

INSTALLATION



ID CPR46.10 - OBID myAXCESS[®] flatOne

ISO14443-A and -B, NFC Payment Reader



Note

© Copyright 2012 by
FEIG ELECTRONIC GmbH
Lange Strasse 4
D-35781 Weilburg
Tel.: +49 6471 3109-0
<http://www.feig.de>

With the edition of this document, all previous editions become void. Indications made in this manual may be changed without previous notice.

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization is prohibited. Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.

Composition of the information in this document has been done to the best of our knowledge. FEIG ELECTRONIC GmbH does not guarantee the correctness and completeness of the details given in this manual and may not be held liable for damages ensuing from incorrect or incomplete information. Since, despite all our efforts, errors may not be completely avoided, we are always grateful for your useful tips.

The instructions given in this manual are based on advantageous boundary conditions. FEIG ELECTRONIC GmbH does not give any guarantee promise for perfect function in cross environments and does not give any guaranty for the functionality of the complete system which incorporates the subject of this document.

FEIG ELECTRONIC call explicit attention that devices which are subject of this document are not designed with components and testing methods for a level of reliability suitable for use in or in connection with surgical implants or as critical components in any life support systems whose failure to perform can reasonably be expected to cause significant injury to a human. To avoid damage, injury, or death, the user or application designer must take reasonably prudent steps to protect against system failures.

FEIG ELECTRONIC GmbH assumes no responsibility for the use of any information contained in this document and makes no representation that they free of patent infringement. FEIG ELECTRONIC GmbH does not convey any license under its patent rights nor the rights of others.

OBID® and OBID i-scan® is a registered trademark of FEIG ELECTRONIC GmbH.
All brand names, trademarks or logos are property of their respective owners.

Contact:

Commercial Questions: obid@feig.de
Technical Questions: obid-support@feig.de

Contents

1. Safety Instructions / Warning - Read before start-up !	4
--	----------

2. Characterization ID CPR46.10	5
2.1. Versions / Ordering Information's	6
2.2. Delivery Content	6
2.3. Technical Data	7
2.4. Dimensions	10

3. Mechanical Installation	11
3.1. Recommended Front Panel Cutout	12
3.2. Mounting in Metallic and Nonmetallic Front Panels.....	13
3.3. Recommended Mounting Frame	14

4. Wiring and Electrical Connection	15
4.1. Connection X1, X2	15
4.2. Standby / Wakeup.....	16
4.3. SAM Socket (ID CPR46.10-4SUSB only)	17
4.4. LEDs	18

5. Radio Approvals	19
5.1. Europe (CE).....	19

1. Safety Instructions / Warning - Read before start-up !

- The device may only be used for the intended purpose designed by for the manufacturer.
- The operation manual should be conveniently kept available at all times for each user.
- Unauthorised changes and the use of spare parts and additional devices which have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorised measures shall exclude any liability by the manufacturer.
- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- Repairs may only be executed by the manufacturer.
- Installation, operation, and maintenance procedures should only be carried out by qualified personnel.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes .
- When working on devices the valid safety regulations must be observed.
- **Special advice for carriers of cardiac pacemakers:**
Although this device doesn't exceed the valid limits for electromagnetic fields you should keep a minimum distance of 25 cm between the device and your cardiac pace-maker and not stay in an immediate proximity of the device respective the antenna for some time.

2. Characterization ID CPR46.10

The OBID® classic-pro ID CPR46.10 is a transparent EMVCo Level 1 approved contactless RFID card reader for unattended electronic payment-, eTicket- or eMobility- Applications.

The reader is explicitly designed to be nearly flat installed into a metallic front panel from the back side like vending machines, ticket machines, petrol- or charging stations, etc. If mounted in non-metallic front plates an additional 2 mm steel frame has to be used. The robust and flat housing front panel ensures a good protection against water, dust and vandalism.

The ID CPR46.10 supports all common contactless credit and debit cards as well as all other common ISO14443-A and -B based smart cards and can communicate with NFC devices running in card emulation mode.

The reader offers high security authentication and encryption. Data transfer between the reader and the host is AES256 encrypted.



