

Module Device

RFID UNI Module
Internal Technical Documentation V 1.0



Automation by innovation.

Introduction

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1 Introduction

1.1 Purpose of the document

This planning manual describes the RFID UNI module, which is already permanently installed in different KEBA products like operating panels and teaching units. The application and functionality of the RFID module is the same for each KEBA product.

1.2 Audience and prerequisites

The planning manual is geared towards those who are using or intend to deploy an KEBA product with RFID module.

Only electrical technicians who are qualified to the VDE 1000-10 standard are permitted to install and maintain.

This means personnel who:

- can evaluate the work to be carried out and recognise the possible hazards based on their technical training, knowledge and experience plus their expertise in the applicable standards.
- have a level of knowledge equivalent to that obtained through professional training as a result of several years experience working in a similar field.

1.3 Intended use

The intended use of the RFID UNI module includes deployment in KEBA products.

The RFID UNI module (Radio Frequency Identification) is used in conjunction with an RFID card for contactless logon and logoff (as per ISO 15693) and is employed for user identification. This replaces the login of a user with username and password.

The RFID UNI module may not be used to fulfil protection requirements in the area of personal safety to prevent a malfunction compromising personal safety.

1.4 Notes on this document

1.4.1 Contents of document

- RFID module description
- Assembly and installation notes
- Description of the connections and wiring including EMC measures
- Description of the configuration
- Description of the optional status LED
- Maintenance notes
- Accessories
- Technical specification

1.4.2 Not contained in this document

- Operating panel description
- Teaching pendants description
- Other KEBA products

1.5 Documentation for further reading

The following is a listing of manuals for operating panels, which are equipped with an RFID module:

Doc. No.:	Planning manual	Description
1008790	AP CC300 operating device	Describes the installation, assembly, connection and operation of the operating panel.
- in preparation -	AP C3 operating device	

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

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

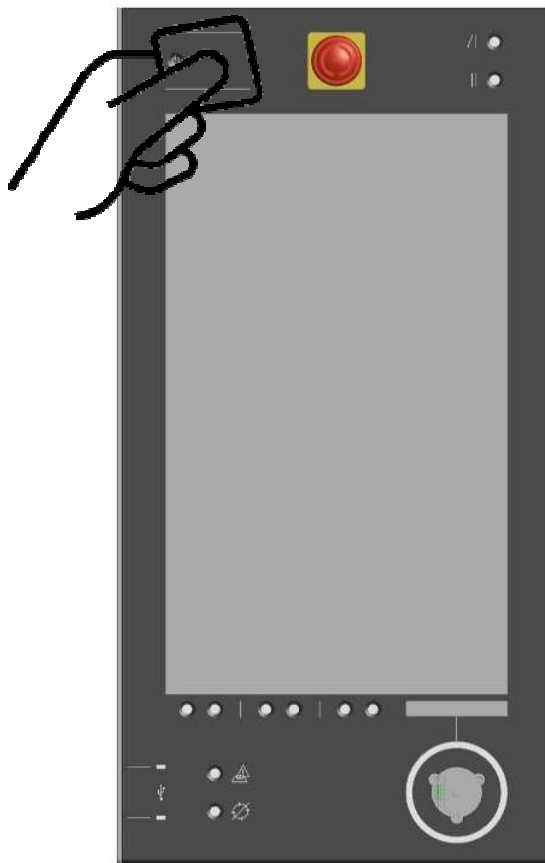
3 Product overview

3.1 Summary

The RFID card user must hold the RFID card close to the RFID antenna on the front of the operating panel for identification. The area of the RFID antenna is indicated by two horizontal lines on the panel.

An RFID system comprises:

- RFID card
- RFID UNI module, installed in the device.



Contactless user identification with an RFID card (e.g. operating panel AP CC300)

3.1.1 Range and detection

The typical range for RFID card to RFID UNI module is about 40 mm for the recommended RI-I02112A-03 RFID card.

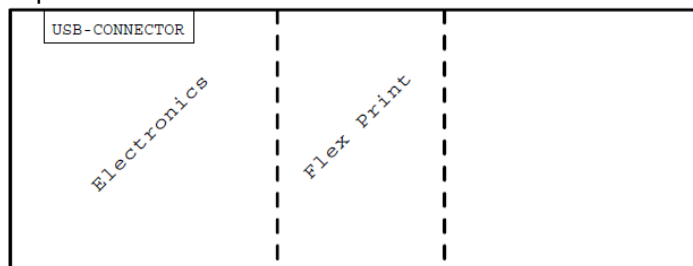
There is no provision to detect multiple cards at the same time. If several RFID cards are within range, either only one will be detected or this will cause a detection error.

3.2 RFID module before installation

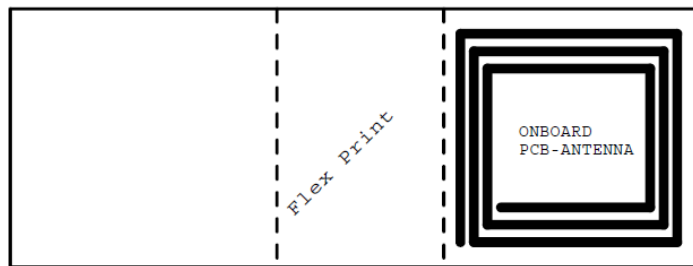
The illustrations below show the standard module with an USB connector.

The flexible part of the module allows a folded installation. The lateral, rigid parts are then parallel to each other; a few millimeters apart (see chapter 3.3.2.)

Top view:



Bottom view:

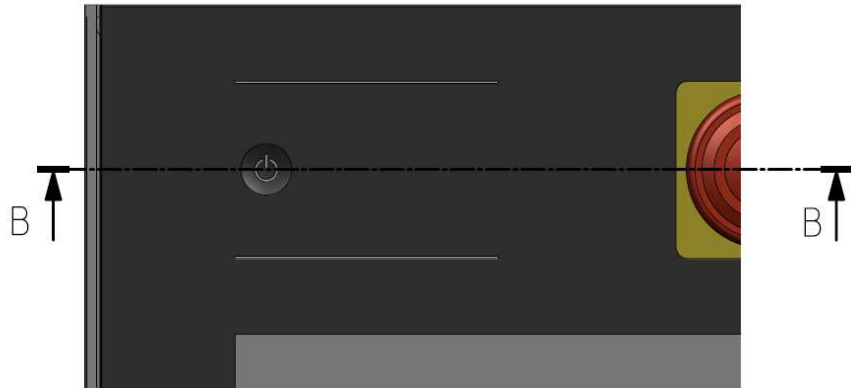


3.3 RFID module after installation

The following illustrations show the position of the module in stationary operating panels.

3.3.1 AP CC300 operating panel (example)

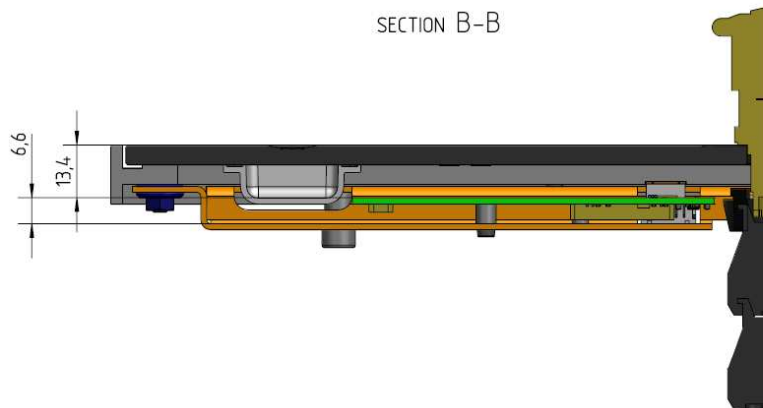
Front view:



Front view (without elements located in front of the module):



Section B view:



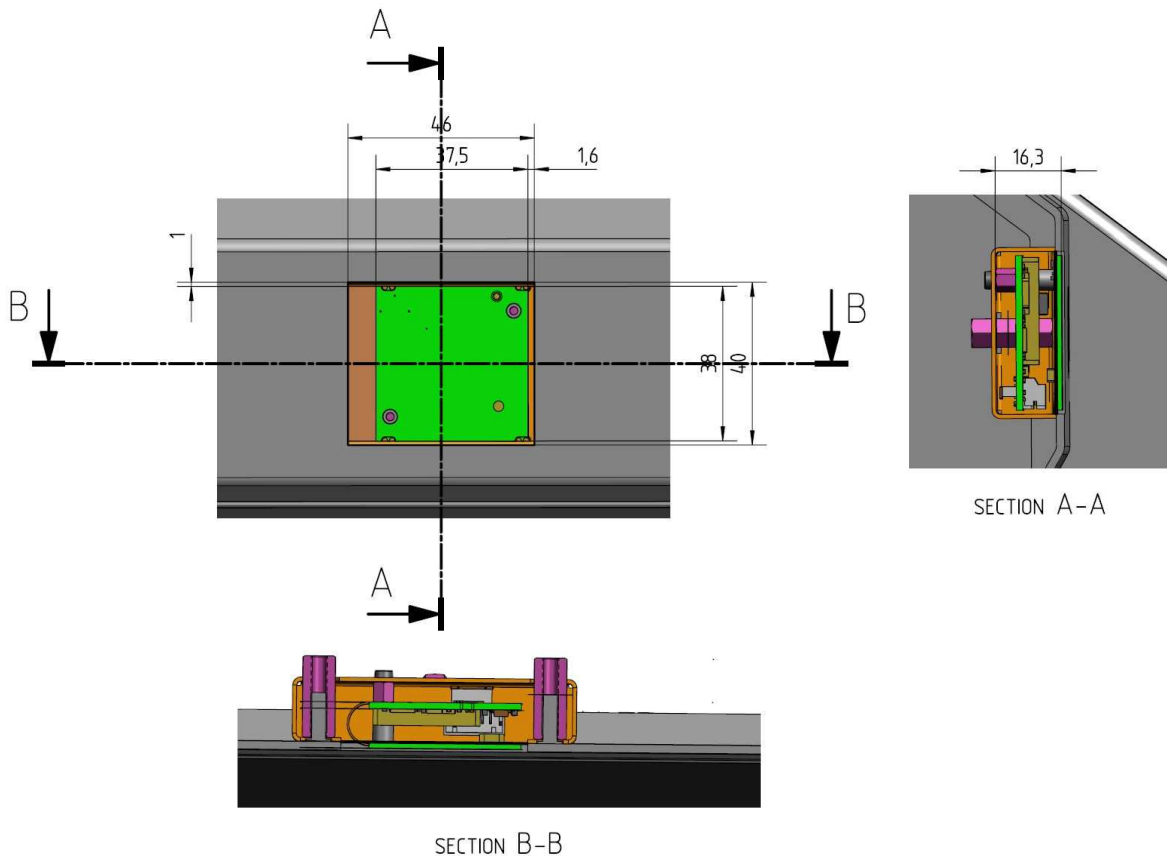
3.3.2 AP C3 operating panel (example)

The RFID module is installed folded.

The first illustration shows the user-facing side of the module.

The second and third figures make the folded module easier to recognize; two printed circuit boards and a flexible print in between.

Top View:



4 Assembly and installation notes

To guarantee the specified antenna range the minimum clearance between antenna and base material (e.g. aluminium) must be respected.

Suitable precautions must be taken to prevent any cables located behind the antenna from causing antenna detuning, e.g. providing a cover.

5 Connections and wiring

5.1 EMC and wiring guidelines

5.1.1 Personal safety and exposure

Safety extra-low voltage

All products are powered by safety extra-low voltage.

Magnetic field strength (distance of 20 cm)

The reference value at 13.56 MHz for H-Field: 73 mA/m

Result module unfolded (max.): 6.8 mA/m

Result module folded (max.): 6.7 mA/m

All levels are far below the applicable limit.

