ADDENDUM TO OPERATING INSTRUCTIONS





Described product	Ethernet interface converter for S700 product family
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# **1** About this document

This document describes handling the interface converter for control of the S700 via Ethernet.

### **1.1** Additional documentation / information

This document is a supplement to the Operating Instructions of the S700 product family.

These documents are available for download at *www.sick.com*. The publications can be found by entering the Part No. in the search field.

Furthermore, the Operating Instructions of the following component apply:

Component	Manufacturer
FL COMSERVER UNI 232/422/485	Phoenix Contact

# 2 Safety instructions

- This document is only complete in conjunction with the Operating Instructions of the corresponding analyzer. Read and observe the safety instructions and warnings contained therein.
- Do not put the device into operation until this document and the Operating I)nstructions have been read and understood. Contact SICK customer service if you have any questions.
- The standards and directives of the Declaration of Conformity used are specified with the respective device.
- Keep this document together with the Operating Instructions for reference and pass it on to a new owner.

# 2.1 Intended use

The interface converter enables the use of Modbus TCP and remote control via MARC2000.

### 2.2 Qualification of the user

The device may only be operated by authorized persons who, based on their training on, and knowledge of the specific device, as well as knowledge of the relevant regulations can assess the tasks given and recognize the hazards involved.

# 3 Product description

Two application cases can be realized using the "Interface converter Ethernet" option.

### 3.1 Application case 1 - Virtual serial interface

In this application case, the interface converter provides the serial interface of the S700 available to remote PCs via the network. An additional program which can be downloaded from PhoenixContact is required for use.

Once the connection has been established, the virtual serial port of the accessing PC can be used for the following tasks:

- Remote control of the device via SICK "MARC2000" software
- After activating the Modbus ID in the S700: Communication with the device via Modbus RTU

With an existing Meeting Point Router (MPR) from SICK, remote maintenance by Support is also possible without setting up a virtual port.

#### **Functional principle**

A COM port redirector driver is installed on the PC, which provides a virtual COM port. The driver connects to the IP of the FL-COM server via the network connection when the virtual COM port is opened and sends the serial data to the FL-COM server via the network. The FL-COM Server "translates" the data received back to serial RS232 format and then uses the this serial connection to communicate with the S700.



The Figure below shows the setup with description.

1 PC with LAN connection

2 Virtual Com port (driver)

3 FL-COM-Server

4 S700 (Figure may differ)

Fig. 1: Application case - Virtual serial interface

## 3.2 Application case 2 - Modbus TCP gateway

In this application case, the interface converter is used to translate the Modbus RTU (serial) protocol to Modbus TCP Client (Ethernet) (gateway). This makes the S700 Modbus accessible for higher-level systems via Ethernet. In contrast to serial communication, it is also possible for several systems to access each other simultaneously.

The following tasks can be implemented:

• Integration of the S700 in Modbus TCP communication networks

#### **Functional principle**

The interface converter is operated in "Modbus/TCP" operating mode. Port 502 is opened at the set IP address of the interface converter and the interface converter is then available as Modbus TCP server. The content of incoming Modbus TCP requests is extracted and the message forwarded to the device whose ID is contained in the telegram. The device's response is in turn transmitted back to the IP address of the requesting system.



- 1 PC with LAN connection
- 2 FL-COM-Server
- 3 S700 (Figure may differ)
- Fig. 2: Application case Modbus TCP gateway

# 4 Usage

## 4.1 Preparations

## Additional preparation for housing variants $\textbf{S710} \ / \ \textbf{S711}$

- 1. Mount the COM server on the top-hat rail.
- 2. Connect the 24 V power supply to the terminal.
- 3. Connect the SIDOR/S700 to the serial interface with the standard cable (Part No.: 2135520).

#### Preparations for all housing variants

4. Connect the converter with Ethernet cable directly to a PC for configuration.

## 4.2 Change the IP address

- 1. Change the IP address on the PC to 192.168.0.100.
- 2. Open the web browser to access the web interface and enter the IP address of the FL-COM-Server (Standard: 192.168.0.254).
- 3. Call up menu item "General configuration"-"IP".
- 4. Log in with password "private".

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5. Change the setting according to the internal specifications.



