



**Weidmüller** 

## ComServer / Modbus Gateway IE-CS-MBGW-2TX-1COM

(Part number 2682600000)

## User Manual

Edition 1.2

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## 1. Introduction

### 1.1 Overview

IE-CS-MBGW-2TX-1COM is a multi-purpose Serial/Ethernet converter and Modbus TCP/RTU-ASCII protocol gateway and is equipped with one configurable RS232/422/485 port and two Ethernet RJ45 ports (acting like an unmanaged 2-Port switch). The ComServer / Modbus Gateway is designed for industrial applications and fitted with a robust housing.

### 1.2 Device Features

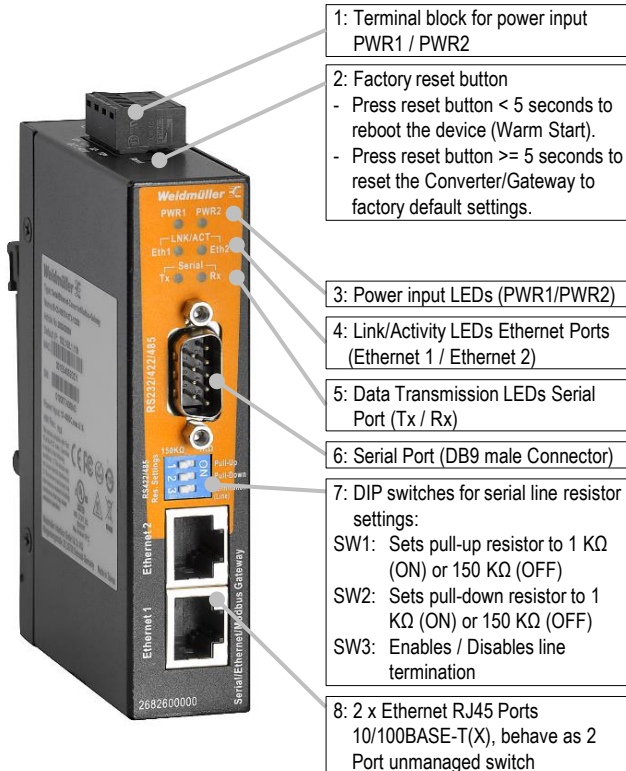
The ComServer / Modbus Gateway supports 6 different operating respective service modes:

- **Virtual COM Mode**      Using this mode a PC-based application - normally communicating to a connected serial device by a physical COM port - can communicate alternatively with a (remote) serial device using an Ethernet based communication via IE-CS-MBGW-2TX-1COM. This mode requires the installation of a virtual COM Port driver on the application PC (Setup via Weidmüller ComServer / Modbus Gateway Utility).
- **TCP Server**      The device is running as a pure media converter between serial and Ethernet Interface. The device waits passively for host computer(s) to establish a TCP/IP connection to exchange data with the connected serial device. Any payload of a TCP packet will be converted into a serial data stream and vice versa.
- **TCP Client**      As TCP Client the ComServer is running as a pure media converter between serial and Ethernet Interface. The device establishes actively a TCP/IP connection to the specified host(s) (TCP Server) to exchange data with the connected serial device. Any incoming serial data will be sent as payload of a TCP packet to the defined TCP Server(s).
- **UDP Server/Client**      In mode UDP Server/Client the device is running as pure media converter between serial and Ethernet Interface. The device can act as UDP Client and UDP Server simultaneously.
- **Modbus Serial Master to TCP Slave Gateway**      In this operation mode the device is running as media and protocol converter (Gateway) between Ethernet-based Modbus TCP and serial Modbus RTU/ASCII devices. This mode allows to integrate Modbus TCP Slaves into a serial Modbus application (RS232/RS485) with a Modbus RTU/ASCII Master.
- **Modbus TCP Master to Serial Slave Gateway**      The device is running as media and protocol converter (Gateway) between Ethernet-based Modbus TCP and serial Modbus RTU/ASCII devices. The function is to access serial Modbus RTU/ASCII Slaves by one or several Ethernet-based Modbus TCP Master(s).



## 2. Hardware Description


### Front View



### Description of LED Indicators

LED	Color	Status	Description
PWR1	Green	On	Power is supplied to power input PWR1.
PWR2	Green	On	Power is supplied to power input PWR2.
Eth1	Green	On	Ethernet Port 1 is connected.
		Blinking	Data is transmitted.
Eth2	Green	On	Ethernet Port 2 is connected.
		Blinking	Data is transmitted.
Rx	Amber	On	Receiving serial data.
Tx	Green	On	Transmitting serial data.

### Pinout of Serial Interface DB-9 Connector

Pin #	RS-232 (DTE Device)	RS-422 <sup>1)</sup>	RS-485 <sup>1)</sup> (4-wire)	RS-485 (2-wire)	
1	DCD	RX-	RX-	DATA-	
2	RXD	RX+	RX+	DATA+	
3	TXD	TX+	TX+	---	
4	DTR	TX-	TX-	---	
5	GND	GND	GND	GND	
6	DSR	---	---	---	
7	RTS	---	---	---	
8	CTS	---	---	---	
9	RI	---	---	---	

**1) Note:** Above table shows the corrected pinouts for RS-422 and RS-485 4-wire interface modes. In previous document V1.0 the assignments for RX-/RX+ and TX-/TX+ were reversed!

### Hardware Specifications

Interfaces	
Ethernet Ports	2 x RJ45 10/100BASE-T(X) auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection
Serial Port	1x DB9 connector (male) • Interface Settings RS-232/422/485 • Baud Rates 110 bps to 460800 bps • Data Bits 7, 8 • Parity odd, even, none, mark, space • Stop Bits 1, 2 • RS-232: Tx, Rx, RTS, CTS, DTR, DSR, DCD, GND • RS-422: Rx-, Rx+, Tx+, Tx-, GND • RS-485 4 wire: Rx-, Rx+, Tx+, Tx-, GND • RS-485 2 wire: Data-, Data+, GND • Flow Control XON/XOFF, RTS/CTS, DTR/DSR
LED Indicators	PWR 1 / 2 (Power supply) Eth 1 / 2 (Ethernet Port Link / Activity) Tx / Rx (Serial Port Data Transmit / Receive)
DIP Switch	SW1: Sets Pull-Up resistor to 1 K $\Omega$ (ON) or 150 K $\Omega$ (OFF) SW2: Sets Pull-Down res. to 1 K $\Omega$ (ON) or 150 K $\Omega$ (OFF) SW3: Enables (ON) / Disables (OFF) Line Termination
Power supply	
Input Voltage	24 V DC (12 to 48 V DC), 2 redundant inputs
Current Consumption	0.05 A – 0.1 A
Connection	One removable 4-pin terminal block, Wiring cable 12-24AWG
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	IP30 protection, metal
Dimension (W x H x D)	26.1 x 110 x 75.2 mm (1.02 x 4.33 x 2.95 inch)
Weight	200 g
Installation	DIN-rail, Wall
Environmental conditions	
Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	up to 2000 m
Regulatory Approvals	
Safety	UL 61010-1; UL 61010-2-201
EMC	EN 55032, EN 55024, FCC Part 15 Subpart B Class A, IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz bis 1 GHz: 3 V/m, IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV, IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV, IEC 61000-4-6 CS: 3 Vrms
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
MTBF	
Time	1.479.078 hrs
Database	Telcordia SR332
Warranty	
Time Period	5 years

**Attention:** For device installation and for Safety notice refer to document 'Hardware Installation Guide' for IE-CS-MBGW-2TX-1COM (Part No. 2682600000). The document can be downloaded from the Weidmüller Online Product Catalogue. Select or search for device name IE-CS-MBGW-2TX-1COM or part number 2682600000 and refer to section 'Downloads'.

## 3. Getting Started

### 3.1 Hardware Installation

- Install and power-up the device according to 'Hardware Installation Guide' for IE-CS-MBGW-2TX-1COM (downloadable from the Weidmüller Online Product Catalogue). Consider the safety notices mentioned in the HIG.

### 3.2 Device Access and Configuration

- IE-CS-MBGW-2TX-1COM has to be configured primarily via Web interface.
- Additionally, some basic configuration settings can be done via the Command Line Interface using a SSH console access. The CLI based configuration provides only limited options in comparison to the full-featured web-based configuration.
- Software 'ComServer / Modbus Gateway Utility' (downloadable from the Weidmüller Online Product Catalogue) can be used for device search (across a switched network) and for installation of a virtual COM-Port driver.

### 3.3 Web Interface Access

- Login credentials (Factory default settings):
  - IP address / Netmask: 192.168.1.110 / 255.255.255.0
  - Username: admin
  - Password: Weidmueller
- Connect the PC to any Ethernet port of the Converter/Gateway and set the PC's IP address to a free one of range 192.168.1.0 / 255.255.255.0.
- Start a Web browser and enter the IP address of the connected device into the browser's address line (<http://192.168.1.110>).
- After the appearance of the prompt (login) enter the login credentials. After successful input of username and password the Converter/Gateway will be displayed.

### 3.4 Console Access via SSH

- Use for SSH console login (eg. via tool PuTTY) the same credentials as for Web interface access.
- Refer to page 37 of this document about short introduction of using the command line interface and the implemented commands.

**Note:** By factory default settings both the Web interface access via HTTP and HTTPS as well as the SSH console access are allowed.

## 4. Web Interface Configuration


- Subsequent pages provide a detailed description about the web menu structure and configuration pages in terms of functional and parameter settings.
- For access to the Web interface any browser can be used. If the device is still set to factory defaults use IP address **192.1.68.1.110** and username **admin** and password **Weidmueller** for login.

#### 4.1 Menu Basic Settings → System Information

Login page providing a system overview showing these parameters.

Description of parameters	
System Name	Shows model name when set to factory default settings. Editable via menu 'Device Description'.
System Description	Shows by factory default a functional description of the device. Editable via menu 'Device Description'.
System Location	Empty by factory default. Editable via menu 'Device Description'.
System Contact	Empty by factory default. Editable via menu 'Device Description'.
Firmware	Running firmware version. Can be updated via menu 'Upgrade Firmware'.
MAC address	Device specific MAC address for identification
Serial Number	Device specific production number for identification
System Uptime	Provides the elapsed time since device start-up or last reboot.

Industrial ComServer / Modbus Gateway  
IE-CS-MBGW-2TX-1COM


  
www.weidmueller.com

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

System Information

System Name:	IE-CS-MBGW-2TX-1COM
System Description:	Industrial Serial-to-Ethernet Converter and Modbus Gateway
System Location	
System Contact	
Firmware Version:	V3.02h
MAC Address:	00-15-7e-1d-0e-8f
Serial Number:	021057A07442
System Uptime:	34 Day(s), 02 Hour(s) 49 Min(s) 10 Sec(s)

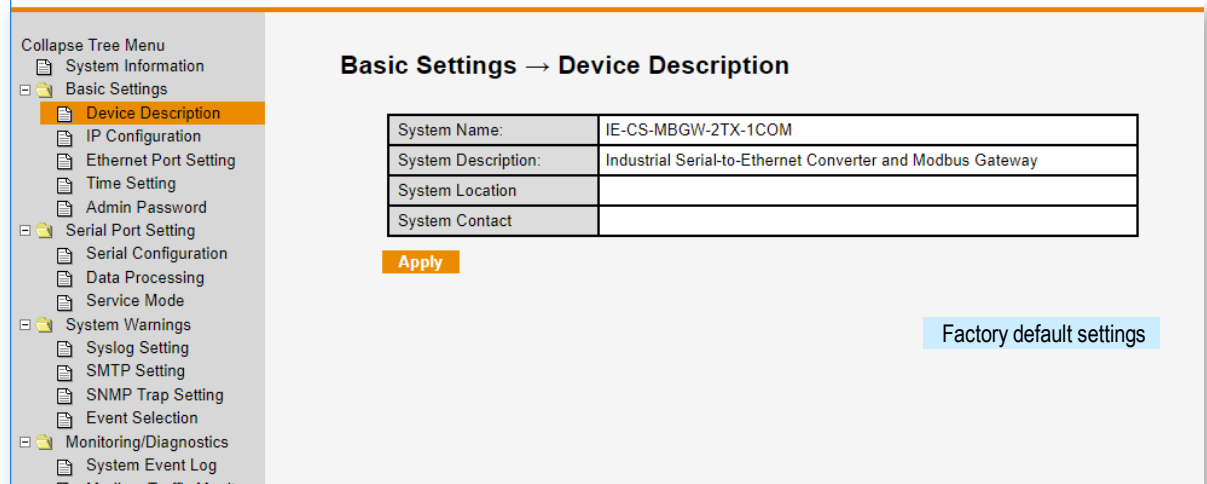
Home page after login



## 4.2 Menu Basic Settings → Device Description

Configuration of device specific identification and application parameters.

Description of parameter settings	
System Name	Enter any name and descriptions for device or application identification.
System Description	
System Location	
System Contact	



The screenshot shows a web interface with a left-hand navigation menu and a main content area. The navigation menu includes options like 'System Information', 'Basic Settings', 'Device Description' (which is highlighted), 'IP Configuration', 'Ethernet Port Setting', 'Time Setting', 'Admin Password', 'Serial Port Setting', 'Serial Configuration', 'Data Processing', 'Service Mode', 'System Warnings', 'Syslog Setting', 'SMTP Setting', 'SNMP Trap Setting', 'Event Selection', 'Monitoring/Diagnostics', and 'System Event Log'. The main content area is titled 'Basic Settings → Device Description' and contains a table for system identification parameters. The table has four rows: 'System Name' with the value 'IE-CS-MBGW-2TX-1COM', 'System Description' with the value 'Industrial Serial-to-Ethernet Converter and Modbus Gateway', 'System Location' which is empty, and 'System Contact' which is empty. Below the table is an 'Apply' button. In the bottom right corner of the main area, there is a button labeled 'Factory default settings'.

Basic Settings → Device Description	
System Name:	IE-CS-MBGW-2TX-1COM
System Description:	Industrial Serial-to-Ethernet Converter and Modbus Gateway
System Location	
System Contact	

Apply

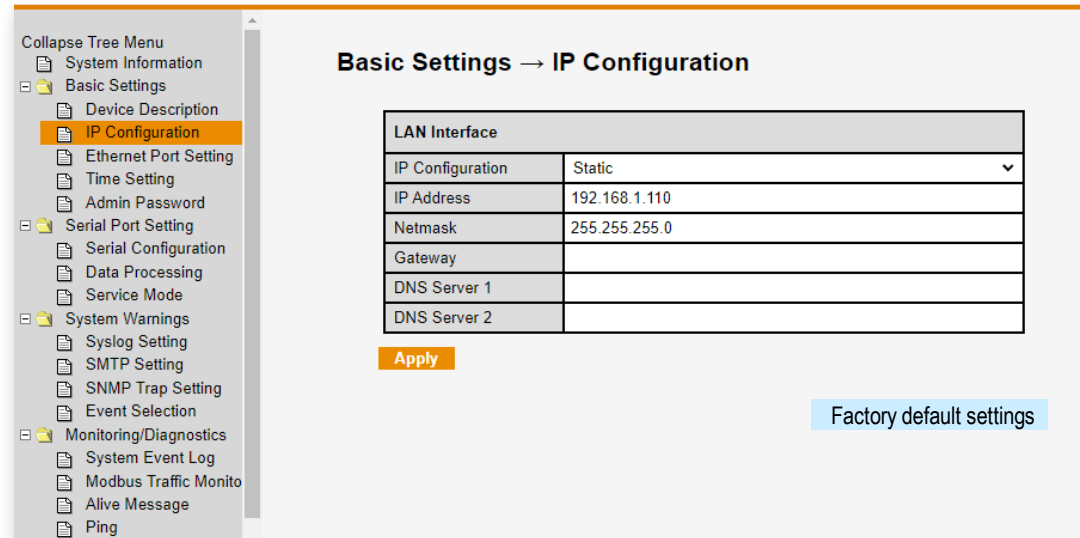
Factory default settings

### 4.3 Menu Basic Settings → IP Configuration

#### Configuration of network settings of Ethernet interface.

Both ports behave like an unmanaged Ethernet switch.

Description of parameter settings	
IP Configuration	Selection of IP address assignment (Static or DHCP/BOOTP)
Parameters for static IP address assignment:	
IP address	Device IP address
Netmask	Assignment of network range
Gateway	Gateway IP address
DNS Server 1	IP address of primary DNS server
DNS Server 2	IP address of secondary DNS server



The screenshot shows the 'Basic Settings → IP Configuration' page. On the left is a navigation tree with 'IP Configuration' selected. The main area contains a table for LAN Interface settings. The 'IP Configuration' dropdown is set to 'Static'. The IP Address is 192.168.1.110, Netmask is 255.255.255.0, and Gateway is empty. DNS Server 1 and DNS Server 2 are also empty. An 'Apply' button is at the bottom left, and a 'Factory default settings' button is at the bottom right.

LAN Interface	
IP Configuration	Static
IP Address	192.168.1.110
Netmask	255.255.255.0
Gateway	
DNS Server 1	
DNS Server 2	

Apply

Factory default settings

## 4.4 Menu Basic Settings → Ethernet Port Setting

Configuration of Ethernet port settings.

Description of parameter settings	
State	Enables / Disables the Ethernet port.
Speed/Duplex	Transmission mode of Ethernet port.
	Selectable values: AutoNegotiation, 100 Full, 100 Half, 10 Full or 10 Half

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting**
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor

### Basic Settings → Ethernet Port Setting

Port	State	Speed/Duplex
Ethernet 1	Enabled	AutoNegotiation
Ethernet 2	Enabled	AutoNegotiation

Apply

Factory default settings

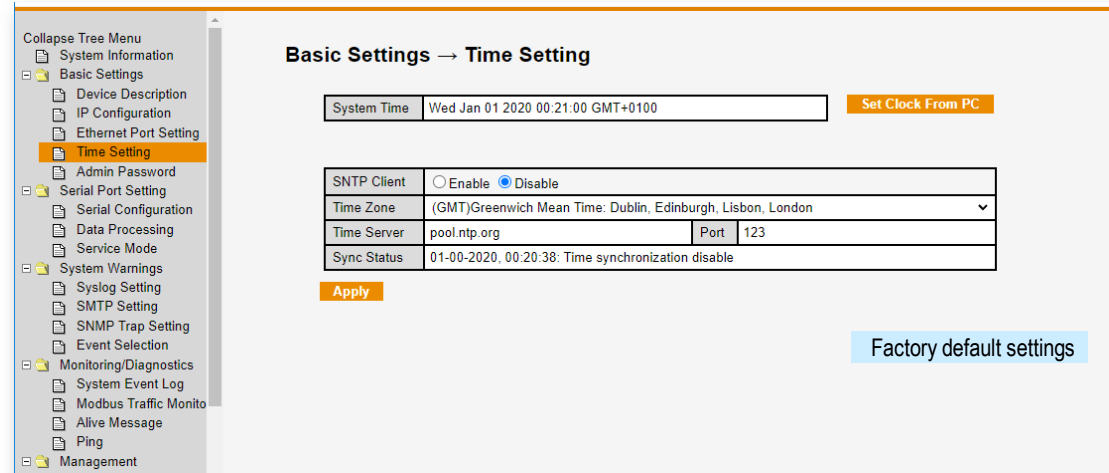

## 4.5 Menu Basic Settings → Time Setting

### Configuration of device time settings.

Description of parameter settings	
Set Clock from PC (Button)	Sets the system time same as the connected PC's date/time.
SNTP Client	Enables / Disables date/time synchronization via a remote time server.
Time Zone	Select time zone from drop-down list suitable to the device location.
Time Server	Enter IP address or Domain name of the time server.
Port	Port number of used time protocol (Default = 123).
Sync Status	Shows the latest synchronization status with time server.

Notes: When powering-up the system date/time initially is set to date/time 01.01.2020 00:00:00.

When the device is ready after start-up and if SNTP Client is enabled, the system time automatically will be updated if the defined time server can be accessed.

## 4.6 Menu Basic Settings → Admin Password

### Password change of administrator account (admin).

Note: Only this account is available for device access.

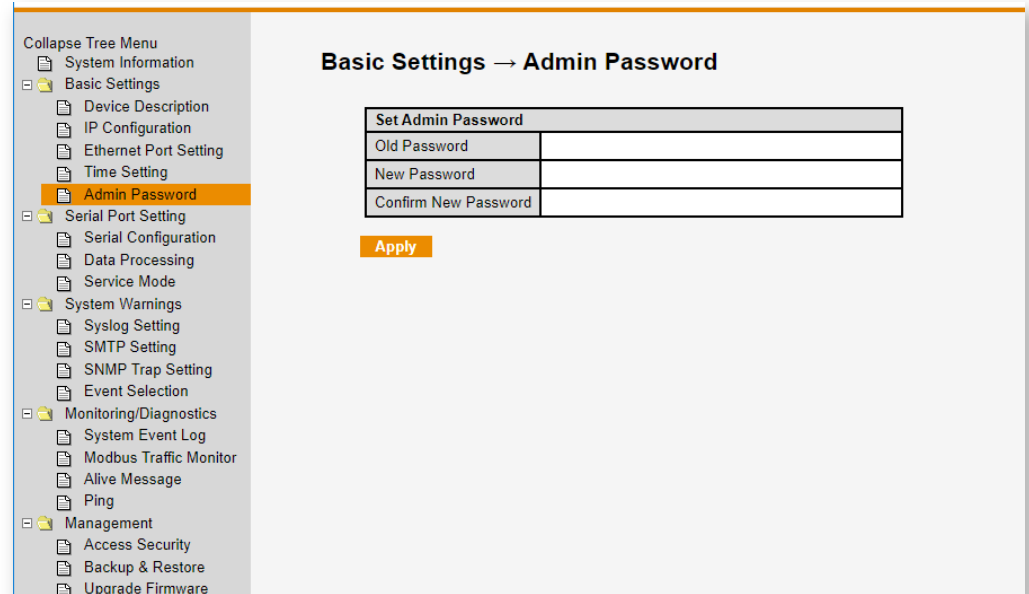
Description of parameter settings:

Old Password	Enter current password if a new password shall be set (mandatory).
New Password	Enter new password.
Confirm Password	Enter new password for confirmation.

