SIEMENS

AR40S-MF

AR10S-MF

AR10S-MF AR40S-MF

Installation and Mounting

Version 9.0

Siemens Switzerland Ltd

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Document nr: A-100010-9

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1 Introduction

The AR10S-MF and AR40S-MF are executively designed card readers for modern security. The encryption*) is conducted via a protocol which ensures a high level of security, providing that the card reader and system are set to the secure mode. When the secure mode is activated, the communication from neither the reader nor the system they are connected to can be extracted. They are made of hardwearing materials and will endure most weather conditions. The readers are easy to mount and connect, and can be mounted on a flat surface or partly inside a back box. They can be cleaned with most kinds of domestic detergents. Both readers have a multicolour light frame. The AR40S-MF has a keypad and a high contrast display.

**) Only valid for SiPass integrated MP2.65 – or later*

2 Technical data

	AR10S-MF Mifare card reader standard	**AR40S-MF** Mifare card reader standard with keypad and display
Protocol	OSDP	OSDP
Interface to controller	RS485	RS485
Operating voltage	8.5 – 30.0 VDC	8.5 – 30.0 VDC
Power consumption	DC 12V 43mA Peak 168mA DC 24V 26mA Peak 100mA	DC 12V 60mA Peak 220mA DC 24V 40mA Peak 125mA
Tamper protection	Yes	Yes
Card technology	Mifare	Mifare
Card compatibility	Mifare Classic Mifare Plus Mifare DESfire EV1	Mifare Classic Mifare Plus Mifare DESfire EV1
Reading distance	Up to 6 cm	Up to 6 cm
Indicators	3 x LED (red/yellow/green) 1 x Buzzer Multicolor light frame	3 x LED (red/yellow/green) 1 x Buzzer Multicolor light frame
Keypad	No	Yes
Display	No	Yes, graphic monochrome OLED
Operating temperature	- 40°C to + 55°C*	- 40°C to + 55°C*
IP rating	IP55**	IP55**
IK class	08	08
Housing	Zinc casted metal bezel with polycarbonate plastic front	Zinc casted metal bezel with polycarbonate plastic front
Color	Black, matt chrome	Black, matt chrome
Dimensions (W x H x D)	Surface mounted: 85 x 114 x 22 Back box mounted: 85 x 114 x 14	Surface mounted: 85 x 114 x 22 Back box mounted: 85 x 114 x 14
Approvals	CE according to Radio Equipment Directives, FCC Certified	CE according to Radio Equipment Directives, FCC Certified

* Only applicable for surface mounted readers. Back box mounted readers are specified from -10°C to +55°C.

** Only applicable for surface mounted readers. Back box mounted readers are specified to IP3X.

3 Safety regulations

General

- Follow all warnings and instructions marked on the device.
- Keep this document for reference purposes.
- Please take into account any additional country-specific, local laws, safety standards or regulations concerning installation, operation and disposal of the product.

Liability claim

- Do not make any changes or modifications to the device.
- Use only spare parts and accessories that have been approved by the manufacturer.

3.1 Standards and guidelines

European directives

Siemens Switzerland Ltd hereby declares that this product is in compliance with the essential requirements and other relevant provisions of Radio Equipment Directive 2014/53/EU.

The EC Declaration of Conformity is available from your Siemens sales office or:

Siemens Switzerland Ltd

Gubelstrasse 22

6300 Zug

Switzerland

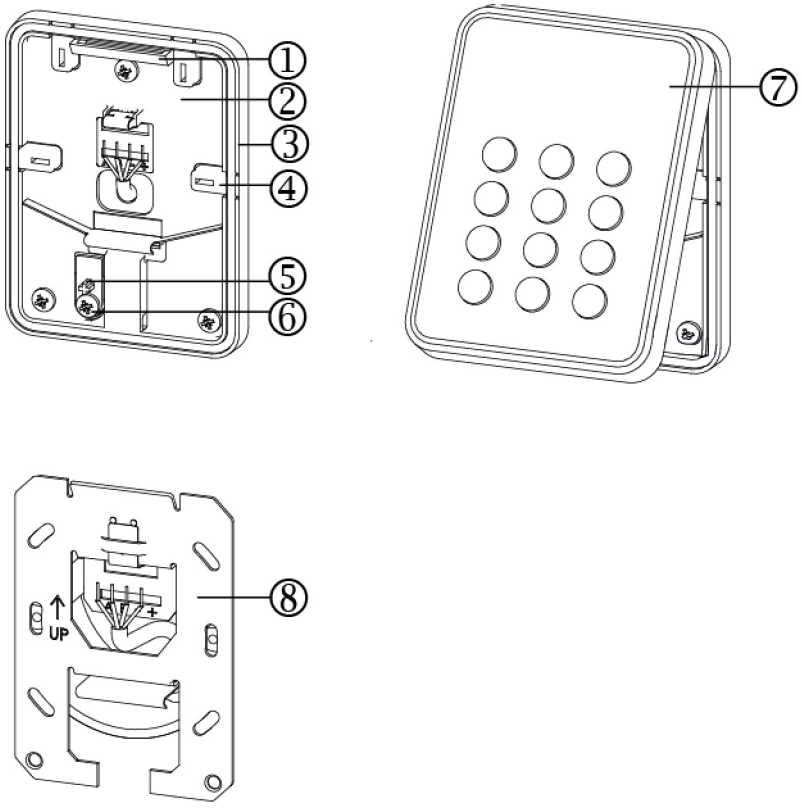
3.2 FCC statements

Model No.	AR10S-MF	AR40S-MF
FCC ID	2AHDLNGCR	2AHDLNGCR

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.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the User`s authority to operate the equipment.

4 Reader components



1. Hinge

2. Base

3. Cord gasket

4. Knock outs x 4

5 Tamper base

6. Screw for removal from wall tamper protection

7 Front

8. Back box plate

1. Screws for back box plate
2. Connector
3. Opening tool – please note that this is a symbolic depiction of the opening tool

5 Mounting and connecting

The reader enables two different mounting alternatives: surface mounted and back box mounted. Those come in two different varieties, depending on how the wires are fed or which kind of back box is used. The reader is delivered with components to support the two mounting alternatives. Please note that the alternatives only require some of the different components. Before mounting the reader, identify the parts which are needed for the appropriate alternative.

