ICP DAS
IoTstar Report Service
User Manual

[Version 1.0.0 - 2021/10/18]

Warning

The information furnished by ICP DAS Co. Ltd. (hereinafter "ICP DAS") is accurate and reliable to ICP DAS's best knowledge. ICP DAS reserves the right to change the content of this manual at any time without notice.

Through the service provided by Tiny Technologies, Inc., this software can provide the WYSIWYG editor to the user. However, this editor may not be available due to the Tiny Technologies, Inc. close or terminate the service of their systems.

ICP DAS cannot guarantee that this controller is free of any actual or legal defects (including but not limited to stability, reliability, accuracy, completeness, validity, suitability for a specific purpose, security related defects, errors or bugs, infringement of rights etc.). ICP DAS shall not be responsible for any damages inflicted upon users in relation to the use of the controller.

Copyright and Trademark Information

Trademark of Other Companies

The names used for identification only maybe registered trademarks of their respective companies.

License

The user can use, modify and backup this software on a single machine. The user may not reproduce, transfer or distribute this software, or any copy, in whole or in part.

Table of Contents

List of Figures

1 Introduction

IoTstar is a software developed by ICP DAS for WISE/PMC/PMD controllers for use in a variety of Industrial IoT applications. IoTstar can be installed on a general PC platform and works as a Private IoT Cloud system, or on the VM (Virtual Machine) platform of Microsoft Azure, IBM Bluemix, Google Cloud or Amazon AWS, etc. and works as a Public IoT Cloud system. By using IoTstar to build a IoT Cloud system, it can provide the following major services:

1. Controller Remote Access Service : Status Monitoring, System Setting, and Firmware Update for WISE/PMC/PMD controllers.
2. Sensor Data Service : Collect the data of the sensor connected to the controller and import the data into the Database on cloud.
3. Sensor Data Visualization Service : Review the data of the sensor connected to the controller through Dashboard interface.
4. Sensor Data Report Service : Provide statistical report for the data of the sensor connected to the controller.
5. Bot Service with Mobile Phone : Review the data of the sensor connected to the controller by mobile phone Bot service.
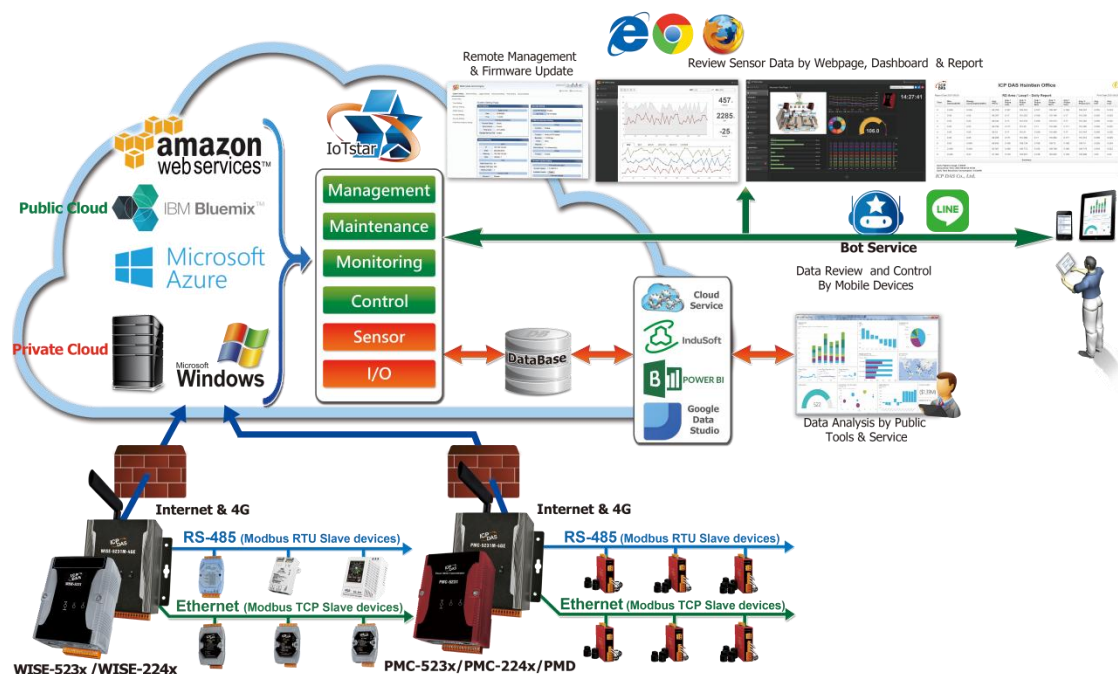

Figure 1-1: System Architecture of IoTstar

IoTstar Report Service is an optional software package for IoTstar that provides statistic report service for the sensors connected to WISE/PMC/PMD controllers. By using IoTstar Report Service, the data measured by the sensors can be converted into valuable statistical reports, so that the statistical reports of the operation status of the machines, equipment and facilities monitored by WISE/PMC/PMD can be provided as basis for making decisions, avoid biases and blind spots in decision-making, and be able to adjust the operation modes of the machines, equipment, and facilities to most appropriate to optimize the maximum benefit of system.

● Features
  ➢ Provide a variety types of statistical reports for sensors and power meters.
  ➢ In addition to the report for single I/O channel (or power meter loop), it also provides the report for group of I/O channels (or power meter loops).
  ➢ Support the query of the "Daily/Weekly/Monthly/Quarterly/Yearly" statistical report with customized date.
  ➢ Provide data comparison function for comparing values of I/O channel (or power meter loop).
  ➢ Built-in editor for users to flexibly edit the report content (header and footer) to create desired report format.
  ➢ PDF & Excel file format supported for report output.

● Types of Report supported

Type of Report		Description
Report for Power Meter Loop	Single power meter loop	● Information for specified power meter loop.
		● Comparison of the data in different time periods for specified power meter loop.
	Group of power meter loops	● The energy consumption(kWh) and Max. Demand(kW) of the group.
		● Comparison of the data of each power meter loop included in the group in the same time period.
Report for I/O Channel	Single I/O channel	● Information for the specified I/O channel.
		● Comparison of the data in different time periods for specified I/O channel.
	Group of I/O channels	● Comparison of the data of each I/O channel included in the group in the same time

		period.

The following is the examples of reports built by IoTstar Report Service:

● Report for "Power Meter Loop"

Power meter loop report — PMC-5231(Xindian office) / PM-4324-MTCP(Power meter of Area A) / Loop1(wall socket 1)

Day | Week | Month | Quarter | Year > Single Mode > Today 2021/10/08 > Data Shown   Template Management   Download PDF   Download Excel

Time	Max. Demand(kW)	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar
0	0.048	0.047	90.011	0.165	107.849	0.164	107.845	0.165	107.855	0.053	0.023
1	0.048	0.048	89.676	0.166	108.607	0.166	108.604	0.167	108.613	0.054	0.024
2	0.049	0.048	89.734	0.166	108.812	0.165	108.808	0.166	108.818	0.054	0.023
3	0.049	0.049	89.57	0.168	108.977	0.167	108.973	0.168	108.983	0.054	0.024
4	0.049	0.049	89.478	0.169	109.092	0.168	109.088	0.169	109.098	0.054	0.024
5	0.049	0.049	89.318	0.167	109.258	0.167	109.254	0.168	109.264	0.055	0.024
6	0.049	0.048	89.628	0.166	108.734	0.165	108.73	0.166	108.74	0.054	0.024
7	0.049	0.048	89.913	0.166	108.324	0.165	108.32	0.166	108.329	0.053	0.023
8	0.047	0.045	91.828	0.155	104.762	0.155	104.759	0.155	104.768	0.049	0.019
9	0.045	0.044	91.552	0.156	104.732	0.155	104.728	0.156	104.736	0.049	0.019
10	0.044	0.044	91.384	0.156	104.273	0.155	104.269	0.156	104.277	0.048	0.019

Summary

Daily Highest Usage: 0.049kW
Occurrence Time: 2021-10-08 05:23:00
Daily Total Electricity Consumption: 0.721kWh

● Report for "Power Meter Loop Group (Loop Comparison mode)"

Power meter loop group report — PM Group

Day | Week | Month | Quarter | Year > Custom Date 2021/09/29 > Loop Comparison > Avg. V   Template Management   Download PDF   Download Excel

Time	Xindian office Power meter of Area B Loop1	Xindian office Power meter of Area A Loop2	Xindian office Power meter of Area A Loop3	Xindian office Power meter of Area A Loop5	Xindian office Power meter of Area A Loop6	Xindian office Power meter of Area A Loop7
0	109.437	109.394	109.392	109.411	109.402	109.397
1	110.25	110.207	110.204	110.223	110.212	110.209
2	110.325	110.282	110.278	110.297	110.287	110.283
3	110.495	110.454	110.45	110.469	110.459	110.456
4	110.456	110.414	110.409	110.429	110.418	110.416
5	110.417	110.372	110.37	110.389	110.378	110.373
6	109.78	109.737	109.734	109.753	109.743	109.739
7	108.815	108.775	108.771	108.791	108.781	108.779
8	105.546	105.504	105.5	105.516	105.508	105.506
9	104.663	104.625	104.62	104.635	104.627	104.627
10	104.432	104.394	104.388	104.403	104.397	104.396

