

Operating Manual

TUF HD 20

PACKAGE

1. Laser distance meter – 1pc.
2. Batteries (type AAA) - 2 pcs.
3. User manual – 1 pc.

SPECIFICATIONS

Working range	0,2...20 m*
Smallest unit displayed	1 mm
Measuring accuracy	±3 mm**
Laser type	Class II, 630-670 nm, < 1 mW
Continuous measurement (tracking)	V
Display backlight	V
Automatic shutdown of laser	30 sec.
Automatic shutdown of laser distance meter	180 sec.
Storage temperature	-10...+60 °C
Working temperature	0...+40 °C
Battery	2 x 1.5V AAA LR3 (alkaline)
Battery life	up to 5000 measurements
Dimensions	100 x 40 x 24,7 mm
Weight	0,08 kg

* Use a reflecting plate to increase the measurement range during daylight or if the target has poor reflective properties.

** In favorable conditions (good target surface properties, room temperature) up to 10 m. In unfavorable conditions, such as intense sunshine, poorly reflecting target surface or considerable temperature variations, accuracy can decrease at distance over 10m.



PRODUCT DESCRIPTION

1. Display
2. Switch on /turn on laser beam /make measurement/continuous measurement
3. Switch off/clear.


Display



- 1 Main display line
- 2 Secondary display line
- 3 Battery charge level
- 4 Measuring unit
- 5 Laser beam indication
- 6 Reference point


OPERATION

Insert/replace batteries


Remove the battery cover. Insert the batteries, observing correct polarity. Put the battery cover back. Remove the batteries when the device is not used for a long time to avoid corrosion and battery depletion. Both batteries should be replaced at the same time. Both batteries must be of the same brand with the same charge level. Replace batteries when you see symbol  on the display.

Switch on/off




Switch on: press and hold for 1 sec. button . The device will turn on and enter single distance measuring mode. Laser beam will turn on simultaneously. Laser beam automatically turns off in 30 seconds after the last operation.



Switch off: press and hold for 1 sec. button . In order to save battery power the device will switch off automatically within 3 minutes after the last operation.

Display backlight



When the device is on, backlight turns on automatically when you press button . The backlight will turn off automatically in 10 seconds after last operation.

Reference point

Reference point is the bottom end of the device.

Measuring unit



Press simultaneously buttons  and  to select the reference point – m (meter) or ft (foot).


Measurements

1. Single distance measurement





Short press button  to switch on the device. Laser beam will be on. Point the laser beam at




the target and short press button  for single distance measurement. The result of measurement will appear in the main line on the display. To perform next single distance measurement press button



 to turn on the laser beam and then press  again.

2. Continuous measurement (tracking)




When in single distance measurement mode press and hold for 1 sec. button . The device will take measurements one after the other, showing the last measured value. To stop continuous



measurement press button  or .



To exit the mode short press .


MESSAGE CODES

While operation, the following codes/symbols may appear on the display:


Message	Cause	Solution
204	Calculation error	Refer to user manual, repeat the procedure.
208	Excessive current	Please contact the distributor or authorized service center.
220	Batteries are low	Replace the batteries.
252	Operating temperature is too high	Cool down the device to temperature within 0...+40 °C.
253	Operating temperature is too low	Warm up the device to temperature within 0...+40 °C.
255	Received signal is too weak	Make measurements against surface with better reflective properties. Use a reflecting plate.
256	Received signal is too strong	Make measurements against surface with lower reflective properties. Use a reflecting plate.

261	Outside of measuring range	Carry out measurements within the range acceptable for this device.
500	Hardware error	Switch on/off the device several times. If this error still appears, please contact the distributor or authorized service center.

SAFETY REGULATIONS

 The user manual should be read carefully before you use the device for the first time. Unintended use of the device can be dangerous for human's health and cause serious injury. Keep this user manual. If the device is given to somebody for temporary use, be sure to enclose user manual to it.

- Do not misuse the device.
- Do not remove warning signs and protect them from abrasion, because they contain information about safe operation of the device.

	<p>Laser radiation! Do not stare into beam Class 2 laser <1 mW, 630-670 nm IEC 60825-1: 2007-03</p>
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The device belongs to laser product class II in accordance with IEC 60825-1 with a 630-670 nm wavelength.

- Do not look into the laser beam or its reflection, with unprotected eye or through an optical instrument. Do not point the laser beam at people or animals without the need. You can dazzle them.
- To protect your eyes close them or look aside.
- It is prohibited to disassemble or repair the device yourself. Entrust device repair to qualified personnel and use original spare parts only.
- Do not use the device in explosive environment, close to flammable materials.
- Avoid heating the batteries to avoid the risk of explosion and electrolyte leakage. In case of liquid contact with skin, wash it immediately with soap and water. In case of contact with eyes, flush with clean water during 10 minutes and consult the doctor.

CARE AND MAINTENANCE

Attention! The instrument is a high precision device and requires careful handling. The following recommendations will extend the life of the device:

- Do not point the device at the sun
- Protect the device from bumps, falls and excessive vibration; do not let liquids, construction dust and foreign objects get inside the device.
- Do not expose the device to extreme temperatures.
- If liquids get inside the device first remove batteries, then contact a service center.
- Do not store or use the device under high humidity conditions for a long time.
- Clean the device with soft wet cloth.
- Keep device optics clean and protect it from mechanical damage.
- Carry out control measurements occasionally, especially if the device is subject to excessive mechanical or other impact, before and after making important measurements.

WARRANTY

All TUF products go through post-production control and are governed by the following terms of warranty. The buyer's right to claim about defects and general provisions of the current legislation do not expire.

- 1) TUF agrees to eliminate all defects of the device, discovered during the warranty period, that represent defect in material or workmanship in full volume and at its own expense.
- 2) The warranty period is 24 months and starts from the date of purchase by end consumer (see the original supporting document).
- 3) The warranty doesn't cover defects resulting from wear and tear or improper use, malfunction of the device caused by failure to observe the instructions of this user manual, untimely maintenance and service and insufficient care, the use of non-original accessories and spare parts. Modifications in design of the device relieve the seller from responsibility for warranty works. The warranty doesn't cover cosmetic damage, that doesn't hinder normal operation of the device.
- 4) TUF reserves the right to decide on replacement or repair of the device.
- 5) Other claims not mentioned above, are not covered by the warranty.
- 6) After warranty works are carried out by TUF warranty period is not renewed or extended.
- 7) TUF is not liable for loss of profit or inconvenience associated with a defect of the device, the rental cost of alternative equipment for the period of repair.

This warranty applies to German law except provision of the United Nations Convention on contracts for the international sale of goods (CISG).

In warranty case please return the device to retail seller or send it with defect description to the following address:

