DELTA ELECTRONICS, INC.

DVPDT02-H2

DeviceNet Slave Communication Module

Application Manual

http://www.delta.com.tw/industrialautomation

⚠ Warning

✓*Please read this instruction carefully before use and follow this instruction to operate the device in order to prevent damages on the device or injuries to staff.*

✓*Switch off the power before wiring.*

✓*DVPDT02-H2 is an OPEN TYPE device and therefore should be installed in an enclosure free of airborne dust, humidity, electric shock and vibration. The enclosure should prevent non-maintenance staff from operating the device (e.g. key or specific tools are required for operating the enclosure) in case danger and damage on the device may occur.*

✓*DVPDT02-H2 is to be used for controlling the operating machine and equipment. In order not to damage it, only qualified professional staff familiar with the structure and operation of DVPDT02-H2 can install, operate, wire and maintain it.*

✓*DO NOT connect input AC power supply to any of the I/O terminals; otherwise serious damage may occur. Check all the wirings again before switching on the power and DO NOT touch any terminal when the power is switched on. Make sure the ground terminal ⏚ is correctly grounded in order to prevent electromagnetic interference.*

🕮 Table of Contents

1 Introduction

1. To ensure correct installation and proper operation of DVPDT02-H2, please read this chapter carefully before using your DVPDT02-H2.
2. This chapter only provides introductory information on DVPDT02-H2. Details of DeviceNet protocol are not included. For more information on DeviceNet protocol, please refer to relevant reference or literatures.
3. DVPDT02-H2 is a DeviceNet slave communication module, used for the connection between DeviceNet network and DVP-EH2 series PLC MPU.

1.1 Features

- Supports Group 2 only servers.
- Supports explicit connection in the pre-defined master/slave connection group.
- Supports polling.
- Supports EDS files in DeviceNet network configuration tools.
- The length of I/O data can be freely configured through DeviceNet network configuration tool. Re-power it to make effect the configuration.
- I/O data is extendable to 200 bytes.

1.2 Specifications

■ DeviceNet connection

Transmission method	CAN
Electrical isolation	500VDC
Interface	Removable connector (5.08mm)
Transmission cable	2 communication cables, 2 power cables, 1 shielded cable

■ Communication

Message type	I/O polling; explicit
Serial transmission speed	125 kbps; 250 kbps; 500 kbps (bits per second)

■ Electrical specification

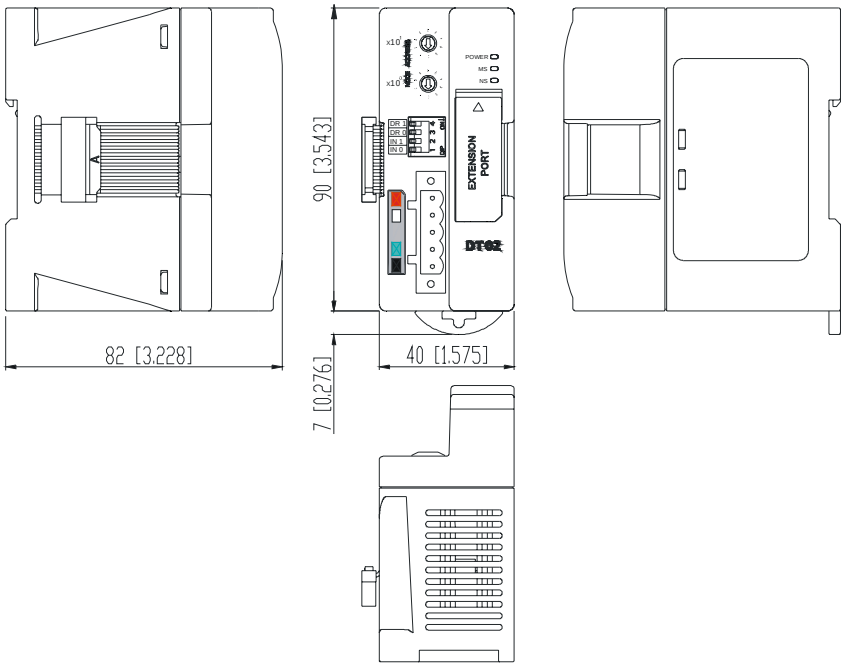
Voltage	24VDC (Range: 11 ~ 25VDC)
Current	28mA (typical), 125mA impulse current (24VDC)

■ Environment

Noise immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Digital I/O: 1KV Analog & Communication I/O: 1KV Damped-Oscillatory Wave: Power Line: 1KV, Digital I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 26MHz ~ 1GHz, 10V/m
Operation	0ºC ~ 55ºC (temperature); 50 ~ 95% (humidity); pollution degree 2
Storage	-25ºC ~ 70ºC (temperature); 5 ~ 95% (humidity)
Vibration/shock resistance	Standard: IEC 61131-2, IEC 68-2-6 (TEST Fc)/IEC 61131-2 & IEC 68-2-27 (TEST Ea)
Certificates	IEC 61131-2, UL508

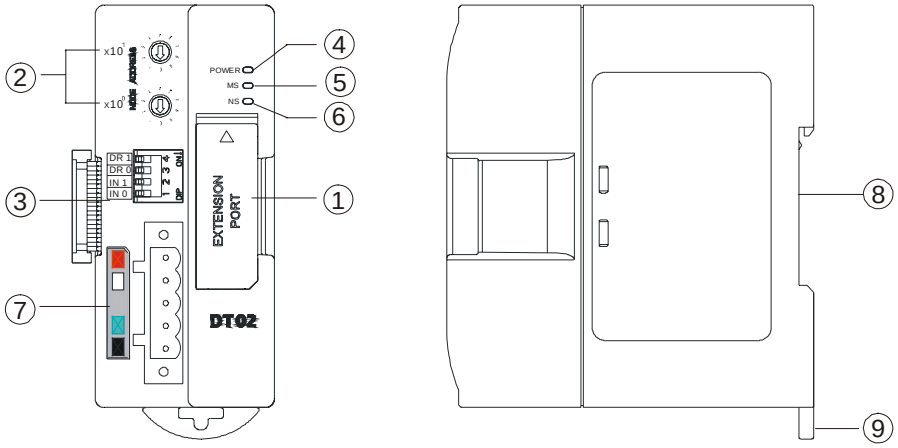
2 Product Profile & Outline

2.1 Dimension



Unit: mm [inch]

2.2 Product Profiles

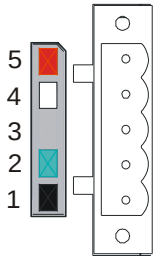


1.	Extension port	6.	NS (Network Status) indicator
2.	Address switch	7.	DeviceNet connection port
3.	Function switch	8.	DIN rail
4.	POWER indicator	9.	DIN rail clip
5.	MS (Module Status) indicator		

2.3 DeviceNet Connection Port

The connector is used on the connection to DeviceNet network. Wire by using the connector enclosed with DVPDT02-H2.

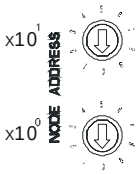
PIN	Signal	Color	Contect
1	V-	Black	0 VDC
2	CAN_L	Blue	Signal-
3	SHIELD	-	Shielded
4	CAN_H	White	Signal+
5	V+	Red	24 VDC



2.4 Address Switch

The switch is used on setting up the node address of DVPDT02-H2 on DeviceNet network.

Switch setting	Content
0 ~ 63	Valid DeviceNet node address
64~ 99	Invalid DeviceNet node address



Example: If you need to set the node address of DVPDT02-H2 to 26, simply switch the corresponding switch of $x10^1$ to 2 and the corresponding switch of $x10^0$ to 6.

Note:

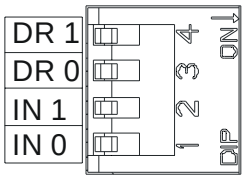
- Please set up the node address when the power is switched off. After the setup is completed, re-power DVPDT02-H2.
- When DVPDT02-H2 is operating, changing the set value of the node address will be invalid.
- Use slotted screwdriver to rotate the switch carefully in case you scratch the switch.

