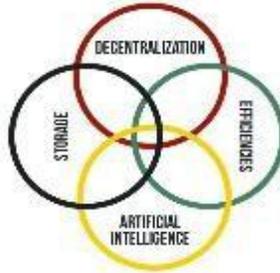


DSEA

JUSTSTANDOUT
Helping Africa



DSEA: Decentralization, Storage, Efficiencies and Artificial Intelligence are keys to reducing our carbon footprint while delivering our energy needs.

©2018 **Joseph Inyang**

At Juststandout our mantra is DSEA we believe Decentralization, Storage, Efficiencies and Artificial Intelligence are keys to reducing our carbon footprint while delivering our energy needs. Today Storage is the Key of keys. That is why we have partnered with Pylon Technologies to deliver the best Lithium ion batteries to West Africa.

PYLONTECH BATTERY INSTALLATION SOPs

All the following steps should be carried out by a trained professional.

Steps you **must** follow to avoid voiding your warranty, in addition to the minimum requirement and guideline.

Note: We do not support open loop connections (i.e without correct inverter / pylontech BMS communication cable). Your battery warranty is void if installation is open loop. Do not connect pylontech batteries with any compatible inverter without the correct BMS communication cable. For your warranty to be honored use the correct BMS communication cable.

1. Use only approved inverters to Pylontech batteries.
2. Use approved communication cables to install battery to inverter. Wiring your own cable according to the manufacturers pinout above must be done at your own risk. Any damage to the Pylontech battery due to incorrect wiring, cable orientation or use of an incorrect cable is not covered by any warranty.
3. Ensure that the DC breaker for your battery is on before switching on your inverter.
4. Do not connect DC cable to inverter until you have turned on the connected batteries in the bank and assured that each battery is within one blink of difference in SOC if not YOU MUST wait 30 minutes or more until SOC's equalize. this is also important when you are expanding your bank.

Any further questions to this SOP please contact us via service@juststandout.com

Pylontech UP2500, & US2000, US3000, US2000C, US3000C, UP5000, Phantom-S & Force-L1

BATTERY SPECIFICATIONS

*****the SPECS is pdf (pdf has been sent, kindly put the link.)

INVERTER COMPATABILITY LIST

*****the list is pdf (pdf has been sent, kindly put the link.)

Pylontech UP2500, & US2000, US3000, US2000C, US3000C, UP5000, Phantom-S & Force-L1

PYLONTECH – VICTRON

The combination of Victron products with Pylontech lithium batteries has been tested and certified by the Victron and Pylontech R&D departments.

General information about the battery is found in Pylontech's documentation.

This manual is intended to be used in conjunction with the product manual supplied by Pylontech. It provides additional and specific information regarding integration with Victron systems.

PYLONTECH - VICTRON SYSTEM REQUIREMENT

VICTRON MINIMUM REQUIREMENTS

The Pylontech includes a Battery Management System (BMS) with each battery module. This interfaces with the Victron GX device and can support multiple battery modules connected in parallel.

1. Product & system compatibility

Battery	UP2500*	US2000 (Plus/C)	US3000(C)	UP5000	Force-L1
Nominal voltage	24V	48V	48V	48V	48V
Module capacity	2.55 kWh	2.4 kWh	3.5 kWh	4.8 kwh	3.55 kWh

* Note that UP2500 came in two versions, UP2500NA01V00101 does not have a CANBUS port, and IS NOT supported by Victron. UP2500NB01V00101 released April 2020 has the CANBUS port and IS supported.

A GX-device is required, eg Cerbo GX or Venus GX (VGX)

It is essential to use the CAN-bus connection of the GX device (e.g. Cerbo GX or CCGX) - this communicates the keep-alive signal, charge and discharge limits, error codes and state of charge (SOC %) between the batteries and the system.

For new systems, the minimum required firmware version for the GX Device (e.g. Cerbo GX is v2.42. It is highly recommended to use the latest firmware version on all connected devices, including the GX device Inverter/Charger and MPPTs. There are regular updates to improve performance and reliability.

Legacy systems installed with v2.15 can continue to be used without upgrade as long as they do not present any issues.

All Multi, MultiPlus, MultiGrid and Quattro are compatible

As long as you are using the appropriate model for the nominal battery voltage, all VE.Bus inverters and inverter/chargers are compatible.

The minimum firmware version for new installations is 469. Though updating to the latest firmware is recommended where possible, and a necessary first step when troubleshooting issues.

These inverter/charger units must be connected to the GX device via the VE.Bus connection port.

Legacy systems installed with VE.Bus firmware 422 can continue to be used without upgrade as long as they do not present any issues.

All VE.Direct BlueSolar and SmartSolar MPPT Chargers are compatible

For proper operation, the Pylontech battery needs to be able to control the charge current. Therefore it is recommended to use Victron 48V compatible MPPTs models with VE.Direct port for charging.

MPPTs with a VE.Direct port

MPPTs are controlled via the GX device. Make sure the GX device runs v2.15 or later, and the MPPTs to 1.37 or the latest available version.

The MPPT requires connection to the GX device to regulate charge currents as the batteries require (due to temperature, etc) To test operation, try disconnecting the GX device from the MPPT. After a time-out, the MPPT will stop charging and flash an error code on its LEDs. The error code is error #67: no BMS.

MPPTs with a VE.Can port

New Model (2019 and later) VE.Can MPPTs are also supported from firmware version 1.06 and above. Be aware that some GX devices (e.g. CCGX) only have a single CANBus interface, and that is required for the battery communications. So if you use a new VE.Can MPPT, it must also be with a GX device that has more than one CANbus interface, e.g. the Cerbo GX.

Old model VE.Can MPPTs (pre 2019) are not supported.

Minimum Battery Sizing Recommendations

Some suggested battery sizings for common Victron inverter/chargers are listed below. These are suggestions for reliable operation for single phase off grid and are not specified by Pylontech.

Using the above formula, an example of minimum system sizing based on the US2000 battery module is below. Each battery module is approximately 50Ah at 48V, can provide 25A continuous charge and discharge and 100A peak for 1 minute.

Inverter / Charger Model	Inv continuous	Inverter peak watts	Number of Pylontech	Battery continuous	Battery peak discharge
--------------------------	----------------	---------------------	---------------------	--------------------	------------------------

	watts @ 25 degrees	surge rating	modules	discharge watt rating	watt rating
Multiplus 48/500/6	430	900	1	1200	4800
Multiplus 48/800/9	700	1600	1	1200	4800
Multiplus 48/1200/13	1000	2400	1	1200	4800
Multiplus 48/3000/35	2400	6000	2	2400	9600
Multiplus 48/5000/70	4000	10000	4	4800	19200
Quattro 48/8000/110-100/100	6500	16000	6	7200	28800
Quattro 48/10000/140-100/100	8000	20000	7	8400	33600
Quattro 48/15000/200-100/100	12000	25000	10	12000	48000

VICTRON SET UP/ INSTALLATION INSTRUCTION

CAN-bus Wiring

You can connect multiple battery modules together to form a single large battery by connecting the RJ-45 cable supplied by Pylontech using the link ports on the battery. This is shown in more detail in the [example wiring diagram](#) and Pylontech manual.

The communications for UP2500 can be paralleled up to 20 modules per string (and cannot use the LV-HUB). Other models can connect up to 8 battery modules (see Pylontech data sheets), in those models when using more than 8 parallel units, some limitations, additional configuration or equipment (e.g. Pylontech LV-Hub) may apply. See your Pylontech dealer, and Pylontech documentation for more details.

The batteries will automatically detect and link to each other, no adjustment of dip switches on the battery module are necessary.

The battery with the empty link port 0 is the master battery. You must use the *VE.Can to CAN-bus BMS type B Cable*, part number ASS030720018 for connection with US2000/US3000/UP2500; and *VE.Can to CAN-bus BMS type A Cable*, part number ASS030710018 for connection with US2000C/US3000C/UP5000/Force-L, you cannot use the cable supplied by Pylontech.

Plug the communication cable with the side which is labeled Battery BMS into the Pylontech CAN port of the master battery. Plug the side labeled Victron VE.Can into the [GX device](#).

Then, plug a [VE.Can terminator](#) in the other VE.Can socket on the [GX device](#). Two VE.Can terminators are included with the package of the [GX device](#) as an accessory, only one is used. Keep the other one as a spare.

More information about the cable can be found in [its manual](#).

Without properly connecting this cable, the battery will not show up on the display of the [GX device](#). The battery will also turn itself off.

