KILOWATT LABS
BETTER ENERGY

# SIRIUS VIEW

## Monitoring and Controlling Application
## Of
## Sirius Capacitor Module


Please Read this Manual carefully before operating Sirius Module and keep it for future reference

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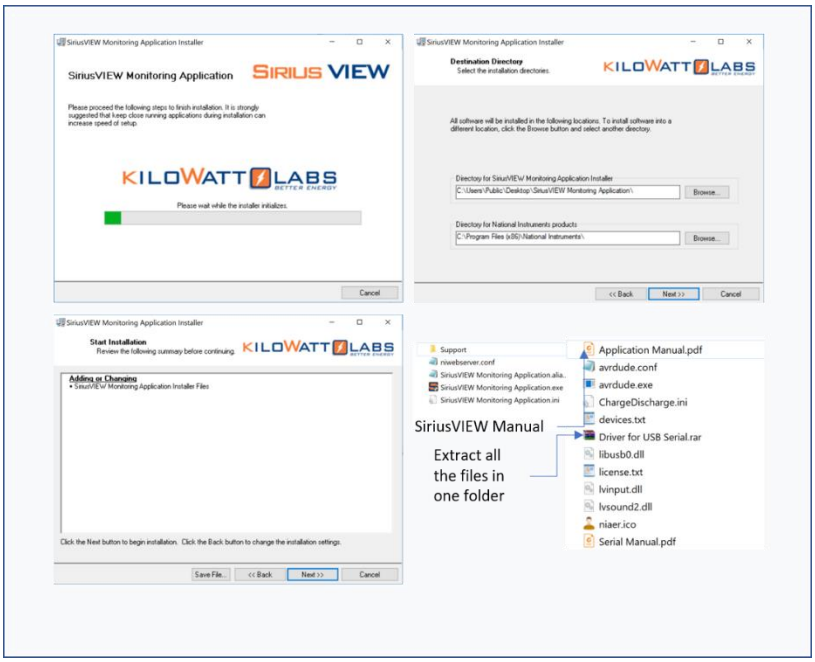
# 1 GETTING STARTED

## 1.1 Installation of SiriusVIEW

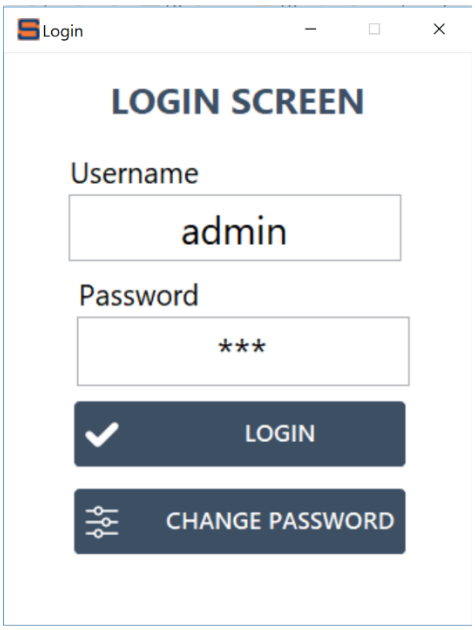
For installing SiriusVIEW application please use USB or DVD media provided with Sirius Cap. Module. Double click on SiriusVIEW Installer which resides in media will start installation procedure. User should follow these steps that shown below with screen shots. When installation is finished, user should restart the system for applying application changes on system.

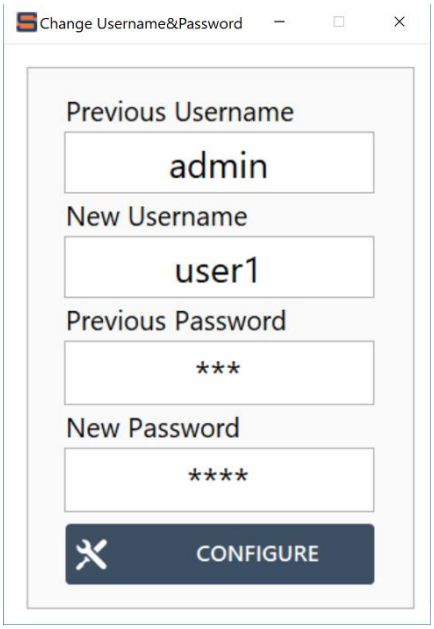



After restart procedure, user can find Sirius Application on Desktop as folder. Inside the folder there will be Serial Driver for USB Communication under **SUPPORT** Folder. This driver will be installed automatically by SiriusVIEW installation, but in case of need user can locate it and install it manually.

After installing all application and driver, user can find SiriusVIEW.exe application in folder which is reside in Desktop. SiriusVIEW requires administrative rights to start because it has functionality as creating, replacing saving automatic log files as excel format.

