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sLAN/all

User Manual

Version 1.1.1 2018/06/11

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Revision History

Revision Date	Document Version	Pages	Description
March. 6. 2017	1.0	All	New
June. 11. 2018	1.1	24-25	RS-422 Multi-Drop Mode Added

Contents

1. Preface

General sLAN/all, one of a serial converter device manufactured by SystemBase, related information is provided.

About This Manual

This manual explains the connection, communication, configuration, and other management operations with sLAN/all.

To Our Readers

This manual is written for users and network managers using sLAN/all. We recommend reading this manual before using and configuring sLAN/all. The manual includes the details on utilizing the hardware and setting provided software. This document should provide enough information regarding controlling and managing sLAN/all with its connected devices.

Documents Related to sLAN/all

Technical documents related to sLAN/all are as follows.

Document	Description
User Manual	sLAN/all hardware information, configuration, and management
COM Port Redirector User Manual	Information regarding using COM Redirector by SystemBase
TestView User Manual	Information regarding using TestView (a serial data testing utility for COM port, TCP, and UDP)
SGConfig Manual	Details on using utilities for configuring through the network
sLAN/all Spec Sheet	sLAN/all product specification
sLAN/all White Paper	Details on backgrounds, technology, and related market

All documents in our website is up-to-date. Contents of the documents may change without notice.

Technical Support

SystemBase provides technical support through two methods below:

1. Send an e-mail to our technical support team at tech@sysbas.com to receive fast responses. Any questions, requests, suggestions or comments are welcomed.

2. For instant response, call us. Our technical team will always provide detailed consultation and guides through a simple phone call.
The phone number is: +82-2-855-0501 (ext. 233)
Available from Monday to Friday, 9:00 ~ 18:00 KST. We are closed on weekends and holidays.

2. Getting Started

This chapter provides an overview, function of sLAN/all, contents of package and applied field.

Overview

sLAN/all is a small converter allowing data transmission from serial (RS-232, RS-422, RS-485) to Ethernet.
The connection standard supports IEEE 802.3 10/100Base-TX. It has a standard DE9 connector to providing maximum serial communication speed of 921.6kbps and RJ45 connector for Ethernet side with maximum 100Mbps speed connection. A sLAN can be connected remotely to control, monitor any type of serial devices through the same network.

Features

sLAN/all features are as follows:
- Maximum Serial Communication Speed: 921.6 kbps
- Support RS-232, RS422, and RS485
- 10/100 Mbps (Auto MDIX) Ethernet Port
- Virtual Serial Port Utility: COM Port Redirector
- Configure sLAN/all from a Web Browser
- Windows Utility for Configuration: SGConfig

Contents of Package

Please check if your package includes following:

1 Unit of sLAN/all Device

1 Unit of 5V DC Adaptor (or a Micro USB B Cable)

1 LAN Cable

1 sLAN/all Quick Manual (Paper Manual)

Class A equipment

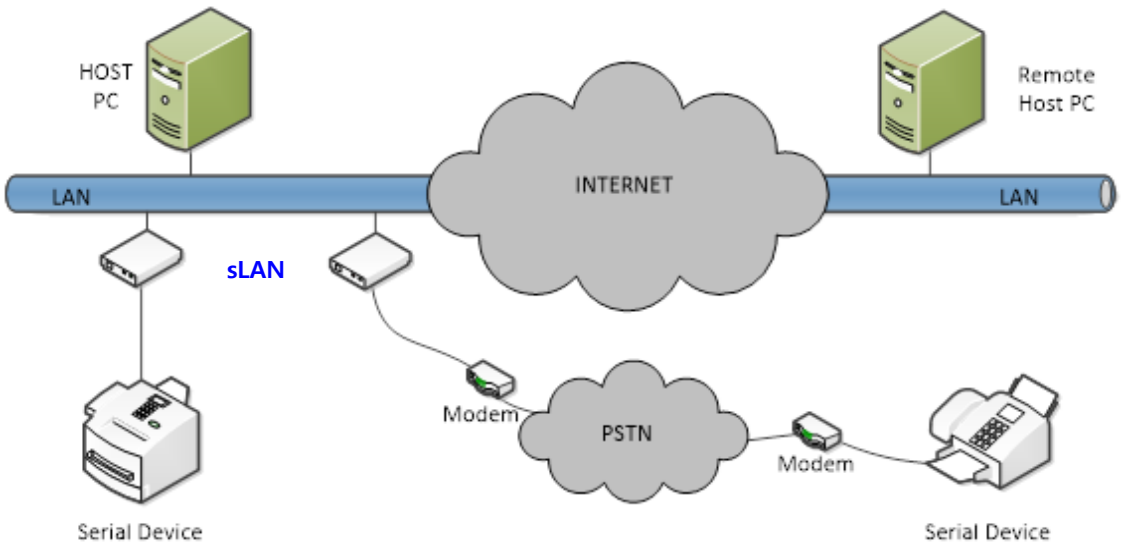
Sellers or users should be aware of the fact that this device is intended for industrial use(Class A), not for residential use.