Please refer to respective page for:

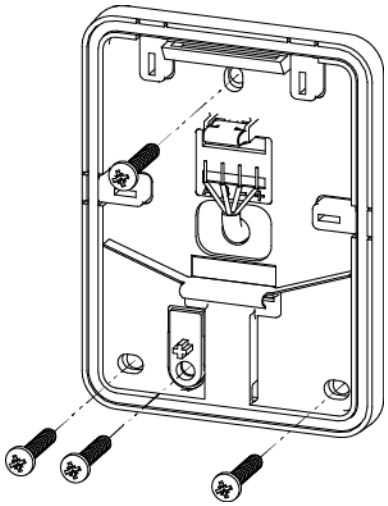
- "Surface mounted reader" on the next page– the reader is mounted on the base, which first is fastened on a wall.
- "Surface mounted reader with cables fed from outside" on page 11 – the reader is mounted on the base and the cables are connected via one of the knock outs.
- "Back box mounted reader " on page 13 – the reader is partly mounted inside a back box in a wall. The two extra screws prevent the reader from rotating.

For connecting the cables to the reader, please refer to: "Connecting the cables" on page 14.

5.1 Surface mounted reader

Use drills and screws appropriate for the surface which the reader is to be mounted upon. The surface should be flat to ensure a close fit. To attach the base to the wall:

1. Make a small hole in the base gasket. The cables will be pushed through this hole.
2. Attach the base to the wall with three screws: one in the middle at the top of the base, and two in the corners at the bottom of the base.

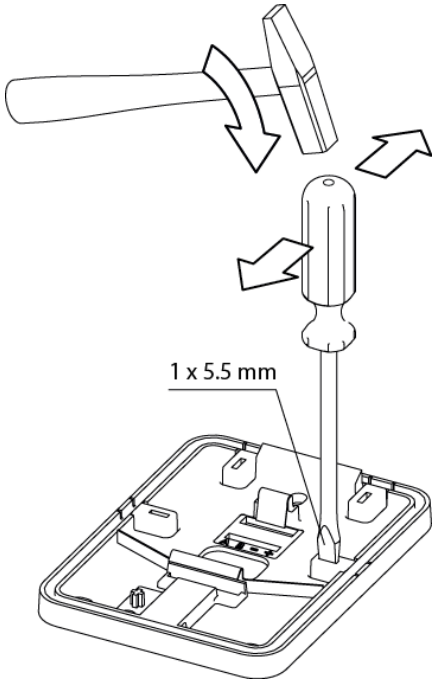


3. In case that the removal from wall tamper protection is required, fix the screw into the hole under the tamper base. Ensure to not use excessive force since this can damage the tamper base.
4. Continue to follow the instructions "Connecting the cables" on page 14.

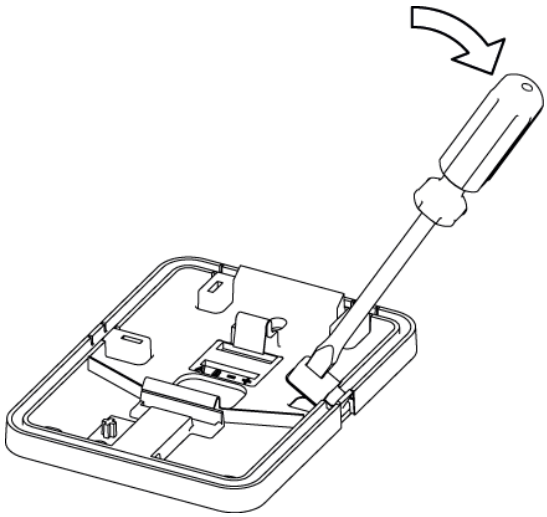
5.2 Surface mounted reader with cables fed from outside

Should the cables be fed from outside:

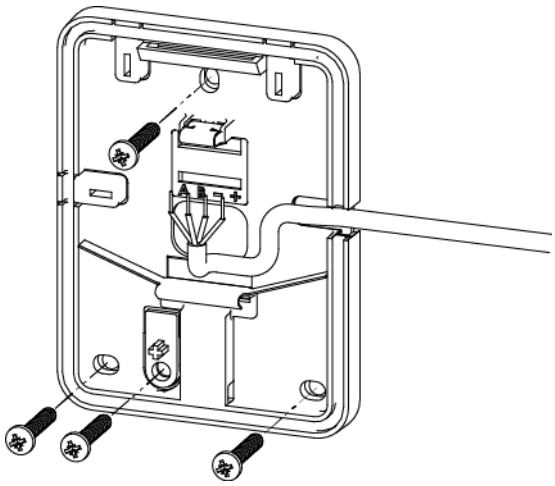
1. Remove the cord gasket from the base.
2. Identify which of the knock outs the cables should be fed through.
3. Insert the flat head screw driver in the pocket of the knock out.
4. Hammer the screw driver handle. This will create enough pressure to crack the exact area of the base which will release the knock out.
5. Tilt the knock out with the screwdriver.



6. Pull the knock out away from the base.



7. Attach the base to the wall with three screws: one in the middle at the top of the base and two in corners at the bottom of the base.



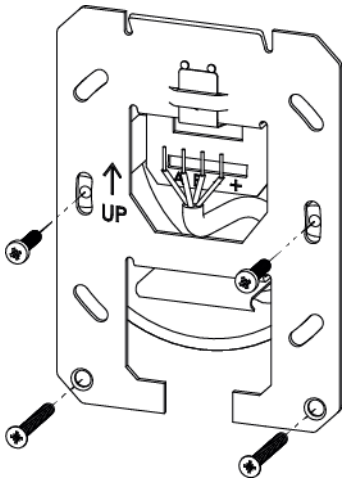
8. In case that the removal from wall tamper protection is required, fix the screw into the hole under the tamper base. Ensure to not use excessive force since this can damage the tamper base.
9. Feed the cables through the opening and reinsert the cord gasket. Proceed to the instructions for "Connecting the cables" on page 15.