Summary

Daily electricity consumption of each loop	0	0	0	0	0	1.149
Daily Total Electricity Consumption	1.149					

● Report for "I/O Channel"

I/O Channel report

PMC-5231(Xindian office) / DL-1023(Air quality for factory) / AI1(CO2)

Day | Week | Month | Quarter | Year > Single Mode ▼ > Today 2021/10/08 ▼ > Data Shown ▼   Template Management   Download PDF   Download Excel

Time	Maximum(ppm)	Minimum(ppm)	Average(ppm)	Final Value(ppm)	Total Value(ppm)
0	528	518	522.9	520	31374
1	524	519	521.266	520	31276
2	521	513	517.266	513	31036
3	517	508	512.433	508	30746
4	510	505	508.116	507	30487
5	510	504	506.866	504	30412
6	507	501	504.266	504	30256
7	509	500	504.55	509	30273
8	542	510	526.633	542	31598
9	622	540	583.466	622	35008
10	644	618	630.95	644	37857
Summary					

Daily maximum: 681 ppm
Time of maximum daily value occurs: 2021-10-08 14:45:00

Daily minimum: 500 ppm
Time of minimum daily value occurs: 2021-10-08 07:27:00

Daily average: 569.336 ppm
Daily total value: 530052 ppm

● Report for "I/O Channel Group"

I/O Channel group report

Air quality

Day | Week | Month | Quarter | Year > Today 2021/10/12 ▼ > Maximum ▼   Template Management   Download PDF   Download Excel

Time	Xindian office Air quality for Office CO (ppm)	Xindian office Air quality for Office CO2 (ppm)	Xindian office Air quality for factory CO (ppm)	Xindian office Air quality for factory CO2 (ppm)
0	0	448	0	490
1	0	446	0	490
2	0	448	0	488
3	0	447	0	487
4	0	447	0	488
5	0	446	0	489
6	0	447	0	488
7	0	456	0	499
8	0	509	0	555
9	0	583	0	636
10	0	601	0	650
11	0	617	0	668
12	0	659	0	710
Summary				
Daily maximum	0	659	0	710
Daily minimum	0	441	0	482
Daily average	0	498.794	0	543.844
Daily total value	0	402028	0	438339

● Report "Template Management (Editing for Report header and footer)"
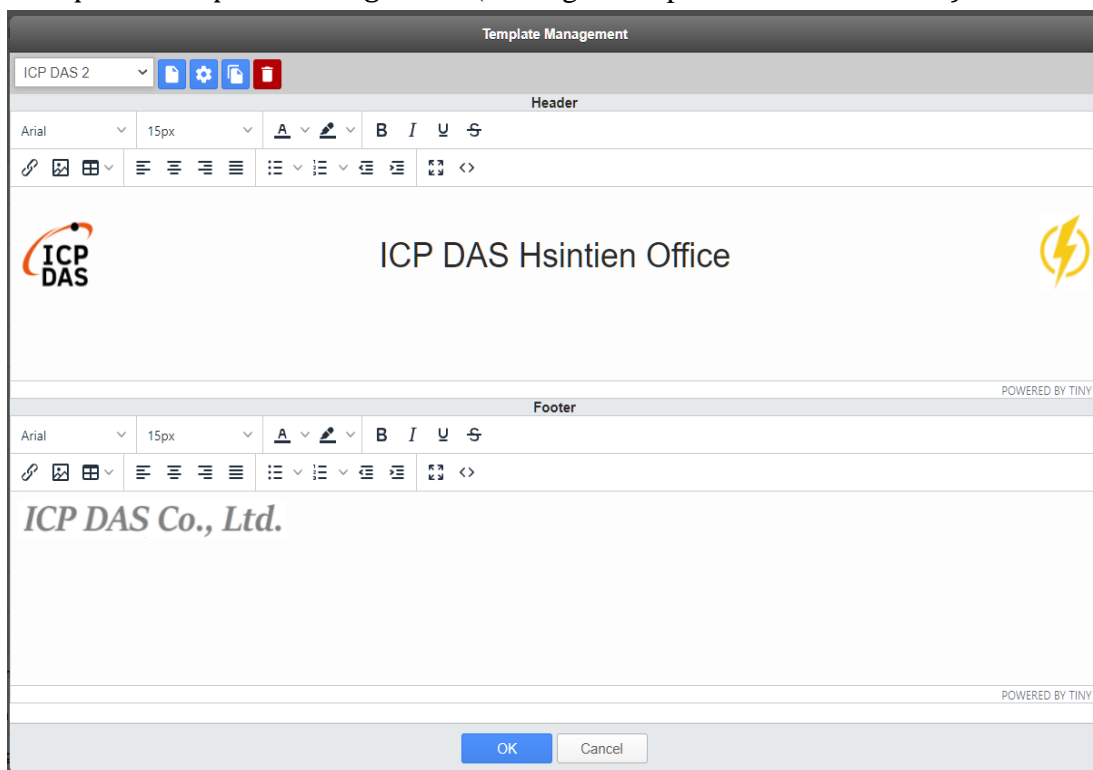
● Report download (PDF file format)

ICP DAS Hsintien Office

Report Date:2021/09/29   Hsintien Office / RD Area / Loop1 - Daily Report   Print Date:2021/09/29

Time	Max. Demand(kW)	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar
0	0.049	0.049	89.708	0.167	109.391	0.167	109.387	0.168	109.397	0.055	0.024
1	0.05	0.05	89.397	0.17	110.203	0.169	110.199	0.17	110.209	0.056	0.025
2	0.05	0.05	89.244	0.17	110.278	0.169	110.274	0.17	110.284	0.056	0.025
3	0.05	0.05	89.196	0.171	110.45	0.17	110.446	0.171	110.456	0.056	0.025
4	0.05	0.05	89.23	0.17	110.41	0.169	110.406	0.17	110.416	0.056	0.025
5	0.05	0.05	89.206	0.171	110.368	0.17	110.364	0.171	110.374	0.056	0.025
6	0.05	0.049	89.642	0.168	109.734	0.168	109.73	0.168	109.74	0.055	0.024
7	0.049	0.048	90.087	0.166	108.772	0.165	108.768	0.166	108.778	0.054	0.023
8	0.048	0.045	91.459	0.158	105.502	0.157	105.498	0.158	105.507	0.049	0.02
9	0.044	0.044	91.354	0.155	104.622	0.154	104.618	0.155	104.627	0.048	0.019
10	0.044	0.037	91.19	0.156	104.417	0.155	104.413	0.156	104.422	0.048	0.02

Summary

Daily Highest Usage: 0.05kW
Occurrence Time: 2021-09-29 03:18:00
Daily Total Electricity Consumption: 0.527kWh

ICP DAS Co., Ltd.

● Report download (Excel file format)

Time	Max. Demand(kW	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar
0	0.049	0.049	89.708	0.167	109.391	0.167	109.387	0.168	109.397	0.055	0.024
1	0.05	0.05	89.397	0.17	110.203	0.169	110.199	0.17	110.209	0.056	0.025
2	0.05	0.05	89.244	0.17	110.278	0.169	110.274	0.17	110.284	0.056	0.025
3	0.05	0.05	89.196	0.171	110.45	0.17	110.446	0.171	110.456	0.056	0.025
4	0.05	0.05	89.23	0.17	110.41	0.169	110.406	0.17	110.416	0.056	0.025
5	0.05	0.05	89.206	0.171	110.368	0.17	110.364	0.171	110.374	0.056	0.025
6	0.05	0.049	89.642	0.168	109.734	0.168	109.73	0.168	109.74	0.055	0.024
7	0.049	0.048	90.087	0.166	108.772	0.165	108.768	0.166	108.778	0.054	0.023
8	0.048	0.045	91.459	0.158	105.502	0.157	105.498	0.158	105.507	0.049	0.02
9	0.044	0.044	91.354	0.155	104.622	0.154	104.618	0.155	104.627	0.048	0.019
10	0.044	0.044	91.213	0.156	104.392	0.155	104.388	0.156	104.396	0.048	0.019
11	0.044	0.007	91.335	0.159	104.069	0.159	104.064	0.16	104.073	0.048	0.019

Report Date: 2021-09-29   Hsintien Office / RD Area / Loop1 - Daily Report   Print Date: 2021-09-29

Total Value	0.541kWh
Daily Highest Usage	0.05 kW
Occurrence Time	2021-09-29 03:18:00

2 Before Installation

2.1 Precondition

Before using IoTstar Report Service, you must first complete the setting of the following preconditions.

◆ Complete the installation of IoTstar, and complete the connection setting of IoTstar and WISE/PMC/PMD controllers.

◆ To ensure the front-end WISE/PMC/PMD controllers can connect to IoTstar correctly and actively, please make sure the PC (or platform) to install the IoTstar on must be "Static IP" setting.

◆ If user want to review the Report pages which IoTstar Report Service provide directly in the internet environment, please make sure the PC (or platform) to install the IoTstar on must be with "Public Static IP" or "Dynamic IP + DDNS" setting.

The requirement for IoTstar and WISE/PMC/PMD firmware.

◆ IoTstar v3.0.0 or later version.

