ekey
YOUR FINGER. YOUR KEY.

ekey home

en **OPERATING INSTRUCTIONS**

English

Translation of the original instructions – ID159/493/0/330

Table of contents

General

Note

This manual forms a component of the product. Ensure that it is stored in a safe place. Please contact your dealer for further information about the product.

Product liability and limitation of liability

Safe operation and function of the machine can be impaired in the following situations. Liability due to malfunctioning is transferred to the operator/user in such cases:

- The system devices are not installed, used, maintained and cleaned in accordance with the instructions;
- The system devices are not used within the scope of proper use;
- Unauthorised modifications are carried out on the system devices by the operator.

These operating instructions are not subject to updating. Subject to optical and technical modifications, any liability for errors and misprints excluded.

Warranty and manufacturer's warranty

The version of our general terms and conditions on the date of purchase shall apply. See http://www.ekey.net.

Notices, symbols and abbreviations

NOTICE

Denotes additional information and useful tips.

DANGER

Denotes imminent danger which could lead to death or serious injuries.

ATTENTION

Denotes possible property damage which cannot result in injuries.

Symbols:

1.	Step-by-step instructions
	Reference to sections of this manual
	Reference to the mounting instructions
	Reference to the wiring diagram
□	Listing without specified order, 1st level
ekey home FS UP	Product names
MENU ITEM	Menu items
Button	Buttons

Abbreviations:

CV	Converter
OEM	Original Equipment Manufacturer
WIEG	Wiegand

Safety information

DANGER

Life-threatening danger resulting from electricity

All *ekey home* devices are to be operated with safety extra-low voltage (SELV). Only use power supplies rated protection class 2 according to VDE 0140-1.
Failure to do so will result in life-threatening danger due to electric shock.
Only certified electricians are authorised to carry out the electrical installation!

Mount the converter in a safe internal area. This prevents tampering from the outside.

Safety against tampering

Product description

System overview

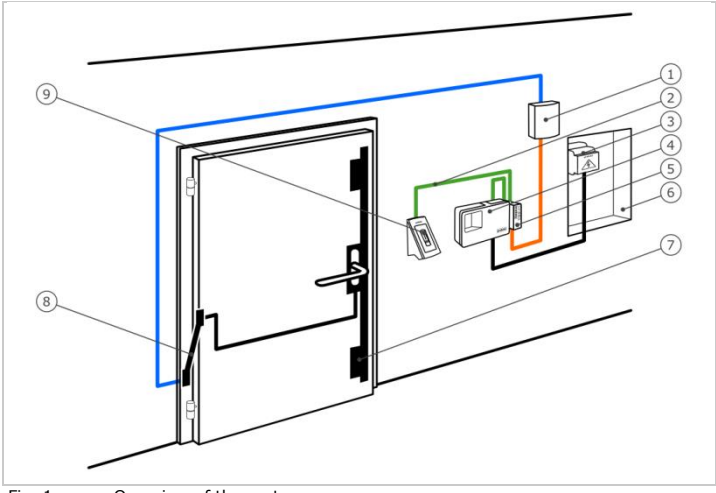


Fig. 1: Overview of the system

1 Third-party Wiegand system
2 ekey RS485 bus
3 Power supply
4 Control panel
5 Wiegand converter
6 Distributor
7 Motorised lock
8 Cable transfer
9 Finger scanner

Scope of delivery

- □ Wiegand converter;
- □ Mounting set;
- □ Operating instructions, mounting instructions and wiring diagram;
- □ Optional: Finger scanner, control panel, USB converter, software CD, cable transfer, power supply, connection cable, covers, etc.).

Proper use and area of application

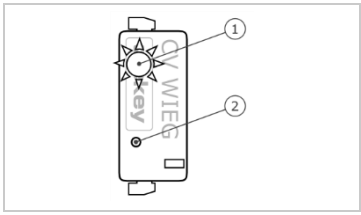
This product is an accessory for a finger scan access control system. The device is integrated into the system. The system is comprised of a finger scanner, control panel, converter and third-party Wiegand system. It is available in various makeups and component combinations. The converter converts the internal ekey RS485 protocol to a Wiegand protocol. Data is transmitted in one direction from the *ekey home or ekey multi* system to the third-party Wiegand system, and never the other way round.

The system is used to establish a data connection between the *ekey home* or *ekey multi* system and a third-party Wiegand system.

Function of the converter

The converter reads out the sent information at the ekey RS485 bus. It converts this data into a predefined Wiegand protocol. The converter sends the generated data to the third-party Wiegand system for further processing. The predefined data format can be adapted to the third-party system using the configuration tool and a USB converter.

Controls and visual signals on the converter



1 Status LED
2 Button

Fig. 2: Overview of *ekey home CV WIEG RS485*

The converter has a status LED for displaying operating statuses. There is a button for resetting the device to its default settings.

Button operation	Function
Press and hold button for 4 seconds.	Resets default settings.

Table 1: Button operation of *ekey home CV WIEG RS485*

Display		Description
	Status LED flashes green.	Normal mode.
	Status LED lights up green.	Data is being sent.
	Status LED flashes red.	Default setting/ incorrect connection.

Table 2: Visual signals for *ekey home CV WIEG RS485*

Wiegand protocol

The converter is delivered from the factory with the widely-used 26-bit Wiegand format. The binary Wiegand ID is comprised of even parity, facility code, user ID and odd parity.

Bit assignment: P FFFFFFFF UUUUUUUUUUUUUUUU P

Letter	Name	Bit length	Binary code
P	Even parity	1	0-1
F	Facility code	8	0-255
U	User ID	16	0-65535
P	Odd parity	1	0-1

Table 3: 26-bit Wiegand format

Parity

The parity bit is used to check the sent data.

Facility code (unique device code)

The facility code uniquely defines the finger scanner in the third-party Wiegand system. The default code is 1. The code can be changed using the configuration tool.

User ID (unique user number)

The user ID is made up of the user number and the finger number when using fingers.

In an *ekey home* system, this is calculated as follows:

User ID * 10 + finger number
e.g.: User number 15 with finger number 7: 15 * 10 + 7 = 157

In an *ekey multi* system, the user ID is calculated as follows:

(User ID - 1) * 10 + finger number
e.g.: User number 15 with finger number 7: (15 - 1) * 10 + 7 = 147

The user ID is made up of the user number and the finger number 0 when using pin codes.

In an *ekey home* system, this is calculated as follows:

User ID * 10 + finger number 0

e.g.: User number 15 with finger number 0: 15 * 10 + 0 = 150

In an *ekey multi* system, the user ID is calculated as follows:

(User ID - 1) * 10 + finger number 0

e.g.: User number 15 with finger number 0: (15 - 1) * 10 + 0 = 140

The user ID is made up of the user number and the relay number when using RFID transponders.

In an *ekey home* system, this is calculated as follows:

User ID * 10 + relay number
e.g.: User number 13 with relay number 2: 13 * 10 + 2 = 132

In an *ekey multi* system, the user ID is calculated as follows:

(User ID - 1) * 10 + relay number
e.g.: User number 13 with relay number 2: (13 - 1) * 10 + 2 = 122

The relay number is 0 at double relay.

NOTICE

The *ekey home control panel mini* and the *ekey home control panel micro* cannot be used with an *ekey home converter Wiegand RS-485*. Both control panels do not use any user number.

You can change the length of the Wiegand ID using the configuration tool. An additional OEM code can also be defined during configuration. This is added before the facility code.

Configuration tool

The configuration tool is integrated in the *ekey FWupdate* software. This can be found on the CD supplied with the *ekey converter USB* and is also available to download from the ekey homepage. Click on the following link to go to the download area: https://www.ekey.net/wp-content/uploads/2020/11/ekey_home_multi_servicekit_3.18.7.zip.

NOTICE

An *ekey converter USB* is required in order to establish a connection between the Wiegand converter and the PC.

Function of the configuration tool

The configuration tool is used to configure the converter. The ID is entered in decimal values.

Software requirement

The software only operates on MS Windows operating systems.

Technical specifications

Description	Unit	Value
Supply	VAC/VDC	8-24/8-30
Power input	W	approx. 1
Temperature range	°C	-25 to+70
Baud rate at RS485	Bd	115200
Protection class	IP	20

Table 4: Technical specifications: *ekey home CV WIEG RS485*

System setup variants

There are three setup variants for connecting an *ekey home* or *ekey multi* system to a third-party Wiegand system.

