Mullion Reader

User Manual

VANDERBILT

Document nr: A-100410

Table of Contents

1 Introduction

The VR20M-MFand VR50M-MF are mullion mount card readers with modern security over OSDP and support for the traditional Wiegand protocol. When installed as part of a secure system, the communication from the reader or the controller they are connected to cannot be compromised. The readers are made of hard wearing materials and will endure most weather conditions. The readers are easy to mount and can be mounted on a flat surface. The readers can be cleaned with most kinds of domestic detergents. All readers have a multicolour light frame. The VR50M-MF has a keypad for pin code.

2 Technical data

	VR20M-MF Mifare card reader standard	VR50M-MF Mifare card reader standard with keypad
Protocol	OSDP or Wiegand	OSDP or Wiegand
Interface to controller	RS485 or Wiegand	RS485 or Wiegand
Operating voltage	8.5 – 30.0 VDC	8.5 – 30.0 VDC
Power consumption	DC 12V 50mA Peak 150mA DC 24V 35mA Peak 100mA	DC 12V 50mA Peak 150mA DC 24V 35mA Peak 100mA
Tamper protection	Yes	Yes
Card technology	Mifare	Mifare
Card compatibility	Mifare Classic Mifare Plus Mifare DESfire EV1/ EV2	Mifare Classic Mifare Plus Mifare DESfire EV1/ EV2
Reading distance	Mifare Classic-up to 6 cm Mifare Plus-up to 6 cm Mifare DESfire EV1/ EV2-the card must be held to the reader	Mifare Classic-up to 6 cm Mifare Plus-up to 6 cm Mifare DESfire EV1/ EV2-the card must be held to the reader
Indicators	3 x LED (red/yellow/green) 1 x Buzzer Multicolour light frame	3 x LED (red/yellow/green) 1 x Buzzer Multicolour light frame
Keypad	No	Yes
Operating temperature	- 40°C to + 70°C	- 40°C to + 70°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 (WxHxD) mm	Surface mounted: 48 x 129 x 22	Surface mounted: 48 x 129 x 24
Approvals	CE 2014/53/EU	CE 2014/53/EU

Cable length guide

OSDP	Max. 8 readers	Max. 1 km Belden cable
Wiegand	Max. 4 readers	Max. 30m copper cable (0.5 mm)

3 Safety regulations

General

- Follow all warnings and instructions marked on the device.
- Keep this document for reference purposes.
- Please consider 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

Vanderbilt hereby declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC on Electromagnetic Compatibility (EMC).

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

Vanderbilt International Ltd.

Clonshaugh Business and Technology Park
Clonshaugh

Dublin 17

Dublin
Ireland D17 KV 84

4 Reader components and package contents

The following diagrams identify the reader components and the contents that come packaged with the reader.

4.1 Reader components
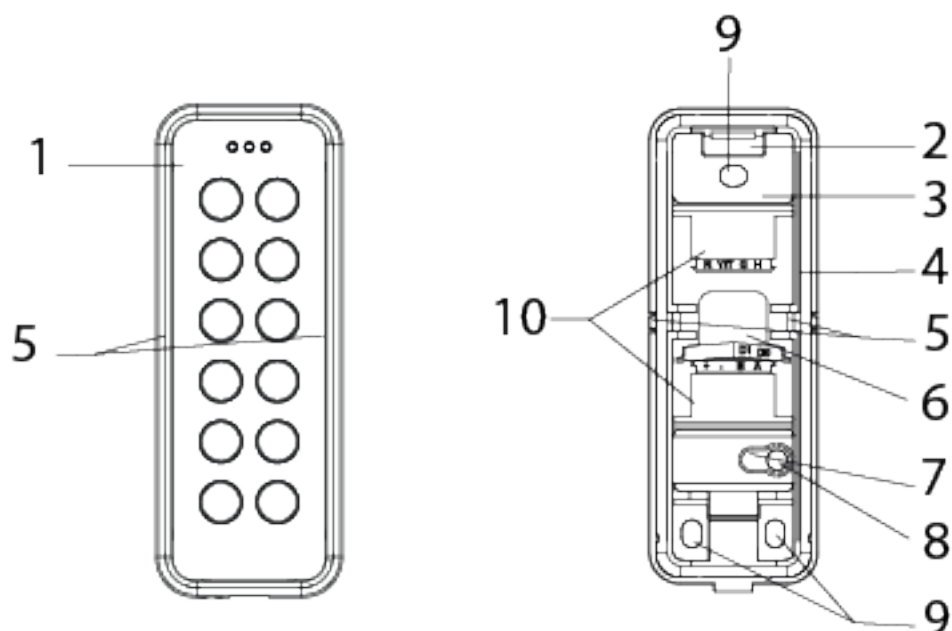
1	Front	6	Location where cables can come through the back
2	Hook	7	Tamper base
3	Base	8	Screw for tamper protection
4	Gasket	9	Mounting holes
5	Knock outs x 2	10	Upper and lower terminal block locations