Applied Field

sLAN/all can be applied in many areas. Some examples are shown below.

Serial Communication using Network

Serial devices can be used from a computer, if a computer and a sLAN/all device are connected through the network.

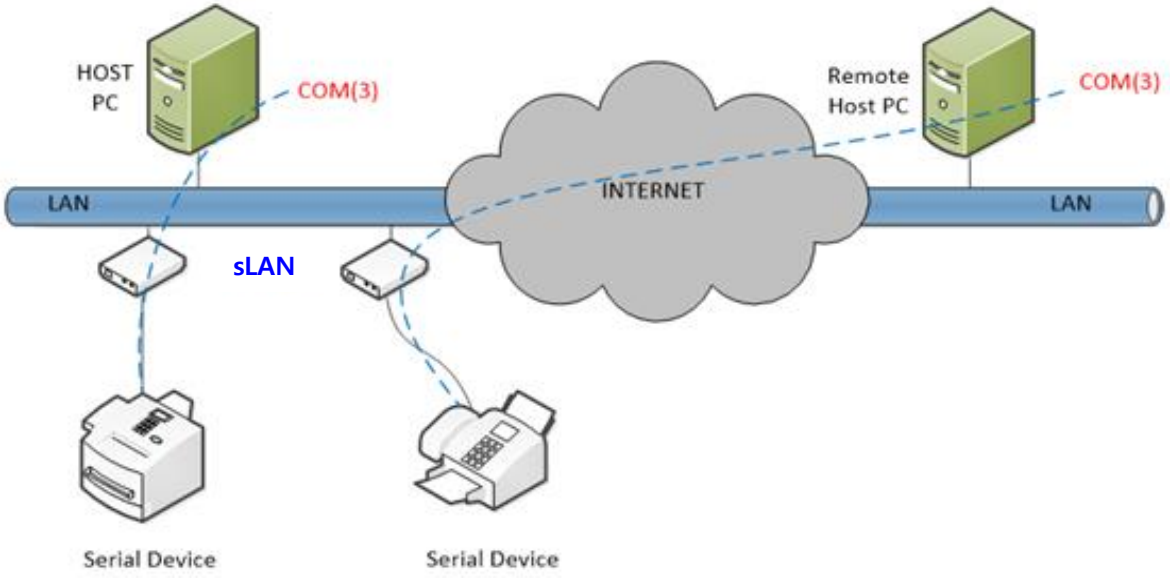


Serial Tunneling

This allows the serial cable between a computer and a serial device to be extended through the network. This makes the cable length limitless where there is a network nearby. To use this feature, please refer to Chapter 5 Configuration Web Page, and use either “TCP Server – TCP Client mode”, or “UDP Server – UDP Client mode”. Only these two modes allow transmit and receive data for serial tunneling.

COM Port Redirector

By using COM port redirector, a virtual COM port utility, sLAN/all serial port (on the network) can be used as a physical serial port connected to a computer.



Factory / Industry Automation

PLC, Robot Arms, Human-Machine Interface, Logistic Storage Conveyor Belt

Medical Equipment, Controllers on Inspection Equipment

Alarm Device, Biometric Sensors

Home Appliances / Electronics

Power Management Device, Game Console

Measuring Instrument, Gas Detector, Water/Pollution Detector

Devices for Data Collection and Distribution

Finances / Building Automation

Card Reader, Barcode Scanner, Kiosk, POS Devices

Serial Printer, ATM Machines, Credit Card Terminals

Security Devices

3. Hardware Specifications

sLAN/all hardware case, connectors, pin specifications, and reset button information is provided.

Case and Connectors

Front View

Rear View
(Adapter Powered Type)

Rear View
(Micro USB Powered Type)

- Serial Port: RS232/RS422/RS485 (DE-9 Male)
- Reset Button: sLAN/all will restart if the button is pressed and released.
- LED: Shows the status of sLAN/all.
- LAN Port: This 8-pin RJ45 port is used for connecting sLAN/all to devices such as Ethernet card, hub, router, and other network devices.
- Power Connector: The device supports both DC Adapters and Micro USB type B

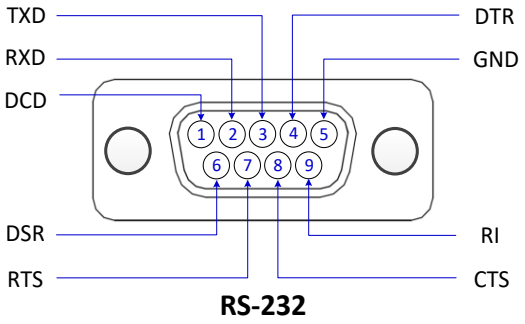
Power	5V DC 1A, Power Consumption: 0.90 W
Power Connecter (DC Adapter)	External diameter Φ3.5mm, Internal diameter Φ1.35mm - +
Power Connector (USB)	Micro USB Type B

