CONNECTION AND SETUP GUIDE

Hybrid inverter GSIKE 11 kW 48 V

Model GSK-11KP-48V-WIFI · connectors, connection, menu F0–F4, lithium battery, parallel, fault codes



Control panel

The front panel has a display, three indicators and four buttons. The power switch is on the bottom panel, right side.

ESC	UP	DOWN	ENTER
exit / back	previous item	next item	enter and confirm

How to change settings

1. Press and hold **ENTER** for 3 seconds: the settings group selection opens.
2. Select a group with **UP / DOWN**: **F0:** general, **F1:** AC output, **F2:** battery, **F3:** time, **F4:** system. Press **ENTER.**
3. Select the program number in the group and the value; **ENTER:** confirm, **ESC:** back to groups or exit.

Below, programs are written as “group-number”, e.g. F2-01 is program 01 of group F2. Notation in ranges: “greater of (A; B)” takes the larger of the two values, “lesser of (A; B)” the smaller.



Most important: battery type, F2-01.

Default: AGM. For a lithium battery cabled to the RS485 port, select **Li2** (PYLON US2000 protocol) or **Li4** (inverter maker’s protocol); for a lithium battery without link: **LIb.** Numbers like “05” or “26” from the standard menus of other inverters do not apply here.

LEDs

Indicator	Steady	Flashing
AC / INV (green)	Output supplied from the grid (grid mode)	Output supplied from battery or sun (battery mode)
CHG (green)	Battery fully charged	Battery charging
FAULT (red)	Inverter fault	Warning

What the display shows

UP / DOWN switch the screens in turn: input and output voltage (main screen), frequencies, output power, PV input and export power, battery voltage and load, charge power and current, PV power and discharge current, PV1 and PV2 power, voltage and current, energy produced per day, month, year and in total, date and time. Holding DOWN on the main screen shows firmware versions, model code and hardware version.

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CONNECTORS

Bottom panel: what goes where

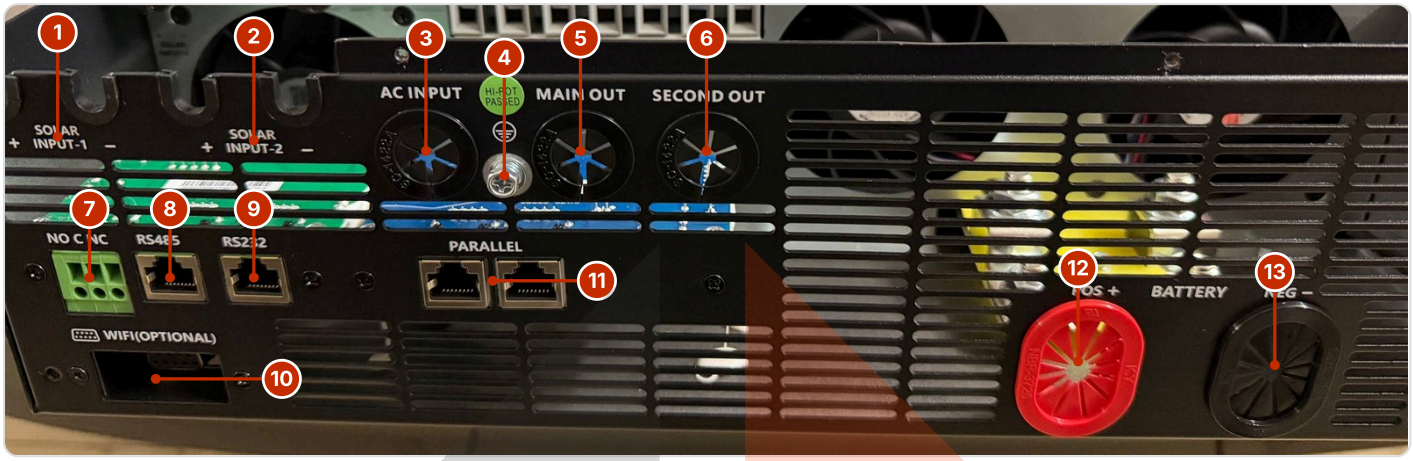

Photo of the GSIKE 11 kW bottom panel with the terminal cover removed. Numbers in the photo match those in the table; the set of connectors was checked against the product overview in the manual (p. 3). The ON/OFF switch is to the right of the battery entries (not in the photo).