2.5 Function Switch

The switches are for:

- Setting up I/O data holding function (IN0).
- Setting up baud rates of DeviceNet network (DR0 ~ DR1).

DR1	DR0	Baud rate
OFF	OFF	125 kbps
OFF	ON	250 kbps
ON	OFF	500 kbps
ON	ON	Incorrect setting
IN0	OFF	When the DeviceNet connection is interrupted, the content in the buffer area will not be held.
	ON	When the DeviceNet connection is interrupted, the content in the buffer area will be held.
IN1	Reserved	



Note:

- Please set up the switch when the power is switched off. After the setup is completed, re-power DVPDT02-H2.
- When DVPDT02-H2 is operating, changing the setting of the switch will be invalid.
- Use slotted screwdriver to adjust the switch carefully in case you scratch the switch.

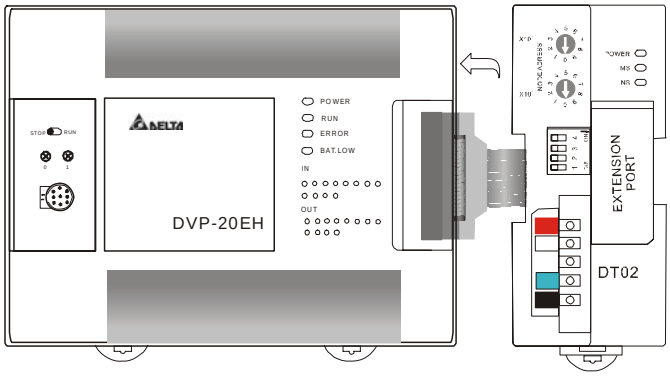
2.6 Extension Port

The extension port on DVPDT02-H2 is used for the connection to the next DVPDT02-H2 or extension modules of DVP-EH2 series PLC MPU.

3 Basic Operation

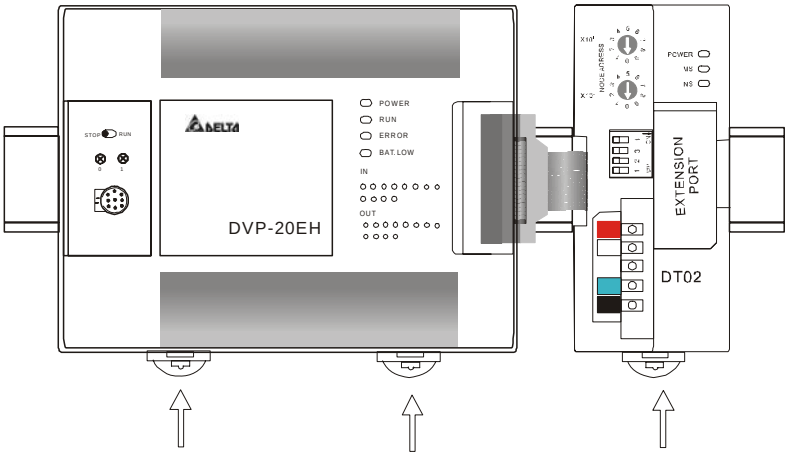
3.1 Connecting DVPDT02-H2 to DVP-EH2 Series PLC MPU

- Open the connection port on the right hand side of DVP-EH2 and connect DVPDT02-H2 to DVP-EH2.



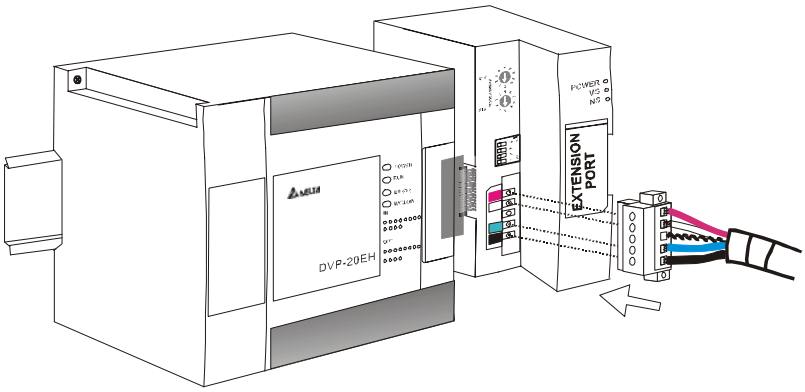
3.2 Install DVP-EH2 and DVPDT02-H2 on DIN Rail

- Use 35mm DIN rail.
- Open the DIN rail clip on DVP-EH2 and DVPDT02-H2. Insert DVP-EH2 and DVPDT02-H2 onto the DIN rail.
- Clip up the DIN rail clips on DVP-EH2 and DVPDT02-H2 to fix DVP-EH2 and DVPDT02-H2 on the DIN rail.



3.3 Connecting to DeviceNet Connection Port

- The colors of the PINs on the DeviceNet connection port match the colors of the connection cables. Make sure you connect the cable to the right PIN.
- We recommend you also apply Delta's power module in the connection.



4 Configurating DVPDT02-H2

4.1 Format of Request Message and Response Message

1. DVPDT02-H2 supports polling by standard DeviceNet explicit messages.
   - Format of request messages：

Byte position	Data written into special module	Data read from special module
0	Frag[0]+XID+MAC ID	Frag[0]+XID+MAC ID
1	R/R[0]+Service Code [0x10]	R/R[0]+Service Code [0x0E]
2	Class ID [0x95]	Class ID [0x95]
3	Instance ID	Instance ID
4	Attribute ID	Attribute ID
5	Low byte of Service Data	N/A
6	High byte of Service Data	N/A
7	N/A	N/A

   - Format of response messages

Byte position	Data written into special module	Data read from special module
0	Frag[0]+XID+MAC ID	Frag[0]+XID+MAC ID
1	R/R[1]+Service Code [0x10]	R/R[1]+Service Code [0x0E]
2		Low byte of response data
3		High byte of response data

2. Definitions of DeviceNet Objects for DVPDT02-H2:
   - Class 0x95 – DVPDT02-H2 I/O data configuration object

     Class attribute

Attribute ID	Access rule	Name	Data type
1	Get	Revision	UINT

Instance

Instance ID	Access rule	Name	Range	Default	Explanation
1	Get	Model code	560	560	The model code of DVPDT02-H2: 560 (H'0230)
2	Get	Firmware version	0 ~ 65,535	N/A	The firmware version of DVPDT02-H2.
3	Get	Node address	0 ~ 63	N/A	The node address of DVPDT02-H2.
4	Get	Serial transmission speed	0 ~ 2	0	The communication speed of DVPDT02-H2.
5	Get/Set	Length of input I/O data	0 ~ 200	32	Unit: byte
6	Get/Set	Length of output I/O data	0 ~ 200	32	Unit: byte

Instance attribute

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get/Set	Parameter value	N/A	N/A	The present parameter value.
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). "0" refers to the connection path is not designated. Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0 ~ 127	N/A	The descriptor of parameter.
5	Get	Data type	1 ~ 8	N/A	The code of data type.
6	Get	Data length	N/A	N/A	Number of bytes occupied by the patameter value (Attribute 1). Unit: byte

Coommon services

Service code	Implemented for		Service na,e
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

4.2 Control Registers (CR) in DVPDT02-H2

CR#	Attribute	Content	High byte	Low byte
#0	Get	Model name	DVPDT02-H2 model code = H'0230	
#1	Get	Firmware version	Displaying the current firmware version in hex, e.g.g V1.12 is indicated as H'0112.	
#2	Get	Length of I/O data	Length of output I/O data	Length of input I/O data
#3 ~ #102	Get/Set	Output data mappinng	Area for storing data from DVPDT02-H2 to DeviceNet master.	

