LiFe² 5120S

Inverter and Charger Settings



LiFe² 5120S · Managed (Comms) and Self-Managed (No Comms)

PCE Integration Guide

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Battery
AERL LiFe² 5120S

Audience
Installers and integrators

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Foreword

This guide covers only the battery's charge and discharge settings. All other configuration and system settings are the integrator's responsibility.

Before programming, the integrator must understand the Power Conversion Equipment (PCE) being used. AERL strongly recommends the PCE manufacturer's training or integration course, where one is available.

The LiFe² 5120S runs in Managed (Comms) or Self-Managed (No Comms) mode. This guide gives the settings for each mode and the minimum number of battery modules for specific inverters and chargers. Read it before you configure the system.

Installers and integrators are responsible for the system design. AERL is not responsible for designs that underperform or do not meet the expected standards.

Settings may change without notice. They are correct at the date of publication.

The minimum number of battery modules ensures that the batteries can support the full output of the connected PCE. In Managed mode, the PCE operates within the battery's limits. In Self-Managed mode, install at least the recommended minimum, or the battery may be operated outside its warranty conditions.

To size a complete LiFe² system (modules, cabinets and charge sources), see the AERL LiFe² 5120S System Sizing Guide, at aerl.com.au.

Follow the LiFe² 5120S Installation and Operation Manual, including all its environmental, installation and battery specifications.

Managed Communication (Comms)

01

AERL recommended minimum battery modules

The LiFe² 5120S works with selected inverters and chargers (PCE) in Managed mode, over a CAN bus connection. The battery sends its data to the PCE, which then sets the charge and discharge from the battery's cell temperature and state of charge. Managed mode extends cell life and keeps the State of Charge reporting accurate.

The PCE listed in this section support CAN bus communication. Follow each PCE manufacturer's instructions for connecting a managed battery.

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

Minimum number of LiFe² 5120S modules per inverter, from Victron's and ZYC's published tables.

Inverter	Single-phase on-grid	Single-phase off-grid	Three-phase on-grid	Three-phase off-grid
MultiPlus 48/500/6	1	1	1	1
MultiPlus 48/800/9	1	1	1	1
MultiPlus 48/1200/13	1	1	1	1
MultiPlus 48/1600/20	1	1	1	2
MultiPlus 48/2000/25	1	1	1	2
MultiPlus 48/3000/35	1	1	2	3
MultiPlus 48/5000/70	1	2	2	4
MultiPlus-II (GX) 48/3000/35-32	1	1	1	3
MultiPlus-II (GX) 48/5000/70-50	1	2	2	4
MultiPlus-II 48/3000/35-32	1	1	1	3
MultiPlus-II 48/5000/70-50	1	2	2	4
MultiPlus-II 48/8000/110-100	1	3	3	7
MultiPlus-II 48/10000/140-100	2	3	3	8
MultiPlus-II 48/15000/200-100	2	4	4	12
Quattro 48/5000/70-100/100	1	2	2	4

Inverter	Single-phase on-grid	Single-phase off-grid	Three-phase on-grid	Three-phase off-grid
Quattro 48/8000/110-100/100	1	3	2	7
Quattro 48/10000/140-100/100	2	3	4	8
Quattro 48/15000/200-100/100	2	4	4	12
Quattro II 48/5000/70-50	1	2	2	4
RS Smart Solar 48/6000	1	2	2	4
Multi RS Solar 48/6000	1	2	2	4
Multi RS Solar 48/6000 Dual Tracker	1	2	2	4
EasySolar-II 48/3000/35-32 MPPT 250/70 GX	1	1	2	3
EasySolar-II 48/5000/70-50 MPPT 250/100 GX	1	2	2	4

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-12K-SG04LP3-EU	4
SUN-3K-SG04LP1-EU	1

Inverter	Battery modules
SUN-3.6K-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-7.6K-SG05LP1-EU	3
SUN-8K-SG05LP1-EU	3

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

Self-Managed Communication (No Comms)

02

LiFe² 5120S basic Charge and Discharge settings

In Self-Managed (No Comms) mode, the LiFe² 5120S works with PCE whose charge settings are programmed by hand. The PCE must allow its charge settings to be set to the battery's requirements.

The battery starts in Managed mode by default. To switch it to Self-Managed mode, double-press the **ON/OFF** button on the master battery with the battery on: the SOC LEDs flash 3 times to confirm, and the battery remembers the mode after a restart. It returns to Managed mode automatically when a communication cable to the inverter is connected.

This section gives the settings and minimum battery modules for common PCE brands. If your PCE is not listed, contact AERL for its settings.

2.1 LiFe² 5120S Basic Charge and Discharge Settings

Parameter	Battery specification
Charge Voltage DC	56 V
Max Charge Current	70 A
Max Discharge Current	100 A
Max Depth of Discharge	90% (recommended setting)

The battery can discharge to 100% (LiFe² 5120S datasheet and manual). 90% is the recommended setting: it gives a longer cycle life (see the cycle-life curves in the manual).