	What it is	Why	What connects where
1	**PV1 input**	First solar panel input (SOLAR INPUT-1, + and −). PV connectors are under the cover.	Panel string via a separate DC switch. Up to 500 V open-circuit, MPPT 60–500 V, up to 18 A.
2	**PV2 input**	Second solar panel input (SOLAR INPUT-2, + and −), separate MPPT tracker.	Second panel string, likewise up to 500 V and 18 A.
3	**AC grid input**	Cable entry to the **AC INPUT** terminals: ⏚, L, N (under the cover).	Grid or generator via a separate 63 A breaker. 16 mm² cable.
4	**Grounding**	Case earthing point.	Earth wire (PE). The inverter must be connected to a permanent earthing system.
5	**Main output**	Cable entry to the **MAIN OUT** terminals: L, N (OP1).	Main load panel. Cut-off: F2-07.
6	**Second output**	Cable entry to the **SECOND OUT** terminals: L, N (OP2), up to 5.5 kW. Single system only.	Panel for loads that can be cut off earlier. Enable: F1-11, cut-off: F2-08, schedule: F1-13/14.
7	**Dry contact**	**NO · C · NC** terminals, 3 A / 250 V AC.	Signal to an external device or earthing unit (mode: F0-16).
8	**RS485 (BMS)**	Comm port to the lithium battery BMS (RJ45). Pins: 1 — RS485-B, 2 — RS485-A, 7 — RS485-A, 8 — RS485-B.	Communication cable from the BMS RS485 port (“pin to pin”, included). Battery type: F2-01.
9	**RS232 (RJ45)**	RS232 communication port.	Cannot be used at the same time as port 10.
10	**RS232 (DB9)**	RS232 communication port; labelled “WIFI (OPTIONAL)” on the case.	Cannot be used together with port 9. The manual does not describe a Wi-Fi connection.
11	**Parallel**	Two parallel communication ports.	Parallel communication cable between inverters (only in a parallel system).
12	**Battery +**	Entry for the battery “plus” cable (POS +).	Battery plus 48 V via a separate 250 A / 60 V DC breaker. Cable 2 × 35 mm².
13	**Battery −**	Entry for the battery “minus” cable (NEG −).	Battery minus 48 V.

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Safety, installation site, cables and breakers

Safety (from the manufacturer's manual)

- Mounting and connection by a qualified specialist only. Do not disassemble the inverter: repairs only at a service centre.
- Before servicing or cleaning, disconnect all wires: simply switching the inverter off does not remove the shock hazard.
- Never charge a frozen battery. Be careful with metal tools near the battery: a spark or short circuit can cause an explosion.
- The inverter must be connected to a permanent earthing system in line with local rules.
- Never short the AC output to the DC input; do not connect to the grid if the DC input is short-circuited.
- Air conditioners need 2–3 min before restarting. If an air conditioner has no start delay, a quick loss and return of power may make the inverter report an overload fault and damage the air conditioner.

Location

- Only on concrete or another non-combustible solid surface, vertically, at eye level.
- Ambient temperature 0...55 °C. Free space: **50 cm** above and below, **20 cm** at the sides.
- Fixing: three screws, M4 or M5 recommended. Before connecting, remove the bottom cover (4 screws).
- Kit: inverter, manual, 4 PV connectors, battery fuse (for 11 kW).

Cables and protection

Section	Cable	Torque	Protection
Battery (max. current 220 A, capacity from 600 Ah)	2 × 35 mm²; lug: L 37 mm, W 22 mm, D 8.4 mm	10–12 N·m	separate DC breaker **250 A / 60 V** between the battery and the inverter (the 11 kW kit includes a battery fuse)
Grid input and AC outputs	16 mm²	1.2–1.4 N·m	separate **63 A** breaker between grid and inverter
Solar panels (typical current 18 A per input)	6 mm²	1.4–1.6 N·m	separate DC switch between the panels and the inverter

Stripping: AC wires 10 mm, make phase L and neutral N 3 mm shorter than PE; PV wires 10 mm.

