

SerialGate

2000 Series

User Guide

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History

Modified Date	Version	Pages	Description
Dec. 02. 2013	2.2a	All	New
Feb. 07. 2014	2.2b	66	COM Port Redirector 3.0 release
Mar. 27. 2014	2.2c	All	Serial/IP, low latency, new options for connection added Commercial Version Added
Apr. 04. 2015	2.2e	All	Modify Logo and Specification Update serial options and SNMP
Aug. 27. 2015	2.2f	All	Modbus Master Mode Added.
Jan. 26. 2016	2.3	All	Correcting errors in manual
Nov. 13. 2018	2.4	All	Added option to change service port number
Apr. 21. 2020	2.5	All	Text modified and download guide added
Dec. 10. 2020	2.6	All	IP Access Policy Added

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Chapter 1. Introduction

This chapter is an introduction to device servers by SystemBase, the SerialGate series.

About this document

This guide is designed for users of SerialGate, for setting configurations, status monitoring, firmware update, and other administration work related to the SerialGate.

Who should read this document?

This guide is designed for SerialGate users and administrators. It is strongly recommended that anyone trying to apply, use, and maintain SerialGate to read this document. This guide deals with the hardware-level integration issues and software-level configuration tips. It will be a great starting point for any administrators who want to easily monitor and control SerialGate and its connected devices.

Manual Contents

Introduction (Chapter 1) is a preface with general information and introductory notices.

Getting Started (Chapter 2) gives a brief introduction of SerialGate series, including features and applications.

Hardware Descriptions (Chapter 3) explains the layout and pin specifications with block diagram and drawings.

Installation (Chapter 4) helps you to connect SerialGate to serial and network environment. It ends up with first time boot-up and status check.

Configuration from the Web Browser (Chapter 5) provides menu-by-menu guide for setting up the operation environment for SerialGate via web browser.

Configuration via Telnet (Chapter 6) provides a list of commands for setting up the operation environment for SerialGate via Telnet.

Configuration using LCD (Chapter 7) explains how to monitor status and working environment of device server.

Application (Chapter 8) provides a variety of application examples widely used in industries.

Appendix (Chapter 9) provides firmware update guides and technical specifications for detailed information.

SerialGate Documents

The following table summarizes documents included in the SerialGate document set.

Document Name	Description
User Guide	Integration, configuration, and management tasks are explained for the administrator
PortView User Manual	Guide for SystemBase device server management application PortView
SGConfig User Manual	Guide for SystemBase device server configuration application SGConfig
Serial IP Redirector User Manual	Guide for Serial IP Redirector
TestView User Manual	User Manual for testing Com port , TCP Server/Client , UDP Server/Client

If you need brief information on SerialGate or device servers in general, please visit our company websites at <https://www.sysbas.com/en/>. You can view or download documents, latest software and firmware updates related to SerialGate. Available resources are as follows:

Document Name	Description
SerialGate Spec Sheet	Specifications for SerialGate products
SerialGate White Paper	An easy reading for anyone new to device server. Deals with background and technology Past, present, and future of device servers along with the overview of market environment

All documents are updated promptly, so check for the recent document update. The contents in these documents are subject to change without any notice in advance.

Technical Support

The customers can get a technical support from SystemBase by following methods:

Please visit our website <http://www.sysbas.com> and go to 'Support.' menu. There you can read FAQs and the customers can post an inquiry from the 'Technical Support' menu.

Lastly, you can call us at the customer center for immediate support. Our technical support team will kindly help you get over with the problem.

The number is +82-2-855-0501 (Extension number 1). Do not forget to dial the extension number after getting a welcome message.

The office hour is from 09:00 AM to 06:00 PM KST, Monday to Friday. We are closed on Saturday, Sunday and national holidays.

Chapter 2. Getting Started

This chapter includes SerialGate overview, main and distinctive features, package contents for each product, and application fields.

Overview

SerialGate provides network connectivity to various serial devices (security devices, communication peripherals, modems, data printing devices, industrial metering devices, etc.). SerialGate supports RS-232, RS-422, and RS-485 serial communication standards under various communication speed, with auto-sensing 100baseTX Fast Ethernet and 10baseT Ethernet connection.

Features

Various features of SerialGate make it a universal yet distinctive device server solution. Here we present main features of SerialGate. Others will explicitly appear throughout this guide.

- Maximum of 921.6Kbps for serial communication speed
- Three models available: RS-232, Combo(RS-422/485) or All version (RS-232/422/485)
- 10/100Mbps Ethernet port
- Serial IP Redirector for better adaptability
- Extensive configuration and monitoring with PortView
- Firmware update by Web manager or FTP
- Configuration using Web browser, Telnet, SNMP, or SGConfig
- SDK package which enables customizing program development provided

Package Component

SerialGate package is composed of the following components. Make sure every component is included in your package. All packages include a product can be downloaded from SystemBase website(www.sysbas.com/en > product > download).

SerialGate device: 1 unit

Ethernet Cable: 1 piece

Power adapter: 1 unit

Class A Device

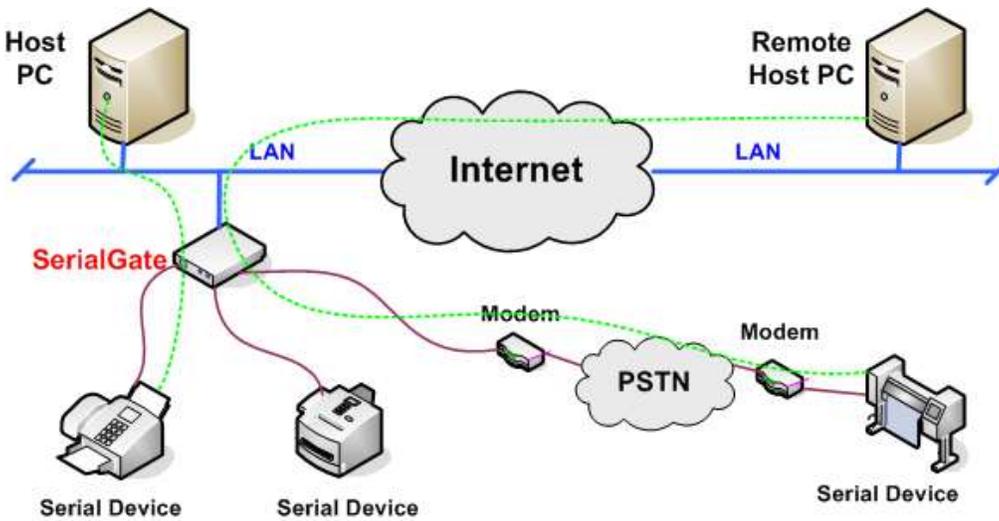
The distributor and the user must be aware that SerialGate series are a Class A device registered only for commercial or business environment. The SerialGate series are not a Class B device for residential or home use.

Application

SerialGate can be used in many practical applications in various fields. Here we present some of them.

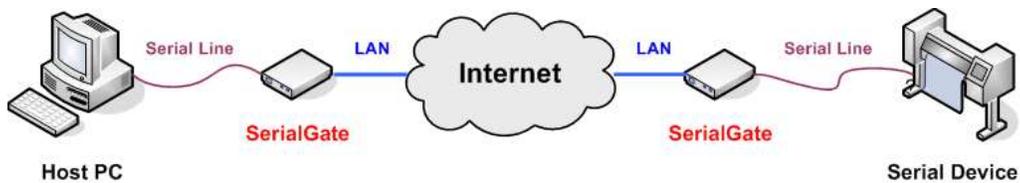
Network Serial Communication

PC and SerialGate are connected to the network, and a user gets an access to a device connected to SerialGate on PC.



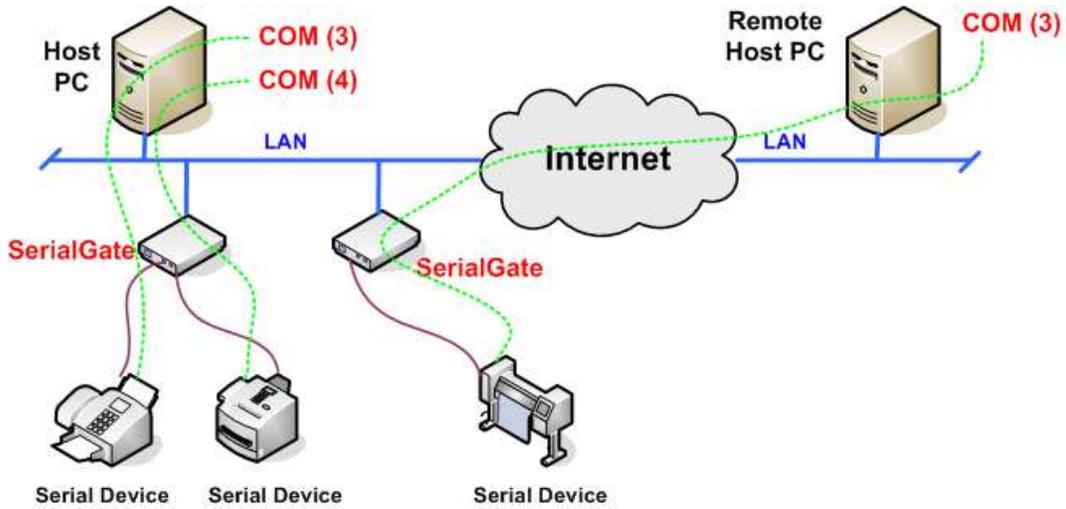
Serial Communication Tunneling

SerialGate enables a connection not restricted to distance between PC and serial device. To enable this feature, a user should change its setting to TCP Server – TCP Client mode or UDP Server – UDP Client mode referring to Chapter 5 of this manual. In this case, only data can be transmitted while both data and control signal can be transmitted in Pair_Master and Pair_Slave mode.



COM Port Redirection

With Serial IP Redirector, users can use serial port to connect to the SerialGate on the network as if there are serial ports in the PC.



Factory / Industrial Automation

PLC, Robot arms, Human-Machine Interface, Warehouse rails
 Medical instruments, Inspection equipment controllers
 Alarming units

Home Appliances / Electronic Devices

Power controller, gaming machines
 Scales, Gas detection units, Water & pollution metering devices
 Data collection and distribution units

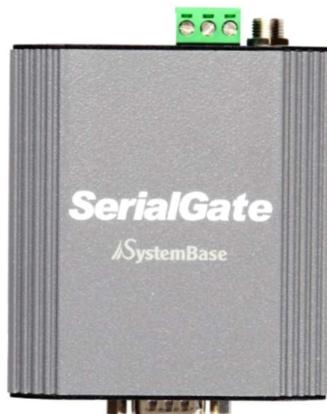
Financial / Building Automation

Card readers, Barcode scanners, Kiosks, Point-Of-Sale related devices
 Serial printers, Cash registers, Credit card authorization terminals
 Biometric detection units, Security devices

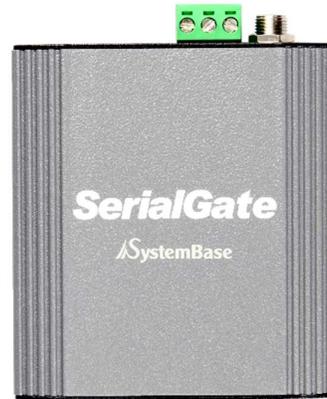
Chapter 3. Hardware Description

This chapter provides hardware information including block diagram, layout, pin specification, dimensions and other hardware-related issues.

Exterior of SG-2011 Series



SG- 2011DIL/ALL, 232 Top



SG-2011RIL/ALL, 232 Top



SG-2011DIL/ALL, 232 Front



SG-2011RIL/ALL, 232 Front



SG-2011DIL/ALL, 232 Rear



SG-2011RIL/ALL, 232 Rear

- **Serial Port:** DB-9 male (DE-09P) or RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Reset button:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore its factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.
- **LAN port:** 8-pin RJ45 jack connects SerialGate to networking devices such as Ethernet card, hub, and router.

SG-2011 Series LED / RESET

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
Serial Tx/Rx	Green Blink	Serial data transmitted
	Orange Blink	Serial data received
LAN Port (Right Orange)	On	Network connected
	Off	Network disconnected
	Blink	LAN data being transmitted
LAN Port (Left Green)	On	100baseT connection detected and data transferred
	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for more than 3 seconds	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2021 Series



SG-2021DIL/ALL, 232 Top



SG-2021RIL/ALL, 232 Top



SG-2021DIL/ALL, 232 Front



SG-2021RIL/ALL, 232 Front



SG-2021DIL/ALL, 232 Rear



SG-2021RIL/ALL, 232 Rear

- **Serial Port:** DB-9 male (DE-09P) or J-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
 When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable
 When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Reset button:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore its factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.
- **LAN port:** 8-pin RJ45 jack connects SerialGate to networking devices such as Ethernet card, hub, and router.

SG-2021 Series LED / RESET

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
Serial Tx/Rx	Green Blink	Serial data transmitted
	Orange Blink	Serial data received
LAN Port (Right Orange)	On	Network connected
	Off	Network disconnected
	Blink	LAN data being transmitted
LAN Port (Left Green)	On	100baseT connection detected and data transferred
	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for more than 3 seconds	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2040 Series



SG-2040DCL/ALL, 232 Top

SG-2040RCL/ALL, 232 top

SG-



2040DCL/ALL, 232 Front

SG-2040RCL/ALL, 232 Front



SG-2040DCL/ALL, 232 Rear

SG-2040RCL/ALL, 232 Rear

- **Serial:** DB-9 male (DE-09P) or RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
 - When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable

When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.

- **Reset:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.
- **WAN:** Main network port used when connecting SerialGate to networking devices such as Ethernet card, hub, and router.
- **LAN:** This is a secondary network port operating in NAT mode. It allows connection to sub-network connected to SerialGate or in bridge mode, operates as a switch port.
- **SD / MMC:** SD memory card works for system log. Available up to 32 GB. (SD memory is not included in the package)

SG-2040 Series LED / RESET

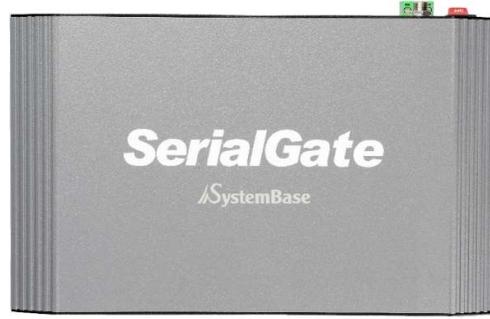
<LED Feature>

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
WAN (Green)	Off	Deactivate main network
	On	Activate main network
LAN (Green)	Off	Deactivate sub network
	On	Activate sub network
Serial Tx/Rx (Green/Orange)	Blink	Serial data transmitted
	Blink	Serial data received
WAN/LAN (Right Orange)	On	Connected to network
	Off	Disconnected to network
	Blink	LAN data being transmitted
WAN/LAN (Left Green)	On	100baseT connection detected and data transferred
	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for 3 seconds or more	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2041 Series



SG-2041DIL/ALL, 232 Top

SG-2041RIL/ALL, 232 top



SG-2041DIL/ALL, 232 Front

SG-2041RIL/ALL, 232 Front



SG-2041DIL/ALL, 232 Rear

SG-2041RIL/ALL, 232 Rear

- **Serial:** DB-9 male (DE-09P) or RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Reset:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.
- **WAN:** Main network port used when connecting SerialGate to networking devices such as Ethernet card, hub, and router.
- **LAN:** This is a secondary network port operating in NAT mode. It allows connection to sub-network connected to SerialGate or in bridge mode, operates as a switch port.
- **SD / MMC:** SD memory card works for system log. Available up to 32 GB. (SD memory is not included in the package)

SG-2041 Series LED / RESET

<LED Feature>

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
WAN (Green)	Off	Deactivate main network
	On	Activate main network
LAN (Green)	Off	Deactivate sub network
	On	Activate sub network
Serial Tx/Rx (Green/Orange)	Blink	Serial data transmitted
	Blink	Serial data received
WAN/LAN	On	Connected to network
	Off	Disconnected to network

SerialGate User Guide

(Right Orange)	Blink	LAN data being transmitted
WAN/LAN	On	100baseT connection detected and data transferred
(Left Green)	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for 3 seconds or more	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2080 Series



SG-2080DCL/ALL, 232 Top



SG-2080RCL/ALL, 232 top



SG-2080DCL/ALL, 232 Front



SG-2080RCL/ALL, 232 Front



SG-2040DCL/ALL, 232 Rear



SG-2040RCL/ALL, 232 Rear

- **Serial:** DB-9 male (DE-09P) or RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable

When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.

