

Electronic-Key-System



EKS. ■

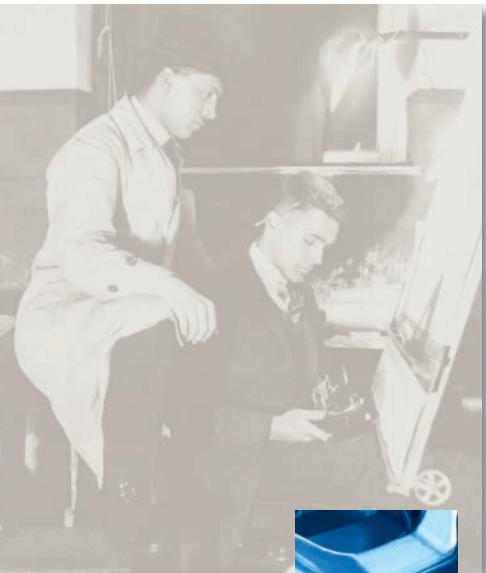


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EUCHNER

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Emil Euchner, the company's founder and inventor of the multiple limit switch, circa 1928.



Around the world – the Swabian specialists in motion sequence control for mechanical and systems engineering.

EUCHNER's history began in 1940 with the establishment of an engineering office by Emil Euchner. Since that time, EUCHNER has been involved in the design and development of switchgear for controlling a wide variety of motion sequences in mechanical and systems engineering. In 1953, Emil Euchner founded EUCHNER + Co., a milestone in the company's history. In 1952, he developed the first multiple limit switch – to this day a symbol of the enterprising spirit of this family-owned company.

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Today, our products range from electromechanical and electronic components to complex system solutions. With this wide range of products we can provide the necessary technologies to offer the right solution for special requirements – regardless of whether these relate to reliable and precise positioning or to components and systems for safety engineering in the automation sector.

EUCHNER products are sold through a world-wide sales network of competent partners. With our closeness to the customer and the guarantee of reliable solutions throughout the globe, we enjoy the confidence of customers all over the world.

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At EUCHNER, quality means that all our employees take personal responsibility for the company as a whole and, in particular, for their own field of work. This individual commitment to perfection results in products which are ideally tailored to the customers' needs and the requirements of the market. After all: our customers and their needs are the focus of all our efforts. Through efficient and effective use of resources, the promotion of personal initiative and courage in finding unusual solutions to the benefit of our customers, we ensure a high level of customer satisfaction. We familiarize ourselves with their needs, requirements and products and we learn from the experiences of our customers' own customers.

EUCHNER – More than safety.



Quality – made by EUCHNER

Electronic-Key-System (EKS)

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Application

With the **Electronic-Key system (EKS)**, it does not matter if a password is forgotten. **EKS** is used for 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 changes to systems.

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.

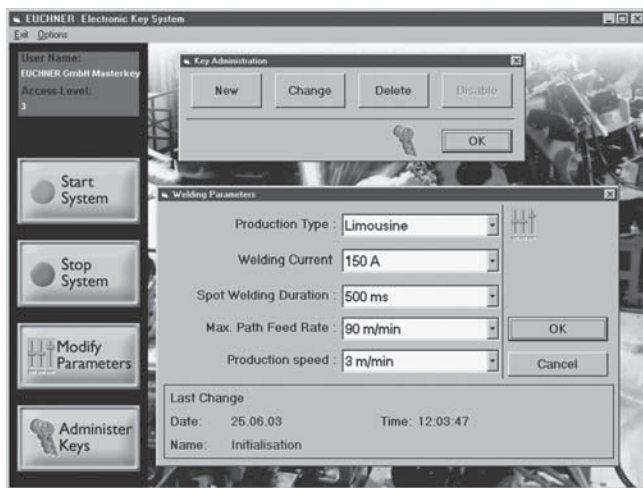
The Electronic key provides **protection against unauthorized access** to operation and visualization systems. Often only specific people have permission to change the system parameters on critical systems. This is the ideal application for **EKS**.

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.



Key management using the Electronic-Key-Manager

The Electronic-Keys can also be managed on separate workstations using the **Electronic-Key-Manager (EKM)** software.

