1782-JDP
DeviceNet™ / PAMUX
User's Manual

Western Reserve Controls, Inc.

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1 Overview

The 1782-JDP remote I/O device acts as a "gateway" between DeviceNet™ and Pamux™ discrete I/O systems. The 1782-JDP supports serial communications on a DeviceNet™ communications link and can be DIN-mounted or panel-mounted.

The 1782-JDP will support 2 Pamux™ B4 or B5 brainboards, one on each 50 pin connector. Using 2 B4 brainboards yields 64 discrete I/O points of control. This also allows in-service systems to be upgraded with devicenet, without redesigning the discrete control sections that use Pamux™ systems.

The 1782-JDP is designed as a Group 2 Only Server on the DeviceNet system and its I/O is read by and written from a DeviceNet Master. The 1782-JDP supports the Predefined Master/Slave Explicit Message Connection, Polled I/O, Cyclic I/O, and Change-of-State (COS).

The device address and data rate can be changed via software configuration or by on-board rotary switches. Other parameters are software-configurable and are changed from their default values by a third-party configuration tool. Each 1782-JDP has 2 green/red LED's - one for module status and one for network status.

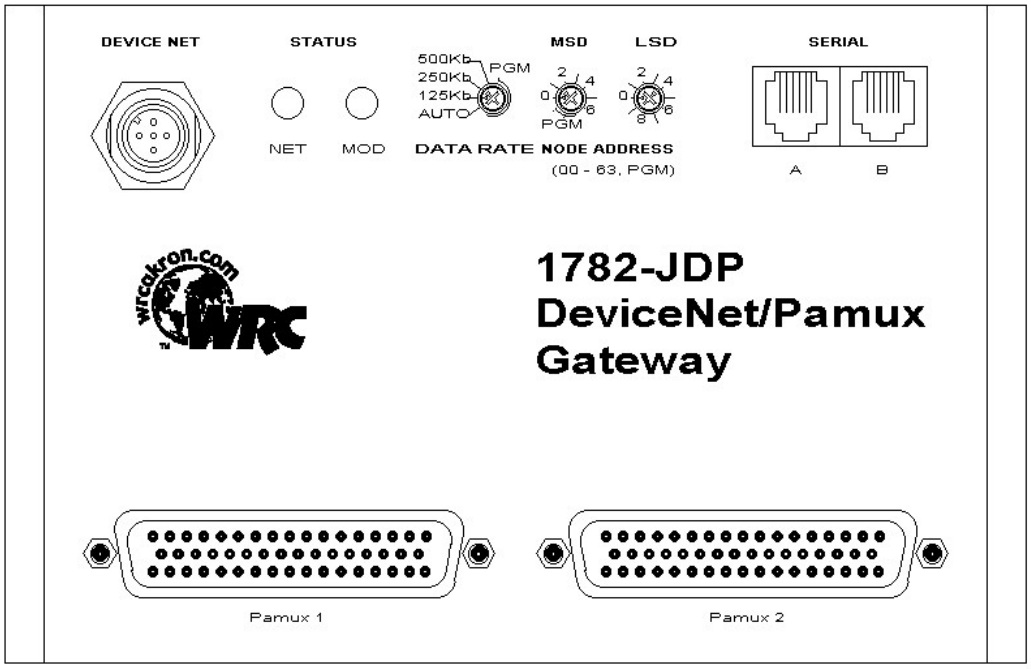

Figure 1-1 Front Panel

1.1 Features

The 1782-JDP has the following features:

- DeviceNet compatible
- Quick Retro-fit for already exisistant Pamux installations
- Each 50 pin connector can handle 1 B4 or 1 B5 Brainboard.
- Up to 2 B4 or B5 Brainboards of Discrete Input/Output Signals
- Mix-and-match module types
- Uses 8-, or 16- or 24-, or 32 channel mounting boards
- 4000V Isolation typical (provided by the modules)
- Multiple I/O Message Data Options:
- Polled I/O
- Cyclic Inputs
- Change of State Inputs
- Software Configurable Parameters
- Address and Baud Rate set via software or hardware switches
- DIN rail mount
- Metal enclosure
- Round, micro-style DeviceNet connection
- Isolated DeviceNet connection
- JDP powered from DeviceNet network
- Discrete I/O control signals powered from a Pamux power supply

1.2 DeviceNet System Architecture

A DeviceNet network is a distributed I/O system that may contain many different products from several different vendors. Products may be configured uniformly, as clusters or as distributed clusters. Up to 64 devices, including the master, may be attached to a single DeviceNet network. Any of these, except the master, may be a JDP. A typical system will include a master, such as a PLC or industrial PC, and multiple slave I/O devices.

1.3 I/O System Configuration and Design Notes

The 1782-JDP is the communications interface for 1 or 2 Pamux™ I/O nodes. To implement a full I/O node with the JDP you need some or all of the following system elements.

- 1782-JDP
- 1 or 2 Pamux™ B4 or B5 Brainboards
- Discrete I/O Pamux™ mounting board(s)
- Discrete I/O signal conditioning module(s)
- Discrete board-to-JDP ribbon cable(s)
- Power for field signals

1.4 Basic Operation – I/O Messaging

The JDP operates as a discrete I/O and serial I/O device on the DeviceNet network. It is a slave device that can be assigned (allocated) by the system implementer to one specific master. The DeviceNet Master can send and receive data to and from the JDP via the several methods described in this section. I/O methods are:

Table 1-1 I/O Message Options

I/O Type	Polled	Cyclic	Change of State
Discrete Inputs	√	√	√
Discrete Outputs	√		

1.5 Polled I/O

The master can explicitly poll (interrogate) the discrete input data from the JDP. The communications is a two-part transaction: there is a Poll Command from the host (with or without data) to the JDP and the JDP responds with a Poll Response. When a poll command is received, **all** input data are transmitted from the JDP to the host. The data is returned in the following order:

- Up to 4 bytes (32 points) of discrete input data from connector 1
- Up to 4 bytes (32 points) of discrete input data from connector 2

Discrete inputs (DI's) will be returned as a one or zero (1 or 0), one bit per channel, 8 channels of data in each byte. Discrete channels configured as outputs will always have zeros returned as data.

If the Poll Command contains data, the JDP will accept the data and send the data to the proper PAMUX brainboard. Output data sent to a module position that is configured as an input will be masked off.

