

EDISON

ORDER CODE: EDI-312-4000K

MODEL IRT537

Infrared Thermometer

OPERATING MANUAL

Functions

- Use for automotive diagnostics: Air conditioning, heaters, radiators, thermostats, misfiring cylinders, catalytic converters, brakes & tyres.
- Average, maximum, minimum & max-min mode selection.
- Temperature range: -20°C to 537°C .
- Optional $^{\circ}\text{C}/^{\circ}\text{F}$ display selection.
- Distance : Spot size ratio: 12 : 1.
- Laser pointer beam.
- Emissivity: 0.95.
- Clear display with LCD back light function.
- Auto power 'OFF' and low power indicator.




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1. GENERAL INSTRUCTIONS

The Edison IRT537 Infrared Thermometer is manufactured to a high standard and is easy to use. Simply aim at the target object, pull the trigger and read the current surface temperature from the LCD display. If necessary the laser can be activated via the laser button  for a more accurate targeting.

To get the best service from this instrument, read carefully this operating manual and respect the detailed safety precautions.

2. SAFETY INFORMATION

- This instrument should only be used by qualified personnel and should be kept out of the reach of children.
- Great care should be taken when using the thermometer, not to point the laser in the direction of any other person, animal or moving object. The user should also be aware of the danger posed by indirect exposure via reflective surfaces.



Direct eye contact with the laser beam could result in permanent damage .

- **DO NOT** use the thermometer for any other purpose, other than that for which it is intended.
- **DO NOT** allow the thermometer to be exposed to wet or damp conditions, to be subjected to rapid changes in ambient temperatures, or to be exposed to electro-magnetic fields, static electricity or high temperatures.
- **DO NOT** clean the thermometer using any solvents or abrasives.
- This instrument complies with European CE safety standards, and is also compatible with the following: EN61326.

Infrared Thermometer

3. DESCRIPTION

1. Laser on indicator
2. Measurement indicator
3. Emissivity indicator
4. °C temperature unit
5. °F temperature unit
6. Average temperature
7. Average value indicator
8. MAX/MIN indicator
9. Battery low indicator
10. Current temperature
11. Data hold indicator

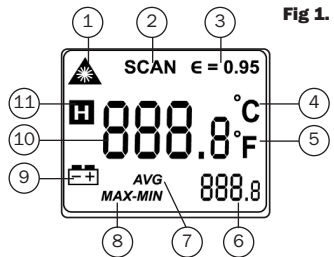


Fig 2.



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4. TECHNICAL SPECIFICATIONS

- **Temperature range:** -20°C to 537°C / -4°F to 999°F.
- **Distance : Spot saze ratio:** 12 : 1.
- **Accuracy:** -20°C to 50°C \pm 2.5°C.
+51°C to 537°C \pm (reading x 1% + 1°C).
- **Automatic turn off:** Hold for 10 seconds.
- **Operating conditions:** 0 to 40°C, 10 to 90%RH.
- **Storage conditions:** -10°C to 60°C, \leq 75%RH.
- **Emissivity:** 0.95.
- **Response time:** 0.5 second.
- **Spectral response:** 8- to 14 μ m.
- **Laser power:** <1mw.
- **Power source:** 9V battery (6F22 equivalent).
- **Size (HxWxD):** 190mm x 56mm x 162mm.
- **Weight:** Approx. 258g (including battery).

5. OPERATING INSTRUCTION

5.1 How Does The Infrared Thermometer Work?

The thermometer detects infrared energy, which is emitted by all objects. This infrared energy is captured by the thermometer and processed through a sensor. The sensor generates a measurable voltage output which is in proportion to the target temperature. The output is processed and displayed on the LCD.

5.2 Instructions For Use

Pull and hold trigger (laser pointer is off by default) to activate the thermometer. Point the thermometer toward the target object and depress the trigger. On releasing the trigger the reading will display for 10 seconds before the auto off function is activated. While the trigger is depressed, alternative formats and features can be accessed via the keypad.



Pressing the laser button  (see Fig. 3) activates /deactivates the laser facility. The temperature format can be changed from Fahrenheit (default) to Celsius by means of the °C/°F button (see Fig. 3). Pressing this button allows the user to work between the two temperature scales. A backlight feature  is also available (see Fig. 3), allowing the user to work in reduced light conditions. The **MODE** key will let you check temperature variations between 'Average' (default), 'Maximum', 'Minimum' or 'Maximum/Minimum' reading. Just press the **MODE** key consecutively to achieve the desired setting.



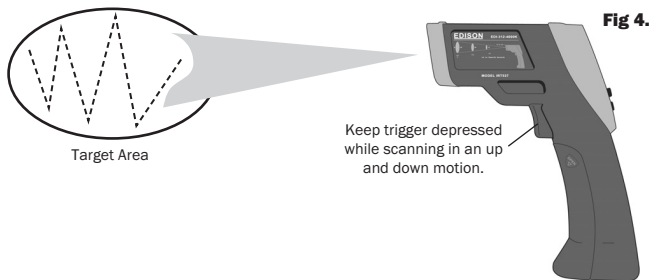
Fig 3.

Infrared Thermometer**5.3 Emissivity**

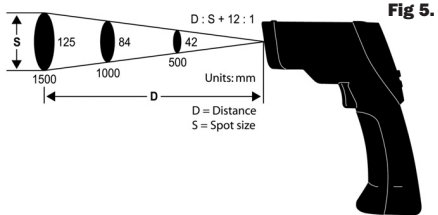
Depending on the nature of the material which is to be scanned, different levels of energy will be encountered (emissivity). However, most organic and painted or oxidised surfaces have an emissivity of 0.95. To overcome any problems with polished or mirrored surfaces, they should be covered in masking tape or matt black paint before scanning. Allow time for the tape or paint to attain the same temperature as the target object before scanning.

