

Infrared thermometer for non-contact forehead temperature measurement



2. Signs and symbols

- Follow instructions for use
- Medical device
- Manufacturer
- Date of manufacture
- Batch code
- Catalogue number
- Serial number
- Keep dry
- Caution (Please note)
- Temperature limit
- Humidity limitation
- Protection against electric shock (Type BF)
- Unique Device Identifier
- Distributor
- Protected against solid objects with a diameter of ≥ 12.5 mm and against vertically falling drops of water when enclosure tilted up to 15°
- Symbol for the marking of electrical and electronic equipment
- Cardboard recycling code
- Dispose of packaging in an environmentally responsible way
- Dispose of packaging in an environmentally responsible way
- For families with children and/or babies
- Contact free measurement

3. Important information

Important instructions for use

Intended purpose:

The Veroval baby is a reusable, digital infrared thermometer for non-contact measurement on the forehead that is intended for temporary monitoring of the body temperature of humans and can be used by laypersons and healthcare professionals in clinical and domestic settings.

- This device is designed only to measure human body temperature on the forehead. Do not use this thermometer to take temperature measurements on any other part of the body.
- If measured values seem incorrect, repeat the measurement.
- A high temperature or persistent fever requires medical treatment, especially in small children. Please consult your doctor.
- Self-diagnosis based on these temperature readings or administering treatment on their basis may carry an unacceptable medical risk or even worsen the symptoms. For this reason, do not interpret measured values yourself and do not use them to self-prescribe treatment. Follow the instructions provided by your doctor.
- If you inform your physician about the temperature measured, please also mention that this temperature was taken on the forehead.
- Forehead measurement is not suitable for use in incubators.
- The additional object mode of Veroval baby allows for the temperature measurement of the surface of objects or the ambient temperature.

Important instructions regarding measurement

- We recommend that you always take the temperature over the same part of the forehead, because the values displayed may otherwise vary.
- The body temperature measured on the forehead can produce a reading that may differ to aural, oral or axillary temperature readings. This result must be taken into account when comparing the values (see Chapter 4 as well).
- Ensure you measure body temperature regularly to determine normal forehead temperature levels, then use those temperatures as a basis against which to compare measurements obtained when you suspect a fever.
- The forehead temperature measurement determines core body temperature via infrared radiation emitted by the body. Even when temperature measurement is carried out correctly, the reading can vary slightly compared to a rectal, oral or axillary temperature measurement using a digital thermometer.
- If non-contact forehead measurement is used for infants and small children (particularly during the first 6 months), we recommend that the measured value is always verified using a rectal measurement.
- The values measured by you are for your information only – they are not a substitute for a medical examination! Discuss your measurements with your doctor and under no circumstances make your own medical decisions based on those measurements (e.g. medications or their dosage)!

Safety instructions concerning the device

This thermometer consists of high-quality electronic precision components. The accuracy of the measured values and the lifetime of the device depend on careful handling.

- The thermometer is NOT waterproof! Avoid direct contact with water or any other liquids.
- Protect the device from strong shocks, impacts or vibrations, and do not drop it on the floor.
- Treat with care to avoid scratches on the surface of the measuring sensor or display screen.
- Never open the device. Do not modify, dismantle or repair the device yourself! Repairs may only be carried out by an authorised specialist.
- Do not expose the device to extreme temperatures, humidity, dust, lint or direct sunlight as this may cause it to malfunction.
- Do not use the device if it is obviously damaged.
- Keep the packaging, batteries and device out of reach of children.
- Protect the device against contact with pets and pests to avoid damage.
- Please comply with the storage, transport and operating conditions defined in Chapter 14 – Technical data. Storing or using the device outside the specified temperature and humidity range can affect measurement accuracy or the function of the device.
- If the thermometer was not stored within the minimum/maximum permissible storage conditions, a waiting period of at least 2 hours must be observed before using it under the specified operating conditions (Chapter 14) or an ambient temperature of approx. 20 °C.
- The device is not intended for use in vehicles (e.g. ambulances) or helicopters.

