

**Topic: The PLC link function of DVP series PLCs**

Applicable model	DVP-EH3 series, DVP-SV2 series, DVP-ES2/EX2 series, DVP-SX2 series, DVP-SA2 series, DVP-SS2 series, DVP-SE series, DVP-10MC series, DVP-SX series, TP04P series, TP70P series
Keyword	PLC link function

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## 1. Preface, Purpose, and Note

### Preface:

The PLC link wizards in WPLSoft and ISPSOFT are used to set PLC links. DVP-EH3 series PLCs are used in the examples below.

**Purpose:** Helping users know how to use the PLC link wizards in WPLSoft and ISPSOFT to construct PLC links

- (1) Manually specifying linked slave stations
- (2) Automatically searching for linked slave stations
- (3) Manually specifying the same slave station, but different communication addresses
- (4) Reading and writing simultaneously in a polling cycle
- (5) Enabling the function of linking thirty-two PLCs and exchanging more than sixteen pieces of data
- (6) Sending a write command after the change of values

### Note:

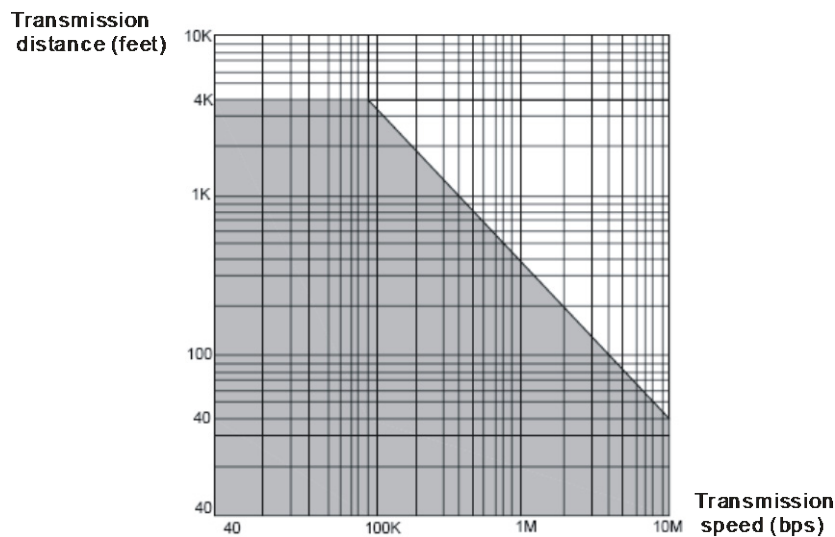
If RS-232/RS-485 is used for the wiring of hardware, the length of the connection created should be as short as possible, and should be far from high noise. An RS-232 interface is a one-to-one connection, and the length of the connection created is usually shorter. Therefore, the use of standard cables on the market or Delta cables generally does not cause any problems. The distance of a high-speed RS-485 connection is long. Besides, an RS-485 connection has a high transmission rate and numerous stations. It attenuates signals highly. If the problems related to improper ground potential, impedance matching, noise interference, and wiring are not solved, there will be low communication quality. Users have to pay attention to the following notes about the wiring of RS-485 communication.

- Limit on the number of stations

The number of stations which can be connected to a DVP series PLC can be up to 254, but the maximum number of stations which can be driven by an RS-485 interface is 16. If more than 16 stations are required, an RS-485 repeater (IFD8510) should be used. Each repeater supports 16 stations. Users can add stations by adding repeaters until the number of stations reaches 254.

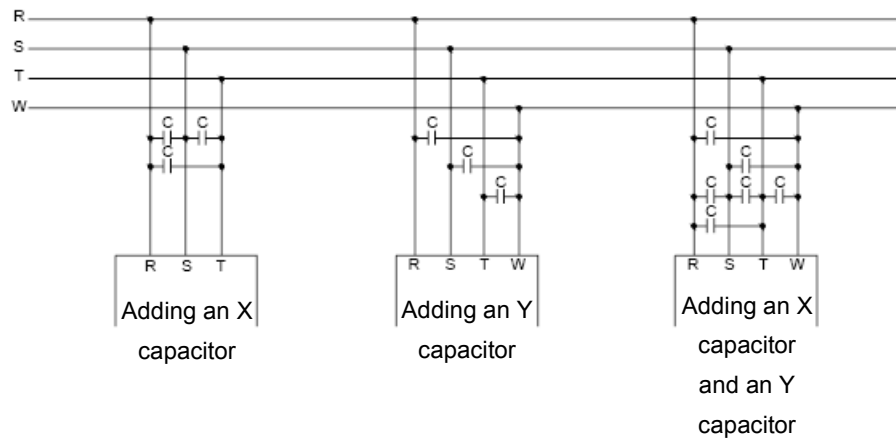
- Limit on distance

If an RS-485 interface is used, the maximum length of the cable which can be used for a specific transmission path is the function of a data signaling rate. The maximum length is affected by the factors such as the distortion of signals and noise. The graph below is gotten by using a 24 AWG copper twisted pair telephone cable (a cable whose diameter is 0.51 mm) with a 52.5 PF/M bypass capacitor and a 100  $\Omega$  terminator. (Please refer to GB11014-89 Appendix A.) If the maximum acceptable signal loss allowed is 6 dBV when data a signaling rate is lower than 90 kbit/s, the limit on the length of the cable which can be used will be 1200 m (4K feet). However, the graph is conservative, and a longer cable length is accessible in practical application. If cables whose diameters are different are used, the maximum cable lengths which can be gotten will be different. For example, if a data signaling rate is 600 kbit/s, and a 24 AWG cable is used, the maximum cable length gotten will be 200 m. If a 19 AWG cable (a cable whose diameter is 0.91 mm) is used, the maximum cable length gotten can be longer than 200 m. If a 28 AWG cable (a cable whose diameter is 0.32 mm) is used, the maximum cable length gotten can only be shorter than 200 m. The relation between transmission rates (bps) and transmission distances for an RS-485 standard communication interface is shown below.



- **Limitation on cables**  
Users have to use shielded twisted pair cables. The quality of cables greatly influences transmission signals. If users use low quality cables (such as PVC twisted pair cables), signals will be attenuated highly and transmission distance will be shortened. In addition, noise can interfere with communication easily due to the poor noise immunity of low quality cables. Therefore, in a situation in which there is a high transmission rate, a long distance, or high noise, high quality twisted pair cables (such as polyethylene twisted pair cables) should be used. However, in a situation in which there are a low transmission rate and low noise, PVC twisted pair cable is an acceptable and cost saving choice though the signal loss of PVC cables is 1,000 times greater than high quality cables. If a long transmission distance attenuates signals, an RS-485 repeater (IFD8510) can be used to amplify the signals.
- **Wiring topology**  
In RS-485 wiring, nodes should be near the master cable as much as possible. Generally, a daisy chain is used for RS-485 wiring. Topology is the link structure of a connection. The topology of RS-485 wiring is a configuration of stations which are wired together in sequence. That is, in RS-485 wiring, the first station is connected to the second station, the second station is connected to the third station, and so on. Start topology and ring topology are not allowed.
- **SG (signal ground)**  
Though twisted cables can be used to connect an RS-485 network, noise can easily interfere with the twisted cables. The prerequisite for using twisted cables to connect an RS-485 network is that the ground potential (common mode voltage) between stations should not exceed the maximum common mode voltage allowed by an RS-485 IC. However, no matter how high the ground potential between stations is, users should use shielded twisted pair cables to connect the signal grounds of stations. The use of shielded twisted pair cables can reduce the common mode voltage between stations. It provides the shortest circuit for communication, and improves noise immunity.
- **Terminator**  
All cables have their own characteristic impedance (120 Ω for a twisted pair). If the terminal impedance of a cable is different from the characteristic impedance of the cable when a signal in the cable is transmitted to a terminal, an echo signal will occur, and the waveform of the signal will be distorted (convex or concave). The distortion of the waveform of a signal will not be obvious if the cable used to transmit the signal is short. If the cable used to transmit a signal is long, the distortion of the waveform of the signal will become serious, and a terminator will be needed to maintain normal transmission.
- **Methods to reduce noise**  
After an RS-485 network is wired according to the rules above, or connected to a 120 Ω terminator, noise interference can be reduced. If the noise interference can not be reduced, it means that there is a strong noise source near the network. In addition to keeping cables away from the strong noise source (such as an electromagnetic valve, AC motor drive, an AC servo drive, or power equipment) and its power lines, the best way to reduce the noise interference is to add a noise suppressor to the noise source. The figure below shows the methods for reducing the

noise caused by an AC motor drive, an AC servo drive, and power equipment.  
 $C = 0.22 \mu\text{f} \sim 0.47 \mu\text{f}/630 \text{ V AC}$



Generally, an RS-485 cable comprises two wires twisted together. It transmits signals by the potential difference between the twisted pair, and therefore the transmission is called differential mode transmission. Differential mode interference is transmitted between two signal wires. It is symmetric interference. Differential mode interference can be reduced by adding a bias resistor to a circuit and using twisted pair cables. Common mode interference is transmitted between a signal wire and the ground. It is asymmetric interference. Common mode interference can be reduced by using the following methods.

- (1) Use shielded twisted pair cables and ground it properly.
- (2) Use galvanized pipes in strong electric fields.
- (3) Users should keep away from high voltage cables when they install cables. Do not bond high voltage power cables and signal cables together.
- (4) Use a linear power supply or a high quality switching-mode power supply (ripple < 50mV).

## 2. Communication Rates and Formats

### 2.1 DVP Series PLCs Supporting PLC Links

In the table below, **V** means supporting PLC links, and **X** means not supporting PLC links.

Model	EH3	SV2	ES2/EX2	SA2	SX2	SS2	SE	SX	MC	ES/EX/EC3
Supporting PLC links or not	V	V	V	V	V	V	V	V	V	X

### 2.2 DVP Series PLCs Supporting Function Codes of PLC Links

In the table below, **V** means supporting function codes of PLC links, and **X** means not supporting.

Model	EH3	SV2	ES2/EX2	SA2	SX2	SS2	SE	SX	MC
<b>Function Code</b>									
H03	V	V	V	V	V	V	V	V	V
H06	V	V	V	V	V	V	V	V	X
H10	V	V	V	V	V	V	V	V	V
H17	V	V	V	V	V	V	V	V	V

## 2.3 The Maximum Quantity of Data and Stations

The maximum quantity of data and station supported by DVP series PLCs are described below. In the table below, **V** means supporting and **X** means not supporting.

Max. Quantity \ Model	EH3	SV2	ES2/EX2	SA2	SX2	SS2	SE	SX	MC
100 data & 32 stations	V	V	X	X	X	X	V1.60	X	X
50 data & 16 stations	X	X	V	V	V	V	X	V3.00	V

## 2.4 Communication Formats

DVP series PLCs support ASCII/RTU communication. The communication formats supported by DVP series PLCs are described below.

Model	Data length	Parity bit	Stop bit
EH3	7, 8	None, odd, even	1, 2
SV2	7, 8	None, odd, even	1, 2
ES2/EX2	7, 8	None, odd, even	1, 2
SA2	7, 8	None, odd, even	1, 2
SX2	7, 8	None, odd, even	1, 2
SS2	7, 8	None, odd, even	1, 2
SE	7, 8	None, odd, even	1, 2
MC	7, 8	None, odd, even	1, 2
SX	7, 8	None, odd, even	1, 2

## 2.5 Communication Rates

Users can set a communication format for a DVP series PLC by means of D1120 (COM2)/D1109 (COM3). The maximum communication rate that COM3 (DVP-F485) in a DVP-EH3 series PLC supports is 500 kbps. The setting of a communication format does not support bit 8~bit 15 in D1120/D1109. Please refer to the following table for more information about the communication rates that the RS-485 ports on DVP series PLCs support and the setting of a communication format.

Model	EH3	SV2/MC	ES2/EX2/SA2	ES2-C/SX2/SS2/SX	SE
RS-485 port	COM2/COM3	COM2	COM2/COM3	COM2	COM2/COM3
Baud rate (bps)	(V: Supporting the baud rate; X: Not supporting the baud rate)				
110	V	V	X	X	V
150	V	V	X	X	V
300	V	V	X	X	V
600	V	V	V	V	V
1200	V	V	V	V	V
2400	V	V	V	V	V
4800	V	V	V	V	V
9600	V	V	V	V	V
19200	V	V	V	V	V
31250	V	V	V	V	V
38400	V	V	V	V	V
57600	V	V	V	V	V
115200	V	V	V	V	V
500K	V	V	V	V	V
921K	COM2: V COM3: X	V	V	V	X

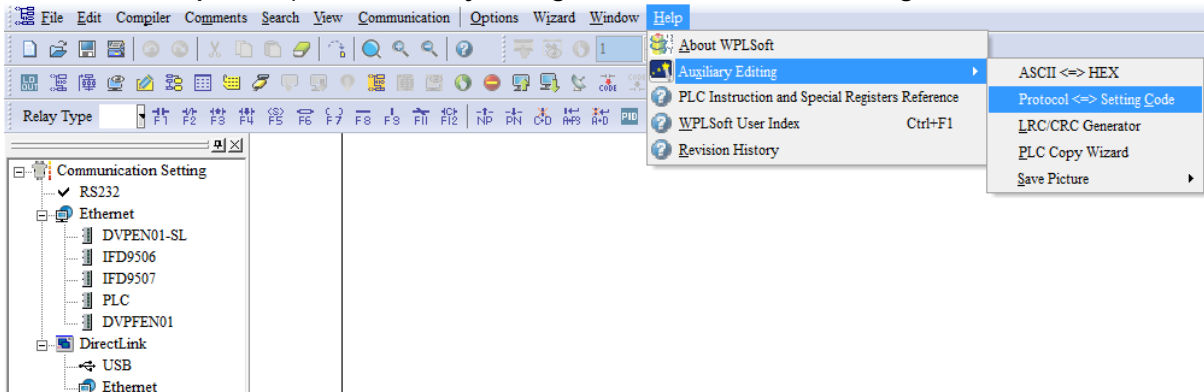
Communication format			
		Contents	
<b>b0</b>	Data length	0: 7 bits 1: 8 bits (If an RTU communication format is selected, the data length set needs to be 8 bits.)	
<b>b1</b> <b>b2</b>	Parity bit	00: None 01: Odd 11: Even	
<b>b3</b>	Stop bit	0: 1 bit 1: 2 bits	
<b>b4</b> <b>b5</b> <b>b6</b> <b>b7</b>	Serial transmission rate	0001 (H1): 110 0010 (H2): 150 0011 (H3): 300 0100 (H4): 600 0101 (H5): 1200 0110 (H6): 2400 0111 (H7): 4800 1000 (H8): 9600 1001 (H9): 19200 1010 (HA): 38400 1011 (HB): 57600 1100 (HC): 115200 1101 (HD): 500000 1110 (HE): 31250 1111 (HF): 921000	
<b>b8</b>	Start-of-text character	0: None	1: D1124
<b>b9</b>	First end-of-text character	0: None	1: D1125
<b>b10</b>	Second end-of-text character	0: None	1: D1126
<b>b11~b15</b>	Undefined		


Another way to set a communication format is described below.

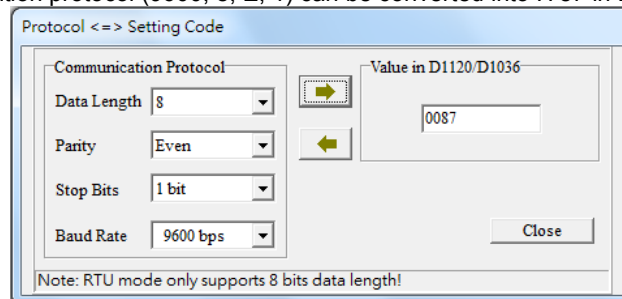
- (1) Start WPLSoft.



- (2) Click the the **Help** menu, point to **Auxiliary Editing**, and click **Protocol <=> Setting Code**.



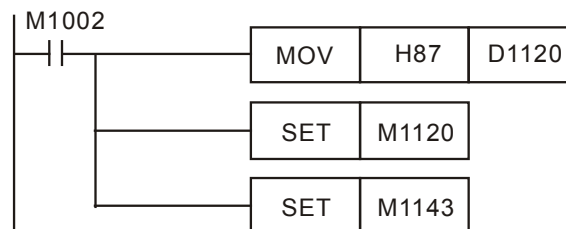
- (3) Select values in the **Data Length** drop-down list box, the **Parity** drop-down list box, the **Stop Bits** drop-down list box, and the **Baud Rate** drop-down list box in the **Protocol <=> Setting Code** window, and then click . For example, the communication protocol (9600, 8, E, 1) can be converted into H'87 in D1120/D1036.



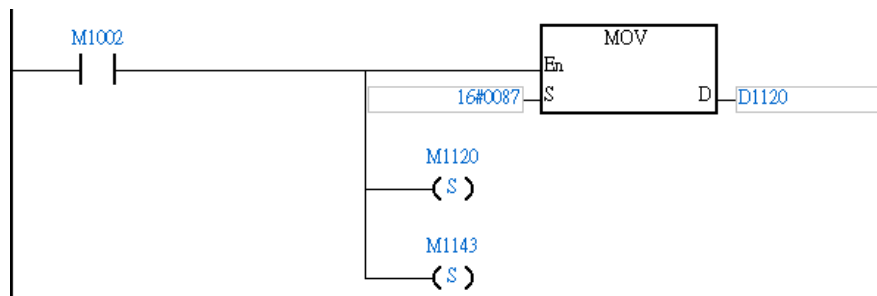
## 2.6 Setting a Communication format for COM2/COM3

- (1) If users want to change the communication format set for COM2/COM3, they need to write the program shown in (3). After the RUN/STOP switch on a PLC is moved out of the STOP position and into the RUN position, the PLC will detect whether M1120/M1136 is On in the first scan time. If M1120/M1136 is On, the settings related to COM2/COM3 will be changed according to the values in D1120/D1109.
- (2) Whether the communication format set for COM2 is an ASCII mode or an RTU mode is determined by M1143, and whether the communication format set for COM3 is an ASCII mode or an RTU mode is determined by M1320. (If M1143/M1320 is Off, the communication format set for COM2/COM3 is an ASCII mode. If M1143/M1320 is On, the communication format set for COM2/COM3 is an RTU mode.)
- (3) If users want to change the communication format set for COM2/COM3 to an RTU mode and (9600, 8, E, 1), they need to write the program shown below.

- COM2:  
WPLSoft:

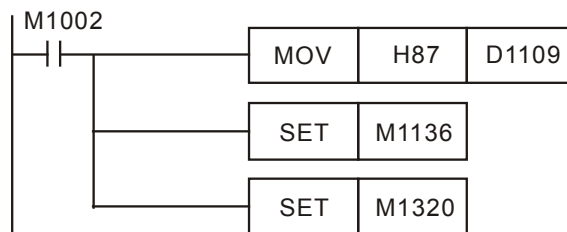


ISPSOft:

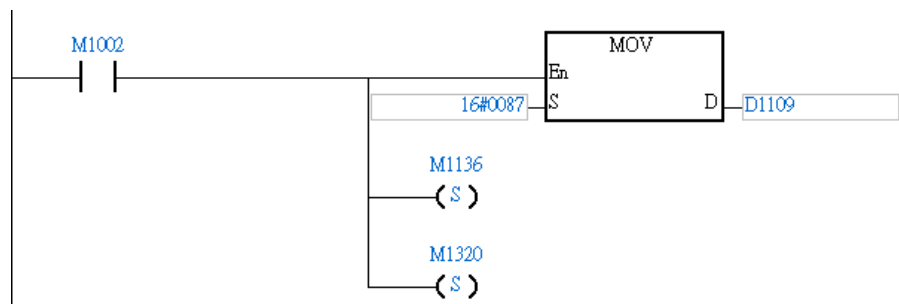




- COM3:  
WPLSoft:



ISPSOft:



**Notes:**

- (1) If COM2/COM3 is used as a slave port, please do not use any communication instructions in the program for COM2/COM3.
- (2) If the RUN/STOP switch on a PLC is moved out of the RUN position and into the STOP position after a communication format is modified, the communication format will not be changed.
- (3) After the modification of a communication format is complete, if a PLC is disconnected when the RUN/STOP switch on the PLC is in the STOP position and then powered, the PLC will be restored to the default communication format (9600, 7, E, 1).

### 3. Example 1—Manually Specifying Linked Slave Stations (M1355=On)

If M1355 is ON, M1360~M1375 (M1440~M1455) can be used to specify the stations which need to be linked, and therefore read/write commands will be transmitted cyclically through PLC links according to M1360~M1375 no matter how many PLCs are connected. (The master stations and the slave stations in the examples below are DVP-EH3 series PLCs.)

#### 3.1 Using the PLC Link Wizard in WPLSoft (ASCII/RTU Mode)

**【Control requirement】**

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with the two slave stations (two DVP-EH3 series PLCs) manually specified through a PLC link.

**【Setting station addresses of PLCs】**

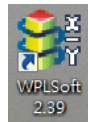
Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

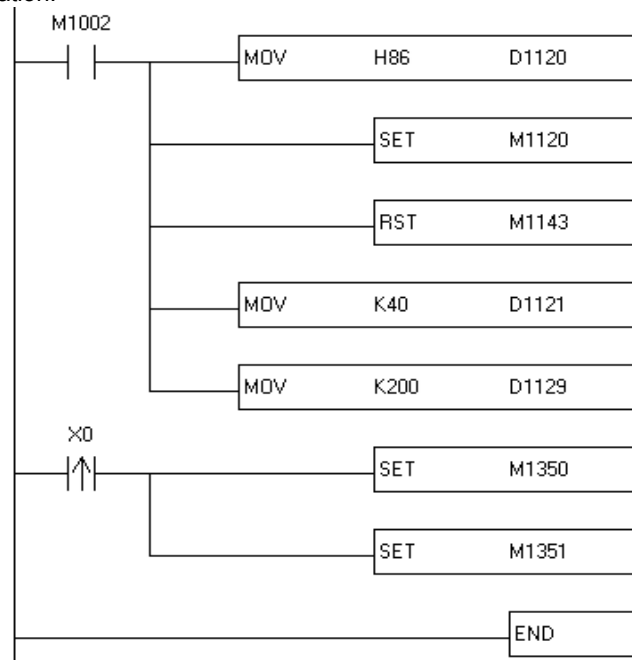
【PLC link wizard】

**Step 1:** Start WPLSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

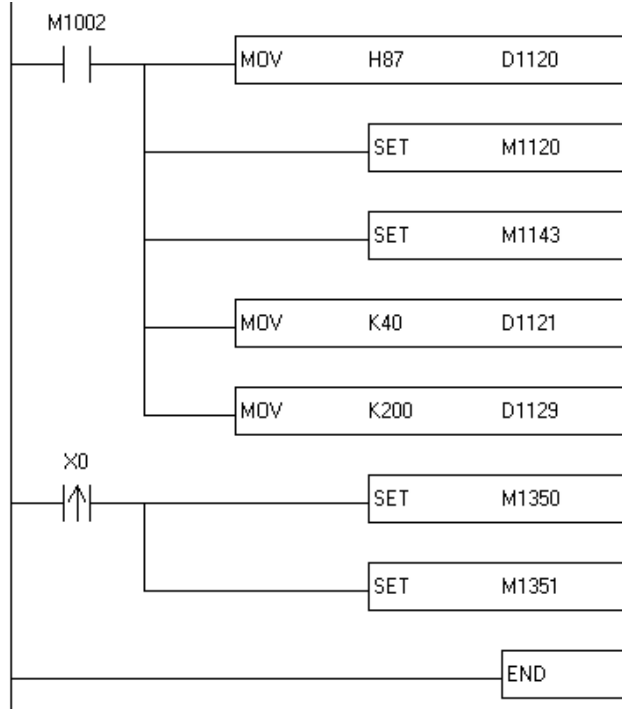


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On).

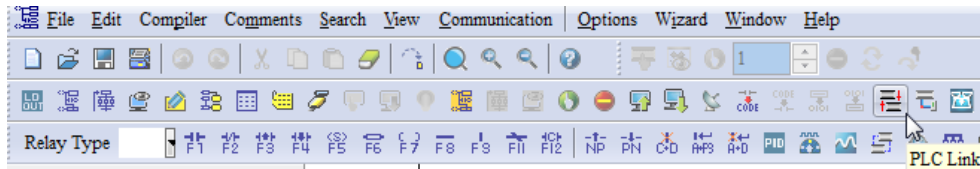
Program for ASCII communication:




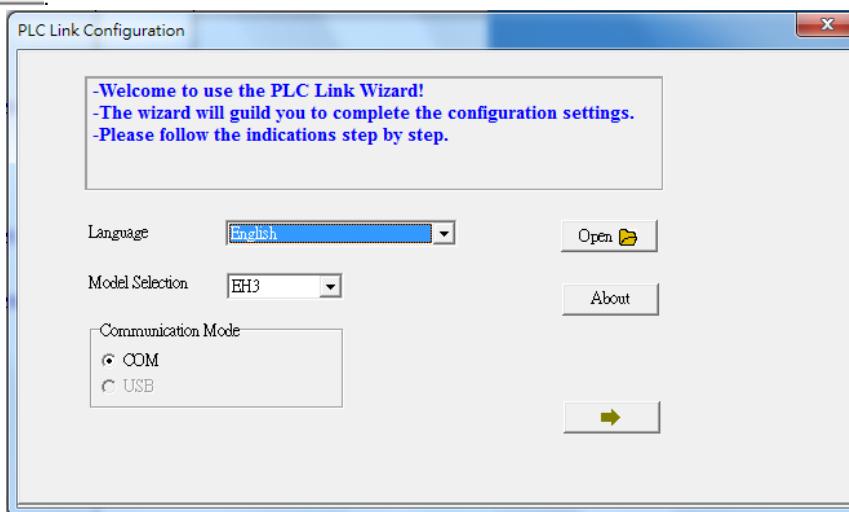
Program for RTU communication:




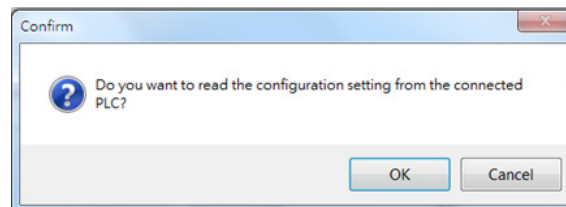
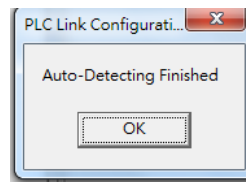
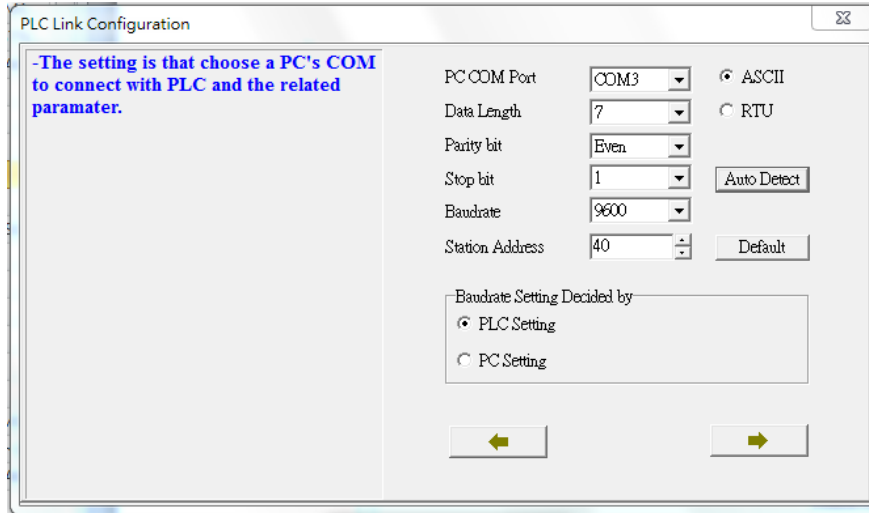
**Step 2:** Click the PLC link wizard  in WPLSoft.



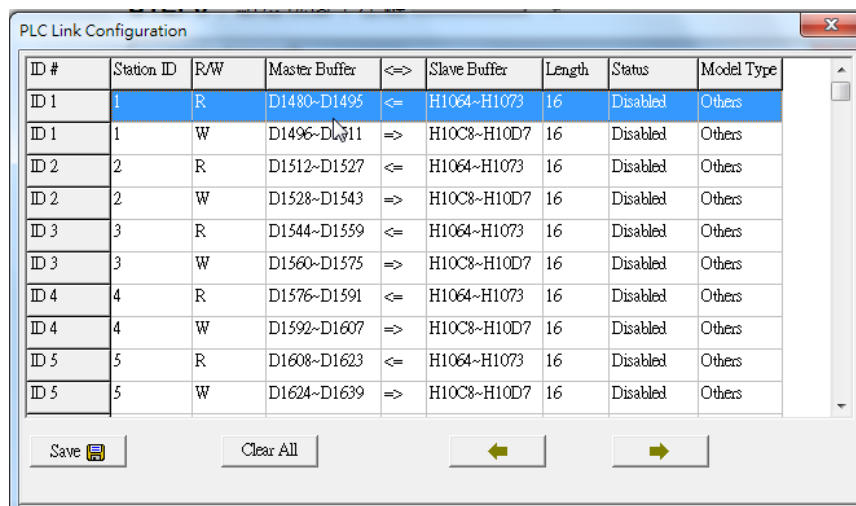
**Step 3:** Select a language in the **Language** drop-down list box, select a model in the **Model Selection** drop-down list box, and click .




**Step 4:** Set a communication format for COM1 in the master PLC, click **Auto Detect**, click **OK** in the window which appears, click , and click **OK** in the window which appears.

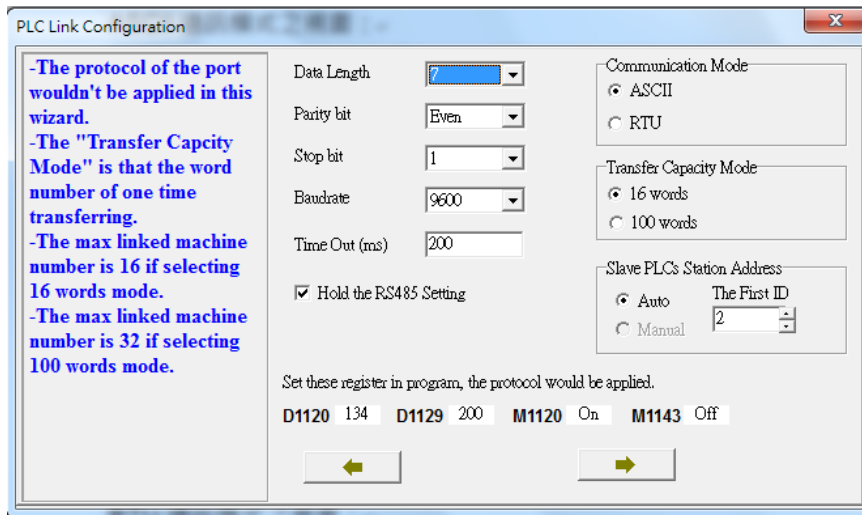


**Step 5:** Click .

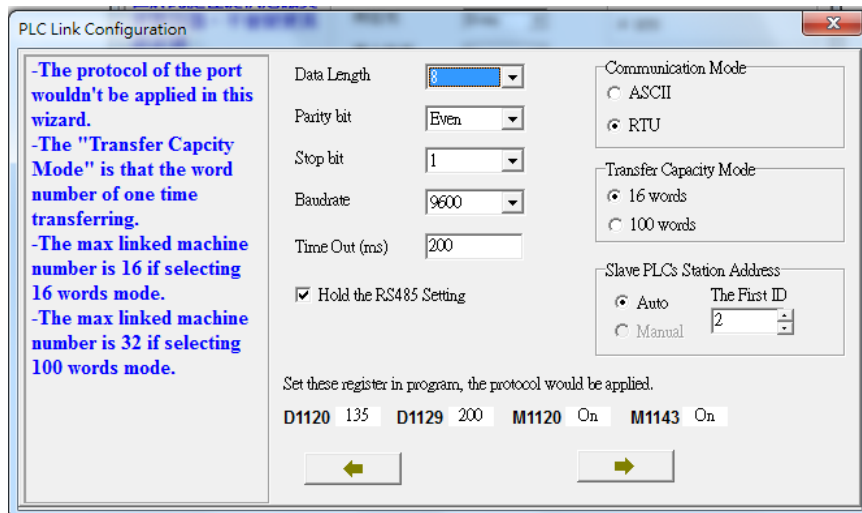


**Step 6:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, select the **Auto** option button and **2** in the **The First ID** box in the **Slave PLCs Station Address** section, and click .

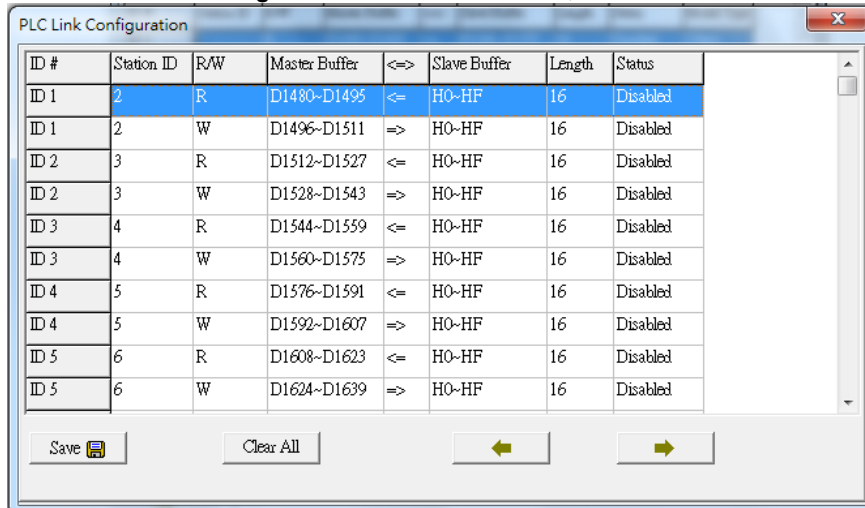
Window for ASCII communication:



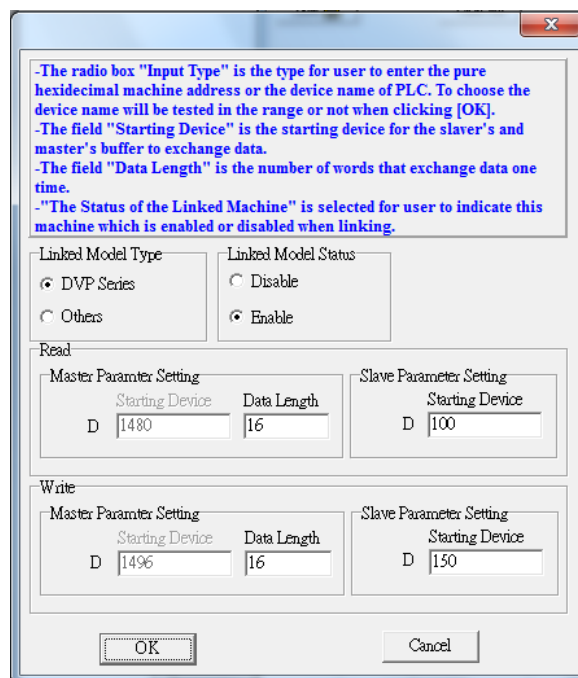
Window for RTU communication:



**Step 7:** Double-click the **ID 1** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1360 to On), type "16" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "100" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "150" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	↔	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	←	H0~HF	16	Disabled
ID 1	2	W	D1496~D1511	⇒	H0~HF	16	Disabled
ID 2	3	R	D1512~D1527	←	H0~HF	16	Disabled
ID 2	3	W	D1528~D1543	⇒	H0~HF	16	Disabled
ID 3	4	R	D1544~D1559	←	H0~HF	16	Disabled
ID 3	4	W	D1560~D1575	⇒	H0~HF	16	Disabled
ID 4	5	R	D1576~D1591	←	H0~HF	16	Disabled
ID 4	5	W	D1592~D1607	⇒	H0~HF	16	Disabled
ID 5	6	R	D1608~D1623	←	H0~HF	16	Disabled
ID 5	6	W	D1624~D1639	⇒	H0~HF	16	Disabled



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

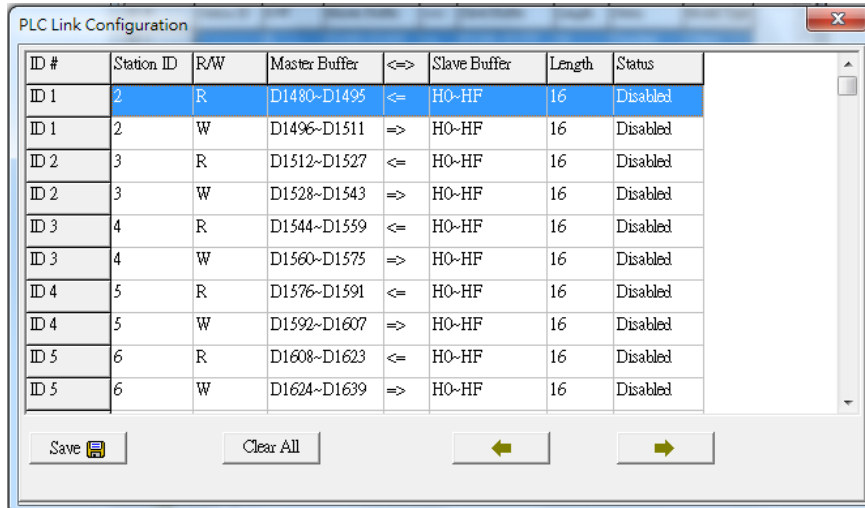
Linked Model Type:  DVP Series,  Others  
 Linked Model Status:  Disable,  Enable

Read Section:  
 Master Parameter Setting: Starting Device: D 1480, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 100

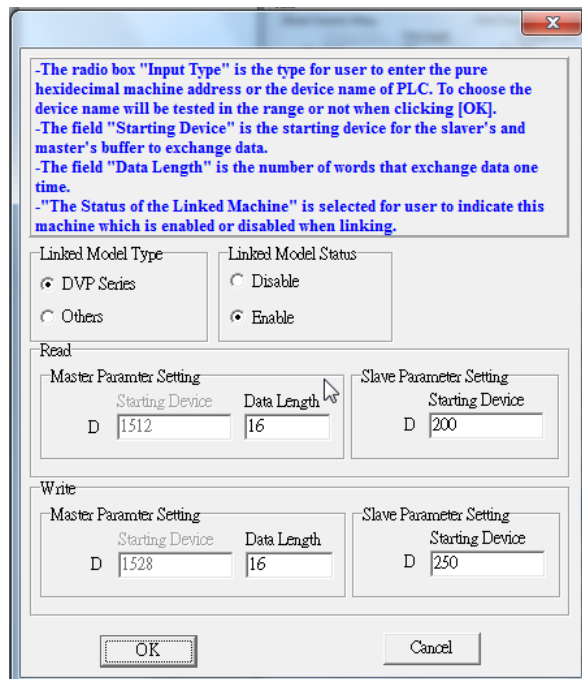
Write Section:  
 Master Parameter Setting: Starting Device: D 1496, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 150

Buttons: OK, Cancel

**Step 8:** Double-click the **ID 2** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1361 to On), type "16" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "200" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "250" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	<=>	H0~HF	16	Disabled
ID 1	2	W	D1496~D1511	=>	H0~HF	16	Disabled
ID 2	3	R	D1512~D1527	<=>	H0~HF	16	Disabled
ID 2	3	W	D1528~D1543	=>	H0~HF	16	Disabled
ID 3	4	R	D1544~D1559	<=>	H0~HF	16	Disabled
ID 3	4	W	D1560~D1575	=>	H0~HF	16	Disabled
ID 4	5	R	D1576~D1591	<=>	H0~HF	16	Disabled
ID 4	5	W	D1592~D1607	=>	H0~HF	16	Disabled
ID 5	6	R	D1608~D1623	<=>	H0~HF	16	Disabled
ID 5	6	W	D1624~D1639	=>	H0~HF	16	Disabled




-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

Linked Model Type:  DVP Series,  Others  
 Linked Model Status:  Disable,  Enable

Read section:  
 Master Parameter Setting: Starting Device: D 1512, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 200

Write section:  
 Master Parameter Setting: Starting Device: D 1528, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 250

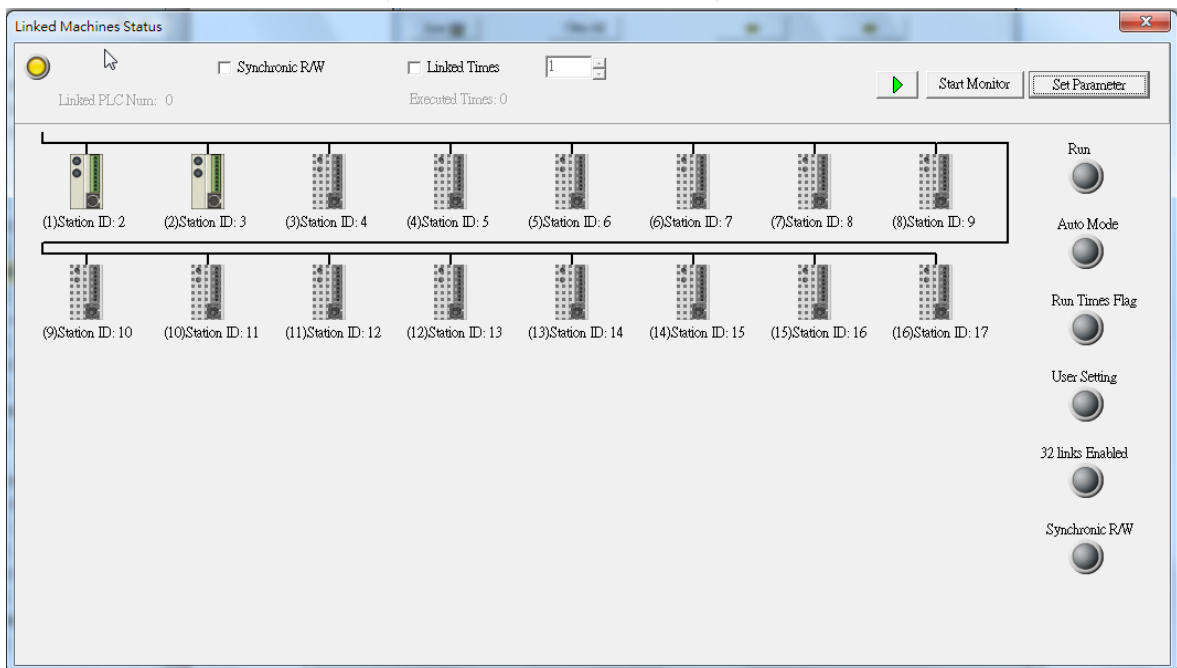
Buttons: OK, Cancel

**Step 9:** Check whether the contents of the ID 1 block and the ID 2 block are correct, and then click 

ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	<=>	D100~D115	16	Enabled
ID 1	2	W	D1496~D1511	=>	D150~D165	16	Enabled
ID 2	3	R	D1512~D1527	<=>	D200~D215	16	Enabled
ID 2	3	W	D1528~D1543	=>	D250~D265	16	Enabled
ID 3	4	R	D1544~D1559	<=>	H0~HF	16	Disabled
ID 3	4	W	D1560~D1575	=>	H0~HF	16	Disabled
ID 4	5	R	D1576~D1591	<=>	H0~HF	16	Disabled
ID 4	5	W	D1592~D1607	=>	H0~HF	16	Disabled
ID 5	6	R	D1608~D1623	<=>	H0~HF	16	Disabled
ID 5	6	W	D1624~D1639	=>	H0~HF	16	Disabled

Buttons: Save, Clear All, left arrow, right arrow

**Step 10:** Click the **Set Parameter** button, click the **Start Monitor** button, and click  or set X0 to On.



Linked Machines Status

Linked PLC Num: 0      Executed Times: 0



Buttons: Start Monitor, Set Parameter

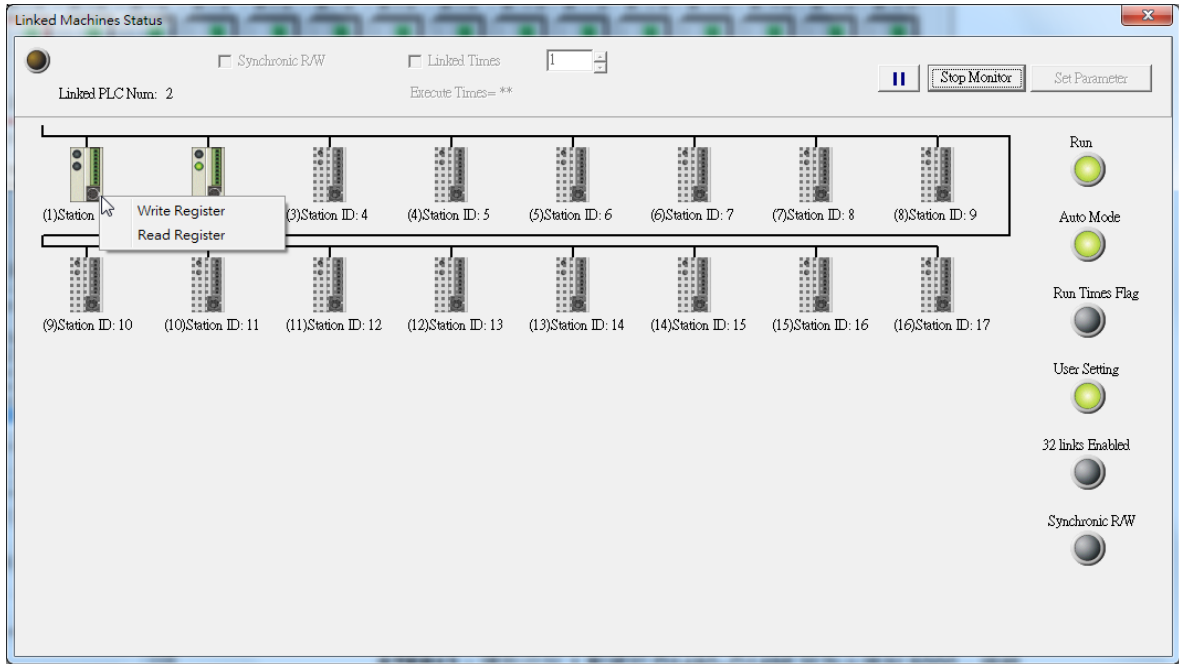
Station IDs: (1)Station ID: 2, (2)Station ID: 3, (3)Station ID: 4, (4)Station ID: 5, (5)Station ID: 6, (6)Station ID: 7, (7)Station ID: 8, (8)Station ID: 9, (9)Station ID: 10, (10)Station ID: 11, (11)Station ID: 12, (12)Station ID: 13, (13)Station ID: 14, (14)Station ID: 15, (15)Station ID: 16, (16)Station ID: 17

Control Panel (Right): Run, Auto Mode, Run Times Flag, User Setting, 32 links Enabled, Synchronic R/W

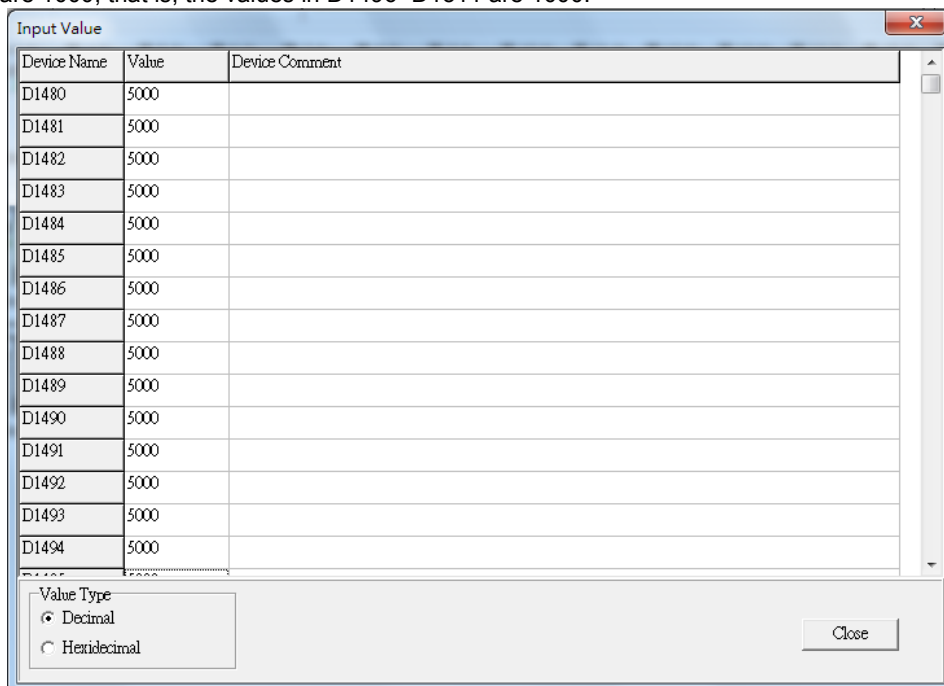


**Step 11:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.



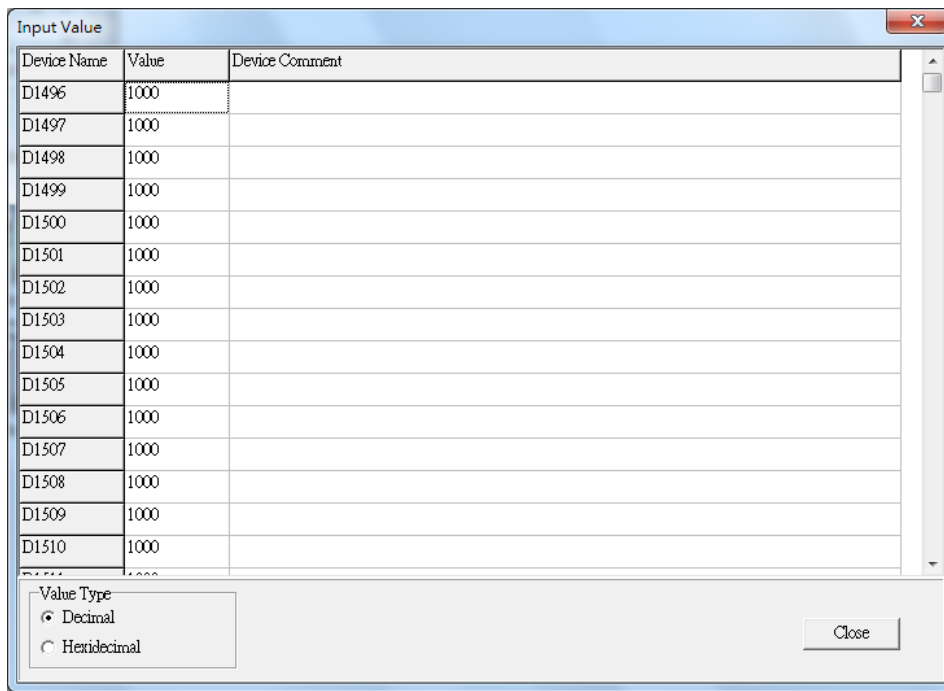
**Step 12:** The values read from slave 1 are 5000, that is, the values in D1480~D1495 are 5000. The values written to slave station 1 are 1000, that is, the values in D1496~D1511 are 1000.



