



Dynamax

IR-TDoc™ Infrared Temperature Sensor

- Non-contact temperature screening
- Infrared forehead readings every 3 seconds
- Scan up to 10 persons with using one hub
- Data in Remote WIFI WEB access with all wireless data



We believe that crowd screening management will be much easier with the IR-TDoc™



Message from Mike Van Bavel, President of Dynamax

Dynamax introduced infrared temperature measurement sensors and monitoring systems over the last 8 years by working with the United States Department of Agriculture Cooperative Research Agreement (CRADA). The Dynamax Infrared Temperature (IRT) sensors are the result of many years of development to accurately determine the temperature of leaves in the canopy and to schedule irrigation with wireless networks. The CRADA development was completed in 2018 and has resulted in three IR temp sensors designs, with radio frequency RF relays, wired and analog sensors with narrow view scanning. By applying the remote detection and transfer of data through RF channels, Dynamax has introduced a very accurate and distributed remote system to monitor and access surface temperatures.

Now the nation and the global pandemic which causes illness through virus transmission has become a serious personal monitoring challenge. We have a great need to screen people entering businesses, factories, hospitals, schools, sporting events and airports. Clearly it's not possible to test all people in real-time for virus, except for a general temperature screening which can spot people who are actually ill and have a fever.

In our product announcement, we believe this is a major breakthrough in temperature screening for personnel. There are few or no remote IR temp monitors with the data transmission by a secure network on the market today. From our research, no IR cameras have the accuracy and repeatability of the IR-TDoc™. IR-TDoc™ system has major advantages over hand held IR sensors, since wireless data provides remote - hand held measurement.

IR-TDoc™ also displays the simulated internal temperature converted display.

Various technologies exist to estimate the internal body temperature of humans as a temple temperature, mouth, or forehead temperature screening methodology. While the internal temperature of a human is not a hundred percent determination of a virus infection it does



indeed screen people who are potentially ill and allows one to address those individuals with further tests and diagnostic. The diagnostic provided by this new IRT-Doc™ device is based on an infrared temperature scanned about 10 centimeters (4 inch) away from the forehead. Better accuracy is achieved by reading the temple temperature with a handheld IR-TDoc™ sensor.

Dynamax recommends two basic systems which are configured with five or ten infrared temperature scanning sensors which then transmit their data wirelessly to a micro- web server, IR-TDoc™ Server, which projects data through a virtual web interface. The data is converted from forehead temperature to a projected internal temperature. All of these temperatures are projected every 3 seconds on the graphic output, and color coded with audible alert, and text message alarms to signify people who are over the targeted temperature.

Factory Employee Entrance and Airport Screening - Applications



In application of the employee entrance or airport screener, one inspector may view the temperature display from the Dynamax IR-TDoc™ from all ten lines where each person is checked, entering the screening line or the x-ray for security scanning at the airport. The temperature inspector may be in a separate room, having a web-wifi laptop to do remote monitoring. Any of the physical inspectors, or a supervisor may screen a single or multiple line of temp scans simultaneously on a notebook or cell phone web browser. All temp channels data are monitored on the IR-TDoc™ Server, and temp warnings alert about fever issues. Each WIFI channel is available to a private IP address secured web page display. No physical contact is needed with the person being screened.

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IR-TDoc™ Introduction

The new IR-TDoc™ wireless infrared temperature system is the latest development in infrared body temperature sensing technology for monitoring applications in building, crowds or employee screening. The remote node module has a calibrated temperature sensor with many convenient applications and can be considered a general purpose surface temperature and forehead temperature sensor. As a fixed sensor on an adjustable tripod, people may be tested with no human intervention. Temple and forehead sensing is performed with the IR-TDoc™ moving in an exam room, entrance way by making portable applications. Each transmitter node is powered by internal batteries. Once the sensor is powered up, the readings are constantly transmitted every three seconds with no human intervention. The system is exceptionally easy to use, and requires nothing but a cellphone or computer (with WIFI) to read from any of the ten sensors. The server can be positioned within the Zigbee RF Range, 30 m or about 100 ft indoors. Servers can be locked up, but anyone with the IP address/password may view data.

