

Central Temperature /Power saving Monitoring System

cloud service

<https://iotlab.devdaq.com.tw/login>

<https://app.powerbi.com>

Microsoft Power Bi



Preface:

Due to the advent of IOT , the CTMS / CPMS controller provided by TOPSCCC based on EX-Cloud can be applied to physical variety and chemical reactions (by sensors sensing) in different environments (agriculture, fishery, industrial, medical) for analyze and judgement, in time to avoid and prevent such as pests and diseases, water quality changes, gas leakage, abnormal specimens and other phenomena.

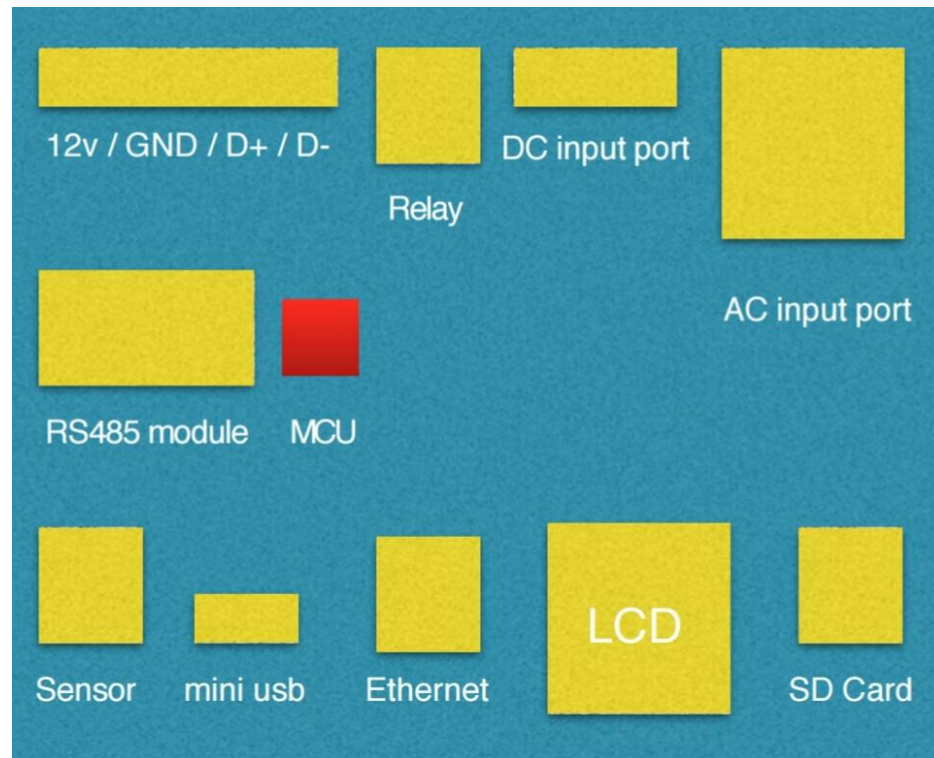
The data saved by this system will be stored in a secure public cloud (public cloud: Azure, Google, Facebook, IBM, ...) that does not have a hacker threat and data loss.



Function of Embedded Control Board

The control panel can communicate with all kinds of MODBUS products via RS485, with 2.5-inch LCD display related to the acquisition of information. With automatic upload data function so that information can be automatically uploaded to the cloud, and the data will storage in SD during network disconnected to avoid loss of information. Each channel has a individual logic operation with one buzzer and also DC/ AC voltage input port for choose the voltage input mode.

Hardware of Control Board



LCD panel

Module	EX9018
Range	TypeK -270° - 1372° C
channel1	1372.0000
channel2	1372.0000
channel3	1372.0000
channel4	1372.0000
channel5	1372.0000
channel6	1372.0000
channel7	1372.0000
channel8	1372.0000
Temperature	26°C [22 -27]
Humidity	70% [60 -80]
Alert	OFF
Server	13.67.118.210:5020
DHCP IP	192.168.8.101
CONNECTED	



Firmware of Embedded Control Board

The control board through the SD card can be set the parameters as module name , remote IP address, temperature and humidity of logic and relevant information will be saved in common.ini. The corresponding to each channel of parameters such as channel name, channel type and logic level are placed in the file of EX9018.ini. / EX9133.ini.

Temperature Firmware

Common.ini

EX9018,13,67,118,210,5020,ON,26,29,60,80

module name : EX9018

emote ip : 12.67.118.210

remote port : 5020

power off reload data status : ON

board thermal low / high : 26 / 29

board humidity low / high : 60 / 80

ex9018.ini

8,7288,7286,deflow1,-1.00,1.00,1,60

sensor type : 8 (Ktype)

auto upload counter : 7288 , 7286

channel name : devflow1

logical low / high : -1.00/+1.00

acquisition data status : 1

sampling rate : 1



Power saving Firmware

Common.ini

EX9133,13,67,118,210,5020,ON,26,29,60,80

module name : EX9133

remote ip : 12.67.118.210

remote port : 5020

power off reload data status : ON

board thermal low / high : 26 / 29

board humidity low / high : 60 / 80

EX9133.ini

0,100,0,5000,30,0,0,100kw,100kvar,100kVA,100PF,100kWh,100kvarh,100kVAh

kw sensor range : 0 - 100

kWh sensor range : 0 - 5000

sampling rate : 30

auto upload counter : 0 , 0

kw value : 100kw

kvar value : 100kvar

VA value : 100kVA

PF value : 100PF

kvarh value : 100kvarh



EX-Cloud system

Automatically store the channel data(Iotlab)

The data read by 9018/ 9133 module are automatically uploaded to the EX-Cloud system,

数据视图

al

06/11	11:27	0.75
06/11	11:28	0.74
06/11	11:28	0.74
06/11	11:29	0.74
06/11	11:30	0.74
06/11	11:30	0.74
06/11	11:31	0.74
06/11	11:32	0.74
06/11	11:32	0.73
06/11	11:33	0.73
06/11	11:33	0.91
06/11	11:34	0.78
06/11	11:35	0.81
06/11	11:35	0.81
06/11	11:35	0.81

关闭 刷新

(EX9133-power meter KW)

数据视图

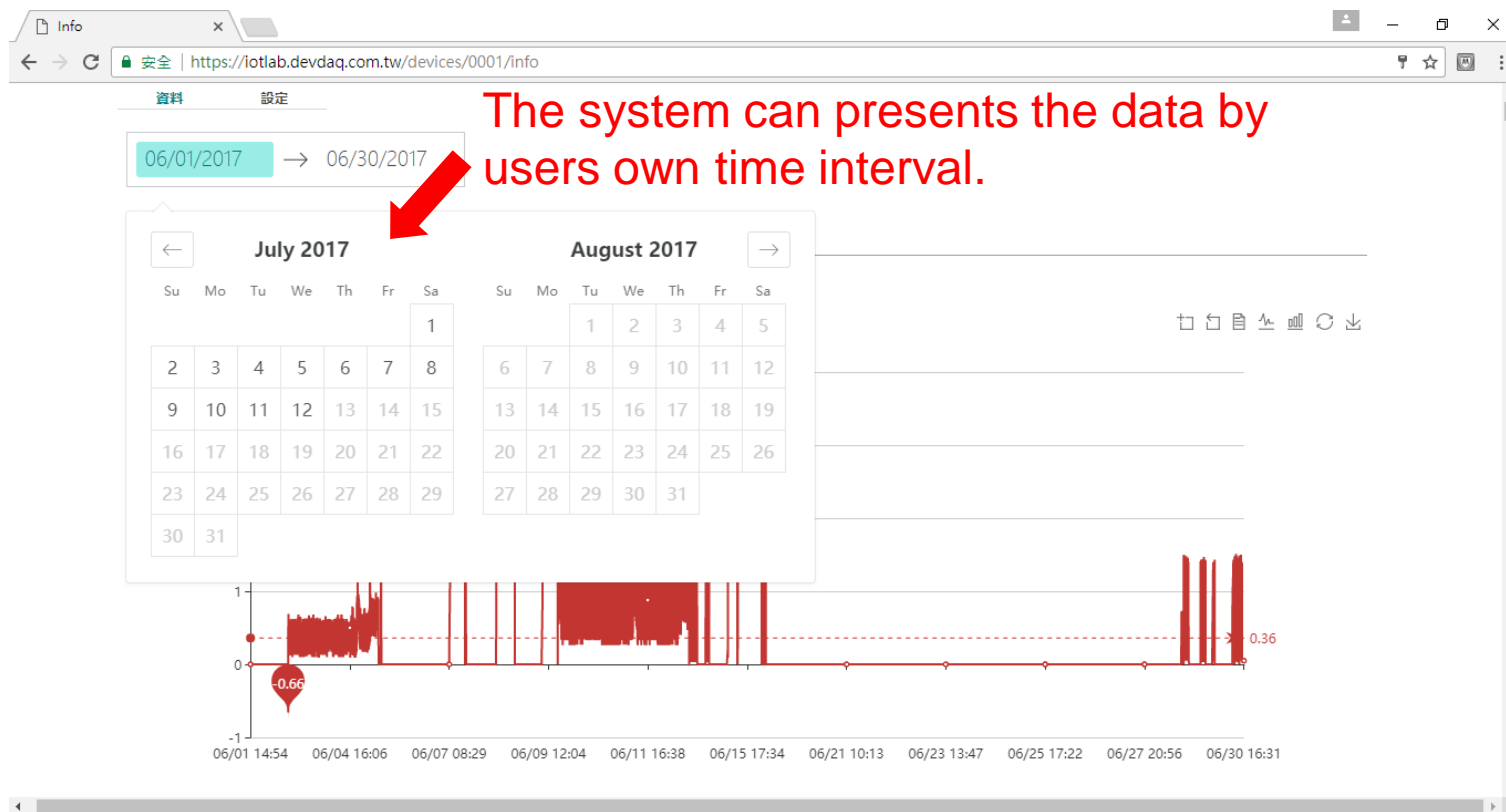
06/01 14:41	28.1
06/01 14:41	27.93
06/01 14:41	28.1
06/01 14:41	27.76
06/01 14:41	28.26
06/01 14:42	27.64
06/01 14:42	27.51
06/01 14:42	27.43
06/01 14:42	27.84
06/01 14:42	27.89
06/01 14:42	27.68
06/01 14:42	27.68
06/01 14:42	27.55
06/01 14:43	27.59
06/01 14:43	27.84

