

**Operating manual  
Infrared Thermometer  
Model: **TemPro** 700**



ENG

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## 1. Review

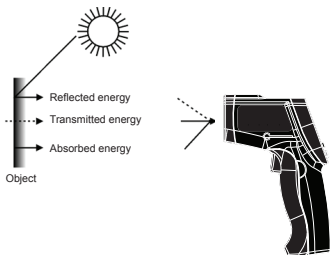
TemPro 700 is IR Thermometer for non-contact temperature measurements at the touch of button. The built-in laser pointer increases target accuracy while the backlight LCD and handy push-buttons combine for convenient, ergonomic operation.

TemPro 700 can be used to measure the temperature of objects' surface that is improper to be measured by traditional (contact) thermometer (such as moving object, the surface with electricity current or the objects which are uneasy to be touched).

## 2. Measurement considerations

Holding the meter by its handle, point the IR Sensor toward the object whose temperature is to be measured. The meter automatically compensates for temperature deviations from ambient temperature.

Infrared thermometers measure the surface temperature of an object. The unit's optics sense emitted, reflected, and transmitted energy, which is collected and focused onto detector. The unit's electronics translate the information into a temperature reading, which is displayed on the unit. The laser is used for aiming purposes only.



Pic.1

### 3. Complete set

Thermometer TemPro 700  
Battery 9V  
Case for transportation  
Operating manual

### 4. Technical data

#### 4.1. Functions

- Rapid detection function
- Precise non-contact measurements
- Built-in laser sighting
- Unique flat surface, modern housing design
- Automatic Data Hold
- °C/°F switch
- Emissivity Digitally adjustable from 0.10 to 1.0
- MAX MIN AVG DIF temperature displays
- Backlight LCD display
- Automatic selection range and Display Resolution 0.1°C
- Set high and low alarms
- Low battery indicator
- Memory (12 memory units)

#### 4.2. Specifications

IR temperature range	-50°C to +700°C
Optical resolution, D:S	12:1
Resolution	0.1°C
Accuracy	±1,5°C (±1,5%) at 0<t ≤700°C ±3°C (±3%) at -50<t ≤0°C
Response time	0.5 sec.
Spectral response, um	8 ~ 14
Emissivity	от 0.10 to 1.0
Backlight	yes
Data hold	yes
Operating temperature/relative humidity	0..40°C / 10-95% at 30°C

Power supply	9V (krona)
Dimensions, mm	175x100x49
Weight, gr	170
MAX, MIN, AVG measurements	yes
Difference value of measurement	yes
High/Low alarm	yes
Memory units	12

Operating temperature	0°C to +50°C
Storage temperature	-10°C to +60°C
Relative humidity	10% ~ 90% RH operating <80% RH storage
Power supply	9B battery, NEDA 1604A or IEC 6LR61
Safety	CE

### 5. Safety requirements

Inaccurate readings will result from measuring shiny or polished metal surfaces (stainless steel, aluminium, etc.). To compensate, cover the measuring surface with masking tape or flat black paint. Allow time for the tape to reach the same temperature as the material under it. Measure the temperature of the tape or painted surface.

The unit cannot measure through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.

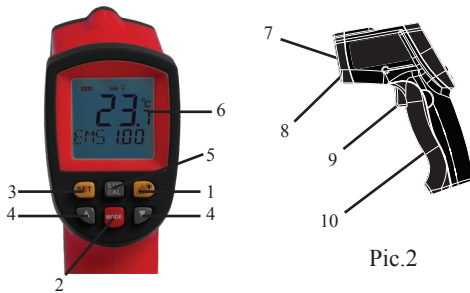
Steam, dust, smoke, etc., can prevent accurate measurement by obstructing the unit's optics.

Make sure that the target is larger than the unit's spot size. The smaller the target, the closer you should be to it. When accuracy is critical, make sure the target is at least twice as large as the spot size.