◆ WISE-523x/WISE-224x firmware v1.5.1 or later version.

◆ PMC-523x/PMC-224x/PMD firmware v3.4.7 or later version.

2.2 Enable IoTstar Report Service(Trial service)

IoTstar v3.0.0 (and later version) includes the IoTstar Report Service (Trial service). After you complete the installation of IoTstar v3.0.0 (or later version) and import the license file of IoTstar Report Service(Trial service), the IoTstar will provide you a full-function trial service of IoTstar Report Service for thirty days.

Following is the steps to enable IoTstar Report Service (Trial service).

i. Go to IoTstar official website http://iotstar.icpdas.com/en/index.php, and click the "Download" button on the main page.

ii. On the "Download" page, click the "Apply for trial" button of "Trial

Service for Support Package" section to enter the IoTstar Trial Service page.
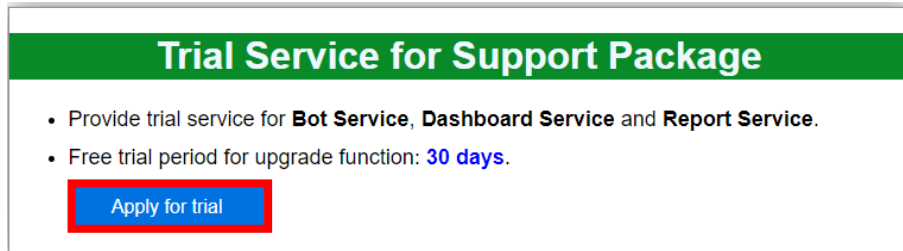
Figure 2-1: Apply for IoTstar Report Service(Trial service)

iii. On the IoTstar "Trial Service for Support Package" page, select the "Report service" on the "Trial service option" field. For the "Hardware ID", please click the ⓘ button next to the "Hardware ID" field and follow the instructions on the Pop-up window to get the Hardware ID of the platform which IoTstar is installed and enter the Hardware ID you get in the "Hardware ID" field. Click the "Download Trial License" button. If the above information is correct. Users can obtain the IoTstar Report Service (Trial service) License File.
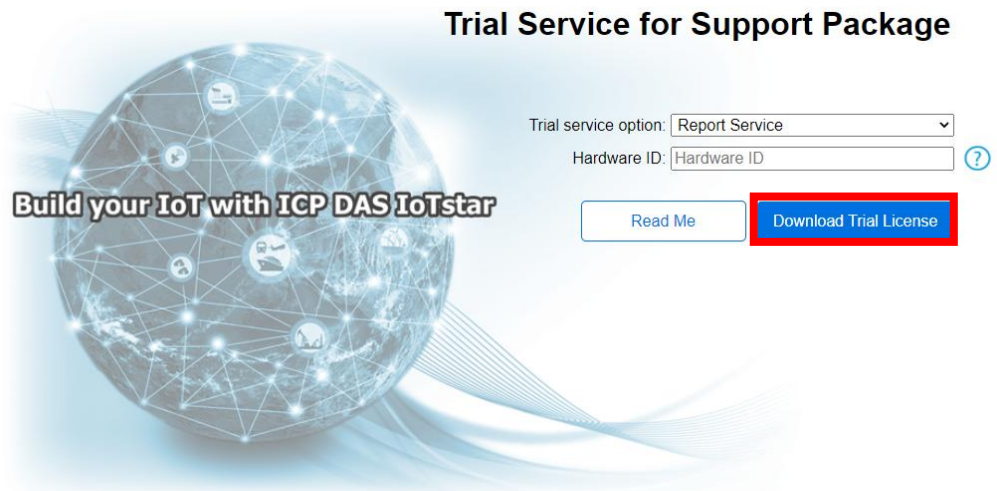
Figure 2-2: Download IoTstar Report Service(Trial service) License

iv. After you get the license file of IoTstar Report Service (Trial service), click "Start Menu"→ "All apps"→ "ICPDAS"→ "IoTstar" to open the IoTstar system interface.
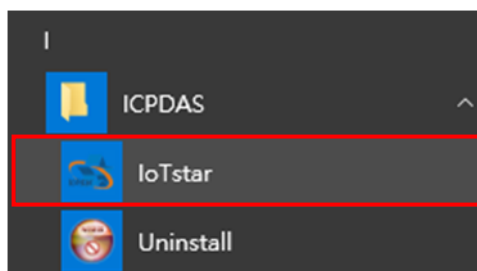
v. Click the "License" button on the IoTstar system interface to enter the License setting window.
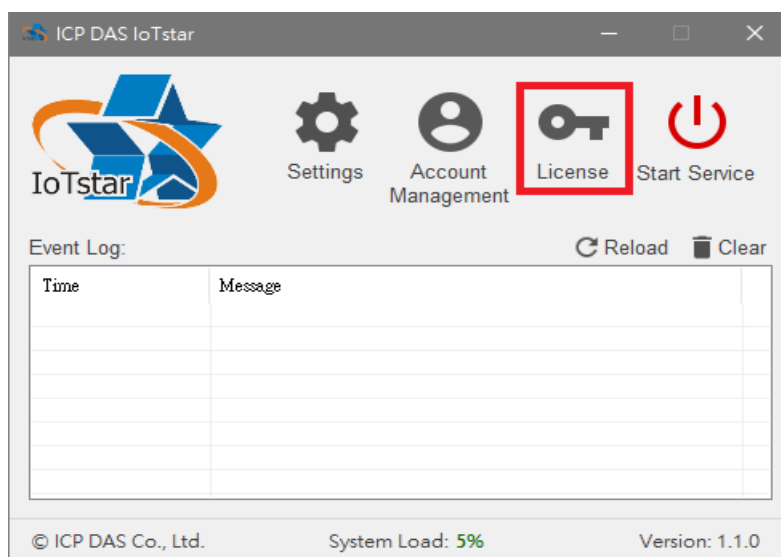
vi. In the "License" setting window, click the "Browse..." button to find the location of the IoTstar Report Service (Trial service) license file, and then click the "OK" button.
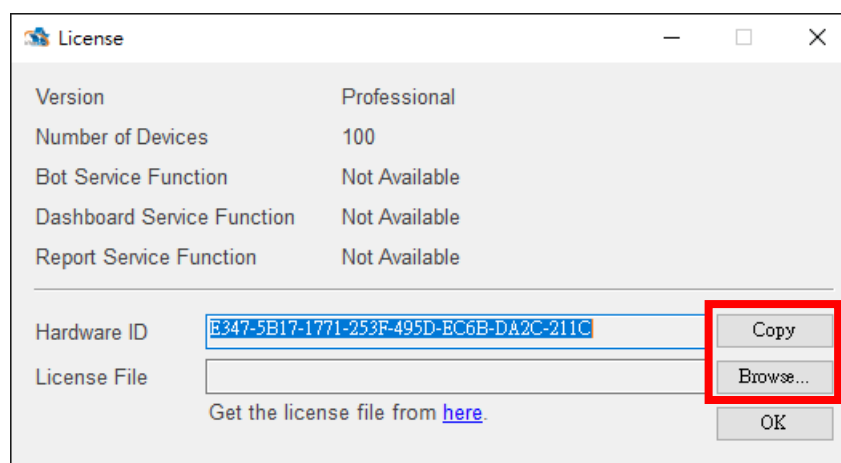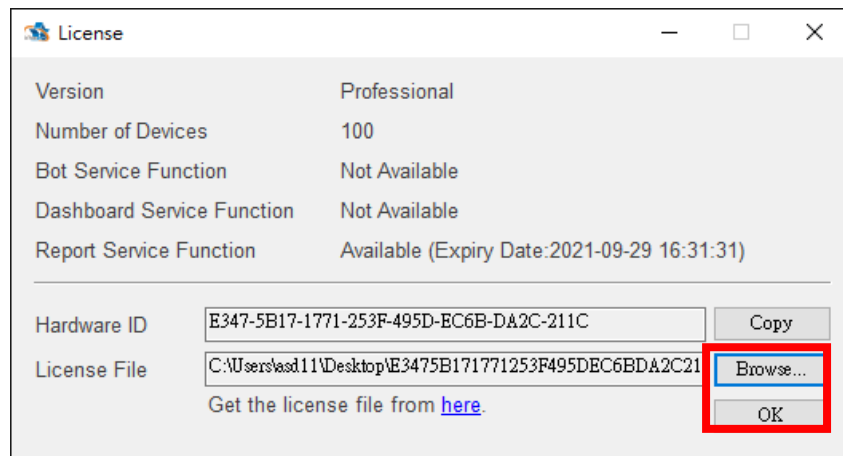

