User Manual for ICP DAS IoTstar IoT Cloud Management Software

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1 Introduction

IoTstar is the software developed by ICP DAS for use in remote monitoring and management of the WISE / PMC / PMD controllers in a variety of Industrial IoT applications. IoTstar can be installed on a general PC platform and works as a Private Cloud management system of WISE / PMC / PMD controller, or on the VM (Virtual Machine) platform of Microsoft Azure, IBM Bluemix or Amazon AWS, etc. and works as a Public Cloud management system of WISE / PMC / PMD controller. In addition to provide the remote maintenance and firmware update services on WISE / PMC / PMD controllers, IoTstar also can collect the I/O channel data and power data from the I/O modules (or Sensor) and Power Meter connected to WISE / PMC / PMD, and import these data into the Database to provide the services such as status query and display on the automation control and monitoring system with Cloud environment.

With IoTstar, users can complete the system setting only by a few clicks on Web page, and perform the Remote Access Service (Status Monitoring, System Setting, and Firmware Update), Sensor Data Service (Sensor data collected and imported into Database), Bot Service (Query and monitor sensor data by mobile phone Bot service), Dashboard Service (Review sensor data through Dashboard interface) and Report Service (Provide statistical report for sensor data) operations for each WISE / PMC / PMD. Through the SQL database command, IoTstar can be quickly integrated with the Cloud platforms, data analysis tools (Power BI, Google Data Studio, etc.) or SCADA systems to help users quickly build the Cloud "IoT + Big Data" application and significantly reduce the time and cost of building the Cloud "IoT + Big Data" application.

Currently IoTstar supports the following ICP DAS IoT controllers.

- WISE-523x series, WISE-2x4x series, WISE-75xx series
- PMC-5231 series, PMC-2x4x series
- PMD series

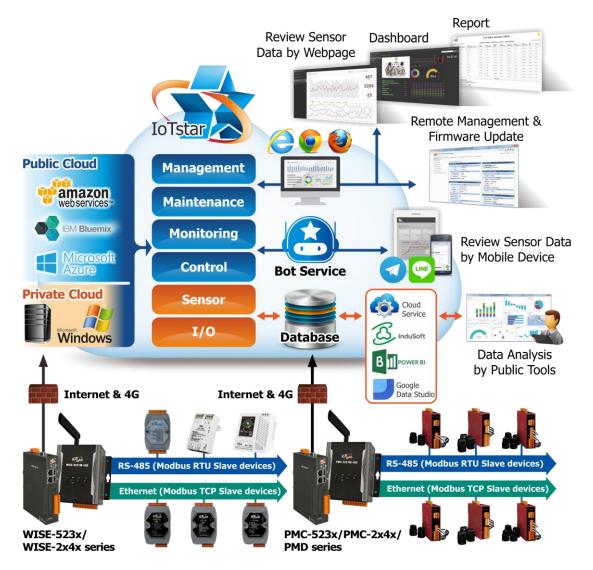


Figure 1-1 IoTstar System Architecture

The IoTstar system features are as below.

- Flexible installation environment supported to quickly set up IoT Cloud system
 - ✓ According to the needs of the field site, the installation environment can be flexibly selected.

IoTstar can be installed on the VM (Virtual Machine) platform of the Public Cloud platform such as: Microsoft Azure, IBM Bluemix, Google Cloud or Amazon AWS to implement the Public IoT Cloud system on WISE/PMC/PMD controllers. It can reduce the loading for maintaining the IoT Cloud operating environment.

If the user concerns about the environment of the system operation or data storage, the IoTstar can also be installed on a private Windows PC (Windows 7/8/10, Windows Server) to implement the Private IoT Cloud solutions on the WISE/PMC/PMD controllers, and then the user can manage the environment by himself.

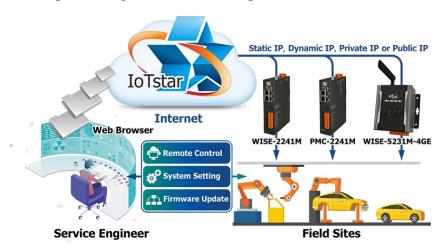


✓ No more programming! Using Browser to set up the IoT Cloud system It allows to perform Remote Maintenance service on WISE/PMC/PMD controllers, and provides the Database import, query and display services for the sensor data (and/or Power data) collected from the WISE/PMC/PMD controllers.

Remote Maintain Devices	Online Device List (\$100)		Q, Search	×
Real Time Data Deplay	WISE-5231 WISE-5231 0134400513000076	PMC-5231 PMC-6231 01:21:001:000007	PMD-2201 PMD-2201 014504d515000043	
Historical Data Analysis From Channet Data Prower Data	MP2 PANEL 44 PAC-6231 0123e000510000es C Offline Device List	ML PANEL AL PAC 221 Off-SOUTH BOOODS O	PMC_03 PMC-501 0104/90518000026	ŝ
Power Report Crouping Setting ED Channel Power Meter Loop	Demo UA-5231 5231-00059485187	WISE-5236M-4GC WISE-5230M-4GC 0143/724130000a1		
System information & Setting				

• Remote Access Service - Remote maintenance for Controllers

With IoTstar, users do not need to worry about the network environment of the WISE/PMC/PMD controller, regardless of whether the controller uses the static IP, dynamic IP, virtual IP or physical IP, user can perform the status monitoring, system setting adjusting, and update the firmware of the controllers through the web interface provided by IoTstar. It can reduce the time and cost of personnel travel due to performing the maintenance operations of controllers.





- Sensor Data Service Collect sensor data and import data into database
 - ✓ Sensor data collection and import the data into the database at the cloud With IoTstar, the Sensor Data Service can be performed to collect the Historical and Real-Time sensor data (and/or Power data) from the WISE/PMC/PMD controllers, and import the data to the Database at the cloud. The users can quickly setup the Data Lake for the IoT and Big Data applications. The users can also modify the data in the database to change the status of the DO/AO channel of the sensor connected to controllers through the SQL command. Please note: IoTstar which ICP DAS provide supports Microsoft SQL Server, MySQL Server and Oracle Database respectively. User can install the appropriate version of IoTstar according to the requirement of system, and also install the corresponding database system by himself for the sensor data collection service of IoTstar.



✓ Support SQL interface to speed up the integration of OT and IT systems With the support of SQL command interface, the sensor data stored by IoTstar can be connected easily with the third-party data analysis tools (such as: Power BI, Google Data Studio, SCADA and ERP/MES systems). It can assist user to integrate the OT (Operational Technology) and IT (Information Technology) systems quickly and seamlessly.



• Sensor Data Visualization Service

With the built-in standard web page of IoTstar, user can directly query and review

the real-time or historical sensor data (and/or Power data) collected from the WISE/PMC/PMD controllers.



IoTstar also provides IoTstar Dashboard Service package. Through the Dashboard editor and a variety of Widget components provided by IoTstar Dashboard Service, user can quickly setup the Dashboard page for the Real-Time sensor data (and Power data) collected from the WISE/PMC/PMD controllers according to their needs to review the operation status of the application system in real time. Please note: IoTstar Dashboard Service is an optional package for IoTstar.



• Bot Service - Interactive operation through mobile phone

IoTstar provides IoTstar Bot Service package for two-way message interactions between the WISE/PMC/PMD controller managed IoTstar by and LINE/Telegram chat rooms. Users can query the real-time sensor data (and/or Power data) collected from the WISE/PMC/PMD controllers and be able to change the value of DO/AO output channels anytime and anywhere by LINE/Telegram App. In addition, with the ICP DAS iCAM IP Camera, it can also receive the video recording events on the application site, so that the users can review the operating status of the equipment through their mobile phones even they are not close by. Please note: IoTstar Bot Service is an optional package for



• Sensor Data Report Service

IoTstar features IoTstar Report Service which 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 controllers can be provided as the 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. Please note: IoTstar Report Service is an optional package for IoTstar.

ay We	eek Month Quarter Y	/ear > Single Mode + >	Today 2	021/10/08 -	Data Shown	•	Template	Management	Download P	DF Dow	nload 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. kva
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						

Software package provided (Optional; 90 days free trial)

• IoTstar Bot Service

It is an optional software package for IoTstar that provides users two-way message interactions between the WISE / PMC / PMD controller managed by IoTstar and LINE/Telegram chat rooms. IoTstar Bot Service provides an easier and more convenient mechanism for user to manage his/her remote controllers with LINE/Telegram App. It does not like the traditional Chatbot which get the information or service by entering the text message; it provides a friendly user interface that includes buttons and dialogue menu to perform the monitoring of remote controllers in an easy way. With IoTstar Bot Service, users can query the real-time I/O Channel data (or power data) of the on-site I/O modules or power

meters and be able to change the value of DO/AO output channels anytime and anywhere. IoTstar Bot Service also provides functions to receive, store, and query the event messages. The controllers can be triggered to send event messages to IoTstar Bot Service by IF-THEN-ELSE rules. After IoTstar Bot Service receives these event messages, it would process and send them to relative LINE/Telegram users for real-time alarm notification. In addition, IoTstar Bot Service also provides the function to store and query the historical received event messages for system operation analysis.



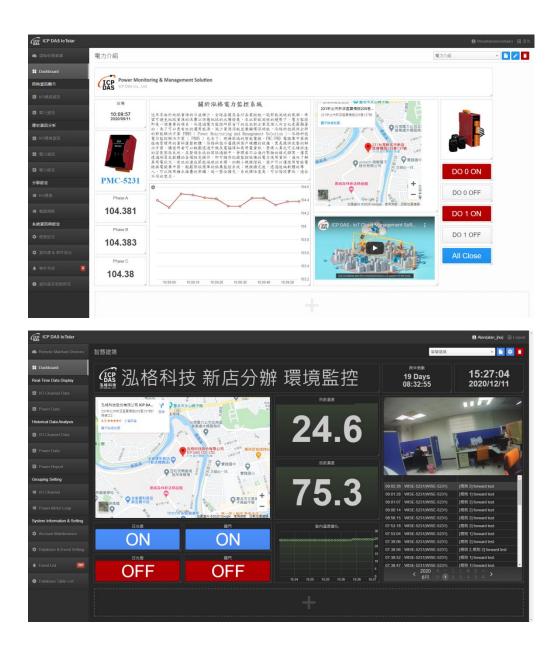
• IoTstar Dashboard Service

IoTstar Dashboard Service provides the Dashboard editor and a variety of Widget

components. User can setup the Dashboard pages to review the Real-Time sensor data (and Power data) from the I/O modules (or Sensor) and Power Meter connected to WISE / PMC / PM controllers through the IoTstar Dashboard Service.

Following are the Widget components provided by IoTstar Dashboard Service and the examples of Dashboard built by IoTstar Dashboard Service.





• IoTstar Report Service

IoTstar Report Service provides users the statistic report service for the sensors

connected to WISE/PMC/PMD controller. The main features are as follows:

- > Provide 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.

The following is the examples of the function provide by IoTstar Report Service: ➤ Report for "Power Meter Loop"

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. kva
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						

\triangleright Report for	"Power Meter	Loop Group	(Loop	Comparison mode))"
/ 1000011101		Loop Oloup	(LOOP	comparison model	/

Day Week Month	Quarter Year > Custom	Date 2021/09/29 - > Loop (Comparison • Avg. V	•	Template Management Dow	PM G
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					

ay We	eek Month Quarter Year > Sing	gle Mode	₩08 • > Data Shown •	Template Management	Download PDF Download Exce
Time	Maximum(ppm)	Minimum(ppm)	Average(ppm)	Final Value(ppm)	Total Value(ppm)
)	528	518	522.9	520	31374
	524	519	521.266	520	31276
2	521	513	517.266	513	31036
3	517	508	512.433	508	30746
ŧ.	510	505	508.116	507	30487
5	510	504	506.866	504	30412
6	507	501	504.266	504	30256
	509	500	504.55	509	30273
3	542	510	526.633	542	31598
)	622	540	583.466	622	35008
0	644	618	630.95	644	37857
			Summary		

≻ Report "Template Management (Editing for Report header and footer)"

	Template Management				
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	Header				
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	፸ ₂ 53 ↔				
ICP DAS	ICP DAS Hsintien Office	Ø			
	Footer	POWERED BY TINY			
Arial ~ 15px ~ <u>A</u> ~ <u>*</u> ~					
ICP DAS Co., Ltd.					
		POWERED BY TINY			
	OK Cancel				

> Report download (PDF file format)



ICP DAS Hsintien Office



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	Date:2021/09
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
					Summar	y					

ICP DAS Co., Ltd.

The following is the function comparison table of different versions of IoTstar.

	Standa	ard Function	Optiona	l package <mark>(*2</mark>)
Version (*1)	Remote Access Service	Sensor Data Collection Service	Bot Service	Dashboard Service	Report Service
v1.x			_		—
v2.x	Yes	Yes (MS SQL only)	Yes	Yes	—
v3.0			Yes	Yes	Yes
v3.1	Vac	Yes (Optional support for MS	Yes (Support for LINE)	Voc	Vac
v3.6	Yes	SQL, MySQL or Oracle)	Yes (Support for LINE, Telegram)	Yes	Yes

	1. IoTstar provides free upgrade from v1.x/2.x/3.x to v3.6.
	Support WISE-523x/WISE-224x (with v1.6.0 or later version
	firmware), WISE-284x (with v1.0.0 or later version firmware),
	WISE-75xx (with v1.1.0 or later version firmware),
	PMC-523x/PMC-224x/PMD (with v3.6.0 or later version firmware)
Note	and PMC-284x (with v1.0.0 or later version firmware).
Note	2. "Bot Service" requires the purchase of IoTstar Bot Service package.
	"Dashboard Service" requires the purchase of IoTstar Dashboard
	Service package.
	"Report Service" requires the purchase of IoTstar Report Service
	package.
	***The above packages all provide "90 days free trial".

2 Install IoTstar

IoTstar can be installed on Windows 7 / 8 / 10 or Windows Server OS system. It also needs to work with the IIS Web Server and Database system. The following is the suggested system requirements for IoTstar.

Item	Specification Suggestions
CPU	64-bit (x64); 3.0 GHz or higher GHz Processor.
	• Minimum 8 GB for RAM. As the number of controllers,
	the number of sensors, and the size of Database is
RAM	increasing, please do not forget to increase the size of the
	RAM as needed to ensure the best performance of the
	system.
	• Minimum 64GB for Hard Disk space. As the number of
	controllers, the number of sensors, and the size of
Hard Disk	Database is increasing, please do not forget to increase
	the size of the Hard Disk space as needed to ensure the
	best performance of the system.
OS System	Windows 7, Windows 8, Windows 10, Windows Server 2012
05 System	or later OS system. (64-bit Windows required)
	• Support WISE-523 $x/2x4x/75xx$, PMC-523 $x/2x4x$ and
	PMD controllers.
	• Need to work with IIS Web Server.
Notes	• One of the following database systems is required.
	Microsoft SQL Server 2012 or later version.
	➤ MySQL Server (8.0.20) or later version.
	➢ Oracle Database 19c (19.3 - Enterprise Edition (also

Please Note:

 If user wants to use IoTstar to perform remote monitoring and management of the front-end WISE / PMC / PMD controllers directly in the Intranet environment, please make sure the PC (or platform) to install the IoTstar on must be "Static IP" setting.
 If user want to use IoTstar to perform remote monitoring and management of the front-end WISE / PMC / PMD controllers 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 following sections will describe the download, installation and setting procedures for IoTstar. In addition, it will also describe the settings of WISE / PMC / PMD controller for the connection with IoTstar. Please Note: If you are installing IoTstar v1.x ~ v2.0, please refer to IoTstar v1.x ~ v2.0 Installation Guide.

2.1 **Download IoTstar (Basic version)**

Users can download IoTstar (Basic version) from IoTstar official website. Please follow the steps below:

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



II. On the "Download" page, click the "Free Download" button of "Basic version" section to enter the download page of IoTstar software (Basic version).

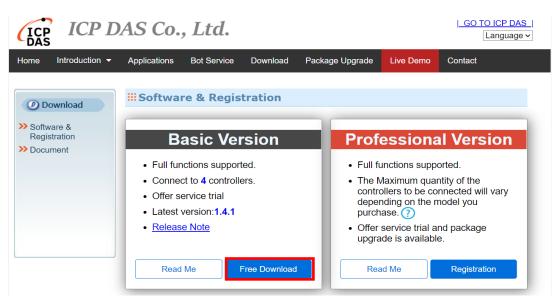


Figure 2-1 Download IoTstar (Basic version) (1)

III. On the download page of IoTstar (Basic version), enter the following information: "First Name", "Last Name", "Company", "Country", and "E-mail", and then click the "Send Software Link" button. An email with the download link of IoTstar software (Basic version) would be sent to the email address account you entered.

ICP	ICP D	AS Co.	, <i>Ltd</i> .				GO TO ICP DAS
Home	Introduction -	Applications	Bot Service	Download	Package Upgrade	Live Demo	Contact
		Reg	jistratio	n & Ge	tting loTsta	·	c Version)
	C S				Last Name : Last N		
Bufi	d your IoT	with ICI	P DAS 10	TSET	Company : Comp Country : (Sele E-mail : E-mai	ct Country)	✓ → Link Help

Figure 2-2 Download IoTstar (Basic version) (2)

IV. Check your mailbox and find the email sent by IoTstar, and then download the IoTstar (Basic version) from the download link in the email.

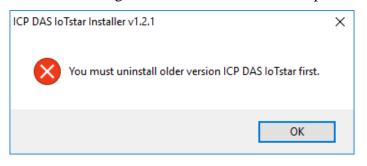
Please note: The email sent by IoTstar may be found in the spam/trash folder of your mailbox according to different mail servers, please also check the spam/trash folder of your mailbox if you does not find it in the Inbox folder.

2.2 Install IoTstar (Basic version)

After download the installation file of IoTstar (Basic version), please refer to the following steps to install IoTstar software (Basic version).

I. Click the installation file of IoTstar (Basic version).

II. If you have installed IoTstar before, the Installer of IoTstar will pop up a message window for the notification of the un-installation of the old version IoTstar. Please click the "OK" button to start the un-installation process. After the un-installation, please click the installation file again to restart the installation operation.



III. The Installer of IoTstar will pop up a window to inform you to remove the project setting of the old version IoTstar, or not.

Please Note : Remember to click the "No" button, if you just want to upgrade to the new version IoTstar but still want to keep the original project settings for the new version IoTstar.

lCP DAS loTstar Uninstaller v1.2.1	\times
Are you sure you want to remove the original settings? Click 'No' if you want to upgrade to the new version but still want to keep the original project settings to the new version loTstar.	
Yes No	

IV. Click "Next" button.



V. In "Destination Folder" field, enter the location which will be used to install IoTstar. Click "Install" to start the installation.

st ICP DAS IoTstar Install v1.0.0	-		×
Choose Install Location Choose the folder in which to install ICP DAS IoTstar.		IoTsta	
Setup will install ICP DAS IoTstar in the following folder. To install in a d Browse and select another folder. Click Install to start the installation.	ifferent	folder, clid	¢
Destination Folder C:\ICPDAS\IoTstar	Bro	wse]
Space required: 18.2MB Space available: 428.4GB			
ICP DA5 IoTstar Installer Built on 2017/2/14 at 下午 02:24:17	tall	Cano	el

VI. When the installation is completed, check "Run the ICP DAS IoTstar." and click the "Finish" button.

🛸 ICP DAS IoTstar Install v1.	0.0 — D.X
	Completing ICP DAS IoTstar Setup
	ICP DAS IoTstar has been installed on your computer. Click Finish to close Setup.
	Run the ICP DAS IoTstar.
	< Back Einish Cancel

2.3 **Database Setting**

IoTstar supports Microsoft SQL Server, MySQL Server and Oracle Database respectively. User can install the appropriate version of IoTstar according to the requirement of system, and also install the corresponding database system to work with IoTstar. Following are the database systems IoTstar support.

- Microsoft SQL Server 2012 or later version.
- MySQL Server (8.0.20) or later version.
- Oracle Database 19c (19.3 Enterprise Edition (also includes Standard Edition 2)) or later version.

Following sections will describe the settings of Microsoft SQL Server, MySQL Server, and Oracle Database.

2.3.1 Microsoft SQL Server Setting

I. Install Microsoft SQL Server

The version of Server used in the following example is Microsoft SQL Server 2016 (Express Edition), the management tool is SQL Server Management Studio (16.5.1).

• Microsoft SQL Server (Express Edition) can be downloaded at:

https://www.microsoft.com/en-US/download/details.aspx?id=56840

 Microsoft SQL Server Management Studio can be downloaded at: https://msdn.microsoft.com/library/mt238290.aspx

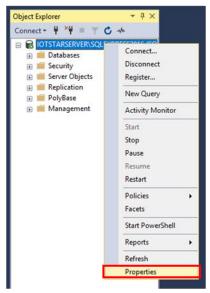
After download the two software tools, please also install both of them.

Please note: The system administrator account **sa** and its password will be used later when setup the database and perform connection operation. Please keep the password in a safe place. If the "Server Authentication" is not "SQL Server and Windows Authentication mode" after the installation, please refer to the following steps to enable the "SQL Server and Windows Authentication mode".

- II. Execute SQL Server Management Studio.
- III. Login by selecting "Windows Authentication"; then click "Connect".

	SQL Server	
Server type:	Database Engine	~
Server name:	IOTSTARSERVER\SQLEXPRESS2016	~
Authentication:	Windows Authentication	~
<u>U</u> ser name:	IOTSTARSERVER\votstar	Ŷ
Password:		
	Remember password	

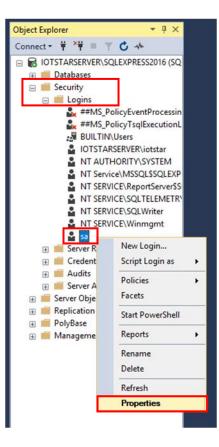
IV. Right-click on the name of the database and select "Properties" to bring up the Properties window.



V. On the left side of the setup window, click the "Security" to open the "Security" page. Under the "Server authentication" section, select "SQL Server and Windows Authentication mode". Click "OK" to complete the setting.

Server Properties - IOTSTARS	SERVER\SQLEXPRESS2016		-		\times
Select a page General Memory	🖵 Script 🔻 😮 Help				
Processors Security Connections	Server authentication	n mode			
 Database Settings Advanced Permissions 	SQL Server and Windo	ws Authentication mode			
	Login auditing				
	O None				
	Eailed logins only				
	O Successful logins only				
	Both failed and succes	sful logins			
	Server proxy account				
Connection	Enable server proxy ac	count			
Server: IOTSTARSERVER\SQLEXPRESS	P <u>r</u> oxy account: <u>P</u> assword:	******			
Connection: IOTSTARSERVER\iotstar	Options				
y ₩ <u>View connection properties</u>	Enable C2 audit tracing				
	Cross database owners	hip chaining			
Progress					
Ready					
			ОК	Can	icel

VI. Return to the main settings window, expand "Security" and "Logins", find and right click on the "**sa**" account, select "Properties" to bring up the Properties window.



VII. Change the password on the "General" page and click "OK".

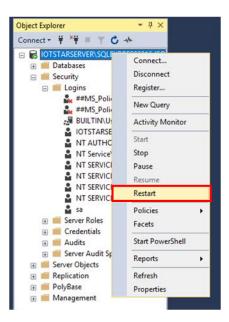
Please note: If you check "Enforce password policy", the system will perform the rigorous password verification policy for the new password setting. If the password you assign is too simple, the system will reject the new password setting.

Login Properties - sa				-		\times
Select a page	🖵 Script 🔻 😮 Help					
 Server Roles User Mapping Status 	Login name:	sa			Search	h
	SQL Server authentication <u>Password:</u>	•••••	••		1	
	Confirm password:	•••••	•••			
	Specify old password					
	Old password:					
	Enforce password policy Enforce password expire					
	User must change pass	word at next login				
	 Mapped to certificate 			\sim		
Connection	 Mapped to asymmetric key 			\sim		
Server: IOTSTARSERVER\SQLEXPRESS				\sim		
Connection: IOTSTARSERVER\iotstar	Mapped Credentials	Credential	Provider	_		
View connection properties						
						_
Progress						ve
Ready	Default <u>d</u> atabase:	master		~		
44.5V	Default language:	English		\sim		
				OK	Can	cel

VIII.Switch to the "Status" page; select "Enabled" under the "Login" section, and click "OK".

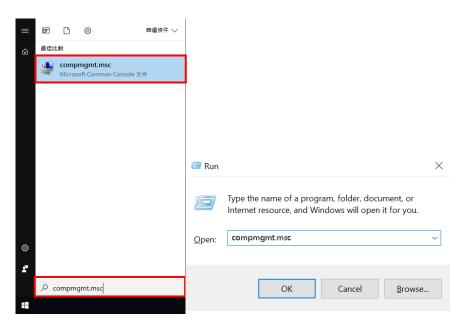
Login Properties - sa		-		×
Select a page & General & Server Roles & User Mapping & Status	Script Gent Bernission to connect to database engine: Gent Derny Login: Enabled Digabled Status SQL Server authentication: Login is locked out			
Connection Server: IOTSTARSERVER\SQLEXPRESS Connection: IOTSTARSERVER\votstar Y ^{III} View connection properties Progress Ready				
1940 S		ОК	Can	cel

IX. Return to the main setting window and right click on the name of the main database and select "Restart" to complete the settings of "SQL Server and Windows Authentication mode" for the SQL Server.



X. Click "Start" button, or press the "WIN key + R key" on the keyboard to open the "RUN" box, and enter "compmgmt.msc" to open the "Computer Management"

window.



XI. In the left half of the "Computer Management" window, expand "Services and Applications" and then find "SQL Server Configuration Manager" and expand the folder; select "SQL Server Services" and check if the "State" of SQL Server (SQLEXPRESS2016) is "Running" and the "Start Mode" is "Automatic" or not (In this example the name of the SQL Server name is "SQLEXPRESS2016", this name will be used in the following sections). If it is not, please right click on the SQL Server (SQLEXPRESS2016) and select "Properties" to open the "Properties" window. In the pop-up window, select "Service" tab, change the "Start Mode" to "Automatic", click "Apply" and click "OK". After return to "SQL Server Services" page, right click on SQL Server (SQLEXPRESS2016) and select "Start".

E Computer Management				- 🗆	×
<u>File</u> <u>Action</u> <u>View</u> <u>H</u> elp					
🗢 🏟 🙍 📆 🔯 👘					
Computer Management (Local)	Name	State	Start Mode	Log On As	
 Visitem Tools 	SQL Server (SQLEXPRESS)	Stopped	Automatic	NT Service\MSSC	QL\$
> 🕑 Task Scheduler	SQL Server Agent (SQLEXPRESS)	Stopped	Other (Boot, System,	NT AUTHORITY	NET
> 🛃 Event Viewer	SQL Server Browser	Stopped	Other (Boot, System,	NT AUTHORITY	.OC
> 👸 Shared Folders					
> 🐚 Performance					
🔤 🛃 Device Manager					
> 🔚 Storage					
 Services and Applications 					
Internet Information Services					
Services					
WMI Control					
 SQL Server Configuration Ma 					
SQL Server Services					
. J. SQL Server Network Conf					
›릏. SQL Native Client 11.0 Co					
> 🚊 SQL Server Network Conf					
> 💂 SQL Native Client 11.0 Co					
1	11				
SQL Server (SQL	EXPRESS2016) Propertie	s	?	\times	

Error Control 1 Exit Code 0 Host Name IOTSTARSERVER Name SQL Server (SQLEXPRESS2016) Process ID 8024 SQL Service Type SQL Server Start Mode Automatic State Running		AlwaysOn High Availa <u>bility</u> Log On	Service	FIL	ESTREAM
Error Control 1 Exit Code 0 Host Name IOTSTARSERVER Name SQL Server (SQLEXPRESS2016) Process ID 8024 SQL Service Type SQL Server Start Mode Automatic State Running	Ξ	General			
Exit Code 0 Host Name IOTSTARSERVER Name SQL Server (SQLEXPRESS2016) Process ID 8024 SQL Service Type SQL Server Start Mode Automatic		Binary Path	"C:\Progra	am Files\M	licrosoft SQL S
Host Name IOTSTARSERVER Name SQL Server (SQLEXPRESS2016) Process ID 8024 SQL Service Type SQL Server Start Mode Automatic • State Running		Error Control	1		
Name SQL Server (SQLEXPRESS2016) Process ID 8024 SQL Service Type SQL Server Start Mode Automatic State State Start Mode		Exit Code	0		
Process ID 8024 SQL Service Type SQL Server Start Mode Automatic State Running		Host Name	IOTSTARS	ERVER	
SQL Service Type SQL Server Start Mode Automatic State Running		Name	SQL Serve	r (SQLEXPF	RESS2016)
Start Mode Automatic State Running		Process ID	8024		
State Running Start Mode		SQL Service Type	SQL Serve	r	
Start Mode		Start Mode	Automati	c	-
Start Mode The start mode of this service.		Ctata	December in a		
		State	Kunning		

🜆 Computer Management				- 🗆 ×
File Action View Help				
🗢 🤿 🞽 📅 🛅 🗟 🛛 🖬	۱ ا ۲			
🞥 Computer Management (Local)	Name	State	Start Mode	Log On As
✓ [™] System Tools	SQL Server (SQLEXPRESS)	Stopped	Automatic	NT Service\MSSQL\$
> 🕑 Task Scheduler	SQL Server Agent (SQLEXPRESS)	Stopped	Start	JUTHORITY\NE
> 🛃 Event Viewer > 減 Shared Folders	🤕 SQL Server Browser	Stopped	Stop	UTHORITY\LO
> 🔞 Shared Folders			Pause	
A Device Manager			Resume	
> 🔄 Storage			Restart	
✓				
> 🐚 Internet Information Service:			Properties	
🔍 Services			Help	
🗃 WMI Control				
✓ I SQL Server Configuration Ma				
SQL Server Services				
夏. SQL Server Network Cont > 曼 SQL Native Client 11.0 Cc				
SQL Server Network Conf				
> 🖳 SQL Native Client 11.0 Cc				
< >	<			
Start selected service.				

XII. In the left half of the "Computer Management" window, expand "Services and Applications" item and then find "SQL Server Configuration Manager" and expand the folder; select "SQL Server Network Configuration"; select "Protocols for SQLEXPRESS2016" to verify if the "TCP/IP" protocol is Enabled or not. If not, please right click on the TCP/IP to open the "TCP/IP Properties" window. In the pop-up window, select "Protocol" tab, change the "Enabled" to "Yes", and click "Apply".

🜆 Computer Management		T	P/IP Properties		?		×
File Action View Help							
🗢 🔿 🙍 🗊 🔛 🔛 🖬			rotocol IP Addresses				
 Computer Management (Local) System Tools Task Scheduler Event Viewer Stards Folders Performance Device Manager Storage Disk Management Services and Applications Services Services SQL Server Configuration Manager SQL Server Services SQL Server Network Configuration (SQL Server Network Configuration SQL Native Client 11.0 Configuration 	Status Enabled Disabled Enabled		General Enabled Keep Alive Listen All General	Yes 30000 Yes Cancel A	pply	Help	
			- OK	Cancer A	olfu A	nep	

XIII. Click on "IP Addresses" tab of the "TCP/IP Properties" window. Change the value of the "TCP Port" of the "IPAII" section to 1433, and then click "Apply" and "OK" to complete the settings.

	TCP Dynamic Ports TCP Port	0	^
⊡	IP6		
	Active	Yes	
	Enabled	No	
	IP Address	2001:0:4137:9e76:1ce2:7ff:cb57:7	(
	TCP Dynamic Ports	0	
	TCP Port		
Ξ	IP7		
	Active	Yes	
	Enabled	No	
	IP Address	fe80::1ce2:7ff:cb57:70a0%5	
	TCP Dynamic Ports	0	
	TCP Port		
Ξ	IPAII		
	TCP Dynamic Ports	0	
	TCP Port	1433	ι,
-			-
ю	CP Port		

XIV. After return to "SQL Server Configuration Manager", find "SQL Server services", right click on the "SQL Server (SQLEXPRESS2016)" and select "Restart".

Name	State	Start Mode	Log
SQL Server Browser	Stopped	Other (Boot, Syste	NT
SQL Server (SQLEXPRESS2016)	Running		NT
SQL Server Agent (SQLEXPRES	Stopped	Start	NT
SQL Server Launchpad (SQLEX	Stopped	Stop	NT
SQL Full-text Filter Daemon La	Running	Pause	NT
SQL Server Reporting Services	Running	Resume	NT
		Restart	
	1	Properties	
		Help	

XV. Login by "SQL Server Authentication"

Select "SQL Server Authentication" for the Authentication field, enter "**sa**" as the login name, and input the password you previous set on the Login windows, then click "Connect" to check if you can login by using "SQL Server Authentication".

s ^{ji}	Connect to Server	x
	SQL Server	
Server type:	Database Engine	~
<u>S</u> erver name:	IOTSTAR\SQLEXPRESS2016	~
Authentication:	SQL Server Authentication	~
<u>L</u> ogin:	sa	~
Password:	••••••	
	Remember password	
	Connect Cancel Help C	ptions >>

2.3.2 MySQL Server Setting

I. Install MySQL Server

The version of MySQL Server used in the following example is MySQL Server (8.0.20), the management tool is MySQL Workbench (8.0.20). Please go to do<u>wnload</u> <u>MySQL Installer (Archived Versions)</u> to download the installation files and install them.

Please note: The administrator account "root" and its corresponding password assign during the installation process will be used in the connection setting between IoTstar and MySQL, so please keep the user account information properly.

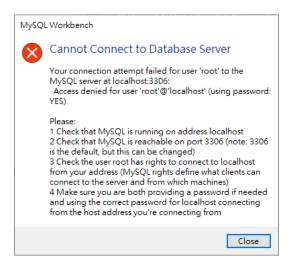
II. Open MySQL Workbench

III. Click on the "root" account and enter the password for the "root" account to log in to MySQL Workbench.

👤 roo		MySQL80	
🔝 Connect to N	/lySQL Server	;	×
	Please enter pa following servi	assword for the ice:	
	Service:	Mysql@localhost:3306	
λ Σ	User:	root	
Workbench	Password:		
Workbench		Save password in vault	
		OK Cancel	

MySQL Connections ⊕ ⊗

IV. If the login operation is successful, then IoTstar can use the "root" account to log in to MySQL Server later. However, if the following window appears, it means that the "root" account cannot log in to this MySQL Server. Please confirm the relevant settings of the account again.



Please note: If IoTstar and MySQL are installed on different computers, and IoTstar needs to connect to MySQL through the remote connection operation, be sure to add a user account with the "remote access qualification" in MySQL and assign the account to have the same authority as the "root" account. After the account is established, IoTstar can remotely log in to the MySQL Server through this account.

2.3.3 Oracle Database Setting

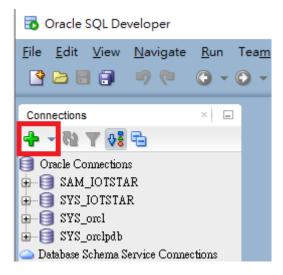
I. Install Oracle Database

The version of Oracle Database used in the following example is Oracle Database 21c (21.3 - Enterprise Edition (also includes Standard Edition 2)), the management tool is SQL Developer (21.4.3). Please go to the official Oracle website to complete the registration first, and then go to <u>Oracle Database Software Downloads (21.3 - Enterprise Edition (also includes Standard Edition 2)</u>) to download the Database installation file and install it. For the management tool (SQL Developer), please go to the <u>SQL Developer Downloads (21.4.3)</u> page of the official Oracle website to download the installation file and install it.

Please note: The administrator account "SYS" and its corresponding password, and the information of "Global database name" assign during the installation process will be used in the connection setting between IoTstar and Oracle Database, so please keep these information properly.

II. Open SQL Developer

III. Click the "+" in the upper left corner to add a new connection.



The name of the connection in the "New/Select Database Connection" window can be freely named (SYS_orcl in this example). Please enter the administrator account "SYS" and select the role "SYSDBA" in the Username field, then enter the password of the administrator account "SYS" you assign during the installation process. Now click the "Details" tab, enter the Hostname (It can be IP address or Domain name; this example is 192.168.100.167) and port (1521 in this example) of the Oracle database you want to connect, then select "SID" and enter the name of the "Global database name" you assign during the installation process(orcl in this example). After complete all setting, please click the "Test" button to test the connection setting. If the message status bar in the lower left corner shows "Success", It mean the connection setting can successfully connect to the Oracle database(192.168.100.167), then please click the "Save" button to save the setting.

