

# Motor Shell Cloud IoT Wireless Temp. Monitoring Solution

Wireless Temperature Monitoring, for motor shell, IoT cloud & local temperature display & alarm, electrical nodes temp.

Ver. Date: Dec, 27th 2023

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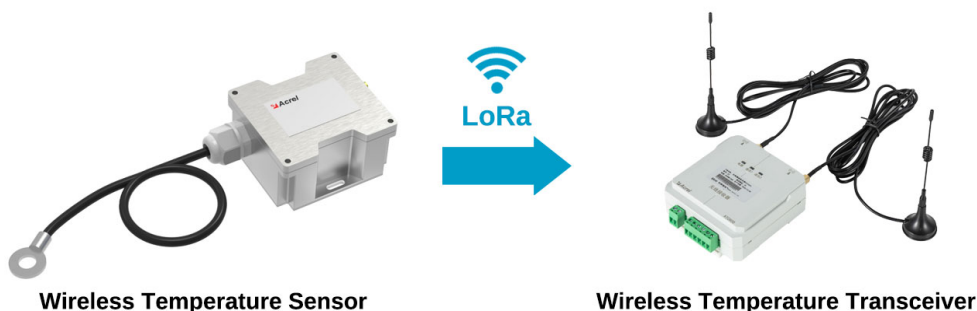


## 0. Application Scenario

- (1) This **wireless temperature monitoring solution** was majorly designed for monitoring & alarming **temperature** of crucial temperature monitoring nodes in like the temperature of **motor outside shell, indoor cable trench, indoor cable tray** and etc.
- (2) Such temperature monitoring nodes have the potential threat of fire hazard due to the aging of material, slackness of connection and etc. Thus a real-time temperature monitoring and alarm system will be necessary to **prevent it from potential fire hazard** causing by the rising of temperature.
- (3) Solution here was major designed for **both cloud&local temperature display and alarm**. Distinguish from other Acrel wireless temperature monitoring solution which only have local temperature display&alarm function.
- (4) Unlike the traditional wired temperature monitoring solution, wireless temperature monitoring solution **make the connection between temperature sensor and temperature transceiver wireless**. This will largely ease the installation and make the overall solution more flexible.



(1) Major Temperature Monitoring Nodes Showcase

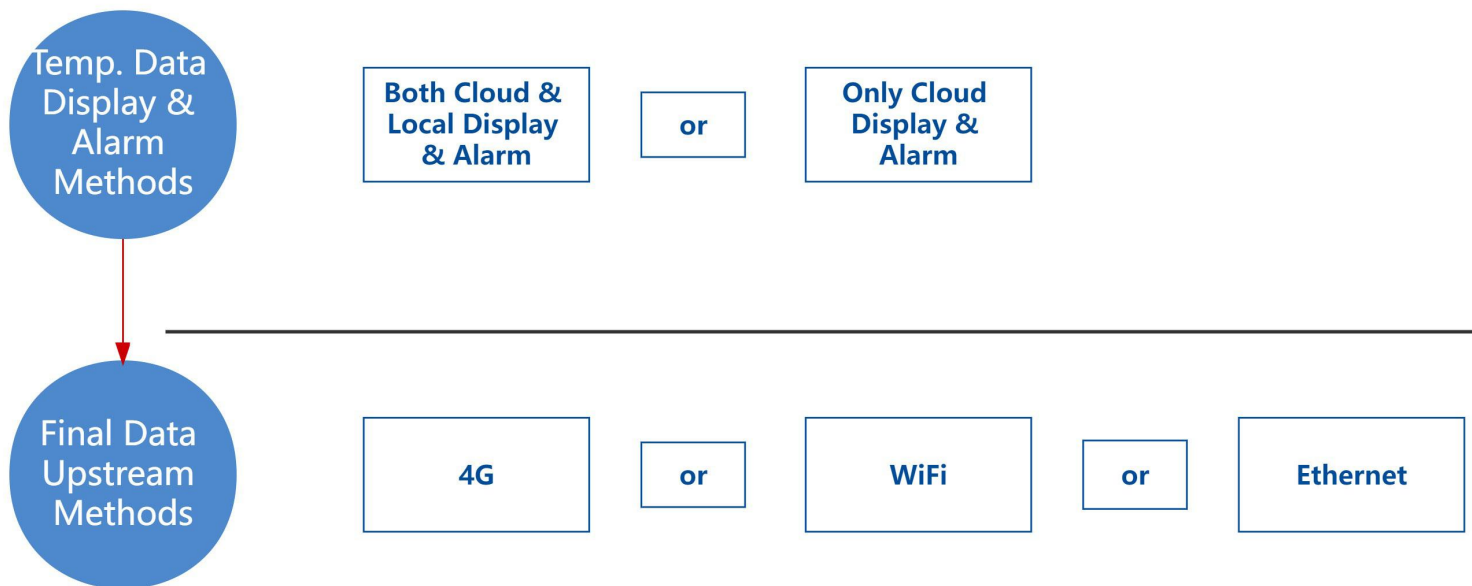


(4) Wireless Connection for easy installation

## 0. Solution Selection Logic

Judging by **final data upstream methods** which was decided by site network condition [4G, WiFi, Ethernet]. And request for temp. data display&alarm methods - either **both Cloud&Local** Temp. Display&Alarm or just **only Cloud** Temp. Display&Alarm. The standard solutions could be divided into 5 basic solutions [Cloud display&alarm here means computer or mobile accessed IoT system platform temperature for display and alarm]:

- (1) Motor Shell **4G** IoT **Cloud&Local** Wireless Temperature Monitoring Solution [with **both Cloud&Local** Temp. Display&Alarm, **4G** based]
- (2) Motor Shell **WiFi** IoT **Cloud&Local** Wireless Temperature Monitoring Solution [with **both Cloud&Local** Temp. Display&Alarm, **WiFi** based]
- (3) Motor Shell **Ethernet** IoT **Cloud&Local** Wireless Temperature Monitoring Solution [with **both Cloud&Local** Temp. Display&Alarm, **Ethernet** based]
- (4) Motor Shell **4G** IoT **Cloud** Wireless Temperature Monitoring Solution [with **only Cloud** Temp. Display&Alarm, **4G** based]
- (5) Motor Shell **WiFi&Ethernet** IoT **Cloud** Wireless Temperature Monitoring Solution [with **only Cloud** Temp. Display&Alarm, **WiFi&Ethernet** based]



(1) Solution Selection Logic

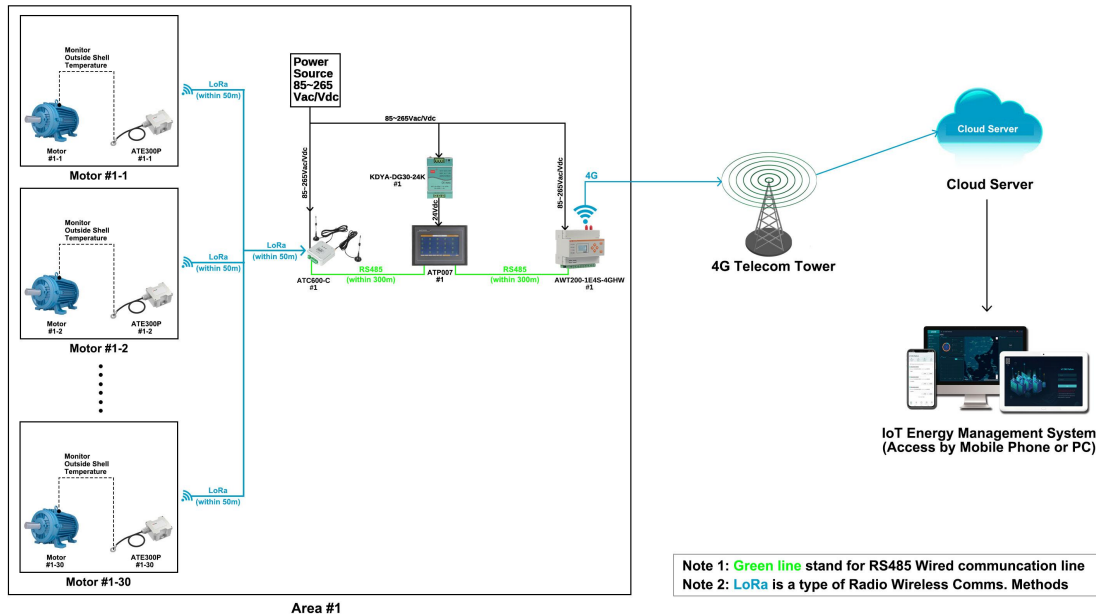
## 1. Scenario Preset [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

- (1) The target was to monitor and alarm the temperature of **30 motor's shell** deployed in a single room. Both **cloud&local** display and alarm of temperature was requested.
- (2) Each motor has **1** temperature monitoring point for electrical connection nodes. Thus there will be **30** temperature monitoring points in total.
- (3) Network status with stable **4G** signal.

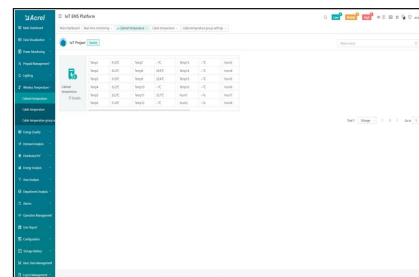
## 1. Devices Deployment [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

**Area #1 - Motor #1-1 ~ #1-30:**

- **1\* AWT200-1E4S-4GHW IoT Gateway** [For further uploading the data from ATP007 to Acrel IoT Cloud System via **4G** Comms.]
- **1\* ATP007 Temperature Display Touchscreen** [For local display and alarm for all temperature data and further upload the data to upstream IoT gateway]
- **1\* ATC600-C Wireless Temperature Transceiver** [For collecting the temperature data from ATE300P wireless temp. sensors and further upload the data to ATP007]
- **30\* ATE300P Wireless Temperature Sensor** [For monitoring the temperature of motor shell and send the data to ATC600-C via LoRa wireless Comms. Note: Distance between ATE300P and motor **wasn't more than 2m** due to paired PT100 cable length limit.]
- **1\* KDYA-DG30-24K Power Supply Module** [Paired with ATP007 for 85~265Vac/Vdc Power Supply input]



Installation Picture of ATE300P installed on Motor Shell

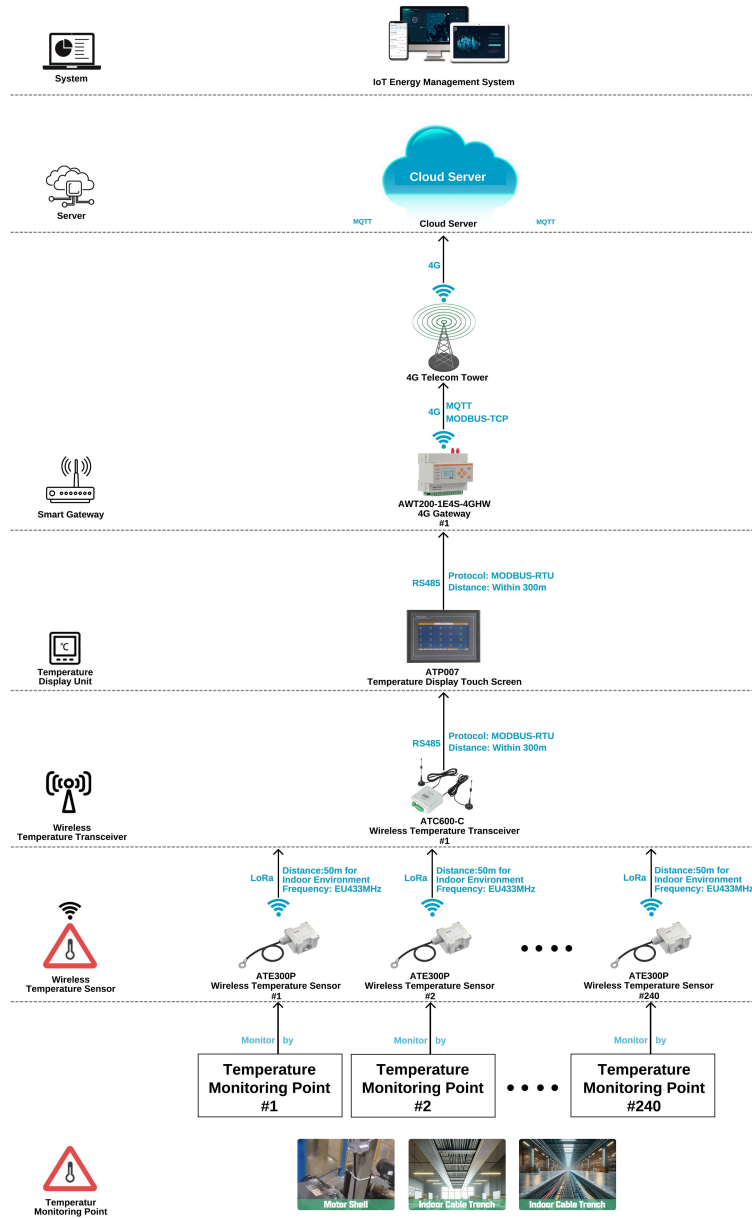


Acrel IoT Temperature Monitoring System Showcase

(1) Device Deployment Plan illustration

### 1. Comms. Structure & Logic [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

- (1) Between **ATE300P** wireless temperature sensor and **ATC600-C** wireless temperature transceiver, we are using a radio wireless communications called **LoRa**. The communication distance is within 50m [when in indoor environment and penetrate 1 layer of metal cover of switchgear]. The communication protocol is self defined protocol. [1 **ATC600-C** can support up to 240 pcs **ATE300P** if comms. distance allowed.]
- (2) Between **ATP007** smart touch screen and **ATC600-C** wireless temperature transceiver. and between **ATP007** touch screen and **AWT200-1E4S-4GHW** IoT gateway, we are both using common **RS485 communications** based on **MODBUS-RTU protocol**. Although for this RS485 communication, it's wired comms. But normally these devices were always installed closedly to each other, so that remain the most part of communication structure still wireless. [1 pcs **ATP007** can support and display the temp. data of up to 240 points]
- (3) Between **AWT200-1E4S-4GHW** IoT gateway and Acrel IoT system, we are using **4G** comms. methods based on either **MQTT** or **MODBUS-TCP** protocol.



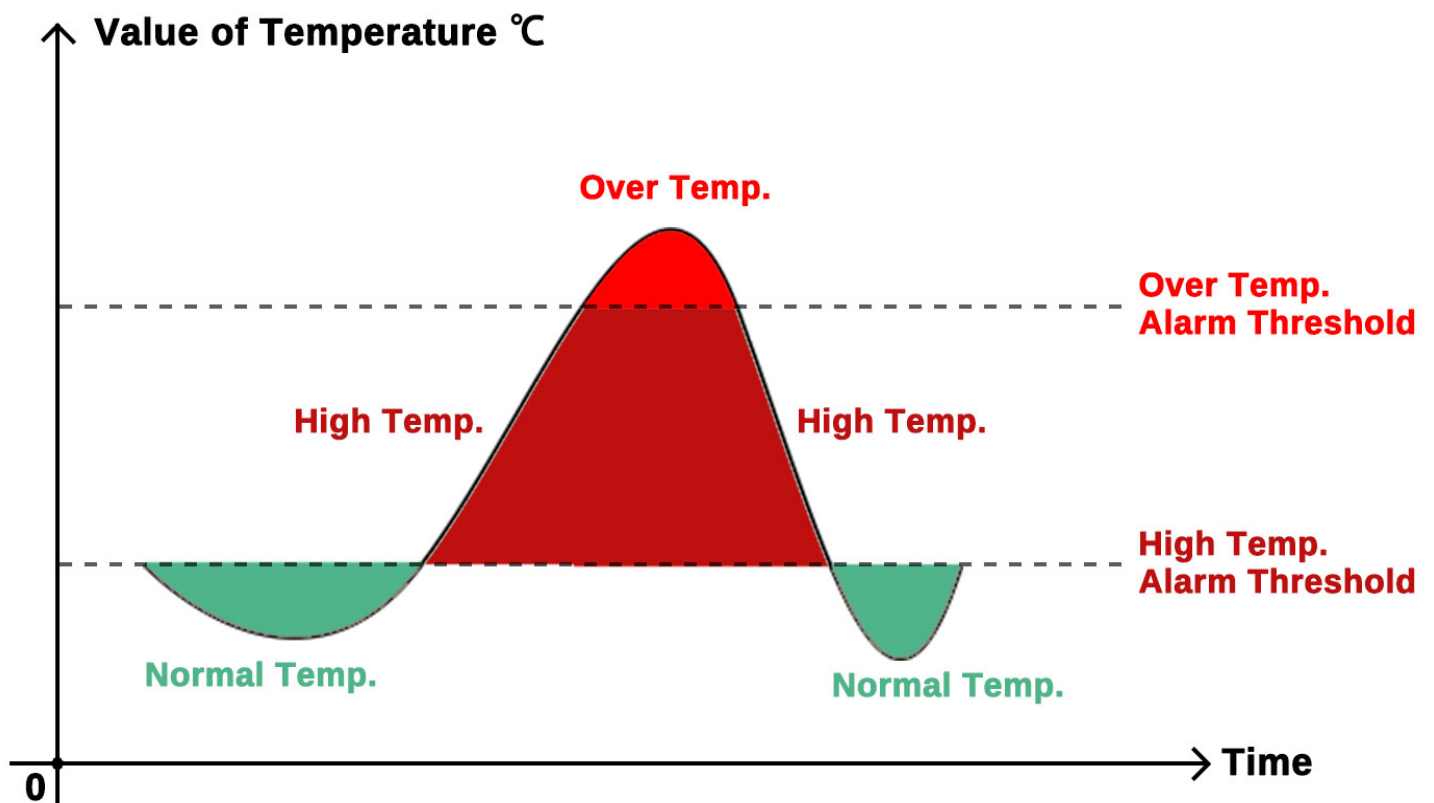
(1) Communication Structure

## 1. Local Device Temperature Alarm Function&Logic [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

ATP Seires Temperature Display Devices support 2 types of major temperature alarm logic. When any of the below alarm logic was set and triggered, it will alarm the buzzer up.

