

Installation and operating instructions SENSOLUX Energy controller



Art.No.: 482 FU-E

1. General

1.1 Application

The radio-operated system is ideally suited for expanding existing electrical installations without the need for additional wiring. Various electric loads such as lamp bulbs, HV halogen lamps, electronic ballast devices and inductive loads can be switched with the outputs O1 and O2 of the energy controller (receiver).

A presence sensor or an Easyclick transmitter provide the switching function (radio signal). The energy controller can also be switched via two remote stations (buttons or switches).

Notes:

- On delivery, the energy controller is set to "Fully automatic +daylight" mode for presence sensors.
- Read through the operating instructions carefully before putting the device into service.

1.2 Warranty conditions

These operating instructions are an integral part of both the device and our terms of warranty. They must be handed over to the user. The technical design of the appliance is subject to change without prior notification. **PEHA** products are manufactured and quality-checked with the latest technology according to applicable national and international regulations. Nevertheless, if a product should exhibit a defect, **PEHA** warrants to make remedy as follows (regardless of any claims against the dealer to which the end-user may be entitled as a result of the sales transaction):

In the event of a justified and properly-established claim, **PEHA** shall exercise its prerogative to either repair or replace the defective device. Further claims or liability for consequential damage are explicitly excluded. A justifiable deficiency is one in which the device exhibits a structural, manufacturing, or material defect that makes it unusable or substantially impairs its utility at the time it is turned over to the end-user. The warranty does not apply to natural wear, unintended usage, incorrect connection, device tampering or the effects of external influences. The warranty period is for 24 months from the date of purchase by the end-user from a dealer and ends not later than 36 months after the device's date of manufacture. German law shall be applicable for the settlement of warranty claims.

1.3 Disposal of the device

The device must be disposed of in compliance with the laws and standards of the country in which it is operated!

2. Safety



CAUTION! Danger of electrical shock! The housing contains current-carrying components. Contact can lead to personal injury! All work on the mains network and the device may only be done by an authorised electrician.

- Disconnect power supply from the device prior to performing any work on it.
- Secure the device against being powered on again.
- Check that the device is powered off.
- Close the housing securely before applying power.

The following must be observed:

- Prevailing statutes, standards and regulations.
- State-of-the-art technology at the time of installation.
- The device's operating instructions.
- Operating instructions can only cite general stipulations. These are to be viewed in the context of a specific system.

This device is only intended to be used for its stated application. Unauthorised conversions, modifications or changes are not permissible! This device may not be used in conjunction with other devices whose operation could present a hazard to persons, animals or property.

3. Technical specifications

3.1 General data

General data		
Transmit frequency	868,3 MHz	
Voltage supply	230V~/50 Hz	
Power line protection	Automatic circuit breaker or fuse rated for max. 16A	
Ambient temperature	+ 5°C to + 50°C	
Test specifications	EN 60669-2-1	
Identification	CE	
Type of protection	IP 20	
Permissible load		
	Incandescent lamps (Ω)	2300 W
	HV halogen lamps	1250 W
	Fluorescent lamps	1000 VA
	Inductive loads	600 VA
	Electronic ballast loads	5x

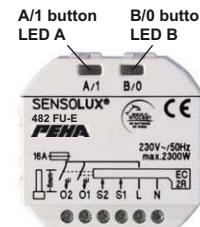
3.2 Range in buildings

The strength of the radio signal between transmitter and receiver decreases with increasing distance. The visually unobstructed range is about 30 m in passageways and 100 m in open rooms.

Material	Typical range
Masonry	20 m, through 3 walls
Reinforced concrete	10 m, through 1 wall/ceiling
Plasterboard/wood	30 m, through 5 walls

4. Structure and description

4.1 Connection options and accessories



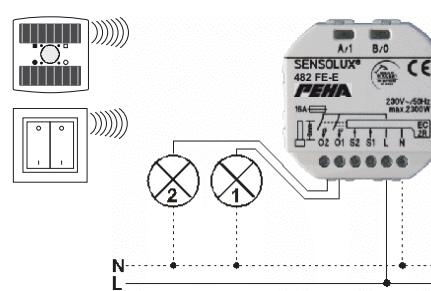
Supported Easyclick transmitters:

2-channel wall-mounted transmitter	4-channel wall-mounted transmitter	Hand-held transmitter	Presence sensor
- 95.450.xx FU-BLS	- 95.455.xx FU-BLS	- 450 FU HS4	
- 20.450.xx FU BLS	- 20.455.xx FU BLS		Presence sensor
- 20.450.xx FU BLS N	- 20.455.xx FU BLS N	- 482 FU-BM DE	
- 450 FU-BLS	- 455 FU-BLS		

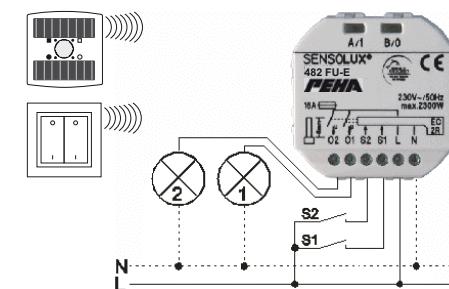
Function	Terminal
Voltage supply 230V~/50Hz	L, N
Remote station input 230V~/50Hz for button or switch (output O1)	S1
Remote station input 230V~/50Hz for button or switch (output O2)	S2
Load output	O1, O2

4.2 Connection diagrams

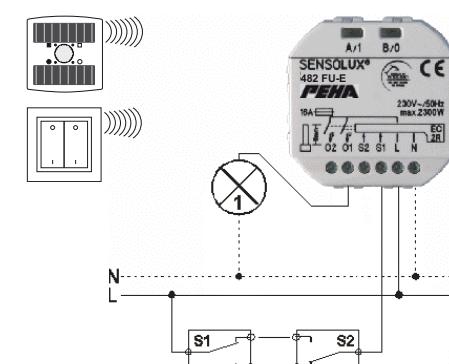
a) Actuation by presence sensor/transmitter with no remote station



b) Actuation by presence sensor/transmitter and remote station S1 and S2 (button or switch)



c) Actuation by presence sensor/transmitter and existing electrical installation



4.3 Parameter for presence sensor

a) Standard parameters (factory setting)

On delivery, the energy controller is preset to "Fully automatic+daylight" mode for presence sensors.

Parameter: Time	Function	Code
Delay time 10-12 min	OFF	01100100
Parameter: Light value	Function	Code
LV 4	OFF	01001011
Parameter: Mode	Function	Code
Fully automatic	ON/OFF	00000111
Daylight (light value)	OFF	00000111

Presence → Movement detected

Absence → No movement detected

The presence sensor *automatically switches on* the lighting in response to presence.

It *automatically switches off* the lighting in response to absence (delayed shut-down time approx. 10-12 minutes).

The lighting is switched on again in response to a renewed presence state after approx. 2 minutes absence.

The lighting is also switched off on reaching the preset daylight value (mixed light) even in presence mode.

The lighting can be switched on or off at any time by the Easyclick transmitter or a remote station.

b) LED indicator and entry of standard parameters

The code belonging to the standard parameters is indicated by LEDs (A/1+B/0) flashing.

Buttons 1/0 must be used to enter the code (8-digit) of the standard parameters.

Parameters	Indicator
Time	A/1 + B/0 1x flashing
Code	0 1 1 0 0 1 0 0
Light value	A/1 + B/0 2x flashing
Code	0 1 0 0 1 0 1 1
Mode	A/1 + B/0 3x flashing
Code	0 0 0 0 0 1 1 1

c) Parameter list

The parameter settings can be changed with the buttons 1/0 according to following code.

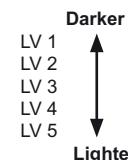
Parameter: Time (1)	Function	Code
About 1 min delay time	OFF	00000000
About 3 min delay time	OFF	00001110
About 6 min delay time	OFF	00111100
About 10 min delay time	OFF	01100100
About 15 min delay time	OFF	10010110
About 20 min delay time	OFF	11001000

Parameter: Light value (2)	Function	Code
LV 1	OFF	00011001
LV 2	OFF	00100011
LV 3	OFF	00110010
LV 4	OFF	01001011
LV 5	OFF	01100100

Parameter: Mode (3)	Function	Code
Fully automatic	ON/OFF	00000011
Fully automatic + daylight	ON/OFF	00000111
Fully automatic + daylight + twilight	ON/OFF	00001111
Semiautomatic	OFF	00000001
Semiautomatic + daylight	OFF	00000101

(1) The delayed shut-down time can extend up to 2 min (depending on the transmit interval).

