PILZ

THE SPIRIT OF SAFETY

PSEN op Advanced Programming Adapter

Ethernet adapter for PSENopt Advanced series

Operating manual
1003071-EN-02

SAVE CONFIGURATION

The Adapter can read out the configuration of a Type 4 safety light curtain of the PSENopt Advanced series. It can be used both as a backup in case an exchange of damaged safety light curtains is required, and for transferring a configuration to other safety light curtains used in the same way in the application.

Step 1: Backup of the configuration

Connect the adapter to the safety light curtain that is used as a source (see section "Connection").
Press the button ▼ until the symbol **d** is shown on the display. The backup procedure is completed when the DL-LED lo longer flashes (see Fig. 1).
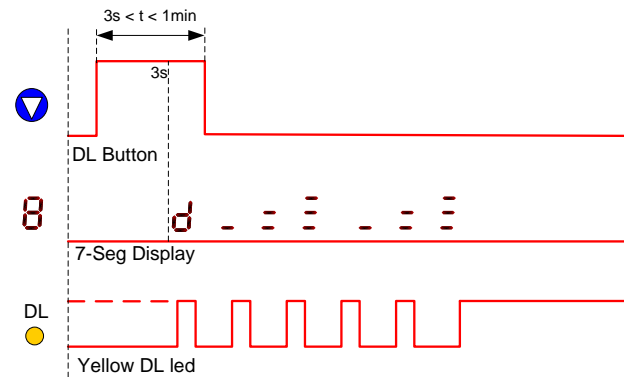

Fig. 1 Download of a configuration

Step 2: Reading the configuration

Connect the adapter to the safety light curtain to which the configuration is to be transferred (see section "Connection").
Important: The existing configuration in the programming adapter can only be copied into safety light curtains with the same hardware.
Press the button ▲ until the symbol **U** is shown on the display. The process of writing is completed when the UL-LED no longer flashes (Fig. 2).
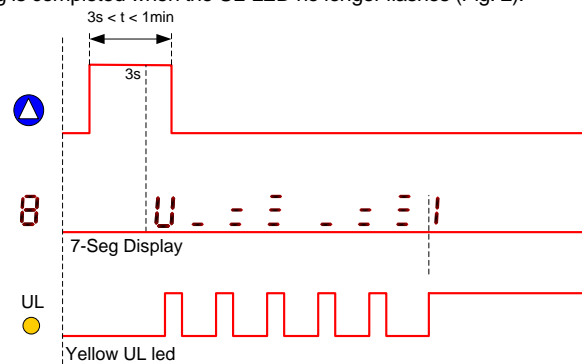

Fig. 2 Reading the configuration

After a configuration has been successfully transferred from the adapter to the safety light curtain, a configuration report is saved. A maximum of 10 transfer processes can be performed. When this number is achieved, the user has to download the reports using the PSENopt Configurator software.

Step 3: Downloading the reports and checking the safety light curtain configuration

Connect the adapter **to the Ethernet network and the supply** (see section "Stand-Alone connection").
Load all the reports saved in the adapter via **PSENopt Configurator** .

The serial number and the corresponding configuration parameters are saved in a configuration report of a certain safety light curtain.

> ⚠️ Before starting normal plant operation, it must be checked whether the configured safety light curtains work to the purpose for which they are intended.

Deleting the configuration reports

Before deleting, ensure that the report has been saved. Press the button ▲ (> 3s), until the symbol **E** is shown on the display. Then all the reports in the adapter are deleted.

OFFLINE CONFIGURATION

Via PSENopt Configurator you can prepare a safety light curtain configuration and transfer it to the PSEN op Advanced Programming Adapter. This allows offline configurations to be created which can later be copied to the corresponding safety light curtains.

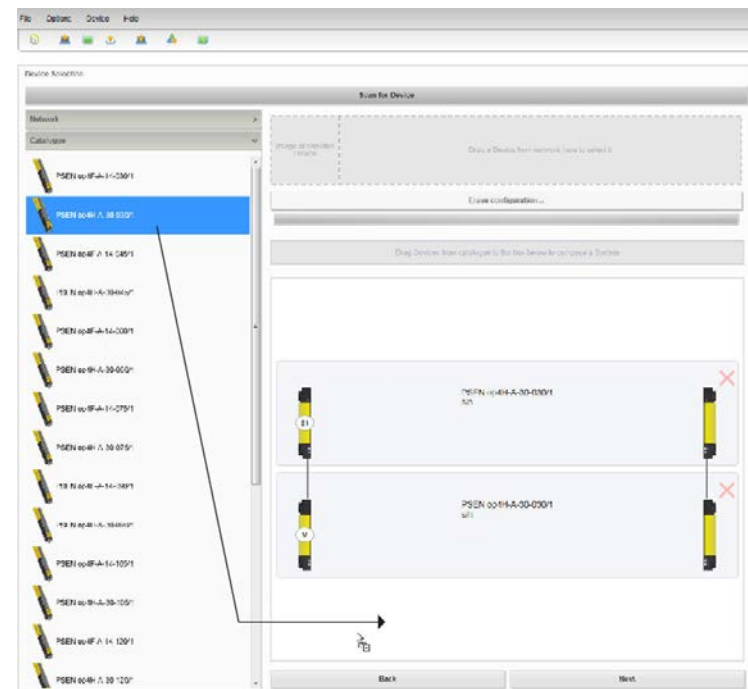### Step 1: Create configuration

Connect the **supply voltage** and the **Ethernet connection** correspondingly. (see section "Stand-Alone connection"). In **PSENopt Configurator** select "Configuration of the safety light curtain" to start the offline configuration.

Select the corresponding safety light curtain from the catalogue and drag it to the middle (max. 3 Types can be cascaded). The select the corresponding programming adapter from the network and continue setting the parameters with "Continue".
Then use "Programming" to save the corresponding configuration into the programming adapter PSEN op Advanced Programming Adapter.
The adapter now includes the configuration that can be transferred to several safety light curtains.

Important: Select the correct article number depending on the safety light curtain for which the configuration is to be made.
If the wrong safety light curtain was selected, you cannot load the configuration.

Step 2: Transfer configuration to a safety light curtain

Connect the adapter to the safety light curtain (see section "Connection").
Press the button ▲ until the symbol **U** is shown on the display.
Once the upload has been completed successful, a corresponding configuration report is saved in the adapter. A maximum of 10 read processes can be performed in succession. Then load the configuration reports via PSENopt Configurator to perform further read processes**.**

When the load procedure is complete the configuration remains saved in the adapter: It can then be read to other light curtains (a new report is created for each upload).

Step 3: Downloading the reports and checking the safety light curtain configuration

Connect the adapter **to the Ethernet network and the supply** (see section "Stand-Alone connection").
Then load all the reports saved in the adapter via **PSENopt Configurator**.

Each configuration report states the **serial number of the safety light curtain**, in which the corresponding configuration was read, and all the configuration parameters.

> ⚠️ Before starting normal plant operation, it must be checked whether the configured safety light curtains work to the purpose for which they are intended.

ERROR LOG

When PSEN op Advanced Programming Adapter is permanently connected to a safety light curtain, an error log is written on the adapter. This can be made via the Software PSENopt Configurator. Detailed diagnostics of random states is therefore possible.
It is only possible to record errors via the adapter when the Type4 safety light curtain was configured with the software.
An error is written to the log when this error can be recovered via RESET.
The maximum number of logs in the adapter depends on the type of cascading: 7 logs per cascading with 3 safety light curtains, 11 logs per cascading with 2 safety light curtains, 23 logs per cascading with 1 safety light curtain.
When the adapter is offset from one safety light curtain to the next, or the configuration of the safety light curtain changes, the current log is deleted and a new log is created.
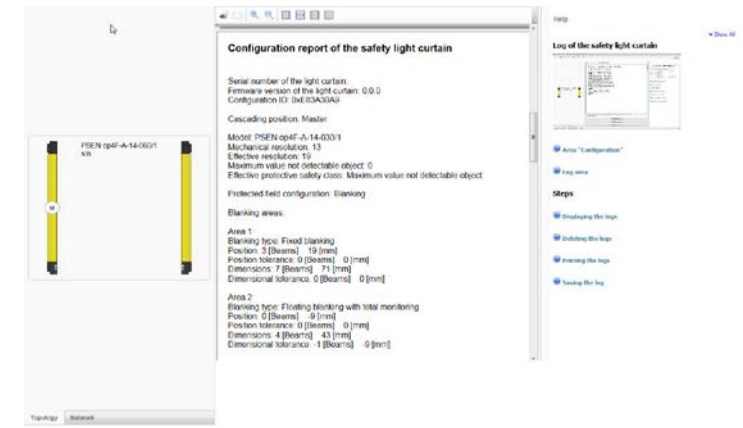Connect the adapter **to the Ethernet network and the supply** (see section "Stand-Alone connection").
In PSENopt Configurator select "Open log of the safety light curtain" to load and display the logs saved in the adapter.