Choosing solar panels

Panel (manufacturer's example)	In series on one input (PV1 or PV2)
450 W (Vmp 34.67 V, Voc 41.25 V, Isc 12.98 A)	from 3 to 12 pcs (1350–5400 W)
550 W (Vmp 42.48 V, Voc 50.32 V, Isc 13.70 A)	from 3 to 9 pcs (1650–4950 W)

Configuration for each input separately: e.g. 8 pcs in series on PV1 and 8 pcs on PV2, 16 panels in total. Conditions: the string open-circuit voltage must not exceed 500 V and must be above the minimum battery voltage.

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Step-by-step connection

1. **Remove the bottom cover** (4 screws) and fix the inverter to the wall with the required clearances.
2. **Battery.** Install a separate DC breaker or fuse between the battery and the inverter.
   - Crimp lugs of the recommended size on the “+” and “−” cables; connect the battery as the inverter requires (48 V), preferably of the recommended capacity.
   - Fit the lugs squarely on the battery terminals and tighten the bolts to 10–12 N·m. Put nothing between lug and terminal, otherwise it may overheat; do not apply antioxidant paste before tightening.
   - Before closing the DC protection check polarity: “+” to “+”, “−” to “−”.
3. **Grid and AC outputs.** First open the battery DC protection. Install a separate 63 A breaker between the grid and the inverter.
   - Strip the wires by 10 mm, shorten L and N by 3 mm.
   - **AC INPUT:** earth ⏚ first (green-yellow), then L (brown or black) and N (blue). The grid must be off.
     MAIN OUT and **SECOND OUT** outputs: the same, earth first. Do not mix up the input (IN) and output (OUT) blocks.
   - Make sure the wires are clamped firmly and L/N polarity is correct.
   -
4. **Solar panels.** Install a separate DC switch between the panels and the inverter. Strip the wires by 10 mm, check polarity and connect the strings to PV1 and PV2: “+” to “+”, “−” to “−”.
5. **Communication:** lithium battery: cable from the BMS RS485 to the inverter RS485 port; dry contact (NO, C, NC) if needed.
6. **Refit the cover** (4 screws).
7. **Switch on the inverter** with the ON/OFF switch (the battery must be connected) and set up the menu, first of all the battery type (F2-01).

Dry contact (3 A / 250 V AC)

Inverter state	Condition	NC–C	NO–C
F0-16 = Model 1			
Off	output not powered	closed	open
On, powered from the grid	—	closed	open
Powered by battery or solar, F1-01 = SUB	battery voltage (or SOC) below the warning level	open	closed
	voltage (or SOC) above F2-05 or charging has reached float	closed	open
Powered by battery or solar, F1-01 = SBU	battery voltage below F2-05	open	closed
	battery voltage above F2-06 or charging has reached float	closed	open
F0-16 = Model 2			
Off	output not powered	closed	open
Standby, grid or fault	—	closed	open
Battery or energy saving	—	open	closed

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SPECIFICATIONS

Specifications GSK-11KP-48V-WIFI

Output (inverter mode)		AC grid input	
Rated power	**11 kVA / 11 kW**	Rated voltage	**230 V**
Parallel operation	**yes, up to 6 units**	Lower limit	**90 ± 7 V** (APL), **170 ± 7 V** (UPS)
Dual output	**yes,** single system only	Return after lower limit	**100 ± 7 V** (APL), **180 ± 7 V** (UPS)
Max. power of main output	**11 kVA / 11 kW**	High limit / return	**280 ± 7 V / 270 ± 7 V**
Max. power of second output	**5.5 kVA / 5.5 kW**	Max. input voltage	**300 V**
Waveform / voltage	**sine wave, 230 V ± 5 %**	Frequency	**50 / 60 Hz** (auto-detect)
Frequency	**50 or 60 Hz**	Transfer time	**10 ms** (UPS), **20 ms** (APL)
Peak efficiency	**94 %**	Grid efficiency	**over 95 %**
Overload	**5.5 s** at ≥140 %; **10.5 s** at 100–140 %	Surge capacity	**2 × rated, 5 s**
Battery and charging		**Solar panels (PV)**	
Rated voltage	**48 V**	Rated power	**2 × 5500 W**
Cold start voltage	**46.0 V**	Max. open-circuit voltage	**500 V**
Max. charge current (PV + grid)	**160 A**	MPPT range	**60–500 V**
Max. grid charge current	**120 A**	Max. input current	**2 × 18 A**
Charge voltage: flooded / AGM, gel	**58.4 V / 56.4 V**	Max. MPPT charge current	**160 A**
Float voltage	**54 V**	**General**	
Overcharge protection	**63 V**	Certification	**CE**
Charging algorithm	**3 stages**	Operating temperature	**−10…+55 °C**
Max. battery current	**220 A**	Storage	**−15…+60 °C**
Recommended battery capacity	**600 Ah**	Humidity	**5–95 %,** non-condensing
		Dimensions (D × W × H)	**540 × 403 × 122 mm**
		Weight	**14.8 kg**