(1) **High Temperature Alarm:** When temperature of certain monitoring node was higher than a certain preset threshold value, this will trigger high temperature alarm. [Normally used as a pre-alarm for mentioning related person to take care of temperature rising issue in monitoring places]

(2) **Over Temperature Alarm:** Similar like high temperature alarm, but over temperature alarm normally will be preset a higher alarm threshold. [Normally used for alarming the related person that there are severe temperature rising issue happened and need to be solved immediately]

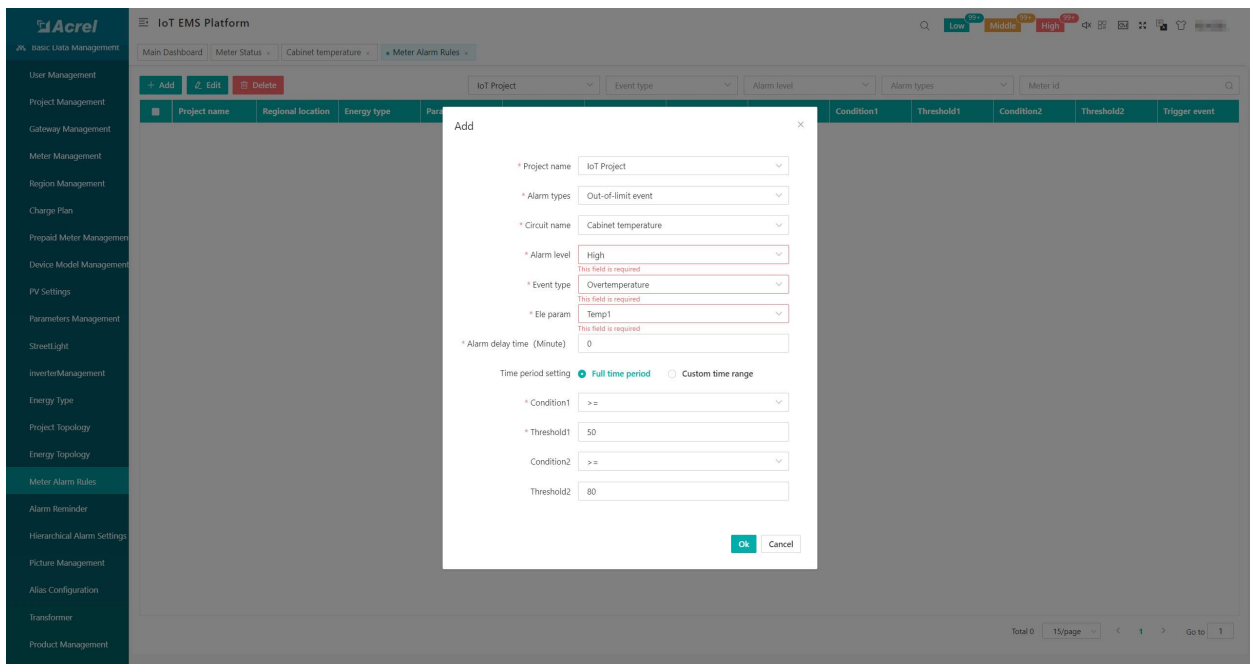


(1&2) High&Over Temperature Alarm

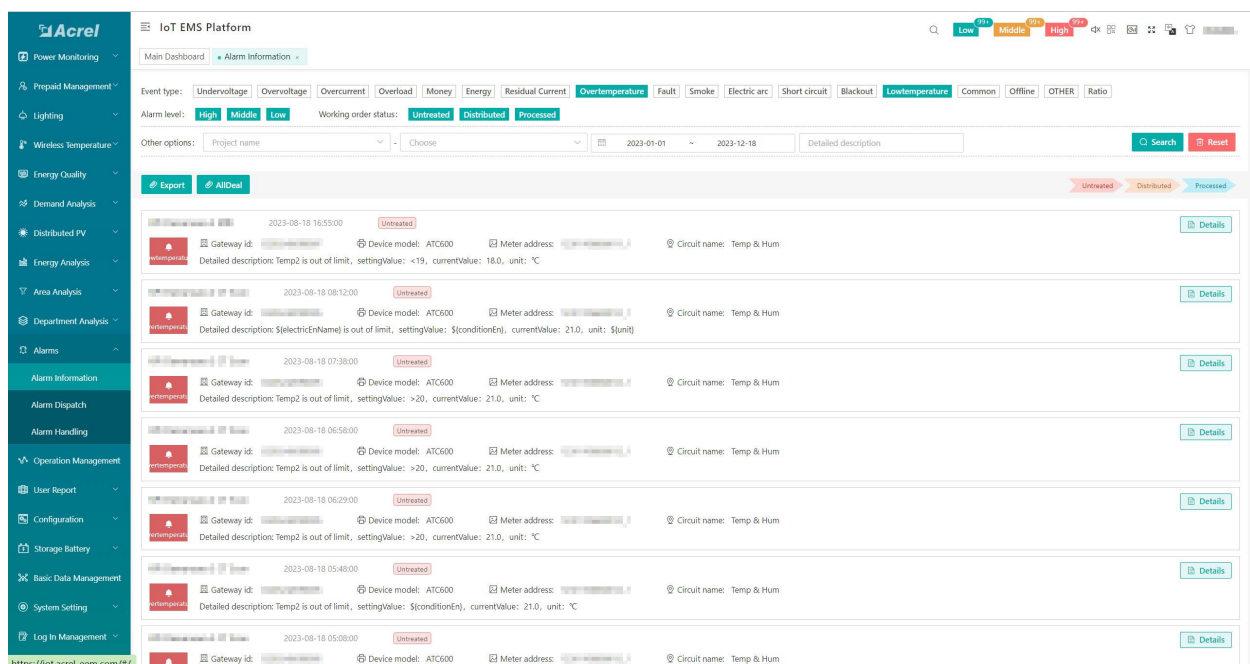
## 1. Cloud IoT Platform Temperature Alarm Function&Logic [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

Once the temperature data was collected by Acrel IoT Cloud System Platform. We could also do the high/over temperature alarm rule setting on cloud system and receive the high/over temperature alarm warning information via **WEB/APP/SMS/E-mail**. [SMS/E-mail warning will be only supported when using buy-out service of Acrel IoT System.]

**(1) High/Over Temperature Alarm:** First we set the high/over temperature alarm rule on platform, then once the monitoring temperature was higher/lower than a certain preset threshold value, this will trigger the alarm and send the alarm warning information via assigned **WEB/APP/SMS/E-mail**.



(1) Set the over/high temperature alarm rule

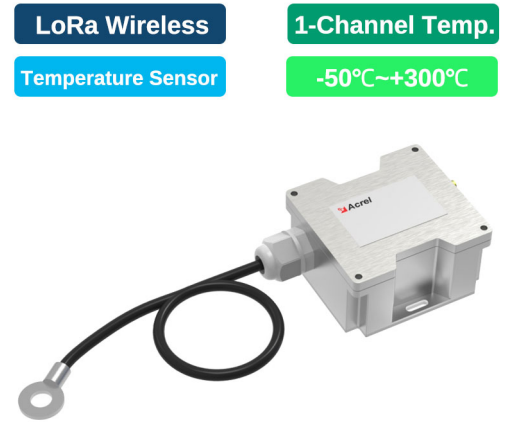


(2) Receive and check alarm information

## 1. Hardware Devices Overview [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

### Model 1: ATE300P Wireless Temperature Sensor

- Temperature Measuring Range: -50 ~+300 [±1 ]
- Monitoring: Up to 1-channel Temperature [via paired PT100 Thermistor, cable length = 2m]
- Wireless Comms: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Protection Level: IP65
- Power Supply: Built-in battery [5 years life span, when main body under 25 operating temperature]
- Installation: DIN-rail/Strap-tied/Hot melt adhesive



### Model 2: ATC600-C Wireless Temperature Transceiver

- Wireless Comms. [Downstream]: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Wired Comms. [Upstream]: 1-way RS485 [MODBUS-RTU protocol]
- Support: up to 240 pcs ATE300P Wireless Temperature Sensors based on LoRa
- Power Supply: 100~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



### Model 3: ATP007 Temp. Display&Alarm Touch Screen

- Comms.: 2-way RS485 [one for upstream, one for downstream, MODBUS-RTU]; 1-way Ethernet [for upstream, MODBUS-TCP]
- Support: Display the temperature data of up to 240 pcs temperature monitoring points.
- Alarm: High-temperature alarm, over-temperature alarm.
- Power Supply: 24Vdc [±10%]; consumption 15W
- Screen Size: 7 inches [10 inches option available, module ATP010]
- Working Temperature: -10 ~ +55
- Working Humidity: <=95%





## 1. Hardware Devices Overview [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

<b>Input Range</b>	<b>Output Range</b>
<b>100~240Vac/Vdc</b>	<b>24Vdc</b>

### Model 4: KDYA-DG30-24K Power Supply Module

- Rated Input Range: 100~240Vac/Vdc
- Rated Output Range: 24Vdc
- Application: paired with ATP007 for power supply input



<b>IoT Gateway</b>	<b>4G Upstream</b>
<b>MQTT&amp;MODBUS</b>	<b>RS485 Downstream</b>


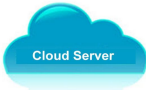





### Model 5: AWT200-1E4S-4GHW IoT Smart Gateway

- Upstream Comms.: 4G&Ethernet Comms. [MQTT&MODBUS-TCP protocol]
- Downstream Comms.: 4-way RS485 [MODBUS-RTU protocol]
- Power Supply: 85~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



## 1. Overall Model Selection&Quotation [4G IoT Cloud&Local Wireless Temperature Monitoring Solution]

(1) This Quotation doesn't include freight charge. To gain a complete quotation, please refer the actual quantity that you want to request for the actual order, once we receiving it. We will issue a Official Proforma Invoice with Acrel Stamps on it for later procedure.

System Software					
Name	Description	System Price	Remark (Choose Host Service or Buy-out Service after 3-month Free Trial of <b>Cloud IoT System</b> )		
 <b>Acrel Cloud IoT Energy Management System</b>	1.System support all the meters across the country whose data has been sent to cloud server through <b>4G,WIFI or Ethernet</b> . 2.Remote meter reading and data collection. 3.Provide <b>IoT APP</b> for <b>mobile phone</b> side and <b>IoT WEB</b> for <b>PC</b> side. 4.Generate energy data report of daily, monthly and annually period with year-on-year and period-on-period energy analysis. 5.Provide various alarm function to ensure a stable operation of the system and protect your property. 6.Offer 3-month free trial of system with full technical support as for a test phase or pilot project.	\$0 (recommended in pilot project)  \$xxx/Year (For 30 Points) (Price for Host Service Only, recommended in pilot project)  \$xxxx/Permanent (Limitless Points) (Price for Buy-out Service Only, recommended in late project)	3-month Free Trail (Users don't need to rent a cloud server))  \$xx to buy Hosting Service for 1 monitoring points connected to the system 1 year (Users don't need to rent a cloud server)  1-time charging of \$xxxx for Buy-out Service of permanent use (Limitless monitoring points and a cloud server need to be rent by users)		
Cloud Server					
Name	Description	Server Renting Price (For Reference Only)	Remark		
 Cloud Server	1.Cloud Server could be rent on the cloud server provider like Amazon Cloud. 2.Users of <b>Cloud IoT Energy Management System</b> only need to rent cloud server when they choose <b>buy-out</b> service of our <b>Cloud IoT System</b> . And if they are using <b>hosting service</b> or <b>3-month free trial</b> of our Cloud IoT System, we will use our own cloud server which has been rent on Amazon so that users don't need to rent a cloud server. 3.The quotation of Cloud Server is only a reference price that we have rent on Amazon Cloud.	According to Specs of Rented Cloud Server	Below cloud server specs could support 1000~2000 monitoring points connected to the system (Server: 8 core 16G Operation System: windows server 2016)		
Smart IoT Gateway					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Smart Gateway <b>AWT200-1E4S-4GHW</b>	<b>Upstream:</b> 4G, Ethernet [MQTT, MODBUS, etc] <b>Downstream:</b> RS485 (MODBUS-RTU) <b>Support:</b> up to <b>80~100</b> RS485 Devices within 400m using RS485 Wired Communication <b>Adjustment:</b> Via RJ45 or RS485 Port. <b>Power Supply:</b> 85~265Vac/Vdc (via power adapter) <b>HS Code:</b> 8517699000	1 pcs	/	/
Local Temperature Display&Alarm Device					
	Touch Screen <b>ATP007</b>	<b>Comms.:</b> 2-way RS485 (MODBUS-RTU); 1-way Ethernet [MODBUS-TCP] <b>Support:</b> Up to 240 ATE series Transceiver. <b>Auxiliary Power Supply:</b> 24Vdc <b>HS Code:</b> 8471609000	1 pcs	/	/
	Power Supply Module <b>KDYA-DG30-24K</b>	<b>Application:</b> Paired with ATP007Kt for 85~265Vac Power Supply Input <b>Input:</b> 85~265Vac <b>Output:</b> 24Vdc <b>HS Code:</b> 8504409999	1 pcs	/	/
Wireless Temperature Transceiver					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Transceiver <b>ATC600-C</b>	<b>Upstream:</b> RS485 (MODBUS-RTU) <b>Downstream:</b> LoRa (433~510 MHz) <b>Support:</b> Up to 240 ATE300P series wireless temperature sensors using LoRa communication. <b>Power Supply:</b> 100~265Vac <b>HS Code:</b> 9025191010	1 pcs	/	/
Wireless Temperature Sensor					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Sensor <b>ATE300P</b>	<b>Communication:</b> LoRa Wireless (433~510MHz) <b>Monitoring:</b> 1-channel Temperature <b>Measuring Range:</b> -50℃~+300℃ [via PT100 thermistor] <b>Power Supply:</b> Built-in Battery <b>Protection Level:</b> IP65 <b>Installation:</b> Rail-type or Cable-tie installation <b>HS Code:</b> 9025191010	30 pcs	/	/

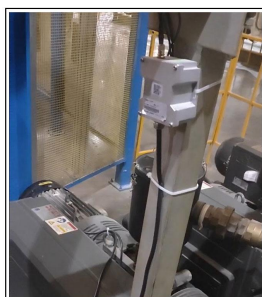
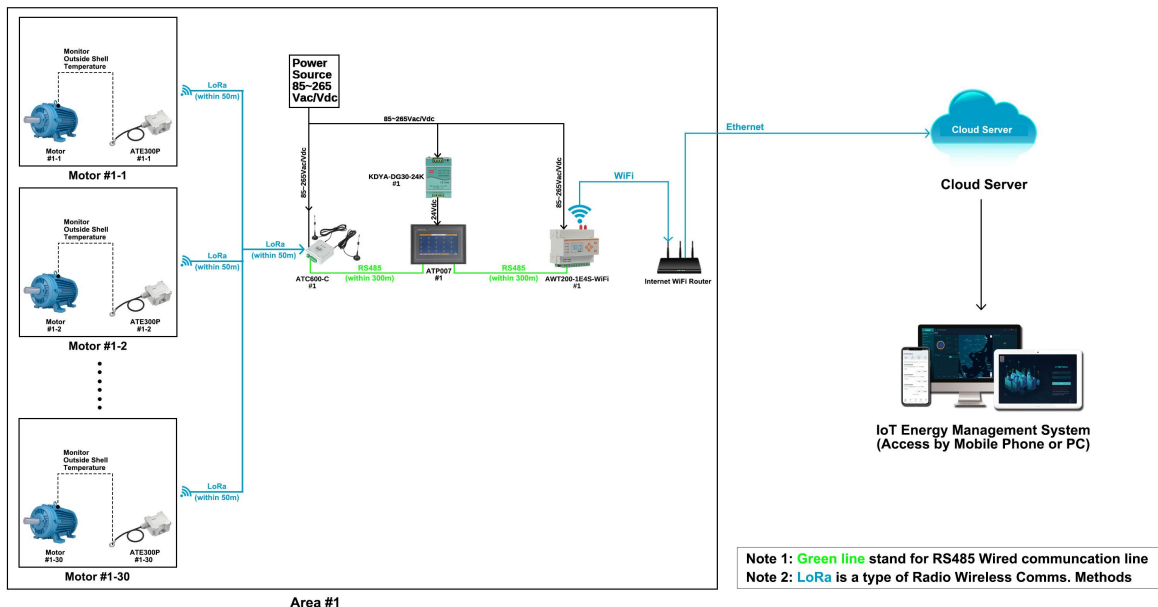
## 2. Scenario Preset [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

- (1) The target was to monitor and alarm the temperature of **30 motor's shell** deployed in a single room. Both **cloud&local** display and alarm of temperature was requested.
- (2) Each motor has **1** temperature monitoring point for electrical connection nodes. Thus there will be **30** temperature monitoring points in total.
- (3) Network with stable **WiFi** communications.