### Factory default access credentials for login:

User:	admin
Password:	Weidmueller

Note: After clicking 'Apply' button the login windows appears requiring the new password.



Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password**
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware

### Basic Settings → Admin Password

Set Admin Password	
Old Password	<input type="password"/>
New Password	<input type="password"/>
Confirm New Password	<input type="password"/>

**Apply**

## 4.7 Menu Serial Port Setting → Serial Configuration

Configuration menu for interface and control settings of serial Port1.

Description of parameter settings:	
Port Alias	Port Alias can be used to describe or identify the connected serial device. Enter any identifying name or device description.
Interface	Select the interface type for the connected serial device. Available interfaces: RS232, RS422, RS485 (2-wires) and RS 485 (4-wires).
Baud Rate	Selection of the serial transmission speed. Selectable values range from 110bps to 460800bps.
Data Bits	Choose the number of data bits (5, 6, 7 or 8).
Stop Bits	The number of bits used to indicate the end of a byte. Selectable values 1 or 2.
Parity	Selectable values: None, Even, Mark, Space
Flow Control	Selection of hard-, software-based or deactivated flow control. Selectable values: None, XON/XOFF, RTS/CTS, DTR/DSR
Performance	<u>Latency</u> : Guarantees shortest response time. This option ensures that any received character incoming at Serial Port will be sent immediately to the Ethernet network and the payload of each incoming IP packet will be forwarded immediately to the serial device without any buffering.
	<u>Throughput</u> : Guarantees highest data throughput. This option minimizes the overall Ethernet packet overhead by using a larger payload in Ethernet frames consisting of buffered received serial data.
	Note: This parameter is only valid for Service Mode Virtual COM.

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration**
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware

### Serial Port Settings → Serial Configuration Help

Port1	
Port Alias	Port0
Interface	RS232 ▼
Baud Rate	38400 ▼
Data Bits	8 ▼
Stop Bits	1 ▼
Parity	None ▼
Flow Control	None ▼
Performance	<input checked="" type="radio"/> Throughput <input type="radio"/> Latency

Apply

## 4.8 Menu Serial Port Setting → Data Processing (Overview)

### Configuration menu for setting the behavior of data processing.

Via these options the data flow (Latency, Buffering, etc.) between Ethernet and serial interface and vice versa can be adapted.

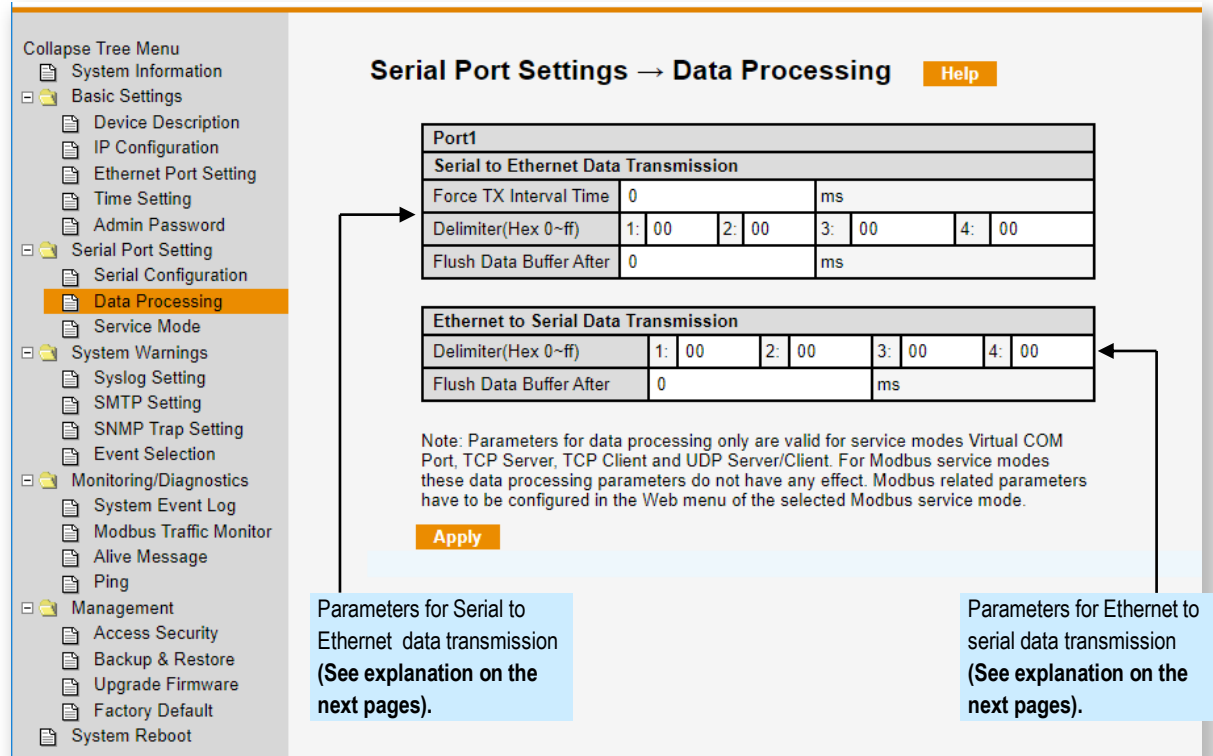
These parameters **only** are applicable for service modes

- 'Virtual COM'
- 'TCP Server'
- 'TCP Client' and
- 'UDP Server/Client'.

For Modbus service modes

- 'Serial Master to TCP Slave Gateway' and
- 'TCP Master to Serial Slave Gateway'

these data processing parameters do not have any effect. Modbus related parameters can be configured in the configuration menu of the selected Modbus service mode.



**Serial Port Settings → Data Processing** Help

Port1				
<b>Serial to Ethernet Data Transmission</b>				
Force TX Interval Time	0			ms
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0			ms

<b>Ethernet to Serial Data Transmission</b>				
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0			ms

Note: Parameters for data processing only are valid for service modes Virtual COM Port, TCP Server, TCP Client and UDP Server/Client. For Modbus service modes these data processing parameters do not have any effect. Modbus related parameters have to be configured in the Web menu of the selected Modbus service mode.

Apply

Parameters for Serial to Ethernet data transmission  
(See explanation on the next pages).

Parameters for Ethernet to serial data transmission  
(See explanation on the next pages).

#### 4.8.1 Description of Data Processing: Behavior of Serial to Ethernet interface data flow

Generally, the overall data flow from receiving data at serial interface (Port 1) and sending out to the Ethernet interface depends on parameters

- Delimiter (Byte value) [1]
- S2E Flush Data Buffer After (Timer) [2]
- Force TX Interval Time (Timer) [3]

which control the behavior of Serial-to-Ethernet-Input-Buffer [1, 2] and Transmit-to-Ethernet-Output-Buffer [3].

##### Behavior of Serial-to-Ethernet-Input-Buffer:

If Delimiter byte(s) are set to 00 then input buffering always is disabled independent of setting of timer parameter "S2E Flush Data Buffer After". In this case each incoming byte from serial port will be forwarded immediately to the Transmit Buffer.

Note: If Delimiter(s) shall be applied then always use first Delimiter 1 (being not 00) followed by Delimiter 2, 3 or 4 if necessary.

If Delimiter byte(s) do have a value other than 00 AND 'S2E Flush Data Buffer After' is set to 0 (ms), then incoming bytes will be buffered as long as no Delimiter(s) will be received and match. If the delimiter condition match or if the buffer is full (4 kBytes) then data of input buffer will be forwarded to Transmit Buffer.

If Delimiter byte(s) do have a value other than 00 AND "S2E Flush Data Buffer After" is set > 0 (ms) then incoming bytes will be buffered as long as

- delimiter settings do not match or
- elapsed time since first received byte < defined "S2E Flush Data Buffer After" time.

If one of the conditions triggers, then the buffer content will be forwarded to transmit buffer immediately.

Note: Timer parameter 'S2E Flush Data Buffer After' only can be used in combination with delimiter settings. If Delimiter byte(s) are set to 00 (disabled) then 'S2E Flush Data Buffer After' does not have any effect. Independent of parameter settings the data always will be forwarded if the buffer is full (4kByte).

##### Behavior of Transmit Buffer:

If timer parameter 'Force TX Interval Time' is set to 0, then output buffering is disabled. Each incoming byte or byte block received from S2E Input Buffer will be sent out immediately as an IP packet via Ethernet interface.

If 'Force TX Interval Time' is set 0, then buffering is enabled. In this case the ComServer periodically sends out each defined 'Force TX Interval Time' the content of the Transmit buffer as IP packet(s) via Ethernet interface.

#### Serial Port Settings → Data Processing

[Help](#)

Parameters for Serial to Ethernet data transmission

Port1				
Serial to Ethernet Data Transmission				
Force TX Interval Time	0			ms
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0			ms

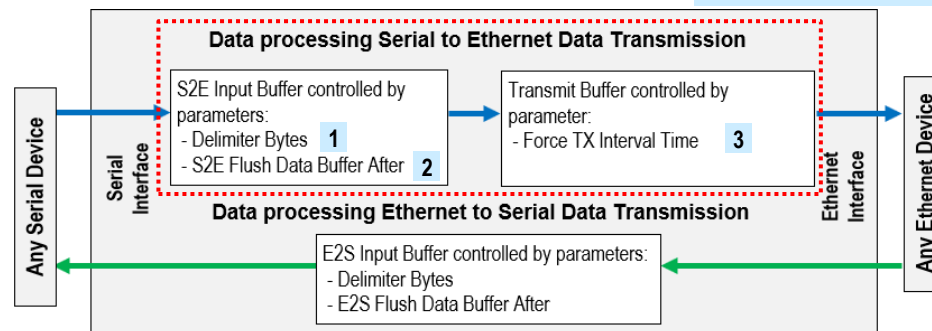
Ethernet to Serial Data Transmission				
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0			ms

Note: Parameters for data processing only are valid for service modes Virtual COM Port, TCP Server, TCP Client and UDP Server/Client. For Modbus service modes these data processing parameters do not have any effect. Modbus related parameters have to be configured in the Web menu of the selected Modbus service mode.

[Apply](#)

#### Diagram of data processing and buffering

Buffers for Serial to Ethernet data transmission



**Note:** Parameter 'Force TX Interval Time' can be used to increase the payload of an Ethernet frame by gathering more bytes of the serial input stream. But consider a possible impact on timing requirements regarding the serial application behind the Ethernet side. Independent of this parameter the data always will be sent out if the buffer is full (4kByte).



## 4.8.2 Description of Data Processing: Behavior of Ethernet to Serial interface data flow

General the overall data flow from receiving the payload of an Ethernet frame and sending out at serial interface (Port 1) depends on parameters

- Delimiter (Byte value) [1]
- S2E Flush Data Buffer After (Timer) [2]

which control the behavior of Ethernet-to-Serial-Input-Buffer.

### Behavior of Ethernet-to-Serial-Input-Buffer:

If Delimiter byte(s) are set to 00 then input buffering always is disabled independent of setting of timer parameter 'E2S Flush Data Buffer After'. In this case the payload of each incoming IP packet immediately will be send to the serial interface.

Note: If Delimiter(s) shall be applied then always use first Delimiter 1 (being not 00) followed by Delimiter 2, 3 or 4 if necessary.

If Delimiter byte(s) do have a value other than 00 AND 'E2S Flush Data Buffer After' is set to 0 (ms), then the payload of incoming IP packet(s) will be buffered as long as no delimiter byte(s) will be received and match. If the delimiter condition match or if the buffer is full (4 kBytes), then buffer data will be sent out at serial interface.

If Delimiter byte(s) do have a value other than 00 AND 'E2S Flush Data Buffer After' is set > 0 (ms), then the payload of incoming IP packet(s) will be buffered as long as

- the delimiter settings do not match or
- the elapsed time since first received byte/payload has not reached defined 'E2S Flush Data Buffer After' time.

If one of the conditions triggers, then the buffer content will be sent out at the serial interface immediately.

Note: Parameter 'E2S Flush Data Buffer After' only can be used in combination with delimiter settings. If Delimiter byte(s) are set to 00 (disabled) then 'E2S Flush Data Buffer After' does not have any effect. Independent of parameter settings the data always will be sent out if the buffer is full (4kByte).

### Serial Port Settings → Data Processing Help

Port1				
Serial to Ethernet Data Transmission				
Force TX Interval Time	0			ms
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0			ms

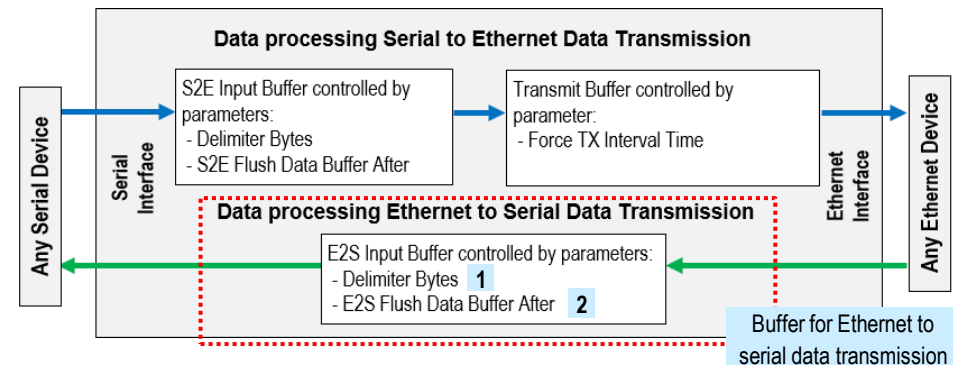
Ethernet to Serial Data Transmission				
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0			ms

Note: Parameters for data processing only are valid for service modes Virtual COM Port, TCP Server, TCP Client and UDP Server/Client. For Modbus service modes these data processing parameters do not have any effect. Modbus related parameters have to be configured in the Web menu of the selected Modbus service mode.

Apply

Parameters for Ethernet to serial data transmission

### Diagram of data processing and buffering



## 4.9 Menu Serial Port Setting → Service Mode: Virtual COM

In Virtual COM mode a PC-based application - which normally communicates to a connected serial device by a physical COM port - alternatively can communicate with a (remote) serial device using an Ethernet based communication via the Serial/Ethernet Converter (ComServer).

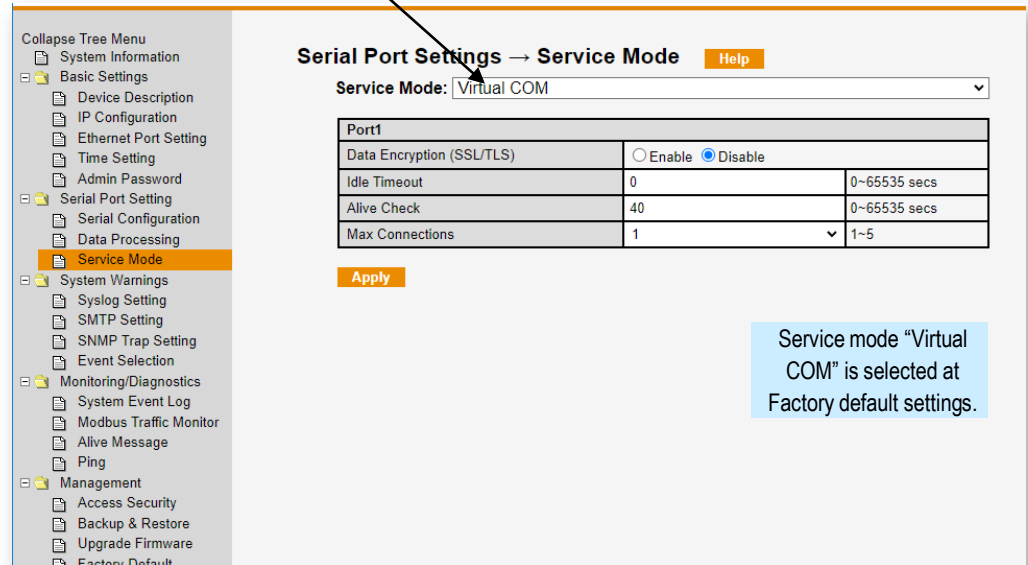
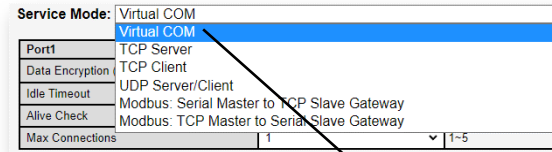
To use this function a specific Virtual COM port driver has to be installed and configured on the PC, emulating a COM port that can be selected by a software application like a physical COM port. For installing a virtual COM port, the software tool “ComServer / Modbus Gateway Utility” (Weidmüller-CS-MBGW-Utility.exe) has to be used. When installed and activated the virtual COM port driver establishes a TCP/IP connection to the ComServer. Any data sent from the PC's application to the virtual COM port will be forwarded as IP packet payload to the ComServer and finally sent out to the serial port. Any data received from the serial port will be handled vice versa.

The Virtual COM mode supports up to 5 simultaneous TCP/IP connections, allowing multiple hosts (each having installed a virtual COM port driver) to exchange data with the same serial device at the same time.

### Description of parameter settings:

Data Encryption	Disables or enables an SSL/TLS encrypted TCP/IP communication between initiating TCP Client and this ComServer (TCP Server).
Idle Timeout	Disconnects established TCP/IP connection(s) after defined Idle time (seconds) if there is no further data transmission on the serial interface (due to Inactivity). If Idle Timeout = 0 seconds the ComServer never will terminate a consisting TCP/IP connection.
Alive Check	The ComServer sends according to the defined interval time (seconds) periodically TCP alive check packages to the remote host(s) to evaluate the TCP connection. If the TCP connection is no longer alive, the connection will be closed.
Max Connections	Defines the maximum number of simultaneous TCP/IP host connections.

**Note:** The behavior of data processing (Latency, Buffering, etc.) between Ethernet and serial interface and vice versa can be adapted via parameters 'Force TX Interval Time', 'Delimiter' and 'Flush Data Buffer After' in menu Serial Port Setting → Data Processing.



Service mode “Virtual COM” is selected at Factory default settings.

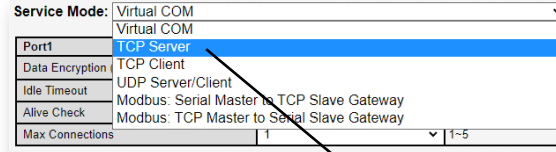
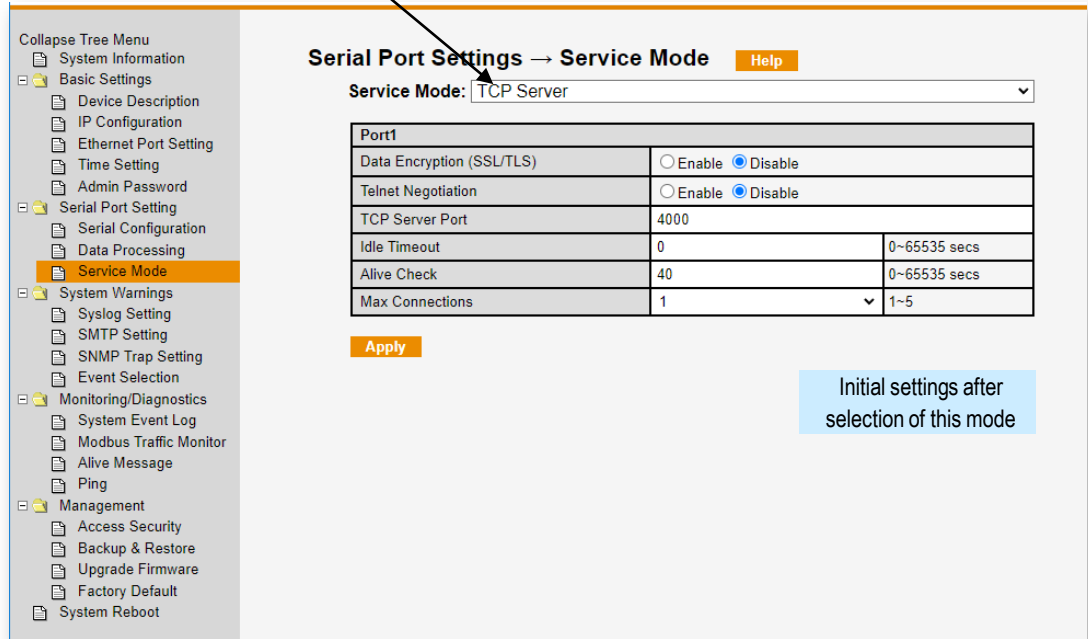
### Use of service mode Virtual COM:

- It has to be used together with software “ComServer / Modbus Gateway Utility”.
- For running a virtual COM port application, only software “ComServer / Modbus Gateway Utility” needs to be configured. This tool allows to set both, the service mode “Virtual COM” and all mode-related parameters on a connected ComServer via the internal communication protocol.
- When creating / mapping a virtual COM Port on the PC the software establishes - based on the configured communication parameters - a TCP connection to the ComServer.
- See page 38 for more detailed information about “ComServer / Modbus Gateway Utility”.

