

# HDL 80

  
**Hultafors**



Operating instructions

EN

**INCLUDED IN DELIVERY WITH THE HDL 80**

1. Laser distance measurement instrument
2. Belt bag
3. AAA batteries
4. Flat-head screwdriver
5. Quick start guide

1



3



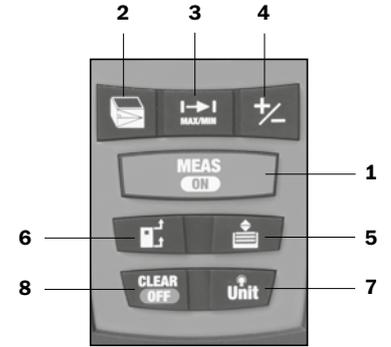
2



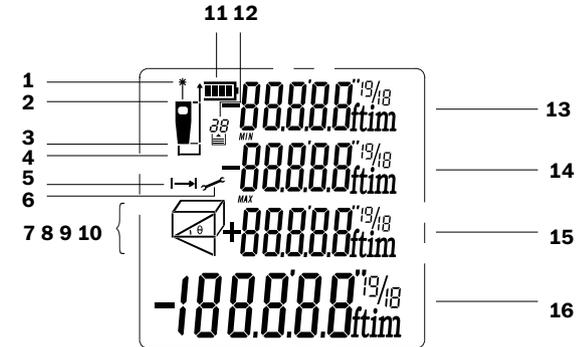
4



**2.1 FUNCTION BUTTONS**



**2.2 DISPLAY**



# Operating manual

## HDL 80/Laser Distance Measurement Instrument

### About this manual

Congratulations on the purchase of your new HDL 80! You have acquired a Hultafors measurement instrument, which can make your work easier, faster and more precise. To utilize the complete functionality range of this measurement instrument, and to ensure a safe operation, please observe the following instructions:

Please read these operating manual before starting to use the device.

Always keep the operating manual near the device.

Only hand over the device to other persons together with the operating manual.

Never render the attached warning signs unreadable.

### Contents

1. General information
2. Description
3. Technical data
4. Safety instructions
5. Laser safety / classification
6. Startup
7. Operation
8. Maintenance, storage and transportation
9. Scope of delivery and accessories
10. Troubleshooting
11. Disposal
12. Warranty
13. EC conformity declaration

## 1. General information

### 1.1 Signal words and their meaning

#### DANGER

For an imminent danger that could lead to serious injury or death.

#### WARNING

For a possibly dangerous situation that could lead to serious injury or death.

#### CAUTION

For a possibly dangerous situation that could lead to slight injury or property damage.

#### NOTE

For application notes and other useful information

### 1.2 Pictograms and other information

#### 1.2.1 WARNING SIGNS



Warning of dangers in general

#### 1.2.2 Symbols



Read instructions before use



Batteries and devices may not be disposed of with household waste



Do not throw batteries into the fire



Warning signs on battery Do not heat the battery above 60°C.



2 Class 2 laser device



Do not look into the laser beam!

## 2. Description

### 2.1.2 Function Buttons

- 1 ON/Measure button
- 2 Function button
- 3 Min/Max and continuous measurement
- 4 Add/subtract
- 5 Memory
- 6 Measurement edge
- 7 Backlighting/unit of measurement
- 8 OFF/Delete button

### 2.2 Display

- 1 Laser ON
- 2 Front measurement edge
- 3 Back measurement edge
- 4 Side measurement edge
- 5 Continuous measurement of distance
- 6 Error messages
- 7
- 8 } Area, volume, indirect 2-
- 9 } and 3-point measurement
- 10 }
- 11 Battery status
- 12 Memory
- 13 Measured value 1
- 14 Measured value 2
- 15 Measured value 3
- 16 Last measured value

### 2.3 Intended Use

This instrument is designed to measure distances. The measured value, setting, and instrument status can be viewed on the display. A laser beam is emitted and then sent back to the laser distance measurement instrument from a reflected surface. This is used to calculate the distance. The range depends on the model of the laser distance measurement instrument, on reflectivity, and on the properties of the reflective surface.