1.5.1 Cyclic Input Message

Cyclic I/O is the function by which a slave device sends *all* its input data to the master at a specific time period without the host explicitly requesting it. When the specified time interval (defined by you) elapses, all input data (all input channels) are transmitted to the master in the same format as a polled response. This time period is specified by writing the COS/CYCLIC connection's EPR value (in milliseconds). When 4 times the specified milliseconds has elapsed, a poll response message will be sent by the JDP.

1.5.2 Change-of-State Input Message

Change-of-State (COS) behavior is similar to cyclic I/O in that the slave device will send *all* its input data to the master without the host explicitly requesting it. A COS message is sent when a selected user-defined input channel changes value. A COS message looks like a poll response. If *no* COS event occures within the EPR time, a COS message will be sent as in CYCLIC mode. Channel selection is set through the parameter object, discussed in Section 6.2.

1.6 Default Device Configuration

All parameters are set to the values given in Table 6-6 Configuration Parameters. DeviceNet address and baud rate will be read from the switches.

1.7 EDS File

An Electronic Data Sheets (EDS), which describes the various parameters of the specific version of the JDP, is shipped with your device or is available on WRC's website:

http://www.wrcakron.com

2 Using This Manual

This manual serves to help the user to understand the capabilities of the 1782-JDP, how to install and configure an I/O subsystem using these products, and how to generate the commands from the system host to read data from or write data to the JDP.

Section 3 describes how to quickly connect your JDP and get it up and running on the DeviceNet link.

Section 4 provides the technical specifications.

Section 5 describes the installation of the hardware, including mounting, connection to other I/O subsystem components, power requirements and configuration of the operating parameters of the JDP.

Section 6 describes the DeviceNet Profile and DeviceNet Object data for these products.

Section 7 lists common accessories that are used with the JDP.

Section 8 provides some troubleshooting hints in the event your JDP or I/O system is not operating as anticipated.

3 Quick Start

To quickly and easily install your JDP in your DeviceNet system, follow the instructions below. For more details, see Section 5.

3.1 To Install and DeviceNet Establish Communications

1. Make sure that the DeviceNet network is terminated properly.
2. Make sure that there is power on the DeviceNet network.
3. Connect your DeviceNet cable to the JDP using the 5-pin round, female micro plug, using the DeviceNet cable wiring specifications. (See Figure 5-2 and Table 5-5 DeviceNet Connector, Section 5.6 Network Configuration).
4. The JDP will undergo its initialization sequence, flashing both LED's red and green. After approximately 5 seconds, the Module Status LED (labeled "MS") will go on solid green and network LED will flash green.
5. The green Network Status LED (labeled "NS") will go on solid after the Master recognizes the unit on the link and allocates the connection.
6. The JDP is now operating on the network.

3.2 To Configure the Node Address

The Node Address (MacID) is set to 63 at the factory.

3.2.1 Using the hardware switches

Set the 2 address rotary switches to the decimal number representing the desired Node Address, 0-63. (Address 0 is often reserved for a Master device.)

3.2.2 Via software configuration:

After initialization at the factory default of 63, Set the address switches to any number > 63, then use your software configuration tool to set the address.

Note: *If you change the device address via software, the JDP will reset and immediately assume the new address. If you change the address via hard switches, the new address will not become effective until the unit is power cycled or a Reset command is received from the Master.*

3.3 To Configure the Baud Rate

The Baudrate is set to 125k at the factory.

3.3.1 Using the hardware switches

Set the rotary switch to 125k, 250k or 500k

3.3.2 Via software

Set the switch to position PGM to define the baud rate as software selectable

Note: If you change the baud rate via either software or switches, the new baud rate will **not** become effective until the unit is power cycled or a Reset command is received from the Master.

3.4 Installation

Warning: Do not insert or remove I/O modules, or the Pamux connectors under power. You may damage the modules or the JDP and unpredictable operation may occur.

- Remove power from the JDP and connect the ribbon cable(s) from the Brainboard I/O Card to the 50 pin connector(s) on the JDP using the included 50 conductor ribbon cables.
- Install appropriate I/O modules in the I/O card.
- Connect the 5 Vdc power leads to the Brainboard I/O board.
- Setup the master's scan table with either 2,4,6,or 8 bytes size, depending on the Brainboard configuration.
- Apply power to the JDP and the I/O board.

3.5 Read Discrete Input Data

- Allocate an explicit connection and a poll connection.
- Send a poll command to the JDP
- Read the poll response.

3.6 Write Discrete Output Data

- Follow the procedures from the previous section on Reading Discrete Inputs
- Select the appropriate channels to be outputs via your DeviceNet configuration tool by setting one bit per desired output channel in Parameters 6-11. Any discrete channel can be selected to be an output.
- Perform a poll function and send data to the JDP by inserting data into the first 3 or 6 bytes of the Poll command or by the values in the Master's defined output table.
- The LED's on the mounting board reflect the state of the commanded signal – energized is 1 and the LED is ON, and de-energized is 0 and the LED is OFF. A DO module must be present in the position in order for the LED to illuminate.

4 General Specifications

Product: 1782-JDP DeviceNet to Pamux Gateway

Description: Remote gateway, compatible with ODVA's DeviceNet protocol for discrete I/O signals using Pamux Discrete Brainboard + I/O Boards.

Device Type: Generic Device ($0x00_{hex}$)

Product Revision: 1.00

DeviceNet Conformance: Designed to conform to the ODVA DeviceNet Specification Volume I and II, Version 2.0.

Communications: Predefined Master/Slave Connection Set, Group 2 Only Server

Baud rate: 125k, 250, 500k - software or switch selectable (default = 125k)

Address selection: Address number 0 to 63, software or switch selectable (default = 63)

DeviceNet Connection:

JDP: 5-pin round micro-style connector (male pins)
Lumberg p/n RSWF5 or equivalent

DeviceNet Cable: 5-pin round micro-style connector (female contacts)
(user-supplied)

Status Indicators: Module Status: green/red bi-color LED
Network Status: green/red bi-color LED

Network Isolation: 2500V

Max Power: 2.9 watts: 0.26 A @ 11 Vdc – 0.12 A @ 25 Vdc unregulated power supply

Discrete Inputs: Up to 2 Brainboards with Discrete Input modules any channel position
refresh rate <2 msec for all inputs

Discrete Outputs: Up to 2 Brainboards with Discrete Output modules, any channel position
refresh rate <2 msec for all outputs

I/O Isolation: Provided by I/O modules (4000V typical discrete)

I/O Connections: Pamux: 1 or 2, 50-pin D-shell connectors

Mounting: DIN rail mount, EN 50022

Size:	Length:	6.00" (152 mm)
	Width:	4.15" (105 mm)
	Height:	2.60" (66 mm)
Operating Temp:	0-70 ºC	
Humidity:	0-95% RH, non-condensing	

5 Hardware Installation and Set-Up

5.1 Overview

A 1782-JDP I/O subsystem consists of a JDP gateway and one or two Pamux™ discrete I/O mounting boards. The JDP is mounted on an EN50022 DIN rail. The I/O module(s) plug into the appropriate brainboard assemblies and are secured by the captive hold-down screw in each module. Each brainboard assembly is connected to the gateway by ribbon cable.

