

**Appendix 6.**

**User manual**

# **SAM-CRM-12 (Validator PCI) Board H/W Specification**

2012. 11. 05

SAMSUNG SDS

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Project Manager

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Approved

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## Revision History

Version	Date	Author	Ver if ier	Descr iption

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# 1 Overview

SAM-CRM-12(Product name : Uni-Pay) is a PCI-PED Compliant Debit PIN Pad, which supports as following EMV and PCI PTS V3.1. Mag-stripe function. It has TFT LCD which can be used for video advertisement, and host interface via RS232, RS422.

## 1.1 Purpose

It is Debit PIN Pad mainly use for credit card transaction at automatic ticket vending machine.

## 1.2 Communication & Operation

HOST server controls this reader via TCP/IP or RS232, RS422. It receives transaction amount and transaction result from the host.

## 1.3 Functions

- 1) Contact Card
- 2) Magnetic Card
- 3) BUZZER
- 4) LCD
- 5) Touch Screen
- 6) RS-232 communication
- 7) TCP/IP communication

## 1.4 Certifications (Factions)

- 1) PCI-PTS

The payment card industry (PCI) denotes the debit, credit, prepaid, e-purse, ATM, and POS cards and associated businesses.

PCI-PTS was specifically designed to protect consumer PIN data from theft. It is also intended to enforce hardware security of devices that accept consumer PINs and house secret encryption keys of the acquirer, including how the PIN Entry Device (PED) is produced, controlled, transported, stored and used throughout its life cycle.

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## 2) EMV

EMV stands for Europay, MasterCard and VISA, a global standard for inter-operation of integrated circuit cards (IC cards or "chip cards") and IC card capable point of sale (POS) terminals and automated teller machines (ATMs), for authenticating credit and debit card transactions.

The EMV standards define the interaction at the physical, electrical, data and application levels between IC cards and IC card processing devices for financial transactions. There are standards based on ISO/IEC 7816 for contact cards, and standards based on ISO/IEC 14443 for contactless cards.

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## 2 Summary

Following is the power & communication interface of Uni-Pay (SAM-CRM-12).

ITEM	Specification	Description
Power	DC 12V, 1A	
IN/OUT Interface	RS232 2ch, Ethernet 1ch, USB 1ch	
Certification	EMV, PCI PTS, J/Smart, CE, FCC, UL	

Internal Main Board divided to sector, one is User interface and the other is Pin input & Communication security.

Following is the contents of each sector

### 2.1 User Interface(LCD)

ITEM	Specification	Description
Processor	32Bits Microcontroller, ARM Cortex A8, 633MHz	Model No. : S5PC100
OS	Android 2.1	Linux 2.6.2.9 kernel
Memory	SDRAM 256MByte, NAND Flash 512Mbyte (Bios Area + Application Area)	
LCD	4.3 TFT Color LCD, 480*272 pixels	
IN/OUT Interface	RS232 1ch(internal Debug), RS232 1ch(RF Device) or RS485 1ch(External Device) USB2.0 1ch(Debug) I/O Ports for USIP communication	
Others	Audio Speaker, SD Card Slot	

### 2.2 PIN Input & Communication security (Touch sensor & Smart Card Control)

ITEM	Specification	Description
Processor	32Bits Secure Microcontroller, 96MHz	
OS	Linux	

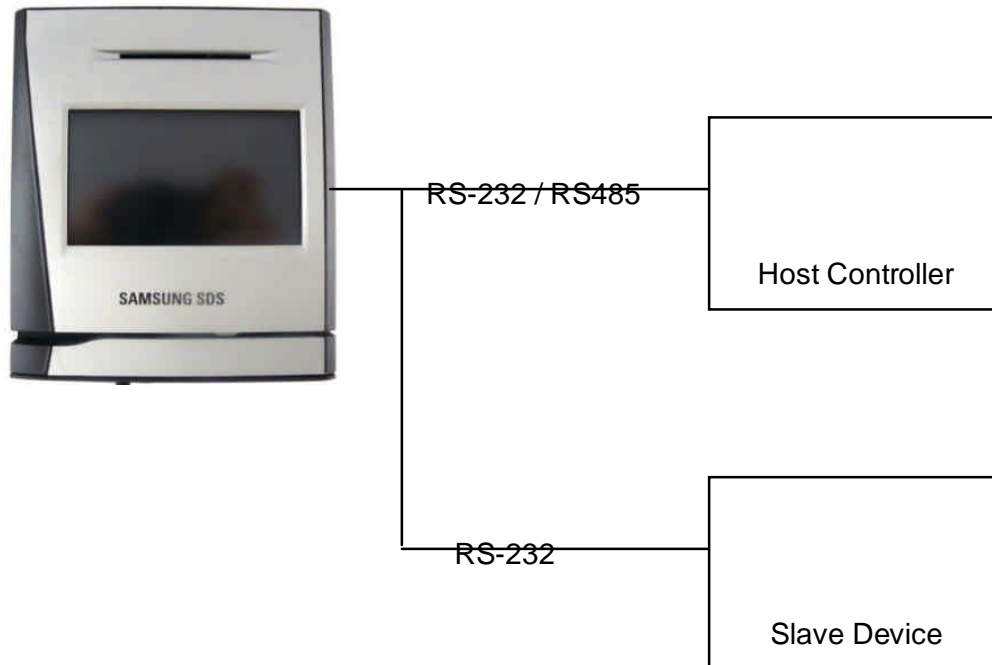
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Memory	SRAM 128KByte, Flash 256KByte, OTP 256Byte, ROM 128KByte external Flash 16Mbyte, external SDRAM 32Mbyte external SRAM 16Mbyte	
Touch	Touch Panel(SPI)	
Smart Card	Contact 1 Slot (UART)	
IN/OUT Interface	RS232 2ch(External Device) Ethernet SPI for TOUCH I/F	
MSR	Mag-Stripe Reader (UART)	
Battery	Lithium Manganese Dioxide Battery	For RTC and External Sensors
Others	Buzzer	
Certification	EMV, PCI PTS, CE, FCC, UL	