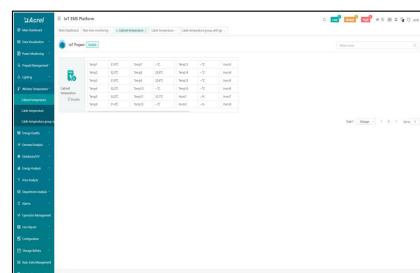
## 2. Devices Deployment [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

### Area #1 - Motor #1-1 ~ #1-30:

- 1\* **AWT200-1E4S-WiFi IoT Gateway** [For further uploading the data from ATP007 to Acrel IoT Cloud System via **WiFi** Comms.]
- 1\* **ATP007 Temperature Display Touchscreen** [For local display and alarm of all temperature data and further upload the data to upstream IoT gateway]
- 1\* **ATC600-C Wireless Temperature Transceiver** [For collecting the temperature data from ATE300P wireless temp. sensors and further upload the data to ATP007]
- **30\* ATE300P Wireless Temperature Sensor** [For monitoring the temperature of motor shell and send the data to ATC600-C via LoRa wireless Comms. Note: Distance between ATE300P and motor **wasn't more than 2m** due to paired PT100 cable length limit.]
- 1\* **KDYA-DG30-24K Power Supply Module** [Paired with ATP007 for 85~265Vac/Vdc Power Supply input]



Installation Picture of ATE300P installed on Motor Shell

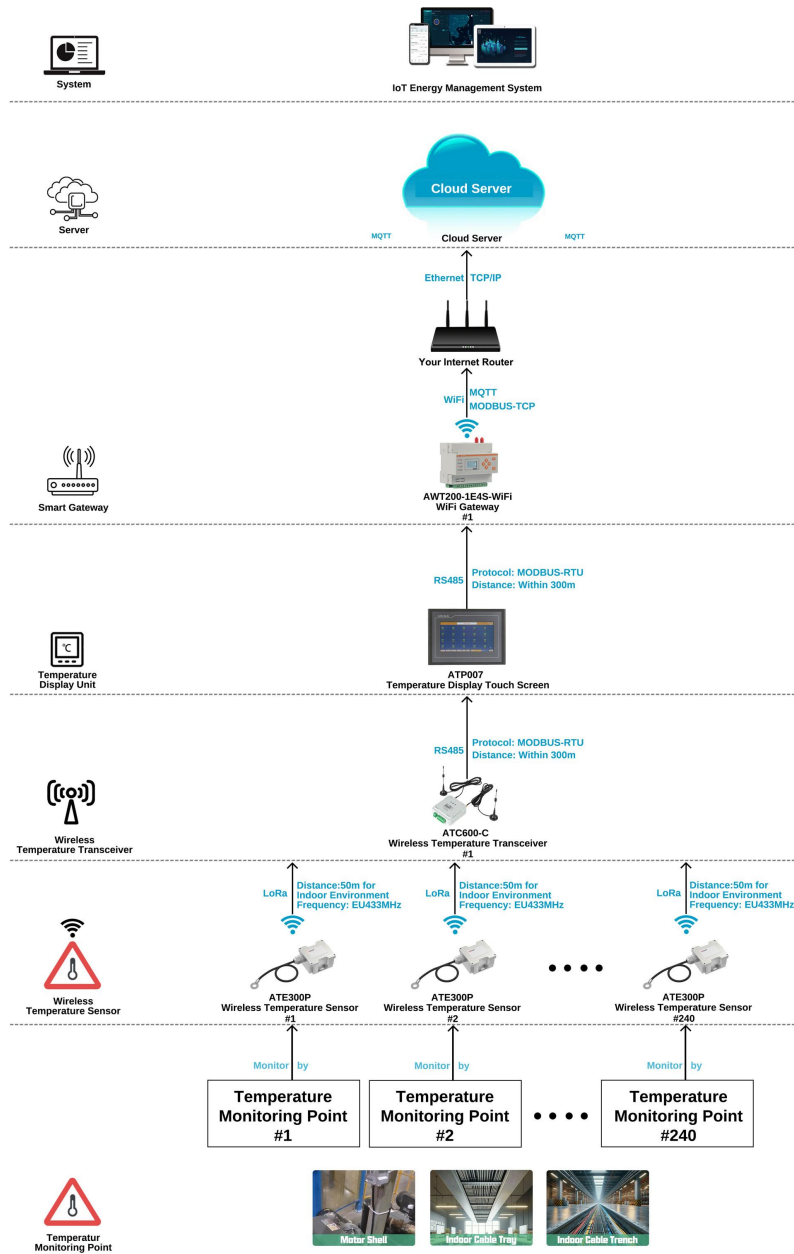


Acrel IoT Temperature Monitoring System Showcase

### (1) Devices deployment plan Illustration

## 2. Comms. Structure & Logic [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

- (1) Between **ATE300P** wireless temperature sensor and **ATC600-C** wireless temperature transceiver, we are using a radio wireless communications called **LoRa**. Communication distance is within 50m [when in indoor environment. Communication protocol is self defined protocol. [1 ATC600-C can support up to 240 pcs ATE300P if comms. distance allowed.]
- (2) Between **ATP007** smart touch screen and **ATC600-C** wireless temperature transceiver. and between **ATP007** touch screen and **AWT200-1E4S-WiFi** IoT gateway, we are both using common **RS485 communications** based on **MODBUS-RTU protocol**. Although for this RS485 communication, it's wired comms. But normally these devices were always installed closedly to each other, so that remain the most part of communication structure still wireless. [1 pcs ATP007 can support and display the temp. data of up to 240 points]
- (3) Between **AWT200-1E4S-WiFi** IoT gateway and Acrel IoT system, we are using **WiFi** comms. methods based on either **MQTT** or **MODBUS-TCP** protocol.



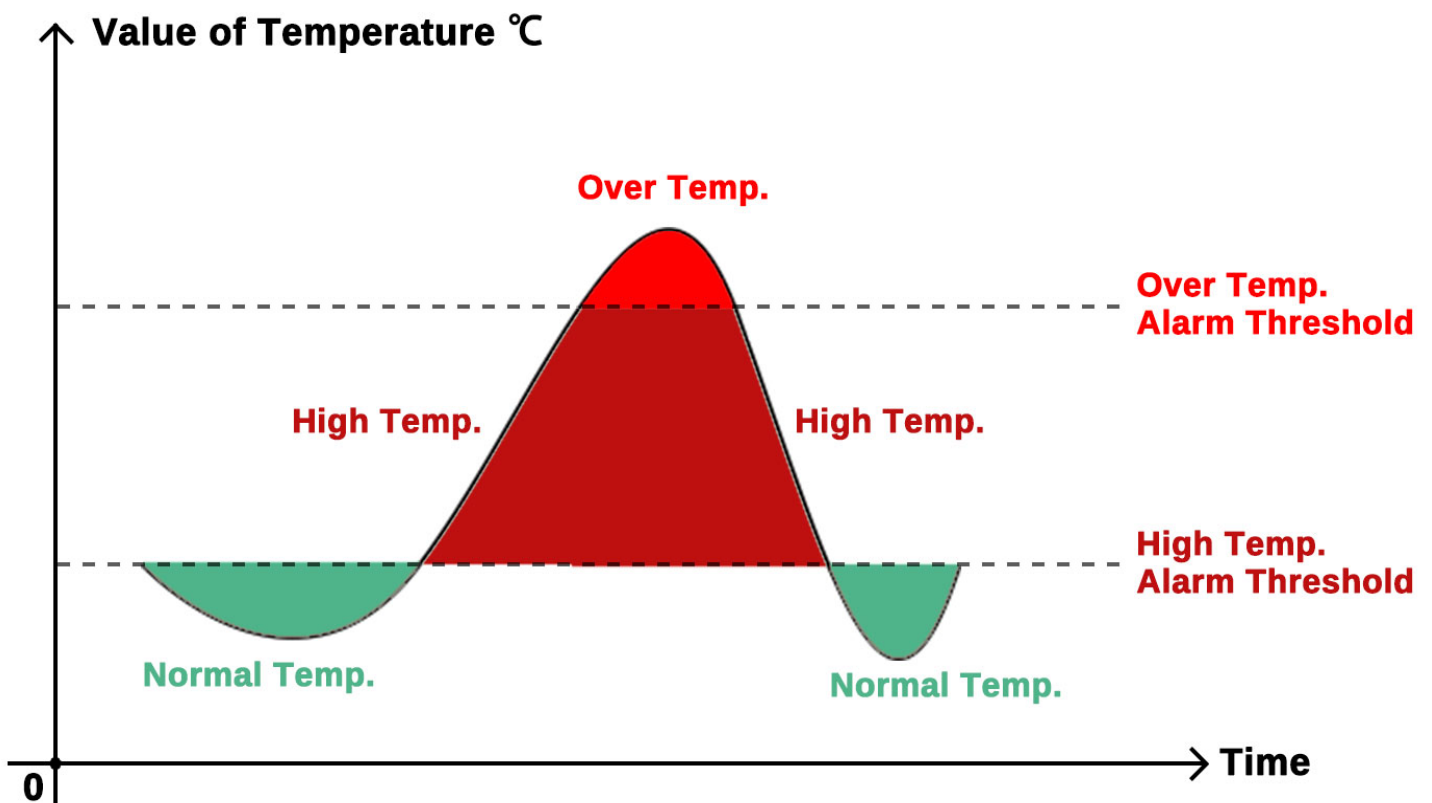
(1) Communication Structure

## 2. Local Device Temperature Alarm Function&Logic [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

ATP Seires Temperature Display Devices support 2 types of major temperature alarm logic. When any of the below alarm logic was set and triggered, it will alarm the buzzer up.

(1) **High Temperature Alarm:** When temperature of certain monitoring node was higher than a certain preset threshold value, this will trigger high temperature alarm. [Normally used as a pre-alarm for mentioning related person to take care of temperature rising issue in monitoring places]

(2) **Over Temperature Alarm:** Similar like high temperature alarm, but over temperature alarm normally will be preset a higher alarm threshold. [Normally used for alarming the related person that there are severe temperature rising issue happened and need to be solved immediately]

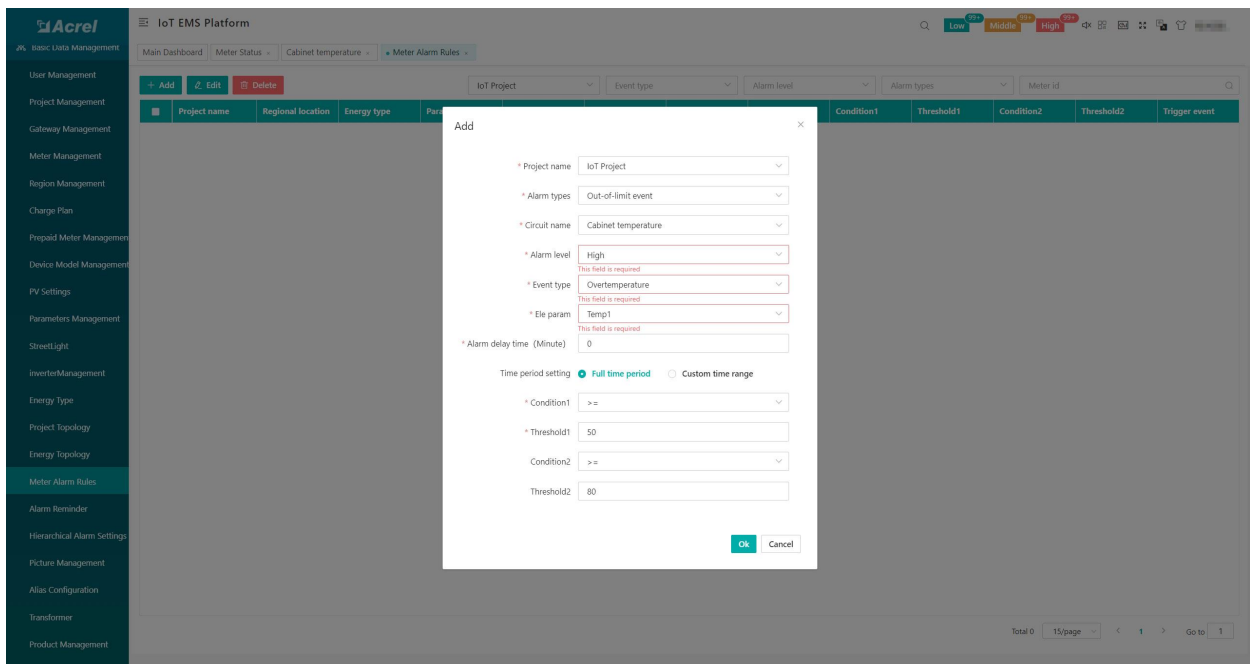


(1&2) High&Over Temperature Alarm

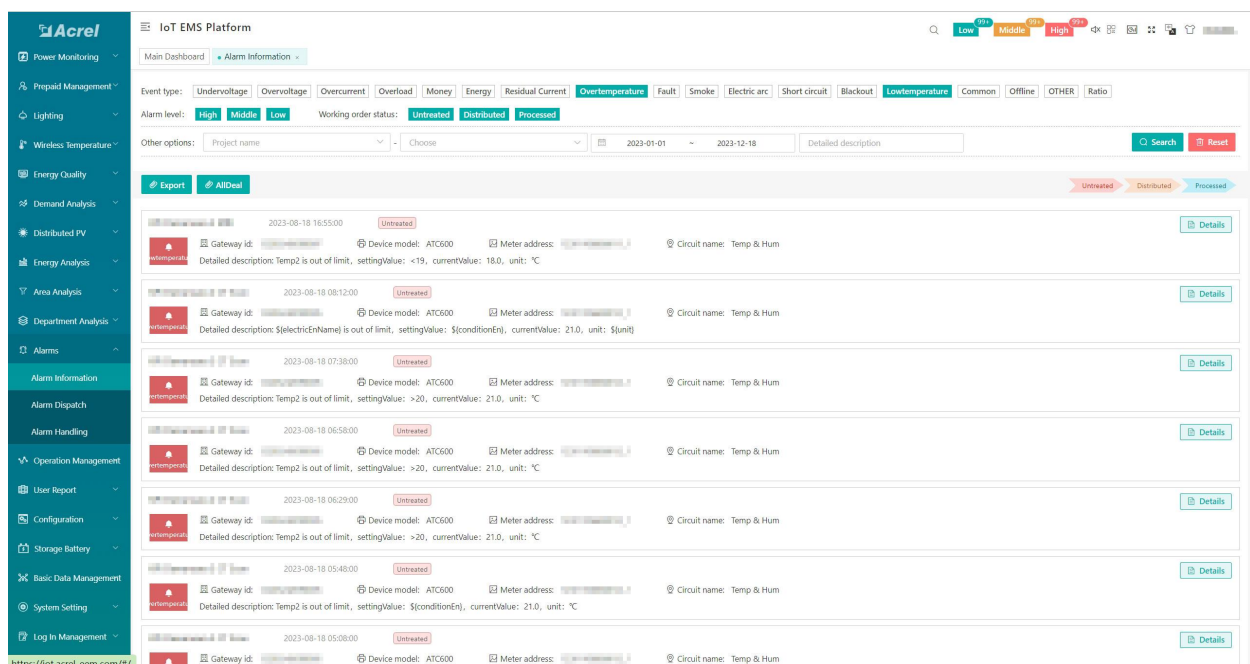
## 2. Cloud IoT Platform Temperature Alarm Function&Logic [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

Once the temperature data was collected by Acrel IoT Cloud System Platform. We could also do the high/over temperature alarm rule setting on cloud system and receive the high/over temperature alarm warning information via **WEB/APP/SMS/E-mail**. [SMS/E-mail warning will be only supported when using buy-out service of Acrel IoT System.]

**(1) High/Over Temperature Alarm:** First we set the high/over temperature alarm rule on platform, then once the monitoring temperature was higher/lower than a certain preset threshold value, this will trigger the alarm and send the alarm warning information via assigned **WEB/APP/SMS/E-mail**.



