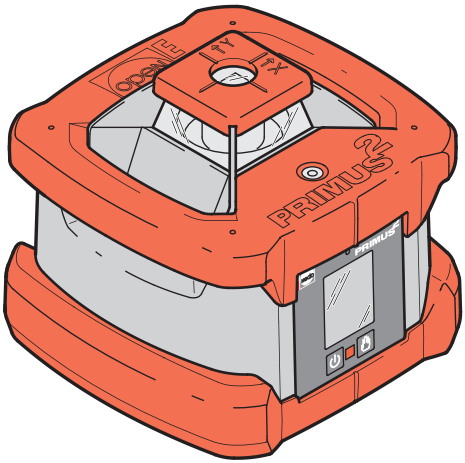

PRIMUS 2 H

DE Bedienungsanleitung

EN Operating instructions

FR Mode d'emploi

NL Gebruiksanwijzing

ES Manual de instrucciones

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Internet: www.nedo.com

These operating instructions have been drawn up with due care. However, NEDO GmbH & Co. KG does not accept any liability for possible errors in these operating instructions and their consequences. Equally, it does not accept any liability for direct losses or consequential losses resulting from improper use of the laser.
The specific national safety regulations and health & safety provisions as well as the specifications in these operating instructions must be noted and complied with when using the laser.
All product and brand names used are the property of the holder and are not explicitly labelled as such.
Contents subject to change without notice.

1 About these operating instructions

These operating instructions contain all the important information necessary for handling the **PRIMUS 2 H fully automatic rotating laser**. Operation, maintenance and care of the laser as well as the warnings and error messages are also described.

- Do not use the PRIMUS 2 H rotating laser until you have completely read and understood these operating instructions.
- Keep these operating instructions together with the PRIMUS 2 H rotating laser at all times.
- The PRIMUS 2 H rotating laser is also referred to as a "laser" in these operating instructions.

1.1 Symbols used in these operating instructions

Compliance with the safety instructions and warnings is the basic requirement for safe use of the PRIMUS 2 H rotating laser. The various instructions and warnings are labelled with corresponding symbols.

WARNING!

This pictogram with the word "WARNING!" indicates an imminent danger, which could result in severe physical injuries if it is not avoided.
▶ This arrow indicates the appropriate measure to prevent the imminent danger.

CAUTION!

This pictogram with the word "CAUTION!" indicates an imminent danger, which could result in slight or moderate physical injuries or property damage if it is not avoided.
▶ This arrow indicates the appropriate measure to prevent the imminent danger.

NOTE

This "Note" pictogram provides tips, recommendations and important information on use and handling of the laser.

In addition, the standard symbols are used in the appropriate places in these operating instructions.

2 Safety information

2.1 Documentation

Compliance with the following safety instructions and the specific national safety regulations and health & safety provisions is a basic requirement for trouble-free and safe use of the laser. Therefore, please read carefully through these operating instructions and all notes and follow them while working with the laser.

2.2 Laser radiation

The Primus 2 H rotating laser is, depending on the version, a Class 2 or Class 3R laser product in accordance with EN 60825-1:2014.

LASER RADIATION DO NOT STARE INTO BEAM LASER CLASS 2	**DIN EN 60825-1:2014 P ≤ 1mW λ: 630-680 nm φ ≤ 1,5 mrad**

LASER RADIATION AVOID DIRECT EYE EXPOSURE! LASER CLASS 3R	**EN 60825-1:2014 P ≤ 5 mW λ: 630-680 nm φ ≤ 1.5 mrad**

General safety instructions for handling laser radiation

WARNING!

Laser radiation can damage the eyes.
- ▶ *Prevent direct eye exposure to the beam.*
- ▶ *Do not direct the beam at other people or into public areas.*
- ▶ *To prevent reflections, do not point the laser at reflective surfaces.*
- ▶ *If possible, do not operate the laser at eye level.*
- ▶ *The housing of the laser may be opened by trained service technicians only.*

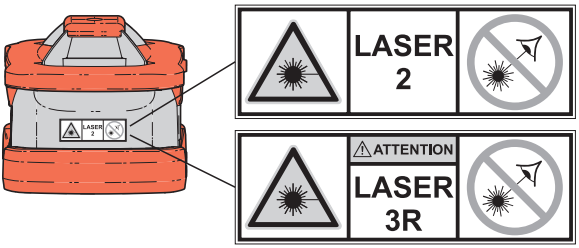
The emitted laser radiation has the following properties:

- Class 2 Power P ≤ 1mW / Class 3R Power P ≤ 5mW
- Wavelength λ: 630-680 nm
- Beam divergence φ ≤ 1.5 mrad
- Rotating laser dot: Laser pulse with f: 0.2Hz ... 10Hz

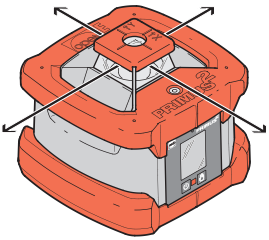
Warning signs

WARNING!

