Foxboro Process Automation System Hardware

Foxboro_®

by Schneider Electric

Product Specifications

PSS 31S-2M13

Foxboro Remote Terminal Viewer (RTV)

Eoxboro Evo Remote Terminal Viewer				
RTU Name: IEC104Mst Node: 1	Time: Tuesday, January	11, 2000 05:09:37	CPU Idle: 99% Co	nnection: 192.168.1.205 : 20476
Image: Constraint of the system Image: Constraint of the system <th>Configuration System Configuration Software: 1110 Configuration: VEC Version: 7.0.2 System Status System Status System Fail: Flash OK: Local Tool Session: Battery Backup: Debugger Available Last Time Sync: Zone SEL Zone Position: 1</th> <th>: 0, Slot: 0, Channel: 1] 1207GTC3.Z 104_M_IMP.CFG 2 SY-1101207_G (TC-3) No Yes No OK : No CK</th> <th>RTU Reset: Flash Identity: Remote Tool Sessic NV RAM Condition:</th> <th>int C training of the second second</th>	Configuration System Configuration Software: 1110 Configuration: VEC Version: 7.0.2 System Status System Status System Fail: Flash OK: Local Tool Session: Battery Backup: Debugger Available Last Time Sync: Zone SEL Zone Position: 1	: 0, Slot: 0, Channel: 1] 1207GTC3.Z 104_M_IMP.CFG 2 SY-1101207_G (TC-3) No Yes No OK : No CK	RTU Reset: Flash Identity: Remote Tool Sessic NV RAM Condition:	int C training of the second

OVERVIEW

Foxboro Remote Terminal Viewer (RTV) is a diagnostic and remote file management tool. It helps to provide authenticated and authorized access and deploys an engineered application that can manage Foxboro Remote Terminal Units (RTUs) such as Foxboro SCD6000, RTU50 SVX, Foxboro SCD5200, and RTU50 from local and remote locations.

These Foxboro remote devices are used as data concentrators, gateways, and substation controllers by high and medium voltage industrial power markets. The SCD6000 and RTU50 SVX inherit the functionality of the compact SCD5200 and provide more dynamic RAM to achieve higher performance. The RTV helps technical staff and system engineers to diagnose and maintain Foxboro remote devices.

The RTV operates in conjunction with the Foxboro RTU Station and Foxboro RTU Connect Secure software products to effectively manage the uploading and downloading of files.

INTRODUCTION

RTV can connect to multiple RTU controllers. Through a windowed Graphical User Interface (GUI), it presents a real time view of the operation of each RTU. RTV communication interfaces include serial for local access and dial-up modem or TCP/IP for local and wide area networks.

RTV uploads, downloads, and displays device configurations, including firmware and calculations. Many RTV windows are dynamically updated with input, output, and calculation data. Other windows display information on dynamic communications and raw communication packets, and provide communications diagnostics.

FEATURES

The RTV functions vary depending on how it is configured for the target controller.

- Connects through serial or TCP/IP communications.
- Provides a single connection to access OptoNet nodes.
- Provides user-friendly navigation through pulldown menus and tree-type functional display.
- Displays configuration summary, system status, and zone selection details.
- Downloads or uploads firmware, configuration, calculations, and other files.
- Allows remote configuration selection and restart.
- Displays input/output point detail (status and analog values) and module health points.
- Displays communication configuration and relevant details.
- Enables and displays diagnostics for communications protocols.
- > Diagnoses and debugs calculations.

- Provides user authentication features when the .SCF file is configured in the RTU:
 - Password-based authentication for RTV connection to help prevent unauthorized access to the RTU
 - Three privilege levels to access the RTU
 - Log of 500 most recent user actions with time stamp and activity details, component/module/protocol, severity of the event (high/medium/low) and outcome of the event in .CSV format
- Displays "System Use Notification" message in the User Authentication Window.
- Supports trapping and display of transmitted and received messages of many protocols.
- Supports bulk transfers for the upload, download, and reset of multiple RTUs.
- Supports RTV connectivity through Foxboro SCADA Master Station serial and TCP/IP communication channels using DNP3 File Transfer Agent Service. It can be used for multiple stand alone RTUs also.