It is important to ensure this connection and display of the battery on the [GX device](#) display before attempting firmware updates or settings changes on other devices if they depend on the power supply from the battery. Without this connection, the battery may turn off unexpectedly.

VICTRON PICTORIAL SET UP

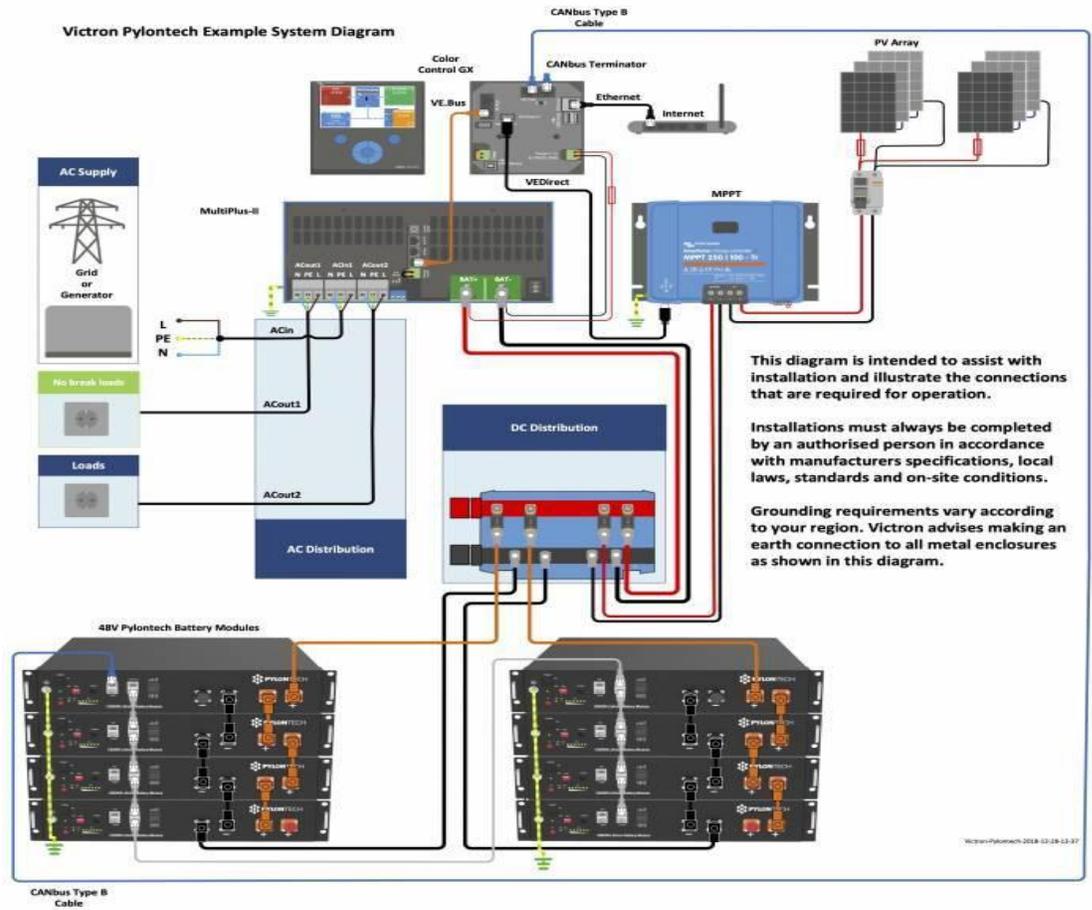


Image showing Victron set-up with Pylontech battery

GX Device Settings

On the [GX device](#),

Select the *CAN-bus BMS (500 kbit/s)* CAN-profile in the CCGX. Menu path: *Settings* → *Services* → *CAN-profile*.

After properly wiring and setting the correct CAN-bus speed, the Pylontech will be visible as a battery in the device list. If you have multiple batteries a single entry will show up, which represents all batteries:



Image showing the device list for Pylontech settings

When the battery is correctly connected this will also set the following values automatically:

Venus Settings → System Setup Parameter Value

DVCC	ON
Shared Voltage Sense	OFF
Shared Temperature Sense	OFF

The parameters option within the battery page shows the actual battery charge and discharge limits

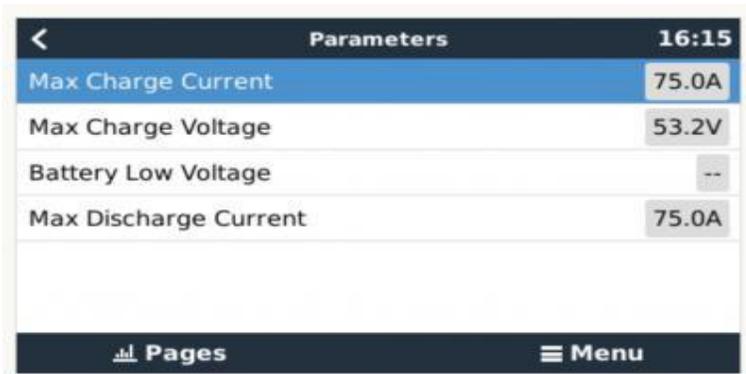


Image showing the parameter for Pylontech settings

This parameters page is also a good place to check that all batteries are connected and working properly. In see the individual battery data sheet for the normal working conditions, e.g. the current limit per cell. For example, If each battery is rated to 25A charge current, and the menu shows a 75A charge current limit (75 / 25 = 3) means there are 3 Pylontech battery modules connected.

Note that 'details' menu of the battery (e.g. Lowest and Highest cell voltages etc) is not currently supported by Pylontech.

VEConfigure Settings

When using the latest firmware on all compatible connected devices, and once the battery module has been detected by the GX device, battery charging parameters (e.g. Maximum Charge Current, Target Battery Voltage, etc) are automatically configured by the Pylontech BMU, and communicated to the rest of the Victron components in the system via [DVCC](#).

It is possible to override some of these automatic settings to provide additional limitations (e.g. reduce the total charge current that would be provided but the MultiPlus). The following information is provided for that purpose, though is not required for the safe operation of the system.

This section presumes familiarity with [VEConfigure software](#).

Voltages shown are for the 48V model, and should be scaled for the 24V model. The 24V model is an 8-series configuration while the 48V model is a 15-series configuration. Voltages should therefore be scaled by 8/15.

a. General tab

Check the “Enable battery monitor” function

Set the battery capacity to the total capacity of the battery: eg 50Ah times the number of battery modules for the US2000 model.

The other parameters (“State of charge when bulk finished” and “Charge efficiency”) can be left to their default setting: They are ignored for a Pylontech installation.

b. Charge Settings

Charger tab

Parameter	Setting
Battery type	Lithium
Charge curve	Fixed
Absorption voltage	52.0 V
Float voltage	51.0 V
Absorption time	1 Hr

Note: make sure to double check the float voltage after completing Assistants, and if necessary set it back to 51.0 V.

Note For off-grid use: ignore the 'bms assistant required' warning.

Inverter Settings

In the Inverter tab of VEConfigure

VEConfigure Inverter Parameter Setting

DC input low shut-down	44V
DC input low restart	48V
DC input low pre-alarm*	48V

* The pre-alarm setting is dependant on your preference and on site specific requirements. You may wish for this to be activated earlier in an off grid situation to allow time to start a backup generator.

ESS System Settings

If you are using the battery as part of a [grid connected ESS system](#), please review the [ESS Quickstart guide](#) and [Design and Installation Manual](#).