4.2 Package contents

1	+ - B A terminal block for OSDP and Wiegand (lower terminal block)
2	R Y/T G H terminal block for Wiegand (upper terminal block)
3	Mounting screws
4	Cover screw
5	Opening tool

5 Mounting and connecting

The Mullion readers are surface-mounted readers. The units can be mounted with cables led through the back of the unit or led in from either side through knockout gaps.

For wiring details please refer to:

- *Connecting the cables* on page 13.

5.1 Mounting a reader

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. Use this hole to feed the cable through the gasket and into the reader base.

2. Attach the base to the wall with three screws: one in the middle at the top of the base, and one in each of the corners at the bottom of the base.
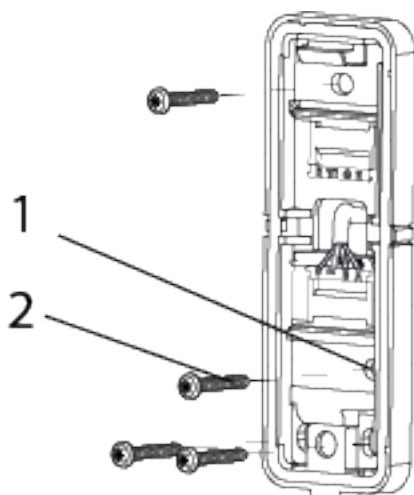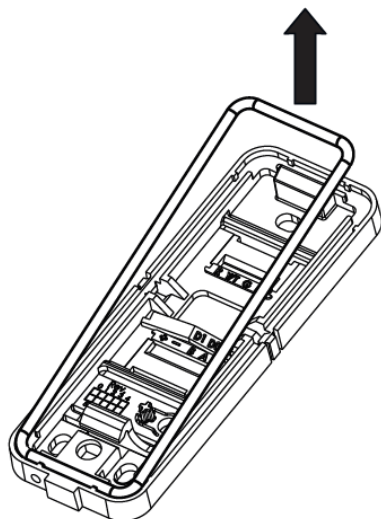

1	Tamper base
2	Tamper screw

3. If tamper protection is required, fix the screw into the hole on the tamper base. Do not over tighten the screw as this can damage the tamper base.

4. Continue to follow the instructions detailed in *Connecting the cables* on page 13.
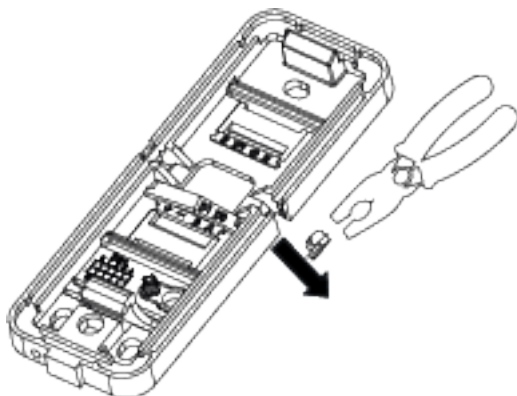
5.2 Mounting a reader with cables fed from the side

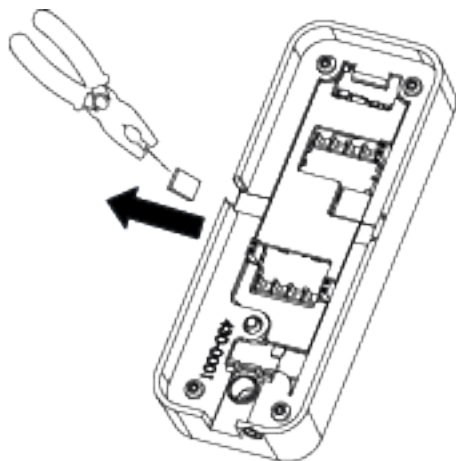If the cables are fed from the side:

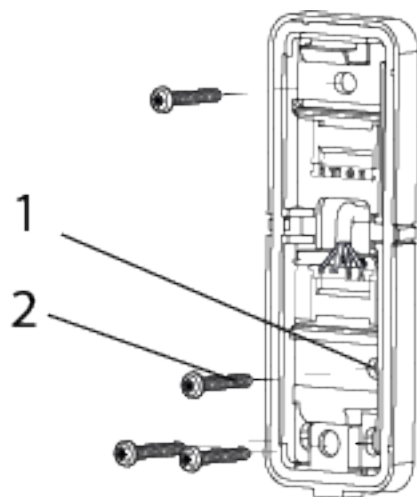1. Remove the gasket from the base.

2. Identify which of the knock outs the cables should be fed through.

3. Use a pliers to pull the knock out away from the base.

4. Remove the corresponding knockout on the cover.

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

1	Tamper base
2	Tamper screw

6. If tamper protection is required, fix the screw into the hole on the tamper base. Do not over tighten the screw as this can damage the tamper base.

7. Feed the cables through the opening and reinsert the gasket. Proceed to the instructions for *Connecting the cables* on the next page.


ℹ️   Vanderbilt recommends sealing the gap that the knock out creates with a sillicone sealant. Do this after you have closed the reader. Please note that a reader with a removed knock out is not IP 55.

5.3 Connecting the cables

5.3.1 Setting the jumpers

There are 3 jumpers inside the front of the reader. Use the jumpers to set the reader to OSDP or Wiegand mode, to set OSDP Addressing or Wiegand format, and to set the End Of Line (EOL) status for the reader.
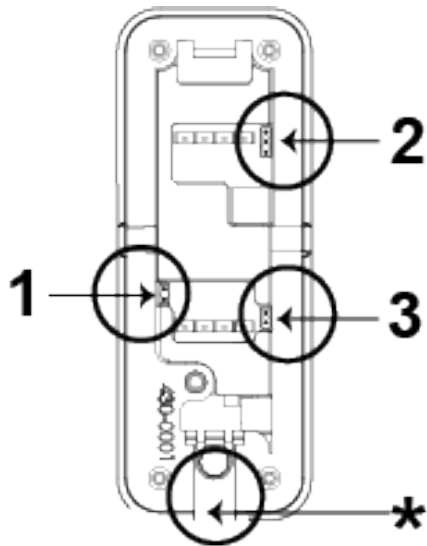
1	Set reader to OSDP or Wiegand mode
2	Set OSDP addressing or Wiegand formats
3	Set End Of Line (EOL) status for the reader

* This indicates the bottom of the reader

5.3.1.1 OSDP

The diagrams below show how to position the jumpers to get the desired functions from the terminal blocks. Note that the EOL is ON for a sole reader or for the last reader on the RS485 bus.
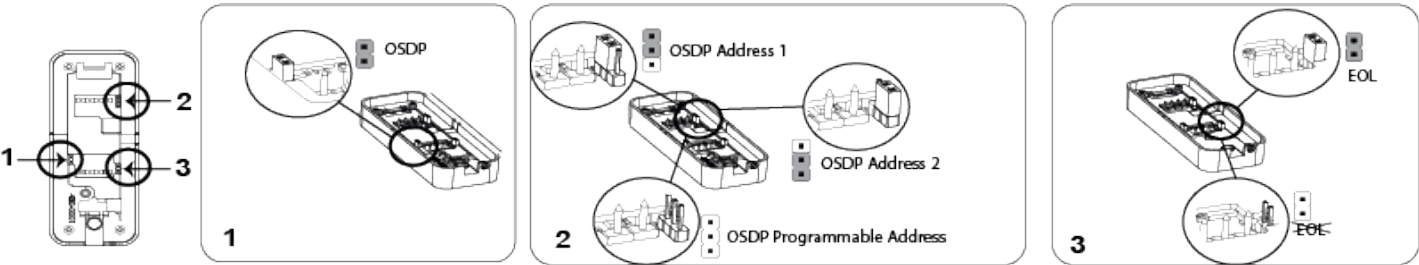
5.3.1.2 Wiegand

