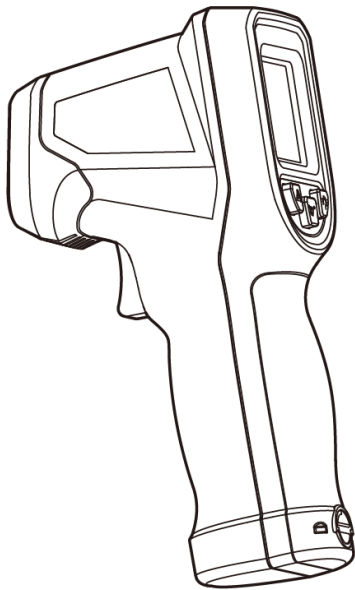


Pro'sKit®

MT-4602

INFRARED THERMOMETER



User's Manual

1st Edition,

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I. Overview

Infrared thermometers use non-contact infrared sensing technology to measure the temperature of targets safely, accurately, quickly, and reliably. They are widely applicable for measuring the surface temperature of high-temperature, hazardous, or hard-to-reach objects in food, maintenance, etc.

II. Working principle

Any object with a temperature greater than absolute zero will radiate infrared energy, which is transmitted at the speed of light in all directions. The lens of an infrared thermometer collects and focuses the infrared energy onto the sensor, which produces a low voltage output proportional to the temperature of the target object. This voltage output is processed and displayed as a temperature reading.

III. Specifications

Temperature Range	-50~600℃ (-58~1112℉)
Accuracy	-50-0℃:±3℃or ±3%(take the maximum) 0-600℃:±2℃or ±2%(take the maximum) -58-32℉: ±5.4℉or ±3%(take the maximum) 32-1112℉: ±3.6℉or ±2%(take the maximum)
Unit	℃ / ℉
Resolution	0.1℃ (0.1℉)
Response Time	≦0.5s (95% Response)
Emissivity	Adjustable (0.1 to 1.0)

Distance to Spot Ratio	8 : 1
Response wavelength	8~14um
Laser class	Class II <1mW
Laser wavelength	630~670nm
Storage Temperature	-20 to 50℃ (-4~122℉)
Operating Temperature	0 to 50℃ (32~122℉)
Operating Humidity	10~95%RH (Non-condensing)
Battery	1.5V AAA x2 (not included)

IV. Safety Operation Guidelines

Warning!

To avoid harm caused by users, please follow these instructions.

- Do not aim the laser directly at eyes or allow reflection into eyes.
- This instrument cannot measure through transparent surfaces like glass/plastic; values measured will be surface temperature of the transparent object.
- Steam/dust/smoke or other particles may obstruct the instrument lens, affecting measurement accuracy.

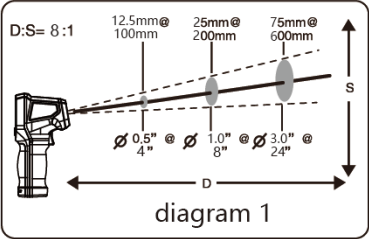
Notice:

To prevent damage to the thermometer or tested equipment, protect them from the following:

- EMF (electromagnetic field) is generated by welding machines and induction heaters.
- Thermal shock (wait 30 minutes before use after significant or sudden changes in ambient temperature for the thermometer to stabilize).
- Never place the thermometer near or on high-temperature objects.

V. Distance Spot Ratio

The farther the target, the larger the testing spot area, it means: As the distance from thermometer to the object increases, the spot size of measuring area becomes larger, (as in diagram 1) it is named as "D:S" (Distance Spot Ratio). The diameter of the target spot area is 1cm when you test from a distance of 8cm, and the thermometers will show the average temperature of target spot area with diameter 1cm.



Observation Range: Ensure that the target being observed is larger than the measuring area of the instrument. When observing smaller targets, move closer but ensure the target is at least 1.5 times larger than the measuring area for accurate measurements.

VI. Detailed function

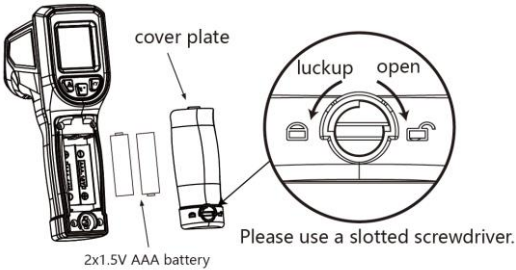


Diagram 2

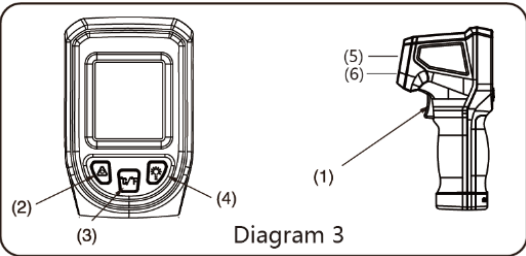


Diagram 3

1: Measurement trigger. 2: Laser button 3: °C/°F Function button.4: Backlight button. 5: Infrared Sensor 6: Laser

Button function:

After power on

- 1) Short press button 3 (°C/°F button), switch the °C/°F.
- 2) Lang press button 3 (°C/°F button) to get into the emissivity adjust, and then press button 2 or 4 to adjust emissivity.
- 3) Press button 2 (laser button), test with laser.
- 4) Press button 4 (backlight button) to turn on/off backlight.