# 1.2 SiriusVIEW Log-In Screen




Log-In screen will appear whenever user execute the SiriusVIEW application. User needs to log in to start SiriusVIEW application. SiriusVIEW Application has default password and username. This username and password can be changed by user by “CHANGE PASSWORD” screen. User need to know previous password and username to update password. If user enter mismatched username and password 3 times, application will be terminated automatically.

In case of forgetting password or username, user can contact our support engineers for resolving the problem.

Default Password: 123

Default Username: admin

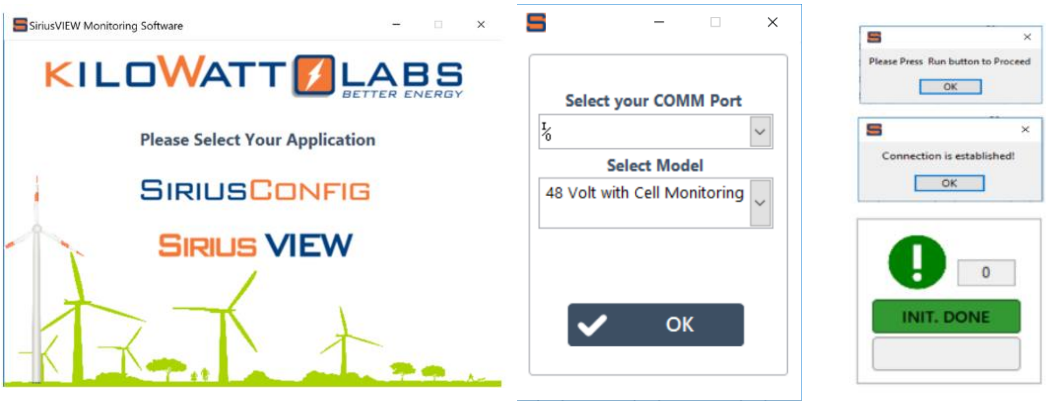
*Note: Only first trial to entering username and password will give error message, user should close the application and run again, default username and password will be activated after first trial.*

# 1.3 Configuration of Module and Application

Sirius Module and SiriusVIEW Application communicates over Serial interface by USB cable. For this communication, needed driver and application can be installed anytime with SiriusVIEW installer (please refer to USB Serial Driver Quick Install).

To use the SiriusView application properly, please follow these steps;

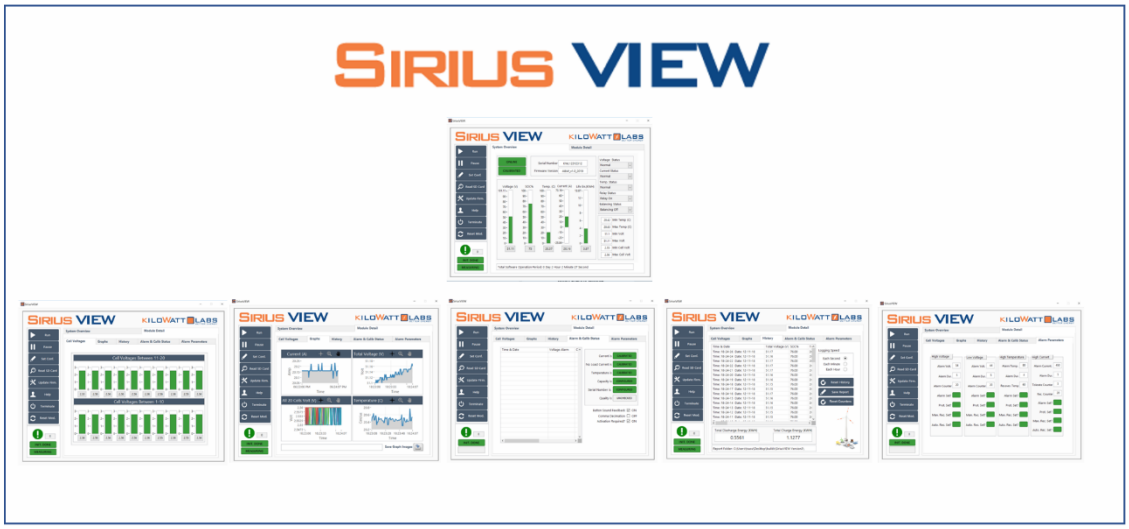
1) Turn on the Sirius Module by pressing power button on front panel.
2) Wait till the LCD screen on the Module displays initial values.
3) Double click on SiriusVIEW application to execute it.
4) Select SiriusVIEW and left click.
5) Enter Serial Port (COM) that Module is using at the beginning of application and select the type of module from drop down menu.