5.4 Hot Spots

In order to locate a hot spot, aim the thermometer away from the target, before scanning across the target in an up and down motion, keeping the trigger depressed until the hot spot is located (See Fig. 4).

**5.5 D:S Ratio (Field of View)**

The D : S Ratio (Distance to Spot size) or Field Of View is 12 : 1 (See Fig. 5). This ratio indicates that when the target object is 300mm (12") away from the thermometer, then the target object should be at least 25mm (1"). In general, it is good practice to ensure that the target is larger than the spot size. The smaller the spot size, the closer the thermometer should be to the target object. For increased accuracy, the target should be twice the size of the spot size.



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5.6 Vehicle Diagnostics



Care should be taken when working on vehicles, as the user may find themselves working in close proximity to very hot components, such as radiators and exhaust manifolds.

Air Conditioning: With the air conditioning set to maximum cooling, the output air temperature should be in excess of 15°C colder than the ambient temperature outside the vehicle. To avoid the instrument being affected by thermal shock, the thermometer should be focused on the air duct rather than directly into the cold air stream. Temperature differentials of less than 15°C indicate that the air conditioning system may need to be checked.

Heater: To test the heater it should be turned on, while the air conditioning should be off. With the engine running at the usual operating temperature, the user should take a reading from the heater inlet and outlet hoses. It would be expected that the outlet would be approximately 10°C cooler than the inlet hose. Any significant difference in the two figures indicates restricted through flow, which should be investigated.

Radiator: With the engine running at the normal operating temperature, the user should check the temperature drop on the inlet and outlet. The drop in temperature should be fairly even. Scan the radiator surface (see Fig. 4) for any cold spots, which are symptomatic of a blockage.

Thermostat: To check that a vehicles thermostat is performing as expected, it is necessary to monitor the temperature of the hose adjacent to the thermostat housing. If the thermostat is working properly, it will open as the vehicle reaches its normal operating temperature (85-105°C). This is apparent, as there is a temperature surge in the hose. If the hose temperature increases gradually, but never reaches operating temperature, the thermostat is faulty or is missing. In the event of no rise in temperature, this indicates that the thermostat is stuck in the closed position, or other parts, such as the pump have failed.

Fluctuating temperature readings are indicative of a failed spring in the thermostat, or air in the system.

Cylinder Misfiring: Injector and manifold gasket problems can be detected by taking temperature readings from the separate branches of the exhaust manifold. If one of the branches is much cooler than the others, then a misfiring cylinder is indicated. In this case, the difference in temperature will be more pronounced before the engine is at normal operating temperature. If an exhaust branch is hotter than others, it is likely that a weak mixture is reaching that cylinder.

Infrared Thermometer


Catalytic Converter: Problems with catalytic converters can be diagnosed by running the engine until the normal operating temperature is achieved, and the engine is running at 1000rpm. Under these conditions, the inlet should be $>55^{\circ}\text{C}$ (2-way) or $>20^{\circ}\text{C}$ (3-way). When the outlet temperature is lower than the inlet temperature, the converter must be blocked and must therefore be replaced. If the temperatures are the same at the inlet and outlet then the converter is worn out and must be replaced or the converter material has degraded. Always investigate the cause of failure before replacement.

Brakes: To check on the comparative braking capability on a vehicle, it is necessary to bring the brakes up to operating temperature by braking 5-6 times from 30mph to standing, before measuring the temperature of the disk/drum immediately afterwards. Brakes on the same axle should not differ by $>3^{\circ}\text{C}$. The front brakes should be around 30°C hotter than the rear brakes. If one brake on an axle does not meet these criteria then it is likely that the brake showing the lower temperature is faulty.

Tyres: After driving the vehicle for a few miles, readings can be taken from the outer, centre and inner tread. A higher temperature at the inner and outer sections of the tread indicates that the tyre is under-inflated. If the centre of the tread is hotter than the other two points then the tyre is over inflated. Any discrepancies may be attributed to inflation or suspension faults.

6. MAINTENANCE

6.1 Charging The Battery

When the battery low  warning symbol is showing, it indicates that the battery is almost exhausted and must be replaced.

To replace the battery, pinch together the open symbols on each side of the handle, and pull the hinged battery access section forward. Remove the old battery and replace with a 9 Volt battery (6F22).

Please dispose of your old battery in a responsible manner.

Order code for replacement battery:
EDI-904-3000K.



Fig 6.

89/336/EEC amended by 93/68/EEC

DECLARATION OF CONFORMITY

We hereby certify that the EDISON IRT537 Infrared Thermometer
complies with:

EN61326:1997 / +A1:1998/+A2:2001/+A3:2003

Official Agent
The Kennedy Group Ltd

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The Power Factory, PO Box 14, Wigston, Leicester, England.

Signed:



Name: Martin Cooke

Position: Director, The Kennedy Group Ltd

Date: June 2010



Always dispose of unwanted tools, accessories and packaging materials in an environmentally friendly manner.



For EU and EEA countries only.

In observance of European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) and its implementation in accordance with national law, electrical goods that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

Do not dispose of electrical goods with domestic waste materials as inappropriate disposal may cause potential hazards to the environment and human health.

For further information, please contact your local authority or the retailer from whom you purchased the product.