Infrared Hand-Held Thermometers

Model: TIR-H...

- Measuring range from -20 to 500 °C to -32 to 900 °C
- Measuring accuracy: ±1 % to ± 2 % of measured value
- Option: analogue output, RS 232, data memory, laser aiming light, statistical functions
- Non-contact measurement
- Simple operation

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Model:
TIR-H...

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Application

The series TIR infrared measuring instruments measure the surface temperature of the most varied materials and liquids in seconds in a non-contacting and non-interacting way.
Due to state-of-the-art microprocessor technology, the devices are compact and easy to operate. The measuring position is targeted with a laser pointer or an optical sight, the trigger is pressed and the measurement result is read on a large display.
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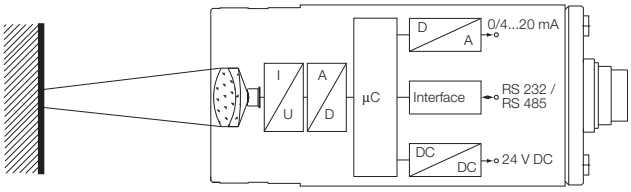
Advantages

- Unbeatable accuracy
- Non-contact measurement, thus short measuring time and no frictional heat
- Safe operation, because of distance from danger zone
- Isolated measuring by utilizing infrared radiation, also on surfaces that are bad conductors of heat.
- Measurements at places that are difficult to access
- Measurements on rotating and moving objects
- Long-term stable, zero-drift measurements
- Maintenance-free

Method of operation

The non-contact temperature measurement is based on the physical effect that every physical object emits electromagnetic radiation when heated. The radiated energy and its characteristic wavelength depends on the temperature of the surface of the target.



The heat radiation can be seen with the naked eye above approximately 550 °C. The target is then said to glow. Radiation below the light spectrum of red light is called infrared radiation.
Infrared measuring systems are able to concentrate infrared radiation with a suitable system of lens and to convert it to electrical signals. The microprocessor receives the radiation characteristics of the target in the form of emittance. The microprocessor outputs the measured value in digital form to the display or converts it to an analogue signal.

Design

Due to the rapid pace of technological development, highly sensitive and stable infrared detectors are available, with which low temperatures (even well below freezing) can be determined by non-contacting means.
The downstream microprocessor-based electronics linearizes the electrical signals and mathematically compensated for material and surface-dependant influences with the set emittance.

Device programme

Battery-powered hand-held devices

- Model TIR-HA
  -30 to +300 °C
  emittance 0.50 to 1.0 (adjustable)

- Model TIR-HN
  -20 to +500 °C to -30 to +900 °C
  emittance 0.10 to 1.0 (adjustable)
  Options: laser, RS 232, data memory
  statistical functions

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Special features

- Small dimensions, negligible weight
- LED positioning aid
- Multi LCD indicator
- Adjustable emittance
- Continuous temperature display
- Hold function
- Automatic switch off
- Automatic battery monitor
- Reasonably-priced version

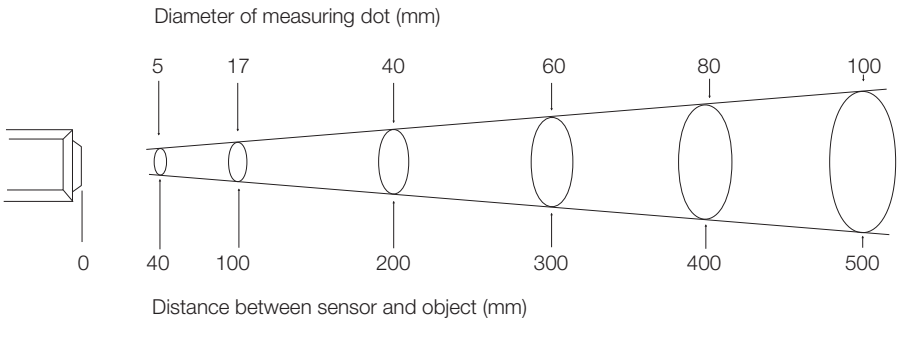
Technical Details

Changeover:	ON/E/HOLD
Measuring ranges:	-30.0 °C to 99.9 °C resolution 0.1 K 100 °C to 300 °C resolution 1 K
Range selection:	automatic
Measuring accuracy*:	-30 to -10 °C ± 3.0 °C -9 to +20 °C ± 2.0 °C +21 to +40 °C ± 1.0 °C +41 to +100 °C ± 1.5 °C +101 to +200 °C ± 2.0 °C +201 to +300 °C ± 3.0 °C
	**Referred to a reference device with an emittance greater than 0.99 and an ambient temperature of 25°C*
Diameter of measuring dot:	approximately 5 mm at 40 mm
Emittance:	0.50 to 1.00
Display:	LCD display, 3-segment
Overrange indication:	300 °C flashing at temperatures greater than 300 °C -30 °C flashing at temperatures less than -30 °C
Function temperature:	10 °C to 40 °C (short-term measurements outside the specification are possible)
Battery type:	9 V alkaline (IEC 6LR61)
Battery life:	approx. 1000 measurements
Weight:	166 g / including battery
Dimensions:	180 x 52 x 45 mm L x B x H

