

Remote operation monitoring systems for RES installations



EKONTROL
MADE BY HEWALEX

OPTI-ENER
MADE BY HEWALEX

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1 SAFETY REQUIREMENTS

NOTE: Read carefully and follow the specified safety conditions.

a Safety conditions:

Read the following instructions carefully before operating this device. The instructions specify important safety information which must be understood and strictly followed. The manufacturer will not accept any liability in the event of non-compliance with the safety rules, improper use of the device or incorrect settings of the controls.

b Safety warnings:

This equipment is not intended to be serviced by individuals (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge of the equipment, unless they have been given supervision or instruction concerning the use of the equipment by individuals responsible for their safety.

c Intended use:

The device is used through a website or a mobile application and only with appropriate instructions for its safe use and provided that the user understands the risks of device operation.

d Installation location:

Due to its protection class/level (IP 20), the device is intended for domestic use only. Outdoor installation is possible provided the unit is installed in an enclosure with a higher protection class, e.g. inside of an electrical switchgear (rated at IP65-IP68). Do not store explosive or flammable materials, including aerosol cans, and do not store or use gasoline or other flammable materials near the device. Keep a sufficient distance between any gas installation and the device in accordance with applicable standards. Make sure that the device is not left near a source of water or exposed to dust. The device is designed to operate in locations with temperatures between -20° and +60° C and a relative humidity between 5% and 85%. The device may not function properly or can be permanently damaged if it is left for an extended period of time in a room with the ambient air parameters outside of these limits.

e Cleaning and maintenance:

Never use steam cleaners. Wear protective gloves when cleaning and maintaining the device. Disconnect the device from the electrical power supply before attempting any maintenance on the device. Do not clean plastic parts with harsh or abrasive cleaning agents, such as window cleaners, scouring agents, flammable liquids, cleaning waxes, concentrated detergents, bleach, or cleaners based on petroleum products. Do not use paper towels, sponges or other rough or sharp instruments for cleaning.

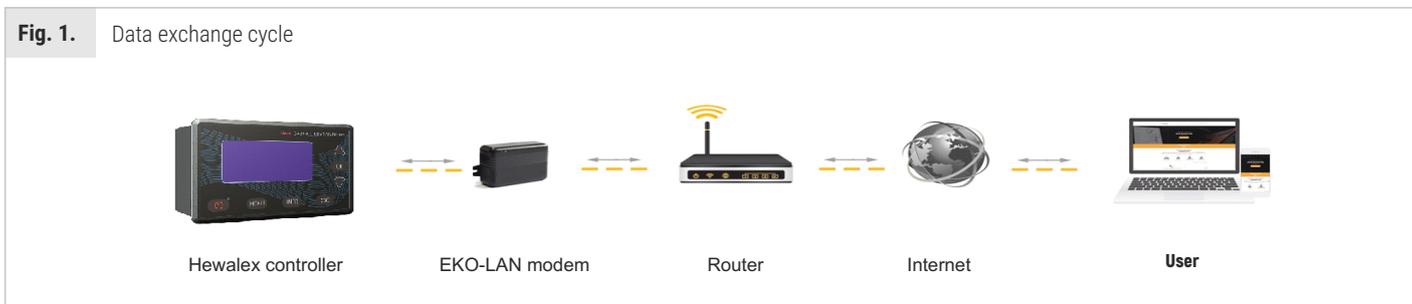
Warning:

During operation of the device, do not insert metal objects into its housing or place them on surface of the control PCB – risk of electric shock.

2 DEVICE OVERVIEW

The EKO-LAN modem is a transceiver device which enables two-way data exchange between a data server and controllers of solar thermal installations, heat pumps, and OPTI-ENER. as shown in Figure 1. The device is required for remote monitoring and modification of the operating parameters of the monitored installation via the ekontrol.pl mobile or web application.

The modem can be used to communicate with the controllers listed in Table 2.