Figure 1. RTV to RTU Communications Options

FUNCTIONAL DESCRIPTION

RTV is a diagnostic tool designed to allow technical staff and system engineers to configure, diagnose, and maintain Foxboro remote devices and associated plant.

You can connect to RTU by:

- PC connected by a serial communication cable or a dial-up modem
- On-site PC connected by local area network
- Remote Windows PC connected by local and wide area networks
- Remote PC connected by VPN tunnel if the RTV is outside the trusted host boundaries

Connection Options

RTV may connect to the COM1 serial port on the main processor module of a SCD5200/RTU50 or through TCP/IP on local and wide area networks of SCD6000/RTU50 SVX/SCD5200/RTU50.

On startup, the "New Connection" window displays the default serial option and any saved serial or TCP/IP communications configurations.

Serial options include PC serial port, baud rate, and dial-up modem interface. TCP/IP option allows setting of IP address.

You can re-establish a connection even when communication stops due to a timeout.

The run-time operations of the Foxboro remote devices, such as communication and I/O data collection, continue independent of the connection to RTV using TCP/IP or serial.

User Authentication

When connecting to a Foxboro remote device that is configured to enable authentication services, users need to enter a User Name and Password in the RTV. Correct entry of these credentials enables the user to access the Foxboro remote device. Each authorized user is provided role-based access in one of these access modes:

- Browse: "View-Only" mode. Users with this authentication level can view all diagnostic details but cannot activate control outputs, upload files, change the file settings, or reset the Foxboro remote device.
- Maintenance: Users with this authentication level can view all data, operate control commands, manipulate files, and reset the Foxboro remote device. Users with this access level cannot change any of the user authentication parameters.
- Superuser: The Superuser manages other users and can access the audit log that records the diagnostic user actions (log in, log out, control operations, file operations, restarts, and so on). The Superuser can change the system use notification message using the change security configuration option. This gets updated in the .SCF file that is stored in the SCD6000.

Unauthorized users are denied diagnostic access to the Foxboro remote device.

The user authentication feature is available in RTV revision SY-1101212_A and later versions when used with:

- SCD6000 firmware revision SY-1101207_A and later
- RTU50 SVX firmware revision SY-1101207_A up to SY-1101207_C1
- SCD5200 and RTU50 firmware revision SY-1101205_A and later

The user authentication feature is configured using the Foxboro RTU Connect Secure, revision SY-1101209_A or later. For more information on Foxboro RTU Connect Secure, refer to PSS 31S-2M12.

Main Screen

The menu lists high level functions, including connect, disconnect, set remote device time/date, and reset the remote device. A status line shows connection status, system time and date, and node number and CPU activity for the current OptoNet node.

A tree diagram in the left panel displays the configuration of connected OptoNet nodes. The highest level of the tree displays a summary of the active firmware, configuration and calculation file names, the name and size of the active calculations, and system diagnostics including memory allocation, flash file status, connected diagnostic sessions, and configuration items.

OptoNet Detail

The status of OptoNet nodes and diagnostic detail for the selected node is shown.

Input Output Detail

Select an item in the tree to trigger the display of the associated database points and diagnostics including card ID, card type, card function, installed slot, health points, command processing, flags, scanning status, configuration status, and available and configured database points on that card. Labelled tabs are provided for cards that need several levels to display points and status, or that allow the display and selection of diagnostics.

Communications Protocol Detail

RTV displays these communications protocol details:

- Protocol attributes
- Captured data frames
- Transmitted data frames
- Received data frames
- Point values

Diagnostic functions can be operated using controls on the protocol displays.

Calculation Detail

The status of calculations and their variables are displayed. Variables can be selected to a watch list to assist debugging. For State And Logic Language (SALL), variables can be forced and calculations can be stopped/started and single stepped. Virtual Screen

System errors and warnings help debug the processor, firmware, and configuration. At startup, the processor type and speed, initial memory allocation, and selected firmware are displayed.

File System

Displays the contents (file name, size, and creation date) of the flash file system. You can also select and activate firmware, configuration, and calculation files. You can delete, upload, and download files on this window.

