



# FLIR TG165

## TG165 Imaging IR Thermometer – How it Works

Thermal imaging is one of the most powerful technologies ever developed to enhance visual perception. The unaided human eye can only perceive a very narrow band of visible light along the electromagnetic spectrum, which also includes radio and microwaves, infrared and ultraviolet light, X-Rays, and gamma rays.

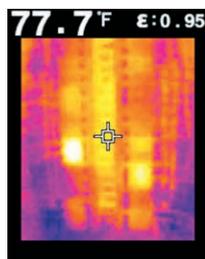
Thermal energy—or “heat”—resides within the infrared spectrum, which is invisible. However, a spot thermometer sensor is capable of converting thermal energy into a temperature measurement, and a thermal imaging detector converts thermal energy into an electronic thermal image that can be viewed on an LCD screen.

The TG165 utilizes both of these types of infrared technology, simultaneously. The spot thermometer emits a beam of infrared light that lands on an object and then bounces back. The thermometer determines the object’s apparent surface temperature based on how much thermal energy the object is emitting, reflecting, or transmitting.

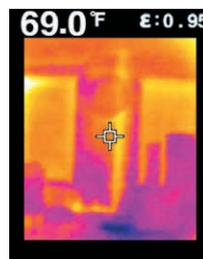
The TG165’s thermal imager, on the other hand, includes a micro thermal camera that can passively scan an area and display images of hot and cold patterns on an LCD screen. Being able to “see” infrared radiation creates an entirely new level of awareness for professionals and consumers, alike. Users no longer have to guess where to take temperature readings. They can literally see hot and cold spots, making work more efficient and reliable.

The TG165’s IR thermometer has a Distance-to-Spot ratio of 24:1. In other words, from a distance of 24 inches (61 cm), the TG165 can measure the temperature of a one-inch spot (2.5 cm). If you double the distance to 48 inches (122 cm) the spot diameter will expand to two inches (5 cm), and so on.

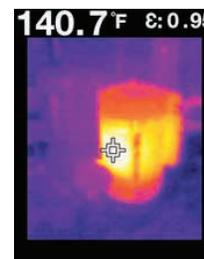
The amount of thermal energy emitted by an object depends upon its temperature and how efficiently it radiates thermal energy. This efficiency is called “emissivity.” Emissivity values range from 0.1 for very reflective material—such as shiny metal—to 1.00 for a pipe with a flat black finish. The TG165 has both adjustable and preset emissivity settings, and the TG165 user’s manual includes a list of common materials and their respective emissivity factors as a quick reference for users who are not trained in thermography.



Electrical Troubleshooting



Warm Pipe in Wall



Mechanical Overheating



Refrigeration Issues