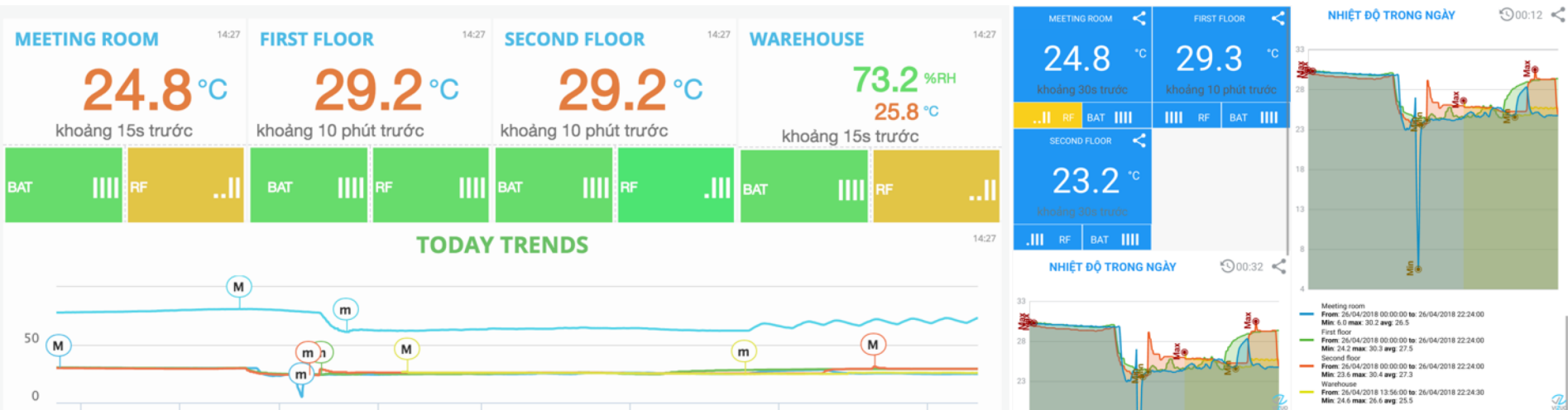


daviteq

Build an Environment Monitoring System based on IoT Platform - Globiots

Prepared by Engineering Department – Oct/2017



www.daviteq.com

PART 1 – GENERAL INTRODUCTION

Monitor environment for warehouse of many industries



Aquatic



Vegetables



Dairy



Agriculture



Seeds



Pharmaceutical



Vaccine



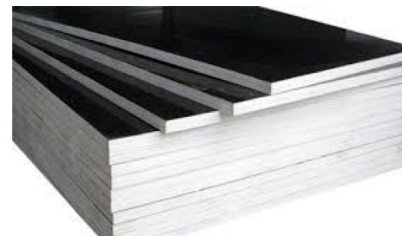
Medical materials



Chemicals



Electronics



Wood



Data center

Monitoring Categories

1. Mobility Monitoring: Cool/Cold trucks, vaccine carrying case...



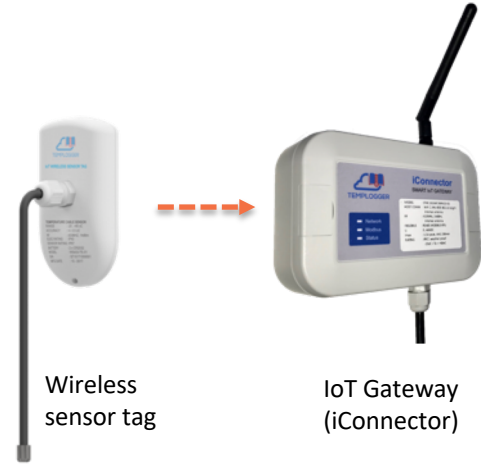
2. Stationary Monitoring: Warehouse, Cold/Cool Container, Fridge, Freezer...



Monitor in just 02 steps

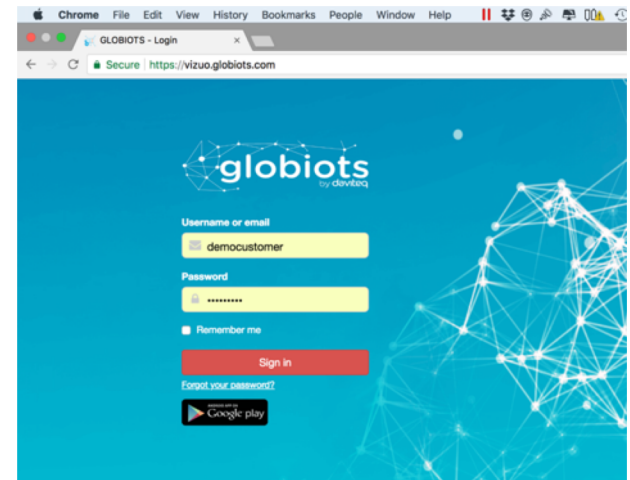
1

Connect wireless sensor tags to iConnector



2

Log in Web based portal for configuration & use



iConnector connect to Server Globiots

Customer can choose either option 1 or option 2 as below:

1. Server Globiots will be placed in your factory/office



OR

2. Cloud Server Globiots is placed on Largest Data center in Vietnam, operated and maintained by Daviteq Company.



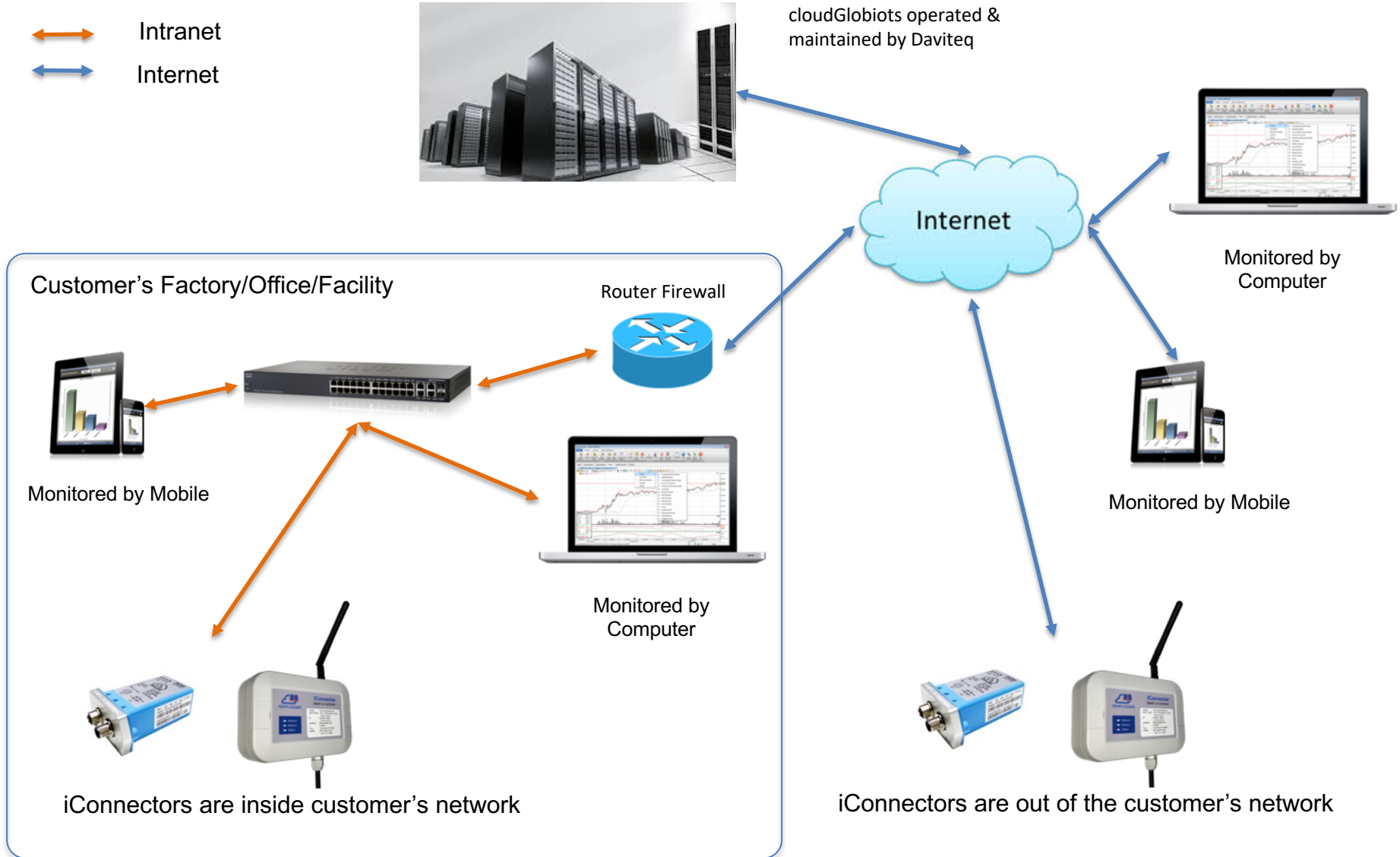
iConnectors

System Architecture for Cloud Globiots System

↔ Intranet
↔ Internet

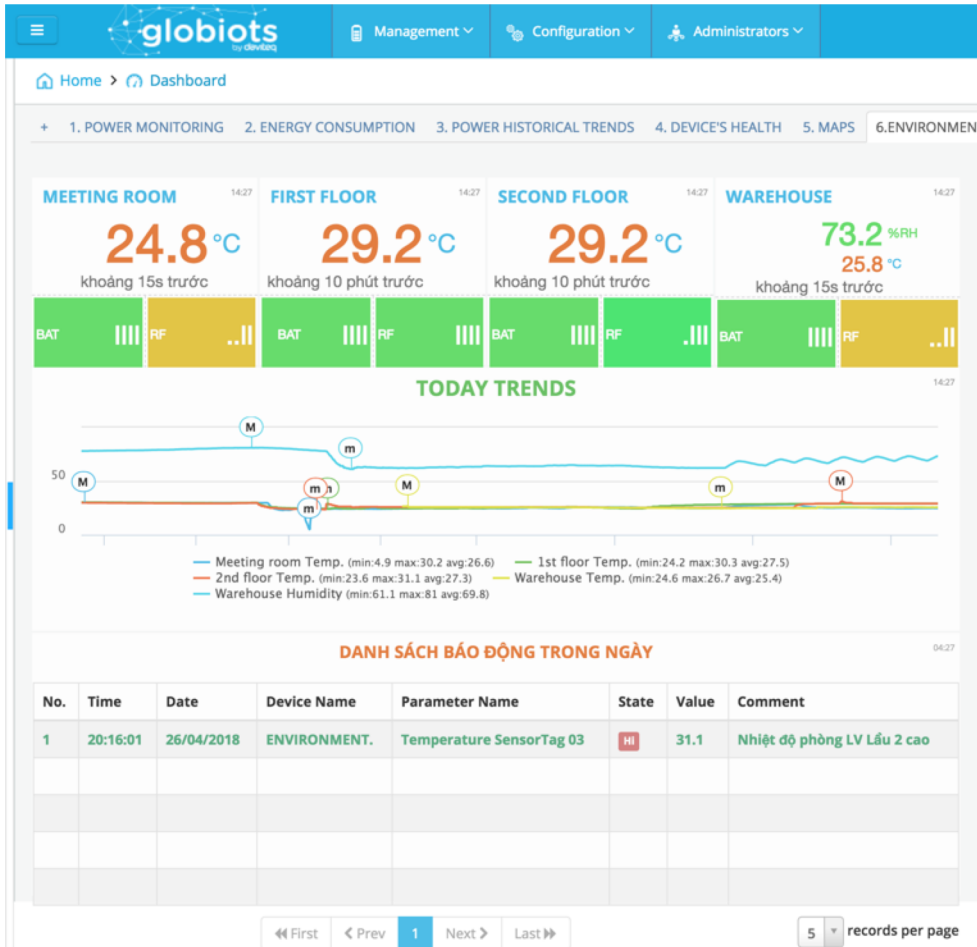


cloudGlobiots operated & maintained by Daviteq



Web based Software - Vizuo

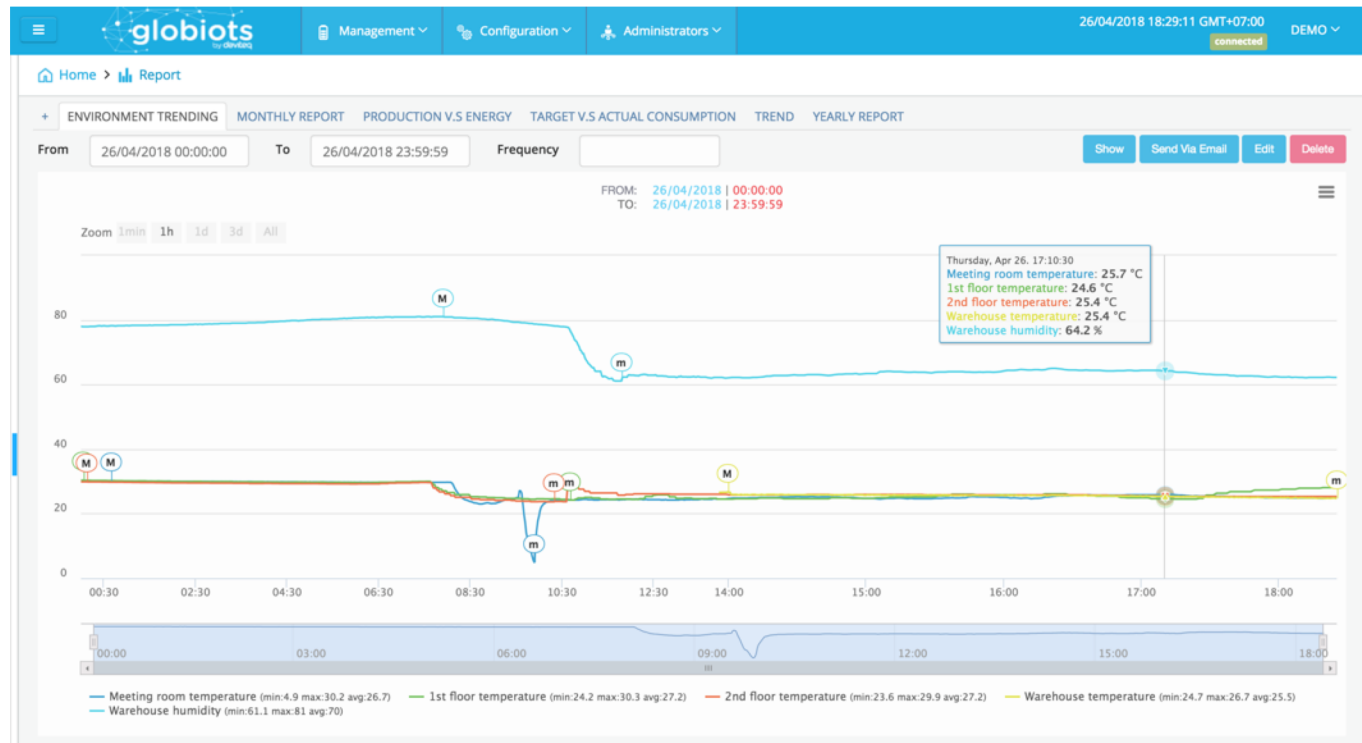
DASHBOARD



- User can create multiple Tabs, depends on applications;
- Each tab can be added multiple Widgets to visualize Realtime data, Historical data, both Raw and Analyzed data;
- To see Data updating status;
- To see Healths of iConnector and Sensor tags