Along with passwords or other personal data, it is also possible to save process-related information, e.g. recipes or parameters for the machine control system, on the Electronic-Key and retrieve the data in production.

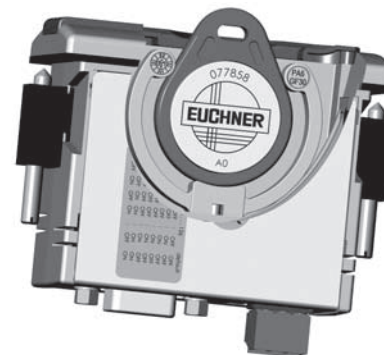
System overview

In principle **EKS** comprises two components: an Electronic-Key and the matching Electronic-Key adapter.

Integrated into the Electronic-Key in the form of a robust tag are a memory chip and an antenna (transponder). This is in fact an **inductive identification system** with the following features:

- ▶ Carrier frequency 125 kHz
- ▶ Transponder **without battery**

In operation the Electronic-Key is inserted into the Electronic-Key adapter and is held in place by a spring clip. The power supply for the transponder and the data are transferred between the Electronic-Key adapter and the Electronic-Key **without using any contacts**.



The data carrier in the Electronic-Key is equipped with a combined read/write and fixed-code memory:

- ▶ 116 bytes E²PROM (programmable) plus an additional 8 bytes ROM (serial number)

The Electronic-Key adapter is a **read/write system with integrated evaluation electronics and interface**. Device variants with the following interfaces are available for system connection:

- ▶ Serial RS232/RS422, switchable
- ▶ USB
- ▶ Profibus DP

The Electronic-Key adapter with serial interface can be connected to a PC or a control system using a serial interface card. 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 Electronic-Key adapter with integrated Profibus DP interface is connected to the fieldbus via a standard Profibus cable as a subscriber. The Profibus variant is used as a matter of preference for control systems. In this variant, the **EKS** can also be used remotely from the control system, e.g. at assembly workplaces.

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. Then when the Electronic-Key is removed, e. g. access to specific functions on the system is automatically inhibited.

A major advantage is the **flexibility of the system**:

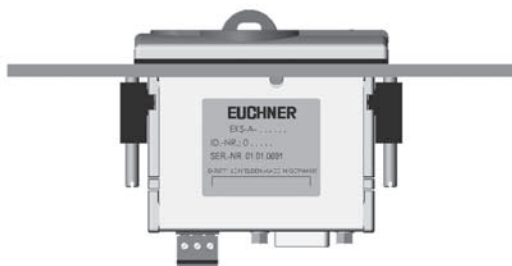
- ▶ Easy assignment and alteration of the access rights level
- ▶ Access for lost Electronic-Keys can be disabled
- ▶ Easy identification of mixed-up Electronic-Keys
- ▶ Fast assignment of additional Electronic-Keys

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

For **quality assurance** in accordance with ISO 9000, it is possible to log accesses and changes when using **EKS**. **EKS** can also serve as an electronic substitute for conventional quality cards.

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.

Due to the transfer of data without using any contacts, it was possible to design the Electronic-Key adapter with the high **degree of protection IP 67** from the access side, i.e. it is **suitable for industrial use**. The Electronic-Key adapter can be installed in accordance with DIN 43700 in any control panel with a standard cut-out of 33 mm x 68 mm. It is fastened by means of screw clamp elements from the rear side of the panel in order to prevent unauthorized tampering from the operator side.



On Electronic-Key adapters that are used as pure read stations on the production line, **write protection can be enabled using a DIP switch** to further increase protection against tampering.

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 adapter with serial or USB interface to the user's PC application is supported by an optionally available **ActiveX® module**¹⁾ (can be used if Microsoft Windows®¹⁾ based user programs support ActiveX®). **EKS** can thus be used, e. g., in conjunction with process visualization software. Data communication is in accordance with transfer protocol 3964R. The **ActiveX® module** is used here as a protocol driver.


To operate the EKS Electronic-Key adapter with USB interface on the 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.

