EMC Technologies Pty Ltd
ABN 82 057 105 549
Unit 3/87 Station Road
Seven Hills NSW 2147 Australia

Telephone +61 2 9624 2777
Facsimile +61 2 9838 4050
Email syd@emctech.com.au
www.emctech.com.au

APPENDIX L
OF
TEST REPORT T160221_F

USER MANUAL

FCC ID: 2ACXQ-PSC-6040
Manufacturer: Sato Vicinity Pty Ltd
Test Sample: RFID Smart Cabinet
Model Number: PSC-6040
Serial Number: Production Prototype

Date: 5th April 2016

Melbourne
176 Harrick Road
Keilor Park, Vic 3042
Tel: +61 3 9365 1000
Fax: +61 3 9331 7455

Sydney
Unit 3/87 Station Road
Seven Hills NSW 2147
Tel: +61 2 9624 2777
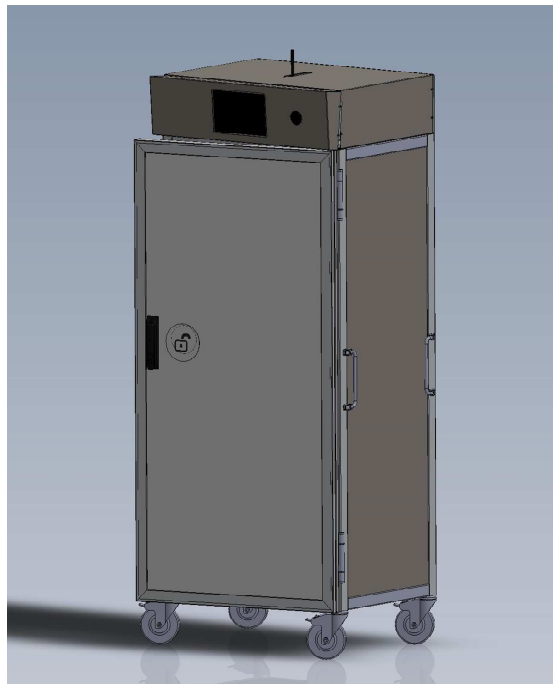Fax: +61 2 9838 4050

Auckland (NZ)
47 MacKelvie Street
Grey Lynn Auckland
Tel: +64 9 360 0862
Fax: +64 9 360 0861

User Manual

PSC-6040

PJM Smart Cabinet

Content

Please read before proceeding

Please read and understand this document before using SATO Vicinity's Readers. If you have any questions, comment or suggestions about the User Manual please contact SATO Vicinity.

Important Information

Installation Environment

For indoor use only unless otherwise specified.

Install SATO Vicinity's Readers within the temperature and humidity range according to the product specification.

The environment must not contain corrosive, flammable or explosive agents or be subject to rapid changes in temperature, to direct vibration or shock.

ƒ Installation

SATO Vicinity's RFID reader-writers communicate with data carriers (RFID inlets, labels and tags) using the 13.56 MHz High Frequency (HF) band. Some industrial devices can generate unwanted noise which may degrade communication. Make sure that other equipment is properly installed, grounded and at a reasonable distance.

Wireless communication can be degraded by high-voltage and high-current lines and other sources of strong electric and magnetic fields. Installation in such locations should be avoided.

ƒ Maintenance

All SATO Vicinity's RFID readers-writers are low maintenance equipment. Except for externally accessible fuses there are no user-serviceable parts in any Reader. There is no requirement to remove the cover of the Reader.

!	Removal of the Reader cover by unauthorised personnel will void the product warranty.

Do not attempt to clean internally. Periodic cleaning of external case parts with a damp cloth is advisable. Turn off the Reader before cleaning. Do not use a solvent of any kind.

ƒ Electrical Safety

	In order to avoid electric shock do not remove the Reader cover or attempt to repair. The equipment must be maintained by authorised, qualified and service-trained personnel only.