- To see the Max, Min, AVG values on Trends;
- Alarm List View;
- Event List View;

Web based Software - Vizuo

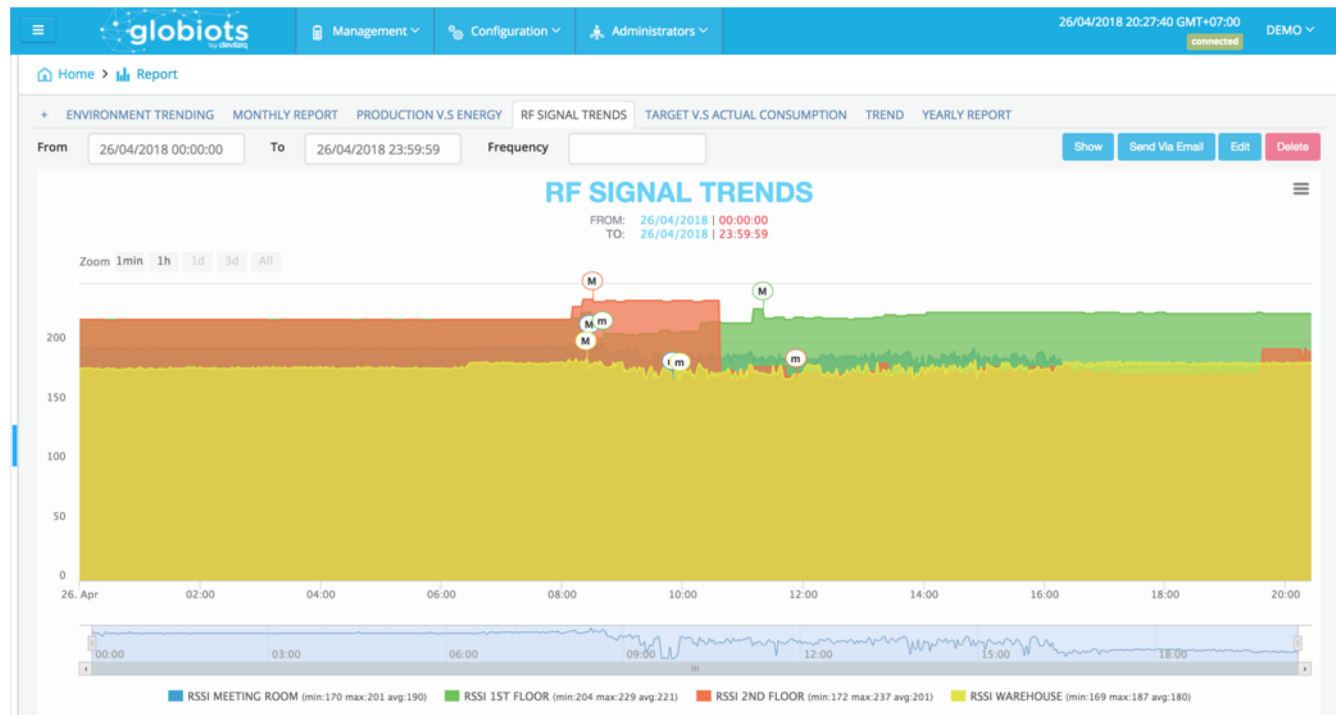
HISTORICAL TRENDSINGS



- User can view any historical data;
- Can select time frame;
- Point the pointer to view values and time stamp;
- Allow Zoon in, out, Pan;
- Enable/Disable Parameters;
- Sending email or exporting to CSV files;
- Can create multiple Tabs of trending, report;

Web based Software - Vizuo

MONITOR THE RF STRENGTH SIGNAL OF WIRELESS SENSOR TAGS



- User can view the historical RF signal of wireless sensor tag to check the place is good or not?

Web based Software - Vizuo

ALARMS MANAGEMENT

Home > Alarm Management > History

Alarm Management

Summary Detail History

Device: ENVIRONMENT.