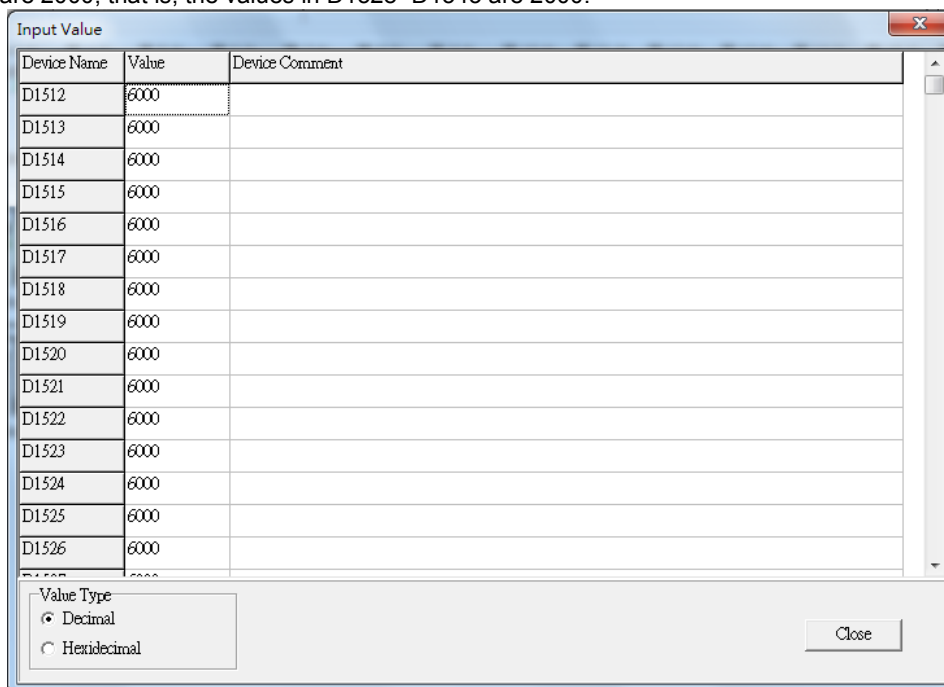
Device Name	Value	Device Comment
D1480	5000	
D1481	5000	
D1482	5000	
D1483	5000	
D1484	5000	
D1485	5000	
D1486	5000	
D1487	5000	
D1488	5000	
D1489	5000	
D1490	5000	
D1491	5000	
D1492	5000	
D1493	5000	
D1494	5000	

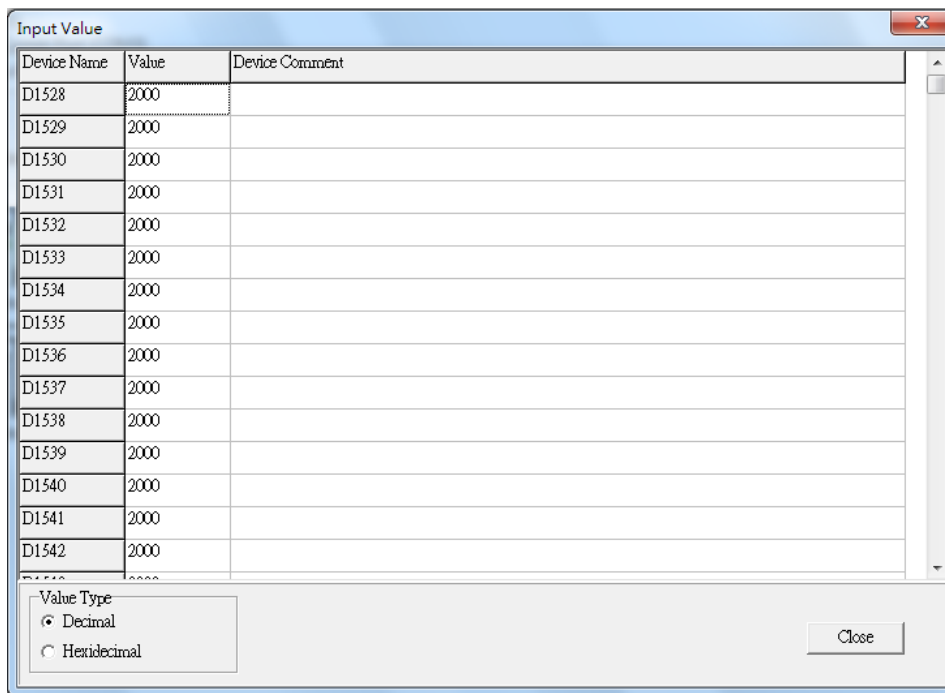
Value Type  
 Decimal  
 Hexidecimal



Close

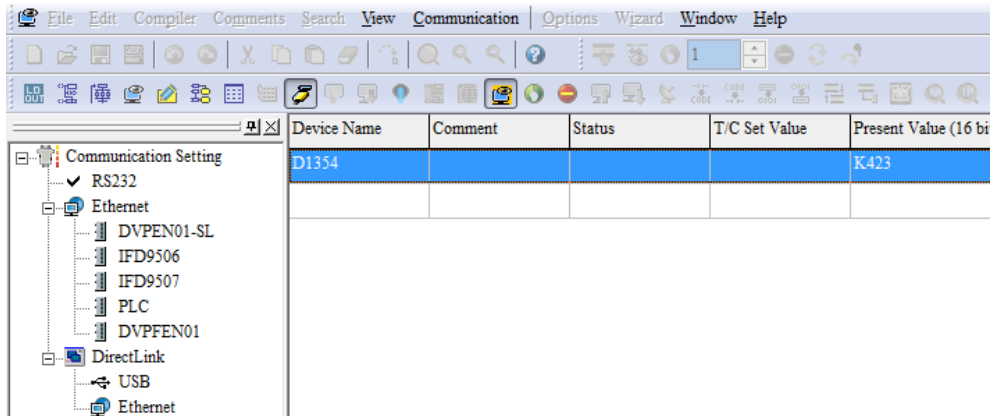


**Step 13:** The values read from slave 2 are 6000, that is, the values in D1512~D1527 are 6000. The values written to slave station 2 are 2000, that is, the values in D1528~D1543 are 2000.



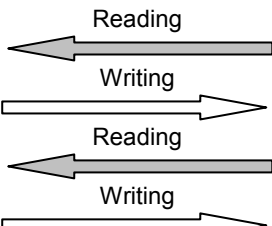


**Step 14:** Close the **Linked Machines Status** window, click , click , and type "D1354". The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D1480~D1495 in the master station, and the values in D1496~D1511 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 2 are written to D1512~D1527 in the master station, and the values in D1528~D1543 in the master station are written to D250~D265 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D1480~D1495		D100~D115 in the slave PLC whose station address is K2
D1496~D1511		D150~D165 in the slave PLC whose station address is K2
D1512~D1527		D200~D215 in the slave PLC whose station address is K3
D1528~D1543		D250~D265 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 0.
D1512~D1527	All are 0.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 1000.
D1512~D1527	All are 6000.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 2000.

### 3.2 Using the PLC Link Wizard in ISPSOft (ASCII/RTU Mode)

#### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with the two slave stations (two DVP-EH3 series PLCs) manually specified through a PLC link.

#### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

#### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

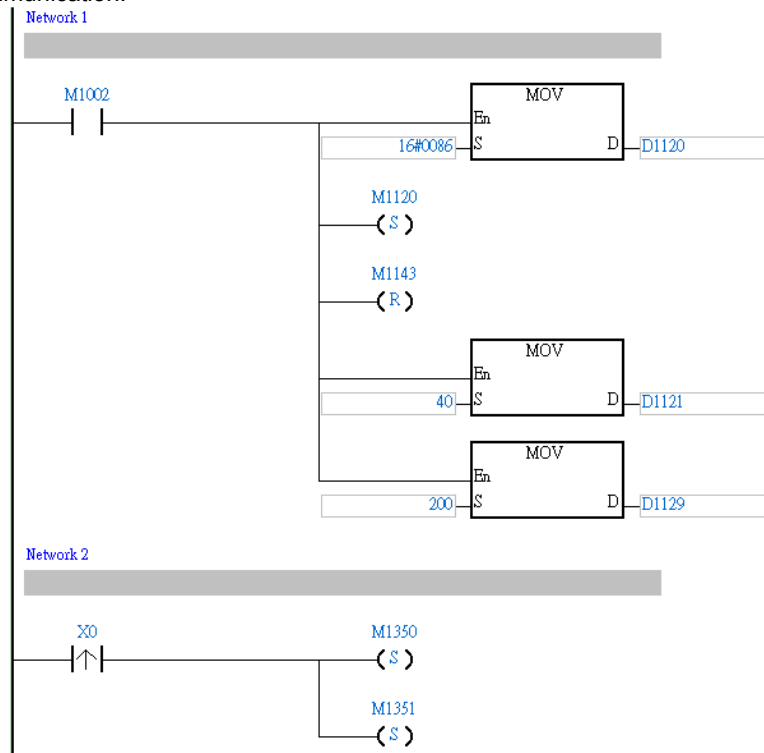
【PLC link wizard】

**Step 1:** Start ISPSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

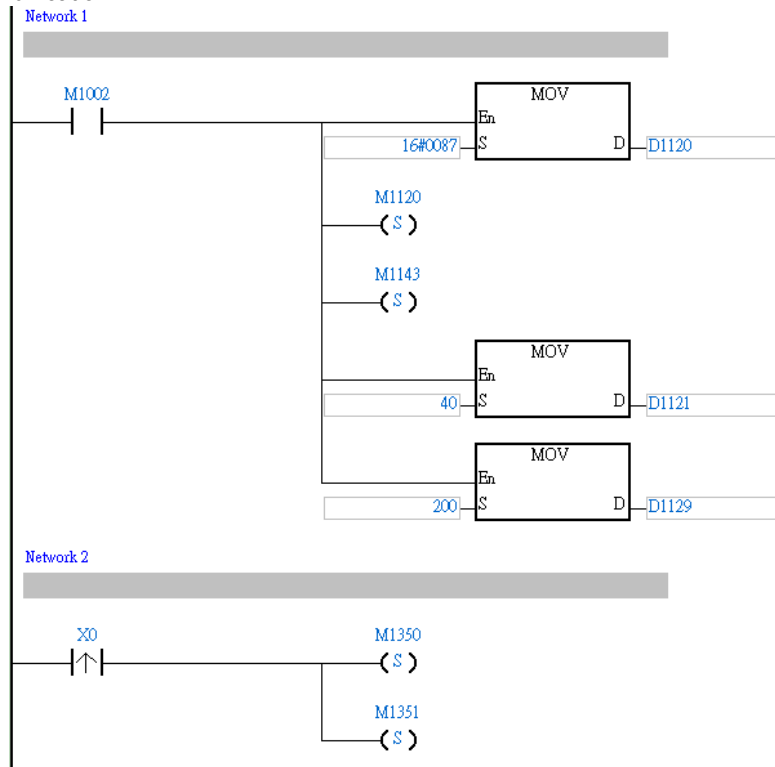




Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On).

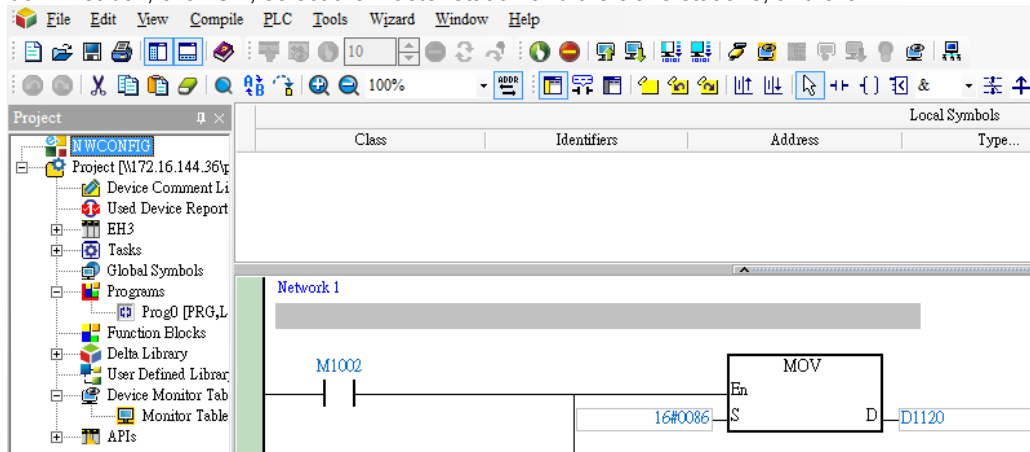
Program for ASCII communication:

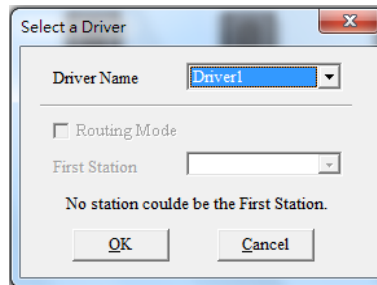
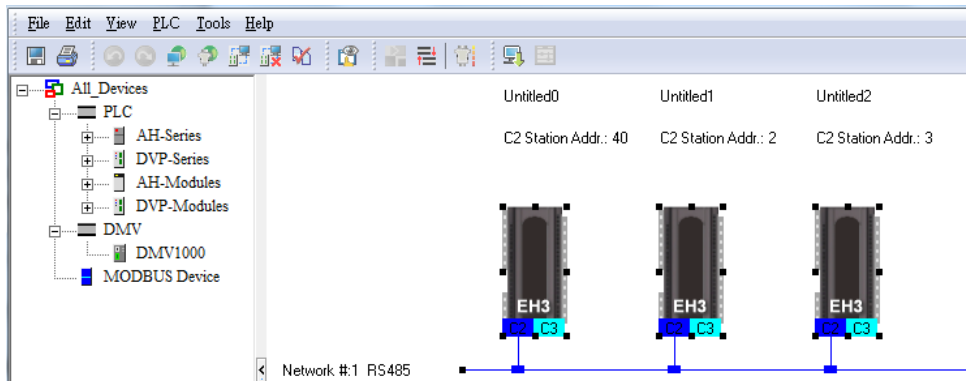



Program for RTU communication:

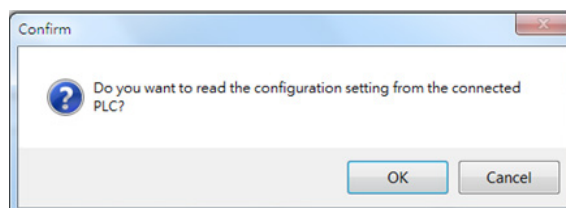
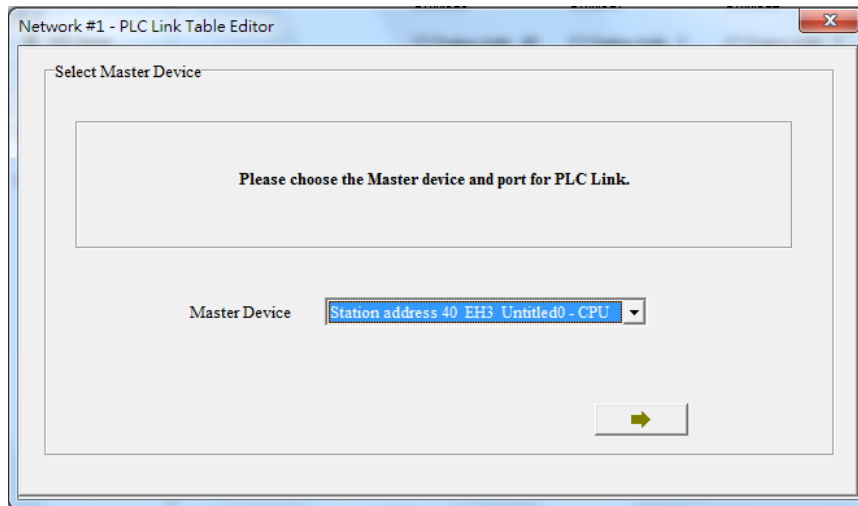


**Step 2:** Double-click **NWCONFIG** in the project management area, create a link, click , select **Driver 1** in the **Driver Name** drop-down list box, click **OK**, select the master station and the slave stations, and click .

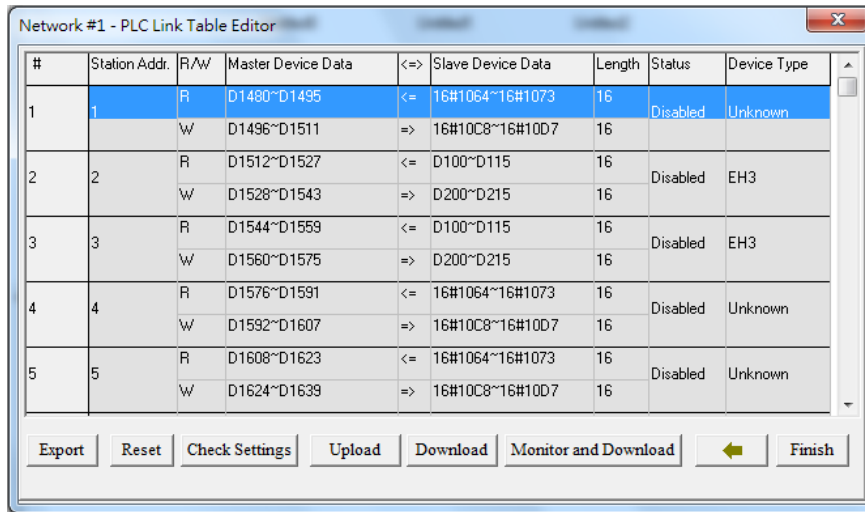





**Step 3:** Select a PLC in the **Master Device** drop-down list box, click , and click **OK** in the window which appears.

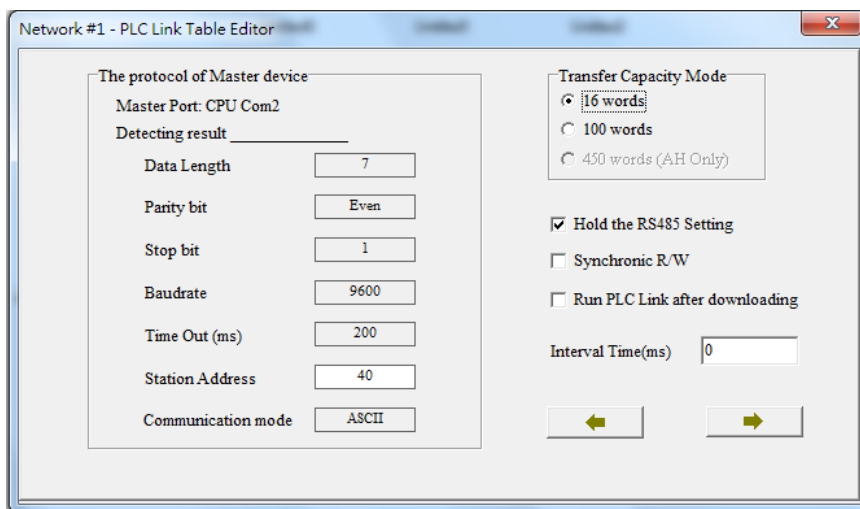


Step 4: Click .



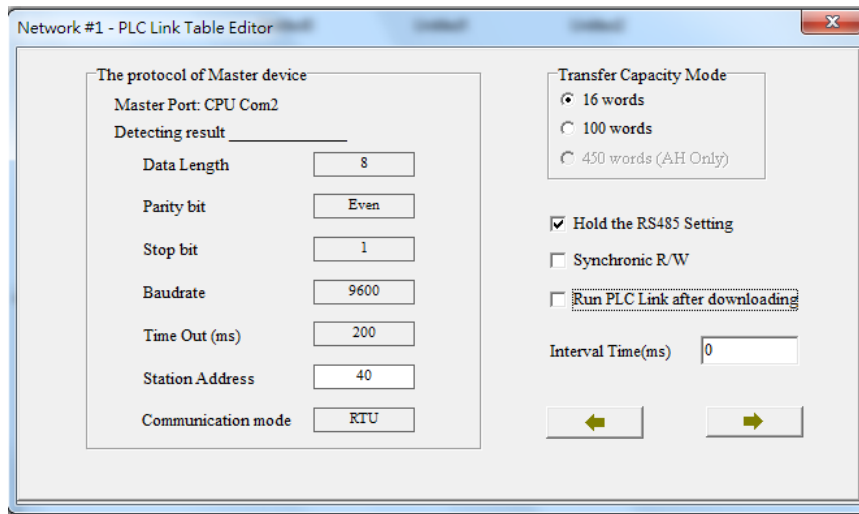
Step 5: The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, unselect the **Synchronic R/W** checkbox and the **Run PLC Link after downloading** checkbox, type "0" in the **Interval time** box, and click .

Window for ASCII communication:

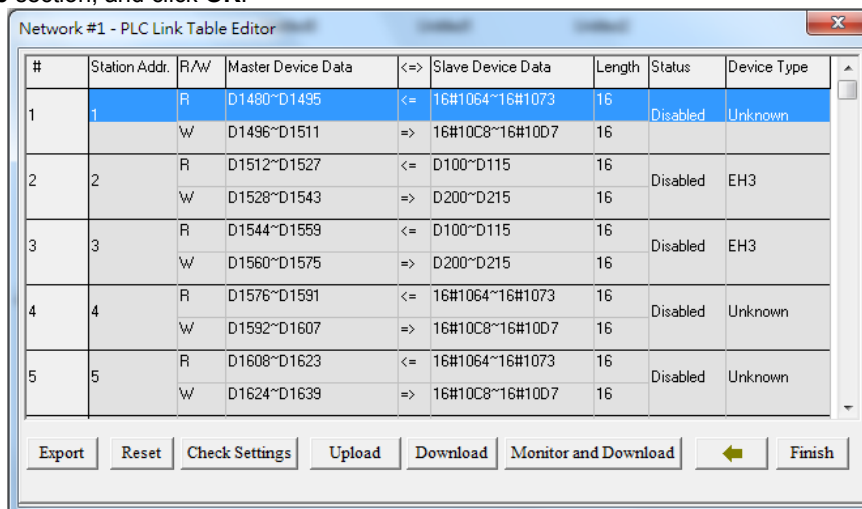


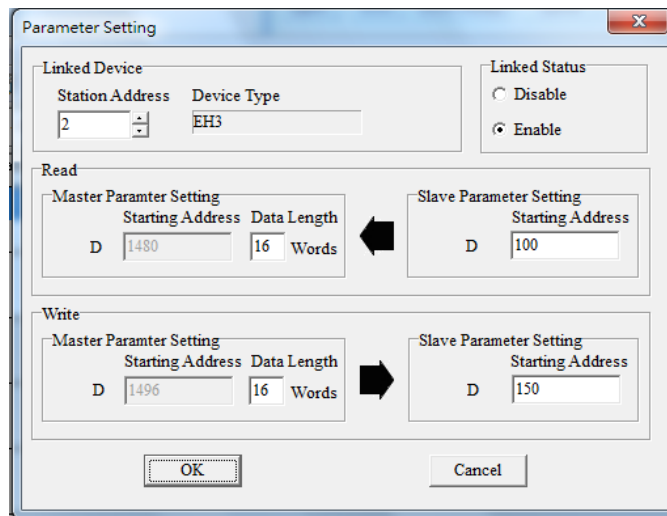


Window for RTU communication:

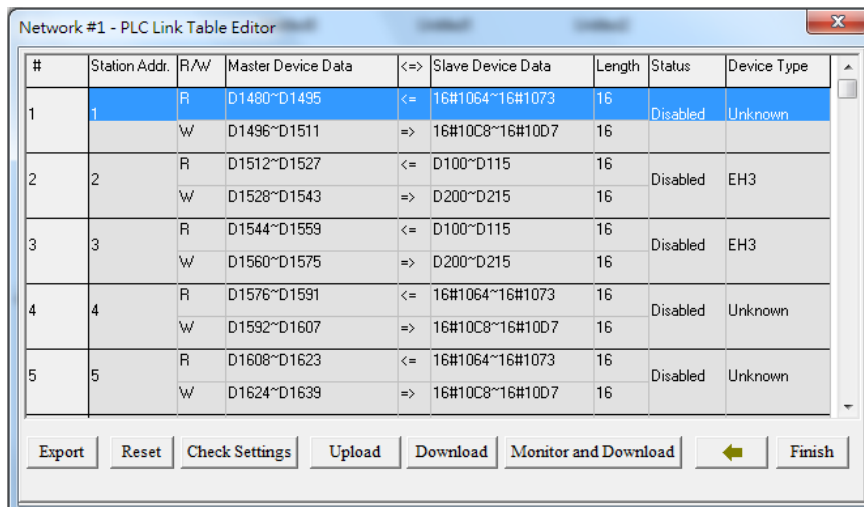


**Step 6:** Double-click the 1 block in the **PLC Link Table Editor** window, select 2 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1360 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “100” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “150” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.





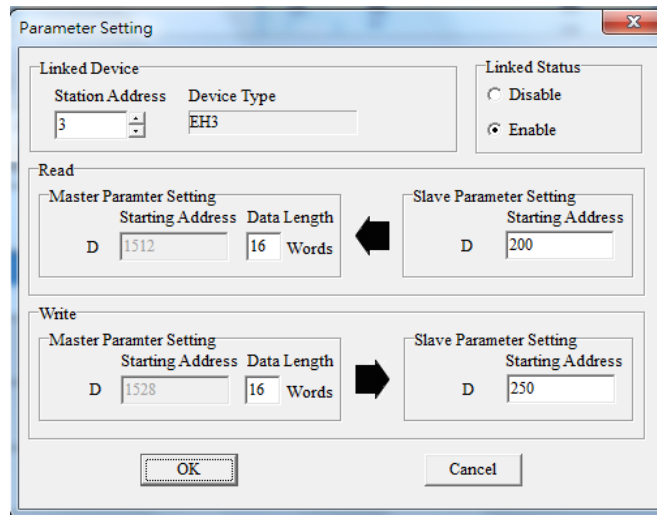
**Step 7:** Double-click the 2 block in the **PLC Link Table Editor** window, select 3 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1361 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “200” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “250” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



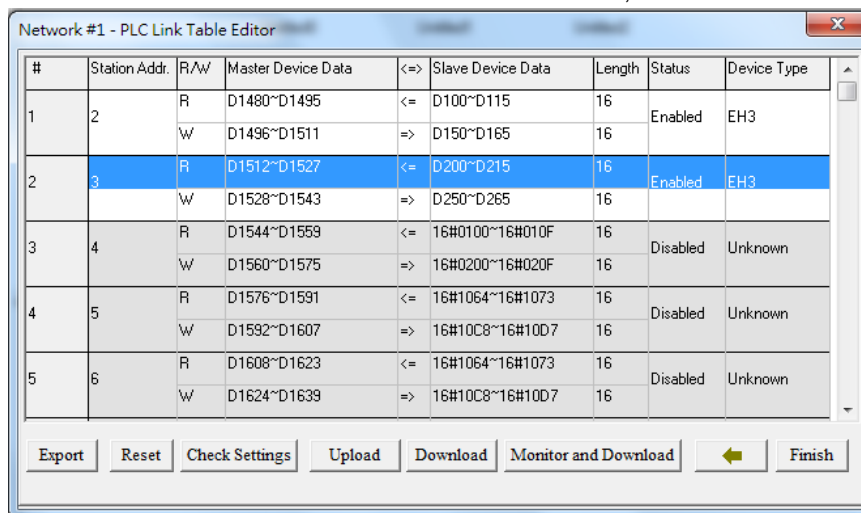
The image shows the 'Network #1 - PLC Link Table Editor' window. It contains a table with the following data:

#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16		
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		

Buttons at the bottom: Export, Reset, Check Settings, Upload, Download, Monitor and Download, Finish.



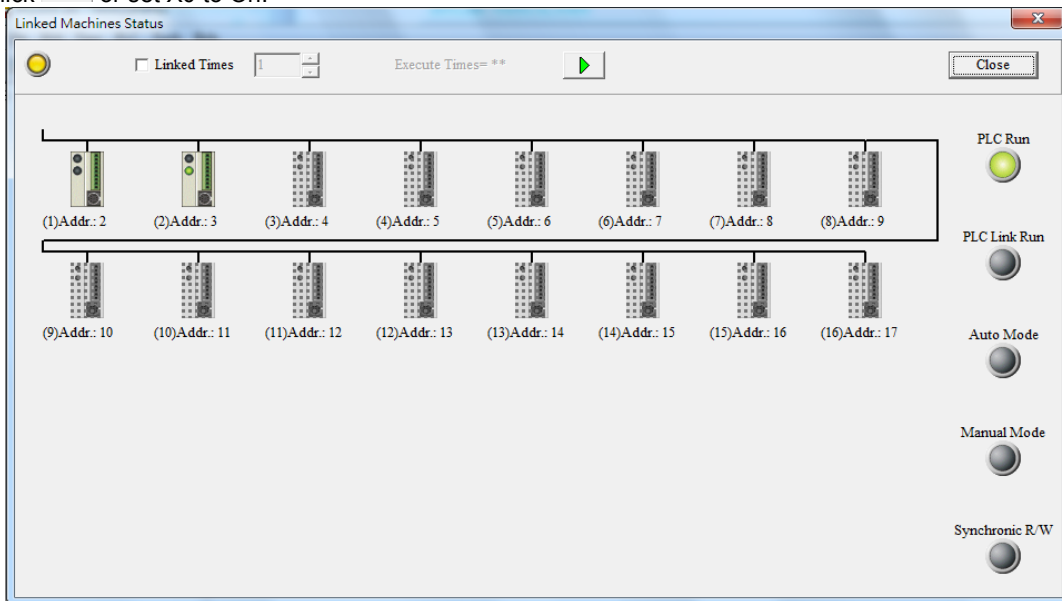
**Step 8:** Check whether the contents of the 1 block and the 2 block are correct, and then click **Monitor and Download**.





#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	2	R	D1480~D1495	<=	D100~D115	16	Enabled	EH3
		W	D1496~D1511	=>	D150~D165	16		
2	3	R	D1512~D1527	<=	D200~D215	16	Enabled	EH3
		W	D1528~D1543	=>	D250~D265	16		
3	4	R	D1544~D1559	<=	16#0100~16#010F	16	Disabled	Unknown
		W	D1560~D1575	=>	16#0200~16#020F	16		
4	5	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	6	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		

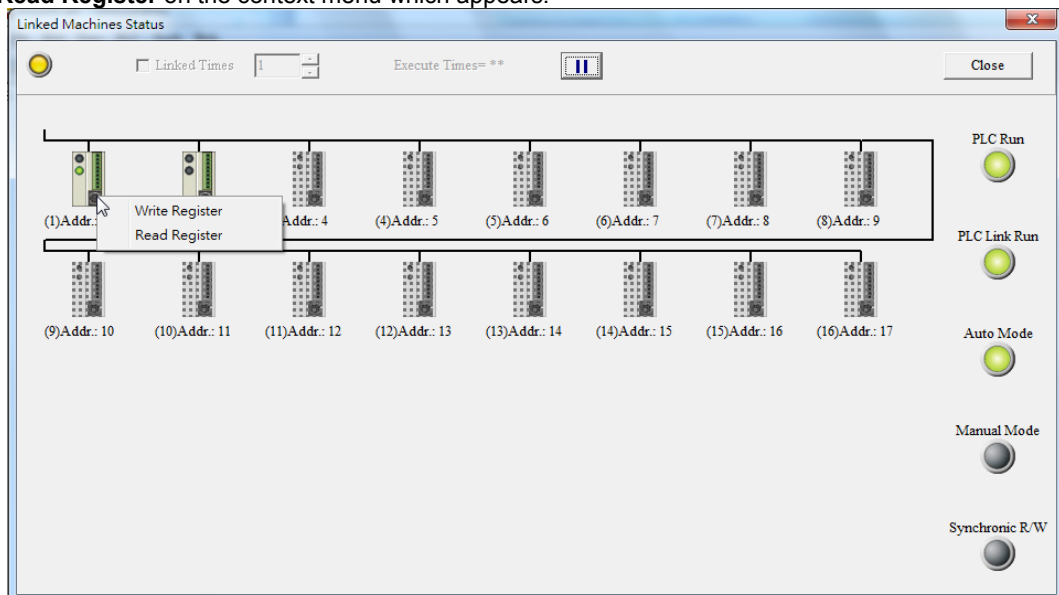
Buttons at the bottom: Export, Reset, Check Settings, Upload, Download, Monitor and Download, Finish

**Step 9:** Click  or set X0 to On.

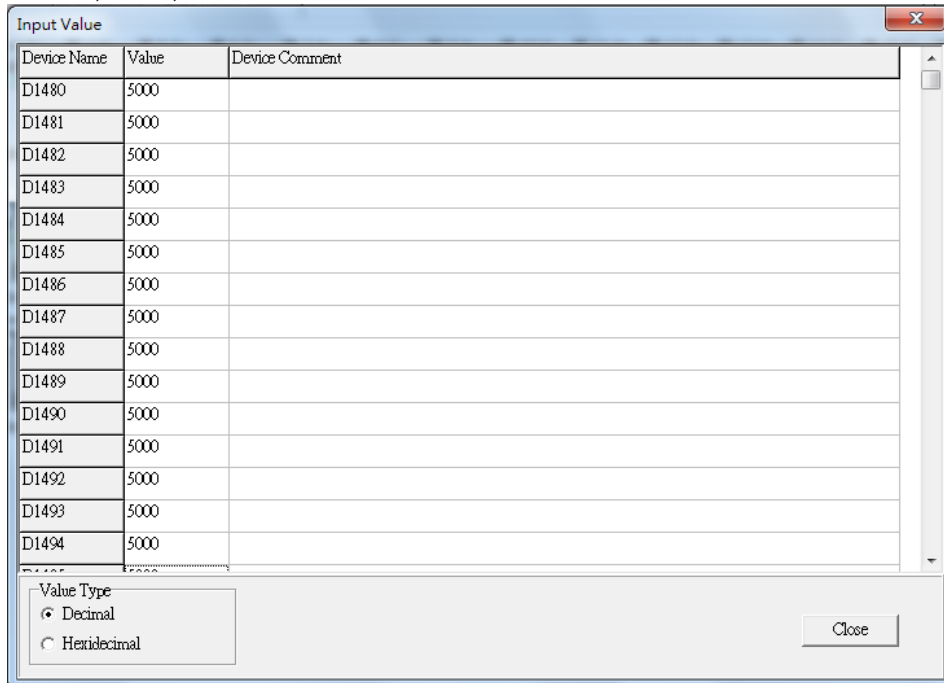


**Step 10:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.



**Step 11:** The values read from slave 1 are 5000, that is, the values in D1480~D1495 are 5000. The values written to slave station 1 are 1000, that is, the values in D1496~D1511 are 1000.

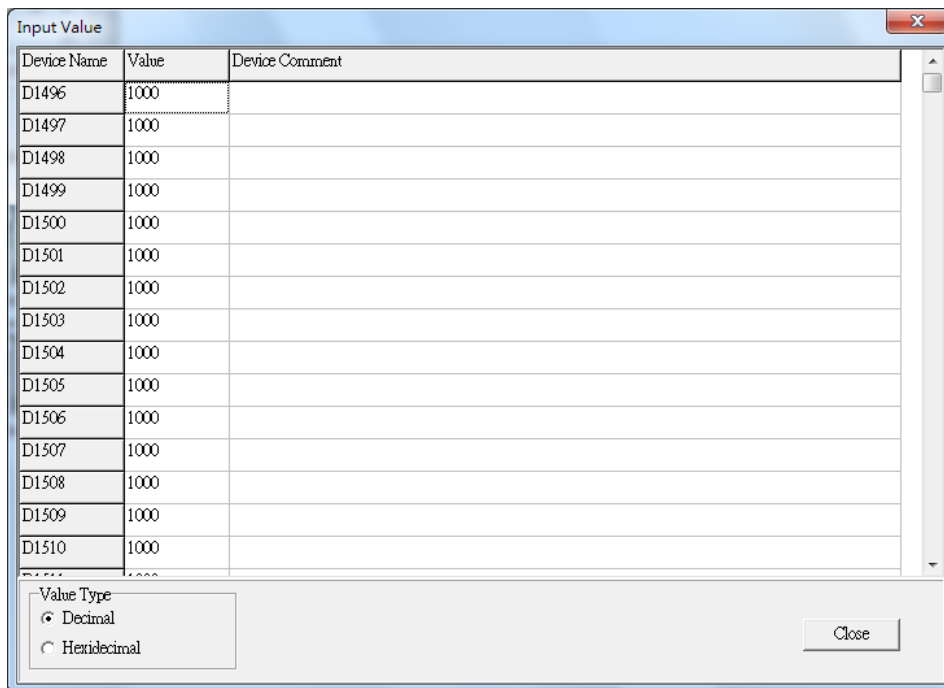


The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D1480	5000	
D1481	5000	
D1482	5000	
D1483	5000	
D1484	5000	
D1485	5000	
D1486	5000	
D1487	5000	
D1488	5000	
D1489	5000	
D1490	5000	
D1491	5000	
D1492	5000	
D1493	5000	
D1494	5000	

Value Type:  
 Decimal  
 Hexidecimal

Close



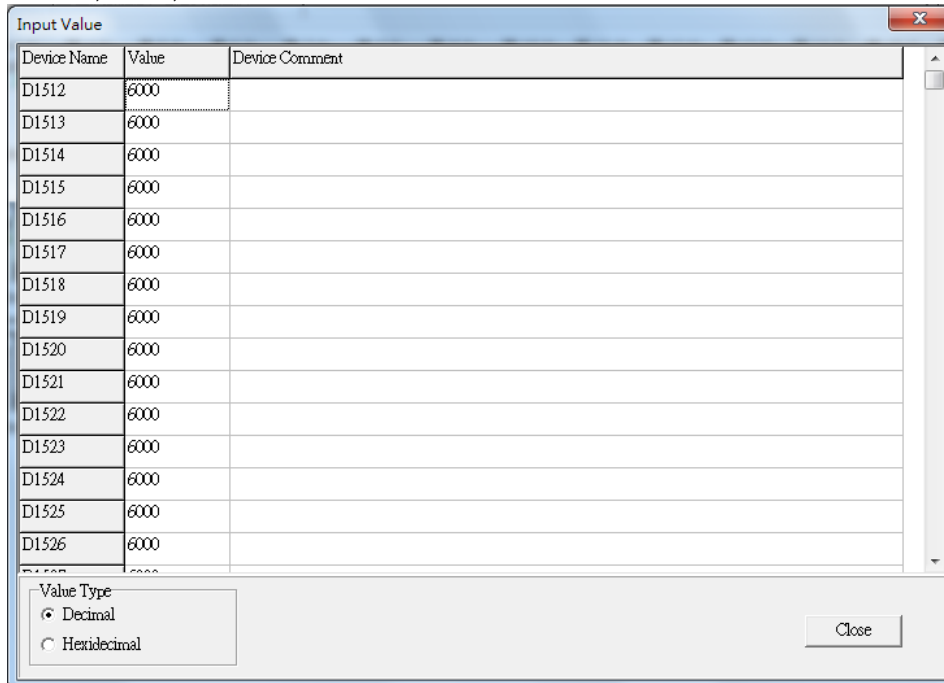
The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D1496	1000	
D1497	1000	
D1498	1000	
D1499	1000	
D1500	1000	
D1501	1000	
D1502	1000	
D1503	1000	
D1504	1000	
D1505	1000	
D1506	1000	
D1507	1000	
D1508	1000	
D1509	1000	
D1510	1000	

Value Type:  
 Decimal  
 Hexidecimal

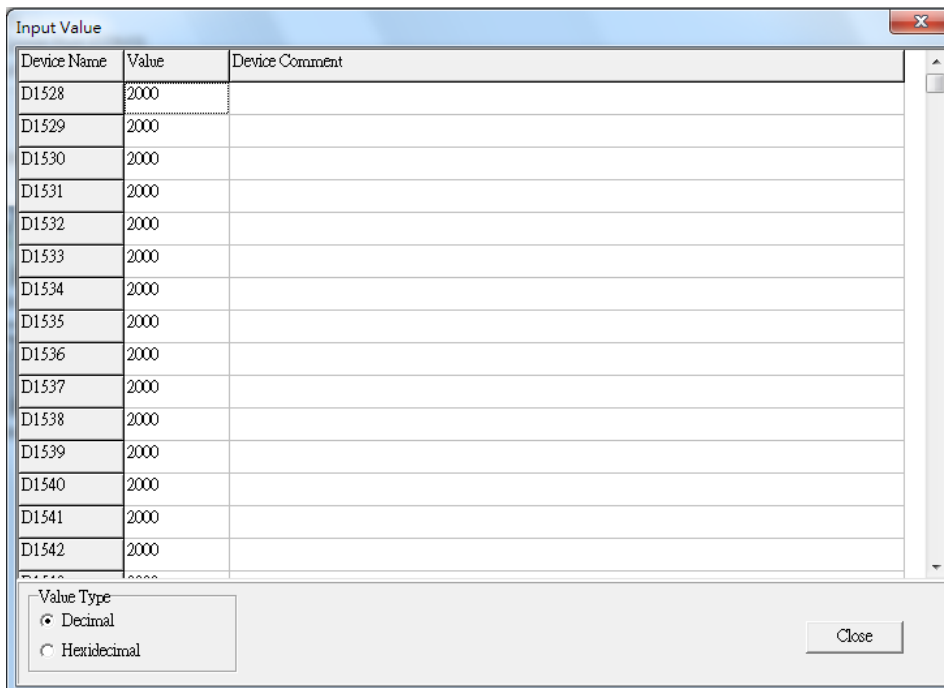
Close

**Step 12:** The values read from slave 2 are 6000, that is, the values in D1512~D1527 are 6000. The values written to slave station 2 are 2000, that is, the values in D1528~D1543 are 2000.



The screenshot shows a dialog box titled "Input Value" with a table of device names and their corresponding values. The values for devices D1512 through D1526 are all 6000. Below the table, there are radio buttons for "Value Type", with "Decimal" selected and "Hexidecimal" unselected. A "Close" button is located at the bottom right.


Device Name	Value	Device Comment
D1512	6000	
D1513	6000	
D1514	6000	
D1515	6000	
D1516	6000	
D1517	6000	
D1518	6000	
D1519	6000	
D1520	6000	
D1521	6000	
D1522	6000	
D1523	6000	
D1524	6000	
D1525	6000	
D1526	6000	

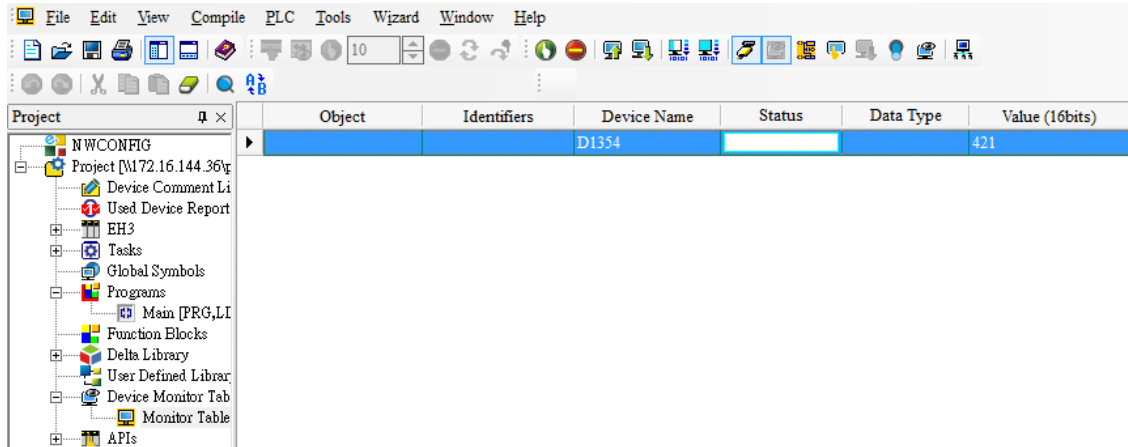


The screenshot shows a dialog box titled "Input Value" with a table of device names and their corresponding values. The values for devices D1528 through D1542 are all 2000. Below the table, there are radio buttons for "Value Type", with "Decimal" selected and "Hexidecimal" unselected. A "Close" button is located at the bottom right.

Device Name	Value	Device Comment
D1528	2000	
D1529	2000	
D1530	2000	
D1531	2000	
D1532	2000	
D1533	2000	
D1534	2000	
D1535	2000	
D1536	2000	
D1537	2000	
D1538	2000	
D1539	2000	
D1540	2000	
D1541	2000	
D1542	2000	

**Step 13:** Close the **Linked Machines Status** window, create a device monitoring table by means of **Device Monitor**

**Table** in the project management area, type "D1354" in the device monitoring table, and click . The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D1480~D1495 in the master station, and the values in D1496~D1511 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 2 are written to D1512~D1527 in the master station, and the values in D1528~D1543 in the master station are written to D250~D265 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D1480~D1495	← Reading	D100~D115 in the slave PLC whose station address is K2
D1496~D1511	→ Writing	D150~D165 in the slave PLC whose station address is K2
D1512~D1527	← Reading	D200~D215 in the slave PLC whose station address is K3
D1528~D1543	→ Writing	D250~D265 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 0.
D1512~D1527	All are 0.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 1000.
D1512~D1527	All are 6000.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 2000.

## 4. Example 2—Automatically Searching for Linked Slave Stations (M1355=Off)

If M1355 is Off, whether slave station 1~slave station 16 (slave station 1~slave station 32) are linked will be automatically detected (and can be monitored by means of M1360~M1375 and M1440~M1455 will be monitored). (The master stations and the slave stations in the examples below are DVP-EH3 series PLCs.)

### 4.1 Using the PLC Link Wizard in WPLSoft (ASCII/RTU Mode)

#### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with the two slave stations (two DVP-EH3 series PLCs) automatically found through a PLC link.

#### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

#### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.
M1355	M1355 is used to enable the function of automatically searching for linked slave stations.

