Serial over Ethernet Device Server

Introduction

Thank you for purchasing the Serial over Ethernet Device Server (SLAN), which is designed to enable users accessing current RS-232, or RS-422/485 serial devices anywhere over LAN or the Internet. It provides a convenient and economical solution not only to protect your current hardware investment, but also to ensure future network expand ability. With Serial over Ethernet Server, users can centralize serial devices and distribute the management hosts at the same time.

Serial over Ethernet Server supports Real COM mode for users to easily use the existing Windows based serial software or API to communicate with serial devices over an Ethernet LAN structure. With this feature, user allows communications with the connected serial device in the same manner as a device connected to the COM port on a PC. This excellent feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

Serial over Ethernet Server equips with 1, 2 or 4 ports high speed asynchronous RS-232 or RS-422/485 standard serial ports which accessed through DB-9 male or RJ45 female connectors. It has built-in one 10/100 Mbps Ethernet RJ-45 connection with auto-select 10BaseT or 100BaseTX feature. SLAN also provides a reliable and high-speed connection for serial devices to an Ethernet LAN/WAN communication and supports total 1 Mbps bandwidth sharing for all serial ports. It is suitable for connecting different devices for remote data polling, event handling or data transferring via Ethernet in different serial ports.

Serial over Ethernet Server supports automatic IP configuration protocols (DHCP) and manual configuration via SLAN Utility or serial console. With user friendly Windows based SLAN Utility, user can configure the parameters, server monitor, and COM port monitor easily and simultaneously. As well we provide port re-direction driver for use in the Linux based system. In conclusion, Serial over Ethernet Server series equips not only powerful hardware structure, but as well versatile software utility for users to easily operate and satisfy most kind of applications. It is the best and most economical solution to instantly convert your commercial or industrial serial devices to be internet ready.

Features

- 1 / 2 / 4 independent RS-232 or RS-422/485 Serial ports.
- Single-chip SUN8989 controller design for high efficiency and reliability.
- Maximum Transmission bandwidth of 1Mbps shared by each serial port.
- One 10/100M auto-detect Ethernet Port with Integrated 10/100 PHY.
- Easy setup and configuration with user-friendly Windows SLAN Utility.
- Ideal networking current serial devices with existing software or API.
- Firmware upgradeable through Ethernet and Windows SLAN Utility.
- Built-in watchdog timer to prevent system lockup.
- Each device could be shared by the different hosts.
- Supports DHCP client to get IP configuration automatically from a LAN.
- Supports Real COM mode and serial console for configuration.
- Protocol supports for ICMP, IP, TCP, DHCP, and BootP.
- Automatic RTS Signal Control (ARSC™) technology for RS-485 signal direction control. *(Note)*
- Supports Auto Detect and Switch RS-422 and RS-485. *(Note)*
- RTS/CTS± Handshaking Communication mode for RS-422/485. *(Note)*
- Built-in termination resistors to avoid cross-talking. *(Note)*
- Optical Isolation (2.5K Voltage) provides protection against damage from static electrical charge. *(Optional)*
- Surge protection (600 Watts) provides clamping capability against damage from high energy spike. *(Optional)*
- SLAN Utility supports Microsoft Windows 98SE, Me, NT, 2000, XP, and 2003 operation system.
- Port Re-Director driver supports Linux 2.4.X (Redhat8, Redhat9), and Linux 2.6.X (Fedora) Kernels.
- Operation temperature: 0 to 60 ℃ & Storage Temperature: -20 to 85℃

(Note) icon means that this feature only built-in for RS-422/485 or 3-in-1 RS232/422/485 Serial over Ethernet Server models.
(Optional) icon means that this feature only built-in certain Serial over Ethernet Server SI models with Surge or Isolation protection.

Specifications

Serial Communication

Interface	RS-232, RS-422/485, or 3-in-1 RS-232/422/485	*(Depend on Product)*
No. of port	1, 2, or 4 ports	*(Depend on Product)*
Port Type	DB9 Male or RJ45 Serial ports	*(Depend on Product)*
Signal	RS-232 : TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND RS-422 : Tx+, Tx-, Rx+, Rx-, RTS+, RTS-, CTS+, CTS- RS-485 : Data+, Data-, RTS+, RTS-, CTS+, CTS-	
Baud Rate	300bps ~ 921.6 Kbps	*(1 Mbps bandwidth shared by each serial port)*
No. of port	1, 2, or 4 ports	
Baud Rate	300bps ~ 921.6 Kbps	
Data bit	5,6,7,8	
Stop bit	1,1.5,2	
Parity	even, odd, none, mark, space	
Flow Control	None, Xon/Xoff, Hardware	
RS-485 Control	ARSC™(Automatic RTS Signal Control) technology	*(RS-485 SLAN)*
Select RS-232 & RS-422/485	Select RS-232 & RS-422/485 mode by switch Auto Identify and Switch RS-422 & RS-485 technology	*(Depend on Product)*
Protection	2KV ESD protection for all signal *(Standard)* 2.5KV Isoation Protection for all signal *(Optional)* 600W Surge Protection for all signal *(Optional)* *Maximum clamping voltage 24.4 V *Peak pulse current 24.6 A	