LEDs

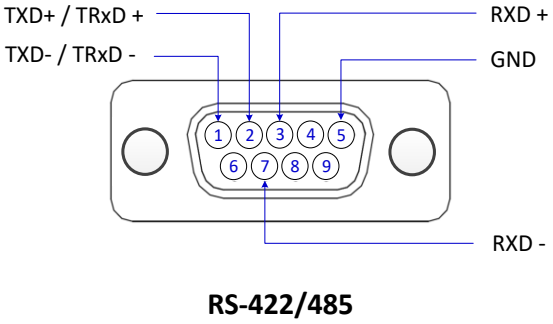
	LED Name	State	Action
1	RDY	Blink	After booting, RDY LED will start blinking. * If the RDY LED is constantly on after booting is complete, the

			device is out of order.
2	TXD	Blink	Blinking Green LED indicates transmitting serial data
3	RXD	Blink	Blinking Red LED indicates receiving serial data

Serial Port Pin Specifications



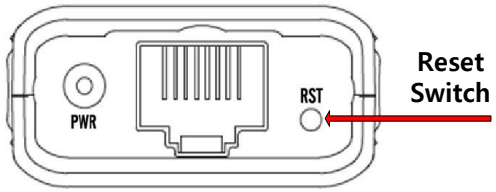
RS-232



RS-422/485

Pin No.	RS-232	RS-422	RS-485
1	DCD	TXD-	TRXD-
2	RXD	TXD+	TRXD+
3	TXD	RXD+	-
4	DTR	-	-
5	GND	GND	GND
6	DSR	-	-
7	RTS	RXD-	-
8	CTS	-	-
9	RI	-	-

Reset Tact Switch



Function	Action	Result
Warm Booting	Press for shorter than 3 seconds	Restart sLAN/all
Factory Default	Press for longer than 3 seconds	Re-initialize to the out-of-the-box status

4. Connecting Network

This chapter is intended to provide information regarding connection and operation of sLAN/all with other serial device. How to connect sLAN/all with a device or network is shown below.

First-time Use

Check if the power source meets the specification of sLAN/all before connecting the power to the device. sLAN/all will be turned on and operate correctly only if the specified power is provided. There are three LEDs to check the status of sLAN/all. Please refer to Chapter 3 Hardware Specifications.

Before connecting

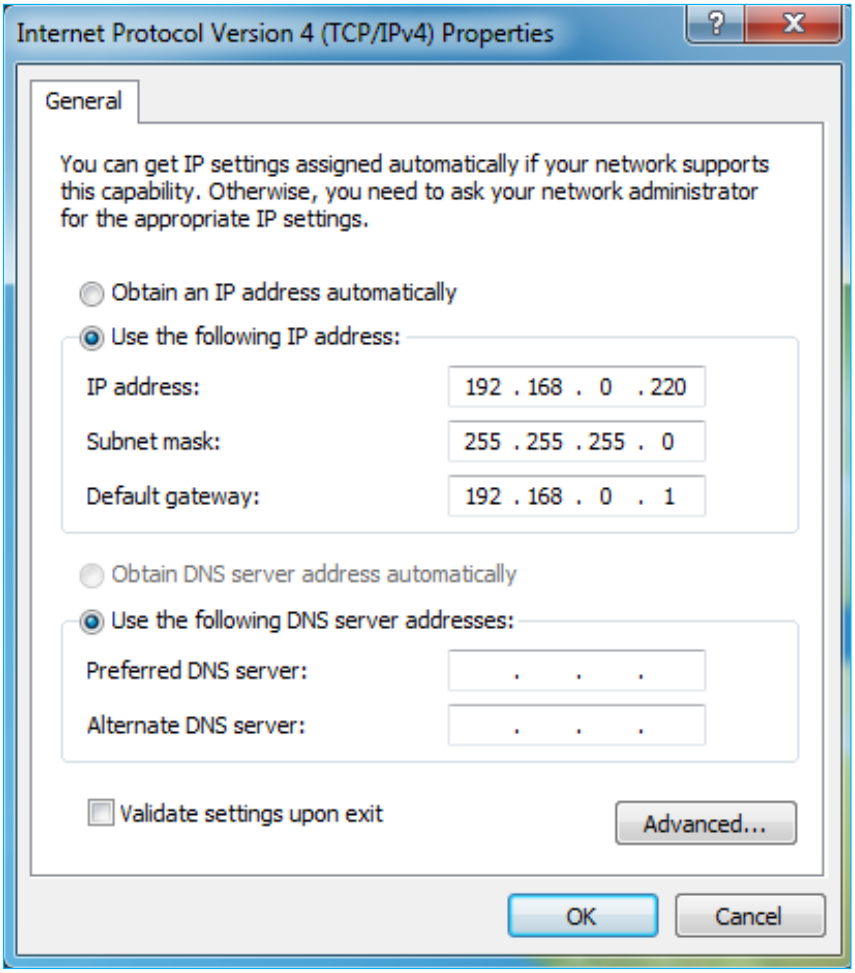
You need a RJ45 Ethernet cable to connect sLAN/all to a network. sLAN/all supports 10Mbps and 100Mbps. sLAN/all LAN (or Ethernet) port supports MDIX. Because the device automatically detects “Cross Ethernet Cable” and “Direct Ethernet Cable”, any types of cables can be used. Connect one end of a cable to sLAN/all, and another end to a network device.