🔂 New / Select Database Connection	×
Connection Name Connection Details SAM_IOTSTAR sam_huang@//192 SYS_IOTSTAR SYS@//192.168.1 SYS_orcl SYS@//192.168.1 SYS_orclpdb SYS@//192.168.1	Name SYS_orcl Color Database Type Oracle Color User Info Proxy User Info Proxy User Authentication Type Default Info Personne Systematic Syst
	Connection Type Basic Details Advanced Hostname 192.168.100.167
	Port 1521 ③ SID orcl ○ Service name
Status : Success <u>H</u> elp	Save Clear Iest Connect Cancel

If the message status bar shows "failure", it means the administrator account "SYS" cannot log in to Oracle Database. Please confirm the database and relevant setting of the account again.

Status : Failure - Test failed: IO Error: The Network Adapt	er could not establis	n the connection (CO	NNECTION_ID=hJv	wwFlyThyXkp/j1EJ	iUw—) 📋
Help	Save	<u>C</u> lear	<u>T</u> est	Connect	Cancel

IV. After complete the connection setting, please log in to Oracle Database through SQL Developer with the administrator account "SYS" to complete the following system setting of Oracle Database.

• "sga memory component" setting

Please use the following SQL commands to adjust the setting of "sga memory component" of Oracle Database.

Alter system set sga_target=2432M SCOPE=spfile;

Alter system set sga_max_size=2432M SCOPE=spfile;

Following is an example of the setting of "sga memory component".

🙈 SAM_IOTS	TAR 🔺 🔠 SYS_0	rcl ×			
ا 👫 🌛 🍫 📓 🗟 ا 🕼 🗟 ا 🖓 😼 ا					
Worksheet Query Builder					
Show parameter sga;					
📃 Script Outp	ut ×				
📌 🥔 🖯 i	📇 🗾 Task comp	pleted i	in 0.043 sec	onds	
AME	💾 🗾 Task comp	oleted i TYPE		onds VALUE	
	当 🗾 Task comp				
NAME	🖳 🗾 Task comp p_access_to_sga	TYPE	2	VALUE	
NAME		TYPE bool	2	VALUE FALSE	
NAME allow_group	p_access_to_sga	Dool	Lean	VALUE FALSE FALSE	
NAME allow_group lock_sga	p_access_to_sga	Dool bool	lean Lean	VALUE FALSE FALSE TRUE	
NAME allow_group lock_sga pre_page_se	p_access_to_sga ga ze	TYPH bool bool bool bool	Lean Lean Lean Lean	VALUE FALSE FALSE TRUE 2432M	

• "pga memory component" setting

Please use the following SQL commands to adjust the setting of "pga memory

component" of Oracle Database.

Alter system set pga_aggregate_limit=0 SCOPE=spfile;

Alter system set pga_aggregate_target=808m SCOPE=spfile;

Following is an example of the setting of "pga memory component".

🔠 SAM_IOTS	star 🛛 🔠	SYS_orcl ×	
> 📃 🕲	- 🏂 🛃 I	🖗 🖪 I 🏦 🎸	🤌 🔄 🚑 I
Worksheet	Query Builder	ſ	
Show	parameter	pga;	
AT.			
📃 Script Outp	ut ×		
* 🧳 🗟	📇 📃 Ta	sk completed in 0.	037 seconds
NAME		TYPE	VALUE
pga_aggreg	ate_limit	big integer	0
pga_aggreg	ate_target	big integer	808M

• "sessions" parameter setting

Please use the following SQL commands to adjust the "sessions" parameter of

Oracle Database.

alter system set sessions=984 scope = spfile;

Following is an example of the setting of "sessions" parameter.

501 S.A	M_IOTS	STAR ×	🔒 S1	S_orcl	6-	
	3	- 🔊 (🛃 I 🗟	- 🛃 I.	🏦 🧼 💿	Aa I
Works	sheet	Query I	Builder			
	show	param	eter s	ession	3;	
.						
📃 Sei	ript Outp	ut ×				
* 4	p 🖯	4 3	Task	completed	l in 0.048 se	conds
NAME					TYPE	VALUE
java	_max_s	ession	space_	size	integer	0
java	_soft_	sessio	nspace	_limit	integer	0
	soft nse_ma			_limit	integer integer	
lice	nse_ma	x_sess		-	-	0
lice	nse_ma nse_se	x_sess	ions	-	integer	0 0

• "processes" parameter setting

Please use the following SQL commands to adjust the "processes" parameter of

Oracle Database.

alter system set processes=640 scope = spfile;

Following is an example of the setting of "processes" parameter.

🔠 SAM_IOTSTAR 💉 🍓 SYS_01	rcl ×	
🕨 📃 🕲 🗸 🥦 🛃 I 🗔 🕻	, i 🤮 🧳	🖲 🗛 🗆
Worksheet Query Builder		
show parameter proce	esses;	
	-	
🗾 Script Output 🛛 🗶		
📌 🥜 📑 📇 🥃 Task comp	leted in 0.0.	35 seconds
NAME	TYPE	VALUE
aq_tm_processes	integer	1
db_writer_processes	integer	1
gcs_server_processes	integer	0
global_txn_processes	integer	1
job_queue_processes	integer	160
log_archive_max_processes	integer	4
processes	integer	640

• "transactions" parameter setting

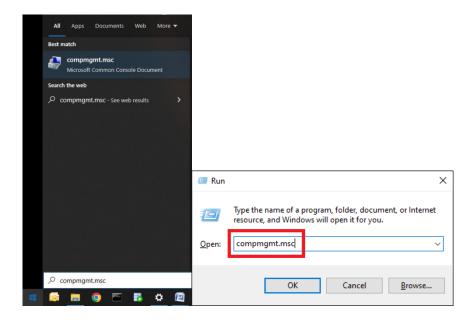
Please use the following SQL commands to adjust the "transactions" parameter of Oracle Database.

alter system set transactions=1082 scope=spfile;

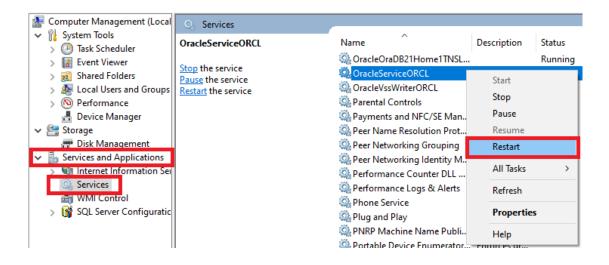
Following is an example of the setting of "transactions" parameter.

🗟 SAM_IOTSTAR × 🔀 SYS_orel 🐣		
Þ 📃 🕲 🗣 🎉 🕄 🖓 🖓 ا	👩 🚑	
Worksheet Query Builder		
show parameter transactions;		
🗾 Script Output 🗴		
📌 🥔 🗟 📇 🥃 Task completed in 0.04	12 seconds	
NAME	TYPE	VALUE
transactions	integer	1082
transactions_per_rollback_segment	integer	5
1		

V. After complete the system setting of Oracle Database, please click "Start" button, or press the "WIN key + R key" on the keyboard to open the "RUN" box, and enter "compmgmt.msc" to open the "Computer Management" window.



VI. Click "Services" in the "Services and Applications" section located in the left half of the "Computer Management" window, then right-click on the Oracle Server (OracleServiceORCL in this example) in the right half, and select "Restart". Now the connection setting for the administrator account "SYS" to log in to the Oracle database is completed, and then IoTstar can also log in to the Oracle database through the administrator account "SYS" and its corresponding password.



2.4 Initialization Setting of IoTstar

I. After complete the installation of IoTstar and the setting of Database, you can open IoTstar, and the "ICP DAS IoTstar" system interface will be shown to help to perform the initialization setting of IoTstar.

🛸 ICP DAS IoTstar				-	
IoTstar	Settings	Ot License	Account Management	Website	U Start Service
Event Log:				C Re	load 🥤 Clear
Time	Message				
© ICP DAS Co., Ltd.					Version: 2.1.0

II. Click the "Settings" button on the "ICP DAS IoTstar" system interface.

star ICP DAS IoTstar				-		×
IoTstar	Settings	Ot License	Account Management	Website	U Start Servic	е
Event Log:				C Re	load 👕 Clea	ar
Time	Message					
© ICP DAS Co., Ltd.					Version: 2.1	.0

X Please complete the following settings by the actual network environment of the hardware platform which IoTstar installed.

III. Complete the following settings in the "Website" tab of the "Settings" window:

🔉 Settings		– 🗆 🗙	
Website Email Databa	se Bot Service Notification	Miscellaneous	
Type IP / Host Name* Port Sign Up Page	http v 80 ÷ V Enable		
		Save Cancel	

- Type : Select the communication protocol used by the IoTstar.
- IP / Domain Name: Input the IP address or the domain name of the PC (or Platform) with IoTstar installed.
- Port: Input the port number which IoTstar will use.
- Sign Up Page: When administrator uncheck the "Enable" of the "Sign Up Page" field, the account creation function of IoTstar will be closed.

IV. Complete the SMTP server settings on the "Email" tab of the "Settings" window. After the user applying a login account of IoTstar, IoTstar will send an authentication Email to the user via the SMTP server. The user will then be able to follow the steps on the email to complete the authentication process and complete the registration of the IoTstar account.

🛸 Settings		– 🗆 🗙
Website Email Databa	se Bot Service Notification	Miscellaneous
SMTP Server		
Address*		
Port	25	
Username*		
Password		
Security	No Security ~	
Sender		
Sender Name*		
Sender Email*		
Connection Test	Connect	
		Save Cancel

- Address: Input the IP address or the domain name of the SMTP server.
- Port: Input the port number of the SMTP server. The default setting is 25.
- Username: Input the username of the SMTP server.
- Password: Input the password of the SMTP server.
- Security: Select the security setting to be "No Security", "TLS", or "SSL" from

the dropdown list.

- Sender Name: Input the name of the sender.
- Sender Email: Input the email address of the sender.
- Connection Test: After complete the setting, you can click this button to test the setting.

Please note: IoTstar would also send the notification emails to the administrator via

this SMTP server when the special situation or abnormal event occurs.

V. For the database that IoTstar will connect to, please enter the corresponding information in the "Database" tab of the "Settings" window:

• Microsoft SQL Server

🐣 Settings		– 🗆 🗙
Website Email Databa SQL Server Address* Port	Bot Service Notification	Miscellaneous
Username* Password Default Maximum Database Size	Unlimited Unlimited to 100	
Connection Test	Connect	
		Save Cancel

- Address: Input the IP address of the Microsoft SQL Server which IoTstar will connect to.
- Port: Input the port of the Microsoft SQL Server. The default port number is set as 1433.
- ➤ Username: Input "sa".
- Password: Input the password of the account "sa" when you perform the authentication settings of the Microsoft SQL Server.
- Default Maximum Database Size: The administrator can pre-set the Maximum size of database which will be allocated to the user accounts of IoTstar.
- Connection Test: After complete the setting, you can click this button to test the connection settings to the database.

• MySQL Server

Settings		- 🗆 X
Website Email Databa	se Bot Service Notification	Miscellaneous
Address* Port Username* Password	3306	
Connection Test	Connect	
		Save Cancel

- Address: Input the IP address of the MySQL Server which IoTstar will connect to.
- Port: Input the port of the MySQL Server. The default port number is set as 3306.
- ➤ Username: Input "root".
- Password: Input the password of the account "root" you assign during the installation of MySQL Server.
- Connection Test: After complete the setting, you can click this button to test the connection settings to the database.
- Oracle Database

Settings		- 🗆 X
Website Email Datab	ase Bot Service Notification	Miscellaneous
Address* Port Username*	1521	
Password SID*	orcl	
Default Maximum Database Size	 Unlimited Limited to 100 	↓ MB
Connection Test	Connect	
		Save Cancel

- Address: Input the IP address of the Oracle Database which IoTstar will connect to.
- Port: Input the port of the Oracle Database. The default port number is set as 1521.
- ➤ Username: Input "SYS".
- Password: Input the password of the account "SYS" you assign during the installation of Oracle Database.
- SID: Enter the Name of "Global database name" you assign during the installation of Oracle Database.
- Default Maximum Database Size: The administrator can pre-set the Maximum size of database which will be allocated to the user accounts of IoTstar.
- Connection Test: After complete the setting, you can click this button to test the connection settings to the database.

VI. If you have purchased the "IoTstar Bot Service" package, please refer to "ICP DAS IoTstar Bot Service User Manual" to complete the setting in the "Bot Service" tab of the "Settings" window.

🛸 Setting	Is				—		×
Website	Email	Database	Bot Service	Notification	Miscellaneou	S	
	ion Statu nel ID*	IS	Enable				
	nel D	et*					
Chanr	nel Acces	ss Token*					
QR C	ode URL	*					
Webh	ook URL		Copy URL to	o clipboard			
					Save	Cance	el

VII. Input the administrator email and select the notification options in the "Notification" tab of the "Settings" window. And then when any of the selected notification options happens; IoTstar will send the alarm notification email to the administrator.

🛸 Setting	IS				—		×
Website	Email	Database	Bot Service	Notification	Miscellane	eous	
Admir	nistrator	Email			_		
🗌 Ins	ufficient	disk space	-				
🗌 Fa	il to esta	ablish a con	nection to the	database.			
🗆 Th	e syster	n load conti	nue to exceed	1 90% and las	st 15 minute	s.	
	user sigr	n up for an a	ccount.				
					Save	Car	ncel

• Insufficient disk space: When the computer platform which IoTstar installed has

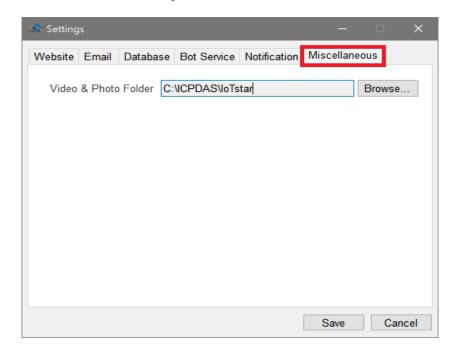
the status of insufficient hard disk space, IoTstar will send a notification email to the administrator.

• Fail to establish a connection to the database: When IoTstar cannot connect to the database successfully; IoTstar will send a notification email to the administrator.

• The system loads continue to exceed 90% and last 15 minutes: When IoTstar is in the high system loading (90%; lasts 15 minutes), IoTstar will send a notification email to the administrator.

• A user sign up for an account: When a user applies for an account of IoTstar, IoTstar will send an email to the administrator of IoTstar, and the administrator can confirm whether to allow the application of the account, or not.

VIII. If the front-end WISE controllers work with ICP DAS iCAM IP Camera, and you need the WISE controllers to upload the photo or video files which WISE receive from iCAM IP Camera to IoTstar, then input the storage folder of IoTstar in the "Miscellaneous" tab of the "Settings" window.



IX. After the settings of initialization are completed, click "Start Service" to active IoTstar, and then click "Website" to open the IoTstar Website directly.

🛸 ICP DAS IoTstar				_	□ ×	
IoTstar	Settings	O-T License	Account Management		U Start Service	
Event Log:				C Relo	ad 🥤 Clear	1
Time	Message					
© ICP DAS Co., Ltd.					Version: 2.1.0	
			7			
📸 ICP DAS loTstar						×
IoTstar	Settings	O T License	Account Managemen	Website	U Stop Service	3
Event Log:				C Re	load 👕 Clea	r
Time	Message					٦
2021-05-25 09:40:4	7 Service start	successfully				
© ICP DAS Co., Ltd.		System Loa	id: 0%		Version: 2.1.	D



2		Lo	gin
8	21	Username	
IoT with ICP DAS lotstar	04	Password	
0 8		English	~
		emember me	Forgot password?
	Γ	Sut	omit

loTstar v2.1.0 © ICP DAS Co., Ltd. All Rights Reserved

2.4.1 **Trouble shooting & Debugging**

After user start IoTstar, if there are errors occur during the operation of IoTstar, please refer to the following information for troubleshooting.

Error1. HTTP error 404: Page not found.

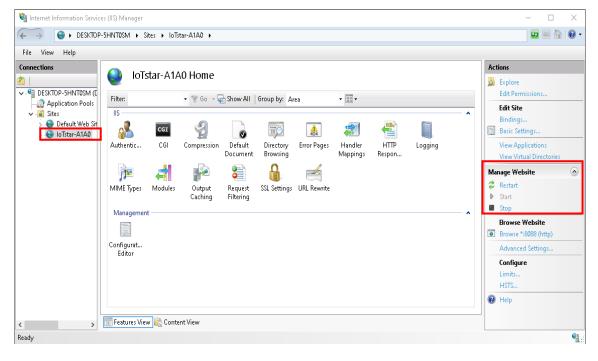
Please check if the Web site of IoTstar exists, and the service of IoTstar also has been started, or not.

 Confirm whether the IoTstar service has been started, or not (When the IoTstar service has been started, the button in the red rectangle will be green color as following, and the Event Log list will display the "Service start successfully" message.)

🛸 ICP DAS loTstar				-	
IoTstar	Settings	O-	Account Management	Website	U Stop Service
Event Log:				C Rela	oad 🧻 Clear
Time	Message				
2021-05-25 09:40:47	Service start s	uccessfully.			
© ICP DAS Co., Ltd.		System Load	l: 0%		Version: 2.1.0

2. Open IIS (Internet Information Services) Manager and confirm whether the IIS

for IoTstar web site exists and has been started.



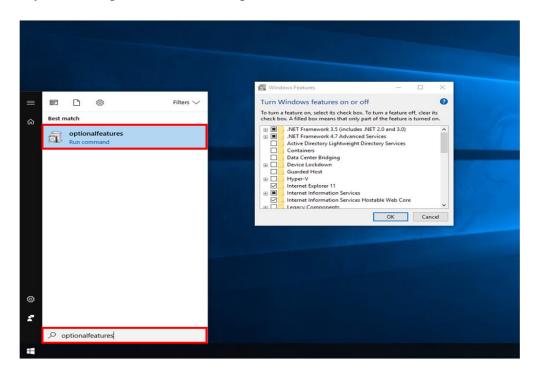
Error2. "Service start failed" shown on IoTstar system interface as below.

🤹 ICP DAS IoTstar				_		×
IoTstar	Settings	O-	Account Management	Website	U Start Service	e
Event Log:				C Re	load 🖀 Cle	ar
Time 2021-05-27 14:22:10	Message Service start fr	ailed. The se	ttings of website	are missin;	g, please r	
© ICP DAS Co., Ltd.					Version: 2.4	1.0

Please Confirm whether IIS (Internet Information Services) has been installed, or not. If it has not been installed, please refer to the following steps to complete the installation.

- 1. The installation of IIS (Internet Information Services)
 - Windows 10

Click "Start" button, or press the "WIN key" on the keyboard, enter the keyword of "optionalfeatures" to open "Windows Features" window.



On the "Windows Features" window, enable all options under the "Internet Information Services" and enable "Internet Information Services Hostable Web Core". Please also enable the "CGI" item, then click "OK" to apply the changes and then close the program.

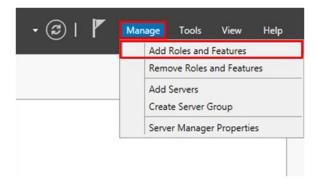
Windows Features —) X	🚉 Windows Features			×
Turn Windows features on or off To turn a feature on, select its check box. To turn a feature off, cl heck box. A filled box means that only part of the feature is turn .NET Framework 3.5 (includes .NET 2.0 and 3.0)		Turn Windows features on or off To turn a feature on, select its check box. To turn a feature box. A filled box means that only part of the feature is tu			() eck
		Internet Information Services FTP Server Web Management Tools World Wide Web Services Net Extensibility 3.5 NET Extensibility 4.8			^
Internet Information Services FTP Server Web Management Tools World Wide Web Services Internet Information Services Hostable Web Core Legacy Components Legacy Components Media Mathematical Components Legacy Compo	Ĵ	Application Initialization ASP ASP.NET 3.5 ASP.NET 4.8 GGI ISAPI Extensions			~
Microsoft Message Queue (MSMQ) Sequer	∨ Cancel	ISAPI Extensions	ĸ	Can	cel

• Windows Server 2012

Open "Server Manager" in "Taskbar" or "Start Menu"

Start
See Marge
Die R. Tech Manager
Atomatika Tash
Desktop

Click "Manage" on the right upper side on the "Server Manager" window, and then click "Add Roles and Features".



The "Add Roles and Features Wizard" window will pop up; read the information in "Before you begin", then click "Next".

a	Add Roles and Features Wizard	1
Before you begin Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results		
	complete the steps, and then run the wizard again. To continue, click Next.	
	< Previous Next > Install Cancel	

In the "Select installation type" window, select "Role-based or feature-based installation", and then click "Next".



In the "Select destination server" window, select which server you are going to install "Server Roles and Features" on, and then click "Next".

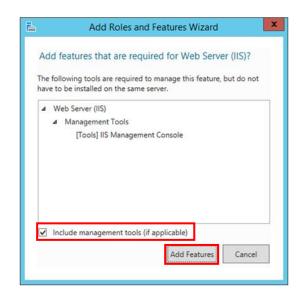
Please note: In the following example, the "Select a server from the server pool" item is selected and the server "IoTstarServer" in the "Server Pool" is selected to perform the installation. Please select the server for the installation as you require.

in the second se	Add Roles and Features Wizard	- 🗆 X
Select destination	Server	IATION SERVER IoTstarServer
Before You Begin Installation Type Server Selection Server Roles Features	Select a server or a virtual hard disk on which to install roles and features.	
Confirmation Results	Filter: Operating System	
	IoTstarServer 10.0.0.4 Microsoft Windows Server 2012 R2 Datac	enter
	1 Computer(s) found This page shows servers that are running Windows Server 2012, and that have been addee Add Servers command in Server Manager. Offline servers and newly-added servers from w collection is still incomplete are not shown.	
	< <u>Previous</u> <u>Next ></u> Install	Cancel

In the "Select server roles" window, select the server roles you need from the list and click "Next".

a	Add Roles and Features Wizard	_ D X
Before You Begin	Select one or more roles to install on the selected server. Roles	DESTINATION SERVER IoTstarServer Description
Server Roles Features Web Server Role (IIS) Role Services Confirmation Results	Application Server DHCP Server Sax Server Fax Server Fax Server Fat Server File and Storage Services (1 of 12 installed) Hyper-V Network Policy and Access Services Print and Document Services Remote Access Remote Access Remote Desktop Services Volume Activation Services Web Server (IIS) Windows Deployment Services Windows Server Update Services Windows Server Update Services	Web Server (IIS) provides a reliable, manageable, and scalable Web application infrastructure. ■

Please note: after the "Web Server (IIS)" is checked, the following window will pop out, please check the "Include management tools (if applicable)", and then click "Add Features".



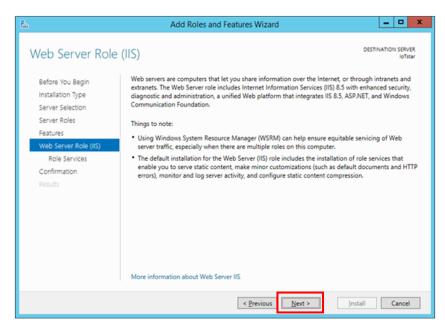
In the "Select features" window, select the Features as required from the list and then click "Next"

Features

A. .NET Framework 3.5 Features I. .NET Framework 3.5 (inludes .NET 2.0 and 3.0)

	Add Roles and Features Wizard	
elect features		DESTINATION SERVER
Before You Begin Installation Type	Select one or more features to install on the selected server.	Description
Server Selection Server Roles	NET Framework 3.5 Features NET Framework 3.5 (includes .NET 2.0 and 3.0)	.NET Framework 3.5 combines the power of the .NET Framework 2.0
Features Web Server Role (IIS) Role Services Confirmation Results	HTTP Activation Non-HTTP Activation Non-HTTP Activation Background Intelligent Transfer Service (BITS) BitLocker Drive Encryption (Installed) BitLocker Network Unlock BranchCache Client for NFS Data Center Bridging Direct Play Enhanced Storage (Installed) Failover Clustering	APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.
	< III > <	Install

Read the information on the "Web server Role (IIS)" window and then click

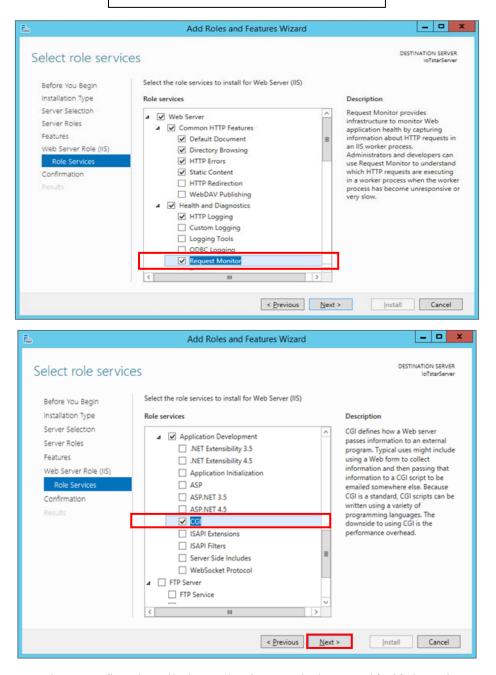


In the "Select Role Services" window, select the Web Server Roles as you need from the list and then click "Next".

"Next".

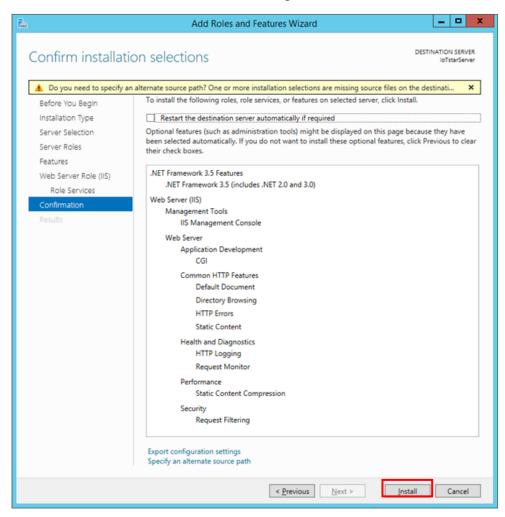
Role Services

- A. Web Server
 - I. Health and Diagnostics
 - i. Request Monitor
 - **II.** Application Development
 - i. CGI

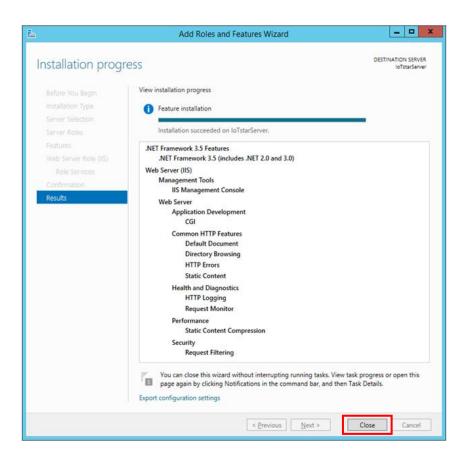


In the "Confirm installation selections" window, verify if the selected items are correct (please note: it will only list the items that have not been installed; the already installed items will not be listed). After you verify the items to be

installed are selected, click "Install" to perform the installation.



After the installation is completed, click "Close" to close the window.



2. IoTstar Settings

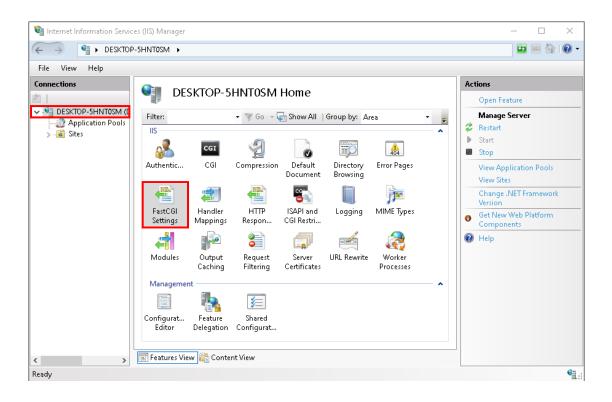
After complete the installation of IIS (Internet Information Services), please open IoTstar, and the "ICP DAS IoTstar" system interface will be shown. Click the "Settings" button on the "ICP DAS IoTstar" system interface to verify the settings in the "Website" tab of the "Settings" window, click "Save" button, and then Web site of IoTstar will be automatically established.

Settings Count Settings Count <	🛸 ICP DAS IoTstar					\times
Time Message Image: CP DAS Co., Ltd. Version: 2.1.0 © ICP DAS Co., Ltd. Version: 2.1.0 Image: CP DAS Co., Ltd. Version: 2.1.0	IoTstar	Settings	O-	Website	C Start Ser	rvice
© ICP DAS Co., Ltd. Version: 2.1.0	Event Log:			C Rel	oad 📋 (Clear
Settings - × Website Email Database Bot Service Notification Miscellaneous Type http - - - - IP / Host Name* 192.168.100.147 - - - Port 80 - - -	Time	Message				
Settings - × Website Email Database Bot Service Notification Miscellaneous Type http - - - - IP / Host Name* 192.168.100.147 - - - Port 80 - - -						
Website Email Database Bot Service Notification Miscellaneous Type http	© ICP DAS Co., Ltd.				Version:	2.1.0
Save Cancel	Website Em Type IP / Host N Port	http lame* 192 80	.168.100.147	scellaneous		

Error3. "HTTP Error 500: Internal Server Error".

It is because of the FastCGI module cannot be found, please confirm the setting of FastCGI module.

1. Open IIS (Internet Information Services) manager, and click the FastCGI setting of IIS.



2. Confirm the directory of "IoTstar installation directory\IIS\PHP\php-cgi.exe" is

in the FastCGI setting as below, or not.

Internet Information Service	s (IIS) Manager		- 🗆 X
← → ● DESKTOP-	5HNT0SM >		🔯 📧 🏠 I 🕢 🗸
File View Help			
Connections	onnections FastCGI Settings		Actions Add Application Add Polication
Sites	Full Path	Arguments	
Configuration: 'localhost' applic	ationHost.config		• 1 .:

3. If it is not in the FastCGI setting, please click "New Application", and add the setting by yourself. About the parameter setting, please refer to following.

Full Path: IoTstar installation directory\IIS\PHP\php-cgi.exe

Instance MaxRequests: 10000

Activity Timeout: 600

Request Timeout: 600

Idle Timeout: 300

argi	uments:	
ast	:CGI Properties:	
~	General	^
	Environment Variables	(Collection)
	Instance MaxRequests	10000
	Max Instances	4
	Monitor changes to file	
	Standard error mode	ReturnStdErrIn500
~	Process Model	
	Activity Timeout	600
>	Advanced Settings	
	Idle Timeout	300
	Queue Length	1000
	Rapid Fails PerMinute	10
	Paguast Timaaut	600 *

Error4. "HTTP Error 500 : The FastCGI process exited unexpectedly"

The cause of the error is "Visual C++ Redistributable (x86) for Visual Studio 2012 Update 4" is not installed. Please download the package from https://www.microsoft.com/en-US/download/details.aspx?id=30679 and install it.



Error5. "HTTP Error 500.19 : Internal Server Error"

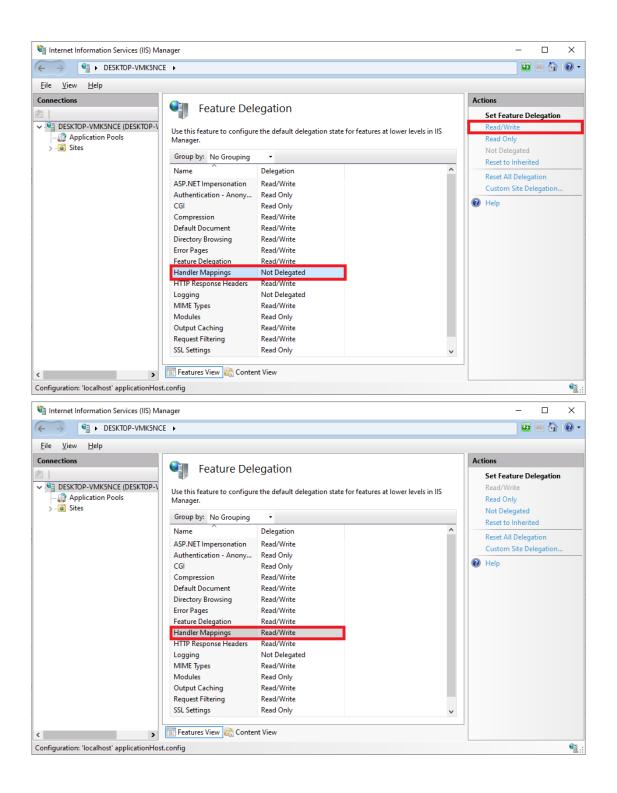
If the Error Code is 0x80070021, it means the cause of the error is "Feature Delegation" is permission not enabled. Please confirm the setting of Feature Delegation.

1 Open IIS (Internet Information Services) manager, and click the Feature

Delegation of IIS

> • DESKTOP-VMK5N	ICE 🔸							😰 🕺 🟠	0
ïle <u>V</u> iew <u>H</u> elp									
onnections	DESKTOP-VMK5NCE Home		Ac	tions					
		SKIUP-V	WINDINCE	потпе				Open Feature	
DESKTOP-VMK5NCE (DESKTOP- DESKTOP-VMK5NCE (DESKTOP- DESKTOP-VMK5NCE DESKTOP-VMK5NCE (DESKTOP- DESKTOP-VMK5NCE DESKTOP-VMK5NCE DESKTOP-VMK5NCE	Filter:		• 🦻 <u>G</u> o - 🗸	Show <u>A</u> ll	Group by: Ar	ea 🔹	-	Manage Server	
> 📓 Sites	IIS					~ ^	. 2	Restart Start	
		CGI)	0		404		Stop	
		CGI	Compression		Directory	Error Pages		View Application Pools View Sites	
				8				Change .NET Framework Version	k
					Logging	MINE lypes	0	Get New Web Platform Components	
			8	D		R	(?)	Help	
	Modules				URL Rewrite				
	Manageme	nt	-			~			
	Features Vie	w / Conte	nt View				_		

2 Confirm if "Feature Delegation"-"Handler Mapping" is Read/Write, or not. If it is not, please click "Read/Write" to change the setting to "Read/Write".



If the Error Code is <u>0x8007000d</u>, it means the cause of the error is "URL

Rewrite(x64)" is not installed. Please download the package from

https://www.iis.net/downloads/microsoft/url-rewrite#additionalDownloads and install

it.

Download URL Rewrite Module 2.1

- English: Web Platform Installer (WebPI) / x86 installer / x64 installer
- German: x86 installer / x64 installer
- Spanish: x86 installer / x64 installer
- French: x86 installer / x64 installer
- Italian: x86 installer / x64 installer
- Japanese: x86 installer / x64 installer
- Korean: x86 installer / x64 installer
- Russian: x86 installer / x64 installer
- Chinese Simplified: x86 installer / x64 installer
- Chinese Traditional: x86 installer / x64 installer



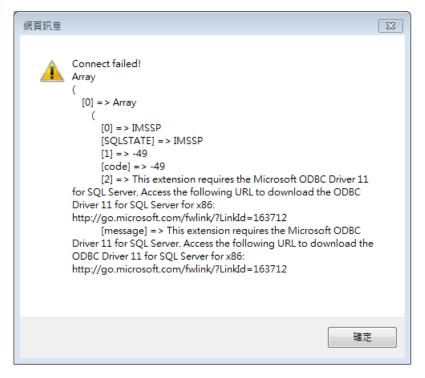
Error6. "HTTP Error 503. Service unavailable"

It means the IIS (Internet Information Services) stopped.

Service Unavailable - Windows Internet Explorer Image: Service Unavailable - Windows Internet Explorer Im	• 🗟 😽 🗙 🕩 Bing	≥ • •
😭 我的最爱 │ 🍰 🕨 建語的網站 マ 🔊 網頁快訊圖車 マ J 🖉 Service Unavailable	谢 ▼ 🗟 ▼ 🖃 🖷 ▼ 網頁(P)▼ 安全性	ŧ(S)▼ 工具(O)▼ @▼
Service Unavailable		
HTTP Error 503. The service is unavailable.		
完成	網際網路 受保護模式: 啟動	

The cause of the error is the PC (or platform) IoTstar installed is used an older version of Operating System. Please update the version of Operating System to the latest version.

Error7. Connect to IoTstar Login page via Web browser, input the username and password, click the "Submit" button to login IoTstar, and then system displays the error message (as shown below).



