Acrel WiFi Based IoT Energy Monitoring Solution (3-phase Separate Cloud)

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1. Scenario Preset

(1) There are 10 Area which are far from each other or are hard for RS485 wiring.

(2) Each Area has 1 circuit 3-phase that needed to be monitored online.

(3) Each circuit are with rated voltage of 400Vac L-L&230Vac L-N, and with rated current of 150A AC.

(4) Circuits' current are carried by cable, of which the size was suitatble for φ24mm aperture. (diameter)

(5) For the places that we gonna install the wireless energy meter, it's covered by stable WiFi signal for WiFi communications. All the WiFi energy meters will be of separate installation and directly send data to IoT system.

2. Devices Deployment Plan

Area #1 - Power Circuit [3-phase] #1:
- 1* ADW300-WF/C WiFi 3-phase Energy Meter [For monitoring Power Circuit #1 & WiFi Data Upstream]
- 3* AKH-0.66/K K-φ24 150/5 Split-core Current Transformer [For current input of ADW300-WF/C]

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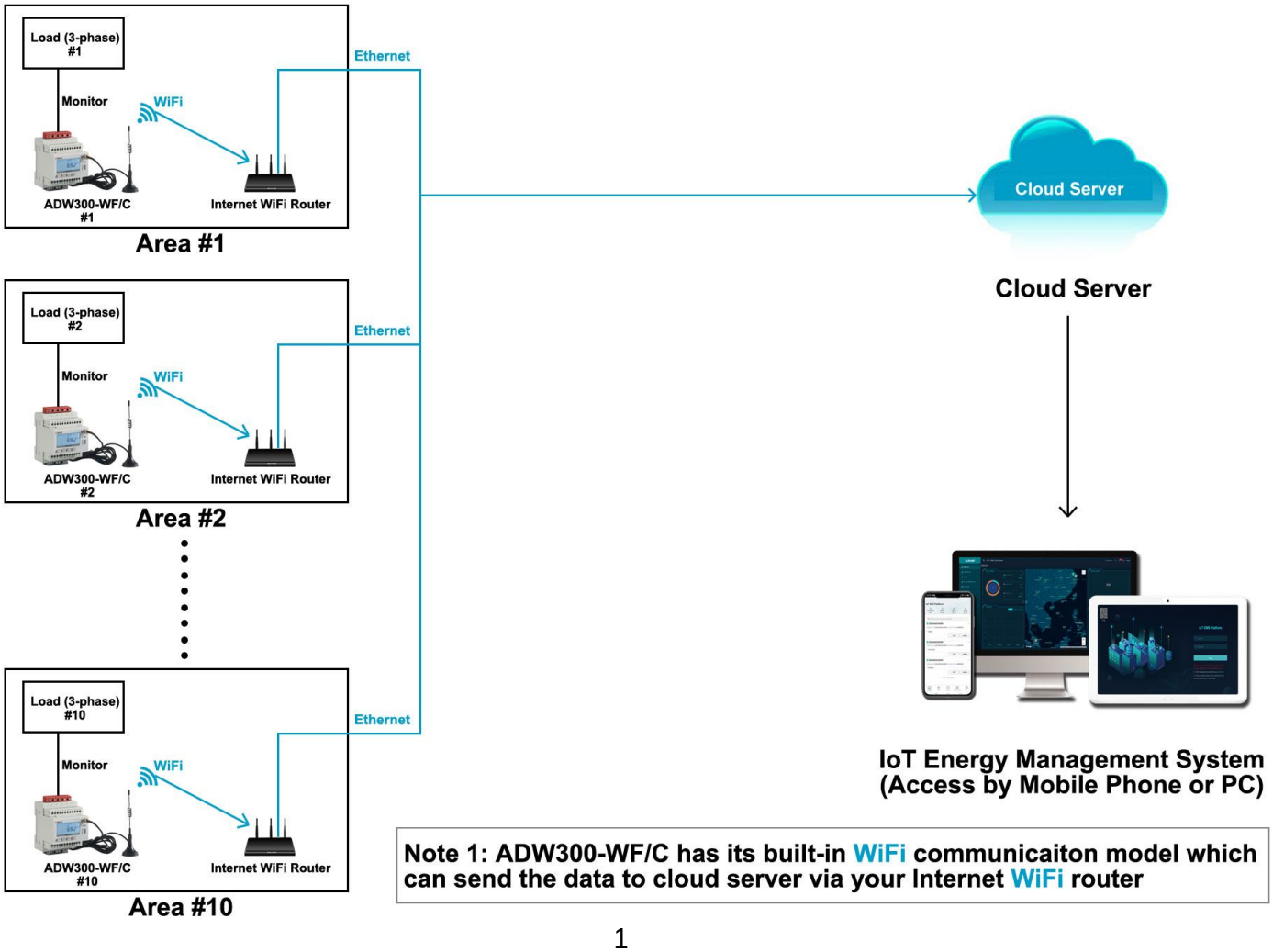
Area #10 - Power Circuit [3-phase] #10:
- 1* ADW300-WF/C WiFi 3-phase Energy Meter [For monitoring Power Circuit #10 & WiFi Data Upstream]
- 3* AKH-0.66/K K-φ24 150/5 Split-core Current Transformer [For current input of ADW300-WF/C]