It is recommended to seal the gap which the knock out creates. Please note that a reader with a removed knock out is not IP 55.

5.3 Back box mounted reader

The reader is mounted on a back box which is attached with two extra screws.

1. Mount the back box plate on to the back box.



2. Attach the extra screws at the lower part of the back box plate in order to prevent rotation.

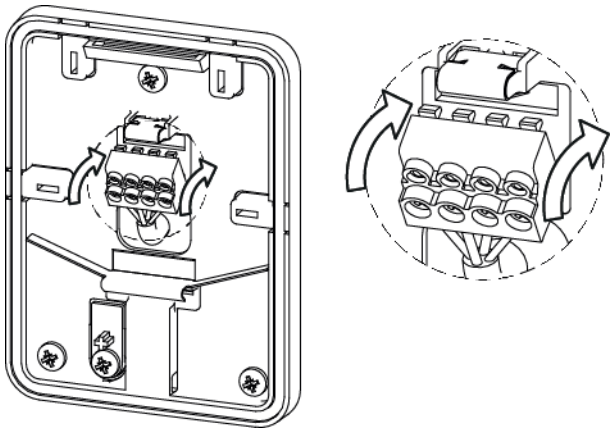
Use only the screws included in the packet for the lower part of the base since those ensure that the reader front will fit perfectly to be securely fitted over the back box.

3. Continue to follow the instructions for "Connecting the cables" on page 15

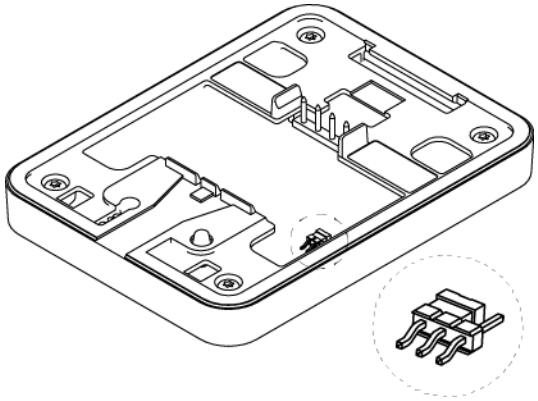
5.4 Connecting the cables

Use a pair twisted screened cable (2 pairs + screen), such as Belden 9502. The cables are connected on the respective indicators. Should an extension cable be used, the cables are already attached to the connector.

1. Attach the cables according to the respective indicators on the connector and the base: **A B - +**
2. Snap the connector in place.

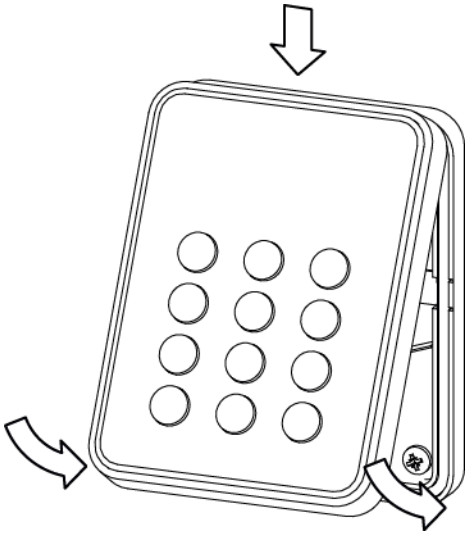


3. Push the cables back.
4. On the backside of the front there is an EOL jumper used for RS485 bus termination (see illustration). By default the reader has the termination ON and acts as the *last* reader on the bus. But if it is an *intermediate* reader on the bus, the jumper must be removed (or placed in OFF position).



5. Place the front of the reader with an angle to the hinges at the top of the base.

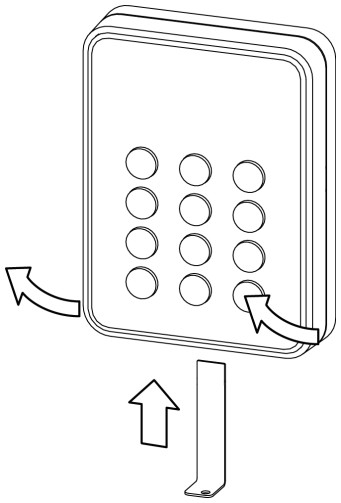
6. Fold the front down until the snap lock confirms a secure attachment.



5.5 Disassembling the reader

Should the reader need to be taken apart:

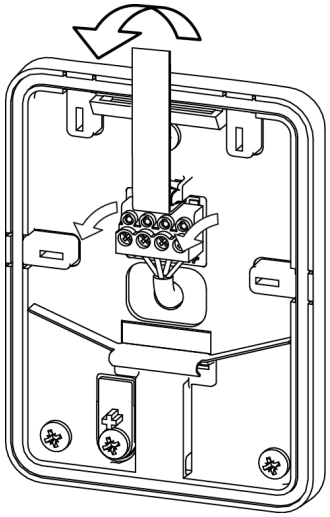
1. Carefully insert the opening tool in the slot between the base and the front.



2. Push gently and lift the front of the base.

To remove the connector:

1. Insert the opening tool as indicated on the picture.
2. Push down gently and tilt the connector away from the base.



6 Default settings

Time-out for configuration card	3 seconds
Time-out for display messages	7 seconds
Activation time-out	30 seconds
Hold-off time for card read	100 milliseconds
Reception for card	Inactive
Character set	Windows 1252
Min background illumination	12
Max background illumination	255
Bus address	0 (Up to eight are supported)
Off-line indication	Yes
Backlight	Always active (Never and Timed activation are possible)
Buzzer volume for key press	2
Buzzer volume for card read	2
System sound	10
Light frame follows LED indicators	Red, yellow, green
Reading MIFARE Classic	UID
Reading MIFARE Plus SL1 – SL3	UID
Reading MIFARE DESFire EV1	UID

The card readers are delivered in this default mode. This mode can be altered with the Configuration Card Creation Tool (3CT), which enables for required settings to be used for the card readers. For further information, please contact the supplier of this reader.