Today Yesterday Last 3 days Custom

From: 26/04/2018 To: 26/04/2018 Show Export

No.	Time	Date	Device Name	Parameter Name	State	Value	Comment	Solution	User
1	20:18:29	26/04/2018	ENVIRONMENT.	Temperature SensorTag 03	HI	31.1	Nhiệt độ phòng LV Lầu 2 cao		democustomer
2	20:16:01	26/04/2018	ENVIRONMENT.	Temperature SensorTag 03	HI	31.1	Nhiệt độ phòng LV Lầu 2 cao		

« First < Prev 1 Next > Last »

records per page

Red color line: the temperature value was exceeded the threshold at 20:16:01

Green color line: at 20:18:29, the user did acknowledge the alarm and solved this problem

Web based Software - Vizuo

EVENT MANAGEMENT

globs

Management Configuration Administrators

26/04/2018 21:59:37 GMT+07:00 connected DEMO

Home > Event Management > History

Event Management

History

Device: ENVIRONMENT.

Today Yesterday Last 3 days Custom

From: 26/04/2018 To: 26/04/2018 Show Export

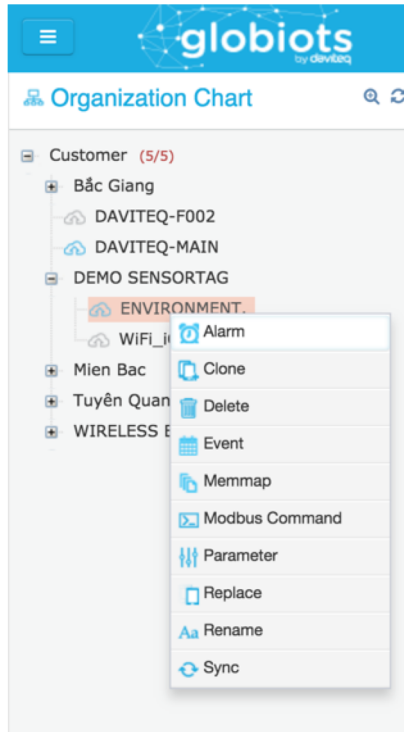
No.	Time	Date	Device Name	Event ID	Priority	Event Name	Status	Parameter	Parameter Value	Comment
1	21:40:12	26/04/2018	ENVIRONMENT.	1	10	Mất kết nối với cảm biến nhiệt độ phòng họp	FALSE	Temperature SensorTag 01 (2002)	24.8	Mất kết nối với cảm biến nhiệt độ phòng họp
2	21:40:09	26/04/2018	ENVIRONMENT.	1	10	Mất kết nối với cảm biến nhiệt độ phòng họp	TRUE	Temperature SensorTag 01 (2002)	24.8	Mất kết nối với cảm biến nhiệt độ phòng họp

Line 2: Sensor was disconnected at that time,
the reason can be low battery or weak signal

Line 1: Sensor was connected again

Web based Software - Vizuo

MENU to CONFIGURE an IoT GATEWAY - iConnector

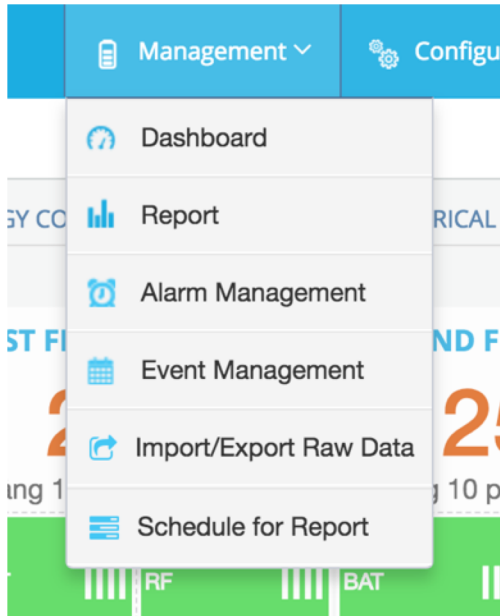


If user was authorized to configure iConnector, then user would do the followings:

- **Alarm:** to configure the alarm threshold for any parameters, for examples temperature, humidity, battery, RF signal...
- **Clone:** to create a copy of iConnector;
- **Delete:** to delete iConnector out of the system;
- **Event:** to configure the event for any parameters, for example sensor lost connection...
- **Memmap:** this is advanced configuration of iConnector;
- **Modbus command:** to configure Modbus command for iConnector
- **Parameter:** to configure the parameters of iConnectors, for example temperature, humidity, battery, RF signal,...
- **Replace:** to replace the iConnector in case of failure;
- **Rename:** rename for iConnector;
- **Sync:** to synchronize the configuration of iConnector once it's configuration is updated;

Web based Software - Vizuo

MENU MANAGEMENT

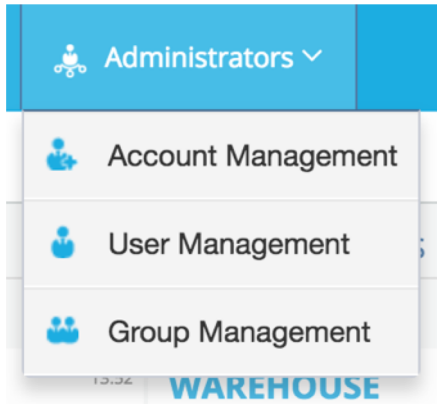


If user was authorized to use this menu, then user would do the followings:

- **Dashboard:** is the main interface for users, user can create the tabs, widgets in tab. Each tab can have different purpose. Data to be displayed can be Realtime or Historical, can be Raw or Analyzed;
- **Report:** allow user to view historical trending, pre-defined reports;
- **Alarm Management:** allow users to view the list of alarms, user can export alarm list to excel file;
- **Event Management:** allow users to view the list of events, user can export event list to excel file;
- **Import/Export raw data:** allow user to import or export raw data to excel of csv file;
- **Schedule for report:** user can schedule a daily report to be sent via email to any user emails;