6) Follow instructions and press Run button on interface. (Auto Pop-up dialogs)
7) If connection between PC and Module is established successfully INIT DONE LED will be constantly turned on.
8) For getting measurement, press RUN button.
9) If there is any problem during connection, check USB cable and ensure the module is working properly.
10) While getting measurement, MEASURING LED should blink every 1 second. If blinking stopped, it will represent measurement interrupt or technical issues.
11) While getting measurement, COMM LED on front panel of the Module should blink.

# 1.4 Overview of SiriusVIEW Application

In this section, user will be introduced to sub monitoring pages of SiriusVIEW application.




In SiriusVIEW, there will be 6 different pages - one page named System Overview and five subpages under Module Detail page.

**1)System Overview**

**2)Module Detail**

**a) Cell Voltages**

**b) Graphs**

**c) History**

**d) Alarm & Calibration Status**

**e) Alarm Parameters**

## 1.4.1 System Overview

System Overview is the page that can inform the user about:

1) Serial Number and Firmware version of Module.
2) 5 vital measurements about Sirius Module in real-time.
3) Communication Status and Measurement Status between PC and module continuously as well as alarm counter.
4) Calibration Status of Module.
5) Alarm Status of Module.
6) Statistical measurements of 6 key parameters.

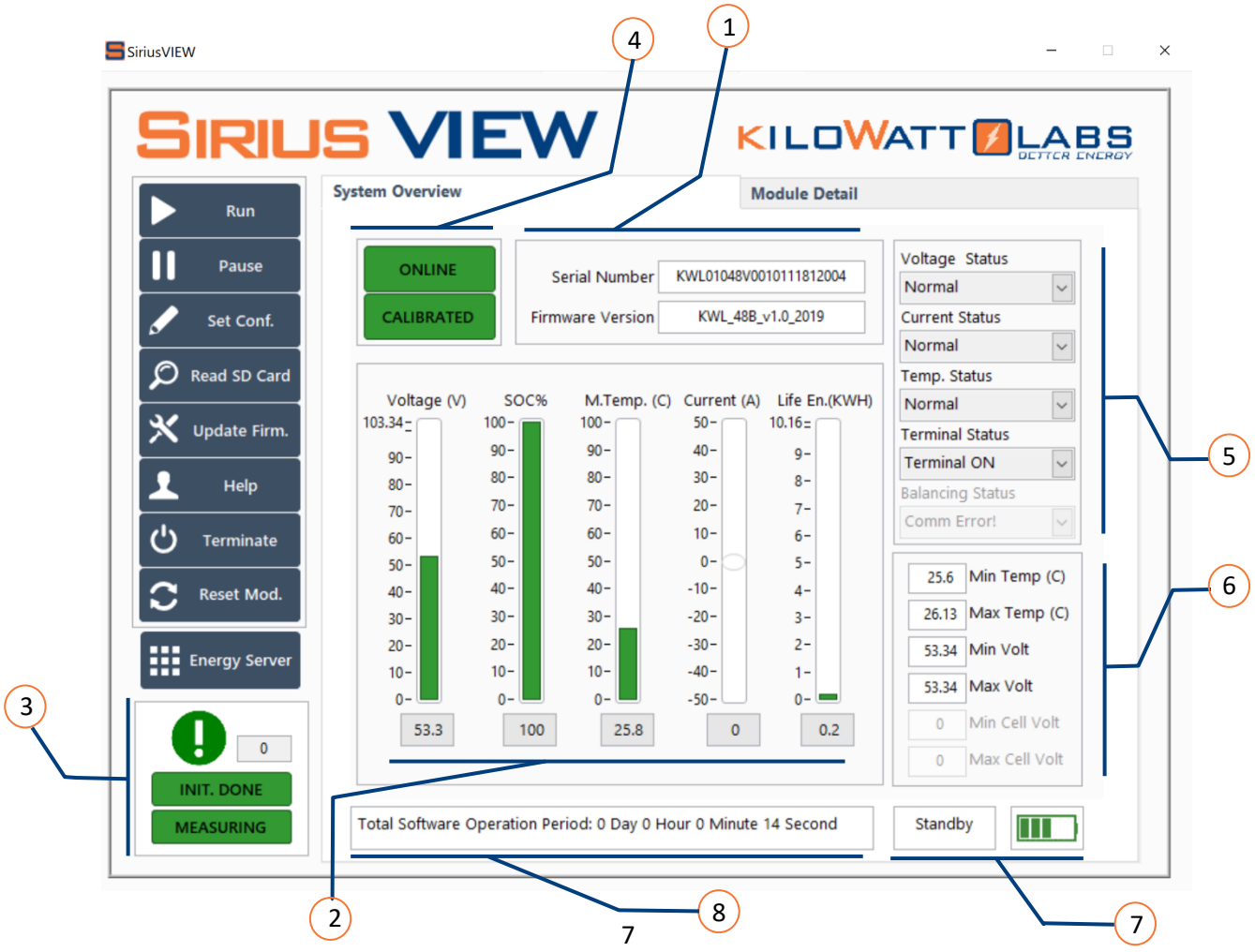
7) Module Status (charging/standby/discharging).
8) Total Application operation period.

