Manuals+ — User Manuals Simplified.

DESKO RFID Reader Module

DESKO RFID Reader Module User Manual

Contents

DESKO

DESKO RFID Reader Module

Product Usage Instructions

Hardware Integration Rules
When integrating the DESKO RFID Reader Module into a metal environment, follow the guidelines provided in the manual to ensure optimal performance and signal reception.

DESKO Specific APDUs
The DESKO RFID Reader Module supports specific APDUs for different features and settings. Refer to the manual for detailed information on Features APDUs and Settings APDUs.

Connectors

- PCI-Express
- USB Full Speed + Maintenance
- Antenna Connector 1
- Antenna Connector 2
- Connector for Contact Reader (optional)

Dimensions
Refer to the manual for detailed dimensions of the RFID Reader Module and antennas.

FAQ:

Q: Can the DESKO RFID Reader Module read smart card technologies other than those mentioned in the documentation?
A: Yes, the DESKO RFID Reader Module can support other smart card technologies upon request. Contact technical support for more information.

Introduction

The DESKO RFID Reader Module is an RFID reading unit which supports reading of different contactless smart card technologies. Depending on the configuration, up to two antennas can be connected to the device.
The DESKO RFID Reader Module supports reading of smart card technologies/RFID-documents according to the following standards:

- ISO14443A
- ISO14443B

Other smart card technologies upon request.

Key Features of the DESKO RFID Reader Module
The integrated RFID Module is a dual antenna design that is especially designed for passport reading. The RFID module is able to read RFID documents according to ISO 14443 (A/B), ISO 7816 (incl. US passport), ICAO 9303 as well as full NFC support.

Package Content

- RFID Reader Module
- USB 2.0 cable
- Manual of the DESKO RFID Reader Module

Technical Overview

Technical Data

Supply Voltage:	5V DC +/− 5%
Supply Current:	300mA max, 200mA typ
Storage Temperature:	−10°C to +50°C
Operating Temperature:	0°C to +40°C
Humidity:	20% to 80% (R.H. non condensing)
Reliability:	MTBF = 80.000 hours (24/7 operation mode)
RF / EMI Compliance:	CE and FCC

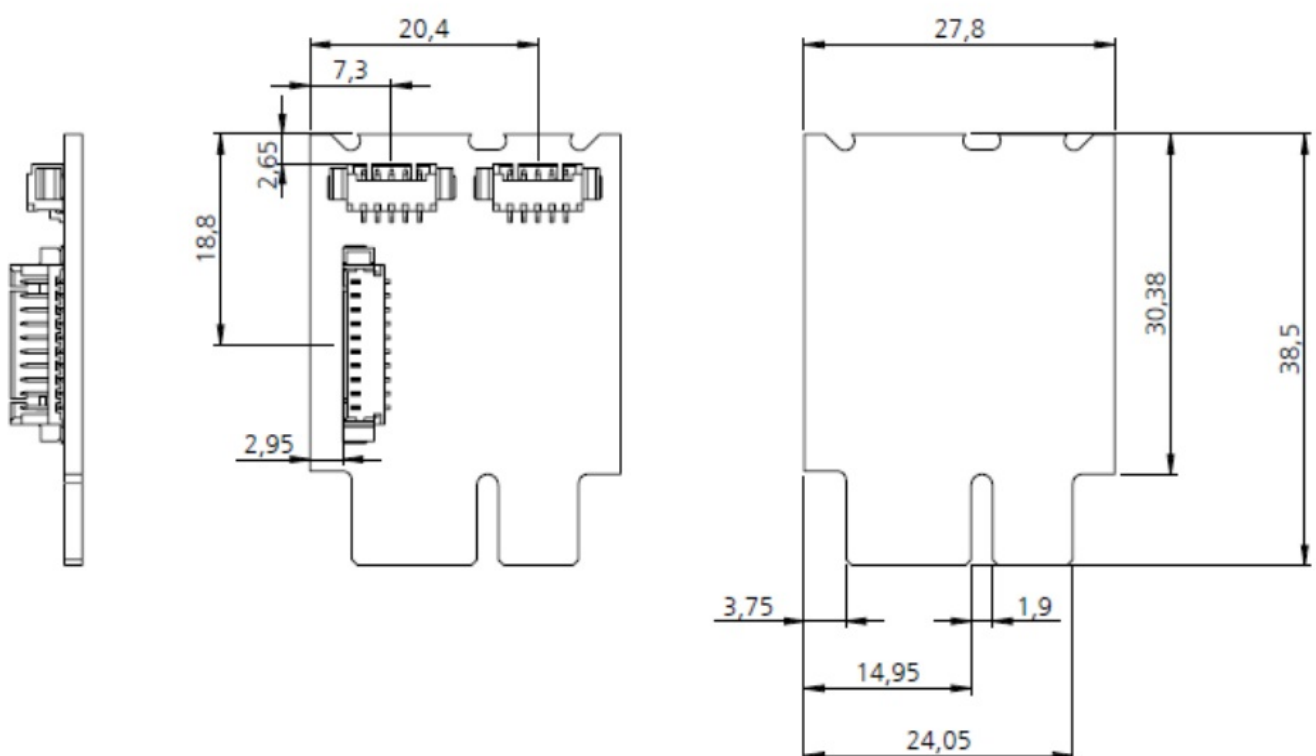*Test report available upon request.*

Connectors
The DESKO RFID Reader Module has the following connectors.