(1) Set the over/high temperature alarm rule

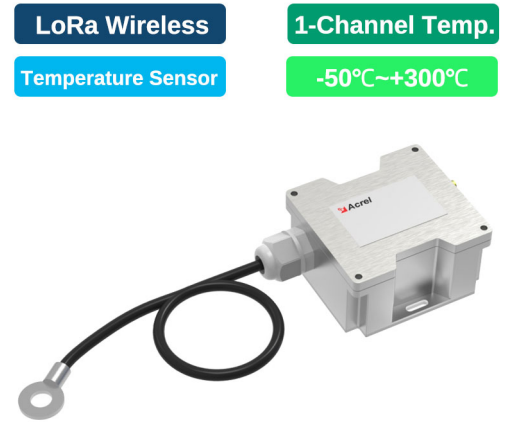


(2) Receive and check alarm information

## 2. Hardware Devices Overview [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

### Model 1: ATE300P Wireless Temperature Sensor

- Temperature Measuring Range: -50 ~+300 [±1 ]
- Monitoring: Up to 1-channel Temperature [via paired PT100 Thermistor, cable length = 2m]
- Wireless Comms: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Protection Level: IP65
- Power Supply: Built-in battery [5 years life span, when main body under 25 operating temperature]
- Installation: DIN-rail/Strap-tied/Hot melt adhesive



### Model 2: ATC600-C Wireless Temperature Transceiver

- Wireless Comms. [Downstream]: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Wired Comms. [Upstream]: 1-way RS485 [MODBUS-RTU protocol]
- Support: up to 240 pcs ATE300P Wireless Temperature Sensors based on LoRa
- Power Supply: 100~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



### Model 3: ATP007 Temp. Display&Alarm Touch Screen

- Comms.: 2-way RS485 [one for upstream, one for downstream, MODBUS-RTU]; 1-way Ethernet [for upstream, MODBUS-TCP]
- Support: Display the temperature data of up to 240 pcs temperature monitoring points.
- Alarm: High-temperature alarm, over-temperature alarm.
- Power Supply: 24Vdc [±10%]; consumption 15W
- Screen Size: 7 inches [10 inches option available, module ATP010]
- Working Temperature: -10 ~ +55
- Working Humidity: <=95%



## 2. Hardware Devices Overview [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

### Model 4: KDYA-DG30-24K Power Supply Module

- Rated Input Range: 100~240Vac/Vdc
- Rated Output Range: 24Vdc
- Application: paired with ATP007 for power supply input

<b>Input Range</b>	<b>Output Range</b>
<b>100~240Vac/Vdc</b>	<b>24Vdc</b>



### Model 5: AWT200-1E4S-WiFi IoT Smart Gateway

- Upstream Comms.: WiFi&Ethernet Comms. [MQTT&MODBUS-TCP protocol]
- Downstream Comms.: 4-way RS485 [MODBUS-RTU protocol]
- Power Supply: 85~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%


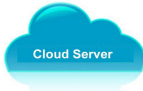





<b>IoT Gateway</b>	<b>WiFi&amp;Ethernet</b>
<b>MQTT&amp;MODBUS</b>	<b>RS485 Downstream</b>





## 2. Model Selection&Quotation [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

(1) This Quotation doesn't include freight charge. To gain a complete quotation, please refer the actual quantity that you want to request for the actual order, once we receiving it. We will issue a Official Proforma Invoice with Acrel Stamps on it for later procedure.

System Software					
Name	Description	System Price	Remark (Choose Host Service or Buy-out Service after 3-month Free Trial of Cloud IoT System)		
 <b>Acrel Cloud IoT Energy Management System</b>	1. System support all the meters across the country whose data has been sent to cloud server through <b>4G,WiFi or Ethernet</b> . 2. Remote meter reading and data collection. 3. Provide <b>IoT APP for mobile phone</b> side and <b>IoT WEB for PC</b> side. 4. Generate energy data report of daily, monthly and annually period with year-on-year and period-on-period energy analysis. 5. Provide various alarm function to ensure a stable operation of the system and protect your property. 6. Offer 3-month free trial of system with full technical support as for a test phase or pilot project.	\$0 (recommended in pilot project)  \$xxx/Year (For 30 Points) (Price for Host Service Only, recommended in pilot project)  \$xxxx/Permanent (Limitless Points) (Price for Buy-out Service Only, recommended in late project)	3-month Free Trial (Users don't need to rent a cloud server))  \$xx to buy Hosting Service for 1 monitoring points connected to the system 1 year (Users don't need to rent a cloud server)  1-time charging of \$xxxx for Buy-out Service of permanent use (Limitless monitoring points and a cloud server need to be rent by users)		
Cloud Server					
Name	Description	Server Renting Price (For Reference Only)	Remark		
 Cloud Server	1. Cloud Server could be rent on the cloud server provider like Amazon Cloud. 2. Users of <b>Cloud IoT Energy Management System</b> only need to rent cloud server when they choose <b>buy-out</b> service of our <b>Cloud IoT System</b> . And if they are using <b>hosting service</b> or <b>3-month free trial</b> of our Cloud IoT System, we will use our own cloud server which has been rent on Amazon so that users don't need to rent a cloud server. 3. The quotation of Cloud Server is only a reference price that we have rent on Amazon Cloud.	According to Specs of Rented Cloud Server	Below cloud server specs could support 1000~2000 monitoring points connected to the system (Server: 8 core 16G Operation System: windows server 2016)		
Smart IoT Gateway					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Smart Gateway <b>AWT200-1E4S-WIFI</b>	<b>Upstream:</b> WiFi, Ethernet [MQTT, MODBUS, etc] <b>Downstream:</b> RS485 (MODBUS-RTU) <b>Support:</b> up to <b>80~100</b> RS485 Devices within 400m using RS485 Wired Communication <b>Adjustment:</b> Via RJ45 or RS485 Port. <b>Power Supply:</b> 85~265Vac/Vdc (via power adapter) <b>HS Code:</b> 8517699000	1 pcs	/	/
Local Temperature Display&Alarm Device					
	Touch Screen <b>ATP007</b>	<b>Comms.:</b> 2-way RS485 (MODBUS-RTU); 1-way Ethernet [MODBUS-TCP] <b>Support:</b> Up to 240 ATE series Transceiver. <b>Auxiliary Power Supply:</b> 24Vdc <b>HS Code:</b> 8471609000	1 pcs	/	/
	Power Supply Module <b>KDYA-DG30-24K</b>	<b>Application:</b> Paired with ATP007Kt for 85~265Vac Power Supply Input <b>Input:</b> 85~265Vac <b>Output:</b> 24Vdc <b>HS Code:</b> 8504409999	1 pcs	/	/
Wireless Temperature Transceiver					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Transceiver <b>ATC600-C</b>	<b>Upstream:</b> RS485 (MODBUS-RTU) <b>Downstream:</b> LoRa (433~510 MHz) <b>Support:</b> Up to 240 ATE300P series wireless temperature sensors using LoRa communication. <b>Power Supply:</b> 100~265Vac <b>HS Code:</b> 9025191010	1 pcs	/	/
Wireless Temperature Sensor					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Sensor <b>ATE300P</b>	<b>Communication:</b> LoRa Wireless (433~510MHz) <b>Monitoring:</b> 1-channel Temperature <b>Measuring Range:</b> -50℃~+300℃ [via PT100 thermistor] <b>Power Supply:</b> Built-in Battery <b>Protection Level:</b> IP65 <b>Installation:</b> Rail-type or Cable-tie installation <b>HS Code:</b> 9025191010	30 pcs	/	/

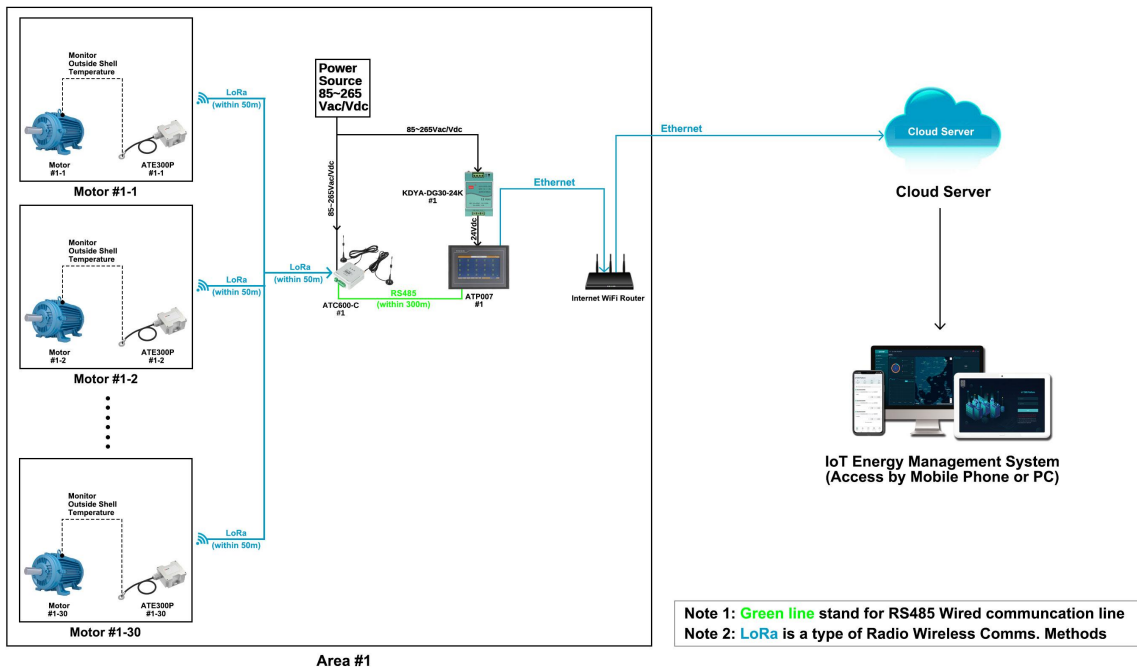
### 3. Scenario Preset [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]

- (1) The target was to monitor and alarm the temperature of **30 motor's shell** deployed in a single room. Both **cloud&local** display and alarm of temperature was requested.
- (2) Each motor has **1** temperature monitoring point for electrical connection nodes. Thus there will be **30** temperature monitoring points in total.
- (3) Network with stable **Ethernet** communications.

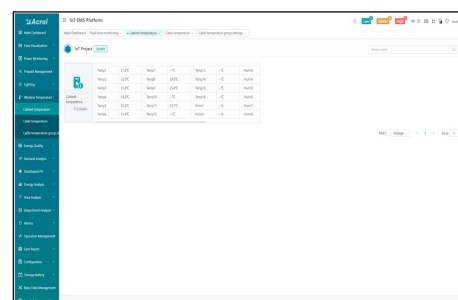
### 3. Devices Deployment [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]

**Area #1 - LV Switchboard #1 ~ #5:**

- 1\* ATP007 Temperature Display Touchscreen [For local display and alarm of all temperature data and further upload the data to upstream IoT System via **Ethernet**]
- 1\* ATC600-C Wireless Temperature Transceiver [For collecting the temperature data from ATE300P wireless temp. sensors and further upload the data to ATP007]
- 30\* ATE300P Wireless Temperature Sensor [For monitoring the temperature of motor shell and send the data to ATC600-C via LoRa wireless Comms. Note: Distance between ATE300P and motor **wasn't more than 2m** due to paired PT100 cable length limit.]
- 1\* KDYA-DG30-24K Power Supply Module [Paired with ATP007 for 85~265Vac/Vdc Power Supply input]



Installation Picture of ATE300P installed on Motor Shell

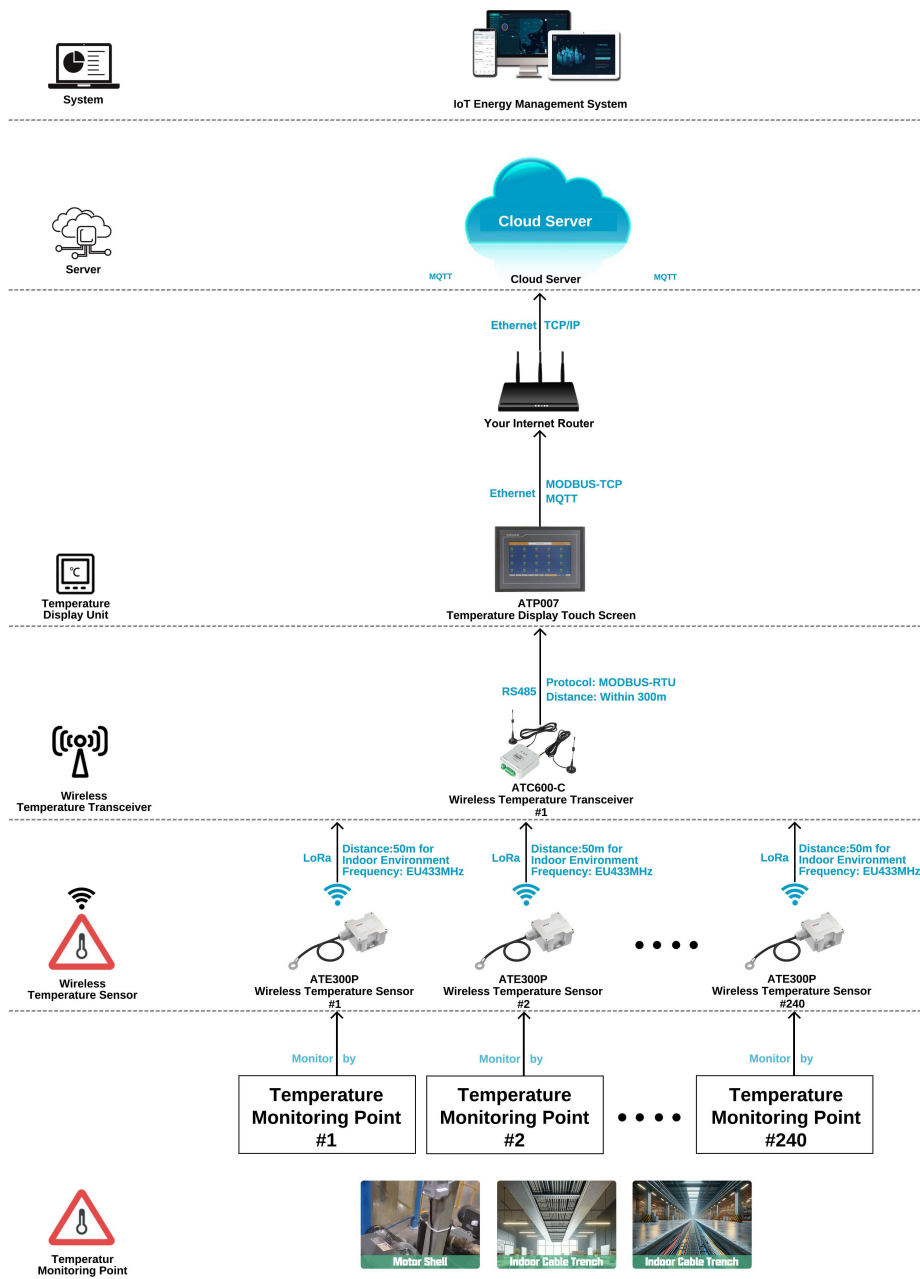


Acrel IoT Temperature Monitoring System Showcase

(1) Devices deployment plan Illustraton

### 3. Comms. Structure & Logic [WiFi IoT Cloud&Local Wireless Temperature Monitoring Solution]

- (1) Between **ATE300P** wireless temperature sensor and **ATC600-C** wireless temperature transceiver, we are using a radio wireless communications called **LoRa**. Communication distance is within 50m [when in indoor environment. Communication protocol is self defined protocol. [1 ATC600-C can support up to 240 pcs ATE300P if comms. distance allowed.]
- (2) Between **ATP007** smart touch screen and **ATC600-C** wireless temperature transceiver, we are using common **RS485 communications** based on **MODBUS-RTU protocol**. Although for this RS485 communication, it's wired comms. But normally these devices were always installed closedly to each other, so that remain the most part of communication structure still wireless. [1 pcs ATP007 can support and display the temp. data of up to 240 points]
- (3) Between **ATP007** IoT gateway and Acrel IoT system, we are using **Ethernet** comms. methods based on either **MQTT** or **MODBUS-TCP** protocol.



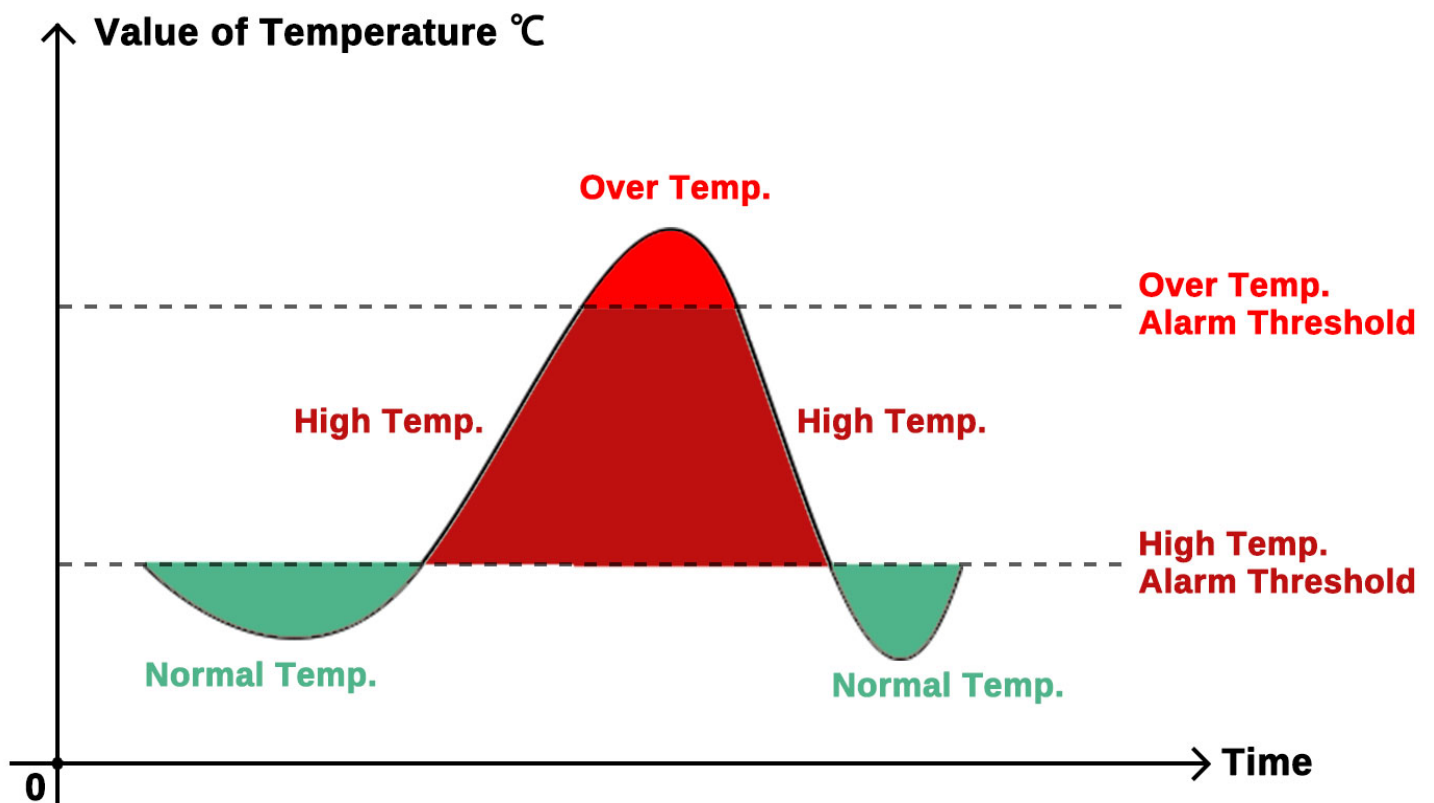
(1) Communication Structure

### 3. Local Device Temperature Alarm Function&Logic [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]

ATP Seires Temperature Display Devices support 2 types of major temperature alarm logic. When any of the below alarm logic was set and triggered, it will alarm the buzzer up.