Web based Software - Vizuo

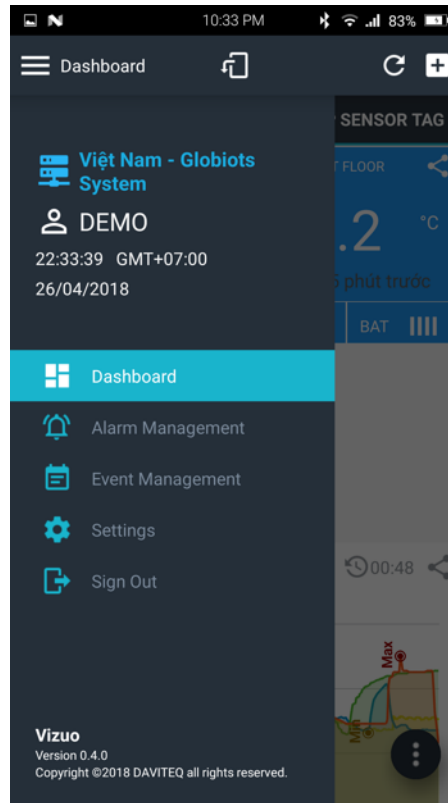
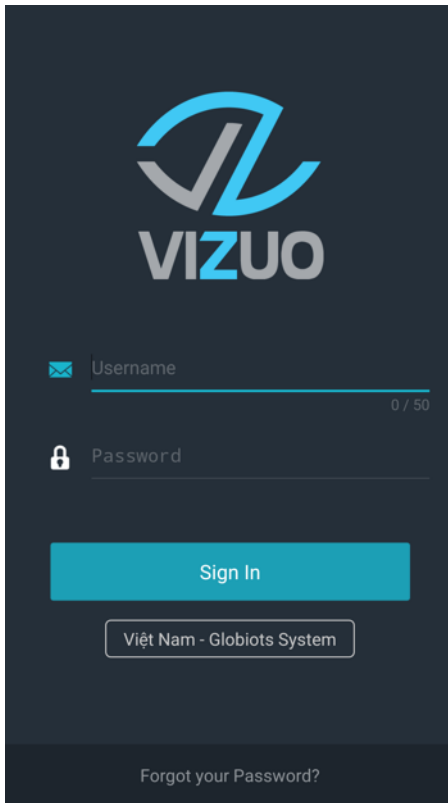
MENU ADMINISTRATION



If user was authorized to use this menu, then user would do the followings:

- **Account Management:** to create accounts and sub-accounts;
- **User Management:** to create users in each account;
- **Group Management:** allow to create functional groups, assign user to group;

Android Vizuo Software



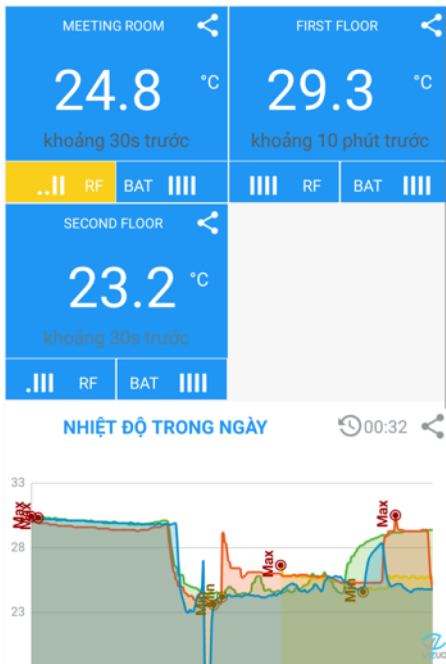
Android Vizuo software have the same functions as in Web based Vizuo

- Dashboard: allow to create multiple tabs and widgets;
- Alarm Management;
- Event Management;

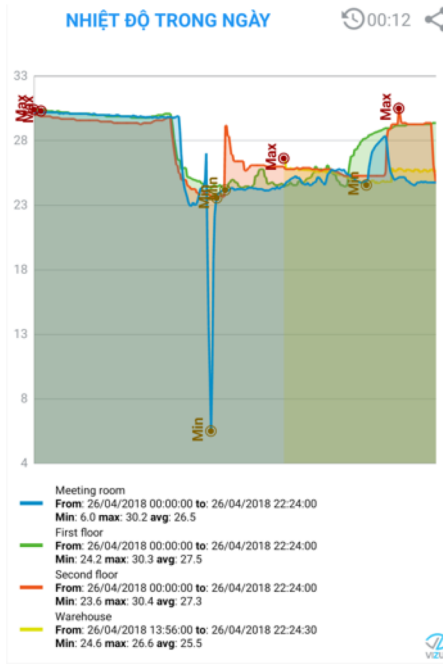
But Android Vizuo does not have the following functions:

- iConnector configuration;
- Configuration for Alarm, Event;
- Administration;
- Other configurations;

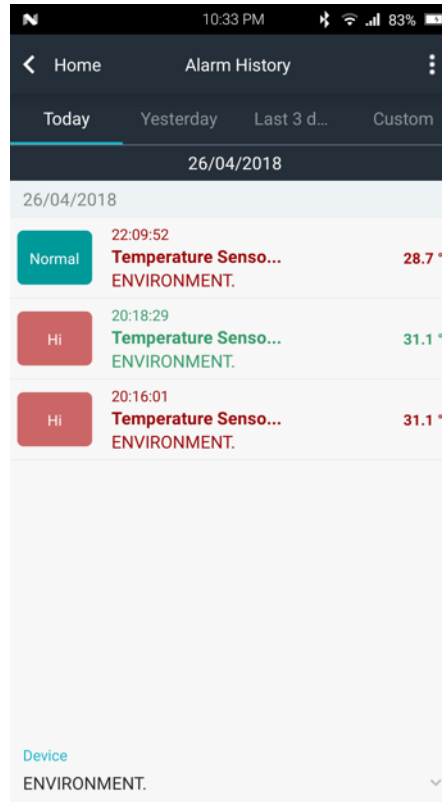
Android Vizuo Software



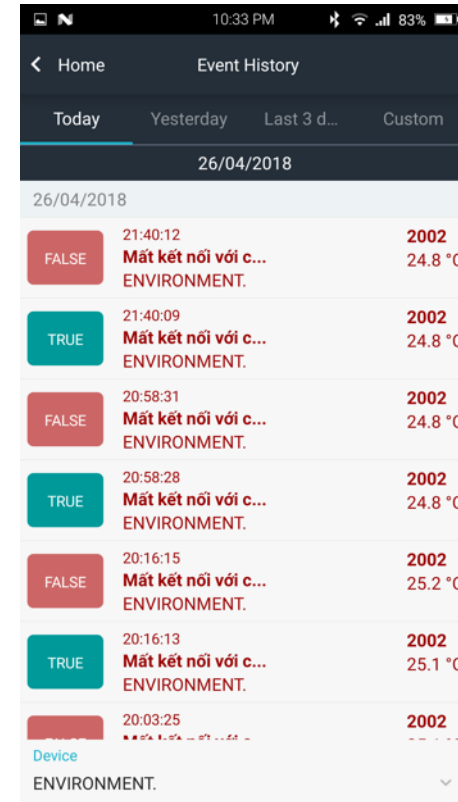
Viewing Realtime values



Historical trending



Alarm Management



Event Management

PART 2 – SENSORS & HARDWARE

Portable Cellular Sensors for Carrying case or Fridge

Cellular Temperature sensor is placed inside the box



Using an IoT gateway with built-in temperature/humidity sensor with LiPo battery, powered up to 08 days.

