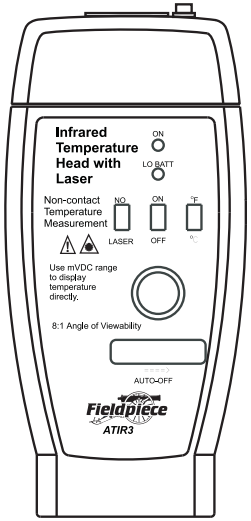
Infrared Temperature Accessory Head Model: ATIR3



Fieldpiece

OPERATOR'S MANUAL

Applications

The infrared temperature measurement is fast and easy. It works best for fast readings, relative readings (one to another or the same one at different times), or temperature readings of hard to reach places. The following are some applications:

- Heating and air conditioning where fast and/or easy measurement is most important.
- Motor bearings: high temperature can indicate bearings that might need replacement.
- Circuit breakers: a circuit breaker that is not operating properly can get hot. By scanning a panel, you will be able to find the hot one.
- Poor power line connections: a bad connection can get hot.

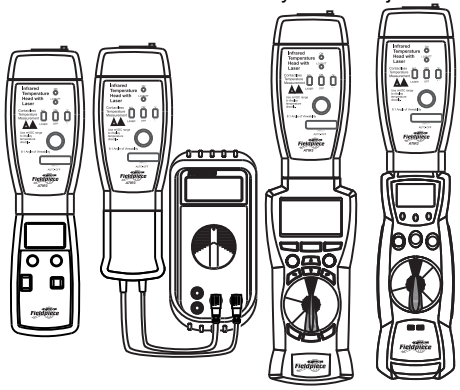
Operation

1. Connect to COM and Volts jacks of meter. Just slide it onto the EHDL1, DL3 or "stick" meter. You can also connect to other DMMs by using the AHDL1 adapter or ADLS2 deluxe silicone leads.
2. Switch to mVDC range on your meter and read the average temperature directly in ºF or ºC of everything in the cone of viewability.
3. To keep temperature interference to a minimum, always try to keep your hands below bottom half of the ATIR3.

Description

The ATIR3 collects infrared energy and converts it to a millivolt DC signal that is proportional to the temperature being measured. The temperature measured will be the average of all the temperatures in the cone of viewability. The closer you are to the target, the smaller the area. The further away, the larger the area measured.

The ATIR3 converts the Fieldpiece "Stick" series meter, DL3 data logger, and EHDL1 electronic handle to a one-piece infrared temperature meter. Use the optional Fieldpiece ADLS2 deluxe silicone test leads or the AHDL1 adapter handle with the ATIR3 for use with DMMs with industry standard jacks.



EHDL1 AHDL1w/DMM DL3 "Stick"

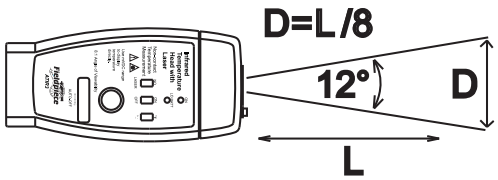
Auto off

When the ATIR3 is turned on and the auto off is switched on, you must hold MEAS to read temperature.

When auto off is switched off, the temperature will continue to be read until you move the power switch off. The MEAS button does nothing when auto off is disabled. It is particularly useful to have auto off disabled when data logging with the DL3.

Cone of viewability

The ATIR3 takes it's measurement from a circle of a size determined by a simple ratio of 8:1. The diameter of this circle is 1/8 the distance between the target and the tip of the ATIR3. For example, if you're standing 16 feet from your target, the size of the circle you're taking the average temperature of will be 2 feet wide.



IR temperature measurement

When something is hot, it radiates infrared (IR) energy. The hotter it is, the more infrared energy. If there's enough of it, you can feel it. The ATIR3 infrared accessory head collects infrared energy from a cone-shaped viewing area and measures the total amount of energy collected. The ATIR3 converts the total energy measured to a temperature. Distance doesn't matter because the further you go from the target, the increase in area "seen" by the sensor exactly balances the loss of energy collected from a given area.

If you want to get the temperature of something small, such as a pipe, you must get close enough so the pipe takes up the whole viewing area circle. Otherwise the pipe and the background temperatures will be averaged into the reading.

The accuracy of many infrared temperature measuring systems is adversely affected by ambient temperature.

You need to be aware that if the target surface is reflective enough, it may reflect infrared from other objects. For example, if you take a reading of a shiny metal surface, the infrared energy of your face may reflect enough energy off the surface to affect the reading.

"Emissivity" of the target surface also affects the temperature reading. For a given temperature, the higher the emissivity, the higher the reading. The lower the emissivity, the lower the reading.

Emissivity of a surface indicates how easy it is for the infrared to get out. Emissivity for a dull, black surface is high (nearly 100%) so it's easy for the infrared to get out. Emissivity for a shiny surface can be much lower. If the emissivity is low, the measured temperature will be lower than actual. For relative readings of the same kind of surface, this isn't a problem. For some applications, it may be necessary to spray dull, black paint on the target to insure a more accurate reading.

For best accuracy use contact sensors (thermocouples, thermistors, etc.) anytime you take a temperature measurement. Infrared instruments should only be used when you aren't able to touch the surface to be measured.

Warranty

The product is warranted to the original purchaser against defects in material or workmanship for a period of one (1) year from the date of purchase. During the warranty period, Fieldpiece Instruments will, at its option, replace or repair the defective unit.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonable use of the instrument. Any implied warranty arising out of the sale of Fieldpiece's products including but not limited to implied warranties of merchantability, and fitness for purpose, are limited to the above. Fieldpiece shall not be liable for incidental or consequential damages.

Service

Return any defective ATIR3 to Fieldpiece for warranty service along with proof of purchase. Contact Fieldpiece for out of warranty repair charges

Specifications

Conversion rate: 1mVDC per 1ºF
Resolution: 0.1ºF for meters with 0.1mVDC
Power: Standard 9V battery
LED indication: green for "On", red for low battery
Operating temp: 32ºF to 122ºF at <75%RH
Storage temp: -4ºF to 140ºF at <80%RH with battery removed
Sensor: Thermopile
Temperature range: 0ºF to 752ºF
Accuracy: Whichever is greater. At 73ºF ± 10ºF at <90%RH
±2.0%rdg or 4ºF, 32ºF to 160ºF
±3.0%rdg or 5.5ºF, 0ºF to 31ºF, 161ºF to 752ºF
Field of view: 8:1

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