HV Deye/SunSynk 50kW Installation Manual

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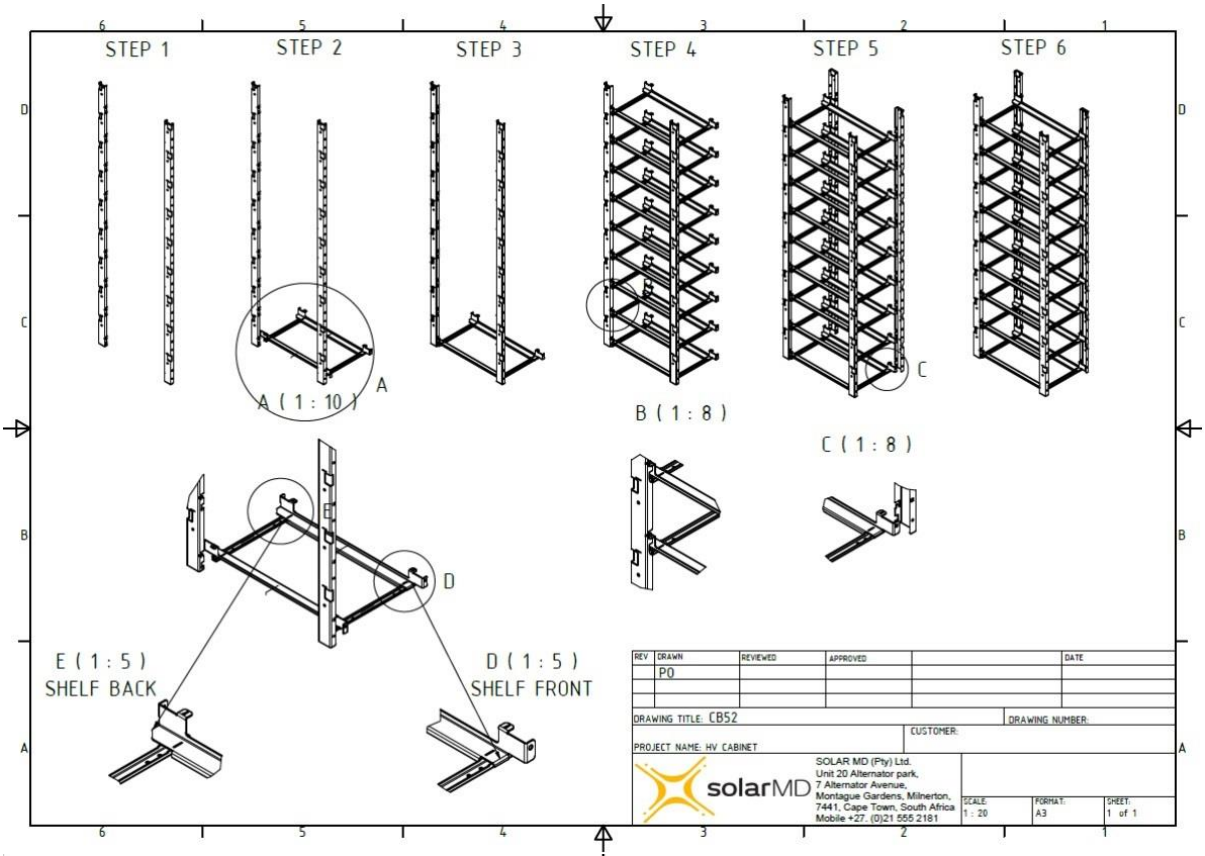
Procedural steps for commissioning an HV site:

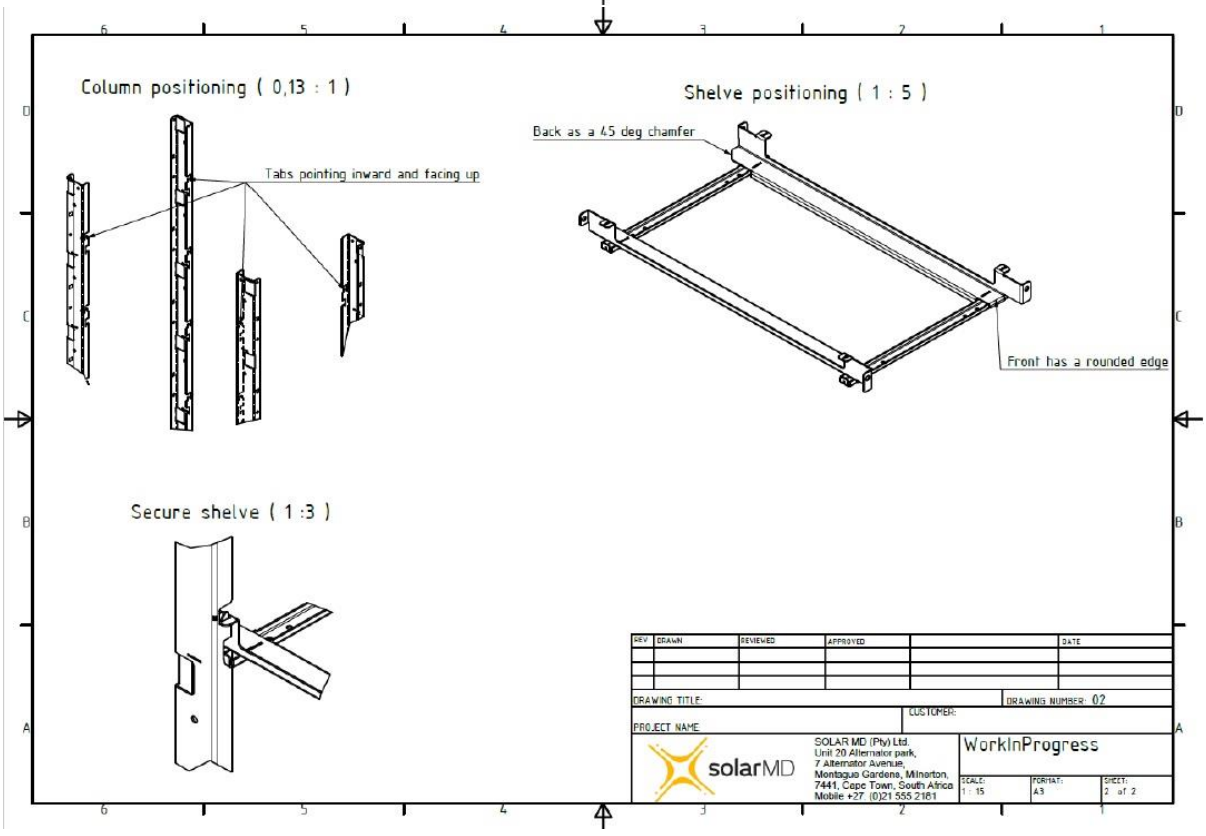
Step 1: Assembly of the Battery Cabinet - CB52X

Cabinets are ordered with the appropriate length columns as indicated by the red arrow in the picture below. The diagram can be downloaded here.

Diagram Notes:

1. Place two columns next to each other spaced about 590mm apart, with the flanges facing upwards. Ensure the shelf hook tabs of all the columns face inwards.
2. Ensure that all shelves are facing the same direction. The front of the shelf has a rounded edge, while the back of the shelf has a 45 deg chamfer.
3. Insert the shelves by hooking each shelf over the positioning tab.
4. Continue until all the shelves have been positioned on the two columns.
5. Insert the remaining columns by hooking the positioning tabs of the column into the positioning tab of the shelves until the tabs have bottomed out.
6. Secure the shelves in place with the provided bolts.
7. Ensure that the cabinet is grounded, with a minimum cable thickness of 16mm2.To ensure that there is bonding between cabinets.

