EN

Electronic-Key-System
EKS

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More than safety.

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Headquarters in Leinfelden-Echterdingen

Logistics center in Leinfelden-Echterdingen

Production location in Unterböhringen

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EUCHNER GmbH + Co. KG is a world-leading company in the area of industrial safety technology. EUCHNER has been developing and producing high-quality switching systems for mechanical and systems engineering for more than 60 years.
The medium-sized family-operated company based in Leinfelden, Germany, employs around 700 people around the world.

16 subsidiaries and other sales partners in Germany and abroad work for our international success on the market.

Quality and innovation – the EUCHNER products

A look into the past shows EUCHNER to be a company with a great inventive spirit. We take the technological and ecological challenges of the future as an incentive for extraordinary product developments.

EUCHNER safety switches monitor safety doors on machines and installations, help to minimize dangers and risks and thereby reliably protect people and processes. Today, our products range from electromechanical and electronic components to intelligent integrated safety solutions. Safety for people, machines and products is one of our dominant themes.

We define future safety technology with the highest quality standards and reliable technology. Extraordinary solutions ensure the great satisfaction of our customers. The product ranges are subdivided as follows:

- Transponder-coded Safety Switches
- Transponder-coded Safety Switches with guard locking
- Multifunctional Gate Box MGB
- Access management systems (Electronic-Key-System EKS)
- Electromechanical Safety Switches
- Magnetically coded Safety Switches
- Enabling Switches
- Safety Relays
- Emergency Stop Devices
- Hand-Held Pendant Stations and Handwheels
- Safety Switches with AS-Interface
- Joystick Switches
- Position Switches

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What is an EKS?

The Electronic-Key-System EKS is a transponder-based read/write system for industrial use. It is used primarily for electronic access control and access management as an alternative to the normal, password-based systems. Due to the combination of Electronic-Key and information memory, however, it offers much more than just a password replacement. As an open, freely configurable system with various data interfaces, EKS is of very universal application.

What does the EKS system comprise?

- EKS read/write station with Electronic-Key adapter for reading and writing the EKS Electronic-Keys.
- EKS Electronic-Key that contains a transponder with data memory.
- Software components that aid integration and serve to parametrize and manage the Electronic-Keys.

How does the EKS work?

For operation the Electronic-Key is placed in the Electronic-Key adapter. The data are transferred between the Electronic-Key adapter and the read/write station without using any contacts. In a further step, the data are transferred to a control system. During this process, e.g., the owner of the Electronic-Key is identified and the user rights transferred.

Depending on the EKS system, further information can be saved on the Electronic-Key and transferred. These data can, e.g., be used to control specific functions or contain encrypted process parameters for an installation.

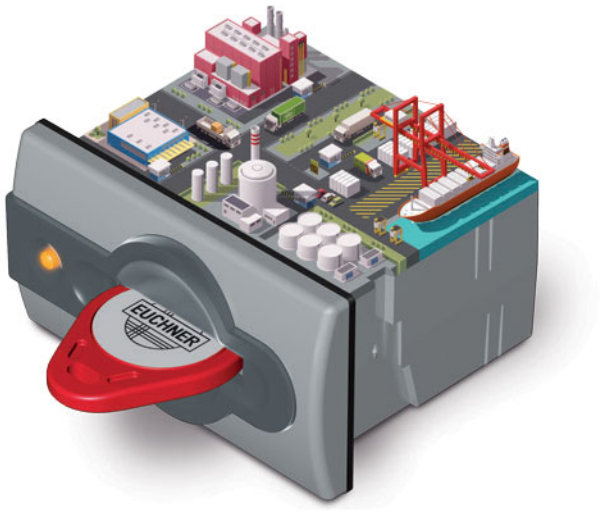
What can the EKS be used for?

EKS is used during daily operation in a very wide range of sectors

- To ensure more efficiency in numerous processes
- To create flexibility during the assignment of access rights
- To provide more safety for employees, installations and processes
- To be able to safeguard the quality of products
- To create transparency and traceability

Here the EKS takes over the following tasks, for example:

- Assigning individual authorizations to specific persons
- Creating traceability. Who did what and when?
- Saving and opening recipes
- Electronic signature
- Rapid switchover of user profiles
- Transferring ergonomic data for setting up the workplace individually
- Acquiring data for enterprise resource planning



Which EKS systems are available?

EKS *Light*

EKS *Light* is optimized for quick, straightforward integration into a control system environment. For this purpose the Electronic-Key has a pre-defined data structure that is evaluated directly by the read-only station.

With EKS *Light*, you therefore procure not just the EKS hardware, but an integrated solution for managing user groups (who is allowed to access what?) and access levels (what is the user allowed to do?).

For this purpose the data structure on the Electronic-Key and the evaluation electronics in the read-only station form a closed system with user group identification and up to 16 access levels that can be used directly for a suitable application.

The complete evaluation logic for Electronic-Key detection is already integrated into the device and does not therefore need to be programmed into a control system. The device first determines whether the Electronic-Key read is valid and access to the machine is allowed. If this is the case, the access level is determined and transferred to the control system via the 4-bit parallel interface. The authorization for a specific machine function must be assigned in the control system for each access level detected; the machine function is enabled in this way.

EKS with data interface

EKS with data interface offers maximum flexibility. As the user you specify the data structure on the Electronic-Key and define how it is to be interpreted. For this purpose you program the processing logic in the control system to suit your needs exactly. In this way numerous possible scenarios can be depicted. For example:

- Control of certain machine functions
- Storage of process parameters
- Traceability of events
- Storage of an expiry date on the Electronic-Key
- Different access rights for multiple processes

With the Electronic-Key, the data memory and the read/write station, the EKS system provides the data interface to the control system. You can choose between a total of five common interfaces.

RS232 RS422 · USB · ETHERNET · PROFIBUS · PROFINET

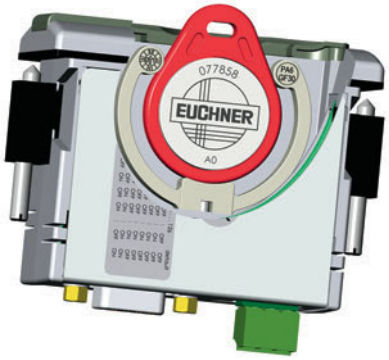
EKS *FSA* (For Safety Applications)

The EKS systems are further differentiated by the optional *FSA* (For Safety Applications) version, which is available both for the EKS with data interface and for EKS *Light*. The *FSA* devices have a second channel in the form of an additional semiconductor switching contact. This switching contact is used in connection with functionally safe applications. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.

Which designs are available?

Compact design

With the compact design, the Electronic-Key adapter and the electronics are accommodated in a single housing. The Electronic-Key is inserted into the Electronic-Key adapter and is held securely in place by a spring clip. The compact design is characterized by an interface directly on the Electronic-Key adapter.



The Electronic-Key adapter can be installed in any control panel with a standard cut-out of 33 mm x 68 mm in accordance with DIN 43700.

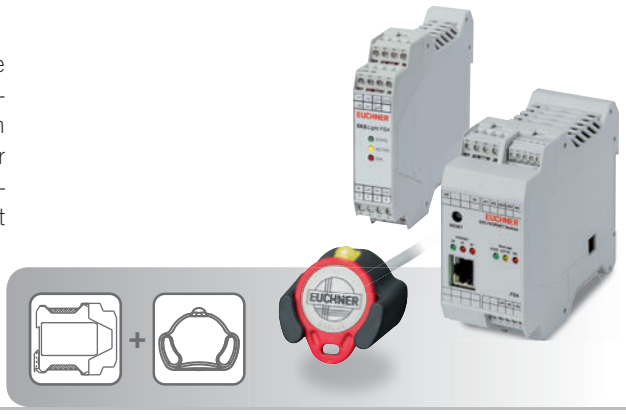
Due to the transfer of energy and data without using any contacts, this Electronic-Key adapter is designed with a high degree of protection suitable for industry from the access side. It is fastened by means of screw clamp elements from the rear side of the panel to exclude unauthorized tampering from the operator side.

The special features and advantages of the compact Electronic-Key adapter:

- Electronic-Key adapter and electronics in one housing
- Electronic-Key is inserted and retained by spring clip
- Very reliable retention of the Electronic-Key, even if there is heavy vibration
- Protection against tampering: fastened using screw clamp elements from rear side of the panel
- Robust housing for use in harsh environments
- Flat seal all around under mounting surface
- Degree of protection: IP 65, IP 67 (installed)

Modular design

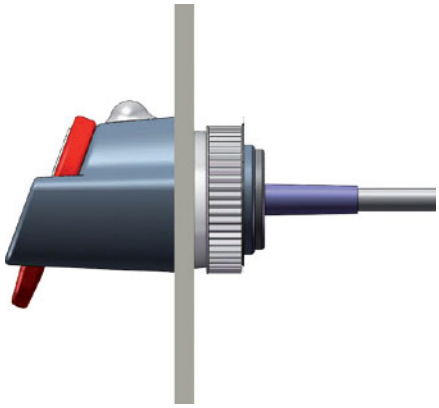
With the modular design, the Electronic-Key adapter and electronics are mounted physically separated. Due to the separation, the Front-Hook-Modular (FHM) Electronic-Key adapter fits in standard mounting bores with Ø 22.5 mm. With this design the Electronic-Key is only held in front or dropped into place. With the modular design, the electronics is accommodated in a separate interface adapter mounted in the control cabinet or on a mounting rail, for example.



The shallow installation depth of the FHM Electronic-Key adapter permits installation in flat control panels as well. Since this version fits in a Ø 22.5 mm hole, it is often the simplest solution for retrofitting in particular.

The Electronic-Key adapter was designed for applications in hygienically sensitive areas, with simple cleaning being of primary importance here. The high-molecular-weight plastic also permits use in the food industry.

Due to the transfer of energy and data without using any contacts and the special design, this Electronic-Key adapter is designed with a very high degree of protection suitable for industry from the access side. It is fastened by means of a central nut from the rear side of the panel to exclude unauthorized tampering from the operator side.



The special features and advantages of the FHM Electronic-Key adapter:

- Key is held or inserted
- Small design for installations where there is little space
- Low installation depth
- Installation in standard assembly hole Ø 22.5 mm
- Closed design, rounded contours for hygienic areas
- Plastic with high resistance to media
- Protection against tampering: fastened using central nut from rear side of the panel
- Very robust housing for use in extremely harsh environments
- Flat seal covered by housing under mounting surface
- Degree of protection: IP 65, IP 67, IP 69K (installed)

Typical applications

With the Electronic-Key System EKS, it is no problem if a password is forgotten. EKS provides electronic access management on PCs and control systems.

Nowadays access rights are usually controlled by the issue of passwords. In practice, however, this often leads to unauthorized system interventions.

This is where the Electronic-Key-System can be put to optimal use: in comparison to the issue of a password, considerably more responsibility is assigned to the owner of an Electronic-Key.

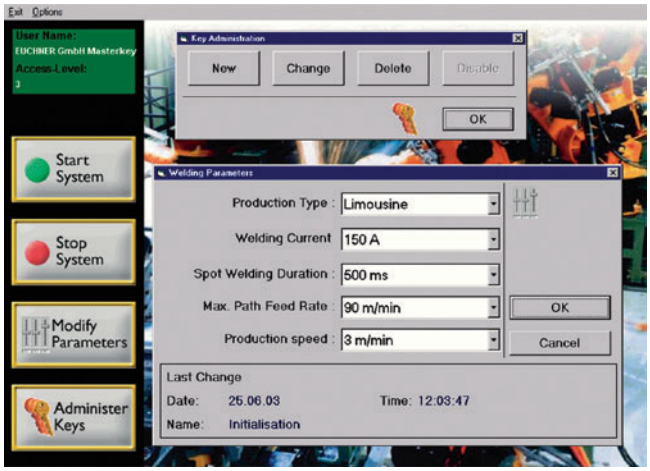
The Electronic-Key provides protection against unauthorized access to control and visualization systems. Often only specific people have permission to change the system parameters on critical systems. This is the ideal application for EKS.