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### 3 Structure

The Structure of equipment

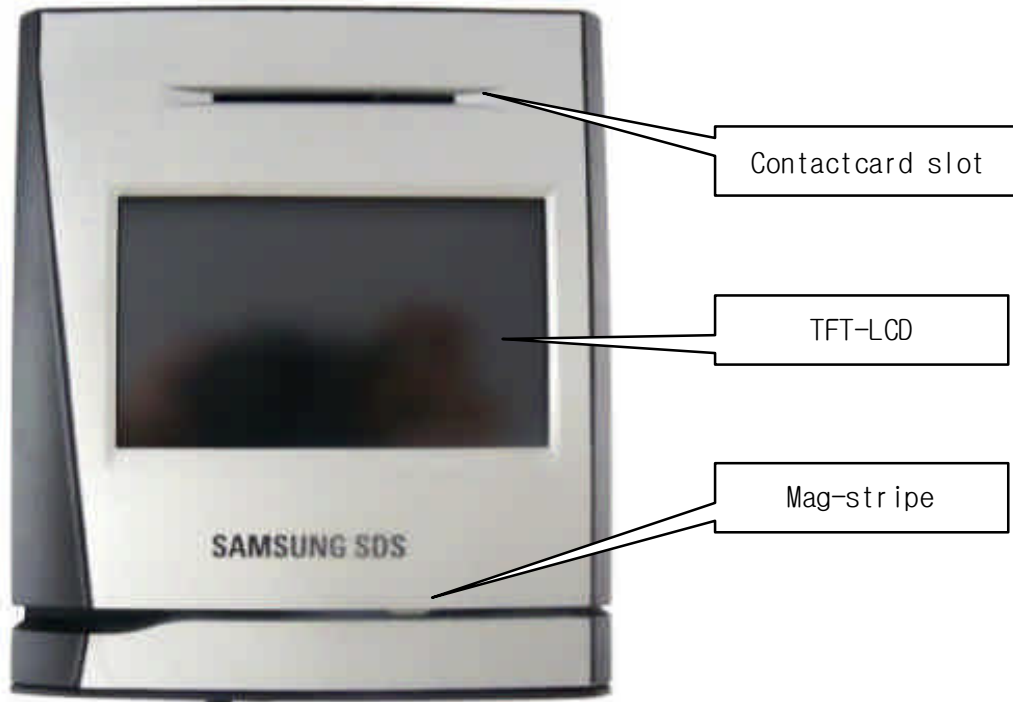


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## 4 Description of Surface

The picture of device surface



- Communication Cable  
LAN or Serial cable
  
- The size of terminal  
135.5(W) \* 152.7(L) \* 26(H)mm

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## 5 Connector Pin Assignment

### 5.1 J19 (Connector)

No	Description	No	Description
1	POWER (12V)	2	GND
3	POWER (12V)	4	GND
5	RESET-	6	RS485P
7	RESET+	8	RS485M
9	TX0_RS232	10	TX1_RS232
11	RX0_RS232	12	RX1_RS232
13	USB D+	14	GND
15	USB D-	16	USB_POWER(5V)
17	LAN_RDP	18	LAN_TDP
19	LAN_RDM	20	LAN_TDM

### 5.2 J6- External cable : Serial and Reset

No	Description	No	Description
1	PWR_IN	6	-
2	GND	7	-
3	TX_RS232	8	IO
4	RX_RS232	9	RESET+
5	GND	10	RESET-

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## 6 Description of Electricity

### The Description of power

- Input power : 12V

### The using electric current

- Normal 12V, 500mA under
- MAX 12V, 700mA under

### The Description of Serial communication

- 115200bps, 8 data, no parity, 1 stop bit

## 7 Property

### Operating Condition

- Temperature to use : -10 ~ 70 °C
- Humidity to use : 50 ~ 95 % (relative humidity)

### Storage Condition

- Temperature to keep : -30 ~ 80 °C
- Humidity to use : 30 ~ 90 % (relative humidity)

## 8 Warning and Notice

- For indoor use only.
- This product is affected by an element like metal or Magnetism. So one has to take precautions.

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## 9 Certifications

### EU

This product is CE marked according to the provision of the R&TTE Directive (99/5/EC). Here by DUALi Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.



### FCC STATEMENT

CAUTION: 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.

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