#### 4.10 Menu Serial Port Setting → Service Mode: TCP Server

In mode TCP Server the Communication Server is running as a pure media converter between serial and Ethernet Interface. The device waits passively for host computer(s) to establish a TCP/IP connection to exchange data with the connected serial device. Any payload of a TCP packet will be converted into a serial data stream and vice versa. Up to 5 simultaneous connections are supported, allowing multiple hosts to exchange data with the serial device.

Description of parameter settings	
Data Encryption	Disables or enables an SSL/TLS encrypted TCP/IP communication between initiating TCP Client and this ComServer (TCP Server).
Telnet Negotiation	Disables or enables the use of Telnet protocol for establishing a connection by a TCP client.
TCP Server Port	Port number on which the ComServer is listening as TCP Server.
Idle Timeout	Disconnects existing TCP/IP connection(s) after defined Idle time (seconds) if there is no further data transmission on the serial interface (due to Inactivity). If Idle Timeout = 0 seconds the ComServer never will terminate a consisting TCP/IP connection.
Alive Check	The ComServer sends according to the defined interval time (seconds) periodically TCP alive check packages to the remote host(s) to evaluate the TCP connection. If the TCP connection is no longer alive, the connection will be closed.
Max Connections	Defines the maximum number of simultaneous TCP/IP host connections.
Note: The behavior of data processing (Latency, Buffering, etc.) between Ethernet and serial interface and vice versa can be adapted via parameters 'Force TX Interval Time', 'Delimiter' and 'Flush Data Buffer After' in menu Serial Port Setting → Data Processing.	

**Serial Port Settings → Service Mode** Help

Service Mode: **TCP Server**

Port1		
Data Encryption (SSL/TLS)	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Telnet Negotiation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
TCP Server Port	4000	
Idle Timeout	0	0~65535 secs
Alive Check	40	0~65535 secs
Max Connections	1	1~5

**Apply**

Initial settings after selection of this mode

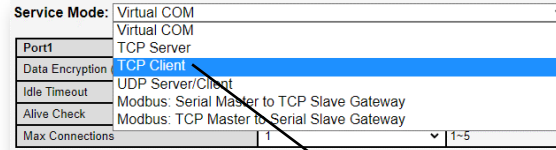
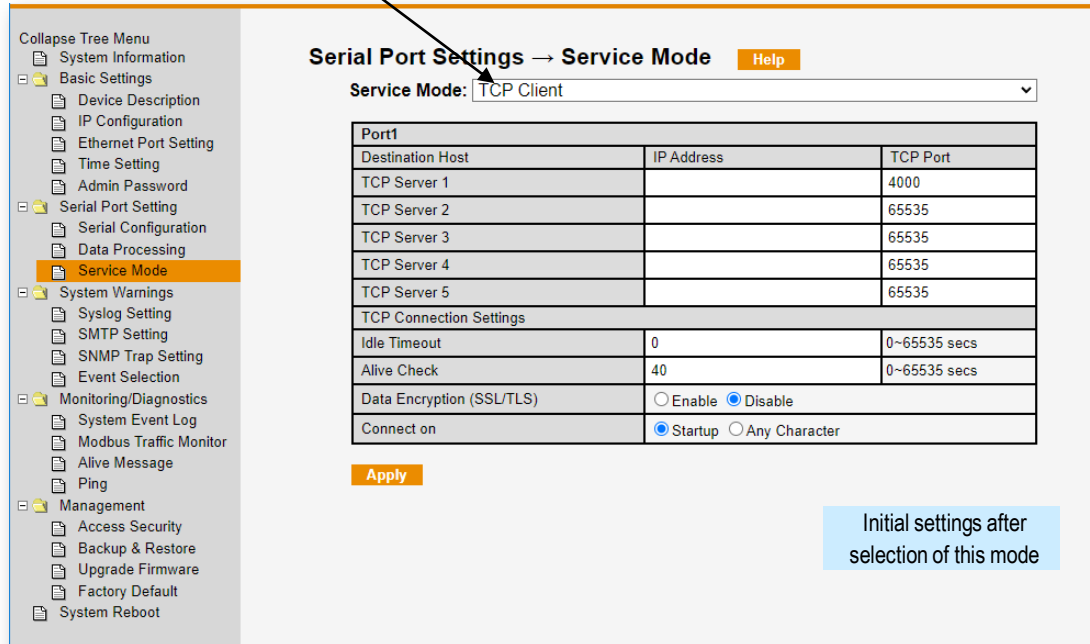
#### 4.11 Menu Serial Port Setting → Service Mode: TCP Client

In mode TCP Client the ComServer is running as a pure media converter between serial and Ethernet Interface. The device establishes actively a TCP/IP connection to the specified host(s) (TCP Server) to exchange data with the connected serial device. Any incoming serial data will be sent as payload of a TCP packet to the defined TCP Server(s). Up to 5 simultaneous connections are supported, allowing multiple hosts to exchange data with the serial device.

Description of parameter settings:

TCP Server 1...5	Definition of up to 5 target TCP Servers (IP address and port number) for data exchange.
Idle Timeout	Disconnects existing TCP/IP connection(s) after defined Idle time (seconds) if there is no further data transmission on the serial interface (due to Inactivity). If Idle Timeout = 0 seconds the COM-Server never will terminate an established TCP/IP connection.
Alive Check	The ComServer sends according to the defined interval time (seconds) periodically TCP alive check packages to the remote host to evaluate the TCP connection. If the TCP connection is not alive, the connection will be closed.
Data Encryption	Disables or enables an SSL/TLS encrypted TCP/IP communication between the initiating ComServer (TCP Client) and remote host (TCP Server).
Connect on	<u>Startup</u> : The COM-Server will establish a TCP/IP connection to all defined TCP Server(s) automatically after start-up. <u>Any Character</u> : The COM-Server will establish a TCP/IP connection to all defined TCP Server(s) after reception of first byte from serial interface.

Note: The behavior of data processing (Latency, Buffering, etc.) between Ethernet and serial interface and vice versa can be adapted via parameters 'Force TX Interval Time', 'Delimiter' and 'Flush Data Buffer After' in menu Serial Port Setting → Data Processing.

**Serial Port Settings → Service Mode** Help

Service Mode: **TCP Client**

Port1	Destination Host	IP Address	TCP Port
TCP Server 1			4000
TCP Server 2			65535
TCP Server 3			65535
TCP Server 4			65535
TCP Server 5			65535

**TCP Connection Settings**

Idle Timeout	0	0~65535 secs
Alive Check	40	0~65535 secs
Data Encryption (SSL/TLS)	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Connect on	<input checked="" type="radio"/> Startup <input type="radio"/> Any Character	

Apply

Initial settings after selection of this mode

#### 4.12 Menu Serial Port Setting → Service Mode: UDP Server / Client

In mode UDP Server/Client the device is running as pure media converter between serial and Ethernet Interface. The device can act as UDP Client and UDP Server simultaneously.

If UDP Server Mode is enabled the ComServer listens to incoming UDP packets at the defined port and forwards the Ethernet payload to the connected serial device.

If UDP Client Mode is activated any incoming serial data will be sent as payload of an UDP packet to the defined Server range(s).

Description of parameter settings:

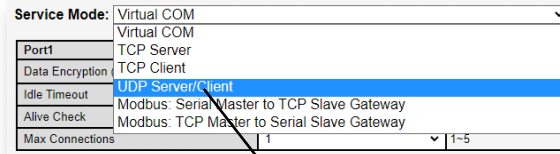
##### UDP Server related settings

UDP Server Mode	Enables or disables the UDP Server Mode.
Listen Port	Definition of UDP port on which the UDP Server listens for incoming UDP packets.

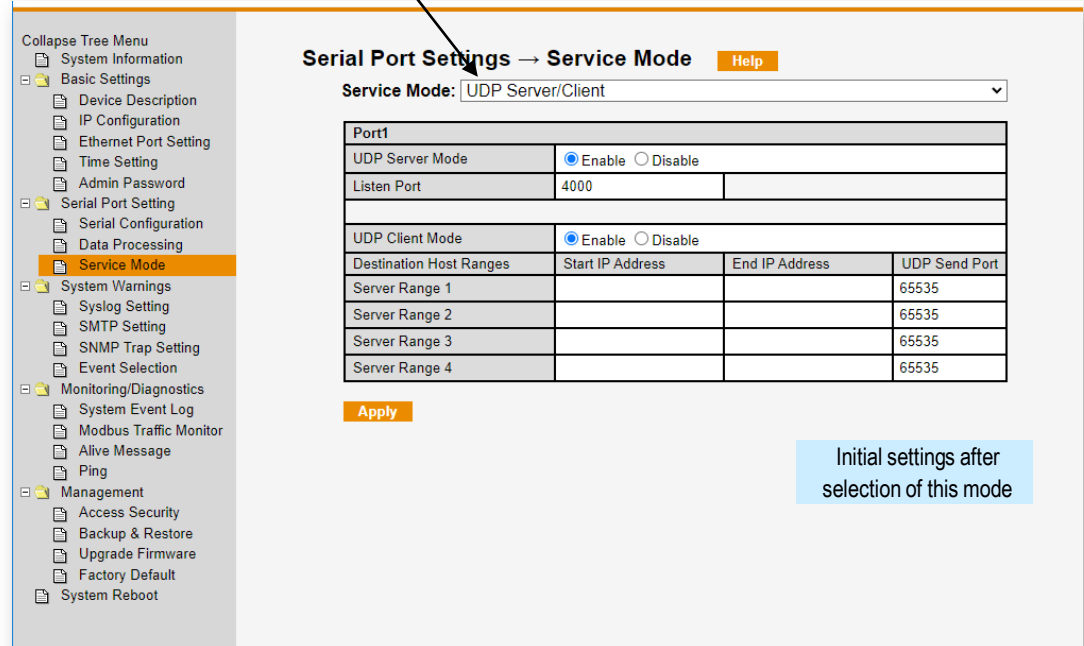
##### UDP Client related settings

UDP Client Mode	Enables or disables the UDP Client Mode.
Server Ranges 1...4	Definition of up to 4 UDP Server Ranges as target(s) for sending the serial data. Each Server range has to be defined by <ul style="list-style-type: none"> <li>- Start IP address,</li> <li>- End IP address and</li> <li>- UDP port number.</li> </ul>

Note: The behavior of data processing (Latency, Buffering, etc.) between Ethernet and serial interface and vice versa can be adapted via parameters 'Force TX Interval Time', 'Delimiter' and 'Flush Data Buffer After' in menu Serial Port Setting → Data Processing.



Service Mode: Virtual COM  
Virtual COM  
TCP Server  
TCP Client  
**UDP Server/Client**  
Modbus: Serial Master to TCP Slave Gateway  
Modbus: TCP Master to Serial Slave Gateway  
Max Connections: 1 | 1-5



**Serial Port Settings → Service Mode** Help

Service Mode: **UDP Server/Client**

<b>Port1</b>			
UDP Server Mode	<input checked="" type="radio"/> Enable <input type="radio"/> Disable		
Listen Port	4000		
<b>UDP Client Mode</b>			
UDP Client Mode	<input checked="" type="radio"/> Enable <input type="radio"/> Disable		
Destination Host Ranges	Start IP Address	End IP Address	UDP Send Port
Server Range 1			65535
Server Range 2			65535
Server Range 3			65535
Server Range 4			65535

Apply

Initial settings after selection of this mode

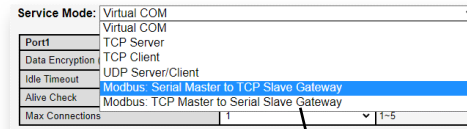
### 4.13 Menu Serial Port Setting → Service Mode: Modbus Serial Master to TCP Slave Gateway

In this operation mode the device is running as Ethernet-to-Serial converter being additionally a protocol converter (Gateway) between a Modbus RTU/ASCII Master and Modbus TCP Slaves. This mode allows to integrate Modbus TCP Slaves into a serial Modbus application (RS232/RS485) with a Modbus RTU/ASCII Master. From the perspective of the serial Master each defined TCP Slave can be accessed via a Device ID like other RTU/ASCII Slaves.

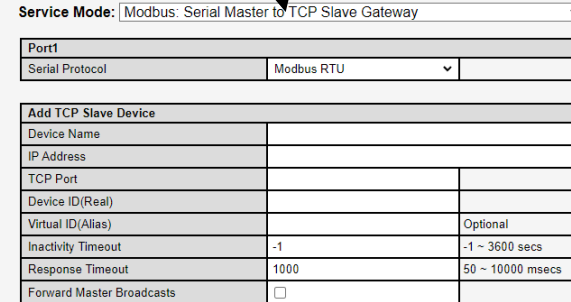
If the serial Modbus Master (RTU or ASCII) starts a request to a Device ID the Modbus Gateway accepts the request if a configured TCP Slave matches to this Device ID. The RTU/ASCII request will be converted into the Modbus TCP protocol and forwarded to the IP address of the TCP Slave. The response from the TCP Slave will be handled vice versa. A maximum of 16 TCP Slave connections can be configured in the Modbus TCP slave list.

Description of parameter settings:	
Serial Protocol	Select the used Modbus protocol of the serial Interface (RTU or ASCII).
<b>TCP Slave related Parameters</b>	
Device Name	Enter any name to describe or identify the TCP Slave device.
IP Address	IP address of the Modbus TCP Slave.
TCP Port	Port number on which the TCP Slave accepts the Modbus request (Default 502).
Device ID (Real)	Mandatory parameter. This Device ID is related to the real Unit ID configured/set on the TCP slave. The Unit ID is part of MBAP Header of Modbus TCP protocol.
Virtual ID (Alias)	Optional parameter. Can be used if several Modbus TCP slaves, having different IP addresses but same (unchangeable) Unit IDs, must be addressed via unique IDs by the RTU/ASCII Master.  If configured, the Modbus-GW checks the Virtual ID with ID of a received Master request, replaces (if matching) it with the real Device (Unit) ID and forwards the request to the TCP slave. When receiving the response from TCP slave containing the real Device (Unit) ID, it will be replaced by corresponding Virtual ID and sent back to requesting RTU/ASCII Master.  If not configured, the Modbus-GW only uses parameter Device ID (real) for communication between RTU/ASCII Master and TCP Slave.
Inactivity Timeout	Defines the Gateway's closing behavior of a TCP/IP connection to a TCP Slave.  -1: The TCP/IP connection will be closed immediately after receiving the response of a request or latest after response timeout if the TCP Slave does not respond.  0: The Gateway does never terminate any initiated TCP/IP connection to a TCP Slave.  1 ~ 3600: The Gateway disconnects a consisting TCP/IP connection to a TCP Slave after the defined value (seconds) if there is no further data transmission.

**Note:** For Modbus communication diagnostic and failure evaluation enable and use Modbus Traffic Monitor (Menu Monitoring / Diagnostics → Modbus Traffic Monitor).



#### Serial Port Settings → Service Mode Help



**Add**

Modbus TCP Slave List									
#	Device Name	IP Address	TCP Port	Device ID (Real)	Virtual ID (Alias)	Inactivity Timeout(secs)	Response Timeout(msecs)	Forward Master Broadcasts	Operations
0	u-remote I/O 1	192.168.50.198	502	1	13	-1	1000	<input type="checkbox"/>	<span>Edit</span> <span>Delete</span>
1	u-remote I/O 2	192.168.50.199	502	1	14	-1	1000	<input type="checkbox"/>	<span>Edit</span> <span>Delete</span>
2	u-remote I/O 3	192.168.50.200	502	1	15	-1	50	<input type="checkbox"/>	<span>Edit</span> <span>Delete</span>

**Apply**

Example of 3 configured Modbus TCP slaves

Response Timeout	Defines the time (milliseconds) to wait for the response of a TCP slave after forwarding a request from the Modbus RTU/ASCII Master. If the defined time is elapsed without any response the Modbus-GW assumes that an error has occurred, and the request process will be terminated without any further activity. No failure response will be sent to the requesting RTU/ASCII Master. Additionally, if after timeout the response from the TCP Slave still will be received it will be dropped simply. <b>Note:</b> For setting of this parameter check the response behavior of the TCP Slave and make sure that the <u>overall</u> Master response timeout to this device has a larger value than this 'Response Timeout' (due to an additional low latency for passing the Gateway).
Forward Master Broadcast	If checkbox is enabled any incoming RTU/ASCII Master request with ID=0 will be forwarded to this TCP Slave. <b>Note:</b> Broadcast requests (messages) are writing commands and do not expect any response. Any broadcast-enabled device should be configured/able to accept a broadcast message as writing function.

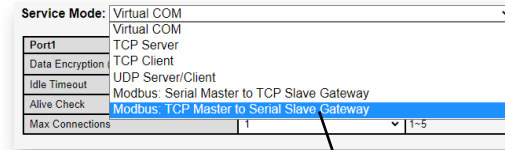
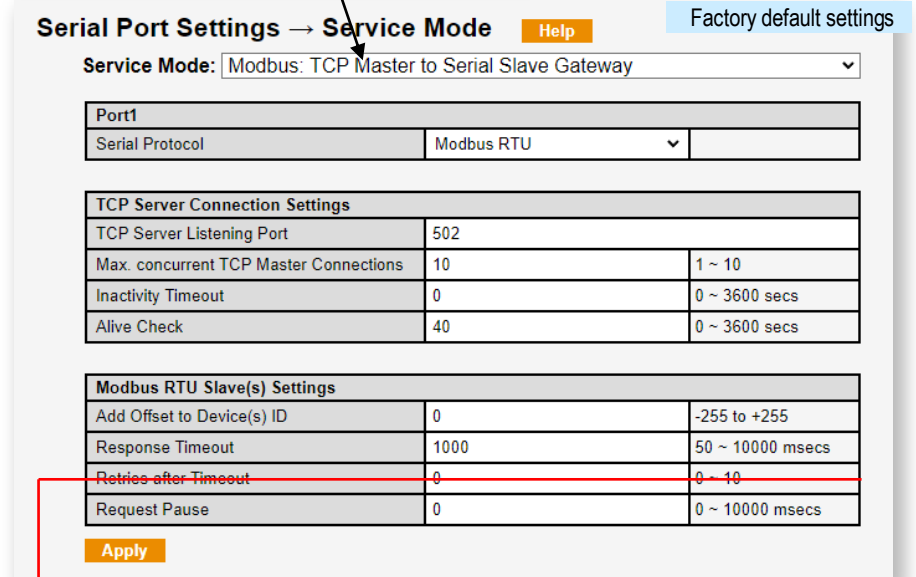


#### 4.14 Menu Serial Port Setting → Service Mode: Modbus TCP Master to Serial Slave Gateway

In this operation mode the device is running as Ethernet-to-Serial converter and is additionally a protocol converter (Gateway) between a Modbus TCP (Master) and Modbus RTU/ASCII (Slaves). Serial Modbus Slaves can be accessed by one or several Ethernet-based Modbus TCP Master(s). Based on the received Device (Unit) ID contained in the Modbus TCP Master request the Gateway converts and forwards it as RTU/ASCII request to the serial Interface. The response from the addressed RTU/ASCII Slave will be handled vice versa.

Description of parameter settings:	
Serial Protocol	Select the used Modbus protocol of the serial Interface (RTU or ASCII).
<b>Modbus TCP Server Connection Settings</b>	
TCP Server Listening Port	Port number on which the Gateway is listening for Modbus TCP Master requests (Normally 502).
Max. concurrent TCP Master Connections	Number of simultaneously allowed TCP connections with requesting Modbus TCP Masters (Maximum 10 connections).
Inactivity Timeout	Defines the COM-Server's closing behavior of a TCP/IP connection to a TCP Master. Dependent on the configured value (seconds) the ComServer actively disconnects an established TCP/IP connection to a TCP Master if there was no data transmission during the elapsed inactivity time. If set to 0 (Factory default setting) the ComServer never will terminate the TCP connection, except it will be terminated if Alive Check is activated and the check has failed.
Alive Check <small>Note: Parameter added from firmware version V3.07.</small>	The ComServer sends according to the defined interval time (seconds) periodically TCP alive check packages to the remote host to evaluate the TCP connection. If the TCP connection is no longer alive, the connection will be closed. Factory default setting is 40 seconds. If set to 0 the function is disabled.
<b>Modbus RTU/ASCII Slave(s) Settings</b>	
Add Offset to Device(s) ID	The defined Offset will be added (subtracted if minus) on the Device (Unit) ID contained in the received TCP Master request. The converted RTU/ASCII request will be forward to the serial Interface with included Device ID offset. For responses back to Modbus TCP Master the offset will be removed again.
Response Timeout	Defines the time (milliseconds) to wait for the response of the RTU/ASCII slave after forwarding the request from the Modbus TCP Master. If the defined time is elapsed without any response the Gateway assumes that an error has been occurred and responses to the requesting Modbus TCP Master with an exception message. If a response from the RTU/ASCII slave still will be received after the response timeout, then it will be dropped simply.

**Note: For Modbus communication diagnostic and failure evaluation enable and use Modbus Traffic Monitor (Menu Monitoring / Diagnostics → Modbus Traffic Monitor).**

**Note:** Parameter **Retries after Timeout** has been removed from firmware versions equal or higher V3.08. Reason: The failure management (repeating the request) in case of getting no response from a RTU/ASCII slave has to be managed by the Modbus TCP Master.