Ordering code: STHC-ISG02-T1 or STHC-ISG02-TH1

NOTES:

- The box must be made from non-metal material or half metal & half non-metal so that the RF signal can go through;
- If the box was made from metal then the IoT Gateway would be placed outside, but the sensor head is inside (select the one with extension sensor head).

Portable Cellular Sensor Specification



Specification:

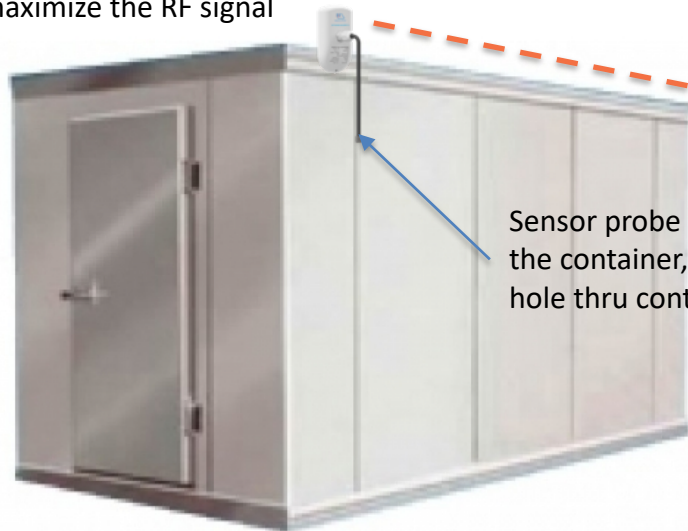
- Host connection: 3G Dual Band
- Antenna GSM: internal
- Functions: Measure 1 channel of temperature or humidity, stored in EEPROM and sending to server, Alarm/Event processing;
- Integrated temperature sensor: accuracy +/- 0.5 degC in range -20 .. + 60 oC
- Or integrated humidity sensor: accuracy +/- 2% RH in range 0..95% RH
- EEPROM memory: 1.7MB (= 140,000 records of measurement)
- LiPo battery: 2000mAh, working upto 08 days (depends on configuration)
- Rating: IP67
- Material: Poly-carbonate plastic, anodized A6061 aluminum
- Working temperature: -20 .. + 60 oC
- Dimension: 110x75x40mm
- Weight: <= 200g

Ordering code

STHC-ISG02-T1	iConnector 3G-DB, internal antenna, with 01 x ambient temperature sensor, 2000mAh LiPo, M12 charger cable, IP67 rated
STHC-ISG02-TH1	iConnector 3G-DB, internal antenna, with 01 x ambient humidity sensor, 2000mAh LiPo, M12 charger cable, IP67 rated (except sensor head)

Measuring temperature/humidity in Closed metallic container

Sensor tag is placed at the top of container, top of sensor housing is 40mm higher than the top edge of container wall to maximize the RF signal



433Mhz wireless

Sensor probe must be put inside the container, by open a 10mm hole thru container wall

METHOD 1 – USING WIRELESS SENSOR WITH INTERNAL ANTENNA



Using wireless sensor tag with internal antenna 3dbi

- Industrial cold containers are made from metallic materials, therefore the RF signal can not goes through;
- Wireless sensor tag must be placed outside, only the sensor probe goes inside;
- Make a small hole on the wall of container so that the sensor probe can get through, then the hole can be filled by silicone glue.

Using a wireless sensor co-ordinator with or without IoT gateway

WiFi IoT Gateway: STHC-ISGWF

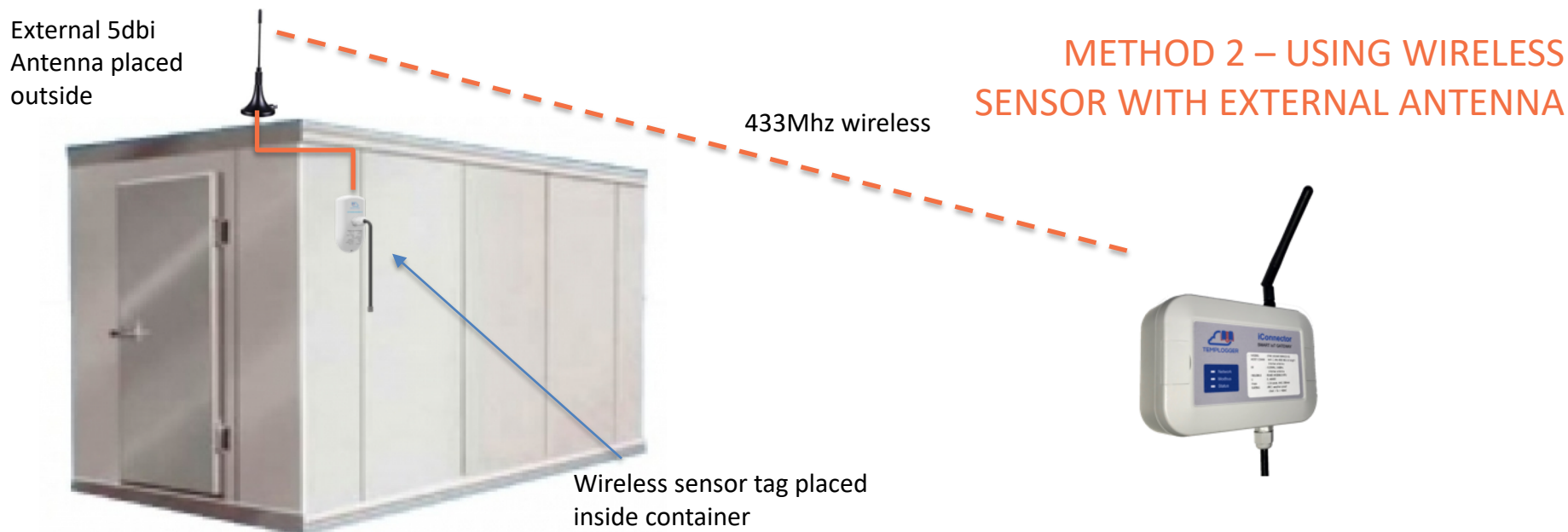
Wireless sensor co-ordinator: WR433-03

Or WiFi iConnector with built-in RF

Receiver: STHC-ISGWF/WR433-01

Ordering code: WS433-TE-01 or WS433-TH-01

Measuring temperature/humidity in Closed metallic container



Using wireless sensor tag with external antenna 5dbi

- Industrial cold containers are made from metallic materials, therefore the RF signal can not go through;
- Must use wireless sensor tag with external antenna;
- Make a small hole on the wall of container so that the antenna cable can get through, then the hole can be filled by silicone glue.

