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PCE INTEGRATION GUIDE

# LiFe<sup>2</sup> 5120S

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# Foreword

This document focuses solely on the parameters for charging and discharging the battery. All other configurations and system settings are the responsibility of the integrator to manage and implement.

Before beginning programming, the integrator must thoroughly understand the associated Power Conversion Equipment (PCE). AERL strongly recommends that the integrator participate in the manufacturer's training or integration course, if available, to achieve optimal proficiency.

The LiFe<sub>2</sub> 5120S can operate in either Managed (Comms) or Self-Managed (No Comms) mode. This guide includes instructions for configuring the system and details the minimum battery requirements for connecting to specific inverter brands. Please review this guide carefully before proceeding with configuration.

Installers and integrators must consistently perform detailed and precise system designs to ensure optimal performance and reliability. AERL is not responsible for designs that result in underperformance or failure to meet expected standards.

Settings may be updated without prior notice as part of our continuous improvement process. The settings provided are accurate as of their release or publication date.

Minimum battery modules are recommended to ensure that the batteries can fully support the performance of the connected PCE. In Managed communication mode, the PCE will operate within the battery's performance limits, ensuring system stability. In Self-Managed mode, adhering to the recommended minimum battery capacity is crucial to maintain battery performance within warranty conditions.

Ensure that the AERL installation manual is followed and that all environmental, installation, and battery specifications are adhered to.

## 1: Managed Communication (Comms)

The AERL supports select brands of inverters and chargers (PCEs) using a Managed configuration via a CAN bus cable connection. This setup allows the AERL battery to relay crucial information to the connected PCEs, enabling them to adjust the battery's charge and discharge based on its internal cell temperature and state of charge. Managed Communications help optimize the battery's cell lifespan and ensure accurate State of Charge reporting.

The PCEs referenced in this section of the Integration Guide are compatible with CAN bus communications. Be sure to follow the PCEs' instructions for connecting Managed batteries.

### 1.1. AERL Recommended Minimum Battery Modules

Charger	Battery Modules
SRX 600/70-48	1
SRX-R 600/60-48	1

## 1.2. Victron Energy Recommended Minimum Battery Modules

Inverter	Single Phase	Three Phase
Multiplus 48/500/6	1	1
Multiplus 48/800/9	1	1
Multiplus 48/1200/13	1	2
Multiplus 48/1600/20	1	2
Multiplus 48/2000/25	1	3
Multiplus 48/2000/25-50 120V	1	3
Multiplus 48/3000/35	1	4
Multiplus 48/5000/70	2	6
Multiplus II (GX) 48/3000/35-32	1	4
Multiplus II (GX) 48/5000/70-50	2	6
Multiplus II 120V 48/3000/35-50	1	4
Multiplus II 120V 48/5000/70-95	2	6
Multiplus II 48/8000/110-100	3	10
Multiplus II 48/10000/140-100	4	12
Multiplus II 48/15000/200-100	6	18
Quattro 48/3000/35-50/50 120V	1	4
Quattro 48/5000/70-100/100 120V	2	6
Quattro 48/10000/140-100/100 120V	3	12
Quattro 48/5000/70-100/100	2	6
Quattro 48/8000/110-100/100	2	10
Quattro 48/10000/140-100/100	4	12
Quattro 48/15000/200-100/100	6	18
Quattro 48/15000/200-100/100 277V	6	18
Quattro II 48/5000/70-50	2	6
RS Smart solar 48/6000	2	6
Multi RS Solar 48/6000	2	6
Multi RS Solar 48/6000 Dual Tracker	2	6

### 1.3. Deye Inverter Technology Recommended Minimum Battery Modules

Inverter	Battery Modules
SUN-3.6K-SG01LP1-EU	2
SUN-5K-SG01LP1-EU	2
SUN-7.6K-SG01LP1-EU	3
SUN-8K-SG01LP1-EU	3
SUN-12K-SG01LP1-EU	4
SUN-14K-SG01LP1-EU	4
SUN-16K-SG01LP1-EU	5
SUN-3.6K-SG03LP1-EU	2
SUN-4.6k-SG03LP1-EU	2
SUN-5K-SG03LP1-EU	2
SUN-5.5K-SG03LP1-EU	2
SUN-6K-SG03LP1-EU	2
SUN-5K-SG04LP3-EU	2
SUN-6K-SG04LP3-EU	2
SUN-8K-SG04LP3-EU	3
SUN-10K-SG04LP3-EU	3
SUN-12-SG04LP3-EU	4
SUN-3K-SG04LP1-EU	1
SUN-3.6-SG04LP1-EU	2
SUN-5K-SG04LP1-EU	2
SUN-6K-SG04LP1-EU	2
SUN-3.6K-SG05LP1-EU	2
SUN-5K-SG05LP1-EU	2
SUN-6K-SG05LP1-EU	2
SUN-7K-SG05LP1-EU	2
SUN-7.6-SG05LP1-EU	3
SUN-8K-SG05LP1-EU	3
SUN-5K-SG01LP1-US	2
SUN-6K-SG01LP1-US	2
SUN-7.6K-SG01LP1-US	3
SUN-8K-SG01LP1-US	3
SUN-12K-SG04LP1-US	4