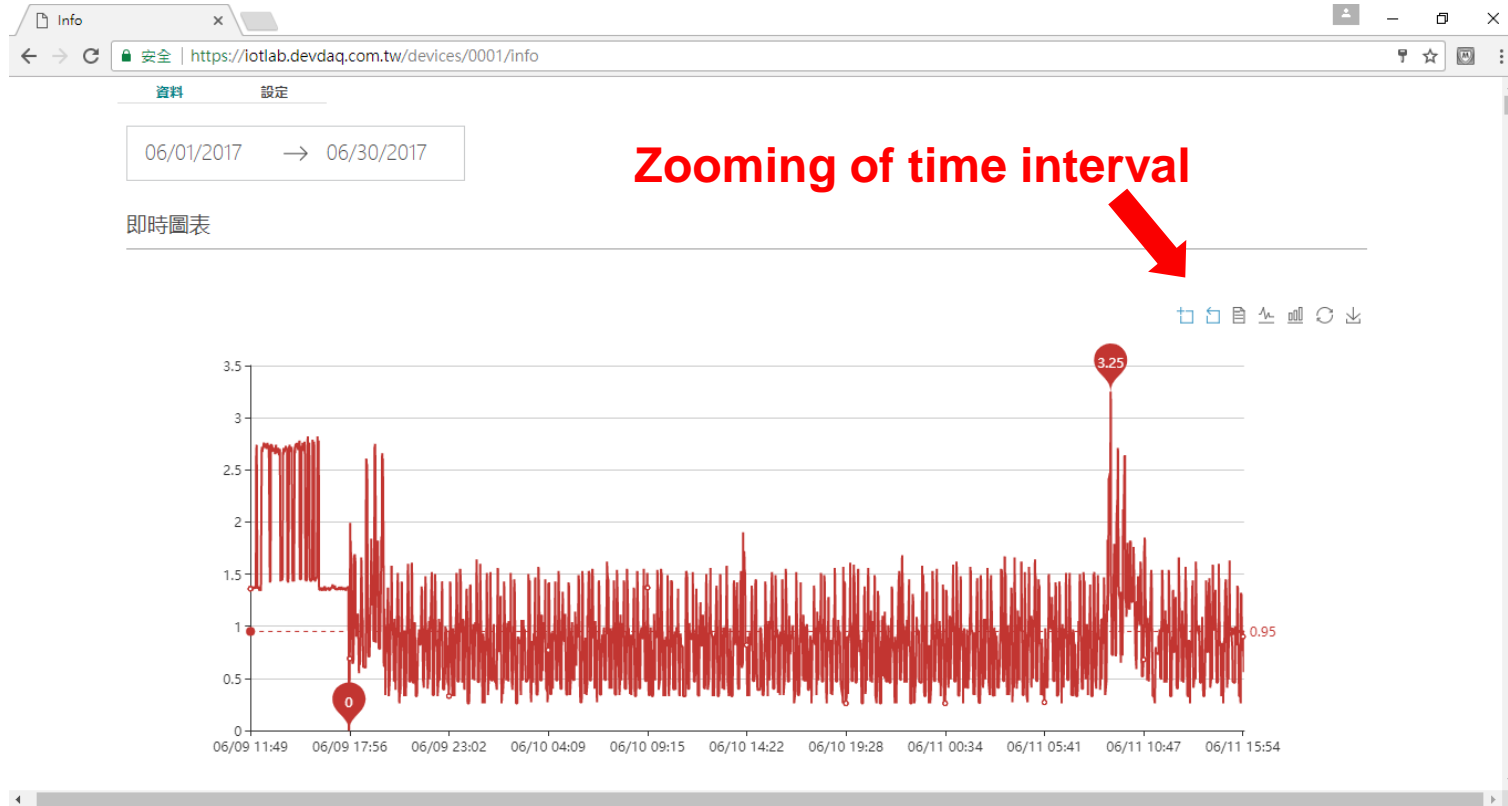
关闭

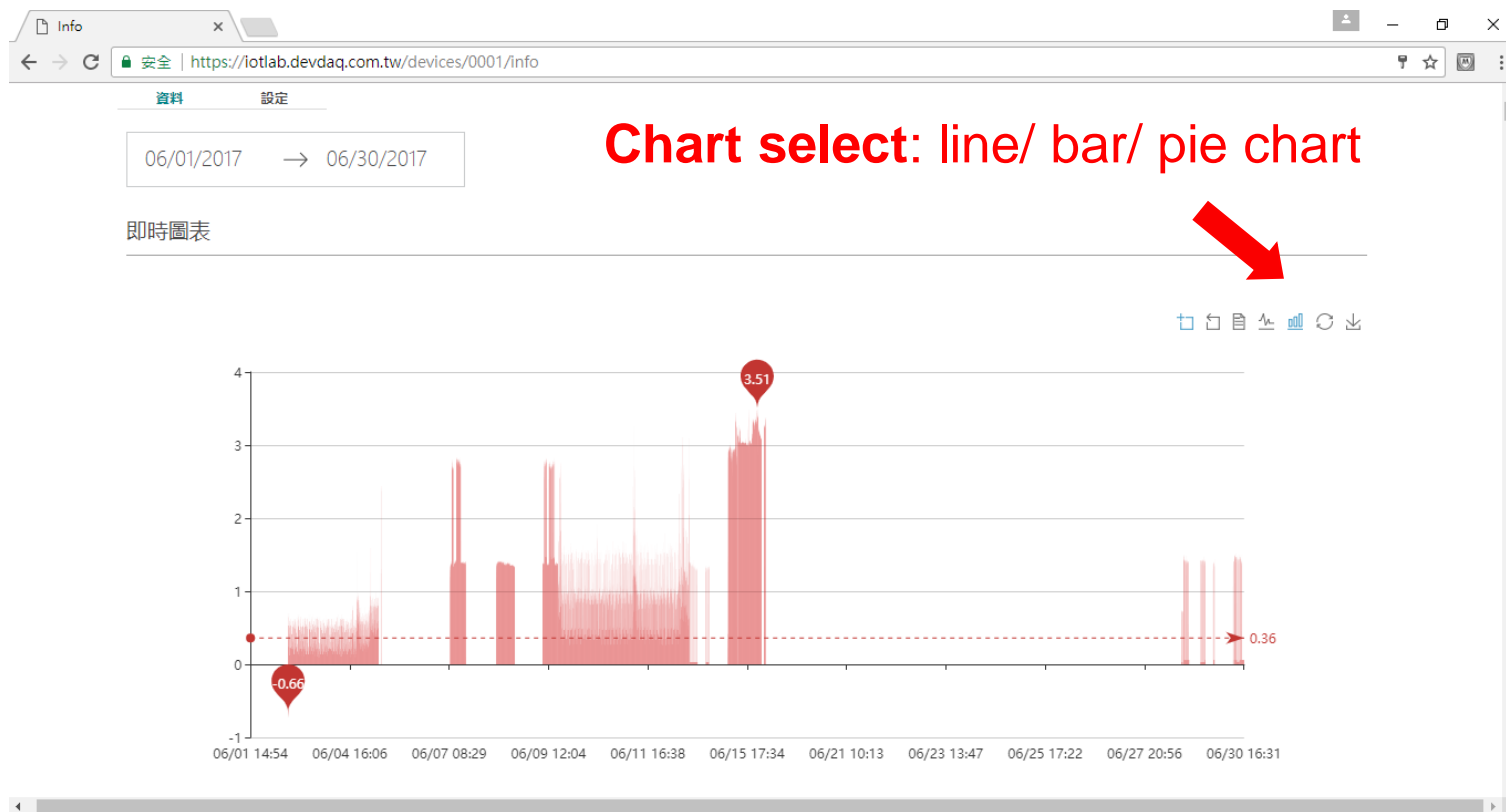
刷新

(EX9018-Device R002)

Features







Setting x

安全 | https://iotlab.devdaq.com.tw/devices/0001/setting

登出

資料 設定

一般設定

名稱

power meter KW

位於什麼地方

Home

監控頻率

5 second

5 second

信箱 / 簡訊設定

邏輯控制

何時通知

監控項目	大於或小於	觸發值	單位	簡訊郵件	通知
溫度	>	23.0	°C	Email	gxi0306@hotmail.com
電量	<	15.4	kwh	SMS	0970058029

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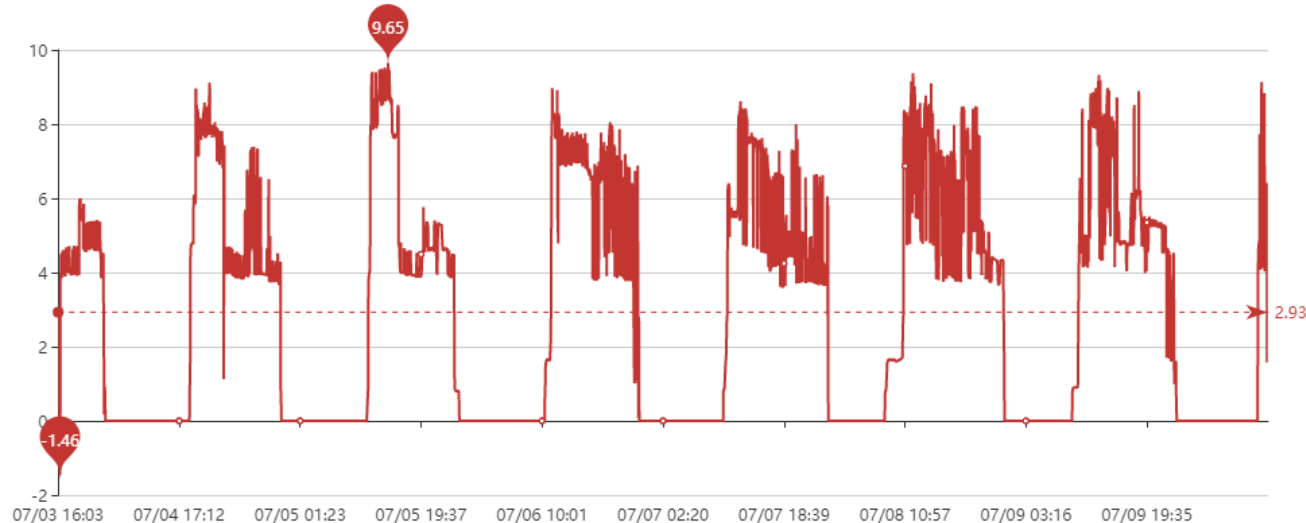
Set the trigger value and send alert messages instantly.



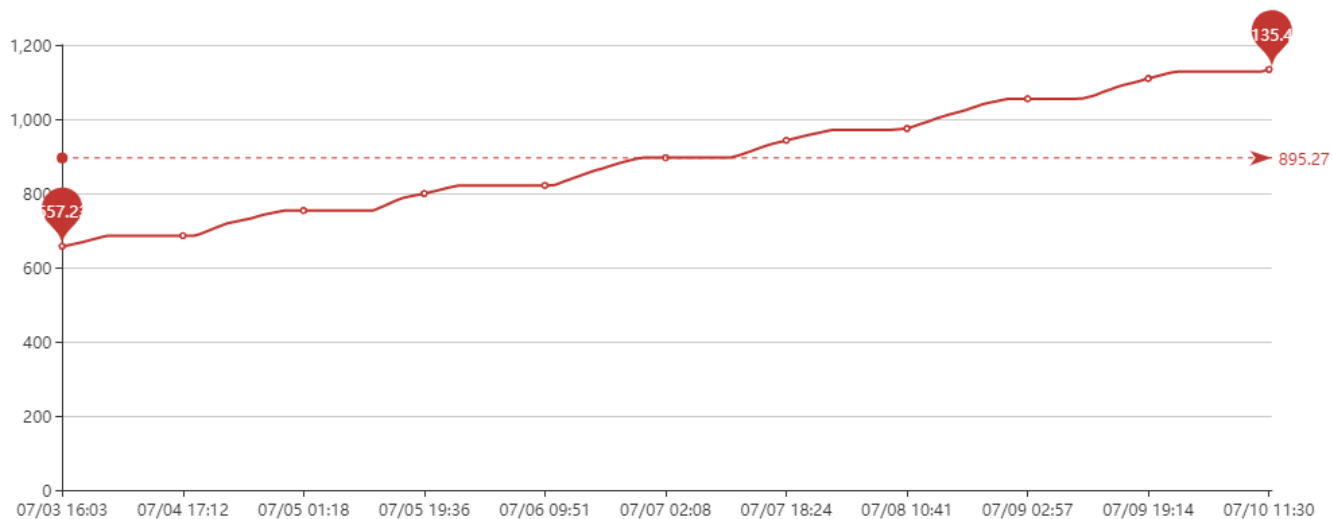
Historical data graph

Each channel has its own parameter graph and the average value, let users understand the trends quickly.