5 key measurements available to the user:

i. Total Voltage of Module (Between terminals).
ii. State of Charge of Module as percentage (SOC, calculated by Kalman filter).
iii. Temperature of Capacitor in Celsius.
iv. Current in Amperes (between terminals).
v. Total energy delivered* from the first discharge in kWh.

As statistical measurement, user can read:
- Minimum and Maximum temperature of Module Cells while application runs.
- Minimum and Maximum Cell Voltages of Module while application runs. (Optional)
- Minimum and Maximum Total Voltage of Module while application runs.

*Total energy delivered is zero when the module is shipped and increases with every discharge (not charge). On the users request, life energy counter of the module can be reset to zero with password protection.

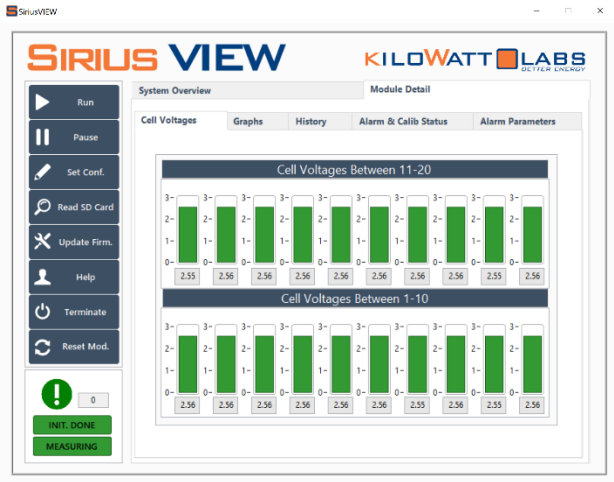


## 1.4.2 Module Details

This second main page of SiriusVIEW includes 5 different subpages:

### *1.4.2.1 Cell Voltages (Optional for Cell Monitoring Models)*

This page informs the user about each cell voltage level in the Sirius Module. Normal configuration of Sirius Module includes 20 cells but this configuration will be different in different models of Sirius Modules. Voltage value of Sirius Cap Cells should be between 2.2 and 2.7 Volt. This page informs the user if there is something wrong with Sirius Cells like over-under voltage or imbalance.




### *1.4.2.2 Graphs*

This page informs the user about trends of Current, Total Voltage, Each Cell Voltage (Optional) and Temperature over time. User can zoom in and zoom out on graphs by using graph tools at top of each graph. Additionally, user can export graphs by **SAVE GRAPH IMAGES** button by using the graph export path at the bottom of the graph page.

### *1.4.2.3 History*

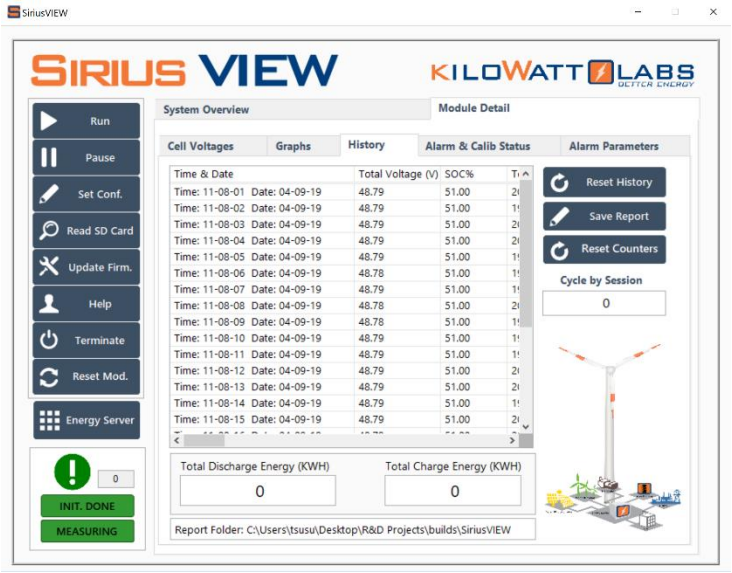
This page shows measurements over time recorded via the SiriusVIEW application such as:

- All the key measurements (Volt, Current...).
- All the Statistical measurements (Maximum volt, minimum volt...).
- All Cell Voltage levels (Optional).
- Alarm conditions.
- Calibration conditions.
- Terminal Temperature.

This table represents last 1 minute of measurements while application is running. Every 1 minute, the table will be cleared (for the sake of PC RAM). Every Charge and Discharge session will be logged automatically as Excel format regarding charge and discharge session start time stamp. So, each 1-minute table will be appended as Excel format regarding discharge and charge sessions. For more detail, user can read additional features section in the manual.