#### 【PLC link wizard】

**Step 1:** Start WPLSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, write related values to the PLC, and move the RUN/STOP switch into the STOP position.

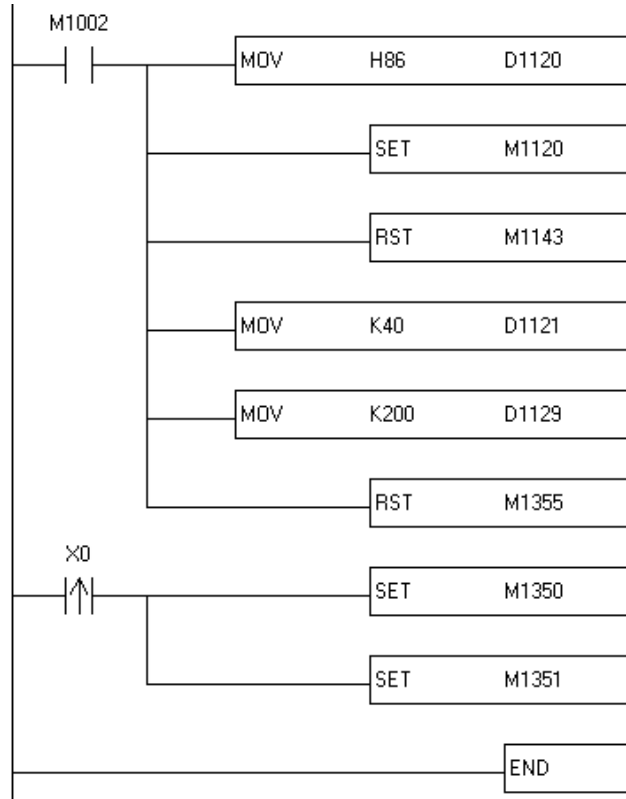


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program.

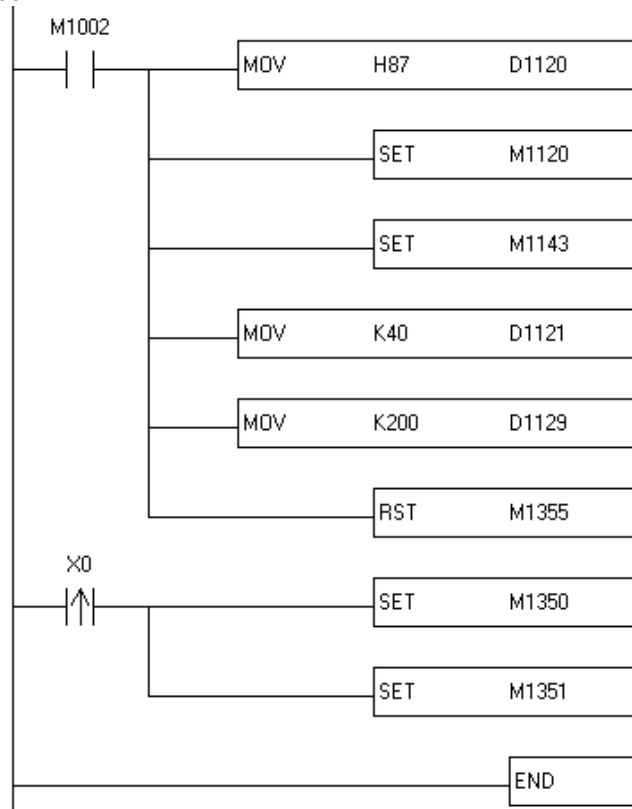
The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On), and therefore parameters must be written when the the RUN/STOP switch is in the STOP position.



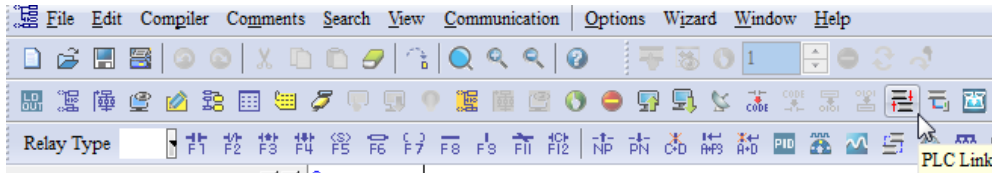
Program for ASCII communication:




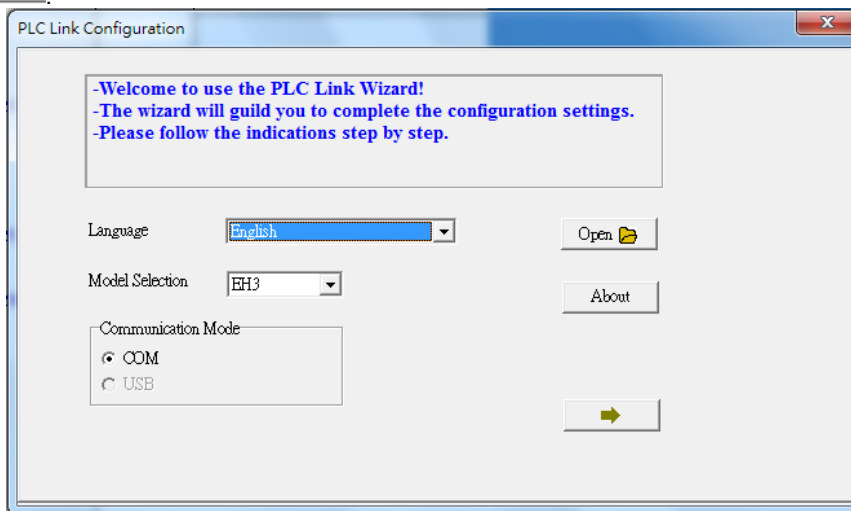
Program for RTU communication:




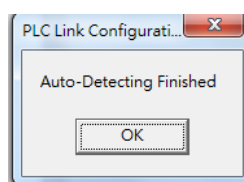
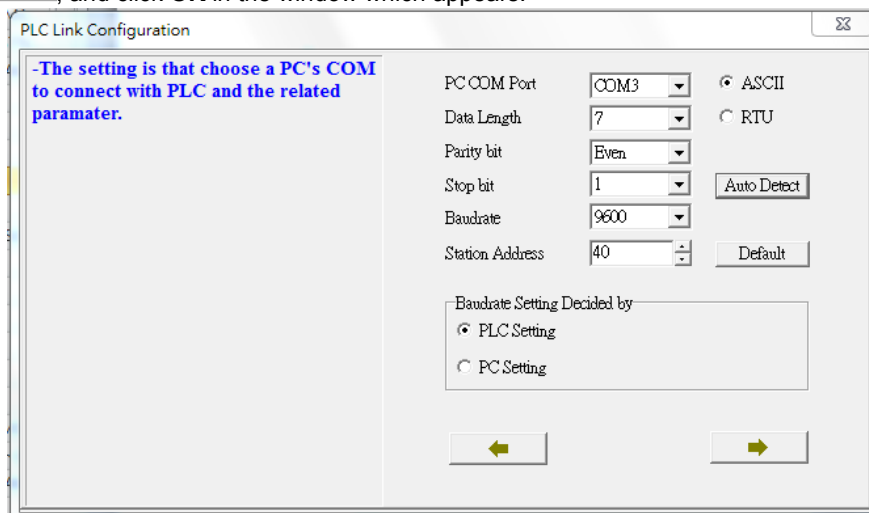
**Step 2:** Click the PLC link wizard  in WPLSoft.

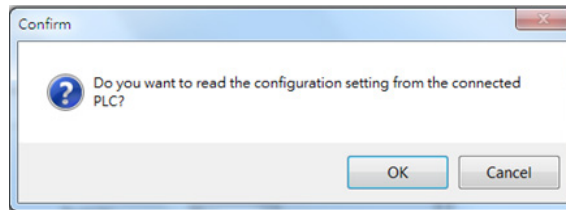


**Step 3:** Select a language in the **Language** drop-down list box, select a model in the **Model Selection** drop-down list box, and click .



**Step 4:** Set a communication format for COM1 in the master PLC, click **Auto Detect**, click **OK** in the window which appears, click , and click **OK** in the window which appears.





Step 5: Click

ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status	Model Type
ID 1	1	R	D1480-D1495	<=>	H1064-H1073	16	Disabled	Others
ID 1	1	W	D1496-D1511	=>	H10C8-H10D7	16	Disabled	Others
ID 2	2	R	D1512-D1527	<=>	H1064-H1073	16	Disabled	Others
ID 2	2	W	D1528-D1543	=>	H10C8-H10D7	16	Disabled	Others
ID 3	3	R	D1544-D1559	<=>	H1064-H1073	16	Disabled	Others
ID 3	3	W	D1560-D1575	=>	H10C8-H10D7	16	Disabled	Others
ID 4	4	R	D1576-D1591	<=>	H1064-H1073	16	Disabled	Others
ID 4	4	W	D1592-D1607	=>	H10C8-H10D7	16	Disabled	Others
ID 5	5	R	D1608-D1623	<=>	H1064-H1073	16	Disabled	Others
ID 5	5	W	D1624-D1639	=>	H10C8-H10D7	16	Disabled	Others

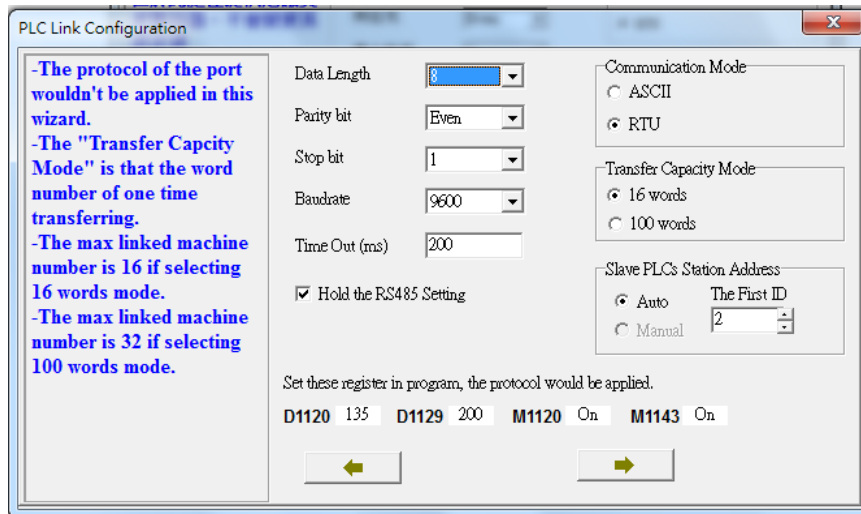
Buttons: Save, Clear All, Left Arrow, Right Arrow

Step 6: The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, select the **Auto** option button and **2** in the **The First ID** box in the **Slave PLCs Station Address** section, and click .

Window for ASCII communication:

<p><b>-The protocol of the port wouldn't be applied in this wizard.</b></p> <p><b>-The "Transfer Capacity Mode" is that the word number of one time transferring.</b></p> <p><b>-The max linked machine number is 16 if selecting 16 words mode.</b></p> <p><b>-The max linked machine number is 32 if selecting 100 words mode.</b></p>	Data Length	7	Communication Mode	<input checked="" type="radio"/> ASCII
	Parity bit	Even	<input type="radio"/> RTU	
	Stop bit	1	Transfer Capacity Mode	<input checked="" type="radio"/> 16 words
	Baudrate	9600	<input type="radio"/> 100 words	
Time Out (ms)	200	Slave PLCs Station Address	<input checked="" type="radio"/> Auto	The First ID
<input checked="" type="checkbox"/> Hold the RS485 Setting		<input type="radio"/> Manual	2	
<p>Set these register in program, the protocol would be applied.</p> <p>D1120 134 D1129 200 M1120 On M1143 Off</p>				
<p> </p>				

Window for RTU communication:



**-The protocol of the port wouldn't be applied in this wizard.**  
**-The "Transfer Capacity Mode" is that the word number of one time transferring.**  
**-The max linked machine number is 16 if selecting 16 words mode.**  
**-The max linked machine number is 32 if selecting 100 words mode.**

Data Length: 8  
 Parity bit: Even  
 Stop bit: 1  
 Baudrate: 9600  
 Time Out (ms): 200  
 Hold the RS485 Setting

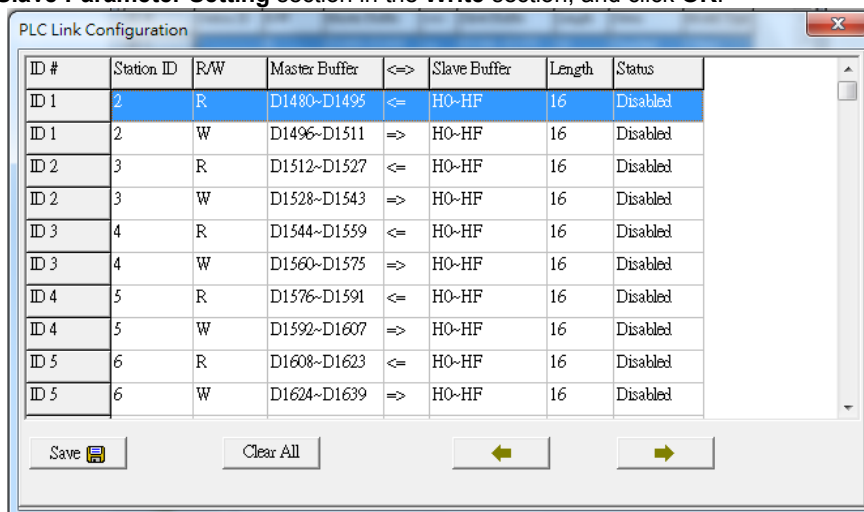
Communication Mode:  
 ASCII  
 RTU

Transfer Capacity Mode:  
 16 words  
 100 words

Slave PLCs Station Address:  
 Auto The First ID  
 Manual 2

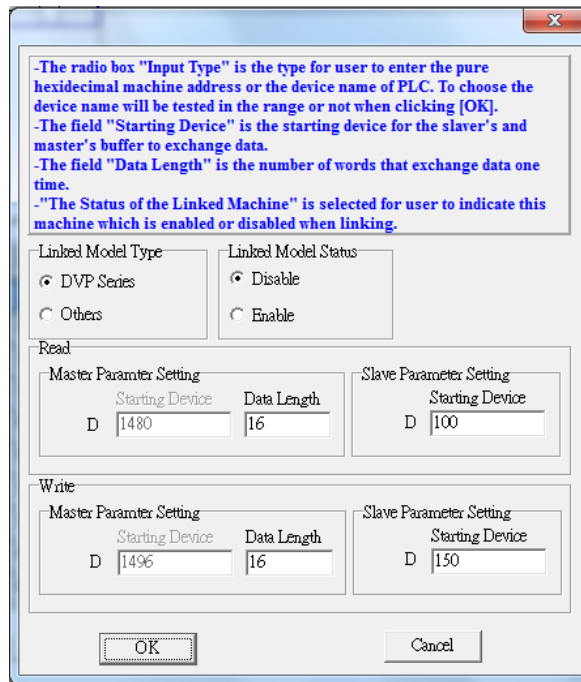
Set these register in program, the protocol would be applied.  
 D1120 135 D1129 200 M1120 On M1143 On

**Step 7:** Double-click the ID 1 block in the PLC Link Configuration window, select the DVP Series option button in the Linked Model Type section, select the Disable option button in the Linked Model Status section (set M1360 to Off), type "16" in the Data Length boxes in the Master Parameter Setting sections in the Read and Write sections, type "100" in the Starting Device box in the Slave Parameter Setting section in the Read section, type "150" in the Starting Device box in the Slave Parameter Setting section in the Write section, and click OK.

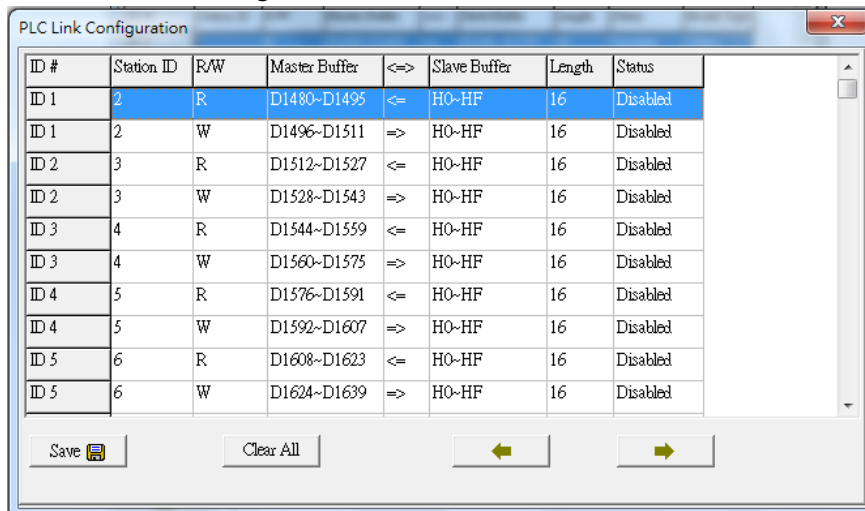


ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	<=>	HO~HF	16	Disabled
ID 1	2	W	D1496~D1511	=>	HO~HF	16	Disabled
ID 2	3	R	D1512~D1527	<=>	HO~HF	16	Disabled
ID 2	3	W	D1528~D1543	=>	HO~HF	16	Disabled
ID 3	4	R	D1544~D1559	<=>	HO~HF	16	Disabled
ID 3	4	W	D1560~D1575	=>	HO~HF	16	Disabled
ID 4	5	R	D1576~D1591	<=>	HO~HF	16	Disabled
ID 4	5	W	D1592~D1607	=>	HO~HF	16	Disabled
ID 5	6	R	D1608~D1623	<=>	HO~HF	16	Disabled
ID 5	6	W	D1624~D1639	=>	HO~HF	16	Disabled

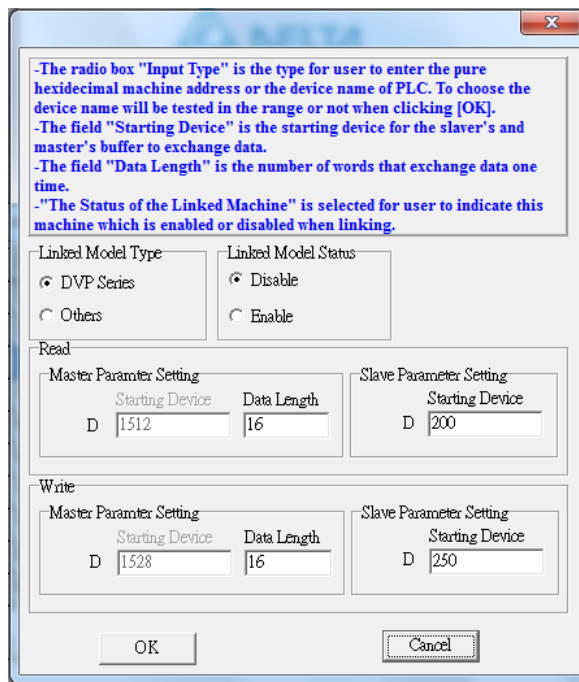
Save Clear All



**Step 8:** Double-click the **ID 2** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Disable** option button in the **Linked Model Status** section (set M1361 to Off), type "16" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "200" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "250" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	H0~HF	16	Disabled
ID 1	2	W	D1496~D1511	H0~HF	16	Disabled
ID 2	3	R	D1512~D1527	H0~HF	16	Disabled
ID 2	3	W	D1528~D1543	H0~HF	16	Disabled
ID 3	4	R	D1544~D1559	H0~HF	16	Disabled
ID 3	4	W	D1560~D1575	H0~HF	16	Disabled
ID 4	5	R	D1576~D1591	H0~HF	16	Disabled
ID 4	5	W	D1592~D1607	H0~HF	16	Disabled
ID 5	6	R	D1608~D1623	H0~HF	16	Disabled
ID 5	6	W	D1624~D1639	H0~HF	16	Disabled



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

Linked Model Type:  DVP Series,  Others  
 Linked Model Status:  Disable,  Enable


Read

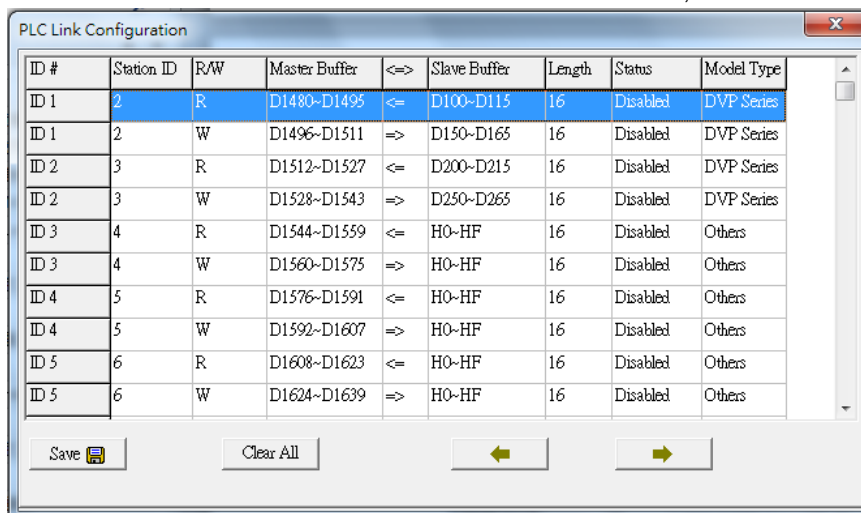
Master Parameter Setting		Slave Parameter Setting	
Starting Device	Data Length	Starting Device	
D 1512	16	D 200	

Write

Master Parameter Setting		Slave Parameter Setting	
Starting Device	Data Length	Starting Device	
D 1528	16	D 250	

Buttons: OK, Cancel

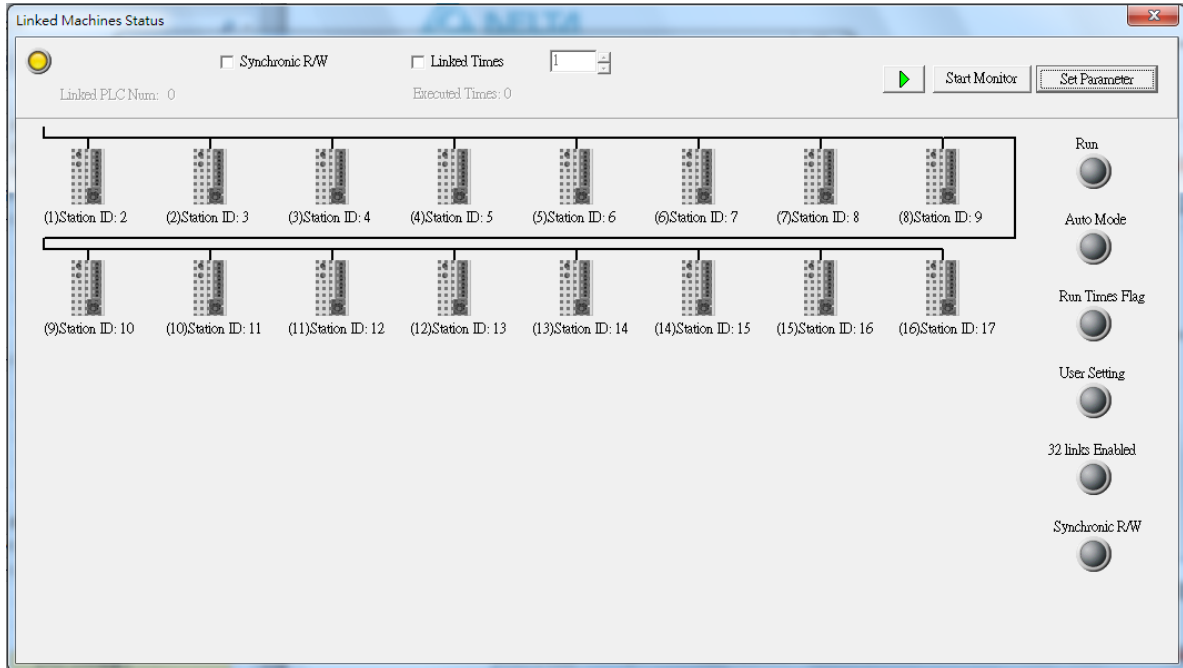
**Step 9:** Check whether the contents of the ID 1 block and the ID 2 block are correct, and then click 




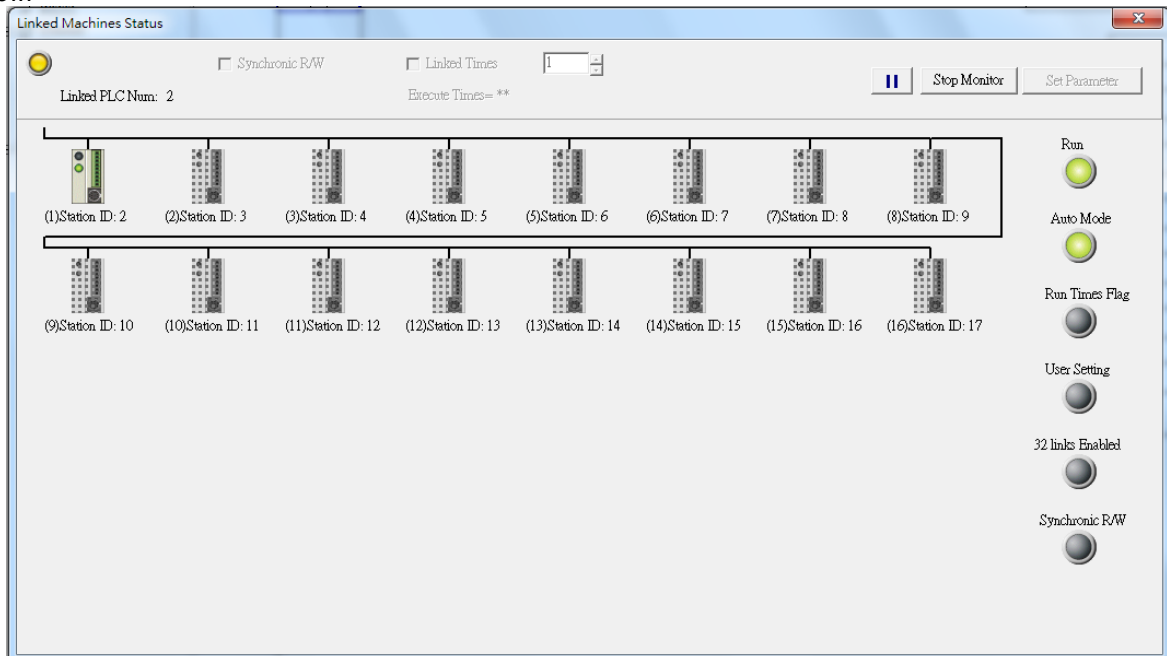
ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status	Model Type
ID 1	2	R	D1480-D1495	<=>	D100-D115	16	Disabled	DVP Series
ID 1	2	W	D1496-D1511	=>	D150-D165	16	Disabled	DVP Series
ID 2	3	R	D1512-D1527	<=>	D200-D215	16	Disabled	DVP Series
ID 2	3	W	D1528-D1543	=>	D250-D265	16	Disabled	DVP Series
ID 3	4	R	D1544-D1559	<=>	H0-HF	16	Disabled	Others
ID 3	4	W	D1560-D1575	=>	H0-HF	16	Disabled	Others
ID 4	5	R	D1576-D1591	<=>	H0-HF	16	Disabled	Others
ID 4	5	W	D1592-D1607	=>	H0-HF	16	Disabled	Others
ID 5	6	R	D1608-D1623	<=>	H0-HF	16	Disabled	Others
ID 5	6	W	D1624-D1639	=>	H0-HF	16	Disabled	Others

Buttons: Save, Clear All, left arrow, right arrow

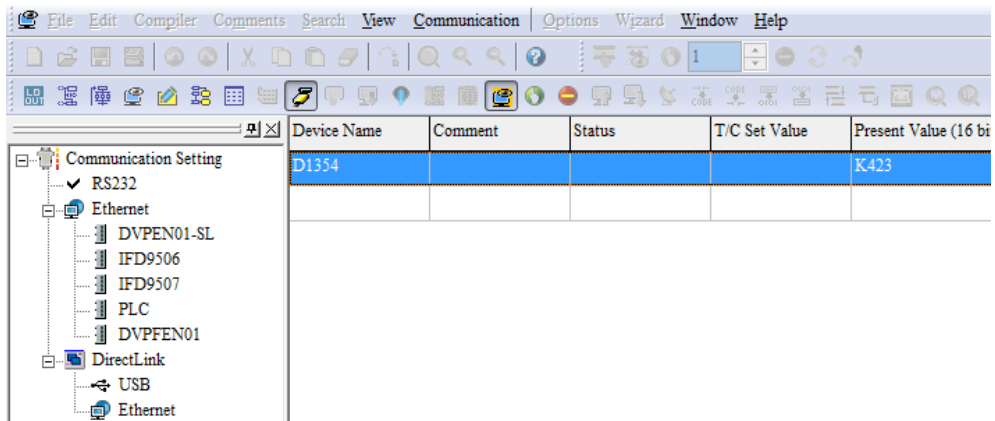
**Step 10:** Click the **Set Parameter** button, click the **Start Monitor** button, move the RUN/STOP switch on the PLC into the RUN position, and click  or set X0 to On.



**Step 11:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program. If the window is not needed,  can be used to close the window.



**Step 12:** Close the **Linked Machines Status** window, click , click , and type "D1354". The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D1480~D1495 in the master station, and the values in D1496~D1511 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 2 are written to D1512~D1527 in the master station, and the values in D1528~D1543 in the master station are written to D250~D265 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D1480~D1495	← Reading	D100~D115 in the slave PLC whose station address is K2
D1496~D1511	→ Writing	D150~D165 in the slave PLC whose station address is K2
D1512~D1527	← Reading	D200~D215 in the slave PLC whose station address is K3
D1528~D1543	→ Writing	D250~D265 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the **ONES** shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 0.
D1512~D1527	All are 0.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 1000.
D1512~D1527	All are 6000.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 2000.



## 4.2 Using the PLC Link Wizard in ISPSoft (ASCII/RTU Mode)

### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with the two slave stations (two DVP-EH3 series PLCs) automatically found through a PLC link.

### 【Setting station addresses of PLCs】

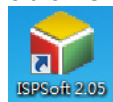
Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	3. ASCII, 9600, 7, E, 1 (D1120=H'86) 4. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.
M1355	M1355 is used to enable the function of automatically searching for linked slave stations.

### 【PLC link wizard】

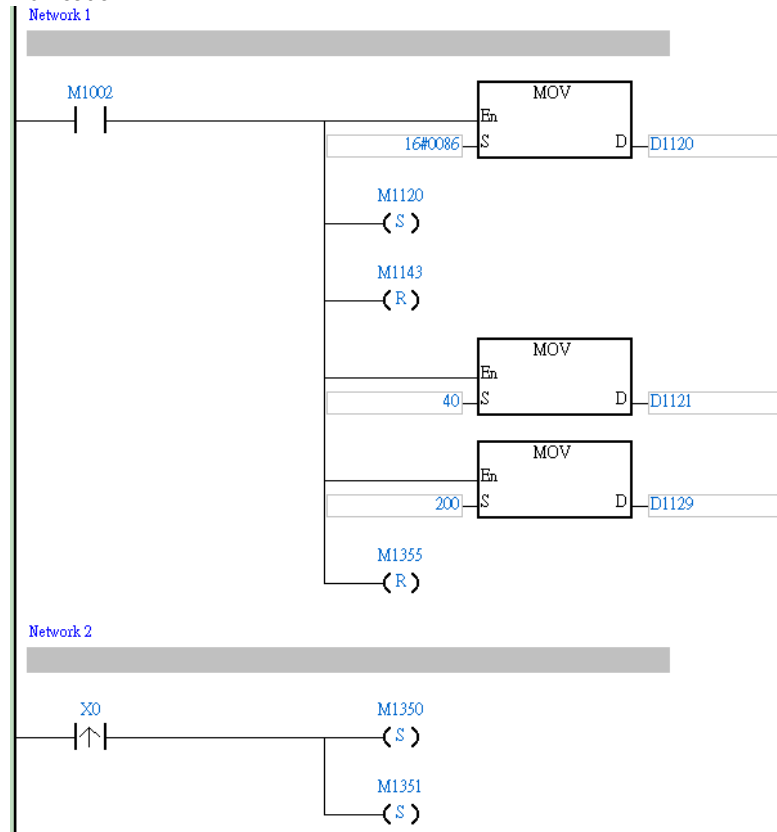
**Step 1:** Start ISPSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, write related values to the PLC, and move the RUN/STOP switch into the STOP position.



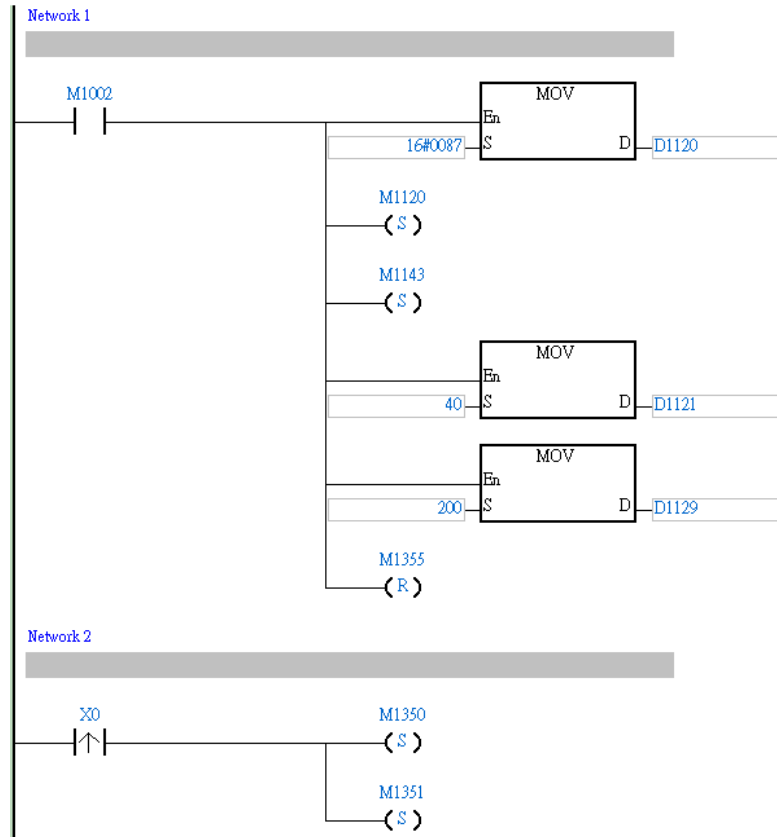
Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program.



The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On), and therefore parameters must be written when the the RUN/STOP switch is in the STOP position.

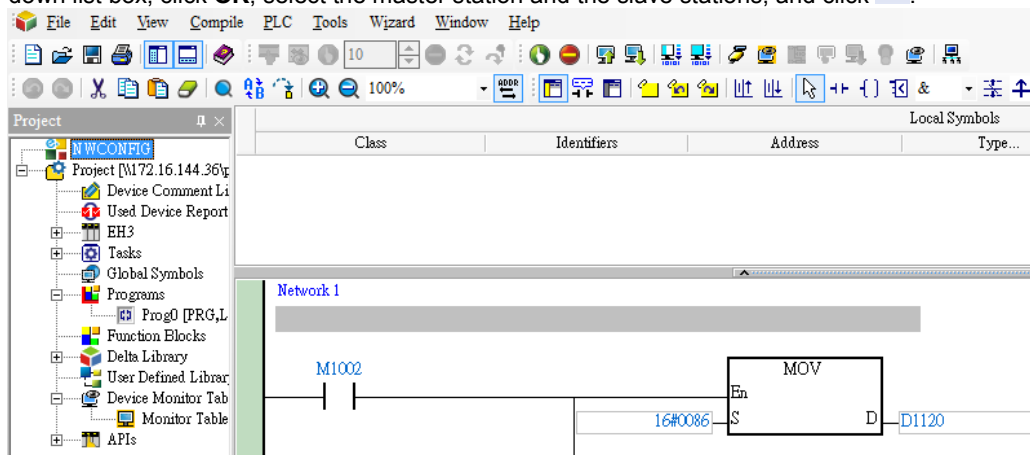
Program for ASCII communication:

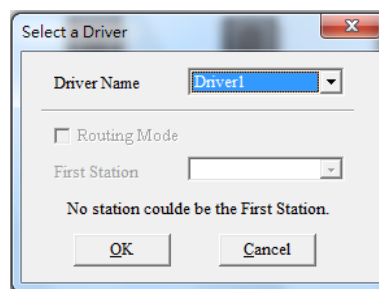
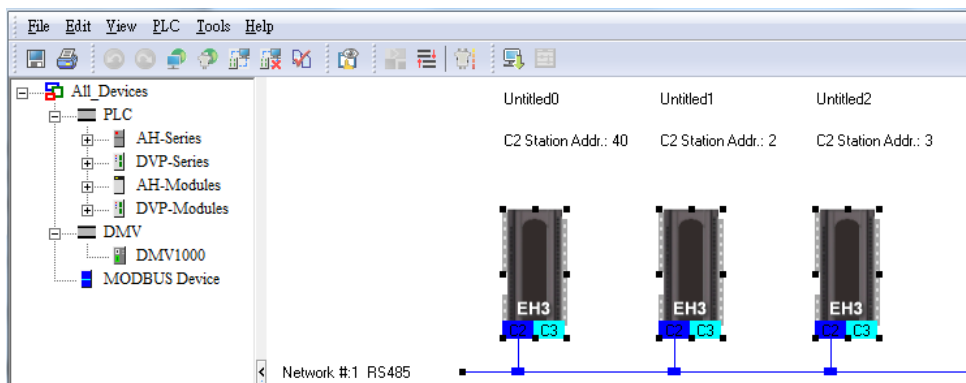



Program for RTU communication:

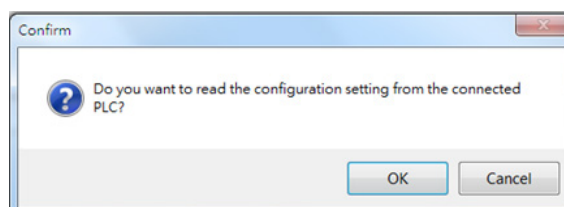
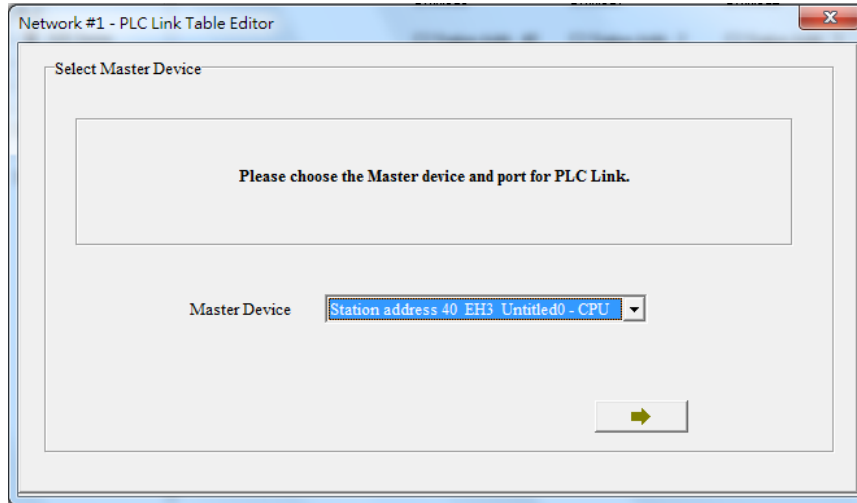


**Step 2:** Double-click **NWCONFIG** in the project management area, create a link, click , select **Driver 1** in the **Driver Name** drop-down list box, click **OK**, select the master station and the slave stations, and click .

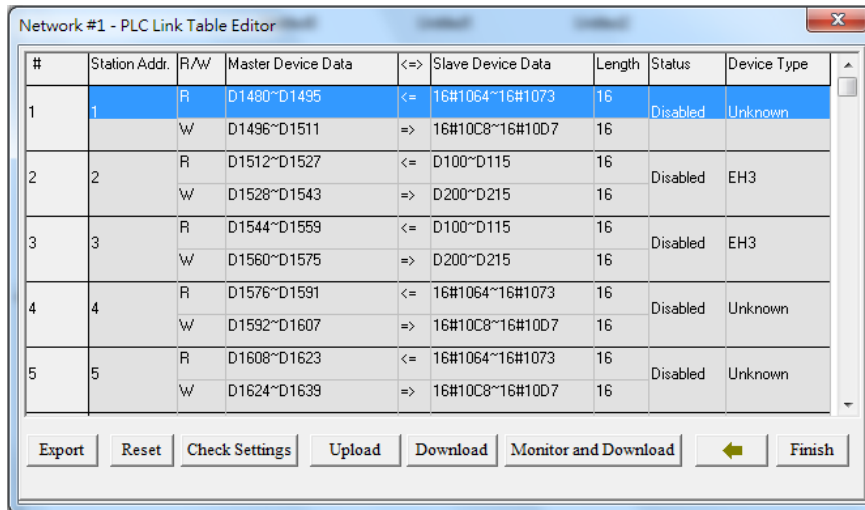





**Step 3:** Select a PLC in the **Master Device** drop-down list box, click , and click **OK** in the window which appears.

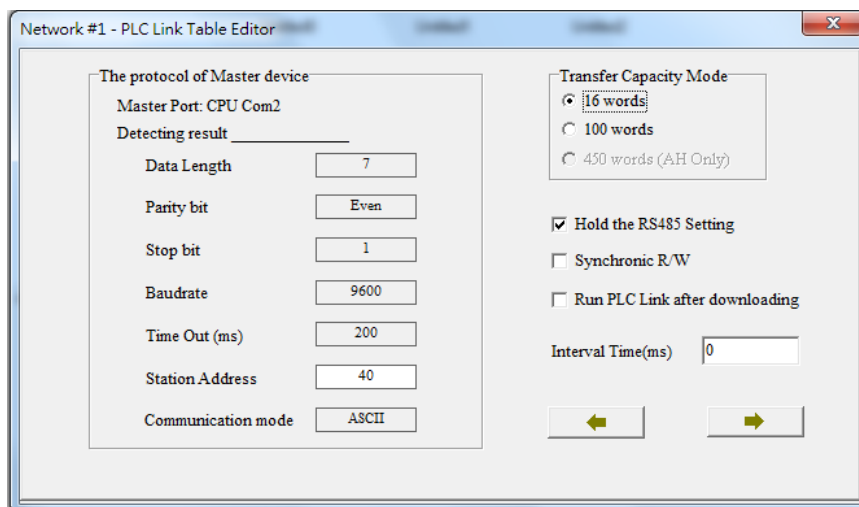


Step 4: Click .

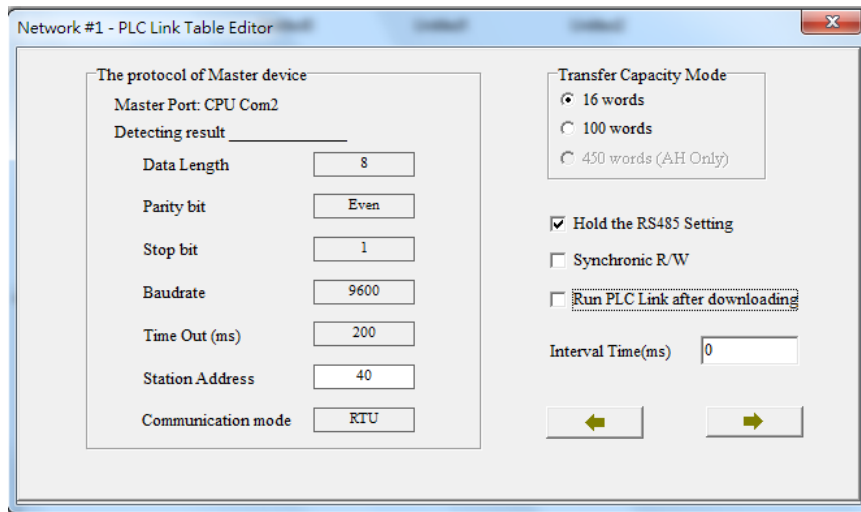


Step 5: The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, unselect the **Synchronic R/W** checkbox and the **Run PLC Link after downloading** checkbox, type "0" in the **Interval time** box, and click .

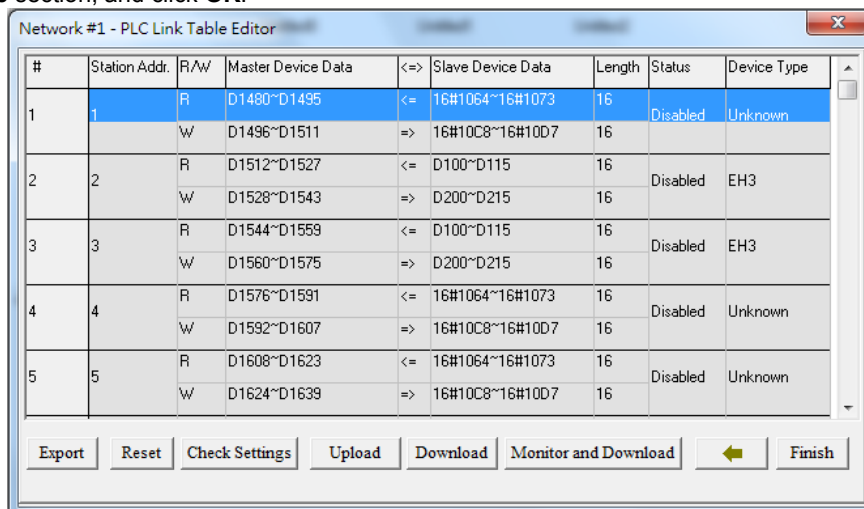
Window for ASCII communication:

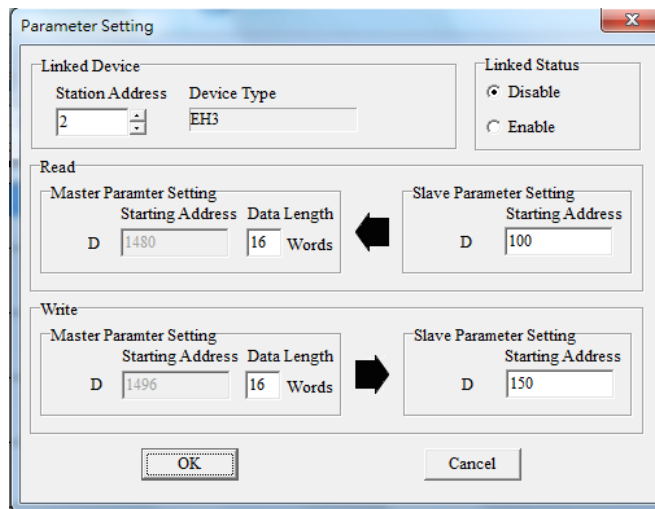


Window for RTU communication:

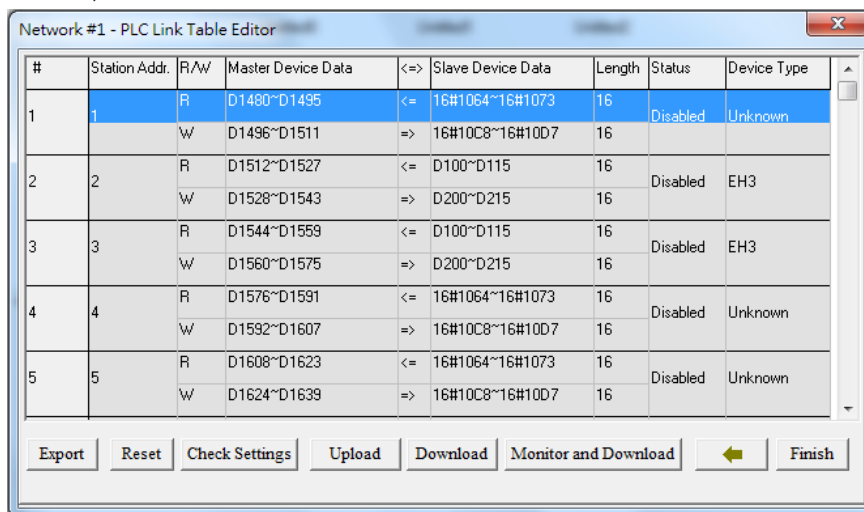


**Step 6:** Double-click the 1 block in the **PLC Link Table Editor** window, select 2 in the **Station Address** box, select the **Disable** option button in the **Linked Status** section (set M1361 to Off), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “100” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “150” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.

