PAT 1111

PAT 1121

PAT 1141

PAT 11x1
OEM Manual

Contents

1.0 Product Specification 3

1.1 Overview 3
1.2 Specification 3

2.0 Hardware details 4

2.1 Product electrical ratings 4
2.2 Clock Frequency 4

3.0 Software details 4

3.1 Block diagram of the software architecture 4
3.2 Contact/SAM Card Parameters 5
3.3 Contactless card Parameters 5

4.0 Similarities and Differences between PAT 11x1 readers 5

5.0 Duty Cycle 6

6.0 DFU Application 6

6.0 Cable details 6

7.0 Regulatory Compliance 7

7.1 Safety Regulations 7
7.2 EMC Regulations 7
7.3 FCC Compliance Statement (USA) 7

8.0 Photographs of Readers 9

1.0 Product Specification

1.1 Overview

The term PAT is an acronym for Physical Access Terminal .The PAT readers are designed and constructed to provide a wide variety of configuration options. The readers support contact, contact less and pinpad interface. The PAT 11x1 readers are based on ARM7 processor. The contactless interface is controlled by Mifare IC controller. The readers are designed to support the following communication protocols to interface with host PC/control panel.

- Wiegand/Magnetic stripe
- RS 485

Two separate slots reside at the back of the readers for the compatibility of the above mentioned communication protocols. The LED and Buzzer in the readers constantly keep showing the user the status of the readers during the operation. The PAT11x1 readers are designed for indoor use only.

1.2 Specification

Host Interface	• Wiegand/Magstripe (CLK/Data) • RS485 (2 or 4 wires) • 3 relay inputs to set reader state
SAM	• ISO 7816 1-3 • T=0, T=1 protocol support (5V card) • Communication speed up to 344,086 bps
Smartcard interface	• ISO 7816 1-3 • T=0, T=1 protocol support (5V card) • Communication speed up to 115,200 bps
Smartcard connector	• 8 contacts (ISO location) • Landing contact, 500,000 insertions
Contactless	• ISO 14443 Type A and B (13.56 MHz) • Supports ISO 14443 part 1 to 4 • Operating distance: 1 inch for CAC • Communication speed: 106 Kbps • Internal 3DES for card authentication (DESFire)
Keypad	• Standard telephone layout (0-9, Clear and Enter) • Robust hard cap, silicon keypad
Human Interface	• 1 LED beam (green and red) for access information (granted and denied) • 1 LED per type of media (contact, contactless and keypad) to indicate the type of requested operation • Buzzer for user acoustic feedback
Application	• Full SDK (software development kit) available • Field Secure firmware upgrade
Dimensions	• LWH 148x84x46 mm
Power	• 12V DC- 200mA

2.0 Hardware details

2.1 Product electrical ratings

2.1.1 Voltage rating

+12V DC is taken from the control panel and regulated to +5V DC and +3.3V DC on the PAT11X1 PCBs. Operating Voltage is 10V to 16V DC.

2.1.2 Current rating

Current consumption is 200 mA @12V for Device full operation. The current consumption during idle state is 160mA.