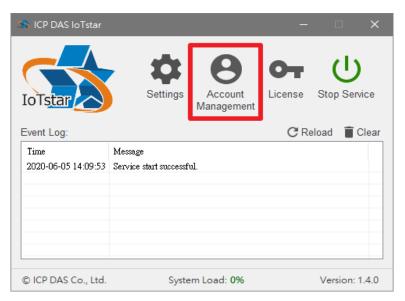
The cause of the error is "Microsoft ODBC Driver 11 for SQL Server (x64)"

is not installed. Please download the package from <u>https://www.microsoft.com/en-US/download/details.aspx?id=36434</u> and install it.

2.5 Account Management

There is no number limitation of login accounts for IoTstar Basic version and Professional version. Therefore, IoTstar provides the Account Management interface for the administrator to remove useless accounts. When one account is removed, all the settings, data, and records would be deleted together.

Click the "Account Management" button on the IoTstar system interface to bring up the "Account Management" window.



Click the "Create" button, enter the user's email address in the "Email Address" field of "Account Creation" window, and press the "Send" button. The system will send the verification email to the user's Email account. User only needs to click the link in the Email to complete the verification procedure for the creation of user account of IoTstar.

semame	Nickname	Email	Device Number	Status

Figure 2-3 Create user account

🛣 Account Creation 🦳 —		×
Please input an email address and the system will send Email to the address for the user. The user can create a using the link in the Email.		
Email Address	Sen	ıd

To enable or change the user's account settings, please select the user account first, click the "Setting" button, then the "Account Settings" window will be shown. Please follow the items as below to enable or change the user account settings.

• Active: Activate this account (Before modify the setting as below items, user must activate the account first. The button will disappear after activation).

- Username: Change the Username of the account in the field.
- Password: Change the Password of the account in the field. Please leave blank if

you do not want to change the Password.

• Device Number: Assign the number of controllers that the user account can

connect (manage)

• Maximum Database Size : The Maximum size of database which will be allocated to the user account can be changed in the field.

sername	Nickname	Email	Device Number	Status
m_jhu	Alan	alan_jhu@icpdas.com	0	Unactivated

Figure 2-4 Change user account settings

🛸 Account Settings	-
Username	alan_ihu
Password	
Device Number	0
Maximum Database Size	 Unlimited
	◯ Limited to 64 🚔 MB
Active	Save Cancel

To delete a user account, please select the user account to be removed, and then click the "Remove" button, then the account would be removed.

Isemame	Nickname	Fmail	Device Number	Status
lan_jhu	Alan	alan_jhu@icpdas.com	50	Activated

Figure 2-5 Remove user account

2.6 System loading monitoring

IoTstar provides the System Loading monitoring function for the administrator to review the real-time System Loading status of the IoTstar. The field of System Loading status is in the lower part of the IoTstar system interface as shown below. If the value of the System Loading is too high (for example: over 90 %), it means the H/W performance of the PC or platform (with the IoTstar installed) cannot meet the operation requirement of IoTstar. If the administrator sees the System Loading is

getting too high, we suggest performing the following two operations to keep the IoTstar function stably:

• Enhance the H/W performance of the PC or platform (with the IoTstar installed) to provide more computing power.

• Reduce the total number of WISE / PMC / PMD controllers connected to IoTstar simultaneously.

🕯 ICP DAS IoTst	ar		-	• ×
IoTstar	Settings	Account Management	O-	U Start Service
Event Log:			CR	eload 🥤 Clear
Time	Message			
© ICP DAS Co., L	td. System	n Load: 5%		Version: 1.1.0

2.7 The Network Connection Setting of WISE / PMC / PMD and IoTstar

Currently IoTstar supports ICP DAS WISE-523x / WISE-2x4x / WISE-75xx, PMC-523x / PMC-2x4x and PMD series controllers. Before setting up the network connection and data upload operation between WISE / PMC / PMD and IoTstar, please make sure the firmware version of the WISE / PMC / PMD controllers you use meet the requirements as below:

Controller		Firmware version	
WISE	WISE-523x/WISE-224x	v1.6.0 or later version	
	WISE-284x	v1.0.0 or later version	
Series	WISE-75xx	v1.1.0 or later version	
PMC / PMD	PMC-523x/PMC-224x/PMD	v3.6.0 or later version	
Series	PMC-284x	v1.0.0 or later version	

If the WISE / PMC / PMD controller you use now is early firmware version, please visit the following link to download the new version firmware and refer to the user manual to complete the firmware update process.

• WISE Series

✓ The download link for the latest firmware version of WISE-523x / WISE-2x4x /
 WISE-75xx : <u>http://wise.icpdas.com/Download.html#firmware</u>

✓ The download link for WISE-523x / WISE-2x4x / WISE-75xx User Manual : <u>http://wise.icpdas.com/Download.html#manual</u>

• PMC / PMD Series

✓ The download link for the latest firmware version of PMC-523x/PMC-2x4x /PMD : <u>http://pmms.icpdas.com/en/download.html#firm_ware</u>

✓ The download link for PMC-523x/PMC-2x4x/PMD User Manual : http://pmms.icpdas.com/en/download.html#manual

About the connection and data upload setting between WISE / PMC / PMD and IoTstar, please refer to the following sections for detail.

Appendix I: WISE Connection setting for IoTstar

Appendix II: Enable "Data Upload Operation" from WISE to IoTstar

Appendix III: PMC / PMD Connection setting for IoTstar

Appendix IV: Enable "Data Upload Operation" from PMC/PMD to IoTstar

Please Note: After completing the network connection setting of WISE / PMC / PMD and IoTstar, please also confirm the following items to ensure the controller can successfully connect to IoTstar.

1. Confirm the Network domain which WISE / PMC / PMD belong can connect to IoTstar.

2. If the network environment is equipped with Firewall, please open "Port 1230 ~
Port 1235", "Port 7000 ~ Port 7100" and "IIS station port".

3 IoTstar (Professional version) Setting with License file

The Professional version of IoTstar includes three options: IoTstar-RC050, IoTstar-RC200 and IoTstar-RC500. To upgrade the IoTstar (Basic version) to IoTstar (Professional version); please refer to the steps below:

I. Please contact with the sales or distributers of ICP DAS to buy IoTstar (Professional version). When the procurement procedure is completed, ICP DAS would send the package of IoTstar to you.

II. When you receive the package of IoTstar, please confirm that there is an IoTstar cardboard in the package, and a sticker of IoTstar serial number on the cardboard.

III. Please follow the sections "2. Install IoTstar" to complete the installation and initialization of IoTstar (Basic version). If you have completed the setting and installation of IoTstar (Basic version), please skip this step.

IV. Go to IoTstar official website <u>https://iotstar.icpdas.com/en/index.php</u>, and click the "Download" button on the main page.



V. In the "Download" page, click the "Registration" button of the "Professional version" section to enter the registration page of IoTstar.

ICP ICP D	AS Co., Ltd.	GO TO ICP DAS
Home Introduction -	Applications Bot Service Download	Package Upgrade Live Demo Contact
Download	Software & Registration	
 Software & Registration Document 	Basic Version	Professional Version
	Full functions supported.Connect to 4 controllers.Offer service trial	 Full functions supported. The Maximum quantity of the controllers to be connected will vary depending on the model you
	Latest version:1.4.1 <u>Release Note</u>	purchase. (?)Offer service trial and package upgrade is available.
	Read Me Free Download	Read Me Registration

Figure 3-1 Registration for IoTstar (Professional version) (1)

VI. On the registration page of IoTstar (Professional version), enter the following information: "First Name", "Last Name", "Company", "Country" and "E-mail". Please enter the "Serial Number" which you get from the sticker on the cardboard of IoTstar. For the "Hardware ID", please click the ② 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 "Registration" button to save these settings. If the key-in registration information is correct, an email with the license file of IoTstar (Professional version) would be sent to the email address you entered.

ICP DAS Co., Ltd.			GO TO ICP DAS
Home Introduction - Applications Bot Service Download	I Package Upg	rade Live Demo	Contact
Registration & Getting License File Version)	e for loTs	tar (Profes	ssional
	First Name :	First Name	
8	Last Name :	Last Name	
Build your IoT with ICP DAS lotstar	Company :	Company	
	Country :	(Select Country)	~
3 3 4	E-mail :	E-mail	
	Serial Number :	Serial Key	
	Hardware ID :	Hardware ID	?
		Regis	Help

Figure 3-2 Registration for IoTstar (Professional version) (2)

Please note:

1. The email sent by IoTstar website may be sent to the spam/trash folder of your mailbox according to different mail servers. Please also check the spam/trash folder of your mailbox if you didn't find it in inbox.

2. The license file of IoTstar is single platform license. Each license is unique and can only be assigned to the PC/Platform with the Hardware ID you provide.

3. If you need to change the PC/Platform's component (CPU, Hard Disk with OS image or motherboard), or the original PC/Platform with IoTstar is damaged and you need to switch IoTstar to other PC/Platform, please follow the steps above to get the new IoTstar license file for the PC/Platform (with the new component) or the new PC/Platform. Each serial number on IoTstar cardboard allows maximum 3 applications of the license file. Please be careful about it.

VII. When you receive the license file of IoTstar (Professional version), click "Start

Menu" \rightarrow "All apps" \rightarrow "ICPDAS" \rightarrow "IoTstar" to open the IoTstar system interface.



VIII.Click the "License" button on the IoTstar system interface to enter the License setting window.

🛸 ICP DAS loTstar		– 🗆 X
IoTstar	Settings Account Managem	
Event Log:		C Reload 🧻 Clear
Time	Message	
© ICP DAS Co., Ltd.	System Load: 5%	Version: 1.1.0

IX. In the "License" setting window, click the "Browse..." button to find the location of the IoTstar (Professional version) license file, and then click the "OK" button.

🗥 License			-		×
Version		Basic			
Number of Device	s	4			
Bot Service Funct	ion	Not Available			
Dashboard Servic	e Function	Not Available			
Hardware ID	A439-D72D-63	2FA-6ABB-74E6-F83F-D20E-DFF5		Сору	,
License File				Browse	·
	Get the licer	nse file from <u>here</u> .		OK	
License File	Get the licer	nse file from <u>here</u> .)

X. If the license file is valid, the IoTstar (Basic version) would be upgraded to IoTstar (Professional version). The registration procedure of IoTstar (Professional version) is completed and the title of IoTstar System Interface will not show the message of "Basic version".

🛸 ICP DAS loTstar		– 🗆 🗙
IoTstar	Settings Account Management	License U Start Service
Event Log:		C Reload 🔋 Clear
Time	Message	
© ICP DAS Co., Ltd.	System Load: 5%	Version: 1.1.0

The "License" setting window will also display the version of IoTstar, the number of controllers it support and the optional function IoTstar support (Following is an example of IoTstar-RC500).

🛸 License			-	□ ×
Version		Professional		
Number of Devic Bot Service Fund		500 Not Available		
Dashboard Servi		Not Available		
Hardware ID	A439-D72D-6	2FA-6ABB-74E6-F83	F-D20E-DFF5	Сору
License File	C:\Users\Alan\Desktop\+30_A439D72D62FA6ABB74E6F83FD2(Browse
Get the license file from <u>here</u> .			OK	

4 IoTstar Optional Package Upgrade

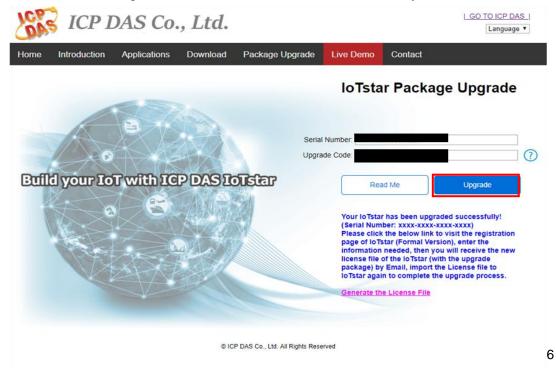
If users want to upgrade IoTstar with the IoTstar Optional Package (IoTstar upgrade package, IoTstar Bot Service, IoTstar Dashboard Service), please refer to the following steps.

I. Please contact with the sales or distributers of ICP DAS to order the IoTstar optional package (IoTstar upgrade package, IoTstar Bot Service or others). When the procurement procedure is completed, ICP DAS would send the upgrade code of the IoTstar optional package to you.

II. Go to IoTstar website <u>https://iotstar.icpdas.com/en/index.php</u>, and click the "Package Upgrade" button on the main page.



III. On the "Package Upgrade" page of IoTstar, enter the "Serial Number" of the IoTstar you have installed and the "Upgrade Code" of the IoTstar optional package you order. Click the "Upgrade" button to save these settings, then click the "Generate the License File" to generate the new license file for the IoTstar you install.



IV. After click the link of "Generate the License File", the browser will open the "Registration & Getting License File for IoTstar (Professional version)" page, please follow the description of "Step VI ~ Step X" of the "3. IoTstar (Professional version) Setting with License file" chapter to complete the registration process of the IoTstar software (with the optional package).

5 System Login

When connect to IoTstar via Web browser (IE 11 / Firefox 53 / Chrome 58 version or above are recommended), in order to get a better operation experience, 1280x1024 resolution or more higher resolution is recommended. The Login page of IoTstar is shown as below:

3	Login
S Contraction	22 Username
IoT with ICP DAS IOTSET	• Password
3	English
	Remember me Forgot password?
	Submit
	Sign up now!

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Figure 5-1 IoTstar Login Page

Before login to IoTstar, users have to create a user account of IoTstar by the following steps:

I. Click the "Sign up now!" button on the Login webpage of IoTstar to enter the sign-up page.

Username Password English Remember me Forgot password? Submit		Log	gin		
English English Remember me Forgot password?	**	22 Username			
Remember me Forgot password?	07	Password			
	\oplus	English	\checkmark		
Submit	□R	emember me	Forgot password?		
		Sut	omit		

II. Input your email address in the "Email" field and click the "Verification" button.IoTstar will send a verification email to this email address later.

Sign Up	
Email Registration Done Verification	
Please enter your Email address. To confirm your Email address is correct, the system will send an Email to your mailbox.	
*Email:	
Verification	

III. Check your mailbox and find the Verification email sent by IoTstar. Click the link in the email to complete the procedure of the email verification.

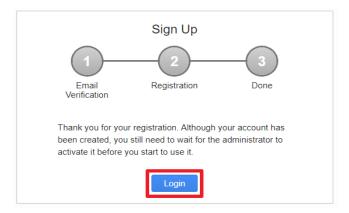
Please note: The email sent by IoTstar website may be sent to the spam/trash folder of your mailbox according to different mail servers. Please also check the spam/trash folder of your mailbox if you didn't find it in inbox.

Email Verification
Dear User:
Please click the following link to complete the registration.
http://localhost/signup.php?step=2&code=1aYgxR2WSQ
Best regards ICP DAS IoTstar

IV. The verification link would lead you to the next sign-up page of IoTstar. Key in the following information: "Username", "Password", "Retype Password", "Nickname", "E-mail", "Company", and "Country / Region ", and then click the "Submit" button. Please note that the username can only contain lowercase letters and numbers.

Email Verification	Sign Up	
*Username:		
*Password:		
*Retype Password:		
*Nickname:		
Email:	wayne_liu@icpdas.com	
Company:		
*Country / Region:	-	~
	Submit	

V. If the information is valid, the following screen will be displayed and the application of IoTstar user account will be completed. After the administrator activates this user account, user can click the "Login" button to visit IoTstar's Account login page



VI. Input the username, password, and select the language, and then click the "Submit" button to login IoTstar.



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Please note:

The user can select the preferred language of the IoTstar webpage on the login page.
 After login into the system, if the user want to change the language again, logout and re-select the language on the Login page.

2. Before starting the system, please make sure the browser you are using already enable JavaScript support, otherwise the system will not function properly.

6 IoTstar Web Page Overview

After the user login into the IoTstar with individual information successfully, the IoTstar home page will be displayed as below. The home page will list all the WISE /PMC / PMD controllers that the user has the authority for maintenance/monitoring and the WISE / PMC / PMD controllers that are shared from other accounts. For assigning the authority setting of WISE / PMC / PMD to individual IoTstar user account, please refer to "Appendix I: WISE Connection setting for IoTstar" section and "Appendix III: PMC / PMD Connection setting for IoTstar" section.

IoTstar home page is mainly divided into 2 parts:

- A. System Function
- B. Data Review/System Setting

More detailed information for each part will be given in the following section.

(ICP DAS IoTstar		🖪 Alan(alan_jhu) ĐLogout
Remote Access Service	Online Device List (3/4)	Q
 Device Maintenance 	В	
Data Display & Analysis	PMC-5231(129) PMC-5231	
Dashboard Service	01a031061800004e	
u Real-Time I/O Data	WISE-5231M-3GWA	
Real-Time Power Data	WISE-5231M-3GWA 01f42a06180000b0	
🖪 Historical I/O Data		
IL Historical Power Data	PMD-4201(169)	
Historical Power Report	PMD-4201 01a8280618000060	
Grouping Setting		
📰 I/O Channel	Offline Device List	
Power Meter Loop		
System Information & Setting	No Device E	xist
🏟 Account Maintenance		
Database & Event Setting		
🜲 Event List 634		
 Database Table List 		

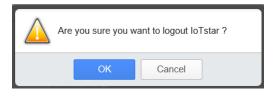
Figure 6-1 IoTstar Home Page

6.1 System Function area

System function area provides immediately access to the main functions of IoTstar, such as: Remote Maintain Devices, Real Time Data Display, Historical Data Analysis, System Information & Settings, and logout IoTstar, etc. Each function in system function area is listed as the following:

• Logout

Logout button is at the right upper of IoTstar Webpage. Click on logout button and then click "OK" to logout the system.



• Account Maintenance

There is the "Account Maintenance" button at the right upper of IoTstar Webpage. Click on the button with user's nickname to enter the Account Maintenance page.

• System Function Toolbar

System function toolbar is at the left side of the IoTstar Webpage. The System function toolbar includes the following function options. The following chapters will provide more detailed description of these functions.

- Chapter 7: Remote Access Service
- Chapter 8: Data Display
- Chapter 9: Grouping Setting
- Chapter 10: System Information & Setting

6.2 Data Review/System setting area

Data review/System setting area allows to set system parameters and data review of WISE / PMC / PMD controller, the content of this area will be varied according to the selected system function. After the user login into the IoTstar, the Data review/System setting area of home page will list all the WISE / PMC / PMD controllers that the user account has the authority for maintenance/monitoring and the WISE / PMC / PMD controllers that are shared from other accounts. The following is an example.

Q Search	×
PMC-5231-3GWA PMC-5231M-3GWA 0123E90518000015	
PMD-2201 PMD-2201	*
	PMC-5231M-3GWA 0123E90518000015

Figure 6-2 Data Review/System Setting area

7 Remote Access Service

After login into the IoTstar, click on the "Device Maintenance" button in the "Remote Access Service" section on the "System Function" area of IoTstar Webpage, the "Data review/System setting" area will list all the WISE / PMC / PMD controllers that the user has the authority for maintenance/monitoring and the WISE / PMC / PMD controllers that are shared from other accounts. According to the connection status between controller and IoTstar, the WISE / PMC / PMD controllers could be divided into "Online Device List" and "Offline Device List" groups as below.

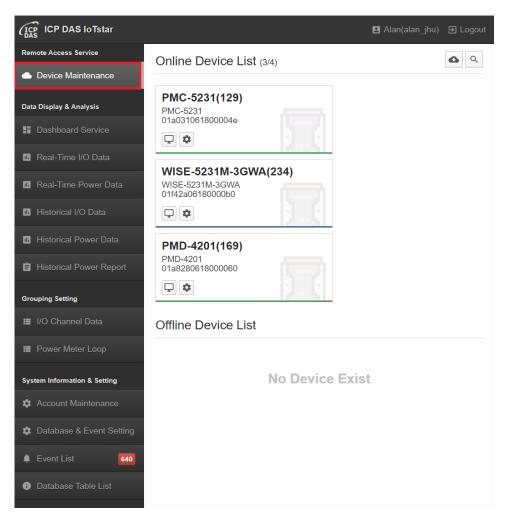


Figure 7-1 Device Maintenance page

In the "Online Device List" group, if the user is authorized to access the controller for maintenance/monitoring, user can click the 📮 button below the controller to launch

the Webpage of the selected WISE / PMC / PMD controller and login the controller for remote maintenance, status monitoring and system setting operations.

Alan's WISE-5231	
WISE-5231 0148470618000037	
₽ \$	

Please Note :

1. For the setting of WISE, please refer to WISE User manual (http://wise.icpdas.com/Download.html#manual).

2. For the setting of PMC / PMD, please refer to PMC / PMD User manual

(http://pmms.icpdas.com/en/download.html#manual).

In addition, if the configuration of WISE / PMC / PMD is modified and the configuration file is downloaded to the controller via the IoTstar's interface, these previous configuration files will be backed up in IoTstar. To restore the configuration, click on the 🔊 button below the controller, specify the desired configuration file, select the controllers you want to restore to, then click the "Restore" button of the file. After complete the operations, IoTstar will download the desired configuration file to the controllers you select and restore them to the previous configuration.

Please Note: IoTstar will only keep the latest 30 previous configuration files for each controller.





Manage Setting File					
Time	Size	Description	Ac	tion	^
2023-01-10 15:07:27	24.6 KB	Not set	Lock	Restore	
2023-01-10 15:07:09	24.5 KB	Not set	Lock	Restore	
2023-01-09 18:01:53	24.4 KB	Not set	Lock	Restore	
					-
		Close			



		Restore Setting File	
~	Model Name / Nickname	Serial Number	Status
~	PMC-5231(PMC-5231)	01a031061800004e	✓ Restore successfully
~	PMC-5231(PMC-5231)	01bb4606180000d1	✓ Restore successfully
			*
		Restore Close	

Since IoTstar will only keep the latest 30 configuration files for each controller, if you want to avoid the configuration file being deleted, you can press the "Lock" button behind the configuration file to lock it, and if you want to unlock the configuration file, you can press the "Unlock" button. In addition, you can make a brief description in the "Description" field of the configuration file for easy identification.

Manage Setting File						
Time	Size	Description	Act	Action		
2023-01-10 15:07:27	24.6 KB	Important	Unlock	Restore		
2023-01-10 15:07:09	24.5 KB	Not set	Lock	Restore		
2023-01-09 18:01:53	24.4 KB	Not set	Lock	Restore		
					÷	
		Close				
	_					

In the "Online Device List" area, if there is the ²⁴ icon at the right upper of WISE / PMC / PMD controller, it means the controller is shared from the other account. Move the mouse over the ²⁴ icon, a message will appear to show who owns the authority of the controller. Click on the 🖃 button below the controller to launch the Webpage of the selected WISE / PMC / PMD controller, and then you can login as a Guest to

review the status of the controllers.

	This device is (iotstar_demo)	shared by iotstar_de	mo
PMC-5231-3G PMC-5231M-3GWA 0123E90518000015			

For the WISE / PMC / PMD controllers in the "Offline Device List" group, it means the Network connection between the controller and IoTstar is in offline status. So the user cannot perform the operations such as: remote maintenance, status monitoring, system setting, and firmware update. If the Network connection between the controller and the IoTstar is no longer needed, user can click on the I button below the controller to remove the controller from the "Offline Device List" group.

Please Note: The "Remove" function will also remove all previous configuration files of the controller.



In addition, IoTstar can perform the "Batch operation of Firmware Update" for the remote WISE / PMC / PMD controllers located in the "Online Device List" area. Users only need to complete the corresponding settings, and then IoTstar will automatically perform remote firmware update on all selected WISE / PMC / PMD controllers. It will help user to conveniently and quickly complete the operation of remote firmware update on multiple controllers simultaneously. For the setting of "Batch operation of Firmware Update", please refer to the steps as below.

I. Click the "Firmware Update" button at the right top corner of the "Online Device List" area.

(ICP DAS IoTstar				🖪 Alan(alan_jhu) ĐLogout
Remote Access Service	Online Device List (3/4)			6 9
 Device Maintenance 				
Data Display & Analysis	PMC-5231(129) PMC-5231	WISE-5231M-3GWA(234) WISE-5231M-3GWA	PMD-4201(169) PMD-4201	
E Dashboard Service	01a031061800004e	01f42a06180000b0	01a8280618000060	
II. Real-Time I/O Data				
Real-Time Power Data	Offline Device List			
II Historical I/O Data				
Historical Power Data		No Devid	ce Exist	
Historical Power Report				
Grouping Setting				
I/O Channel Data				
Power Meter Loop				
System Information & Setting				
Count Maintenance				
A Deteksor & French Cotting				

II. For the firmware file required in the firmware update operations of WISE / PMC

/ PMD controllers, IoTstar provides two options for the selection of firmware file.

(ICP DAS IoTstar		🖪 Alan(alan_jhu) 🤤 Logout
Remote Access Service	Online Device List (3/4)	6 Q
Device Maintenance		
Data Display & Analysis	PMC-5231 Firmware Update	ID-4201(169)
Dashboard Service	01a031061800004e	
Real-Time I/O Data	Automatically search and download the latest firmware fil	
Real-Time Power Data	Offline Device List IoTstar will search and download the latest firmware file from the website automatically. Make sure your IoTstar can connect to the search and the sear	
III Historical I/O Data		
Historical Power Data	Select the firmware file on this computer To select the firmware file on this computer manually, you mus	st download
B Historical Power Report	the firmware file by yourself first.	
Grouping Setting	Close	
I/O Channel Data		
Power Meter Loop		
System Information & Setting		
🌣 Account Maintenance		
Database & Event Setting		

• Automatically search and download the latest firmware files: IoTstar will automatically download the latest version of WISE / PMC / PMD firmware files from the official website of WISE / PMC / PMD controller and use the files in the firmware update operation.

• Browse the firmware files on this computer: If user has previously downloaded the WISE / PMC / PMD firmware files, he can browse and select the WISE / PMC / PMD firmware files on the computer where IoTstar is installed, and use the files in the firmware update operation.

	Firmware Upda	te			
Please se	lect the firmware file(HEX format) in you	ur computer:			
Firmware		Browse			
Please select the specific firmware file corresponding to the device to avoid errors during firmware update.					
	Upload	ose			

III. After the selection of firmware files is completed, user can selects the WISE / PMC / PMD controllers which need to perform the firmware update operation from the list of WISE / PMC / PMD controller and then clicks the "Update" button. Now IoTstar will automatically perform the firmware update operation for all the selected controllers simultaneously. Users can review the status of the firmware update process for each controller through the "Progress Rate" field.

(ICP DAS Io Tstar							🖪 Alan(alan_jhu)	
 Remote Maintain Devices 	Online Device	e List (3/50)						٩
Real-Time Data Display	WISE-5231		WISE-52	31M-4G	F	WISE-5236		
I/O Channel Data	WISE-5231 01f42a06180		Firmware		_	5236 06180000b2		
Power Data		Model Name / Nickname WISE-5231		Version	Progress	_	9.6	
Historical Data Analysis	Offline De	WISE-5231M-4GE		1.4.0.0	50%	_		
🖬 I/O Channel Data		WISE-5236		1.4.1.0	0%	-		
🖪 Power Data								
🖨 Power Report								
Grouping Setting								
I/O Channel								
📰 Power Meter Loop								
System Information & Setting								
Account Maintenance			Update	Close				
Database & Event Setting								
🌲 Event List 🛛 🖪								
Database Table List								

8 Data Display & Analysis

"Data Display & Analysis" allows inquiry and display of the I/O channel data and power data of the WISE / PMC / PMD controllers connected to IoTstar. "Data Display & Analysis" section includes 3 major services: "Dashboard", "Real-time Data" and "Historical Data".

"Dashboard" service provides the Dashboard editor and a variety of Widget components. User can setup the Dashboard pages to review the Real-Time sensor data (and Power data) from the I/O modules (or Sensor) and Power Meter connected to WISE / PMC / PM controllers.

"Real-time Data" service allows inquiry and display of the real-time power data and I/O channel data of the WISE / PMC / PMD controllers connected to IoTstar by chart. "Real-time Data" service includes 2 options: "Real-Time I/O Data" and "Real-Time Power Data".

"Historical Data Analysis" service allows inquiry and display of the historical power data and I/O channel data of the WISE / PMC / PMD controllers connected to IoTstar. It allows doing data analysis and cross-match operations of these historical data with ease. "Historical Data" service includes 3 options: "Historical I/O Data", "Historical Power Data" and "Historical Power Report".

More detailed information for each service will be given in the following sections.

8.1 **Dashboard Service**

IoTstar can use the Dashboard editor and a variety of Widget components provided by IoTstar Dashboard Service to setup the Dashboard pages to review the Real-Time sensor data (and Power data) from the I/O modules (or Sensor) and Power Meter connected to WISE / PMC / PM controllers. User can click on the "Dashboard Service" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage to enter the Dashboard Service page. For the function description of "Dashboard Service", please refer to "ICP DAS IoTstar Dashboard Service User Manual" for detail.

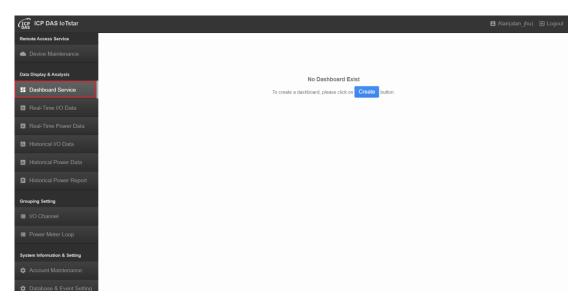


Figure 8-1 Dashboard Service page

8.2 Real-Time I/O Data

Click on the "Real-Time I/O Data" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage; the list of WISE / PMC / PMD controllers connected to IoTstar and the I/O Channel groups will be shown in the Data Review/System Setting section. The user can select the desired I/O Channel of the I/O module or the I/O Channel group, and then the corresponding Real-Time I/O Channel data will be shown in Chart. The "Real-Time I/O Data" page is as below:

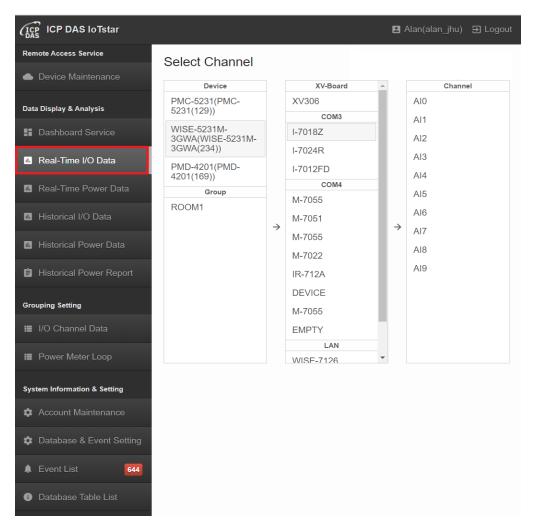


Figure 8-2 Real-Time I/O Data - I/O Module List

User can follow the sequence as: "Select the specified WISE / PMC / PMD controller -> Select the specified I/O module connected to the controller -> Select the I/O channel of the I/O module" or "Select the I/O Channel group directly", then IoTstar will show the real-time Data of the I/O channel in Chart. Click on the Add button below the Chart to add other I/O channel's real-time Data into the Chart for data display and cross-match operation. And if you click on the Remove button next to the I/O channel, the real-time data of the specified I/O channel will be removed and not displayed.

If the I/O channel cannot be selected, please remember to update the firmware of

WISE / PMC / PMD controller first (WISE needs to be updated to v1.5.0 firmware or later version; PMC / PMD needs to be updated to v3.4.6 firmware or later version), visit the "IoT Platform Setting > IoTstar Setting > Real-time Data Sending Setting" page of WISE / PMC / PMD, and insert the I/O channels which need to actively send the Real-Time data to IoTstar, then click "Save" button to save the setting.

The following figure shows an example of the displayed data in Chart. The user can flexibility move the buttons forward and backward on the Timeline to display the corresponding I/O channel real-time Data of specified time range in the Chart.

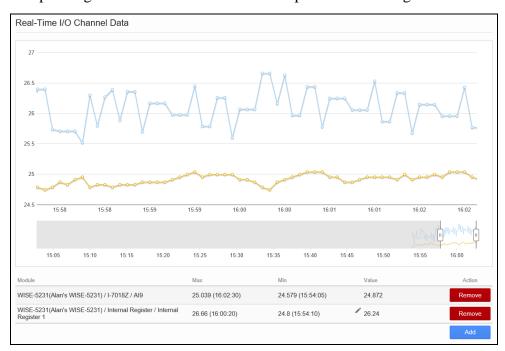


Figure 8-3 Real-Time I/O Data - I/O Channel Data Display

There is the I/O Channel list under the real-time data chart. If the Channel is Internal Register, DO channel or AO channel, IoTstar will provide a button behind the channel. Click the button, a pop-up window will be shown to let user to enter the new value for the output channel. After complete the setting, IoTstar will assign the new value to the I/O module to update the value of the corresponding output channel. Please Note: For the DO channel setting, 1 is ON, 0 is OFF.

Module	Max	Min	Value	Action
WISE-5231(Alan's WISE-5231) / I-7018Z / Al9	25.039 (16:02:30)	24.579 (15:54:05)	24.872	Remove
WISE-5231(Alan's WISE-5231) / Internal Register / Internal Register 1	26.66 (16:00:20)	24.8 (15:54:10)	26.24	Remove
				Add
	Value Se	etting		
Please	enter the value:			
16.86		>	<	
	ОК	Cancel		

Figure 8-4 Real-Time I/O Data - IR, DO/AO channel Setting

8.3 **Real-Time Power Data**

Click on the "Real-Time Power Data" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage; the list of PMC / PMD controllers connected to IoTstar will be shown in the Data Review/System Setting section. The user can select the desired Loop of the power meter, and then the corresponding real time power data will be shown in Chart. The "Real-Time Power Data" page is as below.

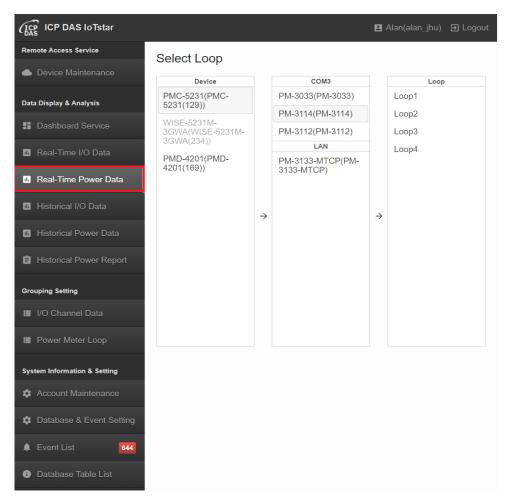


Figure 8-5 Real-Time Power Data - Power Meter List

User can follow the sequence as: "Select the specified PMC / PMD controller -> Select the specified power meter connected to the controller -> Select the Loop of the power meter" in "Power Data" page, then IoTstar will show the real-time power data information in Chart. Currently it provide the Voltage, Current, kW, kvar, kVA, PF, kWh, kvarh and kVAh information display.

If the loop of the power meter cannot be selected, please remember to update the firmware of PMC / PMD controller first (PMC / PMD needs to be updated to v3.4.6 firmware or later version), visit the "IoT Platform Setting -> IoTstar Setting -> Real-time Data Sending Setting" page of PMC / PMD, and insert the loop of the power meter which need to actively send the Real-Time power data to IoTstar, then

click "Save" button to save the setting.

The following figure shows an example of the displayed data in Chart. The user can flexibility move the buttons forward and backward on the Timeline to display the corresponding real-time power data of specified time range in the Chart.



Figure 8-6 Real-Time Power Data - Power Data Display

8.4 Historical I/O Data

Click on the "Historical I/O Data" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage; the list of WISE / PMC / PMD controllers connected to IoTstar and the I/O Channel groups will be shown in the Data Review/System Setting section. The user can select the desired I/O Channel of the I/O module or the I/O Channel group, and then the corresponding historical I/O Channel data will be shown in Chart. The "Historical I/O Data" page is as below:

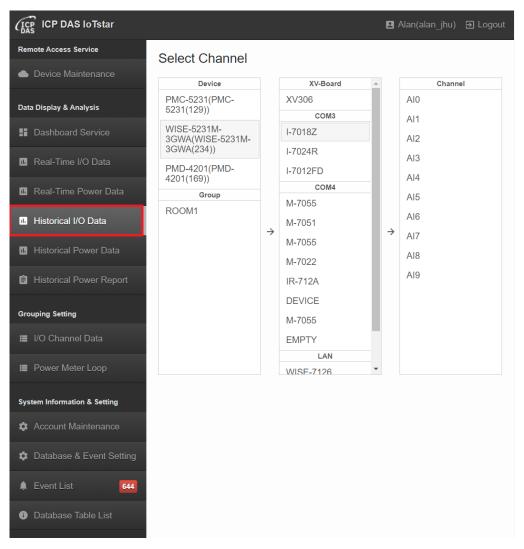


Figure 8-7 Historical I/O Data - I/O Module List

User can follow the sequence as: "Select the specified WISE / PMC / PMD controller -> Select the specified I/O module connected to the controller -> Select the I/O channel of the I/O module" or "Select I/O Channel group directly", then IoTstar will show the historical Data of the I/O channel in Chart. Click on the Add button below the Chart to add other I/O channel's historical Data into the Chart for data analysis and cross-match operation. And if you click on the Remove button next to the I/O channel, the historical data of the specified I/O channel will be removed and not displayed.