CR#	Attribute	Content	High byte	Low byte
#103 ~ #202	Get/Set	Input data mappinig	Area for storing data from DeviceNet master to DVPDT02-H2.	
#203 ~ #215			Set up by the system. DO NOT use it.	
#216 ~ #250			Reserved	
#251	Get	Error	Register for storing errors. See 19.4.3 for error codes.	
#252 ~ #254			Reserved	
#255	Get	MPU status	CR#255 = K0: MPU in STOP status CR#255 = K1: MPU in RUN status	

4.3 Error Codes

Code	Description	How to correct
00	DVPDT02-H2 operates normally.	--
E2	I/O off-line	1. Check if the network connection is normal. 2. Check if the master operates normally.
F0	Dup_MAC_ID test has failed.	1. Make sure DVPDT02-H2 has a unique address. 2. Re-power DVPDT02-H2.
F2	Working power in low voltage	Check if the power of DVPDT02-H2 and MPU is normal.
F3	Entering test mode	Re-power DVPDT02-H2.
F4	Bus-off	Re-power DVPDT02-H2
F5	No network power detected	1. Check if the network cable works normally. 2. Check if the network power works normally.
F7	Internal error. GPIO detection error.	Send your DVPDT02-H2 back to the manufacturer for repair.
F8	Internal error. Manufacturingerror.	Send your DVPDT02-H2 back to the manufacturer for repair.
F9	Internal error. Configured memory polling error.	Send your DVPDT02-H2 back to the manufacturer for repair.

5 How to Construct DeviceNet Network by DVPDT02-H2

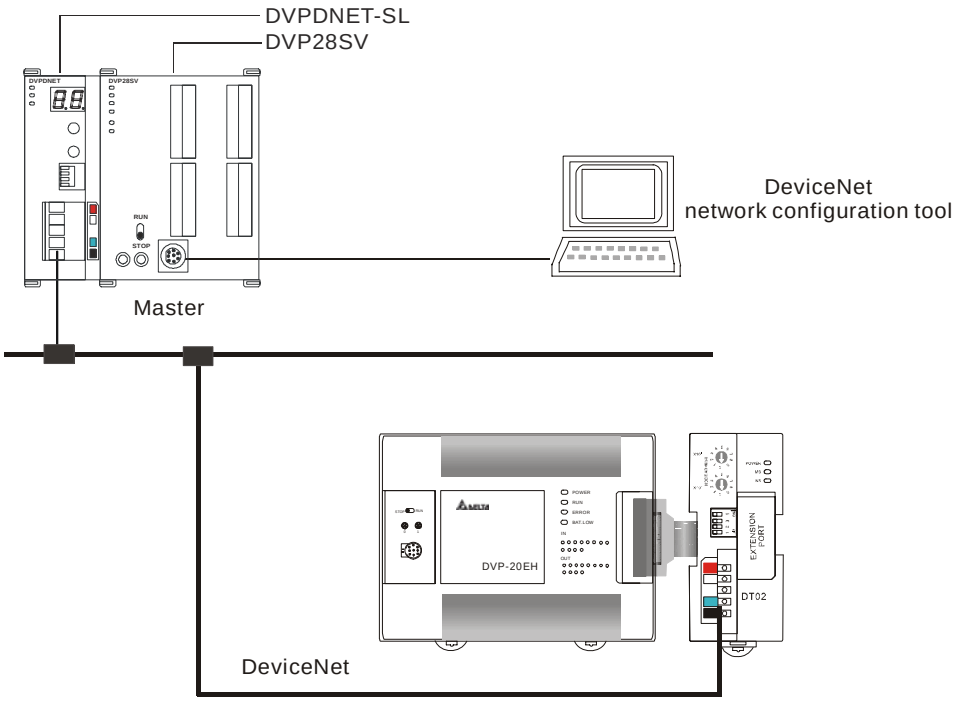
5.1 Application Example I

◆ **Target**

Exchanging data between DVP-SV and DVP-EH2 MPU through DeviceNet.

◆ **Constructing DeviceNet network by using DVPDT02-H2**

1. Constructing DeviceNet network



2. Configuring DVPDNET-SL network scanner and DVPDT02-H2:

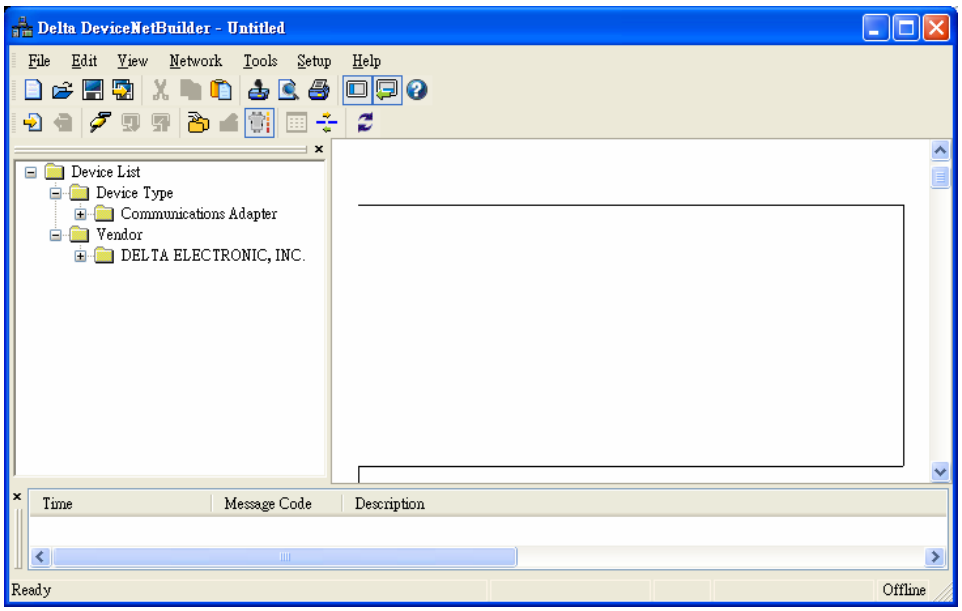
Module	Node address	Baud rate
DVPDNET-SL	1	500kbps
DVPDT02-H2	2	500kbps

3. Please check and make sure DVP-EH2 PLC MPU and DVPDT02-H2 module both operate normally. Check also the wiring of the entire network and make sure the power supply on DeviceNet network is normal.

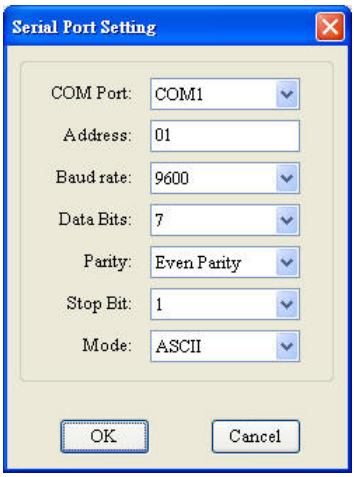
◆ **Configuring the network by DeviceNet network configuration tool**

■ Configuration DVPDT02-H2

1. Open DeviceNetBuilder.



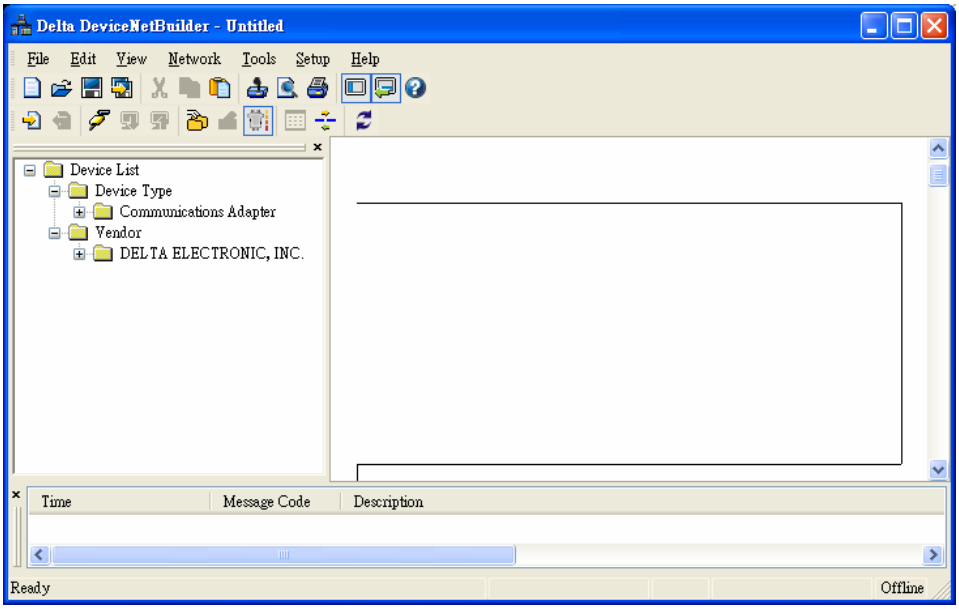
2. Select “Setup“ => “Communication Setting” => “System Channel”, and you will see the “Serial Port Setting” dialog box.



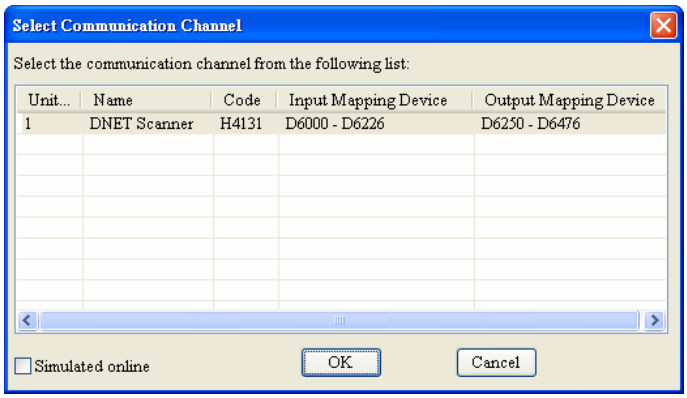
3. Set up the communication parameters, e.g. “COM Port”, “Address”, “Baud rate”, and so on, for the PC and DVP-28SV in this dialog box.

Parameter	Function	Default
COM Port	COM port on the PC to be used to communicate with DVP-SV	COM1
Address	Communication address of DVP-SV	01
Baud rate	Communication speed between PC and DVP-SV	9,600 bps
Data Bits	Communication protocol between PC and DVP-SV	7
Parity		Even Parity
Stop Bit		1
Mode	Communication mode between PC and DVP-SV	ASCII Mode

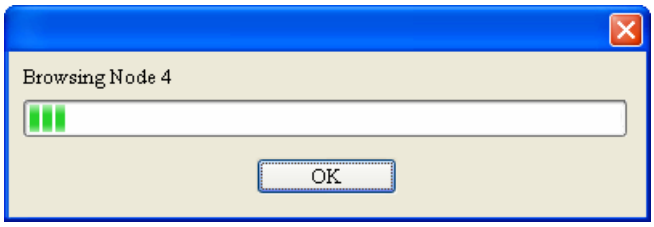
4. Click on “OK” and return to the main page.



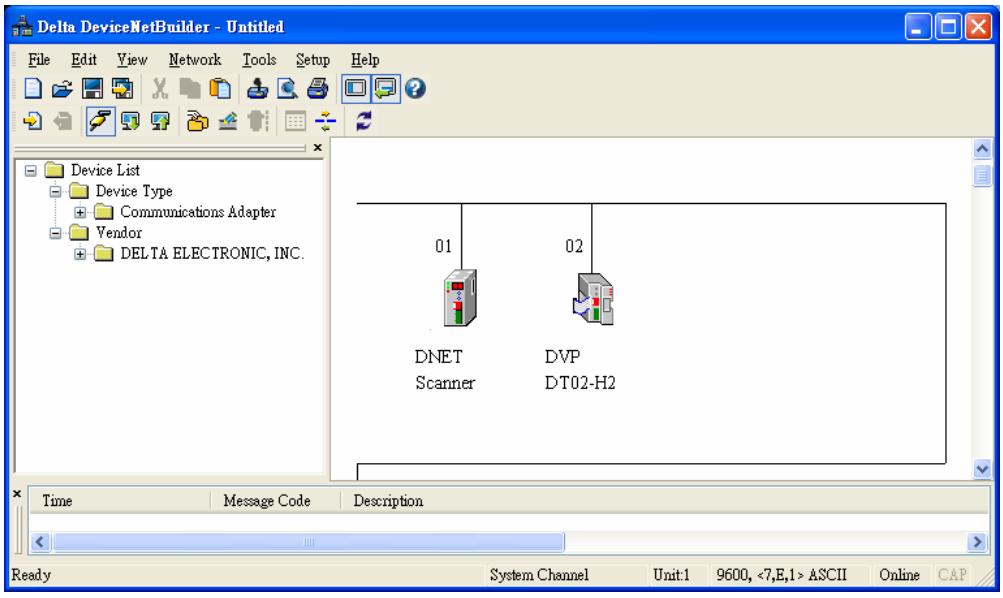
5. Select “Network" => “Online”, and the “Select Communication Channel” dialog box will appear.



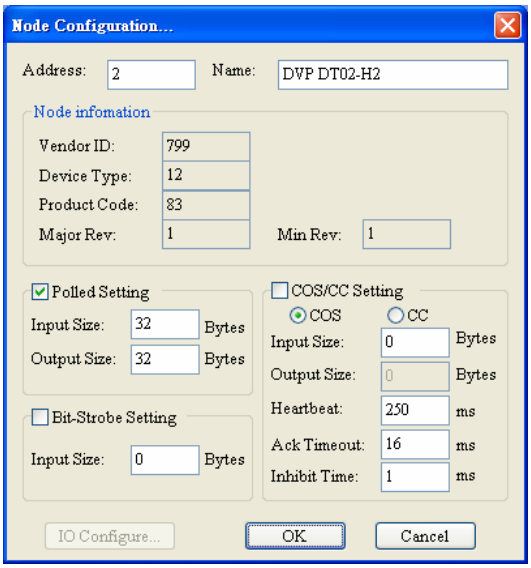
6. Click on “OK”, and DeviceNetBuilder will start to scan the entire network.



7. If the bar on the dialog box does not progress, it means the connection between the PC and DVP-SV is abnormal, or there are other programs also using the COM port on the PC. After the scan is completed, the dialog box will tell you that the scan is completed, and the icons and device names of all the nodes scanned on the network will be shown on the screen. See the figure below, in which the node address of DVPDNET-SL is 01.



8. Double click on DVPDT02-H2 (node 02), and the “Node Configuration...” dialog box will appear.



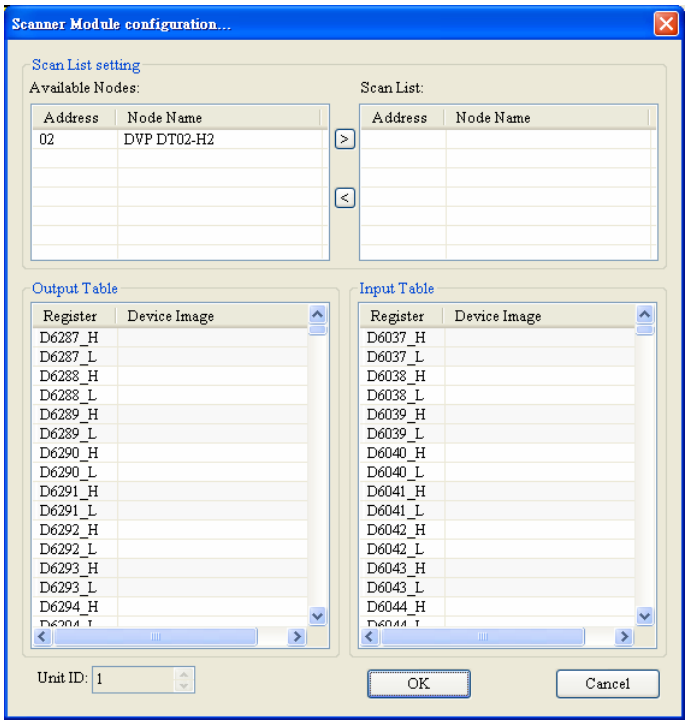
9. Confirm the I/O data of DVPDT02-H2 node.