IP Configuration - Automatic Assignment					
Current discovered addresses					
IP Address Discovered	192.168.0.254				
Subnet Mask	255.255.255.0				
Default Gateway	0.0.0.0				
The IP address discovered is not configurable. The Mask and Gateway may be configured in Static Mode.					
DNS					
DHCP Name					
IP Address Assignment					
Automatic Address Mode	Bootp • On • Off DHCP • On • Off				
Туре	O Static O Automatic				
The Automatic Address Mode Default is Bootp + DHCP. If no mode is set the last IP Address Discovered is used.					
Confirm					
Note: You have to save and reboot to activate the new configuration.					

Fig. 3: IP Configuration - Automatic assignment

The menu shown displays the current IP parameters and addressing mechanism. To change the IP parameters via the web based management, the "Static" selection must be activated.

DPHCENIX CONTACT	FL COMSERVER UNI				last u	pdate: 8:11:57
	IP Configuration - Static Assignment					
12 C	Current configured addresses					
6	IP Address	192	. 168	. 178	. 67	
FL COMSERVER UNI 232/422/485	Subnet Mask	255	. 255	. 255	. 0	
	If Subnet Mask is 0.0.0.0 ti	he standard	d netmas	sk for clas	ss A, B,	C is used.
General Instructions	Default Gateway	0	. 0	. 0	. 0	
Device Information	If Default-Gateway is 0.0.0.0 no gateway is used.					
General Configuration	DNS	0	. 0	. 0	. 0	
🗈 <u>IP</u>	IP Address Assignment					
Serial	Туре		<ul> <li>Static</li> </ul>	2		O Automatic
SNMP						
Application	Confirm					
Security	Note: You have to save and	reboot to a	activate t	he new c	onfigura	tion.
Software Update						
Configuration <u>Management</u>						
Save and Reboot						
Load Factory Settings						
Logout						

Fig. 4: IP Configuration - Static Assignment

### 4.3 Change the password

- 1. Navigate to "General Configuration" "Security"
- 2. Specify the current password to then assign a new password. The password for write access is "private" on delivery.

+1 The password must be between four and twelve characters long.

- The password is transmitted over the network without encryption.
- +1 If the password is not known, an emergency access via the serial interface is available. With the help of e.g. Hyperterminal, the device can be reset to the delivery state.

PHENIX	FL COMSERVER UNI		last update: 8:15:15
	Password Configura	tion	
	Change Read Password		
i a	Enter old password		
FL COMSERVER UNI	Enter new password		
20214221400	Retype new password		
General Instructions	Change Write Password		
Device Information	Enter old password		
General Configuration	Enter new password		
DP	Retype new password		
Serial	The password must be at le password type in the old pa	east 4 and can be up t assword and leave the	o 8 characters. To clear the new password fields blank.
SNMP	Warning: The password wit	Il be sent over the netv	vork unencrypted!
Application	WER Manager Configuration		
Security	WEB Manager Configuration		
Software Update	Recurity Elege		. U
Configuration Management		Enabled	
Save and Reboot		Confirm	Obisabled
D Load Easton: Settings		Committi	
D Load Factory Setungs	Note: Once confirmed the Re	ad and Write password	ds are activated
Logout	immediately but save and rel	boot to activate any W	EB Manager or Security

## 4.4 Settings for Application case 1 - Virtual serial interface

## 4.4.1 Setting





- 1. Navigate to "General Configuration" "Serial"
- 2. Set the serial interface as shown in the Figure.

3. Confirm with "Confirm".



The configuration of the serial parameters must correspond to the configuration set in the S700.

PHENIX		FL COMSERVER UNI		last update: 7:42:17
		Application Settings	for TCP	
	$\sim$	Protocol settings		
FL COMSERVER UNI	(2)	Operation Mode	O UDP O MODBUS/TCP	TCP     PPP
232/422/485		IP and port address		
General Instructions		Own TCP port	3000	
Device Information		Remote IP address	0.0.0	. 0
		Remote Domain name		
General Configuration		Channel settings		
Serial		Device type	<ul> <li>Server(Responder)</li> </ul>	O Client(Initiator)
SNMP	4	Modem DTR/DSR Control	Off	O On
	1	Connection DCD Signal	○ Off	O On
Security		DCD output is available on	ly in RS-232 DCE mode!	
Software Update		Disconnect with inactivity timeout	0 minutes 0 seconds	
Configuration Management		Valid range: 0255. If unu	sed set to 0.0.	
Save and Reboot		TCP Flush Mode	Clear Input Buffer	OOff ⊛On
Load Factory Settings		Idle Force Timeout	Clear Output Butter	●Off OOn
Logout		Characters	10	
Home	1000			
	3		Confirm	
	(5)	Note: To switch operation mo You have to save and reboo Current Firmware Image load PC=UDP and TCP_PM=MO	des press the button and <u>t</u> to activate the new confi fed: <b>PC</b> DBUS/TCP_PP=PPP	then Confirm. guration (and Firmware).

Fig. 7: Application Settings for TCP

- 4. Navigate to "General Configuration" "Application" (1).
- 5. Under "Protocol settings for TCP" (2), change the Operation Mode to TCP.
- 6. Confirm with "Confirm" (3).



7. After the restart, the corresponding operating mode "PC" for TCP is displayed in the lower field of the configuration (5).

	FL COMSERVER UNI	last update: 15:59:39
	Save and Reboot	
	Save current configuration for next Reboot	t
FL COMSERVER UNI	The confirmed configuration settings will be new configuration after a reboot.	e saved. The device starts with the Save
232/422/485	The device executes a reboot. Only confirm included. The device starts with the last say	ned configuration settings will be ved configuration. 🗹 Reboot
General Instructions	Enter password ••••••	Confirm
Device Information	These are an existent free charge	
General Configuration	Security Flags: TFTF	es to the configuration
Serial	Cancel	Ċ
SNMP		
Application		
Security		
Software Update		
Configuration Management		
Save and Reboot		
Load Factory Settings		
Logout		
Fig. 8: Save and Reboot		

8. After complete configuration: Permanently save and activate the settings with the "Save and Reboot" routine. Enter the password to confirm the entry.

#### 4.4.2 Set up the COM Port

1. Download FL-COM-Port Redirector 1.50 from PhoenixContact and install it with administrator rights. - 0 × FL COM Port Redirector 1.50

DESKTOP-K4ITR9D	₩ Neuen Port Erstellen ×	
	Vitueler Pon-Typ     O Clent     O Server	
	Vituele Pot-Einstelungen         tows NT 6.2 9200.0)           Vitueler COM-Pot:         3           Geräte IP-Adresse:         192.168.178.67]           TCP-Pot:         3001   ©	
	OK Abbrechen	

- Fig. 9: Creating the virtual COM-Port
- 2. After starting the FL COM-Port Redirector 1.50, create a new virtual COM-Port.
- 3. Set the mode to "Client" (see Fig. 9).

- 4. Select a free port number (for remote control with MARC2000, the port number must be in the range 1-6).
- 5. Enter the IP of the FL-COM-Server under "Device IP address".
- 6. Leave the TCP port at 3001.

#### 4.4.3 Set up the remote control with MARC2000

- 1. Download MARC2000 from www.sick.com and install.
- 2. Start MARC2000.
- 3. Navigate to "Options" "Interface Parameters"
- 4. Set the "COM-port" defined in Section "Set up the COM Port".

Bits/Sekunde - C 1200 C	2400 C 4800	Qk
@ 9600 C	19200 C 28800	Abbrechen
Datenbits	Stopbits	Echo C Ein @ Aus
Parität	OM-Anschluß	Protokoll
← Keine ← Ungerade ← Gerade	Com1 Com2 Com3 Com4 Com5 Com6	

Fig. 10: Interface parameters

- 5. Navigate to "Run" "PC Control".
- 6. Create a connection.
- » Content is displayed in the black area.
- 7. The analyzer can now be operated via the virtual keypad.



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#### 4.5 Settings for Application case 2 - Modbus Gateway

PHENIX	FL COMSERVE	RUNI	last update: 8:12:38
	Serial Configu	ration	
	Interface Type	Port 1 RS-232 ~	
	Baud Rate	9600 ~	
FL COMSERVER UNI	Data Bits	8 ~	
232/422/485	Parity	none 😪	
General Instructions	Stop Bits	1 ~	
Device Information	Flow Control	none v	
General Configuration	RS-232 Interface Type	DTE ~	
D IP	Switching output	RESET ~ (Setting is N	OT retained after a reboot)
Serial			
SNMP		Confirm	
Application	Note: You have to s	ave and reboot to activate th	he new configuration.
Security Software Update Configuration Management	Typical settings:	3964 R, Phoenix Contact: S7-PC Adapter: S7-TS-Adapter: Modbus RTU: Modbus ASCII:	9600; 8; Even; 1; none 19200; 8; Odd; 1; RTS/CTS 19200; 8; None; 1; RTS/CTS xxxx; 8; Even; 1; none xxxx; 7; Even; 1; none
Save and Reboot Coad Factory Settings Cogout			

Home Fig. 12: Serial Configuration

- 1. Navigate to "General Configuration" "Serial"
- 2. Set the serial interface as shown in the Figure.
- 3. Confirm with "Confirm".