The settings that are specific to the Pylontech battery in the VEConfigure ESS Assistant are below:

Select the externally managed Lithium battery option

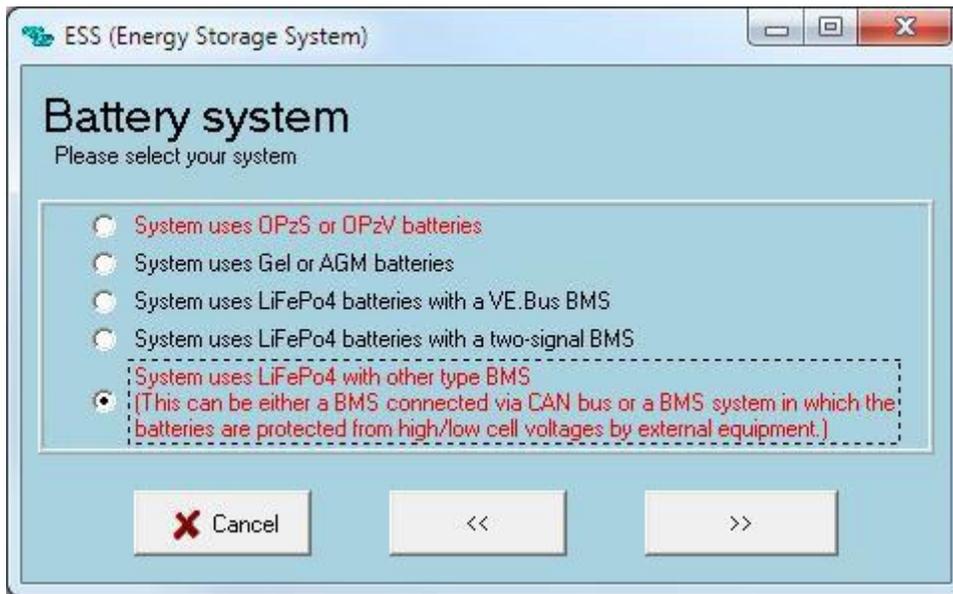


Image showing the ESS interface for Pylontech battery set-up

ESS Parameter	Settings
---------------	----------

Sustain voltage.	48V
------------------	-----

Dynamic cut-off values set all values to 46V.

Restart offset:	1.2V (Default)
-----------------	----------------

Due to the reliability of the grid supply and the behaviour of the sustain voltage threshold in ESS; you may wish to suppress the low voltage pre-alarm warning so that it does not trigger every day on its regular deep cycle. See [ESS FAQ Q5](#) - about suppressing the low-voltage alarm.

Hardware Protection Points

In normal operation, the charge parameter limits are set by the Pylontech battery and communicated through the system by the [GX device](#) to the inverter/charger and MPPT.

Low Voltage: When the battery discharges to 44.5V or less, battery protection will turn on.

High Voltage: If charging voltage above 54V, battery protection will turn on.

Working discharge temperature range is from -10 to 50 degrees celsius.

Charging temperature range is from 0 to 50 degrees celsius.

Discharge Current Limit set to 0A at 47V, inverter will turn off.

Over-charge and Over-discharge Current Limit 102A for 15 seconds, 200A for 0.1 seconds and 400A short circuit current.

If operation is attempted outside the operating range, the battery will disconnect to protect itself.

VE.Direct MPPT Settings

In normal operation the MPPT charge characteristics are governed by the [GX device](#) via DVCC, with instructions from the connected Pylontech battery.

This section presumes familiarity with [VictronConnect](#)

The settings below can be set as a precautionary measure.

MPPT Parameter Setting

Battery voltage. 48V

Absorption voltage 52V

PYLONTECH LV-HUB INSTALLATION GUIDE

FOR US2000 OR US3000

FOR CAN BUS COMMUNICATION

After you have installed the battery groups with battery connectors, short communication cable and earthing cables as instructed in the Pylontech battery manual, follow the next steps carefully.

NOTE: All the Batteries and the LV HUB MUST be SWITCHED OFF

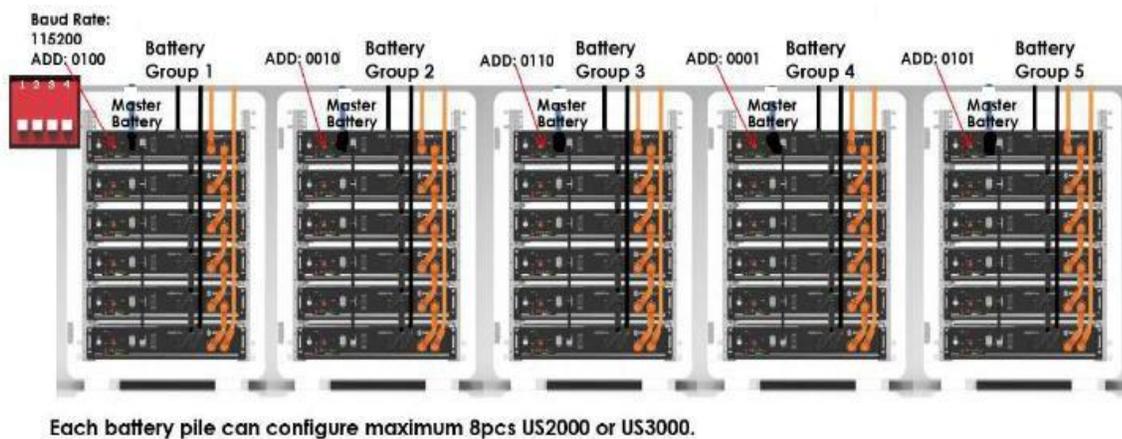


Image showing Pylontech battery set-up

ITEMS NEEDED

1 unit of 48V LV HUB power supply cable included with the LV HUB

1 unit Short COMMUNICATION CABLE that comes in the battery package

1 unit of long COMMUNICATION CABLE (that comes with the battery cable) for EVERY GROUP.

1 unit of long COMMUNICATION CABLE (that comes with the battery cable) for connection to the HUB to inverter. **NOTE FOR VICTRON you MUST use VICTRON COMMUNICATION CABLE: ASS030720018 - VE.Can to CAN-bus BMS type A Cable 1.8m**

STEP 1

- CONNECT THE LV HUB Power supply to the DC bus bar. **Make sure the HUB is OFF.**

STEP 2

- TURN OFF ALL BATTERIES IF NOT OFF**

- SET THE ADD SWITCHES ON EACH BANK'S MASTER AS BELOW - **DO NOT CONNECT INTO THE LV HUB YET WITH THE LONG ETHERNET CABLE**
- ONLY THE MASTER BATTERY OF EACH GROUP THAT THE ADD BE SET – **THE REST MUST BE AT DOWN POSITION**

STEP 3

- CONNECT THE SHORT COMMUNICATION CABLE FROM PORT "0" TO PORT "CAN IN"
- ENSURE THAT THE DIP SWITCHES 6 ON THE LV-HUB ARE ON THE UP POSITION
- CONNECT THE 48V POWER SUPPLY CABLE INTO THE LV-HUB AND INTO THE 48V SUPPLY



Image showing the Pylontech LV Hub

STEP 4

- CONNECT ONLY GROUP 1 FROM "CAN" OF THE MASTER TO PORT "1" OF THE HUB USING THE LONG COMMUNICATION CABLE

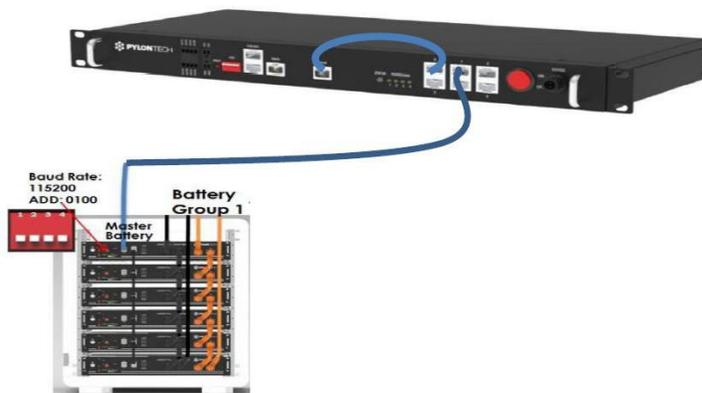


Image showing the Pylontech LV hub connected with a group of Pylontech battery

STEP 5

- TURN ON EACH BATTERY IN GROUP 1 WITH THE POWER SWITCH
- USE RED SW SWITCH ON THE MASTER TO SWITCH ON BATTERIES IN GROUP 1. HOLD ON TO BUTTON UNTIL ALL BATTERIES LIGHT UP. **NOTE: ALL UNITS SHOW "RUN" WHEN ON**
- **DOUBLE CHECK THAT THERE ARE NO ALARMS IN ALL THE BATTERIES IN THE GROUP**
NOTE: DUE TO DRAW FROM INVERTER CAPACITORS, ALARMS MAY SHOW. JUST WAIT TILL THEY CLEAR.

