

# Datasheet

The ekey converter Wiegand is used for data-technical connections between the ekey net system and a "Wiegand" system. Here, the data communication occurs uni-directionally from ekey net to the foreign system "Wiegand" and never in the other direction.

## Functions

- Sending access information to the foreign system immediately after access to ekey net.  
Access information: Wiegand\_ID

## Features

- The ekey converter Wiegand can only be operated in connection with ekey net version 3.3 or above.
- Wiegand protocols
  - 26 bit Wiegand
  - Pyramid protocol
  - User defined protocol






## Requirements for the customer

ekey net version 3.3 or above

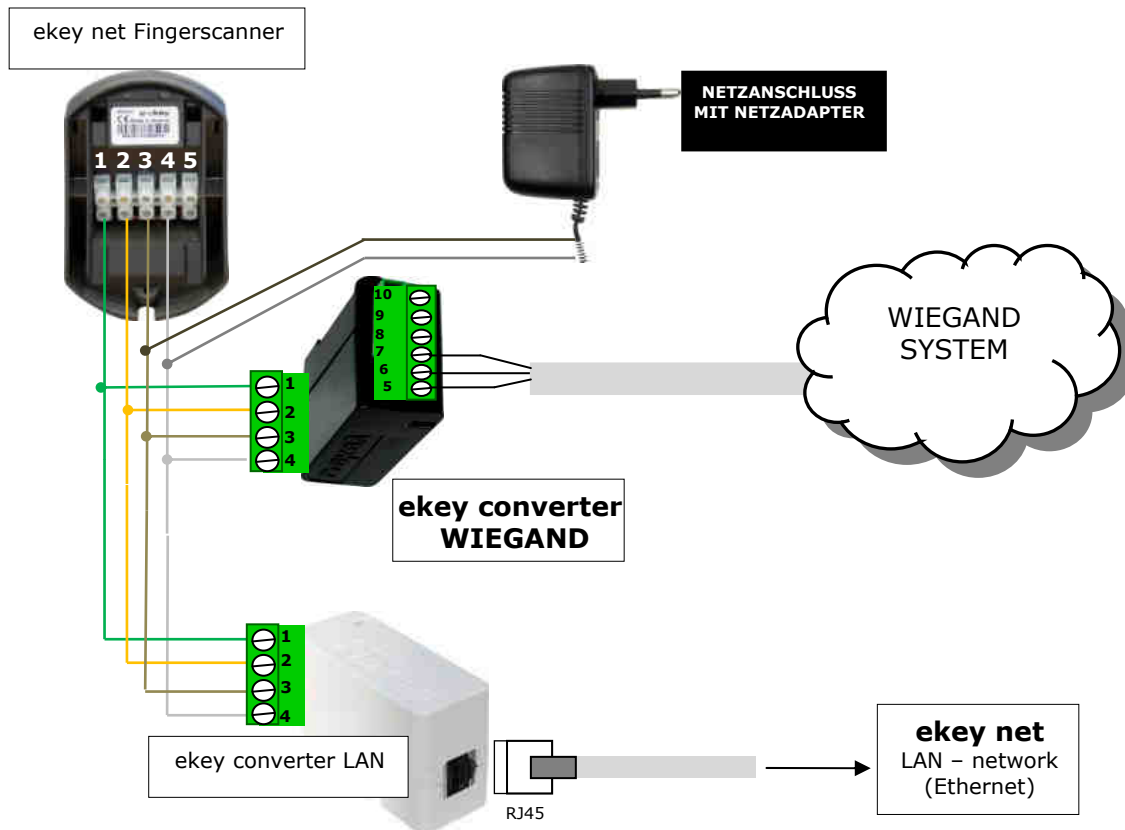
## Scope of delivery - art. no.: 100669

- ekey converter Wiegand
- Assembly and installation instructions
- Assembly set for ekey converter Wiegand
- 230VAC / 9VAC power adaptor

## LED Signals

LED	Info	Discription
	<b>Green flashing</b>	Normal operation
	<b>green</b>	Data sending
	<b>Orange / red flashing</b>	Firmwareupdate
	<b>Orange flashing</b>	Lost of Connection to ekey converter LAN
	<b>red</b>	Malfunction: e.g. NU

## Wiring the ekey converter Wiegand



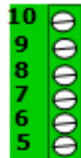
### Attention

ekey converter WIEGAND doesn't work over "Action Boundaries". Therefore ekey net Fingerscanner and the assigned ekey converter WIEGAND have to be located in the same RS485 Bus. This means that both devices have to be connected to the same ekey converter LAN.

## PIN allocation of the ekey converter WIEGAND



PIN No.	ekey converter WIEGAND
1	RS485B (KL1)
2	RS485A (KL2)
3	- VCC FS (KL3)
4	+ VCC FS (KL4)



PIN No.	ekey converter Wiegand
5	WIEGAND D0
6	WIEGAND D1
7	WIEGAND GND
8	LED1 (nicht belegen !)
9	-VCC
10	+VCC

### Cable specification:

ekey® recommends using the following cable for the electrical connection between the fingerprint scanner and the ekey converter WIEGAND:

4-pin twisted pair (UTP and STP) cable as per DIN ISO 8482.

e.g. LiYY 4 x 0.14 or LiYY 4 x 0.25

The maximum cable length as per the specifications *ekey net Spezifikation.pdf* are not to be exceeded.

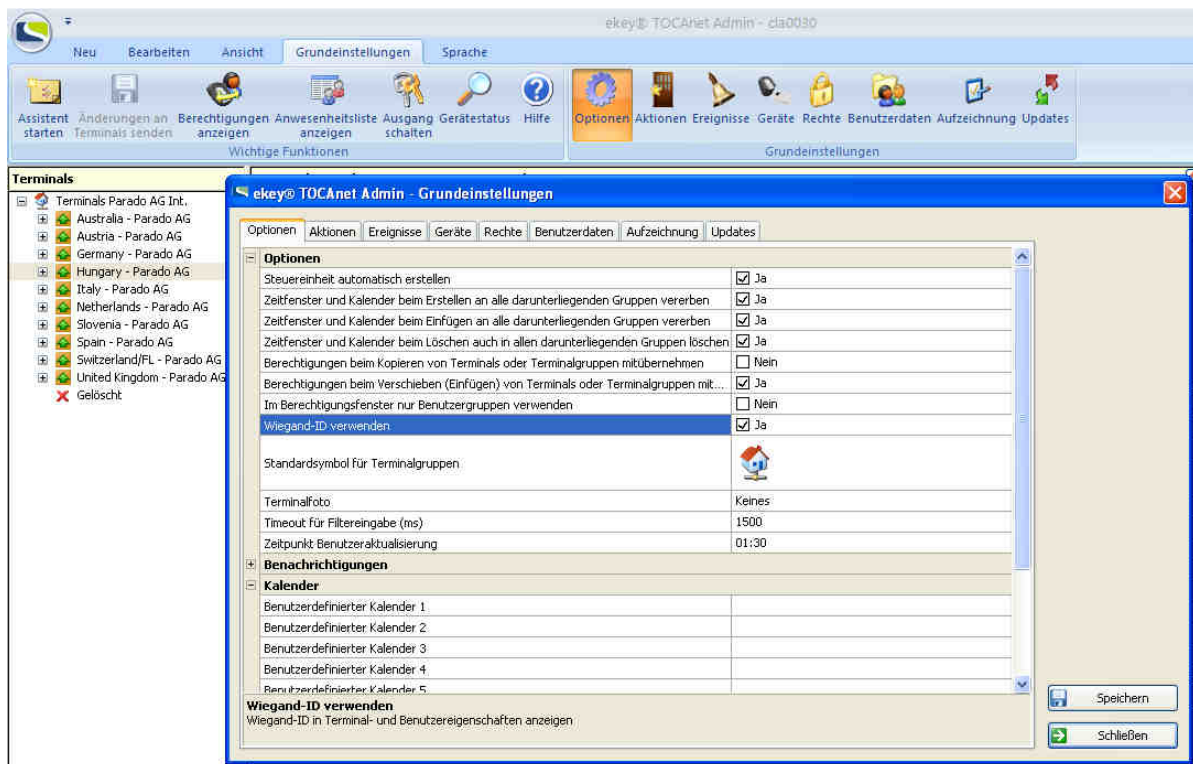
The respective voltage limits (maximum ratings) are also to be observed. The device with the lowest voltage range defines the maximum ratings of the power supply. It is, of course, also possible to power all components individually.

## Activation of Wiegand and the allocation of Wiegand IDs in ekey net

The configuration of the ekey converter WIEGAND is carried out in ekey net software version 3.3 or above.

### Activating WIEGAND functions in ekey net

In order to configure the Wiegand functions in ekey net you require unlimited administrator rights. Start ekey net Admin and under "**Basic settings**" -> "**Options**" -> activate the field "**Use Wiegand ID**"



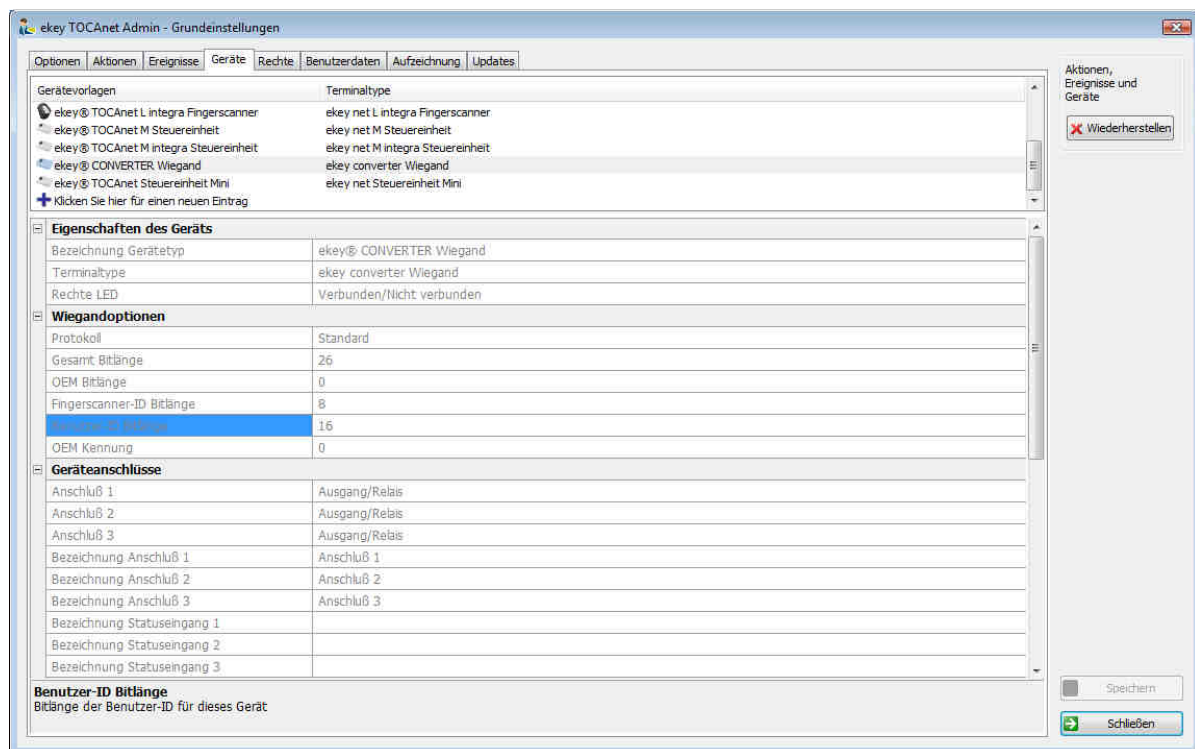
The Wiegand function in ekey net is now activated. Next you have to define the Wiegand protocol to be used.

## Defining the WIEGAND protocol

Wiegand has a very open protocol definition and allows the transfer of user-specific data packages. ekey net has taken this openness into consideration so that you can freely define the ID bit lengths and total lengths per terminal.

You can find the ekey CONVERTER Wiegand under **"Basic settings"** -> **"Devices"** ->. In the device templates you can now find a pre-defined ekey CONVERTER WIEGAND with the **standard** 26-bit protocol.

- Total length = 26 (including start and stop bit)
- Fingerprint scanner ID bit length = 8
- User ID bit length = 16



If your WIEGAND system is not able to work with this pre-defined device, due to the fact that your system requires different bit lengths, then you can define your specific ekey converter WIEGAND using the option **"click here for a new entry"**.

In addition to the 26-bit standard protocol, here you have 2 further options of defining the protocol: (click on the entry field **"protocol"** under **"Wiegand options"**)

- **Pyramid:** 39-bit protocol
- **User-defined:** here you can freely define all ID bit lengths.

### Total bit length

Corresponds to the bit total from the OEM ID, fingerprint scanner ID and the user ID plus 2 (start + stop bit).

### OEM ID bit length

This is the bit length of the OEM identification (= company\_ID). The OEM identification is used for the construction of organisation-spanning systems and this ID is used to determine which company (organisation) a Wiegand package comes from.

### ID length of the fingerprint scanner (device ID)

The ID length of the fingerprint scanner corresponds to the device ID and has to be entered under the characteristics of the allocated fingerprint scanner.

### User ID length

This is the number of bits in the user ID which is entered by the user.

## Entering the individual IDs

- The IDs are entered as decimal values.
- If the binary value of the converted decimal value exceeds the available bit length, then the extra bits are cut on the MSB side.

### Example 1: (correct entry)

e.g. USER ID = 130, FINGERPRINT SCANNER ID = 98  
 Standard protocol 26 bit: Fingerscanner ID bit length = 8  
 User ID bit length = 16  
 Fingerprint scanner ID bit 2 = MSB  
 User ID bit 10 = MSB  
 PE.... Even parity from bit 2-13  
 PO ... Odd parity from bit 14-25

### Bit stream sent to the Wiegand system:

ID	PE	FINGERPRINT SCANNER ID								USER ID																PO
Bit no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	20	22	23	24	25	26
Content	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1

### Example 2 (incorrect entry)

**WARNING! Here an incorrect ID is sent!!!** ekey net does not check the ID entered with the bit length.

User ID-137 fingerprint scanner ID = 276  
 Standard protocol 26 bit: Fingerscanner ID bit length = 8  
 User ID bit length = 16  
 Fingerprint scanner ID bit 2 = MSB  
 User ID bit 10 = MSB  
 PE.... even parity from bit 2-13  
 PO ... odd parity from bit 14-25