Item		Explanation	Default
Address		Node address of DVPDT02-H2 on DeviceNet network	N/A
Name		Name of the node	N/A
Node information	Vendor ID	799 is the vendor ID of Delta Electronics, Inc.	799
	Device Type	Device type of DVPDT02-H2. 12 refers to communication adapter	12
	Product Code	Product code of DVPDT02-H2	83
	Major Rev.	Major version of DVPDT02-H2's firmware	1
	Min Rev.	Minor version of DVPDT02-H2's firmware	1
Polled Setting		One of standard DeviceNet I/O transmission methods	Supported
Bit-Strobe Setting		One of standard DeviceNet I/O transmission methods. DVPDT02-H2 does not support this.	N/A
COS/CC Setting		One of standard DeviceNet I/O transmission methods. DVPDT02-H2 does not support this.	N/A
Input Size		Length of data transmitted from DVPDT02-H2 to DeviceNet master	32 bytes
Output Size		Length of data transmitted from DeviceNet master to DVPDT02-H2	32 bytes

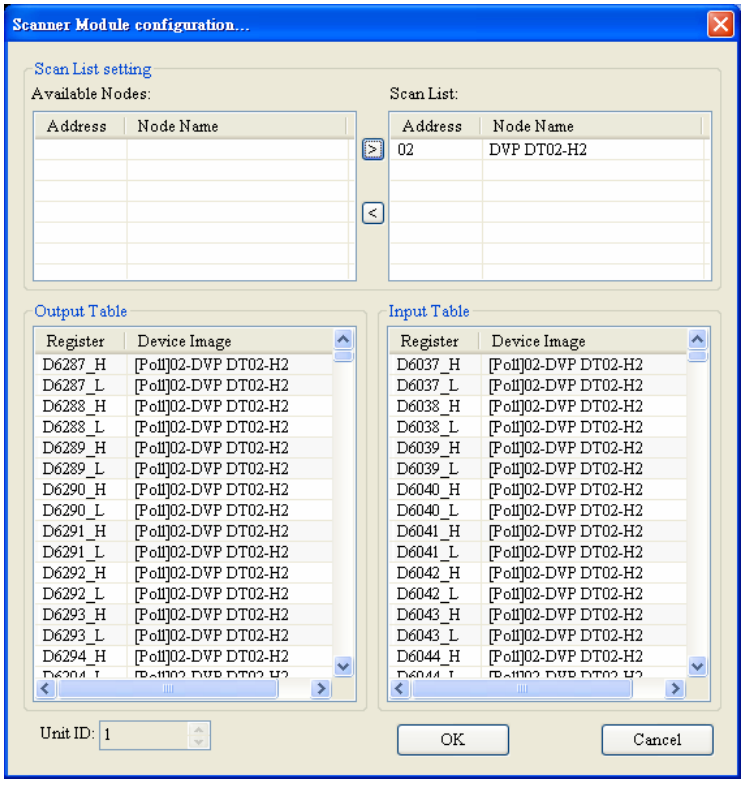
10. Confirm all the settings are correct and click on “OK”.

■ Configuration of DVPDNET-SL

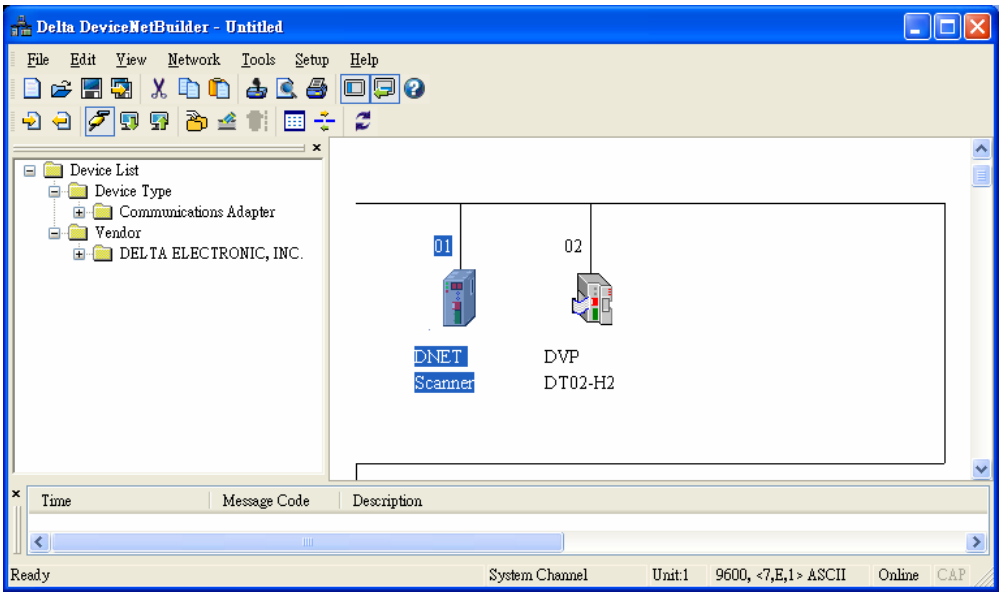
1. Double click on DNET Scanner (node 01), and the "Scan Module Configuration…” dialog box will appear. You can find the currently available node, DVPDT02-H2, in the list. On the right hand side, there is an empty “Scan List”.



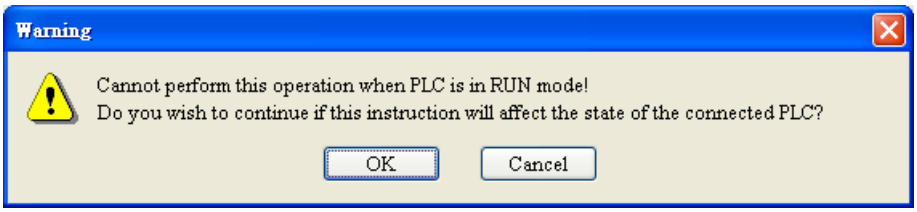
2. Move the slave devices on DeviceNet in the “Available Nodes” list on the left hand side to the “Scan List” on the right hand side. Select a node and click on [>]. Follow the steps to move all the nodes to the scan list.



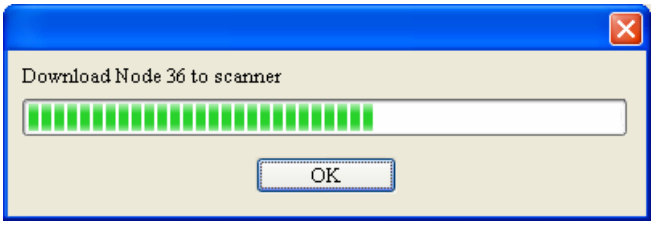
3. Confirm all the settings and click on “OK” to return to the main page.



4. Select “Network” => “Download” to download the configuration to DVPDNET-SL. If DVP-SV is in RUN mode while you are downloading the configuration, a “Warning” dialog box will appear.



5. Click on “OK” to continue the download.



6. Make sure DVP-SV is in RUN mode. You will then see the MS LED and NS LED on DVPDT02-H2 are steadily on in green color.

Follow the steps above to configure DeviceNet network. See below for the I/O data mapping between DVPDNET-SL network scanner and DVPDT02-H2.

DVPDNET-SL → DVPDT02-H2

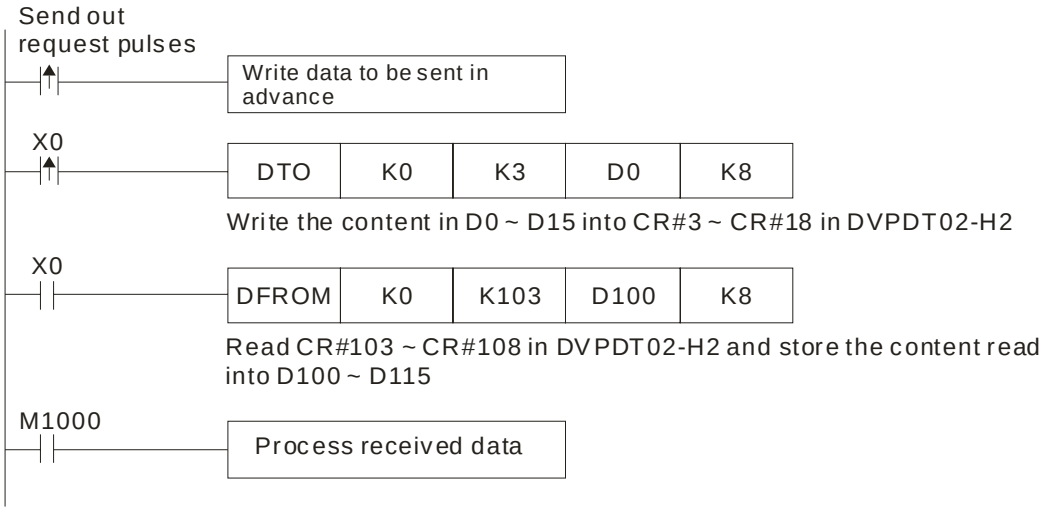
Register in DVPDNET-SL		CR in DVPDT02-H2
D6287	⇨	CR#103
D6288		CR#104
D6289		CR#105
D6290		CR#106
D6291		CR#107
D6292		CR#108
D6293		CR#109

Register in DVPDNET-SL		CR in DVPDT02-H2
D6294		CR#110
D6295		CR#111
D6296		CR1#12
D6297		CR1#13
D6298		CR#114
D6299		CR#115
D6300		CR#116
D6301		CR#117
D6302		CR#118

DVPDT02-H2 → DVPDNET-SL

Register in DVPDNET-SL		CR in DVPDT02-H2
D6037		CR#3
D6038		CR#4
D6039		CR#5
D6040		CR#6
D6041		CR#7
D6042		CR#8
D6043		CR#9
D6044	⇦	CR#10
D6045		CR#11
D6046		CR#12
D6047		CR#13
D6048		CR#14
D6049		CR#15
D6050		CR#16
D6051		CR#17
D6052		CR#18

◆ **Control program for slave PLC**



◆ **Program explanation**

The I/O data mapping between DVPDNET-SL and DVPDT02-H2 is done automatically. You can read or write the control registers in DVPDT02-H2 by editing DFROM or DTO instruction in DVP-EH2 slave PLC, realizing the I/O data mapping between DVPDNET-SL network scanner and the slave PLC. See below for the mapping relation.

Register in DVPDNET-SL		CR in DVPDT02-H2		DVP-EH2 PLC
D6287		CR#103		D100
D6288		CR#104		D101
D6289		CR#105		D102
D6290		CR#106		D103
D6291		CR#107		D104
D6292		CR#108		D105
D6293		CR#109		D106
D6294		CR#110	DFROM instruction (Read)	D107
D6295		CR#111		D108
D6296		CR#112		D109
D6297		CR#113		D110
D6298		CR#114		D111
D6299		CR#115		D112
D6300		CR#116		D113
D6301		CR#117		D114
D6302		CR#118		D115
D6037		CR#3		D0
D6038		CR#4		D1
D6039		CR#5		D2
D6040		CR#6		D3
D6041		CR#7		D4
D6042		CR#8		D5
D6043		CR#9		D6
D6044		CR#10	DTO instruction (Write)	D7
D6045		CR#11		D8
D6046		CR#12		D9
D6047		CR#13		D10
D6048		CR#14		D11
D6049		CR#15		D12
D6050		CR#16		D13
D6051		CR#17		D14
D6052		CR#18		D15

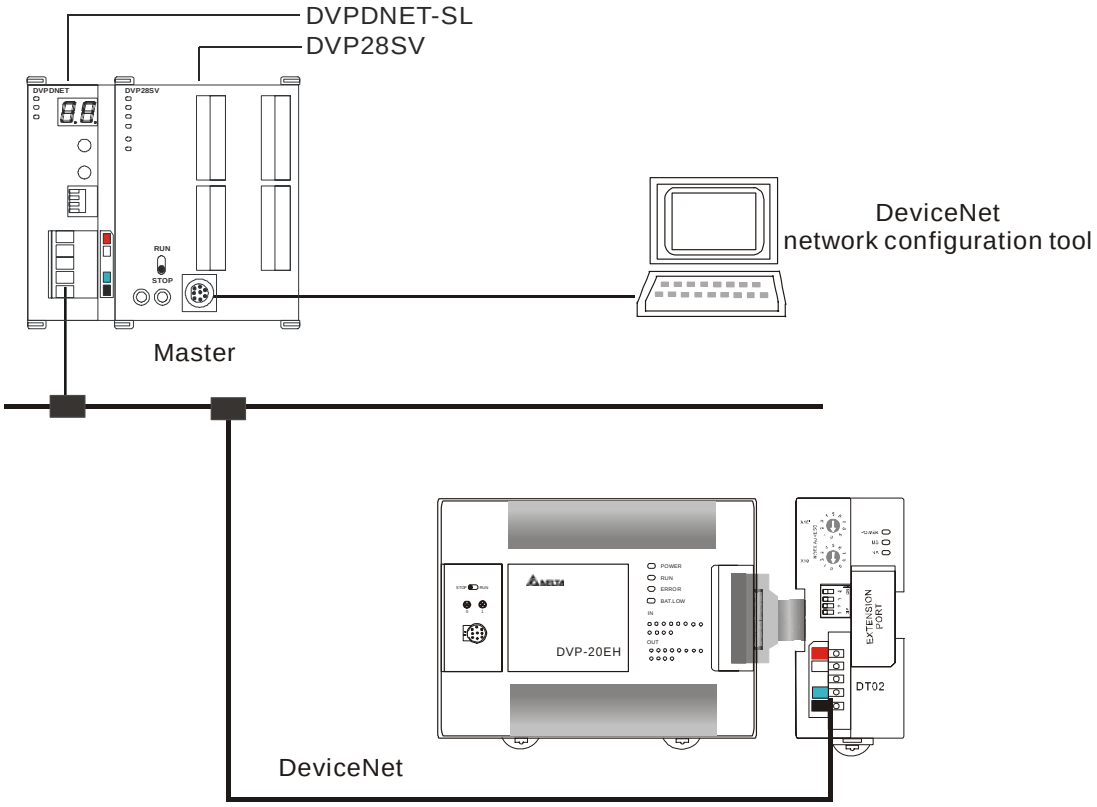
Use DFROM/DTO instruction instead of FROM/TO instruction.

5.2 Application Example II

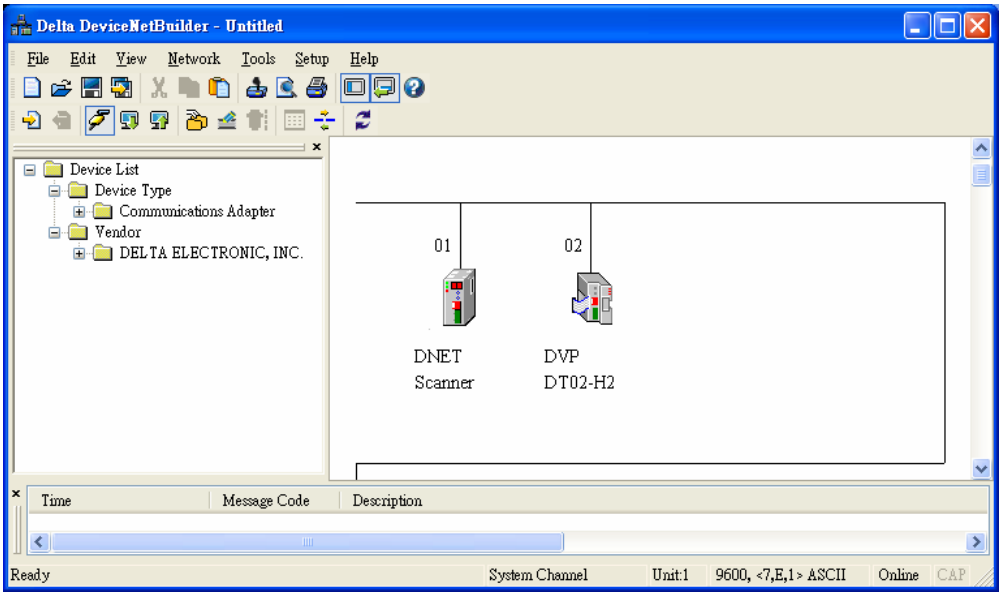
The default I/O data length of DVPDT02-H2 is 32 bytes. The configured I/O data length of DVPDT02-H2

through DeviceNet network configuration tool is 200 bytes.