## 3. Technical Data

### 3.1 General

Measurement range	0.2–80 m*
Accuracy	± 1.5 mm**
Unit of measurement	m, in, ft, ft+in
Laser class	2
Laser type	635 nm, < 1 mW
Protection rating	IP54
Laser auto-shutdown	30 s
Instrument auto-shutdown	180 s
Operating duration	up to 5000 measurements***
Battery type	2 x AAA 1.5 V
Operating temperature	0 to +40°C
Storage temperature	-10°C to +60°C
Dimensions (H x W x D)	115 x 52 x 32
Weight with batteries	140 g

\*when measuring targets with 100% reflectivity (e.g., a painted white wall), with low backlighting and an operating temperature of 25°C.

\*\*at 0.2–10 m; distances between 10 m and 80 m may cause the maximum tolerance to decrease by 0.1 mm/m.

\*\*\*when used at room temperature.

### 3.2 Functions

- Individual measurement
- Min/Max measurement
- Continuous measurement
- Area measurement
- Volume measurement
- Indirect 2-point measurement
- Indirect 3-point measurement
- Addition
- Subtraction
- Measured value memory
- Unit of measurement
- 4-line display with backlighting

## 4. Safety instructions

### 4.1 Area of responsibility

#### 4.1.1 MANUFACTURER

Hultafors is responsible for the safe delivery condition of the product, including the operating manual and the original accessories.

#### 4.1.2 OPERATOR

The operator is responsible for using the product as intended, the deployment of his personnel, their training and the operational safety of the product.

- He understands the safety information which is stated on the product and the instructions which are contained in the operating manual.
- He shall comply with local regulations relating to safety and accident prevention regulations as well as worker protection laws and regulations.
- He shall immediately notify Hultafors if safety-related issues should develop on the product or during its utilization.
- He shall ensure that the product is not utilized any further if defects become evident, and he will have the product repaired professionally.



### 4.2 IMPROPER USE

- Use of the device and the accessories without instruction.
- Use of third-party accessories or additional equipment.
- Use outside of the intended limits (see Chapter 3/Technical data).
- Use under extreme temperature fluctuations without an adequate acclimatization.
- Disabling of safety devices and removal of hazard notices and labels.
- Unauthorized opening of the device.
- Performance of modifications or alterations the device or the accessories.
- Deliberate blinding of third parties.
- Inadequate safeguarding at the installation site.

### 4.3 UTILIZATION LIMITATIONS

The HDL 80 is suitable for a continuous use in an atmosphere which can be inhabited by humans.

- Do not operate the product in explosion-prone or corrosive environments.
- Inform the local safety authorities and safety experts before working in hazardous environments, in close proximity to electrical installations or similar surroundings.

## 4.4 Usage Hazards

### 4.4.1 GENERAL



#### WARNING

Missing or incomplete instructions may result in improper or incorrect use. This can cause accidents with serious damages to persons, property, assets and the environment.

- Follow the manufacturer's and operator's safety instructions.
- Protect equipment and accessories from access through children.



#### WARNING

Blinding by laser radiation can indirectly lead to serious accidents, especially for people who are driving a vehicle or operating machinery.

- Do not set up the laser beam and the laser plane at eye level or aim at people.



#### CAUTION

A fall, longer storage, transportation or other mechanical effects can lead to erroneous measurement results. Check the unit for damage before use. Do not use damaged equipment.

- Repairs have to be exclusively performed by Hultafors

### 4.4.2 BATTERIES



#### DANGER

Strong mechanical influences, can lead to a leakage, fire or explosion of the batteries or trigger the release of toxic substances.

- Batteries and rechargeable batteries may not be opened or exposed to mechanical loads.
- Repairs have to be exclusively performed by Hultafors



#### WARNING

High ambient temperatures and immersion into liquids can cause a leakage, fire or explosion of the batteries or trigger the release of toxic substances.

