



SX-3000EDM

Integration Guide



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Product Overview

Introduction

The SX-3000EDM allows you to embed Silex SX-Virtual Link functionality into a USB device enabling you to easily connect and share all of the device functionality on a Gigabit Ethernet network. Silex has created software for Windows and Macintosh computers called SX-Virtual Link which precisely emulates a USB port on each of the computers that want to access the USB device over the network. The computers think that they are communicating with the device via a direct USB connection, but they are actually communicating over the network to the USB device connected to the SX-3000EDM.

To create your own client utility for connecting to the device instead of using SX-Virtual Link, contact Silex Technology for information about the SX-Virtual Link SDK for Windows or Macintosh, which allows you to design your own custom utility for connection to the USB device over the network.

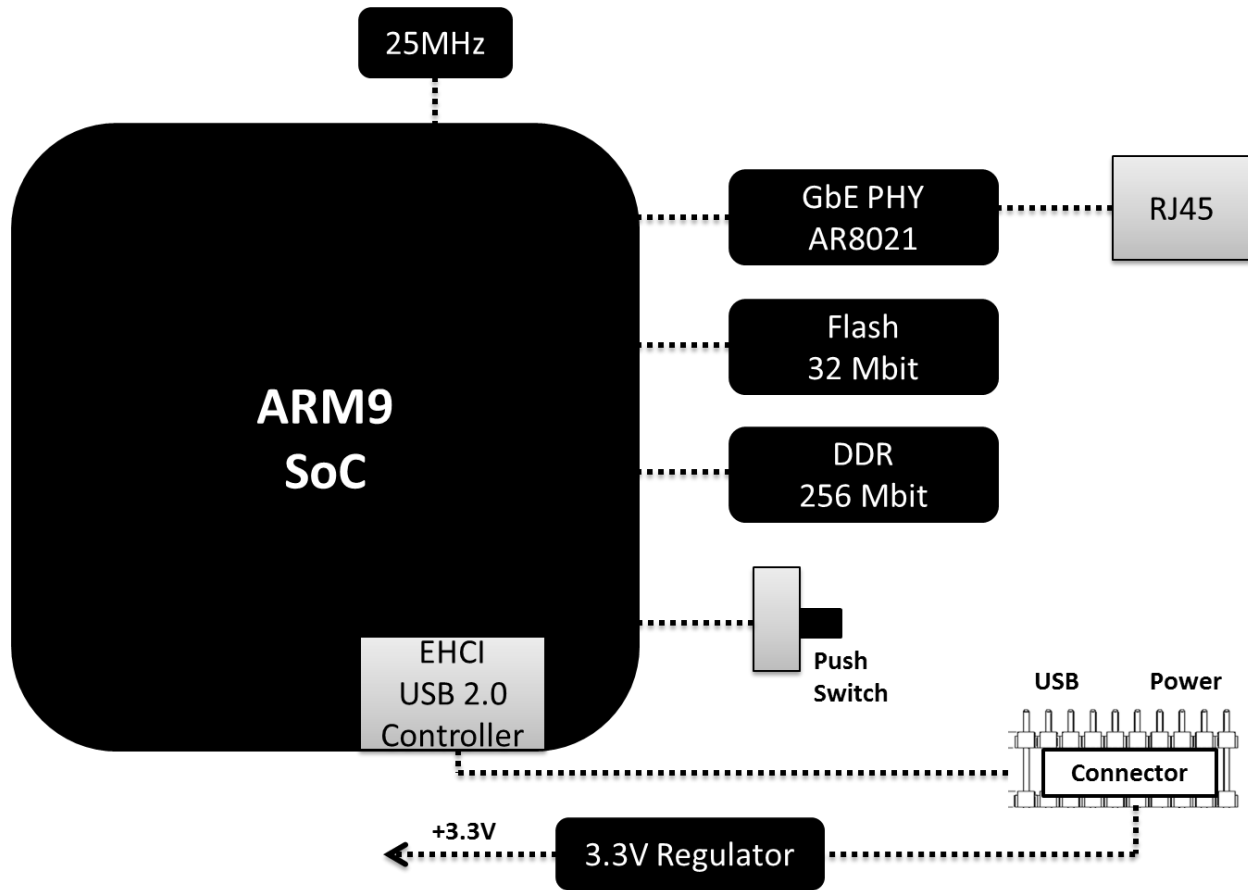
IMPORTANT

- **Download the SX-3000EDM software, firmware updates, and latest documentation from the Support & Downloads section of the Silex website (www.silexamerica.com).**