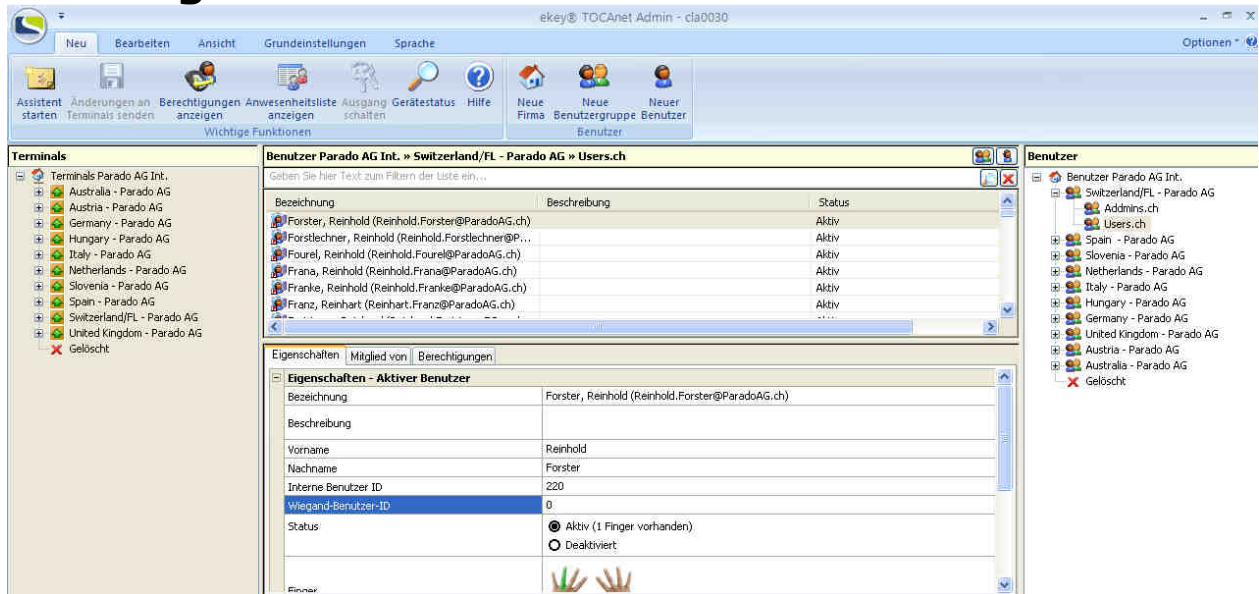
### Bit stream sent to Wiegand

ID	PE	FINGERPRINT SCANNER ID								USER ID																PO
Bit no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	20	22	23	24	25	26
Content	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0

With the fingerprint scanner ID the highest bit of 276 = 1 0001 0100 is cut and only 20 sent as the ID.

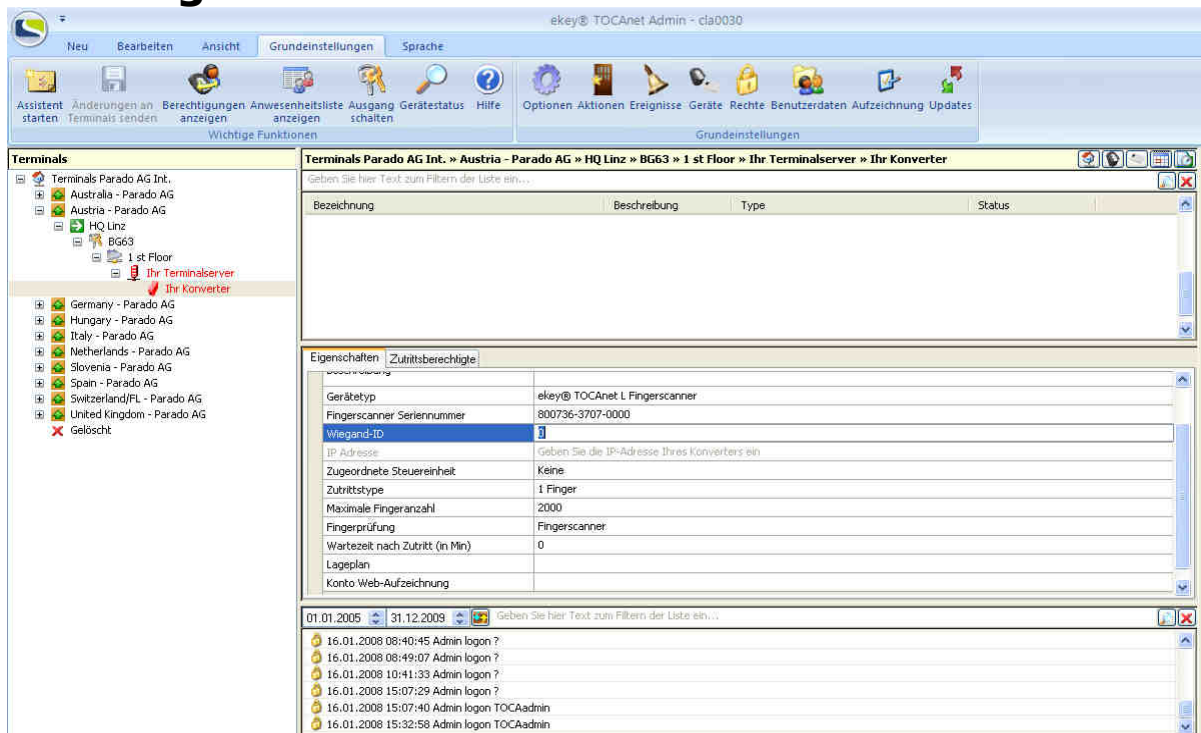
**When entering the ID it is therefore absolutely necessary to pay attention to the bit length, as ekey net does not check it!!**