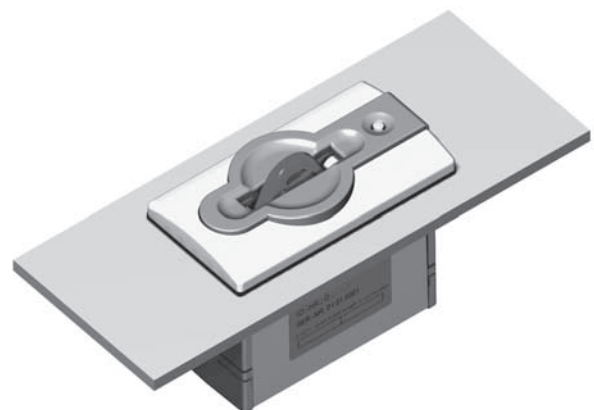
The **Transponder Coding** software can be used for straightforwardly writing and reading the Electronic-Key on the PC. Furthermore, the **Electronic-Key-Manager**, a flexible software package, is available for **programming and managing the Electronic-Keys** on the PC. The freely programmable memory on the Electronic-Key can be structured exactly as required using **EKM**. **EKM** is based on a client/server architecture with central database.

Commissioning and **system integration is significantly simpler and easier using the EKS with Profibus interface**. The bus address is set using DIP switches. The **EKS** is integrated in the software using the GSD file and the data are available in the bus master's input area immediately after connection.

Approvals

The EKS Electronic-Key adapters are certified in accordance with  (certificate number 170205 – E240367).

For use and operation as per the  requirements, a power supply with the feature *For use in class 2 circuits* must be used.



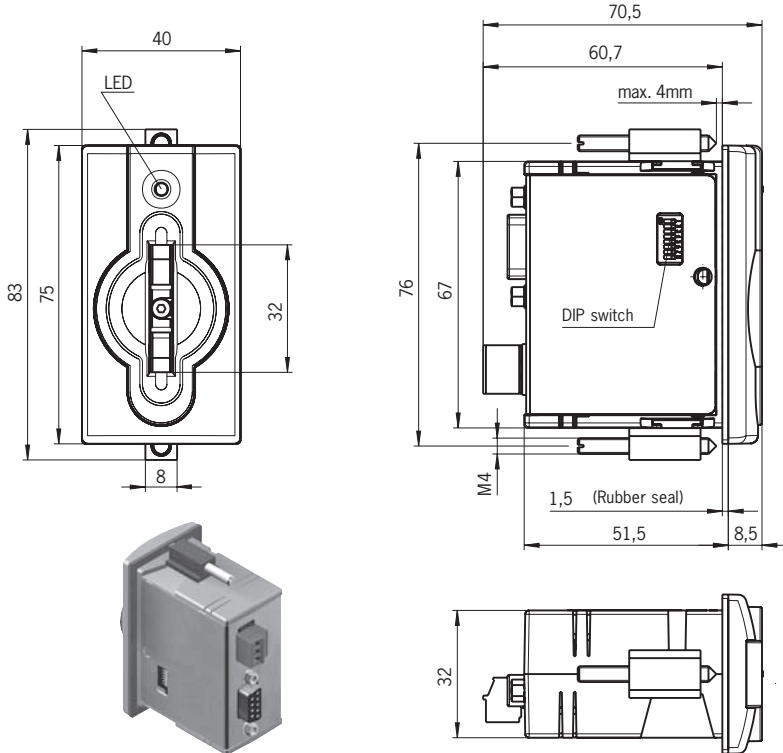
1) Microsoft Windows® and ActiveX® are registered trademarks of Microsoft Corporation

Electronic-Key adapter with serial Interface

RS232
serial
RS422

Dimension drawing

Dimensions in mm



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	plastic (PA 6 GF30 gray)			
Degree of protection according to EN 60529	IP 67 in mounted condition			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Connection type for power supply	miniature plug connector (3-pin)			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption			100	mA
Interface, data transfer				
Interface to the PC or to the control system	serial RS232 / RS422 (selectable via DIP switch)			
Transfer protocol	3964R			
Baud rate	9.6			kbaud
Data format	1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit			
Connection type for serial interface	Sub-D (9-pin)			
Cable length RS232			5	m
Cable length RS422			1000	m
LED indicator	green: "Ready" (in operation) yellow: "Electronic-Key active" *			

