WIT 50–150K Installation & Commissioning Quick Guide

Additional Resources

WIT 50–150K-XHU-US
Quick Guide · Datasheet

Approved Battery List
C&I · WIT 50–150K page

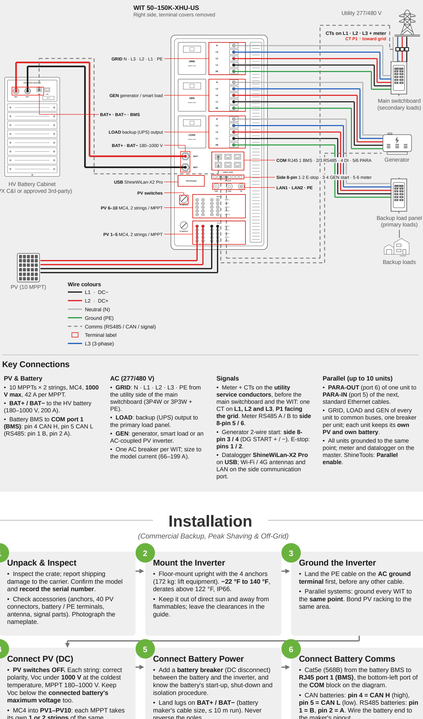
Growatt OSS
Installer web portal

ShineTools App
iPhone · App Store
Web: oss.growatt.com

ShineTools App
Android · Google Play
Web: oss.growatt.com

Growatt Support: 1-866-686-0298

Wiring & Connection Terminals



Key Connections

PV & Battery

- 10 MPPTs • 2 strings, MC4, **1000 V max**, 42 A per MPPT.
- **BAT+ / BAT–** to the HV battery (180–1000 V, 200 A).
- Battery BMS to **COM port 1 (BMS)**; pin 4 CAN H, pin 5 CAN L (RS485: pin 1 B, pin 2 A).

AC (277/480 V)

- **GRID**: N · L1 · L2 · L3 · PE from the utility side of the main switchboard (3P4W or 3P3W + PE).
- **LOAD**: backup (UPS) output to the primary load panel.
- **GEN**: generator, smart load or an AC-coupled PV inverter.
- One AC breaker per WIT; size to the model current (86–199 A).

Signals

- Meter + CTs on the **utility service conductors**, before the main switchboard and the WIT: one CT on **L1, L2 and L3**. **P1 facing the grid**. Meter RS485 A / B to **side 8-pin 5 / 6**.
- Generator 2-wire start: **side 9-pin 3 / 4** (DG START + / –). E-stop: **pins 1 / 2**.
- Datalogger **ShineWiLan-X2 Pro** on **USB**; Wi-Fi / 4G antennas and LAN on the side communication port.

Parallel (up to 10 units)

- **PARA-OUT** (port 6) of one unit to **PARA-IN** (port 5) of the next, standard Ethernet cables.
- GRID, LOAD and GEN of every unit to common buses, one breaker per unit; each unit keeps its **own PV and own battery**.
- All units grounded to the same point; meter and datalogger on the master. ShineTools: **Parallel enable**.

Installation

(Commercial Backup, Peak Shaving & Off-Grid)

1 Unpack & Inspect

- Inspect the crate; report shipping damage to the carrier. Confirm the model and **record the serial number**.
- Check accessories (anchors, 40 PV connectors, battery / PE terminals, antenna, signal parts). Photograph the nameplate.

2 Mount the Inverter

- Floor-mount upright with the 4 anchors (172 kg: lift equipment). **–22 °F to 140 °F**; derates above 122 °F. IP66.
- Keep it out of direct sun and away from flammables; leave the clearances in the guide.

3 Ground the Inverter

- Land the PE cable on the **AC ground terminal** (M5 lug, 4 mm² cable).
- Parallel systems: ground every WIT to the **same point**. Bond PV racking to the same area.

4 Connect PV (DC)

- **PV switches OFF.** Each string: correct polarity. Voc under **1000 V** at the coldest temperature, MPPT 180–1000 V. Keep Voc below the **connected battery's maximum voltage** too.
- MC4 into **PV1–PV10**; each MPPT takes its own **1 or 2 strings** of the same modules. **Never parallel MPPTs**; no Y-branch or jumper joining strings of different MPPTs, and no string split across two MPPTs (it can false-trip the AFCI).

5 Connect Battery Power

- Add a **battery breaker** (DC disconnect) between the battery and the inverter, and know the battery's start-up, shut-down and isolation procedures.
- Land lugs on **BAT+ / BAT–** (battery maker's cable size, ≤ 10 m run). Never reverse the poles.