Selectronic Instructions

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Selectronic SP PRO recommended minimum battery modules

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 (Self-Managed)

Inverter	Tab	Input data
Battery Type	Quick Start	LiFePO4
Battery Capacity	Quick Start	Total Ah Capacity of LiFe² 5120S installed
Voltage DC Shutdown 0% Load	Inverter	49.50 V (10% SoC)
Voltage DC Shutdown 100% Load	Inverter	46 V
Recovery Voltage	Inverter	52 V
Shut Down SoC %	Inverter	20% (minimum)
Max Charge Voltage	Battery	56 V
High Battery Alert voltage	Battery	58.3 V
High Battery Alert Clear	Battery	57.3 V
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	52.8 V
Initial Return SoC	Charger	95%
Initial Stage Voltage	Charger	54 V
Initial Stage Current	Charger	100%
Initial Stage Time	Charger	40 min
Bulk Stage Voltage	Charger	55 V
Bulk Stage Current	Charger	20%
Bulk stage Time	Charger	30 min
Absorb Stage Voltage	Charger	55 V
Absorb Stage Current	Charger	10%
Absorb – Float Transition Net Change	Charger	1%
Absorb – Float Transition Change Time	Charger	5 min
Absorb – Float Max Time	Charger	10 min
Float Stage Voltage	Charger	55 V
Long Term Float Voltage	Charger	55 V
Equalise Stage Voltage	Charger	55 V
Equalise Current	Charger	10%

Inverter	Tab	Input data
Equalise Time	Charger	1 h
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

Solis Instructions

Solis recommended minimum battery modules

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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-EO1P5K-48	2	5
S6-EH1P3K-L-EU	1	3
S6-EH1P3.6K-L-EU	2	4
S6-EH1P4.6K-L-EU	2	4

Inverter	Single phase	Three phase
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 LiFe² 5120S Installed
Floating Voltage	56 V
I_Max Discharge	Max. 100 A per battery installed
I_Max Charge	Max. 70 A per battery installed
Equalize Voltage	56 V
Over Discharge Voltage	50.2 V
Force Charge Voltage	48 V
ForceChg PLmt	Max. 3500 W per battery installed
Temp. Compensation	0
AMB. Temp.Lower	5 °C
AMB. Temp.Upper	45 °C
Power Limit On	From Grid

Select **Save and Send**, then set **Environment Temp** to **Warm**.

SMA Instructions

SMA Sunny Island recommended minimum battery modules (4.4M, 6.0H and 8.0H)

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5.1 SMA Sunny Island Recommended Minimum Battery Modules (4.4M, 6.0H and 8.0H)

Inverter	Single phase	Three phase
SI 4.4M	2	6
SI 6.0H	2	6
SI 8.0H	3	9

5.2 SMA Sunny Island Settings (Self-Managed)

AERL strongly recommends an external shunt to measure the state of charge: with SMA inverters it improves SOC accuracy. See the SMA manuals for instructions.

Setting	Input data
Battery Type	Valve Regulated Lead Acid
Nominal Battery Voltage	48 V
Nominal Battery Capacity	Total Ah Capacity of LiFe² 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	49.5 V
Maximum discharge Current	Leave Default
Cell Charge Nominal for Boost Charge	2.35 V
Cell Charge Nominal for Full Charging	2.35 V
Cell Charge Nominal for Equalisation Charge	2.35 V
Float Voltage Cyclic Applications	2.35 V
Float Voltage UPS/Standby Applications	2.33 V
Cycle Time Full Charge	7 Days
Cycle Time Equalisation Charge	30 Days
Battery Temperature Compensation	0 mV/°C (per cell)

Setting	Input data
Automatic Equalisation Charge	Disable (OFF)
Voltage Setpoint with Deactivated BMS	56 V
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)

AERL strongly recommends an external shunt to measure the state of charge: with SMA inverters it improves SOC accuracy. See the SMA manuals for instructions.

Setting	Section	Input data
Battery Type	Basic	Valve Regulated Lead Acid
Nominal Battery Voltage	Basic	48 V
Nominal Battery Capacity	Basic	Total Ah Capacity of LiFe² 5120S Installed
222.01 BatChrgCurMax	Installer Mode	0.7C – 70% of Total Ah Capacity Installed
222.02 AptTmBoost	Expert Mode	120 min
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	2.35 V
222.08 ChrgVtgFul	Expert Mode	2.35 V
222.09 ChrgVtgEqu	Expert Mode	2.35 V
222.10 ChrgVtgFlo	Expert Mode	2.35 V Cyclic / 2.33 V Standby

Setting	Section	Input data
222.11 BatTmpCps	Expert Mode	0 mV/°C (per cell)
222.12 AutoEquChrgEna	Expert Mode	Disable (OFF)
222.13 BatChrgVtgMan	Expert Mode	56 V
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 BatPro2Soc	223# Protection	25%
223.07 BatPro3Soc	223# Protection	20%

Thank You for Choosing AERL

If you have any questions or need support, contact AERL.

Sincerely,

The AERL Team

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