- Protect batteries and rechargeable batteries from mechanical influences during transport.
- Do not overheat batteries and rechargeable batteries or expose them to fire.
- Avoid the ingress of moisture into batteries and rechargeable batteries.
- Do not use damaged batteries or rechargeable batteries. Perform a proper disposal (see Chapter 11/Disposal).



#### WARNING

A short-circuiting or unintended use can cause batteries to overheat and create an injury or fire hazard.

- Do not transport or store batteries in the pockets of garments.
- Do not bring the battery contacts in contact with jewelry, keys, or other electrically conductive objects.
- Do not charge the batteries.
- Do not discharge the batteries through short-circuiting.
- Do not solder the batteries within the device.
- Do not mix old and new batteries, and do not mix batteries from different manufacturers or with a differing type designation.



#### WARNING

If disposed of improperly third parties can possibly be seriously injured and the environment polluted. The burning of plastic components generates toxic fumes which may impair health of people. Batteries/rechargeable batteries may explode if they are damaged or heated excessively, and thereby cause poisoning, burning, corrosion or environmental contamination. If disposed of negligently unauthorized persons are able to use the product improperly.

- The product may not be disposed of together with household waste. Perform a proper disposal of the device and the accessories (see Chapter 12/Disposal).
- Protect the product at all times from access through unauthorized persons, and especially children.

## 4.5 Electromagnetic compatibility (EMC)

The electromagnetic compatibility is the ability of the product to function in an environment with electromagnetic radiation and electrostatic discharges were are present, without causing an electromagnetic interference for other devices.

### 4.5.1 INTERFERENCE FOR OTHER DEVICES THROUGH HDL 80

Although the product meets the strict requirements of the relevant directives and standards, Hultafors can not completely exclude the possibility of interference with other devices (for example, when using the product in combination with third-party devices, such as field computers, personal computers, wireless devices, mobile phones, certain cables or external batteries).

- When using computers and radio equipment make sure to observe to the vendor-specific information about electromagnetic compatibility.
- Only use original Hultafors equipment and accessories.

### 4.5.2 INTERFERENCE OF THE HDL 80 THROUGH OTHER DEVICES

Although the product meets the strict requirements of the relevant directives and standards, Hultafors can not entirely exclude the possibility that an intense electromagnetic radiation in the immediate vicinity of radio transmitters, two-way radios, diesel generators, etc. can distort the measurement results.

- When performing measurements under these conditions check the plausibility of the results.

## 5. Laser safety/classification

The HDL 80 emits a visible laser point.  
The product corresponds to the Laser Class 2 according to DIN EN 60825-1:2007

### Laser Class 2:

When using Class 2 laser devices the eye is protected by the eyelid closure reflex or evasive reactions in case of a random and short-term exposure.



#### WARNING

Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be dangerous.



#### CAUTION

Looking into the laser beam may be hazardous to the eye.

- Do not look into the laser beam.
- Do not aim the laser beam at other people.

### Labeling on the device:



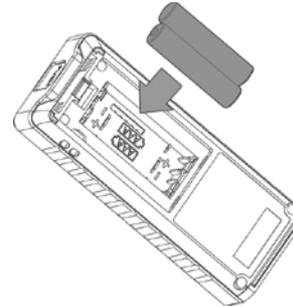
- Do not remove the type plate!

## 6. Getting Started

### 6.1 Batteries

1. Open the battery compartment cover on the back of the instrument using a screwdriver.
2. Insert the batteries into the instrument, observing the correct poles.
3. Close the battery compartment cover (tighten the screw by hand using a screwdriver).

Use only AAA batteries (1.5 V).  
Remove the batteries if the instrument is not used over a longer period of time.



### 6.2 Belt bag

The laser instrument can be stowed in a belt pouch for transport. It must be removed from the pouch when taking measurements.



## 7. Operation

### 7.1 Getting Started

#### 7.1.1 SWITCHING THE INSTRUMENT ON AND OFF

##### On:

- Hold down the ON/Measure button for 2 seconds to switch the laser instrument on.