ƒ Environmental

	For disposal purposes Readers should be treated as industrial waste.

This symbol on the Reader or on its packaging indicates that this Reader shall not be treated as household waste. Instead it shall be handed over to an appropriate collection point for the recycling of electrical and electronic equipment. By ensuring this Reader is disposed off correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this Reader, please contact your local city office, your household waste disposal service or the SATO Vicinity office.

1. Introduction

Thank you for your recent purchase of a SATO Vicinity RFID reader-writer.

This User Manual will provide you with information to rapidly adopt SATO Vicinity's PJM technology for your needs, to install the Reader hardware and ReaderManager software and get the Reader running.

Refer to the ReaderManager User Manual (40-01-006-DOC) for a description of the various tools and advanced options available in ReaderManager.

Programming is covered in the Programmer Guide (40-01-000-DOC).

1.1 Regulation and Standards

RFID equipment is subject to national and international regulations.

The FCC regards RFID equipment as low-power transmitting devices and, therefore, does not require users of RFID devices to obtain a license to operate them.

FCC Radio Frequency Interference Statement (USA)

These devices comply with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limit for a Class A digital device and intentional radiator, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

!	Any changes or modifications to the equipment that are not expressly approved by the party responsible for compliance could void the user's authority granted under FCC Rules to operate this equipment.

FCC ID: 2ACXQ-PSC-6040

CE Declaration of Conformity (European Union)

This equipment has been declared as compliant in accordance with R&TTE EU Council Directive 1999/5/EC and displays the CE mark accordingly. Products with CE marking comply with EMC Directive (89/336/EEC amended by 93/68/EEC) issued by the Commission of the European Community.

This apparatus complies with ETSI EN 301 489-1 RF common mode immunity requirements on Ethernet Port with shielded CAT5 Ethernet Cable.

! WARNING	This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ACMA Declaration of Conformity (Australia)

This product complies with the Australian Communications and Media Authority (ACMA) Radiocommunications regulations and carries the RCM mark accordingly.

! WARNING	This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ISO/IEC 18000 – 3 Mode 2 (Air Interface at 13.56 MHz) Compliance

SATO Vicinity's Readers fully complies with the ISO/IEC 18000 Part 3 Mode 2 (Information technology – Radio frequency identification for item management. Part 3: Parameters for air interface communications at 13.56 MHz) published in August, 2004.

1.2 Warranty

SATO Vicinity's warranty and liability with respect to products and/or services is for a period of 12 months from date of delivery and is limited to the rectification of faulty workmanship and/or non-compliance by SATO Vicinity.

Any liability with respect to components including purchased or free issued items and other materials used in the manufacture of products are covered by, and limited to, any warranty provided by the original manufacturer.

1.3 Limitation of Liability

SATO Vicinity's warranty excludes products that have been improperly installed or maintained, modified or misused. Notification of claims must occur within the warranty period.

End-users should contact the company from whom they purchase the products for replacement, repair or refund.

If u s e r purchases the Reader directly from SATO Vicinity, contact SATO Vicinity for a
Return Authorization Number (RAN) before shipment.

1.4 Changes in Product Family, Specifications and User Manuals

This document is subject to change without notice in future editions. SATO Vicinity reserves the rights to change its product design, specifications and product range.

1.5 Copyrights and Copy Permission

This document shall not be copied, reproduced or transmitted in any form or by any means without written permission from SATO Vicinity Pty Ltd. This document is protected by copyrights and is intended solely for use in conjunctions with SATO Vicinity's products only.

1.6 Meaning of Alert Symbols and Signal Words

	Notes and Tips. Application Notes.
!	This part of the Manual requires your attention.
	Warning! In order to avoid electric shock follow the instructions provided.
! CAUTION	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury. Can cause property damage.
! WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Can cause significant property damage.

