

# Motor Shell Wireless Temp. Monitoring Solution

Wireless Temperature Monitoring, for motor shell, cable trench, cable tray and etc, electrical nodes temp. monitoring

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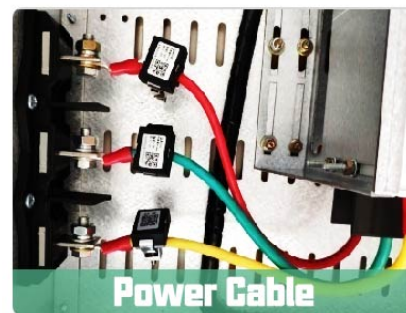
Acrel Co., Ltd.

No.253 Yulv Road, Jiading  
District, Shanghai, China

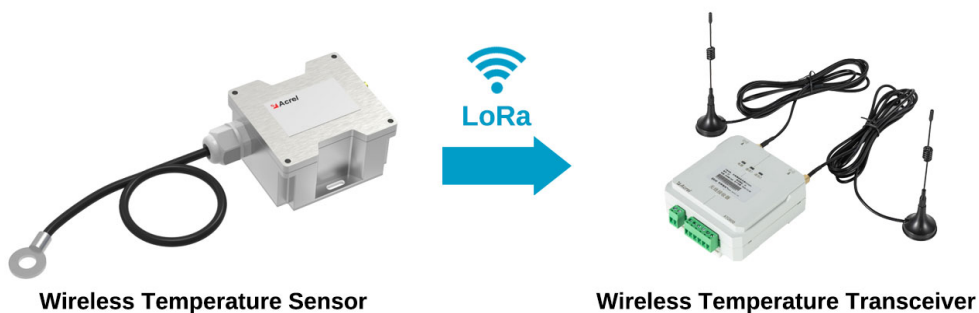


## 0. Application Scenario

- (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 **local temperature display and alarm only**. Distinguish from other Acrel wireless temperature monitoring solution which also has IoT cloud system monitoring 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 esasy installation

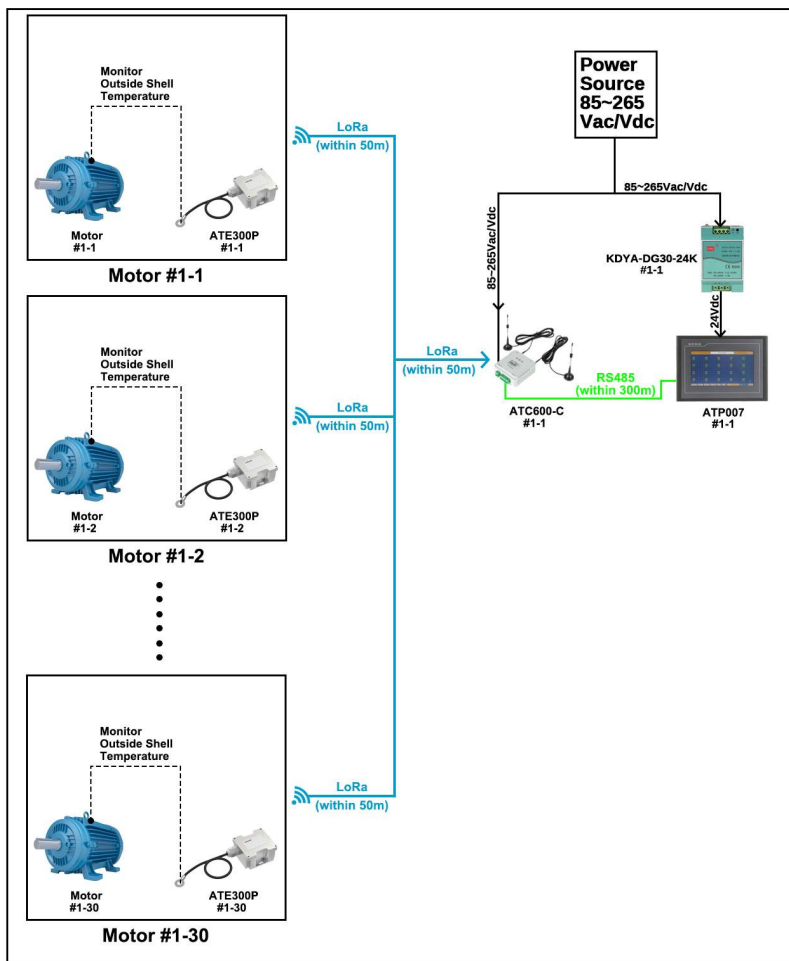
## 1. Scenario Preset

- (1) The target was to monitor and alarm the temperature of **30 motor's shell** deployed in a single room. Only local display and alarm of temperature was requested.
- (2) Each motor has **1** temperature monitoring point on motor's shell. Thus there will be **30** temperature monitoring points in total.