##### Off:

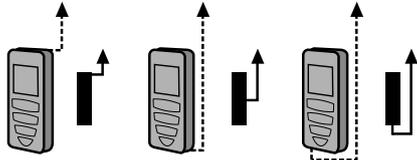
- Hold down the OFF/Delete button for 2 seconds to switch the laser instrument off.

#### 7.1.2 BACK

Press the OFF/Delete button once to undo the last action. Press the OFF/Delete button twice to exit the current function and return to individual measurement mode.

#### 7.1.3 SETTING THE MEASUREMENT PLANE

Press the Measurement edge button to toggle between using the front, back, or side of the instrument. The selection is indicated by an arrow on the display. The back of the instrument is set as the measurement edge by default. Each time the instrument is restarted, the back of the instrument is reset as the measurement edge.



### 7.2 Applications

#### 7.2.1 INDIVIDUAL MEASUREMENT

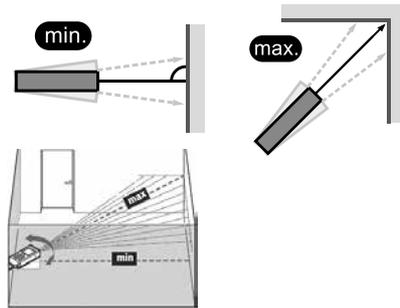
1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press the ON/Measure button.

As soon as an audible signal is emitted, the measurement is complete and the distance can be seen on the display. To calculate additional distances, press the Measure button again.

#### 7.2.2 MIN/MAX MEASUREMENT

1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press the Min/Max and continuous measurement button..

The minimum and maximum values are shown on the display. To stop the measurement, simply press the ON/Measure button.



#### 7.2.3 CONTINUOUS MEASUREMENT

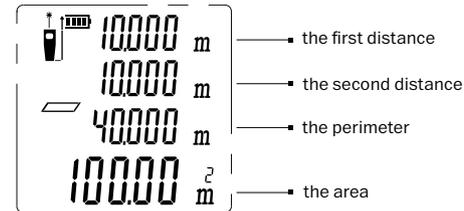
1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press the Min/Max and continuous measurement button.

The laser instrument measures the distance and shows it on the bottom line of the display.

#### 7.2.4 AREA MEASUREMENT

1. Switch on the laser instrument.
2. Press the Function button until the display for area measurement appears.
3. Measure the length and then the width separately using the individual measurement method. The laser beam remains switched on between the two measurements.

Once the second measurement is complete, the area is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2. The perimeter is also shown in measured value line 3.



#### 7.2.5 VOLUME MEASUREMENT

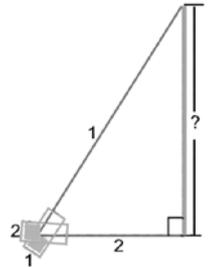
1. Switch on the laser instrument.
2. Press the Function button until the display for volume measurement appears.
3. Measure the length, the width, and then the height separately using the individual measurement method. The laser beam remains switched on between the three measurements.

Once the third measurement is complete, the volume is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1, 2, and 3.

#### 7.2.6 INDIRECT 2-POINT MEASUREMENT

1. Switch on the laser instrument.
2. Press the Function button until the display for indirect 2-point measurement appears.
3. Measure the two points separately using the individual measurement method. The laser beam remains switched on between the two measurements.

Once the second measurement is complete the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2.





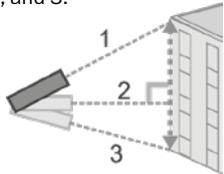
#### CAUTION

The two points measured must be in line and the second measurement must be taken at a right angle to the measured surface; otherwise measured values may be incorrect.

#### 7.2.7 INDIRECT 3-POINT MEASUREMENT

1. Switch on the laser instrument.
2. Press the Function button until the display for indirect measurement appears.
3. Measure the three points separately using the individual measurement method. The laser beam remains switched on between the three measurements.

Once the third measurement is complete, the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1, 2, and 3.



#### CAUTION

The three points measured must run in a line and the second measurement must be taken at a right angle to the measured surface; otherwise measured values may be incorrect.