In this page, user can view Total Discharge/Charge Energy (kWh) as independent from Module. These energy values are calculated by the application, so are available only while the application runs. When application is restarted, energy values will remember the last energy measurements (it will not start at 0 kWh). This feature can be used to calculate round trip efficiency of the Sirius Module during continuous charge and discharge sessions.

- User can clear History table with RESET HISTORY button,
- User can save all the table as Excel format by SAVE REPORT button
- User can reset Discharge/Charge counters by RESET COUNTER button. (User will be asked for password for that operation.)
- User can read Cycle number during application session (Completed Charge-Discharge Cycle)
- Note: Cycle number will be reset by terminating SirisuVIEW Application.



### *1.4.2.4 Alarm and Calibration Status*

In this page there is a table that records 3 alarm conditions continuously over time:

- Temperature Alarm
- Voltage Alarm
- Current Alarm
- Starting time for charging
- Starting time for discharging

Also, user can be informed about each calibration status of:

- Current measurement
- No load current measurement
- Temperature measurement
- Capacity of module
- Serial Number
- Quality control status

<u>Additional features</u>

- User can turn on/off button feedback sound.

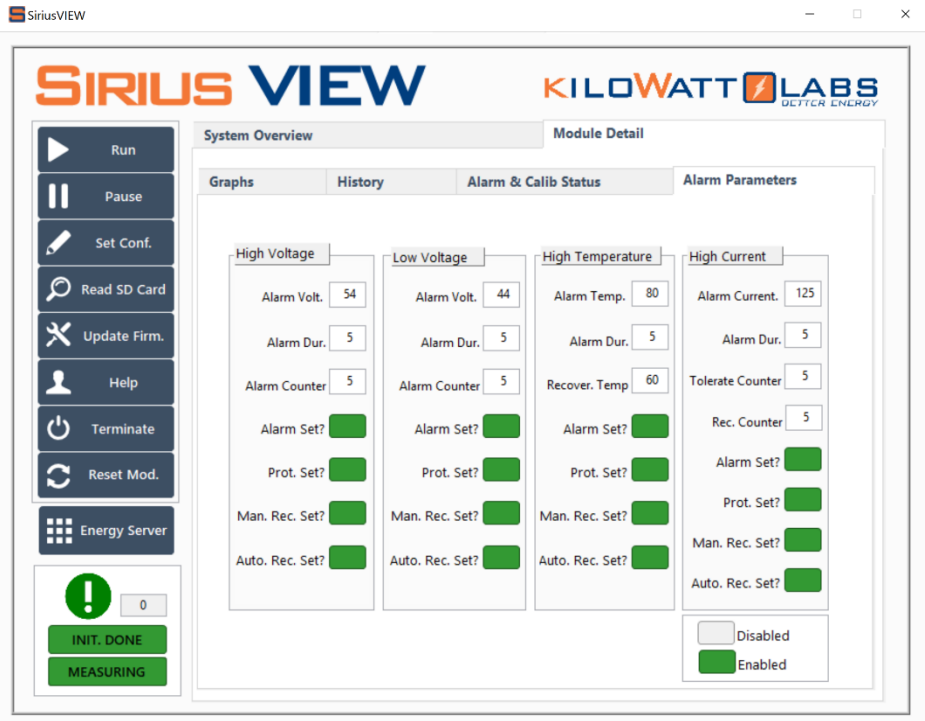
### *1.4.2.5 Alarm Parameters*

In this page user can see alarm parameters which are factory configured before shipping:

- High Voltage Alarm Parameters
- Low Voltage Alarm Parameters
- High Current Alarm Parameters
- High Temperature Alarm Parameters

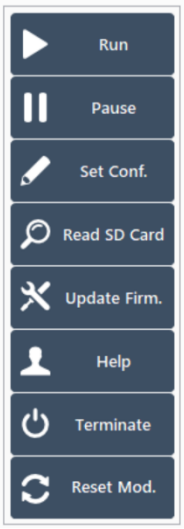
In each Alarm condition there are different parameters such as:

- Alarm *parameter* (High/Low).
- Alarm Duration (seconds): Buzzer will be activated after that much duration.
- Alarm Counter (seconds): Module will recover after that much duration, if there is no alarm status.
- Tolerate Counter (seconds): Alarm will be triggered after that much duration.
- Alarm Set: Buzzer is activated/not activated.
- Protection Set: Module will trip in any alarm condition/Module will not trip.
- Manual Recovery Set: Module can recover manually (pressing fault reset button)/ manual recover is disabled.
- Auto Recover Set: Module will recover automatically if there is no alarm condition anymore/ Recovery will be by only manually (pressing fault reset button).



# 2 APPLICATION DETAILS

From each page of the application, user can reach functional buttons for specific operations.