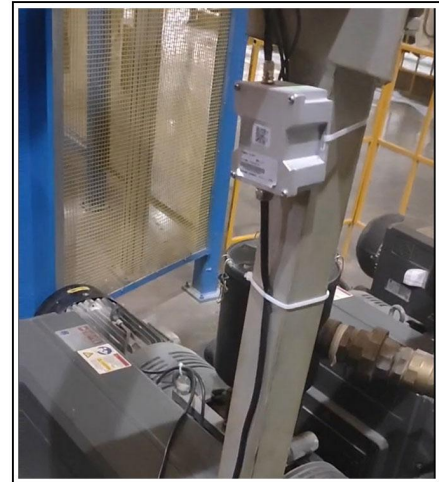
## 1. Devices Deployment

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

- 1\* ATP007 Temperature Display Touchscreen [For display and alarm for all temperature data]
- 1\* ATC600-C Wireless Temperature Transciever [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 wirelesss 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]



Area #1



Installation Picture of ATE300P installed on Motor Shell

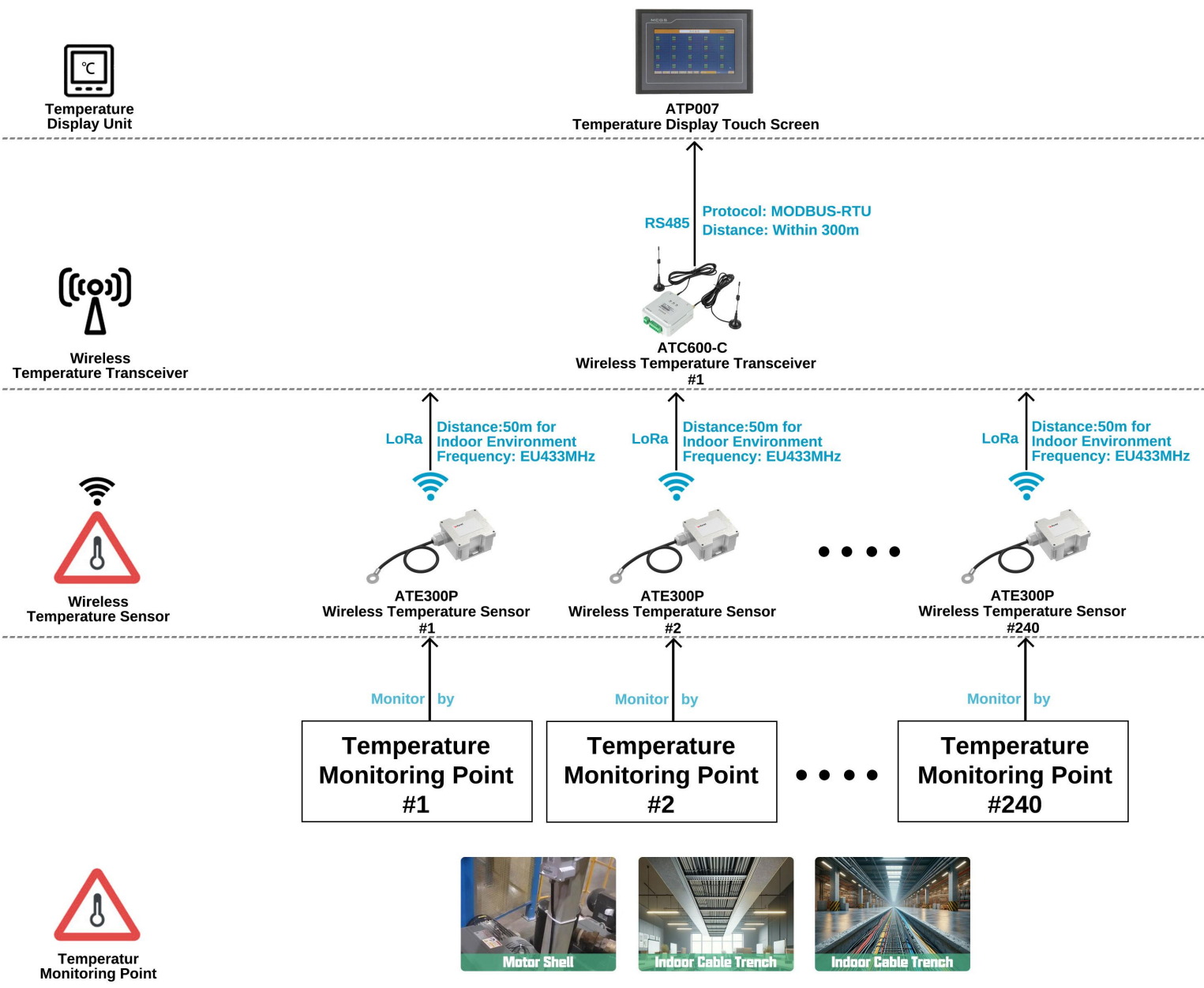
**Note 1:** Green line stand for RS485 Wired communcation line  
**Note 2:** LoRa is a type of Radio Wireless Comms. Methods