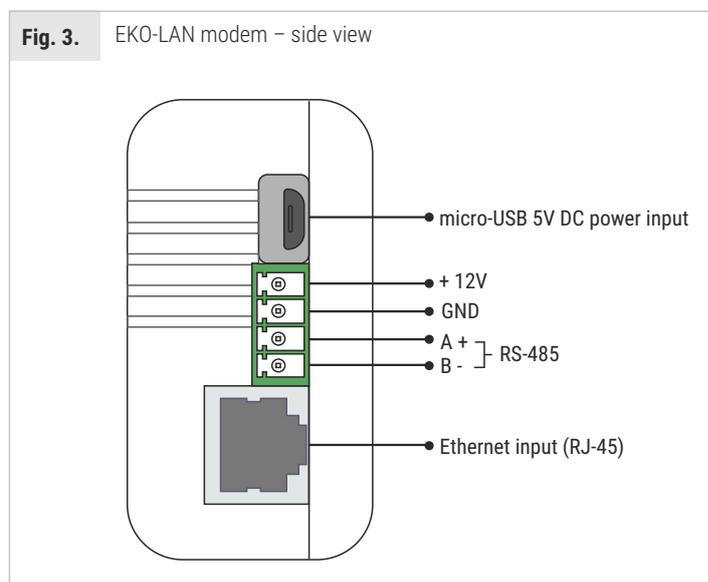
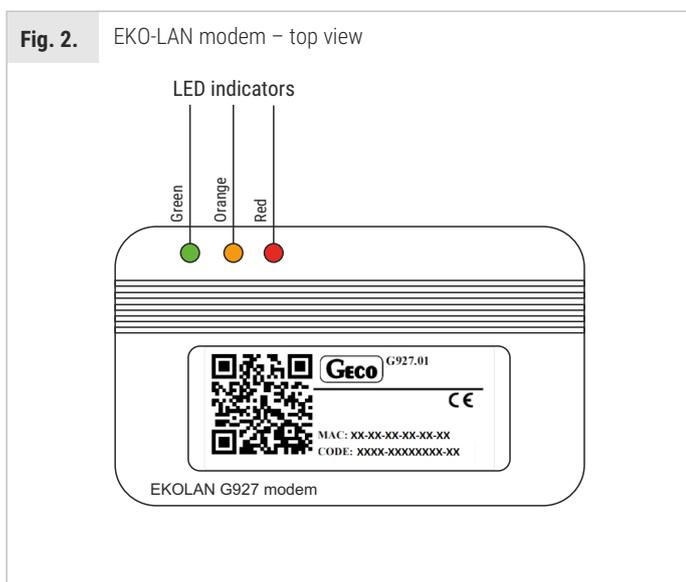


EKO-LAN modem technical specifications:

- power supply: 12V DC or 5V DC
- dimensions (W x D x H) 60/90/30 mm
- operating conditions:
 - ambient temperature: -10°C to +25°C
 - relative humidity: 5% to 85% (without condensation and/or freezing)
- power demand: <3W
- Protection class: IP 20.

2.1 Inputs & outputs

The EKO-LAN modem has two power inputs: 12V DC and 5V DC, one LAN port (RJ45), and one RS485 bus output for connection to the installation controller. The location of the inputs on the EKO-LAN modem housing is shown in Fig. 3.



3 INSTALLATION

3.1 Connecting the EKO-LAN modem

The EKO-LAN modem is designed for surface mounting. Depending on the installation substrate, a suitable mounting system should be selected (wall plugs and screws) and the modem should be fastened using its dedicated brackets, the location of which is shown in Fig. 2.

The device requires a power supply, which can be provided in one of three ways:

- 12 V DC directly from the interfaced controller;
- 5V DC from a stabilised power supply with a micro-USB connector;
- 12 V DC from a stabilised power supply.

NOTE: Only one of the specified power supply sources shall be connected to the modem, irrespective of the units connected to this device.

Provide an Internet over LAN connection with DHCP (dynamic IP address assignment) via an Ethernet cable with a RJ45 connector, plugged directly into the router. If the Ethernet cable cannot be connected to the device due to technical constraints or the required aesthetic quality, you can use the optionally available G931 RF module or use a commercially available connectivity solution, like network repeaters, WiFi repeaters, another router with bridging, etc. See the detailed information about the G931 RF module in its manual.

The modem is Plug&Play and requires no additional configuration. A correct connection to the Internet is indicated by the green LED flashing continuously, the orange LED flashing once every minute or once every 4 minutes (depending on the type of Ekontrol licence) and the red LED staying off. If the LED indicators work differently, the EKO-LAN modem should first be reset as follows:

- Disconnect the Ethernet cable for 60 seconds;
- Disconnect the power supply from the modem;
- Reconnect the power supply to the modem;
- Wait 10 seconds and reconnect the Ethernet cable.

NOTE: Due to possible interference, do not lay data and Ethernet cables along high-voltage cables. Never connect the EKO-LAN modem directly with an Ethernet cable to a PC desktop computer or a laptop.

Access point configuration instructions:



3.2 Connecting multiple units to the modem

One EKO-LAN modem is sufficient to manage multiple controllers of Hewalex RES installations. You do not need another modem to manage more than one device. To connect multiple units, wire in parallel the data outputs A+ and B- of the EKO-LAN modem RS-485 bus to all controllers which are to be managed. The wiring diagram for multiple devices is shown in Figure 4-6.

