

# Fieldbus Application

## < DeviceNet >

# 1

<b>Type of Fieldbus :</b>	<b>DeviceNet</b>
<b>S/W :</b>	<b>Rockwell Software, RSLinx, RSNetworx</b>
<b>DeviceNet Scanner :</b>	<b>Allen-Bradley, 1747-SDN</b>

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# 1 Introduction

PLC products from Allen-Bradley has function that can be transmit Input/Output through DeviceNet. This document explains setting up DeviceNet network including Hi Controller, SLC cpu and SDN-1747 scanner of Allen-Bradley.

## 1.1 Composition

In order to install or monitor or modify setting of DeviceNet network, PC must be connected to PLC and DeviceNet as the following Figure (1-1). PC must have Windows 95/98/NT operating system and Rockwell Software shown in Table 1

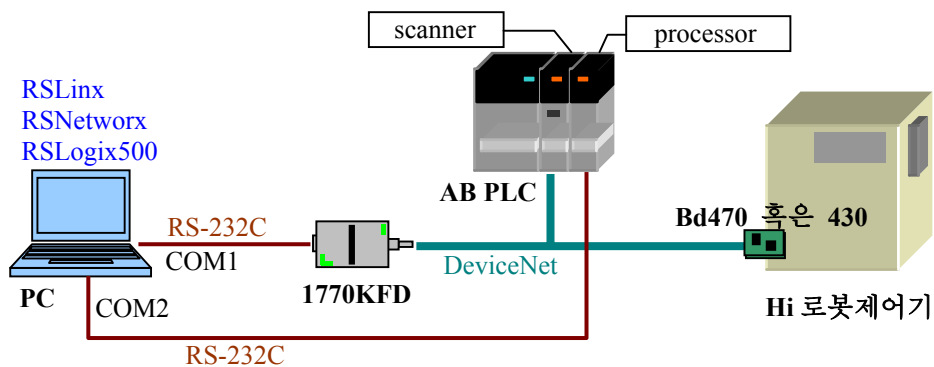


Figure 1-1. Configuration of DeviceNet setting and Monitoring

Table 1 Setting and Monitoring software for DeviceNet

S/W	Contents
RSLinx	Provide AB or Rockwell Software run in PC connection for AB PLC and DeviceNet network
RSNetworkx	Monitor the network condition and set DeviceNet devices
RSLogix500	Create ladder diagram and download it to PLC. Do remote control of PLC and monitor the operation, file condition, and I/O of PLC.

1770KFD is a hardware of AB that connects PC to DeviceNet via RS-232C

This document explains brief network installation and setting procedure. Further information, refer to the manuals from Rockwell Software.

## 2 RSLinx

Execute RSLinx. If RSLinx is executed for the first time, driver must be setup.  
As figure 2-1, select Configure Drivers in menu item.

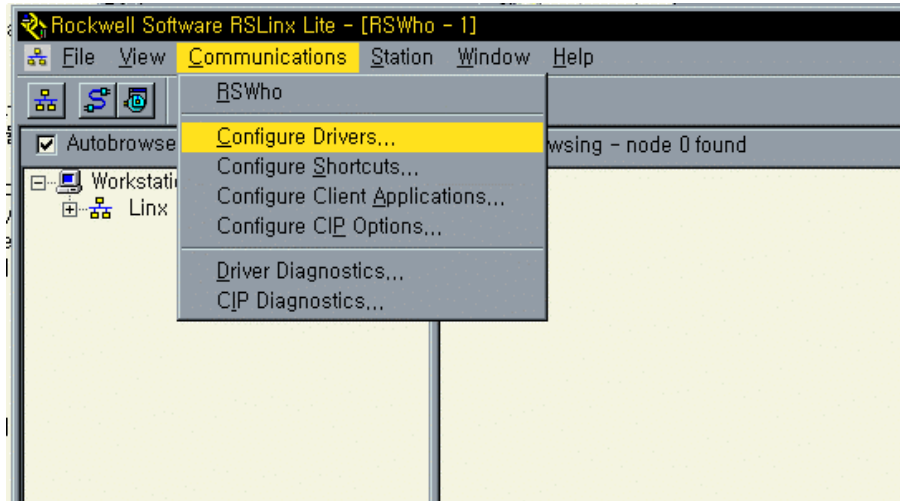


Figure 2-1 Select Configure Drivers

Dialog box of Configure Drivers is displayed.

## 2.1 DeviceNet Driver setting

First establish connectivity for DeviceNet. After selecting DeviceNet in Available Driver, press Add New... button to call dialog box of DeviceNet Driver Selection. Select Allen-Bradley 1770-KFD.

