

# F2–DEVNETS–1 DeviceNet Base Controller User Manual

Manual Number F2–DEVNETS1–M

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# **Manual Revisions**

If you contact us in reference to this manual, be sure to include the revision number.

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1st Edition	9/02	Original issue

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# **Getting Started**

In This Chapter. . . .

- Introduction
- Introduction to DeviceNet
- DL205 I/O System
- F2-DEVNETS-1 DeviceNet Base Controller

# Introduction

The Purpose of this Manual

This manual describes the installation and operation of the F2–DEVNETS–1.



Supplemental	The following manuals are essential to the proper use of your F2–DEVNETS–1.					
Manuals	<ul> <li>DL205 Installation and I/O Manual part number D2–INST–M</li> </ul>					
	The PLC/PC software manual					
	<ul> <li>The DeviceNet software (if separate) manual</li> </ul>					
	<ul> <li>The DeviceNet Scanner (or Master) manual</li> </ul>					
Who Should Read this Manual	If you have a working knowledge of the DeviceNet network, the DeviceNet software and PLC or PC which you are using, this manual will help you configure and install your F2–DEVNETS–1 DeviceNet Base Controller.					
Technical Support	We strive to make our manuals the best in the industry and rely on your feedback in reaching our goal. If you cannot find the solution to your particular application, or, if for any reason you need additional technical assistance, please call us at					
	1-800-783-3225					
	Our technical support team is glad to work with you in answering your questions. They are available <b>weekdays from 9:00 a.m. to 6:00 p.m. Eastern Time</b> . We also encourage you to visit our website where you can find technical and nontechnical information about our products and our company.					
	www.facts-eng.com					

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#### Symbols Used





The "light bulb" icon in the left-hand margin indicates a **tip** or **shortcut**.

The "note pad" icon in the left-hand margin indicates a **special note**.

The "exclamation mark" icon in the left-hand margin indicates a **warning** or **caution**. These are very important because the information may help you prevent serious personal injury or equipment damage.

#### Key Topics for Each Chapter

The beginning of each chapter will list the key topics that can be found in that chapter.

Introduction	1
In This Chapter – Overview – Organization of Topics – Manual Convertions – System Herdware Recuirements	

# Introduction to DeviceNet

DeviceNet Concepts DeviceNet is a low-level network designed to connect factory-floor devices to control systems. There are a host of manufacturers of DeviceNet products, offering an array of products including sensors, motor drives and starters, PLCs, pushbutton stations, remote I/O systems, etc.

Here are some DeviceNet concepts you may find helpful.

- DeviceNet supports various communication structures including Peer to Peer, Multi-master and Master/Slave. *The F2–DEVNETS–1 uses the predefined Master/Slave connection.*
- DeviceNet has two types of messaging: Explicit Messaging and I/O Messaging.
  - Explicit Messaging is low priority, not time-critical and usually for configuration/diagnostic purposes.
  - I/O Messaging is time-critical and high priority for I/O data transfer. I/O Messaging comes in four types:
    - Strobed
    - Polled (*The F2–DEVNETS–1 only supports Polled*.)
    - Change of State (or COS)
    - Cyclic
- A single DeviceNet network is limited to 64 nodes. A node can be a single-bit device, such as a limit switch, or a remote I/O slave with several I/O modules, such as the F2–DEVNETS–1. The Master (Scanner) is usually assigned to node address 0, and many Slave devices have a factory default node address of 63.
- DeviceNet has the following data rates (with maximum bus lengths):
  - 125 kbps (bus length = 500m max.)
  - 250 kbps (bus length = 250m max.)
  - 500 kbps (bus length = 100m max.)
- The 24V DeviceNet power supply must be grounded at only one point. The – V terminal must be tied to Protective Earth Ground at the power supply only.

**The ODVA** The DeviceNet standard is maintained by the ODVA (Open DeviceNet Vendor Association, Inc.). Contact the ODVA for detailed information about DeviceNet.

Open DeviceNet Vendor Association, Inc. 20423 State Road 7 Suite 499 Boca Raton, FL 33498 Phone: (954) 340–5412 Fax: (954) 340–5413 *Internet:* www.odva.org Email: odva@powerinternet.com

# DL205 I/O System

0 Align the F2–DEVNETS–1 with the Push the retaining clips grooves in the base and slide it in. in to secure the module in the DL205 base. Mini Glossary Below is a small glossary of terms used in this manual. Scanner or Master The DeviceNet Master of which the F2–DEVNETS–1 is a slave. This can be either a PLC module or a card in your PC.

**Controller or Slave** 

Interface Module, and one or more I/O Module(s).

Node Address or MAC IDThe controller is also referred to as a Network<br/>Interface Module elsewhere.Node Address or MAC IDThe unique device address on a DeviceNet<br/>network. There are a maximum of 64 total (0–63).<br/>Usually the scanner is node 0.

Short for the F2–DEVNETS–1 Base Controller.

Each 205 I/O system has the following components: a Power Supply/Base, CPU or

F2-DEVNETS-1

**Base Controller** 

**Features** 

# F2–DEVNETS–1 Base Controller

The F2–DEVNETS–1 Base Controller is a slave module that functions as a controller for 205 I/O on a DeviceNet network.

The Controller has the following features:

- Status LEDs (Power, Module and Network)
- Serial Port
- Node Address (MAC ID) and Baud Rate Jumpers
- DeviceNet Connector



# 2

# Installing the F2–DEVNETS–1 Base Controller

In This Chapter. . . .

- Installing the F2-DEVNETS-1 Base Controller
- Configuring the Controller
- Master/Slave Communications
- DL205 Backplane Communications

# Installing the F2–DEVNETS–1

Jumpers

Setting the Module The F2–DEVNETS–1 controller has a 8 jumpers which are used to set baud rates and the node address.



Note: Be sure to look closely at the default settings below. If you are connecting to an existing DeviceNet network, you may need to change the DeviceNet Baud Rate on your F2–DEVNETS–1. The factory default baud rate is 125kbps.



Factory Default Settings Shown (125K Baud/MAC ID = 63)

#### Set the DeviceNet baud rate.

DeviceNet Baud Rate				
Baud Rate	Jumper 1	Jumper 2		
125 kbps	OFF	OFF		
250 kbps	ON	OFF		
500 kbps	OFF	ON		
See Appendix E, Compatibility Mode	ON	ON		

Data Rate 1 Data Rate 2 Node Address 1 Node Address 2 Node Address 4 Node Address 8 Node Address 16 Node Address 32

nstalling the DeviceNet

Set the combination of Node Address jumpers to match the desired Node Address (MAC ID).

	•					
Node Address	Jumper 1	Jumper 2	Jumper 4	Jumper 8	Jumper 16	Jumper 32
1	ON	OFF	OFF	OFF	OFF	OFF
63	ON	ON	ON	ON	ON	ON
10	OFF	ON	OFF	ON	OFF	OFF
43	ON	ON	OFF	ON	OFF	ON

#### Node Address Examples

Wiring the<br/>Controller to a<br/>DeviceNet NetworkConnect the DeviceNet cable (Belden 3085A, YR–29832 or equivalent) to the<br/>removable connector as shown below. Be sure to connect a terminating resistor<br/>(121 Ohm 1%, 1/4W).



\* Controller Area Network (CAN)



The terminating resistor is 121 Ohm 1%, 1/4 Watt. (2 resistors are included with each F2–DEVNETS–1).



**Tip:** Be sure that each end of the DeviceNet network 'trunk' has a proper terminating resistor connected as shown above.

#### Serial Port (RS–232)

The F2–DEVNETS–1 serial port is used to update the firmware when necessary. Use cable part number **FA–CABKIT** to connect the F2–DEVNETS–1 to a PC, or use the following information to make a cable.



6–pin Male (RJ–12) Modular Plug 6-pin Female (RJ-12) Modular Jack

<u> </u>	9
	~ 5
-	4
_	~
	~ -
<u> </u>	- r I
1	

Serial Port Pinout		
Pin	Signal	
1	0V	
2	Internally shorted to Pin 5	
3	RS232C Data in	
4	RS232C Data out	
5	Internally shorted to Pin 2	
6	0V	

# **Configuring the Controller**

Configuring the DeviceNet Base Controller

Use the software of your DeviceNet master to configure the controller for your network. *Refer to the software Help file and/or manual for help with configuration.* Follow these basic steps when configuring your F2–DEVNETS–1 controller.

#### 1. Set the Controller Node Address:

In the DeviceNet master software, make sure the Controller node address is set to an available node number on the DeviceNet network (from 0 to 63).

- Add the EDS file (if required by the software): In your DeviceNet software, add the F2–DEVNETS–1 Electronic Data Sheet (EDS) file from the disk which came with this manual or from our web site www.automationdirect.com. Some software may not provide for the use of EDS files.
- 3. Add the F2–DEVNETS–1 to the Scan List:

Add the F2–DEVNETS–1 to the Scan List in your DeviceNet Master software.

4. Set the Input/Output Bytes:

If required by your DeviceNet software, set the I/O Parameters to Tx = Output bytes and Rx = Input bytes (on the Scanner's Scan List tab), for Polled I/O.

- Map the I/O to the Master: Map the F2–DEVNETS–1 I/O to the Scanner using Auto Map, or map the I/O to another location if desired.
- 6. Scan:

Go Online (or Scan) to verify the configuration and check for errors.

7. View Indicators on the Controller: Refer to the Status Indicators when connecting to the network. The F2–DEVNETS has three LED's: PWR, MS and NS.

The MS LED represents the Module Status.

The NS LED indicates the Network Status.



PWR (Power) Indicator			
Indication	Status		
OFF	No power or defective LED.		
Solid Green	Power is ON.		
MS	(Module Status) Indicator		
Indication	Status		
OFF	No power or defective LED.		
Flashing Red–Green	LED test during power up cycle.		
Solid Green	Allocated to a master.		
Solid Red	Module Error.		
NS (Network Status) Indicator			
Indication	Status		
OFF	No power, defective LED or No Network Connection		
Flashing Red–Green	LED test during power up cycle.		
Flashing Green	A 0.25 sec. ON–OFF cycle indicates online and ready to accept commands from the master.		
Solid Green	Under control of a master.		
Flashing Red	A 0.25 sec. ON–OFF cycle indicates a communica- tion fault or loss of Bus Power.		
Solid Red	No bus power or a unrecoverable communications fault.		

## **Master/Slave Communications**

The F2–DEVNETS–1 controller (slave) communicates with the DeviceNet scanner (master) by sending Input Data and receiving Output Data. The controller *reads* Inputs from I/O Modules and *writes* Outputs to I/O Modules.



nstalling the DeviceNet Base Controller

# **DL205 Backplane Communications**



The Controller communicates with its I/O modules over the backplane. The I/O is mapped in consecutive order as shown.

I/O Module Memory Map

Module Type	Part Number	ID October	F2–DEVNETS–1 Mode	
			Bytes Produced	Bytes Consumed
Discrete Inputs	F2-08SIM D2-08ND3 D2-16ND3-2 D2-32ND3 D2-08NA-1 D2-08NA-2 D2-16NA	14 14 08 05 14 14 08	1 1 2 4 1 1 2	0 0 0 0 0 0
Discrete Outputs	D2-04TD1 D2-08TD1 D2-16TD1-2 D2-16TD2-2 D2-32TD1 D2-08TA F2-08TA D2-12TA D2-04TRS D2-08TR F2-08TR F2-08TRS D2-12TR	0A 13 06 0F 13 13 06 0A 13 13 13 13 06	0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 2 2 4 1 1 2 1 1 1 2
Discrete Combo	D2-08CDR	0E	1	1
Analog In	F2-04AD-1(L) F2-04AD-2(L) F2-08AD-1 F2-08AD-2	03 03 01 01	8 8 16 16	0 0 0 0
Temperature In	F2–04RTD F2–04THM	15 15	9 9	0 0
Analog Out	F2-02DA-1(L) F2-02DA-2(L) F2-02DAS-1 F2-02DAS-2 F2-08DA-1 F2-08DA-2	04 04 17 17 16 16	0 0 0 0 0 0	4 4 4 16 16
Analog Combo	F2–4AD2DA	02	8	4

Modules Not Supported: F2–CP128 H2–CTRIO, H2–ERM (–F), H2–ECOM (–F) D2–DCM, D2–CTRINT, D2–RMSM

Installing the DeviceNet Base Controller

Analog would wapping				
	Part Numbers	Data Format	Data Description	Comments
4 Channel Al (12 Bit)	F2-04AD-1(L) F2-04AD-2(L)	Word 1 Word 2 Word 3 Word 4	Ch1 Data Ch2 Data Ch3 Data Ch4 Data	The MSB (Bit) of each word of channel data is a diagnostic bit. ON indicates broken transmitter or no 24VDC.
8 Channel Al (12 Bit)	F2-08AD-1 F2-08AD-2	Word 1 Word 2 Word 3 Word 4 Word 5 Word 6 Word 7 Word 8	Ch1 Data Ch2 Data Ch3 Data Ch4 Data Ch5 Data Ch6 Data Ch7 Data Ch8 Data	The MSB (Bit) of each word of channel data is a diagnostic bit. ON indicates broken transmitter or no 24VDC.
4 Channel Temperature Input (16 Bit)	F2-04THM F2-04RTD	Word 1 Word 2 Word 3 Word 4 Byte 9	Ch1 Data Ch2 Data Ch3 Data Ch4 Data Burnout Byte	Each of the Low 4 bits of the burnout byte corresponds to a channel. ON indicates burnout.
2 Channel AO (12 Bit)	F2-02DA-1 F2-02DA-2	Word 1 Word 2	Ch1 Data Ch2 Data	
2 Channel AO (16 Bit)	F2-02DAS-1 F2-02DAS-2	Word 1 Word 2	Ch1 Data Ch2 Data	
8 Channel AO (12 Bit)	F2–08DA–1 F2–08DA–2	Word 1 Word 2 Word 3 Word 4 Word 5 Word 6 Word 7 Word 8	Ch1 Data Ch2 Data Ch3 Data Ch4 Data Ch5 Data Ch6 Data Ch7 Data Ch8 Data	
4 Channel Al 2 Channel AO (12 Bit)	F2–4AD2DA	Word 1 Word 2 Word 3 Word 4 Output Word 1 Output Word 2	Ch1 AI Data Ch2 AI Data Ch3 AI Data Ch4 AI Data Ch1 AO Data Ch2 AO Data	

Analoa	Module	Man	nina
Analog	modulo	map	Pilig

Bytes=8 Bits, Word=16 Bits

# **Specifications**

In This Appendix. . . . — Specifications

# Specifications

General			
Operating Temperature	32° F to 131° F (0° C to 55° C)		
Storage Temperature	–4° F to 158° F (–20° C to 70° C)		
Ambient Humidity	5% – 95% relative humidity (non-condensing)		
Voltage Withstand	1500VAC, 1 minute (DeviceNet connector internal)		
Insulation Resistance	500VDC, 10M $\Omega$ (DeviceNet connector internal)		
Vibration Resistance	MIL STD 810C, Method 514.2		
Shock Resistance	MIL STD 810C, Method 516.2		
Noise Immunity	NEMA (ICS3–304) Impulse noise 1µs, 1000V FCC class A RFI (145MHz, 435MHz 10W, 10cm)		
Atmosphere	No corrosive gases Environmental Pollution Level 2		

Communication			
Communication form	DeviceNet Communication Protocol (Slave)PredefinedMaster/SlaveGroup 2Server only		
Network Node Address	0 to 63 (Set by jumpers)		
Data Packet	1 to 128 Bytes (Data beyond eight bytes are divid- ed by fragmentation)		
Communication Rate (Max. cable length)	125KB         (1640 ft./ 500m)           250KB         (820 ft./ 250m)           500KB         (328 ft./ 100m)		
Communication Status Indicator	MS: Module Status LED [Red/Green] NS: Network Status LED [Red/Green]		
DeviceNet Power Consumption	11 to 25 VDC (45mA max.)		

