D0–DEVNETS
DeviceNet Slave Module
User Manual

Manual Number D0–DEVNETS–M

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Manual Revisions

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

Title: D0–DEVNETS DeviceNet Slave Module User Manual
Manual Number: D0–DEVNETS–M

Edition	Date	Description of Changes
Original	11/01	Original issue
Rev. A	11/02	Added DL06 references

Added pages 2-10, 2-11, & 2-12 for I/O Configuration and I/O Count to explain configuration and setup.

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Getting Started

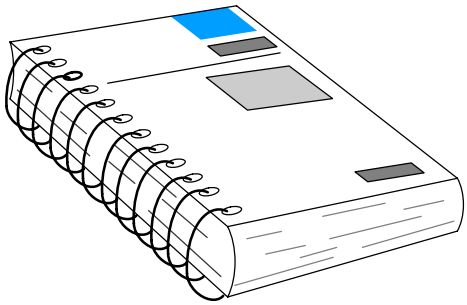
In This Chapter. . . .

- — Introduction
- — Introduction to DeviceNet
- — General Information About D0–DEVNETS

Introduction

The Purpose of this Manual

This manual describes the installation and operation of the D0–DEVNETS Slave Module (D0–DEVNETS).



Supplemental Manuals

The following manuals are essential for the proper use of your DL05 DeviceNet Slave Module.

- DL–05 Micro PLC User Manual part number **D0–USER–M**

  This manual contains very important information, including a complete I/O Module Memory Map. The Memory Map is crucial in designing and implementing the I/O system.
- The PLC/PC software manual
- The DeviceNet software (if separate) manual
- The DeviceNet Scanner (or Master) manual

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 D0–DEVNETS Slave Module.

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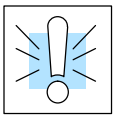
The “light bulb” icon in the left-hand margin indicates a **tip** or **shortcut**.

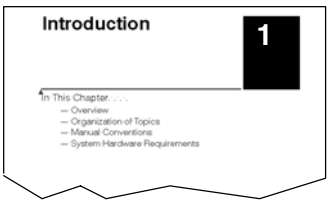
The “note pad” icon in the left–hand margin indicates a **special note**.



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 to DeviceNet

DeviceNet is a low-cost control bus used to connect field devices to PLCs and PCs. DeviceNet is designed to reduce the need for hard–wiring while providing device–level diagnostics. There are a host of manufacturers of DeviceNet products, offering an array of products including sensors, motor drives and starters, PLCs, pushbuttons, remote I/O systems, etc.

DeviceNet Concepts

Here are some DeviceNet concepts you may find helpful.

- DeviceNet supports various communication structures including Peer to Peer, Multi-master and Master/Slave. *The D0–DEVNETS 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 D0–DEVNETS 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 D0–DEVNETS. 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 connected 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.

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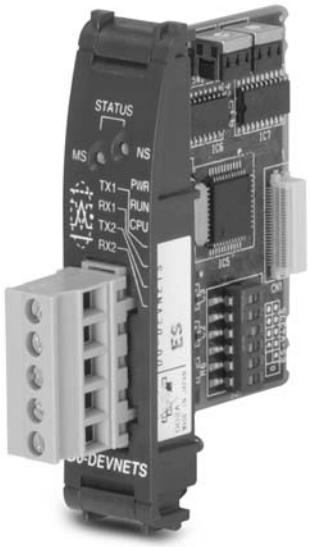
General Information about the D0–DEVNETS

The D0-DEVNETS slave module offers the following features:

- The D0–DEVNETS installs into any of the DL05 PLC's option slot. The PLC must have firmware version 3.0 or higher installed.
- The D0–DEVNETS can be installed in any of the four option slots of the DL06 PLC. The PLC must have firmware version 1.0 or higher installed.
- Only one D0–DEVNETS can be installed in the DL06 PLC.
- The D0–DEVNETS is an interface for DeviceNet (slave mode only).
- The D0–DEVNETS collects and reports all discrete I/O data to a DeviceNet master as polled data.
- The D0–DEVNETS does not poll analog I/O data, the analog I/O is looked at in registers. Refer to the **D0–DEVNETS–M** pointer method setup for the analog module being used.
- The D0–DEVNETS can either be configured in the DL05/06 for slave I/O mode without the need for a ladder program or programmed with ladder control logic as part of a network.
- LEDs for the Module Status and Network Status.
- Node address switches are easily accessed.



Specifications

Environmental specifications for the D0–DEVNETS are the same as for the DL05/06 PLCs. UL and CE approvals are pending. See Appendix A for detailed specifications.

Mini Glossary

Below is a small glossary of terms used in this manual.

Scanner or Master	The DeviceNet Master of which the D0–DEVNETS is a slave. This can be either a PLC module or a card in your PC.
Adapter or Slave	Short for the D0–DEVNETS Slave Module. The adapter is also referred to as a Network Interface Module elsewhere.
Node Address or MAC ID	The unique device address on a DeviceNet network. There are a maximum of 64 total (0–63). Usually the scanner is node 0.

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Installing the DeviceNet Slave Module

In This Chapter. . . .

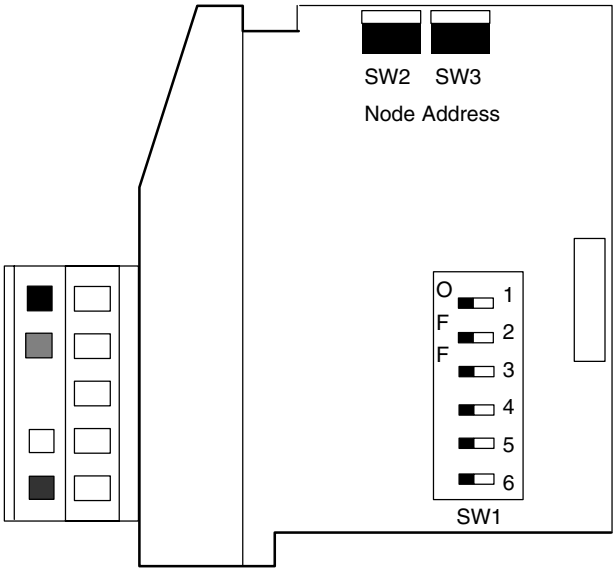
- — Installing the D0–DEVNETS Slave Module
- — Configure the Adapter
- — D0–DEVNETS Parameter Setup
- — Software and Firmware Requirements
- — Writing the D0–DEVNETS Setup

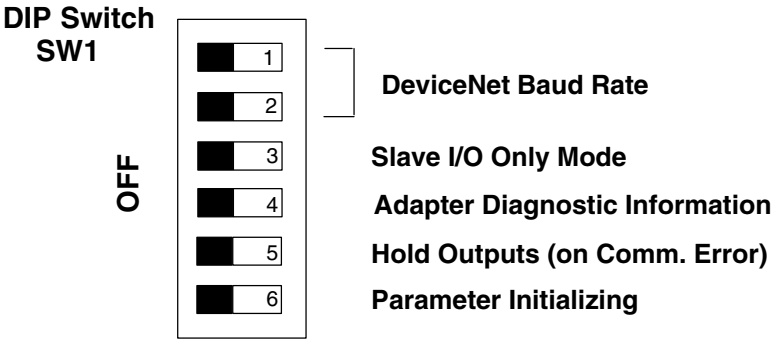
Installing the D0–DEVNETS Slave Module

Setting the DIP Switch (SW1)

The DIP switch, SW1 must be set before installing the DeviceNet slave module in the DL05 option slot or in one of the DL06 option slots. The following diagram shows the location of the DIP switch.

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 D0–DEVNETS. *The factory default baud rate is 125kbps.*





Set SW1–1 and SW1–2 for the DeviceNet baud rate.

DeviceNet Baud Rate		
Baud Rate	**SW1–1**	**SW1–2**
125 kbps	OFF	OFF
250 kbps	ON	OFF
500 kbps	OFF	ON
Reserved	ON	ON

Set the DL05/06 to Slave Mode.

When SW1–3 is ON, the DL05/DL06 can be placed in the RUN mode with the external RUN/TERM/STOP switch (with or without a program in it).

Slave I/O Only Mode	
Mode	**SW1–3**
Slave I/O only	ON
Normal	OFF

Eliminate adapter diagnostic information bits from I/O polling.

When SW1–4 is OFF D0–DEVNETS adds adapter information to the head of I/O polling.

Adapter diagnostic information	
Mode	**SW1–4**
Disable	ON
Enable	OFF

Note: Leaving position 4 OFF will add 2 bytes of inputs and 2 bytes of outputs for diagnostic information at the beginning of your I/O polling. Refer to the Adapter Input/Output Status Word tables on page C–8.

Position SW1–5 ON will hold the outputs on if there is a communication error.

Hold Outputs (on Comm. Error)	
Outputs	**SW1–5**
Turn Off	OFF
Hold	ON

Position SW1–6 ON will initialize the D0–DEVNETS system parameters.

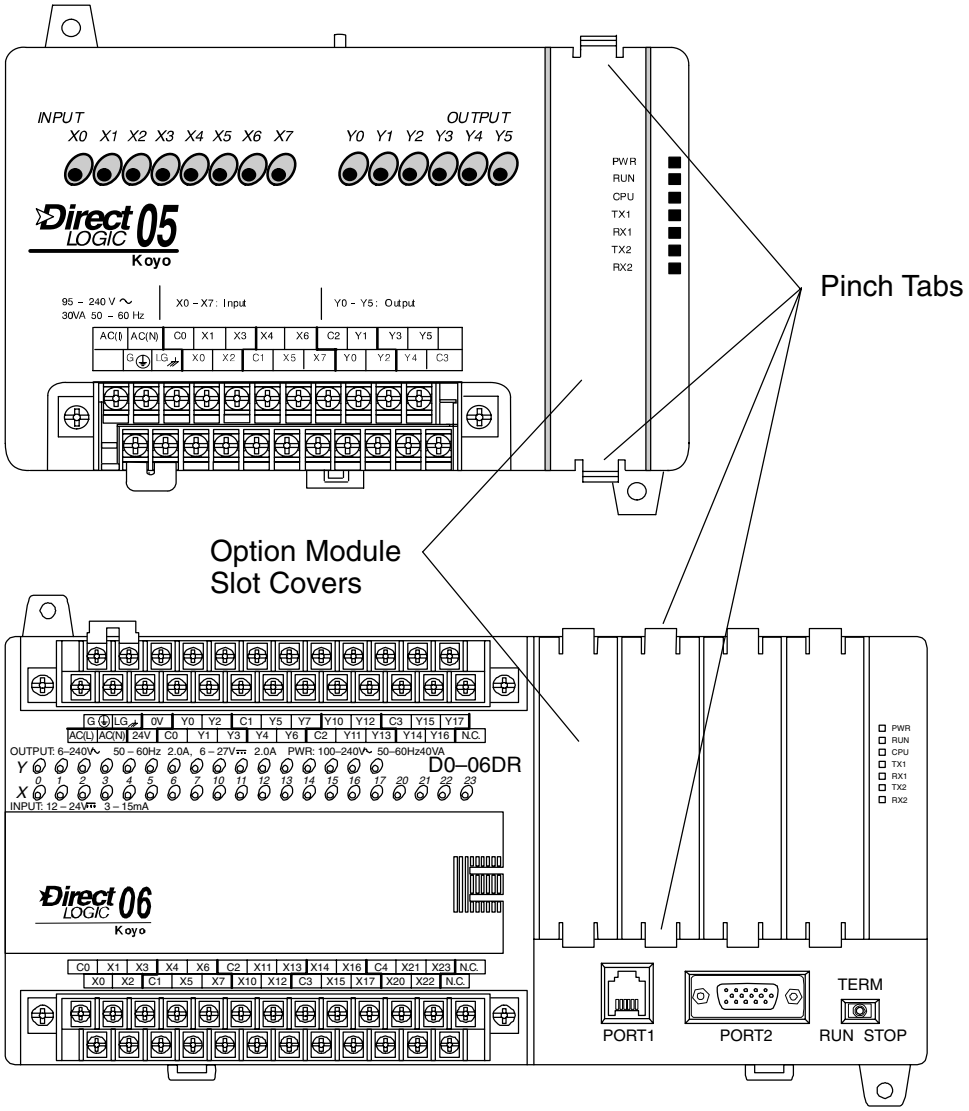
Parameter Initializing		
Mode	**SW1–6**	**Description**
Initialize 1	ON	Default is set when power is ON *1
Initialize 2	OFF	

*1 Initialization parameter value changes with status of DIP switch positions 3 and 6. Refer to the Initialization Parameter Values table on page D–2.

Note: All DIP switch positions shown are the factory default settings (all OFF).

Remove the Slot Cover

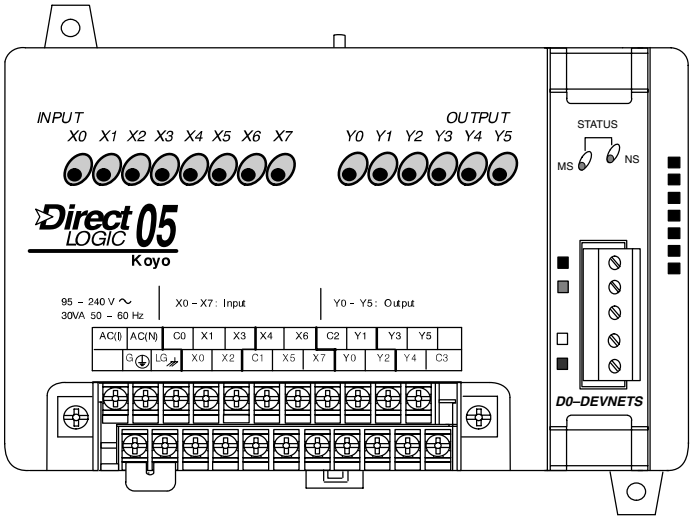
When the D0–DEVNETS module is ready to be installed the protective option slot cover must be removed. The protective cover is removed from the option card slot by squeezing the pinch tabs and lifting the cover off.

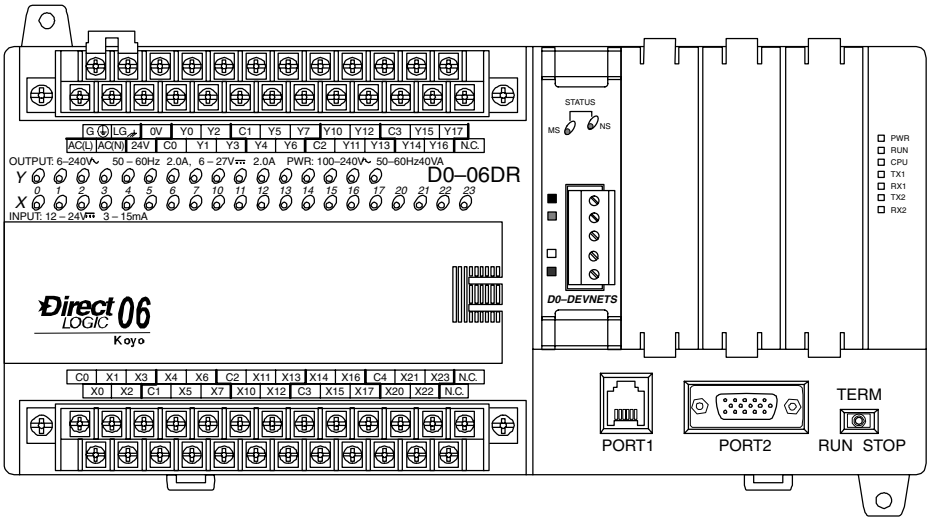


WARNING: Power to the PLC **must** be disconnected before inserting or removing the D0–DEVNETS slave module. Failure to disconnect power could result in serious damage to the module, the PLC or both.

Insert the Module

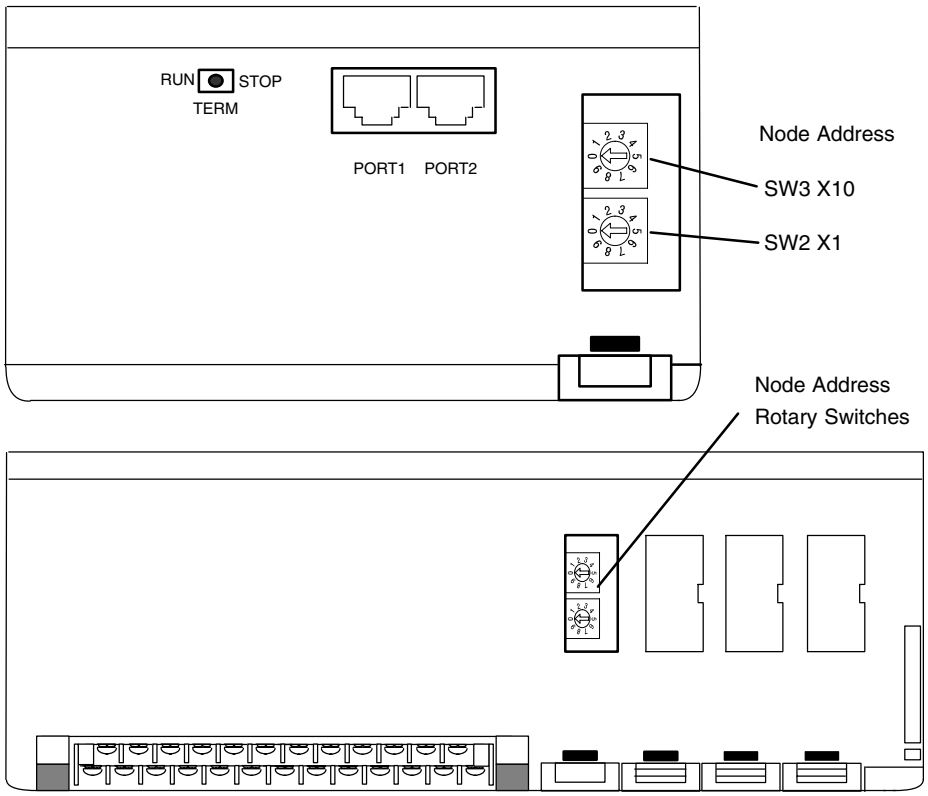
Insert the D0–DEVNETS slave module into the open card slot. Locate the module so the printed information is oriented in the same direction as the markings on the PLC. Be careful to align the female connector on the printed circuit board of the module with the male connector on the PLC mother board. Press the module into the slot until the front of the module is flush with the front of the PLC.





Set the Node Address

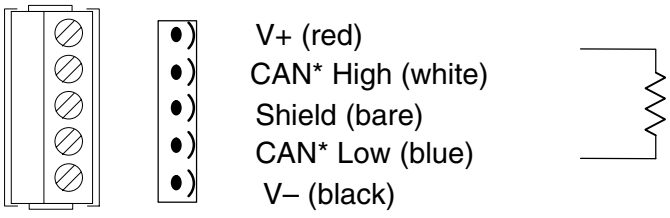
Once the D0–DEVNETS is installed in the option slot, set the Node Address. The Node Address rotary switches are accessed by removing the cover located to the right of Port1 and Port2 on the DL05.



Remove the cover associated with the option slot where the D0–DEVNETS is installed in for the DL06 Once the access cover is removed, use a small, flat, screwdriver to set the Node Address to an *available* address (or MAC ID), from 0 – 63. Note that SW3 sets the tens and SW2 sets the units.

Wiring the Adapter to a DeviceNet Network

Connect the DeviceNet cable (Belden 3085A, YR–29832 or equivalent) to the removable connector as shown below. The wire colors are also labeled on the front of the adapter. Be sure to connect a terminating resistor (121 Ohm 1%, 1/4W). An external 11–25 VDC power supply is also required.



