



HEIDENHAIN



Product Overview

Touch Probes The New Generation

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Representante oficial de:



HEIDENHAIN

[Argentina – Bolivia – Chile – Colombia - Costa Rica – Ecuador - El Salvador –
Guatemala – Honduras – Nicaragua – Panamá – Paraguay – Perú -
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Touch Probes from HEIDENHAIN

—The New Generation

HEIDENHAIN has been developing touch probes for workpiece and tool measurement on machine tools for over 25 years now, and has set the standard several times with the following features:

- The wear-free optical sensor
- The first transceiver capable of being fully integrated in the spindle housing
- The integrated cleaning blower for cleaning the measuring point
- The first battery-free touch probe without cable connection

Along with the technical advantages, HEIDENHAIN and its subsidiaries also offer reliable service in over 50 countries: regardless of the country in which the machine with the touch probe finally lands, HEIDENHAIN supports you on site.

Of course the new generation of touch probes from HEIDENHAIN is based on experiences with the current touch probes. Numerous improvements make working with the touch probes easier and more reliable, so that their use by the operator becomes more efficient.

Compact design

The particularly compact design makes it possible to use the touch probes even where installation space is limited. The smaller contours of the TS permit much freedom when tilting into position.

Optimum structure

The fastening element, sensor and probe contact are in a straight line. No adjustment is necessary. Simply mount and calibrate the touch probe, and off you go.

Reliable measurement results

Clean measuring points are a prerequisite for high process reliability. That is why all TS workpiece touch probes from HEIDENHAIN have blower jets for cleaning the workpiece, either with coolant or compressed air.

Wear-free optical sensor

The optical sensor is free of wear, and so provides the specified probing reproducibility even after a large number of probing processes (5 million switching cycles during type testing). This means that touch probes from HEIDENHAIN are excellently suited for grinding machines. The optical sensor features an optimized lens system and an integrated preamplifier for stable output signals.

Conventional batteries

Energy is supplied by size 1/2 AA normal batteries (e.g. lithium or alkaline) or rechargeable batteries. The batteries can be exchanged in a user-friendly manner, without any tools.

Electrically compatible

The **TS 260** and **TT 160** touch probes have both an HTL switching output and a floating trigger signal. Direct connection, without an interface or amplifier, to Fanuc controls is therefore possible, even to the "high speed skip" input.



—Innovative Technology

Hybrid technology: signal transmission via radio waves and infrared signals

The dual signal transmission combines the advantages of radio waves (high range and large amounts of data) with infrared signals (highest accuracy and fast signal transmission). This way, one version of a touch probe can be operated on different types of machines (milling machines, lathes, grinding machines) and any machine sizes (from small and enclosed to large and open). Difficult applications, such as plunging into a cylinder, are also not a problem.

Radio transmission uses the 2.4 GHz frequency band, which does not require a license, and has 16 channels. The range is usually 15 m, but much larger ranges are possible in practice under ideal circumstances. Each touch probe is uniquely addressed, making it possible to use them on twin-spindle machines.

Infrared transmission has a range of 7 m. The carrier frequency method makes the transmission very reliable, and the high frequency ensures a short delay time. The extremely short and constant transmission time permits exact measurement results, regardless of the probing velocity.

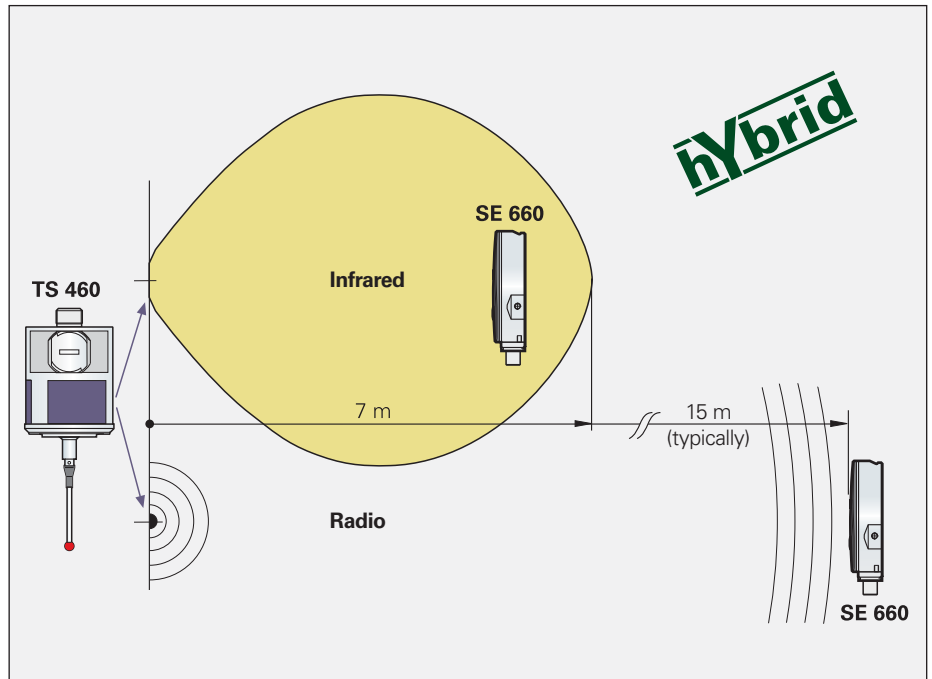
No matter whether you work with radio or infrared transmission, you need only **one SE 660 transmitter-receiver unit**. During installation you define once whether the trigger signal is to be received via radio or infrared transmission. The SE 660 has bar displays to assist you in finding an available frequency channel.