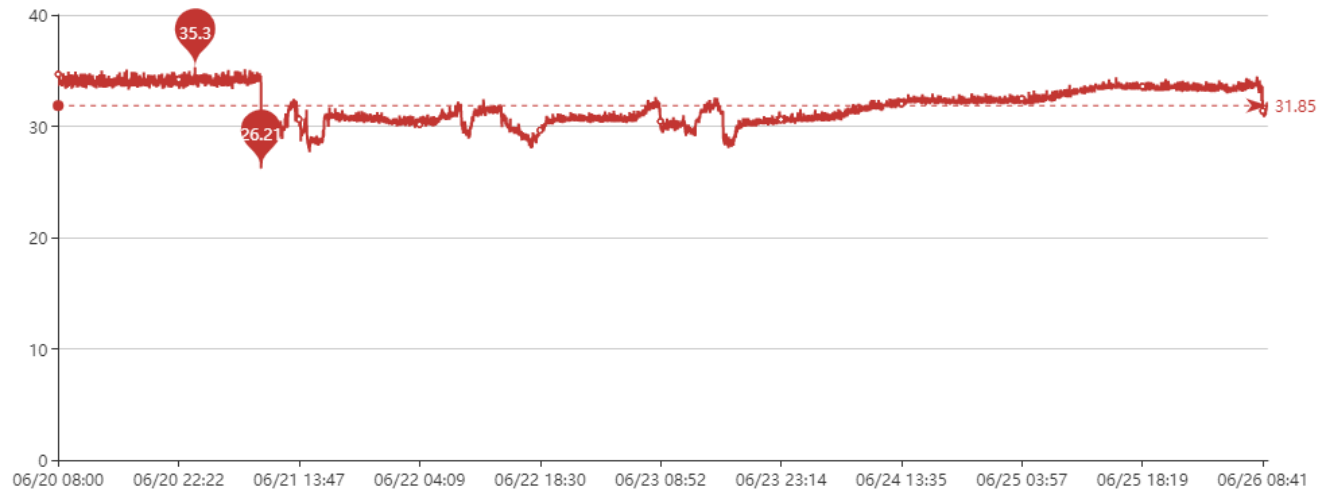
power meter KW



power meter kwh

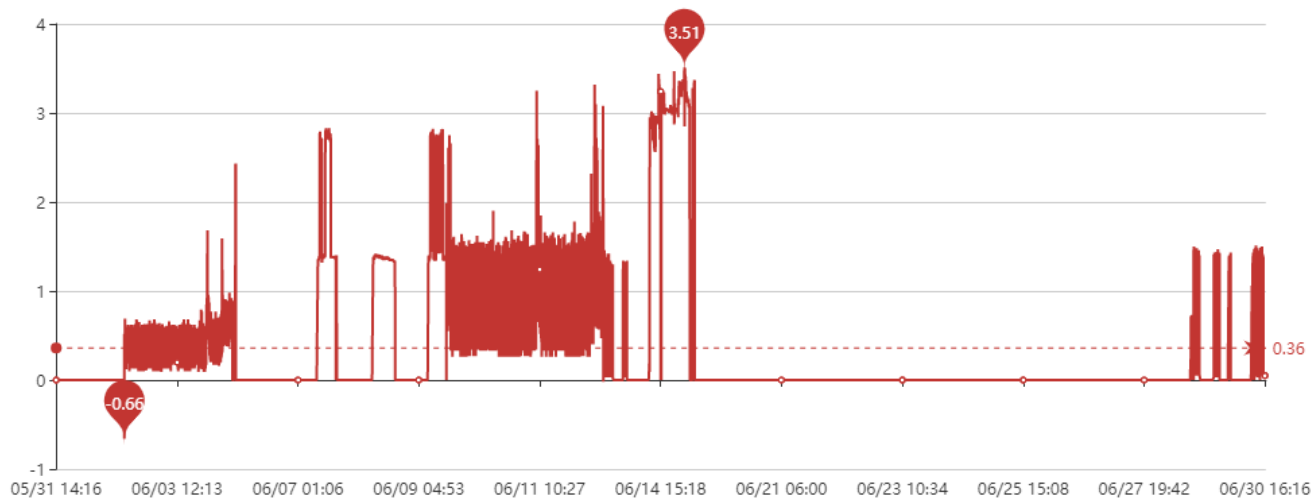


Temperature

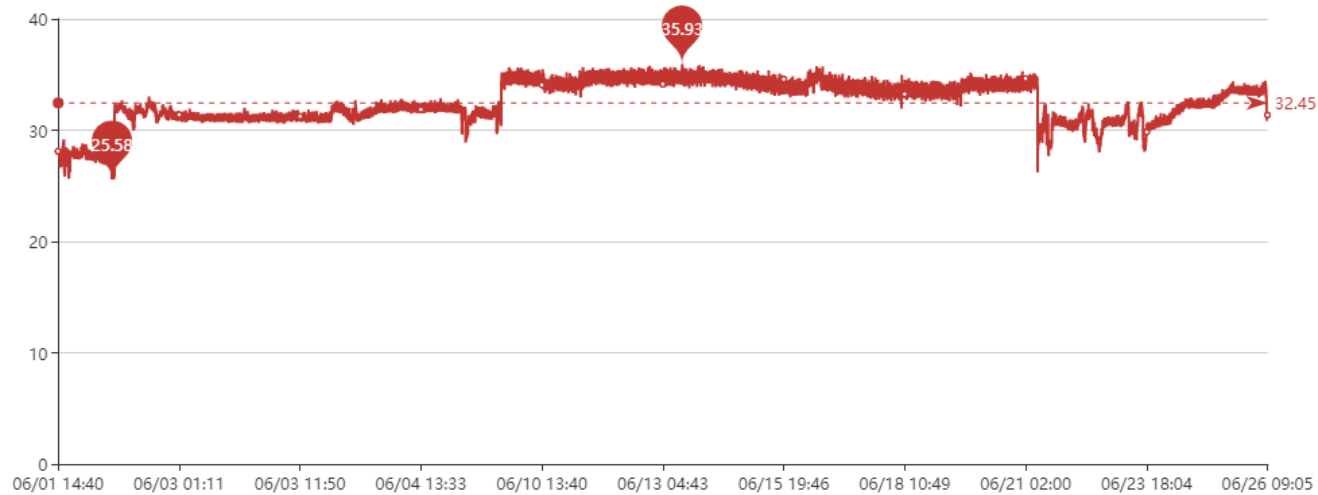


Historical record

Each channel will according its own sampling rate to display each Historical data.



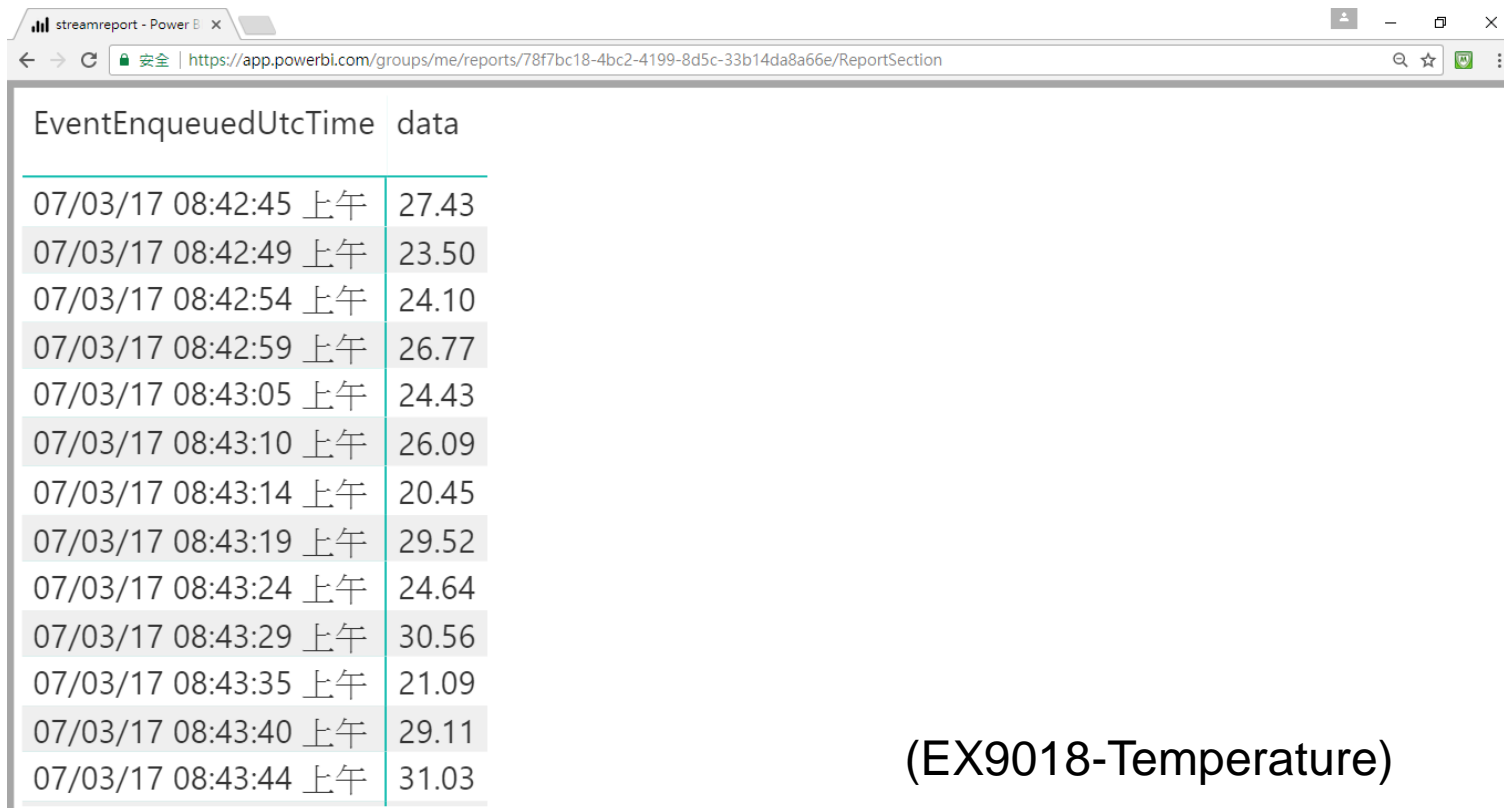
(EX9133-power meter KW)



(EX9018-Temperature)

Automatically store the channel data(**Power bi**)

The data read by 9018/ 9133 module are automatically uploaded to the Cloud system and the system will store and backup the corresponding value.

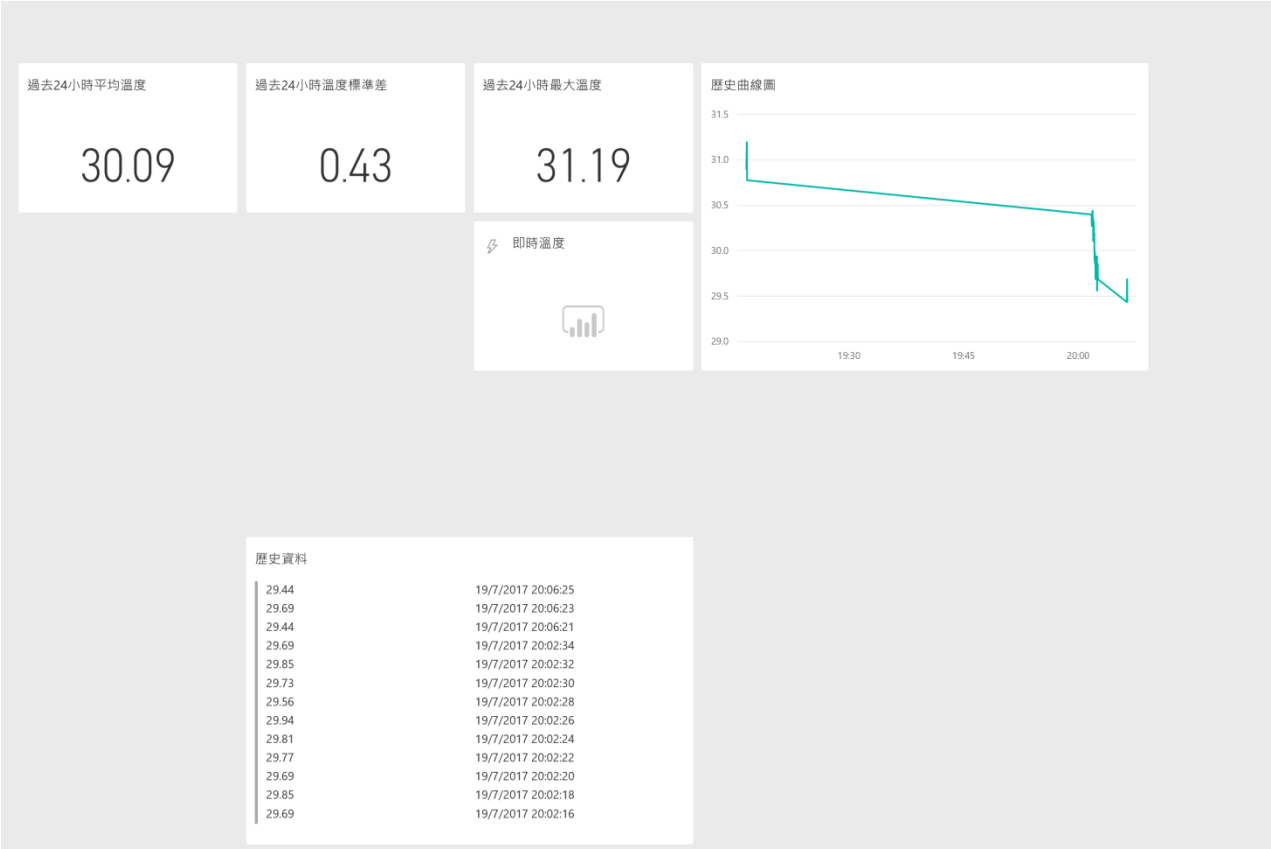


The screenshot shows a web browser window displaying a Power BI report. The browser's address bar shows the URL: <https://app.powerbi.com/groups/me/reports/78f7bc18-4bc2-4199-8d5c-33b14da8a66e/ReportSection>. The report content is a table with two columns: 'EventEnqueuedUtcTime' and 'data'. The data represents temperature readings over time.