The JDP accommodates all Pamux™ discrete I/O mounting boards with a B4 or B5 brainboard.

The JDP contains two LED's to indicate the status of the device and the status of the network. The device can be connected to the main DeviceNet trunk line or to a drop line via a round, 5-pin, sealed female micro-style connector.

All power for the JDP is derived from the DeviceNet power. The Pamux™ boards are powered by a separate supply.

5.2 LED Operation

A JDP gateway has two LED's that provide visual status information to the user about the product and the DeviceNet network. See Table 5-1 and Table 5-2 below.

Table 5-1 Module Status LED (labeled MS)

LED State	Module Status	Meaning
OFF	No Power	There is no power through DeviceNet.
Green	Device Operational	JDP is operating normally.
Flashing Green	Device in Standby	JDP needs commissioning.
Flashing Red	Minor Fault	Recoverable fault.
Red	Unrecoverable Fault	JDP may need replaced.
Flashing Red/Green	Device Self-Testing	JDP is in self-test mode.

Table 5-2 Network Status LED (labeled NS)

LED State	Module Status	Meaning
OFF	No Power / Not on-line	JDP has no power or has not completed the Dup_MAC_ID test.
Flashing Green	On-line, not connected	JDP is on-line but is not allocated to a Master.
Green	On-line	JDP is operating normally.
Flashing Red	Connection time-out	One or more I/O connections are timed out.
Red	Critical link failure	JDP has detected an error that makes it incapable of communicating on the link. (Bus off or Duplicate MAC ID).

5.3 Serial Connectors

The serial connectors on the JDP are only used for in-field firmware updates.

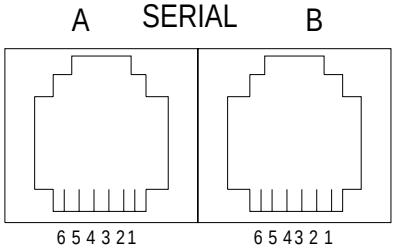

Figure 5-1 Serial Connectors Pin-out

Table 5-3 Serial A and Serial B Connectors, Rev. C and Later Product

Pin #	Signal
1	Ground
2	Receive
3	Transmit
4	Not used
5	Not used
6	Not used

5.4 Serial I/O Connections

The serial I/O devices are connected to the JDP via 6-wire phone cable and RJ-11 connector. The other end of the ribbon must have a connector which is appropriate for the serial device selected. See Section 7 for details.

5.5 Power Requirements

The JDP is powered from the 11-25 Vdc provided by the DeviceNet network. The JDP consumes 120 mA of current at 24 Vdc, or 2.9 Watts, typical.

5.5.1 Serial I/O Power

A user-supplied external power supply is required to operate the ASCII serial used with the JDP. Power requirements depend entirely upon the specifications of the device(s) selected.

5.6 Network Configuration

DeviceNet specifications provide for a maximum network distances for the main trunk line and drop lines, depending upon the baud rate used on the network. They are:

Table 5-4 Maximum Network Cable Lengths

	Trunk Line Length		Drop Length			
	Maximum Distance		Maximum		Cumulative	
Baud Rate	Meters	Feet	Meters	Feet	Meters	Feet
125k baud	500 m	1640 ft	6 m	20 ft	156 m	512 ft.
250k baud	250 m	820 ft	6 m	20 ft	78 m	256 ft.
500k baud	100 m	328 ft	6 m	20 ft	39 m	128 ft.

5.6.1 Network Termination

A DeviceNet system **must be terminated at each end of the trunk line**. The host controller and the **last** JDP or other DeviceNet device on the network must always be terminated to eliminate reflections, even if only two nodes are present. The DeviceNet specifications for the terminating resistor are:

- 121 ohm
- 1% metal film
- 1/4 Watt

An appropriate terminating resistor, WRC part number RM121DN, may be purchased from WRC.

Important: Per the DeviceNet spec -- do not terminate devices on drop lines.

5.6.2 DeviceNet Connection Wiring

The 1782-JDP uses a "micro-style" round DeviceNet connector which has male pins.

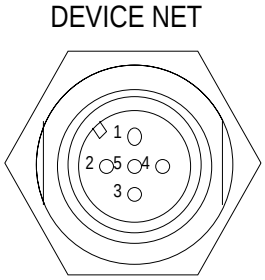

Figure 5-2 DeviceNet Connector

Table 5-5 DeviceNet Connector

Pin #	Signal
1	1MΩ to shield
2	+24 V dc
3	V dc return
4	CAN_H
5	CAN_L

6 I/O Data and DeviceNet Profile

This section describes the DeviceNet Objects present in the 1782-JDP. The JDP conforms to a Type 7, General Purpose I/O Device.

Table 6-1 JDP Device Profile

Object	Class Code (dec. / hex)	Max # of Instances
Identity	01 / 0x01	1
Message Router	02 / 0x02	1
DeviceNet	03 / 0x03	1
Assembly	04 / 0x04	3
Connection	05 / 0x05	3
Parameter	15 / 0x0F	41
Acknowledge Handler	43 / 0x2B	1
Serial I/O	64 / 0x40	2
Pamux	110 / 0x6E	2

6.1 Assembly Object I/O Data Formats

The formats of the various I/O messages are described in this section.

6.1.1 Poll, COS and Cyclic Input Data

Discrete and Serial Input data is produced by the JDP and returned to the Master as a group for Poll and Cyclic messages. There is one basic type of input data – bit data for discrete data. The following table illustrates a general format, assuming 64 DI's receiving external device data.

The JDP will return a 0 (zero) value for any discrete channel position defined as an output.

6.1.2 Poll Output Data

Discrete and Serial Output data is sent as a group for Poll messages to the JDP, in a similar manner as described above for Poll Input Data. Data sent to any channel defined as an input will be ignored. A discrete output will turn ON if a 1 is received from the master and will turn OFF if a 0 is received.