STEP 6

- NOW SWITCH ON THE LV HUB

LED Indicators Instructions

Status				•	Normal
				•	No battery connected or at least one group is off line. When battery group is reduced it will alarm (in red), but when battery group is added in it will no alarm.
1	2	3	4		Green flash; connected battery groups number
•					1 group
	•				2 groups
•	•				3 groups
		•			4 groups
•		•			5 groups
	•	•			6 groups
•	•	•			7 groups

Image showing the status of LED indicators for Pylontech LV Hub

LED 1 MUST FLASH GREEN, INDICATING THAT IT CAN SEE THE SINGLE GROUP CONNECTED
IF STATUS SHOWS RED LIGHT, TURN OFF THE HUB AND ENSURE THAT ALL THE CABLES ARE PUSHED IN FIRMLY THEN TURN ON THE HUB

STEP 7

- SWITCH OFF THE LV-HUB
- CONNECT GROUP 2 OF BATTERIES FROM “CAN” OF THE MASTER TO PORT “2” OF THE HUB USING THE LONG COMMUNICATION CABLE

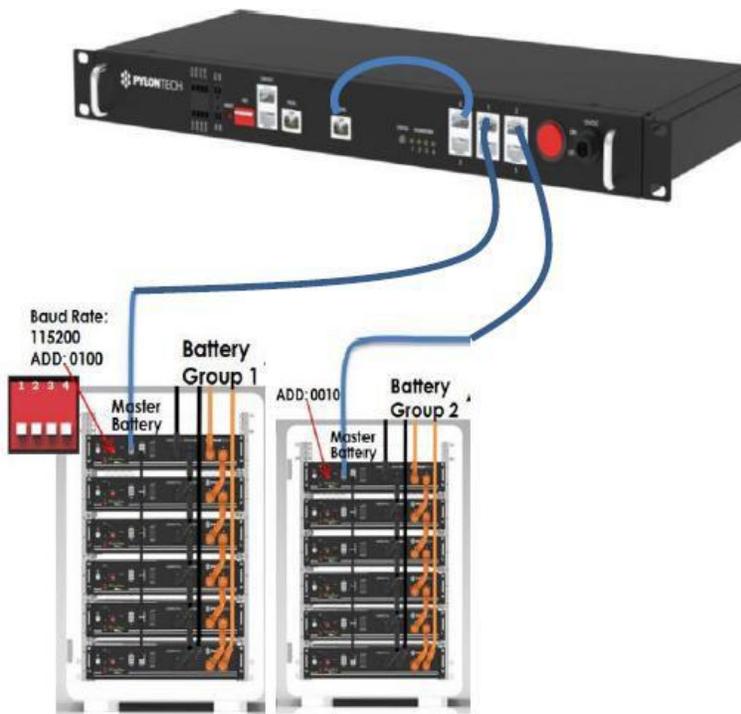


Image showing Pylontech LV hub connected with two groups of Pylontech batteries.

- TURN ON EACH BATTERY IN GROUP 2 WITH THE POWER SWITCH
- USE RED SW SWITCH ON THE MASTER TO SWITCH ON BATTERIES IN GROUP 2. HOLD ON TO BUTTON UNTIL ALL BATTERIES LIGHT UP. **NOTE: ALL UNITS SHOW "RUN" WHEN ON**
- **DOUBLE CHECK THAT THERE ARE NO ALARMS IN ALL THE BATTERIES IN THE GROUP**
NOTE: DUE TO DRAW FROM INVERTER CAPACITORS, ALARMS MAY SHOW. JUST WAIT TILL THEY CLEAR.
- REPEAT STEP 6, NOW LED 2 ON THE HUB SHOULD FLASH. INDICATING 2 GROUPS ARE BEING RECOGNIZED.
- TO CONNECT GROUP 3, 4 & 5 CONTINUE TO ADD THEM ONE BY ONE AS DONE FOR GROUP 2, CHECKING **STEP 6** AFTER EACH CONNECTION.

PYLONTECH LV-HUB INSTALLATION GUIDE

FOR US3000C OR UP5000

FOR CAN BUS COMMUNICATION

After you have installed the battery groups with battery connectors, short communication cable and earthing cables as instructed in the Pylontech battery manual, follow the next steps carefully.

NOTE: All the Batteries and the LV HUB MUST be SWITCHED OFF



Each battery pile can configure maximum 16pcs US3000C or UP5000

Image showing Pylontech battery set-up

ITEMS NEEDED

- 1 unit of 48V LV HUB power supply cable included with the LV HUB
- 1 unit Short COMMUNICATION CABLE that comes in the battery package
- 1 unit of long COMMUNICATION CABLE (W10SCAN35RJ3/STRAIGHT RJ45/DIRECT) for EACH GROUP.
- 1 unit of long COMMUNICATION CABLE (W10SCAN35RJ3/ PIN 1-3: NULL) for connection to the HUB to inverter. **NOTE FOR VICTRON you MUST use VICTRON COMMUNICATION CABLEASS030710018 - VE.Can to CAN-bus BMS type A Cable 1.8m**

STEP 1

- CONNECT THE LV HUB Power supply to the DC bus bar. **Make sure the HUB is OFF.**

STEP 2

- **TURN OFF ALL BATTERIES IF NOT OFF**

STEP 3

- SET ALL ADD SWITCHES ON EACH BATTERY TO ZERO AS BELOW - **DO NOT CONNECT INTO THE LV HUB YET WITH THE LONG ETHERNET CABLE**

Dip1	Dip2	Dip3	Dip4	The corresponding position of switch
0	0	0	0	

- ALL BATTERIES INCLUDING THE MASTER BATTERY OF EACH GROUP ADD SWITCH **MUST BE AT UP POSITION**

STEP 3

- CONNECT THE SHORT COMMUNICATION CABLE THAT COMES WITH THE BATTERY FROM PORT "0" TO PORT "CAN IN"
- ENSURE THAT THE DIP SWITCHES 6 ON THE LV-HUB ARE ON THE UP POSITION
- CONNECT THE 48V POWER SUPPLY CABLE INTO THE LV-HUB AND INTO THE 48V SUPPLY



Image showing the Pylontech LV Hub

STEP 4

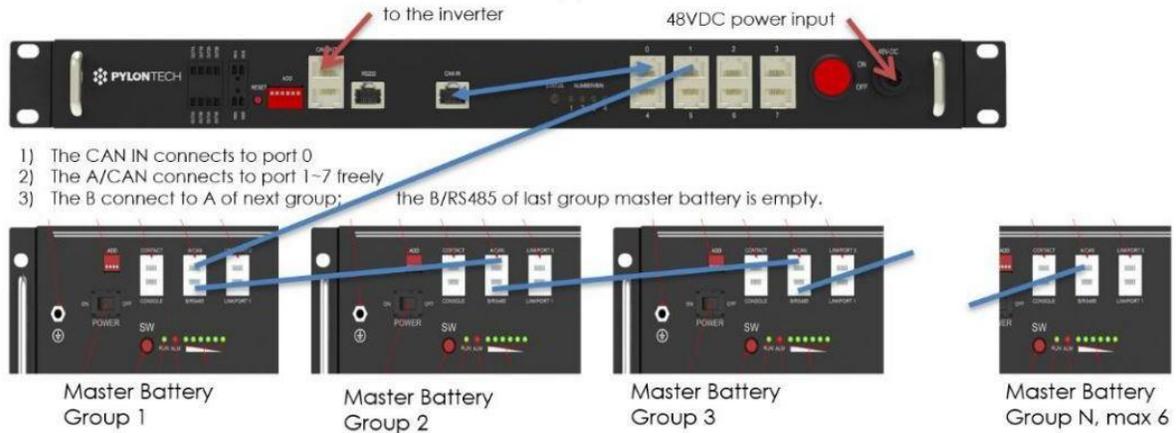
- SWITCH OFF THE LV-HUB IF THE LV-HUB IS ON

STEP 5

- CONNECT GROUP 2 MASTER BATTERY USING PORT "A/CAN" TO PORT "B/RS485" OF THE MASTER BATTERY GROUP 1 USING RJ45 CABLE (W10SCAN35RJ3/STRAIGHT RJ45/DIRECT). (REPEAT CONNECTION FOR MULTIPLE GROUPS MAX 6 GROUPS). THE B/RS485 OF THE LAST GROUP MASTER IS EMPTY.

Multiple Battery Groups CAN Communication Cable Connection

Each Communication HUB connects maximum 6 battery piles.



Each battery pile can configure maximum 16pcs US2000C/US3000C.

STEP 6

- Make sure all dip-switch is **0000**,

STEP 7

- TURN ON EACH BATTERY IN GROUP 1 WITH THE POWER SWITCH
- USE RED SW SWITCH ON THE MASTER TO SWITCH ON BATTERIES IN GROUP 1. HOLD ON TO BUTTON UNTIL ALL BATTERIES LIGHT UP. **NOTE: ALL UNITS SHOW "RUN" WHEN ON**
- **DOUBLE CHECK THAT THERE ARE NO ALARMS IN ALL THE BATTERIES IN THE GROUP**
NOTE: DUE TO DRAW FROM INVERTER CAPACITORS, ALARMS MAY SHOW. JUST WAIT TILL THEY CLEAR.

