

SOLAR ELECTRIC

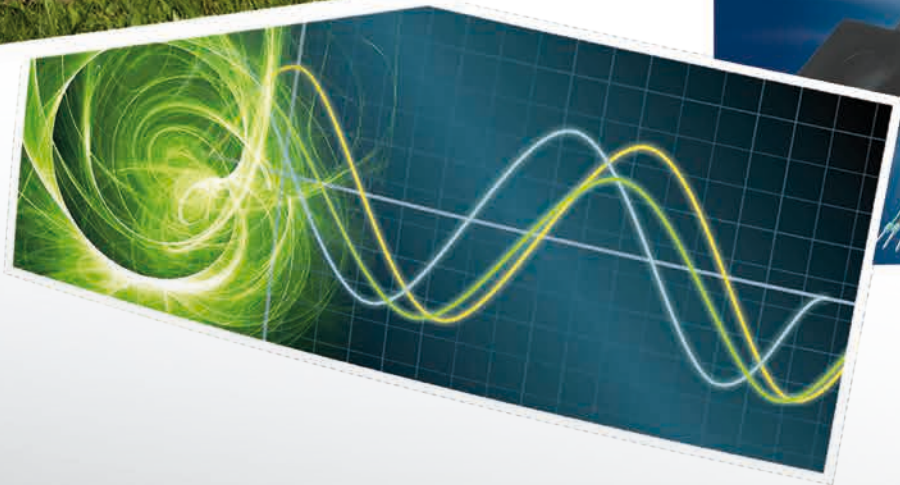
KOSTAL

PIKO inverters –  
flexible, communicative and practical.

Smart  
connections.



KOSTAL competence –  
generating energy the smart way.  
Convincing.



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# KOSTAL family – the story behind the success. 100 years.



## **The KOSTAL Group: the KOSTAL success story**

- As an independent, family-run company, the KOSTAL Group is specialised 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 about 14,400 people at 39 locations in 17 countries.
- The KOSTAL Group has four divisions: Automotive Electrical Systems, Industrial Electronics with its international sales company 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 headquarters. KOSTAL Solar Electric GmbH handles all distribution 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 designed for 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.



## **PIKO inverter: very flexible and easy to use**

With its selection of three-phase string inverters, KOSTAL offers a comprehensive portfolio for photovoltaic systems of all sizes.

- Performance classes: 4.2 kW, 5.5 kW, 7.0 kW, 8.3 kW, 10.1 kW
- PIKO inverters feed in symmetrically with three phases and thus prevent a potential unbalanced load of the grid
- Thanks to the preconfiguration and certification, PIKO inverters can be used immediately in up to 30 European countries
- The broad DC input range offers a variety of possibilities for system configuration and guarantees feed-in even with unfavourable lighting conditions
- Up to three independent MPP trackers ensure maximum yields and flexibility in system planning, especially for roofs facing in different directions or having different inclines
- Easy installation due to compact form and low weight



## **PIKO inverter: communicative, a standard feature**

Every inverter from KOSTAL is equipped with a complete communications system as standard.

- Data logger and all relevant interfaces for system monitoring are integrated
- Data monitoring at no charge thanks to affiliated web server, PIKO Master Control and the PIKO Solar Portal
- Integrated active power control (100/60/30/0%) and internal consumption control
- Optional accessories available, e.g. PIKO Data Communicator (data transfer by radio), PIKO M2M Service

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

[www.kostal-solar-electric.de](http://www.kostal-solar-electric.de)

# PIKO inverters – internationally usable. Immediately.

PIKO inverters are preconfigured and certified for most European countries. An adjustment to the grid specific to the country takes place automatically following activation of the appropriate country setting in the inverter.