- Make sure that children or persons who cannot operate the device themselves do not use it without supervision. Some parts of the device could be swallowed. Contact a physician immediately if a child has swallowed a battery or any other small part.
- Using the thermometer on different people may not be suitable if certain acute infectious diseases are present, because germs may be transferred from one person to another despite mandatory disinfecting by cleaning and wiping. Ask your treating doctor if you are unsure.

Instructions regarding electromagnetic compatibility

- Portable and mobile high-frequency and communication devices, such as telephones and mobile phones (including any accessories), can impair the functionality of this electronic medical device. Therefore keep a minimum distance of 30 cm.
- Do not use the device directly next to or between or stacked with other electronic products as this could lead to faulty operation.
- Do not use the device near strong electromagnetic fields and keep it away from radio equipment.
- Do not use the thermometer together with a high-frequency surgical device or, for example, near magnetic resonance imaging equipment.
- Further documentation in accordance with the electromagnetic compatibility standard can be requested from the manufacturer or the customer service (contact details see Chapter 13).

Power supply (batteries)

- Observe the polarity labels plus (+) and minus (-).
- Use only high-quality batteries (see specification in Chapter 14 – Technical data). If you use low-quality batteries, we can no longer guarantee the specified number of measurements.
- Never mix old and new batteries, or batteries from different manufacturers.
- Remove empty batteries immediately.
- Replace batteries if the battery symbol ▼ is permanently displayed.
- Always replace all batteries at the same time.
- If the device is not going to be used for some time, batteries should be removed to prevent possible leakage.

Information on batteries

- Choking hazard: Small children could swallow batteries and suffocate on them. Keep batteries out of reach of children!
- Risk of explosion: Do not throw batteries into a fire.
- Batteries must not be charged or short-circuited.
- If a battery has leaked, put on protective gloves and clean the battery compartment using a dry cloth. If liquid from a battery cell comes into contact with skin or eyes, clean the affected area with water and seek medical attention if necessary.
- Protect batteries from excessive heat.
- Do not disassemble, open or crush batteries.

Instructions for measurement function

Every Veroval device has been carefully tested by HARTMANN for measurement accuracy and has been developed with a view to a long service life. We recommend carrying out a metrological check once a year for devices in professional use, for example, in pharmacies, medical practices or hospitals. In addition, please also observe the national regulations specified by the legislator. The metrological check should only be carried out by competent authorities or authorised maintenance providers at the user's expense.

Disposal information

- To protect the environment, empty batteries must not be disposed of in household waste. Please comply with relevant waste disposal regulations or use public collection points.
- This product is subject to the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment and is marked accordingly. Never dispose of electronic equipment in your household waste. Please obtain information about your local regulations regarding the proper disposal of electrical and electronic products in your area. Proper disposal protects the environment and human health.

4. General information on body temperature

The human body regulates the body temperature to a target value, although body temperature can fluctuate by up to 1 °C over the course of a day. Throughout the course of life, your average body temperature can decrease by up to 0.5 °C. Moreover, the temperature inside the body (core temperature) and the surface temperature on the skin have different values. Thus, there is no 'normal' body temperature – it always depends on the measurement site. Your body temperature is also influenced by ambient temperature, your age, stress levels, how much sleep you have had, hormone levels and physical activity. While glass and digital thermometers measure the temperature of the human body directly, ear and forehead measurement involves determining the core body temperature using the infrared radiation emitted by the body. Even when the temperature is measured correctly, the reading can differ slightly from a rectal, oral or axillary temperature measurement obtained using a digital thermometer.

Table of measured values (in °C):

Description	Measurement site		
	Ear / forehead	Rectum	Mouth / armpit
Subnormal temperature	<35.7	<36.2	<35.8
Normal temperature	35.8 – 36.9	36.3 – 37.4	35.9 – 37.0
Elevated temperature	37.0 – 37.5	37.5 – 38.0	37.1 – 37.5
Slight fever	37.6 – 38.0	38.1 – 38.5	37.6 – 38.0
Moderate fever	38.1 – 38.5	38.6 – 39.0	38.1 – 38.5
High fever	38.6 – 39.4	39.1 – 39.9	38.6 – 39.5
Very high fever	39.5 – 42.0	40.0 – 42.5	39.6 – 42.0

- Measuring a temperature in the ear and on the forehead can produce differing results, as the forehead temperature depends more on external influences than the temperature of the eardrum.
- Forehead temperature measurement is also more dependent on external influences than rectal, oral or axillary measurement.
- In the case of several successive measurements, slightly varying values are obtained within the range of the measuring error tolerance, as a rule. This depends in particular on the body's anatomy.