Note 1: ADW300-WF/C has its built-in WiFi communicaiton model which can send the data to cloud server via your Internet WiFi router

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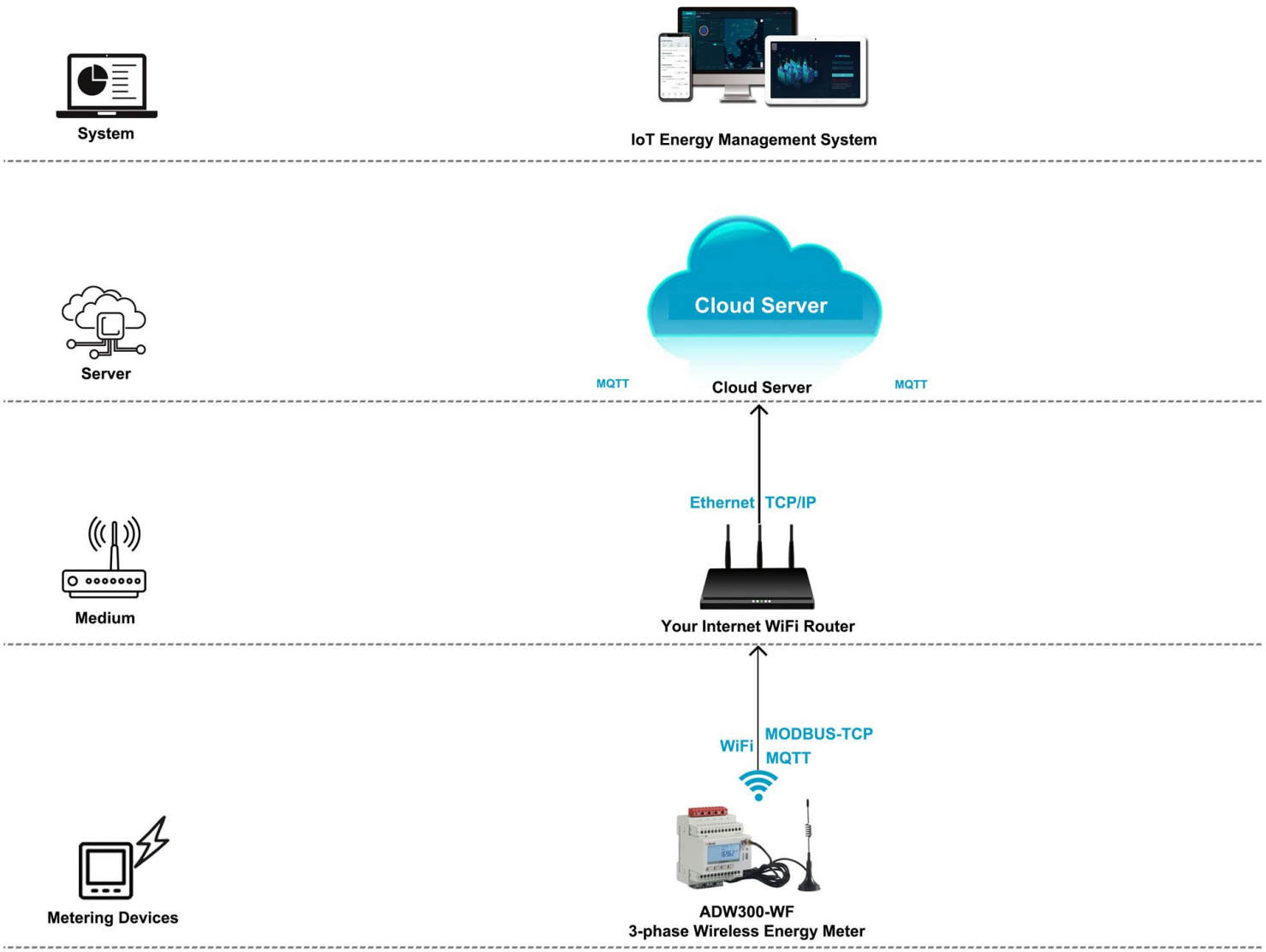
2. Communication Structure&Logic

(1) WiFi Communication could be served as one of the final data upstream methods by sending the data to cloud server deployed in Internet via your WiFi Internet Router so that Acrel IoT System could be interact with these data collected by bottom metering devices like Energy Meter

(2) ADW300-WF/C Wireless WiFi 3-phase Energy Meter has a built-in WiFi communication module which allow it to directly send data to your Internet WiFi Router using MQTT and MODBUS-TCP protocol without using a extra WiFi IoT Gateway. Then your WiFi router will send the data further to internet for a final data upstreaming.

