



Dynamax

IRT Infrared Temperature Sensor



Applications

- Fixed drip and sub surface irrigation
- Center Pivot Systems
- Crop Stress Management
- Crop Water Management
- Canopy Temperature Measurement
- Crop Water Stress Index
- Integrated Degrees above Non-Stressed Models
- Non-Contact Temperature Readings

Benefits

- Wireless Sensors
- No Internet Fees - WiFi Outputs
- Works With Other Loggers
- 20 Degree Field of View
- Analog, SDI12, and Wireless Versions
- Costs Half the Competition
- Developed Cooperatively with USDA-ARS

IRT Infrared Temperature Sensor



The new IRT infrared temperature sensor from Dynamax is the latest development in IR leaf temperature sensing for use in irrigation scheduling and plant stress detection. Analog, SDI12, and wireless versions of the IRT sensors are available. The IRT sensors may be distributed throughout a field and data collected with a single data logger, wireless Zigbee modem, SALH Stress Accumulator Data Logger, or through a wireless SapIP GSM system. Plant stress models like CWSI or iDANS are then used to determine if and when your crops need irrigation. Flags and set-points are used to indicate when irrigation is required. It is also possible to use the IR leaf temperature readings to calculate Chill Factors, Frost Warnings, Growing Degree Days, and more.

Dynamax IRT sensors read leaf temperature $\pm 0.5^\circ\text{C}$, has a complete Field of View of 20 degrees, and a distance to window ratio of 3:1. If the sensor is placed 3 feet from the plant leaves, it has a window field of view of 1 foot. The sensor may be placed several feet from the target. The IRT sensor itself is inside a weatherproof enclosure, with rechargeable battery, and comes with mounts included.

- **Each IRT sensor is self-contained**
- **$\pm 0.5\text{ C}$ accuracy over wide range of temperatures (0-50° C)**
- **IRT has 20 Degrees Field of View**
- **Weatherproof Enclosures, 2.5" X 2.5" X 14" long**
- **No Calibration Required**
- **Analog output 0-1.6 V**
- **5 ft. cable included, can be up to 75 ft. long**
- **Wireless versions include rechargeable battery**
- **Readings 6 times per min. with averages output, 1 min to 1 hour**

Wireless Version IRT – SPIP-IRT

The wireless IRT sensor is self-contained in a weatherproof enclosure with mounting brackets and rechargeable battery included. The IR sensor gives $\pm 0.5^\circ\text{C}$ accuracy, and needs no calibration. There are antenna options which give 50 m, 100 m, and 3-500 meter distance communications.

Analog Version IRT – SPIP-IRT-AD

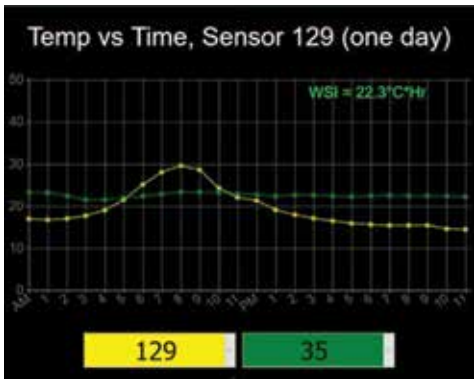
The analog version of the IRT sensor can be added to almost any data logger, and programming is similar to that of most air temperature sensors. The output is 0-1.6 volts with a calculated output of -40° to 120°C , and the cable may be up to 75 ft. long. The power for the IRT is provided by the data logger; either 5 volts or 12 volts, switched on 2 seconds before taking a reading.

SDI12 Version IRT – SPIP-IRT-SDI

The SDI12 version of the IRT sensor works with most SDI12 capable data loggers and devices. Commands and data are transmitted through a bi-directional serial data port. Several SDI12 IRT's may be connected in a row, depending on the type and power supply of the data logger. Typically, up to (10) SDI12 IRT's in a line will work.