- **Terminal block power connector:** for connection of 12~48VDC terminal block cable

When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.

- **Reset:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.
- **WAN:** Main network port used when connecting SerialGate to networking devices such as Ethernet card, hub, and router.
- **LAN:** This is a secondary network port operating in NAT mode. It allows connection to sub-network connected to SerialGate or in bridge mode, operates as a switch port.
- **SD / MMC:** SD memory card works for system log. Available up to 32 GB. (SD memory is not included in the package)

SG-2080 Series LED / RESET

<LED Feature>

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
WAN (Green)	Off	Deactivate main network
	On	Activate main network
LAN (Green)	Off	Deactivate sub network
	On	Activate sub network
Serial Tx/Rx (Green/Orange)	Blink	Serial data transmitted
	Blink	Serial data received
WAN/LAN (Right Orange)	On	Connected to network
	Off	Disconnected to network
	Blink	LAN data being transmitted

SerialGate User Guide

WAN/LAN	On	100baseT connection detected and data transferred
(Left Green)	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for 3 seconds or more	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2081 Series



SG-2081DIL/ALL, 232 Top



SG-2081RIL/ALL, 232 top



SG-2081DIL/ALL, 232 Front



SG-2081RIL/ALL, 232 Front



SG-2041DIL/ALL, 232 Rear



SG-2041RIL/ALL, 232 Rear

- **Serial:** DB-9 male (DE-09P) or RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
 - When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable
 - When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Reset:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.

- **WAN:** Main network port used when connecting SerialGate to networking devices such as Ethernet card, hub, and router.
- **LAN:** This is a secondary network port operating in NAT mode. It allows connection to sub-network connected to SerialGate or in bridge mode, operates as a switch port.
- **SD / MMC:** SD memory card works for system log. Available up to 32 GB. (SD memory is not included in the package)

SG-2081 Series LED / RESET

<LED Feature>

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
WAN (Green)	Off	Deactivate main network
	On	Activate main network
LAN (Green)	Off	Deactivate sub network
	On	Activate sub network
Serial Tx/Rx (Green/Orange)	Blink	Serial data transmitted
	Blink	Serial data received
WAN/LAN (Right Orange)	On	Connected to network
	Off	Disconnected to network
	Blink	LAN data being transmitted
WAN/LAN (Left Green)	On	100baseT connection detected and data transferred
	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for 3 seconds or more	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2160 Series



SG-2160RCL/ALL, 232 Top



SG-2160RCL/ALL, 232 Front



SG-2160RCL/ALL, 232 Rear

- **Serial:** RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Reset:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.

- **WAN:** Main network port used when connecting SerialGate to networking devices such as Ethernet card, hub, and router.
- **LAN:** This is a secondary network port operating in NAT mode. It allows connection to sub-network connected to SerialGate or in bridge mode, operates as a switch port.
- **SD / MMC:** SD memory card works for system log. Available up to 32 GB. (SD memory not included in the package)

SG-2160 Series LED / RESET

<LED Feature>

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
WAN (Green)	Off	Deactivate main network
	On	Activate main network
LAN (Green)	Off	Deactivate sub network
	On	Activate sub network
Serial Tx/Rx (Green/Orange)	Blink	Serial data transmitted
	Blink	Serial data received
WAN/LAN (Right Orange)	On	Connected to network
	Off	Disconnected to network
	Blink	LAN data being transmitted
WAN/LAN (Left Green)	On	100baseT connection detected and data transferred
	Off	10baseT connection detected and data transferred

< Reset button features >

Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for 3 seconds or more	Restore factory default settings of SerialGate, and the device will automatically reboot.

Exterior of SG-2161 Series



SG-2161RIL/ALL, 232 Top



SG-2161RIL/ALL, 232 Front



SG-2161RIL/ALL, 232 Rear

- **Serial:** RJ-45 socket for serial ports
- **DC-Jack power connector:** for connection of 12~48VDC adapter cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Terminal block power connector:** for connection of 12~48VDC terminal block cable
When the power is supplied from both terminal block and DC adapter connector at the same time, it may cause irreparable damage to the product.
- **Reset:** SerialGate reboots if this button is pressed for less than 3 seconds. If pressed for longer than 3 seconds, SerialGate will restore factory default settings.
- **LED:** Operation status of SerialGate. Next section describes the meaning of each LED display status.

- **WAN:** Main network port used when connecting SerialGate to networking devices such as Ethernet card, hub, and router.
- **LAN:** This is a secondary network port operating in NAT mode. It allows connection to sub-network connected to SerialGate or in bridge mode, operates as a switch port.
- **SD / MMC:** SD memory card works for system log. Available up to 32 GB. (SD memory is not included in the package)

SG-2161 Series LED / RESET

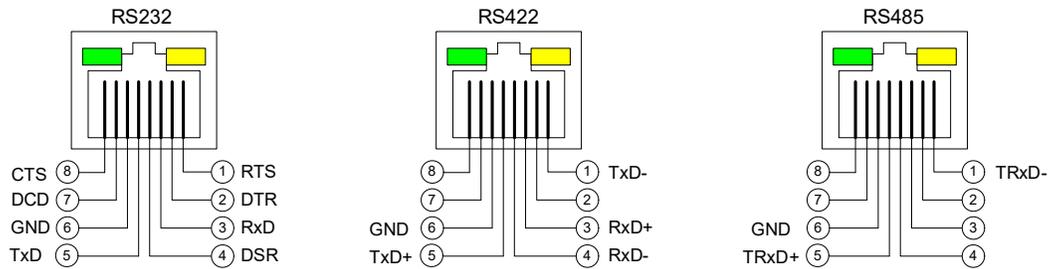
<LED Feature>

LED	Status	Meaning
RDY (Green)	Blink	Normal operation
	On	System Booting
	Off	System Error
WAN (Green)	Off	Deactivate main network
	On	Activate main network
LAN (Green)	Off	Deactivate sub network
	On	Activate sub network
Serial Tx/Rx (Green/Orange)	Blink	Serial data transmitted
	Blink	Serial data received
WAN/LAN (Right Orange)	On	Connected to network
	Off	Disconnected to network
	Blink	LAN data being transmitted
WAN/LAN (Left Green)	On	100baseT connection detected and data transferred
	Off	10baseT connection detected and data transferred

< Reset button features >

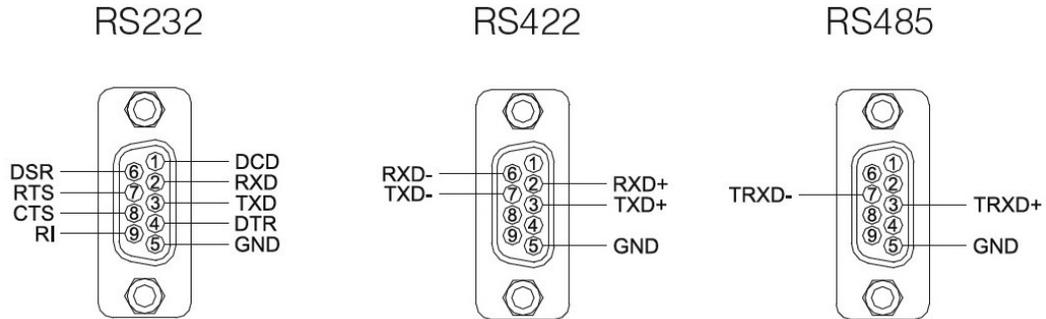
Operation	Result
Pressed for less than 3 seconds	Restart SerialGate
Pressed for 3 seconds or more	Restore factory default settings of SerialGate, and the device will automatically reboot.

Pin Specification (RJ-45)



Pin No.	RS-232	RS-422	RS-485
1	RTS	TxD -	TRxD -
2	DTR	-	-
3	RxD	RxD +	-
4	DSR	RxD -	-
5	TxD	TxD +	TRxD +
6	GND	GND	GND
7	DCD	-	-
8	CTS	-	-

Pin Specification (DB-9 male / DE-09P)



Pin No.	RS-232	RS-422	RS-485
1	DCD	-	-
2	RXD	RxD +	-
3	TXD	TxD +	TRxD +
4	DTR	-	-
5	GND	GND	GND
6	DSR	RxD -	-
7	RTS	TxD -	TRxD -
8	CTS	-	-
9	Power(Optional)	Power(Optional)	Power(Optional)

Chapter 4. How to Connect

This chapter explains how to install SerialGate. It deals with LAN and serial connection guides for SerialGate to operate together with the target serial device.

Connection Guide

In order to connect SerialGate to network, you need to use RJ-45 Ethernet port. It supports both 10Mbps and 100Mbps Ethernet connection (auto-sensing). Since WAN/LAN port supports MDIX, it automatically detects any kind of cable. (Cross or direct LAN cable) Plug one end of the LAN cable to SerialGate and the other end to a hub, switch, or any other network device.

First-Time Power On

First of all, please make sure that the power input you supply to the module is corresponding with the SerialGate model that you have. If an appropriate power input has been successfully supplied, SerialGate will power on and start booting.

Although there is no power LED to check the status, you can check by LEDs on the RJ-45 Ethernet port. LED status operation is described in Chapter 3. Hardware Description.

An IP address is required to access web interface in SerialGate or telnet command-line configuration tool. By factory default, a static IP address is assigned to SerialGate. After the initial connection, you can either manually assign a different IP address or set SerialGate to automatically get an IP address from a DHCP server. While this depends on your network environment and policy, it is strongly recommended that a user assigns SerialGate with a unique static IP.

Connecting to SerialGate

In order to view current settings or modify them, you need to make a Web or Telnet connection to SerialGate. IP address is required information to make a connection.

There are two ways you can know the current IP address of SerialGate.

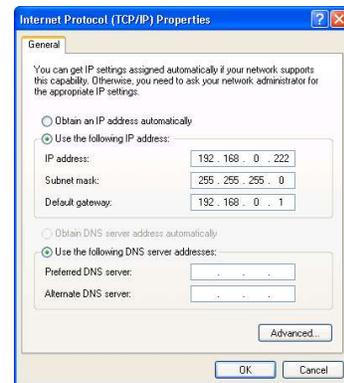
If WAN port in SerialGate uses assigned IP address from DHCP server or is set to a fixed IP address, SerialGate supports the following options in case that a user does not know IP address.

For SG-204x/208x/216x Series

1. A user can connect to the default LAN port with IP address: **10.10.1.1**
2. A user can search IP address pre-set to SerialGate using "Detector" application enclosed in the downloaded Utility and Documents and connect to SerialGate.

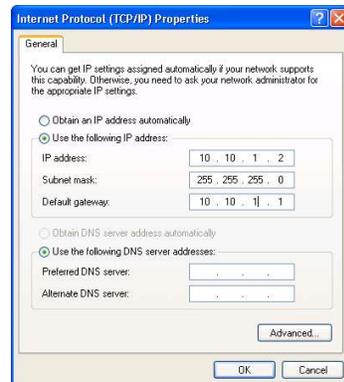
Default WAN IP Address: 192.168.0.223

The default IP address of SerialGate is set to 192.168.0.223. In order to connect with this address, you need to change network configurations so that your PC can connect to the IP 192.168.0.223. Please refer to an example to the right side, and note that values do not necessarily have to be identical to the example below.



Default LAN IP Address: 10.10.1.1

For SG-201x/202x, LAN port's IP address is 10.10.1.1 while LAN port's default IP address for SerialGate-204x/208x/216x is 10.10.1.1. In order to connect with this address, you need to change network configurations so that your PC can connect to the IP 10.10.1.1. Please refer to an example below, and note that values don't necessarily have to be identical to the example below.



Configuration

1) Configuration via Web

A user can easily configure SerialGate with web interface, accessible from any web browser. For more information, please refer to Chapter 5. Configuration via Web.

2) Configuration via Telnet

A user can configure SerialGate with commands after accessing SerialGate through Telnet. For more information, please refer to Chapter 6. Configuration via Telnet.

3) Configuration via PortView

A user can use a Windows-based utility PortView from SystemBase to monitor SerialGate. For more information on using the utility for your administration purpose, please refer to PortView User Guide.

4) Configuration with SGConfig

The users can use SGConfig to modify settings for the SerialGate. For more information, please refer to the SGConfig manual.

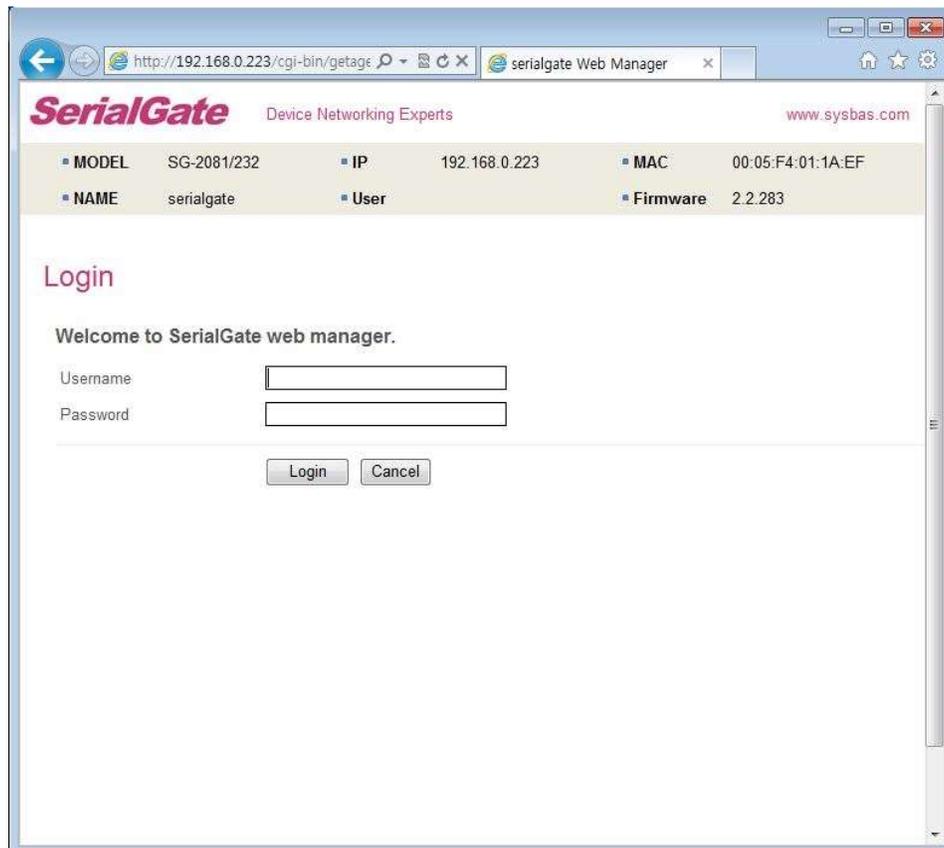
Chapter 5. Configuration from Web Browser

Connection

Open web browser and enter the IP address of SerialGate to access the web manager. Once you are successfully connected, the following page will show up. You need to enter appropriate username and password to login. Please note that this username and password are used as authentication method for Telnet as well. This means if username or/and password has been modified from the web interface, modified values have to be entered to connect to Telnet, and vice versa.