The readers use FreeRTOS. For further information, please visit www.freertos.org.

7 Connecting card reader to SiPass integrated

The connection between a card reader and a Reader Interface Module (RIM) is as follows:

RIM (DRI/ERI)		ARxx-MF
12 V	↔	**+**
0V	↔	**-**
Tx/+	↔	**A**
Rx/-	↔	**B**

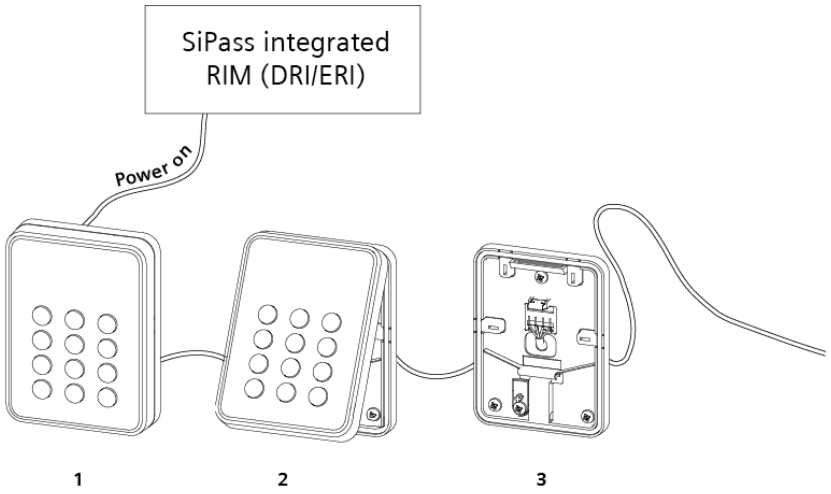
7.1 Setting the card reader address

The card readers are delivered in the default mode which is stated in "Default settings" on page 18. The bus address for card readers with default settings is 0. Ensure to power up the card readers one at the time – this in order to establish the bus addresses in correct order. When connecting a card reader to a RIM (DRI/ERI), the card reader and bus address is automatically configured as follows:

1. The first powered up card reader gets bus address 1.
2. The secondly powered up card reader gets bus address 2 and so forth.

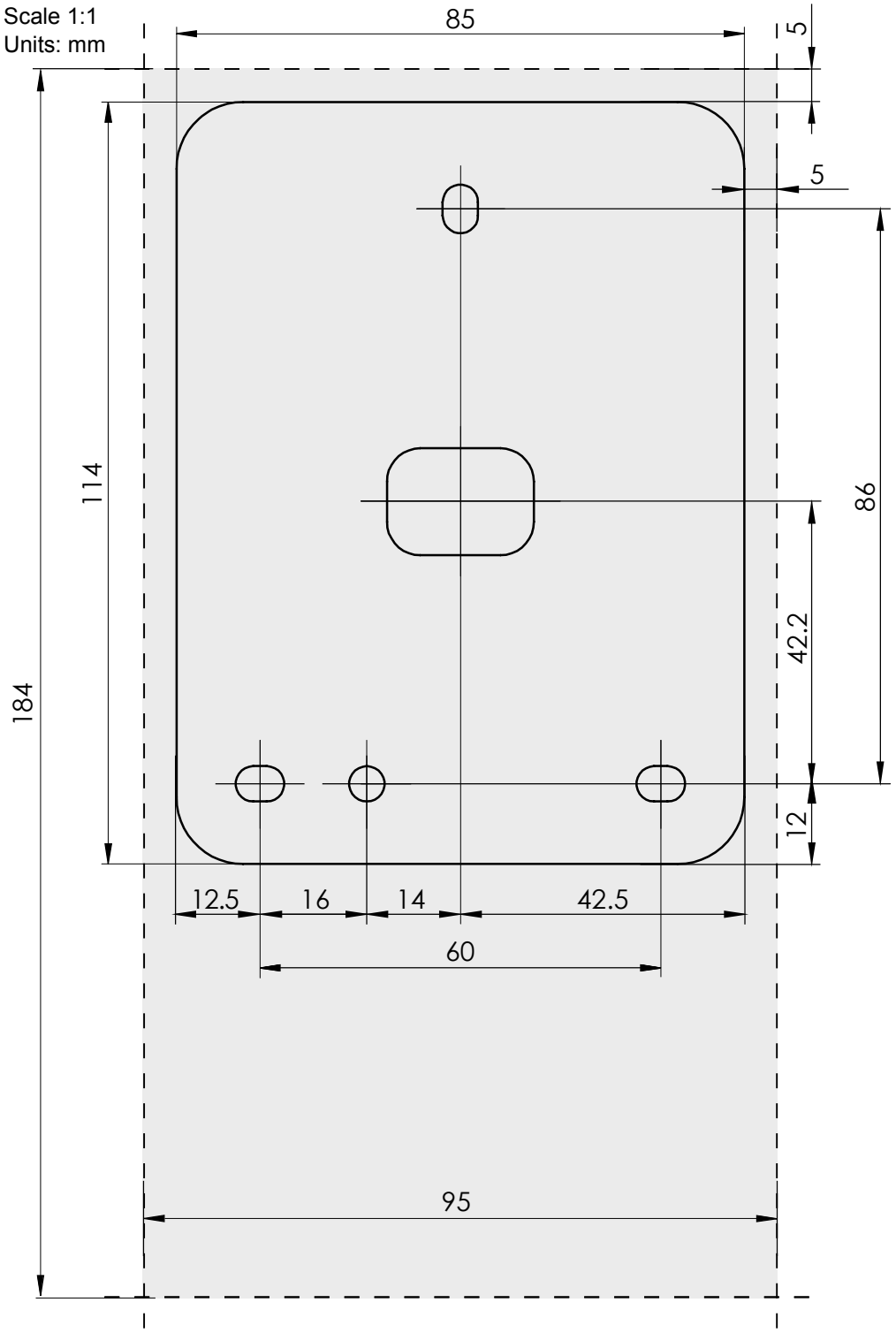
When the card reader is first powered, the yellow LED flashes. The flashing lights stop when it is correctly configured to SiPass integrated. This can be tested by holding a card in close proximity. A correctly configured card reader acknowledges the card according to the SiPass integrated settings.