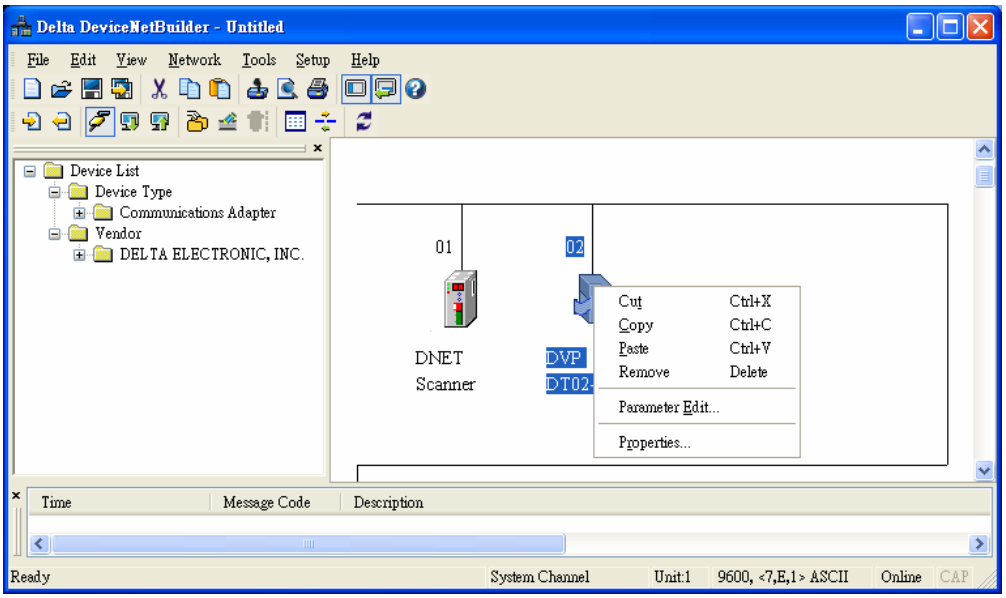
Constructing DeviceNet network:



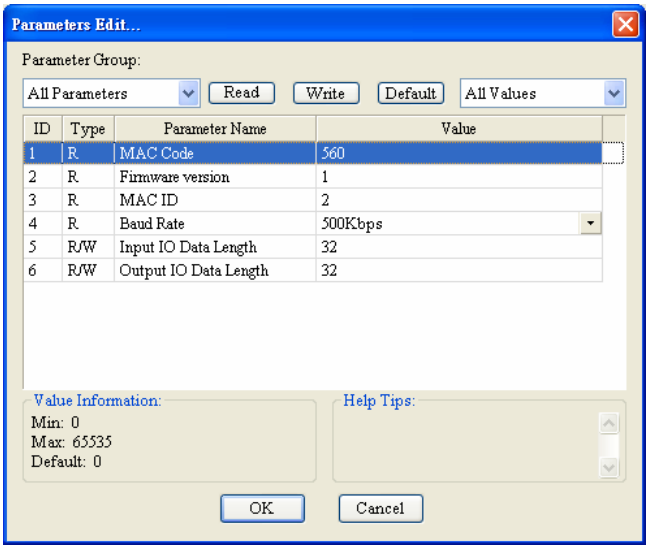
1. Scan the DeviceNet network by DeviceNetBuilder. After the scan is completed, the nodes on the DeviceNet network will appear on the screen.



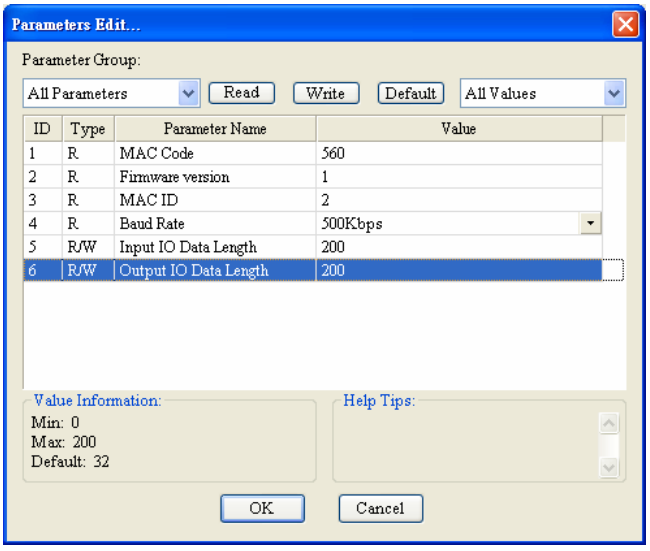
2. Click on “DVP DT02-H2" icon, and you will see a box as below.



3. Select “Parameter Edit…”, and the "Parameter Edit..." window will appear.



4. Set the “Input IO Data Length” and “Output IO Data Length" to 200 bytes.



5. Click on “Download” to download the I/O data configuration to DVPDT02-H2 and re-power DVPDT02-H2.

6 LED Indicators & Trouble-shooting

There are 3 LED indicators on DVPDT02-H2. POWER indicator displays the status of working power. NS indicator and MS indicator display the connection status of the communication.

6.1 POWER LED

LED status	Indication	How to correct
Off	Power is abnormal.	Check the power of DVPDT02-H2 and DVP-EH2 PLC MPU.
Green light On	Power is normal.	--

6.2 NS LED

LED status	Indication	How to correct
Off	No power, or DVPDT02-H2 has not completed the Dup_MAC_ID test yet.	1. Check the power of DVPDT02-H2 and see if the connection is normal. 2. Check if the node communication on the bus is normal. 3. Make sure at least one or more nodes on the network are operational at the same time. 4. Check if the baud rate of DVPDT02-H2 is the same as that of other nodes.
Green light flashes	DVPDT02-H2 is on-line but has not established connections to other nodes.	1. Correctly configure it in the master. 2. Re-download the configured data to the master and set the master to RUN status.
Green light On	DVPDT02-H2 is on-line and isnormally connected to the master.	--
Red light flashes	DVPDT02-H2 is on-line, but I/O connections are timed-out.	1. Check if the network connection is normal. 2. Check if the master operates normally.
Red ligh On	The communication is down; MAC ID is repeated; no network power; bus-off.	1. Make sure all the node addresses on the bus are not repeated. 2. Check if the network installation is normal. 3. Check if the baud rate of DVPDT02-H2 is consistent with that of other nodes on the network. 4. Check if the node address of DVPDT02-H2 is a valid one. 5. Check if the network power is normal.

6.3 MS LED

LED status	Indication	How to correct
Off	No power or off-line.	Check the power of DVPDT02-H2 and see if the connection is normal.
Green light flashes	Waiting for I/O data; no I/O data; DVPDT02-H2 in STOP status.	Switch DVPDT02-H2 to RUN status to start I/O data exchange.
Green light On	I/O data are normal.	--
Red light flashes	Configuration problem	1. Reset DVPDT02-H2. 2. Re-power DVPDT02-H2.

LED status	Indication	How to correct
Red light On	Hardware error	1. Find out the cause of error in CR#251. 2. Send back to the manufacturer for repair if necessary.