Display:

- 1. Data hold.
- 2. Scan Mode: Shows on LCD when testing.
- 3.Low Battery.
- 4. Laser Sign: test with laser aim.
- 5.Backlight sign.
- 6.°C/°F Symbol.
- 7.Temperature reading.
- 8.Max temperature or Emissivity reading.
- 9.Adjustable emissivity sign.
- 10.Max: Max temperature.

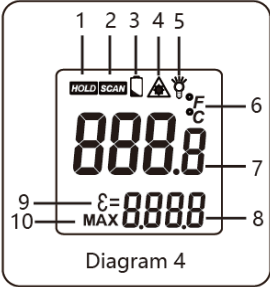


Diagram 4

VII. Operation

- 1. Power-on measurement: Aim the probe at the object to be measured, press the "measure" trigger (press time > 0.5 seconds) for a single measurement, or hold the "measure" trigger for continuous measurement. The instrument will perform a self-check upon power-on and automatically display the temperature value. During measurement, "SCAN" is displayed; release the trigger, "HOLD" is displayed; the latest temperature data and the highest temperature data (MAX) are shown after measurement.
- 2. After power-on, if there is no operation of the infrared thermometer for more than 12 seconds, the instrument will automatically shut down.
- 3. Laser indication: Turn on the laser when measuring, the instrument emits a laser point, which serves as the reference center point for the measurement location. When measuring, you can move up and down or left and right slowly to find the position with the highest temperature on the surface of the object being measured.
- 4. Backlight on/off: Press the backlight button (4) to turn on or off the LCD backlight.
- 5. Emissivity adjustment: To ensure accurate temperature measurement, adjust the emissivity parameter according to different objects being measured. Long press the middle (°C/°F) button, the display shows ε=0.95 with the number flashing, entering the emissivity adjustment mode. Adjust the emissivity by pressing the left (+) and right (-) buttons respectively.

Emissivity

Most organic materials painted or oxidized surfaces have an emissivity of 0.95 (pre-set in the unit). Inaccurate readings will occur if the surface to be measured is shiny or polished

such as stainless steel or aluminum. To obtain better accuracy, please cover the surface with masking tape or flat black paint before measuring. Measure the tape or painted surface when the tape or painted reaches the same temperature as the material underneath. Please kindly note: thermometer cannot measure the temperature of target objects through the surface of glass. And steam, dust, smog will lower the accuracy.

Emissivity of Articles

Material	Feature	Emissivity	Material	Feature	Emissivity
Aluminum	Oxidized	0.3	Limestone		0.98
	Polished	0.02-0.04		Paint	0.93
Brass	Oxidized	0.5	Human skin		0.98
	Polished	0.02-0.05		Graphite	0.20-0.60
Gold		0.01-0.10	Rubber		0.95
Iron	Oxidized	0.7	Plastic cement		0.85-0.95
Steel	Oxidized	0.70-0.90	Concrete		0.95
Asbestos		0.95	Cement		0.96
Plaster		0.80-0.90	Soil		0.90-0.98
Asphalt		0.95	Mortar		0.89-0.91
Rock		0.7	Brick		0.90-0.96
Wood		0.90-0.95	Marble		0.94
Charcoal	Powdered	0.96	Textile		0.95
Carbon		0.85	Paper		0.95
Lacquer work	lackluster	0.97	Sand		0.90
Carbon Cement		0.90	Clay		0.92-0.96
Soap Bubble		0.75-0.80	Glass		0.85-0.92
Water		0.93	Heated food		0.95
Snow		0.83-0.90	Oil		0.94
Ice		0.96-0.98	Steel and iron		0.80
Frozen Foods		0.95	Wool	Natural	0.94
Ceramics		0.95	Lead	Oxidized	0.5

VIII. Battery:

- If the LCD shows " " , replace the battery in time.
- If not used for a long time, take out the battery to prevent damage to the product due to battery leakage

IX. Maintenance

- 1. Lens cleaning: use clean compressed air to blow off loose particles, use a soft brush to remove debris, finally clean it with damp cotton cloth.
- 2. Case cleaning: clean the case with a damp sponge/cloth and mild soap.