* Controller Area Network (CAN)

Connect a terminating resistor across the CAN High (white) and CAN Low (blue) screw terminals.

The terminating resistor is 121 Ohm 1%, 1/4 Watt. (2 resistors are included with each D0–DEVNETS).

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

Configure the Adapter

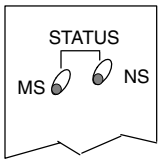
Configuring the DeviceNet Adapter

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 D0–DEVNETS adapter.

1. **Set the Adapter Node Address:**
   In the DeviceNet master software, make sure the adapter node address is set to an available node number on the DeviceNet network (from 0 to 63).
2. **Add the EDS file (if required by the software):**
   In your DeviceNet software, add the D0–DEVNETS 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. **Commission the Node:**
   Use the DeviceNet software to "Commission the Node" of the adapter. Again, some software may not require this.
4. **Add the D0–DEVNETS to the Scan List:**
   Add the D0–DEVNETS to the Scan List in your DeviceNet Master software.
5. **Set the Input/Output Bytes:**
   If required by your DeviceNet software set the I/O Parameters to Tx = Output bytes and Rx = Input bytes for Polled I/O. *Follow the steps in Appendix G to determine the actual number of Output and Input bytes your system has.*
6. **Map the I/O to the Master:**
   Map the D0–DEVNETS I/O to the Scanner using Auto Map, or map the I/O to another location if desired.
7. **Scan:**
   Go Online (or Scan) to verify the configuration and check for errors.
8. **View Indicators on the adapter:**
   Refer to the Status Indicators when connecting to the network.

Status Indicators

The adapter has two Status Indicators, one for **M**odule **S**tatus and the other for **N**etwork **S**tatus.



MS (Module Status) Indicator	
Indication	**Status**
OFF	No power to module.
Solid Green	Power is ON, normal condition
Solid Red	Critical module Failure
NS (Network Status) Indicator	
Indication	**Status**
OFF	No power to module or no Network Access
Flashing Green	Online but not connected (no connection established)
Solid Green	Online, link okay and connected
Flashing Red	Recoverable fault
Solid Red	Critical module Failure (Duplicate ID or Bus off)

D0–DEVNETS Parameter Setup

D0–DEVNETS Default Parameters

The DL05/06 PLCs reserve several V–memory locations for storing the DEVNETS parameters. These special registers store the I/O ranges. The parameters are stored in the DL05/06 systems FLASH memory and are not lost when the PLC is powered off.

System V-memory	Description of Contents	Factory Default Value	Range
V7610	Input starting address	V40400	V40400 – 40417 (X0–377) V40500 – 40517 (Y0–377) V40600 – 40637 (C0–777) V41000 – 41017 (S0 – 377) V41100 – 41107 (T0 – 177) V41140 – 41147 (CT0 – 177) V41200 – 41237 (SP0 – 777)
V7611	Input number of bytes	2 Bytes	0 – 8 Bytes
V7612	Output starting address	V40500	V40400 – 40417 (X0 – 377) V40500 – 40517 (Y0–377) V40600 – 40637 (C0–777) V41000 – 41017 (S0–377) V41100 – 41107 (T0 – 177) V41140 – 41147 (CT0 – 177) V41200 – 41237 (SP0 – 777)
V7613	Output number of bytes	2 Bytes	0 – 8 Bytes
V7614	Input starting V–memory location	V3000	V0 – 7777
V7615	Input V–memory number of bytes	58 Bytes	0 – 128 Bytes
V7616	Output starting V–memory location	V3100	V0 – 7377
V7617	Output V–memory number of bytes	52 Bytes	0 – 128 Bytes

I/O Configuration

The consumed and produced I/O is user defined in the DL05/06 memory. The DeviceNET available memory in the PLC is basically divided into 2 sets of data pointers. The first set was intended to read and write discrete I/O memory (but other data ranges can be accessed) and is setup through V7610 – V7613. Since this data range was intended to contain discrete I/O, it is limited to 8 bytes of Input and 8 bytes of Output.

The other data set is configured through V7614 – V7617 and was intended to contain User V-memory locations. This data set has a much higher range of accessible values (128 bytes In and 128 bytes Out).

If the module to set to slave mode (dipswitch 3), it will be configured for 2 inputs/outputs in the I/O data pointers. If the PLC is not set to Slave mode, then these V-memory locations will need to be configured. The DL05/06 PLCs reserve several V–memory locations for storing the DEVNETS parameters. These special registers store the I/O ranges. The parameters are stored in the DL05/06 systems FLASH memory, and are not lost when the PLC is powered off.

Below is the V-Memory layout for the I/O configuration.

You can use both sets of data pointers, but if you have configured the I/O set of data pointers (V7610 – V7613), this is the only data available via Implicit messaging. If the I/O set of data pointers are used, then the V-memory set of data pointers (V7614- V7617) is only available via Explicit messaging.

To make the V-memory set of data pointers available via Implicit messaging the I/O set of data pointers need to be zeroed out. Then 128 bytes of Input and 128 bytes of Output data can be accessed through Implicit messaging. If the actual discrete I/O data is needed, this can be mapped over to the V-memory Input and Output blocks using LD and OUT instructions. This can be an easier way to configure this module

	System V-Memory	Description of Contents	Factory Default Value	Range
I/O Data Pointer setup registers	V7610	Input starting address	V40400	V40400 - 40417 (X0-377) V40500 - 40517 (Y0-377) V40600 - 40637 (C0-377) V41000 - 41017 (S0-377) V41100 - 41107 (T0-377) V41140 - 41147 (CT0-377) V41200 - 41237 (SP0-377)
	V7611	Input number of bytes	2 Bytes	0 - 8 Bytes
	V7612	Output starting address	V40500	V40400 - 40417 (X0-377) V40500 - 40517 (Y0-377) V40600 - 40637 (C0-377) V41000 - 41017 (S0-377) V41100 - 41107 (T0-377) V41140 - 41147 (CT0-377) V41200 - 41237 (SP0-377)
	V7613	Output number of bytes	2 Bytes	0 - 8 Bytes
V-memory Data Pointer setup registers	V7614	Input starting V-memory location	V3000	V0 - 7777
	V7615	Input V-memory number of bytes	58 Bytes	0 - 128 Bytes
	V7616	Output starting V-memory location	V3100	
	V7617	Output V-memory number of bytes	52 Bytes	0 - 128 Bytes

I/O Count

As mentioned earlier the I/O count is set up in the PLC with ladder. To calculate the actual I/O count to assign in the master there are a few things to consider.

1. What is the position of SW1-4?
2. Are you using I/O data or V-memory Data?
3. Are their any I/O cards in the DL06 expansion slots?
4. What is configured in the PLC memory?

If you are using I/O data then the D0-DEVNETS will automatically add any digital I/O in the expansion slots to the I/O data configured in the PLC.

I/O Example:

V7611 = 6

V7613 = 6

Expansion Slot 1 = D0-16ND3 = 2 bytes

Expansion Slot 2 = D0-08ND3 = 1 bytes

SW1-4 = ON

The total I/O Count = 9 bytes input and 6 Output bytes.

When SW1-4 is off it adds 2 bytes to the total Input/Output count. In this example the D0-DEVNETS will error even if you entered these values correctly in the master because you are over the maximum Input/Output count for I/O data. The D0-DEVNETS NS LED will remain solid green for 10 sec and then flash red for 10 sec.

The solution to this problem is to use V-memory data in the PLC, disable the I/O data and map over the X input/Y output V-memory words to the DEVNETS V-memory data blocks.

The D0-Devnet will allow you to go over 8 bytes in V-memory data mode.

V-memory data setup Example:

V7610 –V7613 = 0

V7615 = 58

V7617 = 52

SW1-4 = off

The total I/O Count = 60 bytes input and 54 Output bytes.

In Slave Only Mode there are some nuances when using it with a DL06. The DL06 has 20 inputs so the default setting for Slave Only Mode is 2 input bytes which will only cover 16 of those inputs. If all 20 inputs are required, the PLC will need to be configured manually.

If the I/O Data pointer method is still desired, here are the byte counts for all cards.

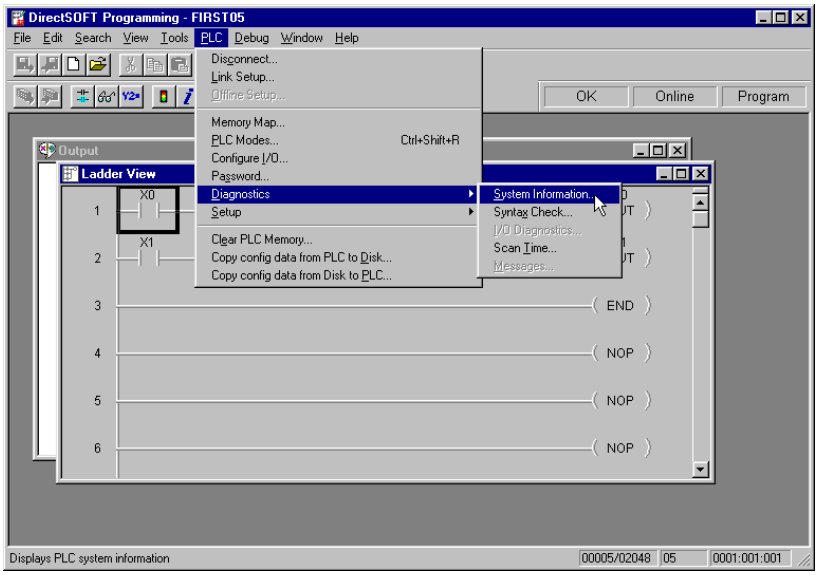
- Any 8 Point Input card = 1 Input byte
- Any 10 Point Input Card = 2 Input Bytes
- Any 16 Point Input Card = 2 Input Bytes
- Any 4 Point Output card = 1 Output byte
- Any 8 Point Output card = 1 Output byte
- Any 10 Point Output Card = 2 Output Bytes
- Any 16 Point Output Card = 2 Output Bytes
- Any Combo card will follow any combination of the above.

Software and Firmware Requirements

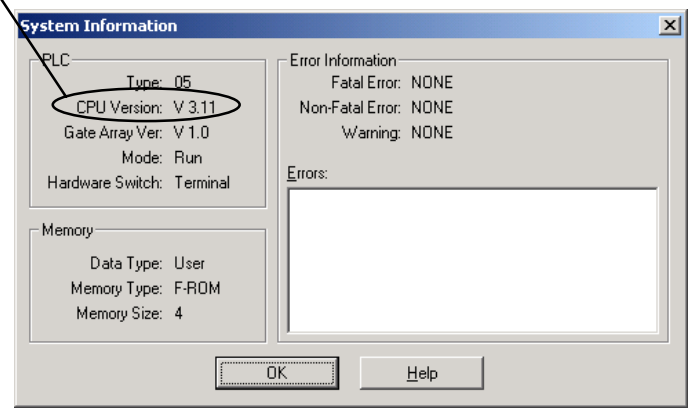
How to Update Your *Direct*SOFT32 Programming Software

When a D0–DEVNETS module is installed the DL05/06 PLCs do not need to have a relay ladder logic (RLL) program in them to operate as slave I/O. However, if you are using the D0–DEVNETS in either a DL05 or a DL06 for local control on a network, they must have a RLL control program in them. You will need ***Direct***SOFT32 Version 3.0b (or later) for the DL05 and/or Version 4.0 for DL06 in order to use all features of the D0–DEVNETS. If you have a licensed copy of Version 3.0 or 3.0a, the Version 3.0b Maintenance Release (or a later maintenance release) is available for free on our website at **www.automationdirect.com**.

The DL05 must have Version 3.0 (or later) firmware and the DL06 must have Version 1.0 (or later) firmware to operate correctly with all features of the D0–DEVNETS. If your DL05/06 was received with your D0–DEVNETS, the correct firmware is already installed in the PLC. If you already have a DL05 and need to determine what firmware version is installed in the PLC, connect to the DL05 with ***Direct***SOFT32 programming software, and click on PLC/Diagnostics/System Information. This will bring up the System Information screen.



The “CPU Version:” will tell you what firmware version is installed in your PLC.



How to Update Your DL05 Firmware

If your PLC requires new firmware, you may download the latest firmware and upgrade tool from our website. Point your browser to **www.automationdirect.com**, click on technical support, then select Firmware Upgrades. There you will find the latest firmware for your CPU that you can download at no charge.

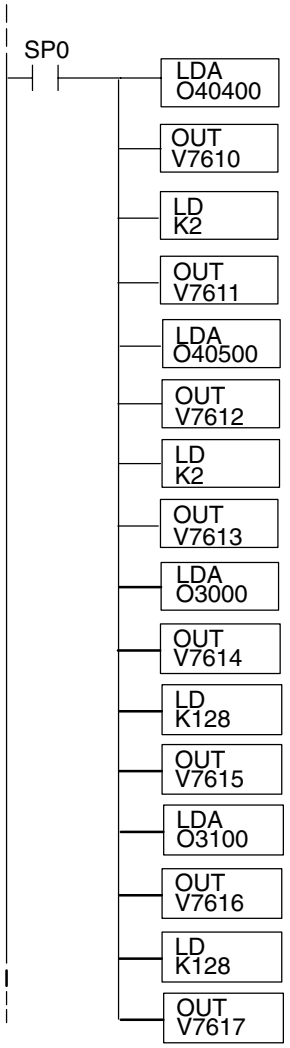
Follow the upgrade instructions contained in the downloaded files. Cycle power after upgrading the firmware in your PLC and ***Direct***SOFT32 will recognize the new features available for the PLC.

Changing the D0–DEVNETS Setup Parameters

There may be a time when the initial setup parameters will need to be changed. The following example shows how to edit a DL05/06 PLC program to make the parameter changes using ***Direct***SOFT32 programming software. Once the following rung is editted, be sure to either power cycle the PLC or put the PLC into Program mode, then to Run mode. This will insure that the settings will become effective.

Parameter Example

Function	Register Number	Data Size
Input Point	V40400	2 Bytes
Output Point	V40500	2 Bytes
Input Register	V3000	128 Bytes
Output Register	V3100	128 Bytes



Load the input starting address and store it to system memory

Number of input bytes.

Load the output starting address and store it to system memory.

Number of output bytes.

Load the V–memory location to store the input data.

Number of input register bytes.

Load the V–memory location to store the output data.

Number of output register bytes.

Specifications

A

In This Appendix. . . .

— Specifications

Specifications

General Specifications	
Ambient 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% to 95% non-condensing
Atmosphere	No corrosive gases, max. environmental pollution = 2, UL840
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 (144MHz, 430MHz, 10W, 10cm)
Size	0.78” W x 3.02” H x 2.12” D
Weight	1.75 oz. (50g)

Communication Specification	
Protocol	DeviceNet Communication (Slave)
Network address	0 to 63
Data Packet	0 to 8 Bytes (Data beyond eight bytes are divided.)
Baud Rate	125 kbps/250 kbps/500 kbps DIP Switch Setting
Maximum cable length	500m/125 kbps 250m/250 kbps 100m/500kbps
Parameter storage	FLASH Memory
Communication Status Indicator	**MS**: Module Status LED [Red/Green] **NS**: Network Status LED [Red/Green]
DeviceNet Power Consumption	11~25VDC 45mA Max.

DeviceNet Communication Details		
Device Type		Generic
Explicit Peer to Peer Message		No
I/O Peer to Peer Message		No
Configuration Consistency		No
Fault Node Recovery		No
Communication Baud Rate 125K, 250K, 500K		Yes
Master/Scanner		No
I/O Slave Message	Bit Strobe	No
	Polling	Yes
	Cyclic	No
	Change of State (COS)	No

DeviceNet Object		
Item	**Instance**	**Class Number**
Identity Object	1	1h
Message Router Object	1	2h
DeviceNet Object	1	3h
I/O Assembly Object	5	4h
Connection Object	1	5h

Device I/O Specification	
I/O LINK	Inputs: 64 Points Outputs: 64 Points
I/O LINK Data Types Available	X, Y, C, S, T, CT, SP (Read Only)
Register LINK	128 Bytes Maximum: V0 – V7777
Other PLC Communication from Master	Only PLC Mode Selection (Mode SW is in TERM only)
Internal Power Consumption	45mA at 5VDC

Tables

B

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— DeviceNet Tables

Data Input and Output Tables

I/O Assembly Object is used for Data Transfer of the LINK register. I/O Assembly Object can access the data of the Input Point, Output Point, Input V–memory and Output V–memory. The I/O Assembly Object can also control the PLC Mode.

I/O Assembly CLASS = 4

Data Type	Instance	Attribute	Comment
Input Point	100	3	Read data from linking Input point.
Output Point	101	3	Write data to linking Output point.
Input Register	102	3	Read data from linking Input V–memory.
Output Register	103	3	Write data to linking Output V–memory.
PLC Mode	104	3	PLC Mode control (RUN/STOP)

Attribute Configure

The following tables describes each Link Register Attribute (Data Configure).

Input Point Attribute

Instance = 100 Attribute = 3

Name	Data			Address	Service
	MSB		LSB		
Input Point	Input 07	————————	Input 00	+00	Get
	Input 17	————————	Input 10	+01	
	Input 27	————————	Input 20	+02	
	Input 37	————————	Input 30	+03	
	Input 47	————————	Input 40	+04	
	Input 57	————————	Input 50	+05	
	Input 67	————————	Input 60	+06	
	Input 77	————————	Input 70	+07	

One Input point is equal to one bit of the byte.

Eight bytes equals 64 Input points.

Output Point Attribute

Instance = 101 Attribute = 3

Name	Data			Address	Service
	MSB		LSB		
Output Point	Output 07	————————	Output 00	+00	Set
	Output 17	————————	Output 10	+01	
	Output 27	————————	Output 20	+02	
	Output 37	————————	Output 30	+03	
	Output 47	————————	Output 40	+04	
	Output 57	————————	Output 50	+05	
	Output 67	————————	Output 60	+06	
	Output 77	————————	Output 70	+07	

One Output point is equal to one bit of the byte.

Eight bytes equals 64 Output points.

Input Register Attribute

Instance = 102 Attribute = 3

Name	Data	Address	Service
Input Register	Vn+00	+00	Get
	Vn+01	+02	
	Vn+02	+04	
	Vn+03	+06	
	Vn+04	+08	
	Vn+62	+124	
	Vn+63	+ 126	

The Data Register equals one Word (16 bits).

A maximum of 64 V–memory words can be accessed.

Output Register Attribute

Instance = 103 Attribute = 3

Name	Data	Address	Service
Output Register	Vn+00	+00	Set
	Vn+01	+02	
	Vn+02	+04	
	Vn+03	+06	
	Vn+04	+08	
	Vn+62	+124	
	Vn+63	+ 126	

The Data Register equals one Word (16 bits).

A maximum of 64 V–memory words can be accessed.

PLC Mode Control Attribute

Instance = 104 Attribute = 3

Name	Data	Address	Service
PLC Mode	01: RUN request 02: STOP request	+00	Set
	00: STOP 03: RUN		Get

The PLC Mode can be read and requested to be changed.