Further details:

- One PIKO suitable for up to 30 countries
- Easy country setting with the display
- Multilingual menu navigation

## Preconfiguration and certification for the following countries:

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

\* Only for PIKO 4.2 | 5.5



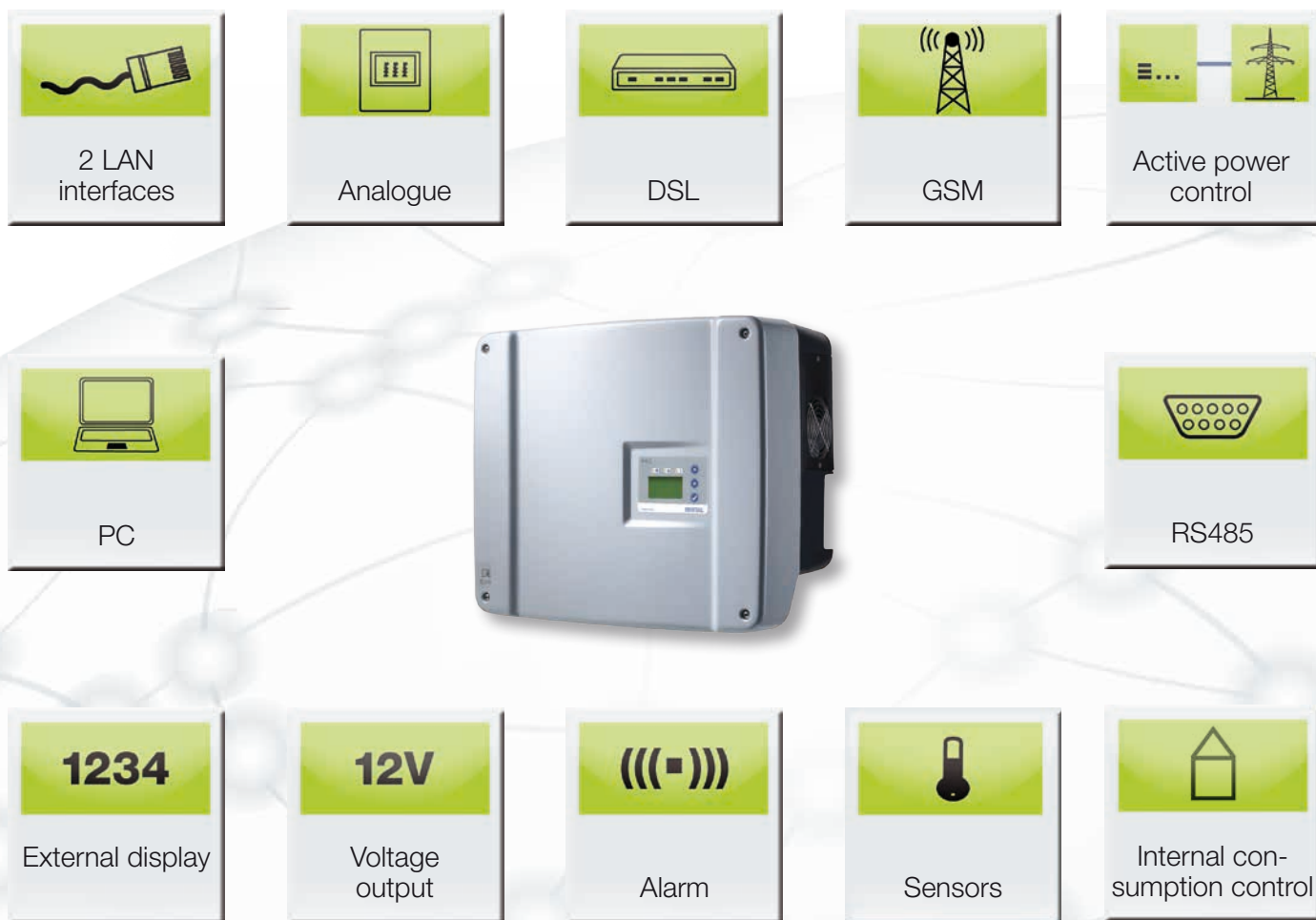
# PIKO inverters – with a complete communications system. A standard feature.

The communications package integrated as a standard feature enables monitoring of the PV system without any additional components.