5.1.2 Why EMC-aware wiring?

The immunity of an electrical system depends essentially on wiring and shielding that is designed to overcome any EMC problems. Servicing experience has shown that inadequate wiring and shielding is a common cause of system interference and failure.

Electromagnetic interference is far more troublesome than "conventional" faults:

- It is not normally recognised as such from the symptoms displayed and can often be mistaken for a fault in an assembly, which is basically sound.
- They mainly occur sporadically and are difficult to duplicate.

As a consequence fault-finding is time-consuming and expensive.

Therefore ensure from the start that the wiring and shielding conforms to the guidelines documented below.

5.1.3 Which EMC measures must be taken?

The EMC measures for the RFID UNI module concentrate on shielding the connecting cable of the module.

5.2 Power supply

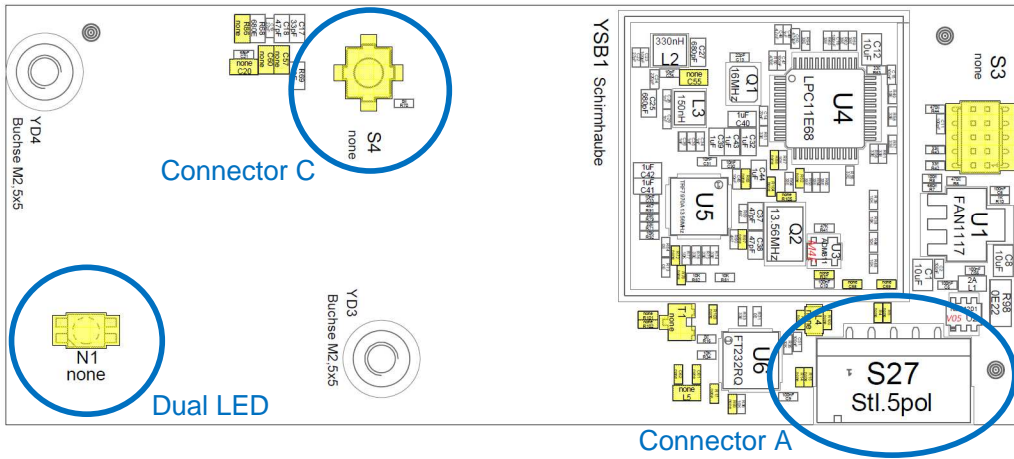
The power to the RFID module is supplied via the connectors for communication.

The high-frequency area has its own voltage regulator.

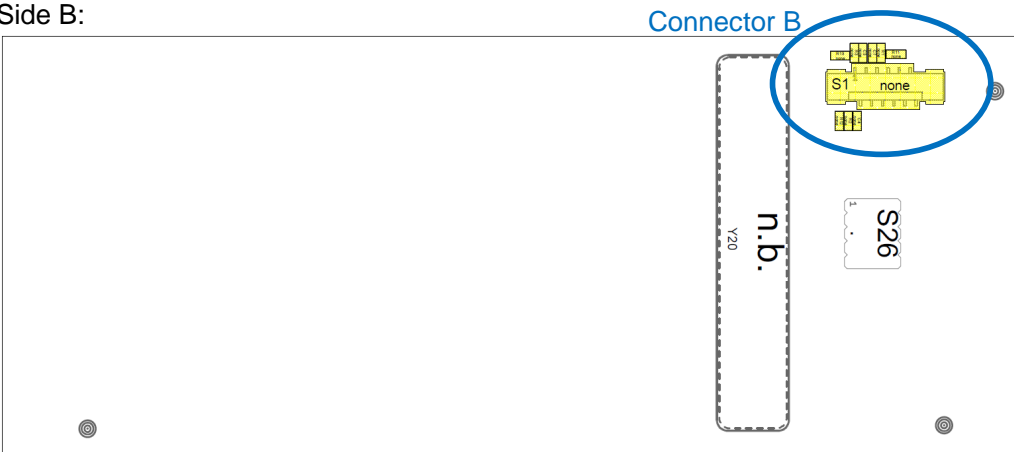
5.3 Module interfaces

5.3.1 Assembly

Side A:



Side B:



Description	Component No. according to assembly diagram
Connector A	S27
Connector B	S1
Connector C	S4
Dual LED	N1

5.3.2 Connector A

This 5-pin connector is populated for USB communication.