The configuration of the serial parameters must correspond to the +i configuration set in the S700.

- 4. Navigate to "General Configuration" "Application"
- 5. Under "Protocol settings for TCP", change the Operation Mode to "MODBUS/TCP".
- 6. Confirm with "Confirm".



- 7. After the restart, the corresponding operating mode "PM" for "MODBUS/TCP" is displayed in the lower field of the configuration.
- 8. Under "Channel Settings" "Device Type", select the option "Slave".
- 9. Under "Protocol", select the "RTU" option.
- 10.Under "Slave Remote TCP", enter 502,

11.Confirm with "Confirm".

+i

- 12.Use the link to switch to the "Save and Reboot" menu.
- 13.Confirm by entering the password and pressing "Confirm".
- 14.After the restart, the device can be accessed under the selected IP address on Port 502 for Modbus TCP requests.



For address assignment, function codes and restrictions, consult the S700 Operating Instructions (remote control with Modbus).

## 4.6 Emergency configuration

If the possibility for a WBM device configuration via network is not available, e.g. because the set static IP address is unknown, it is possible to use the serial emergency access.

For this purpose, local access to the device and a PC with terminal program must be connected to the RS-232 interface.

#### 4.6.1 Function scope

The following are available for emergency configuration:

- Configuration of the IP address / activation of the BootP mechanism
- Deleting all settings (incl. passwords) and resetting to factory settings
- Loading new firmware
- Complete device configuration by loading a file

#### 4.6.2 Procedure

- 1. Connect the FL COM SERVER UNI to a serial COM port of a PC.
- 2. Open a terminal program, e.g. Hyperterminal in the Windows start menu under "Programs" "Accessories" "Communication" "Hyperterminal".
- 3. Configure the interface (e.g. COM 1) under "File" "Properties" to 9600 bit/s; No parity; 1 stop bit; No flow control.

Eigenschaften von COM1	?🗙
Anschlusseinstellungen	
Bits pro Sekunde: 9600 💌	
Datenbits: 8	
Parität: Keine	
Stoppbits: 1	
Elusssteuerung: Kein 💌	
<u>W</u> iederherste	llen
OK Abbrechen Ob	ernehmen

Fig. 13: Menu "Properties" in Windows hyperterminal

- 4. Confirm the settings with "OK" and close the menu.
- 5. Check the settings in the status bar of the hyperterminal.

1	erbunden 00:00:08	Auto-Erkenn.	9600 8-N-1	RF	GROSS	NUM	Aufzeichnen	Druckerecho
Fig. 14: Status bar in Windows hyperterminal								

6. Perform a power reset on the FL COM SERVER UNI while holding down the X key on the keyboard.

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7. As soon as a response from the FL COM SERVER UNI appears on the screen, press the Enter key within 3 seconds. The following Figure appears:

🇞 9600 8N1N - HyperTerminal 📃 🔲 🔀								
Datei Bearbeiten Ansicht Anrufen Übertragung ?								
*** Phoenix F	L Com Server. SET V2.0 ***	^						
Serial Number MAC address 00A04501BB28 Software version 01.8b5 (050525) Press Enter to go into Setup Mode								
*** basic parameters IP addr - 0.0.9.0/DHCP/BOOTP, no gateway set, netmask 255.255.255.0 DHCP device name : not set								
Change Setup	: 0 Standard IP : 5 Security : 7 Factory defaults							
Transfer	: 7 Factory defaults : 8 Exit without save : 9 Save and exit :10 Get Setup :11 Put Setup	Your choice ? 0_						
<								
Verbunden 00:20:13 Auto-Erkenn. 9600 8-N-1 Ri GROSS NUM Autzeichnen Drückerecht								

Fig. 15: Serial setup menu

8. Select the desired option by entering the digit and confirm by pressing the Enter key.

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