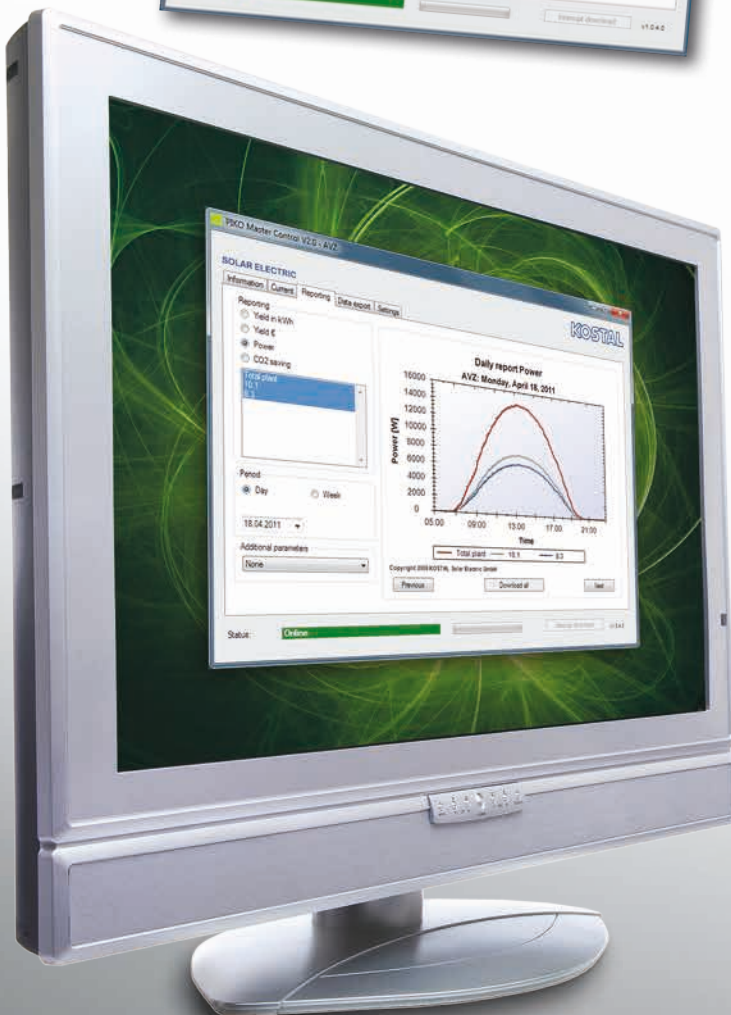
The package includes:

- Data logger
- Web server
- 2 LAN interfaces
- RS485 interface
- S0 impulse input/output
- Analogue inputs for sensors and ripple control receiver (active power control)

System monitoring takes place with the PIKO Solar Portal, the PIKO Master Control software or the integrated web server.



# PIKO inverters – reliable monitoring ...



## Integrated web server: Quick and direct monitoring

The most important operating data can be displayed with the integrated web server. In addition to this, all inverter settings can be applied.

The most important data and settings are:

- Display of the current power data and the daily and total yields
- Information page for checking sensors and modems
- Download of historical log data
- Inverter configuration (e.g. portal access, IP address, internal 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 data
- Data export

\* [www.kostal-solar-electric.com](http://www.kostal-solar-electric.com)



# ... online, anytime. Worldwide.



## PIKO Solar Portal: Monitoring online – always and everywhere

The PIKO Solar Portal makes it possible to monitor the operation of the PIKO inverters via the Internet. Registration for the PIKO Solar Portal takes place at no charge via the affiliated website of KOSTAL Solar Electric\*.

Functions include:

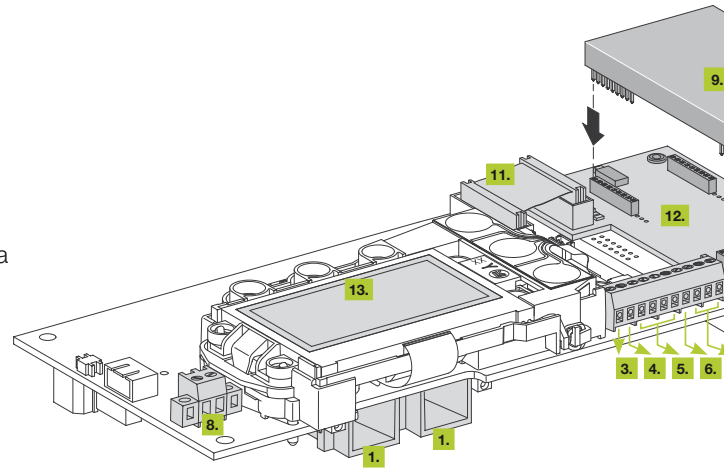
- Worldwide online access to portal
- Graphic representation of the performance and yield data
- Notification of incidents by e-mail
- Data export
- Sensor evaluation
- Display of a potential active power reduction by the grid operator
- Log data storage

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](http://www.piko-solar-portal.com)

# PIKO inverters – the all-in-one communication board ...

The communication board is the heart of the PIKO inverters. Thanks to the extensive functional range, in addition to the grid and bus connections, it is also possible to connect the ripple control receiver, sensors, energy meters and all of the usual components for data transfer. PIKO inverters: the all-in-one solution for the most demanding requirements.