EventEnqueuedUtcTime	data
07/03/17 08:42:45 上午	27.43
07/03/17 08:42:49 上午	23.50
07/03/17 08:42:54 上午	24.10
07/03/17 08:42:59 上午	26.77
07/03/17 08:43:05 上午	24.43
07/03/17 08:43:10 上午	26.09
07/03/17 08:43:14 上午	20.45
07/03/17 08:43:19 上午	29.52
07/03/17 08:43:24 上午	24.64
07/03/17 08:43:29 上午	30.56
07/03/17 08:43:35 上午	21.09
07/03/17 08:43:40 上午	29.11
07/03/17 08:43:44 上午	31.03

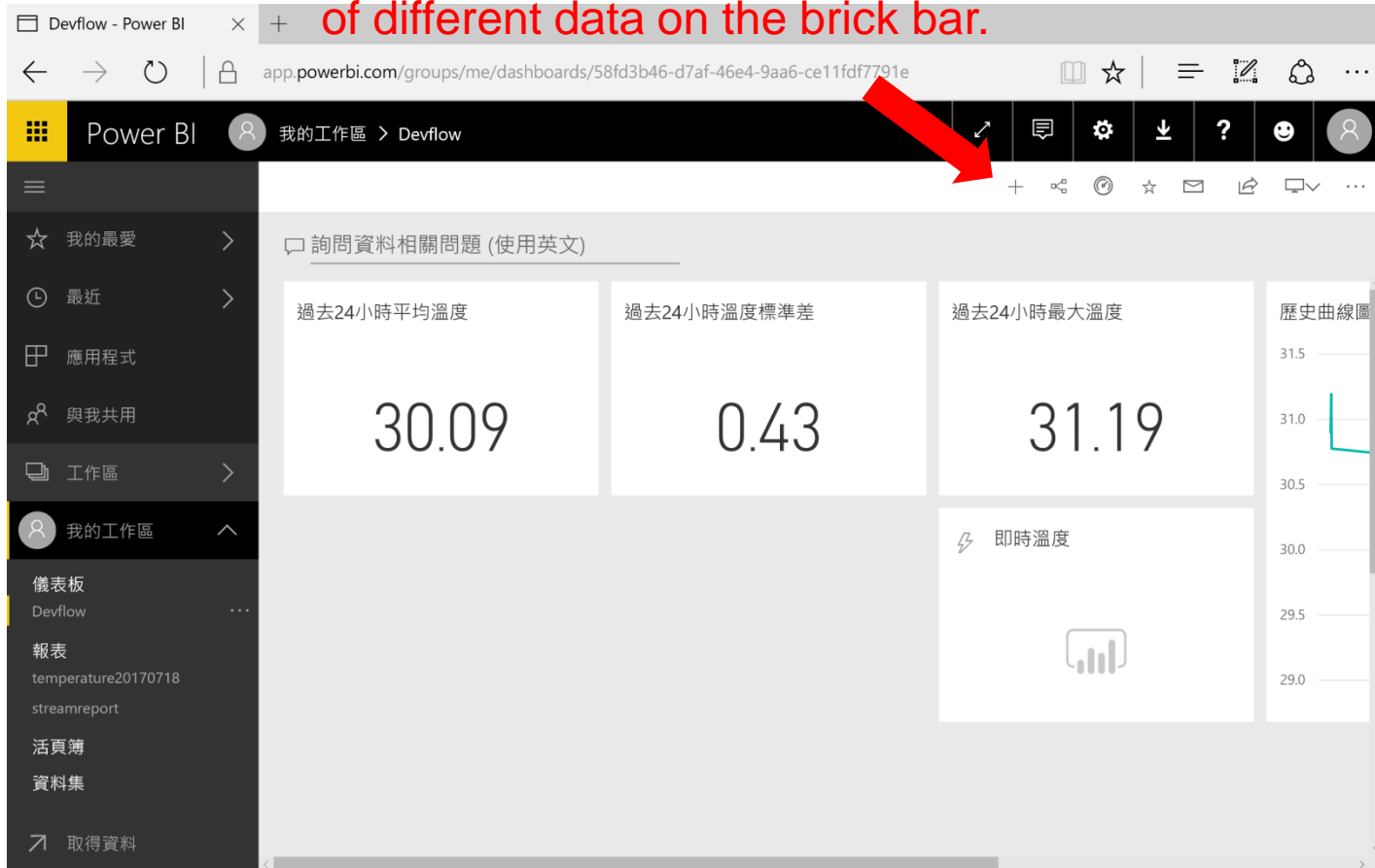
(EX9018-Temperature)

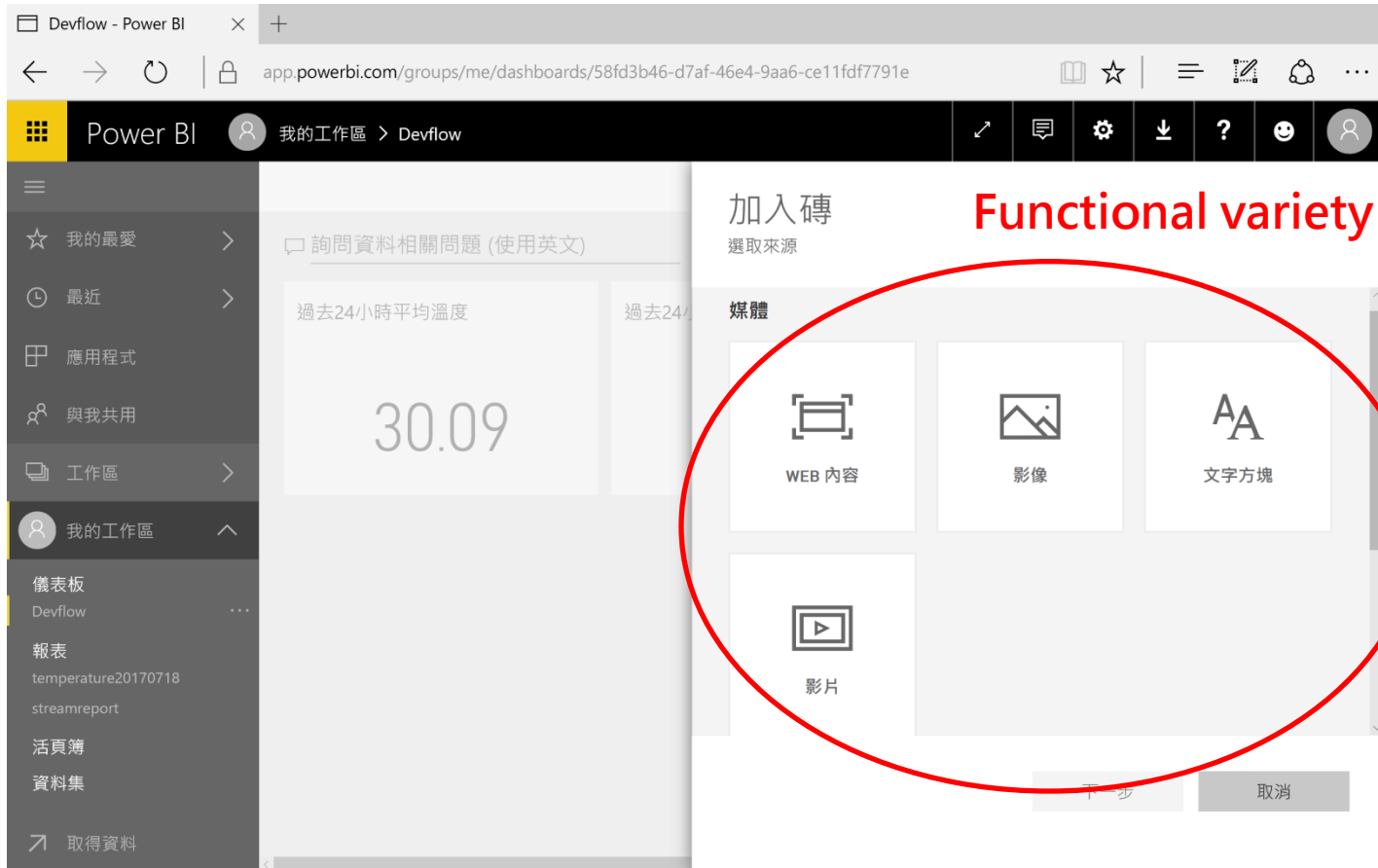
Features



(EX9018-Temperature)

Dashboard can be added to a number
of different data on the brick bar.



