

# IRtec P500+



## Portable Infrared Thermometer

Bulletin 03-06.3 E

INFRARED  
THERMOMETRY

ISO 9001

EC



- Laser pinpointing
- Aux Tc input
- Analog Output
- PC interface
- Programmable alarms
- Data memory
- Calibration certificate





# PALM-TO INFRARED THERMOMETERS

## GENERAL

- *Accurate, hand-held, rugged and easy to use*
- *Laser pinpointing system*
- *No focus operations required*
- *Actual, max, medium, min and T temperature measurements*
- *High and Low programmable alarms*
- *Internal data memory and real time clock to acquire up to 500 measures*
- *Auxiliary Tc K and S input*
- *Analog output*
- *Alkaline or rechargeable batteries operations*
- *RS232 PC communication*
- *Calibration certificate*

### Principle of operation

Each body, at temperature above the absolute zero, emits energy as electromagnetic radiation. As the temperature rises, the intensity of this radiation increases.

Measuring the energy in a small spectral band, the infrared region, allows to calculate the temperature of the body surface.

The instrument used to measure this energy and calculate the temperature is called Infrared thermometer or non-contact thermometer.

### Sighting system

When target is small or moving, it can be difficult to identify exactly the measuring area. **IRtec P500+** has a laser pinpointing system with dot spot (to identify the center of the measuring area also when the target is far from operator) or circular spot (to identify the measuring area). Using this sighting system it is very simple

and fast measuring temperature. Is enough to point at the target and read the temperature. All operations can be made with operator in safety zone.

### Emissivity

The infrared energy emitted by a surface differs according to its composition and physical condition. The parameter used to characterize the object surface is called emissivity.

However, to obtain the true temperature readings, it is necessary to compensate the thermometer for the emissivity of the surface to be measured.

**IRtec P500+** is equipped with an emissivity adjustment from 0.10 to 1.00.

### EMC compatibility

All **IRtec P500+** thermometers are designed and fully tested in compliance with the directive n. 89/336/CEE electromagnetic compatibility.

### Calibration certificate

Each **IRtec P500+** is factory calibrated and certified against **Eurotron** Standards, that are periodically certified by an

International recognized Laboratory, and shipped with a Report of Calibration stating the nominal and actual values and the deviation errors.

### Data acquisition

**LogMan** software allows the **IRtec** users to set and prepare the infrared thermometers to acquire up to 500 data organized by 'Tag'. This software also allows to download data from Instrument on document (table) with date, time and value.

You can view table, save table, print table, export data and obtain graph. You can also manage data coping, moving on other tables.

### Analog output

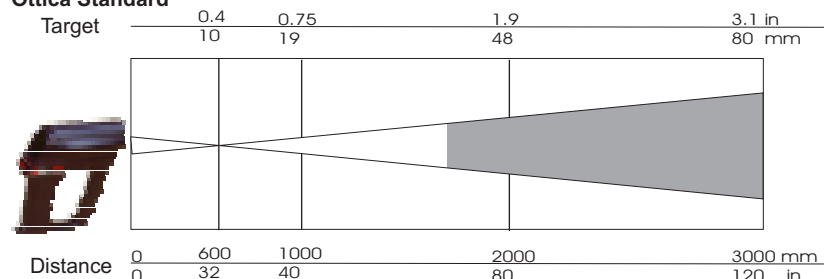
An analog output (1 mV/°C/°F/K) is available to drive an external analog input device (eg. a potentiometric or hybrid recorder) for long term trend profiling and tests. In this case the instrument can be powered directly from mains using the external power supply module supplied with the thermometer.

### Thermocouple input

To extend the operative capability the instrument is equipped with an

## IRtec P500+

### Optica Standard



(Nominal target diameter at 90% energy)

**DISPLAY AND  
KEYBOARD**

auxiliary input for thermocouple. This feature, when used with a calibrated thermocouple, can be used to obtain accurate temperature measurements eliminating the problems of emissivity and the interfering light.

**Applications**

Temperature measurements of a liquid or gaseous compound have been successfully made with thermoelectric or expansion thermometers thanks to the good thermal exchange of the sensor with the fluid.

With solid bodies a good thermal exchange is difficult to be obtained and an additional measuring error should be considered.

