

SOLAR ELECTRIC

KOSTAL

PIKO inverters – flexible, communicative and practical

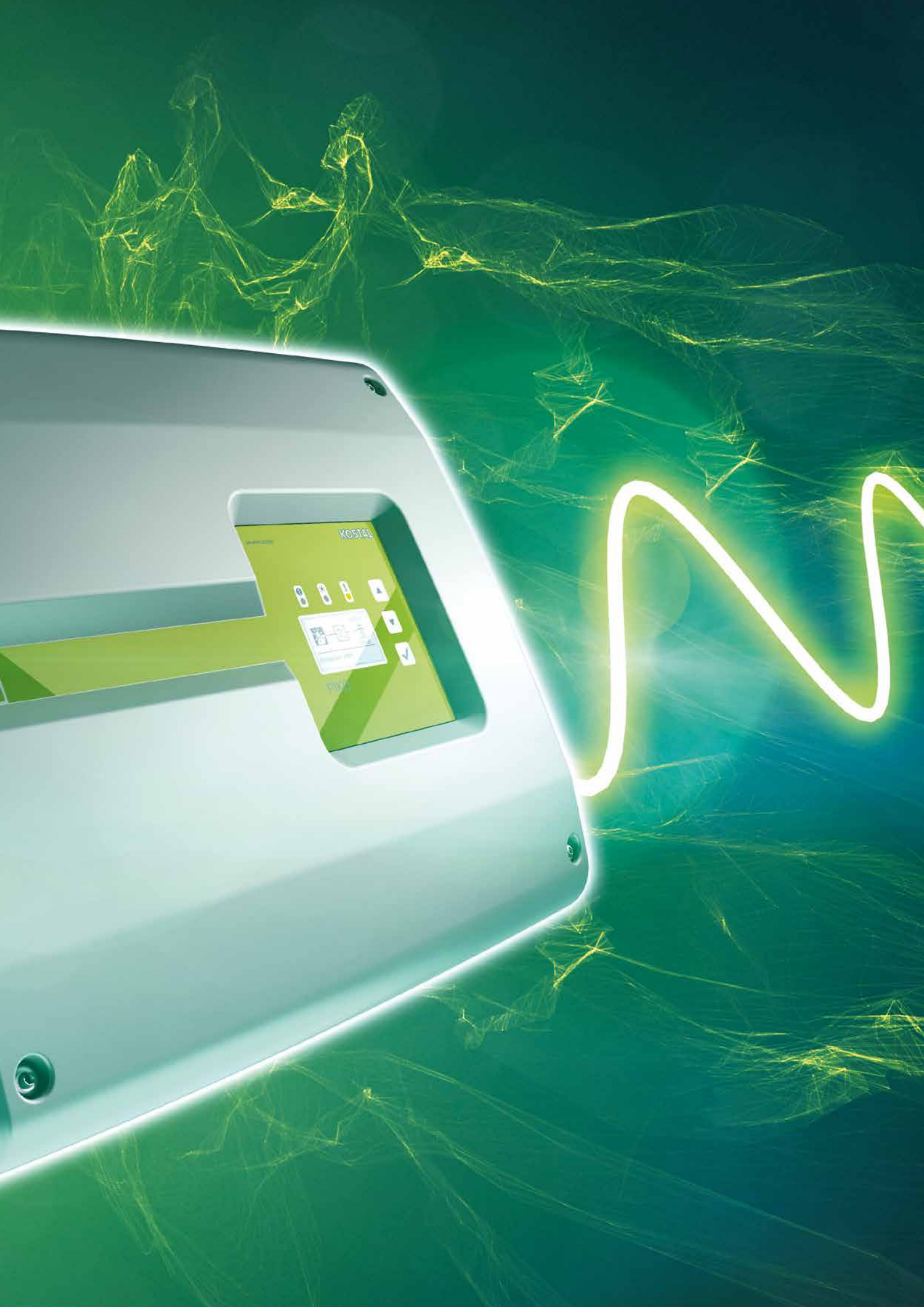


Smart
connections.

KOSTAL competence – using energy the smart way. Convincing.