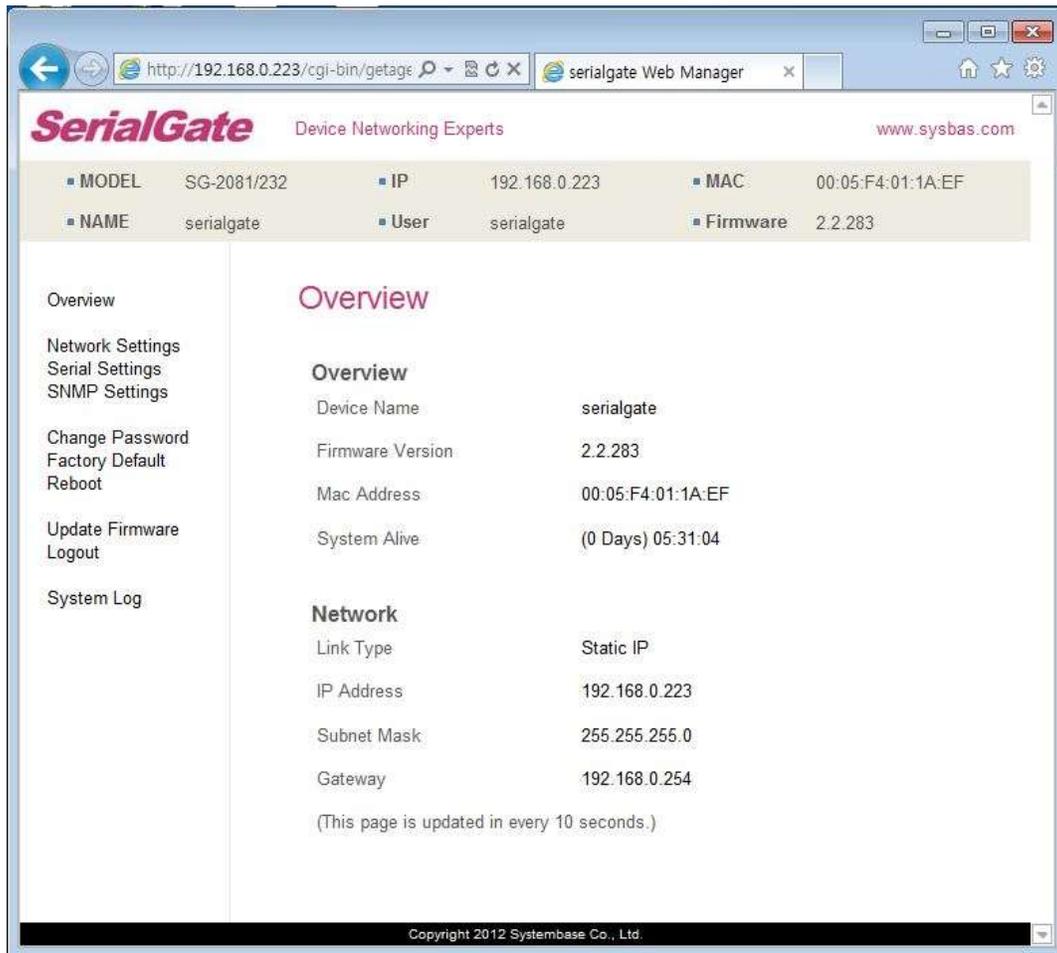
Factory default username : serialgate

Factory default password : 99999999



Setup Menu

If login process is successful, you will see a web manager's main page, showing summary of your device. On the left, you will see a setup menu, and you can navigate through these options.



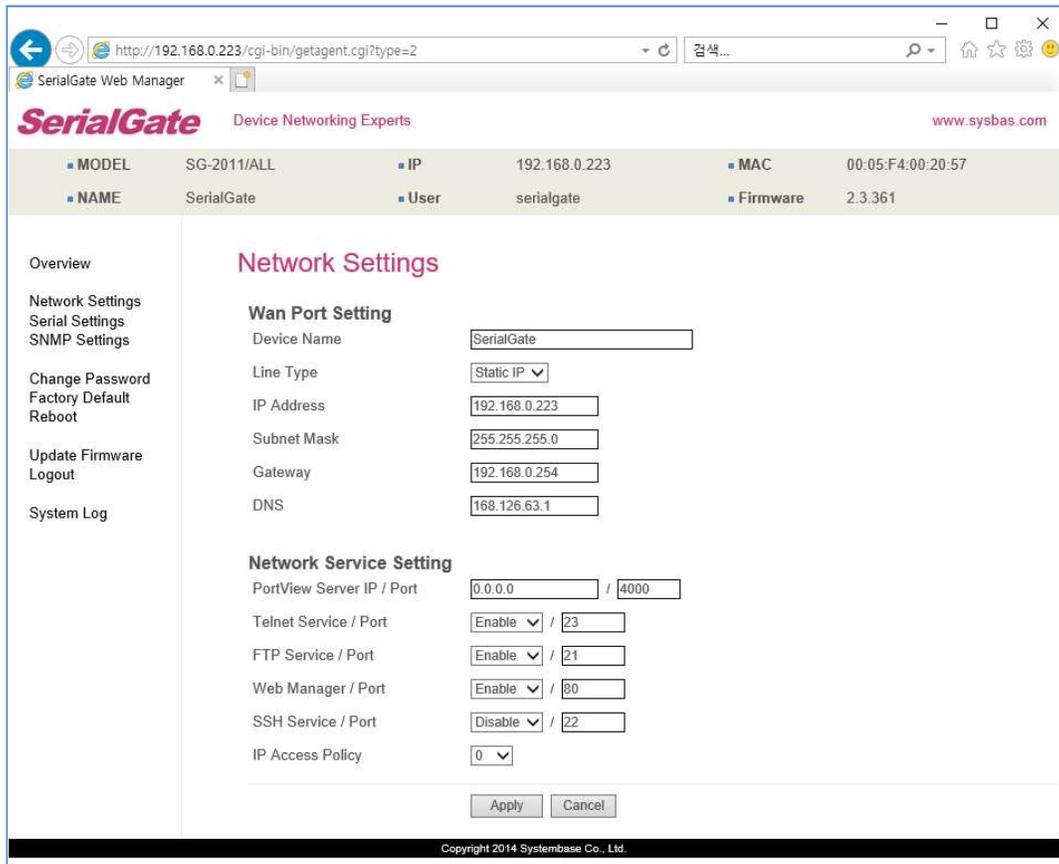
The followings are main features of Setup Menu.

Menu	Description
Summary	Confirm basic information about SerialGate
Network Settings	Configure network connection settings.
Serial Settings	Configure detailed operation environment for serial communication
SNMP Settings	Configure detailed operation environment for SNMP
Change Password	Change ID and password for both Web connection and telnet
Update Firmware	Update the firmware in SerialGate
Factory Default	Restore all the factory default settings.
Save & Reboot	Save the configurations and reboot SerialGate
System Log	View system log of SerialGate

Network Settings

In Network Settings, a user can configure general network environment and network management. After changing values, you need to click **Apply** button. If you don't want to change, you need to click **Cancel** button. If you change the IP address, you must reconnect via changed IP address.

For SG-201x / 202x



SG-204x / 208x / 216x

The screenshot shows the SerialGate Web Manager interface in a browser window. The address bar shows the URL `http://192.168.0.41/cgi-bin/getagent.cgi?type=2`. The page title is "SerialGate Web Manager" and the URL `www.sysbas.com` is visible in the top right. A navigation menu includes "SerialGate" and "Device Networking Experts".

Below the navigation menu is a status table:

MODEL	SG-2041/ALL	IP	192.168.0.41	MAC	00-05-F4-01-99-04
NAME	SerialGate	User	serialgate	Firmware	2.3.361

The main content area is titled "Network Settings" and contains three sections:

- Wan Port Setting**: Includes fields for Device Name (SerialGate), Line Type (Static IP), IP Address (192.168.0.41), Subnet Mask (255.255.255.0), Gateway (192.168.0.254), and DNS (168.126.63.1).
- Lan Port Setting**: Includes Bridge Setting (Disable), IP Address (10.10.1.1), and Subnet Mask (255.255.255.0).
- Network Service Setting**: Includes PortView Server IP / Port (192.168.0.40 / 4000), Telnet Service / Port (Enable / 23), FTP Service / Port (Enable / 21), Web Manager / Port (Enable / 80), SSH Service / Port (Disable / 22), and IP Access Policy (0).

At the bottom of the settings area are "Apply" and "Cancel" buttons. The footer of the page reads "Copyright 2014 Systembase Co., Ltd."

SerialGate User Guide

The followings are main features of WAN Configuration.

Menu	Default	Description
Device Name	SerialGate	Name of the current device
Line Type	Static IP	How IP is obtained when network is connected.
IP Address	192.168.0.223	Current IP address SerialGate is assigned to. (When line type is Static IP, manually enter an appropriate IP address. When line type is DHCP, current IP is displayed, but it is not editable.)
Subnet Mask	255.255.255.0	Current subnet mask SerialGate is assigned to. (When line type is Static IP, manually enter an appropriate subnet mask. When line type is DHCP, current subnet mask is displayed, but it is not editable.)
Gateway	192.168.0.254	Current default gateway SerialGate is assigned to (When line type is Static IP, manually enter an appropriate default gateway. When line type is DHCP, current default gateway is displayed, but it is not editable.)
DNS	168.126.63.1	Domain Name Service IP address

For SG-204x/208x/216x, the main features of LAN Configuration are as follows.

Menu	Default	Description
Bridge	Disable	Enable or Disable Bridge Mode
IP Address	10.10.1.1	Set the current IP address (Bridge : disable only)
Subnet Mask	255.255.255.0	Set Subnet Mask address (Bridge : enable only)

When it is used in the bridge mode, LAN and WAN ports are not used as their original intention but will be connected to other SerialGate and form a network with daisy chain method.

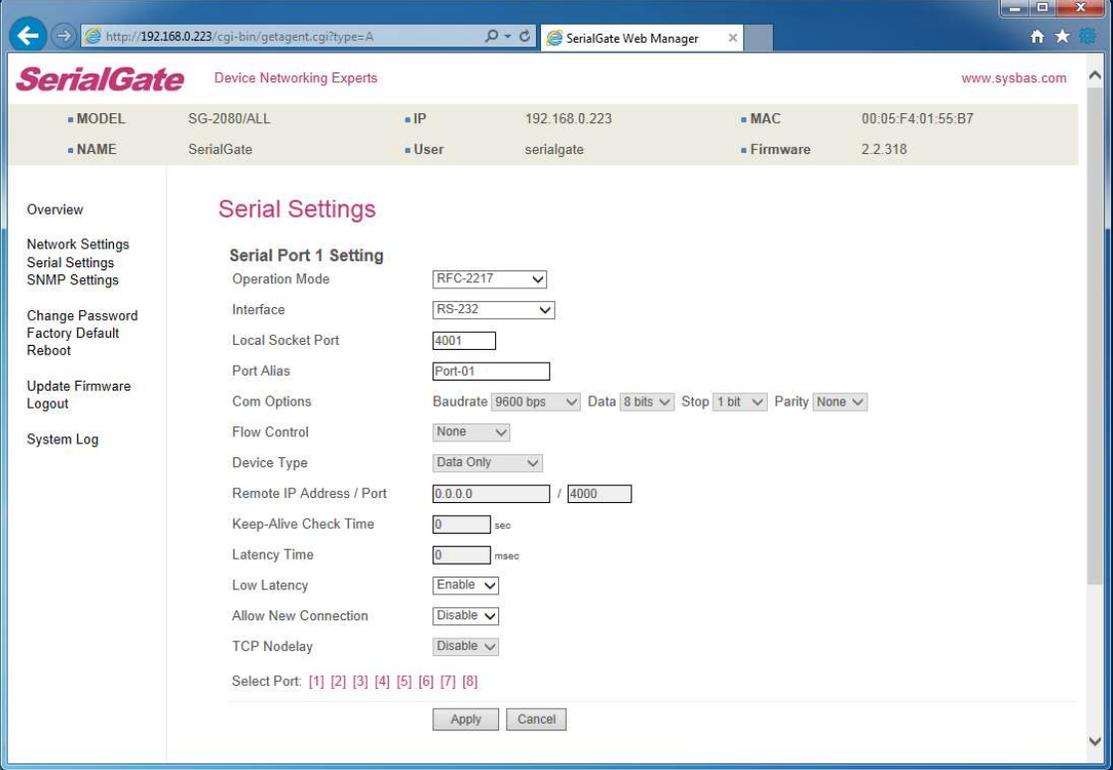
Main features for Network Service Configuration are as follows.

Menu	Default	Descriptions
PortView IP / Port	0.0.0.0 / 4000	Set the IP address and the socket number of the PC where PortView is installed. For more information about PortView, please refer to the PortView User Manual. If IP is set to 0.0.0.0, this feature is disabled
Telnet Service / Port	Enable / 23	Enable or disable Telnet service and set the port number. To change the port number and apply it, you need to save and reboot. If disabled, you cannot connect to SerialGate via Telnet.
FTP Service / Port	Enable / 21	Enable or disable FTP service and set the port number. To change the port number and apply it, you need to save and reboot. If disabled, you cannot connect to SerialGate via FTP.
WEB Service / Port	Enable / 80	Enable or disable Web service and set the port number. To change the port number and apply it, you need to save and reboot. If disabled, you cannot connect to SerialGate via Web.
SSH Service / Port	Disable / 22	Enable or disable Secure Shell service and set the port number. To change the port number and apply it, you need to save and reboot. If disabled, you cannot connect to SerialGate via SSH.
IP Access Policy	0	Enable access control from the designated IP to SerialGate. Can be set to Accept or Deny the access to the Port which is set to Telnet, FTP, Web and SSH. If the IP is 0.0.0.0, the policy will not be applied. (The parent policy is the top priority which takes precedence over the sub policy.)

Serial Settings

A user can set the communication and operation environment for the serial port.

After changing values, you need to click **Apply** button. If you don't want to change, you need to click **Cancel** button.