The log of the safety system includes:

- A report on the safety system with detailed configuration of the safety light curtain that the log refers to.

- One or several logs with detailed information on the errors.

SPECIFIC STATUS DISPLAY

When the adapter is connected to a safety light curtain, detailed information on the status of the light curtain is shown in the 7 segment display.
Further information on the messages on the user interface see: Chapter "Diagnostics" in the PSEN op safety light curtain operating manual.

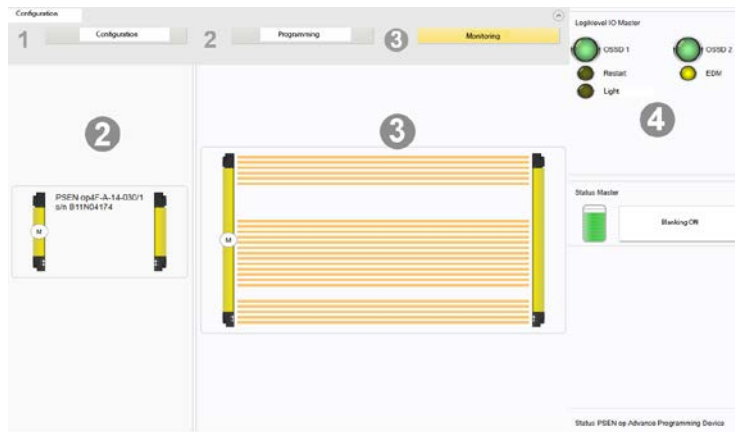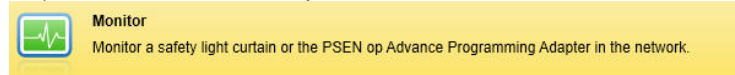| Error messages	
	OSSD error
	Microcontroller error
	Error optical system
	EDM error
	Restart error
	Communication error
	BCM Configuration error
	ACM configuration error
	Muting lamp error

STATUS MESSAGES	
	Safety light curtain in ALIGN mode, aligned correctly
	Safety light curtain in ALIGN mode, not aligned
	Safety light curtain in ALIGN mode, last optics not aligned
	Safety light curtain in ALIGN mode, optics not aligned
	Safety light curtain in ALIGN mode, middle beam not aligned
	Safety light curtain in interlock, activate RESTART
	Advanced configuration via PSENopt Configurator is running
	Muting function active
	Safety light curtain process ready for override call up
	Override function active
	Wrong wiring on the override
	Blanking zones limits not observed.
	Blanking function active

ONLINE MONITORING AND CONFIGURATION

When the adapter is connected to a safety light curtain **and** to the network, a direct connection of PSENopt Configurator to the safety light curtains is possible. Regarding the correct connection of the adapter to the safety light curtain, see section "Connection".

Monitoring

In PSENopt Configurator select "Monitor" to monitor a safety light curtain via an adapter that is connected to the system.

> **Monitor**
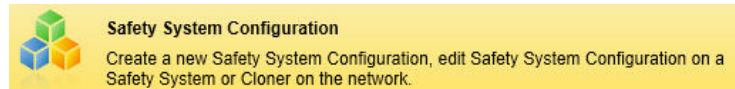> Monitor a safety light curtain or the PSEN op Advance Programming Adapter in the network.

In the monitoring area of the PSENopt Configurator the user can call up the following updated information.

- Connected type of cascading
- Status of all light axes
- Alignment level
- OSSD status
- Status of the inputs of the safety light curtain
- Status of outputs of the safety light curtain
- Operating mode (with detailed information on the errors)
- Status of the adapter