Warning signs on the laser are for your safety.
▶ Never remove the warning signs!



Laser exit openings



2.3 Intended use

The PRIMUS 2 H fully automatic rotating laser is suitable for levelling and for marking heights. The laser can be used indoors and outdoors.

Repairs may only be carried out by NEDO or an authorised customer service agent.

2.4 Transport and storage

The laser is is a sensitive, high-precision instrument and must be handled with appropriate care. Always transport and store the laser and the accessories in the transportation case.

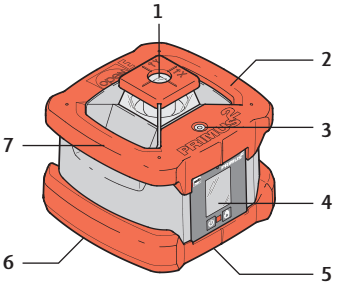
2.5 The environment

Product-specific information on disposal of the laser can be downloaded from www.nedo.com.
Batteries and rechargeable batteries are hazardous waste and may not be placed in the domestic waste. They must be properly disposed of according to the respective national guidelines.

3 Description

3.1 General product description

The PRIMUS 2 H laser is a fully-automatic rotating laser for horizontal use. The innovative shock protection system and the robust, water and dustproof housing protects the high power laser under virtually all indoor and outdoor operating conditions.



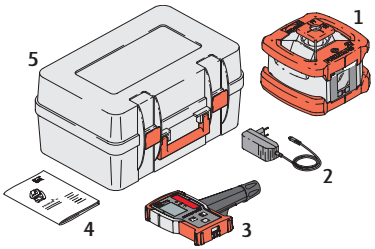
1 Rotating laser
2 Handle, rubberised
3 Spirit level
4 Control panel with buttons and display
5 5/8" threaded bushing (bottom)
6 Battery/rechargeable battery compartment
7 Handle, rubberised

3.2 Specifications

Fully-automatic rotating laser	**PRIMUS 2 H**
Self-levelling range	±5°, motorised with automatic monitoring
Levelling accuracy	better than ±0,05mm/m
Laser model	< 5 mW, Laser class 3R, 635 nm
Operating voltage	6 V
Operation duration	approx. 100 h with rechargeable batteries/approx. 120 h with batteries
Weight	4,0 kg
Dimensions (width/depth/height)	210×208×185 mm
Working temperature range	–20 °C to +50 °C
Charging temperature	–5 °C to +40 °C (recommended: +10 °C to +20 °C)
Working range with ACCEPTOR Pro receiver	700 m diameter
Rotational speed	600 rpm / optional 900 rpm
Class of protection	IP 66

3.3 Scope of Delivery

The illustrated scope of delivery includes the ACCEPTOR PRO laser receiver and a fixing clip. Its use is described in the corresponding instructions.

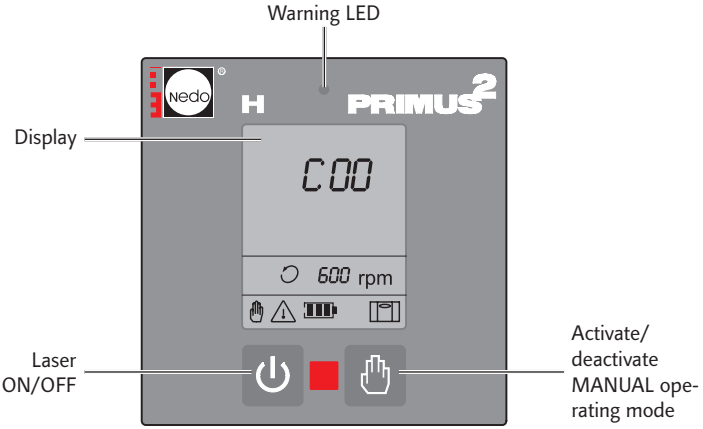


1 PRIMUS 2 H rotating laser
2 Charger
3 ACCEPTOR PRO laser receiver
4 Operating Instructions
5 Transportation case

4 Controls

4.1 Control panel buttons

The laser is operated using the control panel.



