



**INTRINSICALLY SAFE
INFRARED THERMOMETER
MODEL - IRL-8Ex (EX-DT60)**



The Industrial Intrinsically Safe Infrared Thermometer IRL-8Ex (EX-DT60) has been certified by the explosion-proof certification authority, & meets the requirements of GB3836.1-2010 explosive environment Part 1 : General requirements for equipment, GB3836.4-2010 explosive environment Part 4 : equipment protected by Intrinsically safe "I" & GB12476.1-2013 electrical equipment for combustible dust environment Part 1 : General requirements & GB12476.4-2010 / IEC61241-11:2005 electrical equipment for combustible dust environment Part 4 : Intrinsic safety "ID" standard requirements. It is suitable for zone1, zone2, zone21 & zone 22 of explosion hazard field.

SAFETY :

Explosion-proof grade : Ex ib IIC T4 Gb / Ex ib IIIC T130°C Db

Certification No. : CCRI 23.7627

Protection Grade : IP54

SAFETY WARNING

Safety performance of Industrial Intrinsically Safe Infrared Thermometer can be warranted only in strict accordance with the instructions in this section. Please read the instruction carefully before using. If you have any questions, please contact the manufacturer immediately.

SAFETY RULES

The safe use of this device is based on the user's compliance with the following usage rules. The following usage requirements must be strictly followed.

- It is strictly prohibited to replace batteries for equipment in explosive hazardous areas.
- This device cannot be used in Zone 0 of explosive hazardous areas.
- Stay away from high temperature areas when using equipment.

SAFETY INSTRUCTIONS

Ordinary mobile phones can not meet the explosion proof requirements in dangerous places, so they are not allowed to be used in dangerous places that may cause explosion. The areas that may cause explosion include: fuel area (such as under the deck of a ship, transportation & storage facilities for fuel or chemical products), places with chemical substances or particles (such as particles, dust or metal powder) in the air, such as gas station, oil depots, etc.

FAILURE AND DAMAGE HANDLING

Any factor that may cause the equipment to lose its intrinsic safety performance, please stop using it in hazardous areas. And it is recommended to send it back to the manufacturer for testing.

Possible situations that may cause equipment explosion-proof performance failure include the following:

- Shell damage;
- Store in a place that does not meet storage conditions;
- Damage during transportation;
- Explosion proof signs cannot be recognized;
- Other functions fail.

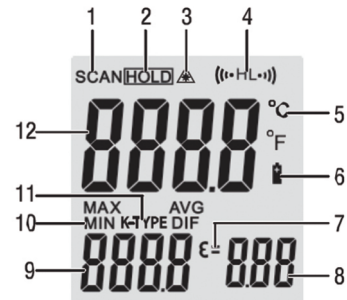
INFRARED THERMOMETER STRUCTURE



- Infrared Sensor
- LCD Display Screen
- UP key
- Down key
- Function selection key
- Trigger
- Handle
- Battery Cover

Display screen Description

DISPLAY SYMBOLS



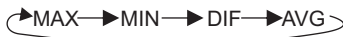
- Measurement display
- Data retention
- Laser display
- High & Low temperature alarm display
- °C / °F display
- Low battery display
- Emissivity Symbol
- Emissivity values
- Maximum temperature / minimum temperature / difference / average temperature / TK temperature
- Display of maximum / minimum / difference / mean values
- TK display
- Current temperature display

BUTTON PANEL DESCRIPTION



1. Up selection key
(select EMS, HAL, LAL)
EMS : Emissivity
HAL: High Alarm
LAL: Low Alarm
2. Down selection key
(select EMS, HAL, LAL)

3. MODE function selection key (loop function selection key)



FUNCTION SETTINGS

1. During the measurement process, the up & down keys are used to adjust the emissivity.
2. During the HOLD process, the up button is used to turn on or off the laser, & the down button is used to turn on & off the backlight.
3. During the HOLD process, the function selection keys can sequentially select the maximum / minimum value, difference/ mean value.
4. During the measurement process, if the K-Type thermocouple is connected, the TK value will be automatically displayed in the bottom left corner. At this time, the maximum, minimum, difference, & mean values cannot be changed.
5. Press the function button until the relevant debugging code is displayed on the display screen. Press the up or down keys to adjust the high temperature alarm, low temperature alarm, & emissivity to the desired values.

