



# Thermal Imaging

Red Hot Intelligence

## IRI 2010 Thermal Camera



**LOW COST - Without Compromise!**

The Irisys thermal camera is a low cost camera which is used to find faults and identify failing components.

## Key Camera Features

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- **Image Fusion**

Lets you view a visible or thermal image of your equipment, or a blend of both. By combining visible and thermal images the user is able to get a clear image of the equipment being monitored whilst easily seeing potential faults.

- **Hot/Cold Tracking**

By switching on the tracking function two cursors can be activated to simultaneously find the hottest and coldest points in the image. This function is particularly useful for quick fault finding and takes away any guess work.

- **Audible and Visual Alarms**

The Audible and Visual alarm function can be switched on to quickly alert the user to temperatures outside a defined range. This works particularly well when combined with the tracking and fusion functions. A user can very quickly scan equipment, allowing the camera to automatically sound and show an alarm, when equipment is operating outside its defined temperature parameters. With the camera set in Image Fusion (blended) mode or even in full visible mode a user can very quickly pin point any alarm locations.

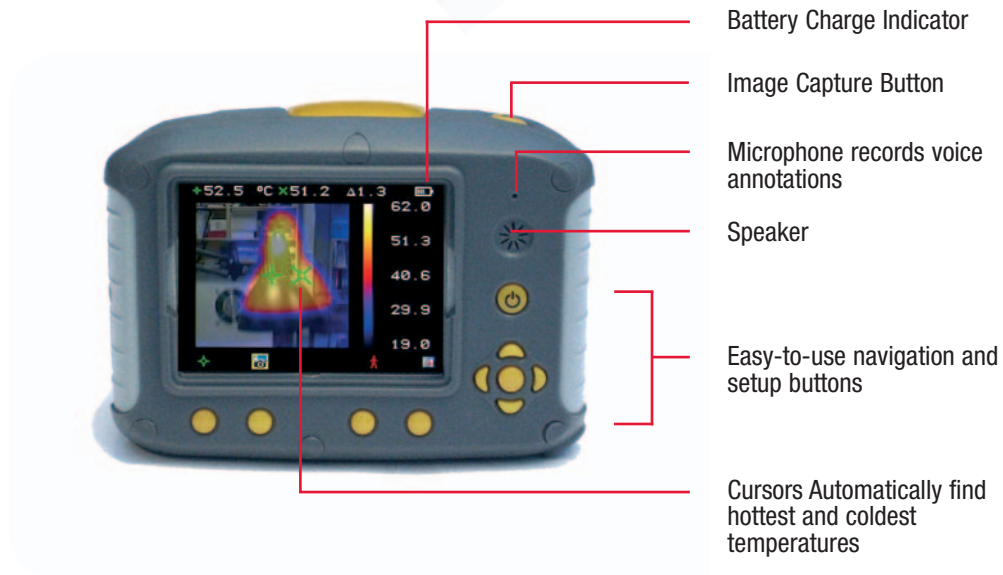
- **Voice Annotation on Saved Images**

The camera can save up to a 1000 images via the cameras SD card. For a user who wants to survey a large amount of equipment, a voice tag recording can be added to each image. Voice recordings can be played back on the camera or on a PC, which will prove to be invaluable in identifying images at a later date, or when producing a report on the camera's PC software.

- **Robust and Easy to Use.**

The camera casing is made of hard plastic over-moulded with soft plastic, providing a very robust package whilst still being light for handling. The camera has an optional handle giving the user flexibility. A rechargeable battery with a 6 hour capacity allows continual operation over a full shift.





## Adjustable Blended View for Ease of Use

The IRI 2010 captures both a full infrared image and a visible image.