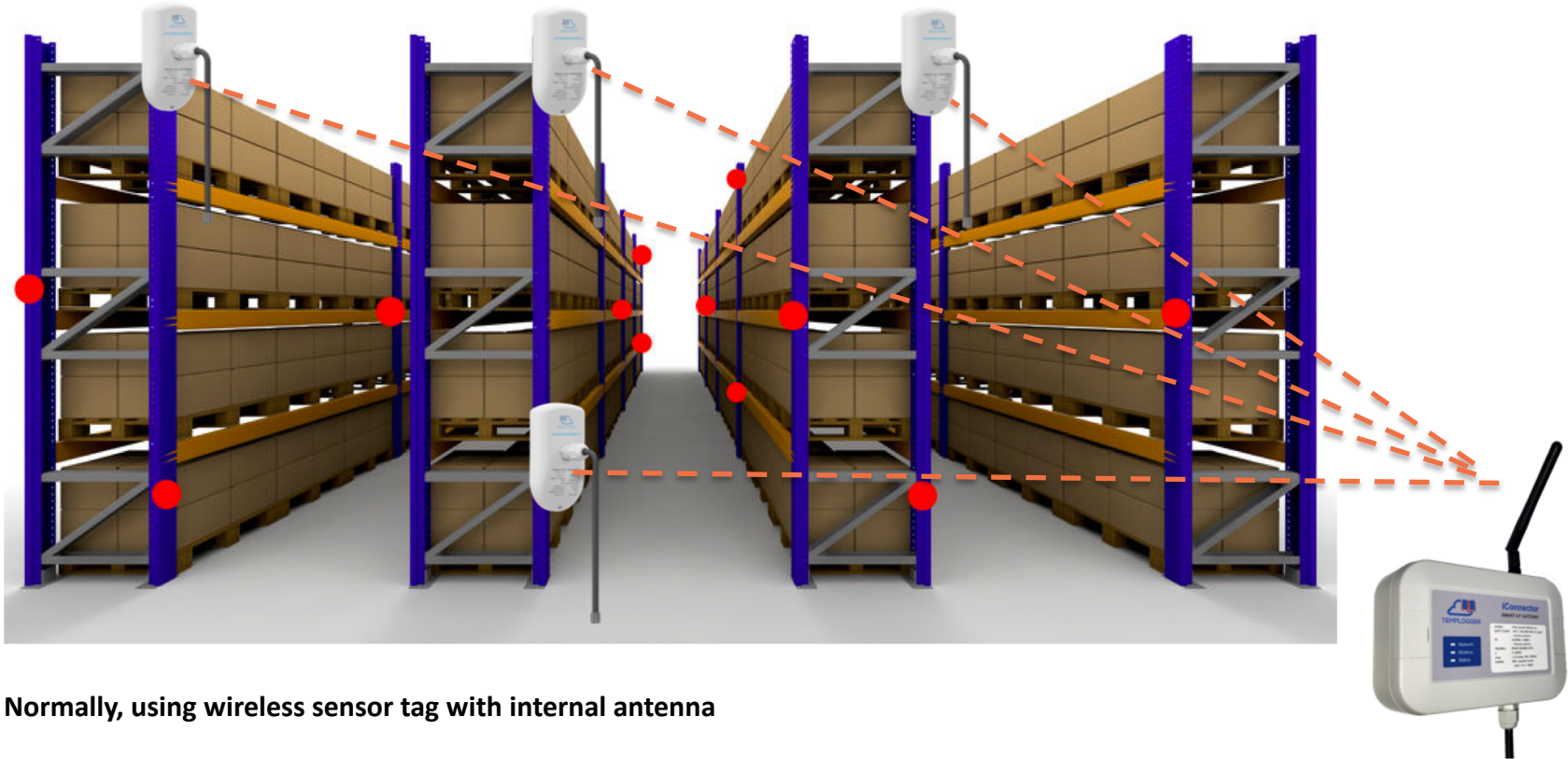
Ordering code: WS433-TE-02 or WS433-TH-02

Using a wireless sensor co-ordinator with or without IoT gateway

WiFi IoT Gateway: STHC-ISGWF
Wireless sensor co-ordinator: WR433-03

Or WiFi iConnector with built-in RF Receiver: STHC-ISGWF/WR433-01

Measuring temperature/humidity in open space



Normally, using wireless sensor tag with internal antenna

Ordering code: WS433-TE-01 or WS433-TH-01

For farer distance, consider to use sensor tag with external antenna

Ordering code: WS433-TE-02 or WS433-TH-02

Using a wireless sensor co-ordinator with or without IoT gateway

WiFi IoT Gateway: STHC-ISGWF

Wireless sensor co-ordinator: WR433-03

Or WiFi iConnector with built-in RF Receiver: STHC-ISGWF/WR433-01

Temperature wireless sensor tag – Internal antenna



Specification:

- Sensor probe: Digital type, factory calibrated, IP67, cable length 150mm. Sensor probe can be immersed in ice water for quick validation
- Sensor measuring range: -40°C to 85°C
- Accuracy: +/- 0.5°C
- Resolution: 0.125°C
- Wireless speed: Max 50kbps;
- Distance, LOS: 400m
- Antenna: 3 dbi internal antenna;
- Battery: 01 x CR2032, working time 2..5 years (depends on configuration)
- Frequency: 433Mhz, Sub-1GHz technology from Texas Instrument;
- Receiving sensitivity: -110dBm at 50kbps
- Transmit power: : 14dBm, 25mW
- RF Compliance:
 - ETSI EN 300 220, EN 303 204 (Europe)
 - FCC CFR47 Part15 (US)
 - ARIB STD-T108 (Japan)
- Security: AES-128
- Working temperature: -20°C..+60°C (with battery installed)
- Housing: ABS plastic, IP40;
- Dimension: 100x58x11mm (electronics housing only);
- Installation method: 3M double sided tape (included)
- Net Weight: < 70g
- Package dimension: 110x90x70mm
- Gross Weight: 94g

Ordering code

WS433-TE-01

Wireless ambient temperature sensor, IP67 sensor head, IP40 housing, -20 .. + 60oC, CR2032 battery

Humidity wireless sensor tag – Internal antenna



Specification:

- Sensors: RH Digital type, factory calibrated, with built-in temperature sensor
- RH measuring range: 0 .. 100 %RH
- RH Accuracy: +/- 2.0%
- RH Resolution: 0.1%
- Temperature measuring range: -40 .. + 85 oC
- Temperature accuracy: +/- 0.2 oC
- Temperature resolution: 0.1 oC
- Wireless speed: Max 50kbps;
- Distance, LOS: 400m
- Antenna: 3 dbi internal antenna;
- Battery: 01 x CR2032, working time 2..5 years (depends on configuration)
- Frequency: 433Mhz, Sub-1GHz technology from Texas Instrument;
- Receiving sensitivity: -110dBm at 50kbps
- Transmit power: : 14dBm, 25mW
- RF Compliance:
 - ETSI EN 300 220, EN 303 204 (Europe)
 - FCC CFR47 Part15 (US)
 - ARIB STD-T108 (Japan)
- Security: AES-128
- Working temperature: -20°C..+60°C (with battery installed)
- Housing: ABS plastic, IP40;
- Dimension: 100x58x11mm (electronics housing only);
- Installation method: 3M double sided tape (included)
- Net Weight: < 70g
- Package dimension: 110x90x70
- Gross Weight: 84g

