Kemro K2

Kemro UserID classic / eco
User Identification System
User's Manual V 1.01

Translation of the original manual

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Automation by innovation.

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1 Introduction

1.1 Purpose of the document

This document describes the products Kemro UserID classic and Kemro UserID eco.

This manual enables the user to operate the above-mentioned products and integrate them into the existing control and visualization system.

1.2 Target groups, pre-requirements

This document is made for the following persons with adequate skill pre-requirements:

Target group	Knowledge and skills pre-requirements

Project engineer	• Basic technical training (University of Applied Science/University level or corresponding professional experience),
	• Knowledge in:
	  • working mode of a PLC,
	  • safety instructions,
	  • the application.

Operator	• Basic technical training (Vocational high school, engineer training or corresponding professional experience).
	• Knowledge in:
	  • safety instructions,
	  • working mode of machine or plant,
	  • principal functions of the application,
	  • system analysis and troubleshooting,
	  • setting options at the operating installations.

Service technician	• Basic technical training (Vocational high school, engineer training or corresponding professional experience).
	• Knowledge in:
	  • working mode of a PLC,
	  • safety instructions,
	  • working mode of machine or plant,
	  • Diagnosis possibilities,
	  • systematic error analysis and rectification.

Information

To integrate the Kemro UserID into an existing system does not require knowledge about RFID technology and the EUROMAP 65 standard. The necessary information is provided in respective chapter.

1.3 Intended use

Kemro UserID is used in applications for user identification at industrial plants and machines. The typical applications areas include injection molding machines, robots, presses, machine tools, machines / systems in the foodstuffs/luxury foodstuffs and pharmacy industries and similar.

Kemro UserID was developed, manufactured, tested and documented in accordance with the appropriate safety standards. Provided, therefore, that the instructions and safety precautions relating to the intended use are properly observed, under normal circumstances the products do not represent any danger to the health of personnel or a risk of damage to other property or equipment.

Information
KEBA assumes no liability for damages resulting from non-observance of safety instructions or improper use.

1.4 Notes on this document

This manual is part of the product. It must be retained over the whole lifetime and if necessary referred to subsequent owners or users of the product.

1.4.1 Contents of document

- Description of the product and its function
- Installation guidelines (mounting, cabling)
- Description of operating behavior
- Description of an example application
- Description of function interface
- Technical data

1.4.2 Not contained in this document

- Description of the integration packages
  Integration packages are collections of modules that assist with the integration of the Kemro UserID products into the visualization system used on the customer side.
- Description of the Kemro.userID secure+ version

1.5 Documentation for further reading

Doc.No.	Description	Target group
DE: 1000732 EN: 1000733	Kemro.userID secure+ User's manual	• Project engineer • Commissioner • Service technician
	User's manuals Kemro.userID Integration package	• Project engineer • Commissioner

2 Safety notes

2.1 Representation

At various points in this manual you will see notes and precautionary warnings regarding possible hazards. The symbols used have the following meaning:

DANGER!

- **indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

WARNING!

- **indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

CAUTION!

- **means that if the corresponding safety measures are not taken a potentially hazardous situation can occur which, if not avoided, may result in property damage or slight bodily injury.**

NOTICE

- **NOTICE used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.**

- **This symbol reminds you of the possible consequences of touching electrostatically sensitive components.**

Information
Information on use of equipment and useful practical tips is identified by the symbol "Information". "Information" items do not contain any information that draws attention to potentially dangerous or harmful functions.

2.2 General safety instructions

WARNING!

- **The following application areas are expressly excluded for Kemro UserID:**
  - **Use in explosive or fire-risk areas**
  - **Use in mining**
  - **Outdoor use**

- **Kemro UserID are not allowed to be used for safety-relevant applications or safety functions (e.g. shutdown in emergency).**

Other products are to be used for the above applications!

For further information, see EN 954-1 (EN ISO 13849-1).

CAUTION!

- **Arbitrary or unsanctioned modifications to the device are prohibited. This leads to the expiration of the conformity with the legal regulations as well as loss of guarantee and warranty claims.**

NOTICE

- **Kemro UserID corresponds partially or completely to an "open type equipment" (according to UL 508), depending on version, and must therefore be installed in a control cabinet or suitable housing.**
  Further information: See chapter *Fehler! Verweisquelle konnte nicht gefunden werden.***.**

- **When removed from the rack, the integrable versions (OEM) are sensitive to electrostatic discharge. Before handling the module, touch a grounded metal object in order to discharge any static electricity from your body.**

2.3 Personnel safety instructions

WARNING!

Danger of personal injury due to electric shock!

- **Supply the Kemro UserID exclusively from power sources that have a protective low voltage (e.g. SELV according to EN 60950-1)**
- **Connect only voltages and power circuits to connections, terminals and interfaces up to 50 V rated voltage that have a secure disconnect for hazardous voltages (e.g. with sufficient isolation).**

CAUTION!

Fire hazard with module failure!

- **Provide suitable fuses for the 24 V DC power supply of the final application.**
  The maximum allowable fuse is 10 A!

2.4 Safety instructions for maintenance

CAUTION!

- **Always turn off the power supply before mounting and dismounting the Kemro UserID. Otherwise, the module can be destroyed or undefined signal states can lead to damage of the control system.**

CAUTION!

- **The device may only be opened by qualified personnel and only maintenance activities expressly approved by KEBA may be performed (see chapter “Service notes”).**

- **Protective measures against electrostatic discharge must be used (electrostatic wristband, service mat) when performing maintenance and service work.**
- **Do not touch the parts on the modules unless it is unavoidable.**
- **Turn off the power supply on the device before inserting or removing the modules.**

3 General product description

Kemro UserID is a system for easy and fast identification of users of industrial plants and machines. Process-related and frequent login and logoff operations can be carried out reliably and efficiently.

User data stored on a card are transferred via non-contact RFID technology to the control system of the plant or machine. The entry of passwords is no longer necessary with Kemro UserID. This substantially increases the security and transparency of the machines and plants.

Kemro UserID is available in different versions (see chapter *V*) and can therefore be used for variety of applications.

Next to the hardware components, Kemro UserID also contains device drivers for different operating systems. The device drivers have interfaces that are easy to use for integration with all common visualization systems. A pre-fabricated set of commands is available for user identification to facilitate the integration into a system.

In addition to the device drivers, comprehensive integration packages are available for various, commercially available visualization systems. These integration packages contain custom-made components for the simple integration of the Kemro UserID modules in the various visualization systems and present their versatile application options in an array of descriptive application examples.

Details: See manuals for Kemro UserID integration packages

3.1 Versions

The product versions are basically divided into the following two groups:

- **"Stand-alone" versions:**
  All Kemro UserID stand-alone products are installed well protected in rugged and compact housings. Their integration is simple and just as problem-free with regard to retrofitting existing machines.

- **Integrable versions (OEM):**
  For integrable Kemro UserID products, the installation is made directly in the customer's system, without interfering edges or gaps, which effectively reduces contamination of the devices. The antenna for this is integrated directly in the housing of the machine or the visualization device.
  All OEM versions are available with different antennae and with or without metal housing.

The Kemro UserID product line consists of the following versions:

Stand-alone version	Integrable version
Kemro UserID classic • Serial interface • Module and antenna in a common housing • Rugged housing (Front side: IP65)	Kemro UserID classic OEM • Serial interface • For installation in machinery and plants • Antennas can be remotely positioned from the module
Kemro UserID eco • USB interface • Module and antenna in a common housing • Rugged housing (Front side: IP65)	Kemro UserID eco OEM • USB interface • For installation in a machinery and plants • Antennas can be remotely positioned from the module

Information

A further system version is Kemro UserID secure+. This additionally offers a special encoding feature for increasing data security. This version is not described in this manual due to the technical differences (see chapter Documentation for further reading*).*

3.1.1 Kemro UserID classic

Material No.	Name	Description
074223	Kemro UserID classic (IC 140/A)	**RFID read/write unit** • Stand-alone version with complete electronics in compact plastic housing • Serial interface • Connector plug: 9 pole D-SUB (female) and 2 pole male connector (supply) • without connection cable
074224	Kemro UserID classic A-OEM (IC 140/A-OEM)	**RFID read/write unit** • without sheet metal housing for evaluation unit • Serial interface • Antenna 2 (L x W = 50 mm x 30 mm) • Connecting plug: Terminal block • without connection cable • Shield clamp for the shield connection (with fixing screw) • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)
074225	Kemro UserID classic B-OEM (IC 140/B-OEM)	**RFID read/write unit** • without sheet metal housing for evaluation unit • Serial interface • Antenna 1 (L x W = 57 mm x 53 mm) • Connecting plug: Terminal block • without connection cable • Shield clamp for the shield connection (with fixing screw) • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)
074226	Kemro UserID classic C-OEM (IC 140/C-OEM)	**RFID read/write unit** • incl. sheet metal housing for evaluation unit • Serial interface • Antenna 2 (L x W = 50 mm x 30 mm) • Connecting plug: 9 pole D-SUB (female) and 2 pole male connector (supply) • without connection cable • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)

Material No.	Name	Description
074227	Kemro UserID classic D-OEM (IC 140/D-OEM)	**RFID read/write unit** • incl. sheet metal housing for evaluation unit • Serial interface • Antenna 1 (L x W = 57 mm x 53 mm) • Connecting plug: 9 pole D-SUB (female) and 2 pole male connector (supply) • without connection cable • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)

3.1.2 Kemro UserID eco

Material No.	Name	Description
074229	Kemro UserID eco (IE 160/A)	**RFID read/write unit** • USB interface • Stand-alone version with complete electronics in compact plastic housing • Connecting plug: USB Type B • without connection cable
074230	Kemro UserID eco A-OEM (IE 160/A-OEM)	**RFID read/write unit** • USB interface • Antenna 2 (L x W = 50 mm x 30 mm) • Connecting plug: Terminal block • without sheet metal housing for evaluation unit • without connection cable • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)
074231	Kemro UserID eco B-OEM (IE 160/B-OEM)	**RFID read/write unit** • USB interface • Antenna 1 (L x W = 57 mm x 53 mm) • Connecting plug: Terminal block • without sheet metal housing for evaluation unit • without connection cable • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)

Material No.	Name	Description
074232	Kemro UserID eco C-OEM (IE 160/C-OEM)	**RFID read/write unit** • USB interface • Antenna 2 (L x W = 50 mm x 30 mm) • Connecting plug: USB Type B • incl. sheet metal housing for evaluation unit • without connection cable • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)
074233	Kemro UserID eco D-OEM (IE 160/D-OEM)	**RFID read/write unit** • USB interface • Antenna 1 (L x W = 57 mm x 53 mm) • Connecting plug: USB Type B • incl. sheet metal housing for evaluation unit • without connection cable • Connection cable evaluation unit – Antenna (coax cable and LED connection cable)

3.2 View of modules

3.2.1 Stand-alone version

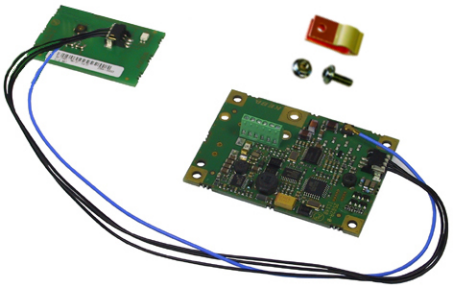
Stand-alone version (Kemro UserID classic / eco)

3.2.2 Integrable version (OEM)

3.2.2.1 Kemro UserID classic / Kemro UserID eco A-OEM

Scope of delivery:

- Read/write unit without sheet metal housing for the evaluation unit
- Antenna 2 (L x W = 50 mm x 30 mm)
- Connecting cable evaluation unit -> antenna
- Shield clamp with fixing screw (shield connection)

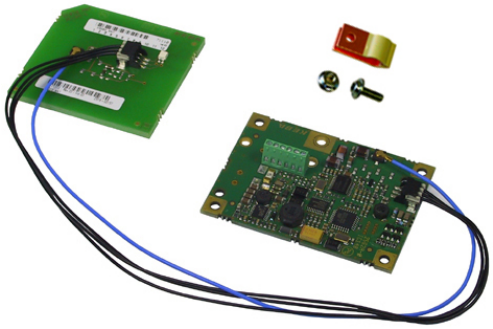


Kemro UserID classic / Kemro UserID eco A-OEM

3.2.2.2 Kemro UserID classic / Kemro UserID eco B-OEM

Scope of delivery:

- Read/write unit without sheet metal housing for the evaluation unit
- Antenna 1 (L x W = 57 mm x 53 mm)
- Connecting cable evaluation unit -> antenna
- Shield clamp with fixing screw (shield connection)



Kemro UserID classic / Kemro UserID eco B-OEM

3.2.2.3 Kemro UserID classic / Kemro UserID eco C-OEM

Scope of delivery:

- Read/write unit with sheet metal housing for the evaluation unit
- Antenna 2 (L x W = 50 mm x 30 mm)
- Connecting cable evaluation unit -> antenna

Kemro UserID classic / Kemro UserID eco C-OEM

Information
The version Kemro UserID classic OEM only differs from the shown Kemro UserID eco OEM version by the different data interfaces.

3.2.2.4 Kemro UserID classic / Kemro UserID eco D-OEM

Scope of delivery:

- Read/write unit with sheet metal housing for the evaluation unit
- Antenna 1 (L x W = 57 mm x 53 mm)
- Connecting cable evaluation unit -> antenna

Kemro UserID classic / Kemro UserID eco D-OEM

Information
The version Kemro UserID classic OEM only differs from the shown Kemro UserID eco OEM version by the different data interfaces.

3.3 Recommended transponder (RFID data carrier)

Kemro UserID classic or Kemro UserID eco is for use with ISO/IEC 15693 compatible transponders (tags) designed with at least 256 bit freely writable memory.

Transponders with the following transponder chips are approved:

- Tag-it HF I Plus (Texas Instruments)
- Tag-it HF I Standard (Texas Instruments)
- I-Code SLI SL2 ICS20 (Philips)

Different transponder designs can be obtained directly from KEBA. The correct functioning of these transponders is guaranteed by KEBA through comprehensive system tests. For an overview of all available transponders, please see the chapter "*Data disc (transponders)*".
If other transponders are to be used, these are to be approved by KEBA.

3.4 Spare parts and accessories

3.4.1 Connection cable

Material No.	Name	Description
on request	Serial data cable, 1 m	D-Sub 9-pin plug/socket, 1 m
074212	Serial data cable, 3.6 m	D-Sub 9-pin plug/socket, 3.6 m
on request	Serial data cable, 5 m	D-Sub 9-pin plug/socket, 5 m
073384	USB data cable, USB type A/type B, 2 m	USB-A-USB-B 2.0 m
070780	USB data cable, USB type A/type B, 4 m	USB-A-USB-B 4.0 m
069145	USB data cable, USB type A/type B, 4.6 m	USB-A-USB-B 4.6 m

Information
To ensure a proper functioning, we recommend using the cables specified above.

3.4.2 Data disc (transponders)

Material No.	Name	Description
074665	XC140/A	Check card transponder unprinted, 2kBit
on request	XC140/Z	Check card transponder, printed (4-color), 2 kBit
074662	XC240/A	Key ring transponder unprinted, 2kBit
on request	XC240/Z	Key ring transponder, printed (4-color), 2 kBit
074710	XC340/A	Wristband transponder unprinted, 2kBit
on request	XC340/Z	Wristband transponder, printed (4-color), 2 kBit

3.4.3 Software

Material No.	Name	Description
074345	Kemro UserID Device driver CD-Rom	Device driver for the product line Kemro UserID, suitable for installation in all Windows-based development environments.
074346	Kemro UserID Integration packages CD-ROM	Kemro UserID Integration packages for the easy installation in current visualization systems

4 Mounting and installation instructions

In order to guarantee the defined range of the antenna (see chapter *Technical data*) and ensure an error-free operation, observe the installation instructions listed in this chapter.

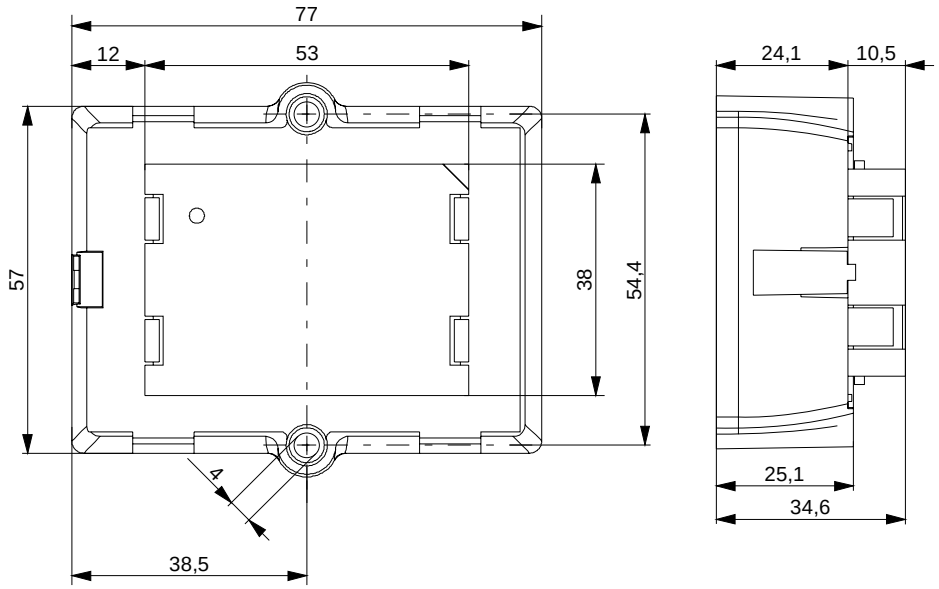
Information
The range is largely dependent on the installation situation.
(see chapter Range and detection*)*

4.1 Stand-alone version

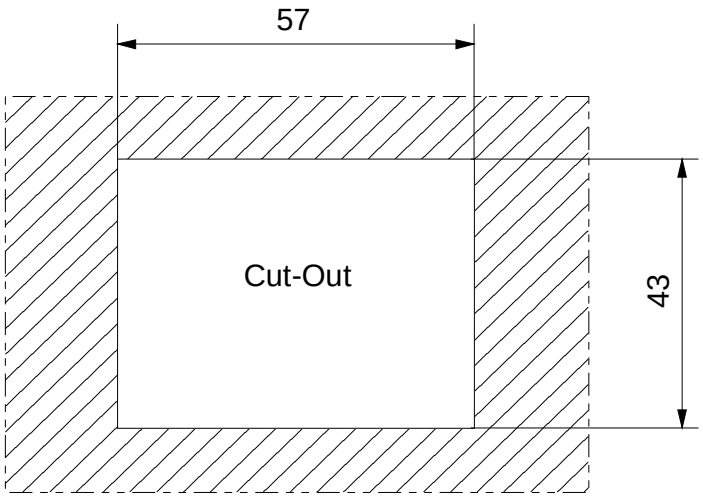
NOTICE

- **The Kemro UserID stand-alone version is defined as "open type equipment" (according to UL 508). After mounting the front side rates as part of the final casing to a "type 1" indoor use (according to UL 508) or the protection type IP65.**

Dimensions:



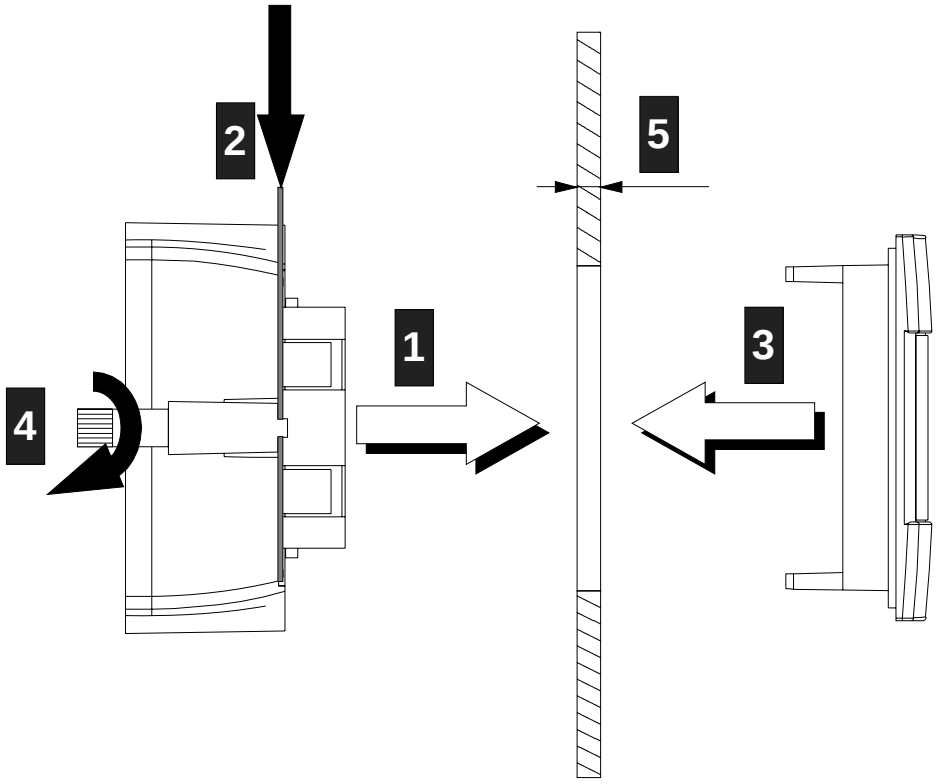
Dimensions (in mm)



Dimension of the opening for the installation (in mm)

Information
The edges of the opening must be deburred to prevent damage to the device that might occur otherwise.

Installation



1. Create an opening with a size of 57 mm x 43 mm.
2. Remove the product from the packaging
3. Take off front cover (by pressing the clip 2 in the direction of the arrow)
4. Fit module (without front cover) in the opening 1.

Information
The wall strength of the carrier material 5 can amount to 1.5 mm and 6 mm.

5. Press in the clip of the mounting bracket and hold pressed 2
6. Stick the front cover onto the module from the front side 3.
7. Tighten both retaining screws (max. 0.5 Nm) 4.

NOTICE

- **The housing can be damaged by tightening the retaining screws too tightly.**

4.2 Integrable versions (OEM)

General installation instructions for all integrable versions:

- No metal may be located in front of the antenna print (from the perspective of the user).
- The larger the distance is between the antenna print and the metallic environment, the greater the range.
- The back side of the antenna print and the evaluation electronics must be protected against touching by a metallic cover.
  The distance to the back side of the antenna print must be at least 2.5 cm.

- **The module and the antenna are sensitive to electrostatic discharge and thus corresponding ESD protection measures must be taken. (ground strap)**

NOTICE

- **The operation of the module is only approved with the supplied antennas. Arbitrary or unsanctioned modifications to the module or the antenna are prohibited and will lead to the loss of the operating license.**

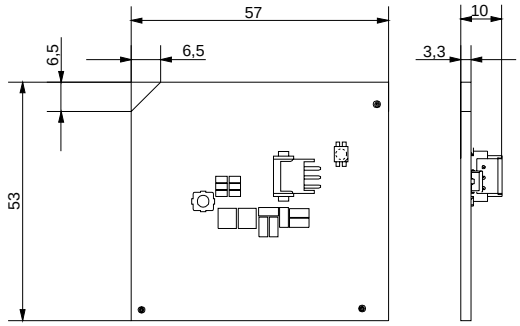
NOTICE

- **The Kemro UserID OEM-version is defined as "open type equipment" (according to UL 508) so that it must be installed in a control cabinet or in other suitable housings.**

Information

- *Not observing the installation instructions will result in a loss of guarantee and warrantee claims.*
- *The manufacturer is responsible for the compliance with the corresponding standards of the complete device for the integration of OEM modules.*