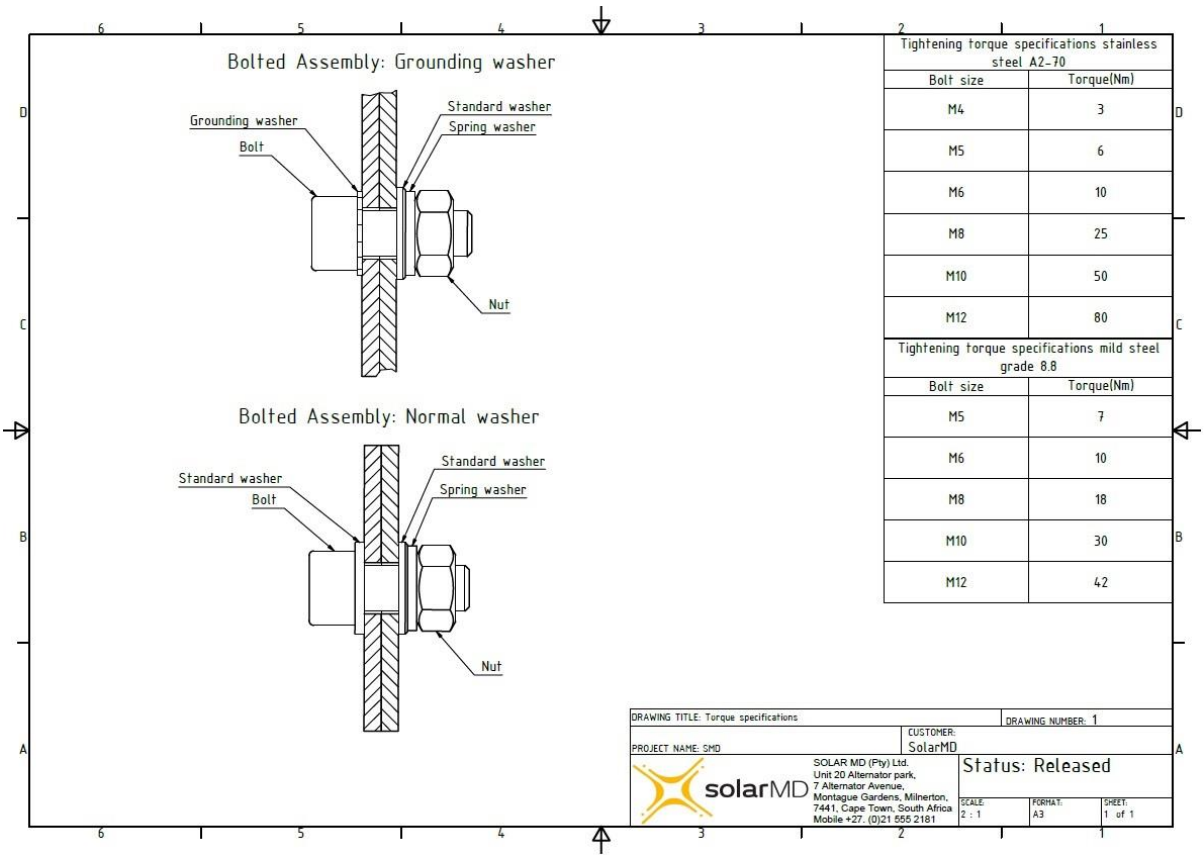

STEP 1
STEP 2
STEP 3
STEP 4
STEP 5
STEP 6
A (1 : 10)
B (1 : 8)
C (1 : 8)
E (1 : 5)
SHELF BACK
D (1 : 5)
SHELF FRONT
REV
DRAWN
REVIEWED
APPROVED
DATE
PO
DRAWING TITLE: CB52
DRAWING NUMBER:
CUSTOMER:
PROJECT NAME: HV CABINET
solarMD
SOLAR MD (Pty) Ltd.
Unit 20 Alternator park,
7 Alternator Avenue,
Montague Gardens, Milnerton,
7441, Cape Town, South Africa
Mobile +27. (0)21 555 2181
SCALE:
1 : 20
FORMAT:
A3
SHEET:
1 of 1


Column positioning (0,13 : 1)
Tabs pointing inward and facing up
Shelve positioning (1 : 5)
Back as a 45 deg chamfer
Front has a rounded edge
Secure shelve (1 :3)
REV
DRAWN
REVIEWED
APPROVED
DATE
DRAWING TITLE:
DRAWING NUMBER: 02
CUSTOMER:
PROJECT NAME
solarMD
SOLAR MD (Pty) Ltd.
Unit 20 Alternator park,
7 Alternator Avenue,
Montague Gardens, Milnerton,
7441, Cape Town, South Africa
Mobile +27. (0)21 555 2181
WorkInProgress
SCALE:
1 : 15
FORMAT:
A3
SHEET:
2 of 2

]

Step 2: Assembling the SS7000 Series ESS

1. Slide the BMU into the top left space of the rack.
2. Ensure the main isolator of the BMU is open/OFF.
3. Slide the individual battery modules into their respective slots in the battery cabinet.
4. Secure the modules and BMU with two M6 bolts and grounding washers, tightened with a torque value of 6Nm.
    a. **NB**: Failure to use grounding washers, means that the BMU and metal work isn't grounded properly which can cause electrical interference.
    b. The torque specifications can be found here.
    c. If the battery consists of an even number of modules, then the bottom right hand slot should be left open.



