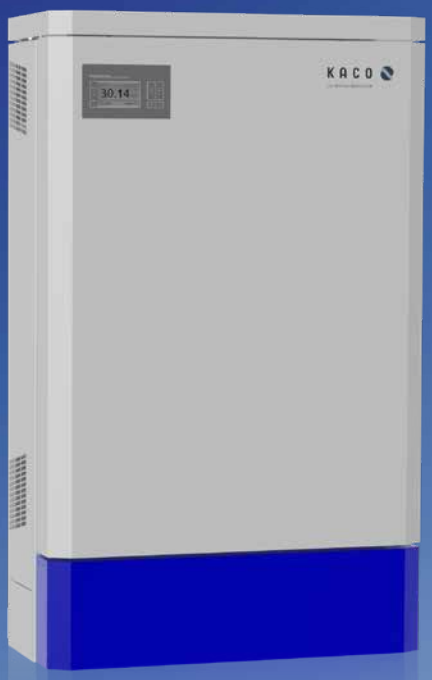
KACO new energy.

Powador
39.0 TL3 M1
39.0 TL3
60.0 TL3
48.0 TL3 Park
72.0 TL3 Park




# Efficient. Flexible. Proven.

## The transformerless three-phase inverters Powador 39.0 TL3 to 72.0 TL3 Park.

The transformerless three-phase inverters Powador 39.0 TL3 and 60.0 TL3, Powador 48.0 TL3 Park and 72.0 TL3 Park are suitable for all applications from large-scale commercial premises to multi-megawatt solar parks.

All inverters in this product family come in three variants. On the M variant with one input per MPPT, a DC isolation switch is integral. Variant XL offers you a full range of features:

- Integral DC switch
- 4 string inputs per MPPT
- Fuse protection on DC positive inputs (XL-F version has additional fuse protection on DC negative inputs also)
- DC surge protection device, type 1+2 on each MPPT input.

The inverters operate using three separate MPP trackers that can handle both symmetrical and asymmetrical loads to allow for optimum adjustment for complex setups. Three MPP trackers can also compensate for mismatches between modules, such as those resulting from temperature differences and uneven solar radiation or shading.

For simpler system designs, there is the Powador 39.0 TL3 M1 on offer which has one MPP tracker.

The input voltage window of all units is extremely wide: the inverters generating from a 250 V startup voltage, and continuing to feed in down to 200 V DC. Their peak efficiency is approximately 98 %, with a European Efficiency partly also up to an impressive 98 %. Even in the lower power ranges, the units have a very high partial load performance, operating at 95 % efficiency at just 5 % rated power.