(2) Light value (LV) measurement



(3) Daylight / twilight → „Parameter: Light value“

Note: Measured light values are summed and averaged. This averaged value is compared with the preset light value. Depending on the Mode parameter setting (3), switching on or off will be based on the daylight / twilight value.

The circuit does not react to brief overcast periods caused by clouds. It may take as long as 20 minutes for the circuit to react appropriately to a new light value setting.

5. Installation and commissioning

Notes:

5.1 Safety information

Assembly, installation and commissioning may only be done by an authorised electrician.

Mains power (230 V ~/50 Hz) to electrical equipment must be switched off during installation.

Applicable laws and standards of the country in which the device is operated must be observed!

5.2 Important installation information!!

– All presence sensors / Easyclick transmitters to be used must be assigned prior to final installation.

– The parameters of the energy controller required for presence sensors must be set beforehand.

– NEVER install presence sensors / Easyclick transmitters in a metal enclosure or in the immediate vicinity of large metal objects. Installation close to floor level or on the floor is not recommended.

– The energy controller and the remote stations must be connected to the same phase conductor (L).

5.3 Installation

This device is intended for installation in a flush-mounted installation box. With sufficient installation depth for the flush-mounted installation box, the energy controller can be installed behind a button or switch. The devices are to be equipped with the 1-5 multipurpose frame from the PEHA switch range.

- Install the energy controller at a suitable location.
- Protect power supply line with an automatic circuit breaker or fuse (max. 16 A)!
- Install connection cables according to the connection diagram (see Point 4).

5.4 Start-up

- Install system
- Switch on electrical system (power supply).
- If required, assign presence sensor or Easyclick transmitter.
- If necessary, set parameters of energy controller for presence sensor (see Point 6.4).

!! Important information on starting up !! the presence sensor

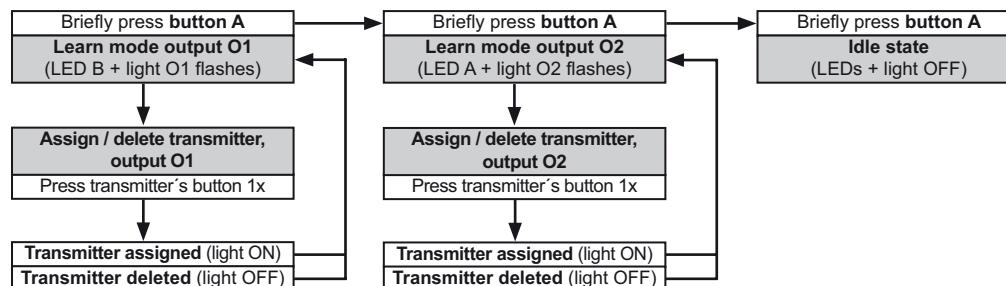
The energy storage device must be fully charged before placing the presence sensor into operation. Observe following points:

- For immediate operation (assign or delete), charge the device for approx. 5-10 minutes at 50-100 LUX or optionally select battery mode.
- The energy storage device must be charged over several days at 50-100 LUX for light measurement to function correctly.

6. Programming

The energy controller (receiver) must be connected to the power supply for programming. The programming is retained in the event of power failure.

6.1 Learn mode (presence sensor / transmitter)



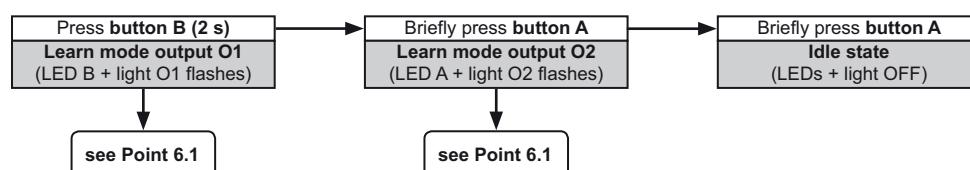
Examples of assigning or deleting:

Wall-mounted transmitter \Rightarrow Press rocker I or O 1x
 Hand-held transmitter \Rightarrow Press button A or B 1x
 Presence sensor \Rightarrow Press button LRN 1x

Notes:

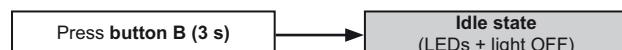
- No presence sensor / transmitter is assigned on delivery.
- Up to 8 presence sensors and 8 Easyclick transmitters can be assigned or delete in learn mode.
- A presence sensor / Easyclick transmitter is alternately assigned (LED ON) or delete (LED OFF) each time the transmitter's button is pressed!
- If no action takes place, learn mode will be terminated after 30 s.