(1) **High Temperature Alarm:** When temperature of certain monitoring node was higher than a certain preset threshold value, this will trigger high temperature alarm. [Normally used as a pre-alarm for mentioning related person to take care of temperature rising issue in monitoring places]

(2) **Over Temperature Alarm:** Similar like high temperature alarm, but over temperature alarm normally will be preset a higher alarm threshold. [Normally used for alarming the related person that there are severe temperature rising issue happened and need to be solved immediately]

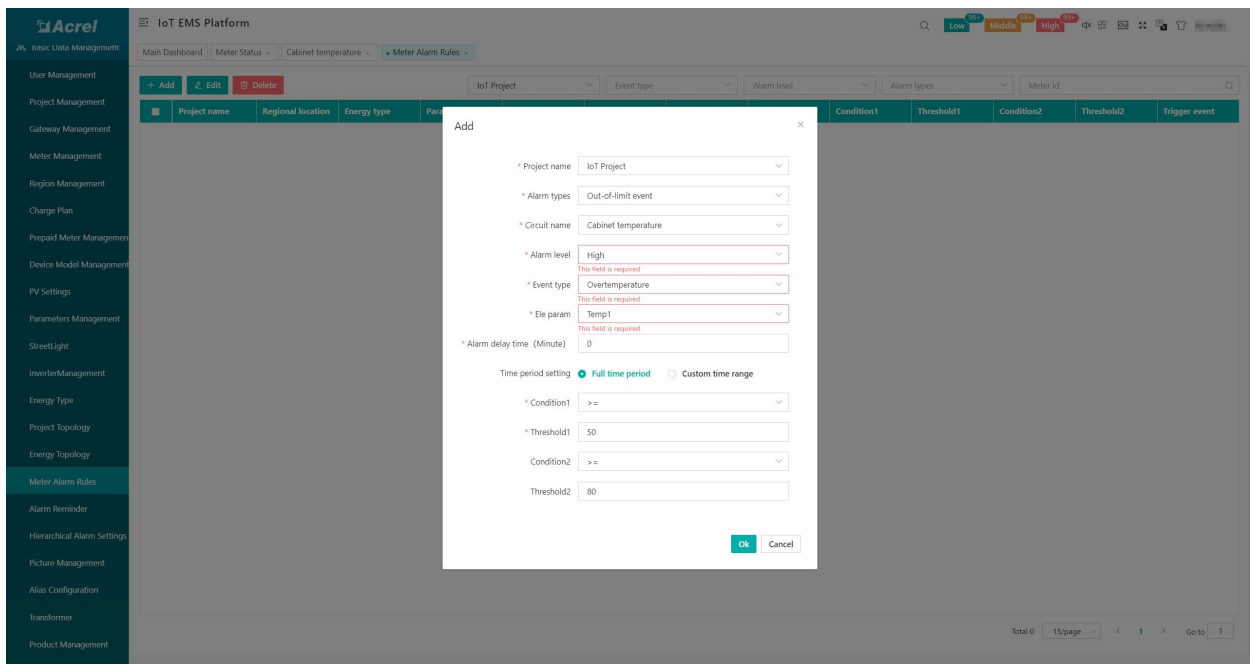


(1&2) High&Over Temperature Alarm

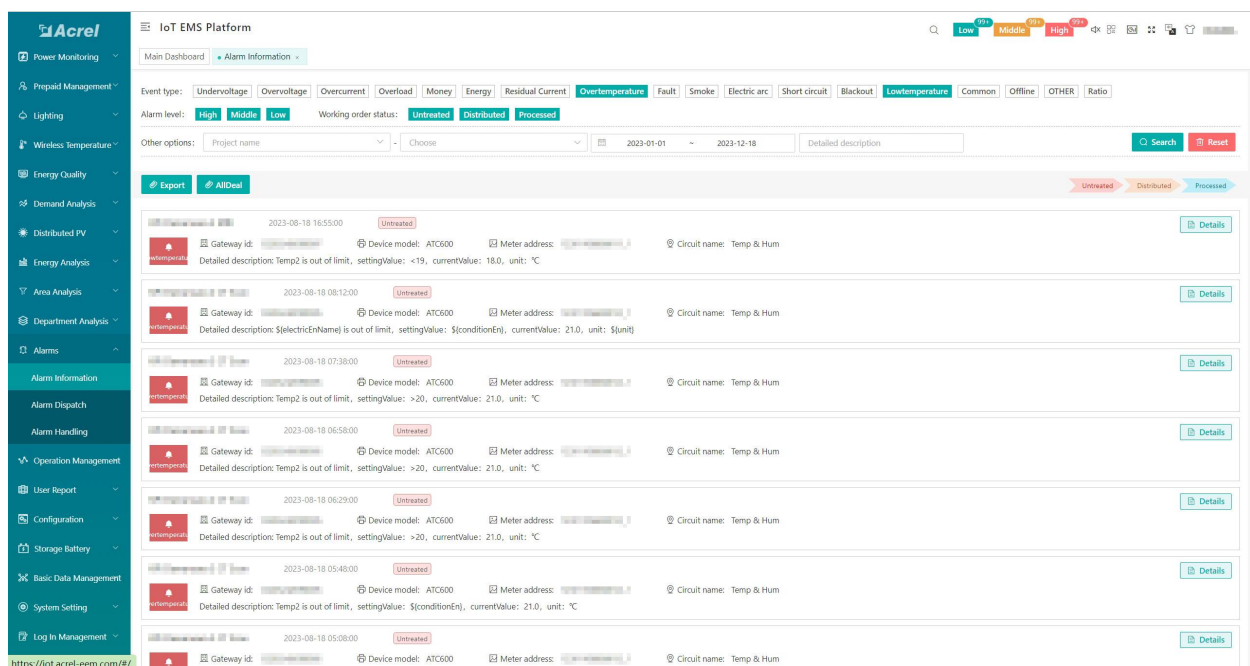
## 3. Cloud IoT Platform Temperature Alarm Function&Logic [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]

Once the temperature data was collected by Acrel IoT Cloud System Platform. We could also do the high/over temperature alarm rule setting on cloud system and receive the high/over temperature alarm warning information via **WEB/APP/SMS/E-mail**. [SMS/E-mail warning will be only supported when using buy-out service of Acrel IoT System.]

**(1) High/Over Temperature Alarm:** First we set the high/over temperature alarm rule on platform, then once the monitoring temperature was higher/lower than a certain preset threshold value, this will trigger the alarm and send the alarm warning information via assigned **WEB/APP/SMS/E-mail**.



(1) Set the over/high temperature alarm rule

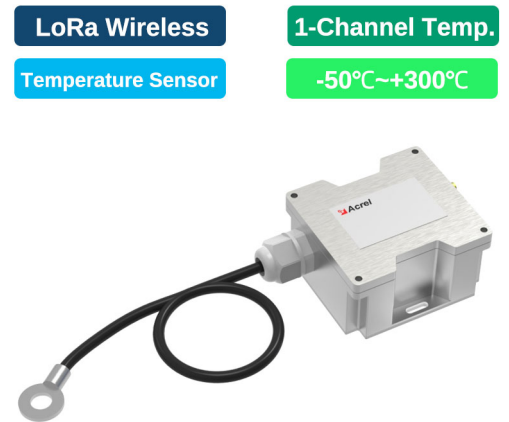


(2) Receive and check alarm information

### 3. Hardware Devices Overview [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]

#### Model 1: ATE300P Wireless Temperature Sensor

- Temperature Measuring Range: -50 ~+300 [±1 ]
- Monitoring: Up to 1-channel Temperature [via paired PT100 Thermistor, cable length = 2m]
- Wireless Comms: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Protection Level: IP65
- Power Supply: Built-in battery [5 years life span, when main body under 25 operating temperature]
- Installation: DIN-rail/Strap-tied/Hot melt adhesive



#### Model 2: ATC600-C Wireless Temperature Transceiver

- Wireless Comms. [Downstream]: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Wired Comms. [Upstream]: 1-way RS485 [MODBUS-RTU protocol]
- Support: up to 240 pcs ATE300P Wireless Temperature Sensors based on LoRa
- Power Supply: 100~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



#### Model 3: ATP007 Temp. Display&Alarm Touch Screen

- Comms.: 2-way RS485 [one for upstream, one for downstream, MODBUS-RTU]; 1-way Ethernet [for upstream, MODBUS-TCP]
- Support: Display the temperature data of up to 240 pcs temperature monitoring points.
- Alarm: High-temperature alarm, over-temperature alarm.
- Power Supply: 24Vdc [±10%]; consumption 15W
- Screen Size: 7 inches [10 inches option available, module ATP010]
- Working Temperature: -10 ~ +55
- Working Humidity: <=95%




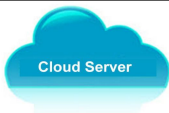




**3. Hardware Devices Overview [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]****Input Range****100~240Vac/Vdc****Output Range****24Vdc****Model 4: KDYA-DG30-24K Power Supply Module**

- Rated Input Range: 100~240Vac/Vdc
- Rated Output Range: 24Vdc
- Application: paired with ATP007 for power supply input



### 3. Model Selection&Quotation [Ethernet IoT Cloud&Local Wireless Temperature Monitoring Solution]

(1) This Quotation doesn't include freight charge. To gain a complete quotation, please refer the actual quantity that you want to request for the actual order, once we receiving it. We will issue a Official Proforma Invoice with Acrel Stamps on it for later procedure.

System Software					
Name	Description	System Price	Remark (Choose Host Service or Buy-out Service after 3-month Free Trial of Cloud IoT System)		
 <b>Acrel Cloud IoT Energy Management System</b>	1.System support all the meters across the country whose data has been sent to cloud server through <b>4G,WiFi or Ethernet</b> . 2.Remote meter reading and data collection. 3.Provide <b>IoT APP</b> for <b>mobile phone</b> side and <b>IoT WEB</b> for <b>PC</b> side. 4.Generate energy data report of daily, monthly and annually period with year-on-year and period-on-period energy analysis. 5.Provide various alarm function to ensure a stable operation of the system and protect your property. 6.Offer 3-month free trial of system with full technical support as for a test phase or pilot project.	\$0 (recommended in pilot project)  \$xxx/Year (For 30 Points) (Price for Host Service Only, recommended in pilot project)  \$xxxx/Permanent (Limitless Points) (Price for Buy-out Service Only, recommended in late project)	3-month Free Trail (Users don't need to rent a cloud server))  \$xx to buy Hosting Service for 1 monitoring points connected to the system 1 year (Users don't need to rent a cloud server)  1-time charging of \$xxxx for Buy-out Service of permanent use (Limitless monitoring points and a cloud server need to be rent by users)		
Cloud Server					
Name	Description	Server Renting Price (For Reference Only)	Remark		
 Cloud Server	1.Cloud Server could be rent on the cloud server provider like Amazon Cloud. 2.Users of <b>Cloud IoT Energy Management System</b> only need to rent cloud server when they choose <b>buy-out</b> service of our <b>Cloud IoT System</b> . And if they are using <b>hosting service</b> or <b>3-month free trial</b> of our Cloud IoT System, we will use our own cloud server which has been rent on Amazon so that users don't need to rent a cloud server. 3.The quotation of Cloud Server is only a reference price that we have rent on Amazon Cloud.	According to Specs of Rented Cloud Server	Below cloud server specs could support 1000~2000 monitoings points connected to the system (Server: 8 core 16G Operation System: windows server 2016)		
Local Temperature Display&Alarm Device					
	<b>Touch Screen ATP007</b>	<b>Comms.:</b> 2-way RS485 (MODBUS-RTU); 1-way Ethernet [MODBUS-TCP] <b>Support:</b> Up to 240 ATE series Transceiver. <b>Auxiliary Power Supply:</b> 24Vdc <b>HS Code:</b> 8471609000	1 pcs	/	/
	<b>Power Supply Module KDYA-DG30-24K</b>	<b>Application:</b> Paired with ATP007Kt for 85~265Vac Power Supply Input <b>Input:</b> 85~265Vac <b>Output:</b> 24Vdc <b>HS Code:</b> 8504409999	1 pcs	/	/
Wireless Temperature Transceiver					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	<b>Temperature Transceiver ATC600-C</b>	<b>Upstream:</b> RS485 (MODBUS-RTU) <b>Downstream:</b> LoRa (433~510 MHz) <b>Support:</b> Up to 240 ATE300P series wireless temperature sensors using LoRa communication. <b>Power Supply:</b> 100~265Vac <b>HS Code:</b> 9025191010	1 pcs		
Wireless Temperature Sensor					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	<b>Temperature Sensor ATE300P</b>	<b>Communication:</b> LoRa Wireless (433~510MHz) <b>Monitoring:</b> 1-channel Temperature <b>Measuring Range:</b> -50℃~+300℃ [via PT100 thermistor] <b>Power Supply:</b> Built-in Battery <b>Protection Level:</b> IP65 <b>Installation:</b> Rail-type or Cable-tie installation <b>HS Code:</b> 9025191010	30 pcs		



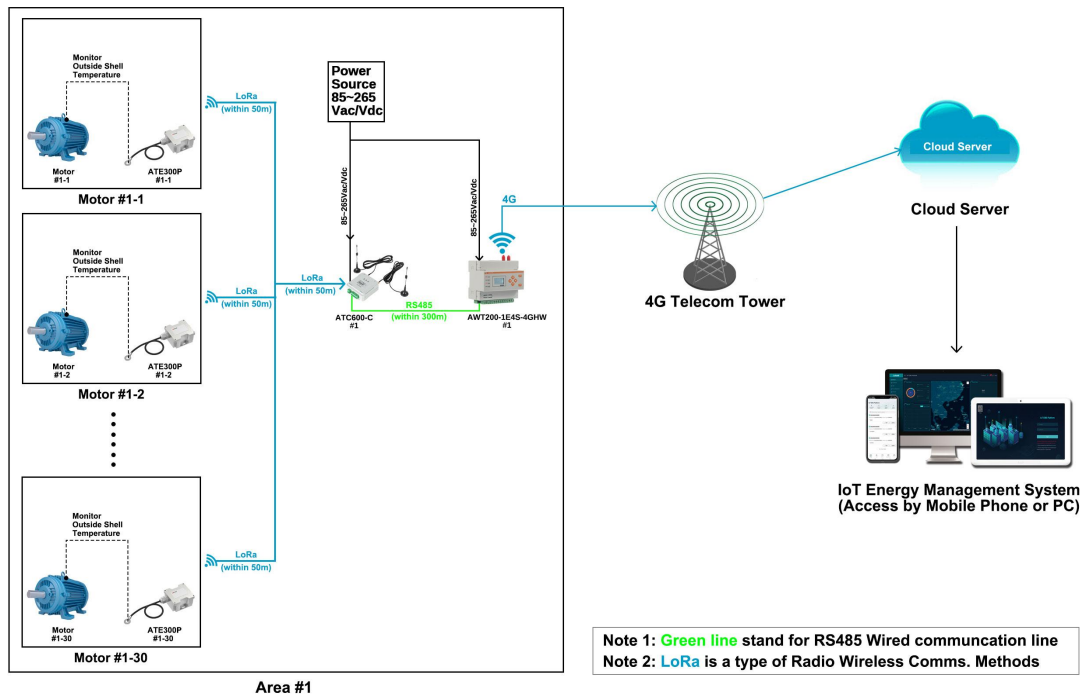
### 4. Scenario Preset [4G IoT Cloud Wireless Temperature Monitoring Solution]

- (1) The target was to monitor and alarm the temperature of **30 motor's shell** deployed in a single room. Only **cloud** display and alarm of temperature was requested.
- (2) Each motor has **1** temperature monitoring point for electrical connection nodes. Thus there will be **30** temperature monitoring points in total.
- (3) Network status with stable **4G** signal.

