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Product Design, Description, Drawings & Specifications

1. Description of the device and its components

1.1 Description of the device

The Infrared Thermometer (model: PG-IRT1601, PG-IRT1602, PG-IRT1603) which infers temperature from a portion of the thermal radiation sometimes called blackbody radiation emitted by the object being measured. The operation principle is based on Infrared Sensor technology, IR Sensor can put out different signal when measuring different object temperature or in different ambient temperature; an ASIC can turn the signal from IR Sensor to a digital value and display it by LCD.

The accuracy is (35.5°C -43.0°C) $\pm 0.2^{\circ}\text{C}$, (95.0°F-109.4°F) $\pm 0.4^{\circ}\text{F}$, other temperature $\pm 0.3^{\circ}\text{C}$

1.2 Components of the device

1.2.1 Main Unit

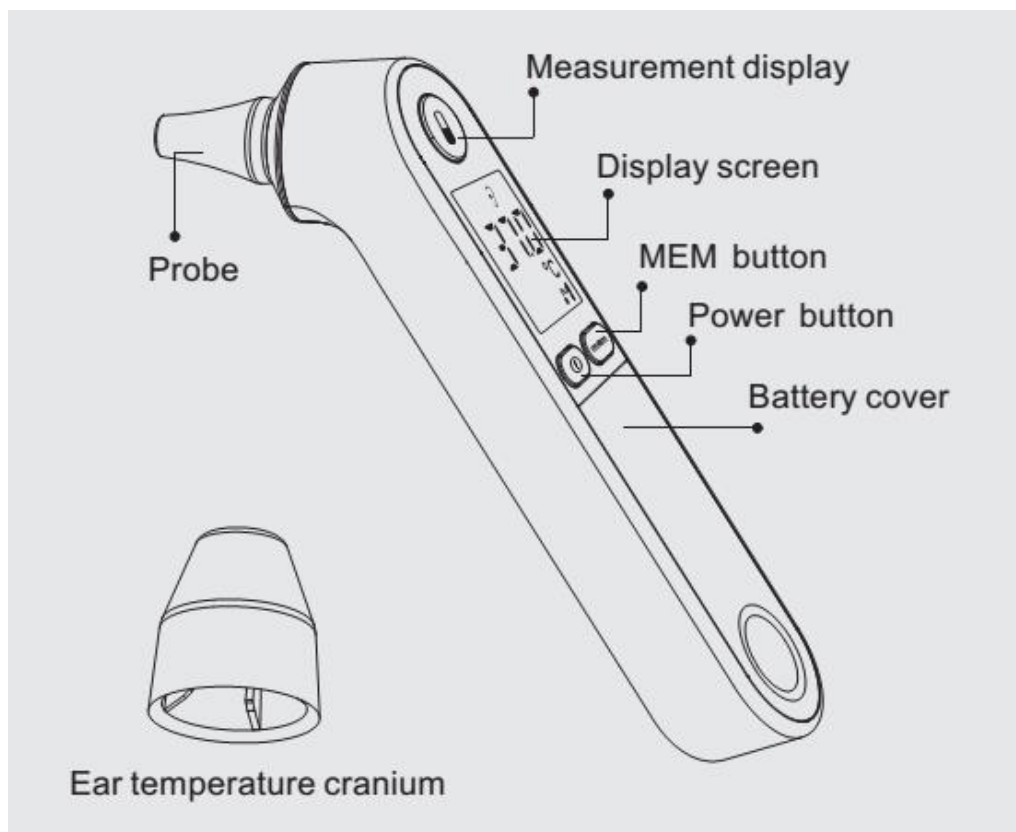


Fig.1. Main Unit of Infrared Thermometer (model: PG-IRT1601)