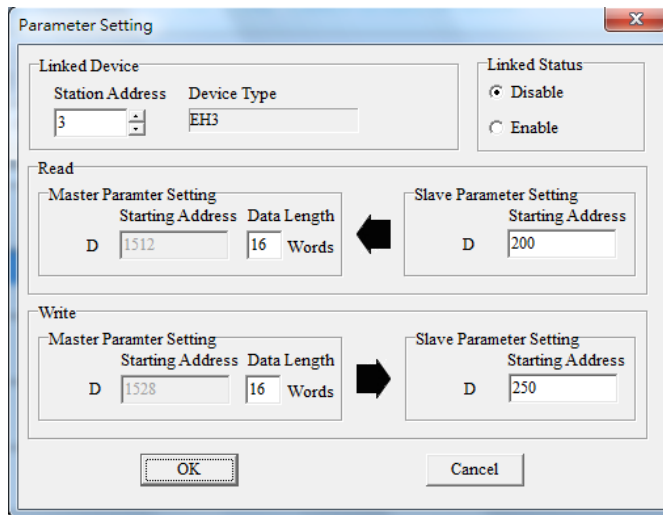




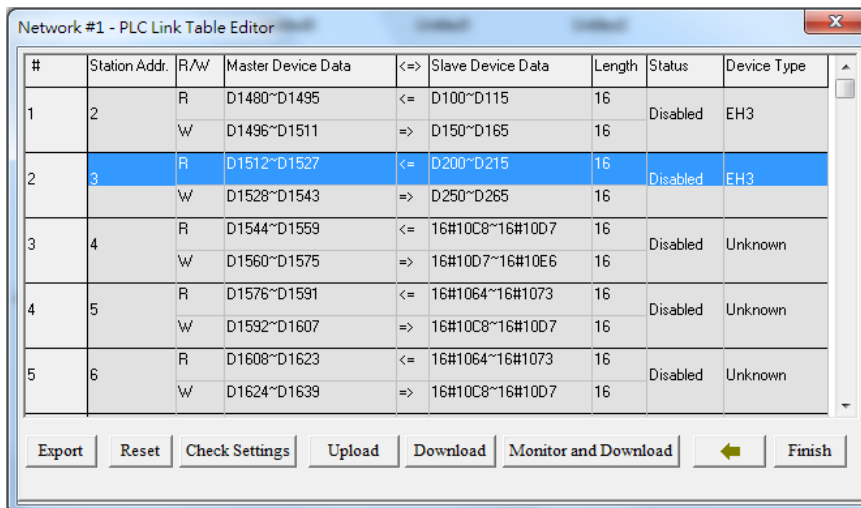
**Step 7:** Double-click the 2 block in the **PLC Link Table Editor** window, select 3 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1361 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “200” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “250” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16	Disabled	
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		



**Step 8:** Check whether the contents of the 1 block and the 2 block are correct, and then click **Monitor and Download**.

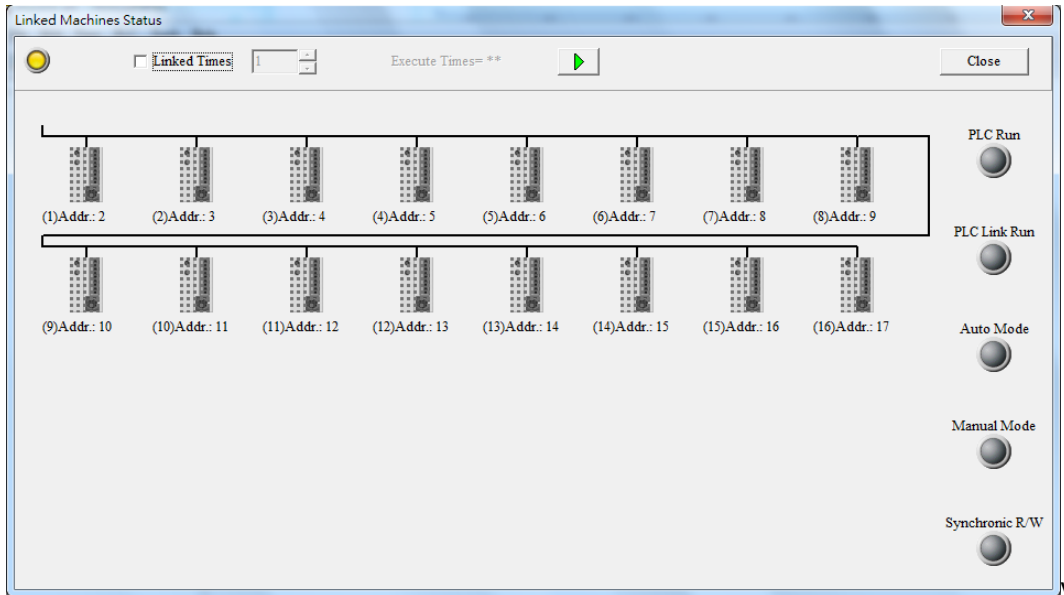


#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	2	R	D1480~D1495	<=	D100~D115	16	Disabled	EH3
		W	D1496~D1511	=>	D150~D165	16		
2	3	R	D1512~D1527	<=	D200~D215	16	Disabled	EH3
		W	D1528~D1543	=>	D250~D265	16		
3	4	R	D1544~D1559	<=	16#10C8~16#10D7	16	Disabled	Unknown
		W	D1560~D1575	=>	16#10D7~16#10E6	16		
4	5	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	6	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		

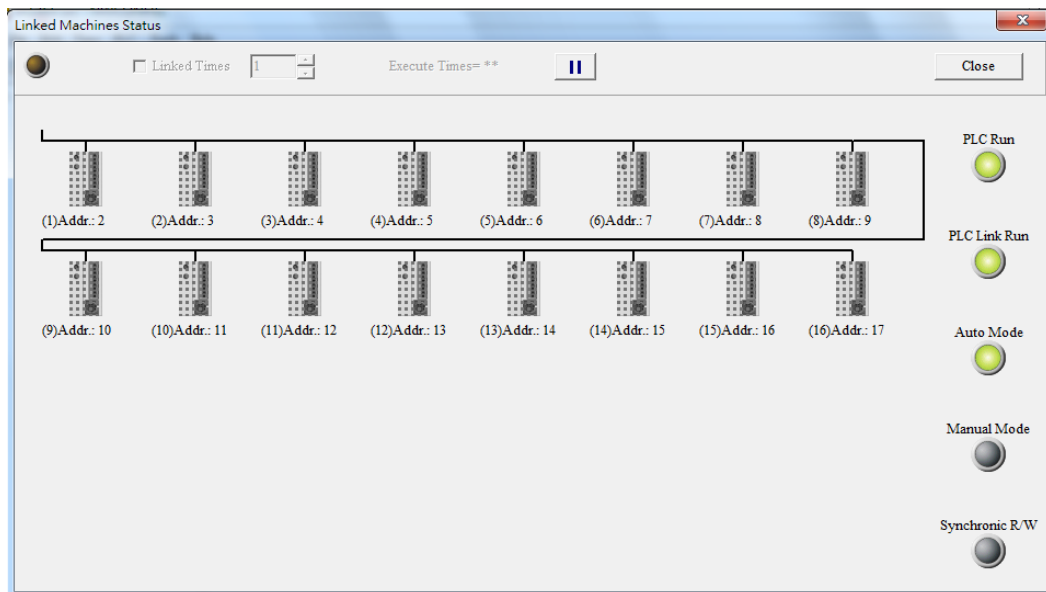
Buttons at the bottom: Export, Reset, Check Settings, Upload, Download, Monitor and Download, Finish




**Step 9:** Move the RUN/STOP switch on the PLC into the RUN position, and click or set X0 to On.

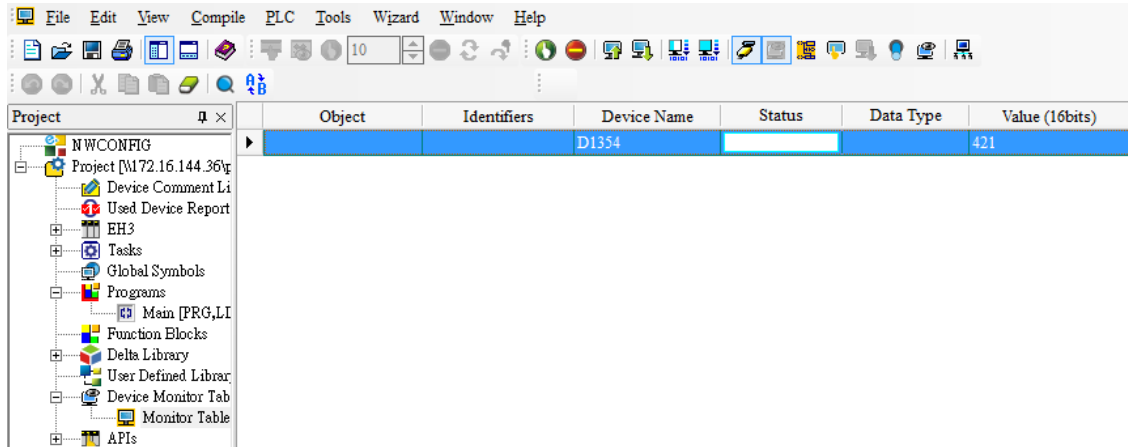


**Step 10:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program. If the window is not needed, can be used to close the window.



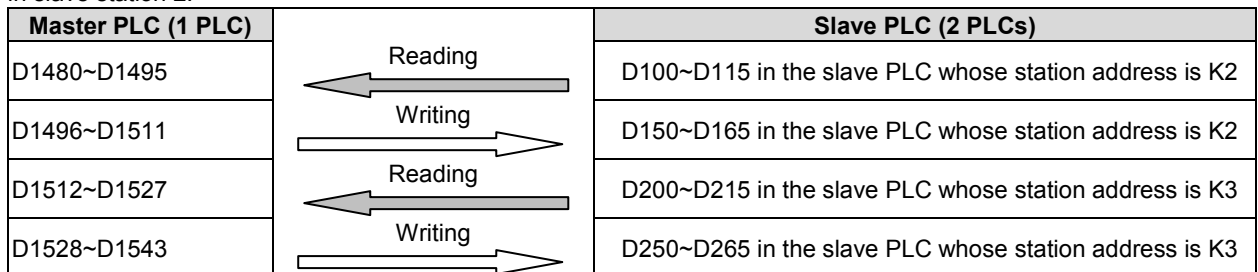
**Step 11:** Close the **Linked Machines Status** window, create a device monitoring table by means of **Device Monitor**

**Table** in the project management area, type "D1354" in the device monitoring table, and click . The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D1480~D1495 in the master station, and the values in D1496~D1511 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 2 are written to D1512~D1527 in the master station, and the value in D1528~D1543 in the master station are written to D250~D265 in slave station 2.



- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 0.
D1512~D1527	All are 0.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 1000.
D1512~D1527	All are 6000.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 2000.

## 5. Example 3—Manually Specifying the Same Slave Station, but Different Communication Addresses (M1356=On)

If M1356 is On, station addresses can be specified. If M1353 is On and M1356 is On, the values in D1900~D1931 will be the station addresses of station 1~station 32, and the consecutive station addresses specified by D1399 will not be used. (The master stations and the slave stations in the examples below are DVP-EH3 series PLCs.)

### 5.1 Using the PLC Link Wizard in WPLSoft (ASCII/RTU Mode)

#### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with different communication addresses in the two slave stations (two DVP-EH3 series PLCs) manually specified through a PLC link.

#### 【Setting station addresses of PLCs】

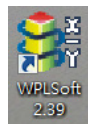
Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

#### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

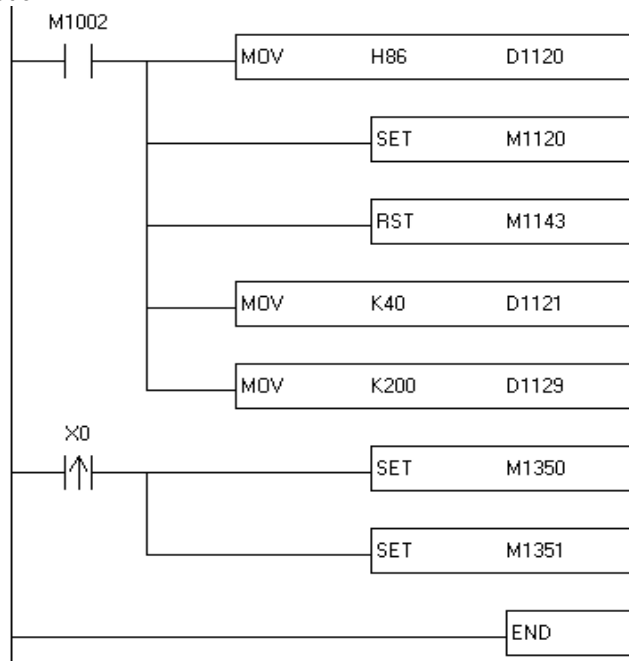
#### 【PLC link wizard】

**Step 1:** Start WPLSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

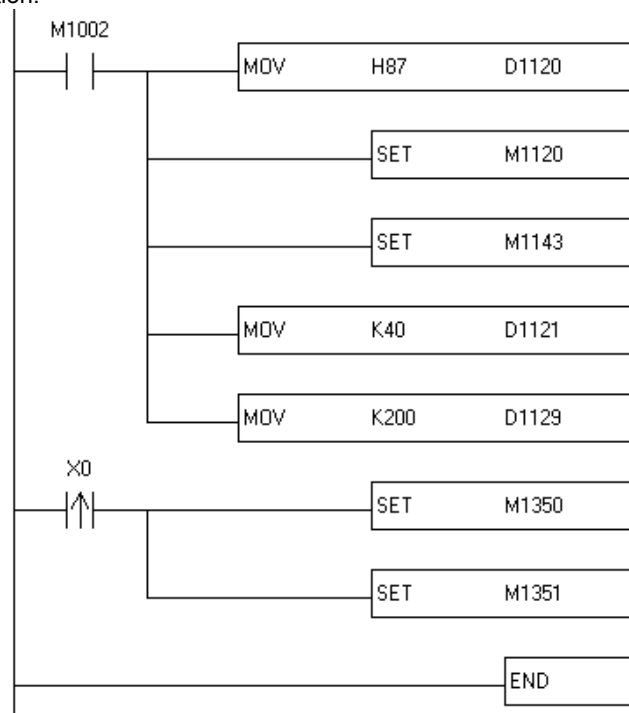


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to specify the stations which need to be linked (M1355 is On).

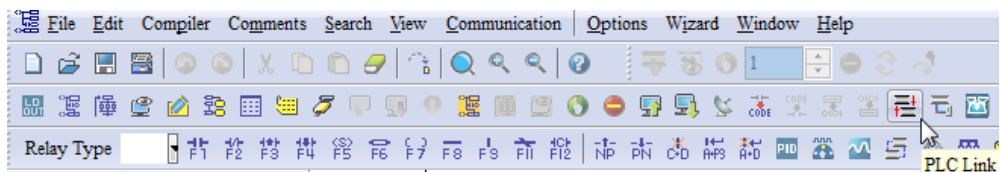
Program for ASCII communication:




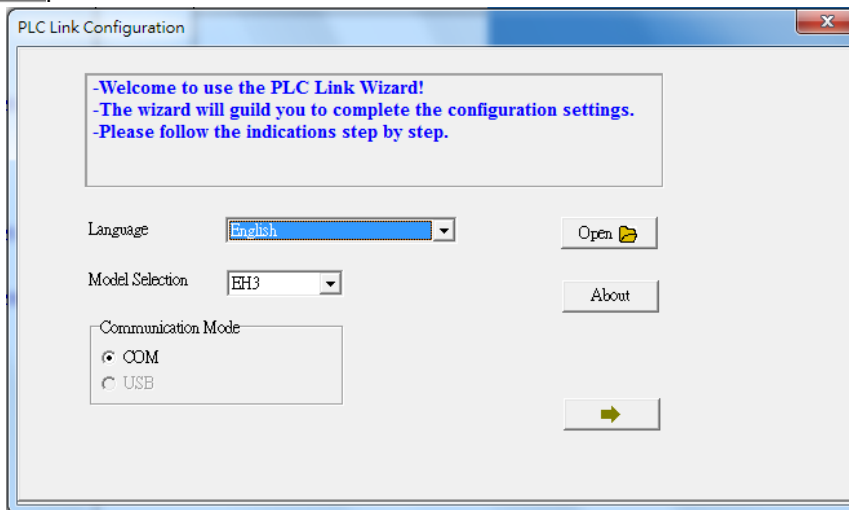
Program for RTU communication:




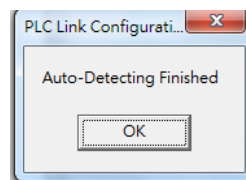
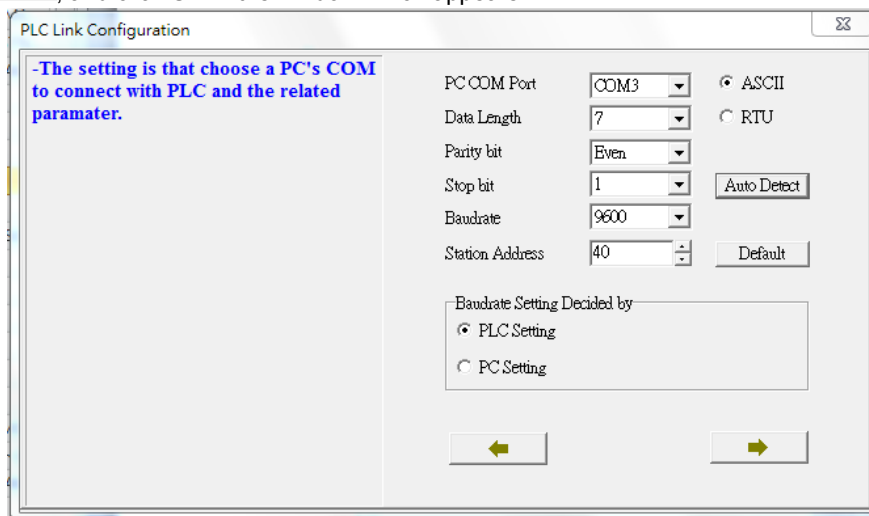
**Step 2:** Click the PLC link wizard  in WPLSoft.

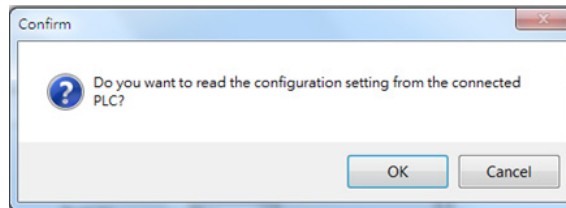


**Step 3:** Select a language in the **Language** drop-down list box, select a model in the **Model Selection** drop-down list box, and click .

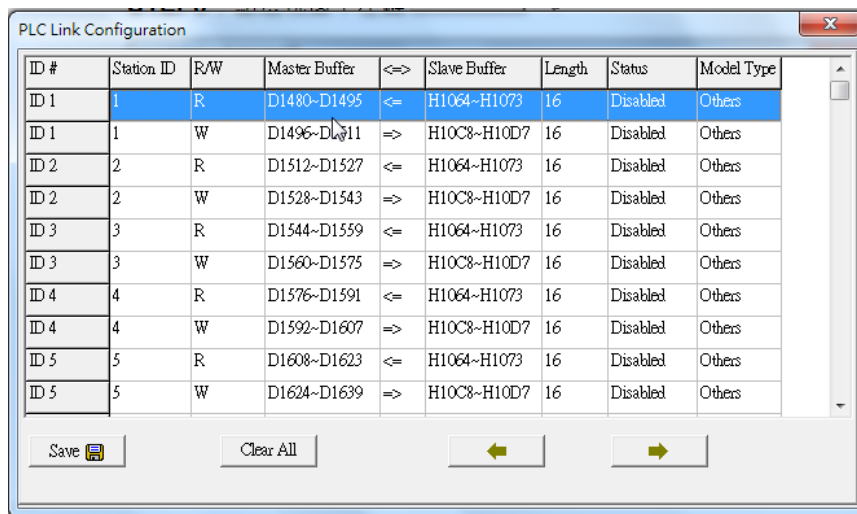


**Step 4:** Set a communication format for COM1 in the master PLC, click **Auto Detect**, click **OK** in the window which appears, click , and click **OK** in the window which appears.



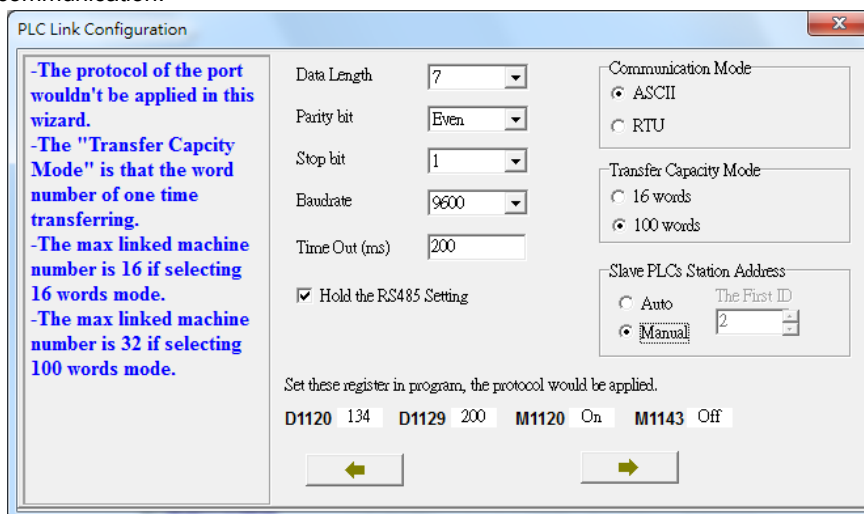


Step 5: Click 

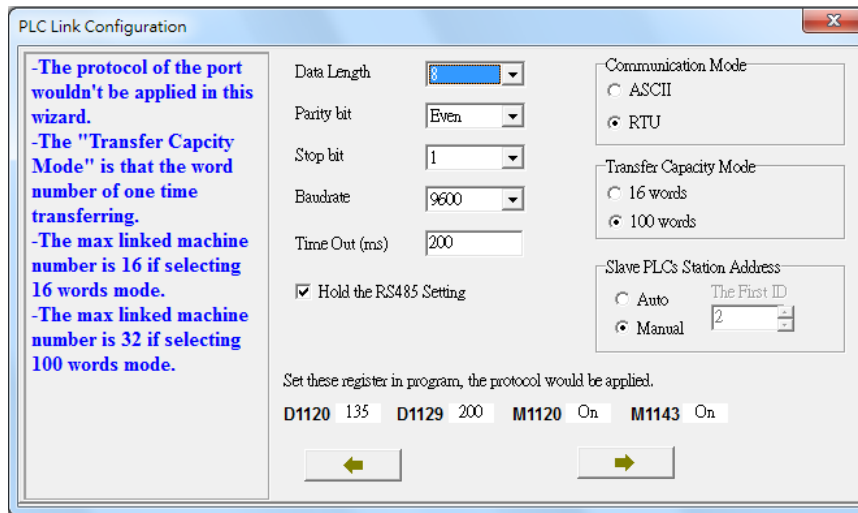


Step 6: The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **100 words** option button in the **Transfer Capacity Mode** section, select the **Manual** option button in the **Slave PLCs Station Address** section, and click .

Window for ASCII communication:



Window for RTU communication:



**PLC Link Configuration**

-The protocol of the port wouldn't be applied in this wizard.  
 -The "Transfer Capacity Mode" is that the word number of one time transferring.  
 -The max linked machine number is 16 if selecting 16 words mode.  
 -The max linked machine number is 32 if selecting 100 words mode.

Data Length: 8  
 Parity bit: Even  
 Stop bit: 1  
 Baudrate: 9600  
 Time Out (ms): 200

Hold the RS485 Setting

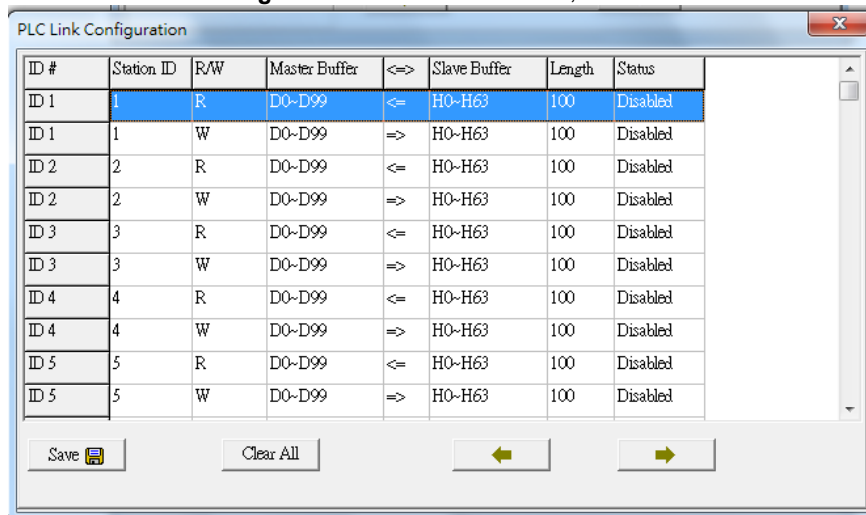
Communication Mode:  
 ASCII  
 RTU

Transfer Capacity Mode:  
 16 words  
 100 words

Slave PLCs Station Address:  
 Auto (The First ID)  
 Manual (2)

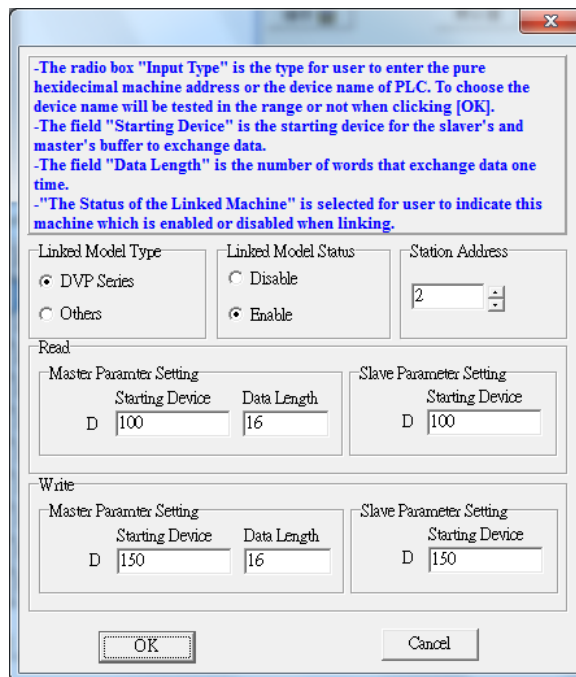
Set these register in program, the protocol would be applied.  
 D1120 135 D1129 200 M1120 On M1143 On

**Step 7:** Double-click the **ID 1** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1360 to On), select **2** in the **Station Address** box, type "100" in the **Starting Device** box in the **Master Parameter Setting** section in the **Read** section, type "150" in the **Starting Device** box in the **Master Parameter Setting** section in the **Write** section, type "16" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "100" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "150" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	1	R	D0~D99	<=>	H0~H63	100	Disabled
ID 1	1	W	D0~D99	=>	H0~H63	100	Disabled
ID 2	2	R	D0~D99	<=>	H0~H63	100	Disabled
ID 2	2	W	D0~D99	=>	H0~H63	100	Disabled
ID 3	3	R	D0~D99	<=>	H0~H63	100	Disabled
ID 3	3	W	D0~D99	=>	H0~H63	100	Disabled
ID 4	4	R	D0~D99	<=>	H0~H63	100	Disabled
ID 4	4	W	D0~D99	=>	H0~H63	100	Disabled
ID 5	5	R	D0~D99	<=>	H0~H63	100	Disabled
ID 5	5	W	D0~D99	=>	H0~H63	100	Disabled

Buttons: Save, Clear All, Left Arrow, Right Arrow



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

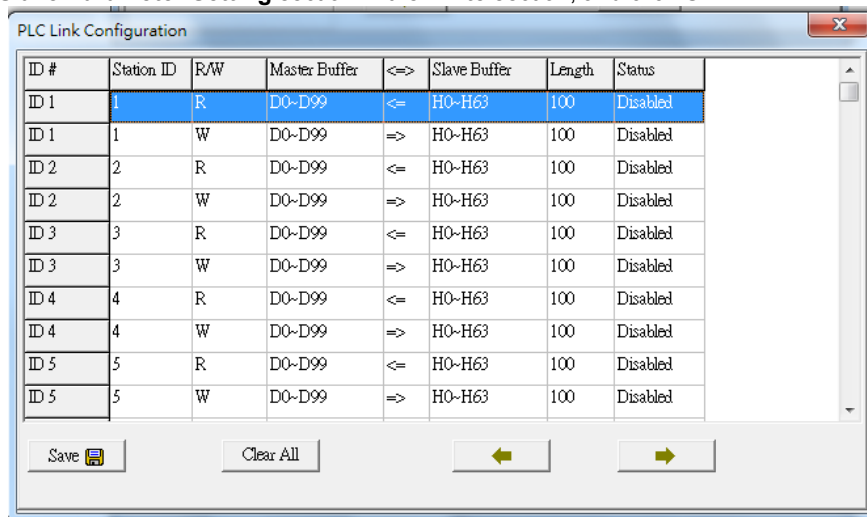
Linked Model Type:  DVP Series,  Others  
 Linked Model Status:  Disable,  Enable  
 Station Address: 2

Read  
 Master Parameter Setting: Starting Device: D 100, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 100

Write  
 Master Parameter Setting: Starting Device: D 150, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 150

Buttons: OK, Cancel

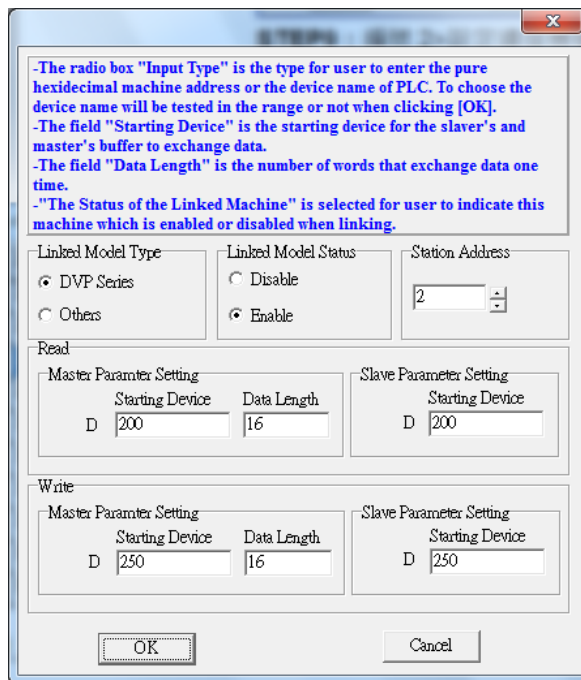
**Step 8:** Double-click the ID 2 block in the PLC Link Configuration window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1360 to On), select **2** in the **Station Address** box, type "200" in the **Starting Device** box in the **Master Parameter Setting** section in the **Read** section, type "250" in the **Starting Device** box in the **Master Parameter Setting** section in the **Write** section, type "16" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "200" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "250" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



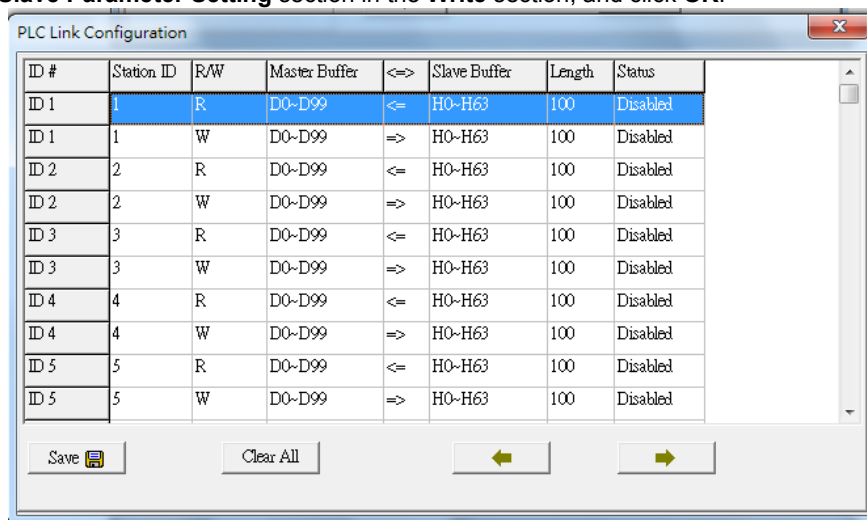
ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	1	R	D0-D99	<=>	H0-H63	100	Disabled
ID 1	1	W	D0-D99	=>	H0-H63	100	Disabled
ID 2	2	R	D0-D99	<=>	H0-H63	100	Disabled
ID 2	2	W	D0-D99	=>	H0-H63	100	Disabled
ID 3	3	R	D0-D99	<=>	H0-H63	100	Disabled
ID 3	3	W	D0-D99	=>	H0-H63	100	Disabled
ID 4	4	R	D0-D99	<=>	H0-H63	100	Disabled
ID 4	4	W	D0-D99	=>	H0-H63	100	Disabled
ID 5	5	R	D0-D99	<=>	H0-H63	100	Disabled
ID 5	5	W	D0-D99	=>	H0-H63	100	Disabled

Buttons: Save, Clear All, Left Arrow, Right Arrow

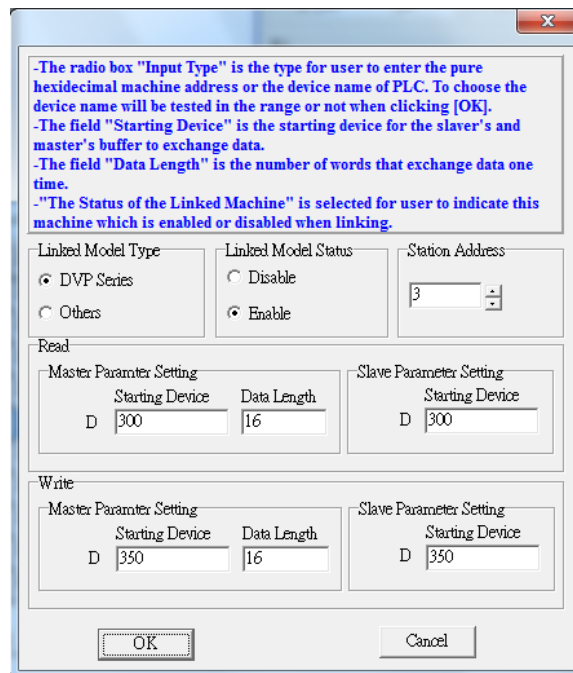




**Step 9:** Double-click the **ID 3** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1361 to On), select **3** in the **Station Address** box, type “300” in the **Starting Device** box in the **Master Parameter Setting** section in the **Read** section, type “350” in the **Starting Device** box in the **Master Parameter Setting** section in the **Write** section, type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “300” in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type “350” in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	Slave Buffer	Length	Status
ID 1	1	R	D0-D99	H0-H63	100	Disabled
ID 1	1	W	D0-D99	H0-H63	100	Disabled
ID 2	2	R	D0-D99	H0-H63	100	Disabled
ID 2	2	W	D0-D99	H0-H63	100	Disabled
ID 3	3	R	D0-D99	H0-H63	100	Disabled
ID 3	3	W	D0-D99	H0-H63	100	Disabled
ID 4	4	R	D0-D99	H0-H63	100	Disabled
ID 4	4	W	D0-D99	H0-H63	100	Disabled
ID 5	5	R	D0-D99	H0-H63	100	Disabled
ID 5	5	W	D0-D99	H0-H63	100	Disabled



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

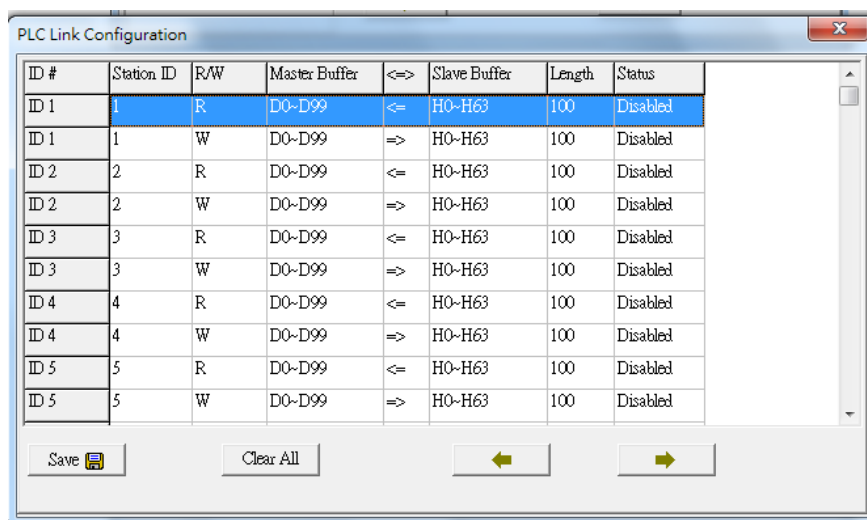
Linked Model Type:  DVP Series,  Others  
 Linked Model Status:  Disable,  Enable  
 Station Address: 3

Read  
 Master Parameter Setting: Starting Device D 300, Data Length 16  
 Slave Parameter Setting: Starting Device D 300

Write  
 Master Parameter Setting: Starting Device D 350, Data Length 16  
 Slave Parameter Setting: Starting Device D 350

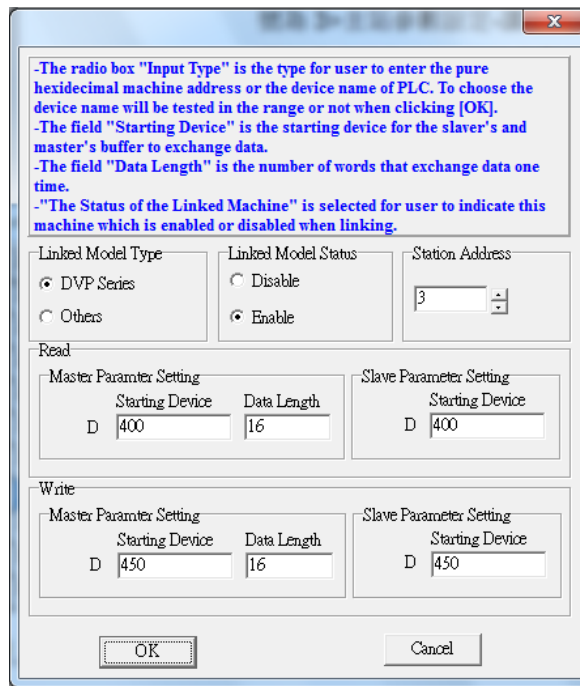
Buttons: OK, Cancel

**Step 10:** Double-click the ID 4 block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1361 to On), select **3** in the **Station Address** box, type "400" in the **Starting Device** box in the **Master Parameter Setting** section in the **Read** section, type "450" in the **Starting Device** box in the **Master Parameter Setting** section in the **Write** section, type "16" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "400" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "450" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	1	R	D0-D99	<=>	H0-H63	100	Disabled
ID 1	1	W	D0-D99	=>	H0-H63	100	Disabled
ID 2	2	R	D0-D99	<=>	H0-H63	100	Disabled
ID 2	2	W	D0-D99	=>	H0-H63	100	Disabled
ID 3	3	R	D0-D99	<=>	H0-H63	100	Disabled
ID 3	3	W	D0-D99	=>	H0-H63	100	Disabled
ID 4	4	R	D0-D99	<=>	H0-H63	100	Disabled
ID 4	4	W	D0-D99	=>	H0-H63	100	Disabled
ID 5	5	R	D0-D99	<=>	H0-H63	100	Disabled
ID 5	5	W	D0-D99	=>	H0-H63	100	Disabled

Buttons: Save, Clear All, Left Arrow, Right Arrow



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].

-The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.

-The field "Data Length" is the number of words that exchange data one time.

-"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

Linked Model Type:  DVP Series,  Others

Linked Model Status:  Disable,  Enable

Station Address: 3

Read

Master Parameter Setting: Starting Device: D 400, Data Length: 16


Slave Parameter Setting: Starting Device: D 400

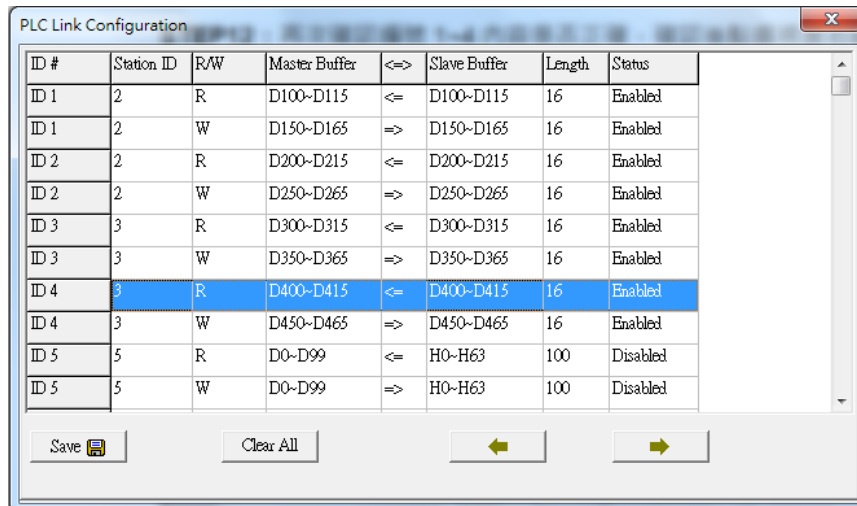
Write

Master Parameter Setting: Starting Device: D 450, Data Length: 16

Slave Parameter Setting: Starting Device: D 450

Buttons: OK, Cancel

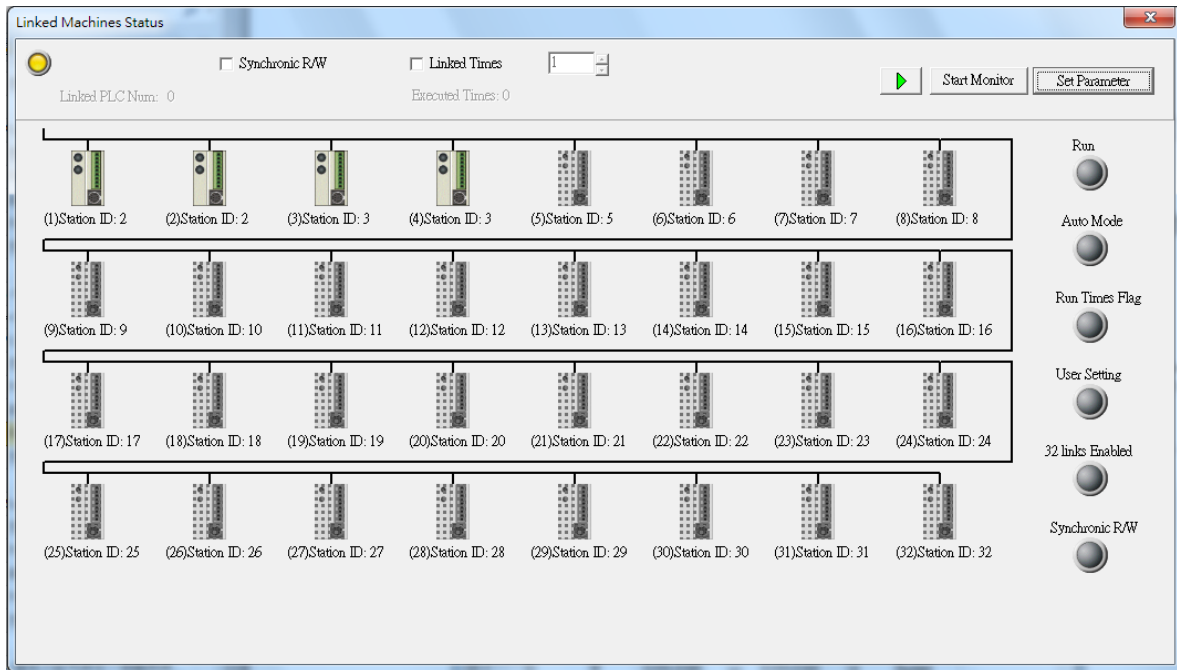
**Step 11:** Check whether the contents of the ID 1 block~the ID 4 block are correct, and then click  .





ID #	Station ID	R/W	Master Buffer	↔	Slave Buffer	Length	Status
ID 1	2	R	D100~D115	⇐	D100~D115	16	Enabled
ID 1	2	W	D150~D165	⇒	D150~D165	16	Enabled
ID 2	2	R	D200~D215	⇐	D200~D215	16	Enabled
ID 2	2	W	D250~D265	⇒	D250~D265	16	Enabled
ID 3	3	R	D300~D315	⇐	D300~D315	16	Enabled
ID 3	3	W	D350~D365	⇒	D350~D365	16	Enabled
ID 4	3	R	D400~D415	⇐	D400~D415	16	Enabled
ID 4	3	W	D450~D465	⇒	D450~D465	16	Enabled
ID 5	5	R	D0~D99	⇐	H0~H63	100	Disabled
ID 5	5	W	D0~D99	⇒	H0~H63	100	Disabled

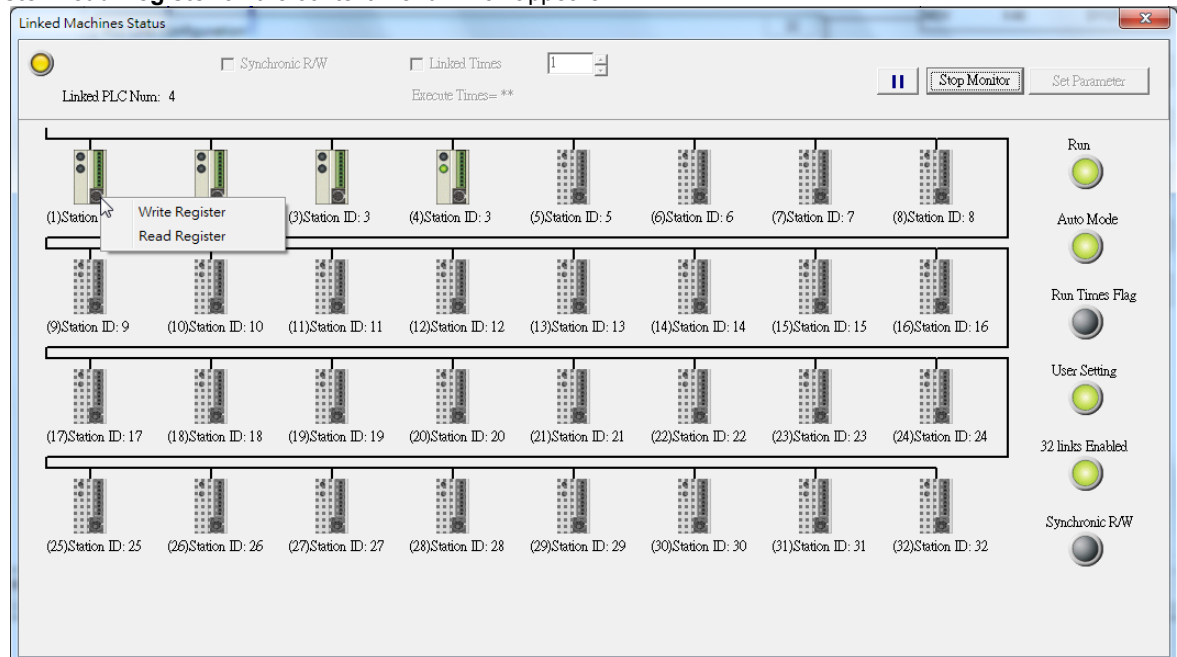
Buttons: Save, Clear All, ←, →

**Step 12:** Click the **Set Parameter** button, click the **Start Monitor** button, and click  or set X0 to On.

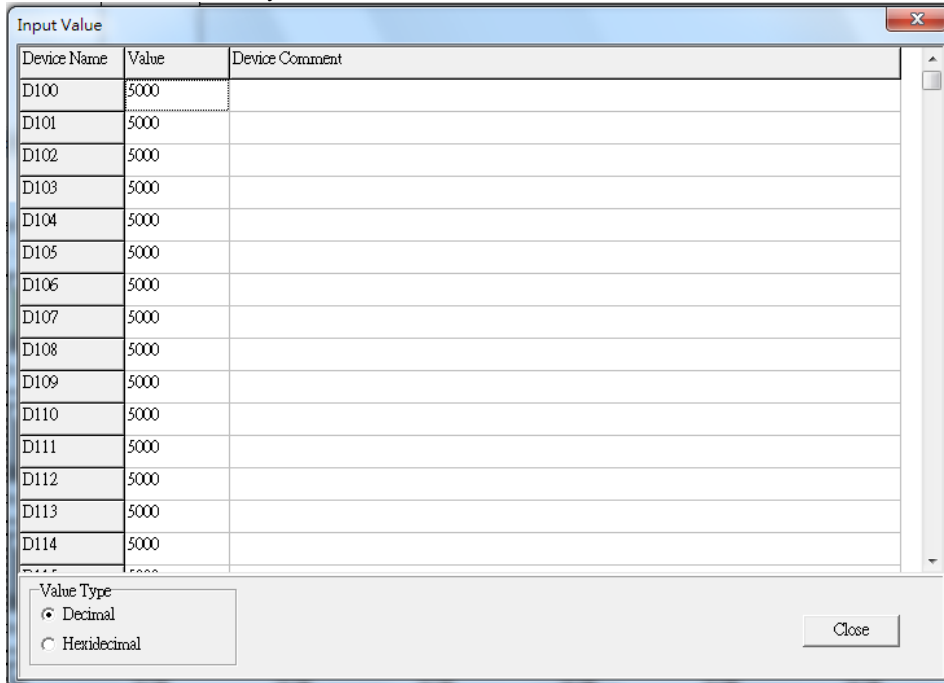


**Step 13:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.



**Step 14:** The values in D100~D115 are values read from slave 1, and they are 5000. The values in D150~D165 are values written to slave station 1, and they are 1000.