Step 3: Connecting the communication lines

1. Connect the Eth port of the BMU to the Network Switch on site.
2. Connect the **CANBUS 1 - OUTPUT** on the BMU to the top port **RJ45 module connector** of the first module below using the 0.22m CAT5 fly leads. Continue connecting the modules via the RJ45 module connectors down the line by connecting IN from the top connector, and OUT from the bottom connector.
3. When you have reached the bottom left hand side's module, continue the CANBUS line by feeding a longer CAT5 fly lead through the cabinet frame to the **TOP RIGHT** module and continue by connecting on the top port RJ45 module connector, downwards until you have reached the last module in the battery pack (i.e. the bottom right module). Note that an EOL (End of Line) termination resistor is not required.
4. Check that the cell MOLEX PIN connectors are secured properly on each BMS.

5. Ensure that the RJ45 connectors on the BMSs are securely connected. The top RJ45 module connector cable should be plugged into the BMS CANBUS 1-1. The bottom RJ45 module connector should be plugged into CANBUS 2-2.
6. On each battery module's BMS ensure the termination resistor switches are in the following positions:
    - CANBUS 1: ON
    - CANBUS 2: OFF
    - RS485: ON
7. Ensure the modules' BMS ON/OFF switches are in the ON position.
8. On the BMU: Terminate the unused CAN 2 (if only one battery is connected), CAN 3 and RS485 with the termination jumpers.

Step 4: Connecting the Power Cables

1. Refer to your Solar MD HV L1 training for all safety precautions. HV protective gear should be worn at all times.
2. Take note of the power cable quick connector colours. Each HV battery comes with 1x **positive-to-positive** cable, 1x negative-to-negative cable and the relevant amount of positive-to-negative cables to connect the battery modules in series.
3. Starting with the BMU, connect the positive-to-positive power cable from the BMU to the first battery module.
4. Continue connecting the power cables in **series** between the battery modules. **Note:** the power cable connector colour should be the same as the connector colour on the module. Modules should be connected in series with each other. There is a risk of causing a short circuit on a module if the positive and negative terminals of the same module are connected together. Note that the internal module fuse will blow if incorrectly connected.
5. Lastly connect the **negative-to-negative** power cable from the top right battery module to the BMU negative battery input connector.
6. Review the connection diagrams below for connecting the power cables on page 7, and the communication cables on pages 8 and 9. Please see the wiring diagram below.
7. Press and hold the BMU green push button for 2 seconds. This will turn the BMU communication on and if the communication line to the BMSs is correct, the BMSs will turn on sequentially. All the BMSs need to be illuminated at this point.
    a. If the BMU does not turn on, ensure that the power cables are correctly connected
        I. If the power cables are correctly connected, you will need to test each battery module's 250A internal fuse for continuity.
    b. If the BMSs do not initialize correctly, please contact Solar MD Support for further assistance.
8. Install all perspex covers securing each with four M4 button head bolts and flat washers, tightened with a torque value of 1.35Nm.
9. The BMU output connectors should be connected to the relevant OUTPUT terminals on the BMU. Ensure that the power cables are terminated on the other end and that it is safe to turn on the battery DC isolator before doing so.
10. Turn the Main Isolator into the ON position. (This should only be done once the batteries have been commissioned by Solar MD Support)

Step 5: Connecting the Logger V2

Ensure the Logger is powered. **DO NOT** power the Logger with a battery module.

An external power supply will be required. Power supplies can be a DC source with **9-65V** via the screw terminals **OR** a 5V USB Type-C with at least 2A rated current connected to the USB-C port on the logger.

*Do not connect the USB-C and the 9-65V power supplies simultaneously to the Logger.

Connecting the Logger to the internet

NOTE: The **Logger** and the **BMU MUST** be connected to the **same** network.

