INGECON SUN STORAGE 1PLAY

Use and Settings of the ISS 1Play working with PYLONTECH FORCE H1/H2 and POWERCUBE X1/X2

ABH2010IMC13_B

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1 Introduction

This document describes the process to configure the INGECON SUN STORAGE 1Play (TL and TL M version) to work with PYLONTECH FORCE H1/H2 and POWERCUBE X1/X2 batteries.

The PYLONTECH HV and ISS 1Play equipment can be used in the following type of **single-phase** installations:

- Stand-alone installations
- UPS installations
- Self-consumption installations

The minimum FW versions to work with the ISS 1Play and PYLONTECH HV are the following:

Minimum Firmware Version used in the PYLONTEHC HV:

- Force H1/H2 → V1.3 or higher
- Powercube X1/X2 → V4.6 or higher

The battery´s firmware is supplied by the qualified distributor of Pylontech. For further details, check the "Installation Manual of Pylontech".

Minimum Firmware Version used in the ISS 1Play TL:

- Inverter: ABH1002AA or higher
- Display: ABH1003_Q or higher

Minimum Firmware Version used in the ISS 1Play TL M:

- Inverter: ABH1007_ or higher

For further details, check the "List of approved lithium batteries" available on Ingeteam website.

2 Connecting the battery pack to the inverter

The instructions to connect the battery pack to the inverter are described in the “Installation Manual of Pylontech”

Please, take into account the following technical notes:

1) The inverter is turned OFF before connecting the battery pack to the inverter.
2) The battery circuit breaker is on the OFF position.
3) Connect the DC power wires with 6-10mm^2.
4) Connect the CAN Communication wire.

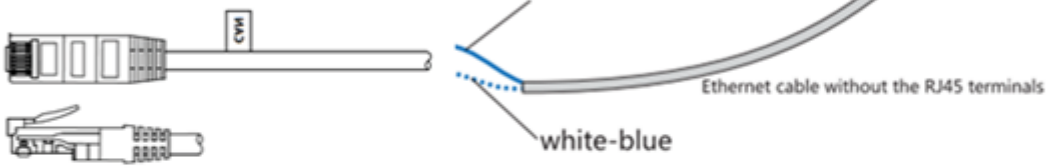
2.1 Wiring of CAN communication wire

Pylontech batteries require a CAN communication wire to the ISS 1Play.

The ISS 1Play will send the necessary keep-a-live command to the Pylontech battery, which is needed to keep its internal circuit breaker close. When the battery does not receive for 15 seconds such a command, its internal circuit breaker opens.

The ISS 1Play uses a two-pin CAN terminal and the Pylontech uses a RJ45 connector. For further details, check the “Installation and Operation Manual” of ISS 1Play. The pin-out is the following:

Ingeteam pin-out	ISS 1Play TL	ISS 1Play TL M
CAN High (Blue)	J76 – CAN IN-H	J8 – BMS CAN_H
CAN Low (White blue)	J76 – CAN IN-L	J8 – BMS CAN_L



Definition of RJ45 Port Pin

No.	CAN
1	---
2	GND
3	---
4	CANH
5	CANL
6	---
7	---
8	---

RJ45 Port

RJ45 Plug

Only for ISS 1Play TL, it is mandatory that its display is correctly connected. Otherwise, the Pylontech will open its internal circuit breaker after 15 seconds.

3 Black start function

This chapter describes how to turn on the system when the PV energy is not available, and the battery is the only source to turn on the inverter.

To do so, once all the previous steps have been completed, the following steps must be followed:

1) Make sure that the battery circuit breaker is in OFF position.
2) Move the circuit breaker to ON position, press and hold the red start button for 5 seconds to turn the battery pack on.
3) After 30 seconds press and hold the red start button again for another 5 seconds.
4) Then the inverter and battery should get powered. Make sure that the display´s screen is ON.

In this situation, if the battery does not receive communication from the inverter for 10 minutes, its internal circuit breaker will be opened.

This period time is enough to do the first commissioning of the system as update the correct inverter´s firmware and select the correct battery type.

4 Battery´s firmware update

The battery´s firmware is supplied by the qualified distributor of Pylontech. To update the firmware is necessary a monitoring cable RS-232 supplied by the distributor.

For further details, check the “Pylontech guideline” supplied by the distributor.

A minimum firmware version is necessary to work with the Ingecon Sun Storage 1Play:

- Force H1/H2 → V1.3 or higher
- Powercube X1/X2 → V4.6 or higher

5 Setting the inverter

This chapter describes how to configure the inverter settings when the ISS 1Play has been wired to the Pylontech battery.

To do so, once all the previous steps have been completed, the following steps must be followed:

5.1 DC Battery type

Please be careful to choose the right battery type when you set up the configuration in your inverter. The battery or inverter manufacturers have no responsibility on the damages caused due to incorrect configurations. For instance, if you select “Lead-acid” as a battery type in the inverter configuration and the battery being used is “Lithium-ion”, the battery might get damaged or experience performance degradation.

