Fluke Commissioning and Troubleshooting Tools for

Solar Installers

FLUKE®

Wire Installation

- Check the integrity of insulation after wire installation
- Identify ground faults and potential insulation damage
- Detect issues early to prevent larger problems

FLUKE PRODUCTS

Insulation resistance tester: 1507, 1537, 1587 FC
Multifunction tester: SMFT-1000

Ground Resistance

- Measure equipment grounding system resistance to ground
- Prevent safety hazards from ungrounded parts in case of a ground fault

FLUKE PRODUCTS

Earth ground clamp: 1630-2 FC
Earth ground tester: 1625-2 GEO

Voltage and Polarity

- Identify mis-wired strings
- Ensure proper landing of module home run

FLUKE PRODUCTS

Clamp meter: 393 FC
Multifunction tester: SMFT-1000

Performance

- Compare expected vs. actual power measurements
- Verify inverter efficiency
- Ensure proper system operation
- Establish baseline data for future testing

FLUKE PRODUCTS

Clamp meter: 393 FC
Multifunction tester: SMFT-1000

I-V Curve

- Identify module/string issues before operation
- Establish a historical record for future comparisons
- Detect issues not visible with Voc testing

FLUKE PRODUCTS

I-V curve tester: PVA-1500HE2, PVA-1500T2
Multifunction tester with I-V curve: SMFT-1000

Thermal Imaging

- Identify hotspots indicating faults or inefficiencies
- Detect potential issues early, such as microcracks or defective cells
- Ensure uniform module performance
- Prevent overheating hazards

FLUKE PRODUCTS

Thermal imager: PTi120, TiS55+, Ti480 PRO

Earth-Bond Continuity

- Measure resistance/continuity between two points (e.g., module frame to ground rod)
- Ensure bonding of non-current carrying metal parts

FLUKE PRODUCTS

Insulation resistance tester: 1507, 1537, 1587 FC
Multifunction tester: SMFT-1000

Harmonics

- Troubleshoot and prevent issues in power generation, transmission, and distribution systems
- Conduct load studies to reduce energy usage

FLUKE PRODUCTS

Power quality and energy analyzer: 1770 Series

Fluke™ Solar Tools

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What Should Solar Installers be Measuring?

Inverters and Transformers

Inverters and Transformers

- DC voltage and current
- AC voltage and current
- Fuse continuity
- Thermal imaging
- Torque terminals
- Inverter efficiency
- AC power quality: voltage, frequency, harmonics

Maintenance on Inverters and Transformers

- Ensures equipment is operating properly
- Upholds OEM warranty
- Prevents future failures
- Maximizes system production

FLUKE PRODUCTS

Digital multimeters
Clamp meters
Multifunction testers
Thermal imagers

Modules

Visual inspection on an array is needed to look for any obvious damage or accidental disconnections, including:

- Damaged modules
- Compromised insulation
- Loose or damaged connectors

Thermal imaging inspection:

- Aerial or handheld
- Modules/cells not operating will be hot
- High resistance connections will be hot
- Identify equipment for further testing

Voltage and current:

- Vmp testing can identify closed bypass diodes
- Imp testing can identify strings that aren't producing
- Test circuits for current before disconnecting module connectors or opening fuses

Note: Fluke tool must be CAT III, with a voltage rating greater than the array voltage.

FLUKE PRODUCTS

Thermal imagers
Digital multimeters
Clamp meters
I-V curve tracers

Fluke. Keeping your world up and running.™