

# Managing PV Plants in the Medium Voltage Network

## Feed-in management (with Solar-Log™ PM Pro licence)

In Germany, PV systems connected to the medium-voltage grid are subject to increased requirements. The various regulations that may be applied to a plant are bundled in the VDE-AR-N-4110 (VDE-4110) standard.

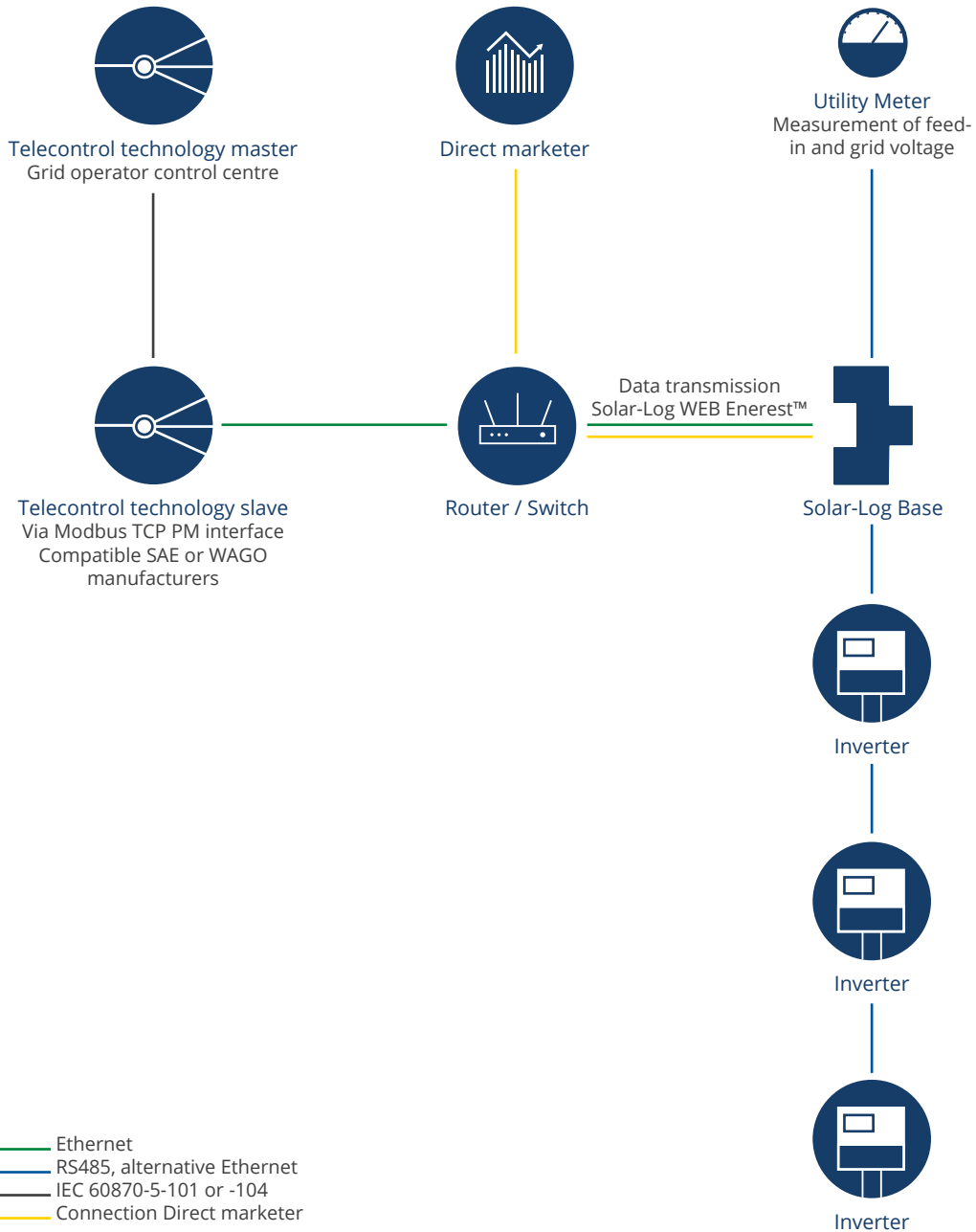
In addition to the way the PV system is controlled, it is also generally stipulated that diverse information about the current status of the PV system must be made available to the energy company.

This information is communicated to the energy company via telecontrol systems. The signal is normally transmitted between the telecontrol system and the Solar-Log Base via a Modbus/TCP interface, more rarely via the I/O box(es) (analogue, digital) included in the PM package. In addition to controlling the active power, the reactive power control represents a special technical challenge.