6.4 NS LED + MS LED

LED status		Indication	How to correct
NS LED	MS LED		
Off	Off	No power	Check the power of DVPDT02-H2 and see if the connection is normal.
Off	Green light On	DVPDT02-H2 has not completed the Dup_MAC_ID test yet.	Make sure at least one or more nodes on the network is operational at the same time, and its baud rate is the same as that of DVPDT02-H2.
Red light On	Red light flashes	No network power	1. Check if the network cable is correctly connected to DVPDT02-H2. 2. Check if the network power works normally.
Red ligh On	Green light On	Dup_MAC_ID test has failed; bus-off	7 Make sure DVPDT02-H2 has a unique address. 8 Re-power DVPDT02-H2.
Red light On	Red light On	Hardware error	Send your DVPDT02-H2 back to the manufacturer for repair.

Appendix A: DeviceNet Objects DVPDT02-H2 Supports

- DeviceNet objects

Class	Object
0x01	Identity object
0x02	Message router object
0x03	DeviceNet Object
0x05	Connection object
0x95	DataConf object

- Class 0x01 – Identity object

Class attribute

Attribute ID	Access rule	Name	Data type
1	Get	Revision	UINT
2	Get	MaxInstance	UINT
3	Get	NumberofInstances	UINT
6	Get	MaxIdClass	UINT
7	Get	MaxIdInstance	UINT

Instance

Attribute ID	Access rule	Name	Data type
1	Get	VendorId	UINT
2	Get	DeviceType	UINT
3	Get	ProductCode	UINT
4	Get	Revision	

Attribute ID	Access rule	Name	Data type
		MaxRev MinRev	USINT USINT
5	Get	Status	WORD
6	Get	Sn	UDINT
7	Get	ProdName StrLen ASCIIStr	 USINT STRING

Common services

Service code	Implemented for		Service name
	Class	Instance	
0x05	No	Yes	Reset
0x0E	Yes	Yes	Get_Attribute_Single

- Class 0x02 – Message router object

Class attribute

Attribute ID	Access rule	Name	Data type
1	Get	Revision	UINT
6	Get	MaxIdClass	UINT
7	Get	MaxIdInstance	UINT

Instance

Attribute ID	Access rule	Name	Data type
2	Get	NumAvailable	UINT
3	Get	NumActive	UINT

Common services

Service code	Implemented for		Service name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single

- Class 0x03 – DeviceNet object

Class attribute

Attribute ID	Access rule	Name	Data type
1	Get	Revision	UINT

Instance attribute

Attribute ID	Access rule	Name	Data type
1	Get	MACID	USINT
2	Get	BaudRate	USINT
3	Get/Set	BusofInterrupt	BOOL
4	Get/Set	BusofCounter	USINT
5	Get	AllocationInfo AllocationChoice MasterNodeAddress	 BYTE USINT
6	Get	MACIDSwitchChanged	BOOL

Attribute ID	Access rule	Name	Data type
7	Get	BaudRateSwitchChanged	BOOL
8	Get	MACIDSwitchValue	USINT
9	Get	BaudRateSwitchValue	USINT

Common services

Service code	Implemented for		Service name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single
0x4B	No	Yes	Allocate_Master/Slave_Connection_Set
0x4C	No	Yes	Release_Master/Slave_Connection_Set

- Class 0x05 – Connection object

Class attribute

Attribute ID	Access rule	Name	Data type
1	Get	Revision	UINT

Instance 1: Explicit message connection

Attribute ID	Access rule	Name	Data type
1	Get	State	USINT
2	Get	InstanceType	USINT
3	Get	TransportClassTrigger	USINT
4	Get	ProducedConnectionId	UINT
5	Get	ConsumedConnectionId	UINT
6	Get	InitialCommCharacterisitcs	BYTE
7	Get	ProducedConnectionSize	UINT
8	Get	ConsumedConnectionSize	UINT
9	Get/Set	ExpectedPackedRate	UINT
12	Get/Set	WatcdogTimeoutAction	USINT
13	Get	Produced Connection Path Length	USINT
14	Get	Produced Connection Path	EPATH
15	Get	Consumed Connection Patch Length	USINT
16	Get	Consumed Connection Path	EPATH

Instance 2: Polled I/O connection

Attribute ID	Acccess rule	Name	Data type
1	Get	State	USINT
2	Get	InstanceType	USINT
3	Get	TransportClassTrigger	USINT
4	Get	ProducedConnectionId	UINT
5	Get	ConsumedConnectionId	UINT
6	Get	InitialCommCharacteristics	BYTE
7	Get	ProducedConnectionSize	UINT

8	Get	ConsumedConnectionSize	UINT
9	Get/Set	ExpectedPackedRate	UINT
12	Get/Set	WatchdogTimeoutAction	USINT
13	Get	Produced Connection Path Length	USINT
14	Get	Produced Connection Path	EPATH
15	Get	Consumed Connection Path Length	USINT
16	Get	Consumed Connection Path	EPATH

Common services

Service code	Implemented for		Service name
	Class	Instance	
0x05	No	Yes	Reset
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

Appendix B: DeviceNet Ojects Defined by DVPDT02-H2

- Class 0x95 – DVPDT02-H2 I/O data configuration object

Class attribute

Attribute ID	Access rule	Name	Data type
1	Get	Revision	UINT

Instance 1: Model code

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get	Parameter value	560	560	Model code of DVPDT02-H2: 560 (H'0230)
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). "0" refers to the connection path is not designated. Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0 ~ 127	N/A	The descriptor of parameter
5	Get	Data type	1 ~ 8	N/A	The code of data type
6	Get	Data length	N/A	N/A	Number of bytes occupied by the parameter value (Attribute 1). Unit: byte

Instance 2: Firmware version

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get	Parameter value	0 ~ 65,535	N/A	Firmware version of DVPDT02-H2
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). "0" refers to the connection path is not designated.

Attribute ID	Access rule	Name	Range	Default	Explanation
					Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0 ~ 127	N/A	The descriptor of parameter
5	Get	Data type	1 ~ 8	N/A	The code of data type
6	Get	Data length	N/A	N/A	Number of bytes occupied by the parameter value (Attribute 1). Unit: byte

Instance 3: Node address

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get	Parameter value	0 ~ 63	N/A	Node address of DVPDT02-H2
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). “0” refers to the connection path is not designated. Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0 ~ 127	N/A	The descriptor of parameter
5	Get	Data type	1 ~ 8	N/A	The code of data type
6	Get	Data length	N/A	N/A	Number of bytes occupied by the parameter value (Attribute 1). Unit: byte

Instance 4: Serial transmission speed

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get	Parameter value	0 ~ 2	0	Communication speed of DVPDT02-H2
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). “0” refers to the connection path is not designated. Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0 ~ 127	N/A	The descriptor of parameter
5	Get	Data type	1 ~ 8	N/A	The code of data type
6	Get	Data length	N/A	N/A	Number of bytes occupied by the parameter value (Attribute 1). Unit: byte

Instance 5: Length of input I/O data

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get/Set	Parameter value	0 ~ 200	32	Unit: byte

Attribute ID	Access rule	Name	Range	Default	Explanation
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). “0” refers to the connection path is not designated. Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0~127	N/A	The descriptor of parameter
5	Get	Data type	1~8	N/A	The code of data type
6	Get	Data length	N/A	N/A	Number of bytes occupied by the parameter value (Attribute 1). Unit: byte

Instance 6: Length of output I/O data

Attribute ID	Access rule	Name	Range	Default	Explanation
1	Get/Set	Parameter value	0 ~ 200	32	Unit: byte
2	Get	Length of connection path	N/A	N/A	The length of connection path (Attribute 3). “0” refers to the connection path is not designated. Unit: byte
3	Get	Connection path	N/A	N/A	Polling path of the parameter value. Max. connection path: 255 bytes
4	Get	Descriptor	0 ~ 127	N/A	The descriptor of parameter
5	Get	Data type	1 ~ 8	N/A	The code of data type
6	Get	Data length	N/A	N/A	Number of bytes occupied by the parameter value (Attribute 1). Unit: byte

Common services

Service code	Implemented for		Service name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single