



# Powador-proLOG

**Operating instructions** 



### Manual

# **Operating Instructions**

Powador-proLOG

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K A C O 📎

new energy.



# 1 About this documentation

The following notes guide you through all of the documentation. Additional documents are applicable in conjunction with these operating instructions.



#### Read the manual

 $|\mathbf{i}|$ 

We assume no liability for any damage caused by failure to observe these instructions.

### 1.1 Other applicable documents

When installing the data logger, be sure to observe all assembly and installation instructions for components and other parts of the system. These instructions are delivered together with the respective components and other parts of the system.

### 1.2 Retention of documents

Pass these operating instructions on to the system operator. The system operator is to retain the documents. The instructions must be available whenever they are needed.

### 1.3 Symbols used in this document

When installing the data logger, observe the safety instructions included in these installation instructions.



Failure to observe a warning indicated in this manner will lead directly to serious bodily injury or death.

# ATTENTION

Failure to observe a warning indicated in this manner may lead to damage to property.



# IMPORTANT

Failure to observe this information may result in operating difficulty or impaired functionality.



# ACTION

This symbol indicates that a certain action is required.



High voltage!



Read the manual

### 1.4 CE marking

The CE marking is used to document that the Powador-pro-LOG data logger shown on the name plate fulfils the fundamental requirements of the following relevant directives:

- Directive relating to electromagnetic compatibility (Council Directive 2004/108/EC)
- Low voltage directive (Council Directive 2006/95/EC)

### 1.5 Name plate

The name plate showing the exact designation of the unit is located on the left side of the housing.



# 2 Safety Instructions and Regulations



Danger due to lethal voltages.

Lethal voltages are present within the unit and on the power supply lines. Therefore, only authorised electricians may install and open the unit.

#### Standards and regulations

#### IEC 60364-7-712:2002:

Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems.

#### **Technical rules**

The installation must be suited to the on-site conditions and comply with local regulations and technical rules.

#### Accident prevention regulations

- The monitoring system for photovoltaic systems may only be connected by qualified specialists.
- Cables must be disconnected from all power sources before being connected to or disconnected from the system.
- Read the manual and familiarise yourself with the unit prior to operation
- Damaged units must be removed from operation immediately and inspected by a qualified specialist.
- The unit is to be opened by a qualified specialist only.
- The safety of the operator and the unit cannot be guaranteed if the operator does not adhere to the safety instructions.

# ATTENTION

Risk of damage due to improper modifications. Do not attempt to open or modify the data logger.

The proper and safe operation of this unit requires proper transportation, storage, assembly and installation, as well as careful operation and maintenance.

#### Transportation

The Powador-proLOG is subjected to extensive testing and inspections at our test facility. Only by doing so can we ensure the high quality of our products. Our data loggers leave our factory in proper electrical and mechanical condition. Special packaging ensures that materials are not damaged during transportation. However, damage may still occur during transport. The shipping company is responsible in such cases.

Thoroughly inspect the data logger upon delivery. Immediately notify the responsible shipping company if you discover any damage to the packaging which indicates that the data logger may have been damaged or if you discover any visible damage to the data logger.

If necessary, KACO new energy GmbH will assist you. Damage reports must be received by the shipping company in writing within six days following receipt of the goods.

When transporting the data logger, only the original packaging is to be used, as this ensures safe transport.



# 3 Notes on installation and operation

### 3.1 Intended use

The Powador-proLOG is used for system monitoring of a photovoltaic system.

It records the currents, voltages, temperatures, power and yields of every individual inverter, as well as the values of the externally connected sensors.

The Powador-proLOG is built according to the state of the art and recognised safety rules. Nevertheless, improper use may cause hazards for the operators or result in damage to the units.

Any other or additional use of the device is deemed improper. The manufacturer/supplier is not liable for damage caused by such use. Damage caused by improper use is at the sole risk of the operator.

Intended use also includes adherence to the operating instructions.

### 3.2 Factory warranty and liability

KACO new energy GmbH grants a warranty of two years on the Powador-proLOG starting from the date of shipment by KACO new energy GmbH.

During this time, KACO new energy GmbH guarantees the proper function of the units and to undertake repairs at the factory free of charge in the event of a defect for which we are responsible.

Contact your specialty dealer if your unit exhibits a defect or fault during the warranty period.

Warranty claims are excluded in the following cases:

- Use of the units in ways not intended
- Improper installation or installation that does not comply with standards
- Improper operation
- Operating the unit with defective protective equipment
- Unauthorised modifications to the units or repair attempts
- Influence of foreign objects or force majeure (lightning, overvoltage, severe weather, fire)
- Failure to observe the relevant safety regulations
- Transport damage

All warranty claims must be handled at the premises of KACO new energy GmbH. Where possible, the unit must be returned in its original or equivalent packaging. The costs for these services cannot be borne by KACO new energy GmbH.

KACO new energy GmbH will only perform warranty services if the defective unit is returned to KACO new energy GmbH

together with a copy of the invoice which was issued to the user by the dealer. The name plate on the unit must be fully legible. If these requirements are not fulfilled, KACO new energy GmbH reserves the right to deny warranty services.

### 3.3 Service

Starting with the product development phase, we place a great deal of importance on ensuring the quality and longevity of our data loggers.

However, in spite of all quality assurance measures, faults may occur in rare cases. In such cases, KACO new energy GmbH will provide you with the maximum possible support. KACO new energy GmbH will make every effort to remedy such faults in an expeditious manner and with a minimum of bureaucracy.

In such cases, please contact our service department directly.

### Telephone: +49(0)7132-3818-680 e-Mail monitoring@kaco-newenergy.de

So that your enquiry can be dealt with more quickly, please always have the serial number (A) and hardware serial number (B) of your data logger to hand. Both numbers can be found on the name plate on the left-hand side of the housing (see figure below).

KACO rew energy. Powador proLOG	M
10300020	
Type Ethernet/DSL	3
Item No. ME 67.835 A	47
YOM 2011	<u>22</u>
MAC 00:24:80:00:80:4E	
85240 V / 4763 Hz / 10 VA	
	ANY



# 4 Technical Data

Electrical data	Powador-proLOG S	Powador-proLOG M	Powador-proLOG XL
Input levels			
AC power supply [V]	230	230	230
AC voltage range [V]	85 to 240	85 to 240	85 to 240
Rated frequency [Hz]	50	50	50
Frequency range [Hz]	47 to 63	47 to 63	47 to 63
230 V AC power input [W]	7.5	9	9
DC power supply [V]	24	24	24
DC voltage range [V]	21.6 to 26.4	21.6 to 26.4	21.6 to 26.4
24 V DC power input [W]	2.4	3.5	3.5
Output levels			
DC power supply [V]	24	24	24
DC voltage range [V]	23.5 to 24.5	23.5 to 24.5	23.5 to 24.5
Max. current consumption for s	ensors depending on modem v	ariant	
Ethernet/DSL [mA]	230	230	230
ISDN modem [mA]	-	-	230
Analogue modem [mA]	190	-	190
GSM/GPRS modem [mA]	-	-	160
Mechanical data			
Display	LCD 2 x 16 characters	LCD 2 x 16 characters	LCD 2 x 16 characters
Controls	4 buttons for display	4 buttons for display	4 buttons for display
Display elements	4 LEDs	4 LEDs	4 LEDs
Interfaces	RS485, Ethernet, SO	RS485, Ethernet, SO, Powador-go	RS485, Ethernet, SO, Powador-go
Operating temperature [°C]	0 to +55	0 to +55	0 to +55
Storage temperature [°C]	-20 to +65	-20 to +65	-20 to +65
Protection rating	IP20	IP21	IP21
Mounting	Top hat rail & wall	Wall	Wall
H x W x D [mm]	160 x 110 x 63	217 x 220 x 87	217 x 220 x 87
Weight [g]	436	900	900



Connections	Powador-proLOG S	Powador-proLOG M	Powador-proLOG XL
Analogue inputs			
Number of	1	1	4
DC voltage measurement [V]	0 to 10 (max. 24)	0 to 10 (max. 24)	0 to 10 (max. 24)
DC current measurement [mA]	0 to 20 (max. 40/3 V)	0 to 20 (max. 40/3 V)	0 to 20 (max. 40/3 V)
Resistance measurement	PT1000	PT1000	PT1000
Measuring accuracy	1% of the end value (0.1 V/0.2 mA)	1% of the end value (0.1 V/0.2 mA)	1% of the end value (0.1 V/0.2 mA)
Digital inputs			
Number of	1	1	4
S0 pulse input (DC) [V]	Low: 0 to 7 High: 9 to 24	Low: 0 to 7 High: 9 to 24	Low: 0 to 7 High: 9 to 24
	<ul> <li>Powered exclusively by the</li> <li>Can be configured as a stat</li> <li>Potential-free contacts</li> <li>S0 interface specification contacts</li> </ul>	unit's internal power supply us input onforms to DIN 43864	
Digital output			
Number of	1	1	1
S0 optocoupler (DC)	Max. 70 V/50 mA	Max. 70 V/50 mA	Max. 70 V/50 mA
Display elements	4 LEDs	4 LEDs	4 LEDs
Interfaces	<ul> <li>Can be configured as an ala</li> <li>Observe the polarity</li> </ul>	arm or pulse output	
Communication			
Ethernet	100 MBit (RJ45)	100 MBit (RJ45)	100 MBit (RJ45)
Analogue modem (PSTN)*	1 (RJ12)	-	1 (RJ12)
ISDN modem*	-	-	1 (RJ12)
GSM/GPRS modem	-	-	SIM card slot Antenna (FME)

\*Depending on Powador-proLOG variant



#### 5 Installation

#### 5.1 Determining the installation location

Install the Powador-proLOG near a telephone or Ethernet connection and a 230 V grid connection. To prevent damage to the Powador-proLOG or the building's electrical system, keep the following points in mind when you choose an installation location:

- The Powador-proLOG must not be installed outdoors or in damp areas. The unit must be protected from moisture and direct sunlight.
- The ambient temperature must be between 0°C and +55°C.
- There must not be any building installations (e.g. power, gas or water lines) around the drill holes.
- The Powador-proLOG should be placed on a level surface to prevent damage to the housing.

#### 5.2 Installing the unit

### 5.2.1 Powador-proLOG S

The unit is suitable for mounting on a top hat rail (size 35 mm). To make it easy to attach the housing, use a clamping device to snap it onto (or release it from) the hat rail.



### 5.2.2 Powador-proLOG M / XL

The unit is suitable for wall mounting. Use the sketch below to mark the drill holes.

The distance between the screws on the mounting bracket and the wall should be approx. 3 mm.

Powador-proLOG Hang the screw on the and then pull down. Now secure the heads, Powador-proLOG with a third screw in the lower part of the unit.

### Drill hole sketch (lengths in mm)



#### 5.3 Service flap

The Powador-proLOG may only be operated when the service flap is closed. However, the service flap must be opened for the purpose of connecting the voltage supply, the network connection (Ethernet) or sensors.



The 230 V AC grid connection of the Powador-proLOG must always be disconnected from the power supply (by pulling out the plug) before opening the service flap

There are two versions of the service flap: Spherical closure or screw-type closure



## ATTENTION

Always make sure that the service flap is closed while the unit is in operation, i.e. that the spherical closure is firmly in place or that the service flap is screwed tight.

#### 5.4 Connections



Powador-proLOG M/XL



Powador-proLOG S

### 5.4.1 Voltage supply

The Powador-proLOG is powered by an integrated power supply. Thegrid connection (230 V) should be protected by a separate fuse B6A). The power supply provides 24 (e.g. V, e.g. to power a solar sensor.



Powador-proLOG M/XL

Powador-proLOG S

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### Strain relief

When connecting the 230 V AC power cable (included in the scope of delivery), we recommend that you use a cable grip to attach it to the assembly rail inside the housing. The figure below shows an example cable grip design.



5.4.2 GSM antenna (XL GSM/GPRS)



Connect the GSM antenna supplied here. The connection is located to the far left, between the grid connection and the Powador-go RJ45 sockets.



### 5.4.3 Powador-go (M / XL)



You can connect up to 100 current sensors (Powador-go) to the "Powador-go" RJ45 sockets. For example, you can use the current sensors to include inverters without RS485 in monitoring.

The current sensors are connected and supplied with power using patch cables. The ports are labelled "Powador go" (RJ45 sockets).

# ATTENTION

The internal power supply can be used to supply power to a maximum of six current sensors.



### Installing the ferrite clips

To prevent possible communication faults caused by electromagnetic radiation, ferrite clips are included with the Powador-proLOG M. The installation process is shown in the two images below.

a) Insert the patch cable (RS485) into the ferrite clip and close it.



b) Connect the patch cable to the Powador-go port on the Powador-proLOG and attach the ferrite clip to the assembly rail (e.g. cable ties).





### 5.4.4 Analogue/ISDN modem (XL)

Depending on the unit type, the Powador-proLOG units are equipped with either an internal analogue or an internal ISDN modem. The cable connection is included in the scope of delivery.

- Before you install the unit, use a telephone to test the analogue/ISDN telephone connection in both directions (incoming and outgoing connections).
- Use the included cable to connect the unit to the TAE socket/NTBA.
- If you need to extend the cable, make sure that the contacts are secure and the polarity is correct..



