Micro■Inverter Installation Guide (EU – Generic, Brand■Free)

Extended installer handout with troubleshooting and checklist. For trained electrical installers only.

Safety notice: PV DC circuits may be live in daylight. Isolate AC supply before work. Use appropriate PPE and follow local electrical and grid■connection rules.

1) Scope & Applicable Standards (EU)

This guide provides generic installation and commissioning steps for grid■tied micro■inverters used with PV modules. For EU installations, comply with applicable national wiring rules based on IEC 60364, and the applicable grid connection standard EN 50549 (local DSO requirements may add settings or paperwork).

2) System Overview (Typical)

- PV module(s) connected to DC inputs on each micro■inverter (MC4■type connectors are common).
- AC output from micro■inverter(s) connected in parallel via an approved AC trunk/branch cable to a dedicated AC circuit.
- Dedicated protections at distribution board: MCB (overcurrent) and RCD/RCBO (residual current protection) as required by national rules and inverter type.
- Protective earth (PE) bonding for PV frames/mounting structure and inverter casing/ground terminal.
- Optional monitoring via Wi■Fi/Bluetooth function if present.

3) Pre■Installation Checks

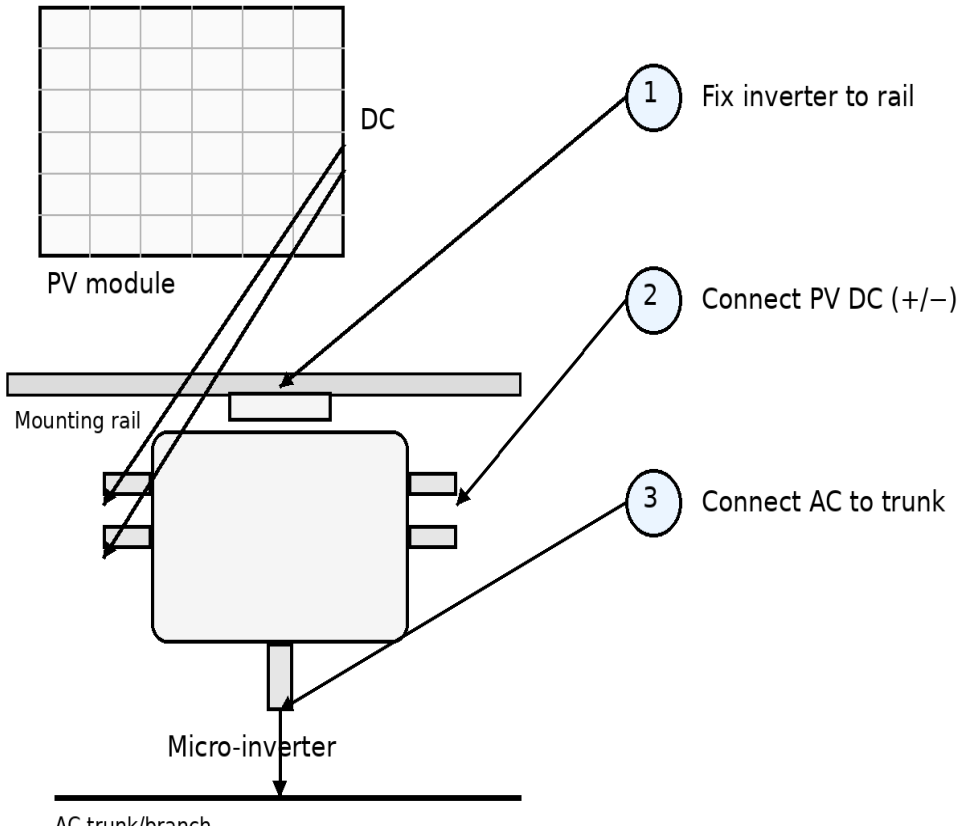
- **Site**: dry, ventilated, and accessible for service; keep clear of heat sources and direct water jets.
- **PV electrical**: Verify PV open■circuit voltage (Voc) and maximum power are within the inverter's DC input limits; verify connectors are compatible and undamaged.
- **AC circuit**: Confirm nominal grid voltage/frequency and earthing arrangement (TN/TT) and that a dedicated circuit with correct protection is available.
- **Branch loading**: Do not exceed the manufacturer's maximum number of micro■inverters per AC branch or cable current rating.
- **Tools**: torque tools as required, multimeter (CAT rated), insulation tester if required by local practice, and appropriate MC4 tools if field terminations are used.