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

Ordering table

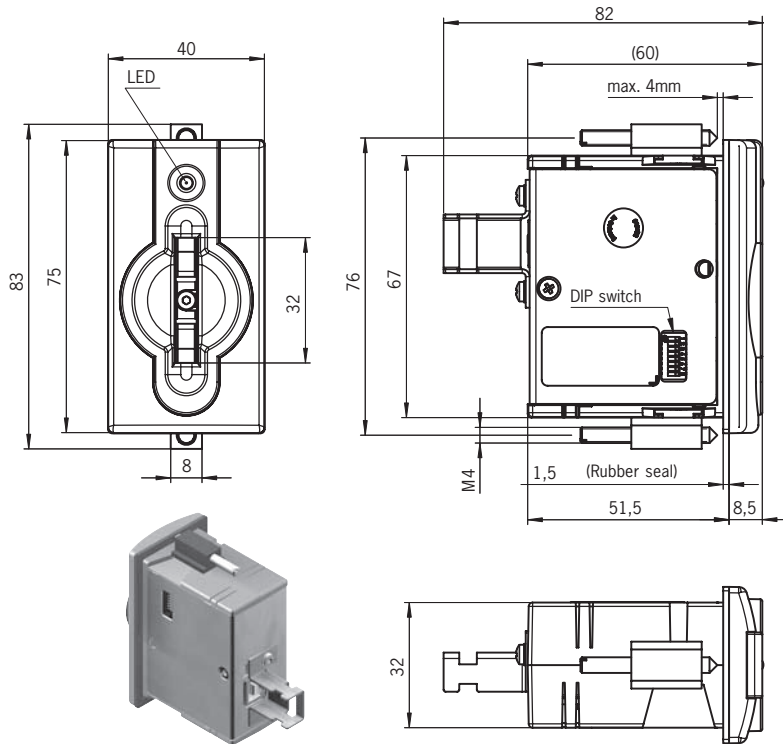
Designation	Item	Order No.
Electronic-Key adapter with serial Interface	EKS-A-ISX-G01-ST09/03	084 750

Electronic-Key adapter with USB interface



Dimension drawing

Dimensions in mm



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	plastic (PA 6 GF30 gray)			
Degree of protection according to EN 60529	IP 67 in mounted condition			
Ambient temperature	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Power supply	via USB			
Current consumption			100	mA
Interface, data transfer				
Interface to the PC	USB full speed (USB 1.1 and USB 2.0 compatible)			
Transfer protocol	3964R			
Baud rate	9.6			kbaud
Data format	1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit			
USB interface connection type	type B			
Cable length			3	m
LED indicator	green: "Ready" (in operation) yellow: "Electronic-Key active" *			

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

Ordering table

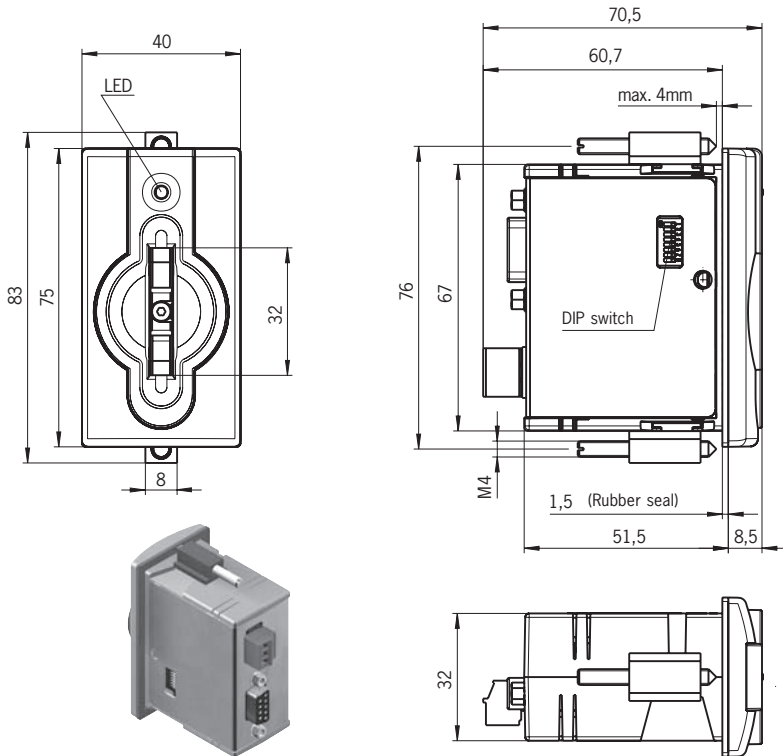
Designation	Item	Order No.
Electronic-Key adapter with USB interface	EKS-A-IUX-G01-ST01	092 750