Figure 2-3: Import IoTstar Report Service(Trial service) License

vii. If the license file is valid, the expiration date of IoTstar Report Service (Trial service) will be displayed.
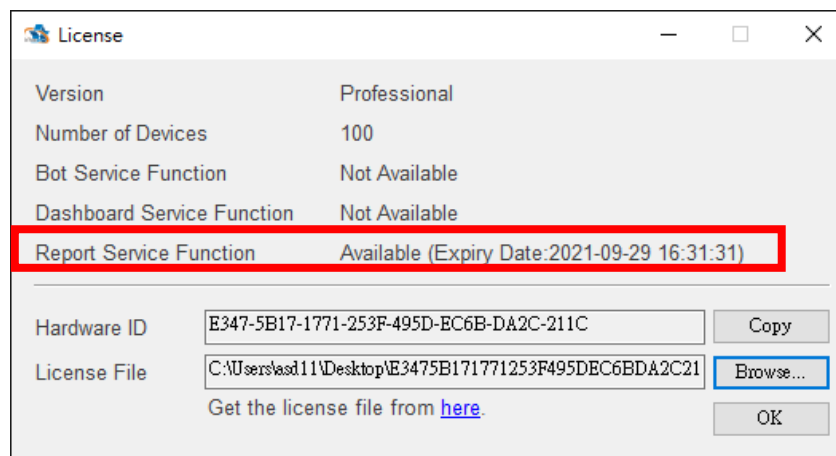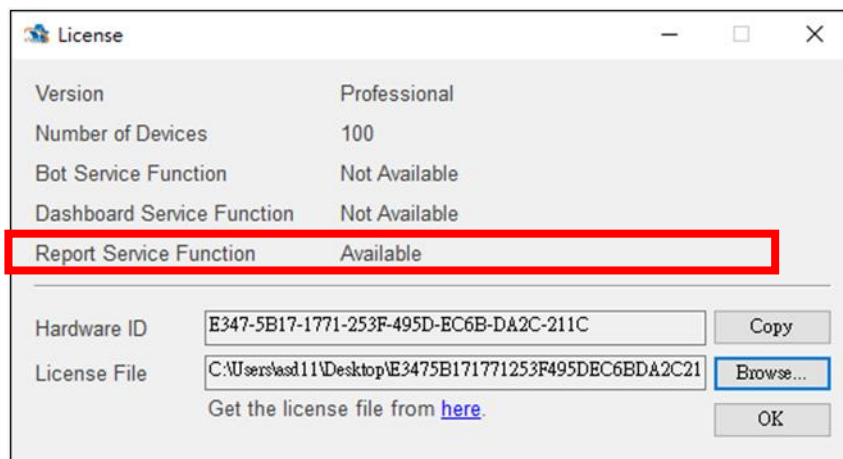

Figure 2-4: Status of Import IoTstar Report Service(Trial service)

viii. Return to IoTstar system interface, click "Start Service" to start IoTstar, then the IoTstar Report Service (Trial service) will also be enabled at the same time.
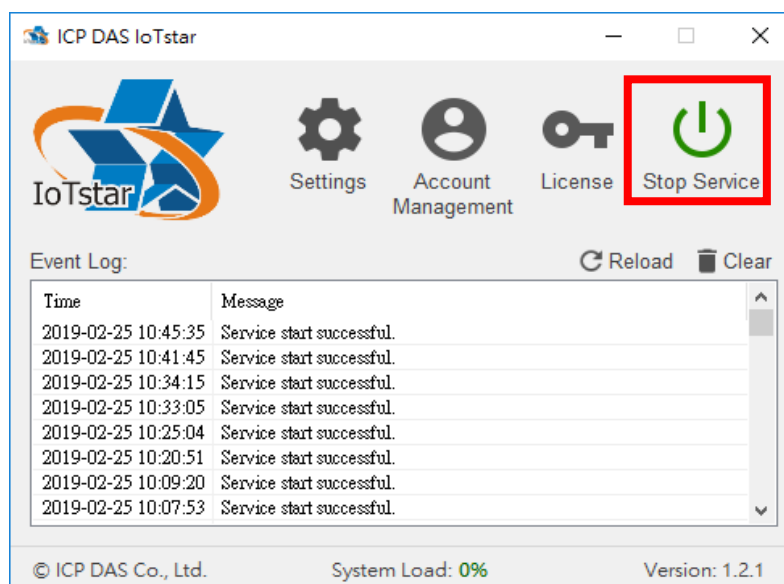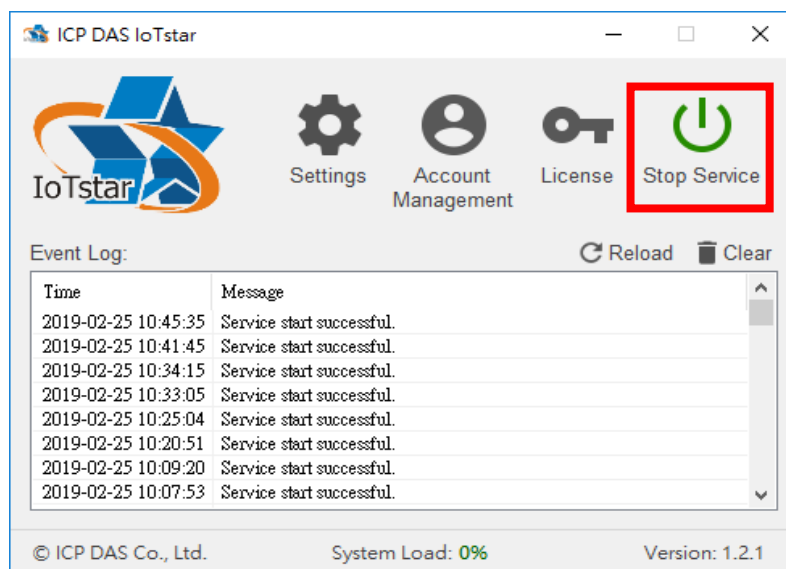

Figure 2-5: Start IoTstar Report Service(Trial service)

2.3 Enable IoTstar Report Service(Formal service)

To enable IoTstar Report Service(Formal service), you have to install the IoTstar Professional version v3.0.0 (and later version) first, and then contact with ICP DAS to purchase the upgrade code to enable the IoTstar Report Service(Formal service). The following steps will introduce the process to enable the IoTstar Report Service(Formal service).

i   Click the "Package Upgrade" button on the IoTstar official webpage.

Figure 2-6: Upgrade to IoTstar Report Service(Formal service) (1)

ii   Enter the Serial Number of IoTstar (Professional version) and the Upgrade Code of IoTstar Report Service (Formal service), and click the "Upgrade" button to upgrade your IoTstar Serial Number with the authorization to use IoTstar Report Service(Formal service). Click "Generate the License File" to go to the registration page.
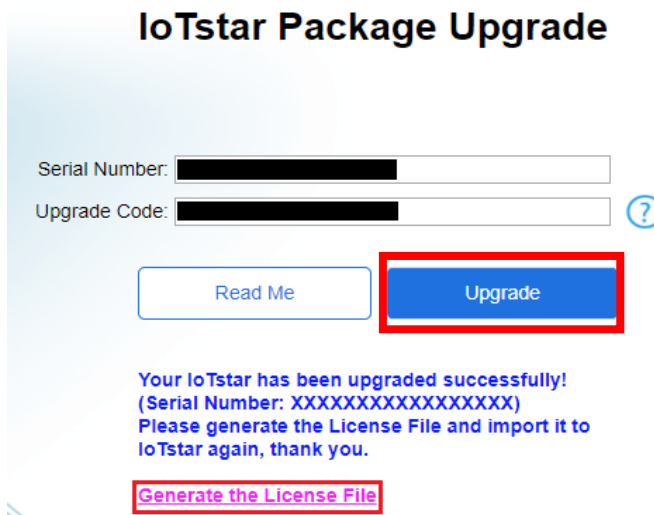
Figure 2-7: Upgrade to IoTstar Report Service(Formal service) (2)

iii   Enter the required information and click the "Registration" button to get the new License File.
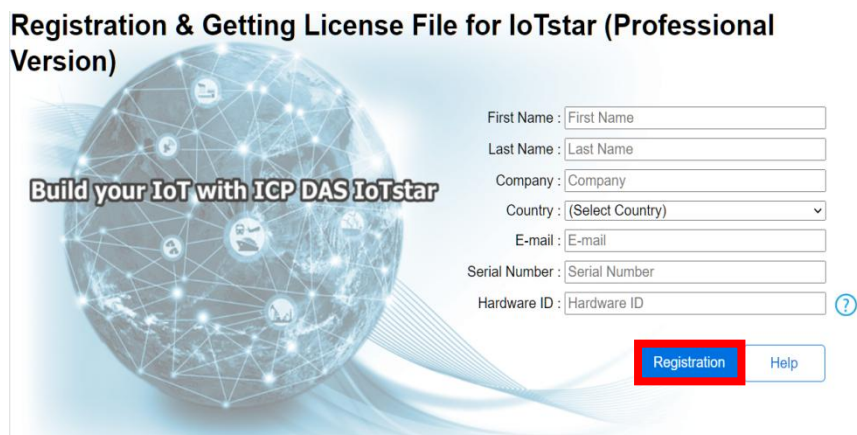
Figure 2-8: Upgrade to IoTstar Report Service(Formal service)(3)

iv After getting the License file for IoTstar Report Service (Formal service), please open the IoTstar system interface, click "License" button to enter the License setting window.
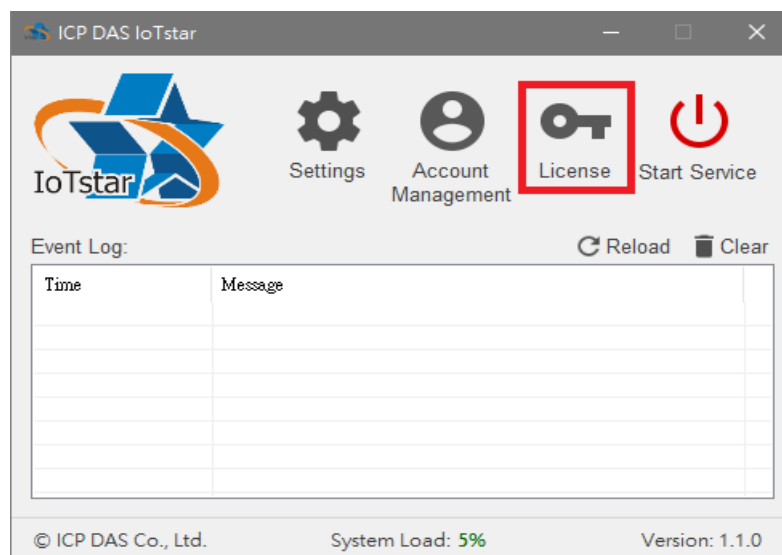
v Enter the License setting window, click "Browse" button to find the location of the IoTstar Report Service (Formal service) license file, and then click the "OK" button.