Features

- The USB device can be controlled by SX-Virtual Link utility or custom utility utilizing SX-Virtual USB SDK.
- Network configuration via Web browser and Telnet.
- Factory default configuration using the Push switch.
- USB 2.0 Hi-Speed Host Controller is implemented.
- Two USB ports are installed. By using a USB HUB, up to 15 interfaces can be used. (A cascade connection using a USB HUB is not supported.)
- Supports Gigabit Ethernet.
- 10BASE-T/100BASE-TX/1000BASE-T port auto-sense 10 or 100 or 1000Mbps connection speed, auto-negotiates half-/full-duplex mode. This mode can be fixed by changing the settings.
- Firmware updates can be made over the network via TFTP or from the internal Web browser configuration interface
- Firmware updates can be made from the internal web browser configuration interface. The mDNS feature allows to search Device Server from the mDNS(Bonjour) supported browser.
- Includes an auto connect or reconnect feature by configuring the favorite settings at SX-Virtual Link utility or custom utility utilizing SX-Virtual USB SDK.
- Supported Operating Systems include; MAC OS 10.4 to 10.6, Windows XP, Windows Vista, and Windows 7.
- Supports printing protocol (ex. TCP#9100, LPD, IPP). It can print without using SX-Virtual Link utility or custom utility utilizing SX-Virtual USB SDK.
- Supports some Web cameras and Speakers with Isochronous transfer.

Block Diagram

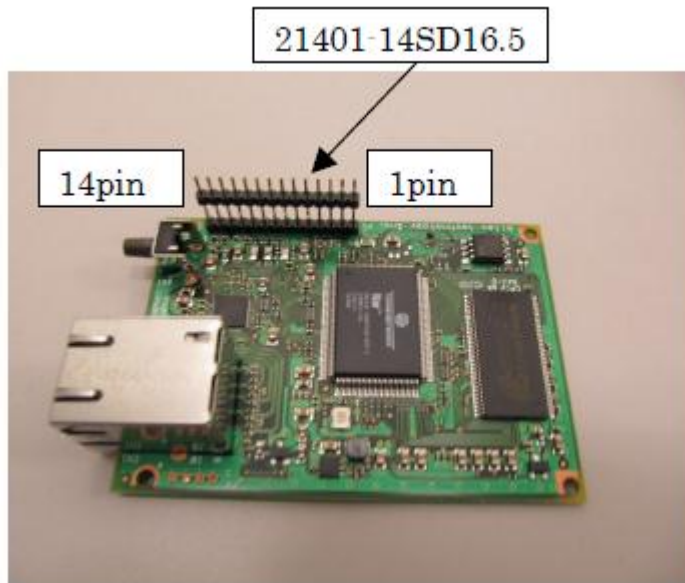


Hardware Specifications

Contents	Specifications	Memo
CPU	32bit 250MHz RISC CPU (ARM922 / FA526)	CNS2181
Wired LAN I/F	10Base-T/100 Base-TX/1000Base-T 1Port (Auto-Detect) AutoMDI/MDIX	CNS2181
USB Host I/F	USB2.0(Hi-Speed) 2 Port	CNS2181
ROM	SPI FlashROM 4MB	
RAM	DDR SDRAM 32MB	
LED	RJ45 Power(Orange) x1 RJ45 Link(Green/Red) x1	Power LED is H/W control.
SW	Non-lock Switch x1	

