ACTpro MIFARE DESFire EV1 Readers

Installation Guide

VANDERBILT

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1 Overview

This guide describes the following products:

- EV1030e ACTpro EV1 Mullion Reader
- EV1030PM ACTpro EV1 Reader panel mount
- EV1040e ACTpro EV1 Reader
- EV1050e ACTpro EV1 Reader with keypad

1.1 Product description

Vanderbilt MIFARE® DESFire® EV1 readers support all Vanderbilt MIFARE DESFire EV1 cards.

- Compatible with Vanderbilt MIFARE DESFire EV1 cards
- Configurable to read MIFARE DESFire EV1 File Data, Serial Number or Reverse Serial Number
- Configurable for Wiegand or Clock & Data output

1.2 Technical specification

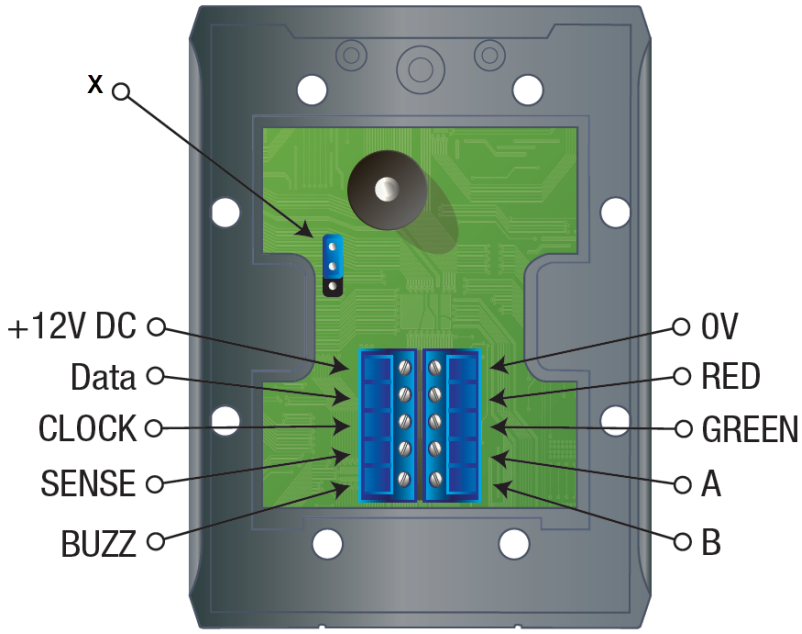
	EV1030e	EV1030PM	EV1040e	EV1050e
Connections	Pigtail	Terminal Block	Terminal Block	Terminal Block
Dimensions W x H x D	37 x 120 x 15mm	63 x 58 x 23mm	95 x 128 x 19mm	95 x 128 x 21mm
Mounting	Mullion	Panel	Flush or Surface	Flush or Surface
Weight	150g	65g	142g	155g
Power Supply	12V DC – 24V DC	12V DC – 24V DC	12V DC – 24V DC	12V DC – 24V DC

	EV1030e	EV1030PM	EV1040e	EV1050e
Selectable file, serial & reverse serial	Yes	Yes	Yes	Yes
Current Consumption (Typical)	30mA	30mA	70mA	70mA
Current Consumption (Peak)	130mA	70mA	140mA	140mA
Operating Temperature	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C	-40°C to +50°C
Transmit Frequency	13.56MHz	13.56MHz	13.56MHz	13.56MHz
Keypad	No	No	No	Yes
Environmental Rating	IP67	IP67	IP67	IP67
Cable Distance	100m	100m	100m	100m
Output Formats	Wiegand or Clock & Data	Wiegand or Clock & Data	Wiegand or Clock & Data	Wiegand or Clock & Data
Indoor & Outdoor	Yes	Yes	Yes	Yes
Card & PIN	Card only	Card only	Card only	Card & PIN

ACTpro MIFARE DESFire EV1 readers must be powered from a fused AC/DC PSU (12–24V, 1A maximum). If the reader is used in a manner not specified in this document, the protection provided by the reader may be impaired.