(3) In the factory manufacturing stage, we can set the WiFi configuration (WiFi SSID and password) in ADW300-WF/C so that users don't need to set WiFi configuration again.

(4) ADW300-WF/C also have a RS485 communication normally used for devices adjustment with Acrel ADW300 adjustment softare. For example, setting like WiFi configuration could be done.



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3. Hardware Devices Overview [Energy Meter & Paired CTs]

Model 1: ADW300-WF/C WiFi 3-phase IoT Energy Meter

3-phase | Multi-Function | IoT APP/WEB | 4G/WiFi/LoRa

Monitoring: Up to 1 circuits 3-phase [AC Metering]

- Wireless Comms.: WiFi [MQTT, MODBUS Protocol]
- Wired Comms.: RS485 [MODBUS-RTU Protocol]
- Rated Current: 3x1(6)A AC [via -/5A CTs.]
- Rated Voltage: Up to 3x660Vac L-L
- Certificate&Standard: CE, CE-RED
- More Introduction: https://www.acrel-electric.fr/product/adw300_iot_wireless_smart_energy_meter

Model 2: AKH-0.66/K K-Φ24 150/5 Split-core Current Transformer

AC | 60~400A | Split Core | Class 0.5

- Current Ratio: 150A/5A
- Primary Current: 150A
- Secondary Current: 5A
- Accuracy: Class 0.5 or 1.0
- Certificate&Standard: CE
- More Introduction: https://www.acrel-electric.fr/product/split_core_current_transformer_akh_0_66_k_24

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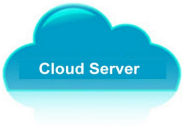
3. Overall Model Selection&Quoation

(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**)
 **Acrel Cloud IoT Energy Management System**	1.System support all the meters across the country whose data has been sent to cloud server through **4G,WiFi or Ethernet**. 2.Remote meter reading and data collection. 3.Provide **IoT APP** for **mobile phone** side and **IoT WEB** for **PC** side. 4.Generate energy data report of daily, monthly and annually period with year-on-yeay 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 projtect)	3-month Free Trail (Users don't need to rent a cloud server))
		$xxx/Year (For 10 Points) (Price for Host Service Only, recommended in pilot projtect)	$xx to buy Hosting Service for 1 monitoring points connected to the system 1 year (Users don't need to rent a cloud server)
		$xxxxPermanent (Limitless Points) (Price for Buy-out Service Only,recommended in late projtect)	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 **Cloud IoT Energy Management System** only need to rent cloud server when they choose **buy-out** service of our **Cloud IoT System**. And if they are using **hosting service** or **3-month free trial** 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)

WiFi Wireless Energy Meter

Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	3-phase WiFi Wireless Energy Meter **ADW300-WF/C**	**Communication:** WiFi Wireless Communication (2.4GHz)&RS485 (MODBUS-RTU) **Rated Voltage:** 3x380~456Vac L-L or 3x660Vac L-L (45~65Hz) **Rated Current:** 3x1(6)A AC (via CTs) **Auxiliary Power Supply:** 85~265Vac	10 pcs	/	/

Paired Split-core CT

Overview Picture	USAGE&MODULE NAME	DESCRIPTION & SPECIFICATION	QUANTITY	FOB UNIT PRICE (USD)	AMOUNT (USD)
	Split-core Current Trasnformer **AKH-0.66/K K-φ24**	**Current Ratio:** 150/5A AC **Aperture:** φ24mm (diameter) **Accuracy:** Class 1.0 **Application:** For current input of ADW300-WF/C	30 pcs	/	/

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5. Acrel IoT Energy Monitoring System (Partail Introduction)

Acrel IoT Energy Monitoring System could be access in 2 different ways:

(1) Access through WEB on your computer.