VDE-4110 envisages various voltage- or power-controlled concepts in this regard. The voltage-guided reactive power control requires a measurement at the feed-in point, for which a utility meter approved by Solar-Log GmbH is required.

<b>Komponentenzertifikat</b>		Nr. 20-166-01						
<b>Hersteller / Antragsteller</b>	Solar-Log-Systeme GmbH Fuldaerstraße 9 72911 Geislingen - Binsdorf Deutschland							
<b>Komponenten-Typ</b>	EZA-Regler, Module Solar-Log Base 16 / Solar-Log Base 100 / Solar-Log Base 2000 / Solar-Log Base Fixe							
<b>Technische Daten</b>	<table border="1"> <tr><td>Betriebsgeschwindigkeit</td><td>—</td></tr> <tr><td>Einmessungsspannung</td><td>—</td></tr> <tr><td>Netzfrequenz</td><td>—</td></tr> </table>		Betriebsgeschwindigkeit	—	Einmessungsspannung	—	Netzfrequenz	—
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Einmessungsspannung	—							
Netzfrequenz	—							
<b>Zertifizierungsprogramm</b>	SQP 9.7, 08 E28 Certification Program, 11/20 Auf Basis von: EN 61671 Technische Richtlinie Nr. 8 Rev. 9 VDE-AR-N 4110:2018-05-11 „TAX Mittelspannung“							
<b>VDE Anwendungsregel</b>	VDE-AR-N 4110:2018-05-11 „TAX Mittelspannung“							
<b>Mitgeltende Normen</b>	DIN EN 61671 Technische Richtlinie Nr. 8 Rev. 9 VDE Technische Richtlinie Nr. 4 Rev. 9							
<b>Prüfberichte</b>	TR 18 PF202-01 vom 28.07.2020 TR 18 PF202-02 vom 05.02.2021 TR 18 PF202-03 vom 05.02.2021							
<p>Das oben beschriebene Komponente erfüllt die Anforderungen der oben aufgeführten VDE-Anwendungsregel.</p> <p>Es gelten folgende Einschränkungen und Abweichungen:</p> <p>— keine</p> <p>Der Hersteller hat die Zertifizierung des Qualitätsmanagementsystems seiner Fertigungsstätte nach ISO 9001 nachgewiesen.</p> <p>Validiertes Simulationsmodell: F0112_S005_PackConVerbot_2018_V011.pdf MDS Checksumme: 56f4d34a7611d4c1d11c1a76460f3</p> <p>Das Zertifikat basiert auf 2 Systemtestfällen folgenden Angaben:</p> <ul style="list-style-type: none"> <li>Technische Daten der Komponente, der eingesetzten Hilfsbauteile und der verwendeten Softwareversion</li> <li>den sachlichen Aufbau der Komponente</li> <li>zusammenfassende Angaben zu den Eigenschaften der Komponente.</li> </ul> <p>Das Zertifikat enthält weiterhin folgende Angaben:</p> <ul style="list-style-type: none"> <li>Anhang 1 Verfahren zur Bewertung der Prüfberichte</li> <li>Anhang 2 Bewertung der Prüfberichte gemäß TR 18, Rev. 9</li> <li>Anhang 3 Analyse der durchgeführten „Bestimmung der elektrischen Eigenschaften“</li> <li>Anhang 4 Ergebnisse von Einzel- und Parametermessungen</li> <li>Anhang 5 Herstellerangaben und Prüfberichte</li> <li>Anhang 6 Herstellerangaben</li> <li>Anhang 7 Herstellerangaben</li> </ul> <p>Das Zertifikat ist gültig bis 13.06.2026.</p> <p>Kaufnummer: 08-02-2021</p>								
<p><b>ZERTIFIKAT</b></p> <p>www.kiwa.de</p> <p><b>kiwa</b></p> <p>www.kiwa.de</p> <p><b>Dakks</b> Technische Anforderungen DIN EN ISO 17025</p> <p><b>Dieter Rader</b> Certification Engineer</p> <p style="text-align: right;">Seite 1 von 2</p>								