## 6. DESCRIPTION OF THE INSTRUMENT

### 6.1. Features (Pic.2)

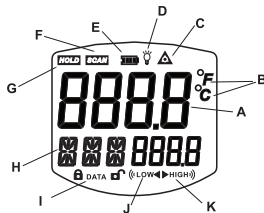
- 1 Laser/Backlight ON/OFF button (LASER/BACKLIT)
- 2 Mode button (MODE)
- 3 Set button (SET)
- 4 Up/Down button
- 5 Data storage (STO/CAL)
- 6 LCD display
- 7 Laser pointer
- 8 IR sensor
- 9 MEASUREMENT trigger
- 10 Battery compartment



Pic.2

### 6.2. LCD display (Pic.3)

- A — Current temperature value
- B — °C/°F symbol
- C — Laser “ON” icon
- D — Backlight ON icon
- E — Low power symbol
- F — Scanning icon (SCAN)
- G - Data hold icon (HOLD)
- H - Mode/emissivity indicator
- I - Data storage/read icon



Pic.3



J - Low temperature alarm icon

K - High temperature alarm icon

## 7. Operation

### Preparation before operation

Read the operating manual before use the instrument.

Take the instrument out of case.

Open battery cover and put 9V battery.

### Thermometer On/Off

Pull and hold the trigger (9) to turn the meter on and begin testing. The display will light if the battery is good. Replace the battery if the display does not light. The meter will automatically power down after approximately 20 seconds after the trigger is released.

### °C/°F

Open battery compartment (10) and push the slide switch for conversion.

### EMS adjustment

To select the emissivity (EMS) press "Up/Down" button (4). To store this value press button (3).

### Laser pointer

Laser pointer is on when you turn on the unit. To turn off the laser pointer, press button (1) LASER/BACKLIT.

**Backlight**

Backlight is on when you turn on the unit. To turn off the backlight, press button (1) LASER/BACKLIT.

**MODE button function**

Press the “MODE” (2) button. It allows you to access the set state: MAX, MIN, DIF, AVG, HAL, LAL, STO. Choose the required mode and press button SET (3).

**8. Measuring modes**

MAX= maximum. Maximum value of measurement.

MIN=minimum. Minimum value of measurement.

DIF= difference. Difference value of measurement.

AVG= average, Average value of measurement.

HAL= High alarm. Please adjust high alarm value by pressing “Up/Down” button (4). To confirm the value press button SET (3).

If the measured temperature is higher the value you've adjusted, symbol K will be shown on the display and you will hear a sound.

LAL= Low alarm. Please adjust low alarm value by pressing “Up/Down” button (4). To confirm the value press button SET (3).

If the measured temperature is higher the value you've adjusted, symbol J will be shown on the display and you will hear a sound.

STO- Data storage. To store data choose the mode STO, press the button SET (3). then “1---” memory unit will be shown. Enter measured data by pressing button 5 (STO/CAL). 12 groups memory unit are available.

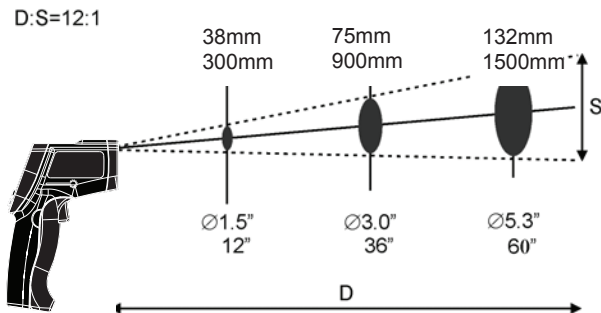
## Measurement operation

Hold the meter by its handle grip and point it towards the surface to be measured. Pull and hold the trigger (9) to turn the meter on and begin testing. Release the trigger (9) and HOLD display icon will appear on display indicating that the reading is being held.

## Distance to spot size

When take measurement, pay attention to the Distance to Spot Size. As the Distance (D) from the target surface increases, the spot size (S) of the area measured by the unit becomes larger. The Distance to Spot size of the unit is 12:1.

