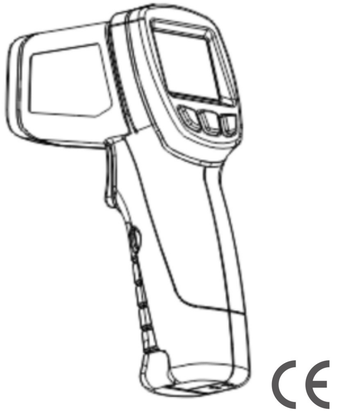
MASTECH®

MS6531 SERIES

INFRARED THERMOMETER

User's Manual



1. Introdution

Thank you for purchasing our infrared thermometer. This product is a professional, hand-held meter for non-contact infrared and K-type thermocouple temperature measurements that is simple to use, highly accurate, and with a wide temperature range.

2. Features

- ·Fast measurement
- ·Non-contact infrared and precision k-type temp measurement
- ·Built-in dual laser sight for faster and more accurate targeting
- ·Adjustable Emissivity: 0.1 to 1.0 range for multiple surface types
- ·Temp. unit conversion, maximum, minimum, average, difference displays
- ·Record up to 20 readings
- ·Resolution: 0.1°C (0.1°F)
- ·High temperature alarm setting
- ·Automatic range, data hold, and auto power functions

3. Uses

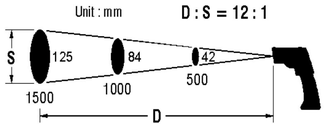
This product is widely used in food services, security, fire prevention, chemical, storage, and transport industries

4. Safety Information

- ·when laser beam is active, use with caution
- ·DO NOT aim laser beam at a person's/animal's eyes
- ·DO NOT use the laser beam near explosive gas

5. Distance to Spot Ratio

The distance to spot ratio (D:S) for this meter is: 12:1. Example: Measurement from a distance of 300mm away will produce a measurement spot of approx. 25mm in diameter. Figure 1 shows a diagram of how distance to spot ratio works.



6. Technical Specifications

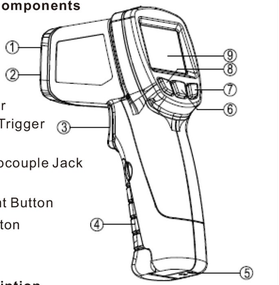
Model	**MS6531ABC**	
Range	**MS6531A** IR: -60~500°C/-76~932°F	
	MS6531B/C IR: -40~800°C/-40~1472°F	
	MS6531A/C TK: -40~1080°C/-40~1976°F	
Accuracy	IR: -60~0°C/-76~32°F: ±4°C/7.2°F	
	IR: 0~400°C/32~752°F: ±1.5%, ±2°C/3.6°F	
	IR: 400~800°C/752~1472°F: ±2%, ±2°C/3.6°F	
	TK: -40~1080°C/-40~1976°F: ±1.5%, ±3°C/5.4°F	
D:S	12:1	

Emissivity	Adjustable: 0.10~1.0	
Resolution	0.1°C(0.1°F)<199.9, 1°C(1°F)>199.9	
Response Time	<500ms	
Spectral Response	8~14μm	
Work Light	**MS6531A only**	
Low/High Alarm	Low	High
Polarity Display	Automatic (no indication for positive)	
	"-" indicates negative	
Laser Pointers	Output: <1mW, 630~670nm, class 2 (II) laser	
Auto Power Off	IRT will turn off after 30s of non-use	
Operating TEMP	0°C~50°C/32°F~122°F	
Storage TEMP	-20°C~60°C/-4°F~140°F	
Relative Humidity	Operating: 10~90% RH, Storage: <80% RH	
Battery	9V battery	
Weight	223g	
Dimensions	176x132x49mm	
Safety	Compliance with European CE safety standards	

Note:

- ·Calibration is carried out at a temperature between 18° and 28 ° (64° to 82°) and relative humidity below 80%.
- ·Make sure that the target is larger than the meter' visual spot size. The smaller the target, the closer the meter should be.

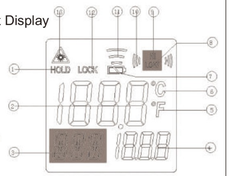
7. Buttons and Components



1. Laser Sight
2. Infrared Sensor
3. Measurement Trigger
4. Battery Cover
5. Type-K Thermocouple Jack
6. Mode Button
7. Laser/Backlight Button
8. Temp. Unit Button
9. LCD Display

8. Display Description

1. Display Hold
2. Main Measurement Display
3. Mode
4. Secondary Measurement Display
5. Fahrenheit
6. Celsius
7. Low Battery
8. Low Alarm Indication
9. High Alarm indication
10. Buzzer Indication
11. Measurement Indication
12. Measurement Lock
13. Laser Pointers On/Off



9. Operating Instructions

9.1 Measurement

1. Point the meter at the object to be measured.
2. Hold down the trigger to begin measurement. The " " symbol flashes on the top of the display to indicate measurement is taking place.
3. The main measurement display show the current temperature reading of the measured surface.
4. Release the trigger and "HOLD" symbol will appear in the upper left corner and the display will hold the last reading.
5. The meter's auto off function will turn off the meter 30s after releasing the trigger.

Note:

- Environmental temperature can affect the accuracy of the reading. It is recommended the meter be place in the measurement environment for 30 min. prior to taking measurement.
- Laser can be turned off for measurements at close range to conserve battery power.