Table 6-2 Poll Output Data Buffer Format (2xB4)

	Connector 1				Connector 2			
Byte	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Channel	0-7	8-15	16-23	24-31	0-7	8-15	16-23	24-31

Table 6-3 Poll Output Data Buffer Format (1xB4,1xB5)

	Connector 1				Connector 2	
Byte	**1**	**2**	**3**	**4**	**5**	**6**
Channel	0-7	8-15	16-23	24-31	0-7	8-15

Table 6-4 Poll Output Data Buffer Format (1xB5,1xB4)

	Connector 1		Connector 2			
Byte	**1**	**2**	**3**	**4**	**5**	**6**
Channel	0-7	8-15	0-7	8-15	16-23	24-31

Table 6-5 Poll Output Data Buffer Format (2xB5)

	Connector 1		Connector 2	
Byte	**1**	**2**	**3**	**4**
Channel	0-7	8-15	0-7	8-15

6.2 Device Configuration - Parameter Object, Class 0x0F

A JDP can be configured for MacID, baud rate, the type of I/O implemented and the fault and idle actions. The MacId is configured via hardware selection using the 2 rotary switches marked Address; or via software using a third party tool, or changing attribute 1 of the DeviceNet object (Class 3, Instance 1, Attribute 1) to a value between 0 and 63. Upon completion of this command the device will automatically reset and come on line at the new address.

The baud rate can be configured in the same manner, either with the hardware switch or via software. (The baud rate is Class 3, Instance 1 Attribute 2.) It can be set to values 0,1, or 2, corresponding to 125K, 250K, and 500K baud. The new baud rate will not take effect until the device is power cycled or reset over the network.

The type of I/O implemented, the output channels parameters and the serial port parameter are shown in Table 6-6 Configuration Parameters. Path Class, Instance, Attribute (C I A) shown in decimal.

Note: After changing the Brainboard I/O module type for either connector, the JDP ***must be power cycled or reset to cause the changes to take effect***.

Table 6-6 Configuration Parameters

Parameter Instance	Access Rule	Name	Parameter Choices	Default Setting	Default Value	Path C I A	Definition
1	Get/Set	Brainboard Type	0 = None 1 = B4 2 = B5	None	0	110, 1, 1	Type of brainboard on conn 1
2	Get/Set	Brainboard Address	0 to 63	0	0	110, 1, 2	Address of brainboard on conn 1
3	Get/Set	Reset Polarity	0 or 1	0	0	110. 1, 3	Reset polarity for brainboard on conn 1
4	Get/Set	Output Config Bank 0	0 = Input 1 = Output	All inputs	0	110, 1, 4	Output Configuration bits for Bank 0
5	Get/Set	Output Config Bank 1	0 = Input 1 = Output	All inputs	0	110, 1, 5	Output Configuration bits for Bank 1
6	Get/Set	Output Config Bank 2	0 = Input 1 = Output	All inputs	0	110, 1, 6	Output Configuration bits for Bank 2
7	Get/Set	Output Config Bank 3	0 = Input 1 = Output	All inputs	0	110, 1, 7	Output Configuration bits for Bank 3
8	Get	Channels	NA	NA	NA	110, 1, 8	Number of channels on connector 1
9	Get/Set	COS enable Bank 0	0 = Input 1 = Output	All disabled	0	15, 12, 1	Enable COS for inputs from Bank 0
10	Get/Set	COS enable Bank 1	0 = Input 1 = Output	All disabled	0	15, 13, 1	Enable COS for inputs from Bank 1
11	Get/Set	COS enable Bank 2	0 = Input 1 = Output	All disabled	0	15, 14, 1	Enable COS for inputs from Bank 2
12	Get/Set	COS enable Bank 3	0 = Input 1 = Output	All disabled	0	15, 15, 1	Enable COS for inputs from Bank 3
13	Get/Set	Output Fault Action for Bank 0	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 20, 1	Output Fault Action for Bank 0
14	Get/Set	Output Fault Action for Bank 1	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 21, 1	Output Fault Action for Bank 1
15	Get/Set	Output Fault Action for Bank 2	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 22, 1	Output Fault Action for Bank 2
16	Get/Set	Output Fault Action for Bank 3	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 23, 1	Output Fault Action for Bank 3
17	Get/Set	Output Fault Value for Bank 0	0 = Output off 1 = Output on	All Off	0	15, 28, 1	Output Fault Value for Bank 0
18	Get/Set	Output Fault Value for Bank 1	0 = Output off 1 = Output on	All Off	0	15, 29, 1	Output Fault Value for Bank 1
19	Get/Set	Output Fault Value for Bank 2	0 = Output off 1 = Output on	All Off	0	15, 30, 1	Output Fault Value for Bank 2
20	Get/Set	Output Fault Value for Bank 3	0 = Output off 1 = Output on	All Off	0	15, 31, 1	Output Fault Value for Bank 3
21	Get/Set	Output Idle Action for Bank 0	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 36, 1	Output Idle Action for Bank 0

22	Get/Set	Output Idle Action for Bank 1	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 37, 1	Output Idle Action for Bank 1
23	Get/Set	Output Idle Action for Bank 2	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 38, 1	Output Idle Action for Bank 2
24	Get/Set	Output Idle Action for Bank 3	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 39, 1	Output Idle Action for Bank 3
25	Get/Set	Output Idle Value for Bank 0	0 = Output off 1 = Output on	All Off	0	15, 44, 1	Output Idle Value for Bank 0
26	Get/Set	Output Idle Value for Bank 1	0 = Output off 1 = Output on	All Off	0	15, 45, 1	Output Idle Value for Bank 0
27	Get/Set	Output Idle Value for Bank 2	0 = Output off 1 = Output on	All Off	0	15, 46, 1	Output Idle Value for Bank 0
28	Get/Set	Output Idle Value for Bank 3	0 = Output off 1 = Output on	All Off	0	15, 47, 1	Output Idle Value for Bank 0
29	Get/Set	Brainboard Type	0 = None 1 = B4 2 = B5	None	0	110, 2, 1	Type of brainboard on conn 2
30	Get/Set	Brainboard Address	0 to 63	0	0	110, 2, 2	Address of brainboard on conn 2
31	Get/Set	Reset Polarity	0 or 1	0	0	110. 2, 3	Reset polarity for brainboard on conn 2
32	Get/Set	Output Config Bank 0	0 = Input 1 = Output	All inputs	0	110, 2, 4	Output Configuration bits for Bank 0
33	Get/Set	Output Config Bank 1	0 = Input 1 = Output	All inputs	0	110, 2, 5	Output Configuration bits for Bank 1
34	Get/Set	Output Config Bank 2	0 = Input 1 = Output	All inputs	0	110, 2, 6	Output Configuration bits for Bank 2
35	Get/Set	Output Config Bank 3	0 = Input 1 = Output	All inputs	0	110, 2, 7	Output Configuration bits for Bank 3
36	Get	Channels	NA	NA	NA	110, 2, 8	Number of channels on connector 1
37	Get/Set	COS enable Bank 0	0 = Input 1 = Output	All disabled	0	15, 16, 1	Enable COS for inputs from Bank 0
38	Get/Set	COS enable Bank 1	0 = Input 1 = Output	All disabled	0	15, 17, 1	Enable COS for inputs from Bank 1
39	Get/Set	COS enable Bank 2	0 = Input 1 = Output	All disabled	0	15, 18, 1	Enable COS for inputs from Bank 2
40	Get/Set	COS enable Bank 3	0 = Input 1 = Output	All disabled	0	15, 19, 1	Enable COS for inputs from Bank 3
41	Get/Set	Output Fault Action for Bank 0	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 24, 1	Output Fault Action for Bank 0
42	Get/Set	Output Fault Action for Bank 1	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 25, 1	Output Fault Action for Bank 1
43	Get/Set	Output Fault Action for Bank 2	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 26, 1	Output Fault Action for Bank 2