Bulk Transfer

Bulk Transfer uploads and downloads multiple files from multiple RTUs connected on the OptoNet or TCP/IP Network. You can also reset multiple RTUs on the OptoNet and TCP/IP in this window.

System Requirements

RTV operates on Windows[®] 7 (32-bit and 64-bit), Windows[®] 10 (64-bit), Windows Server[®] 2008 (64bit), and Windows Server[®] 2016 (64-bit) operating systems.

RTV is compatible with:

- SCD6000 using any version of firmware SY-1101207 with compatible bootstrap firmware
- RTU50 SVX using SY-1101207_A, SY-1101207_B, or SY-1101207_C1 version with compatible bootstrap firmware
- SCD5200 and RTU50 using any version of firmware SY-1101205 or SY-1101155 Rev K or later with compatible bootstrap firmware

RTV SY-1101212 supports the hardware modules, communications protocol, and input output modules in Table 1 and the software modules in Table 2.

Part Number	Subsystem	SCD5200/ RTU50	SCD6000	RTU50 SVX
	AC Transducer Modules	L	l	
SY-0399142	3 Phase AC Transducer Module 5 Amp Module Assembly	Yes	Yes	Yes
SY-0399142R	3 Phase AC Transducer Module 5 Amp Module Assembly (RoHS)	Yes	Yes	Yes
SY-0399140	3 Phase AC Transducer Module 1 Amp Module Assembly	Yes	Yes	Yes
SY-0399140R	3 Phase AC Transducer Module 1 Amp Module Assembly (RoHS)	Yes	Yes	Yes
	Multiple I/O Modules		1	
SY-0399095	Multi Input Output Module 129V 8 Mini Pilot Relay	Yes	Yes	Yes
SY-0399095R	Multi Input Output Module 129V 8 Mini Pilot Relay (RoHS)	Yes	Yes	Yes
SY-0399094	Multi Input Output Module 48V 8 Mini Pilot Relay	Yes	Yes	Yes
SY-0399094R	Multi Input Output Module 48V 8 Mini Pilot Relay (RoHS)	Yes	Yes	Yes
SY-0399088	Multi Input Output Module 24V 8 Mini Pilot Relay	Yes	Yes	Yes
SY-0399088R	Multi Input Output Module 24V 8 Mini Pilot Relay (RoHS)	Yes	Yes	Yes
SY-0399097	Multi Input Output Module 129V 6 Paired Pilot Relay	Yes	Yes	Yes
SY-0399097R	Multi Input Output Module 129V 6 Paired Pilot Relay (RoHS)	Yes	Yes	Yes
SY-0399096	Multi Input Output Module 48V 6 Paired Pilot Relay	Yes	Yes	Yes
SY-0399096R	Multi Input Output Module 48V 6 Paired Pilot Relay (RoHS)	Yes	Yes	Yes
SY-0399089	Multi Input Output Module 24V 6 Paired Pilot Relay	Yes	Yes	Yes
SY-0399089R	Multi Input Output Module 24V 6 Paired Pilot Relay (RoHS)	Yes	Yes	Yes

Table 1. Hardware Modules Supported by RTV

Part Number	Subsystem	SCD5200/ RTU50	SCD6000	RTU50 SVX
	Analog Input Module			
SY-0399085	20 Channel Analog Input Module (Isolated)	Yes	Yes	Yes
SY-0399085R	20 Channel Analog Input Module (Isolated) (RoHS)	Yes	Yes	Yes
	Analog/Digital Input Module)		
SY-0399160	4 Analog/32 Digital Input Module (24 V to 129 V)	Yes	Yes	Yes
SY-0399160R	4 Analog/32 Digital Input Module (24 V to 129 V) (RoHS)	Yes	Yes	Yes
SY-0399222	4 Analog/32 Digital Input Module (24 V to 129 V) Deep Wiring Channel Module	Yes	Yes	Yes
SY-0399222R	4 Analog/32 Digital Input Module (24 V to 129 V) Deep Wiring Channel Module (RoHS)	Yes	Yes	Yes
	Digital Output Modules			
SY-0399086	12 Pilot Relay Digital Output Module	Yes	Yes	Yes
SY-0399086R	12 Pilot Relay Digital Output Module (RoHS)	Yes	Yes	Yes
SY-0399087	12 Magnetically Latched Relay Digital Output Module	Yes	Yes	Yes
SY-0399087R	12 Magnetically Latched Relay Digital Output Module (RoHS)	Yes	Yes	Yes
SY-0399136	8 Digital Output 10 Amp Module	Yes	Yes	Yes
SY-0399136R	8 Digital Output 10 Amp Module (RoHS)	Yes	Yes	Yes
Analog Output Module				
SY-0399084	4 Channel Analog Output Module	Yes	Yes	Yes
SY-0399084R	4 Channel Analog Output Module (RoHS)	Yes	Yes	Yes
Processor Modules				
SY-0399143	SCD5200 CPU OptoNet Power Supply Ethernet (COPE) Module	Yes	NA	NA
SY-0399144	SCD5200 CPU OptoNet Ethernet (COE) Module	Yes	NA	NA

