



TG Control Co., Ltd.

EQ Matic



EQMatic Energy Analyzer are compact, web-based standalone devices for energy management applications.

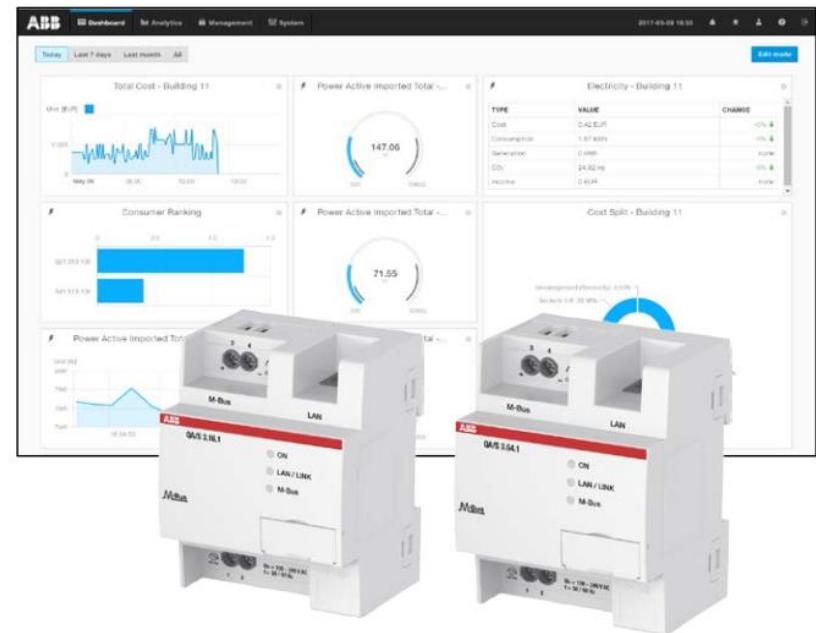
EQMatic collects data from.

- M-Bus meters
- Modbus RTU meters

(Support up to 16 or 64 device)

EQMatic log and store consumption data for electricity, gas, water or heat meters.

EQMatic received ISO 50001 Certificate.



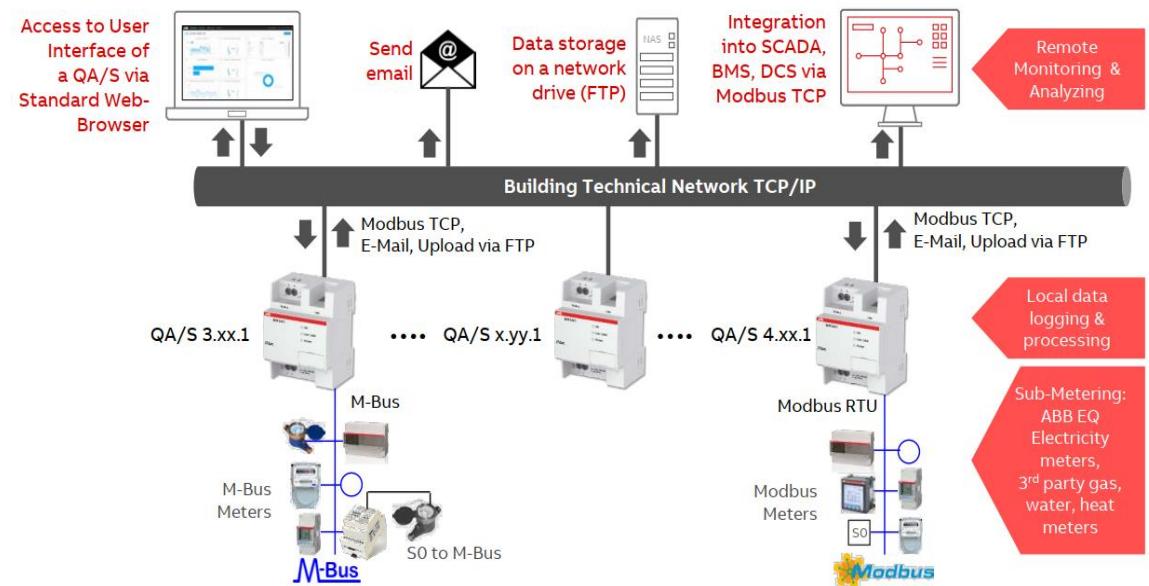


The collected data can be

- Save locally in the device database
- Sent as report via E-Mail
- Uploaded via FTP
- Shared with other system via Modbus TCP(IP)

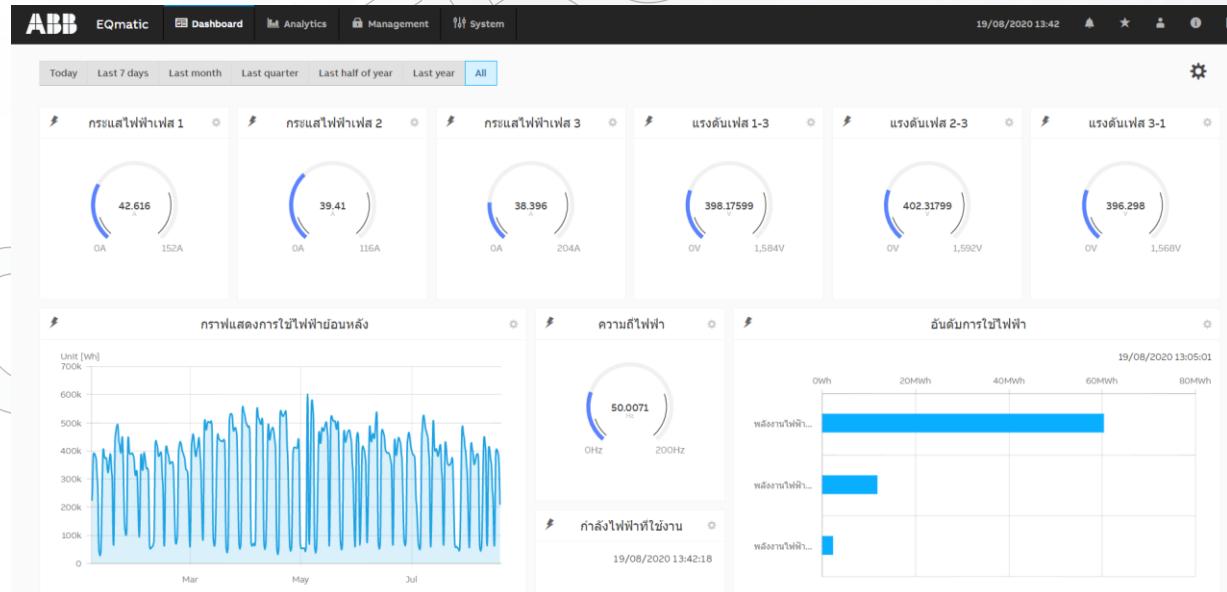
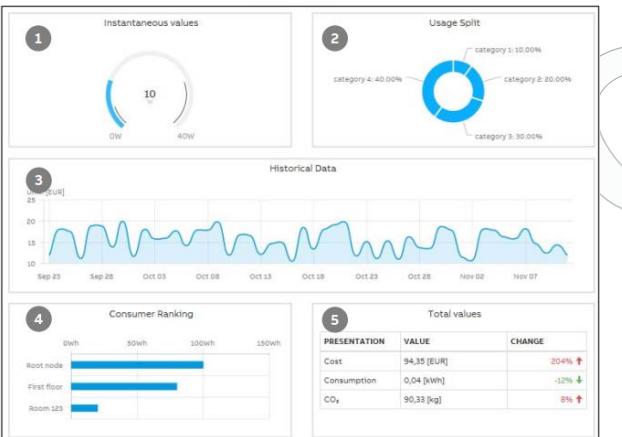
Storage of metering data from up to 64 meters for at least 3 years.