The screenshot displays the SerialGate Web Manager interface. The browser address bar shows the URL `http://192.168.0.223/cgi-bin/getagent.cgi?type=A`. The page title is "SerialGate Device Networking Experts" and the website URL is `www.sysbas.com`. A navigation menu on the left includes "Overview", "Network Settings", "Serial Settings", "SNMP Settings", "Change Password", "Factory Default", "Reboot", "Update Firmware", "Logout", and "System Log". The main content area is titled "Serial Settings" and contains the "Serial Port 1 Setting" configuration page. The configuration includes the following fields and options:

- Operation Mode: RFC-2217
- Interface: RS-232
- Local Socket Port: 4001
- Port Alias: Port-01
- Com Options: Baudrate 9600 bps, Data 8 bits, Stop 1 bit, Parity None
- Flow Control: None
- Device Type: Data Only
- Remote IP Address / Port: 0.0.0.0 / 4000
- Keep-Alive Check Time: 0 sec
- Latency Time: 0 msec
- Low Latency: Enable
- Allow New Connection: Disable
- TCP Nodelay: Disable

At the bottom of the configuration area, there is a "Select Port:" section with links for ports [1] through [8]. Below this are "Apply" and "Cancel" buttons.

Serial settings for SerialGate are as follows.

Menu	Default	Descriptions
Operation Mode	RFC-2217	<p>Select the operation protocol that will be applied in the serial port.</p> <p>Disable Disable the serial port.</p> <p>RFC-2217 Allows a use of telnet protocol similar to COM Redirector. To use Serial/IP software in a PC, this protocol must be selected. (v4.9.6 maximum Speed: 460.8 Kbps, v4.9.10 maximum Speed: 921.6Kbps)</p> <p>COM Redirector Use the serial port of SerialGate as a virtual COM port in windows environment. To use Com Redirector software in a PC, this protocol must be selected.</p> <p>Terminal Users can connect to serial console using SerialGate with this mode. With this mode, there is an option to set 'End of Line'. Following command is used to enter the serial console: telnet [SerialGate IP] [Local Socket Port]</p> <p>TCP Server SerialGate works as a socket server, waiting for the client connection on the network. Socket number for awaiting connections can be set in 'Local socket port' field. After socket connection, data between socket and serial port will be transmitted.</p> <p>TCP Client SerialGate acts as a socket client in this mode. It tries to connect to the server IP address and the socket number assigned when a certain server waits for connection on the network. All data between the socket and the serial port is transferred untouched after the socket connection is established.</p> <p>TCP Broadcast SerialGate works as a server, accepting up to 5 simultaneous connections from socket clients. Data transmitted from SerialGate is broadcast to each socket client.</p>

Menu	Default	Descriptions
		<p>TCP Multiplex SerialGate works as a server, accepting up to 5 simultaneous connections from socket clients. The difference between TCP Broadcast and TCP Multiplex is that Multiplex allows each socket to communicate exclusively. That is, serial data in response are only transferred to the sender socket.</p> <p>UDP Server SerialGate works as a UDP server, waiting for UDP connection from the client on the network. Socket number for awaiting connections can be set in 'Local socket port' field. Once a UDP packet is received to the socket that waits for the connection, the data is transmitted to the serial port. The data input from the serial port is put into UDP packets, which eventually are sent to the client.</p> <p>UDP Client When the data is input to the serial port, UDP packets are sent using the preset IP address and the socket number of the server.</p> <p>Pair_Master/ Pair_Slave It extends a serial cable between DTE and DCE to network, and enables communication not limited to distance. Two devices are required for this feature and set one to Pair_Master and another to Pair_Slave. It can be used for serial communication tunneling.</p> <p>MODBUS ASCII Connect MODBUS/ASCII SLAVE using serial port and make user of MODBUS/TCP MASTER feature using LAN port in PC. This feature enables MODBUS media converter function.</p> <p>MODBUS RTU Connect MODBUS/RTU SLAVE using serial port so that the PC connected to the SerialGate with the Ethernet can be operate as MODBUS/TCP MASTER. By using this function, it will act as a media converter.</p> <p>MODBUS ASCII (Master) This mode is necessary when connecting MODBUS/TCP master to</p>

Menu	Default	Descriptions
		<p>MODBUS/ASCII slave.</p> <p>Connect MODBUS/ASCII slave device to SerialGate.</p> <p>Connect LAN from SerialGate to MODBUS/TCP master to use SerialGate as media converter.</p> <p>SerialGate supports up to 32 MODBUS / ASCII slave connections and supports up to 16 connections per one serial port.</p> <p>MODBUS RTU (Master)</p> <p>This mode is necessary when connecting MODBUS/TCP master to MODBUS/MASTER slave.</p> <p>Connect MODBUS/ASCII slave device to SerialGate.</p> <p>Connect LAN from SerialGate to MODBUS/TCP master to use SerialGate as media converter.</p> <p>SerialGate supports up to 32 MODBUS / MASTER slave connections and supports up to 16 connections per one serial port.</p> <p>User Application</p> <p>A user can run own customized program. In order to run it, a user needs to ask for application development environment to SystemBase.</p>
Interface	RS232	<p>In RS232 model, default is set to RS-232.</p> <p>In ALL model, it is selectable between RS-232, RS-422, RS-485(No-Echo) and RS-485(Echo). Default value is RS-232.</p> <p>In SG-1160/ALL model, it is selectable between RS-232, RS-422, RS-485 (No-Echo) and RS-485 (Echo). Default value is RS-232 and termination can be configured.</p>
Local Socket Port	4001	Set the socket number for the port. TCP server and UDP server operation mode makes use of this port for awaiting network socket connections.
Port Alias	Port1	Name each port for convenience. 16 Characters at maximum.
Baud Rate	9600 bps	Set communication speed (Options: 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600 bps)
Data Bits	8	Set the number of bits in each character size. (Options: 5, 6, 7, 8)

Menu	Default	Descriptions
Stop Bits	1	Set the number of stop bits. (Options: 1, 2)
Parity	None	Set parity bit check scheme. (Options: None, Odd, Even)
Flow Control	None	Set the flow control scheme. (Options: None, Xon/Xoff, RTS/CTS)
Device Type	DataOnly	Set the signal line checking method for the device to be connected to the given serial port. If the mode is set to Data Only, TxD, RxD, and GND signal lines are used in inter-device communication. If the mode is set to Modem Signals, all modem signals except RI (Ring Indicator) are asserted, tested, and used in communication. (Options: Data Only, Modem Signals)
Remote IP Address / Port	0.0.0.0 / 4000	If the Operation Mode is in TCP Client or UDP Client or Pair_Master mode, set the IP address and the socket number to connect to.
Keepalive Check Time	30	When set to '1', network status is check with given time period after socket connection is established. Socket connection will be reset when there is any network issue. (When set to '0', this feature is disabled. When enabled, setting range is from 0 to 32767.) If the value is set to '0', the socket connection is not reset.
Latency Time	0	This needs to be set when consecutive data from the given serial port needs to be transmitted to socket at once. For example, if 100 bytes of character string are to be transmitted from the serial device to a server through SerialGate, bypass is set to 0 for the latency time. Although it provides immediate sending through SerialGate, the server could be received a lot parts of divided packets. If the latency time is not 0, SerialGate will wait for the time and check new data. If there is new data, SerialGate repeatedly wait for the time. Otherwise, SerialGate will transfer the buffered data, but it could not run in real time.

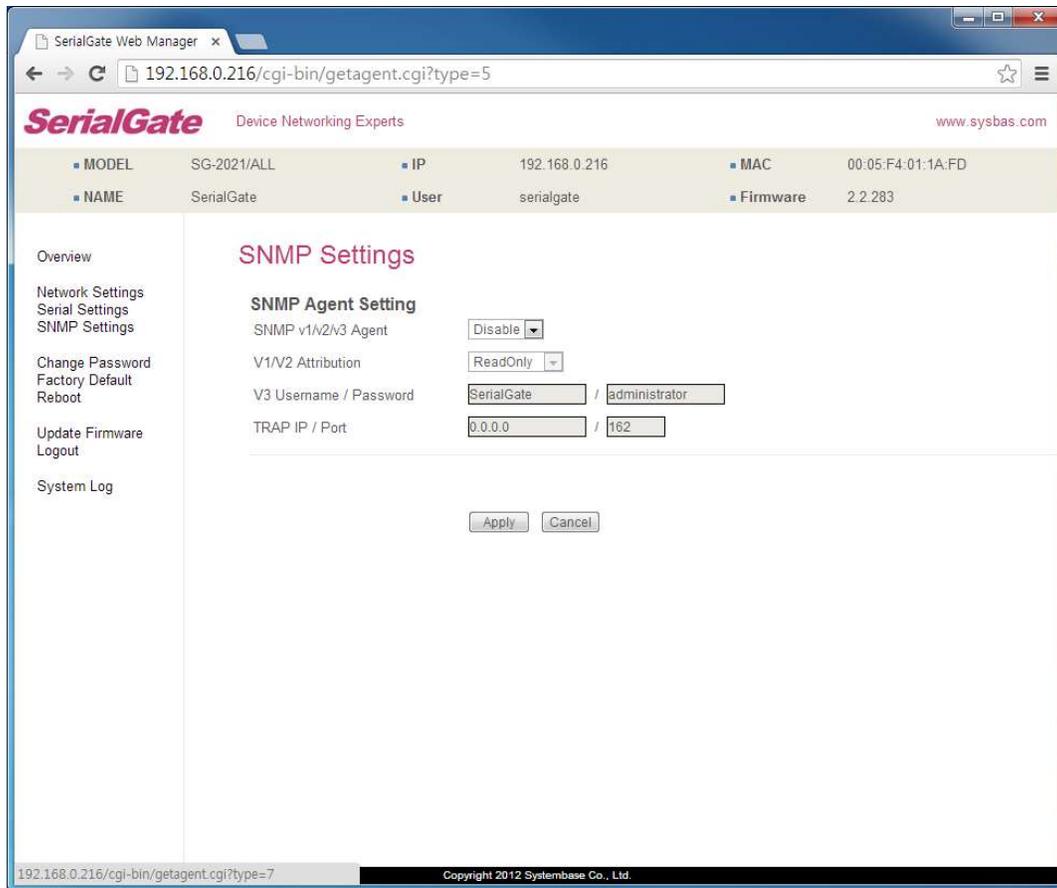
Menu	Default	Descriptions
Maximum Response Time	0	When operating with TCP Multiplex mode, the SerialGate sends a data to the device and waits given amount of time. When there are no reply within the given time, it will send the next data to the device. If the value is set to zero, it will not wait for the reply but send the next available data right away when received.
Low Latency	Enable	Send the data received from the Ethernet to the serial port as soon as possible. When enabled, it takes less time to send the serial data, but will increase the load of the system. When disabled, the load of the system decreases, but will take more time to send the serial data. If it is required to send the data to the serial device with less delay, enable this feature. When sending large amount of data, disable this feature.
Allow New Connection	Disable	When using TCP server mode, this feature allows new connection when enabled. While communicating, if new connection request arrives, the SerialGate will disconnect the current connection and permit the new connection.
TCP Nodelay	Disable	When communicating with TCP, this feature will allow whether to send the data at once using the Ethernet port. If it is disabled, data received from TCP will be sent after they are gathered. It is recommended when using high speed data transmission or packet transmission. If it is enabled, data received from TCP will be sent immediately, allowing less delay in Ethernet and serial communication. However, it is not optimized for high speed communication or packet transmission.
Port Login	Disable	User/Password can be set in TCP Server, TCP Broadcast, TCP Multiplex mode. When 'Port Login' is enabled, 'User/Password' can be modified.
User	none	User/Password can be set in TCP Server, TCP Broadcast, TCP Multiplex mode. When 'Port Login' is enabled, 'User' can be modified.
Password	none	User/Password can be set in TCP Server, TCP Broadcast, TCP Multiplex mode. When 'Port Login' is enabled, 'Password' can be modified.
End of line	CR	When operation mode is set to 'Terminal', this option appears. CR or

Menu	Default	Descriptions
		CR LF can be set here.
Number of TCP Slave	0	Set the number of Modbus TCP Slave connected to the serial port. In SerialGate it supports up to 32 Modbus TCP Slave connections and supports up to 16 Modbus TCP Slave connections per one serial port . If the Operation mode MODBUS RTU / ASCII (Master) , this option appears .
Slave IP / Port	0.0.0.0 / 0	Set the Modbus TCP Slave IP address and Port number. "Number of TCP Slave" option appears if you have set the option to a value different than 1.
Slave ID Range	0 / 0	Set the Modbus TCP slave device ID or the range of IDs "Number of TCP Slave" option appears if you have set the option to a value different than 1. Ex.) 1-1 or 1-3

SNMP Settings

A user can set the communication and operation environment for the SNMP Agent.

After changing values, you need to click **Apply** button. If you don't want to change, you need to click **Cancel** button.



Menu	Default	Descriptions
SNMP v1/v2/v3 Agent	Disable	Enable or disable Simple Network Management Protocol (SNMP) support. (Options : Disable/Enable)
V1/2 Attribution	ReadOnly	SNMP V1/2 Attributes can read and write by SNMP Agent. In order to read attributes only, change the feature to "ReadOnly". In order to read and write attributes, change the feature to "ReadWrite". (Options : ReadOnly/ ReadWrite)
V3 Attribution	ReadOnly	SNMP V3 Attributes can read and write by SNMP Agent. In order to read attributes only, change the feature to "ReadOnly". In order to read and write attributes, change the feature to "ReadWrite". (Options : ReadOnly/ ReadWrite)
V3 Username/ Password	serialgate /administrator	Configure the Username and the password when use SNMP V3. The Password should be at least 8 character string
TRAP IP/ Port	0.0.0.0/162	Configure the server IP address and Port which receive the TRAP information.

Change Password

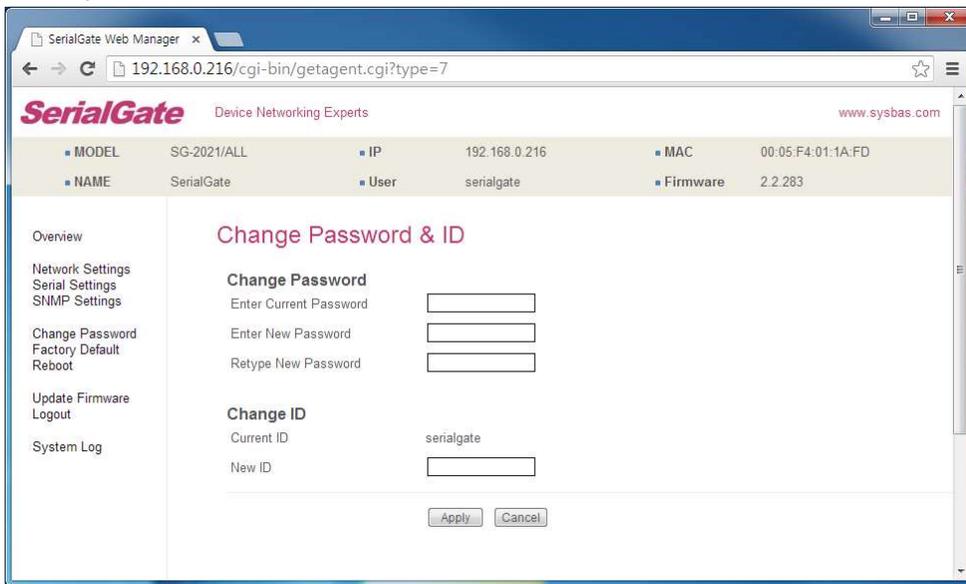
Change username and password for an access to Web and Telnet.