360° range with wide angle of transmission

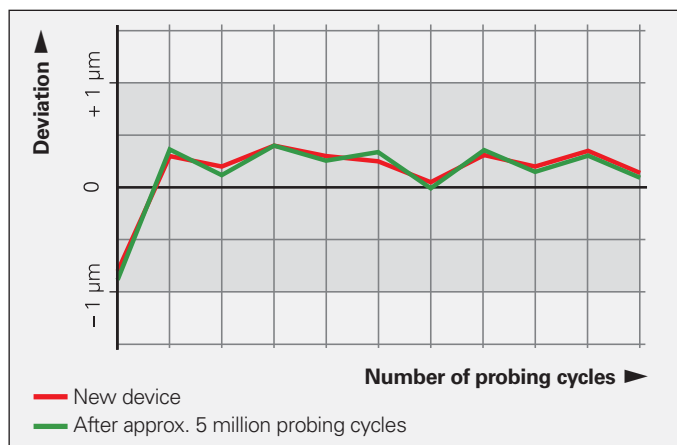
HEIDENHAIN touch probes have a 360° range of transmission. The large transmitter and receiver windows make a very wide transmission angle possible.

Mechanical collision protection and thermal decoupling (option)

A mechanical adapter between the touch probe and taper shank serves as collision protection. If there is a slight collision between the touch-probe body and the workpiece or fixture, the touch probe gives way somewhat, the ready signal drops to 0, and the control stops. The undamaged touch probe is recalibrated (via the control's calibration cycle) and you can continue working. At the same time, the collision protection adapter also functions as a thermal decoupling, protecting the touch probe from heating through the spindle.



Hybrid technology: simultaneous signal transmission via radio waves and infrared signals



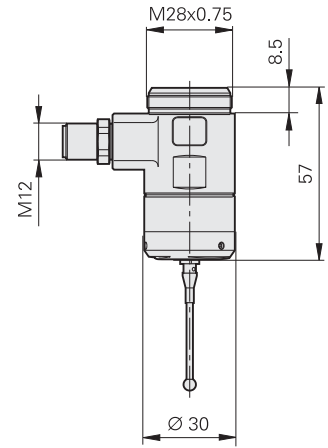
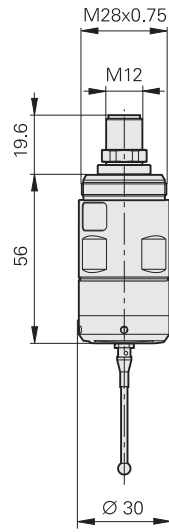
Wear-free optical sensor: typical repeatability curve results of repeated probing from one direction