Please note that a new card reader will always get the next free bus address. Should a card reader with bus address 5 be removed and a new card reader be installed, the new card reader will get address 5.


SiPass integrated
RIM (DRI/ERI)
Power on
1
2
3

8 Disposal

All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. This crossed-out wheeled bin symbol on the product means the product is covered by the European Directive 2002/96/EC.
The correct disposal and separate collection of your old appliance will help prevent potential negative consequences for the environment and human health. It is a precondition for reuse and recycling of used electrical and electronic equipment. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.


Scale 1:1
Units: mm
85
5
5
114
86
42.2
184
12
12.5
16
14
42.5
60
95

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Edition Date 2017-07-14

VANDERBILT

VR40S-MF

VR10S-MF

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Version 9.0

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1 Introduction

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Card technology	Mifare	Mifare
Card compatibility	Mifare Classic Mifare Plus Mifare DESfire EV1	Mifare Classic Mifare Plus Mifare DESfire EV1
Reading distance	Up to 6 cm	Up to 6 cm
Indicators	3 x LED (red/yellow/green) 1 x Buzzer Multicolor light frame	3 x LED (red/yellow/green) 1 x Buzzer Multicolor light frame
Keypad	No	Yes
Display	No	Yes, graphic monochrome OLED
Operating temperature	- 40°C to + 55°C*	- 40°C to + 55°C*
IP rating	IP55**	IP55**
IK class	08	08
Housing	Zinc casted metal bezel with polycarbonate plastic front	Zinc casted metal bezel with polycarbonate plastic front
Color	Black, matt chrome	Black, matt chrome
Dimensions (W x H x D)	Surface mounted: 85 x 114 x 22 Back box mounted: 85 x 114 x 14	Surface mounted: 85 x 114 x 22 Back box mounted: 85 x 114 x 14
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The EC Declaration of Conformity is available from your Vanderbilt sales office or:

Vanderbilt International (IRL) Ltd.
Clonshaugh Business and Technology Park
Clonshaugh
Dublin 17
Ireland

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3.2 FCC statements

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FCC ID	2AHDLNGCR	2AHDLNGCR

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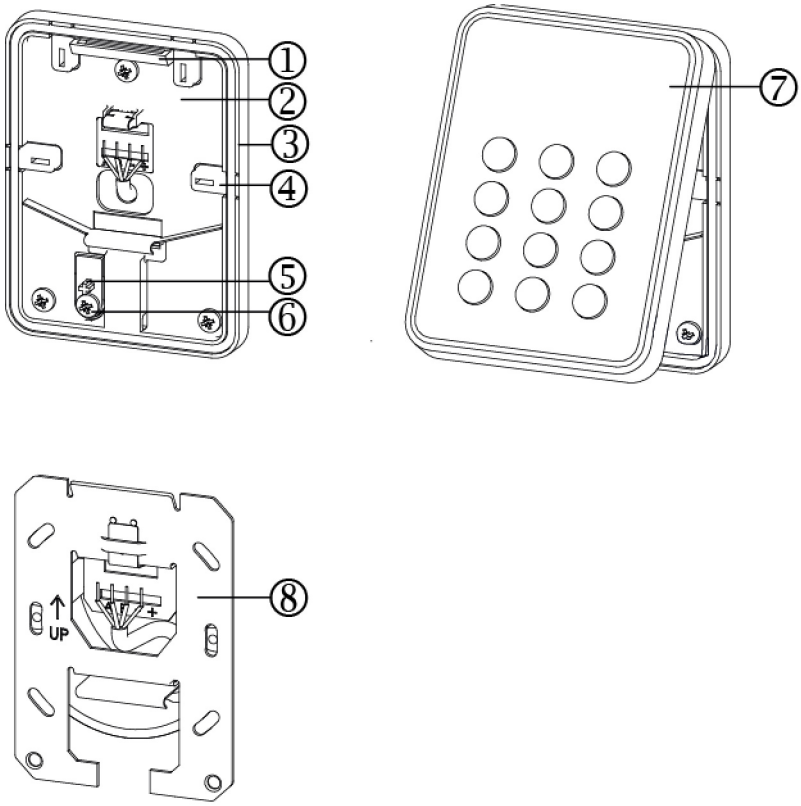
Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the User`s authority to operate the equipment.

4 Reader components



1. Hinge
2. Base
3. Cord gasket
4. Knock outs x 4
5. Tamper base
6. Screw for removal from wall tamper protection
7. Front
8. Back box plate

1. Screws for back box plate
2. Connector
3. Opening tool – please note that this is a symbolic depiction of the opening tool

5 Mounting and connecting

The reader enables two different mounting alternatives: surface mounted and back box mounted. Those come in two different varieties, depending on how the wires are fed or which kind of back box is used. The reader is delivered with components to support the two mounting alternatives. Please note that the alternatives only require some of the different components. Before mounting the reader, identify the parts which are needed for the appropriate alternative.

Please refer to respective page for:

- "Surface mounted reader" on the next page– the reader is mounted on the base, which first is fastened on a wall.
- "Surface mounted reader with cables fed from outside" on page 11 – the reader is mounted on the base and the cables are connected via one of the knock outs.
- "Back box mounted reader " on page 13 – the reader is partly mounted inside a back box in a wall. The two extra screws prevent the reader from rotating.