Press Run button at least one time to start having measurement

Press Pause button to pause having measurement

Press Set Conf. button to configure:
- Balancing
- Energy Save
- Contrast
- Relay Status

Press Read SD Card button to read internal memory as measurements

Press Update Firm. button to update Firmware with new version of it.

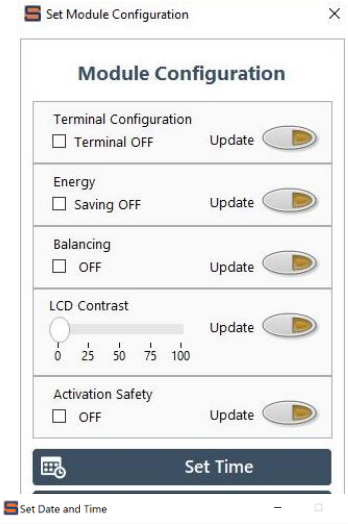
Press Help button to read Software manual

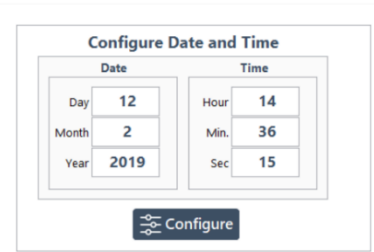
Press Terminate button to terminate software(not module)

Press Reset Mod. button to reset Module (Terminals will turn of while turning off)

## 2.1 Setting Configuration of Sirius Module

For setting configuration of Sirius Module, user can press SET CONF button to:




- Turn on/off Balancing: Balancing only can turn on while there is no current flow at terminals (Optional).
- Turn on/off Terminal.
- Turn on/off Energy Saving: While Energy save turn on; LCD screen backlighting will turn off after 20 seconds.
- LCD Contrast (0-100): 100 will be the most visible.

-Set Time: when set Time Butten pressed a pop-up window will appear with a Date and time that synchronizes with PC time, however the time can be adjusted.

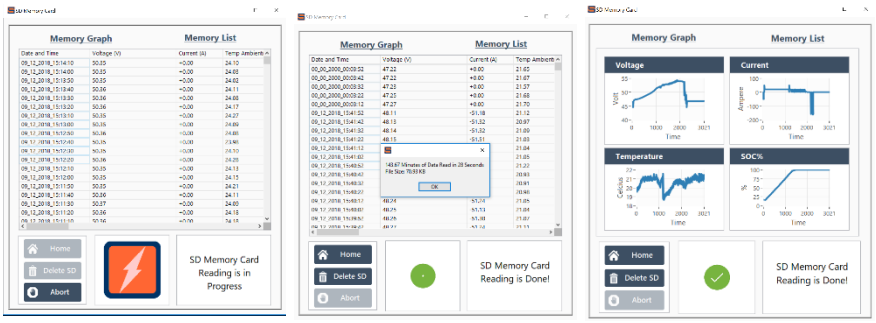
-Turn on/off Activation Safety: this feature is turned on by default, which allow the customer to toggle the Protected terminal ON/OFF by pushing the fault reset button on module when the module is turned on. When this feature updated to turned off there will be output across terminal whenever module is turned on.

To update the configuration user should press UPDATE button or CONFIGURE for Time then wait for 10 minutes to activate the new configuration, if user just give up to update configurations, press HOME button.

## 2.2 Reading Internal Memory (SD Card)

Sirius Capacitor Module has great feature that, recording key measurements to internal SD card for every 10 seconds. If required, user can stream all the information in SD card and save it as Excel format in SiriusVIEW Application. At every 10 seconds, Sirius Module will save the following data:

- Timestamp
- Total Voltage
- Current
- Temperature
- Terminal Temperature
- SOC %
- Voltage Status
- Current Status
- Temperature Status
- Terminal Status




For reading Internal Memory, user should press Read SD Card button. Streaming from SD card to PC will start automatically. Pop up screen will stream measurements till reading whole data in memory card. During this time user can:

- Read and follow all the measurements as table version
- Read and follow all the measurements as graph version
- Abort reading operation.

After reading operation is done or aborted, user can delete the memory card information to refresh it.

Additionally, after reading operation, SiriusVIEW application will generate SD reading report automatically in the same folder with application.

| Parameter | Status | Meaning |
|---|---|---|
| T.Voltage | 0 | Comm. Error |
| T.Voltage | 1 | Normal |
| T.Voltage | 2 | Module Full |
| T.Voltage | 4 | Cell Too Low |
| T.Voltage | 7 | Contact Service |
| T.Voltage | 9 | Module Too Low |

| Parameter | Status | Meaning |
|---|---|---|
| Temp. | 0 | Comm. Error |
| Temp. | 1 | Normal |
| Temp. | 2 | Module Over Temp. |
| Temp. | 3 | Terminal Over Temp. |

| Parameter | Status | Meaning |
|---|---|---|
| Terminal | 0 | Comm. Error |
| Terminal | 1 | Terminal on |
| Terminal | 2 | Terminal off |