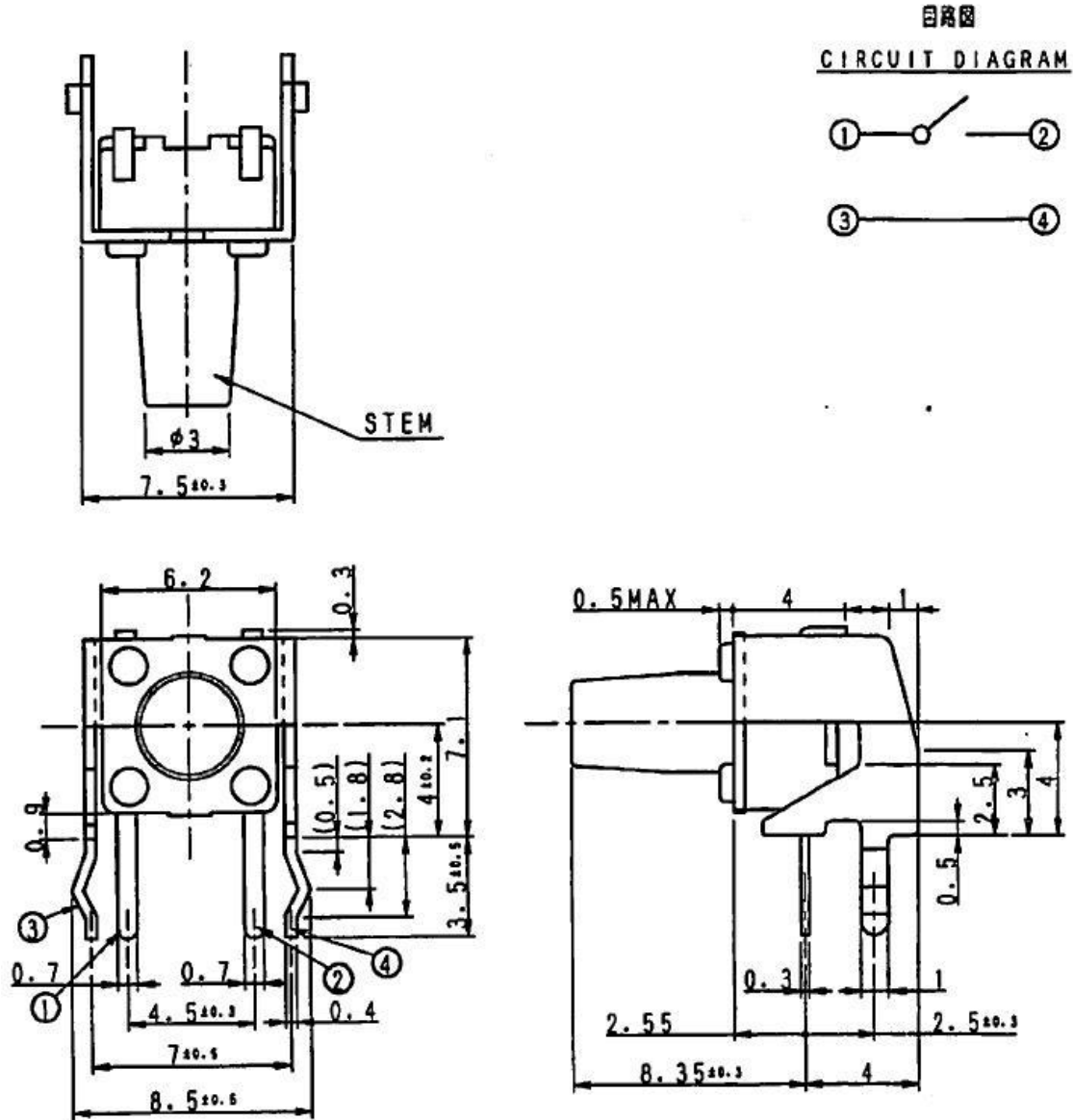
Header Pin Information

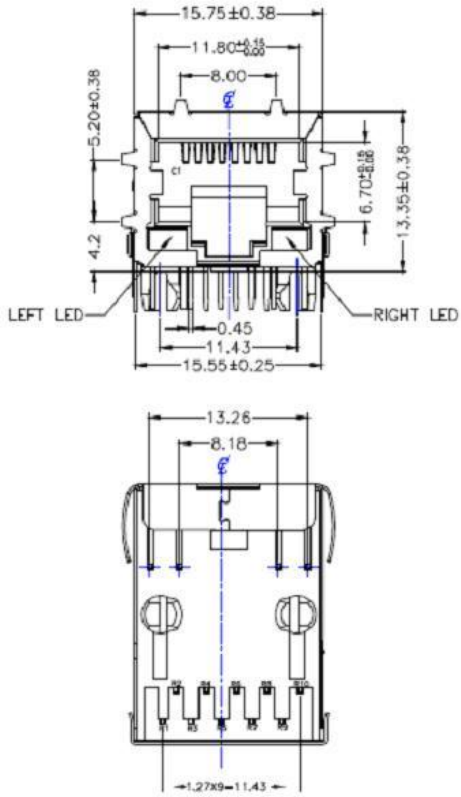
Connector : 21401-14SD16.5 (LEAMAX)



Pin No.	Pin Name	Pin Type	Description
1	VCC	Power	3.3V or 5V power source to the module
2	USB_DP0	In/Out	USB Port0 Data +
3	USB_DN0	In/Out	USB Port0 Data -
4	GND	Ground	
5	NC	In/Out	Reserved
6	NC	In/Out	Reserved
7	GND	Ground	
8	USB_DN1	In/Out	USB Port0 Data -
9	USB_DP1	In/Out	USB Port0 Data +
10	GND	Ground	
11	GPIO11	Output	Device Select (10K Pull Up to 3.3V)
12	NC	In/Out	Reserved
13	GPIO13	Input	Device Detect (10K Pull Up to 3.3V)
14	GPIO14	Input	Over Current Detect (10K Pull Up to 3.3V)

RJ-45 and Push Button Drawings





General Tolerance : .X : ±0.25
.XX : ±0.13

Software Specifications

Contents	Specifications	Explanation
Product Name	SX-3000EDM	
Version	Ver.1.0.0	
Protocol	TCP/IP Network layer: ARP, IP, ICMP Transport layer: TCP, UDP Application layer: FTP, TELNET, BOOTP, DHCP(FQDN, HostName), HTTP, NetworkPnP, WINS(NBNS), mDNS, JCP(UDP#19541), SXUPTP(TCP/UDP#19540), SX-KeepAlive(UDP#49235), Bi-directional TCP Port 9100, LPD, IPP	*1
Maximum number of device connection	15	
IP Address	DHCP/BOOTP	
Subnet Mask		
DefaultGateway	Manual	
LAN Interface	Auto/Manual	
IP Filter	Specify up to 4 addresses range to allow/deny access.	
Supported USB device	Printers Multifunction Printers Scanners USB Storage Devices Web Cameras Speakers others	*2