DeviceNet			
Device Type		Generic	
Explicit Peer to Peer I	Vessage	No	
I/O Peer to Peer Mes	sage	No	
Configuration Consist	ency	No	
Fault Node Recovery		No	
Communication Baud Rate 125K, 250K, 500K		Yes	
Master/Scanner		No	
I/O Slave Message Chan	Bit Strobe Polling Cyclic ge of State	No Yes No No	

A-2

Serial Port Communications			
Connector	6 pin female modular (RJ12 phone jack)		
Connection Port Type	RS-232C		
Protocol	Proprietary		
Station Number	1 (fixed)		
Baud Rate	9600 and 19200 bps		
Data Bits	8		
Start Bits	1		
Stop Bits	1		
Parity	None		
Communication Time out	Prescribed Time		

**A–3** 

	I/O Modules
Number of I/O points	128 Bytes (1024 bits) In/128 Bytes (1024) Out
Number of Slots (I/O Modules)	1 to 8 slots
Self-diagnostics	Watchdog Timer Memory check
I/O module types	Discrete Input Module Discrete Output Module Analog Input Module Analog Output Module
Internal Power Consumption	190mA at 5VDC
Max. time of external power loss	10ms

# DeviceNet Group2 only Explicit Messages

In This Appendix. . . . — DeviceNet Commands

# **DeviceNet Group2 only Explicit Messages**

These explicit messages are used to allocate/release the connection between the master and its slave.

**DeviceNet Commands** The following tables identify the data being transferred. When GET is by itself in the Service column, the item is either fixed and cannot change or the system sets the item to reflect the system processing characteristics. SET only in the Service column indicates the user can modify the item.

Unless otherwise indicated, all data is given in HEX format. Single numbers shall be considered zero filled and right justified.

CLASS = 1

ATTR	INSTANCE	ITEM	VALUE	DESCRIPTION	SERVICE
1	1	Vendor ID	660d	AutomationDirect.com	GET
2	1	Product Type	0	General Purpose I/O Device	GET
3	1	Product Code	20d	Vendor Assigned Product Code	GET
4	1	Revision Major/Minor	3.1	Released Product Version	GET
5	1	ID Status	1	Current Status of Entire Device	GET
6	1	Serial Number	XXXX	4–Digit Vendor Assigned	GET
7	1	Product Name	F2-DEVNETS	Vendor Assigned	GET
	1	Reset		Reset the Device	RESET

#### CLASS = 3

ATTR	INSTANCE	ITEM	VALUE	DESCRIPTION	SERVICE
1	1	MAC ID	0 - 63	MAC ID (Node Address)	GET
2	1	BAUD RATE	0 – 2	0=125k, 1=250k, 2= 500k	GET
3	1	BUS–OFF Interrupt	Х	BUS–OFF Interrupt processing	GET
4	1	BUS–OFF Count	Х	BUS-OFF Count	GET/SET
5	1	ALLOCATION	Х	Explicit and I/O connections	GET

R

#### CLASS = 4

ATTR	INSTANCE	ITEM	VALUE	DESCRIPTION	SERVICE	]
3	100	I/O DATA	Up to 128 BYTES	Read Input Data (Produced) Write Output Data (Consumed)	GET/SET	
		CONFIG DATA	4 Bytes + 1 Word (16 1–4 are always suppl appropriate.	bits) for each occupied slot. Bytes ied. Other bytes are supplied when		
		BYTE 1	0 – 3F (63d)	MAC ID		
3	101	BYTE 2	0-2	BAUD RATE	0.57	G
		BYTE 3	0 - 8	SLOTS (0=Empty Rack)	GET	dno.
		BYTE 4	0 – FF	SLOTS (Bit 0=Slot 0, Bit 1 = Slot 1, etc.)		App 02 Exp
		BYTE 5/6	BITS 15 – 8 BITS 7 – 0	# Inputs # Outputs		endix olicit N
		CONFIG DATA	8 BYTES	Configuration Data with the module ID for each occupied slot. 0FFH=Unoccupied		B Nessage
			BYTE 1	Module ID in Slot 0		Se
			BYTE 2	Module ID in Slot 1		
3	102		BYTE 3	Module ID in Slot 2	GET	
			BYTE 4	Module ID in Slot 3	GET	
			BYTE 5	Module ID in Slot 4		
			BYTE 6	Module ID in Slot 5		
			BYTE 7	Module ID in Slot 6		
			BYTE 8	Module ID in Slot 7		
3	103	PRODUCED DATA	0-0FFFFH	4 Channels (8 bytes) of analog inputs (First 4 of last 8 analog inuts in base)	GET	
3	104	PRODUCED DATA	0-0FFFFH	4 Channels (8 bytes) of analog inputs (Second 4 of last 8 analog inuts in base)	GET	
3	105	PRODUCED DATA	0–0FFFFH	4 Channels (8 bytes) of RTD/THM Inputs	GET	

#### CLASS = 5

ATTR	INSTANCE 1=EXPLICIT 2=POLLING	ITEM	VALUE	DESCRIPTION	SERVICE
1	1/2	CNXN ATTR State	Х	0=None, 1=Configuring, 2=Waiting, 3=Connected, 4=Timed out T	GET
2	1/2	Connect Type	Х	0=Explicit 1=I/O	GET
3	1/2	Connect Trigger	Х	83H = Explicit 82h = I/O	GET
4	1/2	Connect Produced	Х	Connection ID that will produceFFFF if no production	GET
5	1/2	Cconnect Consumed	Х	Connection ID that will consumeFFFF if no production	GET
6	1/2	Connect COMM ID	021h	MSG Group2 Consuming MSG Group1 Producining	GET
7	1/2	Produced Connection Size	Х	# Bytes data in polled connection # Bytes data + header in Explicit connection	GET
8	1/2	Consumed Connection Size		# Bytes data out polled connection # Bytes data + header out Explicit connection	GET
9 (see note)	1/2	Connect Expected Packet Rate	Х	Number in milliseconds	GET
0C	1/2	Connect WD Timeout	0	Watchdog time out action reset device	GET
0D	1/2	Connect Path Length	Х	0 for Explicit 6 for I/O	GET
0E	1/2	Connect Path ATTR ID	0/STRING	0 for Explicit 6 bytes for I/O	GET
0F	1/2	Connect Consumed Path Length	Х	0 for Explicit 6 for I/O	GET
10	1/2	Connect Consumed ATTR ID	0/STRING	0 for Explicit 6 bytes for I/O	GET
11	1/2	PROD Inhibit	Х		GET
	1/2	Reset		Start Inactivity	RESET

**Note:** The F2–DEVNETS–1 has a interval timer that can be set to timeout after a selectable number of milliseconds. If there is no activity during the selected time value, the connection will release. *When this timer is set to zero the connection will not timeout.* 

Since the operation depends on the controlling actions of a Master CPU existing externally on the network, the connection should never be allowed to timeout. To keep the connection open, set the Expected Packet Rate (EPR) value for the connection to zero.

All outputs will turn off when the connection is released. This will occur when an EPR value counts down to zero or when the master releases the connection. This is a fixed condition and cannot be modified.

# F2–DEVNETS–1 Think & Do Setup

In This Appendix. . . . — F2-DEVNETS-1 T & D Setup

# F2–DEVNETS–1 Think & Do Setup

For those who are using the F2–DEVNETS–1 as a slave with Think & Do Live or Studio, the following example shows how to setup Think & Do on your network.

- **T & D Studio setup** for PC control Use the following procedure to setup the F2–DEVNETS–1 adapter. This example is using Think & Do Studio. Be sure that the Node Address switches have been set to a proper address.
  - 1. Click on Add Driver and SST card is installed.
  - 2. Set MAC ID to 62.
  - 3. Set baud rate to 125K, or to whatever the slave is set to.
  - 4. Set scanner interval to 0.
  - 5. Set timeout shutdown to 5.
  - 6. EDS not needed.

