KACO

new energy.

Powador-proLOG

Operating instructions

Manual

Operating Instructions

Powador-proLOG

Contents

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1 About this documentation

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

☐	**ATTENTION**
Read the manual
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.

⚠️	**DANGER**
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.	

ⓘ	**NOTE**
Useful information and notes.	

☞	**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**

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.

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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).

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 sensors depending on modem variant			
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, S0	RS485, Ethernet, S0, Powador-go	RS485, Ethernet, S0, 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
	— Powered exclusively by the unit's internal power supply — Can be configured as a status input — Potential-free contacts — S0 interface specification conforms 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	— Can be configured as an alarm or pulse output — Observe the polarity		
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.
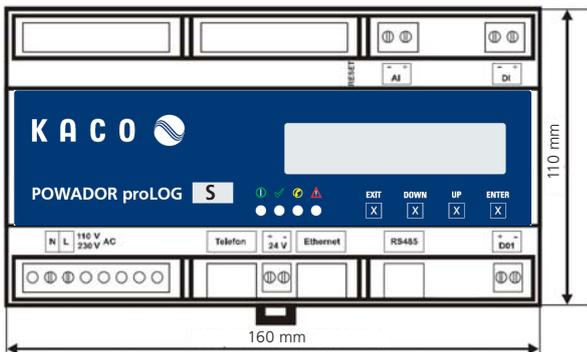
5.2.2 Powador-proLOG M / XL

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

Drill hole sketch (lengths in mm)
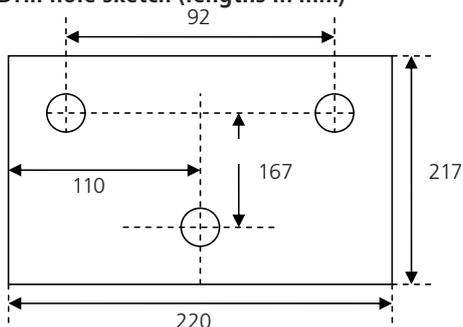
5.3 Service flap

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.

	ATTENTION
☝	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. The grid connection (230 V) should be protected by a separate fuse (e.g. B6A). The power supply provides 24 V, e.g. to power a solar sensor.

Powador-proLOG M/XL   Powador-proLOG S

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.
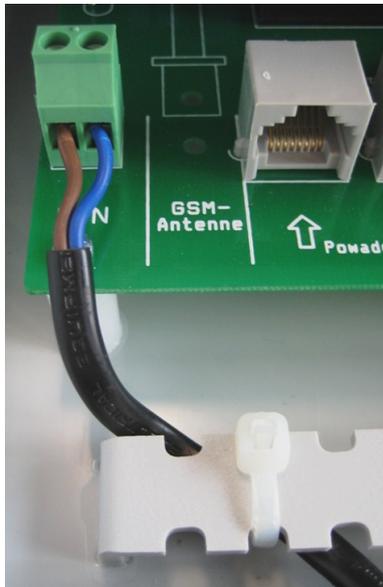
5.4.2 GSM antenna (XL GSM/GPRS)
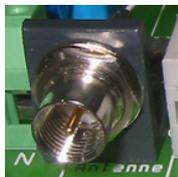
Connect the GSM antenna supplied here. The connection is located to the far left, between the grid connection and the Powador-go RJ45 sockets.

IMPORTANT

For more information on the Powador-proLOG with GSM modem, see section 6.5 on page 22.

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.

IMPORTANT

When you have more than 32 bus devices, you need to use a repeater.

Installing the ferrite clips

To prevent possible communication faults caused by electro-magnetic 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.
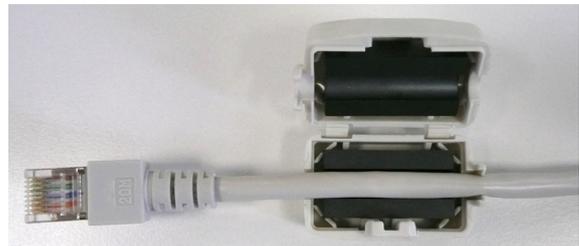
b) Connect the patch cable to the Powador-go port on the Powador-proLOG and attach the ferrite clip to the assembly rail (e.g. cable ties).
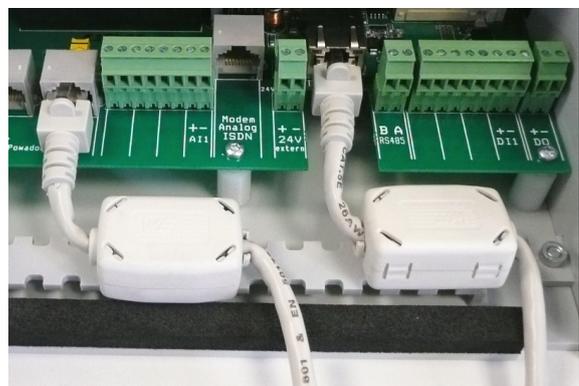
5.4.4 Analogue/ISDN modem (XL)

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..

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 M/XL   Powador-proLOG S

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.

Powador-proLOG   **PC**

Crossover-Kabel

Powador-proLOG   **PC**

Switch / Hub

Patchkabel   Patchkabel
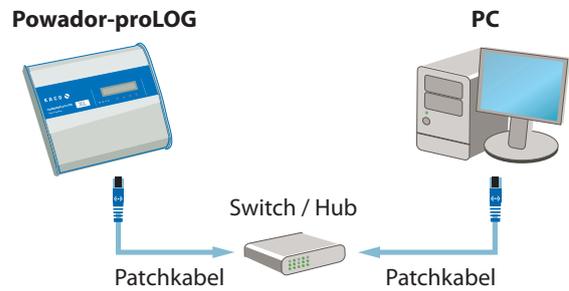
Difference between patch cable and crossover cable

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.