(1) Devices deployment plan Illustraton

## 1. Communication Structure & Logic

(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 100m [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, we are using common RS485 communications based on MODBUS-RTU protocol. Although for this RS485 communication, it's wired comms. But normally the **ATP007** and **ATC600-C** was 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]



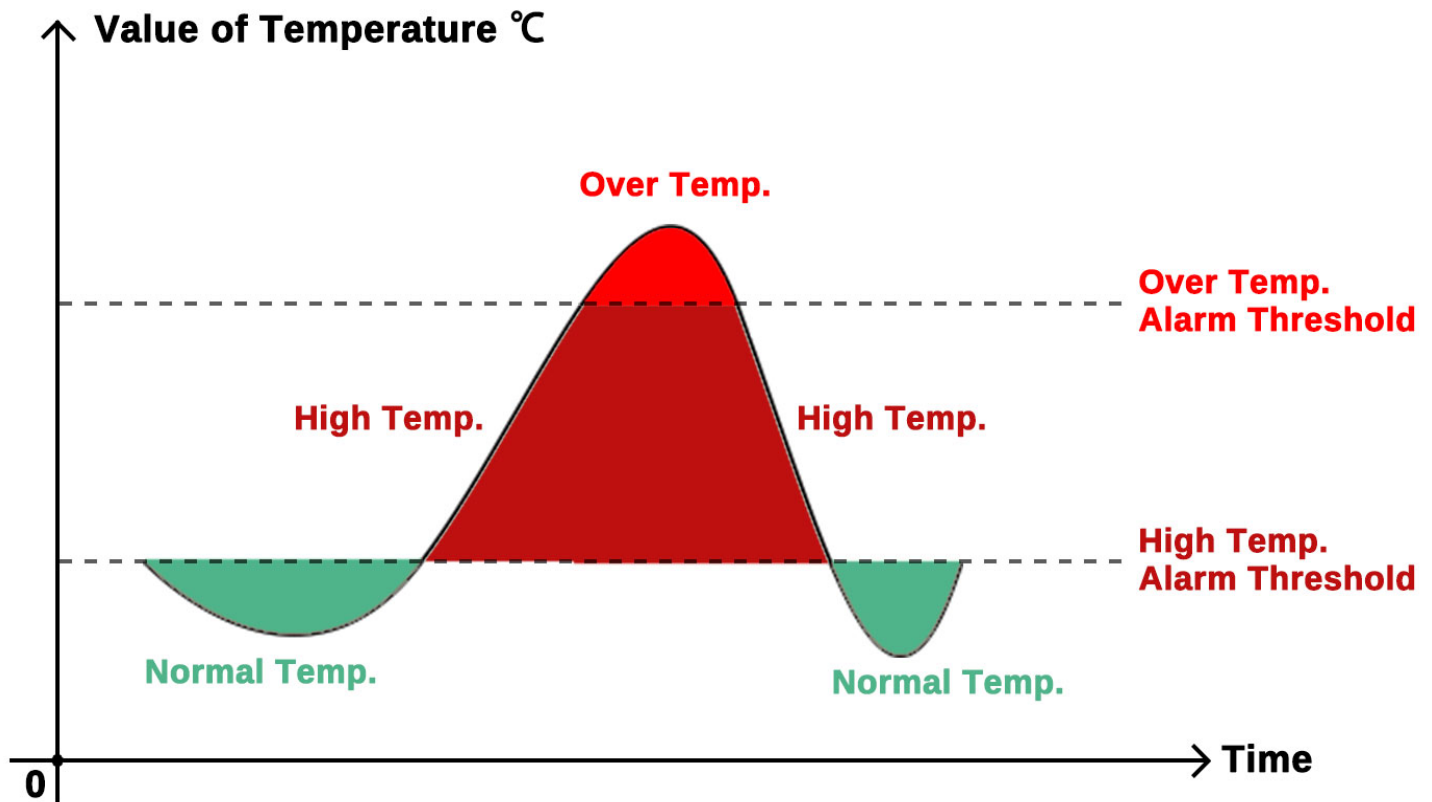
(1) Communication Structure

## 1. Temperature Alarm Function&Logic

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]

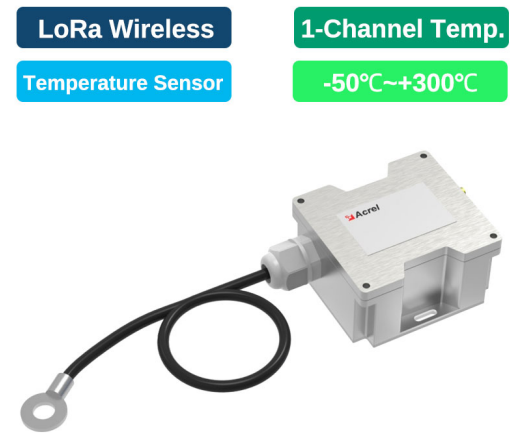


(1&2) High&Over Temperature Alarm

## 1. Hardware Devices Overview

### 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.: LoRa Radio Comms. [433~510MHz, self-defined protocol]
- LoRa Comms. Distance: within 50m [when paired with ATE300P when in indoor environment]
- Wired Comms.: 1-way RS485 [MODBUS-RTU protocol]
- Support: up to 240 pcs ATE300P Wireless Temperature Sensors based on LoRa
- I/O Function: 2-way DO output
- Power Supply: 100~265Vac/Vdc
- Working Temperature: -20 ~ +55
- Working Humidity: <=95%



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

- Comms.: 2-way RS485 [MODBUS-RTU]; 1-way Ethernet [MODBUS-TCP]
- Support: Display the temperature data of up to 240 pcs temperature monitoring points.
- 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





### 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

**Input Range****100~240Vac/Vdc****Output Range****24Vdc**

## 1. Overall Model Selection&Quotation

(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.

<b>Temp. Display&amp;Alarm Touch Screen</b>					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Touch Screen ATP007	<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</b>					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Power Module KDYA-DG30-24K	<b>Rated Input:</b> 100~240Vac/Vdc <b>Rated Output:</b> 24Vdc <b>Application:</b> Paired with ATP007 for power supply <b>HS Code:</b> 8473309000	1 pcs		
<b>Wireless Temperature Transceiver</b>					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Transceiver ATC600-C	<b>Upstream:</b> RS485 (MODBUS-RTU) <b>Downstream:</b> LoRa (433~510 MHz) <b>Support:</b> Up to 240 ATE300M series wireless temperature sensors using LoRa communication. <b>Power Supply:</b> 100~265Vac <b>HS Code:</b> 9025191010	1 pcs		
<b>Wireless Temperature Sensor</b>					
Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Temperature Sensor ATE300P	<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. 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