***ekey home* variant**

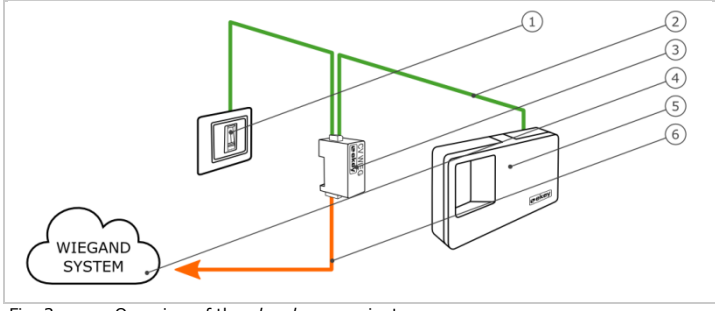


Fig. 3: Overview of the *ekey home* variant

1 Finger scanner
2 ekey RS485 bus
3 Wiegand converter
4 Third-party Wiegand system
5 Control panel
6 Wiegand connection cable

The *ekey home* variant comprises a finger scanner, a control panel, a converter and a Wiegand interface to the third-party system. The converter transmits the sent data from the finger scanner to the third-party Wiegand system.

ekey multi variant 1

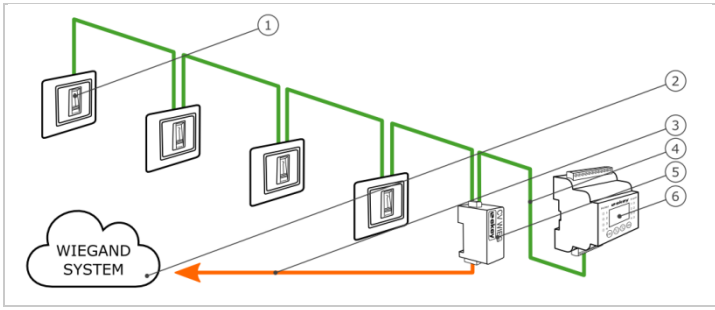


Fig. 4: Overview of *ekey multi* variant 1

1 Finger scanner 1-4
2 Third-party Wiegand system
3 Wiegand connection cable
4 ekey RS485 bus
5 Wiegand converter
6 Control panel

ekey multi variant 1 comprises up to four finger scanners, a control panel, a converter and a Wiegand interface to the third-party system. The converter transmits the sent data from each finger scanner to the third-party Wiegand system. With this system setup, the converter is connected to a Wiegand interface for the third-party system. The third-party system must therefore be able to recognise various facility codes.

ekey multi variant 2

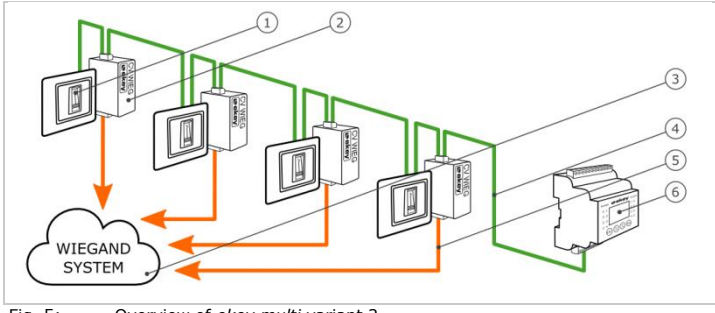


Fig. 5: Overview of *ekey multi* variant 2

1 Finger scanner 1-4
2 Wiegand converter 1-4
3 Third-party Wiegand system
4 ekey RS485 bus
5 Wiegand connection cable 1-4
6 Control panel

ekey multi variant 2 comprises up to four finger scanners, a control panel and the same number of converters and Wiegand interfaces to the third-party system as there are finger scanners. Each converter transmits the sent data from one finger scanner to the third-party Wiegand system. With this system setup, the individual converters are connected to different Wiegand interfaces for the third-party system.

Converter configuration

NOTICE

In an *ekey home* system, the converter only needs to be configured if a 26-bit Wiegand format cannot be used.

NOTICE

In an *ekey multi* system, the converter must be configured, as the individual finger scanners require a unique facility code. Configuration is not absolutely essential in the following system setups if a 26-bit Wiegand format can be used:

- Only one finger scanner is used in the system;
- Only one converter is used in the system and a distinction between the individual finger scanners does not need to be made in the third-party Wiegand system. (*ekey multi* variant 1)

Preparing for configuration

The following components are required to configure the converter:

- *ekey converter USB*;
- USB connection cable;
- RS485 connection cable;
- Power supply;
- PC with MS Windows operating system and USB-2.0 interface;
- *ekey FWupdate* software with configuration tool.

If you have already implemented your system, disconnect it from the power supply. Dismantle the *ekey home converter Wiegand RS485* to enable it to be configured.