Web browser	Internet Explorer 5.5 or later Firefox 2.0.0 or later Safari 1.0.3 or later	
Web Page language	Japanese English Chinese	
Device Status	USB Device Information - USB Device - Manufacturer Name - USB Speed - Connected PC - Duration (H:M:SEC) Printer Information - Printer Name - Raw Port No. - Queue Name - IPP destination URL	
System Status	Host Name	

	IP Address Subnet Mask Default Gateway DHCP/BOOTP Server Lease Time(sec.) mDNS Service Name mDNS Domain Name LAN Interface Primary WINS Server Secondary WINS Server NetBIOS Scope ID	
System Information	MAC Address Firmware Version URL	
Admin password	Settings are protected by password. (password is required to change the settings)	
Remote reset	Restart HW Reset configuration	
Log	Display the log information up to 64 steps. Logs are cleared when the product turns off. (Maintenance information) -Time -Event -USB Device -Connected PC	
Display device information	Display the device descriptor that is connected	Supports in hidden page
SYSLOG download	Download the System Log.	Supports in hidden page
LED	Power LED, Link/Status LED	
PushSW	Loader Mode Factory default setting Diagnostic/Configuration Print	
F/W Update	JCUPWIN (FLDP) Setup Assistant (FTP) Web (HTTP)	
Supported OS	Windows XP(32Bit/64Bit) Windows Vista(32Bit/64Bit) Windows 7(32Bit/64Bit) Mac OS 10.4 – 10.6	

*1: When failing DHCP Discover, the server requests it again in every x minutes.

