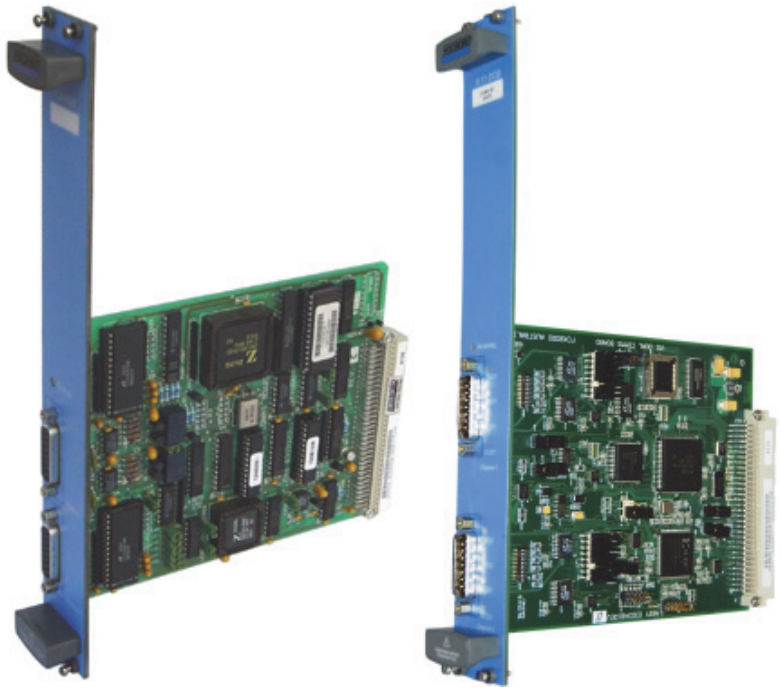
Foxboro Evo™ Process Automation System

Product Specifications

Foxboro® by Schneider Electric

PSS 31H-8G5

SCD5200 Dual Communications Modules



BACKGROUND

The SCD5200, a Station Computing Device (SCD), inherits the pedigree and function of the Foxboro Evo™ RTU50. The SCD5200 integrates the field-proven RTU50 hardware into a more compact, higher performance package, with latest generation processors and fabrication techniques.

The SCD5200 combines the features and benefits of the RTU50 Series components with higher levels of communications, integration, and package engineering.

A key development of the SCD5200 is the integration of CPU, OptoNet™, Power, and dual Ethernet into the main processor board (COPE) to provide a compact single module for specialized communications, local networking, applications processing, and integration of station devices and meters.

OVERVIEW

The SCD5200 features options for communicating with SCADA Master Stations, human machine interfaces, Intelligent Electronic Devices (IEDs), and plant equipment (see SCD5200 Architectural Overview [PSS 31H-8G1]). Various media options are provided by serial ports on the COPE Module (see PSS 31H-8G3) and 8 Channel Serial Module (see PSS 31H-8G6) and this range of Dual Communications Modules.

The Dual Communications Modules allow communication over a wide variety of media such as leased lines, radio, microwave, fiber optic, power-line carrier, and other such infrastructure with the following media standards:

- ITU-T V.28 (RS-232)
- ITU-T V.11 (RS-485/RS-422)
- Glass fiber optics

Each Dual Communications Module provides two independent channels. In modules that support slave protocol implementation, the channels can be used for connection to two separate Master Stations. Optionally, the second channel can be used as a backup to the primary channel.

To ensure reliable communication, each Dual Communications Module is independently responsible for providing error handling, while sending and receiving data.

The Dual Communications modules support a wide variety of current and legacy protocols. The supported protocols are:

- DNP3
- IEC 60870-5-101
- IEC 60870-5-103
- Conitel (C2025, C300, C3000)
- WISP+

Through this flexibility in protocol and communications media support, the SCD5200 is ideally suited for greenfield and retrofit SCADA sites. In addition, through the dual communication technology on each module, reliable and stable communication can be achieved over a wide range of system configurations.

FUNCTIONAL DESCRIPTION

The Dual Communication Modules in the SCD5200 are based on intelligent communication cards, with each card featuring a microprocessor, and associated random access memory (RAM) and read only memory (ROM). The on-board processor sends and receives messages, and controls the implemented communication protocol. This information is passed to the COPE (CPU OptoNet Power Supply and Ethernet) module via shared memory on the Dual Communication Module. Error detection algorithms appropriate for each supported protocol monitor communication integrity and guarantee a high level of data integrity.