Fig. 1 ID CPR46.10 front view - not installed

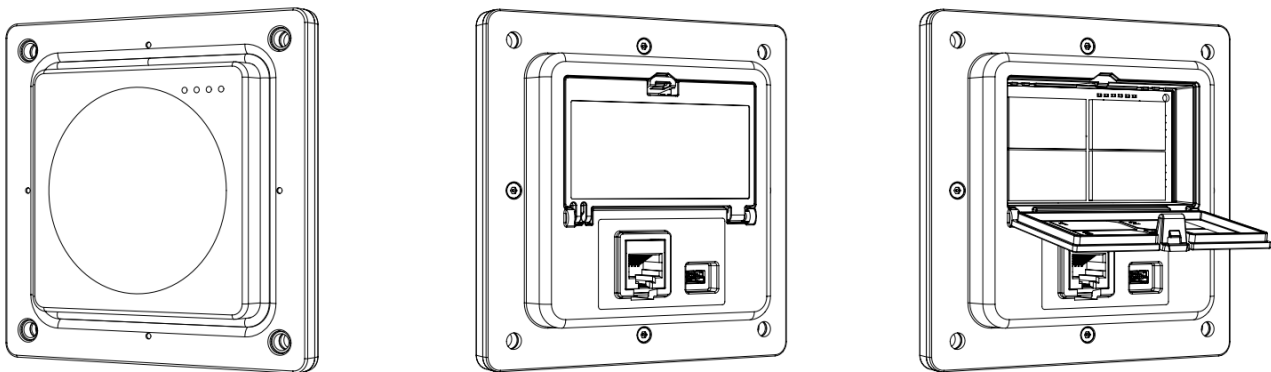


Fig. 2 ID CPR46.10 Front view and rear view with closed and open hatch to SAM sockets

2.1. Versions / Ordering Information's

The ID CPR46.10 reader family includes one model with four SAM Sockets (**ID CPR46.10-4SUSB**) in ID000 format which are accessible via a service hatch in the rear side of the housing and one model without SAM Sockets (**ID CPR46.10-USB**). Both models are offering beneath the USB interface a RS232 and a RS232-LVTTL interface.

Model	Order No.	SAM Sockets	Host-Interface		
			USB	RS232	RS232 LVTTL
ID CPR46.10-4SUSB (OBID myAXCESS® flatOne plus)	3889.000.00	4	●	●	●
ID CPR46.10-USB (OBID myAXCESS® flatOne)	3889.001.00	-	●	●	●

2.2. Delivery Content

- ID CPR46.10 RFID Reader Unit
- Rubber (EPDM) Sealing Cord (D=4 mm)

2.3. Technical Data

Housing		<ul style="list-style-type: none"> transparent front: PC rear part: ASA+PC
Dimensions over all (W x H x D)		<ul style="list-style-type: none"> 120 x 120 x 23,8 mm (4,72 x 4,72, x 0,95 in)
Visible front section (W x H)		<ul style="list-style-type: none"> 85 x 85 mm (3,35 x 3,35 in)
Weight		approx 255 g (9 oz)
Protection Class	Front Side	<ul style="list-style-type: none"> IP65 (if accurate installed)
	Back Side	<ul style="list-style-type: none"> IP30
Impact protection Class (Front Impact)		<ul style="list-style-type: none"> IK10 (installed with mounting frame)
Temperature Range	Operating	<ul style="list-style-type: none"> -25 °C to +70 °C¹ (-13 °F to +158 °F)
	Storage	<ul style="list-style-type: none"> -40 °C to +80 °C (-40 °F to +176 °F)
Humidity		95 % max, (no condensing)
Power Supply (Alternative)		<ul style="list-style-type: none"> 5 V DC 8 to 42 V DC
Antenna		internal
Operating Frequency		13,56 MHz
RF Interface		ISO/IEC 14443-A / -B
Supported Transponder (reading and writing)		ISO/IEC 14443-4 compliant smart cards, NFC Type 1, 2 and 4 in card emulation mode, mifare classic, mifare PLUS, mifare DESFire, mifare ultralight, my-d move, my-d proximity, Jewel, SR176, SR1x, Calypso (Innovatron radio protocol)
Terminal / Host-Interface		<ul style="list-style-type: none"> USB Full Speed (12 Mbit/s) Self-Powered Device RS232 (4.800 - 921.600 Baud) RS232-LVTTL (4.800 - 921.600 Baud)
Connector		
	VCC, RS232, RS232TTL, Wakeup:	<ul style="list-style-type: none"> RJ-45 (8P8C) Modular Jack
	USB:	<ul style="list-style-type: none"> Mini USB - B
Operating Modes		Polling-Mode (OBID® ISO-Host)

¹ With duty cycle ≤ 50% and max. active duration of 60 Seconds.

User Interface	<ul style="list-style-type: none"> • 4 x LED green • 1 x LED red • 1 x LED yellow • 1 x Buzzer
Contact Interface - ISO7816 (ID CPR46.10-4SUSB only)	4 x independent SAM Sockets for ID000 Format (SIM-Card) 9600 to 625.000 bit/s T=0 and T=1 Protocol support of power class A, B, C
MTBF	150.000 h
CPU / Memory	ARM Cortex-M3 at 120 MHz Memory 512 kB Flash-ROM, 128 kB RAM Flash Write Cycles 10.000

Power Consumption – normal Operation

Supply Voltage	ID CPR46.10-4SUSB ²	ID CPR46.10-USB
5 V DC	2,5 W	2,0 W
8 V DC	3,0 W	2,8 W
12 V DC	3,0 W	2,8 W
36 V DC	3,0 W	2,8 W
42 V DC	3,0 W	2,8 W

Table 1 Max. power consumption

Current Consumption – Stand-by

Supply Voltage	Stand-by
5 V DC	280 µA
8 V DC	500 µA
12 V DC	440 µA
24 V DC	300 µA
36 V DC	300 µA

Table 2 Stand-by current in card detection mode

² Excluding the power consumption of inserted SAM modules.