Retrieval/storage of meter data every 5 minutes.





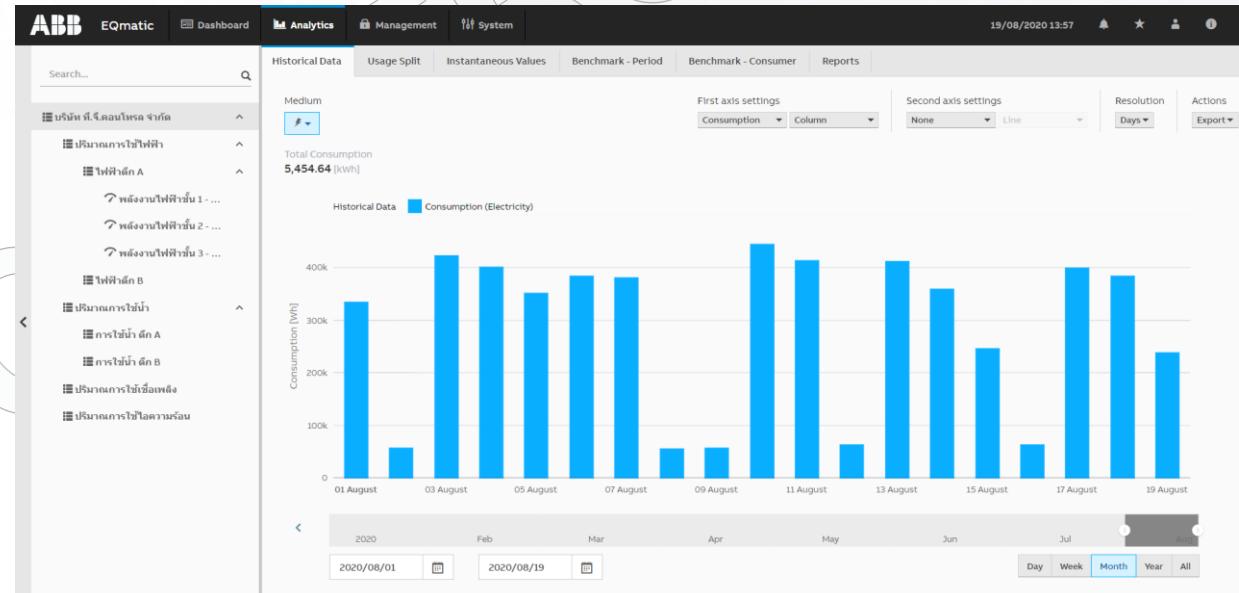
In the dashboard you can
configure user-defined views
using widgets up to 24 widgets





Historical Date

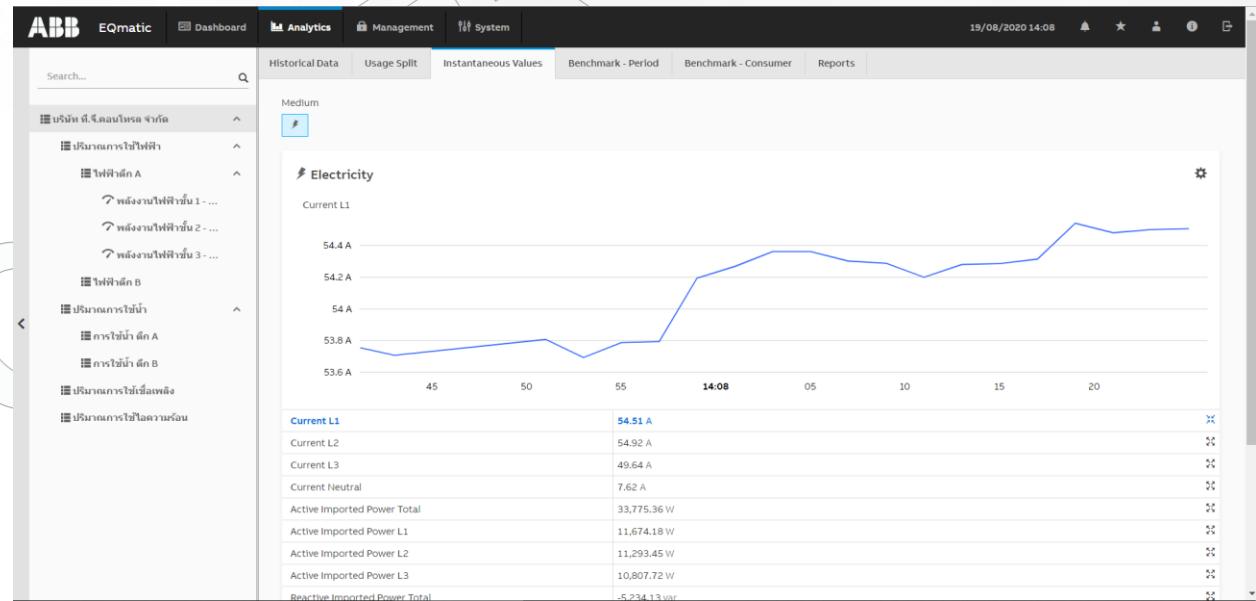
- The device saves data every 5 minutes
 - At the maximum system capacity, historical data can be stored for at least 3 years