DHCP (Dynamic Host Configuration Protocol) Server is Available:

1. Connect a LAN cable on the Eth1 port on the Logger V2.
    a. Note that if an older generation Logger V2 is being used, please refer to the installation guide for connecting it.
2. Connect the other end of the LAN cable to the network switch as seen in the Network Switch tab - ANNEX 2 (PG17).

DHCP Server Not Available:

1. Two options are available:
    a. Using a phone or laptop, connect to the Logger's WiFi AP (Access Point) - eg.LoggerV2-SLVxxxxxxxxx
    b. Connect an Ethernet Cable to Eth-2 (the local AP of the logger).
2. The network name (SSID) and WPA2 password are printed on the Logger sticker for connecting via the AP.
3. Open your internet browser and type in the local address as printed on the Logger sticker (192.168.222.1) .You'll be redirected to a Login Screen.
4. The default Login Details are:
    a. Username: admin
    b. Password: admin
5. Click Sign In/Sign Up
6. Navigate to My Devices > Logger myPower > Network Tab
    a. Expand the wlan1 drop down tab. A list of available networks will be displayed.
    b. Click on the desired network you wish to connect to wirelessly, if the network is secure, you will be prompted for the WiFi password. Enter the password, and click SAVE.
    c. The logger will connect and will be visible once 'GROUP_HANDSHAKE→COMPLETED' has occurred and the connection LED on the logger turns green.
7. You can now close the browser window and disconnect from the Logger's WiFi and open the normal MyPower24 server.
8. Using the Logger Local Ethernet port (Eth2) to the network switch will provide the network switch on site with a DHCP server. All network devices connected to this switch will now be allocated an IP address by the Logger V2, starting with 192.168.222.xxx.
    a. This method should only be used in cases whereby there is no dedicated router on site.

Logger Adoption and Account Creation

1. Scanning
    a. Scan the QR code printed on the Logger using a QR code scanner on your smartphone.
    b. If you are not logged on, it will take you to a login page. When logging in from here it will automatically adopt the logger once you have logged in.
    c. If you do not have an existing account, please select ‘Create New Account’ and follow the prompts.
2. Assign Logger to a New User
    a. Under the Advanced User tab on the mypower24 web portal, search for the logger in the list.
    b. Right click on the logger and select “Invite to logger”.
    c. Enter the email address you would like to invite to the Logger and select ‘Send Invitation’.
    d. The user will receive an activation email to create a new account.

Step 6: Set the Logger V2 Battery Interfaces

1. Connect your Logger V2 to the internet. Refer to Connecting the Logger tab - Step 4.
2. Navigate to your MyPower 24 portal and login.MyPower24 Web Portal
3. Navigate to the Logger under your Logger list.
4. Under the “My Devices” tab, proceed to “Logger MyPower”. (See image 6.1 below.)
5. Under “Logger myPower” proceed: (See image 6.2 below.)
    a. Step 1: To the “Interfaces” tab
    b. Step 2: Go to the “eth0” tab
    c. Step 3: Click on “Add device”
    d. Step 4: Navigate to Solar MD > Li-ion HV Storage > High Voltage H8 Series
    e. Step 5: Click “Add”.
6. Once the High Voltage H8 Series batteries have been added. Follow these steps:
    - Step 1: Click Scan. The batteries that are connected to the network switch will now show in the list. If there are no batteries available:
        - Go to System Settings > Soft Reboot > Confirm and wait +/- 30 seconds for the Logger service to restart, then go back to Interfaces > eth0 > Scan to see if the list has now populated correctly.
        - If there are still no devices available on the list, check that your Ethernet network between the logger and the BMUs is connected correctly and that the BMUs are ON.
    - Step 2: Click on the BMU serial number that you wish to add to the Logger.
    - Step 3: Click connect.
    - Step 4: Continue until all the BMUs you wish to connect to the Logger are connected.
7. Successful connections will show under My Devices as Li-Ion HV Series.

Once the Li-Ion HV Series has been added to the Logger, the Solar MD Support team will assist in commissioning the batteries.