2.4. Compliance

Radio Approval	Europe	EN 300 330
	USA	FCC 47 CFR Part 15
	Canada	IC RSS-Gen, RSS-210
EMC		EN 301 489
Safety and Health		EN 60950
		EN 50364
Waste and Hazardous Substances		WEEE - 2002/96/EC
		RoHS - 2002/95/EC
EMVCo		Conform to Book D - EMV Contactless Communication Protocol Specification, Version 2.1

2.5. Dimensions

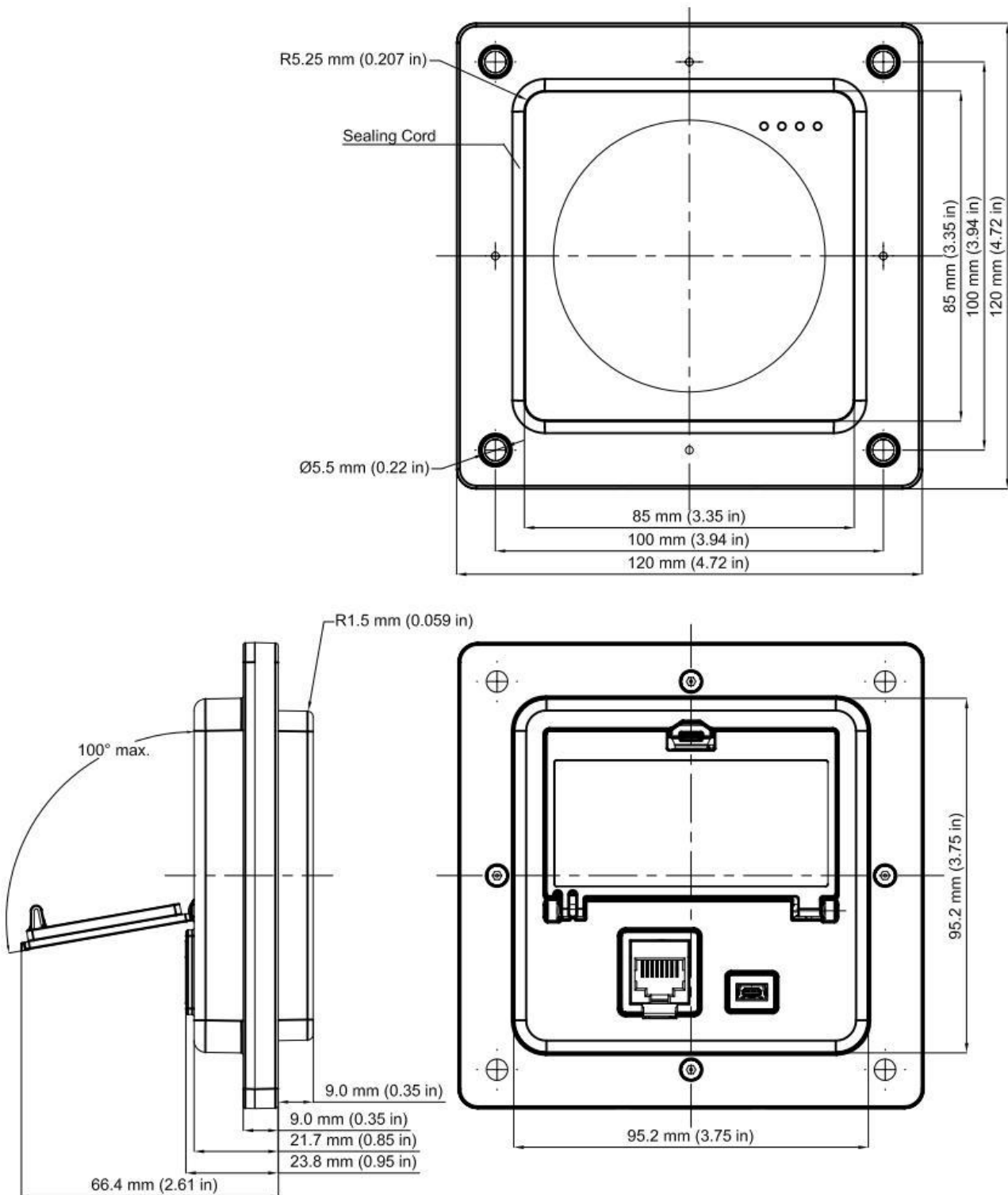


Fig. 3 ID CPR46.10 dimensions

3.Mechanical Installation

The ID CPR46.10 is intended to be installed into a front panel from the back side like it is shown in Fig. 4 ID CPR46.10 installation.