STEP 8

- After all batteries are running and buzzer of Master Battery in group 1 rings 3 times. Means all groups are online.

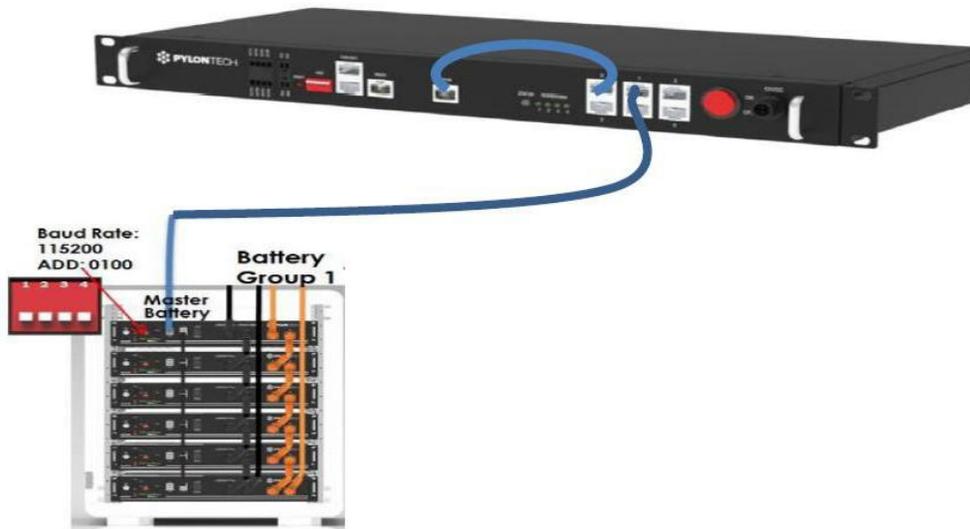
STEP 9

- Change the dip switch of **master battery in group 1** to **0100**.

Dip1	Dip2	Dip3	Dip4	The corresponding position of switch
0	1	0	0	

STEP 10

- Then connect communication cable between LV-HUB and master battery in group 1.
- CONNECT "A/CAN" OF MASTER BATTERY GROUP 1 TO PORT "1" OF THE HUB USING THE LONG RJ45 COMMUNICATION CABLE (WIOSCAN35RJ3/ PIN 1-3: NULL).



STEP 11

- NOW SWITCH ON THE LV HUB

LED Indicators Instructions

Status				•	Normal
				•	No battery connected or at least one group is off line. When battery group is reduced it will alarm (in red), but when battery group is added in it will no alarm.
1	2	3	4		Green flash; connected battery groups number
•					1 group
	•				2 groups
•	•				3 groups
		•			4 groups
•		•			5 groups
	•	•			6 groups
•	•	•			7 groups

Image showing the status of LED indicators for Pylontech LV Hub

LED 1 MUST FLASH GREEN, INDICATING THAT IT CAN SEE THE SINGLE GROUP CONNECTED
IF STATUS SHOWS RED LIGHT, TURN OFF THE HUB AND ENSURE THAT ALL THE CABLES ARE PUSHED IN FIRMLY THEN TURN ON THE HUB

Any further questions to this SOP please contact us via service@juststandout.com

PYLONTECH – SCHNEIDER CONEXT

Pylontech UP2500, & US2000, US3000, US2000C, US3000C, UP5000, Phantom-S & Force-L1

The combination of Schneider products with Pylontech lithium batteries has been tested and certified by the Schneider and Pylontech R&D departments.

General information about the battery is found in Pylontech's documentation.

This manual is intended to be used in conjunction with the product manual supplied by Pylontech. It provides additional and specific information regarding integration with Schneider systems.

PYLONTECH – SCHNEIDER CONEXT XW PRO SYSTEM REQUIREMENT

Each of the system architectures supports a maximum number of compatible devices within a system; beyond the number stated in the table, normal operation of the system is not guaranteed. The following table lists maximum number of compatible devices that have been validated.

Name	Maximum Quantity
Single Conext XW Pro with Single Master BMS	
Conext XW Pro	1 (multi-unit support planned in a future firmware release)
BMS	1 (master)
Li-ion Battery Packs	See " <i>Appendix A - Battery-Specific Information</i> " on page 11
PV Inverter	See Conext XW+ / XW Pro / SW AC Coupling Guide (976-0240-01-01)

BMS Setup

Depending on the battery system brand and the number of battery packs, there might be slave BMSs present. Conext XW Pro only supports communication with a master BMS and you must refer to the battery manufacturer's documentation for information on how to set up slave BMSs to be aggregated into the master BMS.

Wiring Interface

Wire CAN or RS485 interface of the BMS to the 26-pin connector referring to the below diagram. RS485 can be connected to either Port 1 or Port 2 on Conext Gateway. Once the connections are done, power on Conext Gateway and BMS. Refer to the Conext Gateway Owners Guide (Part Number: 975-0806-01-03) for more details on installation.

Battery Association

CANbus BMS systems that are supported by the Conext Gateway have auto-detection, where the Conext Gateway will see the messages from the BMS and detect the battery.

MODBUS BMS systems can be detected through a MODBUS discovery feature from the Conext Gateway UI during commissioning. Once completed the device will be remembered unless manually removed from the device list in the Conext Gateway.

Only the master BMS in the system, once discovered, must be associated with the Conext XW Pro inverter to which its battery packs are connected. The association is completed through the Conext Gateway UI Inverter/Charger **Associations** menu.

Note: Depending on the battery system brand and the number of battery packs, there might be slave BMSs present. The Conext XW Pro only supports communication with a master BMS and you must refer to the battery manufacturer's documentation for information on how to set up slave BMSs to be aggregated into the master BMS.

Battery-Specific Information

The following table summarizes the battery models that are compatible with the Conext XW Pro inverter using BMS communication. Batteries that are used with the Conext XW Pro inverter without BMS communication (static manual charge settings) are out of scope of this document. The Absolute Minimum number of batteries is the minimum battery bank sizing to prevent battery tripping on inrush current when connecting to the inverter. The number of batteries for 6.8 / 8.5 / 12 kW discharge describe the number of batteries that could fully utilize the inverter's continuous or overload power ratings respectively during backup power operation. For smaller battery banks, the inverter will limit power according to the BMS and settings. With this information, the system designer can size the batteries based on the expected loads and the desired autonomy.

Table 1 Single Conext XW Pro with Single Master BMS with AC Coupling

Manufacturer	Model	Nominal Rating	Protocol	DC Coupling ¹	AC Coupling	Start-Up Sequence	Number of batteries in Parallel			
							Single Conext XW Pro			
							Absolute Minimum	6.8 kW Continuous Discharge	8.5 kW 30m in Discharge	12 kW 1-min Peak Discharge
Pylontech	US2000	2.4 kWh	CAN	NO	YES	With DC disconnect open, start batteries in sequence. Then close DC disconnect.	1	6	7	5

Pylontech	US3000	3.55 kWh	CAN	NO	YES	With DC disconnect open, start batteries in sequence. Then close DC disconnect.	1	4	5	4
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CONXET XW PRO SET UP/ INSTALLATION INSTRUCTION

Recommended Settings

Conext Gateway Configuration Section	Setting	Description	Recommended Value	
			Pylontech US2000	Pylontech US3000
Charger Settings	Battery Type	Battery chemistry technology used.	Li-ion	Li-ion
Charger Settings	Charge Cycle	2-, 3-stage or External BMS.	External BMS	External BMS
Charger Settings	Battery Bank Capacity	Total capacity of all batteries connected to the system.	2.4 kWh x number of batteries	3.55 kWh x number of batteries
Charger Settings	Absorption Time	If High Cut Out SOC is not reached, charge will be stopped once charge current is <2% of battery bank capacity for this duration.	60 seconds	60 seconds
Charger Settings	Absorption Period Timeout	Overall absorption charge timeout – if High Cut Out SOC is not reached within this timeframe, charge will stop.	60 min x number of batteries	90 min x number of batteries
Grid Support	State of Charge Control	Enables SOC-based energy management state transitions (if disabled then Conext XW Pro works in voltagebased control).	Enabled	Enabled
Inverter Settings	Low Battery Cut Out SOC	Low-end SOC below which discharge is prohibited.	10%	10 %
Inverter Settings	High Cut Out SOC	High-end SOC above which charge is prohibited.	100%	100 %