Phone

Powador-proLOG XL

Powador-proLOG S (analogue only)

### 5.4.5 24 V supply



Use this connection to power external sensors using the unit's internal power supply (max. 230 mA). The socket is located between the analogue/ISDN modem and the Ethernet interface.



Powador-proLOG S

Powador-proLOG M/XL

### 5.4.6 Ethernet

All Powador-proLOG models are equipped with a network connection to connect the unit to an Ethernet network.





Powador-proLOG M/XL

Powador-proLOG S

When installing the network cable, please note that a crossover cable (included in the scope of delivery) is required for direct communication between the Powador-proLOG unit and a PC. However, if you intend to set up a large network and want to connect the Powador-proLOG unit to a PC or router via a switch or hub, you need to use a patch cable instead. The following figures illustrate the differences between the two Ethernet cables.



### Difference between patch cable and crossover cable

To identify the cable type, simply hold both ends of the cable out in front of you. The RJ45 connector heads on the patch cables are identical. The connector heads on the crossover cables are different.







### **IMPORTANT**

To connect the Powador-proLOG directly to a PC, you must use a crossover cable (included in the scope of delivery). If you want to connect it to a switch or hub, you require a patch cable.



To prevent possible communication faults caused by electromagnetic radiation, ferrite clips are included with the Powador-proLOG M. The installation process is described in 5.4.3 Powador-go (M / XL).

### 5.4.7 RS485 connection

Use a shielded twisted pair cable to connect the unit to the RS485 bus (inverter <-> Powador-proLOG). The ports are labelled "A" and "B".

The maximum length of the RS485 bus is 1000 m. In practice, KACO new energy recommends keeping the length to 500 m. The last bus device must be terminated with a terminating resistor. The Powador-proLOG is already terminated at the factory. Each inverter is assigned a separate address (1 to 32).



# NOTE

- The designations for A and B vary between manufacturers. Therefore, please pay attention to the designations Data + and Data -, because only these are definitive.
- A repeater or hub is usually required for cable lengths greater than 500 m.
- DC/AC lines and signal lines must be routed separately. In other words, never install signal lines in the vicinity of conductors.
- Only use shielded twisted pair cables.
- Twisted pair cables feature core pairs that are twisted together. The same twisted pair must always be used for both A and B (see image below).
- Only use cables that conform to the LiYCY specification.



RS485 bus: Assignment of twisted-pair wires



#### Powador-proLOG M / XL

Connect the RS485 bus to the A/B screw terminals.

### Powador-proLOG S

A special cable with 6-pin connector is included in thescopeofdeliveryforconnectingtheinvertersviaanRS485bus. Plug the 6-pin connector into the Powador-proLOG S. Connect the inverters to the open cable ends. You only need the A and B wires.





Powador-proLOG M/XL

Powador-proLOG S



# IMPORTANT

After you have connected the inverters and current sensors, make sure that the jumper switch is set to "Powador+Powador-go". If only inverters are connected, set the jumper switch to "Powador".



# IMPORTANT

A maximum of 31 Powador inverters can be operated at the same time. The number of Powador 25/30/33000xi central inverters is restricted to a maximum of ten units, as each one occupies three addresses.

The Powador-proLOG S is limited to a maximum output of 50 kWp.

### Schematic diagram for wiring inverters and current sensors





### 5.4.8 Digital output D0

The digital output can be used as an alarm output to control signalling devices or as a pulse output to connect a display.





Powador-proLOG M/XL

Powador-proLOG S



## NOTE

To configure this function, connect to the Powador-pro-LOG and make the required settings via -> "Admin monitoring > Switching output" in your browser.



The output is designed as an optocoupler output (N/O contact) and must therefore be connected to an external voltage supply, if necessary. The maximum load is 50 mA.

### Connecting a display to D0



#### Connecting a signalling device to D0



### 5.4.9 Analogue/digital inputs

The unit is equipped with four (XL) or one (S, M) analogue input(s), which are designed for a voltage measurement of 0 to 10 V.





Powador-proLOG S



Incorrect polarity or using a voltage supply greater than 12 V can destroy the measuring input.

The analogue inputs can be optionally converted for current measurement or resistance measurement. You do this in the configuration menu of the PowadorproLOG (Admin-Messung -> Admin measurement > Analogue channels).

NOTE

Counter pulses (maximum frequency: 14 Hz) can be recorded using four (XL) or one (S, M) digital counter input(s). An interface in accordance with the S0 specification must be available.



Powador-proLOG XL



Powador-proLOG S

ATTENTION

Incorrect polarity or using an external voltage supply greater than 24 V can destroy the measuring input. The 24-V supply is available starting at terminal DI+.





#### Connecting sensors and energy counters to the Powador-proLOG S/M/XL





#### **Recommended cables**

Cable assemblies are provided with all sensors. In the case of the PT1000 ambient temperature sensor, we recommend using cables of the following type: LiYCY 2 x 2 x 0.5 mm<sup>2</sup>. The maximum cable length of 100 m must not be exceeded.



### 5.5 KACO Power Control

Since 1 January 2009 when the German Renewable Energies Act (EEG) was passed, PV systems in excess of 100 kW have been subject to remote-controlled power regulation. In principle, each individual unit in a network with other units can become a system of this size. Therefore, every Powador inverter supports power reduction.

KACO new energy achieves this power reduction function (KACO power control) by combining the Powador-proLOG XL unit with a radio ripple control receiver. These units enable the power supply company to reduce the power of the system as required. For this, the following levels are possible: 0%, 30%, 60% or 100% of the rated AC power of the inverter. When you specify 30% or 60%, the inverter limits the power to 30% or 60%. With a setting of 0%, the inverter disconnects from the grid, and 100% is used for normal grid feed mode.

When the power supply company requests a reduction in the power, the Powador-proLOG receives the corresponding signal via the radio ripple control receiver. The Powador-pro-LOG then forwards the information to all connected inverters as a command via the RS485 interface. After a period of five minutes without any signal from the power supply company, the inverters return to normal operation.

#### Connection

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The radio ripple control receiver is connected to the PowadorproLOG XL, which is mandatory for the use of KACO power control. You do not have to make any changes to the inverter in order to use the KACO power control function, since it is integrated into the inverter as standard. It is activated and configured using the Powador-proLOG XL web server or the integrated display on the Powador-proLOG XL.



# ATTENTION

To use the KACO power control function, you must insert the adapter board. This is included in the scope of delivery of each Powador-proLOG XL unit. In other words, you must remove the standard plug connector and insert the adapter board instead. Now connect the radio ripple control receiver to the adapter board.

### **KACO Power-Control**

#### Adapter board



Radio ripple control receiver Relaiscontact



### 5.6 Pin assignment

### 1 2 3 4 5 6 7 8



RJ45 socket Left: Pin 1

Right: Pin 8

PIN	Phone	
	Analog	ISDN
1		
2		
3		STA / (B2)
4	b= minus	SRA / (B1)
5	a= plus	SRB / (A1)
6		STB / (A2)
7		
8		

PIN	Ethernet	
	Name	Function
1	TPTX-	Transmit Data
2	TPTX+	Transmit Data
3	TPTX+	Transmit Data
4		
5		
6	TPTX-	Transmit Data
7		
8		

PIN	Powador-go	
	Name	Function
1	+12V24V	supply
2	+12V24V	supply
3	+12V24V	alarm output
4	b= plus	data link
5	a= minus	data link
6	GND	alarm output
7	GND	supply
8	GND	supply

### 5.7 Jumper switch (M/XL only)



The Powador-proLOG M/XL has three jumper switches located on the circuit board. You can set the following operating modes:

### OPTO <-> BEEPER

You can set the jumper to OPTO or BEEPER. OPTO: Only the D0 output is activated. BEEPER: The D0 output and the internal horn are activated.



The BEEPER should only be active when the D0 output is used as an alarm output.

### Powador <-> Powador+Powador-go

You can set the jumper to Powador or Powador+Powadorgo.Powador: The RS485 signal is only present at the "B A RS485" terminal strip. Only the Powador inverters can be operated.



# IMPORTANT

If only inverters are connected (without current sensors), make sure the jumper is set to "Powador". Otherwise, you cannot communicate with the inverters.

### Powador+Powador-go:

The RS485 signal is present at the "B A RS485" terminal strip and at the "Powador-go" RJ45 sockets. The current sensors and the inverters can be operated together.



using the "Powador+Powador-go" jumper setting.

#### 24 V internal <-> 24 V external

You can set the jumper to INTERNAL or EXTERNAL. This jumper affects the front socket of the "24 V external" connection.

#### INTERNAL:

The Powador-go units draw their power from the internal power supply of the Powador-proLOG.

### EXTERNAL:

An external voltage supply for the Powador-go units can be connected to the "24 V external" terminal strip.

**Reset** Use the reset button to restart the Powador-proLOG.





# 6 Start-Up

### 6.1 Procedure

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Make sure that everything is properly connected (polarity) and that all inverters are addressed (RS485 address). For more information, see the inverter manual.

 Switch on the Powador-proLOG Connect the supply voltage to switch on the unit. After the supply voltage has beenconnected, the "Power" LED must remain lit.



## NOTE

The system needs about two minutes to be completely initialised. This process is similar to starting up (booting) a PC. The completion of the boot phase is indicated by the status LED: The status LED is off during the boot phase and only starts to flash after it is completed.

 Check the status LEDs The status LED provides information about the unit's status after it has been started up:

Status LED is off ->System is starting up

Status LED is flashing steadily -> System is ready

3. This is the most important part of start-up. Once the system has started up (Power LED is lit/Status LEDisflashing), youshouldconnecttothePowador-proLOG with your computer to check whether all inverters are answering over the RS485 line and whether all connected sensors are providing data. See section 7 ("Establishing a Connection") of this manual for information on how to connect to the Powador-proLOG with your computer.

### 6.2 Using the Powador-proLOG with Powador-web

You do not have to configure the data logger on site. 1. You must ensure that the inverters and sensors have been connected correctly. Make sure that the telephone connection (analogue, ISDN) and the Internet connection (Ethernet) or SIM card (GSM/ GPRS) are functioning correctly. It must be possible to access the data logger using a PC/laptop (assign IP address). In the case of network devices (Ethernet), you should also have the free TeamViewer software installed on your PC/laptop to ensure trouble-free service. As soon as you have managed to meet these requirements, please contact the

KACO new energy monitoring service.

2. Once KACO new energy has confirmed that your data logger is communicating with the portal please send the completed application form to the monitoring service.

You can download the application form from our wesite: "www.kaco-newenergy.de".



You can use what is known as the "posbox" function to test the connection to the Powador-web. To do this go to Admin monitoring » Network » Postbox).

### 6.3 Using the Powador-proLOG without Powador-web

- 1. Once you have successfully connected to the Powador-proLOG, you should configure the unit to meet your requirements (inverter, analogue/digital channels, alarm notification and data transmission).
- You can use the "Installation Wizard") to configure and check the measured data of the Powador-pro LOG. It will guide you through the installation process one step at a time. You can also use the "Expert page" to configure and check measured data. For more information, see section 8 ("Menu Description").

### 6.4 Display menu and status LEDs

### 6.4.1 Meaning of the four status LEDs

"Power" LED Remains lit: the unit is supplied with power Is not lit: there is a fault in the voltage supply

"Status" LED Is not lit: the system is just starting up (boot phase) Flashing: the system loaded successfully (normal operation)

"Connect" LED

Is not lit: currently there is no connection via analogue modem,  $\ensuremath{\mathsf{ISDN}}$  or  $\ensuremath{\mathsf{GSM}}$ 

Flashing: the connection to the remote station is being established

Remains lit: the connection was successfully established

"Alarm" LED

Is not lit: normal operation

Remains lit: the unit issues an alarm signal via alarm output D0 (provided it was appropriately configured)



### 6.4.2 Display menu

The integrated display allows you to make settings (e.g. IP address for the Powador-proLOG) or search for inverters during installation.

You can also query current measured values and stored energy yields while the unit is operating.

Navigating through the display menu:

EXIT:	- Cancel input - Go back one menu level
DOWN:	- Select a menu item below this point - Lower the number
UP:	- Select a menu item above this point - Increase the number

- **ENTER:** Confirm input
  - Go down one menu level
  - Go to the next menu level



### 6.4.3 Display menu structure: Description of the menu items



003

0020

0010



### **Description of the menu items:**

#### Overview

You can see the current TCP/IP settings for your Ethernet connection here. For GSM/GPRS units, you can also query the field strength.

#### ▲ Ethernet

Current IP address: Shows the current IP address that is used in the LAN.

- Current subnet mask: Shows the current subnet mask that is used in the LAN.
- Current gateway: Shows the current gatewaythat is used in the LAN.

#### ▲ GSM/GPRS

• Field strength: Indicates the field strength.

#### Settings

In the "Communication" section, you can make numerous communication settings, e.g. change IP addresses or set the PIN code for the GSM card. You can set the respective local language in the second section, which is the "Language" section. In the third section, which is the "Data logger" section, you can trigger an inverter scan and activate the power control function. You can also reset the data logger to its factory settings.

#### ▲ Communication

• Ethernet

- → Boot protocol
  - none: No boot protocol is used.

DHCP (Dynamic Host Configuration Protocol): A DHCP server assigns an IP address to the Powador-proLOG.

BOOTP (bootstrap protocol): The BOOTP server assigns an IP address to the Powador-proLOG.