Instantaneous Values

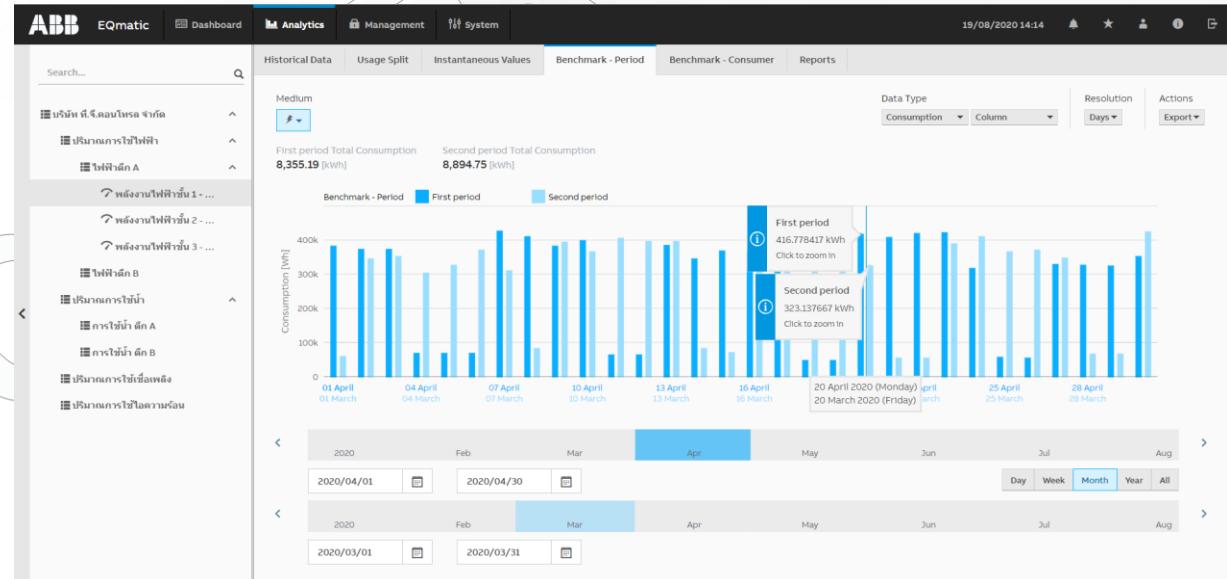
- This function display the instantaneous value for a single data point in real time





Benchmark – Period

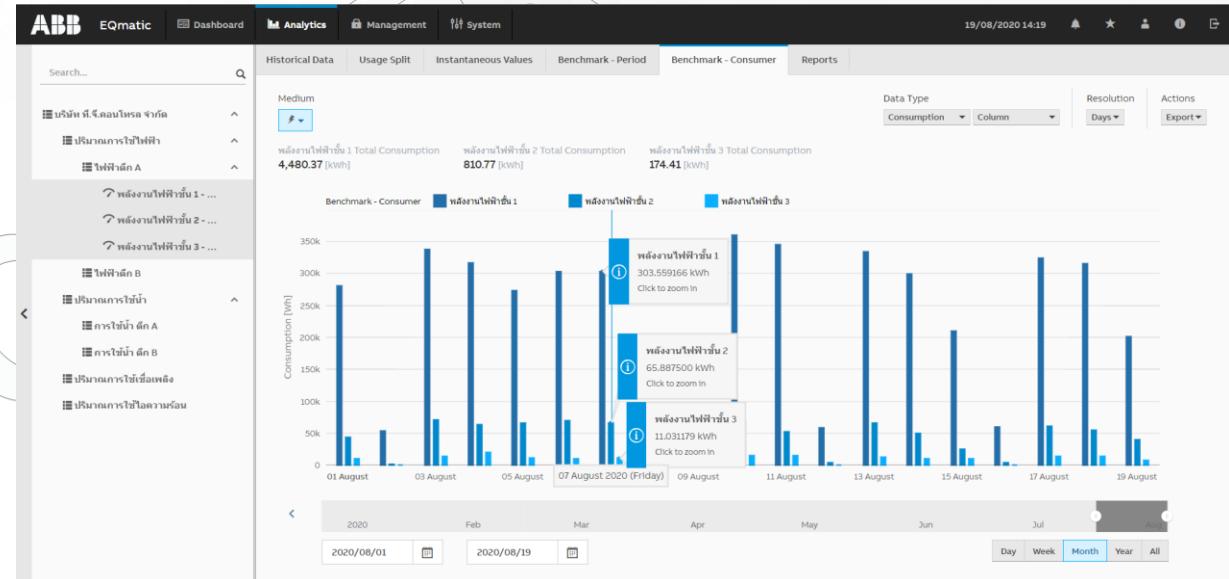
- To compare a consumer or node over two time intervals





Benchmark – Consumer

- Used to compare up to 5 consumers or nodes over an time interval





Report

- This function allows to send analyses and evaluations to various recipients automatically