1 2 3 4 5 6 7 8   1 2 3 4 5 6 7 8

Patch cable

Crossover cable
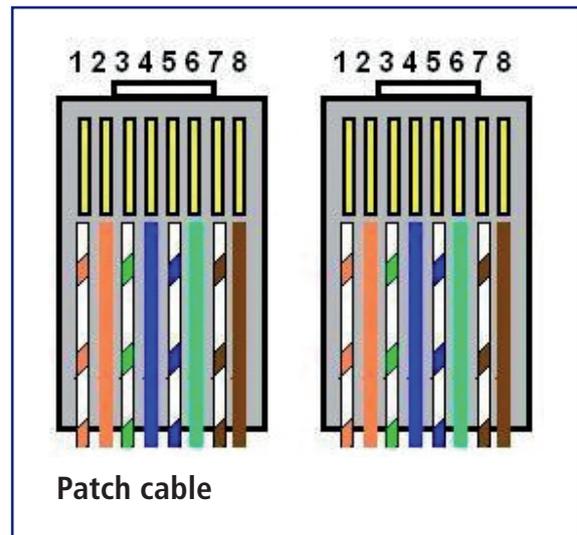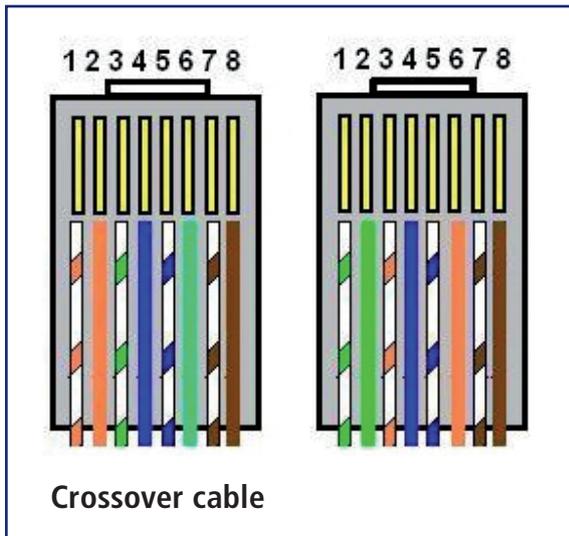
NOTE

- 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.

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.

NOTE

At the factory, the Powador-proLOG is set to use an IP address of 192.168.100.50 and a netmask of 255.255.255.0.
For detailed instructions on how to set up an Ethernet connection, see section 7.2.
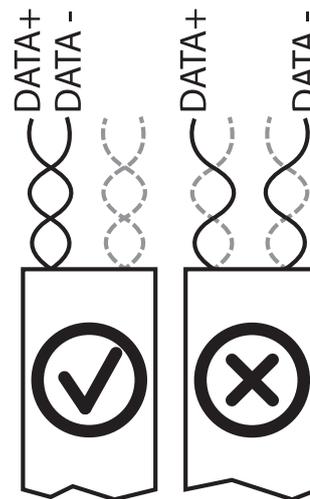
RS485 bus: Assignment of twisted-pair wires

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).

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 the scope of delivery for connecting the inverters via an RS485 bus. 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.

> ⓘ **NOTE**
>
> Consult the relevant inverter manual for more information on connecting and addressing the individual inverters.

Schematic diagram for wiring inverters and current sensors
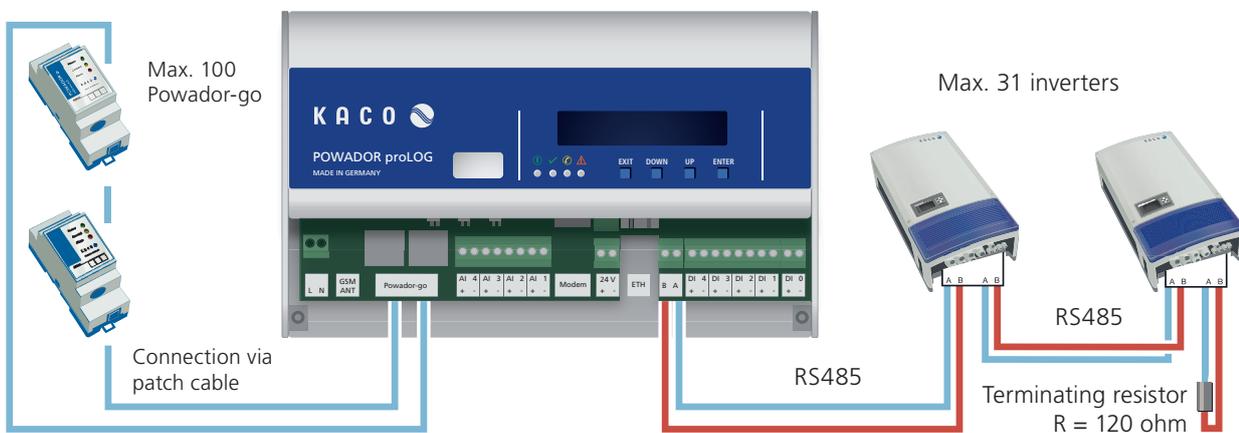
5.4.8 Digital output D0

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.

ATTENTION

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
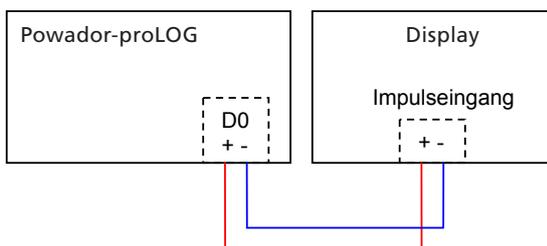
Connecting a signalling device to D0
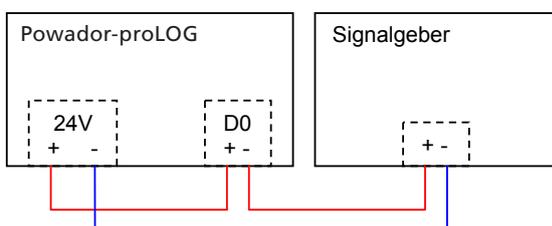
5.4.9 Analogue/digital inputs

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.
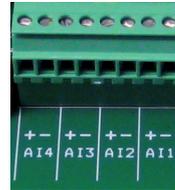
Powador-proLOG XL   Powador-proLOG S

ATTENTION

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

NOTE

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

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.
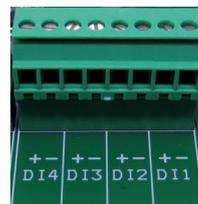
Powador-proLOG XL   Powador-proLOG S

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+.

NOTE

The digital inputs can be optionally converted for status evaluation.
This means that the Powador-proLOG can evaluate switching states 0 or 1 (N/C or N/O contact).
This must be set up using the configuration files for the Powador-proLOG.
Please contact the KACO new energy hotline.