Order Details

Model	Description	Applications
TIR-HA030	Infrared hand thermometer -30.0 to +300.0 °C including 9 V battery	Plastics, rubber, food, paper, textiles, paints, glass, liquids, asphalt, wood

Diameter of measuring dot



For larger distances (>0,5 m) : Dot diameter = distance /5

Description

The TIR Infrared hand-held thermometers are universal measuring instruments for non-contact temperature measurement. They are remarkable for the following special features:

- Convenient one-hand operation and display with pistol grip
- Ergonomic design
- Large multifunction display
- Laser aiming light for marking measuring dot (optional)
- Many computer functions
- Automatic display illumination
- Adjustable emittance
- Locking switch for continuous mode

Technical Details TIR-HN040.../050.../060

Accuracy (with T_U=23 °C, ε=1):	
TIR-HN040:	2 % of measured value or 2 °C
TIR-HN050/...060:	1 % of measured value or 1 °C
Repeatability:	
TIR-HN040:	1 % of measured value or 1 °C
TIR-HN050/...060:	0.5 % of measured value or 1 °C
Response time (t90):	300 ms
Emittance:	0.2 - 1 0.95 (TIR-HN040 factory set)
Display illumination:	automatic
Display resolution:	1 °C
Temperature indication:	3 digits, °C/°F switchable (TIR-HN040 factory set)
Operating temperature	0 to 55 °C
Storage temperature	-20 to 70 °C
Supply:	battery 9 V Block
Battery life:	approx. 80 h / 25 h (with/without laser)
Math. functions:	MAX, MIN, AVG switchable MAX with TIR-HN040
Hold function:	10 s
Measuring dot marking:	laser aiming light laser category 2
Protection type:	IP 20
Case material	ABS
Dimensions of housing:	205 x 130 x 45 mm (H x L x W)
Tripod thread:	UNC 1/4"
Weight:	340 g (with battery)

Applications:

- Plastics
- Rubber
- Paper
- Textiles
- Liquids
- Paints
- Asphalt
- Wood
- Glass
- Food
- **No bright metal**

Order Details (Example: **TIR-HN 040 D L0**)

Model	Measuring range	Relation of distance	Fittings	Infrared detector
				Thermopile Spectral range 8 - 14 µm (no influence of steam and CO_2)
TIR-HN040...	-32 to +400 °C	**..D..**=1 : 10; Ø 20 mm	**L0**=with laser	
TIR-HN050...	-32 to +500 °C	**..G..**=1 : 15; Ø 8 mm		
TIR-HN060...	-32 to +600 °C	**..H..**=1 : 30; Ø 15 mm		

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Description

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- Convenient one-hand operation and display with pistol grip
- Ergonomic design
- Large multifunction display
- Laser aiming light for marking measuring dot
- Many computer functions
- Automatic display illumination
- RS232 interface or analogue output
- Adjustable emittance

Technical Details TIR-HNR...

Accuracy (with T_U=23 °C, ε=1) :	1 % of measured value ± 1 K ±2 °C for measuring temperature under -10 °C
Repeatability:	±0.5% of measured value ±1 K
Temperature coefficient:	±0.03 %/°C of measured value
Response time (t90):	150 ms
Emittance:	0.2 –1 adjustable
Display illumination:	automatic
Display resolution:	0.1 °C: -30 °C to 900 °C 0.1 °F: -22 °F to 999.9 °F 1 °F: 1000 °F to 1652 °F
Temperature indication:	°C/°F switchable 3 digits
Operating temperature:	-18 to 55 °C
Storage temperature:	-20 to 70 °C
Supply:	battery 9 V block (IEC GLR61)
Math. function:	MAX, MIN, AVG, Δ T
Hold function:	10 s
Data memory:	250 measured values with all parameters
Interface:	RS 232, 9600 BAUD
Measuring dot marking:	laser aiming light marks the centre of the measuring field, laser category 2
Alarm function:	HI alarm, LO alarm, adjustable
Analogue output:	1 mV/°C or 1 mV/°F
Charging socket:	for connecting a charger for NC battery
Battery life:	40 hours without laser
Weight:	470 g

Order Details (Example: **TIR-HNR 90 E LR**)