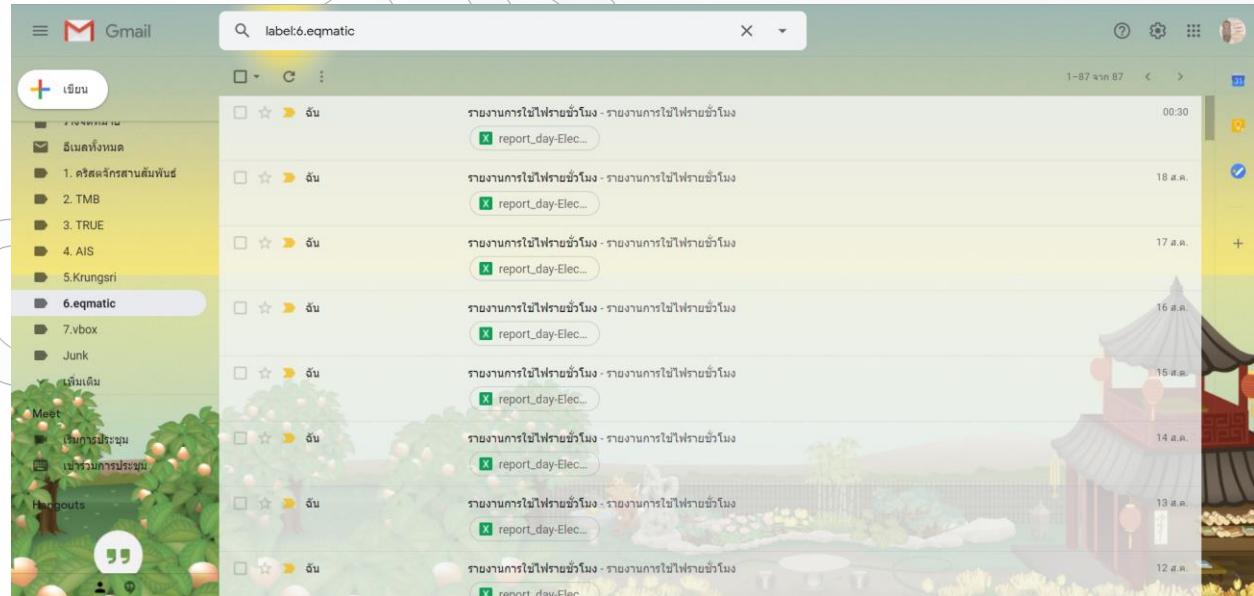
- The data can be sent data either by e-mail or to an FTP server

A screenshot of the ABB EQmatic software interface. The top navigation bar includes 'ABB', 'EQmatic', 'Dashboard', 'Analytics' (which is the active tab), 'Management', and 'System'. The date '19/08/2020 14:22' and various system icons are also in the top right. Below the navigation is a sub-menu with tabs: 'Historical Data', 'Usage Split', 'Instantaneous Values', 'Benchmark - Period', 'Benchmark - Consumer', and 'Reports' (which is the active tab). The main content area is titled 'Configuration' and shows a table titled 'Reports'. The table has two tabs: 'Reports' (selected) and 'Report recipients'. The 'Reports' tab shows a single row for 'report'. The 'Report recipients' tab shows four rows: 'report', '27.254.86.31:2121', 'baramee1225@gmail.com', and 'report_month'. Each row has columns for 'RECIPIENTS', 'TYPE', 'STATUS', 'NEXT REPORT ON', 'LAST REPORT ON', 'PERIOD', 'RESOLUTION', 'MEDIUM', 'FORMAT', and 'ACTION'. The 'report' row has a status of 'OK'. The 'report_month' row has a status of 'OK'. The '27.254.86.31:2121' and 'baramee1225@gmail.com' rows have status 'OK'. The 'ACTION' column for each row contains a pencil icon and an 'X' icon.



Report

Sent data either by e-mail





Report

Sent data either by e-mail

Report Day Electricity - 2020-08-18.xlsx

| Timestamp | บริษัท ก.ส.ก.คอมบริการ จำกัด | บริษัท ก.ส.ก.คอมบริการ จำกัด | พลังงานไฟฟ้าครั้ง 1 Cost (THB) | พลังงานไฟฟ้าครั้ง 1 Consumpt. | พลังงานไฟฟ้าครั้ง 2 Cost (THB) | พลังงานไฟฟ้าครั้ง 2 Consumpt. | พลังงานไฟฟ้าครั้ง 3 Cost (THB) | พลังงานไฟฟ้าครั้ง 3 Consumpt. |
|------------------|------------------------------|------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|
| 2020-08-18 00:00 | 13.39458 | 2.67892 | 11.51958 | 2.30392 | 1.875 | 0.375 | 0 | 0 |
| 2020-08-18 01:00 | 12.97167 | 2.59433 | 12.03417 | 2.40683 | 0.9375 | 0.1875 | 0 | 0 |
| 2020-08-18 02:00 | 11.67333 | 2.33467 | 11.67333 | 2.33467 | 0 | 0 | 0 | 0 |
| 2020-08-18 03:00 | 11.715 | 2.343 | 11.715 | 2.343 | 0 | 0 | 0 | 0 |
| 2020-08-18 04:00 | 12.195 | 2.439 | 12.195 | 2.439 | 0 | 0 | 0 | 0 |
| 2020-08-18 05:00 | 11.86083 | 2.37217 | 11.86083 | 2.37217 | 0 | 0 | 0 | 0 |
| 2020-08-18 06:00 | 14.95083 | 2.99017 | 13.07583 | 2.61517 | 1.875 | 0.375 | 0 | 0 |
| 2020-08-18 07:00 | 88.03442 | 17.60688 | 75.825 | 15.165 | 8.90625 | 1.78125 | 3.30317 | 0.66063 |
| 2020-08-18 08:00 | 187.13575 | 37.42715 | 138.30958 | 27.66192 | 39.65625 | 7.93125 | 9.16992 | 1.83398 |
| 2020-08-18 09:00 | 175.13656 | 35.02731 | 137.83125 | 27.56625 | 32.15625 | 6.43125 | 5.14906 | 1.02981 |
| 2020-08-18 10:00 | 153.81755 | 30.76351 | 125.4025 | 25.0805 | 20.71875 | 4.14375 | 7.6963 | 1.53926 |
| 2020-08-18 11:00 | 145.73605 | 29.14721 | 118.67708 | 23.73542 | 19.59375 | 3.91875 | 7.46521 | 1.49304 |
| 2020-08-18 12:00 | 174.39909 | 34.87982 | 138.91542 | 27.78308 | 27.28125 | 5.45625 | 8.20243 | 1.64049 |
| 2020-08-18 13:00 | 156.34243 | 31.26849 | 125.2825 | 25.0565 | 25.125 | 5.025 | 5.93494 | 1.18699 |
| 2020-08-18 14:00 | 151.43291 | 30.28658 | 122.32542 | 24.46508 | 23.90625 | 4.78125 | 5.20124 | 1.04025 |
| 2020-08-18 15:00 | 151.22393 | 30.64479 | 128.40208 | 25.68042 | 19.40625 | 3.88125 | 5.01411 | 1.08312 |
| 2020-08-18 16:00 | 149.85639 | 29.97128 | 123.93583 | 24.78717 | 20.90625 | 4.18125 | 5.01411 | 1.00286 |
| 2020-08-18 17:00 | 129.1311 | 25.82622 | 101.11875 | 20.22375 | 23.34375 | 4.66875 | 4.66861 | 0.93372 |
| 2020-08-18 18:00 | 68.20513 | 13.64103 | 62.24792 | 12.44958 | 3.75 | 0.75 | 2.20721 | 0.44144 |
| 2020-08-18 19:00 | 39.36292 | 7.87258 | 38.42542 | 7.68508 | 0.9375 | 0.1875 | 0 | 0 |
| 2020-08-18 20:00 | 16.9275 | 3.3855 | 16.9275 | 3.3855 | 0 | 0 | 0 | 0 |
| 2020-08-18 21:00 | 16.2975 | 3.2595 | 15.36 | 3.072 | 0.9375 | 0.1875 | 0 | 0 |
| 2020-08-18 22:00 | 12.27375 | 2.45475 | 12.27375 | 2.45475 | 0 | 0 | 0 | 0 |
| 2020-08-18 23:00 | 12.55333 | 2.51067 | 11.61583 | 2.32317 | 0.9375 | 0.1875 | 0 | 0 |
| Totals | 1918.62755 | 383.72553 | 1576.49597 | 315.38993 | 272.25 | 54.45 | 69.428 | 13.88559 |



