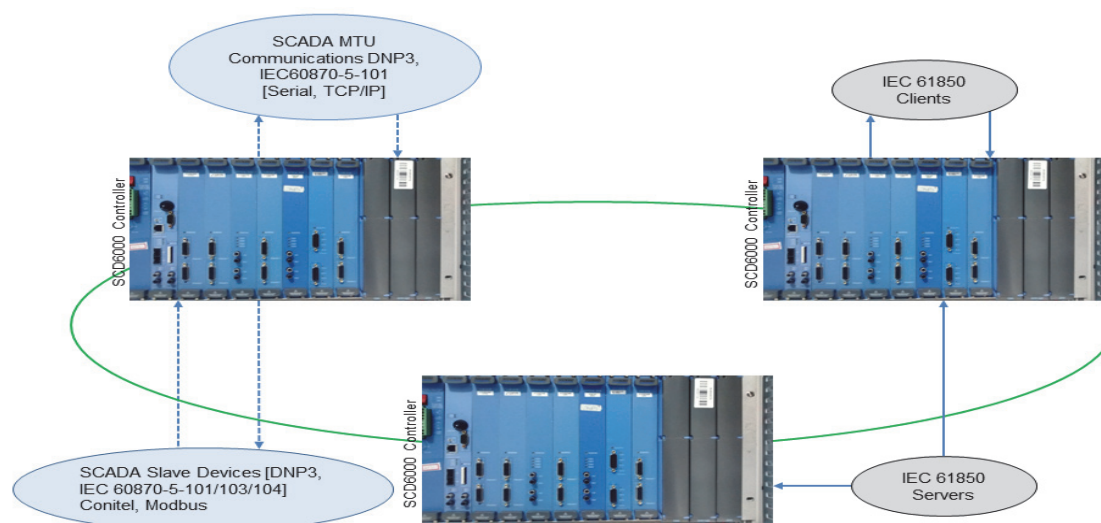


Foxboro SCD6000 Controller

SCD6000 Controller



OVERVIEW

The Foxboro SCD6000 architecture is designed with the flexibility to allow users to configure Foxboro Remote Terminal Units (RTUs) as needed to meet the various Control System requirements. The same equipment, software, and networks are used as building blocks to produce a fully integrated system consisting of:

- ▶ Analog, digital, or fiber-optic communications using multiple communication ports with each port using different communication protocols
- ▶ Intelligent I/O modules for high performance processing
- ▶ High speed peer-to-peer distributed automation over a ring optical network

- ▶ Integration of Intelligent Electronic Devices (IEDs) within the local control network
- ▶ Data and Control Interface Unit (DCIU) capability for coordination of controls between RTUs
- ▶ “Check-before-operate” mechanism on all controls
- ▶ Applications Software Library for a wide range of control system applications

SCD6000 is a multi-nodal RTU with advanced data integration, time synchronization, and programming capabilities. Its primary Slave interfaces are provided with DNP3 Slave (TCP/IP and Serial) and IEC 61850 Client.

The SCD6000 Controller inherits the functionality of the compact SCD5200 and provides a large RAM for a higher concentration of IEC 61850 IEDs.

The SCD6000 Controller module inherits the functionality of the compact Foxboro SCD5200 module. The SCD6000 Main Processor module can be used as plug-in replacement for the existing SCD5200 installed base with regenerated configuration file.

Each SCD6000 rack mounted card file can support Power, CPU, Communications, and IO modules. The range of IO modules is extensive, covering all aspects of IO at a wide range of input voltage level. Each IO processor is intelligent, provides on-board pre-processing, and captures information on the Sequence of Events.

Apart from handling IO modules, the SCD6000 also works as an embedded computing and networking platform, which serves as a distributed Station Computing Device (SCD).

As shown in the SCD6000 Controller figure, the architecture provides continuous support for OptoNet and includes additional support for the high speed internet protocols that are needed to integrate IEC 61850 Station LANs. OptoNet is transparent to the user and it provides a user programming environment with access to IO or communications information on any node at any time. Up to 63 SCD6000s can be interconnected on the OptoNet ring. IEC 61850 Station LANs can be introduced into any node on either of the Dual SFP based Ethernet ports.