Device Profile Tables

Identify Object (Class 1)

Instance 1 Attribute

Attribute	Item	Data type	Value	Service
1	Vendor ID	UINT	482	Get
2	Device Type	UINT	00	Get
3	Product Code	UINT	1500	Get
4	Major Revision	UINT	*	Get
	Minor Revision	UINT	*	
5	Status	WORD	*	
6	Serial Number	UDINT	****	Get
7	Product Name	SHORT–STRING	D0–DEVNETS	Get

Common Service

Service Code	Common Service
0E	Get_Attribute_Single
05	Reset

Device Net Object (Class 3)

Instance 1 Attribute

Attribute	Item	Data type	Value	Service
1	MAC ID	UINT	0 – 63	Get
2	Baud Rate	UINT	0 – 2	Get
4	BusOff Counter	UDINT	*	Get
5	Allocation Choice	BYTE	*	Get
	Master MAC ID	USINT	*	

Common Service

Service Code	Common Service
0E	Get_Attribute_Single

Connection Object (Class 5)

Slave Explicit Messaging Connection Object (Instance 1)

Attribute	Item	Data type	Value	Service
1	State	UINT	*	Get
2	Instance Type	UINT	00	Get
3	TransportClass_trigger	BYTE	83h	Get
4	Produced_connection_id	UINT	*	Get
5	Consumed_connection_id	UINT	*	Get
6	Initial_comm_characteristics	BYTE	21h	Get
7	Produced_connection_size	UINT	*	Get
8	Consumed_connection_size	UINT	*	Get
9	Expected_packet_rate	UINT	2500	Get
12	Watchdog_timeout_action	USINT	01	Get
13	Produced_connection_path_length	UINT	00	Get
14	Produced_connection_path	USINT	String	Get
15	Consumed_connection_path_length	UINT	00	Get
16	Consumed_connection_path	USINT	String	Get

Poll Connection Object (Instance 2)

Attribute	Item	Data type	Value	Service
1	State	UINT	*	Get
2	Instance Type	UINT	01	Get
3	TransportClass_trigger	BYTE	82h	Get
4	Produced_connection_id	UINT	*	Get
5	Consumed_connection_id	UINT	*	Get
6	Initial_comm_characteristics	BYTE	01	Get
7	Produced_connection_size	UINT	*	Get/Set
8	Consumed_connection_size	UINT	*	Get/Set
9	Expected_packet_rate	UINT	00	Get/Set
12	Watchdog_timeout_action	USINT	00	Get/Set
13	Produced_connection_path_length	UINT	6	Get
14	Produced_connection_path	USINT	20h,04,24h,40h,64h,03	Get/Set
15	Consumed_connection_path_length	UINT	6	Get
16	Consumed_connection_path	USINT	20h,04,24h,42,65h,03	Get/Set

Common Service

Service Code	Common Service
10h	Set_Attribute_Single
0E	Get_Attribute_Single

I/O Assembly Object (Class 4)

Instance Attribute

Instance	Attribute	Data type	Description	Bytes Maximum	Service
100	3	BIT	Input Data	8	Get
101	3	BIT	Output Data	8	Set
102	3	WORD	Input Register Data	128	Get
103	3	WORD	Output Register Data	128	Set
104	3	BYTE	PLC Mode	1	Get/Set

Common Service

Service Code	Common Service
10h	Set_Attribute_Single
0E	Get_Attribute_Single

Instance Attribute

Instance	Attribute	Bytes Maximum	Description	Data			Address	Service
				MSB7		LSB0		
100	3	8	Input Data	07	———	00	+00	Get
				17	———	10	+01	
				:	:	:	:	
				67	———	60	+06	
				77	———	70	+07	
101	3	8	Output Data	07	———	00	+00	Set
				17	———	10	+01	
				:	:	:	:	
				67	———	60	+06	
				77	———	70	+07	
102	3	128	Input Register Data	Vn+00			+00	Get
				Vn+01			+02	
				:			:	
				Vn+62			+124	
				Vn+63			+126	
103	3	128	Output Register Data	Vn+00			+00	Set
				Vn+01			+02	
				:			:	
				Vn+62			+124	
				Vn+63			+126	
104	3	1	PLC Mode	01:RUN Request			+00	Set
				02:STOP Request				
				00:STOP				Get
				03:RUN				

The DeviceNet standard is maintained by the ODVA (Open DeviceNet Vendor Association, Inc.). Contact the ODVA for detailed information about DeviceNet.
Internet: **www.odva.org** Email: odva@powerinternet.com

Image Table Mapping

C

In This Appendix. . . .

— Image Table Mapping

Image Table Mapping

Read, Write and Status Byte References

D0–DEVNETS can access data bytes.

Discrete Input

Discrete Input Point (X,Y,C,S,T,CT,SP) Image Table Mapping

I/O Image

Input Size

Read 1 to 8 bytes

Inputs							
X7	X6	X5	X4	X3	X2	X1	X0
Inputs							
X17	X16	X15	X14	X13	X12	X11	X10
Inputs							
X27	X26	X25	X24	X23	X22	X21	X20
Inputs							
X37	X36	X35	X34	X33	X32	X31	X30
Inputs							
X47	X46	X45	X44	X43	X42	X41	X40
Inputs							
X57	X56	X55	X54	X53	X52	X51	X50
Inputs							
X67	X66	X65	X64	X63	X62	X61	X60
Inputs							
X77	X76	X75	X74	X73	X72	X71	X70

Dec. Bit	07	06	05	04	03	02	01	00	Size
Oct. Bit	07	06	05	04	03	02	01	00	
	X7	X6	X5	X4	X3	X2	X1	X0	Read Byte 1
	X17	X16	X15	X14	X13	X12	X11	X10	Read Byte 2
	X27	X26	X25	X24	X23	X22	X21	X20	Read Byte 3
	X37	X36	X35	X34	X33	X32	X31	X30	Read Byte 4
	X47	X46	X45	X44	X43	X42	X41	X40	Read Byte 5
	X57	X56	X55	X54	X53	X52	X51	X50	Read Byte 6
	X67	X66	X65	X64	X63	X62	X61	X60	Read Byte 7
	X77	X76	X75	X74	X73	X72	X71	X70	Read Byte 8
	Not Supported								Write Byte 1

Discrete Output Point (X,Y,C,S,T,CT,SP) Image Table Mapping

I/O Image

Output Size

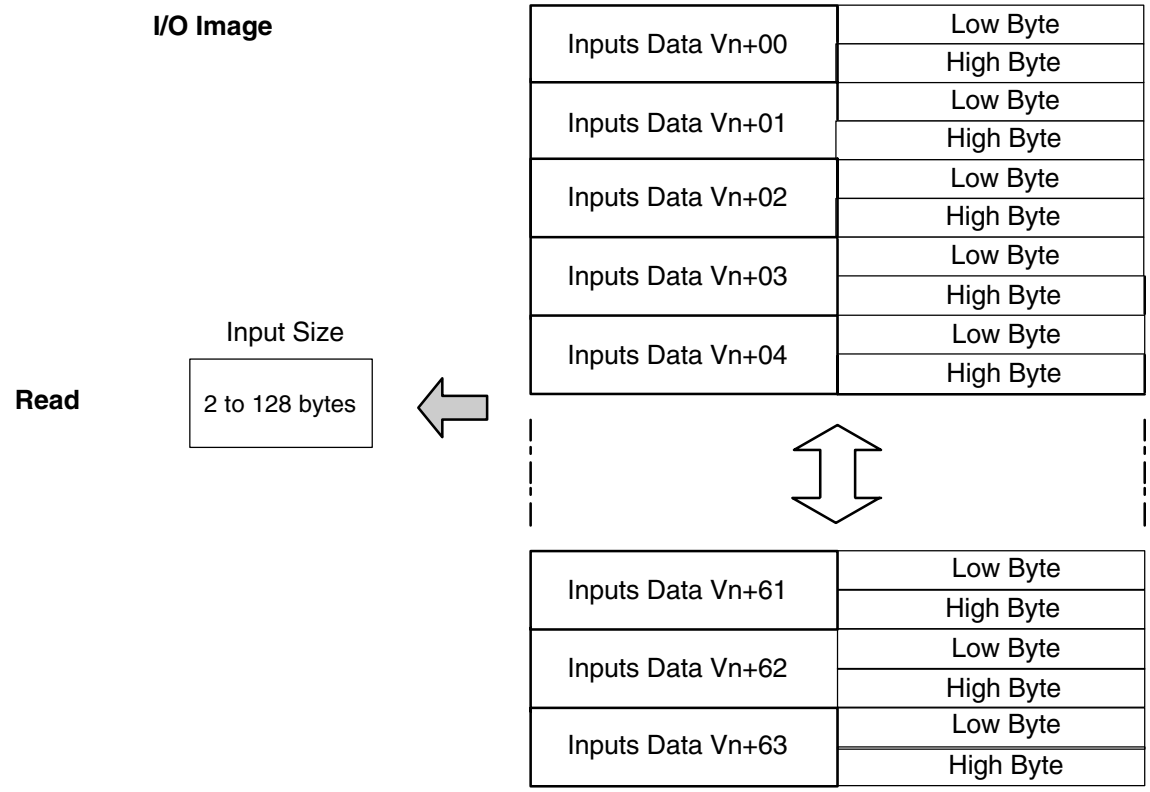
Write

1 to 8 bytes

Outputs							
Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
Outputs							
Y17	Y16	Y15	Y14	Y13	Y12	Y11	Y10
Outputs							
Y27	Y26	Y25	Y24	Y23	Y22	Y21	Y20
Outputs							
Y37	Y36	Y35	Y34	Y33	Y32	Y31	Y30
Outputs							
Y47	Y46	Y45	Y44	Y43	Y42	Y41	Y40
Outputs							
Y57	Y56	Y55	Y54	Y53	Y52	Y51	Y50
Outputs							
Y67	Y66	Y65	Y64	Y63	Y62	Y61	Y60
Outputs							
Y77	Y76	Y75	Y74	Y73	Y72	Y71	Y70

Dec. Bit	07	06	05	04	03	02	01	00	Size
Oct. Bit	07	06	05	04	03	02	01	00	Size
	Not Supported								Read Byte 1
	Y7	Y6	Y5	X4	Y3	Y2	Y1	Y0	Write Byte 1
	Y17	Y16	Y15	Y14	Y13	Y12	Y11	Y10	Write Byte 2
	Y27	Y26	Y25	Y24	Y23	Y22	Y21	Y20	Write Byte 3
	Y37	Y36	Y35	Y34	Y33	Y32	Y31	Y30	Write Byte 4
	Y47	Y46	Y45	Y44	Y43	Y42	Y41	Y40	Write Byte 5
	Y57	Y56	Y55	Y54	Y53	Y52	Y51	Y50	Write Byte 6
	Y67	Y66	Y65	Y64	Y63	Y62	Y61	Y60	Write Byte 7
	Y77	Y76	Y75	Y74	Y73	Y72	Y71	Y70	Write Byte 8

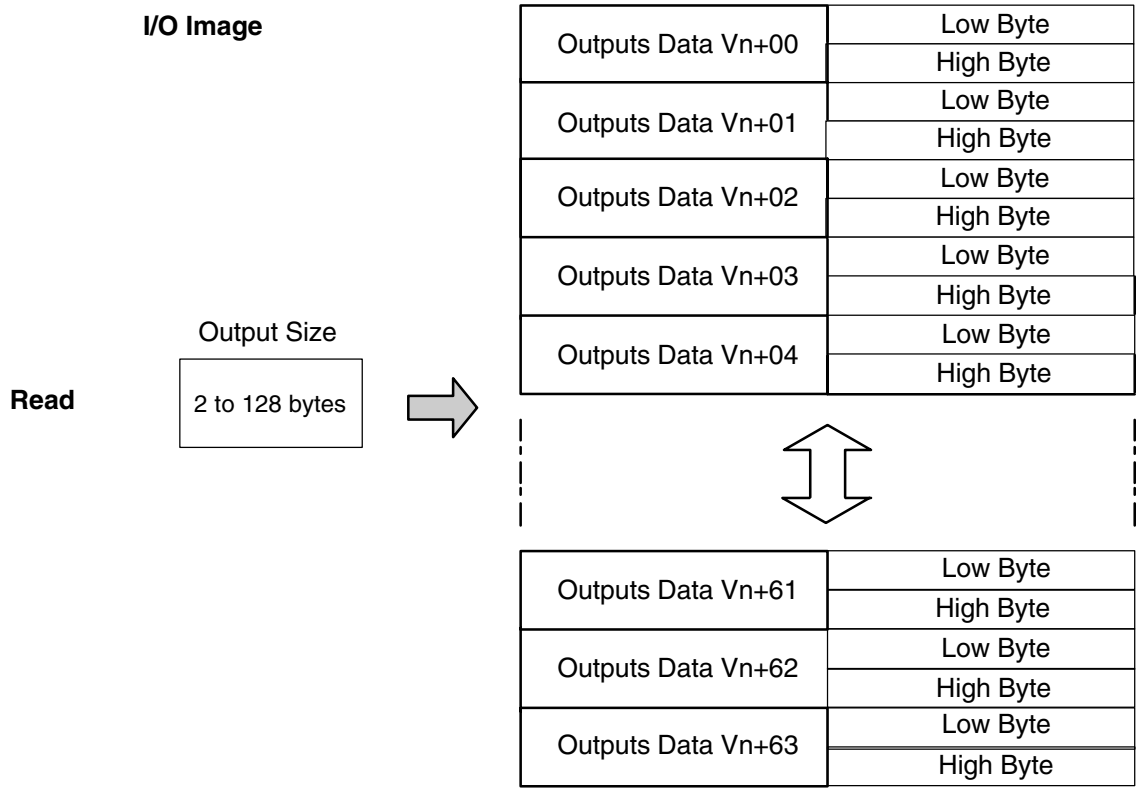
Register Input (V–memory) Image Table Mapping



Decimal Bit	07	06	05	04	03	02	01	00	Size
Octal Bit	07	06	05	04	03	02	01	00	
	Vn + 00 V memory Low byte data								Read Byte 1
	Vn + 00 V memory High byte data								Read Byte 2
	Vn + 01 V memory Low byte data								Read Byte 3
	Vn + 01 V memory High byte data								Read Byte 4
	Vn + 02 V memory Low byte data								Read Byte 5
	Vn + 02 V memory High byte data								Read Byte 6
	Vn + 03 V memory Low byte data								Read Byte 7
	Vn + 03 V memory High byte data								Read Byte 8
	Vn + 04 V memory Low byte data								Read Byte 9
	Vn + 04 V memory High byte data								Read Byte 10
	Vn + 05 V memory Low byte data								Read Byte 11
	Vn + 05 V memory High byte data								Read Byte 12
	Vn + 06 V memory Low byte data								Read Byte 13
	Vn + 06 V memory High byte data								Read Byte 14
	Vn + 07 V memory Low byte data								Read Byte 15
	Vn + 07 V memory High byte data								Read Byte 16

	Vn + 08 V memory Low byte data	Read Byte 17
	Vn + 08 V memory High byte data	Read Byte 18
	Vn + 09 V memory Low byte data	Read Byte 19
	Vn + 09 V memory High byte data	Read Byte 20
	:	:
	:	:
	:	:
	:	:
	Vn + 30 V memory Low byte data	Read Byte 60
	Vn + 30 V memory High byte data	Read Byte 61
	Vn + 31 V memory Low byte data	Read Byte 62
	Vn + 31 V memory High byte data	Read Byte 63
	:	:
	:	:
	:	:
	:	:
	Vn + 60 V memory Low byte data	Read Byte 121
	Vn + 60 V memory High byte data	Read Byte 122
	Vn + 61 V memory Low byte data	Read Byte 123
	Vn + 61 V memory High byte data	Read Byte 124
	Vn + 62 V memory Low byte data	Read Byte 125
	Vn + 62 V memory High byte data	Read Byte 126
	Vn + 63 V memory Low byte data	Read Byte 127
	Vn + 63 V memory High byte data	Read Byte 128
	Not Supported	Write Byte 1

Register Output (V–memory) Image Table Mapping

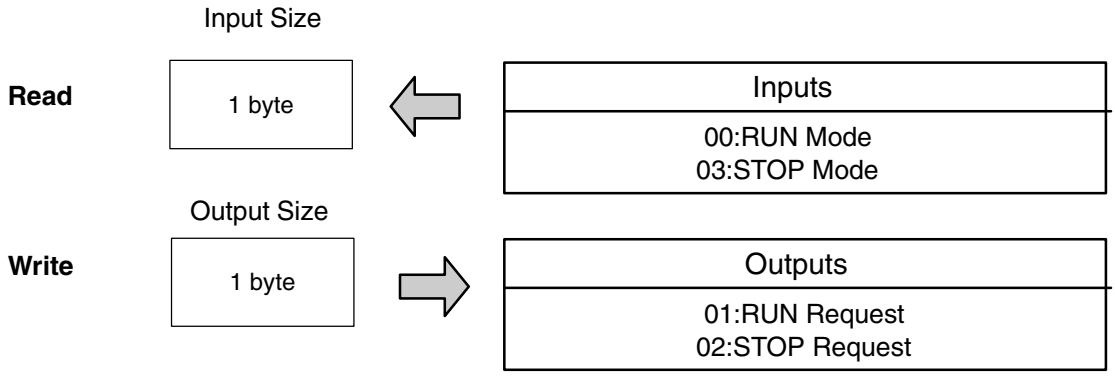


Decimal Bit	07	06	05	04	03	02	01	00	Size
Octal Bit	07	06	05	04	03	02	01	00	
	Not Supported								Read Byte 1
	Vn + 00 V memory Low byte data								Write Byte 1
	Vn + 00 V memory High byte data								Write Byte 2
	Vn + 01 V memory Low byte data								Write Byte 3
	Vn + 01 V memory High byte data								Write Byte 4
	Vn + 02 V memory Low byte data								Write Byte 5
	Vn + 02 V memory High byte data								Write Byte 6
	Vn + 03 V memory Low byte data								Write Byte 7
	Vn + 03 V memory High byte data								Write Byte 8
	Vn + 04 V memory Low byte data								Write Byte 9
	Vn + 04 V memory High byte data								Write Byte 10
	Vn + 05 V memory Low byte data								Write Byte 11
	Vn + 05 V memory High byte data								Write Byte 12
	Vn + 06 V memory Low byte data								Write Byte 13
	Vn + 06 V memory High byte data								Write Byte 14

	Vn + 07 V memory Low byte data	Write Byte 15
	Vn + 07 V memory High byte data	Write Byte 16
	Vn + 08 V memory Low byte data	Write Byte 17
	Vn + 08 V memory High byte data	Write Byte 18
	Vn + 09 V memory Low byte data	Write Byte 19
	Vn + 09 V memory High byte data	Write Byte 20
	:	:
	:	:
	:	:
	:	:
	Vn + 30 V memory Low byte data	Write Byte 61
	Vn + 30 V memory High byte data	Write Byte 62
	Vn + 31 V memory Low byte data	Write Byte 63
	Vn + 31 V memory High byte data	Write Byte 64
	:	:
	:	:
	:	:
	:	:
	Vn + 60 V memory Low byte data	Write Byte 121
	Vn + 60 V memory High byte data	Write Byte 122
	Vn + 61 V memory Low byte data	Write Byte 123
	Vn + 61 V memory High byte data	Write Byte 124
	Vn + 62 V memory Low byte data	Write Byte 125
	Vn + 62 V memory High byte data	Write Byte 126
	Vn + 63 V memory Low byte data	Write Byte 127
	Vn + 63 V memory High byte data	Write Byte 128

PLC Mode Image Table Mapping

I/O Image



Dec. Bit	07	06	05	04	03	02	01	00	Size
Oct. Bit	07	06	05	04	03	02	01	00	
RUN Request	0	0	0	0	0	0	0	1	Read Byte 1
STOP Request	0	0	0	0	0	0	1	0	
STOP	0	0	0	0	0	0	0	0	Write Byte 1
RUN									

Adapter Input/Output Status Word

Polling format that the DO–DEVNETS (slave) transmits to a master.

Address	Bytes	Data	Comment
+ 0	1	I/O Status	Bit 0: Not used Bit 1: Not used Bit 2: Not used Bit 3: Node Error (Node number has changed) ON: Error/OFF: Normal Bit 4: IDLE (Output is IDLE) ON: Idle/OFF: Normal Bit 7: OUTPUT Status ON: Enable/OFF: Disable
+ 1	1	PLC Mode	00: Mode = STOP 03: Mode = RUN

Polling format that a master transmits to a DO–DEVNETS (slave).

Address	Bytes	Data	Comment
+ 0	1	No Code	No request
		C3h	Enable OUTPUT
		3Ch	Disable OUTPUT
+ 1	1	PLC Mode	01: RUN request 02: STOP request

D

Special Relays and DIP Switch Parameter Initializing

In This Appendix. . . .

— Special Relays
— DIP Switch Parameter Initializing

Network Status Speicial Relays

The DL05 has special relays which allows the D0–DEVNETS to monitor the network status. These relays are SP120 and SP121.

SP	Condition	Details
SP120	ON	Communicating
	OFF	No communication
SP121	ON	Communication error
	OFF	Normal

Initializing Parameter Values

The values of the system parameter registers, V7610 – V7617, can be changed and initialized by the position of DIP switches SW1–3 and SW1–6.

Parameter values when the DL05/06 is powered up.

SW–3	SW1–6	V7610	V7611	V7612	V7613	V7614	V7615	V7616	V7617
OFF	OFF	*1	*1	*1	*1	*1	*1	*1	*1
OFF	ON	O40400	2	O40500	2	O3000	128	O3100	128
ON	OFF	O40400	2	O40500	2	O3000	58	O3100	52
ON	ON	O40400	2	O40500	2	O3000	128	O3100	128

*The parameter value in the EEPROM is moved to a register.

D0–DEVNETS Think & Do/Entity Setup

E

In This Appendix. . . .

— D0–DEVNETS Think & Do/Entivity Setup

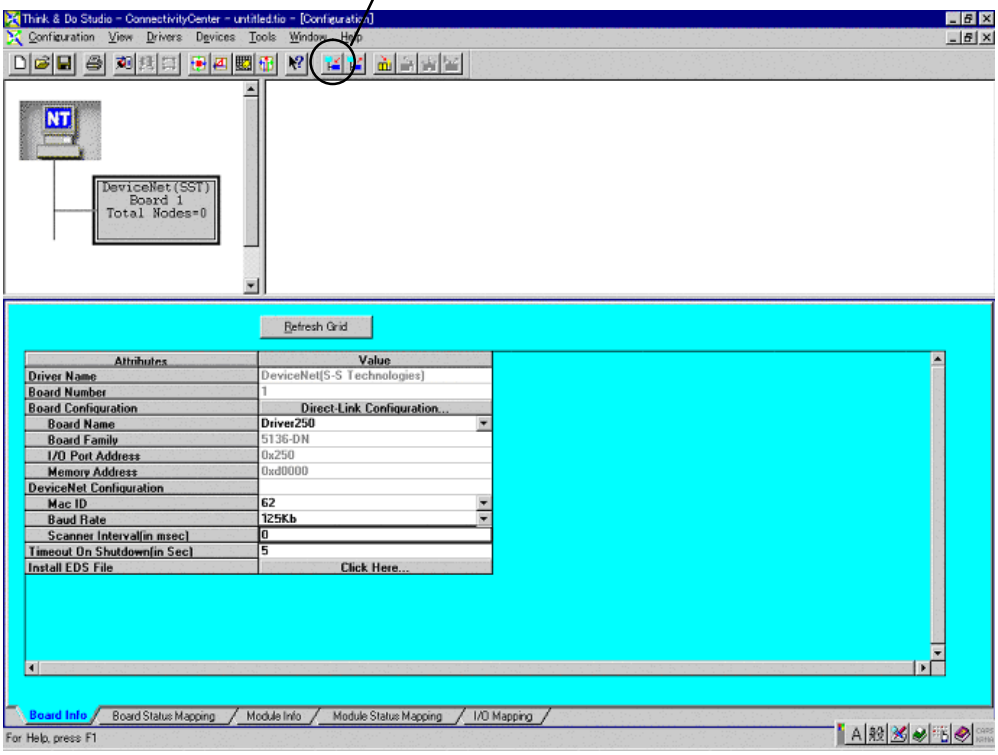
D0–DEVNETS Think & Do/Entivity Setup

For those who are using the D0–DEVNETS as slave I/O with Think & Do Studio PC based control, the following example shows how to setup Think & Do on your network.

T&D/Entivity setup for PC control

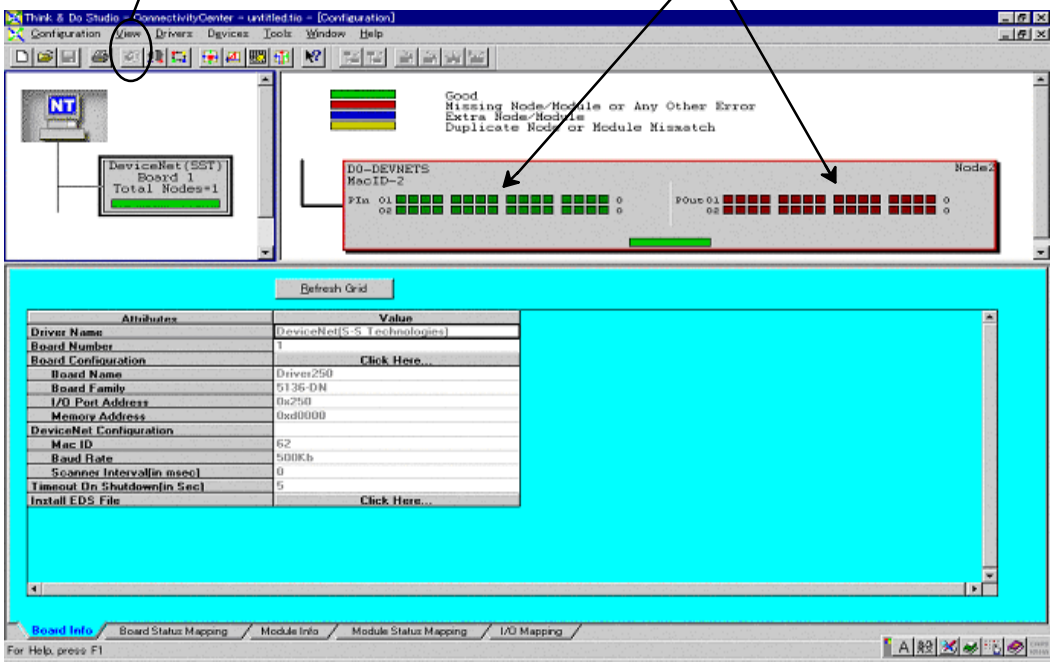
Use the following procedure to setup the D0–DEVNETS adapter with Think & Do Studio.

1. Click on Add Driver and SST card is installed.
2. Set MAC ID to 62.
3. Set baud rate to either125k or 250k.
4. Set scanner interval to 0.
5. Set timeout shutdown to 5.
6. EDS not needed.



7. Click on connection.

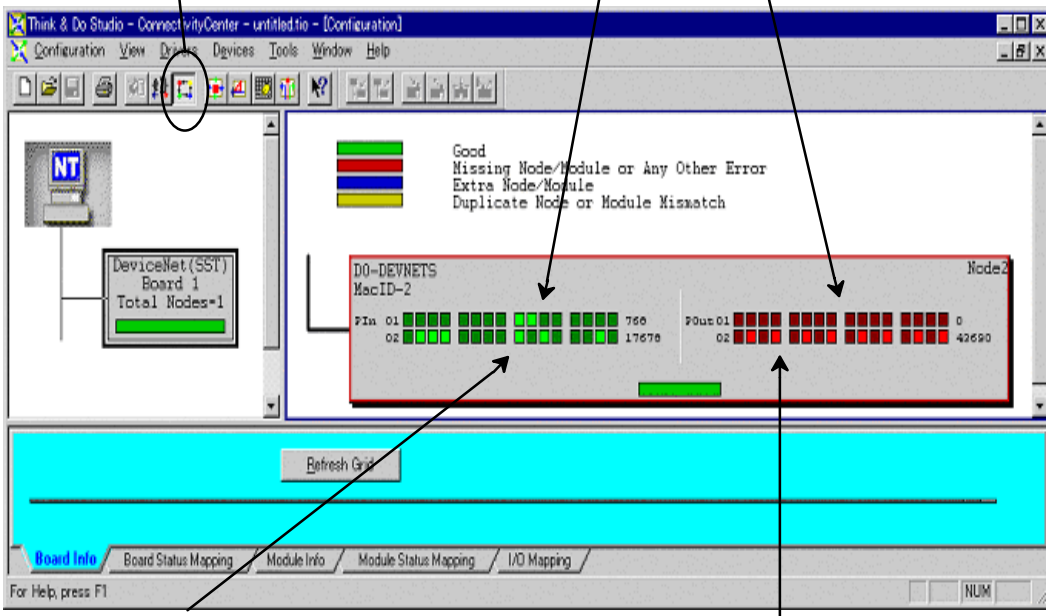
Think & Do/Entivity will display D0–DEVNETS MacID #. PIn and POut will display 32 points each.



8. Click on Scan and communication will begin.

PIn 01 will display diagnostic data.

POut 01 controls D0–DEVNETS.



Inputs X0–X7 (V40400) will display on bits 0–15 of PIn 02.

Outputs Y0–Y15 (V40500) will display, and bits 0–15 of POut 02 can be forced ON/OFF.

For those who are using a DL05 with D0–DEVNETS as a PLC, for local I/O control, on a DeviceNet network with Think & Do Studio, the following example shows how to setup the DL05 and the adapter for use as a PLC on the network.

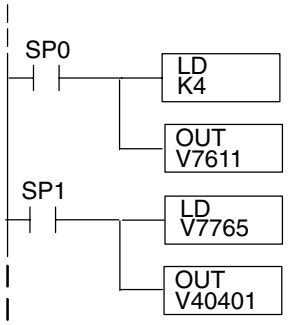
Setup Think & Do with DL05 on a network

Use the following steps to setup the adapter with the DL05 PLC for local control on a network. The RLL program is edited using ***Direct***SOFT32 programming software.

Set DIP switch, SW1, as follows:

1. SW1–1: OFF
   SW1–2: ON (communications rate 500K or the baud rate of your choice)
   SW1–3: OFF
   SW1–4: OFF
   SW1–5: OFF
   SW1–6: ON (initial value)

   SW1–6 sets up the following system parameter defaults:
   V7610 = O40400 / V7611 = 2
   V7612 = O40500 / V7613 = 2
   V7614 = O3000 / V7615 = 128
   V7616 = O3100 / V7617 = 128
2. Set rotary switch, SW2 = 02, SW3 = 0.
3. Add the following RLL code to the DL05 program:



Set to read 4 bytes to display active input points.

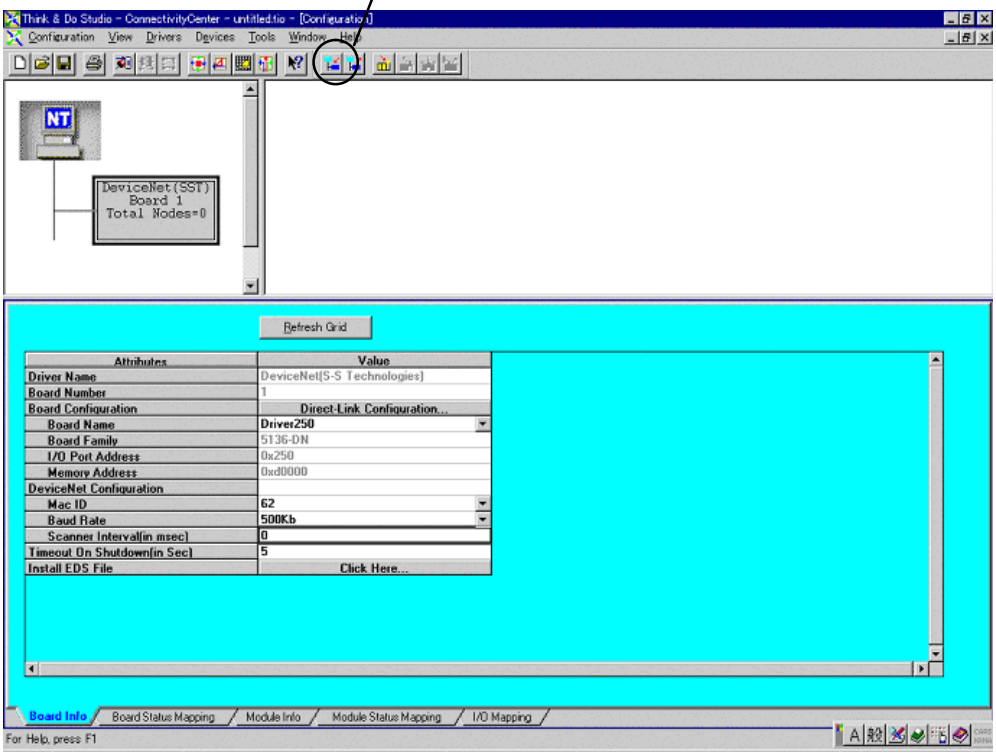
Load the total number of scan cycles.

V40401 = X20–X37

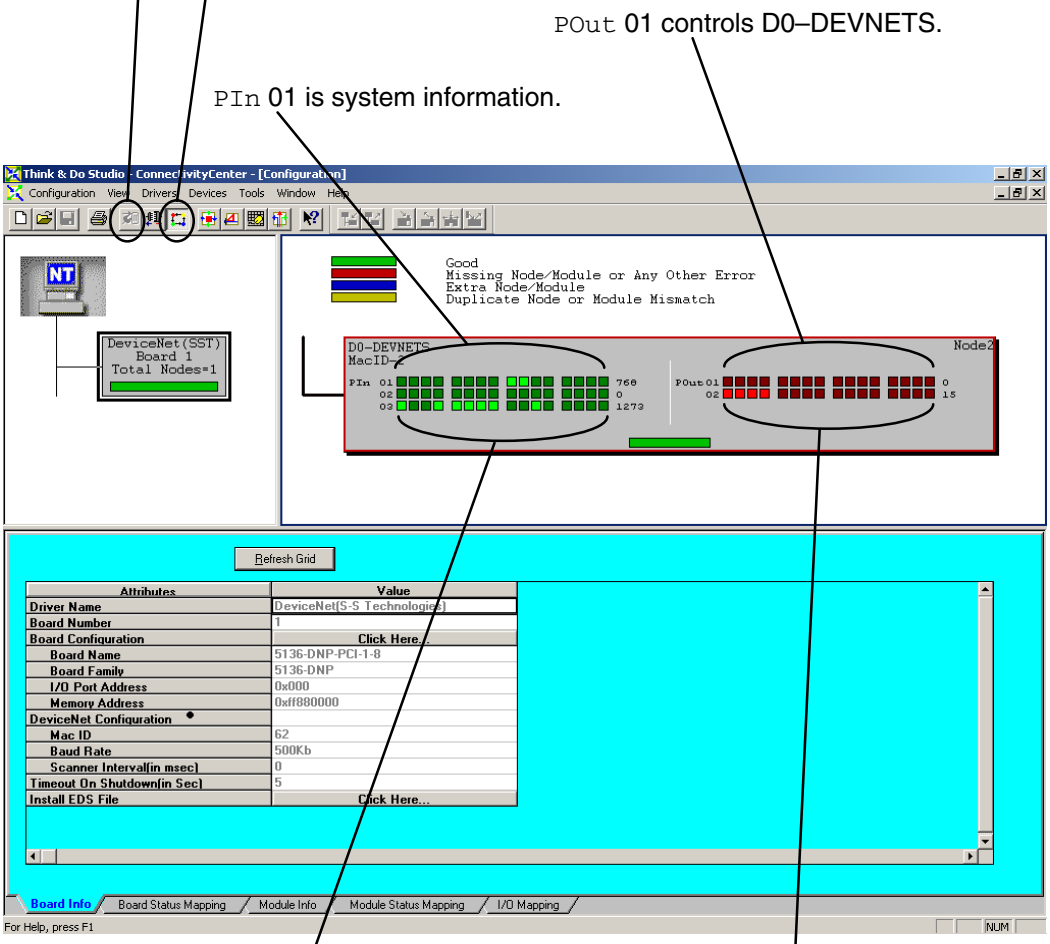
4. Return the DL05 to RUN mode.

T & D Studio setup Use the following procedure to setup the D0–DEVNETS adapter with Think & Do Studio.

1. Click on Add Driver and SST card is installed.
2. Set MAC ID to 62.
3. Set baud rate (500K in this example).
4. Set scanner interval to 0.
5. Set timeout shutdown to 5.
6. EDS not needed.



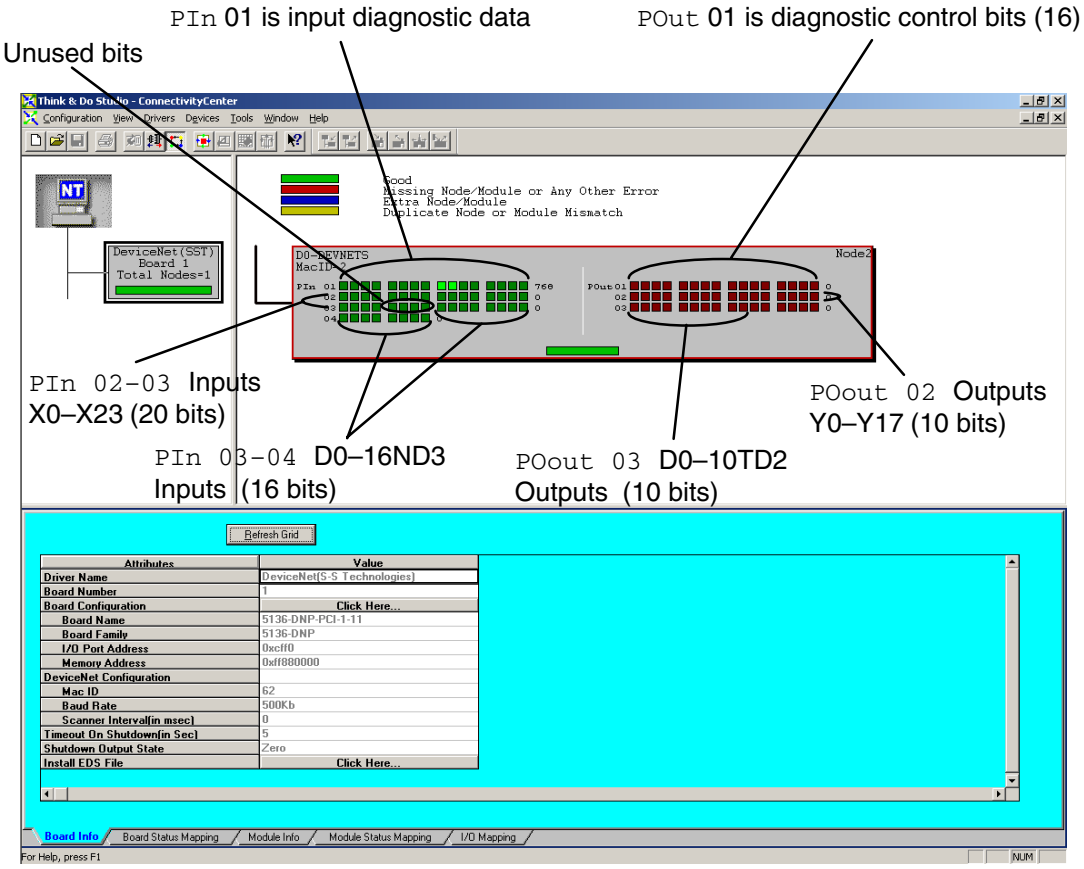
7. Click on connection.
8. Click on Scan and communication will be setup.



Using the DL05 PLC example will allow easy access to other bits in the PLC without using explicit messaging. Polling is often faster than explicit messaging.

The following example is a DL06 PLC with the following I/O modules installed:

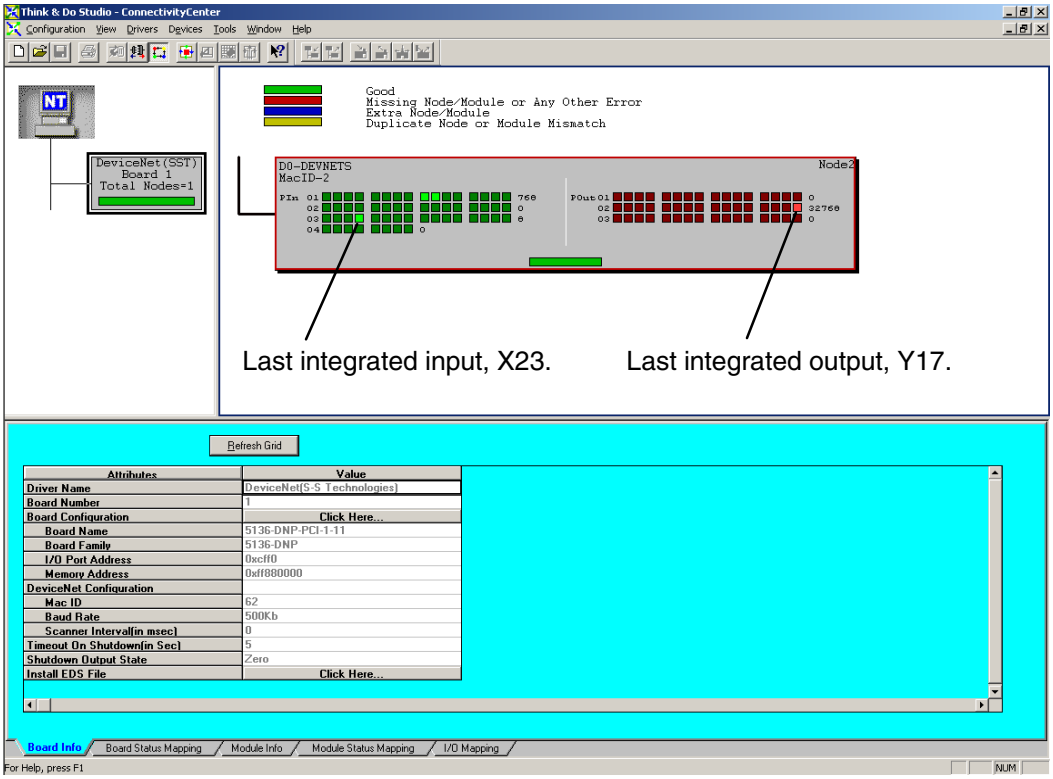
Slot 1 = D0–16ND3
Slot 2 = F0–2AD2DA–2
Slot 3 = D0–10TD2
Slot 4 = D0–DEVNETS



PIn 01 shows the input diagnostic data (16 bits). PIn 02, linked to V40400, and the first four bits of PIn 03 are the DL06 integrated inputs (X0–X23 octal = 20 bits). The next four bits are not used. The last eight bits of PIn3 are the first eight inputs of the D0–16ND3 and PIn 04 are the last eight inputs of the D0–16ND3.

POut 01 are the diagnostic control bits for D0–DEVNETS. POut 02, linked to V40500, shows the 16 integrated outputs of the DL06 (Y0–Y17 octal), and POut 03 are the bits for the D0–10TD2 output points.

This is how the display appears after scanning begins. Notice the end points for the DL06 integrated I/O. Only the discrete I/O is polled. Analog I/O is setup in registers (See page 2–11).



Polled I/O

Byte	I/O Point								Address
PIn 02	X7	X6	X5	X4	X3	X2	X1	X0	V40400
PIn 02	X17	X16	X15	X14	X13	X12	X11	X10	V40400
PIn 03	NA	NA	NA	NA	X23	X22	X21	X20	V40401
PIn 03	X107	X106	X105	X104	X103	X102	X101	X100	V40401
PIn 04	X117	X116	X115	X114	X113	X112	X111	X110	V40402
POut 02	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0	V40500
POut 02	Y17	Y16	Y15	Y14	Y13	Y12	Y11	Y10	V40500
POut 03	Y107	Y106	Y105	Y104	Y103	Y102	Y101	Y100	V40501

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OIT with D0–DEVNETS

In This Appendix. . . .

— OIT with D0–DEVNETS and Think & Do/Entivity

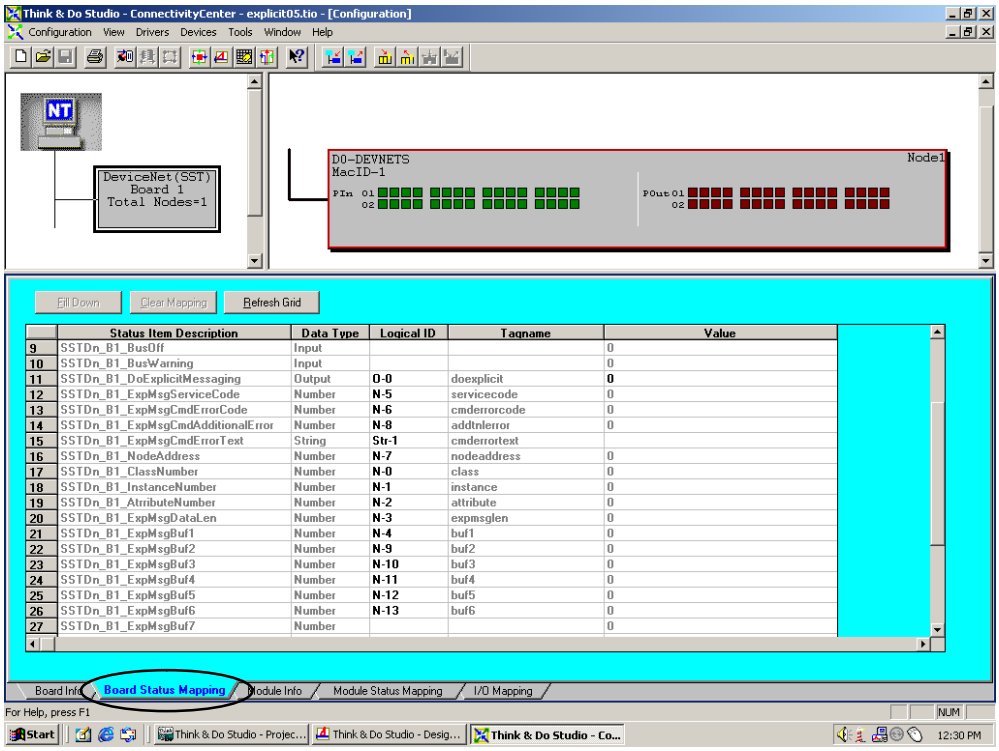
Using an OIT with D0–DEVNETS

An Operator Interface Terminal (OIT) can be used on your DeviceNet network. The example used here is for a D0–DEVNETS installed in a PLC on a DeviceNet network. The network is controlled by a PC, with an SST module installed and using Think & Do Studio. The OIT is an EZTouch unit connected to a DL05 PLC. The PLC does not have a RLL program in it.

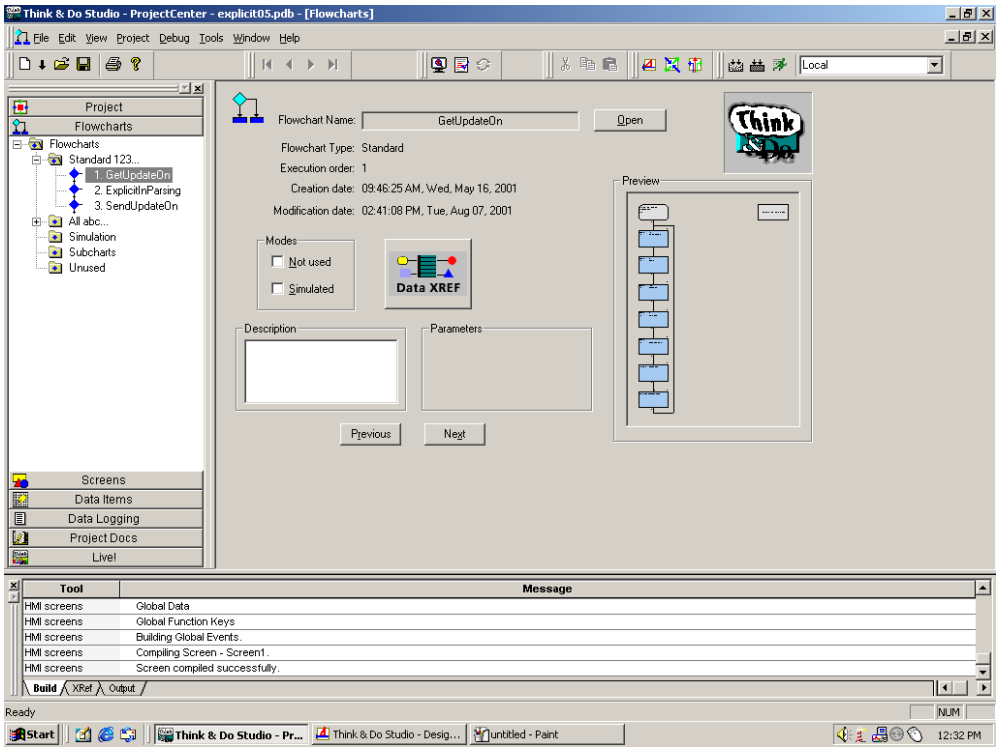
T&D Studio

You will first map the DeviceNet status.

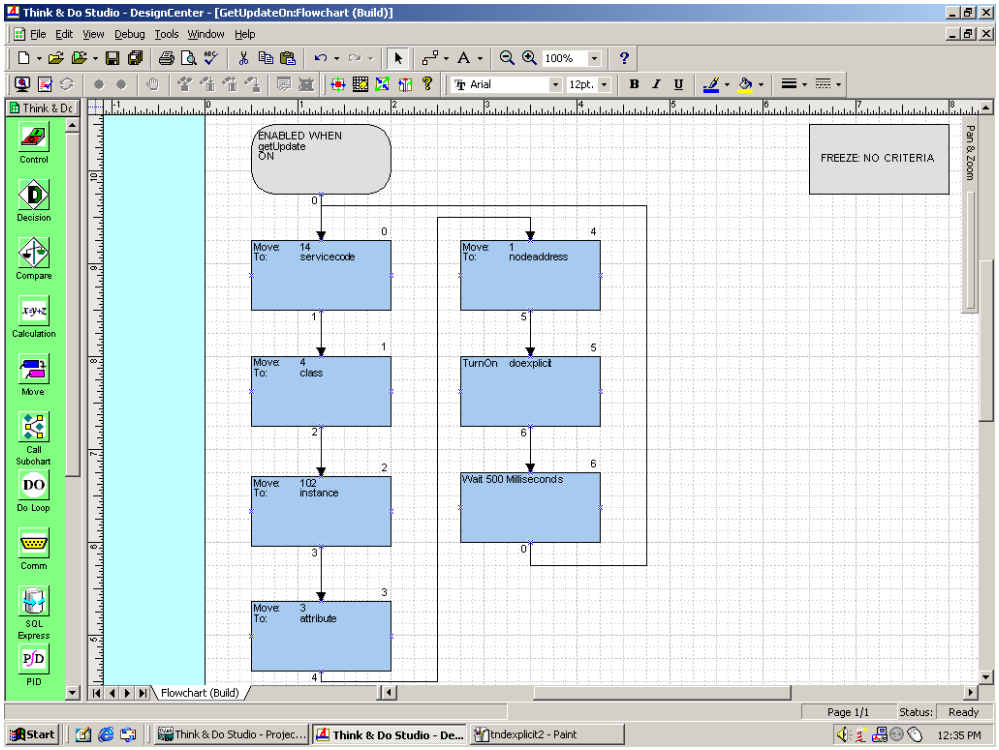
Connect to the D0–DEVNETS on the DeviceNet network, select **Board Status Mapping** so the status items can be mapped. Map the data and provide a tag name for each item.



Our example uses three flowcharts. Flowchart 1 Gets the data, flowchart 2, entitled Parsing, breaks down the data and flowchart 3 Sends the data. We will select **GetUpdateOn** first.

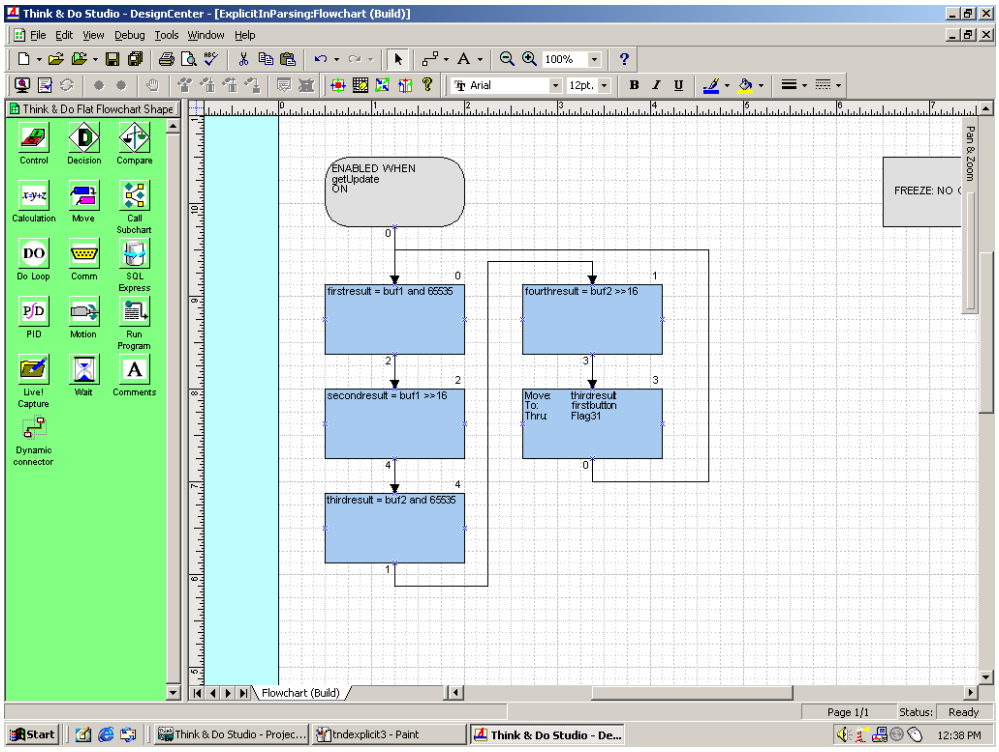


This flowchart shows how to set up explicit messaging to Get (receive) the data. Once the explicit messaging is done, it normally turns off, but in this example, the last block provides a 500 millisecond delay which allows the explicit messaging to turn on again.

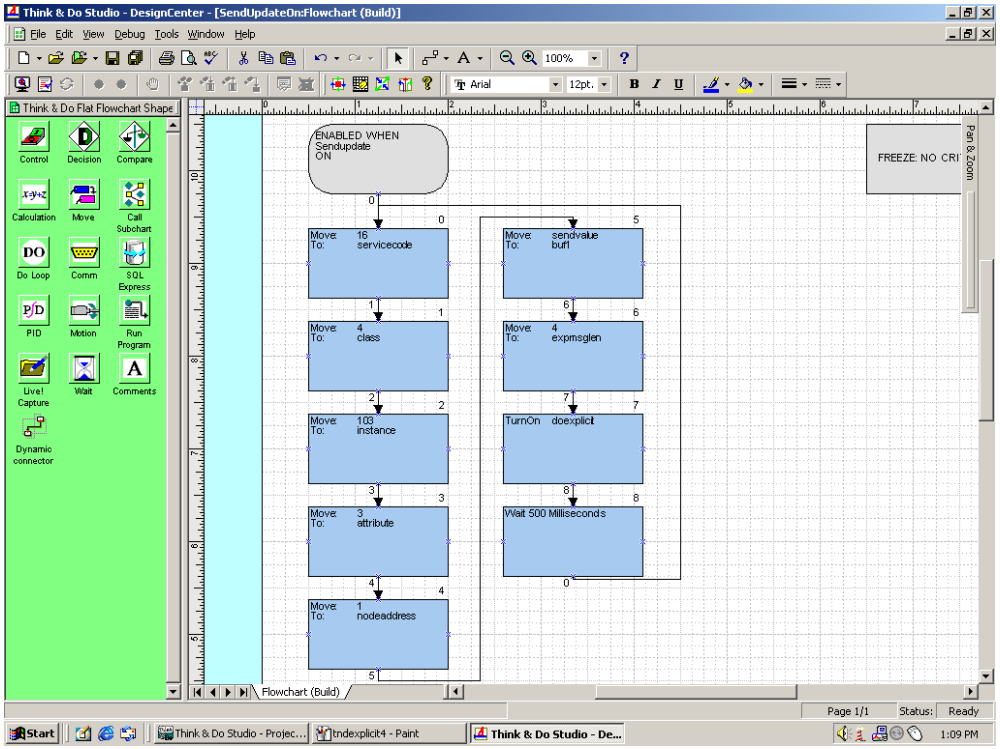


Refer to the DeviceNet tables located in Appendix B when creating your flowcharts.

Since Think & Do Studio has 32 bit registers, the 32 bits must be broken down into two 16 bit registers in order to transmit (send) the correct data to the PLC. This flowchart, Parsing, shows how it is done.



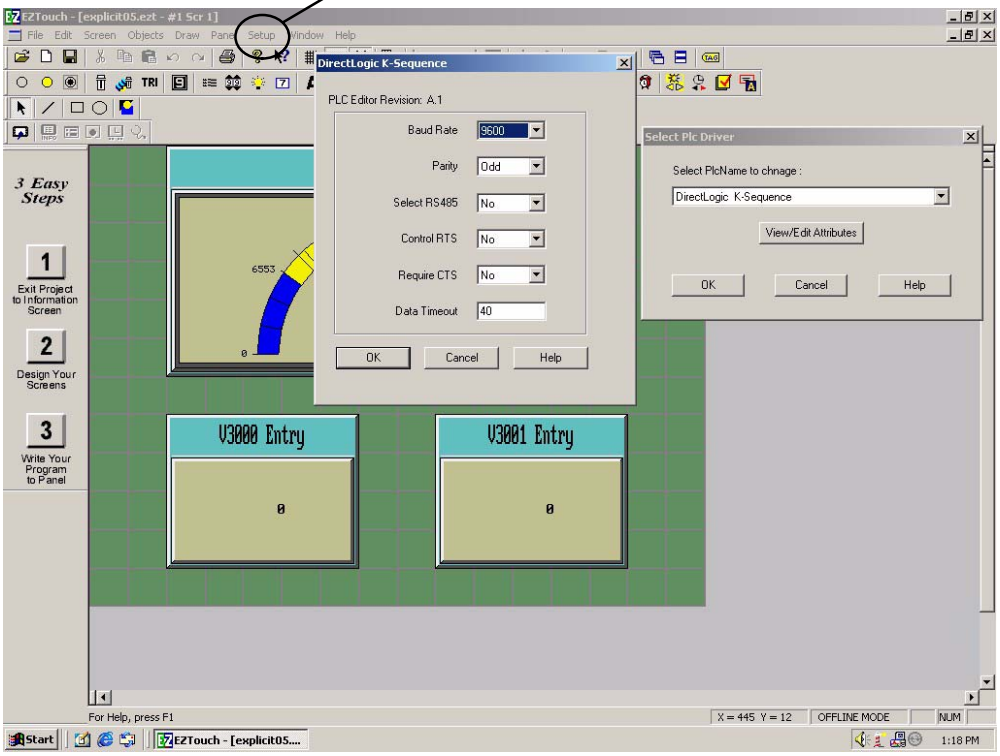
This flowchart, **SendUpdateOn**, shows you how to put the data into a send (transmit) buffer. The data gets cleared out of the buffer whenever each explicit messaging is done, therefore, data needs to be loaded into the buffer before each explicit messaging is turned on. Notice that this flowchart uses a 500 millisecond wait block to allow the explicit messaging to turn on continuously.