Retries after Timeout <small>Note: Parameter renamed from firmware version V3.07. Original naming was 'Max. Retries'.</small>	Defines how often the Modbus Gateway sends the RTU/ASCII request again to the serial device after a response timeout has been occurred. <small>Note: Keep in mind that each retry will enhance the overall timeout until the Modbus-GW will send a response to the requesting Modbus Master. <b>Best practice:</b> Set 'Retries after Timeout' = 0, set 'Response Timeout' &lt; Modbus Master's response timeout and initiate request retries by Modbus Master (e.g., if a slave does not response after first request).</small>
Request Pause	Defines a time delay (milliseconds) between the reception of the Modbus TCP Master request and forwarding of the converted RTU/ASCII request to the serial RTU/ASCII Slave. If set to zero, then an incoming TCP request will be converted and sent out immediately without any delay.

## 4.15 Menu System Warnings → Syslog Setting

### Configuration menu for Syslog parameter settings

Description of parameter settings:	
Local Syslog	Enables / Disables the recording of event messages in the local System Event Log (Menu Monitoring/Diagnostics → System Event Log).
Remote Syslog Server	Enables / Disables the forwarding of system events (UDP data) to a remote Syslog Server.
Syslog Server IP	IP address of the remote Syslog Server.
Syslog Server Port	UDP connection Port (typically 514) of the remote Syslog Server.

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting**
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

### System Warnings → Syslog Setting

Local Syslog	Enabled
Remote Syslog Server	Disabled
Syslog Server IP	
Syslog Server Port	0

**Apply**

Default Syslog settings



## 4.16 Menu System Warnings → SMTP Setting (Simple Mail Transfer Protocol)

### Configuration menu for sending system warnings by e-Mail

This feature can be used to send event messages as e-Mail via Simple Mail Transfer Protocol. The event types for which an alarm mail can be generated is defined in menu System Warnings → Event Selection.

Description of parameter settings	
SMTP Server	IP address or DNS name of mail server which has to be used as mail forwarder.
Port	Port number of SMTP Server.
Connection type	NONE, SSL or TLS
Server Authentication	Enables / Disables Server Authentication by Username and Password
Username	Account name on SMTP Server
Password	Password of account on SMTP Server
E-mail Sender	This name will be shown as originator when a recipient receives the mail.
E-mail Address 1	Mail recipient 1
E-mail Address 2	Mail recipient 2
E-mail Address 3	Mail recipient 3
E-mail Address 4	Mail recipient 4
Note: Due to security aspects nowadays only mails with Server Authentication can be sent. For this reason, you need an account on the Mail system which shall be used to forward the event mail to the defined mail recipients.	

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
- Serial Configuration
- Data Processing
- Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting**
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

### System Warnings → SMTP Setting

E-mail Settings			
SMTP Server		Port	25
Connection type	NONE		
Server Authentication	<input type="checkbox"/>		
User Name			
Password			
E-mail Sender			
E-mail Address 1			
E-mail Address 2			
E-mail Address 3			
E-mail Address 4			

**Apply**

Factory default settings

## 4.17 Menu System Warnings → SNMP Trap Setting

### Configuration menu for sending system warnings by SNMP Traps

This feature can be used to send event messages via Simple Network Management Protocol to a SNMP Trap Server. The event types for which a trap message can be generated is defined in menu System Warnings → Event Selection.

Description of parameter settings	
Community	This is the community write access string to permit access to the SNMP trap server.
Location	Use for information about the device location. This parameter is referenced to SNMP parameter 'sysLocation'.
Contact	Use for information about responsible contact person. This parameter is referenced to SNMP parameter 'sysContact'.
IP Address Trap Server 1 .. 4	Enter the IP addresses of maximum 4 target SNMP servers. For each configured IP address, a trap will be sent.
Note: Traps will be sent using the default SNMP port number 161.	

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting**
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

### System Warnings → SNMP Trap Setting

SNMP Trap Server	
Community	
Location	
Contact	
IP Address Trap Server 1	
IP Address Trap Server 2	
IP Address Trap Server 3	
IP Address Trap Server 4	

**Apply**

Factory default settings

## 4.18 Menu System Warnings → Event Selection

Configuration menu for setting system warnings to be signaled by SMTP Mail, SNMP Trap or Syslog.

Definition of event notifications are triggerable on states or change of a state related to

- General device items
- Handshake signaling of the serial port and
- TCP connection changes.

Note: By factory default only Syslog events are enabled. Triggered events can be monitored in menu Monitoring/Diagnostics → System Event Log.

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection**
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

### System Warnings → Event Selection

Default Event settings

Device Event Notifications			
Hardware Reset (Cold Start)	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
Software Reset (Warm Start)	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
Login Failed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
IP Address Changed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
Password Changed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
Access IP Blocked	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog

Serial Port Event Notifications			
DCD Changed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
DSR Changed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
RI Changed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
CTS Changed	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog

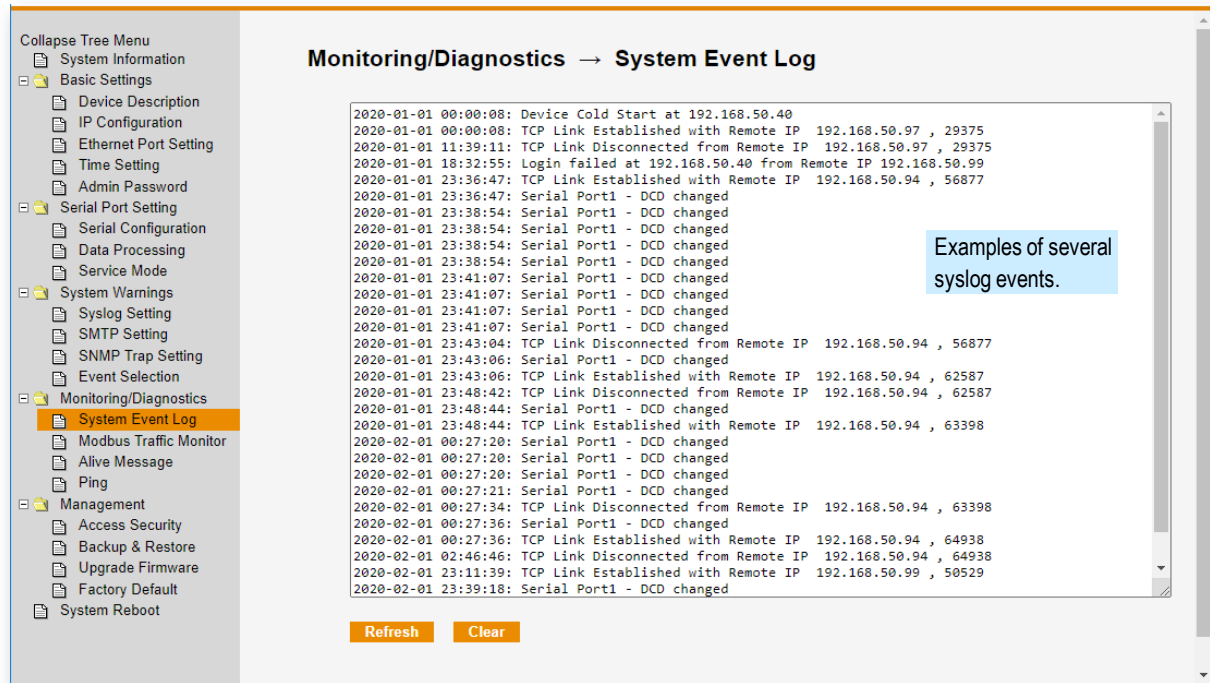
TCP Connection Event Notifications			
TCP Link Established	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog
TCP Link Disconnected	<input type="checkbox"/> SMTP Mail	<input type="checkbox"/> SNMP Trap	<input checked="" type="checkbox"/> Syslog

Apply

## 4.19 Menu Monitoring/Diagnostics → System Event Log

The System Event Log shows all event messages triggered by event selection type 'Syslog'.

Note: The event-related timestamp depends on the time setting of the device. The initial time after start-up is set to 2020-01-01 00:00:00. If a real timestamp is necessary for the event evaluation either set the time manually after power-up or enable the SNTP client to get the real time automatically (Menu Basic Settings → Time Setting).



The screenshot displays the 'Monitoring/Diagnostics → System Event Log' window. On the left is a 'Collapse Tree Menu' with various system settings. The 'System Event Log' option is highlighted. The main area shows a list of syslog events with timestamps and descriptions. A blue callout box points to the event list with the text 'Examples of several syslog events.' At the bottom of the event list are 'Refresh' and 'Clear' buttons.

**Monitoring/Diagnostics → System Event Log**

Examples of several syslog events.

2020-01-01 00:00:08: Device Cold Start at 192.168.50.40  
 2020-01-01 00:00:08: TCP Link Established with Remote IP 192.168.50.97 , 29375  
 2020-01-01 11:39:11: TCP Link Disconnected from Remote IP 192.168.50.97 , 29375  
 2020-01-01 18:32:55: Login failed at 192.168.50.40 from Remote IP 192.168.50.99  
 2020-01-01 23:36:47: TCP Link Established with Remote IP 192.168.50.94 , 56877  
 2020-01-01 23:36:47: Serial Port1 - DCD changed  
 2020-01-01 23:38:54: Serial Port1 - DCD changed  
 2020-01-01 23:38:54: Serial Port1 - DCD changed  
 2020-01-01 23:38:54: Serial Port1 - DCD changed  
 2020-01-01 23:38:54: Serial Port1 - DCD changed  
 2020-01-01 23:41:07: Serial Port1 - DCD changed  
 2020-01-01 23:41:07: Serial Port1 - DCD changed  
 2020-01-01 23:41:07: Serial Port1 - DCD changed  
 2020-01-01 23:41:07: Serial Port1 - DCD changed  
 2020-01-01 23:43:04: TCP Link Disconnected from Remote IP 192.168.50.94 , 56877  
 2020-01-01 23:43:06: Serial Port1 - DCD changed  
 2020-01-01 23:43:06: TCP Link Established with Remote IP 192.168.50.94 , 62587  
 2020-01-01 23:48:42: TCP Link Disconnected from Remote IP 192.168.50.94 , 62587  
 2020-01-01 23:48:44: Serial Port1 - DCD changed  
 2020-01-01 23:48:44: TCP Link Established with Remote IP 192.168.50.94 , 63398  
 2020-02-01 00:27:20: Serial Port1 - DCD changed  
 2020-02-01 00:27:20: Serial Port1 - DCD changed  
 2020-02-01 00:27:20: Serial Port1 - DCD changed  
 2020-02-01 00:27:21: Serial Port1 - DCD changed  
 2020-02-01 00:27:34: TCP Link Disconnected from Remote IP 192.168.50.94 , 63398  
 2020-02-01 00:27:36: Serial Port1 - DCD changed  
 2020-02-01 00:27:36: TCP Link Established with Remote IP 192.168.50.94 , 64938  
 2020-02-01 02:46:46: TCP Link Disconnected from Remote IP 192.168.50.94 , 64938  
 2020-02-01 23:11:39: TCP Link Established with Remote IP 192.168.50.99 , 50529  
 2020-02-01 23:39:18: Serial Port1 - DCD changed

Refresh Clear

## 4.20 Menu Monitoring/Diagnostics → Modbus Traffic Monitor

The Modbus Traffic Monitor can be used for diagnostic purposes and failure evaluation for service modes

- Modbus Serial Master to TCP Slave Gateway and
- Modbus TCP Master to Serial Slave Gateway.

If enabled, all Modbus traffic data passing the Gateway will be displayed. Each Modbus request/response cycle will be shown by 4 lines representing the 4 steps of the Modbus protocol conversion process.

### Process cycle of service mode **Modbus Serial Master to TCP Slave Gateway**:

1. Input RTU/ASCII Master request at serial port  
(generates Data Source = In: Port1)
2. Output TCP request to Slave at Ethernet interface  
(generates Data Source = Out: <IP address>:<Port No.>)
3. Input TCP response from Slave at Ethernet interface  
(generates Data Source = In: <IP address>:<Port No.>)
4. Output RTU/ASCII response to serial port  
(generates Data Source = Out: Port1)

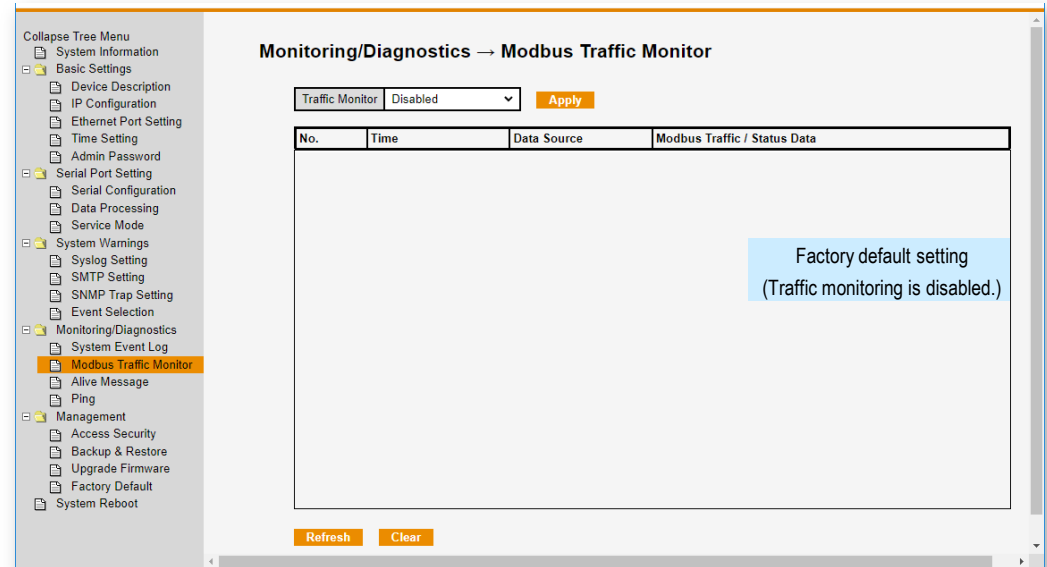
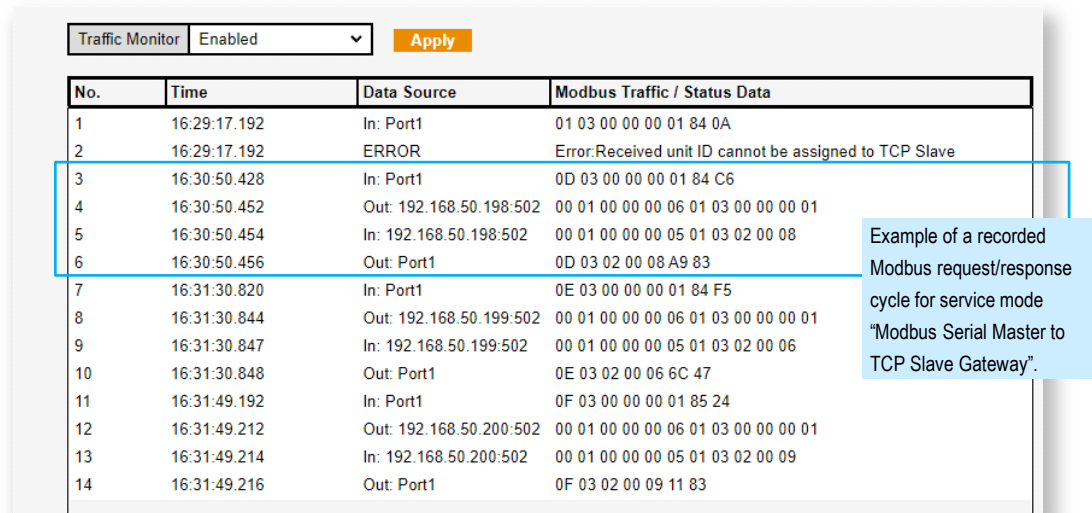
### Process cycle of service mode **Modbus TCP Master to Serial Slave Gateway**:

1. Input TCP Master request at Ethernet interface  
(generates Data Source = In: <IP address>:<Port No.>)
2. Output RTU/ASCII request to Slave at serial port  
(generates Data Source = Out: Port1)
3. Input RTU/ASCII response from serial port  
(generates Data Source = In: Port1)
4. Output TCP response at Ethernet interface  
(generates Data Source = Out: <IP address>:<Port No.>)

If any problem occurs during the process cycle, then it will be signaled as follows:

- Parameter Data Source contains an error message (eg. due to a timeout).
- Parameter Modbus Traffic / Status Data contains any other helpful information.
- Only a part of the messages of the process is shown, giving an indication on which interface the problem exist.

Notes: 1) The traffic monitor only can be used for above mentioned Modbus-related service modes!  
2) The logged content will be cleared if any device parameter will be changed and applied.  
3) The buffer size is 100 lines. When clicking button "Refresh" then the latest 100 entries (max.) will be displayed.

The screenshot shows the same interface but with the 'Traffic Monitor' dropdown set to 'Enabled' and the 'Apply' button pressed. The table now contains 14 rows of data. A blue box highlights rows 3 through 6, which represent a complete Modbus request/response cycle. A blue callout box on the right points to this cycle, stating: 'Example of a recorded Modbus request/response cycle for service mode "Modbus Serial Master to TCP Slave Gateway".'

No.	Time	Data Source	Modbus Traffic / Status Data
1	16:29:17.192	In: Port1	01 03 00 00 00 01 84 0A
2	16:29:17.192	ERROR	Error:Received unit ID cannot be assigned to TCP Slave
3	16:30:50.428	In: Port1	0D 03 00 00 00 01 84 C6
4	16:30:50.452	Out: 192.168.50.198:502	00 01 00 00 00 06 01 03 00 00 00 01
5	16:30:50.454	In: 192.168.50.198:502	00 01 00 00 00 05 01 03 02 00 08
6	16:30:50.456	Out: Port1	0D 03 02 00 08 A9 83
7	16:31:30.820	In: Port1	0E 03 00 00 00 01 84 F5
8	16:31:30.844	Out: 192.168.50.199:502	00 01 00 00 00 06 01 03 00 00 00 01
9	16:31:30.847	In: 192.168.50.199:502	00 01 00 00 00 05 01 03 02 00 06
10	16:31:30.848	Out: Port1	0E 03 02 00 06 6C 47
11	16:31:49.192	In: Port1	0F 03 00 00 00 01 85 24
12	16:31:49.212	Out: 192.168.50.200:502	00 01 00 00 00 06 01 03 00 00 00 01
13	16:31:49.214	In: 192.168.50.200:502	00 01 00 00 00 05 01 03 02 00 09
14	16:31:49.216	Out: Port1	0F 03 02 00 09 11 83

## 4.21 Menu Monitoring/Diagnostics → Alive Message

The “Alive Message” feature is a simple function that pushes a Still-Alive notification at defined intervals to a target system.

If enabled, this service periodically sends an UDP message containing

- Device IP address
- System Name
- Model Name

to the recipient IP address according to the defined Keep-Alive Message Interval.

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message**
  - Ping
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

### Monitoring/Diagnostics → Alive Message Help

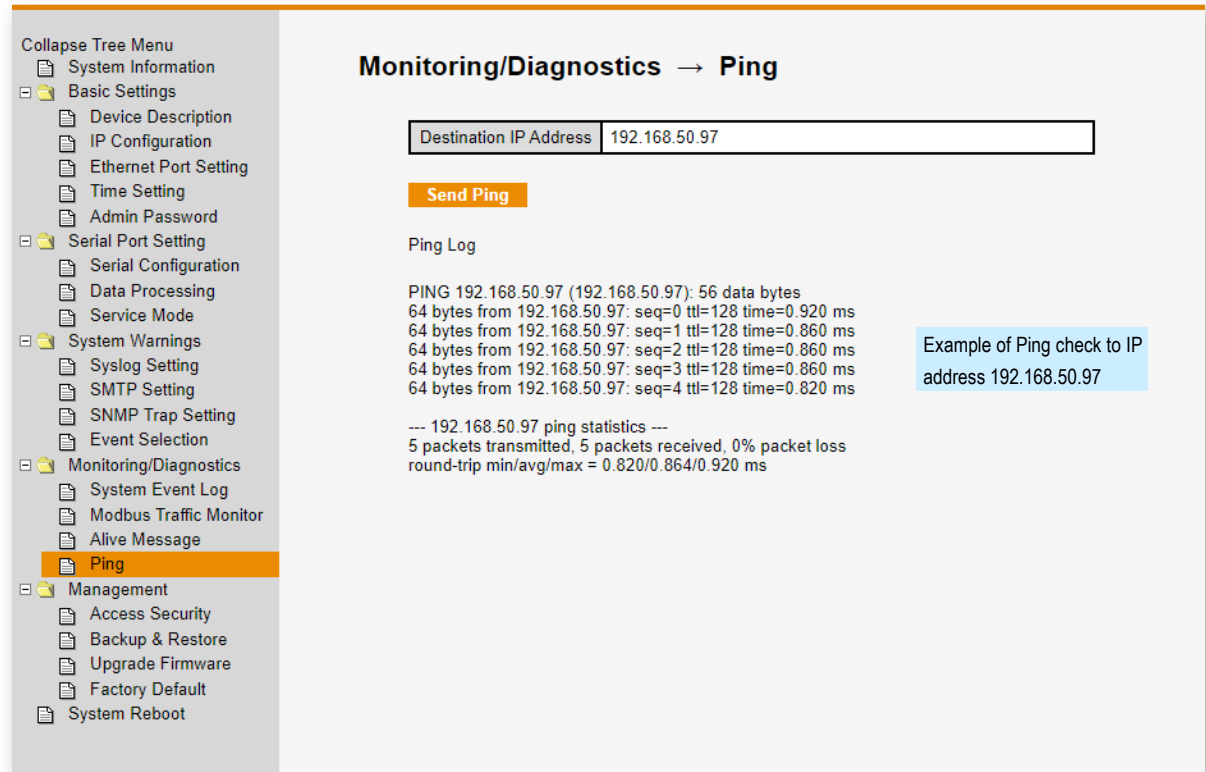
Alive Message Service	Disabled ▼	
Recipient IP Address		
UDP Port	0	
Keep-Alive Message Interval	0	seconds

**Apply**

Factory default setting

## 4.22 Menu Monitoring/Diagnostics → Ping

The “Ping” feature is a simple function to check the network connectivity to other network devices via ICMP protocol.