Backward compatibility of the OptoNet is maintained with the Foxboro Remote Terminal Unit RTU50/SCD5200. This allows older RTU50/SCD5200 cardfiles to be mixed with the newer SCD6000 card.

SCD6000 supports both half and full duplex Ethernet communications. Dual SFP ports support either

100Base-FX or 10/100Base-T and provide a cost-effective and versatile optical, and wired Ethernet interface.

The SCD6000 can be password protected on any TCP/IP or Serial ports to restrict end user access. Passwords can be assigned for individual users with roles such as Maintainer, Browser, and Superuser. Each configuration file is node locked.

The SCD6000 Controller includes both IEC 61850 Client and Server services and data structures. These data structures are created by importing a standard .SCD file included with the configuration file. Either the IEC 61850 Client or Server, or both can be configured for use on any node.

REAL-TIME DATABASE AND ENVIRONMENT

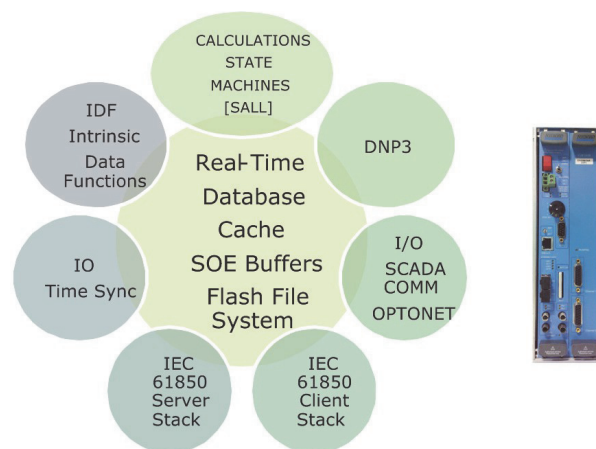


Figure 1. Real-Time Database and Environment

Figure 1 shows the SCD6000 Controller environment, which consists of a central real-time database that is kept up-to-date by a variety of independent processes. The embedded Operating System executive supports these processes.

- ▶ Intrinsic Data Functions (IDF) – Event driven pre-configured functionality is very fast and often used for implicit conversions of IO information

- ▶ Calculations – Up to 3 calculation tasks can be programmed. Each task is written as a State Machine or a Procedural Logic using the dedicated State And Logic Language [SALL]
- ▶ IEC 61850 Client – A separate process is maintained to allow the IEC 61850 Client services to operate
- ▶ IEC 61850 Server – A separate process is maintained to allow the IEC 61850 Server services to operate
- ▶ IO/COMMS/OptoNet – The Electrobus interface supports the IO and Communications modules and the OptoNet functionality supports the transparent transmission of the real-time database from node to node
- ▶ IO Time Sync – The real-time clock on each processor is used to synchronize the clocks on all intelligent IO modules

The real-time database accepts incoming data and records changes in any of the change-driven protocol stacks with a time-based comparison.

Diagnostic interfaces are provided to allow both remote and local diagnostic tools to establish a connection with the unit at any time. The on-board flash file workspace allows for multiple files to be downloaded and used as current, past, or potential future running configurations. The diagnostic interface allows the SCD6000 to be reset remotely and re-started with a new or test configuration.

The Foxboro SCD6000 controller has the ability to update online parameters communication protocols, so that the user need not restart the RTU if certain parameters such as delays and timeouts are changed.

Control Points will now have the last five control events with Request Time, Operate Time, Value, and CE Flag.

FILE FORMATS

Multi-Slot Cardfile Formats

The SCD6000 is provided with a passive parallel backplane that makes it possible to provide a number of formats with varying number of IO slots.

Each format allows one CPU. The popular card file format for the SCD6000 is a 19 inch rack file, which includes a wide range power supply, a COE [CPU, OptoNet, and Ethernet] variant of the CPU module, and space to accommodate up to 10 standard width IO modules.

Use OptoNet cables to interconnect each rack to allow a scalable solution involving multiple computing nodes. Use the 5-slot cardfile to accommodate higher communications densities. In this case, a COPE [variant of the CPU module] supplies backplane power, which avoids the need for a separate wide range power supply. Use the 5 slot file for smaller spaces where a 19 inch rack solution might not be feasible.

FILE POWER SUPPLY

In smaller file formats (up to 5 I/O modules), the COPE's integral 40 W wide input voltage supply powers the system.

Optional Power Supply

A standalone power supply module needs to power the I/O modules and provide the field supply in the 10 I/O module file format. These power supplies operate from 19.2 to 148VDC.

CPU OPTONET AND ETHERNET MAIN PROCESSOR MODULE

The SCD6000 module provides access to the battery from the front panel. This makes it convenient to replace the battery without having to remove the SCD6000 module from the cabinet. The LED indicator on the front panel provides the status of the battery.

The SCD6000 COPE board has an industrial processor with an Electrobus interface and includes:

- ▶ 1 serial port (configurable RS232/RS485)
- ▶ 256 KB of non-volatile static RAM
- ▶ 256 MB DDR3 SDRAM
- ▶ 64 MB flash
- ▶ Dual 100 Mbps fixed SFP ports to support either 100Base-FX or 10/100Base-T
- ▶ On-board real-time clock
- ▶ 40 W regulated wide input voltage dc power supply
- ▶ Single OptoNet node (2 optical ports)

The SCD6000 board supports:

- ▶ OptoNet
 - High-speed optical redundant token passing local area network
- ▶ Dedicated RJ45 Ethernet diagnostic port for the Foxboro Remote Terminal Viewer (RTV)
- ▶ COM2 port RS-232/RS-485 supported protocols
 - DNP3 Master (SAv2 and SAV5)
 - DNP3 Slave (SAv2 and SAV5)
 - DNP3 Slave Dialup (SAv2 and SAV5)
 - Modbus Master
 - Modbus Slave
 - IEC 60870-5-101 Master

- User Configurable Serial Interface
- ▶ Ethernet supported protocols and features
 - DNP3 Master on TCP/IP (SAv2 and SAV5)
 - DNP3 Slave on TCP/IP (SAv2 and SAV5)
 - DNP3 Master on UDP (SAv2 and SAV5)
 - DNP3 Slave on UDP (SAv2 and SAV5)
 - IEC 60870-5-104 Slave
 - DNV GL certified IEC 61850 Edition 1 Server and Client
 - DNV GL certified IEC 61850 GOOSE Publisher and Subscriber
 - Modbus/TCP Master
 - Diagnostic Utility over TCP/IP
 - Event logger

Input/Output Assemblies (I/O)

CPU interfaces with the I/O modules through Electrobus. For the technical specifications of the non-RoHS Input and Output Modules, see the latest revision of PSS 31H-8K1. For the technical specifications of the RoHS Input and Output Modules, see the latest revision of PSS 31H-8K1R.

Dual Communication Board (DCB)

DCB provides communication interface between SCD6000 and Master station. For the technical specifications of the SCD6000 Dual Communication Modules, see the latest revision of PSS 31H-8K4. For the technical specifications of the SCD6000 RoHS Dual Communication Modules, see the latest revision of PSS 31H-8K4R.

State And Logic Language (SALL)

SALL provides the means to implement individual control and data processing logic for execution on the SCD6000.

Intrinsic Database Functions (IDF)

IDF provides predefined functions for control and data processing logic for execution on the SCD6000. It is a cyclic, data driven, interrupt driven, and event driven preconfigured functionality. With IDF, calculations can be implemented within the RTU configuration, without creating application programs

using SALL.

Foxboro Remote Terminal Viewer (RTV)

RTV provides password-based authentication to help prevent unauthorized access to the RTU. Three-level access privilege for RTV with a log of access and diagnostic activities.

CPU

Part Number	Description
SY-60399001R	SCD6000 CPU OptoNet Power Supply Ethernet (COPE) Module (RoHS)
SY-60399002R	SCD6000 CPU OptoNet Ethernet (COE) Module (RoHS)
SY-60399003R	RTU 50 SVX ^(a) CPU OptoNet Ethernet Module (RoHS)

(a) RTU 50 SVX does not support DNP3 SAV2 and SAV5.

