



Model: TIR-H...

- Measuring range from
-20 ... 500 °C to -32 ... 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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KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
☎ +49(0)6192 299-0
Fax +49(0)6192 23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

Model:
TIR-H...

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.

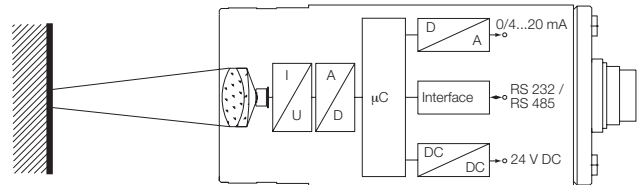


Advantages

- 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 ... +300°C
emittance 0.50 to 1.0 (adjustable)
- Model TIR-HN
-20 ... +500°C to -30 ... +900°C
emittance 0.10 to 1.0 (adjustable)
Options: laser, RS 232, data memory
statistical functions



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 ... 99.9°C
 resolution 0.1 K
 100°C ... 300°C
 resolution 1 K
 Range selection: automatic
 Measuring accuracy*:
 -30 ... -10°C ± 3.0°C
 -9 ... +20°C ± 2.0°C
 +21 ... +40°C ± 1.0°C
 +41 ... +100°C ± 1.5°C
 +101 ... +200°C ± 2.0°C
 +201 ... +300°C ± 3.0°C

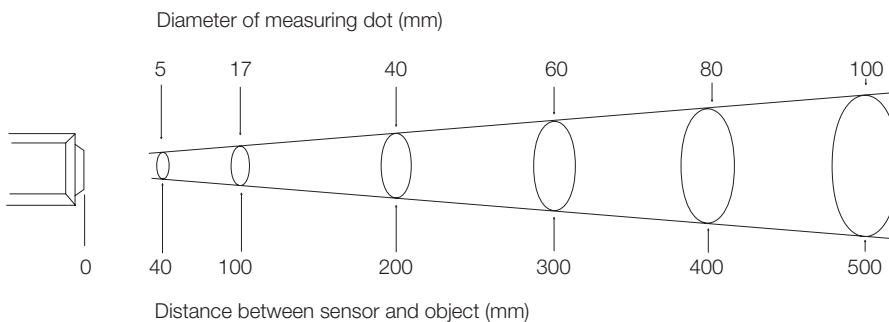
**Referred to a reference device with an emittance greater than 0.99 and an ambient temperature of 25°C*

Diameter of meas. 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 ... 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 W x H)

Order Details

Model	Description	Applications
TIR-HA030	Infrared hand thermometer -30.0 ... +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 $T_U=23^\circ\text{C}$, $\epsilon=1$):
 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 (t_{90}): 300 ms
 Emittance: 0.2 - 1
 0.95 (TIR-HN040 factory set)
 Display illumination: automatic
 Display resolution: 1°C
 Temperature indication: 3 digits, $^\circ\text{C}/^\circ\text{F}$ switchable (TIR-HN040 factory set)
 Operating temperature 0 ... 55°C
 Storage temperature -20 ... 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-HN040 D L0)

Model	Measuring range	Relation of distance	Fittings	Infrared detector
TIR-HN040...	$-32 \dots +400^\circ\text{C}$	..D..= 1 : 10; \varnothing 20 mm	L0=with laser	Thermopile Spectral range: 8 - 14 μm (no influence of steam and CO_2)
TIR-HN050...	$-32 \dots +500^\circ\text{C}$	..G..= 1 : 15; \varnothing 8 mm		
TIR-HN060...	$-32 \dots +600^\circ\text{C}$	..H..= 1 : 30; \varnothing 15 mm		



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
- Many computer functions
- Automatic display illumination
- RS232 interface or analogue output
- Adjustable emittance

Technical Details TIR-HNR...

Accuracy (with $T_U=23\text{ }^\circ\text{C}$, $\epsilon=1$) : 1 % of measured value or $\pm 1\text{ K} \pm 2^\circ$ for measuring temperature under $-10\text{ }^\circ\text{C}$

Repeatability: $\pm 0.5\%$ of meas. value or $\pm 1\text{ K}$

Temperature coefficient: $\pm 0.03\%/^\circ\text{C}$ ($23\text{ }^\circ\text{C}$)

Response time (t_{90}): 150 ms

Emittance: 0.2 - 1 adjustable

Display illumination: automatic

Display resolution: $0.1\text{ }^\circ\text{C}$: $-30\text{ }^\circ\text{C} \dots 900\text{ }^\circ\text{C}$
 $0.1\text{ }^\circ\text{F}$: $-22\text{ }^\circ\text{F} \dots 999.9\text{ }^\circ\text{F}$
 $1\text{ }^\circ\text{F}$: $1000\text{ }^\circ\text{F} \dots 1652\text{ }^\circ\text{F}$

