GEDORE
KLANN EXPERIENCE

Operating instructions EN

KL-0880-20

Infrared Thermometer

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Imprint

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1. READ AND UNDERSTAND FOR YOUR SAFETY

These operating instructions are intended to familiarise you with the operation of the infrared thermometer. Therefore read and understand these operating instructions **before using** the infrared thermometer and observe all safety and warning instructions for safe use! Misuse can result in **SEVERE INJURIES** ! The operating instructions are part of the infrared thermometer. Therefore keep them in a safe place so that you can access them at any time , and always pass them on to subsequent users of the infrared thermometer! The infrared thermometer complies with the recognised rules of technology as well as the relevant safety regulations!

1.1 Target group

These operating instructions are **exclusively** intended for skilled personnel in specialised motor vehicle workshops!

The infrared thermometer **may only be** used by skilled personnel in specialised motor vehicle workshops who are familiar with the basic regulations on work safety and accident prevention!

- **Never** allow unauthorised, inexperienced persons, minors and children, or persons with limited physical, sensory, and mental abilities to use the infrared thermometer!

1.2 Obligations of the owner

Pursuant to the German Ordinance on Industrial Safety and Health *(BetrSichV)*, employers are obliged to provide their employees with safe work equipment in accordance with the recognised rules of technology and the relevant safety regulations!

- The owner of the infrared thermometer **must** ensure that **only** trained personnel in specialised vehicle workshops use the infrared thermometer!
- The owner of the infrared thermometer **must** ensure that the instructions for use are available to the user and that the user has completely read and understood the instructions for use **before** using the infrared thermometer!
- The owner of the infrared thermometer **must** ensure that the user is familiar with the basic regulations on work safety and accident prevention and that the personal protective equipment is available to him.

1.3 Intended use

The infrared thermometer ...

- **may only** be used for non-contact temperature measurements on objects and liquids!
- **may only be** used for industrial applications, e.g. in the industrial, construction and automotive sectors!
- **may only** be used with **GEDORE Automotive** genuine spare parts and accessories!
- **may only** be used in the way described in these operating instructions!

⚠ Any other use may result in **SEVERE INJURY** !

1.4 Reasonably foreseeable misuse

The infrared thermometer ...

- **must never** be used for medical purposes, e.g. on living beings!
- **must never** be pointed directly into the eyes or at people or animals!
- **must never** be pointed at reflective surfaces!
- **must never** be used in any other way than intended!
- **must never** be used with a bridged, modified, or removed safety device!
- **must never** be modified, converted, or used for other purposes without authorisation!

⚠**Always** use the infrared thermometer as intended. Any other use may result in **SEVERE INJURY** !

1.5 Work environment

Only use the infrared thermometer in a safe working environment and **do not** expose it to extreme temperatures, direct sunlight or extreme humidity and moisture!

- The workplace **must** be clean and tidy.
- The workplace **must** be sufficiently large and illuminated.
- The workplace **must** be on a solid and non-skidding floor.
- The workplace **must** be safeguarded against access of unauthorised persons.
- The workplace **must** be at room temperature between -10°C and +40°C.

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1.6 Labelling of the warnings

Warnings warn of potential **hazards**. **Always** observe these warnings to avoid **DEATH** or **INJURIES**!

For better differentiation, warnings in these operating instructions are classified as follows:	
Warning sign	**Meaning**
⚠WARNING	**Indicates** a hazardous situation, which, if not avoided, could cause **DEATH** or **SERIOUS INJURIES** .
⚠CAUTION	**Indicates** a hazardous situation which, if not avoided, could cause **MODERATE** or **MINOR INJURIES**.
ATTENTION	**Indicates** a situation which, if not avoided, could cause damage to the tool or an object in its vicinity.
ⓘ	**Note** on important information and useful tips.

1.7 Basic safety instructions and warnings

⚠WARNING - Failure to observe this warning may result in an accident or death.