The Time range setting of the Chart can be adjusted as required to show the I/O 110

channel data of the corresponding time range. Check the "Sync Selector" will synchronize the Time range setting of all I/O channel of the Chart. The following figure shows an example of the displayed data in Chart. The user can flexibility move the buttons forward and backward on the Timeline to display the corresponding I/O channel historical Data of specified time range in the Chart.

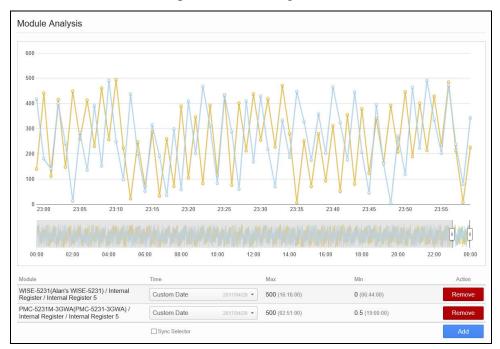


Figure 8-8 Historical I/O Data - I/O Channel Data Analysis

8.5 Historical Power Data

Click on the "Historical Power Data" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage; the list of PMC / PMD controllers connected to IoTstar and power meter groups will be shown in the Data Review/System Setting section. The user can select the desired Loop of the power meter or the power group, and then the corresponding historical power data will be shown in Chart. The "Historical Power Data" page is as below:

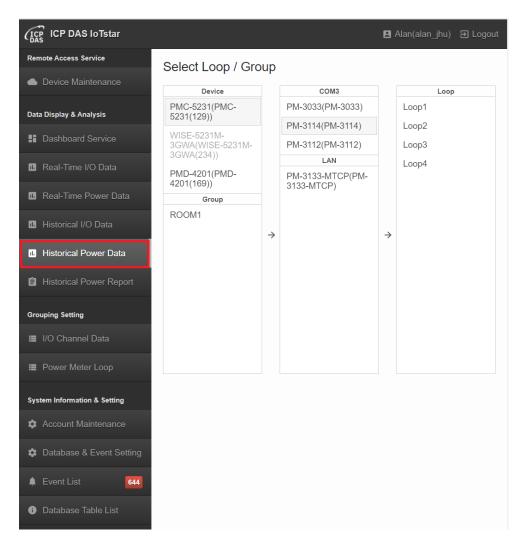


Figure 8-9 Historical Power Data - Power Meter List

IoTstar provide the "Power Data Analysis for Power Meter" or "Power Data Analysis for Power Meter Group" functions. The following sections will describe detailed information.

8.5.1 **Power Data Analysis for Power Meter**

User can follow the sequence as: "Select the specified PMC / PMD controller -> Select the specified power meter connected to the controller -> Select the Loop of the power meter" in "Power Data" page, then IoTstar will show the "Energy Analysis" and "Power Data Analysis" information of the corresponding historical power data in Chart.

• Energy Analysis: For the Energy data (kWh) analysis, 5 options of Chart's Timeline setting are provided: "Day", "Week", "Month", "Quarter" and "Year" (at the left upper of the Chart). Setup the Timeline and then specify the start day of the Timeline from the "Time" filed; then the corresponding historical power data of the Loop of the power meter will be displayed. By using the "Compared" function, the user can specify a start day of the compared group's historical power data; the chart will be shown to compare the historical power data of these two groups at the same time for data cross-match analysis. In the "Energy Analysis" section, it also provides the current and compared information as kWh, "Carbon Footprint" and "Growth Rate" for reference. Click the w button at the right upper of "Carbon Footprint" will provide the interface for adjusting the parameters of Carbon Footprint.



Figure 8-10 Historical Power Data - Energy Analysis for Power Meter

• **Power Data Analysis:** 5 options of Chart's Timeline setting are provided: "Day", "Week", "Month", "Quarter" and "Year" (at the left upper of Chart) for the power data analysis. After adjusting the Timeline setting, please specify the start day of the Timeline from the "Time" filed at the top of chart, and then the chart will display the corresponding historical power data of the Loop/Phase of the power meter. Currently the "Power Data Analysis" section provides the Voltage, Current, kW, kvar, kVA and PF information display.



Figure 8-11 Historical Power Data - Power Data Analysis for Power Meter

8.5.2 **Power Data Analysis for Power Meter Group**

Select the specified power meter group in the "Power Data" page; then the IoTstar will show the "Energy Analysis" information for the corresponding historical power data of the power meter group in chart. 5 options of chart's Timeline setting are provided: "Day", "Week", "Month", "Quarter" and "Year" (at the left upper of chart) for the Energy data (kWh) analysis. Setup the Timeline setting and then specify the start day of the Timeline from the "Time" filed; then the corresponding historical power data of the power meter group will be displayed. By using the "Compared" function, the user can specify a start day of the compared group's historical power data; the chart will be shown to compare the historical power data of these two groups at the same time for data cross-match analysis. In the "Energy Analysis" section, it also provides the current and compared information of kWh, "Carbon Footprint" and "Growth Rate" for reference. Click the start be button at the right upper of "Carbon Footprint" will provide the interface for adjusting the parameters of Carbon Footprint.

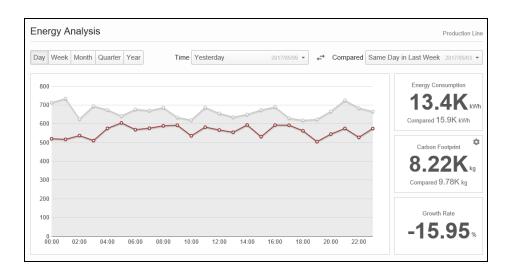


Figure 8-12 Historical Power Data - Energy Analysis for Power Meter Group

8.6 **Report Service**

IoTstar provide the statistical report query function for the sensors connected to WISE/PMC/PMD controller by the IoTstar Report Service. By using IoTstar Report Service, the data measured by the sensors can be converted into valuable statistical reports for references and as basis for making decisions. User can click on the "Report Service" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage to enter the IoTstar Report Service page. For the function description of "Report Service", please refer to "ICP DAS IoTstar Report Service User Manual" for detail.

(ICP DAS IoTstar		
Remote Access Service	Online Device List (1/10)	
	Xindian office	
Data Display & Analysis	PMC-5231 01a0190618000088	
Real-Time I/O Data	₽ \$	
Real-Time Power Data	Offline Device List	
Historical I/O Data		
	PMC-5231 PMC-5231 01bb4606180000d1	PMC-5236 ** PMC-5236 01bb4606180000d1
Historical Power Data		0100400010000001
Report Service		
Video Event Data		
Grouping Setting		
I/O Channel		
Power Meter Loop		

Figure 8-13 Report Service page

Please Note: IoTstar has removed the original "Historical Power Report" query function after v3.0, and this function is now provided by the IoTstar Report Service package. If you need to use the original "Historical Power Report" query function, please do not install IoTstar v3.0.0 (or later version).

8.7 Video Event Data

Click on the "Video Event Data" button in the "Data Display & Analysis" section on the "System Function" area of IoTstar Webpage; the video event data uploaded by WISE controllers will be shown in the Data Review/System Setting section, and user can query and play the image/video files uploaded by WISE controllers. The "Video Event data" page is as below:

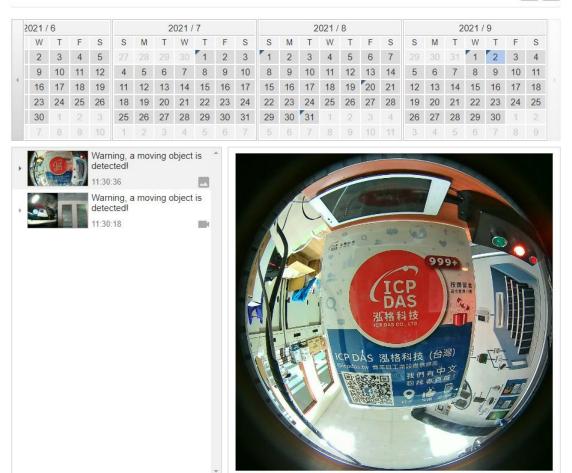


Figure 8-14 "Video Event Data" Page

Users can click the button on the right upper of page to instantly update the video event currently received by IoTstar, reload the latest video events, and play the image/video file bound with latest event on the page. In addition, user can click the

button to enable the "Device Filter" function. Through the function, user can select the desired WISE controller and review the video event uploaded by the WISE.

CY

	Device Filter		
~	Model Name / Nickname	Serial Number	^
~	WISE-5231M-4GC(WISE-5236M-4GC)	015c1c0618000055	
~	WISE-5231M-3GWA(WISE-5231M-3GWA)	01f42a06180000b0	
			-
	OK Cancel		

Figure 8-15 Interface of "Device Filter" Function

The "Video Event Data" page provides the calendar interface. If the date of the calendar bound with a triangle symbol in the upper left corner of the date, it mean there is the event occurred on the date. In addition, user can keep the mouse on the calendar and scroll the mouse wheel to scroll the calendar or scroll the calendar through the buttons on the left and right side of the calendar to review the video event on other months.

		2	021/	6					2	021/	7					2	021/	8					2	021/	9	
	L	Т	W	Т	F	S	S	М	Т	W	Т	F	S	S	М	Т	W	Т	F	S	S	М	Т	W	Т	F
	1	1	2	3	4	5	27				1	2	3	1	2	3	4	5	6	7	29		31	1	2	3
		8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	5	6	7	8	9	10
4	1	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	12	13	14	15	16	17
	1	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	19	20	21	22	23	24
	3	29	30	1	2		25	26	27	28	29	30	31	29	30	31	1			4	26	27	28	29	30	1
		6	7			10	1	2		4	5		7	5	6	7		9	10	11		4	5	6	7	

Figure 8-16 Calendar Interface

User can click on the date bound with the triangle symbol, and then the system will list all video events that occurred on that date in the video event list. Each event will show the information as the thumbnail of the event, the time of the occurrence of the event, the description of the event, and the event type (Icon means this event is a video event; Icon means this event is an image event; Icon means this event

is an event from a controller shared by other accounts. If user moves the mouse to the icon, it will show the account name and nickname of the sharer).

When the mouse is moved to any video event, a check box will be shown at the left of the event. User can click the check box, and the advanced operation buttons will be shown at the bottom of the list. Click button can be used to select or deselect all events. Click button can be used to remove the selected events.

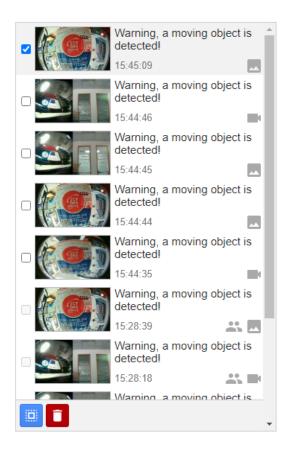


Figure 8-17 Video Event List

When user clicks the event in the video event list, the system will display the video/image file bound with the event in the video playback area.



Figure 8-18 Video Playback Area

9 Grouping Setting

"Group setting" provides user with the grouping setting of I/O channel and power meter loop for the management and classification of I/O channel and power meter loop. Currently, IoTstar provides the group setting function for "I/O channel of I/O module" and "loop of power meter". More detailed information for the function will be described in the following sections.

9.1 I/O Channel Grouping Setting

Click on the "I/O Channel" button in the "Grouping Setting" section on the "System Function" area of IoTstar Webpage; the list of I/O channel group will be shown in the Data Review/System Setting area. The I/O channel grouping function allows user to create groups that contain the I/O channels of I/O modules for easy group classification. Users can create, edit and remove the I/O channel group. The I/O channel group setting page is shown as below:

CICP ICP DAS IoTstar		🖪 Alan(alan_jhu) 🕣 Logout
Remote Access Service	Online Device List (3/4)	4
Device Maintenance		
Data Display & Analysis	PMC-5231(129) PMC-5231	
Dashboard Service	01a031061800004e	
u Real-Time I/O Data		-
🖪 Real-Time Power Data	WISE-5231M-3GWA(234) WISE-5231M-3GWA 01f42a06180000b0	
🚥 Historical I/O Data	•	
II. Historical Power Data	PMD-4201(169)	-
Historical Power Report	PMD-4201 01a8280618000060	
Grouping Setting		
🔳 I/O Channel	Offline Device List	
🔳 Power Meter Loop		
System Information & Setting	No Device	e Exist

Figure 9-1 Grouping Setting for I/O Channel



"Group Name" field, then click "OK" to create a new I/O channel group.

(ICP DAS IoTstar		🖪 Alan(alan_jhu) ĐLogou
Remote Access Service		
Device Maintenance		
Data Display & Analysis	No Group Exist	
Dashboard Service	To add a new group, please click on Add New Group button.	
Real-Time I/O Data		
Real-Time Power Data		
Historical I/O Data		
Historical Power Data		
Historical Power Report		
Grouping Setting		
I/O Channel III		
Power Meter Loop		
System Information & Setting		
Account Maintenance		
Database & Event Setting		
	Add New Group	
	Group Name	
	OK Cancel	

Figure 9-2 Create I/O Channel Group

After creating a new I/O channel group, please click the [•] button in the Data Review/System Setting section on the IoTstar Webpage; and specify the desired I/O channel of the I/O module to add to the group. After completing the setting, click "OK" button to save the setting. In addition to adding I/O channels to the I/O channel group, IoTstar also provides the hierarchical group setting function. Based on the function, user can add other I/O channel groups to the selected I/O channel group to form a hierarchical grouping (parent group and child group) structure. It will be helpful for user to manage large amount of I/O channels. For the hierarchical group setting function, please refer to <u>9.3 Hierarchical Group Setting</u>.

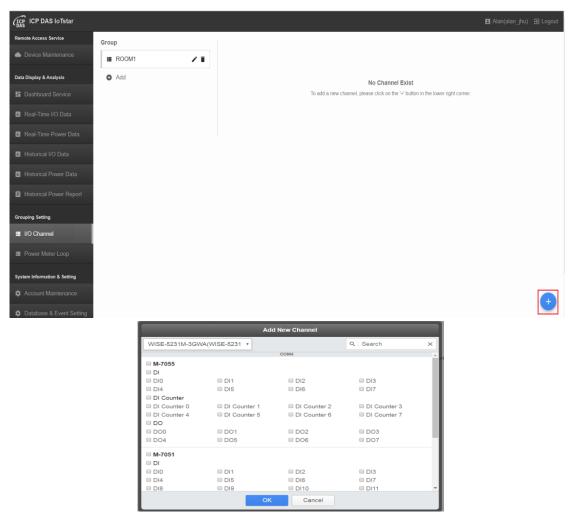


Figure 9-3 Add I/O Channel to Group

If required, user can click the ✓ button to edit the name of the I/O channel group, or click the 🛢 button to remove the I/O channel group.

Click on an I/O channel group on the I/O channel group list, all I/O channels that are included in the group will be displayed in the Data Review/System Setting section. If required, the user can also specify the I/O channel(s), and click the Remove the Channel button to remove the I/O channel(s) from the group or click the

button to cancel the remove operation.

	WISE-5231M-3GWA(W	WISE-5231M-3GWA(WISE-5231M-3GWA)					
<u>^</u>			COM3				
Sensor	PC Slave						
Add	Discrete Input 0	Discrete Input 1	Discrete Input 2	Discrete Input 3			
	Discrete Input 4						
	Coil Output 0	Coil Output 1	Coil Output 2	Coil Output 3			
	Coil Output 4						
	Input Register 0	Input Register 1	Input Register 2	Input Register 3			
	Input Register 4						
	Holding Register 0	Holding Register 1	Holding Register 2	Holding Register 3			
	Holding Register 4						

Figure 9-4 List of the I/O Channel

	WISE-5231M-3GWA(WISE-5231M-3GWA)							
sor 🖍 🔋	COM3							
	Discrete Input 0 Discrete Input 4	Discrete Input 1	Discrete Input 2	Discrete Input 3				
	Coil Output 0	Coil Output 1	Coil Output 2	Coil Output 3				
	 Input Register 0 Input Register 4 	Input Register 1	Input Register 2	🗏 Input Register 3				
	 Holding Register 0 Holding Register 4 	Holding Register 1	Holding Register 2	Holding Register 3				
	Holding Register 4	channel is selected.		Rer				

Figure 9-5 Remove I/O Channel from the I/O Channel Group

9.2 **Power Meter Loop Grouping Setting**

Click on the "Power Meter Loop" button in the "Grouping Setting" section on the "System Function" area of IoTstar Webpage; the list of power meter loop group will be shown in the Data Review/System Setting area. The power meter loop grouping function allows user to create groups that contain the loops of power meters for easy group classification. Users can create, edit and remove the power meter loop group. The power meter loop group setting page is shown as below:

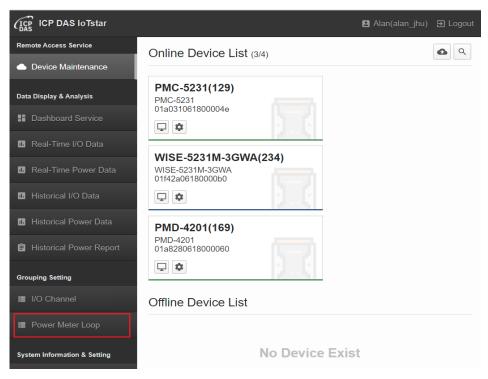


Figure 9-6 Grouping Setting for Power Meter Loop

Click the Add New Group button or • Add button; enter the group name in the

"Group Name" field, then click "OK" to create a new power meter loop group.

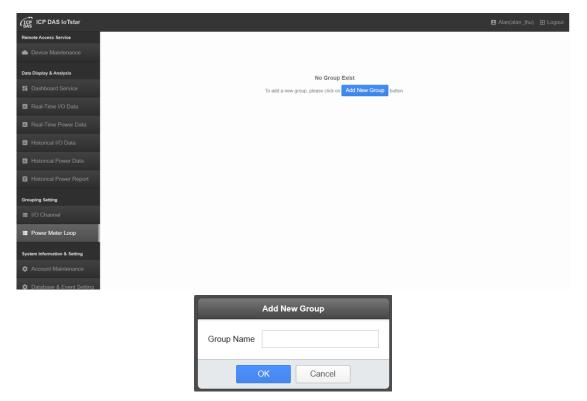
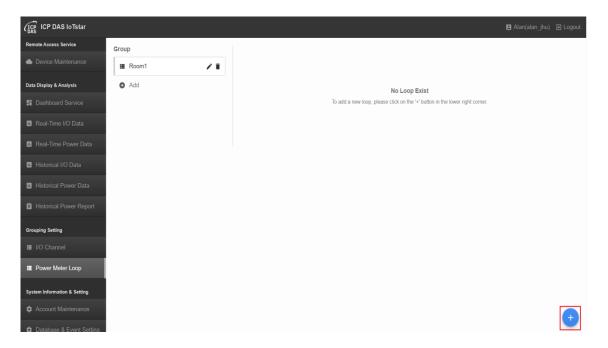


Figure 9-7 Create Power Meter Loop Group

After creating a new power meter loop group, please click the button in the Data Review/System Setting section on the IoTstar Webpage; and specify the desired Loop of the power meter to add to the group. After completing the setting, click "OK" button to save the setting. In addition to adding power meter loops to the power meter loop group, IoTstar also provides the hierarchical group setting function. Based on the function, user can add other power meter loop groups to the selected power meter loop group to form a hierarchical grouping (parent group and child group) structure. It will be helpful for user to manage large amount of power meter loops. For the hierarchical group setting function, please refer to 9.3 Hierarchical Group Setting.



Add	New Loop		
PMD-2201(PMD-2201)	✓ Q		×
C	:OM1		
□ICP DAS PM-3112(PM-3112) □Loop1	Loop2		Î
□ICP DAS PM-3112(PM-3112) □Loop1	Loop2		
□ ICP DAS PM-3114(PM-3114) □ Loop1 □ Loop2	Loop3	Loop4	
□ICP DAS PM-3112(PM-3112) □Loop1	Loop2		
□ ICP DAS PM-3114(PM-3114) □ Loop1 □ Loop2	Loop3	Loop4	
□ ICP DAS PM-3112(PM-3112) □ Loop1	□Loop2		~
ОК	Cancel		

Figure 9-8 Add Loop into the Power Meter Loop Group

If required, user can click the \checkmark button to edit the name of the power meter group, or click the \blacksquare button to delete the power meter group.

Click on a power meter group on the power meter group list, all power meter loops that are included in the group will be displayed in the Data Review/System Setting

section. If required, user can also specify the loop(s), and click the

button to remove the loop(s) from the group, or click the Back button to cancel the remove operation.

			COM1	
Production Line	ICP DAS PM-43	324(PM-4324)		
G Add	Loop1	Loop2	🗌 Loop3	Loop4
Add	□ Loop5	□ Loop6	Loop7	□Loop8
	CP DAS PM-43	324(PM-4324)		
	Loop1	Loop2	□ Loop3	Loop4
	Loop5	□Loop6	□Loop7	□Loop8
	PMD-2201(PMD-22	01)		
			COM1	
	ICP DAS PM-3* Loop1	112(PM-3112)	□Loop2	
	CP DAS PM-3	112(PM-3112)	Loop2	
	Loop1	114(PM-3114)	□Loop3	□Loop4
			□Loop3	□Loop4

Figure 9-9 List of the Power Meter Loop Group

Remove the Loop

Production Line Add		Loop2	Loop3						
D Add	Loop1	Loop2	U 10						
Add 🤇	□ Loop5		L Loop3	Loop4					
		□Loop6	🗌 Loop7	□ Loop8					
	□ ICP DAS PM-43	24(PM-4324)							
	Loop1	✓ Loop2	✓ Loop3	☑ Loop4					
	☑ Loop5	□ Loop6	☑ Loop7	☑ Loop8					
	PMD-2201(PMD-220)1)							
			COM1						
	ICP DAS PM-31	☑ ICP DAS PM-3112(PM-3112)							
	☑ Loop1	. ,	☑ Loop2						
	CP DAS PM-31	12(PM-3112)							
	Loop1		Loop2						
	CP DAS PM-31								
	Loop1	Loop2	🗌 Loop3	Loop4					

Figure 9-10 Remove Loop from the Power Meter Loop Group

9.3 Hierarchical Group Setting

In addition to the original function which add I/O channel (or power meter loop) to the I/O channel group (or power meter loop group), IoTstar v3.2.0 (and later versions) provides a new function of "Hierarchical Group Setting". The "Hierarchical Group Setting" function allow user to add the I/O channel groups (or power meter loop groups) to the selected group and become the child group of the selected group. By using the "Hierarchical Group Setting" function, it can help user systematically grouping and management a large amount I/O channels (or power meter loops).

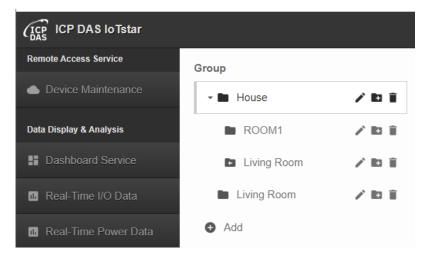
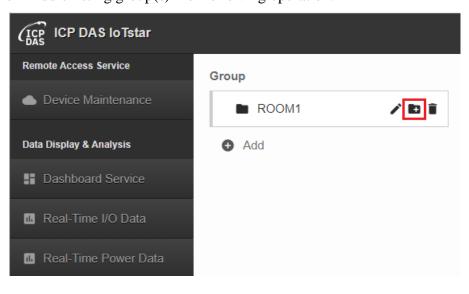


Figure 9-11 Example for Hierarchical Grouping

To add other groups (child group) to the selected group (parent group), please click the button behind the selected group (parent group), and then click "Create a new group" or "Add existing group(s)" for following operation.



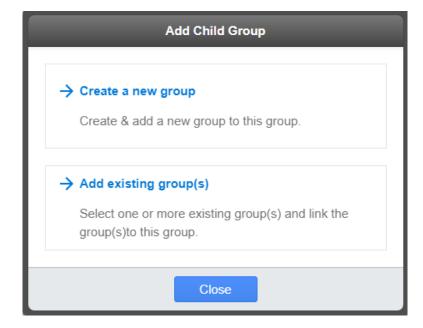


Figure 9-12 Add child group(s) to its parent group

• Create a new group

After click "Create a new group", please enter the "Group Name" for the new group and click the "OK" button to create a new group, and then the new group (child group) will be added to the selected group (parent group). Following user can click the ⁺ button at the bottom right of the page; and specify the desired I/O channels (or power meter loops) to add to the new group (child group). After completing all setting, click "OK" button to save the setting.

Please note: For the group created by "Create a new group", the mark in front of the group name is \square , and if the group is removed, all connections related to this group (through the operation of "Add existing group(s)") will also be removed.

	Add Nev	w Group
Group Name		
	OK	Cancel

• Add existing group(s)

After click "Add existing group(s)", please click the groups (child group) that you want to add to the selected group (parent group), and then click "OK" button to complete the setting. Now the group (child group) you specify will be add to the selected group (parent group).

Please note: The mark in front of the group name means the group is added to its parent group through the operation of "Add existing group(s)". Users can also change the content of the group through the the button at the bottom right of the web page.



If user want to change the related position of the group that is in the hierarchical grouping structure, he can use the mouse to click the selected group and drag it to the new position.

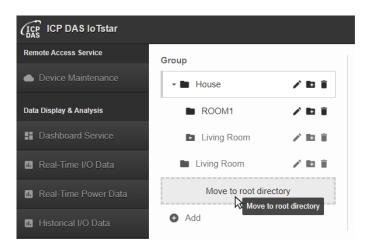


Figure 9-13 Change the position of the selected group

10 System Information & Setting

System Setting is used for the system information display and parameters setting. It includes 4 options: "Account Maintenance", "Database & Event Setting", "Event List" and "Database Table List". More detailed information for each option will be given in the following section.

10.1 Account Maintenance

Click on the "Account Maintenance" button in the "System Information & Setting" section on the "System Function" area of IoTstar Webpage; the Account Maintenance Setting page will be displayed as below:

(ICP DAS IoTstar	됨 Alan(alan_jhu) ⋺ Logou
Remote Access Service	Settings
 Device Maintenance 	
Data Display & Analysis	Password
Dashboard Service	*Current Password:
Real-Time I/O Data	*New Password:
Real-Time Power Data	*Retype New Password:
III Historical I/O Data	Submit
II. Historical Power Data	
🖨 Historical Power Report	Information
Grouping Setting	*Nickname: Alan
📰 I/O Channel	*Email: alan_jhu@icpdas.com
📰 Power Meter Loop	Company: ICP DAS
System Information & Setting	
Account Maintenance	Country / Region: Taiwan ~
Database & Event Setting	Submit
🜲 Event List 647	Device Share
Database Table List	
	Share the device to other account. However, the account shared the device is only authorized to inquire the I/O channel data or Power data that the device collected.
	Username Nickname Action
	No Sharing Account
	Username Add
	Bot Service
	The Bot Service feature lets you interact with your controller through the LINE app. The LINE accounts that allow interaction with your controller are listed below.
	Status ID . Nickname Action
	No LINE Account

Figure 10-1 Account Maintenance Setting Page

The Account Maintenance Setting page includes 4 options: "Password modification",

"Information modification", "Device Share" and "Bot Service".

• Password modification

Password modification allows user to change the password that is required when login IoTstar. The Password modification setting steps are as follow:

Password	
*Current Password:	
*New Password:	
*Retype New Password:	
	Submit

Figure 10-2 Password Modification Page

- I. Enter current password in the "current password" field.
- II. In the "New password" and "Retype New password" fields, enter the new password.
- III. Click "Submit" button to save the new password setting.

After completing the password modification, the user can use the new password to login IoTstar next time.

• Information modification

Information modification allows to change the personal information of the current login account. After user entering the Information modification page, IoTstar will read and display personal information of the current login account. The Information modification setting steps are as follow:

Information	
*Nickname:	iotstar_demo
*Email:	wayne_liu@icpdas.com
Company:	ICPDAS
Country / Region:	Taiwan
	Submit

Figure 10-3 Information Modification Page

- I. Enter the new Nickname in the "Nickname" field.
- II. In the "Email" field, enter the new Email address of the user account. Please Note: If the email address is changed, an email will be sent to the NEW email address with a link for verification, please click the link to complete the modification of the Email address.
- III. Enter the new Company name in the "Company" field.
- IV. Select the new Country/Region in the "Country/Region" field.
- V. Click "Submit" button to save the new personal information setting.
- Device Share

"Device Share" allows the current login user account to share the I/O channel data or Power data of the WISE / PMC / PMD controllers that he has the authority for maintenance/monitoring to others IoTstar user account. The account shared is only authorized to inquire the I/O channel data or Power data that the controller collected. Enter the Username of the account which you want to share information in the "Username" field; click the "Add" button to add the account shared, and then all accounts in the "Account Shared List" of the "Device Share" section are authorized to inquire the I/O channel data or Power data that the controller collected. Click the "Remove" button next to the account shared to stop the sharing.

Device Share				
Share the device to other account. However, the account shared the device is only authorized to inquire the I/O channel data or Power data that the device collected.				
Username	Nickname	Action		
No Sharing Account				
Username Add				
Device Share				
Share the device to other account. However, the account shared the device is only authorized to inquire the I/O channel data or Power data that the device collected.				
Username	Nickname	Action		
iotstar_share	iotstar_demo_share	Remove		
Username Add				

• Bot Service

Bot Service allows users to interact with WISE / PMC / PMD controllers connected with IoTstar through the LINE/Telegram App. For the function description, please refer to "ICP DAS IoTstar Bot Service for LINE User Manual" or "ICP DAS IoTstar Bot Service for Telegram User Manual".

10.2 Database & Event Setting

Click on the "Database & Event Setting" button in the "System Information & Setting" section on the "System Function" area of IoTstar Webpage; the Database & Event Setting page be displayed as below.

CICP ICP DAS IoTstar	🖪 Alan(alan_jhu) 🕤 Logout
Remote Access Service	Event Notification Setting
Device Maintenance	Check which event(s) below you want to receive via Email notification.
Data Display & Analysis	Events
Dashboard Service	✓ Insufficient database space.
15 Real-Time I/O Data	Change of the module settings.
III Real-Time Power Data	 Failed login attempt over 10 times.
Historical I/O Data	The device is offline.
Historical Power Data	Save
Historical Power Report	Import Data into the Database
Grouping Setting	Setup whether or not to import the I/O module data and power meter data into the database.
I/O Channel	 Real-Time Data Historical Data
Power Meter Loop	Save
System Information & Setting	
Account Maintenance	Clear Data in the Database
Database & Event Setting	All data of the modules and groups stored in the database will be removed and can not be recovered after the command is executed.
List 647	Password: Clear
Database Table List	

Figure 10-4 Database & Event Setting Page

The Database & Event Setting page includes 3 options: "Event Notification Setting", "Import Data into the Database", and "Clear Data in the Database".

• Event Notification Setting

"Event Notification" Setting allows IoTstar to actively send the Event Notification Email to the user. Check the Event to receive the corresponding Notification Email, and then click "Save" button to save the setting.

Event Notification Setting			
Check which event(s) below you want to receive via Email notification.			
Events			
✓ Insufficient database space.			
Change of the module settings.			
Failed login attempt over 10 times.			
The device is offline.			
Save			

Currently IoTstar provide the Event notification options as follow:

• Insufficient database space: IoTstar provides the following Event Notification Email sending for the status of "insufficient database space".

 \checkmark IoTstar will send a Notification Email to the user in advance when the usage of the database of the user account has reached 90% of the maximum size of database which be allocated to the user account.

 \checkmark When IoTstar wants to import I/O data into the user account's database, but the operation is failed. IoTstar will send a Notification Email to the user, and the error message will also be recorded in "Event List" section.

Change of the module settings: If an I/O module or Power Meter connected to the WISE / PMC / PMD is removed, the IoTstar will actively send an Event Notification Email to the user.

• Failed login attempt over 10 times: If your IoTstar account has been encountered the failed login attempt over 10 times, IoTstar will actively send an Event Notification Email to the user.

• The device is offline: If a WISE / PMC / PMD controller connected to IoTstar is in offline status, then IoTstar will actively send an Event Notification Email to the user.

• Import Data into the Database

"Import Data into the Database" setting allows user to setup whether or not to import the historical data or real-time data (I/O Module or Power data) of the WISE / PMC / PMD controllers into the database. Check the "Real-Time data" or "Historical data", and click the "Save" button to enable the function to import the I/O module data and power meter data into the database. Uncheck the "Real-Time data" and "Historical data", and click the "Save" button to disable the function and IoTstar will stop to import the I/O module data and power meter data into the Database.

Import Data into the Database
Setup whether or not to import the I/O module data and power meter data into the database.
 Real-Time Data Historical Data
Save

• Clear the Data in the Database

"Clear the Data in the Database" setting will remove all I/O module data and power meter data of the WISE / PMC / PMD stored in the database. This operation cannot be recovered after the command is executed. If the user wants to enable this function, please enter the password of the user account, and then click the "Clear" button to clear all data in the database.

Clear the Data in the Database			
All data of the modules and groups stored in the database will be removed and can not be recovered after the command is executed.			
Password		Clear	

After executing the "Clear the Data in the Database" command, the content of the database will be cleared. If the controller is in online status and the "Import to the Database" function is enabled at that time, the IoTstar will still keep on receiving the new I/O module data and power meter data of the controller, and import them into the

Database. If the controller is in offline status, the IoTstar will stop the data import operation.

10.3 Event List

Click on the "Event List" button in the "System Information & Setting" section on the "System Function" area of IoTstar Webpage; the list of system event information will be displayed as below. In the Event List, the event with Red background color is serious event need to react immediately. The event with Yellow background color is warning event and the event with White background color is general event.

(ICP DAS IoTstar		🖪 Alan(alan_jhu) 🛛 Logout
Remote Access Service	Event List	
 Device Maintenance 		
Data Display & Analysis	Time	Event The user login successfully from 192.168.100.27.
Dashboard Service	2021-02-18 11:12:52	The user login successfully from 192.168.100.181.
Real-Time I/O Data	2021-02-18 11:12:42	The user logout successfully from 192.168.100.181.
Real-Time Power Data	2021-02-18 09:54:36	The user login successfully from 192.168.100.27.
	2021-02-18 09:54:25	The user logout successfully from 192.168.100.27.
Historical I/O Data	2021-02-18 09:10:16	The user login successfully from 192.168.100.27.
16 Historical Power Data	2021-02-18 09:10:11	The user logout successfully from 192.168.100.27.
Historical Power Report	2021-02-18 08:37:34	The user login successfully from 192.168.100.27.
	2021-02-18 08:37:29	The user logout successfully from 192.168.100.27.
Grouping Setting	2021-02-18 08:30:04	The user login successfully from 192.168.100.27.
I/O Channel	2021-02-18 08:29:58	The user logout successfully from 192.168.100.27.
Power Meter Loop	2021-02-18 08:25:54	The user login successfully from 192.168.100.27.
	2021-02-18 08:24:10	The device PMD-4201 S/N:01a8280618000060 is online.
System Information & Setting	2021-02-18 08:24:05	The device PMC-5231 S/N:01a031061800004e is online.
🏟 Account Maintenance	2021-02-18 08:23:58	The device WISE-5231M-3GWA S/N:01f42a06180000b0 is online.
🏟 Database & Event Setting	2021-02-18 08:23:57	The device PMD-4201(PMD-4201(169)) S/N:01a8280618000060 is offline.
🜲 Event List 626	2021-02-18 08:23:57	The device WISE-5231M-3GWA(WISE-5231M-3GWA(234)) S/N:01f42a06180000b0 is offline.
 Database Table List 	2021-02-18 08:23:57	The device PMC-5231(PMC-5231(129)) S/N:01a031061800004e is offline.
	2021-02-18 07:30:51	The device PMC-5231 S/N:01a031061800004e is online.
	2021-02-18 07:30:48	The device PMD-4201 S/N:01a8280618000060 is online.
	1 2 3 4 5	5 ··· 37 > Export Clear

Figure 10-5 Event List Page

User can click the "Export" button on the right lower of "Event List" area to export the Event List logger file (*.CSV file format). User can also click the "Clear" button to enter the Clear Event window, then select the event type, and assign the time range to delete the content of the "Event List" user specify.