4.2.1 Antenna 1 - XE020_ANT-OEM (variants B-OEM and D-OEM)

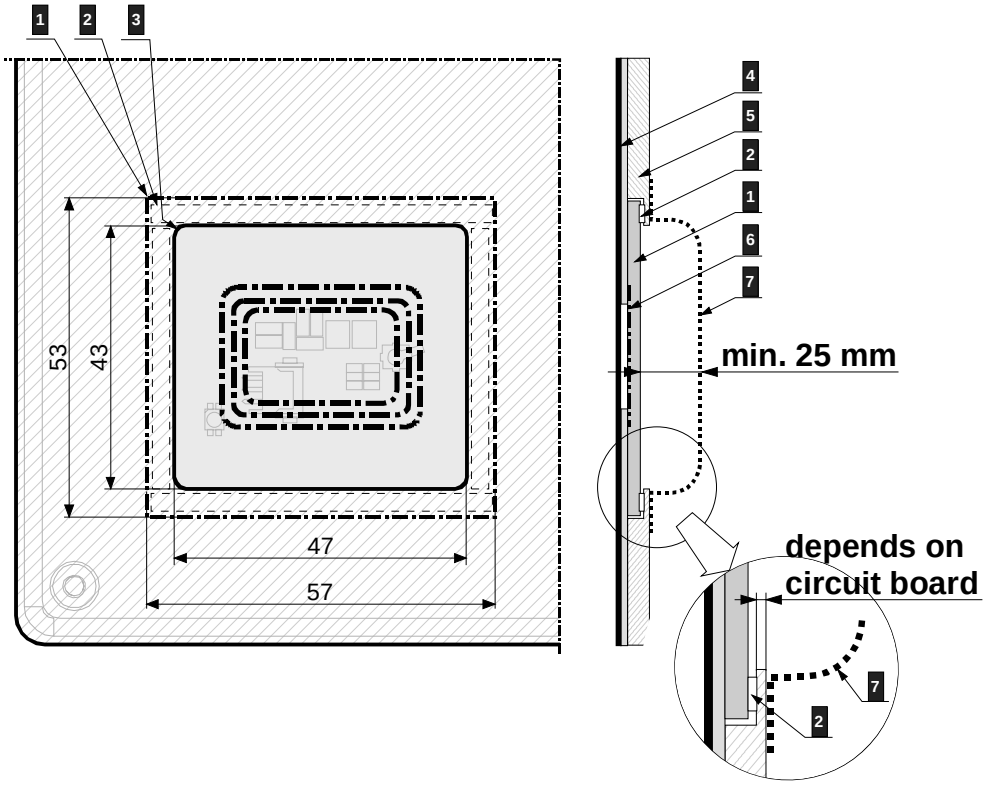


Antenna 1 - XE020_ANT-OEM (dimensions in mm)

Information

The thickness of the circuit board varies over ±10%, this must be reconsidered for mounting the circuit board into the front plate. (see following figure)

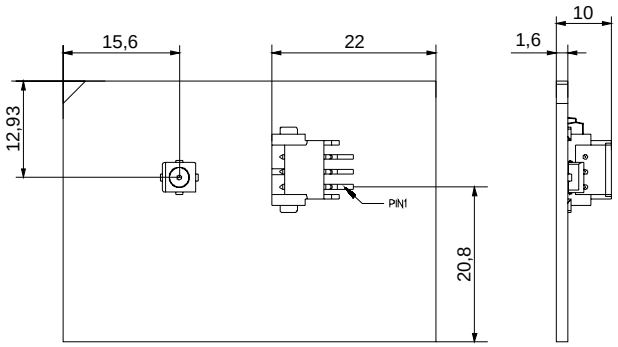
4.2.1.1 Antenna 1: Installation example



1	*Antenna 1 (XE020_ANT-OEM) antenna module*	4	*Front film*
2	*Adhesive strips between antenna module and front plate*	5	*Front plate (aluminum material) at least 5 mm thick*
3	*Opening in the front plate*	6	*Antenna*
		7	*Metallic cover*

Installation example of the antenna 1 (back view) (dimensions in mm)

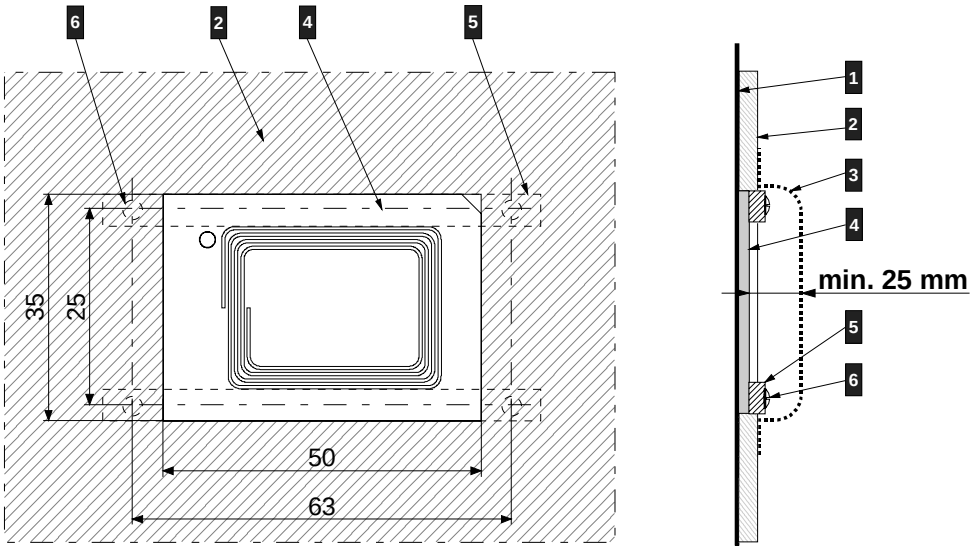
4.2.2 Antenna 2 - X110_ANT-OEM (Versions A-OEM and C-OEM)



Antenna 2 - X110_ANT-OEM Antenna - dimensions (in mm)

Information
The thickness of the circuit board varies over ±10%, this must be reconsidered for mounting the circuit board into the front plate.

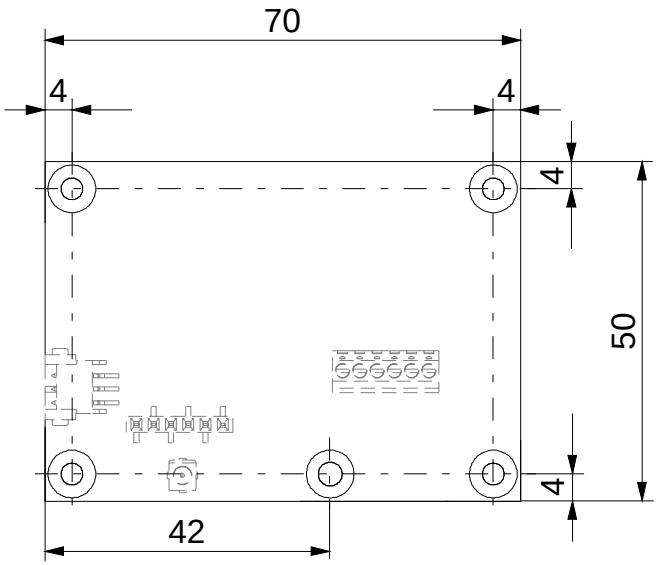
4.2.2.1 Antenna 2: Installation example



1 ... *Front film (plastic)*
2 ... *Front plate*
3 ... *Metallic cover (contact protection)*
4 ... *Antenna 2 (X110_ANT-OEM) antenna module*
5 ... *Plastic clip *)*
6 ... *Screw*
**) To prevent a restriction of the range, the support clip must never be made of a metallic material.*

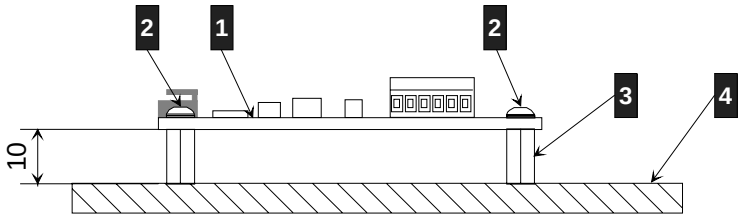
Installation example of the antenna 2 (back view) (dimensions in mm)

4.2.3 Evaluation unit without housing (versions A-OEM and B-OEM)



Dimensions of the evaluation unit without housing (versions A-OEM and B-OEM) (dimensions in mm)

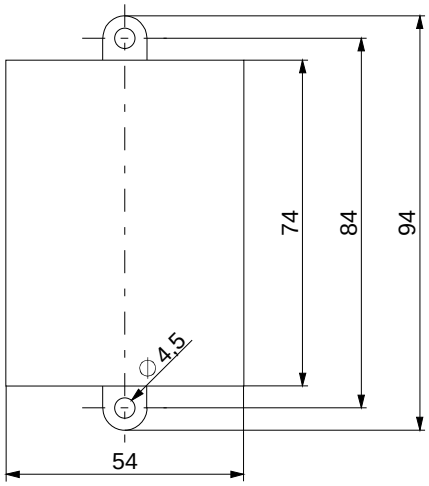
4.2.3.1 Evaluation unit without housing - installation example



1	*Evaluation unit (print)*
2	*Screw*
3	*Spacer bolts*
4	*Carrier material*

Evaluation unit without housing - installation example

4.2.4 Evaluation unit with housing (versions C-OEM and D-OEM)



Dimensions of the evaluation unit with housing (versions C-OEM and D-OEM) (dimensions in mm)

4.2.4.1 Installation

The evaluation unit with housing can be screwed to any level carrier material using 2 M4 screws.

5 Show, connections and wiring

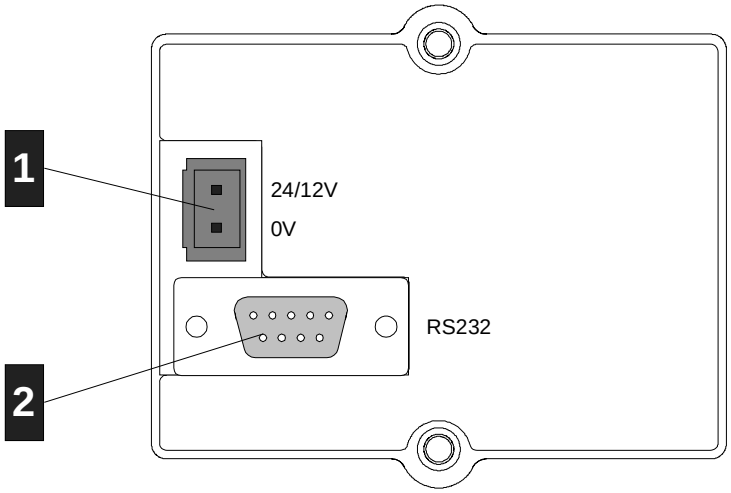
5.1 Status LED

A three-color status LED to display the status is mounted on the housing front of the stand-alone version or on the antenna module of the integrated versions (OEM).

Information
The conditions of the status LED are described in chapter Diagnosis.

5.2 Connections

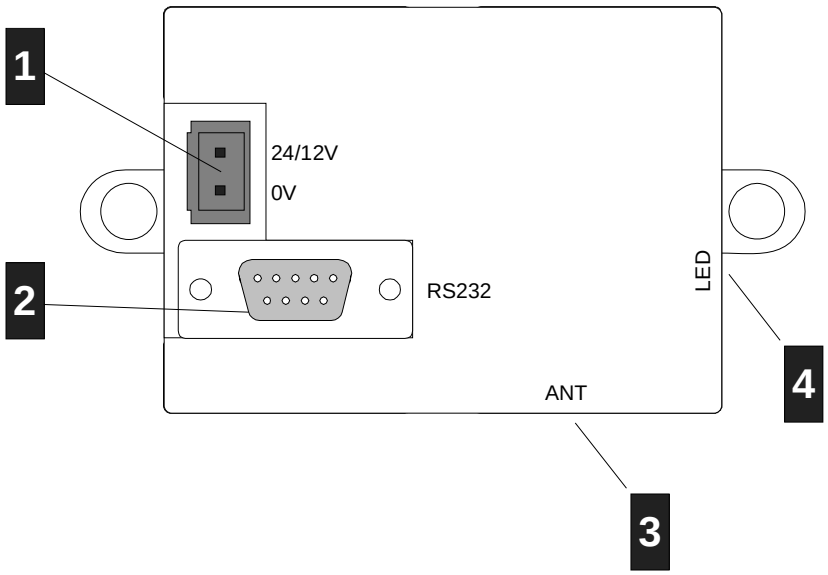
5.2.1 Kemro UserID classic (stand-alone)



1 … *Voltage supply 24/12 V (2-pole plug)*
2 … *Serial interface (D-Sub socket 9-pole)*

Kemro UserID classic, back view

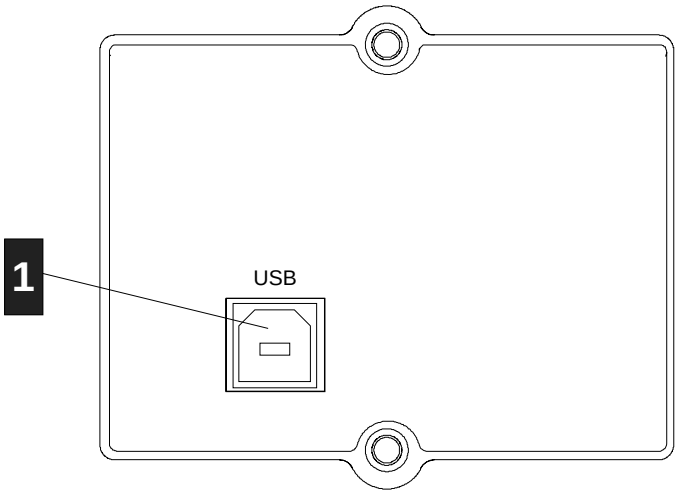
5.2.2 Kemro UserID classic C-OEM / D-OEM