Report

Sent data either by FTP Server

TC

File Home Share View

Pin to Quick access Copy Paste Cut Copy path Move to Copy to Delete Rename New folder New item New Open Select all Properties Open Invert selection

Clipboard Organize New Open Select

← → ⌘ The Internet > www.smartergy-spm.com > domains > smartergy-spm.com > public_ftp > daily_report

Search daily_report

| | Name | Size | Type | Date modified | Date created | Date accessed |
|-------------------------|--|------|---------------------------|--------------------|--------------------|--------------------|
| Desktop | report_day-Electricity-2020-03-31.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:33 PM | 4/16/2020 10:33 PM | 4/16/2020 10:33 PM |
| Documents | report_day-Electricity-2020-04-01.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:34 PM | 4/16/2020 10:34 PM | 4/16/2020 10:34 PM |
| Downloads | report_day-Electricity-2020-04-02.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:34 PM | 4/16/2020 10:34 PM | 4/16/2020 10:34 PM |
| Pictures | report_day-Electricity-2020-04-03.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:34 PM | 4/16/2020 10:34 PM | 4/16/2020 10:34 PM |
| This PC | report_day-Electricity-2020-04-04.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:35 PM | 4/16/2020 10:35 PM | 4/16/2020 10:35 PM |
| 11.İnşaatı11 | report_day-Electricity-2020-04-05.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:35 PM | 4/16/2020 10:35 PM | 4/16/2020 10:35 PM |
| EQmatic | report_day-Electricity-2020-04-06.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:35 PM | 4/16/2020 10:35 PM | 4/16/2020 10:35 PM |
| TGControl | report_day-Electricity-2020-04-07.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:37 PM | 4/16/2020 10:37 PM | 4/16/2020 10:37 PM |
| İnşaatı11 | report_day-Electricity-2020-04-08.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM |
| This PC | report_day-Electricity-2020-04-09.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM |
| 11.İnşaatı11 | report_day-Electricity-2020-04-10.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM |
| 3D Objects | report_day-Electricity-2020-04-11.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM | 4/16/2020 10:39 PM |
| Desktop | report_day-Electricity-2020-04-12.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM |
| Documents | report_day-Electricity-2020-04-13.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM |
| Downloads | report_day-Electricity-2020-04-14.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM |
| Pictures | report_day-Electricity-2020-04-15.xlsx | 5 KB | Microsoft Excel Worksheet | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM | 4/16/2020 10:40 PM |
| Videos | report_day-Electricity-2020-04-16.xlsx | 5 KB | Microsoft Excel Worksheet | 4/17/2020 7:33 AM | 4/17/2020 7:33 AM | 4/17/2020 7:33 AM |
| www.smartergy-spm | report_day-Electricity-2020-04-17.xlsx | 5 KB | Microsoft Excel Worksheet | 4/18/2020 7:33 AM | 4/18/2020 7:33 AM | 4/18/2020 7:33 AM |
| Local Disk (C) | report_day-Electricity-2020-04-18.xlsx | 5 KB | Microsoft Excel Worksheet | 4/19/2020 7:33 AM | 4/19/2020 7:33 AM | 4/19/2020 7:33 AM |
| bank (D) | report_day-Electricity-2020-04-19.xlsx | 5 KB | Microsoft Excel Worksheet | 4/20/2020 7:33 AM | 4/20/2020 7:33 AM | 4/20/2020 7:33 AM |
| web (\\\192.168.100.10) | report_day-Electricity-2020-04-20.xlsx | 5 KB | Microsoft Excel Worksheet | 4/21/2020 7:34 AM | 4/21/2020 7:34 AM | 4/21/2020 7:34 AM |
| download (\\\192.168.1 | report_day-Electricity-2020-04-21.xlsx | 5 KB | Microsoft Excel Worksheet | 4/22/2020 7:34 AM | 4/22/2020 7:34 AM | 4/22/2020 7:34 AM |
| c (\\\Nexuspc) (Y) | report_day-Electricity-2020-04-22.xlsx | 5 KB | Microsoft Excel Worksheet | 4/23/2020 7:34 AM | 4/23/2020 7:34 AM | 4/23/2020 7:34 AM |
| e (\\\Nexuspc) (Z) | report_day-Electricity-2020-04-23.xlsx | 5 KB | Microsoft Excel Worksheet | 4/24/2020 7:34 AM | 4/24/2020 7:34 AM | 4/24/2020 7:34 AM |
| Network | report_day-Electricity-2020-04-24.xlsx | 5 KB | Microsoft Excel Worksheet | 4/25/2020 7:34 AM | 4/25/2020 7:34 AM | 4/25/2020 7:34 AM |
| | report_day-Electricity-2020-04-25.xlsx | 5 KB | Microsoft Excel Worksheet | 4/26/2020 7:34 AM | 4/26/2020 7:34 AM | 4/26/2020 7:34 AM |
| | report_day-Electricity-2020-04-26.xlsx | 5 KB | Microsoft Excel Worksheet | 4/27/2020 7:34 AM | 4/27/2020 7:34 AM | 4/27/2020 7:34 AM |
| | report_day-Electricity-2020-04-27.xlsx | 5 KB | Microsoft Excel Worksheet | 4/28/2020 7:34 AM | 4/28/2020 7:34 AM | 4/28/2020 7:34 AM |