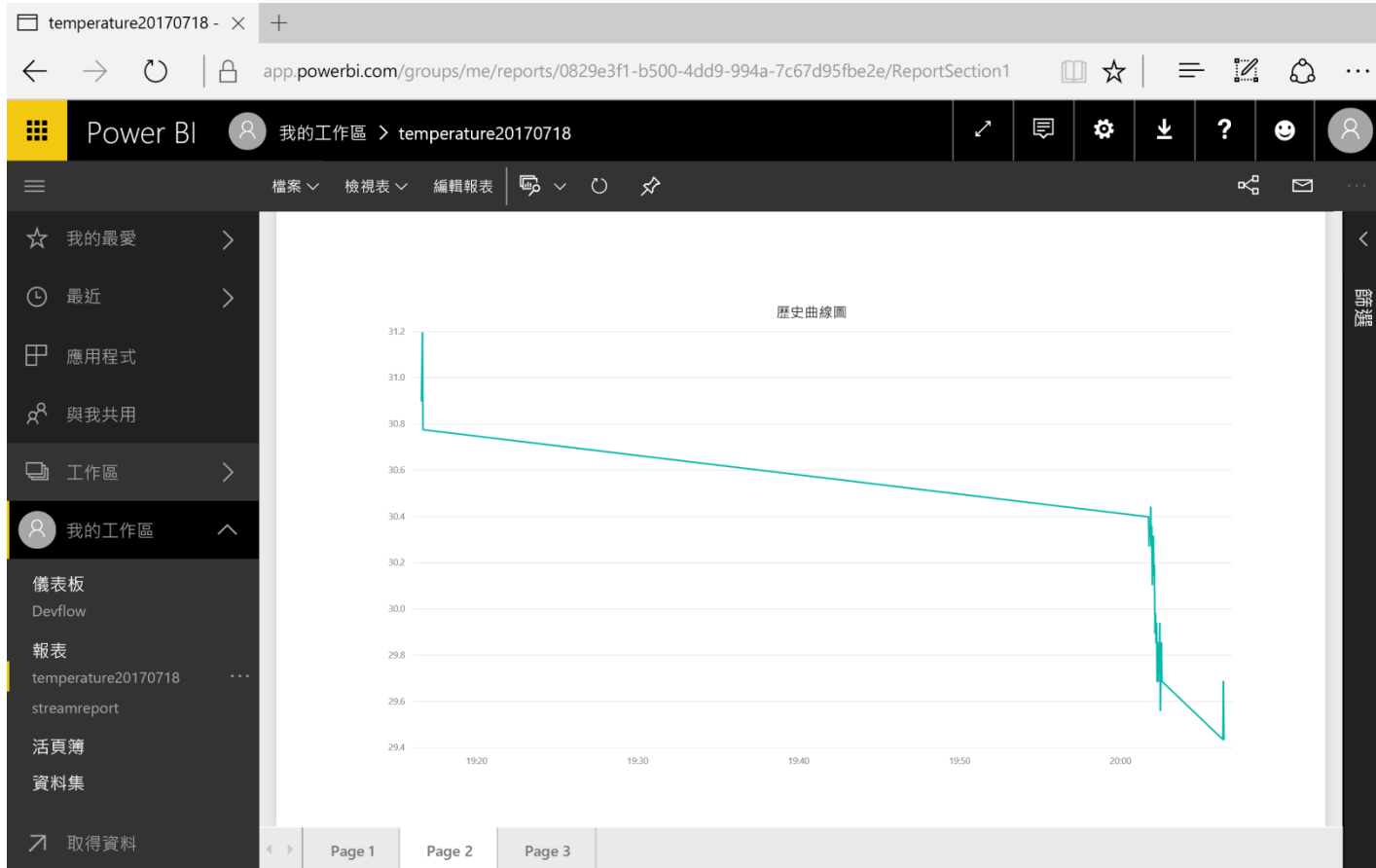


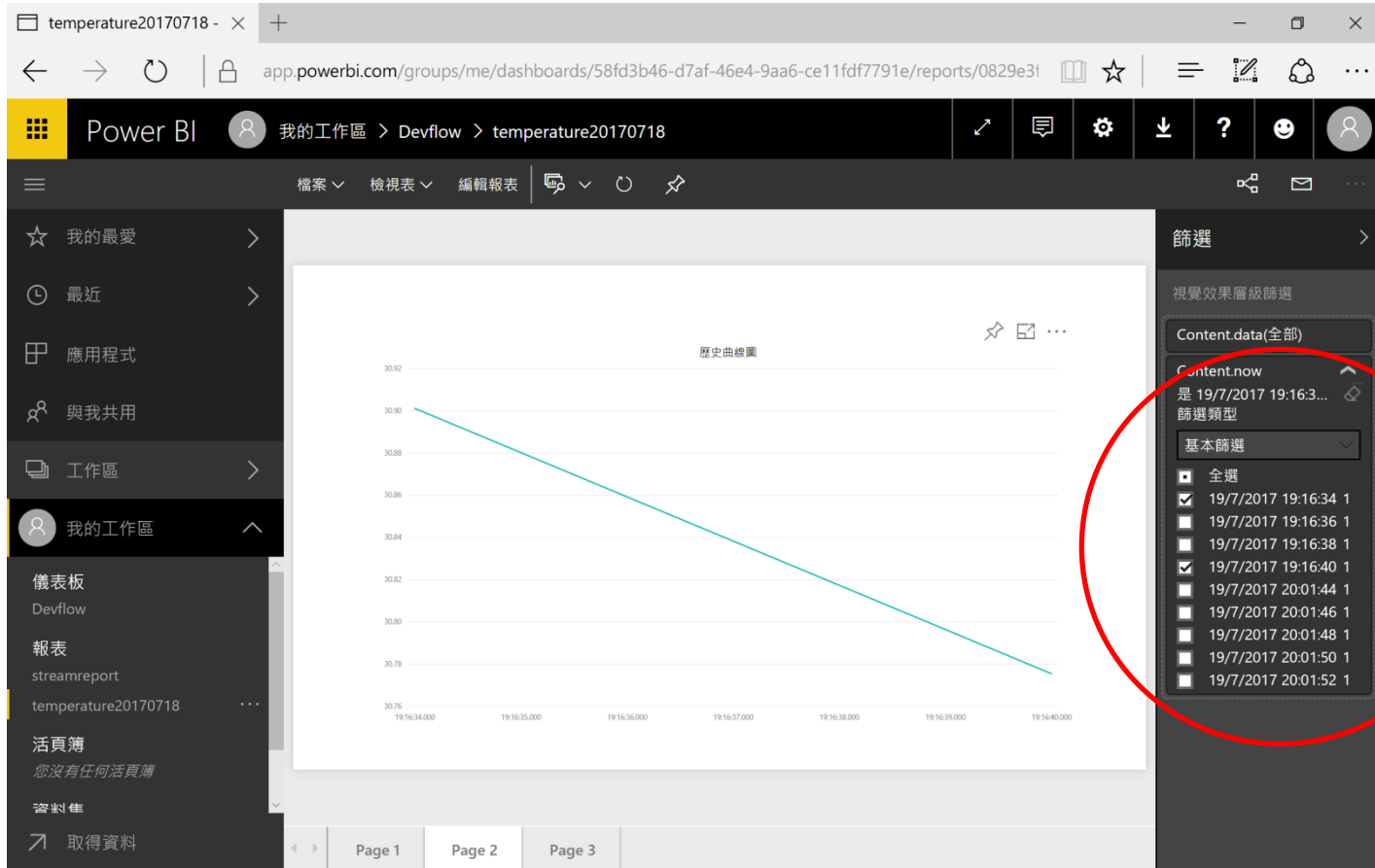
The screenshot shows the Power BI web interface. The left sidebar contains navigation options: 我的最愛, 最近, 應用程式, 與我共用, 工作區, 我的工作區, 儀表板 (Devflow), 報表 (temperature20170718, streamreport), 活頁簿, 資料集. The main area displays a '歷史資料' (Historical Data) table with the following entries:

Time	Value
19/7/2017 20:06:25	29.44
19/7/2017 20:06:23	29.69
19/7/2017 20:06:21	29.44
19/7/2017 20:02:34	29.69
19/7/2017 20:02:32	29.85
19/7/2017 20:02:30	29.73
19/7/2017 20:02:28	29.56
19/7/2017 20:02:26	29.94
19/7/2017 20:02:24	29.81
19/7/2017 20:02:22	29.77

The '報表' (Reports) section in the sidebar is circled in red. A red text overlay states: "The data of dashboard can be a listing".

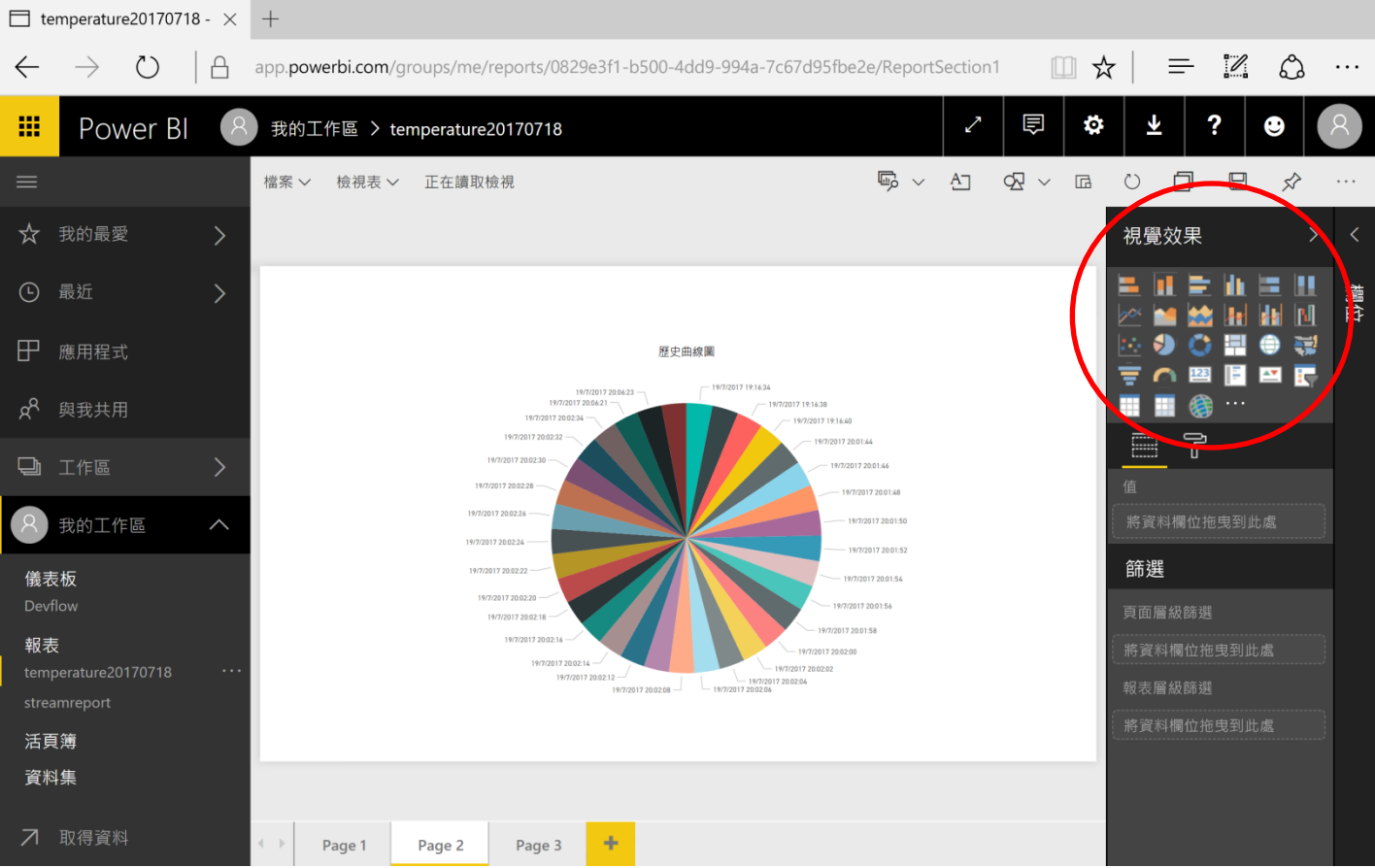
Can be presented in a graphical way

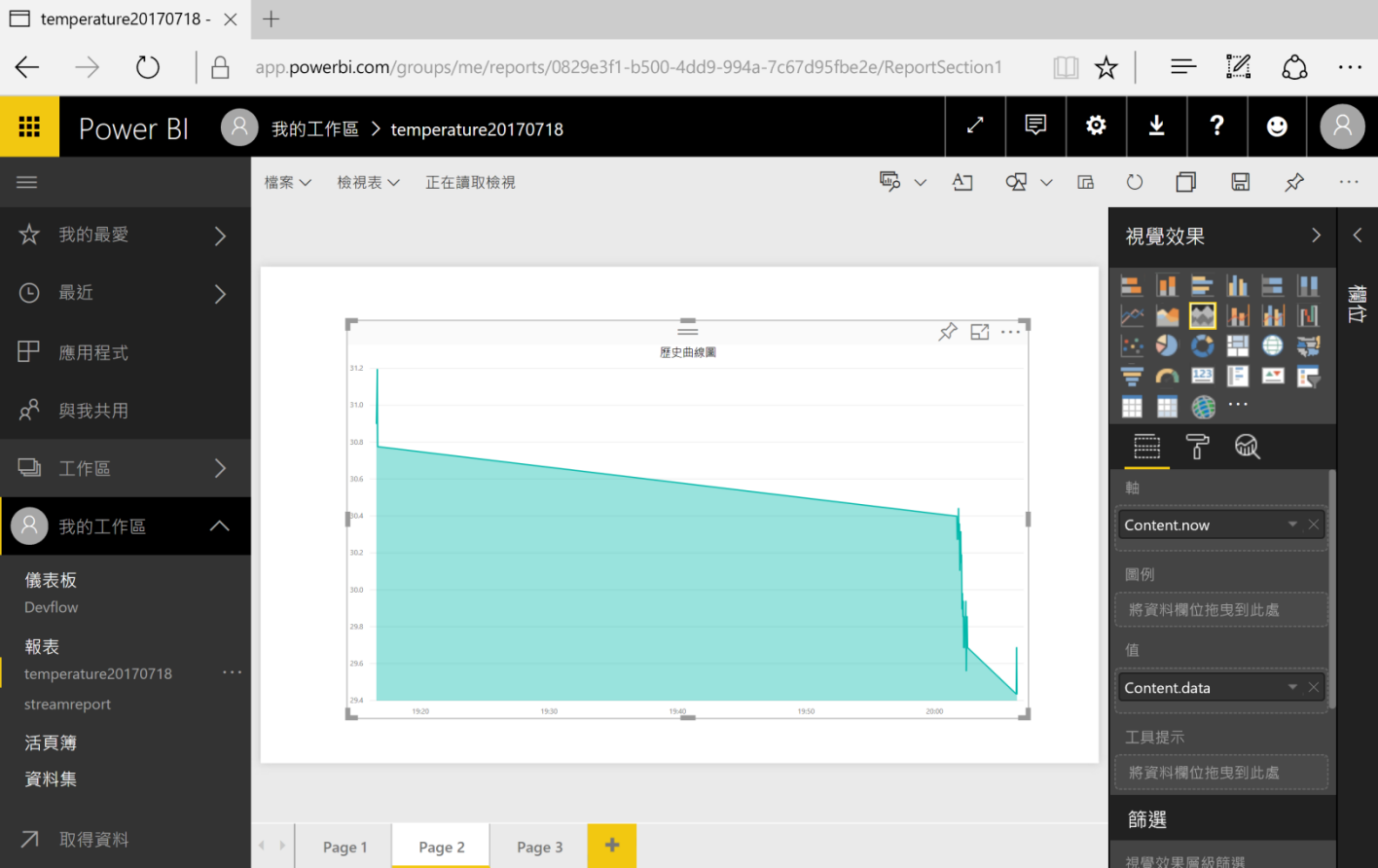




Users can filter their own time interval

several chart styles





The screenshot shows a Power BI dashboard with the following elements:

- Browser address bar: `app.powerbi.com/groups/me/dashboards/58fd3b46-d7af-46e4-9aa6-ce11fdf7791e`
- Power BI navigation bar: "Power BI" and "我的工作區 > Devflow"
- Left sidebar: "我的最愛", "最近", "應用程式", "與我共用", "工作區", "我的工作區", "儀表板", "報表", "活頁簿", "資料集", "取得資料"
- Main dashboard content:
 - Header: "詢問資料相關問題 (使用英文)"
 - Card 1: "過去24小時平均溫度" (30.09), "前往報表 temperature20170718", and a warning icon (lightbulb) highlighted by a red arrow.
 - Card 2: "過去24小時溫度標準差" (0.43)
 - Card 3: "過去24小時最大溫度" (31.19)
 - Card 4: "即時溫度" (30.09)
 - Card 5: "歷史曲線圖" (line chart)

All the brick on dashboard can custom with warning function

The screenshot shows a Power BI dashboard with two main data cards: '過去24小時平均溫度' (Average temperature over the last 24 hours) with a value of 30.09, and '過去24小時溫度標準差' (Standard deviation of temperature over the last 24 hours) with a value of 0.43. To the right, the '管理警示' (Manage Alerts) panel is open, showing configuration options for an alert rule. A red arrow points from the text 'Set the trigger value' to the '臨界值' (Threshold) input field, which is set to 0. Another red arrow points from the text 'send the alert messages instantly' to the '也傳送電子郵件給我' (Also send me email) checkbox, which is checked. The '最高通知頻率' (Maximum notification frequency) is set to '最多每 24 小時一次' (At most once every 24 hours).