Temperature indication: $^\circ\text{C}/^\circ\text{F}$ switchable 3 digits

Operating temperature: $-0 \dots 55\text{ }^\circ\text{C}$

Storage temperature: $-20 \dots 70\text{ }^\circ\text{C}$

Supply: battery 9 V block (IEC GLR61)

Math. function: MAX, MIN, AVG

Hold function: 10 s

Data memory: 250 measured values with all parameters
 20 measured values (TIR-HNR 80)

Interface: RS 232, 9600 BAUD (TIR-HNR 90 only)

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: $1\text{ mV}/^\circ\text{C}$ or $1\text{ mV}/^\circ\text{F}$ (TIR-HNR 90 only)

Charging socket: for connecting a charger for NC battery (TIR-HNR 90 only)

Battery life: 40 hours without laser

Tripod thread: UNC 1/4"

Weight: 340 g (with battery)

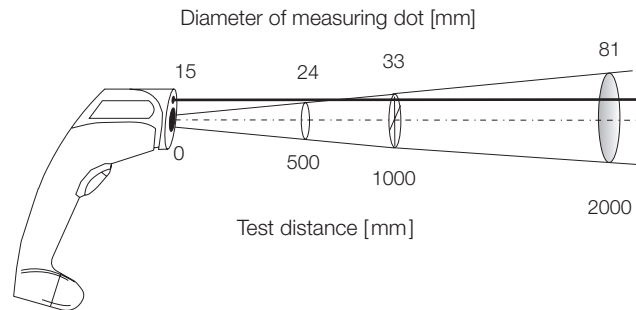
Protection: IP 20

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

Model	Measuring range	Optics	Fittings	Infrared detector	Applications
TIR-HNR80... 20 meas. values without RS 232, analogue output, charging socket for NC battery, integrated clock	$-32 \dots +800\text{ }^\circ\text{C}$	..E= optics 1000 mm (1 : 50) \varnothing 20 mm standard	data memory	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-HNR90... 250 meas. values with RS 232, analogue output, charging socket for NC battery, integrated clock	$-32 \dots +900\text{ }^\circ\text{C}$	..B= auxiliary optics 100 mm (1 : 50) \varnothing 2 mm (TIR-HNR90 only)			

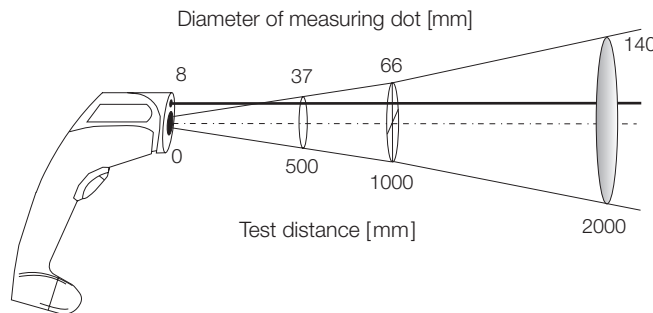
Size of measuring dot for hand-held measuring instruments model TIR-HN040...TIR-HN060

TIR-HN060

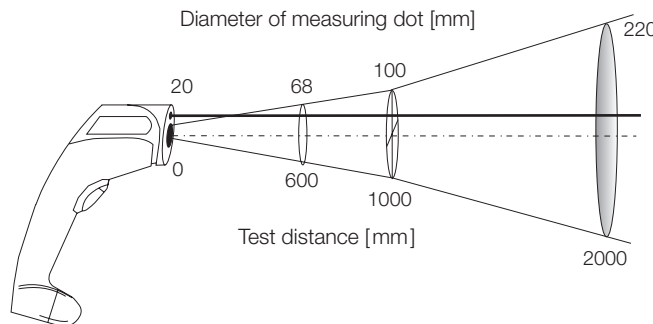


The laser aiming light is 20 mm above the centre of the measuring dot.

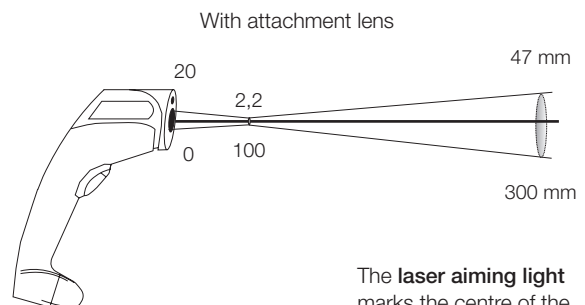
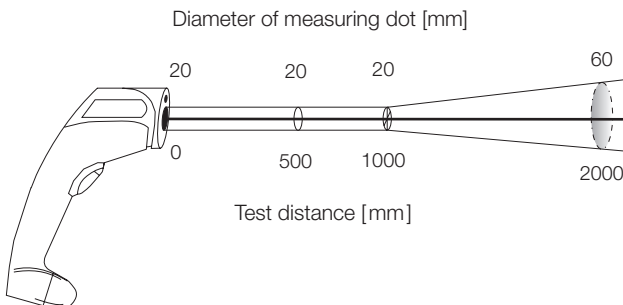
TIR-HN050



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