NOTE:

- 1. Do not use solvent to clean lens.
- 2. Do not submerge the unit in water

Pro'sKit®

MT-4602 红外线测温枪使用说明书

一、概述

红外线测温仪采用非接触红外线传感技术对目标进行安全、准确、快速、可靠的测量。本产品适用于食品、维修等行业快速、准确测量物体表面的温度

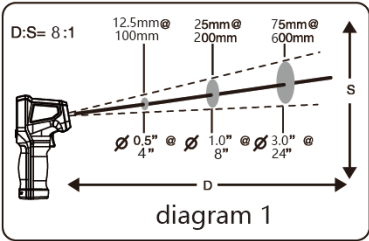
二、工作原理

任何温度大于绝对零度的物体都会辐射红外能量，此能量以光速向四周传输。红外线测温仪的透镜收集并汇集红外能量到传感器上，传感器产生一个低电压输出，此电压与目标物体的温度成正比，电压输出经过处理后显示为温度值。

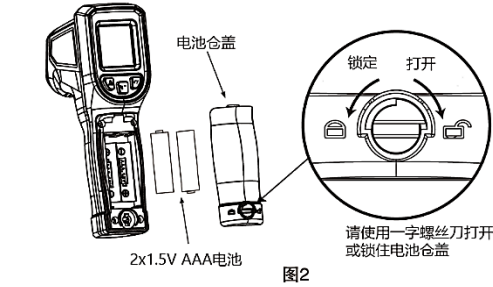
温度测试范围	-50~600℃ (-58~1112℉)
测量精度	-50~0℃: ±3℃or ±3%(取最大值) 0~600℃: ±2℃or ±2%(取最大值) -58~32℉: ±5.4℉or ±3%(取最大值) 32~1112℉: ±3.6℉or ±2%(取最大值)
单位	℃ / ℉切换
分辨率	0.1℃ (0.1℉)
测试响应时间	≤0.5 秒 (95% 响应)
发射率	可调 (0.1~1.0)
距离系数比	8:1
响应波长	8~14um
激光等级	Class II <1mW
激光波长	630~670nm
储存温度	-20 to 50℃ (-4~122℉)
操作温度	0 to 50℃ (32~122℉)
操作湿度	10~95%RH (无凝结)
电源	1.5V AAA 电池 x2 (不含)

- 四、安全须知**
- ！ **警告：** 为避免对人体造成伤害，请严守下列指示：
- 请勿将激光直接对准人的眼睛或是从反射面间照射眼睛。
 - 使用前请先检查机壳是否完整，请勿使用损坏的产品。
 - 电池低电压显示时，请立即更换电池；长时间不用，请取出电池，以免电池漏液，造成仪器损坏。
 - 若产品异常请勿使用，产品的保护功能可能已经损坏，若有疑问应将产品送修。
 - 请勿在有爆炸气体、蒸汽或灰尘的地方使用。
 - 为避免灼伤，请记得发射率高的物体上所测得的温度要低于实际温度。
 - 若未按照本说明书规定使用，产品提供的保护功能可能会失效。
 - 为避免损害测温仪或被测之设备，请保护它们免受以下影响：
 - 弧焊机或感应式加热器等产生电磁磁场。
 - 热冲击(如环境温度发生较大变化或突然有较大改变，在使用前要等待 3 0 分钟使测温仪达到稳定状态)。
 - 请勿将测温仪靠近或放在高温物体上。

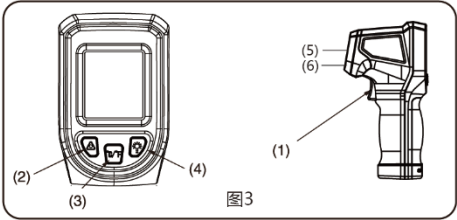
- 五、距离系数比**
- 测量目标越远，测试的范围越大，距离与测量范围的比值常用 D:S 来表示。当测量距离为 8cm 时，测量范围的直径为 1.0cm，测温枪测量的是量测范围的平均温度。(如图 1)



六、外观介绍：



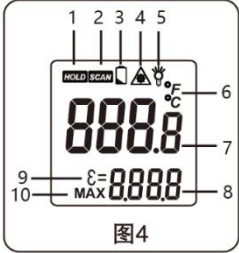
产品说明：



1. 测量扳机：按住该键进行测量。
2. 激光指示开关：按该键开启或关闭激光指示灯，开启时LCD显示激光指示灯符号。
3. ℃/℉切换键：短按，可切换℃/℉温度单位，长按该键，ε=0.95数字闪烁，进入发射率调整模式，再按（2）+或（4）- 调整发射率。
4. 背光开关键：按该键，开启或关闭LCD背光灯，开启时，LCD显示背光灯符号。
5. 温度传感器。
6. 激光指示。