The screenshot displays the 'Monitoring/Diagnostics → Ping' page in the ComServer web interface. On the left is a 'Collapse Tree Menu' with the following structure:

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping**
- Management
  - Access Security
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

The main content area is titled 'Monitoring/Diagnostics → Ping'. It features a text input field for 'Destination IP Address' containing '192.168.50.97' and an orange 'Send Ping' button. Below this is the 'Ping Log' section, which shows the results of a ping test:

```
PING 192.168.50.97 (192.168.50.97): 56 data bytes
64 bytes from 192.168.50.97: seq=0 ttl=128 time=0.920 ms
64 bytes from 192.168.50.97: seq=1 ttl=128 time=0.860 ms
64 bytes from 192.168.50.97: seq=2 ttl=128 time=0.860 ms
64 bytes from 192.168.50.97: seq=3 ttl=128 time=0.860 ms
64 bytes from 192.168.50.97: seq=4 ttl=128 time=0.820 ms

--- 192.168.50.97 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.820/0.864/0.920 ms
```

A blue callout box on the right side of the log states: 'Example of Ping check to IP address 192.168.50.97'.

## 4.23 Menu Management → Access Security

### Configuration of access security settings.

These settings control the **access method** for device configuration and the **general access permit** based on the IP address of a connecting device.

Description of parameter settings	
HTTP Access	Enables / Disables the HTTP-based Webinterface access via Port 80.
HTTPS Access	Enables / Disables the HTTPS-based Web interface access via Port 443.
SSH Access (Console)	Enables / Disables the access to the Command Line Interface via SSH (Port 22).
IP Access Control	Enables / Disables the device access generally based on the IP Access Control List. If enabled and applied, then only members of <u>listed and active</u> IP addresses / ranges will have device access.
<b>Attention:</b> If 'IP Access Control' will be enabled then the IP address of the connected PC should be member of the 'IP Access Control List'. Otherwise, the Web interface connection immediately will be lost after clicking 'Apply' button.	

Collapse Tree Menu

- System Information
- Basic Settings
  - Device Description
  - IP Configuration
  - Ethernet Port Setting
  - Time Setting
  - Admin Password
- Serial Port Setting
  - Serial Configuration
  - Data Processing
  - Service Mode
- System Warnings
  - Syslog Setting
  - SMTP Setting
  - SNMP Trap Setting
  - Event Selection
- Monitoring/Diagnostics
  - System Event Log
  - Modbus Traffic Monitor
  - Alive Message
  - Ping
- Management
  - Access Security**
  - Backup & Restore
  - Upgrade Firmware
  - Factory Default
  - System Reboot

### Management → Access Security

Factory default setting

HTTP Access	Enabled
HTTPS Access	Enabled
SSH Access (Console)	Enabled

IP Access Control	Disabled
-------------------	----------

IP Access Control List			
No.	Activate	IP Address	Netmask
1	<input type="checkbox"/>		
2	<input type="checkbox"/>		
3	<input type="checkbox"/>		
4	<input type="checkbox"/>		
5	<input type="checkbox"/>		
6	<input type="checkbox"/>		
7	<input type="checkbox"/>		
8	<input type="checkbox"/>		
9	<input type="checkbox"/>		
10	<input type="checkbox"/>		
11	<input type="checkbox"/>		
12	<input type="checkbox"/>		
13	<input type="checkbox"/>		
14	<input type="checkbox"/>		
15	<input type="checkbox"/>		
16	<input type="checkbox"/>		

**Attention:** If IP Access Control will be enabled and applied then only listed and active IP addresses will have device access. The PC's IP address should be member of this list otherwise the connection will be lost.

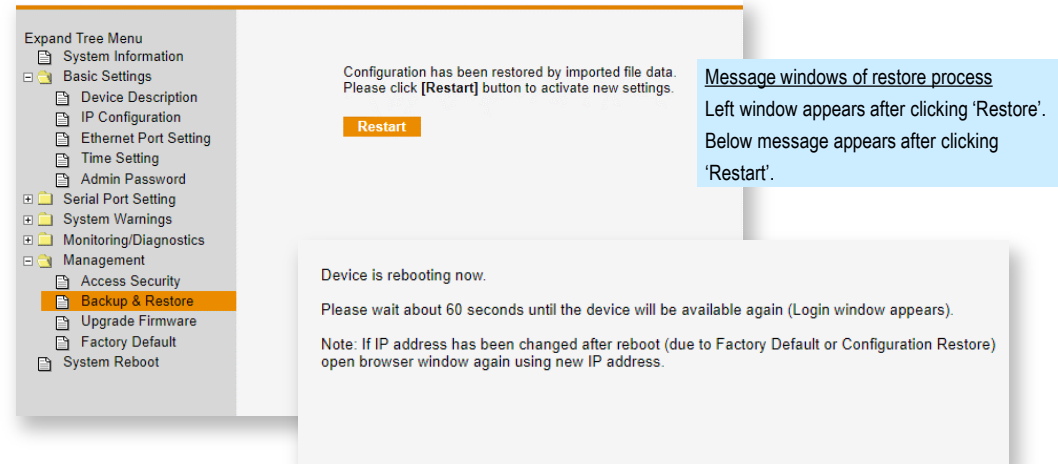
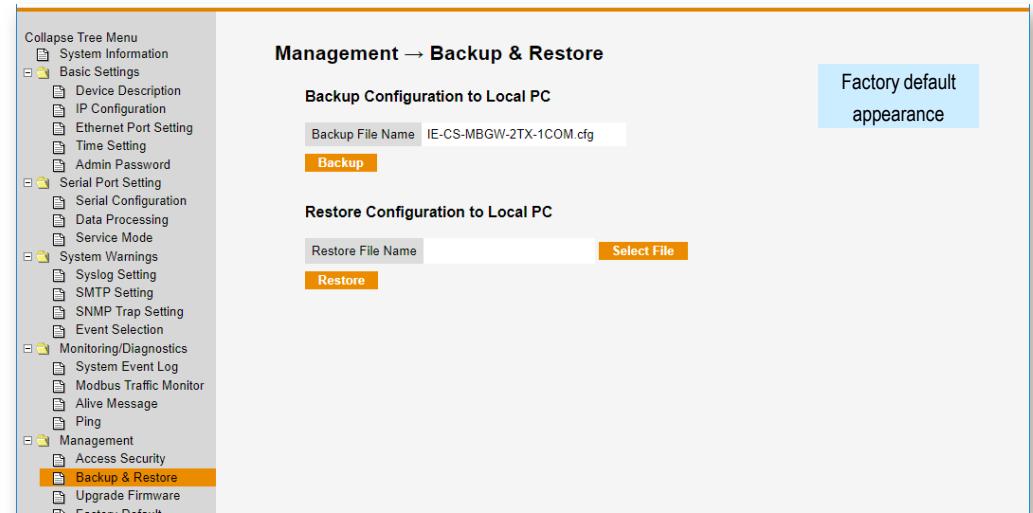
**Apply**



## 4.24 Menu Management → Backup & Restore

Via this menu the device configuration either can be saved to a configuration file or restored from a configuration file.

Description of parameter settings:	
<b>Backup Settings</b>	
Backup File Name	By factory default the file name is IE-CS-MBGW-2TX-1COM.cfg (Model name). Enter an appropriate filename for easy identification of the backup file to the device.
Button 'Backup'	Saves the current configuration to the browsers download section.
<b>Restore Settings</b>	
Restore File Name	Select a saved configuration file from the PC's directory.
Button 'Restore'	Starts the restoring process to activate the settings of selected configuration file.
Note about <b>restore process</b>	
Some seconds after click of button "Restore" a message appears that the configuration has been loaded and the device needs to be restarted. Click button 'Restart' and wait around 60 seconds until the device will be ready again.	
<b>If the device IP address of the restored configuration is different from the current one, then open a new browser window using the new IP address.</b>	

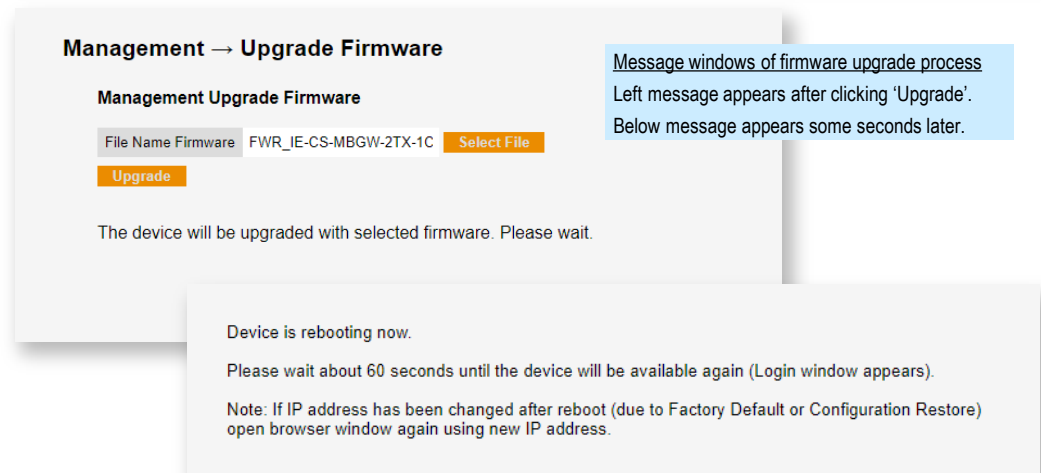
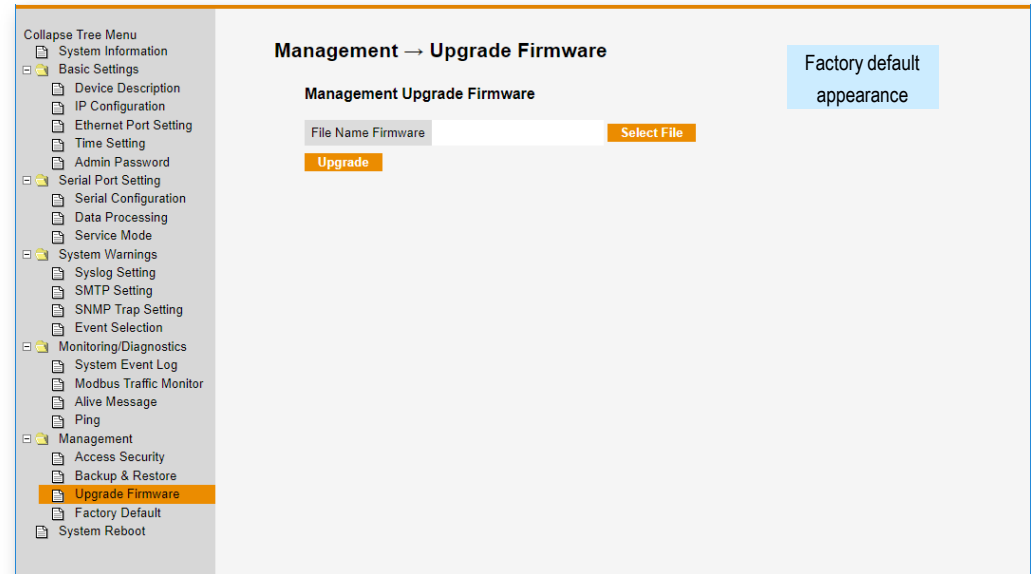


## 4.25 Menu Management → Upgrade Firmware

### Menu used for firmware upgrade.

If available, new firmware file can be downloaded from the Weidmüller Online Product Catalogue. Select or search for device name IE-CS-MBGW-2TX-1COM or part number 2682600000 and refer to section 'Downloads' regarding updated firmware files.

Description of parameter settings:	
File Name Firmware	Select your firmware file from your PC's directory via button 'Select File'.
Button 'Upgrade'	<p>Starts the upgrade process.</p> <p><b>Note about firmware upgrade process:</b> Some seconds after clicking button "Upgrade" a message appears that the device will be upgraded by the loaded firmware. Please wait again some seconds until the next message appears that the device is rebooting and will need around 60 seconds until it will be ready again.</p>
<p><b>Note:</b> A firmware upgrade will not change the configuration. After reboot the device will be accessible again via same IP address.</p>	



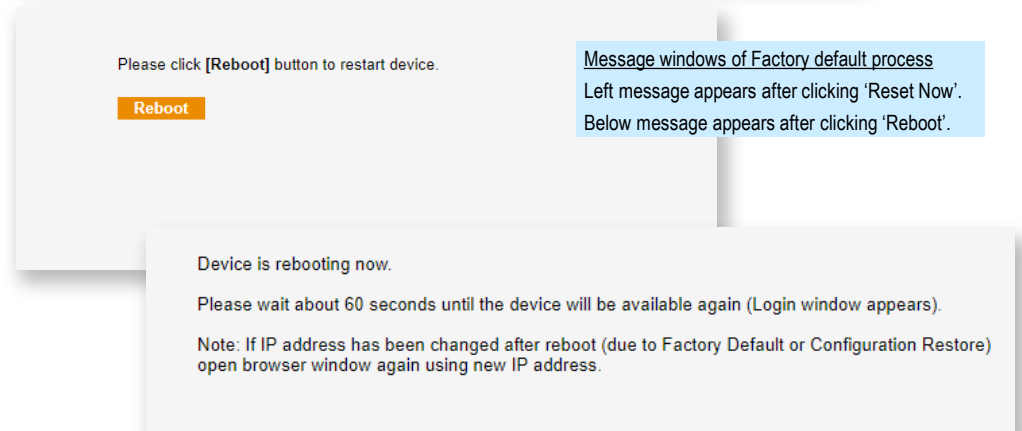
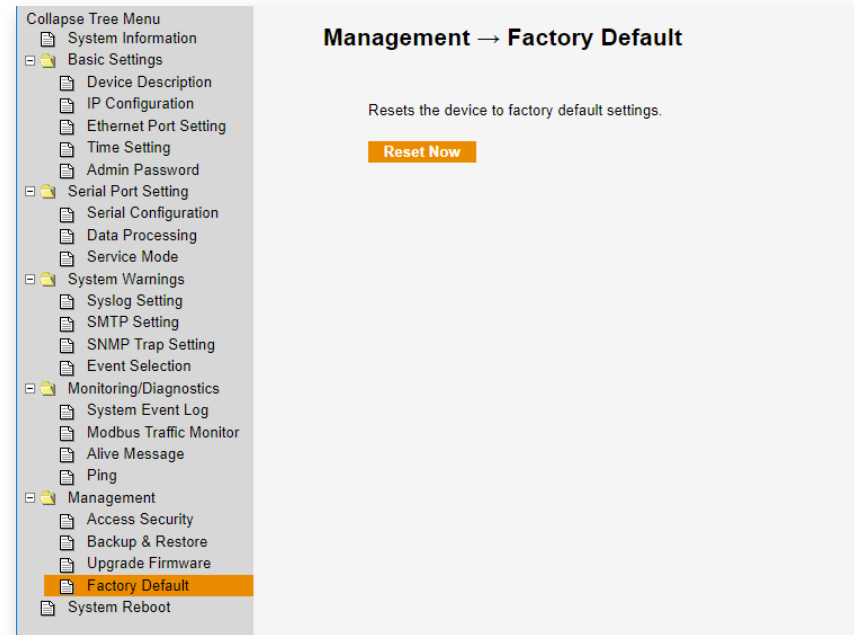
## 4.26 Menu Management → Factory Default

Menu for reset the device configuration to factory default settings.

### Process behavior:

Some seconds after clicking button “Reset Now” a message appears that the device will restart. Please wait again some seconds until the device rebooting is signalized. Then it takes around 60 seconds until the device will be ready again.

**Note:** The factory IP address always is set to 192.168.1.110. If previous IP address is different to factory IP address, then open a new browser window using factory IP address and default login credentials.



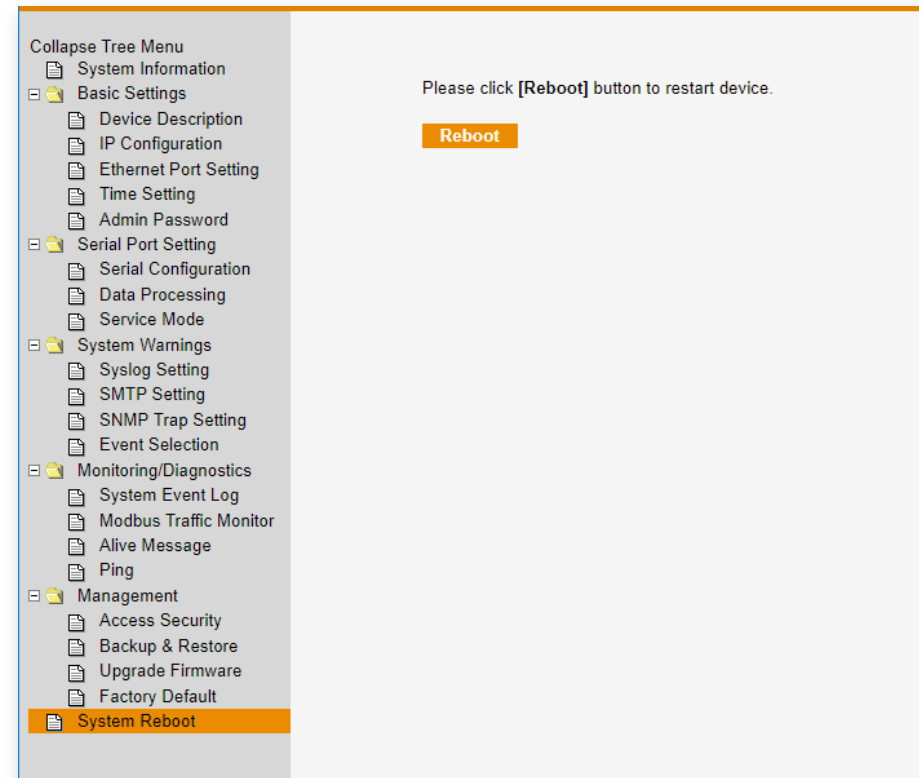
## 4.27 Menu System Reboot

### Menu for initiating a device reboot (warm start).

#### Process behavior:

After clicking button "Reboot" a message appears that the device is rebooting. The process will need around 60 seconds until the device will be ready again.

**Note:** After the reboot process the Login window appears again requiring input of username and password for Web interface access.



Device is rebooting now.

Message after clicking 'Reboot'.

Please wait about 60 seconds until the device will be available again (Login window appears).

**Note:** If IP address has been changed after reboot (due to Factory Default or Configuration Restore) open browser window again using new IP address.

## 5. Command Line Interface (SSH Console)

Additional to the Web interface configuration the ComServer / Modbus Gateway can be configured by an implemented Command Line Interface via SSH console access.

Use for SSH console login the same credentials as for Web interface access.

IP address/Netmask: 192.168.1.110 / 255.255.255.0

Username: admin

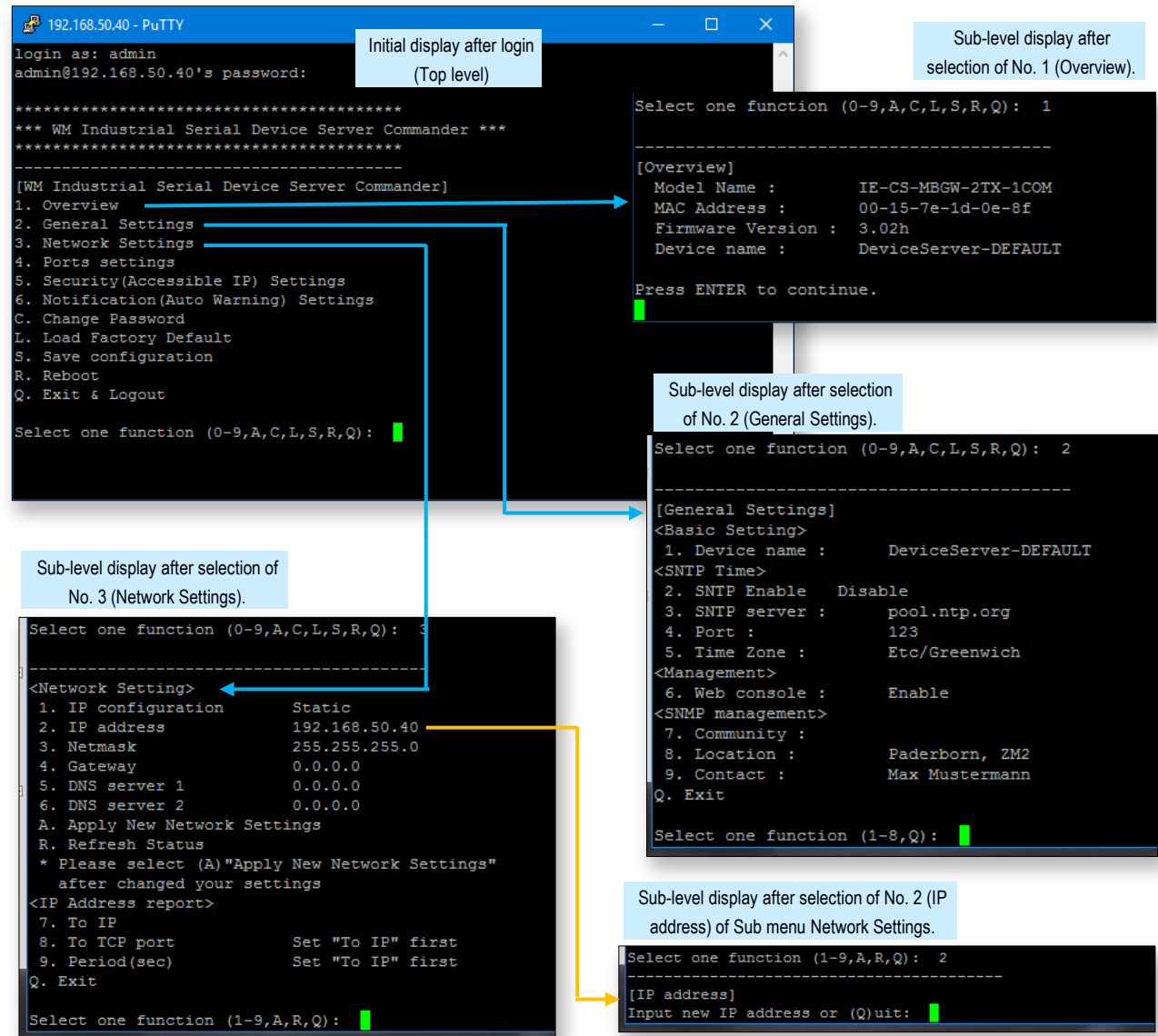
Password: Weidmueller

(Factory default settings)

The Command Line Interface provides for configuration a user guidance of possible commands and parameter settings.