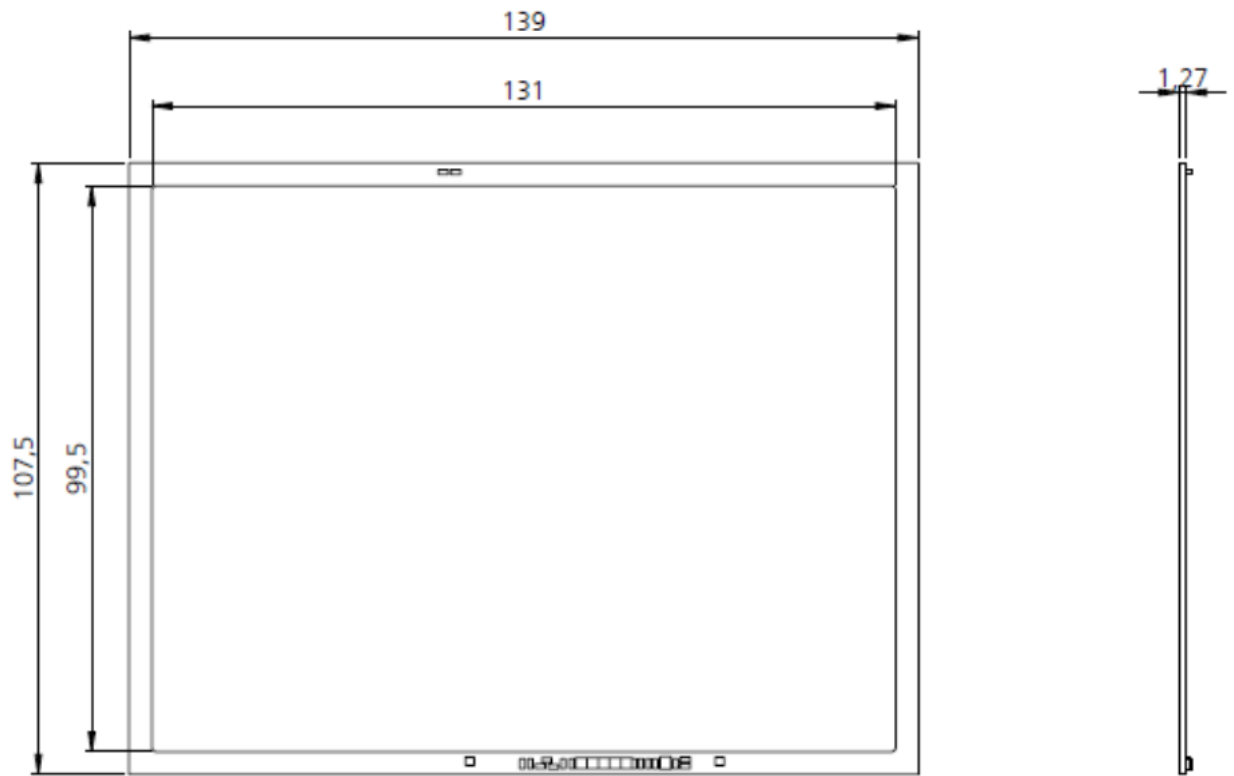| 1	PCI-Express	USB Full Speed + Maintanance
2	Antenna Connector 1	
3	Antenna Connector 2	
4	Connector for Contact Reader	optional