Power derating: with grid voltage below 170 V the output power is reduced (to 50 % at 90 V); with battery voltage below 55.0 V it drops to 75 % of rated at 42.0 V (manufacturer's graphs).

Battery voltages for lead-acid batteries (AGM and flooded)

Load	"Low battery" warning	Warning cleared	OP2 / OP1 cut-off (OP2 enabled)	OP1 cut-off (OP2 disabled)
under 20 %	44.0 V	46.0 V	42.0 V / 45.2 V	45.2 V
20–50 %	42.8 V	44.8 V	40.8 V / 44.0 V	44.0 V
50 % and above	40.4 V	42.4 V	38.4 V / 41.6 V	41.6 V

Data from the manual's specification tables (11 kVA column). If the label on your inverter differs, go by the label.

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SETTINGS MENU

All menu programs: groups F0–F4

On the left: the default option code as shown in the manual, or the default value. Programs F0-11...F0-15 and F1-05 are not in the manual's table.

F0: general parameters



F0-01 Grid input voltage range

APL	**Household appliances:** default, 90–280 V.
UPS	**UPS:** 170–280 V.
GNt	**Generator:** 170–280 V, compatible with generators. A generator is unstable, so the inverter output may also be unstable.



F0-02 Power saving mode

SdS	**Off:** default; the output works regardless of load.
SEN	**On:** the output turns off when the load is very small or not detected.

In a parallel system only "off".



F0-03 Bypass on overload

byd	**Off**
byE	**On:** default; on overload in battery mode the inverter switches to the grid.

In a parallel system only "on".



F0-04 Auto restart after overload

Ltd	**Off**
LtE	**On:** default.



F0-05 Auto restart after overheating

ttd	**Off**
ttE	**On:** default.



F0-06 Auto bypass

nML	**Manual:** default.
Ato	**Auto:** if the grid is normal, the inverter switches to bypass automatically, even with the switch off.



F0-07 Return to main screen

ESP	**Return:** default; after 1 min without key presses.
HEP	**Stay:** the display stays on the last selected screen.



F0-08 Backlight

LoN	**On**
LoF	**Off:** default.

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F0-09 Buzzer mode

nd1	**Mode 1:** sound off.
nd2	**Mode 2:** signal on power source change, certain warnings or faults.
nd3	**Mode 3:** signal on certain warnings or faults.
nd4	**Mode 4:** default; signal on faults only.

default
001

F0-10 Modbus address (Modbus ID)

Range 001–247.



F0-16 Dry contact mode

nd1	**Model 1:** default; signal to an external device when the battery voltage reaches the warning level.
nd2	**Model 2:** control of an external earthing unit: only in battery mode the contact commands connecting the AC output neutral and earth.

For contact logic see the “Dry contact” section.



F0-17 AC output neutral-earth bonding

diS	**Off:** default; output neutral and earth are separated.
ENA	**On:** output neutral and earth are bonded.

default
not specified

F0-18 MPPT scan (several peaks on the PV curve)

diS	**No scan:** scanning off.
tin	**Periodic:** automatic PV power curve scan every hour.
Pou	**On fluctuation:** PV power is compared every few minutes; if it fluctuates by more than ±20 %, a scan starts.
btH	**Both:** periodic and on fluctuation at once.