LAN

Ethernet	10/100 Mbps, Auto-select 10BaseT or 100BaseTX
Port Type	RJ45 Ethernet Connector
Protection	1.5KV Magnetic Isolation

Software

Protocols	ICMP, IP, TCP, DHCP, and BootP
Utility / Driver	SLAN Utility for Microsoft Windows based O.S. Windows 98SE / ME / 2000/ XP / 2003 Port Re-Director Driver for Linux based O.S. Linux 2.4.X (Redhat8, Redhat9), and Linux 2.6.X (Fedora Core2.0) Kernels.
Real COM / TTY	Microsoft Windows 98SE / ME / 2000/ XP / 2003, and Linux 2.4.X (Redhat8, Redhat9), and Linux 2.6.X (Fedora Core 2.0) Kernels
Configuration	SLAN Utility, Serial Console

Power

Input Power Voltage	12 VDC External Power, DC Jack Type	*(Standard)*
	12~48 VDC External Power, Terminal Block Type	*(Optional)*
Protection	Reverse Power Protection (Protects against V+ & V- reverse protection)	
	2.5KV Isloation protection	*(Optional)*
Power Consumption	4 ports Model: 500mA 2 ports Model: 300mA 1 port Model: 250mA	*(at 12V level)*

Dimensions

Dimensions (W × D × H)	4 ports SLAN : 189 x 106 x 32 mm (with Mounting Kit) 165 x 106 x 32mm 2 / 1 ports SLAN : 144 x 90 x 24 mm (with Mounting Kit) 120 x 90 x 24 mm

Regulator Approvals

Approvals	CE, FCC

Operation Environment

Operation Temperature	0℃ to 60 ℃
Operation Humidity	5 to 95% RH
Storage Temperature	-20℃ to 85℃

Package List

Please check if the following items are present and in good condition upon opening your package. Contact your vendor if any item is damaged or missing.

Standard Accessories:
1. Multi-port (1, 2, or 4) Serial over Ethernet Server
2. CD Driver
3. Quick Installation Guide (this document)
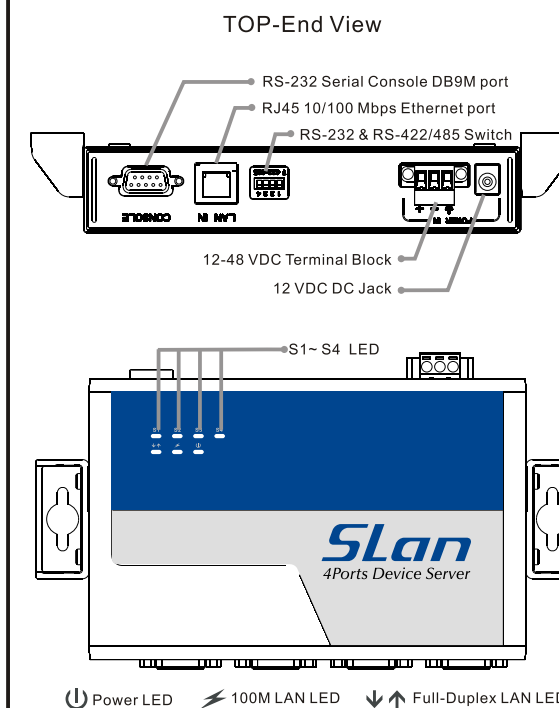3. User's Manual (Please read the detail manual in CD Driver)

Optional Accessories:
1. RS-232 Console Cable
2. Power Adapter DC 12V / 1A
3. Wall Mount Kit
4. DIN-Rail Mount Kit
5. Rubber foot stub / R Screw