This unit is equipped with a laser, which is used for aiming.



Pic.4

### Field of view

Make sure the target is larger than the unit's spot size. The smaller the target the closer measure distance. When accuracy is critical, make sure the target is at least twice as large as the spot size.

### 9. Maintenance

The maintenance of the thermometer includes the replacement of power supply, cleaning the unit with dry cloth and also debugging. Periodically, one time per year it is necessary to check settings in authorized service center.

### 10. Specific reasons of instrument malfunctions

Malfunction	Possible reason of malfunction	Way of debugging
After pressing and holding the button MEASUREMENT (5) the instrument doesn't turn on.	1. Fully discharged battery 2. Bad contact of battery and jack of the thermometer 3. Broken jack wire in battery compartment	Change battery  Recover contacts  Recover power lead

Contact with authorized service center if you have another malfunctions.

## 11. Storage and transportation

Storage and transportation of the instrument should be only in case.

Take out the battery if you are not going to use the instrument for a long time.

Don't expose the instrument to mechanical effects (heating, hits, strong vibrations, humidity, dust ...).

Store the instrument in normal conditions (temperature/humidity).

## WARRANTY

This product is warranted by the manufacturer to the original purchaser to be free from defects in material and workmanship under normal use for a period of two (2) years from the date of purchase.

During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or similar model at manufactures option), without charge for either parts of labour.

In case of a defect please contact the dealer where you originally purchased this product. The warranty will not apply to this product if it has been misused, abused or altered. Withiut limiting the foregoing, leakage of the battery, bending or dropping the unit are presumed to be defects resulting from misuse or abuse.

## EXCEPTIONS FROM RESPONSIBILITY

The user of this product is expected to follow the instructions given in operators' manual.

Although all instruments left our warehouse in perfect condition and adjustment the user is expected to carry out periodic checks of the product's accuracy and general performance.

The manufacturer, or its representatives, assumes no responsibility of results of a faulty or intentional usage or misuse including any direct, indirect, consequential damage, and loss of profits.

The manufacturer, or its representatives, assumes no responsibility for consequential damage, and loss of profits by any disaster (earthquake, storm, flood ...), fire, accident, or an act of a third party and/or a usage in other than usual conditions.

The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits due to a change of data, loss of data and interruption of business etc., caused by using the product or an unusable product.

The manufacturer, or its representatives, assumes no responsibility for any damage, and loss of profits caused by usage other thsn explained in the users' manual.

The manufacturer, or its representatives, assumes no responsibility for damage caused by wrong movement or action due to connecting with other products.

## WARRANTY CARD

Name and model of the product \_\_\_\_\_

Serial number \_\_\_\_\_ date of sale \_\_\_\_\_

Name of commercial organization \_\_\_\_\_ stamp of commercial organization

Warranty period for the instrument exploitation is 24 months after the date of original retail purchase. It extends to the equipment, imported on the RF territory by official importer.

During this warranty period the owner of the product has the right for free repair of his instrument in case of manufacturing defects.

Warranty is valid only with original warranty card, fully and clear filled (stamp or mark of the seller is obligatory).

Technical examination of instruments for fault identification which is under the warranty, is made only in the authorized service center.

In no event shall manufacturer be liable before the client for direct or consequential damages, loss of profit or any other damage which occur in the result of the instrument outage.

The product is received in the state of operability, without any visible damages, in full completeness. It is tested in my presence. I have no complaints to the product quality. I am familiar with the conditions of warranty service and I agree.

purchaser signature \_\_\_\_\_

Before operating you should read service instruction!