Workpiece Touch Probes

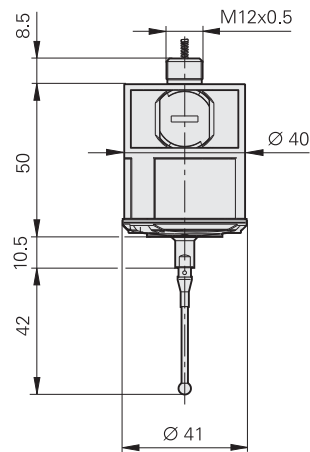
TS 260

TS 460

TS 260



TS 460



Workpiece touch probe	TS 260	TS 460
Probe accuracy	≤ ± 5 µm when using a standard T404 stylus	
Probe repeatability Repeated probing from one direction	$2\sigma \leq 1\ \mu\text{m}$ at a probing velocity of 1 m/min <i>Typical values:</i> $2\sigma \leq 1\ \mu\text{m}$ at a probing velocity of 3 m/min $2\sigma \leq 4\ \mu\text{m}$ at a probing velocity of 5 m/min	
Deflection of probe contact	≤ 5 mm in all directions (with stylus length L = 40 mm)	
Deflection force	<i>Axial:</i> approx. 8 N <i>Radial:</i> approx. 1 N	
Probe velocity	≤ 5 m/min	
Protection EN 60529	IP 67	
Operating temperature	10 °C to 40 °C	
Storage temperature	-20 °C to +70 °C	
Weight	Approx. 0.2 kg	
Fastening*	<ul style="list-style-type: none"> • Via M28x0.75 external thread • Via coupling joint with M22x1 external thread 	<ul style="list-style-type: none"> • With taper shank (see <i>Touch Probes</i> brochure) • Without taper shank (connecting thread M12x0.5)
Power supply	DC 15 to 30 V / ≤ 100 mA (with no load)	2 batteries (rechargeable or non-rechargeable), size $1\frac{1}{2}$ AA or LR2; each 1 V to 4 V
Operating time	–	Continuous duty: typ. 400 h ¹⁾ with lithium batteries
Electrical connection*	M12 flange socket, 8-pin; axial or radial	–
Cable length	≤ 25 m	–
Output signals	<ul style="list-style-type: none"> • Trigger signals S and \bar{S} (square-wave signal and its inverted signal) • Floating trigger output 	–
HTL signal levels	$U_H \geq 20\ \text{V}$ at $-I_H \leq 20\ \text{mA}$ $U_L \leq 2.8\ \text{V}$ at $I_L \leq 20\ \text{mA}$ at 24 V DC rated voltage	–
Signal transmission	Cable	Radio wave and infrared transmission with 360° range
Transmission angle of infrared signal	–	0°
Transceiver unit	–	SE 660
TS switch-on/off	–	Radio signal from SE 660

* Please select when ordering

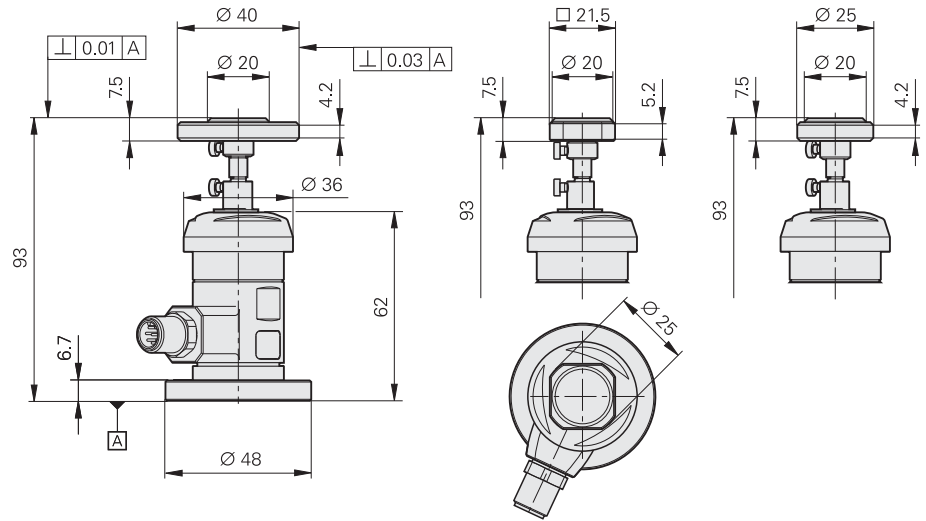
¹⁾ Reduced operating time if there is much surrounding radio traffic