## Entering the user ID



Select the user to be recorded under **"User"** and enter the **"Wiegand user ID"** as a decimal figure under **"Characteristics"**. Pay attention to the bit length!! (see "Entering the individual IDs")

## Entering the FINGERPRINT SCANNER ID



In terminals select the fingerprint scanner which is to send the identification data to the Wiegand system. Under the **"Characteristics"** of the fingerprint scanner, define the **"Wiegand ID"** (=Fingerprint scanner ID) and under **"Allocated control panel"** define the corresponding ekey converter Wiegand. Pay attention to the bit length!! (see "Entering the individual IDs")

Parity bits (the first and last bits of the Wiegand data package) are automatically calculated by ekey net and do not have to be taken into account when entering the IDs.

## Technical data (maximum ratings)

### General data (MAXIMUM Ratings)

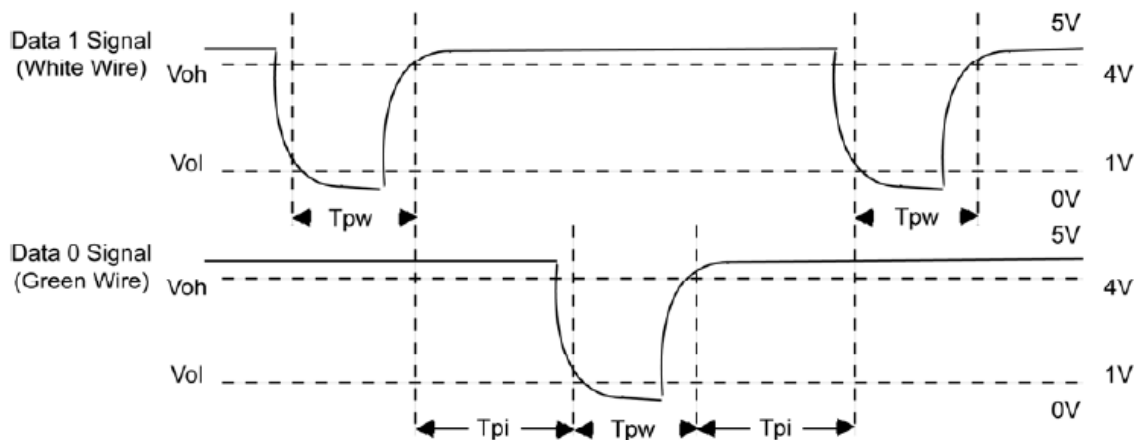
Technical data ekey converter WIEGAND	Unit	Value
Power supply	V A/C	8-24
	V D/C	8-30
Power input	W	approx. 1
Temperature range	°C	-20 to +70
Protection class		IP20

### Voltage limits for D0, D1, LED1 and LED2

D0 and D1 are open collector outputs. The corresponding load of the master system (receiver) has to be adjusted respectively.

Value	Unit	Min.	Max.
VoL (output low)	V	4.0	5.5
Voh (output high)	V	0.0	1.0
Iol (current output low)	mA	-1.0	0.0
Ioh (current output high)	mA	-25.0	0.0

### Signal waveform on D0 and D1



Symbol	Description	unit	time		
			min	typ	max
Tpw	Zeit Pulsbreite	µs	20	30	100
Tpi	Zeit Pulsintervall	ms	1	2	20



ekey biometric systems GmbH  
Lunzerstraße 89  
A- 4030 Linz

*Subject to optical and technical amendments, as well as printing and typing errors*