

SCANIR[®] II

LINE SCANNING INFRARED THERMOMETER AND THERMAL IMAGING SYSTEM

Introduction

Building upon the success of the ScanIR, and more than 40 years of experience solving industrial non-contact temperature measurement problems, Ircon has developed ScanIR II, the new generation industrial line scanning infrared thermometer system. Multiple improvements have made ScanIR II more accurate, faster, easier to use, and more affordable. Even our installation accessories have been redesigned.

Designed for Industrial Environments

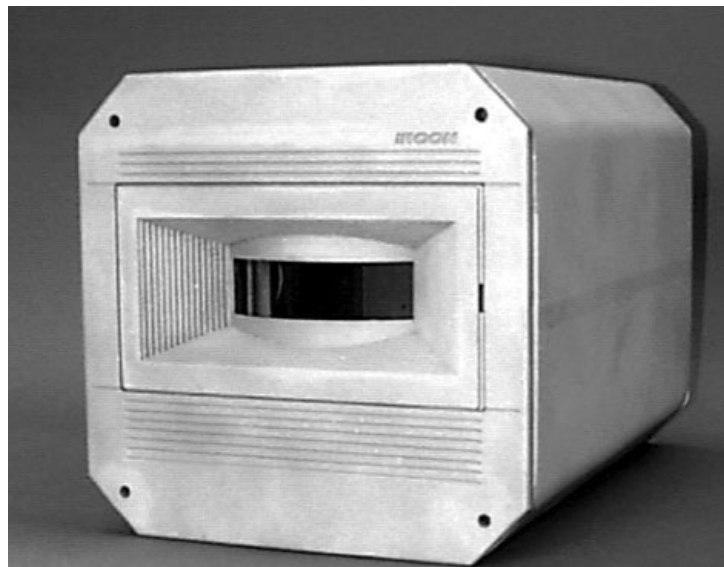
The ScanIR II is a rugged industrial product designed to meet NEMA 12K and IP52 standards. The sensor uses a single detector and a scanning mirror to view the target over a full 90°. Utilizing a 90° scan angle allows sensors to view wide targets at a closer distance, making installation more convenient in many applications.

Fast and Accurate

The ScanIR II is fast. For each 90° scan, 10 Hz models make 5,000 measurements, 50 Hz models make 1,000 measurements, and 100 Hz models make 500 measurements. Using a single element detector, ScanIR II guarantees the same calibration for all measurements across a target. This assures that indicated temperature differences across a target are actual temperature differences, not artifacts of different detector element calibrations.

Stand Alone System

The ScanIR II sensor, in conjunction with the power supply/processor, is a stand-alone system. A separate computer is not required for operation. The system can output temperatures in a variety of methods; via the standard RS-485 serial communications, using the standard TCP/IP ethernet network capability, or via the optional analog output cards. Alarm contacts are also included with the analog output cards.



ScanIR II Line Scanning Infrared Thermometer Sensor

Laser Aiming Feature

During setup, an optional visible laser assists in aligning the sensor and defining the scanline width. Since the laser option is built-in at the time of manufacture, alignment accuracy is assured. This also eliminates the need for the sensor to be opened or physically accessed in a potentially dirty or unsafe industrial environment.

Sensor/Processor Capabilities

The Ircon ScanIR II offers a complete software package designed to solve your temperature applications. There are four different packages, namely, the Ircon Configurator, the Ircon ZoneMaster, the Ircon Spot-Master, and the Ircon Profiler. All software programs operate on the Microsoft Windows NT[®] workstation or Microsoft Windows 2000[®].

ScanIR II

Benefits

The Ircon ScanIR II benefits:

- Stand-alone sensor does not require a dedicated PC.
- Compares two line processes simultaneously.
- Eliminates single sensors, and can output temperatures of ten (10) individual spots with zones.
- Sensor can operate with any Ircon software.
- Has the ability to measure fast moving objects with scan speeds up to 100 Hz.
- Easy historical data collection for quantitative comparisons.
- Image displays with a resolution of fifty (50) colors.

Features

The Ircon ScanIR II offers the following features.

- Spot and zone modes offer a maximum of 10 independent spots or zones with these features:
 - Overlapping of spots or zones
 - User-definable spot/zone size and location
 - Ten totally independent spot or zone measurements calibrated against a common reference
 - Ten separate analog and digital outputs
 - TCP/IP ethernet access of spot/zone data
 - Access via RS-485 serial communication
- Optional visible laser aids in aiming sensor during installation and to display scanline definition against target.
- Separate spot mode or zone mode operator interface software makes the system more "user friendly" and reduces the operators learning curve.
- Microsoft® Windows NT® or Windows 2000® provides a stable, familiar operating system that is accepted worldwide.
- Rugged Sensor and Power Supply/Processor are both designed for industrial process applications. The sensor can operate in ambient temperatures

Features (continued)

up to 130°F (55°C) without cooling, and up to 212°F (100°C) with standard air and water cooling option.

- Installation accessories also include protection from radiant energy.
- Fast scan rates - models up to 100 Hz
- Fast sampling rate provides from 500 to 5000 temperature samples across each 90° scan.
- High Optical Resolutions from F=50 to F=300 system resolution.
- Remote focusing allows for best optical resolution at any installation distance. This also allows for sensor relocation without physical modifications to the sensor. There is no need to open the sensor or swap components to change the focus. A few simple keystrokes is all that is required to focus.
- Power supply/processor can be located as far as 5000 to 1,000 ft. (153 to 305 m) from the sensor (depending on model) to avoid difficult environments.
- Easy-to-use operator interface software uses sensor data and product movement to create a variety of real-time thermal imaging/temperature mapping displays.
- Operator interface software utilizes a variety of configuration and display screens to best match ScanIR II to your application requirements.
- Automatic edge detection.
- Two versions of spot autotracking.
- High performance detectors.
- Rugged, rigid mineral window.
- ActiveX® controls for easy integration of temperature information into third party systems.