## 1.4. Noark Recommended Minimum Battery Modules

Inverter	Battery Modules
Ex9N-DH-3KS-AU	1
Ex9N-DH-3.6KS-AU	1
Ex9N-DH-5KS-AU	2
Ex9N-DH-6KS-AU	2
Ex9N-DH-7.6KS-AU	3
Ex9N-DH-8KS-AU	3
Ex9N-DH-5KT-AU	2
Ex9N-DH-6KT-AU	2
Ex9N-DH-8KT-AU	3
Ex9N-DH-10KT-AU	3
Ex9N-DH-12KT-AU	4
Ex9N-DH-3KS-AU	1

## 2: Self-Managed Communication (No Comms)

The AERL LiFe<sup>2</sup> allows connection of PCE's that require manual programming of charge settings to control charge and discharge from the battery known as Self-Managed (No Comms). The PCE must have the ability to customize its charge settings to suit the battery's requirements.

This section outlines the settings and the minimum battery requirements for popular brands of PCE's. If your selected PCE is not listed here, please get in touch with AERL for further confirmation of settings.

### 2.1. LiFe<sup>2</sup> 5120S Basic Charge and Discharge Settings

Parameter	Battery Specification
Charge Voltage DC	56V
Max Charge Current	70A
Max Discharge Current	100A
Max Depth of Discharge	90%

## 3: Selectronic Instructions

### 3.1. Selectronic SP PRO Recommended Minimum Battery Modules

Inverter	Single Phase	Three Phase
SPMC480	2	6
SPMC481	2	6
SPMC482	3	9

### 3.2. Selectronic SP PRO Settings (Managed or Self-Managed)

Inverter	Tab	Input Data
Battery Type	Quick Start	LiFePO4 (Pylon US5000C - if Managed)
Battery Capacity	Quick Start	Total Ah Capacity of LiFe <sup>2</sup> 5120S installed
Voltage DC Shutdown 0% Load	Inverter	49.50V (10% SoC)
Voltage DC Shutdown 100% Load	Inverter	46V
Recovery Voltage	Inverter	52V
Shut Down SoC %	Inverter	20% (minimum)
Max Charge Voltage	Battery	56V
High Battery Alert voltage	Battery	58.3V
High Battery Alert Clear	Battery	57.3V
Periodic Equalise	Battery	N/A
Periodic Recharge	Battery	14 Days
Peukert's Exponent	Battery	1.02
Limit Charge Above °C	Battery	50°C
Limit Rate %	Battery	0
Max Charge Current % or Amp	Charger	0.7C – 70% of total Ah Capacity Installed
Initial Return voltage	Charger	52.8V
Initial Return SoC	Charger	95%
Initial Stage Voltage	Charger	55V
Initial Stage Current	Charger	100%
Initial Stage Time	Charger	40 min
Bulk Stage Voltage	Charger	55V
Bulk Stage Current	Charger	100%
Bulk stage Time	Charger	40 min
Absorb Stage Voltage	Charger	56V
Absorb Stage Current	Charger	15%
Absorb – Float Transition Net Change	Charger	1%
Absorb – Float Transition Change Time	Charger	40 min
Absorb – Float Max Time	Charger	40 min
Float Stage Voltage	Charger	56V
Long Term Float Voltage	Charger	55.8V
Equalise Stage Voltage	Charger	56V
Equalise Current	Charger	10%
Equalise Time	Charger	1hr
Min Temp Compensation °C	Charger	N/A
Max Temp Compensation °C	Charger	N/A
Ref A Temp Compensation mV/cell/°C	Charger	N/A
Ref B Temp Compensation mV/cell/°C	Charger	N/A

## 4: Solis Instructions

### 4.1. Solis Recommended Minimum Battery Modules

Inverter	Single Phase	Three Phase
RHI-3K-48ES-5G	1	
RHI-3.6-48ES-5G	1	
RHI-4.6K-48ES-5G	2	
RHI-5K-48ES-5G	2	
RHI-6K-48ES-5G	2	
RAI-3K-48ES-5G	1	
S5-EH1P3K-L	1	
S5-EH1P3.6K-L	1	
S5-EH1P4.6K-L	2	
S5-EH1P5K-L	2	
S5-EH1P6K-L	2	
S5-EO1P4K-48	2	
S5-EO1P4K-48-P	2	
S5-EO1P5K-48	2	
S5-EO1P5K-48-P	2	
S6-EO1P4K-48	2	4
S6-EO1P4K-48	2	5
S6-EH1P3K-L-EU	1	3
S6-EH1P3.6K-L-EU	2	4
S6-EH1P4.6K-L-EU	2	4
S6-EH1P5K-L-EU	2	5
S6-EH1P6K-L-EU	2	6
S6-EH1P3K-L-PRO	1	3
S6-EH1P3.6K-L-PRO	2	4
S6-EH1P5K-L-PRO	2	5
S6-EH1P6K-L-PRO	2	6
S6-EH1P8K-L-PRO	3	7