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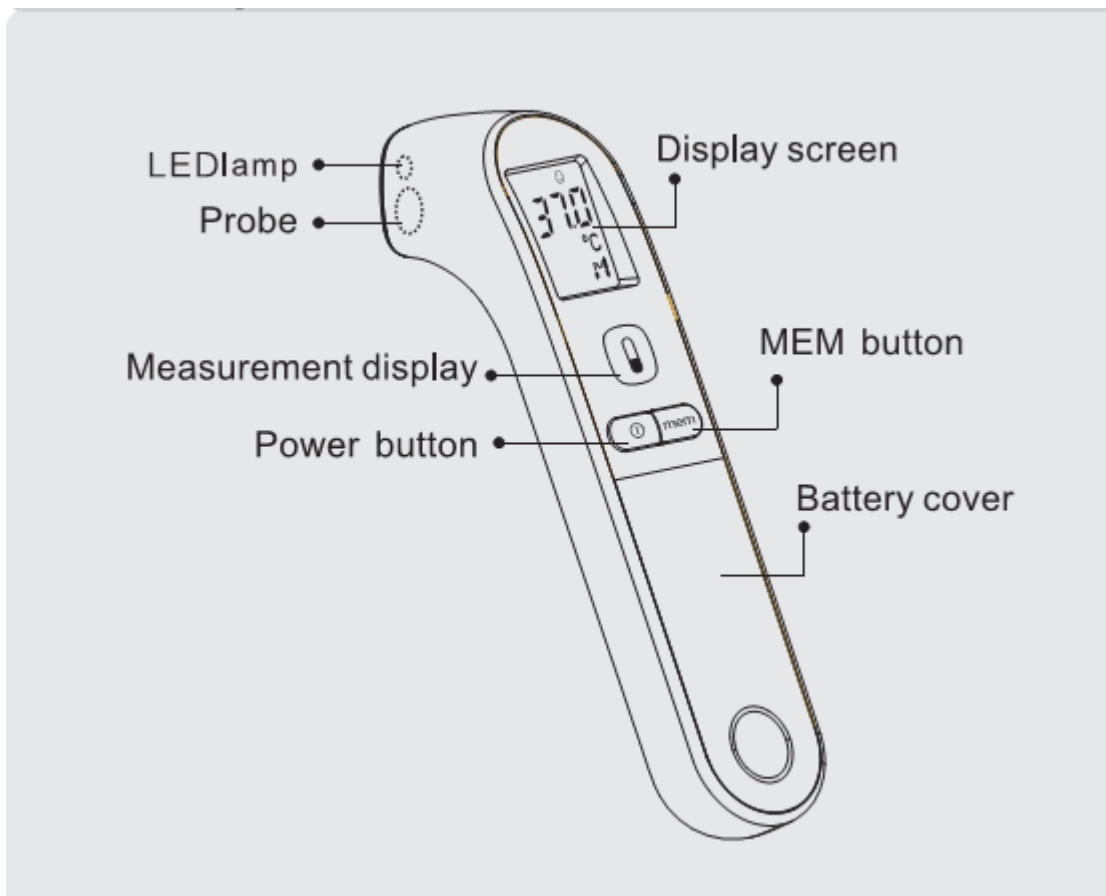


Fig 2. Main Unit of Infrared Thermometer (model: PG-IRT1602)

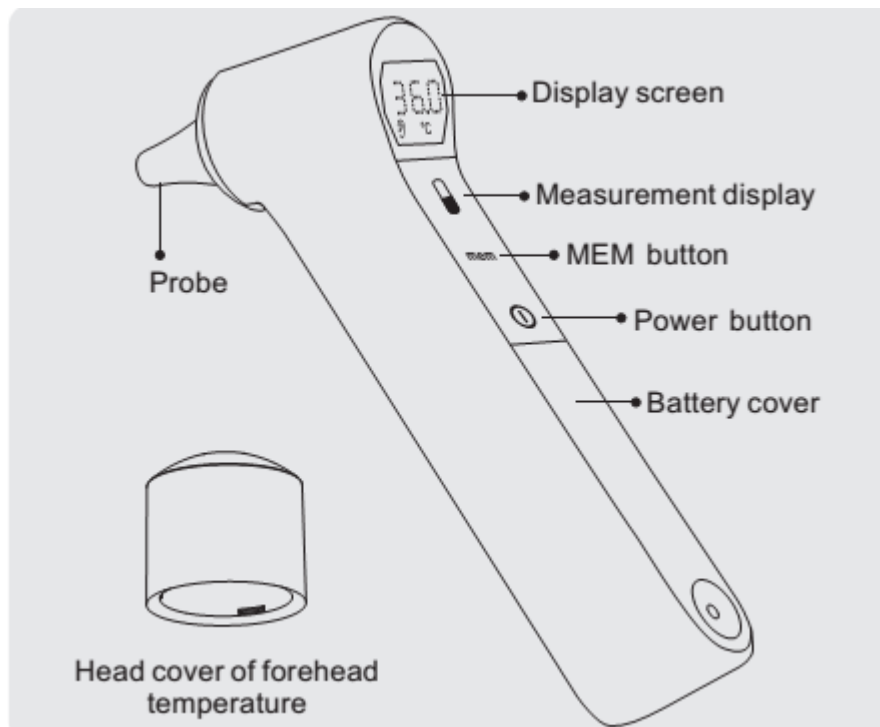





Fig.3. Main Unit of Infrared Thermometer (model: PG-IRT1603)

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EXPLANATION

Button	Function Description	Logo
Power Button	Press the ON/OFF button to switch on or off of the Infrared Thermometer	
Mem Button	This button can be used to set the sound on or off, to switch of °F or °C, to read and save 9 sets of measurement values, etc.	
Measurement Display Button	The temperature of the target object can be measured directly by pressing the Measurement Display Button	

2. Intended use

Infrared Thermometer (model: PG-IRT1601, PG-IRT1602, PG-IRT1603) is intended for the measurement and monitoring of human body temperature in regular mode ear or forehead by doctor or consumer.