1.3 Reader connections

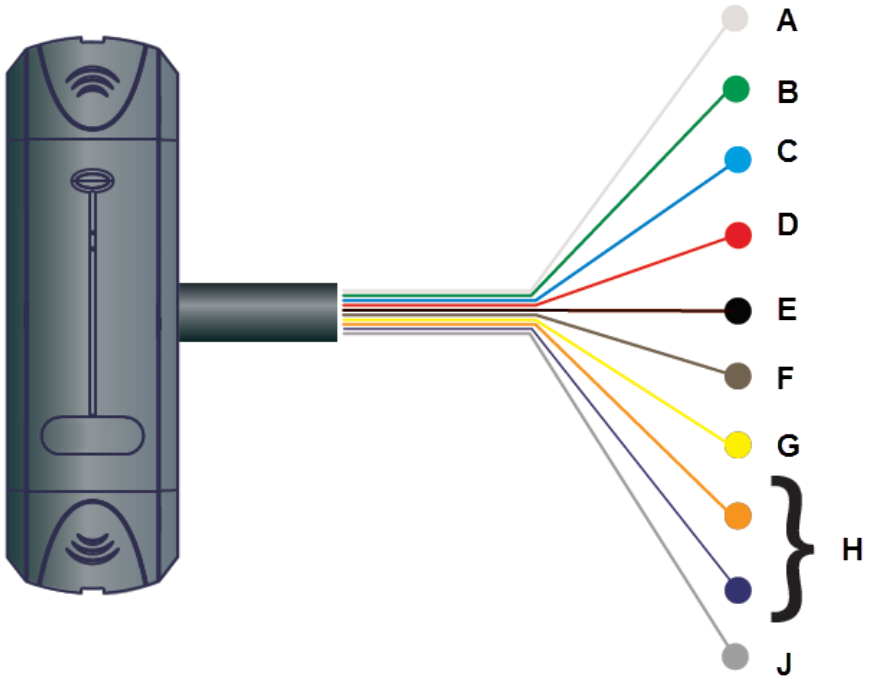
1.3.1 EV1040e/EV1050e



X	File/Serial operation jumper

1.3.2 EV1030e

EV1030e is supplied with 3m pigtail cable.



A	SENSE (White)	**F**	RED LED (Brown)
B	CLOCK/D1 (Green)	**G**	GREEN LED (Yellow)
C	DATA/D0 (Blue)	**H**	(Orange and Purple) – Programming File/Serial
D	+12V (Red)	**J**	ISP (Grey) – Unused
E	0V/GND (Black)		

1.3.3 CAT5/6 colour code

The following is the suggested colour coding if using CAT5 or CAT6 cabling.

Reader Output	Colour
Sense	White/Green
Clock / D1	Green

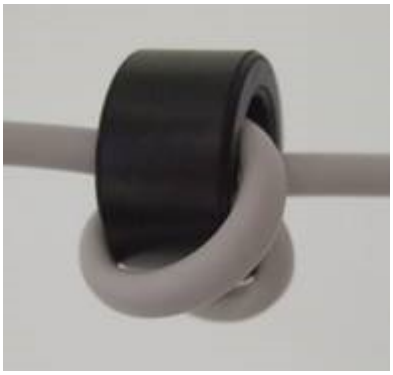
Reader Output	Colour
Data / D0	Blue
+12V	Orange
(0V) GND	White/Orange
Red LED	Brown
Green LED	White/Brown
Orange & Purple	Programming File/Serial
ISP	Grey (Unused)

1.4 Wiring for ACTpro and ACT365

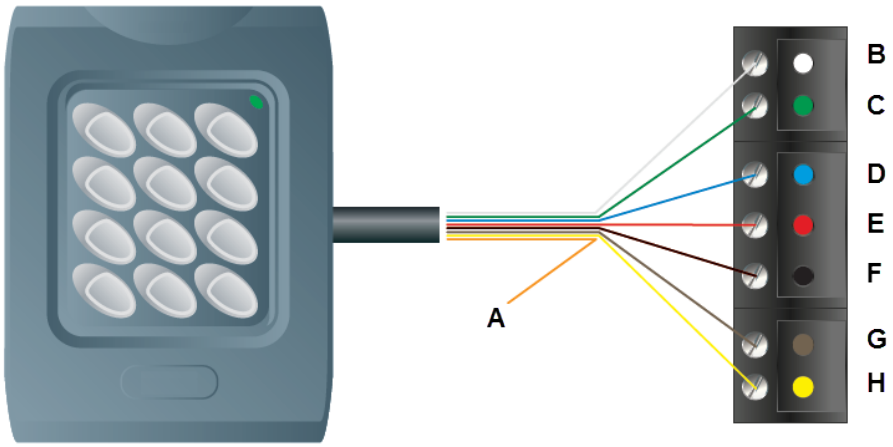
Note: Illustrations apply to all ACTpro MIFARE DESFire EV1 readers.