# Technical data

## Powador 39.0 TL3 M1 | 39.0 TL3 | 60.0 TL3 | 48.0 TL3 Park | 72.0 TL3 Park

| Electrical data | 39.0 TL3 M1 | 39.0 TL3 | 60.0 TL3 |
|---|---|---|---|
| **DC input** | | | |
| Max. recommended PV generator power | 39000 W | 39000 W | 60000 W |
| MPP range@Pnom [1] | 340 V ... 800 V | 340 V ... 800 V | 480 V ... 850 V |
| Operating range | 200 V ... 950 V | 200 V ... 950 V | 200 V ... 950 V |
| Min. DC voltage/start voltage | 200 V / 250 V | 200 V / 250 V | 200 V / 250 V |
| No-load voltage | 1000 V | 1000 V | 1000 V |
| Max. input current | 102 A | 3x34.0 A | 3x36.0 A |
| Max. short circuit current [$I_{SC\ max}$] | 122.4 A | 3x40.8 A | 3x43.2 A |
| Number of MPP trackers | 1 | 3 | 3 |
| Max. power/tracker | 34.3 kW | 20 kW | 20 kW |
| Number of strings | 1 | 3x1 (version M) / 3x4 (version XL and XL-F) | |
| **AC output** | | | |
| Rated output (@230 V) | 33 300 VA | 33300 VA | 49900 VA |
| Line voltage | 400 V / 230 V (3/N/PE) | acc. to local requirements | acc. to local requirements |
| Rated current | 3x48.3 A | 3x48.3 A | 3x72.2 A |
| Rated frequency | 50 Hz / 60 Hz | 50 Hz / 60 Hz | 50 Hz / 60 Hz |
| cos phi | 0.80 inductive ... 0.80 capacitive | 0.80 inductive ... 0.80 capacitive | 0.80 inductive ... 0.80 capacitive |
| Number of grid phases | 3 | 3 | 3 |
| **General electrical data** | | | |
| Efficiency max. / european | 98.0 % / 97.8 % | 98.0 % / 97.8 % | 97.8 % / 97.6 % |
| Night consumption | 1.5 W | 1.5 W | 1.5 W |
| Circuitry topology | transformerless | transformerless | transformerless |
| **Mechanical data** | | | |
| Display | graphical display + LEDs | graphical display + LEDs | graphical display + LEDs |
| Control units | 4-way navigation + 2 buttons | 4-way navigation + 2 buttons | 4-way navigation + 2 buttons |
| Interfaces | Ethernet, USB, RS485, S0 output, digital input “inverter off” | | |
| Fault signalling relay | Potential-free NO contact, max. 30 V DC/1A or 230 V AC/1 A | | |
| Connections | AC connection via screw terminals, bushing 1xM50, max cross section: 50 mm² (flexible);<br>DC connection of M version: spring-type terminals 6-35 mm², bushing 6xM32;<br>DC connection of XL version: screw and spring-type terminals 10 mm², bushing 6xM32 | | |
| Ambient temperature | -20 °C … +60 °C [2] | -20 °C … +60 °C [2] | -20 °C … +60 °C [3] |
| Cooling | fan, max. 600 m³ / h | fan, max. 600 m³ / h | fan, max. 600 m³ / h |
| Protection class | IP54 | IP54 | IP54 |
| Noise emission | 58 dB(A) (only fan noise) | 58 dB(A) (only fan noise) | 58 dB(A) (only fan noise) |
| DC switch | integrated | integrated | integrated |
| HxWxD | 1360x840x355 mm | 1360x840x355 mm | 1360x840x355 mm |
| Weight | 151 kg | 151 kg | 173 kg |
| **Product variants** | | | |
| Version M | DC switch | | |
| Version XL | DC switch / fuse protection DC input plus / overvoltage protection type 1 + 2 | | |
| Version XL-F | DC switch / fuse protection DC input plus and minus / overvoltage protection type 1+2 | | |
| **Certifications** | | | |
| Safety | IEC 62109-1/-2, EN 61000-6-1/-2/-3, EN 61000-3-12/-11 | | |
| Grid compliance | VDE 0126, VDE-AR-N 4105, BDEW, G59/3, ... for more see homepage/download area | | |

Conforms to the country-specific standards and regulations according to the country version that has been set.
[1] Symmetrical assignment of the MPP trackers. [2] Power derating at high ambient temperatures. [3] Possible power derating at temperatures above 40 °C.

| Electrical data | 48.0 TL3 Park | 72.0 TL3 Park |
|---|---|---|
| **DC input** | | |
| Max. recommended PV generator power | 48 000 W | 72 000 W |
| MPP range@Pnom [4] | 410 V ... 800 V | 580 V ... 850 V |
| Operating range | 200 V - 950 V | 200 V - 950 V |
| Min. DC voltage/start voltage | 200 V / 250 V | 200 V / 250 V |
| No-load voltage | 1 000 V | 1 000 V |
| Max. input current | 3 x 34.0 A | 3 x 36.0 A |
| Max. short circuit current [$I_{SC\ max}$] | 3 x 40.8 A | 3 x 43.2 A |
| Number of MPP trackers | 3 | 3 |
| Max. power/tracker | 20 kW | 24 kW |
| Number of strings | 3 x 1 (version M) / 3 x 4 (version XL and XL-F) | 3 x 1 (version M) / 3 x 4 (version XL and XL-F) |
| **AC output** | | |
| Rated output (@230 V) | 40 000 VA | 60 000 VA |
| Line voltage | 480 V / 277 V (3/N/PE) | 480 V / 277 V (3/N/PE) |
| Rated current | 3 x 48.1 A | 3 x 72.2 A |
| Rated frequency | 50 Hz / 60 Hz | 50 Hz / 60 Hz |
| cos phi | 0.80 inductive ... 0.80 capacitive | 0.80 inductive ... 0.80 capacitive |
| Number of grid phases | 3 | 3 |
| **General electrical data** | | |
| Efficiency max. / european | 98.0 % / 97.9 % | 98.3 % / 98.0 % |
| Night consumption | 1.5 W | 1.5 W |
| Circuitry topology | transformerless | transformerless |
| **Mechanical data** | | |
| Display | graphical display + LEDs | graphical display + LEDs |
| Control units | 4-way navigation + 2 buttons | 4-way navigation + 2 buttons |
| Interfaces | Ethernet, USB, RS485, S0 output, digital input "inverter off" | |
| Fault signalling relay | Potential-free NO contact, max. 30 V DC/1A or 230 V AC/1 A | |
| Connections | AC connection via screw terminals, bushing 1 x M50, max cross section: 50 mm² (flexible);<br>DC connection of M version: spring-type terminals 6-35 mm² [5];<br>DC connection of XL version: screw and spring-type terminals 10 mm² | |
| Ambient temperature | -20 °C … +60 °C [6] | -20 °C … +60 °C [6] |
| Cooling | fan, max. 600 m³ / h | fan, max. 600 m³ / h |
| Protection class | IP54 | IP54 |
| Noise emission | 58 dB(A) (only fan noise) | 58 dB(A) (only fan noise) |
| DC switch | integrated | integrated |
| H x W x D | 1 360 x 840 x 355 mm | 1 360 x 840 x 355 mm |
| Weight | 151 kg | 173 kg |
| **Product variants** | | |
| Version M | DC switch | |
| Version XL | DC switch / fuse protection DC input plus / overvoltage protection type 1 + 2 | |
| Version XL-F | DC switch / fuse protection DC input plus and minus / overvoltage protection type 1+2 | |
| **Certifications** | | |
| Safety | IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4, EN 61000-3-12/-11 | |
| Grid compliance | VDE 0126, BDEW, G59/3, CEI 016, ... for more see homepage/download area | |