IR-TDoc™ Operations

The new IRT (Infra-Red Temperature) module has a narrow field of aperture and has an embedded processor temperature controller for a calibrated digital signal. There are two sensor processors: one for the temperature reading signal processor, and the second one for controlling data format and transmission in the IR-TDoc™ sensor. The IR-TDoc™ server has two embedded processors: One for the radio reception and validations, and the second provides a CPU running the LINUX operating system with the Doc program. The LINUX/OS Doc program provides readings from the sensors, and makes a comparison to the reference body temperature. Since the sensors continuously transmit, the Doc makes a series of two to three readings to generate the final accurate reading. Nine seconds is the maximum time needed and the next person in a line may enter the Field of View (FOV). Four to five person readings per minute is typical, and ten sensors may scan 2400 to 3000 people per hour.

The Doc program performs the analysis and then transmits numbers and in color coded outline. If over the set limits, the Doc sends alarms by email/text message and by audible beeping. Doc saves diagnostic readings on a 2 GB memory stick, and will transmit LAN and WIFI results to any enabled cell phone or wireless laptop

IR-TDoc™ Accuracy

This module has a very accurate reading to $\pm 0.9^{\circ}$ F (0.5° C), is very stable over time. This new system allows small IRT nodes to be distributed throughout an office, and for its recorded data to be collected with a coordinator module then stored in a logger or transmitted to a display or controller. In ordinary circumstances, the accuracy at room temperature is $\pm 0.36^{\circ}$ F (0.2° C) forehead sensing.



Specifications Details

SPIP-IRTD0C-SY5 (5 Sensors)
 SPIP-IRTD0C-SY10 (10 Sensors)

Sensors

Each system contains (5 or 10) IR-TDoc™ sensors in a package

- Sensors includes IRT temperature sensor with narrow field 20 horizontal degree FOV (10 degree radius FOV)
- Transmitter included - range -30 yd (30 m) indoor to IR-TDoc™ Server
- Power consumption while transmitting -
- FCC ID: XBee-Pro Radio FCC ID MCQ-PS2CTH
- ± 0.9 F (0.5° C) accuracy over range of ambient 0-50° C.
- Weatherproof Enclosures: 2." x 2.4" x 14" length (5.0 cm x 6.0 cm x 35 cm)
- Weight: 1.17 lbs.
- Output for Sensors: Serial no., transmit sequence no., Battery V, Target temp. (C), Ambient temp.(C)
- Batteries included for five days service (5 V nominal)
- Charger (12 V) AC adapter for internal rechargeable batteries
- Antenna for Xbee - Radio 4"
- LED for power during sample data activity
- LED for transmit activity
- Mounting bracket / bolt for mounting vertical pole
- Transmit data every 3 seconds



Date 8/15/2019					
Nicols Scales Measurement				C. Deg	Range 85 C
IRT-SDI				NIST NO.	
Serial No 20747				CI229-23723-397	
Procedure NIST HB 205-43				B9518018	
Fluke 4181					
Standard Control Company 4247					
Service Temp 23 C.		Emissivity = 1.000			
Humidity 45%		Test Point-Standard		Before Read C.	After Read
Barometric 1012 mB		25		25.38	25.38
		30		30.20	29.50
		35		35.10	35.10
		40		40.10	40.10
		45		45.20	45.20
		50		50.16	50.16
		55		55.08	55.08
		60		60.12	60.12
		65		65.16	65.16
		70		70.22	70.22
		75		75.18	75.18
		80		80.26	80.26
				Correl / Std Dev. Avg.	

Server

IR-TDoc Sever (1) each for system data broadcast by WIFI

- Web Page Broadcast (WIFI)
- Server for 10 users
- IRT on Fixed IP address, with password.
- Data transmitted to WIFI 20 m, (60 ft indoor). 30 m outdoor(100 ft outdoor L.O.S.)
- High gain receive antenna on Zigbee channel data for 10 IR-TDoc units
- Display for 10 units, Degrees F or Degrees C.
- Enclosure (8" x 10" x 4")
- Transmitted data pages:

IR-TDoc Server Output

- Real-Time IR temp data from forehead with computed offset

Settings

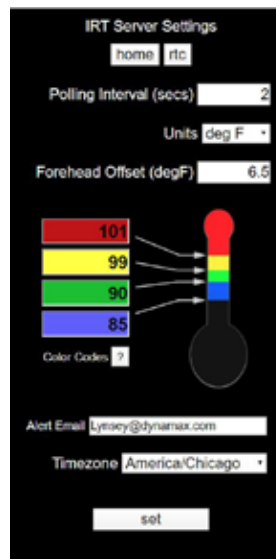
- F or C Deg. option. Setting: 4 - Temp. color warning graphics. Alarm Settings