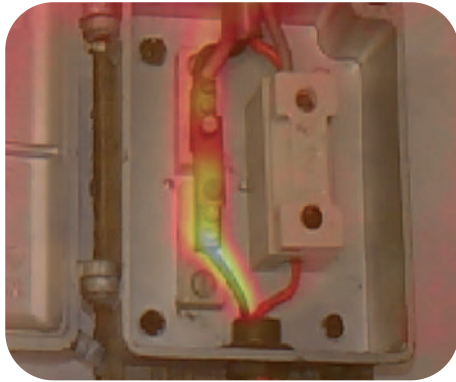
The thermal image can be overlaid on top of the visible image in various % blends for better clarity

100% Visible

0% Visible

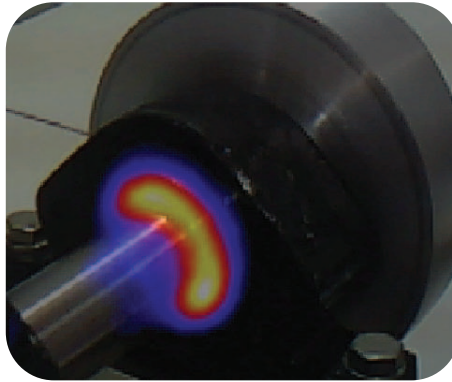


The IRI 2010 can be used for many applications such as:



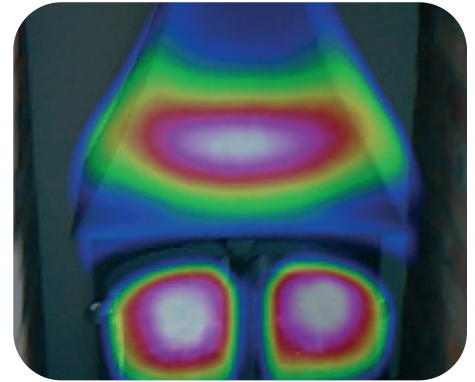
## Electrical

- Failing/Fatigued components
- Loose/Tight connections
- Overloaded Components
- Uneven voltage distribution



## Mechanical

- Wear
- Poor Lubrication
- Shaft Misalignment
- Overloaded Components



## Energy Efficiency

- Poor or Missing Insulation
- Energy losses
- Integrity of Refrigeration seals
- HVAC

## Camera Specifications

### Measurement

Temperature range:

-10°C to 350°C

Radiometry:

Two moveable temperature measurement cursors.

Accuracy:

The greater of  $\pm 2^\circ\text{C}$  or  $\pm 2\%$  of reading in  $^\circ\text{C}$

Operating temp for stated accuracy:

23°C

Focal Range:

0.5m to infinity

### Image Storage

Number:

Up to 1000 images on micro SD card supplied

### Imager Power Supply

Battery:

Lithium-ion field rechargeable, Up to 6 hours continuous operation.

### Mechanical

Low Weight:

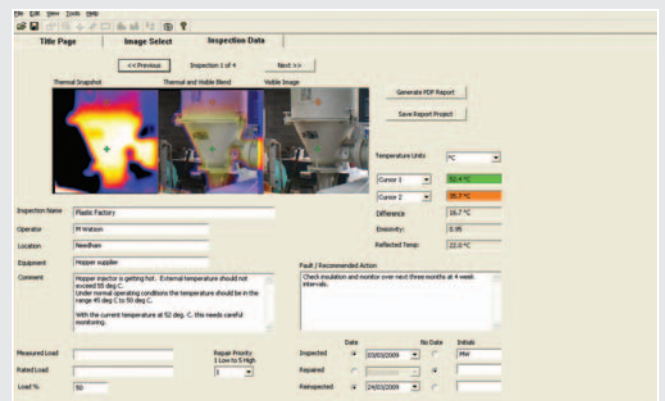
0.70kg

### Settings and Controls

- On/Off soft power control
- User selectable span & Level control
- Auto adjust span and level
- 4 preset thermal/visible alignment distances
- Manual thermal/visible alignment
- Laser trigger switch
- Readout in  $^\circ\text{C}$  or  $^\circ\text{F}$
- User selectable image integration
- User selectable emissivity tables
- User selectable reflected temperature
- Two moveable temperature measurement cursors
- Area analysis – 3 size options
- X-Y profiles
- Isotherms
- Text annotation
- Voice annotation
- Image capture, time and date
- Visual/audio alarm high and low