#### 7.2.8 ADDITION

1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Take an individual measurement.
4. Press the Add/subtract button to add the next individual measurement (plus symbol + appears on the display).
5. Take an individual measurement.

The laser instrument shows the result on the bottom line of the display. This process can be repeated indefinitely.

#### 7.2.9 SUBTRACTION

1. Switch on the laser instrument.
2. Direct the laser point at the target..
3. Take an individual measurement.
4. Hold down the Add/subtract button for 2 seconds to subtract the next individual measurement (minus symbol - appears on the display).
5. Take an individual measurement.

The laser instrument shows the result on the bottom line of the display. This process can be repeated indefinitely.

#### 7.2.10 MEASURED VALUE MEMORY

1. Switch on the laser instrument.
2. Press the Memory button.

The Add/subtract button can now be used to view the last 20 measured values.

#### 7.2.11 UNIT OF MEASUREMENT

1. Switch on the laser instrument.
2. Press the Memory button.  
The Add/subtract button can now be used to view the last 20 measured values.

The unit of measurement switches from meters (m) to feet (ft). Holding down the Backlighting/unit of measurement button for 2 seconds again switches the unit of measurement from feet (ft) to inches (in). Holding down the Backlighting/unit of measurement button for 2 seconds again switches the unit of measurement from inches (in) to feet and inches (ft+in). Holding down the Backlighting/unit of measurement button for 2 seconds again switches the unit of measurement from feet and inches (ft+in) back to meters (m). Each time the instrument is restarted, the unit of measurement is reset to meters (m).

#### 7.2.12 BACKLIGHTING

1. Switch on the laser instrument.
2. Press the Backlighting/unit of measurement button to switch the backlighting on or off.  
Each time the instrument is restarted, the backlighting is switched on.

Each time the instrument is restarted, the backlighting is switched on.

### 7.3 Guidance for Operation

The laser instrument must not be moved during measurements. A fixed mounting surface with a stop is therefore recommended. The laser emission area and the reception range must not be obscured during measurements.

Depending on the measured surface, it cannot be guaranteed that all measurements are completely accurate. Avoid surfaces that are textured, reflective, transparent, or porous.

## 8. Maintenance, storage and transportation

### 8.1 Cleaning

- Wipe off the dirt with a soft damp cloth.
- Check the outlet openings of the laser regularly, and gently clean them if necessary. Do not touch the glass with your fingers.
- Do not use aggressive cleaning agents or solvents.
- Do not immerse the device into water!
- Clean and dry wet equipment, accessories and transport containers prior to packaging them. Only pack equipment again when it is completely dry.
- Keep plug connections clean and protected from moisture.

### 8.2 Storage

#### 8.2.1 GENERAL

- The equipment may only be stored within the specified temperature limits (see Chapter 3/Technical data).
- After a prolonged storage check the accuracy of the measuring device before using it.

#### 8.2.2 BATTERIES

- For storage, remove the batteries from the device.
- The storage should preferably be performed in a dry environment at room temperature (see Chapter 3/Technical data).

- Protect from moisture and humidity. Dry wet or damp batteries before the storage, or respectively before usage.

### 8.3 Transport

#### 8.3.1 GENERAL

The device may be damaged through strong vibrations or by falling.

- Never transport the product loosely. Always use the original packaging or an equivalent transport container.
- Switch off the measuring device before transporting it.
- Check the unit for damages before use.

#### 8.3.2 BATTERIES

When transporting or shipping batteries, the operator is responsible for complying with the applicable national and international laws and regulations.

- Before shipping, remove the batteries from the device.