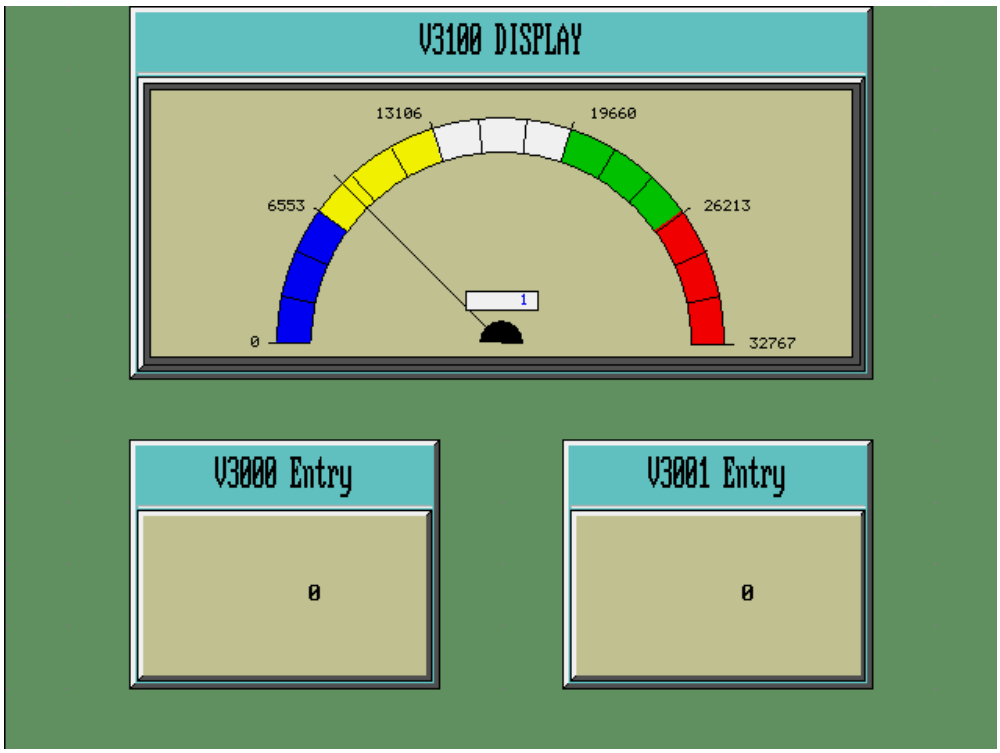
After Think & Do has been setup, the EZTouch panel can be connected to the DL05/06 serial port. Match the communications settings in the EZTouch software to the settings for the DL05/06 serial port setup.

From the development screen, select **Setup** then **PLC...**.

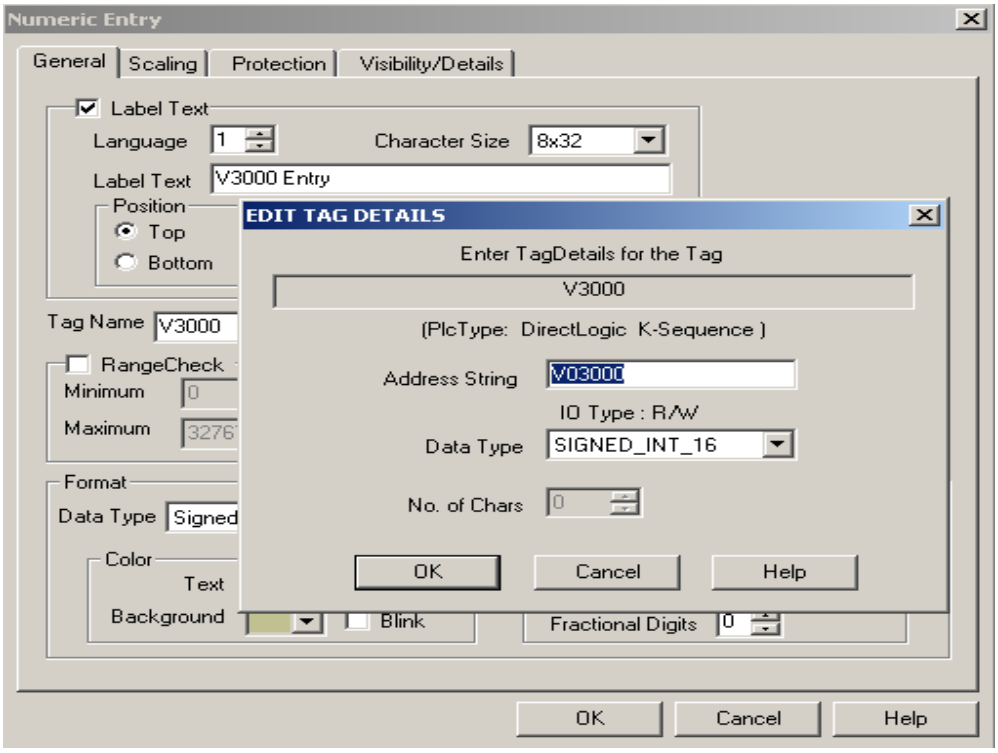
Refer to the diagram below.

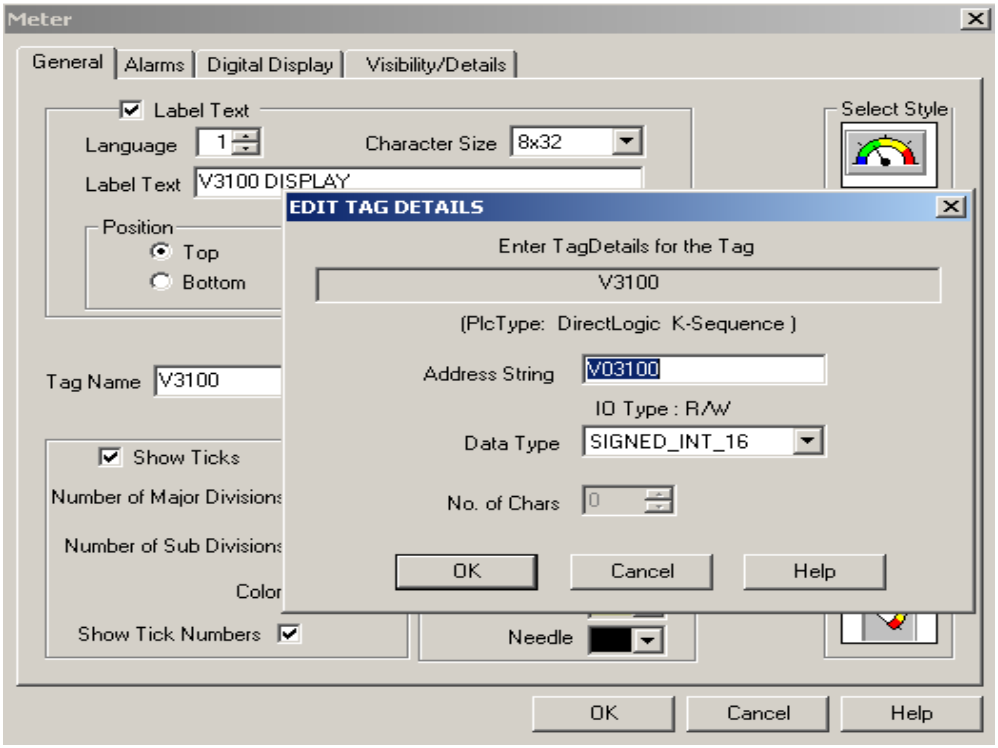


This is an example of a meter display and two numeric entry parts showing the use of the default V–memory input and output locations.



Finish the EZTouch display by completing the input and output information. Consult the EZTouch User Manual or the EZTouch help menu for more details.





G

D0–DEVNETS and Allen–Bradley Set up

In This Appendix. . . .

— Setup D0-DEVNETS with Allen-Bradley **RSNetworx™**

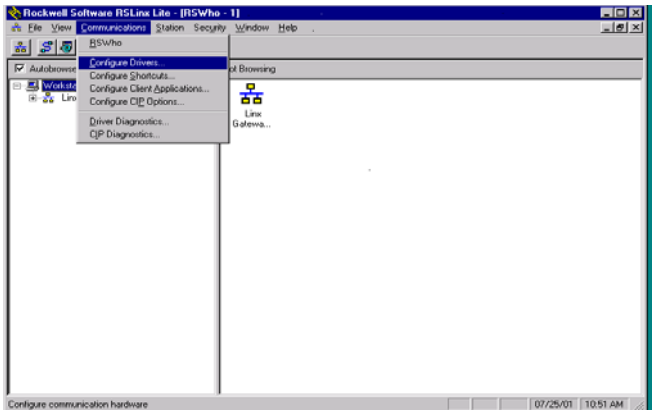
Setup D0–DEVNETS with Allen–Bradley RSNetWorx™

For those who are using the D0–DEVNETS as a slave with an Allen–Bradley PLC, the examples on the following pages will step you through the process of setting up your Allen–Bradley DeviceNet network using RSNetWorx™.

RSLinx

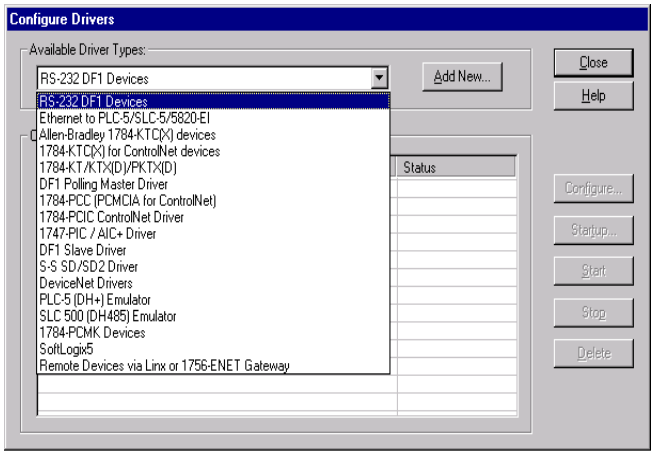
Begin by opening your RSLinx to configure the DeviceNet driver.

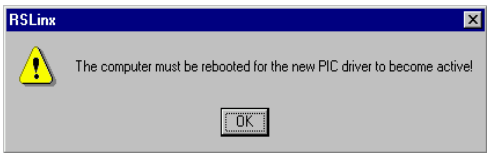
1. Click on **Communications.**
2. Click on **Configure Drivers**.



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

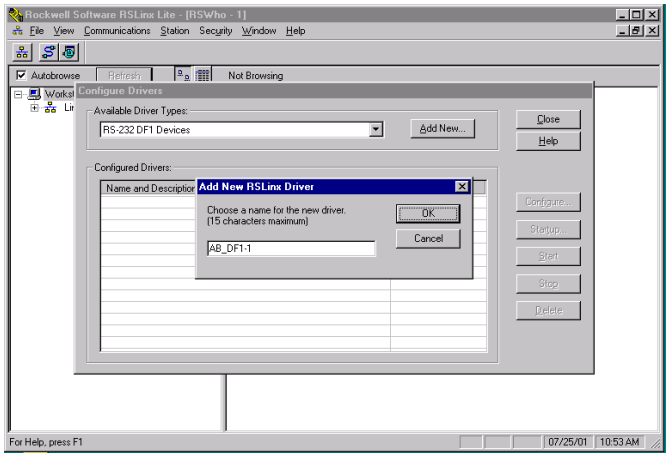
A DF1 driver is selected in this example.





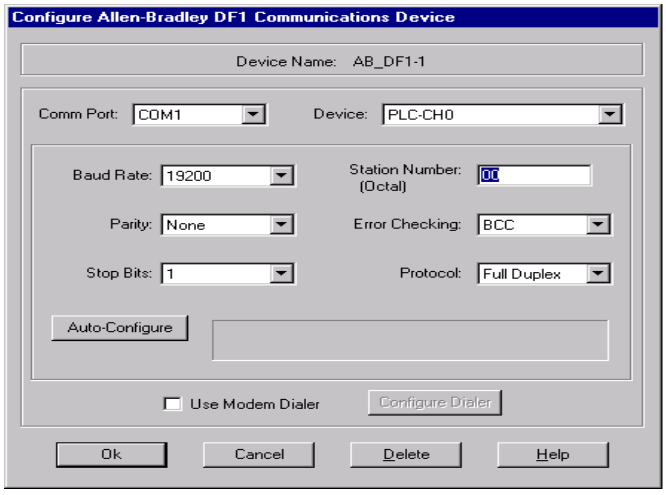
Note: Selecting a new driver may prompt you to reboot or to restart your computer.

5. Click **OK** in the pop–up window.



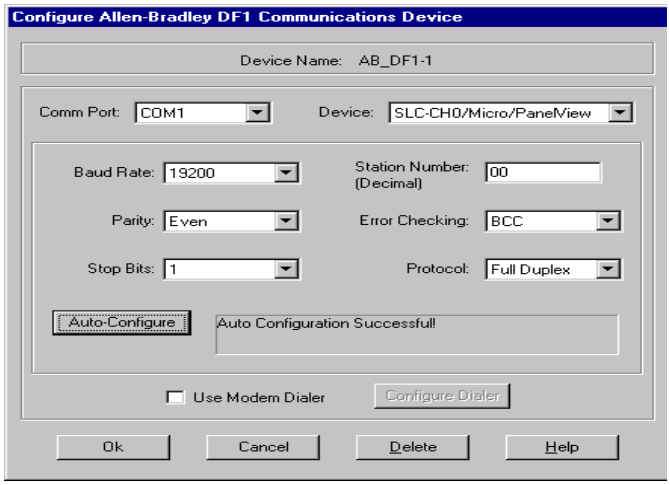
This window will appear.

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

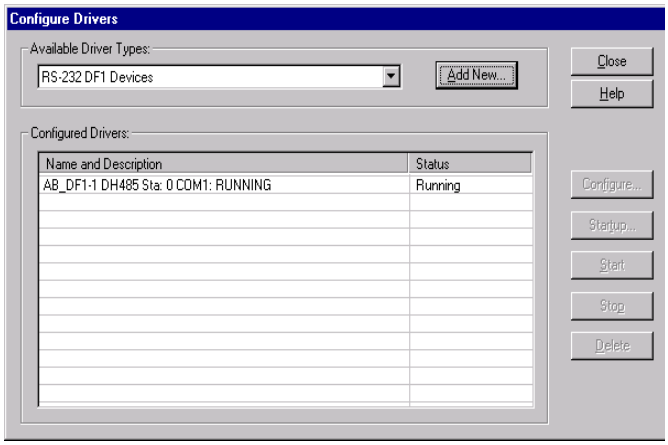


Auto Configuration Successfull will appear.

7. Click **OK**.

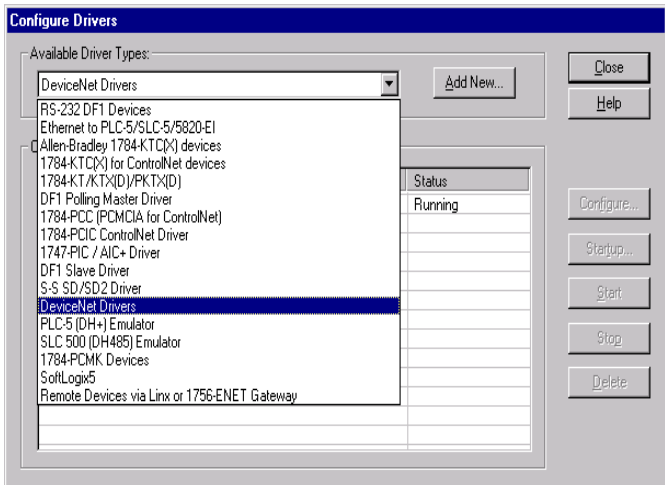


The Configure Drivers window will now appear showing the **Status** as Running.



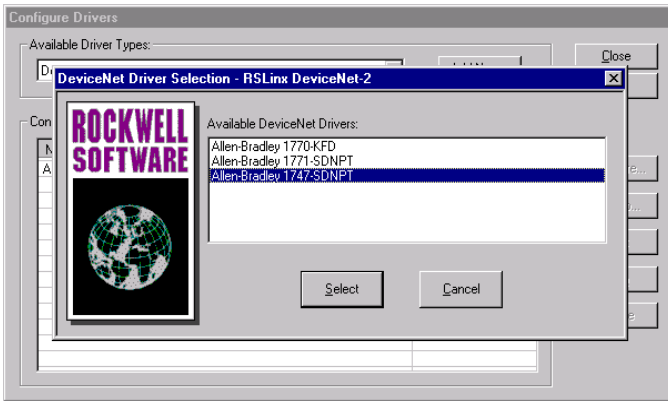
The next step is to add a DeviceNet driver.

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

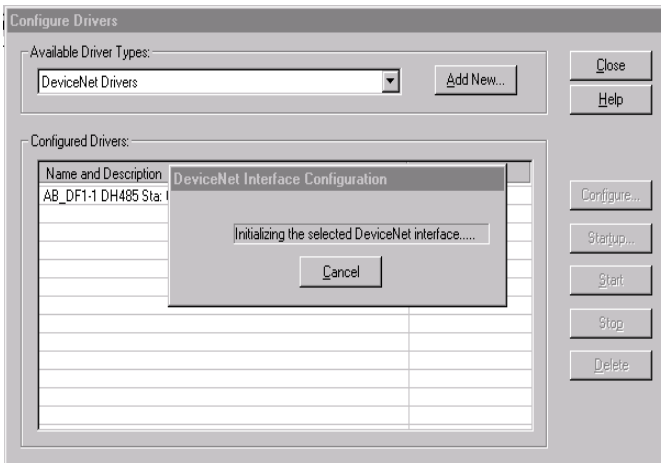


This window will appear.

10. Select the proper driver, then click **Select**.



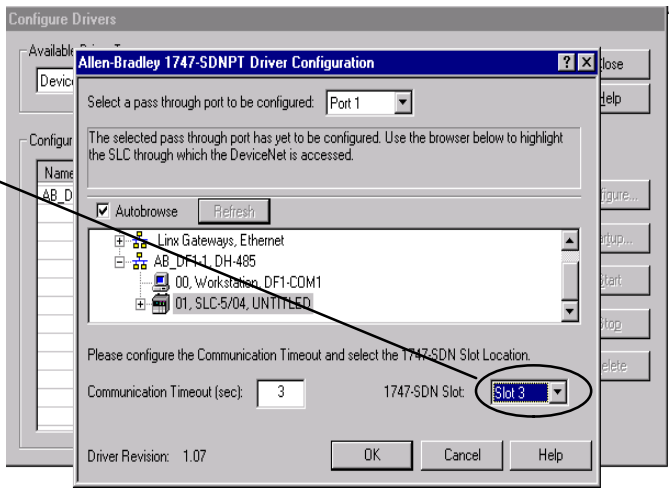
The DeviceNet Interface Configuration window will appear briefly.