When using the infrared thermometer, **always** observe the following safety and warning instructions as well as measures to avoid **SERIOUS INJURY** as well as property damage due to hazards, misuse, abuse and unsafe handling!

- Therefore read and understand these operating instructions **before using** the infrared thermometer and observe all safety and warning instructions for **safe use**!
- **Always** work with the infrared thermometer in accordance with the basic regulations on work safety, accident prevention and environmental protection!
- **Always** use the infrared thermometer as intended. **GEDORE Automotive** does not accept any liability or warranty or guarantee claims for injuries and damage resulting from improper use or disregard of the safety regulations.
- **Before each use**, check the infrared thermometer **carefully** for damage, loose parts, or unauthorised modifications. **Never** use it if you notice any such deficiencies! Professional inspection and repair may only be carried out by specially trained personnel from **GEDORE Automotive**
- **Only** use original spare parts and accessories from **GEDORE Automotive** for the infrared thermometer!
- **Always** observe the vehicle-specific manufacturer's specifications when working with the infrared thermometer!
- **Never** use the infrared thermometer when you are tired or under the influence of alcohol, drugs, or medication!
- **Before using** the infrared thermometer, make sure that **no** unauthorised persons are in the immediate environment!
- Before measuring, always determine the emissivity of the target object and set it correctly on the infrared thermometer!
- When measuring, always ensure that the target object Ø is larger than the measuring range Ø of the infrared thermometer! The smaller the target object, the shorter the measuring distance should be!
- Never look directly into the laser beam of the infrared thermometer or point it at people or animals!
- Never point the laser beam at reflective surfaces, otherwise it may be reflected into your eyes!
- Always wear your personal protective equipment when working.
- It is **essential** to avoid dropping, hitting or knocking the infrared thermometer!
- Interrupt your work **immediately** if you are unsure about using the wheel infrared thermometer and contact **GEDORE Automotive**, **if necessary**!

1.8 Care / storage

CAUTION

Improper care and storage can damage the infrared thermometer.

- Therefore, **never** immerse the infrared thermometer in water, solvents, or other cleaning liquids.
- After use, clean all parts of the infrared thermometer when with a dry and clean cleaning cloth.
- Store the infrared thermometer and the operating instructions at a dry and clean place.

1.9 Repair

⚠WARNING

Improper repair of the infrared thermometer **can** result in **SEVERE INJURIES**.

- If damage, loose parts or unauthorised modifications have been found on the infrared thermometer, it must no longer be used for safety reasons!
- Repair may only be carried out by specially trained personnel from **GEDORE Automotive** !
- **Only** use original spare parts and accessories from **GEDORE Automotive** for the infrared thermometer!

If necessary, contact us, the **GEDORE Automotive** for a professional inspection and repair of the infrared thermometer.

1.10 Environmentally friendly disposal

Dispose of the infrared thermometer and its packaging material in an environmentally compatible way in accordance with the legal requirements. If necessary, ask your local authorities about environmentally friendly disposal options.

1.11 Duty to provide information pursuant to the Electrical and Electronic Equipment Act *(ElektroG)*

Electrical and electronic equipment contains harmful substances and valuable resources. Therefore, do not dispose of defective appliances in household waste, but recycle them separately. This is indicated by the symbol of the crossed-out dustbin on the appliance. If your old device cannot be reused, you are welcome to send it to us at the following address:

GEDORE Automotive GmbH
Breslauer Straße 41
78166 Donaueschingen

We will then take over the complete take-back and professional disposal via our certified waste disposal companies.

1.12 Duty to provide information pursuant to the Battery Act *(BattG)*

Please note that our electrical and electronic equipment contains batteries. Batteries must not be disposed of in household waste. This is indicated by the symbol of the crossed-out dustbin on the appliance. As the end user, you are legally obliged to return them. Batteries may contain harmful substances that can damage the environment or health if not stored or disposed of properly. Used batteries can be returned to established collection points, e.g. municipal collection points, retailers or to us at **GEDORE Automotive GmbH**. Used batteries may only be returned to collection points when discharged and with the battery terminals protected against short-circuits!