5.3.3 Connector B (optional)

This 12-pin connector is populated on side B of the module. It enables USB and serial communication.

5.3.4 Connector C (optional)

The coaxial connector can be populated optionally for using an external antenna.

5.3.5 Dual LED (optional)

An dual led (red and green) can be populated to indicate the state of the module.

5.4 Cables

5.4.1 Connector cable for RFID module

The connection cable for the RFID module must be shielded and no longer than 3 m.

6 Status LED (optional)

6.1 RFID status LED

The RFID status LED is located on the module and indicates the status of RFID card recognition:

RFID status LED	Meaning	Cause of fault / solution
red	RFID card not recognised or no authorisation	<ul style="list-style-type: none">● RFID card is defective● Wrong information recorded on RFID card
green for ca. 3 sec.	RFID card has been recognised	-
permanent red	No firmware, hardware does not boot	<ul style="list-style-type: none">● Contact the manufacturer
LED off	Connection is OK	-

7 Maintenance and repair notes

7.1 Maintenance

This device does not require regular maintenance.

7.2 Repair

Only KEBA technicians may repair faulty devices, otherwise the warranty becomes void.

7.2.1 Packaging and shipping

The module is placed in protective packing for shipping. Please return the packaging since KEBA tries to reuse it to minimise the environmental impact.

This protective packaging is not transport packaging and as such it is unsuitable for transport by carrier or air. Suitable, extra transport packaging must be used for this purpose.

7.3 Waste disposal

Comply with your national regulations for the disposal of electronic components!

8 Accessories and spares

Component	Order number
RFID UNI V1 AP_CC300	101719
RFID UNI V2 AP_C3	104242

9 Technical specification

General

Reading distance:	4 cm from the panel
Antenna installation:	permanently installed
Positioning of RFID UNI module:	module can be located 5 mm from planes
Communication protocol:	according to ISO 15693
Signalling:	2-colour LED on the printed antenna (optional)

Interfaces

Data interface:	serial
Supply voltage:	5 VDC (+/- 5%)
Connector plug:	5-pin / 12-pin (optional)

RF signal

Frequency response:	13.56 MHz
Transmission power:	max. 200 mW
Sampling rate:	configurable (default: 10 samples / sec)

Dimensions

Module	width:	38 mm
	length:	92 mm
	height:	7 mm

Environmental condition

Operating temperature:	+5 °C to +55 °C
Storage temperature:	-30 °C to +70 °C
Relative humidity:	5 to 95% (non-condensing)
Vibration resistance:	as per IEC 61131
Shock resistance:	as per IEC 61131

10 Relevant EC directives and applicable standards

10.1 EU directives

2014/53/EU	Radio Equipment Directive (RED)
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10.2 Standards

The following non-legally binding European standards are used to validate the RFID module's conformance to the directives.

10.2.1 Validating conformance

Personal safety:	EN 50364:2010
Radio sector:	EN 300330-2 V2.1.1
EMC sector:	EN 301489-1 V2.1.1 / EN 301489-3 V1.6.1
Electrical safety:	EN 60950-1:2006 + A2:2013

10.2.2 Other standards

In addition the following non-legally binding standards provide advice in some areas:

Environmental conditions

EN 61131-2:2007	Programmable logic controller - part 2 Equipment requirements and tests
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10.2.3 FCC statement (USA)

FCC Part 15	Radio Frequency Devices
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The device complies with Part 15 of the FCC Rules. Operation is 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.

e.g.

"Contains FCC ID: U870008"
(KEBA Product RFID UNI Module)

10.2.4 RSS/CNR statement (Canada)

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage;
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device is labelled with an IC identification 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.

e.g.

"IC: 20800-RFIDUNI"
(KEBA Product RFID UNI Module)

Information

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