5. Advantages of the thermometer

Modern measuring sensor technology provides high measurement accuracy
The infrared sensor provides high measuring accuracy in non-contact forehead temperature measurement.

Rapid infrared measurement

Without touching the forehead or the surface of the object, the measuring sensor detects the infrared radiation emitted, performs a scan for three seconds, and displays the highest measurement recorded.

Robust and reliable through high quality of workmanship

This device has been developed in accordance with the HARTMANN quality assurance guidelines. Designed to meet customer needs, it meets high stability standards.

Handling

The positioning light integrated into the head of the sensor enables guided handling of the thermometer during the scanning process when measuring. In addition, the illustrations inside the storage box explain how to measure correctly. You can take your child's temperature even while he or she is sleeping, absolutely silently and without bothering or even waking him or her. Thanks to its fast measurement capability, it is comfortable to use with restless children and infants.

Overview of fever progression

Veroval baby stores up to 10 readings in the memory function (M), simplifying overviews of fever progression.

Safe and hygienic

Because Veroval baby is able to measure temperature without direct skin contact, the risk of contact transmission of bacteria or viruses is minimised. Therefore Veroval baby is ideal for use on babies and children.

Visual fever alert

If your child's body temperature is 37.6 °C or higher, the Veroval baby screen will light up red as a visual alert to indicate a fever.

Multiple use potential (extended measuring range)

The device operates in two modes, which are the medical forehead mode, with a measuring range of 34.0 °C to 42.2 °C, and the non-medical object mode with an extended measuring range of 0 °C to 100 °C. Use the mode switch on the side of the thermometer to take either forehead or object temperature readings. Therefore, in addition to measuring body temperature (forehead mode), the thermometer can be used in object mode to measure the surface temperature of baby bottles or bath water, for example, as well as ambient temperature in the bedroom.

6. Initial operation of the device

Batteries are included in delivery and already inserted in the device. Carefully pull the non-contact strip out of the closed battery compartment. Veroval baby is now ready for operation.

Inserting / changing batteries

- Open the battery cover at the bottom of the device by applying gentle pressure on the notch. Insert the batteries (see Chapter 14 – Technical data). Ensure correct polarity (+ and –) when inserting batteries. Carefully close the battery lid.
- If the 'Change battery' symbol ▼ is permanently displayed, temperatures can no longer be measured and you need to replace all batteries.
- The stored values will remain in the memory when the batteries are changed.

7. Measuring the body temperature

How to avoid inaccurate readings

- Please check that the lens of the sensor is clean, free from grease and is not damaged before every measurement.
- To ensure that the temporal artery (Arteria temporalis) is captured during the measurement, it is essential for the scan to range from the centre of the forehead to the temple area, including the temple.
- Do not remove the measuring device from the measuring area until the blue positioning light has gone off after 3 seconds.
- Measurements on body regions other than the forehead do not provide reliable measuring results.
- An accurate result can only be achieved if the prescribed measuring distance of 3 cm – 5 cm between the sensor and the skin or object is maintained during the measurement. If this distance is not maintained, the measured values could deviate significantly.
- Please note that the thermometer and the person whose temperature is to be measured should both be in a moderately warm room for at least 30 minutes beforehand.
- For optimum measuring accuracy, remove any hair, sweat, cosmetics or dirt from the forehead and temples.
- Do not measure immediately after showering, swimming etc. while the forehead is still wet.
- Avoid eating, drinking or exercising before taking your temperature.
- Please note that the temperature of the forehead can be influenced by being outdoors for longer periods (e.g. when it is cold in winter or by strong solar radiation in summer) as well as by wearing a head covering.
- Do not take a baby's temperature during or directly after breastfeeding.
- After waking from sleep, it is recommended to wait a few minutes before taking the temperature.
- Note that vasoconstrictor medication or any skin irritations can distort the result when taking the forehead temperature.