RARP (Reverse Address Resolution Protocol): A RARP server assigns an IP address to the Powador-proLOG.

→ Static IP address: The IP address that is used when no boot protocol was selected.

#### $\rightarrow$ Subnet mask:

The subnet mask that is used when one was not assigned by the BOOTP/DHCP server.

 $\rightarrow$ Gateway:

The gateway that is used when one was not assigned by the BOOTP/DHCP server.

- Modem/ISDN/GSM
  - $\rightarrow$  Local IP address:

The IP address that the Powador-proLOG has in the

WAN.

- → Remote IP address: The IP address that the caller must have on the WAN
- $\rightarrow$  Subnet mask:
- The subnet mask in the WAN
- $\rightarrow$  MSN (ISDN only): MSN setting
- $\rightarrow$  PIN Code (GSM only): GSM pin setting

#### ▲ Data logger

Inverter settings

- Start scan: Use this option to search for inverters.
- Activate power control
- Set factory settings
- Reset to factory settings.

#### **Current values**

The current measured values are displayed here. Various queries are possible, depending on which units are connected.

- Analogue values
  - Shows the analogue measured values.
- Digital values Shows the digital measured values.
- ▲ Current sensors
- Shows the measured values for the current sensors
- ▲ Inverters
  - Shows the current power of the individual inverters.

#### System

In the "Power/Energy" section, you can read the current total power and the energy that is fed in during various time periods. The "Alarms/Faults" section shows messages about faults detected in the system.

▲ Energy of DI

If at least one digital channel was selected to calculate the overall system power, the relevant measured value will be displayed in the following submenus.

- $\rightarrow$  Current power
- $\rightarrow$  Yield today
- $\rightarrow$  Yield yesterday
- $\rightarrow$  Monthly yield
- $\rightarrow$  Annual yield
- $\rightarrow$  Total yield

#### ▲ Energy Inverters

If the inverters were selected to calculate the total system power and energy, the relevant measured value will be displayed in the following submenus.

- $\rightarrow$  Current power
- $\rightarrow$  Daily energy
- $\rightarrow$  Previous day's energy
- $\rightarrow$  Energy for the month
- $\rightarrow$  Annual energy
- $\rightarrow$  Total energy



#### Alarms/Faults

→ Communication - Modem fault

A fault occurred while establishing the modem connection

→ System error: - System file is missing

A file that is needed by the system is missing.  $\rightarrow$  System alarms

-Alarm list

A list of the system alarms that were triggered. - Reset local alarms

- Reset the local alarm at D0.
- $\rightarrow$  Hardware
  - AI/DI fault
  - Analogue/digital input fault
  - OCS does not respond
  - No reply from the current sensor
  - Inverter does not respond
  - No reply from the inverter

### Factory settings:

Network:	IP address: Subnet mask:	192.168.100.50 255.255.255.0
Modem:	IP address: Remote IP address: Subnet mask: Analogue :Call acce ISDN: GSM:	192.168.200.1 192.168.200.51 255.255.255.255 ptance active MSN deleted PIN code is 4321

# 6.5 Powador-proLOG XL with GSM/GPRS modem

### 6.5.1 General information

To ensure optimum operation of the Powador-proLOG, we recommend that you take advantage of the agreement that we offer. The costs for this agreement are passed on one to one.



The alternatively used GSM/GPRS data card must have the following properties:

- You should be able to call the data card using an analogue modem. For this reason, the card's data telephone number is required. You usually receive another number for data traffic from your grid operator.
- You must be able to send e-mail (with attachments).
- The transfer rate is 9.6 kBit/s.
- The card does not require storage space.
- The data volume is approx. 100 kB per day, assuming the data is sent once per day by e-mail (without alarms).
- A CSD (Circuit Switched Data) data service must be activated.

### 6.5.2 Inserting a SIM card



Be sure to ground yourself before touching any of the electronic components.



### 1. Open the housing

To insert the SIM card, first open the housing. To do so, remove the two housing screws on the front of the unit. The SIM card slot is located at the rear of the connection box on the top part of the modem.

### 2. Insert the SIM card

With the chip facing up, slide the SIM card into the holder. The card will lock automatically. To unlock it again, lightly push the SIM card forward.









#### 3. Connect the antenna



The antenna connection is located in the connection area, next to the 230 V grid connection. Connect the included antenna here.

#### 4. Start the Powador-proLOG

On delivery, the PIN number of the Powador-proLOG is 4321. The PIN numbers for the SIM card and the Powador-proLOG must be identical. If this is not the case, the card cannot be registered and will be blocked after a certain period. Use the display to check and/or change the PIN number for the Powador-proLOG.

Once the Powador-proLOG has successfully started, you can read the reception status on the display:





# 7 Establishing a Connection

### 7.1 Hardware and software requirements

If the Powador-proLOG has an internal analogue modem, you have to use an analogue modem for communication. If the Powador-proLOG has an internal ISDN modem, the PC also has to have an ISDN modem for communication. A table of the connections that are possible is contained in section 4.

#### Hardware

Standard PC with modem (analogue or ISDN) for a Powador-proLOG with modem, or Ethernet network connection for a Powador-proLOG with Ethernet connection, and the possibility to send e-mail over the network.

#### Software

Internet browser: Internet Explorer 5.5/Netscape 6.1 (or later) with JavaScript activated.

### 7.2 Direct connection to a PowadorproLOG over a network (Ethernet)



Powador-proLOG

PC/notebook with Powador-monitor

The Powador-proLOG and the computer must be connected to the same network. The IP addresses and the netmask for the Powador-proLOG or computer must be in the same address space. As soon as these requirements have been met, you can use an Internet browser (e.g. Mozilla or Internet Explorer) to address the Powador-proLOG at its IP address.

You can set the IP address in the "Network Connections" module in the Windows Control Panel.

	-Yerbindung	? )
Allgemein		
Verbindung herstellen u	unter Verwendung von	:
📑 Realtek RTL813	9/810X Family Fast El	hernet NIC
		Konfigurieren
Aktivierte Komponenter	n werden von dieser V	erbindung verwendet:
M 🛃 Datei- und Druc M 🏹 Internetprotoko	ckerfreigabe für Micros III (TCP/IP)	oft-Netzwerke
Installieren	Deinstallieren	Eigenschaften
Installieren Beschreibung Ermöglicht den Zugri Microsoft-Netzwerk.	Deinstallieren	Eigenschaften
Installieren Beschreibung Ermöglicht den Zugr Microsoft-Netzwerk.	Deinstallieren iff auf Ressourcen in e ung in der Taskleiste a	Eigenschaften inem Inzeigen

igenschaften von Internetprotokoll	(TCP/IP) ?×
Allgemein	
IP-Einstellungen können automatisch zu Netzwerk diese Funktion unterstützt. W den Netzwerkadministrator, um die geei beziehen.	ugewiesen werden, wenn das enden Sie sich andemfalls an gneten IP-Einstellungen zu
O IP-Adresse automatisch beziehen	
Folgende IP-Adresse verwenden:	
IP-Adresse:	192.168.100.55
Subnetzmaske:	255 . 255 . 255 . 0
Standardgateway:	<u> </u>
C DNS-Serveradresse automatisch t	beziehen
Folgende DNS-Serveradressen ve	erwenden:
Bevorzugter DNS-Server:	
Alternativer DNS-Server:	· · ·
	Erweitert
	OK Abbrechen

# IMPORTANT

The Powador-proLOG must be addressed using the correct IP address and netmask. The standard IP address is 192.168.100.50, with a netmask of 255.255.255.0. This means that the Powador-proLOG can be addressed by a PC with IP address 192.168.100.xxx and netmask 255.255.255.255.0. "xxx" stands for any number between 1 and 254, although the number 50 is already assigned to the Powador-proLOG.



Example:

IP address of the Powador-proLOG: 192.168.100.50 IP address of the network card (computer): 192.168.100.55

You can change the Powador-proLOG's settings for IP address, netmask and gateway via "Admin monitoring -> Network -> Settings"). Depending on your settings, the IP address may vary. In this case, enter the correct IP address in your browser instead of the standard address that is listed above.



After you have made changes, saved the settings, and restarted the unit, the Powador-proLOG can be reached using the new parameters.

# 7.3 Establishing a connection to a Powador-proLOG by modem

To connect to the Powador-proLOG from a PC, you have to set up a new dial-up connection. The instructions below are based on the example of Windows XP.



### Windows XP

1. Step

A suitable modem must already be connected to your PC and installed.

Access the "Network Connections" menu item by selecting "Start -> Settings -> Control Panel"). Now select the "New Connection Wizard".

# IMPORTANT

If the Powador-proLOG has an internal analogue modem, you have to use an analogue modem or an ISDN modem with analogue simulation for communication. If the Powador-proLOG has an internal ISDN modem, the PC also has to have an ISDN modem for communication.

### 2. Step

Select the "New Connection Wizard" and then click "Next". Now select the "Connect to the Internet" menu item. In the next window, select "Set up my connection manually". Select "Connect using a dial-up modem" in the following window.

kssistent für neue verding	rungen
	Willkommen         Mit diesem Assistenten können Sie:         • Eine Verbindung mit dem Internet herstellen         • Eine Verbindung mit einem privaten Netzwerk herstellen, wie z. B. einem Firmennetzwerk         • Ein Heim- oder ein kleines Firmennetzwerk einrichten
	Klicken Sie auf 'Weiter', um den Vorgang fortzusetzen.
ssistent für neue Verbind	lungen
Netzwerk verbindungstyp Wie möchten Sie vorgehe	en?
und E-Mail lesen könr Verbindung mit der Stellt eine Verbindung VPN-Verbindung) her, Ein Heim- oder ein Stellt eine Verbindung her oder richtet eine n Eine erweiterte Ver Stellt eine direkte Vert parallelen oder Infraro andere Computer dara	ren. In Netzwerk am Arbeitsplatz herstellen mit sinem Firmernetzwerk (über eine DFU- oder so dass Sie von zu Hause oder unterwegs arbeiten können. Kleines Firmennetzwerk einrichten mit sinem bestehenden Heim- oder kleinem Firmennetzwerk eue Verbindung ein: bindung mit einem anderen Computer über einen seriellen, tanszhluss her oder richtet diesen Computer so ein, dass suf zugreifen können.
	< Zurück Weiter > Abtrechen
ssistent fiir neue Verhing	lungen
<b>Vorbereitung</b> Der Assistent wird zum Eir	nrichten der Internetverbindung vorbereitet.
Wie soll die Verbindung m	it dem Internet hergestellt werden?
C Finen Internetd	ienstanbieter aus einer Liste auswählen
Vorbindung mar	
Für eine DFÜ-Verb des Internetdienst Rufnummer.	uen einrichten jindung ist ein Kontonamen, ein Kennwort und die Rufnummer anbieters erforderlich. Ein Breitbandkonto erfordert keine
○ CD eines Intern	etdienstanbieters verwenden



Assistent für neue Verbindungen					
Internetverbindung Wie soll die Internetverbindung hergestellt werden?					
Verbindung mit einem DFU-Modem herstellen					
Stellt eine Verbindung mit einem Modem und über eine herkömmliche Telefonleitung oder eine ISDN-Telefonleitung her.					
<ul> <li>Verbindung über eine Breitbandverbindung herstellen, die Benutzername und Kennwort erfordert</li> </ul>					
Stellt eine Hochgeschwindigkeitsverbindung über ein DSL- oder Kabelmodem her. Internetdienstanbieter nennen diesen Verbindungstyp häufig PPPoE.					
O Verbindung über eine beständige aktive Breitbandverbindung herstellen					
Stellt eine Hochgeschwindigkeitsverbindung über ein Kabelmodem oder eine DSL- oder LAN-Verbindung her. Diese Verbindung ist immer aktiv und erfordert keine Benutzeranmeldung.					
<zurück weiter=""> Abbrechen</zurück>					

#### 3. Step

Press the "Next" button to begin setting up your connection. First enter a name (of your choosing) which will be used later on to call up the connection. In the next window, enter the phone number for the Powador-proLOG.

In the window that follows, enter "admin" for both the user name and the password.



this connection") should be deactivated, because they could disrupt operation. The following window is the final step in setting up the

connection.

Assistent für neue Verbindungen				
Verbindungsname Wie lautet der Name des Internetdienstanbieters?				
Geben den Namen des Internetdienstanbieters im folgenden Feld ein. Name des Internetdienstanbieters				
proLOG				
Der hier eingegebene Name wird als Name für die zu erstellende Verbindung verwendet.				
<zurück weiter=""> Abbrechen</zurück>				

Assistent für neue Verbindungen
Zu wählende Rufnummer Wie lautet die Rufnummer des Internetdienstanbieters?
Geben Sie die Rufnummer unten ein.
Rufnummer:
123456789
Sie müssen eventuell eine "1" bzw. eine Vorwahl oder beides einbeziehen. Wählen Sie die Rufnummer auf Ihrem Telefon, wenn Sie sich nicht sicher sind, ob diese zusätzlichen Nummer erforderlich sind. Die gewählte Nummer ist korrekt, wenn Sie bei dem Telefonanruf einen Modemton hören.
<zurück weiter=""> Abbrechen</zurück>
Assistent für neue Verbindungen
Internetkontoinformationen Sie benötigen einen Kontonamen und ein Kennwort für die Anmeldung an Ihrem Internetkonto.