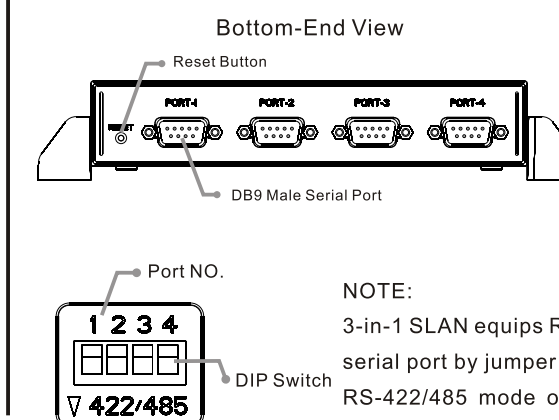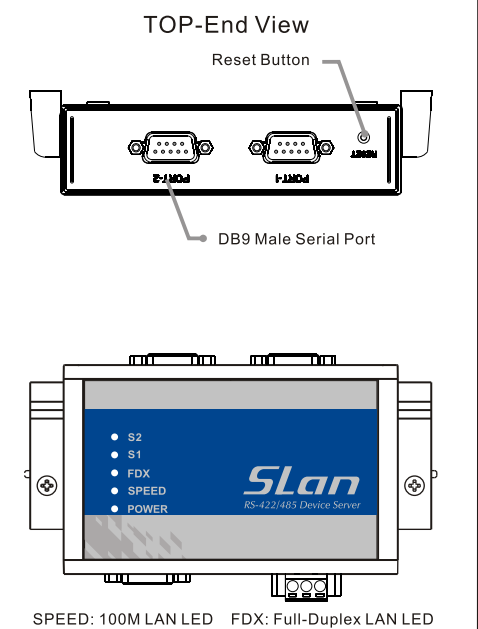Wall Mount Kit

DIN-Rail Mount Kit

Rubber foot stub / R Screw

Hardware Guide

● 4 ports Model

TOP-End View

- RS-232 Serial Console DB9M port
- RJ45 10/100 Mbps Ethernet port
- RS-232 & RS-422/485 Switch
- 12-48 VDC Terminal Block
- 12 VDC DC Jack

- S1~ S4 LED

SLAN
4Ports Device Server

⏻ Power LED   ⚡ 100M LAN LED   ↓↑ Full-Duplex LAN LED

Bottom-End View

- Reset Button
- PORT-1 PORT-2 PORT-3 PORT-4
- DB9 Male Serial Port

● 2 / 1 ports Model

TOP-End View

- Reset Button
- PORT-2 PORT-1
- DB9 Male Serial Port

- S2
- S1
- FDX
- SPEED
- POWER

SLan
RS-422/485 Device Server

SPEED: 100M LAN LED   FDX: Full-Duplex LAN LED

Bottom-End View

- RS-232 Serial Console DB9M por
- RJ45 10/100 Mbps Ethernet port
- CONSOLE   LAN IN   DC IN
- 12-48 VDC Terminal Block
- 12 VDC DC Jack

Port NO.

1 2 3 4

DIP Switch

▽ 422/485

NOTE:
3-in-1 SLAN equips RS-232 or RS-422/485 mode selection for each serial port by jumper setting. User can pull the DIP switch down for RS-422/485 mode or pull it up for RS-232 mode independently.

Serial over Ethernet Device Server

Hardware Installation

The hardware installation of Serial over Ethernet Server is easy to carry out. Follow the detailed steps given below to install the Serial over Ethernet Server on your system.

> **Safety First:**
> *To avoid damaging, make sure to discount power connection before wiring or disposing Serial over Ethernet Server.*

■ Step1. Select which mode you want to use, including "Wall Mount", "DIN-Rail Mount" or "Rubber foot stub". Fasten the holding screw and fix SLAN in place firmly.

■ Step2. Turn your serial device's power off, and connect serial data cable to SLAN's serial port.

■ Step3. Connect Ethernet cable to SLAN's LAN port and the other end of the cable to the Ethernet network with standard straight-through Ethernet cable. Or you might find it convenient to connect directly to your computer's Ethernet port with cross-over cable.