The symbols on the batteries have the following meaning:

Crossed-out dustbin = The battery must not be disposed of in household waste.
Pb = Battery contains more than 0.004% lead by mass.
Cd = Battery contains more than 0.002% cadmium by mass.
Hg = Battery contains more than 0.0005% mercury by mass.

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2. PRODUCT DESCRIPTION

2.1 KL-0880-20 - Infrared thermometer

Universally applicable, e.g. in the industrial, construction and automotive sectors.

For fast, non-contact temperature measurement, especially on cold/hot or hard-to-reach objects and liquids. In the automotive sector, especially on engines, gearboxes, control units, exhaust and brake systems as well as air conditioning, heating and cooling systems.

- Robust infrared thermometer in industrial quality
- Non-contact temperature measurement on objects and liquids
- High temperature measuring range from -50 to +550°C
- Precise real-time measurement thanks to infrared technology
- Red 12-point laser target detection (can be switched off)
- Illuminated 1.5" LCD colour display
- Automatic energy-saving switch-off
- Simple and convenient one-handed operation
- Measured value hold function with min/max recording
- Very high measuring accuracy due to adjustable emissivity detection
- Adjustable LED warning light when temperature limit value is under/exceeded
- Low battery warning indicator
- Certified according to CE / ROHS

2.2 Scope of delivery

1x Infrared thermometer
1x manual

2.3 Specifications

Temperature measuring range:	-50 to +550°C (-58 to +1022°F)
Laser pointer:	RED / <1 mW (630 ~ 650 nm) / Class 2
LCD colour display:	1.5" (37 mm)
Time to measurement result:	0.5 seconds
Measurement tolerance:	1.5 %
Aiming distance ratio:	D:S = 12:1
Spectral sensitivity:	8 - 14 µm
Adjustable emissivity:	from 0.10 to 1.00
Automatic switch-off:	30 seconds
Time to measurement result:	0.5 seconds
Power supply:	2x 1.5V AAA batteries (not included)
Weight:	100g (*without batteries*)
Dimensions (LxWxH):	145x95x45 mm

3. OPERATION AND FUNCTION OVERVIEW

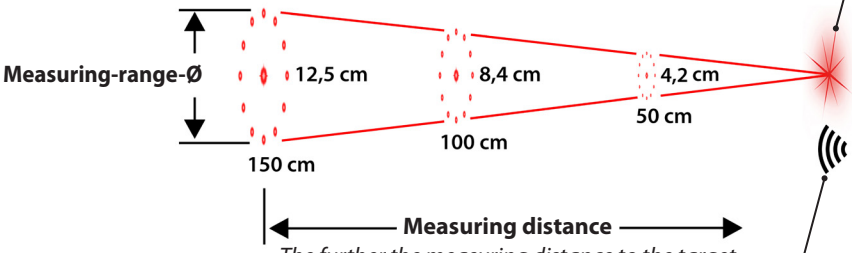
This overview shows basic components, designations, information and instructions for using the infrared thermometer.