1.4.1 Attaching the ferrite bead

A ferrite bead is supplied with all ACTpro MIFARE DESFire EV1040e/EV1050e readers. To comply with the EMC directive, the ferrite bead must be attached to the reader connection cable, as close as possible to the reader terminal block. Wind the reader connection cable around the ferrite bead twice tightly.

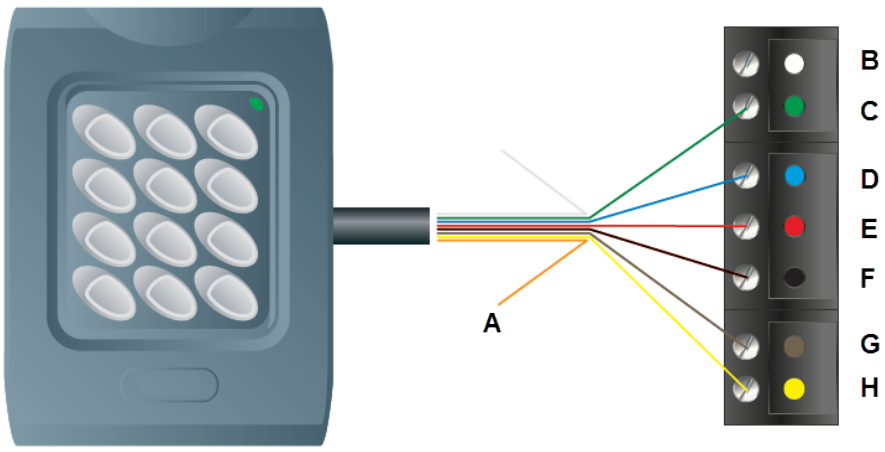


1.4.2 Clock & Data entry reader



A	Buzzer input (not available on EV1030e)	**E**	+12V (Red)
B	SENSE (White)	**F**	0V / GND (Black)
C	CLOCK / D1 (Green)	**G**	RED (Brown)
D	DATA / D0 (Blue)	**H**	GREEN (Yellow)

1.4.3 Clock & Data exit reader

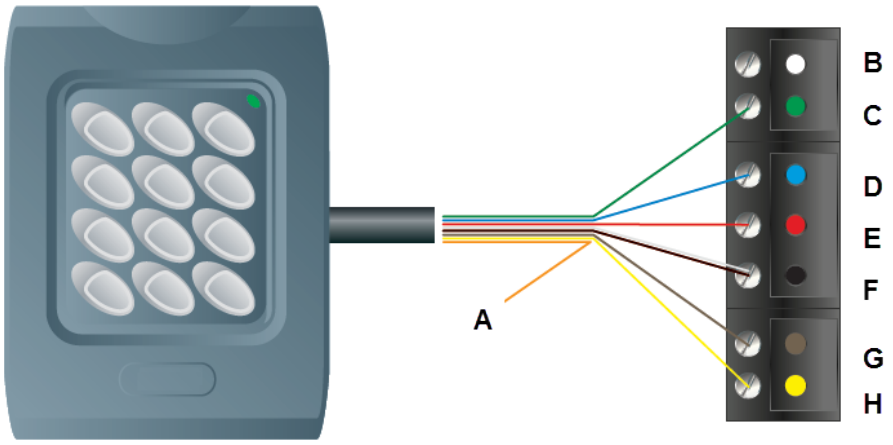


A	Buzzer input (not available on EV1030e)	**E**	+12V (Red)
B	SENSE (White) – DO NOT CONNECT SENSE	**F**	0V / GND (Black)
C	CLOCK / D1 (Green)	**G**	RED (Brown)

D DATA / D0 (Blue)	**H** GREEN (Yellow)

