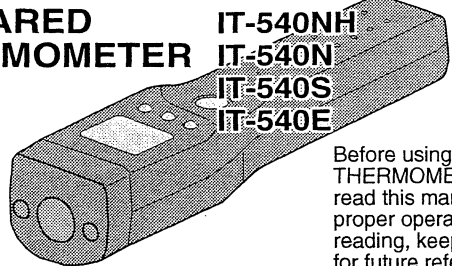


## INSTRUCTION MANUAL

INFRARED THERMOMETER IT-540NH  
IT-540N  
IT-540S  
IT-540E



Before using the INFRARED THERMOMETER, thoroughly read this manual for the proper operation. After reading, keep this manual for future reference.

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### CAUTION



- Class 2 laser is used in Model IT-540NH, IT-540N. Do not stare into beam or direct it toward eyes. (Avoid using laser around reflective objects such as glass.)
- Never disassemble unit.

### Caution

Follow the instructions here, or it may cause breakage or a malfunction.

#### Usage:

- Do not bring unit into contact with objects to be measured.
- Never drop unit or subject it to strong impact.
- Do not touch lens with anything hard, and do not apply force on or insert foreign substances into lens.
- Do not bring unit into contact with electrically charged bodies.
- Error may occur when unit emissivity setting is different from that of object being measured.
- Keep unit fully off objects with high temperature to be measured so that temperature on front of case will not go up too high.

#### Environment:

- Do not use or store IT-540NH, IT-540N, IT-540S or IT-540E in direct sunlight, and do not expose to dust, high temperature or high humidity.
- Do not use unit near any object that has strong electromagnetic field such as transceivers and radiophones.
- Do not allow condensation to form on unit (ex., bringing it from cold to warm environments).
- Unit is not water-proof; do not allow it to get wet.
- When °C indicator blinks, operating temperature is out of acceptable range. Stop operation immediately.

### Battery Replacement

When "B" indicator blinks, replace batteries.

- Slide cover off battery compartment at rear of main unit.
- Insert new R03 (#AAA) batteries as shown on battery compartment inside diagram. Do not mix new batteries with the old ones.

- Notes:**
- Reset unit parameters after replacing batteries.
  - Never put used battery into fire. Do not attempt to recharge old batteries.
  - Return exhausted batteries to electric appliance store, or dispose in accordance with environmental regulations.
  - Remove batteries when unit unused for more than six months.
  - The batteries included with IT-540NH, IT-540N, IT-540S or IT-540E have a short time.

### Maintenance

#### Lens cleaning

Lens dirt may cause measurement error and may result in lens erosion. Dust is removable with a camera lens blower. Insistent dirt may be wiped away with medical-type cotton applicator soaked in alcohol.

#### Body cleaning

Wipe gently with dry cloth. Insistent dirt may be wiped with well a wrung out cloth containing diluted neutral detergent. Organic solvents cause surface erosion, and should not be used.

### Keys and Indicators

**Mode select key (MODE)**

This key displays MAX/MIN-temp. or present reading during measurement. In addition, emissivity and alarm-temp. upper/lower limits are also displayable when HOLD indicator lit.

**Parameter adjust keys (▲▼)**

These keys raise/lower emissivity and alarm-temp. upper/lower limits.

▼ Decrease  
▲ Increase

**Measure key (MEAS)**

MEAS key performs measurement. Final reading is held in display upon release.

Measuring: 400°C  
Holding: 400°C

**Liquid crystal display**

**Laser indicator (540NH, 540N)**  
Displayed: ready  
Blinking: laser in use

**Warning indicator**  
Displayed: set  
Blinking: emission warning  
Buzzer sounds and indicator blinks during measurement.

**Battery indicator**  
Blinking: replace battery

**Centigrade**

**Emissivity**  
Displayed: emissivity being set

**HOLD indicator**  
Displayed: measurement completed

**MAX/MIN temp. indicators**  
MAX Displayed: max-temp displayed  
MIN Displayed: min-temp. displayed  
Neither MAX/MIN Displayed: present reading displayed

**SET**  
Blinking: emissivity and/or alarm temp. adjustable

Entire display blinks when Measurement range exceeded.

Power turns ON when MEAS key is pressed. Power cuts OFF 15 seconds after HOLD or SET is displayed.

### Prior to use

Insert batteries.  
See "Battery Replacement" for details.

### Operation

First, confirm emissivity setting matches object to be measured. Make measurement using following procedure.

#### 1 Start measurement

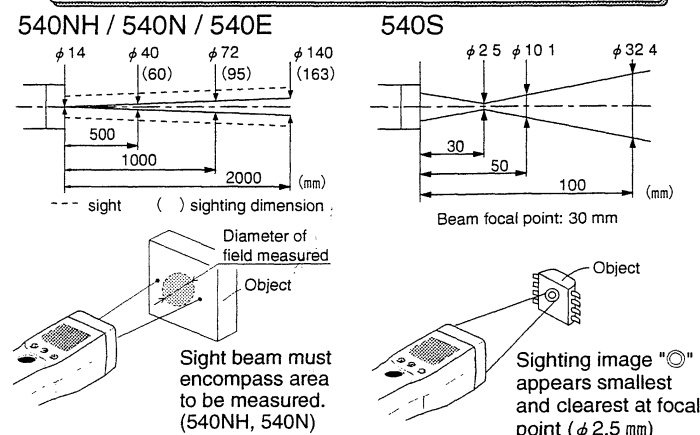
Aim lens toward object to be measured. The measurement is carried out while you press MEAS key. For IT-540NH, IT-540N and 540S, pressing MEAS key will sight a beam.