Making Connection

To check the configure of the sLAN/all, you can either connect to the device with a web browser or use configuration utility. If you know the static IP address, type it in a web browser to connect to the configuration web page. Otherwise, if your sLAN/all received its IP address from the DHCP server, using configuration utility is recommended. To learn more about using configuration utility, please refer to the SGConfig manual. To connect to the sLAN/all Configuration Web Page, you need to type an IP address of the sLAN/all from a web browser. A static address, 192.168.0.223, is assigned to sLAN/all as default. After initial connection, you can change the IP address or set sLAN/all to automatically receive an IP addresses from a DHCP server. This will be dependent on the network environment and policies that you are using, but we strongly recommend to use a static IP address when using sLAN/all.

Default IP Address: 192.168.0.223

The default IP address of a sLAN/all is 192.168.0.223. To connect to the device, network settings of your computer must be configured to the same network. Please refer to the following example to set the network settings of your computer.

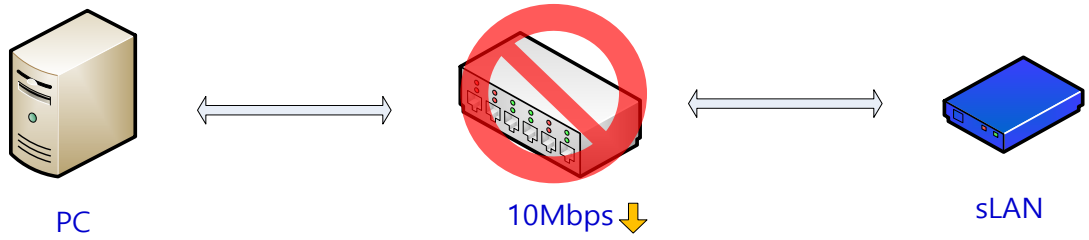

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 220
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

5. Configuration Web Page

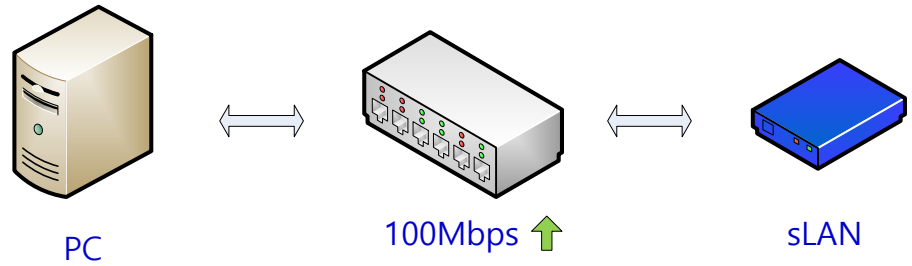
Configuring a sLAN/all through the web page is explained.

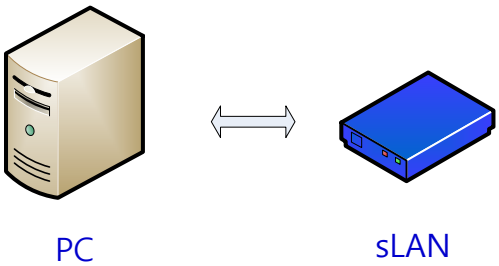
Minimum Requirements

For network environments with speed of 10Mbps or lower, configuration through the web page is not supported.



To configure through the web page, the network speed must be 100Mbps or faster. If a sLAN/all is directly connected to the computer it will also work. If setting the below environment is difficult, use the SGConfig utility to configure the device. For directly connecting the device with your computer, please refer to Chapter 4 Connecting Network.