KOSTAL family	4
Overview of PIKO inverters	5
PIKO inverters – even more flexible	6-7
PIKO inverters – even more communicative	8-13
PIKO inverters – even more practical	14
Service	15





KOSTAL family – success has a history and over 100 years of experience.



The KOSTAL Group: the KOSTAL success story

- As an independent, family-run company, the KOSTAL Group specialises in the development of high-quality electronic and mechatronic solutions for a wide range of industrial and automobile applications.
- The company was founded in 1912 by Leopold Kostal in Lüdenscheid, Germany, and today employs over 15.100 people at 39 locations in 17 countries.
- The KOSTAL Group has four divisions: Automotive Electrical Systems, Industrial Electronics with its international sales company KOSTAL Solar Electric, Connectors and SOMA (Test Technology).
- The KOSTAL Group's partners include the world's leading automobile manufacturers and numerous major industrial companies.

Quality-offensive thinking

- Having been developed in-house at KOSTAL, the PIKO inverter meets the highest standards.
- All PIKO inverters are produced in line with state-of-the-art technological standards.
- All production processes are aligned to the "zero-defects philosophy" of an automobile supplier.
- The PIKO inverter undergoes strict quality checks, including a final check lasting several hours, throughout the production process.

KOSTAL Solar Electric: a partner you can always count on

- In the Industrial Electronics business division, the PIKO inverters are developed and produced at the German headquarter. KOSTAL Solar Electric handles the distribution and sales of the PIKO inverters, as well as technical support.
- International customers also benefit from our local service with branch offices in France, Italy, Spain and Greece.
- KOSTAL partnerships are oriented towards the long term. This has always been and continues to be an essential element of our company culture.

PIKO inverters from KOSTAL – flexible, communicative and practical. Simply better.

With the new generation of PIKO inverters, KOSTAL has also been able to make the corporate philosophy of "Smart connections." visible at the product level. The new devices reflect the philosophy both visually, for example, through the visible connection of the communication board with the casing, and technically, for example, with the expansion of communication options. The greatest benefit comes from the improvement of the new PIKO generation with respect to the product advantages: flexibility, communication and practicality, as well as increasing our product range up to 17 kW.



Flexibility can be even more flexible

The PIKO inverters of the new generation impress with their flexibility. The proven PIKO technology is now more enhanced and more adaptable.

- Expanded product range for flexible system planning
- Technically compatible with the latest generation of high performance PV modules
- Reduction of electricity costs through dynamic self-consumption control



Communication can be even more communicative

The PIKO inverters of the new generation attach great importance to communication. In addition to a variety of proven interfaces and the integrated data logger, they provide many other new features.

- Smart Home compatible
- New web server with intuitive user interface and extensive functions
- Commissioning, configuration and display of graphically prepared yield data possible directly through the inverter display screen



Practicality can be even more practical

PIKO inverters of the new generation are more practical than ever before. The futuristic design ensures a comfortable, safe installation and operation.

- Recessed grips on the sides for easy handling
- Robust, newly positioned DC switch with easy-to-read switching status
- The easily-accessible connection area is well-protected against damage

You can find up-to-date technical data on the PIKO inverters on our website:

www.kostal-solar-electric.com

PIKO inverters – even more flexible...