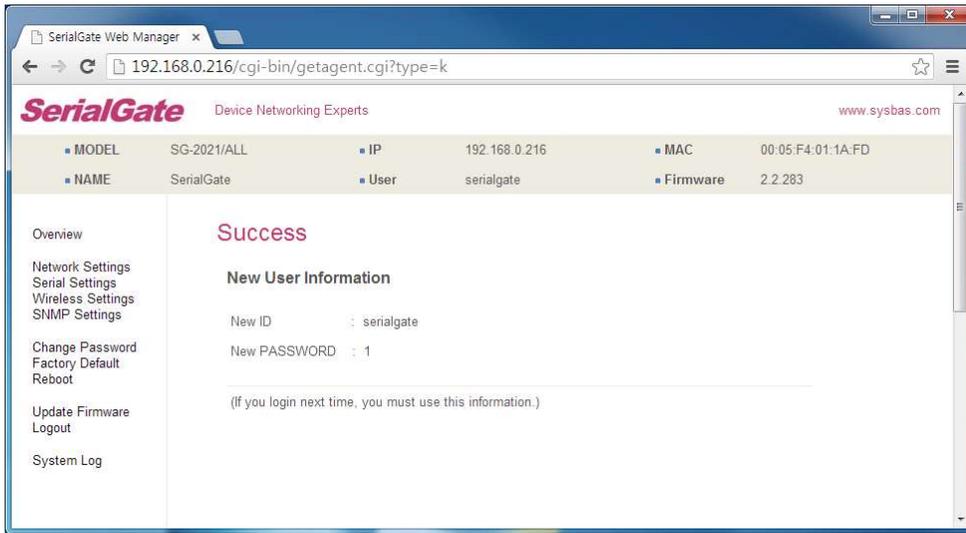
After changing values, you need to click **Apply** button. If you don't want to change, you need to click **Cancel** button.

In case that a user forgot password, press Reset button for less than 3 seconds to restore the settings back to factory default. However, please be aware that all other settings will be initialized and back to factory default.

Default user id : serialgate

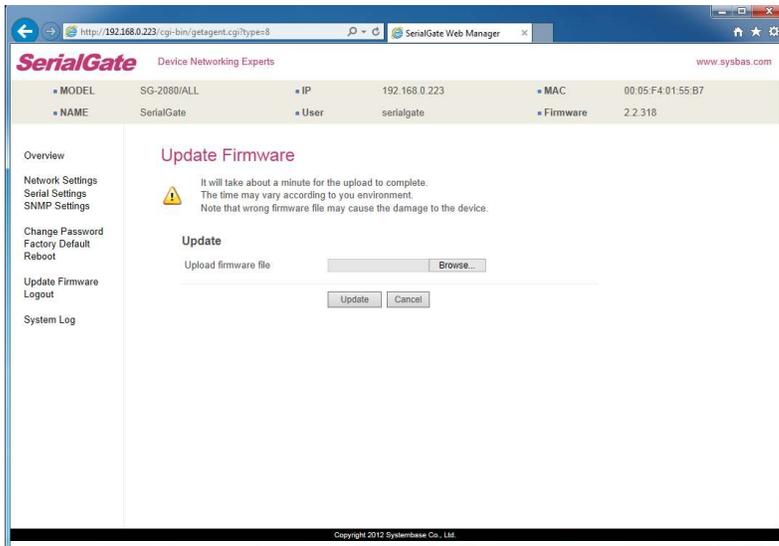
Default password : 99999999



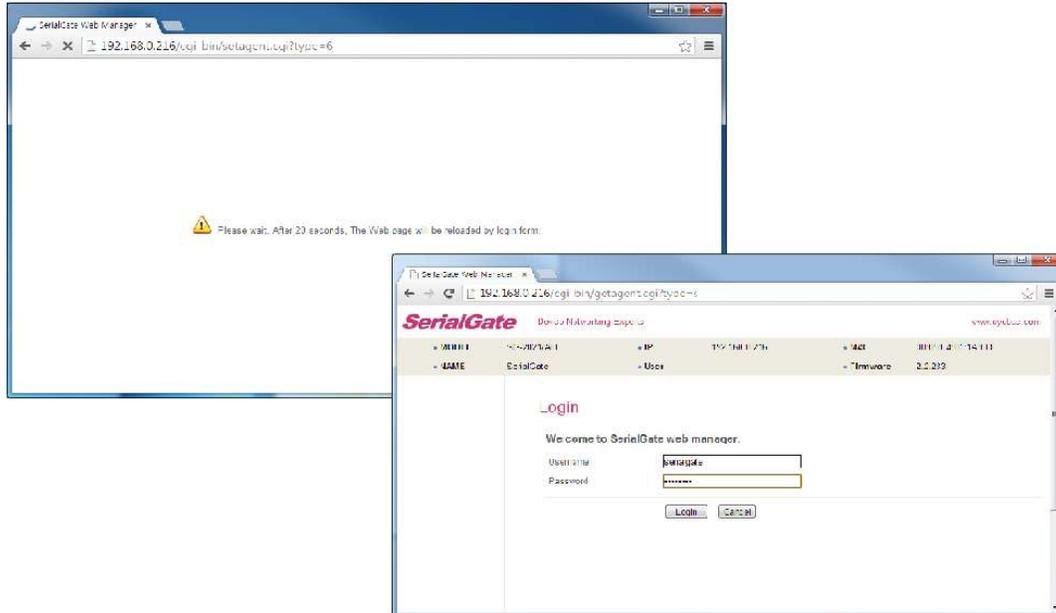


Update Firmware

Firmware is an application embedded in Flash memory of SerialGate. Set the location of the firmware file to update, using the **Browse...** button. The selected firmware will be transferred to SerialGate when you click **Update**.



After the transmission is complete, SerialGate will be automatically restarted to operate with the new firmware. Then your browser is reloaded on the login page.

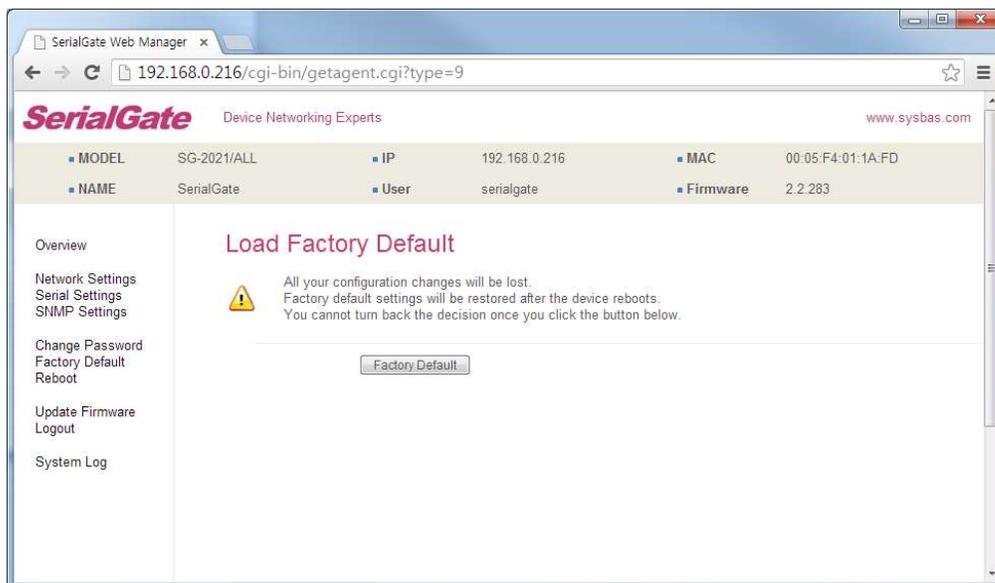


Factory Default

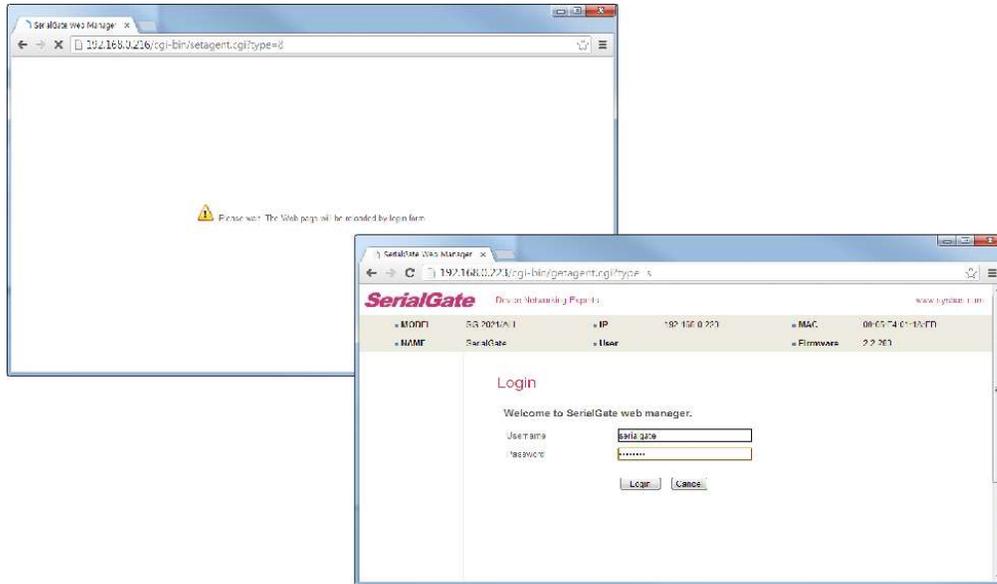
Restore all the configuration parameters to the factory default values. Clicking on 'Restore Factory Defaults' button will delete all current settings and restore settings to the initial status, and SerialGate will automatically reboot.

SG-2011, 2021: Default LAN IP Address 192.168.0.223

SG-204x, 208x, 216x: Default WAN IP Address 192.168.0.223, Default LAN IP Address 10.10.1.1

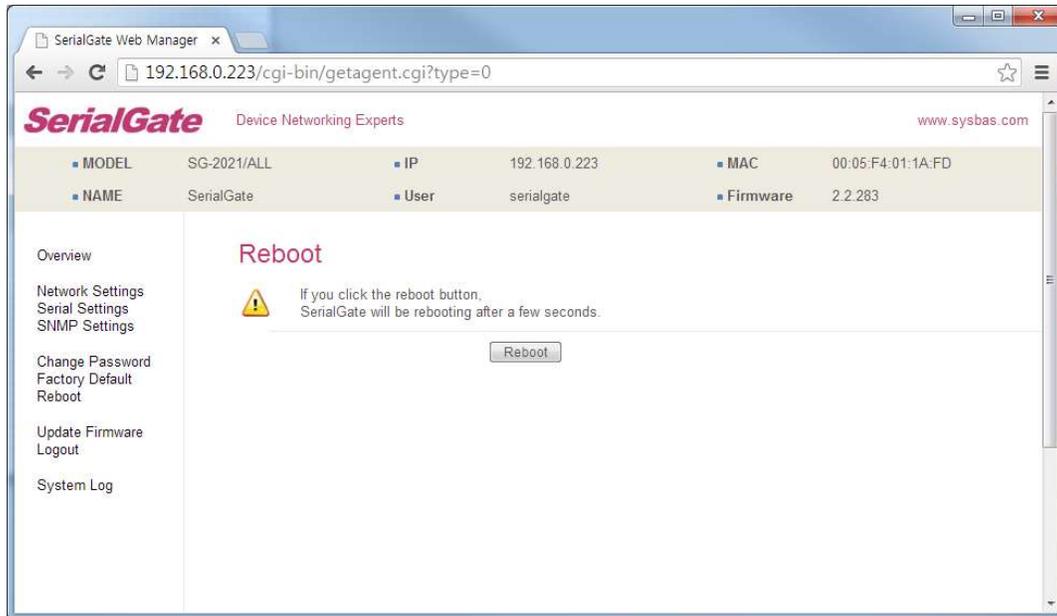


If Factory Default is completed, it shows the initialized IP address, username and password as below, and restarts the device.

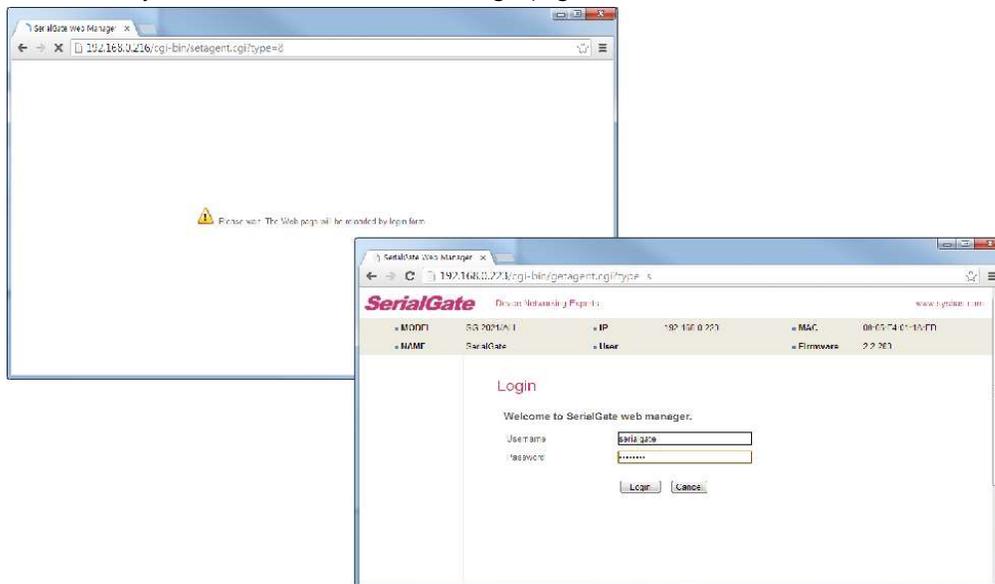


Reboot

This menu provides the reboot function when connected by a web browser.



After reboot, your browser is reloaded on the login page.



System Log

This feature is about system log information. It records the time of the system startup and shutdown, ending time of each port connection, configuration and others.

This feature is only available in **SG-1160** with Secure Digital (SD) card or Multi Media card (MMC) slot in it or **SG-204x/208x/216x** models where there is a microSD card slot in the device.

If the button/coin cell battery is not in the built-in RTC power supply, the default time will be displayed as YYYY-MM-DD HH:MM:SS or "2000-01-01 00:00:00".

Otherwise, if the battery is installed, previous time stored will be shown.

```
C:\W>telnet 192.168.0.223
SerialGate Login : serialgate
Password :99999999
# rtc 2010 7 8 15 0 0 ← Set Current time (Year, Month, Date, Hour, minute,
second)
Thu Jul 8 15:00:00 MDT 2010
Thu Jul 8 15:00:00 MDT 2010
# date ← setting time
Thu Jul 8 15:00:05 MDT 2010 ← Shows time elapsed
# reboot
```

Chapter 6. Configuration via Telnet

Connection

Open your telnet client program and enter the IP address of SerialGate to connect. You need to enter appropriate username and password to login. Please note that this username and password is used as authentication method for Web as well. This means if username or/and password has been modified from the telnet interface, modified values have to be entered to connect to web, and vice versa.