Figure 2-9: Import IoTstar Report Service(Formal service) License

vi If the license file is valid, the status of IoTstar Report Service (Formal service) will be displayed.

Figure 2-10: Status of IoTstar Report Service (Formal service)

vii Return to IoTstar system interface, click "Start Service" to start IoTstar, then the IoTstar Report Service (Formal service) will also be enabled at the same time.

Figure 2-11: Start IoTstar Report Service(Formal service)

3 Operation of IoTstar Report Service

When the installation of IoTstar v3.0.0 is completed and the IoTstar Report Service is enabled, user can use the function provided by IoTstar Report Service to query the corresponding statistical report to review the I/O channel data (or Power data) from the I/O modules, sensor, or power meter connected to WISE / PMC / PM controllers. Following is the description for the function of IoTstar Report Service.

3.1 Launch IoTstar Report Service

Log in to IoTstar website, click on the "Report Service" button on the "Data Display & Analysis" section of IoTstar Webpage to enter the IoTstar Report Service page; the list of WISE / PMC / PMD controllers managed by IoTstar, the I/O channels of the sensors (and the power loops of the power meters) connected to the WISE / PMC / PMD controllers, and the I/O channel groups (and the power loop groups) will be shown in the Data Review/System Setting section. User can select the desired I/O channel (group) or power meter loop (group) to query the corresponding statistical report.

Please note: For the pre-setting of the I/O channel group and power meter loop group, please refer to the description of "Chapter 9 Grouping Setting" in the user manual of ICP DAS IoTstar IoT Cloud Management Software.
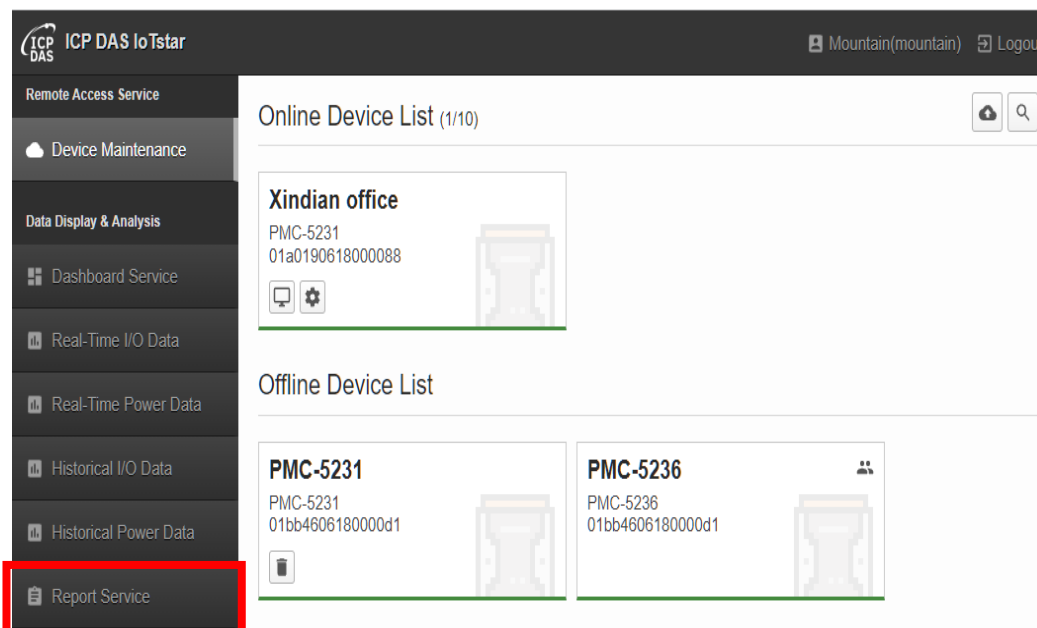
Figure3-1: Launch IoTstar Report Service
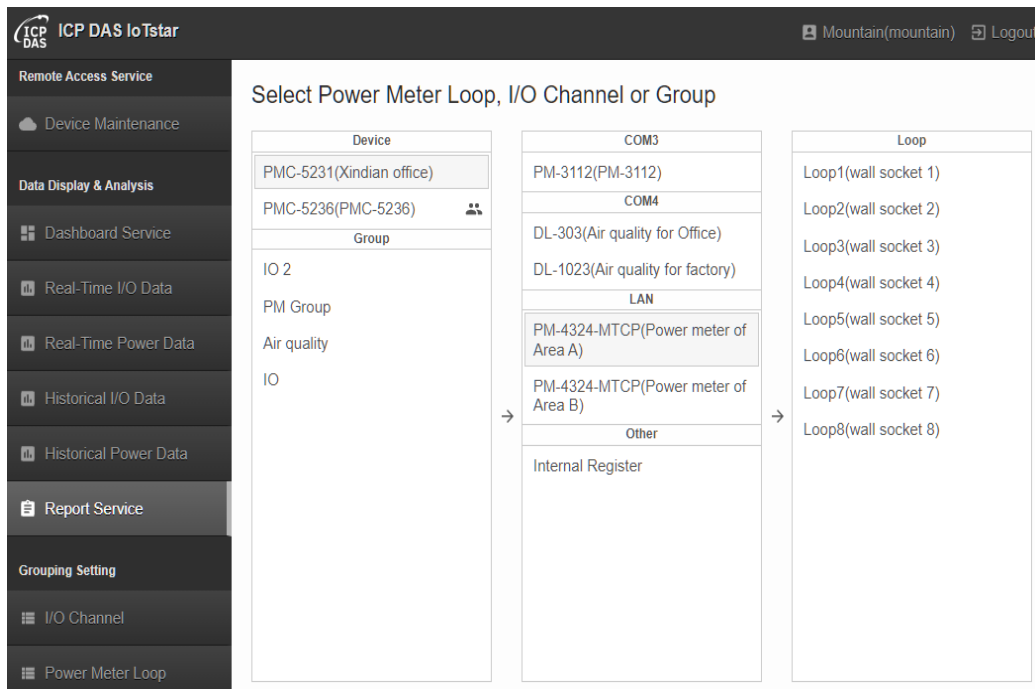
Figure 3-2: Enter IoTstar Report Service Page

3.2 Power Meter Loop Report

When the desired power meter loop is selected, it will enter the "Power meter loop report" setting page. Please refer to the following steps for the setting of the report.

i. Select the Timeline of this report at the upper left of the page. It provides 5 options : Daily report, Weekly report, Monthly report, Quarterly report and Yearly eport.

ii. Assign the Start date of the Timeline for the reoprt, the system provides following two options.

- Single Mode: After selecting "Single Mode", continue to assing the "Start Date" , It provides 4 options : Today, Yesterday, Same day in Last Week, and Custom Date". When the setting of "Start Date" is completed, the system will generate the statistical report of the specified power meter loop according to the setting of "Start date + Timeline".

● Comparison Mode: After selecting "Comparison Mode", continue to assign the "Start Date" and "Comparison Date".

 . It provides 4 options : Today, Yesterday, Same day in Last Week, and Custom Date". When the setting of "Start Date" and "Comparison Date" are completed, the system will query and generate the comparison statistical report of the specified power meter loop in the "Start date + Timeline" and "Comparison Date + Timeline" time periods.

iii. After complate the Time period setting, user can select the desired power data type shown in the report. In the "Data shown" field, it provides "Max. Demand (kW)", "Energy Consumption(kWh)" , "Avg. PF(%)", "Avg I Phase A(A)", "Avg V phase A(V)", "Avg I Phase B(A)", "Avg V phase B(V)" "Avg I Phase C(A)", "Avg V phase C(V)", "Avge kVA" and "Avg kvar" for selection (multiple choice supported).

iv. After complete all settings, the system will generate the corresponding statistical report for the specified power meter loop.