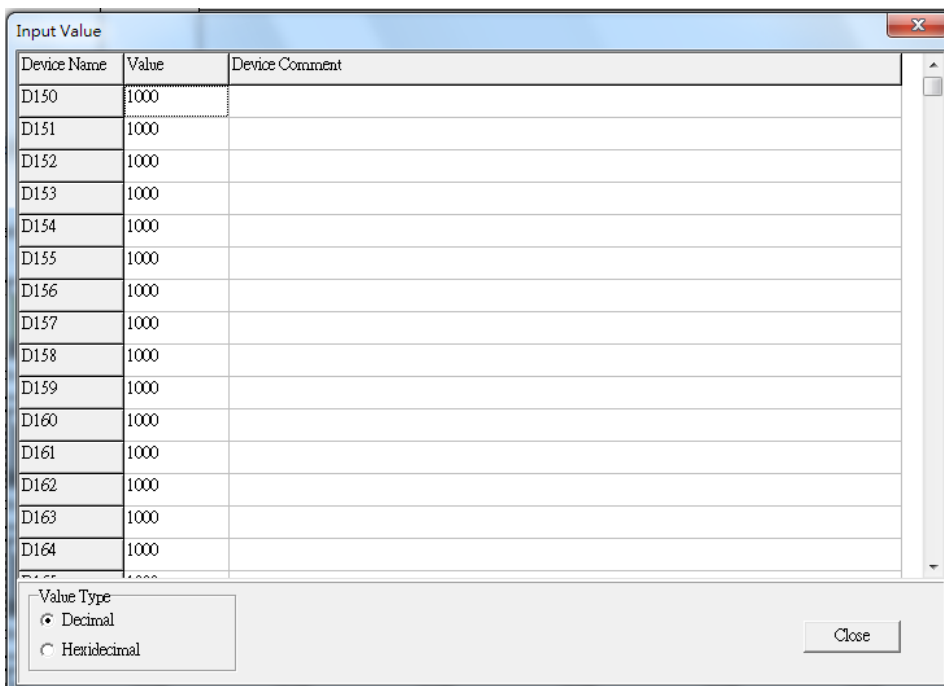


The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D100	5000	
D101	5000	
D102	5000	
D103	5000	
D104	5000	
D105	5000	
D106	5000	
D107	5000	
D108	5000	
D109	5000	
D110	5000	
D111	5000	
D112	5000	
D113	5000	
D114	5000	

Value Type  
 Decimal  
 Hexidecimal

Close



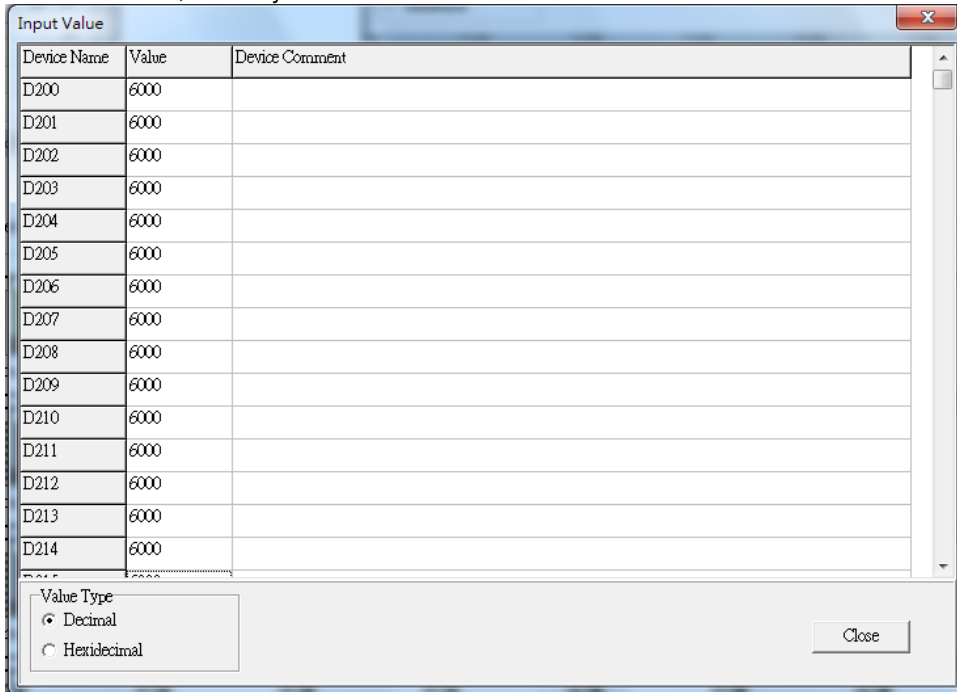
The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D150	1000	
D151	1000	
D152	1000	
D153	1000	
D154	1000	
D155	1000	
D156	1000	
D157	1000	
D158	1000	
D159	1000	
D160	1000	
D161	1000	
D162	1000	
D163	1000	
D164	1000	

Value Type  
 Decimal  
 Hexidecimal

Close

**Step 15:** The values in D200~D215 are values read from slave 1, and they are 6000. The values in D250~D265 are values written to slave station 1, and they are 2000.

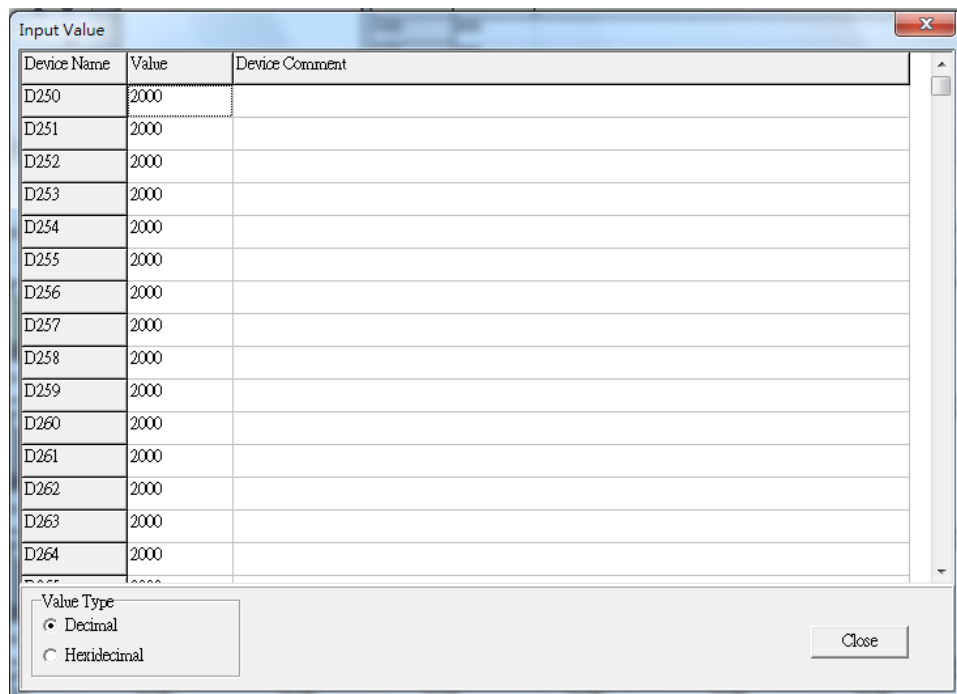


The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section has "Decimal" selected.

Device Name	Value	Device Comment
D200	6000	
D201	6000	
D202	6000	
D203	6000	
D204	6000	
D205	6000	
D206	6000	
D207	6000	
D208	6000	
D209	6000	
D210	6000	
D211	6000	
D212	6000	
D213	6000	
D214	6000	

Value Type:  
 Decimal  
 Hexidecimal

Close



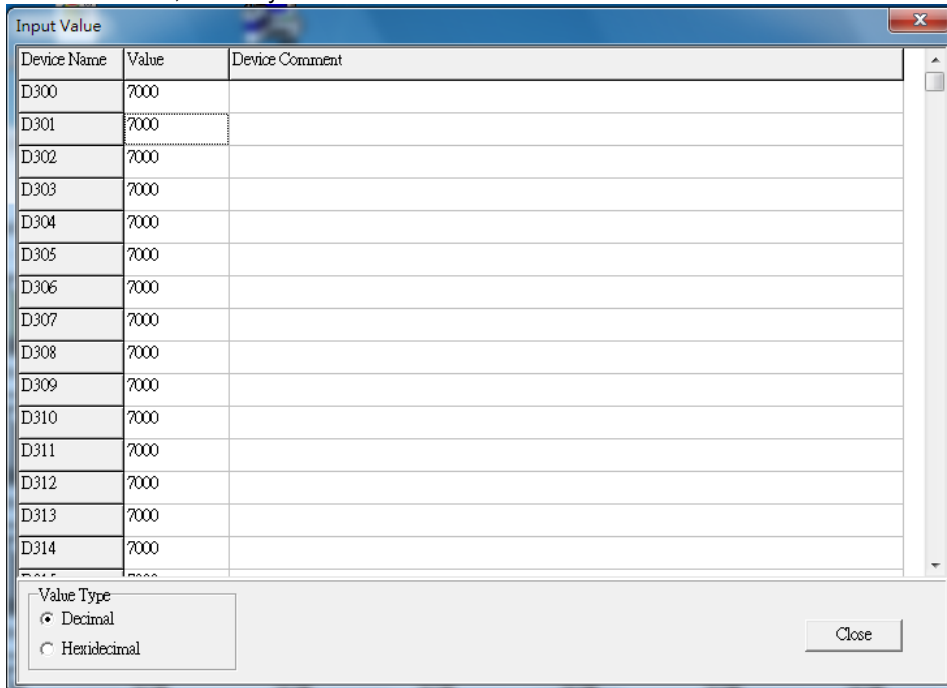
The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section has "Decimal" selected.

Device Name	Value	Device Comment
D250	2000	
D251	2000	
D252	2000	
D253	2000	
D254	2000	
D255	2000	
D256	2000	
D257	2000	
D258	2000	
D259	2000	
D260	2000	
D261	2000	
D262	2000	
D263	2000	
D264	2000	

Value Type:  
 Decimal  
 Hexidecimal

Close

**Step 16:** The values in D300~D315 are values read from slave 2, and they are 7000. The values in D350~D365 are values written to slave station 2, and they are 3000.

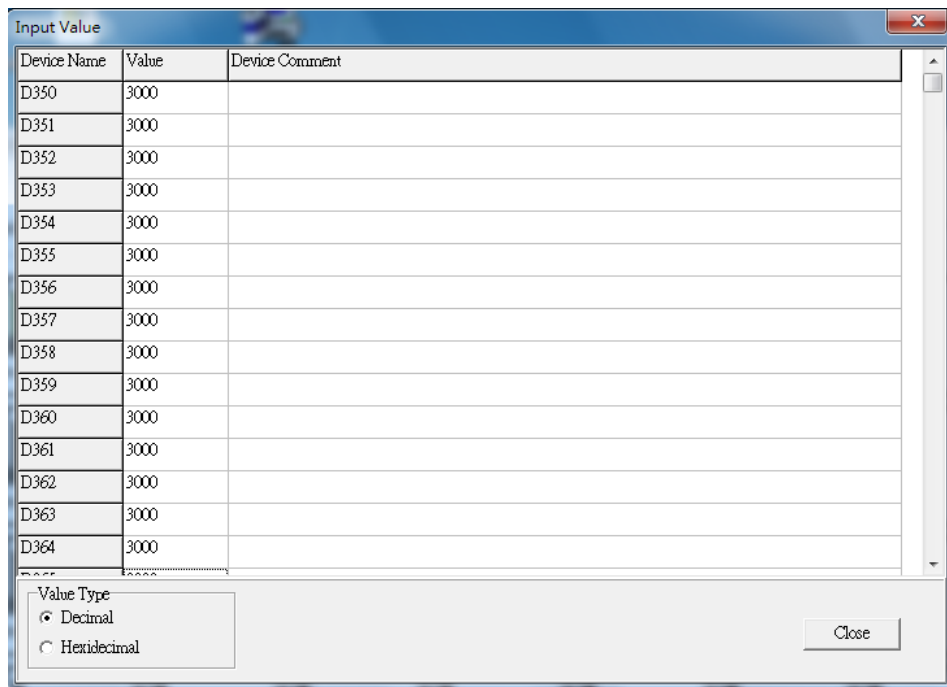


The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The values are all 7000. Below the table, there are radio buttons for "Value Type" with "Decimal" selected. A "Close" button is at the bottom right.

Device Name	Value	Device Comment
D300	7000	
D301	7000	
D302	7000	
D303	7000	
D304	7000	
D305	7000	
D306	7000	
D307	7000	
D308	7000	
D309	7000	
D310	7000	
D311	7000	
D312	7000	
D313	7000	
D314	7000	

Value Type  
 Decimal  
 Hexidecimal

Close



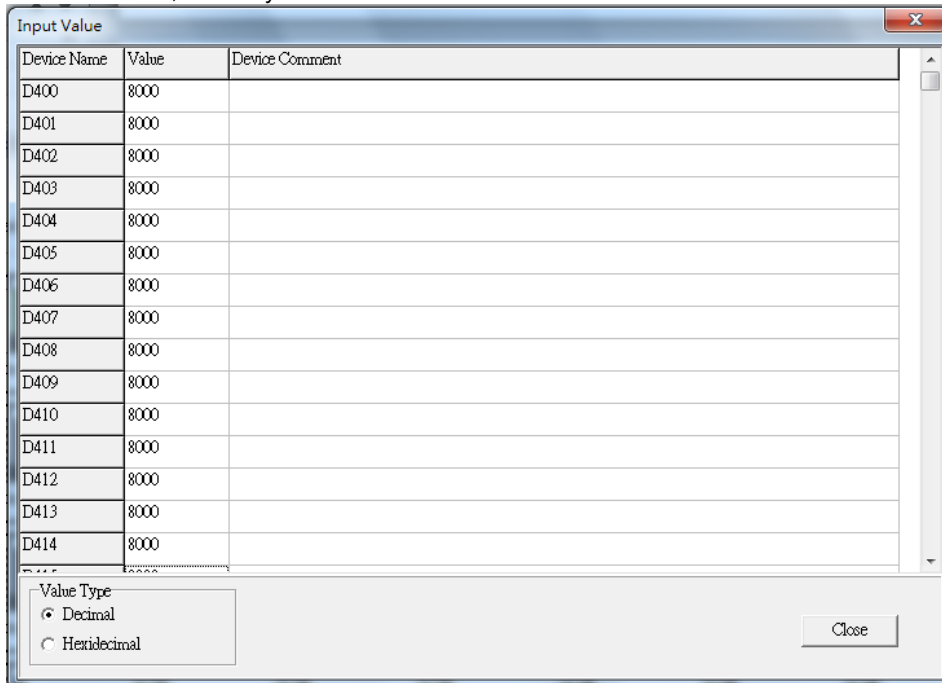
The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The values are all 3000. Below the table, there are radio buttons for "Value Type" with "Decimal" selected. A "Close" button is at the bottom right.

Device Name	Value	Device Comment
D350	3000	
D351	3000	
D352	3000	
D353	3000	
D354	3000	
D355	3000	
D356	3000	
D357	3000	
D358	3000	
D359	3000	
D360	3000	
D361	3000	
D362	3000	
D363	3000	
D364	3000	

Value Type  
 Decimal  
 Hexidecimal

Close

**Step 17:** The values in D400~D415 are values read from slave 2, and they are 8000. The values in D450~D465 are values written to slave station 2, and they are 4000.

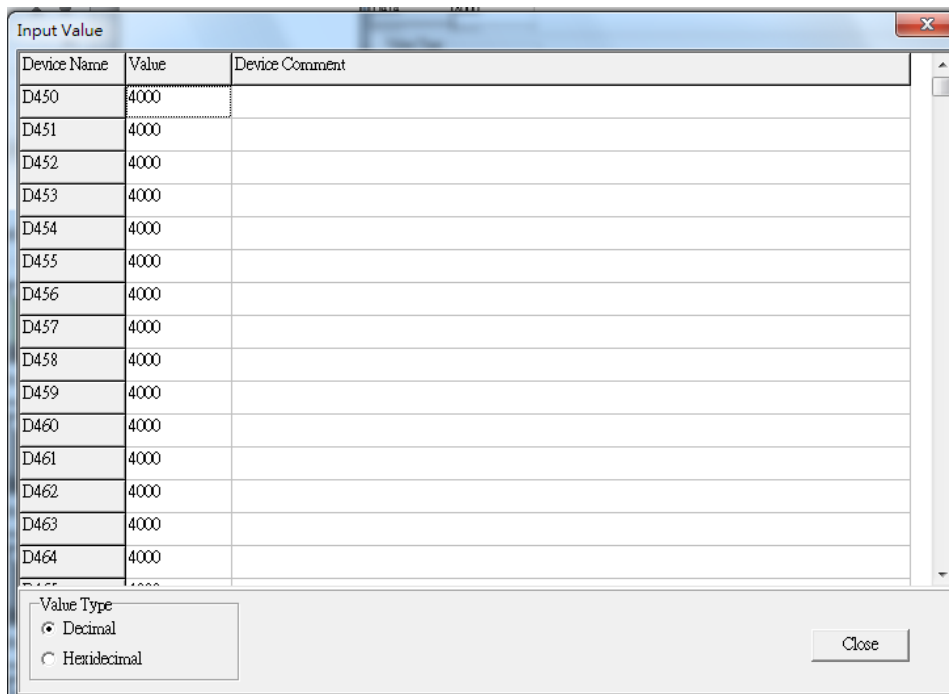


The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section has "Decimal" selected.

Device Name	Value	Device Comment
D400	8000	
D401	8000	
D402	8000	
D403	8000	
D404	8000	
D405	8000	
D406	8000	
D407	8000	
D408	8000	
D409	8000	
D410	8000	
D411	8000	
D412	8000	
D413	8000	
D414	8000	

Value Type  
 Decimal  
 Hexidecimal

Close





The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section has "Decimal" selected.

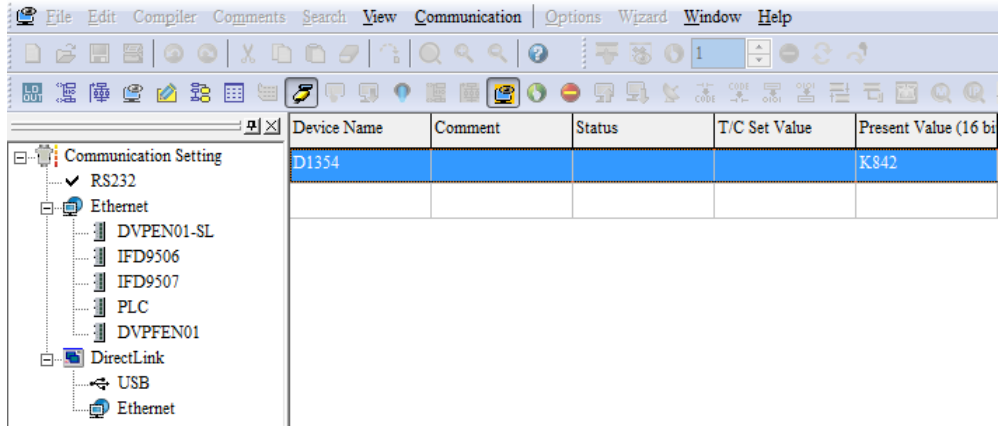
Device Name	Value	Device Comment
D450	4000	
D451	4000	
D452	4000	
D453	4000	
D454	4000	
D455	4000	
D456	4000	
D457	4000	
D458	4000	
D459	4000	
D460	4000	
D461	4000	
D462	4000	
D463	4000	
D464	4000	

Value Type  
 Decimal  
 Hexidecimal

Close



**Step 18:** Close the **Linked Machines Status** window, click , click , and type "D1354". The value in D1354 indicates PLC link scan time.



**【Description of control】**

- The values in D1900~D1903 in the master PLC are taken as slave station addresses. (The value in D1900 is 2, the value in D1901 is 2, the value in D1902 is 3, and the value in D1903 is 3.)
- The master station exchanges data with different communication addresses in the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D100~D115 in the master station, and the values in D150~D165 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 1 are written to D200~D215 in the master station, and the values in D250~D265 in the master station are written to D250~D265 in slave station 1. The values in D300~D315 in slave station 2 are written to D300~D315 in the master station, and the values in D350~D365 in the master station are written to D350~D365 in slave station 2. The values in D400~D415 in slave station 2 are written to D400~D415 in the master station, and the values in D450~D465 in the master station are written to D450~D465 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D100~D115	← Reading	D100~D115 in the slave PLC whose station address is K2
D150~D165	Writing →	D150~D165 in the slave PLC whose station address is K2
D200~D215	← Reading	D200~D215 in the slave PLC whose station address is K2
D250~D265	Writing →	D250~D265 in the slave PLC whose station address is K2
D300~D315	← Reading	D300~D315 in the slave PLC whose station address is K3
D350~D365	Writing →	D350~D365 in the slave PLC whose station address is K3
D400~D415	← Reading	D400~D415 in the slave PLC whose station address is K3
D450~D465	Writing →	D450~D465 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D115	All are 0.	D100~D115 in slave station 1	All are 5000.
D150~D165	All are 1000.	D150~D165 in slave station 1	All are 0.
D200~D215	All are 0.	D200~D215 in slave station 1	All are 6000.
D250~D265	All are 2000.	D250~D265 in slave station 1	All are 0.
D300~D315	All are 0.	D300~D315 in slave station 2	All are 7000.
D350~D365	All are 3000.	D350~D365 in slave station 2	All are 0.

Master PLC	Value	Slave PLC	Value
D400~D415	All are 0.	D400~D415 in slave station 2	All are 8000.
D450~D465	All are 4000.	D450~D465 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D115	All are 5000.	D100~D115 in slave station 1	All are 5000.
D150~D165	All are 1000.	D150~D165 in slave station 1	All are 1000.
D200~D215	All are 6000.	D200~D215 in slave station 1	All are 6000.
D250~D265	All are 2000.	D250~D265 in slave station 1	All are 2000.
D300~D315	All are 7000.	D300~D315 in slave station 2	All are 7000.
D350~D365	All are 3000.	D350~D365 in slave station 2	All are 3000.
D400~D415	All are 8000.	D400~D415 in slave station 2	All are 8000.
D450~D465	All are 4000.	D450~D465 in slave station 2	All are 4000.

## 5.2 Using the PLC Link Wizard in ISPSOft (ASCII/RTU Mode)

### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with different communication addresses in the two slave stations (two DVP-EH3 series PLCs) manually specified through a PLC link.

### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

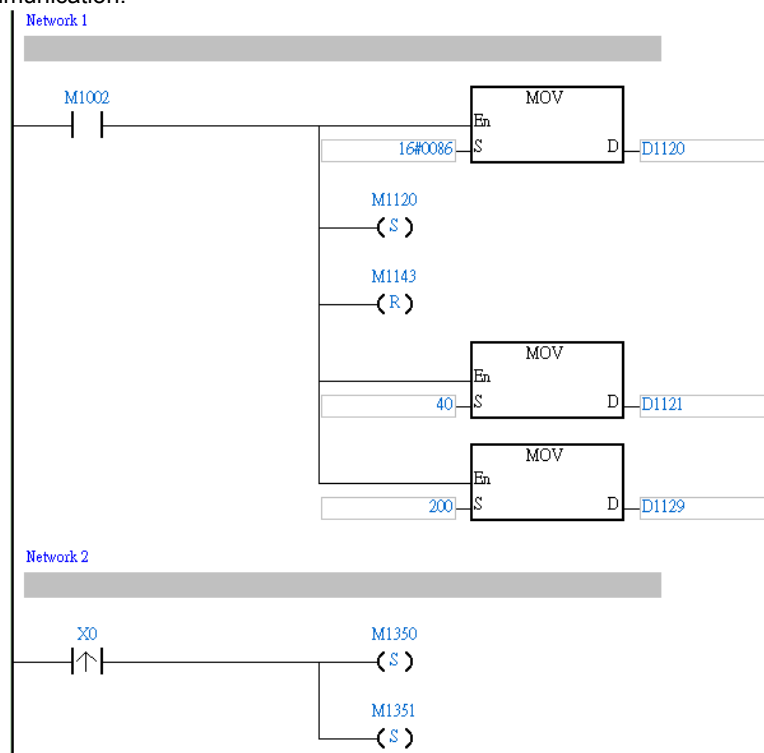
【PLC link wizard】

**Step 1:** Start ISPSOft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

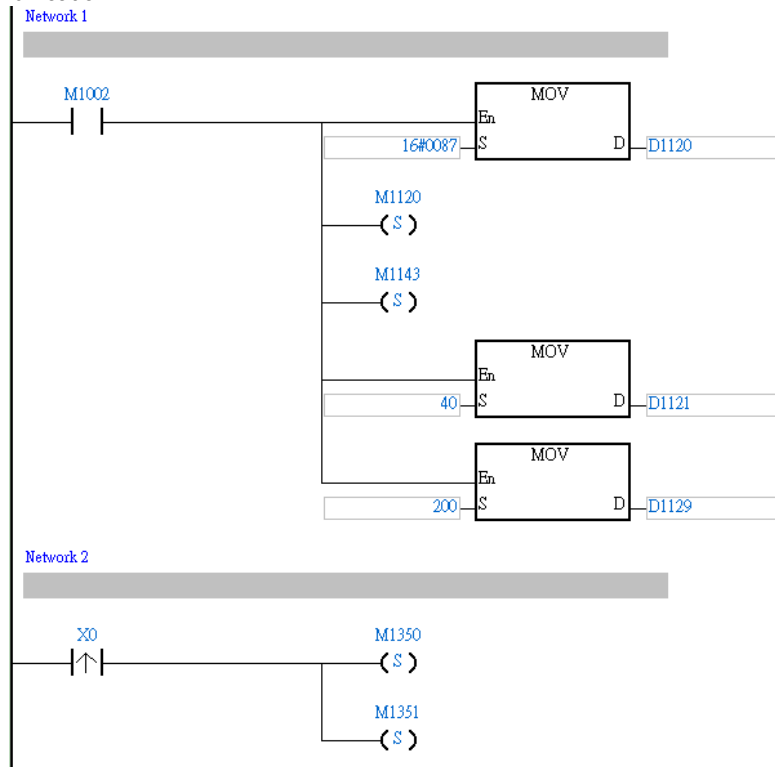




Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On).

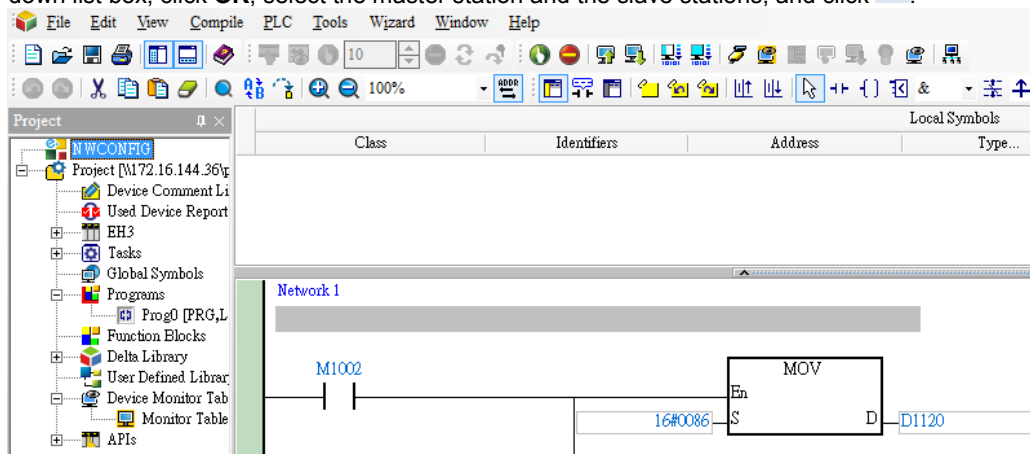
Program for ASCII communication:

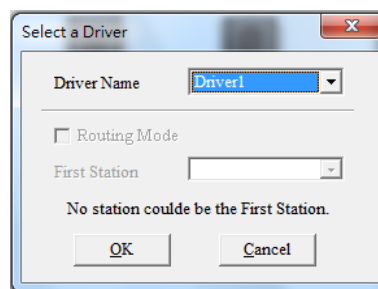
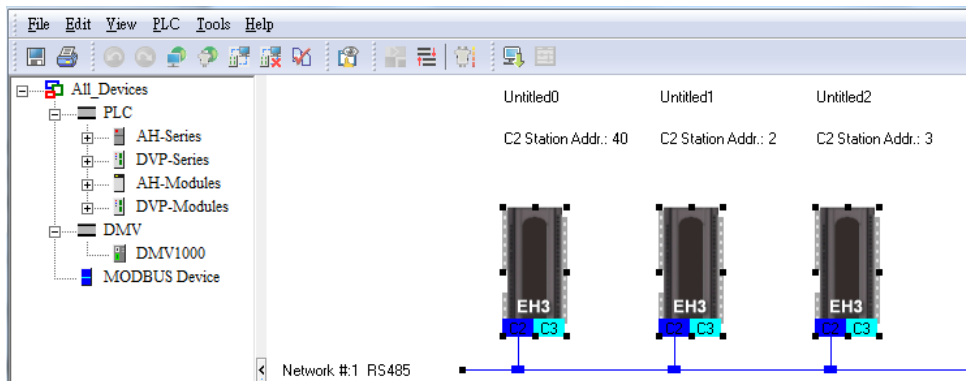



Program for RTU communication:

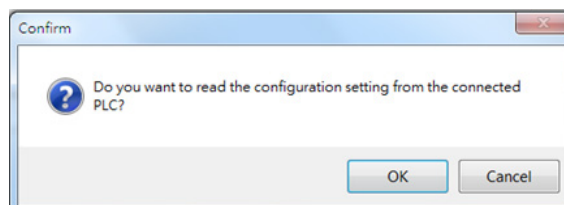
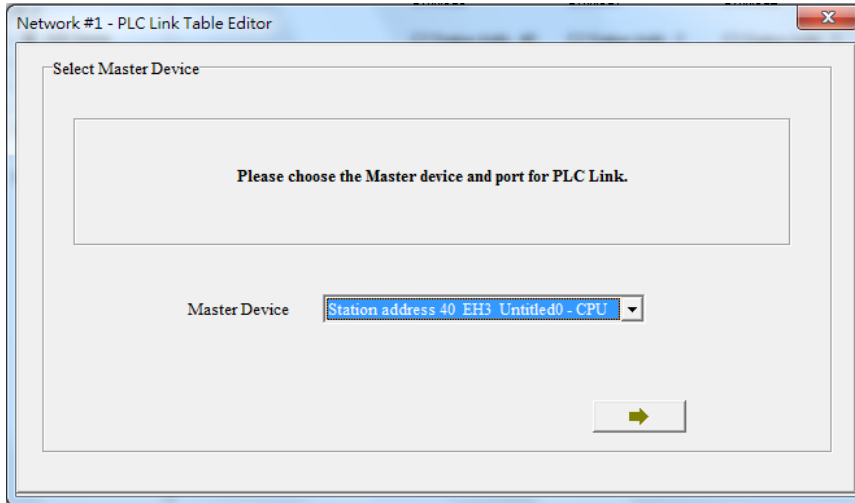


**Step 2:** Double-click **NWCONFIG** in the project management area, create a link, click , select **Driver 1** in the **Driver Name** drop-down list box, click **OK**, select the master station and the slave stations, and click .

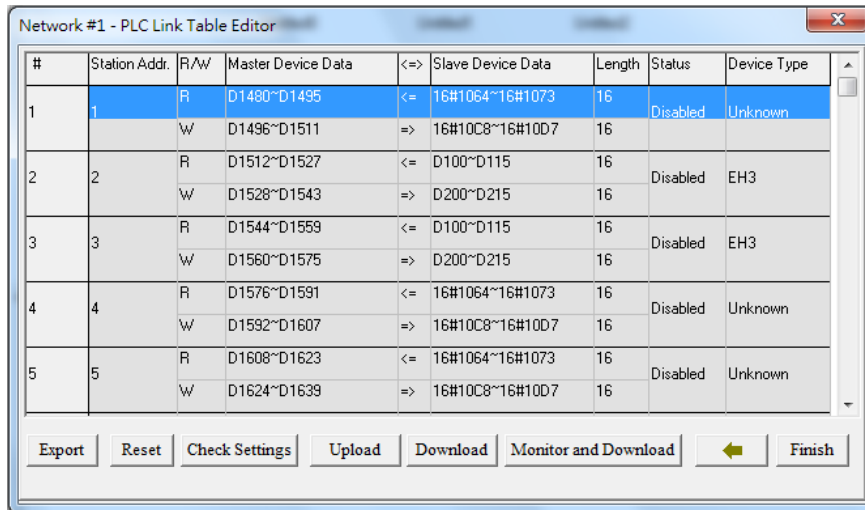





**Step 3:** Select a PLC in the **Master Device** drop-down list box, click , and click **OK** in the window which appears.

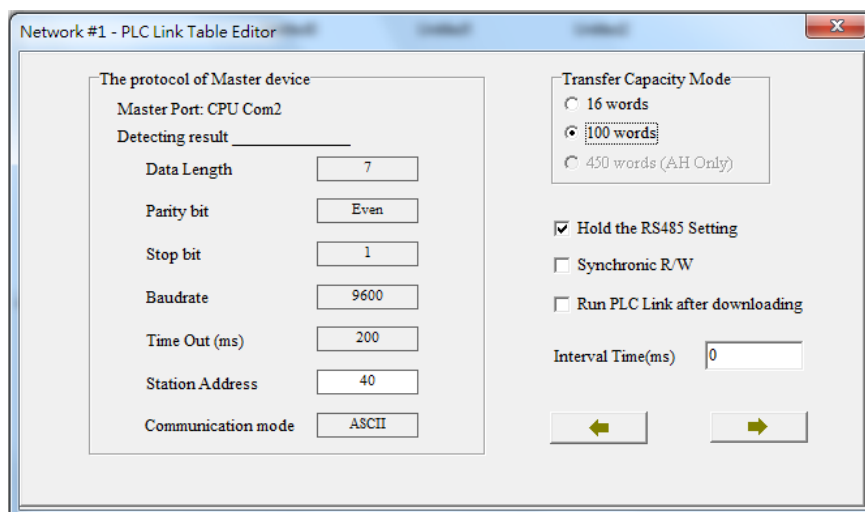


**Step 4:** Click .

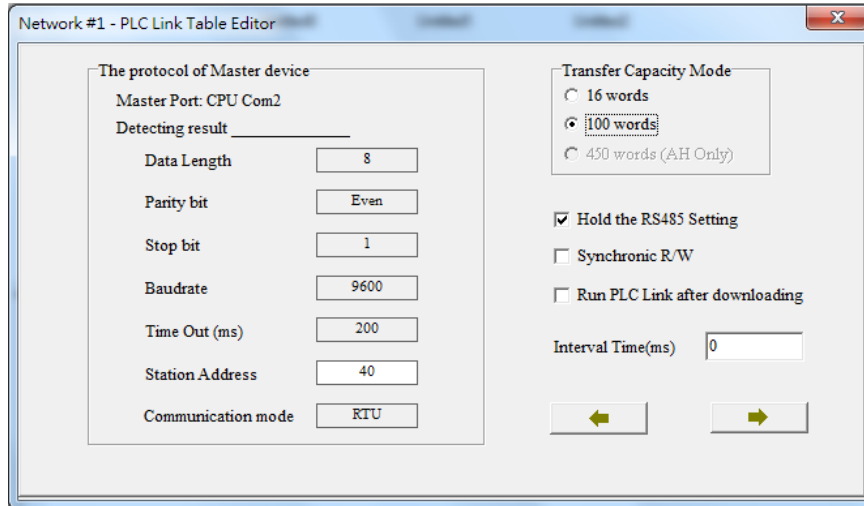


**Step 5:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **100 words** option button in the **Transfer Capacity Mode** section, unselect the **Synchronous R/W** checkbox and the **Run PLC Link after downloading** checkbox, type "0" in the **Interval time** box, and click .

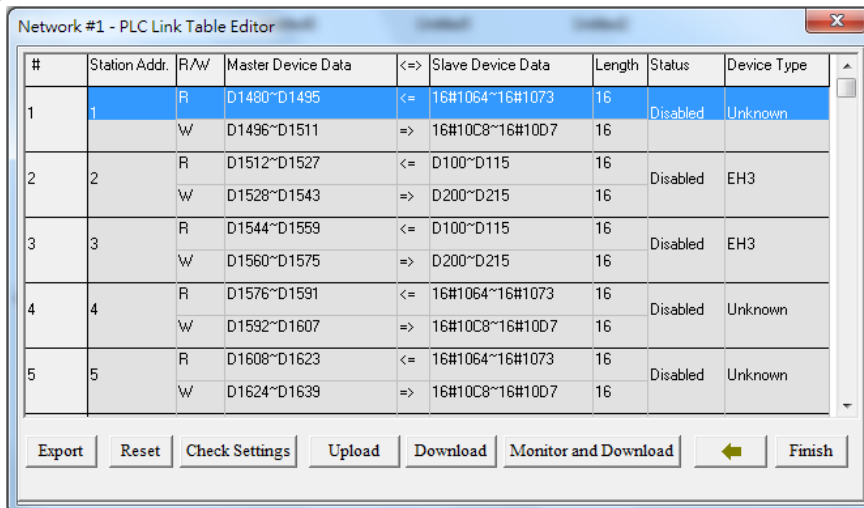
Window for ASCII communication:

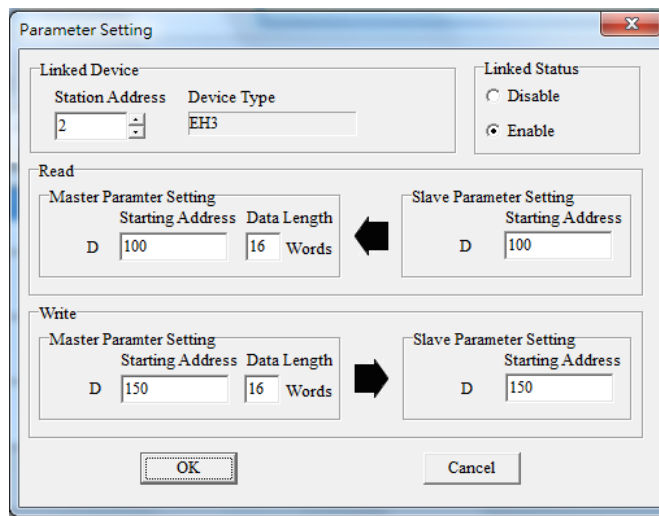


Window for RTU communication:

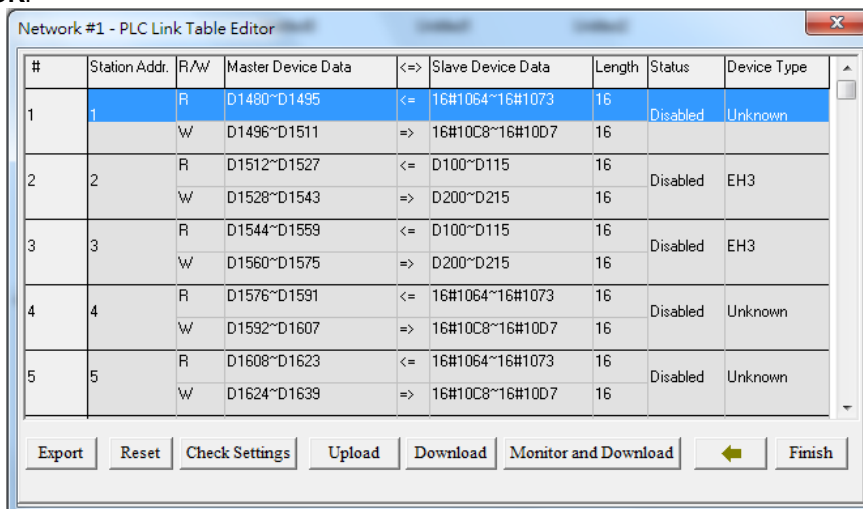


**Step 6:** Double-click the 1 block in the **PLC Link Table Editor** window, select 2 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1360 to On), type “100” in the **Starting Address** box in the **Master Parameter Setting** section in the **Read** section, type “150” in the **Starting Address** box in the **Master Parameter Setting** section in the **Write** section, type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “100” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “150” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



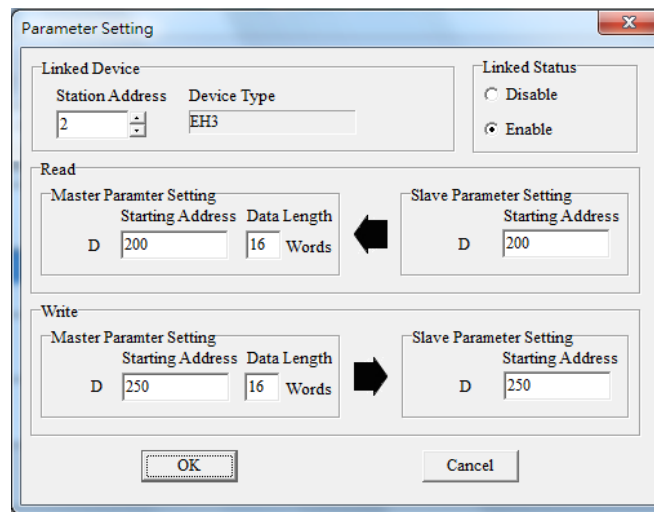


**Step 7:** Double-click the **2** block in the **PLC Link Table Editor** window, select **2** in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1360 to On), type “200” in the **Starting Address** box in the **Master Parameter Setting** section in the **Read** section, type “250” in the **Starting Address** box in the **Master Parameter Setting** section in the **Write** section, type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “200” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “250” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.

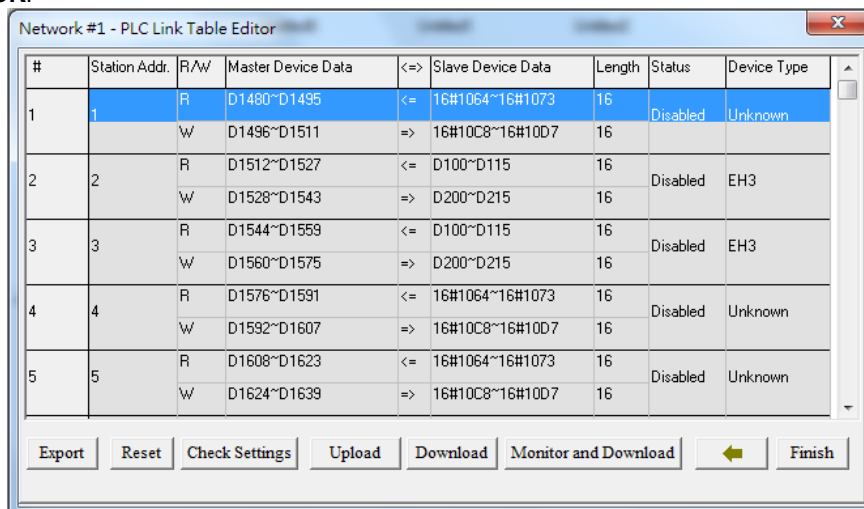


#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16		
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		



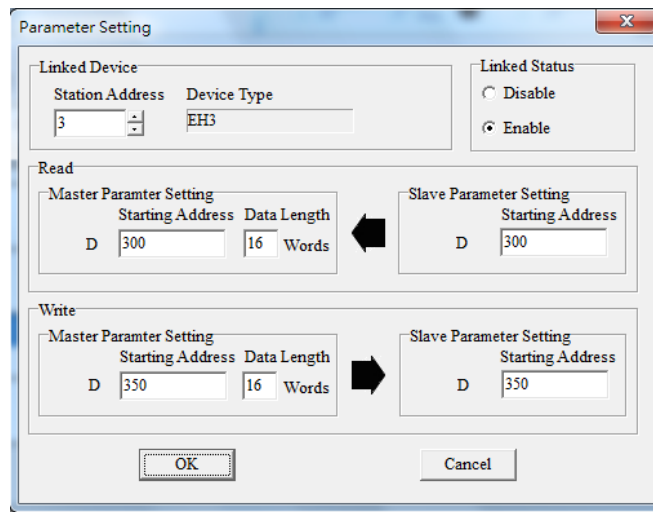


**Step 8:** Double-click the 3 block in the **PLC Link Table Editor** window, select 3 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1361 to On), type “300” in the **Starting Address** box in the **Master Parameter Setting** section in the **Read** section, type “350” in the **Starting Address** box in the **Master Parameter Setting** section in the **Write** section, type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “300” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “350” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.

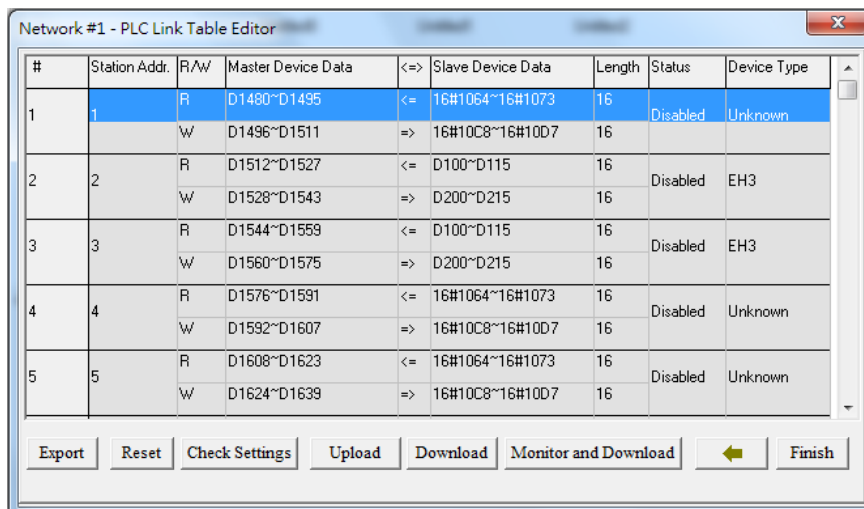


#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16		
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		

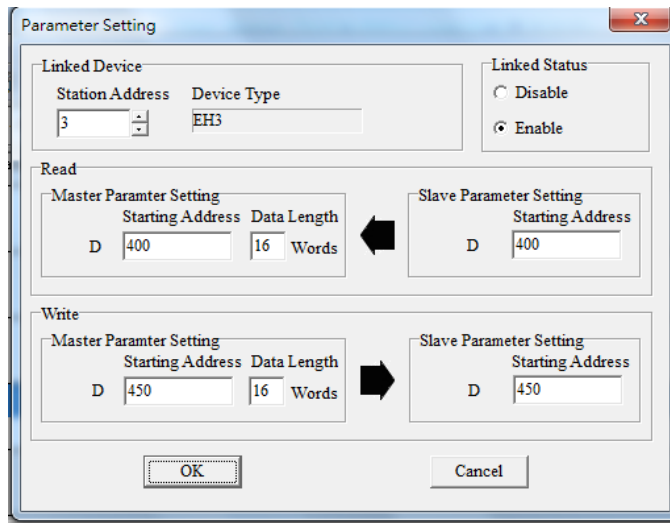
Buttons at the bottom: Export, Reset, Check Settings, Upload, Download, Monitor and Download, Finish.