7.1 Measuring forehead temperature

The thermometer measures the infrared radiation emitted by the skin on the forehead and the temple area and by the surrounding tissue. The radiation is picked up by the sensor and converted into temperature values. The most precise values are obtained when you scan the entire area starting from the middle of the forehead and over the temple.

	Display of all LCD screen segments / device self-test 1. Please ensure the mode switch is in the correct position. Follow steps 1 and 2 similarly to the descriptions in Chapter 7.
	Ready for temperature measurement 2. The temperature display then goes out. You can see the object symbol on the screen. The device is ready to take a measurement as soon as the °C symbol flashes.
	Maintain the measuring distance 3. Point the thermometer at the middle of the object you would like to measure, at a distance of 3 cm – 5 cm. 4. Press the SCAN button to start measuring.
	Carrying out the scan 5. The scanning process lasts 3 seconds and the measured temperature then appears on the blue illuminated screen. The result is displayed for 5 seconds and then the flashing °C symbol appears on the screen. The device is now ready for the next measurement.
	Display of the last measured value 2. The device shows the last measured temperature value for three seconds.
	Ready for temperature measurement 3. The temperature display then goes out. On the screen, you will see the forehead symbol. The device is ready to take a measurement as soon as the °C symbol flashes.
	Maintain the measuring distance 4. Position the thermometer over the middle of the forehead at a distance of 3 cm – 5 cm from the skin.
	Start the measurement process 5. Press the SCAN button to start measuring.
	Carrying out the scan 6. Move the thermometer from the middle of the forehead (about 1 cm above the eyebrow), steadily across the forehead and over the temple. The blue positioning light illuminates for the duration of the measurement. The measuring distance is correct if the circle of light forms a clear outline on the forehead. The forehead measurement takes 3 seconds. At the end of the measurement, the positioning light goes out and the screen lights up blue or red, depending on the temperature value.
	Measurement process finished 7. Read the measured temperature displayed on the screen. The result is displayed for five seconds and then the flashing °C symbol appears on the screen. The device is now ready for the next measurement.

- In the following situations, we recommend you take three temperature readings and consider the highest measurement as definitive:
 - For children below the age of three with a weak immune system (particularly if presence or absence of a fever is of critical importance).
 - For users who are not yet familiar with the device, until they obtain consistent results.
 - In the event of a suspiciously low reading.
 - If the measured temperature is doubtful and inconsistent with the patient's condition, it is advisable to repeat the measurement after several minutes. Please ensure the sensor is clean and undamaged. Furthermore, it is advisable to use another independent method of temperature measurement and/or to consult a physician.

- In the early stages of fever, a specific physiological effect called vasoconstriction can occur. This causes the skin to feel cool to the touch and the temperature taken by the infrared thermometer may be unusually low.

8. Measuring an object's temperature

To switch from forehead to object mode, push the mode switch on the side of the thermometer downwards, in the direction of this symbol:

To return to forehead mode, push the switch upwards again, in the direction of this symbol:

Important information about object temperature measurement

- The real temperature inside the object may be distinctly hotter or colder than the temperature measured on its surface.
- Due to physical surface effects, the temperature of a surface measured in object mode can differ greatly from the real temperature (core temperature). (To check the core temperature of liquids, please use a suitable waterproof thermometer.)
- The measurement is accurate only when the measuring distance of 3 cm – 5 cm between the thermometer and the measured object is maintained and the sensor lens is not clouded by condensation.
- Please make sure the thermometer is in the same room as the object to be measured for at least 30 minutes before taking the reading. In cases of high air humidity (e.g. in the bathroom), the thermometer must be acclimatised to room temperature and air humidity prior to measurement.

