

Are Medical thermometer and Industrial thermometer interchangeable?

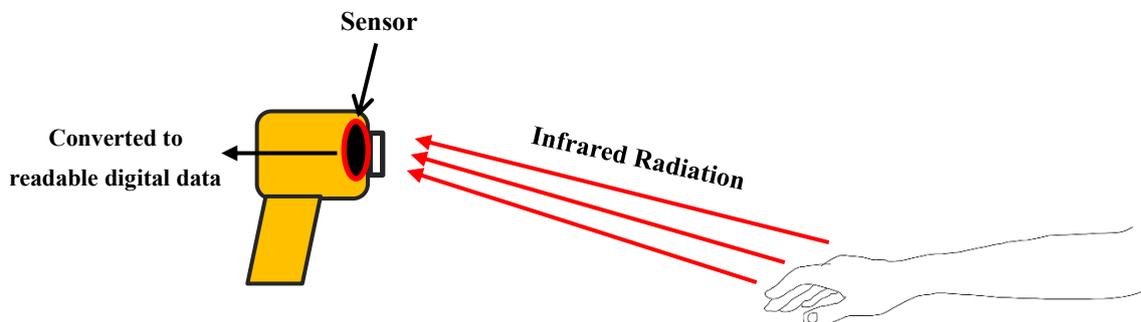


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Infrared thermometers are tools used to quickly measure the surface temperature of an object without touching it. The infrared thermometers are used in wide range of applications including medical and industrial use. The measured temperature can range from 0-3,600 °C. The device takes in the radiation emitted by the object and calculates its temperature.

How an infrared thermometer works?



As the world is facing a COVID-19 crisis, the demand of infrared thermometers greatly increases to filter for the infected people. The question is **“Can we used Medical and Industrial Infrared Thermometers interchangeably?”** The answer is “yes but only recommended for preliminary screening. Normally, an industrial infrared thermometer is designed to measure surface temperature over an extensive temperature range. The temperature can range up to 500 °C. The wider range means there is a trade-off in measurement accuracy. Industrial thermometers can have an error factor that average around ± 1 °C to ± 1.5 °C. On the contrary, the output of medical infrared thermometers must be more accurate as they are well calibrated for human body temperature. The temperature of the medical infrared thermometer only ranges from 32 °C to 42.5 °C, so the error can be expected to be average at ± 0.1 °C.

A reliable medical infrared thermometer is certified for medical use such as ASTM 1965-1998: Specification for Infrared Thermometers for Intermittent Determination of Patient Temperature and FDA.

To ensure the best accuracy of the measurement, a trained or experienced operator is needed to reduce error, even for the medical infrared thermometer. Generally, inaccuracies when using infrared thermometers can be from operating errors and misinterpretation of readings. The common causes of inaccuracy include:

1. Not following instructions – Thermometer is too close or too far away
2. Require skilled adjustment – A different surface temperature needs different settings. (Emissivity)
3. Subject to environment influences – Changing in ambient temperature can cause inaccuracy.
4. Not transparent to glass and other substances – Thermometer cannot read temperature through the glass and other transparent materials.

In conclusion, industrial infrared thermometers can be used to measure body temperature but they are not recommended. An accurate industrial infrared thermometer that can adjust the setting usually comes with an expensive price. Using a medical infrared thermometer would cost less with enough accuracy. The safest way to use industrial infrared thermometers for measuring human body temperature is the primary screening and requires a contact measurement to confirm the result.

References

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