Electronic-Key adapter with Profibus DP interface



Dimension drawing

Dimensions in mm



Technical data

General parameters	Value			Unit
	min.	typ.	max.	
Housing	plastic (PA 6 GF30 gray)			
Degree of protection according to EN 60529	IP 67 in mounted condition			
Ambient temperature at $U_B = DC 24 V$	0		+ 55	°C
Mounting cut-out according to DIN 43700	33 x 68			mm
Connection type for power supply	miniature plug connector (3-pin)			
Operating voltage U_B (regulated, residual ripple < 5%)	20	24	28	V DC
Current consumption			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 DP according to EN 50170			
Baud rate	9.6/19.2/45.45/93.75/187.5/500			kbps
	1.5/3/6/12			Mbps
Connection type for Profibus DP	Sub-D (9-pin)			
Cable length max.	100 ... 1200 according to Profibus DP, depending on baud rate			m
LED indicator	green: "Ready" (in operation) yellow: "Electronic-Key active" * red: "Error"			

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

Ordering table

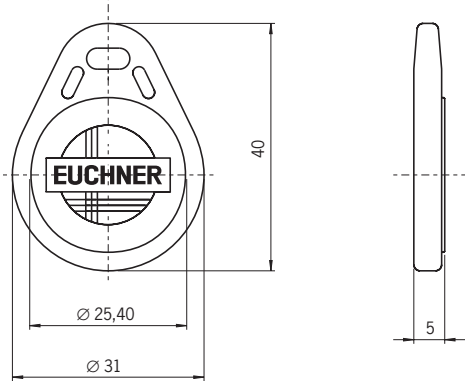
Designation	Item	Order No.
Electronic-Key adapter with Profibus DP interface	EKS-A-IDX-G01-ST09/03	084 800

Electronic-Key read/write

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

Dimension drawing

Dimensions in mm



Special features

- ▶ The Electronic-Key contains a unique 8-byte serial number. This number is written by laser during the Electronic-Key production process and is stored absolutely indestructibly. The serial number is used for secure distinction of every single Electronic-Key.

Electronic-Key memory structure

	E ² PROM (programmable)					ROM (serial number)		
Byte no. [dec]	0	1	...	114	115	116	...	123
Byte no. [hex]	00	01	...	72	73	74	...	7B
	Quantity: 116 bytes					Quantity: 8 bytes		

Technical data

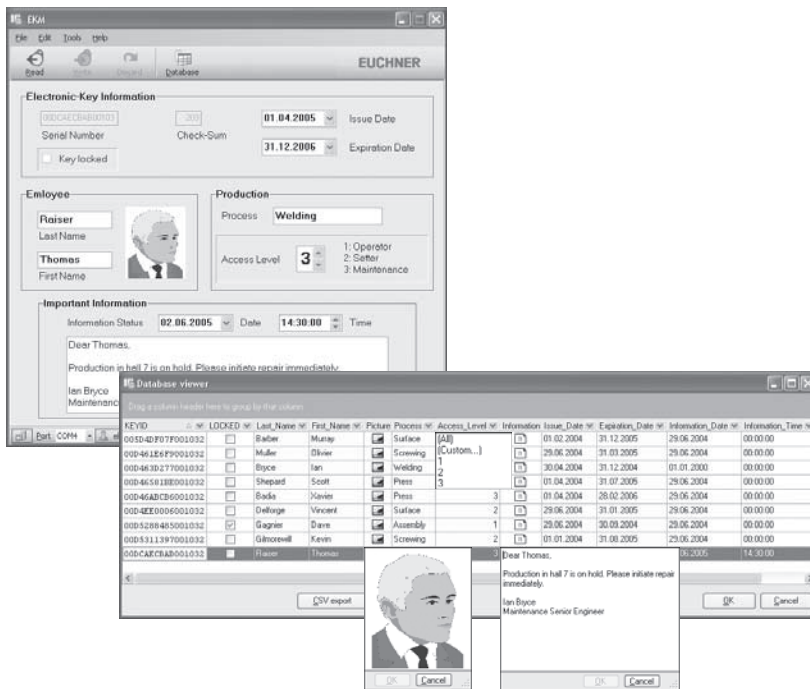
General parameters	Value			Unit
	min.	typ.	max.	
Memory capacity (read/write)		116		bytes
Serial number (read only)		8		bytes
Power supply	inductive via Electronic-Key adapter			
Housing	plastic PC, ABS			
Degree of protection according to EN 60529	IP 67			
Ambient temperature	- 20		+ 60	°C
Number of 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			