6.2 Deleting all presence sensors and transmitters



Note: All presence sensors and transmitters are deleted after pressing button B for 2 s (LED A lights briefly).

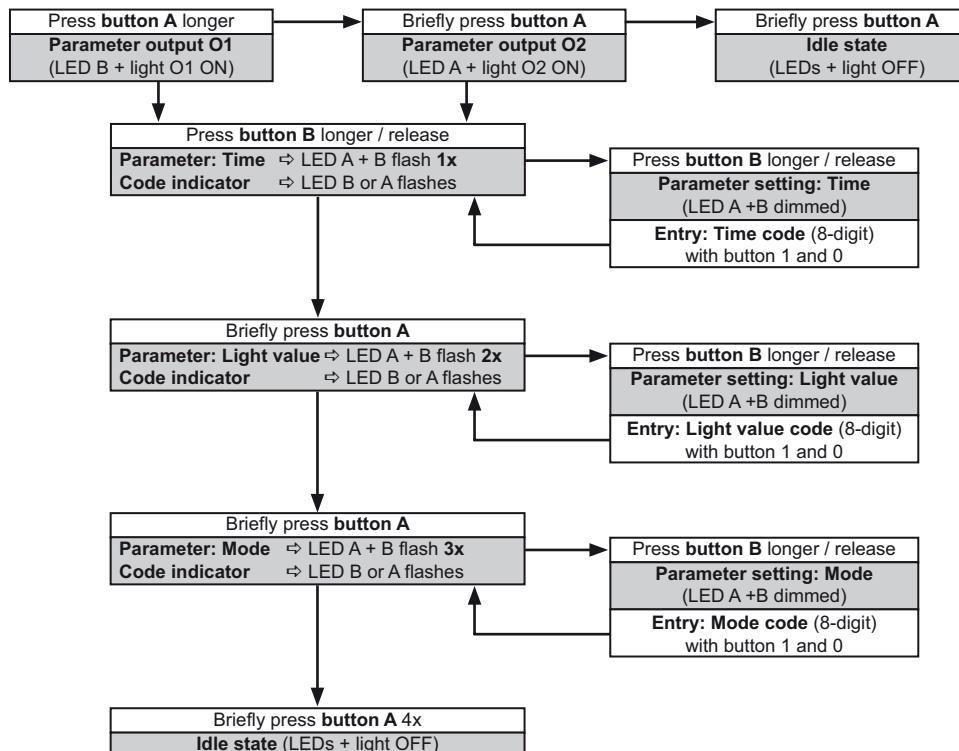
6.3 Deleting all presence sensors, parameter settings and transmitters



Notes:

- All presence sensors, their parameters and transmitters are deleted after pressing button B for 3 s (LED A lights briefly).
- The energy controller is then in idle state and reset to "fully automatic + daylight" mode.

6.4 Showing and changing parameter settings (presence sensor)



Notes:

- Refer to Point 4.3 for showing and entering a code (8-digit)!
- If no action takes place, parameter setting will be terminated after 30 s.

7. Operation and functions

7.1 Operation

A presence sensor or an Easyclick transmitter (radio signal) provide the switching function of the energy controller (receiver).

Before use, presence sensors and transmitters must be assigned to the energy controller (max. 8 presence sensors and 8 transmitters). They can operate an unlimited number of energy controllers. The energy controller can also be switched via two remote stations (buttons or switches). On delivery, the energy controller is preset to "Fully automatic+daylight" mode for presence sensors.

Outputs O1 and O2 of the energy controller can be operated separately. The outputs can also be operated simultaneously by a presence sensor or Easyclick transmitter.

7.2 Remote station functions (button / switch)

Remote station	Function
Press button	Switch on/off
Switch in ON position	Switch on
Switch in OFF position	Switch off

Note: Input signals that are **shorter** than 3 s are evaluated as **button signals**. Input signals that are **longer** than 3 s are evaluated as **switch signals**.