6 Connect Battery Comms

- CatSe (568B) from the battery BMS to **RJ45 port 1 (BMS)**, the bottom-left port of the **COM** block on the diagram.
- CAN batteries: **pin 4 = CAN H** (high), **pin 5 = CAN L** (low). RS485 batteries: **pin 1 = B**, **pin 2 = A**. Wire the battery end to the maker's pinout.
- Check addressing, termination and BMS software against the **Approved Battery List** on the WIT 50–150K product page at us.growatt.com (or scan the QR code all the top). Batteries without comms are not supported.

7 Connect GRID (AC input)

- **N · L1 · L2 · L3 · PE** from a dedicated breaker on the utility side (277/480 V, 3P4W or 3P3W + PE), 1/0–3/0 AWG copper.
- Crimp a **ring terminal** (OT type) with heat-shrink on each conductor, torque to **69 lbf-in**, then refit the AC cover.

8 Connect LOAD (AC output)

- Backup (UPS) output to the **primary load** panel: ≤ 10 ms transfer; 100 % unbalanced, 110 % continuous / 160 % 10 s.
- Loads that may go dark in an outage stay on the **main switchboard**: the building's main distribution panel, top right on the wiring diagram (secondary loads).

9 Connect Meter & CTs

- Mount the **Growatt meter** at the service entrance. One CT on each of **L1, L2, L3** between the utility and the main switchboard, so they see the whole site; **P1 faces the grid**, P2 the WIT / loads.
- Meter RS485 **A to pin 5**, **B to pin 6** of the **side 8-pin**: the 8-way terminal strip on the right edge of the COM block. A Growatt meter is required for export limitation.

10 What goes on the GEN port?

Generator
Gas / diesel, smart start

Smart load
SOC-programmed output

AC couple
Existing PV inverter

Nothing
Go to Step 11

Generator wiring

- Generator L1–L3 / N / PE to **GEN**.
- Generator 2-wire auto-start input to **side 9-pin 3 / 4** (DG START + / –), the 8-way strip on the right edge of the COM block. Settings: **Step 23**.

Smart load wiring

- A load you can shed (EV charger, water heater, pump) on **GEN**. It runs on-grid and off-grid, but off-grid the WIT **cuts it off at ≤ 50 % SOC** or when total load reaches **1.1 × rated**, saving the battery for the backup loads.
- Settings: **Step 23**.

AC couple wiring

- Grid-tied PV inverter output on **GEN**; keeps producing off-grid.
- Settings: **Step 23**.

11 Parallel (optional)

- Up to **10 units**. **PARA-OUT** (port 6) of one unit to **PARA-IN** (port 5) of the next with standard Ethernet cables; all units to one ground point.
- **AC**: each unit's GRID, LOAD and GEN through its own breaker to the common grid bus, backup load panel and generator bus.
- **DC**: each unit has its **own PV strings and its own battery** (BAT+ / BAT– and BMS cable to that unit). Batteries are not shared.
- Meter and datalogger on the master. ShineTools: **Quick Setting**, **Parallel parameter setting**, **Parallel enable**.

12 Connect Datalogger & E-Stop

- Plug the **ShineWiLan-X2 Pro** datalogger into **USB**; fit the Wi-Fi (and 4G) antenna on the side communication port.
- Optional **emergency stop** (E-stop) switch on **side 9-pin 1 / 2**; it shuts the WIT down. It is **not** PV rapid shutdown. DRMS / DI on **RJ45 port 4**.
- Seal unused RJ45s with their caps.

13 Check & Power On

- Terminals tight, polarity, seals, covers and conduit fittings all checked; verify voltages and string short-circuit current.
- **PV switches** on, then the **GRID** breaker, then the **battery breaker** and the battery's own switch. The WIT starts by itself, then close **LOAD / GEN**.

Commissioning

14 Download the ShineTools App

- Scan the **ShineTools App** code at the top of this guide and install it.
- Select your login region, language and account type, then log in with a Growatt **installer account** and tap **Quick Site Setup**. No installer or O&M account yet? Call **1-866-686-0298** to set one up in a few minutes.
- Web portal for monitoring and service: **Growatt OSS** at **oss.growatt.com** (QR code at the top).

15 Create End User

- Tap **Create New User** and fill in the **end user's** information (the site owner).
- Existing owner? Tap **Server user** to find them. Tap **Next**.

16 Create New Plant

- Fill in the plant information to add a new plant under that user.
- Tap **Next**.