*2: If a USB2.0 High-Speed isochronous device is connected, this product may not work correctly because it may have performance issues depending on how the driver for the isochronous USB device is designed. When a High-Speed isochronous device is directly connected, this product will recognize it as a Full-Speed device and reduce the impact on performance in order to increase compatibility and stability. Also, when isochronous USB devices are connected through a USB2.0 HUB, they will not be displayed in the SX-Virtual Link utility or any custom utility utilizing the Silex SX-Virtual USB SDK for Windows and Macintosh so that connection will not be available.

Configuration / Display contents

Network settings

Item	Range	Initial value (Factory default)
Host Name	Any alphanumeric string (Max.15Characters)	SXxxxxxx (xxxxxx is the last 6 digits of the Ethernet address)
DHCP/BOOTP	ENABLE/DISABLE	ENABLE
IP Address	0.0.0.0 - 255.255.255.255	0.0.0.0
Subnet Mask	0.0.0.0 - 255.255.255.255	0.0.0.0
Default Gateway	0.0.0.0 - 255.255.255.255	0.0.0.0
Network PnP Enable	ENABLE/DISABLE	ENABLE
mDNS	ENABLE/DISABLE	ENABLE
mDNS Service Name	Any alphanumeric string (Max.63Characters)	SXxxxxxx (xxxxxx is the last 6 digits of the Ethernet address)
LAN Interface	AUTO/10HALF/10FULL 100HALF/100 FULL	AUTO
Primary WINS Server	0.0.0.0 - 255.255.255.255	0.0.0.0
Secondary WINS Server	0.0.0.0 - 255.255.255.255	0.0.0.0
NetBIOS Scope ID	Any alphanumeric string (Max.223Characters)	""

Electrical characteristics

Absolute Maximum Ratings

Parameter	MIN	MAX	Unit
VCC	-0.3	3.6	V

A. Recommended Operating Conditions

Parameter	MIN	Typical	MAX	Unit
VCC	3.2	3.30	3.46	V
AMBIENT	0	25	40	Degree C
STORAGE	-20		80	Degree C

B. DC Electrical Characteristics

i. USB

USB2.0 Interface (USB_DP,USB_DN)					
Parameter	Condition	Min	Typ.	Max	Unit
HS Differential Input Sensitivity	(D+)-(D-)	150			mV
HS Common Mode Range		-50		500	mV
HS Output Voltage High		360		440	mV
HS Output Voltage Low		-10		10	mV
FS Differential Input Sensitivity	(D+)-(D-)	200			mV
FS Common Mode Range		800		2500	mV
FS Output Voltage High		2800		3600	mV
FS Output Voltage Low				300	mV
Drive Output Impedance for HS & FS		40.5	45	49.5	ohm
Hi-Z State Data Line Leakage		-10		10	uA

ii. GPIO

GPIO Interface (GPIO11,12,13,14)					
Parameter	Condition	Min	Typ.	Max	Unit
Input High Voltage		2.2		3.4	V
Input Low Voltage		-0.3		0.8	V
Input High Current		-10		-10	uA
Input Low Current	Vin=GND	-10		10	uA
Output High Voltage	Ioh=-8mA	2.4			V
Output Low Voltage	Iol=8mA			0.4	V

iii. POWER SOURCE

Power Source (VCC)					
Parameter	Condition	Min	Typ.	Max	Unit
Input Voltage	3.3V	3.2		3.46	V
Input Current	3.3V			0.7	A

Power Consumption
i. MAX POWER CONSUMPTION

Current Consumption = 700mA

Power Consumption = 2.31W

VCC = 3.3V

Temperature = 25 degree C

Mouser Electronics

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