1.7 Glossary of Terms and Abbreviations

D/C	Date Code (month/year)
DSB	Digital Support Board
HDF	High Density Fiberboard (for MARS only)
HF	High Frequency
IT	ItemTag (chips, inlets and labels)
ItemTag tags (IT tags)	SATO Vicinity's labels and inlets for item tagging (separated items) that work with SATO Vicinity's family of reader-writers

LAN	Local Area Network
LED	Light Emitting Diode
MDF	Medium Density Fiberboard (for MARS only)
MLC	Machine Level Control (System Configuration Control)
MRD	Maximum Read-Write Distance
OEM label	Original Equipment Manufacture label is located on the back of the equipment. It includes the Model Number, P/N, D/C, S/N and MLC.
PJM	Phase Jitter Modulation or PJM™ is a registered Trade Mark of SATO Vicinity Pty Ltd. PJM is a RFID communication technology developed and patented by SATO Vicinity Pty Ltd and complies with ISO/IEC 18000-3 Mode 2. PJM technology products include a range of RFID chips, inlets, tags and Readers.
PJM ItemTag®	Registered Trade Mark for SATO Vicinty's ItemTag
PJM StackTag®	Registered Trade Mark for SATO Vicinity's StackTag tags
P/N	Part Number
RAN	Return Authorisation Number
Reader/s	SATO Vicinity's RFID reader-writer/s
ReaderManager	Graphical user application for Windows/Linux which provides a platform for testing, demonstrations and application development
ReaderServer	Embedded application that provides standard Application Programmer Interface to serve end-user applications. This application runs on the Reader.
RFID	Radio Frequency IDentification
RFID inlet	A RFID device comprising a microchip and a printed antenna (copper/aluminium/conductive inks) on a flexible substrate (PET plastic film)
RFID label	RFID inlet with adhesive backing (sticky label)
RFID tag	- generic name for RFID inlet and label; - RFID inlet or label inserted into a housing (glass, polycarbonate, polyamid, epoxy, ABS, etc.)
RFID reader-writer	Device for reading and writing to RFID tags
S/N	Serial Number
ST	StackTag (chips, inlets and labels)
StackTag tags (ST tags)	SATO Vicinity's labels and inlets for item tagging (stacked, touched or overlapping items) that work with SATO Vicinity's family of reader-writers

2. Product Overview

Intended use of SATOI Vicinity's RFID Reader is to read and write information to individual SATO Vicinity ItemTags and multiple SATO Vicinity StackTags.

The communication protocol used by the Reader is compliant with ISO/IEC 18000 - 3 Mode 2 (Air Interface at 13.56 MHz).

2.1   PSC-6040

PJM smart cabinet

Multiple RFID shelves

3 Dimensional reading antennas

8 communication channels

3. Getting Started Guide

3.1 Unpacking and Inspection

When you receive your system, inspect it for any obvious damage that may have occurred during shipment. If there is damage, notify the shipping carrier and the supplier of the equipment or SATO Vicinity if purchased directly from SATO Vicinity.

Until you have checked the system, save the shipping carton and packaging materials in the event the unit has to be returned.

Included with the PSC-6040 should be the following components:

- *f* Smart Cabinet

The Cabinet connection to the power source is realized via mains between 100V and 250V.

A power cable is not included with the supply. End-users should purchase a power cable suitable for the country of use.

! CAUTION Only power cables and adaptors that are compliant with the regulations in the country of use may be connected to SATO Vicinity's equipment.

! As shielded cables (USB and Ethernet) are generally required in order to comply with EMC emissions limits, only shielded communication cables should be used.

Ethernet cable is not included with the supply.

SATO Vicinity recommends CAT5 Ethernet

cable.