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

Powador-proLOG M
1x AI, 1x DI, 1x DO
Powador-proLOG XL
4x AI, 4x DI, 1x DO
analogue inputs (AI)
0 … 10 V DC | PT1000
digital inputs (DI)
optically seperated
Low: 0 … 7 V DC
High: 9 … 24 V DC
digital output (DO)
S0 nach DIN 43 864
Configuration as Alarm or pulse output (S0)
Modemtyp
Analog | ISDN | GSM/GPRS

Powador view
- S0-Impuls(blue)
+ S0-Impulse (brown)
Counter sensor
Signal (white)
+ 24 V DC (green)
- GND (brown)
Irradiation and module temperature sensors (SI12TC-T)
+ 24 V DC (red)
- GND (black)
irradiation (orange)
Temperature (brown)
Environmental „humidity" sensor
+24 V DC (red)
- GND (black)
- Temperature

circuit
breaker B6A

L N
230 V AC

> **ℹ NOTE**
>
> Input AI1 is preconfigured for connection of a solar sensor. Digital input DI1 is preconfigured for connection of a feed-in meter.

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 mm². 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-proLOG 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

The radio ripple control receiver is connected to the Powador-proLOG 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.
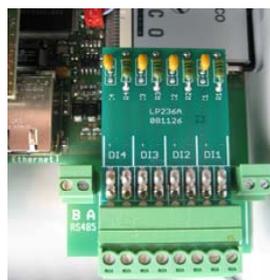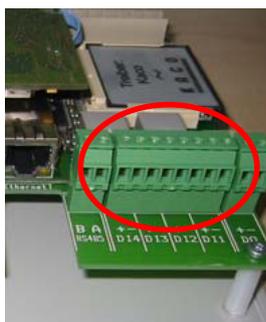
KACO Power-Control

Adapter board
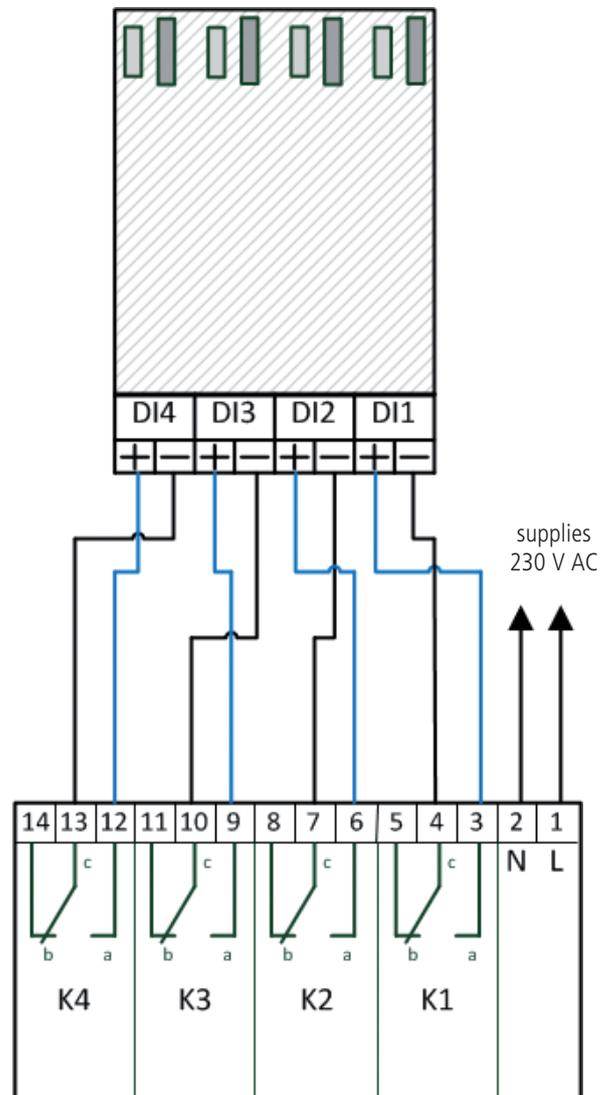
Radio ripple control receiver
Relaiscontact

☞ 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.

5.6   Pin assignment
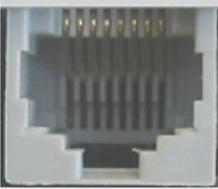
RJ45 socket

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	+12V…24V	supply
2	+12V…24V	supply
3	+12V…24V	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)
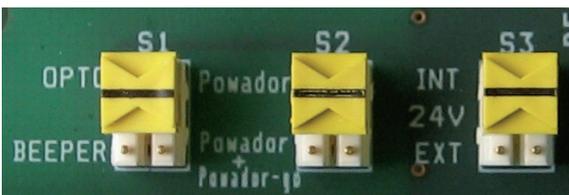
The Powador-proLOG M/XL has three jumper switches located on the circuit board. You can set the following operating modes:

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.

NOTE

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+Powador-go.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.

NOTE

The RS485 signal is internally bridged from the RJ45"Powador-go" socket to the "B A RS485" terminal strip
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

☝ **ATTENTION**

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

1. 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.

2. 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

1. You do not have to configure the data logger on site. 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)arefunctioningcorrectly.Itmustbepossibletoaccess 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".

ⓘ **NOTE**

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).

2. 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, ISDN or 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

Overview	Ethernet	Current IP address
		Current subnet mask
		Current gateway
	GSM/GPRS	Field strength

Settings	Communication	Ethernet	DHCP
			Static IP address
			Subnet mask
			Gateway
		Modem / ISDN / GSM	Local IP address
			Remote IP address
			Subnet mask
			ISDN-MSN
			PIN-Code
			Call acceptance
	Language	Deutsch
		English
		Francais
		Espanol
		Italiano
	Data logger	Inverter settings	Start scan
			Power Control
		Set factory settings

Current values	Analogue values	AI1
		AI2
		AI3
		AI4
	Digital values	DI1
		DI2
		DI3
		DI4
	Current sensors	Address 1
		Address x
	Inverters	Adresse 1
		Adresse x

System	Energy of DI	Current power
		Yield today
		Yield yesterday
		Monthly yield
		Annual yield
		Total yield
	Energy Inverters	Current power
		Daily energy
		Previous day´s energy
		Energy for the month
		Annual energy
		total energy
	Alarms/Faults	Communication	Modem faults
		System error	System file is missing
	System alarms	Alarm list
		Reset local alarms
	Hardware	AI / DI fault
		OCS does´t respond
		Inverter doesn`t respond

Rechte	Passwort
Gast	0030
Installateur	0020
Administrator	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 gateway that 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.