Fig. 4. Powering the modem directly from the installation controller – power receptacle assignment

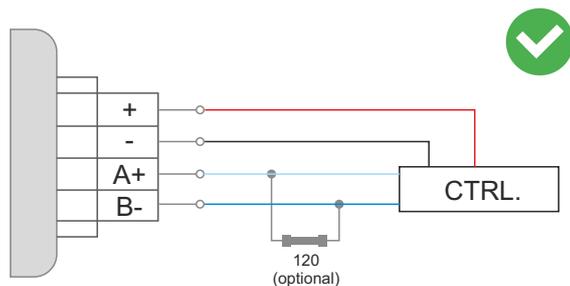


Fig. 5. Wiring diagram for several devices connected to the modem over an RS485 network (Multi-point topology)

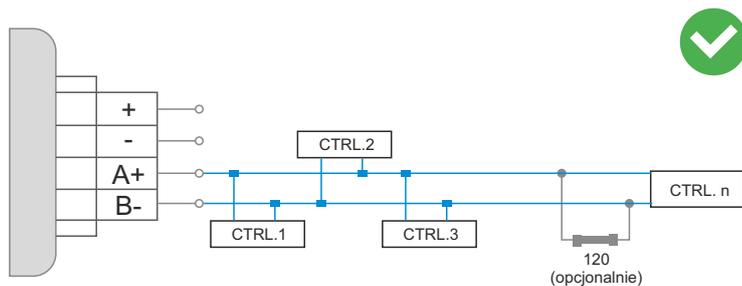
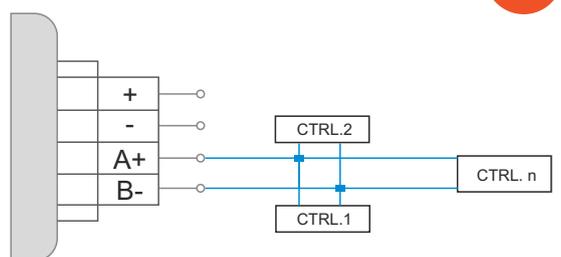


Fig. 6. Example of an incorrect connection over an RS485 network (star topology)



NOTE: If the connected controller does not communicate with the modem over a long distance (more than 50m), install an additional 120 Ω terminator included with the EKO-LAN modem.

3.3 Operating status – LED indicators

The EKO-LAN modem features three LED indicators: green, yellow and red, located as shown in Fig. 2. The frequency of the backlight and the LED colours will depend on the actual operating status of the modem. An overview of indication diagnostics and the corresponding solutions is shown in Table 1.

Tab.1. Operating status indication of the EKO-LAN modem

Lp.	Problem	Diagnostyka	Rozwiązanie
1	Green LED flashes slowly (3 times/second) Orange LED off Red LED steadily on	No LAN connection	If resetting the EKO-LAN modem did not solve the issue: 1. Check that the LAN cable is plugged in. 2. Check that the router is turned on. 3. Check the Internet connection of your home network. 4. Use another factory-terminated Ethernet cable.
2	Green LED flashes slowly (3 times/second) Orange LED off Red LED flashes fast (9 times/second)	The DHCP server cannot be reached	If resetting the EKO-LAN modem did not solve the issue: 1. Check the Internet connection of your home network. 2. Reset the router. 3. Check or replace the Ethernet cable. 4. Open the router settings and enable DHCP or manual address assignment on the router.
3	Green LED flashes fast (9 times/second) Orange LED off Red LED comes on (solid for 5 seconds) and goes off repeatedly	No DNS connection or awaiting reauthorisation	If resetting the EKO-LAN modem did not solve the issue: 1. Reset the router. 2. If the connection is indirect via an access point, another router, etc., check that the issue can be replicated with an ad-hoc (direct) connection to the main router/Internet modem of the network. If the EKO-LAN modem connects correctly, reconfigure the intermediate device which handles the indirect connection. 3. Open the router settings and enable DHCP. 4. Open the router settings and unblock port 50001. 5. In special circumstances, change the DNS address to a public one, like 8.8.8.8 in the network configuration

4	Green LED steadily on Orange LED steadily on Red LED flashes slowly (3 times/second)	RS485 communication error between the modem and the controller No communication with the controller	1. Check that the RS485 port is wired correctly. 2. Check that the A+ and B- wires are not shorted. 3. Change the RS485 port settings of the controller as shown in Table 2 – it is especially important when monitoring several installations.
5	Green LED flashes fast (9 times/second) Orange LED steadily on Red LED flashes slowly (3 times/second)	RS485 communication error between the modem and the controller No communication with the controller No DNS connection or awaiting reauthorisation	1. Follow item 3. 2. Follow item 4.
6	All LEDs are off and unresponsive	No power supply to the EKO-LAN modem The EKO-LAN modem has failed	1. Check that the 12V DC power supply connection to the EKO-LAN modem power input receptacle or the plug-in 5V DC power supply is correct. 2. If the 12V DC power input receptacle is used, use a digital multimeter to test out and verify there is voltage on the correct pins (GND to 12V). 3. Having verified that the connection is OK, replace the EKO-LAN modem.