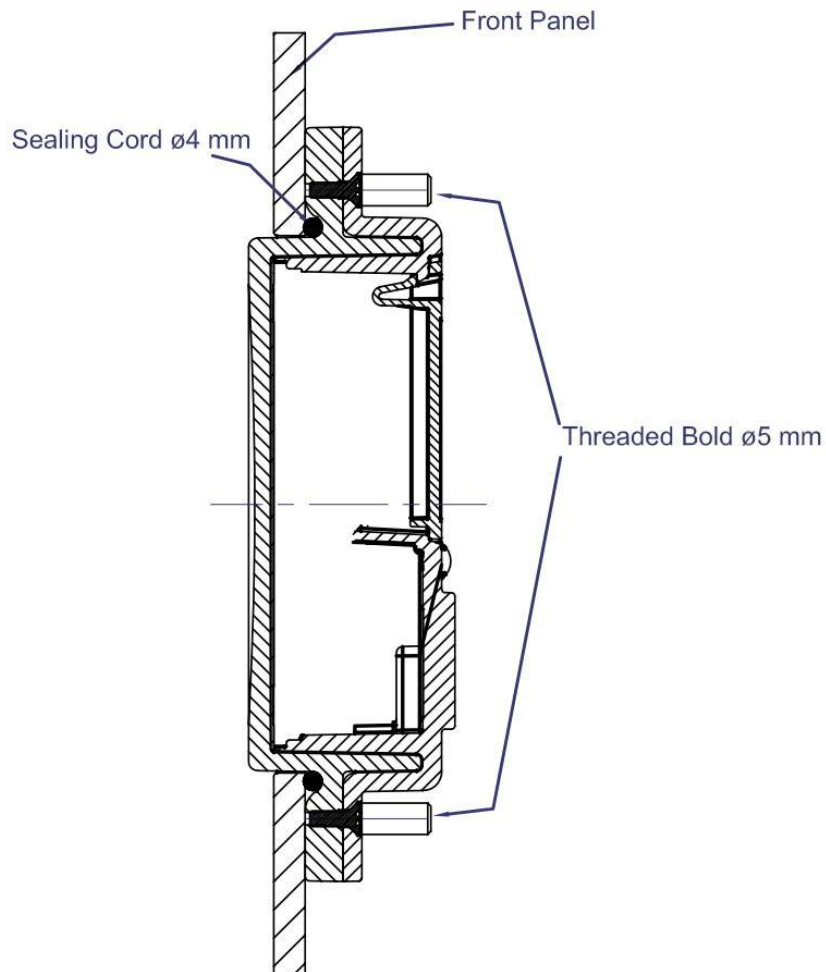


Fig. 4 ID CPR46.10 installation

Recommended torque:

max. 3,5 Nm	If mounted with washer and nut.
max. 5,0 Nm	If mounted with additional Mounting Frame (see Fig. 8 Recommended Mounting Frame)

3.1. Recommended Front Panel Cutout

Fig. 5 shows the cutout which is recommend for installation of ID CPR46.10 into a front panel.