\wedge	Which event type do you want to clear?		
	System Event		
	Time Range		
	Older than 1 year V		
	OK Cancel		
	OK Cancel		

In the "Event List" area, the unread event will be shown in Bold character. The total number of unread events will be shown on the Event List button as below.

	Event Notification	Event Notification				
	Time	Event				
System Information & Setting	2017-05-10 10:26:13	The user login successfully from 192.168.100.176.				
	2017-05-10 10:26:04	The user logout successfully from 192.168.100.176.				
🌣 Account Maintenance	2017-05-10 10:10:25	The user login successfully from 192.168.100.176.				
	2017-05-10 10:03:35	The user logout successfully from 192.168.100.176.				
	2017-05-09 18:09:40	The user login successfully from 192.168.100.176.				
Catabase & Event Setting	2017-05-09 18:09:30	The user logout successfully from 192.168.100.176.				
	2017-05-09 16:50:52	The user login successfully from 192.168.100.176.				
🜲 Event List 🗧 💈	2017-05-09 15:34:13	The device PMD-2201 S/N:014504D515000043 is online.				
	2017-05-09 11:46:42	The user logout successfully from 192.168.100.176.				
Database Table List	2017-05-08 18:27:09	The user login successfully from 192.168.100.176.				
	2017-05-08 09:50:12	The database table of the module M-7005 UID:qdyf in the device PMD-2201(PMD-2201) S/N:0				

10.4 Database Table List

Click on the "Database Table List" button in the "System Information & Setting" section on the "System Function" area of IoTstar Webpage; the list of I/O module and power meter connected to WISE / PMC / PMD, and their corresponding Database Table for the I/O module and power meter will be displayed. The "Database Table List" is as below:

(ICP DAS loTstar				🖪 Alan(alan_	jhu) 🕣 Logout	
Remote Access Service	Device		PMC-5231(129)			
 Device Maintenance 	alan_jhu(Alan)	•	Module	Table Name	Action	
Data Display & Analysis	PMC-5231(129)		COM3			
Dashboard Service	😰 WISE-5231M-3GWA	Î	PM- 3033	uid_01a031061800004e_i8am	Clear	
Real-Time I/O Data	PMD-4201(169)	Î	PM- 3114	uid_01a031061800004e_r78a	Clear	
Real-Time Power Data			PM- 3112	uid_01a031061800004e_u1d8	Clear	
Historical I/O Data			LAN			
Historical Power Data			PM- 3133- MTCP	uid_01a031061800004e_ixc6	Clear	
Historical Power Report			Other			
Grouping Setting			Internal Register	uid_01a031061800004e_ir	Clear	
I/O Channel			Real- Time Data	uid_01a031061800004e_realtime	Clear	
Power Meter Loop			Duiu			
System Information & Setting		587.31	MB database	space used		
Account Maintenance						
Database & Event Setting						
🌲 Event List 634						
Database Table List						

Figure 10-6 Database Table List Page

The "Database Table List" includes 2 options: "Device List" and "Module List".

• Device List

The "Device List" section will list all WISE / PMC / PMD controllers that the user is authorized for maintenance/monitoring as well as the WISE / PMC / PMD controllers shared from other account. User can directly remove the WISE / PMC / PMD controllers (which he has the authority for maintenance/monitoring) by clicking the

button next to the controller's name. This action will remove all information of the removed controller.



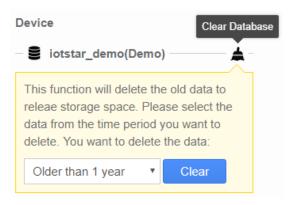
After removing the controller from the "Device List" successfully, the corresponding Database Table and data of the I/O module and power meter of the controller will all be removed. If the controller is in online status and "Import to the Database" function is enabled at that time, the IoTstar will create the new Database Table later, but will still keep on receiving the new I/O module data and power meter data of the controller, and import them into the Database. If the controller is in offline status, the IoTstar will not create the new Database Table, and stop the data import operation.

If the \triangle icon is shown next to the device (controller's) name, it means some I/O module or power meter connected to the controller has been removed, the content of the corresponding Database Table for the removed module will not be updated continuously. User can click the controller's name to review the module list of the controller, and directly remove the Database Table of the module.

In addition, IoTstar also provides the "Clear Database" and "Copy Data Table" operations for the database. Users can click the "Copy Data Table" button and "Clear Database" dutton on the right side of the IoTstar user account for the corresponding operation.

"Clear Database" doeration

After click the "Clear Database" button and select the time range of the data to be removed from the database. IoTstar will then launch the data remove operation for all WISE / PMC / PMD controllers that the user account is authorized for maintenance. This function will help IoTstar to delete the old data from the database to release space; so that when new data is imported into the database, it will not fail due to insufficient database space.



Please Note:

1. The "Clear Database" function will not remove the data of the WISE / PMC / PMD controllers shared from other user account.

2. The options of time range provided by the "Clear Database" function are "1 month ago", "3 months ago", "6 months ago", "1 year ago", "2 years ago" and "3 years ago".

"Copy Data Table"

The Database Table the IoTstar create for the historical I/O data and power data is based on the unit of the I/O modules and power meters connected to WISE / PMC / PMD. So each I/O module and power meter connected to WISE / PMC / PMD has the corresponding Database Table. The name of the Database Table of the historical data is in the format of "uid_SerialNumber_ModuleUID". The "SerialNumber" is a unique number for each WISE / PMC / PMD controller. The "ModuleUID" is the information for I/O module (or power meter) connected to WISE / PMC / PMD. Therefore, if the system requires to replace the old controller with a new one, and the contents of the database table of the I/O module (or power meter) connected to the old controller need to be copied to the database table of the I/O module (or power meter) connected to the new controller, please click the "Copy Database" button, then the system will displays the "Copy Data Table" interface as below. After complete the settings of "Source data table" and "Destination data table" and clicking the "Copy" button, the database table content of the I/O modules (or power meters) connected to the new controller.

Please Note: In the "Copy Data Table" interface, the model of the I/O module (or power meter) corresponding to the "Source data table" and the model of the I/O module (or power meter) corresponding to the "Destination data table" must be the same.

	Copy Data Table							
Source Destination								
Device	WISE-5236(新店)(012a4a06180 ▼		WISE-5236(新店)(012a4a06180	•				
COM3	DL-302	\rightarrow	DL-302	•				
	jijij	\rightarrow	jijij	•				
	tM-AD2	\rightarrow	tM-AD2	•				
LAN	PLC Idec	\rightarrow	PLC Idec	•				
	WISE-7126	\rightarrow	WISE-7126	•				
	humidity	\rightarrow	humidity	•				
XV-Board	XV107A	\rightarrow	XV107A	•				
	XV310	\rightarrow	XV310	•				
Other	Internal Register	\rightarrow	Internal Register	•				
▲ The model of the source and destination must be the same.								
Copy Close								

• Module List

Click on the name of the controller in the "Device List" section, the system will show

all modules connected to the controller and their corresponding Database Tables in the "Module List" section. It helps user to find the module's corresponding Database Table in an easy way. User can click the "Clear" button to clear the content of Database Table, or "Remove" button to remove the Database Table directly.

MC-5231-3GWA			
Module		Table Name	Action
COM3			
M-7002	A	uid_0123E90518000015_b4nc	Remove
PM-2133		uid_0123E90518000015_vxln	Clear
PM-3033		uid_0123E90518000015_nmbw	Clear
Other			
Internal Register		uid_0123E90518000015_ir	Clear

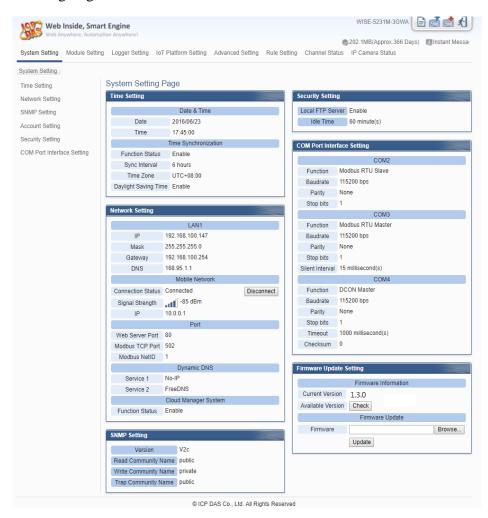
After clicking the "Clear" button in the "Action" field, the content of Database Table will be cleared directly. If the controller is in online status and "Import to the Database" function is enabled at that time, the IoTstar will still keep on receiving the new data of the module from controller, and import them into the Database Table. If the controller is in offline status, the IoTstar will stop the data import operation.

If the \triangle icon is shown next to the module's name, it means the module has been removed from the controller, and the corresponding Database Table of the module will not be updated continuously. User can click the "Remove" button in the "Action" field to remove the Database Table and the content of the Database Table of the module.

Appendix I WISE Connection setting for IoTstar

Please follow the steps below to complete the WISE's setting for the Network connection with the IoTstar.

I. Launch a Browser to open WISE's Web page. Login into the WISE and enter the System Setting Page.



II. Make sure the firmware version of the WISE-523x/WISE-224x is v1.5.1 or later version (WISE-284x must be v1.0.0 or later version; WISE-75xx must be v1.1.0 or later version). If the WISE does not install with the right firmware version, please update the firmware before taking the next step.

Firmware Update S		
	Firmware Information	
Current Version	1.5.1	
Available Version	Check	
	Firmware Update	
Firmware		Browse
	Update	

III. Click the "System Setting" button on the System function toolbar; then click the "Network Setting" button on the Sub-function area to enter the Network Setting Page.

Web Inside, Sma						WISE-5231M-3GWA	
Web Anywhere, Automa	ition Anywhere!					202.1MB(Approx.366 Day)	s) 🔳 Instant Mess
System Setting Module Setting	g Logger Setting IoT F	Platform Setting	Advanced Setting	Rule Setting	g Channel Stat	us IP Camera Status	
ystem Setting							
ime Setting	System Setting Pa	age					
letwork Setting	Time Setting				Security Setting	9	
SNMP Setting		Date & Time			Local FTP Ser	ver Enable	
Account Setting	Date	2016/06/23			Idle Time	60 minute(s)	
-	Time	17:45:00		14			
Security Setting		Time Synchroniza	tion		COM Port Inter	face Setting	
COM Port Interface Setting	Function Status	Enable					
	Sync Interval	6 hours				COM2	
	Time Zone	UTC+08:00			Function	Modbus RTU Slave	
	Daylight Saving Time	Enable			Baudrate	115200 bps	
					Parity	None	
	Network Setting				Stop bits	1	
	Network Setting					COM3	
		LAN1			Function	Modbus RTU Master	
		92.168.100.147			Baudrate	115200 bps	
	Mask 2	55.255.255.0			Parity	None	
	Gateway 1	92.168.100.254			Stop bits	1	
	DNS 1	68.95.1.1			Silent Interval	15 millisecond(s)	
		Mobile Network	¢			COM4	
	Connection Status	Connected	Discor	nect	Function	DCON Master	
	Signal Strength	-85 dBm			Baudrate	115200 bps	
		0.0.0.1			Parity	None	
		Port			Stop bits	1	
	Web Server Port 8				Timeout	1000 millisecond(s)	
	Modbus TCP Port 5				Checksum	0	
	Modbus NetID 1			L			
	Widdbus Netib	Dynamic DNS			Firmware Upda	to Sotting	
	Service 1	Io-IP			Firmware Opua	te setting	
		reeDNS				Firmware Information	
					Current Versio	on 1.5.1	
		Cloud Manager Sy	stem		Available Versi	on Check	
	Function Status E	inable				Firmware Update	
					Firmware		Browse
	SNMP Setting					Update	5104/36
	Version	V2c				opuate	
	Read Community Na	me public					
	Write Community Nar						
	Trap Community Nar	_					

IV. Visit "IoTstar Connection Setting" section, and click "Enable" of the "Function Status" to enable the network connection to the ICP DAS IoTstar.

IoTstar Connection Setting							
	Function Status	Enable					

V. Select "User-defined IP address" and in the "Server Address" field, input the IP address or Domain Name of the PC or Platform (with IoTstar installed). Enter the login username and password in the "Username" and "Password" fields. WISE will login to the IoTstar by the information provided.

Please Note : The "OICP DAS Trial Service - Create Account " is currently disabled and the function is reserved. Please do not click on this option.

loTstar	Connectio	on Setting
Fur	nction Status	✓ Enable
*Sei	rver Address	ICP DAS Trial Service - Create Account Specify an address of server
	*Username	
	*Password	
Conne	ection Status	Disable
		Save

VI. After all settings are completed, click "Save" button to save the changes. This WISE will connect to the IoTstar immediately. The users can review the current connection status between WISE and IoTstar through the information displayed in the "Connection Status" field.

IoTstar Connectio	on Setting				
Function Status	✓ Enable				
*Server Address	ICP DAS Trial Service - Create Account 192.168.100.252				
*Username	wayne1				
*Password	•••••				
Connection Status	Connected.				
	Save				

VII. If the "Connection status" field shows the "Connected" message, it means the connection between the WISE controller and IoTstar is in normal status. The authorized users now can login to the IoTstar (with the username and password set in "Step V") to perform remote monitoring and maintenance of the WISE.

Appendix II Enable "Data Upload Operation" from WISE to IoTstar

IoTstar can receive the historical I/O data and real-time I/O data uploaded by WISE, and import these data into the database it created. In addition, IoTstar can also receive the snapshots or video files captured by iCAM cameras uploaded by WISE. Please refer to the following steps to complete the setting for the data upload and storage operations of WISE and IoTstar.

- Setting of WISE
- IoTstar Historical Data Sending Setting

I. Launch a Browser to open WISE's Web page. Login into the WISE and enter the

System Setting Page.

	nside, Smart						WISE-5231M-3GWA	= 🖾 🖾 🕄
Web Anyo	where, Automati	on Anywhere!					202.1MB(Approx.366 Days)	Instant Messa
System Setting	Module Setting	Logger Setting	oT Platform Setting	Advanced Set	ting Rule Setting	g Channel Stat	tus IP Camera Status	
Dustan Ostina								
System Setting		Custom Catting	Deee					
Time Setting		System Setting	Page					
Network Setting		Time Setting				Security Setting	9	
SNMP Setting			Date & Time	9		Local FTP Ser		
Account Setting		Date	2016/06/23			Idle Time	60 minute(s)	
Security Setting		Time	17:45:00					
COM Port Interface	e Setting	Function Status	Time Synchroniz Enable	ation		COM Port Inter	face Setting	
		Sync Interval	6 hours				COM2	
		Time Zone	UTC+08:00			Function	Modbus RTU Slave	
		Daylight Saving T				Baudrate	115200 bps	
						Parity	None	
		Network Setting				Stop bits	1	
		Network Setting					COM3	
			LAN1			Function	Modbus RTU Master	
		IP	192.168.100.147			Baudrate	115200 bps	
		Mask	255.255.255.0			Parity	None	
		Gateway	192.168.100.254			Stop bits	1	
		DNS	168.95.1.1			Silent Interval	15 millisecond(s)	
			Mobile Netwo	_		Function	COM4 DCON Master	
		Connection Status		L	lisconnect	Baudrate	115200 bps	
		Signal Strength	-85 dBm			Parity	None	
		IP	10.0.0.1			Stop bits	1	
			Port			Timeout	1000 millisecond(s)	
		Web Server Port				Checksum	0	
		Modbus TCP Port Modbus NetID	1			Chicolican	-	
		Wodbus Netito	Dynamic DN	c		Firmware Upda	to Sotting	
		Service 1	No-IP	0		Timiware Opua	-	
		Service 1 Service 2	FreeDNS				Firmware Information	
		0011100 2	Cloud Manager S	vstem		Current Versio		
		Function Status	Enable			Available Vers		
							Firmware Update	
		SNMP Setting				Firmware		Browse
			1/2-				Update	
		Version	V2c					
		Read Community						
		Write Community Trap Community						
		Trap Community	Name public					

II. Refer to the instructions in Appendix I to confirm the connection between WISE

and IoTstar is in normal status.

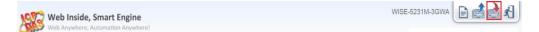
III. Click on "IoT Platform Setting" at the top of the WISE web page, and then click the "Historical Data Sending Setting" button under the "IoTstar Setting" section on the left to enter the "Historical Data Sending Setting" page.

IV. To enable the WISE's Historical I/O data upload operation; check "Enable" to enable the Historical I/O data files upload function.

Note: Please enable the WISE's Data Logger function first. About the setting of WISE's Data Logger function, please refer to the "7.1 I/O Module Data Logger Setting" section of WISE-523x/WISE-224x User Manual.

Historical Data Sending Setting Page					
Function Status	Enable You need to enable the 'I/O Module Data Logger' function to use this function.				
	Save				

V. After all settings are completed, click "Save" button to save the setting, and then click the a "Save" button on the right upper of WISE Web page to save all parameter settings to WISE, then WISE will enable the corresponding mechanisms, and send I/O channel data to the IoTstar.



Real-Time Data Sending Setting

I. Launch a Browser to open WISE's Web page. Login into the WISE and enter the System Setting Page.

II. Refer to the instructions in Appendix I to confirm the connection between WISE and IoTstar is in normal status.

III. Click on "IoT Platform Setting" at the top of the WISE web page, and then click

the "Real-Time Data Sending Setting" button under the "IoTstar Setting" section on the left to enter the "Real-Time Data Sending Setting" page.

IV. In the "Function Status" field, check "Enable" to enable the Real-Time I/O data upload function.

Real-Time Data Sending Setting Page						
Function Status	✓ Enable					

V. In the "Add Channel" section, select the "Interface", "Module" and "Channel" from the dropdown list and click "Insert" to add the I/O channel into the "Channel List" section. User can select "All" in "Channel" field to insert all I/O channels of the module at once.

Add Channel	
Interface	COM3 •
Module	DL-100(5:H/T Meter) ▼
Channel	AI T Ch. All
	Insert

VI. WISE will actively send the Real-Time I/O channel data which is located in the "Channel List" section to IoTstar. User can modify the database field name of the I/O channel data in the "*Name" field. To remove a pre-set I/O channel, please click the radio button in front of the pre-set I/O channel and then click "Remove" button.

1. The name inputted in the "*Name" field must be a unique name.

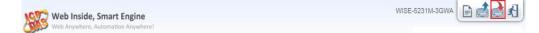
2. The name set in the "*Name" field will be saved in the "Name" field of the Real-Time Database Table that WISE creates (Please refer to Appendix VIII). These names can be used later for further query operations of the Database.

Please Note:

	ha	-	~	L ia	4
-	ha	nn	eı	LIS	51

	Channel	*Name		
0	COM3 DL-100(5:H/T Meter) Humidity(RH)	COM3-N2-AI0		
0	COM3 DL-100(5:H/T Meter) Temperature(°C)(°C)	COM3-N2-AI1		
۲	COM3 DL-100(5:H/T Meter) Temperature(°F)(°F)	COM3-N2-AI2		

VII. After all settings are completed, click "Save" button to save the setting, and then click the a "Save" button on the right upper of WISE Web page to save all parameter settings to WISE, then WISE will enable the corresponding mechanisms, and send I/O channel data to the IoTstar.



- Video data Sending Setting
- I. Launch a Browser to open WISE's Web page. Login into the WISE and enter the System Setting Page.
- II. Refer to the instructions in Appendix I to confirm the connection between WISE and IoTstar is in normal status.
- III. Click on "IoT Platform Setting" at the top of the WISE web page, and then click the "Video Data Sending Setting" button under the "IoTstar Setting" section on the left to enter the "Video Data Sending Setting" page.
- IV. To select the data resource for image/video data sending, click on the radio button of the file source, and click the "Setting" button to enter the setting page.

Video Data Sending Setting Page				IP Camera	Sendbox	CGI Server
	Source	Function Status	Content of Attached Me	ssage		
۲	iCAM-721F (1.2.3.4:80)	Disable				
0	iCAM-MR6322 (4.3.2.1:80)	Disable				
0	iCAM-MR6322 (4.4.4.4:80)	Disable				
0	iCAM-ZMR8422X (5.5.5.5:80)	Disable				
Setting						
			Save			

V. Check the "Enable" function, and then the message setting interface will be shown as below. Enter the message content in the "Content of Attached Message" field. This message will be sent to IoTstar along with the image/video file and displayed on the IoTstar. Click the "OK" button to save the setting.

Function Status	✓Enable
*Content of Attached Message	View Edit Warning, a moving object is detected!
	Interface XV-Board Module XV308 Channel DI Ch. 1 Insert The image will be sent with this message.
Bot Service	✓Forward to Bot Service

- OK Cancel
- VI. After all settings are completed, click "Save" button to save the setting, and then click the 🚵 "Save" button on the right upper of WISE Web page to save all

parameter settings to WISE, then WISE will enable the corresponding mechanisms, and send video data to the IoTstar.

Web Inside, Smart Engine WISE-5231M-3GWA 📄 🚵 🛃

• Setting of IoTstar

I. Launch a Browser to open IoTstar's Web page. Login into the IoTstar and enter the IoTstar home page.

II. Click on the "Database & Event Setting" button on the "System Information &Setting" section; the "Database & Event Setting" page will be displayed as below.

(ICP DAS IoTstar	🖪 Alan(alan_jhu) 쥔 Logout				
Remote Access Service	Event Notification Setting				
 Device Maintenance 	Check which event(s) below you want to receive via Email notification.				
Data Display & Analysis	Events				
Dashboard Service	✓ Insufficient database space.				
Real-Time I/O Data	✓ Change of the module settings.				
Real-Time Power Data	Second Failed login attempt over 10 times.				
Historical I/O Data	The device is offline.				
_	Save				
III Historical Power Data					
Historical Power Report Import Data into the Database					
Grouping Setting	Setup whether or not to import the I/O module data and power meter data into the database.				
I/O Channel	✓ Real-Time Data				
Power Meter Loop					
System Information & Setting	Save				
Account Maintenance	Clear Data in the Database				
Database & Event Setting	All data of the modules and groups stored in the database will be removed and can not be recovered after the command is executed.				
List 634	Password: Clear				
Database Table List					

III. Check the "Real-Time data" or "Historical data", and click the "Save" button to enable the functions to import the I/O data into the database.

Import Data into the Database				
Setup whether or not to import the I/O module data and power meter data into the database	e.			
Real-Time Data				
✓ Historical Data				
Save				

IV. After the functions are enabled, the IoTstar will start to receive the Historical I/O data log files or Real-time I/O data that are uploaded from WISE, and will import them into the Database. Uncheck the "Real-Time data" or "Historical data", and click the "Save" button will disable the functions and IoTstar will stop to import the I/O data into Database.

Appendix III PMC / PMD Connection setting for IoTstar

Please follow the steps below to complete the PMC / PMD's setting for the Network connection with the IoTstar.

I. Launch a Browser to open PMC / PMD's Web page. Login into the PMC / PMD and enter the System Setting Page.



II. Make sure the firmware version of the PMC-523x/PMC-224x/PMD is v3.4.7 or later version (The PMC-284x must be v1.0.0 or later version). If the PMC / PMD does not install with the right firmware version, please update the firmware before taking the next step.

Firmware Update Setting			
Firmware Information			
Current Version	3.4.7		
Available Version	Check		
Firm	nware Update		
Firmware	Browse		
	Update		

III. Click the "System Setting" button on the System function toolbar; then click the "Network Setting" button on the Sub-function area to enter the Network Setting Page.

New Power Monitoring 8	Management Solution	PMD-2201(新店) 📄 🛃 🕏
ICP DAS Co., Ltd.		55.7MB(Approx.2 Days)
Main Page System Setting	Meter / Module Setting Logger Setting IoT Platfo	orm Setting Advanced Setting Rules Setting
System Setting		
Time Setting	System Setting Page	
Network Setting	Time Setting	I/O Interface Setting
SNMP Setting	Date & Time	COM1
Security Setting	Date 2017/11/03	Function Modbus RTU Master
	Time 09:05:14	Baudrate 115200 bps
O Interface Setting	Time Synchronization	Parity None
Other Setting	Function Status Enable	Stop bits 1
ower Meter Group Setting	Sync Interval 6 hours	Silent Interval 100 millisecond(s)
	Time Zone UTC+08:00	COM2
	Daylight Saving Time Disable	Function Modbus RTU Master
		Baudrate 115200 bps
	Network Setting	Parity None
	LAN1	Stop bits 1
	IP 192,168,100,93	Silent Interval 100 millisecond(s)
	Mask 255.255.255.0	LAN
	Gateway 192.168.100.254	Function Modbus TCP Master Modbus TCP Slave
	DNS 8.8.8.8	
	MAC Address 00-0D-E0-18-27-87	Other Setting
	Port	Outer Seturing
	Web Server Port 80	Contract Capacity
	Modbus TCP Port 502	Function Status Disable
	Modbus NetID 1	Demand Interval
	Cloud Manager System	Calculation Interval Every 15 minutes
	Function Status Enable	Carbon Footprint
		Factor 0.612
	SNMP Setting	Firmware Update Setting
	Version V2c	Firmware Information
	Read Community Name public	Current Version 3.4.7
	Write Community Name private	Available Version Check
	Trap Community Name public	Firmware Update
	Security Setting	Firmware Browse
	Local FTP Server Enable	Update
	Idle Time 10 minute(s)	
	To minuce(3)	

IV. Visit "IoTstar Connection Setting" section, and click "Enable" of the "Function

Status" to enable the network connection to the ICP DAS IoTstar.

IoTstar Connection Setting			
	Function Status	Enable	
			Save

V. Select "User-defined IP address" and in the "Server Address" field, input the IP address or Domain Name of the PC or Platform (with IoTstar installed). Enter the username and password of the account applied from the user's IoTstar in the "Username" and "Password" fields. PMC / PMD will login into the IoTstar by the information provided.

Please Note : The " OICP DAS Trial Service - Create Account " is currently disabled and the

function is reserved. Please do not click on this option.

IoTstar Connection Setting			
Function Status	C Enable		
*Server Address	ICP DAS Trial Service - Create Account		
Server Address	Specify an address of server		
*Username	alan_jhu		
*Password			
Connection Status	-		
Save			

VI. After all settings are completed, click "Save" button to save the changes. This PMC / PMD will connect to the IoTstar immediately. The users can review the current connection status between PMC / PMD and IoTstar through the information displayed in the "Connection Status" field.

IoTstar Connection Setting			
Function Status	✓ Enable		
*Server Address	ICP DAS Trial Service - Create Account Specify an address of server		
*Username	alan_jhu		
*Password	•••••		
Connection Status	Connected		
Save			

VII. If the "Connection status" field shows the "Connected" message, it means the connection between the PMC / PMD and IoTstar is in normal status. The authorized users now can login into the IoTstar (with the username and password set in "Step V") to perform remote monitoring and maintenance of the PMC / PMD.

Appendix IV Enable "Data Upload Operation" from PMC/PMD to IoTstar

IoTstar can receive the history power data (and I/O data) and real-time power data (and I/O data) uploaded by PMC / PMD, and import these data into the database it created. Please refer to the following steps to complete the setting for the power meters (and I/O modules) data upload and database import operation of PMC / PMD and IoTstar.

- Setting of PMC / PMD
- Historical Data Sending Setting

I. Launch a Browser to open PMC / PMD's Web page. Login into the PMC / PMD and enter the System Setting Page.



II. Refer to the instructions in Appendix III to confirm the connection status between PMC / PMD and IoTstar is in normal status.

III. Click on "IoT Platform Setting" at the top of the PMC / PMD web page, and then click the "Historical Data Sending Setting" button under the "IoTstar Setting" section on the left to enter the "Historical Data Sending Setting" page.

IV. To enable the PMC / PMD's Historical data upload operation; check "Enable" to enable the data file upload function and select the type of data log file you would like to upload.

V. Please enable the PMC / PMD's Data Logger function first. About the setting of PMC / PMD's Data Logger function, please refer to the "8.1 Data Logger Setting" section of PMC-523x/PMC-224x/PMD User Manual.

Historical Data Sending Setting Page				
	Function Status	Enable		
	Sending Type	✓ Power Data ✓ I/O Channel Da You need to enable the second s	ta le 'Data Logger' function to use this function.	
Save				

VI. After all settings are completed, click "Save" button to save the setting, and then click the save" button on the right upper of PMC / PMD Web page to save all parameter settings to PMC / PMD, then PMC / PMD will enable the corresponding mechanisms, and send I/O channel data to the IoTstar.

Power Monitoring & Management Solution ICP DAS Co., Ltd.	PMC-5236M-4GE	E 🖆 🛃
ICP DAS Co., Ltd.		

Real-Time Data Sending Setting

I. Launch a Browser to open PMC / PMD's Web page. Login into the PMC / PMD and enter the System Setting Page.

II. Refer to the instructions in Appendix III to confirm the connection status between PMC / PMD and IoTstar is in normal status.

III. Click on "IoT Platform Setting" at the top of the PMC / PMD web page, and then click the "Real-Time Data Sending Setting" button under the "IoTstar Setting" section on the left to enter the "Real-Time Data Sending Setting" page.

IV. In the "Function Status" field, check "Enable" to enable the PMC / PMD's Real-Time power data and I/O data upload operation.

Real-Time Data S	ending Setting Page
Function Status	✓ Enable

V. In the "Add Channel" section, select the "Interface", "Module" and "Channel" from the dropdown list and click "Insert" to add the power meter loop or I/O channel into the "Channel List" section. User can select "All" in "Channel" field to insert all power meter loops and I/O channels of the power meter or I/O module at once.

Add Channel	
Interface	COM3 •
Module	PM-4324(4) •
Channel	CT1 Info. V V
	Insert

VI. PMC / PMD will actively send the Real-Time power data and I/O data which is located in the "Channel List" section to IoTstar. User can modify the database field name of the power data (or I/O channel data) in the "*Name" field. To remove a pre-set power meter loop or I/O channel, please click the radio button in front of the pre-set power meter loop or I/O channel and then click "Remove" button.

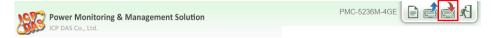
Please Note:

1. The name inputted in the "*Name" field must be a unique name.

2. The name set in the "*Name" field will be saved in the "Name" field of the Real-Time Database Table that IoTstar creates for the PMC / PMD (Please refer to Appendix VIII). These names can be used later for further query operations of the Database.

Char	nnel List	
	Channel	*Name
0	COM3 PM-3112(1) CT1 V	COM3-N1-CT1-V
0	COM3 PM-3112(1) CT1 V	COM3-N1-CT1-V
0	COM3 PM-3133(3) Phase A V	COM3-N3-PHASEA-V
۲	COM3 PM-4324(4) Submeter1 CT1 V	COM3-N4-SUB1-CT1-V

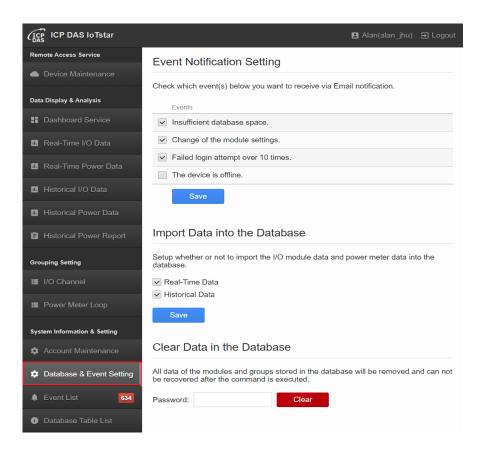
VII. After all settings are completed, click "Save" button to save the setting, and then click the Save" button on the right upper of PMC / PMD Web page to save all parameter settings to PMC / PMD, then PMC / PMD will enable the corresponding mechanisms, and send I/O channel data to the IoTstar.



• Setting of IoTstar

I. Launch a Browser to open IoTstar's Web page. Login into the IoTstar and enter the IoTstar home page.

II. Click on the "Database & Event Setting" button on the "System Information &Setting" section; the "Database & Event Setting" page will be displayed as below.



III. Check the "Real-Time data" or "Historical data", and click the "Save" button to enable the functions to import the data into the database.



IV. After the functions are enabled, the IoTstar will start to receive the historical data or Real-time data that are uploaded from PMC / PMD, and will import them into the Database. Uncheck the "Real-Time data" or "Historical data", and click the "Save" button will disable the functions and IoTstar will stop to import the data into Database.

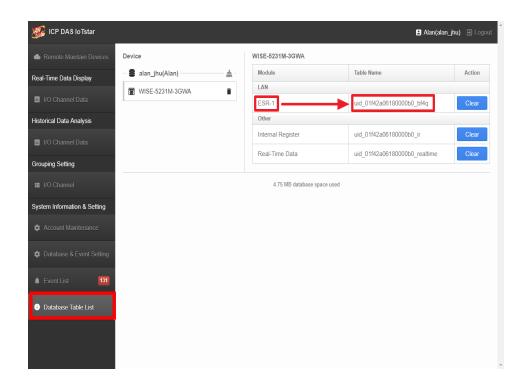
Appendix V Format of Historical Data in Microsoft SQL Server

After both the historical I/O data and power data upload function of WISE / PMC / PMD and the database import function of IoTstar are enabled, IoTstar will start to receive the historical I/O data and power data log files uploaded by WISE / PMC / PMD and import the content of the data files into the Database. The frequency of the upload operation of the historical I/O data and power data log files from WISE / PMC / PMD to IoTstar is per 5 minutes. User can disable the database import function to stop the database import operation of the historical data.

The Database Table the IoTstar create for the historical I/O data and power data is based on the unit of the I/O modules and power meters connected to WISE / PMC / PMD. So each I/O module and power meter connected to WISE / PMC / PMD has a corresponding Database Table. The format of the Database Table of the historical data is as follow:

• The format of historical I/O data in Database

> To show the Database Table corresponding to the I/O module (or power meter) connected to WISE / PMC / PMD, please click on the "Database Table List" button on the "System Information & Setting" section of IoTstar Webpage; the list of I/O modules (or power meters) connected to WISE / PMC / PMD and the name of the corresponding Database Table of the I/O module (or power meters) will then be displayed. The name of the Database Table of the historical data is in the format of "uid_SerialNumber_ModuleUID". "SerialNumber" is the unique number for each WISE / PMC / PMD controller. " ModuleUID" is the information for I/O module (or power meter) connected to WISE / PMC / PMD. Please refer to the following as an example:

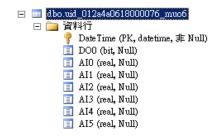


➤ The fields of the Database Table are arranged in the order of "DateTime (Data recording time), I/O Channel (listed by type: DI, DO, AI, AO)". Please refer to the following as an example. The total number of the fields in the Database Table will be different depending on the type of I/O module. For the data type of I/O channel, please refer to the following:

☆ The data type of DIx (DI channel), DOx (DO channel), CIx (Discrete input) and COx (Coil output) is "bit".

☆ The data type of AIx (AI channel), AOx (AO channel), RIx (Input Register), ROx (Holding Register) and IRx (Internal Register) is "real".

 \diamond The data type of DICx (DI channel Counter) and DOCx (DO channel Counter) is "bigint".



∻

Following is an example of the historical Database Table of the I/O module.