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

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

• Modem/ISDN/GSM
   → 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.
   → Subnet mask:
      The subnet mask in the WAN
   → MSN (ISDN only):   MSN setting
   → 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.
      → Current power
      → Yield today
      → Yield yesterday
      → Monthly yield
      → Annual yield
      → 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.

      → Current power
      → Daily energy
      → Previous day's energy
      → Energy for the month
      → Annual energy
      → 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.
   → System alarms
      -Alarm list
        A list of the system alarms that were triggered.
      - Reset local alarms
        Reset the local alarm at D0.
   → 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:	192.168.100.50
	Subnet mask:	255.255.255.0
Modem:	IP address:	192.168.200.1
	Remote IP address:	192.168.200.51
	Subnet mask:	255.255.255.255
	Analogue :Call acceptance active	
	ISDN:	MSN deleted
	GSM:	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.

☞ | **IMPORTANT**

If you use a different contract, KACO new energy will not be able to provide you with support due to recurring problems with the various network providers.

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

☝ | **ATTENTION**

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.
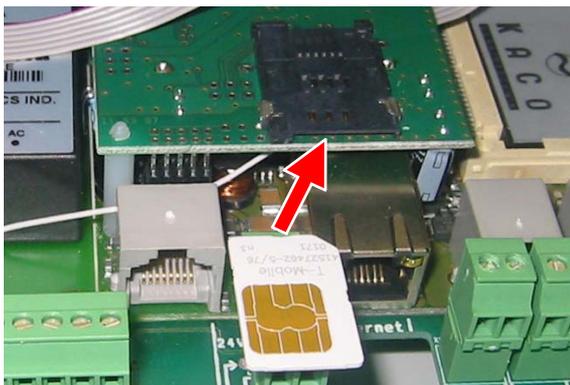
3. Connect the antenna

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:
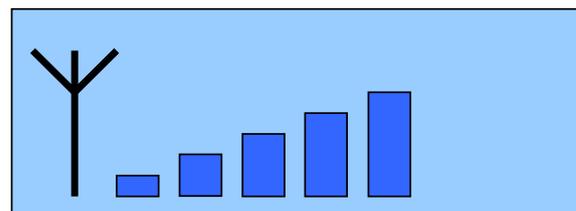
7 Establishing a Connection

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 Powador-proLOG over a network (Ethernet)

www Internet

Gateway

Switch/hub

Powador-proLOG

PC/notebook with Powador-monitor
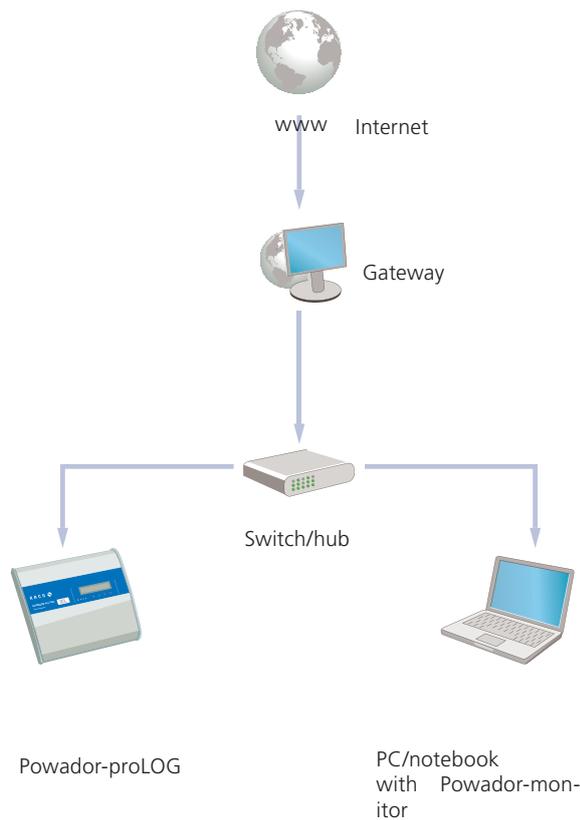
The Powador-proLOG and the computer must be connected to the same network. The IP addresses and the netmask for the Powador-proLOG or computer must be in the same address space. As soon as these requirements have been met, you can use an Internet browser (e.g. Mozilla or Internet Explorer) to address the Powador-proLOG at its IP address.
You can set the IP address in the "Network Connections" module in the Windows Control Panel.
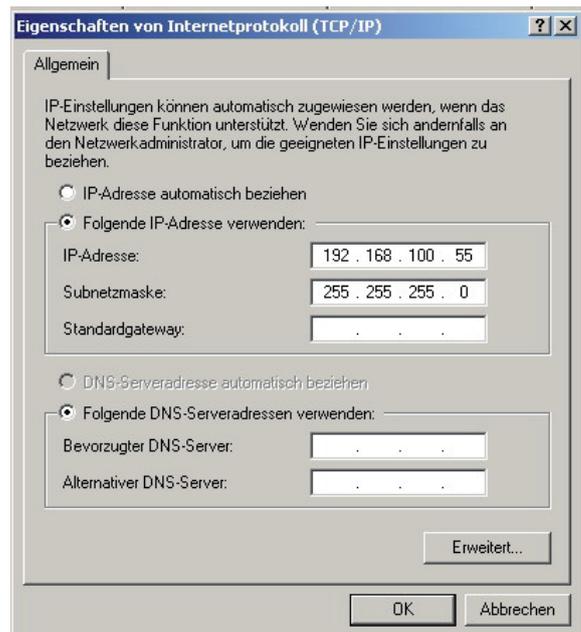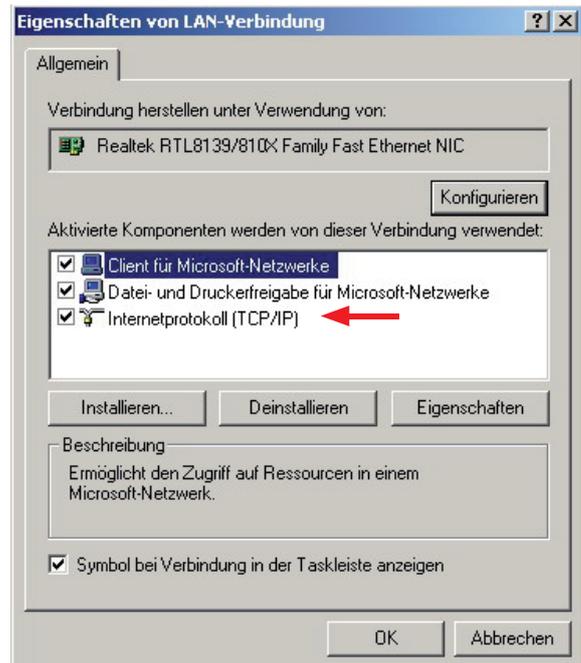
👉 **IMPORTANT**

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 255.255.255.0. "xxx" stands for any number between 1 and 254, although the number 50 is already assigned to the Powador-proLOG.