Access port: https://iot.acrel-eem.com/

(2) Access through APP on your mobile phone

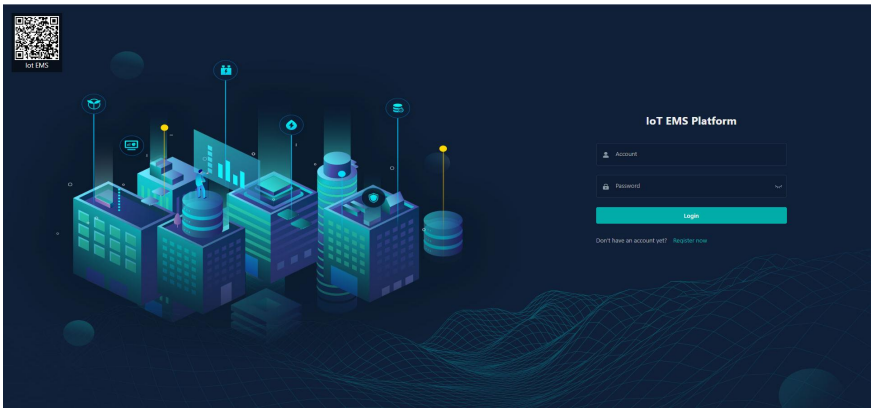
Download Link: https://play.google.com/store/apps/details?id=com.acrel.iotems

(1) WEB Accesss (Computer):

Access Port: https://iot.acrel-eem.com/

Test Account Name: acrel

Test Account Password: 123456

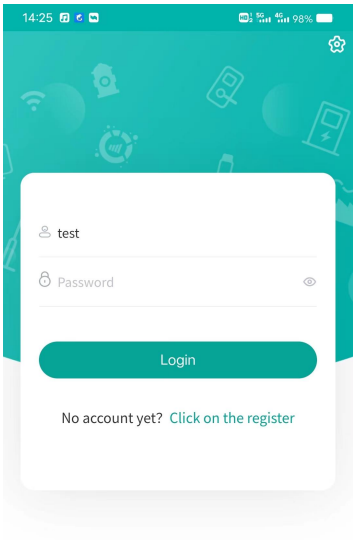


(2) APP Accesss (Mobile):

Download Link: https://play.google.com/store/apps/details?id=com.acrel.iotems

Test Account Name: acrel

Test Account Password: 123456



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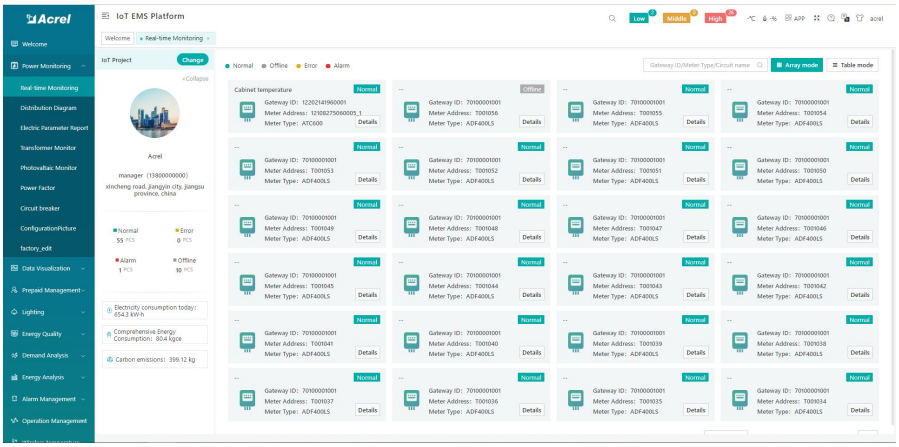
5. Acrel IoT Energy Monitoring System (Partail Introduction)

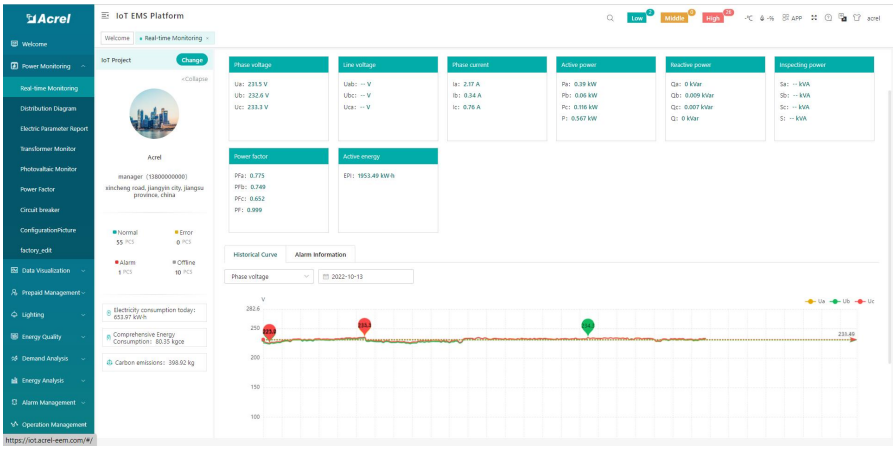
Main Function of WEB side System:

(1) Devices List (2) History Curve (3) Electricity Parameters Report (4) Energy Consumption Report (Daily, Monthly, Yearly) (5) User Report

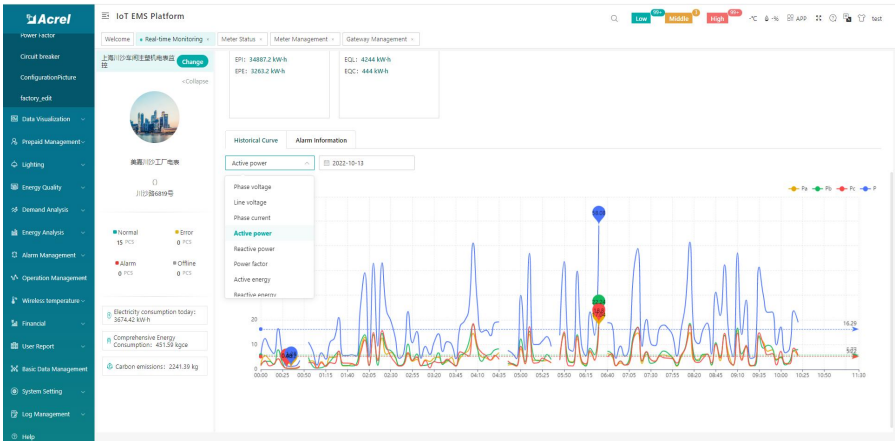
(1) Devices List: Showing the overall devices connected to Acrel System and were bond to certain project. SN code, Online-Offline status, devices model and other necessary information will be shown here.



(2) History Curve: Showing the daily history data curve of all the data that could be collected and upload by energy meter or other basic metering devices.



(2) History Curve: By selecting the items of "data" and "electricity parameter", platform can show the history curve of different data and date.



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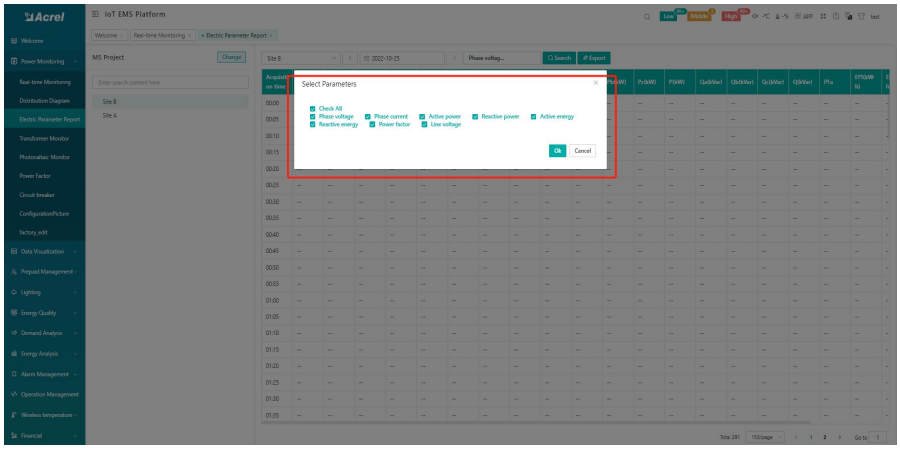
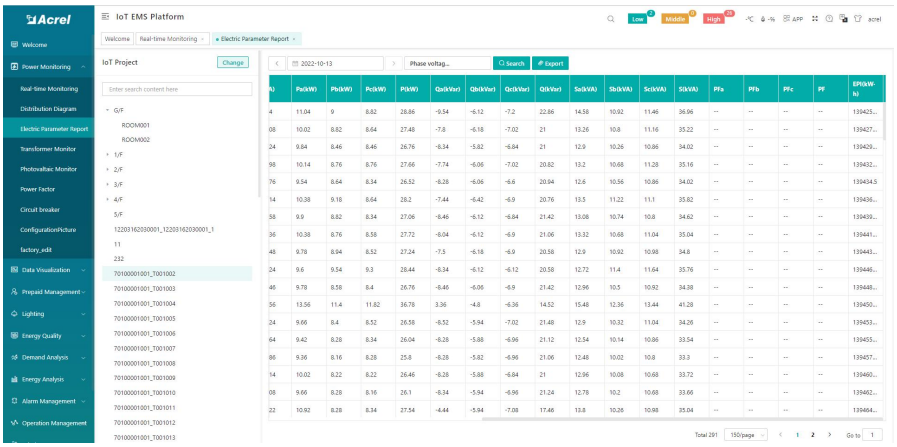
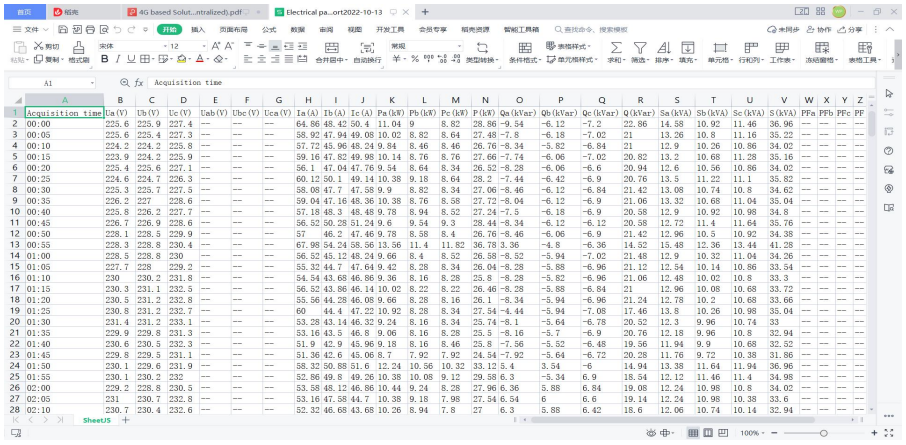
(3) Electricity Parameters Report: Select the "electricity parameters" that you want to show in this report .