Factory default username : serialgate

Factory default password : 99999999

[def] commands - you can configure settings of SerialGate.

[def help] commands - you can view the use of the **def** command.

After changing values, you can see modified values with **set view** commands. These values are not in effect unless you issue a **def save** command. Changes will be discarded if you do not save current settings.

View Commands

Commands related to View are as follows.

Command	Description
def view	Show all information about SerialGate
def view wan	Show WAN network settings
def view management	Show managing items settings
def view serial	Show serial port settings
def help	Show command list and help

Network Commands

Commands related to configuration of general network environment and network management are as follows.

Command	Default	Description
def mac <Mac Address>	00:05:f4:00:20:57	Modify MAC address
def line [ip/dhcp]	Static IP	How IP is obtained when network is connected.
def ip <IP Address>	192.168.0.223	Display the current IP address If line type is Static IP, manually enter an appropriate IP address. If line type is DHCP, it is not editable. Instead, current IP address is shown.
def mask <Subnet mask>	255.255.255.0	Display the current subnet mask address If line type is Static IP, manually enter an appropriate subnet mask address. If line type is DHCP, it is not editable. Instead, current subnet mask address is shown
def gateway <Gateway address>	192.168.0.1	Display the current Gateway address If the connection type is the static IP, manually enter an appropriate Gateway address. If line type is DHCP, it is not editable. Instead, current

		Gateway address is shown
def dns <IP Address>	168.126.63.1	Set IP address of Domain Name Service
def portviewip <IP address>	0.0.0.0	Configures IP of PC which PortView is installed If IP is set to 0.0.0.0, PortView feature is disabled. (Please refer to PortView User Manual in SerialGate Utility and Documents CD for detailed information.)
def portviewport <Port number>	4000	Set the socket number of a PC which PortView is installed.
def ftp [enable/ disable]	Enable	Enable or disable FTP service. If disabled, you cannot connect to SerialGate via FTP.
def ftp port <Port number>	21	Set the port number of FTP Server. To change the port number and apply it, you need to save and reboot.
def telnet [enable/ disable]	Enable	Enable or disable Telnet service. If disabled, you cannot connect to SerialGate via Telnet.
def telnet port <Port number>	23	Set the port number of Telnet Server. To change the port number and apply it, you need to save and reboot.
def web [enable/ disable]	Enable	Enable or disable Web service. If disabled, you cannot connect to SerialGate via Web.
def web port <Port number>	80	Set the port number of WEB Server. To change the port number and apply it, you need to save and reboot.
def ssh [enable/ disable]	Disable	Enable or disable SSH service. If enabled, you can connect to SerialGate via SSH.
def ssh port <Port number>	22	Set the port number of SSH Server. To change the port number and apply it, you need to save and reboot.
def name [SerialGate name]	Product Name	Set the name of SerialGate. (Max 32 bytes)
def snmp [enable/ disable]	Disable	Enable or disable SNMP (Simple Network Management Protocol) - MIB-II (RFC 1213): System, Interface, IP, ICMP, TCP, UDP - MIB-I (RFC 1317): Serial Interface
def v1readwrite [enable, disable]	Disable	SNMP V1/2 Attributes can read and write by SNMP Agent. In order to read attributes only, change the feature to "ReadOnly."

		In order to read and write attributes change the feature to "ReadWrite." (Options : ReadOnly/ ReadWrite)
def v3readwrite [enable, disable]	Disable	SNMP V3 Attributes can read and write by SNMP Agent. In order to read attributes only change the feature to "ReadOnly." In order to read and write attributes change the feature to "ReadWrite." (Options : ReadOnly/ ReadWrite)
def v3username [string]	serialgate	Configure the Username to use SNMP V3.
def v3password [string]	none	Configure the password to use SNMP V3.
def trapip [address]	0.0.0.0	Configure the server IP address which transmits the TRAP information.
def trapopr [Socket No.]	162	Configure the server Port which transmits the TRAP information.
def acc [0~15] policy	0	Set the number of policies to which the IP Access policy applies.
def acc [1~15] ip [IP Address]	0.0.0.0	Set the IP address to which the IP Access policy applies. 0.0.0.0: IP not applied ex) To block/allow 192.168.0.100 def acc 1 ip 192.168.0.100
def acc [1~15] range [IP Address]	0.0.0.0	Set the IP address range to which the IP Access policy applies. 0.0.0.0: IP not applied ex) To block/allow 192.168.0.100~192.168.1.102 def acc 1 ip 192.168.0.100 def acc 1 range 192.168.1.102
def acc [1~15] state [accept/deny]	deny	Accept or deny the access by IP Access Policy. accept: allow, deny: block
def acc [1~15] telnet [0/1]	0	Apply the IP Access Policy to the Telnet port. 0: not apply, 1:apply
def acc [1~15]	0	Apply the IP Access Policy to the ftp port.

ftp [0/1]		0: not apply, 1:apply
def acc [1~15] web [0/1]	0	Apply the IP Access Policy to the web port. 0: not apply, 1:apply
def acc [1~15] ssh [0/1]	0	Apply the IP Access Policy to the ssh port. 0: not apply, 1:apply

Serial Commands

You can set the communication and operation environment for serial port. Please refer to **Chapter 5** for details of each option.

Commands	Default	Description
def port x protocol [disable, com_redirect, rfc2217 terminal tcp_server, Tcp_client, tcp_broadcast, Tcp_multiplex, udp_server, udp_client, pair_master, pair_slave, modbus_ascii, modbus_rtu, master_ascii, master_rtu, user]	rfc2217	Select the operation protocol to be used in serial port.
def port x interface [rs232, rs422, rs485ne,	RS232,	Configure interface of serial port. It is not available for RS232 model. Combo model can choose from RS-422, RS-485-No-Echo and RS-485-Echo.

Commands	Default	Description
rs485e]		SG-1160/ALL can choose from RS-232, RS-422 and RS-485.
def port x socket <port number>	4001	Set the socket number for the port. Com_redirect, TCP Server, TCP Multiplex, TCP Broadcast, UDP Server, Pair_Slave modes make use of this port for awaiting network socket connections.
def port x name <name>	Port 1	Name each port for convenience. 16 Characters at maximum
def port x speed [150/300/600/1200/2400/4800/9600/19200/38400/57600/115200/230400/460800/921600]	9600bps	Set communication speed.
def port x data [5 / 6 / 7 / 8]	8	Set the number of bits in each character size.
def port x stop [1 / 2]	1	Set the number of stop bits.
def port x parity [none/odd/even]	none	Set parity bit check scheme.
def port x flow [none/xon/rts]	none	Set the flow control scheme.
def port x signal [data/modem]	data	Set the signal line checking method for the device to be connected to the given serial port.
def port x remote <IP address>	0.0.0.0	Set IP address of the server to be connected in TCP Client, UDP Client, Pair_Master mode.
def port 1 remoteport <socket number>	4000	Set the socket number to connect to when the Operation Mode is set to TCP Client or UDP Client or Pair_Master mode.
def port x keepalive <0 ~ 65535>	30	When set to '1', network status is check with given time period after socket connection is established.
def port x latency <msec>	0	This needs to be set when consecutive data from the given serial port needs to be transmitted to socket at once.
def port x login <Enable/Disable>	Disable	When the Operation Mode is set to TCP Server, ask for the username and password when the client tries to connect.

Commands	Default	Description
def port x loginname <username>	None	When the Operation Mode is set to TCP Server, set the username to ask for(Max 8 bytes)
def port x loginpass <password>	None	When the Operation Mode is set as TCP Server, set the password to ask for(Max 8 bytes)
def port x termination <Enable/Disable>	Disable	Set termination for each port.
def port x nodelay <enable/disable>	Disable	Set the TCP no_delay option for each port.
def port x slaveno <0 ~ 16>	0	Set the number of Modbus TCP Slave connected to the serial port. SerialGate supports up to 32 Modbus TCP slave connections and supports up to 16 Modbus TCP slave connections per one serial port .
def port x slaveip <slave number> <slave ip number>	0.0.0.0	Set Modbus TCP IP address corresponding to the < slave number>
def port x slaveport <slave number> <slave port number>	0	Set Modbus TCP port number corresponding to the < slave number>
def port x slaveid <slave number> <start id> <end id>	0	Set the Modbus TCP slave device ID or the range of IDs corresponding to the <slave number >

Username/Password Commands

Configure username and password for Web Manager/Telnet/FTP.

Commands	Default	Descriptions
def username <username>	serialgate	Set username to use in the web manager, Telnet, or FTP. 16 characters at maximum.
def password <password>	99999999	Set password to use in the web manager, Telnet, or FTP. 16 characters at maximum.

System Commands

Commands	Descriptions
def default	Restore all settings to factory default. Requires reboot for changes to take effect.
def apply	Save and apply changed settings.
Reboot	Reboots SerialGate.

Chapter 7. Configuration via LCD

This feature is for SG-2xx0 model only.

Through the LCD on the front panel, a user is able to test operation of each interface and configuration. By default, the LCD displays communication status of each port, and by operating the keys next to the LCD, the interface can be tested.

LCD and Key Operation

The LCD screen can display 16 characters with 2 lines. Four buttons are there to configure the operating environment.

The function of each key is as follows.

Key	기능
MENU / OK	Go to sub-menu from the current menu / Menu entry / Setting mode entry / Set / Select
▲	Go to the previous menu / Move to previous item / Raise the number of IP mode
▼	Go to the next menu / Next item / Reduce the number of IP mode
◀	Go to the high-level menu / Change the settings in the setup mode, or move the cursor to the left
▶	Go to the low-level menu / Menu entry / Setting changes to take effect / Change the settings in the setup mode, or move the cursor to the right

Main Menu

Default screen of the LCD displays the status of each port.

Press ESC to go back to the main menu screen.

Main menu items are as follows.

- STATUS** : Check the status of the SerialGate.
- SETTINGS** : Change the network of the SerialGate.
- UPDATE** : To update the firmware of the SerialGate via micro SD card or USB memory.
- INFO** : Check the basic information of the SerialGate
- REBOOT** : System rebooting

STATUS

Check the status of the device server.

To go to the top menu, use the ◀ button on the device server.

Sub menu	Function	Key Usage
CONNECTIONS	Displays the network connection status of each ports. When the ports are connected, the color of the port number will be reversed and shown in black.	
SERIAL PORTS	Displays the status of the serial ports (TX, RX count, signals, etc.)	▲ : Move to previous serial port ▼ : Move to next serial port
UPTIME	Displays the system uptime	
CPU LOAD	Display the CPU usage	

SETTINGS

Modification of the operating environment of SerialGate is done here.

To configure the settings, use the OK button from the menu to switch from the view mode to edit mode. After any changes are made, use the OK button to quit from the edit mode. Then, use the ► button to move to the top menu to save the changed settings. Select 'YES' to save and apply the settings.

Sub menu	Function	Key Usage
WAN	Configure WAN port	▲ : Move to previous selection
LAN	Configure LAN port	▼ : Move to next selection
SERVICES	Configure/Enable/Disable FTP and TELNET services	► : Apply the change immediately OK : Toggle between View/Edit mode

Menu: WAN

Entries	Option	Default	Key Usage
CONNECTION TYPE	STATIC, DHCP	STATIC	Use ◀ or ▶ to browser the menu
IP ADDRESS	N/A	192.168.0.223	Use ◀ or ▶ to move the cursor.
SUBNET MASK	N/A	255.255.255.0	Use ▲ or ▼ to increase or decrease the number where the cursor is located.
GATEWAY	N/A	192.168.0.254	

Menu: LAN

Entries	Option	Default	Key Usage
NETWORK BRIDGE	DISABLE, ENABLE	DISABLE	Use ◀ or ▶ to browser the menu
IP ADDRESS	N/A	10.10.1.1	Use ◀ or ▶ to move the cursor.
SUBNET MASK	N/A	255.255.255.0	Use ▲ or ▼ to increase or decrease the number where the cursor is located.

Menu: SERVICES

Entries	Option	Default	Key Usage
WEB Service	DISABLE, ENABLE	ENABLE	Use ◀ or ▶ to browser the menu
TELNET Service		ENABLE	
FTP Service		ENABLE	
SSH Service		DISABLE	

UPDATE

Update the firmware of the SerialGate.

From this menu, the users can use a USB memory stick or micro SD memory card to update the firmware. When a correct firmware file is detected at the root of a micro SD or USB memory stick, the SerialGate will alert the users with a beep sound. After the beep, go to this menu to check all the available files that the users can choose from. The users can use ▲ or ▼ buttons to choose the file they wish to update the SerialGate. After the selecting the firmware file, use the OK button to start the update process.

When this menu is used to update the firmware, the system will not reboot automatically. Use the REBOOT from the menu to restart the SerialGate.

INFO

Display model name and firmware version of the SerialGate.

REBOOT

Reboots the SerialGate.

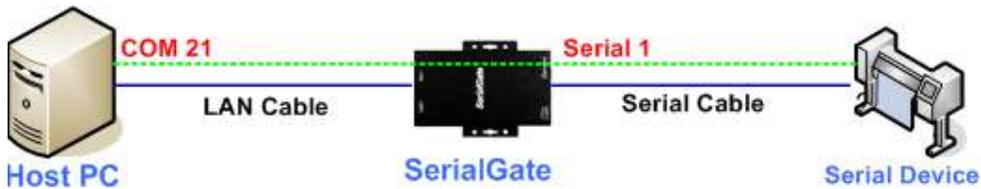
Chapter 8. Application

SerialGate can be used in many practical applications in various fields.

RFC-2217(Serial IP Redirector)

With Serial IP Redirector, a user can use a serial port connected to SerialGate on the network as if it is a serial port in the PC.