4) Mechanical Installation (Mounting)

- Attach each micro■inverter to the PV mounting rail/bracket using the specified mounting hardware. Keep ventilation gaps clear.
- Mount beneath the PV module where possible to reduce DC cable length and UV exposure of cables.
- Route cables to avoid sharp edges, pinch points, and standing water; secure with UV■rated clips/ties.

Diagram A – Mounting & DC/AC connection sequence (neutral)

Diagram A – Mounting & Connections (Illustrative)



5) DC Wiring (PV Side)

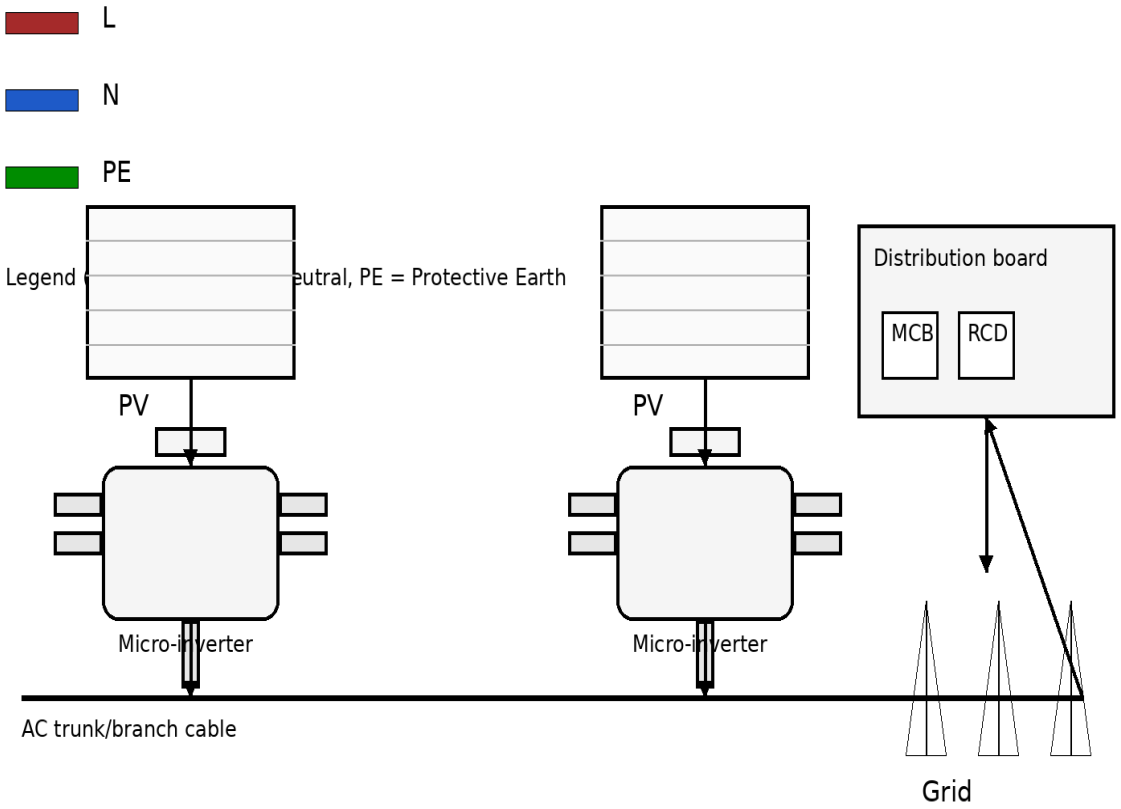
- With AC isolated, connect the PV module DC leads to the micro■inverter DC inputs.
- Observe polarity (+/–). Never force connectors; verify locking features are engaged.
- If multiple inputs exist, connect one PV module per input as intended (do not parallel PV strings unless specifically permitted).
- Ensure DC connectors and cable glands remain weather■sealed (IP rating depends on correct assembly).

