SDI 010 – USB Contact/ Contact less reader) OEM Manual

Contents

1.0   Product Specification

1.1   Overview

The SDI 010 is part of the SCRx31 product family based on the SCM Microsystems' STC II Micro Controller. Taking advantage of existing products, this device adds contactless capability and makes it ideal for any application requiring both interfaces to coexist.
In addition, the SDI 010 is the industry's first to offer on-board flash. This enables future firmware and application enhancements that guarantee against obsolescence.
The SDI 010 offers the best price/performance in the market.

1.2   Product Features

- ➢ PC/SC 1.0 compliant drivers – including the contact-less interface
- ➢ Type A – CL , Type B – CL , Mifare, Memory card support
- ➢ T=1 simulation for contactless
- ➢ USB CCID like Host interface handled by SCM vendor drivers
- ➢ USB2.0 compliant full speed device
- ➢ High bus-powered through USB
- ➢ SCM Vendor drivers for all WINTEL platforms (except WINNT4.0)
- ➢ Device firmware upgradeable in the field through USB
- ➢ Remote wakeup of host machine, on card insertion or removal – Contact only
- ➢ WHQL compliant drivers for WINXP platform
- ➢ ISO7816 compliant contact smart card interface
- ➢ ISO14443 compliant contact-less smart card interface
- ➢ One dual color LED indicating different states of the reader.

1.3   OS Support

The following OS is supported by SCR331-DI:

- ➢ Windows XP (including all service packs)

- ➢ Windows 2000 (including all service packs)

- ➢ Windows ME

- ➢ Windows 98SE

2.0   Hardware Specification

2.1   Adapter Power

- • High Bus Powered (>100mA and <500mA) (draws power from the USB bus), for USB operation.

2.2   Clock Frequency

- • STC-II chip internally running @24 MHz for USB operation, derived from an external 12 MHz crystal
- • ICC clock @4MHz
- • Contactless reader's Transmitter antenna and receiver circuit works @13.56MHz using MIFARE RC531 chip

2.3 Smart card slot details

- Single smart card slot implemented.
- Manual ejection mechanism
- Class A or AB cards ONLY; No support for B only cards

3.0 Software Specifications

3.1 Operating System

- Generic device firmware
- Vendor drivers for WIN98SE, WINME , WIN2000, WINXP, Windows Server 2003, Win CE

3.2 ICC 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
Asynchronous Smart Cards	Supported
ISO-7816 compliant	Yes
EMV'2000 compliant	Not yet validated
PC/SC compliant	Yes
WHQL compliant	Yes (Windows 2000, Windows XP, Windows Server 2003)
CT-API compliant	Yes
Smart card operating frequency	4MHz
Maximum supported card baud-rate	250K

3.3 PICC Parameters

Some important PICC 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 memory card PICC	Supported (Through SCM Specific APDUs)
Type A T=CL PICC	Supported
Type B memory card PICC	Supported (Through SCM Specific APDUs)
Type B T=CL PICC	Supported
ISO-14443 compliant	Yes
PC/SC compliant	Yes (Contactless cards simulated as T=1 cards)
WHQL compliant	Yes (Windows 2000, Windows XP, Windows Server 2003)
PICC operating frequency	13.56MHz
Maximum supported card baud-rate	424Kbps

3.4 USB Parameters

USB Parameters	Value/Description
USB Specification	USB 2.0 FS Device
USB Speed	Full Speed Device (12Mbit/s)
Device Class	Vendor

4.0 Software Modules

4.1 Firmware

Device firmware that supports USB interfaces is provided.
On USB, the firmware implements dual slot architecture – one slot for the CONTACT interface and another for the CONTACT-LESS interface.

4.2 USB Drivers

Two driver packages have been provided – a SINGLE driver package and a DUAL driver package

SINGLE DRIVER PACKAGE

Only one driver gets loaded and the same driver handles both the CONTACT and CONTACT-LESS operations. However though we have a dual slot firmware EITHER one of CONTACT or CONTACTLESS are be accessed at a time.

DUAL DRIVER PACKAGE

Two drivers are loaded and two readers are seen at the host level.
SCM Microsystems Inc. SDI 010 Smart Card Reader
    It is a CONTACT-ONLY reader.

SCM Microsystems Inc. SDI 010 ContactlessReader
    It is a CONTACT- LESS-ONLY reader.

The advantage is that two slots of the reader can be accessed simultaneously. But as discussed in section 4.2.2 LED behavior, when the firmware is configured in the mode, where the RF field is powered OFF during CONTACT card presence, the real Dual slot feature is lost.

4.3 Utilities

4.3.1 Installation

SCM provides Install Shield Installer for Windows to install the product. The SCM drivers as well as the utilities can be installed with the help of this installer.

4.3.2 DFU Utility

DFU utilities/drivers for dynamic Device Firmware Upgrade (DFU) are shipped with the device for USB interface. DFU utilities/drivers are capable of performing a DFU under the following operating systems.

Operating System	Support
WIN98	Yes
WINME	Yes
WIN2000	Yes
WINXP	Yes

5.0   Regulatory Compliance

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

5.1   Safety Regulations

Below Table the safety regulations the product complies with when correctly installed in a compatible host system.

Regulation	Title
UL 60950	US Safety of Information Technology Equipment
EN 60950:2000	The Standard for Safety of Information Technology Equipment including Electrical Business Equipment. (European Union)

5.2   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	
Radio Law Japan	

5.2.1   FCC Compliance Statement (USA)

Product Type: Contact / contactless smart card reader.
Product Name: SDI 010

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.

5.3 Product Ecology Statements

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

5.3.1   Disposal Considerations

This product contains the following materials that may be regulated upon disposal: lead solder on the printed wiring board assembly.

5.3.2   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.

5.4 Product Certification Markings

Below Table lists the product certification markings.

Description	Marking
UL file number for SDI 010 - XXXXXXXXX	
FCC ID for intentional radiator Class B equipment.	FCC ID MBPSDI 010 -1000
VCCI Declaration of Conformity logo mark for Class B equipment.	
Radio Law Japan RF certification	