1 … *Voltage supply 24/12 V (2-pole plug)*
2 … *Serial interface (D-Sub socket 9-pole)*
3 … *ANT, plug for antenna cable*
4 … *LED, plug for status LED*

Kemro UserID classic C-OEM / D-OEM

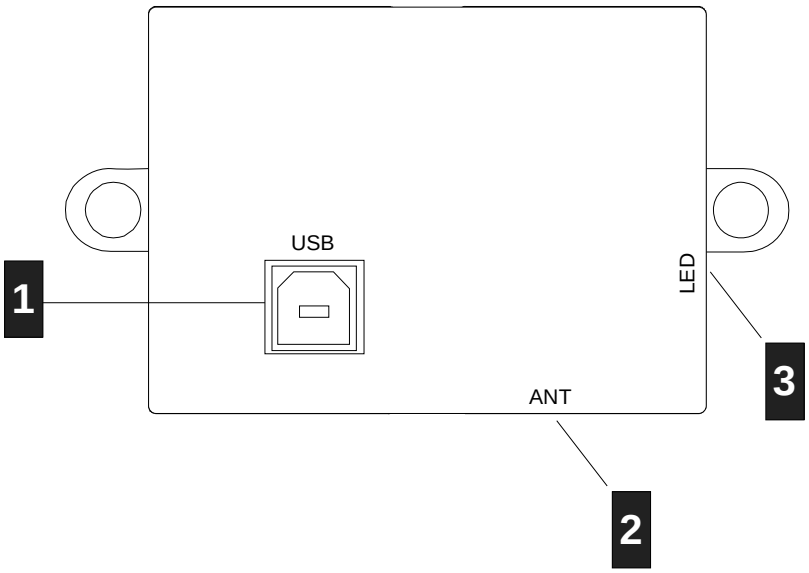
5.2.3 Kemro UserID eco (stand-alone)



1 … *USB interface (type B)*

Kemro UserID eco, back view

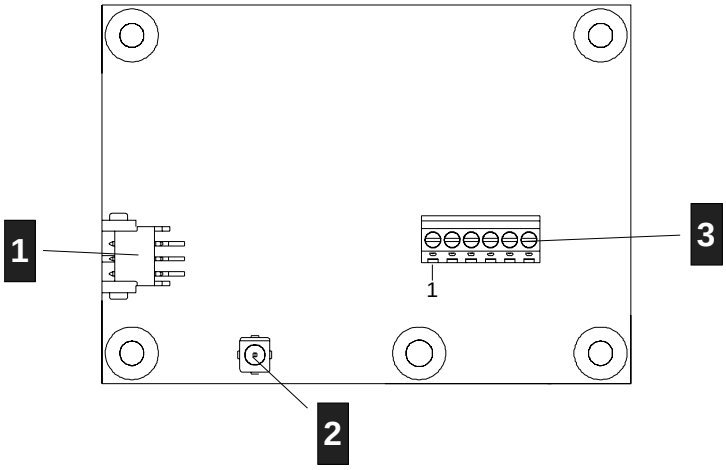
5.2.4 Kemro UserID eco C-OEM / D-OEM



1 … *USB interface (type B)*
2 … *ANT, plug for antenna cable*
3 … *LED, plug for status LED*

Kemro UserID eco C-OEM / D-OEM

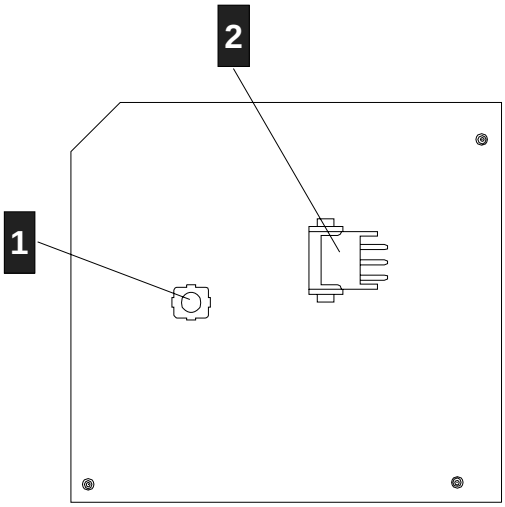
5.2.5 Kemro UserID classic / eco A-OEM and B-OEM



1 … *LED, plug for status LED*
2 … *ANT, plug for antenna cable*
3 … *S1, terminal block for data interface (eco and classic) and voltage supply (classic only)*

Kemro UserID classic / eco A-OEM and B-OEM

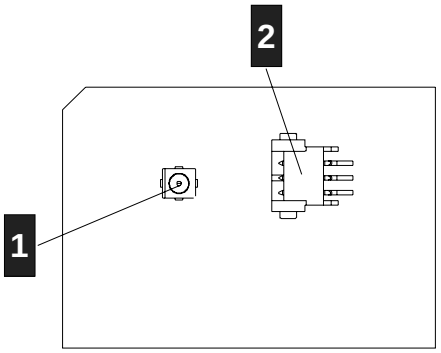
5.2.6 Antenna 1 (XE020_ANT-OEM)



1 … ANT … connection for antenna cable
2 … LED ... Connection for status LED cable

Antenna 1 (XE020_ANT-OEM)

5.2.7 Antenna 2 (X110_ANT-OEM)



1 … ANT, connection for antenna cable
2 … LED, connection for status LED cable

Antenna 2 (X110_ANT-OEM)

5.3 Shield clamp

Information
The shield clamp is used for grounding and must never be used as strain relief.

5.3.1 Attaching the shield clamp

Proceed as follows to connect the cable to the terminal block and subsequently attach the shield clamp:

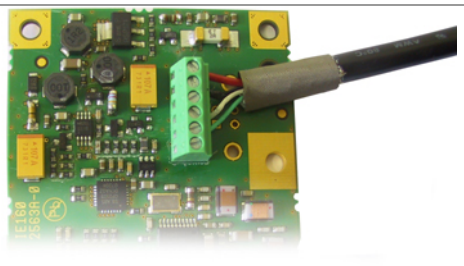
1. Strip the insulation off the cable end.

2. Fold back the shielding braid and shielding foil.

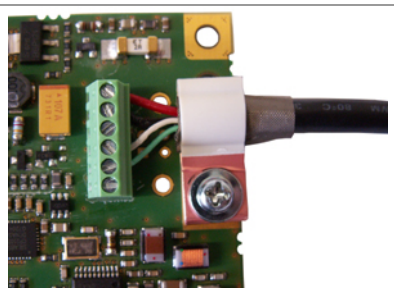
3. Attach conductive textile-backed strip.

4. Strip the insulation off the pins.

5. Connect the pins to the terminal block according to the pin assignment.



6. Attach the shield clamp to the print using fixing screw.



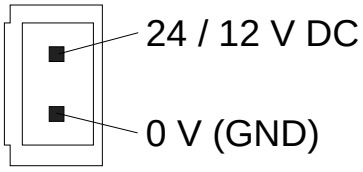
The cable is now connected and the shield clamp is connected with the print.

5.4 Power supply

5.4.1 Kemro UserID classic

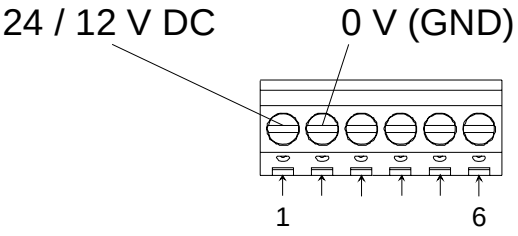
All Kemro UserID classic modules can be optionally supplied with +24 V DC
or +12 V DC.
Depending on the module version, the voltage supply occurs either via a plug or a terminal block.

Kemro UserID classic stand-alone, C-OEM / D-OEM:



Plug for the voltage supply (24/12V) for Kemro UserID classic stand-alone
C-OEM / D–OEM

Kemro UserID classic A-OEM / B-OEM:



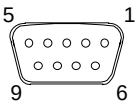
Terminal block S1 for Kemro UserID classic A-OEM / B-OEM

5.4.2 Kemro UserID eco

All Kemro UserID eco modules are supplied with voltage directly via the USB interface.
Kemro UserID eco modules can only be connected to USB devices that fulfill the high power standard, i.e. a voltage supply of 500 mA is guaranteed.

5.5 Serial interface RS-232 (Kemro UserID classic)

5.5.1 Kemro UserID classic and Kemro UserID classic C/D-OEM



9-pole DSUB female connector (S3)

Pin	Description
1	--
2	RxD
3	TxD
4	--
5	0V (GND)
6	--
7	(RTS) is not used
8	(CTS) is not used
9	--

5.5.1.1 Cable and plug specification:

Cable type

Shielded standard cable.

Plug type

9-pole D-SUB male connector with completely conductive shell.

The cable shielding must be connected plane with the shield cover of the plug.

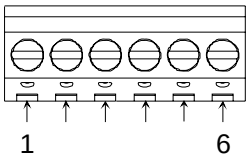
Cable length

tested up to 30 m

Minimum bend radius

Minimum bend radius during installation: 60 mm
Minimum bend radius for installed cable: 50 mm

5.5.2 Kemro UserID classic A/B-OEM



Terminal block S1

Terminal	Description
1	+24/12V
2	0V (GND)
3	CTS
4	RxD
5	TxD
6	RTS

5.5.2.1 Cable and plug specification:

Cable type

Shielded standard cable.

Cable length

tested up to 30 m

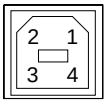
Minimum bend radius

Minimum bend radius during installation: 60 mm
Minimum bend radius for installed cable: 50 mm

5.6 USB 2.0 interface (Kemro UserID eco)

Kemro UserID eco is a high-power USB device and has a standard USB 2.0 interface. The USB master interface to which the Kemro UserID eco - module is connected must be able to supply this with 500 mA (high-power).

5.6.1 USB interface for Kemro UserID eco C-OEM / D-OEM



USB interface type B

Pin	Description
1	Vbus (+5V)
2	D-
3	D+
4	0 V (GND)

5.6.1.1 Cable and plug specification:

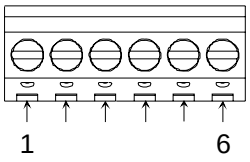
Cable type

Shielded USB cable, twisted pair data cables with a characteristic impedance of 90 Ohm +/- 15%.

Cable length

tested up to 5 m

5.6.2 USB interface for Kemro UserID eco A-OEM / B-OEM



Terminal block S1

Terminal	Description
1	0V (GND)
2	D+
3	D-
4	0V (GND)
5	0V (GND)
6	5V

5.6.2.1 Cable and plug specification:

Cable type

Shielded USB cable, twisted pair data cables with a characteristic impedance of 90 Ohm +/- 15%.

Plug type

Standard USB connector type B with fully conductive shell.

The cable shielding must be connected plane with the shield cover of the plug.

Cable length

tested up to 5 m

6 Installation

Generally the Kemro UserID can be integrated with every system that, depending on the product version, has a serial interface or USB interface with a host function (master) and is supported by the operating system.

The device drivers supplied are suitable for the following operating systems:

- Microsoft Windows XP
- Microsoft Windows XP emb.
- Microsoft Windows CE 5.x
- Microsoft Windows Vista
- Microsoft Windows 2000
- Microsoft Windows Server 2003

When integrating serial Kemro UserID modules in systems conforming to EN 61131, the following additional operating systems are possible:

- Linux
- VxWorks

6.1 Requirements for the target system

Before installing the Kemro UserID one of the following operating systems must have been fully installed in the target system:

- Microsoft Windows XP SP2
- Microsoft Windows XP emb.
- Microsoft Windows CE 5.x
- Microsoft Windows Vista
- Microsoft Windows 2000 SP4
- Microsoft Windows Server 2003

In case of product version Kemro UserID eco the following additional requirement must be met:

- USB interface (host controller / master, type A socket, the interface can supply high-power devices with 500 mA current consumption)

6.2 Installation with Microsoft Windows 2000/2003 Server/XP/XPemb/Vista

1.) Start target system.

2.) Insert Kemro UserID installation CD into the CD drive.

3.) Start installation by calling up the file `INSTALL_device_driver.cmd` (directory `<Kemro UserID CD>\drivers\Win_XP_Vista`).

4.) Re-start system.