**Note:** The Command Line Interface provides only limited configuration options in comparison to the full-featured web-based configuration.

### Sample screenshots of Command Line Interface use



**Initial display after login (Top level)**

```

192.168.50.40 - PuTTY
login as: admin
admin@192.168.50.40's password:

*****
*** WM Industrial Serial Device Server Commander ***
*****

[WM Industrial Serial Device Server Commander]
1. Overview
2. General Settings
3. Network Settings
4. Ports settings
5. Security(Accessible IP) Settings
6. Notification(Auto Warning) Settings
C. Change Password
L. Load Factory Default
S. Save configuration
R. Reboot
Q. Exit & Logout

Select one function (0-9,A,C,L,S,R,Q):
  
```

**Sub-level display after selection of No. 1 (Overview).**

```

Select one function (0-9,A,C,L,S,R,Q): 1

-----
[Overview]
Model Name :      IE-CS-MBGW-2TX-1COM
MAC Address  :      00-15-7e-1d-0e-8f
Firmware Version :  3.02h
Device name  :      DeviceServer-DEFAULT

Press ENTER to continue.
  
```

**Sub-level display after selection of No. 2 (General Settings).**

```

Select one function (0-9,A,C,L,S,R,Q): 2

-----
[General Settings]
<Basic Setting>
1. Device name :      DeviceServer-DEFAULT
<SNTP Time>
2. SNTP Enable   Disable
3. SNTP server  :      pool.ntp.org
4. Port         :      123
5. Time Zone    :      Etc/Greenwich
<Management>
6. Web console  :      Enable
<SNMP management>
7. Community    :
8. Location     :      Paderborn, ZM2
9. Contact      :      Max Mustermann
Q. Exit

Select one function (1-8,Q):
  
```

**Sub-level display after selection of No. 3 (Network Settings).**

```

Select one function (0-9,A,C,L,S,R,Q): 3

-----
<Network Setting>
1. IP configuration   Static
2. IP address        192.168.50.40
3. Netmask           255.255.255.0
4. Gateway           0.0.0.0
5. DNS server 1      0.0.0.0
6. DNS server 2      0.0.0.0
A. Apply New Network Settings
R. Refresh Status
* Please select (A)"Apply New Network Settings"
  after changed your settings
<IP Address report>
7. To IP
8. To TCP port       Set "To IP" first
9. Period(sec)       Set "To IP" first
Q. Exit

Select one function (1-9,A,R,Q):
  
```

**Sub-level display after selection of No. 2 (IP address) of Sub menu Network Settings.**

```

Select one function (1-9,A,R,Q): 2

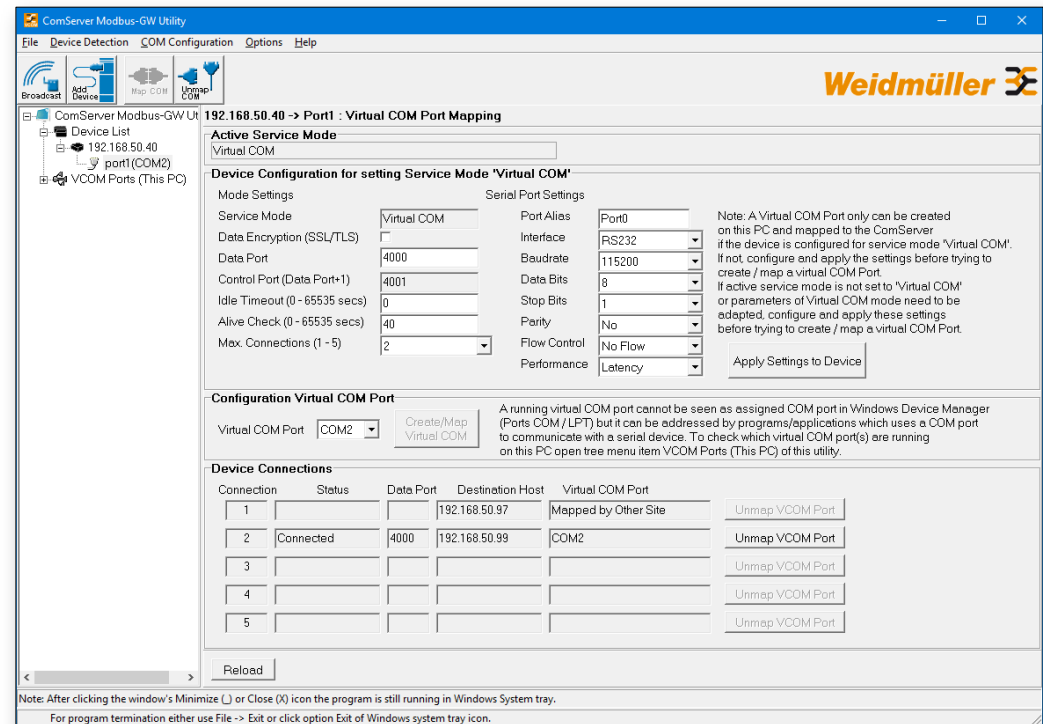
-----
[IP address]
Input new IP address or (Q)uit:
  
```

## 6. ComServer / Modbus Gateway Utility

### 6.1 Overview

- The Weidmüller software 'ComServer / Modbus Gateway Utility' is designed to provide a virtual COM port on a Windows PC allowing a communication with remote serial devices connected to ComServer IE-CS-MBGW-2TX-1COM (Service mode Virtual COM).
- When installed and activated the virtual COM port driver establishes a TCP/IP connection to the ComServer. Any data sent from the PC's application to the virtual COM port will be forwarded as IP packet payload to the ComServer and finally sent out to the serial port. Any data received from the serial port will be handled vice versa.
- Several virtual COM ports can be installed and activated concurrently, each mapped to the serial port of an individual ComServer..
- Additionally, the software utility can be used to detect IE-CS-MBGW-2TX-1COM device inside of the local switched network (Broadcast domain) of the PC.

**Note:** The utility can be downloaded from the Weidmüller Online Product Catalogue. Select or search for device name IE-CS-MBGW-2TX-1COM or part number 2682600000 and refer to section 'Downloads'.



## 6.2 Installation

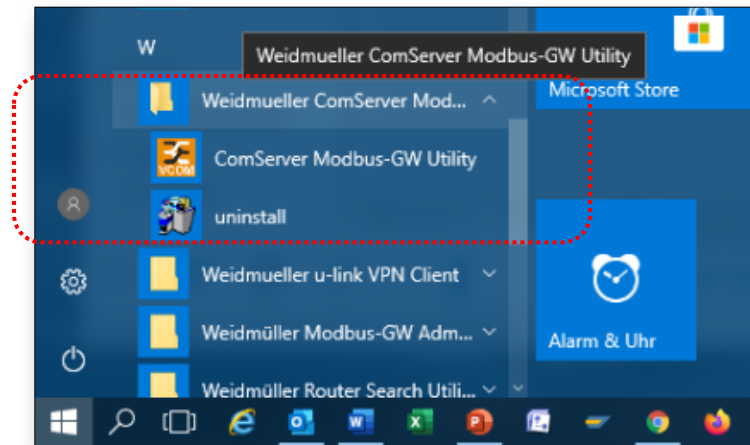
Run installation file Weidmüller-CS-MBGW-Utility\_Vx.x.exe with administration rights and follow the installations hints.



Final display after successful installation

After successful completion of the installation the utility can be launched in Windows Start Menu.

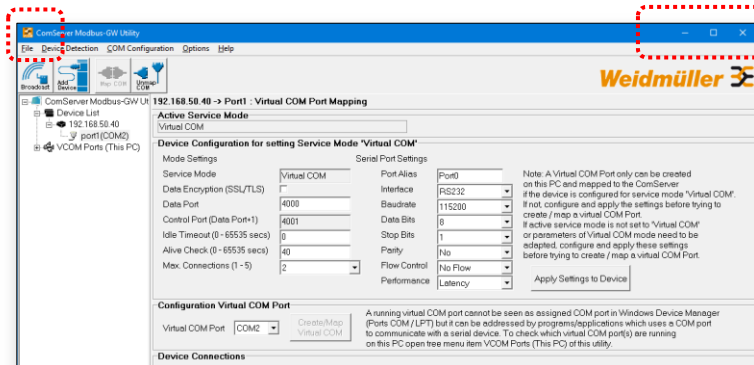
**Note:** The utility cannot be seen in section 'Apps & Features' respective 'Programs and Features'. For removing the program use button 'Uninstall' in Windows Start Menu.



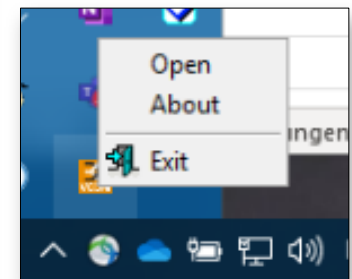
### Notes about appearance behavior:

If the window of the running program will be minimized (⏏) or closed (x), or if the window of the utility becomes a background window (due to focus on other program), then it will disappear into the Windows System tray. Open the window again by clicking button 'Open' of the Windows system tray icon.

For program exit use Menu item File → Exit or click button 'Exit' of the Windows system tray icon.



Windows system tray icon



### 6.3 Initial start page (Program Use)

#### Description of Menus and Buttons

##### [1a] Button Broadcast Search

##### [1b] Menu item Device Detection → Broadcast Search

Can be used to detect devices of type IE-CS-MBGW-2TX-1COM via an Ethernet-based (Layer 2) broadcast. Devices can be detected across a switches network independent of their IP address settings.

##### [2a] Button Add Device

##### [2b] Menu item Device Detection → Add Device by IP

Can be used to add devices of type IE-CS-MBGW-2TX-1COM via device IP address.

##### [3] Menu item File → New CS-MBGW-Utility configuration

Resets all settings to an initial state. All listed devices and all configured virtual COM ports will be removed.

##### [4] Menu item File → Load CS-MBGW-Utility configuration

Loads a previously saved configuration.

##### [5] Menu item File → Save CS-MBGW-Utility configuration

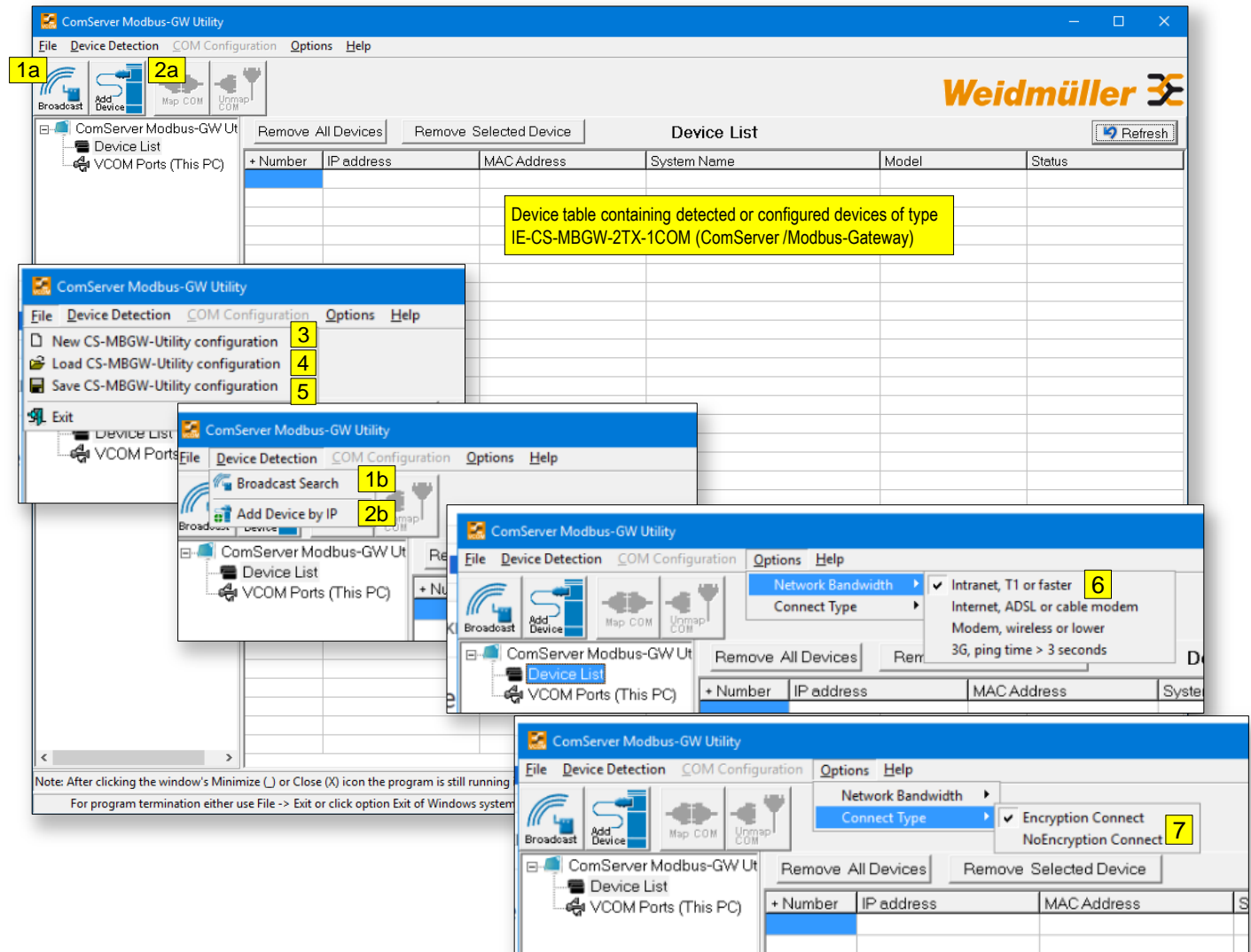
Creates a backup file of current configuration.

##### [6] Menu item Options → Network Bandwidth

Sets an indication about connection speed between the PC and connected ComServer(s) for internal timing settings.

##### [7] Menu item Options → Connect Type

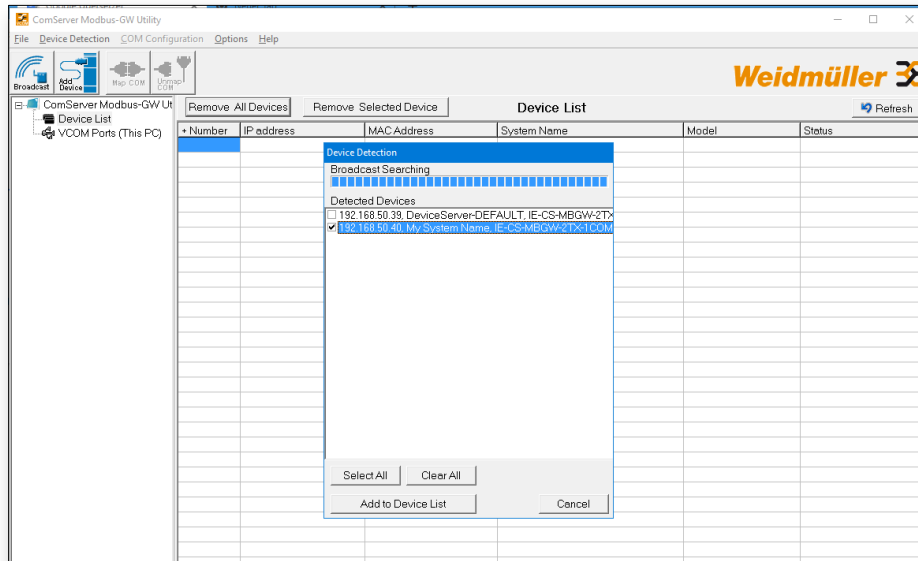
Select if internal communication protocol between this tool and listed devices will be exchanged readable or encrypted (by default).



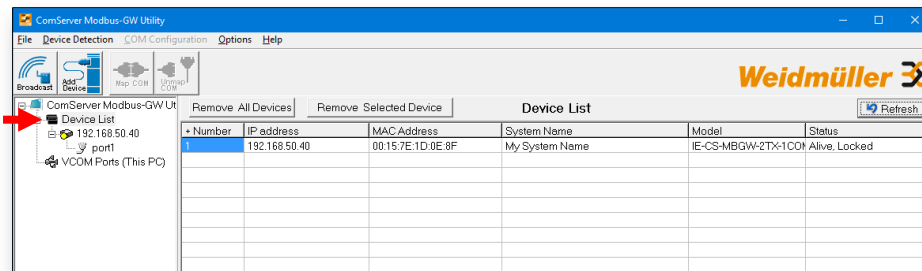


## 6.4 How to configure a Virtual COM Port and assign to a ComServer

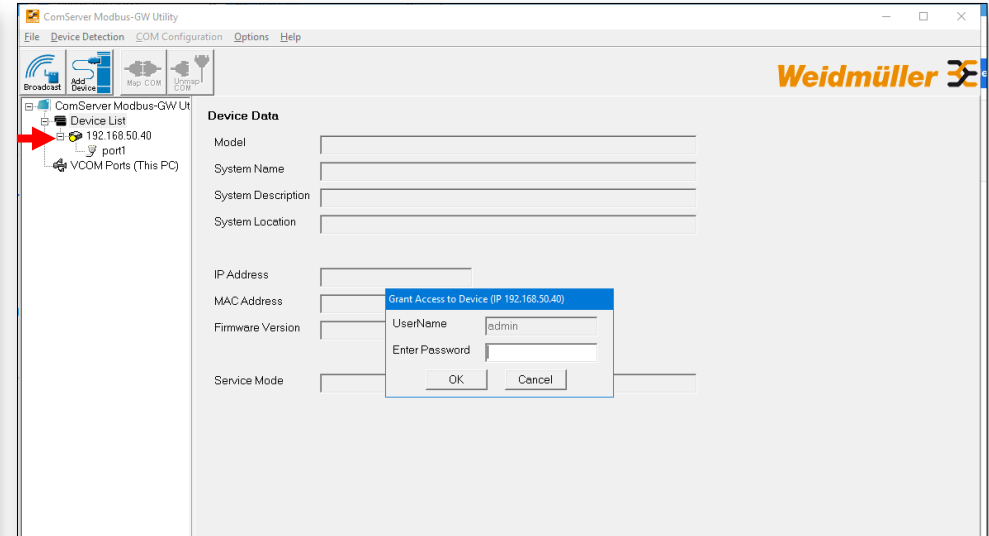
**Step 1:** Start a broadcast search via button 'Broadcast' for ComServer detection. Select a found device and click "Add to Device List". Alternatively use button "Add Device" to insert a ComServer directly via a known IP address.



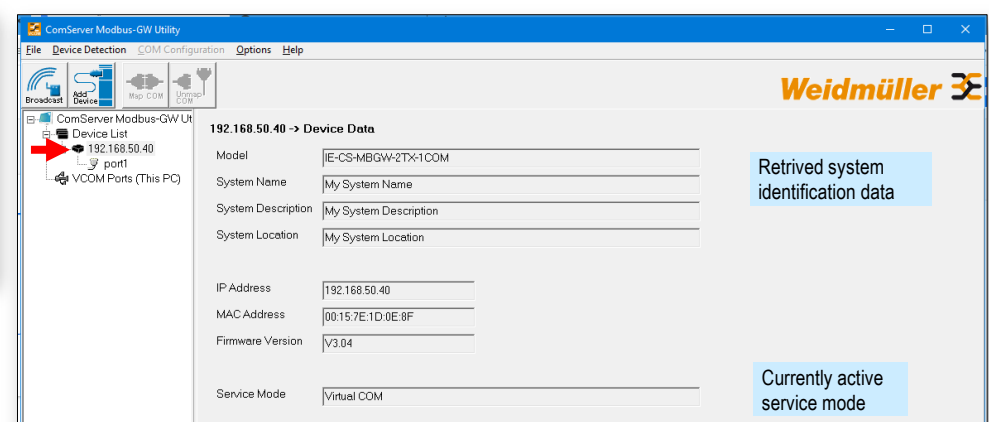
**Step 2:** Added device now appears in the device list.



**Step 3:** Click on menu item <IP address> item to initiate the communication with the selected device. To grant access enter same password as used for Web interface access.