This window will appear for you to setup the pass through port.

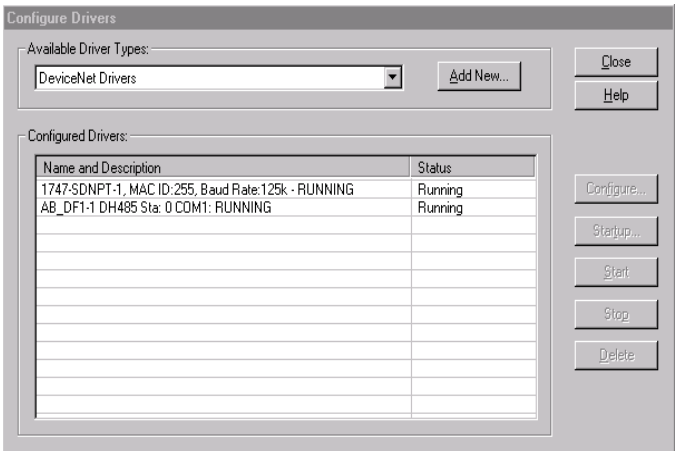
Be sure that you select the proper slot where the scanner module is located.

If this does not match, you will need to reconfigure the I/O in RSLogix.



11. Type in a name for the driver, then click **OK**.

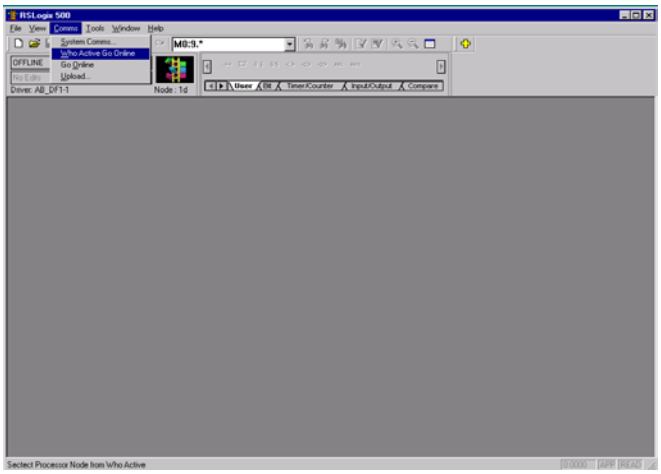
This window will appear indicating that both drivers are Running.



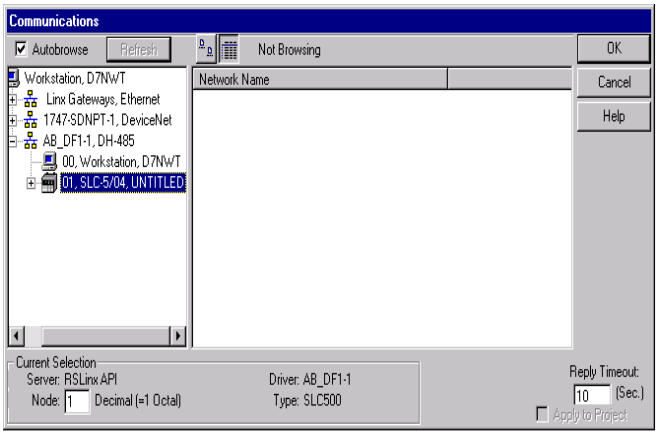
RSLogix

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

1. Click on **Communications** and select **Who Active Go Online.**

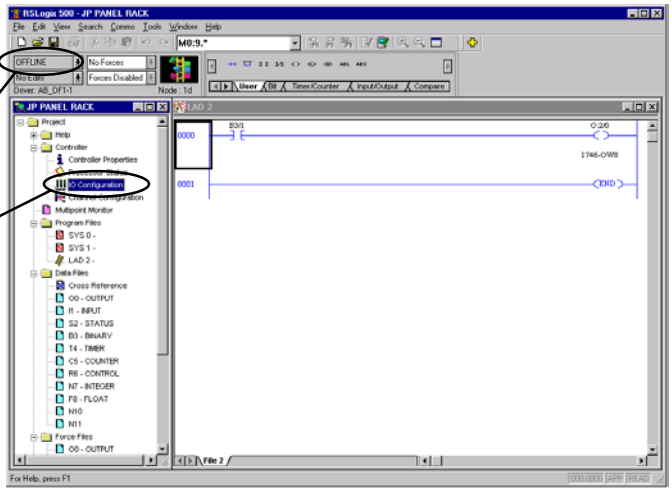


2. When this window appears, select the PLC to connect to.
3. Click **OK**.



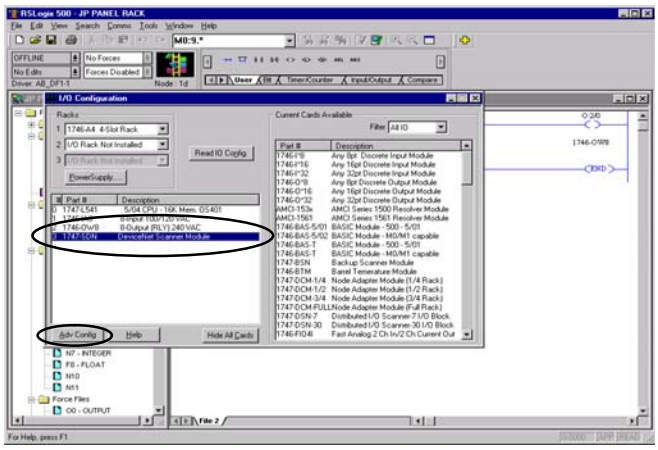
This window will appear with the relay ladder program. You now want to configure the I/O. This must be done **OFFLINE** in order to change the configuration.

4. Select **I/O Configuration**.



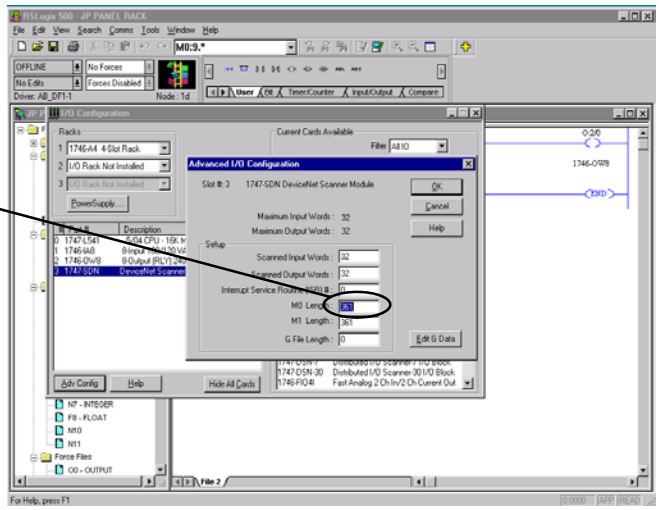
The I/O Configuration window will come into view. When you select the scanner module, verify that it is in the correct slot.

5. Click **Adv Config**.



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

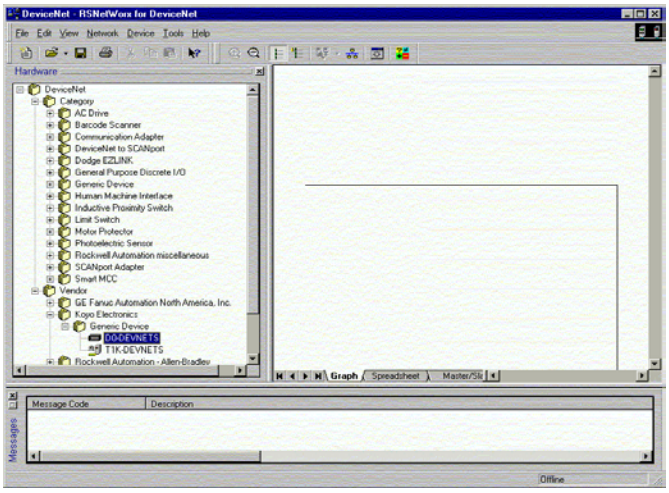
6. Click **OK**.



Configure D0–DEVNETS with RSNetWorx

You are now ready to configure the D0–DEVNETS installed in your DL05. First, open RSNetWorx. Look for Koyo Electronics in the hardware tree listed under **Vendor**. Click on the + to show the devices for Koyo. The following example shows two devices, D0–DEVNETS and T1K–DEVNETS.

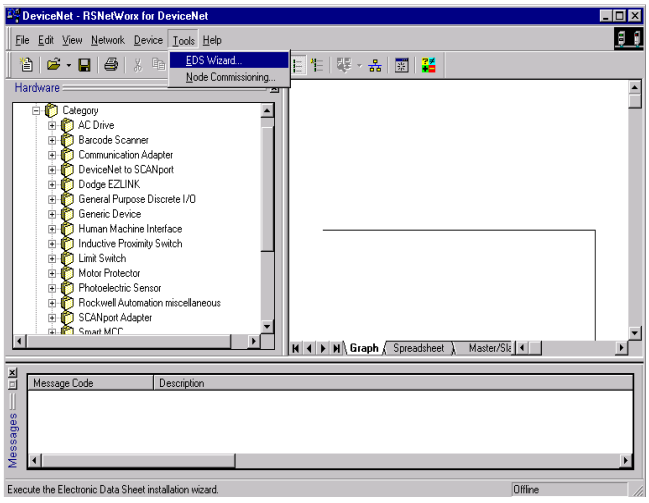
RSNetWorx opened.



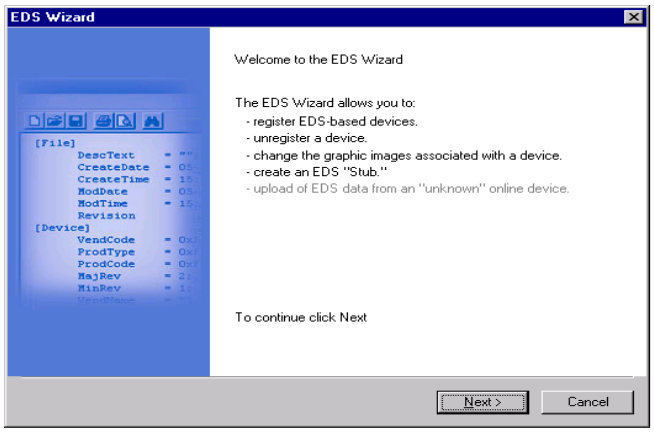
Using the EDS file

If you do not see your device listed, it will need to be added from the EDS file (refer to page 2–7). The following example will guide you through the procedure of installing the device from the EDS file.

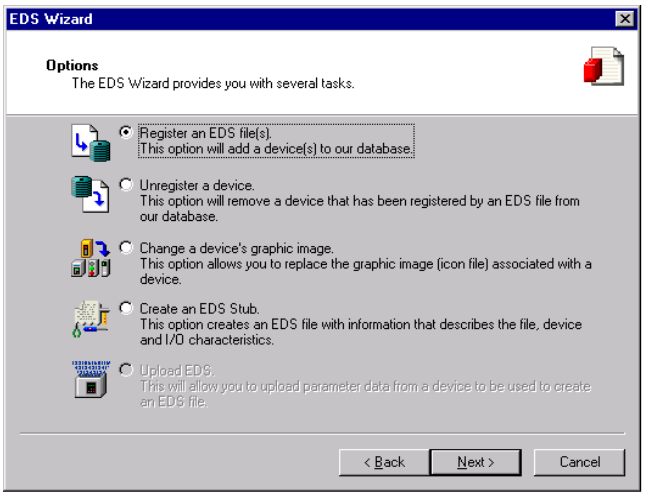
Click **Tools** and select **EDS Wizard...**.



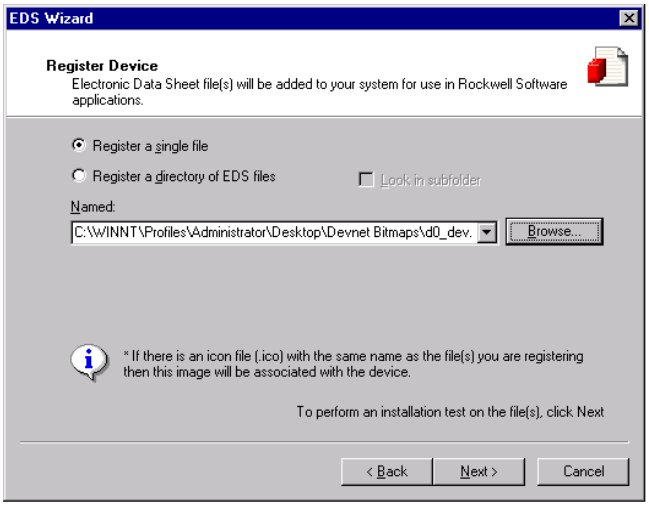
The EDS Wizard will open. Simply follow the instructions to register the device.



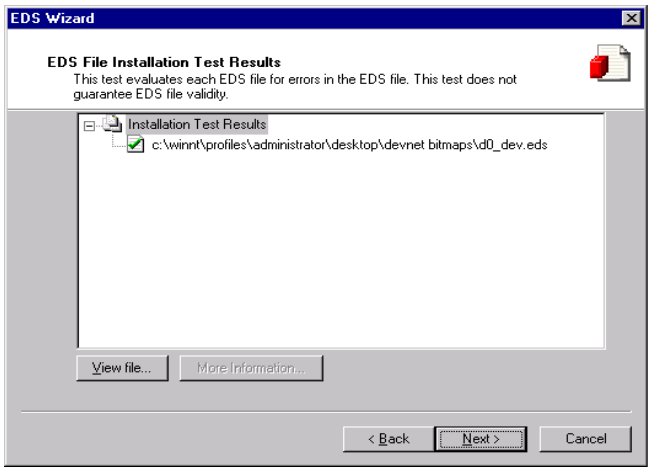
Register the EDS file.



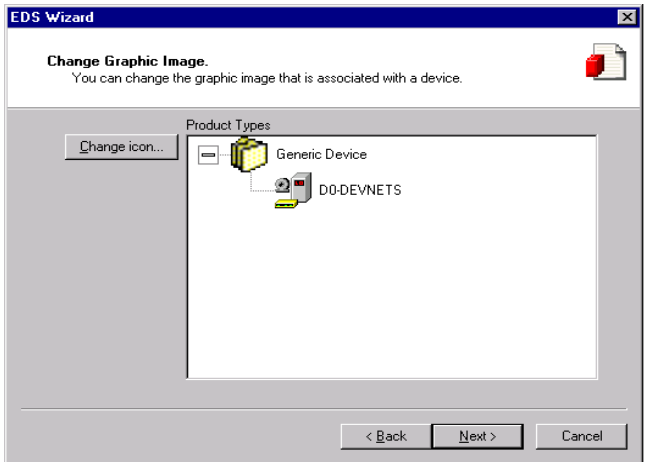
Enter the path for the EDS file.



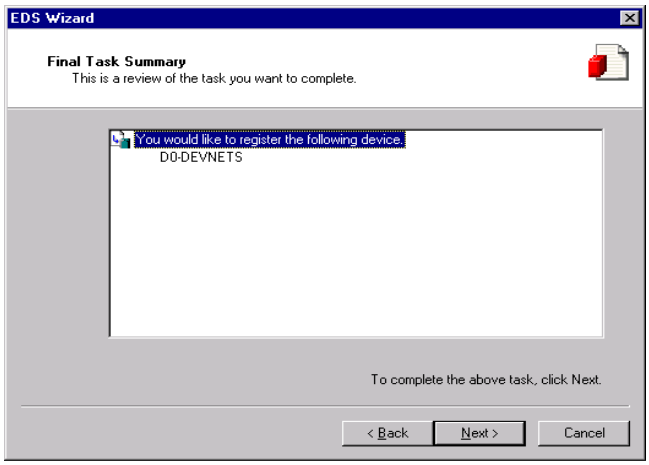
EDS file installation results.



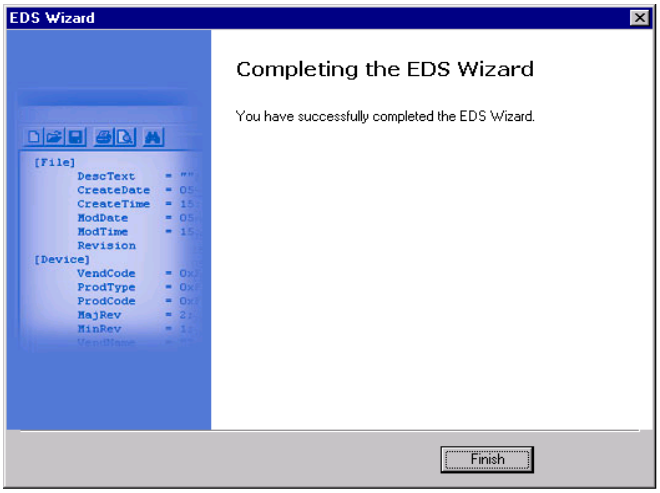
Change the icon image for your device, if you desire to.



Review what you have done.



EDS Wizard complete.

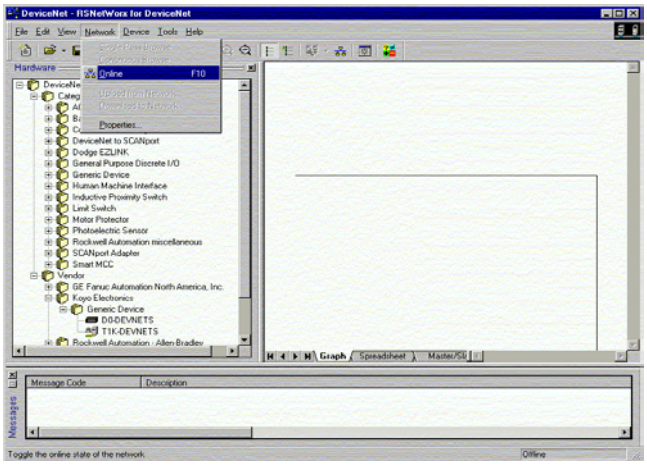


Go on line

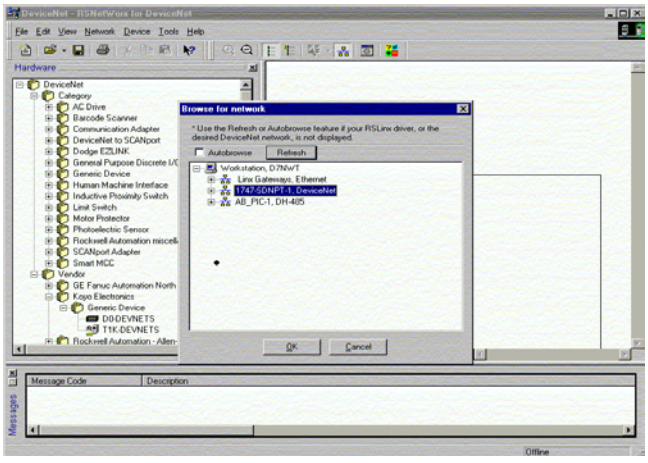
You will want to go on line with the network now.

In the main RSNetworx window,

1. Click on **Network** to select **Online**.



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



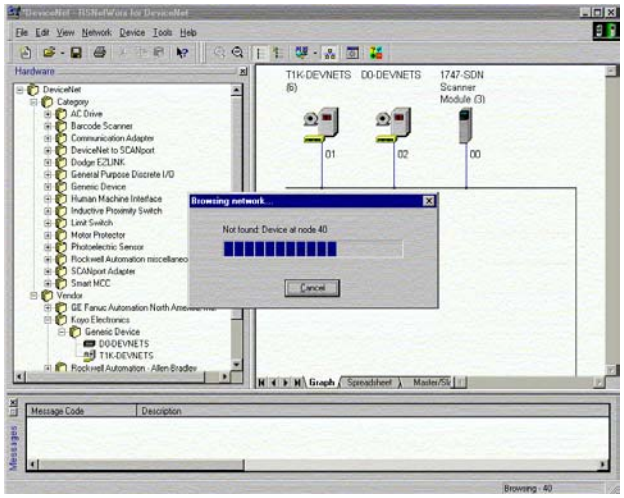
This message will appear.