The drivers necessary for operation are installed and Kemro UserID can now be used from all windows-based application development systems.

6.3 Installation with Microsoft Windows CE

6.3.1 Integration into the Windows CE Image

1.) Start target system.

2.) Copy the files

```
SIUSBXP.dll
SIUSBXP_LIB.dll
UIDDRV_RfbCommUsb.dll
UIDDRV_RfbMaster.dll
UIDDRV_RfbInterface.dll
UIDDRV_RfidInterface.dll
UIDDRV_RfidService.dll
```

of directory `<Kemro UserID CD>\drivers\win_ce` into directory `\Windows` of the target system.

3.) Take over the registry entries from files `SIUSBXP.reg` and `UIDDRV_Win32ce_RfidService.reg`.
Here the `Dll` entries are to be set on `\Windows\SIUSBXP.DLL` or `\Windows\UIDDRV_RfidService.dll` (in the platform builder).

4.) Create Windows CE Image in the platform builder.

The drivers necessary for operation are installed and Kemro UserID can now be used from all windows-based application development systems.

6.3.2 Later installation / installation outside the Windows CE image

1.) Start target system.

2.) Copy the files
`SIUSBXP.dll`
`SIUSBXP_LIB.dll`
`UIDDRV_RfbCommUsb.dll`
`UIDDRV_RfbMaster.dll`
`UIDDRV_RfbInterface.dll`
`UIDDRV_RfidInterface.dll`
`UIDDRV_RfidService.dll`

of directory `<Kemro UserID CD>\drivers\win_ce` into a non-volatile directory (e.g. flash drive, a hard disc or a battery-buffered Ram)

3.) Take over the registry entries of file `UIDDRV_Win32ce_RfidService.reg` into the registry of the target system and at the same time change the path of entry `Dll` to the path under which file `UIDDRV_RfidService.dll` was stored
.
The registry can be edited via a remote registry editor if the target system has no registry editor available. The suitability of the editor depends on the Windows CE image and the CPU used. Additional information is available from the manufacturer of the target system.

4.) Now connect the Kemro UserID module to the target system. The target system will now display a dialog in which you are requested to enter the driver for the new device. Now specify the file `<pfad>\SIUSBXP.dl`, which could not be copied into the non-volatile directory of the target system.

If this dialog is not displayed the registry key `[HKEY_LOCAL_MACHINE\DRIVERS\USB\LoadClients\Default\Default\255]` is to be deleted in the target system with the aid of the registry editor. The connecting cable to the Kemro UserID module must then be unplugged and again plugged in. The dialog should now be displayed.

5.) Re-start the target system.

The drivers necessary for operation are installed and Kemro UserID can now be used from all windows-based application development systems.

6.3.3 Module settings for the operation with Windows CE

In order to keep the system capacity low with the use of the device driver, we recommend setting the inventory cycle (cycle time with which the module is polled by the driver via identified cards) to 300 ms (default value: 50 ms).
This setting can be carried out using the demo application (see chapter *Tab Settings*). Moreover, the inventory cycle can also be set directly via the device driver (see chapter *New settings for the* Kemro UserID *module*).

7 Operating behavior

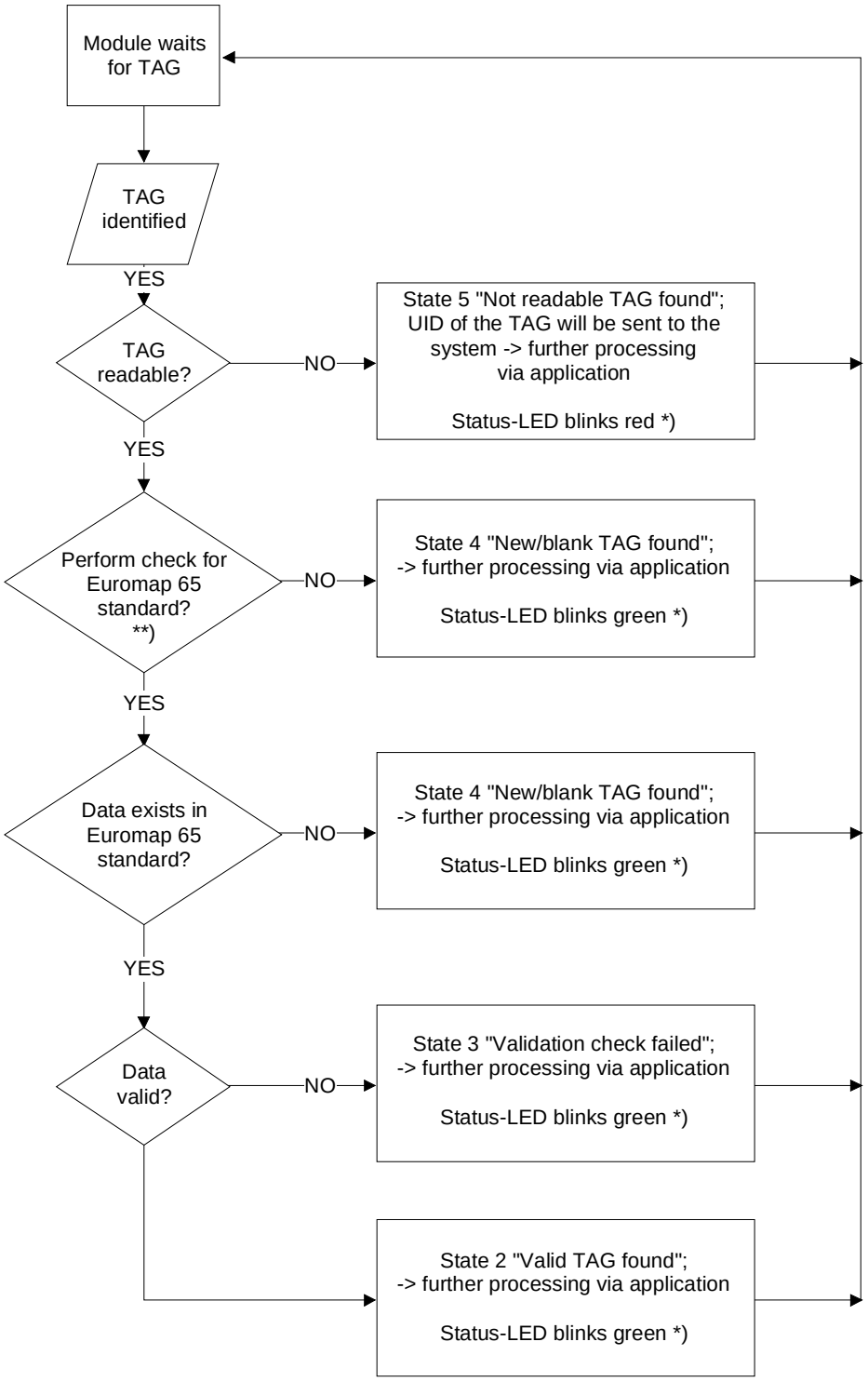
7.1 Start-up behavior

During the startup of the Kemro UserID module, states are displayed in the following order by the status LED:

Step	Display	Description
1	**off (continuous)**	**Only for** Kemro UserID eco**:** Module from device driver not yet detected and switched on. **Only for** Kemro UserID classic**:** Once the module is supplied with voltage, the status LED lights up red and the firmware is loaded (step 2)
2	**red (continuous)**	Firmware is loaded
3	**orange (continuous)**	Firmware is loaded, data communication with device driver on the host system is established
4	**green / orange (blinking)**	Supply and data communication with device driver on the host system exists

After completion of the startup, the LED can either be set individually by the driver or through a communication interface by the application (see chapter Activation modes for status LED).

7.2 Behavior in operation



**) This behavior of the Status-LED only occurs, if the control of the Status-LED will be performed by the device driver (dwLedControlMode=0)*

***) Whether the check for the Euromap65 Standard is performed or not, is configured via the configuration entry boolCheckValidation.*

Information
For a detailed description of the individual status messages, see the chapter Call-up actions of the Event Callback.

The operating behavior of the started up Kemro UserID modules is dependent on their configuration. Configurations in all Windows-based development environments for the following parameters can be determined via a predefined data structure (see chapter Data structure TModuleSettings):

- `dwLedControlMode`
  This determines how the status LED is controlled after successful startup.

- `boolCheckValidation`
  This determines whether a validity test according to Euromap 65 guideline is to occur.

Via a function of the device driver from the Kemro UserID module, the selected configuration can be read and also written to this (see chapter *Call-up actions of the Event Callback*).

7.2.1 Activation modes for status LED

Two operation types result by the setting of the parameter `dwLedControlMode` for the signaling of the Kemro UserID modules through the status LED:

- **Operation type 0** (status on delivery)

  The device driver controls the status LED according to the schema shown below. The read/write functions on the status LED from the application remain without effect.

LED signals	Designation / description
LED green (continuous)	Default behavior if valid module detected
LED green (blinking, max. 3 sec.)	Readable transponder detected The status LED blinks green as long as the transponder is within reading range (max. 3 sec.)
LED red (blinking, max. 3 sec.)	Transponder could not be read; unsupported transponder type The status LED blinks red as long as the transponder is within reading range (max. 3 sec.)

Information
The signaling via the status LED merely provides information about whether a transponder was able to be read correctly. Whether the stored used on the transponder can actually be logged in on the system is not signaled in this operating mode.

- **Operating mode 1**
  status LED is controlled by the application. In this was, the LED can be arbitrarily set by the application via the corresponding read/write functions. An individual formation of the acknowledgement can thus be realized through the status LED.

Information
The data basis for the user data is stored in the control or visualization system and is retrievable by the associated application. Thus, the validity of user data can be checked in the application and signaled via driver interface through the status LED of the Kemro UserID module.

7.2.2 Validity test

The setting of the parameter `boolCheckValidation` determines whether the transponder is checked for validity according to the Euromap 65 guideline. Through this setting, different call actions of the callback function become effective (see chapter *Call-up actions of the Event Callback*).

- **TRUE** (status on delivery)
  Validity of a detected transponder is checked according to the Euromap 65 guideline. The data content is linked with an individually settable "security key". Falsified transponders can thus be reliably detected. Thus the following invoking actions of the callback function of the driver are possible through the validity test:
  - Valid transponder found
  - Falsified transponder was found (security test failed)
  - Empty / invalid transponder was found
  - Unreadable transponder was found
  - Known transponder was removed.

- **FALSE**
  No validity test of a known transponder is performed. Thus, the following invoking actions of the callback function of the driver are possible:
  - Transponder was found
  - Unreadable transponder was found
  - Known transponder was removed.

Information
The invoking action "Transponder was found" for switched off validity test is ident with the invoking action "Empty / invalid transponder was found" for activated validity test.

7.3 Range and detection

The range between transponder and the Kemro UserID module is dependent on the installation situation, the antenna size (with OEM versions) and the transponder used. The range increases if the antenna (for OEM versions) or the stand-alone module are installed in non-metallic materials. In addition, the range increases if a sufficiently large surface is available for the transponder antenna. Thus, check card transponders have a slightly higher range than transponders in the form of key chains.

The simultaneous detection of up to four transponders is possible. If multiple transponders are in the reception area of a Kemro UserID module simultaneously, the module will automatically attempt to read out the transponders, filter out unreadable transponders and make the valid card(s) available at the interface of the device driver.

8 Demo application

The demo application is a complete application with which the Kemro UserID can be put into operation quickly and easily on systems with Microsoft Windows.

The demo application is a practical application for reading out and writing on transponders in Euromap 65 or binary form.

The demo application can be used to configure Kemro UserID modules and to test different functions.

8.1 Start-up operation

8.1.1 Prerequisites

Before installing the demo application one of the following operating systems must have been fully installed in the target system:

- Windows XP
- Windows XP emb.
- Windows Vista
- Windows 2000
- Windows Server 2003

In case of product version Kemro UserID eco the following additional requirement must be met:

- USB interface (host controller / master, type A socket, the interface can supply high-power devices with 500 mA current consumption)

8.1.2 Start-up operation of system

1.) Installation of the device driver. See chapter *Installation with Microsoft Windows 2000/2003 Server/XP/XPemb/Vista*

2.) Installation of .NET Framework 2.0, if it is not already in the target system. This setup can also be called up from the CD-ROM at: `<root>/drivers/Framework 2.0/dotnetfx.exe`

3.) Connect the Kemro UserID modules with target system and ensure the power supply of the modules.

