HEIDENHAIN

TD 110

Installation Instructions

English (en)
11/2025

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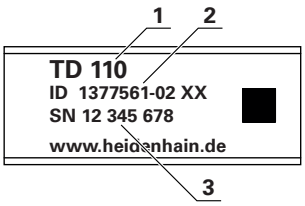
Fundamentals

1.1 Product information

Product designation	Part number (ID)
TD 110	1377561-02
TD 110	1377561-01

The ID label is provided on the side panel that houses the connections:



1 Product designation
2 Product ID / Part number (ID)
3 Serial number

1.2 Documentation on the product

1.2.1 Validity of the documentation

Prior to using the documentation and the product, check whether the documentation and product match.

If the part numbers do not match so that the documentation is not valid, you will find the current documentation at **www.heidenhain.com**.

1.2.2 Notes on reading the documentation

⚠ WARNING

Fatal accidents, personal injury or property damage caused by non-compliance with the documentation!

Failure to comply with the documentation may result in fatal accidents, personal injury or property damage.

- Read the documentation carefully from beginning to end
- Keep the documentation for future reference

The following table lists the various parts of the documentation in their order of reading priority.

Document type	Description
Addendum	An Addendum supplements or supersedes the corresponding contents of the Operating Instructions and the User's Manual. If an Addendum is included in the shipment, it has the highest reading priority. All other documentation content retains its validity.
Operating Instructions	The Operating Instructions contain all the information and safety precautions needed for the proper mounting and installation of the product. The Operating Instructions are included in delivery. The Operating Instructions have the second highest priority for reading.
User's Manual	The User's Manual contains all the information and safety precautions needed for the proper operation of the product according to its intended use. The User's Manual can be downloaded from the download area at **www.heidenhain.com**. The User's Manual has the third highest reading priority.

1.2.3 Storage and distribution of the documentation

The instructions must be kept in the immediate vicinity of the workplace and must be available to all personnel at all times. The operating company must inform the personnel where these instructions are kept. If the instructions have become illegible, the operating company must obtain a new copy from the manufacturer.

If the product is given or resold to any other party, the following documents must be passed on to the new owner:

- Addendum (if supplied)
- Operating Instructions

1.3 About these instructions

These instructions provide all the information and safety precautions needed for the proper mounting and installation of the device.

1.3.1 Target groups for the instructions

These instructions must be read and observed by every person who performs any of the following tasks:

- Mounting
- Installation

1.3.2 Notes in this documentation

Safety precautions

Precautionary statements warn of hazards in handling the device and provide information on their prevention. Precautionary statements are classified by hazard severity and divided into the following groups:

⚠ DANGER

Danger indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **will result in death or severe injury.**

⚠ WARNING

Warning indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **could result in death or serious injury**.

⚠ CAUTION

Caution indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **could result in minor or moderate injury.**

NOTICE

Notice indicates danger to material or data. If you do not follow the avoidance instructions, the hazard **could result in property damage**.

Informational notes

Informational notes ensure reliable and efficient operation of the device. Informational notes are divided into the following groups:

The information symbol indicates a **tip**.
A tip provides important additional or supplementary information.

The gear symbol indicates a function that **depends on the machine**.
The function described depends on the machine if, for example:

- Your machine features a certain software or hardware option
- The behavior of the functions depends on the configurable machine settings

The book symbol indicates a **cross reference**.
A cross reference leads to external documentation, for example the documentation of your machine manufacturer or other supplier.

1.3.3 Symbols and fonts used for marking text

In these instructions the following symbols and fonts are used for marking text:

Format	Meaning
▶ ... > ...	Identifies an action and the result of this action Example: ▶ Tap **OK** > The message is closed
■ ... ■ ...	Identifies an item of a list Example: ■ TTL interface ■ EnDat interface ■ ...

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Safety

2.1 General safety precautions

Generally accepted safety precautions, in particular the applicable precautions relating to the handling of live electrical equipment, must be followed when operating the system. Failure to observe these safety precautions may result in personal injury or damage to the device.

It is understood that safety rules within individual companies vary. If a conflict exists between the material contained in these instructions and the rules of a company using this system, the more stringent rules take precedence.

2.2 Intended use

The TD 110 series products are high-quality sensors for the non-contacting inspection of end mills and drills inside a machine's working space. The products are deployed for breakage detection.