In a typical application, the user has an access right at a specific level via the Electronic-Key.

An example:

- Level 1: start and stop installation
- Level 2: change process parameters
- Level 3: manage Electronic-Keys

The Electronic-Keys are available in different colors with identical functionality. The colors can be used, for example, to indicate the different levels of access rights.



All the advantages at a glance

With EKS, very fast log-on is possible without the use of a password even on systems without a keyboard. In addition, it is sensible to program the application to permit system access only as long as the Electronic-Key is positioned in the Electronic-Key adapter. Access to certain installation functions will then be inhibited automatically when the Electronic-Key is removed, for example.

A major advantage is the flexibility of the system:

- Easy assignment and alteration of the access rights level
- Access for lost Electronic-Keys can be disabled
- Fast assignment of additional Electronic-Keys

Along with the level for the access rights, the name of the user can be programmed into the Electronic-Key read/write in plain text, for example.

For quality assurance in accordance with ISO 9000, it is possible to log accesses and changes when using the EKS.

The EKS system also makes it possible, for example, to log product parameters and operator entries in accordance with FDA standard 21 CFR Part 11. EKS can be used in this context as an electronic signature for personal confirmation of work steps.

On EKS devices that are used as pure read stations on the production line, write protection can be set using a DIP switch to increase the protection against tampering.

Approvals

The EKS devices are certified in accordance with c UL us (UL file number E240367).

System selection

1 Selecting the right EKS system for my application

Essential requirements	EKS with data interface	EKS *Light*
Using the programmable memory in the Electronic-Key	✓ ✓ Read/write	✓ ✘ Read/write
Assignment of access rights	✓ Several levels per Electronic-Key	✓ One level per Electronic-Key
Identification of persons	✓ Individual	✓ In groups
Recording of events, traceability via a dedicated database	✓ Individual	✓ In groups
Representation of different data elements	✓ Electronic-Key freely configurable	✘ Electronic-Key structure pre-defined
Usage of date functions	✓ E.g. issue date, expiry date	✘
Comparison of Electronic-Key data with database	✓ E.g. via Electronic-Key serial number	✘

2 Selection of a suitable interface

Interfaces available	Serial	USB	Ethernet TCP/IP	PROFIBUS DP	PROFINET IO	PROFINET IO	Digital outputs (4-bit, parallel)	
Usage on PLC	✓	✘	✘	✓	✓	✓	✓	✓
Usage on PC	✓	✓	✓	✘	✘	✘	✘	✘
Possible cable lengths (EKS to the control system)	5 m	3 m	100 m	1,200 m	100 m	100 m	50 m	50 m
Version *FSA*	✘	✓	✓	✓	✓	✓	✓	✓

3 Selection of a suitable design

Design	compact	modular	compact	modular
				

How is the EKS Electronic-Key structured?

The Electronic-Key contains an RFID transponder with memory chip.
The data are transferred by induction without using any contacts. The Electronic-Key is operated without batteries.
The Electronic-Keys have the shape of a robust tag and are available in various colors.

EKS
Electronic-Key colors

Data structure in the Electronic-Key memory

Every Electronic-Key has a combined read/write and fixed-code memory with 116 bytes of E²PROM (programmable) plus 8 bytes of ROM (as unique serial number). As such it is possible, e.g., to save data elements such as the department, personnel number, access levels for one or more processes, an expiry date and much more on the Electronic-Key. This information is then read from the Electronic-Key by the machine control and used to derive machine functions.

Memory	E²PROM (programmable)														ROM (fixed)		
Number	116 bytes														8 bytes		
Byte no.	0	1	2	3	4	5	6	...	110	111	112	113	114	115	116	...	123

Example data structure for EKS with data interface

A typical example for the utilization of the freely programmable memory for EKS with data interface could be as follows:

- Department (here: WT)
- Personnel number (here: 37)
- Reserve block
- Access rights for process 1, e.g. milling (here 3)
- Access rights for process 2, e.g. turning (here 5)
- Safe operating mode MSO 0 (here 0F0F)
- Unused memory (freely available)
- Fixed serial number (here: 02...32)

Example for utilization with data interface

Byte no.	0	1	2	3	4	5	6	7	8	...	112	113	114	115	116	...	123
Value [hex]	57	54	33	37	00	03	05	0F	0F						02	...	32
Value [ASCII]	W	T	3	7													
Function	Department		Personnel number		Res.	Rights	Rights	Operating mode selection		Freely available					Serial number		

Pre-defined data structure for EKS *Light*

The data structure for utilization with EKS *Light* is as follows:

- Unused memory (freely available)
- Pre-defined structure for the related operating state (information on access code and access level)
- Fixed serial number

Example for utilization with EKS *Light*

Byte no.	0	1	2	3	4	...	108	109	110	111	112	113	114	115	116	...	123
Function	Freely available						Used for the related operating state (pre-defined structure)								Serial number		

How do I program and manage the EKS Electronic-Keys?

In principle the Electronic-Keys can be written and read using any read/write station. This can be performed centrally on a programming station with the aid of a suitable software package, or on any read/write station from the application. Electronic-Keys and users can be managed either with the Electronic-Key-Manager EKM software on a PC or a custom solution.

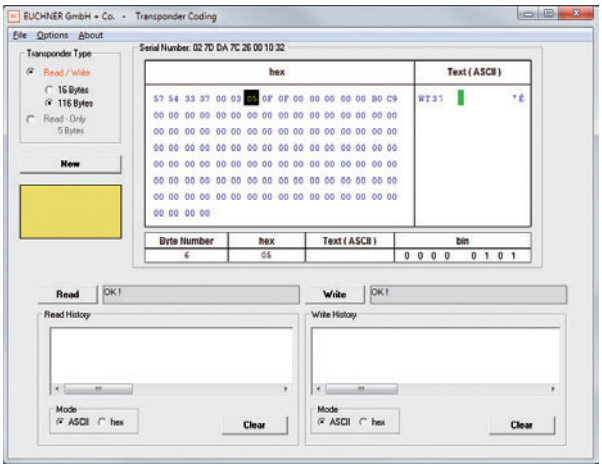
Programming station for writing the Electronic-Keys

In the simplest case, the following resources are required to write EKS Electronic-Keys.

- Windows PC
- Electronic-Key adapter with USB interface
- EKS desktop case (optional)
- Software: Transponder Coding TC or Electronic-Key-Manager EKM

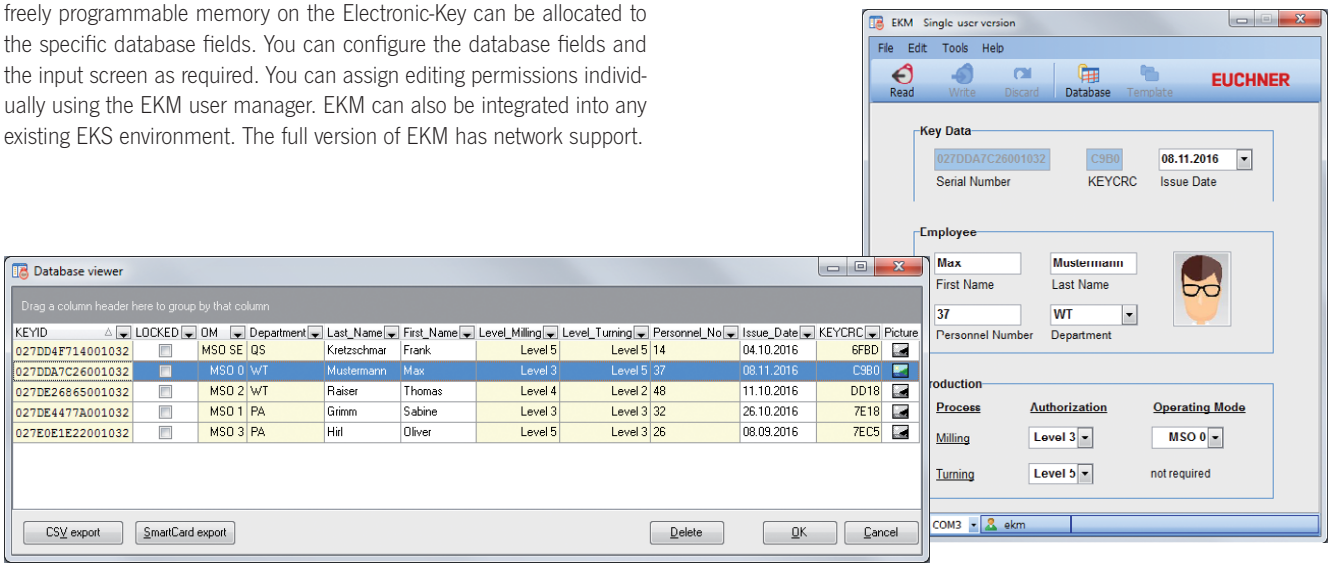
Electronic-Key editor Transponder Coding TC

The Transponder Coding TC software package is used to write EKS Electronic-Keys on a programming station. TC is a simple hex/ASCII editor that can be used to read and write the Electronic-Key data conveniently on the PC. This makes it a helpful tool during system integration and makes it easier to understand the memory structure.



Electronic-Key database Electronic-Key-Manager EKM

The Electronic-Key-Manager (EKM) is a flexible software package for writing and managing the EKS Electronic-Keys on a programming station. All Electronic-Keys and their contents are managed in a database. The freely programmable memory on the Electronic-Key can be allocated to the specific database fields. You can configure the database fields and the input screen as required. You can assign editing permissions individually using the EKM user manager. EKM can also be integrated into any existing EKS environment. The full version of EKM has network support.

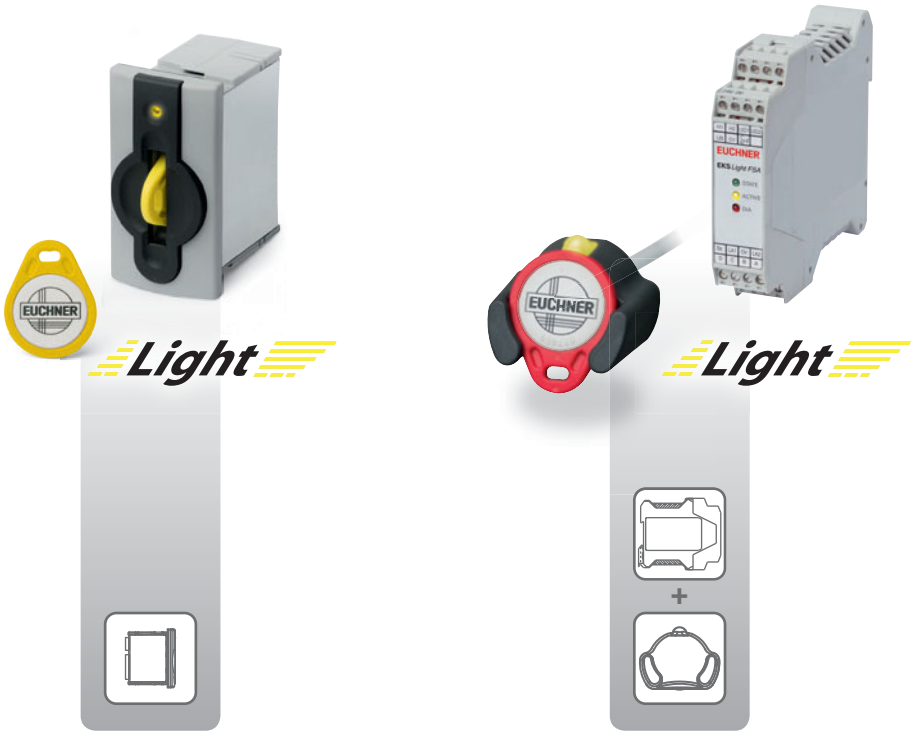


EKS Light

»Access the easy way...«

- Electronic access control
- Simple connection
- Simple communication, 4-bit output

EKS Light



Access the easy way...

A simple connection concept and rapid and thus economical integration into the control technology were at the forefront in the development of EKS *Light*. Compatibility with the existing EKS with data interface through the use of the same Electronic-Keys was also taken into account.

- Electronic access control
- Simple connection
- Simple communication, 4-bit output
- Very simple use

EKS *Light* permits simple, controlled access to individual machines, entire installations or other facilities. With EKS *Light*, the device directly identifies a user by means of the user's Electronic-Key. A control system is not necessary for this check. If an authorized user was detected, an access level is output with which the user receives a certain authorization. The control system derives the access rights to machine functions via control system programming by the system integrator.

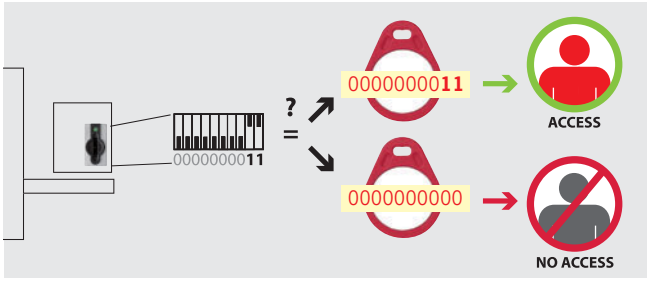
And this is how it works

The EKS *Light* is a read-only system with evaluation electronics and interface.

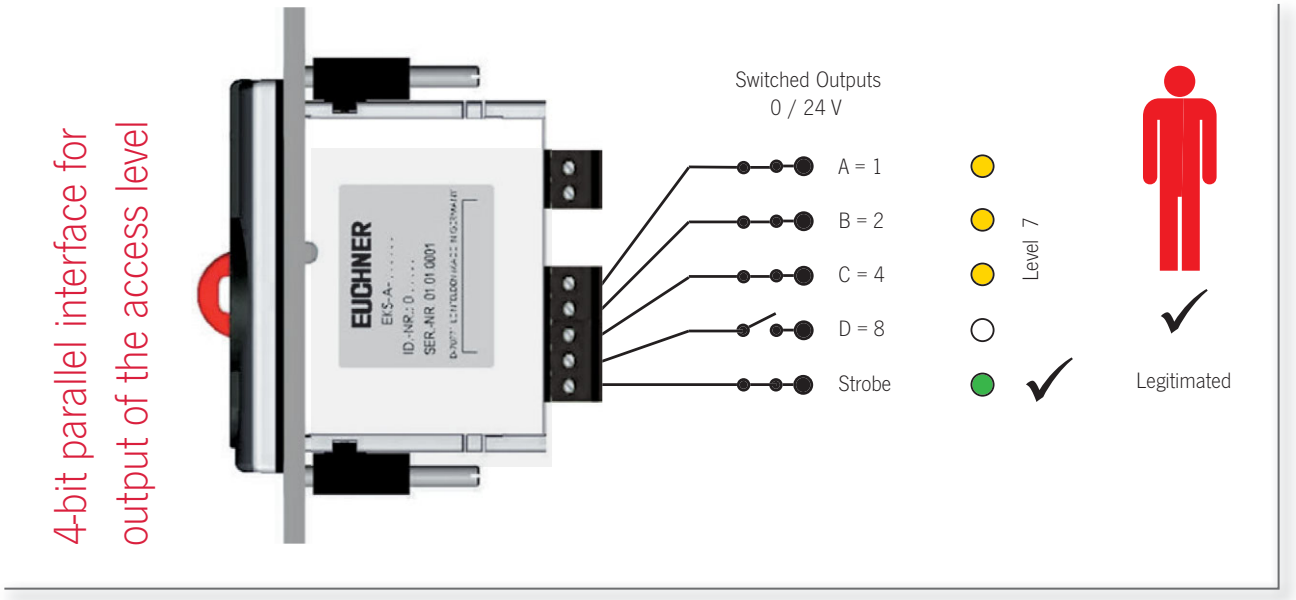
After the Electronic-Key is placed, the Electronic-Key's data are evaluated within the device as the first step, which permits automatic user recognition without the aid of the control system.

Once the internal check of the data integrity is complete, an access level is issued. The access level is output via a 4-bit parallel interface. The parallel interface offers the advantage of transparent depiction of the data and therefore simple connection directly to the inputs of a control system or a switching device.

An EKS operating state, an access code, an access level, a checksum (CRC) and a serial number are stored on the Electronic-Key. When an Electronic-Key is placed, the data range relevant for the respective operating state is automatically read from the Electronic-Key into the device, temporarily stored there and evaluated. If an authorized user is recognized via a valid Electronic-Key, the outputs in the device are set to High in accordance with the stored access level values. All outputs are reset to Low when the Electronic-Key is removed.



The device and Electronic-Key are separately parameterized with values that have to match. Parameter assignment to the device is performed very straightforwardly via the DIP switch.



Flexibility through various operating states

The application options for EKS *Light* are diverse, and the flexible concept with its different operating states provides flexibility for planning.

The operating state determines the system function. The operating state defines the scheme according to which automatic Electronic-Key recognition functions and how an access level is issued.

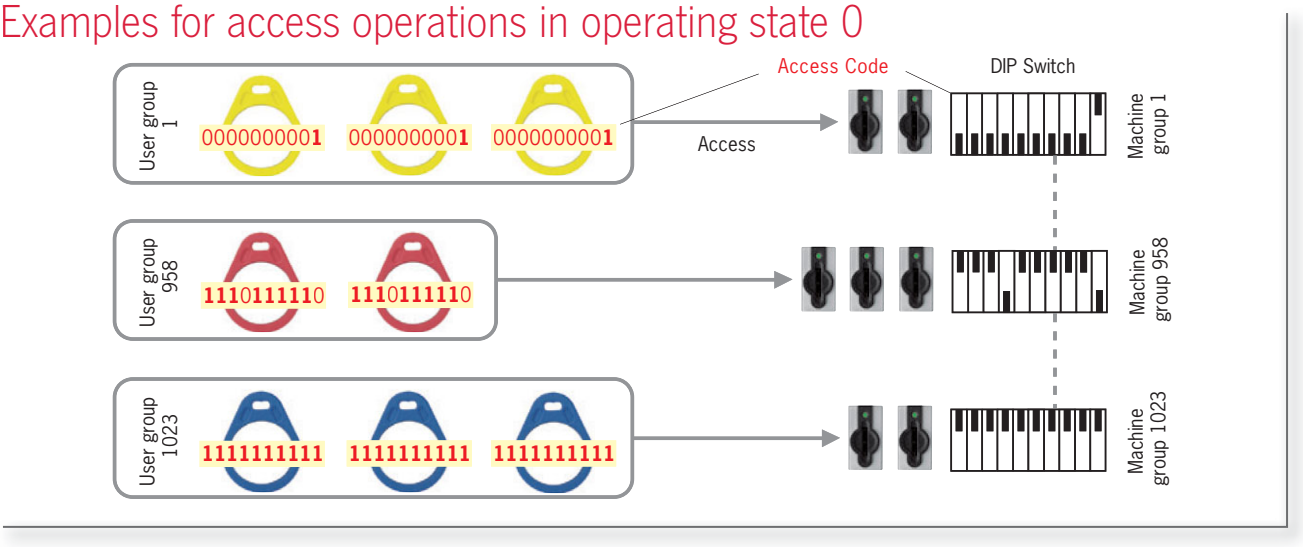
What operating states are available?

Depending on the application, various operating states can be selected. Two different operating states are available for general use:

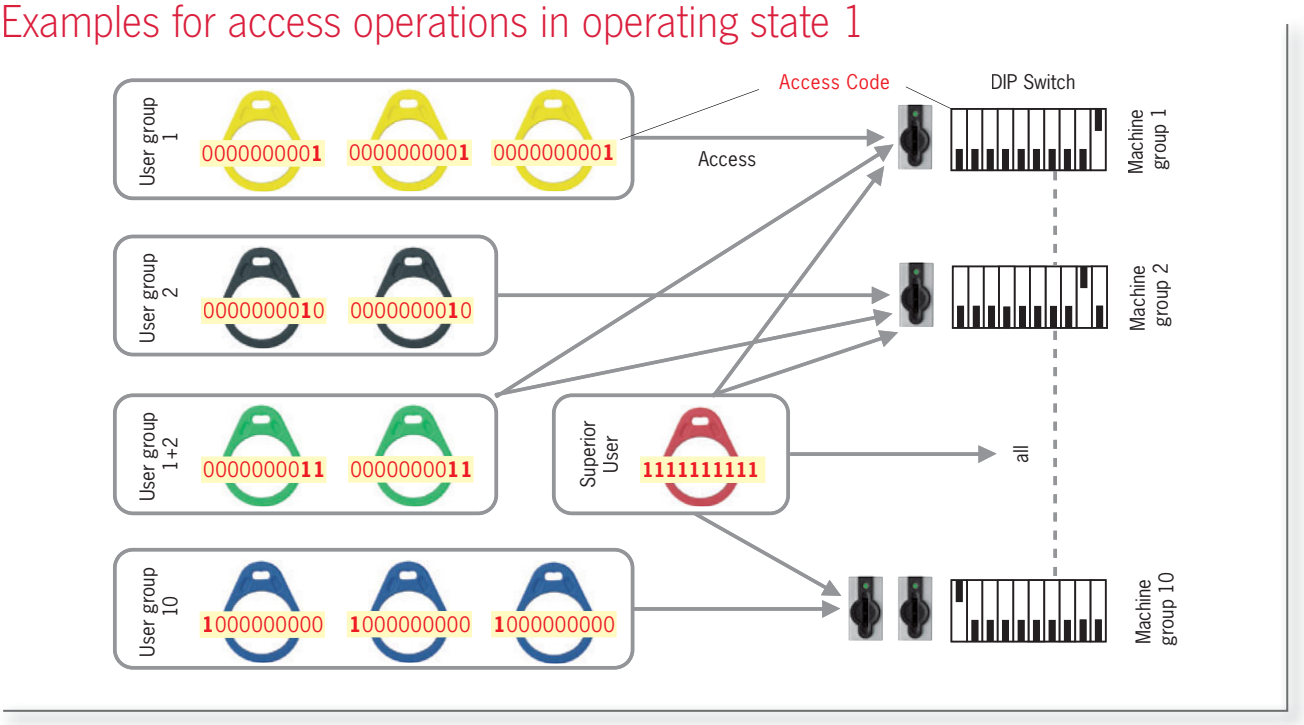
- Operating state 0
  Access is granted when the access codes on the Electronic-Key and DIP switch are an exact match. 1,024 codes are possible in this operating state.

- Operating state 1
  Access is granted when one bit of the access codes on the Electronic-Key and DIP switch matches.

Examples for access operations in operating state 0



Examples for access operations in operating state 1



Electronic-Key-Manager EKM

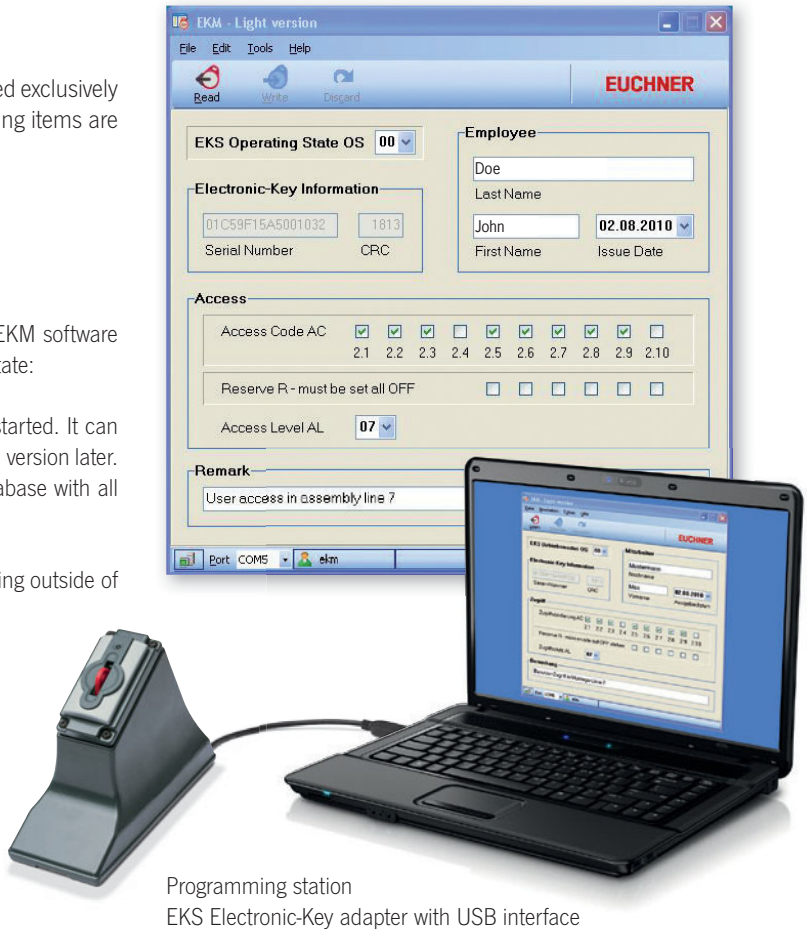
How are parameters assigned to Electronic-Keys?
Parameter assignment for the Electronic-Keys is performed exclusively via a programming station on the PC. At least the following items are required for this purpose:

- A commercially available Windows PC
- An EKS Electronic-Key adapter with USB interface
- The Electronic-Key Manager EKM *Light* software

Programming takes place via the Electronic-Key-Manager EKM software with an EKS *Light* input screen suitable for the operating state:

The *Light* version of the EKM software is sufficient to get started. It can be upgraded to an EKM individual workstation license or full version later. With this upgrade you always have an overview of the database with all Electronic-Keys already added.

The cyclic redundancy check routine prevents data tampering outside of the defined software environment.



Programming station
EKS Electronic-Key adapter with USB interface
in the desktop case on the PC

Electronic-Key adapter with digital outputs

- **Simple communication, 4-bit output**
- **Additional integration into the safety engineering (optional)**

Details

- Three-color status LED to indicate the operating state
- Read-only system

Notice

- A separate programming station must be set up on a Windows PC to produce functional Electronic-Keys in EKS *Light*.
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.

Further information

- For information about the Electronic-Key programming required, see p. 16.
- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

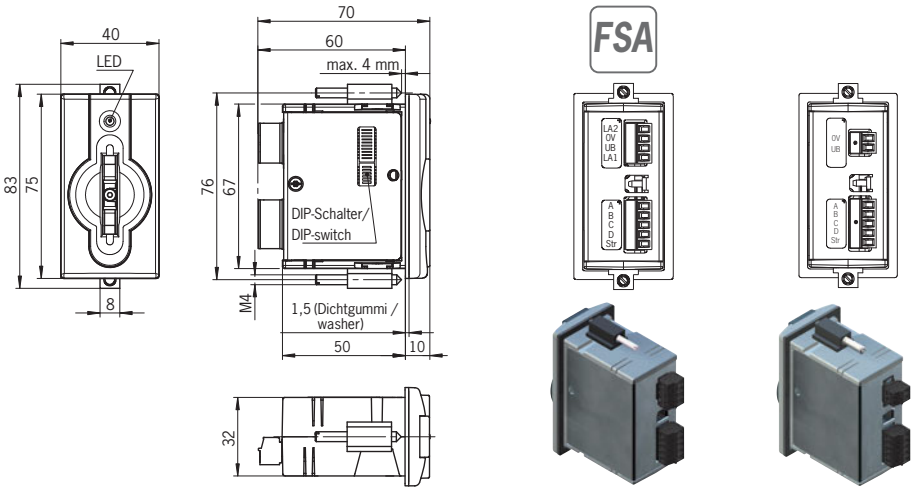
Electronic-Key adapter

Series	Design	Operating state	Option	Order no./item	
EKS-A-IP... Digital outputs 4-bit parallel		0	–	**111230** EKS-A-IPB-G01-ST05/02	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		0...n	–	**109820** EKS-A-IPL-G01-ST05/02	
		0...n	FSA	**112207** EKS-A-IPLA-G01-ST05/04	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
Desktop case		Page 46

Dimension drawing



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray/black)			
Degree of prot. acc. to EN 60529	IP 65, IP 67 in installed state			
Ambient temperature	- 20		+ 70	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Power supply connection	Plug-in connection terminal, 2-pin, with screw terminal (4-pin for version *FSA*)			
Operating voltage U_B (regulated, residual ripple < 5%)	9	24	28	V DC
Current consumption I_B (without load current)			70	mA
Interface, digital outputs				
Interface to inputs of control system or switching device	4-bit parallel plus strobe, binary coded via High/Low level			
Load current I_A per output	1	10	50	mA
Output voltage U_A (HIGH level) for A, B, C, D, strobe	U_B - 2		U_B	V
Interface connection	Plug-in connection terminal, 5-pin, with screw terminal			
Cable length to control system			50	m
LED indicator	Green: ready (in operation) Yellow: Electronic-Key active [1] Red: fault			
Parameters for floating semiconductor switching contact LA (version *FSA* only)				
Switching contact connection	Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA)		24	30	V
Switching current (with overload protection)	1	10	50	mA
Output voltage U_A (LA) in switched state	U x 0.9		U	V
Resistance in switched state		35		ohms
Capacitive load			1	µF
Utilization category acc. to EN IEC 60947-5-2 AC-12 AC-15 DC-12 DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only [2])				
Category (with downstream safe evaluation)	3			
MTTFd	200			years
DC	92			%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) The values apply to switching contact LA when the Electronic-Key is removed and only to one channel.

Modular interface adapter with digital outputs

- **Usage in conjunction with Electronic-Key adapter FHM**
- **Simple communication, 4-bit output**
- **Additional integration into the safety engineering (optional)**

Details

- Three-color status LED to indicate the operating state
- Read-only system
- Maximum cable length of 15 m to the Electronic-Key adapter FHM.

Notice

- A separate programming station must be set up on a Windows PC to produce functional Electronic-Keys in EKS *Light*.
- A complete read station consists of an Electronic-Key adapter FHM and a modular interface adapter.
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.

Further information

- For information about the Electronic-Key programming required, see p. 16.
- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

Interface adapter

Series	Design	Operating state	Option	Order no./item	
EKS-A-AP... Digital outputs 4-bit parallel		0	–	**113665** EKS-A-APB-G08	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		0...n	–	**113647** EKS-A-APR-G08	
		0...n	FSA	**113645** EKS-A-APRA-G08	

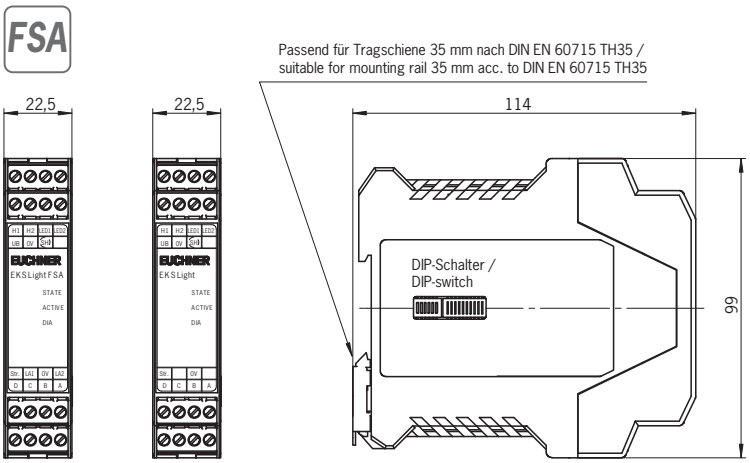
Electronic-Key adapter

Type	Version	
Electronic-Key adapter FHM		Page 22

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44

Dimension drawing



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6.6, gray)			
Ambient temperature	- 20		+ 55	°C
Mounting	Mounting rail 35 mm according to DIN EN 60715 TH35			
Electronic-Key adapter connection	1 Electronic-Key adapter with max. 15 m connection cable			
Connection for power supply and Electronic-Key adapter	Plug-in connection terminals, 4-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	9	24	28	V DC
Current consumption I_B (without load current)			70	mA
Interface, digital outputs				
Interface to inputs of control system or switching device	4-bit parallel plus strobe, binary coded via High/Low level			
Load current I_A per output	1	10	50	mA
Output voltage U_A (HIGH level) for A, B, C, D, strobe	U_B - 2		U_B	V
Interface connection	Plug-in connection terminals, 4-pin, with screw terminal			
Cable length to control system			50	m
LED indicator	Green: ready (in operation) Yellow: Electronic-Key active [1] Red: fault			
Parameters for floating semiconductor switching contact LA (version *FSA* only)				
Switching contact connection	Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA)		24	30	V
Switching current (with overload protection)	1	10	50	mA
Output voltage U_A (LA) in switched state	U x 0.9		U	V
Resistance in switched state		35		ohms
Capacitive load			1	µF
Utilization category acc. to EN IEC 60947-5-2 AC-12 AC-15 DC-12 DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only [2])				
Category (with downstream safe evaluation)	3			
MTTFd	200			years
DC	92			%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) The values apply to switching contact LA when the Electronic-Key is removed and only to one channel.

Electronic-Key adapter FHM modular

- **Usage in conjunction with modular interface adapter**

Details

- The Electronic-Key adapter FHM is available with:
  - Cable length 2 m and flying lead

  or
  - Cable length 0.13 m with M8 male plug. This version can be combined with cables measuring 2, 5, 10 and 15 m in length. The cable has an M8 female plug on one end and a flying lead on the other end.

Notice

- Usage in conjunction with modular interface adapter.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

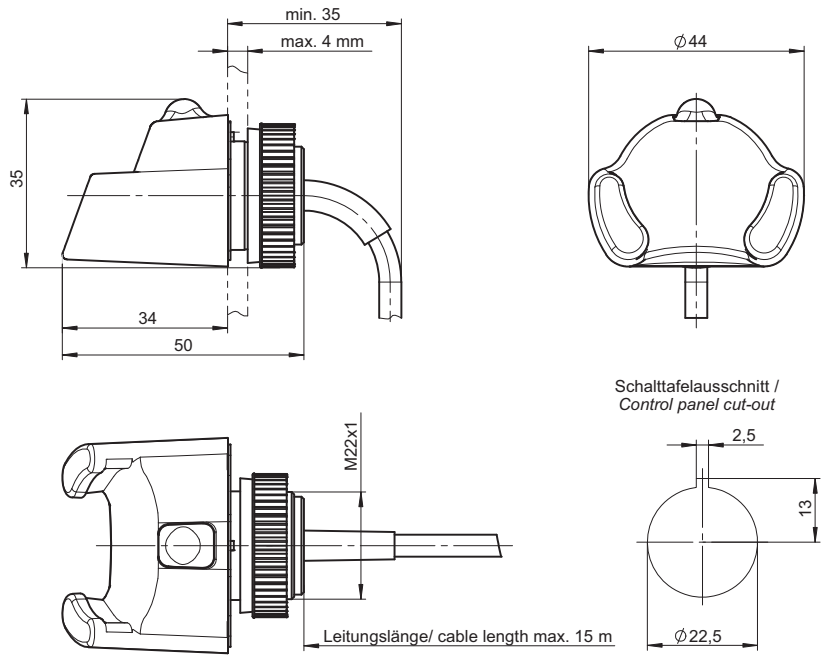
Electronic-Key adapter

Series	Design	Version	Order no./item	
EKS-A-SFH-G30-... Electronic-Key adapter FHM		2m	**106585** EKS-A-SFH-G30-2000	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		M8 0,13m	**116118** EKS-A-SFH-G30-ST150	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
Connection cables	Connection cable with plug connectors M8 4 pin	Page 51

Dimension drawing



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PVDF GF30, gray)			
Degree of prot. acc. to EN 60529	IP 65, IP 67, IP 69K in installed state			
Ambient temperature	- 20		+ 70 / + 100 [1)]	°C
Assembly hole	Ø 22.5			mm
Connection	Connection cable 2 m with flying lead or connection cable 0.13 m with plug connector M8, 4-pin			
Connection cable length	2, 5, 10, 15			m
Connection cable cross-section	4 x 0.25 screened			mm²
Connection cable outer sheath	PVC			

1) This is no ambient temperature for operation. It is valid for a time of no more than 3 minutes, e.g. for cleaning purposes.
The LED signaling is described with the interface adapter.

EKS Data Interface

»The universal talent offering maximum flexibility.«

- Control of certain machine functions
- Storage of process parameters
- Traceability of events
- Storage of an expiry date on the Electronic-Key
- Different access rights for multiple processes

086809-14-04/17

EKS Data Interface

System overview

EKS devices with data interface are read/write systems permitting any desired use of the entire Electronic-Key memory. Device variants with the following data interfaces are available for system connection:

- Serial RS232/RS422, switchable
- USB
- Ethernet TCP/IP
- PROFIBUS DP
- PROFINET IO

The Electronic-Key adapters with serial interface and Ethernet TCP/IP interface can be connected to a PC or a control system. The advantage of Ethernet is that EKS can be physically remote. The Electronic-Key adapter with USB interface is particularly suitable for connecting to a PC. The major advantage is that power is supplied via the USB connection. The devices with PROFIBUS DP and PROFINET IO interface are preferably used on control systems. Also in these variants, the EKS can be used remotely from the control system, e.g. at assembly workplaces.

Integration

The user is responsible for organizing the programming of the application, integration in an overall system and assignment and use of the freely programmable memory in the Electronic-Key.

Connection of the EKS Electronic-Key adapters with serial, USB or Ethernet TCP/IP interface in the user's PC application is supported by optionally available ActiveX® modules[1)] (can be used for ActiveX®-capable user programs under Microsoft Windows® [1)]). EKS can thus be used, for example, in conjunction with process visualization software. Data communication is in accordance with transfer protocol 3964R or TCP/IP. The ActiveX® module is used here as a protocol driver.

To operate the EKS Electronic-Key adapter with USB interface on a PC, USB driver software must be installed. The USB interface is designed as a virtual serial COM port. The communication over the interface is exactly the same as for the device with serial interface. Therefore, devices with serial interface and USB interface are interchangeable with regard to software applications.

Commissioning and system integration are significantly simpler using the EKS with PROFIBUS and PROFINET interface. The address can be set using DIP switches. The EKS is integrated in the software using the GSD files, and the data are available in the control system's input area immediately after configuration.

1) Microsoft Windows® and ActiveX® are registered trademarks of Microsoft Corporation

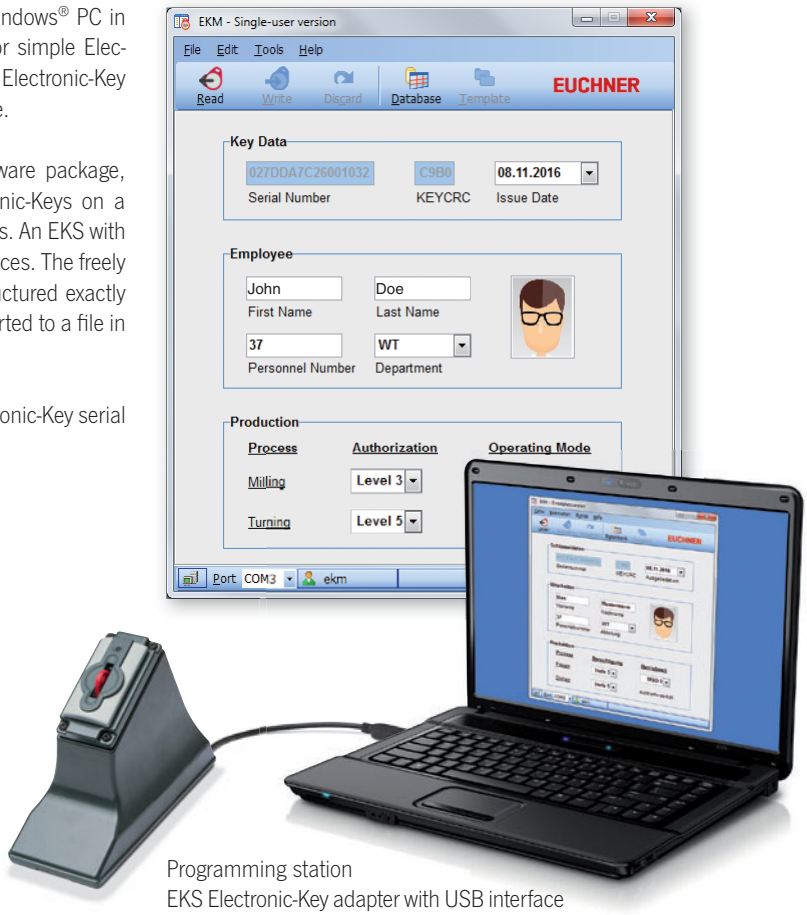
How are parameters assigned to Electronic-Keys?

In principle, the Electronic-Keys can be written and read by all devices with a data interface. This is always possible from the application.

An EKS with serial or USB interface can be used on a Windows® PC in combination with the Transponder Coding TC software for simple Electronic-Key reading and writing and for visual display of the Electronic-Key data during the commissioning phase as well, for example.

Furthermore, the Electronic-Key-Manager, a flexible software package, is available for programming and managing the Electronic-Keys on a Windows® PC. It includes a database for the Electronic-Keys. An EKS with serial or USB interface must also be used on these workplaces. The freely programmable memory on the Electronic-Key can be structured exactly as required using EKM. The database content can be exported to a file in csv format for interaction with other software applications.

If a custom database is established using the unique Electronic-Key serial number, it is not imperative to write the Electronic-Key.



Programming station
EKS Electronic-Key adapter with USB interface in the desktop case on the PC

Electronic-Key adapter with serial interface

- **Connection to PC**
- **Connection to control system or microprocessor**

Details

- Two-color status LED to indicate the operating state
- Serial interface RS232/RS422
- Connection to the user software via:
  - ActiveX® module under Windows®
  - Programming based on the 3964R protocol. Communication via the interface is disclosed in the manual.

Notice

- Suitable for setting up a programming station on a Windows® PC
- A commercially available screened connection cable is used to connect the EKS Electronic-Key adapter via the serial interface. On the EKS end the cable must have a SUB-D plug (9-pin) and on the PC/control system end typically a SUB-D socket (9-pin), with 1 to 1 connection of the contacts. Screws are required at both ends for strain relief. The maximum cable length is 5 m.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

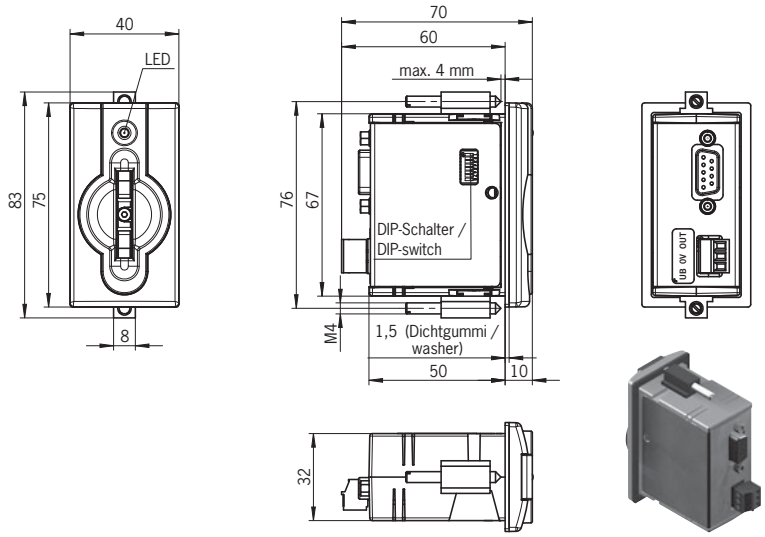
Electronic-Key adapter

Series	Design	Order no./item	
EKS-A-ISX... Serial interface		**084750** EKS-A-ISX-G01-ST09/03	For detailed information, enter the order number for the product in the search box at www.euchner.com.

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
EKS ActiveX® module		Page 50
Transponder Coding TC		Page 48
Electronic-Key-Manager EKM		Page 49
Desktop case		Page 46

Dimension drawing



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529	IP 65, IP 67 in installed state			
Ambient temperature at U_B = DC 24 V	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Power supply connection	Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption I_B			100	mA
Interface, data transfer				
Interface to the PC or to the control system	Serial RS232 / RS422 (selectable via DIP switch)			
Transfer protocol	3964R			
Data transfer rate	9.6			kbaud
Data format	1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit			
Serial interface connection	Socket Sub-D, 9-pin			
Cable length, RS232			5	m
Cable length, RS422			1,000	m
LED indicator	Green: ready (in operation) Yellow: Electronic-Key active [1)]			

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.

Electronic-Key adapter with USB interface

- **Connection to PC**
- **Power supply via the USB interface**
- **Additional integration into the safety engineering (optional)**

Details

- Two-color status LED to indicate the operating state
- Virtual serial COM port. Communication identical to EKS serial
- Connection to the user software via:
  - ActiveX® module under Windows®
  - Programming based on the 3964R protocol. Communication via the interface is disclosed in the manual

Notice

- Particularly suitable for setting up a programming station on a Windows® PC
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.
- A commercially available, screened connection cable in accordance with USB 1.1 or USB 2.0 standard is used to connect the EKS Electronic-Key adapter via the USB interface. On the EKS end the cable must have a USB plug of type B and on the PC end typically a USB plug of type A. The maximum cable length is 3 m.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

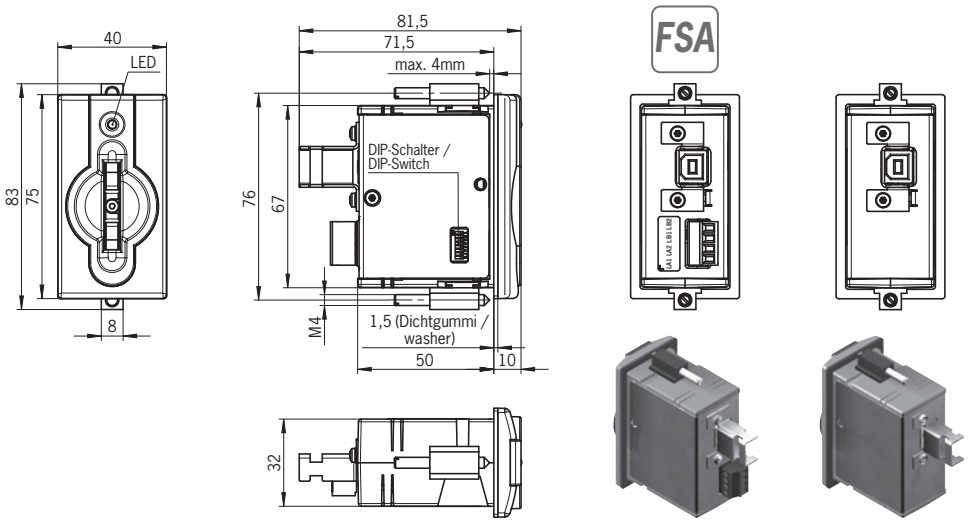
Electronic-Key adapter

Series	Design	Option	Order no./item	
EKS-A-IUX... USB interface		–	**092750** EKS-A-IUX-G01-ST01	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		FSA	**098513** EKS-A-IUXA-G01-ST01/04	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
USB driver **094376**		–
EKS ActiveX® module		Page 50
Transponder Coding TC		Page 48
Electronic-Key-Manager EKM		Page 49
PC mounting frame		Page 47
Desktop case		Page 46

Dimension drawing



Technical data

General parameters		Value			Unit
		min.	typ.	max.	
Housing		Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529		IP 65, IP 67 in installed state			
Ambient temperature		0		+ 55	°C
Mounting cut-out according to DIN 43700		33 x 68			mm
Power supply		Via USB			
Current consumption I_B				100	mA
Interface, data transfer					
Interface to the PC		USB full speed (USB 1.1 and USB 2.0 compatible)			
Transfer protocol		3964R			
Data transfer rate		9.6			kbaud
Data format		1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit			
USB interface connection		Type B socket			
Cable length				3	m
LED indicator		Green: ready (in operation) Yellow: Electronic-Key active [1]			
Parameters for floating semiconductor switching contacts LA and LB (version *FSA* only)					
Switching contact connection		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		U x 0.9		U	V
Resistance in switched state			35		ohms
Capacitive load				1	µF
Utilization category according to EN IEC 60947-5-2	AC-12 AC-15 DC-12 DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only) [2]					
Category (with downstream safe evaluation)		3			
MTTFd	Evaluation of data channel and switching contact LA	416			years
	Evaluation of data channel and both switching contacts LA and LB	803			years
DC		92			%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) Values apply to switching contacts LA and LB when the Electronic-Key is removed. The two switching contacts must be monitored for simultaneity.

