EcoStruxure™

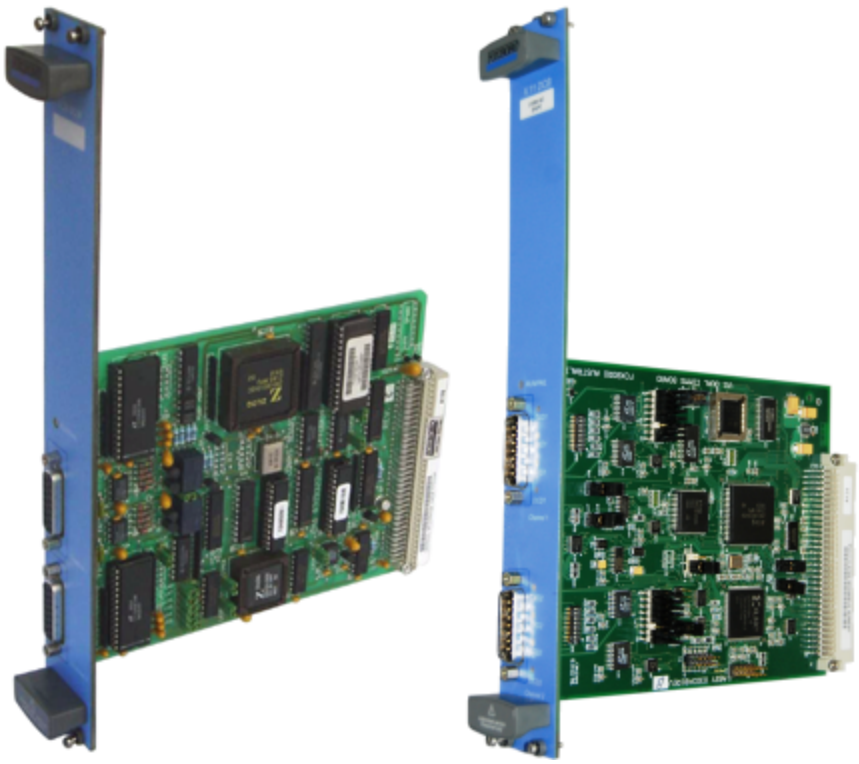
Foxboro™ SCADA

SCD6000 Dual Communications Modules

PSS 41H-8K4

Product Specification

November 2020



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Legal Information

Overview

The Foxboro™ SCADA Dual communication modules provide options for communicating SCD5200/SCD6000 with SCADA Master Stations, human machine interfaces, Intelligent Electronic Devices (IEDs), and plant equipment (see *SCD5200 Architectural Overview* (PSS 41H-8G1)). They provide reliable and stable communication over a wide range of system configurations when used in Greenfield and retrofit SCADA sites.

Various media options are provided by serial ports on the COPE Module (see *EcoStruxure™ Foxboro SCADA SCD6000 CPU OptoNet Power Supply Ethernet (COPE) Module/SCD6000 CPU OptoNet Ethernet (COE) Module* (PSS 41H-8K2)) and 8 Channel Serial Module (see *EcoStruxure™ Foxboro SCADA SCD6000 8 Channel Serial Module* (PSS 41H-8K5)) 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+

NOTE: WISP+ protocol is supported by SCD5200.

Through this flexibility in protocol and communications media support, the SCD5200/SCD6000 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 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.

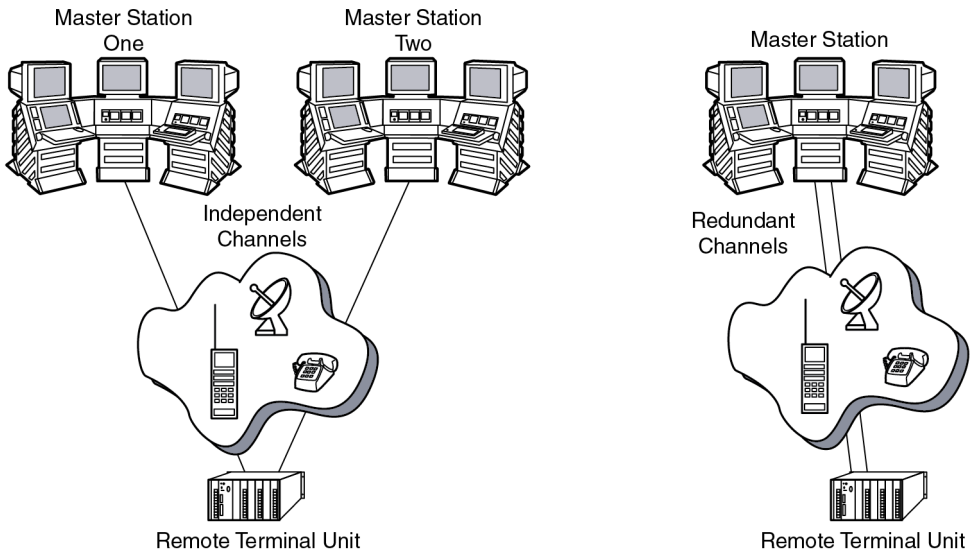
Separate data sets can be configured when operating in dual communication mode to two independent Master Stations. These data sets can be equivalent, disjointed, or intersecting sets of either the complete SCD5200/SCD6000 database or a subset of it. Therefore, greater flexibility is provided in what 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 of Independent Channels and Redundant Channels



V.28 Dual Communication 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 Communication 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

Table 1 - V.28 Dual Communication Module

Interface:	ITU-T V.24/RS-232-C (ITU-T V.28) DTE
Terminations:	DB15-pin female
Number of Channels:	Two
Data Rates[a]:	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[b]:	DNP3 Master and Slave, Conitel C2025 Master and Slave, Conitel C300 & C3000 Slave, Wisp+ Master and Slave, IEC 60870-5-101 Slave **NOTE:** Wisp+ protocol is supported by SCD5200.
Transient Protection[c]:	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.
(a) Only 1200 baud is supported while interfacing V.28 DCB with IG202T-R38 Modem. (b) 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. (c) Only in Stand alone mode. When connecting external modems, these levels are not applicable.	

Table 2 - 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

Table 3 - 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 mm 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

Product Safety

The Dual Communication modules comply with the U.S. Standard for Safety UL 61010-1 - Safety requirements for electrical equipment for measurement, control, and laboratory use - PART 1: GENERAL REQUIREMENTS - Edition 2 - Revision Date 2008/10/28 and CSA C22.2 NO. 61010-1 - Safety requirements for Electrical equipment for measurement, control, and laboratory use.

Ordering Information

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

WARNING: This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.p65warnings.ca.gov/.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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