### Features

- Real-time image and temperature measurement display
- Visible/thermal/mixed image fusion (100%/ 75%/ 50%/ 25%/ 0%)
- Simple operation
- Multiple temperature measurement
- Image browser
- Battery Charge indicator
- Lightweight
- Laser Pointer
- Auto hot/cold seeker
- Selectable Language
- Thermal lens focus meter
- LED illuminator for operation in dark environments.



Above images are examples of the report writing software provided with the IRI 2010 Thermal Imaging Camera.

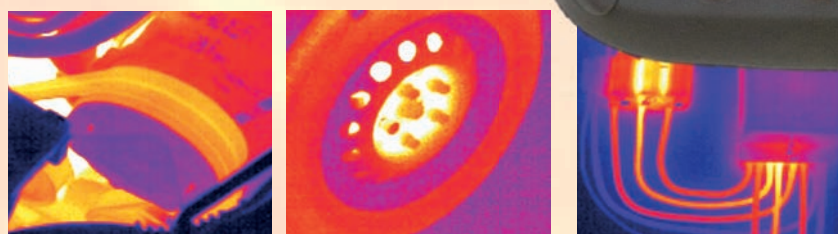
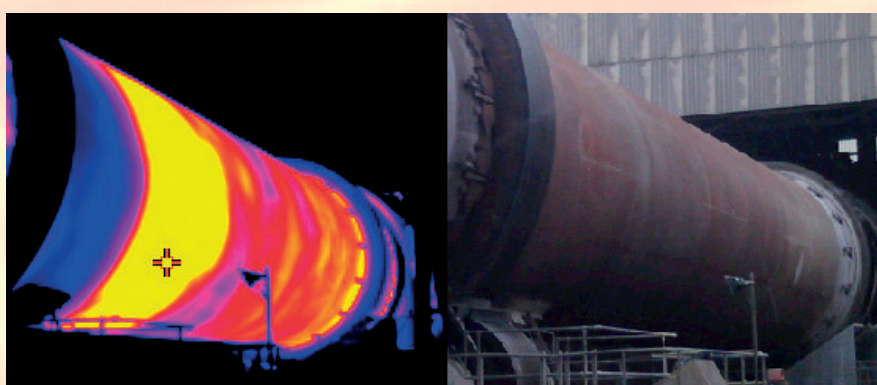
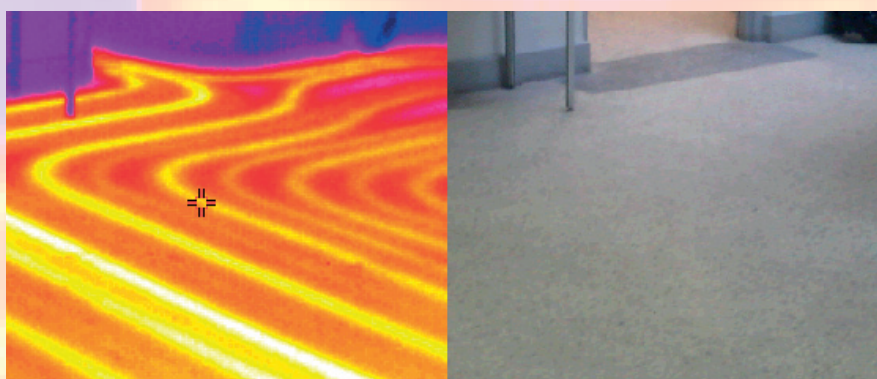
## IRI 2010 Includes:

IR Camera, handle, Battery, AC Adaptor, Quick Start Guide, Carrying Case, CD with user manual and software (Analysis and report writer)