Electronic-Key adapter with Ethernet TCP/IP interface

- **Connection to PC**
- **Connection to control systems for special applications**
- **Remote installation; cable length up to 100 m**
- **Additional integration into the safety engineering (optional)**

Details

- Three-color status LED to indicate the operating state
- Connection to the user software via:
  - ActiveX® module under Windows®
  - Programming based on the TCP/IP protocol. Communication via the interface is disclosed in the manual.

Notice

- The device offers various options for address assignment via:
  - DHCP
  - Web browser
  - DIP switch
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.
- A commercially available, screened twisted-pair 100BaseTX connection cable in accordance with Cat5 or better is used to connect the EKS Electronic-Key adapter via the Ethernet interface. On the EKS end the cable must have an RJ-45 plug. The maximum cable length is 100 m.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

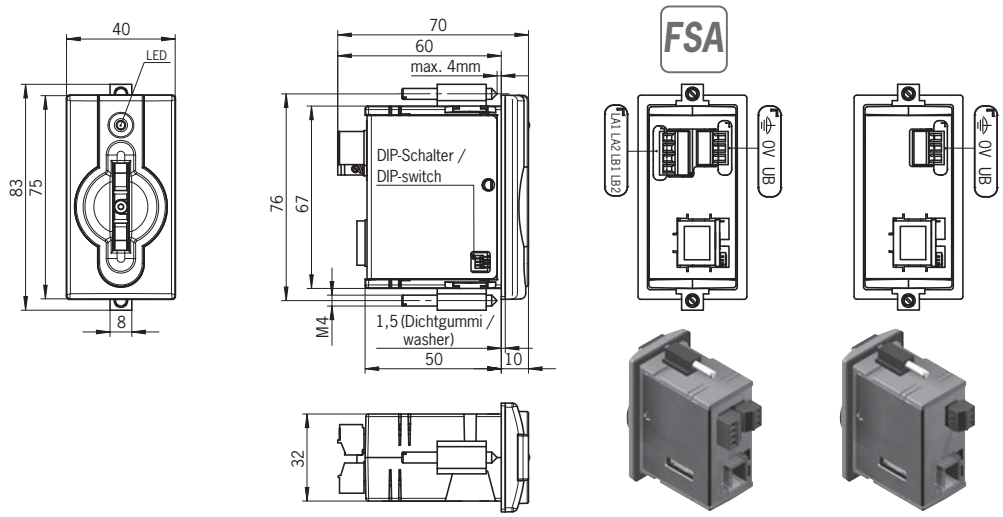
Electronic-Key adapter

Series	Design	Option	Order no./item	
EKS-A-IEX... Ethernet TCP/IP interface		–	**100401** EKS-A-IEX-G01-ST02/03	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		FSA	**099265** EKS-A-IEXA-G01-ST02/03/04	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
EKS ActiveX® module		Page 50
Desktop case		Page 46

Dimension drawing



Technical data

General parameters		Value			Unit
		min.	typ.	max.	
Housing		Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529		IP 65, IP 67 in installed state			
Ambient temperature at U_B = DC 24 V		0		+ 55	°C
Mounting cut-out according to DIN 43700		33 x 68			mm
Power supply connection		Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)		20	24	28	V DC
Current consumption I_B				150	mA
Interface, data transfer					
Interface to the PC or to the control system		Industrial Ethernet (IEEE 802.3)			
Transfer protocol		TCP/IP			
Data transfer rate (full duplex)			10/100		Mbit/s
Ethernet interface connection		1 x RJ45 socket			
Data line		2 x 2 twisted-pair copper wire, screened; min. category 5			
Cable length				100	m
LED indicator		Green: ready (in operation) Yellow: Electronic-Key active [1] Red: fault			
Parameters for floating semiconductor switching contacts LA and LB (version *FSA* only)					
Switching contact connection		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		U x 0.9		U	V
Resistance in switched state			35		ohms
Capacitive load				1	µF
Utilization category according to EN IEC 60947-5-2	AC-12, AC-15 DC-12, DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only) [2]					
Category (with downstream safe evaluation)		3			
MTTFd	Evaluation of data channel and switching contact LA	416			years
	Evaluation of data channel and both switching contacts LA and LB	803			years
DC		92			%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) Values apply to switching contacts LA and LB when the Electronic-Key is removed. The two switching contacts must be monitored for simultaneity.

Electronic-Key adapter with PROFIBUS DP interface

- **Connection to control system**
- **Remote installation; cable length up to 1,200 m**
- **Additional integration into the safety engineering (optional)**

Details

- Three-color status LED to indicate the operating state
- Connection to the control system's bus master via:
  - GSD file

  and
  - Cyclical data transfer corresponding to the parametrization in the control software

Notice

- Address assignment is performed via DIP switches
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.
- A commercially available screened connection cable is used to connect the EKS Electronic-Key adapter via the PROFIBUS interface. The cable requires a sub-D connector (9-pin) on the EKS end and typically on the control system end. Screws are required at both ends for strain relief. The maximum cable length is 1,200 m.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

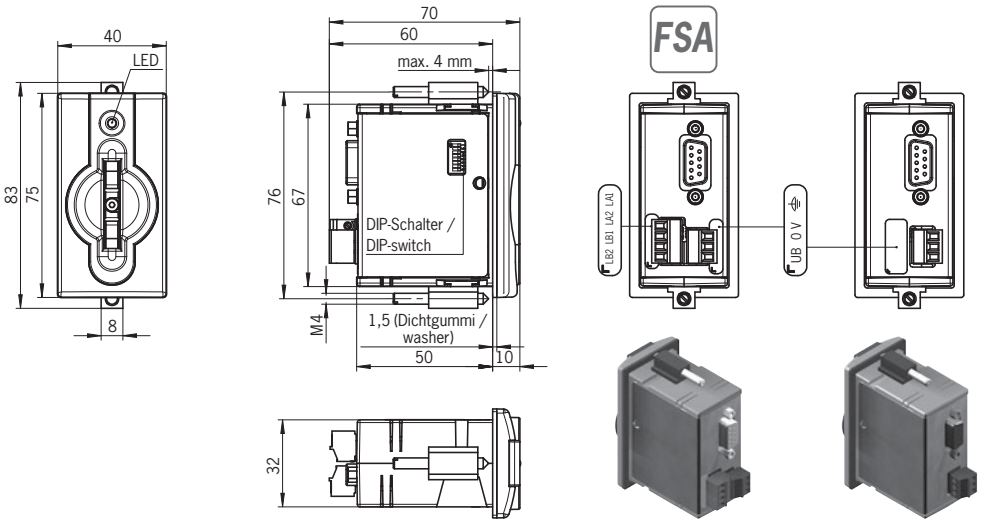
Electronic-Key adapter

Series	Design	Option	Order no./item	
EKS-A-IDX... PROFIBUS DP interface		–	**084800** EKS-A-IDX-G01-ST09/03	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		FSA	**100378** EKS-A-IDXA-G01-ST09/03/04	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
GSD file **092054**		–
Desktop case		Page 46

Dimension drawing



Technical data

General parameters		Value			Unit
		min.	typ.	max.	
Housing		Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529		IP 65, IP 67 in installed state			
Ambient temperature at U_B = DC 24 V		0		+ 55	°C
Mounting cut-out according to DIN 43700		33 x 68			mm
Power supply connection		Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)		20	24	28	V DC
Current consumption I_B				150	mA
Interface, data transfer					
Interface to the PC or to the control system		RS485			
Address range		0 ... 126 (address selectable via DIP switch)			
Transfer protocol		PROFIBUS according to IEC 61158/IEC 61784-1			
Data transfer rate		9.6/19.2/45.45/93.75/187.5/500			kbps
PROFIBUS DP connection		1.5/3/6/12			Mbit/s
Data line		Socket Sub-D, 9-pin			
Cable length max.		100 ... 1,200 according to PROFIBUS DP, depending on data transfer			m
LED indicator		Green: ready (in operation) Yellow: Electronic-Key active [1] Red: fault			
Parameters for floating semiconductor switching contacts LA and LB (version *FSA* only)					
Switching contact connection		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		U x 0.9		U	V
Resistance in switched state			35		ohms
Capacitive load				1	µF
Utilization category according to EN IEC 60947-5-2	AC-12, AC-15 DC-12, DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only) [2]					
Category (with downstream safe evaluation)		3			
MTTFd	Evaluation of data channel and switching contact LA	416			years
	Evaluation of data channel and both switching contacts LA and LB	803			years
DC		92			%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) Values apply to switching contacts LA and LB when the Electronic-Key is removed. The two switching contacts must be monitored for simultaneity.

Electronic-Key adapter with PROFINET IO interface

- **Connection to control system**
- **Remote installation; cable length up to 100 m**
- **Additional integration into the safety engineering (optional)**

Details

- Three-color status LED to indicate the operating state
- Connection to the control system's bus master via:
  - GSDML file

  and
  - Cyclical data transfer corresponding to the parametrization in the control software.

Notice

- The device offers various options for address assignment via:
  - DCP naming by PLC
  - Web browser
  - DIP switch
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.
- A commercially available, screened twisted-pair 100BaseTX connection cable in accordance with Cat5 or better is used to connect the EKS Electronic-Key adapter via the Ethernet interface. On the EKS end the cable must have an RJ-45 plug. The maximum cable length is 100 m.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

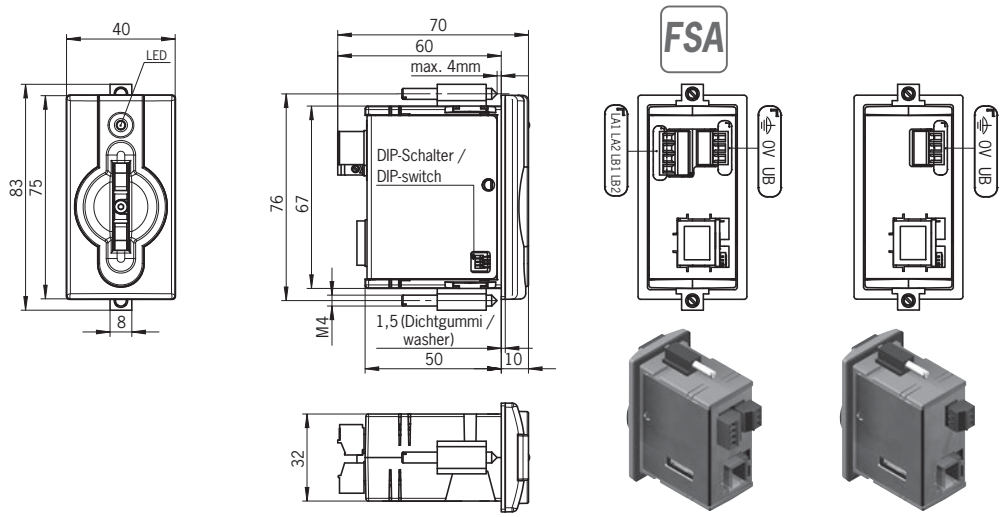
Electronic-Key adapter

Series	Design	Option	Order no./item	
EKS-A-IIX... PROFINET IO interface		–	**106305** EKS-A-IIX-G01-ST02/03	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		FSA	**106306** EKS-A-IIXA-G01-ST02/03/04	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
GSDML file for compact Electronic-Key adapter **109539**	WWW	–
Desktop case		Page 46