5

USAGE METHOD

1. Hold the instrument handle & point it towards the surface of the measured object.
2. Pull the trigger to start the measurement. If the battery is fully charged, the LCD will light up. If it does not light up or the battery energy is low, please replace the battery.
3. Release the trigger & the LCD display screen will display "HOLD", indicating that the data has been recorded in HOLD mode, press the up button to turn on or off the laser & press the button to turn on or off the backlight.

After releasing the trigger for about 10 seconds, the instrument panel will automatically shut down (Unless the instrument is locked).

MEASUREMENT PRECAUTIONS

Grasp the instrument handle & align the infrared thermometer with the object being measured. The instrument can automatically compensate for errors caused by changes in environmental temperature, but when the measurement of environmental temperature changes is too large or a high temperature is measured first, & then a low temperature object is measured the instrument needs to perform a 30 minute thermal balance in a

Battery Replacement

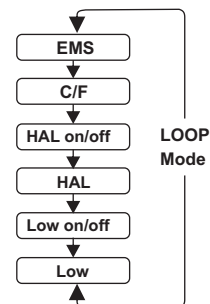
1. When the battery level is low, the "⚡" symbol will appear on the LCD screen, & the instrument panel needs to be replaced with 1.5V x 2 AAA batteries.
2. Open the battery cover, take out the old battery & place it in the new one, then tighten the battery cover as it is.



7

MODE FUNCTION SELECTION KEY

The MODE function selection key can sequentially set the emissivity, lock on or off, high temperature alarm on or off, high temperature alarm value adjustment, low temperature alarm on or off, & low temperature alarm value adjustment. With each button pressed, the thermometer moves to the next function in sequence. The following chart display the order of various functions in the pattern loop in order.



- **Emission rate adjustment range** : 0.1 - 1.0
- **°C / °F unit conversion** : You can press the up or down keys to select the temperature unit (°C/°F)
- **Enable & disable high & Low Alarms** : Press the up button or down button to turn on & off the high & low alarms.
- Pressing the trigger can unlock the high & low alarms.
- **Range of high & low alarm values** : -50 ~ 1100°C (-58°F ~ 2012°F)
- The maximum value (maximum temperature) is displayed on the LCD & every time the trigger button is pressed, the maximum value will be refreshed.
- Display maximum, minimum, difference & mean values.
MAX = Maximum The maximum value measured.
MIN = Minimum The minimum value measured.
DIF = The difference in measurement.
AVG = Average The average value measured.

6

ATTENTION MATTER

WORKING PRINCIPLE

Infrared Thermometer is used to measure the surface temperature of objects. The optical components of the instrument emit, reflect & propagate energy, which is collected & concentrated on a detector. This information is converted into temperature readings & displayed through electronic components. The laser on the instrument is only used for aiming at the measured object. scan the entire area until the location of the hotspot is confirmed.

FIELD

Ensure that the area of the tested object is greater than the diameter of the infrared circular light spot of the instrument. The smaller the goal, the closer you should be to it. When accuracy is important, it should be ensured that the area of the measured object is not less than twice the measurement point.

DISTANCE AND SPOT DIAMETER

When the distance (D) between the thermometer & the object being measured increases, the light point (S) should correspondingly increases.

HOT SPOT POSITIONING

To search for a hotspot, first align the thermometer with the outer side of the measured area, & then slowly move the thermometer up & down to scan the entire area until the location of the hotspot is confirmed.

8

TIPS

1. It is not recommended to measure the surface temperature of luminescent metals or smooth metals (such as stainless steel, aluminum, etc.)

View the emissivity table.

When measuring with this instrument, it should not be obstructed by transparent objects such as glass, otherwise the temperature measured will be the surface temperature of the obstructed object. Steam, dust, smoke etc. can affect the accuracy of measurements in a way that hinders light emission.

EMISSION

Emissivity describes the characteristics of material radiation energy. Most (90%) organic materials & surfaces coated with paint or oxidation have an emissivity of 0.95. Measuring the luminous metal surface may cause inaccurate readings. To ensure accurate readings, the surface to be measured can be covered with masking tape or black paint. Wait for a period of time for the adhesive paper or coating to reach the same temperature as the surface it covers, then measure the temperature of the adhesive paper or painted surface.

