with national law, electrical appliances that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.



Dispose of the batteries in accordance with national regulations.

11 Manufacturer's warranty

Hilti warrants that the tool supplied is free of defects in material and workmanship. This warranty is valid so long as the tool is operated and handled correctly, cleaned and serviced properly and in accordance with the Hilti Operating Instructions, and the technical system is maintained. This means that only original Hilti consumables, components and spare parts may be used in the tool.

This warranty provides the free-of-charge repair or replacement of defective parts only over the entire lifespan of the tool. Parts requiring repair or replacement as a result of normal wear and tear are not covered by this warranty.

Additional claims are excluded, unless stringent national rules prohibit such exclusion. In particular, Hilti is not obligated for direct, indirect, incidental or consequential damages, losses or expenses in connection with, or by reason of, the use of, or inability to use the tool for any purpose. Implied warranties of merchantability or fitness for a particular purpose are specifically excluded.

For repair or replacement, send the tool or related parts immediately upon discovery of the defect to the address of the local Hilti marketing organization provided.

This constitutes Hilti's entire obligation with regard to warranty and supersedes all prior or contemporaneous comments and oral or written agreements concerning warranties.



Hilti Corporation

LI-9494 Schaan

Tel.: +423/234 21 11

Fax: +423/234 29 65

www.hilti.com

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