POWER SUPPLY

Part Number	Description
SY-0399131	Wide Input Range Power Supply Module (needed for 2003098)
SY-0399131R	Wide Input Range Power Supply Module (needed for 2003098) (RoHS)

I/O FILES

Part Number	Description
SY-2003092	2x5 I/O slot file (RoHS)
SY-2003098	Ten I/O slot card file (RoHS)
SY-2003100	Five I/O slot card file (RoHS)
SY-2003102	Three I/O slot card file (RoHS)
SY-2003104	One I/O slot card file (RoHS)
SY-2003107	3x3 I/O slot file (RoHS)

ASSOCIATED PRODUCT SPECIFICATION SHEETS

Part Number	Description
PSS 31H-8K2	SCD6000 CPU OptoNet Power Supply Ethernet (COPE) Module / SCD6000 CPU OptoNet Ethernet (COE) Module
PSS 31H-8K3	SCD6000 Wide Range Input Power Supply Module
PSS 31H-8K3R	SCD6000 Wide Range Input Power Supply Module (RoHS)
PSS 31H-8K1	SCD6000 Input/Output Modules
PSS 31H-8K1R	SCD6000 Input/Output Modules (RoHS)
PSS 31H-8K4	SCD6000 Dual Communications Modules
PSS 31H-8K4R	SCD6000 Dual Communications Modules (RoHS)
PSS 31H-8K5	SCD6000 8 Channel Serial Module
PSS 31H-8K5R	SCD6000 8 Channel Serial Module (RoHS)
PSS 31H-8K6	RTU50 SVX CPU Module
PSS 31S-2M11	Foxboro RTU Station
PSS 31S-2M12	RTU Connect Secure
PSS 31S-2M13	Foxboro Remote Terminal Viewer
PSS 31S-2M15	SCD6000 State and Logic Language (SALL)
PSS 31H-8K2	SCD6000 CPU OptoNet Power Supply Ethernet (COPE) Module / SCD6000 CPU OptoNet Ethernet (COE) Module
PSS 31H-8K3	SCD6000 Wide Range Input Power Supply Module
PSS 31H-8K3R	SCD6000 Wide Range Input Power Supply Module (RoHS)

I/O ASSEMBLIES

Part Number	Description	I/O Count	SCD6000	RTU50 SVX
SY-0399084	4 Channel Analog Output Module	4 AO	Yes	Yes
SY-0399084R	4 Channel Analog Output Module (RoHS)	4 AO	Yes	Yes
SY-0399085	20 Channel Analog Input Module (Isolated)	20 AI	Yes	Yes

Part Number	Description	I/O Count	SCD6000	RTU50 SVX
SY-0399085R	20 Channel Analog Input Module (Isolated) (RoHS)	20 AI	Yes	Yes
SY-0399086	12 Pilot Relay Digital Output Module	12 DO	Yes	Yes
SY-0399086R	12 Pilot Relay Digital Output Module (RoHS)	12 DO	Yes	Yes
SY-0399087	12 Magnetically Latched Relay Digital Output Module	12 DO	Yes	Yes
SY-0399087R	12 Magnetically Latched Relay Digital Output Module (RoHS)	12 DO	Yes	Yes
SY-0399088	Multi Input Output Module 24V 8 Mini Pilot Relay	24 DI/6 AI/8 DO	Yes	Yes
SY-0399088R	Multi Input Output Module 24V 8 Mini Pilot Relay (RoHS)	24 DI/6 AI/8 DO	Yes	Yes
SY-0399089	Multi Input Output Module 24V 6 Paired Pilot Relay	24 DI/6 AI/6 DO	Yes	Yes
SY-0399089R	Multi Input Output Module 24V 6 Paired Pilot Relay (RoHS)	24 DI/6 AI/6 DO	Yes	Yes
SY-0399094	Multi Input Output Module 48V 8 Mini Pilot Relay	8 Mini-pilot Relays 24 DI/6 AI/8 DO	Yes	Yes
SY-0399094R	Multi Input Output Module 48V 8 Mini Pilot Relay (RoHS)	8 Mini-pilot Relays 24 DI/6 AI/8 DO	Yes	Yes
SY-0399095	Multi Input Output Module 129V 8 Mini Pilot Relay	24 DI/6 AI/8 DO	Yes	Yes
SY-0399095R	Multi Input Output Module 129V 8 Mini Pilot Relay (RoHS)	24 DI/6 AI/8 DO	Yes	Yes
SY-0399096	Multi Input Output Module 48V 6 Paired Pilot Relay	24 DI/6 AI/6 DO	Yes	Yes
SY-0399096R	Multi Input Output Module 48V 6 Paired Pilot Relay (RoHS)	24 DI/6 AI/6 DO	Yes	Yes
SY-0399097	Multi Input Output Module 129V 6 Paired Pilot Relay	24 DI/6 AI/6 DO	Yes	Yes

Part Number	Description	I/O Count	SCD6000	RTU50 SVX
SY-0399097R	Multi Input Output Module 129V 6 Paired Pilot Relay (RoHS)	24 DI/6 AI/6 DO	Yes	Yes
SY-0399136	8 Digital Output 10 Amp Module	8 DO	Yes	Yes
SY-0399136R	8 Digital Output 10 Amp Module (RoHS)	8 DO	Yes	Yes
SY-0399160	4 Analog/32 Digital Input Module (24 V to 129 V)	32 DI/4 AI	Yes	Yes
SY-0399160R	4 Analog/32 Digital Input Module (24 V to 129 V) (RoHS)	32 DI/4 AI	Yes	Yes
SY-0399222	4 Analog/32 Digital Input Module (24 V to 129 V) Deep Wiring Channel Module	32 DI/4 AI	Yes	Yes
SY-0399222R	4 Analog/32 Digital Input Module (24 V to 129 V) Deep Wiring Channel Module (RoHS)	32 DI/4 AI	Yes	Yes

COMMUNICATIONS BOARDS

Part Number	Description	SCD6000	RTU50 SVX
SY-0399132	8 CH Serial Module RS-485/RS-232	Yes	Yes
SY-0399132R	8 CH Serial Module RS-485/RS-232 (RoHS)	Yes	Yes

DUAL COMMUNICATIONS MODULES

Part Number	Description	SCD6000	RTU50 SVX
SY-0399122(a)	DCB DNP Glass Optical supporting DNP3 Master/Slave	Yes	Yes
SY-0399122R(a)	DCB DNP Glass Optical supporting DNP3 Master/Slave (RoHS)	Yes	Yes
SY-0399127	DCB IEC 60870-5-103 Glass Optical supporting IEC 60870-5-103 Master	Yes	Yes
SY-0399127R	DCB IEC 60870-5-103 Glass Optical supporting IEC 60870-5-103 Master (RoHS)	Yes	Yes

Part Number	Description	SCD6000	RTU50 SVX
SY-0399163 ^(a)	DCB DNP V.11 supporting DNP3 Master/Slave	Yes	Yes
SY-0399163R ^(a)	DCB DNP V.11 supporting DNP3 Master/Slave (RoHS)	Yes	Yes
SY-0399192	Communications Module V.28 Conitel C2020/C2025 Master/Slave	Yes	Yes
SY-0399192R	Communications Module V.28 Conitel C2020/C2025 Master/Slave (RoHS)	Yes	Yes
SY-0399194 ^(a)	Communications Module V.28 DNP3 Master/Slave	Yes	Yes
SY-0399194R ^(a)	Communications Module V.28 DNP3 Master/Slave (RoHS)	Yes	Yes
SY-0399196	Communications Module V.28 IEC 60870-5-101 Slave	Yes	Yes
SY-0399196R	Communications Module V.28 IEC 60870-5-101 Slave (RoHS)	Yes	Yes
SY-0399224 ^(a)	Communications Module V.11 DNP3 Master/Slave (Ignore DCD)	Yes	Yes
SY-0399224R ^(a)	Communications Module V.11 DNP3 Master/Slave (Ignore DCD) (RoHS)	Yes	Yes
SY-0399225R ^(b)	SCD6000 Communications Module V.11 DNP3 Master/Slave Type 2 (RoHS)	Yes	No
SY-0399226R ^(b)	SCD6000 Communications Module V.28 DNP3 Master/Slave Type 2 (RoHS)	Yes	No
SY-0399227R ^(b)	SCD6000 Communications Module Glass Optical DNP3 Master/Slave Type 2 (RoHS)	Yes	No

(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 and later versions

PERFORMANCE CHARACTERISTICS

The section provides details of the performance characteristics of all the protocols.

Table 1 displays the performance characteristics of the IEC 61850 Server with different number of nodes.