Conforms to the country-specific standards and regulations according to the country version that has been set.
[4] by symmetrical assignment of the MPP trackers. [5] Only in conjunction with external Powador Mini-Argus. [6] Power derating at high ambient temperatures.

# Powador
## 39.0 TL3 M1 | 39.0 TL3 | 60.0 TL3
## 48.0 TL3 Park | 72.0 TL3 Park

- Up to 98.0 % efficiency
- 3 MPP trackers, symmetrical and asymmetrical loading possible
- Graphical display, multilingual menu
- Cost-saving DC input configurations available
- Integrated data logger with web server

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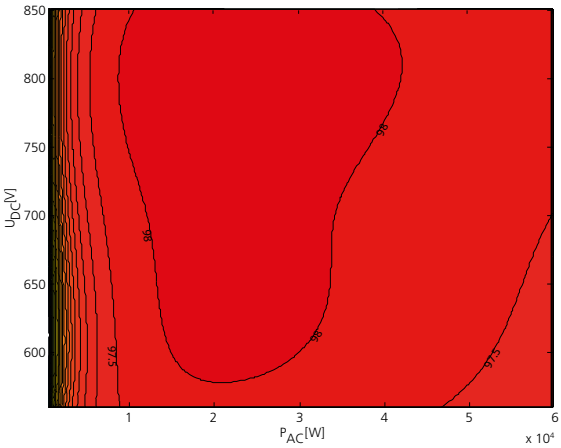
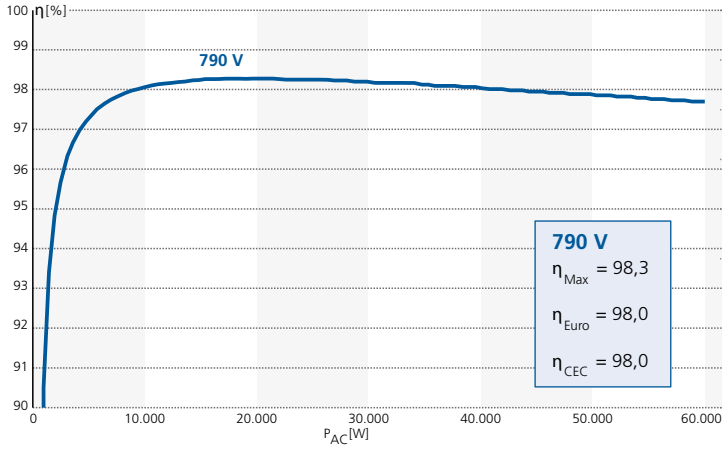
## Graphical Display of efficiency

### 3D efficiency diagram for Powador 72.0 TL3 Park




### Efficiency characteristic curve for Powador 72.0 TL3 Park

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