Payment Express® Colour Mini Vend (CMV)
Hardware Guide

Version 0.1

paymentexpress®

DOCUMENT REVISION INFORMATION

Version	Revision Information
0.1	Initial version.

RELATED DOCUMENTS

Version	Document Title
1.6.76	Payment Express SCR Serial Communications – SCR Serial Message Specification
A00	MI0022 Mounting Diagrams CMV300

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PROPRIETARY NOTICE

CONTENTS

1 OVERVIEW

The Payment Express Colour Mini Vend (CMV) solution offers a complete solution for taking ICC Chip/Contactless payments in an unattended environment.

Payment Express develops and owns the hardware design, intellectual property and processor platform to ensure end to end accountability from card read to bankcard provider.

1.1 TERMS AND ACRONYMS

Term	Explanation
PIN	Personal Identification Number. In the context of card transactions this is typically a secret four digit value, entered to approve a transaction
PCI	Payment Card Industry Standards Security Council (established 2006). Set data security standards for hardware and software in the payments industry
PTS	PIN Transaction Security. As set of standards applied to a security standards applying to secure devices such as the CMV300
CMV	Colour Mini Vend (version 300)
CRC	Cyclic Redundancy Check
MCU	Main Control Unit
RSA	RSA algorithm
AES	Advanced Encryption Standard
ICC	Integrated Circuit Card (chip card/smart card)
Host	The Payment Express Host. Provides e-commerce services on the internet

1.2 HARDWARE MODELS

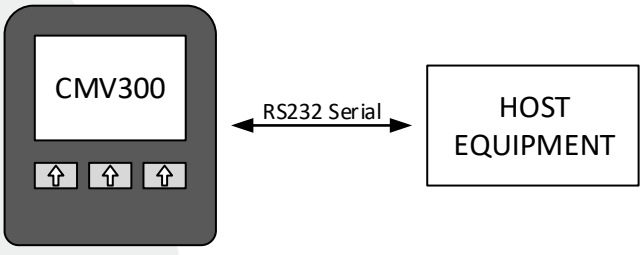
The CMV solution consists of a core module, anti-removal device and mounting nuts.

Standard Unattended

Model	PX Product Code	Brief Description
CMV300	AB0146	• Base module • Anti-removal device (AB0170) • M4 flange nuts (MF0099)

Please note that these are our standard models. When ordering or querying about a particular product please mention the PX Product Code. Please contact Payment Express if you require a bespoke solution (*see Appendix 7 for contact details*).

1.3 CONNECTIVITY DIAGRAM



2 CMV300 (AB0146)

CMV300 Front View

CMV300 Rear View

Hardware Overview

- Front Mount Design
- Hardware accelerated encryption (Triple DES, RSA and AES) and a CRC engine
- Combined magnetic stripe card and ICC card reader interface
- RS-232 serial ports x1
- Secure crypto MCU designed for POS applications
- Dedicated tamper grid and removal switch monitor

Physical Link Interface

Please refer to the above photo (CMV300 Rear) for reference.

- Connection with the customer equipment is via the 8-pin port labelled “HOST”.
- Connection for the anti-removal device labelled “SEC”

Power Requirements

The device accepts DC regulated from +9V to +43.5V. SELV (Safety Extra Low Voltage)
When idle (no card inserted), power of 1400mW is drawn and when active 2800mW is drawn (3200mW max).

Operating & Storage Temperature Ratings

Storage: -20 to 80 degrees (Celsius)
Operating: -20 to 75 degrees (Celsius)

Standards & Compliance

- EMV Contact Level 1 & 2
- EMV Contactless Level 1 IN PROGRESS
- PCI SRED (Secure Reading and Exchange of Data) v5 IN PROGRESS

Additional Comments

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.

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

2.1 CMV300 DIMENSIONS & CUT-OUT

Recommended cut out dimensions for customer equipment.

Please note that mounting plates are not supplied by Payment Express Hardware and is the responsibility of the customer to arrange their selected mounting method. All non-dimensioned lengths are subject to individual customer machine fronts.

2.2 CMV300 INSTALLATION

DRAWING REQUIRED

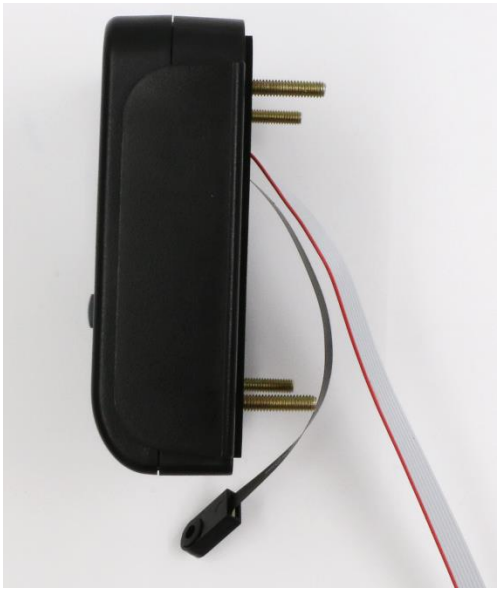
#	PX Product Code	Description	Default QTY
1	AB0146	CMV300	1
2	AB0170	CMV300 M4 SEC with FPC Connector	1 (included with AB0146)
3	MW0142	CMV300 communications cable	1
4	MF0099	Nut M4 Flange OD 12mm	4 (included with AB0146)
5		Machine Mounting Plate (Customer Equipment) *Refer to Section 2.1*	1

Installation Steps:

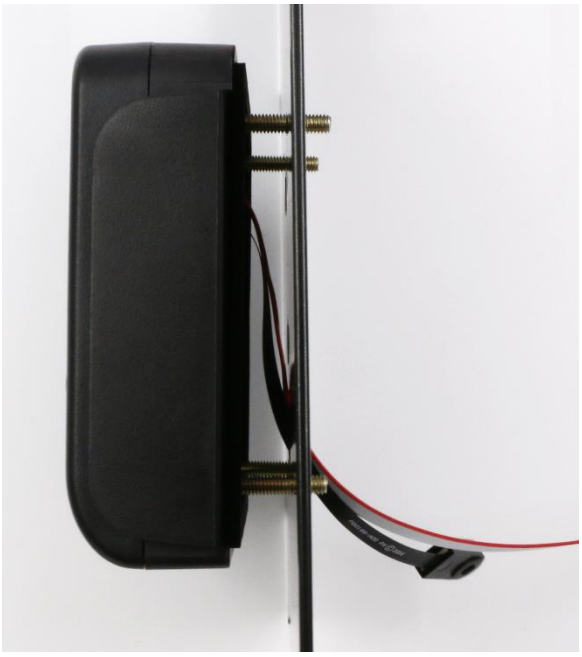
1. Prepare the mounting surface in accordance with the MI0020 mounting instructions. Make sure the edge of the hole is smooth.
2. Connect the SEC (2) to the rear of the CMV300 as shown

3. Insert the communications cable (3) into the rear of the CMV300 as shown.

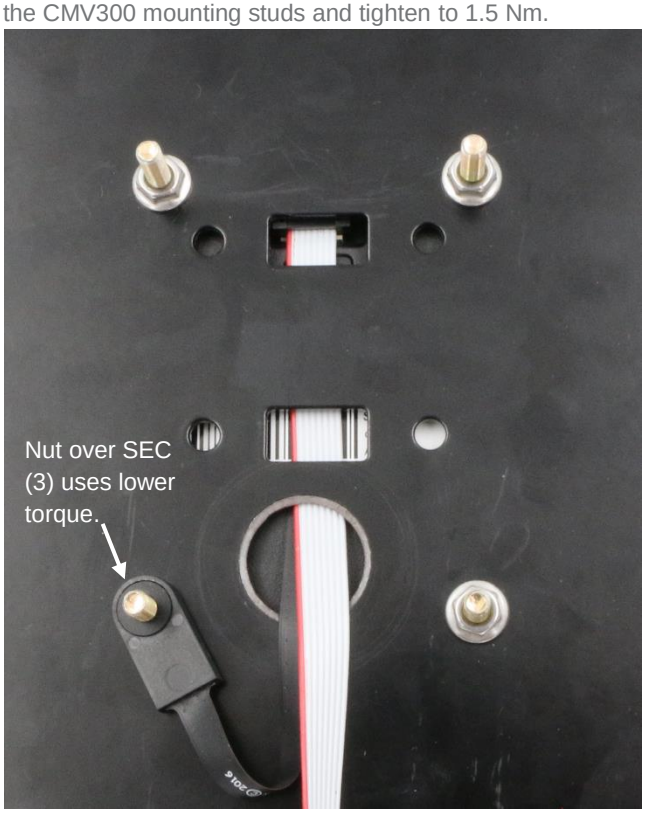
4. Remove the four nuts (4) from the CMV300.