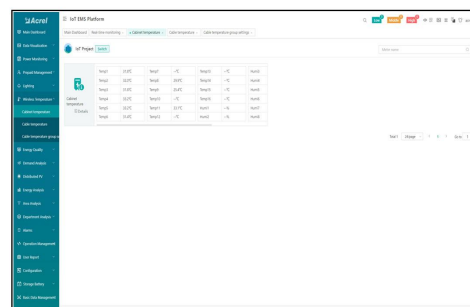
### 4. Devices Deployment [4G IoT Cloud Wireless Temperature Monitoring Solution]

Area #1 - Motor #1-1 ~ #1-30:

- 1\* AWT200-1E4S-4GHW IoT Gateway [For further uploading the data from ATC600-C to Acrel IoT Cloud System via 4G Comms.]
- 1\* ATC600-C Wireless Temperature Transceiver [For collecting temperature data from ATE300P wireless temp. sensors and further upload the data to AWT200-1E4S-4GHW]
- 30\* ATE300P Wireless Temperature Sensor [For monitoring the temperature of motor shell and send the data to ATC600-C via LoRa wireless Comms. Note: Distance between ATE300P and motor **wasn't more than 2m** due to paired PT100 cable length limit.]



Installation Picture of ATE300P installed on Motor Shell

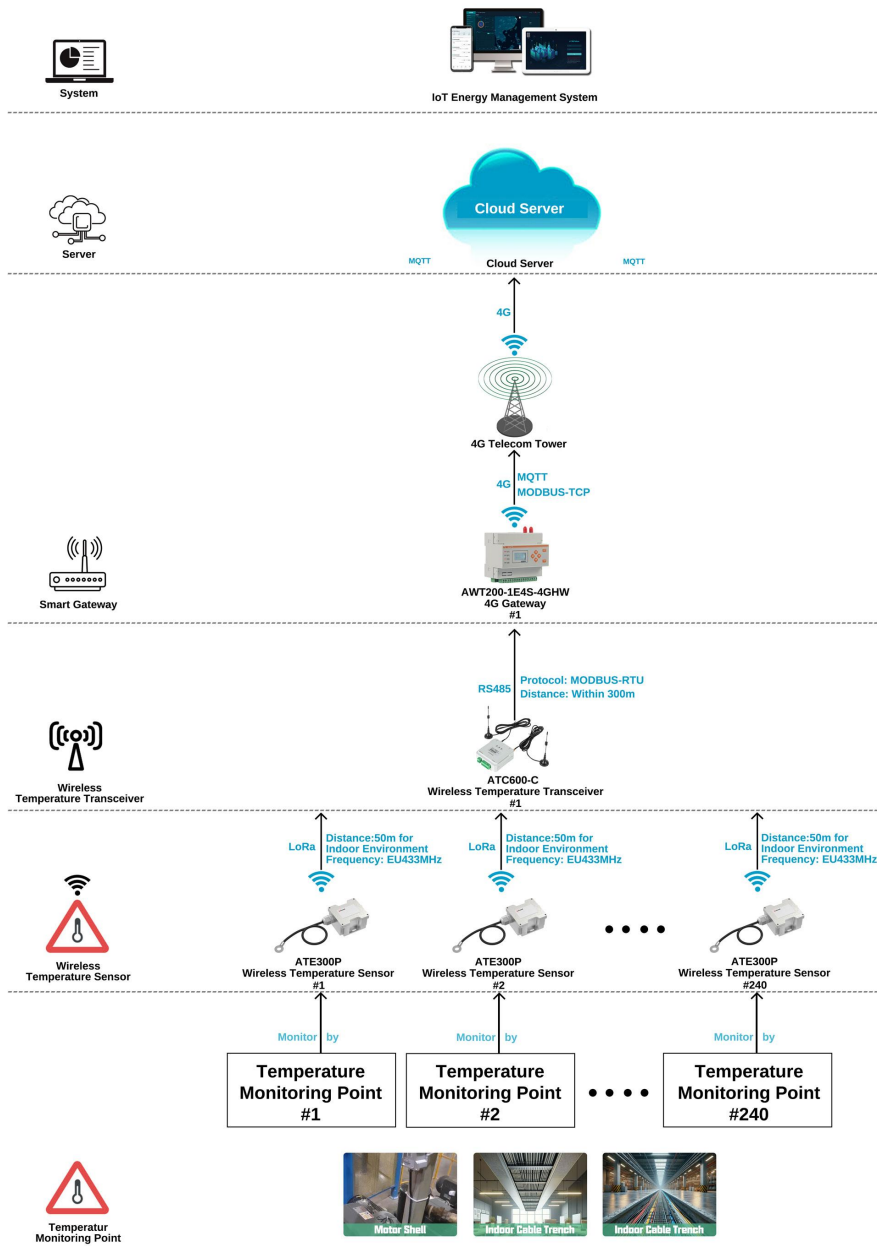


Acrel IoT Temperature Monitoring System Showcase

(1) Device Deployment Plan illustration

### 4. Comms. Structure & Logic [4G IoT Cloud Wireless Temperature Monitoring Solution]

- (1) Between **ATE300P** wireless temperature sensor and **ATC600-C** wireless temperature transceiver, we are using a radio wireless communications called **LoRa**. The communication distance is within 50m [when in indoor environment and penetrate 1 layer of metal cover of switchgear]. The communication protocol is self defined protocol. [1 **ATC600-C** can support up to 240 pcs **ATE300P** if comms. distance allowed.]
- (2) Between **ATC600-C** wireless temperature transceiver and **AWT200-1E4S-4GHW** IoT gateway, we are both using common **RS485 communications** based on **MODBUS-RTU protocol**. Although for this RS485 communication, it's wired comms. But normally these devices were always installed closely to each other, so that remain the most part of communication structure still wireless.
- (3) Between **AWT200-1E4S-4GHW** IoT gateway and **Acrel IoT system**, we are using **4G** comms. methods based on either **MQTT** or **MODBUS-TCP** protocol.



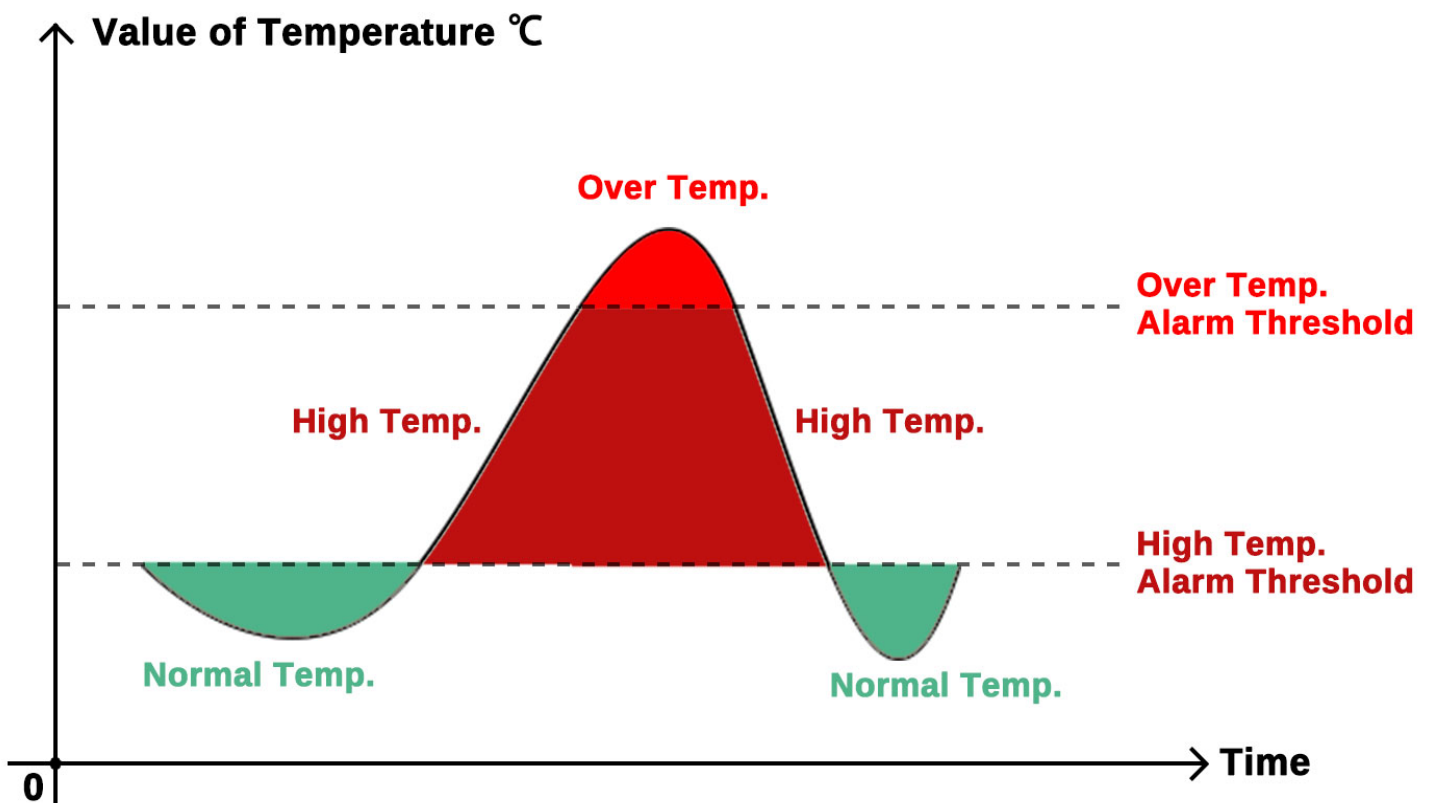
(1) Communication Structure

#### 4. Local Device Temperature Alarm Function&Logic [4G IoT Cloud Wireless Temperature Monitoring Solution]

ATP Seires Temperature Display Devices support 2 types of major temperature alarm logic. When any of the below alarm logic was set and triggered, it will alarm the buzzer up.

(1) **High Temperature Alarm:** When temperature of certain monitoring node was higher than a certain preset threshold value, this will trigger high temperature alarm. [Normally used as a pre-alarm for mentioning related person to take care of temperature rising issue in monitoring places]

(2) **Over Temperature Alarm:** Similar like high temperature alarm, but over temperature alarm normally will be preset a higher alarm threshold. [Normally used for alarming the related person that there are severe temperature rising issue happened and need to be solved immediately]

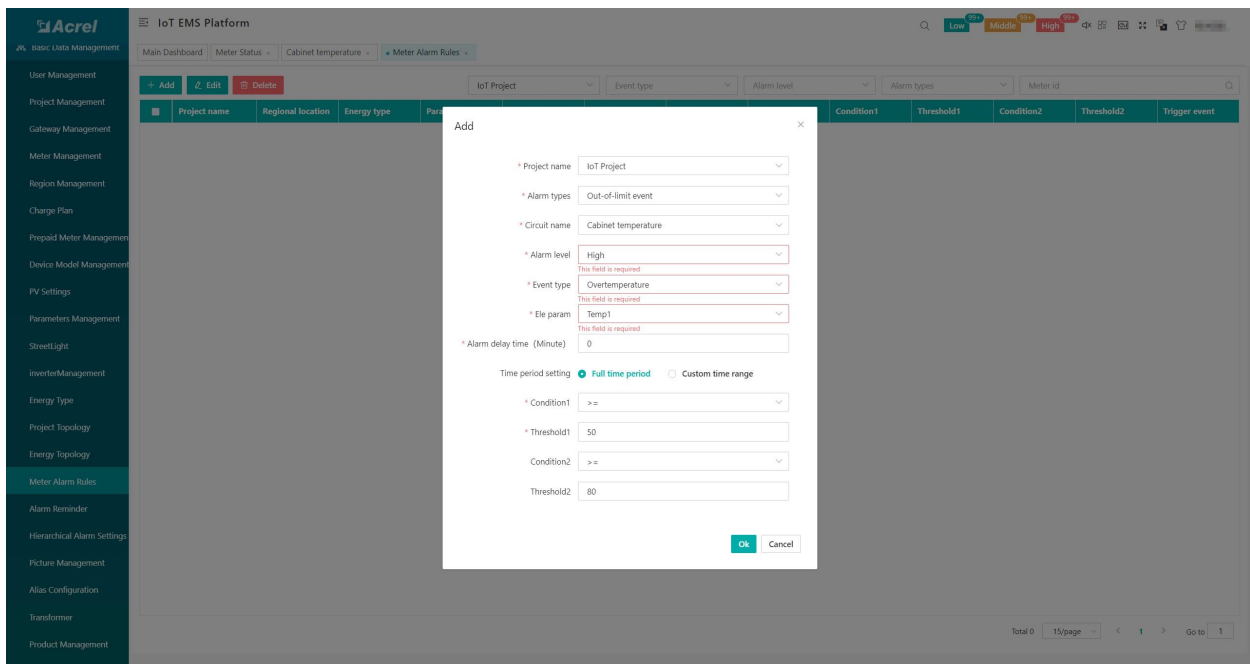


(1&2) High&Over Temperature Alarm

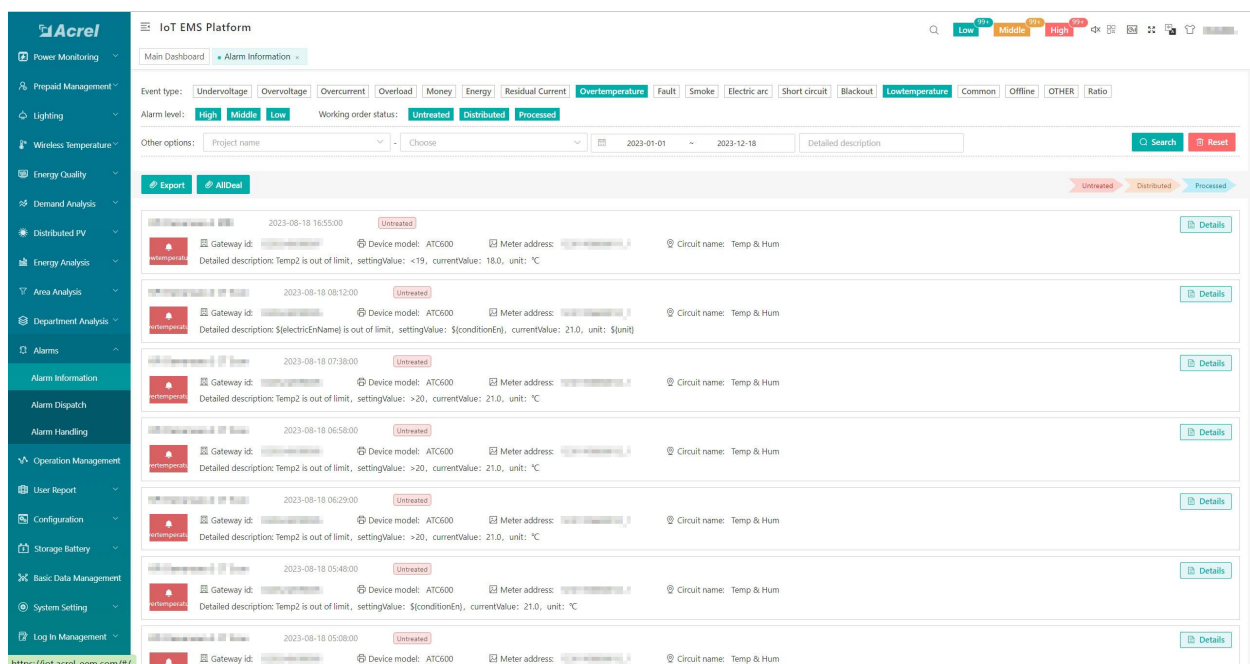
## 4. Cloud IoT Platform Temperature Alarm Function&Logic [4G IoT Cloud Wireless Temperature Monitoring Solution]

Once the temperature data was collected by Acrel IoT Cloud System Platform. We could also do the high/over temperature alarm rule setting on cloud system and receive the high/over temperature alarm warning information via **WEB/APP/SMS/E-mail**. [SMS/E-mail warning will be only supported when using buy-out service of Acrel IoT System.]

**(1) High/Over Temperature Alarm:** First we set the high/over temperature alarm rule on platform, then once the monitoring temperature was higher/lower than a certain preset threshold value, this will trigger the alarm and send the alarm warning information via assigned **WEB/APP/SMS/E-mail**.