SPIP-IRT	Zigbee Node Digital Data Stream	Wireless Transmission to Zigbee coordinators
SPIP-IRT-AD	Analog Module – Volts Output	Wired connect to SAPIP-RS9, or SAPIP-RS24 or any analog logger.
SPIP-IRT-SDI	Serial 3 wire Digital Data Stream	Wired transmission to loggers and SDI-12 field bus.
SPIP-RHT	RH & Air Temperature Sensor Kit	Transmit on Zigbee to SALH or Coordinator

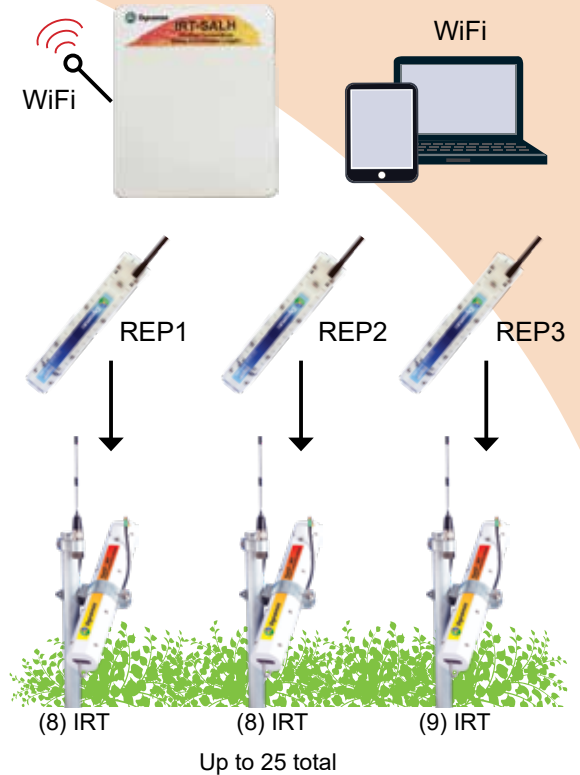
IRT SALH Stress Accumulator Logger



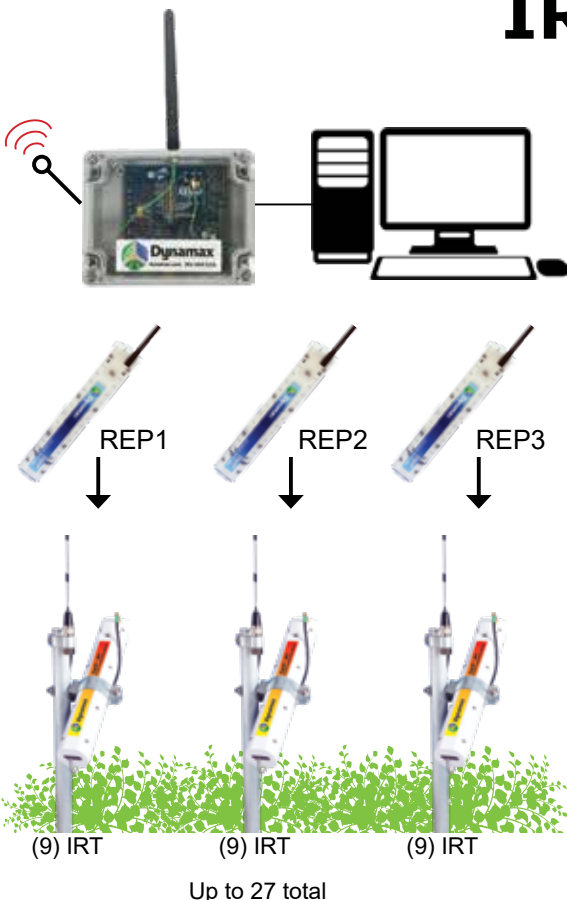
The Dynamax IRT SALH data logger system is a sophisticated data logger in a weatherproof enclosure which can be linked to repeaters to take data from up to (25) wireless IRT sensors. Up to one million records are stored in memory and data can be downloaded

to your smart phone or tablet using WiFi from up to 50-100 feet away. Data can also be set up with web access.