2.1.3 ESD and EFT

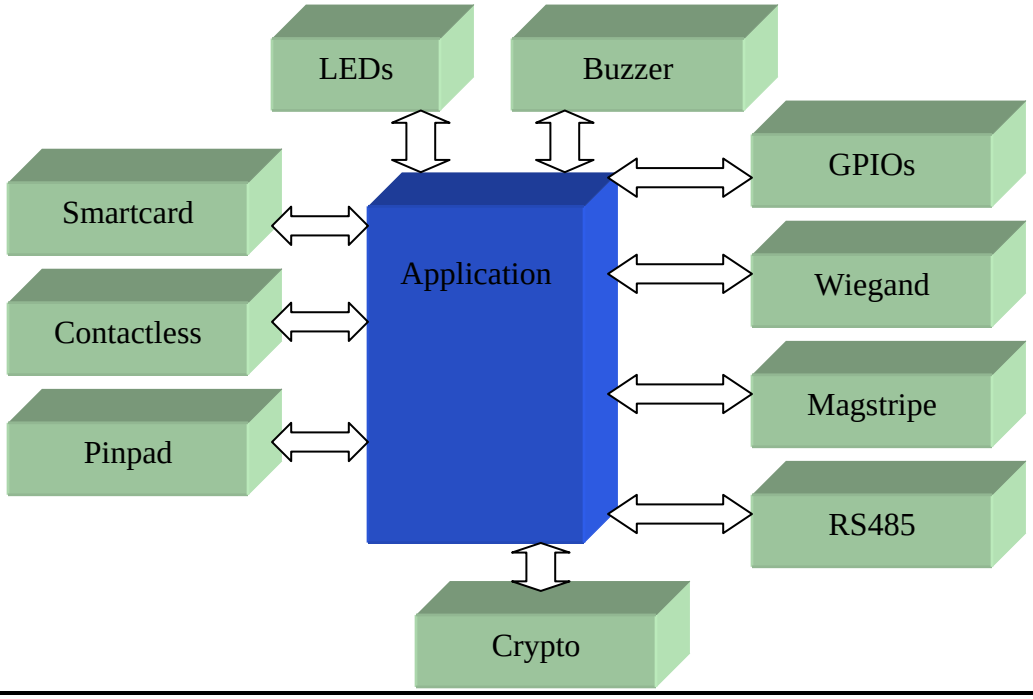
As per EN61000-4-2 4KV contacts and 8KV air discharge.
As per EN61000-4-4 the product can withstand up to 4KV EFT.

2.2 Clock Frequency

- ARM7 processor is running @ 45MHz, which is derived from an external 12 MHz crystal
- ICC clock @4-12MHz
- Contactless reader's transmitter antenna and receiver circuit works @13.56MHz using MIFARE RC531 controller.
- For RS485, the maximum supported baud rate is 115200 bps.

3.0 Software details

3.1 Block diagram of the software architecture



3.2 Contact/SAM Card Parameters

Some important smart card parameters, supported smart card types, maximum operable smart card frequencies, operating voltages etc., are detailed in the tables below.

ICC Parameters	Value/Description
Class A Smart Cards	Supported
Class AB Smart Cards	Supported
ISO-7816 compliant	Yes
Smart card operating frequency	4MHz as a minimum (Up to 8MHz)
Maximum supported card baud-rate	344,086 bauds

3.3 Contactless card Parameters

Some important contactless card parameters, supported contact-less card types, maximum operable PICC frequencies, operating voltages etc., are detailed in the tables below.

ICC Parameters	Value/Description
Type A T=CL PICC	Supported
Type B T=CL PICC	Supported
ISO-14443 compliant	Yes
PICC operating frequency	13.56MHz
Maximum supported card baud-rate	424Kbps

4.0 Similarities and Differences between PAT 11x1 readers

Features	**PAT 1111**	**PAT 1121**	**PAT 1141**
Software	The application is configured for contactless cards only.	The application is configured for both contactless and pinpad. The reader will wait for the pinpad entry first.	The application is configured for contactless, pinpad and smartcard. The reader will wait for either the pinpad entry or the smartcard whichever is first.
Wiegand	Yes	Yes	Yes
Magstripe	Yes	Yes	Yes
RS485	Yes	Yes	Yes
Optional SAM	Yes	Yes	Yes
Protocol	T=CL	T=CL	T=0, T=1,T=CL
ISO14443	Yes	Yes	Yes
ISO7816	No	No	Yes
Relay Inputs	3	3	3
LED per media type	1	2	3
Dimension	LWH 148 x 84 x 46 mm	LWH 148 x 84 x 46 mm	LWH 148 x 84 x 46 mm

5.0 Duty Cycle

The product is designed to work 365 days 24 hours. The RF is always ON for PAT1111 reader. For PAT1121 reader, RF will be activated only when the user enters the correct PIN number. For PAT1141, the reader will wait for either the pin pad entry or the smartcard whichever is first.