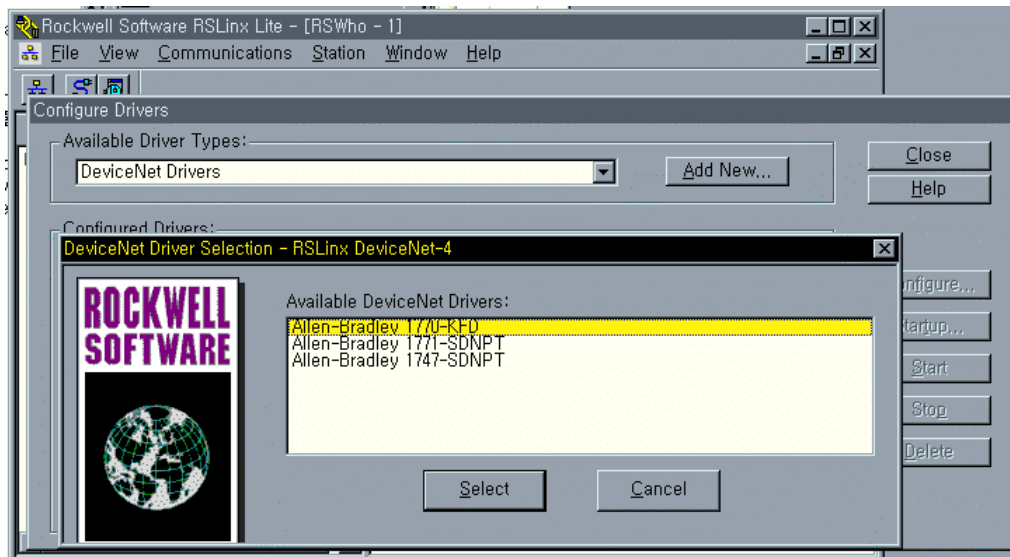


Figure 2-2. Register 1770-KFD

1770-KFD Driver Configuration dialog box is displayed as in figure 2-3. Select Serial Port Setup and DeviceNet Port Setup and press OK button. Data Rate of DeviceNet Port Setup must be matched to DeviceNet scanner rate of PLC. (In case of 1747-SDN scanner, right after power being supplied, version and rate is displayed in 7 segment.)

Node Address is the Node address of 1770-KFD itself.

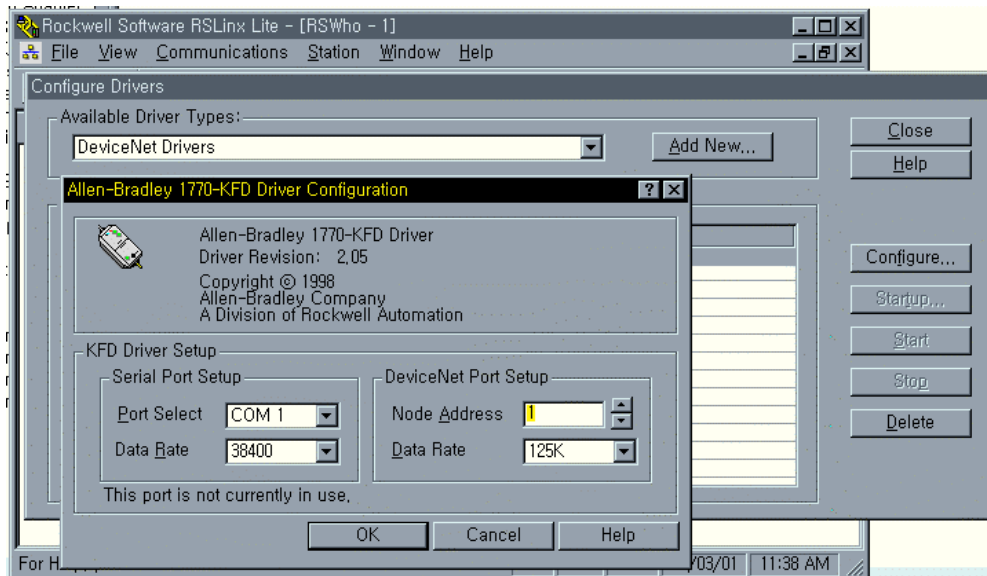


Figure 2-3. 1770-KFD Driver Configuration

Note : Setting method on fieldbus baud rate of 1747-SDN

- ① Open RSLinx and execute RSNetworkx.
- ② First, you should initialize internal memory setting in scanner. Select SDN in RSNetworkx and download to initialize scanner setting.
- ③ Select Tools - Node Commissioning menu of RSNetworkx.
- ④ Press Browse and select 1770KFD to carry our browse. Press O.K button when SDN is displayed
- ⑤ After setting Node address and rate, press Apply. .If message that setting is changed is displayed rather than error message, setting is successfully completed
- ⑥ If power is switched to off and On, changes can be confirmed as version and rate and node address is displayed in initial 7 segment .
- ⑦ 1770KFD rate must be matched with this setting. Select Communications - Configure Drivers menu in RSLinx, delete 1770KFD drive and add it again. This new baud rate should be applied

2.2 DF1 Driver setting

Like the above method, set DF1 communication device. This is to connect PC to SLC. Select RS-232 DF1 Device of Available Drive type in Configure Driver dialog box and press Add New button to display DF1 Communication Device in Figure 2-4.

For instance, after selecting Device (ex. SLC) to connect, select RS-232C port (COM1 OR COM2) to be connected in Comm. By pressing Auto-Configure button, all other setting for communication is automatically set.