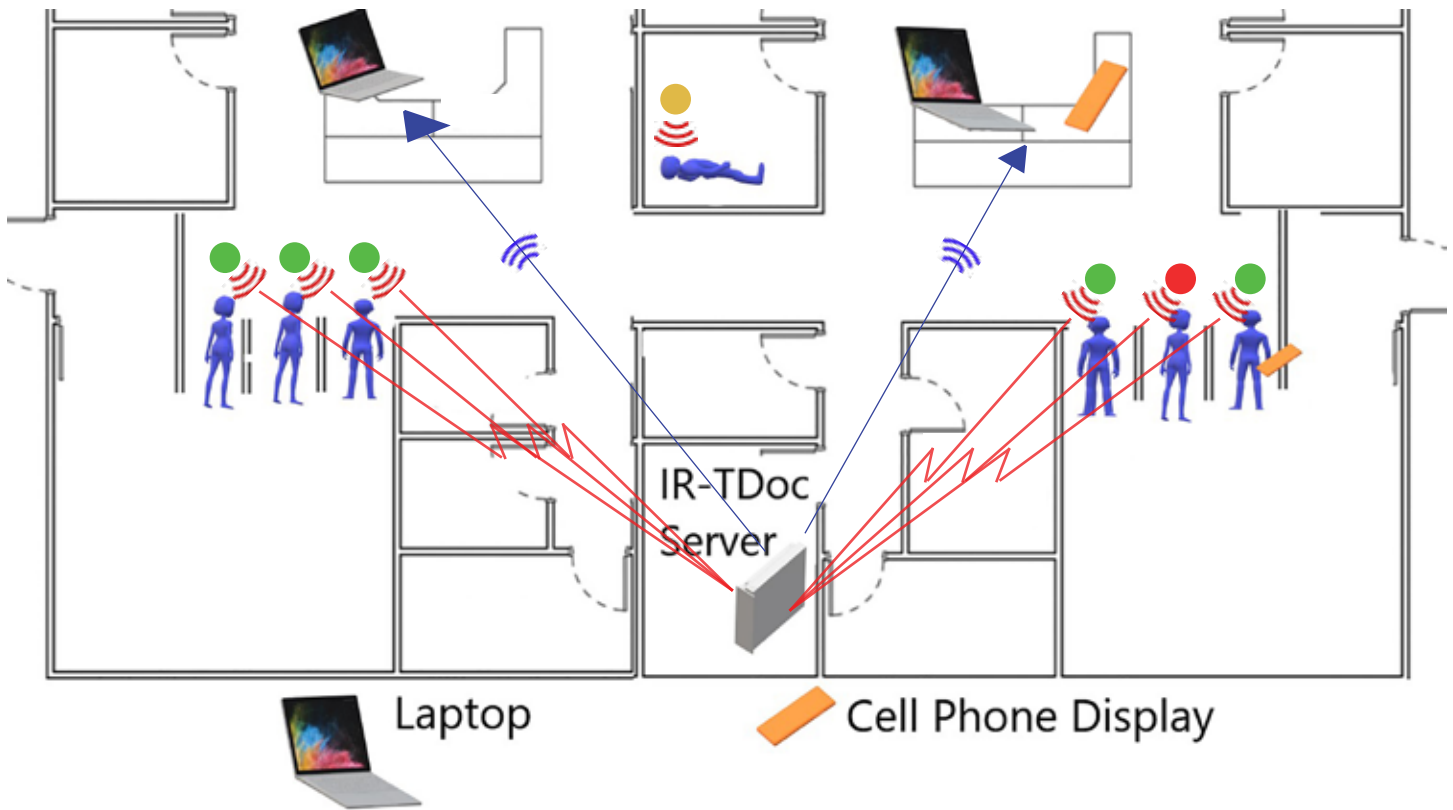
Graphics

- Upload graphics for building, screening area layout

History - Charts

- 1 minute averages for all data - communication and control diagnostics
- Tracking for sensor diagnostics





Installation - Support - Warranty

Each system is installed by Dynamax technicians and service providers. All temperature sensors include providing tripod pole install, and chargers installed for full continuous operation. Each IR-TDoc Sensor is mounted and IR-TDoc Server installed in the customer's location. All IR-TDoc sensor transmitters are tested and links are provided so each customer's laptop or workstation and at least one cell phone communicates with an operational WIFI link to the server.