4. Diagrams / Drawings

4.1 Drawings of Infrared Thermometer (model: PG-IRT1601, PG-IRT1602, PG-IRT1603)

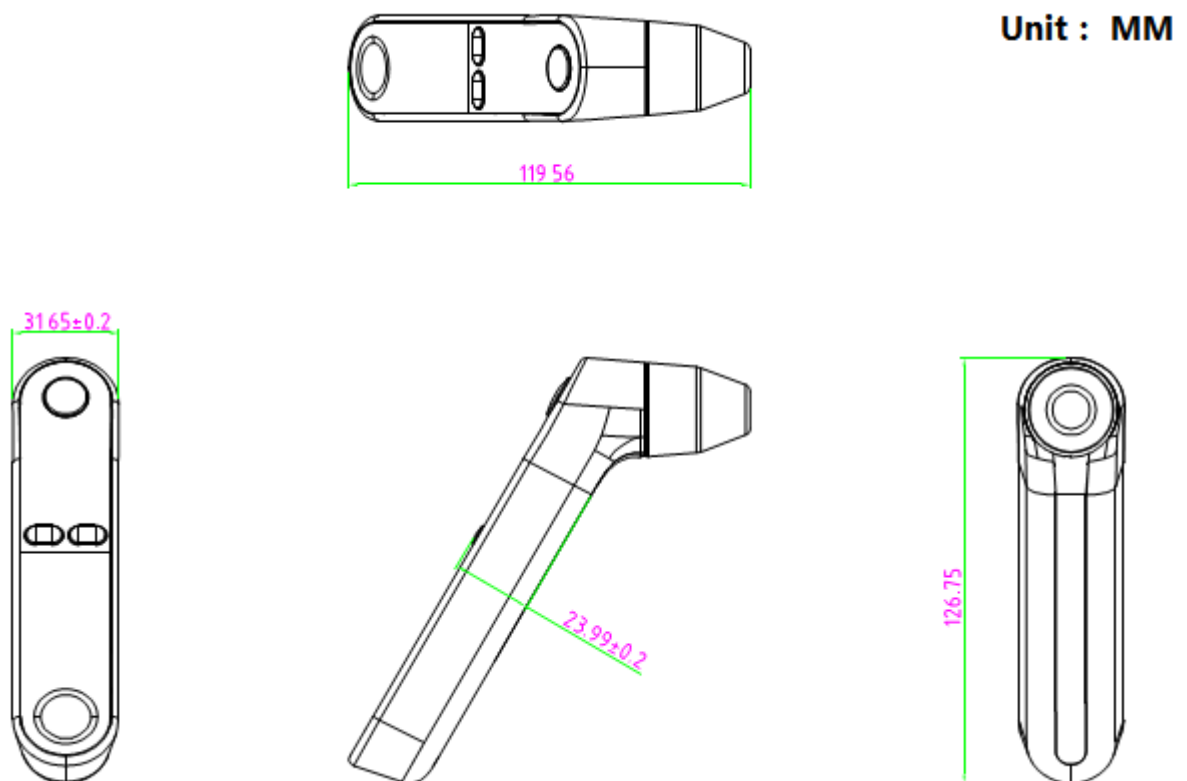


Fig.4 Dimension of Infrared Thermometer (model: PG-IRT1601)

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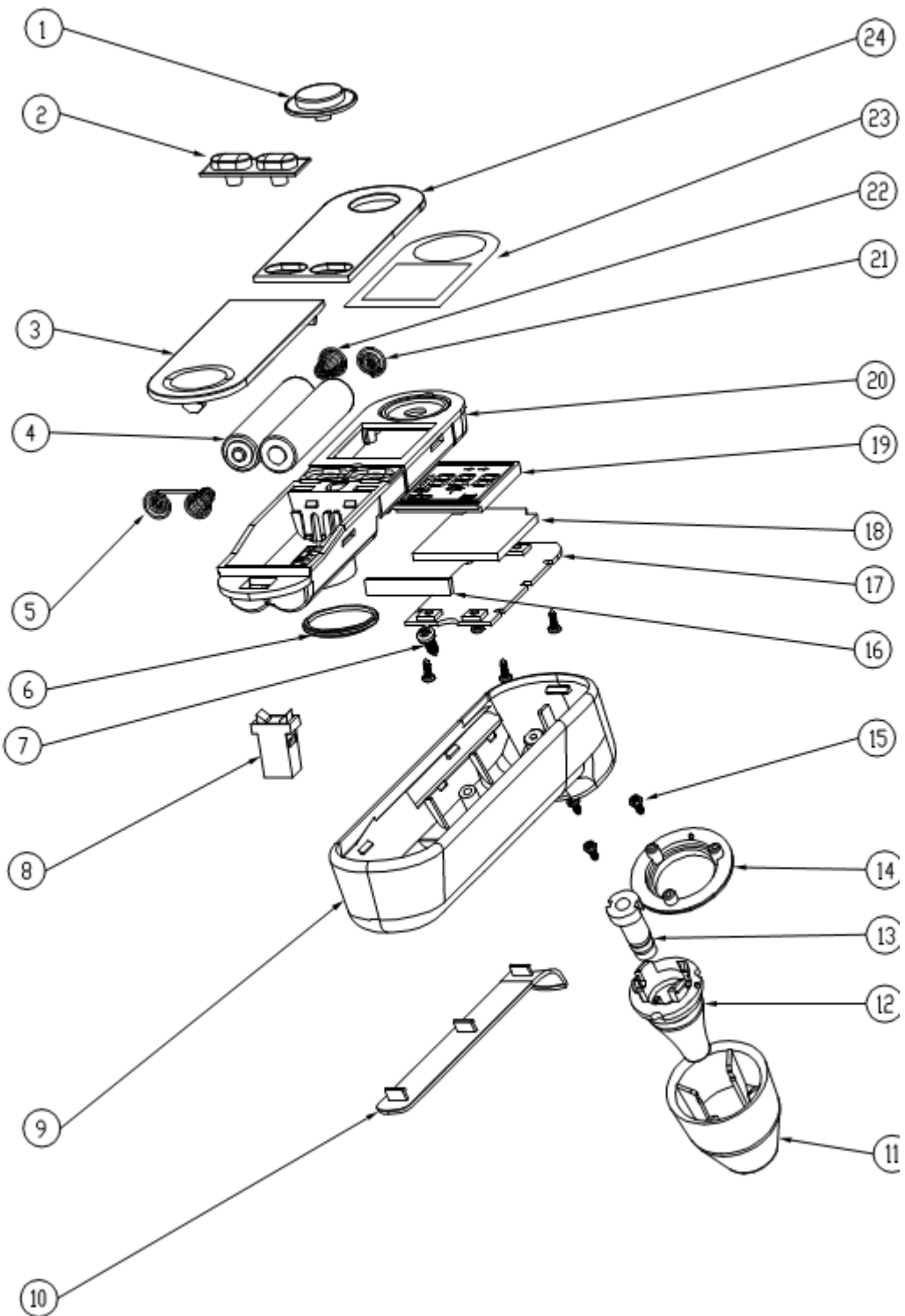