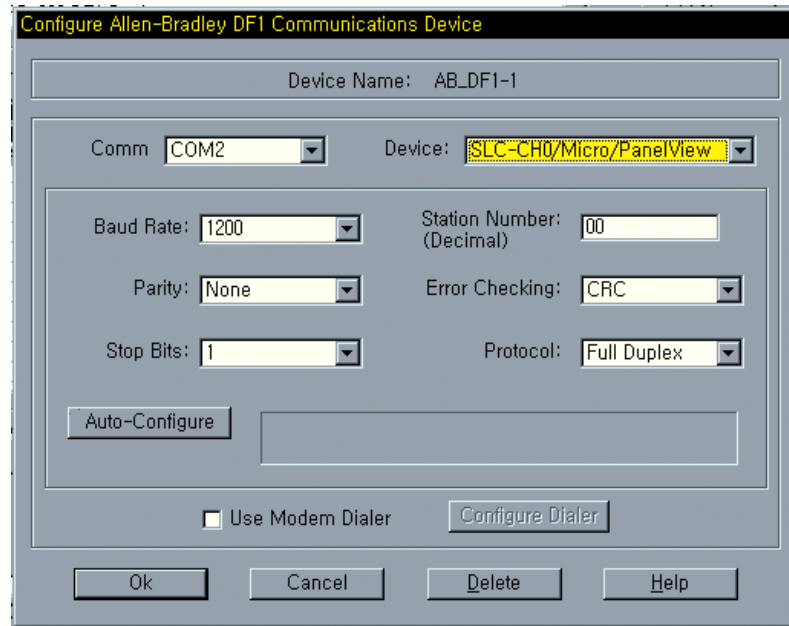


Figure 2-4. DF1 communication device setting



After carrying out the above two driver setting successfully, the following in Figure 2-5 is displayed.

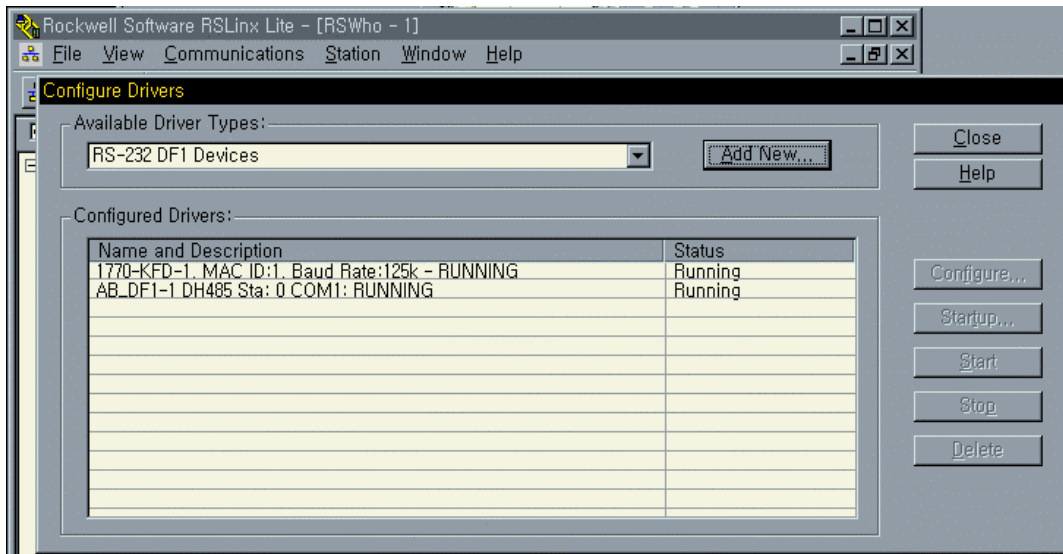


Figure 2-5 Results of two Driver setting

RSLinx performs in repetition Network browsing if Autobrowse is selected. Select 1770-KFD and DeviceNet Tree view in left as Figure 2-6 to displays connected Devices on DeviceNet Network on right side of the screen