Internetkontoinformationen Sie benötigen einen Kontonamen und ein Kennwort für die Anmeldung an Ihrem Internetkonto.						
Geben Sie einen Kontonamen und ein Kennwort für den Internetdienstanbieter ein. Schreiben Sie diese Informationen auf und verwahren Sie sie an einem sicheren Drt. (Wenden Sie sich an den Internetdienstanbieter, wenn Sie den Kontonamen oder das Kennwort eines vorhandenen Kontos vergessen haben.)						
Benutzername:	MusterUser					
Kennwort						
Kennwort bestätigen:						
Diesen Kontonamer Computers verwend	n und Kennwort für die Internetverbindung aller Benutzer dieses den					
📃 Verbindung als Star	ndardinternetverbindung verwenden					
Internetverbindungsfirewall für diese Verbindung aktivieren						
	<zuriuck weiter=""> Abbrechen</zuriuck>					

Enter "admin" for both the user name and the password.







### 4. Step

After you have finished setting up the connection, the "Connect to ..." window appears. First press the "Properties" button and then access the "Networking" tab in the following window. Place a check next to "Internet Protocol (TCP/IP)" and then click on "Properties". Activate the "Use the following IP address" and "Use the following DNS server addresses" options and then enter "192.168.200.51" in each of the address fields.

Connect to "p	roLOG"
R	
Benutzername: Kennwort:	MusterUser [Klicken Sie hier, um das Kennwort zu ändern]
✓ Benutzernam ONur für eig OAlle Benut	en und Kennwort speichern für: ene Verwendung zer dieses Computers
Wählen:	123456789
Wählen	Abbrechen Eigenschaften Hilfe



Eigenschaften von Internetprotokoll (TCP/IP)						
Allgemein						
IP-Einstellungen können automatisch zugewiesen werden, wenn das Netzwerk diese Funktion unterstützt. Wenden Sie sich andernfalls an den Netzwerkadministrator, um die geeigneten IP-Einstellungen zu beziehen.						
◯ IP-Adresse automatisch beziehen						
Folgende IP-Adresse verwenden:						
IP-Adresse: 192 . 168 . 200 . 51						
<ul> <li>DNS-Serveradresse automatisch t</li> <li>Folgende DNS-Serveradressen ver</li> </ul>	veziehen rrwenden:					
Bevorzugter DNS-Server:	192 . 168 . 200 . 51					
Alternativer DNS-Server:						
Erweitert						
OK Abbrechen						

NOTE

From now on, you can establish a connection by simply accessing the "Network Connections" menu item in "Start -> Settings -> Control Panel").



## **IMPORTANT**

Enter the same address in both fields. After you have entered the addresses, confirm by pressing "OK". The "Connect to ..." window will then appear. Choose "Dial" to start dialling. You do not need to enter either the user name or the password.



## NOTE

[w], [,] and blanks between the individual digits in the telephone numbers are commands that tell the telephone system to wait until an outside line has been reached. For more information, see the documentation for the telephone system.

#### 5. Step

Once the connection has been made, your browser (e.g. Netscape 6.1) opens, and the unit's IP address is entered in the address bar. The standard address is: http://192.168.200.1. Confirm this address to access the start page for the Powador-proLOG.



### 7.4 Powador-web

Powador-web is an Internet portal that allows for a comprehensive evaluation and visualisation of photovoltaic systems together with the Powador-proLOG. The password-protected portal provides you with secure and worldwide access to your system data.

As administrator, you can configure which data is displayed.

#### Highlights

- Professional remote monitoring
- Graphical presentation of measured values
- Compatible with all operating systems
- Automatic data transmission
- Comprehensive alarm parameters
- Alarm notification via e-mail, fax or SMS (text message)
- Summary of your systems for one farm
- KACO new energy configures portal and data logger based on the application form (which is available at www.kaco-newenergy.de).
- Low annual fee

#### Advantages of Powador-web

- Worldwide access to measured data
- Satellite data updated daily
- Basic data is the same for each user
- Updates are made centrally
- No installation necessary
- Extremely high level of data security and availability
- Hourly updates
- Custom alarm notification

The Powador-web Internet portal must be requested separately. Set-up and usage are subject to various costs. The application form is available for download from the KACO new energy website. To avoid your application being delayed, the application form must be completed in full. We have activated a sample system at

#### http://www.kaco-newenergy.de

so that you can familiarise yourself with what Powador-web can do. A link to "KACO Plant 3" in Neckarsulm is located on the right-hand side of the homepage. Because this system is accessible to everyone, it has a limited range of functions.

# Once Powador-web has been completely set up and is ready to use, KACO new energy will send you the access data for your system.



The "Java JIT compiler enabled" option must be activated (under "Tools -> Internet Options -> Advanced" in Internet Explorer). Also make sure that your browser and firewall allow pop-up windows from our "www.kaco-newenergy.de" page.



You can find the daily yield of your PV system under "Evaluation".



You can find a list of the total annual yield of your PV systems under "Solar account".



To find out what kind of difference you are making personally in the quest for an environmentally friendlier future, go to "Environment".



#### **Menu Description** 8

Once you have established a dial-up or network connection, you can access the menu structure for the Powador-proLOG in your browser.



The Powador-proLOG's Start Center is divided into two menu items:

- Installationsassistent (Installation Wizard)
- Profiseite (Expert Page)



The Installation Wizard has been designed to make it as easy as possible for the user to set up the data logger. The installation procedure comprises 14 steps. Help is provided for each step.

- 01 System time
- 02 System data
- 03 Contact data
- 04 Connections
- 05 Send data and alarms
- 06 Test connections
- 07 Measurement equipment: analogue
- 08 Measurement equipment: digital
- 09 Measurement equipment: inverter scan
- 10 Measurement equipment: energy comparison configuration
- 11 Test measurement equipment
- 12 Monitoring
- 13 Digital output
- 14 Final report

The expert page is intended for experienced users. The following menu items show the start page:

- 8.1 General
- 8.2 Online values
- 8.3 Status
- 8.4 Configuration

The following additional menu items can be accessed by the administrator:

- 8.5 Admin monitoring and
- 8.6 Admin measurement



function. Consult your system administrator or KACO new energy GmbH before making changes.

### 8.1 General

The start page shows the most important information for the system.

Hardware:

Ų

This section provides an overview of occupied channels and available bus devices.

Monitoring:

This section shows the last fault message that occurred, and when it occurred. The last data transmission is also shown. The field strength is indicated for GSM/GPRS units.

System parameters:

These entries provide information about the connected photovoltaic system.

General Online values	Status Configuration			
Powador		К	A C	
Welcome to mon	itoring system « Powador XI	L»		
System Survey o	f the Plant			
Hardware Analog inputs Digital Inputs Current sensors Inverters	0 allocated 1 allocated 0	Monitoring Last alarm message Date/Time Last data Yansfer Free Memory	96 %	
System Parameters Plant operator Installed power Inverters Module type Module area	0 kW 0 m²	Orientation Tilt Module efficiency	0" 0" 0 %	
		System Time	12:01:40 /	11.08.2010



Login Bitte piden Sie das Administratorpasswort en	A C O 📎
Ellite geben Sie das Administraturpassworf ein	Are marg
Abbrechen Login	



### HTML menu

General Informa- tion	Online values	Status	Configuration	Admin monitoring	Admin measure- ment
Logout	Analogue/digital	System messages	System data	Network »	Analogue Channels
Start page	Current sensors	Inverters	Standard con- tact	Contact addresses »	Digital Channels
	Powador-Argus		Date/time	Switching output	Extension Modules
	Inverter overview			System messages	Current sensors
	Inverter details			Inverters	Powador-Argus
	Active power/idle power control			Powador-Argus	Inverters
				Formulas »	Active power/idle power control »
				Status alarms »	Energy of digital inputs
				Website password	Energy of inverters
					Time synchronisation



### 8.2 Online values

This section shows various measured values from the sensors and counters that are connected to the analogue and digital inputs. If inverters are connected to the RS485 interface, you can also query the inverter values.

#### 8.2.1 Analogue/digital

#### Online-Werte » Analog / Digital

Summe ausgewählter Digitaleingäng	ge				
Bezeichnung	Wert	Einheit	Bezeichnung	Wert	Einheit
Aktuelle Leistung	1.576	KW	Aktuelle Monatsenergie	3.930	kWh
Aktuelle Tagesenergie	0.117	kWh	Aktuelle Jahresenergie	3.930	kWh
Tagesenergie Vortag	0.000	kWh	Gesamtenergie	3.930	kWh

#### Example:

The system consists of two sub-systems, which have separate counters connected to the Powador-proLOG. To get the proper totals, activate the two sub-counters for consideration under "Admin measurement -> Energy of digital channels")

An overview of the system's overall energy production is provided here. You can define how this overall total is calculated in the > Admin measurement -> Energy of digital channels") section.

#### Details of the digital inputs:

Details D	ligitaleingänge						
Kanal	Bezeichnung	Aktuelle Leistung	Minimum	Maximum	Einheit	Zählerstand	Einheit
1	Einspeisezähler	1.443	0.000	1.770	kW	95.562	kWh
2	Verbrauchszähler	0.000	0.000	0.584	kW	30.324	kWh

This section lists the measured values for each digital input.

#### Current power:

The pulse constant is used to convert counter pulses to the corresponding power over a specified period of time. (Power displayed in kW.)

Minimum:

The lowest measured value for the current day

### Details of the analogue inputs:

NΛ	lavi	im	111	m٠	
IVI					

The highest measured value for the current day

#### Counter reading:

This column shows the overall total for the measured pulses. You can calibrate this display with the actual value on the energy counter. (See the "Admin measurement -> Digital channels") menu item; displayed in kWh).

Details A	Analogeingänge				
Kanal	Bezeichnung	Wert	Minimum	Maximum	Einheit
1	Einstrahlung in Modulebene	322	96	478	W/m²
2	Temperatur Modul	13.8	5.7	13.7	°C
3	Umgebungstemperatur	8.1	4.7	8.3	°C

Analogue values are shown with channel number and designation. The following information is provided:

#### Value:

Current online value (updated every 10 seconds)

Minimum: The lowest measured value for the current day

Maximum: The highest measured value for the current day



#### 8.2.2 Current sensors

If current sensors (Powador-go) are connected, the current measured values of the current sensors are shown here.

Aktualisieren	Adresse	Stromwert	Minimum	Maximum	Einheit	
	0	1.64	0.00	4.11	A	
	1	1.51	0.00	3.93	A	
	2	1.57	0.00	4.11	A	
	3	1.51	0.00	4.00	A	
	4	1.57	0.00	4.04	A	
	5	1.54	0.00	4.01	A	
	6	1.53	0.00	3.99	A	
	7	1.56	0.00	4.05	A	
	8	1.55	0.00	3.89	A	
	9	1.57	0.00	3.96	A	
	10	1.61	0.00	4.06	A	
	11	1.60	0.00	4.08	A	
	12	1.66	0.03	4.18	A	
	13	1.53	0.00	3.85	A	

### 8.2.3 Inverter overview

If inverters are connected and properly addressed, current and accumulated measured values are shown here. Total yields are displayed in the "Total for all inverters" section. The "Overview of individual inverters") section lists all connected inverters, including address, unit status, current feedin power and daily yield that was reached at the time of the query. Each inverter address is linked to the inverter details.

Summe alle	r Wechselrichter						
Bezeichnun	2	1	Wert	Einheit	Bezeichnung	Wert	Einhei
Utuelle Leis	tung		9.388	KW	Aktuelle Monatsenergie	2524.281	kWh
Atuelle Tag	esenergie		5.678	KWD	Aktuelle Jahresenergie	10025.340	kvin
agesenerg	ie Vortag		176.478	KWD	Gesamtenergie	81020.813	RWh
bersicht ei	nzeiner Wechse	richter					
dresse	Leistung	Einheit		Tagesenergie	Einheit		
	2990	W		2133	Wh		
11	1025	W		713	Wh		
12	978	W		717	Wh		
/3	987	W		703	Wh		
	2925	W		2095	Wh		
11	1011	W		709	Wh		
12	963	W		699	Wh		
13	952	W		688	Wh		
	3215	W		2230	Wh		
11	1107	W		772	Wh		
12	1116	W		767	Wh		
13	992	W		691	Wh		
	112	W		60	Wh		
	168	W		145	Wh		
	21	W		12	Wh		
	9	W		2	Wh		
	0	W		0	Wh		

### 8.2.4 Inverter details

This section shows all of the inverter's measured values. You can only select one inverter at a time from the drop-down list.

Online-Werte » Wech	selrichter-D	Details			
In der Auswahlliste können Sie	die angeschlo	ssenen Wechselrichter auswähl	len.		
Auswahl	Anz	eige			
3/1 Powador 30000xi/1	- B	Sezeichnung	Kürzel	Wert	Einheit
Aktualisieren	V	/echselrichter 3/1 tetriebsart / Status	s		
	G	Seneratorspannung	U_DC_0	452.9	V
	G	seneratorstrom	LDC_0	2.50	A
	G	eneratorleistung	P_DC_WR	1132	W
	N.	letzspannung	U_AC_0	229.5	v
	N	letzstrom	LAC_0	4.33	A
	L	eistung an Netz	P_AC_WR	1018	W
	G	serätetemperatur	T_WR	12	°C
	т	agesenergie	E_D_WR	772	Wh

### 8.3 Status

#### 8.3.1 System messages

This menu item provides an overview of the possible alarm statuses.