Fig.5 Exploded diagrams of Infrared Thermometer (model: PG-IRT1601)

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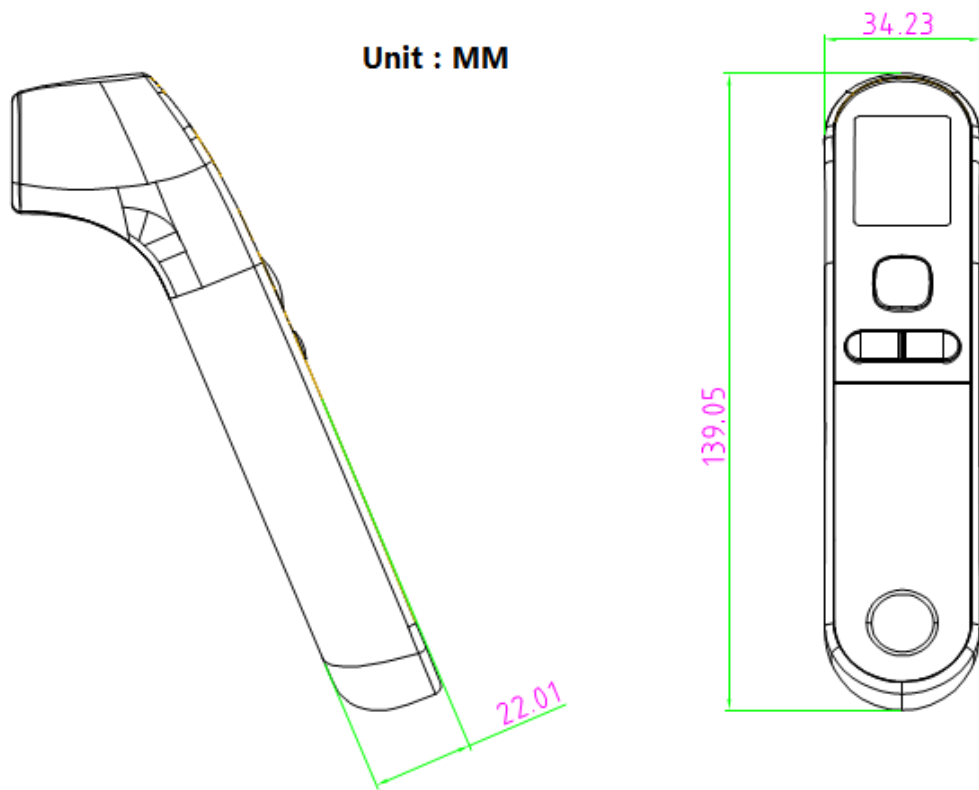


Fig.6 Dimension of Infrared Thermometer (model: PG-IRT1602)