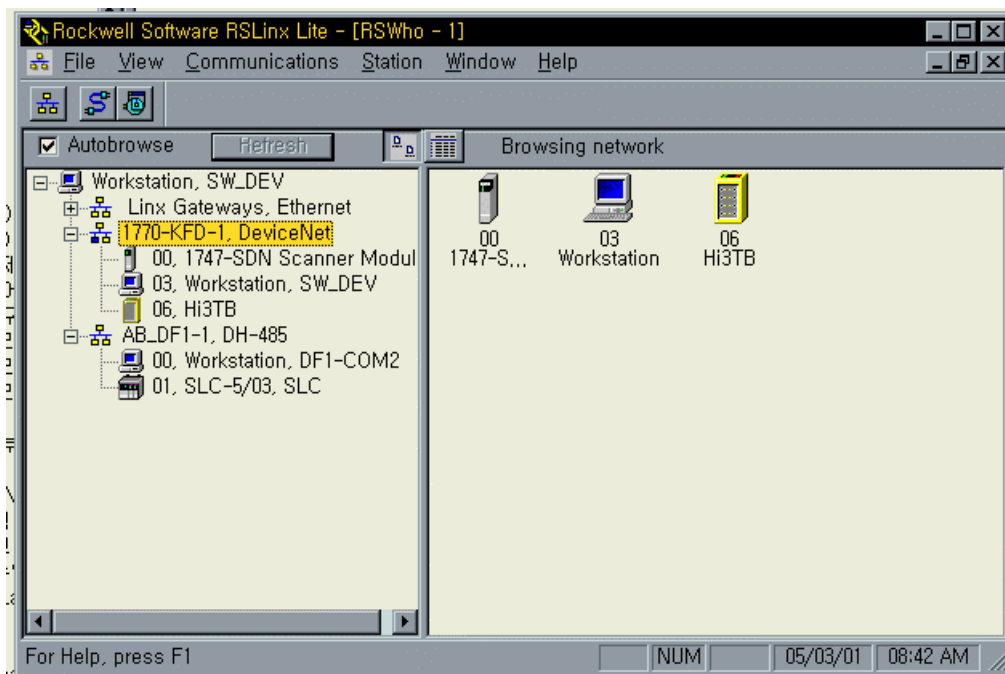


Figure 2-6. List of DeviceNet network devices

In Figure 2-6, Hi Controller icon is displayed as No.6 node, but if EDS file of Hi Controller is not registered yet, No.6 node would be displayed as unknown device.

Select AB-DF and DH-485 in tree view on the left side of screen to display devices on the right side of the screen which are connected to DF1 Network

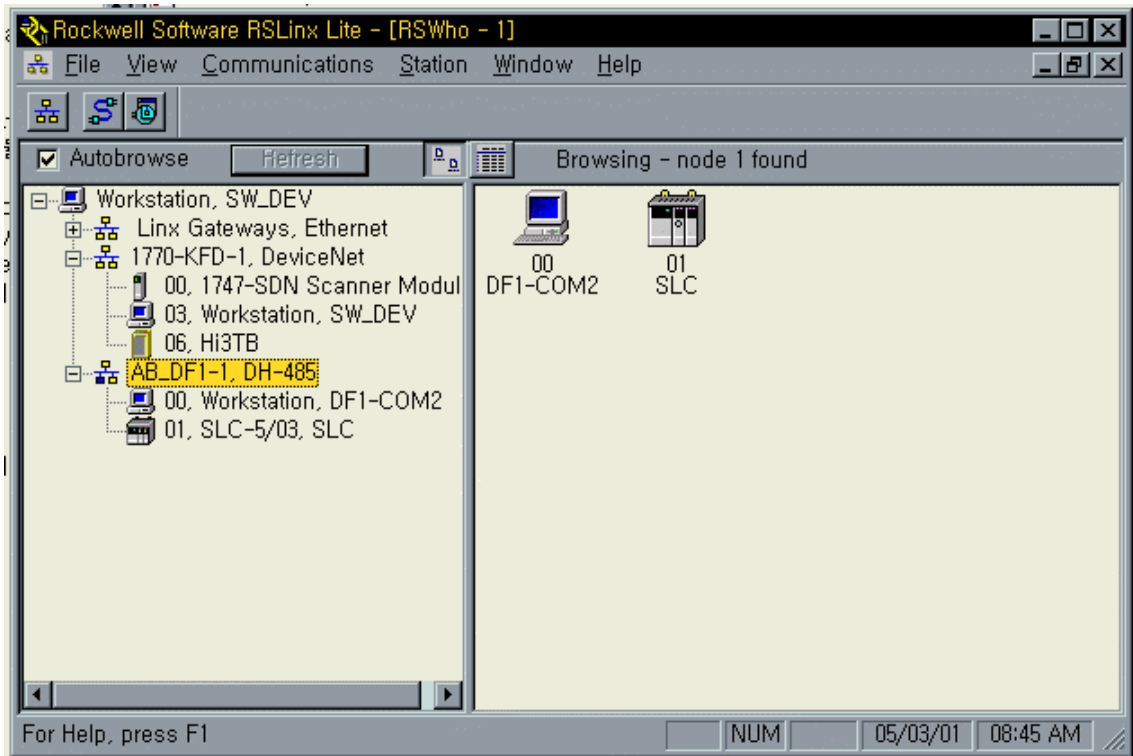


Figure 2-7. List of DF1 Network Device

### 2.3 Complete

Now Driver setting in RSLinx is completed. If RSNetworkx or RSLogix500 are to be used, do not close RSLinx.

### 3 RSNetworkx

#### 3.1 Creation and registration of EDS

After installation, if RSNetworkx is executed for the first time, EDS registration must be at first carried out. As Figure 3-1, Select EDS Wizard... in Menu Item.