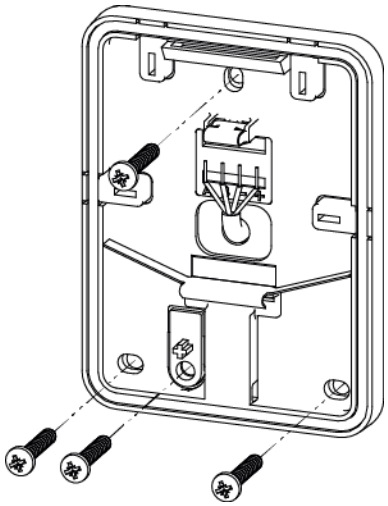
For connecting the cables to the reader, please refer to:

"Connecting the cables" on page 14.

5.1 Surface mounted reader

Use drills and screws appropriate for the surface which the reader is to be mounted upon. The surface should be flat to ensure a close fit. To attach the base to the wall:

1. Make a small hole in the base gasket. The cables will be pushed through this hole.
2. Attach the base to the wall with three screws: one in the middle at the top of the base, and two in the corners at the bottom of the base.

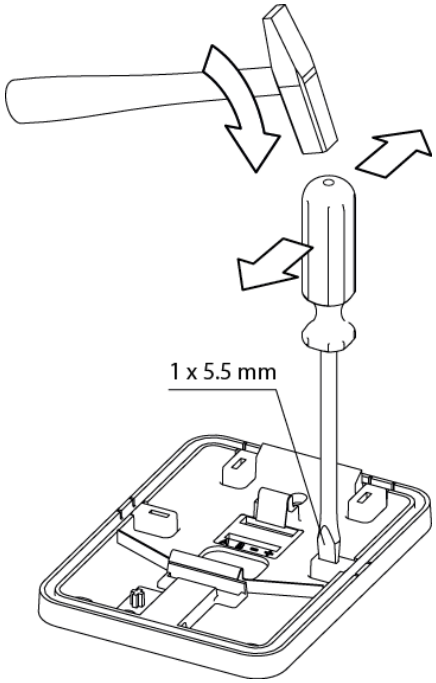


3. In case that the removal from wall tamper protection is required, fix the screw into the hole under the tamper base. Ensure to not use excessive force since this can damage the tamper base.
4. Continue to follow the instructions "Connecting the cables" on page 15.

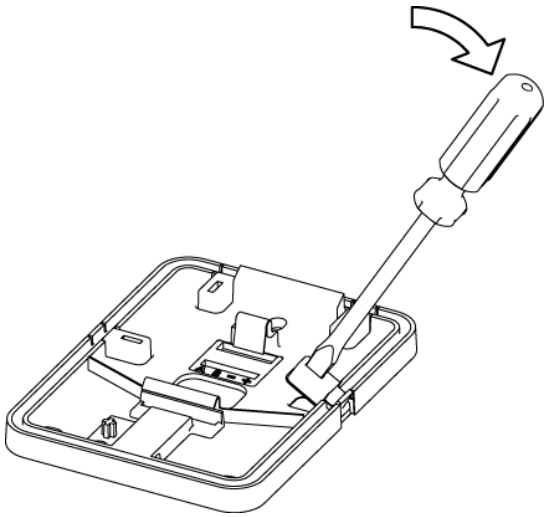
5.2 Surface mounted reader with cables fed from outside

Should the cables be fed from outside:

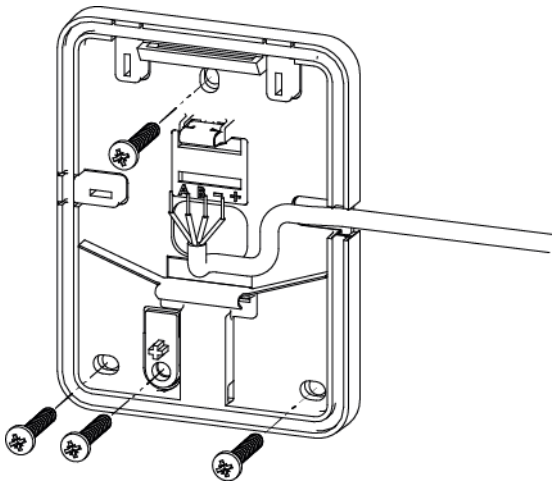
1. Remove the cord gasket from the base.
2. Identify which of the knock outs the cables should be fed through.
3. Insert the flat head screw driver in the pocket of the knock out.
4. Hammer the screw driver handle. This will create enough pressure to crack the exact area of the base which will release the knock out.
5. Tilt the knock out with the screwdriver.



6. Pull the knock out away from the base.



7. Attach the base to the wall with three screws: one in the middle at the top of the base and two in corners at the bottom of the base.



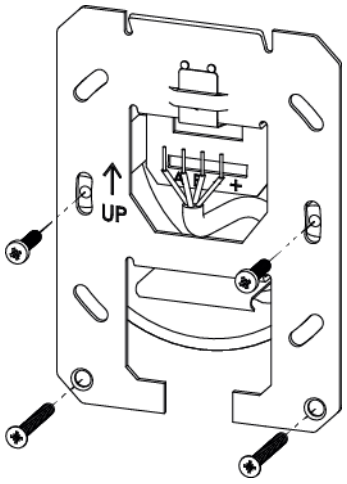
8. In case that the removal from wall tamper protection is required, fix the screw into the hole under the tamper base. Ensure to not use excessive force since this can damage the tamper base.
9. Feed the cables through the opening and reinsert the cord gasket. Proceed to the instructions for "Connecting the cables" on page 15.

It is recommended to seal the gap which the knock out creates. Please note that a reader with a removed knock out is not IP 55.

5.3 Back box mounted reader

The reader is mounted on a back box which is attached with two extra screws.

1. Mount the back box plate on to the back box.



2. Attach the extra screws at the lower part of the back box plate in order to prevent rotation.

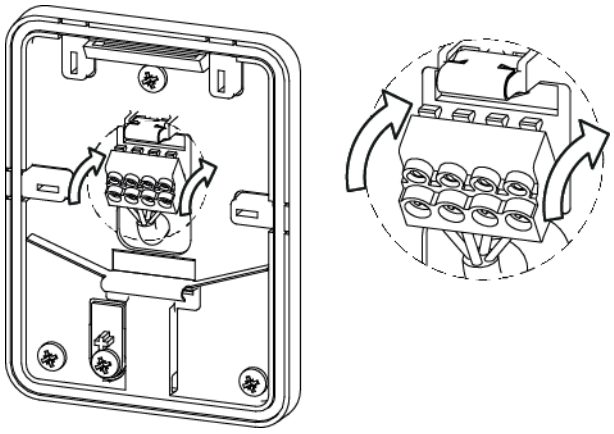
Use only the screws included in the packet for the lower part of the base since those ensure that the reader front will fit perfectly to be securely fitted over the back box.