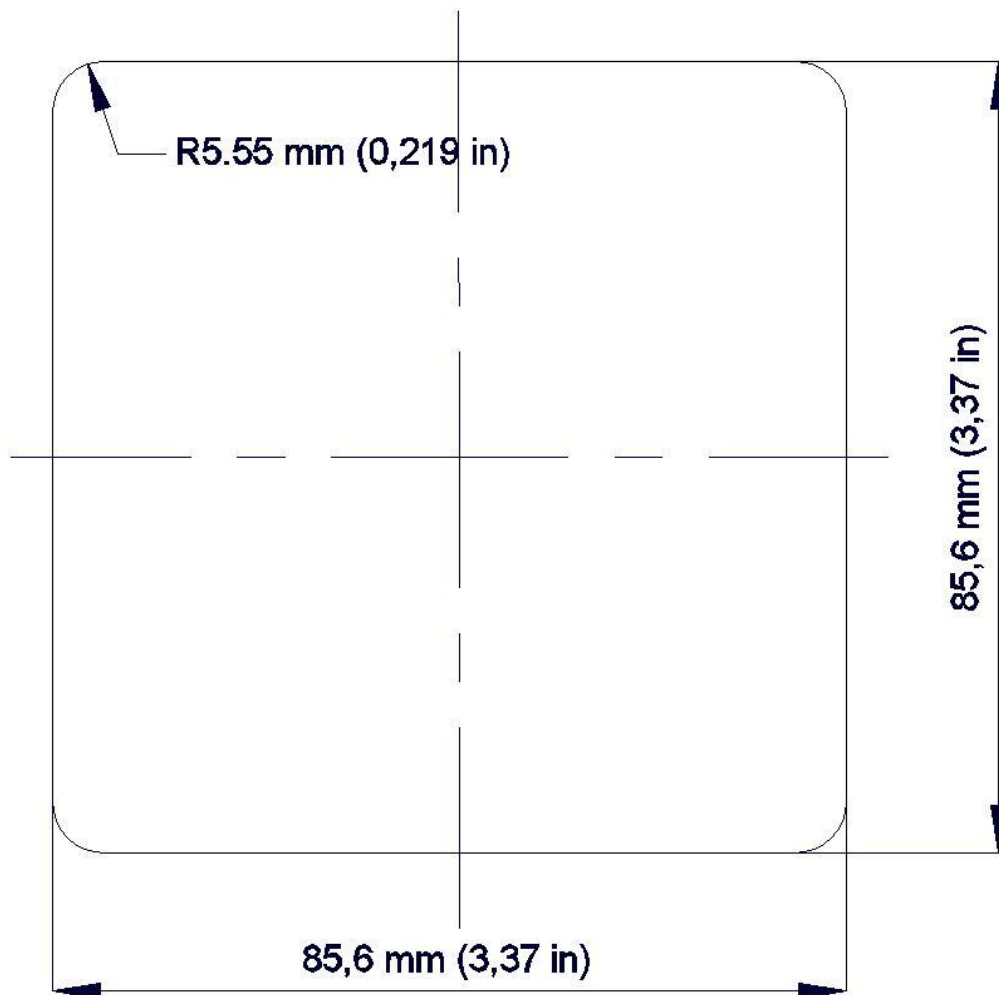


Fig. 5 Recommended front panel cutout for ID CPR46.10 installation

3.2. Mounting in Metallic and Nonmetallic Front Panels

Metallic Front Panels:

The ID CPR46.10 is designed to be mounted into metallic front plates.

The metallic front panel must have a wall thickness between 2,0 and 5,5 mm.

Nonmetallic Front Panels

In cases where ID CPR46.10 shall be used in a nonmetallic front plate like plastic or glass a 2 mm steel plate has to be mounted between ID CPR46.10 and the non-metallic front plate. A sealing between the steel plate and the nonmetallic front plate is recommended to ensure the impermeability.

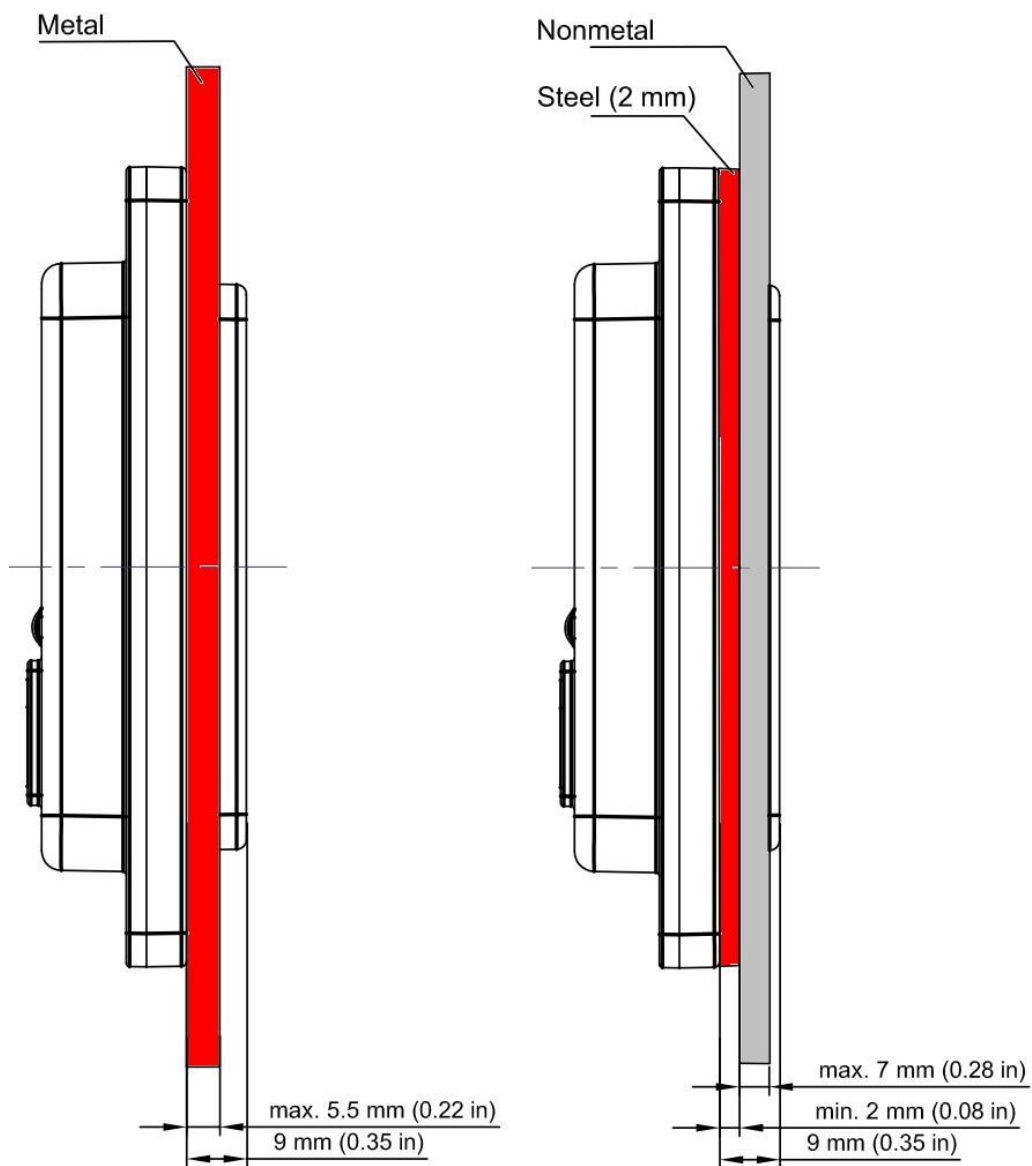


Fig. 6 ID CPR46.10 installation in metallic and non metallic front panels.