THINK & DO SCOOLO - CONNECTIVITYLENCER - [1	Configuration]	
🔀 Configuration View Drivers Devices Tools	Window Help	_ 8 ×
이야히 중 해외의 유지했		
DeviceNet(SST) Ecard 1 Total Nodes=0		
Be	efresh Giid	
Attributes	Value	<b>_</b>
Attributes Driver Name	Value DeviceNet(S-S Technologies)	<b>-</b>
<u>Attributes</u> Driver Name Board Number	Value DeviceNet[S:S Technologies] 1	<u> </u>
Attributes Driver Name Board Number Board Configuration	Value DeviceNet(S-S Technologies) 1 Direct-Link Configuration	<u>^</u>
Attributes Driver Name Board Number Board Configuration Board Name	Value       DeviceNet(S-S Technologies)       1       Direct-Link Configuration       5136-DNP-PCI-0-19	<b>_</b>
Attributes Driver Name Board Number Board Configuration Board Name Board Family	Value DeviceNet[S:STechnologies] T DirectLink Configuration 5136.DNP-PCI-0-19 ST36-DNP	L
Attributes Driver Name Board Number Board Configuration Board Name Board Family 1/0 Port Address	Value           DeviceNet(S-S Technologies)           1           Direct-Link Configuration           5136-DNP-PCI-0-19           5136-DNP           0xee800	Â
Altributes Driver Name Board Number Board Configuration Board Family 1/D Port Address Memory Address	Value           DeviceNt[S:S Technologies]           1           DirectLink Configuration           5136-DNP-PCI-0-19           5136-DNP-DCI-0-19           0xe800           0xe7000000	
Attributes Driver Name Board Number Board Configuration Board Name Board Family I/O Port Address Memory Address DeviceNet Configuration	Value           DeviceNet[S:STechnologies]           1           Direct-Link Configuration           5136-DNP-PCI-0-19           3136-DNP-PCI-0-19           0xee800           0xee7000000	ĺ
Attributes Driver Name Board Configuration Board Anme Board Family 1/0 Port Address Memory Address DeviceNet Configuration Mac ID	Value           DeviceNet(S-S Technologies)           1           Direct-Link Configuration           5136-DNP-PCI-19           0xee800           0xee7000000           62	
Altributes Driver Name Board Number Board Configuration Board Family 1/D Port Address Memory Address DeviceNet Configuration Mac D Baud Rate Entry Statement Board Rate Board Ra	Value           DeviceNet[S-S Technologies]           1           Direct-Link Configuration           5136-DNP-CI-0-19           5136-DNP           0xe6000           0xec7000000           62           125Kb	Ĵ
Attributes Driver Name Board Number Board Number Board Name Board Anme Board Family I/O Port Address Memory Address DeviceNet Configuration Mac ID Baud Rate	Value           DeviceNet[S:STechnologies]           1           Direct-Link Configuration           5136-DNP-PCI-0-19           5136-DNP-P00           0xee000           0xee000           0xee000           0xee000           0xee00	 
Attributes Driver Name Board Configuration Board Mame Board Family I/O Port Address Memory Address DeviceNet Configuration Mac D Baud Rate	Value           DeviceNet[S S Technologies]           1           Direct-Link Configuration           5136-DNP-PCI-0.19           0xe800           0xe800	, , ,
Altributes Driver Name Board Number Board Configuration Board Family 1/D Port Address Memory Address DeviceNet Configuration Mac D Baud Rate 1	Value           DeviceNet[S-S Technologies]           1           Direct-Link Configuration           5136-DNP-CI-0-19           5136-DNP           0xe6000           0xec7000000           62           125Kb	,ř
Attributes Driver Name Board Configuration Board Anne Board Family I/O Port Address Memory Address DeviceNet Configuration Hac ID Board Rate Board Info Board Status Mapping M	Value           DeviceNet(S-S Technologies)           1           Direct-Link Configuration           5136-DNP-POL-19           0xe600           0xe600           0xe600           0xe600           0xe7000000           62           125Kb           0	* *
Attributes Driver Name Board Configuration Board Aname Board Family I/O Port Address Memory Address DeviceNet Configuration Mac D Baud Rate Board Info Board Status Mapping McConnect to I/O Network	Value           DeviceNet[S S Technologies]           1           Direct-Link Configuration           5136-DNP-PCI-0-19           beze7000000           62           125Kb           0	×



8. Click on Scan and communication will begin.

١

Matin a De Chulie - Connectului - Con				
Think & Do Scualo - Connect VityCenter - [t	onfiguration			
Configuration View Driver Nevices Tools	Window Help			
- 🗅 🚅 🗐 🥌 🚈 🏥 🖉 🧱	[命 ♥] [김 김 금,	동물 말		
DeviceNet (SST) Board 1 Total Nodes=1	Good Missing Node/ Extra Node/Duplicate Nod Duplicate Nod % In Node2 Slot #0 % In Node2 F2-DEVNETS	Module or Any Other Error dule e or Module Mismatch Slot #2 An 41/20 0 0 0 0 0 0 0 0 0 0 0 0 0		Appendix C Think & Do Setup
			•	0
Be	efresh Grid			
Attributes	Value		-	
Board Number	1			
Board Configuration	Click Here			
Board Name	5136-DNP-PCI-0-19			
Board Family	5136-DNP			
I/O Port Address	0xe800			
Memory Address	0xe7000000			
DeviceNet Configuration				
Mac ID	62			
Baud Rate	125Kb		-	
• • • • • • • • • • • • • • • • • • •	1n			
Board Info Board Status Mapping / M	odule Info 🖌 Module Status Mapping 📝 1/0	Mapping /		
For Help, press E1				
			( ) , , , , , , , , , , , , , , , , , ,	
📑 🕅 Start 🛛 🚺 🍘 🖏 🗍 🔀 Think & Do Stu	dio - Co 📺 connected.bmp - Paint 🧠	com1_9600 - HyperTerminal	🖏 9:59 AM	

# F2–DEVNETS–1 and RSNetWorx<sup>™</sup> Setup

In this Appendix....

— Setup F2-DEVNETS-1 with RSNetWorx™

# Setup F2–DEVNETS–1 with RSNetWorx<sup>™</sup>

For those who are using the F2–DEVNETS–1 as a slave with an Allen–Bradley PLC, the examples on the following pages have worked for us, and will be a guide for you. These steps should help you through the process of setting up your Allen–Bradley DeviceNet network using RSNetWorx<sup>™</sup>. If you encounter any difficulties with the setup process, please contact your local Rockwell International representative.

**RSLinx** 

Begin by opening your RSLinx to configure the DeviceNet driver.

- 1. Click on Communications.
- Click on Configure Drivers.

The Yiew Communications Station Security Window Help .	- 149
s BSWho	1018
Image: Second	

- 3. Click on the down arrowhead, ▼, and select a driver from the drop–down list.
- 4. Click Add New.

A DF1 driver is selected in this example.







Note: Selecting a new driver may prompt you to reboot or to restart your computer.

3

D.

5. Click **OK** in the pop–up window.

Rockwell So Regime Liew ( Regime Liew ( Regime Liew) Regime Liew) Regime Liew) Regime Liew) Regime Liew) Regime Liew ( Regime Liew) Regime Liew ( Regi	twann Ristinn Lite (1619Mpo - 1) camunications §lation Security Window Holp   Refreent    Ag i⊞ Not Browsing	
E-E Works II	Avalable Drivers Avalable Drivers RS-232 DFI Devices Configured Drivers: Name and Descriptor Add New RSLinx Driver	lose
	(15 chractets maximum)  A8_DF1-1  Cancel  D  Cancel  Cancel Cancel Cancel  Cancel C	dup tert tog

This window will appear.

6. Click on **Auto–Configure** to setup the communication parameters.

oningure Allen-Brauley DFT Colliniu	nications Device				
Device Name: AB_DF1-1					
Comm Port: COM1	Device: PLC-CH0				
Baud Rate: 19200	Station Number: 🔟 (Octal)				
Parity: None	Error Checking: BCC				
Stop Bits: 1	Protocol: Full Duplex				
Auto-Configure					
🗖 Use Modem Diale	r Configure Dialer				
Ok Cancel	<u>D</u> elete <u>H</u> elp				

Auto Configuration Successfull will appear.

7. Click **OK**.

Configure Allen-Bradley DF1 Communications Device				
Device Name: AB_DF1-1				
Comm Port: COM1 Device: SLC-CH0/Micro/PaneMiew				
Baud Rate: 19200 Station Number: 00 (Decimal)				
Parity: Even  Error Checking: BCC				
Stop Bits: 1 Protocol: Full Duplex 💌				
Auto Configure Auto Configuration Successful!				
Use Modem Dialer Configure Dialer				
Ok Cancel <u>D</u> elete <u>H</u> elp				

D\_4

The Configure Drivers window will now appear showing the **Status** as Running.

Configure Drivers		
Available Driver Types:		Close
RS-232 DF1 Devices	▼ Add New	
		Help
Configured Drivers:		
Name and Description	Status	]
AB_DF1-1 DH485 Sta: 0 COM1: RUNNING	Running	Configure
		Startup
		<u>S</u> tart
		Stop
		Delete

The next step is to add a DeviceNet driver.

- 8. Click on the down arrowhead, ▼, and select your choice of drivers from the drop–down list.
- 9. Click on Add New.

Configure Drivers		
Available Driver Types:		Close
DeviceNet Drivers	Add New	<u></u>
RS-232 DF1 Devices	Status Running	Help Configure
DeviceNet Drivers		<u>2</u> (d)(
PLC-5 (DH+) Emulator SLC 500 (DH485) Emulator 1784-PCMK Devices		Stop
SoftLogix5 Remote Devices via Linx or 1756-ENET Gateway		<u>D</u> elete

This window will appear.

10. Select the proper driver, then click **<u>Select</u>**.

Configure Drivers	
Available Driver Types:	
Dí DeviceNet Driver Selection - RSLinx DeviceNet-2	
Con       Available DeviceNet Drivers:         AlleneBradley 1772-KED         AlleneBradley 1772-SDNPT         AlleneBradley 1774-SDNPT         AlleneBradley 1774-SDNPT         Spect         Qancel	

Appendix D RSNetWorx Setup





vppendix D 

#### RSLogix

You are ready to connect to the PLC using your RSLogix software.

🐮 RSLogix 500 - JP PANEL RACK

1. Click on **Communications** and select <u>Who Active Go</u> **Online.** 



- 2. When this window appears, select the PLC to connect to.
- 3. Click OK.

Communications					
Autobrowse	Refresh	<u>۵</u>	Not Browsing		OK
Uvorkstation, D7N	VT	Network Na	ame		Cancel
표·器 Linx Gateways 표·器 1747-SDNPT-1 금·器 AB_DF1-1, DH	s, Ethernet I, DeviceNet -485				Help
	ation, D7NWT 04, UNTITLED				
- Current Selection-	•	J			
Server: RSLinx AF	1		Driver: AB_DF1-1	F	Reply Timeout:
Node: 1 Dec	imal (=1 Octal)		Type: SLC500	🗖 App	y to Project

This window will appear with the relay ladder program. You now want to configure the I/O. This must be done **OFFLINE** in order to change the configuration.

4. Select I/O Configuration.

IPPUINT     In forces       IPPUINT     IPPUINT        IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPPUINT       IPPUINT     IPP		M0:9.* 💽 % # 🦉 🔍 🔍 🗖	0 I
************************************	OFFLINE IN No Forces	e : 1d	•
Implement     Implement       Implement	😒 JP PANEL RACK 📃 🗆 🗙	<b>発</b> LAD 2	_D×
- The Theorem - 10	Right Preset		020 17460W8
★ ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ► ►	TURINO-00	K File 2	×

Appendix D RSNetWorx Setup

D-

The I/O Configuration window will come into view. When you select the scanner module, verify that it is in the correct slot.

5. Click <u>Adv Config</u>.

TRSLogic 500 - JP PANEL RACK	
File Edit Yiew Search Comma Icola Window Help	
🗋 📽 🖬 🚳 응 한 🖻 🗠 약 📶 💁 💽 🔄 🕞 🥵 💭 🖉 및 등 🗖 🖉	
DFFLINE  No Forces I No Forces I No Forces I I I I I I I I I I I I I I I I I I I	
Driver: AB_DF1-1 Node: 1d KINDer (Bt ( Timer/Counter ( Input/Output ( Compare	
COLO 1 MILLO Configuration	_DX
Current Cards Available	0.20
1 174644 4-StxRack 💌 Filer Al-10 💌	—~   I
2 1/D Rack Not Installed Part II Description	1746-0'W8
3 UD Rack Not Installed  PRead ID Cogility 1746/18 Any Bpt Decrete Input Module 1746/19 Any Epit Discrete Input Module	
PowerSupply	(8KD)
1746-018 Any Bpt Discrete Output Module 1746-0116 Any 16pt Discrete Output Module	
III Part II Description     In 17472 541 S/04 (291), 16K Mem (0547)     AMCI-152k AMCI Series 1500 Reactive Module	
1 1765/08 Strippt 100/120 VMC AMCI-1561 AMCI Series 1561 Recolver Module 1766 PM B Recolver Modu	
3 1747-50N DeviceNet Scamer Module 746 BAS 5/02 BASIC Module - M0/M1 capable	
B C 1745 BAS-T BASIC Module - 500 - 5/01 1745 BAS-T BASIC Module - M0.M1 capable	
1747/85N Backup Scanner Module 1762/87M Riveral Tamarahan Module	
1747-0CM-1/4 Node Adapter Module [1/4 Plack]	
1747-0CM-1/2 Node Adapter Module (1/2 Hack) 1747-0CM-3/4 Node Adapter Module (3/4 Rack)	
1747-DCM-FULLNode Adapter Module (Full Rack) 1747-DSN-7 Direbuted (K) Sciences 71/0 Block	
1747/OSN-30 Distributed I/O Scarver-30.I/O Block	
Bdv Config Beb Hide All Cads 11/40+104 Fest Analog 2 On In/2 On Current Out	
- NT - MTEGER	
P NIO	
- N11	
E Corce Files	
CO-CONTON	,č
For Help, press F1	0.0000 APP READ

The Advanced I/O Configuration window will appear. The M0 and M1 Lengths will show the default of 256. Change this to 361.

6. Click OK.



Configure F2–DEVNETS–1 with RSNetWorx You are now ready to configure the F2–DEVNETS–1. First, open RSNetWorx. Look for AUTOMATIONDIRECT.COM in the hardware tree listed under **Vendor**. Click on the + to show the devices for AUTOMATIONDIRECT.COM. The following example shows the F2–DEVNETS–1 as an F2–DEVNETS.

RSNetWorx opened.



- **Using the EDS file** If you do not see your device listed, it will need to be added from the EDS file (refer to page 2–4). The following example will guide you through the procedure of installing the device from the EDS file.
  - Click <u>T</u>ools and select <u>E</u>DS Wizard....



Appendix D RSNetWorx Setup The EDS Wizard will open. Simply follow the instructions to register the device.

EDS Wizard	×
EDS Wizard	Welcome to the EDS Wizard The EDS Wizard allows you to: • register EDS-based devices. • unregister a device. • change the graphic images associated with a device. • create an EDS "Stub." • upload of EDS data from an "unknown" online device.
ProdType = 0x1 ProdCode = 0x1 HajRev = 2 HillRev = 1 VentHame = 1	To continue click Next

#### Register the EDS file.



#### Enter the path for the EDS file.



EDS file installation results.

EDS File Installati This test evaluat guarantee EDS f	<b>on Test Results</b> ss each EDS file for errors in the EDS file. This test di le validity.	bes not
🖃 🖓 Installa	ion Test Results	3
	program files\rockwell software\rscommon\f2devnets	.eds
⊻iew file	More Information	
	·	

You can change the icon image for your device in this window.

EDS Wizard	×
Change Graphic Image. You can change the graphic image that is associated with a device.	
Product Types	
Change icon Generic Device F2-DE VNETS	
< <u>B</u> ack <u>N</u> ext >	Cancel

Review what you have done.