Software included gives you IRT commands and network control. You can control the system, collect data, and save files which can then be imported into spreadsheets for Crop Water Stress calculations. This system is excellent for use when fields to be monitored are a long distance away.



IRT Coordinator Network



The Dynamax IRT Coordinator Module handles up to (10) wireless IRT sensors directly, or add routers to expand the network and include up to (27) IRT sensors, which can be further away. Usually, the Coordinator is placed near a computer and a cable and antenna are mounted outside the window.



IRT Watcher software, after installation on your PC, has IRT commands and network control. You control the system, collect data, and save files which may be imported into spreadsheets for Crop Water Stress calculations. This system is excellent for monitoring fields near your office or for center pivot irrigation system controllers.

SapIP Wireless Networks with IRT

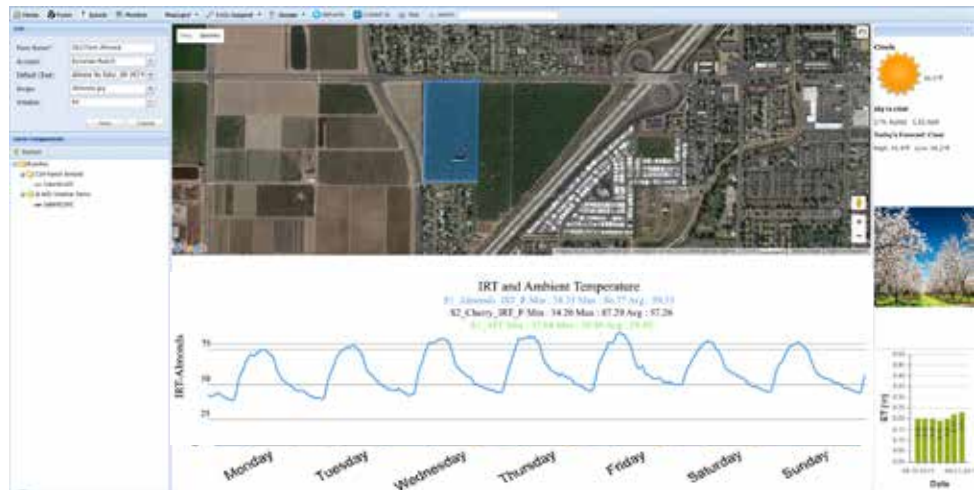


IRT sensors are integrated into a complete stand-alone system, or as part of a SapIP wireless mesh network. With the SapIP wireless network, you monitor plant water use, soil moisture profiles, weather, ET, and IRT leaf temperature, all through one SapIP system. Up to (15) SapIP nodes are connected via wireless with a single GSM modem. The nodes can be "daisy-chained" up to several levels deep. This allows for distances up to 2.5 to 3.0 miles radius to be monitored. All data, charts, and graphs are available at our web page, Agrisensors.NET.

Grower Dashboard – Map View

SapIP data is displayed on the AgriSensors web page "dashboard" in easy to read formats with custom graphs and charts. There is also a Google Maps image which shows the location of the SapIP nodes in the field. Data files can be downloaded to your PC, and then imported into spread sheets or other data analysis software.

- **GSM modem with web access, handles up to (15) SapIP nodes**
- **SapIP nodes may be spaced up to 1 mile (1.6 km) apart**
- **SapIP nodes may have up to 2, 4 or 6 IRT each**
- **Areas as large as 3 mi radius may be covered by a single SapIP Network**



Package	Part No.	Description
Choose 1	SPIP-24K SPIP-9K	2.4 GHz SapIP Kit with antenna 900 MHz SapIP Kit with antenna
Choose 1	SPIP-CS13-AD2 SPIP-CS13-AD4 SPIP-CS13-AD6	Cable for 2 analog sensors Cable for 4 analog sensors Cable for 6 analog sensors
Choose 2, 4, or 6	SPIP-IRT-AD	IR Leaf Temp Sensor Analog



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