3. Continue to follow the instructions for "Connecting the cables" on page 14

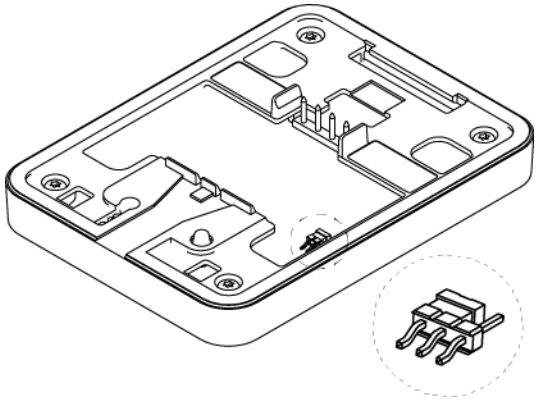
5.4 Connecting the cables

Use a pair twisted screened cable (2 pairs + screen), such as Belden 9502. The cables are connected on the respective indicators. Should an extension cable be used, the cables are already attached to the connector.

1. Attach the cables according to the respective indicators on the connector and the base: **A B - +**
2. Snap the connector in place.

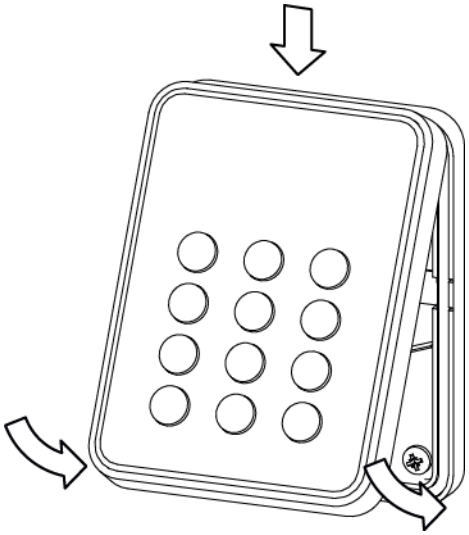


3. Push the cables back.
4. On the backside of the front there is an EOL jumper used for RS485 bus termination (see illustration). By default the reader has the termination ON and acts as the *last* reader on the bus. But if it is an *intermediate* reader on the bus, the jumper must be removed (or placed in OFF position).



5. Place the front of the reader with an angle to the hinges at the top of the base.

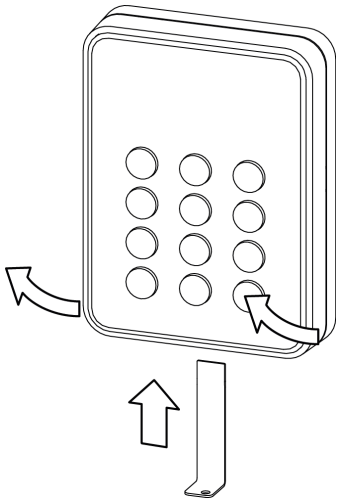
6. Fold the front down until the snap lock confirms a secure attachment.



5.5 Disassembling the reader

Should the reader need to be taken apart:

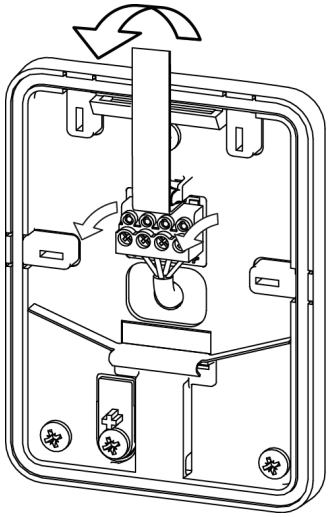
1. Carefully insert the opening tool in the slot between the base and the front.



2. Push gently and lift the front of the base.

To remove the connector:

1. Insert the opening tool as indicated on the picture.
2. Push down gently and tilt the connector away from the base.



6 Default settings

Time-out for configuration card	3 seconds
Time-out for display messages	7 seconds
Activation time-out	30 seconds
Hold-off time for card read	100 milliseconds
Reception for card	Inactive
Character set	Windows 1252
Min background illumination	12
Max background illumination	255
Bus address	0 (Up to eight are supported)
Off-line indication	Yes
Backlight	Always active (Never and Timed activation are possible)
Buzzer volume for key press	2
Buzzer volume for card read	2
System sound	10
Light frame follows LED indicators	Red, yellow, green
Reading MIFARE Classic	UID
Reading MIFARE Plus SL1 – SL3	UID
Reading MIFARE DESFire EV1	UID

The card readers are delivered in this default mode. This mode can be altered with the Configuration Card Creation Tool (3CT), which enables for required settings to be used for the card readers. For further information, please contact the supplier of this reader.

The readers use FreeRTOS. For further information, please visit www.freertos.org.

