

# AVRO

Infrared forehead thermometers

## Product Specification

Model: A66



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### I. Description

This Infrared forehead thermometers is a non-contact Infrared forehead thermometers that specializes in measuring the temperature of human’s forehead, the patient also can be an intended operator. Patient can safely use all functions of the Infrared forehead thermometers. The measured temperature will be different according to the difference of human skin; different measured parts of human can result in different temperatures as the exposed parts of the human are greatly affected by the environment temperature. The applied part type of Infrared forehead thermometers is BF type.

### II. Safety Manual for Use

- Please read this manual carefully before using the Infrared forehead thermometers.
- The environment temperature when using this product is 15°C ~ 40°C.
- Please do not place this product in an environment higher than 55°C or lower than -25°C.
- Please do not place this product near charged objects to avoid electric shock.
- Please do not use this product in an environment with relative humidity greater than 90%.
- Please do not place this product too close to the electromagnetic range. (such as radio, mobile phone, etc).
- Please do not expose this product to the sun, or place it close to the stove, and not contact with water.
- Please do not strike or drop this product, and do not use the product if it is damaged.
- Sweat on forehead, hair, hat or scarf will affect the measuring accuracy. Please confirm that the measuring distance is in the range of 5 cm-10 cm.
- When forehead sweat or other reasons cause forehead temperature not to reflect the human temperature normally, please measure the human temperature from posterior earlobe.
- If the product has any problem, please contact with the distributor rather than repairing the product individually. It is forbidden to measure the body temperature when the environment temperature changes greatly.
- The use of the Infrared forehead thermometers as intended by the manufacturer.
- ⚠ Warning: The Infrared forehead thermometers should not be serviced or maintained while in use with the patient.
- ⚠ Please keep the Infrared forehead thermometers away with the children and kids to avoid that small parts being inhaled or swallowed.

### III. Characteristics

- 1)Non-contact and high-precision body temperature measurement;
- 2)It can select °C or °F;
- Setting method: press the " "key for 8 seconds to switch in the startup state.
- 3)Alarm value can be set (the default value of this product is 38.0°C)
- Setting method: the default is set;
- 4)Beep prompt function (it can set to turn on or turn off the buzzer)
- Setting method: press the " " key once to turn on or turn off the buzzer in the startup state;
- 5)The LCD display with backlight can be used by users in darkness. Setting method: press the " " key once to turn on the backlight in the startup state; press the " " key for 8 seconds to convert to object test in the startup state.
- 6)Automatic range selection; resolution is 0.1°C (0.1°F) .
- 7)The latest 32 measured data can be memorized and stored (press the up and down keys to check the latest 32 stored and measured data).
- 8)Automatic data keeping and automatic shut down . The Infrared forehead thermometers will automatically shut down after the device is not used for 20 seconds.
- 9)When the ambient temperature is 20 °C, wait for 10 minutes to cool the Infrared forehead thermometers from the maximum storage temperature +55°C to ready for use.
- 10)When the ambient temperature is 20 °C, wait for 10 minutes to warm the Infrared forehead thermometers from the minimum storage temperature -25°C to ready for use.

### IV.Intended use and Contraindications of Products

1. Intended use  
Infrared forehead thermometers is a thermometer specialized in measuring the human’s forehead, the patient also can be an intended operator. Patient can safely use all functions of the Infrared forehead thermometers. It is widely used in families, and this product is for screen check, cannot replace doctors’ diagnosis.

- 1)Scope of application of products: The body temperature of the tested object is displayed by measuring the thermal radiation on the forehead.
- 2)Intended users: Adult, except contraindications. This device can be used by layperson without professional training.
- 3)Patient population: Suitable for infants, children and adults.
- 4)Intended use environment: This product is suitable for hospitals, clinics, and families, etc. For detailed working, storage and transportation environment requirements, please refer to IX. Technical Indicators.
- 5)Parts of the body/tissues, duration: This device is a non-contact Infrared forehead thermometers, will be handed by user during measuring only.