Date Time	DOO	AIO	AI1	AI2	AI3	AI4	AI5
2018-07-02 17:37:00.000	0	673	56.09	26.91	80.43	17.41	63.33
2018-07-02 17:38:00.000	0	674	55.99	26.92	80.45	17.39	63.3
2018-07-02 17:39:00.000	0	674	55.82	26.94	80.49	17.36	63.24
2018-07-02 17:40:00.000	0	671	55.61	26.93	80.47	17.29	63.12
2018-07-02 17:41:00.000	0	670	55.39	26.89	80.4	17.19	62.94
2018-07-02 17:42:00.000	0	669	55.24	26.85	80.33	17.11	62.79
2018-07-02 17:43:00.000	0	669	55.06	26.83	80.29	17.04	62.67
2018-07-02 17:45:00.000	0	667	54.85	26.73	80.11	16.89	62.4
2018-07-02 17:46:00.000	0	667	54.63	26.68	80.02	16.78	62.2
2018-07-02 17:47:00.000	0	667	54.73	26.64	79.95	16.77	62.18

• The format of historical power data in Database

> To show the Database Table corresponding to the power meter connected to PMC / PMD, please click on the "Database Table List" button on the "System Information & Setting" section of IoTstar Webpage; the list of power meter connected to PMC / PMD and the name of the corresponding Database Table of the power meter will then be displayed. Please refer following as an example:

K ICP DAS loTstar			😫 Demo(iotstar_de	mo) 🕣 Logou
 Remote Maintain Devices 	Device	PMC-5231(新)	吉)	
Real-Time Data Display	- Siotstar_demo(Demo)	Module	Table Name	Action
I/O Channel Data	I PMC-5231(新店) A	COM3		
	Tim_Test	PM-3033	uid_01c21c06180000f7_ocrx	Clear
B Power Data	I WISE-5231M-展会	PM-3133	uid_01c21c06180000f7_yh66	Clear
Historical Data Analysis	Tim Test	PM-3112	uid_01c21c06180000f7_rz1e	Clear
		PM-3114	uid_01c21c06180000f7_vber	Clear
I/O Channel Data	📓 WISE-Wellracom-Indonesia 🔺	PM-4324	uid_01c21c06180000f7_ys7w	Clear
B Power Data	😰 Tim_Test	÷		
	😰 Tim_Test			
Power Report	😰 Tim_Test			
Frouping Setting	😰 Tim_Test			
I/O Channel	I PMD-2201(新店)			
Power Meter Loop	I WISE-5231(新店)			
Power Meter Loop		•		
system Information & Setting	- 🛢 icpdas(ICP DAS)			
Account Maintenance	I ML PANEL(湖口總公司)			
	I MP2 PANEL(湖口總公司)			
Database & Event Setting	I PMC_03(湖口總公司)			
🜲 Event List 513				
	6.0	6 GB (66%) of 10.0 GB datab	base space used	
 Database Table List 				

> The fields of the Database Table are arranged in the order of "DateTime (Data recording time), Loop, Phase, Power Data". Please refer to the following as an

example. The total number of the fields in the Database Table will be different depending on the type of power meter.



Please Note:

 The fields of "Power Data" in the Database Table include the items as V, I, KW, KVAR, KVA, PF, KWH, KVARH, KVAH, TotalKWH, Demand and DeltaTotalKWH.
 The data type is "float".

2. The setting of "Loop" and "Phase" fields for the Single-Phase power meter are as below. The data type is "tinyint".

Phase=1;

Loop=1(Loop1) / 2(Loop2) / 3(Loop3) or 4(Loop4);

3. The setting of "Loop" and "Phase" fields for the Three-Phase power meter are as below. The data type is "tinyint".

Phase=1(Phase A) / 2(Phase B) / 3(Phase C) or 4(Total/Average);

Loop=1;

Following is an example of the Database Table of the Single-Phase power meter.

Date Time	Loop	Phase	V	Ι	KW	KVAR	KVA	PF	KWH	KVARH	KVAH	TotalK WH	Demand	DeltaTotalK WH
2018-07-02 17:37:00.000	1	1	108.2254	43.15078	4.305416	1.791282	4.669908	0.9220997	311.6591	112.2224	331.3458	75.38925	4.327881	0.07434082
2018-07-02 17:37:00.000	2	1	108.2254	31.65001	3.217044	1.149993	3.425507	0.9392473	236.3537	85.54285	251.4235	57.1683	3.287842	0.05705261
2018-07-02 17:37:00.000	3	1	107.6251	52.13065	5.278157	1.864834	5.611673	0.9409559	381.8143	138.2642	406.1833	92.3529	5.325317	0.0925293
2018-07-02 17:37:00.000	4	1	107.6251	22.46969	2.263612	0.841252	2.417825	0.9363443	162.362	58.79002	172.7234	39.2797	2.263367	0.03973389
2018-07-02 17:38:00.000	1	1	107.9024	42.79379	4.290934	1.688034	4.617733	0.92903	311.7335	112.252	331.4259	75.46359	4.328638	0.074646
2018-07-02 17:38:00.000	2	1	107.9024	32.64227	3.27278	1.274346	3.522168	0.9297242	236.4108	85.56282	251.4842	57.22535	3.287019	0.05783081
2018-07-02 17:38:00.000	3	1	108.3073	51.4741	5.241315	1.854267	5.574574	0.9404389	381.9068	138.2975	406.2819	92.44543	5.327451	0.09295654
2018-07-02 17:38:00.000	4	1	108.3073	23.33362	2.371359	0.8677974	2.527929	0.9380841	162.4017	58.80378	172.7656	39.31944	2.263588	0.03977966
2018-07-02 17:39:00.000	1	1	108.0131	42.39548	4.282682	1.603083	4.579183	0.935204	311.8081	112.2798	331.5057	75.53824	4.333101	0.06695557
2018-07-02 17:39:00.000	2	1	108.0131	32.85199	3.348092	1.150439	3.548589	0.9436507	236.4686	85.58226	251.5453	57.28318	3.291178	0.05015564

Following is an example of the Database Table of the Three-Phase power meter.

DateTime	Loop	Phase	A	I	K₩	KVAR	KVA	PF	KWH	KVARH	KVAH	TotalK WH	Demand	DeltaTotalK WH
2018-07-02 17:37:00.000	1	1	106.2663	157.6436	16.13437	4.372093	16.75173	0.9629701	1144.354	412.2841	1216.714	276.8288	15.9083	0.2728271
2018-07-02 17:37:00.000	1	2	86.13081	120.2396	9.683695	3.619991	10.35655	0.9351036	694.2592	251.3808	738.557	167.9618	9.61144	0.1698608
2018-07-02 17:37:00.000	1	3	126.1374	199.9745	24.0762	7.366921	25.22384	0.9542505	1704.404	617.2196	1813.188	412.4152	23.70737	0.4162598
2018-07-02 17:37:00.000	1	4	106.1782	159.2859	48.24508	15.54225	50.73822	0.9507748	3434.082	1243.385	3652.561	830.832	47.69099	0.8320313
2018-07-02 17:38:00.000	1	1	106.0209	164.2822	16.23845	6.239208	17.41921	0.9317431	1144.627	412.3924	1217.008	277.1016	15.92025	0.2546387
2018-07-02 17:38:00.000	1	2	85.46117	121.3305	9.779465	3.392461	10.36892	0.9433134	694.429	251.4404	738.7374	168.1316	9.640043	0.1536865
2018-07-02 17:38:00.000	1	3	126.4842	205.1121	24.44427	8.375932	25.94365	0.9424259	1704.821	617.3588	1813.629	412.8315	23.78387	0.3780518
2018-07-02 17:38:00.000	1	4	105.9887	163.575	48.84912	17.66418	52.01149	0.9391608	3434.914	1243.69	3653.448	831.664	47.79996	0.7612305
2018-07-02 17:39:00.000	1	1	106.0027	160.9817	16.0403	5.756826	17.0668	0.9405341	1144.881	412.486	1217.28	277.3562	15.91699	0.2674561
2018-07-02 17:39:00.000	1	2	85.89303	120.3002	9.595291	3.772508	10.3352	0.9275854	694.5827	251.4997	738.9024	168.2853	9.622314	0.15979

• Work with SQL command

User now can use the SQL command to get the historical I/O data (or power data) from the Database Table. Following is an example for the data retrieve from the historical Database Table.

In this case, the WISE controller login into IoTstar with the account "alan_jhu"; user can use Microsoft SQL Server Management Studio to open the corresponding Database of the "alan_jhu" account; find the "uid_01f42a06180000b0_bf4q" Database Table ("uid_01f42a06180000b0_bf4q" is the name of the Database Table of the ESR-1 module; the user can find it in the "Database Table List" page of IoTstar), then use the SQL command to query the historical I/O channel data from the Database Table.

SELECT * FROM [alan_jhu].[dbo].[uid_01f42a06180000b0_bf4q]

(The above is used to query all historical I/O channel data from the Database Table of ESR-1.)

			🖪 Alan(alan_jh	u) 🔁 Logoi
Device		WISE-5231M-3GWA		
alan_jhu(Alan)	A -	Module	Table Name	Action
WISE-5231M-3GWA	•	ESR-1	uid_01f42a06180000b0_bf4q	Clear
		Other		
		Internal Register	uid_01f42a06180000b0_ir	Clear
		Real-Time Data	uid_01f42a06180000b0_realtime	Clear
		4.75 MB database space used		
		Salan_jhu(Alan)	■ alan_jhu(Alan) ▲ ■ Module ■ LAN ■ ESR-1 Other Internal Register Real-Time Data Conter	Device WISE-5231M-3GWA Image: State of the state of th

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User can query the historical I/O data for a period of time from the Database Table. It only needs to add a WHERE condition to the SELECT command as below. SELECT * FROM [alan_jhu].[dbo].[uid_01f42a06180000b0_bf4q] WHERE

DateTime >= '2018-10-23 17:10:00' AND DateTime < '2018-10-23 17:15:00'

(The above is used to query the historical I/O channel data during the time period of "2018-10-23 17:10:00 ~ 2018-10-23 17:15:00" from the Database Table of ESR-1.)

J. SQLQuery2sql - localhost.alan.jhu (sa (84))* - Microsoft S 編集() 編載() 裕祝() 査務() 専業() 領備() ○ • ○ ○ 1 2 • □ • □ 単 単 局新場査利() 局 給 ● • ○ ○ 1 2 • □ • □ 単 単 局新場査利() 局 給 ● ♥ ♥ alan.jhu • ▶ 執行() 領信()		D 視窗(M 記 版 光) ജിഡോ റെഫി 🔈	• C"						*@ -				0 2		(啟動 ((工具 -)		°		×
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Appendix VI Format of Historical Data in MySQL Server

After both the historical I/O data and power data upload function of WISE / PMC / PMD and the database import function of IoTstar are enabled, IoTstar will start to receive the historical I/O data and power data log files uploaded by WISE / PMC / PMD and import the content of the data files into the Database. The frequency of the upload operation of the historical I/O data and power data log files from WISE / PMC / PMD to IoTstar is per 5 minutes. User can disable the database import function to stop the database import operation of the historical data.

The Database Table the IoTstar create for the historical I/O data and power data is based on the unit of the I/O modules and power meters connected to WISE / PMC / PMD. So each I/O module and power meter connected to WISE / PMC / PMD has a corresponding Database Table. The format of the Database Table of the historical data is as follow:

• The format of historical I/O data in Database

> To show the Database Table corresponding to the I/O module (or power meter) connected to WISE / PMC / PMD, please click on the "Database Table List" button on the "System Information & Setting" section of IoTstar Webpage; the list of I/O modules (or power meters) connected to WISE / PMC / PMD and the name of the corresponding Database Table of the I/O module (or power meters) will then be displayed. The name of the Database Table of the historical data is in the format of "uid_SerialNumber_ModuleUID". "SerialNumber" is the unique number for each WISE / PMC / PMD controller. " ModuleUID" is the information for I/O module (or power meter) connected to WISE / PMC / PMD. Please refer to the following as an example:

(ICP ICP DAS loTstar			sam_huang(sam_h	uang) 🕣 I
Remote Access Service	Device	WISE-2246M		
Device Maintenance	– 🛢 sam_huang(sam_huang) — 🖺 🛓 -	Module	Table Name	Actio
Data Display & Analysis	PMC-5231(39)	COM3		
Dashboard Service	PMC-5231(.129)	中文測試	uid_01b1703a1a000013_wrwt	Clea
	🗑 WISE-2246M 📋	I-7024R	uid_01b1703a1a000013_kysh	Clea
Real-Time I/O Data	WISE-2240W	I-7012FD	uid_01b1703a1a000013_aehk	Clea
Real-Time Power Data		COM4		
Historical I/O Data		M-7055	uid_01b1703a1a000013_bo7n	Clea
Historical Power Data		M-7051	uid_01b1703a1a000013_sqcp	Clea
		M-7055	uid_01b1703a1a000013_sag9	Clea
Report Service		M-7022	uid_01b1703a1a000013_ayyi	Clea
Video Event Data		IR-712A	uid_01b1703a1a000013_e00I	Clea
Grouping Setting		DEVICE	uid_01b1703a1a000013_ex8s	Clea
I/O Channel		M-7055	uid_01b1703a1a000013_rw8f	Clea
Power Meter Loop		EMPTY	uid_01b1703a1a000013_k0ku	Clea
Frontano la farona di an 8 Patria		XV-Board		
System Information & Setting		XV306	uid_01b1703a1a000013_lkz2	Clea
Account Maintenance		LAN		
Database & Event Setting		WISE-7126	uid_01b1703a1a000013_qxyy	Clea
Event List		PC	uid_01b1703a1a000013_tx5t	Clea
		Other		
 Database Table List 		Internal Register	uid_01b1703a1a000013_ir	Clea

➤ The fields of the Database Table are arranged in the order of "DateTime (Data recording time), I/O Channel (listed by type: DI, DO, AI, AO)". Please refer to the following as an example. The total number of the fields in the Database Table will be different depending on the type of I/O module. For the data type of I/O channel, please refer to the following:

☆ The data type of DIx (DI channel), DOx (DO channel), CIx (Discrete input) and COx (Coil output) is "bit".

The data type of AIx (AI channel), AOx (AO channel), RIx (Input Register), ROx (Holding Register) and IRx (Internal Register) is "float".

 \diamond The data type of DICx (DI channel Counter) and DOCx (DO channel Counter) is "bigint".

Table:	T able:							
uid_01b1703	uid_01b1703a1a000013_aehk							
Columns: DateTime DI0 DIC0 DO0 DO1 AI0	datetime PK bit(10) bigint bit(10) bit(10) float							

Following is an example of the historical Database Table of the I/O module.

DateTime	DIO	DIC0	DO0	DO1	AIO
2022-08-02 03:44:00	1	2	0	0	-1.062
2022-08-02 03:45:00	1	2	0	0	-1.016
2022-08-02 03:46:00	1	2	0	0	-1.085
2022-08-02 03:47:00	1	2	0	0	-1.09
2022-08-02 03:48:00	1	2	0	0	-1.039
2022-08-02 03:49:00	1	2	0	0	-1.085
2022-08-02 03:50:00	1	2	0	0	-1.099

• The format of historical power data in Database

➤ To show the Database Table corresponding to the power meter connected to PMC / PMD, please click on the "Database Table List" button on the "System Information & Setting" section of IoTstar Webpage; the list of power meter connected to PMC / PMD and the name of the corresponding Database Table of the power meter will then be displayed. Please refer following as an example:

💥 ICP DAS loTstar			B Demo(iotstar_de	mo) 🕣 Logoi
 Remote Maintain Devices 	Device	PMC-5231(新)	店)	
Real-Time Data Display	– 🛢 iotstar_demo(Demo) — 🦯	- Module	Table Name	Action
I/O Channel Data	I PMC-5231(新店) 🔺			
	Tim_Test		uid_01c21c06180000f7_ocrx	Clear
n Power Data	I WISE-5231M-展会	PM-3133	uid_01c21c06180000f7_yh66	Clear
listorical Data Analysis	Tim_Test	PM-3112	uid_01c21c06180000f7_rz1e	Clear
I/O Channel Data	😰 WISE-Wellracom-Indonesia 🔥 🕯	PM-3114	uid_01c21c06180000f7_vber	Clear
_	😰 Tim Test	PM-4324	uid_01c21c06180000f7_ys7w	Clear
Power Data	Tim Test			
🖹 Power Report				
Grouping Setting				
I/O Channel	Tim_Test			
	I PMD-2201(新店)	Ĩ		
Power Meter Loop	I WISE-5231(新店)	Ĩ		
System Information & Setting	e icpdas(ICP DAS)			
🏟 Account Maintenance	I ML PANEL(湖口總公司)			
	Imp2 PANEL(湖口總公司)			
Database & Event Setting	2 PMC_03(湖口總公司)			
Event List 513				
Database Table List	6.6	GB (66%) of 10.0 GB datab	base space used	
Database Table List				

➤ The fields of the Database Table are arranged in the order of "DateTime (Data recording time), Loop, Phase, Power Data". Please refer to the following as an example. The total number of the fields in the Database Table will be different depending on the type of power meter.

Table: uid_01a0190618000088_afsx							
Columns: DateTime Loop Phase V I KW KVAR KVAR KVAR KVAR KVARH KVARH KVARH KVARH KVAH Demand DeitaTotalKWH	datetime PK tinyint PK double double double double double double double double double double double double double double double						

Please Note:

1. The fields of "Power Data" in the Database Table include the items as V, I, KW, KVAR, KVA, PF, KWH, KVARH, KVAH, TotalKWH, Demand and DeltaTotalKWH.

The data type is "double".

2. The setting of "Loop" and "Phase" fields for the Single-Phase power meter are as below. The data type is "tinyint".

Phase=1;

Loop=1(Loop1) / 2(Loop2) / 3(Loop3) or 4(Loop4);

3. The setting of "Loop" and "Phase" fields for the Three-Phase power meter are as

below. The data type is "tinyint".

Phase=1(Phase A) / 2(Phase B) / 3(Phase C) or 4(Total/Average);

Loop=1;

Following is an example of the Database Table of the Single-Phase power meter.

DateTime	Loop	Phase	٧	I	KW	KVAR	KVA	PF	KWH	KVARH	KVAH	TotalKWH	Demand	DeltaTotalKWH
2022-07-28 06:30:00	1	1	105.0837	0.8869665	0.0565521	-0.07386559	0.09302833	0.6079022	338.5234	58529.79	58599.86	0.8131104	0.05658142	0.0009460449
2022-07-28 06:30:00	2	1	105.0772	0.8825316	0.05588683	-0.07378011	0.09255725	0.6038085	233.6636	43770.57	43839.61	0.8033447	0.05584818	0.0009613037
2022-07-28 06:30:00	3	1	105.0818	0.8820415	0.05640228	-0.07332637	0.09250935	0.6096933	390.4046	58035.41	58105.4	0.8112488	0.05633701	0.0009460449
2022-07-28 06:30:00	4	1	105.0898	0.8821138	0.05633458	-0.07338635	0.09251565	0.6089199	345.4574	43886.43	43956.3	0.8100891	0.05633701	0.0009460449
2022-07-28 06:30:00	5	1	105.0821	0.887094	0.0568739	-0.07363179	0.09303916	0.6112902	256.5244	57801.52	57871.74	0.818222	0.05682584	0.0009765625
2022-07-28 06:30:00	6	1	105.0678	0.87849	-0.05587691	0.07322898	0.09211252	0.6066163	215.6385	43540.3	43609.33	0.8033142	0.05590929	0.0009460449
2022-07-28 06:30:00	7	1	105.0782	0.8788111	-0.055869	0.07334594	0.09220073	0.6059499	251.6464	44093.37	44162.41	0.8032379	0.05590929	0.0009460449
2022-07-28 06:30:00	8	1	105.0887	0.8831283	-0.05578999	0.07403351	0.09270108	0.6018271	210.2048	43918.07	43986.81	0.8017731	0.05578708	0.0009460449
2022-07-28 06:31:00	1	1	105.1394	0.8865415	0.05653119	-0.07396043	0.09309099	0.6072693	338.5243	58529.79	58599.86	0.8140564	0.05658142	0.0009460449
2022-07-28 06:31:00	2	1	105.1354	0.8820661	0.05587119	-0.07387036	0.09261981	0.6032326	233.6646	43770.57	43839.61	0.804306	0.05590929	0.0009460449
2022-07-28 06:31:00	3	1	105.1412	0.8815048	0.05639187	-0.07340655	0.0925666	0.6092041	390.4056	58035.41	58105.4	0.8121948	0.05633701	0.0009765625
2022-07-28 06:31:00	4	1	105.1444	0.8812924	0.05631373	-0.07347459	0.09257301	0.6083179	345.4583	43886.44	43956.3	0.8110352	0.05633701	0.0009460449
2022-07-28 06:31:00	5	1	105.1429	0.8866329	0.05684775	-0.07373109	0.09310183	0.6105985	256.5254	57801.52	57871.74	0.8191986	0.05694804	0.0009460449

Following is an example of the Database Table of the Three-Phase power meter.

DateTime	Loop	Phase	V	I	KW	KVAR	KVA	PF	KWH	KVARH	KVAH	TotalKWH	Demand	DeltaTotalKWH
2022-07-28 06:30:00	1	1	105.0837	0.8869665	0.0565521	-0.07386559	0.09302833	0.6079022	338.5234	58529.79	58599.86	0.8131104	0.05658142	0.0009460449
2022-07-28 06:30:00	1	2	105.0838	0.8759144	0.05520246	-0.07342793	0.09186391	0.6009161	248.3526	44537.05	44605.09	0.7931519	0.05517605	0.0009460449
2022-07-28 06:30:00	1	3	105.0936	0.8794594	0.05560001	-0.07363222	0.0922663	0.602604	213.7584	44571.24	44639.76	0.7992096	0.05560377	0.0009460449
2022-07-28 06:30:00	1	4	105.087	0.88078	0.1673545	0.2209282	0.2771585	0.6038229	800.5638	147638.2	147844.7	2.405457	0.1674224	0.002807617
2022-07-28 06:31:00	1	1	105.1394	0.8865415	0.05653119	-0.07396043	0.09309099	0.6072693	338.5243	58529.79	58599.86	0.8140564	0.05658142	0.0009460449
2022-07-28 06:31:00	1	2	105.1389	0.8754761	0.0551816	-0.07352185	0.09192648	0.6002803	248.3536	44537.05	44605.09	0.7940979	0.05523716	0.0009307861
2022-07-28 06:31:00	1	3	105.1493	0.8790665	0.05558432	-0.07370953	0.09231856	0.6020935	213.7593	44571.24	44639.76	0.8001556	0.05560377	0.0009460449
2022-07-28 06:31:00	1	4	105.1425	0.8803614	0.1672971	0.2211942	0.277336	0.6032298	800.5667	147638.2	147844.7	2.408264	0.1671779	0.002868652
2022-07-28 06:32:00	1	1	105.0453	0.8894718	0.05653119	-0.0742232	0.09329987	0.6059092	338.5253	58529.79	58599.86	0.8150024	0.05658142	0.0009460449
2022-07-28 06:32:00	1	2	105.047	0.8781597	0.05517639	-0.07378637	0.09213504	0.5988647	248.3545	44537.05	44605.09	0.7950287	0.05523716	0.0009155273
2022-07-28 06:32:00	1	3	105.0591	0.8818119	0.05558433	-0.0739778	0.09253287	0.6006986	213.7603	44571.24	44639.76	0.8011017	0.05566488	0.0009307861
2022-07-28 06:32:00	1	4	105.0505	0.8831478	0.1672919	0.2219898	0.2779678	0.6018397	800.5695	147638.2	147844.7	2.411133	0.1676668	0.002746582
2022-07-28 06:33:00	1	1	104.9471	0.8878288	0.05652073	-0.07406042	0.09316409	0.6066806	338.5262	58529.79	58599.86	0.8159485	0.05651855	0.0009460449

• Work with SQL command

User now can use the SQL command to get the historical I/O data (or power data) from the Database Table. Following is an example for the data retrieve from the

historical Database Table.

In this case, the WISE controller login into IoTstar with the account "sam_huang"; user can use MySQL Workbench to open the corresponding Database of the "sam_huang" account; find the "uid_01b1703a1a000013_aehk" Database Table ("uid_01b1703a1a000013_aehk" is the name of the Database Table of the I-7012FD module; the user can find it in the "Database Table List" page of IoTstar), then use the SQL command to query the historical I/O channel data from the Database Table.

SELECT * FROM sam_huang.uid_01b1703a1a000013_aehk

(The above is used to query all historical I/O channel data from the Database Table of I-7012FD.)

(ICP ICP DAS IoTstar			🖪 sam_huang(sam_huang) 🕤 Logou
Remote Access Service	Device	WISE-2246M	
Device Maintenance	– 🛢 sam_huang(sam_huang) — 🖺 🛓 -	Module	Table Name Action
Data Display & Analysis	😰 PMC-5231(39)	COM3	
Dashboard Service	😰 PMC-5231(.129)	中文測試	uid_01b1703a1a000013_wrwt Clear
R Deel Tree I/O Dete	😰 WISE-2246M 💼	I-7024R	uid_01b1703a1a000013_kysh Clear
Real-Time I/O Data		I-7012FD	uid_01b1703a1a000013_aehk Clear
Real-Time Power Data		COM4	
III Historical I/O Data		M-7055	uid_01b1703a1a000013_bo7n Clear
Historical Power Data		M-7051	uid_01b1703a1a000013_sqcp Clear
		M-7055	uid_01b1703a1a000013_sag9 Clear
B Report Service		M-7022	uid_01b1703a1a000013_ayyi Clear
 Video Event Data 		IR-712A	uid_01b1703a1a000013_e00I Clear
Grouping Setting		DEVICE	uid_01b1703a1a000013_ex8s Clear
I/O Channel		M-7055	uid_01b1703a1a000013_rw8f Clear
Power Meter Loop		EMPTY	uid_01b1703a1a000013_k0ku
		XV-Board	
System Information & Setting		XV306	uid_01b1703a1a000013_lkz2 Clear
Account Maintenance		LAN	
Database & Event Setting		WISE-7126	uid_01b1703a1a000013_qxyy Clear
🌲 Event List 🛛 🚺		PC	uid_01b1703a1a000013_tx5t Clear
		Other	
i) Database Table List		Internal Register	uid_01b1703a1a000013_ir Clear

sam ×					
le Edit View Query Database S					
	Q 0				0
lavigator	Query 1 SQL File 5	5* SQL File 6*	module u	id_01b1703a1a000013_aehk $ imes$	
CHEMAS	* 🗀 🖬 🗲 🕱 🛉	ā, 🕑 i 🔂 i 📀 (🔊 🔞 Limit te	o 50000 rows 🔹 🛛 🌟 🛛 🍯	1 7
Filter objects	1 • SELECT *	FROM sam_huang.ui	.d_01b1703a1a	000013_aehk;	
 sam_huang sam_huang channel dashboard_channel dashboard_mfo dashboard_widget device event_log group_lata group_info 					
module	<				
report_template	Result Grid 🔢 🚷	Filter Rows:	Edit: 🗹	🔓 🔜 🔜 Export/Import: 🏣	Wrap Cell Conten
 temp uid_01a0190618000088_afs> 	DateTime	DI0 DIC0 DO	DO1 AI0		
uid_01a0190618000088_ir	2022-08-02 03:44:00		0 -1.06		Result Grid
uid_01a0190618000088_o5s	2022-08-02 03:45:00 2022-08-02 03:46:00		0 -1.01		
uid 01a0190618000088 real uid_01b1703a1a000013_aeh	e 2022-08-02 03:47:00		0 -1.09		Form
uid_01b1703a1a000013_aem	2022-08-02 03:48:00		0 -1.03		Editor
uid_01b1703a1a000013_bo7	2022-08-02 03:49:00		0 -1.08		
dministration Schemas	2022-08-02 03:50:00 2022-08-02 03:51:00		0 -1.09		
formation			0 -1.00		Field Types
	2022-08-02 03:53:00	1 2 0	0 -1.07	1	- V
Table:	uid_01b1703a1a000013_	aehk 4 🗙			Apply Revert
uid_01b1703a1a000013_aehk	Output				
Columns:	Action Output	•			
DateTime datetime PK DIO bit(10)	# Time Acti	on		Message	Duration / Fetch
DICO bigint DOO bit(10)	1 16:21:47 SEL	ECT * FROM sam_huang	.uid_01b1703a	-	0.016 sec / 0.000 se
DO1 bit(10) AI0 float					
bject Info Session					

User can query the historical I/O data for a period of time from the Database Table. It only needs to add a WHERE condition to the SELECT command as below.

SELECT * FROM sam_huang.uid_01b1703a1a000013_aehk WHERE DateTime >= '2022-08-02 07:00:00' AND DateTime < '2022-08-02 07:05:00'

(The above is used to query the historical I/O channel data during the time period of "2022-08-02 07:00:00 ~ 2022-08-02 07:05:00" from the Database Table of I-7012FD module.)

MySQL Workbench		- 0	ı ×
File Edit View Query Database Server		Ø	
Navigator: SCHEMAS Filter objects manager sam_huang Tables channel dashboard_r	Query 1 SQL File 5' SQL File 6' module uid_01b1703a1a000013_aehk × Image: Select * FROM sam_huang.uid_01b1703a1a000013_aehk Image: Select * FROM sam_huang.uid_01b1703a1a000013_aehk 2 SELECT * FROM sam_huang.uid_01b1703a1a000013_aehk Image: Select * Select * 2 WHERE DateTime >= '2022-08-02 07:00:00' AND DateTime < '2022-08-02	07:05:00'	Result Grid Form Editor
Table: uid_01b1703a1a000013_aehk	uid_01b1703a1a000013_aehk 5 x Output	Apply	Revert
Columns: <u>DateTime</u> datetime PK DI0 bit(10) DIC0 bigint DO0 bit(10) DO1 bit(10) AI0 float	Action Output	Duration / I	Fetch
Object Info Session			
Query Completed			

Appendix VII Format of Historical Data in Oracle Database

After both the historical I/O data and power data upload function of WISE / PMC / PMD and the database import function of IoTstar are enabled, IoTstar will start to receive the historical I/O data and power data log files uploaded by WISE / PMC / PMD and import the content of the data files into the Database. The frequency of the upload operation of the historical I/O data and power data log files from WISE / PMC / PMD to IoTstar is per 5 minutes. User can disable the database import function to stop the database import operation of the historical data.

The Database Table the IoTstar create for the historical I/O data and power data is based on the unit of the I/O modules and power meters connected to WISE / PMC / PMD. So each I/O module and power meter connected to WISE / PMC / PMD has a corresponding Database Table. The format of the Database Table of the historical data is as follow:

Please note: After user opens IoTstar and creates an account, IoTstar will automatically create a dedicated PDB (Pluggable Database) for IoTstar in Oracle Database and name it as "IOTSTAR". If user needs to open the database created by IoTstar through SQL Developer, the database connection setting must be created (as shown in the figure below) as below. In the "New/Select Database Connection" window, enter the name of the connection (SAM_IOTSTAR in this example), enter the corresponding user name and password for the account created in IoTstar ("sam_huang" in this example). In the "Details" tab, enter the information in the Hostname (192.168.100.167 in this example) and port (1521 in this example) of the Oracle Database, then select "Service Name" and enter "IOTSTAR". After complete all setting, please click the "Test" button to set the connection setting. If the Status message bar in the lower left corner shows "Success", it mean the connection setting

Connection Name Connection Details SAM_IOTSTAR som_huang@//192 SYS_IOTSTAR SYS@//192.168.1 SYS_orclpdb SYS@//192.168.1 SYS_orclpdb SYS@//192.168.1 User Info Proxy User Authentication Type Default ~ Usermane sam_huang Role default	
	Color
Password •••••• Connection Type Basic • Details Advanced	•
Hostname 192.168.100.167 Port 1521 SID Sgrvice name IOTSTAR Status : Success Help Save Clear Test Connect Can	

is operational, then press the "Save" button to save the connection setting.

• The format of historical I/O data in Database

> To show the Database Table corresponding to the I/O module (or power meter) connected to WISE / PMC / PMD, please click on the "Database Table List" button on the "System Information & Setting" section of IoTstar Webpage; the list of I/O modules (or power meters) connected to WISE / PMC / PMD and the name of the corresponding Database Table of the I/O module (or power meters) will then be displayed. The name of the Database Table of the historical data is in the format of "uid_SerialNumber_ModuleUID". "SerialNumber" is the unique number for each WISE / PMC / PMD controller. " ModuleUID" is the information for I/O module (or power meter) connected to WISE / PMC / PMD. Please refer to the following as an example:

ICP DAS IoTstar			🖪 sam_huang(sam_hua
Remote Access Service	Device	WISE-2246M	
Device Maintenance	– 🛢 sam_huang(sam_huang) — 🖺 🛓 -	Module	Table Name
Data Display & Analysis	PMC-5231(39)	COM3	
Dashboard Service	PMC-5231(.129)	中文測試	uid_01b1703a1a000013_wrwt
	😰 WISE-2246M 🔋	I-7024R	uid_01b1703a1a000013_kysh
Real-Time I/O Data		I-7012FD	uid_01b1703a1a000013_aehk
Real-Time Power Data		COM4	
Historical I/O Data		M-7055	uid_01b1703a1a000013_bo7n
Historical Power Data		M-7051	uid_01b1703a1a000013_sqcp
		M-7055	uid_01b1703a1a000013_sag9
Report Service		M-7022	uid_01b1703a1a000013_ayyi
Video Event Data		IR-712A	uid_01b1703a1a000013_e001
Grouping Setting		DEVICE	uid_01b1703a1a000013_ex8s
I/O Channel		M-7055	uid_01b1703a1a000013_rw8f
Power Meter Loop		EMPTY	uid_01b1703a1a000013_k0ku
		XV-Board	
System Information & Setting		XV306	uid_01b1703a1a000013_lkz2
Account Maintenance		LAN	
Database & Event Setting		WISE-7126	uid_01b1703a1a000013_qxyy
🛕 Event List 🚺		PC	uid_01b1703a1a000013_tx5t
	•	Other	
 Database Table List 	L	Internal Register	uid_01b1703a1a000013_ir

➤ The fields of the Database Table are arranged in the order of "DateTime (Data recording time), I/O Channel (listed by type: DI, DO, AI, AO)". Please refer to the following as an example. The total number of the fields in the Database Table will be different depending on the type of I/O module. For the data type of the I/O channel, please refer to the following:

The data type of DIx (DI channel), DOx (DO channel), CIx (Discrete input) and COx (Coil output) is "number(1,0)".

☆ The data type of AIx (AI channel), AOx (AO channel), RIx (Input Register), ROx (Holding Register) and IRx (Internal Register) is "float".

The data type of DICx (DI channel Counter) and DOCx (DO channel Counter) is "number(19,0)".

	SAM_IOTSTAR × III UID_01B1703A1A000013_AEHK ×									
Columns	Columns Data Model Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQI									
📌 📝 🚱 🕶 Actions										
	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	<pre> { COLUMN_ID COLUMN COLUMN_ID COLUMN COLUMN</pre>	COMMENTS				
1	DATETIME	TIMESTAMP(6)	No	(null)	1	(null)				
2	DIO	NUMBER(1,0)	Yes	(null)	2	(null)				
3	DICO	NUMBER(19,0)	Yes	(null)	3	(null)				
4	DOO	NUMBER(1,0)	Yes	(null)	4	(null)				
5	DO1	NUMBER(1,0)	Yes	(null)	5	(null)				
6	AIO	FLOAT	Yes	(null)	6	(null)				

Following is an example of the historical Database Table of the I/O module.

	DATETIMI	E		DIO	DIC0	∯ DO0	\$ DO1	\$ AIO
1	02-AUG-22	09.41.00.000000000	AM	1	2	0	0	-1.071
2	02-AUG-22	09.42.00.000000000	AM	1	2	0	0	-1.053
3	02-AUG-22	09.28.00.00000000	AM	1	2	0	0	-0.993
4	02-AUG-22	09.29.00.00000000	AM	1	2	0	0	-1.099
5	02-AUG-22	09.30.00.00000000	AM	1	2	0	0	-1.03
6	02-AUG-22	09.31.00.00000000	AM	1	2	0	0	-0.989

• The format of historical power data in Database

➤ To show the Database Table corresponding to the power meter connected to PMC / PMD, please click on the "Database Table List" button on the "System Information & Setting" section of IoTstar Webpage; the list of power meter connected to PMC / PMD and the name of the corresponding Database Table of the power meter will then be displayed. Please refer following as an example:

💥 ICP DAS loTstar			Demo(iotstar_der	no) Đ
 Remote Maintain Devices 	Device	PMC-5231(新)	吉)	
Real-Time Data Display	- 🛢 iotstar_demo(Demo) ———	Module	Table Name	Actio
I/O Channel Data	I PMC-5231(新店) 🔺			
	🗐 Tim_Test	PM-3033	uid_01c21c06180000f7_ocrx	Clea
B Power Data	III WISE-5231M-展会	PM-3133	uid_01c21c06180000f7_yh66	Cle
istorical Data Analysis	😭 Tim Test	PM-3112	uid_01c21c06180000f7_rz1e	Cle
I/O Channel Data	📓 WISE-Wellracom-Indonesia 🔺 🕯	PM-3114	uid_01c21c06180000f7_vber	Cle
	Tim Test	PM-4324	uid_01c21c06180000f7_ys7w	Clea
B Power Data				
Power Report	😰 Tim_Test			
rouping Setting	Tim_Test	Ī		
	Tim_Test	I		
I/O Channel	I PMD-2201(新店)	ī		
Power Meter Loop	I WISE-5231(新店)	ī		
system Information & Setting	- 🛢 icpdas(ICP DAS)			
Account Maintenance	Image: ML PANEL(湖口總公司)			
	I MP2 PANEL(湖口總公司)			
Database & Event Setting	I PMC_03(湖口總公司)			
Event List 513 Database Table List	6.6	GB (66%) of 10.0 GB datab	ase space used	

> The fields of the Database Table are arranged in the order of "DateTime (Data recording time), Loop, Phase, Power Data". Please refer to the following as an example. The total number of the fields in the Database Table will be different depending on the type of power meter.

humes	Data Model Const	raints Grants Stati	istics Triggers R	Jashhack Dependen	cies Details Porti	2 sevební knoš
-	-		auco Inggero I	Instituter Dependen		10110 11100 / 10
r 📈		1	1.			
	<pre> {} COLUMN_NAME </pre>	DATA_TYPE	NULLABLE	DATA_DEFAULT	<pre>@ COLUMN_ID</pre>	COMMENTS (COMMENTS)
1	DATETIME	TIMESTAMP(6)	No	(null)	1	(null)
2	LOOP	NUMBER(3,0)	No	(null)	2	(null)
3	PHASE	NUMBER(3,0)	No	(null)	3	(null)
4	v	FLOAT	No	(null)	4	(null)
5	I	FLOAT	No	(null)	5	(null)
6	KW	FLOAT	No	(null)	6	(null)
7	KVAR	FLOAT	No	(null)	7	(null)
8	KVA	FLOAT	No	(null)	8	(null)
9	PF	FLOAT	No	(null)	9	(null)
10	KWH	FLOAT	No	(null)	10	(null)
11	KVARH	FLOAT	No	(null)	11	(null)
12	KVAH	FLOAT	No	(null)	12	(null)
13	TOTALKWH	FLOAT	No	(null)	13	(null)
14	DEMAND	FLOAT	No	(null)	14	(null)
15	DELTATOTALKWH	FLOAT	No	(null)	15	(null)

Please Note:

1. The fields of "Power Data" in the Database Table include the items as V, I, KW,

KVAR, KVA, PF, KWH, KVARH, KVAH, TotalKWH, Demand and DeltaTotalKWH.