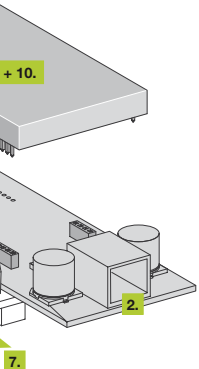
Communication board II

## Communication board II structure

<b>1.</b> RJ45 socket	■ 2 LAN interfaces, integrated switch for direct connection of several inverters
<b>2.</b> RJ11 socket	■ Connection to the analogue telephone connection
<b>3.</b> Voltage supply of external sensors	■ 12 V output
<b>4.</b> Grounding	■ For connections 4 + 6 + 7
<b>5.</b> 4 analogue inputs	■ Sensors ■ Ripple control receiver for controlling output reduction
<b>6.</b> Impulse input	■ Connection of an energy meter; values are saved in the integrated data logger
<b>7.</b> RS485 interface	■ Easy connection of inverters ■ Connection of external displays and data loggers
<b>8.</b> Configurable switch output	■ S0 impulse output for connection of an indicator panel ■ Alarm contact ■ Internal consumption control
<b>9.</b> Analogue modem for remote retrieval* (available as an option)	■ Data transfer to a solar portal ■ Enables remote dialling in to the PIKO inverter for monitoring or service purposes
<b>10.</b> GSM modem for remote retrieval** (available as an option)	■ Data transfer to a solar portal ■ Enables remote dialling in to the PIKO inverter for monitoring or service purposes
<b>11.</b> Flat ribbon cable	■ Included in the optional modem set
<b>12.</b> Modem adapter PCB	■ Included in the optional modem set
<b>13.</b> Display	■ Graphic display, 3-button operation

\* Requires a separate telephone connection | \*\* Requires SIM card with data tariff (see PIKO M2M Service on p.13)

# ...intelligently expandable.



## You will be perfectly equipped with the intelligent accessories from KOSTAL

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

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

With the PIKO Data Communicator, the 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 (1) and the Data Stick (2). The Data Collector collects data from the PIKO inverter and transfers it to the Data Stick. The Data Stick is connected by way of a USB interface with a digital picture frame (3), which displays all the important data of your PV system.

### Features:

- Can be connected to digital picture frames\* with USB interface and slideshow function
- Easy installation
- PV system output/yield per day/month/year
- CO<sub>2</sub> savings per day/month/year
- Sensor data (ambient and module temperature, solar 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 not included in offer. A list with compatible picture frames is available at: [www.kostal-solar-electric.com](http://www.kostal-solar-electric.com).



Illustration is an example

# PIKO inverters – with additional intelligent accessories ...



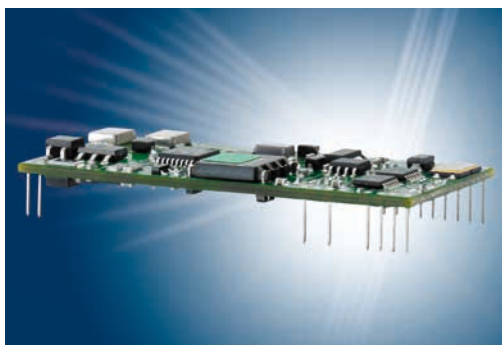
PIKO Sensor for actual/nominal comparison.

## PIKO Sensor – for measuring temperature and irradiation

The PIKO Sensor makes it possible to compare the real irradiation and temperature conditions with the performance data of the PV system. The following values are measured with the PIKO Sensor:

- Irradiation
- Ambient temperature
- Module temperature

Especially comfortable: the measuring values can be visualised by way of a solar portal (e.g. PIKO Solar Portal) and with the PIKO Master Control software.