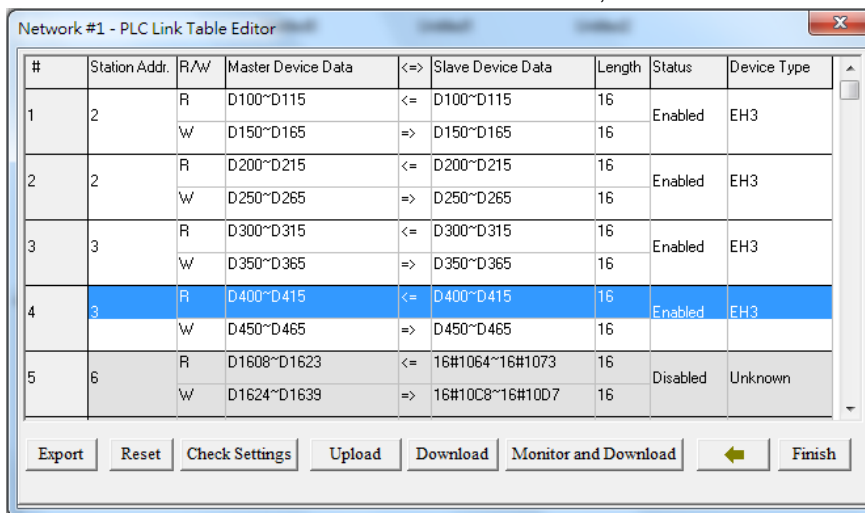
**Step 9:** Double-click the 4 block in the **PLC Link Table Editor** window, select 3 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1361 to On), type “400” in the **Starting Address** box in the **Master Parameter Setting** section in the **Read** section, type “450” in the **Starting Address** box in the **Master Parameter Setting** section in the **Write** section, type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “400” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “450” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16		
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		



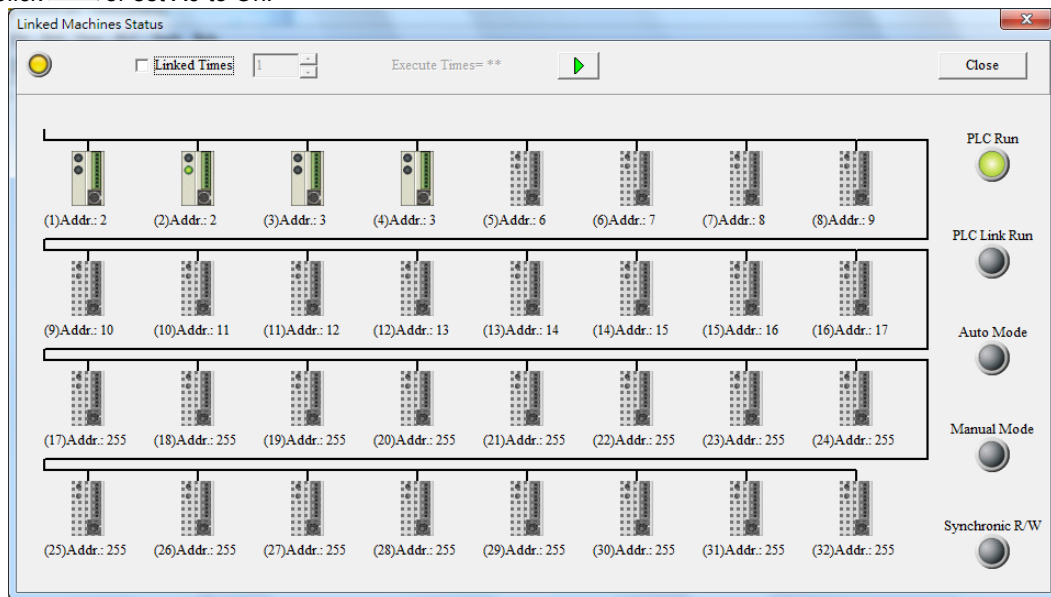
**Step 10:** Check whether the contents of the 1 block~the 2 block are correct, and then click **Monitor and Download**.





#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	2	R	D100~D115	<=	D100~D115	16	Enabled	EH3
		W	D150~D165	=>	D150~D165	16		
2	2	R	D200~D215	<=	D200~D215	16	Enabled	EH3
		W	D250~D265	=>	D250~D265	16		
3	3	R	D300~D315	<=	D300~D315	16	Enabled	EH3
		W	D350~D365	=>	D350~D365	16		
4	3	R	D400~D415	<=	D400~D415	16	Enabled	EH3
		W	D450~D465	=>	D450~D465	16		
5	6	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		

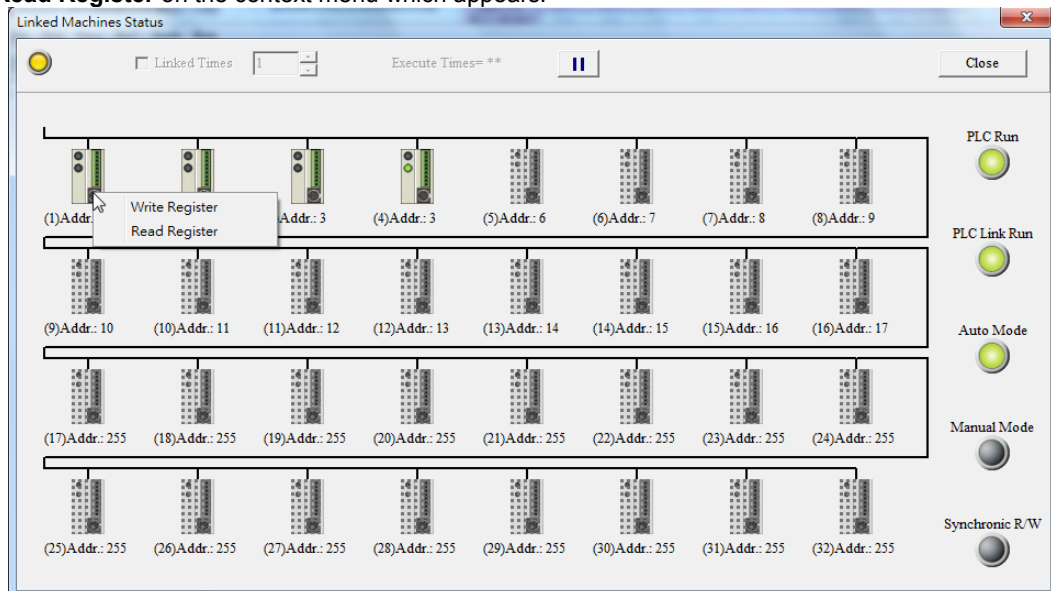
Buttons at the bottom: Export, Reset, Check Settings, Upload, Download, Monitor and Download, Finish

**Step 11:** Click  or set X0 to On.

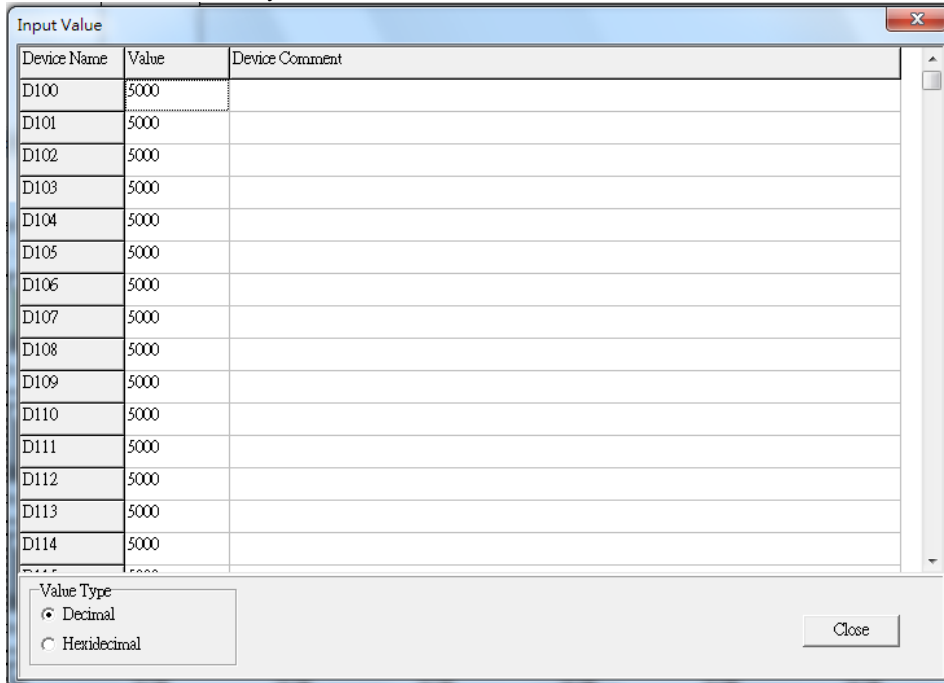


**Step 12:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.



**Step 13:** The values in D100~D115 are values read from slave 1, and they are 5000. The values in D150~D165 are values written to slave station 1, and they are 1000.

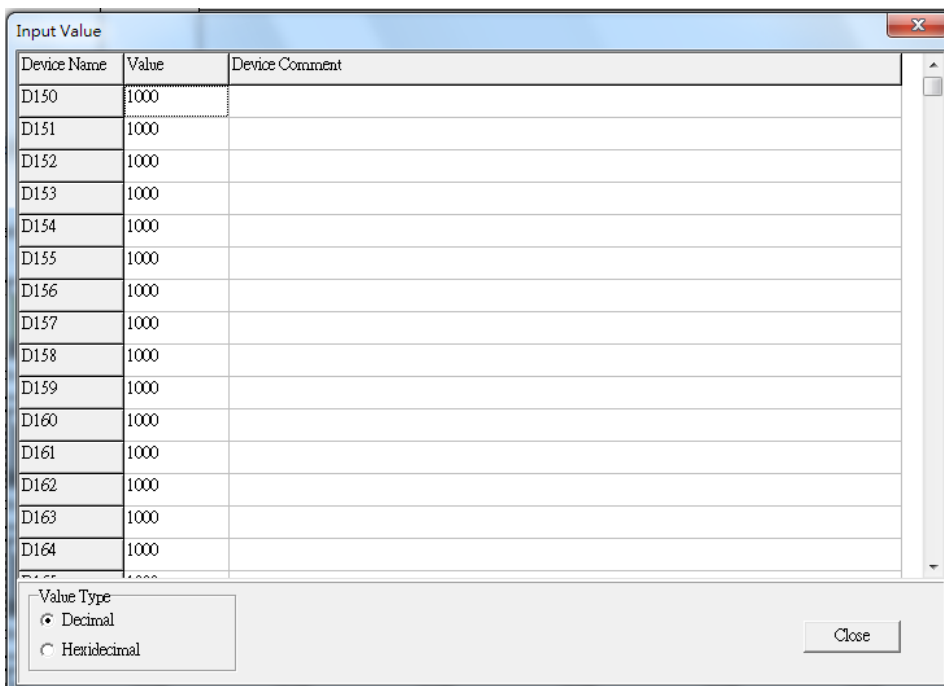


The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D100	5000	
D101	5000	
D102	5000	
D103	5000	
D104	5000	
D105	5000	
D106	5000	
D107	5000	
D108	5000	
D109	5000	
D110	5000	
D111	5000	
D112	5000	
D113	5000	
D114	5000	

Value Type:  
 Decimal  
 Hexidecimal

Close



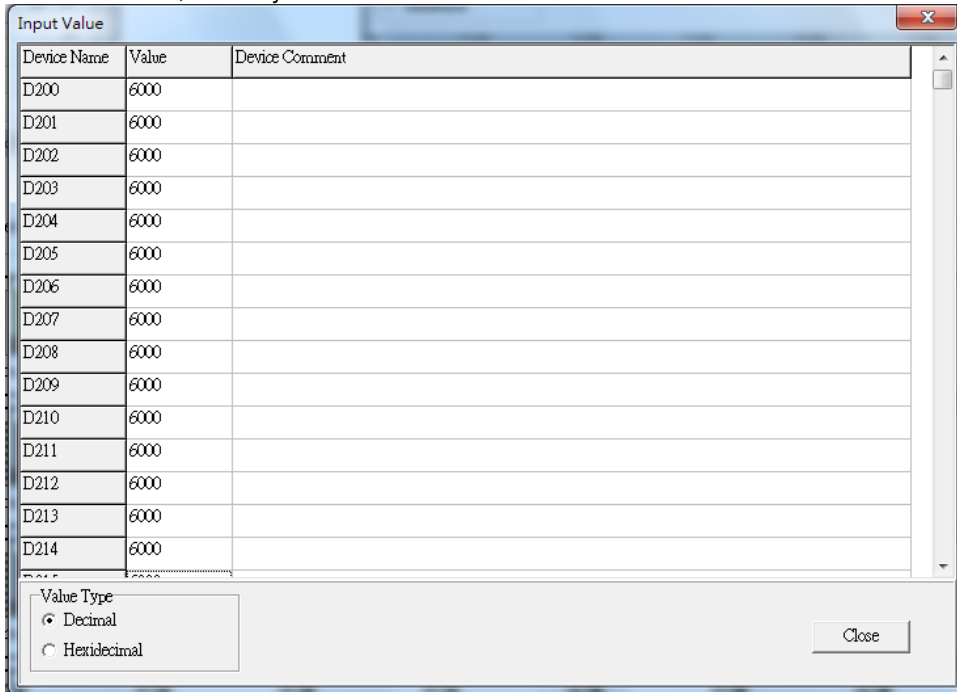
The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D150	1000	
D151	1000	
D152	1000	
D153	1000	
D154	1000	
D155	1000	
D156	1000	
D157	1000	
D158	1000	
D159	1000	
D160	1000	
D161	1000	
D162	1000	
D163	1000	
D164	1000	

Value Type:  
 Decimal  
 Hexidecimal

Close

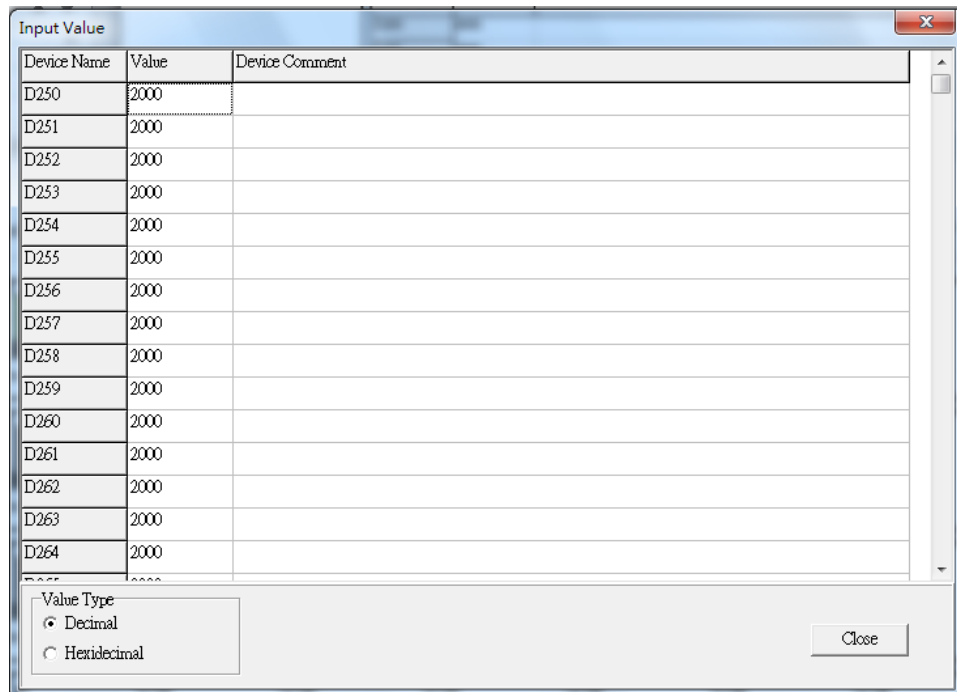
**Step 14:** The values in D200~D215 are values read from slave 1, and they are 6000. The values in D250~D265 are values written to slave station 1, and they are 2000.



The screenshot shows a dialog box titled "Input Value" with a table containing the following data:

Device Name	Value	Device Comment
D200	6000	
D201	6000	
D202	6000	
D203	6000	
D204	6000	
D205	6000	
D206	6000	
D207	6000	
D208	6000	
D209	6000	
D210	6000	
D211	6000	
D212	6000	
D213	6000	
D214	6000	

Below the table, the "Value Type" section has the "Decimal" radio button selected and the "Hexidecimal" radio button unselected. A "Close" button is located at the bottom right.

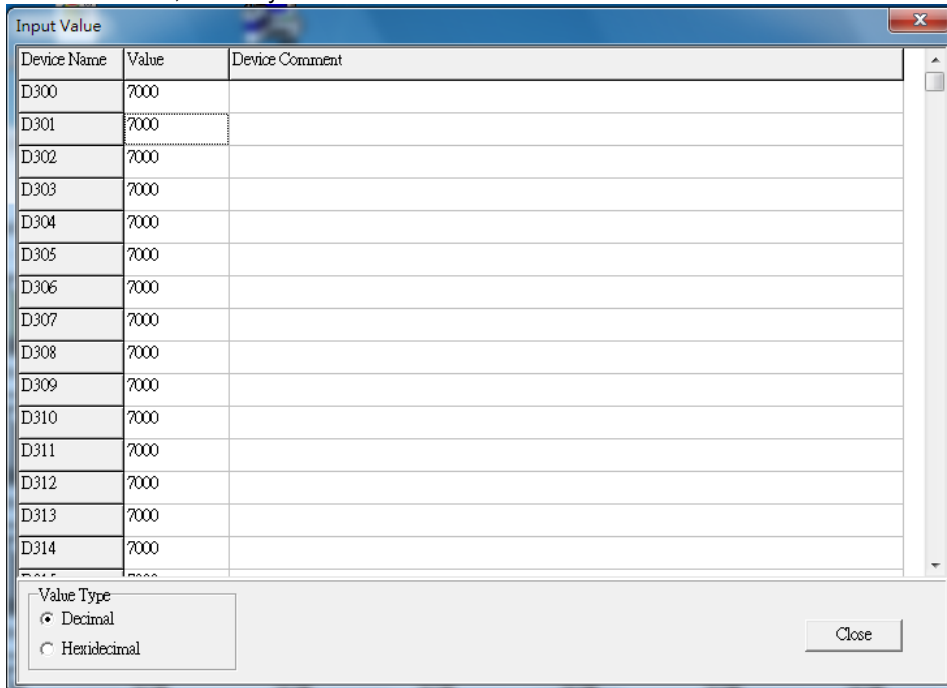


The screenshot shows a dialog box titled "Input Value" with a table containing the following data:

Device Name	Value	Device Comment
D250	2000	
D251	2000	
D252	2000	
D253	2000	
D254	2000	
D255	2000	
D256	2000	
D257	2000	
D258	2000	
D259	2000	
D260	2000	
D261	2000	
D262	2000	
D263	2000	
D264	2000	

Below the table, the "Value Type" section has the "Decimal" radio button selected and the "Hexidecimal" radio button unselected. A "Close" button is located at the bottom right.

**Step 15:** The values in D300~D315 are values read from slave 2, and they are 7000. The values in D350~D365 are values written to slave station 2, and they are 3000.

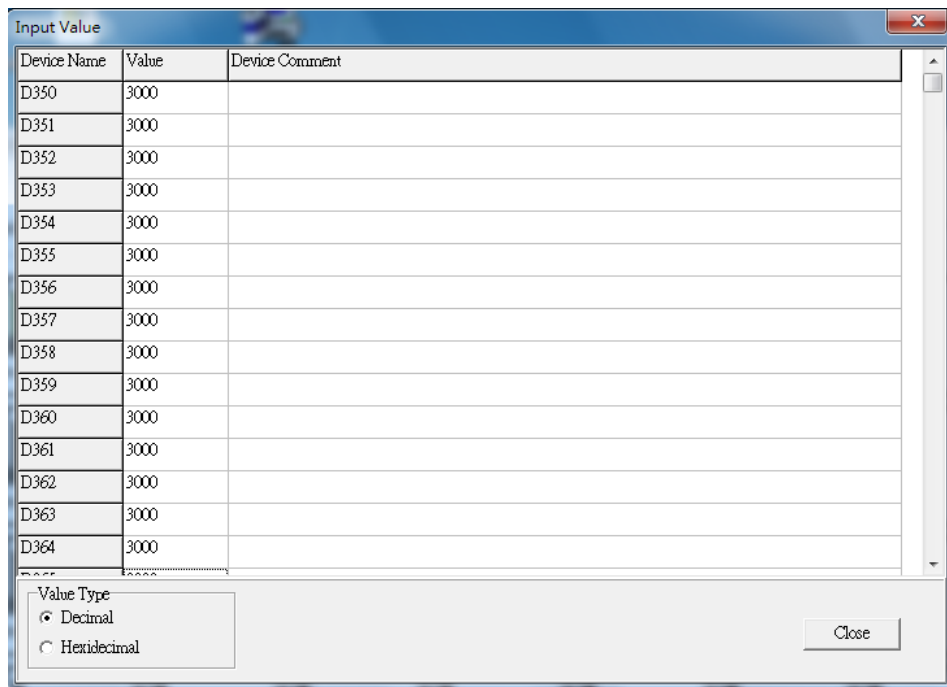


The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D300	7000	
D301	7000	
D302	7000	
D303	7000	
D304	7000	
D305	7000	
D306	7000	
D307	7000	
D308	7000	
D309	7000	
D310	7000	
D311	7000	
D312	7000	
D313	7000	
D314	7000	

Value Type  
 Decimal  
 Hexidecimal

Close



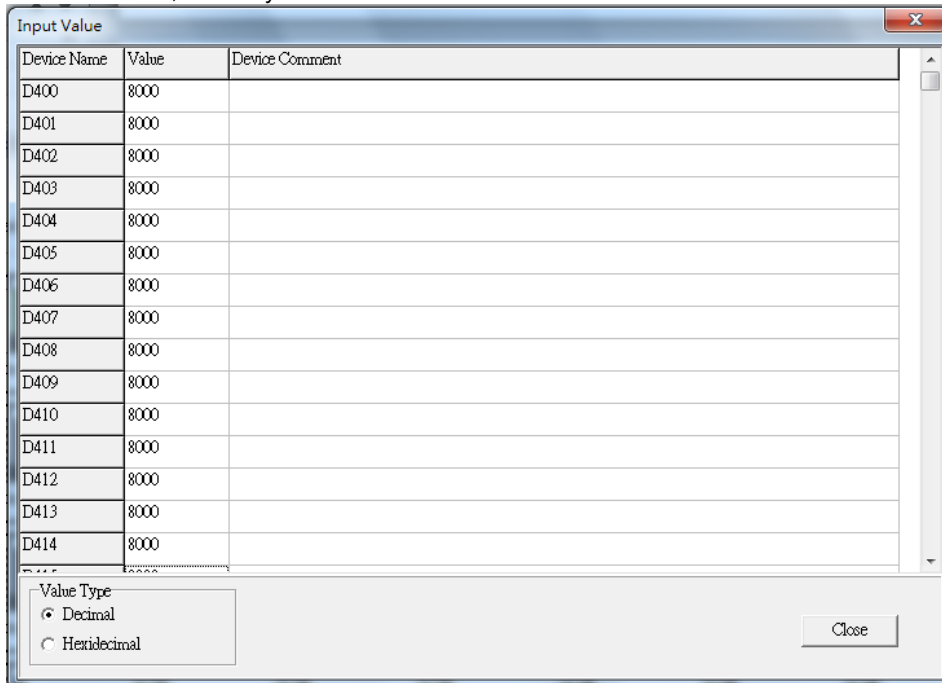
The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D350	3000	
D351	3000	
D352	3000	
D353	3000	
D354	3000	
D355	3000	
D356	3000	
D357	3000	
D358	3000	
D359	3000	
D360	3000	
D361	3000	
D362	3000	
D363	3000	
D364	3000	

Value Type  
 Decimal  
 Hexidecimal

Close

**Step 16:** The values in D400~D415 are values read from slave 2, and they are 8000. The values in D450~D465 are values written to slave station 2, and they are 4000.

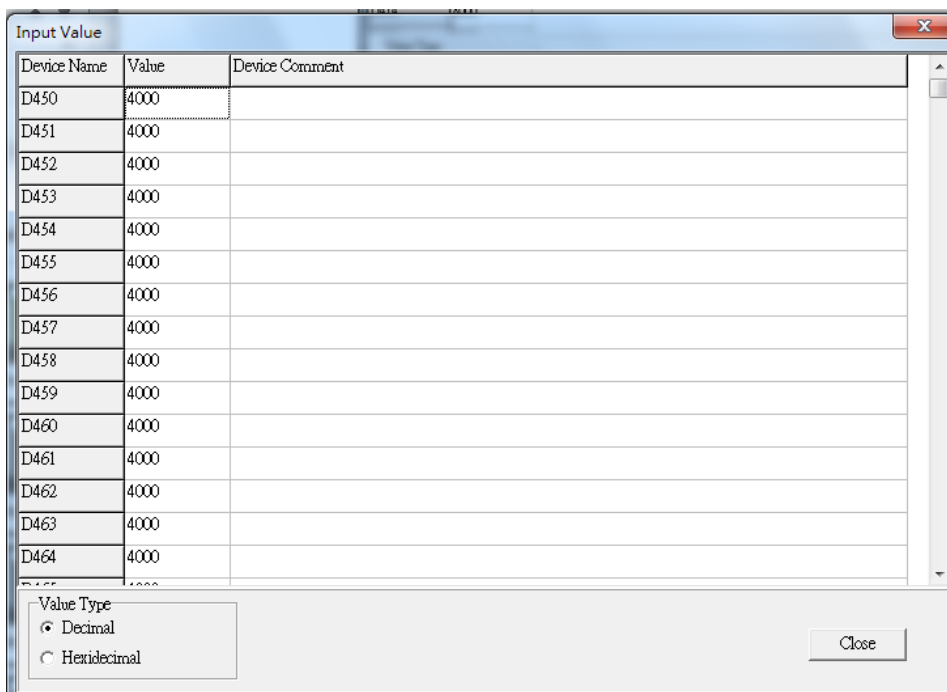


The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D400	8000	
D401	8000	
D402	8000	
D403	8000	
D404	8000	
D405	8000	
D406	8000	
D407	8000	
D408	8000	
D409	8000	
D410	8000	
D411	8000	
D412	8000	
D413	8000	
D414	8000	

Value Type  
 Decimal  
 Hexidecimal

Close



The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section at the bottom has "Decimal" selected.


Device Name	Value	Device Comment
D450	4000	
D451	4000	
D452	4000	
D453	4000	
D454	4000	
D455	4000	
D456	4000	
D457	4000	
D458	4000	
D459	4000	
D460	4000	
D461	4000	
D462	4000	
D463	4000	
D464	4000	

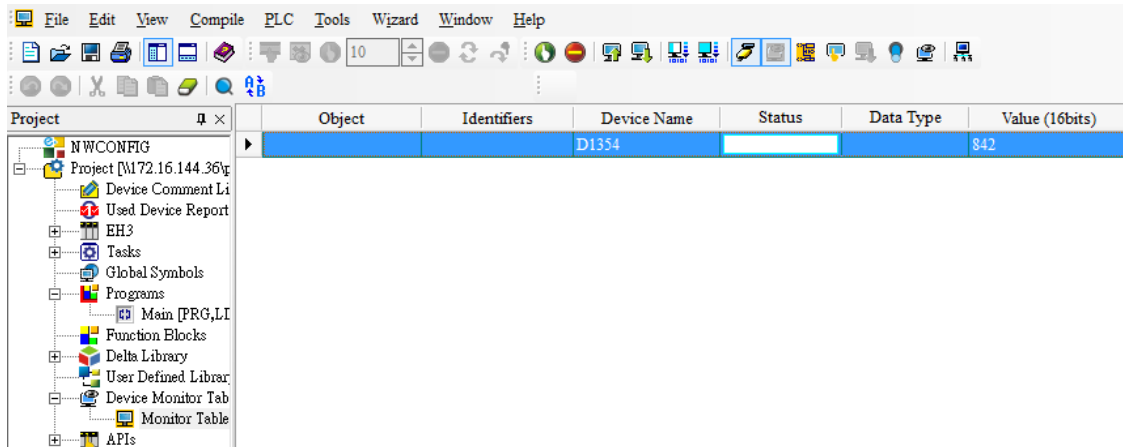
Value Type  
 Decimal  
 Hexidecimal

Close



**Step 17:** Close the **Linked Machines Status** window, create a device monitoring table by means of **Device Monitor**

**Table** in the project management area, type "D1354" in the device monitoring table, and click . The value in D1354 indicates PLC link scan time.



**【Description of control】**

- The values in D1900~D1903 in the master PLC are taken as slave station addresses. (The value in D1900 is 2, the value in D1901 is 2, the value in D1902 is 3, and the value in D1903 is 3.)
- The master station exchanges data with different communication addresses in the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D100~D115 in the master station, and the values in D150~D165 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 1 are written to D200~D215 in the master station, and the values in D250~D265 in the master station are written to D250~D265 in slave station 1. The values in D300~D315 in slave station 2 are written to D300~D315 in the master station, and the values in D350~D365 in the master station are written to D350~D365 in slave station 2. The values in D400~D415 in slave station 2 are written to D400~D415 in the master station, and the values in D450~D465 in the master station are written to D450~D465 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D100~D115	← Reading	D100~D115 in the slave PLC whose station address is K2
D150~D165	→ Writing	D150~D165 in the slave PLC whose station address is K2
D200~D215	← Reading	D200~D215 in the slave PLC whose station address is K2
D250~D265	→ Writing	D250~D265 in the slave PLC whose station address is K2
D300~D315	← Reading	D300~D315 in the slave PLC whose station address is K3
D350~D365	→ Writing	D350~D365 in the slave PLC whose station address is K3
D400~D415	← Reading	D400~D415 in the slave PLC whose station address is K3
D450~D465	→ Writing	D450~D465 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D115	All are 0.	D100~D115 in slave station 1	All are 5000.
D150~D165	All are 1000.	D150~D165 in slave station 1	All are 0.
D200~D215	All are 0.	D200~D215 in slave station 1	All are 6000.
D250~D265	All are 2000.	D250~D265 in slave station 1	All are 0.
D300~D315	All are 0.	D300~D315 in slave station 2	All are 7000.

Master PLC	Value	Slave PLC	Value
D350~D365	All are 3000.	D350~D365 in slave station 2	All are 0.
D400~D415	All are 0.	D400~D415 in slave station 2	All are 8000.
D450~D465	All are 4000.	D450~D465 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D115	All are 5000.	D100~D115 in slave station 1	All are 5000.
D150~D165	All are 1000.	D150~D165 in slave station 1	All are 1000.
D200~D215	All are 6000.	D200~D215 in slave station 1	All are 6000.
D250~D265	All are 2000.	D250~D265 in slave station 1	All are 2000.
D300~D315	All are 7000.	D300~D315 in slave station 2	All are 7000.
D350~D365	All are 3000.	D350~D365 in slave station 2	All are 3000.
D400~D415	All are 8000.	D400~D415 in slave station 2	All are 8000.
D450~D465	All are 4000.	D450~D465 in slave station 2	All are 4000.

## 6. Example 4—Reading and Writing Simultaneously in a Polling Cycle (M1354=On)

If M1354 is On, the Modbus function code H'17 (reading and writing simultaneously in a polling cycle through a PLC link) will be used to execute a PLC link. (The master station and the slave stations in the examples below are DVP-EH3 series PLCs.)

### 6.1 Using the PLC Link Wizard in WPLSoft (ASCII/RTU Mode)

#### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with two slave stations (two DVP-EH3 series PLCs) in a polling cycle through a PLC link.

#### 【Setting station addresses of PLCs】

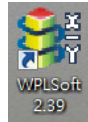
Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

#### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

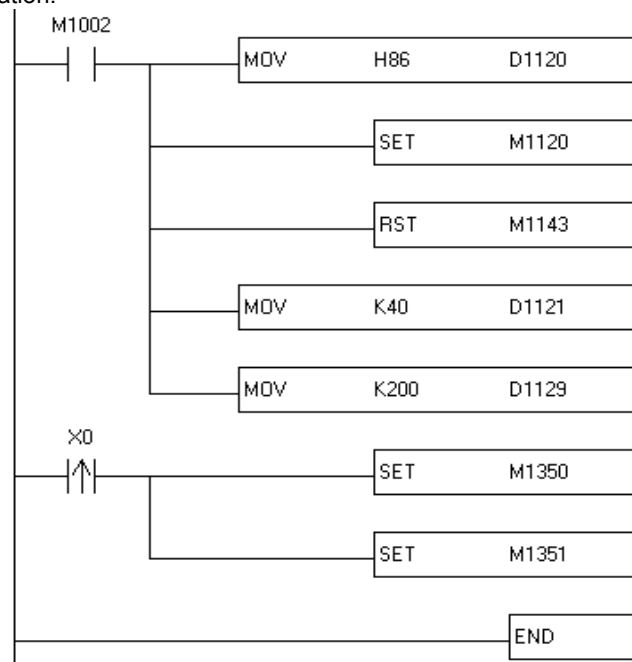
## 【PLC link wizard】

**Step 1:** Start WPLSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

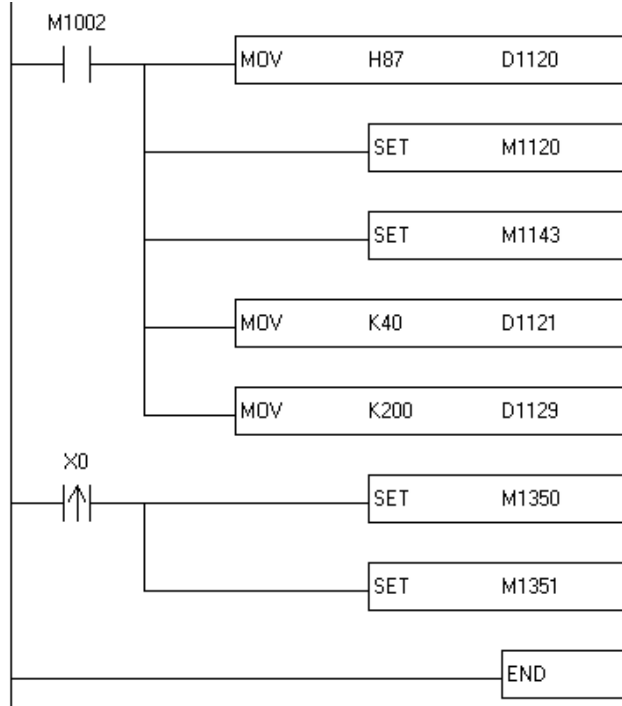


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to specify the stations which need to be linked (M1355 is On).

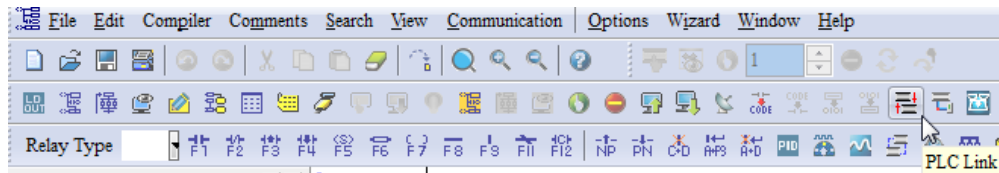
Program for ASCII communication:



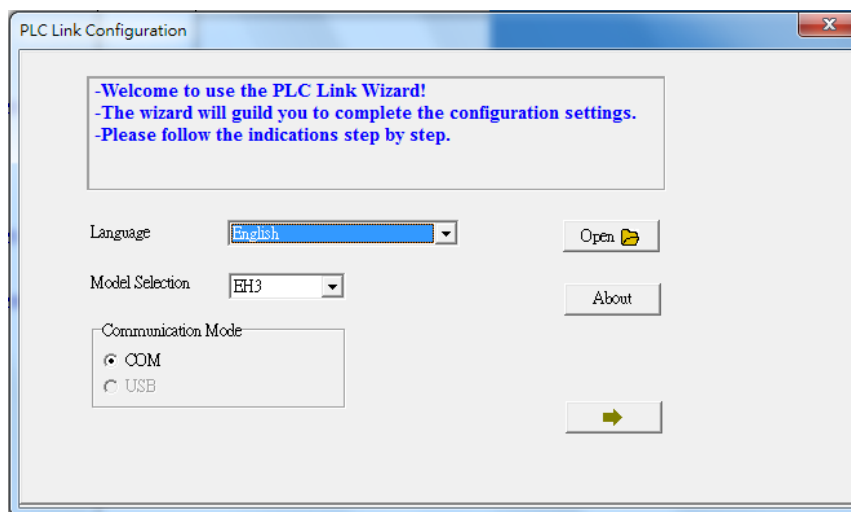
Program for RTU communication:




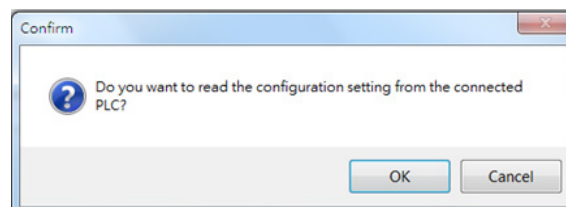
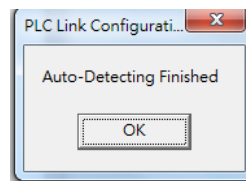
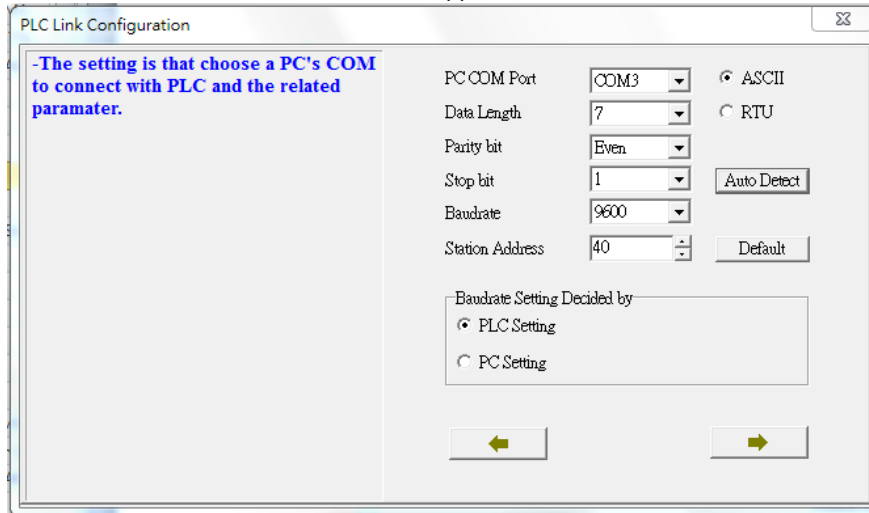
**Step 2:** Click the PLC link wizard  in WPLSoft.



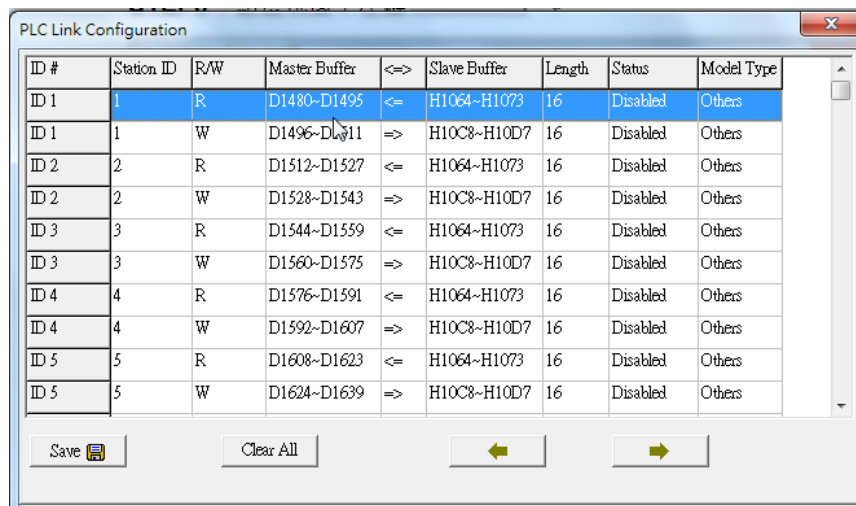
**Step 3:** Select a language in the **Language** drop-down list box, select a model in the **Model Selection** box, and click




**Step 4:** Set a communication format for COM1 in the master PLC, click **Auto Detect**, click **OK** in the window which appears, click , and click **OK** in the window which appears.

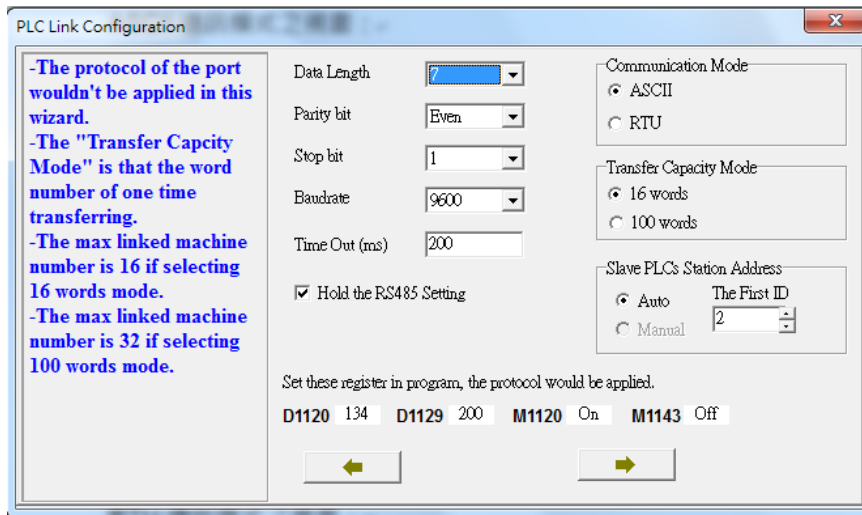


**Step 5:** Click .

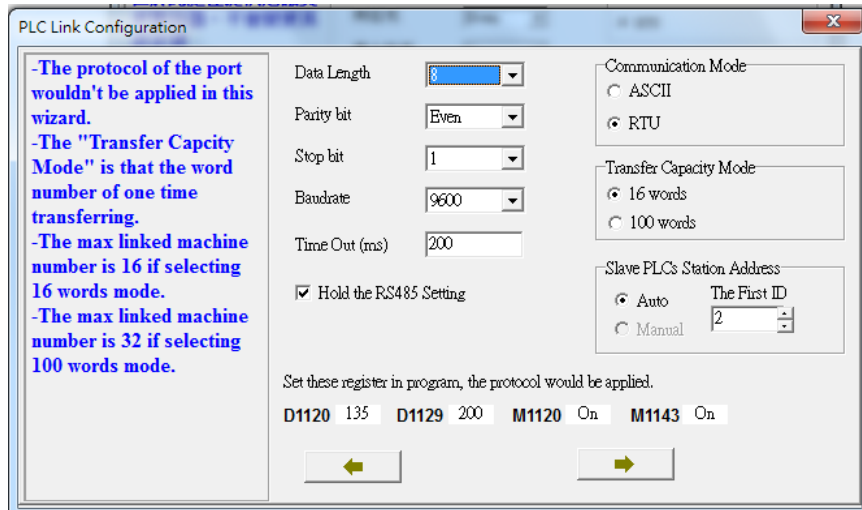


**Step 6:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, select the **Auto** option button, select **2** in the **The First ID** box in the **Slave PLCs Station Address** section, and click .