6.0 DFU Application

DFU is the acronym for Device Firmware Upgrade. The DFU application is used for programming the onboard flash in the PAT readers through RS232 interface and allows seamless reconfiguration of the reader and prevents obsolescence. A RS485 to RS232 converter has to be used to connect the reader to the host PC. The application is capable of running under the following operating systems.

Operating System	Support
WIN98	Yes
WINME	Yes
WIN2000	Yes
WINXP	Yes

6.0 Cable details

For Wiegand/Magstripe interface:

10 core 22 AWG foil shielded cable should be used. A maximum cable length of 150 meters is supported. At the power supply end, GND should be connected to the shield of the cable.

For RS485 interface:

8 core 22 AWG foil shielded cable should be used. A maximum cable length of 4000 feet is supported. At the power supply end, GND should be connected to the shield of the cable.

7.0 Regulatory Compliance

This section describes the product's compliance with U.S. and international safety and electromagnetic compatibility (EMC) regulations.

7.1 Safety Regulations

The safety regulations to which the product complies with when correctly installed in a compatible host system are:

Regulation	Title
UL 294	US Safety of Information Technology Equipment

7.2 EMC Regulations

Regulation	Title
FCC (Class B)	Title 47 of the Code of Federal Regulations, Parts 2 and 15, Subpart C,Radio Frequency Devices. (USA)
VCCI:1997 Class B ITE	

7.3 FCC Compliance Statement (USA)

Product Type: Contact / contactless smart card reader.
Product Name: PACT- ARM7

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 Sub part C of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. 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 the receiver. Connect the equipment to a different electrical branch circuit from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help. Any changes or modifications to the equipment not expressly approved by SCM could void the user’s authority to operate the equipment.

7.4 Product Ecology Statements

The following information is provided to address worldwide product ecology concerns and regulations.

7.4.1 Disposal Considerations

This product contains the following materials that may be regulated upon disposal:

- lead solder on the printed wiring board assembly.

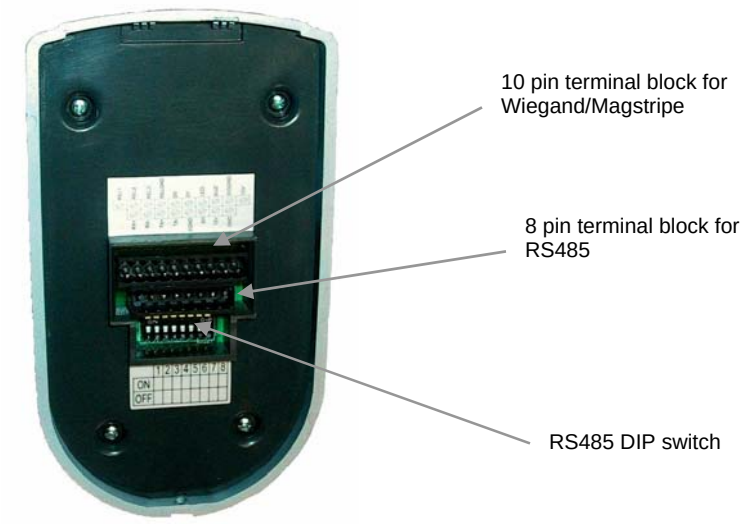
7.4.2 Recycling Considerations

SCM encourages its customers to recycle its products and their components (e.g., batteries, circuit boards, plastic enclosures, etc.) whenever possible. In the U.S., a list of recyclers in your area can be found at: http://www.eiae.org/
In the absence of a viable recycling option, products and their components must be disposed of in accordance with all applicable local environmental regulations.

8.0 Photographs of Readers

Front view

Rear view (The rear view appears similar for PAT1111, PAT1121 and PAT1141 readers)



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