The data type is "float".

2. The setting of "Loop" and "Phase" fields for the Single-Phase power meter are as below. The data type is "number(3,0)".

Phase=1;

Loop=1(Loop1) / 2(Loop2) / 3(Loop3) or 4(Loop4);

3. The setting of "Loop" and "Phase" fields for the Three-Phase power meter are as below. The data type is "number(3,0)".

```
Phase=1(Phase A) / 2(Phase B) / 3(Phase C) or 4(Total/Average);
```

Loop=1;

Following is an example of the Database Table of the Single-Phase power meter.

QZ [⊥] DATETIME	LOOP () P 🍸 () V	\$ I	∲ KW	KVAR	KVA	PF	∲ KWH	() KVARH	KVAH	TOTALKWH	DEMAND	DEL TATOTALK WH
1 28-JUL-22 06.24.00.00000000 AM	1	1 104.2871	0.8909901	0.0566723	-0.0737403	0.0930022	0.6093596	338.5177	58529.79	58599.84	0.8074646	0.05664443	0.0009460449
2 28-JUL-22 06.24.00.00000000 AM	2	1 104.2847	0.8866025	0.05600159	-0.07367327	0.09254161	0.6051452	233.658	43770.57	43839.61	0.7977753	0.05591038	0.0009460449
3 28-JUL-22 06.24.00.00000000 AM	3	1 104.294	0.8861876	0.05652208	-0.07321422	0.09249374	0.6110862	390.399	58035.41	58105.39	0.8056335	0.05652209	0.0009460449
4 28-JUL-22 06.24.00.00000000 AM	4	1 104.2998	0.8860688	0.05644936	-0.07327161	0.09249479	0.6102918	345.4518	43886.43	43956.29	0.8044739	0.05639975	0.0009460449
5 28-JUL-22 06.24.00.00000000 AM	5	1 104.2992	0.8915583	L 0.05700463	-0.07353047	0.09303916	0.6126899	256.5187	57801.51	57871.73	0.8125458	0.05688912	0.0009765625
6 28-JUL-22 06.24.00.00000000 AM	6	1 104.2812	0.8826886	5 -0.0560063	0.07312995	0.09211252	0.6080157	215.6329	43540.3	43609.32	0.7977295	0.05591038	0.0009460449
7 28-JUL-22 06.24.00.00000000 AM	7	1 104.2937	0.8831654	-0.05600363	0.07324306	0.09220073	0.6074054	251.6409	44093.36	44162.4	0.7976532	0.05591038	0.0009613037
8 28-JUL-22 06.24.00.00000000 AM	8	1 104.2852	0.8879612	2 -0.05592522	0.07391824	0.09269067	0.6033478	210.1992	43918.07	43986.8	0.7962036	0.05584921	0.0009460449
9 28-JUL-22 06.23.00.00000000 AM	1	1 104.4853	0.8902178	0.0565155	-0.07381465	0.09296566	0.6079194	338.5168	58529.78	58599.84	0.806488	0.05645922	0.0009765625
10 28-JUL-22 06.23.00.000000000 AM	2	1 104.4818	0.8854795	0.05583988	-0.07373713	0.0924947	0.6037108	233.6571	43770.56	43839.6	0.7968292	0.05578708	0.0009460449
11 28-JUL-22 06.23.00.000000000 AM	3	1 104.4878	0.8847224	0.05636583	-0.07328216	0.0924521	0.6096776	390.3981	58035.41	58105.39	0.8046875	0.05633701	0.0009460449
12 28-JUL-22 06.23.00.00000000 AM	4	1 104.4958	0.8849031	0.05629285	-0.0733329	0.09244787	0.6089159	345.4508	43886.43	43956.29	0.8034973	0.05621481	0.0009765625
13 28-JUL-22 06.23.00.000000000 AM	5	1 104.4946	0.8901963	0.05683206	-0.07357825	0.09297124	0.611288	256.5178	57801.51	57871.73	0.8115997	0.05682584	0.0009460449
14 28-JUL-22 06.23.00.000000000 AM	6	1 104.4798	0.881425	5 -0.05583033	0.07319293	0.09205564	0.6064861	215.6319	43540.3	43609.32	0.7967834	0.05578708	0.0009460449
15 28-JUL-22 06.23.00.00000000 AM	7	1 104.4919	0.8817863	8 -0.05584829	0.07330313	0.09215415	0.6060326	251.6399	44093.36	44162.4	0.7967072	0.05578708	0.0009460449
16 28-JUL-22 06.23.00.000000000 AM	8	1 104.4811	0.8868449	9 -0.05575359	0.0739828	0.09263868	0.6018406	210.1983	43918.06	43986.8	0.7952576	0.05572598	0.0009460449

Following is an example of the Database Table of the Three-Phase power meter.

♦޹ DATETIME	7	LOOP	7	}}² PH		V	₿I	∲KW	∲ KVAR	∲ KVA	∲ PF	∲ KWH	🗄 KVARH	∲ KVAH	TOTALKWH	0 DEMAND	DEL TA TOTALKWH
1 28-JUL-22 06.24.00.00000000 AM	M		1		4 1	4.2923	0.8847608	0.1677307	0.2205242	0.2770645	0.6053791	800.5471	147638.2	147844.7	2.388733	0.1673641	0.002868652
2 28-JUL-22 06.24.00.00000000 AM	М		1		3 1	4.2995	0.883516	0.05573597	-0.07348326	0.09222969	0.6043108	213.7528	44571.23	44639.75	0.7936707	0.05566569	0.0009460449
3 28-JUL-22 06.24.00.00000000 AM	М		1		2 1	4.2902	0.8797763	0.05532242	-0.07329824	0.09183263	0.602421	248.3471	44537.04	44605.08	0.7876434	0.05523749	0.0009460449
4 28-JUL-22 06.24.00.00000000 AM	М		1		1 1	4.2871	0.8909901	0.0566723	-0.0737403	0.0930022	0.6093596	338.5177	58529.79	58599.84	0.8074646	0.05664443	0.0009460449
5 28-JUL-22 06.23.00.00000000 AM	М		1		4 1	4.4888	0.8839501	0.1672449	0.2207754	0.2769706	0.6038375	800.5443	147638.2	147844.7	2.385925	0.1671779	0.002807617
6 28-JUL-22 06.23.00.00000000 AM	М		1		3 1	4.4957	0.8825243	0.05556341	-0.07358124	0.09220356	0.6026179	213.7519	44571.23	44639.75	0.7927246	0.05554267	0.0009460449
7 28-JUL-22 06.23.00.00000000 AM	М		1		2 1	4.4856	0.8791078	0.05516596	-0.07337708	0.09180135	0.6009288	248.3462	44537.04	44605.08	0.7867126	0.05511495	0.0009307861
8 28-JUL-22 06.23.00.00000000 AM	М		1		1 1	4.4853	0.8902178	0.0565155	-0.07381465	0.09296566	0.6079194	338.5168	58529.78	58599.84	0.806488	0.05645922	0.0009765625
9 28-JUL-22 06.22.00.00000000 AM	М		1		4 1	4.5974	0.8830364	0.1672083	0.220338	0.2765999	0.6045139	800.5415	147638.2	147844.7	2.383118	0.1671779	0.002807617
10 28-JUL-22 06.22.00.00000000 AM	М		1		3 1	4.6041	0.881736	0.05555817	-0.07342794	0.0920781	0.6033818	213.751	44571.23	44639.75	0.7918091	0.05560377	0.0009155273
11 28-JUL-22 06.22.00.00000000 AM	М		1		2 1	4.5934	0.8780259	0.05515552	-0.0732349	0.09168143	0.6016002	248.3453	44537.04	44605.08	0.7857971	0.05517605	0.0009155273
12 28-JUL-22 06.22.00.00000000 AM	М		1		1 1	4.5945	0.8893473	0.05649461	-0.07367282	0.09284034	0.6085141	338.5158	58529.78	58599.84	0.8055725	0.05658142	0.0009155273

Work with SQL command

User now can use the SQL command to get the historical I/O data (or power data) from the Database Table. Following is an example for the data retrieve from the historical Database Table.

In this case, the WISE controller log in to IoTstar with the account "sam_huang"; user can use SQL Developer to open the corresponding Database of the "sam_huang" find the "uid_01b1703a1a000013_aehk" Database Table account; ("uid_01b1703a1a000013_aehk" is the name of the Database Table of the I-7012FD module; the user can find it in the "Database Table List" page of IoTstar), then use the SQL command to query the historical I/O channel data from the Database Table.

SELECT * FROM sam_huang.uid_01b1703a1a000013_aehk

(The above is used to query all historical I/O channel data from the Database Table of I-7012FD.)

(ICP ICP DAS lo Tstar			🖪 sam_huang(sam_huang) 🗿	
Remote Access Service	Device	WISE-2246M		
 Device Maintenance 	– 🛢 sam_huang(sam_huang) — 🖺 🛓	- Module	Table Name Actio	on
Data Display & Analysis	😰 PMC-5231(39)	COM3		
Dashboard Service	😰 PMC-5231(.129)	中文測試	uid_01b1703a1a000013_wrwt	ar
	😰 WISE-2246M 🗊	I-7024R	uid_01b1703a1a000013_kysh	ar
Real-Time I/O Data		I-7012FD	Luid_01b1703a1a000013_aehk	ar
B Real-Time Power Data		COM4		
Historical I/O Data		M-7055	uid_01b1703a1a000013_bo7n	ar
Historical Power Data		M-7051	uid_01b1703a1a000013_sqcp Clea	ar
🗖 Depart Caprica		M-7055	uid_01b1703a1a000013_sag9	ar
Report Service		M-7022	uid_01b1703a1a000013_ayyi	ar
Video Event Data		IR-712A	uid_01b1703a1a000013_e00I	ar
Grouping Setting		DEVICE	uid_01b1703a1a000013_ex8s	ar
I/O Channel		M-7055	uid_01b1703a1a000013_rw8f	ar
Power Meter Loop		EMPTY	uid_01b1703a1a000013_k0ku	ar
		XV-Board		
System Information & Setting		XV306	uid_01b1703a1a000013_lkz2	ar
Account Maintenance		LAN		
Database & Event Setting		WISE-7126	uid_01b1703a1a000013_qxyy	ar
🌲 Event List 🛛 🚹		PC	uid_01b1703a1a000013_tx5t	ar
	h .	Other		
 Database Table List 		Internal Register	uid_01b1703a1a000013_ir Clea	ar

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Oracle Connections Worksheet Query Builder						
SAM IOTSTAR						
SELECT * FROM sam_huang.uid_01b1703	a1a000013	_aehk				
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EVENT LOG						
GROUP_DATA						
GROUP_INFO						
I MODULE						
I REPORT_TEMPLATE						
B UID_01A0190618000088_AFSX D UID_01A0190618000088_IR D UID_01A0190618000088_IR						
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😥 🛄 UID_01A0190618000088_REALTIME 📝 📇 🝓 🎭 SQL All Rows Fetched: 15 in 0.005 set	conds					
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UID_01A031061800004E_IR 2 02-AUG-22 09.42.00.000000000 AM	1 2	0	0 -1.053			
UID_01A031061800004E_M0GB	1 2	0	0 -0.993			
	1 2	0	0 -1.099			
UID_01A031001800004E_FVNS 5 02-AUG-22 09.30.00.000000000 AM	1 2	0	0 -1.03			
6 02-AUG-22 09.31.00.00000000 AM	1 2	0	0 -0.989			
UID_01B1703A1A000013_AEHK 7 02-AUG-22 09.32.00.000000000 AM	1 2	0	0 -1.094			
⊕ UID_01B1703A1A000013_AYYI 8 02-AUG-22 09.33.00.000000000 AM	1 2	0	0 -1.025			
UID_01B1703A1A000013_BO7N 9 02-AUG-22 09.34.00.00000000 AM	1 2	0	0 -0.989			
	1 2	0	0 -1.09			
Reports	1 2	0	0 -1.048			*
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User can query the historical I/O data for a period of time from the Database Table. It only needs to add a WHERE condition to the SELECT command as below.

SELECT * FROM sam_huang.uid_01b1703a1a000013_aehk WHERE DateTime >= to_timestamp('2022-08-02 09:30:00', 'yyyy-mm-dd hh24:mi:ss') AND DateTime < to_timestamp('2022-08-02 09:35:00', 'yyyy-mm-dd hh24:mi:ss'

(The above is used to query the historical I/O channel data during the time period of "2022-08-02 09:30:00 ~ 2022-08-02 09:35:00" from the Database Table of I-7012FD.)

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e EVENT_LOG	
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B REPORT_TEMPLATE	
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4 02-A06-22 09.33.00.0000000 AH 1 2 0 0 -1.025	
B B Did_01A031001000048_PVRJ 5 02-AUG-22 09.34.00.000000000 AM 1 2 0 -0.989 B	
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Appendix VIII Format of Real-Time Data in Microsoft SQL Server

After both the real-time I/O data and power data upload function of WISE / PMC / PMD and the database import function of IoTstar are enabled, IoTstar will start to receive the real-time I/O data and power data uploaded by WISE / PMC / PMD and import them into the Database. For the real-time I/O data and power data, the database will only keep the latest values of the corresponding channel. User can disable the database import function to stop the database import operation.

The Real-Time Database Table IoTstar create is based on the unit of WISE / PMC / PMD controller. So each WISE / PMC / PMD has a corresponding Database Table for the storage of real-time I/O channel data and power data. Based on the setting of "Appendix II" and "Appendix IV", IoTstar will receive the real-time data of the selected I/O channel or Power meter loop/phase from WISE / PMC / PMD, and import them into the Database. The total amount of I/O channels and Power meter loop/phase to be included in each WISE / PMC / PMD's Real-Time Database Table can be up to 1000. The format of the Real-Time Database Table is as follow:

• The format of Real-Time Data in Database

Each WISE / PMC / PMD controller has a corresponding Database Table for the storage of the real-time I/O data and power data. The name of this Database Table is in the format of "uid_SerialNumber_realtime". "SerialNumber" is a unique number for each WISE / PMC / PMD controller. User can find the "SerialNumber" of the corresponding WISE / PMC / PMD controller through the "Remote Maintain Devices" page of IoTstar as below:

🧱 ICP DAS loTstar					🖪 Demo(iotstar_demo) 🕀 Logoul
Remote Maintain Devices	Online Device List (3/100)				Q, Search X
Real-Time Data Display	WISE-5231(新店)	PMC-5231(新店)	PMD-2201(新店)	ML PANEL(湖口總公司)	PMC_03(湖口總公司)
I/O Channel Data	WISE-5231 012a4a0618000076	PMC-5231 01c21c06180000f7	PMD-2201 014504d515000043	PMC-5231 01c90f061800003d	PMC-5231 0104e90518000026
6 Power Data	•	•	•	₽	•
Historical Data Analysis	MP2 PANEL(湖口總公司)				
I/O Channel Data	0128e905180000ed				
Power Data					
Power Report	Offline Device List				
Grouping Setting	WISE-5231M-展会 WISE-5231M-3GWA	WISE-5231M-4GE	WISE-5231M-4GC		
I/O Channel	01fd3706180000b6	01823dc7190000aa	017f45391a000041		
Power Meter Loop					

> There are 7 fields in the Real-Time Database Table as below. The I/O channels (or Power meter loop/phase) included in the Database Table are based on the channels listed on the "Channel List" section of the WISE / PMC / PMD's "IoT Platform Setting -> IoTstar Setting -> Real-Time Data Sending Setting" page which user define previously (please refer to "Appendix II" and "Appendix IV"). It is arranged from top to bottom, and can store up to 1000 I/O channels (or Power meter loop/phase) data.

Name	Data type	Description
Name	nvarchar	The setting of "Name" field in the "Channel List" section of the WISE / PMC / PMD's "IoTstar Real-Time Data Sending Setting" page which user define previously for the I/O module channel (or meter power loop/phase).
Value	real	The real-time value of the I/O channel (or meter power loop/phase). "NULL" mean the I/O module (or power meter) which the I/O channel (or meter power loop/phase)

		belongs is in offline status with controller.			
		The time information of the real-time value			
DateTime	datetimeoffset	of the I/O channel (or meter power			
		loop/phase) is logged.			
		It is the information of the I/O module (or			
		power meter) which the I/O channel (or			
		meter power loop/phase) belongs. User can			
		obtain the corresponding name of the			
ModuleUID	nvarchar	historical I/O module (or power meter)			
		Database table through the combination of			
		"uid_SerialNumber_ModuleUID". (The			
		"SerialNumber" is a unique number for			
		each WISE / PMC / PMD controller).			
		The column name of I/O channel (or meter			
Channel	nvarchar	power loop/phase) in the historical I/O			
		module (or power meter) Database table.			
		If this data is the power data, it means the			
		loop information of the power meter which			
Loop	tinyint	the power data belongs.			
		If this data is the I/O channel data, it will			
		show "NULL".			
		If this data is the power data, it means the			
Phase	tinvint	phase information of the power meter which			
rnase	tinyint	the power data belongs.			
		• Three Phase Power Meter:			

	1 -> A; 2 ->B; 3->C; 4 ->Total/Average
	• Single Phase Power Meter:1
	If this data is the I/O channel data, it will
	show "NULL".

Following is an example of the Real-Time Database Table with I/O channel data.

	Name	Value	DateTime	ModuleUID	Channel	Loop	Phase
1	COM3-N1-AI0	127.995	2019-12-10 18:12:35.000	wrwt	AIO	NULL	NULL
2	COM3-N2-AOO	0.5	2019-12-10 18:12:35.000	kysh	AOO	NULL	NULL
3	COM3-N2-AO1	0	2019-12-10 18:12:35.000	kysh	AO1	NULL	NULL
4	COM3-N3-DO0	0	2019-12-10 18:12:35.000	aehk	DOO	NULL	NULL
5	COM4-N1-DIC0	0	2019-12-10 18:12:35.000	bo7n	DICO	NULL	NULL
6	COM4-N3-DI0	0	2019-12-10 18:12:35.000	38g9	DIO	NULL	NULL
7	COM4-N6-RI32	NULL	2019-12-10 18:12:35.000	ex8s	RI32	NULL	NULL
8	IR1	0	2019-12-10 18:12:35.000	ir	IR1	NULL	NULL
9	XV-DIC0	0	2019-12-10 18:12:35.000	lkz2	DICO	NULL	NULL

Following is an example of the Real-Time Database Table with Power Data.

	III Results 📑 Messages							
	Name	Value	Date Time	ModuleUID	Channel	Loop	Phase	
1	COM3-N1-SUB8-TOTAL-KWH	1423.265	2019-12-03 14:36:38.000	g92h	KWH	8	4	
2	COM3-N2-PHASEA-V	108.027	2019-12-03 14:36:38.000	p82r	٧	1	1	
3	COM3-N2-PHASEB-V	106.176	2019-12-03 14:36:38.000	p82r	٧	1	2	
4	COM3-N2-PHASEC-V	113.47	2019-12-03 14:36:38.000	p82r	٧	1	3	
5	COM3-N2-TOTAL-KWH	3056.991	2019-12-03 14:36:38.000	p82r	KWH	1	4	
6	COM3-N3-CT2-I	12.768	2019-12-03 14:36:38.000	f3u5	Ι	2	1	

• Work with SQL command to get real-time I/O data and power data

User now can use the SQL command to get the data from the Real-Time Database Table. Following is an example to get real-time I/O data and power data from the Real-Time Database Table.

In this case, the WISE controller login into IoTstar with the account "alan_jhu"; user can use Microsoft SQL Server Management Studio to open the corresponding Database of the "alan_jhu" account, find the "uid_01f42a06180000b0_realtime" Database Table for the real-time I/O channel data of the WISE controller ("01f42a06180000b0" is the Serial Number of the WISE), then use the SQL command as below to query all real-time I/O channel data from the Database Table.

SELECT TOP (1000) [Name], [Value], [DateTime] FROM

[alan_jhu].[dbo].[uid_01f42a06180000b0_realtime]

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• Work with SQL command to assign the value of the I/O module's DO/AO Channel

User also can use the SQL command to assign the value of I/O module's DO/AO channel by the Real-Time Database Table. Please refer to the following as an example:

In this case, user use Microsoft SQL Server Management Studio to open the Database that is corresponding to the "alan_jhu" account, find the "uid_01f42a06180000b0_realtime" Database Table for the real-time I/O channel data of the WISE controller ("01f42a06180000b0" is the Serial Number of the WISE), search the DO channel named as "LAN-N1-COO", then use the SQL command as below to set the value of the "LAN-N1-CO0" channel to OFF.

UPDATE [alan_jhu].[dbo].[uid_01f42a06180000b0_realtime] SET Value = 0 WHERE Name = 'LAN-N1-CO0'

説 SQLQuery1 sql - localhost.alan_jhu (sa (107))* - Microsoft S 構築(0) 道田(0) 専家(0) ● 項目(0) ● <th>工具(I) 視窗(W) 説明(H)</th> <th>快速設置 </th> <th>₫ (Ctrl+Q) Į +</th> <th>₽ = □ ×</th>	工具(I) 視窗(W) 説明(H)	快速設置 	₫ (Ctrl+Q) Į +	₽ = □ ×
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Appendix IX Format of Real-Time Data in MySQL Server

After both the real-time I/O data and power data upload function of WISE / PMC / PMD and the database import function of IoTstar are enabled, IoTstar will start to receive the real-time I/O data and power data uploaded by WISE / PMC / PMD and import them into the Database. For the real-time I/O data and power data, the database will only keep the latest values of the corresponding channel. User can disable the database import function to stop the database import operation.

The Real-Time Database Table IoTstar create is based on the unit of WISE / PMC / PMD controller. So each WISE / PMC / PMD has a corresponding Database Table for the storage of real-time I/O channel data and power data. Based on the setting of "Appendix II" and "Appendix IV", IoTstar will receive the real-time data of the selected I/O channel or Power meter loop/phase from WISE / PMC / PMD, and import them into the Database. The total amount of I/O channels and Power meter loop/phase to be included in each WISE / PMC / PMD's Real-Time Database Table can be up to 1000. The format of the Real-Time Database Table is as follow:

• The format of Real-Time Data in Database

Each WISE / PMC / PMD controller has a corresponding Database Table for the storage of the real-time I/O data and power data. The name of this Database Table is in the format of "uid_SerialNumber_realtime". "SerialNumber" is a unique number for each WISE / PMC / PMD controller. User can find the "SerialNumber" of the corresponding WISE / PMC / PMD controller through the "Remote Maintain Devices" page of IoTstar as below:

Dometa Unintain Douisse	Online Device List (3/100)						Q, Search	
- піпе и ага изунау	WISE-5231(新店)	PMC-5231(新店)		-2201(新店)		L(湖口總公司)	- 1001-1004-11	
	WISF-5231 012a4a0618000076	PMC-5231 D1c21c06180000f7		4d515000043	PMC-5231 01c90f0618	00003d	PMC-5231 0104e90518000026	
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ping Setting	WISE-5231M-展会 WISE-5231M-3GWA	WISE-5231M-4GE		E-5231M-4GC 5231M-4GE				
	01fd3706180000b6	01823dc7190000aa		5231M-4GE 391a000041				
		Î	1					

There are 7 fields in the Real-Time Database Table as below. The I/O channels (or Power meter loop/phase) included in the Database Table are based on the channels listed on the "Channel List" section of the WISE / PMC / PMD's "IoT Platform Setting -> IoTstar Setting -> Real-Time Data Sending Setting" page which user define previously (please refer to "Appendix II" and "Appendix IV"). It is arranged from top to bottom, and can store up to 1000 I/O channels (or Power meter loop/phase) data.

Name	Data type	Description
		The setting of "Name" field in the "Channel
		List" section of the WISE / PMC / PMD's
Name	varchar	"IoTstar Real-Time Data Sending Setting"
		page which user define previously for the I/O
		module channel (or meter power loop/phase).
	double	The real-time value of the I/O channel (or
Value		meter power loop/phase). "NULL" mean the
value		I/O module (or power meter) which the I/O
		channel (or meter power loop/phase) belongs

		is in offline status with controller.
		The time information of the real-time value of
		the I/O channel (or meter power loop/phase)
		is logged.
	1	Please note: The time information recorded
DateTime	datetime	here is UTC time, so please remember to refer
		to the time zone of the controller and convert
		the time information you get in this field to
		the correct time information.
		It is the information of the I/O module (or
	varchar	power meter) which the I/O channel (or meter
		power loop/phase) belongs. User can obtain
		the corresponding name of the historical I/O
ModuleUID		module (or power meter) Database table
		through the combination of
		"uid_SerialNumber_ModuleUID". (The
		"SerialNumber" is a unique number for each
		WISE / PMC / PMD controller).
		The column name of I/O channel (or meter
Channel	varchar	power loop/phase) in the historical I/O
		module (or power meter) Database table.
		If this data is the power data, it means the
Loon	tinvint	loop information of the power meter which
Loop	tinyint	the power data belongs.
		If this data is the I/O channel data, it will

		show "NULL".
		If this data is the power data, it means the
		phase information of the power meter which
	tinyint	the power data belongs.
Dhaga		• Three Phase Power Meter:
Phase		1 -> A; 2 ->B; 3->C; 4 ->Total/Average
		• Single Phase Power Meter:1
		If this data is the I/O channel data, it will
		show "NULL".

Following is an example of the Real-Time Database Table with I/O channel data.

Name	Value	DateTime	ModuleUID	Channel	Loop	Phase
IR 12	3391	2022-08-02 08:39:30	ir	IR12	NULL	NULL
COM3-N1-AI0	760	2022-08-02 08:39:30	wrwt	AI0	NULL	NULL
COM3-N1-AI5	186.972	2022-08-02 08:39:30	wrwt	AI5	NULL	NULL
COM3-N1-AI6	184.82	2022-08-02 08:39:30	wrwt	AI6	NULL	NULL
COM3-N1-AI7	184.545	2022-08-02 08:39:30	wrwt	AI7	NULL	NULL
COM3-N1-AI8	184.301	2022-08-02 08:39:30	wrwt	AI8	NULL	NULL
COM3-N1-AI3	76.37	2022-08-02 08:39:30	wrwt	AI3	NULL	NULL
COM3-N1-AI4	69.881	2022-08-02 08:39:30	wrwt	AI4	NULL	NULL
COM3-N1-AI9	25.458	2022-08-02 08:39:30	wrwt	AI9	NULL	NULL
COM3-N1-AI2	2.579	2022-08-02 08:39:30	wrwt	AI2	NULL	NULL
COM3-N1-AI1	0.186	2022-08-02 08:39:30	wrwt	AI1	NULL	NULL
COM3-N3-DO0	0	2022-08-02 08:39:30	aehk	DO0	NULL	NULL
COM3-N3-DO1	0	2022-08-02 08:39:30	aehk	DO1	NULL	NULL
COM4-N3-DO0	0	2022-08-02 08:39:30	sag9	DO0	NULL	NULL
COM4-N3-DO1	0	2022-08-02 08:39:30	sag9	DO1	NULL	NULL

Following is an example of the Real-Time Database Table with Power Data.

Name	Value	DateTime	ModuleUID	Channel	Loop	Phase
COM3-N1-CT1-I	44.135	2022-08-02 09:28:28	blgb	I	1	1
COM3-N1-CT1-KVA	4.703	2022-08-02 09:28:28	blgb	KVA	1	1
COM3-N1-CT1-KVAH	42003.74	2022-08-02 09:28:28	blgb	KVAH	1	1
COM3-N1-CT1-KVAR	-3.712	2022-08-02 09:28:28	blgb	KVAR	1	1
COM3-N1-CT1-KVARH	-18560.92	2022-08-02 09:28:28	blgb	KVARH	1	1
COM3-N1-CT1-KW	2.887	2022-08-02 09:28:28	blgb	KW	1	1
COM3-N1-CT1-KWH	21979.01	2022-08-02 09:28:28	blgb	KWH	1	1
COM3-N1-CT1-PF	0.614	2022-08-02 09:28:28	blgb	PF	1	1
COM3-N1-CT1-V	106.655	2022-08-02 09:28:28	blgb	V	1	1

• Work with SQL command to get real-time I/O data and power data

User now can use the SQL command to get the data from the Real-Time Database Table. Following is an example to get real-time I/O data and power data from the Real-Time Database Table.

In this case, the WISE controller login into IoTstar with the account "sam_huang"; user can use MySQL Workbench to open the corresponding Database of the "sam_huang" account, find the "uid_01b1703a1a000013_realtime" Database Table for the real-time I/O channel data of the WISE controller ("01b1703a1a000013" is the Serial Number of the WISE), then use the SQL command as below to query all real-time I/O channel data from the Database Table.

SELECT Name, Value, DateTime FROM

sam_huang.uid_01b1703a1a000013_realtime

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uid_01a0190618000088_ir	` P		-N1-AI0	760 0.188	1022-08-02 08:47:36 1022-08-02 08:47:36	wrwt	AI0 AI1	NULL	NULL		G	Grid
uid_01a0190618000088_o5s	h –		HN1-AL1	2,592	022-08-02 08:47:36	wrwt	AI1 AI2	NULL	NULL			
uid_01a0190618000088_real			-N1-A12	76.139	022-08-02 08:47:36	wrwt	AI2	NULL	NULL			
uid_01b1703a1a000013_aeh			-N1-AI4	69.874	022-08-02 08:47:36	wrwt	AI4	NULL	NULL			orn
 uid_01b1703a1a000013_ayy uid_01b1703a1a000013_bo7 		COM3	-N1-AI5	186.667	022-08-02 08:47:36	wrwt	AI5	NULL	NULL			
uid 01b1703a1a000013 e00		COMS	-N1-AI6	184.362	022-08-02 08:47:36	wrwt	AI6	NULL	NULL			
uid_01b1703a1a000013_ex8	s		-N1-AI7	184.683	022-08-02 08:47:36	wrwt	AI7	NULL	NULL		E	Field
uid_01b1703a1a000013_ir			-N1-AI8	183.432	022-08-02 08:47:36	wrwt	AI8	NULL	NULL		τy	уре
uid_01b1703a1a000013_k0k uid_01b1703a1a000013_k0k			8-N1-AI9	25.29	022-08-02 08:47:36	wrwt	AI9					
uid_01b1703a1a000013_kys	,	-		013_realtin						Apply	Rev	
▶ uid_01b1703a1a000013_oxy		Dutput 🔅										
uid_01b1703a1a000013_real		Actio	n Output		-							
uid_01b1/03a1a000013_rw8 uid_01b1703a1a000013_sag		+	Time	Action			Message			Durati	on / Fetch	
uid 01b1703a1a000013 sqc		ງ່ 1	16:37:31	SELECT *	ROM sam_huang.uid_0	1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00
uid_01b1703a1a000013_tx5t	v (2	16:38:10	SELECT *	ROM sam huang.uid 0	1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00
ministration Schemas			16:39:05	SELECT	FROM sam_huang.uid_0	1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00
ormation		4	16:39:28	SELECT *	ROM sam_huang.uid_0	1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00
	<u>^</u>	5	16:39:31	SELECT *	ROM sam_huang.uid_0	1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00
Table: uid_01b1703a1a000013_realtin	ne d	6	16:39:32	SELECT *	ROM sam_huang.uid_0	1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00
		7	16:44:41	SELECT * I	ROM sam_huang.uid_0	1a01906	4000 row(s) re	etumed		0.000	sec / 0.03	32
Columns: <u>Name</u> varchar(64) PK		-	16:44:47	SELECT *	ROM sam_huang.uid_0	1a01906	8 row(s) return	ned		0.000	sec / 0.00	00
Value double DateTime datetime			16:46:37	SELECT *		1b1703a	59 row(s) retu	med		0.000	sec / 0.00	00 :
ModuleUID varchar(64) Channel varchar(64)		· · ·			ROM sam_huang.uid_0					0.000	sec / 0.00	00
Loop tinyint Phase tinyint	~									3.000		
pject Info Session												

• Work with SQL command to assign the value of the I/O module's DO/AO Channel

User also can use the SQL command to assign the value of I/O module's DO/AO channel by the Real-Time Database Table. Please refer to the following as an example:

In this case, user use MySQL Workbench to open the Database that is corresponding to the "sam_huang" account, find the "uid_01b1703a1a000013_realtime" Database Table for the real-time I/O channel data of the WISE controller ("01b1703a1a000013" is the Serial Number of the WISE), search the DO channel named as

"COM3-N3-DO0", then use the SQL command as below to set the value of the "COM3-N3-DO0" channel to OFF.

UPDATE sam_huang.uid_01b1703a1a000013_realtime SET Value = 0

WHERE Name = 'COM3-N3-DO0'

MySQL Workbench	-	o x
sam × File Edit View Query Database Server		
		Ø
Navigator	Query 1 SQL File 5* SQL File 6* module SQL File 7* x uid_01b1703a1a000013_realtime	
SCHEMAS 🚸	🗀 🖬 🗲 🙀 👰 🔘 🏡 📀 🛞 関 Limit to 50000 rows 🔹 📩 💆 🔍 👖 🖃	
9, Filter objects	1 • UPDATE sam_huang.uid_01b1703a1a0000013_realtime SET Value = 0	
<pre>sam_huang sam_huang channel dashboard_channel dashboard_info dashboard_widget device event_log group_info module report_template temp uid_01a0190618000088_afsx uid_01a0190618000088_realtime uid_01a0190618000088_realtime uid_01a0190618000088_realtime uid_01b1703a1a000013_aehk uid_01b1703a1a000013_evh uid_01b1703a1a000013_evh uid_01b1703a1a000013_evh uid_01b1703a1a000013_exls uid_01b1703a1a000013_vsh uid_01b1703a1a000013_vsf uid_01b1703a10</pre>	2 WHERE Name = 'COM3-N3-D00' 3 Output Cutput Cutput * Time Action * Time Action Message 1 16:54:59 UPDATE sam_huang.uid_01b1703a1a00001 0 row(s) affected Rows matched: 1 Changed	Duration / Fetch
Object Info Session		
Query Completed		

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Appendix X Format of Real-Time Data in Oracle Database

After both the real-time I/O data and power data upload function of WISE / PMC / PMD and the database import function of IoTstar are enabled, IoTstar will start to receive the real-time I/O data and power data uploaded by WISE / PMC / PMD and import them into the Database. For the real-time I/O data and power data, the database will only keep the latest values of the corresponding channel. User can disable the database import function to stop the database import operation.

