



# INSTALLER TOOLKIT FOR TROUBLESHOOTING OF SMA INVERTERS

The below table is a recommended hardware and software list for installers to bring onsite to troubleshoot SMA inverters. This list covers most use cases. This list is not exhaustive and depending on the inverter model, site and other factors, some tools may not be needed.

<b>Hardware</b>	<ul style="list-style-type: none"> <li>• Torx screwdrivers/Allen Keys (according to product manual)</li> <li>• Multimeter (min. 1000V DC)</li> <li>• Insulation Resistance Tester (1000V DC)</li> <li>• Clamp meter for DC and AC current measurements</li> <li>• Network cable tester</li> <li>• Windows laptop and charger</li> <li>• USB/RJ45 adapter (if laptop doesn't have an Ethernet port, tested to work beforehand)</li> <li>• A shielded ethernet cable (CAT5/5E or CAT6, recommended 10m)</li> <li>• 4G router (tested to work with Sunny Portal, e.g. Robustel R1511)</li> </ul>
<b>Software</b>	<ul style="list-style-type: none"> <li>• <a href="#">Advanced IP Scanner</a></li> <li>• <a href="#">SMA Grid Guard Code</a></li> <li>• Latest SMA <a href="#">firmware update files</a> (found under 'Software')</li> </ul>

The below discontinued models require additional tools.

Inverter Model	Additional Hardware & Software Requirements
STP60-10 SHP75-10	<ul style="list-style-type: none"> <li>• <a href="#">LCS Tool</a> (found under 'Archive' &gt; 'STP xx-10' &gt; 'Software')</li> </ul>
Inverters with Webconnect module	<ul style="list-style-type: none"> <li>• <a href="#">Sunny Explorer</a></li> </ul>
Inverters with Bluetooth	<ul style="list-style-type: none"> <li>• <a href="#">Sunny Explorer</a></li> <li>• BT dongle (generic, rated for 100m, tested to work beforehand)</li> </ul>
SBS5.0-10 SBS2.5-1VL-10	<ul style="list-style-type: none"> <li>• Spare RS485 communication cable (recommended 2m)</li> </ul>