Data sharing
Shared with other system
via Modbus TCP(IP)

ABB EQmatic

Meter Management Metering Structure User Management Tariffs and units Consumer Groups Data sharing

19/08/2020 14:33

Data sharing

Modbus TCP Rest API

Mapping configuration

Default

Enable static register mapping

Reload mapping

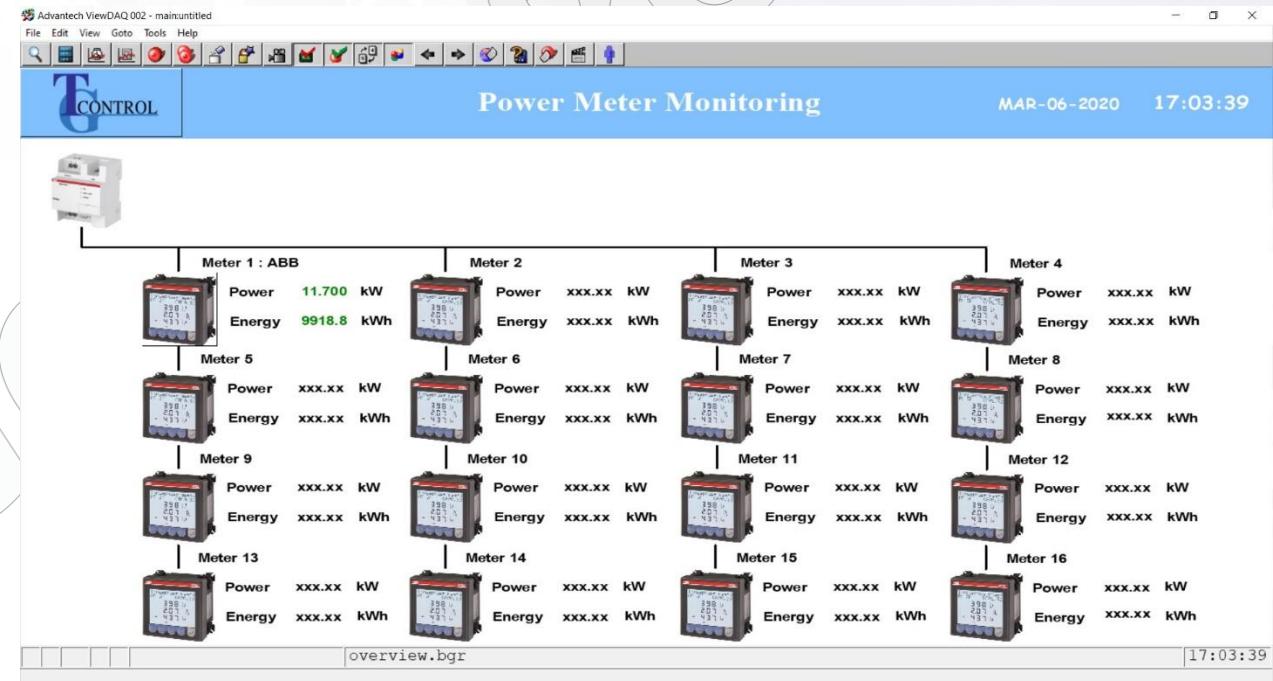
| TCP REGISTER ADDRESS | SIZE | CODING | UNIT | RESOLUTION | NAME | DATA POINTS |
|----------------------|------|--------------------------|------|------------|-----------------|-------------|
| 0x200h (512d) | 2 | Signed 32-bit (INT32) | A | 1 | Current L1 | |
| 0x202h (514d) | 2 | Signed 32-bit (INT32) | A | 1 | Current L2 | |
| 0x204h (516d) | 2 | Signed 32-bit (INT32) | A | 1 | Current L3 | |
| 0x206h (518d) | 2 | Unsigned 32-bit (UINT32) | A | 1 | Current Neutral | |
| 0x208h (520d) | 1 | Unsigned 16-bit (UINT16) | V | 1 | Voltage L1-2 | |
| 0x209h (521d) | 1 | Unsigned 16-bit (UINT16) | V | 1 | Voltage L2-3 | |



Data sharing

Shared with other system
via Modbus TCP(IP)

Application Example





Data sharing

Shared with other system
via Modbus TCP(IP)

Application Example





Wi-Fi/Ethernet/4G

Gateway



LAN (Modbus TCP)



Scada On Cloud



EQMatic Dashboard

EQMatic



RS 485



16 or 64 Device

Data sharing
Shared with other system
via Rest API

The screenshot shows the ABB Eqmatic Management interface. The top navigation bar includes the ABB logo, the Eqmatic brand name, and tabs for Dashboard, Analytics, Management, and System. The date and time (19/08/2020 15:03) and user information are also visible. The Management tab is selected, and the sub-menu 'Data sharing' is highlighted. The main content area is titled 'Data sharing' and shows two tabs: 'Modbus TCP' and 'Rest API', with 'Rest API' currently selected. A checkbox for 'Allow API token authentication' is checked. Below this, a table lists generated auth tokens. The table has columns for 'NAME', 'TOKEN', and 'CREATED ON'. One entry is shown: 'tg1' with token '1:d538fa0666798c7715fc3b4612f1b4e9683856a5181c380cbd47739765ed5fd14f96ecacaf539' and creation date '20/12/2019 09:41:59'. An 'Actions' button is located at the bottom right of the table.