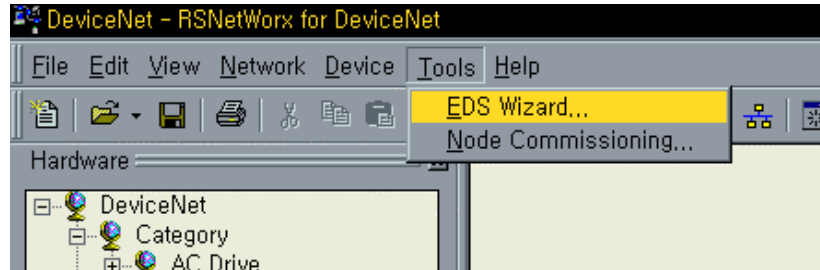


Figure 3-1 Selection of EDS Wizard in menu item

EDS Installation Wizard dialog box is displayed as Figure 3-2. After selecting Create an EDS Stub Radio button, press (N)> button.

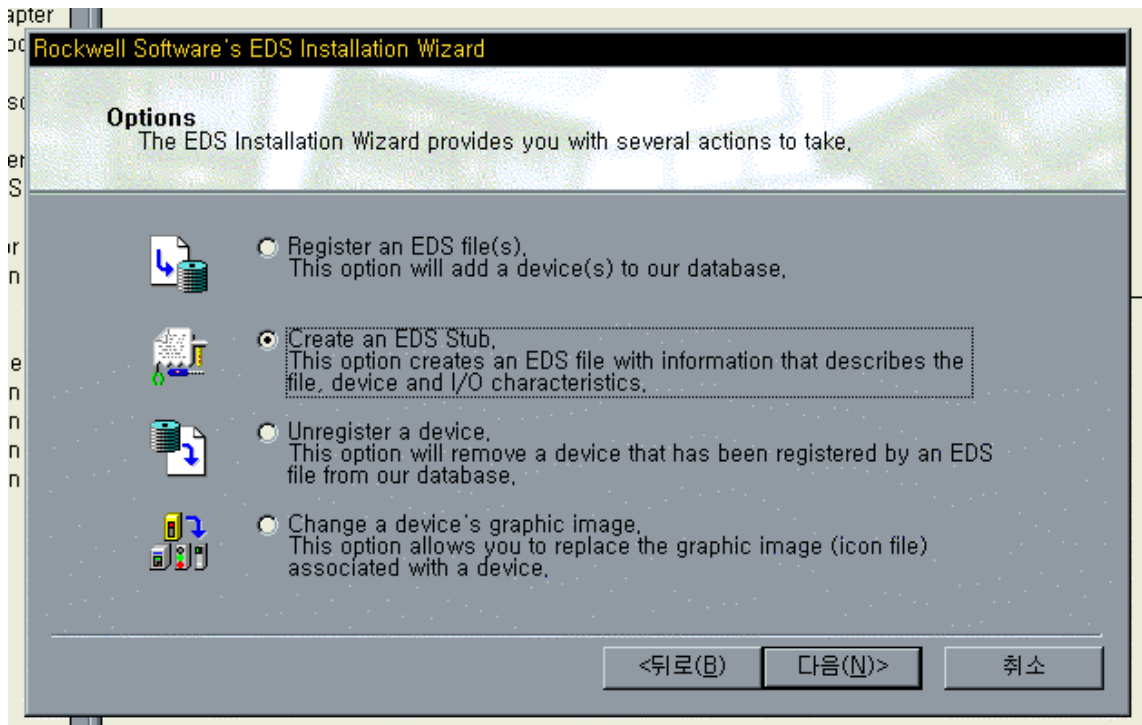


Figure 3-2. EDS Installation Wizard

As Figure 3-3, enter DeviceNet ID information for Fieldbus adapter of Hi Controller and press (N)> button.

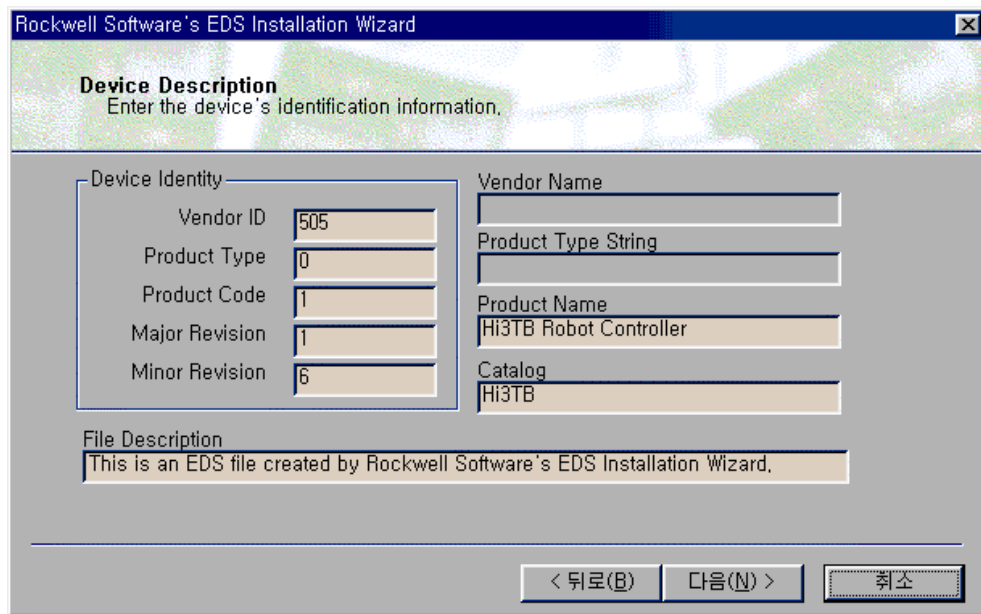


Figure 3-3. DeviceNet ID information for Fieldbus adapter of Hi Controller

Check Enabled of Polled and enter 32 bit for input and output respectively and press(N)> button  
 Upon the completion of EDS Installation Wizard, RSNetworkx recognizes Hi Robot Controller as DeviceNet Slave Device.