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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.

☞ **IMPORTANT**

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.

Powador-proLOG

www
Powador-web
via KACO server

GSM or
telephone
network

Connection
via modem

Internet connection
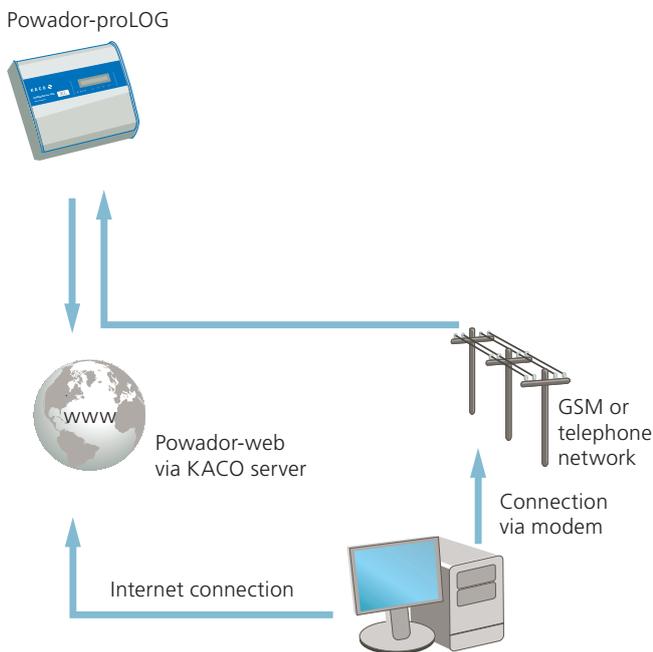
Windows XP

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.

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---
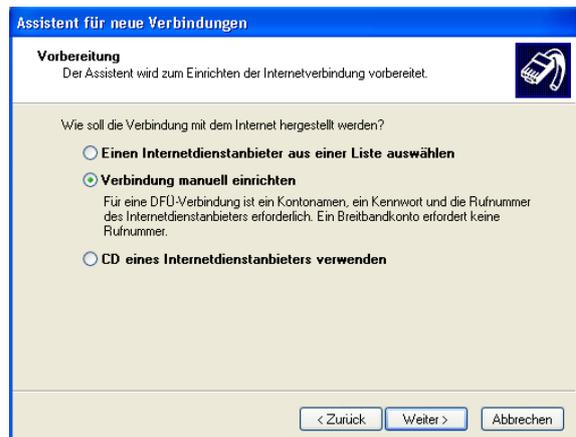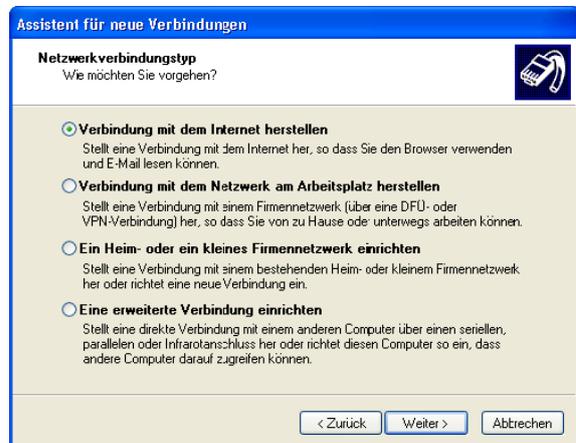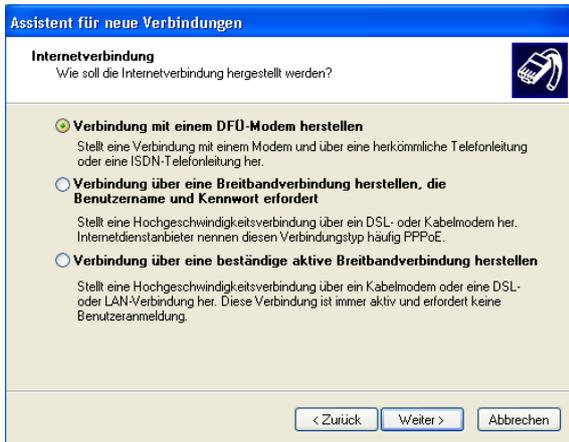
3. Step

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.
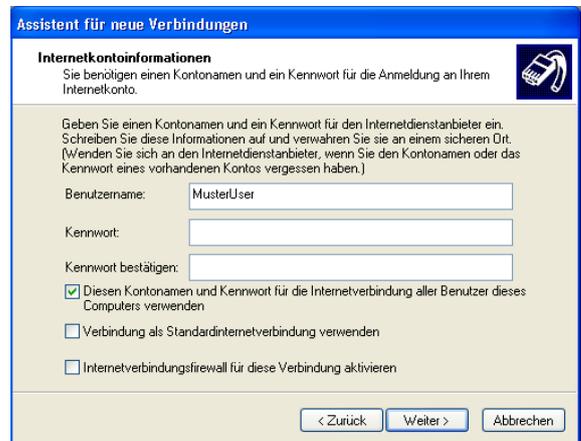
ℹ️	NOTE

Check boxes 2 ("Make this the default Internet connection") and 3 ("Turn on Internet Connection Firewall for this connection") should be deactivated, because they could disrupt operation.
The following window is the final step in setting up the connection.

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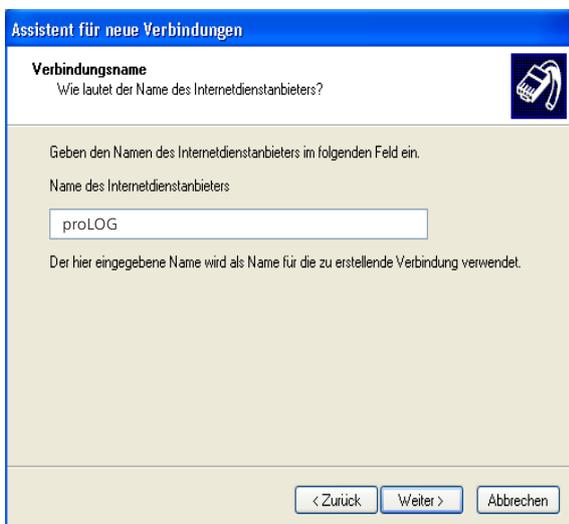
ℹ️	NOTE

When you enter the telephone number, remember to include any prefixes that may be required to dial out. The most common dial-out prefix is a preceding "0".