ScanIR II

Sensor Operation

Central to the ScanIR II system is the sensor. Like all infrared thermometers, the ScanIR II system measures the temperature of a target without contact by detecting the infrared energy radiated from the target. While single point infrared spot thermometers only measure the temperature of a single spot, the ScanIR II sensor scans the surface of the object continuously from left to right, and measures the temperature along that line. Together with the movement of the process object in the other axis, the spot or zone mode software can build an image, or "temperature map" of the object. The sensor can be oriented in any physical position for operation.

Infrared energy from the target enters the sensor through a rugged sealed mineral window. It is reflected by a pair of 45° angled mirrors, toward the focusing lens, which then focuses it onto the detector (see Fig. 1). It is the bottom mirror in the sensor that provides the scanning action of the system. This mirror is mounted on a motor that rotates at either 10, 25, 50 or 100 Hz, depending on the model selected. As the mirror rotates, whatever it "sees" is passed on to the detector. For 90° of each rotation, the mirror sees out through the window, and scans the surface of the target. (see Fig. 2). During each scan of the target surface, the detector signal level is sampled at a rate of 200 kHz. Each sample is converted from an analog signal to a digital value, which is then converted into a temperature value. For models with a scan rate of 10 Hz, there are 5,000 samples per scan. For 100 Hz models, there are 500 samples per scan. Consecutive samples are located close enough together to ensure accurate temperature measurement for even the smallest resolvable spot on the target.

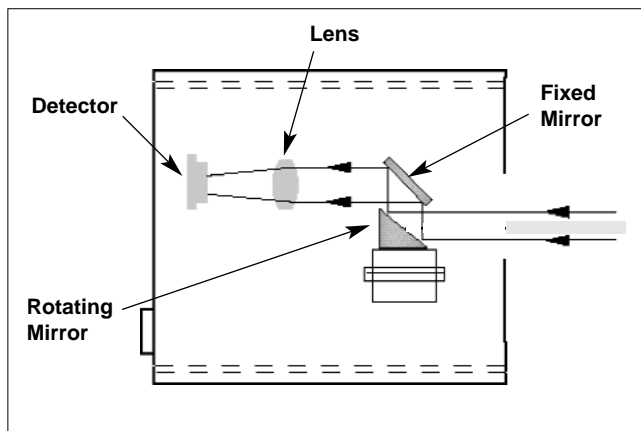


Fig. 1: Optical Schematic

Sensor operation (cont'd)

During the remaining 270° of each rotation, the system senses internal reference sources (high and/or low, depending on model), which are used to maintain system accuracy. Also during this portion of the rotation, the microprocessors in the power supply/processor perform other calculations based on user-set parameters.

Installation Features

An optional visible laser system can be factory installed within the sensor. It is used to align the ScanIR II to the target, and to visually define the selected scanline length against the target. The rugged sensor enclosure includes an internal cast aluminum alloy "optical bench" integral with the front face. This assures accurate optical alignment of all internal components and also accurate alignment and relocation relative to the process mounting. Only one cable is required for the sensor. The cable includes a rugged quick release mil-spec connector at the sensor end.

An accurate quick release mount requires no tools to remove or replace the sensor is offered as an option. In addition, a water-cooled enclosure that includes the quick release mount is available for ambient temperature environments up to 212°F (100°C).

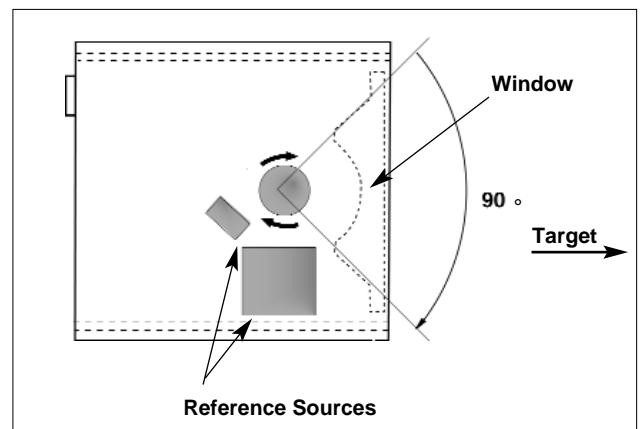


Fig. 2: Sensor, Top View
(with high and low reference sources)

ScanIR II

Operator Interface Software

Required Platform

Because computers and computer standards are constantly changing, please contact Ircon for specific minimum PC and configuration recommendations and systems offered.

Note: All operation interface software programs described below require Microsoft® Windows NT® Workstation or Windows 2000® and Ethernet card for operation.

Ircon ScanIR II Configurator Software

The Ircon ScanIR II Configurator operator interface setup software is a basic configuration or setup package. It lets you do system setup or make spot mode changes. Once configured, the sensor/processor treats each spot independently, each one having its own digital or optional analog output. The software displays a "line profile" of temperature to assist in setting up the system on your process. It also includes the capability to illuminate the aiming laser. The Configurator is not designed for applications where imaging is essential. The Configurator can be run in a notebook PC or other PC's that have an ethernet card and Microsoft® Windows NT® or Windows 2000® Workstation operating system installed.