The diagrams below show how to position the jumpers to get the desired functions from the terminal blocks. Note that in Wiegand mode EOL is not fitted. Wiegand can be set at 26 bit, 32 bit or 56 bit.
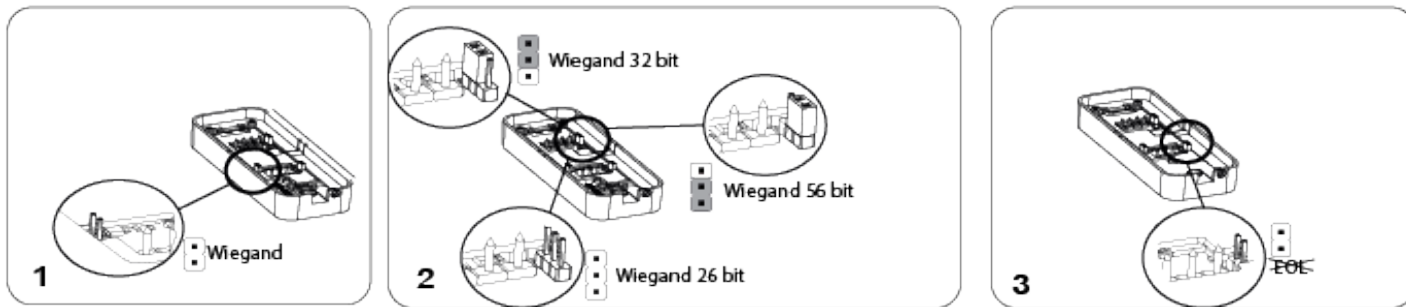

5.3.2 Connecting the reader in OSDP mode

Use the terminal block marked +-BA (see number 2 in *Package contents* on page 9 and a pair of twisted screened cable to connect the cables in OSDP mode.

1. Attach the cables according to the respective indicators on the second, +-BA terminal block (lower terminal block) and the base:

Reader	Controller
+	0V
-	+12V
B	B
A	A

2. Insert the ridge on the end of the terminal block marked +,-,B,A into the slot marked +,-,B,A.
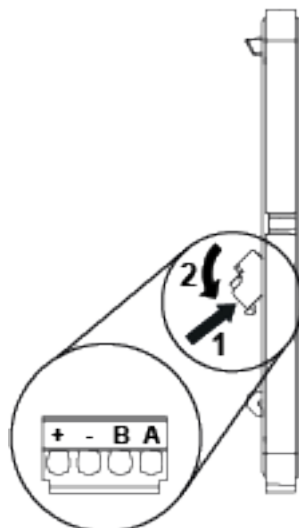
3. Gently push the terminal block towards the base until it clicks.

4. Push the cables back.

5. On the reverse of the front plate there is an EOL jumper used for RS485 bus termination (see the

illustration in *Setting the jumpers* on the previous page). By default the reader has the termination ON and acts as the last reader on the bus. However, if the reader is an intermediate Connecting the reader in Wiegand mode

Use the terminal blocks marked +-BA and R,Y/T,G,H and a pair of twisted screened cables (4 pairs + screen), such as Belden 9502 to connect the cables in Wiegand mode.

reader on the bus, the jumper must be removed.

5.3.3 Connecting the reader in Wiegand mode

Use the terminal blocks marked +-BA and R,Y/T,G,H and a pair of twisted screened cables (4 pairs + screen), such as Belden 9502 to connect the cables in Wiegand mode.

1. Attach the cables according to the respective indicators on the communication and power terminal block (+-BA terminal block (lower terminal block)) :

Reader	Controller
+	0V
-	+12V
B	Wiegand D1
A	Wiegand D0

2. Attach the cables on the LED, tamper, and horn terminal block (R,Y/T,G,H terminal block (upper terminal block)):

Reader	Controller
R	Red LED
Y/T*	Tamper input
G	Green LED
H	Horn output
The Tamper output (default setting) connection may alternatively be configured to provide a Yellow input to the reader . The Tamper output/ Yellow input options are mutually exclusive.	