A direct contact measurement could be impractical when the target is moving, it cannot be touched with a thermoelectric sensor because of electrical hazard or of other reasons. A non-contact IR temperature measurement could be the only solution to the above application problems.

**IRtec P500+** portable thermometers typical application is everywhere temperature increasing is related to wearing, aging, faulting, etc. However a periodical temperature check is important for:

- ▶ Bearings, motors, valves.
- ▶ Switchboards, conductors, switches transformers.
- ▶ Thermal insulations.
- ▶ Production, processing, holding and serving food (HACCP).
- ▶ Heating, ventilation and air conditioning (HVAC).
- ▶ etc.

A special "**Close-focus**" **IRtec P500+** version is available to measure small target at small distance (e.g. Electronic components).

The high contrast custom LCD display indicates the actual temperature value and shows the operative mode selected. The display backlight is automatically switched on to allow easy reading in poor light conditions.



- <MEM> DataLogger programming - Data Hold
- <ENTER> General parameters programming mode - Enable / disable averaging
- <SEL> Select the parameter / menu option - Memory recalling
- < ▲ > < ▼ > Increase / decrease value
- < \* > Enable / disable laser

- 1 Operative mode
- 2 Operative mode
- 3 Selected parameter (min, med, max, allarm, memory, etc.)
- 4 Emissivity value
- 5 Technical unit (°C, °F, K)
- 6 measured value with 1°C or 0.1°C resolution
- 7 Low and High alarm indication
- 8 Setting value for the selected parameter





## ... TO MAINTAIN

### SPECIFICATIONS

- **Measuring range:**  
*Standard optic:* from -30 to 930°C  
*Close focus:* from -30 to 200°C
- **Response spectral band:** 8-14  $\mu$ m
- **Accuracy:**  $\pm(1\%$  of rdg + 1°C)
- **Repeatability:**  $\pm(0.5\%$  of rdg + 1°C)
- **Standard optic:** 10mm focus point at 600mm (60:1) far field 35:1 (>10m)
- **Close focus:** 2mm at contact with target
- **Display:** High contrast custom LCD with backlight device
- **Display resolution:** 1°C or 0.1°C selectable
- **Emissivity:** Adjustable from 0.10 to 1.00
- **Analog output:** 1 mV/°
- **Digital interface:** TTL full duplex. RS232 adopter available as option.
- **Calculated functions:** average, max, min, diff.
- **Data memory:** 500 input data structured by tag
- **Calibration:** self learning technique with automatic procedure
- **Power supply:** alkaline or rechargeable (optional) type AA battery
- **Battery life:** 16 h (backlight off)
- **Battery low level of charge:** symbol on the LCD display
- **Line operation:** 100, 115, 230V 10% 50/60 Hz using the optional external charger
- **Battery recharging time:** 8 h at 90% (instrument switched off)
- **Operating environment condition:**  
*Temperature:* from -10°C to +60°C  
*Relative Humidity:* from 10% to 95% non condensing
- **Storage temperature range:** from -30 °C to +60 °C without battery
- **Dimensions:** 200 x 180 x 80 mm
- **Weights:** net 0.8 kg gross 1.5 kg

### ORDERING CODE

#### IRtec P500+ 1190 - A - B - C - D

Each instrument includes Vinyl case, batteries, instruction manual and calibration certificate.

#### Table A Batteries / Line charger

0	Alkaline / None
1	Ni-MH / 115 Vac with USA plug
2	Ni-MH / 230 Vac with Schuko plug
3	Ni-MH / 230 Vac with UK plug
4	Ni-MH / 230 Vac with European plug
5	Ni-MH / 100 Vac with USA/Japan plug

#### Table B Optic - Pinpointing

0	Close Focus - No Laser
1	Standard - Dot Laser spot
2	Standard - Circular Laser spot

#### Table C Accessories

0	None
1	Vinyl case (instrument only)
2	Aluminum case (instrument + accessories)
3	Data memory + RS232 adopter + PC LogMan software
4	External impact printer
8	Acoustic & visible HI/LO alarms
9	Analog output
A	Thermocouple type 'K' and 'S' input
B	Data memory
C	Tc K contact probe model 2137

#### Table D Report of Calibration

1	Eurotron certificate
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Aluminum case



Close Focus



PC data transfer

Published specifications may change without notice.