Installation is provided in these areas with no charge for travel:

- Texas
- California
- Washington
- Oregon
- Idaho

Other locations will include install with a travel cost added, or on-line support. Dynamax will provide unlimited technical support for any technical questions. Limited Warranty is provided for 1 year on all Dynamax products.



Doctors Office or Hospital Application

In a new application, a portable screening IR-TDoc™ may be projected on the nurses or doctors cell phone display in a number of exam rooms. At the same time, an entry way screener is available to all patients or hospital personnel entering the facility, while the receptionist scans each person. If anyone is above an example target of 100.5 F, the bleeping alarm alerts the reception to see the temperature details, and requests the person to move to a secure area. An alarm target temperature may be adjusted remotely as well.

Hospital and doctors offices are congregation areas for patients, and some screening is required. In most cases with the global Corona-19 pandemic, the hospital screenings require a tent outside with a dedicated person to use a hand held device. We believe this IR-TDoc™ application is easily resolved, with a receptionist monitoring incoming patients or workers through a glass-separation window.

Schools, Sporting Events and Transportation



Every door, ticket line and entry way in these applications needs to be screened. A single line would congregate a crowd, and instead organizers can direct people to ten lines each scanned by IR-TDoc™, with each person taking about 6 seconds. Each person needs to remove glasses, and a face mask, and will normally be scanned indoors or under a tent away from the sun. As each person is scanned in seconds a new person lines up 4-5 seconds later; in fifteen minutes it is possible to clear 900 people. We believe this procedure is an innovation that handles large crowds.

Virtual links with WIFI and personnel screening

Our application has a great benefit with all data viewable with a web page format available to any cell phone, notebook, and WIFI enabled laptop. The customer supplies the viewing device, which is customized by Dynamax server to display data.

Dynamax expects that all of these applications are easy to use with the IR-TDoc™. Our product delivery comes with “kid” and people friendly facial targets to instruct persons where to position their face to get accurate readings from the sensor. These target placards are not necessary for operation, but add a beautiful Nurse or Doctor face to tell folks with hospitable directions how to get good measurement.

Making the future safer and society more efficient

I hope that you find the IR-TDoc™ more efficient and very easy to operate. The instrument makes your factory, store or medical facility safer for everyone. Please let us know about how this product may be improved, and when there is something that we can do to make your operation healthy for all your clients and employees.

Sincerely,
Michael van Bavel
President
Dynamax Inc



System and Customer Requirements

IR-TDoc Server Communication

System Install requires the customer to provide one or more workstation or Laptop. PC with LAN connection and one added WIFI channel. IR-TDoc uses the Wifi channel./ Customer may operate LAN for normal apps. Each workstation needs to have antenna range to within 90 ft of Server. Each workstation needs operating speakers.

IR-TDoc Server:

LAN cable operation is required for email notification. One AC 120 V / 220 V power connection

Browser Required on PC or Laptop:

Recommended and tested by Dynamax:

Explorer, Safari, Chrome, FireFox

Each IR-TDoc needs an AC outlet within 15 ft for 24 /7 days operation

Hand held sensors will run 5 days on a full charge, and 24 hours needed for recharge.

Ordering Information

IR-TDoc-S1	IR T Doc Sensor - 1	IRT Sensor - XBee RF 1 ea. Temp Pricing Allocation, with Batteries, Charger, Antenna 4 in, Screening application for personnel. Tripod included.
IR-TDoc-SYS5	Temp Sen Assy- 5 IRT+ Server	Digital Infrared Temperature Sensor Screening Assembly 5 units IR-TDoc, Server, all with tripods, antennas, and chargers With Installation and Client Programs
IR-TDoc-SYS10	Temp Sen Assy - 10 IRT + Server	Digital Infrared Temperature Sensor Screening Assembly 10 units IR-TDoc, Server, all with tripods, antennas, and chargers With Installation and Client Programs



Dynamax

Dynamax Fresno CA Office
Sales: (561) 324-5989
Service: (559) 770-0000
eric.pena@dynamax.com

10808 Fallstone Road
Suite #350
Houston, TX 77099
(281) 564-5100
Toll Free: 1-800-896-7108
admin@dynamax.com
www.dynamax.com

Dynamax NW Region Office
44491 West Airport
Baker City, Or 97817
(509) 494-9606
KarlW@dynamax.com