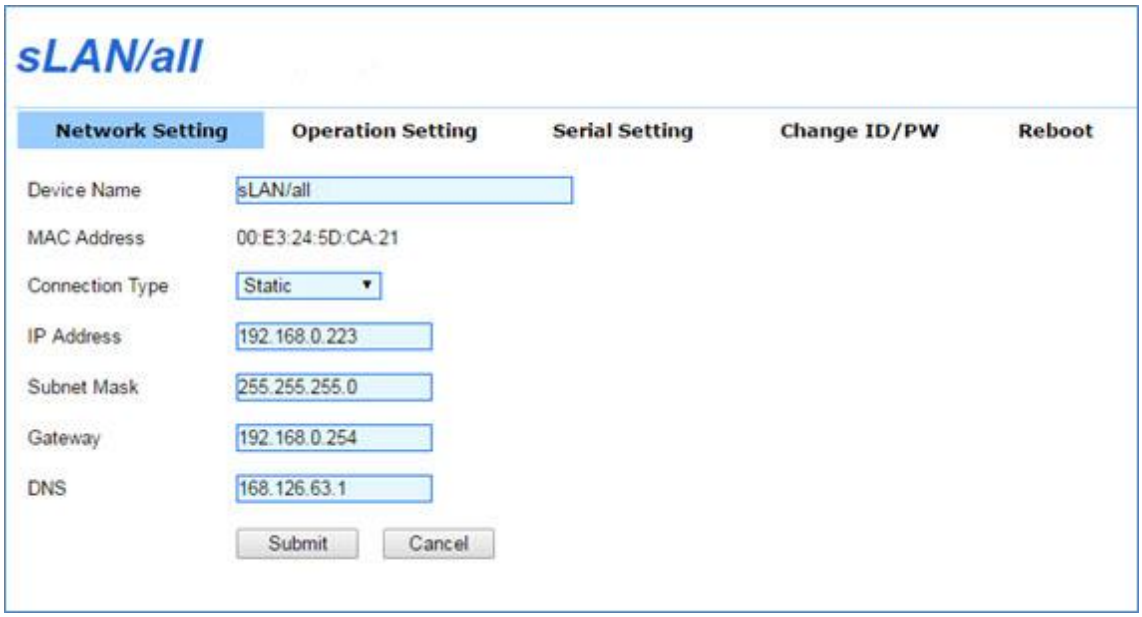


Login

Open a web browser and enter the IP address of the sLAN/all. An authentication window will appear. The default ID is “slan”, and password is “99999999” without quotes.

Network Setting

Network Setting page will be initially shown with network information when connecting from a web browser.
The page looks like below:



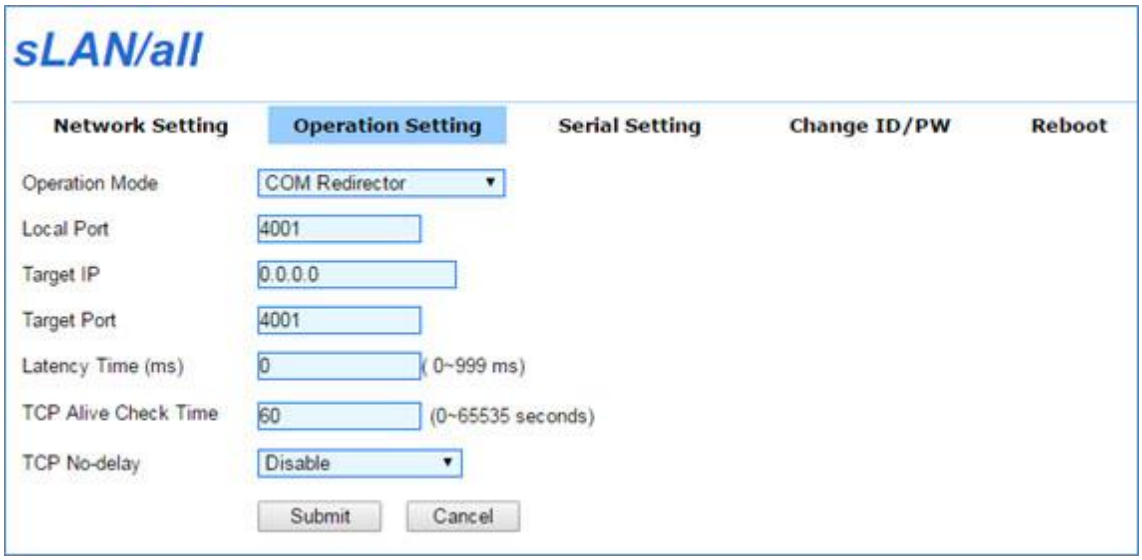
In [Network Setting], you can configure network environment. The [Submit] button must be clicked to save the changes you have made. For changes to take effect, the device must be rebooted. You can do it from [Reboot] menu. If changes are not saved, changed values will be lost when the device is turned off or rebooted.

If you did not click the [Submit] button to save the changed values, you can click the [Cancel] button to return to its previous values.

The main features are as follows:

Menu	Default	Description
Device Name	sLAN/all	Display current name of the device.
MAC Address	Unique Address	Displays current MAC Address.
Connection Type	Static	Choose whether to use a static IP, or DHCP (Dynamic IP) to get a IP address assigned automatically
IP Address	192.168.0.223	Set current IP Address. (Set the IP address yourself if the Connection Type is set to 'Static IP'. If it is set to 'DHCP', current IP address will be displayed, and changes can't be made)
Subnet Mask	255.255.255.0	Configure current subnet mask address. (Set the IP address manually if the connection type is set to 'Static IP'. If it is set to 'DHCP', IP address will be shown and changes cannot be made.)
Gateway	192.168.0.254	Configure the current Gateway address (Set the IP address yourself if the Connection Type is set to 'Static IP'. If it is set to 'DHCP', IP address will be shown and changes cannot be made.)
DNS	168.126.63.1	Configure the IP address of the DNS (Domain Name Service) if any.