Spot Mode - Continuous Process

The spot mode is used typically for continuous processes such as a web of plastic, strip of steel, or ribbon of glass. They have no finite beginning or end and no observable leading edge or trailing edge. The ScanIR II sensors let you define up to ten (10) different spots across the surface of any continuous target (see Figure 3 below).

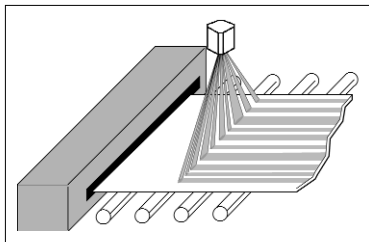


Fig. 3: Spot Mode: Ten Spots defined across target. Spots can be defined by Ircon's Configurator or SpotMaster software.

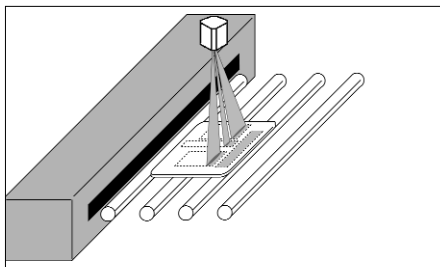


Fig. 4: Zone Mode - four zones defined (maximum of ten) on target. Zones can be defined by Ircon's ZoneMaster software.

Spot Mode (cont'd)

This is analogous to having ten separate single point infrared thermometers aimed at the target. The sensor/processor treats each spot independently, each one having its own digital or optional analog temperature output.

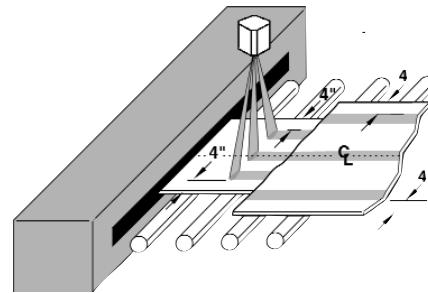


Fig. 3-A: Spot Auto Tracking Mode

The user can assign each spot its own settings for high/low setpoints and peak picker decay and status. Spots can overlap, and can be as wide as 90°. If desired, you can use the spot mode to measure the average temperature over the whole width of the target, or find the single hottest temperature on the target.

The SpotMaster software provides all the capability of the Configurator software plus the complete archiving and spot mode imaging capabilities. It includes the following screens; 2D full image, 3D full image, 2D split image, 2D dual sensor, X/Y cursor, digital panel meter, trending, image subtraction, dual temperature profile with envelopes, alarms and more (see description of displays below).

Using the "spot auto tracking" mode, you can define spots to measure temperatures at a fixed distance relative to the target edges, or define Spots relative to the target center. This capability is independent of changes to target width or lateral movement. You can define up to five auto tracking spots. In this mode, the sensor detects the positions of the left and right edges of the target during each scan. This is useful in applications where the product width changes or the product may wander laterally.

In auto-tracking mode, the additional five (5) outputs can provide the maximum and minimum sample temperature across the target, the sample position of the right and left edge and the width of the target.

Operator interface software (cont'd)

Zone Mode - Batch or Discrete Processes

The zone mode is used mainly for batch or discrete processes, which have a leading edge and a trailing edge observable on the target within a 20-minute time period. The sensor will detect the target's leading edge when it senses a temperature value above the user selected threshold value. Users can choose an external contact closure to signal the presence of a new piece in lieu of the threshold temperature value.

You can divide the target area into as many as ten different zones (See fig. 4). Zones can take the shape of either a rectangle or a parallelogram. Zones can be as wide as 90°, as long as the target piece, and can overlap. Each zone provides a separate digital or optional analog temperature output, using either the average, highest or lowest temperature sample from the area within its borders. You can also assign unique settings for setpoints to each zone. Once a zone passes the sensor, the values are updated.

Simultaneous 50 Color Temperature Palette

Both the SpotMaster and ZoneMaster image screens have the ability to display a temperature palette of 50 colors at once. This allows the user to display a temperature palette span of 100°F (50°C) and still maintain 2°F (1°C) per color temperature image resolution. This is particularly advantageous when the process temperatures vary.

If a system can only display 16 colors, and the user wants 2°F (1°C) per color screen resolution, this entire process can only vary within a specific temperature window of 32°F (16°C) without going out-of-range for that palette. This is unacceptable for many applications such as many steel applications which have more dynamic temperature excursions. If the user wants to expand the color palette temperature span to represent 100°F (50°C) with only a 16-color palette, then he will have to accept a 6.25°F (3.125°C) per color screen resolution. If he needs a 200°F (100°C) span, he would see only a 12.5°F (6.25°C) per color resolution.

With other systems' 16 color capability the user must compromise image resolution to be assured that the process temperatures are within the selected temperature display span. In contrast, our system displays 50 colors, allowing users to take advantage of a 2°F per color screen resolution, yet still display a temperature span of 100°F. When working in the celsius scale, our 50 simultaneous color palette can be set to represent a 50°C span with a 1°C per color, image resolution. For a palette range of 50 degrees or less, one degree per color resolution is provided.

2D Full Screen

This 2D Full Screen Image displays a two-dimensional temperature map of the target. The 2D Imaging screen can also show the location of one or all Spots or Zones relative to the target.