Power meter loop report   PMC-5231(Xindian office) / PM-4324-MTCP(Power meter of Area A) / Loop1(wall socket 1)

Time	Max. Demand(kW)	Energy Consumption(kWh)	Avg. PF(%)	Avg. I Phase A(A)	Avg. V Phase A(V)	Avg. I Phase B(A)	Avg. V Phase B(V)	Avg. I Phase C(A)	Avg. V Phase C(V)	Avg. kVA	Avg. kvar
0	0.047	0.046	90.65	0.162	106.32	0.161	106.316	0.162	106.326	0.051	0.021
1	0.047	0.046	90.562	0.163	106.612	0.162	106.608	0.163	106.618	0.051	0.022
2	0.047	0.047	90.312	0.164	107.068	0.163	107.064	0.164	107.074	0.052	0.022
3	0.047	0.047	90.165	0.163	107.238	0.163	107.235	0.163	107.244	0.052	0.022
4	0.047	0.047	90.063	0.164	107.395	0.163	107.392	0.164	107.402	0.053	0.023
5	0.047	0.047	89.965	0.165	107.375	0.165	107.371	0.166	107.381	0.053	0.023
6	0.047	0.047	90.224	0.163	107.042	0.162	107.039	0.163	107.048	0.052	0.022
7	0.047	0.047	90.363	0.163	106.665	0.162	106.662	0.163	106.671	0.052	0.022
8	0.046	0.044	91.77	0.155	104.643	0.154	104.639	0.155	104.648	0.048	0.019
9	0.044	0.026	91.392	0.156	104.718	0.155	104.714	0.156	104.723	0.048	0.019
					Summary						

Daily Highest Usage: 0.047kW
Occurrence Time: 2021-10-05 04:47:00
Daily Total Electricity Consumption: 0.449kWh

Figure 3-3: Power Meter loop Report - Single mode

Figure 3-4: Power Meter loop Report - Comparison mode

3.3 I/O Channel Report

When the desired I/O channel is selected, it will enter the "I/O channel report" setting page. Please refer to the following steps for the setting of the report.

i. Select the Timeline of this report at the left upper of the page. It provides 5 options : Daily report, Weekly report, Monthly report, Quarterly report and Yearly eport.

ii. Assign the Start date of the Timeline for the reoprt, the system provides following two options.

- Single Mode: After selecting "Single Mode", continue to assing the "Start Date" , It provides 4 options : Today, Yesterday, Same day in Last Week, and Custom Date". When the setting of "Start Date" is completed, the system will generate the statistical report of the specified I/O channel according to the setting of "Start date + Timeline".

● Comparison Mode: After selecting "Comparison Mode", continue to assign the "Start Date" and "Comparison Date".

. It provides 4 options : Today, Yesterday, Same day in Last Week, and Custom Date". When the setting of "Start Date" and "Comparison Date" are completed, the system will generate the comparison statistical report of the specified I/O channel in the "Start date + Timeline" and "Comparison Date + Timeline" time periods.

iii. After complate the Time period setting, user can select the desired I/O channel data type shown in the report. In the "Data Shown" field, it provides "Maximum", " Minimum" , "Average", "Final Value" and "Total Value " for selection (multiple choice supported).

iv. After complete all settings, the system will generate the corresponding statistical report for the specified I/O channel.

Figure 3-5: I/O Channel Report - Single mode

Figure 3-6: I/O Channel Report - Comparison mode

3.4 Power Meter Loop Group Report

When the desired power meter loop group is selected, it will enter the "Power meter loop group report" setting page. Please refer to the following steps for the setting of the report.

i. Select the Timeline ![Day Week Month Quarter Year] of this report at the left upper of the page. It provides 5 options : Daily report, Weekly report, Monthly report, Quarterly report and Yearly eport.

ii. Assign the Start date ![Today 2021/10/04] of the Timeline for the reoprt, it provides 4 options : Today, Yesterday, Same day in Last Week, and Custom Date. When the setting of "Start Date" is completed, the system will generate the statistical report of the specified power meter loop group according to the setting of "Start date + Timeline".

iii. Assign the type of group reoprt, the system provides following two options.
  ● Loop Statistics : After selecting "Loop Statistics"

Loop Statistics ▼ , the system will generate the statistical reports

for the energy consumption(kWh) and Max. Demand(kW) of the

power meter loop group.

● Loop Comparison: After selecting "Loop Comaprison "

Loop Comparison ▼ , user needs to select the desired item for the

comparison of the data of each power meter loop included in the

group. It provides 7 options : "Max. Demand (kW)", "Energy

Consumption(kWh)" , "Avg. PF(%)", "Avg I", "Avg V", "Avge

kVA" and "Avg kvar".

iv. After complete all settings, the system will generate the corresponding

statistical report for the specified power meter loop group.

Power meter loop group report   PM Group

Time	Max. Demand(kW)	Energy Consumption(kWh)
0	0.049	0.049
1	0.05	0.05
2	0.05	0.05
3	0.05	0.05
4	0.05	0.05
5	0.05	0.05
6	0.05	0.05
7	0.049	0.048
8	0.049	0.045
9	0.044	0.044
10	0.044	0.033
Summary		
Daily Total Electricity Consumption	0.522	

Figure 3-7: Power Meter Loop Group Report - Loop Statistics

Figure 3-8: Power Meter Loop Group Report - Loop Comaprison

3.5 I/O Channel Group Report

When the desired I/O channel group is selected, it will enter the "I/O channel group report" setting page. Please refer to the following steps for the setting of the report.

i. Select the Timeline [Day Week Month Quarter Year] of this report at the left upper of the page. It provides 5 options : Daily report, Weekly report, Monthly report, Quarterly report and Yearly eport.

ii. Assign the Start date [Today 2021/10/04 ▼] of the Timeline for the reoprt, it provides 4 options : Today, Yesterday, Same day in Last Week, and Custom Date. When the setting of "Start Date" is completed, the system will generate the statistical report of the specified I/O channel group according to the setting of "Start date + Timeline".

iii. Select the desired item for the comparison of the data of each I/O channel in this group. It provides 5 options : "Maximum", " Minimum" , "Average", "Final Value" and "Total Value ".

iv. After complete all settings, the system will generate the corresponding statistical report for the specified I/O channel group.

Time	Xindian office Air quality for Office CO (ppm)	Xindian office Air quality for Office CO2 (ppm)	Xindian office Air quality for factory CO (ppm)	Xindian office Air quality for factory CO2 (ppm)
0	0	453	0	500
1	0	454	0	499
2	0	453	0	499
3	0	453	0	500
4	0	455	0	500
5	0	453	0	500
6	0	453	0	500
7	0	461	0	506
8	0	517	0	569
9	0	691	0	720
10	0	681	0	741
11	0	661	0	719
Summary				
Daily maximum	0	691	0	741
Daily minimum	0	444	0	493
Daily average	0	486.903	0	535.593
Daily total value	0	321843	0	354027

Figure 3-9: I/O Channel Group Report

3.6 Report Template Management

After user completes the setting for the power meter loop (group) report or I/O channel (group) report according to the instructions in the previous sections, the "Report Template Management" function of IoTstar Report Service can be activated. Through the built-in editor of "Report Template Management", it allows user to flexibly edit the header and footer of the report to create an exclusive report format for himself. The following will describe the "Report Template Management" function of IoTstar Report Service.

Please note: The "Report Template Management" editor is provided by TinyMCE.

● Enter the "Report Template Management" editor

After complet the settings of the power meter loop (group) report or I/O channel (group) report, click the "Template Management" button at the upper right of the page to open the "Template Management" editor for
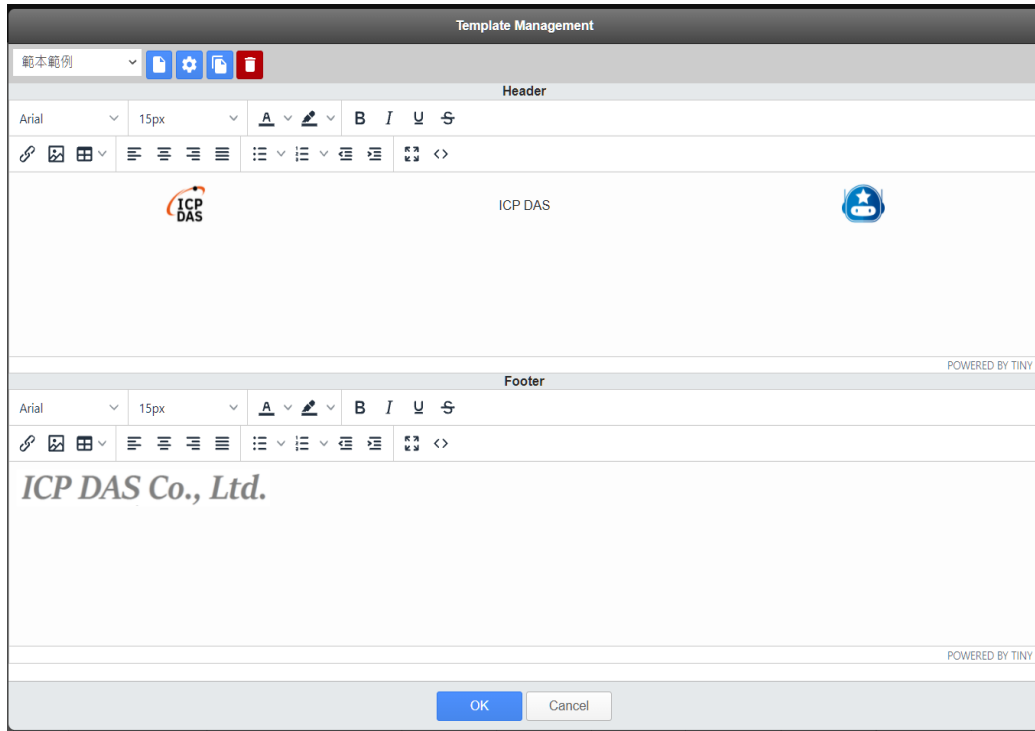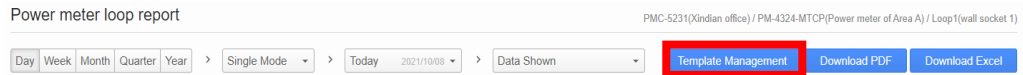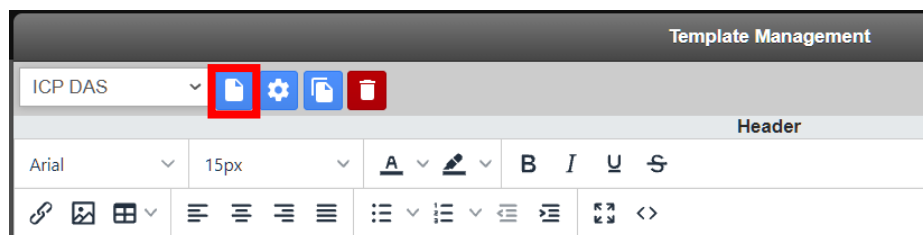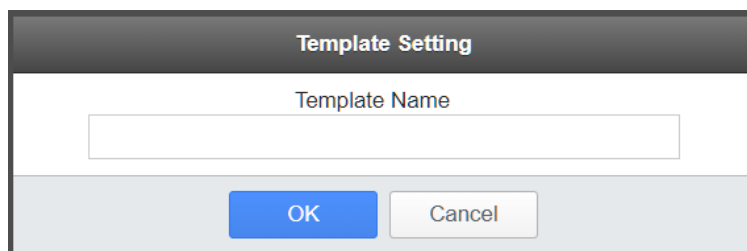
the report.