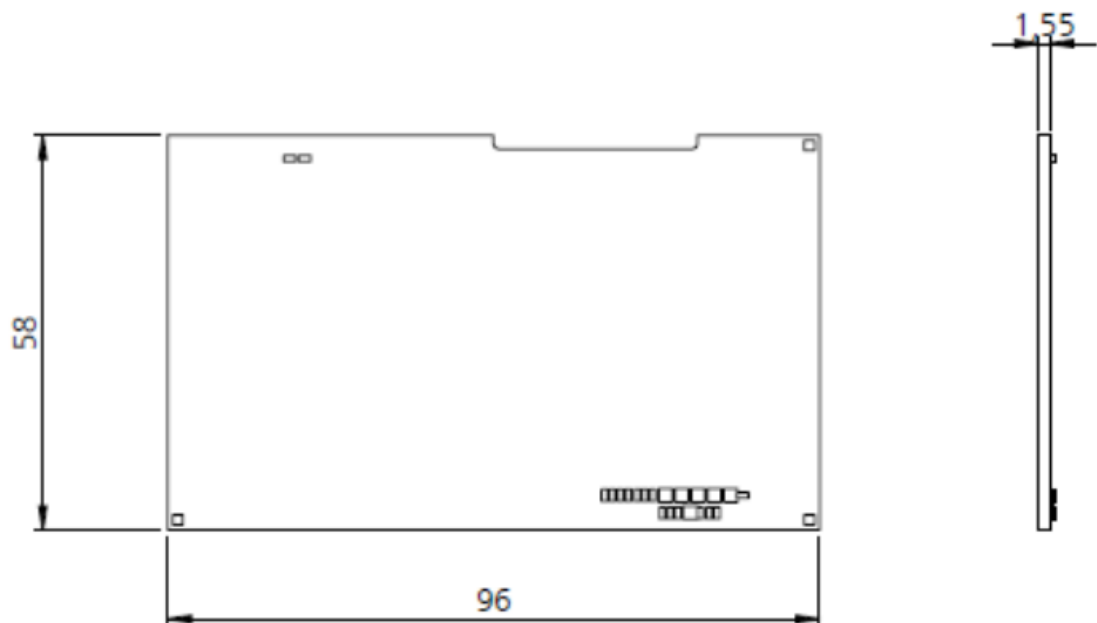**Dimensions**

1. RFID Reader Module
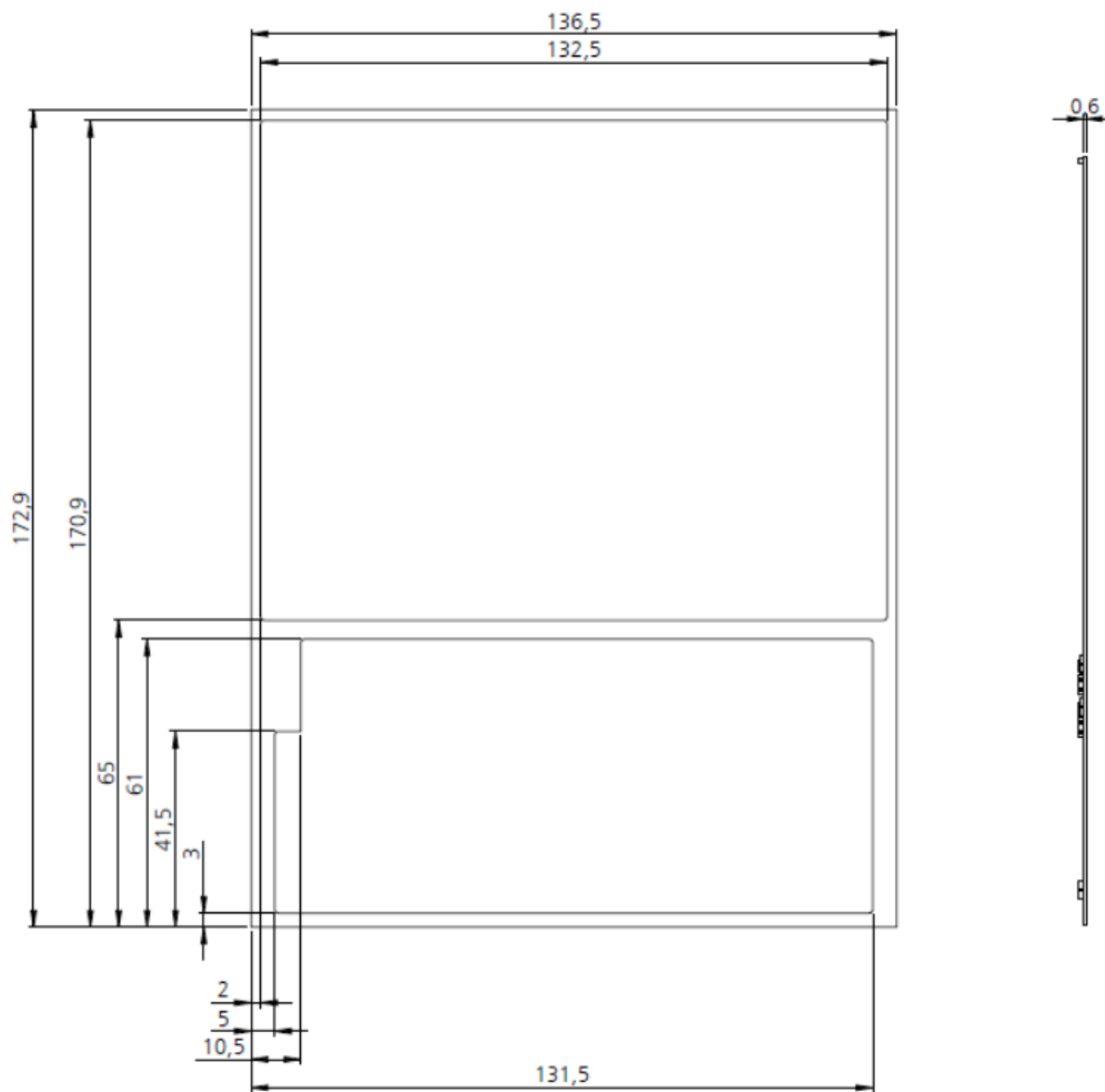
