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Kaco New Energy Powador 60.0 TL3 (Firmware V2.02)

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96.9 % at medium irradiation 7/2013

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Kaco New Energy Powador 60.0 TL3 (Firmware V2.10)

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Decent performance with new firmware

With an AC power of just under 50 kW, the Powador 60.0 TL3 is the most powerful device from Kaco tested by PHOTON Lab so far. Users better make sure that the right version of the firmware has been installed

Kaco New Energy GmbH now has a compact central inverter on sale in the form of the Powador 60.0 TL3. The device boasts a wide range of carefully thought-out features that allow arrays in the 50 kW to several megawatt capacity range to be erected inexpensively. It is a transformerless device with three-phase feed-in and features three trackers and an output power of 49.9 kW. The device was purchased by PHOTON Power AG and tested at editorial request, after the manufacturer had expressed a lack of interest in a test. Two versions of the firmware were tested: V2.02, with which the device was delivered, and V2.10, which is available as a download from the manufacturer's website.

a) Firmware V2.02

The maximum conversion efficiency totals 97.7 percent and takes a very homogenous course over the entire power range. The European efficiency is just 0.3 percentage points below the maximum conversion efficiency but is 0.4 percentage points less than the value specified by the manufacturer, 97.8 percent. The MPPT adjustment efficiency is very uniform and high; however, it does exhibit minor weaknesses in the DC voltage range around 710 V, which also impacts the overall efficiency. The PHOTON efficiency for medium irradiation totals a very good 96.9 percent. When dimensioning a PV array, the upper half of the MPP voltage range should be chosen. Under asymmetric load, which was not assessed, there

are problems with the MPP tracking in the DC voltage range spanning 710 to 770 V.

b) Firmware V2.10

The device exhibits more stable operating characteristics and there are no problems with the MPP tracking, but its maximum conversion efficiency is slightly lower at 97.5 percent. The course taken is also very homogenous. Its European efficiency is just 0.4 percentage points below the maximum conversion efficiency; however, but it is considerably lower than the manufacturer's specification of 97.8 percent. The PHOTON efficiency for medium irradiation totals 96.8 percent and is therefore 0.1 percentage points lower than when firmware V2.02 is used. However, with V2.10 there are no more problems with the MPP tracking in the asymmetric load case. When dimensioning a PV array, the middle third of the MPP voltage range can now be chosen.

The Powador 60.0 TL3 is a top-notch device that provides many additional functions and options. However, if the asymmetric load case is used, it must be ensured that the latest version of the firmware has been installed (the update from V2.02 to V2.10 was made using the serial number 60.0TL01340000). ● hn, ak

Further information

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The full test results are exclusively available to subscribers in an extended PDF version (see appendix, p. 150), which can be downloaded at www.photon.info.

Highlights

- The Powador 60.0 TL3 made by Kaco is a transformerless inverter with three-phase feed-in, three MPP trackers and an output power of 49.9 kW
- The device was purchased by PHOTON Power AG and was tested at editorial request. It was delivered in June with firmware version V2.02. However, with firmware V2.10 now also available, this was tested too
- Firmware V2.02: In the asymmetric load case, there are problems with the MPP tracking in the voltage range spanning 710 to 770 V - this range should be avoided when dimensioning the solar array. The PHOTON efficiency, for which only the symmetric load case applies, still amounts to a very good 96.9 percent, though
- Firmware V2.10: The device no longer exhibits problems with the MPP tracking. It does, however, have a slightly lower PHOTON efficiency of 96.8 percent. The optimum middle third of the MPP voltage range can now be selected when dimensioning an array