Ordering table

Designation	Color	Item	Order No.
Electronic-Key read/write with 116 bytes read/write memory	red	EKS-AK1RDWT32-EU	077 859
	black	EKS-AK1BKWT32-EU	084 735
	blue	EKS-AK1BUWT32-EU	091 045
	green	EKS-AK1GNWT32-EU	094 839
	yellow	EKS-AK1YEWWT32-EU	094 840

Electronic-Key-Manager (EKM)

► Database for Electronic-Key management



Product description

The Electronic-Key-Manager (EKM) is a software package for writing and managing the Electronic-Keys on the PC. All Electronic-Keys and their contents are managed in a central database. The freely programmable memory on the Electronic-Key can be allocated to the specific database fields. The database fields and the screen interface for entering the data can be configured as required. Write and read rights can be granted through user management. EKM can also be integrated into an existing EKS environment. All versions include:

- Database import/export function in csv format
- Example databases that can be edited
- Software and documentation in German and English

Overview of demo version

- Only local EKM client, no network support
- Runtime limitation
- Databases and forms prepared using the demo version can continue to be used with the full version

Overview of single-user version

- Only local EKM client, no network support
- Databases and forms prepared using the single-user version can continue to be used with the full version

Overview of full version

- Client/server architecture, full network support
- Includes EKM ActiveX® module for interfacing the EKM database to any user program with ActiveX® support (e. g. for process visualization)

System requirements

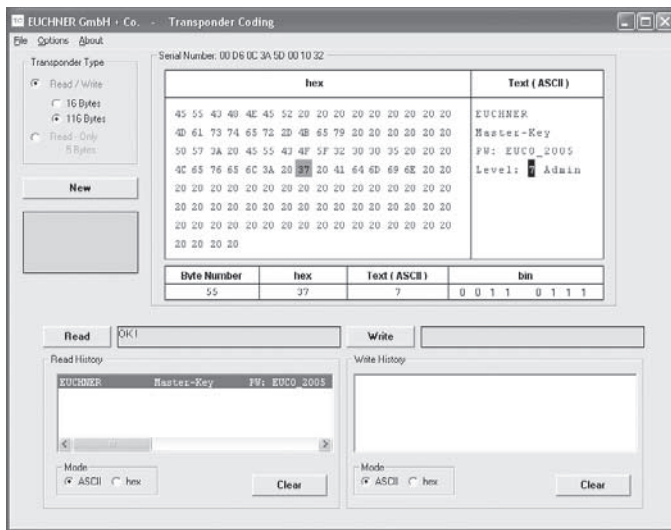
- Operating system: Microsoft Windows® 98/ME/NT/2000/XP
- Processor: from Pentium 2
- Available memory: min. 64 MB
- Network: network card and TCP/IP protocol installed
- Hard disk space for the installation: approx. 20 MB
- Interfaces: serial or USB (depending on model of the Electronic-Key adapter)

Ordering table

Designation		Order No.
Electronic-Key-Manager software, demo version	on CD	093 320
Electronic-Key-Manager software, single-user version	on CD	098 578
Electronic-Key-Manager software, full version	on CD	093 322

Transponder Coding (TC)

► Software for writing to the Electronic-Keys



Product description

The Transponder Coding (TC) software is an ASCII/hex editor that can be used to read and write the Electronic-Key data on the PC.