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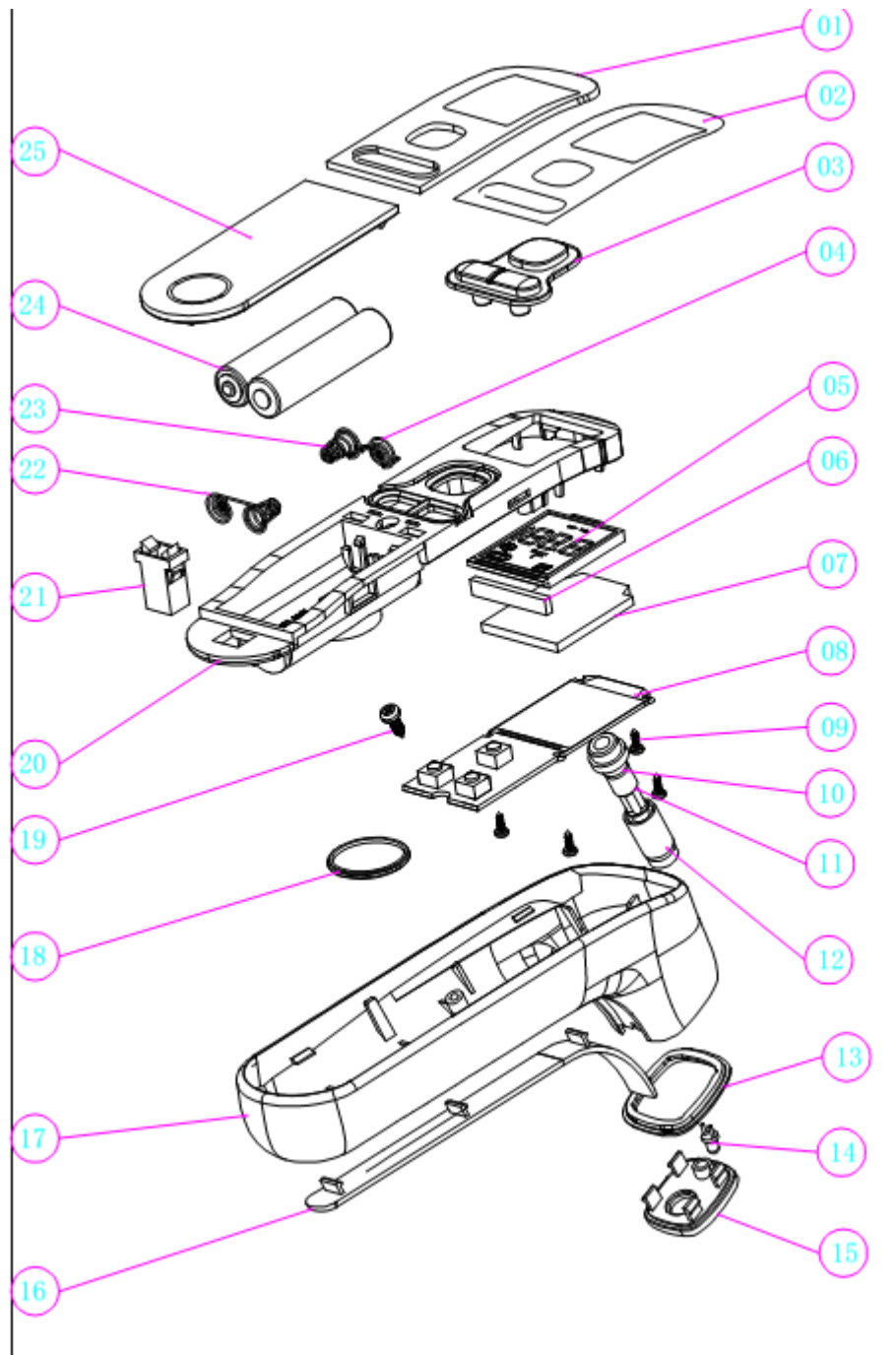


Fig7. Exploded diagrams of Infrared Thermometer (model: PG-IRT1602)

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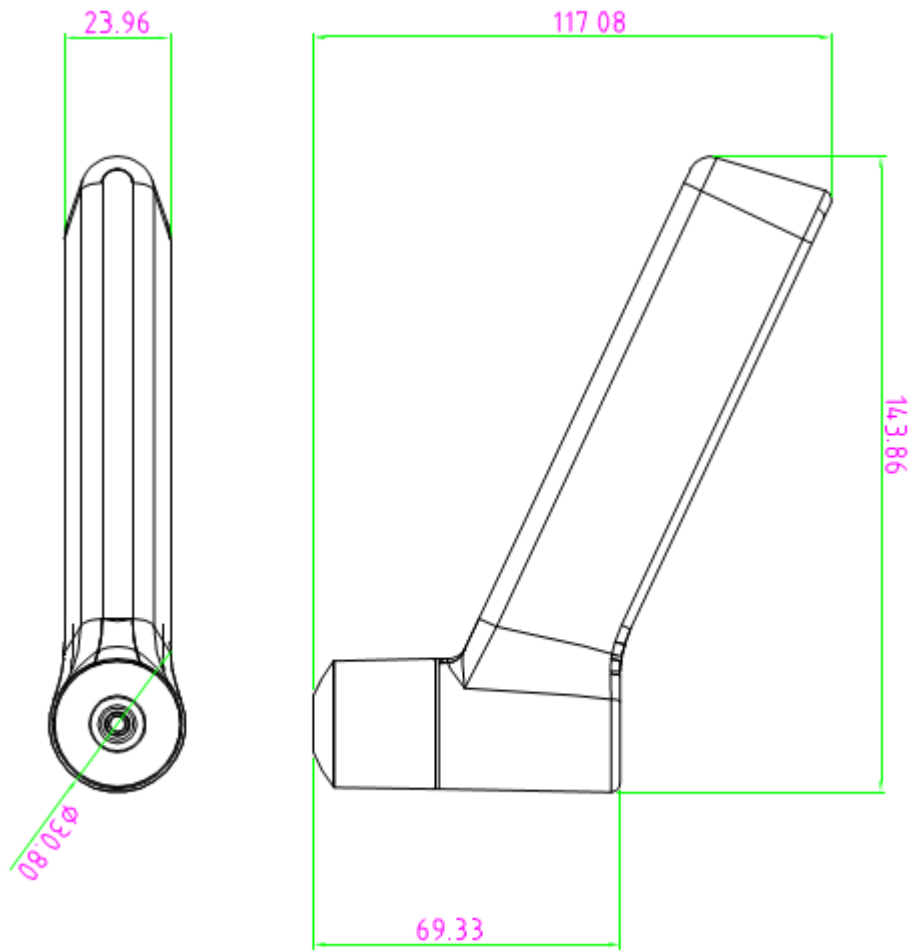