(3) Electricity Parameters Report: All the electricity parameters that could be collected by certain energy meter will showed as a report here.



(3) Electricity Parameters Report: Report on platform could be exported in "Excel" format to your computer for a brief storage when accessing the IoT EMS WEB platform.



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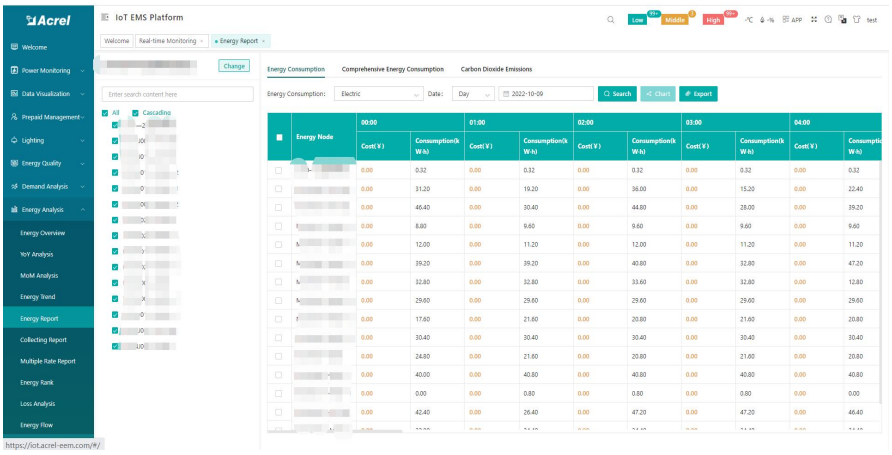
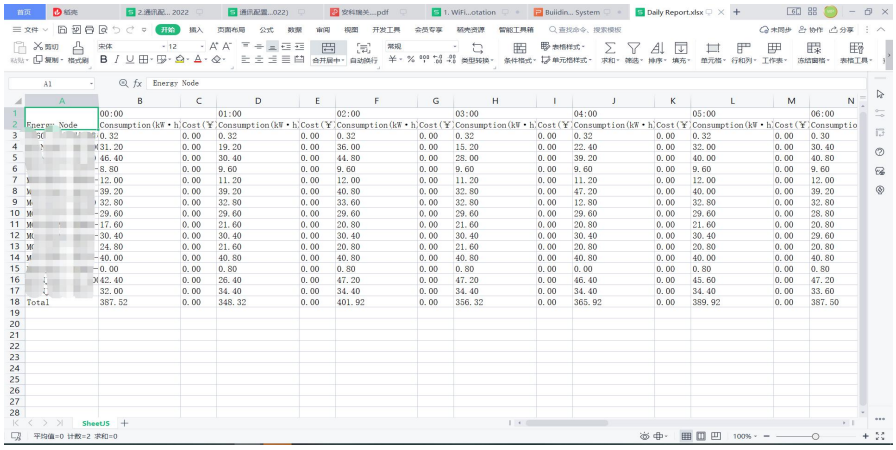
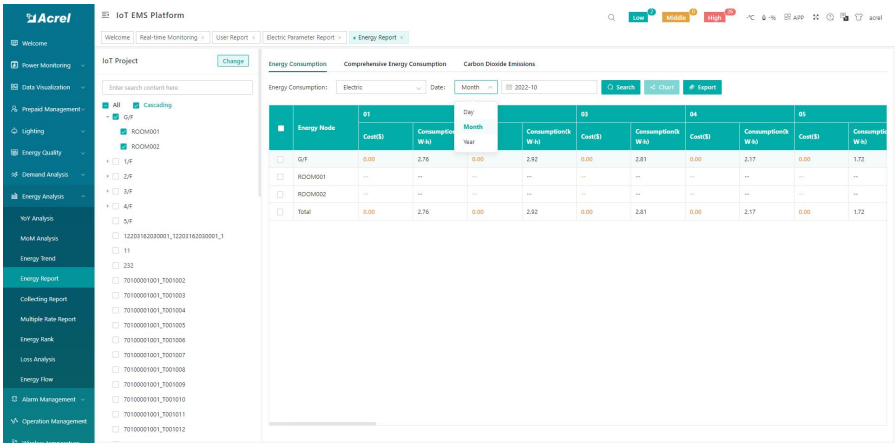
(4) Energy Report (Daily): This Interface show the daily energy consumtion report (calculated by forward active energy)