1.4.4 Wiegand entry reader

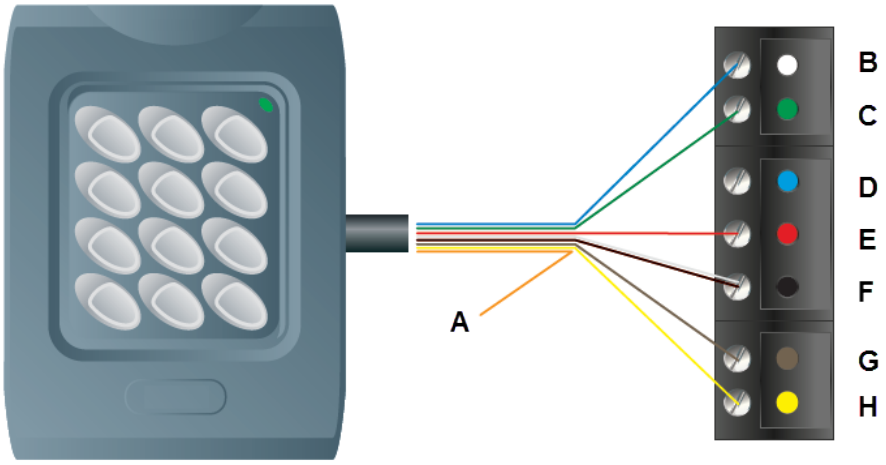
IMPORTANT: To put ACTpro MIFARE DESFire EV1 readers into Wiegand mode, connect the SENSE on the reader to 0V/GND.



A Buzzer input (not available on EV1030e)	**E** +12V (Red)
B SENSE	**F** 0V / GND (Black, White)
C CLOCK / D1 (Green)	**G** RED (Brown)
D DATA / D0 (Blue)	**H** GREEN (Yellow)

1.4.5 Wiegand exit reader

IMPORTANT: To put ACTpro MIFARE DESFire EV1 readers into Wiegand mode, connect the SENSE on the reader to 0V/GND PIN and DATA/D0 to the SENSE PIN on the controller.



A	Buzzer input (not available on EV1030e)	**E**	+12V (Red)
B	SENSE (Blue)	**F**	0V / GND (Black, White)
C	CLOCK / D1 (Green)	**G**	RED (Brown)
D	DATA / D0	**H**	GREEN (Yellow)

1.5 Reader Configuration

1.5.1 Operation: EV1030PM / EV1040e / EV1050e

ACTpro MIFARE DESFire EV1 readers can operate in file, serial or reverse serial mode which is selectable via a jumper. To change the operation mode power down the reader, change the jumper for the desired operation and re-apply power.

File

Connect pins 1 & 2

Serial

Connect pins 2 & 3

Reverse Serial

Do NOT connect jumper

1.5.2 Operation: EV1030e

The operation of the EV1030e is selectable via cable configuration. To change the operation power down the reader, change the Orange and Purple cable for the desired operation and re-apply power.

Colour	MIFARE DESFire EV1 File	Serial	Reverse Serial
Orange	0V	0V	Not Connected
Purple	0V	Not Connected	0V

1.5.3 MIFARE DESFire EV1 File reader

Reads the file data on ACTpro MIFARE DESFire EV1 cards.

1.5.4 Serial and Reverse Serial reader

When in Serial or Reverse Serial mode, the MIFARE DESFire EV1 card serial number (CSN) is read by the reader.

1.5.5 Backlight operation – EV1050e

The EV1050e has backlight illumination of the keypad.

1.5.6 Buzzer operation

The internal buzzer is activated by applying 0V to the Buzz PIN. The buzzer activates 4 seconds after the 0V is applied and sounds continuously until the 0V is removed (external buzzer control is not available on the EV1030e).