Fig8. Dimension of Infrared Thermometer (model: PG-IRT1603)

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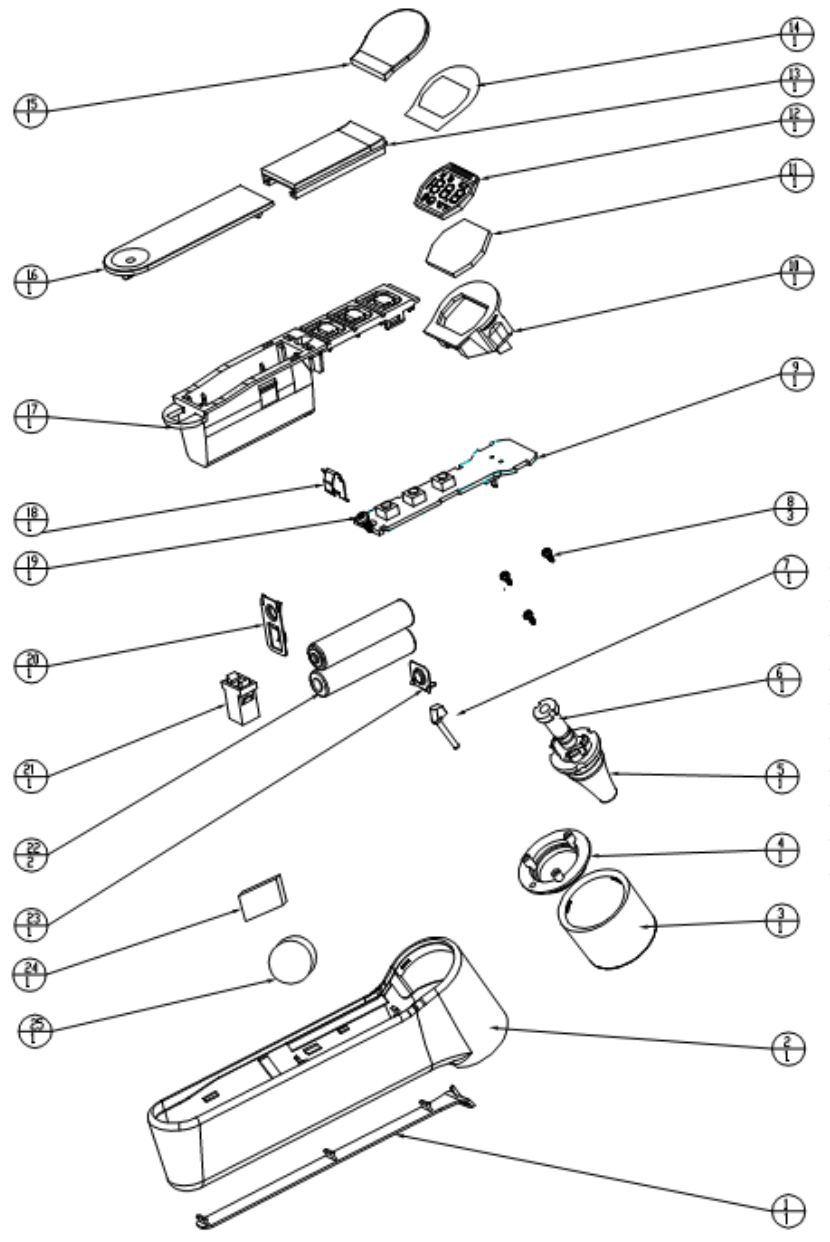


Fig8. Exploded diagrams of Infrared Thermometer (model: PG-IRT1603)

5. Technical and physical description of hardware

5.1 Technical description of hardware

Bill of material of Infrared Thermometer (Model: PG-IRT1601)

Name	specifications and models	Mol Qty	Den Qty
IC	CPU ;SBAHM10;Software PG-IRT1600 Rev: 1.0	1	1
PCB	PG-IRT1601;74.44x23.24x1.6(t)mm;FR4;V1.0	1	1
Resistance	SMT;0603;200Ω;±5%	3	1
Resistance	SMT;0603;1K;±1%	1	1