4 REGISTERING THE MODEM

The next step to do after the EKO-LAN modem has been correctly installed and connected to the controllers is to create an account. Remote management of all installations within one account is possible on the Ekontrol.pl platform (go to the Login tab). A dedicated platform available at opti-ener.com is provided to the owners of the OPTI-ENER system. A separate user account is not required.

You will need these to create your account:

- User's e-mail address
- Modem's CODE number¹

If you have connected a controller and registered your account and the following message is displayed: "Device not found", wait up to 5 minutes before the unit appears in the system. If the problem persists, verify the operating status displayed by the LED indicators and, if necessary, follow the appropriate procedure in Table 1.

¹NOTE: If the modem does not have a CODE number or if it is illegible, contact the manufacturer.

The web application, which runs on any device with Internet access and a web browser installed, allows the user to:

- remotely view of the actual installation operating parameters;
- remotely operate the installation by modifying its specific operating parameters;
- receive alarm state messages about the installation via e-mail or cellular text messages (SMS)²;
- archive the operating status data for every managed installation 24/7;
- generate parameter statistics in graphs;
- use the remote service of the device supplier to ensure maximum performance of the managed installation².

2NOTE: Available with the EKONTROL+ package only.

5 LIST OF SUPPORTED CONTROLLERS

Depending on the type of installation and the controller model, different settings must be made for the RS-485 port which handles the communication with the EKO-LAN modem. The list of devices compatible with the modem and the required settings are shown in Table 2.

If you modify the port settings, restart the managed unit (the controller) by cycling its power supply and turning the unit on again. Next, wait 2 minutes after turning on the unit and check the LED indicators on the EKO-LAN modem by comparing their statuses to Section 3.3.

Tab.2 RS485 port settings for Hewalex units

RES installation type	Unit type	Controller model	Controller access password	RS485 port settings
PV installation	OPTI-ENER	P01 P02	-	- Baud rate: 38400 - Logical address: 2 - Physical address: 3
MONO & SPLIT heat pumps	PCCO SPLIT 6kW PCCO SPLIT 10kW PCCO SPLIT 13kW PCCO SPLIT 20kW	G-426-P02	1305	- Baud rate: 38400 - Logical address: 2 - Physical address: 4
DHW heat pumps (without a DHW tank)	PCWU 2,5kW PCWU 3,0kW	G-426-P01	1305	- Baud rate: 38400 - Logical address: 2 - Physical address: 5
DHW heat pumps (with a DHW tank)	PCWU 200K-2,3kW PCWU 300K-2,3kW PCWU 300SK-2,3kW PCWU 200eK-2,5kW PCWU 300eK-2,5kW	G-426-P01	1305	- Baud rate: 38400 - Logical address: 2 - Physical address: 6
Solar thermal system	ZSP 18 ZSP 18E ZSP 28-01 ECO	G422-P06; G422-P07 G422-P08 G422-P09 G422-P09a GH26-P09 GH26-P09A G439	0110	- Baud rate: 38400 - Logical address: 2 - Physical address: 7(G422) 8(GH26) 9(G439)
Extension modules	COP protection module	G922	-	- Baud rate: 38400 - Logical address: 2 - Physical address: 11

6 NOTICE ON THE LABELLING AND COLLECTION OF WASTE ELECTRONIC EQUIPMENT



This symbol on the product or its packaging requires separate collection of waste electrical and electronic equipment (WEEE). It means that this product should not be disposed of with other household waste. Proper disposal of WEEE helps to avoid potential harm to the environment and human health.

The mandatory selective collection of WEEE is the liability of the user, who should hand over WEEE to a WEEE collection plant.

CAUTION!

- This equipment is not intended to be operated by individuals (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge of the equipment, unless they have been given supervision or instruction concerning the use of the equipment by individuals responsible for their safety. Children should be supervised to ensure that they do not play with the equipment.
- If the integrated power cord is damaged, have it replaced by the manufacturer, a professional repair service, or a qualified professional to avoid hazards.

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