- Temperature readings taken over boiling water or steaming bathwater will cause condensation to form on the sensor lens, which will have a strong influence on measuring accuracy.
- Surface measurement in object mode is not suitable for medical use or body temperature measurement.

8.1 Measuring the surface temperature of an object

There are two types of temperature measurements available. Follow the steps below if you want to measure the surface temperature of an object, e.g. a baby bottle or the surface temperature of the bath water:

	Display of all LCD screen segments / device self-test 1. Please ensure the mode switch is in the correct position. Follow steps 1 and 2 similarly to the descriptions in Chapter 7.
	Ready for temperature measurement 2. The temperature display then goes out. You can see the object symbol on the screen. The device is ready to take a measurement as soon as the °C symbol flashes.
	Maintain the measuring distance 3. Point the thermometer at the middle of the object you would like to measure, at a distance of 3 cm – 5 cm. 4. Press the SCAN button to start measuring.
	Carrying out the scan 5. The scanning process lasts 3 seconds and the measured temperature then appears on the blue illuminated screen. The result is displayed for 5 seconds and then the flashing °C symbol appears on the screen. The device is now ready for the next measurement.

If you want to measure ambient or room temperature:

- Hold the device up in the room and press the SCAN button. You do not need to point the device at any specific object. Veroval baby now determines the temperature of the ambient air. After 3 seconds, the temperature appears on the screen and the screen lights up blue.

9. Displaying stored measurement values

The device automatically stores the last 10 measurements taken from the forehead or an object. Once the 10 memory positions are occupied, the oldest temperature reading is overwritten. Saved temperatures can be retrieved as follows:

	Press the SCAN button when the power is off to enter memory mode. The memory symbol 'M' flashes.
	Press the SCAN button briefly to retrieve the last measured value. The number '1' will appear on the display, together with the memory icon 'M'. Then the stored temperature reading is displayed.
	To display the next 9 values, press the SCAN button repeatedly. If you press the SCAN button again after having retrieved the 10 temperature readings, this sequence will restart, commencing with the measured value number 1.

10. Explanation of error messages

Veroval baby is a clinically tested, premium product. Yet error messages may occur, such as an ambient temperature reading that is too high or too low, if the measured temperature is outside the range of human body temperature, if the battery is flat or in very rare instances, if a system error occurs.

Error message	Possible causes	Remedy
Batteries cannot be switched on	Batteries are missing, incorrectly inserted or low/empty.	Check batteries and insert two identical new batteries if necessary.
	Temperature above 42.2 °C, measured in forehead mode	Check that the mode switch is in the correct position. Only use the thermometer within the stated measurement range (see Chapter 14).
	Temperature below 34.0 °C, measured in forehead mode	
	Temperature above 100 °C, measured in object mode	Check that the mode switch is in the correct position. Only use the thermometer within the stated measurement range (see Chapter 14).
	Temperature below 0 °C, measured in object mode	
	Ambient temperature above 40 °C	Use the thermometer only within the ambient temperature ranges indicated (see Chapter 14).
	Ambient temperature below 15 °C (forehead mode) or below 5 °C (object mode)	Contact your specialist dealer or customer service if error message persists.
	Malfunction message (The thermometer is not functioning correctly or is damaged.)	Check the thermometer for possible damage. Remove and reinsert the batteries. Contact customer service if the error message persists.
	Batteries are almost empty.	Keep new batteries of the same type at hand (AAA/LR03).
	The batteries are empty.	Insert new batteries of the same type (AAA/LR03).
	Implausible measured values often occur due to inappropriate handling of the device or if mistakes were made during measuring.	Please follow the directions for correct use given in the instructions for use and all important information given in Chapters 3, 7 and 8. Then repeat the temperature measurement. If body temperature values remain implausible, please contact your doctor!

- Switch the device off if an error message appears.
- Check for possible causes and follow the directions for correct use in the instructions for use, and in particular the instructions regarding measurement in Chapter 3 „Important information“ and in Chapters 7 and 8.
- Wait for 1 minute and then repeat the temperature measurement.

11. Cleaning and care of the device

The measuring sensor is the most important and most sensitive part of the device. To ensure accurate measurement, the sensor must be clean and undamaged at all times.