2D/Split Image

This feature compares two images side by side on the OI display. For example, the live image of the target can be compared to a reference image. You can create and choose from a selection of different reference images, and thus compare each type of process against an appropriate standard. It can also display two file images side-by-side, in the Archive Mode.

2D/Dual Sensor

This screen displays two, live, 2D images from any two sensors on the network. This is particularly useful for "before and after" measurements or top and bottom temperature comparisons.

Subtraction (SpotMaster only)

In addition, using the image subtraction screen, the live image of a given area can be compared to a reference image. Each individual data sample of temperature is compared and the difference is calculated, producing a differential temperature map for that area. Comparisons can be made between two file images, two live images, or one file and one live image.

3D Imaging (SpotMaster Only)

The 3D imaging feature lets you create a relief or topographical map of temperature that can be used for monitoring purposes.

Profile and Envelope Functions

This feature lets you display a profile of temperature as measured across the width of the target. You can also overlay successive profiles on top of one another and obtain an "envelope" of temperature. This envelope graphically represents the total temperature excursion over time for each independent temperature sample across the scanline.

Spot/Zone Trending

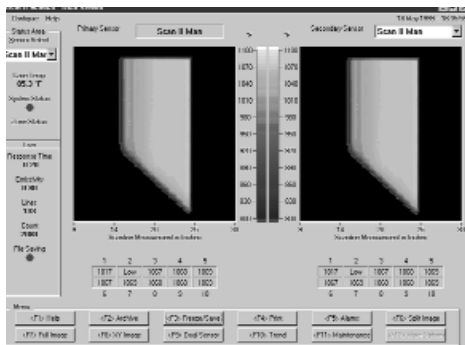
This screen is analogous to a 10-pen chart recorder or a data acquisition system. It displays a history of the spot or zone temperatures over a period of time. This data can be archived and off-loaded in a ".csv" file format for use within spreadsheet programs.

Operator interface software (cont'd)

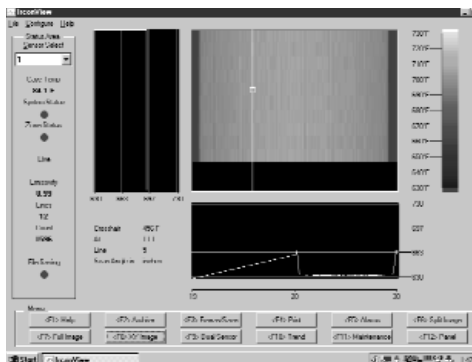
X/Y Cursor Screen

This screen displays a 2D image and two line profiles. Below the image is a profile representing the area beneath the movable X (horizontal) cursor. Along the left, is the profile representing the temperatures beneath the Y (vertical) cursor. A display shows the X-Y position and the temperature where they cross.

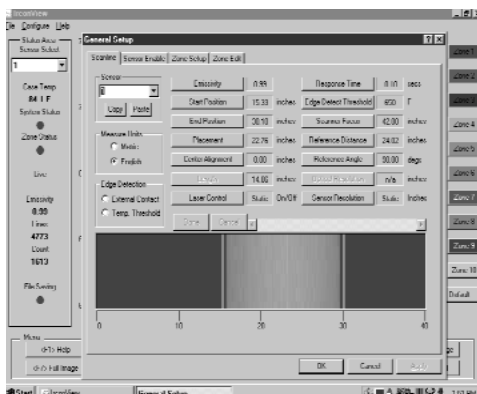
Typical Display Screens



2D Display with Zone Temperature



X/Y Cursor Display



Typical Configuration Window

Analog and Digital Outputs

Digital Communications

All communications with the sensor/power supply/processor are made through connections at the power supply/processor. The power supply/processor connects to the sensor by a single cable supplied with the system. The power supply/processor provides two types of digital communication, RS-485 serial communications, and ethernet communications. With a TCP/IP connection, the ethernet can be used to access spot or zone data generated by any sensor on the network.

To configure the sensor/power supply/processor, at least one operator interface, running one of the operator interface software programs, should be connected to the power supply/processor via the ethernet network. There are three different types of operator interface PCs that are typically used to configure the sensor/power supply/processor. A notebook computer can be used as a portable operator interface. Icon also offers a benchtop or industrial panel-mount OI (operator interface) PC. The high-speed ethernet data link provides continuous communications to and from any sensor/processor system on the network, at a rate of 10 megabits per second.

Using the RS-485 serial communications you may use your own digital device such as a host computer or PLC to access temperature data from the sensor/power supply/processor system and make changes to the system setup. The host computer or PLC would connect to the power supply/processor with an RS-485 cable. When communicating through this port, the sensor/processor must be polled before it transmits data. An ASCII protocol is standard through this interface. Although this RS-485 connection can access zone temperature data, it is not designed to support the setup of zones.

The ASCII protocol is based on simple, one and two character commands. Any programming language can be used. Up to ten sensors can be networked to one host computer. Each sensor in a network has its own single-digit address (see sample examples 1 through 3 on page 7).