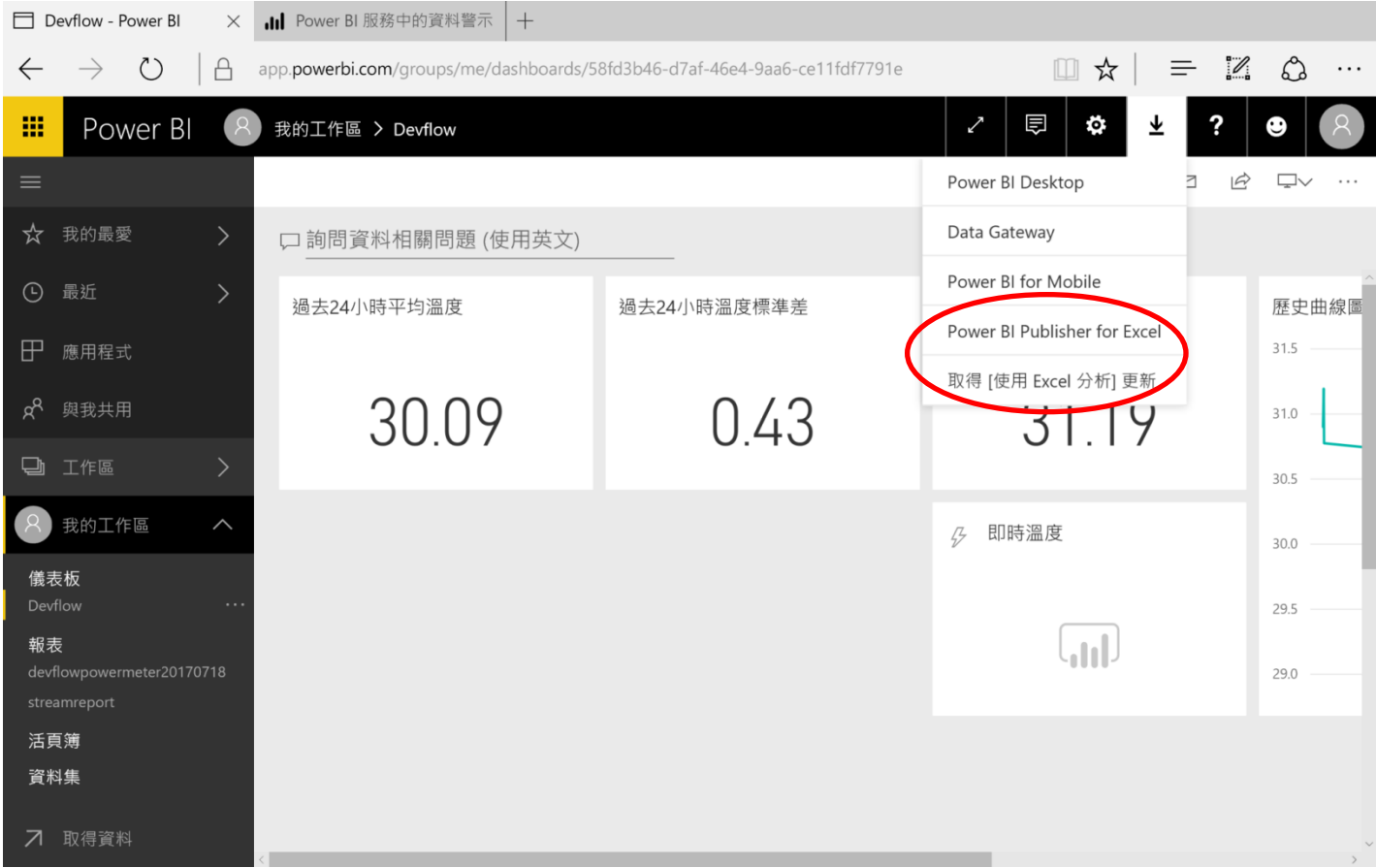
Set the trigger value

send the alert messages instantly

The screenshot shows a Microsoft Power BI dashboard in a web browser. The browser address bar shows the URL: `app.powerbi.com/groups/me/dashboards/58fd3b46-d7af-46e4-9aa6-ce11fdf7791e`. The dashboard has a dark theme and a sidebar on the left with navigation options like '我的最愛', '最近', '應用程式', '與我共用', '工作區', and '我的工作區'. The main content area displays two cards: '過去24小時平均溫度' with a value of 30.09 and '過去24小時溫度標準差' with a value of 0.43. On the right side, there is a '通知中心' (Notification Center) with the text '所有通知' circled in red and the word 'Noticed' in large red font. Below this, there are three notification cards, each with an upward arrow icon, a close button (X), and text indicating a warning about humidity: '本日最大濕度的警示 27天前 testdashboard 上的 本日最大濕度的警示 已超過臨界值 69 · 目前為 79.217096117412 · 前往磚'.

Historical data download

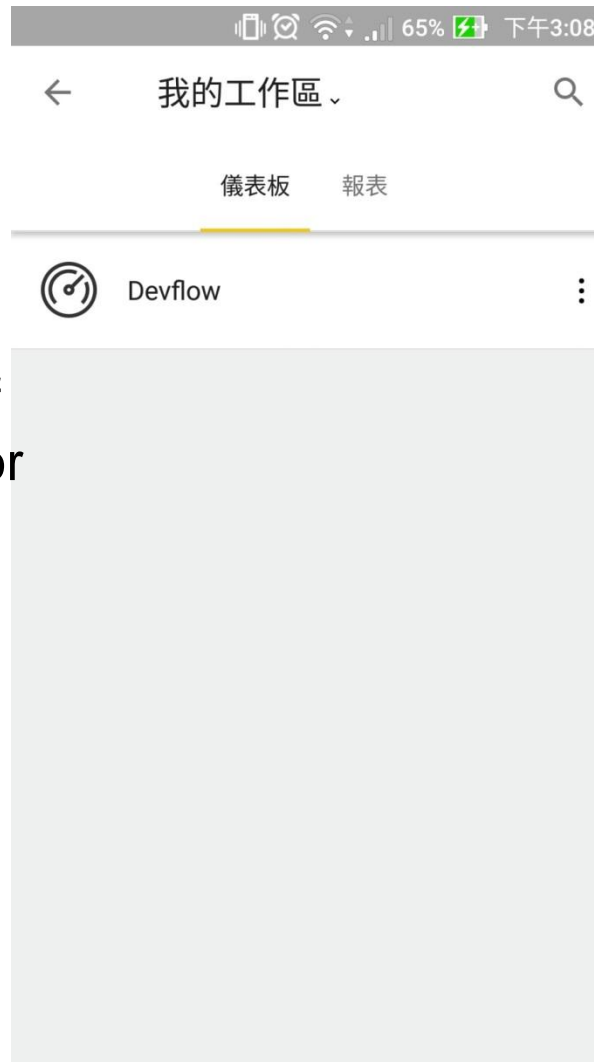
User can download historical data through excel addin for analyze.



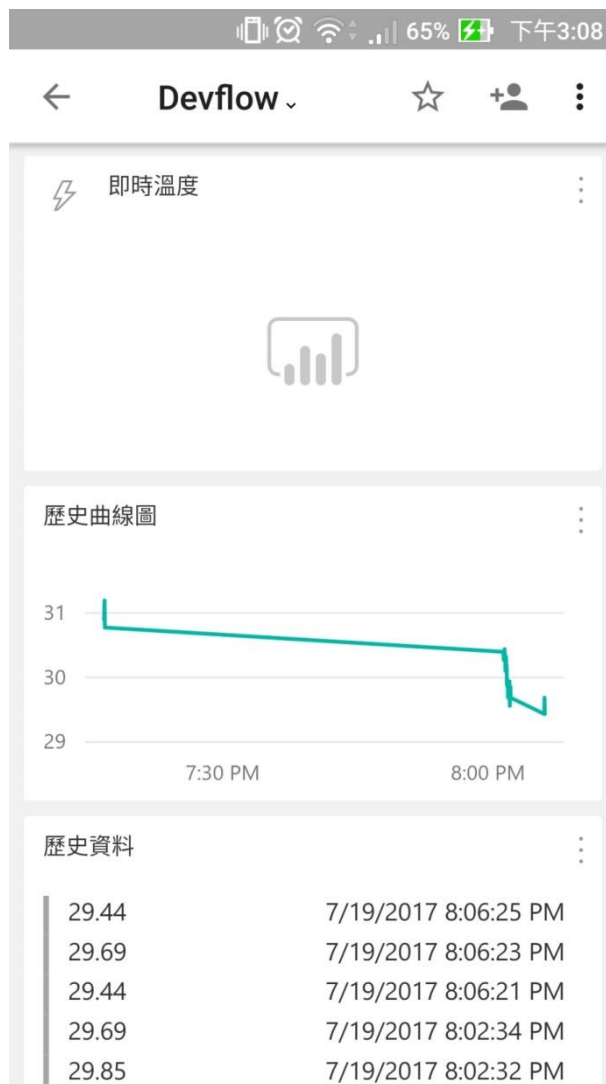
data 依據 EventEnqueuedUtcTime - 唯讀

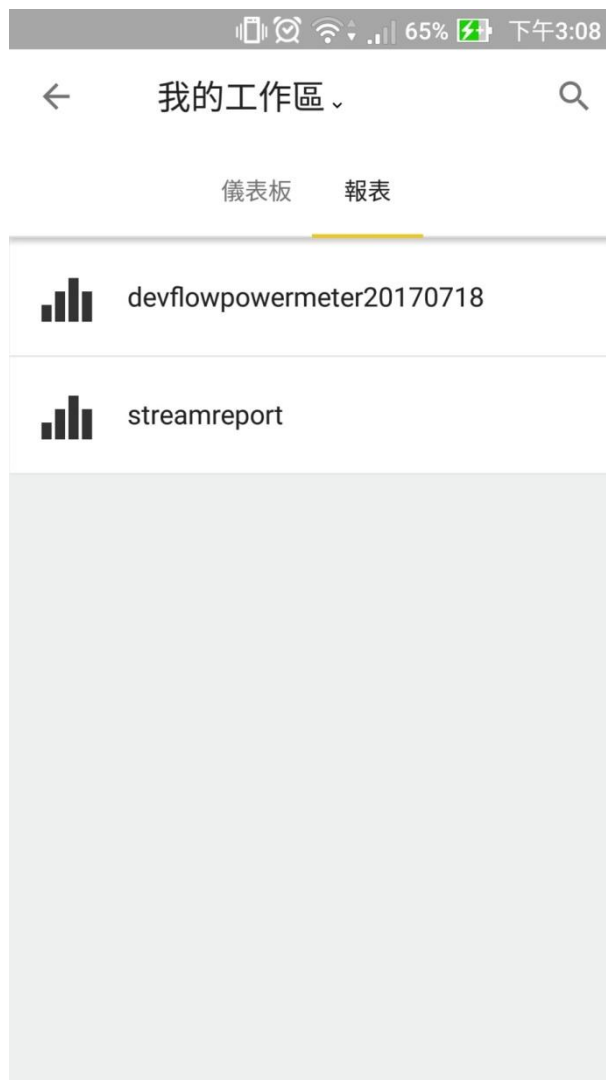
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	未套用任何篩選條件													
2														
3	EventEnqueuedUtcTime	data 的總和												
4	07/03/17 08:42:45 AM	27.4259024												
5	07/03/17 08:42:50 AM	23.49840272												
6	07/03/17 08:42:55 AM	24.09837345												
7	07/03/17 08:43:00 AM	26.77481679												
8	07/03/17 08:43:05 AM	24.42618333												
9	07/03/17 08:43:10 AM	26.0926191												
10	07/03/17 08:43:14 AM	20.44714999												
11	07/03/17 08:43:20 AM	29.52022546												
12	07/03/17 08:43:25 AM	24.64194903												
13	07/03/17 08:43:30 AM	30.55578887												
14	07/03/17 08:43:35 AM	21.08862761												
15	07/03/17 08:43:40 AM	29.1121448												
16	07/03/17 08:43:44 AM	31.02873125												
17	07/03/17 08:43:49 AM	26.34469422												
18	07/03/17 08:43:55 AM	31.72827748												
19	07/03/17 08:44:00 AM	30.46685582												