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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.
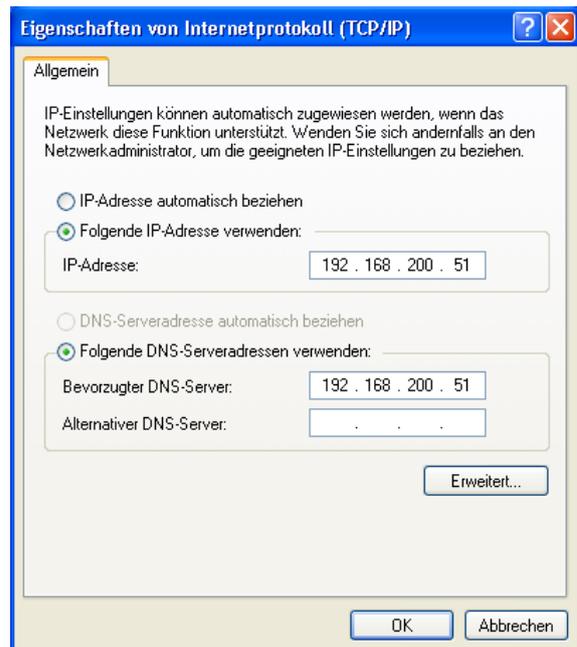
NOTE

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.
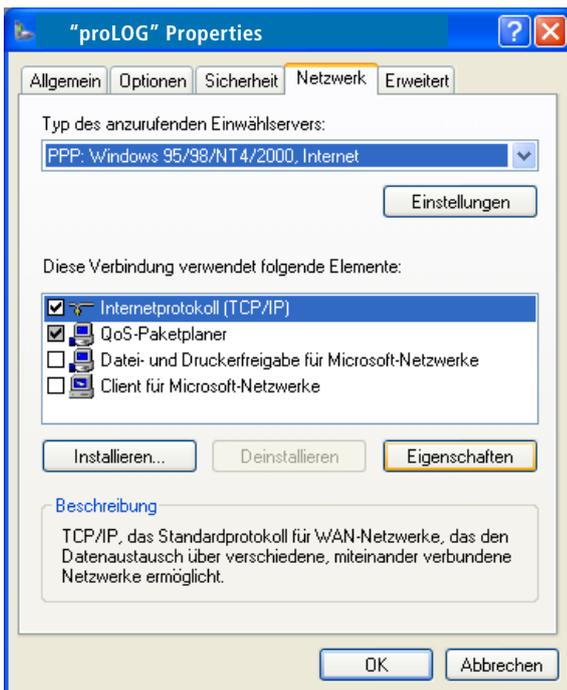
5. Step

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.

IMPORTANT

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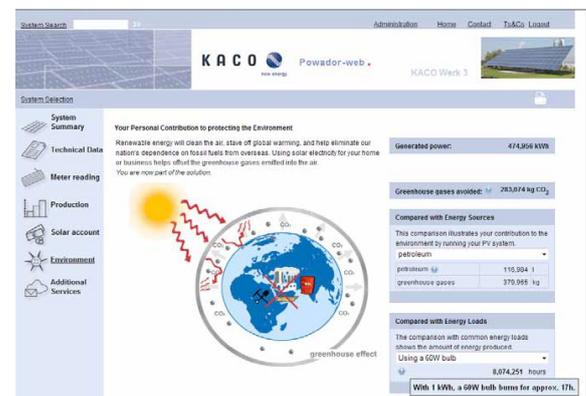
To find out what kind of difference you are making personally in the quest for an environmentally friendlier future, go to "Environment".

8 Menu Description

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

☞	**IMPORTANT**

With a dial-up connection (modem), enter "http://192.168.200.1/" in your browser.
For a network connection, enter the IP address (standard: http://192.168.100.50/) 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

☝	**ATTENTION**

Changes in this section can cause the data logger to malfunction. 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:
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.

ⓘ	**NOTE**

To log on to the unit as system administrator, access the dial-in page via "Allgemein -> Login"General -> Login"). The password is: ist02

HTML menu

General Information	Online values	Status	Configuration	Admin monitoring	Admin measurement
Logout	Analogue/digital	System messages	System data	Network »	Analogue Channels
Start page	Current sensors	Inverters	Standard contact	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 Digitaleingänge

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 Digitaleingänge

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

Maximum:
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 of the analogue inputs:

Details 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.

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 feed-in power and daily yield that was reached at the time of the query. Each inverter address is linked to the inverter details.

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.

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".

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.

8.4   Configuration

8.4.1   System data

System data is required at various times. In the Powador-proLOG, 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

IMPORTANT

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)

8.4.3 Date/Time

This is where you set the time and date.

ATTENTION

Keep in mind that setting the time directly affects data logging.
Deviations of a few seconds should not be corrected.

IMPORTANT

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

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 Powador-proLOG'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.

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 Powador-proLOG'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).

IMPORTANT

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 "Netzwerk -> E-Mail" ("Network -> E-mail").

IMPORTANT

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.

IMPORTANT

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

---

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.

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.

IMPORTANT

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

8.5.3 Switching output

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"

IMPORTANT

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

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.

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 Powador-proLOG
    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).
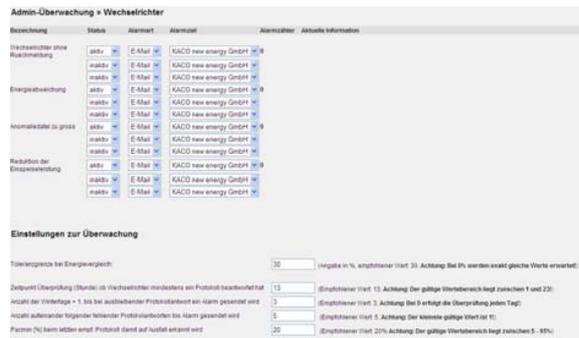
8.5.6 Formulas

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").
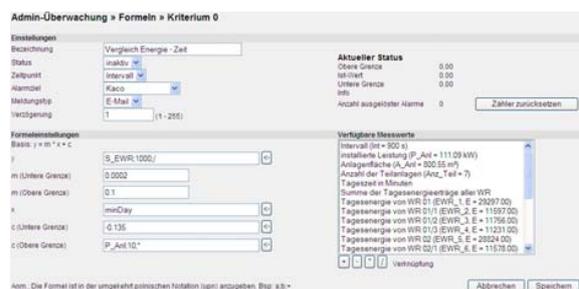
8.5.7 Status alarms

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:

— 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).