3. Insert the ridge on the end of the upper or lower terminal block into the corresponding slot.
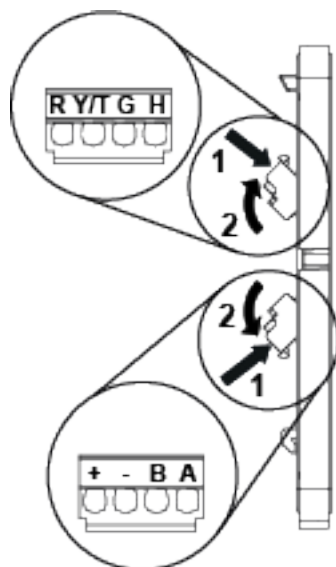
4. Gently push the terminal block towards the base until it clicks.

5. Remove the EOL jumper (see number 3 in section 6.1 in *Connecting the cables* on page 13). The EOL jumper is used for RS485 bus termination. By default the reader has the termination ON. EOL is always off in Wiegand mode.

# 6 Closing the reader

To close the reader:

1. Holding the front of the reader at an angle, insert the hook on the top of the base into the corresponding slot in the front of the reader and slide down.

2. Gently press in the bottom of the reader front until the snap lock confirms a secure attachment.

3. Screw the cover screw (see number 4 in *Package contents* on page 9) into the bottom of the reader.
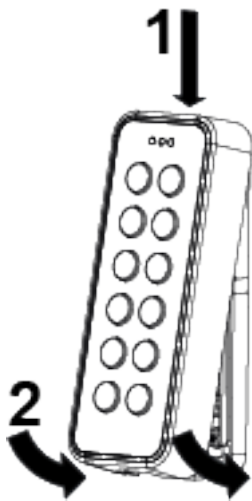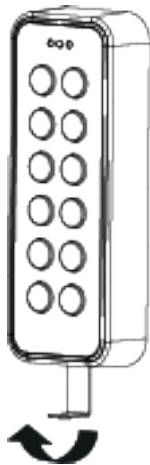
7 Disassembling the reader

To disassemble the reader:

1. Remove the security screw.

2. Insert the opening tool in the slot between the base and the front and push gently upwards.
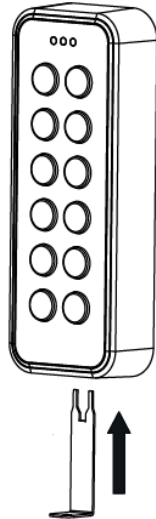
3. Use the opening tool to pull the reader outwards and upwards.

4. When the front of the reader is disconnected from the snap lock, lift the front and slide upwards to disengage from the hook at the top.
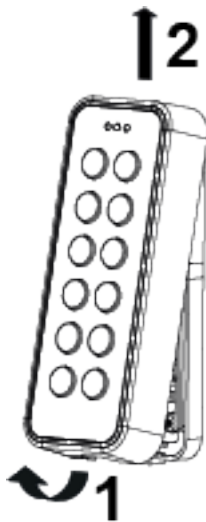
To remove the terminal block:

1. Push down gently on the end of the terminal block marked with either +,-,B,A or R,Y/T,G,H.

2. Tilt the terminal block away from the base.

8 Default settings

Reading MIFARE Classic	UID
Reading MIFARE Plus SL1 – SL3	UID
Reading MIFARE DESFire EV1	UID
Communications mode	OSDP (to change to Wiegand mode remove Jumper 1 and Jumper 3)
Backlight	Always on (change with 3CT tool)
Bus address	1 (Up to eight are supported)
Wiegand output	32 bit
Wiegand key PIN burst	8 bits
Light frame	Follows Red, Green LED inputs in Wiegand mode
Tamper/Yellow Connection	Tamper output (change to yellow LED with 3CT tool)
Wiegand heart beat mode	OFF
Time-out for configuration card (keypad backlight turns off when this timeout expires subsequent to last keypress)	3 seconds
Activation time-out	30 seconds
Hold-off time for card read	100 milliseconds
Reception for card (time before the same card will be detected in the field again)	Inactive
Min background illumination	12
Max background illumination	255
Off-line indication	Yes
Buzzer volume for key press	2
Buzzer volume for card read	2
System sound	10

8.1 3CT Tool

To change the default configuration of the reader, use the 3CT tool. You can purchase the 3CT tool as a separate download. You can use the 3CT tool to configure MF Classic and DESFire EV1 card formats to be configured along with Wiegand options to be used for the card readers. For further information, please contact the supplier of this reader. The 3CT tool configures the format in which user cards are interpreted by the card reader. The 3CT tool supports configuration of the following options: Tamper Output / Yellow Input and Heart beat Mode.