3.3. Recommended Mounting Frame

In order to achieve a good mechanical resistance against external mechanical influences like vandalism a additional mounting frame is recommended to be placed behind the mounting flange of the ID CPR46.10 as shown in Fig. 8.



Fig. 7 Recommended mounting with mounting frame

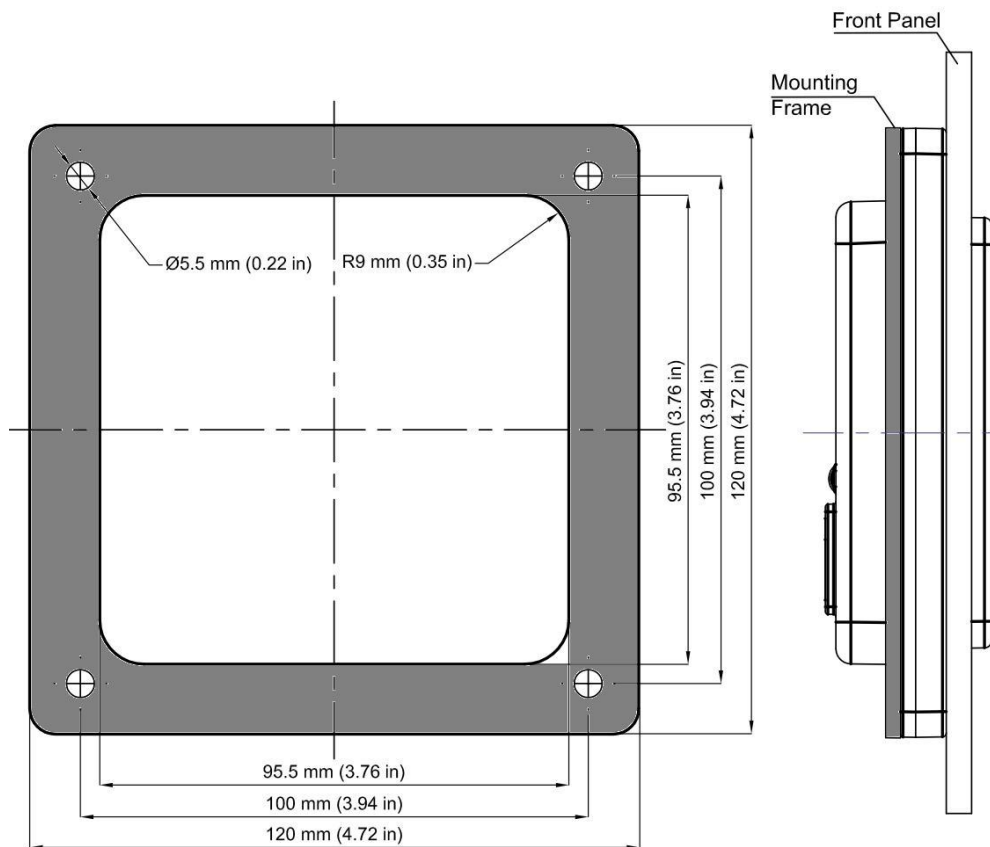
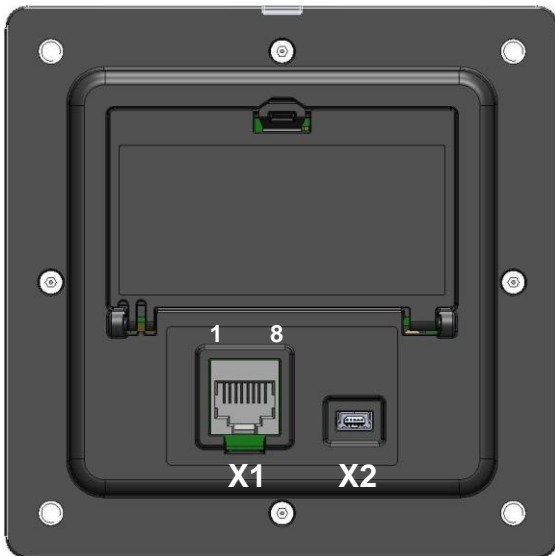


Fig. 8 Recommended Mounting Frame - Dimensions

4. Wiring and Electrical Connection

4.1. Connection X1, X2

The ID CPR46.10 offers 2 alternative power supply options. Either "Vin" which can be between 8 V DC and 42 V DC or Vcc which can be 5 V DC only.