The **measured value alarms** result from the criteria specified in "Admin monitoring -> Formulas -> Criteria 0-4". The status overview lists the following information:

- Designation:
  - The name that was defined in Formula -> Criterion") is shown here.
- Status:
  - Indicates whether the criterion is defined as active or inactive.
- Upper limit: This shows the current upper limit value for the monitoring criterion.
- Actual value:

This shows the current actual value for the monitoring criterion.

Lower limit:

This shows the current lower limit value for the monitoring criterion.

Alarm counter:

This shows how often the criterion exceeded a limit value.

- Sending status:

Indicates whether there are currently alarm messages that are waiting to be sent.

- Information:
  - This shows when the last alarm occurred.

# The system alarms relate to messages that are based on faults in the monitoring system.

- Designation:
  - The reason for the error message is shown here.
- Alarm type:

Information about the type of e-mail/fax alarm message.

- Alarm destination: Shows which contact the error message was sent to.
- Alarm counter:

This shows how often the alarm was tripped.

Sending status:

Indicates whether there are currently alarm messages that are waiting to be sent.

Info Information:

This shows when the last alarm occurred.

The **Sending status of e-mails** status shows the system's current status. For example, if e-mails are waiting to be sent, "busy" is shown in the "sendstate" field. The normal status is "Ready to Send".



Status » Anlagenmelo	dungen						
tlesswertalarme							
Bezeichnung	Status	Obere Grenze	Ist-Wert	Untere Grenze	Alarmzähler	Versandstatus	Info
Vergleich Energie - Zeit E.Z.PV2(E.Z.PV1 E.Z.PV3(E.Z.PV1 E.Z.PV3(E.Z.PV2	inaktiv inaktiv inaktiv inaktiv	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0 0 0	:	
Aniagenalarme							
Bezeichnung	Alarmart	Alarmziel			Alarmzähler	Versandstatus	Info
Statusalarme							
Bezeichnung	Status	Quelle 1	Verknüpfung	Quelle 2	Alarmzähler	Versandstatus	info
Versandstatus der E-Mails							
Sendestatus:	Bereit zum 5	lenden					
Folgende E-Mail wird im Mome	ent versendet oder	ist für den Versand vor	gesehen:				
Depet aller Alarma inkl. Jokal		Alarma zunücksatzer					

### 8.3.2 Inverters

The "Fault messages" section shows when the last alarm message occurred, including alarm destination and mode of communication). The "Brief information" section lists all connected inverters with their address and unit status.

Status	38	Wechselrichter
orurua	-	rechaementer

atoronyo	neodingen.				
Bezeichn	ing Alarmart	Alarmziel	Alarmzähler	Versandstatus	Info
Kurzinfo					
Adresse	Status				
01	MPP- Regler, ständige Suchbew	egung (4)			
01/1	MPP- Regler, ständige Suchbew	regung (4)			
01/2	MPP- Regler, ständige Suchbew	regung (4)			
01/3	MPP- Regler, ständige Suchbew	regung (4)			
02	MPP- Regler, ständige Suchbew	egung (4)			
02/1	MPP- Regler, ständige Suchbew	egung (4)			
02/2	MPP- Regler, ständige Suchbew	regung (4)			
02/3	MPP- Regler, ständige Suchbew	egung (4)			
03	MPP- Regler, ständige Suchbew	regung (4)			
03/1	MPP- Regler, ständige Suchbew	egung (4)			
03/2	MPP- Regler, ständige Suchbew	egung (4)			
03/3	MPP- Regler, ständige Suchbew	regung (4)			
04	MPP-Regler, ohne Suchbewegu	ng (5)			
05	MPP-Regler, ohne Suchbewegu	ng (5)			
06	MPP-Regler, ohne Suchbewegu	ng (5)			
07	MPP-Regler, ohne Suchbewegu	ng (5)			
na l	MPP-Regler obne Suchbewegu	00(5)			

### 8.4 Configuration

### 8.4.1 System data

System data is required at various times. In the PowadorproLOG, the information is used on the title page to provide a quick system overview. The system data is provided in the "Admin monitoring -> Formulas") section to define fault messages.

#### This is where you enter data about the operator, the system power, the module types, orientation, etc. You can also make settings related to error message sending, scanning rate, and so forth.

- System designation:
  - This entry appears on the start page and is included in all alarm messages.
- Operator:
- For documentation purposes only. – Installed power:
- Used when calculating alarm criteria — Module area:
- Used when calculating alarm criteria
- Degree of efficiency of modules): Used when calculating alarm criteria
- Degree of efficiency of inverters:
- Used when calculating alarm criteria
- Number of sub-systems:

- Used when calculating alarm criteria
- Storage interval:
  - Data compression every 300, 600, 900, 1800, 3600 seconds
- Orientation:
  - The system's orientation
- Angle of inclination:
  - The angle of inclination of the modules
- Module type:
- Module data
- Inverter type:
- e.g. Powador 5000xi – E-mail contact for sending data:
- Destination for sending measured data
- Data transmission: On/Off
- Dial-out prefix:
  - Number required to reach an outside line (depends on the telephone system)
- Tone or pulse dialling:
- Dialling method setting
- Time-out (analogue modem): Maximum time between two bell signals
- Language:
  - You can choose between German and English.
- Call acceptance: On/Off
   You can limit call acceptance on the data logger to a specific time. More information
- can be found on the next page.
- Bell signals (analogue modem)):
  - Number of bell signals until the Powador-proLOG answers
- Contact for sending the daily file by fax):
  - The daily files can also be sent by fax at a specific time. Options: Inactive, Contacts 1-4), Standard contact.





#### Additional settings when call acceptance = "off"

- Start time for call acceptance: Time that the unit begins answering
- Stop time for call acceptance: Time that the unit stops answering
- Bell signals (analogue modem)): Number of bell signals until the Powador-proLOG answers
- Time for call acceptance after reset):
   Time (in seconds) indicating how long the unit can be reached for after a restart

Rutannahme	⊖Ein ⊙Aus
Startzeit Stunde Rufannahme (nur analog. Modem)	0 .00 Uhr
Stopzeit Stunde Rufannahme (nur analog. Modem)	0 .00 Uhr
Klingelzeichen bei Rufannahme (nur analog. Modem)	1
Zeitdauer Rufannahme nach Reset in s (nur analog. Modem)	600 s



Your changes are not applied until you press the "Save" button.

### 8.4.2 Standard contact

The default setting for the Powador-proLOG is to have all alarm messages and measured value files sent to the address indicated in the "Standard contact" field. You can make changes to individual alarm criteria, system messages, and system parameters.

- Company/Person:
  - The company or person that is entered in this field is the name of the contact and is displayed in the selection boxes for addressing an alarm message.
- Street, postal code, telephone number, contact person: For documentation purposes only.
- Mobile:

Mobile phone number for alarm notification by SMS (text message);

- the mobile phone number may not contain formatting characters.
- Fax:

Fax number for alarm notification by fax; the fax number may not contain formatting characters.

– E-mail:

E-mail address for alarm notification by e-mail (max. 40 characters)

# Konfiguration > Standardkontakt Filma / Person Kaco Funktion des Standardkontaktes: In der Vortrastellung des Dävelsogens werden alle Alammeldungen sonle de Metazwerdstallen in an den Standardkontaktegen Nation Pital Wenner Heisanberg Statile Ord Erfenbach Teelon Assperdyaterer Assperdyaterer Kachul Daniel Erfast Daniel Kachul Biszon Gewennerge de

### 8.4.3 Date/Time

This is where you set the time and date.



Konfiguration » Datum / Uhrzeit	
Neues Datum (dd:mm:yy) 17 3 9	
Neue Systemzeit (hh.mm.ss) 8 55 6	
	Abbrechen Speichern
Bitte beachten Sie, dass die Einstellung der Uhrzeit direkte Auswirkungen auf die Datenprotokollierung hat Abweichungen is werden.	m Sekundenbereich sollten nicht korrigiert



### 8.5 Admin monitoring

### 8.5.1 Network

The "Network" section is divided into four sub-sections.

#### 1. Settings

The "Settings as PPP server") section pertains to the network settings for the Powador-proLOG's web server.

IP address of the server IP address of the Powador-proLOG for dialling up by modem/ ISDN/GSM (standard: 192.168.200.1). Netmask of the server: Do not change.

IP address of the caller Do not change. (Standard: 192.168.200.51)

Telephone number of the server This telephone number is the number at which the Powador-proLOG can be reached The number is used as the sender's number when sending an SMS (text message).

The LAN interface (Ethernet) settings pertain to the PowadorproLOG's local network settings.

Current IP address The current IP address of the Powador-proLOG.

Boot protocol You can choose between none, DHCP, BOOTP, and RARP. A description of the protocols is shown on page 10.

### Section 8 · Menu Description



### Static IP address

Indicates the desired IP address when no boot protocol is used.

#### Netmask

The subnet mask that is used if one has not been assigned by the BOOTP/DHCP server.

#### Gateway

The gateway that is used when one was not assigned by the BOOTP/DHCP server.

#### DNS server

You can enter the DNS server in this field.

- DNS server
  - You can enter an alternate DNS server in this field.

The ISDN terminal adapter settings pertain to the PowadorproLOG's ISDN settings. To use the unit on an ISDN extension, enter the relevant connection number here.

#### MSN

Connection number for the ISDN extension, which is usually a phone number without prefix.

The settings for testing the reporting methods are used to test the Powador-proLOG's ability to make contact. The test can be conducted by e-mail, fax and SMS (text message).

#### Contact for the test

The contact for sending a test message. You can use the standard contact or specify one of the four contact addresses.

Place a check next to the relevant fields to activate the desired form of contact (E-mail, Fax, or Text message). Admin-Überwachung » Netzwerk » Einstellungen

Einstellungen als PPP-Server	
Servername	
IP Adresse des Servers	192.168.200.1
Netzmaske des Servers	255.255.255.0
IP-Adresse des Anrufers	192.168.200.51
Telefonnummer des Servers	
Einstellungen LAN-Interface (Ethernet)	
Aktuelle IP-Adresse	192.168.106.9
Boot-Protokoll	Keines 🐱
Statische IP Adresse	192.168.106.9
Netzmaske	255.255.0.0
Gateway	192.168.100.254
1. DNS-Server	
2. DNS-Server	
Einstellungen zum ISDN Terminaladapter	
MSN	
Überprüfung der Meldewege	
Kontakt für den Test	Kaco 🗸
E-Mail	
Fax	



Your changes are not applied until you press the "Save" button.

#### 2. Internet

This section contains settings for the Internet access points (provider settings), which the Powador-proLOG uses to connect to the Internet. Enter the designation, access number, user name and password. The providers are listed under "Net-zwerk -> E-Mail" ("Network -> E-mail").

Admin-Überwachung » Netzwerk » Internet

Einstellu	ngen der Internet-Zugangspunkte (Provider)			
Lid. Nr.	Bezeichnung	Einwahl-Nummer	Benutzername	Passwort
1.	MSN	0192658	msn	msn
2	SBQ 2006	03947311000	freesurf@xxd	box
3.	Arcor GSM	08081809999	Arcor	internet
4.	freenet GSM	22243	freenet	mobil
5.				



Your changes are not applied until you press the "Save" button.

### 3. E-mail

This section is where you make settings for sending e-mail messages.

The SMTP server (outbox) section includes settings for IP address and e-mail address. This information is needed for the Powador-proLOG to send e-mail messages.

IP address of the server

The IP address for logging on to the e-mail server. The IP address of our data processing centre is 213.179.128.176.

- E-Mail-Adresse des Powador-proLOG (E-mail address of the Powador-proLOG)
  - Enter a valid e-mail address here. The e-mail address must include the relevant SMTP server. Standard e-mail address: sr@direct-data.de
- Collective e-mail address

KACO new energy provides a service

- for sending e-mail messages using a server in our data processing centre.
- To use it, enter the address
- data@mail1.meteocontrol.de.

The e-mail messages will then be forwarded to the actual address.

The POP3 server (inbox) section includes settings for authentication, IP address, user name and password. Fill in these fields only if they are required by the e-mail account. The server in our data processing centre does not require them.

You can set the priority of the providers in the dialling services section. This means that the first provider listed will be dialled first. If no connection is made, the Powador-proLOG dials up the next provider.

# IMPORTANT

Sending e-mail messages via the Ethernet interface: If you want to send e-mail messages through the local network (e.g. via DSL), make sure that no provider is selected in the list on the left side of the "dialling services" section.



Synchronisation with database server: Yes/No

When you use the "Powador-web" service, you have the option of having all alarm messages sent to both the receiving address and the portal. This means that the fault messages are also accessible in alarm management.