Battery Management System Settings	Fault on loss of BMS status information	If Enabled, then Conext XW Pro will shut down when there is a loss of communication with the BMS. If Disabled, then Conext XW Pro will continue to operate with a warning and will follow the charge and discharge limits as defined below.	Enabled	Enabled
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Battery Management System Settings	Charge Voltage Limit (BMS status lost)	Target charge voltage limit when there is a loss communication with the BMS.	53.2 V	53.2 V
Battery Management System Settings	Discharge Voltage Limit (BMS status lost)	Internal under-voltage limit when there is a loss communication with the BMS.	47 V	47 V
Battery Management System Settings	Charge Current Limit (BMS status lost)	Target discharge voltage limit when there is a loss of communication with the BMS.	25 A x number of batteries	37 A x number of batteries
Battery Management System Settings	Discharge Current Limit (BMS status lost)	Target current limit when there is a loss of communication with the BMS. When connected to the grid, the inverter will follow the Discharge Current Limit. When operating off-grid, the inverter will follow the current required by the loads up to the Discharge Current Limit plus the Discharge Overcurrent Offset.	25 A x number of batteries	37 A x number of batteries
Battery Management System Settings	Charge Overcurrent Offset	Maximum offset compared to the target charge current before triggering the Charge Overcurrent Trip timer.	5 A x number of batteries	5 A x number of batteries
Battery Management System Settings	Charge Overcurrent Trip Time	Maximum time the inverter can exceed the target charge current plus Charge Overcurrent Offset before the inverter will trip.	2 s	2 s
Battery Management System Settings	Discharge Overcurrent Offset	Maximum offset compared to the target discharge current before triggering the Discharge Overcurrent Trip timer.	25 A x number of batteries	37 A x number of batteries

Battery Management System Settings	Discharge Overcurrent Trip Time	Maximum time the inverter can exceed the target discharge current plus Discharge Overcurrent Offset before the inverter will trip.	60 s	60 s
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Battery Management System Settings	DC Undervoltage Offset	Maximum offset compared to the target discharge voltage before triggering the DC Undervoltage Trip timer.	0.5 V	0.5 V
Battery Management System Settings	DC Undervoltage Trip Time	Maximum time the inverter can exceed the target discharge voltage plus DC Undervoltage Offset before the inverter will trip.	30 s	30 s
Battery Management System Settings	DC Overvoltage Offset	Maximum offset compared to the target charge voltage before triggering the DC Overvoltage Trip timer.	0.5 V	0.5 V
Battery Management System Settings	DC Overvoltage Trip Time	Maximum time the inverter can exceed the target charge voltage plus DC Overvoltage Offset before the inverter will trip.	30 s	30 s

NOTE: Offset values and trip times apply to both the target charge and discharge limits communicated by the BMS, as well as the charge and discharge limit settings for a BMS status lost event.

NOTE: Static voltage and current charge/discharge settings not included in the above table are not used when Charge Cycle is set to External BMS and do not need to be configured.

CONXET XW + SET UP/ INSTALLATION INSTRUCTION

Please set the Bulk Termination Voltage to 53.0V first then change the Bulk Voltage to 53.2V.

XW+8548

	US2000	<i>per battery values</i>
<u>Inverter setts</u>		
<i>V-LBCO</i>	46	
<i>LBCO Delay</i>	10s	
<i>LBCO Hyst</i>	1.2	
<i>HBCO</i>	54	
<i>Search Watts</i>	-	
<i>Search Delay</i>	-	

	US3000	<i>per battery</i>
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		<i>values</i>
<u>Inverter setts</u>		<i>Phase</i>
<i>V-LBCO</i>	46	
<i>LBCO Delay</i>	10s	
<i>LBCO Hyst</i>	1.2	
<i>HBCO</i>	50	
<i>Search Watts</i>	-	
<i>Search Delay</i>	-	

<u>Charger Setts</u>			
<i>Batt Type</i>	Lithium Ion		
<i>Custom Sett</i>	LITHIUM SETTINGS		
<i>Batt Capacity</i>	50	<i>Control</i>	
<i>Max Chg Rate</i>	17%	<i>Bulk Voltage</i>	53.2
<i>Charge Cycle</i>	2-stage	<i>MaxBulkCurrent</i>	25
<i>Default Batt Temp</i>	Warm	<i>Absorb Voltage</i>	53.2
<i>ReCharge Volts</i>	48	<i>Max Abs Current</i>	25
<i>Absorb Time</i>	60min	<i>Float Voltage</i>	53
<i>ChgBlock Start</i>	-	<i>Max Float Current</i>	25
<i>ChgBlock Stop</i>	-	<i>DisChgImax</i>	50A or 35%
		<i>DisChgImaxTimer</i>	300s

<u>Charger Setts</u>			
<i>Batt Type</i>	Lithium Ion		
<i>Custom Sett</i>	LITHIUM SETTINGS		
<i>Batt Capacity</i>	74	<i>Control</i>	2StgNoFloat
<i>Max Chg Rate</i>	26%	<i>Bulk Voltage</i>	53.2
<i>Charge Cycle</i>	2-stage	<i>MaxBulkCurrent</i>	37
<i>Default Batt Temp</i>	Warm	<i>Absorb Voltage</i>	53.2
<i>ReCharge Volts</i>	48	<i>Max Abs Current</i>	37
<i>Absorb Time</i>	60min	<i>Float Voltage</i>	53
<i>ChgBlock Start</i>	-	<i>Max Float Current</i>	37
<i>ChgBlock Stop</i>	-	<i>DisChgImax</i>	74A or 52%
		<i>DisChgImaxTimer</i>	300s

SCHNEIDER XW+ 7048

Please set the Bulk Termination Voltage to 53.0V first then change the Bulk Voltage to 53.2V.

Charger Settings			
Batt Type	Lithium Ion		
Custom Sett	LITHIUM SETTINGS		
Batt Capacity	50	Control	2StgNoFloat
Max Chg Rate	22%	Bulk Voltage	53.2
Charge Cycle	2-stage	MaxBulkCurrent	25
Default Batt Temp	Warm	Absorb Voltage	53.2
ReCharge Volts	48	Max Abs Current	25
Absorb Time	60min	Float Voltage	53
ChgBlock Start	-	Max Float Current	25
ChgBlock Stop	-	DisChgImax	50A or 45%
		DisChgImaxTimer	300s

	US3000	<i>per battery values</i>
Inverter setts		
V-LBCO	46	
LBCO Delay	10s	
LBCO Hyst	1.2	
HBCO	50	
Search Watts	-	
Search Delay	-	

	US2000	<i>per battery values</i>
Inverter setts		
V-LBCO	46	
LBCO Delay	10s	
LBCO Hyst	1.2	
HBCO	54	
Search Watts	-	
Search Delay	-	

Ch	Search Watts	-	
	Search Delay	-	
Batt Type	Ion		
Custom Sett	LITHIUM SETTINGS		
Batt Capacity	74	Control	2StgNoFloat
Max Chg Rate	33%	Bulk Voltage	53.2
Charge Cycle	2-stage	MaxBulkCurrent	37
Default Batt Temp	Warm	Absorb Voltage	53.2
ReCharge Volts	48	Max Abs Current	37
Absorb Time	60min	Float Voltage	53
ChgBlock Start	-	Max Float Current	37
ChgBlock Stop	-	DisChgImax	74A or 67%
		DisChgImaxTimer	300s

CONXET SW SET UP/ INSTALLATION INSTRUCTION

Please set the Bulk Termination Voltage to 53.0V first then change the Bulk Voltage to 53.2V.