Operation Setting



In [Operation Setting], you can configure operation modes and socket options. The [Submit] button must be clicked to save the changes you have made. For changes to take effect, the device must be rebooted. You can do it from [Reboot] menu. If changes are not saved, changed values will be lost when the device is turned off or rebooted.

If you did not click the [Submit] button to save the changed values, you can click the [Cancel] button to return to its previous values.

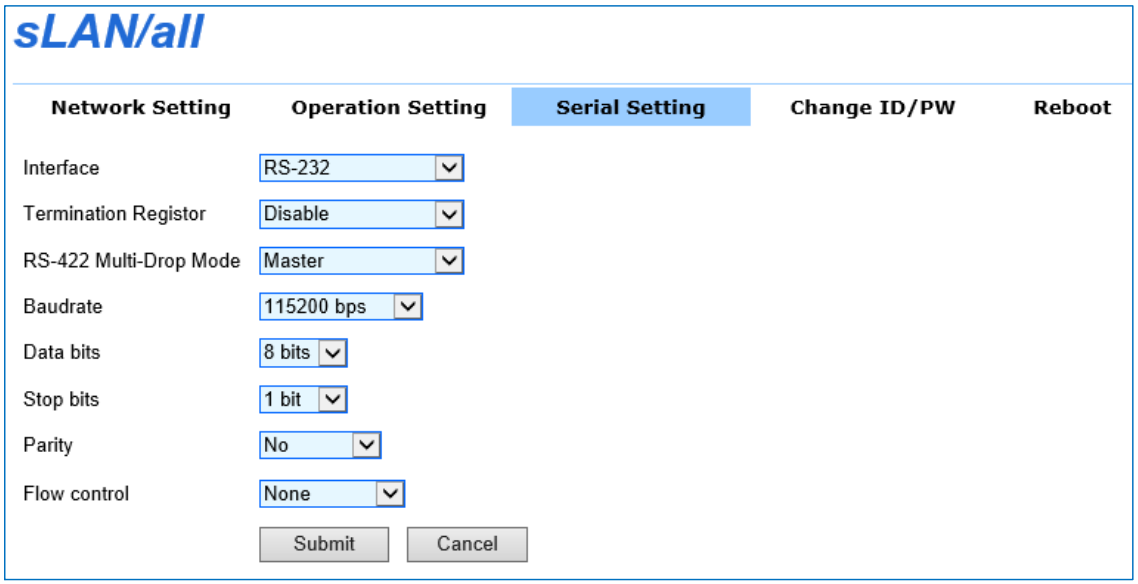
The main features are as follows:

Menu	Default	Description
Operation Mode	COM Redirector	Configure operational protocol for the serial port. **COM Redirector** This allows sLAN/all serial port to be used as a virtual COM port for Windows. When using this mode, serial settings follow what is set in the virtual COM Port. **TCP Server** For a client device from the same network to access, this device can run as a server. A socket number can be configured from [Local Port]. When the socket is connected, any data received from the sLAN/all will pass the socket and the serial port. **TCP Client** A sLAN/all can run as a client to connect to the server in the same network. When the socket is connected, any data received from the sLAN/all will pass the socket and the serial port. The IP address of the server can be set from [Target IP/Port]. **UDP Server** For a client device from the same network to access, this device

Menu	Default	Description
		can run as a server. A socket number can be configured from [Local Port]. If UDP package is received from the socket, the data will be passed through the serial port. The data from the serial port will be sent to the client with UDP packet. **UDP Client** When the data is received from the serial port, it will be sent to the server with UDP packet. The server IP address and the port number can be set in [Target IP] and [Target Port].
Local Port	4001	The socket number is assigned to the serial port in this device. This port is used in TCP server and UDP server modes.
Target IP	0.0.0.0	When the device is set to TCP or UDP client mode, the TCP or UDP server IP address can be entered here.
Target Port	4001	When the device is set to TCP or UDP client mode, the TCP or UDP server port number can be entered here.
Latency Time	0	The waiting time interval before sending a continuously received serial data to socket. For example, if the value is set to 0, when the serial device sends 100 bytes of ASCII through a sLAN/all to a socket in a server, the data will be sent to the server immediately. Although this allows for real-time operations, this will cause a huge amount of network traffic. If this value is set to any value except zero, the device will fill the buffer and send the data according to the waiting time interval. Although, it will lessen the network traffic, but real-time communication is not possible when the latency time is not set to zero. (Unit: milliseconds)
TCP Alive Check Time	60	After socket connection is established, the network status is checked by given time value. If any errors are detected, the socket connection will be terminated or reset. If this value is set to zero, this feature is disabled, but network connection will remain connected. (Options; From 0 to 65,535 seconds)
TCP No-delay	Disable	This is an option for the device to set a delay when sending TCP packet. When this is disabled, TCP data will be buffered before sent to serial port. This will cause some delays between the Ethernet and serial communication. It is suitable for high-speed data or packet

Menu	Default	Description
		transmission and reception. When this is set to enabled, TCP data is set immediately. Delays between communication is be minimized, but this is not suitable for high-speed data or packet transmission and reception.