Figure 3-10: "Report Template Management" editor

- Create Template
  If user enters the "Template Management" editor for the first time, please
  click the "Create" button at the upper left of the page, and the
  system will create a new report template. After complete the setting of
  the template's name, the name of the new report template will be shown
  in the "Report Template" list at the upper left of the page.

- Edit Template

  User can edit the content of the report header and footer through the "Template Management" editor (for example: import text, import table, import image file, adjust format etc.).
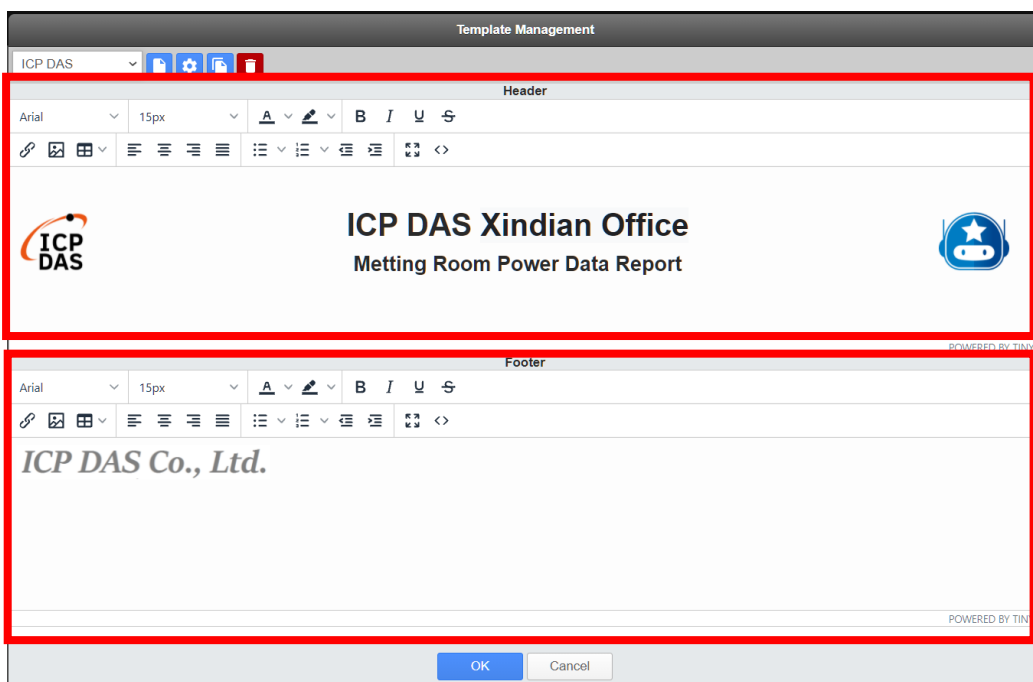
**Figure 3-11: Editing for the Report header and footer**

- Change the name of Template

  User can select the report template from the "Report Template" list on the upper left of the editor, and click the "Edit" button to change the template's name.
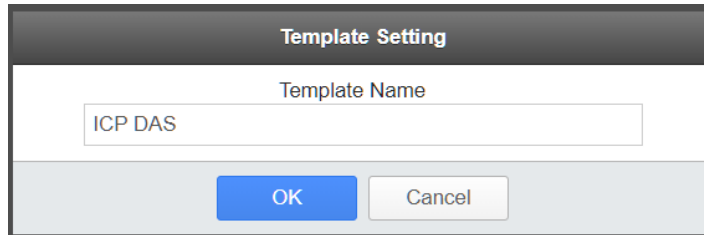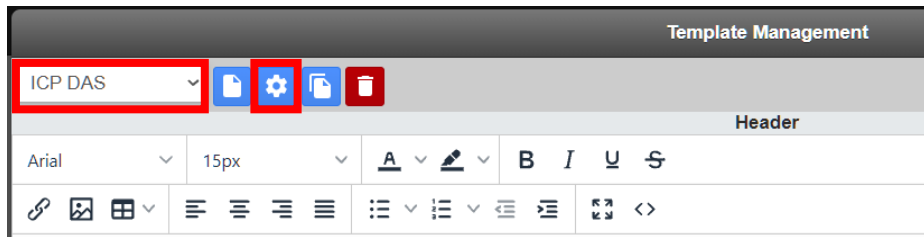
- Copy Template

  If user wants to copy the content of an existing report template to the new template, he can select the original report template from the "Report

  Template" list at the upper left of the editor, and click the "Copy"

  button to copy the contents of the specify template to the new template, and the default name of the new template is "Name of the original template-copy".
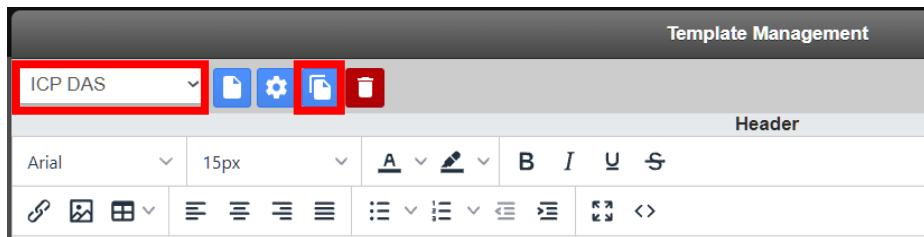

- Remove Template

  If user wants to remove an existing report template, he can select the template to be removed from the "Report Template" list on the upper left

  of the editor, and click the "Remove" button to delete the specified

  Template.
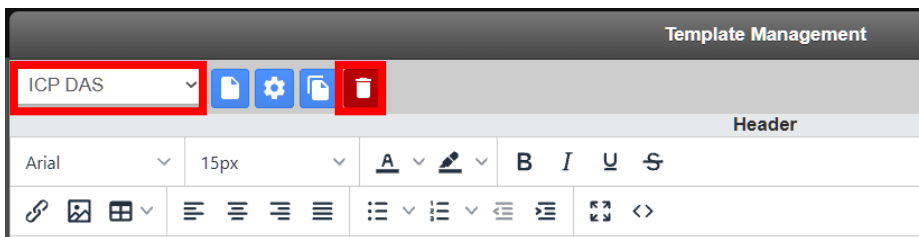
● Exit the "Report Template Management" editor