显示说明：

1. 数据保持符号。
2. 扫描符号，在测试时显示。
3. 电池低电压符号。
4. 激光指示灯符号，仅激光指示开启时显示。
5. LCD背光灯符号，仅背光开启时显示。
6. ℃/℉：温度单位符号。
7. 测量读数。
8. 发射率或测量最大值。
9. 发射率符号。
10. MAX: 测量最大值：按住测量键连续测量时，显示测量过程的最高温度。



七、操作说明

- a) 开机测量：探头对准被测物体，按下“测量”扳机（按压时间> 0.5秒）进行单次测量，或按住“测量”键进行连续测量，仪器开机自检并自动测量显示温度值，测量时显示SCAN;松开扳机，显示HOLD;测量显示最新温度数据和最高温度数据（MAX）。
- b) 关机：开机后，如超过12秒未操作红外线测温仪，仪器自动关机。
- c) 激光指示：测量时开启激光，仪器射出激光点，激光点为被测位置参考中心点，测量时可以上下或者左右慢慢移动，找出被测物体表面最高温度位置。
- d) 背光开/关：按背光键（4）开启或关闭LCD背光。
- e) 发射参数调整：为保证测量温度准确，根据不同被测物体，调整发射率参数，长按中间（℃/℉）键，显示屏ε=0.95数字闪烁，进入发射率调整模式，分别按左（+）右（-）键，调整发射率。

大多数有机材料、涂漆或氧化表面的发射率为0.95（本产品中默认）。如果要测量的表面是光滑或抛光的，如不锈钢或铝，则会出现不准确的读数。为了获得更好的准确性，请在测量前用遮蔽胶带或哑光黑漆覆盖表面。当胶带或涂漆达到与下面材料相同的温度时，测量胶带或涂漆表面。请注意：温度计不能通过玻璃表面测量目标物体的温度。蒸汽、灰尘、烟雾会降低准确性。

常见名称物体发射率对照表					
材料	规格	发射率	材料	规格	发射率
铝	氧化	0.3	石灰		0.98

	抛光	0.02-0.04	油漆		0.93
黄铜	氧化	0.5	人体皮肤		0.98
	抛光	0.02-0.05	石墨	氧化	0.20-0.60
黄金		0.01-0.10	橡胶		0.95
铁	氧化	0.7	塑料		0.85-0.95
钢	氧化	0.70-0.90	混凝土		0.95
石棉		0.95	水泥		0.96
石膏		0.80-0.90	土壤		0.90-0.98
沥青		0.95	灰泥		0.89-0.91
岩石		0.7	砖		0.90-0.96
木材		0.90-0.95	大理石		0.94
木炭	粉末	0.96	纺织品		0.95
碳		0.85	纸		0.95
漆器	无光泽	0.97	沙子		0.90
碳胶		0.90	泥土		0.92-0.96
肥皂泡		0.75-0.80	玻璃		0.85-0.92
水		0.93	热食物		0.95
雪		0.83-0.90	油		0.94
冰		0.96-0.98	钢铁		0.80
冷冻食品		0.95	羊毛	自然的	0.94
陶瓷		0.95	铅	氧化	0.5

八、更换电池

当 LCD 显示 “” 时，表示电池低电压，请及时更换电池。
如果长期不使用本产品，请将电池取出，以免电池漏液造成产品损坏。

九、保养

镜头清洗方法：

使用干净的压缩空气或吹尘球吹掉松散的颗粒，再用柔软毛刷轻轻地去除残留碎屑后，用沾湿的棉花球小心擦拭。注意！不可使用溶剂清洗镜头。

外壳清洗方法：

用沾有肥皂水的软布擦拭，不可将产品浸泡水中。

Pro'sKit® 中国地区产品保固卡

购买日期		店章
公司名称		
联络电话		
电子邮箱		
联络地址		
产品型号	☐ MT-4602-C	

- ※ 在正常使用情况下,自原购买日起 12 个月免费维修保证(不含耗材、消耗品)。
- ※ 产品保固卡需盖上店章、日期章，其保固效力始生效。
- ※ 本卡请妥善保管，如需维修服务时，请出示本卡以为证明。
- ※ 保固期满后，属调整、保养或是维修性质之服务，则酌收检修工时费用。若有零件需更换，则零件费另计。

产品保固说明

- 保固期限内，如有下列情况者，维修中心则得酌收材料成本或修理费(由本公司维修人员判定)：
 - 对产品表面的损伤，包括外壳裂缝或刮痕
 - 因误用、疏忽、不当安装或测量，未经授权打开产品修理，修改产品或者任何其它超出预期使用范围的原因所造成的损害
 - 因事故、火灾、电力变化、其它危害，或自然灾害所造成的损害。
- 非服务保证内容：
 - 本体之外附配件：电池等附配件。
- 超过保证期限检修或服务,虽未更换零件,将依公司保固维修政策酌收服务费。

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服务热线：400 1699 629
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