(1) Set the over/high temperature alarm rule

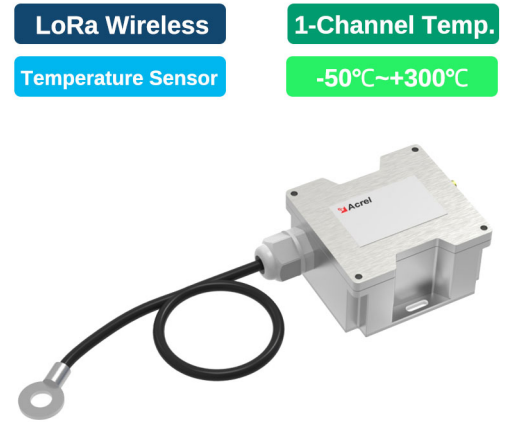


(2) Receive and check alarm information

#### 4. Hardware Devices Overview [4G IoT Cloud Wireless Temperature Monitoring Solution]

##### Model 1: ATE300P Wireless Temperature Sensor

- Temperature Measuring Range: -50 ~+300 [±1 ]
- Monitoring: Up to 1-channel Temperature [via paired PT100 Thermistor, cable length = 2m]
- Wireless Comms: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Protection Level: IP65
- Power Supply: Built-in battery [5 years life span, when main body under 25 operating temperature]
- Installation: DIN-rail/Strap-tied



##### Model 2: ATC600-C Wireless Temperature Transceiver

- Wireless Comms. [Downstream]: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Wired Comms. [Upstream]: 1-way RS485 [MODBUS-RTU protocol]
- Support: up to 240 pcs ATE300P Wireless Temperature Sensors based on LoRa
- Power Supply: 100~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



##### Model 3: ATP007 Temp. Display&Alarm Touch Screen

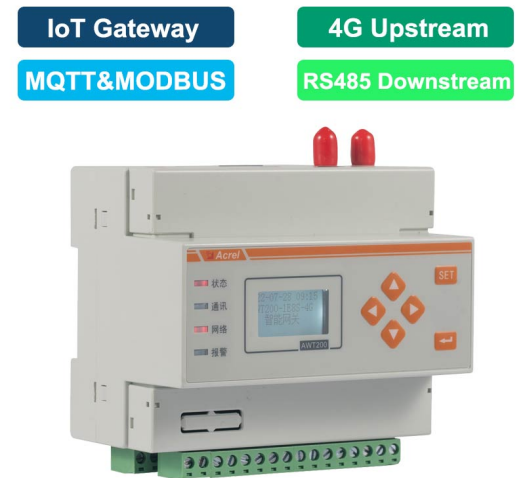
- Comms.: 2-way RS485 [one for upstream, one for downstream, MODBUS-RTU]; 1-way Ethernet [for upstream, MODBUS-TCP]
- Support: Display the temperature data of up to 240 pcs temperature monitoring points.
- Alarm: High-temperature alarm, over-temperature alarm.
- Power Supply: 24Vdc [±10%]; consumption 15W
- Screen Size: 7 inches [10 inches option available, module ATP010]
- Working Temperature: -10 ~ +55
- Working Humidity: <=95%



#### 4. Hardware Devices Overview [4G IoT Cloud Wireless Temperature Monitoring Solution]

##### Model 4: AWT200-1E4S-4GHW IoT Smart Gateway

- Upstream Comms.: 4G&Ethernet Comms. [MQTT& MODBUS-TCP protocol]
- Downstream Comms.: 4-way RS485 [MODBUS-RTU protocol]
- Power Supply: 85~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



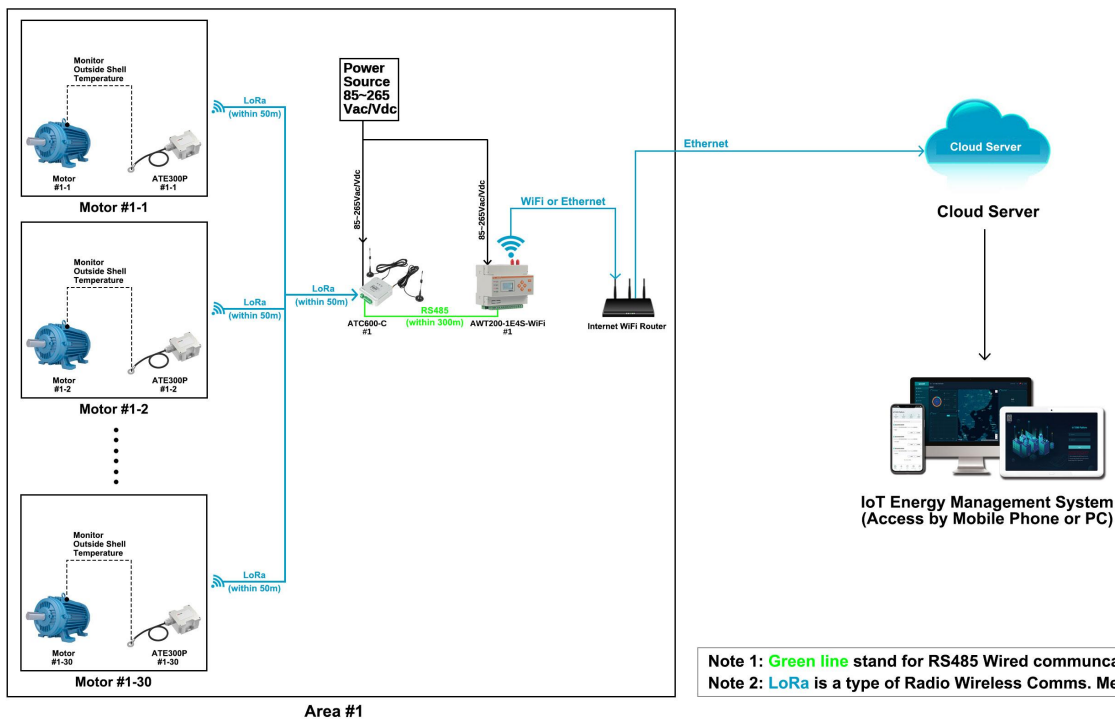
### 5. Scenario Preset [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

- (1) The target was to monitor and alarm the temperature of **30 motor's shell** deployed in a single room. Only **cloud** display and alarm of temperature was requested.
- (2) Each motor has **1** temperature monitoring point for electrical connection nodes. Thus there will be **30** temperature monitoring points in total.
- (3) Network with stable **WiFi or Ethernet** communications.

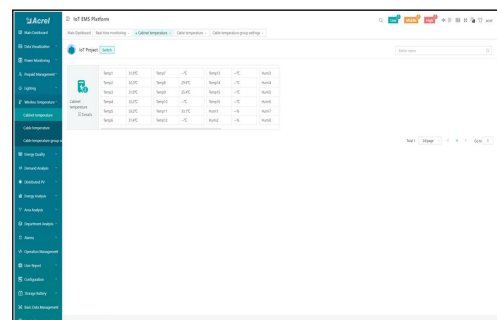
### 5. Devices Deployment [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

Area #1 - LV Switchboard #1 ~ #5:

- 1\* AWT200-1E4S-WiFi IoT Gateway [For further uploading the data from ATC600-C to Acrel IoT Cloud System via **WiFi or Ethernet** Comms.]
- 1\* ATC600-C Wireless Temperature Transceiver [For collecting the temperature data from ATE300P wireless temp. sensors and further upload the data to AWT200-1E4S-WiFi]
- 30\* ATE300P Wireless Temperature Sensor [For monitoring the temperature of motor shell and send the data to ATC600-C via LoRa wireless Comms. Note: Distance between ATE300P and motor **wasn't more than 2m** due to paired PT100 cable length limitation.]



Installation Picture of ATE300P installed on Motor Shell

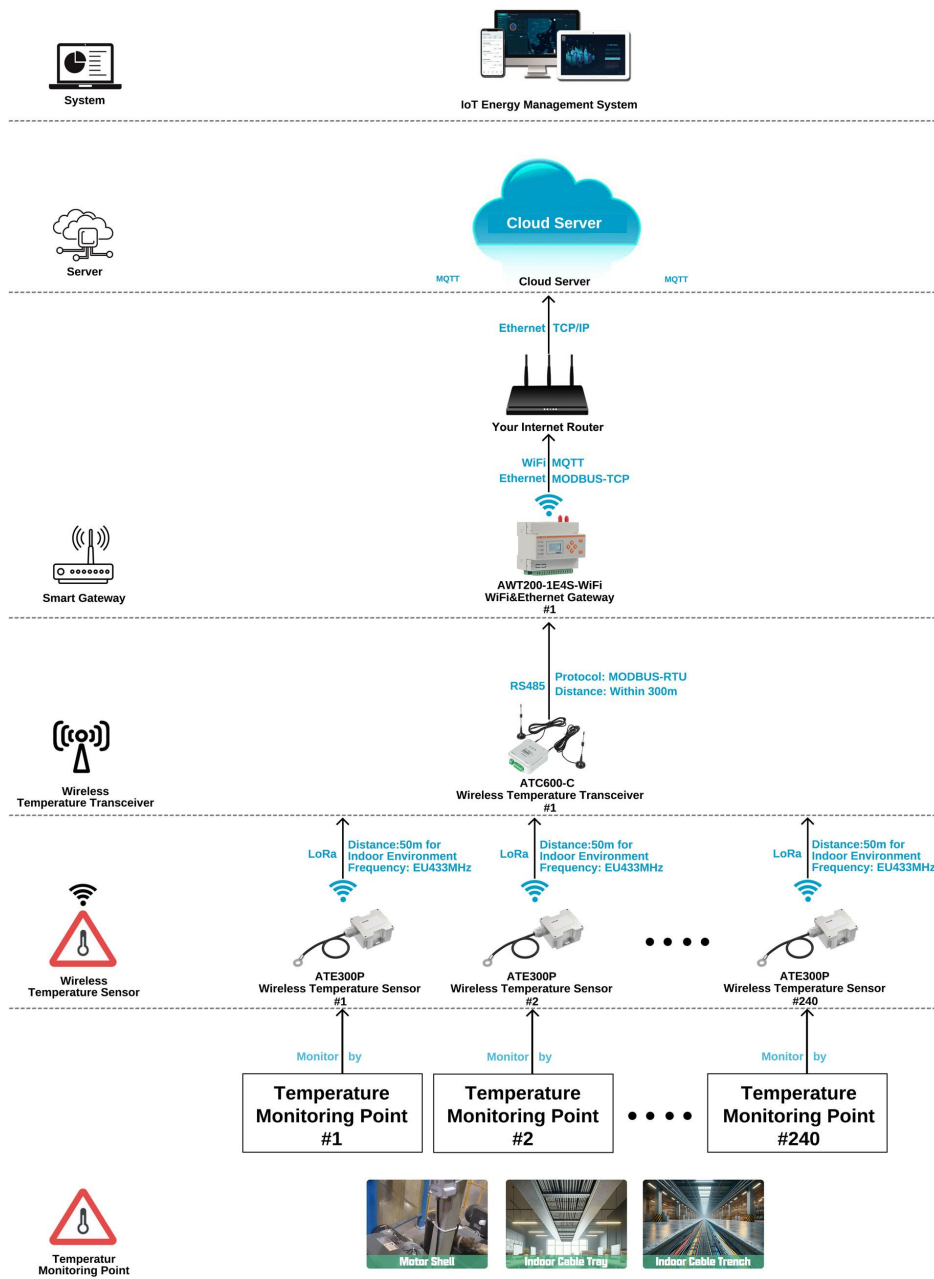


Acrel IoT Temperature Monitoring System Showcase

(1) Devices deployment plan Illustration

### 5. Comms. Structure & Logic [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

- (1) Between **ATE300P** wireless temperature sensor and **ATC600-C** wireless temperature transceiver, we are using a radio wireless communications called **LoRa**. Communication distance is within 50m [when in indoor environment. Communication protocol is self defined protocol. [1 **ATC600-P** can support up to 240 pcs **ATE300P** if comms. distance allowed.]
- (2) Between **ATC600-C** wireless temperature transceiver and **AWT200-1E4S-WiFi** IoT gateway, we are both using common **RS485 communications** based on **MODBUS-RTU protocol**. Although for this RS485 communication, it's wired comms. But normally these devices were always installed closedly to each other, so that remain the most part of communication structure still wireless.
- (3) Between **AWT200-1E4S-WiFi** IoT gateway and Acrel IoT system, we are using either **WiFi or Ethernet** comms. methods based on either **MQTT** or **MODBUS-TCP** protocol.



(1) Communication Structure

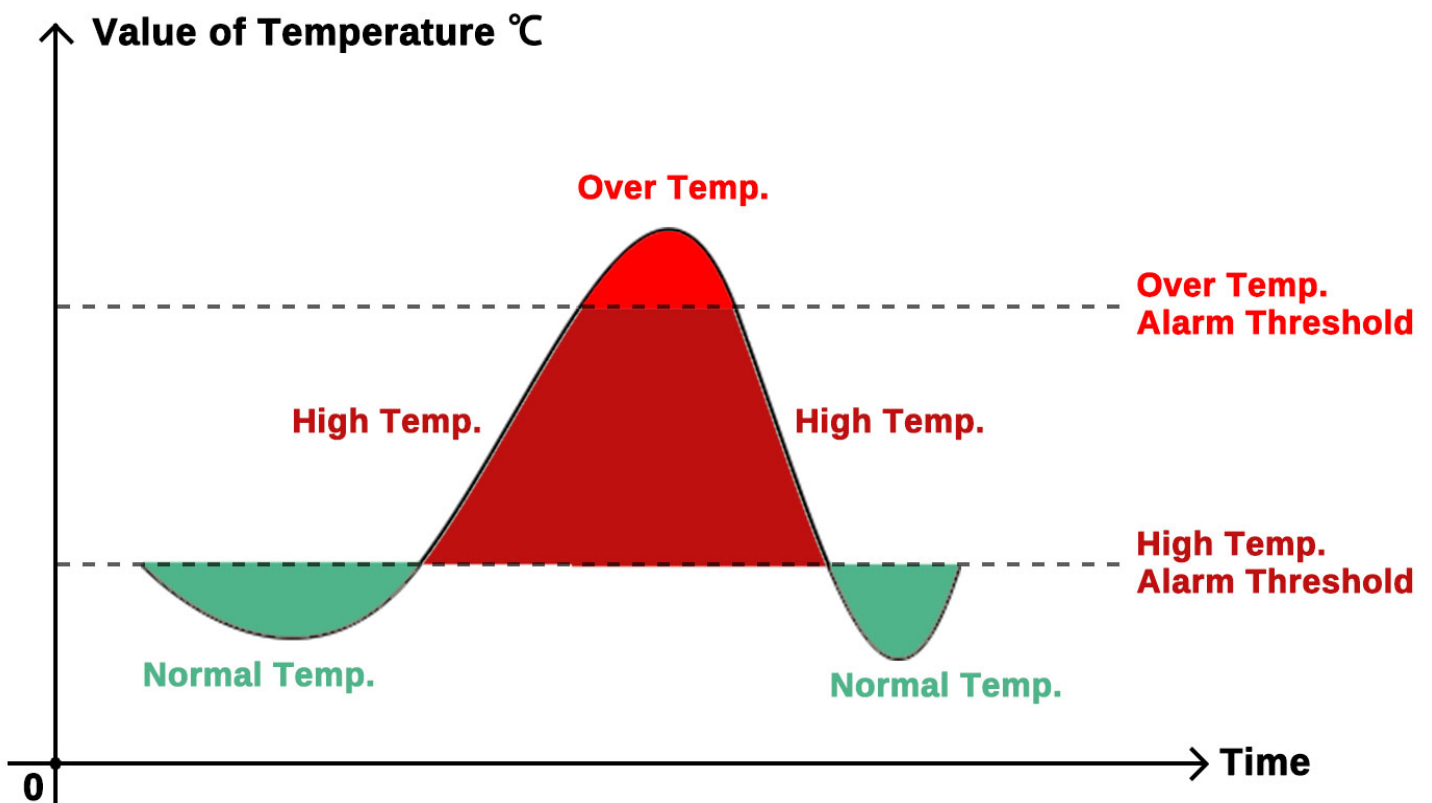


## 5. Local Device Temperature Alarm Function&Logic [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

ATP Seires Temperature Display Devices support 2 types of major temperature alarm logic. When any of the below alarm logic was set and triggered, it will alarm the buzzer up.