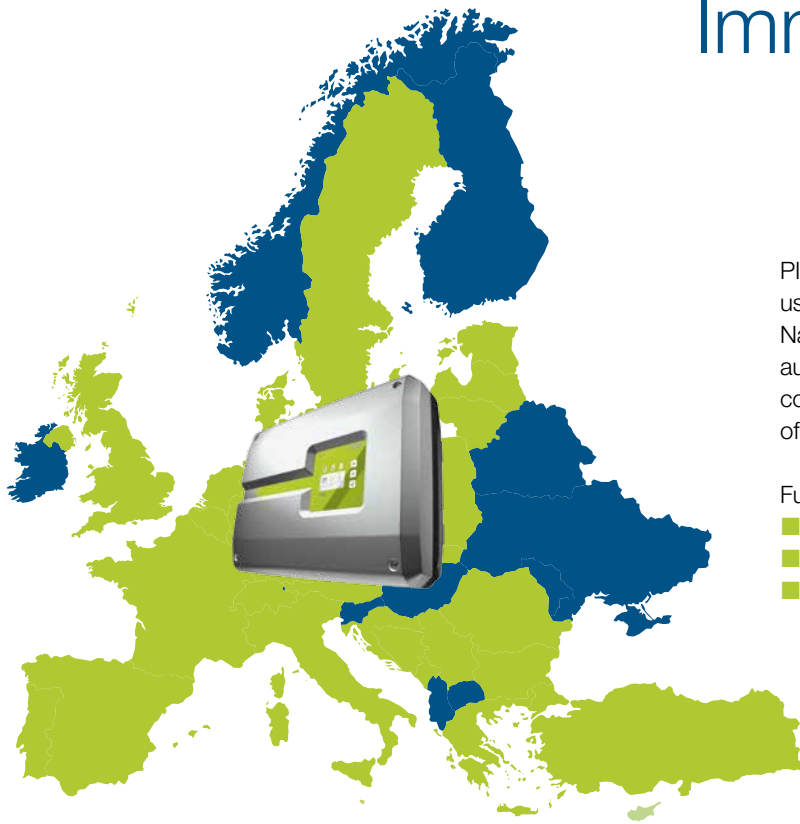


Flexibility can be even more flexible

The new generation of PIKO inverters offers you an even greater variety of possible applications.

- Due to the expansion of the product range, single- and three-phase inverters in the performance categories 3-17 kW are now available. This means that the suitable PIKO can be found for any PV system.
- PIKO inverters can now operate at higher currents and are thus already equipped for the future with high-performance PV modules today.
- The connection of a current sensor for dynamic self-consumption control is possible for any PIKO inverter.
- Up to three independent MPP trackers ensure the greatest degree of flexibility, so that even difficult roof surfaces can be used optimally.
- The broad input voltage range ensures extensive adaptability with regard to the potential range of application.
- The flexible PIKO Plan configuration tool integrates all PIKO inverters, so that you acquire a recommendation for your optimal inverter quickly, securely and precisely.
- The installation location of all inverters can be selected variably: Whether indoors or outdoors—thanks to the high casing protection category, our inverters can be used without any further adaptations.

...and internationally usable. Immediately.



PIKO inverters are pre-configured and can be used in most European countries. National grid adjustment takes place automatically following activation of the corresponding country setting or after selection of the applicable standard in the inverter.

Further details:

- A PIKO suitable for more than 30 countries
- Easy country setting with the display
- Multilingual menu navigation

Pre-configuration and certification for the following countries:

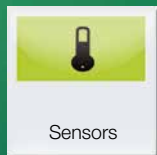
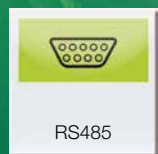
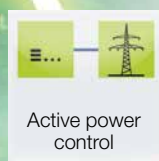
Australia*	Greece (mainland)	Portugal
Austria	Greece (islands), Cyprus (EU)	Romania
Belgium	Israel*	Serbia
Bosnia and Herzegovina	Italy	Slovakia
Bulgaria	Latvia	Spain
Croatia	Lithuania	Sweden
Czech Republic	Luxembourg	Switzerland
Denmark	Malta*	Turkey
Estonia	Montenegro	United Kingdom**
France	Netherlands	
Germany	Poland	

* Planned

** Only for PIKO 3.0 | 4.2 | 5.5

Subject to change

PIKO inverters – even more communicative...



Communication can be even more communicative

Thanks to the various communication interfaces, PIKO inverters have become even more communicative.

- The Smart Home compatibility now also enables integration into intelligently controlled home systems.
- PIKO inverters are equipped with a new web server with an intuitive user interface and extensive functions.
- Thanks to the new inverter software commissioning, configuration and display of graphically prepared yield data is possible directly through the inverter display screen.
- The inverter display enables quick and easy operation with three capacitive buttons.
- Thanks to the integrated communication board, you no longer need to take additional components into account when planning PV systems. The PIKO inverter contains everything necessary for modern communication and the monitoring of the PV system which provides comfortable protection against yield losses.
- The extensive communications package contains the following interfaces: 2 LAN interfaces, RS485 interface, S0-impulse input/output, analogue inputs.
- The integrated interfaces can be used, among other things, for sensors, ripple control receivers, GSM modem, external displays or routers, as well as for data loggers and Smart Home control.
- You can also connect the PIKO inverters with one another or incorporate them into an existing network.