4.2 Displays

Symbol	Description					
C00 – C03	Warning					
ERR1 – 12	Error display					
	ROTATION mode					
600 rpm	Speed of the laser, from Serial no. P2-10000 optional 900 rpm possible					
	MANUAL operating mode					
	Warning symbol (flashes)					
	Remaining life in hours					
	Rechargeable battery	100	70	30	5	< 0,5
	Battery	120	100	50	15	< 2
	Levelling					

5 Initial Startup

5.1 Power supply safety instructions

WARNING!

Destruction! Explosion risk!

- ▶ *Use charger included in the scope of delivery only.*
- ▶ *Do not insert batters in the rechargeable battery pack and charge with the charger.*

CAUTION!

Damage!

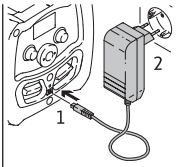
- ▶ *Do not mix dead and fully charged batteries.*
- ▶ *Do not place rechargeable batteries or batteries on radiators or store them in the sun.*

5.2 General power supply notes

Use the charger in dry rooms only.

5.3 Operating the laser with rechargeable batteries

Rechargeable battery pack is pushed in



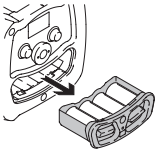
Connect charger

1 Connect charger to rechargeable battery pack.
2 Connect charger to mains supply.
Note voltage! (110-230 V)
Charging time for complete charging: 12-14 h.
During charging, the LED above the charger socket lights up in the rechargeable battery pack.
Operation possible during the charging process (charging time lengthened).

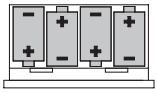
5.4 Operating the laser with batteries

When delivered, the rechargeable battery pack is inserted, the laser is ready for use. Replace rechargeable battery pack. as follows:

Release rechargeable battery pack / battery compartment locking device

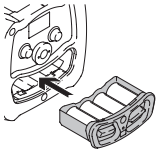


Pull out rechargeable battery pack / battery compartment



Note pole position!

Insert batteries into battery compartment



Push in battery compartment

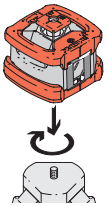
Lock battery compartment

6 Starting up the laser

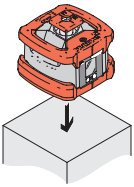
6.1 Install or s et up laser for use

The laser can be installed or set up in a horizontal depending on the use situation.

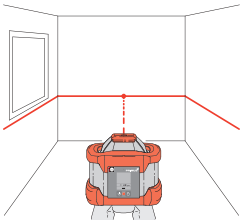
Horizontal on tripod



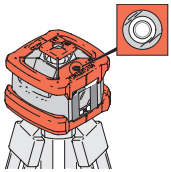
Set up horizontally



Set laser to working height



HORIZONTAL laser projection



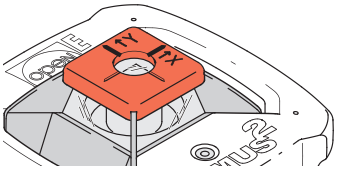
Use integrated spirit level to align laser

CAUTION!

Unevenness, soft surfaces and vibrations impair the stability of the laser or tripod.
▶ When installing/setting up the laser, ensure it has a safe, firm foothold.

NOTE

The cap with the axis markings is pushed on. If the cap has been removed, it must be pushed on as shown to the right, with the X and Y axes pointing in the right direction.



7 Switch on the laser

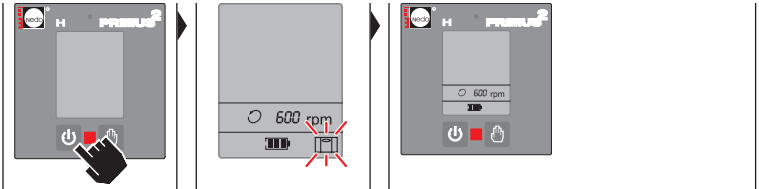
AUTOMATIC operating mode is the default setting each time the laser is switched on.

NOTE

Despite careful setting up, warnings and error messages can appear in the display in AUTOMATIC operating mode due to external influences and strong vibrations. For description and remedies, see Chapter 9.

7.1 AUTOMATIC operating mode

In AUTOMATIC operating mode, the laser automatically levels itself horizontally within a range of ±5° and compensates for minor vibrations.