Table 1. Hardware Modules Supported by RTV (Continued)

Part Number	Subsystem	SCD5200/ RTU50	SCD6000	RTU50 SVX	
SY-0399151	SCD5200 CPU OptoNet Ethernet (COE) Module with 64 MB SDRAM	Yes	NA	NA	
SY-0399152	SCD5200 CPU OptoNet Power Supply Ethernet (COPE) Module with 64 MB SDRAM	Yes	NA	NA	
SY-60399001R	SCD6000 CPU OptoNet Power Supply Ethernet (COPE) Module (RoHS)	NA	Yes	NA	
SY-60399002R	SCD6000 CPU OptoNet Ethernet (COE) Module (RoHS)	NA	Yes	No	
SY-60399003R	RTU50 SVX CPU OptoNet Ethernet Module (RoHS)	NA	No	Yes	
	8 Channel Serial Module				
SY-0399132	8CH Serial Module RS-485/RS-232	Yes	Yes	Yes	
SY-0399132R	8CH Serial Module RS-485/RS-232 (RoHS)	Yes	Yes	Yes	
	Dual Communications Modules				
SY-0399122 ^(a)	DCB DNP Glass Optical supporting DNP3 Master/Slave	Yes	Yes	Yes	
SY-0399122R ^(a)	DCB DNP Glass Optical supporting DNP3 Master/Slave (RoHS)	Yes	Yes	Yes	
SY-0399127	DCB IEC 60870-5-103 Glass Optical supporting IEC 60870-5-103 Master	Yes	Yes	Yes	
SY-0399127R	DCB IEC 60870-5-103 Glass Optical supporting IEC 60870-5-103 Master (RoHS)	Yes	Yes	Yes	
SY-0399163 ^(a)	DCB DNP V.11 supporting DNP3 Master/Slave	Yes	Yes	Yes	
SY-0399163R ^(a)	DCB DNP V.11 supporting DNP3 Master/Slave (RoHS)	Yes	Yes	Yes	
SY-0399192	Communications Module V.28 Conitel C2020/C2025 Master/Slave	Yes	Yes	Yes	
SY-0399192R	Communications Module V.28 Conitel C2020/C2025 Master/Slave (RoHS)	Yes	Yes	Yes	
SY-0399194 ^(a)	Communications Module V.28 DNP3 Master/Slave	Yes	Yes	Yes	

Table 1. Hardware Modules Supported by RTV (Continued)