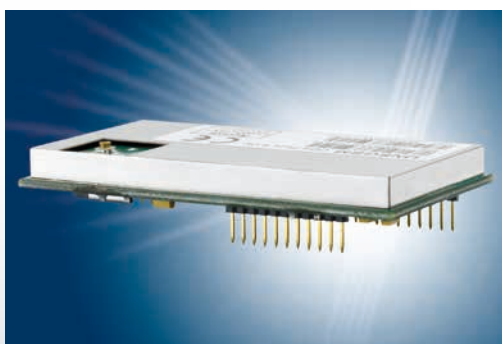
KOSTAL analogue modem: online via dial-up connection.

## KOSTAL modems – online with the mobile network or dial-up connection

The KOSTAL GSM modem lets the PIKO inverters connect to the Internet via the mobile network<sup>1</sup>, and the KOSTAL analogue modem via a dial-up connection<sup>2</sup>.

The following applies to both modem types:

- The connection can be used for the transfer of data to a solar portal (e.g. PIKO Solar Portal) or for dialling in to the PV system.
- With a KOSTAL modem, PV systems can be connected to the Internet with up to 20 inverters<sup>3</sup>.



KOSTAL GSM modem: online via mobile network.

Delivery package of GSM modem:  
GSM modem, GSM exterior antenna, modem adapter PCB, cable (length of 3 m, extendable)

Delivery package for analogue modem:  
KOSTAL analogue modem, modem adapter PCB, telephone cable RJ11 (length 3 m)

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

<sup>2</sup> Requires a separate telephone connection.

<sup>3</sup> For the GSM modem, depending on the GSM signal strength.

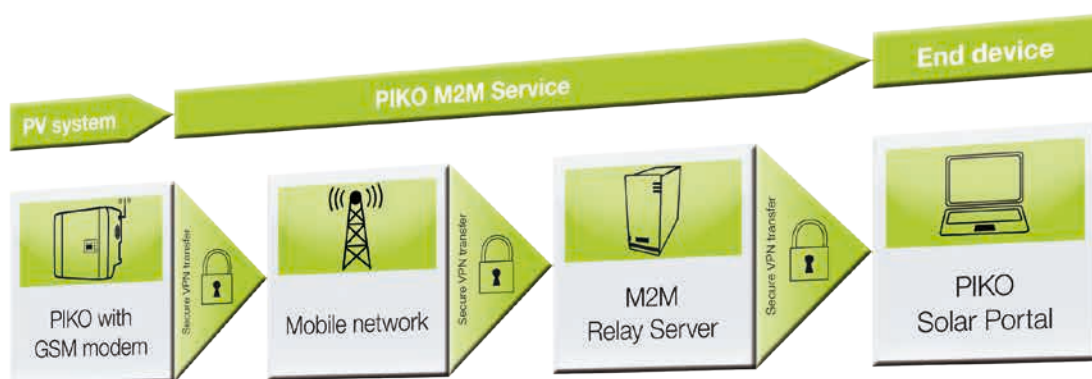
# ... also for mobile data transfer.

## PIKO M2M Service – simple, secure and stable

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

- Plug and play thanks to the preconfigured inverter
- Future-proof, professional M2M (machine-to-machine) communications package
- Mobile communication link monitored by KOSTAL
- Optimum network coverage
- Protection against theft and misuse of cards, as well as 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).



# PIKO inverters – with arc detection. Better protected.



Arc detection for more safety.