7.3 Easyclick wall transmitter functions

Rocker O	
Rocker I	

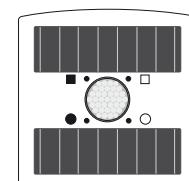
Wall-mounted transmitter	Function
Press rocker I	Switch on
Press rocker O	Switch off

7.4 Easyclick hand-held transmitter functions

Button A	
Button B	
Button C	
Button D	

Hand-held transmitter	Function
Press button A/C	Switch on
Press button B/D	Switch off

7.5 Presence sensor functions



- LRN button
- Light measurement

Light measurement: The presence sensor measures the light value (IR component) of the ambient light. The light value LV is dependent on the artificial lighting, nature of surfaces (light / dark) or the incidence of light from windows. The energy controller for presence sensors is set as standard to a light value (LV 4) at average user sensitivity.

Caution!!

- The energy storage device must be charged over several days at 50-100 LUX for light measurement to function correctly.
- The presence sensor detects the infrared portion of the light. As such, the light can only be switched on in the case of presence detection if using light bulbs and halogen lamps!

Presence	⇒ Movement detected
Absence	⇒ No movement detected
Delayed shut-down time	⇒ "Parameter: Time"
Daylight + twilight	⇒ "Parameter: Light value"
Mode	⇒ "Parameter: Mode"

7.5.1 Fully automatic mode

The energy controller is set to "fully automatic" mode for presence sensors. The lighting can be switched on or off at any time by the Easyclick transmitter or a remote station.

Presence sensor	Function
Presence	Switch on
Absence	switch off after expiration of delay shut-down time

7.5.2 Fully automatic + daylight mode (standard)

The energy controller is set to "fully automatic + daylight" mode for presence sensors. The lighting can be switched on or off at any time by the Easyclick transmitter or a remote station.

Presence detect	Function
Presence	switch on
Absence	switch off after expiration of delay time
Daylight value greater than preset light value	switch off (switch-on blocked)

Note: The lighting is switched on again in response to a renewed presence state after approx. 2 minutes absence. The lighting is also switched off on reaching the preset daylight value even in presence mode.

7.5.3 Fully automatic + Daylight + Twilight Mode

The energy controller is set to „fully automatic + daylight + twilight“ mode for presence detection. The lighting can be switched on or off at any time by the Easyclick transmitter or a remote station.

Presence detect	Function
Presence	switch on
Absence	switch off after expiration of delay time
Daylight value greater than preset light value	switch off (switch-on blocked)
Daylight value less than preset light value	switch on at twilight

7.5.4 Semiautomatic mode

The energy controller is set to „semiautomatic“ mode for presence detection. The lighting can be switched on or off at any time by the Easyclick transmitter or a remote station.

Presence detect	Function
Presence	--
Absence	switch off after expiration of delay time

7.5.5 Semiautomatic + daylight mode

The energy controller is set to „semiautomatic + daylight“ mode for presence detection. The lighting can be switched on or off at any time by the Easyclick transmitter or a remote station.

Presence detect	Function
Presence	--
Absence	switch off after expiration of delay time
Daylight value greater than preset light value	switch off

8. Troubleshooting & remedies

8.1 New system or existing system

- Check automatic circuit breaker and power supply (electrician only).
- Check connected electrical loads and connection cables (electrician only).
- Check the system's surroundings for changes that could cause interference (e.g. metal cabinets, furniture or walls which have been moved).
- If the receiver operates at a reduced distance from the transmitter, the radio signal was encountering interference or it was operating outside the transmission range.
- Relocate the receiver to a better location.
- Delete all assigned transmitters and reprogramming.

8.2 Receiver switching of its own accord

- This may be caused by operation of a transmitter that was coincidentally assigned to the receiver.
- Delete all assigned transmitters and reprogramming.

8.3 Range restrictions of radio signals

- Use of the receiver in the vicinity of metal objects or materials with metal components. Maintain minimum distance of 10 cm.
- Damp materials.
- Maintain minimum distance of 0.5 m from devices that emit high frequency signals, e.g. audio and video systems, computers, electronic ballast for lighting systems.

8.4 Contact

Telephone: +49 (0)2351 185-0
 Fax: +49 (0)2351 27666
 Internet: www.peha.de/contact.aspx
 E-mail: peha@peha.de

9. Conformity declaration

PEHA Easyclick products may be sold and operated in EU countries as well as in CH, IS and N. PEHA herewith declares that the energy controller (482 FU-E) is in compliance with the fundamental requirements and other relevant provisions of R&TTE Directive 1999/5/EC. The conformity declaration is available on the Internet at the following address: www.peha.de/ServiceDownloads.aspx.