Tool Touch Probes

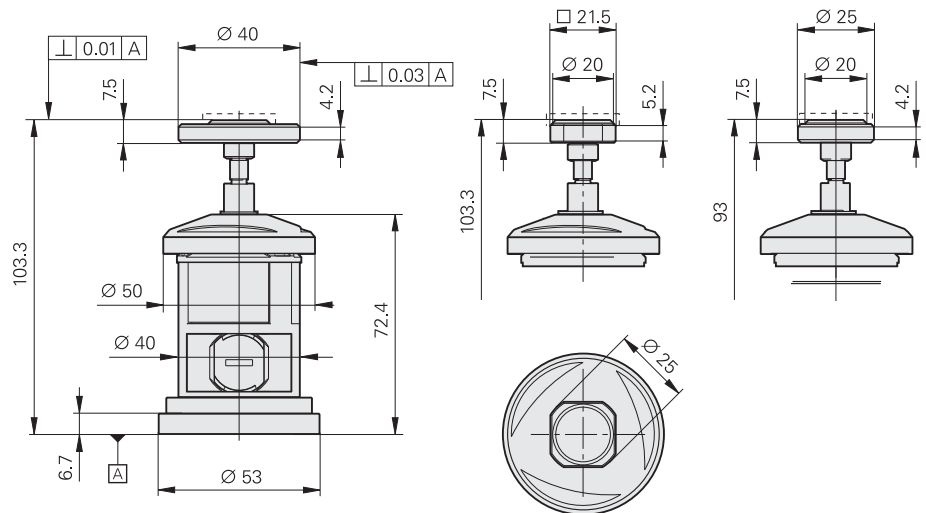
TT 160

TT 460

TT 160



TT 460



Tool touch probe	TT 160	TT 460
Probe accuracy	≤ ± 15 µm	
Probe repeatability Repeated probing from one direction	2 σ ≤ 1 µm at a probing velocity of 1 m/min <i>Typical values:</i> 2 σ ≤ 1 µm at a probing velocity of 3 m/min 2 σ ≤ 4 µm at a probing velocity of 5 m/min	
Deflection of probe contact	≤ 5 mm in all directions	
Deflection force	<i>Axial:</i> approx. 8 N <i>Radial:</i> approx. 1 N	
Probe velocity	≤ 5 m/min	
Protection EN 60529	IP 67	
Operating temperature	10 °C to 40 °C	
Storage temperature	-20 °C to +70 °C	
Weight	Approx. 0.3 kg	Approx. 0.4 kg
Mounting on the machine table	<ul style="list-style-type: none"> • Fastening by fixing clamps (included in delivery) • Fastening with mounting base (accessory) 	
Power supply	DC 10 to 30 V / ≤ 100 mA (with no load)	2 batteries (rechargeable or non-rechargeable), size 1/2 AA or LR2; each 1 V to 4 V
Operating time	–	Continuous duty: typ. 400 h ¹⁾ with lithium batteries
Electrical connection	M12 flange socket, 8-pin	–
Cable length	≤ 25 m	–
Output signals	<ul style="list-style-type: none"> • Trigger signals S and \bar{S} (square-wave signal and its inverted signal) • Floating trigger output 	–
HTL signal levels	$U_H \geq 20 \text{ V}$ at $-I_H \leq 20 \text{ mA}$ $U_L \leq 2.8 \text{ V}$ at $I_L \leq 20 \text{ mA}$ at 24 V DC rated voltage	–
Signal transmission	Cable	Radio wave and infrared transmission with 360° range
Transmission angle of infrared signal	–	0°
Transceiver unit	–	SE 660
TT switch-on/off	–	Radio signal from SE 660

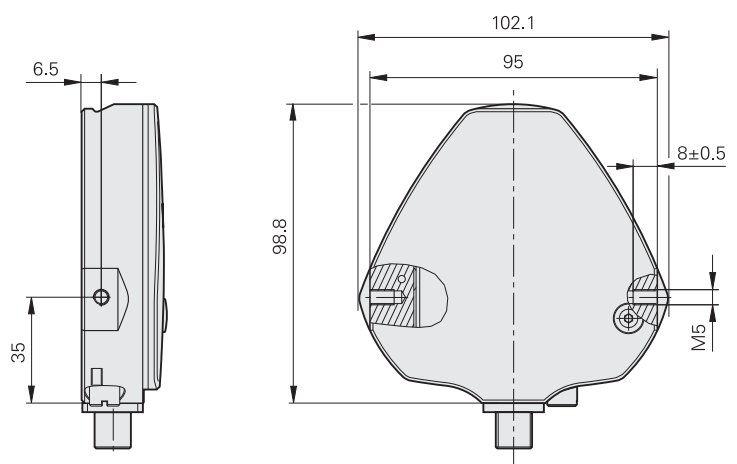
¹⁾ Reduced operating time if there is much surrounding radio traffic

Transceiver Unit

SE 660

Transceiver unit	SE 660
Area of application	In the machine's working space; for common communication with TS 460 and TT 460 using radio and infrared transmission
Input/output signals	Square-wave signals at HTL level <ul style="list-style-type: none"> • Start signals R(-TS) and R(-TT) • Ready signals B(-TS) and B(-TT) • Trigger signals S and \bar{S} • Battery warning \bar{W}
Optical status indicator	For infrared transmission, radio transmission, radio channel quality, channel, operating mode and whether workpiece or tool touch probe
Protection EN 60529	IP 67
Operating temperature	10 °C to 40 °C
Storage temperature	-20 °C to +70 °C
Weight without cable	Approx. 0.3 kg
Power supply	15 to 30 V DC
Power consumption Without load	<i>Normal operation:</i> 5.1 W _{eff} (≤ 250 mA _{eff} ¹⁾ <i>Transmission (max. 3.5 s):</i> 8.3 W (≤ 550 mA ¹⁾)
Electrical connection	M12 flange socket, 12-pin
Max. cable length	50 m 20 m with iTNC 530

¹⁾ At minimum supply voltage



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For more information

- Brochure: *Touch Probes*