2. **Antennas**

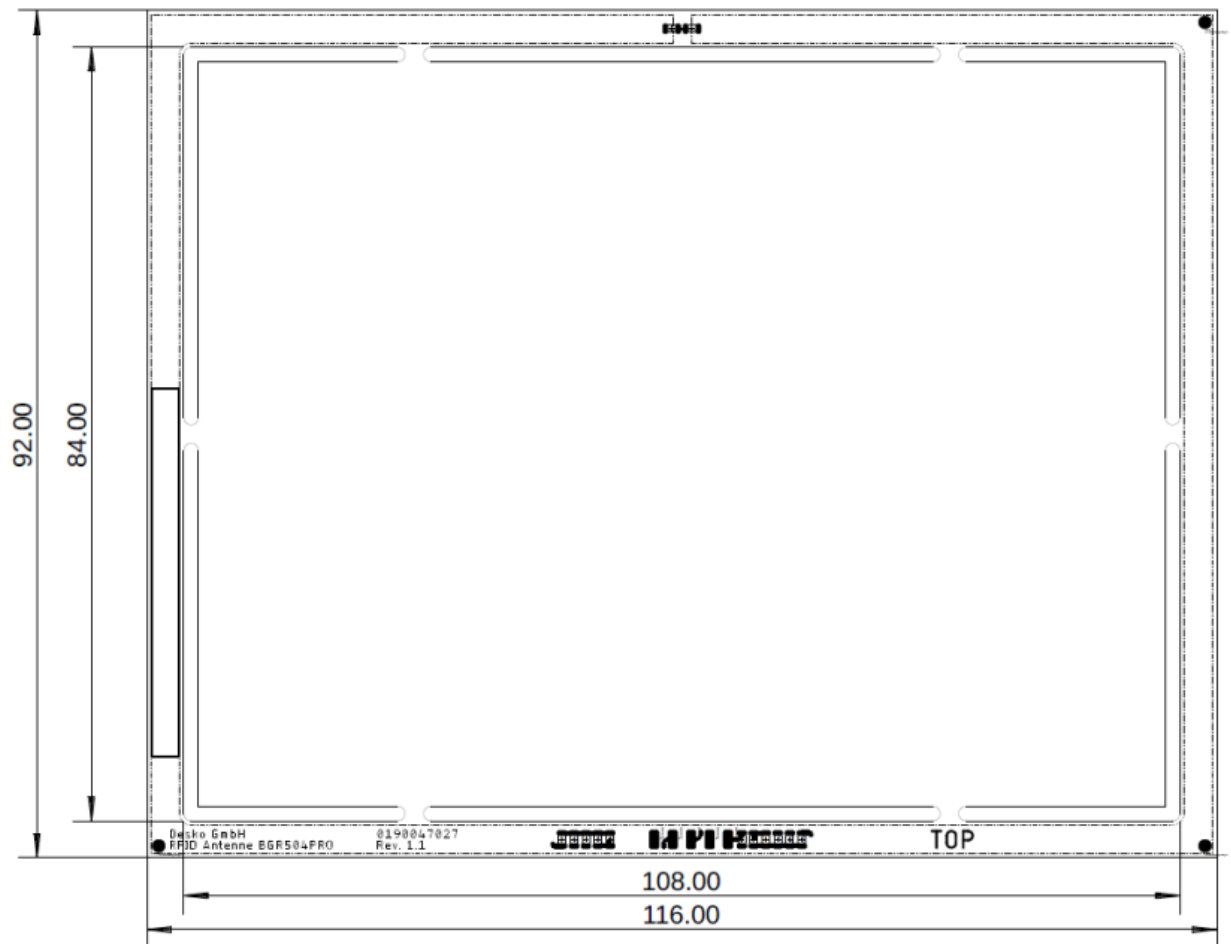- Antenna Penta Scanner Large:

- Antenna Penta Scanner Small:

- Antenna Penta Scanner Cube (containing up to 2 Antennnas):

136,5

132,5

0,6

172,9

170,9

65

61

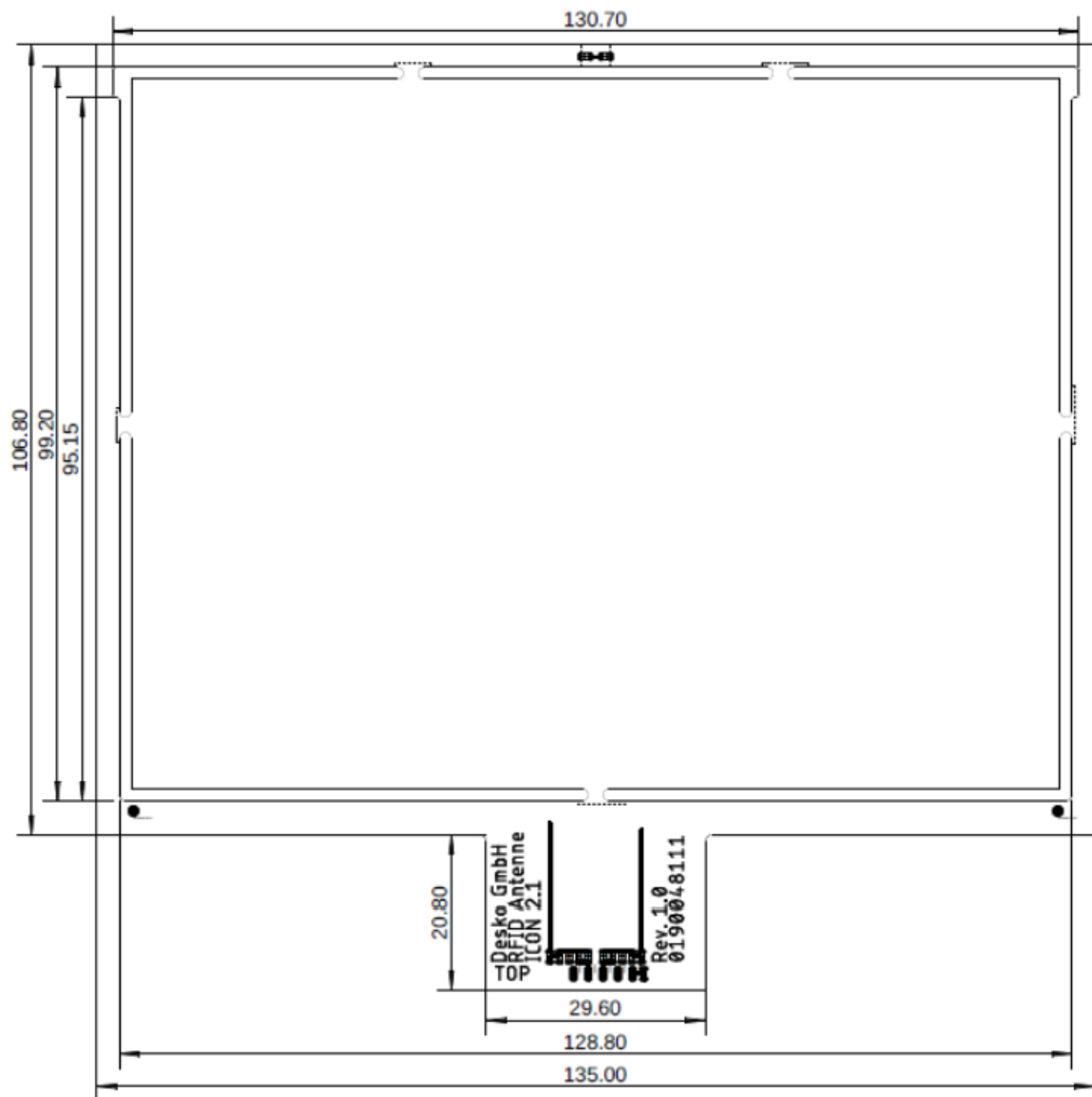41,5

3

2

5
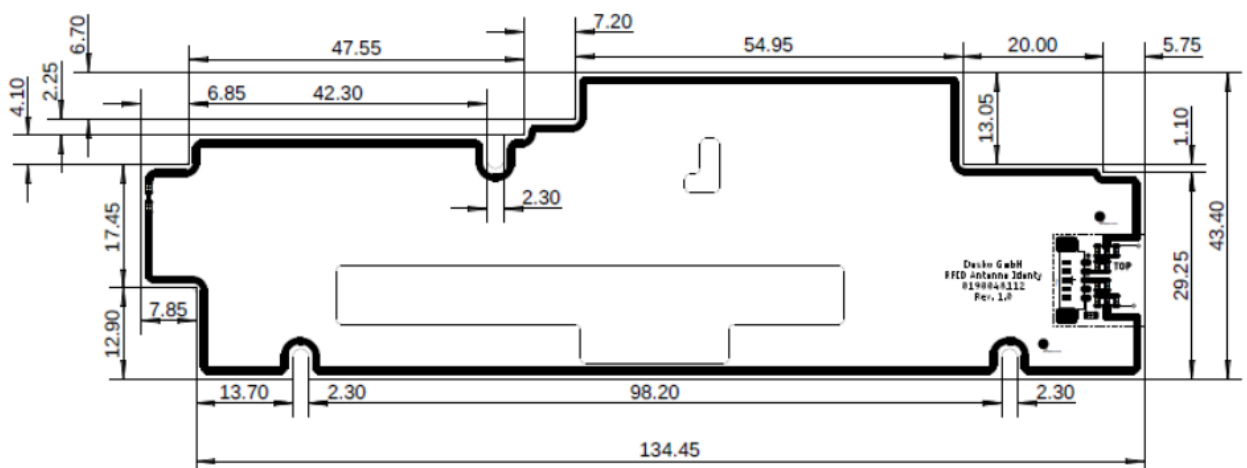
10,5

131,5

- Antenna BGR504pro: Depth = 1.27 mm

- Antenna Penta Block: Depth = 1.66mm
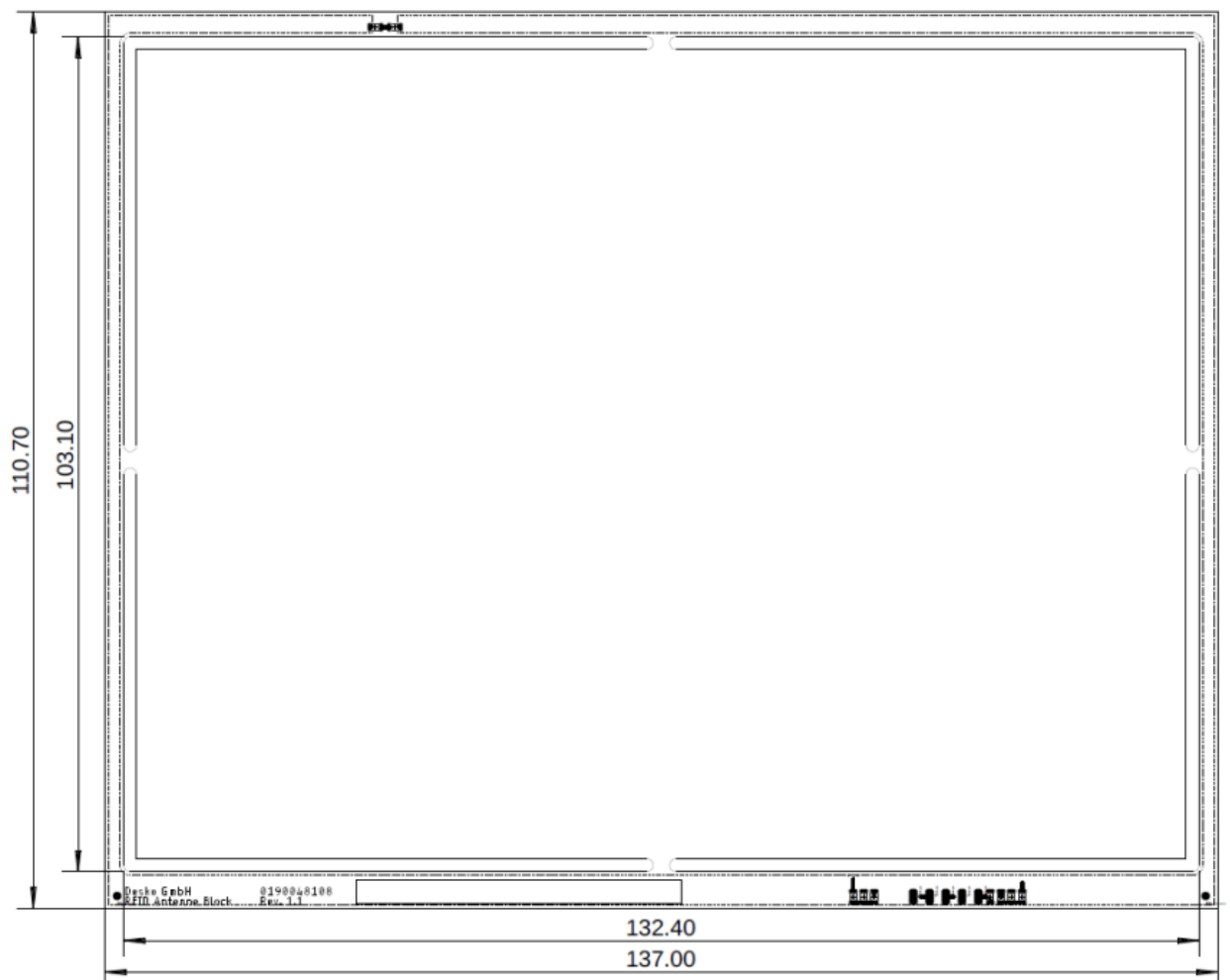
- Antenna ICON: Depth = 1.55mm