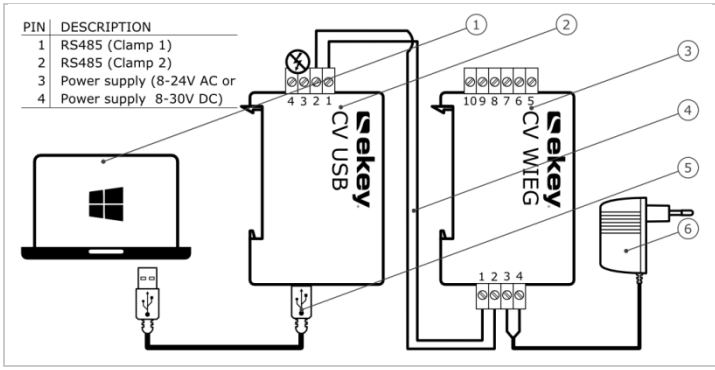


Fig. 6: Wiring diagram for configuring the converter

1 PC with MS Windows operating system
2 USB converter
3 Wiegand converter
4 RS485 connection cable
5 USB connection cable
6 Power supply

Cable the devices according to the wiring diagram (Fig. 6).

ATTENTION

The device connections are not polarity reversal protected!
Possible property damage!
Check the configuration of the wires carefully before connecting the power supply.

Step	Instruction
1.	Install the *ekey FWupdate* software on your PC.
2nd	Connect the USB connection cable to the PC.
3rd	Wait until the USB driver has been installed.
4th	Connect the power supply to the mains.

The devices are ready for configuration.

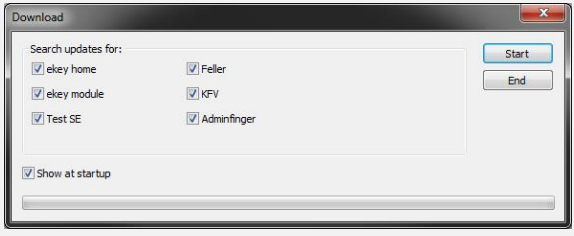
Carrying out the configuration

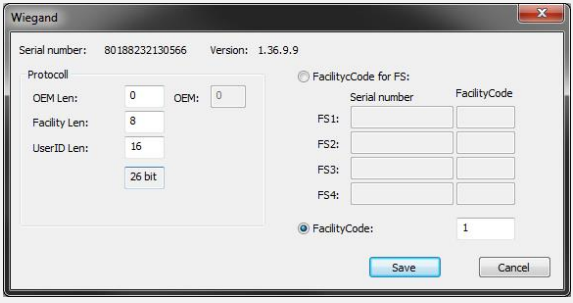
You can use the configuration tool to make changes to the Wiegand protocol. The following aspects can be changed:

- The OEM code
- The facility code
- The length of the user ID and the facility code

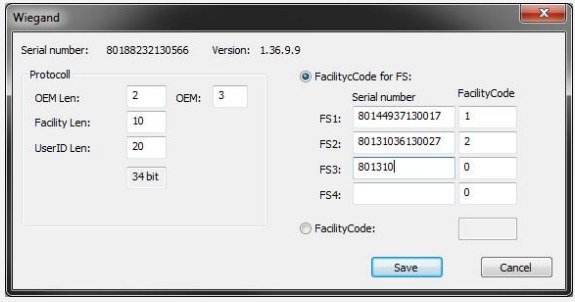
Prepare the devices for configuration.

See Preparing for configuration, page 10.

Step	Instruction
5.	Launch the *ekey FWupdate* software.
6th	The *ekey FWupdate* program automatically opens with the update window.  **!NOTICE** This function enables you to download the most recent firmware software for your products. Once you have downloaded it to your PC, you can use these files for an update.
7th	If you require an update: Select the required products. Then click on Start. If you do not require an update: Click on End.
8th	The start screen is displayed. 

Step	Instruction
9.	Select the connected *ekey converter USB* from the dropdown menu based on the serial number. 
10.	Click on Search.
11.	The connected *ekey home converter Wiegand RS485* is listed. The Wiegand button is enabled. 
12.	Click on Wiegand.
13.	The input screen for the Wiegand protocol is displayed. 

Step	Instruction
14.	Enter the required values in the input fields.



!NOTICE

For a system setup with several converters (*ekey multi* variant 2), input field **FS1** must always be used for the finger scanner assignment.
This means that the serial number of the finger scanner being assigned and the corresponding facility code must be entered in the **FS1** input line for each converter.

15th	Click on Save to apply the settings. Click on Cancel to discard the settings.

Configuration of the converter is complete. The converter is ready for installation and implementation.

Configuration examples

Below you will find configuration examples for the different system setup variants.

ekey home variant

In this example, the 26-bit Wiegand format was adapted to the third-party Wiegand system. The OEM code and bit lengths were configured.

