Operation on DeviceNet network using Rockwell ControlLogix PLC

SSW900-CAN-W

Application Note





SSW900-CAN-W DeviceNet Application Note

Series: SSW900 Language: English Document: 10006261818 / 00 Build 5249

Publication Date: 01/2019



The information below describes the reviews made in this manual.

Version	Revision	Description
-	R00	First edition



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1 DESCRIPTION

This application note is intended to provide a description of how to program a soft-starter SSW900 with accessory SSW900-CAN-W to communicate in DeviceNet network using Rockwell ControlLogix PLC.

This document is meant for trained personnel working with the equipment described and DeviceNet network installation, besides a good knowledge of automation and programmable logic controllers, in particular about Rockwell Automation software.

1.1 REFERENCED DOCUMENTS

This application note was developed based on the following documents and tools:

Document	Version	Source
SSW900 User's Manual	10005616165 / 04	WEG
SSW900 Soft-Starter Programming Manual	10003989140 / 03 (1.2X)	WEG
SSW900-CAN-W DeviceNet User's Guide	10006223733 / 00 (1.2X)	WEG
WPS	2.40	WEG
Planning and Installation Manual - DeviceNet Cable System	PUB00027R1	ODVA
RSNetWorx for DeviceNet	21.00	Rockwell Automation
Studio 5000 PLC programming software	26.00	Rockwell Automation

1.2 ARCHITECTURE



Figure 1.1: Network components for this application

1.3 SSW900

- Equipment: SSW900 with accessory SSW900-CAN-W installed at slot 1.
- Version: 1.20
- EDS file: DN_SSW900_V12X.eds
- Programming tools:
 - WPS version 2.40

1.4 CONTROLLOGIX

CPU: 1756-L71S version 26.013

- DeviceNet Scanner: 1756-DNB version 7.03 ×.
- Programming tools: RSNetWorx For DeviceNet version 21.00 Studio 5000 Logix Designer version 26.01

PASSIVE NETWORK COMPONENTS 1.5

For passive network components - cables, connectors, terminating resistors, power supply - we recommend using certified components for DeviceNet network. Please refer to the product documentation for information about the proper network installation.



2 SLAVE CONFIGURATION

This section describes the main configurations for soft-starter SSW900 operation with accessory SSW900-CAN-W in DeviceNet network. Some of the described configurations are only available if SSW900-CAN-W accessory is properly installed.

Refer to the SSW900 programming manual for the necessary configurations related to other device functions, like motor configuration, protections, etc.

2.1 DEVICENET INTERFACE

For soft-starter SSW900 operation in the DeviceNet network, it is necessary to program the protocol, address (or Node-ID), and baud rate. For this application, the following configurations have been done:

- C8.4.1 CANopen/DeviceNet Protocol: DeviceNet. ①
- C8.4.2 CANopen/DeviceNet Address: 1. 2
- C8.4.3 CANopen/DeviceNet Baud Rate: 125 Kbps. 0



Figure 2.1: WPS - CAN accessory configuration

2.2 I/O DATA

SSW900 has a set of configurations where it is possible to define any device data to exchange with network master. There is an appendix at DeviceNet User's Guide describing the entire list of device data that can be programmed to I/O Data.

Parameter	De	escription	Range of values	Decimal places	Class	Instance	Attribute	CIP data type	Net Id	Slze	Qty mapped words
S5.1	Status Word										
S5.1.1	SSW		Bit 0 = Running Bit 1 = Gener, Enabled Bit 2 = JOG Bit 3 = Initial Test Bit 4 = Ramp Up Bit 5 = Full Voltage Bit 7 = Ramp Down Bit 8 = Remote Bit 9 = Braking Bit 1 = Reverse Bit 1 = Coff Bit 1 = Aram Bit 1 = Aut		64h	07h	B4h	WORD	680	16blt	1

Figure 2.2: List of available data described at SSW900-CAN-W DeviceNet User's Guide

For each application, it is necessary to look at this appendix and define the data to communicate between SSW900 and network master. Considering SSW900-CAN-W accessory installed at slot 1, for this application, SSW900 will transfer the following I/O data with network master:

Mapped Inputs	Net Id	Size	Qty Mapped Words
S5.1.1 Status Word SSW	680	16bit	1
S1.2.4 Main Line Voltage Average	4	16bit	1
S1.1.4 Current Average	24	32bit	2
		TOTAL	4 Words (8 Bytes)

Mapped Outputs	Net Id	Size	Qty Mapped Words
S5.2.5 Command Word Slot1	685	16bit	1
	1 Word (2 Bytes)		

Based on this sequence of data for communication, the following configurations have been programmed:

Data read configuration (Input Words):

- C8.1.1.1 Data Read Slot 1 1st Word: 1. 0
- C8.1.1.4 Data Read Slot 2 Quantity: 4. 2
- C8.1.1.5 Data Read Word #1: 680 (Status Word SSW). 3
- C8.1.1.6 Data Read Word #2: 4 (Main Line Voltage Average). 4
- C8.1.1.7 Data Read Word #3: 24 (Current Average high word).
- C8.1.1.8 Data Read Word #4: 24 (Current Average low word).



Figure 2.3: WPS - Data read configuration

Data write configuration (Output Words):

Ρſ

- C8.1.2.1 Data Write Slot 1 1st Word: 1. 0
- C8.1.2.2 Data Write Slot 1 Quantity: 1. 2
- C8.1.2.6 Data Write Word #1: 685 (Command Word Slot1). 3

WEG Programming Suite 2.40 Eile Edit Online Iools Window Help	: ⊖ ⊖ €, ▶ ■ . +		
Configurations X Swy900_devicenet_app_note Swy900 (SW900 v1.20) Configurations Configurations Configurations Swy900 (SW900 v1.20) Configurations Configurations Swy900 (Swy900 v1.20) Configurations Configurations Configurations Configurations Configurations Configurations Configurations Configurations Swy900 (Swy900 v1.20) Configurations Configurations Configurations Configurations Configurations Configurations Configurations Configurations Swy900 (Swy900 v1.20) Configurations	C8 Communication IN C8.1 I/O Data C8.2 RS485 Serial C8.3 Anybus-CC C8.4 CAN-W C8.11 Data Read C8.12 Data Write Configuration of the Write Parameters (16 bits) via Communication Network Configuration of the Data Exchange Area Slot 1 Accessory CAN CAN C8.1.2.3 Slot 2 Accessory CAN C8.1.2.4 Slot 1 quartry C8.1.2.4 Slot 2 quartry 1 C8.1.2.4 Slot 2 quartry 1 C8.1.2.4 Slot 2 quartry C9 Slot 2 quartry C0 words) C8.1.2.4 Slot 2 quartry C0 words) C8.1.2.4 Slot 2 quartry C8.1.2.4 Slot 2 quartry C8.1.2.4 Slot 2 quartry C8.1.2.4 Slot 2 quartry C9 Slot 2 quartry Slot 2 quartr	k Configuration of the Parameters to be C8.1.2.6 S5.2.5 Comman	Advanced programming Advanced programming a Available C8.1.2.16 Not configured * C8.1.2.19 Not configured * C8.1.2.20 Not configured * C8.1.2.21 Not configured * C8.1.2.22 Not configured * C8.1.2.23 Not configured * C8.1.2.25 Not configured * C8.1.2.25 Not configured *
	₹		

Figure 2.4: WPS - Data write configuration



2.3 LOCAL/REMOTE

SSW900 has two operation modes: local and remote. For each operation mode, it is necessary to define the source that it will use to receive commands, like start/stop, error reset. For this application, considering SSW900-CAN-W accessory installed at slot 1, the following control sources have been defined:

- Local: keypad will control SSW900 in local mode.
- Remote: slot 1 (SSW900-CAN-W) will control SSW900 in remote mode.
- Local/Remote transition: the definition if the device is in local or remote mode will be controlled by slot 1 commands also, in remote mode by default (at power on).