4. Click **OK**.

Browsing network message.

Once the nodes are found, each node icon will appear on the RSNetworx window.

After all of the nodes have been found, browse can be cancelled.



Set up I/O parameters

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

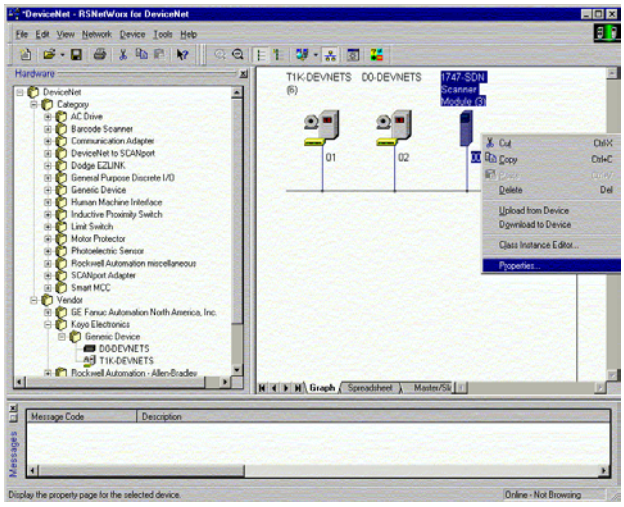
1. Select the scanner module.

This can be done in two different ways.

2. Click on the scanner name, then right click the mouse,

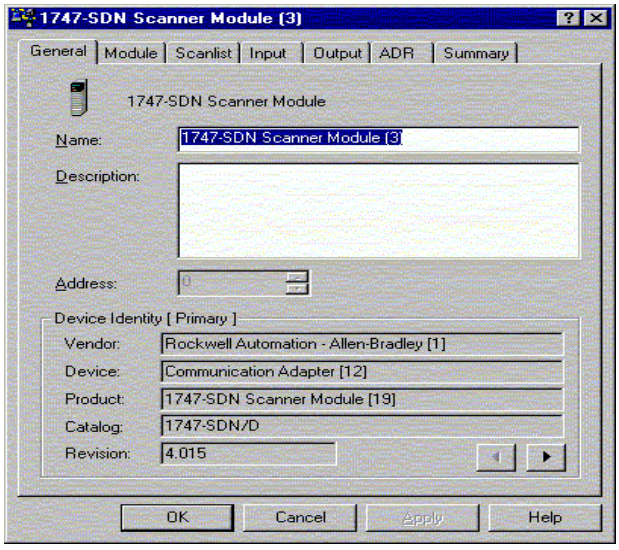
or

3. Click on **Device**, then click on properties in the pop–up window.

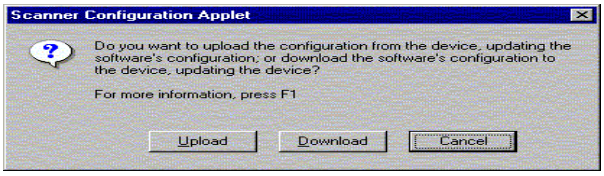


The properties window will appear.

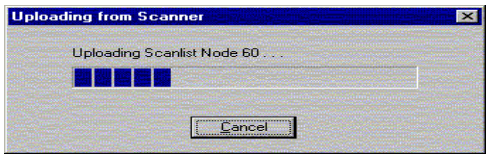
4. Click **Module**.



5. Click **Upload**.



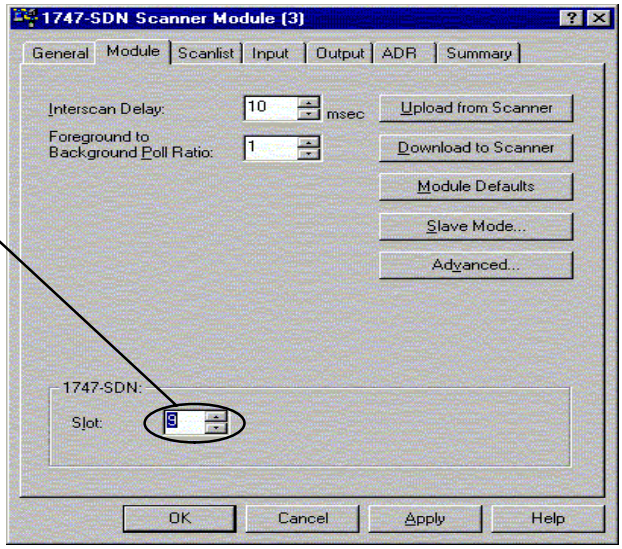
Uploading network information.



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

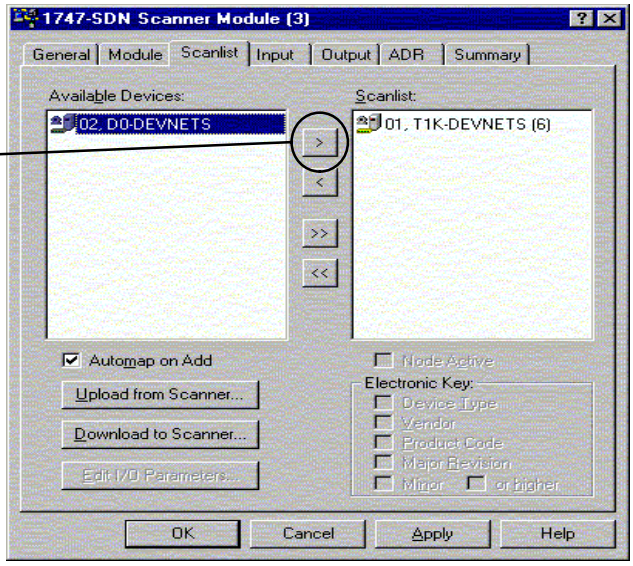
The data appears.

6. Select the correct slot number which the DeviceNet scanner module is residing.
7. Click **Scanlist**.



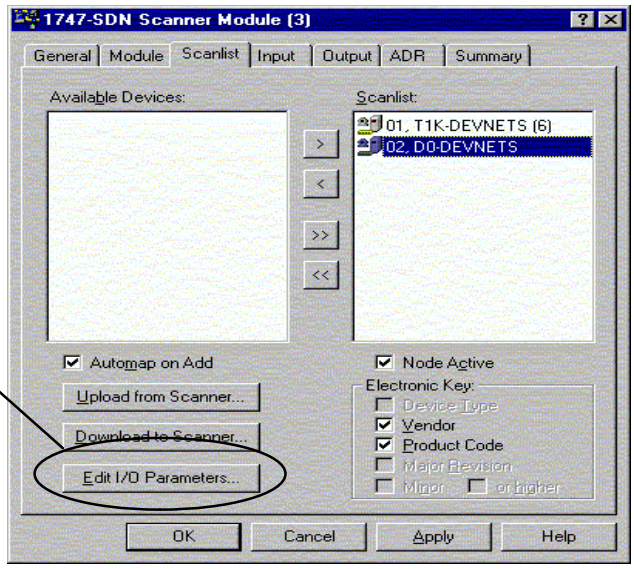
If the node that you want is not in the Scanlist, it needs to be moved to the list.

8. Highlight D0–DEVNETS
9. Click the right arrow.

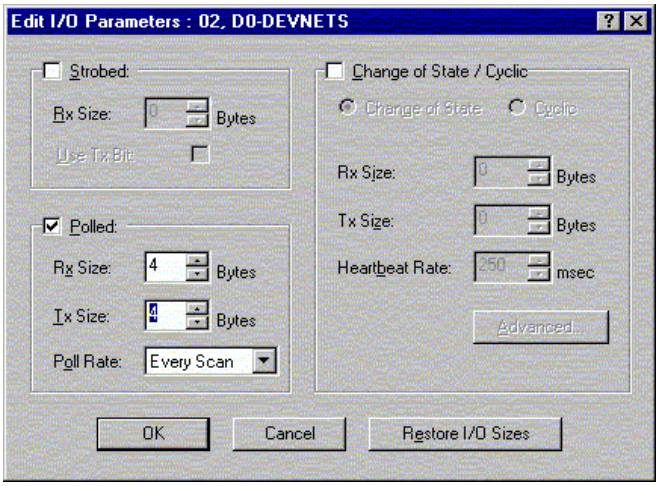


Now that D0–DEVNETS is in the list, be sure that it is selected.

10. Click **Edit I/O Parameters**.



11. Set the **Rx Size** and the **Tx Size** to match the polled data size for the number of I/O bytes (refer to tables in Appendix C).
12. Click **OK**.



Refer to page G–18 (Set Class Instance Attribute) if the total number of Rx and Tx bytes are not known.

This window will appear.

13. Click **Yes**.

Map the nodes

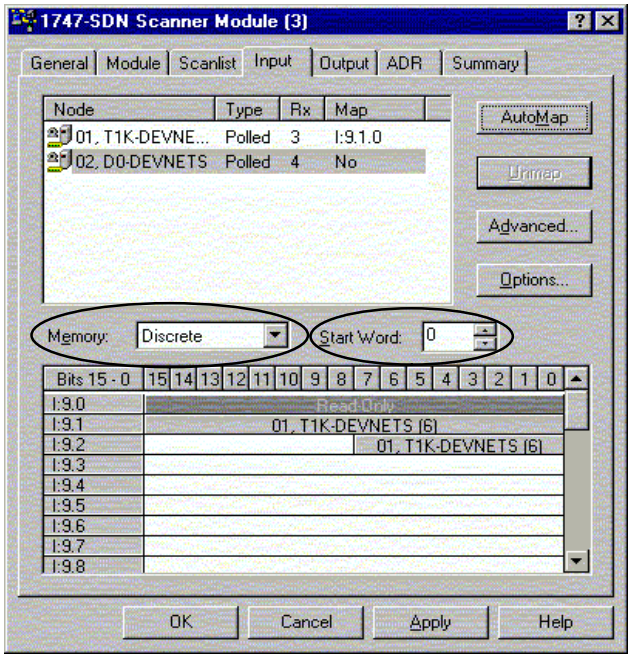
Map each node.

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

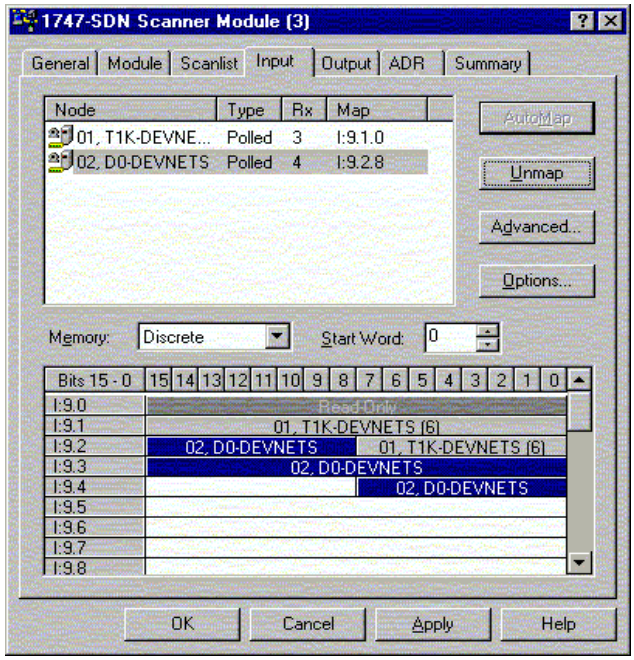
Be sure that D0–DEVNETS is selected.

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

NOTE: M file is used with explicit messaging.



At the completion of the input AutoMapping, the window will look like this example. The D0–DEVNETS node is now shown.

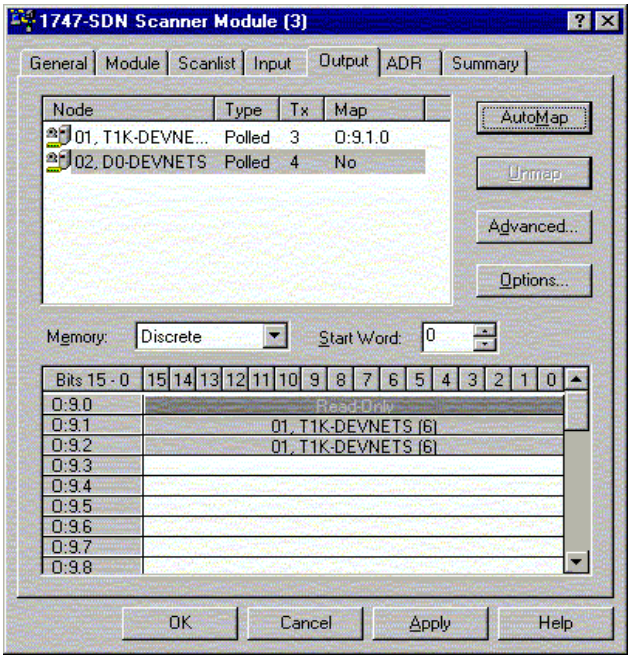


Now, map the outputs just the way you mapped the inputs. This time:

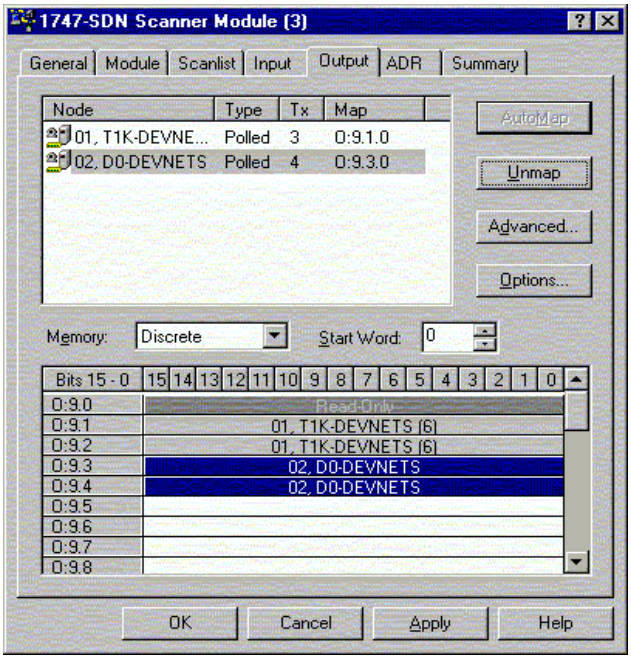
1. Click the **Output** tab in the properties window.

Be sure that D0–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 D0–DEVNETS node is now shown.

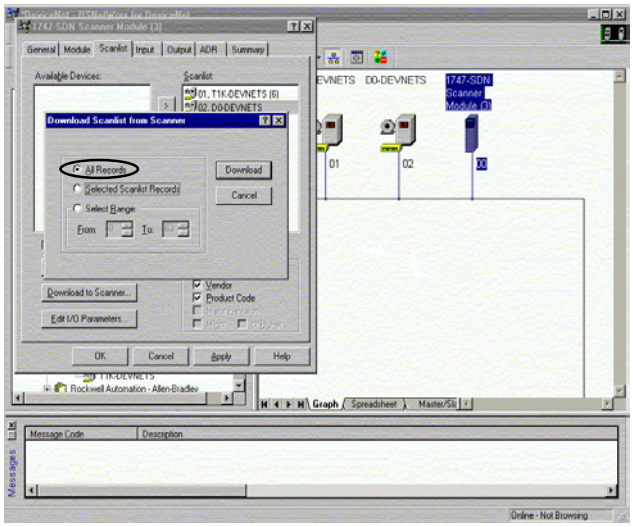


Download the scanlist to the scanner.

1. Select the **Scanlist** tab in the properties window.
2. Select **Download to Scanner**.

In the pop–up window:

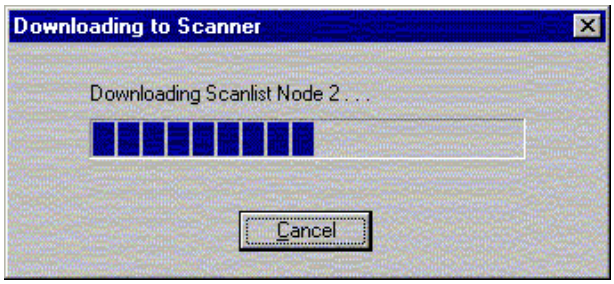
3. Check **All Records**, then
4. Click **Download**.



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

This is an error message that may appear.

When the download indication ends, download is complete.

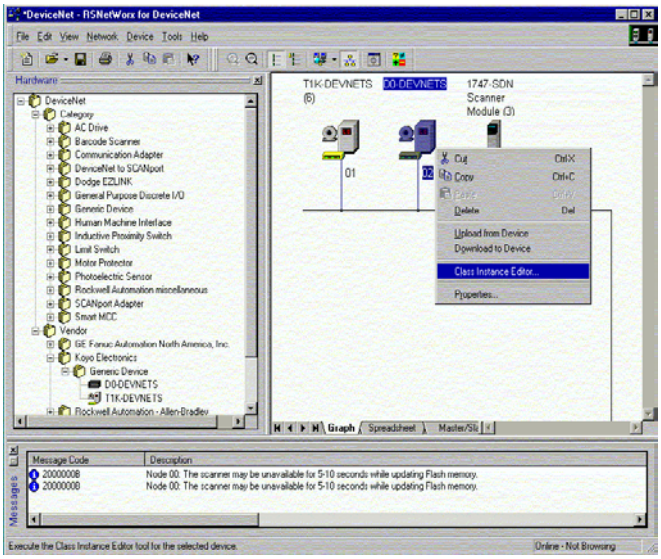


Set Class Instance Attribute

Use the Service Class Instance Attribute Editor to set the I/O to read and write to the DL05/06.

1. Select the D0–DEVNETS node.
2. Select **Device**

   or,
3. Right click on the node symbol in the RSNetWorx window.
4. Select **Class Instance Editor** in the pop–up window.



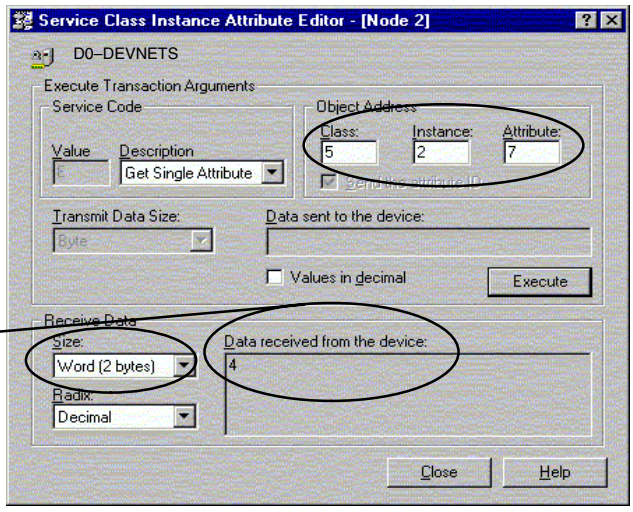
5. Setup input attributes in this window.

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

Size = Word (2 bytes).

6. Click **Execute**

Read the data here.



Setup output attributes in this window.

Object Address must be set to:

Class = 5, **Instance** = 2, **Attribute** = 8

Size = Word (2 bytes).

7. Click **Execute**

Read the data here.