KACO new energy.

KACO Maximizer

The KACO Maximizer powered by TIGO.

KACO Maximizer ES | EP | MMU

The KACO Maximizer system consists of two main components: the Maximizer, a passive electronic component which is mounted directly on the module, and the Maximizer Management Unit, which represents the higher-level intelligence of the system.
The KACO Maximizer optimises the output power for each module, delivers all the relevant operating data for each module in real time, and allows you to disconnect each module for safe installation, maintenance, or when fighting a fire.
The Maximizer Management Unit (MMU) communicates with all of the module Maximizers (wirelessly), controls all processes in real time, and sends the operating data to an external server. This sums up to an online system monitoring for any number of users.
The yield-increasing principle of the system is based on intelligent impedance adjustment for the output of each individual module, so that the best possible performance for the entire string is achieved even when the respective output powers are mismatched.
Depending on the size of the PV-plant a Maximizer system normally contains one MMU. For bigger PV-plants additional MMUs might be necessary. The MMU has a manual operating interface and a liquid crystal display, which is mounted in a housing (with protection rating IP65) for on-site programming. The MMU is mounted next to the inverter and communicates with each PV module in the system via the Maximizer. It provides management and control functions for the module Maximizers and serves as an interface to the data centre. The MMU is preconfigured with a CAT-5 Ethernet connection. It contains the PV safe switch – a unique, local safety function which is located on the front side of the MMU. If maintenance is to be performed or in the event of an emergency, the operator or emergency personnel can press this button to disconnect all modules on-site (patent pending). PV Safe allows you to electrically disconnect each module from the string, thereby limiting the risk of electric shock, since only the no-load voltage of a single module is present (at the most). This function can be activated with the on-site safety switch or from an external control console. There is no danger of high voltages when then system is being installed or maintained or in the event that a fire on the system must be extinguished.
Fast, external access to the data of the MMU is possible from any computer that has an Internet connection. This allows installers, operators or emergency personnel to view all of the system data. Easy-to-read graphics allows for quick analysis of real time output and the power of the individual system that is behind it. They also help you to see and fix system failures, error codes, or warning messages.

Technical Data

KACO Maximizer ES60 | ES110 | ES170

Electrical Data	ES60	ES110	ES170
Input Levels			
Max. power	300 W	300 W	300 W
Max. DC input voltage	60 V	110 V	170 V
Vmp range*	24 V to 48 V	49 V to 89 V	90 V to 140 V
Max. input current	8.5 A	5.0 A	3.0 A
Output Levels			
Max. output power	300 W	300 W	300 W
Max. direct current	7.5 A	4.4 A	2.6 A
Nominal voltage (range)	variable	variable	variable
Mechanical Data			
Ambient temperature	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C
Cooling	free convection	free convection	free convection
Protection rating	IP65	IP65	IP65

*Vmp = Voltage at maximum power

KACO Maximizer EP55 | EP65 | EP90

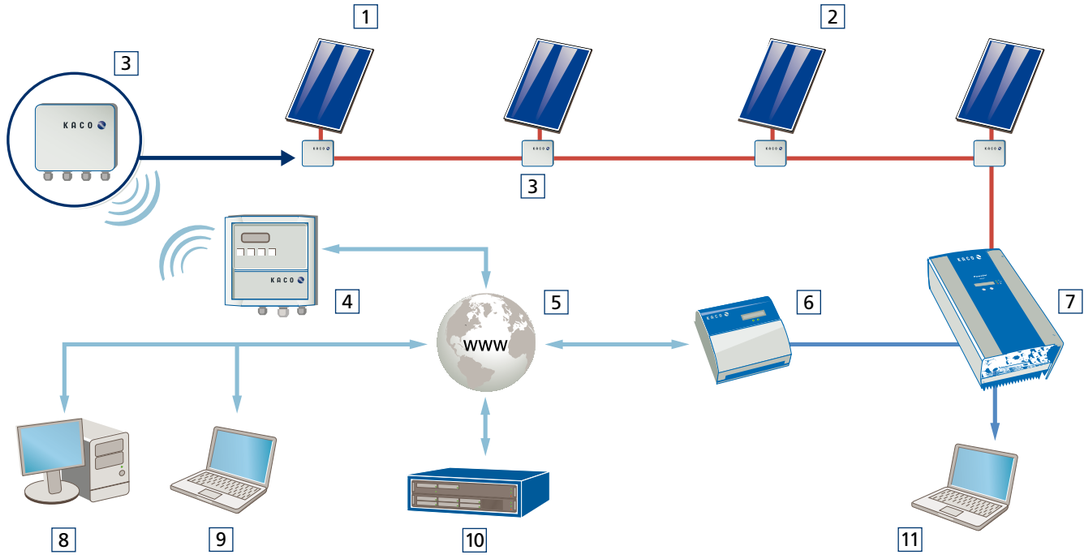
Electrical Data	EP55	EP65	EP90
Input Levels			
Max. power	200 W	200 W	200 W
Max. DC input voltage	55 V	65 V	90 V
Vmp range*	28 V to 42 V	38 V to 52 V	55 V to 75 V
Max. input current	6.5 A	5.0 A	3.8 A
Output Levels			
Max. output power	200 W	200 W	200 W
Max. direct current	0.55 A	0.55 A	0.55 A
Nominal voltage (range)	375 V (+/- 1 %)	375 V (+/- 1 %)	375 V (+/- 1 %)
Mechanical Data			
Ambient temperature	-30 °C to +70 °C	-30 °C to +70 °C	-30 °C to +70 °C
Cooling	free convection	free convection	free convection
Protection rating	IP65	IP65	IP65

*Vmp = Voltage at maximum power

KACO Maximizer Management Unit (MMU)

Electrical Data	MMU
Electrical specification	one MMU supports up to 1000 module Maximizers
Communication (MMU to Maximizer)	Wireless
Communication (MMU to data centre)	Ethernet
Mechanical Data	
Ambient temperature	-30 °C to +70 °C
Dimensions (L x W x H)	245 x 150 x 80 mm
Weight	1000 g

Maximizer Diagram



1 2 PV modules with differing output power (mismatch)

3 The KACO Maximizer guarantees an optimum energy yield. It records the data for each module and transfers this data to the management unit.

4 The management unit is the heart of the KACO Maximizer system. It provides the communication link between the Maximizers and the inverter, as well as real-time process control, and it forwards the data to a remote server, which can also be used by multiple users to monitor the control system and interact with it.

5 Internet

6 Powador proLOG

7 KACO Powador inverter

8 9 Display for end consumer: Data analysis and monitoring

10 Data evaluation and data management

11 Display for technical personnel

KACO Maximizer

Highlights

- Maximises the output of individual modules in all applications
- Allows for PV installations in situations that were previously considered unfavourable (because of shadows or orientation)
- Best degree of efficiency in energy conversion
- Improved data evaluation allows for analysis of each individual module to minimise operating costs and maximise yields over the entire service life
- Unsurpassed safety for new and existing PV systems
- Simplified wiring, especially for high open-circuit-voltage or thin-film modules (EP-version)

EN 31001005-02-100514

Available locally from:

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