44	Get/Set	Output Fault Action for Bank 3	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 27, 1	Output Fault Action for Bank 3
45	Get/Set	Output Fault Value for Bank 0	0 = Output off 1 = Output on	All Off	0	15, 32, 1	Output Fault Value for Bank 0
46	Get/Set	Output Fault Value for Bank 1	0 = Output off 1 = Output on	All Off	0	15, 33, 1	Output Fault Value for Bank 1
47	Get/Set	Output Fault Value for Bank 2	0 = Output off 1 = Output on	All Off	0	15, 34, 1	Output Fault Value for Bank 2
48	Get/Set	Output Fault Value for Bank 3	0 = Output off 1 = Output on	All Off	0	15, 35, 1	Output Fault Value for Bank 3
49	Get/Set	Output Idle Action for Bank 0	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 40, 1	Output Idle Action for Bank 0
50	Get/Set	Output Idle Action for Bank 1	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 41, 1	Output Idle Action for Bank 1
51	Get/Set	Output Idle Action for Bank 2	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 42, 1	Output Idle Action for Bank 2
52	Get/Set	Output Idle Action for Bank 3	0 = Use Fault Value 1 = Hold Last State	All use fault value	0	15, 43, 1	Output Idle Action for Bank 3
53	Get/Set	Output Idle Value for Bank 0	0 = Output off 1 = Output on	All Off	0	15, 48, 1	Output Idle Value for Bank 0
54	Get/Set	Output Idle Value for Bank 1	0 = Output off 1 = Output on	All Off	0	15, 49, 1	Output Idle Value for Bank 0
55	Get/Set	Output Idle Value for Bank 2	0 = Output off 1 = Output on	All Off	0	15, 50, 1	Output Idle Value for Bank 0
56	Get/Set	Output Idle Value for Bank 3	0 = Output off 1 = Output on	All Off	0	15, 51, 1	Output Idle Value for Bank 0
57	Get/Set	Download Mode	0 = Disabled 1 = Port A Enabled 2 = Port B Enabled	Disabled	0	15, 52, 1	Place JDP into code download mode

6.3 Identity Object - Class 01 hex

The following defines the Identity Object format for the JDP.

Table 6-7 Identity Object Class Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	Revision	UINT	Revision of this object	1
2	Get	Max. Object Instance	UINT	Maximum instance number of an object currently	1
6	Get	Max. Class Attribute ID	UINT	Attribute ID number of the last class attribute of the class definition implemented in the device	7
7	Get	Max. Instance Attributes ID	UINT	Attribute ID number of the last instance attribute of the class definition implemented in the device	1

Table 6-8 Identity Object Instance Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	Vendor	UINT	ODVA Vendor Number for this product	9
2	Get	Device Type	UINT	ODVA General Device Type	0
3	Set	Product Code	UINT	WRC Unique Product Code Number	
4	Get	Revision	STRUCT of:	Revision of this device	
		Major Revision	USINT		
		Minor Revision	USINT		
5	Get	Status	WORD	Summary status of device	
6	Get	Serial Number	UDINT	WRC Unique Device Serial Number	
7	Get	Product Name	SHORT_STRING	ASCII Name of product	
8*	Get	State	USINT	Present state of device	
9*	Get	Configuration Consistency Value	UINT	Contents identify configuration of device	
10*	Get/Set	Heartbeat Interval	USINT	The nominal time between heartbeat messages in seconds.	

* Not currently implemented

Table 6-9 Identity Object Common Services

Service Code	Class	Instance	Service Name	Description of Service
$O5_{hex}$		Yes	Reset	Invokes the Reset Service for the device.
OE_{hex}	Yes	Yes	Get_Attribute_Single	Returns the contents of the specified attribute.
10_{hex}	N/A	No	Set_Attribute_Single	Modifies an attribute value.

6.4 Message Router Object, Class 0x02

Table 6-10 Message Router Class Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	Revision	UINT	Revision of this object	2
2	Get	Max Instance	UINT	Maximum instance number of an object currently created in this class level of the JDP	1
6	Get	Max ID Number of Class Attributes	UINT	The attribute ID number of the last class attribute of the class definition implemented in the JDP	7
7	Get	Max ID Number of Instance Attributes	UINT	The attribute ID number of the last instance attribute of the class definition implemented in the JDP	

Table 6-11 Message Router Instance Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
None supported					

Table 6-12 Message Router Common Services

Service Code	Class	Instance	Service Name	Description of Service
OE_{hex}	Get	1	Get_Attribute_Single	Returns the contents of the specified attribute.

