Fieldpiece

Non-contact Infrared Thermometer w/Laser Sight
Model: SIR2

OPERATOR'S MANUAL

Description

The SIR2 thermometer is a low cost, wide angle, standalone non-contact infrared thermometer. Simply aim the thermometer at the target and press the 'Scan' button to display the surface temperature. The temperature measured will be the average of all the temperatures in the field of view. The closer you are to the target, the smaller the area. The further away, the larger the area measured.

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:

- "Shoot" an inside wall for quick and fast indoor ambient temperature readng.
- Heating and air conditioning where fast and/or easy measurement is most important.
- Motor bearings: high temperature can indicate bearings that might need r eplacement.
- 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.

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 SIR2 infrared accessory head collects infrared energy from a circular viewing area and measures the total amount of energy collected. The SIR2 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.

⚠ WARNING ⚠

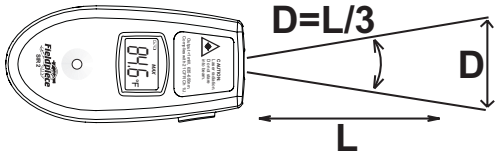
Never point the device towards the eyes-permanant eye damage may occur.

Use extreme caution when using the laser.

Keep out of the reach of children.

Field of View

The SIR2 takes it's measurement from a circle of a size determined by a simple ratio of 3:1. The diameter of this circle is 1/3 the distance between the target and the tip of the SIR2. For example, if you're standing 6 feet from your target, the size of the circle you're taking the average temperature of will be 2 feet wide.



Laser Sight

By partially pressing the Scan button, the SIR2 will begin to measure the temperature of the target. When the Scan button is completely depressed, the laser will operate.

°C or °F

1. Turn the instrument on by pressing the Scan button.
2. Press the Mode button four times. The ºF or ºC symbol will flash.
3. Press the Scan button to change.

MIN/MAX

The MIN or MAX modes measure the lowest or highest temperature, respectively, of all the temperatures measured while the MIN or MAX mode is displayed.

1. Turn the instrument on by pressing the Scan button, then press the Mode button once for minimum or twice for maximum function. The MIN or MAX icon will flash.
2. Press the Scan button to confirm the minimum or maximum mode. The SIR2 will display the minimum or maximum reading only.
3. To exit the MIN/MAX functions, don't press either button and let the instrument turn off. When the scan button is pressed again, the SIR2 will return to normal mode.

LOCK

The LOCK mode is particularly useful for the continuous monitoring of temperatures. Once the LOCK mode is activated, the SIR2 will stay on for 60 minutes.

1. Turn the instrument on by pressing the Scan button.
2. Press the Mode button three times for the lock mode function. The LOCK icon will flash.
3. Press the Scan button to confirm the lock Scan mode. The SIR2 will continuously display the temperature for up to 60 minutes or until the Scan button is pressed again.

Emissivity

The SIR2 infrared thermometer is supplied with a default emissivity of 0.95. The emissivity can be changed from 0.10 (10E) to 1.00 (100E). Changes should only be carried out by experienced personnel.

1. Turn the instrument on by pressing the Scan button, then press the Mode button five times for emissivity function. The 95E will flash on the LCD screen, then press the Scan button to adjust the emissivity value.
2. Press the Mode button again to exit the set up screen. For information relating to the emissivity of specific materials, please contact the nearest retailer.

EMC/RF Interferance

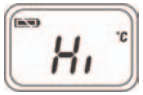
Readings may be affected if the unit is operated within a radio frequency electromagnetic field strength of approximately 3 volts per metre, but the performance of the instrument will not be permanently affected.

Specifications

Temperature range: -27ºF to 482ºF
Resolution: 0.1º
Response time: 1 second
Emmisivity: Default 0.95, Adjustable 0.10 to 1.00
Power: 2 CR2032 batteries (laser/thermometer)
Battery life: 40 hrs typical, 30 hrs minimum
Operating temperature: 32ºF to 122ºF
Storage temperature: -4ºF to 149ºF?
Accuracy: Whichever is greater, ±2%rdg or 2º (at 73ºF ± 10ºF in <90%RH)
Field of view: 3:1
Display: Custom LCD
Auto-off: 15 seconds
Weight: 0.14 lbs
Dimensions: 0.90" x 2.40" x 4.16"
Accessories: Wriststrap, 2 batteries (included), and operator's manual.

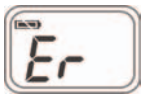
LCD Error Messages

The SIR2 incorporates visual diagnostic messages as follows:



'Hi' or 'Lo' is displayed when the temperature being measured is outside of the range of the instrument, 'Hi' when higher than 482ºF and 'Lo' when lower than -27ºF.

'Er2' is displayed when the SIR2 is exposed to rapid changes in the ambient temperature. 'Er3' is displayed when the ambient temperature of the SIR2 is outside the range of 32ºF to 122ºF. In both cases you should allow plenty of time (minimum 30 minutes) for the SIR2 to stabilize to the operating room temperature.



For all other error messages it is necessary to reset the SIR2. To reset the SIR2, turn the instrument off, remove the batteries and wait for a minimum of one minute, reinsert the batteries and turn on. If the error message remains please contact the Fieldpiece Instruments' repair department for further assistance.

Batteries

The SIR2 has two separate batteries. The battery closer to the side of the laser beam output is for laser operation only. The other battery is designated for temperature measurements. The SIR2 can still measure temperature properly, even without the laser battery.

The SIR2 incorporates visual low battery indication (for the lower battery) as follows:

Battery Okay- Measurements are possible.

Battery Low- Measurements are possible but battery needs replaced.

Battery Exhausted- Measurements are impossible.

Battery Replacement

When the 'Low Battery' icon indicates the battery is low, the battery should be replaced immediately with a CR2032 lithium cell. The battery is located under the twist cover at the rear of the SIR2. Please note: It is important to turn the instrument off before replacing the battery otherwise the SIR2 may malfunction

Cleaning

The sensor lens is the most delicate part of the SIR2. The lens should be kept clean at all times. Care should be taken when cleaning the lens using only a soft cloth or cotton swab with water or rubbing alcohol, allowing the lens to fully dry before using the SIR2. Do not submerge any part of the SIR2.

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 merchantibility, and fitness for purpose, are limited to the above. Fieldpiece shall not be liable for incidental or consequential damages.

Service

Any defective SIR2 should be returned to Fieldpiece Instruments for warranty service along with proof of purchase. Call Fieldpiece for a return material authorization (RMA). For out of warrantee service, send the SIR2 along with a check or money order for $20.00 to Fieldpiece. Your SIR2 will be repaired or replaced at Fieldpiece's option.

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