- Quick Start Guide

- CD-ROM

The CD-ROM should contain the following files:

AdbeRdrxx_enu_full.exe	Self-extracting installation kit for the Adobe Acrobat reader, which is required to read and print PDF files.
40-01-000-DOC Programmer Guide.pdf	PDF document describing how to program all of SATO Vicinity's Readers.
40-01-006-DOC ReaderManager User Manual	PDF document describing various tools and advanced options available in ReaderManager
45-00-001-SPC BT & ST Chip Logical Specification	Defines the functionality of IT and ST chips.
ReaderManager-Install.exe	Self-extracting installation kit for the ReaderManager.

- Test tags (required for Hardware Functionality Test and Communication Test)

3.2 Before You Begin

3.2.1 Installation Environment

SATO Vicinity's Readers are designed to operate in indoor environments where temperature and humidity are controlled unless other conditions are specified for customised Readers.

For standard Readers the temperature range is from +10°C to +45°C. The humidity range is from 10% to 80% (non-condensing humidity).
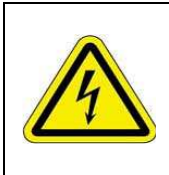
Install the Readers within the temperature and humidity ranges according to the product specification.

The environment must not contain corrosive, flammable or explosive agents and conductive dust or be subject to rapid changes in temperature, direct vibration or shock.

! WARNING	Do not operate this Reader in an environment which contains flammable or explosives gases or fumes.

SATO Vicinity's RFID reader-writers communicate with data carriers (RFID inlets, labels and tags) using the 13.56 MHz High Frequency (HF) band. Some industrial devices can generate unwanted noise which may degrade communication. Make sure that other equipment is properly installed, grounded and are at a reasonable distance.

Wireless communication can be degraded by high-voltage and high-current lines and other sources of strong electric and magnetic fields. Installation in such locations should be avoided.

	In order to avoid electric shock do not remove the Reader cover or attempt to repair. SATO VIcinity's reader-writers are to be maintained by authorised, qualified and service-trained personnel only.

!	Removal of the Reader cover by unauthorised personnel will void the product warranty.

3.2.2 Standalone Application

PSC-6040 smart cabinet can be used as a standalone application or with back-end software management system.

3.2.3   Working with Tags

☞	- Do not stack ItemTags on top of each other. Only StackTags can be stacked, overlapped or touch each other. - Single-axis Readers are tag orientation sensitive. Refer to Tag-to-Reader/Tag-to-Antenna section of this document. - Reading and writing speeds depend on reader-tag communication speeds and channel numbers (communication protocol), amount of information to be read and/or written and number of tags presented at a time. The additional number of tags and information to be read and especially written slow down read-write communication. Please consult SATO Vicinity or your support organisation regarding these issues for your specific application. - Be aware that tags and Readers can be incompatible with each other. Bigger tags can work with all types of Readers. Smaller tags require higher field strengths to communicate with a Reader and as a result they do not communicate with some Readers or have to be closer to a Reader antenna. Refer to the Reader-Tag Compatibility section of this document.

3.2.4   Installation Requirements

PSC-6040 is a stand-alone peripheral desktop device that does not require special installation or tuning of an internal antenna.

Power supply requirements:

Mains input:	110 - 240 VAC @ 50/60 Hz

4. Reporting a Problem

If you are having a problem with a SATO Vicinity Reader, you will need to send a report to your support organisation. To make the diagnosis quicker and easier, please supply your problem report on a Service Form along with the following information:

	▪ What kind of tags are you using and how many are you putting inside the Reader at one time? ▪ Have this Reader and the tags you are using worked at any time in the past? ▪ Have you tried connecting to the Reader with a different PC? ▪ Have you successfully installed the ReaderManager application? ▪ In the ReaderManager, select the Help/About ReaderManager menu item and record on the Service Form what version numbers are shown in the window that appears.

The required information about Model Number, S/N, P/N and D/C is located on OEM label on the back of the equipment.

Warranty Repairs

Before shipping any Reader a Return Authorisation Number (RAN) must be obtained.