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Analog and Digital Outputs (cont'd)

Example 1:

Host requests temperature (command TT) from spot 4 of

Sensor 3: **#34TT<cr>**

Sensor/processor responds that temperature of spot is

800°F: **#34TT800F<cr>**

Example 2:

Host sets response time (command RT) of

Sensor/Processor 1 to 0.2 second: **#10RT200<cr>**

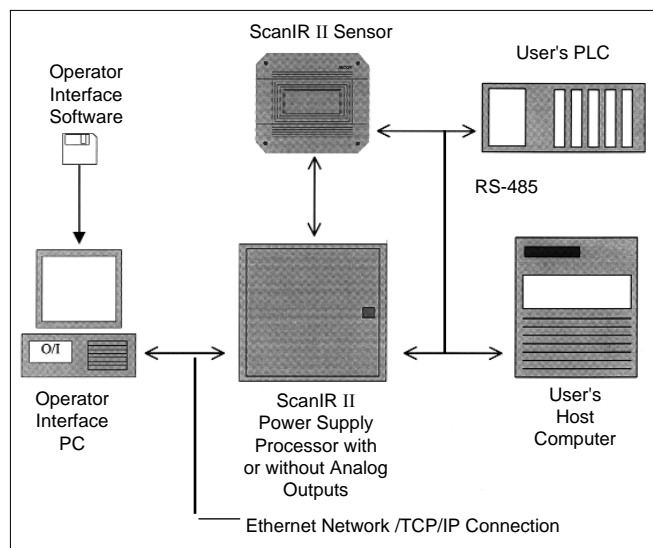
Example 3:

Host sets emissivity (command EM) of sensor 5 to 0.85:

#50EM850<cr>

Optional Analog I/O Cards:

- Analog outputs isolated from ground. All analog outputs share the same isolated output ground.
- Converts temperature data to 4 to 20 mA analog signals, linear with temperature.
- Analog full scale and zero scale outputs can be scaled within instrument range.
- 4-20 mA Dc outputs can be user switched to 0-20 mA Dc outputs.
- Each Card has five Analog Outputs.
- Outputs correspond to spots or zones measured by the sensor.
- Each output channel includes one form-C relay for alarm and/or control.
- Two cards can be plugged in for a total of ten analog outputs and 10 relays per system.



System Elements

Sensor and Power Supply Processor

ScanIR II Sensor includes

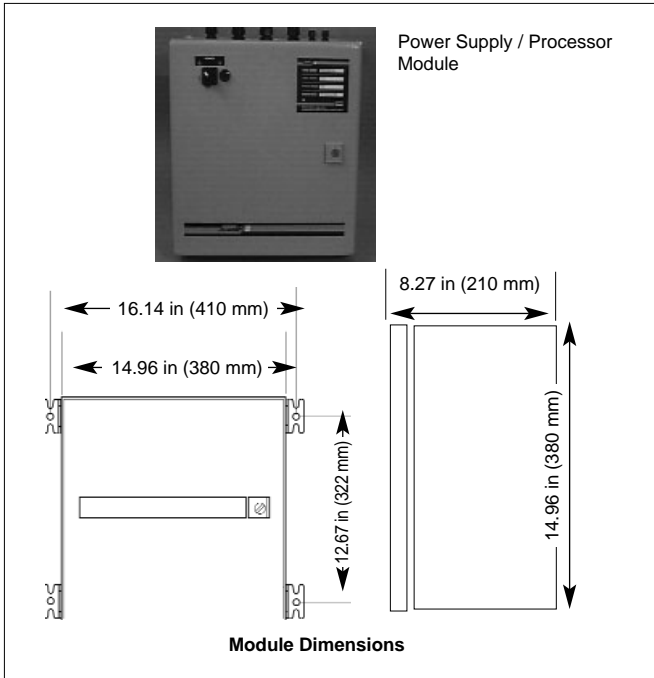
- Scanning mechanism, optics, infrared detector and amplification circuits.
- Parts housed in industrial-grade, dust tight, drip-proof enclosure designed to meet NEMA 12K, IP52.
- 50 feet of cable for sensor to power supply/ processor connection.
- Optional laser aiming system used to align sensor with target during setup.
- Standard remote focusing.
- Sensor-to-power supply/processor cable with quick-disconnect mil-spec connector on sensor end. Power supply/processor end is dressed for terminal-type connection at power supply/ processor. Terminal type connection end allows end of cable to be pulled through conduit without need to install connector in the field.
- Non-volatile model specific data storage provides information required for processor to process unique sensor data. Makes all power supply/processors generic and useable with any model sensor.
- Internal calibration reference if required (model dependent)

ScanIR II Power Supply/Processor

- Signal processing circuits and embedded software to convert target radiance to temperature data and facilitate communication processing.
- Samples temperature signal from sensor, corrects for emissivity, and converts to temperature at precise 5 microsecond intervals.
- Handles RS-485 and ethernet communications. Processes analog outputs and alarms.
- Can be remotely located as far as 500 to 1000 ft. (153 to 305 m) from sensor, depending on model.
- Highest DC operating voltage is 24 Vdc.
- Power auto switching 100–240 Vac, 50/60 Hz; 120 VA
- Dust tight, drip-proof, wall-mountable, designed to meet NEMA 12K, IP52.
- Operating temperature range 32 to 130°F (0 to 55°C).
- Mounting hardware included.
- Universal, no sensor model specific components or programming.

ScanIR II

Sensor & Power Supply Processor (cont'd)



Power Supply/Processor Module Dimensions

OPTIONAL ACCESSORIES

Operator Interface

An operator interface is required for sensor setup and operation of Ircon's SpotMaster and ZoneMaster software programs. Ircon offers portable pc's for the SpotMaster and ZoneMaster software that includes Microsoft® Windows NT installed program; display; diskette drive; hard drive; A6 P graphics; mouse; CD rom drive; and an ethernet card.