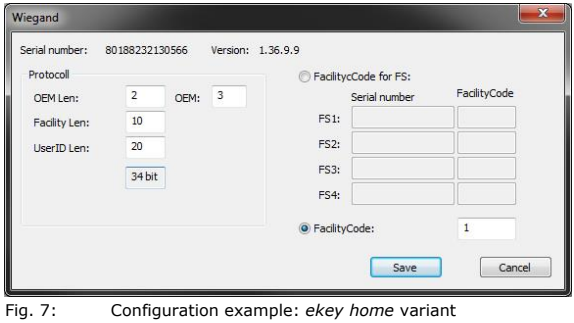


Fig. 7: Configuration example: *ekey home* variant

***ekey multi* variant 1**

In this example, the serial numbers of the 4 finger scanners being assigned and the facility codes in the converter have been entered. This configuration means that the finger scanners are uniquely defined in the third-party Wiegand system. The 26-bit Wiegand format was not changed.

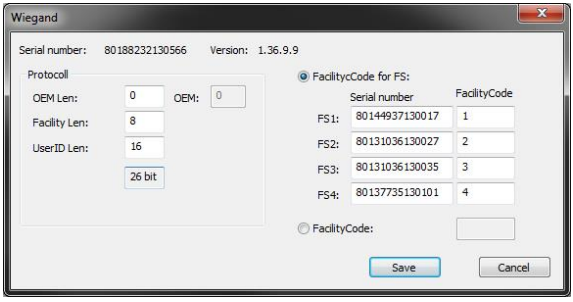


Fig. 8: Configuration example: *ekey multi* variant 1

***ekey multi* variant 2**

In this example, the serial numbers of the 4 finger scanners being assigned and the facility codes in the 4 converters being used have been entered in input line **FS1**. This configuration means that the finger scanners are uniquely defined in the third-party Wiegand system. The 26-bit Wiegand format was not changed.

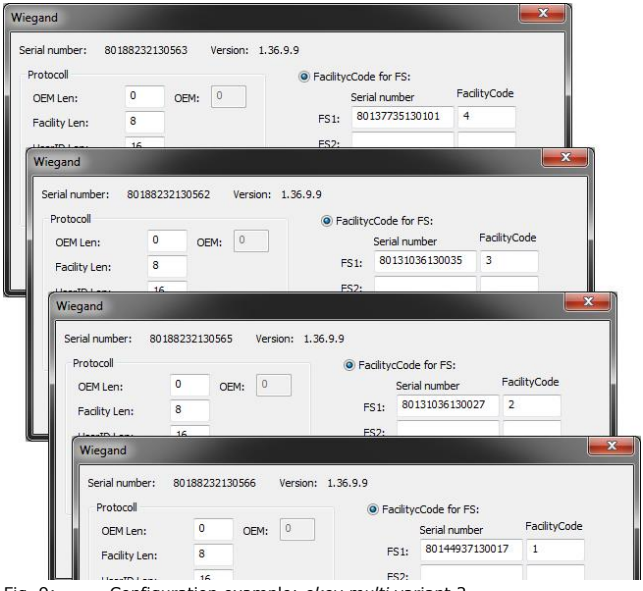


Fig. 9: Configuration example: *ekey multi* variant 2

Installation and implementation

ATTENTION

Mount and cable the product correctly before connecting the power.
Possible property damage!
Do not connect the power supply beforehand!

Mount the system in accordance with the supplied mounting instructions.

Cable the system in accordance with the supplied wiring diagram.

Step	Figure	Description
1.	-	Ensure safe installation of the devices. Close the covers.
2.	-	Connect the power supply to the mains.
3rd		The status LED flashes red: incorrect connection.
4th		The status LED flashes green: Normal mode.
5th	-	If the LEDs fail to light up, check the wiring and power supply.

The system has been installed and implemented. The data connection between the two systems has been established. The system is ready for use.

NOTICE

For information regarding the further processing of the sent *ekey* Wiegand data in the third-party Wiegand system, refer to the documents provided by the supplier of your Wiegand system.

Resetting default settings

Resetting the default settings deletes the configured Wiegand protocol. The default 26-bit Wiegand format with facility code 1 is used again.

Step	Action	Description	Display	
1.		Press and hold the button with the operating rod for at least 4 seconds.		Status LED flashes red.

The converter has been reset to its default settings. You can now reactivate the system.

Maintenance

The system is largely maintenance-free.

Dismantling and disposal

Pursuant to Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment supplied after 13/08/2005, electrical and electronic equipment is to be recycled and may not be disposed of with household waste. As disposal regulations within the EU can differ from country to country, please contact your dealer for further information as necessary.

Declaration of conformity

ekey biometric systems GmbH hereby declares that the product conforms to the relevant European Union directives.

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