Admin-Überwachu	ng » Netzwerk » E-Mail
SMTP-Server	
IP-Adresse des St/TP- Bervers	213.179.128.176
E-Mail-Adresse des Powador	SN070037@direct-data de
Sammel-E-Mail-Adresse	data@mail1.meteocontrol.de
POP3-Server	
POP3-Authentifizierung benötigt	
Servers	
POP3-Benutzername	
POP3-Kennwort	
Einwahl-Dienste	
	SB0 2006 Autwarts MSN Actor GSM Abmints
	In der linken Liste befinden sich die Einwahldenste in Rehenfolge ihrer Verwendung. Ist ein Einwahldenstnicht erreichbar, wird der nachte Listeneinforg verwendt. In der reichte Liste Behönden sich die zur Verlügung stehenden Einwahldenste.
Einstellungen zum Abgleic	ch mit Datenbank
Kontakt für Datenabgleich	Datenbankserver
Abgleich mit Datenbank	Nein 👻



#### 4. SMS

This section contains settings for sending SMS messages (text messages). Enter the numbers for the respective SMS servers here (T-Mobile, Vodafone, E-plus, O2).

Prefix(es))

SMS server prefix(es), separated by a semi-colon.

SMSC telephone number (analogue))

Phone number(s) of the server that is used for sending SMS messages.

#### SMSC telephone number (ISDN))

Phone number(s) of the server that is used for sending SMS messages.

Admin-Überwachung » Netzwerk » SMS	
T-Mobile	
Vorwahl(en)	0160;0170;0171;0175;01
Telefonnummer SMSC (Analog)	01712521002
Telefonnummer SMSC (ISDN)	01712521001
Vodafone	
Vorwahl(en)	0162;0172;0173;0174;01
Telefonnummer SMSC (Analog)	01722278025
Telefonnummer SMSC (ISDN)	01722278000
E-Plus	
Vorwahl(en)	0163;0177;0178;0155
Telefonnummer SMSC (Analog)	01771167
Telefonnummer SMSC (ISDN)	01771167
02	
Vorwahl(en)	0176;0179;0159
Telefonnummer SMSC (Analog)	01797673425
Telefonnummer SMSC (ISDN)	01797673425

#### 8.5.2 Contact addresses

You can define up to four contacts in the "Contact addresses" section. These contacts are in addition to the standard contact and are alerted in the event of a fault. Fill in the fields in the same way you did for the standard contact address.

#### Admin-Überwachung » Kontaktadressen » Kontakt 4

Status	aktiv 💌
Firma / Person	Datenbankserver
Straße	
PLZ	
Ort	
Telefon	
Mobiltelefon	
Ansprechpartner	Datenbank, Server
Fax	
E-Mail	messdaten@mail1.meteocontrol.de

Your changes are not applied until you press the "Save"

#### 8.5.3 Switching output

button.

The settings in this section are used to configure the digital output. You can choose between inactive, alarm output and counter output.

When configured as a counter output for connecting a display, you need to enter a pulse constant. The pulse constant indicates how many pulses are emitted by the Powador-proLOG at D0 for one kWh of energy produced.

When configured as an alarm output for connecting an alarm, you can activate the various alarms in the "Set digital output" section in the lower part of the screen. You can clear the alarms in Admin monitoring -> System messages, Inverters and "Formulas"

Oinaltiv OAlarmausgang ⊙Zählerausgang	
Energie Digitaleingänge     O Wechselrichterenergie ausgeben	
0 Impulse/ki/h	
	Test starten
altausgang	
O inaktiv      Alarmausgang      Zählerausgang	
	Test starten
Aktive Alarme	
Stromaustall	
Stromsensor ohne Rueckmeldung	
Systemdatei fehit	
Systemfehler	
Emailversand geschellert	
Wechselrichter ohne Rueckmeldung	
Energieabweichung	
Anomaliedatei zu gross	
Verpleich Energie - Zeit	
	Onativ O Atamausgang O Zatiferausgang     Orativ O Atamausgang O Zatiferausgang     Orativ O Atamausgang O Zatiferausgang      Intausgang      Orativ O Atamausgang O Zatiferausgang      Atama Atama     Stomausfall     Stomausfall





### 8.5.4 System messages

System messages only pertain to information or faults in the monitoring system itself. You can make the following settings:

- Status
  - Set this criterion to inactive or active.
- Alarm type:

Used for logging on to or registering on the computer that was called.

Alarm destination:

Indicates the contact that is notified when an alarm is triggered.

Alarm counter:

Indicates how often the respective alarm has already occurred.

- Current information:
  - Indicates when the last alarm was triggered.
- Reset:

Use the "Reset counter" button to reset the alarm counter.

Bezeichnung	Status	Alarmart	Alarmziel		Alarmzähler	Aktuelle Information	Reset
Stromausfall	inaktiv 💌	E-Mail 🛩	Касо	~	0		Zähler zurückse
Stromsensor ohne Rueckmeldung	inaktiv 👻	E-Mail 🛩	Касо	~	0		Zähler zurückse
Systemdatei fehit	inaktiv 💌	E-Mail M	Kaco	~	0		Zähler zurückse
Systemfehler	inaktiv 💌	E-Mail 🛩	Касо	¥	0		Zähler zurückse
Email-ersant nescheitert	inaktiv w	SM6	Kaco	~	0		Zähler zurückse

### 8.5.5 Inverters

This section contains settings for inverter monitoring. Alarm notification is configured by indicating the alarm type (fax, e-mail, SMS) and the alarm destination (three contacts simultaneously).

- Anomaly file is too big.
  - This file is used to record the status changes of the inverters. The file is too big, because too many status changes were recorded. An alarm message is triggered.
- Energy yield deviation:

Only works if the correct DC rated powers of the inverters have been entered.

- Inverter does not answer):
- This alarm occurs when an inverter does not answer. – Tolerance limit for energy comparison):
- This setting pertains to the "Energy yield deviation" alarm type. The characteristic curves of the inverters must remain within this range. The alarm is activated when the upper or lower limit is exceeded.
- Time (hour) for checking whether the inverter responded to at least one protocol):

The inverter(s) must have responded to the PowadorproLOG

at least once by the set time. Standard value: 13 (13:00).

- Number of winter days + 1 before an alarm is sent when a protocol has not been answered):
- Number of consecutive missing protocol answers before an alarm is sent):
- Pacmin [%] for last received protocol for detection of a failure).



### 8.5.6 Formulas

This section includes settings for defining the various criteria for monitoring the system.

You can define the following parameters in the Settings section:

- Designation:
  - Enter the name of the criterion here.
- Status:
  - Set this criterion to inactive or active.
- Time:
  - Analysis on an interval/daily basis
- Alarm destination: Indicates the contact that is notified when an alarm is triggered.
- Message type:

Indicates the type of message (e-mail/fax).

Delay:

Indicates how many intervals/days there are to wait before a message is issued when the criterion is in an alarm condition.

- Number of triggered alarms: Indicates the number of alarms that have been registered.
- Reset counter:

Use this option to reset the counter (for alarms that have already occurred) to zero.

#### The formula settings are defined using

reverse Polish notation. An example showing how to set a criterion is provided in section 8 ("Configuration Example").

Einstellungen			
Bezeichnung	Vergleich Energie - Zeit		111 C 11
Ratus	inaktiv 🛩		Aktueller Status Obere Grenze 0.00
alpunit	intervall 🛩		tus-Wert 0.00
lambel	Kaco 🛩		Untere Grenze 0.00
Automostus	E-Mail ~		Ancahl ausgelöster Alarme 0 Zähler zurücksetzen
(wcógenung	1 (1-266)		
ormeleinstellungen			Verflugbare Messwerte
asis y = m * x + c			Intervall (Int + 900 s)
	S_EWR 1000/	•	Installierte Leistung (P_Ari = 111.09 kW) Anlanerfläche (A. Ani = 100.55 m5
(Untere Granza)	0.0002		Anzahi der Teilantagen (Anz_Teil + 7)
n (Obere Grence)	0.1		Summe der Tagesenergieerträge aller WR
	minDay	0	Tagesenergie von WR 01/1 (EWR_1, E + 28297.00) Tagesenergie von WR 01/1 (EWR_2, E + 11597.00)
(Untere Grenze)	0.136	0	Tagesenergie von WR 01/2 (EWR_3, E + 11756.00) Tagesenergie von WR 01/3 (EWR_4, E + 11231.00)
(Obere Grenze)	P_Aek10,*	•	Tagesenergie von WR 02 (EWR_5, E = 28824 00) Tagesenergie von WR 02/1 (EWR_6, E = 11678.00)



#### 8.5.7 Status alarms

This section is used to evaluate analogue and digital inputs and send alarms accordingly. There are 15 status alarms. You can define the following parameters in the **Settings** section:

Admin-Überwachung » Statusalarme	» Alarm 0
Einstellungen	
Status Bezeichnung Alcomaiol	inaktiv Y
Maintuan Meldungstyp Verzögerung Alarmierung Neuaktivierung des Alarms nach Zurücksetzung Anzahl ausgelöster Alarme	E-Mail            0         s         (Wertebereich = 0 - 86400s)           0         s         (Wertebereich = 0 - 86400s)           0         s         (Wertebereich = 0 - 86400s)
Formeleinstellungen	
Funktion	Analog
Grenzwert	0.000000
Berechnungsformel	Grenzwert V

- Status:
  - Set this criterion to inactive or active.
- Designation:
  - Enter the name of the criterion here.
- Alarm destination:
  - Indicates the contact that is notified when an alarm is triggered.
- Message type:
  - Indicates the type of message (e-mail/fax).
- Delay:

Indicates how many seconds there are to wait before a message is issued when the status alarm is in an alarm condition.

- Reactivation of the alarm after reset:
   Specifies the time interval after which the alarm is reactivated, in case the measured value for this time interval is below the defined limit value.
- Number of triggered alarms:
  - Indicates the number of alarms that have been registered.

The **formula setting** function includes the following functions:

- Analogue:

If a specified limit value is exceeded, a message is sent to the contact data defined in the

settings (for example: measurement for channel 1 >= the limit value of 8.0 V).

#### Formeleinstellung

Funktion	Analog 🖌
Grenzwert	0.000000 w/m²
Berechnungsformel	Einstrahlung in Modulebene 💌 < 🛛 Grenzwert

- Status:
  - The message is sent if (for example) status channel 1 no longer corresponds to the defined low/high fault level.

Formeleinstellung	
Funktion	Status
Fehlerpegel	Low 💌
Berechnungsformel	Fehlerpegel V

#### Pulse counter:

If a specified limit value is exceeded, a message is sent to the contact data defined in the settings (for example: counter 1 <= the limit value of 1.0 kW).

Formeleinstellung	
Funktion	Impulszähler 💌
Grenzwert	0.000000 kWh
Berechnungsformel	Zähler der Teilanlage 1 V C= V Grenzwert V

### 8.6 Admin measurement

### 8.6.1 Analogue channels

Type:

Select the type of sensor to be measured.

- You can choose between
- voltage, current and resistance measurement.
- Status:

Set this channel to inactive or active. Measured values are logged in data files according to status.

 Channel/Measured value designation: Indicates the name of the channel. This designation is used in the online display of measured values.

- Code:

- Indicates the channel's code designation. This designation is used in the data files. If possible, use one of the codes in the predefined list (see section 9: "List of Code Designations") so that it is easier to synchronise with the Internet database.
- Unit:

Specifies the unit for the measured values. This designation is used in the online display of measured values.

Slope:

The slope is used to convert the measured input voltage to physical values.

Offset:

The offset is entered as a physical value.

Admin-Messung » Analogkanäle

Canal	Typ	51	estes		Bezeichnung	Kärzel	Einheit	Anzahi Kommastellen	Steigung	Offset
1	Spannungseingang 💌	8	htiv .	۲	Einstrahlung in Modulebene	G_M0	W/m°	0	120	0
2	Spannungseingang 💌	3	kāv -	٣	Temperatur Modul	T_M0	) 'C	1	10.869	-20
3	Spannungseingang 🐱		kāv.	۲	Umgebungstemperatur	T_U0	°C	1	10	-50
4	Spanningseingang 💌		NOV.	×	Temperatur Modul (PT100)	T_M1	)°C	1	15	-50



#### 8.6.2 Digital channels

#### - Status:

Set the channel to inactive or active. Measured values are logged in data files according to status.

Channel/Measured value designation):

Indicates the name of the channel. This designation is used in the online display of measured values.

- Code:

Indicates the channel's code designation. This designation is used in the data files. If possible, use one of the codes in the predefined list (see section 9: "List of Code Designations")

so that it is easier to synchronise with the Internet database.

Unit:

Specifies the unit for the measured values. This design tion is used in the online display of measured values.

- Number of decimal places:

Specifies the number of decimal places for the online display and for archiving in the data files.

– Pulse constant:

The pulse constant is used to convert the measured pulses to physical quantities. The constant is specified in pulses/kWh.

Power interval:

Defines the time period for calculating the current power from the pulses. The time is defined in seconds (depends on the pulse frequency).

- Counter reading:

Current value for the energy measurement. You can also manually enter the value here.

Admin-Messung	*	Dig	tal	kanäle	

Kanal	Status	Bezeichnung	Kürzel	Einheit	Kommastellen	Impulskonstanle	aktuelle Leistung	Zahlerstand
1	aktiv	Zahler EVU	E_Z_EVU	kowite	3	1000	60 8	0.000000
						smp.kom		EV/B
2	akty A	Zahler Teilanlage 1	E Z PV1	lowh -	3	96	60 .	0.000000
(Dessmert)			1.2.2.2			imp.kiliti		KUD
3	aktiv .	Zahlar Taitanlaga 2	E 7 PV2	linet	3	75	60	0.000000
(Nesswert)			10,000 11			amp.ks/m		kV/b
4	Canadiania In				lia I	0.000000.0	0	0.000000
(Messwert	and and a second				1.4	imp.40%h		kWh

#### 8.6.3 Extension modules

You can use up to eight add-on modules to increase the number of inputs on the Powador-proLOG. In this case, the Powador-proLOG communicates with the extension modules over the local Ethernet network.