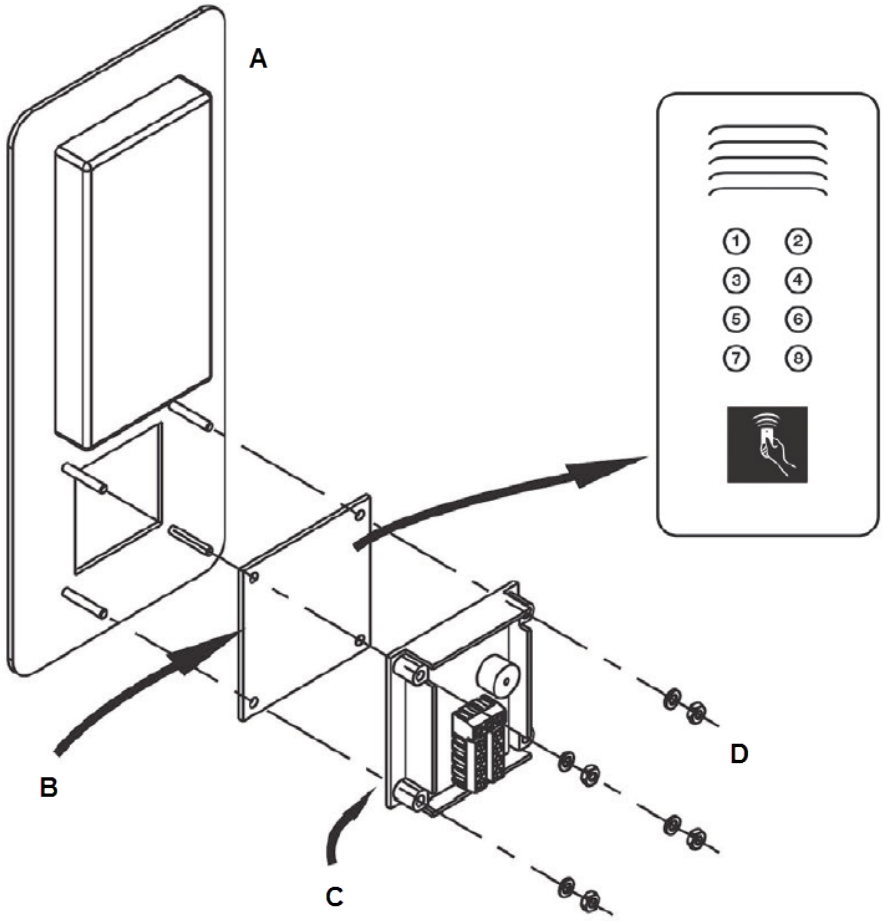
1.5.7 Power On beep codes

The Output Data Format and the File/Serial Operation of the reader can be determined by the beeps generated by the reader after power is applied. The reader will generate two sets of beeps, the first indicating the Output Data Format and the second set of beeps indicating File or Serial Operation. The first set of beeps will occur while the LED is Green, the second set of beeps occur half a second later while the LED is Blue.

First beep set	Double beep	MIFARE DESFire EV1 reader
	Single beep	Serial reader
	Triple beep	Serial reader (byte reverse)
Second beep set	Double beep	Clock & Data output
	Single beep	Wiegand 37 bit output

2 Mounting instructions

2.1 EV1030PM

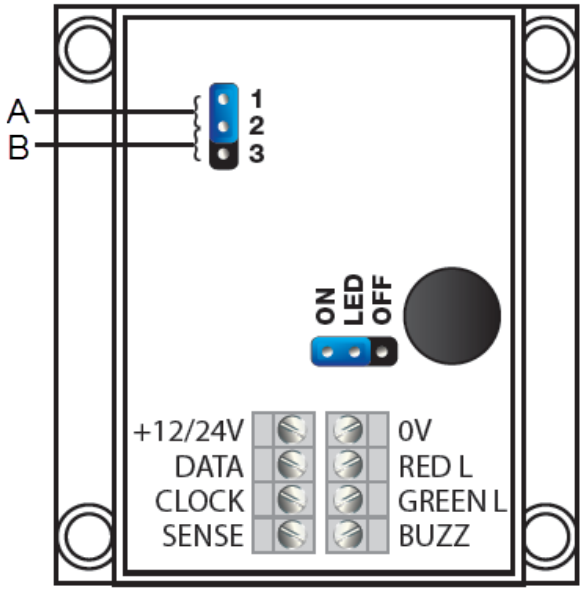


A	Audio entry panel
B	VR screen printed perspex
C	ACTpro MIFARE DESFire EV1 panel mount reader
D	M3 washers and nuts

1. Place the VR screen printed perspex over the four studs on the back of the audio entry panel.
2. Place the ACTpro MIFARE DESFire EV1 panel mount reader over the four studs.

3. Use the four M3 washers and nuts supplied with the product to secure the reader to the audio entry panel.
4. Connect the reader to the controller.
5. When wiring is complete, place the front cover back onto the audio entry panel.
6. Apply power to the controller and test the reader with a card or fob.

2.1.1 Panel mount reader connections to the ACTpro door controllers and door stations



A	Jumper pins 1 and 2	MIFARE DESFire EV1 file operation
B	Jumper pins 2 and 3	Serial operation
	No jumper	Byte reversed serial operation

2.1.2 LED control

The standby LED on the front of the reader can be configured using the jumper. When the jumper is connected between LED and OFF, the blue LED on the front of the reader will remain off while in standby. It will turn green on access granted and red on access denied.