The products of this series

- must only be used in commercial applications and in an industrial environment
- are intended for indoor use in an environment in which the contamination caused by humidity, dirt, oil and lubricants complies with the requirements of the specifications
- must be attached to a mounting surface to ensure the proper operation of the product in accordance with its intended use

2.3 Improper use

Any use not specified in 'Intended use' is considered improper use. The machine manufacturer and the company operating the machine are solely liable for any damage resulting from improper use.

In particular, the products of the TD 110 series must not be used in the following applications:

- Use and storage outside the operating conditions specified in "Specifications"
- Use outdoors
- Use in potentially explosive atmospheres

2.4 Personnel qualification

Qualified personnel

Qualified personnel are trained by the operating company to perform advanced operation and parameterization. Due to their specialized training, knowledge, and experience, including their knowledge of the relevant regulations, qualified personnel are able to perform their assigned tasks with respect to the given application and to recognize and avoid potential hazards on their own.

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Transport and storage

3.1 Unpacking

- Open the top of the box
- Remove the packaging materials
- Unpack the contents
- Check the delivery for completeness
- Check the delivery for damage

3.2 Items supplied and accessories

3.2.1 Items supplied

The following items are included in delivery:

Designation	Description
Product	TD 110 tool breakage detector
Mounting screws	Two M5x25 cylinder head screws
Operating Instructions	Printed issue of the Operating Instructions in the currently available languages
Addendum (optional)	Supplements or supersedes the corresponding contents of the Operating Instructions

3.2.2 Accessories

The following accessories are optionally available and can be ordered from HEIDENHAIN:

Accessory	Designation	ID
Adapter cable	Adapter cable for PLB 62xx, UEC 11x and UMC 11x	1070794-xx
Adapter cable	Adapter cable for iTNC without HSCI	1070793-xx
Connecting cable	Connecting cable for all other controls	634265-xx

3.3 In case of damage in transit

- Have the shipping agent confirm the damage
- Keep the packaging materials for inspection
- Contact and inform the sender about the damage

This applies also if damage occurred to requested replacement parts during transit.

3.4 Repackaging and storage

3.4.1 Repackaging the product

Repackaging should correspond to the original packaging as closely as possible.

- Re-attach all mounted parts and dust protection caps to the product as received from the factory, or repackage them in the original packaging as received from the factory
- Repackage the product in such a way that
  - it is protected from impact and shock during transit
  - it is protected from the ingress of dust or humidity
- Place all accessories that were included in the shipment in the original packaging
  Further information: "Items supplied and accessories", Page 14
- Enclose all the documentation that was included in the original packaging

If the product is returned for repair to the Service department:

- Ship the product without accessories

3.4.2 Storage of the product

- Package the product as described
- Observe the specified ambient conditions
- Inspect the product for damage after any transport or longer storage times