After complete the editing of the report template or the management of the report template, click the "OK" button below the editor to exit the "Report Template Management" editor.
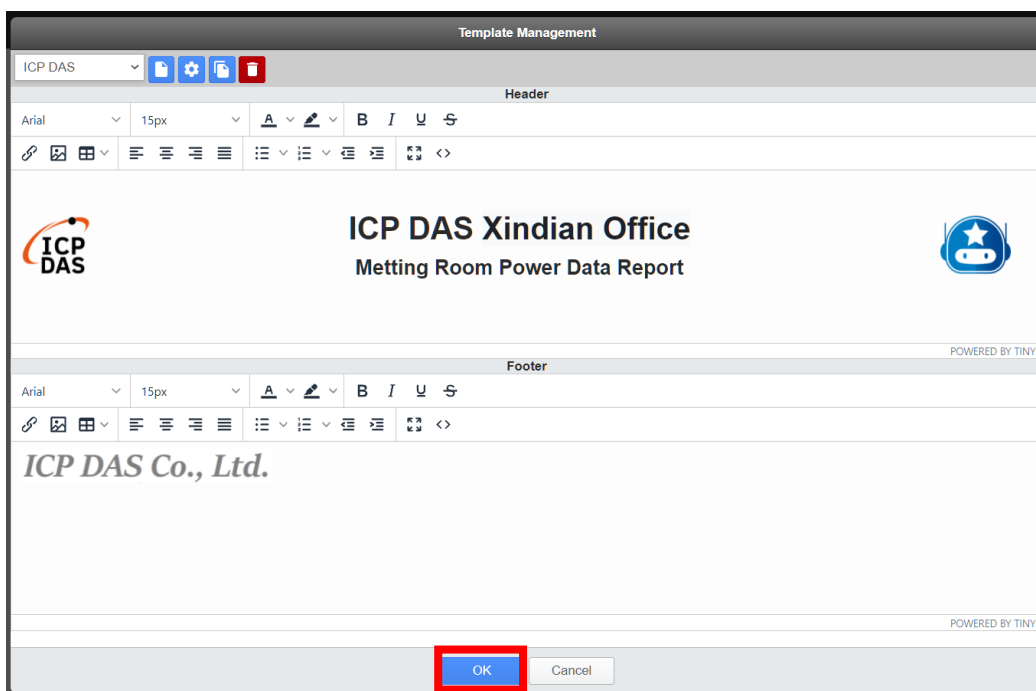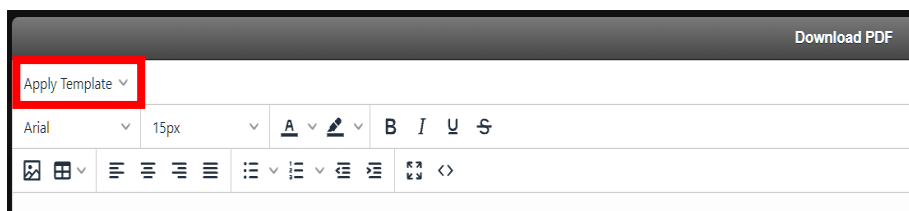

3.7 Download Report file

IoTstar Report Service provides the report file download operation. It supports two file formats as "PDF file" and "Excel file". The following will describe the report file download operation.

● Report file download (PDF file format)

After complete the setting of the power meter loop (group) or I/O channel (group) report, click the "Download PDF" button at the upper right of the IoTstar Report Service page to open the "Download PDF"

window.
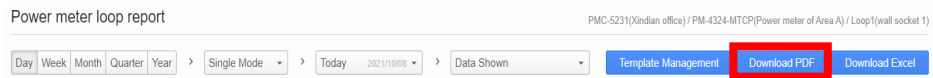
In the "Apply Template" list, select the desired report template want to apply to this report (if "No Template" is selected, it means that no report template is applied to this report), and confirm the report content. If user wants to adjust the report format again, he can use the built-in editor which the "Download PDF" window provide for adjustment.

After confirming the report content, click the "Download" button at the bottom of the window to open the preview window for the PDF file of the report.
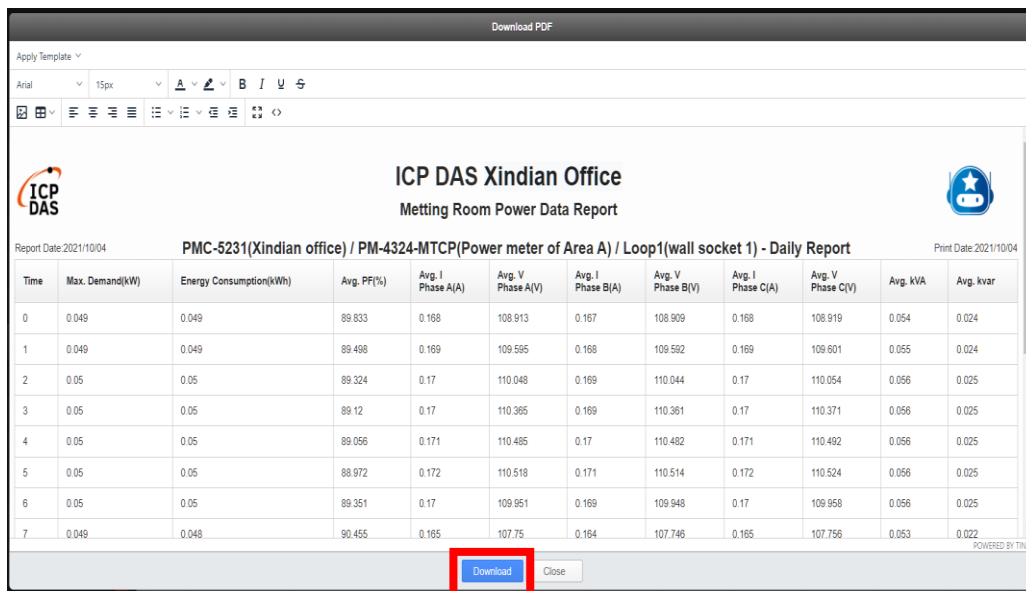

Figure 3-12: "Download PDF" Window

Users can eview the contents of the report in PDF file format that the system generate, and adjust the orientation and the margins of the PDF

file. After all setting is completed, click the "Download" button to download the report file (PDF format).
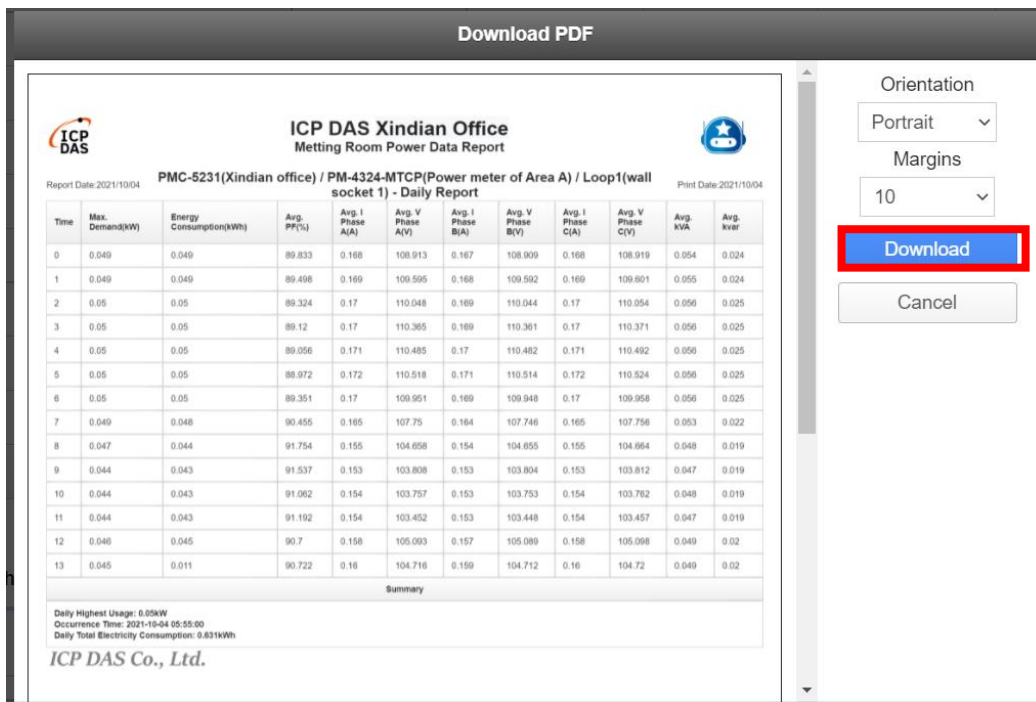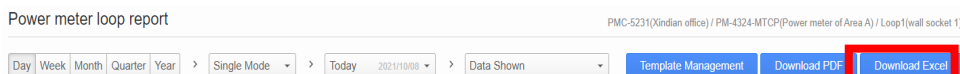

Figure 3-13: Preview and downlaod report file (PDF format)

● Report file download (Excel file format)

After complete the setting of the power meter loop (group) or I/O channel (group) report, click the "Download Excel" button at the upper right of the IoTstar Report Service page to open the "Download Excel" window.

In the "Apply Template" list, select the report template to be applied to this report (if "No Template" is selected, it means that no report template is applied to this report), then click the "Download" button to download the report file (Excel format).

In the "Apply Template" list, select the desired report template want to apply to this report (if "No Template" is selected, it means that no report template is applied to this report), then click the "Download" button to download the report file (Excel format).
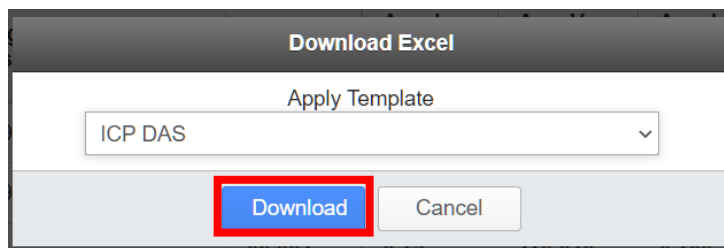
Figure 3-14: Downlaod report file (Excel format)