... and Smart Home compatible.

PIKO – Part of a Smart Home

The request for efficient energy usage in the context of a Smart Home is addressed by the PIKO with its various communication interfaces. With the integrated recording of the used and the provision of the available energy, KOSTAL offers you indispensable added value for the optimisation of self-consumption.

PIKO inverters are completely EEBus compatible. With this networking technology, the inverter can communicate with the electronic devices in the household. This means that the electronic device can then be supplied with energy when this is available. This networking concept ensures that existing energy is used in an economically sensible manner. As a result, you can use the energy you generate yourself without having to manually monitor it. You can find further information of the EEBus protocol on the website of the EEBus Initiative e.V.*.

However, even without a connection to a Smart Home control system, it is possible to directly use the energy provided by the PV system oneself with the help of a relay output. Using this possibility for direct control, the internally generated energy can be used more efficiently by various devices, for example a heat pump. In this way you achieve the highest possible self-consumption proportion and simultaneously gain independence from rising electricity costs.

Profit from the update capability of our inverters

KOSTAL also demonstrates the corporate philosophy of "Smart connections." in its products and in doing so continuously creates new smart connections. Continuing developments in software technology, for example, in the Smart Home sector, can thus always be brought completely up to date via the network connections. At the same time, the fundamental update capability of PIKO inverters creates the best prerequisites for ensuring that the most recent developments and functions

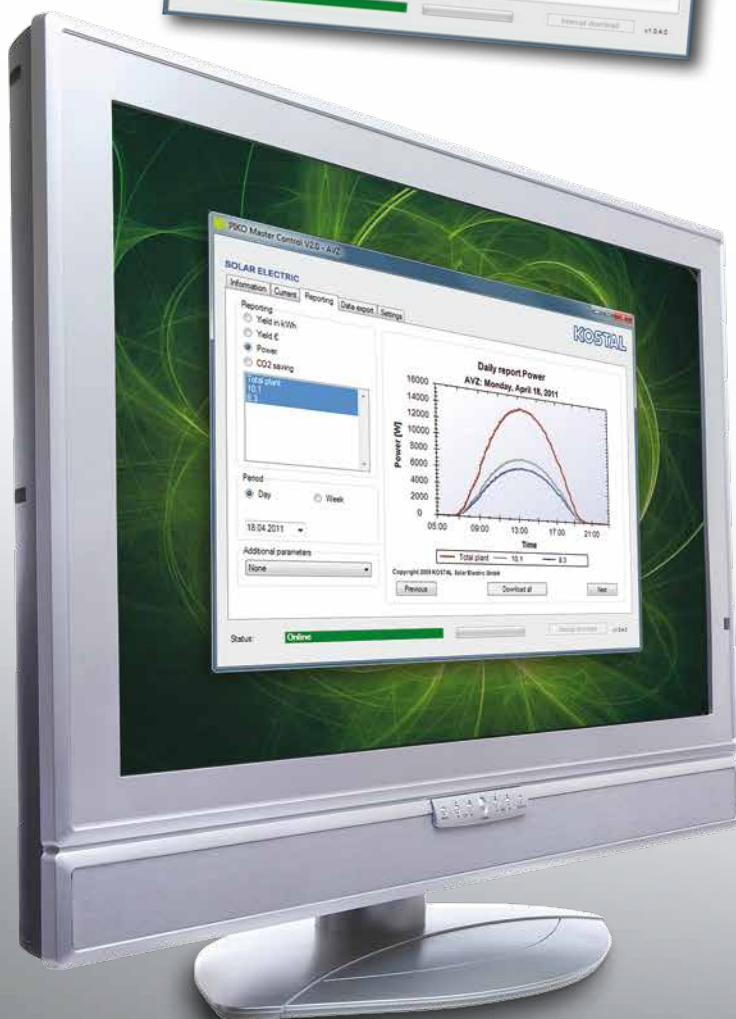


are available to you. Changes in software technology with reference to user-friendliness and technological improvements can be easily downloaded and installed from the KOSTAL Solar Electric website**. This also makes it possible to react flexibly and easily to changes in legislation by updating the software – without having to go onsite.