	<u>US2000</u>	<i>per battery values</i>
<u>Inverter setts</u>		
V-LBCO	46	
LBCO Delay	10s	
LBCO Hyst	1.2	
HBCO	54	
Search Watts	-	
Search Delay	-	
Inv Block Start	-	
Inv Block Stop	-	

	<u>US3000</u>	<i>per battery values</i>
<u>Inverter setts</u>		
V-LBCO	46	
LBCO Delay	10s	
LBCO Hyst	1.2	
HBCO	50	
Search Watts	-	
Search Delay	-	
Inv Block Start	-	
Inv Block Start	-	

<u>Charger Settings</u>			
Batt Type	Lithium Ion		
Custom Sett	LITHIUM SETTINGS		
Batt Capacity	50	Control	2StgNoFloat
Max Chg Rate	55%	Bulk Voltage	53.2
Charge Cycle	2-stage	MaxBulkCurrent	25
Default Batt Temp	Warm	Absorb Voltage	53.2
ReCharge Volts	48	Max Abs Current	25
Absorb Time	60min	Float Voltage	53
ChgBlock Start	-	Max Float Current	25
ChgBlock Stop	-	DisChgImax	45A or 100%
		DisChgImaxTimer	300s

<u>Charger Settings</u>			
Batt Type	Lithium Ion		
Custom Sett	LITHIUM SETTINGS		
Batt Capacity	74	Control	2StgNoFloat
Max Chg Rate	82%	Bulk Voltage	53.2
Charge Cycle	2-stage	MaxBulkCurrent	37
Default Batt Temp	Warm	Absorb Voltage	53.2
ReCharge Volts	48	Max Abs Current	37
Absorb Time	60min	Float Voltage	53
ChgBlock Start	-	Max Float Current	37
ChgBlock Stop	-	DisChgImax	45A or 100%
		DisChgImaxTimer	300s

CONXET MPPT 80 600 SET UP/ INSTALLATION INSTRUCTION

	<u>US2000</u>	<i>per battery values</i>	
Charger setts			
Batt Type	Custom		
Custom Sett	CUSTOM SETTINGS		
Batt Capacity	50	Eqlz Support	Disabled
Max Chg Rate	31%	Eqlz Voltage	-
Charge Cycle	3Stage	Bulk Voltage	53.2
ReCharge Volts	48	Absorb Voltage	53.2
Absorb Time	60min	Float Voltage	53
Default Batt Temp	Warm	BattTempComp	0
Batt Volatge	48		

	<u>US3000</u>	<i>per battery values</i>	
Charger setts			
Batt Type	Custom		
Custom Sett	CUSTOM SETTINGS		
Batt Capacity	74	Eqlz Support	Disabled
Max Chg Rate	92%	Eqlz Voltage	-
Charge Cycle	3Stage	Bulk Voltage	53.2
ReCharge Volt	48	Absorb Voltage	53.2
Absorb Time	60min	Float Voltage	53
Default Batt Te	Warm	BattTempComp	0
Batt Volatge	48		

CONXET MPPT 60 150 SET UP/ INSTALLATION INSTRUCTION

	<u>US2000</u>	<i>per battery values</i>	
Charger setts			
Batt Type	Custom		
Custom Sett		<i>CUSTOM SETTINGS</i>	
Batt Capacity	50	Eqlz Support	Disabled
Max Chg Rate	41%	Eqlz Voltage	-
Charge Cycle	3Stage	Bulk Voltage	53.2
ReCharge Volts	48	Absorb Voltage	53.2
Absorb Time	60min	Float Voltage	53
Default Batt Temp	Warm	BattTempComp	0
Batt Volatge	48		

	<u>US3000</u>	<i>per battery values</i>	
Charger setts			
Batt Type	Custom		
Custom Sett	CUSTOM SETTINGS		
Batt Capacity	74	Eqlz Support	Disabled
Max Chg Rate	100%	Eqlz Voltage	-
Charge Cycle	3Stage	Bulk Voltage	53.2
ReCharge Volts	48	Absorb Voltage	53.2
Absorb Time	60min	Float Voltage	53
Default Batt Temp	Warm	BattTempComp	0
Batt Volatge	48		

BATTERY MONITOR

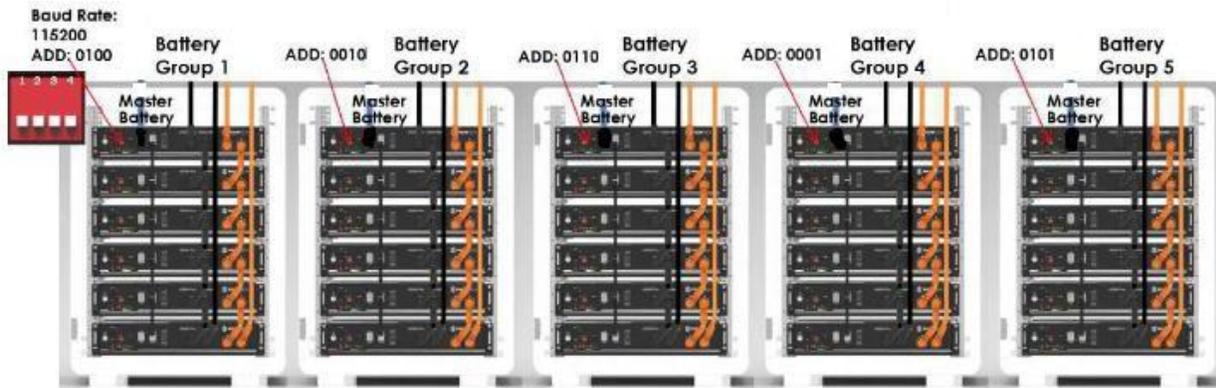
	<u>US2000</u>	<i>per battery values</i>			<u>US3000</u>	<i>per battery values</i>	
Basic setts				Basic setts			
Capacity	50			Capacity	74		
Discharge Rate	10h			Discharge Rate	10h		
Nominal temp	20°C	or 67°F		Nominal temp	20°C	or 67°F	
Shunt Amps	500			Shunt Amps	500		
Shunt mV	50			Shunt mV	50		
Self Disch	<1%/Month			Self Disch	<1%/Month		
Discharge Floor	10%			Discharge Floor	10%		
Float Volt	53			Float Volt	53		
Float Amps	2%			Float Amps	2%		
AutoSyncTime	240			AutoSyncTime	240		
Temp Unit	Celsius			Temp Unit	Celsius		
Cback Light Time	30			Cback Light Timer	30		
Peukert Expo	1.01			Peukert Expo	1.01 or 1.00		
Charge Eff	Auto			Charge Eff	Auto		
Temp Coeff	0.5			Temp Coeff	0.5		
Sync Sensitivity	5			Sync Sensitivity	5		
Time Rem Filter	Faster			Time Rem Filter	Faster		

PYLONTECH LV-HUB INSTALLATION GUIDE

FOR CAN BUS COMMUNICATION

After you have installed the battery groups with battery connectors, short communication cable and earthing cables as instructed in the Pylontech battery manual, follow the next steps carefully.

NOTE: All the Batteries and the LV HUB MUST be SWITCHED OFF



Each battery pile can configure maximum 8pcs US2000 or US3000.

Image showing the Pylontech LV hub connected with five groups of Pylontech battery

ITEMS NEEDED

- 1 unit of 48V LV HUB power supply cable included with the LV HUB
- 1 unit Short COMMUNICATION CABLE that comes in the battery package
- 1 unit of long COMMUNICATION CABLE (that comes with the battery cable) for EVERY GROUP.
- 1 unit of long COMMUNICATION CABLE (that comes with the battery cable) for connection to the HUB to inverter. **NOTE FOR VICTRON you MUST use VICTRON COMMUNICATION CABLE: ASS030720018 - VE.Can to CAN-bus BMS type A Cable 1.8m**

STEP 1

- CONNECT THE LV HUB Power supply to the DC bus bar. **Make sure the HUB is OFF.**

STEP 2

- TURN OFF ALL BATTERIES IF NOT OFF**
- SET THE ADD SWITCHES ON EACH BANK'S MASTER AS BELOW - **DO NOT CONNECT INTO THE LV HUB YET WITH THE LONG ETHERNET CABLE**
- ONLY THE MASTER BATTERY OF EACH GROUP THAT THE ADD BE SET – **THE REST MUST BE AT DOWN POSITION**

STEP 3

- CONNECT THE SHORT COMMUNICATION CABLE FROM PORT "0" TO PORT "CAN IN"
- ENSURE THAT THE DIP SWITCHES 6 ON THE LV-HUB ARE ON THE UP POSITION