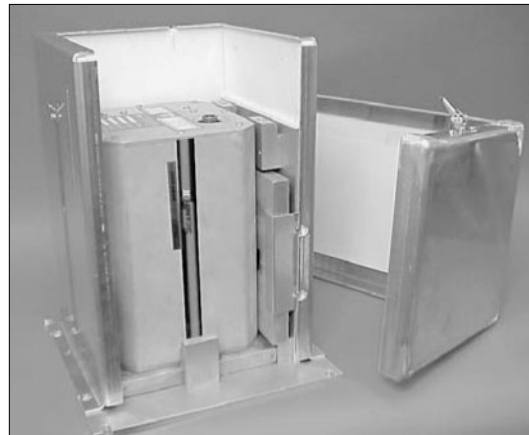
Note: Ircon's Configurator software can also be used with a portable PC (consult factory).

Mounting Accessories

The ScanIR II sensor can be mounted with mounting holes on two sides (see drawing below). The sensor can be used with the following accessories

- **Air purge** - model #S2APOHO-X (see figure xxx). Requires use of a side-mount L-bracket. Blower, fittings, filter and hose are also available. Consult Ircon factory for model numbers and specs.

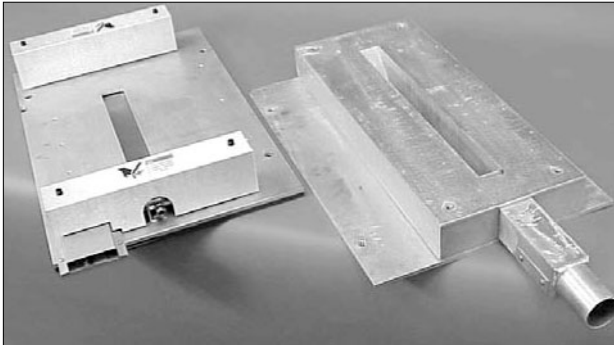
- **Water-cooled enclosure with quick release mount** - model #S2ENCHD-X. Water-cooled side and front plate.
- **Water-cooled enclosure with air purge** - model number S2APSHD-X.
- **Water-cooled enclosure with air purge and flange-mounted adapter plate** - model number S2APBHD-X.
- **Water-cooled housing, air purge and sliding gate valve** - model # S2AGVHD-X. Pneumatically operated, the gate valve provides protection for the sensor if the air purge or water cooling enclosure is inoperable.
- **Control module for gate valve** - model #S2CTBHD-X. Sensors for water flow, air flow or sensors over temperature will automatically close the gate valve to prevent damage to the sensor.



Water-cooled enclosure

ScanIR II

Optional Accessories (cont'd)



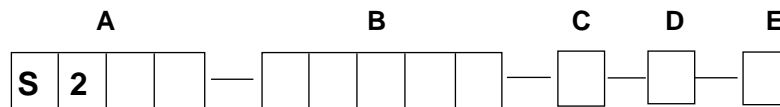
Gate valve and air purge



Sensor with L-bracket

Model Identification Blocks

The Iacon ScanIR II model number has blocks of digits which identify the instrument. The complete model number and serial number are shown on the rear panel of the sensor.



Example: Model Number S223-14F15-0-0-1

- 1.6 μm (micron) wavelength
- 50 Hz scan rate
- 750 to 1400°F temperature range
- D/150 optical resolution
- No Laser Installed
- English Labels
- 5 channels of Analog Output

Note: A "9" in any block of the model number indicates that the system is specially modified.

BLOCK A: Series (Spectral Response and ScanRate)

S 2 1 2	1μ and 25 Hz
S 2 1 3	1μ and 50 Hz
S 2 2 1	1.5 - 1.6μ and 10 Hz
S 2 2 2	1.5 - 1.6μ and 25 Hz
S 2 2 3	1.5 - 1.6μ and 50 Hz
S 2 3 1	2.1 - 2.4μ and 10 Hz
S 2 3 3	2.1 - 2.4μ and 50 Hz
S 2 4 1	3.2 - 3.5μ and 10 Hz
S 2 5 1	4.4 - 5.1μ and 10 Hz
S 2 5 3	4.4 - 5.1μ and 50 Hz
S 2 5 4	4.4 - 5.1μ and 100 Hz

BLOCK B - Temperature and Optical Resolution

S212 Series

2 5 F 3 0	1500 to 2500°F	D/300
3 2 F 3 0	1800 to 3200°F	D/300
1 3 C 3 0	815 to 1365°C	D/300
1 7 C 3 0	980 to 1760°C	D/300

S213 Series

1 6 F 1 0	1000 to 1600°F	D/100
2 2 F 2 0	1300 to 2200°F	D/200
2 5 F 2 0	1500 to 2500°F	D/200
3 2 F 2 0	1800 to 3200°F	D/200
0 8 C 1 0	540 to 870°C	D/100
1 2 C 2 0	705 to 1205°C	D/200
1 3 C 2 0	815 to 1365°C	D/200
1 7 C 2 0	980 to 1760°C	D/200

S221 Series

0 9 F 0 7	500 to 900°F	D/75
1 1 F 1 0	600 to 1100°F	D/100
0 4 C 0 7	260 to 480°C	D/75
0 5 C 1 0	315 to 595°C	D/100

S222 Series

2 2 F 3 0	1100 to 2200°F	D/300
1 2 C 3 0	600 to 1200°C	D/300

ScanIR II

Model Identification Blocks (cont'd)

BLOCK B - Temperature and Optical Resolution (cont'd)