| | NAME | TOKEN | CREATED ON |
|--------------------------|------|---|---------------------|
| <input type="checkbox"/> | tg1 | 1:d538fa0666798c7715fc3b4612f1b4e9683856a5181c380cbd47739765ed5fd14f96ecacaf539 | 20/12/2019 09:41:59 |



EQMatic



IP xxx.xxx.xxx.xxx

EQMatic Dashboard



Window Application



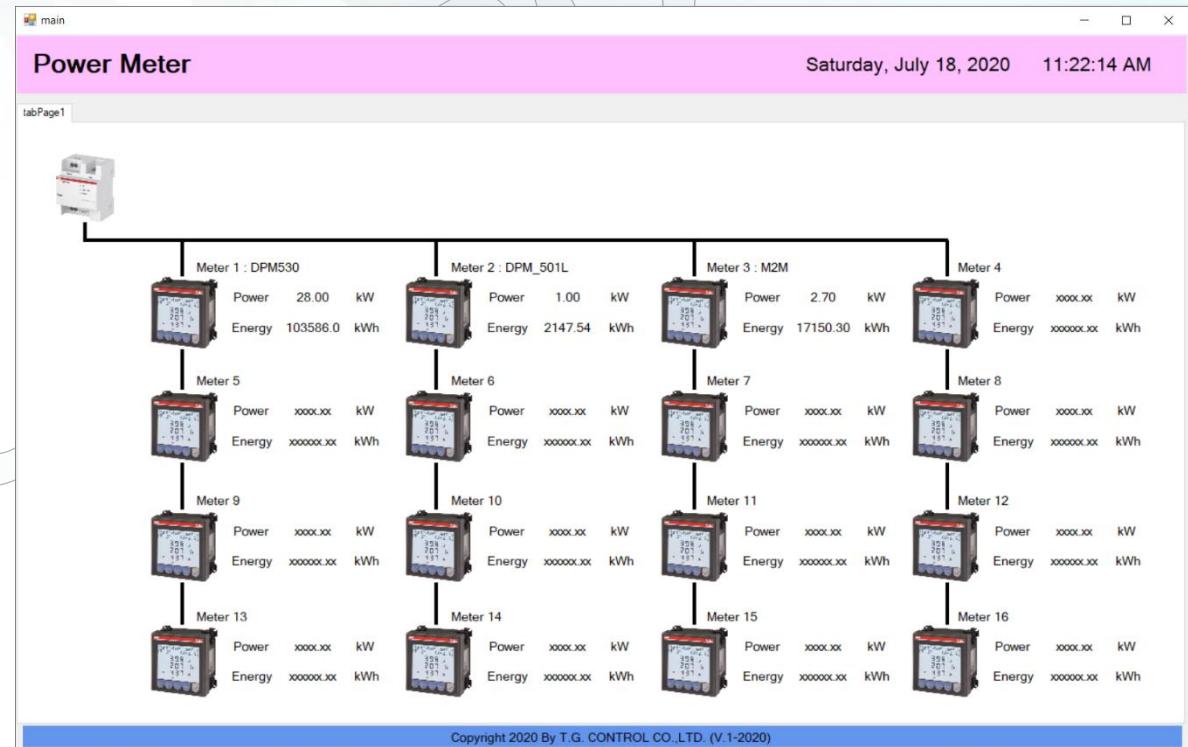
Database



Data sharing
Shared with other system
via Rest API

Application Example

TGC

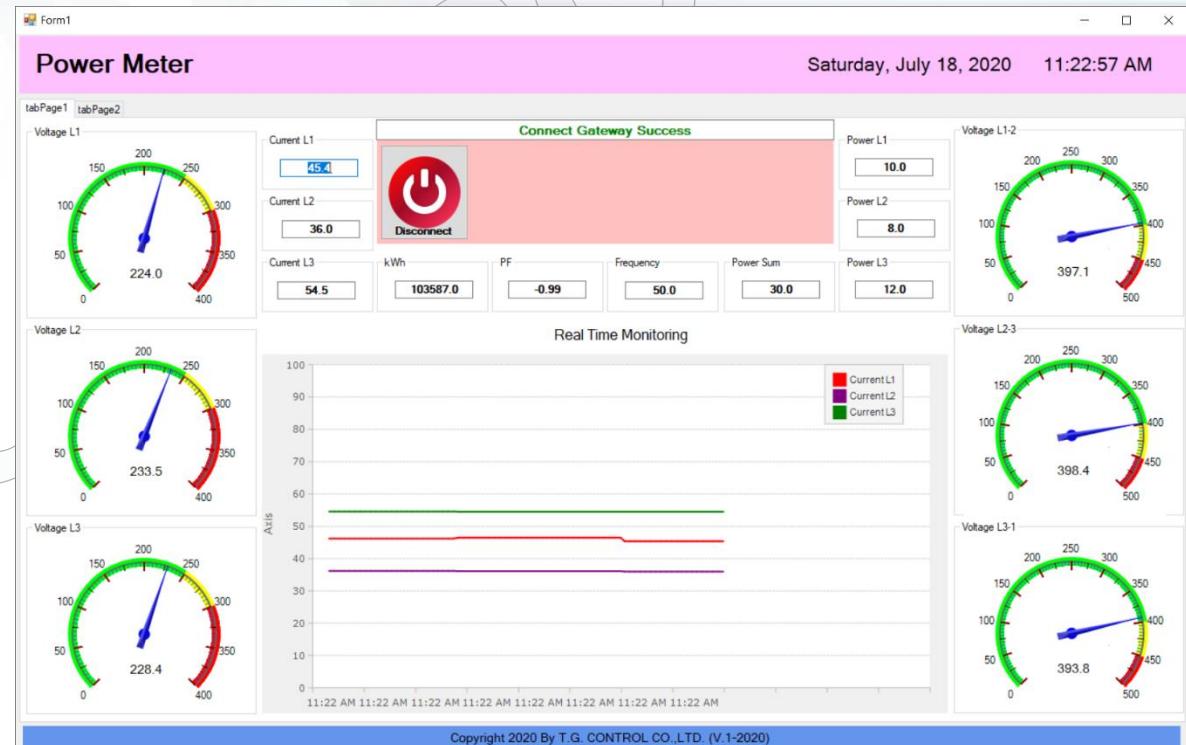




Data sharing
Shared with other system
via Rest API

Application Example

TGC





Data sharing Shared with other system via Rest API

Application Example

Showing rows 0 - 10 (11 total. Query took 0.0005 seconds.)