### 2. Contraindications of products

- 1) Birth defects, congenital malformation, septic shock, circulatory failure and other diseases that may affect forehead temperature measurement seriously.
- 2) Suffering from mental disorders.
- 3) Suffering from serious heart, liver and kidney diseases.

### V.Operating principle

All objects with temperature higher than zero (- 273.15 °C) are constantly emitting infrared energy into the surrounding space. Its radiation characteristics, radiation energy and wavelength distribution are closely related to the surface temperature of the object. On the contrary, by measuring the infrared energy radiated by the object itself, the surface temperature of the object can be accurately measured, which is the working principle of infrared radiation temperature measurement.

The human body, like other organisms, radiates infrared energy

around itself. Its wavelength is generally 9µm~13 µm, which is in the near-infrared band of 0.76µm~100 µm. Because the light in the wavelength range is not absorbed by the air, that is to say, the infrared radiation from the human body has nothing to do with the environmental impact, but only with the amount of energy contained and released by the human body. Therefore, as long as the infrared energy radiated from the human body itself is measured, the surface temperature of the human body can be accurately measured. The infrared temperature sensor is designed and manufactured according to this principle.

### VI. Notes before Use

Power On Self-checking

Aim at the target to be tested, press the measuring switch, and LCD will display all the numbers and characters of the self-checking and a self-checking screen will appear, as shown in Figure 1 below. This picture will be displayed for about 1 second.

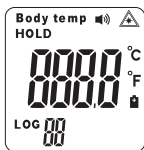


Figure 1

After the self-checking is completed, a sound of “beep” will be heard, indicating that the power-on self-checking has been completed, and the temperature value of the tested target will be displayed on the LCD.

### VII.Product Structure

The product is mainly composed of an infrared sensor, a LCD screen, a button, a shell, a handle, a battery and a circuit board.

- ① . Infrared sensor
- ② . Liquid crystal display (LCD) screen
- ③ . Backlight on/off key
- ④ . Up button (view historical data)
- ⑤ . Down button (view historical data)
- ⑥ . Sound switch key
- ⑦ . Measuring switch
- ⑧ . Battery cover
- ⑨ . Handle



### VIII.Description of LCD Screen

- ① . Body temperature mode (BODY)
- ② . Digital reading
- ③ . Storage position
- ④ . Temperature °C/F

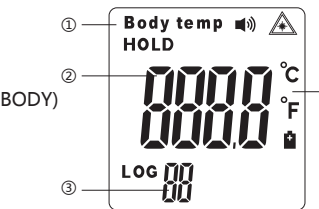


Figure 2

- Please clean the Infrared forehead thermometers regularly, usually once a month. If necessary, the Infrared forehead thermometers can be cleaned properly according to the actual dirty condition.
- Please disinfect the Infrared forehead thermometers regularly, usually once a month. If necessary, the Infrared forehead thermometers can be disinfected properly according to the actual contaminated condition.
- If users wish to share the A66 with others, please clean and disinfect the A66 before and after sharing.

### 2)Preparation

- Dry soft cloth;
- Tap Water;
- Home use neutral detergent, such as Home use detergent;
- Soap;
- 75% medical alcohol;

### 3)Cleaning: Infrared sensor cover

The infrared sensor is located inside the enclosure, it won’t be cleaned and contacted. The enclosure of probe part area should be cleaned.

Hold the A66 facing down, in case water gets into it. Clean the area by dry soft cloth for around 10 seconds. If it is especially dirty, can be wiped with dried cloth stained with little water or neutral detergent.

4)Cleaning: LCD area, Label area, Enclosure and button area  
Clean these areas by dry soft cloth for around 20 seconds. If it is especially dirty, can be wiped with dried cloth stained with little water or neutral detergent, and then gently wipe the area clean.

### Note:

- Don’t use any sharp substances to scratch the LCD display.
- Don’t use much water to prevent water from dripping into the interior of the A66.
- Don’t use any strong chemicals on the A66.
- 5)Drying: Apply one clean dry soft cloth to wipe the enclosure of the A66 for drying for around 10s; or air dry naturally.
- 6)Disinfection:
  - Hold the A66 facing down, in case solution gets into it. Apply one soft cloth dipped with 75% alcohol to clean the enclosure of probe part area in a circular motion for 15 seconds (around 15 times).