(1) **High Temperature Alarm:** When temperature of certain monitoring node was higher than a certain preset threshold value, this will trigger high temperature alarm. [Normally used as a pre-alarm for mentioning related person to take care of temperature rising issue in monitoring places]

(2) **Over Temperature Alarm:** Similar like high temperature alarm, but over temperature alarm normally will be preset a higher alarm threshold. [Normally used for alarming the related person that there are severe temperature rising issue happened and need to be solved immediately]

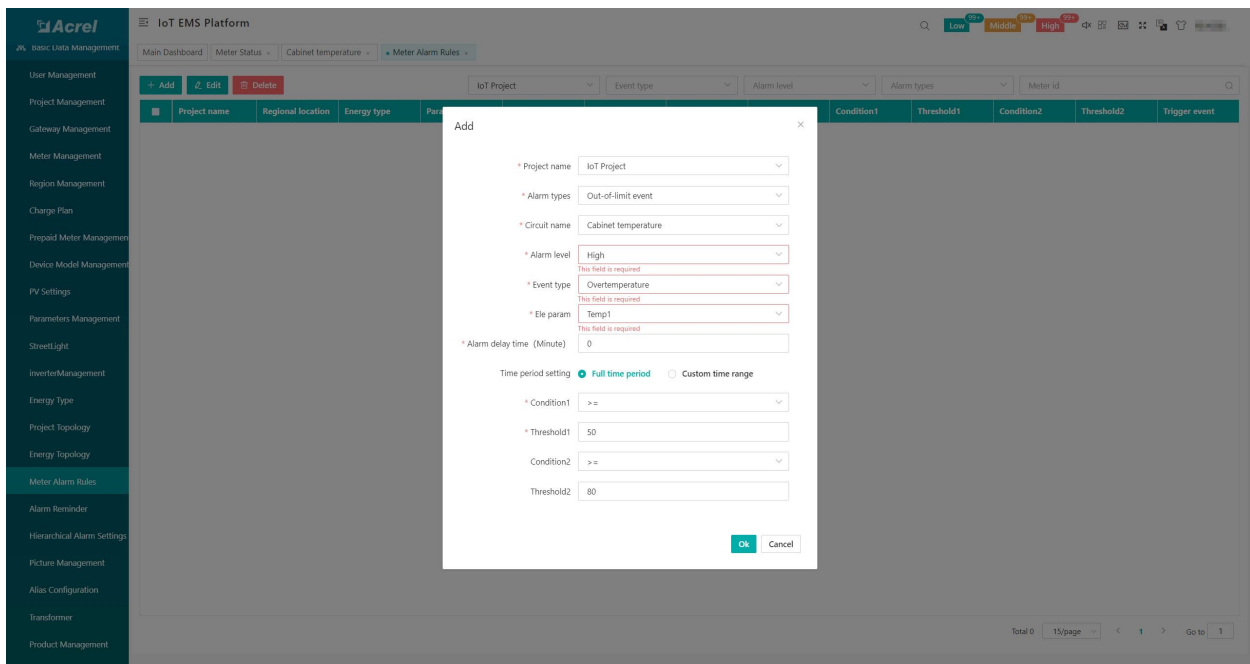


(1&2) High&Over Temperature Alarm

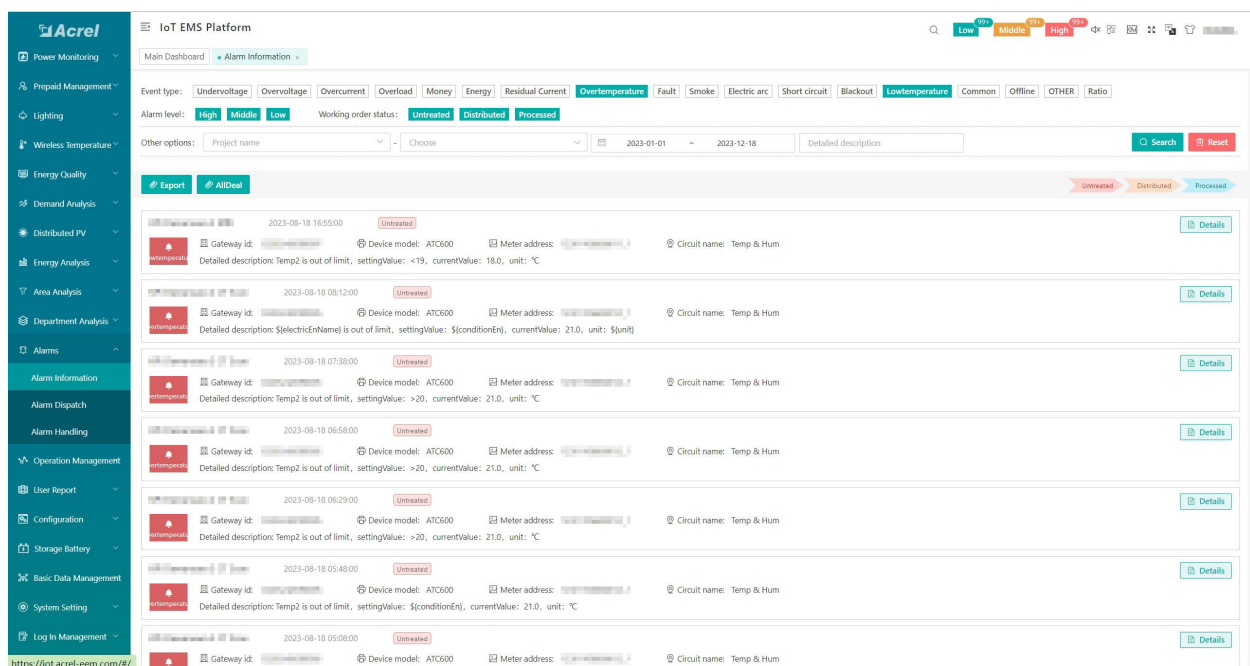
## 5. Cloud IoT Platform Temperature Alarm Function&Logic [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

Once the temperature data was collected by Acrel IoT Cloud System Platform. We could also do the high/over temperature alarm rule setting on cloud system and receive the high/over temperature alarm warning information via **WEB/APP/SMS/E-mail**. [SMS/E-mail warning will be only supported when using buy-out service of Acrel IoT System.]

**(1) High/Over Temperature Alarm:** First we set the high/over temperature alarm rule on platform, then once the monitoring temperature was higher/lower than a certain preset threshold value, this will trigger the alarm and send the alarm warning information via assigned **WEB/APP/SMS/E-mail**.



(1) Set the over/high temperature alarm rule

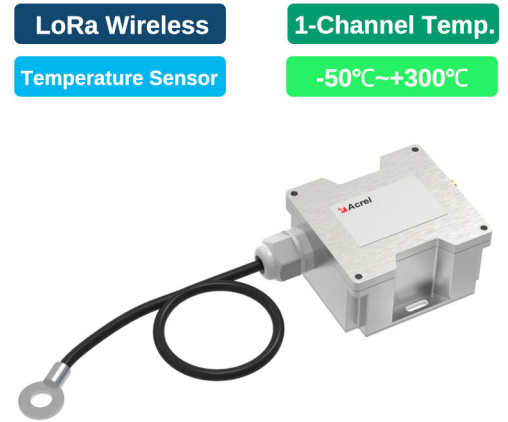


(2) Receive and check alarm information

## 5. Hardware Devices Overview [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

### Model 1: ATE300P Wireless Temperature Sensor

- Temperature Measuring Range: -50 ~+300 [±1 ]
- Monitoring: Up to 1-channel Temperature [via paired PT100 Thermistor, cable length = 2m]
- Wireless Comms: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Protection Level: IP65
- Power Supply: Built-in battery [5 years life span, when main body under 25 operating temperature]
- Installation: DIN-rail/Strap-tied



### Model 2: ATC600-C Wireless Temperature Transceiver

- Wireless Comms. [Downstream]: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when in indoor environment]
- Wired Comms. [Upstream]: 1-way RS485 [MODBUS-RTU protocol]
- Support: up to 240 pcs ATE300P Wireless Temperature Sensors based on LoRa
- Power Supply: 100~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



### Model 3: ATP007 Temp. Display&Alarm Touch Screen

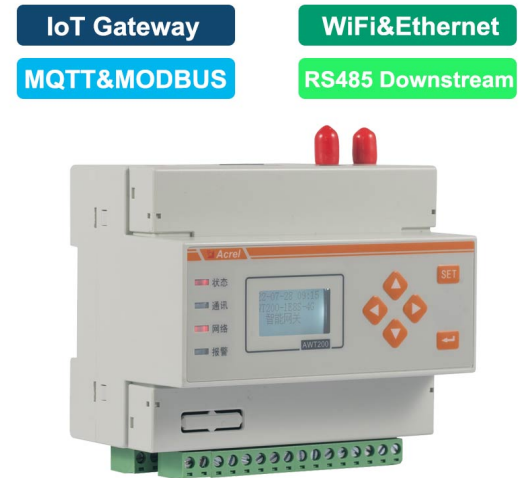
- Comms.: 2-way RS485 [one for upstream, one for downstream, MODBUS-RTU]; 1-way Ethernet [for upstream, MODBUS-TCP]
- Support: Display the temperature data of up to 240 pcs temperature monitoring points.
- Alarm: High-temperature alarm, over-temperature alarm.
- Power Supply: 24Vdc [±10%]; consumption 15W
- Screen Size: 7 inches [10 inches option available, module ATP010]
- Working Temperature: -10 ~ +55
- Working Humidity: <=95%



## 5. Hardware Devices Overview [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]


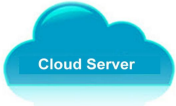



### Model 4: AWT200-1E4S-WiFi IoT Smart Gateway

- Upstream Comms.: WiFi&Ethernet Comms. [MQTT&MODBUS-TCP protocol]
- Downstream Comms.: 4-way RS485 [MODBUS-RTU protocol]
- Power Supply: 85~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



## 5. Model Selection&Quotation [WiFi&Ethernet IoT Cloud Wireless Temperature Monitoring Solution]

(1) This Quotation doesn't include freight charge. To gain a complete quotation, please refer the actual quantity that you want to request for the actual order, once we receiving it. We will issue a Official Proforma Invoice with Acrel Stamps on it for later procedure.

System Software					
Name	Description	System Price	Remark (Choose Host Service or Buy-out Service after 3-month Free Trial of <b>Cloud IoT System</b> )		
 <b>Acrel Cloud IoT Energy Management System</b>	1.System support all the meters across the country whose data has been sent to cloud server through <b>4G,WiFi or Ethernet</b> . 2.Remote meter reading and data collection. 3.Provide <b>IoT APP</b> for <b>mobile phone</b> side and <b>IoT WEB</b> for <b>PC</b> side. 4.Generate energy data report of daily, monthly and annually period with year-on-year and period-on-period energy analysis. 5.Provide various alarm function to ensure a stable operation of the system and protect your property. 6.Offer 3-month free trial of system with full technical support as for a test phase or pilot project.	\$0 (recommended in pilot project)	3-month Free Trail (Users don't need to rent a cloud server)		
		\$xxx/Year (For 30 Points) (Price for Host Service Only, recommended in pilot project)	\$xx to buy Hosting Service for 1 monitoring points connected to the system 1 year (Users don't need to rent a cloud server)		
		\$xxxx/Permanent (Limitless Points) (Price for Buy-out Service Only,recommended in late project)	1-time charging of \$xxxx for Buy-out Service of permanent use (Limitless monitoring points and a cloud server need to be rent by users)		
Cloud Server					
Name	Description	Server Renting Price (For Reference Only)	Remark		
 Cloud Server	1.Cloud Server could be rent on the cloud server provider like Amazon Cloud. 2.Users of <b>Cloud IoT Energy Management System</b> only need to rent cloud server when they choose <b>buy-out</b> service of our <b>Cloud IoT System</b> . And if they are using <b>hosting service</b> or <b>3-month free trial</b> of our <b>Cloud IoT System</b> , we will use our own cloud server which has been rent on Amazon so that users don't need to rent a cloud server. 3.The quotation of Cloud Server is only a reference price that we have rent on Amazon Cloud.	According to Specs of Rented Cloud Server	Below cloud server specs could support 1000~2000 monitoring points connected to the system (Server: 8 core 16G Operation System: windows server 2016)		
Smart IoT Gateway					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Smart Gateway <b>AWT200-1E4S-WiFi</b>	<b>Upstream:</b> WiFi, Ethernet [MQTT, MODBUS, etc] <b>Downstream:</b> RS485 (MODBUS-RTU) <b>Support:</b> up to <b>80~100</b> RS485 Devices within 400m using RS485 Wired Communication <b>Adjustment:</b> Via RJ45 or RS485 Port. <b>Power Supply:</b> 85~265Vac/Vdc (via power adpter) <b>HS Code:</b> 8517699000	1 pcs	/	/
Wireless Temperature Transceiver					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Transceiver <b>ATC600-C</b>	<b>Upstream:</b> RS485 (MODBUS-RTU) <b>Downstream:</b> LoRa (433~510 MHz) <b>Support:</b> Up to 240 ATE300P series wireless temperature sensors using LoRa communication. <b>Power Supply:</b> 100~265Vac <b>HS Code:</b> 9025191010	1 pcs		
Wireless Temperature Sensor					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Sensor <b>ATE300P</b>	<b>Communication:</b> LoRa Wireless (433~510MHz) <b>Monitoring:</b> 1-channel Temperature <b>Measuring Range:</b> -50℃~+300℃ [via PT100 thermistor] <b>Power Supply:</b> Built-in Battery <b>Protection Level:</b> IP65 <b>Installation:</b> Rail-type or Cable-tie installation <b>HS Code:</b> 9025191010	30 pcs		

## 5. Project Sample #1 - Italy Enel Green Power Project

### (1) Project Overview:

- Customer: SEL S.P.A [Switchgear Complete set factory]
- Country: Italy
- Project Aim: Integrate Acrel wireless temperature monitoring devices with switchgear s produced by SEL S.P.A for adding safety feature to their switchgear products.
- Project Amount: About 400.000 USD



(1) Customer: SEL S.P.A  
[Switchgear Complete set  
factory]



Wireless Temperature Sensor

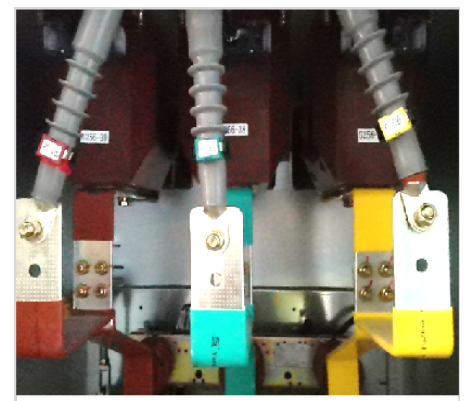
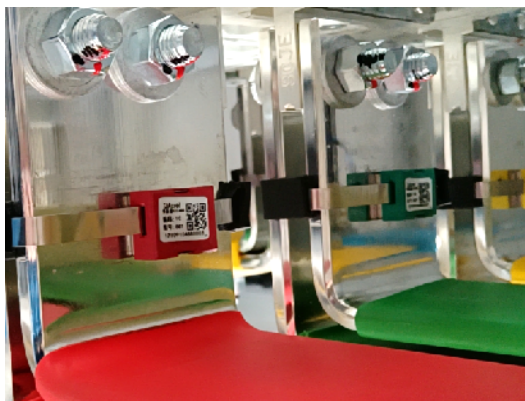
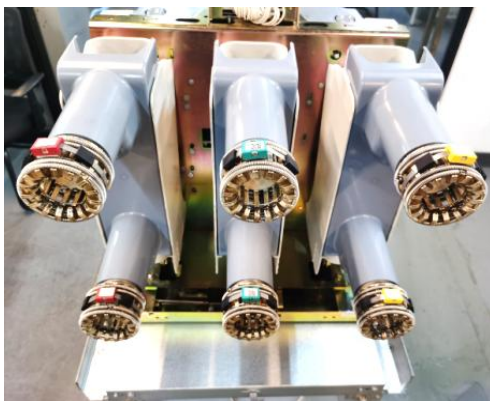


Wireless Temperature Transceiver  
and Display Unit

(1) Project Aim:  
**Switchgear** Wireless  
Temperature Monitoring

### (2) Applied Product Combination:

- ARTM-P30-400 Wireless Temperature Transceiver and Display Unit  
[For collecting, displaying and alarming for all temperature data collected from ATE400]
- ATE400 Wireless Temperature Sensor  
[For monitoring the temperature of electrical connection nodes and send the data to ARTM  
-P30-400 via GFSK wireless Comms.]



(2) Site Installation Picture

## 5. Project Sample #2 - Vietnam Lotte Mart Project

### (1) Project Overview:

- Customer: V.T.E.C.H Electrical Technology Co., Ltd , EPC [Party A]
- Country: Vietnam
- Project Aim: Client use Acrel complete Cloud Wireless Temperature Monitoring Solution for monitoring and alarming electric cabinet in Lotte Mart to ensure electricity safety.
- Project Amount: About 100.000 USD



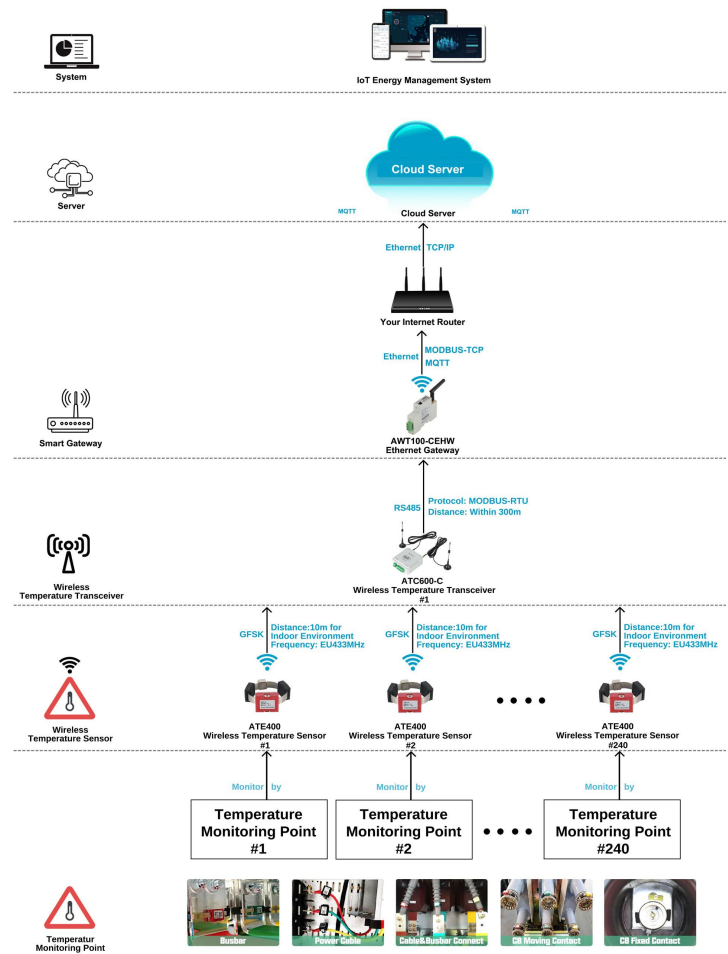
(1) Customer: V.T.E.C.H  
Electrical Technology Co.,  
Ltd , EPC [Party A]



(1) Project Aim:  
**Online IoT based** Wireless  
Temperature Monitoring&Alarming

### (2) Applied Product Combination:

- AWT100-CEHW Ethernet IoT Gateway
- AWT100-POW Power Supply Module
- ATC600-C Wireless Temperature Transceiver
- ATE400 Wireless Temperature Sensor



(2) Site Picture Gallery

(2) Solution Overall Structure