S223 Series

1	2	F	1	0	650 to 1200°F	D/100
1	4	F	1	5	750 to 1400°F	D/150
2	2	F	2	0	1100 to 2200°F	D/200
0	6	C	1	0	350 to 650°C	D/100
0	7	C	1	5	400 to 760°C	D/150
1	2	C	2	0	600 to 1200°C	D/200

S231 Series

0	7	F	0	5	300 to 700°F	D/50
0	8	F	0	7	350 to 800°F	D/75
0	3	C	0	5	150 to 370°C	D/50
0	4	C	0	7	175 to 425°C	D/75

S233 Series

1	0	F	1	0	500 to 1000°F	D/100
1	4	F	1	5	600 to 1400°F	D/150
2	2	F	2	0	800 to 2200°F	D/200
0	5	C	1	0	250 to 550°C	D/100
0	7	C	1	5	300 to 750°C	D/150
1	2	C	2	0	425 to 1200°C	D/200

S241 Series

1	0	F	0	7	300 to 1000°F	D/75
0	5	C	0	7	150 to 550°C	D/75

S251 Series

0	8	F	0	7	100 to 800°F	D/75
1	4	F	1	0	250 to 1400°F	D/100
2	2	F	2	0	500 to 2200°F	D/200
4	5	F	2	0	1800 to 4500°F	D/200
0	4	C	0	7	35 to 425°C	D/75
0	7	C	1	0	120 to 760°C	D/100
1	2	C	2	0	260 to 1200°C	D/200
2	5	C	2	0	1000 to 2500°C	D/200

S253 Series

0	8	F	0	4	100 to 800°F	D/40
1	6	F	1	0	400 to 1600°F	D/100
2	2	F	1	0	500 to 2200°F	D/100
0	4	C	0	4	40 to 440°C	D/40
0	8	C	1	0	200 to 850°C	D/100
1	2	C	1	0	250 to 1200°C	D/100

S254 Series

1	6	F	1	0	400 to 1600°F	D/100
2	2	F	1	0	500 to 2200°F	D/100
0	8	C	1	0	200 to 870°C	D/100
1	2	C	1	0	260 to 1200°C	D/100

BLOCK C - Laser Aiming Option

0 No Laser

1 Laser Installed*

**Note: Factory-installed option only - not a user-installed option.*

BLOCK D - Language (Laser Option Warning Labels)

0 English

1 French

2 German

3 Italian

4 Spanish

BLOCK E - Analog Outputs and Alarms

0 None

1 Five Channels

2 Ten Channels

Operator Interface Functions

In addition to the Operator Interface Display screens, both the SpotMaster and ZoneMaster software include the following functions:

File Archive Operations

The Operator Interface Software lets you save image files onto the hard disk of the OI, and then load them whenever needed. Each file contains both setup data (for the Sensor/ Processor) and image data.

When you load a file as a "reference", settings that were current at the time the file was saved are loaded, both into the Sensor/Processor and into the OI. This lets you reconfigure the Sensor and the OI to a different setup in one easy step. Since you may have different processes running on the same line, this lets you switch from one process to another with little or no downtime. You can also load files without resetting the system, by loading an image as a file. This lets you view reference files without changing the settings in the Sensor itself. When using a split image screen, it also lets you compare file images to the current reference file, or two file images side-by-side.

ScanIR II

Operator Interface Functions (cont'd)

Image file saving capabilities

Snapshot (manual); Spot/Zone alarm based (automatic); Continuous "E" Scan (manual); Discrete part (automatic); Time based (automatic); and Save to file (converts screen image to industry standard J-PEG file format).

Spot or zone temperature values as displayed on the trending screen can be saved for future reference and display. They can also be exported in CSV format for import into spreadsheets, etc. for further analysis.

Multiple Sensors

The Ircon SpotMaster or ZoneMaster operator interface software can display live images and save data from two sensors simultaneously.

Multiple Sensor Switching

Multiple sensors can be networked for use with one operator interface. The operator interface software allows you to switch from one sensor to another through a simple on-screen dialogue box.

Print Support

Screen images can be printed using standard Windows NT functions, so no special printer is required.

Help Screens

Help screens are available throughout the operator interface software by pressing the "F1" function key.

Sensor Specifications

Scan Angle: 90° (adjustable)

Scan Rate (Sample Rate):

10 Hz (5000); 25 Hz (2000); 50 Hz (1000); 100 Hz (500)

System Response Time (at analog output):

@10 Hz, 0.100 to 60 seconds; @25 Hz, 0.040 to 60 seconds
@50 Hz, 0.020 to 60 seconds; @100 Hz, 0.010 to 60 seconds

Calibration Accuracy: $\pm 0.50\%$ of reading or 6°F(3°C), whichever is greater (reference conditions: 25°C, viewing blackbody $e = 1.0$, relative humidity 10 to 90% non-condensing.)

Repeatability: Within 0.3% of reading or 2 digits, whichever is greater (measured in spot mode).

Remote Focus Range: 24in (610mm) from face to infinity

Spectral Regions: 1 μ ; 1.5 - 1.6 μ ; 2.1 - 2.4 μ ; 3.2 - 3.5 μ ; 4.4 - 5.1 μ

Spot Size: Optical Resolution Element (ORE) = D/F (depending on model): F=50; F=75; F=100; F=150; F=200; F=300.

Scan Position Accuracy: ± 5 mrad

Detector Alignment Accuracy to Laser: ± 7 mrad

Signal Conditioning Filters: Maximum/Average/Minimum spot or zone temperature; Peak-Picker (Spot Mode) with adjustable decay rate (0 to 1000°F per second; 0 to 550°C per second)

Adjustable Response Time: Range determined by model.