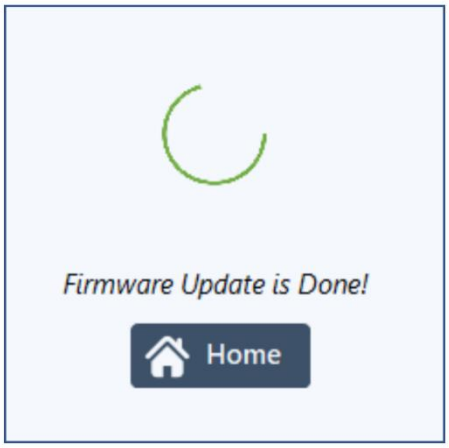
| Parameter | Status | Meaning |
|---|---|---|
| Current | 0 | Comm. Error |
| Current | 1 | Normal |
| Current | 2 | Over Current |
| Current | 3 | Counting |

## 2.3 Updating Module Firmware

Sirius Capacitor Modules are always shipped with the most updated firmware, but during usage, R&D team can release new firmware for:

- More accurate measurements
- New features
- Fixing bugs
- Improving general process timings

In case of releasing new firmware, R&D or support team will contact the user to start the update process. To start the update process, user can use SiriusVIEW to update firmware by pressing UPDATE FIRMWARE button. (Note: This process may require password.)

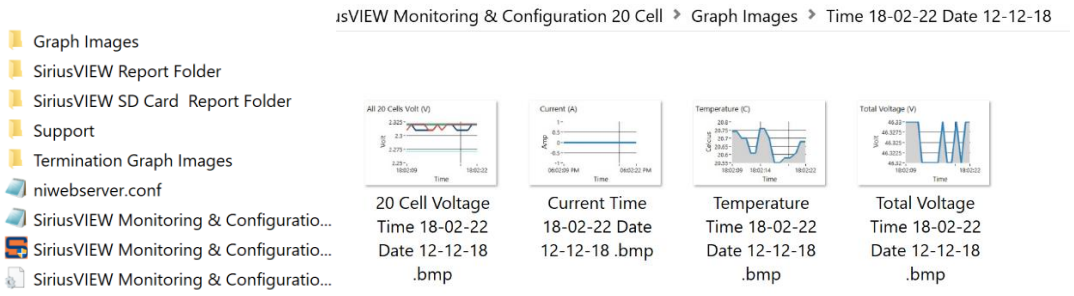

**Note:** It is strongly suggested that, firmware update process should be handled with support team interaction. (New firmware will be delivered by KILOWATTLABS support engineer.)

**Note:** Please do not turn off Module/Disconnect USB while updating firmware. It can cause serious damage of firmware of module!

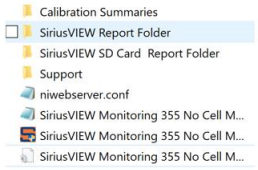
# 2.4 Capturing Application Graph Images

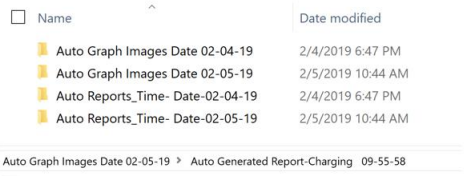
While getting measurements, user can monitor key measurements as graph in Graphs subpage. Also, for post processing and analyzing user may need to export graph images. For this purpose:

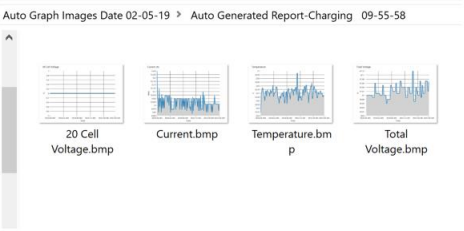
- User should open GRAPHS page.
- User should press SAVE GRAPHS IMAGES button.
- Graph images will reside in same folder with application.
- All the graph images will have timestamp.
- Additionally, user can determine the image path at the bottom of GRAPHS page.