■ Step4. Connect the 12-48 VDC power line with terminal block or 12VDC power adapter into DC Jack on SLAN's power module.
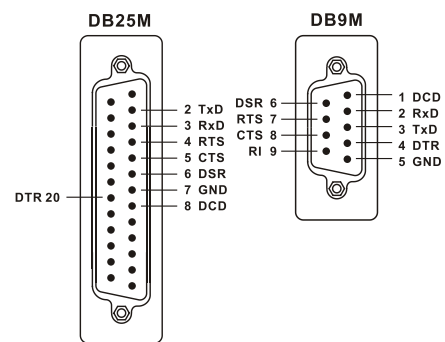
NOTE:

1. Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

2. To limit the effects of noise for electromagnetic interface (EMI), please connect the shielded ground wire on first pin power terminal block to an appropriate grounded metal surface.
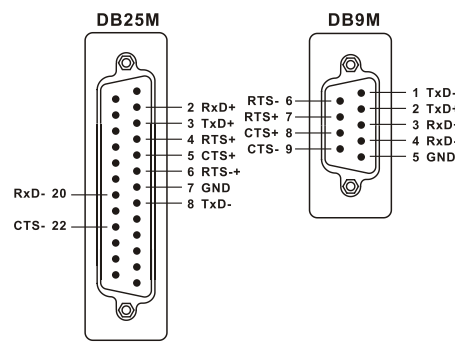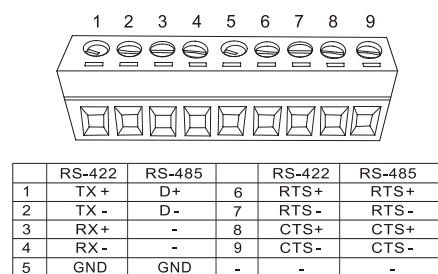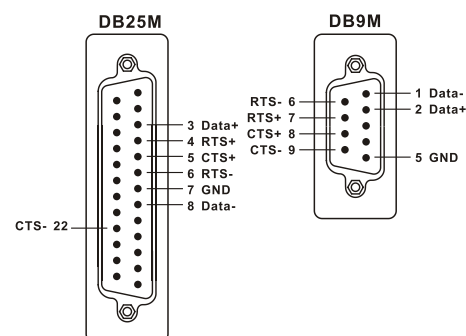
V+   V-   GND

■ Pin Assignment

• **RS-232**

DB25M
2 TxD
3 RxD
4 RTS
5 CTS
6 DSR
7 GND
8 DCD
DTR 20

DB9M
DSR 6
RTS 7
CTS 8
RI 9
1 DCD
2 RxD
3 TxD
4 DTR
5 GND

• **RS-422**

DB25M
2 RxD+
3 TxD+
4 RTS+
5 CTS+
RxD- 20
CTS- 22

DB9M
RTS- 6
RTS+ 7
CTS+ 8
CTS- 9
1 TxD-
2 TxD+
3 RxD+
4 RxD-
5 GND

• **RS-485**

DB25M
3 Data+
4 RTS+
5 CTS+
6 RTS-
7 GND
8 Data-
CTS- 22

DB9M
RTS- 6
RTS+ 7
CTS+ 8
CTS- 9
1 Data-
2 Data+
5 GND

	RS-422	RS-485		RS-422	RS-485
1	TX+	D+	6	RTS+	RTS+
2	TX-	D-	7	RTS-	RTS-
3	RX+	-	8	CTS+	CTS+
4	RX-	-	9	CTS-	CTS-
5	GND	GND	-	-	-

Factory Default Settings

Password	1234
Super Password	s51gm2z *(Load factory Default setting on Serial Console mode)*
Network	Static IP Mode IP Address: 192.168.1.1 Netmask: 255.255.255.0 Gateway: 192.168.1.254
COM Port	Baud Rate: 9600 bps Data bits: 8 Parity bits: None Stop bits: 1 Flow Control: None

Initial IP Configuration

The first thing you should do is configuring the IP address when using Serial over Ethernet Server at the first time. Please determine whether your SLAN needs to use a Static IP or Dynamic IP mode, then you can use serial console or SLAN Utility Ethernet mode to configure networking settings.

■ Serial Console Mode:

Before the Serial over Ethernet Server is installed on a LAN, the serial console mode for users easily configure Network settings and COM ports' setting from the defaults. The serial console port is configured as a DTE (data terminal equipment) device. All PC COM ports are DTE ports. A straight through cable is required to make a connection between the RS-232 COM port on a PC and the SLAN's serial console port.

Command	Function
D	Display Configuration
V	Check firmware version and Model number
M	Back to main menu
S 0	Modify Network Settings
S	Modify COM Port Settings
X MAC	Modify MAC Address
O2	Reset Serial over Ethernet Server

1. Please execute the "Hyper Terminal" program in your system firstly. Then select COM port number that Serial over Ethernet Server's serial console port connected.

2. Hyper Terminal open the connected PC COM port at a baud rate of **57600**, Data bits 8, Parity None, Stop bits 1, and Flow control None. Click "OK" to continue.