Overview

- Display of the programmed Electronic-Key data in ASCII and hex view 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

- Operating system: Microsoft Windows® 98/ME/NT/2000/XP
- Processor: from Pentium 2
- Available memory: min. 64 MB
- Hard disk space for the installation: approx. 20 MB
- Interfaces: serial or USB (depending on model of the Electronic-Key adapter)

Ordering table

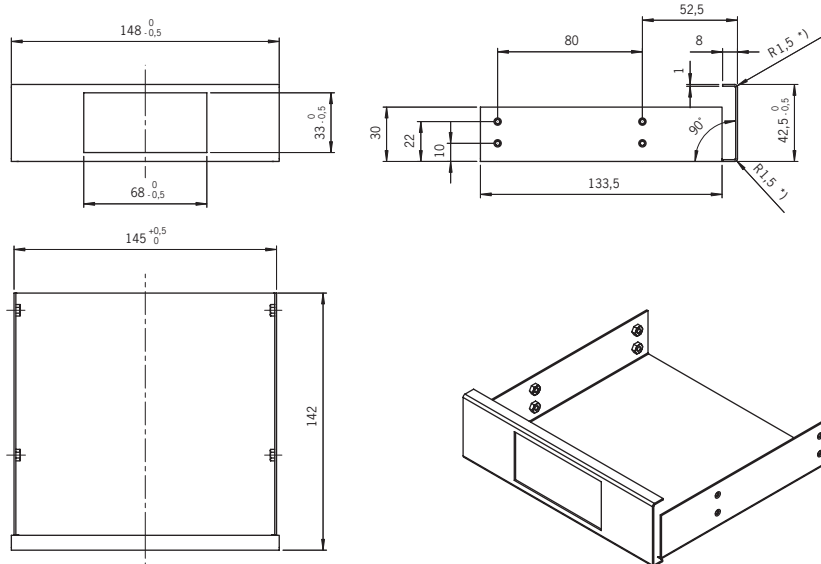
Designation		Order No.
Transponder Coding software	on CD	067 190

Accessories

► PC mounting frame for 5.25" drive bay

Dimension drawing

Dimensions in mm



Product description

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 in accordance with EN 10111
- Surface: front signal black matt RAL 9004
- Incl. 4 fastening screws

As an option a connection cable is available for the connection from the USB Electronic-Key adapter to the internal USB connection on the motherboard.

Ordering table

Designation	Order No.
PC mounting 5.25" for EKS	093 615
Internal USB connection cable	095 633

Software and user manuals

► Electronic-Key adapter with serial Interface



Designation		Order No.
Electronic-Key adapter manual	pdf file as download	088 796
ActiveX® module manual	pdf file as download	098 655
Software, ActiveX® module for Windows®	on CD	098 708
Electronic-Key-Manager software, demo version	on CD	093 320
Electronic-Key-Manager software, single-user version	on CD	098 578
Electronic-Key-Manager software, full version	on CD	093 322
Transponder Coding software	on CD	067 190

Note on the connection cable

To connect the **EKS** Electronic-Key adapter using the serial interface, a commercially available, screened SUB-D connection cable (9-core) with pins wired 1to1 is used. At the **EKS** end the cable must have a plug and at the PC/control system end, the cable must have a socket. Screws are required at both ends for strain relief.

► Electronic-Key adapter with USB interface



Designation		Order No.
Electronic-Key adapter manual	pdf file as download	094 485
ActiveX® module manual	pdf file as download	098 655
Software, ActiveX® module for Windows®	on CD	098 708
Software, USB driver	as download	094 376
Electronic-Key-Manager software, demo version	on CD	093 320
Electronic-Key-Manager software, single-user version	on CD	098 578
Electronic-Key-Manager software, full version	on CD	093 322
Transponder Coding software	on CD	067 190

Note on the connection cable

To connect the **EKS** connection type using the USB interface a commercially available, screened connection cable in accordance with USB 1.1 or USB 2.0 standard is used up to a maximum length of 3 m. At the **EKS** end the cable must have a USB type B plug.

► Electronic-Key adapter with Profibus DP interface



Designation		Order No.
Electronic-Key adapter manual	pdf file as download	092 009
GSD file	as download	092 054

Downloads available at www.euchner.de in the Service area.

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