Material	Emissivity	Material	Emissivity
Asphalt	0.90 to 0.98	Cloth (black)	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Soap bubbles	0.75 to 0.80
Sand	0.9	Charcoal (powder)	0.96
Dirt	0.92 to 0.96	Lacquer ware	0.80 to 0.95
Water	0.92 to 0.96	Lacquerware (Matte)	0.97
Ice	0.92 to 0.98	Rubber (black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.90 to 0.95	Wood	0.9
Ceramics	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium oxide	0.81
Gypsum	0.80 to 0.90	Copper oxide	0.78
Plaster	0.89 to 0.91	Iron oxide	0.78 to 0.82
Brick	0.93 to 0.96	Textile	0.9

9

MUMBAI

TEST CERTIFICATE

INTRINSICALLY SAFE INFRARED THERMOMETER

This Test Certificate warrants that the product has been inspected and tested in accordance with the published specifications.

The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO. IRL-8Ex (EX-DT60)

SERIAL NO. _____

DATE: _____

ISO 9001:2015
REGISTERED



11

SECURITY WARNING

Please turn off the product near electronic devices that use high-precision control, otherwise it may cause electronic device malfunctions. Devices that may be affected by this product include hearing aids, pacemakers, fire alarms, automatic doors & other automatic control devices. Users of electronic medical assistive devices should confirm the impact of radio waves on the device with the service center of the device themselves.

The pacemaker manufacturer recommends maintaining a distance of at least 15 centimeters between the product & the pacemaker to avoid potential interference with the pacemaker. When carrying this product, it should not be placed in the chest bag; the ear on the opposite side of the pacemaker should be used to answer calls, in order to reduce potential interference factors.

Please do not bring this product to the operating room, intensive care unit (ICU), or coronary heart disease monitoring unit (CCU).

In medical facilities where the use of this product is prohibited, please follow the instructions & regulations of the facility.



OFFICE ADDRESS/SERVICE CENTER

Shop no.18, 1st Floor, CIDCO Shopping
Complex, Plot # 9, Sector-7, Rajiv Gandhi Marg,
Sanpada, Navi Mumbai - 400705.
Sales Direct : +91-9867488006, 9867675093
Email : sales@kusam-meco.co.in
Website : www.kusamelectrical.com

10

WARRANTY

Each "KUSAM-MECO" product is warranted to be free from defects in material & work-manship under normal use & service. The warranty period is One year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a "KUSAM-MECO" authorized dealer. This warranty does not apply for damaged Ic's, Burnt Pcb's, fuses, disposable batteries, carrying case, test leads, or to any product which in "KUSAM-MECO's" opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

"KUSAM-MECO" authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of "KUSAM-MECO".

"KUSAM-MECO's" warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a "KUSAM-MECO" authorized service center within the warranty period.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. "KUSAM-MECO" SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.

12



CONFORMITY CERTIFICATE OF EXPLOSION-PROOF

Certificate No.: CCRI 23.7627

Applicant Company: Beijing Dorland System Control Tech Co.,Ltd.

Name of Product: Intrinsically safe infrared thermometer

Type of Product: EX-DT60

Marking: Ex ib II C T4 Gb/Ex ib III C T130°C Db

Technical Documents: Q/DLM 009-2023

Drawing No.: ZZ01

Note(s):

1. The rated voltage is DC 3V, and the power is supplied by a battery pack consisting of two No. 7 dry batteries connected in series.
2. Operating environment temperature: $0^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$.
3. IP code: IP54.
4. Correlation test report number: 202355907.

By verifying the drawings and technical documents and checking samples, the product complies with the following standards currently valid in P.R.China:

GB/T 3836.1-2021, GB/T 3836.4-2021, GB/T 4208-2017

Date of Issue: 1. 23. 2024

Valid till: 1. 22. 2029

Authorize:



Coal Science (Beijing) Test Technology Co., Ltd.

(Beijing Test Center of Mine Working Equipment and Mining Oils for National Safe Production)

Note: This certificate is only valid for the products that are in accord with samples tested and verified.

Address: Building 6, No.5, Yulong Street, Caiyu Town, Beijing Economic and Technological Development Area(Daxing), Beijing Tel/fax: 010-89268018

The query url of Explosion-proof Certificate: <http://www.ccrite.com.cn/Home>