Ordering code

WS433-TH-01

Wireless ambient relative humidity & temperature sensor, IP40 housing, -20 .. + 60oC, CR2032 battery

Temperature/Humidity wireless sensor tag – External antenna

Specification:

- Temperature sensor: Digital type, IP67 head, sensor cable is 150mm;
- Humidity sensor: internal;
- Measuring range: -40°C to 125°C / 0..95% RH cho độ ẩm
- Accuracy: +/- 0.5°C in range -20°C to 100°C / +/- 2% for RH
- Resolution: 0.125°C / 0.1% RH
- Data speed: Max 50kbps;
- Max LOS distance: 400m
- Antenna: external antenna 5 dbi with 1m cable, with magnet and double-side 3M tape for mounting;
- Battery: 01 x CR2032, working time upto 5 years (depends on configuration)
- Frequency: 433Mhz, Sub-1GHz wireless technology from Texas Instrument;
- Receiving sensitivity: -110dBm at 50kbps
- Transmit Power: : 14dBm, 25mW
- Global Frequency compliance:
 - ETSI EN 300 220, EN 303 204 (Europe)
 - FCC CFR47 Part15 (US)
 - ARIB STD-T108 (Japan)
- Security: AES-128
- Working temperature: -20°C..+60°C (with battery in place)
- Rating: IP40;
- Dimension: 100x58x11mm;
- Installation method: double sided 3M tape, flat surface
- Weight: < 100g



External antenna 5dbi with 1m cable

Ordering code

WS433-TE-02	Wireless ambient temperature sensor, IP67 sensor head, IP40 housing, -20 .. + 60oC, CR2032 battery with external antenna 5 dbi
WS433-TH-02	Wireless ambient humidity sensor, internal sensor, IP40 housing, -20 .. + 60oC, CR2032 battery with external antenna 5 dbi

WiFi iConnector with built-in RF Receiver



Specification:

- Host connection: WiFi 802.11 b/g/n, 2.4Ghz
- Design: Ultra low power
- Protection: IP54
- Operating temperature: -20 .. + 85 oC
- Built-in Wireless receiver:
 - Frequency: 433Mhz, Sub-1GHz technology from Texas Instrument;
 - Receiving sensitivity: -110dBm at 50kbps
 - Transmit power: : 14dBm, 25mW
 - Antenna: external, 3 dbi
 - RF Compliance:
 - ETSI EN 300 220, EN 303 204 (Europe)
 - FCC CFR47 Part15 (US)
 - ARIB STD-T108 (Japan)
 - Security: AES-128
- Power supply: 9 .. 48VDC, max 250mA
- Included accessory: Australian plug Power adapter
- Dimension: 130x90x40mm (electronics housing only);
- Installation method: wall mounting (screws are supplied by customer)
- Net Weight: < 350g
- Package dimension: 165x155x105mm
- Gross Weight: 470g

Ordering Code

STHC-ISGWF/WR433-01

iConnector WiFi, internal antenna, built-in RF receiver, DC jack

Principal operation of iConnector



Principal of Operation:

- iConnector will read the values from RF receiver in pre-defined cycles, store in its memory (flash, max 140.000 records), then sending to server, server will store data in Database. This kind of data is **Logged Data**. Each logged data has time_stamp. In case of lost connection, the data is keeping in flash and will be resent to server once the connection resumed. This mechanism will make sure data will be captured in 24/7/365;
- Alarm & Event processing: iConnector can process the alarm/events based on the pre-defined threshold, for example, if temperature was higher than than 20 oC it will send this event to server for notification, and can be turn on the local alarm. This kind of data is **Alarm/Event data**;
- Realtime data: whenever a demand of realtime data from server, iConnector will push values of sensors to server continuously for showing on web or mobile apps. This kind of data is **Realtime data**. In realtime mode, the user can control the equipment remotely on web or mobile app.

PART 3 – GLOBIOTS SOFTWARE DEPLOYMENT

1 - cloudGlobiots

No server investment

No need manpower for operation and maintain

Running 24/7/365

Redundant Data Center



Cloud Globiots

this cloud services is best suitable for customers who have few devices to hundreds of device. They don't want to care about IT system. They need a pre-built and ready to use application software. However, they get access data through APIs at anytime they need.

- Hosted on Tier3+/Tier 4 Data Center;
- Annual Subscription;
- Standard data storage 3 years;
- **Redundant Data Center;**
- Use common domain name: <https://vizuo.globiots.com>;
- Use common GUI and functions;

2 - Private-cloudGlobiots

No server investment

No need manpower for operation and maintain

Running 24/7/365

Private domain name



Private Cloud Globiots

this deployment is best suitable for customers who want to have a separated IoT Platform for their own, not related to other customers. However they still do not want to have IT for operating and maintain the system. In this case we will host a separated globiots platform for customers on our Data Center. The deployment, configuration and maintenance will be under our responsibility.

- Privately hosted on Tier3+/Tier 4 Data center;
- Annual Subscription;
- Standard data storage 3 years;
- Optional Redundant Data Center;
- **Private domain name:**
- **Can customize GUI and functions;**

3 - Industrial Globiots Server

Fanless Industrial Server, No air-con required
Quickest Deployment
Pre-installed Globiots Software
Private Data

plug & play

NANO GLOBIOTS SERVER



Upto 200 sensor nodes

MICRO GLOBIOTS SERVER



Upto 1000 sensor nodes

MINI GLOBIOTS SERVER



Upto 2000 sensor nodes

4 - On-premise Globiots



On-premise Globiots

this package is best suitable for customers who want their own platform to be installed at their premise.

Contact



Collect **DATA** and turn it to useful **INFORMATION**

Nguyễn Vĩnh Lộc

Sales Director | +84-906.88.58.58

Dai Viet Controls & Instrumentation Company Ltd.

No. 11 Street 2G, Nam Hung Vuong Res. Area, An Lac Ward
Binh Tan Dist., Ho Chi Minh City, Vietnam

Tel: +84-28-6268.2523/4 (ext.120) | Fax: +84-28-62682520 |

Email: vinhloc.nguyen@daviteq.com | www.daviteq.com