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Mounting

4.1 Product overview

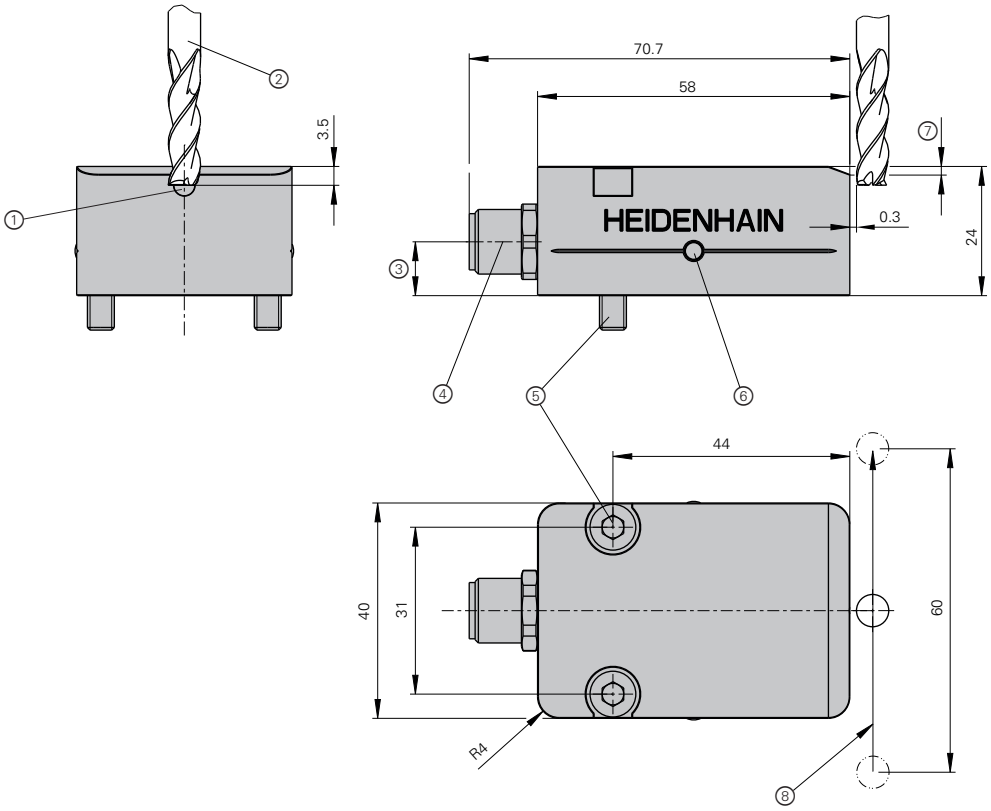
NOTICE

Reduced ingress protection due to missing or unsuitable protective cap

If no cable is connected to the product's connection, the ingress protection of the product cannot be guaranteed while it is inside the machine's working space.

- Remove the protective cap only for connecting a cable
- Attach a suitable protective cap to the connection immediately after disconnecting a cable

Screens



(1) Sensing surface

(2) Tool to be checked

(3) Flange socket dimension

- 1377561-01: 10 mm
- 1377561-02: 10.5 mm

(4) Cable connection X1: 8-pin M12 pre-assembled cable

(5) Mounting screws: M5x25 cylinder head screws

(6) LED: display of device status

- Green
  The device is on and ready for operation
- Blue
  Tool detected (duration: max. 1 second)
- Red
  Device error; reset required (power cycle)

(7) Chamfer dimension

- 1377561-01: 1.5 mm
- 1377561-02: 1 mm

(8) Measuring range

4.2 Mounting the product

The following steps must be performed only by qualified personnel.
Further information: "Personnel qualification", Page 12

⚠ WARNING

Crushing and impact hazards due to moving parts!

When mounting work is performed inside a machine's working space, moving parts may lead to crushing or impact.

- Switch off the machine before installing the product
- Secure all movable parts
- Wear protective gear

- Pay attention to the requirements for the mounting surface
  - Smooth
  - Metallic, electrically conductive
  - Full-surface relative to the floor space of the device
- Fasten the product to the mounting surface with two M5x25 cylinder head screws and tighten the screws with a tightening torque of 6.0 Nm

HEIDENHAIN recommends planar mounting parallel to the machine table.

In order to ensure the proper operation of the product in accordance with its intended use, it must be installed in the machine so that it cannot move out of place.

HEIDENHAIN recommends mounting the product by means of the two provided screws in accordance with the dimension drawing.

Further information: "Screens", Page 19

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Installation

5.1 General information

NOTICE

Damage to the device from the engaging and disengaging of connecting elements during operation!

Damage to internal components may result.

- Do not engage or disengage any connecting elements while the unit is under power

5.1.1 Prerequisites for the downstream electronics

Connect HEIDENHAIN encoders and signal converters only to downstream electronics whose supply voltage comes from PELV systems (for a definition of terminology, see EN 60204-1).

Encoders meet the requirements of the IEC 61010-1 standard if power is supplied from one of the following secondary circuits:

- Secondary circuit with current limitation (Low Voltage, Limited Energy) as per IEC 61010-1$^{3rd\ Ed.}$, Section 9.4
- Class 2 secondary circuit as specified in UL 1310

In place of IEC 61010-1$^{3rd\ Ed.}$, Section 9.4, the corresponding sections of the following standards can be applied:

- DIN EN 61010-1
- EN 61010-1
- UL 61010-1
- CAN/CSA-C22.2 No. 61010-1

5.2 Electrical connection

5.2.1 Connect cable

- Comply with the pin layout
- Remove and save the dust protection caps
- Route the cable based on the mounting variant
- Check the seals of the connection or cable
- Connect the connector to connection X1
- Tighten the coupling ring of the connector (tightening torque: 0.6 Nm to 0.8 Nm)