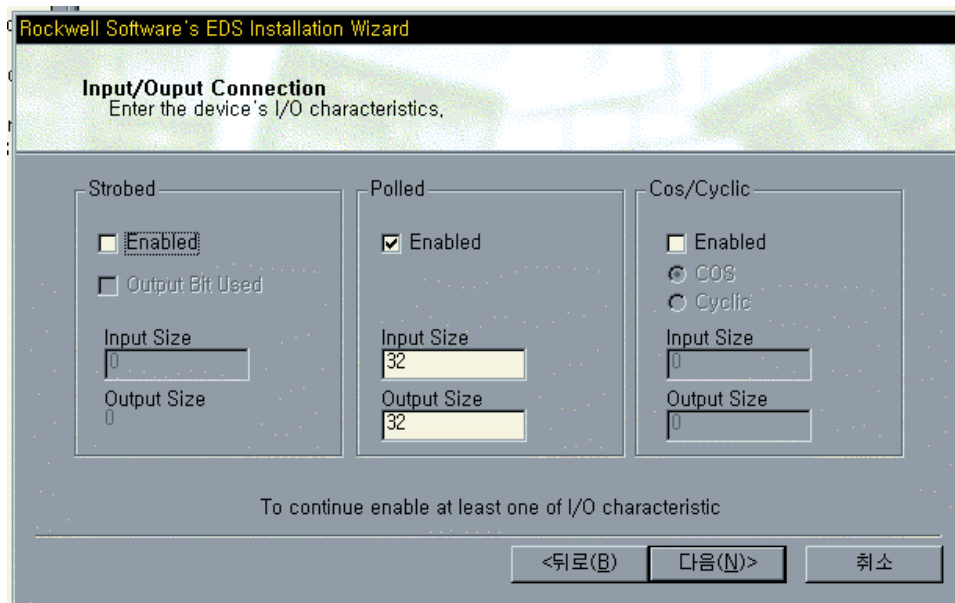


Figure 3-4 Setting I/O Character with polling method

※ When EDS is created and registered with EDS Installation Wizard, if data is wrongly entered , EDS must be deleted with Unregister function , and retry EDS Installation Wizard.

### 3.2 Network browse.

By pressing Online button and press Browse, as Figure 3-5, Browse for Network dialog box is displayed. Select 1770-KFD and DeviceNet and press OK button.

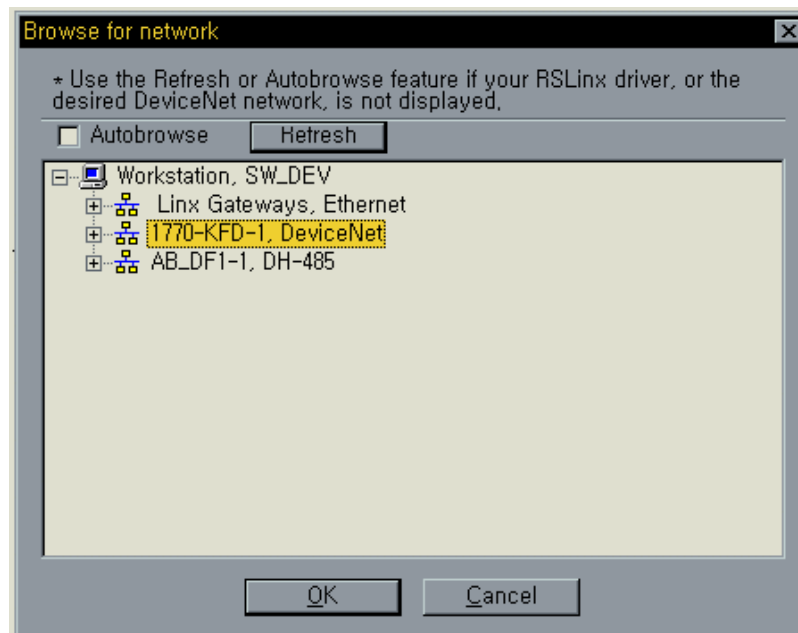


Figure 3-5. Browse for network dialog box

RSLinx starts browsing , as result in Figure 3-6, Network Devices are displayed as Icon