Model	Measuring range	Optics	Fittings	Infrared detector	Applications
		..E=optics 1000 mm (1:50) Ø 20 mm standard **..B**=auxiliary optics 100 mm (1:50) Ø 2 mm	**LR**=with laser, RS 232 without memory **LD**=with laser, RS 232 memory, software charging socket	Thermopile Spectral range: 8 - 14 µm (no influence of steam and CO_2)	Plastics, Rubber, Paper, textiles, Liquids, Paints, Asphalt, wood, Glass, Food **No bright metal**
TIR-HNR80...	-32 to +800 °C				
TIR-HNR90...	-32 to +900 °C				

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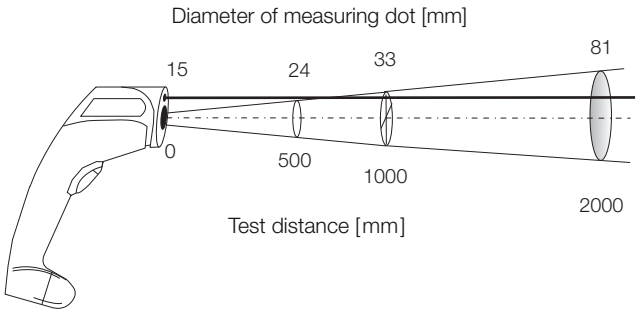
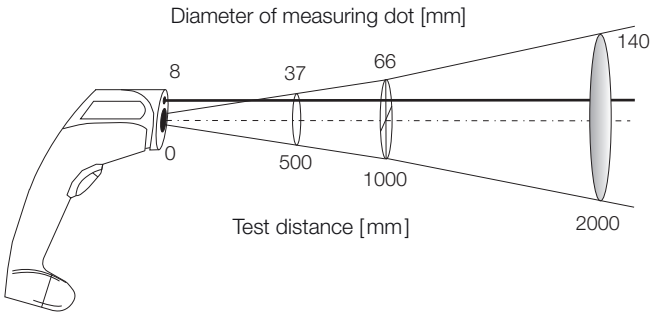
Size of measuring dot for hand-held measuring instruments model TIR-HN040...TIR-HN060

TIR-HN060

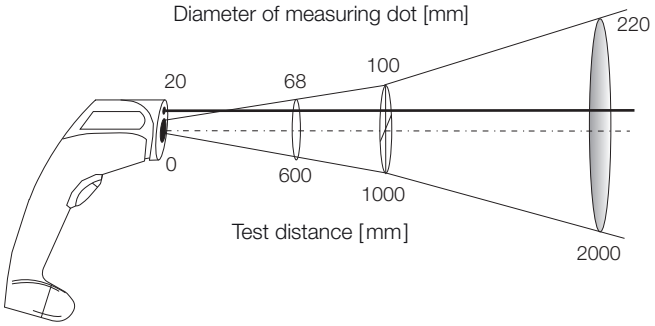


The **laser aiming light** is 20 mm above the centre of the measuring dot.

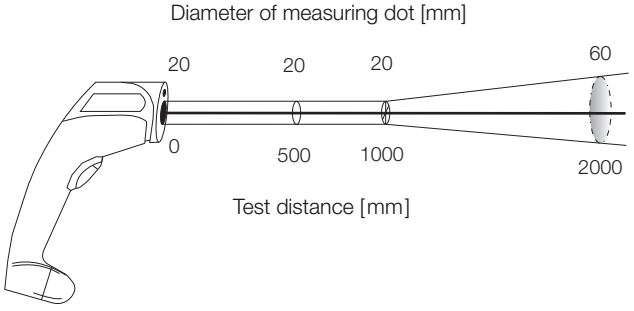
TIR-HN050

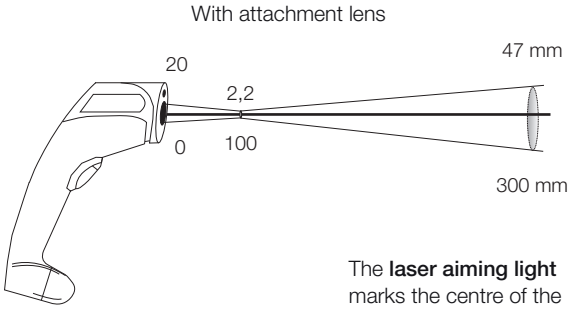


TIR-HN040



Size of measuring dot for hand-held measuring instruments model TIR-HNR80...TIR-HNR90





The **laser aiming light** marks the centre of the measuring dot.

Accessories for infrared hand-held measuring instruments

TIR-ZH 100	Battery for TIR-HNR
TIR-ZH 200	Charger for TIR-HNR
TIR-ZH 300	Carrying case for TIR-HN...
TIR-ZH 400	RS-232 Transmission cable for printer
TIR-ZH 500	Online software model with transmission cable

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