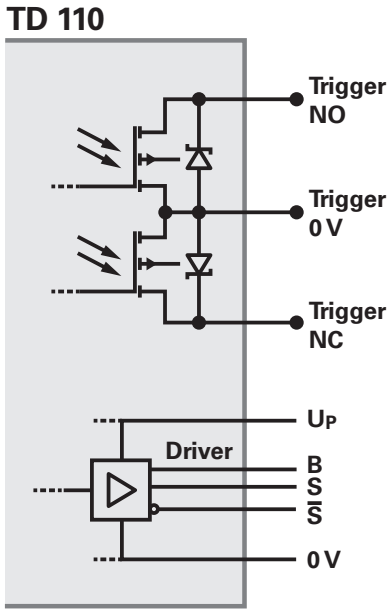
Suitable cables are listed here: Page 14

X1

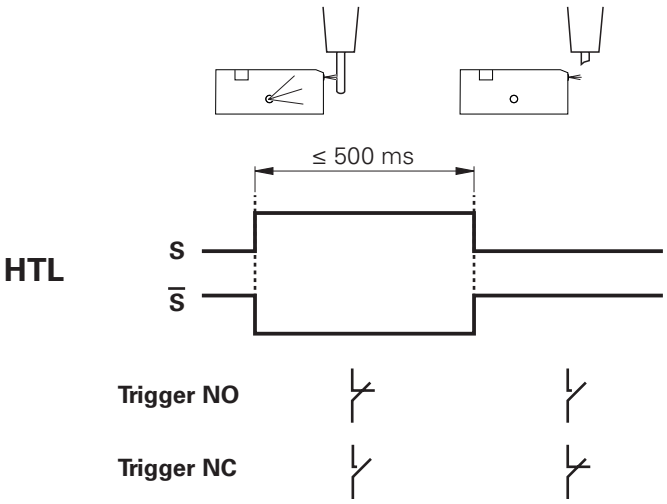
1	2	3	4	5	6	7	8
B	U_P	S	$\overline{S}$	Trigger NO	Trigger NC	0 V	Trigger 0 V
WH	BU	GY	PC	WHGN	YE	VT	BNGN

5.2.2 Interface

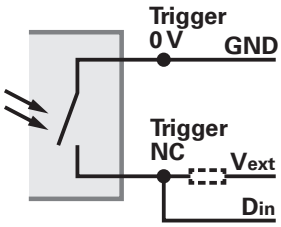
Circuit diagram



Signal behavior



Connection example



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Specifications

Product	
Housing dimensions	70 mm x 40 mm x 24 mm
Type of mounting	Mounting with two M5x25 cylinder head screws
Electrical data	
Supply voltage	■ DC 10 V ... 30 V (typical: DC 24 V) ■ 8-pin M12 flange socket
Current consumption	< 100 mA (without load)
HTL output signal	■ Trigger signals B, S, $\overline{S}$ (see "circuit diagram") ■ $U_H \geq (U_P - 2.2\ V)$ at $-I_H \leq 20\ mA$ ■ $U_L \leq 1.8\ V$ at $I_L \leq 20\ mA$
Floating trigger outputs	■ NC, NO optocouplers (see "circuit diagram") ■ Maximum rated voltage: DC 24 V ■ Maximum output current: 50 mA ■ Voltage drop at 50 mA: typ. 0.3 V

The current through the optocoupler must be limited by a pull-up/pull-down resistor or a suitable circuit.

Ambient conditions	
Operating temperature	10 °C to +50 °C
Storage temperature	–20 °C to +70 °C
General information	
Directives	CE, UKCA
Protection EN 60529	IP66/68
Mass	0.3 kg

HEIDENHAIN

DR. JOHANNES HEIDENHAIN GmbH
Dr.-Johannes-Heidenhain-Straße 5
83301 Traunreut, Germany
☏ +49 8669 31-0
FAX +49 8669 32-5061
info@heidenhain.de

Technical support FAX +49 8669 32-1000
Measuring systems ☏ +49 8669 31-3104
service.ms-support@heidenhain.de
NC support ☏ +49 8669 31-3101
service.nc-support@heidenhain.de
NC programming ☏ +49 8669 31-3103
service.nc-pgm@heidenhain.de
PLC programming ☏ +49 8669 31-3102
service.plc@heidenhain.de
APP programming ☏ +49 8669 31-3106
service.app@heidenhain.de

www.heidenhain.com

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