3.1 Overview infrared thermometer

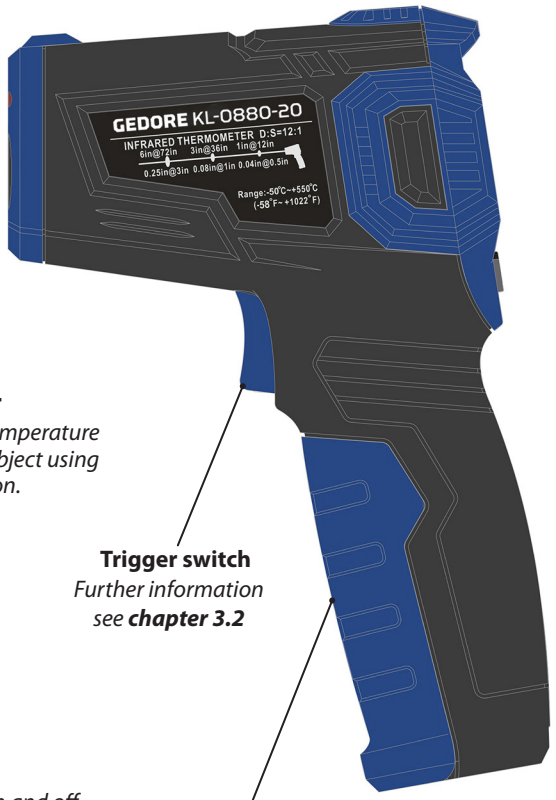
WARNING OF LASER RADIATION

Laser radiation can cause damage to the eyes. Therefore, never look directly into the laser beam or point it at people or animals! Never point the laser beam at reflective surfaces as it may be reflected into the eyes!

Multipoint laser target detection
Can be switched on and off for exact detection of the target object. In addition to the target point, the twelve surrounding points show the measuring range Ø of the infrared sensor.

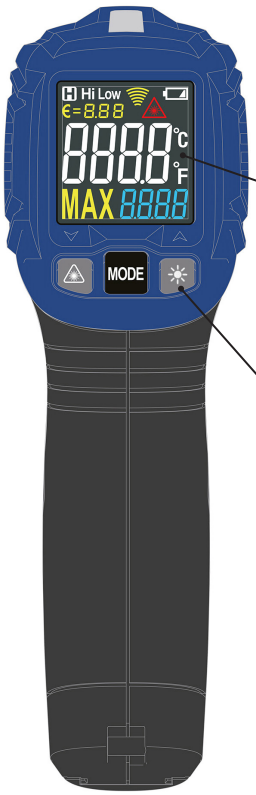


Measuring distance
The further the measuring distance to the target object, the larger the measuring range-Ø.



Infrared sensor
Enables the non-contact temperature measurement of a target object using its infrared radiation.

Trigger switch
*Further information see **chapter 3.2***



1.5" LCD display
*With display lighting that can be switched on and off. For further information see **chapter** 3.2.*

Battery compartment
Two 1.5V AAA batteries required, these are not included in the scope of delivery!

Function buttons
*Further information see **chapter 3.2***

Automatic switch-off
The infrared thermometer switches off automatically after 30 seconds when not in use.

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3.2 Overview of display and button functions

Temperature warning light
Lights up RED when the temperature falls below or exceeds the preset temperature limits. These can be set in the device menu under "Hi" and "Low".

High / Low display
In addition to the temperature warning light, signals that the temperature has exceeded "Hi" or fallen below "Low".

Infrared display
Signals the active infrared sensor during a temperature measurement.

Hold function display
Signals the active measured values hold function after a temperature measurement.

Laser warning display
Warns of dangerous laser radiation when laser target detection is switched on!

Emissivity
Displays the currently set emissivity. For exact measurement results, this value must be set accordingly in the device menu, depending on the material to be measured.

Battery warning indicator
Signals a low battery charge level. To avoid incorrect measurements, these must then be replaced.

Temperature measurement result
Displays the current temperature measurement result.

Temperature unit °C / °F
Displays the currently selected temperature unit °Celsius or °Fahrenheit.