## IR16 Series – Dual View Thermal Imaging Cameras





### **IR16DE – General purpose Thermal Imager**

Ideal for use by both thermographers and maintenance engineers. The high quality images may be captured and manipulated in the camera allowing problems to be resolved on the spot. Images can also be downloaded to a PC for analysis and reporting. The camera comes with an industry leading 3 ½" display. Typical applications for the IR16DE include:

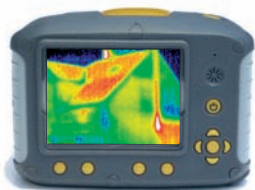
- Predictive and Preventative Maintenance
- Electrical and Mechanical inspections
- Process Monitoring
- HVAC & R Troubleshooting and Maintenance
- General Industrial/Domestic Inspection



### **IR16DS – Dual temperature range Thermal Imager**

The IR16DS has all the features and functions of the IR16DE with the additional capability of:

- Multiple viewing options, with fused images
- User selectable temperature range allowing measurements up to 500°C
- Alarms
- Sequence recording



### **IR16DB – Building Thermal Imager**

The IR16DB offers better sensitivity making it especially suitable for building applications. The temperature range of -20°C to 125°C also makes it suitable for a variety of general purpose and maintenance applications:

- Building Inspection
- Energy loss audit
- Commercial refrigeration
- Building and services maintenance



### **IR16DH – High Temperature Range Thermal Imager**

The IR16DH combines the temperature range of the standard IR16DS with an extended range of up to 900°C, allowing users to monitor plant and equipment operating at higher temperatures. The IR16DH is especially suitable for use where high temperature measurement is required, such as the following industries:

- Petro-chemical
- Glass
- Cement
- Metal Industries

# Key Features



Note: Please see features-at-a-glance table to check for features available in each camera

## Image Fusion

The camera can display a thermal image, a visual image only or a fusion of both thermal and visual images, or as a fused PiP(Picture in Picture) or thermal above or below. An LED illuminator is available for dark environments.

## Voice Annotation

Record voice notes to each image saved. Playback on the camera through its speaker or through headphones and on the PC, once the image has been transferred using the supplied software.

## Alarms

The camera can detect hot & cold spots and be set to alarm when the temperature is above or below the alarm threshold. Alarms are both audible through the camera speaker or headphones and visual via the camera display.

## Time Sequencing

Allows unattended monitoring of equipment over a period of time to observe changes in equipment performance. This can be at regular timed intervals or on user defined threshold temperature alarms.

## Individual cursor emissivity settings

Four moveable cursors allowing easy comparison of components and items in a scene with individual emissivity settings to get a more accurate measure of actual temperatures.

## Battery Life

Long battery life (5 hours) which is also replaceable, allowing a typical shift to be worked without recharging.

### IR16 Thermal Imager features-at-a-glance

Features	IR16DE	IR16DB	IR16DS	IR16DH
Visual Camera	•	•	•	•
Voice Annotation	•	•	•	•
Alarms		•	•	•
Sequencing		•	•	•
PiP	•	•	•	•
Fusion		•	•	•
Thermal Thru	•	•	•	•
2 Moveable Cursors	•			
4 Moveable cursors		•	•	•
Individual emissivity adjustment		•	•	•
-20°C to +125°C		•		
-10°C to + 250°C	•		•	•
+200°C to +500°C			•	•
+200°C to + 900°C				•
Illuminator	•	•	•	•

## Settings and Controls (not all settings listed below are on all models)

- Auto/user selectable span and level control
- Readout in °C or °F
- Four moveable temperature measurement cursors with individual emissivity values and temperature difference between two points.
- User selectable emissivity setting for each measurement cursor.
- Auto hot and cold seeking or hot only or cold only.
- User selectable reflected temperature compensation.
- Area analysis- 3 options.
- X-Y thermal profiles.
- Isotherms with temperature difference.
- Voice and or text annotation.
- Image capture; time and date.
- Palette selection.
- User selectable integration.
- Image fusion control: 0 to 100% adjustment on whole image and on picture in picture.
- Threshold control on thermal above and below display.
- Electronic zoom, x2 , x4.
- Multi-language options.
- Battery power indicator.
- Image browser showing thumbnails and voice annotation playback.
- Time or Alarm sequence recording.