Option	Default setting	Information
Yellow input	Disabled	Selects Tamper Output when disabled
Heart beat mode	Disabled	Ensures a comms message is sent every 10 seconds to controller when enabled

For more information on 3CT please see the **User manual for Configuration Card Creation Tool** which is included when you purchase the 3CT tool.

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

8.2 Setting burst mode using the keypad

The default burst mode is 8 bit. This can only be changed to 4 bit if you are using the card reader in Wiegand mode.
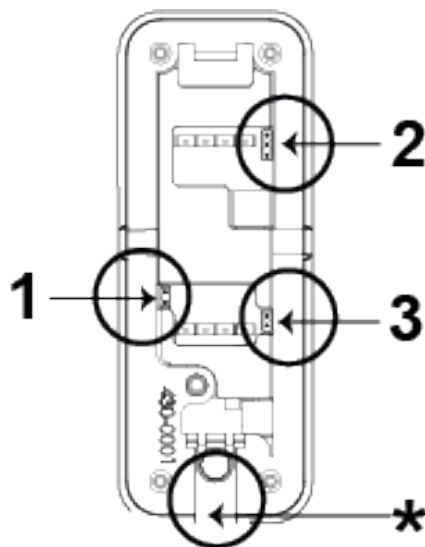

* This indicates the bottom of the reader

To change from 8 bit to 4 bit burst :

1. Ensure Jumper 1 and Jumper 3 are removed .

2. Power up the reader while holding the X key. The red and green indicators alternately turn on.

3. Press the key sequence 1414 to specify that 4 bit burst is required.

4. Hold down the ✓ key until you hear the affirmative beep.

5. To change back to 8 bit burst from 4 bit burst, follow the steps above pressing the key sequence 1818 instead of 1414.

9 Connecting the card reader to SiPass integrated

9.1 Connecting the card reader to SiPass integrated in OSDP mode
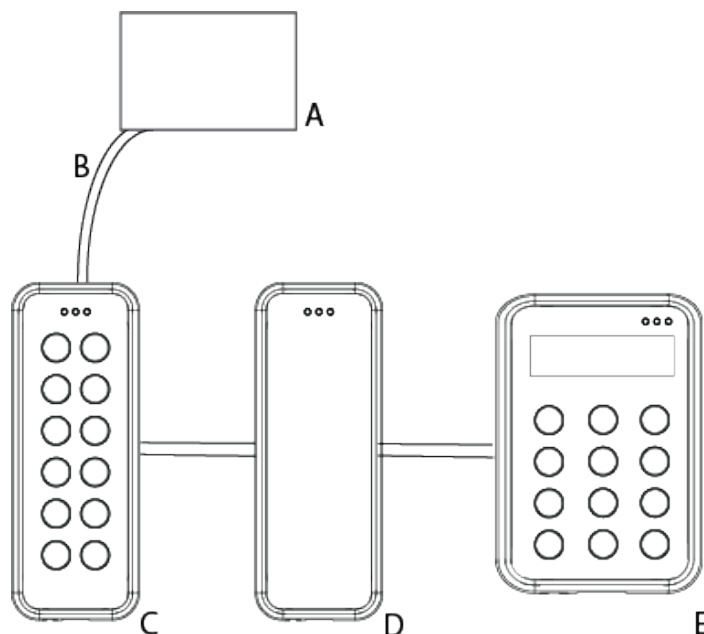
| A	SiPass integrated RIM (DRI/ERI)
B	Power and A, B (OSDP)
C	Reader 1 (Mullion reader with keypad)
D	Reader 2 (Mullion reader)
E	Reader 3 (VR40S-MF Mifare Reader with keypad and display).

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

SiPass integrated can support both the VR and NGCR readers on the same OSDP bus.