Where the communication subsystem is used as part of time synchronization from the SCADA Master Station, the Dual Communication Module implements the protocol-specific requirements to ensure the accuracy demanded in time-critical SCADA applications.

Each Dual Communication Module features two independent communications channels. In modules that support slave protocol implementation, each channel can be configured to communicate with two separate Master Stations, or the second channel can be configured as a backup to the master channel.

Separate data sets can be configured when operating in dual communication mode to two independent Master Stations. These data sets can be equivalent, disjointed, or intersecting sets of either the complete Foxboro Evo SCD5200 database or a subset of it. Therefore, greater flexibility is provided in what data is available to each Master Station.

In addition, the COPE module maintains its own independent Sequence of Events (SOE) buffers, digital input momentary detect information and accumulators. Thus complete independent operation to each Master Station is ensured.

With the second port as backup to the first, identical data sets and buffer sets are provided to the Master Station. The backup port is always active and may be scanned at any time, thus the Master Station controls fail-over.

For Dual Communication Modules which support master and slave protocol implementations, each channel can be individually configured for either slave or master operation. This allows communication both to a Master Station and to a downstream slave device via the same communication module.

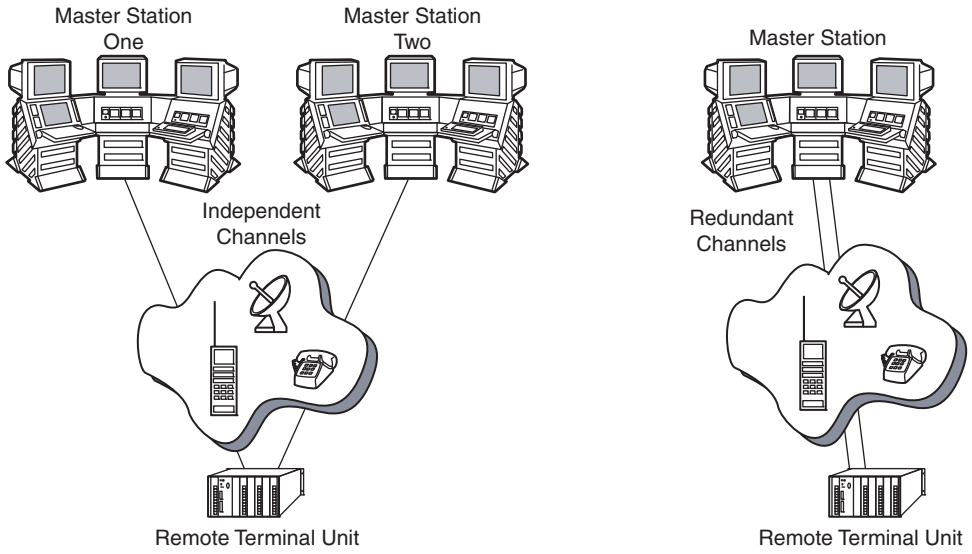


Figure 1. Typical Configurations

V.28 DUAL COMMUNICATIONS MODULE

The V.28 Dual Communications module provides two digital RS-232-C compatible communication channels with data rates of 300 to 9600 baud standard, and up to 64 Kbaud with a single channel only.

The V.28 Dual Communications module supports a range of current and legacy protocols. The wide use of the V.28 interface makes the V.28 Dual Communications module suitable for interfacing to many different communications media. This together with the broad range of supported protocols, makes the V.28 Dual Communications module an ideal choice for both greenfield and retrofit sites, and for small to large input/output counts.

V.28 Dual Communication Module is enhanced to support V.23/Bell 202 interface via IG202T-R38 Modem from Data Connect Enterprise.

V.11 DUAL COMMUNICATIONS MODULE

The V.11 Dual Communications module provides two high speed digital RS-422/RS-485 compatible communication channels.

The V.11 Dual Communications module is ideally suited to demanding greenfield SCADA projects (particularly in the electricity transmission and large distribution substation environment).

OPTICAL DUAL COMMUNICATION MODULE

The Optical Dual Communications module provides two optical (glass) communication channels.

The Optical Dual Communications module is particularly suited to greenfield SCADA applications where large input/output counts require frequent scanning back to a central or local Master Station.

FUNCTIONAL SPECIFICATIONS

V.28 Dual Communications Module

INTERFACE
ITU-T V.24/RS-232-C (ITU-T V.28) DTE

TERMINATIONS
DB15-pin female

NUMBER OF CHANNELS
Two

DATA RATES (1)
300 to 9600 baud dual channel mode.
Up to 64000 baud single channels mode.

OPERATING MODES
Asynchronous/Synchronous

RADIO INTERFACE
Via suitable modem

V.23/BELL 202 INTERFACE
Via Data Connect Enterprise IG202T-R38 Industrial Grade Modem

POWER AVAILABLE
±12 V 50 mA maximum per channel

POWER REQUIREMENTS
450 mA at 5 V

SUPPORTED PROTOCOLS (2)
DNP3 Master and Slave, Conitel C2025 Master and Slave, Conitel C300 & C3000 Slave, Wisp+ Master and Slave, IEC 60870-5-101 Slave

TRANSIENT PROTECTION (3)
IEC 61000-4-4 Level 3 (1 kV EFT)

NOTE
IG202T-R38 from Data Connect Enterprise is proven to operate with V.23/Bell 202 signals with V.28 DCB as a substitute for the V.23 DCB.

V.11 Dual Communications Module

INTERFACE
ITU-T V.11 DTE

NUMBER OF CHANNELS
Two

DATA RATES
300 to 9600 baud dual channel mode
Up to 64000 baud single channel mode

OPERATING MODES
Asynchronous/synchronous

LINE TERMINATION
V.11 drivers/receivers (RS-422, can be wired as RS-485)

TERMINATIONS
DB15 male connector ISO 4903 X.27/V.11

ISOLATION
Direct connection

POWER REQUIREMENTS
450 mA at 5 V

TRANSIENT PROTECTION
IEC 61000-4-4 Level 3 (1 KV EFT)

CONTINUOUS TRANSMIT PROTECTION
Time out on long RTS (10 seconds)

SUPPORTED PROTOCOLS
DNP3 Master and Slave

(1) Only 1200 baud is supported while interfacing V.28 DCB with IG202T-R38 Modem.
(2) DNP3 Master and Slave, Conitel C2025 Master and Slave, Conitel C300 & C3000 Slave protocols are supported when using V.28 DCB with IG202T-R38 Modem.
(3) Only in Stand alone mode. When connecting external modems, these levels are not applicable.

FUNCTIONAL SPECIFICATIONS (CONTINUED)

Optical Dual Communications Module

INTERFACE
Optical (full duplex)

NUMBER OF CHANNELS
Two

DATA RATES
300 to 9600 baud dual channel mode
Up to 64000 baud single channel mode

OPERATING MODES
Asynchronous/Synchronous

MAXIMUM FIBER LENGTH
2000 meter

OPTICAL CONNECTOR
Dual ST connector 820 nm wavelength, multimode 62.5/125 μm glass fiber 1 core transmit 1 core receive

POWER REQUIREMENTS
450 mA at 5 V

SUPPORTED PROTOCOLS
DNP3 Master and Slave,
IEC 60870-5-103 Master

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature

STANDARD
0°C to + 60°C (32°F to 140°F)

Humidity

10 to 95% (noncondensing)

PHYSICAL SPECIFICATIONS

Physical Size

160 x 127.3 mm bare board

185 x 145 x 35 mm - including handle

ORDERING INFORMATION

Part Number	Description
V.28 Dual Communications Module	
SY-0399192	SCD5200 Communications Module V.28 Conitel C2020/C2025 Master/Slave, C300/C3000 Slave
SY-0399194	SCD5200 Communications Module V.28 DNP3 Master/Slave
SY-0399196	SCD5200 Communications Module V.28 IEC 60870-5-101 Slave
SY-0399198	SCD5200 Communications Module V.28 WISP + Master/Slave
V.11 Dual Communications Module	
SY-0399163	SCD5200 Communications Module V.11 DNP3 Master/Slave
Glass Fiber Optic Dual Communications Module	
SY-0399122	SCD5200 Communications Module Glass Optical DNP3 Master/Slave
SY-0399127	SCD5200 Communications Module Glass Optical IEC 60870-5-103 Master

Foxboro®

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