	IR16DE	IR16DB	IR16DS	IR16DH
Field of View (FOV)	20° X 15°			
Focus	Manual			
Minimum Focus	30cm			
Spectral Response	8µm to 14µm			
Thermal Sensitivity	NETD ≤80mK(0.08°C) @ 23°C and 30°C Scene Temperature	NETD ≤50mK(0.05°C) @ 23°C and 30°C Scene Temperature	NETD ≤80mK(0.08°C) @ 23°C and 30°C Scene Temperature	
Detector	160 X 120 Pixels uncooled microbolometer			
Image Storage	Over 1000 images on supplied micro SD card			
Display	3½" colour LCD with LED backlight, 8 colour palettes			
Display Options	Picture in Picture Thermal above and Thermal below	Thermal images or visible images or mixed thermal and visible images including picture in picture with blending Thermal above and Thermal below		
Laser Pointer	A built in class 2 laser highlights the central measurement area			
Measurement				
Temperature Range	-10°C to +250°C	-20°C to +125°C	-10°C to +500°C	-10°C to +900°C
Radiometry	Two moveable temperature measurement cursors with temperature difference measurement	Four moveable temperature measurement cursors with temperature difference measurement and individual emissivity correction		
Emissivity correction	User selectable 0.1 to 1.0 in steps of 0.01 with reflected temperature compensation			
Accuracy	The greater of ±2°C or ±2% of reading in °C for ambient temperatures between -15°C and +45°C			
Battery	Rechargeable field replaceable Lithium Ion			
Operation time	5 hours			
AC operation	AC adaptor supplied			
Mechanical				
Housing	Impact resistant plastic with overmoulded soft elastomer			
Dimensions	130mm X 95 X 220mm			
Weight	0.8KG			
Mounting	Handheld and tripod mounting ¼" BSW			
Environment				
Temp. Operating range	-15°C to +50°C			
Humidity	10% to 90% non condensing			
Temp. storage range	-20°C to +70°C			
IP rating	IP54			
Vibration	MIL-PRF-28800F class 2 section 4.5.5.3.1			
Shock	MIL-PRF-28800F class 2 section 4.5.5.4.1			
Drop test	MIL-PRF-28800F class 2 section 4.5.5.4.2 2m drop test			

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**IR32 DS**

## DUAL VIEW THERMAL IMAGING CAMERA

Ideal for use by both thermographers and maintenance engineers. The IR32DS provides high performance 320 x 240 pixel resolution. The high quality images may be captured and manipulated in the camera allowing problems to be resolved quickly. Images can also be downloaded to a PC for analysis and reporting. The camera comes with an industry leading 3 1/2 display.

### Typical applications for the IR32DS include:

- Predictive and Preventative Maintenance
- Electrical and Mechanical inspections
- Process Monitoring
- HVAC & R Troubleshooting and Maintenance
- General Industrial/Domestic Inspection

### Key Features:

**Image Fusion** - The camera can display a thermal image, a visual image only with thermal cursors or a fusion of both thermal and visual images, or as a fused PiP (Picture in Picture) or thermal above or below a certain temperature. An LED illuminator is available for dark environments.

**Voice Annotation** - Record voice notes to each image saved. Playback on the camera through its speaker or through headphones and on the PC, once the image has been transferred using the supplied software.

**Alarms** - The camera can detect hot & cold spots and be set to alarm when the temperature is above/below the alarm threshold. Alarms are both audible through the camera speaker or headphones and visual via the camera display.

**Time Sequencing** - Allows unattended monitoring of equipment over a period of time to observe changes in equipment performance. This can be at regular timed intervals or on user defined threshold temperature alarms.