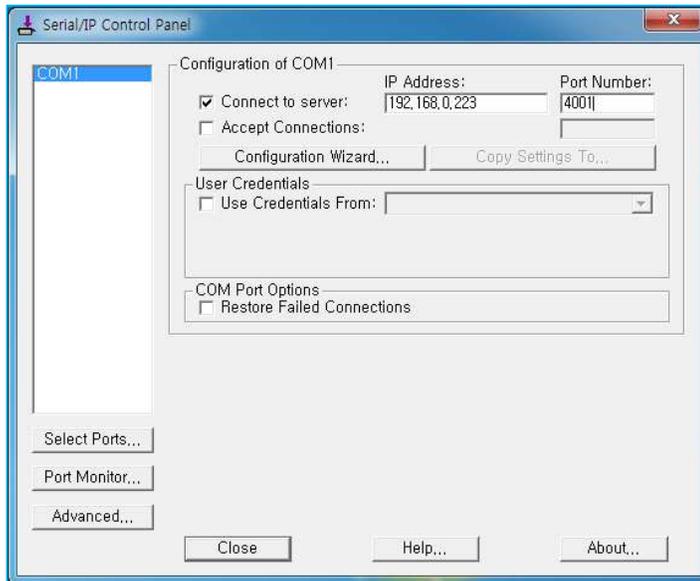
(v4.9.6 maximum speed: 460.8Kbps, v4.9.10 maximum speed: 921.6Kbps)



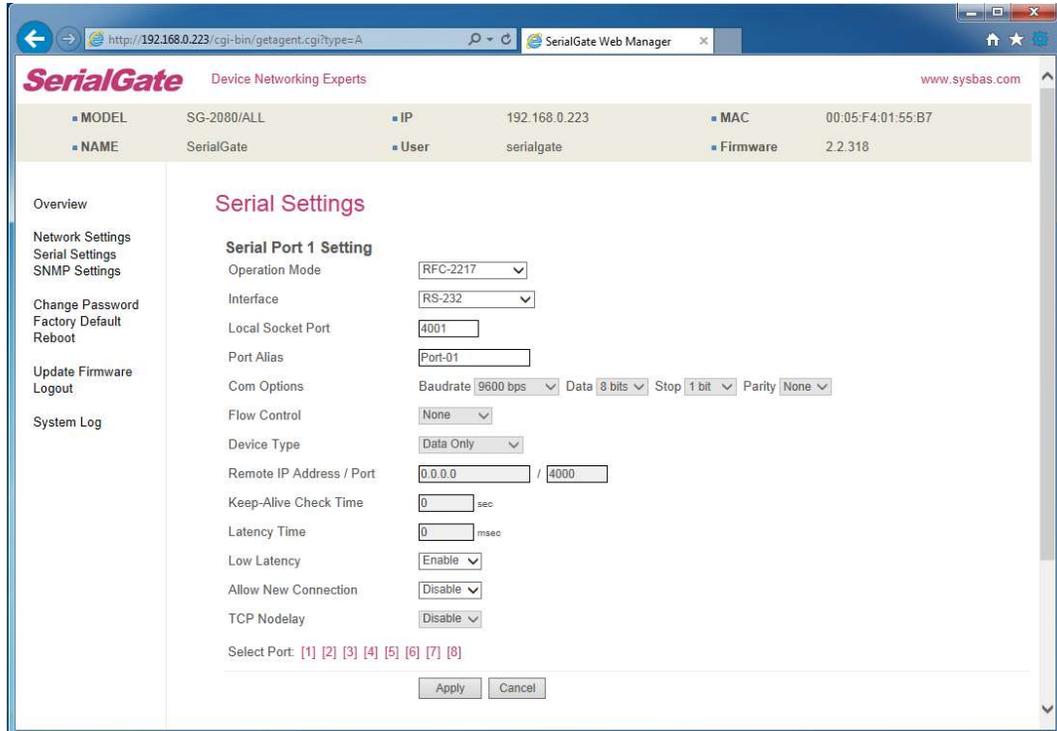
Install Serial IP Redirector (RFC-2217) and set as the following.

For installation, please refer to RFC-2217 (Serial IP Redirector) manual included in the CD.

In the picture below, the IP address of SerialGate is 192.168.0.223, and the first serial port is going to be used. A user can open COM1 port and use the serial device connected to the SerialGate.

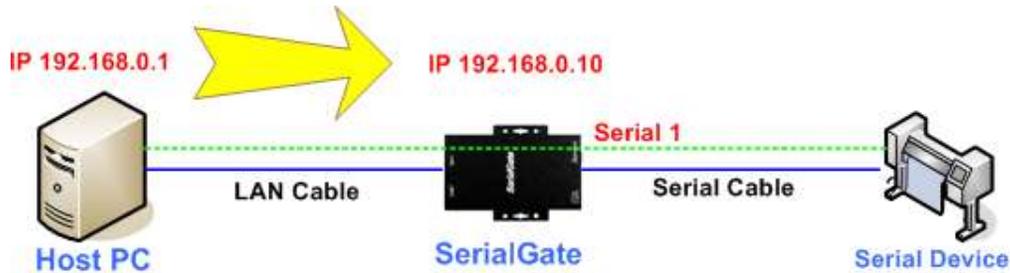


In order to correspond to the Redirector setting of PC, change the setting in the first serial port of SerialGate as follows.



TCP_Server (TCP/IP connection from PC to SerialGate)

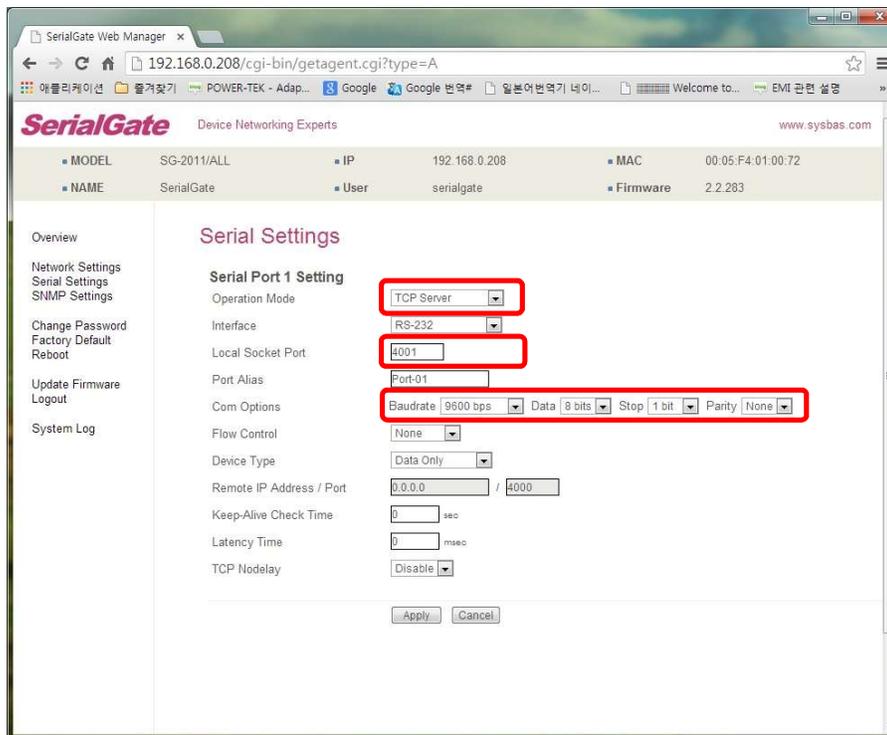
From the socket program in the PC, connect the first serial port of SerialGate with a socket.



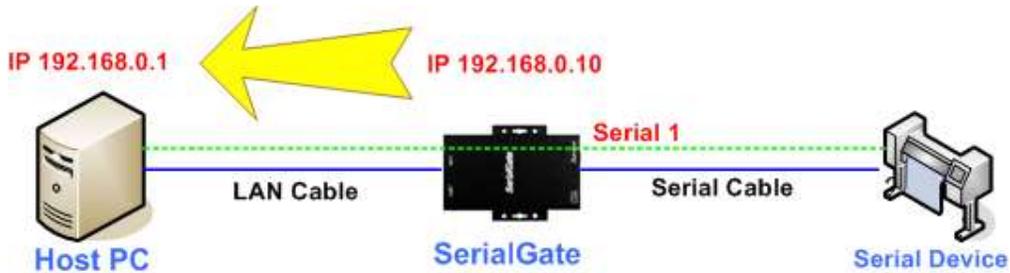
Since socket number for the first port of SerialGate is 4001 by default, try to connect to SerialGate IP address and 4001 socket number when connecting from a PC.

As shown below, change the operation mode to TCP_Server and check the socket number waiting for connection.

Check the communication speed of a serial device to be connected to the serial port, and set it to Com Specification.

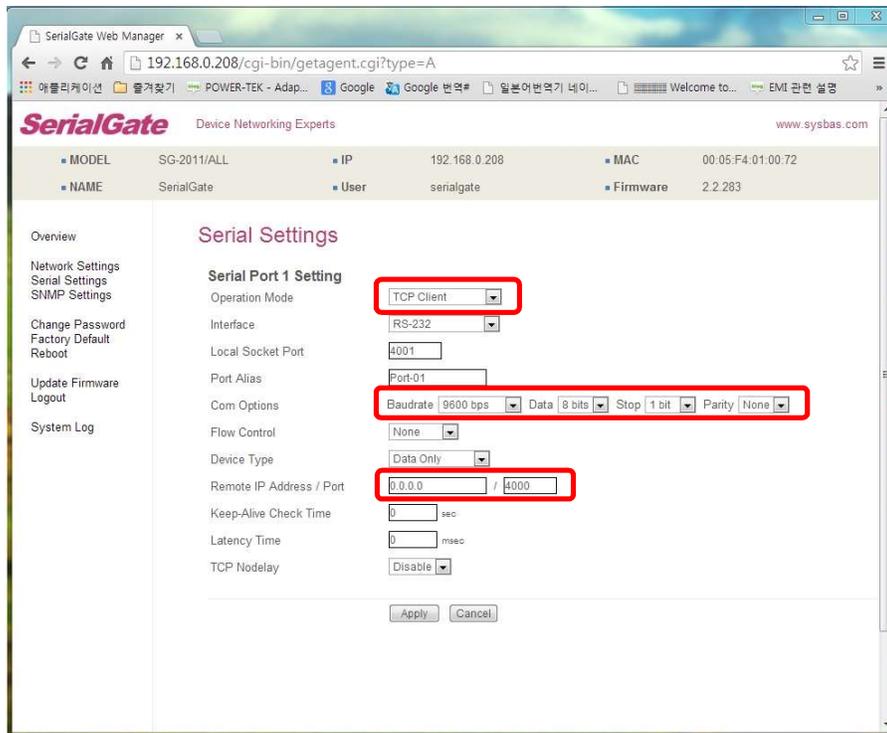


TCP_Client (TCP/IP Connection: SerialGate to PC)



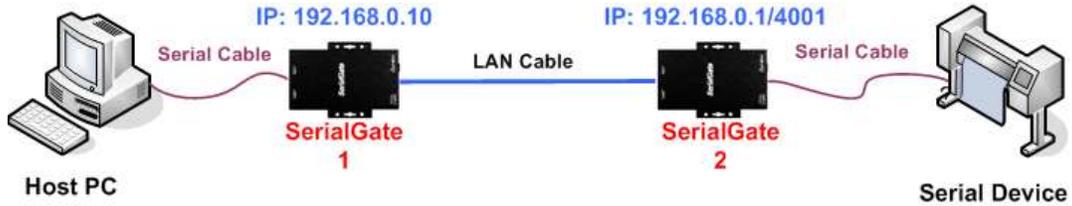
Since it is a connection from SerialGate to a PC, change the operation mode to TCP_Client and register IP address and socket number of the PC that you want to connect.

Check the communication speed of the serial device connected to the serial port in the SerialGate, and set it in the "Com Options".



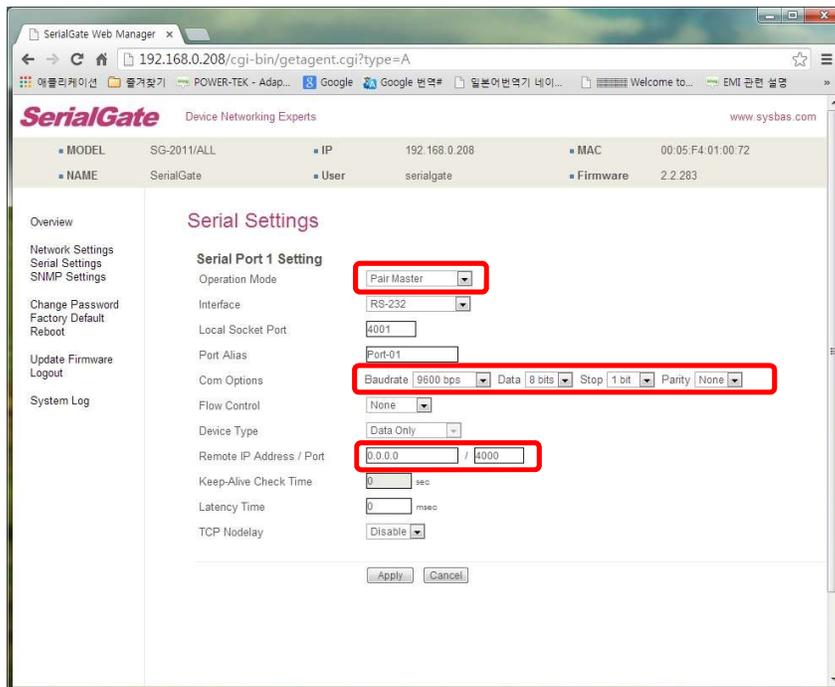
Pairing (Serial Line to Serial Line)

This is mainly used when the cable length between the PC and a serial device is short so a user needs to extend the communication distance. This approach consists of two SerialGates connected in pair.



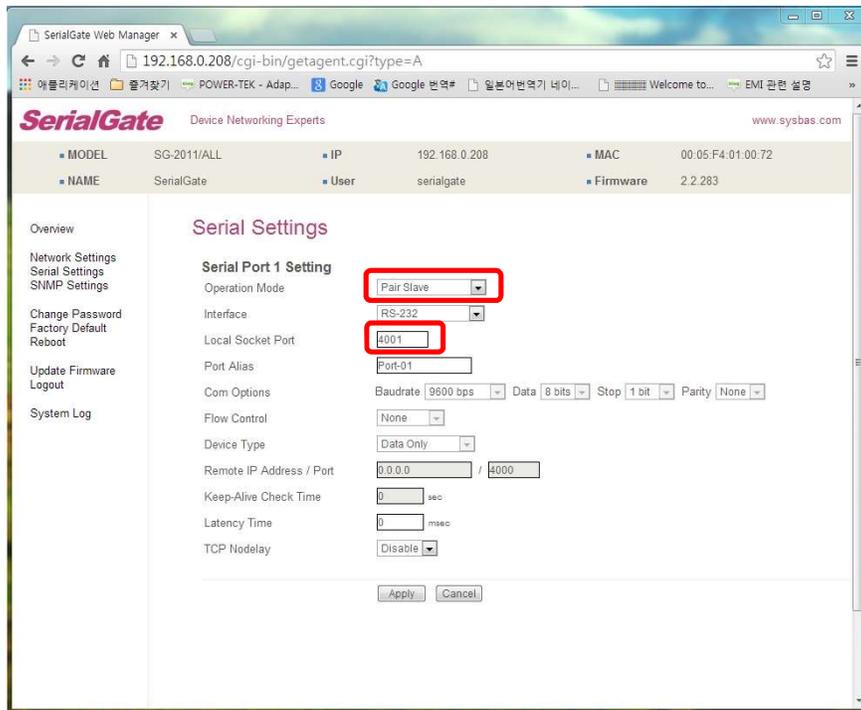
Setting for SerialGate 1

In order to perform master features, change operation mode to Pari_Master. Check the communication speed of a PC and set it in "Com Options", and also register the target SerialGate IP address and port number in Remote IP/Port.



Setting for SerialGate 2

In order to wait for master connection, set the operation mode to Pari_Slave and register the socket number to be connected in local socket port.



Chapter 9. Appendix

Troubleshooting

This section describes procedures for troubleshooting problems you may encounter with SerialGate.

Troubleshooting Installation Problems

If you cannot access the connected serial device via SerialGate, first check the network connection and cabling.

- Check the physical cabling to ensure all cables are plugged in (Ethernet and DB-9/DE-09 serial cable)
- If the appropriate LEDs are not illuminated, then there is probably a bad 10baseT or 100baseTX cable, or the hub port is bad. If possible, try a different cable and hub port, or try connecting a different device to the cable.
- Verify that you are using the correct values for both IP Address and Port Number.
- If you are using a hub, verify that the hub port is operating correctly by trying SerialGate on a different port.