## 9. Scope of delivery and accessories

### 9.1 Scope of delivery HDL 80

- 1 Laser distance measurement instrument
- 2 Batteries
- 1 Belt bag
- 1 Quick start guide

### 9.2 ACCESSORIES (optional)

- LB laser goggles
- TP target plate

Further information on accessories can be found at [www.hultafors.com](http://www.hultafors.com)

## 10. Troubleshooting

Error	Possible Cause	Remedy
204	<ul style="list-style-type: none"> <li>Calculation error</li> </ul>	<ul style="list-style-type: none"> <li>Check specifications. Repeat process.</li> </ul>
208	<ul style="list-style-type: none"> <li>Overvoltage</li> </ul>	<ul style="list-style-type: none"> <li>Contact supplier.</li> </ul>
220	<ul style="list-style-type: none"> <li>Battery empty</li> </ul>	<ul style="list-style-type: none"> <li>Replace battery.</li> </ul>
252	<ul style="list-style-type: none"> <li>Temperature too high</li> </ul>	<ul style="list-style-type: none"> <li>Allow instrument to cool to the specified temperature.</li> </ul>
253	<ul style="list-style-type: none"> <li>Temperature too low</li> </ul>	<ul style="list-style-type: none"> <li>Allow instrument to warm up to the specified temperature.</li> </ul>
255	<ul style="list-style-type: none"> <li>Reception signal too weak</li> </ul>	<ul style="list-style-type: none"> <li>Increase reflectivity of target.</li> </ul>
256	<ul style="list-style-type: none"> <li>Reception signal too strong</li> </ul>	<ul style="list-style-type: none"> <li>Limit reflectivity of target.</li> </ul>
261	<ul style="list-style-type: none"> <li>Outside of measurement range</li> </ul>	<ul style="list-style-type: none"> <li>Observe measurement range given in specifications.</li> </ul>
500	<ul style="list-style-type: none"> <li>Component error</li> </ul>	<ul style="list-style-type: none"> <li>Switch instrument on and off repeatedly.</li> <li>If the error continues, contact the supplier.</li> </ul>

## 11. Disposal

If disposed of improperly third parties can possibly be seriously injured and the environment polluted. The burning of plastic components generates toxic fumes which may impair health of people. Batteries/rechargeable batteries may explode if they are damaged or heated excessively, and thereby cause poisoning, burning, corrosion or environmental contamination. If disposed of negligently unauthorized persons are able to use the product improperly.

Measuring tools, accessories and packaging must be recycled in an environmentally-friendly manner.



The product as well as the accessories - especially the batteries and rechargeable batteries - may not be disposed of with household waste.

- Perform a proper disposal of the device and the accessories.
- Only dispose of batteries in a discharged state.
- Observe the country-specific disposal requirements.

### Only for EU countries



Electric tools may not be disposed of with household waste!

According to the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation in national law, no longer usable electrical and electronic equipment must be collected separately and recycled in an environmentally friendly manner.

## 12. Manufacturer's Guarantee

„The manufacturer warrants to the original purchaser who is stated on the guarantee card, the freedom from defects for the device for a period of two years, with the exception of batteries, as of the point in time the device is handed over. The guarantee is limited to repairs and/or replacements at manufacturer's discretion. Defects which are caused through improper handling by the purchaser or third parties, natural wear and optical flaws that do not affect the usability of the equipment, are not covered by this guarantee. Claims under this guarantee can only be invoked if the device is submitted along with the guarantee card, completely filled out by the dealer, dated and provided with the company stamp. If the guarantee claim is justified, the manufacturer shall bear the transport costs. The duration of the guarantee will not be extended through repair or spare parts work which is carried out within the scope of the guarantee. Further claims are excluded, unless there are provided by the respective national legislation. In particular the manufacturer shall not be liable for any direct, indirect, incidental or consequential damages, losses or expenses in connection with the use or because of the inability to use the tool for any purpose whatsoever. Implied warranties for the usage or suitability for a particular purpose are expressly excluded.“

## 13. EC conformity declaration



### Declaration of Conformity



We **Hultafors Group AB, Hultaforsvägen 21, Hultafors**

declare under our sole responsibility that the Product(s)

**HDL 80**

to which this declarations relates is in conformity with the following standards.

#### **HDL 80:**

- EN 55022: 2010
- EN 61000
- EN 55024: 2010
- EN 60825-1:2007

Following the provisions of Directive(s)

**Electromagnetic compatibility 2004/108/EC  
Low Voltage Directive 2006/95/EC**