[Component certificate](#) according to VDE-AR-N-4110

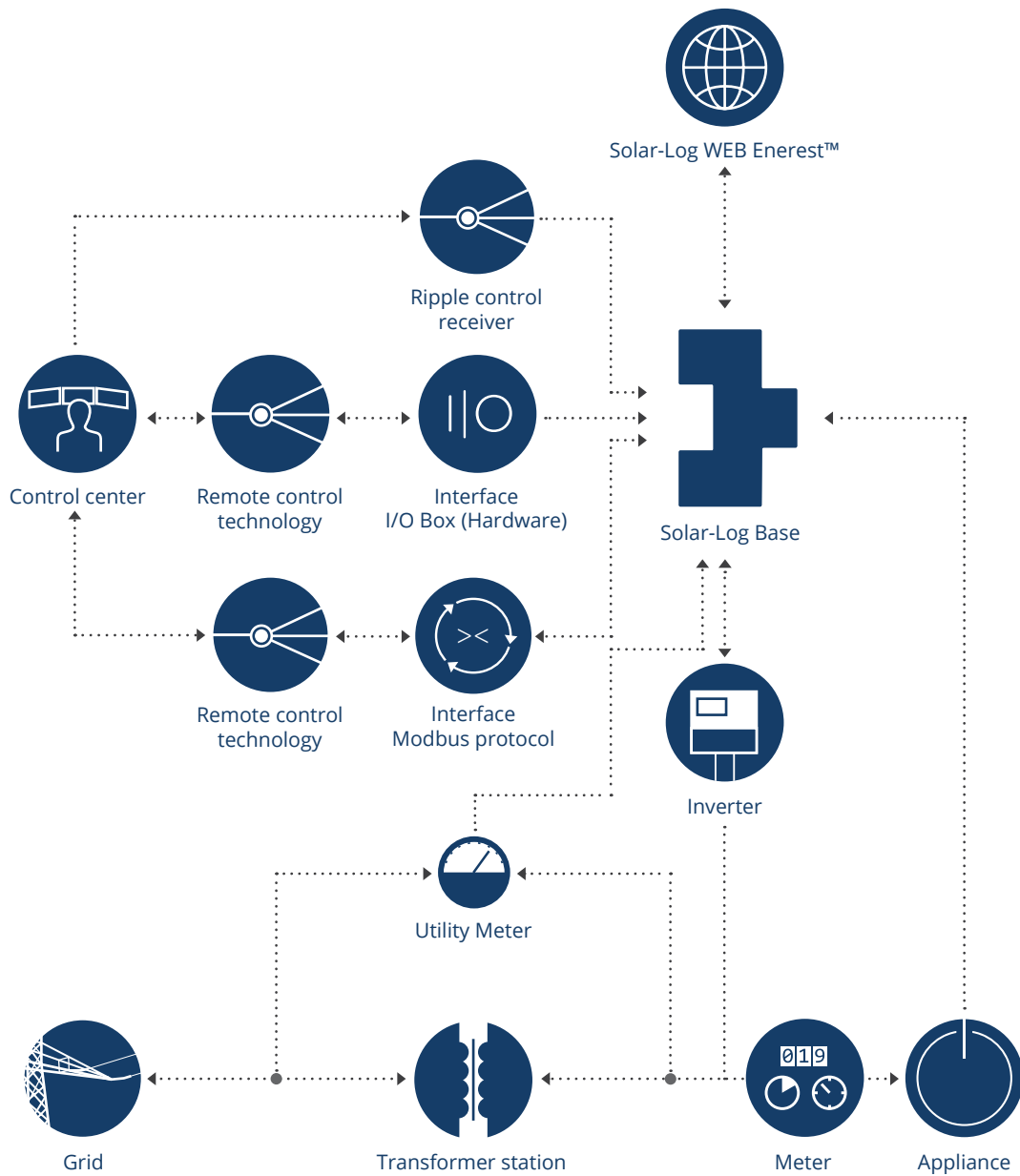


[Solar-Log™ VDE-AR-4110](#)