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If you have any questions about the warranty service and technical support contact seller of this product

## **WARRANTY DOESN'T EXTEND TO FOLLOWING CASES:**

1. If the standard or serial product number will be changed, erased, removed or will be unreadable.
2. Periodic maintenance, repair or changing parts as a result of their normal runout.
3. All adaptations and modifications with the purpose of improvement and expansion of normal sphere of product application, mentioned in the service instruction, without tentative written agreement of the expert provider.
4. Service by anyone other than an authorized service center.
5. Damage to products or parts caused by misuse, including, without limitation, misapplication or negligence of the terms of service instruction.
6. Power supply units, chargers, accessories, wearing parts.
7. Products, damaged from mishandling, faulty adjustment, maintenance with low-quality and non-standard materials, presence of any liquids and foreign objects inside the product.
8. Acts of God and/or actions of third persons.
9. In case of unwarranted repair till the end of warranty period because of damages during the operation of the product, it's transportation and storing, warranty doesn't resume.



## Appendix 1

### Emessivity table (ET)

Material	Temperature °C	Radiation	ET
Aluminium:	220...520	H	0,008-0,062
- oxidated	87...520	H	0,02-0,33
- foil	100...30	N	0,04...0,03
Asbestos paper	40...370	N	0.93...0.95
Asbestos board	25...30	N	0.94...0.96
Slate	20	N	0.96
Asphalt	25...30	N	0.95
Paper:			
- white	20	N	0.70...0.90
- yellow		N	0.72
- red		N	0.76
- green		N	0.85
- blue		N	0.84
- black		N	0.90
- covered with black lacquer		N	0.93
- black dull		N	0.94
- thin, sticked on the metall	19	N	0.924
Dressed birch	25...30	N	0.92
Concrete	20	N	0.92
Bronze:			
aluminium	177...1000	N	0,03-0,06
oxidated	177...1000	N	0,08-0,16
Paper cardboard different kinds	25...30	N	0.89...0.93

Tungsten:	120-500- 1700-3100	H	0,039-0,081- 0,249-0,345
	920-1500- -2000-2700	N	0,116-0,201 0,247-0,312
Gypsum	20	N	0.8...0.9
Alumina	25...30	N	0.96
Porcelain	70	N	0.91
Graphite	900-2900	H	0,77-0,83
Wood :			
- white, raw	20	N	0.7...0.8
- dressed	20	N	0.8...0.9
- ground		N	0.5...0.7
Saw dust of conifers	25...30	N	0.96
Duralumin D	16220-620	N	0,016-0,03
Lime		N	0.3...0.4
Silica sand	25...30	N	0.93
Kerosene	25...30	N	0,96
Brick :			
- fireproof, weak radiant	500...1000	N	0.65...0.75
- fireproof, strong radiant	500...1000	N	0.8...0.9
- chamotte brick, glazed	20	N	0.85
- the same (55 % SiO , 41 % Al O )	1100	N	0.75
- the same (55 % SiO , 41 % Al O )	1230	N	0.59
- silica, fireproof	1000	N	0.66
- Unglazed, rough	1000	N	0.80
- Glazed, rough	1100	N	0.85
- red, rough	20	N	0.88...0.93

- fibrolite (33%SiO, 64%Al O)	1500	N	0.29
- fireproof, corundum	1000	N	0.46
- fireproof, magnesite	1000...1300	N	0.38
- the same (80% MgO, 9% Al O )	1500	N	0.39
- silicate (95% SiO )	1230	N	0.66
Plastered brickwork	20	N	0.94
Human skin	36	N	0.98
Tanned skin		N	0.75...0.80
Paint :			
- oil, different colors	100	N	0.92...0.96
- cobalt, blue		N	0.70...0.80
- cadmium, yellow		N	0.28...0.33
- chrome, green		N	0.65...0.70
- aluminium, after heating	150...315	N	0.35
Lacquer:			
- black, dull	40...95	N	0.96...0.98
- black, bright, on metal	25	N	0.88
- white	40...100	N	0.80...0.95
- white, enamel on metal	23	N	0.906
- bakelite	80	N	0.93
- aluminium	20	N	0.39
- fireproof	100	N	0.92
Brass :			
- polished	100	N	0.05
- polished, very good	220-330	H	0,02
- in composition - 73.2% Cu, 26.7% Zn	245...355	N	0.028..0.031
- in composition - 73.2% Cu, 26.7% Zn	200	N	0.03
- sheet,rolled	22-100	N	
- sheet, finished with emery	22	N	0.20