The manual gives no default value.

F1: AC output



F1-01 Output source priority

SUb	**SUB:** default. Solar → grid → battery: solar first charges the battery, then powers the load; if solar is not enough, the grid is added at the same time.
SbU	**SBU:** solar → battery → grid: if solar is not enough, the battery is added; the grid powers the load only when the battery voltage has fallen to the warning level or to the value of F2-05.
SUF	**SUF:** solar → grid → battery: if solar covers the load and battery charging, the surplus may be exported to the grid; if not, the grid is added at the same time.



F1-02 AC output mode

SiG	**Single:** the inverter works alone.
PAL	**Parallel:** inverter in a parallel system (single phase).
3P1	**Phase L1:** in a three-phase system.
3P2	**Phase L2:** in a three-phase system.
3P3	**Phase L3:** in a three-phase system.

default
230 V

F1-03 Output voltage

220, 230 or 240 V can be selected.

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default
50 Hz

F1-04 Output frequency

50 or 60 Hz can be selected.



F1-06 Additional scheduled output priority

During the set time window (F1-07...F1-10) the inverter switches from the main priority to this one.

`oFF`	**Off:** default.
`SUb / SbU / SUF`	same as in F1-01.

default
00

F1-07...10 Start and end of the additional priority schedule

F1-07: start hour (00–23), F1-08: start minutes (00–59), F1-09: end hour (00–23), F1-10: end minutes (00–59). All 00 by default.



F1-11 Second output (OP2) enable

`on`	**Enabled:** default.
`oFF`	**Disabled:** second output off.

Single system only; fixed to “disabled” in parallel mode.

default
50 %

F1-12 OP2 overload warning threshold

Range 10–100 %. If exceeded: warning **3D.** Single system only.

default
00

F1-13 / 14 OP2 on / off hours

Range 00–23 for each. 00–00: OP2 always on. E.g. 07–13: OP2 works from 7:00 to 13:00; during this time it turns off if the battery voltage reaches F2-08. Single system only.

F2: battery and charging



F2-01 Battery type

`AGn`	**AGM:** default.
`FLd`	**Flooded**
`USE`	**User:** charge and cut-off voltages are set in F2-03, F2-04, F2-08.
`Li2`	**Lithium with link:** PYLON US2000 protocol, version 3.5.
`Li4`	**Lithium with link:** standard protocol 2 of the inverter manufacturer.
`LIb`	**Lithium without link:** factory values are chosen for a lithium battery without link; charge and cut-off voltages are set in F2-03, F2-04, F2-08.



F2-02 Charging source priority

Applies when the inverter runs on grid, in standby or in fault mode:

`SoF`	**Solar first:** the grid charges the battery only when there is no sun.
`SNU`	**Solar and grid:** default; both charge at once.
`oSo`	**Solar only:** charging from solar only, even if the grid is present.
`Sot`	**Solar surplus:** solar first powers the load, the rest charges the battery.

default
56.4 V

F2-03 Charge voltage (C.V)

Adjustable with USE or LIb. Type not LIb: range from F2-04 to 62 V; LIb: from F2-04 to 58 V.

default
54.0 V

F2-04 Float voltage

Adjustable with USE or LIb. Type not LIb: **54.0 V;** LIb: **56.4 V.** Range from 48.0 V to F2-03.

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default
46.0 V

F2-05 Return to grid (SBU mode)

- Type not LIb: **46.0 V,** range from the greater of (44 V; F2-07 + 0.1 V) to the lesser of (F2-06 – 0.1 V; 57.2 V).
- LIb: **52.0 V,** same range.
- Lithium battery with link: **20 %** SOC, range from the greater of (5 %; F2-07 + 1 %) to the lesser of (F2-06 – 1 %; 96 %).



F2-06 Return to battery (SBU mode)

- Default: **full battery charge;** range from the greater of (48 V; F2-05 + 0.1 V) to (F2-03 – 0.5 V) or "full charge".
- Lithium battery with link: **30 %** SOC, range from the greater of (10 %; F2-05 + 1 %) to 100 %.

default
44.0 V

F2-07 Main output cut-off (OP1)

- Type not LIb: **44.0 V,** range from F2-08 to the lesser of (F2-05 – 0.1 V; 54 V).
- LIb: **51.9 V,** same range.
- Lithium battery with link: **15 %** SOC, range from F2-08 to the lesser of (F2-05 – 1 %; 95 %).

default
42.0 V

F2-08 Second output (OP2) cut-off

- Type not LIb: **42.0 V,** range from 40 V to the lesser of (F2-07; 54 V). Fixed at 40 V in parallel mode.
- LIb: **50.0 V,** same range.
- Lithium battery with link: **10 %** SOC, range from 0 % to F2-07. Fixed at 0 % in parallel mode.

Single system only.

default
80 A

F2-09 Maximum charge current (solar + grid)

Single mode: **80 A,** parallel: **30 A.** For 11 kW the range is 10–160 A, but not below the value of F2-10.

default
60 A

F2-10 Maximum grid charging current

Single mode: **60 A,** parallel: **30 A.** Range 5–120 A, must be below F2-09.



F2-11 Additional scheduled charge priority

During the set time window (F2-12...F2-15) this priority applies instead of the main one.

`oFF`	**Off:** default.
`SoF / SNU / oSo / Sot`	same as in F2-02.

default
00

F2-12...15 Start and end of the charge priority schedule

F2-12: start hour (00–23), F2-13: start minutes (00–59), F2-14: end hour (00–23), F2-15: end minutes (00–59). All 00 by default.



F2-16 Constant voltage stage time (C.V)

Adjustable with USE or LIb. **AUt:** the inverter sets the time itself (default); or 5–900 min in 5 min steps.



F2-17 Equalization charge

Adjustable if FLd or USE is selected in F2-01.

`EEN`	**On**
`EdS`	**Off:** default.

default
58.4 V

F2-18 Equalising voltage

Range from the float voltage (F2-04) to 62 V.

default
60 min

F2-19 **Equalization time**

Range 0–900 min, step 5 min.

default
120 min

F2-20 **Equalization extension (timeout)**

Range 0–900 min, step 5 min. If the equalization voltage is not reached within F2-19, charging is extended; if it is still lower after the timeout, equalization stops.



F2-21 **Equalising interval**

30 days by default, range 1–90 days, step 1 day.



F2-22 **Start equalising now**

Available if equalization is enabled in F2-17.

`AEN`	**Enable:** equalization starts at once, “Eq” appears on the main screen.
`AdS`	**Disable:** default; equalization waits for the next time per F2-21.



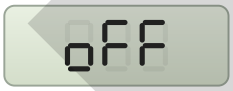
F2-23 **Manual lithium battery activation**

`noP`	**Off:** default.
`ACt`	**Activate:** if USE, LIb or Li2/Li4 is selected in F2-01 and no battery is detected: one-time lithium battery activation.



F2-24 **Automatic lithium battery activation**

`nML`	**Off:** default.
`Ato`	**Auto:** if Li2/Li4 is selected in F2-01 and no battery is detected, the inverter or PV activates the battery automatically once. For this to work, the inverter must be restarted.



F2-25 **Maximum battery discharge current**

OFF by default. Range 50–500 A: if the discharge current exceeds the setting, the inverter stops discharging and switches to bypass or standby.

default
6 s

F2-26 **Lithium battery activation time**

Range 6–300 s (when activation is available).

F3: time and F4: system

default
—

F3-01...06 **Clock: year, month, day, hour, minute, second**

Year 00–99, month 1–12, day 1–31, hour 0–23, minutes 0–59, seconds 0–59.



F4-01 **Reset of accumulated energy data**

`no`	**Keep:** default.
`YES`	**Reset:** clear the data on PV energy produced and energy consumed by the load.

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LITHIUM BATTERY

Lithium battery settings

Only what is in the manufacturer's manual

Connection

A lithium battery has two connections: the power cable and the BMS RS485 port. Power cables and lugs are as for a lead-acid battery (section "Cables and protection"). Connect the battery RS485 port to the inverter **RS485 (BMS)** port (connector 8 on the bottom panel). The cable must connect the pins "one to one"; it is supplied in the kit.

RS485 port pins

Pin	Signal
1	RS485-B
2	RS485-A
7	RS485-A
8	RS485-B

What the display shows with a working link ("LI" icon blinks)

Screen	Information
13	Lithium battery max. charge voltage and max. charge current
14	Status flags: xx1: charging forbidden; x1x: battery forbidden; 1xx: forced charge needed
15	State of charge SOC, %

Via the comm cable the inverter receives data from the BMS and uses it to adjust the charge voltage, charge current and discharge cut-off voltage, and starts or stops charging depending on the battery state. If the link is broken: warning **4B.**

> The manufacturer states: only lithium batteries it has configured for this inverter may be used. This model has no CAN port for the BMS, only RS485.

Menu selection (F2-01)

Code	When to choose
Li2	Battery with PYLON US2000 protocol (version 3.5) connected to RS485
Li4	Battery with the standard protocol 2 of the inverter maker, connected to RS485
LIb	Lithium battery without link to the inverter

With a working link F2-05, F2-06, F2-07, F2-08 are set in SOC percent (factory 20 %, 30 %, 15 %, 10 %).

PYLONTECH US2000 battery

1. DIP switches on the battery: switch 1 ON for baud rate 9600; switches 2, 3, 4 set the group address (on the main, first battery). "1" is the up position, "0" the down position.
2. Connect the inverter and battery with the RS485 cable.
3. Switch on the battery and hold its start button over 3 s until the power output is ready.
4. Switch on the inverter and select **Li2** in F2-01. If the link is established, the battery icon lights up on the display.

Lithium battery without link

Method 1: select **LIb** in F2-01.

Method 2: first find in the BMS data sheet: max. charge voltage, max. charge current and discharge protection voltage. Then:

1. F2-01 — **LIb**.
2. F2-03 (C.V): BMS max. charge voltage minus 0.5 V.
3. Float voltage (F2-04) equal to the C.V voltage.
4. Cut-off voltage (F2-07, main output) not below the BMS discharge protection voltage + 3 V.
5. F2-09: max. charge current, below the BMS max. charge current.

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6. F2-05 (return to grid in SBU mode): not below the cut-off voltage + 2 V, otherwise a low battery voltage warning appears.

It is best to configure while the inverter gives no output (only the display is lit), and restart the inverter afterwards.

Lithium battery in a parallel system

1. Only one battery shared by all inverters is supported.
2. Connect any one inverter to the BMS with an RJ45 cable.
3. Only on this inverter select **Li2** in F2-01; leave **AGM** on the others (otherwise fault E2).

PARALLEL OPERATION

Parallel and three-phase system

- Up to **6** inverters in parallel on one phase, or up to 6 on three phases (no more than 4 per phase). Parallel kit: parallel comm cable.
- Parallel operation is only possible with a battery connected; all inverters on a **shared** battery bank, otherwise they go into fault mode.
- Battery cables from each inverter of equal length and cross-section (as for one inverter); from the junction point to the battery: cross-section × number of inverters. The same for AC input and output.
- Battery breaker: 250 A / 60 V per inverter (or one common breaker for the current × number of inverters).
- Connect each inverter to its own solar panels separately. Clearances: 20 cm at the sides, 50 cm above and below, all at the same level.
- In parallel mode the default charge currents are 30 A (F2-09, F2-10), OP2 is off, F0-02 only “off”, F0-03 only “on”.

Number of inverters	2	3	4	5	6
Common AC input breaker (single phase)	100 A	150 A	200 A	250 A	300 A
Recommended battery capacity	800 Ah	1200 Ah	1600 Ah	2000 Ah	2400 Ah

Instead of a common breaker, a separate 63 A breaker can be fitted on the input of each inverter.

Starting the parallel system

1. Check the connections; load line breakers open, neutrals of all inverters connected.
2. Switch on each inverter and set **PAL** (single phase) or **3P1 / 3P2 / 3P3** (phase of a three-phase system) in F1-02. The setting changes only when the inverter output is off (power present). Then switch all inverters off.
3. Switch on all inverters. Master and slaves are assigned randomly: the master’s icon blinks, the slave’s stays lit.
4. Switch on the AC input breakers, preferably all at once.
5. If there are no faults, the system is ready.
6. Switch on the load breakers.