Sheet1 加總: 0



Power bi offers **APP** of iOS/ Android system for download





歷史曲線圖



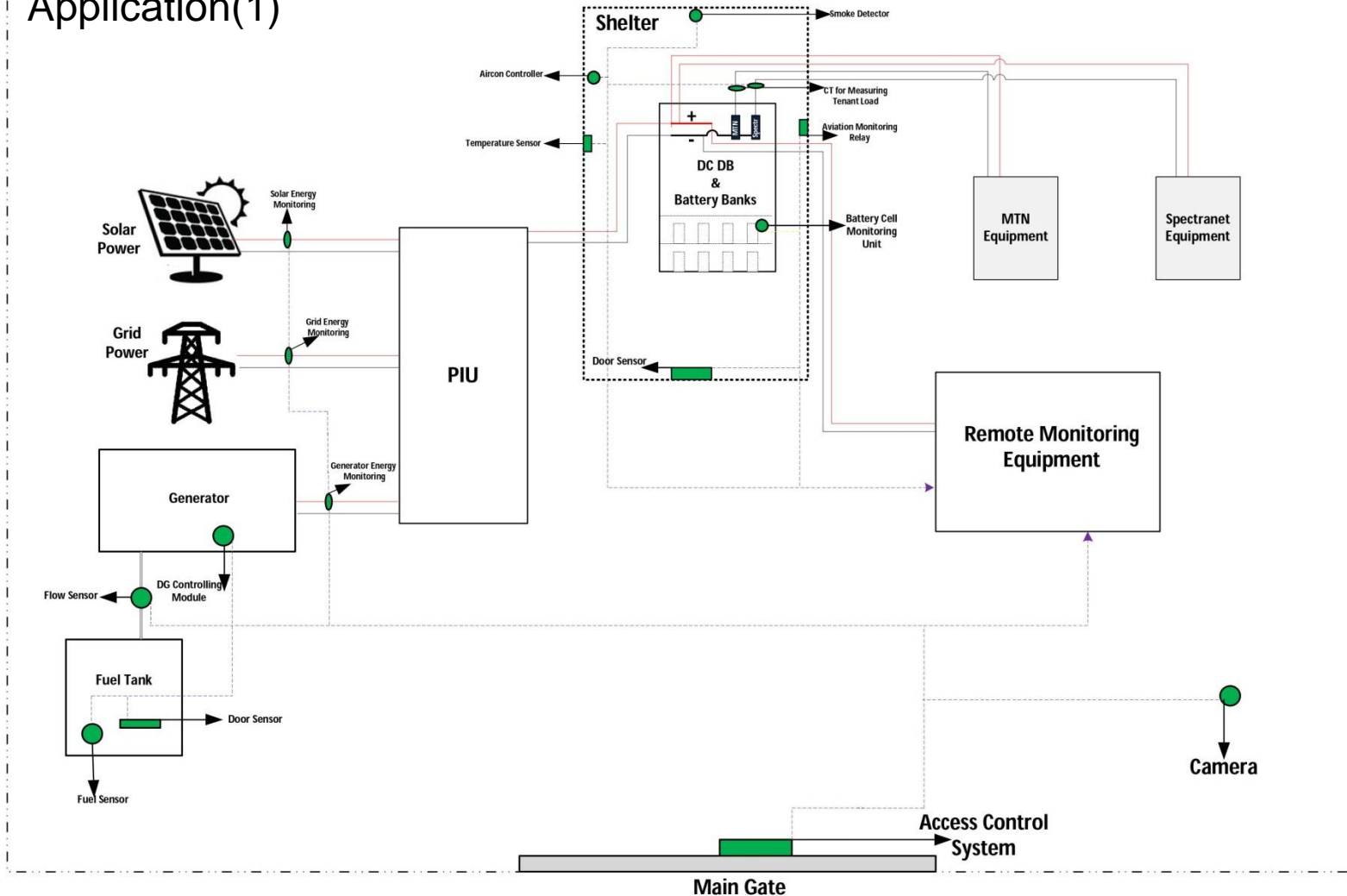
歷史資料

- 19/7/2017 20:06:25
29.44
- 19/7/2017 20:06:23
29.69
- 19/7/2017 20:06:21
29.44
- 19/7/2017 20:02:34
29.69
- 19/7/2017 20:02:32
29.85
- 19/7/2017 20:02:30
29.73
- 19/7/2017 20:02:28
29.56
- 19/7/2017 20:02:26
29.94
- 19/7/2017 20:02:24

Conclusion:

This system gives you benefits such as significant saving manpower, avoid money loss and risk.

Appendix : Application(1)



Application(2):

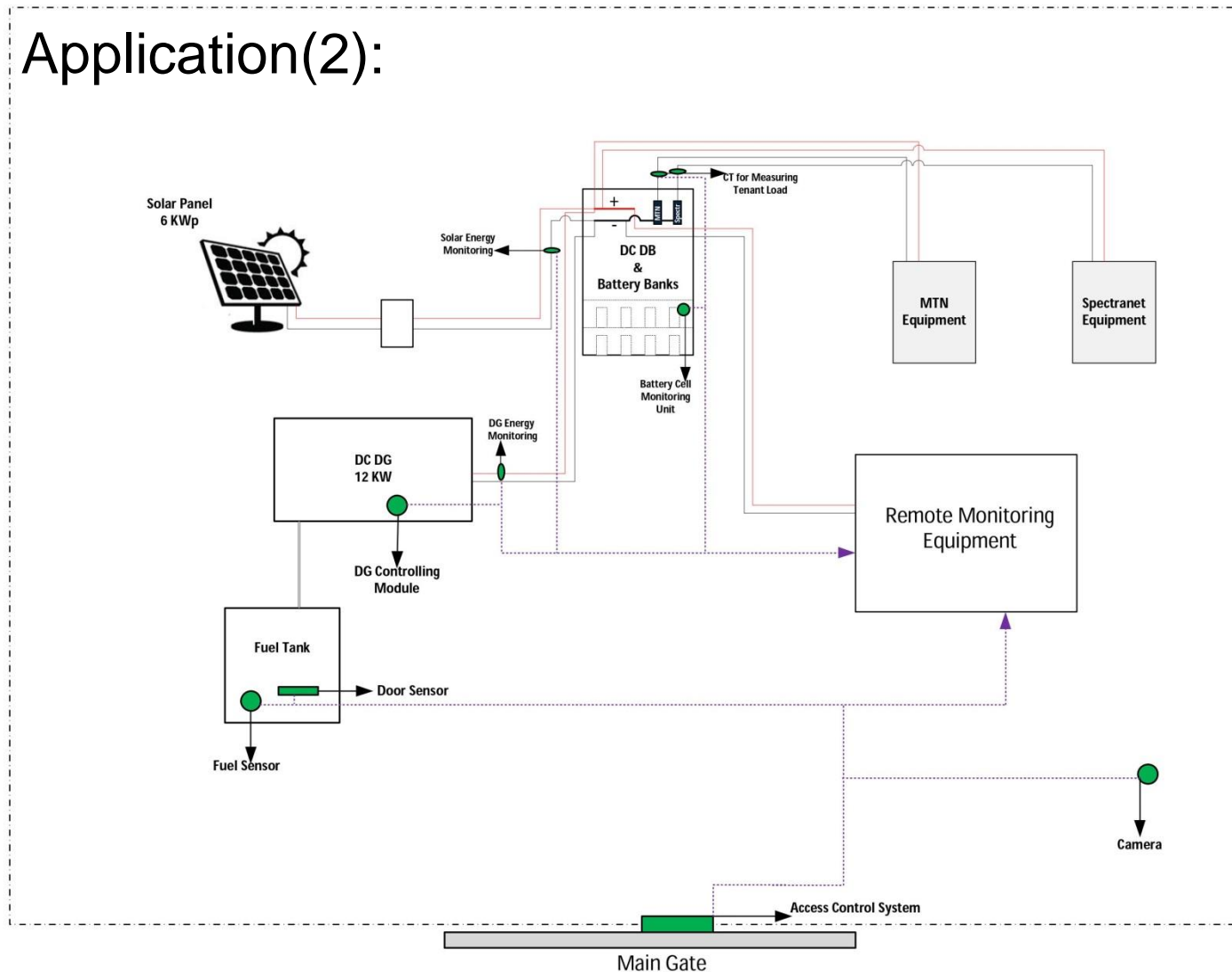
Subject: Solar Generator Solutions

Description: Remote I/O monitoring equipment as DIO(digital input and output) and AI(analog input) ----- DG energy monitoring and Solar energy monitoring & Battery Cell monitoring to determine when the Solar energy or Generator to uses.

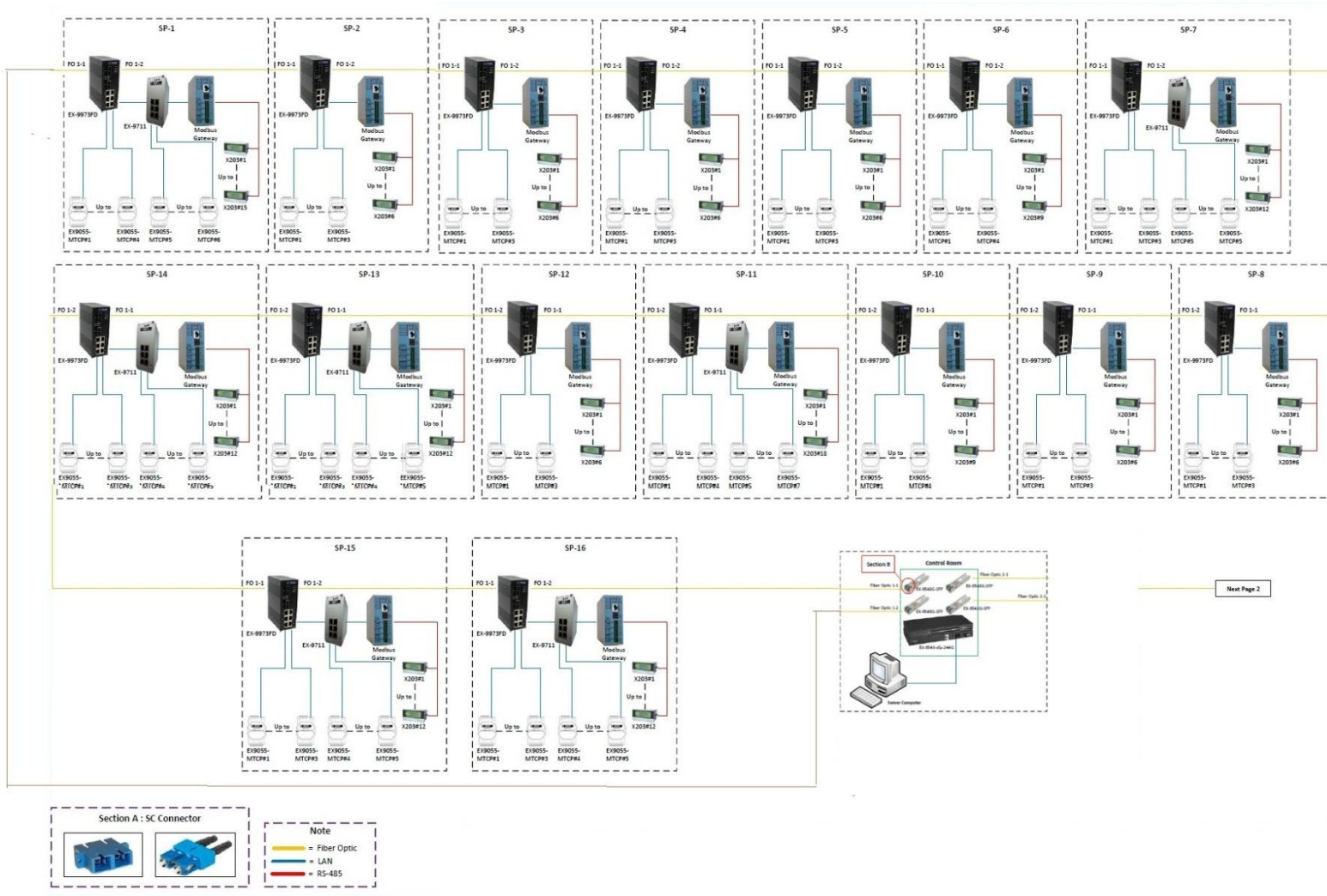
Solution: Remote I/O monitoring equipment to data acquisition and sent it to the Cloud for data analysis to do the best efficiency of Solar energy or saving fuel of Generator.