3. Press "**Enter**" to execute SLAN's console settings. Please enter default password: *1234*

4. Please change Static or Dynamic IP mode to match networking required by entering command code *S 0*.

Static IP Mode	*S 0* + *IP Address* + *Netmask* + *Gateway* *S 0 192.168.110.16 255.255.255.0 192.168.110.254*
Dynamic IP Mode	*S 0* + *DHCP* *S 0 dhcp*

5. If you forget password, please input super password *s51gm2z* to restore factory defaults. The ONLY way to configure SLAN is using the serial console to load default settings.

NOTE:

1.After executing load factory default settings, you will lose all configurations that you set before.

2.Super password can NOT use in Windows based SLAN Utility or Linux based Port Re-direction software.

■ SLAN Utility Ethernet Mode:

Please use across-over Ethernet cable to connect the Serial over Ethernet Server directly to your computer's Ethernet card. Please configure your PC's network settings in the same subnet with Serial over Ethernet Server, such as setting **192.168.1.2** IP address on your computer. Then you can use the "SLAN Utility" program to configure Serial over Ethernet Server's network settings.

SLAN Utility provides server manager, server Monitor, port monitor and port mapping features for user easily controlling and configuring serial over LAN terminal server. Users can remotely manage, monitor, and modify your Serial over Ethernet server over network operation. SLAN Utility supports various operation systems, including Microsoft Microsoft® Windows® 98SE, Me, NT, 2000, XP, and server2003.

1. Please insert the CD driver as bound with your SLAN product into your CD/DVD ROM, and run the "PortSetup.exe" file locate within the CD driver.

### *: \ SLAN \ Software \ Windows \ PortSetup.exe*

Setup

2. Run "SLAN Utility.exe" icon on the desktop to entry SLAN Utility software.   SLAN Utility.exe

3. The SLAN Utility software is divided into four parts.
   A. The top part is the function list and online help area.
   B. The left part lists the main function groups.
   C. The right part provides the SLAN list, which can be selected to process user requirements.
   D. The bottom part is the Log area, which shows messages that record user's processing history.
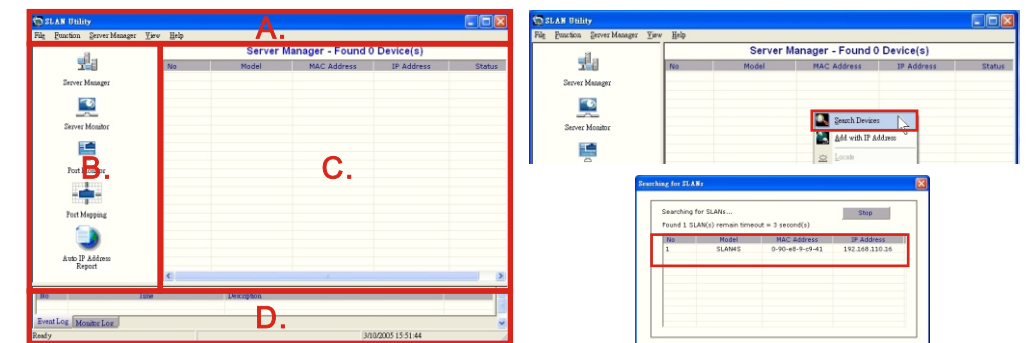
4. Please select **Server manager** which is used to search, configure and store the SLAN settings. Place the cursor over the configuration row, and right click the Search Devices function. The searching for SLANs window will open and display the Model, IP Address, and MAC Address.

5. When searching complete, the Searching for SLANs window closes, and the Serial over Ethernet server were located are displayed in the right pane of the SLAN Utility software.

6. Place the cursor over the row displaying that SLAN information, then right-click on **Unlock** option in the pop-up window that prompts for a password. After unlocking, select **Configure** function to configure SLAN
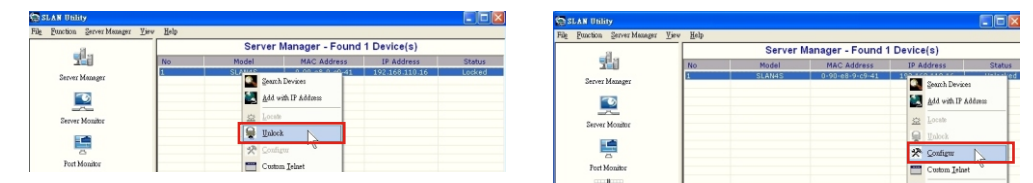
7. You can select Static or Dynamic IP mode to match networking required in IP settings page.