Troubleshooting Network Configuration Problems

- If you are using TCP/IP, make sure that your computer and SerialGate are on the same IP segment or can reach each other with a PING command from the host. The IP address you assign to SerialGate must be on the same logical network as your host computers (e.g., if your computer has an IP address of 192.189.207.3 and the subnet mask of 255.255.255.0, SerialGate should have an IP address of 192.189.207.x, where x is an integer between 1 and 254), or you must properly configure your router address to work with SerialGate.
- If your Device Server is set to Auto or DHCP for obtaining an IP Address, it is possible that the IP address of SerialGate can change. Either configure your DHCP server to give SerialGate a permanent lease, or configure SerialGate to be on a STATIC IP address outside the scope of the DHCP addresses.

- The problem may be the result of mismatched or duplicate IP addresses. Verify that the IP address is correctly loaded into SerialGate (via the displayed or printed configuration information or through the remote console), and make sure that no other nodes on the network have this address (duplicate addresses are the biggest cause of TCP/IP connectivity problems). If the IP address is not correct, then check whether the loading procedure was properly executed.
- Also verify that the host computer and SerialGate are using the same subnet masks (for example, if SerialGate has a subnet mask of 255.255.255.0, the host must have the same subnet mask) or that the router is properly configured to pass data between the two devices.
- If the wrong IP address is loaded, check your network for DHCP server, and make sure that the server is not set up to load wrong IP addresses into SerialGate.

Troubleshooting Windows Problems

- If you are having trouble accessing the connected serial device through Windows, ensure you can ping SerialGate using the command PING x.x.x.x, where x.x.x.x is the IP address of SerialGate. If you cannot ping SerialGate, you will not be able to access the serial device.
- While using Serial IP Redirector (RFC-2217) and encountered a problem, check if the correct virtual COM port is being used. Make sure that the COM port settings are configured properly from the application software.

Firmware Update using FTP

A user can upload firmware using web browser, FTP, and etc.

- 1) Connect to SerialGate with FTP, using correct username and password. (Default: serialgate, 99999999)
- 2) Issue a command 'bi' for binary file transfer mode. Optionally use 'hash' to see the data transfer mark.
- 3) Issue 'put' command to upload the firmware file.
- 4) After getting a 'Transfer complete' message, issue a command 'bye' to disconnect. Now we are ready to update the firmware.

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Wxxx> ftp 192.168.0.223

Connected to 192.168.0.223
220 Operation successful
User(192.168.0.223:(none)): serialgate ← Default
Password:99999999 ← Default
ftp>bi
ftp>ha
ftp>put c:\Wsg.bin ←choose the firmware and upload
200 Operation successful
150 Ok to send data
#####
#####
#####
#####
226 Operation successful
ftp: 2214352 bytes sent in 0.86Seconds 2577.83bytes/sec.
ftp>bye
```

- 5) Connect to SerialGate via Telnet, using correct username and password. (Default: eddy, 99999999)
- 6) After the login, you are already at the default directory where the firmware resides. Update can start right away.

- 7) Issue a command **ls** to make sure firmware files are both successfully uploaded.
- 8) Use 'upgrade' command to write this file into the flash memory in SerialGate. The upgrade application automatically detects whether the given firmware is a kernel or a file system.
- 9) Usage: Upgrade <firmware name> (Filename is case-sensitive.)
- 10) Make sure 'Flash Write OK' and 'Flash Verify OK' messages are displayed.
- 11) Enter 'reboot' to restart SerialGate. Now SerialGate will run with the new firmware.

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Wxxx> telnet 192.168.0.223
SerialGate login: serialgate ← Default
Password: 99999999 ← Default
# upgrade sg.bin ←upgrade to the firmware uploaded to FTP
Version info: 2.0.109
Erase = 2214352 Bytes (34 blocks), info.erasesize = 65536
Erasing...
2214352 (2214352 bytes)
Flash Write OK

Verifying .....
Flash Verify OK
Total 20 second(s) was taken
Update Complete
# reboot
```

Product Specification

Communication (Ethernet)

LAN Port	SG-2011R Series SG-2011D Series SG-2021R Series SG-2021D Series	1 port of 10/100Mbps RJ-45
	SG-204xR Series SG-204xD Series SG-208xR Series SG-208xD Series SG-216xR Series	2 ports of 10/100Mbps RJ-45
Network Connection	Static IP, Dynamic IP	

Communication (Serial)

Mode & Number of Ports	SG-2011R Series	1 Port RJ-45 (RS232 or RS232/RS422/RS485)
	SG-2011D Series	1 Port DB-9 (RS232 or RS232/RS422/RS485)
	SG-2021R Series	2 Ports RJ-45 (RS232 or RS232/RS422/RS485)
	SG-2021D Series	2 Ports DB-9 (RS232 or RS232/RS422/RS485)
	SG-204xR Series	4 Ports RJ-45 (RS232 or RS232/RS422/RS485)
	SG-204xD Series	4 Ports DB-9 (RS232 or RS232/RS422/RS485)
	SG-208xR Series	8 Ports RJ-45 (RS232 or RS232/RS422/RS485)
	SG-208xD Series	8 Ports DB-9 (RS232 or RS232/RS422/RS485)
	SG-216xR Series	16 Ports RJ-45 (RS232 or RS232/RS422/RS485)
Speed	Max 921.6kbps	
Data bit	5, 6, 7, 8	
Stop bit	1, 2	
Parity bit	None, Even, Odd	
Flow Control	RTS/CTS, XON/XOFF	
Signals	RS232: TXD, RXD, DTR, DSR, CTS, RTS, DCD RS422: TXD+, TXD-, RXD+, RXD- RS485: TRXD+, TRXD-	

Hardware (Electrical)

Power Supply	SG-2011 Series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 2W
	SG-2021 Series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 2.8W
	SG-2040 Series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 3.6W
	SG-2041 Series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 3.6W
	SG-2080 Series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 4.5W
	SG-2081 Series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 4.5W
	SG-2160 series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 7.2W
	SG-2161 series	12 ~ 48VDC Adapter or Terminal Block Power Consumption: 7.2W
u-SD CARD	SG-204x Series SG-208x Series SG-216x Series	u-SD Card Support (Maximum 32GB)
ESD Protection	±15kV ESD (HBM), IEC 61000-4-4, IEC 61000-4-5 Protection Support	
Indicator LED	Power, Serial, Ready, Link, Serial Communication Traffic Indicator	

Hardware (Physical)

Dimension	SG-2011 Series	75.8(W) x 83.6(L) x 28.4(H)mm
	SG-2021 Series	101.7(W) x 83.6(L) x 26.8(H)mm
	SG-204x, 208x, 216x Series	237.0(W) x 143.6(L) x 48.7(H)mm
Weight	SG-2011RIL/ALL	163.8g
	SG-2011DIL/ALL	166.6g
	SG-2011RIL/232	159.4g
	SG-2011DIL/232	163.2g
	SG-2021RIL/ALL	191.1g
	SG-2021DIL/ALL	199.4g
	SG-2021RIL/232	190.8g
	SG-2021DIL/232	198.8g
	SG-2040RCL/ALL	965.5g
	SG-2041RIL/ALL	955.4g
	SG-2040DCL/ALL	964.8g
	SG-2041DIL/ALL	963.8g
	SG-2040RCL/232	963.6g

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	SG-2041RIL/232	946.6g
	SG-2040DCL/232	965.0g
	SG-2041DIL/232	955.0g
	SG-2080RCL/ALL	976.8g
	SG-2081RIL/ALL	966.8g
	SG-2080DCL/ALL	1040.3g
	SG-2081DIL/ALL	1029.6g
	SG-2080RCL/232	975.3g
	SG-2081RIL/232	965.3g
	SG-2080DCL/232	1040.1g
	SG-2081DIL/232	1028.1g
	SG-2160RCL/ALL	1058.8g
	SG-2161RIL/ALL	1048.9g
SG-2161RCL/232	1059.2g	
SG-2161RIL/232	1047.9g	
Operation Temperature	Industrial Grade	-40 ~ 85°C
	Commercial Grade	0 ~ 70°C
Humidity	5 ~ 95% (non-condensing)	

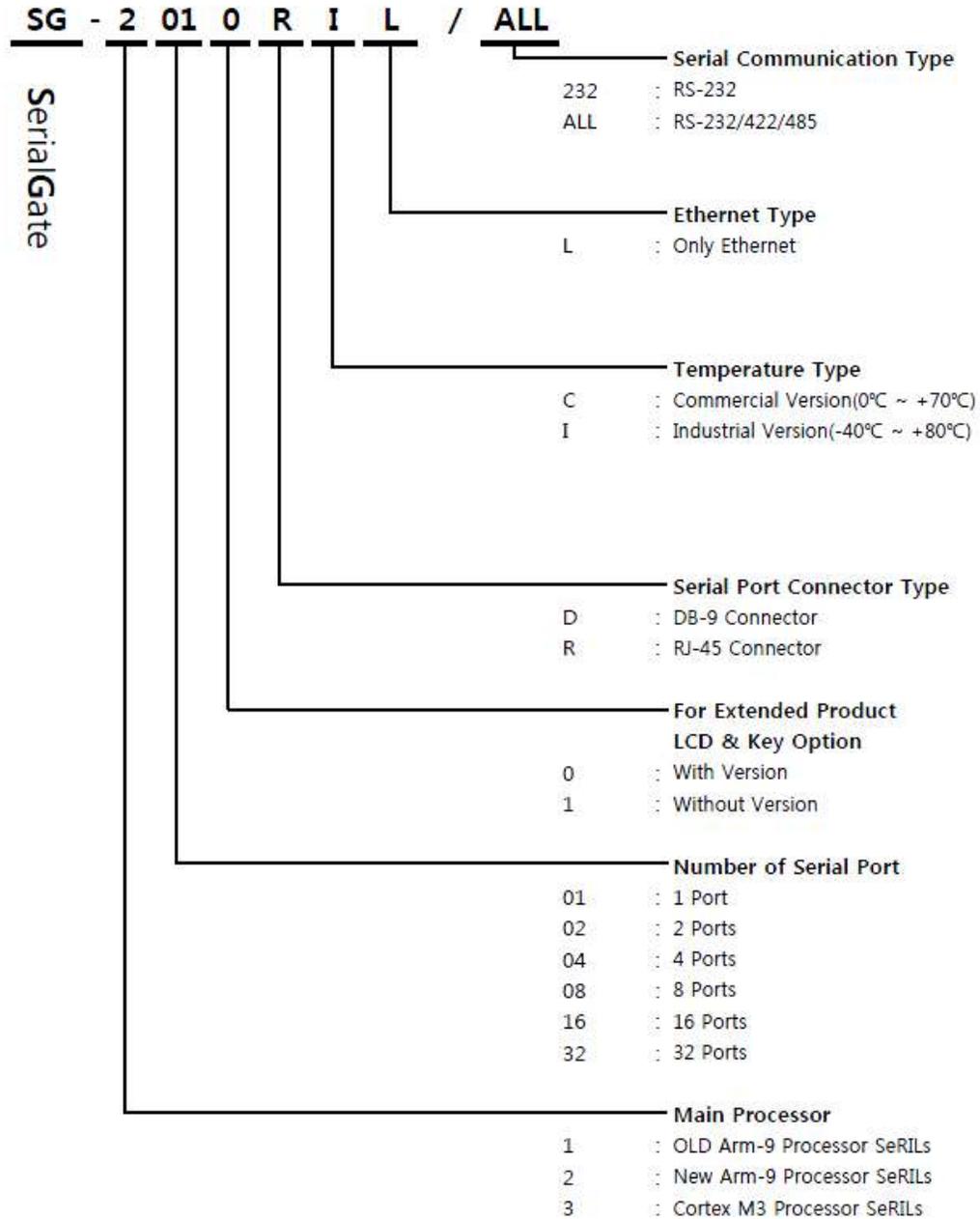
Reset Button

Feature	Action	Result
Warm Booting	Press for less than 3 sec.	SerialGate reboots
Factory Default	Press for 3 sec. or more.	Restores the factory default setting

Software

Protocol	TCP, UDP, Telnet, ICMP, DHCP, TFTP, HTTP, SNMP 1/2/3, SSH, SSL, Modbus TCP RTU/ASCII
Management Tool	PortView, SNMP, TestView
Configuration	Web, SSH, Telnet, SGConfig
Security	SSH

Ordering Information



1 Port Series	
SG-2011RIL/232	1 Port RJ-45 Port, RS232, Industrial, Ethernet
SG-2011RIL/ALL	1 Port RJ-45 Port, RS232/422/485, Industrial, Ethernet
SG-2011DIL/232	1 Port DB-9 Port, RS232, Industrial, Ethernet
SG-2011DIL/ALL	1 Port DB-9 Port, RS232/422/485, Industrial, Ethernet
2 Ports Series	
SG-2021RIL/232	2 Port RJ-45 Port, RS232, Industrial, Ethernet
SG-2021RIL/ALL	2 Port RJ-45 Port, RS232/422/485, Industrial, Ethernet
SG-2021DIL/232	2 Port DB-9 Port, RS232, Industrial, Ethernet
SG-2021DIL/ALL	2 Port DB-9 Port, RS232/422/485, Industrial, Ethernet
4 Ports Series	
SG-2040RCL/232	4 Port RJ-45 Port, RS232, Commercial, Ethernet, LCD
SG-2040RCL/ALL	4 Port RJ-45 Port, RS232/422/485, Commercial, Ethernet, LCD
SG-2040DCL/232	4 Port DB-9 Port, RS232, Commercial, Ethernet, LCD
SG-2040DCL/ALL	4 Port DB-9 Port, RS232/422/485, Commercial, Ethernet, LCD
SG-2041RIL/232	4 Port RJ-45 Port, RS232, Industrial, Ethernet
SG-2041RIL/ALL	4 Port RJ-45 Port, RS232/422/485, Industrial, Ethernet
SG-2041DIL/232	4 Port DB-9 Port, RS232, Industrial, Ethernet
SG-2041DIL/ALL	4 Port DB-9 Port, RS232/422/485, Industrial, Ethernet
8 Ports Series	
SG-2080RCL/232	8 Port RJ-45 Port, RS232, Commercial, Ethernet, LCD
SG-2080RCL/ALL	8 Port RJ-45 Port, RS232/422/485, Commercial, Ethernet, LCD
SG-2080DCL/232	8 Port DB-9 Port, RS232, Commercial, Ethernet, LCD
SG-2080DCL/ALL	8 Port DB-9 Port, RS232/422/485, Commercial, Ethernet, LCD
SG-2081RIL/232	8 Port RJ-45 Port, RS232, Industrial, Ethernet
SG-2081RIL/ALL	8 Port RJ-45 Port, RS232/422/485, Industrial, Ethernet
SG-2081DIL/232	8 Port DB-9 Port, RS232, Industrial, Ethernet
SG-2081DIL/ALL	8 Port DB-9 Port, RS232/422/485, Industrial, Ethernet

16 Ports Series	
SG-2160RCL/232	16 Port RJ-45 Port, RS232, Commercial, Ethernet LCD
SG-2160RCL/ALL	16 Port RJ-45 Port, RS232/422/485, Commercial, Ethernet LCD
SG-2161RIL/232	16 Port RJ-45 Port, RS232, Industrial, Ethernet
SG-2161RIL/ALL	16 Port RJ-45 Port, RS232/422/485, Industrial, Ethernet