- Please do not use any aggressive cleaning agents or solvents as these can damage the device and obscure the screen.
- The device is not waterproof. Make sure no liquid can penetrate the inside of the thermometer and never immerse the device in water or other cleaning agents!

Veroval[®] baby Warranty certificate

Infrared thermometer for non-contact forehead temperature measurement

Purchase date

Serial number (see battery compartment)

Reason for warranty claim

Dealer's stamp

- Clean the device and the measuring sensor with a moist cloth and a mild detergent or a suitable disinfectant (e.g. 70 % isopropanol).
- After cleaning the measuring sensor, you need to wait until the cleaning liquid has dried off completely before taking a temperature measurement.
- To protect from external influences, you can store the thermometer in the storage box.

12. Warranty conditions

- The device is intended for the purpose described in these instructions for use only. The manufacturer is not liable for damage or injury resulting from improper handling.
- We offer a 3-year warranty on this premium quality, non-contact, infrared thermometer from the date of purchase and in accordance with the following conditions:
 - Warranty claims must be made during the warranty period. The purchase date must be documented by an appropriately completed and stamped warranty certificate or proof of purchase.
 - HARTMANN will replace or repair free of charge any faulty device components caused by material faults or manufacturing errors within the warranty period. This does not extend the warranty period.
 - The warranty does not cover damage resulting from improper use or unauthorised interference. Accessory parts that are subject to wear and tear (batteries, storage box, packaging etc.) are excluded from warranty. Claims for compensation are limited to the value of the product; compensation for subsequent damage or injury is expressly excluded.
- For all warranty claims, please send in the device and its storage box, together with the completed and stamped warranty certificate or receipt of purchase, directly or through your retailer to the Customer Services department for your country.

13. Contact details for customer queries

ZA – HARTMANN South Africa
Epsom Avenue, Northriding,
2169 Johannesburg
www.hartmann.info
Tel. +27 860 4278 6266
phzhelpdesk@hartmann.info

If necessary, please contact us at the relevant address above for any questions regarding the initial startup, use and maintenance of the device or to report an unexpected operation or incident.

For a patient/user/third party in the European Union and in countries with identical regulatory regime (Regulation 2017/745/EU on Medical Devices); if, during the use of this device or as a result of its use, a serious incident has occurred, please report it to the manufacturer and/or its authorized representative and to your national authority.

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14. Technical data

Product description:	Infrared thermometer for non-contact forehead temperature measurement
Model:	Veroval baby
Measuring range:	Forehead mode: 34.0 °C – 42.2 °C Object mode: 0 °C – 100 °C
Smallest display unit:	0.1 °C (measurement unit: degrees Celsius)
Laboratory measuring accuracy	±0.2 °C at 35.0 °C – 42.0 °C ±0.3 °C at 34.0 °C – 34.9 °C and 42.1 °C – 42.2 °C
Forehead mode:	±1.0 °C at 0 °C – 100 °C
Laboratory measuring accuracy	±1.0 °C at 0 °C – 100 °C
Object mode:	
Clinical measuring accuracy (forehead mode):	Repeatability: 0.04 °C; Bias: –0.17 °C; Limits of agreement: 0.28 °C.
Measuring distance:	3 cm – 5 cm
Measurement time:	Scan duration: 3 seconds
Operating mode:	Clinical thermometer in adjusted mode (oral reference)
LCD display:	4-digit plus special icons
Acoustic signal:	No acoustic signal
Memory capacity:	10 measured values
Visual fever alert / background illumination:	The background illumination of the LCD screen lights up in RED if the measured forehead temperature (in forehead mode) is higher than or equal to 37.6 °C. In all other cases, the LCD screen lights up in BLUE.
Operating conditions:	Forehead mode: Ambient temperature: +15 °C to +40 °C Object mode: Ambient temperature: +5 °C to +40 °C Relative humidity: 15% to 95%, non-condensing
Storage / transport conditions:	Ambient temperature: –25 °C to +55 °C Relative humidity: 15% to 95%, non-condensing</