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Resistance	SMT;0603;10K;±1%	1	1
Resistance	SMT;0603;100KΩ;±1%	1	1
Resistance	SMT;0603;300K;±1%	1	1
Resistance	SMT;0603;402K;±1%	1	1
Capacitance	SMT;0603;0.1UF;X7R;50V;±10%	8	1
Capacitance	SMT;0603;1UF;25V;X7R;±10%	1	1
Capacitance	SMT;0603;10UF;10V;X7R;±10%	3	1
Diode	SMT;IN4148;SMD;1206	2	1
Switch	DIP;TL-030	1	1
Switch	SMT;6×6×4.3±0.1mm	3	1
HSC	PG-IRT1601;13PIN;P-P1.0×L30mm	1	1
LCD	PG-IRT1601;JSB178160;3V;13PIN;23×17.94/23×20.5mm;	1	1
IC	SMT;HT24L02;SOT-8	1	1
Sensor	10TP583T	1	1
backlight	PG-IRT1601;21.6×23×2.3mm;three color;	1	1
wire	1PIN;3+80+3mm;black;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;red;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;green;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;blue;size 28UL1571;copper	1	1
wire	1PIN;3+30+3mm;red;UL1571;size 26;wire diameter 1.0mm	1	1
wire	1PIN;3+30+3mm;black;UL1571;size 26;wire diameter 1.0mm	1	1
switch	FR-04	1	1
shell	PG-IRT1601;ABS;white	1	1
stand	button stand; PG-IRT1601;ABS;white	1	1
battery cover	PG-IRT1601;ABS;black	1	1
decoration	PG-IRT1601;ABS;black	1	1
ornament	PG-IRT1601;ABS;orange	1	1
forehead cover	PG-IRT1601;ABS;white	1	1
ear cover	PG-IRT1601;ABS;white	1	1
switch	PG-IRT1601;ABS;orange	1	1
stand	LCD stand ; PG-IRT1601;ABS;black	1	1
lens	PG-IRT1601;PMMA;black	1	1
button	PG-IRT1601; silica gel; black and white	1	1
heat shrink tubing	φ 1.5×20mm;black	4	1
adhesive tape	PG-IRT1601;3M double faced adhesive tape;25.60×28.66mm	1	1
battery	PG-IRT1601;positive	1	1

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piece			
battery piece	PG-IRT1601;negative	1	1
battery piece	PG-IRT1601;positive and negative anodes	1	1
screw	PB2.6x8mm; ϕ 4.2 mm; galvanized	1	1
screw	BA1.7x5mm; ϕ 3.8 mm; galvanized	3	1
copper bush	PG-IRT1601;brass C3604	1	1
copper cap	PG-IRT1601;brass C3604; nickel plated	1	1
color box	PG-IRT1601	1	1
manual	PG-IRT1601	1	1
nameplate	PG-IRT1601	1	1
plastic bag	PE;9x (20+2.5) cm; punched	1	1
blister box	PG-IRT1601;white;194x104x35mm	1	1
outer box	PG-IRT160;1/60;F535K	1	60
label	PG-800A7; transparent	1	1
buzzer	BP1740W60-0540; ϕ 16.8x4mm;4KHz;wire length 60mm;	1	1
EVA	PG-800B;L20xW15x1(t)mm;double-faced	1	1
adhesive tape	silver ;45x18mm;single sided	1	1

Bill of material of Infrared Thermometer (Model: PG-IRT1602)

Name	specifications and models	Mol Qty	Den Qty
IC	CPU ;SBAHM10;Software PG-IRT1600 Rev: 1.0	1	1
PCB	PG-IRT1602;74.44x23.24x1.6(t)mm;FR4;V1.0	1	1
Resistance	SMT;0603;200 Ω ;±5%	3	1
Resistance	SMT;0603;1K;±1%	1	1
Resistance	SMT;0603;10K;±1%	1	1
Resistance	SMT;0603;100K Ω ;±1%	1	1
Resistance	SMT;0603;300K;±1%	1	1
Resistance	SMT;0603;402K;±1%	1	1
Capacitance	SMT;0603;0.1UF;X7R;50V;±10%	8	1
Capacitance	SMT;0603;1UF;25V;X7R;±10%	1	1
Capacitance	SMT;0603;10UF;10V;X7R;±10%	3	1
Diode	SMT;IN4148;SMD;1206	2	1
Switch	DIP;TL-030	1	1
Switch	SMT;6x6x4.3±0.1mm	3	1
HSC	PG-IRT1602;13PIN;P-P1.0xL30mm	1	1
LCD	PG-IRT1602;JSB178160;3V;13PIN;23x17.94/23x20.5mm;	1	1

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IC	SMT;HT24L02;SOT-8	1	1
Sensor	10TP583T	1	1
backlight	PG-IRT1602;21.6×23×2.3mm;three color;	1	1
wire	1PIN;3+80+3mm;black;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;red;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;green;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;blue;size 28UL1571;copper	1	1
wire	1PIN;3+30+3mm;red;UL1571;size 26;wire diameter 1.0mm	1	1
wire	1PIN;3+30+3mm;black;UL1571;size 26;wire diameter 1.0mm	1	1
switch	FR-04	1	1
shell	PG-IRT1602;ABS;white	1	1
stand	button stand; PG-IRT1602;ABS;white	1	1
battery cover	PG-IRT1602;ABS;black	1	1
decoration	PG-IRT1602;ABS;black	1	1
ornament	PG-IRT1602;ABS;orange	1	1
forehead cover	PG-IRT1602;ABS;white	1	1
ear cover	PG-IRT1602;ABS;white	1	1
switch	PG-IRT1602;ABS;orange	1	1
stand	LCD stand ; PG-IRT1602;ABS;black	1	1
lens	PG-IRT1602;PMMA;black	1	1
button	PG-IRT1602; silica gel; black and white	1	1
heat shrink tubing	φ 1.5×20mm;black	4	1
adhesive tape	PG-IRT1602;3M double faced adhesive tape;25.60×28.66mm	1	1
battery piece	PG-IRT1602;positive	1	1
battery piece	PG-IRT1602;negative	1	1
battery piece	PG-IRT1602;positive and negative anodes	1	1
screw	PB2.6×8mm; φ 4.2 mm; galvanized	1	1
screw	BA1.7×5mm; φ 3.8 mm; galvanized	3	1
copper bush	PG-IRT1602;brass C3604	1	1
copper cap	PG-IRT1602;brass C3604; nickel plated	1	1
color box	PG-IRT1602	1	1
manual	PG-IRT1602	1	1
nameplate	PG-IRT1602	1	1
plastic bag	PE;9× (20+2.5) cm; punched	1	1