Serial Setting



In [Serial Setting], you can configure serial port environment. The [Submit] button must be clicked to save the changes you have made. For changes to take effect, the device must be rebooted. You can do it from [Reboot] menu. If changes are not saved, changed values will be lost when the device is turned off or rebooted.

If you did not click the [Submit] button to save the changed values, you can click the [Cancel] button to return to its previous values.

If the Operation Mode in Operation Setting is set to “COM Redirector”, current serial settings shown on the screen is ignored, but those set from the COM redirector in your computer will take place.

The main features are as follows:

Menu	Default	Description
Interface	RS-232	Current communication protocol for the serial port (Options: RS-422, RS-485)
Termination Register	Disable	Terminal resistor can be set when using RS-422 or RS485
RS-422 Multi-Drop Mode	Master	Set the operation mode for serial communication in RS-422 Mode. In Multi-drop mode, Set master as a master, slave as a slave. In Point-to-point mode, Set both devices as Master.
Baud Rate	9600 bps	Current communication speed for the serial port (Options: 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600 bps)
Data Bits	8	Current data bit set for serial the communication (Options: 5, 6,7,8)

Menu	Default	Description
Stop Bits	1	Current stop bit set for the serial communication (Options: 1, 2)
Parity	No	Current parity bit set for the serial communication (Options: No, Odd, Even)
Flow Control	None	Current hardware flow control set for the serial communication If the RTS/CTS is chosen, RTS signal will be automatically controlled based on the flow of serial data, and serial data transmission will be automatically controlled based on the status of CTS signal line. This feature will only work with RS-232 mode. (Options: None, RTS/CTS)

Change ID and PW

To connect to the web settings page, you need an ID and a password. They can be configured as shown in the below screen.

This setting will take immediate effect without rebooting the device

Reboot

The device will be restarted.

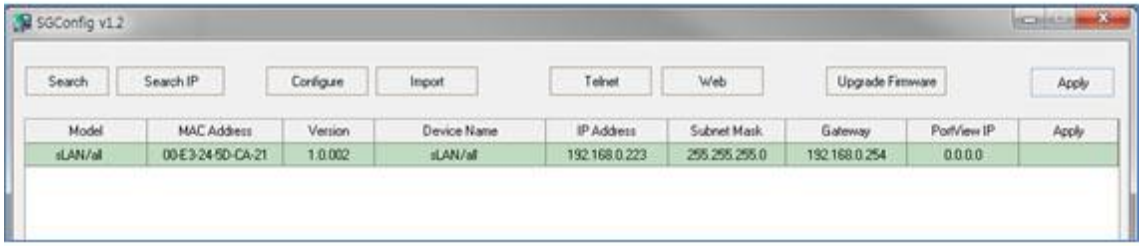
If there are any changes made, click on the [Submit] button and click [Reboot] button under “Reboot” tab.

6. Configuration Utility

In this chapter, configuring sLAN/all with SGConfig utility is explained.

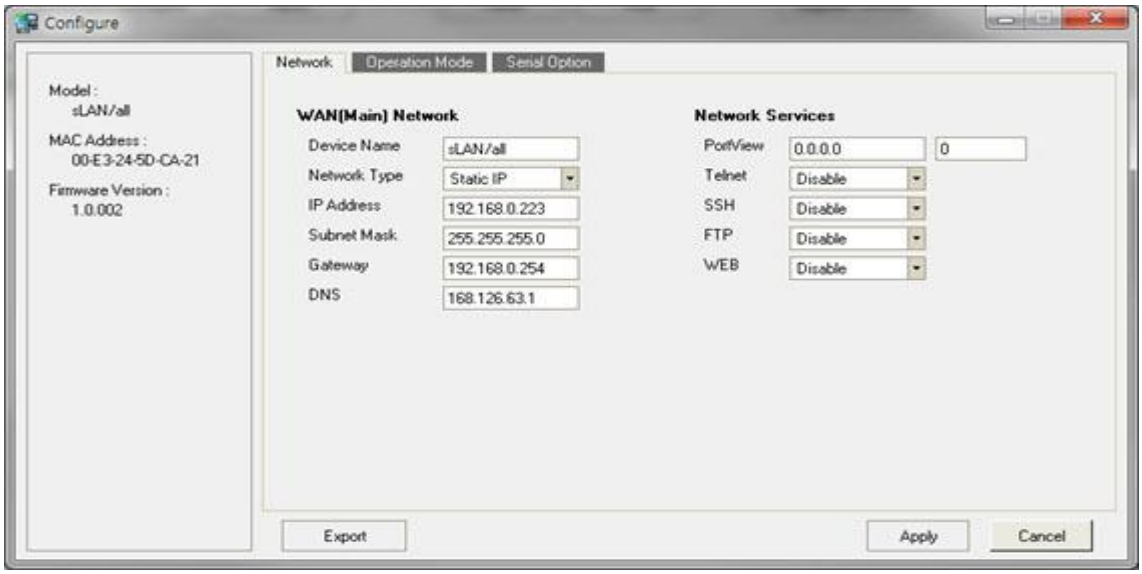
Search

Run SGConfig, and click [Search] button to look for any sLAN/alls in the same network.