Note:Cloud Services(<https://iotlab.devdaq.com.tw/login/><https://app.powerbi.com>)

Application(2):

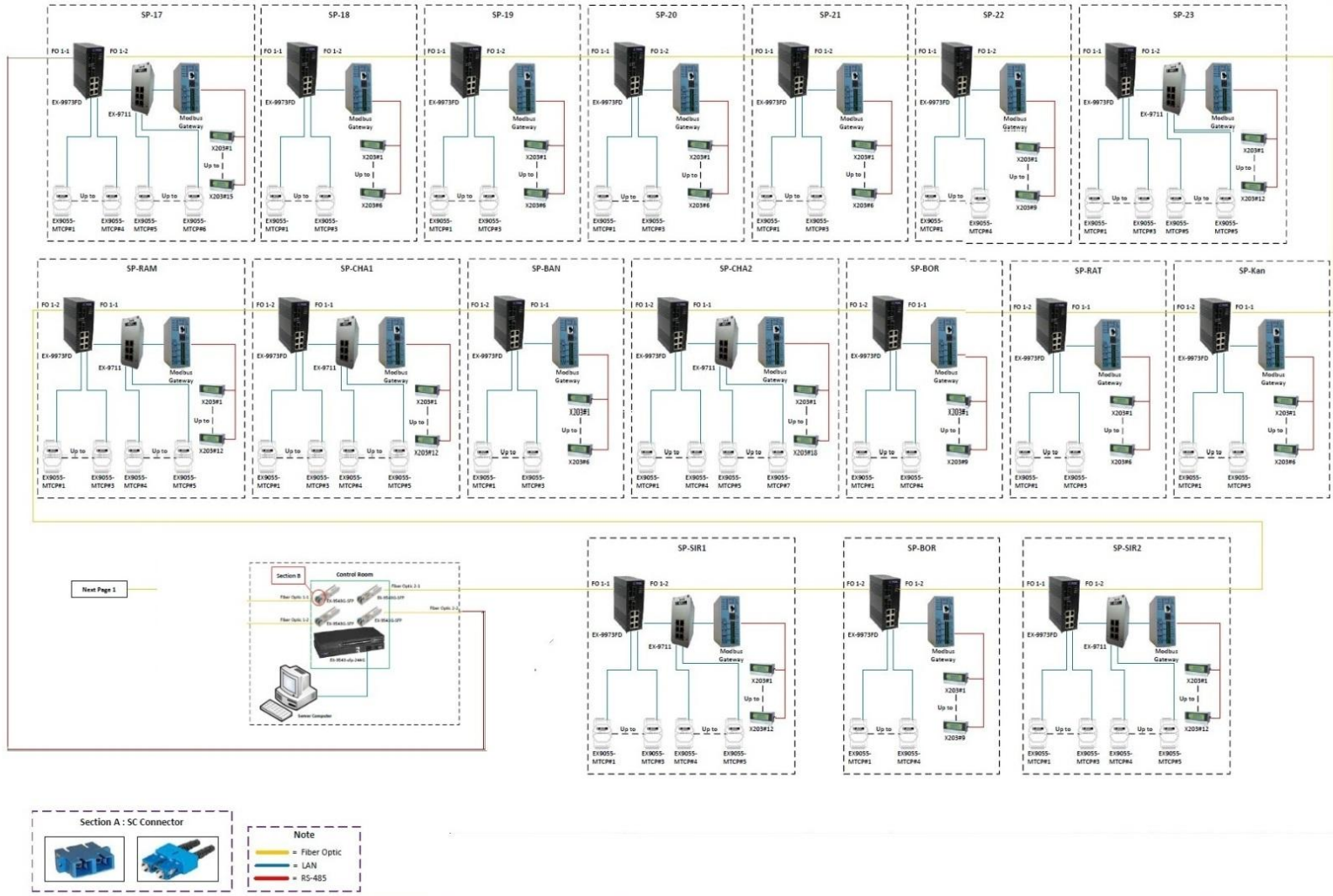


Application(3)



Next Page 2

Application(4)



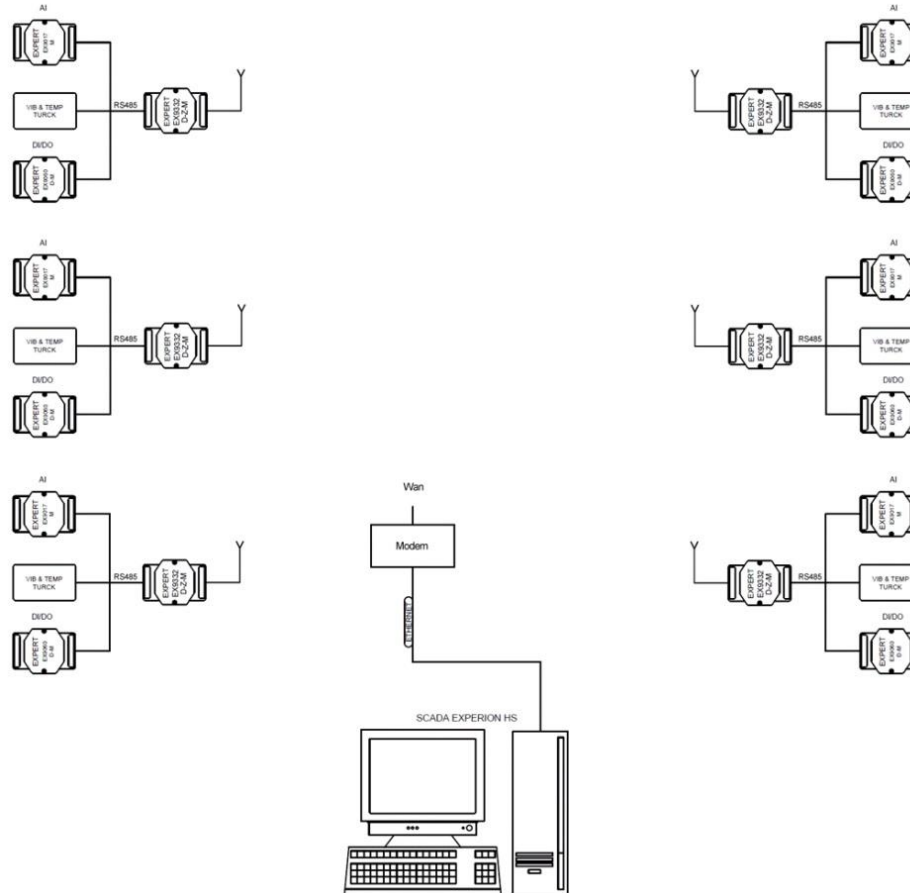
Next Page 1



Note

- Fiber Optic
- LAN
- RS-485

Application(5)



Application(6):

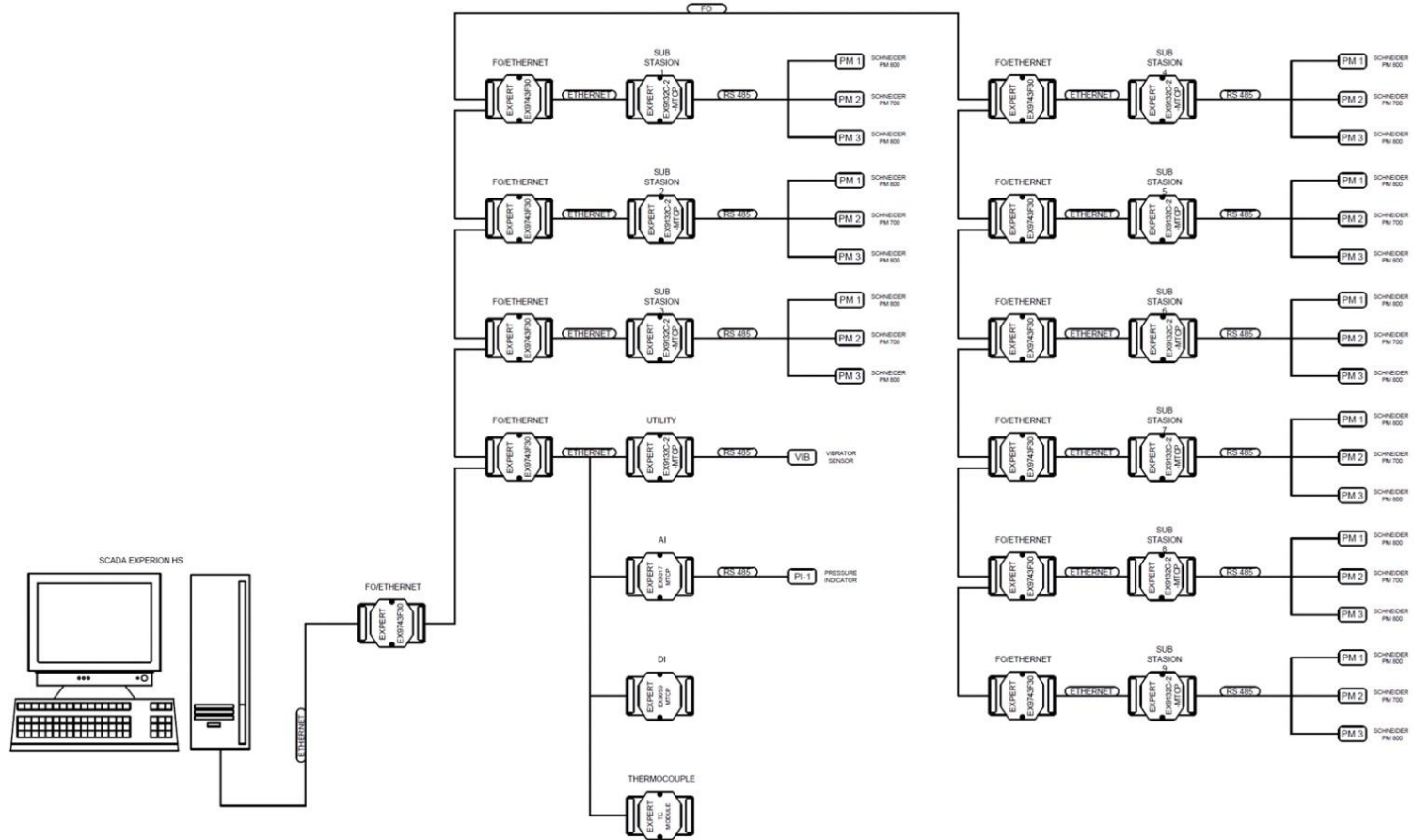
Subject: Power consumption (Power Meter), pressure (Pressure indication) and Vibration sensor to determine the efficiency of Power saving.

Description: SCADA via RS485 of devices to Ethernet; then via Ethernet to Fiber can be remote to Central Control System(SCADA). Each PM(Power Meter: Voltage/ Current), Pressure, Vibration to do data acquisition for Power consumption analysis to achieve best efficiency of Power saving.

Solution: This SCADA will be replaced by a Cloud service.

Note: Cloud services(<https://iotlab.devdaq.com.tw/login/><https://app.powerbi.com>)

Application(6)



Application(7):

Subject: Power consumption (Power meter) to determine the efficiency of Power saving.

Description: SCADA via Wi-Fi / 4G to get each PM (Power Meter: Voltage / Current)of data acquisition to make suitable judgments and decide DIO to make suitable response.

Solution: This SCADA will be replaced by a Cloud service.

Note:Cloud Services(<https://iotlab.devdaq.com.tw/login/><https://app.powerbi.com>)

Application(7)