17 Add Device

- Tap **Datalogger S/N** and scan the QR code on the **ShineWiLan-X2 Pro** you plugged into USB (or **Manual entry**). Its light must be **solid blue**: press its button once if it flashes.
- Tap **Confirm**; binding takes about 5 s.
- **First check** on the ShineTools device home page: live PV, battery (SOC and power), grid and load values, meter power that changes with the load, and no faults or alarms.

18 Network Configuration

- Connect first, so the upgrade can download. Select the site's **2.4 GHz** Wi-Fi, or **LAN** with an Ethernet cable into the **LAN** port on the side communication port.
- Advanced Settings password: **growattYYYYMMDD** (today's date).

19 Upgrade Equipment

- ShineTools compares the WIT firmware with the latest version. If an update is available you are prompted: tap **Upgrade** and keep the network stable. To check again later, open **Quick Site Setup**, then **Upgrade Equipment**.
- No network on site? Get the file from Growatt service and upgrade with a **USB flash drive**.

20 Country & Regulation

- Select the utility's grid code. Check the WIT date and time before connecting to the grid.

21 Meter & Export Limit

- **Meter Enable**: ON whenever the Growatt meter is installed (Step 9).
- **Export Limit Setting** (under EMS in ShineTools): enable it, then set the **export limit power** (0 % = zero export; −1 to −2 % for strict utilities).
- Choose a **three-phase** (total) or **per-phase** limit, and set the **failure power** used if the meter stops reporting.

22 Battery Settings

- **Battery Settings**: charge / discharge power limits, max charge / discharge current, **charge / discharge cut-off SOC**.
- **AC Settings**: off-grid cut-off SOC and recovery, grid charge / discharge power.

Which battery?

Growatt APX C&I
CAN BMS

3rd-party, on the list
CAN BMS

Not on the list
Ask Growatt first

APX settings

- Select the **Growatt** protocol; limits come from the BMS over CAN.
- Set the cut-off SOCs for the site (e.g. discharge **10 %**, off-grid **20 %**).

3rd-party (with comms)

- Select the battery protocol in **Battery Settings** and match the BMS software version on Growatt's **Approved Battery List for C&I** on the WIT 50–150K product page at us.growatt.com (or scan the QR code at the top).
- BMS cable to **RJ45 port 1 (BMS)**: pin 4 CAN H, pin 5 CAN L. Set max current and cut-off SOCs per the battery maker.

Unlisted battery

- Unlisted C&I batteries aren't supported. Email **info@growatt.com** to request validation before installing.

23 Set the Working Mode

- ShineTools **EMS**, then **Working Mode**, plus **Generator And Smart Load**. TOU periods override the default mode.

Load First (default)
PV powers the loads first, then charges the battery, then exports. Maximum self-consumption, least export. **Best for:** cutting energy bills.

Battery First
PV charges the **battery first**, then powers the loads, and exports only once the battery is full; the grid can top up the battery if allowed. Holds a high SOC. **Best for:** backup / UPS readiness.

Grid First
Exports PV and battery energy to the grid. **Best for:** export revenue / market trading.

Time of Use
Up to **6** non-overlapping daily periods, each with its own mode and power. **Best for:** rate arbitrage and peak shaving.

Peak Shaving
Set an **Import limit**: the most power the site may draw from the grid. When the load goes above it, the battery covers the difference, down to the **Reserved SOC for Peak Shaving**. When the load is below it, spare power recharges the battery to that reserve. **Best for:** cutting demand charges.

GEN Port Device
Tell the WIT what is on the GEN port (**Generator And Smart Load**, then **Type of Device Connected to GEN Port**). **Generator:** Generator Enable, the off-grid start SOC, warm-up time and charging power. **Smart Load:** the shed-able load from Step 10. **Photovoltaic Inverter:** AC-coupled PV.

Monitoring & Final Check

24 Check the System

- ShineTools home page: battery status, PV, grid and load readings; no faults or alarms.
- Test an off-grid transfer.
- **Your installation is done!**

25 Growatt OSS

- Log in at **oss.growatt.com** with the installer account: confirm the plant, datalogger, inverter and meter are online and reporting.
- Monitor and service the site in **OSS** (web) and **ShineTools** (app).

26 Hand Over

- Give the end user the login created in **Step 15**. They can now monitor the site in the app.
- Shutdown: send the **shutdown command** in the app or OSS, wait until the WIT is fully off, then open the switches in reverse **order**. The app alone does **not** isolate every source.
- Help: **1-866-686-0298**.