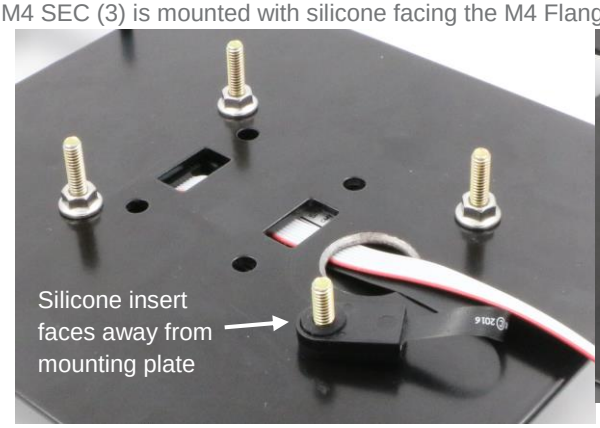
5. Feed the SEC (2) and communications cable (3) through the hole in the mounting plate.
6. Insert the CMV300 into the Machine Mounting Plate (5).

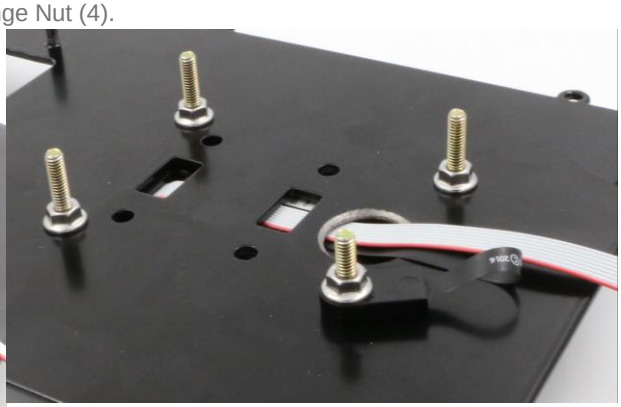


7. Fit 3 of the M4 nuts (4) to the CMV300 mounting studs and tighten to 1.5 Nm.



8. Mount the SEC (3) on the remaining mounting stud, fit the remaining M4 nut (4), and tighten to 0.8 Nm. Ensure M4 SEC (3) is mounted with silicone facing the M4 Flange Nut (4).





9. Connect the communications cable to the Host Application (customer application specific)
10. The device now needs to be activated before it can be used. Activation is done via a dual control process. Refer to Section 5 (Activation) of this document for more information.

3 CABLES

3.1 8-PIN CONNECTOR PIN-OUT

The interconnection between the CMV and the host application is made by a cable plugged into the 8-pin port. The pins on this cable are allocated as follows:

Pin ID	Signal	Type	Description
1	TX	Output from CMV300	Transmit out. RS232 level, 115Kbps max
2	RTS	Output from CMV300	Request-To-Send. RS232 level
3	RX	Input to CMV300	Receive in. RS232 level, 115Kbps max
4	PWR	Power	9Vdc to 43.5Vdc.
5	PWR	Power	
6	CTS	Input to CMV300	Clear-To-Send. RS232 level.
7	GND	-	System Ground
8	GND	-	

3.2 8-PIN TO RJ45 CONNECTOR PIN-OUT

The standard cable for use with the CMV300 is MW0142. This crosses over the input and output signal lines to plug into host equipment. The connections for the 8-pin end are as above, and the connections for the RJ45 are as follows:

Pin ID	Signal	Type	Description
1	RX	Input to CMV300	Receive in. RS232 level, 115Kbps max
2	CTS	Input to CMV300	Clear-To-Send. RS232 level.
3	TX	Output from CMV300	Transmit out. RS232 level, 115Kbps max
4	PWR	Power	9Vdc to 43.5Vdc.
5	PWR	Power	
6	RTS	Output from CMV300	Request-To-Send. RS232 level
7	GND	-	System Ground
8	GND	-	

4 SECURE ACCEPTANCE

The CMV is a security device; therefore, the customer must check the following before installation.

4.1 SERIAL NUMBERS

Each unit (CMV) has their own unique serial number. Upon receiving the unit, the customer must check to ensure that the serial number on the box matches the serial number on the unit.

Any discrepancies need to be reported to Payment Express (*see Appendix 7.1 for contact numbers*).