Ambient Temperature Range: 32 to 130°F (0 to 55°C) without cooling; 32 to 212°F (0–100°C) with air purge/cooling jacket and water cooled face plate

Sensor Humidity: Limit 10 to 90% non-condensing

Vibration: IEC-68-2-6

Sensor Enclosure Construction: Designed in accordance with NEMA 12K and IP52 standards

Sensor Dimensions (W x H x L): 9.56 x 9.16x 13.79 in (243 x 233 x 350 mm)

Sensor Weight: 22 lbs. (10 kg)

POWER SUPPLY/PROCESSOR

Power Requirements: Auto switching 100–240 Vac, 50/60 Hz; 120 VA

Power Supply Size (W x H x D): 14.96 x 14.96 x 8.27 in (380 x 380 x 210 mm)

Weight: 25 lbs (12.2 kg)

Ambient Temperature Rating: 32 to 130°F (0 to 55°C)

Vibration: IEC-68-2-6

Shock: IEC-68-2-27

Humidity: 10-90% non-condensing

Enclosure: Designed to meet NEMA 12K, IP52

Maximum Power Supply to Sensor Cable Length: 1,000 ft (305 m) for series S212; S213; S221; S222; S223; S231; and S233; 500 ft (153 m) for series S241; S251; S253; and S254

Analog Outputs:

Maximum 10 channels (isolated). (One or two 5 channel cards.) Each channel provides 4-20 mAdc (switchable to 0-20 mAdc) outputs for temperature span selected

Current Output Rating: 4-20 mAdc switchable to 0-20 mAdc; 1000 Ω max. Common signal ground isolated from chassis ground

Output Relays Per Channel: One form-C relay output, rated at 24 V AC/DC; @1 Amp, resistive or inductive

ScanIR II

Power supply / processor (cont'd)

Peak Picker Reset Capability: Global peak picker reset via external contact closure

Sensor/System Alarm Contacts: Sensor ambient alarm; system alarm

Data Inputs Accepted: Temperature signal from sensor; Sync pulse from sensor; Sensor case temperature signal; Global peak picker reset; global emissivity (optional); Tachometer/speed Input (optional)

Digital Communications: RS-485, 19.2 kb

Communication with Operator Interface: Ethernet; 10Mbps with bnc connector

ScanIR II System Standards Compliance CE Directive:

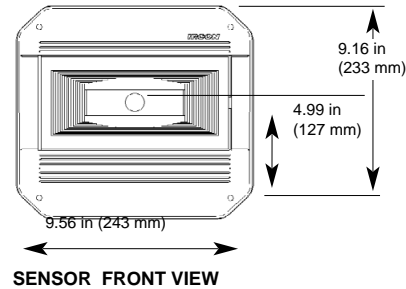
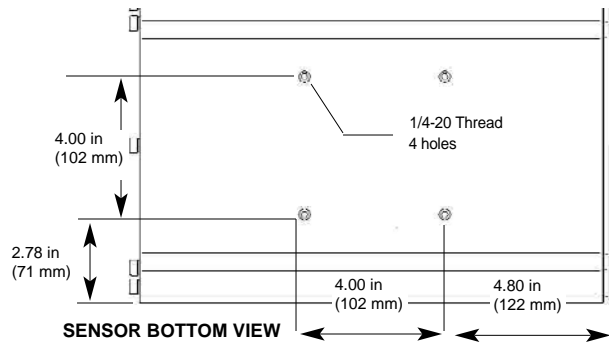
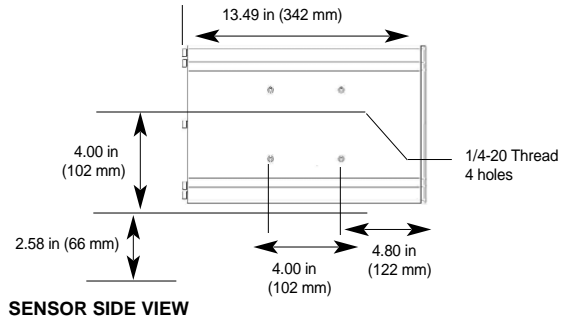
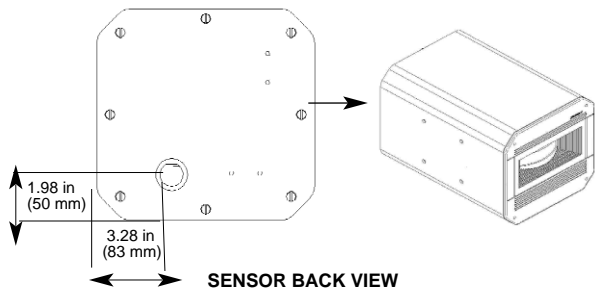
Ircon ScanIR II System meets EMC directive 89/336/EEC and Low Voltage directive 73/23/EEC

Ircon ScanIR II System has been tested to and meets the following: EN50081-2: Emissions Standard for Industrial Environment; EN50082-2: Immunity Standards for Industrial Environment; EN61010-1: Safety Requirements for Electrical Equipment for Measurement

NOTE: The following warning applies only to the optionally-installed laser alignment system:

LASER LIGHT - DO NOT STARE INTO BEAM

2.9mW max., <1.1 ms pulse 635nm
Class 2 Laser Product
per IEC 825-1 (1997)
and CDRH 21 CFR 1040



ISO 9001 : 2000
Quality System
Certified

NIST Calibration Provider



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