### Modbus TCP Powermanagement (PM) Interface

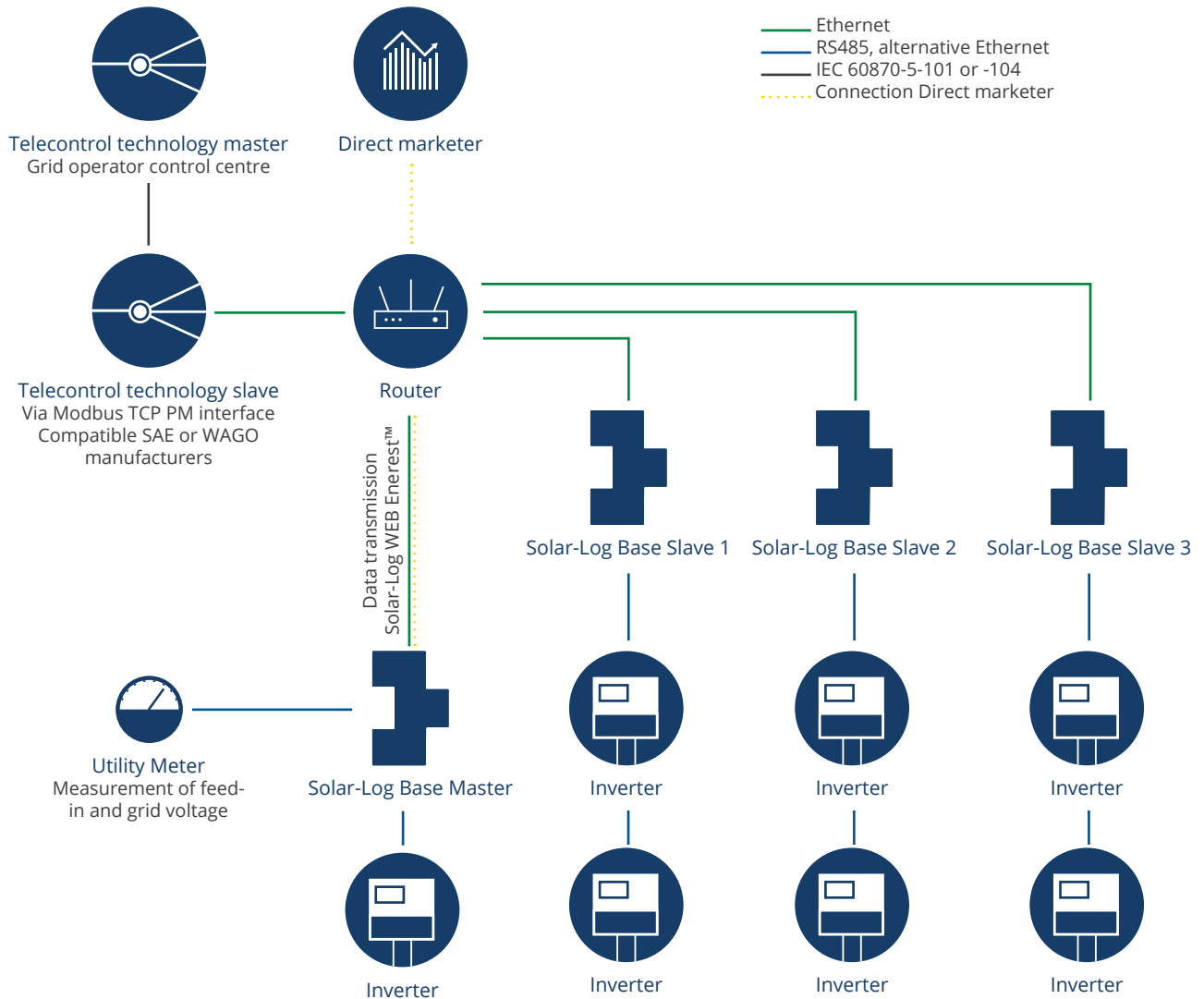
Complex grid operator requirements can be implemented by using telecontrol systems that are directly connected to the Solar-Log™ via the TCP-based Modbus protocol. With this set up, the command signals and response signals between the remote control technology and the Solar-Log Base 2000 are relayed back and forth via the protocol without potential-free and analog interfaces. Telecontrol protocols such as IEC 60870-C, IEC 61850-5-101 and -104 can be implemented using the Modbus interface and a protocol converter.

## Several ways to transfer commands and responses between the Solar-Log™ and grid control center



## Interconnection control – PM management with Solar-Log™ networks

In order to implement feed-in management for larger-scale plants, the Solar-Log Base devices are linked together via an Ethernet network. Networking allows the grid operators' control signals to be exchanged with one another.



The grid operator's signals are received by the Solar-Log Base 2000 (master) and distributed to the connected inverters via the Solar-Log Base 2000 (slaves). The master can be connected to up to nine slaves in this setup. Linking the Solar-Log™ devices together over the network helps to implement complex requirements (several plant parts, feeding points and inverters from several manufacturers).

By using the interconnection control licence, it's also possible to divide plants for direct marketing. By using slave units, each plant is divided into individual areas. A separate direct marketer can then be selected for each area. Any reduction commands from the direct marketers are prioritised with the commands from the energy suppliers and documented accordingly.