7 Connecting card reader to SiPass integrated

The connection between a card reader and a Reader Interface Module (RIM) is as follows:

RIM (DRI/ERI)		VRxx-MF
12 V	↔	**+**
0V	↔	**-**
Tx/+	↔	**A**
Rx/-	↔	**B**

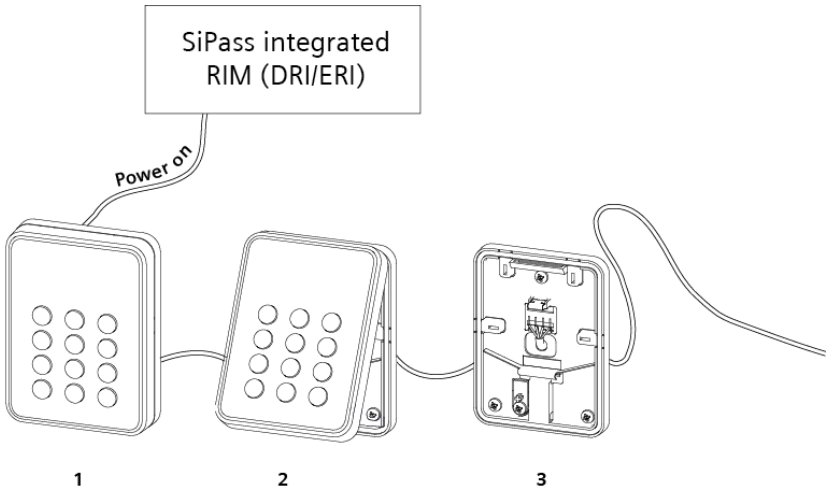
7.1 Setting the card reader address

The card readers are delivered in the default mode which is stated in "Default settings" on page 18. The bus address for card readers with default settings is 0. Ensure to power up the card readers one at the time – this in order to establish the bus addresses in correct order. When connecting a card reader to a RIM (DRI/ERI), the card reader and bus address is automatically configured as follows:

1. The first powered up card reader gets bus address 1.
2. The secondly powered up card reader gets bus address 2 and so forth.

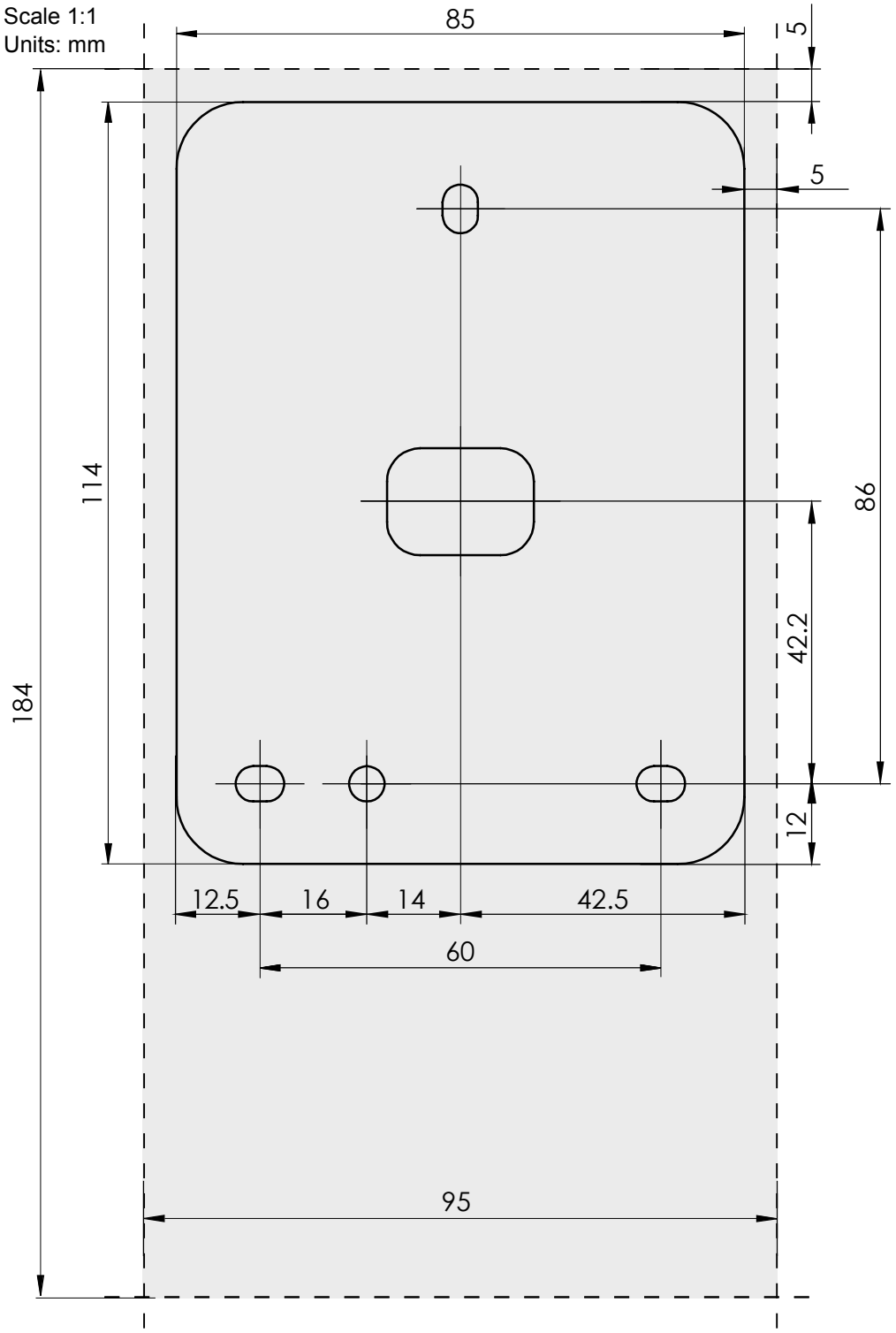
When the card reader is first powered, the yellow LED flashes. The flashing lights stop when it is correctly configured to SiPass integrated. This can be tested by holding a card in close proximity. A correctly configured card reader acknowledges the card according to the SiPass integrated settings.

Please note that a new card reader will always get the next free bus address. Should a card reader with bus address 5 be removed and a new card reader be installed, the new card reader will get address 5.


SiPass integrated
RIM (DRI/ERI)
Power on
1
2
3

8 Disposal

All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. This crossed-out wheeled bin symbol on the product means the product is covered by the European Directive 2002/96/EC.
The correct disposal and separate collection of your old appliance will help prevent potential negative consequences for the environment and human health. It is a precondition for reuse and recycling of used electrical and electronic equipment. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.


Scale 1:1
Units: mm
85
5
5
114
86
42.2
184
12
12.5
16
14
42.5
60
95

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