9.2 Settings

Emissivity: default emissivity is 0.95

To change emissivity: press "MODE" until the bottom left shows the "E" symbol with two arrows pointing up and down. Press the up and down buttons to adjust the emissivity. Emissivity range: 0.1-1.0.

Memory:
To save readings: press "MODE" unit "MEM" appears in the bottom left corner of the display. Press the trigger to save the displayed reading.

To recall saved readings: press “MODE” until “RCL”appears in the bottom left corner of the display. Use the up and down buttons to scroll through the saved readings.

To clear all saved readings” press “MODE” until “CLR ALL” appears on the bottom of the display. Press the trigger to clear readings.

To show the maximum recorded value: press “MODE” until “MAX” appears on the bottom left corner of the display.

To show the minimum recorded value: press “MODE” until “MIN” appears on the bottom left corner of the display.

To show the difference between the minimum and maximum values: press “MODE” until “dIF” appears on the bottom left corner of the display.

To show the average recorded value: press “MODE” until “AVG” appears on the bottom left corner of the display.

To set the high alarm level: press “MODE” until “HAL” appears on the bottom left corner of the display. Press the up and down buttons to set the alarm level.

To set the low alarm level: press “MODE” until “LAL” appears on the bottom left corner of the display. Press the up and down buttons to set the alarm level.

When the high and low alarms are set, the meter will beep if the temperature measured is above the high level or below the low level. In addition, the main display will show “Hi” or “Lo” and the icon in the top right corner will turn red or blue to indicate high or low alarm respectively.

To measure temperature using the included type-k thermocouple probe: press “MODE” until “PRB” appears on the bottom left corner of the display. Insert the type-k thermocouple into the thermocouple jack on the bottom of the thermometer.

Make sure to observe the polarity when inserting the thermocouple. Touch the tip of the probe to the object under test. The measured temperature will be shown on the bottom right of the display.

To turn on/off the laser pointers: during measurement, press the down button to switch between the laser pointers on or off.

To turn on/off the backlight: during measurement, press the up button to turn on or off the backlight.

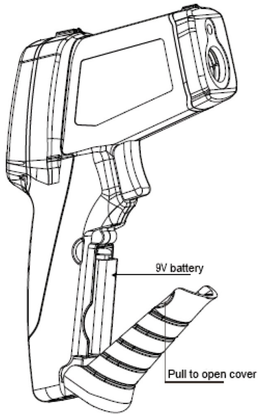
To switch between °C and °F: while in HOLD mode, press the down arrow to switch temperature units.

To lock the thermometer into measurement:

While in HOLD mode, press the up button and the thermometer will begin measuring and continue to measure until the up button is pressed again.

9.3 Battery Replacement

When the battery is running low, the symbol will appear indicating the battery needs to be replaced. Open the battery cove and replace the old battery with a new 9V battery.



10. Additional Notes

10.1 Thermometer

·Infrared thermometers are used to measure surface temperature.
·The sensor collects infrared energy and is gathered in the detector circuit and converted into a temperature reading for display.
·The laser pointers are only used for aiming purposes

10.2 Surfaces

·Make sure the object to be measured is larger than the diameter of the thermometer’s spot field.
·The smaller the target, the closer the meter should be.

10.3 Distance to Spot Size

·As the distance between the surface to be measured and the meter increases, the spot increases according to the ratio 12:1.

10.4 Hotspot positioning

·To find a hotspot, aim the thermometer outside the area to be measured and then move it around within the correct area to find the hotspots.

10.5 Tips

·Not recommended for measuring on light metal or smooth metal surfaces such as stainless steel, aluminum, etc.
·Sensor cannot penetrate through transparent surfaces such as glass.
·Steam, dust, smoke, etc. block the sensor from picking up infrared energy, thus decreasing it’s accuracy.

10.6 Warranty

·Clean the meter regularly with a dry cotton cloth.

·DO NOT use any type of chemicals or detergents.

·Maintenance and repairs should only be done by qualified personnel.

·DO NOT immerse the thermometer in water.

·DO NOT store the thermometer in an area with high temperature or high humidity.

10.7 Emissivity

·Emissivity characterizes the type material and the amount of radiant energy given off by the material. Most organic materials and painted/oxidized surfaces have an emissivity of 0.95.

11. Accessories and Table of Emissivity

11.1 Accessories

·Instruction Manual
·Warranty Card
·9V Battery
·Type-K Thermocouple
·Hook

11.2 Table of Emissivity

Material	Emissivity	Material	Emissivity
Aluminum	0.30	Glass	0.90 to 0.95
Asphalt	0.95	Iron Oxides	0.78 to 0.82
Concrete	0.95	Paint	0.80 to 0.95
Asbestos	0.95	Plastic	0.85 to 0.95
Ceramics	0.95	Paper	0.70 to 0.94
Brass	0.50	Plaster	0.80 to 0.90
Brick	0.90	Rubber	0.95
Carbon	0.85	Wood	0.90
Sludge	0.94	Textile	0.94
Frozen Food	0.90	Lead	0.50
Hot Food	0.93	Marble	0.94
Ice	0.98	Cloth (black)	0.98
Snow	0.90	Sand	0.90
Human Skin	0.98	Water	0.93

00-05-3954