Dimension drawing



Technical data

General parameters		Value			Unit
		min.	typ.	max.	
Housing		Plastic (PA 6 GF30 gray)			
Degree of protection acc. to EN 60529		IP 65, IP 67 in installed state			
Ambient temperature at U_B = DC 24 V		0		+ 55	°C
Mounting cut-out according to DIN 43700		33 x 68			mm
Power supply connection		Plug-in connection terminal, 3-pin, with screw terminal			
Operating voltage U_B (regulated, residual ripple < 5%)		20	24	28	V DC
Current consumption I_B				150	mA
Interface, data transfer					
Interface to the PC or to the control system		Industrial Ethernet (IEEE 802.3)			
Transfer protocol		PROFINET acc. to IEC 61158 / IEC 61784-1 and -2			
Data transfer rate (full duplex)			10/100		Mbit/s
Ethernet interface connection		1 x RJ45 socket			
Data line		2 x 2 twisted-pair copper wire, screened; min. category 5			
Cable length				100	m
LED indicator		Green: ready (in operation) Yellow: Electronic-Key active [1] Red: fault			
Parameters for floating semiconductor switching contacts LA and LB (version *FSA* only)					
Switching contact connection		Plug-in connection terminal, 4-pin, with screw terminal			
Power supply U for load (LA, LB)			24	30	V
Switching current per contact (with overload protection)		1	10	50	mA
Output voltage U_A (LA, LB) in switched state		U x 0.9		U	V
Resistance in switched state			35		ohms
Capacitive load				1	µF
Utilization category according to EN IEC 60947-5-2	AC-12, AC-15 DC-12, DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only) [2]					
Category (with downstream safe evaluation)		3			
MTTFd	Evaluation of data channel and switching contact LA	416			years
	Evaluation of data channel and both switching contacts LA and LB	803			years
DC		92			%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) Values apply to switching contacts LA and LB when the Electronic-Key is removed. The two switching contacts must be monitored for simultaneity.

Modular interface adapter with PROFINET IO interface

- **Usage in conjunction with Electronic-Key adapter FHM**
- **Connection to control system**
- **Remote installation; cable length up to 100 m**
- **Additional integration into the safety engineering (optional)**

Details

- Three-color status LED to indicate the operating state
- Connection to the control system's bus master via:
  - GSDML file

  and
  - Cyclical data transfer corresponding to the parametrization in the control software

Notice

- The device offers various options for address assignment via:
  - DCP naming by PLC
  - Web browser
  - DIP switch
- The plug-in connection terminals are not included with the interface adapter and must be ordered separately.
- A complete read/write station comprises an Electronic-Key adapter FHM and a modular interface adapter.
- The version *FSA* (For Safety Applications) features a switching contact on a second channel. This permits the EKS *FSA* to be used in applications relevant for safety in combination with functionally safe evaluation. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.
- A commercially available, screened twisted-pair 100BaseTX connection cable in accordance with Cat5 or better is used to connect the EKS interface adapter via the Ethernet interface. On the EKS end the cable must have an RJ-45 plug. The maximum cable length is 100 m.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

Interface adapter

Series	Version		Order no./item	
	Design	Option		
EKS-A-AIX... PROFINET IO interface		–	**122352** EKS-A-AIX-G18	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		FSA	**122353** EKS-A-AIXA-G18	
Connection kits for interface adapter **122352**	2 plug-in connection terminals with screw terminal, 4-pin and 5-pin		**125543** AC-SC-04/05-V2	
	2 plug-in connection terminals with spring terminal, 4-pin and 5-pin		**125548** AC-CC-04/05-V2	
Connection kits for interface adapter **122353**	3 plug-in connection terminals with screw terminal, 4-pin and 5-pin		**125528** AC-SC-04/05-V3	
	3 plug-in connection terminals with spring terminal, 4-pin and 5-pin		**125529** AC-CC-04/05-V3	

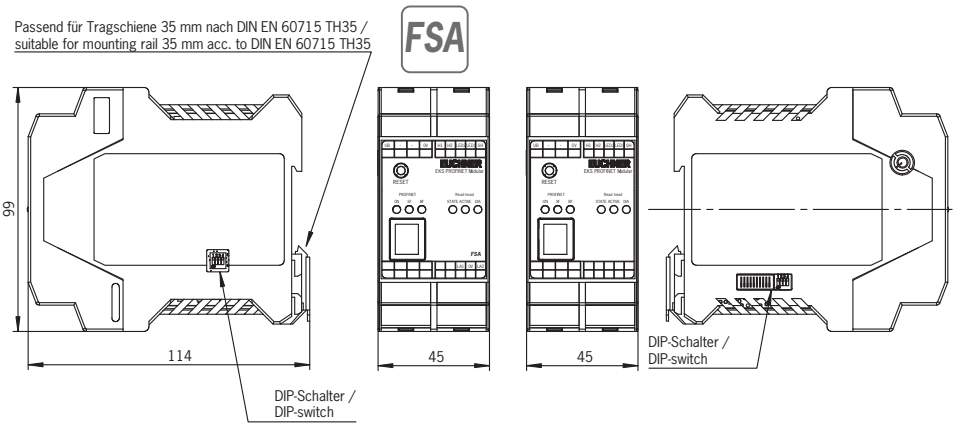
Electronic-Key adapter

Type	Version	
Electronic-Key adapter FHM		Page 40

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
GSDML file for modular interface adapter **126145**	WWW	–

Dimension drawing



Technical data

General parameters		Value			Unit
		min.	typ.	max.	
Housing			Plastic (PA 6.6, gray)		
Ambient temperature at U_B = DC 24 V		0		+ 55	°C
Mounting			Mounting rail 35 mm according to DIN EN 60715 TH35		
Electronic-Key adapter connection			1 Electronic-Key adapter with max. 15 m connection cable		
Connection for power supply and Electronic-Key adapter			Plug-in connection terminal, 4-pin and 5-pin, with screw or spring terminal		
Operating voltage U_B (regulated, residual ripple < 5%)		20	24	28	V DC
Current consumption I_B				150	mA
Interface, data transfer					
Interface to the PC or to the control system			Industrial Ethernet (IEEE 802.3)		
Transfer protocol			PROFINET acc. to IEC 61158 / IEC 61784-1 and -2		
Data transfer rate (full duplex)			10/100		Mbit/s
Ethernet interface connection			1 x RJ45 socket		
Data line			2 x 2 twisted-pair copper wire, screened; min. category 5		
Cable length				100	m
LED indicator			Green: ready (in operation) Yellow: Electronic-Key active [1] Red: fault		
Parameters for floating semiconductor switching contact LA (version *FSA* only)					
Switching contact connection			Plug-in connection terminal, 5-pin, with screw or spring terminal		
Power supply U for load (LA)			24	30	V
Switching current (with overload protection)		1	10	50	mA
Output voltage U_A (LA) in switched state		U x 0.9		U	V
Resistance in switched state			35		ohms
Capacitive load				1	µF
Utilization category according to EN IEC 60947-5-2	AC-12 AC-15 DC-12 DC-13	50 mA / 24 V			
Reliability values according to EN ISO 13849-1 (version *FSA* only [2])					
Category (with downstream safe evaluation)			3		
MTTFd	Evaluation of data channel and switching contact LA		416		years
DC			92		%

1) The LED illuminates yellow if there is a functional Electronic-Key in the Electronic-Key adapter.
2) The values apply to switching contact LA when the Electronic-Key is removed and only to one channel.

Electronic-Key adapter FHM modular

▶ **Usage in conjunction with modular interface adapter**

Details

- The Electronic-Key adapter FHM is available with:
  - Cable length 2 m and flying lead

  or
  - Cable length 0.13 m with M8 male plug. This version can be combined with cables measuring 2, 5, 10 and 15 m in length. The cable has an M8 female plug on one end and a flying lead on the other end.

Notice

- Usage in conjunction with modular interface adapter.

Further information

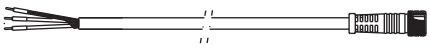
- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

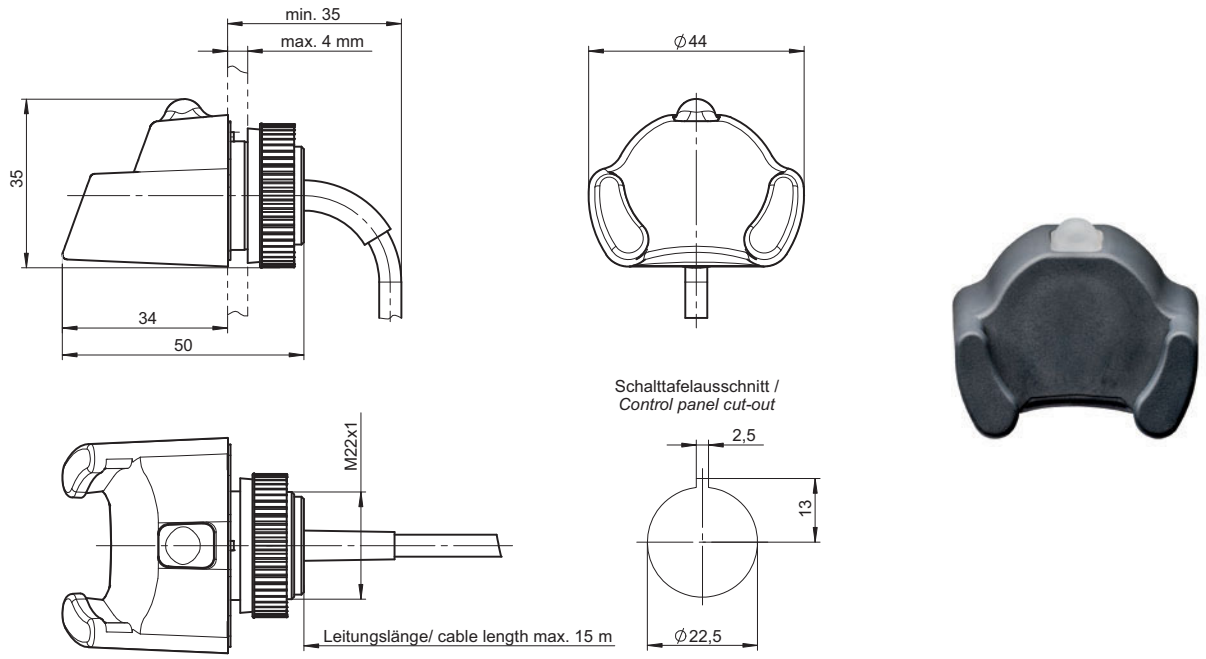
Electronic-Key adapter

Series	Design	Version	Order no./item	
EKS-A-SFH-G30-... Electronic-Key adapter FHM		2m	**106585** EKS-A-SFH-G30-2000	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		M8 0,13m	**116118** EKS-A-SFH-G30-ST150	

Accessories/software

Type	Version	
Electronic-Key read/write		Page 44
Connection material	Connection cable with plug connectors  M8 4 pin	Page 51

Dimension drawing



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	Plastic (PVDF GF30, gray)			
Degree of prot. acc. to EN 60529	IP 65, IP 67, IP 69K in installed state			
Ambient temperature	- 20		+ 70 / + 100 [1)]	°C
Assembly hole	Ø 22.5			mm
Connection	Connection cable 2 m with flying lead or connection cable 0.13 m with plug connector M8, 4-pin			
Connection cable length	2, 5, 10, 15			m
Connection cable cross-section	4 x 0.25 screened			mm²
Connection cable outer sheath	PVC			

1) This is no ambient temperature for operation. It is valid for a time of no more than 3 minutes, e.g. for cleaning purposes.
The LED signaling is described with the interface adapter.

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Accessories and Software

Electronic-Key read/write

- **Memory 116 bytes E²PROM (programmable) plus 8 bytes ROM (serial number)**

Details

The Electronic-Key has a unique 8-byte serial number that is permanently written to the memory during the Electronic-Key production process. This serial number is used for secure distinction of every single Electronic-Key.