Image 6.1:

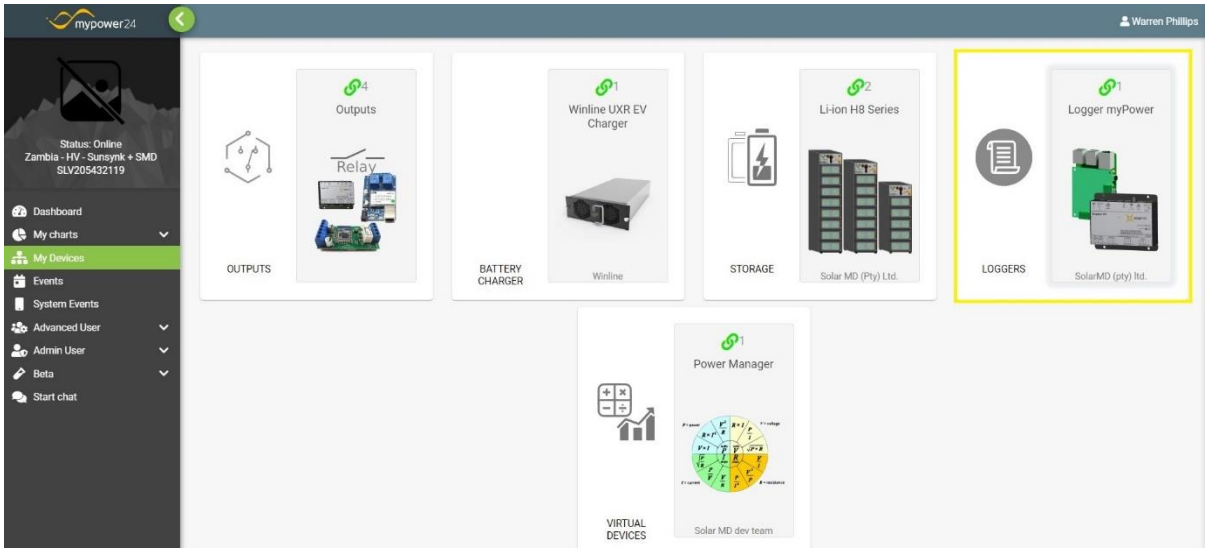
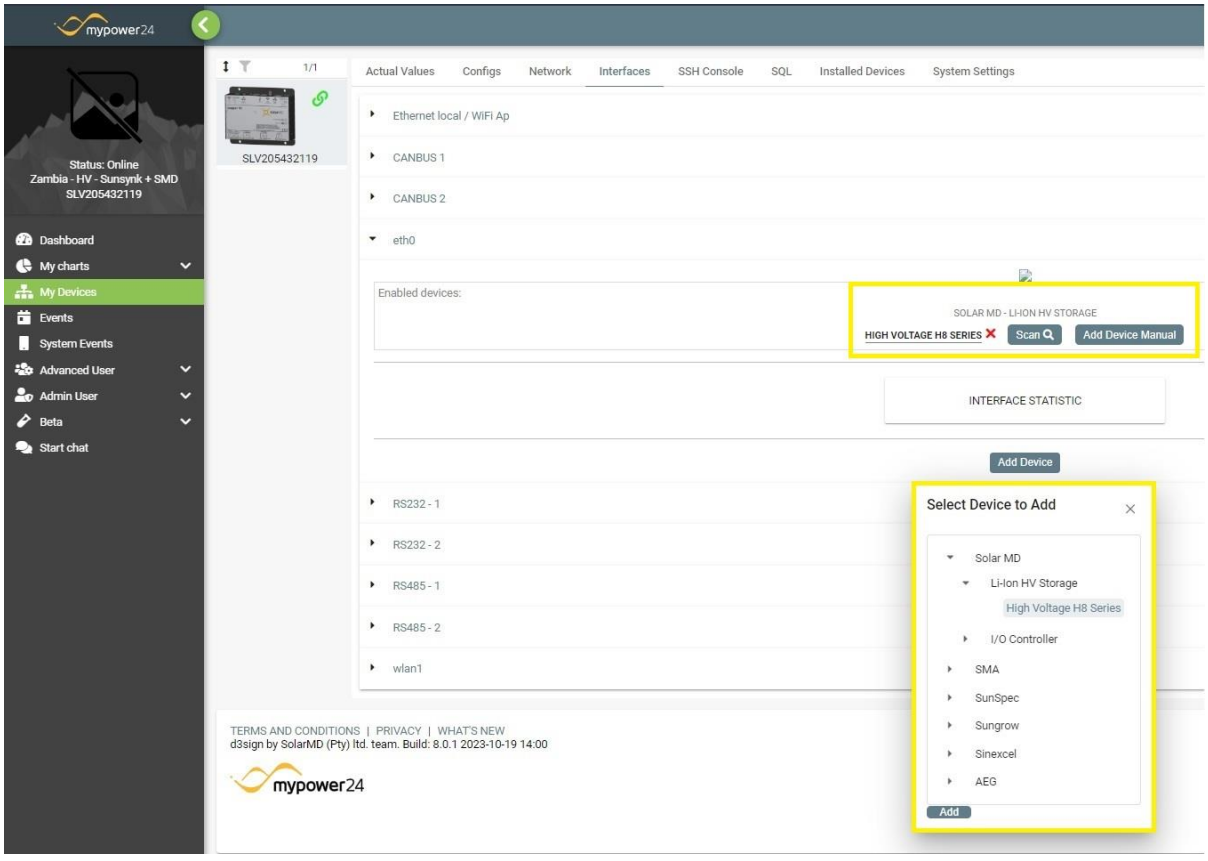