- CONNECT THE 48V POWER SUPPLY CABLE INTO THE LV-HUB AND INTO THE 48V SUPPLY



Image showing the Pylontech LV hub

STEP 4

- CONNECT ONLY GROUP 1 FROM “CAN” OF THE MASTER TO PORT “1” OF THE HUB USING THE LONG COMMUNICATION CABLE

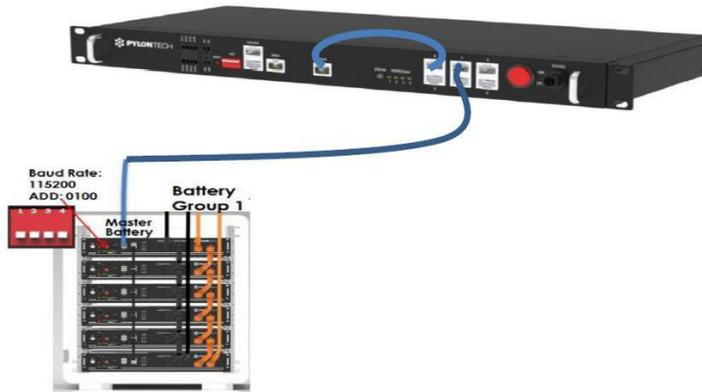


Image showing the Pylontech LV hub connected with a group of Pylontech battery

STEP 5

- TURN ON EACH BATTERY IN GROUP 1 WITH THE POWER SWITCH
- USE RED SW SWITCH ON THE MASTER TO SWITCH ON BATTERIES IN GROUP 1. HOLD ON TO BUTTON UNTIL ALL BATTERIES LIGHT UP. **NOTE: ALL UNITS SHOW “RUN” WHEN ON**
- **DOUBLE CHECK THAT THERE ARE NO ALARMS IN ALL THE BATTERIES IN THE GROUP**
NOTE: DUE TO DRAW FROM INVERTER CAPACITORS, ALARMS MAY SHOW. JUST WAIT TILL THEY CLEAR.

STEP 6

- NOW SWITCH ON THE LV HUB

Any further questions to this SOP please contact us via service@juststandout.com

LED Indicators Instructions

Status				●	Normal
				●	No battery connected or at least one group is off line. When battery group is reduced it will alarm (in red), but when battery group is added in it will no alarm.
1	2	3	4		Green flash; connected battery groups number
●					1 group
	●				2 groups
●	●				3 groups
		●			4 groups
●		●			5 groups
	●	●			6 groups
●	●	●			7 groups

Image showing the status of LED indicators for Pylontech LV Hub

LED 1 MUST FLASH GREEN, INDICATING THAT IT CAN SEE THE SINGLE GROUP CONNECTED
IF STATUS SHOWS RED LIGHT, TURN OFF THE HUB AND ENSURE THAT ALL THE CABLES ARE PUSHED IN FIRMLY THEN TUERN ON THE HUB

IF BATTERY MODEL IS UP5000 OR US3000C USE STEP 7A. BUT IF BATTERY MODEL IS PYLONTECH UP2500, US2000 AND US3000 USE STEP 7B.

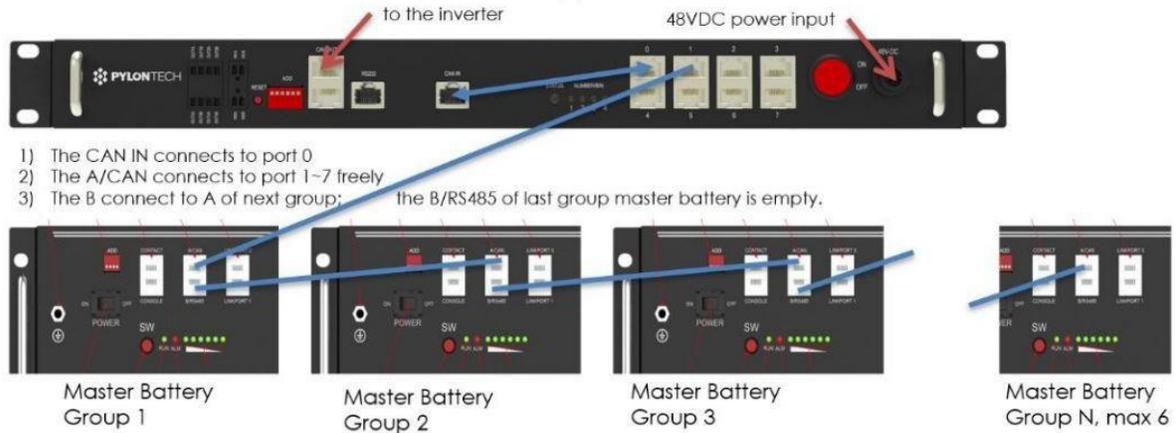
STEP 7A

FOR PYLONTECH UP5000 AND PYLONTECH US3000C

- SWITCH OFF THE LV-HUB
- CONNECT GROUP 2 MASTER BATTERY USING PORT "A/CAN" TO PORT "B/RS485" OF THE MASTER BATTERY GROUP 1 USING RJ45 CABLE. (REPEAT CONNECTION FOR GROUPS MAX 6 GROUPS).
- Make sure all dip-switch is **X0XX**, then turn ON batteries.
- After all batteries are running and buzzer of Master Battery in group 1 rings 3 times. Means all groups are online.
- Change the dip switch of **master battery in group 1** to **X1XX**. Then connect communication cable between LV-HUB and master battery in group 1.
- CONNECT "A/CAN" OF MASTER BATTERY GROUP 1 TO PORT "1" OF THE HUB USING THE LONG RJ45 COMMUNICATION CABLE.

Multiple Battery Groups CAN Communication Cable Connection

Each Communication HUB connects maximum 6 battery piles.



Each battery pile can configure maximum 16pcs US2000C/US3000C.

- Then turn ON LV-HUB.

STEP 7B

FOR PYLONTECH UP2500, US2000AND US3000 .

- SWITCH OFF THE LV-HUB
- CONNECT GROUP 2 OF BATTERIES FROM “CAN” OF THE MASTER TO PORT “2” OF THE HUB USING THE LONG COMMUNICATION CABLE

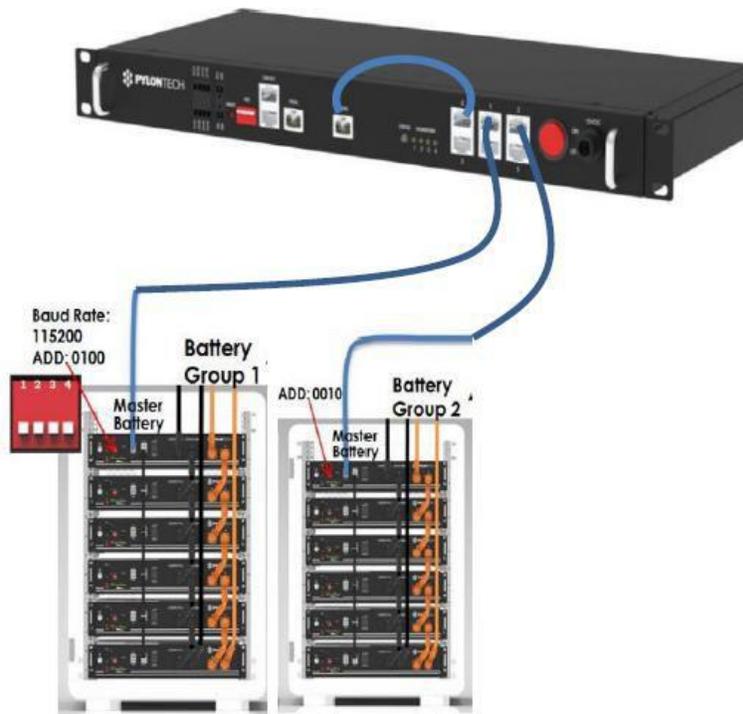


Image showing the Pylontech LV hub connected with two groups of Pylontech battery

- TURN ON EACH BATTERY IN GROUP 2 WITH THE POWER SWITCH
- USE RED SW SWITCH ON THE MASTER TO SWITCH ON BATTERIES IN GROUP 2. HOLD ON TO BUTTON UNTIL ALL BATTERIES LIGHT UP. **NOTE: ALL UNITS SHOW “RUN” WHEN ON**

- **DOUBLE CHECK THAT THERE ARE NO ALARMS IN ALL THE BATTERIES IN THE GROUP**
NOTE: DUE TO DRAW FROM INVERTER CAPACITORS, ALARMS MAY SHOW. JUST WAIT TILL THEY CLEAR.
- REPEAT STEP 6, NOW LED 2 ON THE HUB SHOULD FLASH. INDICATING 2 GROUPS ARE BEING RECOGNIZED.
- TO CONNECT GROUP 3, 4 & 5 CONTINUE TO ADD THEM ONE BY ONE AS DONE FOR GROUP 2, CHECKING **STEP 6** AFTER EACH CONNECTION.