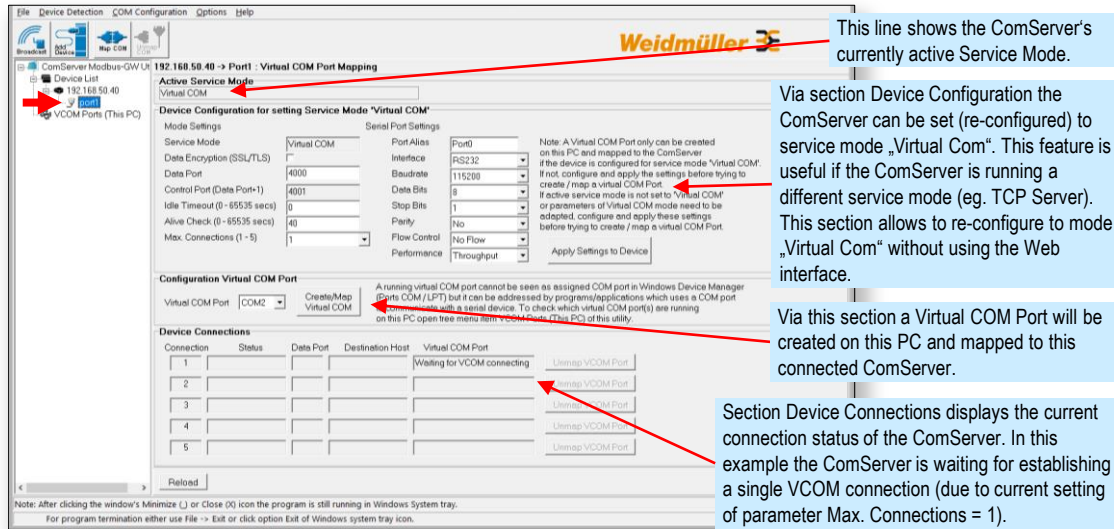


**Step 4:** After successful connection some basic identification data and device settings will displayed.

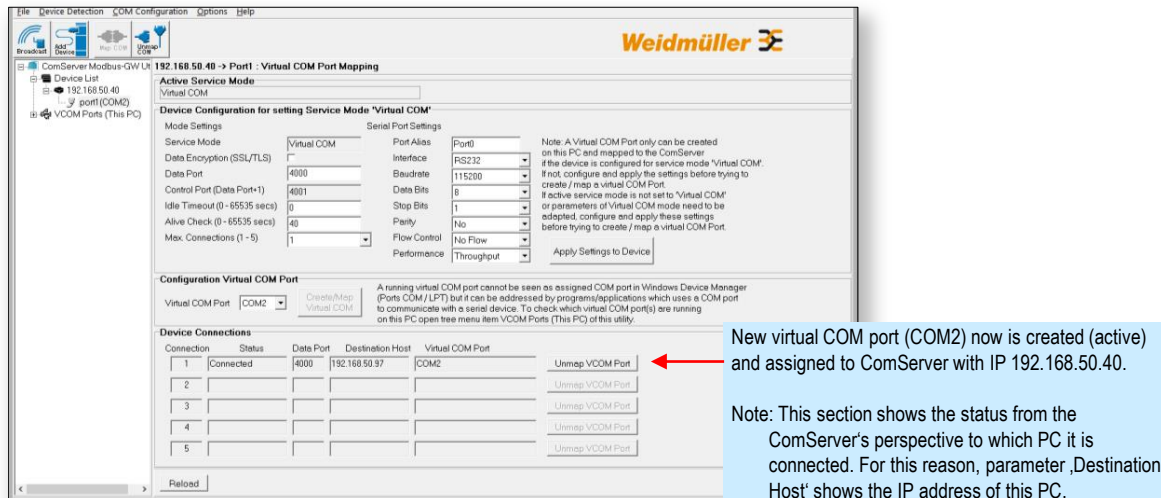


## 6.4 How to configure a Virtual COM Port and assign to a ComServer (ongoing)

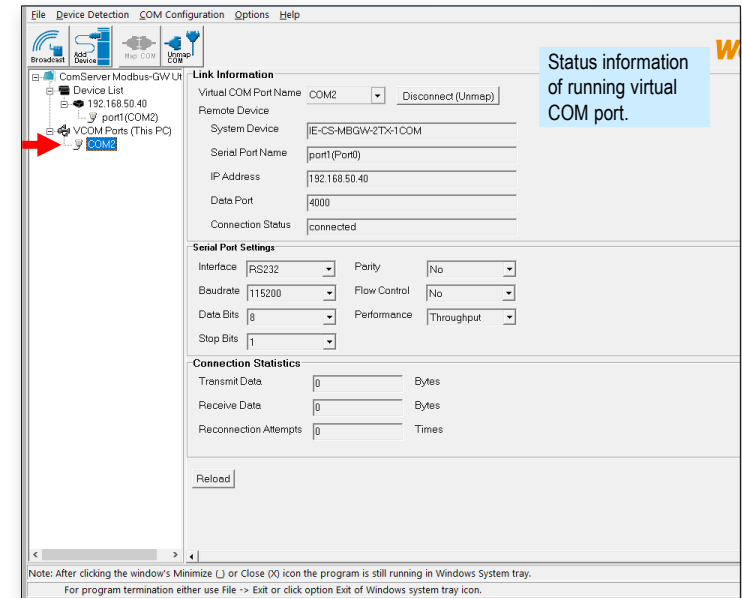
**Step 5:** Click on button “port1” retrieves the current device configuration regarding Service Mode and Port settings. This window is used for creating a Virtual COM Port which will be assigned to serial port1 of this device.



**Step 6:** Click button “Create/Map Virtual COM” to create/add a new COM port.



**Step 7:** After successful mapping of the virtual COM port the new one can be monitored as sub item of menu 'VCOM Ports (This PC)'.



**Result:** The PC application should be able to communicate with a serial device connected to the ComServer by addressing PC's virtual port COM2.

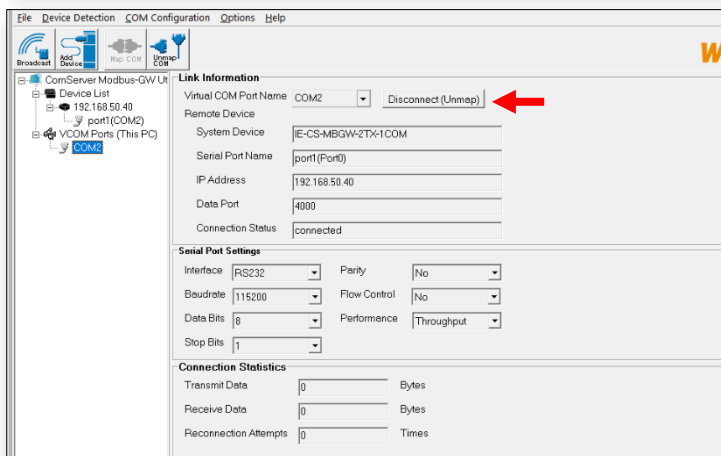
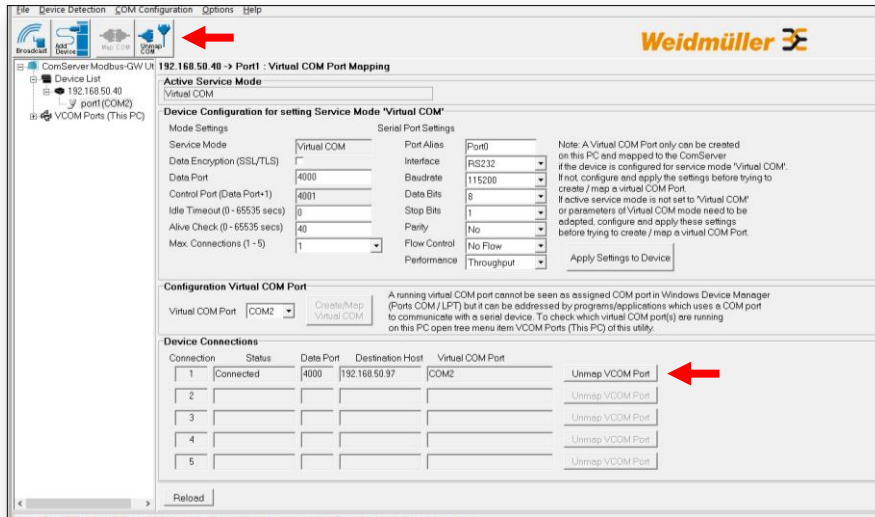
### Important note:

1. A running virtual COM port cannot be seen as assigned COM port in the Windows Device Manager (Section Ports COM & LPT) but it can be selected by programs/applications which uses a COM port to communicate with a serial device. For checking which virtual COM port(s) have been created and assigned by this utility you need to open menu item 'VCOM Ports (This PC)'.
2. A configured and connected virtual COM port is stored permanently on the PC. If not explicitly removed the virtual COM port automatically will go active again after next PC's start or reboot and tries to re-connect to the assigned ComServer if available. (For removing and release of the virtual COM port please refer to next page).

## 6.5 How to disconnect from a ComServer and removing a Virtual COM Port

### Disconnection:

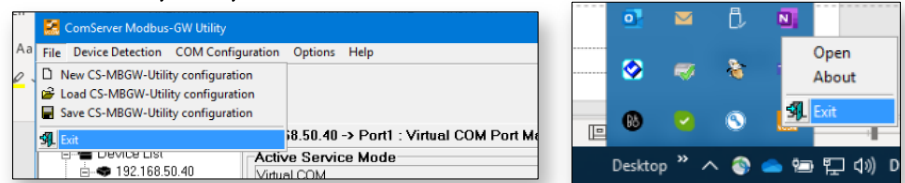
For disconnecting the virtual COM port from the ComServer one of the 'Unmap/Disconnect' buttons can be used (see 3 markings in screenshots below). After unmapping the COM port number still is assigned to this utility and can be used again for a reconnection to the ComServer.



### Remove (and Program Exit):

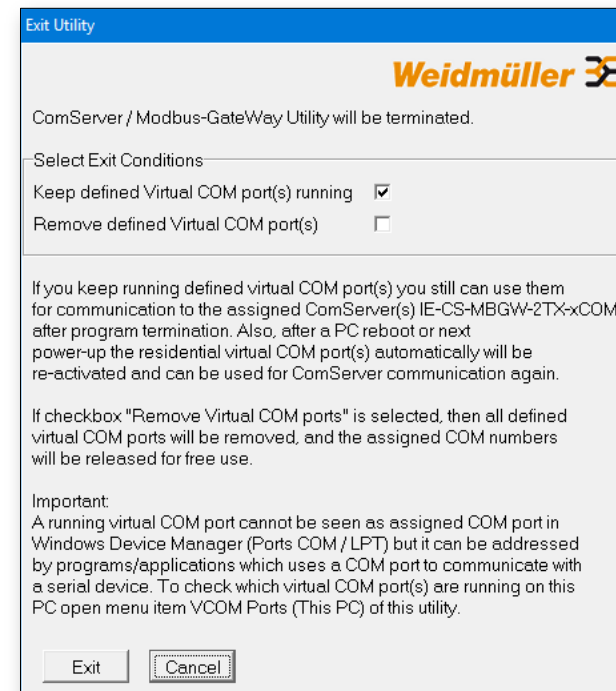
A created virtual COM port can be removed and released when exiting the program.

**Step 1:** Select File → Exit (Drop-down menu) or click alternatively entry "Exit" of program icon in the Windows system tray.



**Step 2:** After click on Exit below window appears for selection how to go on with created virtual COM port(s). Select either option

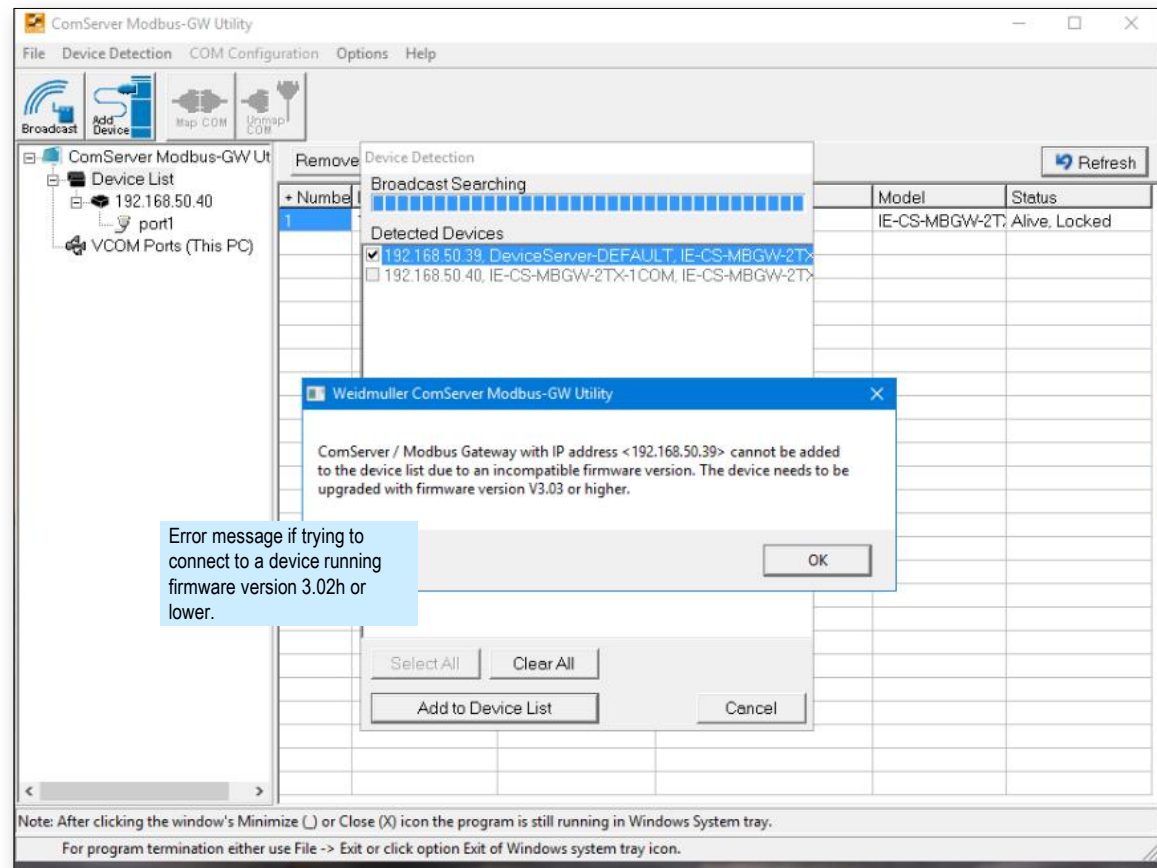
- Keep the defined virtual COM ports residential and running or
  - Remove defined Virtual COM ports
- to remove and release all defined virtual COM ports completely after program exit.



## 6.6 Firmware requirement of IE-CS-MBGW-2TX-1COM for use with ComServer / Modbus Gateway Utility

Please consider that at least **Firmware version 3.03 (or higher)** has to be installed on device IE-CS-MBGW-2TX-1COM to be compatible with ComServer / Modbus Gateway Utility. A connection to devices having previous version 3.02h or lower will be refused and an error message will be displayed.

If necessary, download latest firmware version from the Weidmüller Online Product Catalogue and upgrade the device. For download select or search device name IE-CS-MBGW-2TX-1COM or part number 2682600000 and refer to section 'Downloads'.

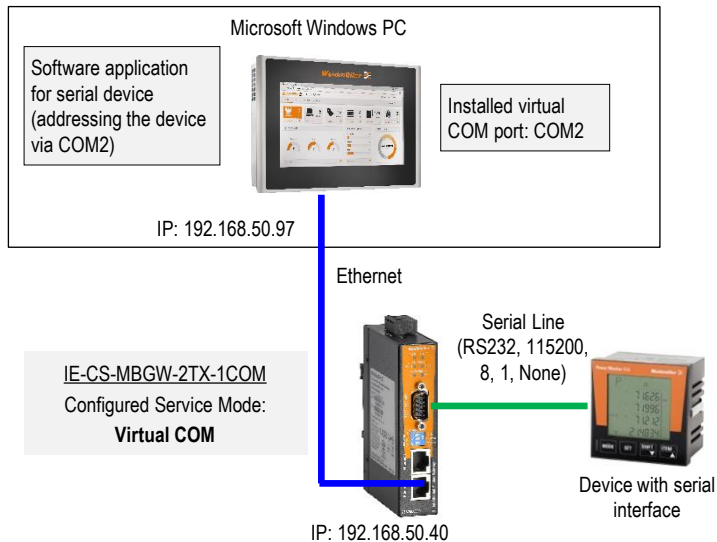


## **A) Application Examples**

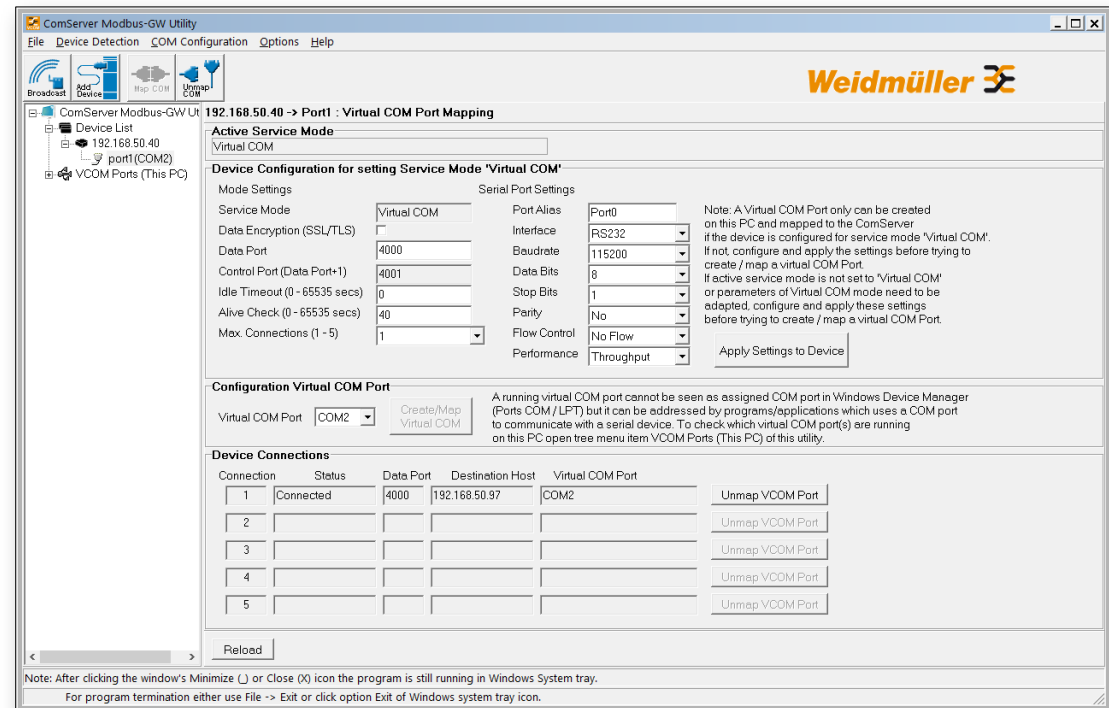
Subsequent pages provide some application examples in terms of the configurable device features (Operation Modes).

## A1) Sample application for service mode “Virtual COM”

**Scenario:** PC application is communicating with a remote serial device via the ComServer (Serial / Ethernet Converter) by addressing a (virtual) COM Port.



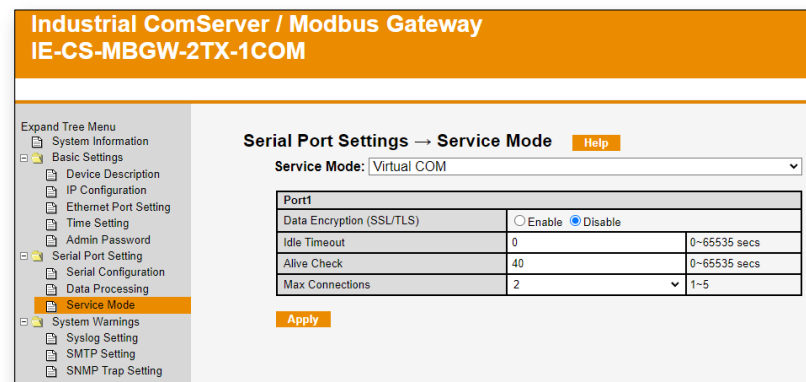
Configuration settings of ComServer/Modbus-GW Utility for illustrated application:



**Note:** For preparing this application all settings can be done using only ComServer/Modbus-GW Utility, including ComServer configuration for service mode 'Virtual COM', which will be set by internal communication between the software and the connected ComServer.

An additional device configuration via Web interface only is necessary if other parameters like Device Description, Timer/Event-Log settings or special settings regarding data processing parameters shall be done.

