FREE INTERNAL REFERENCE ONLY, NOT FOR RESALE

Quick Start Guide For DeviceNet

--Operating FR-A500 via FR-A5ND



Mitsubishi Electric Automation, Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061

SALES OFFICE		SR No.			SHOP ORDER	R No.		
DISTRIBUTION		• •			•		•	
	DATE	ENGI	NEER	Al	PPROVAL	DO	CUMENT No.	REVISION
	31-May-00	Louis	J. Wei	Ma	rk Iwasaki		C2CN-	*
						AC	0114-012	

Restricted to Mitsubishi employees only Quick Start Guide For DeviceNet --Operating A500 via A5ND

Revisions

Revision	Date	Description

TRADEMARKS

IBM is a registered trademark of International Business Machines Corporation. Microsoft and Windows are registered trademarks of Microsoft Corporation. RSLinx, RSNetWorx, RSLogix 500, SLC 500 are trademarks of Rockwell Automation, Inc. DeviceNet is trademark of Open DeviceNet Vendor Association (ODVA), Inc.

All other product names are trademarks or registered trademarks of their respective companies.

Portions of this material excluding any screen captures are copyright Mitsubishi Electric Automation, Inc. 2000.

Restricted to Mitsubishi employees only Quick Start Guide For DeviceNet

--Operating A500 via A5ND

Table of Contents

PURPOSE
1. DEFINITIONS
2. TOOLS
3. SAMPLE PROJECTS
4. NETWORK LAYOUT
4.1. Example of 1-Node Configuration
4.2. Explanations About Network Layout
5. CONFIGURING DRIVERS IN RSLINX
5.1. Config DeviceNet Driver for RSNetWorx
5.2. Config RS232 (DF1) Driver for RSLogix50011
6. CONFIGURING NETWORK IN RSNETWORX14
6.1. Installing A500.eds File
6.2. Config Master Device 1747-SDN
6.3. Config Slave Device A500
7. RUNNING VFD FROM SLC5/03 WITH RSLOGIX50023
8. CONSIDERATIONS FOR MULTIPLE VFD'S
8.1. Example of Multi-Node Configuration
8.2. Many Issues to Consider for Multiple VFD's
REFERENCES

Quick Start Guide For DeviceNet --Operating A500 via A5ND

Purpose

In this quick start guide for DeviceNet, we will use A/B SLC5/03 with 1747-SDN and Mitsubishi FR-A500 with FR-A5ND on DeviceNet network. We will use PC with A/B 1770-KFD as interface to DeviceNet network. We explain in simplest way how to setup, configure, and run DeviceNet network.

For more details, please refer to various application notes and instruction manuals.

1. Definitions

You should be familiar with the following definitions and actual software programs:

•	DeviceNet Assistant –	Optional, free software program downloaded from <u>www.ab.com</u> \ Network Products \ DeviceNet, first hands-on graphical program to setup static network, Get familiar with various components of network, provides basic understanding of network
•	RSLinx –	Required, software program from A/B, used for communications between other PC-based software programs and A/B SLC500 modules, provides many communications drivers
•	RSNetWorx –	Required, software program from A/B, replacing DeviceNetManager, used to configure DeviceNet network
•	RSLogix500 –	Required, software program from A/B, used for programming ladder logic to control A/B SLC500 CPU
•	DeviceNet Analyzer –	Optional, network snooper from SST, used to monitor network activities
•	FR-A5ND –	Required, communication option from Mitsubishi, used for FR-A500 to interface DeviceNet network
•	A500.eds –	Required, free file download from <u>www.odva.org</u> \ downloads \ EDS files, Electronic Data Sheet from Mitsubishi, representing FR-A500 in device database, must be Rev. 4.5 or later
•	DeviceNet University –	Optional, official training offered from ODVA, Open Device Vendor Association

Please refer to A/B instruction manuals for more explanations.

RSLinx, RSNetWorx, RSLogix 500, SLC 500 are trademarks of Rockwell Automation, Inc. All other products are trademarks of their respective companies.

Quick Start Guide For DeviceNet --Operating A500 via A5ND

2. Tools

The following tools are required to assemble, setup, and configure network:

- **D V M** to check voltage and resistance
- Tape measure to check cable length
- Screw drivers
- Soldering station to tin wire leads
- Wire cutter
- Wire stripper
- Electric tape to cover any exposed cable connections
- Notepad to sketch diagrams
- PC with Windows95 or higher

3. Sample Projects

- RSNetWorx Project: qsg01sdn.dnt
- RSLogix500 Project : qsg01df1.rss

In both projects listed above, DeviceNet network of 1 node is actually present, node #04. These projects are available on disk or via email upon request. Follow instructions in the booklet, you can easily duplicate the projects by yourself to gain more hands-on experience on FR-A500 via FR-A5ND on DeviceNet. These projects are designed for demonstration purpose only. They are designed based on the current releases on A/B software programs RSNetWorx, RSLogix500 as of April 20th, 2000. In case of future releases of these software programs from A/B, many changes may be required to run these projects consequently. They can be used for reference only.

For any actual implementation, please consult your technical experts on how to set up your special application.

In the following sections, all drawings are not drawn to scale, they are drawn for illustration only.

4. Network Layout

4.1. Example of 1-Node Configuration



4.2. Explanations about Network Layout

- Set up A/B modules in rack:
 - Slot <00> SLC5/03 CPU, required
 - Slot <01> None, empty, optional
 - Slot <02> Input, optional
 - Slot <03> Output, optional
 - Slot <04> Output, optional
 - Slot <05> 1747-SDN Scanner, required
 - Slot <06> Input, optional
- **+24Vdc** External power supply to DeviceNet network
- **#00** Node address for Master Scanner on DeviceNet network, #00 is selected for fast scanning, since scanning sequence starts from node #00 on scan list
- **#04** Node address for VFD A500 via FR-A5ND on DeviceNet network, #04 is selected for compatibility with other master PLC conventions and convenience to add more nodes
- **#61** Node address for PC on DeviceNet network, #61 is selected for initial configuration only
- Set VFD Baudrate to 500K by setting Pr346 = 20614
- Install a terminating resistor (121 Ohms) at each end of network
- Connect A/B 1770-KFD to network
- Connect A/B 1770-KFD to COM1 on PC via RS232C Cable (e.g. A/B PN96881501 with Null-modem built-in)
- Connect A/B RS232 (DF1) port on SLC5/03 CPU to COM2 on PC via RS232 Cable (e.g. A/B 1747-CP3, Ser.A, RS232 Cable)
- Set Key-Switch on SLC5/03 CPU to Prog-postion
- Install A/B RSLinx software program
- Install A/B RSNetWorx software program
- Install A/B RSLogix500 software program

5. Configuring Drivers in RSLinx

5.1. Config DeviceNet Driver for RSNetWorx

Start RSLinx software program on PC, Install DeviceNet driver as follows:

🗞 Rockwell So	ftware RSLinx Lite - [RSWho - 1	
<mark>aa E</mark> ile ⊻iew	<u>Communications</u> <u>Station</u>	<u>W</u> indow	Help _ B ×
놂 <i>\$</i> @	<u>R</u> SWho		
Autobrowse	<u>Configure Drivers</u> Configure Shortcuts. ^{IX} Configure Client <u>Applic</u> Configure CI <u>P</u> Options <u>D</u> river Diagnostics C <u>I</u> P Diagnostics	ations	Browsing a
Denfigure commun	ication hardware		04/25/00 02:33 PM //

Choose DeviceNet Drivers for Available Drivers,

Mouse Click on [Add New ...],

Available Driver Types:	lelp
DeviceNet Driver Selection - RSLinx DeviceNet-2 X ROCKWELL SOFTWARE Available DeviceNet Drivers: Allen-Bradley 1770-KFD Allen-Bradley 1771-SDNPT Allen-Bradley 1777-SDNPT Star Star Star Star	igure rjup tart to <u>p</u>
Select Cancel For Help, press F1 04/25/00	elete

Choose A-B 1770-KFD, Mouse Click on [Select]

Restricted to Mitsubishi employees only Quick Start Guide For DeviceNet

--Operating A500 via A5ND

Type in settings as follows:

Rockwell Software RSLin	nx Lite - [RSWho - 1]	
Available Driver Types:		Close
DeviceNet Drivers	Add New	
Configured Drivers:	Allen-Bradley 1770-KFD Driver Configuration ? X Allen-Bradley 1770-KFD Driver Driver Revision: 2.05 Copyright © 1998 Allen-Bradley Company	Configure
	A Division of Rockwell Automation KFD Driver Setup Serial Port Setup Port Select	Stop
	Data <u>B</u> ate 57600 ■ Data Bate 500K ■ This port is not currently in use. 0K Cancel	
For Help, press FI		5/00 J 02:35 PM ///

Mouse Click on [OK]

See new driver on screen:

Rockwell Software RSLinx	Lite - [RSWho - 1]		= [] × 키 ×
Available Driver Types: -		Add New 1	
			Help
Configured Drivers:			-
Name and Description	Add New RSLinx Driver	×	Configure
	Choose a name for the new driver. (15 characters maximum)	ОК	congare
	1770-KED.1	Cancel	Startup
	- A		Start
			Stop
			<u>D</u> elete
For Help, press F1			04/25/00 02:35 PM

Confirm above screen, Mouse Click on [OK]

See Configuration result:

Quick Start Guide For DeviceNet --Operating A500 via A5ND

Available Driver Types:	Rockwell Software <u>RSLinx L</u>	ite - [RSWho - 1]		_ □ ×
Available Driver Types:				a ×
For Help, press F1 Odd/25/00 Odd/25/00 02:35 PM Configure Drivers: "1770-KFD-1, DeviceNet" Odd/25/00 02:35 PM For Help, press F1 Odd/25/00 02:35 PM Odd/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" Image: Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" Image: Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" Image: Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" Image: Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" Image: Confirm above screen, Mouse Click on [Close] In Autobrowse is checked for activation, See list of devices on DeviceNet network: Image: Confirm above screen, Mondement above screen above s	Available Driver Types:		Add New	<u>C</u> lose
Image: Status Configure Image: Status Configure Status Status	Configured Drivers:			
Image: Status Image: Status Image: Status Image: Status	Name and Description		Status	
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] 04/25/00 02:35 PM In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> 04/25/00 02:35 PM Year Mathematication (Close) 04/25/00 02:35 PM In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> ••••••••••••••••••••••••••••••••••••	1770-KFD-1, MAC ID:61	Baud Rate:500k - RUNNING	Running	Configure
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] 04/25/00 02:35 PM In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" 04/25/00 02:35 PM Y Autobrowse is checked for activation, See list of devices on DeviceNet network: ••••••••••••••••••••••••••••••••••••				Starjup
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] 04/25/00 02:35 PM In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" (Y) Autobrowse is checked for activation, See list of devices on DeviceNet network: Rockwell Software RSLinx Lite - [RSWho -1] Image: Station Window Help Image: Station Window Help Image: Autobrowse Petresh Image: Browsing - node 31 not found Image: Montest and the status Workstation, DEFAULT Address Device Type Online Name Status Image: Transmission for the status Image: Transmission for the status				<u>S</u> tart
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] 04/25/00 02:35 PM In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" (Y) 04/25/00 02:35 PM In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" (Y) 04/25/00 02:35 PM Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" (Y) (Y) In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" (Y) (Y) (Y) Sel list of devices on DeviceNet network: (Y) (Y) (Y) Im Communications Station Window Help (Y) (Y) (Y) Im Autobrowse Refresh (Y) (Y) (Y) Im Gateways, Ethernet (Y) (Y) (Y) (Y) Im Gateways, Ethernet (Y) (Y) (Y) (Y)				Stop
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] 04/25/00 02:35 PM In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" (Y) [Y] Autobrowse is checked for activation, See list of devices on DeviceNet network: """"""""""""""""""""""""""""""""""""				Delete
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" [V] Autobrowse is checked for activation, See list of devices on DeviceNet network: Rockwell Software RSLinx Lite - [RSWho - 1] Image: Communications Station Window Help Image: Station Station Image: Station Window Help Image: Station Default Image: Station Station Workstation, DEFAULT Address Device Type Online Name Status Image: Linx Gateways, Ethernet Image: Communication Station				
For Help, press F1 04/25/00 02:35 PM Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: "1770-KFD-1, DeviceNet" [v] Autobrowse is checked for activation, See list of devices on DeviceNet network: Rockwell Software RSLinx Lite - [RSWho - 1] Image: Communications Station Window Help Elle View Communications Station Window Help Image: Communications Station Window Help Autobrowse Refresh Browsing - node 31 not found Workstation, DEFAULT Address Device Type Online Name Status Image: Comment M. 1747-SDN Scannet M.				
Confirm above screen, Mouse Click on [Close] In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> [v] Autobrowse is checked for activation, See list of devices on DeviceNet network: Nockwell Software RSLinx Lite - [RSWho - 1] Provide Station Window Help Provide Station Default Provide Station Default Provide Station Device Type Provide Station Station Management M. Provide Station Station Station Management M. Provide Station Station Management M. Provide	For Help, press F1			04/25/00 02:35 PM
In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> [v] Autobrowse is checked for activation, See list of devices on DeviceNet network: Rockwell Software RSLinx Lite - [RSWho - 1] File View Communications Station Window Help Autobrowse Refresh Workstation, DEFAULT Linx Gateways, Ethernet In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> [v] Autobrowse is checked for activation, Browsing - node 31 not found Morkstation, DEFAULT Linx Gateways, Ethernet In Network Tree View, Select Driver: <u>"1770-KFD-1, DeviceNet"</u> In Network Tree View, Select Driver: <u>"1770-KFD-1, Device Type Online Name</u> Status	Confirm above screen, Mouse Click on [Close]			
[v] Autobrowse is checked for activation, See list of devices on DeviceNet network: Image: Construction of the second s	In Network Tree View Selec	t Driver• "1770-KED-1 Device N	let"	
Rockwell Software RSLinx Lite - [RSWho - 1] File Yiew Communications Station Window Help Image: Station Image: Station <	[v] Autobrowse is checked	for activation,		
Image: Second state in the second s	Rockwell Software RSLinx Lite - [RSWho - 1]		
Image: Solution perfection Image: Solution perfection Image: Solution Image: Solution perfection<	Here I in the Elevent Station Elevent Station Elevent Station	<u>W</u> indow <u>H</u> elp		_8×
Autobrowse Refresh P Browsing - node 31 not found Workstation, DEFAULT Address Device Type Online Name Status Linx Gateways, Ethernet 1747-SDN Scenner M.	* \$ 0			
Workstation, DEFAULT Address Device Type Online Name Status	Autobrowse Refresh	Browsing - node 31 not found		
🚰 Linx Gateways, Ethernet 👘 📶 👖 1747-SDN Scanner M.	Workstation, DEFAULT	ddress Device Type	Online Name	Status
	🔓 Linx Gateways, Ethernet	00 1747-SDN Scanner M		
諸 1//U-KFD-1, DeviceNet 100 04 k A500	17/U-KFD-1, DeviceNet	204 ^以 A500		

≝bl Workstation 搧 04, A500 🚇 61, Workstation, DEFAULT 4 • 04/25/00 02:42 PM

For Help, press F1

Confirm devices in above list

Verify FR-A500 PU displays Net-mode, FR-A5ND LED is solid green

Quick Start Guide For DeviceNet --Operating A500 via A5ND

5.2. Config RS232 (DF1) Driver for RSLogix500

Continue in RSLinx software program on PC, Install RS232 (DF1) driver as follows:

🗞 Rockwell Software RSLinx Lite - [RSWho - 1]				
🔒 <u>F</u> ile <u>V</u> iew	<u>Communications</u> <u>Station</u> <u>W</u> indow	<u>H</u> elp		_ 8 ×
옮 💲 🐻	<u>R</u> SWho			
Autobrowse	Configure Drivers Configure Shortcuts	wsing - node 25 not found		
🖃 🖳 Worksta	Configure Client Applications	Device Type	Online Name	Status
⊕ 品 Linx ⊕ 品 1777	Configure CI <u>P</u> Options <u>D</u> river Diagnostics C <u>I</u> P Diagnostics	1747-SDN Scanner M A500 Workstation		
Configure commun	nication hardware			04/25/00 03:38 PM

See next screen:

🇞 Rockwell Software RSLinx Lite - [RSWho - 1]	<u>_ 0 ×</u>
器 <u>F</u> ile <u>V</u> iew <u>C</u> ommunications <u>S</u> tation <u>W</u> indow <u>H</u> elp	_ 뭔 ×
표 50	
Configure Drivers	
Available Driver Types:	
RS-232 DF1 Devices	
Configured Drivers:	
Name and Description Add New RSLinx Driver	
1770-KFD-1, MAC ID: Choose a name for the new driver.	Configure
(15 characters maximum)	Startup
Fo AB DF1-1 Cancel	PM /
	Start
	Stop
	Delete
Choose RS-232 DF1 Devices for available drivers,	

Mouse Click on [Add New ...], Confirm AB_DF1-1 for name, Mouse Click on [OK] Set next Key entry **COM2** for **Port** in table as follows,

Restricted to Mitsubishi employees only Quick Start Guide For DeviceNet

--Operating A500 via A5ND

Ν	ouse Click on [Auto-Config.] ,	
	Configure Allen-Bradley DF1 Communications Device	
Noc 品 <u>Fi</u> le 品 。	Device Name: AB_DF1-1	
Con	Comm Port: COM2 Device: SLC-CH0/Micro/PaneView	
	F Baud Rate: 19200 Station Number: 00 (Decimal)	<u>C</u> lose <u>H</u> elp
	Parity: None Error Checking: CRC	
	Stop Bits: 1 Protocol: Full Duplex	Configure
Fo	Auto Configure Auto Configuration Successful!	Stargup PM
	Use Modem Dialer Configure Dialer	<u>D</u> elete
	Ok Cancel <u>D</u> elete <u>H</u> elp	

Confirm Auto Config Success in above table on screen, Mouse Click on [OK]

See configuration results:

Rockwell Software RSLinx Lite - [RSWho - 1]			_ 🗆 ×
😤 Eile View Communications Station Window Help			_ 8 ×

			-1
Lonfigure Drivers			
Available Driver Types:	<u>_</u>	Close	
RS-232 DF1 Devices	Add New		
		<u>H</u> elp	
Configured Drivers:			
Name and Description	Status	Carloren	
AR DE1-1 DH485 Stat 0 C0M2; BUNNING	Bunning	Longigure	
		Startup	
Fo			PM /
		<u>S</u> tart	
		Stop	
		Delete	
	<u>+</u>]		

Confirm above screen, Mouse Click on [Close] In Network Tree View,

Quick Start Guide For DeviceNet --Operating A500 via A5ND

Select Driver: <u>"AB_DF1-1, (DH485)"</u> [v] Autobrowse is checked for activation,

See list of devices on AB_DF1 network

🗞 Rockwell Software RSLinx Lite - [RSWho - 1]						
🔒 <u>File View Communications Stati</u>	on <u>W</u> indow <u>H</u> elj	2			_ 8 ×	
* \$						
Autobrowse Refresh	🖁 👖 🛛 Browsin	ig - node 0 found				
Uvorkstation, DEFAULT	Address	Device Type	Online Name	Status		
E 🖧 Linx Gateways, Ethernet	<u>00</u> 00	Workstation	DF1-COM2	Program		
● "	📻 01 🧏	SLC-5/03	QSG01DF1	Program		
B. Ta AB_UF1-1, UH-465						
01, SLC-5/03, QSG01DF1						
↓ ▶						
For Help, press F1				04/25/00 03	:42 PM 🥢	

Confirm devices in above list Verify RS232 LED on SLC5/03 CPU is blinking

Finally, minimize RSLinx Window to run both drivers on background

Restricted to Mitsubishi employees only Quick Start Guide For DeviceNet --Operating A500 via A5ND

6. Configuring DeviceNet Network in RSNetWorx

Start RSNetWorx software program on PC, Create Proj: **qsg_1747.dnt** in RSNetWorx, Complete Proj as follows:

6.1. Installing A500.eds File

ProviceNet.dnt - RSNetWorx for	DeviceNet	_ 🗆 ×
<u>File E</u> dit <u>V</u> iew <u>N</u> etwork <u>D</u> evice <u>T</u>		
12 2 • 🖬 4 X 🖻 👔	EDS Wizard	
Hardware		<u></u>
E ♥ Category ⊕ ♥ Category ⊕ ♥ Vendor		
]

Register A500.eds as follows:

DeviceNet.dnt - RSNetWorx for DeviceNet	_ 🗆 ×
<u>File E</u> dit <u>V</u> iew <u>N</u> etwork <u>D</u> evice <u>T</u> ools <u>H</u> elp	
🖀 🖻 🖌 🖥 Rockwell Software's EDS Installation Wizard	X
Hardware Provident Software Cate	*
Register an EDS file. Register a directory of EDS files. Include files in the subdirectory.	
Enter the complete path of the EDS file to be installed and registered.	
C:\Program Files\Rockwell Software\RSCommon\A500.eds T 	
* If there is an icon file (.ico) with the same name as the file(s) you are registering then this image will be associated with the device. Press the 'NEXT' button to perform an installation test on the file(s)	
∑ <u>≺ Back Next></u> Cance	

Quick Start Guide For DeviceNet --Operating A500 via A5ND

Mouse Click on [Next] to proceed as follows:

්	<u> </u>
Eile Edit View Network Device Tools Help	
🖀 🖻 🖌 Rockwell Software's EDS Installation Wizard	
Hardware Period Cate Cate Cate	
Image: Sector Code View file Press the 'Next' button to assign a graphic image to the device Image: Sector Code <	F High

Mouse Click on [Next]:



Confirm no errors during installation, if any, first verify correct version of A500.eds, Mouse Click on [Finish]

Quick Start Guide For DeviceNet --Operating A500 via A5ND

Continue with Single Pass Browse on Network:



Select DeviceNet network with driver: 1770-KFD-1, DeviceNet,

[v] Autobrowse is checked for activation:



Mouse Click on [OK]

Quick Start Guide For DeviceNet --Operating A500 via A5ND

See next window for DeviceNet network on screen:



Now, FR-A500 via FR-A5ND is recognized by A-B Software.

6.2. Config Master Device 1747-SDN in Network Window Screen

In DeviceNet network window, Select Scanner #00, DeviceNet.dnt - RSNetWorx for DeviceNet - 🗆 × File Edit View Network Device Tools Help Upload from Device 🕀 Q 🔚 🏝 💑 🚮 🔣 🚜 🋍 🖻 • 🔒 🎒 Download to Device Hardware . Class Instance Editor... 🖃 👰 DeviceNet 🗄 🍨 Category Properties. 🍯 Vendor ÷ 1747-SDN A500 (5) DEFAULT Scanner Module (4) 61 00 🖌 🗲 🕨 🖌 Graph 🖉 Spreadsheet 🐧 Master/Sla 🔍

Quick Start Guide For DeviceNet --Operating A500 via A5ND

	Select Tab: Module \	Mouse Click on [Advan	ced], Set values as follows:
	eviceNet dat - RSNetWorx for Dr	eviceNet	
	T747-SDN Scanner Module (4)		
	General Module Scanlist Input	Output Summary	
Г	Interscan Delay: 125 🛓	msec Upload from Scanner	
	Foreground to Background <u>P</u> oll Ratio:	Download to Scanner	1
		Module Defaults	
		<u>S</u> lave Mode	0(5) DEFAULT
		Ad <u>v</u> anced	-WARNING
			Modifying these settings may disrupt network communication. Do not modify unless instructed to do so by a technical support representative.
	- 1747-SDN		
L	Slot: 5		Expected Packet Rate: 300 💼 msec
×			Iransmit Retries:
Mest	OK Cano	el <u>A</u> pply Help	OK Cancel

Note: Above timing values are set for this sample only, other values are acceptable as well. Mouse Click on [OK] [Apply*]

Next Select Tab: Scanlist \

Select #04 from Available Devices window, move it to Scanlist window by Clicking [>], Mouse Click on [Edit I/O Parameters...],

27	DeviceNet dot - RSNetWorx fo	r DeviceNet		
	T747-SDN Scanner Module (4]		
Ī	General Module Scanlist Input	t Output Summary		1 m²
	Availa <u>b</u> le Devices:	<u>S</u> canlist:		A
ſ		> ^{[1}]> 04, A500 (5)		
			Edit I/O Parameters : 04, A500	(5)
			<u>S</u> trobed:	Change of State / Cyclic
		<u>>></u>	<u>R</u> x Size: 0 📑 Bytes	Change of State C Cyclic
		<<	<u>Ш</u> se Ти Віт. □	Rx Sjze:
	Automan on Add	Node A	Polled:	Tx Size: 🛛 🚔 Bytes
	Upload from Scanner	Electronic Ke	R <u>x</u> Size: 4 ➡ Bytes	Heartbeat Rate: 0 📑 msec
L	Download to Scanner	I Device I ⊻endor	<u>I</u> x Size: <mark>4 </mark>	<u>A</u> dvanced
×	<u>E</u> dit I/O Parameters	Eroduci Major B	P <u>o</u> ll Rate: Every Scan	
Mes	око	Cancel Apply		ancel Restore I/O Sizes

Confirm above screens,	only [v] Polled is selected, Rx Size = 4,	Tx Size = 4 ,
Since I/O Assembly Insta	nces 21 / 71 are used for polling,	
Mouse Click on [OK] [Ap	pply*]	

Quick Start Guide For DeviceNet --Operating A500 via A5ND

1	Now,	Select	Tab:	Outp	ut \					
2 De	eviceNr	et dnt - B	SNetWo	urx for I)eviceNet			_		<u>- 🗆 ×</u>
	1747-9	SDN Sca	nner Moo	iule (4)			? :	×		
	General	Module	Scanlist	Input	Output Su	immary			🕹 🛃 📰 🚜	
<u> </u>	Node	A500 (5)	Type	Tx 4	Map		AutoMpp			<u>^</u>
		, 1000 (0)	1 0100	-			Unmap			
							A <u>d</u> vanced			
							Options		0 (5) DEFAULT	
	I									
	M <u>e</u> mor	ny: MFi	le	<u> </u>	Start Word:					
	M0:5.	0	13[12[1	11101 3	8 / 6	5 4 3			04	
	M0:5.	2								
	M0:5.3	3						lŀ		
L	M0:5.	5							sheet) Master/Sla	
-	M0:5.	6						1F	·	
×.	M0:5.	8								*
8								╵		<u> </u>
×		(эк 🚺	Car	ncel	Apply	Help	٦ŀ		
										High //
Se	elect	M File	for lar	ge pro	oj, Set	Start V	Vord to 1, s	sinc	e W0 is reserved for SLC5/03,	
Μ	louse	Click or	n [Auto	Map]	, see ne>	t wind	ow for mapp	ping],	
Dev	viceNet	dnt - BS	NetWor	s for D	eviceNet			al		<u>- 🗆 ×</u>
	747-51	JN Scanr	ner Modu	ne (4)			? ×			
📊 Ge	eneral 1	Module 9	icanlist I	nput	Output Sun	nmary				

General Module Sca		-	- L 🖧 🚼 🚟 🏙
Node Ty	ype Tx Map	Auto <u>M</u> ap	
L239 04, A000 (0) P	ollea 4 M0.5.1.0		
		Unmap	
		Advanced	
			0 (5) DEFAULT
		Dptions	
Memory: M File	<u>▼</u> <u>S</u> tart Word:	- E	
15 14 13	12 11 10 9 8 7 6 5 4	3210 -	Figz °
M0:5.0	04 4500 (5)		04
M0:5.2	04, A500 [5]		
M0:5.3			
M0:5.5			Isheet 🔪 Master/Sla 🕥
M0:5.6			
M0:5.7		_	
OK	Cancel <u>A</u> pply	Help	·····
		·//	High

Note: M0:5:1 is B1^B0 in Output Instance 21, M0:5:2 is B3^B2 in Output Instance 21, Mouse Click on [Apply*] [Yes] [OK]

*: If FR-A500 PU displays "E.OP3", this is normal, since network is reset, including Scanlist, etc. Please press [RESET] button on PU or power cycle to VFD.

6.3. Config Slave Device A500 in Network Window Screen

In DeviceNet network window, Select VFD #04,

DeviceNet.dnt - RSNetWor	x for DeviceNet	_ 🗆 ×
	ice Iools Help	
	Upload from Device	
DeviceNet	2lass Instance Editor	
E Category	Properties	
	1747-SDN A500 (5) DEFAULT (4) (4) (4) (4) (4) (4) (4) (4)	

Proceed as follows:

DeviceNet.dnt - RSNe	etWorx for DeviceNet	<u>_ 0 ×</u>
∐ <u>Eile E</u> dit ⊻iew <u>N</u> etwork	Device Tools Help	
	Upload from Device	
E-v DeviceNet	- <u>C</u> lass Instance Editor	
tendor €		
	1747-SDN A500 (5) DEFAULT Scanner Module (4)	
	00 04 61	
	IIII III Graph (Spreadsheet) Master/Sk	▼ ▶

Quick Start Guide For DeviceNet --Operating A500 via A5ND





Confirm above screen, only Polled is enabled, Rx Size: 4, Tx Size: 4, Since I/O Assembly Instances 21 / 71 are used for polling,

Next Select tab: Device Parameters \

DeviceNet dot - BSNetWorx fo A500 (5) General Device Parameters ED	r DeviceNet S I/O Default	? X	
Groups Or All parameters C Bestore Default Values C Parameter Help C	n-Line Single - All	Upload From Device Download To Device Start Monitor	
Parameter	Current Valu	Je si	0 (5) DEFAULT
(0001) Motor Type	Type 7		
(0002) Rated Current	2.55 Amp		
(0003) Rated Voltage	200.0 Volt		
(0004) Rated Power	655.35 kW		
(0005) Rated Frequency	50.00 Hz		
(0006) Pole Count	4		04
(0007) Base Speed	1500 RPM		
(0008)	0		
(0009)	0		· · · · · · · · · · · · · · · · · · ·
(0010) Run1	No		(sheet) Master/Siz
(0011) Run2	No	1	
(0012) Net Control	Network		
OK(Cancel	Apply Help	High

Quick Start Guide For DeviceNet --Operating A500 via A5ND

Scroll down to EDS#0100 (Pr0 Torq Boost), Mouse D-Click on it, Type in a new value:

DeviceNet dot - BSNetWorx for D	eviceNet ? X	
General Device Parameters EDS I. Groups On-Li	'O Default	
All parameters C S Bestore Default Values C A Parameter Help	ngle Upload From Device	
Parameter	Current Value	0(5) DEFAULT
(0097) RTM14: Output Power	0	
🟦 (0098) RTM15: Inp Terminal	0	
🟦 (0099) RTM16: Outp Terminal	0	
(0100) Pr0 Torque Boost	10.0 %	
(0101) Pr1 Max Freq Limit	120.00 Hz	
(0102) Pr2 Min Freq Limit	0.00 Hz	04
(0103) Pr3 Base Frequency	50.00 Hz	
(0104) Pr4 Multi-Speed Setting	60.00 Hz	
(0105) Pr5 Multi-Speed Setting	30.00 Hz	
(0106) Pr6 Multi-Speed Setting	10.00 Hz	isheet 🔪 Master/Siz 🔳
(0107) Pr7 Acceleration Time	5.0 Sec	
(0108) Pr8 Deceleration Time	5.0 Sec	×
Can	cel <u>Apply</u> Help	

Mouse Click on [Download to Device], If time-out happens, select [Retry].

Do File \ Save, Proj is done

Do File \ Exit, thus DeviceNet network configuration is complete.

7. Running VFD from SLC5/03 with RSLogix500

Create Proj: <u>*asg df1.rss*</u> in RSLogix500 Complete Proj as follows:

Make sure following items are ready:

- RS232 (DF1) port on SLC5/03 CPU is connected to COM2 on PC
- RS-232 (DF1) Driver for RSLogix500 is running on background of RSLinx



Quick Start Guide For DeviceNet

--Operating A500 via A5ND

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
B3:0																
B3:1																
B3:2																
B3:3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
B3:4	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0
B3 : 5	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
	1															

Note: Use Mouse R-B Click \ Toggle Bit B3 : W / b

Explanation for file:	B3 – Binary	Confirm functions as follows:				
B3:3	0x60	NetCtrl, NetRef, STOP				
B3:4	0x62	NetCtrl, NetRef, STR				
B3 : 5	0x61	NetCtrl, NetRef, STF				

These bit-maps are used in all polling applications for Assembly Object Output Instance 21, please refer to FR-A5ND Instruction Manual for more details.

Mouse Click on [x] to close window												
After completing editing												
Download to SCL5/03 CPU												
Confirm no errors See PLC5/03 Rack												
	<00>	·́<01>	<02>	<03>	<04>	<05>	<06>					
Power	Rem Run o Prog o o SLC5/03 CPU RS 232	None	Inp	Outp	Outp	1747-SDN DeviceNet Scanner	Inp					

• Set Key-Switch on SLC5/03 CPU to Run-postion

• VFD's run as expected

8. Considerations for Multiple VFD's

8.1. Example of Multi-Node Configuration



Quick Start Guide For DeviceNet --Operating A500 via A5ND

8.2. Many Issues to Consider for Multiple VFD's:

- 1 Resistor (121 Ohms, 1/4 Watts, thin-film) at EACH end of trunk is needed
- Use 500 KBaud whenever possible
- Use Thick Trunk cable whenever possible
- Minimize Thin Drop cable whenever possible
- Avoid Daisy-Chain
- Always assign Sta.#00 to PLC
- Always assign Sta.#61 to PC
- DO NOT use Sta.#63, it's reserved for Default New Node
- Play with DeviceNet Assistant first, it's free from A/B
- Remember FR-A5ND using 50mA in DNet Assistant
- FR-A5ND uses 4 Byte I/O for Polling, Instances 21/71
- Map into 2 Words in Scanner
- Offline config first, default at #63, 125KBaud
- LED is Blinking Green?
- Do Node Commissioning
- Ready to go

References

- Mitsubishi Electric: FR-A500 Inverter Instruction Manual
- Mitsubishi Electric: FR-A5ND DeviceNet Option Instruction Manual
- Rockwell Automation: DeviceNet Assistant Software Program User Manual
- Rockwell Automation: RSLinx Software Program User Manual
- Rockwell Automation: RSNetWorx Software Program User Manual
- Rockwell Automation: RSLogix500 Software Program User Manual
- Rockwell Automation: SLC500 Controller & Accessories Instruction Manual
- ODVA: DeviceNet Specification