# 2.5 Saving Test reports – Automated Processes



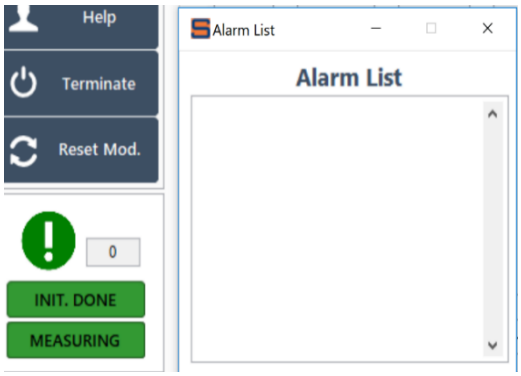


SiriusVIEW Application always log data in history table every 1 second. This table will be refreshed every 1 minute. Before refreshing table, the data which is on the table will be logged as Excel format with time stamp and procedure. Measurement will be logged as Excel only when there is Charging or Discharging

Additionally, graph images of measurements will be logged automatically regarding charge & discharge and timestamp. So, there will be report of charging and discharging sessions automatically without user interraction

| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Time & Date | Total Volta | SOC% | Temperatu | Current (A) | Life Energy | Min.Temp. | Max Temp | Min Voltag | Max Vc |
| 2 | Time: 14-23-28 Date: 02-05-19 | 46.88 | 29 | 22.43 | -5.05 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 3 | Time: 14-23-29 Date: 02-05-19 | 46.85 | 29 | 22.43 | -5.13 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 4 | Time: 14-23-30 Date: 02-05-19 | 46.85 | 29 | 22.31 | -5.13 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 5 | Time: 14-23-31 Date: 02-05-19 | 46.95 | 29 | 22.52 | -5.2 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 6 | Time: 14-23-32 Date: 02-05-19 | 46.95 | 29 | 22.52 | -5.21 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 7 | Time: 14-23-33 Date: 02-05-19 | 46.86 | 29 | 22.37 | -5.21 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 8 | Time: 14-23-34 Date: 02-05-19 | 46.86 | 29 | 22.35 | -5.27 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 9 | Time: 14-23-35 Date: 02-05-19 | 46.86 | 29 | 22.35 | -5.21 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 10 | Time: 14-23-36 Date: 02-05-19 | 46.86 | 29 | 22.47 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 11 | Time: 14-23-37 Date: 02-05-19 | 46.92 | 29 | 22.42 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 12 | Time: 14-23-39 Date: 02-05-19 | 46.92 | 29 | 22.42 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 13 | Time: 14-23-40 Date: 02-05-19 | 46.86 | 29 | 22.56 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 14 | Time: 14-23-41 Date: 02-05-19 | 46.86 | 29 | 22.56 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 15 | Time: 14-23-42 Date: 02-05-19 | 46.86 | 29 | 22.43 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 16 | Time: 14-23-43 Date: 02-05-19 | 46.86 | 29 | 22.34 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 17 | Time: 14-23-44 Date: 02-05-19 | 46.86 | 29 | 22.34 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 18 | Time: 14-23-45 Date: 02-05-19 | 46.86 | 29 | 22.36 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 19 | Time: 14-23-46 Date: 02-05-19 | 46.9 | 29 | 22.42 | -5.39 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 20 | Time: 14-23-47 Date: 02-05-19 | 46.9 | 29 | 22.42 | -5.39 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |
| 21 | Time: 14-23-48 Date: 02-05-19 | 46.9 | 29 | 22.32 | -5.32 | 0.04 | 21.66 | 22.64 | 46.56 | 47 |

## 2.6 Special Indicators and Controls




SiriusVIEW application is listing each alarm condition while measuring voltage, current and temperature values. Whenever there is a new alarm about Voltage, Current and Temperature, user will see the alarm list size indicator increases. If user wants to see which alarms are triggered at which time, user left clicks on exclamation mark. There will be Alarm list as pop up screen. Whenever Alarm list pops up, alarm list size will be reset as zero.

# 3 NOTES & UNINSTALLATION PROCEDURE

SiriusVIEW Application can be uninstalled easily from the control panel of Windows operating system.

Notes:

1) After Restarting Sirius Module, user should wait 10 seconds to avoid communication problems.

2) After updating Sirius Module, user should wait 10 seconds to avoid communication problems.

3) In case of any communication problem, first of all, user should check USB cable connectivity and Module is working or not, if everything is fine, user can press RUN button to refresh communication between PC and Module.

3) Running SiriusVIEW application as administrator gives rights to create report file for measurements to SiriusVIEW application. Without giving administration rights, application can still run, but may not create report properly.

4) While running the Application, please do not use another application which is consuming too much RAM, it can cause the Application to run slower than expected (more than 1 second at some iterations) which can cause errors in calculations.

5) For support, please contact us on:

- support1@kilowattlabs.com

- support2@kilowattlabs.com

# 4 MINIMUM SYSTEM REQUIREMENTS

| | |
|---|---|
| Processor | Pentium 4M/Celeron 866 MHz (or equivalent) or later (32-bit)<br>Pentium 4 G1 (or equivalent) or later (64-bit) |
| RAM | 2GB |
| Screen Resolutions | 1024 X 768 pixels |
| OS | Windows 10/8.1/8/7 SP1 (32- and 64-bit)<br>Windows Server 2012 R2 (64-bit)<br>Windows Server 2008 R2 SP1 (64-bit) |
| Disk Space | 1GB |