When the jumper is connected between LED and ON, the blue LED on the front of the reader will remain on while in standby. It will turn green on access granted and red on access denied.

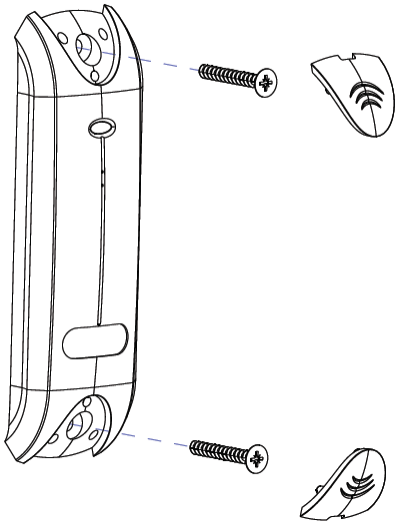
2.1.3 Wiring for Clock & Data / Wiegand reader

The standard wiring colours for ACTpro MIFARE DESFire EV1 readers are shown below.

Readers should be a maximum of 100m when powered from +12V.

White	SENSE
Green	CLOCK & DATA 1
Blue	DATA / DATA 0
Red	+12V
Black	0V
Brown	RED LED
Yellow	GREEN LED
Orange	BUZZER Ctrl

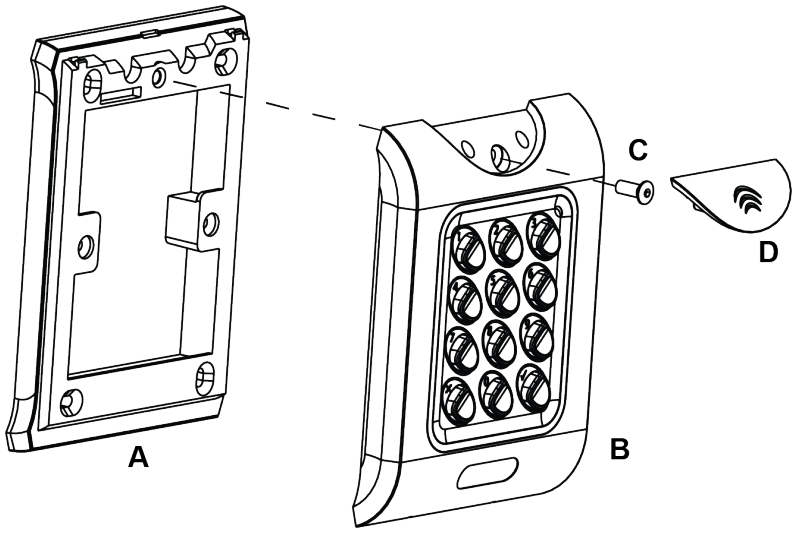
2.2 EV1030e



Screw unit to the surface. Place caps on to the unit and push firmly into place.