Based on this, the following configurations have been programmed:

- C3.1 LOC/REM Selection Mode: Slot 1 REM. 0
- C3.2 LOC/REM Selection LOC Command: HMI Keys. 2
- C3.3 LOC/REM Selection REM Command: Slot 1. ④

🗱 WEG Programming Suite 2.40						
File <u>Edit Online T</u> ools <u>Window H</u> elp						
Configurations %	C8 Communication 18 Basic Programming of SSW900 18					
ssw900_devicenet_app_note						
SSW900 (SSW900 v1.20)						
Ladder	C1 Starting and Stopping C2 Motor Data C3 LOC/REM Selection C4 I/O C9 SSW900					
Diagnostic						
Wizards Main Signale of SSW900	Configuration of the SSW900 Command Source	≝∥				
Basic Programming of SSW900	C3.1 LOC/REM Selection Mode Digital Input to LOC/REM Selection					
C7 Special Functions	Slot 1 REM					
C8 Communication	C3.4 Commands Copy					
	No					
	C3.2 LOC Command C3.3 REM Command Function to Command via DI					
		_				
		=				
		-				
		4				

Figure 2.5: WPS - Local/Remote configuration

2.4 COMMUNICATION ERROR

It is important to define the action SSW900 must take in case of communication error. For this application, a communication error should lead to an alarm indication. If SSW900 was running the motor via network command, SSW900 should also perform a general disable.

Based on this, the following configurations have been programmed (refer to figure 2.1):

- C8.4.5.1 CAN Error Mode: Alarm. 4
- C8.4.5.2 CAN Error Alarm Action: General Disable. 0

3 DEVICENET NETWORK CONFIGURATION

For DeviceNet configuration, use RSNetWorx for DeviceNet. The main steps are described below.

3.1 IMPORT EDS FILE

Import EDS file using EDS Wizard tool. Follow the wizard instruction to import the EDS file. It is important to use the EDS file according to SSW900 firmware version.

Rockwell Automation's EDS Wizard						
Change Graphic Image You can change the graphic image that is associated with a device.						
Product Types Product Types Vendor Specific Type SSW900						
<u>Sack Next</u> > Cancel						

Figure 3.1: Register SSW900 EDS file

3.2 IDENTIFY PRODUCT ON THE NETWORK

Add devices on the network. If devices are online, it is possible to scan the network to automatically find them.

■g ssw900.dnt - RSNetWorx for DeviceNet	
Eile Edit View Network Device Diagnostics Tools Help	
🎦 🖻 🕶 🔛 🎒 X 🖻 💼 院	
@ Q E 1 = ₩ ▼ 牀 ↓ 図 🏭	
Hardware 1	756-DNB SSW900
Photoelectric Sensor	
PointBus Motor Starter	
PowerFlex /50-Series via DeviceNet L PowerMonitor 5000 Series	
Rockwell Automation miscellaneous	
🕀 👘 SCANport Adapter	00 01
Safety Analog I/O Device	
Safety Controllers	
🕀 👘 Softstart Starter	Browsing network
Software Configured Safety Relay	
End Vendor	Found: Device at address 01
🗄 👘 Benshaw Inc.	
Reserved	
Rockwell Automation/Allen-Bradley	Cancel
Rockwell Automation/Reliance Elect	
Rockwell Automation/Sprecher+Sch	
E- WEG	
SSW900	
-	*
	Graph Spreadsheet Master/Slave Configuration Diagnostics
× Descript	ion
DNET:0101 12/12/2018 14:51:49 Mode cf	and to online. The online path is VM-PC!USB\16\Backplane\3\A.
l ss	
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Ready	Starting Browse

Figure 3.2: Scan network devices



3.3 MONITOR SSW900 PARAMETERS

The EDS file has the list of parameters (status and configurations) available to SSW900. Double clicking on the device opens its properties, including this parameter list. If SSW900 is online, it is possible to upload and see online all status and configurations available to it.

General Parameters I/O Data EDS File					
Select the parameter that you want to configure and initiate an action using the toolbar.					
<u> </u>	\$ 🖗	Single 💌 🔿 <u>M</u>	onitor 🛛 🍖 🐴		
ID	💷 🖻 🔬	Parameter	Current Value		
120	Ê	D5.2.6 Motor Maxi	0 °C		
121	۲	D6.1 Hours Control	948348 s		
122	٢	D6.2 Hours Control	0 s		
123	۲	D6.3 Hours Control	0 s		
124		C1.1 Starting and St	. Voltage Ram		
125		C1.2 Starting and St	. 30 %		
126		C1.3 Starting and St	. 20 s		
127		C1.4 Starting and St	Automatic		
128		C1.5 Starting and St	. 150 %		
129		C1.6 Starting and St	. 20 %		
130		C1.7 Starting and St	. 300 %		
131		C1.8 Starting and St	Constant		
132		C1.9 Starting and St	. 30 %		
122		C1 10 Starting and	110 %		
		III	•		
	OK 1	Canad Apr	a. 1 maa		

Figure 3.3: Device parameters

3.4 PROGRAM I/O DATA

Double clicking on the scanner to open its properties. At tab "Scanlist", it is possible to program all devices the master should communicate with, as well the number of bytes for cyclic data exchange, the communication method and data mapping at the scanner.

For this application, the communication method will be "polled". The I/O size was defined at item 2.2:

- Input size: 8 bytes. ①
- Output size: 2 bytes. 2

3량 1756-DNB	?	
General Module Scanlist Input Output ADR Summa	ny	
Available Devices: Scanlist:		
>	Edit I/O Parameters : 01, SSW	2 ×
< >>	Input Size:	vtes
<<	Use Output Bit:	Input Size: 2 Bytes
	Polled:	Output Size: 0 📩 Bytes
Automap on Add V Node Agtive	Input Size: 8 + B	ytes 🜒 Heartbeat Rate: 250 📩 msec
Upload from Scanner	Qutput Size: 2 - B	ytes 2
Edit I/O Parameters	r higher	Cancel Restore I/O Sizes
OK Cancel Apply	Help	

Figure 3.4: Device parameters

🚏 1756-DNB	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
General Module Scanlist Input Output ADR Summary	General Module Scanlist Input Output ADR Summary
Node / Type Size Map AutoMap ⊡ □ 01, SS Polled 8 1:1.Data[0].0 AutoMap	Node / Type Size Map ID-ID 01, SS Polled 2 1.0.Data[0].0
Unmap	Unmap
A <u>d</u> vanced	Advanced
III P Qptions	< III > Options
Memory: Assembly Data 💌 Start DWord: 0 🕂	Memory: Assembly Data Start DWord: 0
Bts 31 - 0 01 559900 11:0bal01 10 10 11:0bal01 10 10 11:0bal01 11 10 11:0bal01 11 11	Bits 31 - 0 01.55W900 1:0. Data10 01.55W900 1:0. Data11 10. Data12 1:0. Data13 10. Data14 1:0. Data161 10. Data161 1:0. Data161 10. Data161 1:0. Data161 10. Data161 1:0. Data161 10. Data161 1:0. Data161 10. Data161
OK Cancel Apply Help	OK Cancel Apply Help

Figure 3.5: Location of communication data

Once the I/O configuration is finished, download it to PLC.

PF

4 CONTROL AND MONITORING

Once network configuration is done, use Studio 5000 Logix Designer to configure PLC and access device data. The main steps are described below.

4.1 DOWNLOAD CONFIGURATION TO PLC

Configure PLC according to CPU and additional modules connected to the backplane, and download this configuration to PLC. In order to exchange input and output data with slaves, command PLC and DeviceNet scanner to run mode.

Cogix Designer - Logix5571S in ssw900_devicenet_application	op_note.ACD [1756-L71S 26.13] - [MainProgram - MainRoutine	2]			
File Edit View Search Logic Communicat	ions <u>T</u> ools <u>W</u> indow <u>H</u> elp				- 8
		Q Q Select language	- 😡		
🖒 Controller Organizer 🗸 🗸	× Scope:		• 7. 8	inter Name Filter	
Controller Logix5571S	Name ===[4	Value 🗲	Force Mask + Sty	yle Data Type	Class D +
Controller Tags	+ Local:3:1	{}	{}	AB:1756 DNB 5	Standard
Controller Fault Handler	- Local:3:0	{}	{}	AB:1756_DNB_4	Standard
Power-Up Handler	- Local:3:0.CommandRegister	{}	{}	AB:1756_DNB_C	Standard
Motion Groups	Local:3:0.CommandRegister.Run		De	cimal BOOL	Standard
Add-On Instructions	Local:3:0.CommandRegister.Fault	0	De	cimal BOOL	Standard
Data Types	Local:3:0.CommandRegister.DisableNetwork	0	De	cimal BOOL	Standard
- Trends	Local: 3:0.CommandRegister.HaltScanner	0	De	cimal BOOL	Standard
Tr. Logical Model	Local:3:0.CommandRegister.Reset	0	De	cimal BOOL	Standard
🖃 🔄 I/O Configuration	+ Local:3:0.Data	{}	{} De	cimal DINT[123]	Standard
📥 🛲 1756 Backplane, 1756-A4	+ Local:3:S	{}	{}	AB:1756_DNB_S	Standard
- ♥] [1] 1756-175P Logio55715Partner ⊕ ♥] [2] 1756-EN2TR eip ⊖ ♥] [3] 1756-DN8 devicenet └─☆ DeviceNet					
	Monitor rags / Edit rags /	٩ 🗆			
	Errors Downloading Controller Extended Properties.				→ ‡
	Linking all Routines Linking routine 'MainRoutine' of program 'M Linking routine 'MainRoutine' of program 'S Finalizing download Reading ChangeLog Complete - 0 error(s), 0 warning(s)	ainProgram' afetyProgram'			
E Controller Organizer	Errors Search Results 🔁 Watch				
ter a tag value					22

Figure 4.1: Scanner tags

4.2 VIEW AND EDIT CYCLIC DATA

With DeviceNet master is at run mode, it is possible to check input and write output data directly at controller memory.



Edits Elization I/O OK		►		
Controller Organizer	→ → × Scope: BLogix5571S → Show: All Tags		▼ Enter Name Filte.	
Controller Logix5571S	Name	_≘ ∆ Value ← For	ce Mask ← Style	Data
Controller Fault Handler	- Local:3:1.Data	{}	{} Decimal	DINT
Power-Up Handler	+ Local:3:I.Data[U]	16#0881_0163	Hex	
🚊 🗀 Tasks	+ Local 31 Data[2]	20	Decimal	DINT
Motion Groups Add-On Instructions	+ Local:3:1.Data[3]	0	Decimal	DINT
⊕ — 🗀 Data Types	+ Local:3: S5.1 Status Word			
	.1 SSW	0 15 Bit		
	Description: Word of SSW status. .1 SSW Word of SSW s	status.		
	Bit	0. The motor is not eaching	Value/Description	
	Running	1: The motor is not enabled.		
	Blt 1 Gener, Enabled	0: When It is general disabled by any mean. 1: When It is general enabled by all the mea	ns.	
	Bit 2 JOG	0: The JOG function is inactive. 1: The JOG function is active.		
	Bit 3 Initial Test	0: None. 1: During the Initial tests before the motor st	arting.	
	Blt 4 Ramp Up	0: It is not accelerating. 1: During the whole acceleration.		
	Blt 5 Full Voltage	0: There Is no full voltage applied to the mot 1: Full voltage Is being applied to the motor.	tor.	
	Blt 6 Bypass	0: With open bypass. 1: With closed bypass.		
	Blt 7 Ramp Down	0: It is not decelerating. 1: During the whole deceleration.		
	Bit 8 Remote	0: Local. 1: Remote.		
	Blt 9 Braking	0: It is not executing braking. 1: During the braking process.		
	Bit 10 FWD/REV	0: It is not reverting the rotation direction. 1: During the rotation reversion process.		
	Bit 11 Reverse	0: Forward rotation.		
	Bit 12	0: None.		
	Bit 13	0: None.		
	Bit 14	1: Time after stop (C5.7.3). 0: The SSW is not in alarm condition		
	Alarm	1: The SSW is in alarm condition. Note: The active alarm codes can be read b	y means of the menu D2.1.	
	Blt 15 Fault	0: The SSW is not in fault condition. 1: The SSW is in fault condition. Note: The active fault code can be read by it	means of the menu D1.1.	

Figure 4.2: Read data, with highlight to the status word as described at SSW900 DeviceNet documentation

For inputs, as described at 2.2, it is programmed to read the following information:

- Local:3:I.Data[0] (low word): Status Word SSW: value 0x0163. Bit 0 = 1 (running).

 - Bit 0 = 1 (general enabled).
 Bit 5 = 1 (at full voltage).
 Bit 6 = 1 (bypass active).
 Bit 8 = 1 (at remote mode).
- Local:3:I.Data[0] (high word): Main Line Voltage Average: value 0x0881 (2177 = 217.7V).
- Local:3:I.Data[1] (double word): Current Average: value 20 (2.0A).



dits and the subscript of the subscript		Favorites 🖌 Add-On 🔏 Safe)- -(U)- -(L)- ety	mer/C			
Controller Organizer	▼ ₽ × Scr	ope: 🛐Logix5571S 👻 S	how: All Tags		-	Y. Enter Name Fi	iter
Controller Logix5571S		Name	_= 스 Valu	ie .	Force Mask	← Style	Data
Controller Fault Handler		- Local:3:0.Data		{	} {	. } Decimal	DINT
Power-Up Handler		+ Local:3:0.Data[0]	-	16#0000 001	3	Hex	DINT
Tasks		+ Local:3:0.Data[1]		7 6 5 3 2 1	0	Decimal	DINT
Motion Groups		+ Local:3:0.Data[2]	2	000101	1	Decimal	DINT
Add-On Instructions		+ Local:3:0.Data[3]	15	0 0 0 0 0 0 0 0	0	Decimal	DINT
Data Types		+ Local:3:0.Data[4]	23-	16 0 0 0 0 0 0 0	0	Decimal	
Trends		Lasslow	31-	24 0 0 0 0 0 0 0 0	0	Decima	UNIT
		Descriptio	n:				
		Command will be reset	n: word of all sources of i. where word via any command word via any	the SSW. The RUN/STC mmunication accessory	P and JOG co connected to s	mmands of th Slot 1. to Slot 2.	e sources which are no
		Command vill be reset .5 Slot1 Cc .6 Slot2 Cc	n: word of all sources of t. ontrol word via any command word via any	the SSW. The RUN/STC mmunication accessory communication accesso	P and JOG co connected to s ory connected	mmands of th Slot 1. to Slot 2.	ne sources which are no
		Bis O	n: word of all sources of untrol word via any co mmand word via any Bit 0: stopp	the SSW. The RUN/STC mmunication accessory communication accessory	P and JOG co connected to pry connected Value/Desc	mmands of th Slot 1. to Slot 2. :ription	ne sources which are no
		Bist 0 Bit 0 Bit 0 Bit 0 Bit 0	n: word of all sources of wntrol word via any co- mmand word via any Bit 0: stopp 1: starti	the SSW. The RUN/STC mmunication accessory communication accessory sing by ramp. ng by ramp. ng the ship	P and JOG co connected to s ory connected Value/Desc	mmands of th Slot 1. to Slot 2. rription	ie sources which are no
		.5 Slot1 Cc .6 Slot2 Cc Bit 0 Star/Stop Bit 1 Gener. En	n: word of all sources of ; ontrol word via any cor ommand word via any Bit 0: stopp 1: startir 0: gener bled 0: gener 1: gener	the SSW. The RUN/STC mmunication accessory communication accessor ing by ramp. ng by ramp. ral disable. ral enable.	P and JOG co connected to s ony connected Value/Desc	mmands of th Slot 1. to Slot 2.	e sources which are no
		Siot1 Co Siot2 Co Bit 0 Start/Stop Start/Stop Bit 0 Start/Stop	n: word of all sources of i. white word via any color mmand word via any Bit 0: stopp 1: starip bled 0: no.JC 0: no.JC	the SSW. The RUN/STC mmunication accessory communication accessor ing by ramp. ng by ramp. ral disable. ral enable.	P and JOG co connected to a ony connected Value/Desc	mmands of th Slot 1. to Slot 2.	e sources which are no
		Bit 0 Bit 0 Bit 0 Bit 2 Bit 2 Bit 2 Bit 2 Bit 2 Bit 2 Bit 2 Bit 2	n: word of all sources of wintrol word via any cor mmand word via any Bit 0: stopp 1: startif bled 0: gener 0: gen	the SSW. The RUN/STC mmunication accessory communication accessor ing by ramp. na disable. na disable. No. Jog.	P and JOG co connected to t pry connected Value/Desc	mmands of th Slot 1. to Slot 2.	ne sources which are no
		Bit 0 Bit 0 Bit 0 Bit 2 Bit 2 Bit 2 Bit 3 Bit 3 Bit 3 Bit 3 Bit 3 Bit 4 Bit 2 Bit 4 Bit 2 Bit 4 Bit 2 Bit 4 Bit 2 Bit 4 Bit 4	n: word of all sources of untrol word via any countrol word via any countrol word via any Bit 0: stopp 1: starti 0: gener bled 0: gener 0: gener 0: gener 0: dock 1: gener 0: dock 1: gener	the SSW. The RUN/STC mmunication accessory communication accessory ing by ramp. rat branp. rat deable. 3G. 3G. 3G. 3G. 3G. 3G. 3G. 3G. 3G. 3G	P and JOG co connected to s pry connected Value/Desc	mmands of th Slot 1. to Slot 2.	ie sources which are no
		Bescriptio Command + Command + Will be reset Solut1 Cc Solut2 Cc Bit 0 Start/Stop Bit 1 Gene 1 Gene 1 Gene 2 JOG Bit 3 FWD/REV Bit 4 FWD/REV	n: word of all sources of mtrol word via any course mmand word via any Bit 0: stopp 1: starti 0: gener bled 0: no JC 1: with 3 0: clock 1: cock 0: clock 1: cock	the SSW. The RUN/STC mmunication accessory communication accessory and by ramp. ng by ramp. ng to ramp. ng taileable. rail enable. 30. Jog. wike CW. terolockwise CCW.	P and JOG co connected to t yory connected Value/Desc	mmands of th Slot 1. to Slot 2. rription	e sources which are no
		Beschptio Command + Command + Will be reset Siot1 Cc .6 Slot2 Cc Bit 0 Start/Stop Bit 1 Gener, Ena Bit 2 JOC Bit 3 FWD/REV Bit 4 LOC/FEM Bit 5 .6	n: word of all sources of mntrol word via any color mmand word via any Bit 0: stopp 1: starif bled 0: no JC 1: with J 0: clock 0: count 1: remot	the SSW. The RUN/STC mmunication accessory communication accessor ing by ramp. ng by ramp. ral disable. ad leable. DG. JOG. JOG. JOG. JOG. JOG.	P and JOG co connected to & ory connected Value/Desc	mmands of th Slot 1. to Slot 2.	e sources which are no
		Bit 0 Bit 0 Bit 0 Bit 0 Bit 0 Bit 1 Generation for the second seco	n: word of all sources of i. with the sources of via any color mmand word via any color mmand word via any 0 stopp 1 : startin bled 0: gener 1 : gener bled 0: optic 1 : with J 0 : clock 1 : count 1 : remot	the SSW. The RUN/STC mmunication accessory communication accessor ing by ramp. ral disable. 736. 1036. 1036. terdockwise CCW. te.	P and JOG co connected to { ory connected Value/Desc	mmands of th Siot 1. to Slot 2.	ie sources which are no
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		Bit 0 Bit 0 Bit 0 Bit 1 Gener. End Bit 2 JOG Bit 3 FWD/REV Bit 4 LEO/FEM Bit 7 Reserved Bit 7 Reserved Bit 7 Bit 7	n: word of all sources of untrol word via any cou- mmand word via any Bit 0: stopp 1: startir 0: gener bled 0: no 20 0: no 20 1: with J 0: clock 1: count 0: local 1: remot 0. → 1: et Note: O	the SSW. The RUN/STC mmunication accessory communication accessory is communication accessory ing by ramp. ng by ramp. ng by ramp. ng at disable. OG. OG. Wise CW. terolockwise CCW. te. execute fault reset (If a fault is : nt) in the 0 to 1 transition com	P and JOG co connected to s value/Desc value/Desc active). mand.	mmands of th Slot 1. to Slot 2.	e sources which are no

Figure 4.3: Write data, with highlight to the command word as described at SSW900 DeviceNet documentation

For output, as described at 2.2, it is programmed to write the following information:

- Local:3:O.Data[0] (low word): Command Word Slot1: value 0x0013.
 - Bit 0 = 1 (ramp enable).
 - Bit 1 = 1 (general enable).
 - Bit 4 = 1 (remote mode).

Using this data, it is possible to design a PLC program, creating tags representing device information, and a PLC logic to manipulate such data according to desired to the application.

4.3 LADDER LOGIC FOR ACYCLIC DATA TRANSFER

There is an appendix at DeviceNet User's Guide describing the entire list of device data that is possible to access via DeviceNet Interface. This list also indicates the class, instance and attribute of each data.

For this example, we will read the value of D1.1.1 - Actual fault FXXX.

Parameter	Description	Range of values	Decimal places	Class	Instance	Attribute	CIP data type	Net Id	Size	Qty mapped words
D1 Dlagnostics\Fault										
D1.1 D1.1.1	Actual Fxxx	0 to 999	0	64h	01h	BEh	UINT	90	16blt	1
D1.2	Fault History									
		D2	Diagnostics\Ala	rms						
D2.1 D2.1.1 D2.1.2 D2.1.3	Actual Axxx 1 Axxx 2 Axxx 3	0 to 999 0 to 999 0 to 999	0 0 0 0	64h 64h 64h	01h 01h 01h	BFh C0h C1h		91 92 93	16blt 16blt 16blt	1 1

Figure 4.4: SSW900 DeviceNet documentation describing CIP path for acyclic access

Once defined the information for acyclic access, program a message at PLC logic. It will be necessary to configure the following information:

Service Type: Get Attribute Single (use "set" attribute single in case of write access). 0



- Class, Instance and Attribute of data, as described by SSW900 DeviceNet documentation. 2
- Destination Element: a variable to store the read value (must be compatible with the data size of the read object).
- Path: with the following format: name of DeviceNet Scanner.

 - channel (in this case, 2 for channel 0).
 slave address (for this example, SSW900 at address 1).

Message Configuration - acyclic_msg	Message Configuration - acyclic_msg
Configuration* Communication Tag	Configuration Communication Tag
Message Type: CIP Generic Service Get Attribute Single Upt: Source Length: 0 Gode: Gytes) Service (Hex) Gass: 64 (Hex) Destination Enternet: Instance: 1 Attribute: BE (Hex)	• Path: Bernsteine [] Browse devicent 2, 1 devic
C Enable C Enable Waiting C Start C Done Done Length: 0	◯ Enable ◯ Enable Waiting ◯ Start ◯ Done Done Length: 0
⊖ Error Code: Extended Error Code:	⊖ Error Code: Extended Error Code: ⊡ Timed Out ◆
Error Path: Error Text: OK Cancel Apply Help	Error Fash: Error Text: OK Cancel Apply Help

Figure 4.5: Acyclic message configuration

Activate MSG block input to send an acyclic request to slave. For this example, the value read from D1.1.1 is "3", representing the active fault code (3 = Motor Start Phase Loss).

Logix Designer - Logix5571S in ssw900_devicenet_app_	note.ACD [1756-L71S 26.13] - [MainProgram - MainRoutine]	
Eile Edit View Search Logic Communication	is Iools Window Help	- 8 ×
	- 🚑 🐴 强 💽 🗽 😰 🔍 Q. Q. Select language 😡	
Rem Run Image: Controller OK No Forces Image: Controller OK No Edits Image: Controller OK Safety Unlocked Image: OK	Path: USB\16 ▼ Image: Compute/Math NOV Invir AND OR XOR NOT SWPB ▶ < →	
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	MainProgram	•
	Errors	→ ₽ ×
	Going online with controller Complete - 0 error(s), 0 warning(s)	Ĩ
		-
F- Controller Organizer	Trrors I Search Results I Watch	
Ready	Rung 0 of 1 APP VER	h

Figure 4.6: Main ladder sending an acyclic message to the slave



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