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

— 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).

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.

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.

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.

ATTENTION

− Only in connection with the Powador-proLOG M and XL (Ethernet interface).
− Detailed instructions are included with the extension modules.

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.

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.

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.

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.

8.6.8 Time synchronisation

Use this menu item to synchronise the system time on the 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.

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.

ATTENTION

Only the Powador-proLOG XL unit that has been defined as the master is able to forward active power and idle power control commands from the connected radio ripple control receiver to the slave data loggers. All slaves must also be Powador-proLOG XL units.

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.

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.

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:

$$[\,Physical\ value\,] = [\,IV\,] \times [\,Gradient\,] + [\,Offset\,]$$

$$[\,IV\,] \qquad = Instantaneous\ channel\ value$$

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

$$[\,Offset\,] \qquad = Physical\ measured\ value$$

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/m². 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 W/m² (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°C and an output voltage of 0 V at −50°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:

$$[\,Physical\ value\,] = [\,IV\,] \times [\,Gradient\,] + [\,Offset\,]$$

$$[\,IV\,] \qquad = Instantaneous\ channel\ value$$

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

$$[\,Offset\,] \qquad = Physical\ measured\ value$$

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 m², the idealised relationship can be displayed as follows:
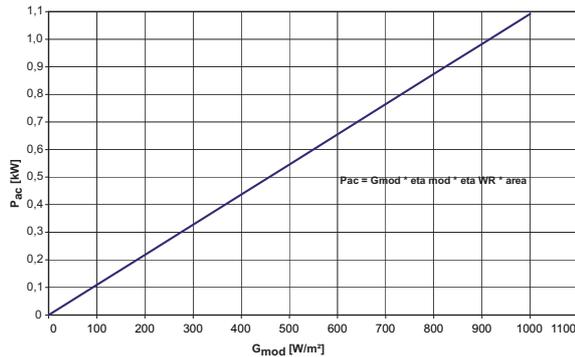
In reality, this relationship is not exactly linear across the entire range (lower irradiance => lower degree of efficiency). Therefore, a solution must be found for a working fault message criterion. For this purpose, a range is "stretched" so that measured values can move. This requires two linear equations that define the upper and lower limits of the "plausible" range:
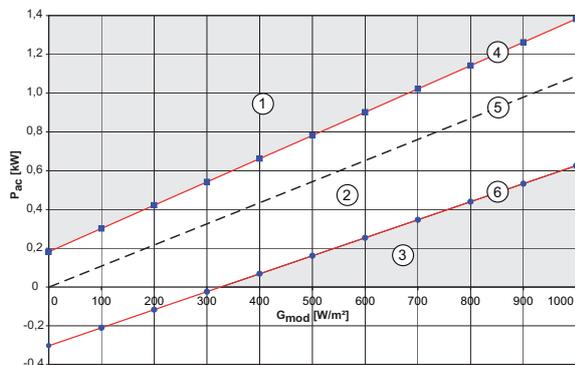
In order to allow the maximum amount of flexibility in selecting the range, two different slopes can be defined. The displacement of the linear slopes by tHigh and tLow is specified as an absolute quantity (e.g. 0.2 kW).

The equations for the linear slopes can now be written as follows:

Lower limit:

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

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

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)

ATTENTION

To send an alarm message, you have to specify the contact for the alarm destination in"Admin monitoring -> Contact addresses -> Contact x").

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 → 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-Werte	Status	Konfiguration	Admin-Überwachung	Admin-Messung

Admin-Überwachung -> Formeln -> Kriterium 3

Einstellungen

Bezeichnung	Vergleich WR4<->WR5	
Status	aktiv	
Zeitpunkt	Tag	
Alarmziel	Solarstrom Schwaben Sebert	
Meldungstyp	Email	
Verzögerung	1	(1 - 255)
Anzahl Alarme	0	

aktueller Status
obere Grenze:
Ist-Wert:
untere Grenze
Info:

Alarmzähler 0

Formeleinstellungen
Basis: y = m * x + c

y	EWR_3;5.6;/
m (untere Grenze)	0.96
m (obere Grenze)	1.04
x	EWR_4;4.8;/
c (untere Grenze)	-0.05
c (obere Grenze)	0.05

verfügbare Messwerte
Intervall (Int = 900 s)
installierte Leistung (
Anlagenfläche (A_A
Anzahl der Teilanlag
Tageszeit in Minuten
Summe der Tagese
Tagesenergie von V
Tagesenergie von V
Tagesenergie von V
Tagesenergie von V
Tagesenergie von V

| + | - | * | / | Verknü

Anm.: Die Formel sind in der Umgekehrt polnischen Notation (upn) anzugeben. 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^2
Irradiance in module level, part 1	G_M1	W/m^2
Irradiance in module level, part 2	G_M2	W/m^2
Irradiance in module level, part 3	G_M3	W/m^2
Irradiance in horizontal level	G_H0	W/m^2
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	T_K0	°C
Collector temperature, part 1	T_K1	°C
Direct current	I_DC_0	A
Direct current of sub-system 1	I_DC_1	A
Direct current of sub-system 2	I_DC_2	A
Direct current of sub-system 3	I_DC_3	A
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	A
Alternating current of sub-system 1	I_AC_1	A
Alternating current of sub-system 2	I_AC_2	A
Alternating current of sub-system 3	I_AC_3	A
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	°
Humidity	F_L0	%
Heat quantity of collector	WM_K0	kWh
Heat quantity of heating	WM_H0	kWh
Heat quantity of CHP	WM_BHKW0	kWh

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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.

⚠	**DANGER**
Before starting the update, make sure to disconnect the power plug for the data logger. The Powador-proLOG must be switched off when removing the card from the data logger.	

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).

ℹ	*NOTE*
After the update, the unit will need to be reconfigured using the installation wizard.	