6) AC Wiring (Grid Side)

- Open any waterproof AC connector covers only when ready to terminate, to prevent contamination.
- Connect micro■inverter AC output to the approved branch/trunk cable and lock connectors fully.
- Connect the branch circuit to a dedicated protective device at the distribution board (MCB and RCD/RCBO as required).
- Maintain correct conductor identification: L (line), N (neutral), PE (protective earth). Follow harmonised colour codes used in your installation.

Diagram B – AC conductors (L/N/PE) and typical system layout (neutral)

Diagram B – AC Conductors & System Layout (Illustrative)



7) Grounding / Bonding

- Connect the micro■inverter protective earth to the installation PE conductor and bond PV module frames and mounting structure per IEC 60364■based national rules.
- Verify PE continuity (low resistance) from inverter chassis to main earth terminal.
- If the site uses TT earthing, ensure RCD/RCBO selection and bonding are consistent with national requirements.

8) Commissioning & Functional Checks

- Close all covers and confirm connectors are fully seated and sealed.
- Energise the AC branch circuit. The micro■inverter typically waits for acceptable grid parameters, then synchronises automatically when PV power is sufficient.
- Confirm production using the monitoring interface (if available) or by observing export at the meter (where permitted).
- Record installation data: location, circuit ID, protections, and serial numbers (for warranty and O&M;).

9) Monitoring Setup (Wi■Fi/Bluetooth – if equipped)

- Perform monitoring setup only after the inverter is correctly installed and operating.
- Use a smartphone/tablet with Bluetooth enabled and connect to a stable 2.4 GHz Wi■Fi network available at the inverter location (signal strength is critical).
- If the device cannot be found, use the inverter's Wi■Fi reset function (press/hold per device instructions) and re■add in the app.
- Note: at night the inverter may be unpowered (no PV input) and monitoring may appear offline.

10) Troubleshooting (Field Quick Guide)

Symptom	Likely causes	What to check / actions
No AC output / zero export in daylight	AC breaker/RCD open; no grid; PV not feeding	Verify grid voltage present; check MCB/RCD/RCBO; verify PV Voc
Inverter does not start after AC ON	PV voltage too low; wiring/polarity error; inverter waiting for grid	Measure PV DC at inverter input; check polarity; verify grid voltage
Frequent disconnects / cycling	Grid outside limits; weak grid; loose AC connection	Check voltage/frequency variation; inspect AC connectors and bra
Monitoring offline / not discoverable	Weak Wi■Fi; phone not on same network; inverter not powered	Move inverter/router; ensure phone Wi■Fi matches; confirm inver
RCD trips	Leakage current; wiring fault; incorrect RCD type; PE/N separation	Inspect DC/AC insulation, cable damage, moisture ingress; verify R

11) Maintenance & Periodic Checks

- Visually inspect annually: cable UV damage, connector seals, mounting tightness, corrosion.
- Keep ventilation paths clear; remove debris and ensure no standing water around connectors.
- After storms or works on the distribution board, confirm the PV circuit protections remain correctly labelled and functional.

One■Page Installer Checklist (EU – Generic)

Tick and file with commissioning records.

1 ■ Permits/DSO requirements checked (if applicable) and grid connection standard confirmed.
2 ■ Work area safe; AC isolated; PV DC treated as live in daylight.
3 ■ Micro■inverter mounted securely; ventilation clear; cables strain■relieved and UV■rated.
4 ■ PV Voc and module power verified within inverter DC input limits.
5 ■ DC polarity verified (+/–); connectors fully seated and sealed; no damaged insulation.
6 ■ Branch/trunk cable rating verified; maximum devices per branch not exceeded.
7 ■ Protective devices installed and labelled: MCB and RCD/RCBO as required.
8 ■ PE bonding complete for inverter, PV frames, and mounting structure; continuity tested.
9 ■ AC L/N/PE terminations correct; torque applied per connector specification (if available).
10 ■ AC energised; inverter synchronises and generates in daylight; no nuisance trips.
11 ■ Monitoring configured (if used): device online and reporting; user access set up.
12 ■ As■built documentation completed (circuit ID, protections, photos, serial numbers).

Installer / Company: _____ Date: ____/____/_____ Signature: _____

Customer / Site Owner: _____ Signature: _____