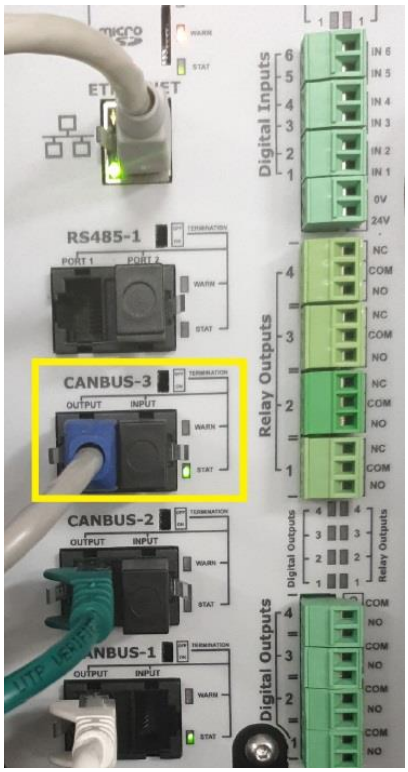
Image 6.2:



Setup: SunSynk/Deye Inverters

Communication between the **SunSynk/Deye** and the **BMU**:

1. Standard patch cable gets connected to the BMS1 port of the inverter: *CAT5 cable **must** be used for communication lines.
2. BMU CAN connection:



Deye/SunSynk settings:

1. To set up a Lithium battery, click on the ‘Battery’ icon.
2. Navigate to “Battery Type”.
3. In the “Battery-Setup” page, under the heading “Batt Type”.
4. Tick “Lithium”.
5. Set the following on the table below.
6. Untick BMS_Err Stop.

Settings Name	Value
Batt Capacity	280Ah
Charge	200A
Discharge	200A

ANNEX 1: BMS Initialization Troubleshooting

The BMS initialization will happen in a fluid line in the sequence that the BMSs have been connected from the BMU CANBUS 1 - OUTPUT port. For troubleshooting, diagnose the problem by finding the last point of initialization. This will help to diagnose the issue more efficiently.

1. Ensure all BMS ON/OFF switches are in the ON position.
2. Check that the BMU CANBUS 1 - OUTPUT port is being used to initialise the first module.
3. Ensure that all the BMS termination resistor switches are in the correct positions:
    - CANBUS 1: ON
    - CANBUS 2: OFF
    - RS485: ON
4. Check that all module frame connector fly leads are securely connected and that the communication line is complete.
5. Make sure that all the module frame RJ45 connections are securely connected to the BMS ports:
    - The top RJ45 module connector cable should be plugged into the BMS CANBUS 1-1.
    - The bottom RJ45 module connector should be plugged into CANBUS 2-2.
6. Check that the BMS where the initialisation stops is in high voltage mode. Refer to ANNEX 2 for further instructions.
7. To troubleshoot whether or not the module frame connector is faulty, use a pre-made CAT5 fly lead and bypass the communication line through the module frame connectors and connect the 2 BMSs directly to each other. Eg. BMS (1) - CANBUS 2-2 is connected directly to BMS (2) - CANBUS 1-1.
8. Contact Solar MD Support for further assistance.

ANNEX 2: The Network Switch Connections