| No | DateTime | Voltage phase 1 | Voltage phase 2 | Voltage phase 3 | Voltage phase 1-2 | Voltage phase 2-3 | Voltage phase 3-1 | Current phase 1 |
|-----|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------|
| 140 | 2020/12/19 13:53:41 | 228.20100402832031 | 230.8630065918 | 233.52601623535 | 399.90103149414062 | 399.89602661132812 | 399.84201049804688 | 1.7100001573563 |
| 141 | 2020/12/19 13:54:42 | 228.03300476074219 | 230.62701416016 | 233.22201538086 | 399.39501953125 | 399.33102416992188 | 399.3740234375 | 1.5780000688646 |
| 142 | 2020/12/19 13:55:43 | 228.1960144043 | 230.4460144043 | 232.69700622559 | 398.92901611328 | 398.91003417969 | 398.91500854492188 | 1.5600001811981 |
| 143 | 2020/12/19 13:56:42 | 228.20301818848 | 230.56001281738281 | 232.91700744629 | 399.2100561523438 | 399.17401123047 | 399.25601196289062 | 1.5540000200272 |
| 144 | 2020/12/19 13:57:41 | 228.59100341797 | 230.84400939941 | 233.09800720215 | 399.75701904297 | 399.71801757812 | 399.68902587891 | 1.5720001459122 |
| 145 | 2020/12/19 13:58:42 | 228.92401123047 | 231.13500976562 | 233.34600830078 | 400.32101440429688 | 400.39001464844 | 400.38302612304688 | 1.6380000114441 |
| 146 | 2020/12/19 13:59:41 | 229.39001464844 | 231.77700805664 | 234.16500854492 | 401.24401855469 | 401.23101806641 | 401.26400756835938 | 2.5500001907349 |
| 147 | 2020/12/19 14:00:47 | 228.28100585938 | 231.12600708008 | 233.97201538086 | 400.26901245117188 | 400.22201538085938 | 400.23800659179688 | 2.9640002250671 |
| 148 | 2020/12/19 14:01:42 | 228.7200164794219 | 231.21801757812 | 233.71601867675781 | 400.33502197266 | 400.31802368164062 | 400.30102539062 | 2.9280002117157 |



Data sharing
Shared with other system
via Rest API

Application Example

The screenshots show a software interface for TG_EQMATIC. The top header bar displays the connection to 'TG_EQMATIC' and the date '2020/08/19 11:48:03'. The interface includes a device image, a title 'TG CONTROL CO., LTD.', and a date 'July 2020'. Below this is a timestamp '2020/07/16 00:05:04'. A table shows energy consumption for July 2020, with columns for Day, kWh1, Day2, and kWh2. The total energy for July is 5159.41 kWh. The table for August 2020 shows a total of 5383.58 kWh, with data for each day from 1 to 16.

| Day | kWh1 | Day2 | kWh2 |
|-----|--------|--------------|---------|
| 1 | 403.69 | 17 | 0.00 |
| 2 | 385.02 | 18 | 0.00 |
| 3 | 375.70 | 19 | 0.00 |
| 4 | 219.63 | 20 | 0.00 |
| 5 | 62.45 | 21 | 0.00 |
| 6 | 56.43 | 22 | 0.00 |
| 7 | 457.45 | 23 | 0.00 |
| 8 | 525.76 | 24 | 0.00 |
| 9 | 473.39 | 25 | 0.00 |
| 10 | 452.82 | 26 | 0.00 |
| 11 | 379.81 | 27 | 0.00 |
| 12 | 57.91 | 28 | 0.00 |
| 13 | 505.18 | 29 | 0.00 |
| 14 | 398.24 | 30 | 0.00 |
| 15 | 405.93 | 31 | 0.00 |
| 16 | 0.00 | Energy (kWh) | 5159.41 |

| Day | kWh1 | Day2 | kWh2 |
|-----|--------|--------------|---------|
| 1 | 333.79 | 17 | 399.19 |
| 2 | 55.17 | 18 | 383.73 |
| 3 | 422.92 | 19 | 165.97 |
| 4 | 400.07 | 20 | 0.00 |
| 5 | 350.78 | 21 | 0.00 |
| 6 | 383.80 | 22 | 0.00 |
| 7 | 380.48 | 23 | 0.00 |
| 8 | 55.00 | 24 | 0.00 |
| 9 | 55.94 | 25 | 0.00 |
| 10 | 443.61 | 26 | 0.00 |
| 11 | 412.60 | 27 | 0.00 |
| 12 | 61.95 | 28 | 0.00 |
| 13 | 412.11 | 29 | 0.00 |
| 14 | 359.09 | 30 | 0.00 |
| 15 | 244.86 | 31 | 0.00 |
| 16 | 62.52 | Energy (kWh) | 5383.58 |



Data sharing
Shared with other system
via Rest API

Application Example

TG CONTROL

9.23 ս.

bank: API TimeoutUnable to connect to the remote server

bank: API TimeoutUnable to connect to the remote server

bank: API TimeoutUnable to connect to the remote server

LINE Notify

```
PF_Sum : 2
PF_A : 2
PF_B : 2
PF_C : 2
kVa : 0
kW : 0
kVar : 0
Energy : 3894
Frequency : 49.96
```

18.17 ս.

bank: DateTime : 2019-09-13 06:18:05
PM

```
Volt_A : 228
Volt_B : 233
Volt_C : 231
Volt_AB : 399
Volt_BC : 402
Volt_CA : 398
Current_A : 0
Current_B : 0
Current_C : 0
PF_Sum : 2
PF_A : 2
PF_B : 2
PF_C : 2
kVa : 0
kW : 0
kVar : 0
Energy : 3894
Frequency : 49.96
```