Configuration

Select the device you would like to configure from the searched list. Click the [Configure] button. A sLAN/all window will be displayed as shown below. For detailed information on how to use it, please refer to the SGConfig Manual.



7. Appendix

Troubleshooting

Installation Problems

If you cannot make connections to the devices in the same network using sLAN/all, check your network connection and cables.

- Check if everything is properly connected (Ethernet, DE-9 connector)
- Check if the IP address and port number is properly configured.
- If you are using a network hub, switch currently using Ethernet port to different one to make sure the problem does not exist in the port itself. Also, change the Ethernet cable to different one.

Windows Operating System Problems

- If the device cannot be found from the configuration utility or cannot connect to the configuration web page, type “PING N.N.N.N” (Where N is a value from 0 to 255) without quotes from the command line prompt to check the connection status. (For example, “PING 192.168.0.223” without quotes.) If it does not return any value or responses, it means that the sLAN/all device is not properly connected.

  1. Check the network cable
  2. Allow network connection from the Windows Firewall
  3. Disable the Windows Firewall

Network Configuration Problems

- When using TCP/IP network, check if your computer and sLAN/all are connected to the same network. Use ping command to check the connection between the computer and the sLAN/all. The IP address of a sLAN/all must be configured with the same network as your computer. For example, if your computer has IP address of 192.189.207.3, and the subnet mask is 255.255.255.0, the IP address of the sLAN/all must be 192.189.207.N (Where N is from 1 to 254. Also, check if the gateway address is set correctly.
- If the sLAN/all is set to receive the IP address automatically from the DHCP server, the IP address of the sLAN/all may change. In this case, set the IP address of the sLAN/all to be fixed from the DHCP server, or change the settings from the sLAN/all to have a fixed IP address.
- Unmatched or duplicate IP address can cause errors. Check if the IP address of the sLAN/all is assigned properly. Also, check if there are any other devices with the same IP address. The duplicate IP address issue is very common while using TCP/IP network. Regarding unmatched IP address, many users connect the sLAN/all device to the network without changing the IP address to be used in the field. Make sure to change the IP address and other configurations before applying at the field.

- Check if the computer and the sLAN/all are using the same subnet mask (For example, if the sLAN/all is using 255.255.255.0 as its subnet mask, your computer must use the same subnet mask). Also, check if the default gateway is set properly.
- If an incorrect IP address is assigned from the DHCP server, please contact your network administrator to check if the DHCP server is assigning a correct IP address for your sLAN/all device.

Software Utility Problem

- When problem occurs while using the COM Redirector, a virtual COM port emulator, check if the correct virtual port number is used when running the application. Go to the COM port configuration window and check if all values are set correctly.

Product Specifications

Ethernet	LAN Port	1 Port × 10/100 Mbps RJ-45 Port
	Network Connection	Static IP, Dynamic IP
	Protocol	TCP, UDP, ICMP, DHCP, HTTP, IPv4
Serial	Serial Port	1 Port × DE-9 Male, RS232/422/485
	Speed	Max. 921.6Kbps
	Data bit	5, 6, 7, 8
	Stop bit	1, 2
	Parity bit	None, Even, Odd
	Flow Control	RTS/CTS
	RS232 Signal	TXD, RXD, RTS, CTS, DTR, DSR, DCD, RI
	RS422 Signal	TXD+, TXD-, RXD+, RXD-
	RS485 Signal	TRXD+, TRXD-
Hardware	Power	5V DC 1A Input, Power Consumption 1 W
	Power Connector (DC Type)	External Diameter: Φ3.5 mm, Internal Diameter: Φ1.35 mm 
	Power Connector (USB Type)	Micro B USB Cable
	Dimension (W × L × H)	40.9 × 74.0 × 16.5mm 1.61 x 2.91 x 0.65in
	Weight	34.7g (1.22oz)
	Operating Temperature	-40 ~ 85℃ (-40 ~ 185℉)
	Humidity	Max. 95 % R.H.
	LED	RDY(Yellow), TXD(Green), RXD(Red)
	Protection	±15kV ESD Protection (Air)
Software	OS	RTOS
	Operational Modes	COM Redirector, TCP Server/Client, UDP Server/Client
	Utility	COM Redirector, TestView, SGConfig
	Configuration	A Web Browser, SGConfig
Ordering Information		sLAN/all

***Reset Button**

Function	Action	Result
Warm Booting	Press for shorter than 3 seconds	Restart sLAN/all
Factory Default	Press for longer than 3 seconds	Re-initialize to the out-of-the-box status

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