* www.eebus.org

** www.kostal-solar-electric.com

PIKO inverters – reliable monitoring ...



Integrated web server: Quick and direct monitoring

The web server integrated into every PIKO inverter informs you at a glance of the most important system data. Inverter settings and changes can be made comfortably and simply using a browser with the help of a PC or tablet.

The most important data and settings are:

- Display of the current performance data and the daily and total yields
- Information page for checking and configuring sensors and modems
- Download of historical log data
- Inverter configuration (e.g. portal access, IP address, self-consumption, active power control)

PIKO Master Control: Monitoring made easy

The yields and operating data of the PIKO inverter can be comfortably prepared with PIKO Master Control. The software is available for download at no charge on the KOSTAL Solar Electric website*.

PIKO Master Control enables the following:

- Graphic representation of the current and historical performance data and historical sensor data
- Data export and long-term archiving of the data
- Possibility for (error) analysis
- Graphic views and exportable figures can be configured freely

* www.kostal-solar-electric.com

... online, anytime. Worldwide.



PIKO Solar Portal:

Monitoring online – always and everywhere

The PIKO Solar Portal protects your investment in a PV system against yield failure, e.g. with an active alarm per e-mail in the event of an error. Registration for the PIKO Solar Portal takes place at no charge via the affiliated website of KOSTAL Solar Electric*.

Functions include:

- Worldwide online access to the portal
- Graphic representation of the power and yield data
- Visualisation of data and thus sensitization of how to optimise self-consumption
- Notification of incidents by e-mail
- Data export
- Sensor evaluation
- Display and proof of a potential active power reduction by the grid operator
- Log data storage for long-term and secure monitoring of your PV system

PIKO Master Control and PIKO Solar Portal can also be used for PV systems with several inverters and, thanks to the multilingual menu navigation, can also be used internationally.

* www.piko-solar-portal.com

PIKO inverters – with intelligent accessories ...

You are ideally equipped with the intelligent accessories from KOSTAL

We offer you components for the optimal visualisation of your yields, for system monitoring and for communication.



PIKO Sensor

PIKO Sensor – for measuring temperature and irradiation

The PIKO Sensor enables the comparison of the real irradiation and temperature conditions with the performance data of the PV system in order to ascertain that the PV system is functioning optimally. The following values are measured with the PIKO Sensor:

- Irradiation
- Ambient temperature
- Module temperature

Especially comfortable: The measuring values can be displayed in a solar portal (e.g. PIKO Solar Portal) and with the PIKO Master Control software.



PIKO BA Sensor

PIKO BA Sensor – for dynamic self-consumption control

The PIKO BA Sensor makes dynamic active power control possible. The sensor measures the domestic consumption and regulates power at the feed-in point to the public grid. In this way you control the quantity of the feed-in and thus, for example, fulfil the 70% regulation according to German legislation, but at the same time you can produce more energy, which can then be used for self-consumption.



PIKO Data Communicator

Stay on top of what's important – with the PIKO Data Communicator

With the PIKO Data Communicator, the outputs and yields of the PV system can be monitored with a digital picture frame. The PIKO Data Communicator is a set consisting of the Data Collector, which collects the data of the PIKO inverters, and the Data Stick, which receives data that can be displayed in a digital picture frame* via a USB interface.

Features:

- Easy installation
- PV system output/yield per day/month/year
- Representation of CO₂ savings per day/month/year
- Visualisation of sensor data (ambient and module temperature, irradiation)
- Data transmission by radio (30 m in buildings, 300 m in the open)
- Up to 10 PIKO inverters can be connected
- 6 languages available (DE, EN, FR, ES, IT, GR)

* Digital picture frames are not included in offer. A list with compatible picture frames is available at: www.kostal-solar-electric.com

... also for mobile data transfer.

KOSTAL GSM modem – online via the mobile network.

The KOSTAL GSM modem enables the Internet connection of PIKO inverters via the mobile network¹.

- The connection can be used for the transfer of data to a solar portal (e.g. PIKO Solar Portal) or for dialling into the PV system.
- With a KOSTAL modem, PV systems can be connected to the Internet with up to 20 inverters².