Maximum temperature
Displays the highest temperature measured for each measurement. This value is automatically reset each time a new measurement is taken.

button
- ***Press briefly*** *to switch the display lighting on/off.*

button
- ***Press briefly*** *to switch the laser target detection on/off.*

Trigger switch
- ***Press briefly*** *to switch on the infrared thermometer.*
- ***Press and hold*** *to carry out a temperature measurement.*

MODE
- ***Hold for 2 seconds*** *to access the device menu.*
- ***Press briefly*** *to select between the individual menu items.*
- ***Press*** *or* *to change the settings.*
- ***Briefly press*** *the release switch to exit the appliance menu.*

Device menu overview:
- ***Hi****: To set the upper temperature limit for the temperature warning light.*
- ***Low****: For setting the lower temperature limit for the temperature warning light.*
- ***ε =****: For setting the material emissivity. Various setting values, see* ***chapter 3.3****.*
- ***°C / °F****: For changing the temperature unit to* ***°C****elsius or* ***°F****ahrenheit.*

3.3 Overview of emissivity

The emissivity of a material is a measure of how effectively a surface emits infrared radiation. For an exact measurement result, the emissivity of the target object must be set correctly in the device menu of the infrared thermometer.

Iron/steel...	
Material	**Emissivity ε**
Steel, oxidised	0.8
Steel, polished	0.07
Steel, raw surface	0.96
Steel, heavily oxidised	0.88
Cast iron, polished	0.2
Cast iron, melted	0.3
Cast iron, turned up to 100° C	0.45
Cast iron, turned up to 1000°C	0.6 - 0.7
Cast iron (raw), rusted	0.95
Stainless steel, polished	0.1
Stainless steel, diverse	0.2 – 0.6
Sheet iron, rusted	0.7 – 0.85
Soft steel, melted	0.3 – 0.4
Tin-plated steel	0.1
Galvanised iron	0.3

Aluminium...	
Material	**Emissivity ε**
Aluminium, polished	0.1
Aluminium, heavily oxidised	0.25
Aluminium oxide at 260°C	0.6
Aluminium at 800°C	0.3
Aluminium alloy, various	0.1 – 0.25

Brass...	
Material	**Emissivity ε**
Brass, polished	0.1
Brass, rough surface	0.2
Brass, oxidised	0.6

Copper...	
Material	**Emissivity ε**
Copper, polished	0.02 – 0.05
Copper sheet, oxidised	0.8
Melted copper	0.15

Lead...	
Material	**Emissivity ε**
Lead, pure	0.1
Lead, oxidised at 25°C	0.3
Lead, oxidised, heated to 200°C	0.6

Nickel...	
Material	**Emissivity ε**
Nickel, pure	0.1
Nickel sheet, oxidised	0.4 – 0.5
Nichrome	0.7
Nichrome, oxidised	0.95

Other metals...	
Material	**Emissivity ε**
Zinc, oxidised	0.1
Gold, polished	0.1
Silver, polished	0.1
Chrome, polished	0.1

Other...	
Material	**Emissivity ε**
Red brick, raw	0.75 – 0.9
Fire clay	0.75
Asbestos	0.95
Concrete	0.7
Marble	0.9
Carborundum	0.85
Gypsum	0.9
Aluminium, fine grain (alumina)	0.25
Alumina, coarse grain	0.45
Silicone, fine grain	0.4
Silicone, coarse grain	0.55
Zirconium silicate up to 500°C	0.85
Zirconium silicate up to 850°C	0.6
Quartz, raw	0.9
Carbon, graphite	0.75
Carbon, soot	0.95
Glass	0.95
Enamel (all colours)	0.9
Oil paint (all colours)	0.95
Varnish	0.9
Matt black paint	0.95 – 0.98
Aluminium lacquer	0.5
Water	0.98
Rubber (smooth)	0.9
Rubber, raw (coarse)	0.98
Plastic, various (solid)	0.8 – 0.95
Plastic coating (0.05 mm)	0.5 – 0.95
Polythene coating (0.03 mm)	0.2 – 0.3
Paper and cardboard	0.9
Silicone polish (0.03 mm)	0.7

Own values...	
Material	**Emissivity ε**

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4. TYPICAL APPLICATION

This application example describes a basic temperature measurement with the infrared thermometer.

1. Switch on the infrared thermometer by briefly pressing the trigger switch. The display is now switched on and lights up completely for a self-test.