The monitoring function is useful particularly for diagnostics and rectifying problems of the safety light curtains.
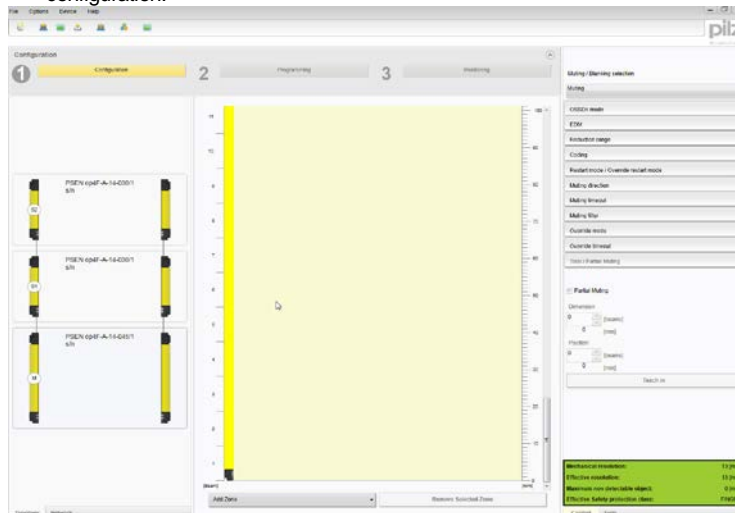
Configuration

In PSENopt Configurator select "Configuration of the safety light curtain" to start the online configuration procedure of the connected safety light curtains.

> **Safety System Configuration**
> Create a new Safety System Configuration, edit Safety System Configuration on a Safety System or Cloner on the network.

After selecting the safety light curtain to be configured, perform configuration steps "1-2-3" to:
1) be able to enter all the configuration parameters,
2) be able to create a new configuration for the safety light curtain and a report of the configuration. This report is required for checking the new configuration of the safety light curtain ,
3) be able to monitor the operation of the safety light curtain before and after the configuration.

Further details on the configuration procedure and the setting of parameters see operating manual PSENopt and online help PSENopt Configurator.

CONNECTION

Connection in head area of the safety light curtain
(Specific user interface, saving, online monitoring and configuration)

Fig. 3 Connection in head area of the safety light curtain

The adapter is connected via the 18-pin interface at the head side:

- Remove the protective plastic cap at the safety light curtain.
- Connect the adapter (see Fig. 3).
- Tighten the adapter screws.
- Connect the 12-pin connector to the adapter.
- If a muting configuration is used, connect the 5-pin muting connector to the adapter.
- When using the connection to the PSENopt Configurator, connect the 4-pin Ethernet connector.
- **Keep the end caps installed at all the unused connectors and ensure that they are fixed.**

Connection	Pin (colour)	Muting	Blanking
	1 (brown)	24V	24V
	2 (blue)	0V	0V
	3 (white)	RESET/RESTART	RESET/RESTART
	4 (green)	OVERRIDE 1	TOLERANCE
	5 (pink)	OSSD2	OSSD2
	6 (yellow)	EDM	EDM
	7 (black)	MUTING DISABLE	TEACH IN
	8 (grey)	OSSD1	OSSD1
	9 (red)	OVERRIDE 2	N.C.
	10 (violet)	MUTING LAMP	BLANKING LAMP
	11 (grey-pink)	OVERRIDE STATUS	N.C.
	12 (red-blue)	EARTH	EARTH
	1 (brown)	24V – Out	
	2 (white)	MUTING2	Not used - keep the
	3 (blue)	0V – Out	end caps installed!
	4 (black)	MUTING1	
	5 (grey)	N.C.	
	Ethernet connection	Use Standard-M12-D-coded Ethernet cable. If the connection is not used, keep the end caps installed	

Connection in the foot area of the safety light curtain
(Specific user interface, saving, online monitoring and configuration)

The adapter can also be connected to the 18-pin connector at the foot area of the safety light curtain.

- Loosen the end cap from the connector of the safety light curtain.
- Connect the adapter (see Fig. 4).
- Tighten the adapter screws.
- When using the connection to the PSENopt Configurator, connect the 4-pin Ethernet connector.
- Keep the end caps installed at all the unused connectors and ensure that they are fixed.

Fig. 4 Connection in the foot area of the safety light curtain

Connection to a cascaded structure

With cascaded safety light curtains, the adapter can be connected at the head section of the master safety light curtain (Fig. 3) or in the foot area of the last Slave safety light curtain (Fig. 4).

Stand-alone connection of the adapter
(Offline configuration, download of the reports, download of the logs)

- Connect the 12-pin M12 connector to the adapter .
- When using the connection to the PSENopt Configurator, connect the 4-pin Ethernet connector.
- **The adapter in stand-alone mode does not conform to the protection type IP 65.**
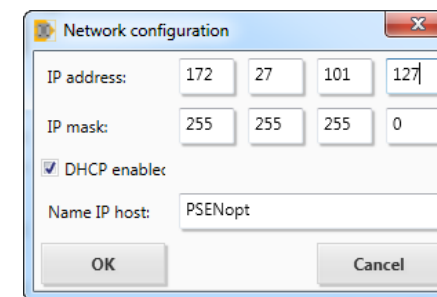
Fig. 5 Stand-alone connection

TCP/IP CONFIGURATION

The client DHCP of the adapter is enabled by default. To enable a connection for PSENopt Configurator it is normally enough to connect the connector of the adapter to the internal network. In case of a connection to a PC that does not belong to any network, the TCP/IP parameters of the PC's operating system have to be entered as follows:

IP address 172.27.101.210.