Abfrageinter	vall				
5 S	ekunden				
Anmerkung:	Das Abfrageinterval	I bestimmt, wie häufig der Datenlogge	r die Erweiterungsmodule ausliest.		
Nummer	Status	Bezeichnung	IP-Adresse	Port	Gerätetyp
1	inaktiv 💌			0	io_441 😪
2	inaktiv 💌			0	io_441 🛩
3	inaktiv 💌			0	io_441 🛩
4	inaktiv 💌			0	io_441 🛩
5	inaktiv 🛩			0	io_441 🛩
6	inaktiv 💌			0	io_441 🛩
7	inaktiv 💌			0	io_081 💌
8	inaktiv 🛩			0	io_441 🛩

#### 8.6.4 Current sensors

Use this section to add or delete sensors. To do so, enter the bus address in the field and then press the "Add" or "Delete" button.

Once you have finished making changes, press "Apply" to use the new address list.

Menter-statestick v at	a deservation en				
Advention					
New Alleschile Histologue Litechen Histologue Data Statistica Control (1997)		elementaria Negari Bari, Isaa Dingateker da ganasisatika ndesaka osi. Ba San Yangdagan aker titatani ndesa Tieren Ba San Yangnangan Algah Sanasisatika ngena dan yang kang tahun yang kang tahun yang kang tahun yang kang tahun yan Negari Bari Kang dan Sanasisatika ngena dan yang kang tahun yang kang tahun yang kang tahun yang kang tahun yan			
Bolinerge Adventisie (2.123+56.783 (2.11.12) Flasse paracter Antiope a (2.11.12) (sequer at	(1) is its (1) its inaction of the second seco	(Attention ) ( Spation			
Programmering energ Serie	un 18 🗰	Montes			
Bar - Orana Andree	8 0	Euror higheritatione celler to de laborat-observa as attractes de l'advantes and attractes anno anno anno anno anno anno anno ann			
Westewn Scilvet	AC C C Store Statistics	1 × 10 × Transiend de Pravetske veren kontre opgenseen eensem Den kunstere fer Annehet witten be gesterenden ferense of distance of distance for Tank Nutiveer. (* 1 km - 1 velandet die Pravetske konte konte nationalerse en ethelit.			
Anneug Gebeech	allerten a andre er Standert				
Kameray Schedulet	22 C (Sectores) + 11 sec. soul etc.	¢			
Nation ( peter ( bet figure	Todowfa cum prodat				

You can change the address of a sensor in the "Program a sensor" section. Since duplicate addresses are not allowed on a data logger, you can change the sensor addresses here.

The rest of the options must be supported by the current sensors. You should therefore consult with KACO new energy before using these settings (or let KACO new energy make the settings for you).

#### 8.6.5 Inverters

If inverters are connected, you can use this section for administration, e.g. to add or delete inverters from the system.

Admin-Messung >	Wechselrichter			
Einstellen der Pausenze	it zwischen Anfrage und Antwort für die Ka	o Wechselrichter		
fragen Sie den neuen m	ert in das Eingabeteld ein und drücken Sie	peichem". 10 (Angabe	in x * 250ms, Empfohlener Wert, 10)	Speichern
Scannen				
Um einen neuen Scanio	rgang für die Kaco-Wechselrichter zu alth-le	n drücken Sie "Scannen".		Scarnen
				-7
Entfernen eines Kaco-W Um einen Kaco-Wechse	Nechselfichers Richter auszufragen, wählen Sie den entspr	henden Wechselrichter aus und drücken ans	chielland "Loschen".	
Entlemen eines Kaco-W Um einen Kaco-Wechse Adresse auswählen	Rectaelrichers Richter auszutragen, wählen Sie den entspr 3/1 Powador 30000kj/1	herden Wechselrichter aus und drücken ans	chiellend "Löschen".	
Entfernen eines Kaco-W Um einen Kaco-Viechse Adresse auswählen	fechselrichers Bichter auszuhragen, wählen Sie den entspr 3/1 Powador 30000k/1	henden Wechselrichter aus und drüchen ans	Challend "Loschen".	Löschen
Entfernen eines Kaco-W Um einen Kaco-Virchse Adresse auswählen Manwelles Vinzafugen e	Nechselfichers Hichter auszuhltagen, wilhten Sie den entagen [3/1 Powador 30000ki/1 enes Kaco. Wechselfichere	henden Wechselsichter aus und drüchen ans	chiebend Loscher	Löschen
Entfernen eines Kaco-Vi Um einen Kaco-Viechse Adresse auswählen Manwähles Hinzafügen e Um einen Kaco-Viechse Dickter Gie zum Abgeba	Rechelinchers Inchter auszuhagen, wählen Sie den entagen [3/T Powador 3000bij/T were Raco Wechtelfichers Inchter manuel einzhagen, fragen Sie die chem die seinen Entaga anschleisten H Anstrese bereits oder iste unglitig, will	herden Tirchselichter aus und dischen ans w un Adresse in das Eingabeleit en und wätte alligen:	chlesend "Löschen". In Sie den entsprechenden Wechselnd	[Löschen_
Entfernen eines Kaco-W Um einen Kaco-Wechse Adresse auswählen Inzwelles Hiszafügen e Um einen Kaco-Viechse Dickten Die zum Absgeber Dickten Die zum Absgeber Tigt auswählen	Inclosering in the second seco	henden Wechsteinkolter aus und dischen ans wi vor Advesse in das Eingeheltet ein und water stügen: Eingeler einschler! wi	chießend Löschen". In Die den entsprechenden Wechselnich	Löschen

### 8.6.6 Energy of digital channels

This page pertains to the "Online values -> Analogue/Digital") section: As the administrator, you can correct the energy values that are displayed there.

You can also specify which channels should be included in the total in the "Digital inputs considered in the total" section.

Summe ausgewählter Digitalei	ngänge				
Bezeichnung	Wert	Einheit	Bezeichnung	Wert	Einheit
Tagesenergie Vortag	0.000	KMb	Altuelle Jahresenergie	3.930	KMb
Atuelle Monatseneroie	0.000	100.00			
Anmerkung: Überschreiben Sie Speichem".	zur Korrektur von Energiew	ronn verten die eingetragen	Gesamtenergie en Werte. Klicken Sie anschließend	3.930	Abbrechen Speichern
Anmerkung: Überschreiben Sie Speichem".	2 990 zur Korrektur von Energiew	enten die eingetragen	Gesamtenergie en Werte, Klicken Sie anschließend	3.930 1 auf	Abbrechen Speichem
Anmerkung: Überschreiben Sie Speichern". In der Summe berücksichtigte Digitaleingang	2ur Korreittur von Energiew Digitaleingänge Berücksichtigur	rovm verten die eingetragen 10	Gesamtenergie en Werte, Klicken Sie anschließend	3.930 Lauf	Abbrechen Speichem
Anmerkung: Überschreiben Sie Speichem <sup>*</sup> . n der Summe berücksichtigte Jigttaleingang	2330 zur Korreitur von Energiew Digitaleingänge Benücksichtigun aktiv v	rovm verten die eingetragen 19	Gesamtenergie en Werfe, Klicken Sie anschließend	(3.930 1 auf	Abbrechen Speichern



#### 8.6.7 Energy of inverters

If inverters are connected, you can use this section to correct the energy values displayed in "Online values -> Inverter overview".

The total will then automatically take all connected inverters into account, so that there is nothing to select here.

kamme aller Wechselrichter					
lepeichnung	Wert	Einheit	Bezeichnung	Wert	Enheit
egesenergie Vortag	176.478	8000	Attuelle Jahresenergie	10025.340	8500
tuelle Monatsenergie	2524 281	kith	Gesamtenergie	81020 813	xith.

#### 8.6.8 Time synchronisation

Use this menu item to synchronise the system time on the  $\ensuremath{\mathsf{Powador}}\xspace$  powador-proLOG.

- No synchronisation:
  - The system time must be manually set in
  - "Configuration -> Date/Time".
- Internet synchronisation:
  - This function is only used in conjunction with Powador-web.
- Network synchronisation):

The Powador-proLOG synchronises the time via the gateway of the local network. The gateway must support the time server function.

Admin-Messung » Zeitsynchronisation	
	<ul> <li>Keine Synchronisation</li> <li>Internet-Synchronisation</li> <li>Netzwerk-Synchronisation</li> </ul>
Aktuelle Zeitzone	1
IP-Adresse des Netzwerk-Zeitservers	132.163.4.102
Portnummer des Netzwerk-Zeitservers	37
Aktuelle Zeitzone	1
Uhrzeit, zu der die Netzwerk-Zeitsynchronisation erfolgen soll	2 : 20

#### 8.6.9 Active power and idle power control) (XL)

The remote-controlled active power and idle power control function can only be used with a Powador-proLOG XL. Select "Admin measurement » Active power and idle power control") to access all the settings for the remote-controlled function.

#### a) Configuration

You can use the "Configuration" menu item to activate the KACO power control function (active power control) and configure the relevant Powador-proLOG as a master or slave.



#### Admin-Messung » Wirk-/ Blindleistungsregelung » Konfiguration

PowerControl ist nicht aktiv	viert			
Konfiguration				
Aktivierung PowerControl	🗢 aktiv	inaktiv	Der als Master aktivierte proLOG gibt die Signale zu Wirk-/ Blindleistungsregelung an alle als Slaw konfigurierten proLOG weiter (max. 20 proLOG als Slaw bei aktivierter Adressliste). Nur beim Master werder	.r e e n
Priorität proLOG	Master	Slave	Einstellungen zur Wirk-/ Blindleistungsregelun, angewandt und nur der Master ist in der Lage di Signale zur Wirk-/ Blindleistungsregelung zu senden.	e
Drücken Sie Speichern um	i die aktuellen	Einstellungen zu	übernehmen. Speichern	

#### b) Control

You can use the "Control" menu item to configure a wide variety of control methods. Depending on what you select, the page will change accordingly and display the relevant settings. Help is also provided for each of the procedures.

Reactive power control method	
Please choose a reactive power control method:	
<ul> <li>Reactive power with radio ripple control terminal</li> </ul>	<ul> <li>Fix power factor cosq</li> </ul>
<ul> <li>Power factor cos</li></ul>	<ul> <li>Variable power factor cos</li></ul>
Eix reactive power in % of Pn	Variable reactive power Q(U) on the basis of the characteristic curve

In the lower screen, you can set the values for the KACO power control function, the idle power (as a percentage of the system's rated power) or the cosine phi for control via a radio ripple control receiver.

level	Digit DI4	tal inp DI3	DI2	DI1	Wirkleis	tung	Blindleis	stung	cosφ	Erregung
0					100	%		%	1.000	kapazitiv 👻
1					100	%		%	1.000	kapazitiv 👻
2					60	%		%	1.000	kapazitiv 👻
3					0	%		%	1.000	kapazitiv 👻
4					30	%		%	1.000	induktiv 👻
5					0	%		%	1.000	kapazitiv 👻
6					0	%		%	1.000	kapazitiv 👻
7					0	%		%	1.000	kapazitiv 👻
8					0	%		%	1.000	kapazitiv 👻
9					0	%		%	1.000	kapazitiv 👻
10					0	%		%	1.000	kapazitiv 👻
11					0	%		%	1.000	kapazitiv 👻
12					0	%		%	1.000	kapazitiv 👻
13					0	%		%	1.000	kapazitiv 👻
14					0	%		%	1.000	kapazitiv 👻
15					0	%		%	1.000	kapazitiv 👻

#### c) Address list

You can use the "Address list" menu item to enter the IP addresses of the slave units. The master Powador-proLOG XL unit forwards the digital signal of the radio ripple control receiver via Ethernet to all the slaves entered. This means that up to 20 slaves can be managed using just one master.

#### d) Online values

You can find the current status of the active power and idle power control function under "Online values » Active power and idle power control"





# 9 Configuration Example

### 9.1 Analogue channels

#### 9.1.1 Voltage input

The rule for converting the measured computation value to a physical value is as follows:

[ Physical value ] = [ IV ] × [ Gradient ] + [ Offset ] [ IV ] = Instantaneous channel value

 $[Gradient] = \left(\frac{Physical full-scale value}{Channel full-scale value}\right)$ 

#### Legend:

[MW]: current measured value at the channel input in [V]. [Measuring scale final value]: for a voltage input of 10 volts.