	End-users should contact the company from whom they purchased the Reader for repair, replacement or refund. If you purchased the Reader directly from SATO Vicinity, contact SATO Vicinity for a Return Authorization Number (RAN) before shipment.

The copy of the Service Form with RAN must be enclosed in the original or equivalent packing with the RAN number clearly marked on the outside of the box.

Non-Warranty Repairs

If a Reader needs repairing after one year warranty period expires, your support organization or SATO Vicinity if you purchased directly from SATO Vicinity will first provide an estimate of repair charges. Then upon receiving approval from you the Reader can be sent for repair. Refer to above Warranty Repairs information for return procedures.

4.1 Troubleshooting

Problem	Reason	Solution
Red LED light is off	Power cable not connected	Ensure the power cable is connected correctly to both the mains power and to the Reader.
	Power cable faulty	Replace the cable.
	Power adaptor faulty	Replace the power adaptor.
	Reader faulty	Send a service report on a Service Form.
Absence of the flashing green LED light during tag reading	Incorrectly orientated tag/tags	Ensure tag/tags are oriented correctly for the Reader (see Tag-to-Reader/Tag-to-Antenna Orientation).
	Faulty tag/tags	Replace tag/tags. Do not use tags with a black dot or black square marking (faulty tags).
	The *Powering Field* is off	Ensure the powering field is on. Go to *Tools> System>Reader Setting.* Tick the *Powering Field* box.
Green LED was sighted but tag did not appear on the computer screen	Reader faulty	Send a service report on a Service Form.
	USB or Ethernet connection is not functioning	Ensure cable is connected correctly. Cycle the power on the Reader. Shut down and restart the host computer and ReaderManager.
	The reader is not *Connected*	Ensure the Reader is turned on and a communication cable is plugged in. The status bar in bottom right corner of the ReaderManager window has to show an indication *Connected,* the tag type and the IP address.
	The tag type is incompatible with the Reader	Use appropriate tag type according to the chart in section Reader-Tag Compatibility.
	A communication tool has not been chosen	Choose Grid or Table from *Tools> System* menu as a communication tool.
Can not find and connect to the Reader as the Reader is not shown on the *Connection* menu list	The Reader was not in operational mode when you connected a communication cable and/or open the *Connection* menu	Unplug and plug in the communication cable. Open the *Connection* menu. Find the Reader you want to connect to on the list.
		Plug in the power and communication cables. Wait for about 1 minute after you apply the power to the Reader. The red or blue LED/LEDs must to be permanently lit and the green LED off. Open the *Connection* menu. Find the Reader you want to connect to on the list.

4.2 Service Form

CONTACT	Company _____ Address _____ Country _____ Sales Order _____ PO Number _____ Purchase Date _____	Return Authorisation Number (RAN) _____ Date _____ Technical Contact _____ Telephone _____ Fax _____ Email _____
PRODUCT	From OEM label on the back of the equipment: Model _____ P/N _____ D/C _____ S/N _____ MLC _____ (first number in order after black dots) Describe any hardware modifications made to the unit and modification date: _____ _____ _____ _____ _____ _____ _____	
REASON FOR RETURN	Describe problems (see 3.2 Reporting a Problem): _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
RETURN TO*	If purchased from SATO Vicinity: **SATO Vicinity Pty Limited** Mailbox: PO Box 408, Camperdown, NSW 1450	Tel.: +61 2 9562 9800 Fax: +61 2 9518 7620 Email: contact@satovicinity.com Website: www.satovicinity.com

* End-users should contact the company from whom they purchased the Reader

5. Contact Us

	SATO VICINITY PTY. LTD. 8 Guihen Street, Annandale, NSW 2038, Australia TEL.: +61 2 9562 9800 FAX: +61 2 9518 7620 EMAIL: contact@satovicinity.com WEBSITE: www.satovicinity.com

6. Revision History

Version	Date	Reason
Ver.1	05.2016	Initial released