- Afterwards, use the same soft cloth to clean exterior area (LCD rea, Label area, Enclosure and button area) back and forth for another 20 seconds (around 15 times).
- Wait for at least 30seconds, until the A66 is totally dry.
- Note:
  - Please wash your hands with soap and tap water before disinfection.
  - Don’t use any strong chemicals on the A66.

### 7)Inspection:

- Signs of Deterioration:
  - Glossy surface of the A66 blurs.
  - Unable to measure.
  - No reaction at all toward operating.
  - Indelible water stain on the LCD screen.

If any signs listed above occur, please contact your local distributor.

### 8)Storage:

Always store the A66 in its container after use.

Keep the A66 away from:

- Extreme temperatures.
- Overly humid or dry environment.
- Direct sunlight.
- Dusty places.

### 2.Calibration

Every A66 is properly calibrated directly after production. The product will be calibrated automatically without manual calibration, if user handles it according to this manual.

### 3.Product maintenance

If you encounter the following problems during use, please follow the instructions in the maintenance instructions to find a solution. If the problem still exists, please contact with our customer service.

### 1)LCD cannot display numerical values.

- If the temperature is lower than 32.0°C or higher than 43.0°C in the human measuring state, the LCD will display "Lo" or "HI" rather than data LCD displays information "HI"
- 2)LCD displays information "Lo".  
When using a non-contact electronic thermometer, the LCD displays the information "Lo", and it analyzes and shows that it is lower than the measuring range or the measured temperature is lower than 32.0°C in the human temperature measuring mode.

### IX.Technical Indicators

#### 1. Basic parameters

Display the accurate digits	0.1°C ( 0.1°F )
Storage temperature	-20-55°C
Operating environment temperature	10°C-40°C , Optimum temperature 25°C
Relative humidity	≤85%
Power supply	DC 3V(2 AAA batteries)
Specification	160*100*40mm
Weight	100g
Production date	See the product certificate for details.
Measuring site	Forehead
Reference body site	Forehead
Operating mode	Adjusted mode
Memory sets	32
Display	LCD with backlight
Measurement Method	Infrared

#### 2. Measuring range

Model temperature measuring range in human body	32.0°C~43.0°C
Measuring time	Each measurement takes about 1-3 seconds
Range of measuring distance	5-10cm
Automatic shutdown	About 20s

#### 3. Measuring accuracy

34.0°C~43.0°C	±0.3°C
32.0°C~34.0°C	±0.2°C

#### 4.Laboratory accuracy

±0.3°C during rated output range: 32.0°C~43.0°C

#### 5.Clinical accuracy

Subjects	Clinical Repeatability (n) ±0.3°C	Clinical Bias (+cb) ±0.2°C	Limits of Agreement (LA)±0.3°C
0 ~ 1 year	0.070	0.046	0.206
0 ~ 3 month	0.075	0.020	0.208
3month ~ 1 year	0.064 -5-	0.072	0.209
1 year ~ 5 year	0.064	0.044	0.245
Older than 5 year	0.059	0.031	0.158

For the Age distribution of enrolled patients and Distribution of febrile subjects, Please refer to Appendix.

#### 6.Service life

The service life of the product is 40,000 times, and the product is valid for 5 years.

#### 7.Software release version

V1.0

#### 8.Working, storage and transportation environment requirements

- 1) Working environment:
  - Environment temperature: 15°C ~ 40°C;
  - Relative humidity: 15%~90% RH (non-condensing);
  - Atmospheric pressure: 70 kPa ~ 106 kPa;
  - Power: DC 3V (2 AAA batteries);
- 2) Storage and transportation environment:
  - Environment temperature: -25°C ~ +55°C;

- Relative humidity: 15% ~ 90% RH (non-condensing);
- No corrosive gas, well ventilated room;
- Transportation requirements must conform to regulations of the order contract, but severe impact, vibration and rain and snow splash during transportation must be prevented;

### X.Operating Instructions for Use

#### 1. Battery instructions

An indicating arrow on the ellipse is arranged at the bottom of the handle; please push the battery cover forwards lightly in the direction of the arrow with your hand here, and install the battery, so that it can be tested and used.