- Antenna IDenty: Depth = 0.8 mm

- Antenna Penta (0190050012): Depth = 1.66mm

Desko Gmbh
PCB RFID Ant. P4X BI.
0190050012
Rev. 1.0

BOT

133.50
136.50
116.50
20.00
3.00
9.75
3.00
16.25
59.50
63.50
168.60
171.60
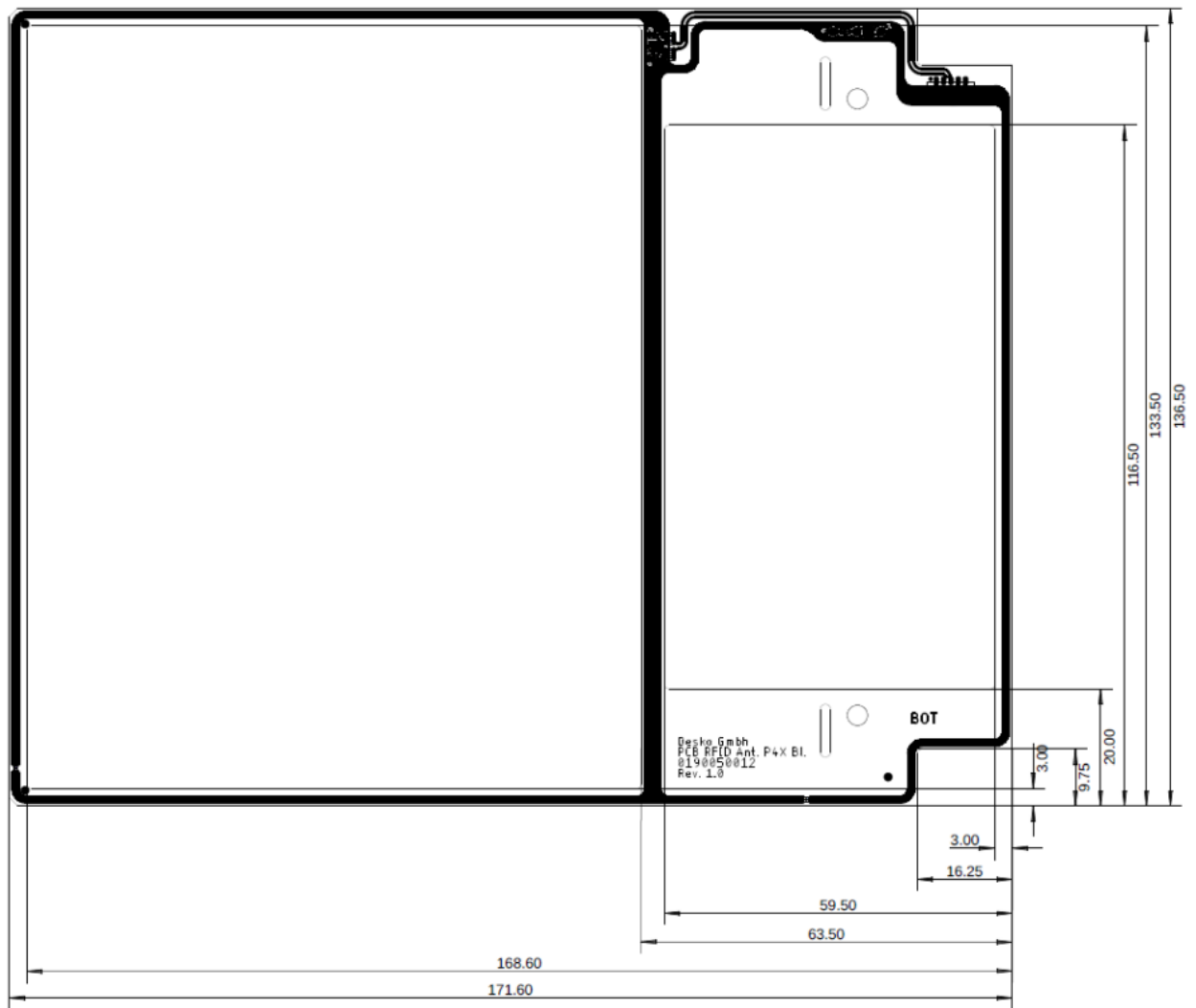
Regulation Information

This 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes, or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information

in that form.

For the integration of the RFID Reader Module, the specification of KDB 996369 D04 need to be observed.

End Product Labeling:

The final end product utilizing the approved module must be labeled on the outside in a visible area with the following statement:

"Contains FCC ID: WTM-NFCREADER2

Contains IC: 7998A-NFCREADER2"

If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label:

"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"

Important Note:

The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module. Appropriate measurements (eg. 15B compliance) an if applicable additional equipment authorizations (sDoC) of the host device to be addressed by the integrator/manufacturer.

This RF Module must not be sold to the general public."

This device complies with Industry Canada license-exempt RSS standard(s). 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.

CAUTION: Any changes or modifications not expressly approved by DESKO GmbH could void the user's authority to operate the equipment.

Software Integration

Driver Information

Information on driver and device	
Driver:	MS Windows CCID Driver
Driver name:	DESKO GmbH SmartCard Reader 0
Device-ID:	1.00

For the latest firmware version, please contact our DESKO support team via e-mail at **support@desko.com**, by phone +49 (0) 921 79279-69 or online **www.desko.com/support**.