Example 1:

A sensor is to be connected to an analogue channel using a sensor constant of 10 V = 1500 W/m<sup>2</sup>. The measurement range final value of the input is 10 V. The slope is calculated as follows:

$$[Gradient] = \frac{1500 \ W/m^2}{10} = 150$$

If the channel does not show an offset during calibration, you can use 0 for the offset. Assuming the channel has an offset of  $+15 \text{ W/m}^2$  (for example) during calibration, set the channel as follows:

$$Offset = -15 W / m^2$$

Example 2:

A PT100 is to be connected to a channel using a voltage transformer. The voltage transformer supplies an output voltage of 10 V at  $+100^{\circ}$ C and an output voltage of 0 V at  $-50^{\circ}$ C. This results in a physical measurement range final value of 150°C. The slope is calculated as follows:

$$[Gradient] = \frac{150 \ ^{\circ}C}{10} = 15$$

Since the temperature is to be measured down to -50 °C, the result is an offset of:

$$[Offset] = -50 \circ C$$

#### 9.1.2 Current input

The rule for converting the measured computation value to a physical value is as follows:

[ Physical value ] = [ IV ] × [ Gradient ] + [ Offset ]

[*IV*] = Instantaneous channel value [*Gradient*] =  $\left(\frac{Physical full-scale value}{Channel full-scale value}\right)$ [*Offset*] = *Physical measured value* 

Legend:

[MW]: Current measured value at the channel input in [mV]. [Measuring scale final value]: for a current input of 20 mA.

### 9.2 Digital inputs

The following equation is used to convert to a physical quantity:

*Physical measured value* = 
$$\frac{\sum pulses}{Meter constant}$$

Example: A counter provides 6000 pulses/kWh and is to be connected to a digital input. This counter constant is directly entered as a value in the Pulse constant (pulses/kWh)] field, which means that the online display shows the values as energy [kWh]. To display the current power, you have to enter a value (e.g. 60) in the Interval for current power (s)] field. This means that the pulses are added up over a period of 60 seconds and converted to an average power for this interval period.

### 9.3 Alarm criterion

An example should help you to achieve simple and effective system monitoring with the unit.

#### Example:

A photovoltaic system is equipped with a solar sensor for measuring irradiance in the module level and a generation counter with pulse output. These quantities are to be used to define limits for reporting a defect in the system by means of a "malfunction call".



### 9.3.1 Basic principle of monitoring

A relationship between irradiance and generated energy is used for the physical basis. Ideally, this means that:

[generated power] = [irradiance \* area of module \* eta module \* eta inverter]

For PV modules with a degree of efficiency of 12%, an inverter degree of efficiency of 91%, and a module area of 10  $m^2$ , the idealised relationship can be displayed as follows:



In reality, this relationship is not exactly linear across the entire range (lower irradiance => lower degree of efficiency). Therefore, a solution must be found for a working fault message criterion. For this purpose, a range is "stretched" so that measured values can move. This requires two linear equations that define the upper and lower limits of the "plausible" range:



In order to allow the maximum amount of flexibility in selecting the range, two different slopes can be defined. The displacement of the linear slopes by tHigh and tLow is specified as an absolute quantity (e.g. 0.2 kW). The equations for the linear slopes can now be written as follows:

Lower limit:

 $Y < m_{lower} \otimes X \otimes t_{lower}$ 

$$\textit{Pac} < \textit{m}_{\textit{lower}} \left(\textit{G}_{\textit{Module}} \otimes \textit{A}_{\textit{Arry}} \otimes \textit{\eta}_{\textit{PV}} \otimes \textit{\eta}_{\textit{INV}}\right) \otimes \left(\textit{t}_{\textit{lower}} \otimes \textit{P}_{\textit{nom}}\right)$$

Upper limit:

 $Y > m_{upper} \otimes X \otimes t_{upper}$ 

 $Pac > m_{upper} (G_{Module} \otimes A_{Arry} \otimes \eta_{PV} \otimes \eta_{INV}) \otimes (t_{upper} \otimes P_{nom})$ 

where: mlow = 0.85 tlow = -0.25

mhigh = 1.1 thigh = 0.15

# 9.3.2 Setting parameters for the measuring device

Settings are made in: Admin monitoring -> Formulas -> Criterion x")

First make the basic settings for this alarm criterion.

- Designation: "Power by irradiance"
- Status."Active"
- Time: "Interval"
- Alarm destination: "Standard contact"
- Message type: E-mail
- Delay: "8"

(This sets a measuring interval of 15 minutes and an alarm delay of two hours)



The formula entries are then as follows:

- Y Generation for photovoltaic system (dig\_0)
- m (lower limit) 0.85
- m (upper limit) 1.1
- x Irradiance of module
- (ana\_0); System area; \*eta PV;\*eta inverter;\*
- c (lower limit) 200
- c (upper limit) 200



# 9.4 Programming criteria using the example of an inverter comparison

In this comparison, the daily energy of inverter 4 is compared with that of inverter 5, and an alarm is triggered if there is an energy yield deviation. Different inverter types can be compared with one another. Enter a name for the criterion and activate it in the settings. You can then choose whether the criterion is calculated with each recording interval, or once a day.

The code for the daily energy of the respective inverter is entered in the **x** and **y** fields in the formula settings section (here: EWR\_3, EWR\_4). The reason the addresses are shifted is because the addresses in the proLOG start with "0" (daily energy from inverter  $5 \rightarrow \text{EWR}_4$ ). This value is then divided by the respective installed generator power. This means that values from different inverters can also be compared with one another (here: EWR\_3 has 5.6 kW and EWR\_4 has 4.8 kW of module power installed). The upper and lower limits are set in the **c** fields. Set the slope for the valid range in the **m** fields. You can usually leave the slope as is.

Allgemein Online-We	erte Status Konfiguration Admin-Überwachun	g Admin-Messung	
Admin-Überwachu	ng -> Formeln -> Kriterium 3		
Einstellungen			
Jezeichnung	Vergleich WR4<->WR5		
3tatus	aktiv 💌		aktueller Status
leitpunkt	Tag 💌		obere Grenze: Ist-Mert
Narmziel	Solarstrom Schwaben Sebert 🗾		untere Grenze
/leldungstyp	Email		Info:
/erzögerung	1 (1 - 255)		Alarmzähler Ju
Anzahl Alarme	0		
Formeleinstellungen Basis: y= m * x + c		1	verfügbare Messwerte Intervall (Int = 900 s) installierte Leistung (
у	EVVH_3;5.6;7		Anlagenfläche (A_Ar
m (untere Grenze)	0.96		Anzahl der Teilanlag Tageszeit in Minuten
m (obere Grenze)	1.04		Summe der Tagese
х	EWR_4;4.8;/	<-	Tagesenergie von V
c (untere Grenze)	-0.05	<-	Tagesenergie von V Tagesenergie von V
c (obere Grenze)	0.05	<-	Tagesenergie ∨on V
			+ - * / Verkní
Anm.: Die Formel sind i	n der Umgekehrt polnischen Notation (upn) anzuge	ben. Bsp: a;b;+	



# 9.5 List of code designations

Measured values	Powador-proLOG	Unit
Feed-in meter	E_Z_EVU	kWh
Counter for sub-system 1	E_Z_PV1	kWh
Counter for sub-system 2	E_Z_PV2	kWh
Counter for sub-system 3	E_Z_PV3	kWh
Irradiance in module level 0	G_M0	W/m <sup>2</sup>
Irradiance in module level, part 1	G_M1	W/m <sup>2</sup>
Irradiance in module level, part 2	G_M2	W/m <sup>2</sup>
Irradiance in module level, part 3	G_M3	W/m <sup>2</sup>
Irradiance in horizontal level	G_H0	W/m <sup>2</sup>
Module temperature	T_M0	°C
Module temperature, part 1	T_M1	°C
Module temperature, part 2	T_M2	°C
Ambient temperature	T_U0	°C
Ambient temperature 1	T_U1	°C
Collector temperature	Т_КО	°C
Collector temperature, part 1	T_K1	°C
Direct current	I_DC_0	А
Direct current of sub-system 1	I_DC_1	А
Direct current of sub-system 2	I_DC_2	А
Direct current of sub-system 3	I_DC_3	А
DC voltage	U_DC_0	V
DC voltage of sub-system 1	U_DC_1	V
DC voltage of sub-system 2	U_DC_2	V
DC voltage of sub-system 3	U_DC_3	V
Alternating current	I_AC_0	А
Alternating current of sub-system 1	I_AC_1	А
Alternating current of sub-system 2	I_AC_2	А
Alternating current of sub-system 3	I_AC_3	А
AC voltage	U_AC_0	V
AC voltage of sub-system 1	U_AC_1	V
AC voltage of sub-system 2	U_AC_2	V
AC voltage of sub-system 3	U_AC_3	V
Wind speed	W_V0	m/s
Wind direction	W_R0	0
Humidity	F_L0	%
Heat quantity of collector	WM_K0	kWh
Heat quantity of heating	WM_H0	kWh
Heat quantity of CHP	WM_BHKW0	kWh

#### 10 **Update**

KACO new energy cannot assume any liability or repair costs for damage resulting from a failure to observe these instructions. Please do not make changes to any directories or files other than the ones described.

#### 10.1 Update with card reader

### 10.1.1 General information

A Compact Flash (CF) card is built into the Powador-proLOG. The entire operating system for the Powador-proLOG and all the system files are stored on this card. You will find the card slot on the right-hand side of the housing.



### 10.1.2 Instructions

To perform the update, you will need a Powador-proLOG, a card reader for CF cards, a PC or laptop and the new software (which you can obtain via the monitoring service).





# **ACTION**

- Remove the protective cover from the card slot and take out the CF card.
- Insert the CF card into the reader and connect the reader to the PC/laptop.
- Start Windows Explorer and open the card reader drive. - Create a backup copy by saving the CF card files to a folder of your choice on the PC/laptop.



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- Format the CF card by right-clicking on the drive. Unzip the new software that you obtained from the monitoring service in the form of a ZIP file.





Wechseldatenträger (E:) formatieren
Speicherkapazität:
123 MB 🔹
Dateisystem:
FAT (Standard)
Größe der Zuordnungseinheiten:
Standardgröße 🔹
Gerätestandards wiederherstellen Volumebezeichnung:
Formatierungsoptionen Schnellformatierung MS-DOS-Startdiskette erstellen
Starten Schließen



- Copy the unzipped files to the CF card. It is recommended that you save the "data" folder from your backup copy onto the CF card. This will ensure that you have all the daily files on the Powador-proLOG.
- Open the file "anlage.ini" (which you can find in path "ISTCONF\ANLAGE") and enter the serial number of your data logger.

📃 anla	age.ini - Edito	r		
Datei	Bearbeiten	For		
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K	A C O			
Powa	dor proĽ	.OG	м	
Powa	dor proĽ 70300020	.OG	<sup>*</sup> M	336
Powa Type	dor proL 70300020 Ethernet/DS	.OG SL	<sup>*</sup> M	711 036
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- Insert the CF card again (with the KACO new energy logo at the top) and switch on the unit. The start process is complete when the status LED starts to flash. The new software is installed.
- Now run the installation wizard in order to reconfigure the data logger.



### 10.2 Update via FTP

### 10.2.1 General information

These instructions are based on the example of Total Commander software. Total Commander is a shareware file manager. However, you can also apply the information in these instructions to other FTP programs.

### 10.2.2 Instructions

To perform the update, you will need a Powador-proLOG, a PC or laptop and the new software (which you can obtain via the monitoring service).



- path "ISTCONF\ANLAGE") and enter the serial number of your data logger.
- Open Total Commander and press number 1, 2 or 3 (depending on what appears on the start window).
- Now set up a connection to the PowadorproLOG by pressing the button "FTP" and then the button New connection". Default settings: IP address "192.168.100.50" User name: "admin" Password: "admin"

Total Commander 7.55 - NOT REGISTERED						
Files Mark Commands	Net Sho	w Configuratio	n Start			
2   👯 🕴 🖬 😫		5   🔶 🔶	🏦 🏛 🎆 🐇	18 M 🖄	: 號 🍙 🗐	
FTP Transfer mod	Connect to	o ftp server				
0 ▼ ftp://admin@ 0	Connect to:					
<b>▼</b> 0:\*.*	🗆 😼 Powado	or-proLOG			Connect	
+ Name						
▲[]					New connection	
[ISTCONF]	FTI	P: connection de	tails		×	
[SYS]	Ge	eneral Advanced			E	
[system]			Rewader erel OG			
@ index		Session: Powador-proLOG				
FAILSAFE	He	Host name[:Port]: 192.168.100.50			b	
		SSL/TLS	Anonymous login	(e-mail address	as password)	
	U	ser name:	admin			
	Pa	assword				
	W	aming: Storing the	password is insecure!			
		Use master passv	rord to protect the pass	word	E	
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a-sonware watenexport of		_				
F3 View	F4 Edit		ОК	Cancel	Help F8 De	

# A

# ACTION

- 5. In the left-hand window, you will see the folders for the current software. In the right-hand window, select the path in which you saved the new software.
- 6. Highlight the entire contents by keeping the right mouse button held down, and press F5. A message will appear. You must confirm this message with ""Overwrite all".





# ACTION

- 7. Once all the files have been overwritten, open the HTML interface of the data logger. Enter the following path in the address bar, after your IP address: "html/de/confupload.html".
- Now press the "Restart" button. After the restart, the process of installing the new software will be complete.

General Online values Status Configuration	
Powador	KACO 🔊
Loadable Application Images	
Hardware serial number	
300691 2909 008	
Loadable Application Images	
File name	Version (WR/USR/OS) Action
✓ kaco223_242_174.is2	2.23/2.42/1.74 Laden
	Peetert
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	Sustem Time 17-04-25 / 30 10 2011



The text and figures reflect the current technical state at the time of printing. Subject to technical changes. Errors and omissions excepted.