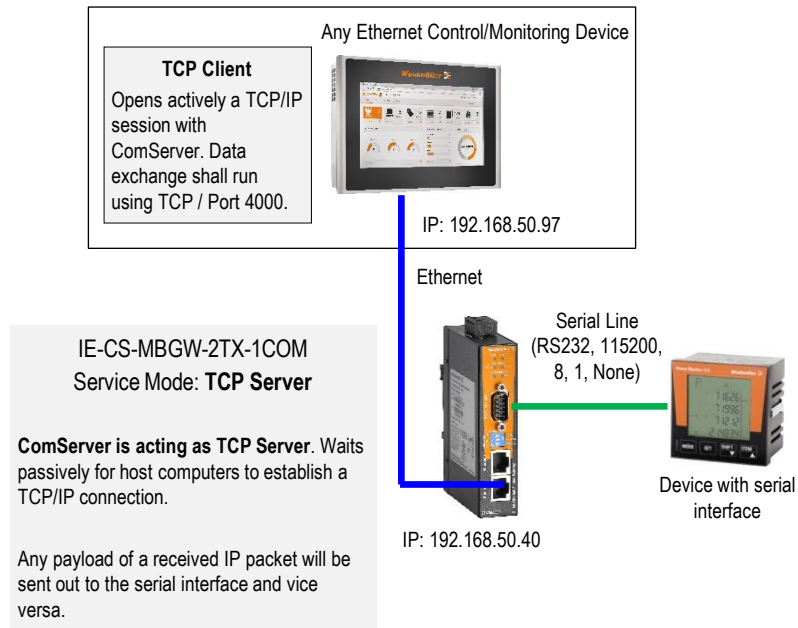
Service mode settings shown by Web interface after setup by ComServer/Modbus-GW Utility:





## A2) Sample application for service mode 'TCP Server'

**Scenario:** Control/Monitoring Device is communicating with remote serial device via the ComServer (Serial / Ethernet Converter) **by TCP protocol**. The Control/Monitoring Device establishes actively the TCP/IP connection to the ComServer.



Serial Port related ComServer settings for illustrated application:

**Serial Port Settings → Serial Configuration** Help

**Port1**

Port Alias	Port0
Interface	RS232
Baud Rate	115200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Performance	<input type="radio"/> Throughput <input checked="" type="radio"/> Latency

**Apply**

**Serial Port Settings → Data Processing** Help

**Port1**

**Serial to Ethernet Data Transmission**

Force TX Interval Time	0	ms		
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0	ms		

**Ethernet to Serial Data Transmission**

Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0	ms		

Note: Parameters for data processing only are valid for service modes Virtual COM Port, TCP Server, TCP Client and UDP Server/Client. For Modbus service modes these data processing parameters do not have any effect. Modbus related parameters have to be configured in the Web menu of the selected Modbus service mode.

**Apply**

Note:  
These parameters for data flow control are optional and do not need to be changed for most applications.

**Serial Port Settings → Service Mode** Help

Service Mode: TCP Server

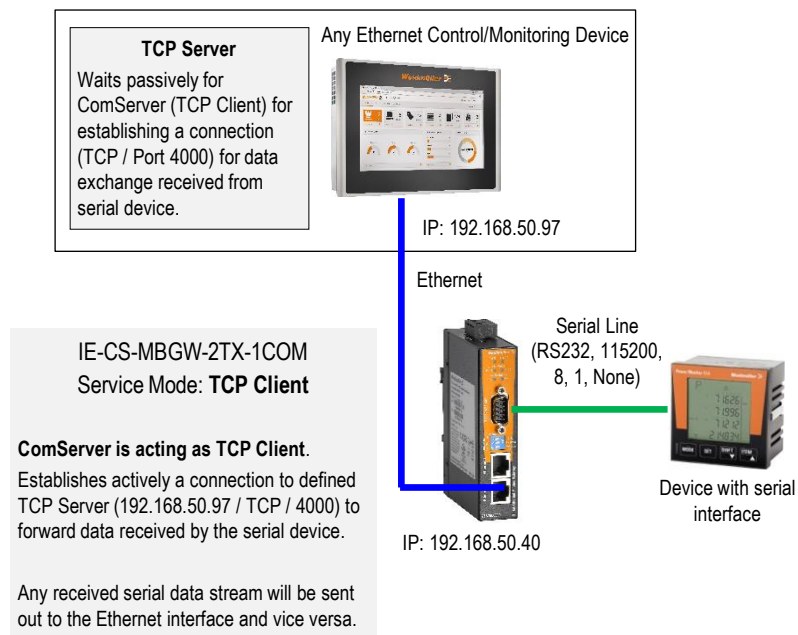
**Port1**

Data Encryption (SSL/TLS)	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Telnet Negotiation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
TCP Server Port	4000
Idle Timeout	0 0~65535 secs
Alive Check	40 0~65535 secs
Max Connections	2 1~5

**Apply**

### A3) Sample application for service mode 'TCP Client'

**Scenario:** Control/Monitoring Device is communicating with remote serial device via the ComServer (Serial / Ethernet Converter) **by TCP protocol**. The Control/Monitoring Device is configured as TCP Server for data reception forwarded by ComServer.



Serial Port related ComServer settings for illustrated application:

**Serial Port Settings → Serial Configuration** Help

**Port1**

Port Alias	Port0
Interface	RS232
Baud Rate	115200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Performance	<input type="radio"/> Throughput <input checked="" type="radio"/> Latency

**Apply**

**Serial Port Settings → Data Processing** Help

**Port1**

**Serial to Ethernet Data Transmission**

Force TX Interval Time	0	ms
Delimiter(Hex 0~ff)	1: 00 2: 00 3: 00 4: 00	
Flush Data Buffer After	0	ms

**Ethernet to Serial Data Transmission**

Delimiter(Hex 0~ff)	1: 00 2: 00 3: 00 4: 00	
Flush Data Buffer After	0	ms

Note: Parameters for data processing only are valid for service modes Virtual COM Port, TCP Server, TCP Client and UDP Server/Client. For Modbus service modes these data processing parameters do not have any effect. Modbus related parameters have to be configured in the Web menu of the selected Modbus service mode.

**Apply**

Note:  
These parameters for data flow control are optional and do not need to be changed for most applications.

**Serial Port Settings → Service Mode** Help

**Service Mode:** TCP Client

**Port1**

Destination Host	IP Address	TCP Port
TCP Server 1	192.168.50.97	4000
TCP Server 2		65535
TCP Server 3		65535
TCP Server 4		65535
TCP Server 5		65535

**TCP Connection Settings**

Idle Timeout	0	0~65535 secs
Alive Check	40	0~65535 secs
Data Encryption (SSL/TLS)	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Connect on	<input checked="" type="radio"/> Startup <input type="radio"/> Any Character	

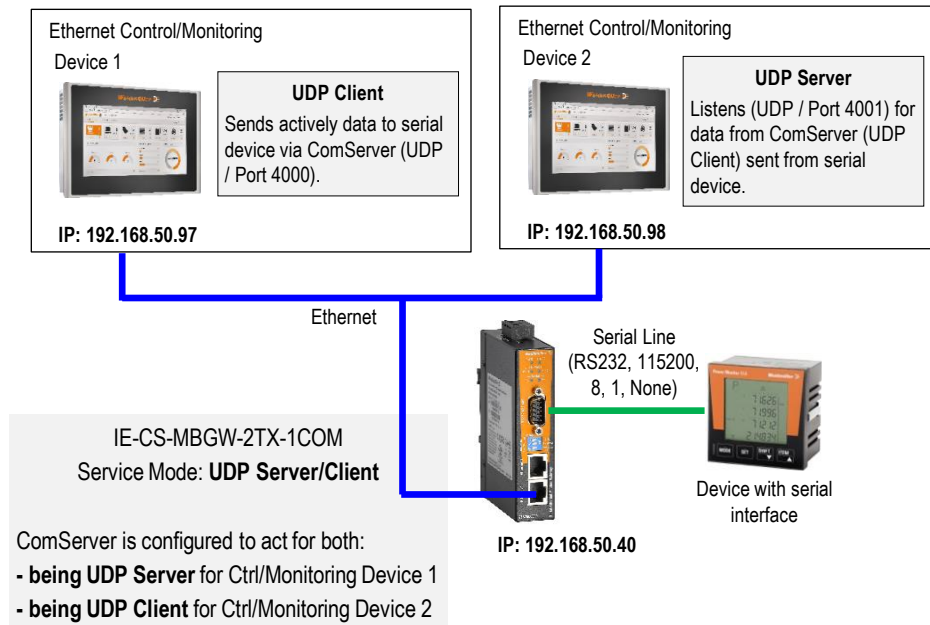
**Apply**



## Serial Port related ComServer settings for illustrated application:

**A4) Sample application for service mode 'UDP Server/Client'**

- Scenario:** 2 Control/Monitoring devices shall communicate with a remote serial device via the ComServer (Serial / Ethernet Converter) **by UDP protocol**.
- Control/Monitoring Device 1 is configured as UDP Client pushing data to serial device via ComServer.
  - Control/Monitoring Device 2 is configured as UDP Server for serial data reception forwarded by ComServer.



**Serial Port Settings → Serial Configuration** [Help](#)

Port1	
Port Alias	Port0
Interface	RS232
Baud Rate	115200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Performance	<input type="radio"/> Throughput <input checked="" type="radio"/> Latency

[Apply](#)

**Serial Port Settings → Data Processing** [Help](#)

Port1				
<b>Serial to Ethernet Data Transmission</b>				
Force TX Interval Time	0	ms		
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0	ms		
<b>Ethernet to Serial Data Transmission</b>				
Delimiter(Hex 0~ff)	1: 00	2: 00	3: 00	4: 00
Flush Data Buffer After	0	ms		

Note: Parameters for data processing only are valid for service modes Virtual COM Port, TCP Server, TCP Client and UDP Server/Client. For Modbus service modes these data processing parameters do not have any effect. Modbus related parameters have to be configured in the Web menu of the selected Modbus service mode.

[Apply](#)

Note:  
These parameters for data flow control are optional and do not need to be changed for most applications.

**Serial Port Settings → Service Mode** [Help](#)

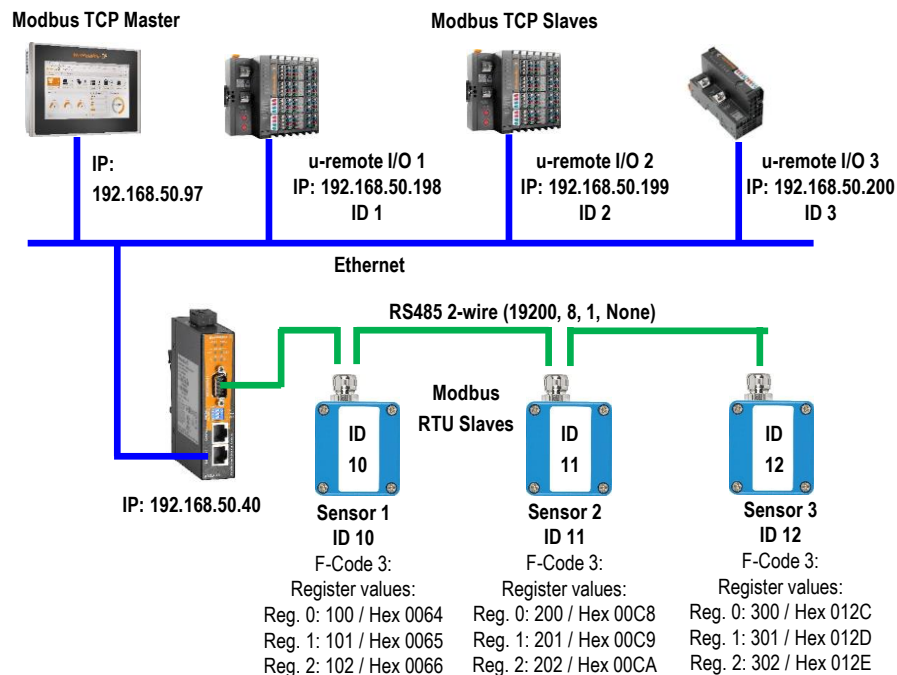
Service Mode: **UDP Server/Client**

Port1			
UDP Server Mode	<input checked="" type="radio"/> Enable <input type="radio"/> Disable		
Listen Port	4000		
UDP Client Mode: <input checked="" type="radio"/> Enable <input type="radio"/> Disable			
Destination Host Ranges	Start IP Address	End IP Address	UDP Send Port
Server Range 1	192.168.50.98	192.168.50.98	4001
Server Range 2			65535
Server Range 3			65535
Server Range 4			65535

[Apply](#)

## A5) Sample application for service mode 'Modbus TCP Master to Serial Slave Gateway'

**Scenario:** 3 Modbus RTU slaves (Sensors) shall be integrated into a Modbus TCP application with Modbus TCP Master.



IE-CS-MBGW-2TX-1COM → Service Mode: **Modbus TCP Master to Serial Slave Gateway**

Device is acting as Modbus TCP/RTU protocol gateway.

- Accepts a Modbus TCP request and forwards as RTU request to the addressed RTU slave.
- Forwards received RTU response as TCP response to the requesting Modbus TCP Master.

### Serial Port related Modbus Gateway settings for illustrated application:

**Serial Port Settings → Serial Configuration**

Port1	
Port Alias	Port0
Interface	RS485(2-wires)
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Performance	<input type="radio"/> Throughput <input checked="" type="radio"/> Latency

**Apply**

**Serial Port Settings → Service Mode**

Service Mode: **Modbus: TCP Master to Serial Slave Gateway**

Port1	
Serial Protocol	Modbus RTU

TCP Server Connection Settings		
TCP Server Listening Port	502	
Max. concurrent TCP Master Connections	10	1 ~ 10
Inactivity Timeout	0	0 ~ 3600 secs
Alive Check	40	0 ~ 3600 secs

Modbus RTU Slave(s) Settings		
Add Offset to Device(s) ID	0	-255 to +255
Response Timeout	1000	50 ~ 10000 msecs
Request Pause	0	0 ~ 10000 msecs

**Apply**

### Monitored data traffic passing the Modbus Gateway:

Collapse Tree Menu

System Information

Basic Settings

Device Description

IP Configuration

Ethernet Port Setting

Time Setting

Admin Password

Serial Port Setting

Serial Configuration

Data Processing

Service Mode

System Warnings

Syslog Setting

SMTP Setting

SNMP Trap Setting

Event Selection

Monitoring/Diagnostics

System Event Log

Modbus Traffic Monitor

Alive Message

Ping

Management

Access Security

Backup & Restore

Upgrade Firmware

Factory Default

System Reboot

Monitoring/Diagnostics → Modbus Traffic Monitor

Traffic Monitor

Enabled

Apply

No.	Time	Data Source	Modbus Traffic / Status Data
1	11:50:14.319	In: 192.168.50.94:58837	00 1B 00 00 00 06 0A 03 00 00 00 03
2	11:50:14.324	Out: Port1	0A 03 00 00 00 03 04 B0
3	11:50:14.544	In: Port1	0A 03 06 00 64 00 65 00 66 B3 B8
4	11:50:14.544	Out: 192.168.50.94:58837	00 1B 00 00 00 09 0A 03 06 00 64 00 65 00 66
5	11:57:7.246	In: 192.168.50.94:58839	00 1C 00 00 00 06 0B 03 00 00 00 03
6	11:57:7.252	Out: Port1	0B 03 00 00 00 03 05 61
7	11:57:7.484	In: Port1	0B 03 06 00 C8 00 C9 00 CA EE 6C
8	11:57:7.484	Out: 192.168.50.94:58839	00 1C 00 00 00 09 0B 03 06 00 C8 00 C9 00 CA
9	Incoming Modbus TCP Request	In: 192.168.50.94:58840	00 1D 00 00 00 06 0C 03 00 00 00 03
10	Forwarded RTU Request	Out: Port1	0C 03 00 00 00 03 04 D6
11	Received RTU Response	In: Port1	0C 03 06 01 2C 01 2D 01 2E F9 8B
12	Forwarded TCP Response	Out: 192.168.50.94:58840	00 1D 00 00 00 09 0C 03 06 01 2C 01 2D 01 2E

Refresh

Clear

Monitored request / response process cycles of:

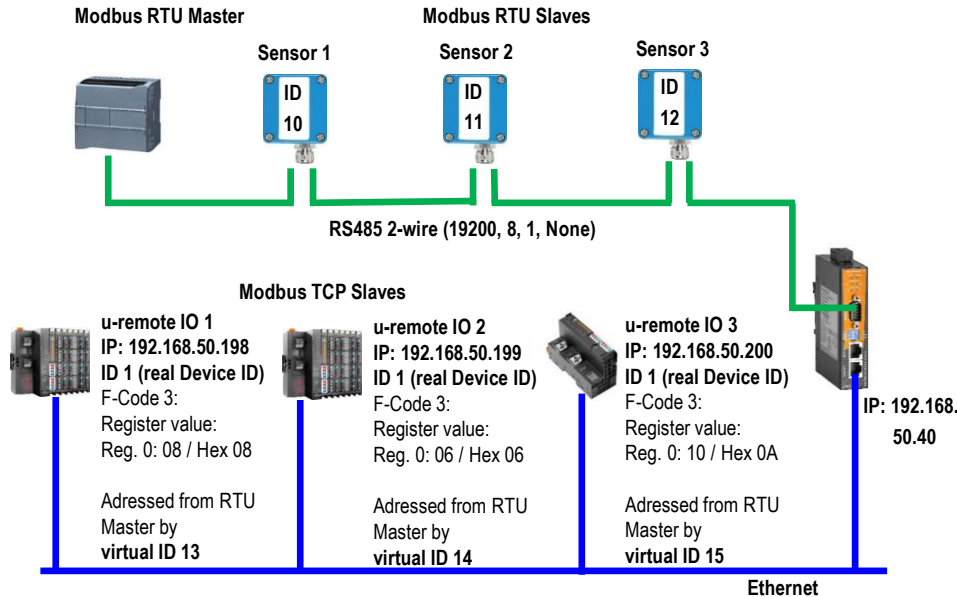
Sensor 1 (ID 10)

Sensor 2 (ID 11)

Sensor 3 (ID 12)

## A6) Sample application for service mode 'Modbus Serial Master to TCP Slave Gateway'

**Scenario:** 3 Modbus TCP slaves (Remote IOs) shall be integrated into a serial Modbus application with Modbus RTU Master.



IE-CS-MBGW-2TX-1COM → Service Mode: **Modbus Serial Master to TCP Slave Gateway**

### Device is acting as Modbus TCP/RTU protocol gateway.

- Accepts a Modbus RTU request and forwards as TCP request to the TCP slave according to defined 'Modbus TCP slave List'.
- Forwards the received TCP response as RTU response to the requesting Modbus RTU Master.
  - The 'Virtual ID' is used to address several TCP clients - having the same real Device (Unit) ID - by a unique ID. If configured for a slave entry in the "Modbus TP Slave List" a Modbus Master has to address this 'Virtual ID'. The Modbus Gateway replaces it with the real Device ID and forwards the request to the TCP slave. When receiving the response from TCP slave containing the real Device ID, it will be replaced by Virtual ID and sent back to requesting RTU/ASCII Master.
  - If not configured, the COM-Server handles the communication between RTU/ASCII Master and TCP Slave via its real Device ID.

### Serial Port related Modbus Gateway settings for illustrated application:

**Serial Port Settings → Serial Configuration**

Port1	Port0
Port Alias	Port0
Interface	RS485(2-wires)
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Performance	<input type="radio"/> Throughput <input checked="" type="radio"/> Latency

**Serial Port Settings → Service Mode**

Service Mode: Modbus: Serial Master to TCP Slave Gateway

Port1: Serial Protocol: Modbus RTU

**Add TCP Slave Device**

Device Name	
IP Address	
TCP Port	
Device ID (Real)	
Virtual ID (Alias)	Optional
Inactivity Timeout	-1 ~ 3600 secs
Response Timeout	1000 ~ 10000 msec
Forward Master Broadcasts	<input type="checkbox"/>

**Modbus TCP Slave List**

#	Device Name	IP Address	TCP Port	Device ID (Real)	Virtual ID (Alias)	Inactivity Timeout(secs)	Response Timeout(msec)	Forward Master Broadcasts	Operations
0	u-remote IO 1	192.168.50.198	502	1	13	-1	1000	<input type="checkbox"/>	Edit Delete
1	u-remote IO 2	192.168.50.199	502	1	14	-1	1000	<input type="checkbox"/>	Edit Delete
2	u-remote IO 3	192.168.50.200	502	1	15	-1	1000	<input type="checkbox"/>	Edit Delete

Defined Modbus TCP slaves

### Monitored data traffic passing the Modbus Gateway:

**Monitoring/Diagnostics → Modbus Traffic Monitor**

Traffic Monitor: Enabled Apply

No.	Time	Data Source	Modbus Traffic / Status Data
1	14:33:8.188	In: Port1	0D 03 00 00 00 01 84 C6
2	14:33:8.204	Out: 192.168.50.198:502	00 02 00 00 00 06 01 03 00 00 01
3	14:33:8.206	In: 192.168.50.198:502	00 02 00 00 00 05 01 03 02 00 08
4	14:33:8.208	Out: Port1	0D 03 02 00 08 A9 83
5		In: Port1	0E 03 00 00 00 01 84 F5
6		Out: 192.168.50.199:502	00 02 00 00 00 06 01 03 00 00 01
7		In: 192.168.50.199:502	00 02 00 00 00 05 01 03 02 00 06
8		Out: Port1	0E 03 02 00 06 6C 47
9	14:33:27.968	In: Port1	0F 03 00 00 00 01 85 24
10	14:33:27.988	Out: 192.168.50.200:502	00 02 00 00 00 06 01 03 00 00 01
11	14:33:27.990	In: 192.168.50.200:502	00 02 00 00 00 05 01 03 02 00 09
12	14:33:27.992	Out: Port1	0F 03 02 00 09 11 83
13	14:33:59.128	In: Port1	01 03 00 00 00 01 84 0A
14	14:33:59.128	ERROR	Error: Received unit ID cannot be assigned to TCP Slave

Monitored request / response process cycles of:

Example of error message for wrong ID addressing (ID=1)