Usage of Escape Commands (DESKO Specific APDUs)

In order to receive or send an Escape command to a reader, the entry "EscapeCommandEnable" must be added to the Windows registry and set to a non-zero value under one of the following keys:

- HKLM\SYSTEM\CCS\Enum\USB\VID_1AC2&PID_0300\1.00\Device Parameters (prior to Windows 7).
- HKLM\SYSTEM\CCS\Enum\USB\ VID_1AC2&PID_0300\1.00\Device

Then the vendor IOCTL for the Escape command is defined as follows:

IOCTL_CCID_ESCAPE SCARD_CTL_CODE(3500).
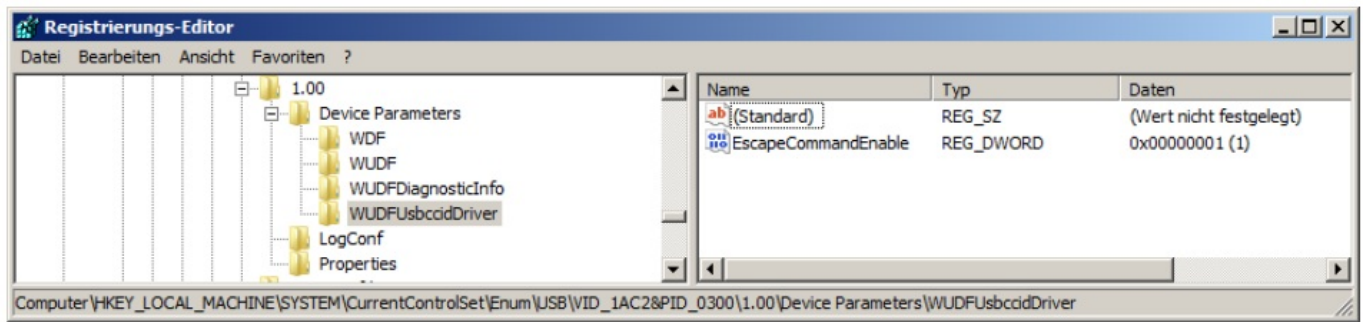
To set the DWORD registry value, the device needs to be connected, so that the driver can be included in the Windows registry. As soon as the value is set, the device must be logged on to the USB interface once again. This can either be done by connecting/disconnecting the USB cable or by disabling and re-activating the driver.

Microsoft Windows Smart Card Plug&Play Service
We recommend disabling Microsoft Windows Smart Card Plug&Play Service (Windows Smart Card PnPS) before using the DESKO Smart Card Reader, since it can cause a misbehavior. If Windows Smart Card PnPS is active, an error message referring to an unsuccessfully installed smart card driver software appears in the latest Windows versions.

How to disable Windows Smart Card PnPS
To disable Windows Smart Card PnP Service, please follow these steps:

1. 1. Click on "Start", type gpedit msc in the "search programs and files" box. Confirm with ENTER.

   2. In the Local Group Policy Editor Navigation pane, select "Computer Configuration", and then "Administrative Templates."

   3. In the details pane, double-click "Windows Components", and then double-click "Smart Card."

   4. Turn on Smart Card Plug and Play service by clicking the right mouse button and then click "Edit."

2. 5. Select "Disabled", and then click OK.

   6. Reboot the PC to activate the changed settings.

For details on deactivating Windows Smart Card PnP, please refer to the following link:
http://support.microsoft.com/kb/976832/en-us.

Specific Application Antenna Handling
Usually, the DESKO RFID Reader Module searches automatically for smart card technologies at the antennas. Nevertheless, in some cases it may be necessary to disable/enable the antennas or to search with only one antenna at a time.
The following example shows, how enabling or disabling of the antenna can be used to optimize the read result:
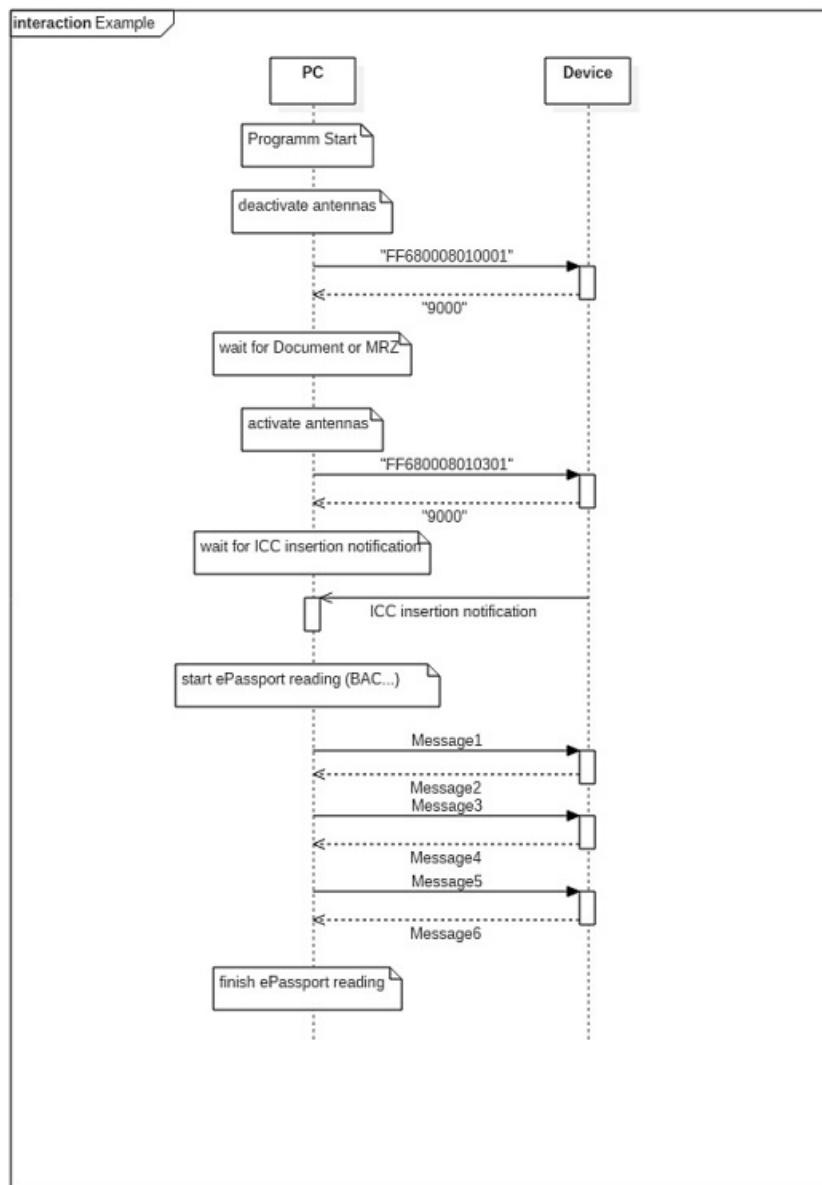
Hardware Integration Rules