#### 2 Complete measurement

Releasing MEAS key ceases operation. Beam turns OFF and final value displayed. Power turns OFF after 15 seconds.

To display last reading after power is cut, press MEAS key and release it within 1 second. If key held longer, operation restarts a new measurement and previous value clears.

### Target size and sighting



**Note:** • Target size is based on 90% energy limit. For best results, overlap area to be measured (by 1.5 times or more).  
• Sight may not be seen according to temperature or color of object.

### Specifications

Model	IT-540NH, IT-540N	IT-540E	IT-540S
Measurement temp. range	-50 to 500°C, -50 to 1000°C (540NH) (Resolution 1°C)		
Target size	φ40 / 500 mm		φ2.5 / 30 mm
Detector / Optical lens	Thermopile/Silicon		
Spectral response	8 to 16 μm		
Response time	Less than 1.5 s (95% response)		
Accuracy 501 to 1000°C	± 1% (of reading) (540NH)		ε = 1.0 Temp. 23±5°C Relative humidity 55%
201 to 500°C	± 1% (of reading)		
0 to 200°C	± 2%		
-50 to -1°C	± (-10% of reading + 2)°C		
Repeatability	± 1°C (-50 to -1°C : ± 2°C)		
Sighting	2-beam laser sight (class 2)		Red LED spot sight
Emissivity setting	0.10 to 1.00, 0.01 increments		
Alarm setting	-55 to 505°C, -55 to 1010°C (540NH)		
Automatic power OFF	HOLD and SET mode: 15 s		
Other functions	MAX/MIN values displayable, Data Hold		
Power	Four R03 (#AAA) batteries		
Operating temp.	0 to 40°C	0 to 50°C	
Operating relative humidity	35 to 85%, no condensation		
Storage temp.	-20 to 55°C no condensation		
Dimensions	170 (H) × 40 (W) × 36 (D) mm		
Mass(batteries included)	Approx. 140 g		
Accessories	Four R03 (#AAA) batteries and case		

### Troubleshooting

Problem	Cause	Counter measure
No readout	Batteries dead or inserted incorrectly.	Replace or reinsert batteries.
Incorrect readout	Lens dirty.	Clean lens.
	High temp. heat source near by.	Shield unit from source.
	Improper emissivity setting.	Correct setting.
"Err" displayed	Unit defective.	Contact representative.

### Warranty and Liability

Horiba shall not be liable for any damages resulting from any malfunctions of this product, any erasure of data, or any other uses of this product.



This equipment is in conformity with the following directives and standards:

Directives: The EMC Directive 89/336/EEC as amended by 92/31/EEC and 93/68/EEC, in accordance with the Article 10 (1) of the Directive.

Standards: EN61326: 1997 / A1:1998 Class B Portable (Emission tests were conducted according to the requirements of EN55011:1998)

**Warning:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### Other functions

#### Setting emissivity (ε)

Each substance has particular emissivity. Precise measurement requires appropriate setting. From HOLD mode, Default is 0.95.

- press MODE until ε appears
- press ▲▼ keys to adjust

#### Examples of emissivity

Item	Emissivity
Paint lacquer	0.80 to 0.95
Rubber (black)	0.94
Plastic	0.85 to 0.95

Objects with low emissivity may cause readout fluctuation. Use of optional black-body spray or tape is recommended.

#### Displaying MAX (MIN) temp.

From HOLD or MEAS mode, press MODE until MAX/MIN appears

- In HOLD mode, MAX/MIN temp. of previous measurement is displayed.
- In MEAS mode, present MAX/MIN temp. is displayed.

#### Displaying laser ready indicator (540NH, 540N)

Anytime ▲ pressed in HOLD or MEAS mode, indicator is lit/unit. Laser ready when ▲ is displayed.

#### Continuous measuring

From power OFF state, press MODE + MEAS

Anytime MEAS pressed, MEAS and HOLD modes toggled.

- Power does not turn OFF in continuous measurement mode. Be sure to return to HOLD or SET mode. Power turns OFF after 15 seconds.

#### Note:

Laser irradiates whenever MEAS pressed.

#### Setting alarm temp. upper/lower limits (↓ALM↑)

- press MODE until ↓ALM↑ appears
- press ▲▼ keys to adjust

Conditions	Alarms	Display
Lower limit < upper limit	Lower limit > measured value Upper limit < measured value	↓ALM ALM↑
Lower limit > upper limit	Lower limit < measured value, and Upper limit > measured value	ALM
Lower limit = upper limit	No alarm	-

Ex., condition = lower limit < upper limit:

