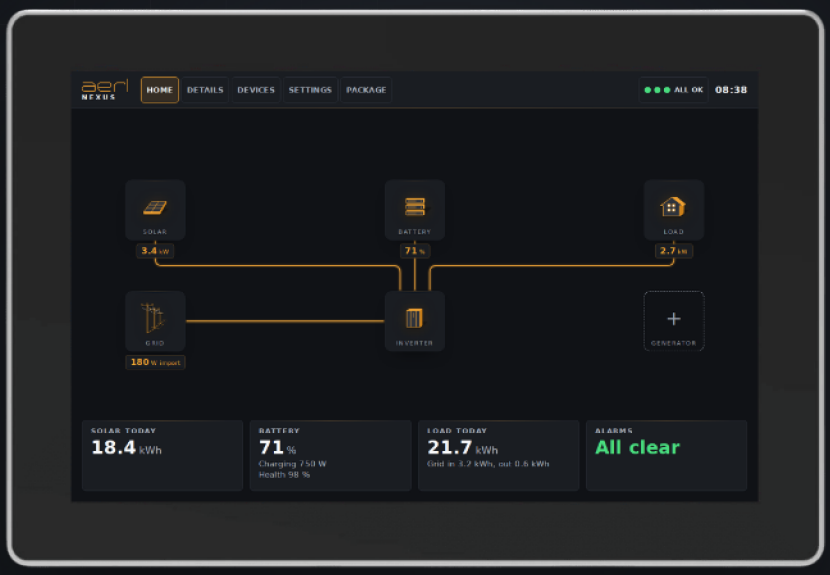
Nexus HMI

10.1" Sunlight-Readable Touch HMI



HMI-10 · NEXUS-HMI-10

Installation and Operation User Manual

REV 1.1.1, 11 NOV 2026

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Installers and site operators

Model
HMI-10 · NEXUS-HMI-10

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About AERL

Australian Energy Research Laboratories (AERL) was founded in 1985 by Stuart Watkinson to commercialise the Power Optimizer, which he developed while studying at the University of Queensland. It became the AERL MAXIMIZER™, a universal maximum power point tracker (MPPT).

Today AERL designs, integrates and supports power conversion, lithium energy storage, monitoring and earth-fault detection products for commercial, industrial and off-grid energy systems, including oil and gas, mining and telecommunications sites.

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Effective Date

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Important Safety Information

About this Manual, safety notes

01

This manual contains important safety information and installation and operating instructions for the AERL Nexus HMI (HMI-10). It uses the following symbols for important operating information and potentially dangerous conditions.

> **Important**
>
> Indicates information that must be followed to ensure proper installation or operation of the Nexus HMI.

> **Caution**
>
> Indicates a critical procedure for the safe installation or operation of the Nexus HMI or the equipment it controls.

1.1 About This Manual

This manual covers installing the Nexus HMI, connecting it to the site's inverter, battery and generator controller, and using its screens. Read all of its instructions and cautions before you start.

Only qualified electricians and technicians may install and commission the Nexus HMI. Site operators may use the Home and Details screens; the Devices, Settings, Package and Generator screens are protected by the installer PIN.

Do not disassemble or attempt to repair the Nexus HMI unless you are a qualified technician and have authority in writing from AERL to do so.

AERL will not be held responsible in any way for the mishandling of this product or for installation of the product in a manner that does not follow the instructions in this manual or as advised by AERL.

1.2 Safety Notes

Caution

- The Nexus HMI's control screens start and stop real equipment. Before you send a command, make sure it is safe to do so: the screen states the consequence of each command and asks you to confirm it.
- Package control and its Emergency stop button are **not a safety function**. The site's hardwired emergency stop circuit remains the safety stop.
- Isolate the DC supply before you connect or disconnect the power input.
- Connect a 24 Vdc supply only through an in-line 12 V regulator (contact AERL).

Important

- Change the default PIN (0000) at commissioning (Settings > Security). Until it is changed, the PIN prompt shows the default PIN to anyone who opens a protected screen.
- Leave **Follow this device if its address changes** off unless no one else can connect to the site network (see Following a Device to a New Address in the Devices chapter).
- The front of the Nexus HMI is rated IP65. When it is rear-mounted behind a window in a switchboard door, the window and the door seal keep water out; the rest of the unit is not sealed.

Introduction

02

What the Nexus HMI works with, screens at a glance

The AERL Nexus HMI (HMI-10) is a 10.1″ sunlight-readable touch panel with the AERL Nexus software built in. Its Home screen shows the site's energy flows at a glance. Its other screens give the installer a detailed view of each device, and give authorised staff local control of the inverter and, where one is added, the generator.

The Nexus HMI reads the inverter and the battery over the site's Ethernet network, and a generator controller over Ethernet or RS-485. When it has an internet connection, it sends the site's readings to AERL Cloud. It can also serve the site's data to a SCADA system over Modbus TCP; this is off until it is switched on.

2.1 What the Nexus HMI Works With

Equipment	How the Nexus HMI connects
Solinteg M2HT hybrid inverter (as in the AERL All-In-One)	Modbus TCP over Ethernet, through the inverter's data logger (port 502, unit ID 255), with RS-485 as an optional fallback link
Solinteg battery of the All-In-One	Modbus TCP over Ethernet, through its own data logger
Deep Sea Electronics DSE 7410 MkII generator controller (optional add-on)	Modbus TCP over Ethernet (unit ID 10), or Modbus RTU over RS-485
Site SCADA (optional)	Modbus TCP server on the Nexus HMI, off by default
Other devices	Contact AERL for a custom integration

The Nexus HMI takes one inverter, one battery and one generator controller.

2.2 Screens at a Glance

Screen	Access	What it is for
Home	Open	The site's energy flows, today's totals and alarms
Details	Open	Each device in detail, the network and cloud connection, and the event log
Devices	PIN	Finding and adding the inverter, battery and generator, and each device's settings
Settings	PIN	Network ports, SCADA server, package control, PIN, cloud and software
Package	PIN	Inverter package Start, Stop, Emergency stop, Clear emergency stop
Generator	PIN	Generator control and quiet hours; shown once a generator is added

Specifications

Display and touch, power, computing and interfaces

03

3.1 Display and Touch

Parameter	Value
Diagonal size	10.1 in
Resolution	1280 × 800 (WXGA)
Panel type	IPS · normally black, transmissive
Luminance	1000 cd/m²
Viewing direction	All
Touch panel	Capacitive · up to 10 touch points
Backlight	White LED · 30 000 h min. life

3.2 Power

Parameter	Value
Input voltage	12–24 Vdc (24 Vdc supplies need an in-line 12 V regulator; contact AERL)
Power consumption	9.6 W typ. (static desktop, default brightness)

3.3 Computing and Interfaces

Parameter	Value
Processor	Quad-core Cortex-A55, 2.0 GHz · Mali-G52 GPU
Memory	2 GB LPDDR4
Storage	32 GB eMMC · TF card slot
Operating system	Linux
Ethernet	2 × 10/100/1000
RS485 · CAN · RS232	2 × each (expansion IO header)
Wireless	Wi-Fi · Bluetooth · 4G LTE (nano SIM)
USB	2 × USB-A · 1 × USB-C (OTG)
Video out	HDMI 1.4

3.4 Mechanical and Environment

Parameter	Value
Dimensions (W × H × D)	260.4 × 177.4 × 37 mm
Weight	1.21 kg typ.
Enclosure	Full metal
Ingress protection	IP65 (front)
Operating temperature	−20 to 70 °C
Storage temperature	−30 to 80 °C
Mounting	Panel mount, or rear mount · 4 × M4 threaded holes, VESA 75 × 75 mm
Certifications	RoHS
Part number	NEXUS-HMI-10 (model HMI-10)
Warranty	2 years

Installation

Location, mounting, power, network and equipment connections

04

All installations must comply with national and local electrical standards and codes of practice.

4.1 Location

> **Important**
>
> - Mount the Nexus HMI where operators can see and reach the screen, out of direct rain. The front is rated IP65; the rear is not sealed.
> - Keep the unit within its operating temperature range, −20 to 70 °C. In a switchboard, allow for the heat of the equipment around it.
> - Route cables downwards away from the unit, so that water on a cable cannot run back into it.

4.2 Mounting

The Nexus HMI mounts one of two ways:

- **Panel mount**, through a cut-out in a panel or door.
- **Rear mount**, behind a window in the switchboard door, on the four M4 threaded holes in the back of the unit (VESA 75 × 75 mm pattern).

For a rear mount, seal the window in the door so that the front of the Nexus HMI stays dry. Contact AERL for the panel cut-out dimensions.

4.3 Power

1	Isolate the DC supply.
2	Connect a 12 Vdc supply to the Nexus HMI's DC input, positive and negative as marked on the unit. From a 24 Vdc supply, fit the in-line 12 V regulator (contact AERL) between the supply and the Nexus HMI.
3	Restore the supply. The Nexus HMI starts on its own: see Starting Up in the Getting Started chapter.

> **Caution**
>
> Check the polarity and the voltage at the Nexus HMI's input before you connect it. Applying more than the rated input voltage, or reversed polarity, may damage the unit and is not covered by the warranty.

4.4 Network and Equipment Connections

The Nexus HMI has two Ethernet ports, **LAN 1** and **LAN 2**. As delivered, both take their address from the site network (DHCP), so nothing needs to be set on the Nexus HMI for it to join the network.

On a typical site the router connects to a network switch, and the inverter, the battery and the Nexus HMI all plug into that switch:

1	Connect the site router to the switch.
2	Connect the inverter's data logger and the battery's data logger to the switch with Cat5e or Cat6 patch leads. (The Nexus HMI's screens call a data logger the collector.)
3	Connect **LAN 1** of the Nexus HMI to the switch. One port is enough; LAN 2 is optional.
4	If the site has a generator controller, connect it to the same switch, or wire it to an RS-485 channel on the Nexus HMI's expansion IO header: **channel 0 (A0, B0)** or **channel 1 (A1, B1)**. Terminate the RS-485 line at both ends as the device manufacturer says.
5	Power on the Nexus HMI, then find and add the devices in Devices (see the Devices chapter).

If the site router can reserve addresses, reserve the inverter's and the battery's, so that their addresses do not change.

Important

- The Nexus HMI must be the only Modbus client of the inverter, the battery and the generator controller. They answer one client at a time: do not connect another Modbus master to them.
- Use shielded twisted-pair cable for RS-485 and keep data cables away from power cables.

Sites with no router

Where there is no router, the Nexus HMI can run the network itself:

1. Connect the inverter's and the battery's data loggers and LAN 1 of the Nexus HMI to a switch that has no router on it.
2. Set LAN 1 to **Standalone** (Settings > Network; see the Settings chapter). The Nexus HMI then gives the devices on that switch their addresses.
3. If the site has a network with internet access, connect LAN 2 to it for AERL Cloud and remote support. Without it the Nexus HMI runs on its own.

Getting Started

Starting up, the screen header, touch and the keypad

05

5.1 Starting Up

When power is applied, the Nexus HMI starts its software and then shows Home. Start-up can take up to about two minutes. The Nexus HMI does not need an internet connection to start or to show the site's equipment.

On a new unit no devices are set up yet, and Home says "No devices set up yet." Touch **Set up devices**, enter the PIN, and find and add the inverter and battery (see Setting Up the Inverter and Battery in the Devices chapter).

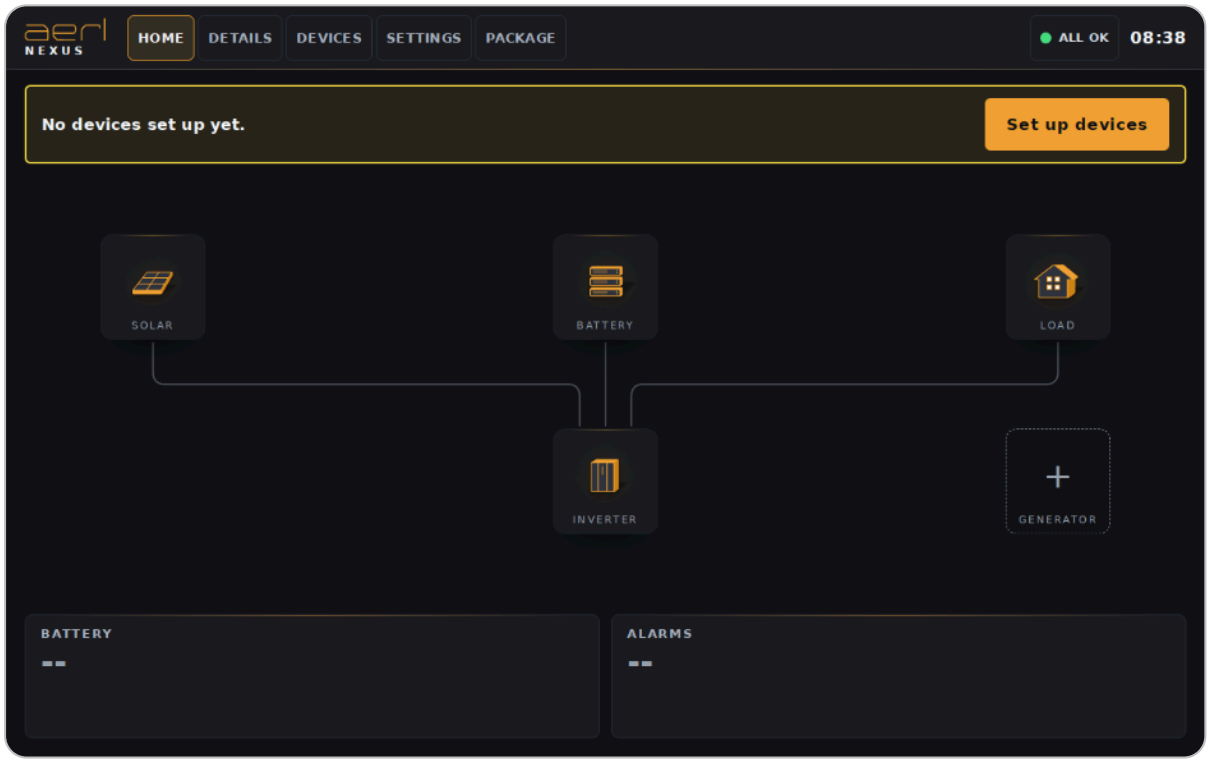


Figure 5.1 Home on a new unit

5.2 The Screen Header

Every screen has the same header:

- The AERL logo, with **Nexus** under it.
- The screen buttons **Home**, **Details**, **Devices**, **Settings** and **Package**, and **Generator** once a generator is added.
- The status: a dot for the cloud connection, then one for each device that is set up, and in words what needs a look ("All OK", "Battery no reply", "2 need a look"). Green: answering (the cloud: online). Amber: not answering, not current or connecting (the cloud: offline). Red: a fault, or a different device at its address. Grey: polling switched off, or not known. Touch the status to list each one with its state; **Details** opens the page of the first one that needs a look.
- The time, in 24-hour format.

5.3 Touch and the Keypad

The Nexus HMI is used by touch only; there is no keyboard or mouse. Numbers, addresses and PINs are entered on an on-screen numeric keypad. Touch a field to open the keypad, enter the value and touch **OK**, or **Cancel** to leave the value as it was.

5.4 PIN and Locking

Home and Details are open to everyone. Devices, Settings, Package and Generator ask for the installer PIN ("Enter PIN for Devices", "Enter PIN for Settings", "Enter PIN for Package control", "Enter PIN for Generator control").

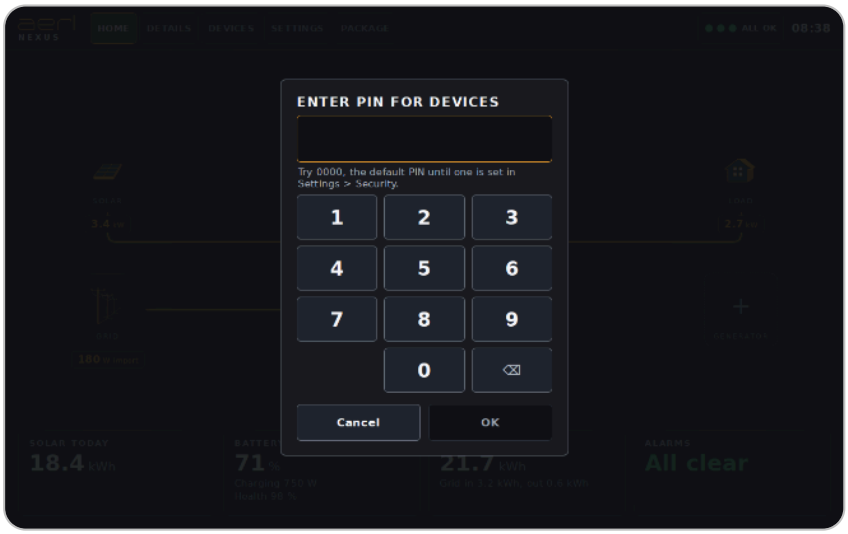


Figure 5.2 PIN prompt, opening Devices

- The PIN is 4 to 8 digits. The default PIN is **0000**, and until it is changed the PIN prompt says so: change it at commissioning (Settings > Security).
- After five wrong PINs, PIN entry is locked for 60 seconds ("Too many attempts").
- A protected screen locks again after 2 minutes without a touch. Touch **Lock** on the screen to lock it straight away.
- If the screen shows "Session expired. Enter PIN again.", enter the PIN again.

Home

The energy diagram, the cards, when the battery does not answer

06

Home shows the site's energy flows, drawn as in AERL Cloud. It needs no PIN.

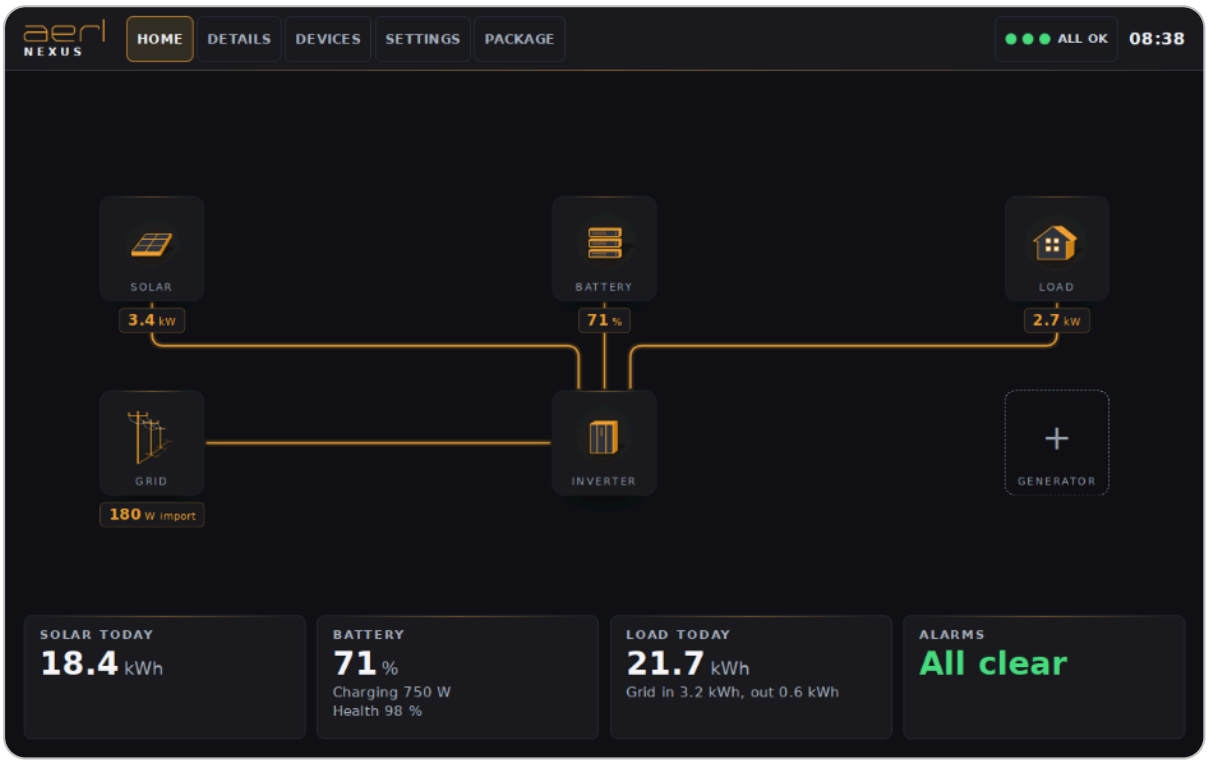


Figure 6.1 Home

6.1 The Energy Diagram

- The tiles are **Solar** (the inverter's solar power), **Battery** (state of charge), **Load** (the power the inverter supplies to the site's loads), **Grid** (shown only while the inverter is connected to the grid, with import or export), **Inverter** and **Generator**.
- Each line runs to the inverter and shows the power on that path. It moves in the direction the power flows, and stands still when less than about 50 W flows.
- Until a generator is added, its tile is a dashed **+**: touching it opens the add-generator form in Devices (PIN). Once a generator is added, its tile shows the generator's output.
- Touch any other tile to open that device's page in Details.
- When a device stops answering, its tiles show "No reply" and for how long (for example "No reply 6:52", minutes and seconds), and their lines stop. A value is never shown as live when it is not.

6.2 The Cards

- **Solar today**: the solar energy today (kWh), and the day's peak power and its time.
- **Battery**: the state of charge; Charging, Discharging or Idle, with the power; and the battery's health.
- **Load today**: the energy supplied to the loads today and, on a grid-connected site, the energy taken from the grid ("Grid in") and sent to it ("out") today.
- **Alarms**: "All clear"; "None reported" while not every device is answering; or the number of active alarms, the most serious first.

6.3 When the Battery Does Not Answer

The battery's values come from the battery itself while it answers. If it stops answering, or no battery is set up, the Battery tile and card use the inverter's own battery values (state of charge, power, voltage and current) instead, and keep showing live values. When a battery that is set up stops answering, the Battery tile carries a warning ("BMS no reply · from inverter") and the Battery card says "From the inverter: the BMS is not answering". Values only the battery itself has (cells, BMS limits and battery alarms) show as unavailable in Details until it answers again.

Details

Device pages, event log, data kept on the Nexus HMI

07

Details is for the installer. It is open to everyone and changes nothing. The menu on the left opens **Inverter**, **Battery**, **Generator** (once a generator is added), **Network & cloud** and **Event log**.

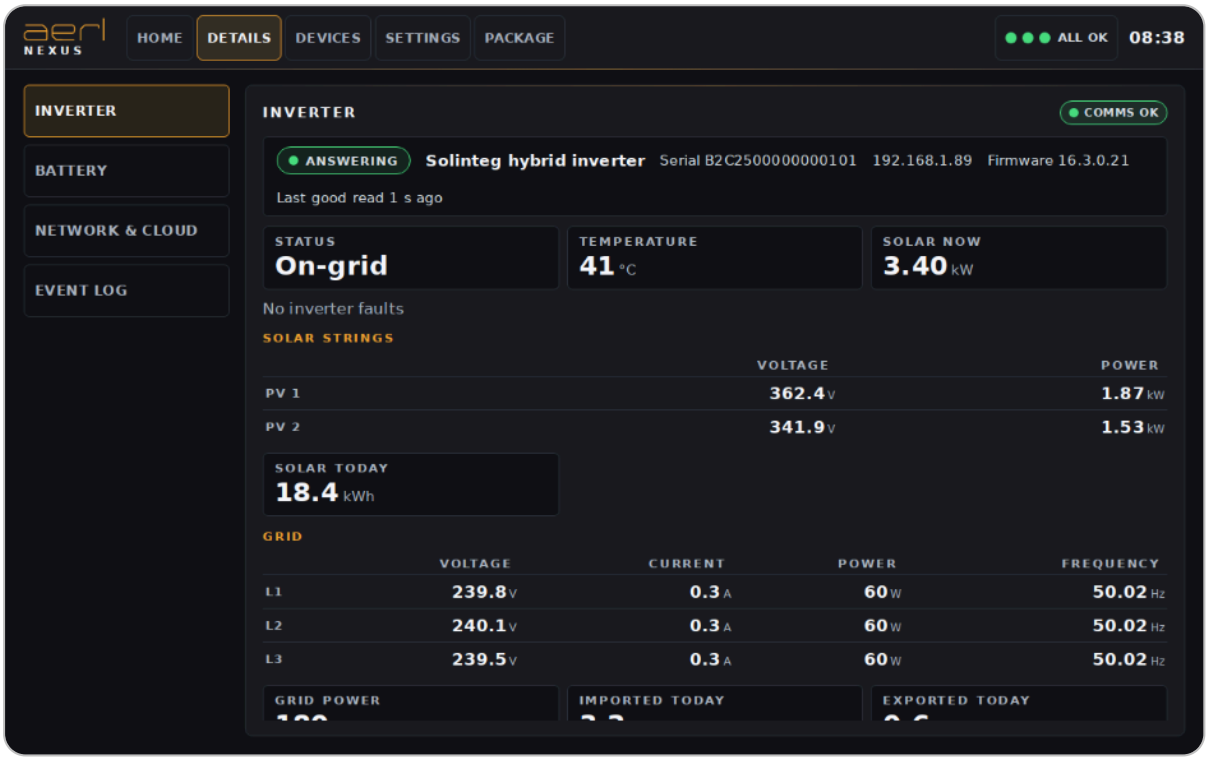


Figure 7.1 Details: the inverter

7.1 Device Pages

Each device page opens with what the Nexus HMI is talking to: the device's state, model, serial number, address and firmware, and the time since its last good reading. A value with no current reading is shown greyed as "--".

- **Inverter**: working status, temperature, solar power and active faults; each solar string (PV 1, PV 2) and the solar energy today; the grid on L1, L2 and L3 (voltage, current, power, frequency), the grid power and the energy imported and exported today; the backup output on L1, L2 and L3, the load power, frequency and load energy today; and, once a generator is added, the generator input.
- **Battery**: state of charge, health, voltage, current, power and temperature, each with where it comes from (BMS or Inverter), and charge cycles; the BMS limits (charge and discharge current, charge voltage, and whether charging and discharging are allowed); the cells (lowest and highest cell voltage and where they are, the spread, the coolest and warmest temperatures, modules online); and the battery's alarms.

- **Generator**: output, mode and engine state; voltage and current on L1, L2 and L3; frequency, engine speed, engine run time, fuel, oil pressure, coolant temperature and the generator's starter battery voltage; the quiet hours line; and the generator's alarms.
- **Network & cloud**: this unit's address, cable and gateway on each LAN port; whether the SCADA server and package control are on; the cloud connection, the last upload and the readings waiting to upload; and the panel software version.

Alarms and faults are listed with the number active, the most serious first: a solid red bar for a fault, shutdown or electrical trip, a yellow outline for a warning.

7.2 Event Log

The event log is the Nexus HMI's own record of what happened, newest first: devices added, removed, lost and answering again; address changes; a different device answering at a device's address; alarms raised and cleared; the gateway stopping and answering again; SCADA clients connecting; changes to settings, the network and the PIN; and package and generator commands. For example: "Battery: no reply (last seen at 192.168.1.58)", "Battery: address set to 192.168.1.61 (was 192.168.1.58)".

Touch **Refresh** to load new entries, and **Show older events** for more; up to the newest 500 are shown.

7.3 Data Kept on the Nexus HMI

The Nexus HMI keeps a record of the site's readings on its own storage, for AERL support: every reading for the last 7 days, one-minute summaries for up to a year, and daily totals, in at most about 3 GB (when it is full, the oldest one-minute summaries go first). The event log is kept for up to five years. The Nexus HMI has no history screens; the site's history is in AERL Cloud.

If the internet connection is lost, the Nexus HMI keeps the readings and sends them to AERL Cloud when the connection is back. Settings > Cloud & software shows how many are waiting.

Devices

Setting up the inverter and battery, Adding a device by hand

08

Devices is where the installer sets up what the Nexus HMI reads: the inverter, the battery and, as an add-on, the generator. It needs the PIN.

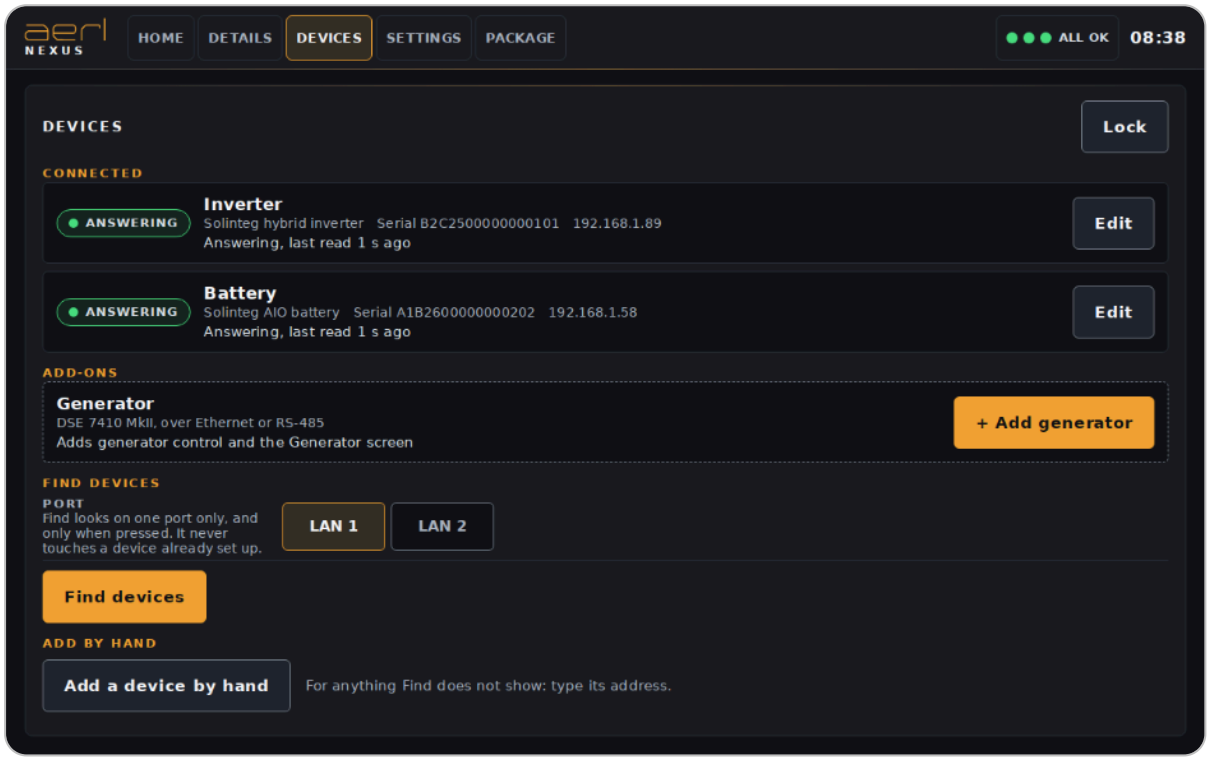


Figure 8.1 Devices

The screen has four parts:

- **Connected**: a row for each device that is set up, with its state, name, model, serial number and address, and **Edit**.
- **Add-ons**: the generator (DSE 7410 MkII, over Ethernet or RS-485).
- **Find devices**: finds the devices on the network.
- **Add by hand**: for a device that Find does not show.

8.1 Setting Up the Inverter and Battery

1. Open Devices (on a new unit, touch **Set up devices** on Home) and enter the PIN.
2. Under Find devices, choose the port the devices are on, **LAN 1** or **LAN 2**, and touch **Find devices**. Find takes up to 15 seconds.

3 Find lists what answered, each with its type, model, serial number and address. Touch **+ Add** beside the inverter, confirm, then do the same for the battery. The Nexus HMI starts reading each one straight away.

4 Check that each row under Connected says "Answering".

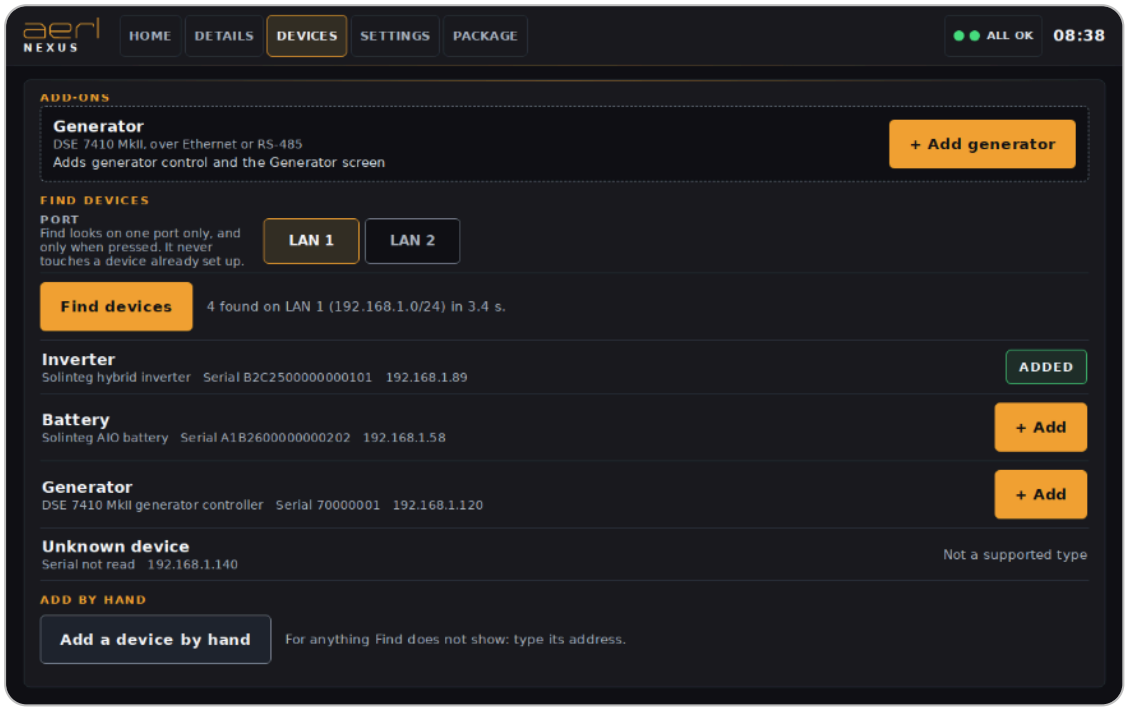


Figure 8.2 Find devices results

Find looks only on the port you choose, and only when you touch **Find devices**: the Nexus HMI never searches the network by itself, and Find never touches a device that is already set up. On a network of more than 254 addresses, only the 254 around the Nexus HMI are checked.

Each result has one action:

Result	Meaning
+ Add	A supported device that is not set up yet.
Added	Already set up at this address.
Update IP	A device that is set up, found at a new address (see When a Device's Address Changes).
Not a supported type	A device the Nexus HMI does not read.
In use by another device	It answers, but another client holds its connection, so it cannot be checked or added.
Not checked, Does not match	It answers with the ID of a device set up here, but its serial number could not be checked, or is a different one. Nothing is offered: check the device.

8.2 Adding a Device by Hand

For a device that Find does not show, touch **Add a device by hand**. Choose its **Type** (Inverter, Battery or Generator) and enter its **IP address**, **Port** (usually 502) and **Unit ID** (0 to 255; the Solinteg default is 255), then touch **Save**. Nothing is sent until Save.

8.3 Devices Are Remembered by Serial Number

The Nexus HMI reads each device's serial number the first time it answers, and remembers it with the address. From then on it uses a device's readings only while the device at that address answers with that serial number. If another device answers there (for example after two devices swap addresses when the router restarts), the device's row says "Different device at this address", and that device's readings are not used. Run Find devices to put it right.

8.4 When a Device's Address Changes

When a device stops answering, its row turns red with the reason and the address it was last seen at, and offers **Find again**.

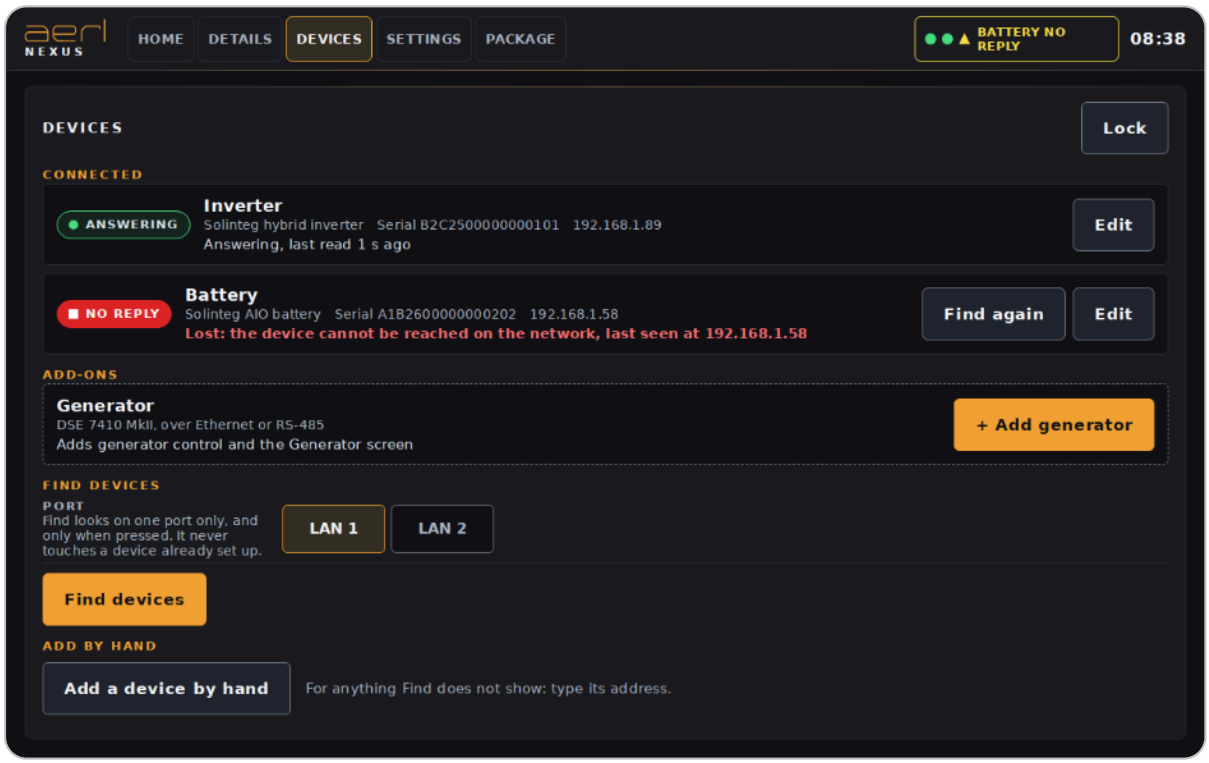


Figure 8.3 A lost device

The reason says where to look:

- "Lost: no reply" or "Lost: the device cannot be reached on the network": check the device's power, its cable and the switch. If the router may have given it a new address, use Find again.
- "Lost: device busy, another client is polling it": another Modbus client is reading the device. Disconnect it: the Nexus HMI must be the device's only client.

To move a device to its new address:

1. Touch **Find again** on its row (or **Find devices** on its port).
2. Find recognises the device at its new address by its serial number, and offers **Update IP**.
3. Touch **Update IP** and confirm. The device keeps its serial number and settings, and the event log records the change.

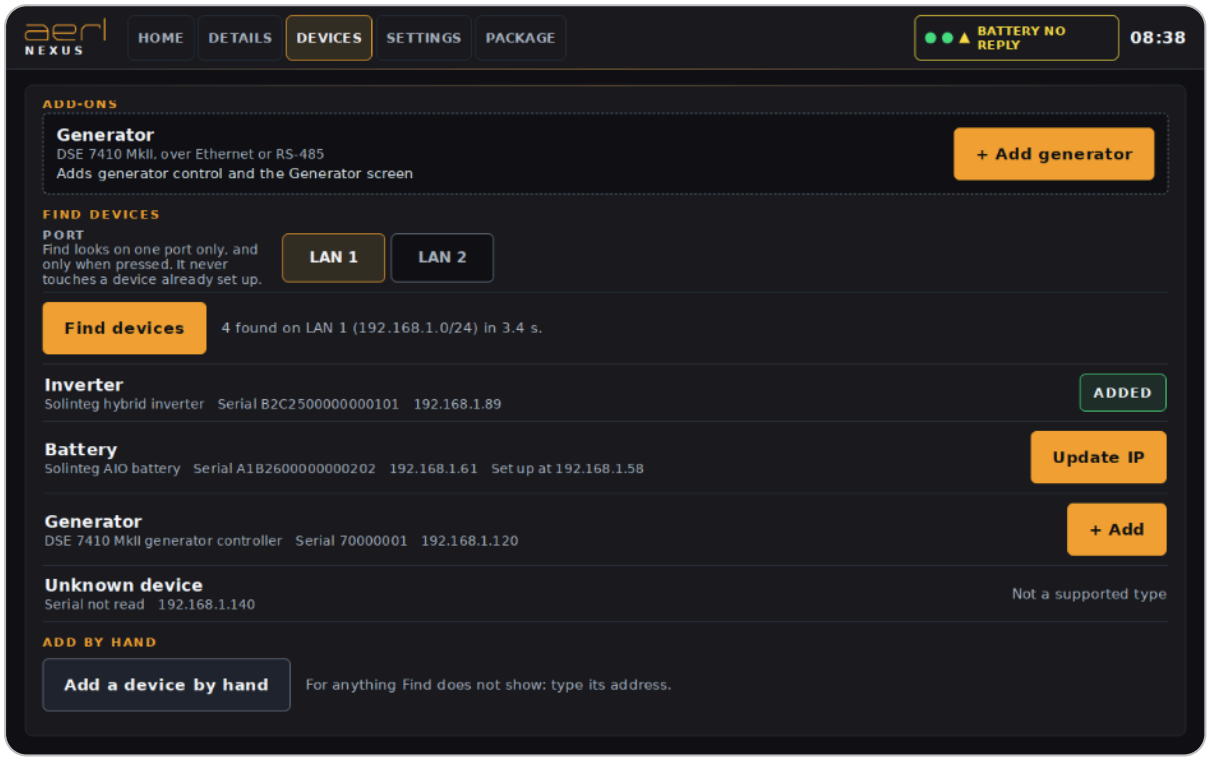


Figure 8.4 Find offers Update IP for the battery

If two devices have swapped addresses and Find saw both move, **Update IP** on one moves both.

8.5 Following a Device to a New Address

Each device's page in Devices (**Edit**) has the setting **Follow this device if its address changes**. It is **Off** by default, and AERL recommends leaving it off. The row reads: "Off (more secure): if its address changes, use Find devices and Update IP. On: the panel moves to a new address only after the device there answers with serial ...". It works only for a device on Ethernet that was added with Find devices, and only once the device has answered with its serial number.

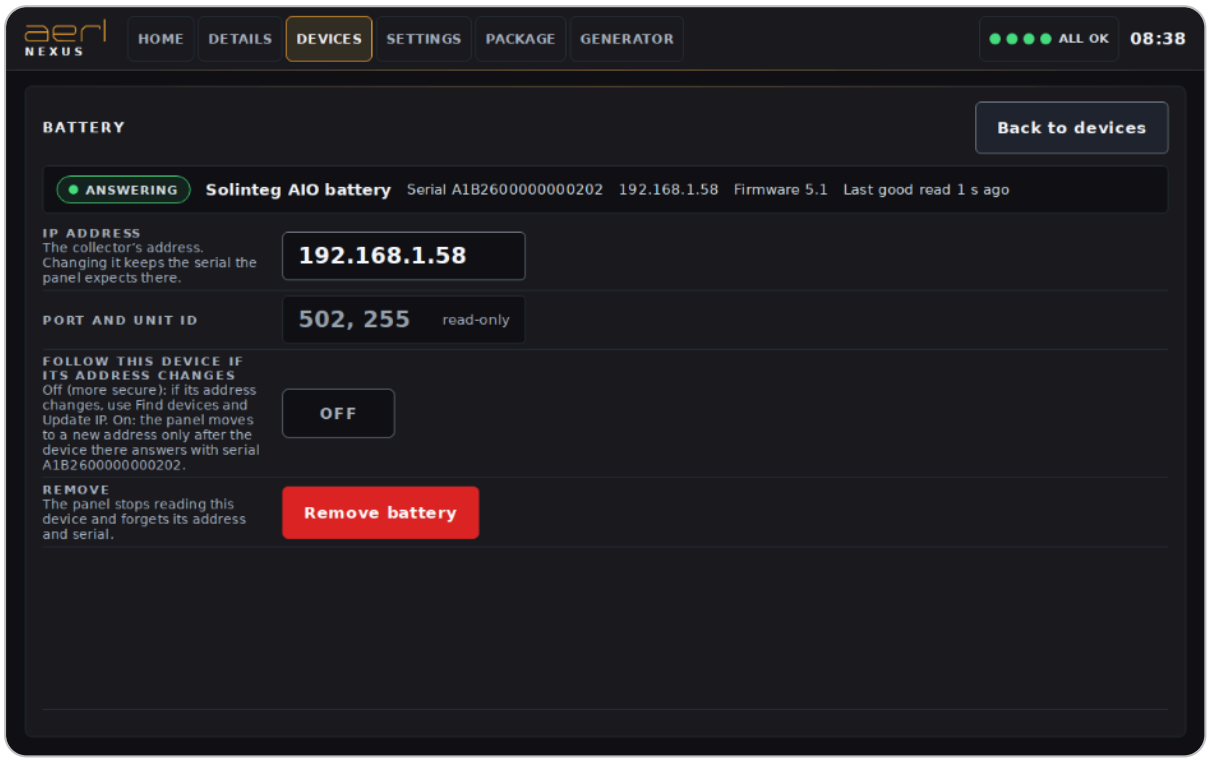


Figure 8.5 A device's page, with the follow setting off

When the setting is on and the device stops answering, the Nexus HMI looks for it on its network and moves to the new address, but only after the device at the new address answers with the remembered serial number. Each move is written to the event log.

Turning it on asks first, in a dialog titled "Follow this device?" with a red **Turn on anyway** button:

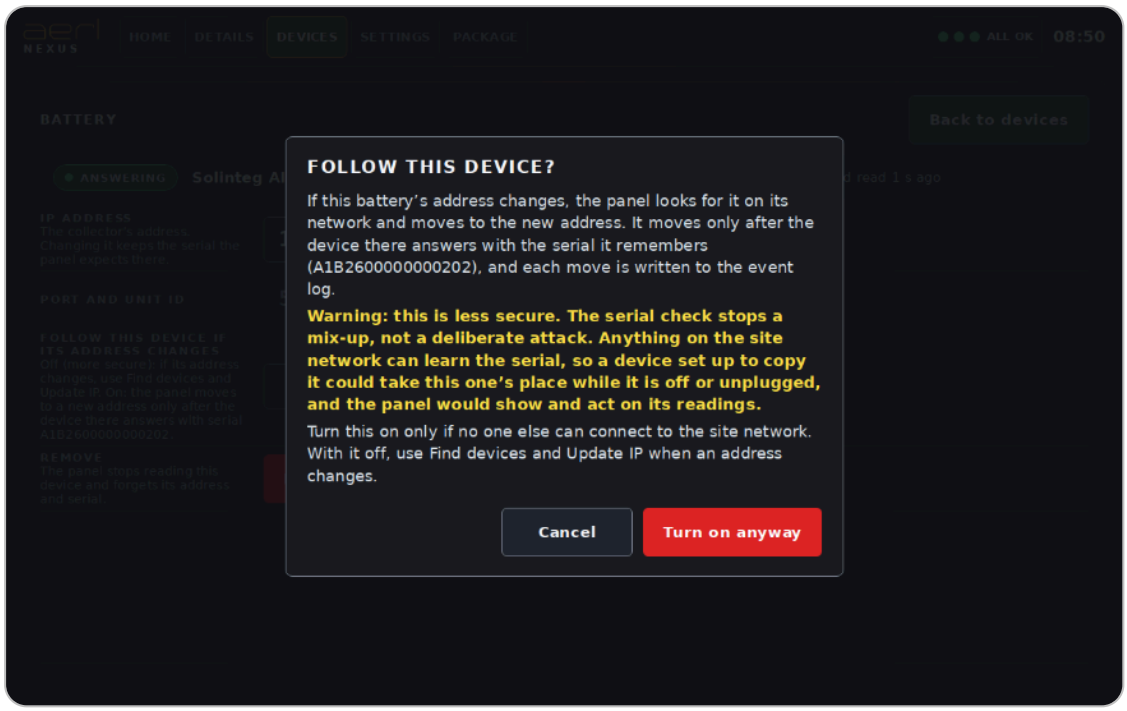


Figure 8.6 The follow warning

> **Caution**
>
> Following a device is less secure. The serial number check stops a mix-up, not a deliberate attack: anything on the site network can learn a device's serial number, so a device set up to copy it could take the real device's place while that one is off or unplugged, and the Nexus HMI would then show and act on its readings. Turn it on only if no one else can connect to the site network. With it off, use **Find devices** and **Update IP** when an address changes.

8.6 Adding the Generator

1. Touch **+ Add generator** under Add-ons, or the dashed Generator tile on Home. (If Find has listed the generator controller, you can instead touch **+ Add** beside it.)
2. Choose the **Link**: **Ethernet** or **RS-485**.
3. For Ethernet, enter the controller's **IP address**. The **Port** is usually 502, and the **Unit ID** is fixed at 10. For RS-485, choose the **Channel** (Channel 0 (A0, B0) or Channel 1 (A1, B1); one channel serves one device only), the **Baud rate** (8 data bits, no parity, 1 stop bit), and the **Unit ID** set at the controller (1 to 247, usually 10).
4. Touch **Save**. There is no connection test: the device list shows the generator connecting, then answering or no reply.

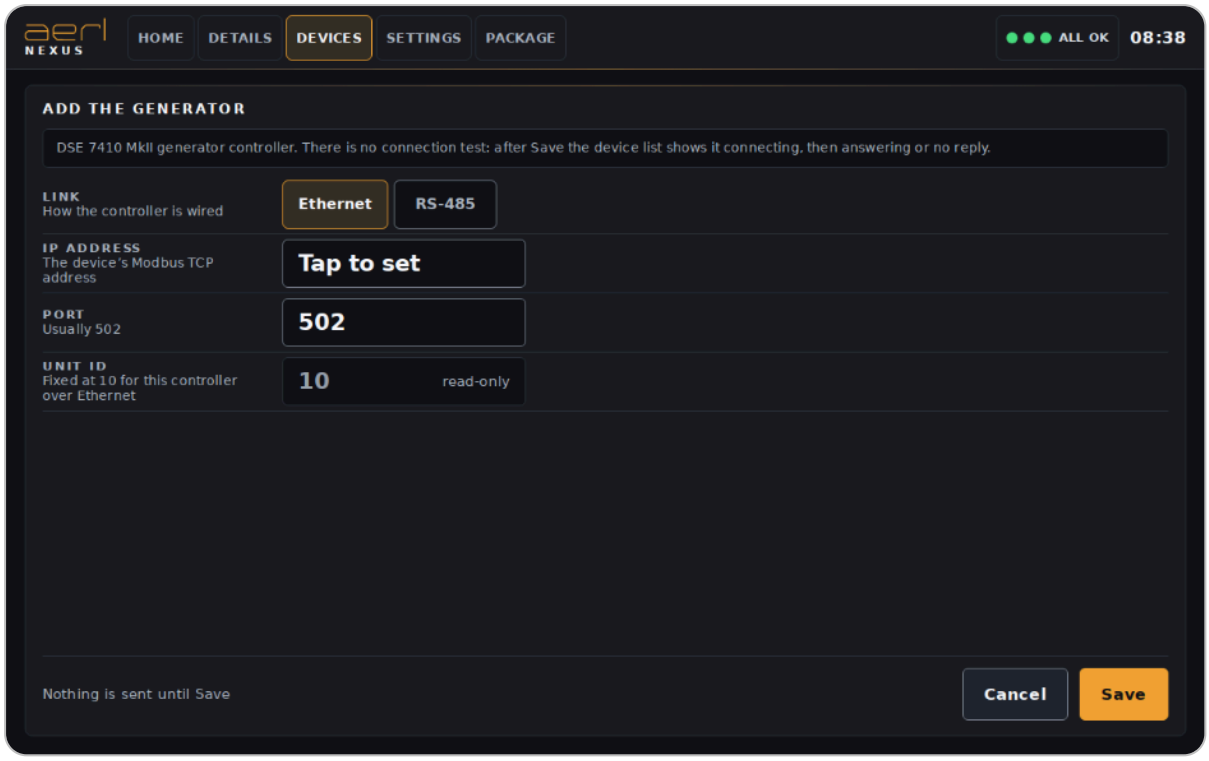


Figure 8.7 Add the generator

Once the generator is added, the **Generator** screen appears in the header, the Generator tile on Home shows its output, and Details has a Generator page. To set up generator control, touch **Edit** on the generator's row and set **Panel control** and, if the controller asks for one, the **Generator controller PIN** (see Device Settings). Quiet hours are set on the Generator screen.

8.7 Device Settings

Touch **Edit** on a device's row to open its page. It opens with the same line as Details (state, model, serial number, address, firmware, last good reading).

The inverter's and the generator's pages show the connection's state and hold its settings. Changes form a draft: touch **Apply...** to see the list of changes and confirm them, or **Revert** to discard them. **Back to devices** asks first if a change has not been applied.

Setting	Use
Polling	Read this device (On or Off).
Link	Ethernet, or RS-485 where the device offers it.
IP address, Port	The device's Modbus TCP address. The port is usually 502.
Unit ID	Inverter: 0 to 255 (the default is 255; some units use 247). Generator: fixed at 10 over Ethernet; set at the controller on RS-485 (1 to 247).

Setting	Use
Poll interval	Seconds between reads (2 to 300).
RS-485 fallback	On an Ethernet link: switch to RS-485 if Ethernet stops answering, and back when it recovers. Set the channel, the baud rate, the RS-485 unit ID (the inverter's: Settings, General Set, Modbus Addr on the inverter), how long Ethernet must fail before it switches (**Switch after**), how often Ethernet is tried while on RS-485 (**Probe every**) and how long Ethernet must keep answering before it switches back (**Return after**).

The RS-485 fallback is not tested in normal running: only one link is used at a time, so a dead RS-485 cable is not noticed until Ethernet fails. Commission it by pulling the Ethernet cable once.

The generator's page also has:

- **Panel control**: allow Auto, Manual, Stop and Start from this screen (Off or On). When it is off, the Generator screen shows the values but its buttons are greyed.
- **Generator controller PIN**: the controller's own control PIN (4 digits), only if the controller asks for one. It is sent on Apply and never shown back. The controller locks out after three wrong PINs (for 1 minute, doubling each time up to 64 minutes), so the Nexus HMI never retries a rejected PIN: enter the correct one.

On the battery's page only the **IP address** can be changed; the port and unit ID are fixed. Its readings are used only if the data logger at the new address answers with the remembered serial number.

Every device's page also has **Remove** (for example **Remove battery**): the Nexus HMI stops reading the device and forgets its address and serial number. Removing the generator also ends generator control from the Nexus HMI. A removed device can be added again.

Settings

Making a change, network, SCADA, package control, Security

09

Settings holds the Nexus HMI's own settings. It needs the PIN. The menu on the left opens **Network**, **SCADA**, **Package control**, **Security** and **Cloud & software**; **Lock** locks Settings straight away.

9.1 Making a Change

Changes to SCADA and package control form a draft ("1 unsaved change"). Touch **Apply...** to see the list of changes and confirm them, or **Revert** to discard them. The screen then shows "Settings applied", or "Not applied" if the change was not kept. Network changes go on trial instead (below).

9.2 Network

For each port, **LAN 1** or **LAN 2**, the page shows what the port has now (cable, address, netmask, gateway, DNS and its service address), and where it gets its address (**Address from**):

- **DHCP** (the default): from the site network.
- **Static**: an **IP address**, **Netmask**, **Gateway** (needed for remote support), and up to two DNS servers (optional).
- **Standalone**: the Nexus HMI runs a small network of its own on this port, for a site with no router.

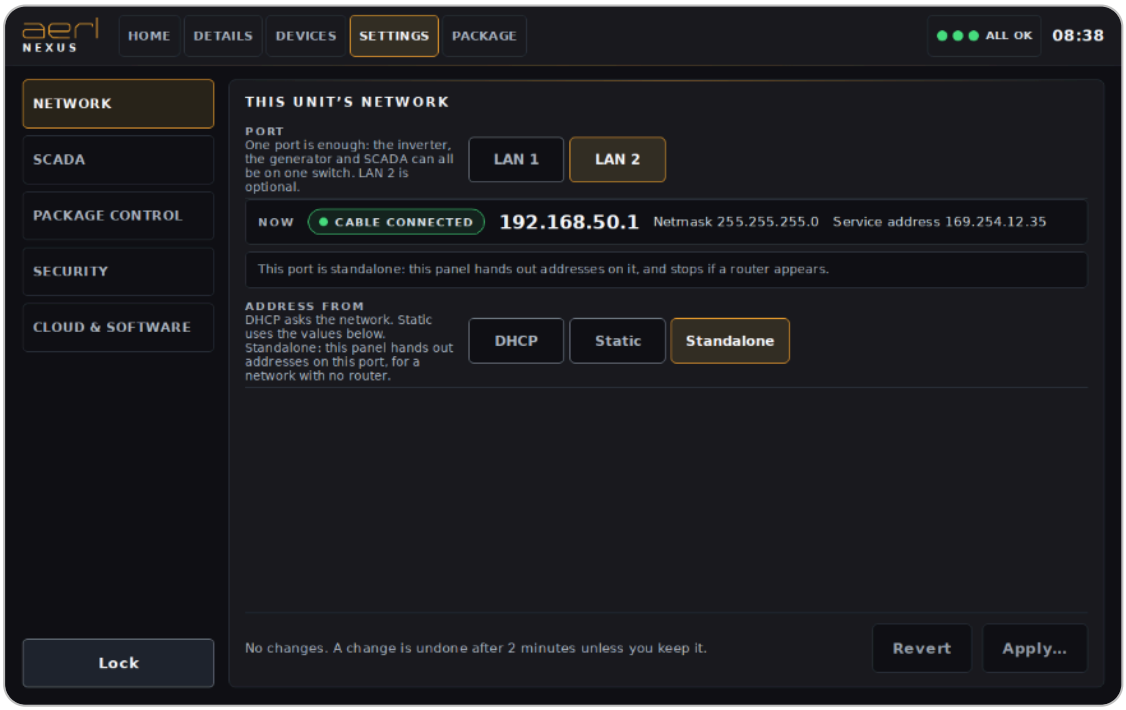


Figure 9.1 Settings: Network, with LAN 2 standalone

A network change is on trial: after you apply it, the Nexus HMI checks the new setting and undoes it by itself after 2 minutes unless you touch **Keep**. Touch **Undo** to go back straight away. While a change is on trial, a banner on every screen offers **Review**. If the new gateway does not answer, the trial says so and **Undo** is the highlighted button. This keeps a wrong setting from cutting the Nexus HMI off its network; the Nexus HMI's own screen always works, whatever the network settings.

Standalone

With **Standalone**, the Nexus HMI takes the address 192.168.50.1 on the port and gives the devices plugged into it addresses from 192.168.50.10 to 192.168.50.99. It offers them no gateway and no DNS server.

- Before it starts, it checks the port for a router, and will not start if one answers ("A router already hands out addresses on that port, so this panel will not.").
- While it runs, it keeps checking. If a router appears, it stops handing out addresses at once, the port goes back to DHCP, and a banner says so.
- Only one port can be standalone, and not the port that has the Nexus HMI's gateway to the internet.
- When the trial asks, touch **Keep** once the devices on the port have their addresses, then add them with **Find devices** on that port.

> **Caution**
> Use Standalone only on a network of its own. Do not plug a standalone port into a network that has a router: the Nexus HMI stops as soon as it sees the router, but a device could be given a wrong address in the meantime.

9.3 SCADA

The SCADA Modbus TCP server is **off by default**: nothing listens on port 502. Turn **SCADA server** on to let SCADA systems read the site over Modbus TCP. Its settings then appear:

- **SCADA writers**: the addresses allowed to send package commands (at most 16), with package control on. When Allowed clients is not empty, a SCADA writer must be in it too.
- **Bind address** (0.0.0.0 for all interfaces), **Port** (usually 502) and **Allowed clients**: who may read the data. An empty list allows local-network clients only.
- **Served units**: unit 1 (inverter), unit 10 (generator controller) and unit 100 (the Nexus HMI's status and the package control result), each with a stale limit. With no reply from a device for longer than its stale limit, SCADA reads of that unit return Modbus exception 0B.

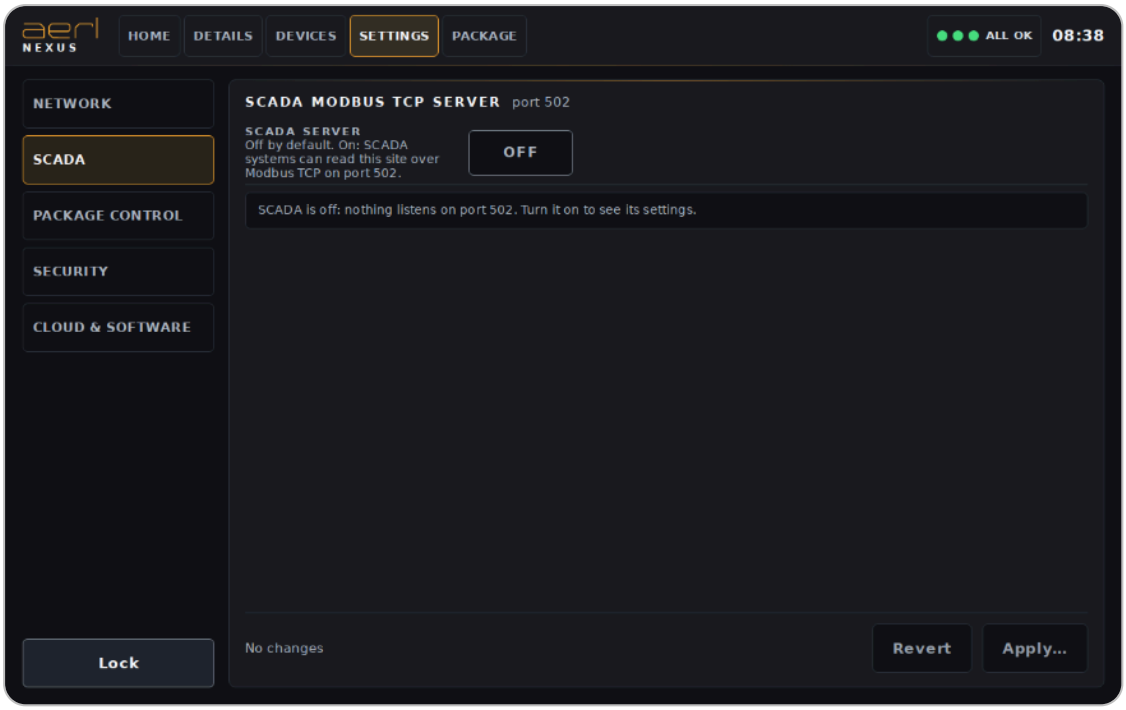


Figure 9.2 Settings: SCADA, off

Contact AERL for the SCADA register map.

9.4 Package Control

Package control is off by default. Turning it on arms **Start**, **Stop** and **Emergency stop** on the Package screen, whether SCADA is on or off. SCADA can start or stop the inverter only with both SCADA and package control on, and only from the SCADA writers listed in Settings > SCADA.

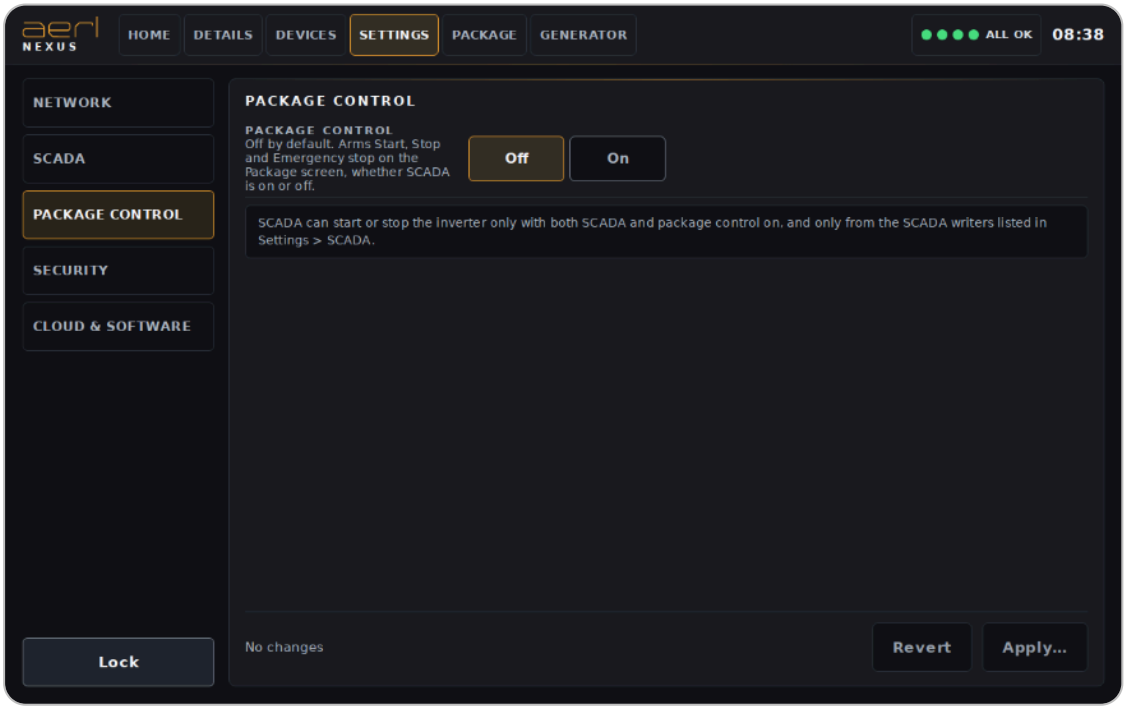


Figure 9.3 Settings: package control, off

9.5 Security

Change the installer PIN here: touch **Change PIN**, enter the current PIN, then the new PIN twice (4 to 8 digits). Until the default PIN is changed, the page shows "The default PIN is still in use. Change it now."

9.6 Cloud & Software

This page shows the cloud **Connection** (Online, Offline or Not known), the **Last upload**, the readings **Waiting to upload**, and the **Panel software** version. Quote the version when you contact AERL.

Package Control 10

The Package screen starts and stops the inverter package. It needs the PIN, and package control must be switched on in Settings > Package control.

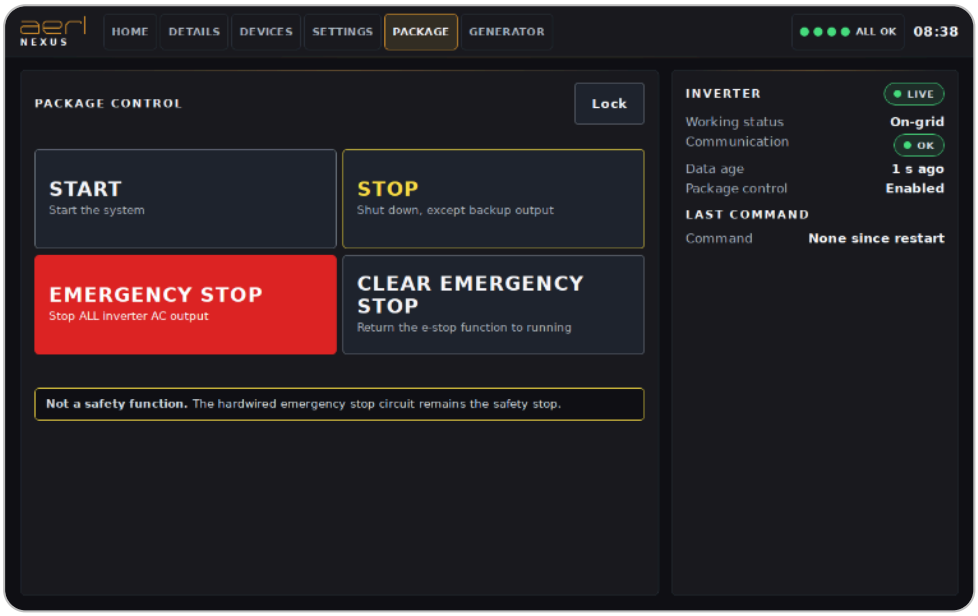


Figure 10.1 The Package screen

> **Caution**
> Package control is not a safety function. The hardwired emergency stop circuit remains the safety stop.

Button	What it does
Start	Start the system. Confirm only when it is safe to energise the system.
Stop	Shut down, except backup output. The site supply may be affected.
Emergency stop	Stop ALL inverter AC output. You are asked to confirm twice ("Yes, emergency stop").
Clear emergency stop	Return the e-stop function to running.

The panel beside the buttons shows the inverter's **Working status**, **Communication**, **Data age** and whether **Package control** is Enabled or Switched off, and the last command: its **Command**, **Counter**, **Result** (Accepted, Rejected by inverter, or No reply from inverter), **Source** (SCADA, or This touchscreen) and when it was **Sent**.

A command that has no reply may or may not have been applied: check the inverter's working status before you send it again. The Nexus HMI never repeats a command by itself.

Generator Control

Commands, when a button is greyed out, status panel, quiet hours

11

The Generator screen appears once a generator is added (see Adding the Generator in the Devices chapter). It controls the generator through its controller, and needs the PIN. **Quiet hours** opens the quiet hours page, and **Generator control** comes back.

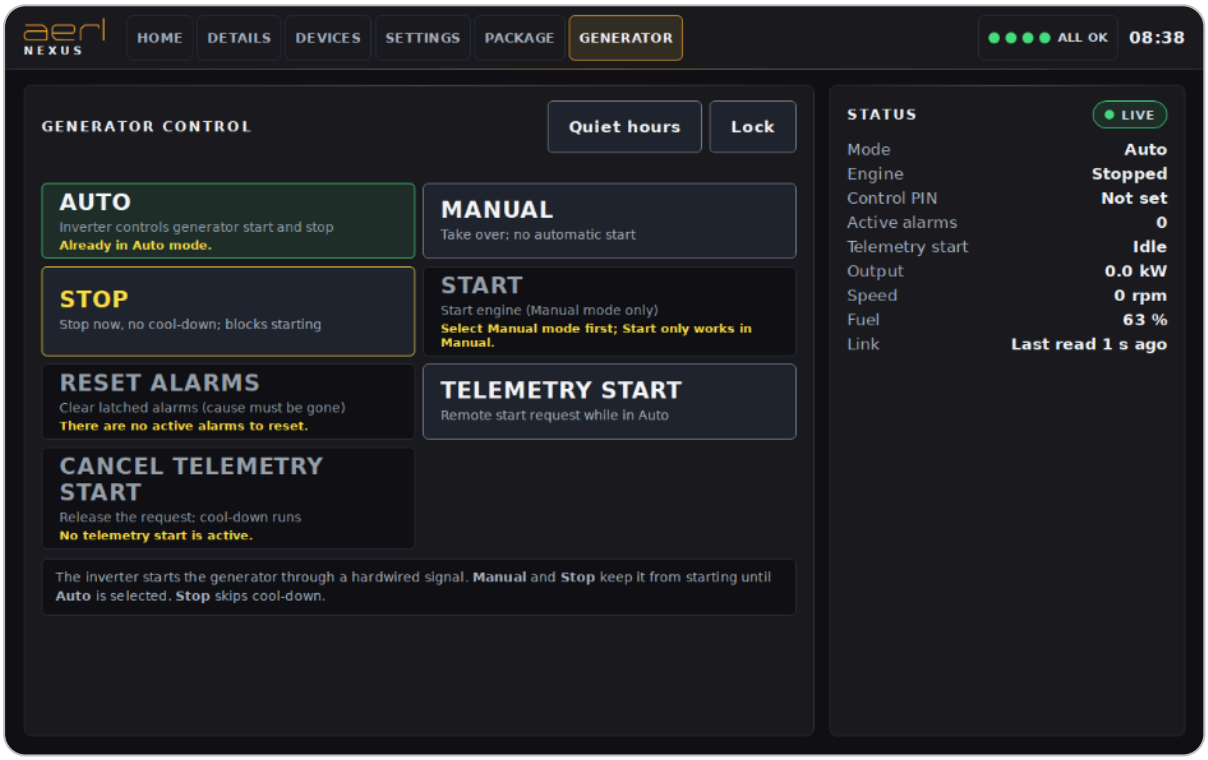


Figure 11.1 The Generator screen

11.1 Commands

Button	What it does
Auto	The inverter controls generator start and stop
Manual	Take over: no automatic start
Stop	Stop now, no cool-down; blocks starting
Start	Start engine (Manual mode only)
Reset alarms	Clear latched alarms (the cause must be gone)
Telemetry start	Remote start request while in Auto
Cancel telemetry start	Release the request; the cool-down runs

Every command opens a confirmation that states its consequence, for example "Make sure the area around the generator is clear." before a start, or "Only reset after the cause has been checked." before an alarm reset. Touch the confirm button to send it.

The inverter starts the generator through a hardwired signal. **Manual** and **Stop** keep it from starting until **Auto** is selected again. **Stop** skips cool-down.

11.2 When a Button Is Greyed Out

A command that cannot be sent is greyed, with the reason under it: for example "Already in Auto mode.", "Select Manual mode first; Start only works in Manual.", or "There are no active alarms to reset." Control is also unavailable while the generator's data is stale or disconnected, while Panel control is switched off (Devices > Generator), or while the generator controller's control PIN is missing or has been rejected.

11.3 Status Panel

The panel beside the buttons shows the generator's **Mode**, **Engine** state, **Control PIN** state, **Active alarms**, **Telemetry start**, **Output**, **Speed**, **Fuel** and **Link**, the quiet hours state, and the result of the last command as the Nexus HMI follows it (for example cranking, running up, running, or failed to start).

11.4 Quiet Hours

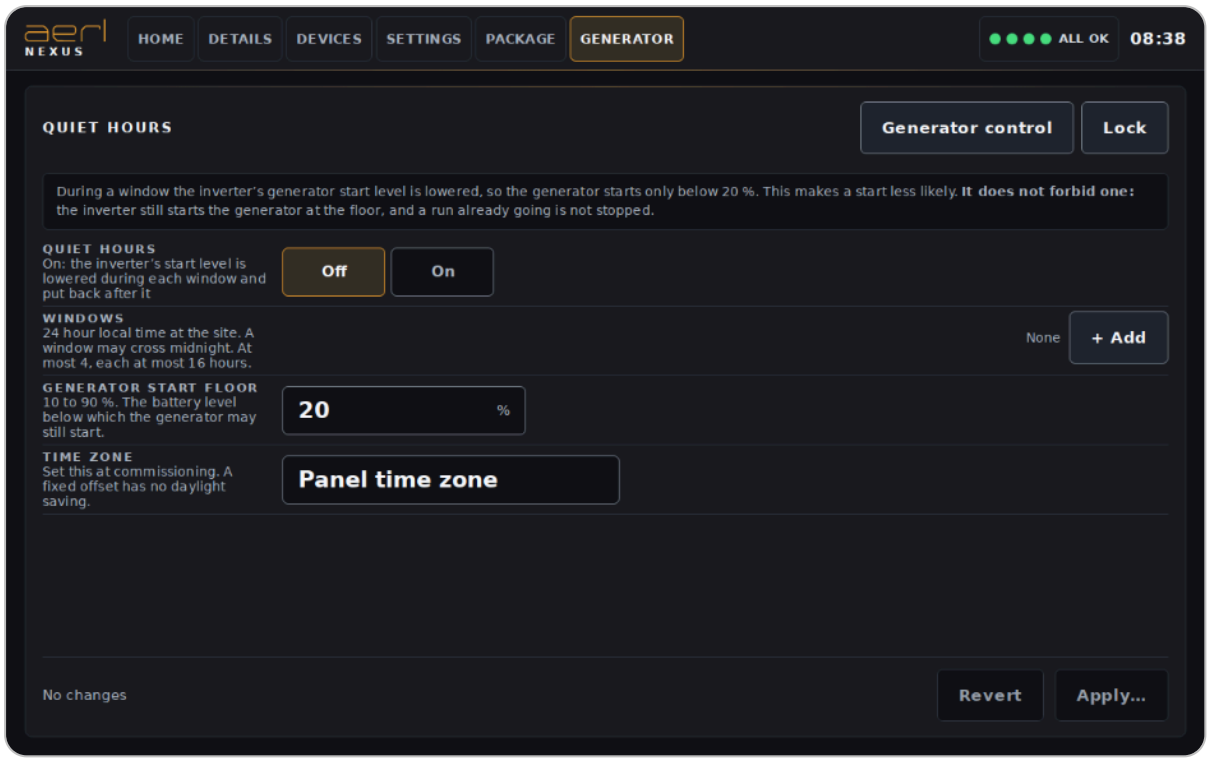


Figure 11.2 Quiet hours

During a quiet-hours window the inverter's generator start level is lowered, so the generator starts only below the generator start floor. This makes a start less likely. It does not forbid one: the inverter still starts the generator at the floor, and a run already going is not stopped.

- **Quiet hours**: Off or On.
- **Windows**: touch **+ Add** and enter the start and end times, in 24-hour local time at the site. A window may cross midnight. At most 4, each at most 16 hours.
- **Generator start floor**: 10 to 90%. The battery level below which the generator may still start.
- **Time zone**: the panel's time zone, or a fixed UTC offset. Set this at commissioning. A fixed offset has no daylight saving.

Touch **Apply...** and confirm. Quiet hours need the Nexus HMI's clock to be right: until it is, the page says "Quiet hours are not active: the panel has no trusted clock yet."

If a start is requested from this screen during quiet hours, the confirmation says so. A telemetry start is held back once: the screen says "Quiet hours are active" and offers **Start anyway** or **Do not start**.

Troubleshooting 12

The Nexus HMI shows a banner across the top of the screen, or a word in the header status, when something is wrong. It keeps trying in the background and recovers by itself when the cause is fixed. Touch the header status to see which device needs a look.

What the screen shows	What to do
"The screen has lost contact with the Nexus. Retrying... Values below are not live."	The Nexus HMI's own software is restarting. Wait a minute. If it stays, switch the Nexus HMI off and on again.
"The gateway is not responding. Waiting for it to come back..."	As above. If it stays after a restart, contact AERL support.
"Settings cannot be read from the gateway."	Wait a minute and open the screen again. If it stays, contact AERL support.
Find: "Nothing found on LAN 1", or "That LAN port has no network address."	Check the port's cable, and that the devices have power and are on that port's network. Try the other port, or add the device by hand.
"Lost: no reply" or "Lost: the device cannot be reached on the network", or a Home tile showing "No reply"	Check the device's power, its cable and the switch. If its address may have changed, touch **Find again**, then **Update IP**.
"Lost: device busy, another client is polling it"	Another Modbus client is reading the device. Disconnect it: the Nexus HMI must be the device's only client.
"Different device at this address"	Another device now has this device's address. Run **Find devices** and use **Update IP**.
Battery tile "BMS no reply · from inverter"	The battery's data logger is not answering, so Home shows the inverter's battery values. Check its power and cable, then Devices.
"Inverter: Ethernet and RS-485 links are both down." (or Generator)	Check the device has power, the Ethernet cable and switch, the RS-485 wiring, and the device's settings (Devices > Edit).
Generator buttons greyed	Read the reason under each button. Check that Panel control is on (Devices > Generator), that the Control PIN is Accepted, and that the generator's data is live.
Control PIN Rejected or Locked out	Enter the correct generator controller PIN (Devices > Generator). After a lock-out, wait for it to clear before you try again.
"Generator will not start from the inverter: the controller is in Manual mode."	Select **Auto** on the Generator screen when the inverter should control the generator.

What the screen shows	What to do
Package buttons greyed	Switch on package control (Settings > Package control), and check that the inverter's data is live.
"Package control is not available.", "This Nexus does not offer package control yet. A software update is needed." or "Control is not available: the controller is not running on this Nexus."	Contact AERL support.
"Dry run: commands are logged, not sent."	Choose Off or On for package control (Settings > Package control) or Panel control (Devices > Generator) to leave the dry run.
"A router already hands out addresses on that port, so this panel will not."	Standalone is only for a network of its own. On a network with a router, use DHCP.
"LAN 1: this panel stopped handing out addresses, because a router appeared."	A router was connected to the standalone port's network, and the port is back on DHCP. Touch **Review**.
"Network change on LAN 1 not confirmed. It will be undone within 2 minutes."	Touch **Review**, then **Keep** or **Undo**.
"LAN 1: the gateway ... is not answering, so remote support may not work."	Check the gateway address (Settings > Network) and the router.
Lost network access after a network change	Touch **Undo**, or wait 2 minutes: the previous setting is restored by itself unless you touched **Keep**.
Cloud Offline	Check the site's internet connection. Readings are kept on the Nexus HMI and sent when the connection is back.
"Session expired. Enter PIN again."	Enter the PIN again.
"Too many attempts. Try again in ... s."	Wait, then enter the correct PIN.
The clock, or the times in the event log, are behind after a power cut	After a power cut, the Nexus HMI's clock can be behind until it reaches the internet. With no internet connection it stays behind.

If your situation is not covered here, contact AERL support on 1800 950 865 or at support@aerl.com.au. Have the Nexus HMI's serial number, the panel software version (Settings > Cloud & software) and a photo of the screen ready.

Warranty

Change log

13

The Nexus HMI has a **2-year warranty**. It starts 30 days after AERL dispatches the Nexus HMI, or on the day it first connects to AERL Cloud if that is sooner.

Register your Nexus HMI at **aerl.com.au/warranty-registration**. Registration does not change the 2-year warranty.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

The full terms and the claim procedure are in the AERL Nexus HMI (HMI-10) Warranty Statement, at aerl.com.au.

13.1 Change Log

Revision	Date	Change
1.0.0	11 / 2026	First issue.
1.1.0	11 / 2026	Rewritten for the Nexus HMI software that ships on all units: Home energy diagram, Details, Devices (Find devices, devices remembered by serial number, Update IP, the follow setting, the generator add-on), Settings (standalone network, SCADA off by default, package control switch), quiet hours on the Generator screen.
1.1.1	11 / 2026	HMI-10 renamed Nexus HMI.

Thank You for Choosing AERL

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

Sincerely,

The AERL Team

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