EDS Wizard	×
Final Task Summary This is a review of the task you want to complete.	
F2-DEVNETS	-
To complete the above task, click Nex	t
< <u>B</u> ack <u>N</u> ext > Canc	el

Appendix D RSNetWorx Setup

#### EDS Wizard complete.

		Completing the EDS Wizard
		You have successfully completed the EDS Wizard.
[File]		
DescText		
CreateDate	- 05	
CreateTime	= 15	
ModDate	= 05	
HodTime	- 15	
Revision		
[Device]	1000	
VendCode	= 0x7	
ProdType	- 0×	
ProdCode	= 0x2	
HajRev	= 2;	
HinRev	- 11	
	1000 N 12	

#### Go on line

You will want to go on line with the network now.

In the main RSNetWorx window,

1. Click on <u>Network</u> to select\_ <u>Online</u>.



- 2. Select your network from the pop–up window.
- 3. Click OK.





# Set up I/O parameters

Now you can set up the I/O parameters for the devices. The scanner needs to be configured first. This is done by accessing the scanner properties.

 Selecting the scanner module can be done in two different ways. Either click on the scanner name and right click the mouse or click on <u>Device</u> then click on <u>Properties</u> in the pop–up window.

2						
9 8 F 1 9 4 3 2						
tardware al	17475302	F2-DEVNETS	D0-DEVNETS	T1K-DEVNETS		
ChevaNit     Corecore     Of ACDive     Diversity     Directive Scanner     Communication Kaladim     Communication Kaladim     Communication ScAlaport     So Directive to SCAlaport     So Directive Scalaport     So Directive Scalaport		D1	02	<b>2</b> ] 3		
8 Gerwal Puspois Discrete I/O 3 Gereic Device	_				Cut	Ctrl-X
B P Human Machine Interface				4	<u>С</u> ору	Ctrl+C
8 DLink Seitch					Easte	
E Photoelectic Senoa					Delete	Del
Rockvell Autonation micellaneous     SCANport Adapter					Upload from Dev	ice
E StatMCC					Download to Dev	vice
C AUTOMATIONDIRECT.COM					Class Instance E	ditor
E C GE Fanuc Automation North America. Inc.					Properties	
Kops Declands     Kops Declands     DopCivit's     motional filteration     Kops Antonation     Kops     Rockwell Automation     Cooler	( ( ) H\Graph [	Spreachhear à Ma	mer/Sk   4			
Message Code Description						

The properties window will	📽 1747-SDN Scanner Module (3)
appear.	General Module Scanlist Input Output ADR Summary
2. Click Module.	1747-SDN Scanner Module
	Name: 1747-SDN Scanner Module (3)
	Address:
	Device Identity [ Primary ]
	Vendor: Rockwell Automation - Allen-Bradley [1]
	Device:  Lommunication Adapter [12] Product: 1747.SDN Scapper Module [19]
	Catalog: 1747-SDN/D
	Revision: 4.015
	OK Cancel Apply Help
3. Click <b>Upload</b> .	Scanner Configuration Applet       Image: Scanner Configuration Applet         Image: Do you want to upload the configuration from the device, updating the software's configuration to the device, updating the device?         For more information, press F1         Image: Upload       Download         Cancel
Uploading network information.	Uploading from Scanner



Note: Do not cancel. The entire network data must be allowed to upload.

The data appears.

- 4. Select the correct slot number which the DeviceNet scanner module is residing.
- 5. Click Scanlist.

	💐 1747-SDN Scanner Module (3)	? ×
	General Module Scanlist Input Output	ADR Summary
iceNet ding.	Interscan Delay: 10 🚍 msec	Upload from Scanner
Ň	Background to	Download to Scanner
$\backslash$		Module Defaults
$\backslash$		Slave Mode
	$\mathbf{X}$	Ad <u>v</u> anced
	1747-SDN:	
	Slot:	
	OK Cancel	Apply Help



? ×

RSNetWorx<sup>™</sup> Setup

This window will appear. 11. Click <u>Y</u>es.



1747-SDN Scanner Module (3)

#### Map the nodes

Map each node.

1. Click the **Input** tab in the properties window.

Be sure that F2–DEVNETS is selected.

- 2. Select **Discrete** for **Memory**, and **0** for **Start Word**.
- 3. Click AutoMap.

NOTE: M file is used with explicit messaging.

Node		Туре	Bx	Мар	S - 2	AutoMap
01, F2-DE	VNETS	Polled	4	No		
🗐 02, DO-DE	VNETS	Polled	3	1:9.1.0		Unmap
						A <u>d</u> vanced
Memory: D	iscrete			Start Word:	0	
Memory: D Bits 15 - 0	liscrete	112111		Start Word: 8 7 6	0	<u>Uptions</u> 3210
Mgmory: C Bits 15 - 0	iscrete	1121111		etart Word:	0	<u>Uptions</u> 3 2 1 0
Mgmory: D Bits 15 - 0 1:9.0 1:9.1 1:9.2	iscrete		D 9	Etart Word:	0 5 4	Uptions
Mgmory: D Bits 15 - 0 1 1:9.0 1:9.1 1:9.2 1:9.3	iscrete		10 9 2, D0	Etart Word:	0 5 4	Uptions 3 2 1 0 • NETS
Memory: D Bits 15 - 0 1:9.0 1:9.1 1:9.2 1:9.3 1:9.4	iscrete		D 9	Etait Word: 8 7 6 DEVNETS 02,	0 5 4 D0-DEV	Uptions 3 2 1 0 •
Memory: D Bits 15 · 0 I:9.0 I:9.1 I:9.2 I:9.3 I:9.4 I:9.5	iscrete	1121111	D 9	Etart Word: 8 7 6 DEVNETS 02,	0 5 4 D0-DEV	Uptions
Memory: D Bits 15 · 0 1.9.0 1.9.1 1.9.2 1.9.3 1.9.4 1.9.5 1.9.6	iscrete 151413		10 9 2, D0	Start Word: 8 7 6 DEVNETS 02,	0 54 D0-DEV	Uptions
Memory: D Bits 15 - 0 1:9.0 1:9.1 1:9.2 1:9.3 1:9.4 1:9.5 1:9.6 1:9.6 1:9.7	iscrete 1514113	▼ 12 11 1 0;	D 9 2, D0	Start Word:	0 5 4 0	Uptions

At the completion of the input AutoMapping, the window will look like this example. The F2–DEVNETS node is now shown.

Node		Туре	Bx	Мар		AutoMan
01, F2-D	EVNETS	Polled	4	1:9.2.8		Contraction
02, DO-0	DEVNETS	Polled	3	l:9.1.0		<u>U</u> nmap
						Advanced
						Options
	Contraction (Second Second		-			
M <u>e</u> mory: Bits 15 - 0	Discrete	312111	] 10  9	Start Word	0	3210-
M <u>e</u> mory: Bits 15 - 0 1:9.0	Discrete	3 12 11	-] 10  9	<u>S</u> tart Word	0 54	3210-
M <u>e</u> mory: Bits 15 - 0 1:9.0 1:9.1	Discrete	3 12 11	-] 10 9	Start Word	: 0 54	÷ 3210▲
Memory: Bits 15 - 0 1:9.0 1:9.1 1:9.2	Discrete 15 14 1:	3 12 11 3 2 12 11	] 10 9 02, DC	Start Word	5 4	3210 •
Memory: Bits 15 - 0 1:9.0 1:9.1 1:9.2 1:9.3	Discrete 15 14 1: 01,F	3 12 11 3 2-DEVNE	10 9 12, D0 TS (6 01,F	Start Word 876 DEVNETS 02 2-DEVNET	5 4 5 4 00-DE\ 5 (6)	3210 ×
Memory: Bits 15 - 0 1:9.0 1:9.1 1:9.2 1:9.3 1:9.4	Discrete	3 3 12 11 3 12 11 0 2-DEVNS	10 9 12, D0 15 (6 01,F	Start Word 8 7 6 DEVNETS 0 02 2-DEVNET	5 4 5 4 00-DE\ 5 (6) 1,F2-DE	3 2 1 0 • /NETS /NETS (6)
Memory: Bits 15 - 0 1:9.0 1:9.1 1:9.2 1:9.3 1:9.4 1:9.5	Discrete	3 3 12 11 3 12 11 0 2-DEVNB	10 9 12, D0 T5 (6 01,F	Start Word	0 54 00-DE\ 5(6) 1,F2-DE	3 2 1 0 • /NETS VNETS (6)
Memory: Bits 15 - 0 1:9.0 1:9.1 1:9.2 1:9.3 1:9.4 1:9.5 1:9.6 1:9.6	Discrete	3 12 11 3 2-DEVN8	10 9 12, D0 75 (6 01,F	Start Word	5 4 5 4 00-DE\ 5 (6) 1,F2-DE	3 2 1 0 • /NETS /NETS (6)

# Appendix D RSNetWorx Setup

D–16

Now, map the outputs just the way you mapped the inputs. This time:

1. Click the **Output** tab in the properties window.

Be sure that F2–DEVNETS is selected.

2. Select **Discrete** for **Memory**, and **0** for **Start Word**.

3. Click AutoMap.

At the completion of the output AutoMapping, the window will appear like this example. The F2–DEVNETS node is now shown.

01, F2-D	EVNETS Polled 4 No	And a second sec
	LVINETO TOICO 4 INO	
<b>20</b> 02, D0-D	EVNETS Polled 3 1:9.1.0	Unmap
		Advanced
		Options
epicers (* 19		
Memory:	Discrete Start Word: C	
BI(\$ 10+0	15 14 13 12 11 10 5 8 7 6 5	4 3 2 1 0
0:91	02 D0-DEVNETS	
0:9.2	02 DO-DEVNETS	And the second second second
0:9.3		
0:9.4	and the second	and the second
0:9.5	and a second	in the second second second
n.o.c		and the second second
0.3.0		
J:9.4 D:9.5		

1747-SDN S	canner Module (3)	**************************************
General   Modu	le Scanlist Input Output ADR	Summary
Node		Auto <u>M</u> ap
01, F2-DE	WHETS Polled 4 1928 EVNETS Polled 3 1:9.1.0	Unmap
		A <u>d</u> vanced
		Options
M <u>e</u> mory:	Discrete <u>S</u> tart Word: 0	
Bits 15 - 0	15 14 13 12 11 10 9 8 7 6 5 4	4 3 2 1 0 -
0:9.0	Read-Only	
0:3.1	02, D0-DEVNETS	
0:9.3	01 E2-DEVNETS (6)	
0:9.4	01,F2-DEVNETS (6)	
0:9.5	01,F2-DEVNETS (6)	
0:9.6	Construction and the second	weiter and the second
0:9.7		
1 0:9.8		
	OK Cancel Apply	y Help

Appendix D RSNetWorx Setup

D-

Download the scanlist to the scanner.

- 1. Select the **Scanlist** tab in the properties window.
- 2. Select <u>D</u>ownload to Scanner.

In the pop-up window:

- 3. Check All Records, then
- 4. Click Download.

e Fig New Deproy Davice Took Heb	1747-SDN Scapper Module (3)
2 6 · 2 8 · · · · · · · ·	Constants Sense los dans long
- Q   1 9 & 3 I	denseal woone occase labor   ontex   you   sourcey
ardware al actioned F2-06	Available Devices: Scanist
Convolved Convolved	Convertised Scouter from Scounce     Convertised Scouter from Scounce     Convertised     Convertised



Note: Verify that the processor is in program mode before downloading the scanlist.

This is an error message that may appear.

Scanner Configuration Applet	×
The processor is in Run Mode!	
OK I	

When the download indication ends, download is complete.

Downloading to	Scanner	X
Download	ling Scanlist Node 2	
	Cancel	

Service Class Instance Attribute Use the Service Class Instance Attribute Editor to set the I/O to read and write to the F2 –DEVNETS.

1. Select the F2–DEVNETS node. Either click on

#### <u>D</u>evice

or right click on the node symbol in theRSNetWorx window.

2. Select Class Instance Editor in the pop-up window.

이 역 📄 탄 🐺 - 삶 🔟 🎽	1717 0011			
Constant     Constant	Contraction of the second seco	COLEMENTS TIKEDEMENTS      COLEMENTS TIKEDEMENTS      COLEMENTS      COLEMEN	DatX CtesC 2197 Del Device on Editor	
,	T T P P ( unapri ) apressar			
Assage Code Description 2000000B Node 00: The scanner 2000000B Node 00: The scanner	may be unavailable for 5-10 may be unavailable for 5-10	I seconds while updating Flash memory. I seconds while updating Flash memory.		8

3. Setup input attributes in this window.

**Object Address** must be set to: **Class** = 5, **Instance** = 2, **Attribute** = 7

<u>Size</u> = Word (2 bytes).

4. Click on **Execute**. Read the data here.

Service Code	Dbject Address	Attribute:
Value Description Get Single Attribute		7
Transmit Data Size:	Data sent to the device:	
	Values in <u>d</u> ecimal	Execute
Receive Data	a received from the device:	
Word (2 bytes) 4 Badix:		
Decimal		

RSNetWorx<sup>™</sup> Setup

5. Setup output attributes in this window.

**Object Address** must be set to:

Class = 5, Instance = 2, Attribute = 8

<u>Size</u> = Word (2 bytes).

6. Click on **Execute**. Read the data here.

Service Class Instance A	Attribute Editor - [Node 1]	?
F2-DEVNETS		
Execute Transaction Argume Service Code Value Description Get Single Attrib	ute	ce: <u>Attribute</u> :
Iransmit Data Size:	Data sent to the device:	
	Values in <u>d</u> ecimal	Execute
Receive Data	Asta respired from the devices	
Word (2 bytes)	4	
Radix: Decimal		
	Close	e Help

# F2–DEVNETS Compatibility Mode

In This Appendix....

— Configuring the F2-DEVNETS-1 for F2-DEVNETS

# Configuring for F2–DEVNETS Compatibility Mode

The F2–DEVNETS–1 module can replace a F2–DEVNETS module if the need arises. The F2–DEVNETS–1 can be configured to look and act like a F2–DEVNETS to the DeviceNet Master. This mode is not recommended for new applications.

- 1. Install both Baud Rate jumpers and Address 1 jumper only. Reinstall the module and power up.
- 2. The MS and NS LEDs flash red and green while powered up.
- 3. Power down and set the Baud Rate and the Address for the application, then power up.
- 4. The following message will be printed out of the F2–DEVNETS–1 serial port, indicating backwards compatibility mode is selected:

F2–DEVNETS–1 MACID–02 CAN Baud Rate=125K V3.1 ROM 08/20/2002 FLASH 08/21/2002 Backward Compatibility with F2–DEVNETS

## Configuring for F2–DEVNETS–1 Mode (Factory Default Mode)

- 1. Install both Baud Rate jumpers and leave the Address jumpers off, then install the module and power up.
- 2. The MS and NS LEDs flash red and green while powered up.
- 3. Power down and set the Baud Rate and Address for the application. Reinstall the module and power up.
- 4. The following message will be printed out of the F2–DEVNETS–1 serial port, indicating default mode:

#### F2-DEVNETS-1 MACID-02 CAN Baud Rate=125K V3.1 ROM 08/20/2002 FLASH 08/21/2002

#### **Connector Cross Reference**

#### F2–DEVNETS

- Pin Description
- 5 V+ (Bus power positive)
- 4 Ground (Bus power common)
- 3 CAN\_H
- 2 CAN\_L
- 1 Shield

#### F2-DEVNETS-1



- ) V+ (red)
- ) CAN\* High (white)
- ) Shield (bare)
- ) CAN\* Low (blue)
- V– (black)
- \* Controller Area Network (CAN)

Appendix E

### I/O Module Table

Module Type	Part Number	ID Code	F2–DEVNE	TS–1 Mode	F2-DEVNETs Mo	Compatibility de	]
		(Hex)	Bytes Produced	Bytes Consumed	Bytes Produced	Bytes Consumed	
Discrete Inputs	F2-08SIM D2-08ND3 D2-16ND3-2 D2-32ND3 D2-08NA-1 D2-08NA-2 D2-16NA	14 14 08 05 14 14 08	1 1 2 4 1 1 2	0 0 0 0 0 0 0 0	1 1 2 4 1 1 2	0 0 0 0 0 0 0 0	=
Discrete Inputs	D2-04TD1 D2-08TD1 D2-16TD1-2 D2-16TD2-2 D2-32TD1 D2-08TA F2-08TA D2-12TA D2-04TRS D2-08TR F2-08TR F2-08TRS D2-12TR	0A 13 06 0F 13 13 06 0A 13 13 13 06	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 2 2 4 1 1 2 1 1 1 1 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 2 2 4 1 1 2 1 1 1 1 2	F2-D Compat
Discrete Combo	D2-08CDR	1	1	1	1	1	DEVN
Analog In	F2-04AD-1(L) F2-04AD-2(L) F2-08AD-1 F2-08AD-2	03 03 01 01	8 8 16 16	0 0 0 0	2 2 2 2	0 0 0 0	· Mode
Temperature In	F2–04RTD F2–04THM	16 16	9 9	0 0	3 3	0 0	
Analog Out	F2-02DA-1(L) F2-02DA-2(L) F2-02DAS-1 F2-02DAS-2 F2-08DA-1 F2-08DA-2	04 04 17 17 16 16	0 0 0 0 0 0	4 4 4 16 16	0 0 0 0 0 0	2 2 4 4 2 2	
Analog Combo	F2–4AD2DA	02	8	4	2	2	

Modules not supported: F2–CP128 H2–CTRIO, H2–ERM (–F), H2–ECOM (–F) D2–DCM, D2–CTRINT, D2–RMSM

### F2–DEVNETS Compatibility Mode

### **DEVICENET GROUP2 ONLY EXPLICIT MESSAGES**

These are used to allocate/release the connection between the master and its slave.

#### **DEVICENET COMMANDS**

The following list identifies the data being transferred. When **GET** is alone in the **SERVICE** column, either indicates the item is fixed and cannot change or that the sestem sets the item to reflect the system processing characteristics.

SET indicates the user can midify the item.

Unless indicated otherwise, all data is given in HEX format. Single numbers shall be considered zero filled and right justified.

ATTR	INSTANCE	ITEM	VALUE	DESCRIPTION	SERVICE
1	1	VENDOR ID	157d	FACTS Engineering	GET
2	1	PRODUCT TYPE	0	General Purpose I/O Device	GET
3	1	PRODUCT CODE	20d	Vendor Assigned Product Code	GET
4	1	REVISION MAJOR.MINOR	3.1	Released Product Version	GET
5	1	ID STATUS	1	Current Status of Entire Device	GET
6	1	SERIAL NUMBER	XXXX	4–Digit Vendor Assigned	GET
7	1	PRODUCT NAME	F2-DEVNETS	Vendor Assigned	GET
	1	RESET		Reset the Device	RESET

#### CLASS=1

#### CLASS=3

ATTR	INSTANCE	ITEM	VALUE	DESCRIPTION	SERVICE
1	1	MACID	0–63	MACID (Media Access Control ID)	GET
2	1	BAUD RATE	0–2	0=125K, 1=250K, 2-500K Baud	GET
3	1	BUS OFF INTERRUPT	Х	BUS-OFF INTERRUPT PROCESSING	GET
4	1	BUS OFF COUNT	Х	BUS-OFF COUNT	GET/SET
5	1	ALLOCATION	Х	EXPLICIT and I/O CONNECTIONS	GET

	1

ATTR	INSTANCE	ITEM	VALUE	DESCRIPTION	SERVICE		
3	1	I/O DATA	8 Bytes	Read Input Data (Produced)	GET / SET		
				Write Output Data (Consumed)			
3	2	CONFIG DATA	4 Bytes + 1 Word (16 Bits) for each occupied slot. Bytes 1–4 are always supplied. Other bytes are supplied when appropriate.		GET		
		BYTE 1	0–3F (63d)	MAC ID			
		BYTE 2	0–2	BAUD RATE			
		BYTE 3	0–8	SLOTS (0=Empty Rack)			
		BYTE 4	0-FFF	SLOTS FILLED (Bit 0=Slot 0, Bit 1=Slot 1, etc.)			
		BYTES 5/6	Bits 15–8 Bits 7–0	# Inputs # Outputs			
3	3	CONFIG DATA	8 Bytes	Configuration Data with the module ID for each occupied slot. 0FFH=Unoccupied	GET		
				Byte 1	ID of Module in Slot 0		
				Byte 2	ID of Module in Slot 1		
			Byte 3	ID of Module in Slot 2			
			Byte 4	ID of Module in Slot 3		Cor E .	
			Byte 5	ID of Module in Slot 4		App 2–C	
			Byte 6	ID of Module in Slot 5		oena DEV tibil	
			Byte 7	ID of Module in Slot 6		lity	
			Byte 8	ID of Module in Slot 7		TS	
3	4	PRODUCED DATA	0–0FFFFH	4 Channels (8 Bytes) of Analog Inputs (1st 4 of last 8 Analog Inputs in Base)	GET	de	
3	5	PRODUCED DATA	0–0FFFFH	4 Channels (8 Bytes) of Analog Inputs (2nd 4 of last 8 Analog Inputs in Base)	GET		
3	6	PRODUCED DATA	0–0FFFFH	4 Channels (8 Bytes) of RTD/THM Iputs	GET		

#### CLASS=5

ATTR	INSTANCE 1=EXPLICIT 2=POLLING	ITEM	VALUE	DESCRIPTION	SERVICE
1	1/2	CNXN ATTR STATE	Х	0=None, 1=Configuring, 2=Waiting, 3=Connected, 4=Timed–Out	GET
2	1/2	CONNECT TYPE	Х	0=Explicit 1=I/O	GET
3	1/2	CONNECT TRIGGER	х	083H Explicit 082H I/O	GET
4	1/2	CONNECT PRODUCED	Х	Connection ID that will produceFFFF if no production	GET
5	1/2	CONNECT CONSUMED	х	Connection ID that will produceFFFF if no consumption	GET
6	1/2	CONNECT COMM ID	021h	MSG Group2 Consuming	GET
7	1/2	PRODUCED CONNECTION SIZE	Х	8 Bytes of Non–Fragmented I/O Data Up to 10 Bytes Fragmented Explicit Messaging	GET
8	1/2	CONSUMED CONNECTION SIZE	Х	8 Bytes of Non–Fragmented I/O Data Up to 10 Bytes Fragmented Explicit Messaging	GET
9 (see Note)	1/2	CONNECT EXPECTED PACKET RATE	Х	Number of Milliseconds	GET/SET
0C	1/2	CONNECT WD TIMEOUT	Х	Watch–Dog Time–Out Action Reset Device	GET
0D	1/2	CONNECT PATH LENGTH	Х	0 for Explicit 6 for I/O	GET
0E	1/2	CONNECT PATH LENGTH	Х	0 for Explicit 6 Bytes for I/O	GET
0F	1/2	CONNECT CONSUMED PATH LENGTH	Х	0 for Explicit 6 for I/O	GET
10	1/2	CONNECT CONSUMED ATTR ID	0/STRING	0 for Explicit 6 Bytes for I/O	GET
11	1/2	PROD INHIBIT	Х		GET
	1/2	RESET		Start Inactivity Timer	RESET

**Note:** The F2–DEVNETS has an internal timer that can be set to timeout after a selected number of milliseconds. If there is no activity during the selected time value the connection will release. When this timer is set to zero the connection will not timeout.

Since the operation depends on the controlling actions of a Master CPU existing externally on the network, there is no none reason to allow the connection to timeout. To keep the connection(s) open, simply set the Expected Packet Rate value for each of the connections to zero.

All outputs will turn off when the connection is released. This will occur when an Expected Packet Rate value counts down to zero or when the master releases the connection. This is a fixed condition and cannot be modified.