Notice

- All Electronic-Keys contain the same transponder type. The different colors are used to indicate the access level, for example.

Further information

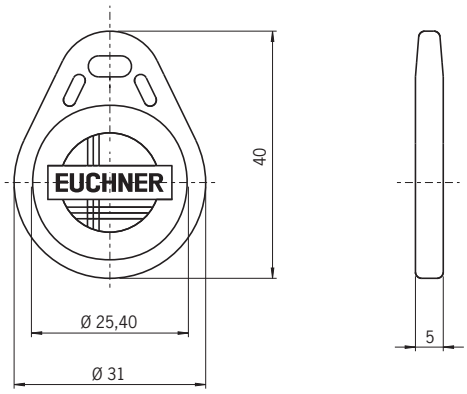
- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

Electronic-Key read/write

Series	Design	Color	Order no./item	
EKS-A-K1... Electronic-Key read/write		Red	**077859** EKS-A-K1RDWT32-EU	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		Black	**084735** EKS-A-K1BKWT32-EU	
		Blue	**091045** EKS-A-K1BUWT32-EU	
		Green	**094839** EKS-A-K1GNWT32-EU	
		Yellow	**094840** EKS-A-K1YEWT32-EU	
		White	**123097** EKS-A-K1WHWT32-EU	
		Orange	**123098** EKS-A-K1OGWT32-EU	

Dimension drawing



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Memory capacity (read/write)		116		bytes
Serial number (read only)		8		bytes
Power supply	Inductive via Electronic-Key adapter			
Housing	ABS plastic			
Degree of prot. acc. to EN 60529	IP 67			
Ambient temperature	- 20		+ 60	°C
Number of read cycles	Not limited			
Number of write cycles	100,000			cycles
Data retention time (at T = + 55°C)	10			years
Memory organization				
Write	Only possible in 4-byte blocks			
Read	Possible byte by byte			

Electronic-Key memory structure

Memory	E²PROM (programmable)					ROM (serial number)		
Byte no. [dec]	0	1	...	114	115	116	...	123
Byte no. [hex]	00	01	...	72	73	74	...	7B
Quantity [bytes]	116					8		

Desktop case

1)

- **Establishment of a programming station for Electronic-Key management on the desk**
- **EKS data entry station on desktop for which a degree of protection is not required**

Details

For installing the EKS Electronic-Key adapter and for placing on the desk.

- Installation of the compact design of the Electronic-Key adapter (all interfaces)
- Easy mounting from above in removable cover (2-piece housing, bottom open)
- Strain relief for connection cable
- Dimensions: 214 mm x 150 mm x 80 mm
- Mounting cut-out 33 mm x 68 mm according to DIN 43700
- Weight: approx. 1 kg
- Housing: sand-cast aluminum
- Surface: anthracite painted

Notice

- Including mounting parts. Screw clamp elements are included with the Electronic-Key adapter.

Further information

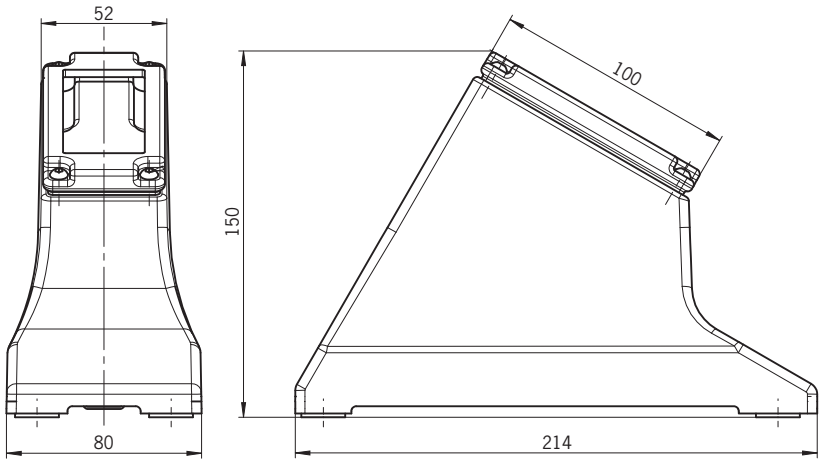
- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

Desktop case

Designation	Order no./item	
Desktop case	**113106** EKS DESKTOP CASE	For detailed information, enter the order number for the product in the search box at www.euchner.com.

Dimension drawing



1) Example illustration with installed Electronic-Key adapter (not included)

PC mounting frame

- **PC mounting frame for 5.25" drive bay**

Details

For installing the EKS Electronic-Key adapter in a PC.

- Dimensions: 148 mm x 42.5 mm x 142 mm (suitable for 5.25" drive bay)
- Housing: sheet steel 1 mm according to EN 10111
- Surface: front signal black matt RAL 9004

Notice

- Including four fastening screws
- An optional connection cable is available for the connection from the USB Electronic-Key adapter to the internal USB connection on the motherboard.

Further information

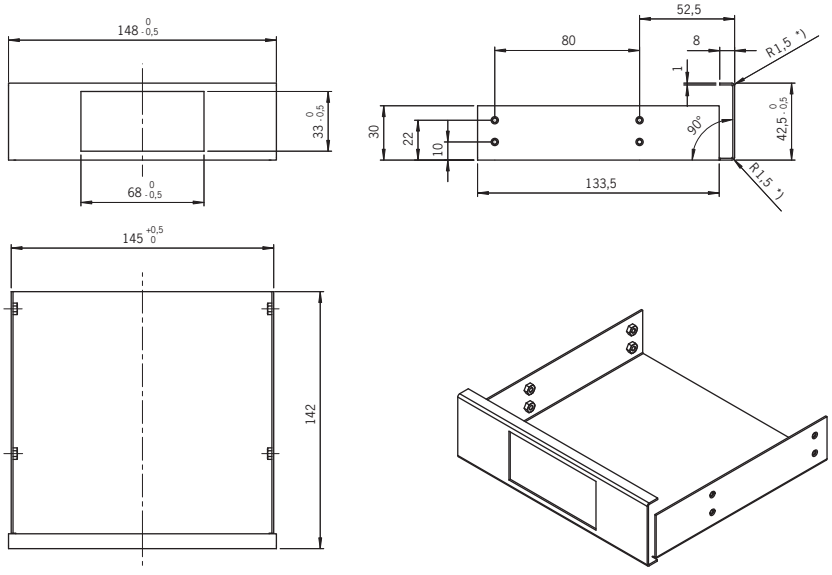
- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

PC mounting frame

Designation	Order no./item	
5.25" PC mounting frame for EKS Electronic-Key adapter	**093615**	For detailed information, enter the order number for the product in the search box at www.euchner.com.
Internal USB connection cable	**095633**	

Dimension drawing



Transponder Coding TC

- **Software for straightforwardly reading and writing the Electronic-Keys**

Details

- The Transponder Coding TC software is a simple hex/ASCII editor that can be used to read and write the Electronic-Key data on a Windows® PC.
- Display of the programmed Electronic-Key data in ASCII and hex views, as well as the serial number in hex view
- Byte-wise editing of the Electronic-Key data
- Storage of the Electronic-Key data as ASCII or hex file

System requirements

- Standard PC with Windows® XP/Server 2003/ Server 2008 (32 and 64-bit)/Windows® 7 (32 and 64-bit)/Server 2008 R2
- Operation of the EKS Electronic-Key adapter with serial or USB interface

Notice

- Software on CD with the order
- Transponder Coding TC cannot be used to produce functional Electronic-Keys for the EKS *Light* application.
- The software can be used immediately after installation and configuration of the interface parameters. In comparison, it is necessary to create an application for the Electronic-Key-Manager EKM software.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

Transponder Coding TC

Series	Version	Order no./item	
Software **Transponder Coding**		**067190**	For detailed information, enter the order number for the product in the search box at www.euchner.com.

Electronic-Key-Manager EKM

- **Software for Electronic-Key management with input screen and database that can be configured as required**
- **Logon via Electronic-Key possible**

Details

The Electronic-Key-Manager EKM is a flexible software package for writing and managing the Electronic-Keys on the PC. All Electronic-Keys and their contents are managed in a database. The freely programmable memory on the Electronic-Key can be allocated to the specific database fields. The database fields and the input screen can be configured as required. Editing permissions within EKM can be assigned using the EKM user manager. EKM can also be integrated into an existing EKS environment. Example databases that can be edited are included on the CD.

The following applies to all versions:

- Software and documentation in German and English
- A prepared input screen and database can be exchanged between all EKM versions

Overview of demo version

- Local input screen and access to database (will only run on one PC)
- Database import/export function in csv format, locally and in the network
- Runtime limitation

Overview of *Light* version

- Local input screen, no access to database and no database import/export function (will only run on one PC)

Overview of single-user version

- Local input screen and access to database (will only run on one PC)
- Database import/export function in csv format, locally and in the network

Overview of full version

- Input screen and access to central database via client/server architecture in the network
- Database import/export function in csv format, locally and in the network

System requirements

- Standard PC with Windows® XP/Server 2003/Server 2008 (32 and 64-bit)/Windows® 7 (32 and 64-bit)/Server 2008 R2
- Operation of the EKS Electronic-Key adapter with serial or USB interface

Notice

- Software on CD with the order
- Key differences from Transponder Coding TC:
  - EKM application must be created
  - EKM uses a database
  - EKM input screen permits structured data input
  - EKM permits access protection to the application. Logon via Electronic-Key is possible.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

Electronic-Key-Manager EKM

Series	Version		Order no./item	
Software **Electronic-Key-Manager**		Demo version	**093320**	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		Light version	**111410**	
		Single-user version	**098578**	
		Full version	**093322**	

EKS ActiveX® module

- **Software for integration in user programs**

Typical applications

- Windows® PC-based user software
- EKS with serial interface on the PC
- EKS with USB interface on the PC
- EKS with Ethernet TCP/IP interface on the PC

Details

An EKS ActiveX® module is protocol driver software. Here the commands for the lower protocol level for the data communication are processed by this ActiveX® software component for standardized usage. An ActiveX® module can only be used with user programs that support ActiveX® in Microsoft Windows®. EKS can thus be used, for example, in conjunction with user software for process visualization.

Overview

To suit the different transfer protocols, we offer two different ActiveX® modules. Usage from the point of view of the programmer is, however, very similar.

For the EKS Electronic-Key adapter with serial RS232/RS422 and USB interface:

- Data communication based on the transfer protocol 3964R

For the EKS Electronic-Key adapter with Ethernet TCP/IP interface:

- Data communication based on the transfer protocol Ethernet TCP/IP

System requirements

- Standard PC with Windows® XP/Server 2003/Server 2008 (32 and 64-bit)/Windows® 7 (32 and 64-bit)/Server 2008 R2

Notice

- Software on CD with the order
- The ActiveX® module is not necessary for the operation of the Transponder Coding TC or Electronic-Key-Manager EKM software.

Further information

- For detailed information and downloads, enter the order number for the product in the search box at www.euchner.com.

Ordering table

EKS ActiveX® module

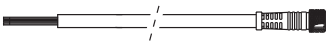
Series	Version		Order no./item	
Software **ActiveX® module**		Serial/USB	**098708**	For detailed information, enter the order number for the product in the search box at www.euchner.com.
		Ethernet TCP/IP	**100665**	

Connection cables with plug connectors

For Electronic-Key adapter FHM with M8 plug connector

For the connection of:

116118
EKS-A-SFH-G30-ST150

Version		Order no./item	
M8 4 pin PVC **Connection cable with female plug, flying lead, screened, 4 x 0.25 mm², screw terminal, knurled nut electrically connected to cable screen** 	2m	**084641** C-M08F04-04X025PV02,0-ES	For detailed information, enter the order number for the product in the search box at www.euchner.com.
	5m	**084642** C-M08F04-04X025PV05,0-ES	
	10m	**084643** C-M08F04-04X025PV10,0-ES	
	15m	**084644** C-M08F04-04X025PV15,0-ES	

Index by item designation

Index by order number

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