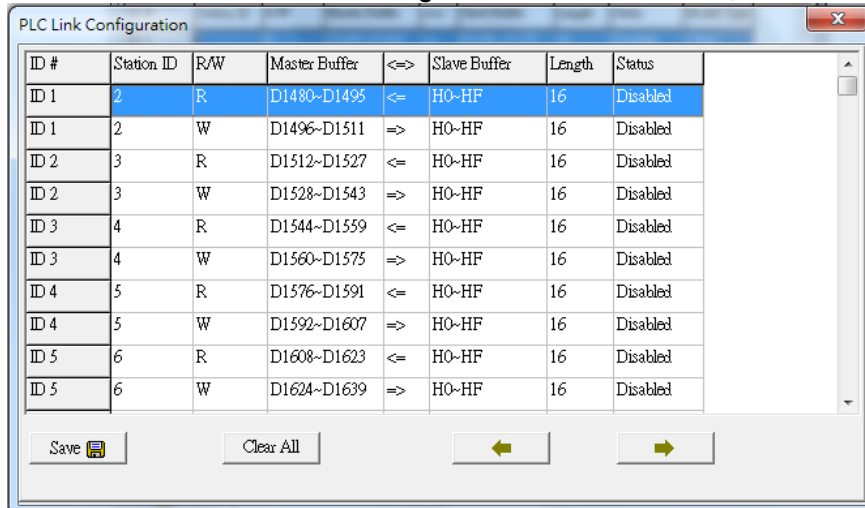
Window for ASCII communication:



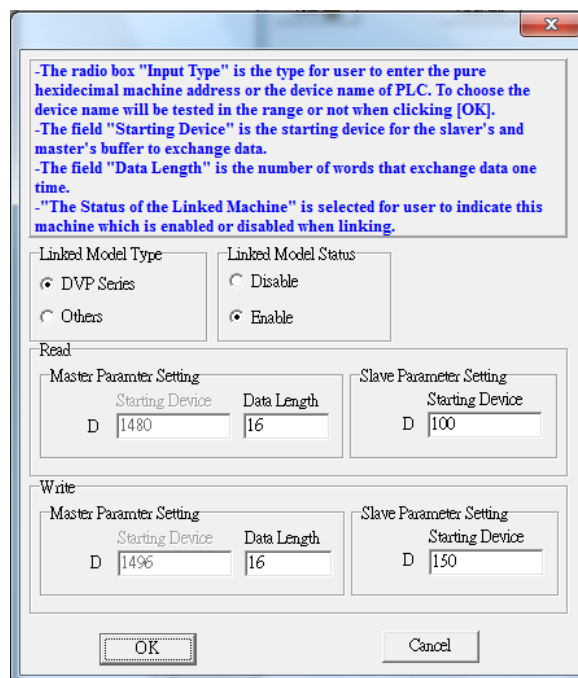
Window for RTU communication:



**Step 7:** Double-click the **ID 1 (Station ID 2)** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1360 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “100” in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type “150” in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	↔	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	←	H0~HF	16	Disabled
ID 1	2	W	D1496~D1511	⇒	H0~HF	16	Disabled
ID 2	3	R	D1512~D1527	←	H0~HF	16	Disabled
ID 2	3	W	D1528~D1543	⇒	H0~HF	16	Disabled
ID 3	4	R	D1544~D1559	←	H0~HF	16	Disabled
ID 3	4	W	D1560~D1575	⇒	H0~HF	16	Disabled
ID 4	5	R	D1576~D1591	←	H0~HF	16	Disabled
ID 4	5	W	D1592~D1607	⇒	H0~HF	16	Disabled
ID 5	6	R	D1608~D1623	←	H0~HF	16	Disabled
ID 5	6	W	D1624~D1639	⇒	H0~HF	16	Disabled



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

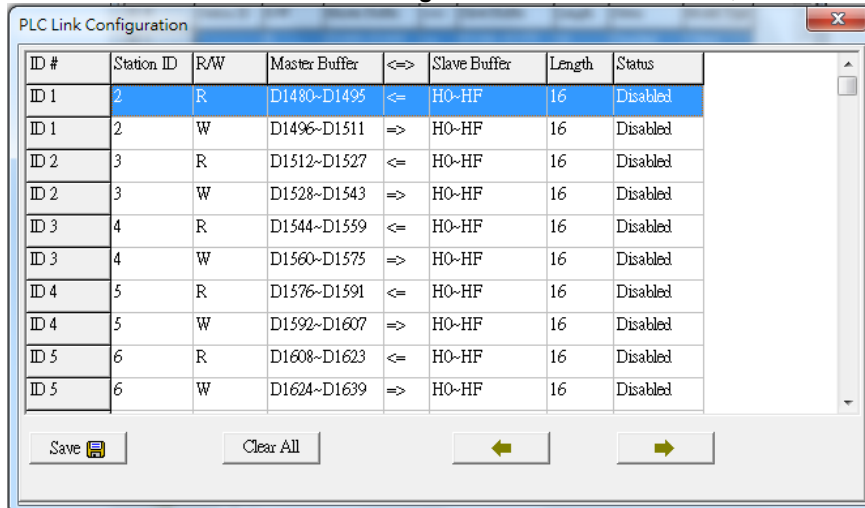
Linked Model Type:  DVP Series,  Others  
 Linked Model Status:  Disable,  Enable

Read Section:  
 Master Parameter Setting: Starting Device: D 1480, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 100

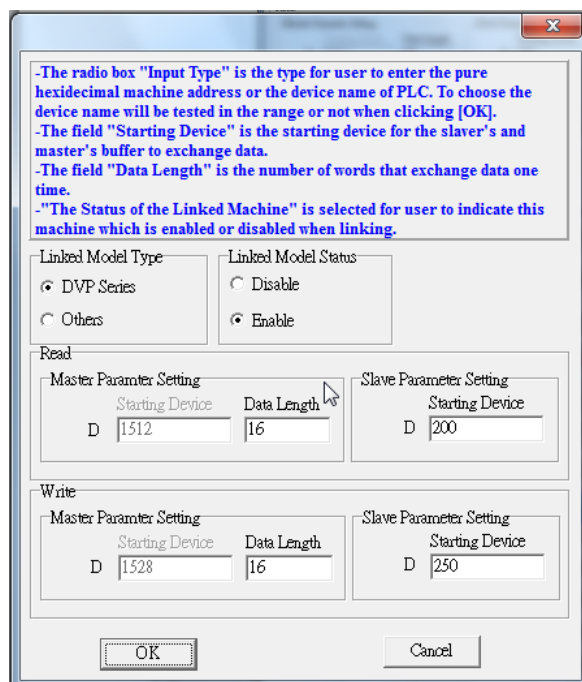
Write Section:  
 Master Parameter Setting: Starting Device: D 1496, Data Length: 16  
 Slave Parameter Setting: Starting Device: D 150

Buttons: OK, Cancel

**Step 8:** Double-click the **ID 2 (Station ID 3)** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1361 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “200” in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type “250” in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	↔	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	←	HO~HF	16	Disabled
ID 1	2	W	D1496~D1511	⇒	HO~HF	16	Disabled
ID 2	3	R	D1512~D1527	←	HO~HF	16	Disabled
ID 2	3	W	D1528~D1543	⇒	HO~HF	16	Disabled
ID 3	4	R	D1544~D1559	←	HO~HF	16	Disabled
ID 3	4	W	D1560~D1575	⇒	HO~HF	16	Disabled
ID 4	5	R	D1576~D1591	←	HO~HF	16	Disabled
ID 4	5	W	D1592~D1607	⇒	HO~HF	16	Disabled
ID 5	6	R	D1608~D1623	←	HO~HF	16	Disabled
ID 5	6	W	D1624~D1639	⇒	HO~HF	16	Disabled



-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

Linked Model Type:  DVP Series,  Others

Linked Model Status:  Disable,  Enable

Read

Master Parameter Setting: Starting Device: D 1512, Data Length: 16

Slave Parameter Setting: Starting Device: D 200

Write

Master Parameter Setting: Starting Device: D 1528, Data Length: 16

Slave Parameter Setting: Starting Device: D 250

Buttons: OK, Cancel

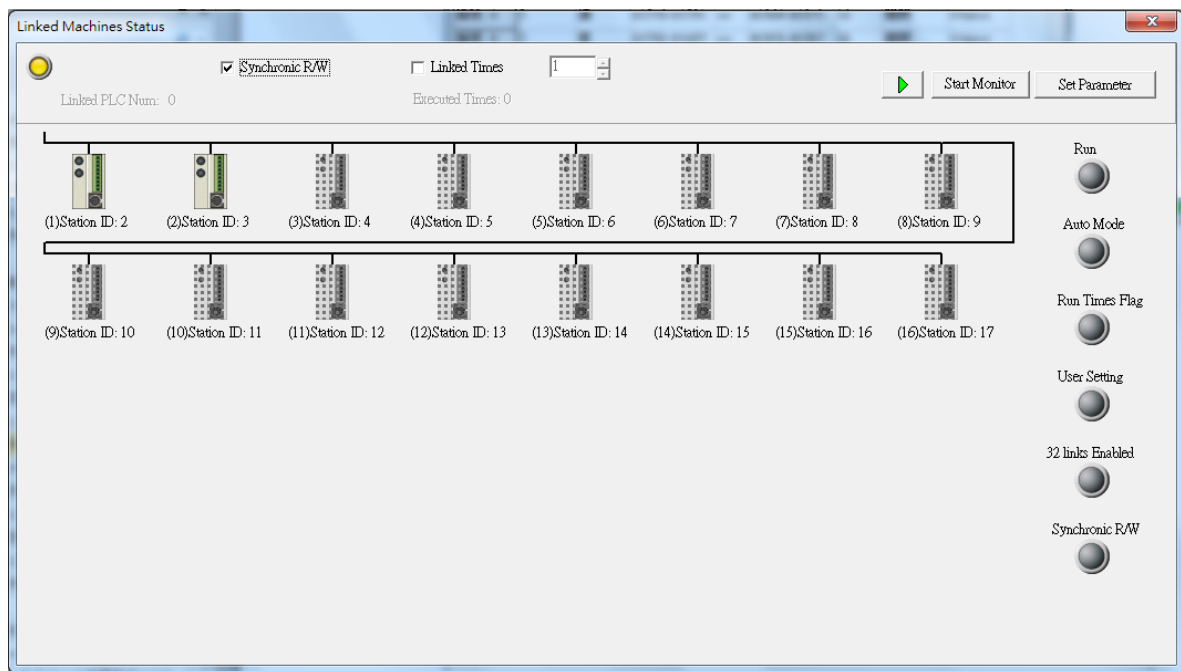


**Step 9:** Check whether the contents of the ID 1 block~the ID 4 block are correct, and then click 

ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	2	R	D1480~D1495	<=>	D100~D115	16	Enabled
ID 1	2	W	D1496~D1511	=>	D150~D165	16	Enabled
ID 2	3	R	D1512~D1527	<=>	D200~D215	16	Enabled
ID 2	3	W	D1528~D1543	=>	D250~D265	16	Enabled
ID 3	4	R	D1544~D1559	<=>	H0~HF	16	Disabled
ID 3	4	W	D1560~D1575	=>	H0~HF	16	Disabled
ID 4	5	R	D1576~D1591	<=>	H0~HF	16	Disabled
ID 4	5	W	D1592~D1607	=>	H0~HF	16	Disabled
ID 5	6	R	D1608~D1623	<=>	H0~HF	16	Disabled
ID 5	6	W	D1624~D1639	=>	H0~HF	16	Disabled

Buttons: Save, Clear All, Left Arrow, Right Arrow

**Step 10:** Select the **Synchronic R/W** checkbox, click the **Set Parameter** button, click the Start Monitor button, and click  or set X0 to On.



Linked Machines Status

Synchronic R/W     Linked Times    1

Linked PLC Num: 0    Executed Times: 0

Start Monitor    Set Parameter

Run

Auto Mode

Run Times Flag

User Setting

32 links Enabled

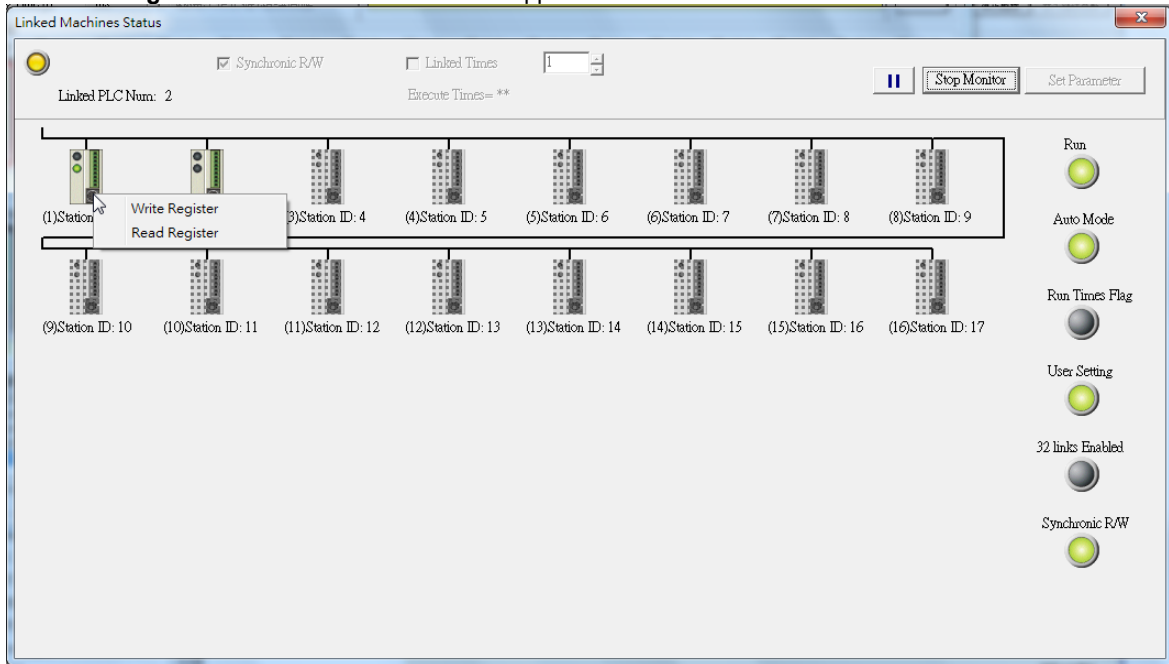
Synchronic R/W

(1)Station ID: 2   (2)Station ID: 3   (3)Station ID: 4   (4)Station ID: 5   (5)Station ID: 6   (6)Station ID: 7   (7)Station ID: 8   (8)Station ID: 9

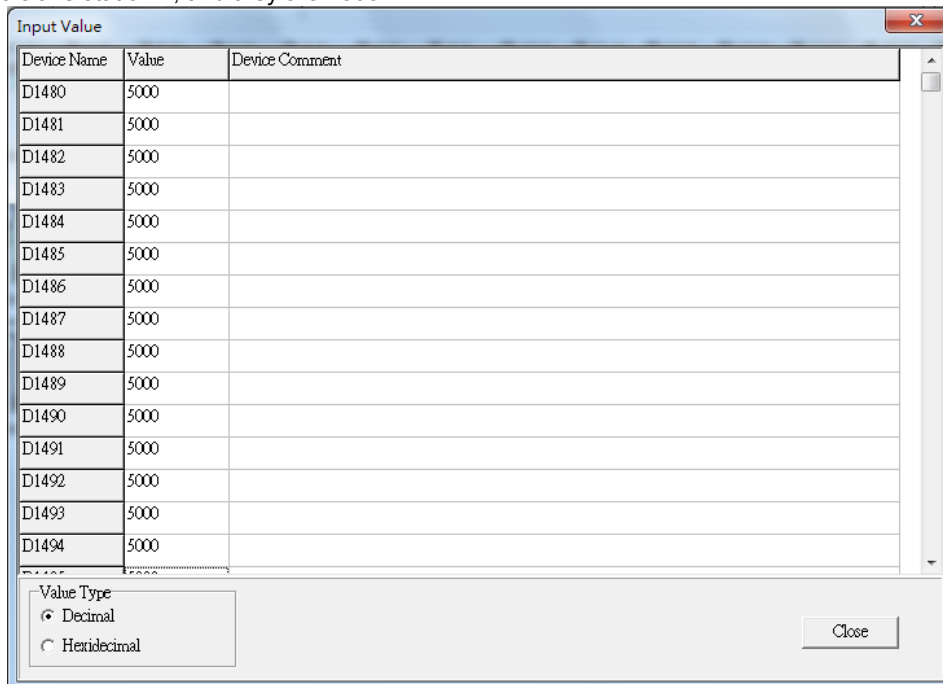
(9)Station ID: 10   (10)Station ID: 11   (11)Station ID: 12   (12)Station ID: 13   (13)Station ID: 14   (14)Station ID: 15   (15)Station ID: 16   (16)Station ID: 17

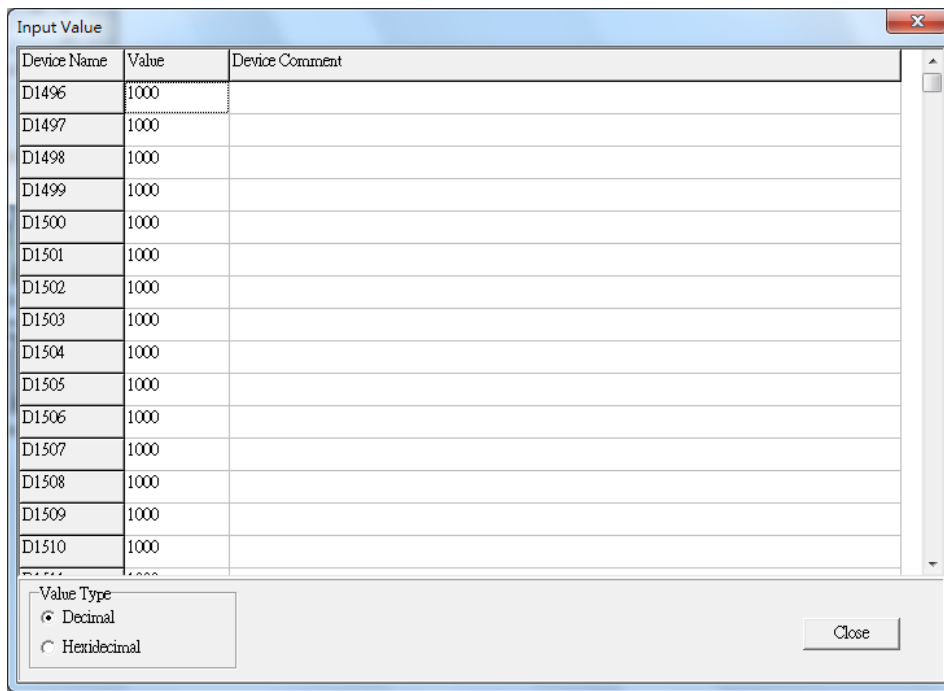
**Step 11:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1) /slave station (2), and click **Write Register/Read Register** on the context menu which appears.

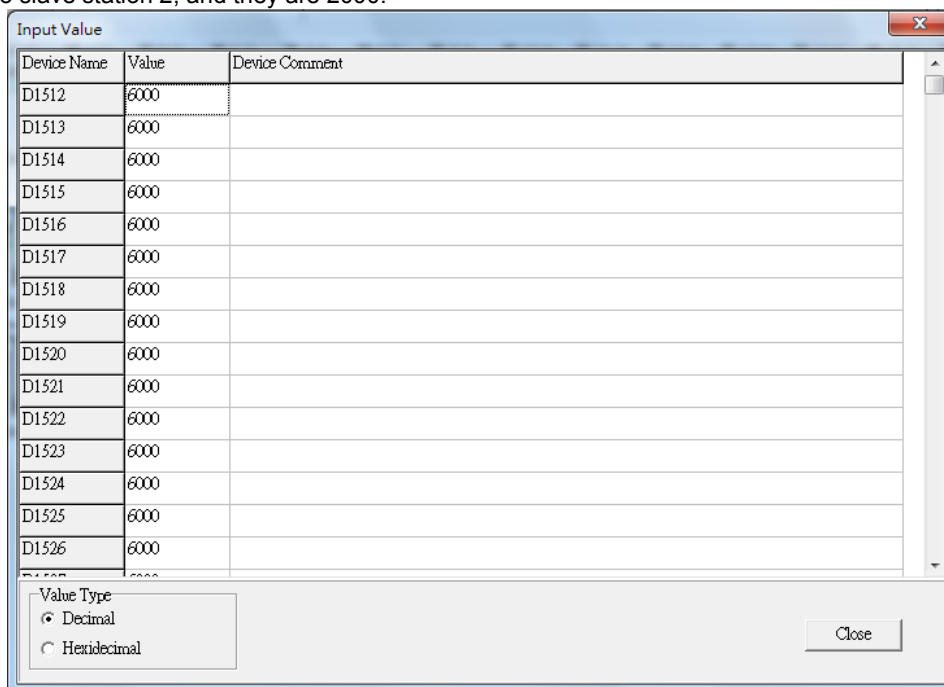


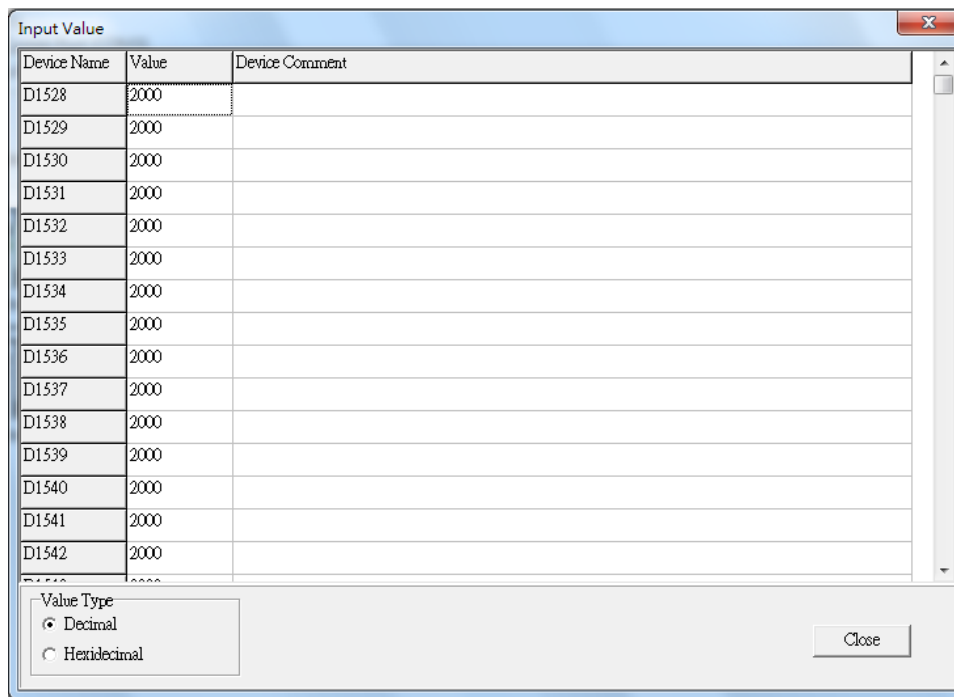
**Step 12:** The values in D1480~D1495 are values read from slave 1, and they are 5000. The values in D1496~D1511 are values written to slave station 1, and they are 1000.





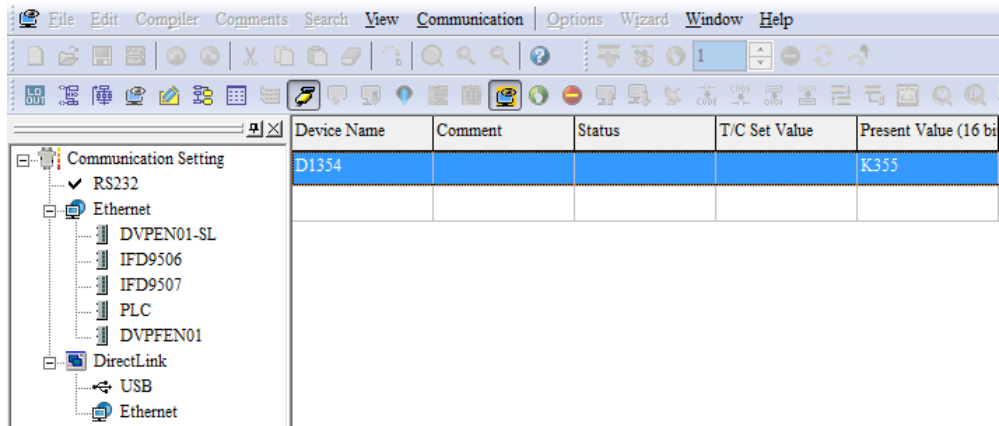


**Step 13:** The values in D1512~D1527 are values read from slave 2, and they are 6000. The values in D1528~D1543 are values written to slave station 2, and they are 2000.



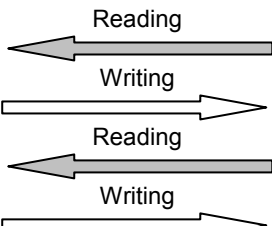


**Step 14:** Close the **Linked Machines Status** window, click , click , and type "D1354". The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D1480~D1495 in the master station, and the values in D1496~D1511 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 2 are written to D1512~D1527 in the master station, and the values in D1528~D1543 in the master station are written to D250~D265 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D1480~D1495		D100~D115 in the slave PLC whose station address is K2
D1496~D1511		D150~D165 in the slave PLC whose station address is K2
D1512~D1527		D200~D215 in the slave PLC whose station address is K3
D1528~D1543		D250~D265 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 0.
D1512~D1527	All are 0.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 1000.
D1512~D1527	All are 6000.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 2000.

## 6.2 Using the PLC Link Wizard in ISPSoft (ASCII/RTU Mode)

### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges sixteen pieces of data (sixteen words) with two slave stations (two DVP-EH3 series PLCs) in a polling cycle through a PLC link.

### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	3. ASCII, 9600, 7, E, 1 (D1120=H'86) 4. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

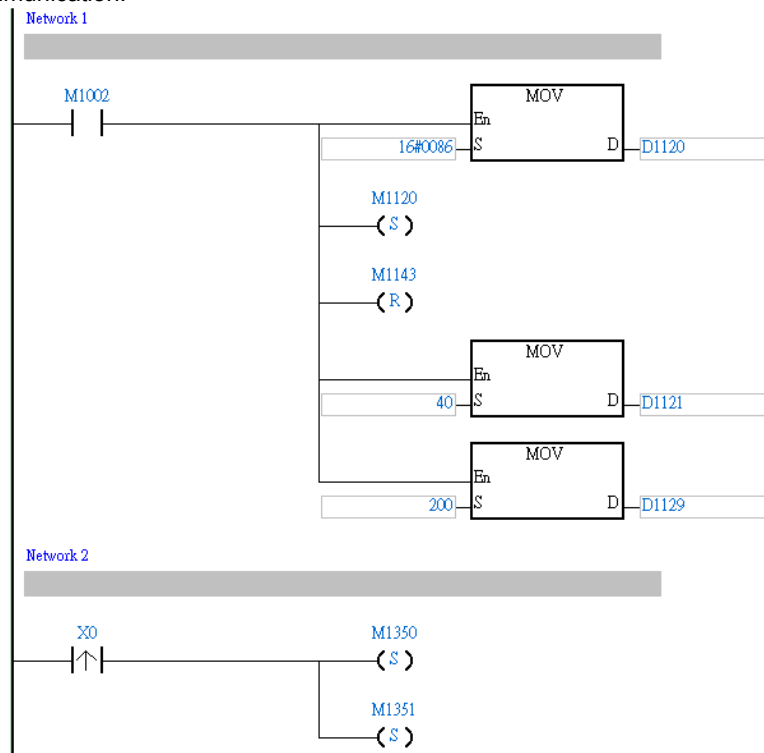
【 PLC link wizard 】

**Step 1:** Start ISPSOft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

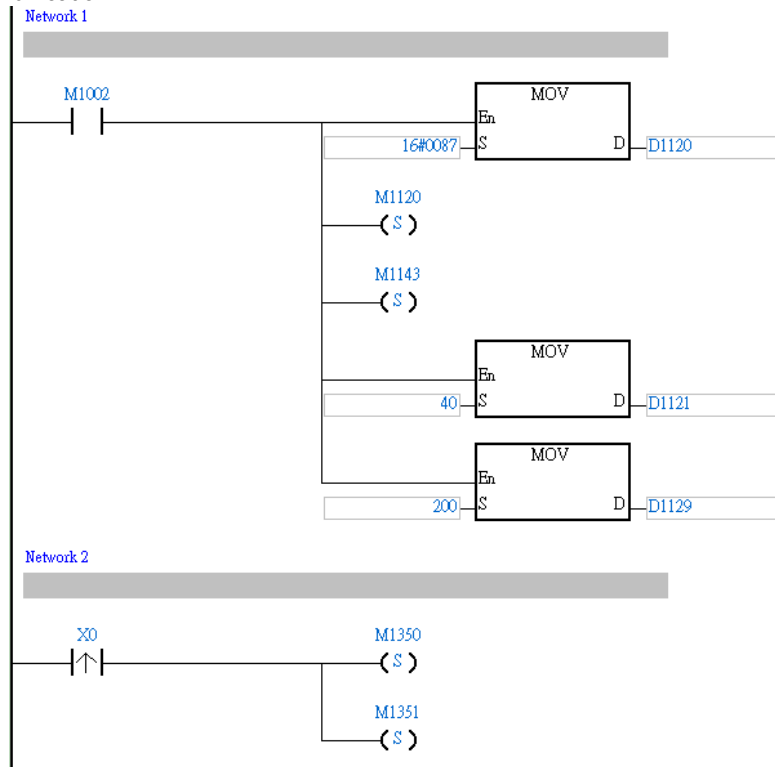




Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On).

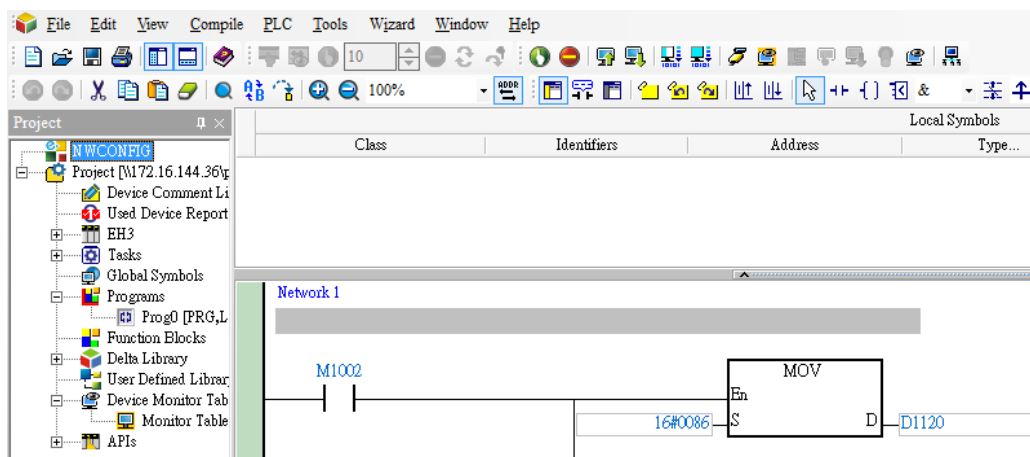
Program for ASCII communication:

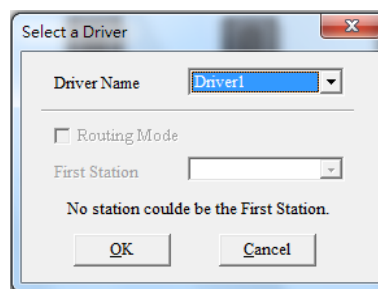
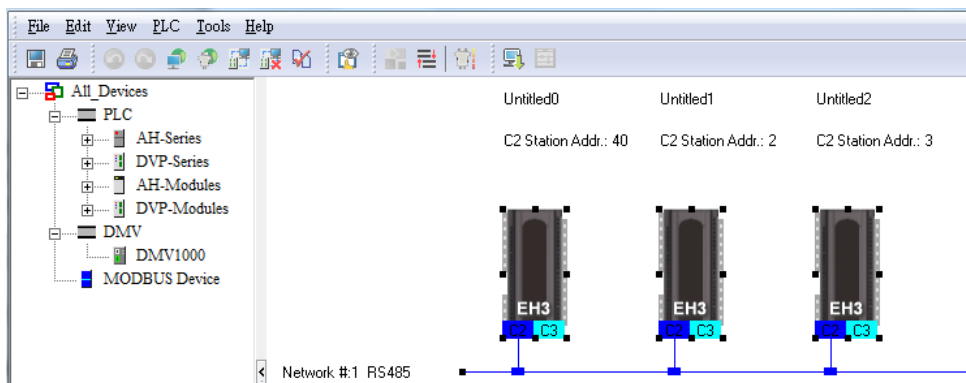



Program for RTU communication:

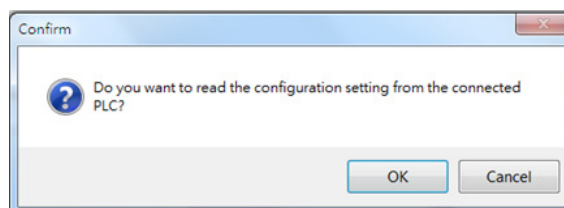
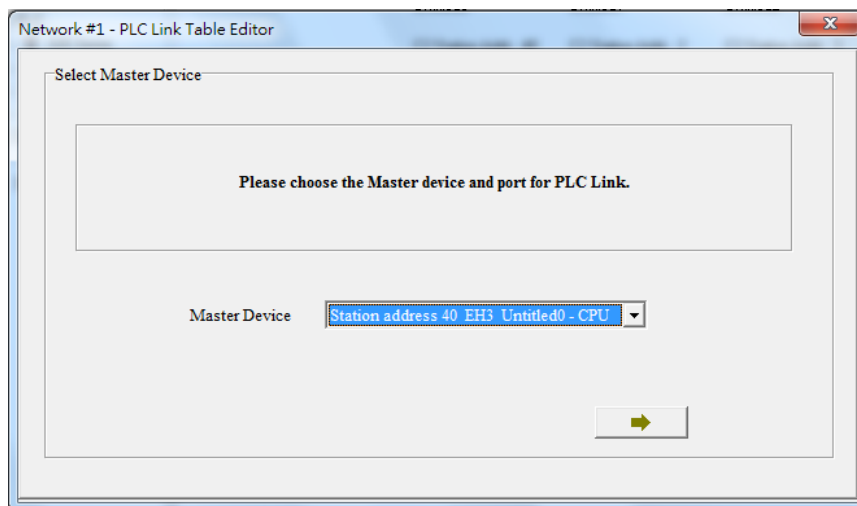


**Step 2:** Double-click **NWCONFIG** in the project management area, create a link, click , select **Driver 1** in the **Driver Name** drop-down list box, click **OK**, select the master station and the slave stations, and click .



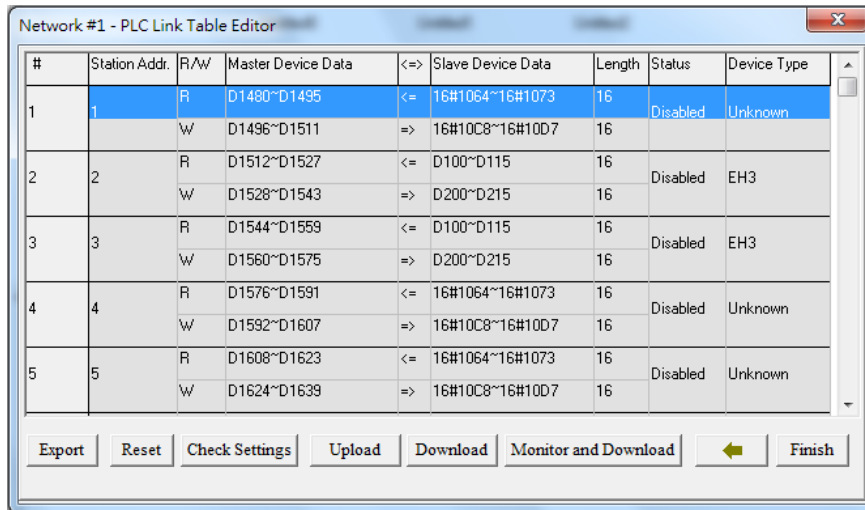



**Step 3:** Select a PLC in the **Master Device** drop-down list box, click , and click **OK** in the window which appears.



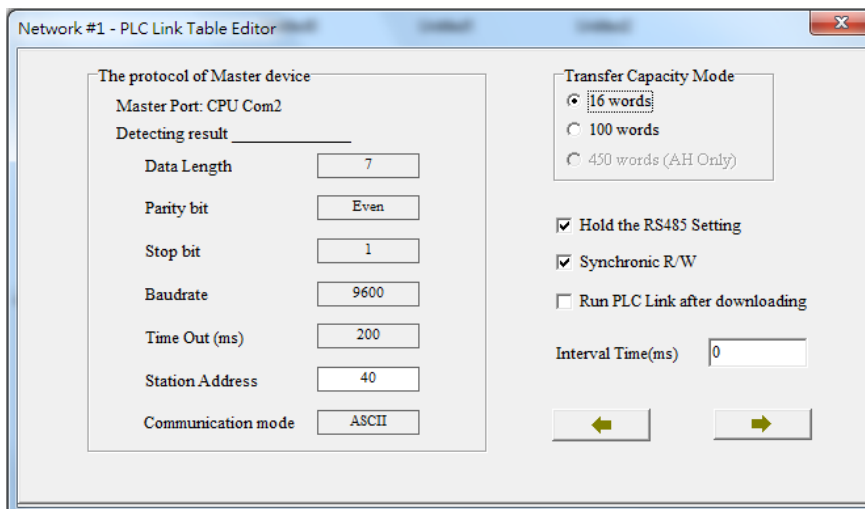


**Step 4:** Click .

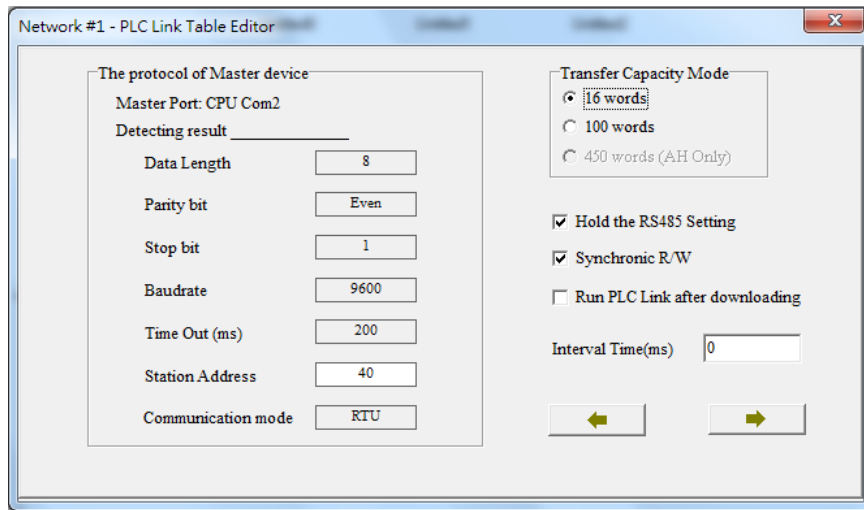


**Step 5:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, select the **Synchronic R/W** checkbox, unselect the **Run PLC Link after downloading** checkbox, type "0" in the **Interval Time** box, and click .

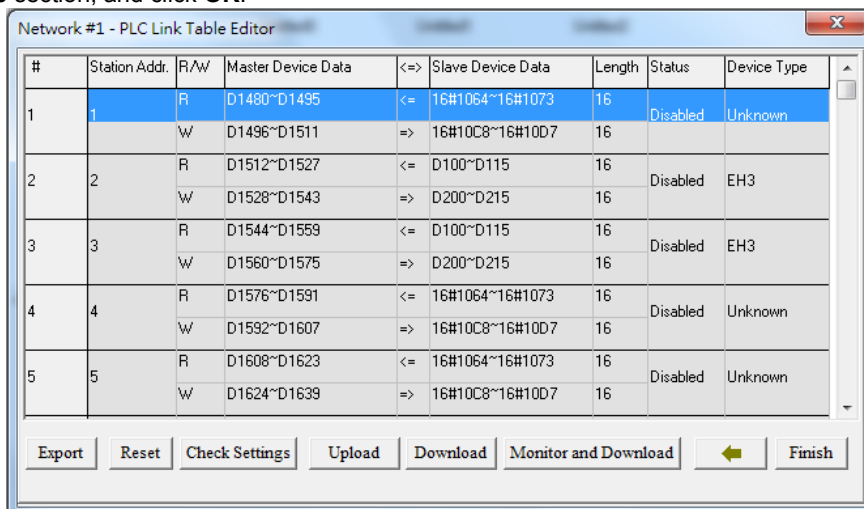
Window for ASCII communication:

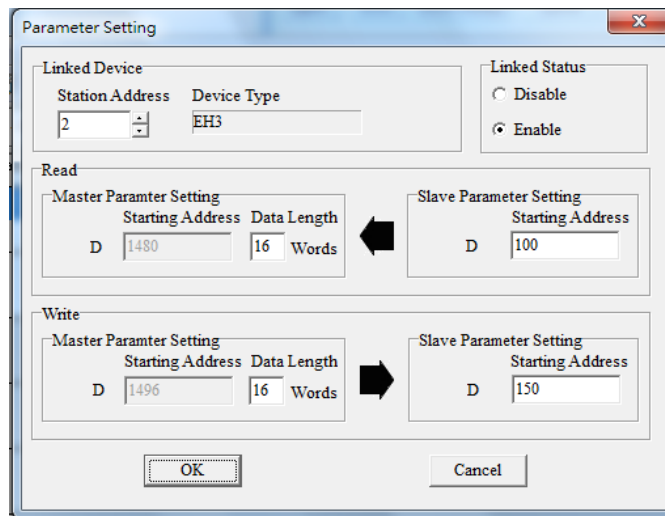


Window for RTU communication:

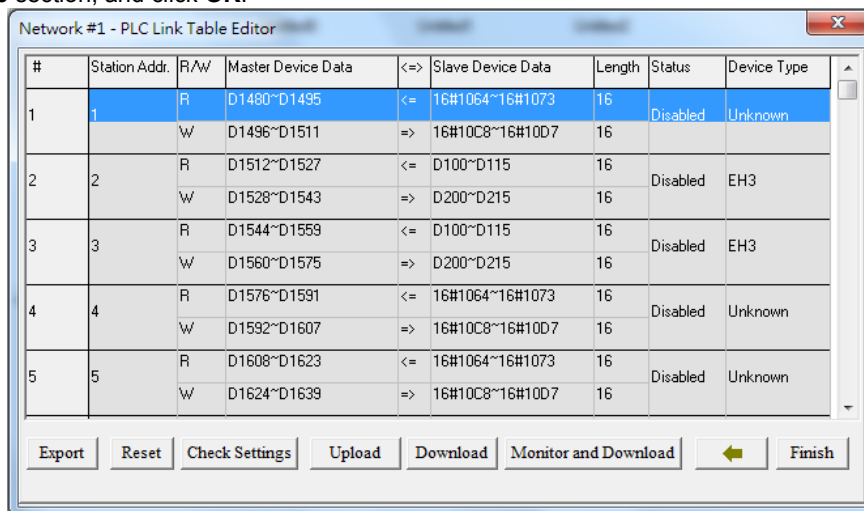


**Step 6:** Double-click the 1 block in the **PLC Link Table Editor** window, select 2 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1360 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “100” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “150” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.

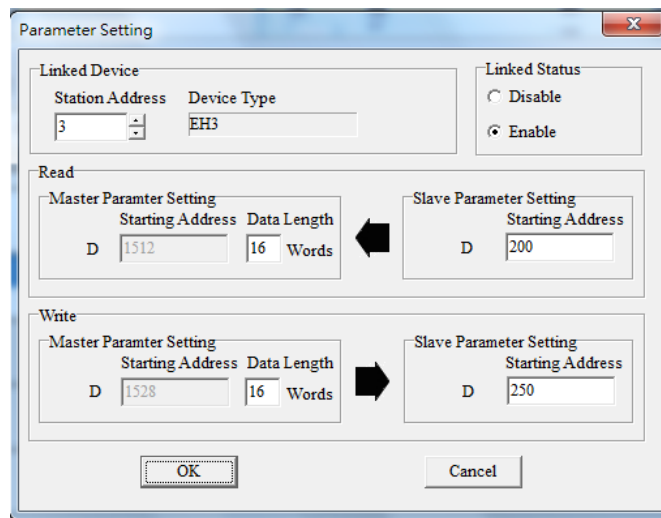




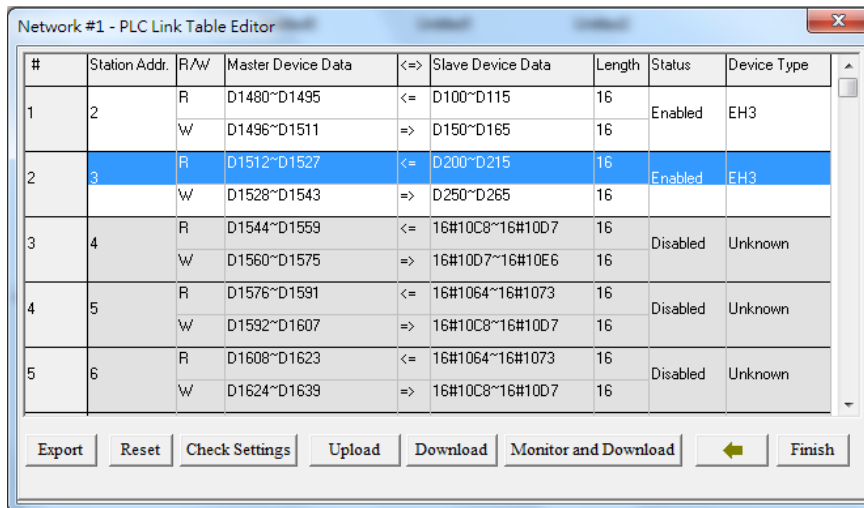
**Step 7:** Double-click the 2 block in the **PLC Link Table Editor** window, select 3 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1361 to On), type “16” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “200” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “250” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16	Disabled	Unknown
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16	Disabled	EH3
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16	Disabled	EH3
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16	Disabled	Unknown
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16	Disabled	Unknown



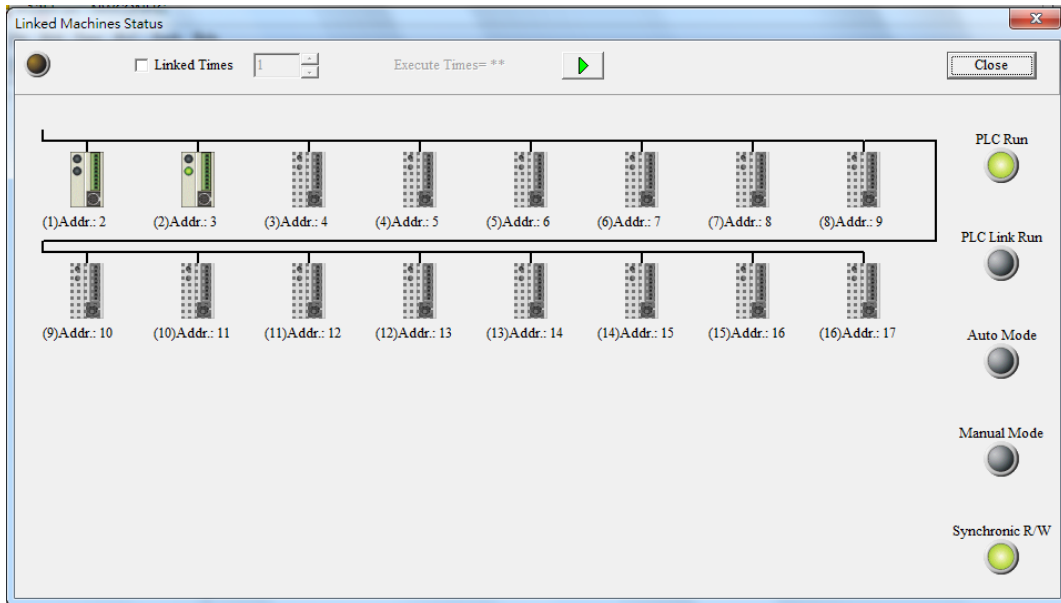
**Step 8:** Check whether the contents of the 1 block~the 2 block are correct, and then click **Monitor and Download**.





#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	2	R	D1480~D1495	<=	D100~D115	16	Enabled	EH3
		W	D1496~D1511	=>	D150~D165	16		
2	3	R	D1512~D1527	<=	D200~D215	16	Enabled	EH3
		W	D1528~D1543	=>	D250~D265	16		
3	4	R	D1544~D1559	<=	16#10C8~16#10D7	16	Disabled	Unknown
		W	D1560~D1575	=>	16#10D7~16#10E6	16		
4	5	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	6	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		

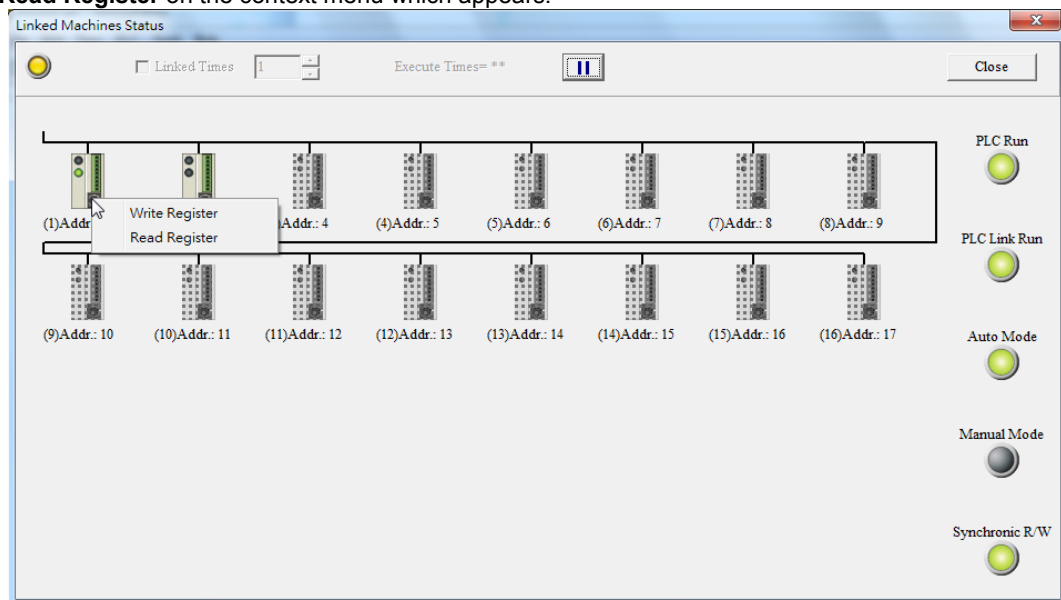
Buttons at the bottom: Export, Reset, Check Settings, Upload, Download, Monitor and Download, Finish

**Step 9:** Click  or set X0 to On.

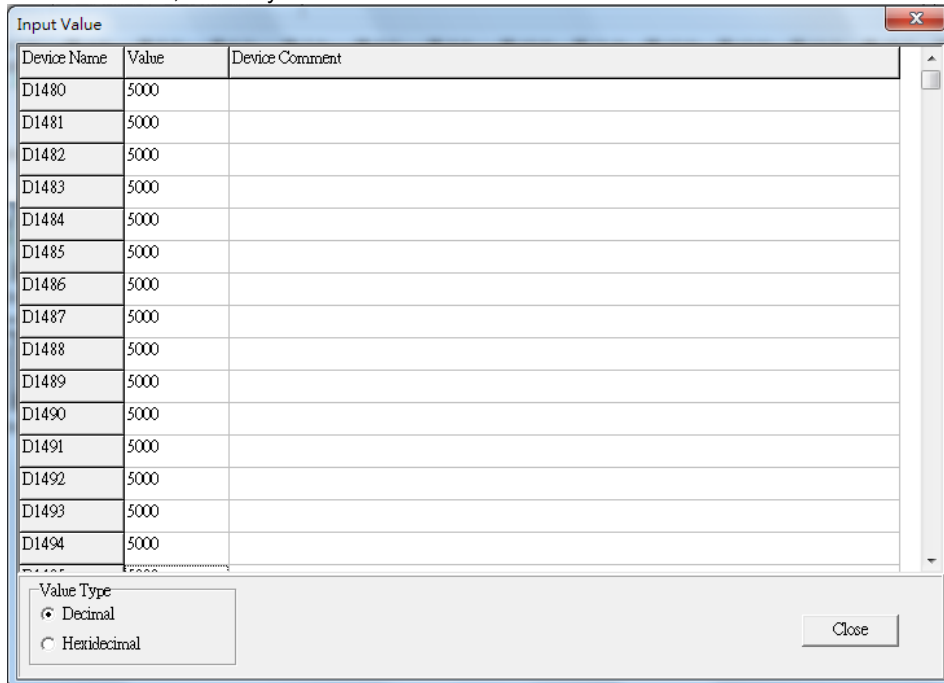


**Step 10:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.



**Step 11:** The values in D1480~D1495 are values read from slave 1, and they are 5000. The values in D1496~D1511 are values written to slave station 1, and they are 1000.