**Individual cursor emissivity settings** - Four moveable cursors allowing easy comparison of components and items in a scene with individual emissivity settings to get a more accurate measure of actual temperatures.

**Battery Life** - Long battery life (5 hours) which is also replaceable, allowing a typical shift to be worked without recharging.



*“ The high quality images may be captured and manipulated in the camera allowing problems to be resolved quickly. ”*



## IR32 DS

### TECHNICAL SPECIFICATION

#### PERFORMANCE

Field of view (FOV):	21.4° x 16°
Focus:	Manual
Minimum Focus:	30cm
Spectral Response:	8µm to 14µm
Thermal Sensitivity:	NETD ≤80mK (0.08°C) @ 30°C Scene Temp.
Detector:	320 x 240 Pixels uncooled microbolometer

#### IMAGE STORAGE

Number:	Over 1000 images on micro SD card supplied
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#### DISPLAY

3 1/2" colour LCD with LED Backlight. 8 colour palettes. Mixed thermal and visible images. Fusion and PiP.

#### DISPLAY OPTIONS

Thermal images or visible images or mixed thermal and visible images including picture in picture with blending. Thermal above and Thermal below

#### LASER POINTER

A built in Class 2 laser is supplied to highlight the centre of the thermal image. (Aligned at 2 metres)

Beam Divergence	<0.2mrad
Maximum Output	<1mW.

#### MEASUREMENT

Temperature range:	-10°C to + 250°C
Radiometry:	Four moveable temperature measurement cursors giving automatic temperature difference measurement and auto locking onto hottest and coldest points
Emissivity Correction:	User selectable 0.10 to 1.00 in steps of 0.01 with reflected temperature compensation
Accuracy:	The greater of ±2°C or ±2% of reading in °C for ambient temperatures between -15°C and +45°C

#### IMAGER POWER SUPPLY

Battery:	Lithium-ion field rechargeable.
Operation time:	Up to 5 hours continuous operation
AC operation:	AC adaptor supplied charge through USB port

#### MECHANICAL

Housing:	Impact Resistant Plastic with over moulded soft elastomer
Dimensions:	130mm x 95mm x 220mm
Weight:	0.80kg
Mounting:	Handheld & tripod mounting 1/4" BSW

#### SETTINGS AND CONTROLS

- Auto/user selectable span and level control
- Readout in °C or °F
- Four moveable temperature measurement cursors with individual emissivity values and temperature difference between two points
- User selectable emissivity setting for each measurement cursor
- Auto hot and cold seeking or hot only or cold only
- User selectable reflected temperature compensation
- Area analysis - 3 options
- X-Y thermal profiles
- Isotherms with temperature difference
- Voice and or text annotation

- Image capture; time and date
- Visual/audio alarm for above/below set temperature value
- Palette selection
- User selectable integration
- Image fusion control: 0 to 100% adjustment on whole image and on picture in picture. Threshold control on thermal above and below display
- Electronic zoom, x2, x4
- Multi-language options
- Battery power indicator
- Image browser showing thumbnails and voice annotation playback
- Time or Alarm sequence recording
- Alarms
- Illuminator

#### OPTIONAL ACCESSORIES

- 12V car charger
- Light shade
- Hard carry case
- Additional battery
- Desktop charger

#### COMPUTER REQUIREMENTS (for PC software)

PC: IBM compatible PC with one of the following operating systems: Windows XP, Vista and Windows 7. (See Irisys Website for currently supported operating systems)

#### ENVIRONMENT

Temp. operating range:	-15°C to +50°C
Humidity:	10% to 90% non condensing
Temp. storage range:	-20°C to +70°C
CE Mark (Europe)	
IP rating:	IP54
Vibration:	MIL-PRF-28800F class 2 section 4.5.5.3.1
Shock:	MIL-PRF-28800F class 2 section 4.5.5.4.1
Droptest:	MIL-PRF-28800F class 2 section 4.5.5.4.2 2 metre drop test