The Real-Time Database Table IoTstar create is based on the unit of WISE / PMC / PMD controller. So each WISE / PMC / PMD has a corresponding Database Table for the storage of real-time I/O channel data and power data. Based on the setting of "Appendix II" and "Appendix IV", IoTstar will receive the real-time data of the selected I/O channel or Power meter loop/phase from WISE / PMC / PMD, and import them into the Database. The total amount of I/O channels and Power meter loop/phase to be included in each WISE / PMC / PMD's Real-Time Database Table can be up to 1000. The format of the Real-Time Database Table is as follow:

• The format of Real-Time Data in Database

Each WISE / PMC / PMD controller has a corresponding Database Table for the storage of the real-time I/O data and power data. The name of this Database Table is in the format of "uid_SerialNumber_realtime". "SerialNumber" is a unique number for each WISE / PMC / PMD controller. User can find the "SerialNumber" of the corresponding WISE / PMC / PMD controller through the "Remote Maintain Devices" page of IoTstar as below:

🧱 ICP DAS loTstar					🖪 Demo(iotstar_demo) Dogoul
Remote Maintain Devices	Online Device List (3/100)				Q, Search X
Real-Time Data Display	WISE-5231(新店)	PMC-5231(新店)	PMD-2201(新店)	ML PANEL(湖口總公司)	PMC_03(湖口總公司)
I/O Channel Data	WISE-5231 D12a4a0618000076	PMC-5231 01c21c06180000ff	PMD-2201 014504d515000043	PMC-5231 01c90f061800003d	PMC-5231 0104e90518000026
Power Data		₽ ♦	•	R	P
Historical Data Analysis	MP2 PANEL(湖口總公司) **				
I/O Channel Data	0128e905180000ed				
Power Data					
Power Report	Offline Device List				
Grouping Setting	WISE-5231M-展会 WISE-5231M-3GWA	WISE-5231M-4GE	WISE-5231M-4GC WISE-5231M-4GE		
I/O Channel	01fd3706180000b6	01823dc7190000aa	017f45391a000041		
Power Meter Loop				-	

There are 7 fields in the Real-Time Database Table as below. The I/O channels (or Power meter loop/phase) included in the Database Table are based on the channels listed on the "Channel List" section of the WISE / PMC / PMD's "IoT Platform Setting -> IoTstar Setting -> Real-Time Data Sending Setting" page which user define previously (please refer to "Appendix II" and "Appendix IV"). It is arranged from top to bottom, and can store up to 1000 I/O channels (or Power meter loop/phase) data.

Name	Data type	Description
		The setting of "Name" field in the "Channel List" section of the WISE / PMC / PMD's "IoTstar Real-Time Data Sending Setting"
Name	nvarchar2	page which user define previously for the I/O module channel (or meter power loop/phase).
Value	float	The real-time value of the I/O channel (or meter power loop/phase). "NULL" mean the I/O module (or power meter) which the I/O channel (or meter power loop/phase) belongs is in offline status with controller.

DateTimeITMESTAMPof the I/O channel (or meter power loop/phase) is logged.Please note: The time information recorded here is UTC time, so please remember to refer to the time zone of the controller and convert the time information, you get in this field to the correct time information.ModuleUIDnvarchar2It is the information of the I/O module (or power meter) which the I/O channel (or meter power loop/phase) belongs. User can obtain the corresponding name of the historical I/O module (or power meter) Database table through the combination of "uid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3.0)If this data is the power data, it means the loop information of the power meter which the power data belongs.			The time information of the real time value
DateTimeHIMESTAMPloop/phase) is logged.Please note: The time information recorded here is UTC time, so please remember to refer to the time zone of the controller and convert the time information you get in this field to the correct time information.ModuleUIDIt is the information of the I/O module (or power meter) which the I/O channel (or meter power loop/phase) belongs. User can obtain the corresponding name of the historical I/O module (or power meter) Database table through the combination of "uid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs.			The time information of the real-time value
DateTimeTIMESTAMPPlease note: The time information recorded here is UTC time, so please remember to refer to the time zone of the controller and convert the time information you get in this field to the correct time information.ModuleUIDIIt is the information of the I/O module (or power meter) which the I/O channel (or meter power loop/phase) belongs. User can obtain the corresponding name of the historical I/O module (or power meter) Database table through the combination of "uid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs.			of the I/O channel (or meter power
DateTimeTIMESTAMPhere is UTC time, so please remember to refer to the time zone of the controller and convert the time information you get in this field to the correct time information.Image: transmission of the local problemIt is the information of the local problemModuleUIDnvarchar2It is the information of the local problemModuleUIDnvarchar2It is the corresponding name of the historical loc module (or power meter) Database table through the combination of "wid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of loc channel (or meter power loop/phase) in the historical loc module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs.			loop/phase) is logged.
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Image: Note of the construct the information.Image: Note of the construct the construct the construct the construct the construct the construct of the construc			refer to the time zone of the controller and
Image: Construct on the section of			convert the time information you get in this
ModuleUIDnvarchar2power meter) which the I/O channel (or meter power loop/phase) belongs. User can obtain the corresponding name of the historical I/O module (or power meter) Database table through the combination of "uid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs. If this data is the I/O channel data, it will			field to the correct time information.
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ModuleUIDnvarchar2obtain the corresponding name of the historical I/O module (or power meter) Database table through the combination of "uid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs. If this data is the I/O channel data, it will			power meter) which the I/O channel (or
ModuleUIDnvarchar2historical I/O module (or power meter) Database table through the combination of "uid_SerialNumber_ModuleUID". (The "SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs. If this data is the I/O channel data, it will			meter power loop/phase) belongs. User can
Loopnumber(3,0)If this data is the I/O channel data, it will			obtain the corresponding name of the
Loopnumber(3,0)If this data is the I/O channel data, it will	ModuleUID	nvarchar2	historical I/O module (or power meter)
Channel"SerialNumber" is a unique number for each WISE / PMC / PMD controller).Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs. If this data is the I/O channel data, it will			Database table through the combination of
Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which If this data is the I/O channel data, it will			"uid_SerialNumber_ModuleUID". (The
Channelnvarchar2The column name of I/O channel (or meter power loop/phase) in the historical I/O module (or power meter) Database table.Loopnumber(3,0)If this data is the power data, it means the loop information of the power meter which the power data belongs.Loopnumber(3,0)If this data is the I/O channel data, it will			"SerialNumber" is a unique number for
Channelnvarchar2power loop/phase) in the historical I/O module (or power meter) Database table.LoopIf this data is the power data, it means the loop information of the power meter which the power data belongs.Loopnumber(3,0)If this data is the I/O channel data, it will			each WISE / PMC / PMD controller).
Image:			The column name of I/O channel (or meter
Loop number(3,0) If this data is the power data, it means the I formation of the power meter which I formation of the power meter which here where which here which here where whic	Channel	nvarchar2	power loop/phase) in the historical I/O
Loopnumber(3,0)loop information of the power meter which the power data belongs.If this data is the I/O channel data, it will			module (or power meter) Database table.
Loop number(3,0) the power data belongs. If this data is the I/O channel data, it will			If this data is the power data, it means the
If this data is the I/O channel data, it will			loop information of the power meter which
	Loop	number(3,0)	the power data belongs.
show "NIIII"			If this data is the I/O channel data, it will
SHOW ITCLE .			show "NULL".

		If this data is the power data, it means the
		phase information of the power meter which
		the power data belongs.
Dhasa	$r_{\rm max} = h_{\rm eff}(2,0)$	• Three Phase Power Meter:
Phase	number(3,0)	1 -> A; 2 ->B; 3->C; 4 ->Total/Average
		• Single Phase Power Meter:1
		If this data is the I/O channel data, it will
		show "NULL".

Following is an example of the Real-Time Database Table with I/O channel data.

	NAME	\$ V 🍸	DATETIME	3			MODULEUID	🔁 CHANN	() LOOP	() PHASE
1	COM3-N1-AI0	760	02-AUG-22	10.00.19.0	000000000	AM	wrwt	AIO	(null)	(null)
2	COM3-N1-AI1	0.193	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI1	(null)	(null)
3	COM3-N1-AI2	2.631	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI2	(null)	(null)
4	COM3-N1-AI3	75.573	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI3	(null)	(null)
5	COM3-N1-AI4	69.747	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI4	(null)	(null)
б	COM3-N1-AI5	185.858	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI5	(null)	(null)
7	COM3-N1-AI6	185.019	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI6	(null)	(null)
8	COM3-N1-AI7	184.011	02-AUG-22	10.00.19.0	000000000	AM	wrwt	AI7	(null)	(null)
9	COM3-N1-AI8	183.233	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AIS	(null)	(null)
10	COM3-N1-AI9	25.5	02-AUG-22	10.00.19.0	00000000	AM	wrwt	AI9	(null)	(null)
11	COM3-N3-DO0	0	02-AUG-22	10.00.19.0	000000000	ΜA	aehk	DO0	(null)	(null)
12	COM4-N3-DO0	0	02-AUG-22	10.00.19.0	00000000	AM	sag9	DO0	(null)	(null)
13	COM4-N3-DO1	0	02-AUG-22	10.00.19.0	00000000	AM	sag9	DO1	(null)	(null)
14	COM3-N3-DO1	0	02-AUG-22	10.00.19.0	00000000	AM	aehk	D01	(null)	(null)
15	COM4-N3-DO2	0	02-AUG-22	10.00.19.0	00000000	AM	sag9	D02	(null)	(null)

Following is an example of the Real-Time Database Table with Power Data.

	NAME	VALUE	DATETIME	MODULEUID	CHANNEL	LOOP	PHASE
1	COM3-N1-CT1-V	107.614	02-AUG-22 10.01.46.000000000 AM	blgb	V	1	1
2	COM3-N1-CT1-I	43.514	02-AUG-22 10.01.46.000000000 AM	blgb	I	1	1
3	COM3-N1-CT1-KW	2.897	02-AUG-22 10.01.46.000000000 AM	blgb	KW	1	1
4	COM3-N1-CT1-KVAR	-3.728	02-AUG-22 10.01.46.000000000 AM	blgb	KVAR	1	1
5	COM3-N1-CT1-KVA	4.721	02-AUG-22 10.01.46.000000000 AM	blgb	KVA	1	1
6	COM3-N1-CT1-PF	0.614	02-AUG-22 10.01.46.00000000 AM	blgb	PF	1	1
7	COM3-N1-CT1-KWH	21980.62	02-AUG-22 10.01.46.000000000 AM	blgb	KWH	1	1
8	COM3-N1-CT1-KVARH	-18563	02-AUG-22 10.01.46.000000000 AM	blgb	KVARH	1	1
9	COM3-N1-CT1-KVAH	42006.37	02-AUG-22 10.01.46.000000000 AM	blgb	KVAH	1	1
10	COM3-N1-CT2-V	107.614	02-AUG-22 10.01.46.000000000 AM	blgb	V	2	1

• Work with SQL command to get real-time I/O data and power data

User now can use the SQL command to get the data from the Real-Time Database Table. Following is an example to get real-time I/O data and power data from the Real-Time Database Table.

In this case, the WISE controller login into IoTstar with the account "sam_huang"; user can use SQL Developer to open the corresponding Database of the "sam_huang" account (For the procedure to open database, user need to create a connection setting first, please refer to the description in Appendix VII for detail), find the "uid_ 01b1703a1a000013_realtime" Database Table for the real-time I/O channel data of the WISE controller ("01b1703a1a000013" is the Serial Number of the WISE), then use the SQL command as below to query all real-time I/O channel data from the Database Table.

SELECT Name, Value, DateTime FROM sam_huang.

uid_01b1703a1a000013_realtime

Oracle SQL Developer : SAM_IOTSTAR		>
ile <u>E</u> dit <u>V</u> iew <u>N</u> avigate <u>R</u> un <u>S</u> ource Tea	<u>m</u> <u>T</u> ools <u>W</u> indow <u>H</u> elp	
3 🗁 🖬 🗊 🔍 🔍 🔾 - 🙆 🗄		
connections ×	A SAM IOTSTAR * III UID 01B1703A1A000013 REALTIME *	
Þ -> 60) ▼ 68 年		a sam_iotstar
		and_ionating
a sam_iotstar	Worksheet Query Builder	
- Tables (Filtered)	SELECT Name, Value, DateTime FROM sam_huang.uid_01b1703ala000013_realtime	
HANNEL		
DASHBOARD_CHANNEL		
DASHBOARD_INFO		
DASHBOARD WIDGET		
EVENT_LOG		
GROUP_DATA		
B GROUP_INFO		
MODULE		
E REPORT_TEMPLATE		
UID_01A0190618000088_RKX		
	Query Result ×	
UID_01A0190618000088_05SH UID_01A0190618000088_DEAL TIME	📌 📇 🙀 🙀 SQL Fetched 50 rows in 0.004 seconds	
UID_01A0190618000088_REALTIME	🚯 NAME 🚯 VALUE 🗧 DATETIME	
UID_01A031061800004E_BLGB	1 IR1 0 02-AUG-22 10.07.36.00000000 AM	
UID_01A031061800004E_IR	2 COM3-N1-AIO 760 2-AUG-22 10.07.36.000000000 AM	
UID_01A031061800004E_M0GB	3 COM3-N1-AI1 0.201 2-AUG-22 10.07.36.000000000 AM	
UID_01A031061800004E_M89T	4 COM3-N1-AI2 2.694 02-AUG-22 10.07.36.000000000 AM	
UID_01A031061800004E_PVN3	5 COM3-N1-AI3 74.767 2-AUG-22 10.07.36.000000000 AM	
UID_01A031061800004E_REAL TIME	6 COM3-N1-AI4 69.601 2-AUG-22 10.07.36.000000000 AM	
	7 COM3-N1-AI5 186.117 02-AUG-22 10.07.36.000000000 AM	
	8 COM3-N1-AI6 185.171 02-AUG-22 10.07.36.000000000 AM	
	9 COM3-N1-A17 184.149 2-AUG-22 10.07.36.00000000 AM	
🖶 🛄 UID_01B1703A1A000013_E00L	10 COM3-N1-AI8 182.989 2-AUG-22 10.07.36.000000000 AM	
🖶 🛄 UID_01B1703A1A000013_EX8S	Messages - Log	x
🖶 🛄 UID_01B1703A1A000013_IR		
🖮 🋄 UID_01B1703A1A000013_K0KU		
🖶 🛄 UID_01B1703A1A000013_LKZ2		
IIID 01B1703A1A000013_OXVV		
🖶 🖽 UID_01B1703A1A000013_REALTIME		
UID_UIB1703A1A000013_KW8F		
IIID 01B1703A1A000013 SAG9		
ports ×		
All Reports		
🔁 Analytic View Reports		
🔁 Data Dictionary Reports		
🔁 Data Modeler Reports	Messages Logging Page × Statements ×	
		Insert Modified Windows

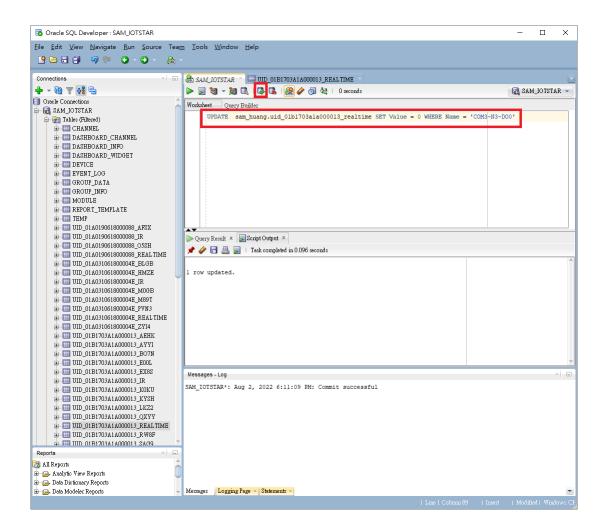
• Work with SQL command to assign the value of the I/O module's DO/AO Channel

User also can use the SQL command to assign the value of I/O module's DO/AO channel by the Real-Time Database Table. Please refer to the following as an example:

In this case, user use SQL Developer to open the Database that is corresponding to the "sam_huang" account (For the procedure to open the database, user need to create a connection setting first, please refer to the description in Appendix VII for detail), find the "uid_01b1703a1a000013_realtime" Database Table for the real-time I/O channel data of the WISE controller ("01b1703a1a000013" is the Serial Number of the WISE), search the DO channel named as "COM3-N3-DO0", then use the SQL command as below to set the value of the "COM3-N3-DO0" channel to OFF. After execute the SQL command, please click the "Commit" button to confirm the setting.

UPDATE sam_huang.uid_01b1703a1a000013_realtime SET Value = 0 WHERE
Name =

'COM3-N3-DO0'



Appendix XI Format of WISE/PMC/PMD Status in Microsoft SQL Server

Users can query the status of the WISE / PMC / PMD controller through the Database Table created by IoTstar. The Database Table's name is "**device**". The format of the Database Table of the WISE / PMC / PMD controller's status is as follow:

	Results	📄 Messages				
	UID		ModelName	Nickname	Online	Signal
1	01f42	a06180000Ъ0	WISE-5231M-3GWA	100.234	0	-113

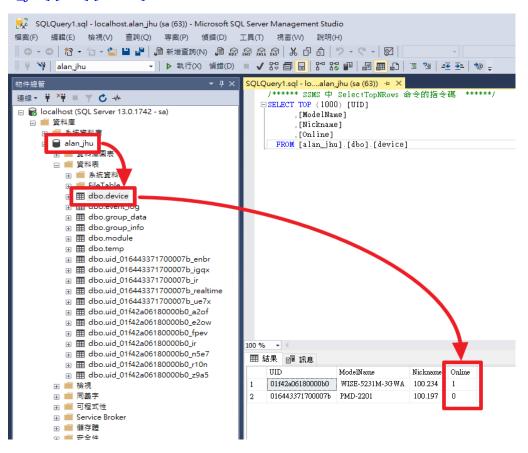
Name	Data type	Description
		It is the "Serial Number" of the WISE / PMC /
		PMD controller. User can find the WISE / PMC
UID	varchar	/ PMD controller with the corresponding "Serial
		Number" through the "Remote Maintain
		Devices" page of IoTstar.
ModelName	varchar	It is the Model name of the controller.
Nickname	nvarchar	It is the Nickname of the controller.
		It indicates the connection status between the
	bit	WISE / PMC / PMD controller and IoTstar. The
Online		data type is "bit" ("0" -> Offline; "1" ->
		Online).
		If the WISE / PMC / PMD controller supports
		the Mobile Network. This field will be used to
Signal	int	indicate the Mobile Signal strength of the WISE
		/ PMC / PMD controller. The unit is dBm. This
		value is updated once every 30 seconds.

TimezoneOffset	int	Time	zone	information	of	the	
	ınt	WISE/PMC/PMD controller.					

In this case, the WISE / PMC / PMD controllers login into the IoTstar with the account "alan_jhu"; user can use Microsoft SQL Server Management Studio to open the corresponding Database of the "alan_jhu" account, find the "**device**" Database Table. This Database Table contains the fields to record the related information of the WISE / PMC / PMD controllers which login into the IoTstar with the "alan_jhu" account.

Now user can use the SQL command as below to query the connection status of all controllers from the Database Table.

SELECT TOP (1000) [UID], [ModelName], [Nickname], [Online] FROM [alan_jhu].[dbo].[device]



Appendix XII Format of WISE/PMC/PMD Status in MySQL Server

Users can query the status of the WISE / PMC / PMD controller through the Database Table created by IoTstar. The Database Table's name is "**device**". The format of the Database Table of the WISE / PMC / PMD controller's status is as follow:

UID	ModelName	Nickname	Online	Signal	TimezoneOffset
01a0190618000088	PMC-5231	PMC-5231(39)	1	0	-480
01b1703a1a000013	WISE-2246M	WISE-2246M	1	0	-480

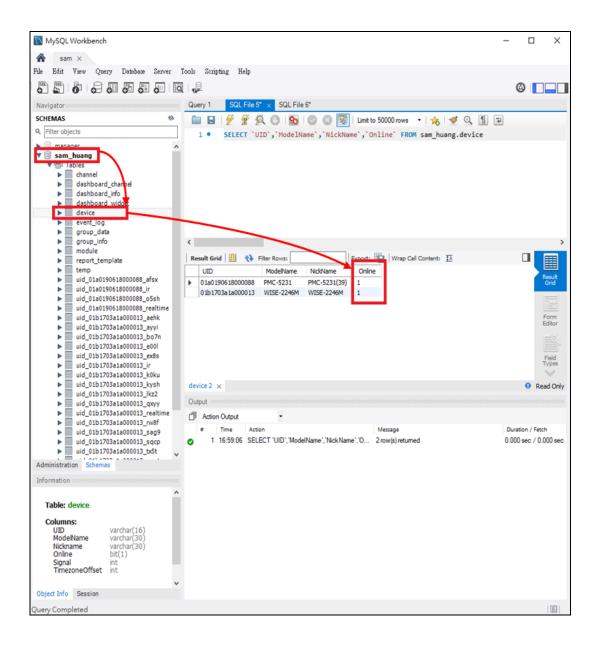
Name	Data type	pe Description						
		It is the "Serial Number" of the WISE / PMC /						
		PMD controller. User can find the WISE / PMC						
UID	varchar	/ PMD controller with the corresponding "Serial						
		Number" through the "Remote Maintain						
		Devices" page of IoTstar.						
ModelName	varchar	It is the Model name of the controller.						
Nickname	varchar	It is the Nickname of the controller.						
		It indicates the connection status between the						
	bit	WISE / PMC / PMD controller and IoTstar. The						
Online		data type is "bit" ("0" -> Offline; "1" ->						
		Online).						
		If the WISE / PMC / PMD controller supports						
		the Mobile Network. This field will be used to						
Signal	int	indicate the Mobile Signal strength of the WISE						
		/ PMC / PMD controller. The unit is dBm. This						
		value is updated once every 30 seconds.						

TimezoneOffset	int	Time zone information of the WISE/PMC/PMD
	IIIt	controller.

In this case, the WISE / PMC / PMD controllers login into the IoTstar with the account "sam_huang"; user can use MySQL Workbench to open the corresponding Database of the "sam_huang" account, find the "device" Database Table. This Database Table contains the fields to record the related information of the WISE / PMC / PMD controllers which login into the IoTstar with the "sam_huang" account. Now user can use the SQL command as below to query the connection status of all controllers from the Database Table.

 SELECT
 `UID`,`ModelName`,`Nickname`,`Online`
 FROM

 sam_huang.device
 FROM



Appendix XIII Format of WISE/PMC/PMD Status in Oracle Database

Users can query the status of the WISE / PMC / PMD controller through the Database Table created by IoTstar. The Database Table's name is "**DEVICE** ". The format of the Database Table of the WISE / PMC / PMD controller's status is as follow:

	UID	MODELNAME	NICKNAME	ONLINE	SIGNAL	🚯 TIMEZONEOFFSET
1	01a0190618000088	PMC-5231	PMC-5231(39)	1	0	-480
2	01a031061800004e	PMC-5231	PMC-5231(.129)	1	0	-480
3	01b1703a1a000013	WISE-2246M	WISE-2246M	1	0	-480

Name	Data type	Description				
		It is the "Serial Number" of the WISE / PMC				
		/ PMD controller. User can find the WISE /				
UID	varchar2	PMC / PMD controller with the				
		corresponding "Serial Number" through the				
		"Remote Maintain Devices" page of IoTstar.				
ModelName	varchar2	It is the Model name of the controller.				
Nickname	nvarchar2	It is the Nickname of the controller.				
		It indicates the connection status between the				
		WISE / PMC / PMD controller and IoTstar.				
Online	number(1,0)	The data type is "bit" ("0" -> Offline; "1" ->				
		Online).				
		If the WISE / PMC / PMD controller supports				
0. 1		the Mobile Network. This field will be used				
Signal	number(38,0)	to indicate the Mobile Signal strength of the				
		WISE / PMC / PMD controller. The unit is				

		dBm. '	This valu	e is updated on	ice ever	ry 30
		second	s.			
Timeroffert	number(38,0)	Time	zone	information	of	the
TimezoneOffset		WISE/	PMC/PM	D controller.		

In this case, the WISE / PMC / PMD controllers login into the IoTstar with the account "sam_huang"; user can use SQL Developer to open the corresponding Database of the "sam_huang" account (For the procedure to open the database, user need to create a connection setting first, please refer to the description in Appendix VII for detail), find the "DEVICE" Database Table. This Database Table contains the fields to record the related information of the WISE / PMC / PMD controllers which login into the IoTstar with the "sam_huang" account.

Now user can use the SQL command as below to query the connection status of all controllers from the Database Table.

SELECT "UID", ModelName, Nickname, "ONLINE" FROM sam_huang.devic

Please note: Since "UID" and "ONLINE" are the reserved words in the Oracle system, so the double quotation marks "" must be added to UID and ONLINE in this SQL command and make sure they are uppercase, otherwise the system will not be able to execute the command correctly.

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B DASHBOARD WIDGET		
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⊕ — III MODULE		
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⊕ IEMF ⊕ UID_01A0190618000088_AFSX		
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⊕	2 01a031061800004e PMC-5231 PMC-5231 (.129 1	
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⊕ UID_01A031061800004E_M89T		
⊕ UID_01A031061800004E_PVN3		

Appendix XIV Format of I/O Module(Power Meter) Status in Microsoft SQL Server

Users can query the status of the I/O modules (and Power meters) which WISE / PMC / PMD connect through the Database Table created by IoTstar. The Database Table's name is "**module**". The format of the Database Table of the I/O module's status (and Power meters) is as follow:

	Results	Messages											
	UID	DeviceUID	Interface	Number	Manufacturer	ModelName	Nickname	Туре	Removed	Loop	Phase	Channel	Online
1	e001	01f42a06180000b0	COM3	1		I-7018Z		0	0	NULL	NULL	AI0,AI1,	1
2	kysh	01f42a06180000b0	COM3	2		I-7024R		0	0	NULL	NULL	DI0,DI1,	1
3	aehk	01f42a06180000b0	COM3	3		I-7012FD		0	0	NULL	NULL	DIO,DIC	0
4	bo7n	01f42a06180000b0	COM4	1		M-7055		0	0	NULL	NULL	DI0,DI1,	1

Name	Data type	Description
		It is the "Serial Number" of the I/O module (or
UID	varchar	Power meter). This value is assigned by IoTstar.
		It is the "Serial Number" of the WISE / PMC /
DeviceUID	varchar	PMD controller which the I/O module (or Power
		meter) connect.
		It is the interface of the WISE / PMC / PMD
Interface	varchar	controller which is used to connect with the I/O
		module (or Power meter).
Number	4:	It is the number of the I/O module (or Power
Number	tinyint	meter).
Manufaatuura	warahar	If the module is a Power meter, this field indicates
Manufacturer	varchar	the manufacturer of the meter.
	1	It is the Model name of the I/O module (or Power
ModelName	varchar	meter).
Nickname	nvarchar	It is the Nickname of the I/O module (or Power

		meter).
		It indicates the type of the module. "0" is for I/O
Туре	tinyint	module, "1" is for Power meter and "2" is for
		Internal Register.
		It indicates the I/O module (or Power meter) has
		been removed from the WISE / PMC / PMD
Removed	bit	controller, or not. ("0" indicates the module has not
		been removed; "1" indicates the module has been
		removed.)
Loop	41	If the module is a Power meter, this field indicates
Loop	tinyint	the number of Loop.
		If the module is a Power meter, this field indicates
Phase	tinyint	the Phase of the Power meter. ("1" is for Single
		Phase; "3" is for Three Phase)
		If the module is an I/O module, all the I/O channel
Channel	varchar	types the module support will be displayed in the
		field.
		It indicates the connection status between the I/O
Online	hit	module (and Power meter) and the WISE/PMC/
Online	bit	PMD controller ("0" -> Offline; "1" -> Online).
		This value is updated once every 30 seconds.

In this case, the WISE / PMC / PMD controllers login into the IoTstar with the account "alan_jhu3"; user can use Microsoft SQL Server Management Studio to open the corresponding Database of the "alan_jhu3" account and find the "**module**"

Database Table.

This Database Table contains the fields to record the related information of the I/O modules (or Power meters) connect with the WISE / PMC / PMD controllers which login into the IoTstar with the "alan_jhu3" account.

Now user can use the SQL command as below to query the connection status between the I/O modules and WISE / PMC / PMD controllers.

SELECT [UID], [ModelName], [Nickname], [Online] FROM

[alan_jhu3].[dbo].[module]

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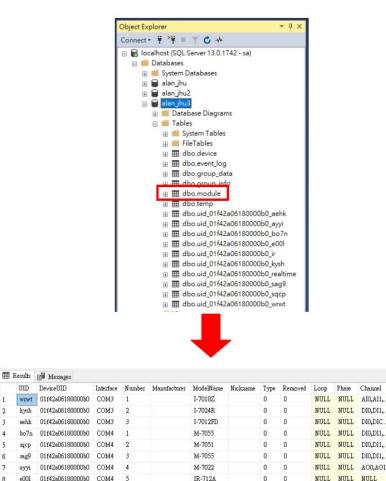
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bo7n

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Appendix XV Format of I/O Module(Power Meter) Status in MySQL Server

Users can query the status of the I/O modules (and Power meters) which WISE / PMC / PMD connect through the Database Table created by IoTstar. The Database Table'name is "**module**". The format of the Database Table of the I/O module's status (and Power meters) is as follow:

UID	DeviceUID	Interface	Number	Manufacturer	ModelName	Nickname	Туре	Removed	Loop	Phase	Channel	Online
aehk	01b1703a1a000013	COM3	3		I-7012FD		0	0	NULL	NULL	DI0,DIC0,DO0,DO1,AI0	1
kysh	01b1703a1a000013	COM3	2		I-7024R		0	0	NULL	NULL	DI0,DI1,DI2,DI3,DI4,DIC0,DIC1,DIC2,DIC3,DI	0
o5sh	01a0190618000088	COM3	1	ICP DAS	PM-3133	PM-3133	1	0	1	3	NULL	0
wrwt	01b1703a1a000013	COM3	1		I-7018Z	中文測試	0	0	NULL	NULL	AI0,AI1,AI2,AI3,AI4,AI5,AI6,AI7,AI8,AI9	1

Name	Data type	Description
LUD		It is the "Serial Number" of the I/O module (or
UID	varchar	Power meter). This value is assigned by IoTstar.
		It is the "Serial Number" of the WISE / PMC /
DeviceUID	varchar	PMD controller which the I/O module (or Power
		meter) connect.
		It is the interface of the WISE / PMC / PMD
Interface	varchar	controller which is used to connect with the I/O
		module (or Power meter).
Number	4:	It is the number of the I/O module (or Power
Number	tinyint	meter).
Manager	h	If the module is a Power meter, this field indicates
Manufacturer	varchar	the manufacturer of the meter.
	1	It is the Model name of the I/O module (or Power
ModelName	varchar	meter).
Nickname	varchar	It is the Nickname of the I/O module (or Power

		meter).
		It indicates the type of the module. "0" is for I/O
Туре	tinyint	module, "1" is for Power meter and "2" is for
		Internal Register.
		It indicates the I/O module (or Power meter) has
		been removed from the WISE / PMC / PMD
Removed	bit	controller, or not. ("0" indicates the module has not
		been removed; "1" indicates the module has been
		removed.)
Loop	tinyint	If the module is a Power meter, this field indicates
	linyint	the number of Loop.
	tinyint	If the module is a Power meter, this field indicates
Phase		the Phase of the Power meter. ("1" is for Single
		Phase; "3" is for Three Phase)
		If the module is an I/O module, all the I/O channel
Channel	varchar	types the module support will be displayed in the
		field.
		It indicates the connection status between the I/O
Online	bit	module (and Power meter) and the WISE/PMC/
Onnie		PMD controller ("0" -> Offline; "1" -> Online).
		This value is updated once every 30 seconds.

In this case, the WISE / PMC / PMD controllers login into the IoTstar with the account "sam_huang"; user can use MySQL Workbench to open the corresponding Database of the "sam_huang" account and find the "**module**" Database Table.

This Database Table contains the fields to record the related information of the I/O modules (or Power meters) connect with the WISE / PMC / PMD controllers which login into the IoTstar with the "sam_huang" account.

Now user can use the SQL command as below to query the connection status between the I/O modules and WISE / PMC / PMD controllers.

SELECT `UID`, `ModelName`, `NickName`, `Online` FROM sam_huang.module

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Appendix XVI Format of I/O Module(Power Meter) Status in Oracle Database

Users can query the status of the I/O modules (and Power meters) which WISE / PMC / PMD connect through the Database Table created by IoTstar. The Database Table's name is "**MODULE**".The format of the Database Table of the I/O module's status (and Power meters) is as follow:

	∯ UID	DEVICEUID	🕴 IN TERF 🍸	🚯 NUMBER	MANUFACTURER	🚯 MODELN 🍸	NICKNAME	TYPE	REMOVED	() LOOP	() PHASE	🔁 CHANNEL	ONLINE
1	wrwt	01b1703a1a000013	COM3	1	(null)	I-7018Z	中文測試	0	0	(null)	(null)	AI0,AI1,AI	1
2	ayyi	01b1703a1a000013	COM4	4	(null)	M-7022	(null)	0	0	(null)	(null)	A00,A01	0
3	sqcp	01b1703a1a000013	COM4	2	(null)	M-7051	(null)	0	0	(null)	(null)	DI0, DI1, DI	0
4	rw8f	01b1703a1a000013	COM4	7	(null)	M-7055	(null)	0	0	(null)	(null)	DI0, DI1, DI	0
5	sag9	01b1703a1a000013	COM4	3	(null)	M-7055	(null)	0	0	(null)	(null)	DI0, DI1, DI	1

Name	Data type	Description
		It is the "Serial Number" of the I/O module (or
UID	varchar2	Power meter). This value is assigned by IoTstar.
		It is the "Serial Number" of the WISE / PMC /
DeviceUID	varchar2	PMD controller which the I/O module (or Power
		meter) connect.
		It is the interface of the WISE / PMC / PMD
Interface	varchar2	controller which is used to connect with the I/O
		module (or Power meter).
Manahan		It is the number of the I/O module (or Power
Number	number(3,0)	meter).
Manager		If the module is a Power meter, this field
Manufacturer	varchar2	indicates the manufacturer of the meter.
	1.0	It is the Model name of the I/O module (or
ModelName	varchar2	Power meter).
Nickname	nvarchar2	It is the Nickname of the I/O module (or Power

		meter).
Туре	number(3,0)	It indicates the type of the module. "0" is for I/O module, "1" is for Power meter and "2" is for Internal Register.
Removed	number(1,0)	It indicates the I/O module (or Power meter) has been removed from the WISE / PMC / PMD controller, or not. ("0" indicates the module has not been removed; "1" indicates the module has been removed.)
Loop	number(3,0)	If the module is a Power meter, this field indicates the number of Loop.
Phase	number(3,0)	If the module is a Power meter, this field indicates the Phase of the Power meter. ("1" is for Single Phase; "3" is for Three Phase)
Channel	varchar2	If the module is an I/O module, all the I/O channel types the module support will be displayed in the field.
Online	number(1,0)	It indicate the connection status between the I/O module (and Power meter) and the WISE/PMC/ PMD controller ("0" -> Offline; "1" -> Online). This value is updated once every 30 seconds.

In this case, the WISE / PMC / PMD controllers login into the IoTstar with the account "sam_huang"; user can use SQL Developer to open the corresponding Database of the "sam_huang" account and find the "**module**" Database Table (For the

procedure to open the database, user need to create a connection setting first, please refer to the description in Appendix VII for detail).

This Database Table contains the fields to record the related information of the I/O modules (or Power meters) connect with the WISE / PMC / PMD controllers which login into the IoTstar with the "sam_huang" account.

Now user can use the SQL command as below to query the connection status between the I/O modules and WISE / PMC / PMD controllers.

SELECT "UID", ModelName, Nickname, "ONLINE" FROM sam_huang.module

Please note: Since "UID" and "ONLINE" are the reserved words in the Oracle system, so the double quotation marks "" must be added to UID and ONLINE in this SQL command and make sure that they are uppercase, otherwise the system will not be able to execute the command correctly.

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UID_01A031061800004E_M0GB	3 blgb PM-3114 PM-3114 1	
UID_01A031061800004E_M89T	4 m89t PM-3112 PM-3112 1	
UID_01A031061800004E_PVN3	5 m0gb PM-4324 PM-4324 0	
UID_01A031061800004E_REALTIME	6 pvn3 PM-3133 PM-3133 0	
UID_01A031061800004E_ZYI4	7 zy14 PM-101 PM-101 0	
UID_01B1703A1A000013_AEHK	8 hmze PM-3133-MTCP PM-3133-MTCP 1	
	9 wrwt I-7018Z 中文測試 1	
UID_01B1703A1A000013_BO7N UID 01B1703A1A000013 E00L	10 kysh I-7024R (null) 0	
UID_01B1703A1A000013_EA85	Messages - Log	× [
UID_01B1703A1A000013_K0KU	SAM_IOTSTAR*: Aug 2, 2022 6:11:09 PM: Commit successful	
UID_01B1703A1A000013_KYSH		
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