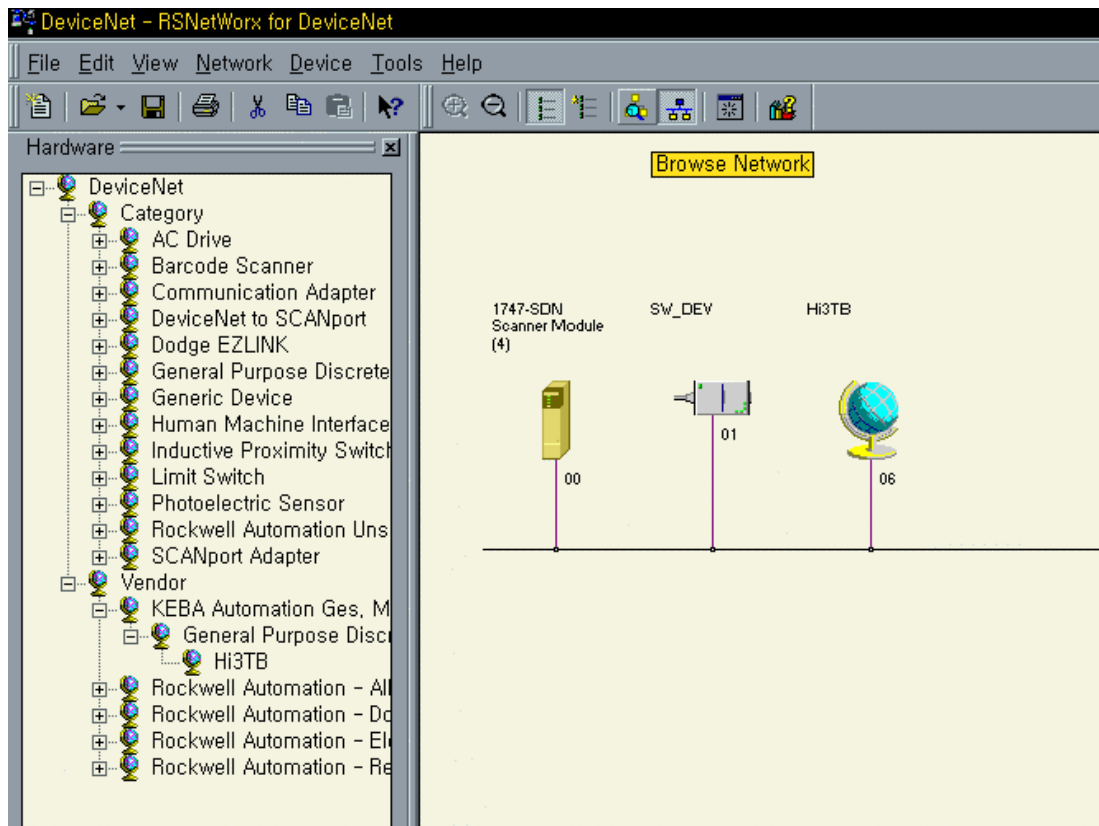


Figure 3-6. Result of Network browsing

### 3.3 1747-SDN setting and download

If double click the icon of 1747-SDN Scanner Module on the right side of screen, 1747-SDN Scanner Module dialog box is displayed

You can select slaves to carry out scanning by scanner, in Scanlist Tab.

Among Devices on the left side, move the devices to be scanned including Hi Robot Controller to right-side Scanlist with arrow button.

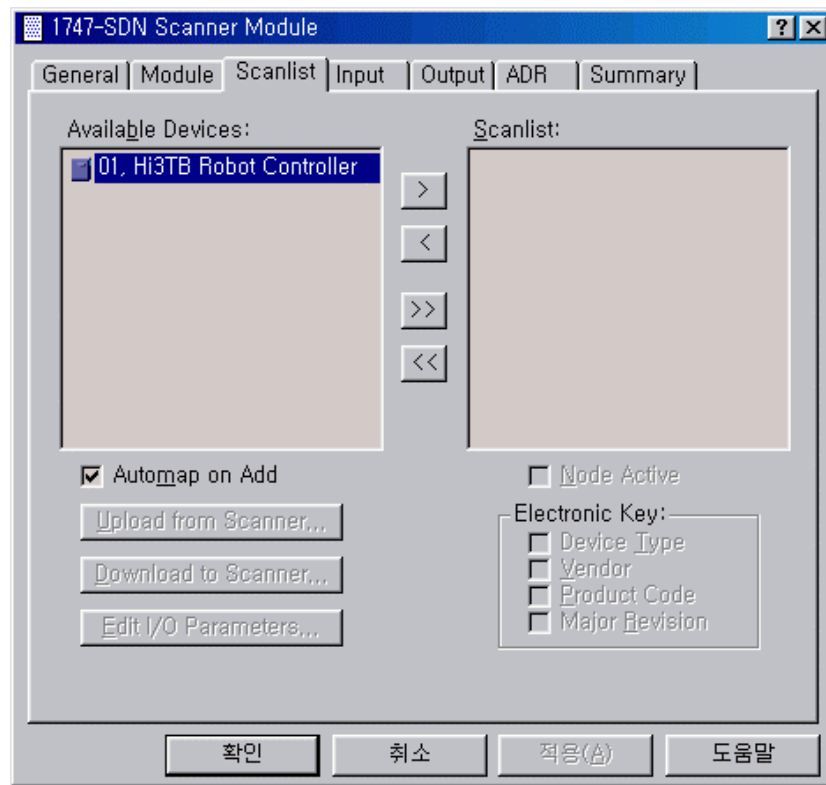


Figure 3-7 Scanlist of Scanner

When you select Input or Output tab, the s/w asks you whether you would download or upload.