It is required to set the DC Battery type: **Pylontech Force H1/H2 or Powercube X1/X2**

5.1.1 For ISS 1Play TL M

This must be done using the web interface of the inverter. To perform any configuration change, the required installer access must be entered on the web. When the permission is given, go to:

CONFIGURATION > ADVANCED SETTIGNS > TYPE OF BATTERY > PYLONTECH FORCE H1/H2

or

CONFIGURATION > ADVANCED SETTIGNS > TYPE OF BATTERY > PYLONTECH POWERCUBE X1/X2

Confirm the desired selection by pressing the “Write” button. A message to confirm the modification will pop up.

5.1.2 For ISS 1Play TL

This can be done using the “Ingecon Sun Manager” software package (downloadable on www.ingeteam.com) or through the display:

Using Ingecon Sun Manager:

Settings → 1-.DC BATTERY TYPE: Type of Battery > Lithium: Pylontech Force H1/H2

or

Settings → 1-.DC BATTERY TYPE: Type of Battery > Lithium: Pylontech Powercube X1/X2

Figure 1: DC Battery selection on Ingecon Sun Manager.

Click on the “Send” button. A screen informing that the configuration was successfully saved must appear when the settings are correctly applied to the inverter.

Using the Display:

To perform any configuration change through the display, the required installer password must be entered on:

MAIN MENU > CONFIGURATION > ENTER PASSWORD

The password is indicated on the “Installation and Operation Manual”, on the chapter dedicated to configuration.

When the permission is given, go to:

MAIN MENU > CONFIGURATION > BATTERY > LITHIUM > PYLONTECH HV > FORCE H1/H2

or

MAIN MENU > CONFIGURATION > BATTERY > LITHIUM > PYLONTECH HV > POWERCUBE X1/X2

Confirm the desired selection by pressing the “OK” button. A message to confirm the modification will pop up. A final screen that shows that the process has been completed will be shown on the display.

6 Final check

This chapter describes the instructions to check that all the connections and settings have been successfully done.

1) Make sure that the CAN communication wire from the PYLONTECH battery to the inverter is connected.
2) Make sure that the battery circuit breaker is in ON position.
3) Make sure that the inverter is turn-on from the battery and doesn't show communication Error with BMS.

7 Trouble shooting

The inverter receives battery´s alarms from BMS and reacts different for each alarm.

Inverter notifies via Interface Web when battery is in alarm status:

Battery. BMS Alarms	HEX: 0x00FF 0x0001 High Current during Charge 0x0002 High Voltage 0x0004 Low Voltage 0x0008 High Temperature 0x0010 Low Temperature 0x0020 Internal BMS Alarm 0x0040 Cell Imbalance 0x0080 High Current during discharge

Also, the inverter shows the alarm:

0x00800000 **BMS alarm**	**Code 2: 0x2000**	**Stop Event: 30**	When the inverter is disconnected to the grid, it will stop. The inverter will recover automatically when alarm in the BMS disappears. If the inverter is connected to the grid, it will keep connected without using the battery.

The reaction of the inverter for each alarm is:

Inverter Alarm Name	Battery Protection Name	Inverter Reaction
0x0001 High Current Charge	COC: Charge Over Current Protect	Stop battery charge
0x0080 High Current Discharge	DOC: Discharge Over Current Protect	Stop battery discharge
0x0002 High Voltage	BOV: Single Cell Over Voltage Protect	Stop battery charge
	POV: Charge system Over Voltage Protect	
	MOV: Module Over Voltage Protect	
0x0004 Low Voltage	BUV: Single Cell Under Voltage Protect	Stop battery discharge
	PUV: Discharge system Under Voltage Protect	
	MUV: Module Under Voltage Protect	
0x0008 High Temperature	COT: Charge Cell Over Temperature Protect	In on-grid, stop battery charge & discharge. In off-grid, stop inverter.
	DOT: Discharge Cell Over Temperature Protect	

0x0010 Low Temperature	CUT: Charge Cell Under Temperature Protect	In on-grid, stop battery charge & discharge. In off-grid, stop inverter
	DUT: Discharge Cell Under Temperature Protect	
0x0020 BMS Internal	Bit 7: Other Error	In on-grid, stop battery charge & discharge. In off-grid, stop inverter.
	Bit 6: Other Error	
	Bit 5: Relay Check Error	
	Bit 4: Input transposition Error	
	Bit 3: Input Over Voltage Error	
	Bit 2: Internal Communication Error	
	Bit 1: Temperature Sensor Error	
	Bit 0: Voltage Sensor Error	

To read more information about the Battery´s alarms, please contact with Pylontech distributor to get the communication cable and software.