X1 RJ-45	Symbol	Function
1	TXD-LVTTL	RS232-LVTTL
2	RXD-LVTTL	RS232-LVTTL
3	I/O	Wakeup
4	Vin	8 V to 42 V DC
5	GND	
6	Vcc	+ 5 V DC \pm 2 %
7	TxD	RS232
8	RxD	RS232

Fig. 9 Plugs for Power Supply, Wakeup and Interfaces

X2 (USB Mini B):

The USB mini connector is for connecting to an USB host. **The device is a self-powered USB device which requires a separate power supply via the RJ-45 connector X1.**

NOTICE:

- **The reader has to be supplied by a limited power supply (e.g. NEC Class 2/LPS power supply) according IEC EN 60950, only!**
- **Do never supply the reader with both supply Voltages Vin and Vcc at the same time!**
- **Supply voltages outside the specifications may destroy the device!**
- **Use only regulated power supply's with adequate filtering. Noisy power supplies can cause malfunctions.**
- **The host interfaces (RS232 or RS232-LVTTL or USB) can be used exclusive only (not simultaneous).**

4.2. Standby / Wakeup

The ID CPR46.10 offers a standby mode which can be configured via software commands. If standby is activated the bidirectional Wakeup I/O on X1, Pin 3 is used for signaling a wakeup event by the reader. The Wakeup I/O can be used also by the host activate the ID CPR46.10.

To leave the standby mode the reader offers 2 options:

1. Card Detection:

If a RFID transponder card comes in the proximity of the reader the reader awake and pulls down the Wakeup line on X1, Pin 3.

After the host has recognized this signal he can start reader polling via the host interface.

2. Wakeup Signal by Host:

The host controller can awake the ID CPR46.10 by pulling down the Wakeup line on X1, Pin 3.

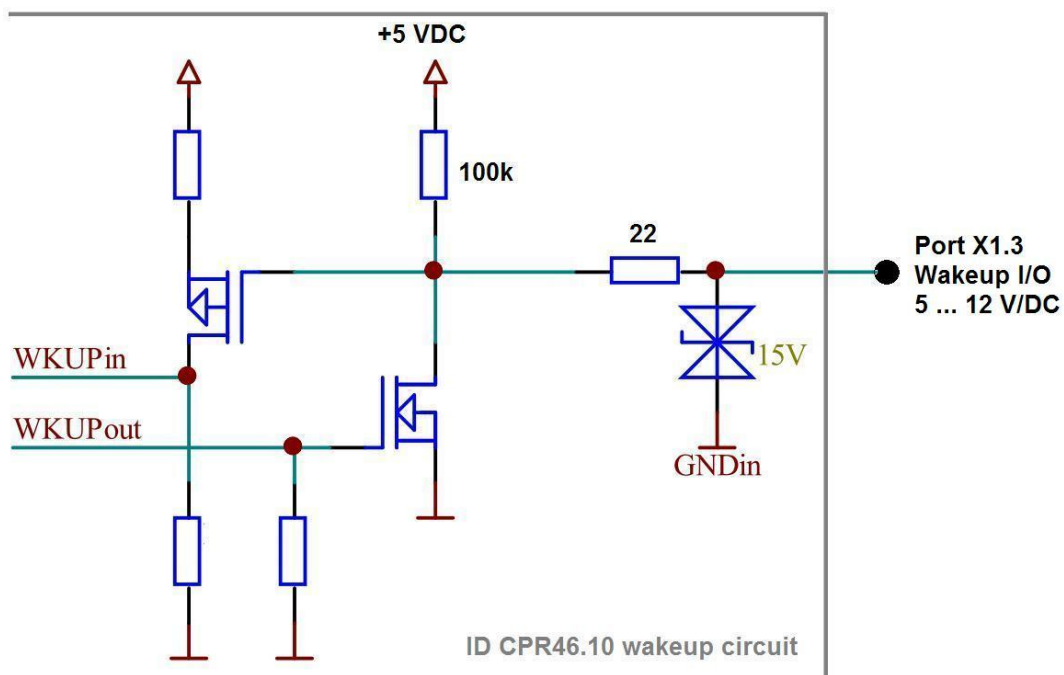


Fig. 10 ID CPR46.10 - internal wakeup line circuit

NOTICE:

- *If the standby - wakeup option is used in connection with the USB interface the USB connection will be interrupted while standby mode.*

4.3. SAM Socket (ID CPR46.10-4SUSB only)

The ID CPR46.10-4SUSB is equipped with 4 SAM sockets which are located behind the latch on the backside of the device.