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DISPLAY CODES

Faults, warnings and troubleshooting

A fault code is a group letter and a digit (e.g. C0); a warning code is a digit and a group letter (e.g. 0B). Groups: A: inverter, B: battery, C: PV, D: output, E: parallel, F: other, G: grid.

Fault codes (red FAULT indicator lit)

Code	Fault
A0	Output short circuit
A1	Output voltage too high
A2	Overcurrent or current surge
A3	DC component on the AC output
A4	Inverter current sensor offset too large
A5	Output voltage too low
A6	Negative inverter power
B0	Battery voltage too high
B1	DC/DC overcurrent
B2	DC/DC current sensor offset too large
C0	PV overcurrent
C1	PV overvoltage
C2	PV1 current sensor offset too large
C3	PV2 current sensor offset too large
D0	Overload: time used up
D1	Output current sensor offset too large
D2	OP2 current sensor offset too large
F0	Inverter module overheat
F1	PV module overheat
F2	DC/DC module overheat
F3	Bus voltage too high
F4	Bus soft start failed
F5	Bus voltage too low
F6	Hardware incompatibility
F7	Display comm failure

Warning codes (red FAULT indicator blinking)

Code	Warning	Beeper
0B	Low battery voltage	1 beep every second
1B	Battery not connected	none
2B	Battery equalization charge	none
3B	Battery flat and not recharged to the value of F2-06	2 beeps every 3 s
4B	Link with lithium battery (BMS) broken	1 beep every 0.5 s
5B	Battery discharge overcurrent	none
1C	PV energy too weak	2 beeps every 3 s
0D	Overload	1 beep every 0.5 s
1D	Output power derating	2 beeps every 3 s
3D	OP2 load exceeds the value of F1-12	none
0F	Temperature too high	3 beeps every second

Parallel system codes

Code	Type	Meaning	What to do
E0	fault	Master data lost	Check the comm cables and restart the inverter.
E1	fault	Sync data lost	Check the comm cables and restart the inverter.
E2	fault	Incompatible battery type	The lithium type must be set only on the inverter connected to the BMS.

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E3	fault	Different firmware versions	Update all inverters to the same firmware version (check versions via the display).
0E	warning	CAN link lost between inverters	Check the comm cables and restart the inverter.
1E	warning	Different output mode F1-02	Switch off the inverter and check F1-02; for parallel on one phase: PAL on all.
2E	warning	Different battery voltage on the inverters	All inverters must run on a shared battery bank; battery cables of equal length and material.

If the problem remains after these steps, contact the installer.

Troubleshooting

Symptom	Cause	What to do
The inverter turns off during start-up; display, indicators and buzzer work for 3 s and go out	Battery voltage too low	Charge or replace the battery.
No response after switching on	Battery voltage very low or battery polarity reversed	Check the battery connection; charge or replace the battery.
Grid present, but the inverter runs on battery; input voltage on display 0, green indicator blinking	Input protection tripped	Check the input breaker and AC wire connections.
Grid present, but the inverter runs on battery; green indicator blinking	Poor grid or generator quality	Check whether the AC wires are too thin or long, the generator works and the input range is correct (F0-01: UPS / APL).
Same, green indicator blinking	SBU or SUB selected in F1-01	Change the output source priority.
After switching on, the internal relay clicks, display and indicators blink	Battery disconnected	Check the battery cable connections.
Buzzer sounds continuously, red indicator lit: code D0	Overload above 100 %, time used up	Reduce the load.
Code A2	Output short circuit or overcurrent, current surge	Check the wiring, disconnect the faulty load; restart, and if it repeats, service.
Code F2	Component temperature above 100 °C	Check that airflow is not blocked and the ambient temperature is not too high.
Code B0	Battery overcharge or battery voltage too high	Check the battery type and number; if that does not help, service.
Code A1 / A5	Output voltage below 190 V or above 260 V	Reduce the load; if that fails, to service.
Code F3 / F4	Internal component fault	Contact service.
Code A3	Unbalanced output voltage	If the wiring is correct, contact service.
Code F5 and others	Low bus voltage / other	If the wiring is correct, contact service.

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