Table 1. IEC 61850 Server

No. of Logical Nodes	Data Attributes	CPU Idle %	Startup Time (in Seconds)	RAM Usage (in MB)
10	1414	64-72	63	141.5
25	3047	61-67	64	145.4
50	8173	52-57	66	155.2
75	13577	45-50	69	166.3
100	15065	43-47	70	169.7
150	17384	34-42	72	174.7

Table 2 displays the performance characteristics of the IEC 61850 Client with different number of nodes.

Table 2. IEC 61850 Client

No. of Logical Nodes	Data Attributes	CPU Idle %	Startup Time (in Seconds)	RAM Usage (in MB)
10	1406	90-93	58	136.5
10 (With DNP3 Slave)	1409	87-91	60	136.9
25	3036	89-92	59	140.7
25 (With DNP3 Slave)	3042	85-90	67	140.3
50	4355	86-90	60	142.8
50 (With DNP3 Slave)	5121	81-86	69	144.7
75	7745	85-88	63	150.0
75 (With DNP3 Slave)	10448	69-72	80	155.5
100	8941	84-87	65	152.5
100 (With DNP3 Slave)	11936	67-71	82	158.4
120	10401	83-86	67	155.6
120 (With DNP3 Slave)	14169	65-70	92	163.2
140	13015	80-82	69	161.5

Table 2. IEC 61850 Client (Continued)

No. of Logical Nodes	Data Attributes	CPU Idle %	Startup Time (in Seconds)	RAM Usage (in MB)
140 (With DNP3 Slave)	20148	58-65	108	176.4

Table 3 displays the performance characteristics of the IEC 61850 Server and Client with different number of nodes.

Table 3. IEC 61850 Server and Client

No. of IEDs	Data Attributes	CPU Idle %	Startup Time (in Seconds)	RAM Usage (in MB)
2	518	84-87	60	139
5	1295	83-85	61	141
10	2590	81-84	61	144
16	4144	78-81	62	148
50	12950	65-71	70	169
100	25900	55-60	81	199

Table 4 displays the configuration details for DNP3 Protocol.

Table 4. DNP3 Protocol Configuration Details

Number of Points			Number of Events/Second		
Digital Inputs	Analog Inputs	Counter Inputs	Digital	Analog	Counter
12500	12500	5000	50	50	20

Table 5 and Table 6 display the performance details for DNP3 Protocol.

Table 5. DNP3 Protocol Performance Details1

DNP3		TCP/IP			UDP			COM2		
		CPU Idle (%)	Start up time (m:s)	RAM usage (MB)	CPU Idle (%)	Start up time (m:s)	RAM usage (MB)	CPU Idle (%)	Start up time (m:s)	RAM usage (MB)
Without secured authentication	Slave	54	1:57	136	51	1:57	135	64	2:52	136
	Master	94	1:22	138	96	1:23	139	72	2:05	137
With SAV2 secured authentication	Slave	51	2:01	137	54	2:01	135	55	2:56	136
	Master	95	1:24	139	94	1:24	139	71	2:10	138
With SAV5 secured authentication	Slave	50	2:07	137	54	2:07	136	56	2:56	136
	Master	95	1:32	138	95	1:37	139	71	2:10	138

Table 6. DNP3 Protocol Performance Details2

DNP3		V.11			V.28			Optical DCB		
		CPU Idle (%)	Start up time (m:s)	RAM usage (MB)	CPU Idle (%)	Start up time (m:s)	RAM usage (MB)	CPU Idle (%)	Start up time (m:s)	RAM usage (MB)
Without DNP3 authentication	Slave	62	2:15	135	96	1:53	136	96	1:30	134
	Master	70	1:22	139	96	1:21	138	95	1:25	138

Table 6. DNP3 Protocol Performance Details2 (Continued)

DNP3		V.11			V.28			Optical DCB		
		CPU Idle (%)	Start up time (m:s)	RAM usage (MB)	CPU Idle (%)	Start up time (m:s)	RAM usage (MB)	CPU Idle (%)	Start up time (m:s)	RAM usage (MB)
With SAv2 DNP3 authentication	Slave	49	2:01	138	84	2:01	136	96	1:32	136
	Master	94	1:24	139	95	1:22	139	95	1:27	139
With SAv5 DNP3 authentication	Slave	59	1:57	137	96	1:59	136	96	1:57	136
	Master	84	1:32	139	95	1:00	139	95	1:44	139

Table 7 and Table 8 display the performance characteristics of the IEC 104 Protocol.

Table 7. IEC 104 Slave Performance

No. of Logical RTUs	No. of Database Points	CPU Idle %	Memory Usage (MB)	Startup Time (in Seconds)
1	1000	95	132	60
2	2000	94	139.6	83
3	5000	92	145.3	112
5	10000	90	154.7	134
9	20000	88	173.3	181
13	30000	85	191.9	211
21	50000	65	216.4	379

Table 8. IEC 104 Master Performance

No. of Master Groups	No. of Logical RTUs	No. of Database Points	CPU Idle %	Memory Usage (MB)	Startup Time (in Seconds)
1	16	8000	98	136	240
16	16	50000	64	145	720

Table 9 displays the IEC 101 Master performance characteristics.

Table 9. IEC 101 Master Performance

No. of Logical RTUs	No. of Database Points	CPU Idle %	RAM Usage (in MB)	Startup Time (in Seconds)
1	1000	95	131	80
2	2000	95	131	90
3	4000	94	132	130
1	8000	93	134	183
2	16000	89	139	300
2	30000	85	144	502
2	40000	80	148	660

Modbus Performance Characteristics for 8 channel - RS485 2-Wire Serial Module on a Standalone RTU

Table 10 displays the maximum number of datatype points supported by Modbus Master scan groups with maximum message size limited to 255 bytes.

Table 10. Number of Points for Each Scan Group

Modbus Data Types	Maximum Number of Points
Digital Input	2000
Analog Input (16-bit)	125
Analog Input (32-bit)	62
Digital outputs	2000
Analog Outputs (16-bit)	125
Analog Outputs (32-bit)	62

Table 11 displays Modbus one-one communication performance details for single channel of 8 channel serial module.

Table 11. One-One Communication, Single Port

No. of Channels	No. of Scan Groups	No. of Database Points	Modbus Protocol	CPU Idle (%)	Memory Usage (MB)	Startup Time (in secs)
1	6	2277	Modbus Master	92	136	105
			Modbus Slave	95	130	110
1	160	23929	Modbus Master	86	138	125
			Modbus Slave	94	133	130

Table 12 displays Modbus one-one communication performance details for all the 8 channels of serial module.

Table 12. One-One Communication, All Ports

No. of Channels	No. of Scan Groups	No. of Database Points	Modbus Protocol	CPU Idle (%)	Memory Usage (MB)	Startup Time (in secs)
8	48	18216	Modbus Master	51	135	126
			Modbus Slave	71	132	127
8	1280	100232	Modbus Master	47	156	164
			Modbus Slave	64	140	254

Table 13 displays the performance details of Modbus protocol in multidrop for single channel of 8 channel serial module.

Table 13. Multidrop Communication, Single Port

No. of Channels	No. of Devices Connected in Multidrop	No. of Scan Groups	No. of Database Points	Modbus Protocol	CPU Idle (%)	Memory Usage (MB)	Start up Time (in secs)
1	10	60	12880	Modbus Master	97	134	127
				Modbus Slave	94	132	119

Table 14 displays the performance details of Modbus protocol in multidrop for all the 8 channels of serial module.

Table 14. Multidrop Communication, All Ports

No. of Channels	No. of Devices Connected in Multidrop	No. of Scan Groups	No. of Database Points	Modbus Protocol	CPU Idle (%)	Memory Usage (MB)	Start up Time (in secs)
8	80	480	103040	Modbus Master	67	155	171
				Modbus Slave	76	136	130

SUPERSEDED VERSIONS

The SY-1101207_G6 release supersedes these versions of the SCD6000 software:

- ♦ SY-1101207 (all versions up to G, including all maintenance releases up to G5)



Schneider Electric Systems USA, Inc.
38 Neponset Avenue
Foxborough, MA 02035-2037
United States of America
www.schneider-electric.com

Global Customer Support
<https://pasupport.schneider-electric.com>

Copyright 2015-2019 Schneider Electric.
All rights reserved.

Schneider Electric and Foxboro are trademarks owned
by Schneider Electric SE, its subsidiaries and affiliates.
All other trademarks are the property of their respective
owners.

MB 031

0719