Part Number	Subsystem	SCD5200/ RTU50	SCD6000	RTU50 SVX
SY-0399194R ^(a)	Communications Module V.28 DNP3 Master/Slave (RoHS)	Yes	Yes	Yes
SY-0399196	Communications Module V.28 IEC 60870-5-101 Slave	Yes	Yes	Yes
SY-0399196R	Communications Module V.28 IEC 60870-5-101 Slave (RoHS)	Yes	Yes	Yes
SY-0399198	Communications Module V.28 WISP+ Master/Slave	Yes	No	No
SY-0399198R	Communications Module V.28 WISP+ Master/Slave (RoHS)	Yes	No	No
SY-0399224 ^(a)	Communications Module V.11 DNP3 Master/Slave (Ignore DCD)	Yes	No	No
SY-0399224R ^(a)	Communications Module V.11 DNP3 Master/Slave (Ignore DCD) (RoHS)	Yes	No	No
SY-0399225R ^(b)	SCD6000 Communications Module V.11 DNP3 Master/Slave Type 2 (RoHS)	No	Yes	No
SY-0399226R ^(b)	SCD6000 Communications Module V.28 DNP3 Master/Slave Type 2 (RoHS)	No	Yes	No
SY-0399227R ^(b)	SCD6000 Communications Module Glass Optical DNP3 Master/Slave Type 2 (RoHS)	No	Yes	No
Electrobus Expansion Module				
SY- 60399004R ^(c)	SCD6000 Electrobus Upper IO Expansion Module	No	Yes	No
SY- 60399005R ^(c)	SCD6000/5200 Electrobus Lower IO Expansion Module	No	Yes	No
SY-60399007R	RTU50/RTU50 SVX Electrobus Lower Expansion Module Type II	Yes	No	Yes
SY-1025072	RTU50/RTU50 SVX Electrobus Upper End Expansion Module	Yes	No	Yes
SY-1025073	RTU50/RTU50 SVX Electrobus Lower End Expansion Module	Yes	No	Yes

Table 1. Hardware Modules Supported by RTV (Continued)

(a) These modules support SCD6000 firmware version SY-1101207-A up to SY-1101207-C

(b) These modules support SCD6000 firmware version SY-1101207-D
(c) These modules support SCD6000 firmware version SY-1101207-F and later

			-	
Subsystem	SCD5200	RTU50	SCD6000	RTU50 SVX
C2025 Conitel Master	Yes	Yes	Yes	Yes
C2025 Conitel Slave	Yes	Yes	Yes	Yes
C300 Conitel Slave	Yes	Yes	No	No
C3000 Conitel Slave	Yes	Yes	No	No
DNP3 Master ^(a)	Yes	Yes	Yes	Yes
DNP3 Slave ^(a)	Yes	Yes	Yes	Yes
IEC 60870-5-101 Master	Yes	Yes	Yes	Yes
IEC 60870-5-101 Slave	Yes	Yes	Yes	Yes
IEC 60870-5-103 Master	Yes	Yes	Yes	Yes
IEC 60870-5-104 Slave	Yes	Yes	Yes	Yes
IEC 60870-5-104 Master	No	No	Yes	No
IEC 61850 Client / GOOSE Subscriber	Yes	Yes	Yes	Yes
IEC 61850 Server / GOOSE Publisher	Yes	Yes	Yes	Yes
Modbus Master	Yes	Yes	Yes	Yes
Modbus Slave	Yes	Yes	Yes	Yes
OptoNet	Yes	Yes	Yes	Yes
SNTP	Yes	Yes	Yes	Yes
TCP/IP	Yes	Yes	Yes	Yes
WISP Master	Yes	Yes	No	No
WISP Slave	Yes	Yes	No	No

Table 2. Communication Protocols Supported by RTV

Subsystem	SCD5200	RTU50	SCD6000	RTU50 SVX	
	Calcula	itions			
Intrinsic Database Functions	Yes	Yes	Yes	Yes	
SALL Calculations	Yes	Yes	Yes	Yes	
IEC 61131-3 (ISaGRAF)	Yes	Yes	No	No	
Miscellaneous					
Analog Logger	Yes	Yes	Yes	Yes	
Serial Event Logger	Yes	Yes	Yes	Yes	
Control Interlock	Yes	Yes	Yes	Yes	
System Monitor (SysMon)	Yes	Yes	Yes	Yes	
Authentication	Yes	Yes	Yes	Yes	

Table 2. Communication Protocols Supported by RTV (Continued)

(a) SCD6000 supports DNP3 Secure Authentication (SAv2 and SAv5) from SY-1101207-D

ORDERING INFORMATION

RTV is provided as part of the Foxboro RTU Station Software CD (SY-1101208).

Part Number	Description
SY-1101208	SCD6000 Firmware, SCD5200 Firmware, RTU Station, and RTV



by Schneider Electric

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