Once upload is performed, page to set either Input or Output of 1747-SDN is displayed, as Figure 3-8

This setting shows that Input/Output of Hi Controller are mapped on I file and O file of 1747-SDN, as default. This setting shall be left in general. Press check button, as Figure 3-8, and perform download to transmit data to 1747-SDN. After downloading data for 1747-SDN, execute DeviceNet Network.

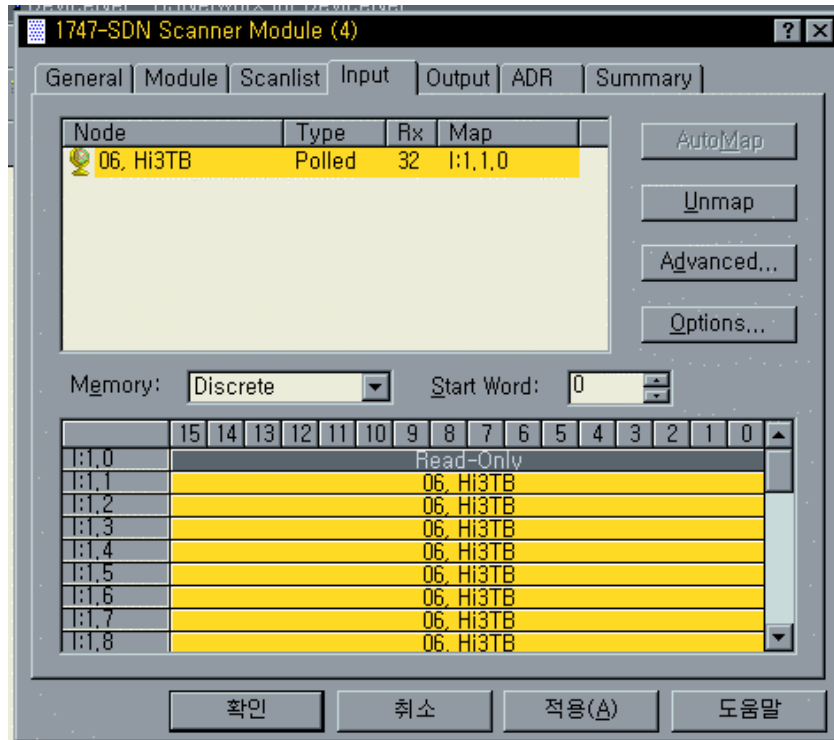


Figure 3-8. Input setting tab of 1747-SDN

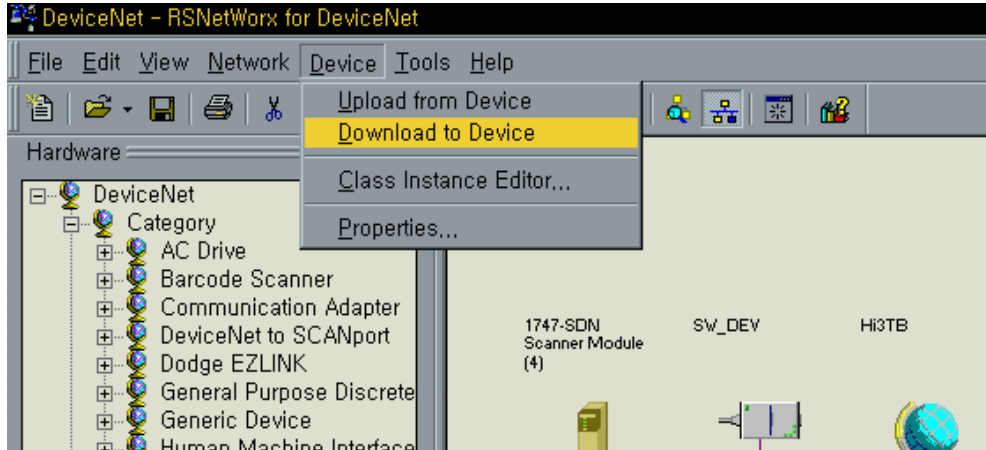


Figure 3-8. Download to 1747-SDN Scanner module



### 3.4 Complete

With above procedure, setting 1747-SDN scanner module is completed. Under condition of the main power being supplied, DeviceNet master device manages entire DeviceNet Network and exchanges the data with Hi Controller and other slave devices within Network .

RSNetworx is not needed unless any changes(adding/deleting additional slave, data mapping) in setting is required. RSLinx and RSLogix are used only if writing ladder program and downloading PLC monitoring are carried out

Namely, during performing Run mode of PLC, connection of PC or 1770KFD is not necessary needed.

※ Note

In AB PLC, SLC500 model, Fieldbus IDLE is occurred when run/idle bit of PLC is 0. In this case set run/idle bit as 1 for reset. After resetting, double click RESET of Teach Pendant.