4.) Start the demo application. The demo application can only be started directly from the CD-ROM and can be called up at: `<root>/demo application/Demo_Application.exe`

8.2 Description of the function of the demo application

8.2.1 Application window

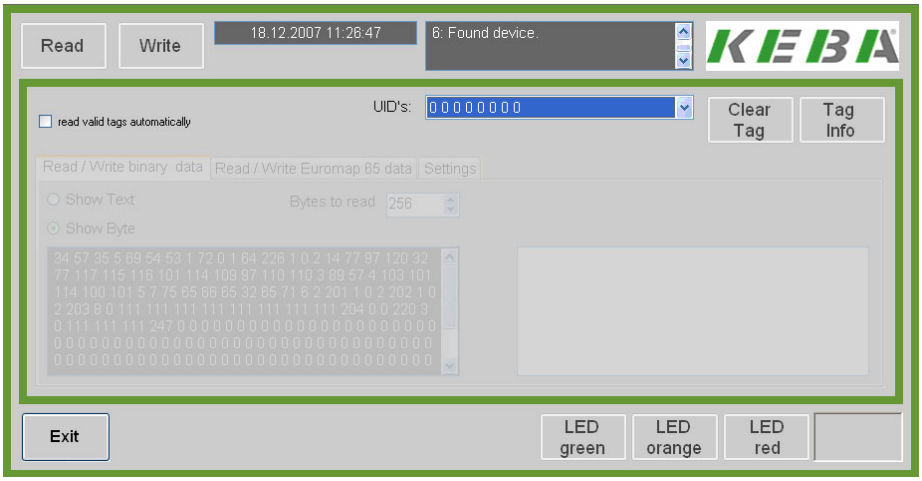
Description of the mask

The application window of the demo application consists of a continuously visible (general) part and a part that can be switched over via tabs.

In the constantly visible part of the application the general functions of the Kemro UserID modules are contained. On the tab pages of the application files can be manipulated and module configurations displayed and changed.

The Kemro UserID modules can read out and write on transponders in Euromap 65 format or binary format. The write and read processes can be switched over with the two tabs ***Read / Write Binary Data*** and ***Read / Write Euromap 65 Data***.

Tab page ***Settings*** contains all functions required for configuring the module.



Kemro UserID demo application - application window

Description of the elements

Element	Description
Read	Reading out user data from the selected transponder and displaying it according to the selected format in binary form or Euromap 65 form. **Note:** The button can only be operated when at least one valid card has been recognized by the Kemro UserID module.
Write	Writing user data on the selected transponder in the format selected. The format is set by the setting of the tab. **Note:** The button can only be operated when at least one valid card has been recognized by the Kemro UserID module.
Date / time (to the right next to the ***Write*** button)	System time and system date are displayed here.
Status display (to the right next to date / time)	Messages from Kemro UserID module are displayed in the status display. The following messages are possible: - Recognized Kemro UserID modules - Removed Kemro UserID modules - Recognized transponders and their status - Removed transponders - Return signal of write commands - Return signal at changes in settings - Fault messages from the application - Fault messages from the device driver

Element	Description
read valid tags automatically	When selecting this option a transponder that is valid according to the Euromap 65 standard and within receiving range is automatically read out. The tab page Read / Write Euromap 65 Data is displayed automatically. A further transponder can only be automatically read when the current transponder has left the receiving range.
UIDs	This selection field displays the UIDs of all recognized transponders that are within the receiving range. The individual transponders for further use (writing, reading) can be selected in this selection field.
Clear Tag	User data of the selected transponder can be deleted with this function. The deletion process overwrites all bytes with 0.
Tag Info	The UID and size of the data memory of the selected transponder are displayed in the status display.
Exit	The connection to the modules is terminated and the application closed.
LED green	The color of the status LED can be set on green with this button. **Note:** The color of the status LED can only be set when the module is operated in "LED application mode". See also chapter *Tab Settings*.
Orange LED	The color of the status LED can be set to orange with this button. **Note:** The color of the status LED can only be set when the module is operated in "LED application mode". See also chapter *Tab Settings*.
Red LED	The color of the status LED can be set on red with this button. **Note:** The color of the status LED can only be set when the module is operated in "LED application mode". See also chapter *Tab Settings*.

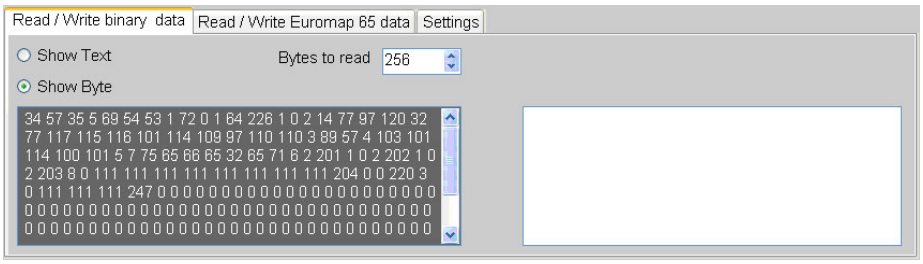
8.2.2 Tab page *Read/Write Binary Data*

Purpose

On this tab page data in binary format can be read out from or written onto the transponder.

Description of the mask

The type of display (text / byte) and the number of bytes to be read out from the transponder's user memory can be set in upper sector of the tab page. Two fields are located below this. The left text field displays the user data read out from the transponder. The right input field is used to enter data that can be subsequently written into the user memory of the transponder.



Kemro UserID demo application - tab page read / write binary data

Description of the elements

Element	Description
Show text	The selection of this option displays the user data of the transponder as text in the left text field.
Show byte	The selection of this option displays the user data of the transponder as byte characters in the left text field.
Bytes to read	Number of Bytes to be read from the user memory of the transponder (user data). The maximum storage memory is specified by the selected transponder.
Text field (left)	Here the user data of the transponder are displayed in the selected display format after being read out.
Input field (right)	Any type of content can be entered as text in the input field. This content is written on the selected transponder during the write process.

Usage of this mask

- Reading out user data in binary format from a transponder
- Writing user data in binary format onto a transponder

8.2.3 Tab page *Read/Write Euromap 65 Data*

Purpose

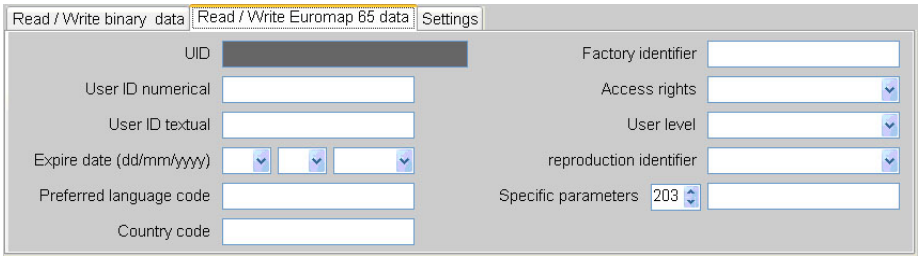
On this tab page data in Euromap 65 format can be read out from or written onto the transponder.

Information
The Euromap 65 Standard is specifically matched to the requirements of user identification on machines and plants. Additional information can be found in the Internet at http://www.euromap.org/.

Description of the mask

On this tab page the user data acc. to the Euromap65 standard are displayed. Here each Euromap 65 parameter is displayed in its own text field. The parameters can also be modified in each field.

In selection field ***Specific parameters*** the reserved parameters acc. to the Euromap 65 standard can be selected per index number (203-255) and displayed and modified in the input field on the right.



Kemro UserID demo application - tab Read/Write Euromap 65 data

Description of the elements

Element	Description
UID	Display of UID of the read out transponder
User ID numerical	Identification number of transponder profile
User ID textual	Name of transponder profile
Expire date	Expiry date of transponder. The transponder loses its validity after this date. This enables the validity of lost transponders to be limited in the application with regard to time.

Element	Description
Preferred language	Language code of preferred language according to ISO 639-2/B (3-digit, e.g. eng for English).
Country code	Country code acc. to ISO 3166-1 (2-digit, e.g. GB for United Kingdom).
Factory identifier	Company code (note: a distinction is made between upper and lower case letters in the input).
Access rights	Access rights according to the Euromap65 standard with the following options: • 0 = no access • 1 = lowest level • 2 = middle level • 3 = highest level
User level	User level of transponder profile (0-255)
Reproduction identifier	Identifier for rights for multiplication of the transponder Recommended application: 0- writing of further transponders not possible 1- user can create transponder with low access rights. 2- user can create transponder with the same access rights.
Specific parameters	Selection of reserved parameters (203-255) acc. to Euromap 65 standard. The value of the parameter is displayed or entered in the input field to the right.

Usage of this mask

- Reading out user data in Euromap 65 format from a transponder
- Writing user data in Euromap 65 format onto a transponder

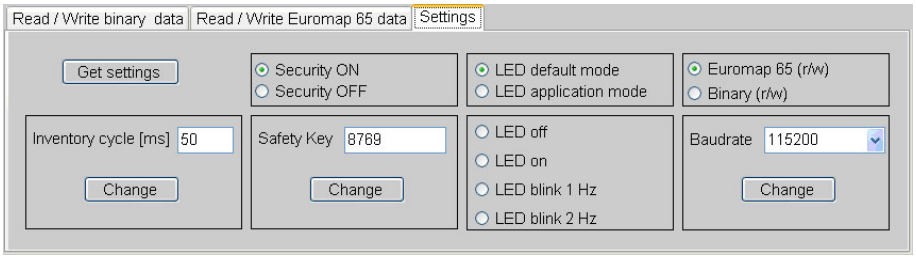
8.2.4 Tab *Settings*

Purpose

With this tab page the configuration of the Kemro UserID module can be displayed and modified.

Description of the mask

On this tab page all the configuration parameters of a Kemro UserID module are displayed. The connected options are displayed in their own sector with a surrounding border. Each parameter can be modified by an entry or a selection.



Kemro UserID demo application - tab settings

Description of the elements

Element	Description
Get settings	Reading out settings.
Security ON / ***Security OFF***	Switching validation check on or off (Note: when using the Euromap65 standard the validation check must be switched on.)
LED default mode	The condition of the status LED is set directly by the driver.
LED application mode	The condition of the status LED is controlled by the application. In this mode the condition and the color of the status LED can be changed with the buttons in the lower area of the mask.
Euromap 65 (r/w)	With the selection of this option the configuration data of the transponder are read and written in the Euromap65 format. The setting applies only to write and read processes of the configuration data. The format of the user data is influenced by the selection of the other tab pages.
Binary (r/w)	With the selection of this option the configuration data of the transponder are read and written in binary format. The setting applies only to write and read processes of the configuration data. The format of the user data is influenced by the selection of the other tab pages.

Element	Description
Inventory cycle [ms]	The cycle time with which the module searches for new transponders in the detection range (typical value: 50 ms). After the corresponding ***Change*** button is pressed this setting is changed.
Safety key	Key (32-bit safety key) for calculating the safety code acc. to the Euromap 65 standard. The safety code is calculated from the checksum of the data stored on the transponder and this safety key (`hidden factory safety key`), and stored on transponders in Euromap 65 format. After the corresponding ***Change*** button is pressed this setting is changed.
LED off	LED is switched off in the application mode
LED on	LED lights up in the application mode
LED blink 1 Hz	LED blinks once per second in the application mode
LED blink 2 Hz	LED blinks twice per second in the application mode
Baud rate	Transmission rate of serial interface. After the corresponding ***Change*** button is pressed this setting is changed.

Usage of this mask

- Displaying and changing the configuration of the Kemro UserID module

9 Function interface of device driver

With the aid of the Kemro UserID simple and easy integration into existing visualization systems is possible.
This chapter describes the commands of the device driver of the Kemro UserID for accessing the module and transponders recognized by the module.

9.1 Data format

Data can be stored on the RFID transponder either in Euromap 65 format, or in binary form. The format is set by the write command used.

9.1.1 Euromap 65 Standard

The user data on the RFID transponder are displayed in Unicode UTF-8 format and stored with the byte sequence Low-Byte-First (Little-Endian).

The data are stored as a sequence of parameters and formatted as follows:

```
<ID><len><parameter...><ID><len><parameter...>...
```

Parameter	Description
`ID`	Identification of the parameter (8-bit value)
`len`	Number of attached parameters in 8-bit units (optional, depends on parameter)
`parameter`	Value of the parameter

9.1.2 Binary format

When using the binary format the user data transferred to the device driver are stored directly on the transponder. These data are not specially formatted.

9.2 Data structure

Information
An alignment of 1 applies to all data structures listed here

9.2.1 Data structure TEuromapData

This chapter describes all data elements which correspond to the optional Euromap65 parameters.