6.5 DeviceNet Object, Class 0x03

Table 6 -6-13 DeviceNet Class Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	Revision	UINT	Revision of this object	2
2	Get	Max Instance	UINT	Maximum instance number of an object currently created in this class level of the JDXX.	Xx
6	Get	Max ID Number of Class Attributes	UINT	The attribute ID number of the last class attribute of the class definition implemented in the JDXX.	7
7	Get	Max ID Number of Instance Attributes	UINT	The attribute ID number of the last instance attribute of the class definition implemented in the JDXX.	3

Table 6-6-14 DeviceNet Instance Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get/Set	MacID	USINT	Device Address	0 - 63 (63 = default)
2	Get/Set	Baud Rate	USINT	Communications speed	0 = 125K (default) 1 = 250K 2 = 500k
3	Get	Bus Off Interrupt	BOOL	BOI action	0 = CAN chip held in reset, enter Communications Faulted state
4	Get	Bus Off Counter	USINT	Number of times the CAN chip went into the Bus-off state	0 = default
5	Get	Allocation		Device allocation information for Predefined Master/Slave Connection Set	
6	Get	Allocation Choice Byte	BYTE	Defines which connections are currently active	Bit 0 = explicit msg Bit 1 = poll Bit 2 = bit strobe Bit 4 = COS Bit 5 = cyclic Bit 6 = ACK suppression Bits 3, 7 = 0 (always)
7	Get	Master's MacID	USINT	MacID of the device which has allocated this device's predefined master/slave connection set	

Table 6 -6-15 DeviceNet Common Services

Service Code	Class	Instance	Service Name	Description of Service
OE_{hex}	Get	Get	Get_Attribute_Single	Returns the contents of the specified attribute.
10_{hex}	No	Yes	Set_Attribute_Single	Modifies an attribute value.

6.6 Connection Object, Class 0x05

Table 6-16 Connection Class Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	Revision	UINT	Revision of this object	2

Table 6-17 Connection Instance 1 Attributes – Explicit Message Connection

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	State	USINT	State of the object	
2	Get	Instance type	USINT	Indicates either I/O or Messaging connection	
3	Get	Transport class trigger	BYTE	Defines behavior of the connection	
4	Get	Produced connection ID	UINT	Placed in CAN ID field when the connection transmits	
5	Get	Consumed connection ID	UINT	CAN ID field that denotes message to be received	
6	Get	Initial communication characteristics	BYTE	Defines the message group across which production and consumption associated with this connection occur	
7	Get	Produced connection size	UINT	Max number of bytes transmitted across this connection	
8	Get	Consumed connection size	UINT	Max number of bytes received across this connection	
9	Get/Set	EPR	UINT	Expected packet rate defines I/O timing associated with this connection	
12	Get/Set	Watchdog timeout action	USINT	Defines how to handle the inactivity/watchdog timer	
13	Get/Set	Produced connection path length	EPATH	Number of bytes in the produced connection path	
14	Get/Set	Produced connection path	UINT	Specifies the application object whose data is to be produced by this connection object	
15	Get/Set	Consumed connection path length	EPATH	Number of bytes in the consumed connection path	
16	Get/Set	Consumed connection path	UINT	Specifies the application object whose data is to be consumed by this connection object	
17	Get/Set	Production inhibit time	UINT	Defines min time between new I/O data production.	

Table 6-18 Connection Instance 2 Attributes – Poll Connection

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	State	USINT	State of the object	
2	Get	Instance type	USINT	Indicates either I/O or Messaging connection	
3	Get	Transport class trigger	BYTE	Defines behavior of the connection	
4	Get	Produced connection ID	UINT	Placed in CAN ID field when the connection transmits	
5	Get	Consumed connection ID	UINT	CAN ID field that denotes message to be received	
6	Get	Initial communication characteristics	BYTE	Defines the message group across which production and consumption associated with this connection occur	
7	Get	Produced connection size	UINT	Max number of bytes transmitted across this connection	
8	Get	Consumed connection size	UINT	Max number of bytes received across this connection	
9	Get/Set	EPR	UINT	Expected packet rate defines I/O timing associated with this connection	
12	Get/Set	Watchdog timeout action	USINT	Defines how to handle the inactivity/watchdog timer	
13	Get/Set	Produced connection path length	EPATH	Number of bytes in the produced connection path	
14	Get/Set	Produced connection path	UINT	Specifies the application object whose data is to be produced by this connection object	
15	Get/Set	Consumed connection path length	EPATH	Number of bytes in the consumed connection path	
16	Get/Set	Consumed connection path	UINT	Specifies the application object whose data is to be consumed by this connection object	
17	Get/Set	Production inhibit time	UINT	Defines min time between new I/O data production.	

Table -6-19 Connection Instance 3 Attributes – Bit Strobe Connection

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	State	USINT	State of the object	
2	Get	Instance type	USINT	Indicates either I/O or Messaging connection	
3	Get	Transport class trigger	BYTE	Defines behavior of the connection	
4	Get	Produced connection ID	UINT	Placed in CAN ID field when the connection transmits	
5	Get	Consumed connection ID	UINT	CAN ID field that denotes message to be received	
6	Get	Initial communication characteristics	BYTE	Defines the message group across which production and consumption associated with this connection occur	
7	Get	Produced connection size	UINT	Max number of bytes transmitted across this connection	
8	Get	Consumed connection size	UINT	Max number of bytes received across this connection	
9	Get/Set	EPR	UINT	Expected packet rate defines I/O timing associated with this connection	
12	Get/Set	Watchdog timeout action	USINT	Defines how to handle the inactivity/watchdog timer	
13	Get/Set	Produced connection path length	EPATH	Number of bytes in the produced connection path	
14	Get/Set	Produced connection path	UINT	Specifies the application object whose data is to be produced by this connection object	
15	Get/Set	Consumed connection path length	EPATH	Number of bytes in the consumed connection path	
16	Get/Set	Consumed connection path	UINT	Specifies the application object whose data is to be consumed by this connection object	
17	Get/Set	Production inhibit time	UINT	Defines min time between new I/O data production.	

Table -6-20 Connection Instance 4 Attributes – COS/Cyclic Connection

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Value
1	Get	State	USINT	State of the object	
2	Get	Instance type	USINT	Indicates either I/O or Messaging connection	
3	Get	Transport class trigger	BYTE	Defines behavior of the connection	
4	Get	Produced connection ID	UINT	Placed in CAN ID field when the connection transmits	
5	Get	Consumed connection ID	UINT	CAN ID field that denotes message to be received	
6	Get	Initial communication characteristics	BYTE	Defines the message group across which production and consumption associated with this connection occur	
7	Get	Produced connection size	UINT	Max number of bytes transmitted across this connection	
8	Get	Consumed connection size	UINT	Max number of bytes received across this connection	
9	Get/Set	EPR	UINT	Expected packet rate defines I/O timing associated with this connection	
12	Get/Set	Watchdog timeout action	USINT	Defines how to handle the inactivity/watchdog timer	
13	Get/Set	Produced connection path length	EPATH	Number of bytes in the produced connection path	
14	Get/Set	Produced connection path	UINT	Specifies the application object whose data is to be produced by this connection object	
15	Get/Set	Consumed connection path length	EPATH	Number of bytes in the consumed connection path	
16	Get/Set	Consumed connection path	UINT	Specifies the application object whose data is to be consumed by this connection object	
17	Get/Set	Production inhibit time	UINT	Defines min time between new I/O data production.	

