

Electronic Tool Tip #10 – Infrared Thermometer



Figure 1 - General Tools IRT207 infrared thermometer

From time to time, I will encounter an electronic device that is not functioning quite as it was designed. For example, I might come up against a radio in which one of the amplifier stages is *kaput*, which is causing a more generalized failure to be evident. Not being one who takes kindly to “busy” work, I am usually interested in a reliable shortcut that will help to resolve the issue at hand. One such “*shortcut*” is a pistol-grip infrared thermometer.

I chose the IRT207 from General Tools (Figure 1) mainly because it was what was in stock at the neighborhood Lowe’s store when I was looking to buy one of these devices. That fact notwithstanding, I would now make that same buying decision even when considering a varied group of candidates. The IRT207 is compact, easy to use, goes almost forever on a single 9-volt snap-top battery, and displays its readings clearly on a backlit LCD panel.

The operational specifications for the IRT207 are shown in Figure 2. Note that the field of view is fixed at a ratio of 8:1, which means that the scanned surface area of the target object will grow at that ratio. For example, at eight inches from the working face of the thermometer, the scanned area target spot will have a diameter ($\varnothing$) of one inch. At a sixteen-inch distance, that scanned area “spot” will now have grown to $\varnothing$ 2”, and then to $\varnothing$ 3” at a twenty-four-inch distance from the thermometer to the target surface.

The IRT207 is selectable as to $^{\circ}\text{C}$ or $^{\circ}\text{F}$, managed by a push of the left-hand switch on the thermometer display panel. In addition, the aiming laser can be selectively active or inactive, again by a mere button press, this time to the right-hand switch on the display panel of the thermometer.

3. Specifications

Temperature Range	-4° to 608°F (-20° to 320°C)
Accuracy	±2% of reading or 3.6°F (2°C), whichever is greater, above 32°F (0°C); ±2% of reading or 5.4°F (3°C), whichever is greater, below 32°F
Field of View	8:1
Laser Type, Output/Wavelength	Class 2, <1mW @655nm
Repeatability	±1°C (±1.8°F)
Response Time	500 ms.
Operation Temp.	32° to 104°F (0° to 40°C) @ 10 to 90% RH
Auto Power Off	Automatically after 7 sec.
Emissivity	Fixed at 0.95
Storage Temp.	14° to 122°F (-10° to 50°C)
°F/°C Switchable	YES
Battery Type	“9V” battery (included)
Battery Life	16 hrs
Dimension	5.98 x 4.65 x 1.26 in. (152 x 118 x 32 mm)
Weight	4.22 oz. (120g) without battery
Accessory	“9V” battery, Instruction manual

Figure 2 - IRT207 specifications list

To use the IRT207, simply point the sensing end of the thermometer towards the surface or object of interest and pull the trigger, holding the trigger until you register the temperature of the target. The aiming laser can be used to help ensure that the unit is sampling the correct or desired point. When the trigger is released, the temperature displayed will be “held” in the display until the display blanks out, which event will occur at about seven seconds after trigger release.

An infrared thermometer is extremely useful in diagnosing weak or under-performing semiconductor devices. Such devices will generally run colder than their neighboring devices. Conversely, semiconductors that are flowing excessive current will generally run hotter than their neighbors. Excess current through any resistance will produce heat. This heat can be used to locate and identify circuit problems.

I am *not* saying that the thermometer is some sort of magic wand that will solve all of your diagnostic woes. I *am* saying, however, that the infrared thermometer is a valuable asset in your diagnostic tool set, and that thermal exploration can be a key process in fully inspecting a piece of electronic equipment.

This thermometer is available online from Amazon, at a price of \$37.99 (USD) plus shipping if you are not an Amazon Prime member. Of course, the government has to get its share, so tax will also be applied. Point your browser to <https://www.amazon.com/General-Tools-IRT207-Temperature-Detector/dp/B00377BSU4> if you want to investigate this item for yourself.