Data element	Euromap 65 ID #	Description
`DWORD TEuromapData::dwValid`	`--`	Switches the following structure entries valid or invalid. A set bit means that the data entry is filled during reading and taken over during writing. If the bit is not set, the corresponding structure entry is not used. One bit each activates/deactivates the specified structure entry: • Bit0: dwUserIdNumerical • Bit1: strUserIdTextual • Bit2: sExpiryDate • Bit3: strLanguageCode • Bit4: strCountryCode • Bit5: strFactoryId • Bit6: bAccessRights • Bit7: bUserLevel • Bit8: bReproductionId • Bit9: rsOEMData • Bit10-31: not used The bit pattern can be used as constants (see chapter ***Fehler! Verweisquelle konnte nicht gefunden werden.***).
`DWORD TEuromap-Data::dwUserIdNumerical`	`0x01`	Numerical user identification
`char TEuromap-Data::strUserIdTextual`	`0x02`	Textual user identification Maximum length of the text field: 16 characters Note: The length by 1 byte larger than in Euromap defines due to 0-termination, further bytes due to alignment of the structure.
`TEuromapTime TEuromap-Data::sExpiryDate`	`0x03`	Expiry date of transponder
`char TEuromap-Data::strLanguageCode`	`0x04`	Language code of user It is recommended to store the language code in line with ISO-2/B. Note: The length by 1 byte larger than in Euromap defines due to 0-termination.

Data element	Euromap 65 ID #	Description
`char TEuromap-Data::strCountryCode`	`0x04`	Country code of user It is recommended to store the language code in line with ISO-1/B. Note: The length by 1 byte larger than in Euromap defines due to 0-termination, further bytes due to alignment of the structure.
`char EuromapData::strFactoryId`	`0x05`	Factory identification Maximum length of the text field: 16 characters Note: The length by 1 byte larger than in Euromap defines due to 0-termination.
`BYTE TEuromap-Data::bAccessRights`	`0x06`	Access rights
`BYTE TEuromapData::bUserLevel`	`0xC9`	User level (Keba-specific) Value range 0-255
`BYTE TEuromap-Data::bReproductionId`	`0xCA`	Reproduction code for the user (Keba-specific) Recommended application: • 0: writing of further transponders not possible • 1: user can create transponder with low access rights • 2: user can create transponder with the same access rights
`TeuromapOEMData TEuromap-Data::rsOEMData`	`0xCB - 0xFF`	List with further, free Euromap entries (OEM-specific)

9.2.2 Data structure TEuromapOEMData

This data structure is used to specify further free Euromap65 entries in the Euromap65 format (ID 203-255).

Data element	Euromap 65 ID #	Description
`BYTE TEuromapOEM-Data::bEuromapID`	`0x1F - 0xC8`	Specific machine manufacturer parameters (these are issued exclusively by the EUROMAP organization, http://www.euromap.org)
`BYTE TEuromapOEMData::bDummy`	`--`	Dummy for structure alignment
`WORD TEuromapOEMData::wLength`	`--`	Length of data of the Euromap65 entry defined by bEuromapID.
`BYTE TEuromapOEMData::rbEuromapData [EUROMAP_OEM_DATALENGTH]`	`--`	Data pointer of data of the Euro-map65 entry defined by bEuro-mapID.

9.2.3 Data structure TEuromapTime

This data structure is used to display the Euromap65 time specifications.

Data element	Euromap 65 ID #	Description
`WORD TEuromapTime::wYear`	`--`	Year
`BYTE TEuromapTime::bMonth`	`--`	Month (1-12)
`BYTE TEuromapTime::bDay`	`--`	Day (1-31)

9.2.4 Data structure TFactorySettings

This data structure is used for reading the factory data of an RFID module.

Data element	Euromap 65 ID #	Description
`DWORD TFactorySet-tings::dwSerialNumber`	`--`	Serial number of the RFID module

9.2.5 Data structure TModuleSettings

This data structure is used for reading and writing the setting data of an RFID module.

Data element	Euromap 65 ID #	Description
`DWORD TModuleSettings::dwInventoryRequestCycle`	--	Cycle time for searching the new transponders
`DWORD TModuleSettings::dwLedControlMode`	--	Specification of who controls the LEDs (default: 0): • 0: driver takes over control. • 1: the application takes over control.
`BOOL TModuleSettings::boolCheckValidation`	--	Specifies whether the validity of the transponder is checked according to Euromap 65 regulation.
`unsigned short TModuleSettings::usSafetyKey`	--	Safety key for Euromap 65 encoding This key is used to together with the data content of the transponder to calculate the safety code.
`DWORD TModuleSettings::dwBaudrate`	--	Baud rate of the Bus connection for to the Kemro UserID module Note: Only valid for units with serial interfaces (Kemro UserID classic).

9.2.6 Data structure TRfidDeviceName

This data structure is used in connection with the device name of a Kemro UserID module.

Data element	Euromap 65 ID #	Description
`char TRfidDeviceName::strDeviceName`	--	Name of Kemro UserID modules

9.2.7 Data structure TRfidUid

This data structure is used in connection with the clear identification of a transponder.

Data element	Euromap 65 ID #	Description
`unsigned char TRfidUid::uid`	--	Clear transponder ID

9.2.8 Data structure for Callback

The Event Callback is used to signal transponder or device actions.

```
typedef void __stdcall TEventCallback(const TRfidDeviceName sDevice-
Name, TRfidUid sTag, const TRfidAction eAction)
```

Parameter	Description
sDeviceName	Name of device that has caused the action
sTag	Name of transponder that has caused the action
eAction	The action that was carried out

The following actions are signaled via this Callback.

Action	Description
eAction	• 0: New Kemro UserID module added (sTag is transmitted as 0) • 1: Kemro UserID module was removed • 2: Valid transponder found • 3: Copied transponder was found (security check has failed) • 4: New / empty / transponder was found • 5: Non-readable transponder was found • 6: Known transponder was removed

Information

If a Kemro UserID module or a transponder is removed and it is open (`rfidOpenDevice`/`rfidOpenTag`), then the connection with regard to this Callback is to be closed (`rfidCloseDevice`/`rfidCloseTag`), since the respective Handle looses its validity when removed.

NOTICE

- **Under no circumstance is blocking and waiting for something during the Callback permitted. Editing during Callback must be short and fast.**

9.3 Enumeration types

9.3.1 Call-up actions of the Event Callback

`enum TRfidAction`

Enumeration values	Description
`RfidAction_NewDevice`	New Kemro UserID module added (sTag is transmitted as 0)
`RfidAction_DeviceRemoved`	Kemro UserID module was removed
`RfidAction_ValidTagFound`	Valid transponder found
`RfidAction_CopiedTagFound`	Copied transponder was found (security check has failed)
`RfidAction_EmptyTagFound`	New / empty / transponder was found
`RfidAction_UnreadableTagFound`	Non-readable transponder was found
`RfidAction_TagRemoved`	Known transponder was removed

9.3.2 Operating state of the Status LED

`enum TRfidLedStatus`

Enumeration values	Description
`RfidLedStatus_Off`	LED off (continuous)
`RfidLedStatus_On`	LED on (continuous)
`RfidLedStatus_Slow`	LED blinking slowly (1 Hz)
`RfidLedStatus_Fast`	LED blinking fast (2 Hz)

9.3.3 Color of the Status LED

`enum TRfidLedColor`

Enumeration values	Description
`RfidLedColor_Red`	Led illuminated/blinks red
`RfidLedColor_Green`	Led illuminated/blinks green
`RfidLedColor_Orange`	Led illuminated/blinks orange

9.4 Constants

Constant	Value	Description
USER_ID_LENGTH	16	Maximum length of the textual user identification
FACTORY_ID_LENGTH	16	Maximum length of the textual factory identification
LANGUAGECODE_LENGTH	3	Number of language code bBytes
COUNTRYCODE_LENGTH	2	Number of country code bytes
OEM_DATA_LENGTH	53	Maximum number of user commands (ID 0xcb to ID 0xff)
FLAG_OPEN_EUROMAP65	1	Transponder connection is opened in Euromap65 format
FLAG_OPEN_BINARY	2	Transponder connection is opened in binary format
RFID_DEVICENAME_LENGTH	50	Maximum length of module name
EUROMAP_OEM_DATALENGTH	256	Maximum length of an OEM data entry
EUROMAP_VALID_USERID_NUMERICAL	0x0001	The entry "UserID-Numerical“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_USERID_TEXTUAL	0x0002	The entry "UserId-textual“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_EXPIRY_DATE	0x0004	The entry "Expiry Date“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_LANGUAGE_CODE	0x0008	The entry "Language Code“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_COUNTRY_CODE	0x0010	The entry "Country Code“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_FACTORY_ID	0x0020	The entry "FactoryID“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_ACCESS_RIGHTS	0x0040	The entry "Access Right“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_KEBA_USER_LEVEL	0x0080	The entry "User Level“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_KEBA_REPRODUCTION_ID	0x0100	The entry "ReproductionId“ of the Euromap structure contains valid data for writing/reading
EUROMAP_VALID_OEM_DATA	0x0200	The entry "OEM Data“ of the Euromap structure contains valid data for writing/reading
EUROMAP_ID_USERID_NUMERICAL	0x01	UserId-Numerical entry

Constant	Value	Description
EUROMAP_ID_USERID_TEXTUAL	0x02	UserId-Textual entry
EUROMAP_ID_EXPIRY_DATE	0x03	Expiry-Date entry
EUROMAP_ID_PREFERED_LANGUAGE	0x04	Language and Country-Code entry
EUROMAP_ID_FACTORY_ID	0x05	FactoryID entry
EUROMAP_ID_ACCESS_RIGHTS	0x06	Access-Rights entry
EUROMAP_ID_KEBA_USER_LEVEL	0xc9	User-Level entry
EUROMAP_ID_KEBA_REPRODUCTION_ID	0xca	ReproductionId entry

9.5 Functions

9.5.1 Registration of an Event Callback

```
DWORD rfidRegisterEventCallback (TEventCallback * pfnEventCallback)
```

Parameter	Description
pfnEventCallback	Callback function that is called up with the previously described actions

A Callback can be registered with this function which is called up in the subsequent action. (see definition of T_EventCallback):

- 0.....New RFID module added (sTag is transmitted as 0)
- 1.....Kemro UserID module was removed
- 2.....Valid transponder found
- 3.....Copied transponder was found (security check has failed)
- 4.....New / empty / transponder was found
- 5.....Non-readable transponder was found
- 6.....Known transponder was removed

The de-registration of a Callback is carried out by transferring a ZERO pointer as Callback pointer

Return

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.2 Read out list of currently connected Kemro UserID modules

```
DWORD rfidGetDeviceList (TRfidDeviceName rsDeviceName[], DWORD *
pdwCount)
```

Parameter	Description
rsDeviceName	String list in which the automatically generated symbolic names of the Kemro UserID modules are written
pdwCount In	Length of string list Out: Number of entered RFID modules

This function lists all Kemro UserID modules found (independent of connection, USB or RS232). The symbolic names specified are generated automatically and can continue to be used to open a Kemro UserID module with rfidOpenDevice, to control LEDs or to read or modify the settings of the module.

Return

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.3 Opening a connection to a Kemro UserID module

```
DWORD rfidOpenDevice (const TRfidDeviceName sDeviceName, HANDLE *
phDevice)
```

Parameter	Description
sDeviceName	Symbolic name of Kemro UserID module to be opened
phDevice	Pointer on the Handle of the opened Kemro UserID module

This function opens the data connection to a Kemro UserID module and supplies a Handle with which the data of the Kemro UserID module can continue to be accessed.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.4 Closing a connection to an opened Kemro UserID module

```
void rfidCloseDevice (HANDLE hDevice)
```

Parameter	Description
hDevice	Name of the opened Kemro UserID module

9.5.5 Controlling the LED of the Kemro UserID module

```
DWORD rfidSetLedStatus (HANDLE hDevice, TRfidLedStatus eStatus,
TRfidLedColor eColor)
```

Parameter	Description
hDevice	Handle on the Kemro UserID module whose Led is to be controlled
eStatus	Operating status of the LED. • 0: Off • 1: On • 2: Slowly flashing (1Hz) • 3: Fast flashing (2Hz)
eColor	Color of the LED • 0: Red • 1: Green • 2: orange

This function controls the operating state of the LED and switches the LED off/on and controls its color.