#### ■ Notes of battery installation and replacement:

- 1) After the battery cover is opened, place the battery at the place where the battery is installed according to the positive and negative directions. Pay attention to the correct direction of the positive and negative electrodes.
- 2) Wait for 10 minutes to warm up after first using or just placing the new battery;
- 3) When the battery capacity is insufficient, the symbol will appear on the display screen, prompting to replace the new battery. Open the battery cover (see product structure ⑧) and pay attention to the positive and negative polarity when replacing the new battery. Incorrect placement may cause damage to the product.
- 4) Please take out the battery when the product is not used for a long time to prolong its service life, and prevent the thermometer from being damaged due to leakage of battery liquid.

#### 2. Measuring steps of body temperature

1) Aim the thermometer at the middle of forehead (above the eyebrows) and keep it vertical with a distance of about 5cm-10cm, and press the measuring switch to display the temperature immediately.

2) When the measuring switch is pressed (see product structure ⑦), the current temperature value is displayed on the current display screen, and the measured data can be automatically stored (press the up and down keys to check the latest 32 stored measured data)

#### Notes:

- 1) Before measurement, please make sure there is no hair, sweat, cosmetics or hats covering, etc.
- 2) Before measurement, please check the probe for any stains or damage.
- 3) When the forehead sweat or other reasons cause the forehead temperature not to reflect the human temperature normally, please ensure that there is no hair, sweat, cosmetics or hat covering, etc. or take the measurement after 10 minutes.
- 4) If the thermometer has not been used for a long time, the environment temperature will be detected when it is used again, and the startup time will be extended by 1-2 seconds.
- 5) Human temperature varies with different times of the day and is also affected by other external conditions, such as age, sex, skin color, system will automatic shutdown after 20s without any actions .

### XI.Reference Value of Body Temperature

1. Normal body temperature range at different measuring positions  
The human body is a very complex bio-integrated system, and the body temperature is an important data for the normal life activities of the human body; usually, we measure the temperature of forehead, cochlea, anus, oral cavity and armpit to detect our health status; the body temperature measured in different parts will be different. Please refer to the following table for specific differences:

Measuring part	Normal temperature (°C)	Normal Fahrenheit ( °F )
Anus	36.6~38	97.8~100.4
Oral cavity	35.5~37.5	95.9~99.5
Armpit	34.7~37.3	94.4~99.1
Ear	35.8~38	96.4~100.4
Forehead	36~37.2	97.4~98.4

2. Normal body temperature range of different ages  
Human temperature varies with different times of the day and is also affected by other external conditions, such as age, sex, skin color, thickness, etc. Please refer to the following table for the normal temperature range of different ages:

Age	Normal temperature (°C)	Normal Fahrenheit ( °F )
0~2 years old	36.4~38.0	97.5~100.4
3~10 years old	36.1~37.8	97.0~100.0
11~65 years old	35.9~37.6	96.6~99.7
>65 years old	35.8~37.5	96.4~99.5

#### Notes:

The body temperature of women is different from that of men. Generally, it is 0.3°C higher than that of men. During ovulation, the body temperature will be 0.3°C - 0.5°C higher than the usual temperature.

### XII.Advice

- The protective glass outside the LCD frame is very important and also the fragile part of the instrument, so it must be used carefully.
- Please do not charge the non-rechargeable battery and do not throw the battery into the fire.
- Please do not expose the product to the sun or touch water.

### XIII.Care and Maintenance

#### 1.Product Cleaning and Disinfection

- 1)Note
  - Do not disassemble or change any parts of the A66. Such action may lower its accuracy.
  - Do not drop the A66, and avoid any strong impact.
  - The probe part located inside the enclosure is the most precise part of the product, and must be carefully protected.
  - Do not clean the product by using corrosive detergent.
  - Do not immerse this product in water or other liquids.
- 2)Direct sunlight.