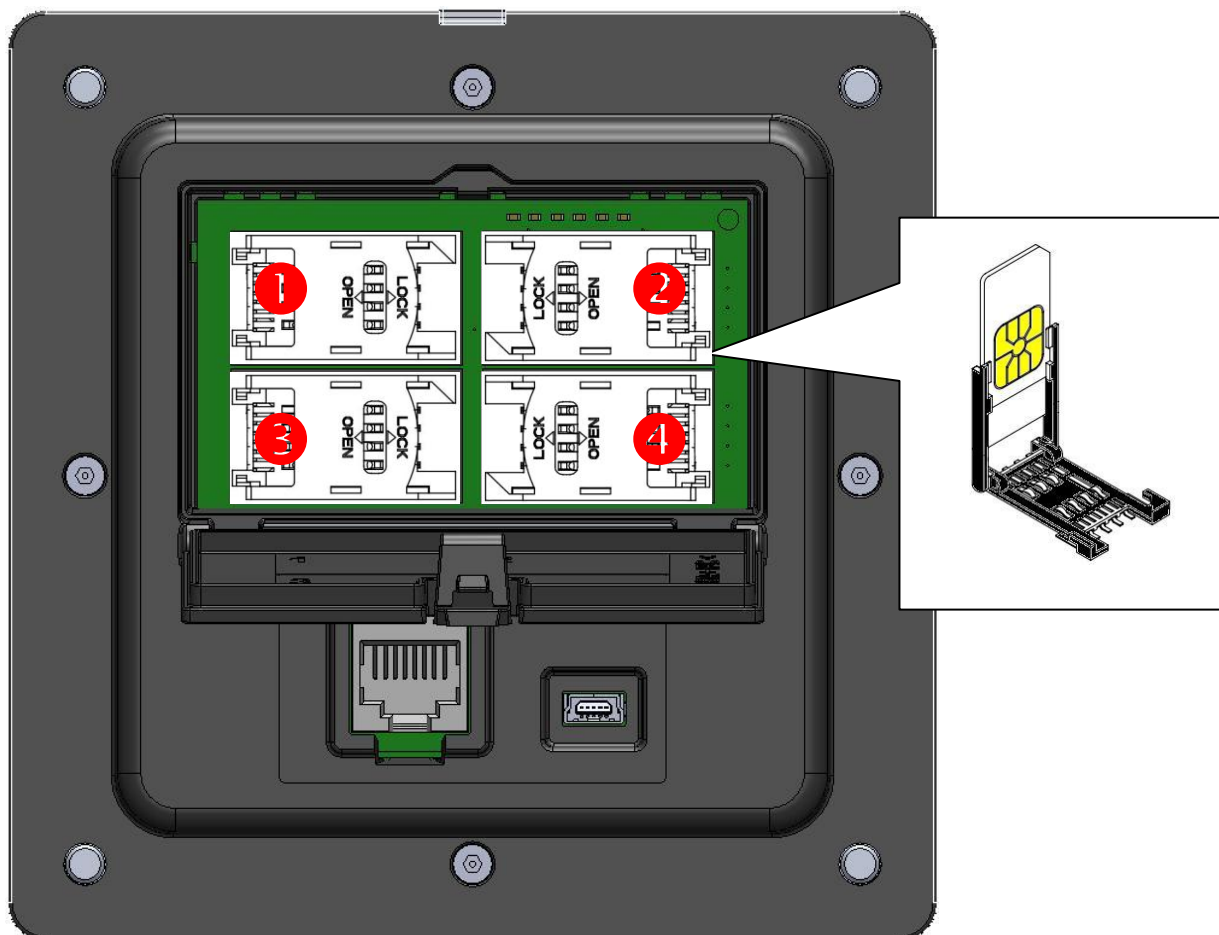


Fig. 11 ID CPR46.10-4SUSB - SAM socket location and handling

4.4. LEDs

The ID CPR46.10 is equipped with 6 different colored LED (see Fig. 12 ID CPR46.10 - LED position and numbering) which can be controlled by the host separately.

LED1	LED2	LED3	LED4	LED5	LED6
green				yellow	red

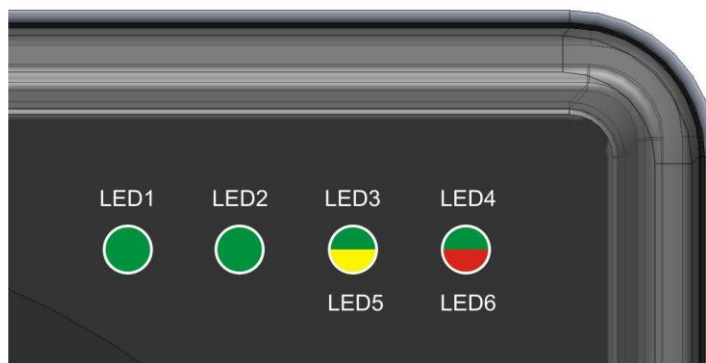


Fig. 12 ID CPR46.10 - LED position and numbering

5. Radio Approvals

5.1. Europe (CE)

When used according to regulation, this radio equipment conforms with the basic requirements of Article 3 and the other relevant provisions of the R&TTE Guideline 1999/EC dated March 99.



Equipment Classification according ETSI EN 300 330: Class 2

5.2. USA (FCC) / Canada (IC)

Notice for USA and Canada	FCC ID: PJMCPR46, IC: 6633A-CPR46
<p>This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions:</p> <ul style="list-style-type: none">(1) this device may not cause harmful interference, and(2) this device must accept any interference received, including interference that may cause undesired operation. <p>Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device.</p> <p>This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.</p> <p>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 :</p> <ul style="list-style-type: none">(1) l'appareil ne doit pas produire de brouillage, et(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.	

FCC ID PJMCPR46

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.
- Consult the dealer or an experienced radio/TV technician for help