Switch on the laser | Laser levels itself horizontally | Levelling is finished, the flashing symbol goes out, the laser is active

During and for 30 seconds after the levelling the laser can be placed in the final vertical position/height without warning, e.g. using an elevator tripod. After 30 seconds, the TILT alarm function is switched on. A vertical movement of the laser triggers the warning C01. For description and remedies, see Chapter 9.

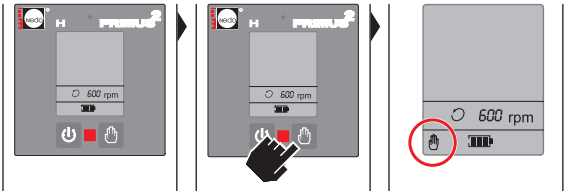
AUTOMATIC operating mode is active. The following functions can be invoked:

Use the button to switch to MANUAL operating mode (Chapter 7.2).

Use the button to exit the operating mode, switch off the laser.

7.2 MANUAL operating mode

In MANUAL operating mode the laser does **not** detect any vibrations and does not level itself horizontally.



AUTOMATIC operating mode is active | Set MANUAL operating mode | The hand symbol is displayed

NOTE

Use the button to switch to MANUAL operating mode immediately after switching on .

MANUAL operating mode is active. The following functions can be invoked:

Use the button to switch to AUTOMATIC operating mode (Chapter 7.1).

Use the button to exit the operating mode, switch off the laser.

8 Maintenance/Care

8.1 Maintenance

The PRIMUS 2 H laser is a robust, maintenance-free laser for professional use indoors and outdoors.
If the laser no longer works due to an internal error or damage, send the laser to the following address to be repaired:

NEDO GmbH & Co. KG
Service Department
Hochgerichtstraße 39 – 43
72280 Dornstetten
Germany

8.2 Care

The laser diode of the rotating laser is protected by glass covers. Use a soft cloth to regularly clean the glass covers and ensure correct operation. Avoid scratches in the glass covers.

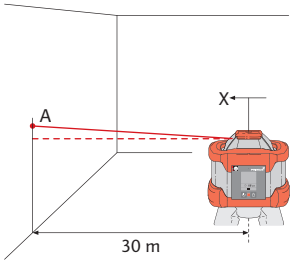
Use standard cleaning agents to clean the dustproof and watertight, partly rubberised housing. Use plenty of water to remove heavy soiling. **Do not immerse the laser in water**.

8.3 Checking the horizontal accuracy

The accuracy of the laser should be checked regularly. This requires a free measuring length of 30 m. Four measurements are taken in total in AUTOMATIC mode (two measurements each in X/Y axis). The check is carried out in two steps. The position of the laser beam is determined with the help of the receiver.

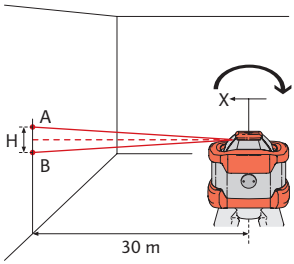
Step 1 – X-axis

- Set up the laser along the X-axis with a 30 m distance from the wall.
- Mark the position of the laser beam (**A**) on the wall.



Step 2 – X-axis

- Rotate the axis through 180°.
  Attention:
  The tripod may **not** be changed – ideally you should use Nedo Quickfix®!
- Mark position **B** of the laser beam and measure the vertical distance **H** between marking **A** and marking **B**. This can be above or below marking **A**.
- The laser is within the tolerance if **H** ≤ **3 mm**!



NOTE

Steps 1 and 2 now have to be repeated as described for the Y-axis.
If the value of H is outside the tolerance, the Primus 2 must be adjusted by an authorised customer service agent or by Nedo.

9 Warnings and error messages

9.1 Warnings

Warnings always indicate particular or special operating circumstances. The red LED of the display panel and the warning symbol ⚠ in the display flash with the display of the warning.

To reset the warning, use the ⏻ button to switch the laser Off and then back On again or use the ✋ button to switch to MANUAL operating mode.

Display	Description of the warning
C00	Laser is tilted by more than ±5° and cannot horizontally level itself.
C01	TILT alarm, vertical/height error. The laser was moved after 30 seconds had expired following levelling.
C02	Time exceeded during automatic levelling.
C03	Unallowed change in horizontal position ◀ ▶ vertical position.

9.2 Error messages

Display	Description of the error message
ERR1 – ERR11	Internal unit error ▶ Send laser to NEDO's Service department.
ERR12	If this error occurs more than once, ▶ Send laser to NEDO's Service department.