ⓘ Before using the infrared thermometer for the first time, insert two standard 1.5V AAA batteries into the battery compartment. These are not included in the scope of delivery!

2. For an exact temperature measurement, the emissivity of the target object must first be determined using the table in **chapter 3.3**. Various emissivities for other materials can also be found on the Internet.

3. Set the determined emissivity in the device menu of the infrared thermometer by holding the MODE button for 2 seconds. Briefly press the MODE button to jump to the **ε=** menu item. Use the ⚠ and ☀ buttons to set the emissivity accordingly and exit the device menu by briefly pressing the release switch.

ⓘ Further device functions such as switching laser target detection on/off, switching display illumination on/off, changing the temperature unit °C / °F and setting the temperature warning light are described in **chapter 3.2**.

4. To measure the temperature, point the infrared thermometer at the target object and press the trigger button for approx. 2 - 5 seconds. The twelve surrounding laser points of the laser target detection indicate the measuring range Ø. After the measurement has been taken, the last measured value can still be seen on the display for about 30 seconds.

ⓘ By pressing and holding the trigger button, targets can be conveniently scanned and temperature peaks localised.

ATTENTION

The temperature measurement results can be falsified. Therefore, always determine the emissivity of the target object before measuring and set it correctly on the infrared thermometer! When measuring, always ensure that the target object Ø is larger than the measuring range Ø of the infrared thermometer. The smaller the target object, the shorter the measuring distance should be.

⚠ WARNING OF LASER RADIATION

Laser radiation can cause damage to the eyes. Therefore, never look directly into the laser beam of the infrared thermometer or point it at people or animals! Never point the laser beam at reflective surfaces as it may be reflected into the eyes!

5. EC DECLARATION OF CONFORMITY *(Translation)*

Name and address of the manufacturer
GEDORE Automotive GmbH
Breslauer Straße 41
78166 Donaueschingen, GERMANY

We hereby declare that the product described below

Designation: Infrared thermometer
Series / Type: KL-0880-20

conforms to all relevant provisions of the **Electromagnetic Compatibility (EMC) Directive 2014/30/EU** *on the harmonisation of the laws of the Member States relating to electromagnetic compatibility,* the **Low Voltage (LVD) Directive 2014/35/EU** *on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits* and the **Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU and 2015/863/EU (RoHS III)** *on the restriction of the use of certain hazardous substances in electrical and electronic equipment.*

The declaration loses its validity if the product is converted or modified without our consent.

Applied harmonised EN standards:

EN 60825-1:2014+AC:2017+A11:2021+A11:2021/AC:2022 - *Safety of laser products - Equipment classification and requirements*

EN IEC 61326-1:2021 - *Electrical equipment for measurement, control and laboratory use. EMC requirements - General requirements*

EN IEC 61326-2-2:2021 - *Electrical equipment for measurement, control and laboratory use. EMC requirements - Particular requirements. Test configurations, operational conditions and performance criteria for portable testing, measuring and monitoring equipment used in low-voltage distribution systems*

EN IEC 61000-3-2:2019+A1:2021 - *Electromagnetic compatibility (EMC) - Limits. Limits for harmonic current emissions (equipment input current ≤16 A per phase)*

EN 61000-3-3:2013+A2:2021 - *Electromagnetic compatibility (EMC) - Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

EN 60335-1:2012+A15:2021 - *Household and similar electrical appliances. Safety - General requirements*

Other technical standards and specifications applied:

EN IEC/IEEE 82079-1:2020 - *Preparation of information for use (instructions for use) of products - Part 1: Principles and general requirements*

Authorised representative for compiling the technical documents:
GEDORE Torque Ltd. / Tannery Ln, Gosden Common / Guildford GU5 0AJ, United Kingdom

Donaueschingen, 11 April 2024

Patrick Mau, Managing Director of **GEDORE Automotive GmbH**