Tin:	30-90	H	0,05
- bright	25	N	0.043...0.064
Permalloy oxidated	20	N	0.11...0.03
Foam plastic	20	N	0.60...0.05
Plastic	20	N	0.68...0.02
Bank sand clean	25...30	N	0.95
Plexiglass	25...30	N	0.95
Rubber soft, grey, rough	24	N	0,86
Mercury clean	0-100	N	0,09-0,12
Ruberoid	20	N	0.93
Granulated sugar	25...30	N	0.97
Lead :	30-260	H	0,04-0,08
- bright	250	N	0.08
- grey, oxidated	0-200	H	0.28
- oxidated at heating	200	H	0,63
Silver:	170-830	H	0,012-0,046
- clean polished	225...625	N	0.0198-0.0324
Mica :			
- thick layer		N	0.72
- in powder, agglomerated in silicate		N	0.81...0.85
Resin		N	0.79...0.84
Ice	-10		0.80...0.85
Carbon steel:	170-1130	H	0,06-0,31
- rolled	50	N	0.56

- ground	940...1100	N	0.52...0.61
- with rough surface	50	N	0.95...0.98
- rusty, red	20	N	0.59
- zinked	20	N	0.28
- alloy (8% Ni ; 18% Cr)	500	N	0.35
Stainless steel:			
- polished	25...30	N	0.13
- after sandblast	700	N	0.70
- after rolling	700	N	0.45
- oxidated at 600°C	200...600	N	0.79
- oxidated, rough	40...370	N	0.94...0.97
Glass window			
	25...30	N	0.91
	22...100	N	0.94...0.91
Glass			
	250...1000	N	0.87...0.72
	1100...1500	N	0.70...0.67
Opal glass	20	N	0.96
Table salt technical	25...30	N	0.96
ethyl alcohol	25...30	N	0.89
Broadcloth	20	N	0.98
Textolite	20	N	0.93 0.02
	200	N	0.15
Titanium polished			
	500	N	0.20
	1000	N	0.36
	200	N	0.40
Titanium, oxidated			
	500	N	0.50
	1000	N	0.60
Fabric :			
- asbestos		N	0.78

White china, bright		N	0.70...0.75
Glazed china	22	N	0.92
Fibre	25...30	N	0.93
Fluoroplastic	20	N	0.95 0.02
Raw cotton different humidity	25...30	N	0.93...0.96
Unpolished chrome	38...538	N	0.08...0.26
Polished chrome	50	N	0.08...0.10
Polished chrome	500...1000	N	0.28...0.38
Chromium-nickel	52...1035	N	0.64...0.76
Cement	25...30	N	0.93
Zink:	30-260	N	0,02-0,06
oxidated	30-200-530	N	0,28-0,14-0,11
Cast iron :			
- turned	830...990	N	0.60...0.70
- oxidated at heating	200...600	N	0.64...0.78
- rough, oxidated	40...250	N	0.95
Iron casting	50	N	0.81
Pig iron	1000	N	0.95
Black shellac, bright on metal	21	N	0.82
	0...100	N	0.97...0.93
Cinder	200...300	N	0.89...0.78
	600...1200	N	0.76...0.70
	1400...1800	N	0.69...0.67
Plaster rough,			
lime	10...90	N	0.91
Ebonite		N	0.89

Enamel white	20	N	0.90
Barley, millet, maize	25...30	N	0.95

**Note:**

1. N - radiation towards в направлении normal.
2. H - radiation in the range of hemisphere.
3. Linear interpolation between points is rather accurate.
4. Source: reference books.

## Certificate of acceptance and sale

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No

name and model of the instrument

Corresponds to

designation of standard and technical requirements

Data of issue

Stamp of quality control department

Price

Sold

Date of sale

name of commercial establishment