4.2 SIGN OF TAMPERING

The device should be checked upon receipt and then bi-monthly for the following signs of tampering:

- The exterior of the device should have no (new) holes, signs of adhesives or stickers other than the device label (as shown in **Error! Reference source not found.**a)
- Only one silver-coloured magnetic read head should be visible on the magnetic swipe slot
- No wires or foreign objects should be visible in the chip card reader slot as shown in Figure 1.

(a) (b)

Figure 1: Foreign object and wires inserted into the device's chip card reader slot. a) Normal slot – no wires visible. b) Tampered slot - wires have been routed into right hand side of slot.

If any of the above signs of tampering is detected, please cease using the device immediately and arrange to return the device to Payment Express Ltd. for examination per Section **Error! Reference source not found.**.

4.3 LOSS OR THEFT

In the event that a CMV300 device is lost or stolen, please notify Payment Express immediately (see Appendix for contact information).

5 ACTIVATION

The CMV300 solution requires activation before the devices can begin processing. Activation is required for initial installations and re-installations. Activation is done via a dual control process.

5.1 AUTHORISED CUSTOMER AGENTS

Prior to the installation process beginning two or more customer agents are authorised by Payment Express for the activation of devices. The customer agents are trusted individuals nominated by the customer.

Once the customer agents are established, Payment Express will issue a unique login (username/password) to each customer agent. These logins are used to access the Payment Express website required for the dual control Activation process.

5.2 ACTIVATION PROCESS

Two authorised customer agents must be available for the Activation process to begin.

1. **Log on to Payment Express**
   Two of the authorised customer agents start separate sessions to log on to the Payment Express website using their individual logins.

2. **Identify Terminal(s)**
   Once logged in, the terminals available for installation are displayed.

3. **Authorise Terminal(s)**
   Both of the customer agents will authorise the terminal(s) for installation via the Payment Express website. This authorisation will require a password.

   When both agents approve a terminal for installation the host terminal information will enter into the "*Ready for Installation*" state pending communications from the terminal. This "*Ready for Installation*" state will revert to a "*Removed*" state if physical installation and communication with the terminal do not occur within 24 hours. The agents will need to start the Activation process again if this occurs.

   For audit purposes, a record will be created in the Payment Express host database for all state changes (including the login used and a timestamp).

   Utilizing the 24 hour window, authorised customer agents can choose to begin the Activation process at the time of physical installation or initiate the Activation process prior to the physical installation if they know the physical installation will be done within the next 24 hours.

4. **Physical Installation**
   Within the 24 hour window, the installation technician will physically install the CMV300 into their mountings. The devices must be connected to communications and the secure channel established to the CMV300.

5. **Terminal Logon**
   The installation technician will trigger a transaction via the vendor's point of sale which will fail with a removal detection error code (W0) and an on-screen message "MAINTENANCE IN PROGRESS". The terminal firmware will automatically force a logon, upon which the terminal state is then updated.

6. **Ready State** (Activation Process Complete)
   The terminal and is now authorised for processing transactions. The installation technician should run another test transaction (using a valid payment card) to confirm correct operation. This transaction should successfully process.

6 MAINTENANCE

6.1 TRADEOUTS & DEACTIVATION PROCESS

In the event that the CMV300 device needs to be swapped out or deactivated, please follow instructions below.

1. Call Payment Express Support to log a ticket (see appendix 10.1 for contact numbers). Please provide the following information.
    - Serial Number(s) of CMV300 device(s).
    - Brief description of fault / reason for deactivation.
    - Contact Name.
    - Contact Phone Number.
    - Shipping Address (for replacement if needed).
2. Physically remove the device(s). At next communication with the host the device will be marked as removed.
3. Ship the device(s) back to Payment Express.

6.2 MAINTENANCE CARDS

The card reader slot in the CMV unit should be checked on a regular basis. This is to ensure that nothing is lodged inside the card reader slot that may prevent successful card reads or pose a security threat.

The card reader slot can be checked by using a standard maintenance card or standard credit card to ensure smooth insert & remove operation.

6.3 CLEANING INSTRUCTIONS

The external face of the CMV300 device should be carefully cleaned on a regular basis. This is to ensure that the keyboard and display are free of dirt and solvents which could damage the device or prevent users from using the device as intended.

Payment Express recommend cleaning the device with a damp cloth. Do not use any solvents as this may damage the device surface.

7 APPENDIX

7.1 CONTACT PAYMENT EXPRESS

Phone

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