Information
The LED can only be controlled when the control for the LED has been released in the settings for the application. Otherwise the driver takes over the exclusive control of the LED.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.6 Reading out current settings of the Kemro UserID module

```
DWORD rfidGetModuleSettings (HANDLE hDevice, TModuleSettings *
psModuleSettings)
```

Parameter	Description
hDevice	Handle on the Kemro UserID module
psModuleSettings	Setting data of the Kemro UserID module

The current device driver settings are supplied for this Kemro UserID module.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.7 New settings for the Kemro UserID module

```
DWORD rfidSetModuleSettings (HANDLE hDevice, TModuleSettings *
psModuleSettings)
```

Parameter	Description
hDevice	Handle on the Kemro UserID module
psModuleSettings	New setting data of the Kemro UserID module

The current device driver settings are set for this Kemro UserID module.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.8 Reading out the factory settings of the Kemro UserID module

```
DWORD rfidGetFactorySettings (HANDLE hDevice, TFactorySettings *
psFactorySettings)
```

Parameter	Description
hDevice	Handle on the Kemro UserID module
psFactorySettings	Factory data of the Kemro UserID module

The Kemro UserID module data entered at the factory are read out and supplied.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.9 Creating a list of currently recognized transponders

```
DWORD rfidGetTagList (HANDLE hDevice, TRfidUid rsUids[], DWORD *
pdwCount)
```

Parameter	Description
hDevice	Handle on the Kemro UserID module whose transponder is to be determined
rsUids	List into which the UIDs of the detected transponders are written
pdwCount	In: Length of UID list. Out: Number of entered transponders

This function lists all detected transponders for the specified Kemro UserID module. The UIDs are required to establish a data connection to a transponder (`rfidOpenTag`).

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.10 Opening a connection to a specific transponder

```
DWORD rfidOpenTag (TRfidUid sUid, DWORD dwFlags, HANDLE * phTag)
```

Parameter	Description
sUid	UIDs of the transponder to be opened
dwFlags	Data mode in which the transponder is to be opened • FLAG_OPEN_EUROMAP65: opens the connection in the Euromap65 standard, i.e. at rfidRead-Tag/rfidWriteTag data in the form of a T_EuromapData structure are expected (pvData is of type T_EuromapData *). • FLAG_OPEN_BINARY: opens the connection in the binary mode, i.e. binary data are expected at rfidRead-Tag/rfidWriteTag (pvData is of type BYTE *). The transmitted data correspond 1:1 to the memory dump of the transponder, without any formatting.
phTag	Pointer on the Handle of the opened transponder

This function opens the data connection to a transponder and supplies a Handle with which the data of the transponder can continue to be accessed.

Information
Opening in the Euromap65 mode is only possible when the safety code check (boolCheckValidation = 1) has been activated. If the validation check is deactivated, the rfidOpenTag issues an error. Specifying the Kemro UserID module is not necessary here, since the transponders are administered centrally for all Kemro UserID modules.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.11 Closing a connection to an opened transponder

```
void rfidCloseTag (HANDLE hTag)
```

Parameter	Description
hTag	Handle of the opened transponder

9.5.12 Reading out data from a transponder

```
DWORD rfidReadTag (HANDLE hTag, void * pvData, DWORD dwCount, DWORD
* pdwCountRead)
```

Parameter	Description
hTag	Handle of the transponder to be read
pvData	Buffer for the data read out. The data have the following format, depending on the data mode in which the transponder was opened: • FLAG_OPEN_EUROMAP65: a data buffer in the form of a T_EuromapData structure is expected. Those fields of the structure that are activated by dwValid (at parameter transfer [in]), are filled during reading out, the fields not activated remain unaffected. • FLAG_OPEN_BINARY: a byte array of adequate size is expected. The data are copied from the transponder into the buffer in binary form (1:1 image)
dwCount	FLAG_OPEN_EUROMAP65: number of structures to be read, must be permanently set on 1. • FLAG_OPEN_BINARY: number of bytes to be read.
pdwCountRead	FLAG_OPEN_EUROMAP65: number of the structures read, 1 if reading was possible, otherwise 0. • FLAG_OPEN_BINARY: number of bytes read.

This function reads the data of an opened transponder. The data are supplied in the form of Euromap65 structure or as binary data depending on how the connection to the transponder was opened.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

9.5.13 Writing data of a transponder

```
DWORD rfidWriteTag (HANDLE hTag, void * pvData, DWORD dwCount, DWORD
* pdwCountWritten)
.
```

Parameter	Description
hTag	Handle of the transponder to be written
pvData	Buffer that contains the data to be written. The data have the following format, depending on the data mode in which the transponder was opened: • FLAG_OPEN_EUROMAP65: a data buffer in the form of a T_EuromapData structure is expected. Those fields of the structure that are activated by dwValid are taken over, the fields not activated remain unaffected. • FLAG_OPEN_BINARY: a byte array of adequate size is expected. The data are taken over in binary form and copied into the transponder (1:1 image).
dwCount	FLAG_OPEN_EUROMAP65: number of structures to be written, must be permanently set on 1. • FLAG_OPEN_BINARY: number of bytes to be written.
pdwCountWritten	FLAG_OPEN_EUROMAP65: number of the structures written, 1 if writing was possible, otherwise 0. • FLAG_OPEN_BINARY: number of bytes written.

This function writes the data of an opened transponder. The data are expected in the form of Euromap65 structure or as binary data depending on how the connection to the transponder was opened.

Return:

Value	Description
0	If everything is OK, otherwise descriptive error code

10 Diagnosis

The following states can be signaled with the status LED:

Display	Description
LED off	Kemro UserID module is not supplied Only with Kemro UserID eco: The module has not yet been detected by the device driver or the device driver for the module has not been installed yet.
red (continuous)	Firmware of the module is loaded
orange (continuous)	Firmware is loaded, data communication with device driver on the host system is established
green / orange (blinking)	Supply and data communication with device driver on the host system exists
green (continuous)	Default behavior of the module, as soon as the device driver has instantiated the module at least one time.
green (blinking, max. 3 sec.)	Readable transponder detected The status LED blinks green as long as the transponder is within reading range (max. 3 sec.)
red (blinking, max. 3 sec.)	Transponder could not be read; unsupported transponder type The status LED blinks red as long as the transponder is within reading range (max. 3 sec.)

11 Maintenance and repair instructions

11.1 Maintenance

This device does not require regular maintenance.

11.2 Repair

A defective device may only be repaired by KEBA specialists, otherwise the warranty claim expires. This is to be sent to KEBA in a suitable transport packaging.

11.2.1 Packaging, shipment

The module is wrapped in protective packaging material for shipment.

The protective packaging does not qualify as adequate transport packaging and hence is not suited for transportation via carrier haulage or airplane. Appropriate transportation packaging is required for these types of shipment.

12 Disposal

12.1 Disposal of the module

- **The symbol with the crossed-out rubbish bin indicates that electrical and electronic devices including their accessories should not be disposed of in the household garbage.**
- **Depending on their coding, the raw materials are recyclable. By disposing of such used devices correctly, you can ensure that they can be reused, their raw materials recycled or put to another use, and you will be making an important contribution to the protection of our environment!**

13 Technical data

General information

Power consumption: (Kemro UserID eco)	Max. 0.75 W
Power consumption: (Kemro UserID classic)	Max. 1 W
Reading range:	Up to 6 cm from the housing / antenna (depending on the installation situation, the transponder design and the number of transponders)
Supported transponders:	Transponders according to ISO/IEC 15693 in any form (Tag-it, I-Code SLI)
Signaling:	Three-color LED on the front side of the housing / on the antenna print
Device driver for the operation systems:	Windows 2000, Windows 2003 Server, Windows CE, Windows XP pro, Windows XP emb., Windows Vista

Interfaces

Data interface:	RS 232 – bei Kemro UserID classic USB 2.0 (12 Mbit) – bei Kemro UserID eco
Power supply voltage:	12 V / 24 V DC – for Kemro UserID classic USB bus powered – for Kemro UserID eco
Communication connecting plug:	DSUB 9 pol. (female) – for Kemro UserID classic stand-alone and OEM – variants C-OEM and D-OEM USB type B – for Kemro.UserID eco stand-alone and OEM – variants C-OEM and D-OEM Terminal block: Kemro UserID OEM variants A-OEM and B-OEM classic and eco
Supply connecting plug:	Only Kemro UserID classic (IC 140/A, IC 140/C-OEM, IC 140/D-OEM): 2-pole plug

RF signal

Frequency range:	13.56 MHz
Transmitting power:	Typical 200 mW (max. 250 mW)
Chip set:	Melexis

Casing, dimensions

Stand-alone module:	Width:	77 mm
	Length:	65.4 mm
	Height:	46.3 mm
Antenna print small:	Width:	50 mm
	Length:	30 mm
Antenna print large:	Width:	57 mm
	Length	53 mm
Evaluation unit with housing:	Width:	94 mm
	Length:	54 mm
	Height:	24 mm
Evaluation unit without housing:	Width:	70 mm
	Length:	50 mm
	Height:	11 mm

Transportation and Environmental conditions

Operating temperature:	+0 °C to +65 °C (OEM variants) +5 °C to +55 °C (stand-alone variant)
Storage temperature:	-25 °C to +70 °C
Relative humidity of air:	5 % to 95 % (non condensing)
Vibration resistance:	according to EN 61131-2
Shock resistance:	according to EN 61131-2

13.1 Stand-alone versions

General Information

Housing:	Robust plastic housing PC / ABS Bayblend FR3010
Device installation:	Direct installation in opening of the front plate, fastening with retaining screws
Protection class:	IP65 (front-sided); IP20 (back-sided) Housing material fire-resistant according to UL 94
Wall thickness for the installation:	1.5 mm to 6 mm

13.2 OEM versions

General Information

Antenna installation:	Antenna installation flush with front plate possible corresponding to the installation guidelines
Transmission range evaluation unit:	Evaluation unit can be positioned up to 30 cm from the antenna
Connection antenna - evaluation unit	Plug-in
Sheet metal housing:	Only for versions C-OEM and D-OEM. Contact protection (IP 20) and fitting aid of the evaluation unit
Protection class:	IP20

14 EC directives and standards

14.1 EC Directives

Directive 1999/5/EG	R&TTE Directive (Radio & Telecommunications Terminal Equipment)
Directive 2002/95/EG	RoHS directives

14.2 Standards

The following, legally non-binding European standards, were applied in order to check that the Kemro K2 System conforms with the Directives.

14.2.1 R & TTE

EN 300330-2	Electromagnetic compatibility and radio spectrum matters (ERM); Short range devices (SRD); Radio equipment with operating frequencies in the range of 9 kHz to 25 MHz and induction loop systems in the range of 9 kHz to 30 MHz
EN 301489-01	Electromagnetic compatibility and radio spectrum matters (ERM); Electromagnetic compatibility for radio equipment and – services Part 1: General technical requirements
EN 301489-03	Electromagnetic compatibility and radio spectrum matters (ERM); Electromagnetic compatibility for radio equipment and – services; Part 3: Specific conditions for short range radio devices (SRD) for the use on frequencies between 9 kHz and 40 Ghz
EN 50364	Limit of the exposition of persons to electromagnetic fields of devices that are operated in the frequency range of 0 Hz to 10 GHz and used in the electronic article monitoring (en: EAS), high-frequency identification (en: RFID) and similar applications
EN 60950-1	Information Technology Equipment – Safety; Part 1

14.2.2 Other Standards and recommendations

In addition, partial aspects of the following legally non-binding standards/recommendations were consulted:

EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Emission standard for industrial einvironments

14.2.3 Environmental and surrounding conditions

EN 61131-2	Stored-program controls – Part 2
IEC 60068-2-6	Vibration, test FC
IEC 60068-2-27	Shock

14.3 Standards for the American market

14.3.1 UL test for industrial control equipment

UL 508, 2005	Industrial Control Equipment

14.3.2 FCC

CFR 47 Part 15	Radio Frequency Devices

14.3.2.1 FCC Requirements

The device complies with Part 15 of the FCC Rules. Operation in subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This device is labelled with an FCC ID number.
If this label is not visible when installed in an end device, the outside of the device MUST also display a label referring to the enclosed module.

Contains FCC ID: U870002 - IC 140/A
(Kemro UserID classic Stand Alone)

Contains FCC ID: U870003 – IC 140/C - OEM
U870003 – IC 140/D – OEM
(Kemro UserID classic OEM)

Contains FCC ID: U870004 – IE 160/A
(Kemro UserID eco Stand Alone)

Contains FCC ID: U870005 – IE 160/C – OEM
U870005 – IE 160/D – OEM
(Kemro UserID eco OEM)

Information
No other antennas except the one provided by KEBA shall be used.

Changes or modifications not expressly approved by KEBA could void the user's authority to operate the equipment.