Hardware Integration in Metal Environment

When integrating a DESKO Smart Card Reader, please make sure that there are no metal objects close to the device. Any metal object near the DESKO Smart Card Reader detunes the RFID antennas and therefore reduces the RFID reading performance.

Should you want to integrate a DESKO Smart Card Reader in a metal environment, please contact your DESKO contact person or our DESKO support team via e-mail under **support@desko.com**, by phone +49 (0) 921 79279-69 or online **www.desko.com/support** to discuss specific integration instructions.

DESKO Specific APDUs

An Application Protocol Data Unit (APDU) is defined as a communication unit between a smart card and a smart card application according to ISO 7816 standard. Before using proprietary APDUs, the "EscapeCommandEnable" entry must be made in the Windows registry. For a detailed description concerning the usage of escape commands, see chapter 2.2.

Features APDUs

Features APDUs	Description
Send: FF680001010001 Response: NULL terminated ASCII string Example: "Response: 30383035303130312E303030303030313500" = 08050101.00000015	*Get Firmware Version* Shows latest Firmware version.
Send: FF680010010001 Response: NULL terminated ASCII string	*Get compile date*

Example: "Response: 4A756E202036203230313600" = Jun 6 2016	Shows compile date.
Send: FF680011010001 Response: NULL terminated ASCII string Example: "Response: 31303A30333A353000" = 10:03:50	*Get compile time* Shows compile time.
Send: FF680012010001 Response: NULL terminated ASCII string Example: "Response: 303000" = 00	*Get Protocol Version* Shows latest protocol version. Shows latest protocol version of DESKO specific A PDUs. Default: 00

Settings APDUs
The following APDUs are only temporarily stored. After rebooting the device, you get the values of the default

setting again.

Settings APDUs	Description
Send: FF680009010001 Response: 1 Byte Example: "Response: 03" = Antenna 0 und Antenna1	*Get Antenna Selection*
	Determines which antennas are used to search for smart card technologies.
	Values: 00 → none 01 → Antenna 0 02 → Antenna 1 03 → Antenna 0 und antenna 1
	Default: 03
	Antenna 0: Antenna auf der Reader LP Antenna 1: External antenna
Send: FF680008010201	*Set Antenna Selection*
Response: none Example:	Returns which antennas shall be used to search for smart card technologies.
"02"	
= Antenna 1	Values: 00 → none 01 →Antenna 0 02 → Antenna 1 03 → Antenna 0 und antenna 1
	Default: 03
	Antenna 0: Antenna on Reader LP Antenna 1: External antenna
Send: FF68000B010001 Response: 1 Byte Example:	*Get Maximum TX Bitrate* Shows currently set maximum TX Bitrate. Default: 02 = 424 kBit

	Values:
"Response: 02" = 424kBit	00 → 106 kBit 01 → 212 kBit 02 → 424 kBit
Send: FF68000A010201 Response: none Example: "02" = 424kBit	*Set Maximum TX Bitrate [2]* Sets maximum TX Bitrate. Values: 00 → 106 kBit 01 → 212 kBit 02 → 424 kBit
Send: FF68000D010001 Response: 1 Byte Example: "Response: 02" = 424kBit	*Get Maximum RX Bitrate* Returns currently set maximum RX Bitrate. Default: 02 = 424 kBit Values: 00 → 106 kBit 01 → 212 kBit 02 → 424 kBit
Send: FF68000C010201 Response: none Example: "02" = 424kBit	*Set Maximum RX Bitrate [2]* Sets maximum RX Bitrate. Values: 00 → 106 kBit 01 → 212 kBit 02 → 424 kBit

	Get Supported Technologies
Send: FF68000E010001 Response: 2 Byte short value Example : "Response: 0003" = ISO14443A und ISO14443B	Indicates which smart card technologies are searched for. This value is coded bit by bit. Default: 0003 Values: 00 → none 01 → ISO14443A 02 → ISO14443B

	03 → ISO 14443A + ISO 14443B
Send: FF68000F02000101	*Set Supported Technologies*
Response: 00	Returns which smart card technologies shall be searched
Example:	for. This value is coded bit by bit.
"0001"	
= ISO14443A only	Values: 00 → none
	01 → ISO14443A
	02 → ISO14443B

Documents / Resources

DESKO RFID Reader Module [pdf] User Manual
WTM-NFCREADER2, WTMNFCREADER2, nfcreader2, RFID Reader Module, Module, RFID
Module, Reader Module

References

- ![Microsoft] **Fail to insert a smart card in a reader - Windows Server | Microsoft Learn**
- ![DESKO] **First choice for document authentication | DESKO GmbH**
- ![DESKO] **First choice for document authentication | DESKO GmbH**
- ![DESKO] **Support & Service | DESKO GmbH**
- **User Manual**