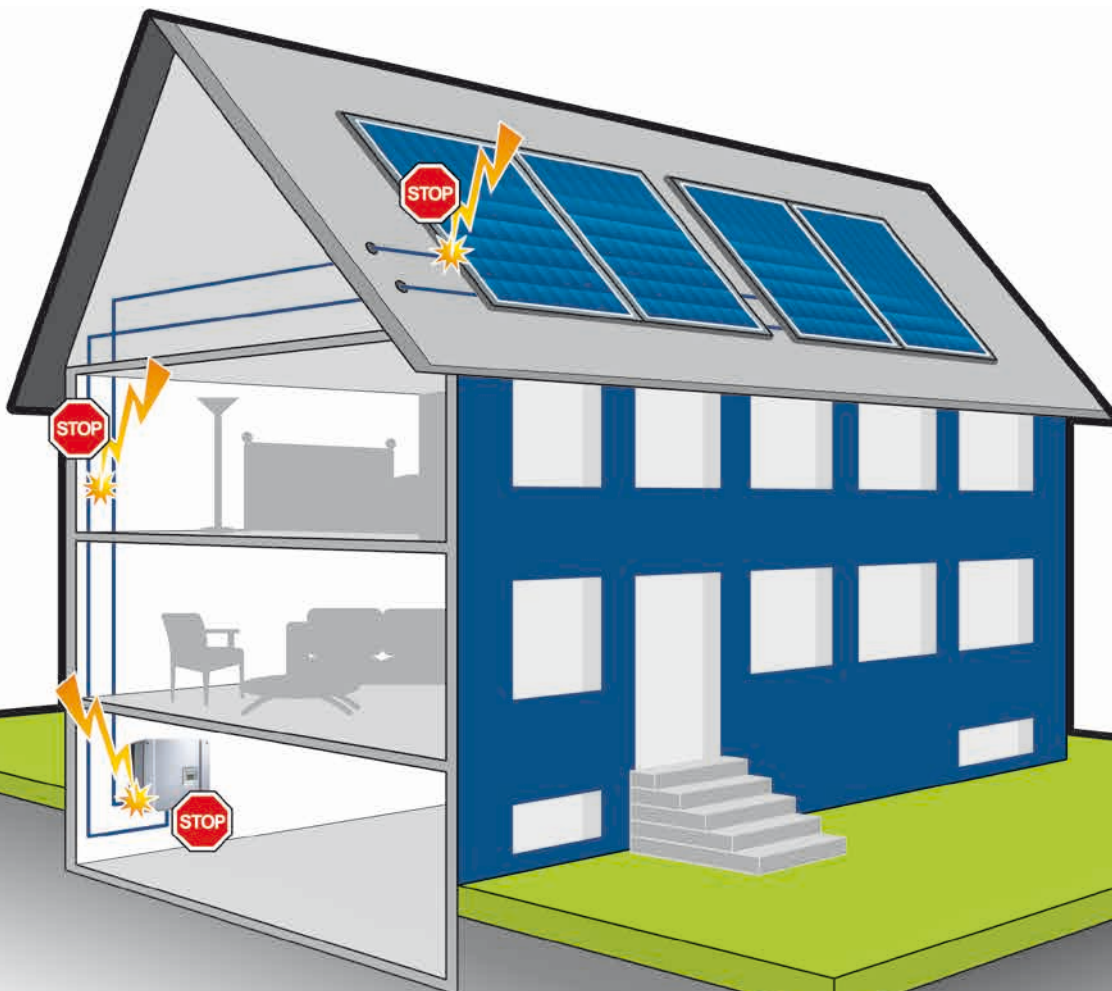
PIKO inverters with arc detection\* offer a full-value solution for protecting buildings and PV systems from damage.

A dangerous arc may occur in a PV system at various points. Even a loose plug or a poor contact point can trigger an arc and cause damage.

## **Arc detection – for more protection and safety**

The arc detector of the PIKO inverter recognises arcs in the individual strings as they originate. It analyses vibration patterns and establishes whether an arc is present or not. As soon as a hazard of this kind is identified, the detector immediately disconnects the PIKO inverter from the mains. Safe operation of the PV system is thus ensured.

\* PIKO 7.0 | 8.3 | 10.1: also available again with arc detection from the 4th quarter of 2013 at the earliest.

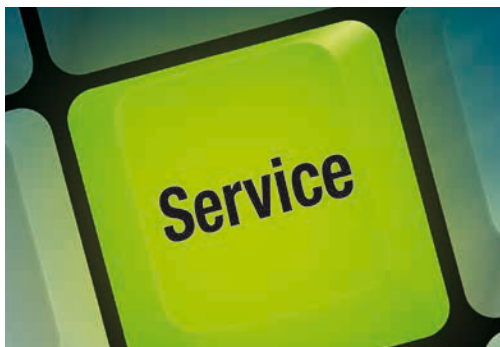


# PIKO inverters – service guaranteed. Tailor-made.

Each PIKO inverter is a quality product manufactured in Europe and within the KOSTAL Group, which is 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.



Personal customer contact for questions of any kind.



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

## 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 layout 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](mailto:service-solar@kostal.com)

## Safety we 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 lump sums for specialist companies

Services outside of the warranty:

- Preferential price for replacement devices when the 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 offering comprises a range of workshops with a focus on the areas of technology and sales, at times in cooperation with TÜV Rhineland. Detailed information on our seminars is available at: [www.kostal-solar-electric.com/seminars](http://www.kostal-solar-electric.com/seminars).

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