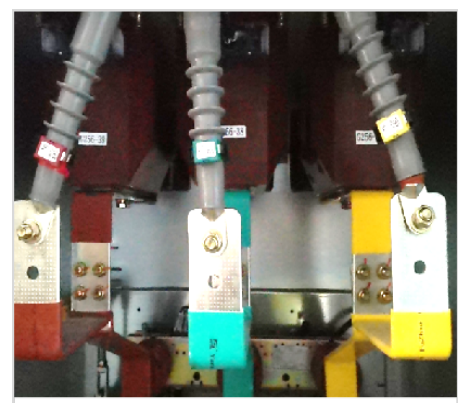
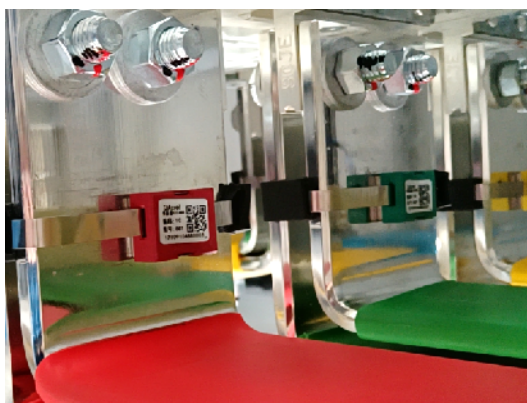
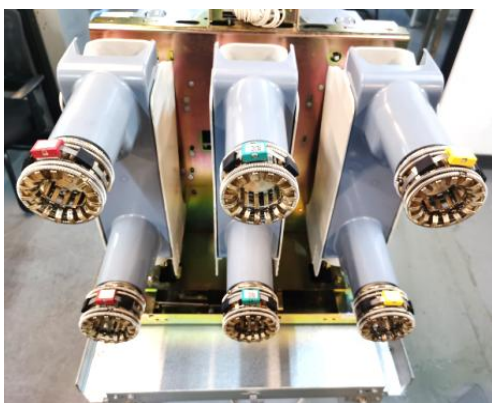
(1) Customer: SEL S.P.A  
[Switchgear Complete set  
factory]



(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

## 3. 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



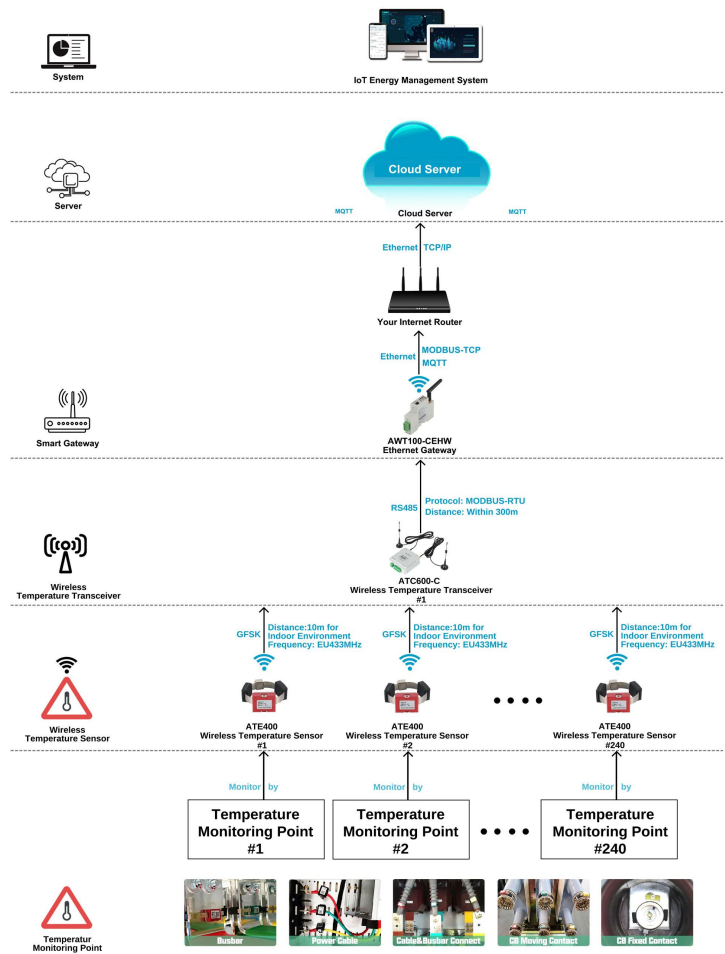
(1) Customer: V.T.E.C.H Electrical Technology Co., Ltd , EPC [Party A]



(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