Table -6-21 Connection Object Common Services

Service Code	Class	Instance	Service Name	Description of Service
OE_{hex}	No	Get	Get_Attribute_Single	Returns the contents of the specified attribute.
10_{hex}	No	Yes	Set_Attribute_Single	Modifies an attribute value.
$O5_{hex}$	No	Yes	Reset	Used to reset the Inactivity/Watchdog Timer associated with a connection Object.

6.7 Acknowledge Handler Object, Class 0x2B $_{hex}$

The DeviceNet specification requires the use of both acknowledged and unacknowledged cyclic messages. The JDP uses the DeviceNet formal Acknowledge Handler to allow the master to request and receive either acknowledged or unacknowledged cyclic messages. In general the use of acknowledged cyclic messaging provides for the slave device to take action if, for some reason, the master does not acknowledge the cyclic after a certain number of retries. This occurs, however, at the expense of increased network traffic. To reduce this traffic and increase network efficiency, unacknowledged cyclic messages may be desired.

If the JDP is operating in acknowledged mode, it will try to send the same cyclic message a second time if the first is not acknowledged. If still no acknowledgment is received, then no further action is taken and the JDP continues to operate as normal.

The JDP supports the following Class Attributes, Instance Attributes and Services for the Acknowledge Handler Object.

Table 6-22 Class 2B $_{hex}$ Class Attributes

Attribute ID	Access Rule	Name	DeviceNet Data Type	Description of Attribute	Semantics of Value
1	Get	Revision	UINT	Revision of this object.	The current value is 1.
2	Get	Max Instance	UINT	Maximum instance number of an object currently	The current value assigned to this is ().

Table 6-23 Class 2B $_{hex}$ Instance Attributes

Attribute ID	Access Rule	Stub /Full	Name	DeviceNet Data Type	Description of Attribute	Semantics of Value
1	Set		Acknowledge Timer	UINT	Time to wait for acknowledge before resending.	Range 1-65,535. Default = 16. (0 is invalid.)
2	Get		Retry Limits	USINT	Number of Ack Time-outs to wait before informing producing application of a Retry_Limit_Event reached.	Range 0-255. Default is 1.
3	Get		Cyclic Producing Instance	UINT	Connection Instance which contains the path of the producing I/O application object that will be notified of Ack Handler events.	Connection Instance ID. Current setting is 8.

Table 6-24 Acknowledge Handler Common Services

Service Code	Class	Instance	Service Name	Description of Service
OE_{hex}	Get	Get	Get_Attribute_Single	Returns the contents of the specified attribute.
10_{hex}	n/a	Set	Set_Attribute_Single	Modifies an attribute value.

7 Accessories and Other WRC DeviceNet Products

The following components can be used with a 1782-JDP JDP for replacements or spare parts, or as a part of your DeviceNet system.

Part	WRC Part Number
• DIN rail	WRC 50022
• Terminating resistor	RM121DN
• DeviceNet Extender, DIN mount	WRC-CANX-DIN-DN
• DeviceNet Extender, NEMA box	WRC-CANX-NEM-DN
• DeviceNet Repeater, Fiber Optic, NEMA box	WRC-CANR-DF-DN

8 Troubleshooting

This section identifies some of the common problems that may be observed when commissioning or operating a DeviceNet and JDP.

Problem:

JDP does not power up; both LED's are off.

Possible Causes:

1. Power not applied to DeviceNet cable or JDP connector.
2. Insufficient power. JDP requires close to 1 amp at 11 volts. (Some hand-held configuration devices, e.g., Allen-Bradley 2707-DNC DeviceView, will not provide sufficient power to the JDP.)

Problem:

Device will not communicate on the network
Module Status LED is solid Green
Network Status LED is flashing Green

Possible Causes:

1. Network does not have a terminating resistor. Add a 121-ohm resistor across the CAN_H and CAN_L signals at the first and last nodes.
2. Incorrect baud rate.
3. Cabling not properly connected.
4. No messaging connections are allocated.
5. Message sent to incorrect node
6. JDP is not is Master device's Scan List

Problem:

Device will not return data
Module Status LED is solid Green
Network Status LED is solid Green

Possible Causes:

1. Incorrect messaging connection set up.
   (Poll request when only Explicit connection is allocated)
2. Message sent to incorrect node.
3. JDP is not mapped into Master's data map

Problem:

Input value is always zero, or near 0.

Possible Causes:

1. Input is wired backwards. (A negative reading will bottom out at 0.)
2. Input is not connected.

3. Modules are not plugged into JDP.
4. Incoming signal is less than the lowest range on the module.
5. Channel is configured as an output

Problem:

Input value jumps around unexpectedly.

Possible Causes:

Input signal to JDP is noisy. Provide a grounded shield around signal cable.

Make sure the signal cable shield is properly grounded at one location.

Problem:

Discrete Input signal does not operate.

Possible Causes:

1. Make sure you are using 1781-I_5S (5 Vdc logic) and not 1781-I_YS or –I_XS (15 and 24 Vdc logic, respectively) modules. Only 5V logic modules will work with the 1782-JDP.
2. Position is not configured as a DI. (JDP must be power cycled after changing I/O configuration.)
3. There is a loose connection in the field wiring.
4. The field wiring is not properly connected from hot to the module to the actuator to common.
5. For a DC module, field-wiring polarity may be reversed.

Problem:

Discrete Output signal does not operate.

Possible Causes:

1. Make sure you are using 1781-__5S (5 Vdc logic) and not 1781-__YS or –__XS (15 and 24 Vdc logic, respectively) modules. Only 5V logic modules will work with the 1782-JDP.
2. Position is not configured as a DO. (JDP must be power cycled after changing I/O configuration.)
3. For a DC output, field-wiring polarity may be reversed.
4. The user-supplied fuse is blown.
5. There is a loose connection in the field wiring.
6. The field wiring is not properly connected from hot to the module to the actuator to common.
7. The module is damaged.

9 Downloading New Firmware

WRC has provided the capability to allow you to upgrade the JDP's firmware in the field, which provides the advantage of enhancing the performance of your JDP and DeviceNet system as new features are added or newly discovered problems are fixed. This section defines the procedure for downloading new firmware received from the factory.