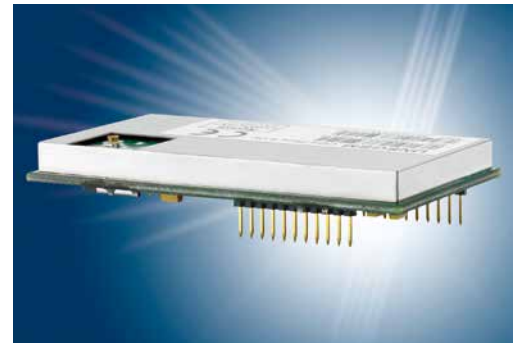
¹ Via data SIM card with volume tariff, not part of the delivery package.

² Dependent upon the GSM signal strength.

PIKO M2M Service – simple, secure and stable

PIKO M2M Service offers secure, automated data transfer between the PIKO inverters and the PIKO Solar Portal via the mobile network. This smart connection offers you:

- Plug and play thanks to the pre-configured inverter
- A future-proof, professional M2M (machine-to-machine) communications package
- A mobile network connection secured and protected by KOSTAL
- Optimum network coverage



KOSTAL GSM modem

- Protection against theft and misuse of cards, as well as against excessive costs thanks to the encoded direct connection to the PIKO Solar Portal.

The PIKO M2M Service can be used in 28 European countries. No monthly costs with the one-time package price (valid for 5 years). Also ideal for PV systems in border areas: Due to the international applicability of the M2M Service, you will never again experience excessive monitoring costs due to dialling into foreign networks.



M2M

PIKO inverters – even more practical...



Practicality can be even more practical

PIKO inverters of the new generation are more practical than ever before. This makes them user-friendly and facilitates secure installation.

- The recessed grips on the sides of the PIKO enable easy handling and a secure grip. This also creates the prerequisites for secure mounting.
- The robust DC switch has been redesigned and positioned in exact line with the casing, which prevents it from breaking off. The switching status can also be comfortably read at a glance.
- With the no-contact magnetic switch, which demonstrates a high durability, KOSTAL relies on its established know-how from the automotive sector.
- The PIKO is now also equipped with easily accessible but at the same time well-protected connections.
- The new future-oriented design fulfils the current requirements of the photovoltaic market and reflects the corporate philosophy of "Smart connections." in terms of visuals.

PIKO inverters – Service guaranteed. Tailor-made.

Each PIKO inverter is a quality product manufactured within the KOSTAL Group, and subject to the same strict quality standards as, for example, our products for the automotive industry. PIKO inverters come with comprehensive warranties and services.



Service Hotline with guaranteed assistance.

Take service literally, give us a call!

For us, partnership means teamwork, cooperation and especially personal contact with our customers. Our service employees are available on the telephone to answer all your questions before and after your purchase, for example:

- General technical consultation
- Support with system planning with the help of the PIKO Plan configuration software
- Adjustment of grid parameters with the help of the PARAKO software
- Help with commissioning
- Support with system analysis
- Advice for the configuration of system monitoring
- Warranty processing

You can reach our Service Hotline on: Telephone +49 761 47744-222 (Mon. – Fri. from 8:00 a.m. to 5:00 p.m.) or by e-mail at service-solar@kostal.com



Personal customer contact for questions of any kind.

Safety guarantee

Within the first two years following purchase, the warranty of the PIKO inverter can be extended from 5 to 10 or 20 years.

Services in the context of the warranty:

- Exchange service
- Exchange fixed sums for specialist companies

Services outside of the warranty:

- Preferential price for replacement devices when a repairable defective device is returned
- 2-year warranty for the replacement device

KOSTAL seminars

Our extensive specialised knowledge is professionally taught in our seminars, and interactive exchanges take place between the participants and the KOSTAL seminar host. Our offer includes various training sessions focusing on technology and sales. Detailed information on our seminars is available at: www.kostal-solar-electric.com/seminars.



KOSTAL seminars can be booked online with just a few clicks.

KOSTAL

KOSTAL Solar Electric GmbH
Hanferstr. 6
79108 Freiburg i. Br.
Deutschland

+49 761 47744 - 100

www.kostal-solar-electric.com

HOT CONTACT

MDACI, A.S.
info@mdacapitalinvest.com

+420 773 988 087

www.mdacapitalinvest.com