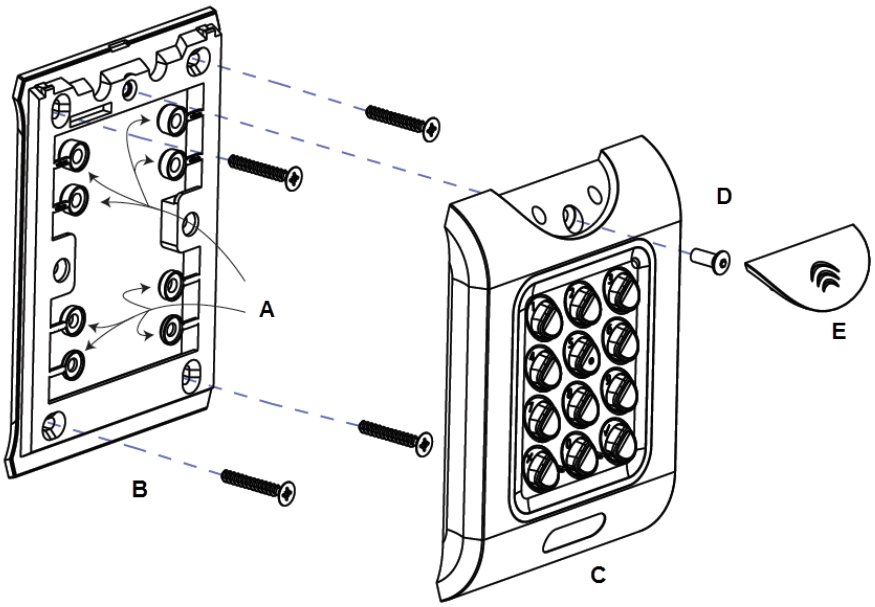
2.3 EV1040e/EV1050e

2.3.1 Surface mount



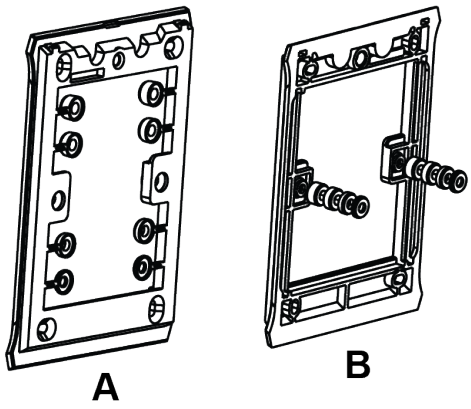
A	Mount the surface mount collar on the wall using the fixing kit supplied in the box.
B	Place the reader/keypad onto the surface mount collar and clip down into place.
C	Use the security screw supplied to attached the unit to the surface mount collar.
D	Place the cap onto the unit and push firmly in place.

2.3.2 Flush mount



A	Remove spacers before mounting.
B	Prepare the mounting surface to receive sub-surface terminals. Mount the flush mount collar on the wall using the fixing kit supplied in the box.
C	Place the reader/keypad onto the surface mount collar and clip down into place.
D	Use the security screw supplied to attached the unit to the flush mount collar.
E	Place the cap onto the unit and push firmly in place.

2.3.3 Flush mount to UK pattress box

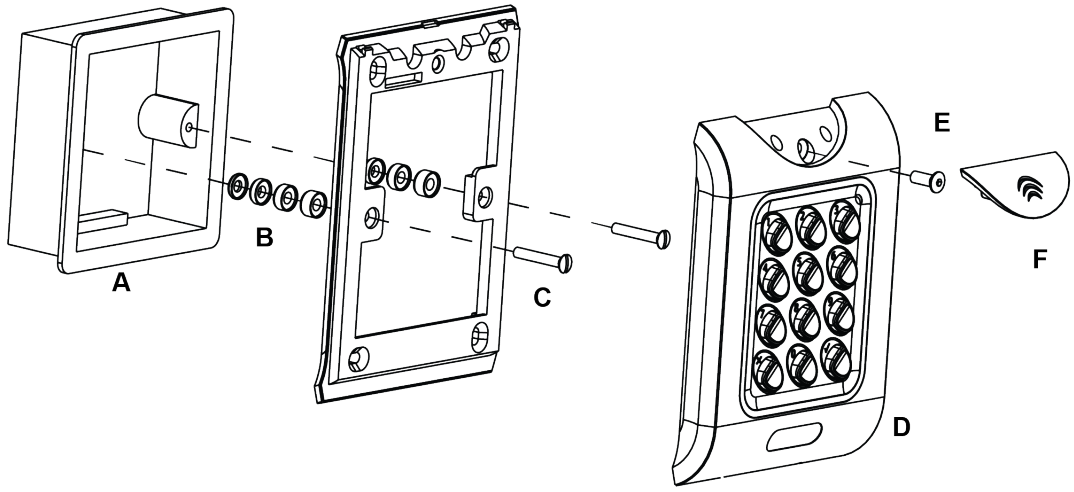


Spacers break away from main component when required by installer for use.

Determine the distance between the patress box and the mounting plate, using the spacers that are labelled 1mm to 4mm. A spacer of the correct length is assembled by stacking the spacers together.

View **A** shows mounting plate before spacers are broken away by installer.

View **B** shows spacer stacking.



A Standard pattress box.

B **C**	Attach the mounting plate to the pattress using the screws supplied (**C**). Ensure the correct spacers (**B**) have been used to bridge the gap between the mounting plate and the fixing wings of the pattress box to avoid the mounting plate being distorted.
D	Place the reader/keypad onto the surface mount collar and clip down into place.
E	Use the security screw supplied to attached the unit to the flush mount collar.
F	Place the cap onto the unit and push firmly in place.

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