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blister box	PG-IRT1602;white;194x104x35mm	1	1
outer box	PG-IRT1602;1/60;F535K	1	60
label	PG-800A7; transparent	1	1
buzzer	BP1740W60-0540; ϕ 16.8x4mm;4KHz;wire length 60mm;	1	1
EVA	PG-800B;L20xW15x1(t)mm;double-faced	1	1
adhesive tape	silver ;45x18mm;single sided	1	1

Bill of material of Infrared Thermometer (Model: PG-IRT1603)

Name	specifications and models	Mol Qty	Den Qty
IC	CPU ;SBAHM10;Software PG-IRT1600 Rev: 1.0	1	1
PCB	PG-IRT1603;74.44x23.24x1.6(t)mm;FR4;V1.0	1	1
Resistance	SMT;0603;200 Ω ;±5%	3	1
Resistance	SMT;0603;1K;±1%	1	1
Resistance	SMT;0603;10K;±1%	1	1
Resistance	SMT;0603;100K Ω ;±1%	1	1
Resistance	SMT;0603;300K;±1%	1	1
Resistance	SMT;0603;402K;±1%	1	1
Capacitance	SMT;0603;0.1UF;X7R;50V;±10%	8	1
Capacitance	SMT;0603;1UF;25V;X7R;±10%	1	1
Capacitance	SMT;0603;10UF;10V;X7R;±10%	3	1
Diode	SMT;IN4148;SMD;1206	2	1
Switch	DIP;TL-030	1	1
Switch	SMT;6x6x4.3±0.1mm	3	1
HSC	PG-IRT1603;13PIN;P-P1.0xL30mm	1	1
LCD	PG-IRT1603;JSB178160;3V;13PIN;23x17.94/23x20.5mm;	1	1
IC	SMT;HT24L02;SOT-8	1	1
Sensor	10TP583T	1	1
backlight	PG-IRT1603;21.6x23x2.3mm;three color;	1	1
wire	1PIN;3+80+3mm;black;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;red;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;green;size 28;UL1571;copper	1	1
wire	1PIN;3+80+3mm;blue;size 28UL1571;copper	1	1
wire	1PIN;3+30+3mm;red;UL1571;size 26;wire diameter 1.0mm	1	1
wire	1PIN;3+30+3mm;black;UL1571;size 26;wire diameter 1.0mm	1	1
switch	FR-04	1	1
shell	PG-IRT1603;ABS;white	1	1

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stand	button stand;PG-IRT1603;ABS;white	1	1
battery cover	PG-IRT1603;ABS;black	1	1
decoration	PG-IRT1603;ABS;black	1	1
ornament	PG-IRT1603;ABS;orange	1	1
forehead cover	PG-IRT1603;ABS;white	1	1
ear cover	PG-IRT1603;ABS;white	1	1
switch	PG-IRT1603;ABS;orange	1	1
stand	LCD stand ;PG-IRT1603;ABS;black	1	1
lens	PG-IRT1603;PMMA;black	1	1
button	PG-IRT1603;silica gel;black and white	1	1
heat shrink tubing	φ 1.5×20mm;black	4	1
adhesive tape	PG-IRT1603;3M double faced adhesive tape;25.60×28.66mm	1	1
battery piece	PG-IRT1603;positive	1	1
battery piece	PG-IRT1603;negative	1	1
battery piece	PG-IRT1603;positive and negative anodes	1	1
screw	PB2.6×8mm; φ 4.2 mm; galvanized	1	1
screw	BA1.7×5mm; φ 3.8 mm; galvanized	3	1
copper bush	PG-IRT1603;brass C3604	1	1
copper cap	PG-IRT1603;brass C3604; nickel plated	1	1
color box	PG-IRT1603	1	1
manual	PG-IRT1603	1	1
nameplate	PG-IRT1603	1	1
plastic bag	PE;9× (20+2.5) cm; punched	1	1
blister bax	PG-IRT1603;white;194×104×35mm	1	1
outer box	PG-IRT1603;1/60;F535K	1	60
label	PG-800A7; transparent	1	1
buzzer	BP1740W60-0540; φ 16.8×4mm;4KHz;wire length 60mm;	1	1
EVA	PG-800B;L20×W15×1(t)mm;double-faced	1	1
adhesive tape	silver ;45×18mm;single sided	1	1

6. Software Specification of Infrared Thermometer (model: PG-IRT1601, PG-IRT1602, PG-IRT1603)

6.1 Programming Language

The software is compiled by assemble language

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6.2 Hardware Platform

The software is designed and run on the hardware platform base on an MSC-51 microprocessor, together with a temperature transducer, a LCD display module, 3 control buttons and a buzzer.

6.3 Operation System

No operation system. We only use MCU (micro-control unit).

6.4 Use of off-the –shelf Software

No off - the - shelf software