(4) Energy Report (Daily): This daily energy report could be also export to computer in "Excel" format



(4) Energy Report (Monthly& Yearly): Same as daily energy report, monthly and yearly energy report could be also checked on platform and exported in "Excel" format.



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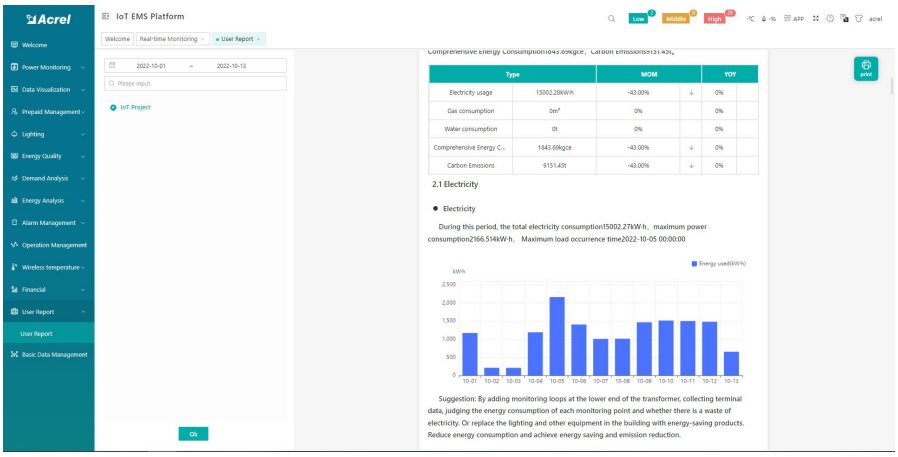
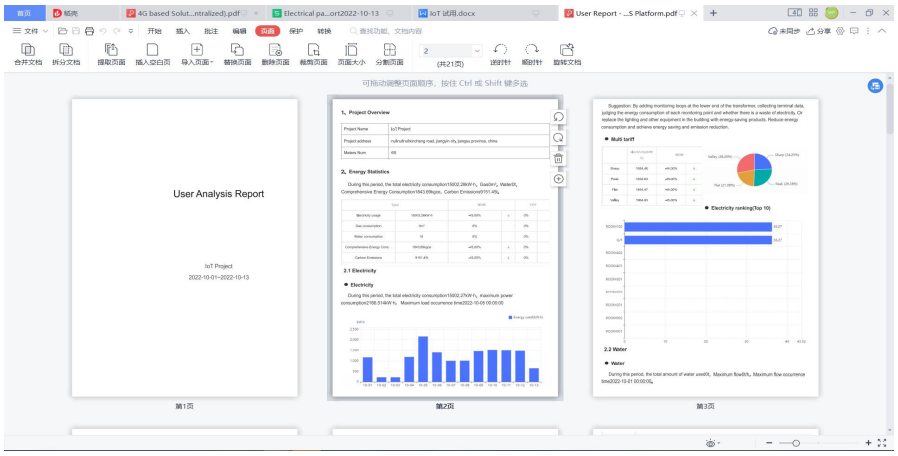
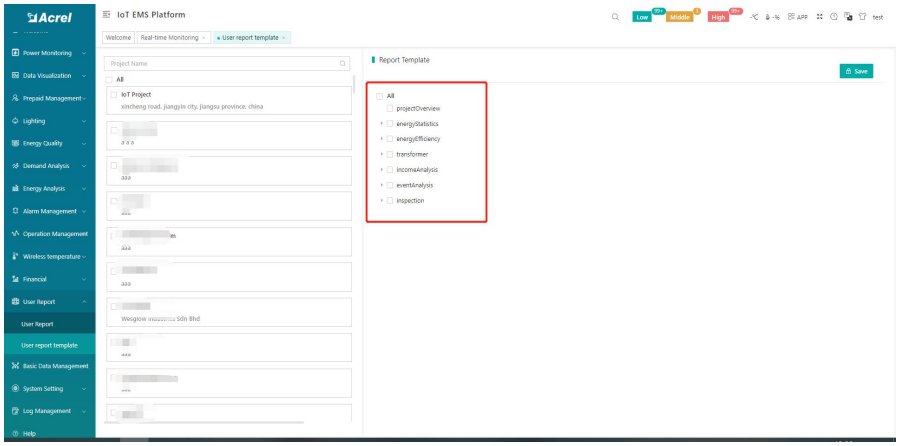
(5) User Report: A comprehensive user report including project overview, energy report, energy analysis and etc could be check on platform