Net mask: 255.255.0.0

The network configuration of the adapter can be changed after connecting to the adapter in the menu Device-> Settings.

> **Network configuration**
> IP address: 172 27 101 127
> IP mask: 255 255 255 0
> ☑ DHCP enabled
> Name IP host: PSENopt
> [OK] [Cancel]

USER INTERFACE

	STATUS	INFORMATION
ETH	🟢	Adapter connected to Ethernet
	⚪	Ethernet connection not available
LINK	🟠	Adapter connected to PSENopt Configurator
	⚪	PSENopt Configurator not connected
UL	⚪	No report available in the adapter memory
	🔆	Loading of configuration to the safety light curtain is in progress
	🟠	One or several reports saved in the adapter
DL	⚪	No configuration available in the adapter memory
	🔆	Loading of configuration from safety light curtain is in progress
	🟠	Downloaded configuration saved in the adapter memory - ready for reading
🔼		Push for over 1.5 s (u is shown on the display), to load the configuration saved in the adapter.
		Push for over 4 s (E is shown on the display), to load the safety reports saved in the adapter.
🔽		Push for over 1.5 s (d is shown on the display) to load the configuration of the safety light curtain into the adapter.

ERROR MESSAGES PSEN op Advanced Programming Adapter

Code	Description
AcbcA	Backup error of the safety light curtain configuration.
AcbcB	Restore error of the safety light curtain configuration. Check that the configuration saved in the adapter is compatible with the connected PSEN op safety light curtain.
AcbcB	Configuration backup error of the safety light curtain during initialisation of the log.
AcB	The memory of the adapter is full. Please download the reports via the software.
ScB	Error in the operating parameters. Please contact Pilz customer services.
AcB	Error in the TCP/IP parameters, default reset.
AcB	Error in the Adapters memory, default reset.
ScE	Error in a report, default reset.
ScB	Error in an error log, default reset.

TECHNICAL DETAILS

ELECTRICAL DATA

Supply	24 V DC ± 20%
Current consumption of the programming adapter	max. 2.4 W
Max. current that is output	1.7 A
Connection:	M12 12-pin M12 5-pin (for muting) M12 ETH 4-pin (for using the PSENopt Configurator) 18-pin (2x9) connector at Safety light curtain
Cable length (for electrical supply):	50 m max.

MECHANICAL AND ENVIRONMENTAL DATA

Operating temperature:	-0…+ 55 °C
Storage temperature:	25…+ 70 °C
Humidity:	15…95 % (non-condensing)
Protection type:	IP 65 (EN 60529)
Vibration:	Width 0.35 mm Frequency 10 … 55 Hz 20 sweeps per axis, 1 octave/min. EN 60068-2-6:
Max. acceleration:	10 g EN 60068-2-29:
Housing material:	NANYA PBT 1400 G3

DOWNLOAD PSENopt Configurator

URL	www.pilz.com/Downloads
Search term	PSENopt Configurator

Compatibility table with various Firmware versions of PSENopt Configurator, PSEN op Advanced Programming Adapter and safety light curtain

PSENopt Configurator Release	Firmware PSEN op Advanced Programming Adapter	Firmware safety light curtain	
R < 1.3			Upgrade to the latest version of PSENopt Configurator (www.pilz.com/Downloads)
R ≥ 1.3	FW Version < 6.2.0	FW Version < 6.1.0	Online or offline configuration: Online or offline configuration:
R ≥ 1.3	FW Version < 6.2.0	FW Version ≥ 6.1.0	Online configuration: System requests password for the safety light curtain. Offline configuration is not possible with this combination.
R ≥ 1.3	FW Version ≥ 6.2.0	FW Version < 6.1.0	Online configuration: System requests password only for PSENopt Configurator. Offline configuration: System requests password for saving in the adapter without transfer to the safety light curtain.
R ≥ 1.3	FW Version ≥ 6.2.0	FW Version ≥ 6.1.0	System always requests a password for the configuration.