9.2 Setting OSDP address for the card reader

You can set the card reader address to 1 (default setting), 2 , or programmed with a value from 1 to 8 using the jumper. Place the jumper in one of the three positions shown in the diagram below to achieve the desired address. Additional addresses are automatically assigned by the controller from 3 to 8 following the order in which the readers are powered up.
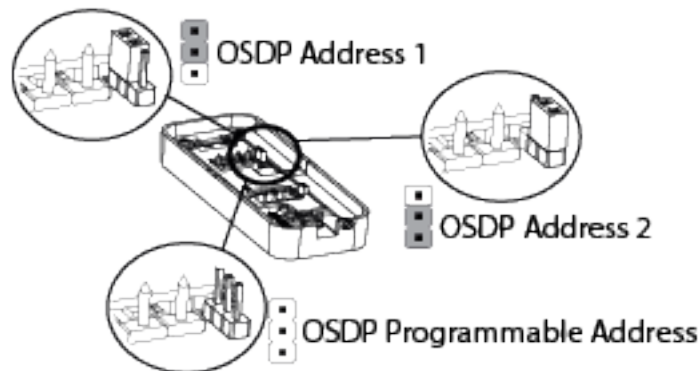
When the card reader is first powered up, the yellow LED flashes. The flashing lights stop when it is correctly configured to SiPass integrated. This can be tested by holding a card next to the reader. A correctly configured card reader acknowledges the card according to the SiPass integrated settings.

Please note that a new card reader will always get the next free bus address. For example, if a card reader with bus address 5 is removed and a new card reader is installed, the new card reader gets address 5.

9.3 Connecting the card reader to SiPass integrated in Wiegand mode

For more detail on connecting the card reader to SiPass integrated via Wiegand see section 5.3.3 in *Connecting the cables* on page 13

10 Connecting the card reader to ACT

## 10.1 Connecting the card reader to ACT in OSDP mode
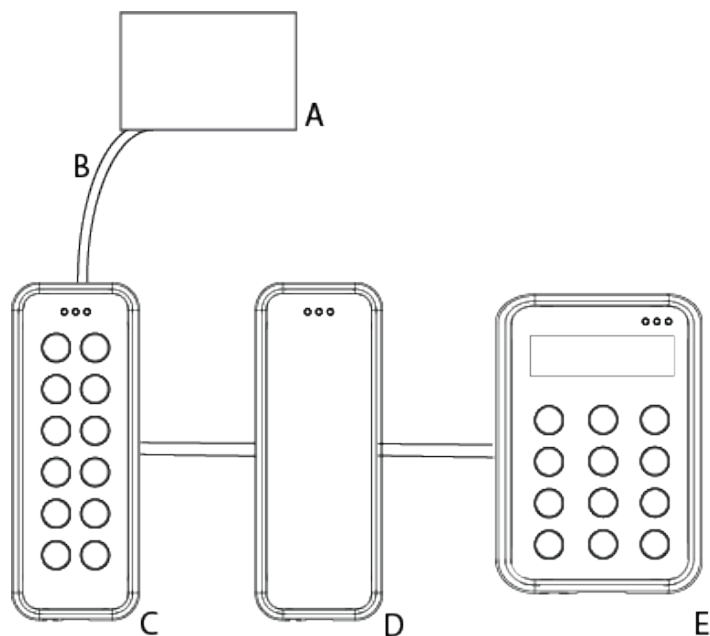
A	ACTpro 1520e
B	Power and A, B (OSDP)
C	Reader 1 (Mullion reader with keypad)
D	Reader 2 (Mullion reader)
E	Reader 3 (VR40S-MF Mifare Reader with keypad and display)

ACTpro 1520e can support both the VR and NGCR readers on the same OSDP bus.

The connection between a card reader and an ACTpro 1520e is as follows:

ACTpro 1520e		VRxx-MF
+12/24 V	↔	+
OSDP/NET 0V	↔	-
OSDP/NET A	↔	A
OSDP/NET B	↔	B
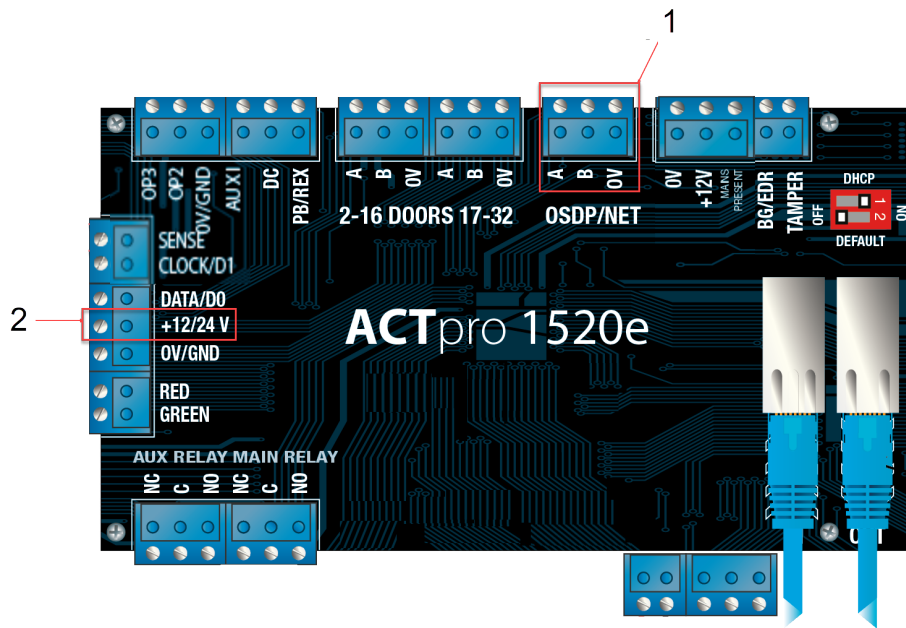
1	A,B,0V
2	+12/24V

1. Connect the cables as shown in the table on the previous page.

2. Use this terminal to supply power to the readers.

10.2 Setting the OSDP address for the card reader

The ACTpro 1520e controller automatically assigns an address to each reader. Therefore, jumper 2 should be removed for OSDP operation. The serial number of the reader is used to identify and enrol a reader on the system . This can be found on a sticker on the reverse of the front cover of the reader (bordered in red in the image below).

During install:

1. Record the 7 digit serial number.

2. Record the door name.

3. Record if a reader is an entry or exit reader.

In the OSDP reader section of ACTEnterprise Software, configure:

1. Name

2. Serial number

3. Direction

10.3 Connecting the card reader to ACT in Wiegand mode

For more detail on connecting the card reader to ACT via Wiegand see section 5.3.3 in *Connecting the cables* on page 13 Please note that if you are connecting an exit reader in Wiegand mode, you should wire the D0 from the reader to SENSE on the ACTpro 1520e (bordered in red on the image on the next page).
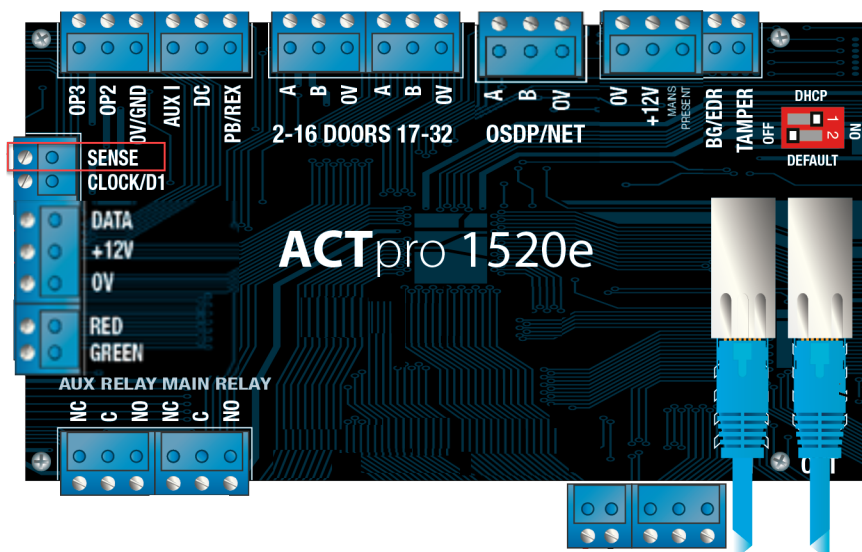
11 Connecting the card reader to SPC

The SPC connection to a Mullion reader is via Wiegand. For more detail on connecting via Wiegand see section 5.3.3 in *Connecting the cables* on page 13

12 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.

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