9.1 Description

The download feature allows a user to install updated versions of the 1782-JDP firmware via a serial link from a host PC. The firmware is downloaded to the 1782-JDP using a standard terminal program or a WRC-provided DOS utility from a standard COM port to Serial Port A or B on the JDP. The new firmware can be received from WRC either on diskette or via e-mail, and will also include an updated EDS file.

Note: Performing the following functions will take the JDP out of normal DeviceNet mode. Standard DeviceNet messaging will be disabled during the download operation.

9.2 Method of Operation

The user installs the new firmware by following the instructions below:

1. Please review and understand all the following instructions before continuing.
2. Make sure the 1782-JDP is operating properly on a DeviceNet network containing a programming or configuration tool or device which can send configuration commands to the JDP.
3. Insert the supplied diskette into the 3.5" drive ("a:\"). Load the new firmware, JDP.HEX (and optionally the batch utility, JDB_SDL.BAT) onto the host PC in a directory, if desired.
4. Connect a serial interface cable from the PC to Port A or B of the 1782-JDP. Use a WRC-CSD9 or equivalent for a 9-pin serial PC port (or other appropriate interface cable, as required).
5. Place the JDP into "download mode" by performing steps 6 through 12 to either ASCII port. Refer to the Device Net Parameter Object data, Section 6.2, in this document.

6. Set the **data bits to 7 or 8**.
7. Set the **baud rate**. (With an isolated RS232 port, the max baud may be only 9600.)
8. Set the **string delimiter character to 13 (0D hex).**
9. Set the **parity** to desired setting.
10. Set the **input maximum characters to at least 100 (64 hex**).
11. Set the **output maximum characters to at least 100 (64 hex).**
12. Set the **mode to 4** (engage download mode). **ALWAYS set this LAST.**
13. This will stop all DeviceNet operations. At this point the **JDP will only respond to the download utility** until it is completed and resets itself or until the device is power cycled.
14. At this point the device is ready for a download and will flash both LEDs green alternately at a rate of one cycle per several seconds.
15. If you change you mind about the download, simply power cycle the JDP to interrupt the download cycle and the device will come up running as previously experienced.
16. Now execute the download per one of the two following methods.

9.2.1 Download Using the JDB_SDL.BAT DOS Batch File

Execute the download utility as follows:

- Change to the drive and directory which contains *both* JDB_SDL.BAT and JDP.HEX
- Type

  > To use the defaults:

  JDB_sdl comX

  where X = 1,2,3,or 4

  This will begin the downloading process using the default com port parameters of BAUD = 9600, PARITY=none, DATASIZE=8, and STOPBITS=1.

  Or,

  > To change the default parameters, type the following:

  JDB_sdl comX baud parity datasize stopbits

  where

  baud = the 1st 2 digits of the baud rate desired, i.e. 48 = 4800 baud.

  parity = N (for none), E (for even), or O (for odd)

datasize = 7 or 8

stopbits = 1 (this setting must always be 1)

- To view the arguments allowed, type the following:

JDB_sdl

or

JDB_sdl /?

The advantage to using this method is that it is simple and requires no other program to be resident on your computer. The drawback to using the batch file is you must watch the LEDs to ensure the download was successful. To confirm that the download was successful, you may want to check the version number using DeviceNet Class 1, Instance 4.

9.2.2 Download Using a Terminal Program

To use a terminal program, such as Procomm or HyperTerminal, launch the program, then set the com settings to match those specified in the target JDP. No hardware handshakes are used. Then use the ASCII or text file transfer mode to do the downloading.

The advantage of using a terminal is the JDP will display it's progress on the terminal screen.

When the JAD7 detects a valid starting hexadecimal record, it will send the "Downloading..." message to the terminal. If any errors occur while downloading, an error message will be sent. If the download completes without error, the "Download Successful" message will be sent.

9.2.3 Finishing the Download

Until the operation is finished, both LEDs will flash green in synchronization at a rate of once per second (on and off at ½ second each).

After the download has successfully completed, the JDP will exit download mode flash both green LEDs rapidly for approximately 3 seconds perform a device reset. At this point the new code is now executing in the JDP and is ready for DeviceNet communications to be re-established.

9.3 In Case of Problems

In the event that a problem occurs during the download, the JDP will display the error on the LEDs for 3 seconds, then perform a reset. It will resume operating with the

same code as before the download was started. Specific problems that may occur and suggested solutions are:

Table 9-1 Download Problem Troubleshooting

Error	Net Led	Mod Led	Possible Cause
Download Not Started (LEDs did not change flash pattern)	Fl. Green Alternate Slowly	Fl. Green Alternate Slowly	Faulty cable, cable not connected, baud rate mismatch. Recheck all connections and try again.
Flash Erase Error	Green	Red	Flash chip may be faulty. Try again.
Flash Write Error	Red	Green	Flash chip may be faulty. Try again.
Flash Data Error	Off	Red	Flash chip may be faulty. Try again.
Flash Timeout Error	Red	Off	Flash chip not properly erased. Try again.
Hex Checksum Error	Red	Red	Input buffer not large enough. Check allocation. File is corrupted. Get new copy.
Hex Record Timeout	Off	Green	Cable not solidly connected. Check cable. Noise on line. Check connection. String delimiter not properly set. Check settings.
Frame Error	Orange	Off	Baud rate not matched. Check settings. Character length not matched. Check settings. Stop bit mismatch. Check settings on PC com.
Overrun Error	Off	Orange	Baud rate not matched. Check settings. Character length not matched. Check settings.
Parity Error	Orange	Orange	Parity settings not matched. Check settings. Noise on cable. Try new cable.

9.3.1 Port Set-up for Downloading

Following are the serial port parameters that must be set up via DeviceNet before performing a download. These are Parameter Class (**class F**) ASCII Instances.

Table 9-2 Serial Port Class 15 (0F hex) Parameters

Instance for Port			
A	B	Description	Values
42	50	Character bit size	7 or 8
43	51	Baud Rate	0 = 9600 1 = 300 2 = 600 3 = 1200 4 = 2400 5 = 4800 6 = 19200
44	52	String delimiter	0 to 255
45	53	Parity	0 = None 1 = Odd 2 = Even
46	54	Input Maximum buffer size	0 to 255
47	55	Output Maximum buffer size	0 to 255
48	56	Mode	0 = Not Active 1 = Transmit only 2 = Receive only 3 = Both 4 = Download
49	57	ASCII Change of State	0 = Not Active 1 = Active

Note: There is no setting option for stop bits. The only allowable selection is 1 stop bit.