(5) User Report: User report could be exported in "PDF" format into your PC for convenient check and storage.



(5) User Report: User report support template customization in buy-out service of Acrel IoT Energy Monitoirng System.



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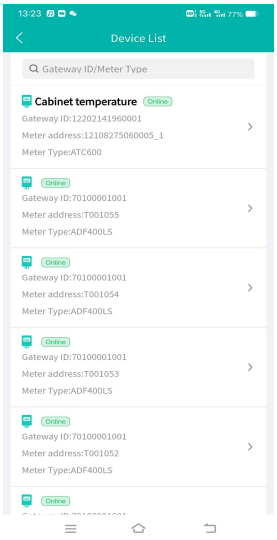
5. Acrel IoT Energy Monitoring System (Partail Introduction)

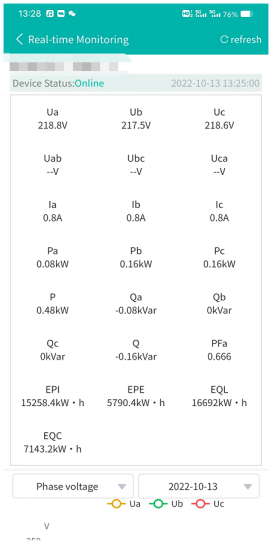
Main Function of APP side System:

(1) Devices List (2) History Curve (3) Electricity Parameters Report (4) Energy Trend (5) Energy Consumption Report (Daily, Monthly, Yearly)

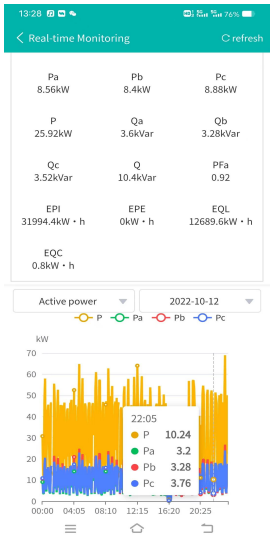
Noted: Since APP side and WEB side of Acrel IoT Energy Monitoring System share the same data, normally recommend our user to add the devices to their account using APP and check the data using WEB platform.



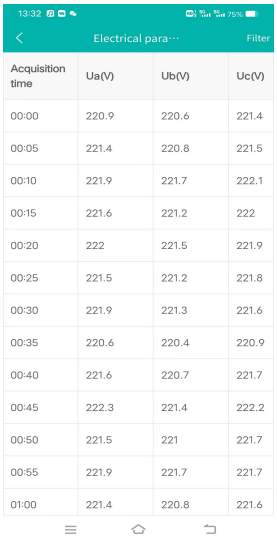
(1) Device List



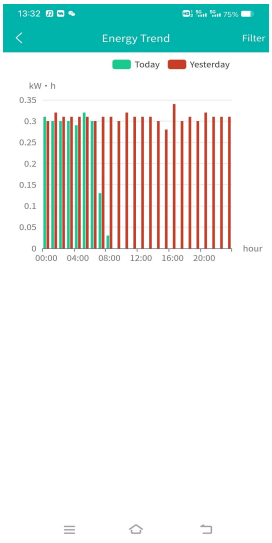
(2) History Curve



(2) History Curve



(3) Parameter Report



(4) Energy Trend

(5) Energy Report