## 4.2. Solis Settings (Self Managed)

Setting	Input Data
Battery Type	Lead Acid Battery
Battery Capacity	Total Ah Capacity of LiFe <sup>2</sup> 5120S Installed
Floating Voltage	56V
I_Max Discharge	Max. 100A per battery installed
I_Max Charge	Max. 70A per battery installed
Equalize Voltage	56V
Over Discharge Voltage	50.2V
Force Charge Voltage	48V
ForceChg PLmt	Max. 3500W per battery installed
Temp. Compensation	0
AMB. Temp.Lower	5°C
AMB. Temp.Upper	45°C
Power Limit On	From Grid
<b>Save and Send</b>	
Environment Temp	Warm

## 5: SMA Instructions

### 5.1. SMA Sunny Island Recommended Minimum Battery Modules (4.4M, 6.0H, 8.0H, 4548 & 6048)

Inverter	Single Phase	Three Phase
SI 4.4M	2	6
SI 6.0H	2	6
SI 8.0H	3	9
4548-US	2	6
6048-US	2	6

## 5.2. SMA Sunny Island Settings (Self Managed)

It is highly recommended that you use an external shunt to measure the state of charge. Using a shunt with SMA inverters will improve SoC accuracy. Refer to SMA manuals for instructions.

Setting	Input Data
Battery Type	Valve Regulated Lead Acid
Nominal Battery Voltage	48V
Nominal Battery Capacity	Total Ah Capacity of LiFe <sup>2</sup> 5120S Installed
Device Configuration	Charge
Maximum Charging Current	0.7C – 70% of Total Ah Capacity Installed
Time for Boost	2 Hours
Time for Equalisation Charge	2 Hours
Time for Full Charge	2 Hours
Discharge Cut Off Voltage	49.5V
Maximum discharge Current	Leave Default
Cell Charge Nominal for Boost Charge	2.35V
Cell Charge Nominal for Full Charging	2.35V
Cell Charge Nominal for Equalisation Charge	2.35V
Float Voltage Cyclic Applications	2.35V
Float Voltage UPS/Standby Applications	2.33V
Cycle Time Full Charge	7 Days
Cycle Time Equalisation Charge	30 Days
Battery Temperature Compensation	0°C
Automatic Equalisation Charge	Disable (OFF)
Voltage Setpoint with Deactivated BMS	56V
Protection Mode	
Start Time A	Default
Start Time B	Default
End Time A	Default
End Time B	Default
Limit of Battery State of Charge A	30%
Limit of Battery State of Charge B	25%
Limit of Battery State of Charge C	20%

### 5.3. SMA Sunny Island Settings Continued (Self Managed)

It is highly recommended that you use an external shunt to measure the state of charge. Using a shunt with SMA inverters will improve SoC accuracy. Refer to SMA manuals for instructions.

Setting	Section	Input Data
Battery Type	Basic	Valve Regulated Lead Acid
Nominal Battery Voltage	Basic	48V
Nominal Battery Capacity	Basic	Total Ah Capacity of LiFe <sup>2</sup> 5120S Installed
222.01 BatChrgCurMax	Installer Mode	0.7C – 70% of Total Ah Capacity Installed
222.02 AptTmBoost	Expert Mode	120min
222.03 AptTMFul	Expert Mode	2 Hours
222.04 AptTmEqu	Expert Mode	2 Hours
222.05 CycTmFul	Expert Mode	7 Days
222.06 CycTmEqu	Expert Mode	30 Days
222.07 ChrgVtgBoost	Expert Mode	2.35V
222.08 ChrgVtgFul	Expert Mode	2.35V
222.09 ChrgVtgEqu	Expert Mode	2.35V
222.10 ChrgVtgEqu	Expert Mode	2.35V Cyclic / 2.33 Standby
222.11 BatTmpCps	Expert Mode	0°C
222.12 AutoEquChrgEna	Expert Mode	Disable (OFF)
222.13 BatChrgVtgMan	Expert Mode	56V
223.01 BatPro1TmStr	223# Protection	Default
223.02 BatPro1TmStp	223# Protection	Default
223.03 BatPro2TmStr	223# Protection	Default
223.04 BatPro2TmStp	223# Protection	Default
223.05 BatPro1Soc	223# Protection	30%
223.06 BatPro1Soc	223# Protection	25%
223.07 BatPro1Soc	223# Protection	20%

# Thank you for choosing AERL.

Your decision to trust our product means a lot to us.

At AERL, our focus is on technical excellence. Our batteries are the result of rigorous engineering and precise craftsmanship, and we have invested heavily in ensuring that each battery delivers outstanding performance and reliability.

We recognize the importance of dependable power in standalone applications, and we are committed to providing you with top-tier products that get the job done.

If you have any questions or need support,  
our team is always ready to assist.

Sincerely,

The AERL Team

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The logo for AERL, featuring the lowercase letters 'aerl' in a stylized, orange, sans-serif font.

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