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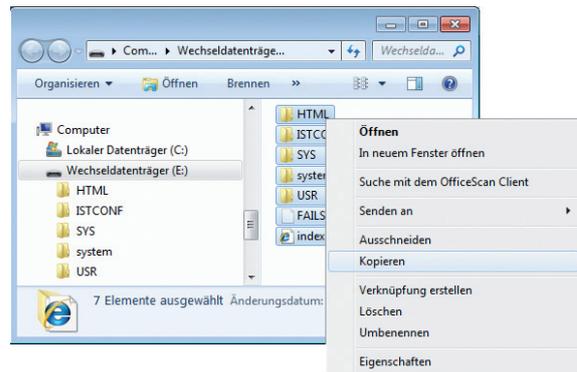
🔧	*ACTION*
– Format the CF card by right-clicking on the drive. Unzip the new software that you obtained from the monitoring service in the form of a ZIP file.	
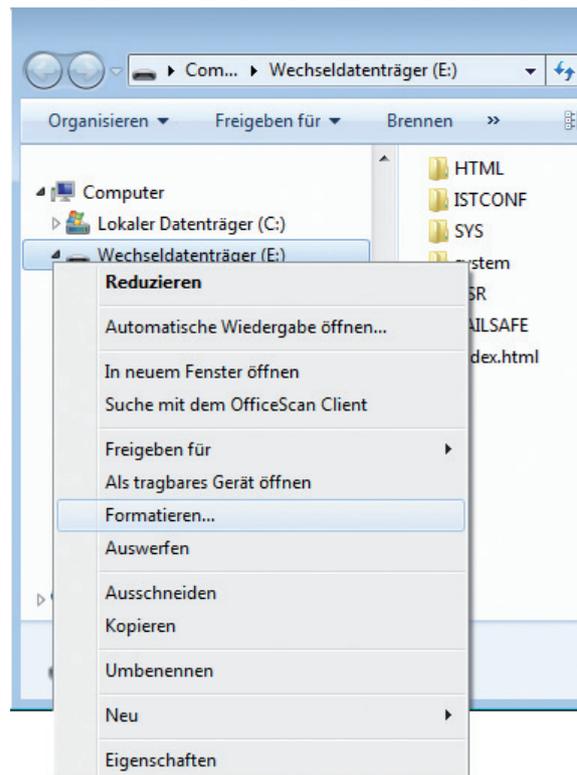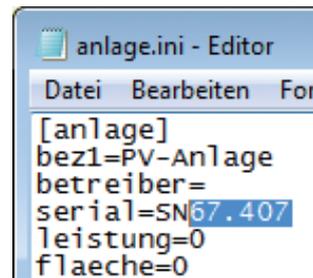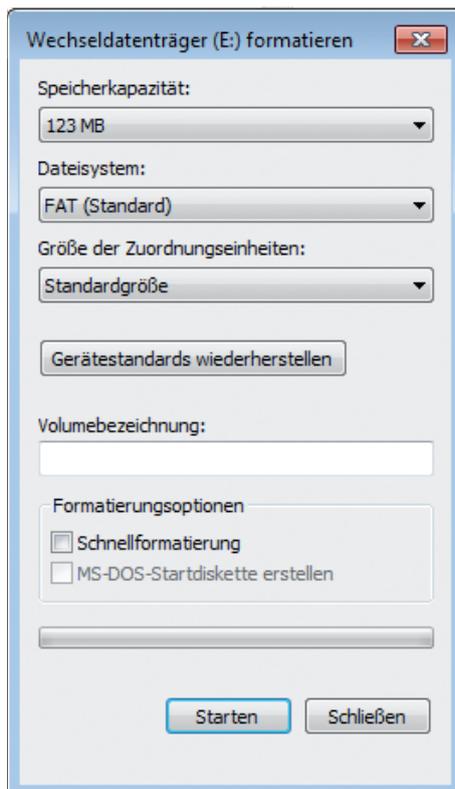
🔧 **ACTION**

– 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.

🔧 **ACTION**

– 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).

ACTION

1. Unzip the new software (ZIP file).
2. Open the file "anlage.ini" (which you can find in path "ISTCONF\ANLAGE") and enter the serial number of your data logger.
3. Open Total Commander and press number 1, 2 or 3 (depending on what appears on the start window).
4. Now set up a connection to the Powador-proLOG by pressing the button "FTP" and then the button New connection".
   Default settings: IP address "192.168.100.50"
   User name: "admin"
   Password: "admin"

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".
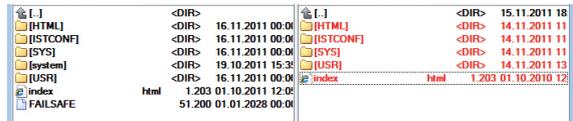
ACTION

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".
8. Now press the "Restart" button.
   After the restart, the process of installing the new software will be complete.
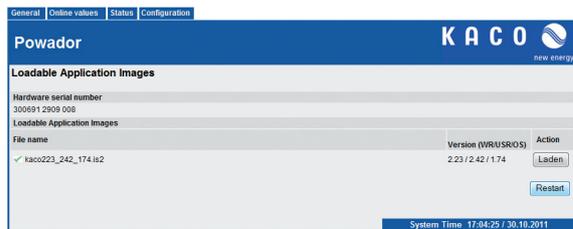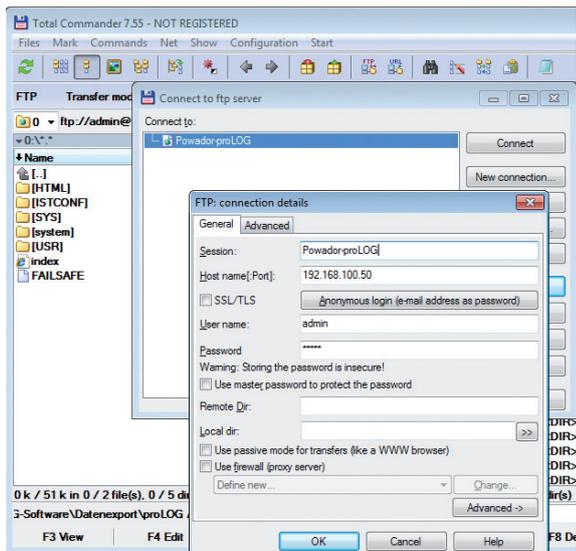
ACTION

9. Now run the installation wizard in order to reconfigure the data logger.

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