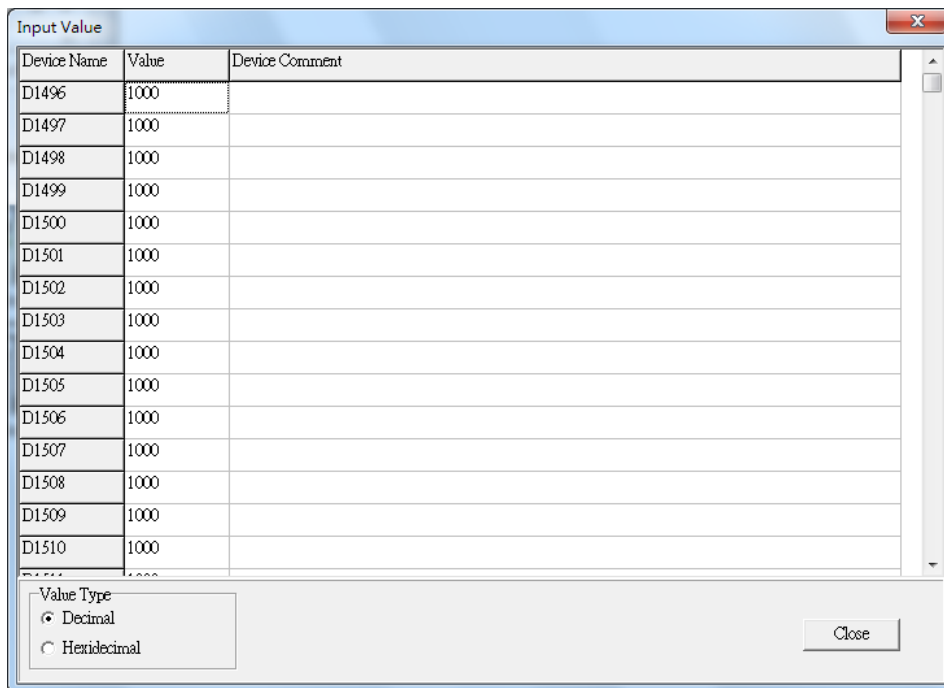


The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D1480	5000	
D1481	5000	
D1482	5000	
D1483	5000	
D1484	5000	
D1485	5000	
D1486	5000	
D1487	5000	
D1488	5000	
D1489	5000	
D1490	5000	
D1491	5000	
D1492	5000	
D1493	5000	
D1494	5000	

Value Type  
 Decimal  
 Hexidecimal

Close



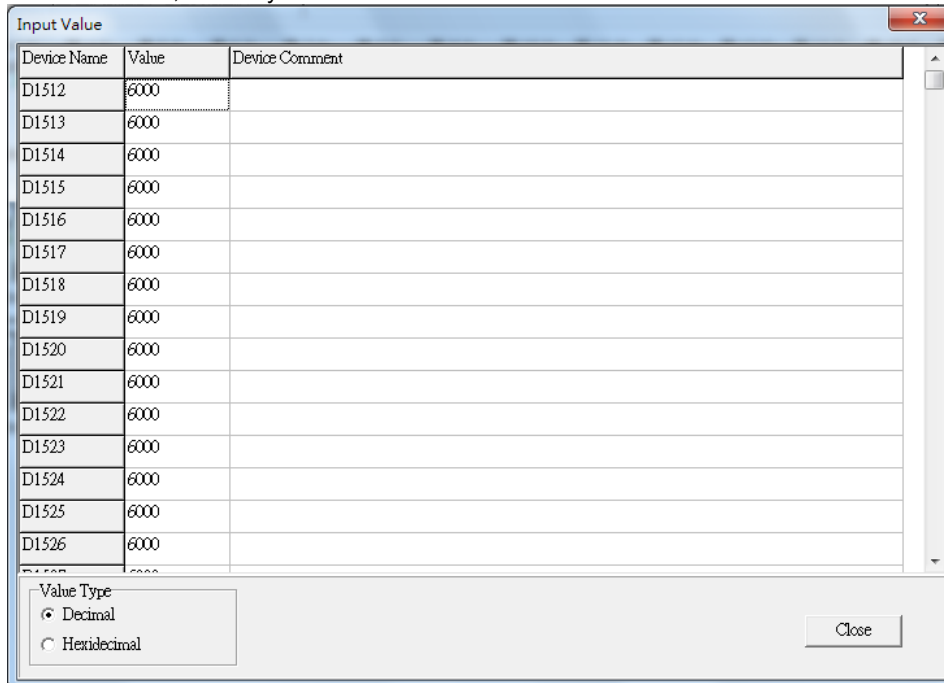
The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D1496	1000	
D1497	1000	
D1498	1000	
D1499	1000	
D1500	1000	
D1501	1000	
D1502	1000	
D1503	1000	
D1504	1000	
D1505	1000	
D1506	1000	
D1507	1000	
D1508	1000	
D1509	1000	
D1510	1000	

Value Type  
 Decimal  
 Hexidecimal

Close

**Step 12:** The values in D1512~D1527 are values read from slave 2, and they are 6000. The values in D1528~D1543 are values written to slave station 2, and they are 2000.

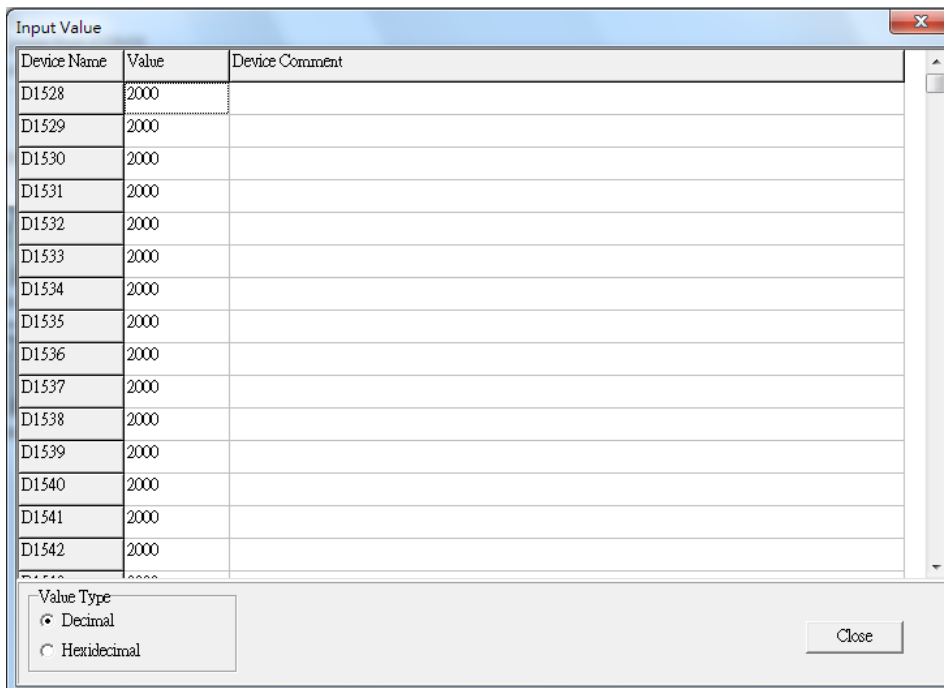


The screenshot shows a dialog box titled "Input Value" with a table of device names and their corresponding values. The "Value Type" is set to "Decimal".

Device Name	Value	Device Comment
D1512	6000	
D1513	6000	
D1514	6000	
D1515	6000	
D1516	6000	
D1517	6000	
D1518	6000	
D1519	6000	
D1520	6000	
D1521	6000	
D1522	6000	
D1523	6000	
D1524	6000	
D1525	6000	
D1526	6000	

Value Type:  
 Decimal  
 Hexidecimal

Close




The screenshot shows a dialog box titled "Input Value" with a table of device names and their corresponding values. The "Value Type" is set to "Decimal".

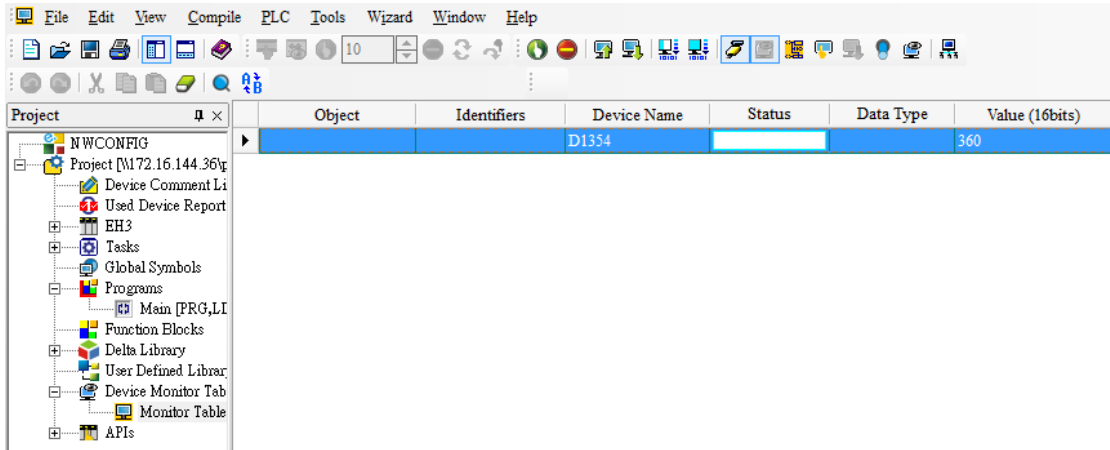
Device Name	Value	Device Comment
D1528	2000	
D1529	2000	
D1530	2000	
D1531	2000	
D1532	2000	
D1533	2000	
D1534	2000	
D1535	2000	
D1536	2000	
D1537	2000	
D1538	2000	
D1539	2000	
D1540	2000	
D1541	2000	
D1542	2000	

Value Type:  
 Decimal  
 Hexidecimal

Close

**Step 13:** Close the **Linked Machines Status** window, create a device monitoring table by means of **Device Monitor**

**Table** in the project management area, type "D1354" in the device monitoring table, and click . The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D115 in slave station 1 are written to D1480~D1495 in the master station, and the values in D1496~D1511 in the master station are written to D150~D165 in slave station 1. The values in D200~D215 in slave station 2 are written to D1512~D1527 in the master station, and the values in D1528~D1543 in the master station are written to D250~D265 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D1480~D1495	← Reading	D100~D115 in the slave PLC whose station address is K2
D1496~D1511	→ Writing	D150~D165 in the slave PLC whose station address is K2
D1512~D1527	← Reading	D200~D215 in the slave PLC whose station address is K3
D1528~D1543	→ Writing	D250~D265 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 0.
D1512~D1527	All are 0.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1511	All are 1000.	D150~D165 in slave station 1	All are 1000.
D1512~D1527	All are 6000.	D200~D215 in slave station 2	All are 6000.
D1528~D1543	All are 2000.	D250~D265 in slave station 2	All are 2000.



## 7. Example 5—Enabling the Function of Linking Thirty-two PLCs and Exchanging More than Sixteen Pieces of Data (M1353=On)

If M1353 is On, the maximum length of the data which can be read/written by a PLC link will be 100 words, and users can specify data registers in which data can be stored. (The master stations and the slave stations in the examples below are DVP-EH3 series PLCs.)

### 7.1 Using the PLC Link Wizard in WPLSoft (ASCII/RTU Mode)

#### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges one hundred pieces of data (one hundred words) with two slave stations (two DVP-EH3 series PLCs) through a PLC link which enables the function of linking thirty-two PLCs and exchanging more than sixteen pieces of data.

#### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

#### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

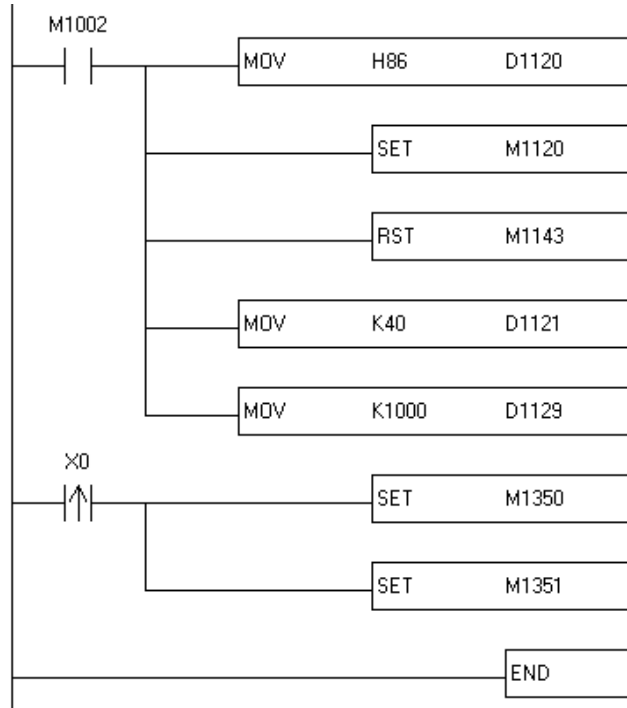
#### 【PLC link wizard】

**Step 1:** Start WPLSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

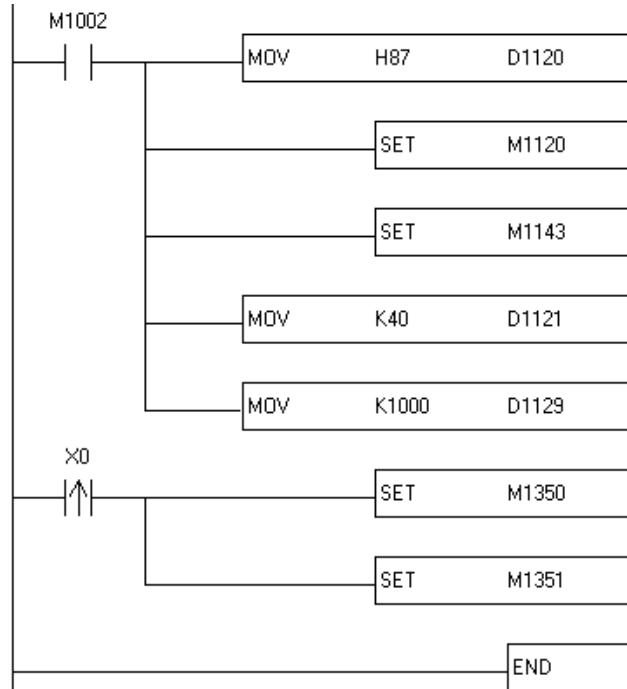


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to specify the stations which need to be linked (M1355 is On).

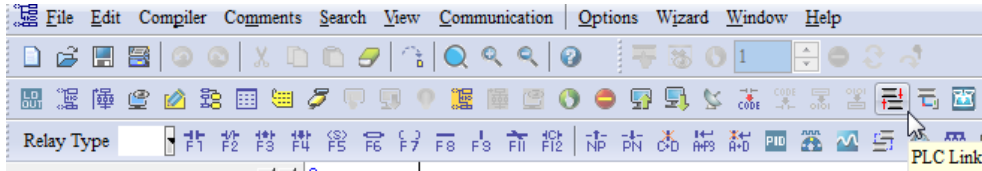
Program for ASCII communication:




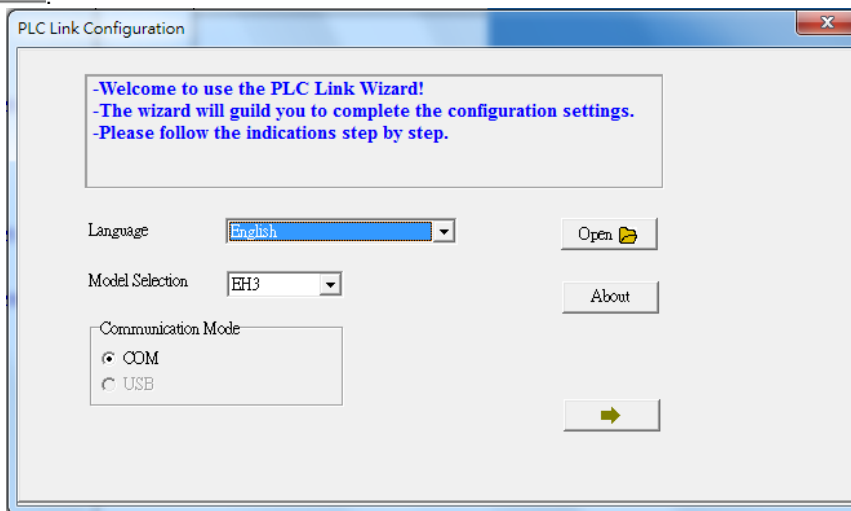
Program for RTU communication:




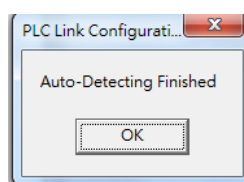
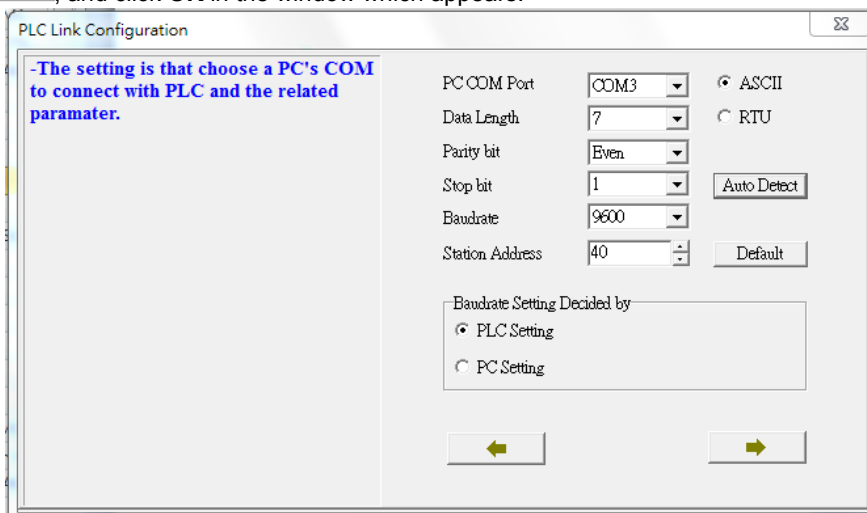
**Step 2:** Click the PLC link wizard  in WPLSoft.

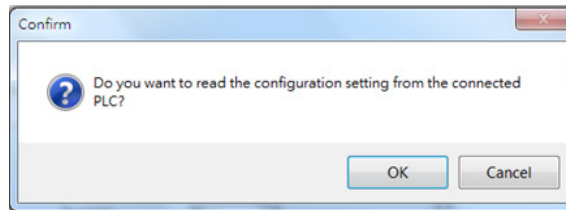


**Step 3:** Select a language in the **Language** drop-down list box, select a model in the **Model Selection** drop-down list box, and click .



**Step 4:** Set a communication format for COM1 in the master PLC, click **Auto Detect**, click **OK** in the window which appears, click , and click **OK** in the window which appears.






Step 5: Click 

ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status	Model Type
ID 1	1	R	D1480-D1495	<=>	H1064-H1073	16	Disabled	Others
ID 1	1	W	D1496-D1511	=>	H10C8-H10D7	16	Disabled	Others
ID 2	2	R	D1512-D1527	<=>	H1064-H1073	16	Disabled	Others
ID 2	2	W	D1528-D1543	=>	H10C8-H10D7	16	Disabled	Others
ID 3	3	R	D1544-D1559	<=>	H1064-H1073	16	Disabled	Others
ID 3	3	W	D1560-D1575	=>	H10C8-H10D7	16	Disabled	Others
ID 4	4	R	D1576-D1591	<=>	H1064-H1073	16	Disabled	Others
ID 4	4	W	D1592-D1607	=>	H10C8-H10D7	16	Disabled	Others
ID 5	5	R	D1608-D1623	<=>	H1064-H1073	16	Disabled	Others
ID 5	5	W	D1624-D1639	=>	H10C8-H10D7	16	Disabled	Others

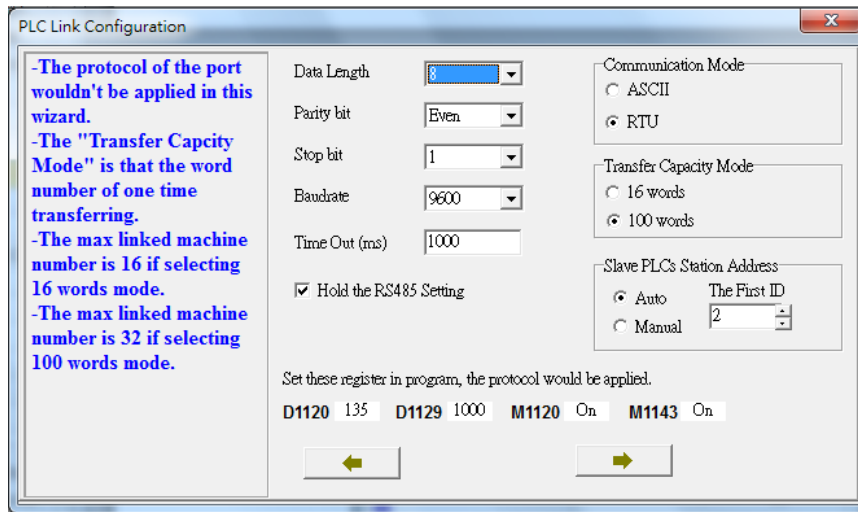
Buttons: Save, Clear All, Left Arrow, Right Arrow

Step 6: The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **100 words** option button in the **Transfer Capacity Mode** section, select the **Auto** option button, select **2** in the **The First ID** box, and click 

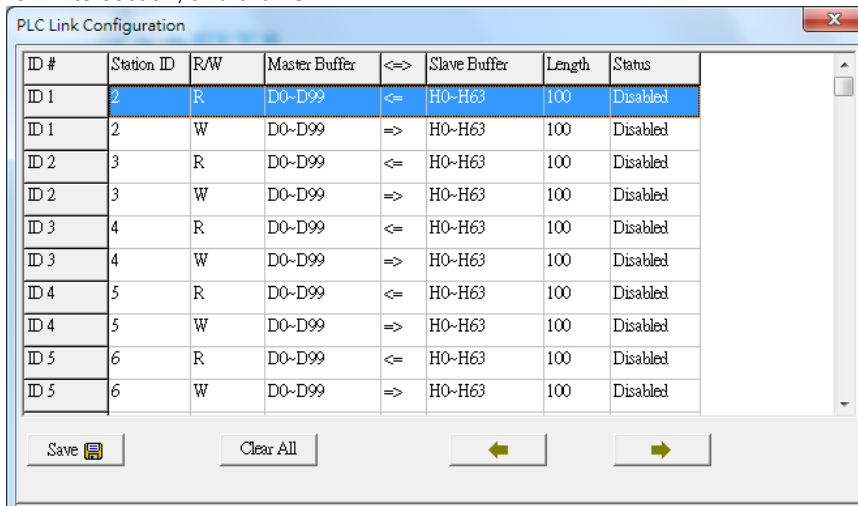
Window for ASCII communication:

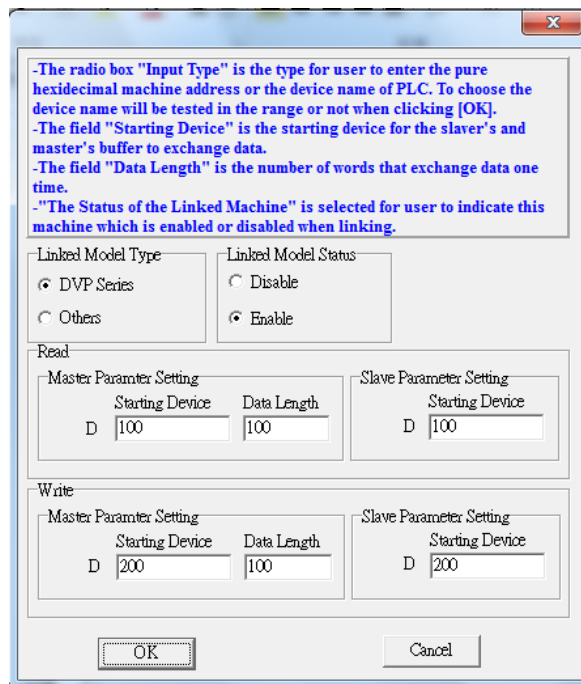
<p><b>-The protocol of the port wouldn't be applied in this wizard.</b></p> <p><b>-The "Transfer Capacity Mode" is that the word number of one time transferring.</b></p> <p><b>-The max linked machine number is 16 if selecting 16 words mode.</b></p> <p><b>-The max linked machine number is 32 if selecting 100 words mode.</b></p>	Data Length: <input type="text" value="7"/>	Communication Mode: <input checked="" type="radio"/> ASCII <input type="radio"/> RTU
	Parity bit: <input type="text" value="Even"/>	Transfer Capacity Mode: <input type="radio"/> 16 words <input checked="" type="radio"/> 100 words
Stop bit: <input type="text" value="1"/>	Baudrate: <input type="text" value="9600"/>	Slave PLCs Station Address: <input checked="" type="radio"/> Auto The First ID <input type="radio"/> Manual <input type="text" value="2"/>
Time Out (ms): <input type="text" value="1000"/>	<input checked="" type="checkbox"/> Hold the RS485 Setting	
<p>Set these register in program, the protocol would be applied.</p> <p>D1120 134 D1129 1000 M1120 On M1143 Off</p>		
<input type="button" value="Left Arrow"/> <input type="button" value="Right Arrow"/>		

Window for RTU communication:

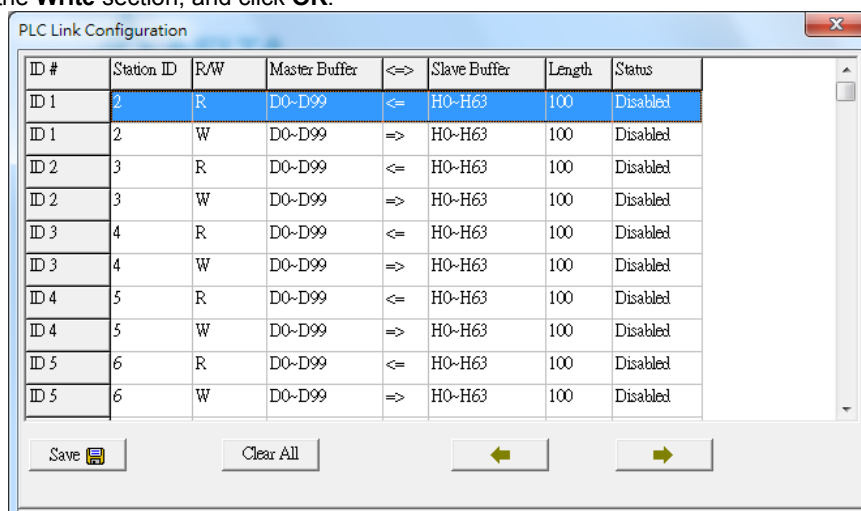


**Step 7:** Double-click the ID 1 block in the PLC Link Configuration window, select the DVP Series option button in the Linked Model Type section, select the Enable option button in the Linked Model Status section (set M1360 to On), type “100” in the Starting Device box in the Mater Parameter Setting section in the Read section, type “200” in the Starting Device box in the Mater Parameter Setting section in the Write section, type “100” in the Data Length boxes in the Mater Parameter Setting sections in the Read and Write sections, type “100” in the Starting Device box in the Slave Parameter Setting section in the Read section, type “200” in the Starting Device box in the Slave Parameter Setting section in the Write section, and click OK.





**Step 8:** Double-click the **ID 2** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1361 to On), type "300" in the **Starting Device** box in the **Master Parameter Setting** section in the **Read** section, type "450" in the **Starting Device** box in the **Master Parameter Setting** section in the **Write** section, type "100" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "300" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "400" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status
ID 1	2	R	D0-D99	<=>	H0-H63	100	Disabled
ID 1	2	W	D0-D99	=>	H0-H63	100	Disabled
ID 2	3	R	D0-D99	<=>	H0-H63	100	Disabled
ID 2	3	W	D0-D99	=>	H0-H63	100	Disabled
ID 3	4	R	D0-D99	<=>	H0-H63	100	Disabled
ID 3	4	W	D0-D99	=>	H0-H63	100	Disabled
ID 4	5	R	D0-D99	<=>	H0-H63	100	Disabled
ID 4	5	W	D0-D99	=>	H0-H63	100	Disabled
ID 5	6	R	D0-D99	<=>	H0-H63	100	Disabled
ID 5	6	W	D0-D99	=>	H0-H63	100	Disabled

Buttons: Save, Clear All, Left Arrow, Right Arrow

-The radio box "Input Type" is the type for user to enter the pure hexadecimal machine address or the device name of PLC. To choose the device name will be tested in the range or not when clicking [OK].  
 -The field "Starting Device" is the starting device for the slaver's and master's buffer to exchange data.  
 -The field "Data Length" is the number of words that exchange data one time.  
 -"The Status of the Linked Machine" is selected for user to indicate this machine which is enabled or disabled when linking.

Linked Model Type:  DVP Series  Others

Linked Model Status:  Disable  Enable

Read

Master Parameter Setting: Starting Device: D 300, Data Length: 100


Slave Parameter Setting: Starting Device: D 300

Write

Master Parameter Setting: Starting Device: D 400, Data Length: 100




Slave Parameter Setting: Starting Device: D 400

OK Cancel

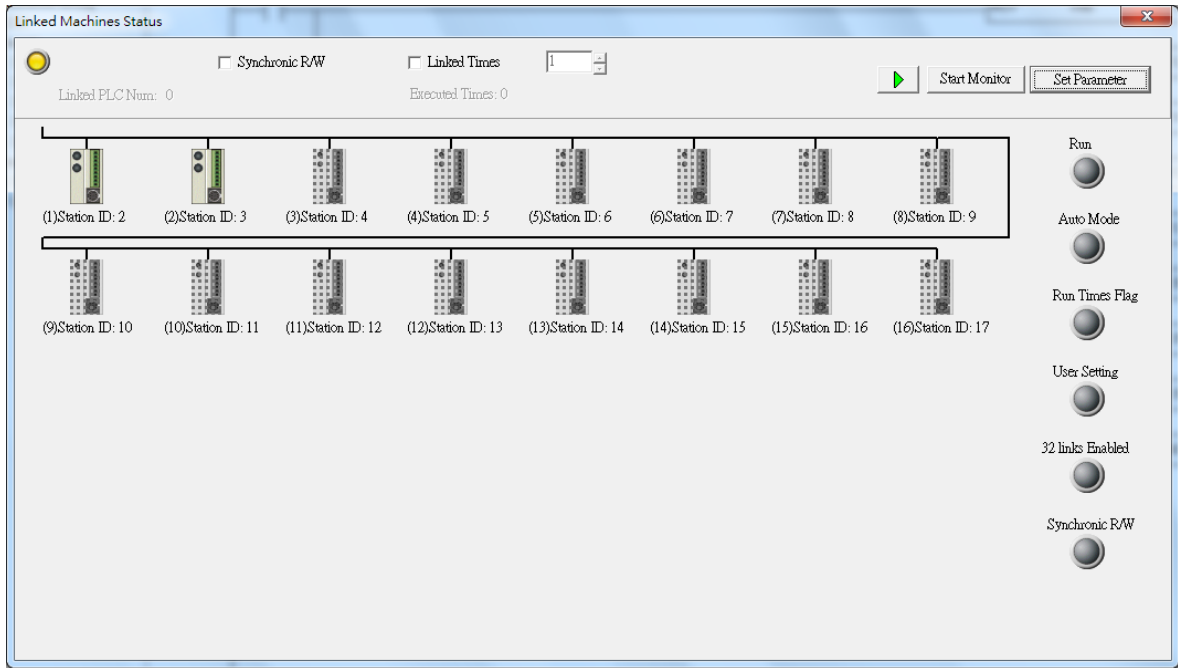
**Step 9:** Check whether the contents of the ID 1 block~the ID 2 block are correct, and then click 

PLC Link Configuration



ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status	Model Type
ID 1	2	R	D100-D199	<=>	D100-D199	100	Enabled	DVP Series
ID 1	2	W	D200-D299	=>	D200-D299	100	Enabled	DVP Series
ID 2	3	R	D300-D399	<=>	D300-D399	100	Enabled	DVP Series
ID 2	3	W	D400-D499	=>	D400-D499	100	Enabled	DVP Series
ID 3	4	R	D0-D99	<=>	H0-H63	100	Disabled	Others
ID 3	4	W	D0-D99	=>	H0-H63	100	Disabled	Others
ID 4	5	R	D0-D99	<=>	H0-H63	100	Disabled	Others
ID 4	5	W	D0-D99	=>	H0-H63	100	Disabled	Others
ID 5	6	R	D0-D99	<=>	H0-H63	100	Disabled	Others
ID 5	6	W	D0-D99	=>	H0-H63	100	Disabled	Others

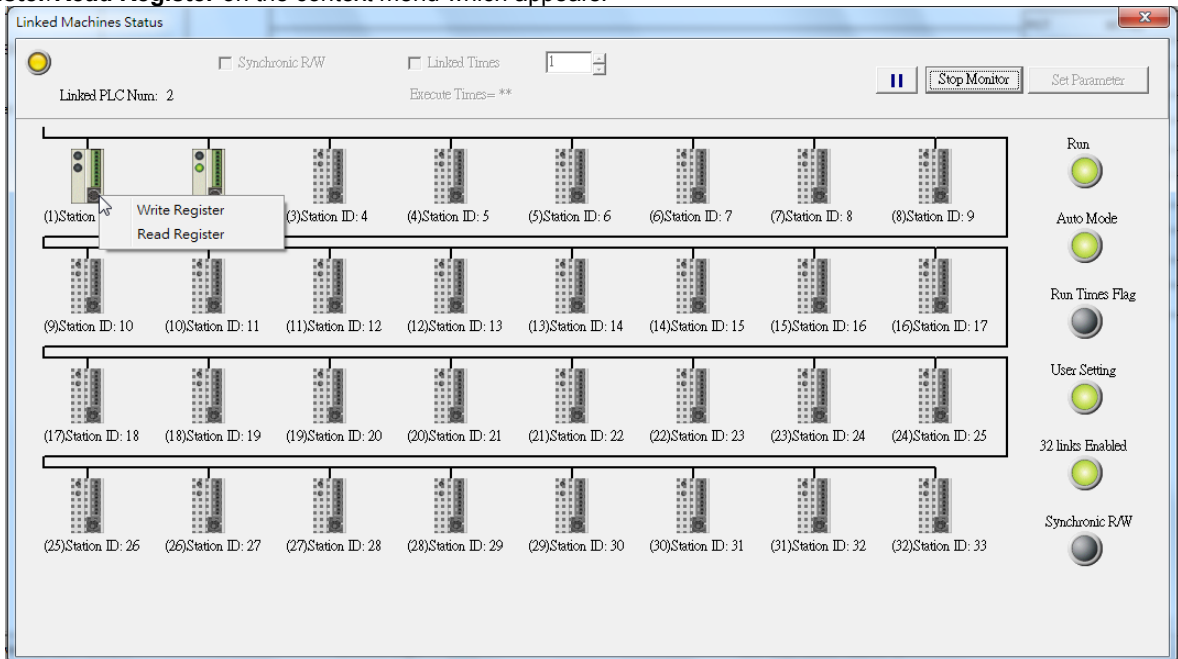
Save  Clear All  

**Step 10:** Click the **Set Parameter** button, click the **Start Monitor** button, and click  or set X0 to On.



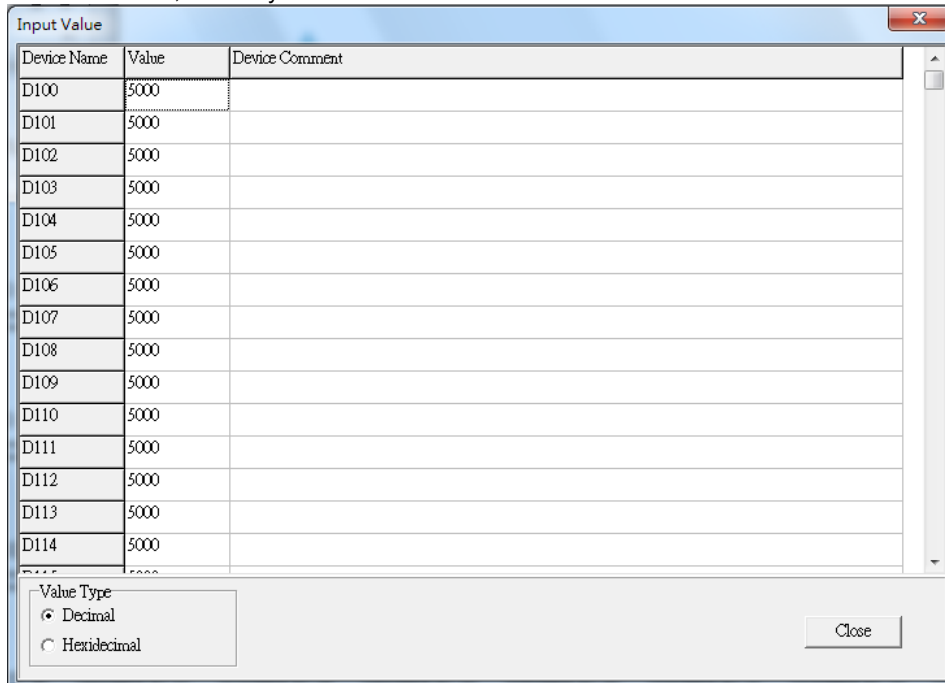
**Step 11:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.





**Step 14:** The values in D100~D199 are values read from slave 1, and they are 5000. The values in D200~D299 are values written to slave station 1, and they are 1000.

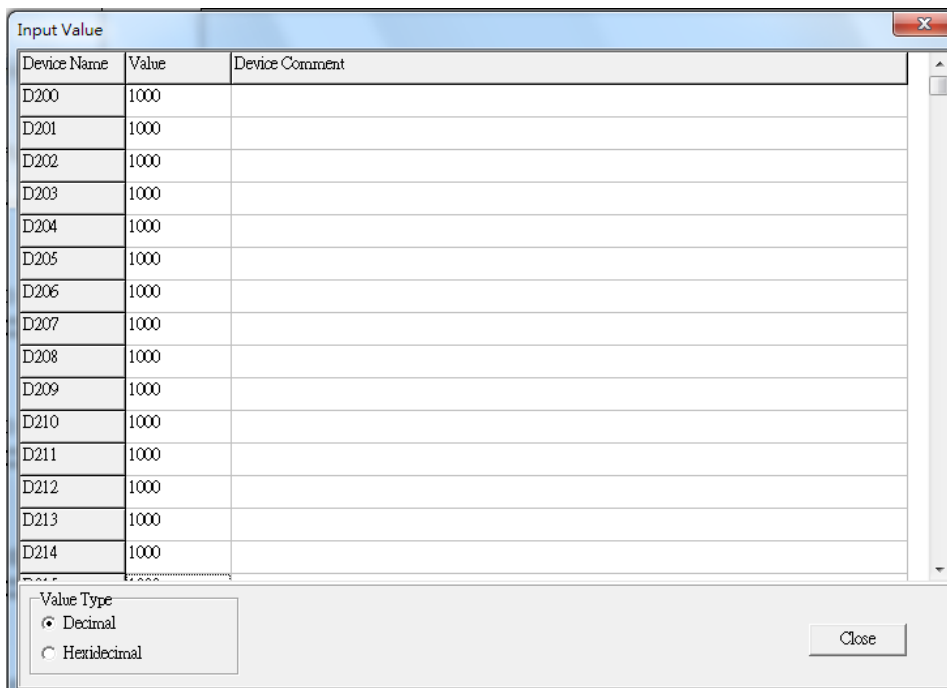


The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D100	5000	
D101	5000	
D102	5000	
D103	5000	
D104	5000	
D105	5000	
D106	5000	
D107	5000	
D108	5000	
D109	5000	
D110	5000	
D111	5000	
D112	5000	
D113	5000	
D114	5000	

Value Type  
 Decimal  
 Hexidecimal

Close



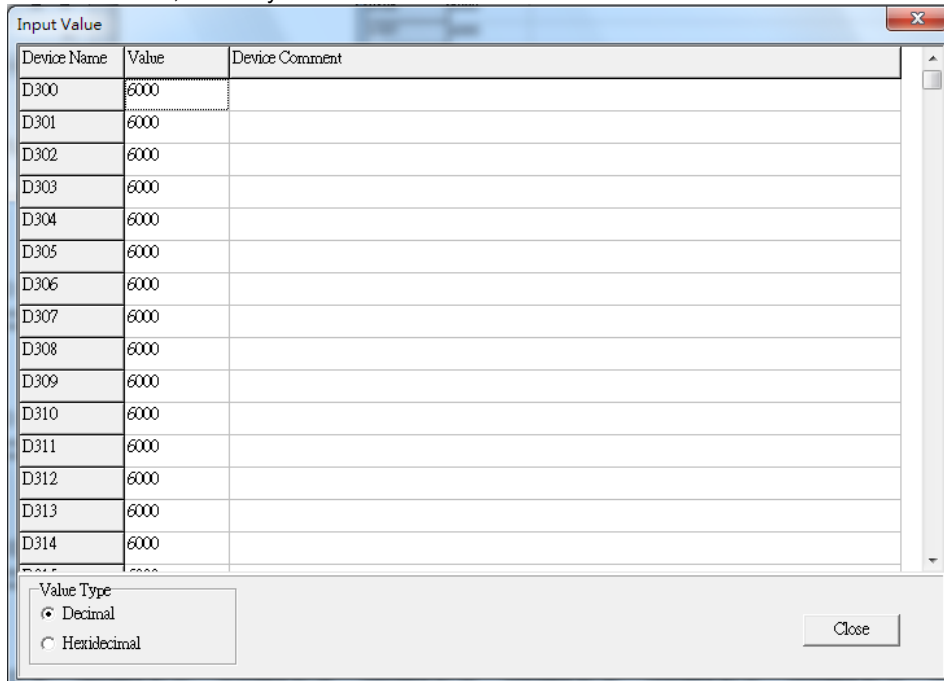
The screenshot shows a dialog box titled "Input Value" with a table of device names and values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D200	1000	
D201	1000	
D202	1000	
D203	1000	
D204	1000	
D205	1000	
D206	1000	
D207	1000	
D208	1000	
D209	1000	
D210	1000	
D211	1000	
D212	1000	
D213	1000	
D214	1000	

Value Type  
 Decimal  
 Hexidecimal

Close

**Step 13:** The values in D300~D399 are values read from slave 2, and they are 6000. The values in D400~D499 are values written to slave station 2, and they are 2000.

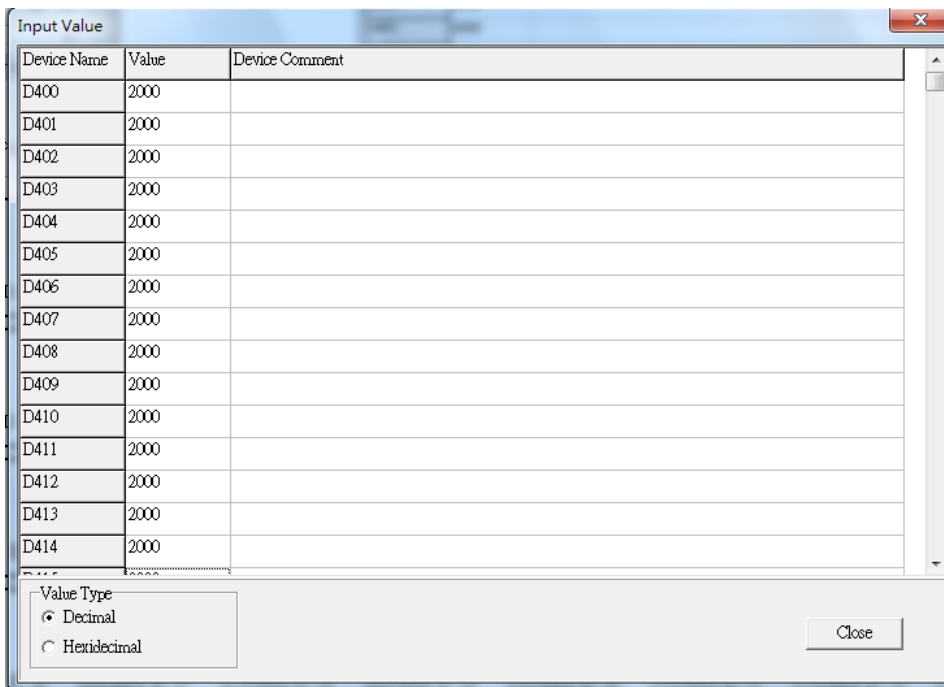


The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D300	6000	
D301	6000	
D302	6000	
D303	6000	
D304	6000	
D305	6000	
D306	6000	
D307	6000	
D308	6000	
D309	6000	
D310	6000	
D311	6000	
D312	6000	
D313	6000	
D314	6000	

Value Type  
 Decimal  
 Hexidecimal

Close





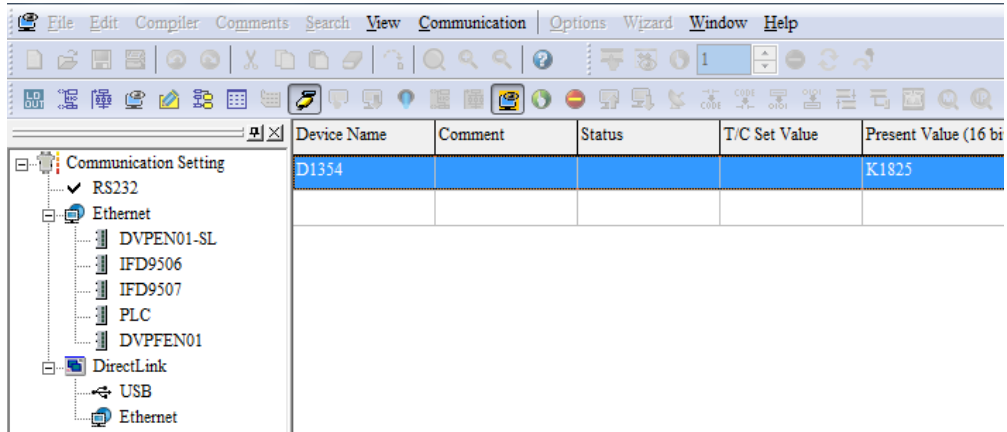
The screenshot shows a dialog box titled "Input Value" with a table of device addresses and their values. The "Value Type" section at the bottom has "Decimal" selected.

Device Name	Value	Device Comment
D400	2000	
D401	2000	
D402	2000	
D403	2000	
D404	2000	
D405	2000	
D406	2000	
D407	2000	
D408	2000	
D409	2000	
D410	2000	
D411	2000	
D412	2000	
D413	2000	
D414	2000	

Value Type  
 Decimal  
 Hexidecimal

Close

**Step 14:** Close the **Linked Machines Status** window, click , click , and type "D1354". The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D199 in slave station 1 are written to D100~D199 in the master station, and the values in D200~D299 in the master station are written to D200~D299 in slave station 1. The values in D300~D399 in slave station 2 are written to D300~D399 in the master station, and the values in D400~D499 in the master station are written to D400~D499 in slave station 2.

Master PLC (1 PLC)		Slave PLC (2 PLCs)
D100~D199	← Reading	D100~D199 in the slave PLC whose station address is K2
D200~D299	→ Writing	D200~D299 in the slave PLC whose station address is K2
D300~D399	← Reading	D300~D399 in the slave PLC whose station address is K3
D400~D499	→ Writing	D400~D499 in the slave PLC whose station address is K3

- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D199	All are 0.	D100~D199 in slave station 1	All are 5000.
D200~D299	All are 1000.	D200~D299 in slave station 1	All are 0.
D300~D399	All are 0.	D300~D399 in slave station 2	All are 6000.
D400~D499	All are 2000.	D400~D499 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D199	All are 5000.	D100~D199 in slave station 1	All are 5000.
D200~D299	All are 1000.	D200~D299 in slave station 1	All are 1000.
D300~D399	All are 6000.	D300~D399 in slave station 2	All are 6000.
D400~D499	All are 2000.	D400~D499 in slave station 2	All are 2000.

## 7.2 Using the PLC Link Wizard in ISPSoft (ASCII/RTU Mode)

### 【Control requirement】

A master station (A DVP-EH3 series PLC) individually exchanges one hundred pieces of data (one hundred words) with two slave stations (two DVP-EH3 series PLCs) through a PLC link which enables the function of linking thirty-two PLCs and exchanging more than sixteen pieces of data.

### 【Setting station addresses of PLCs】

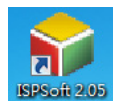
Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	3. ASCII, 9600, 7, E, 1 (D1120=H'86) 4. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	
Slave PLC 2	K3 (D1121=K3)	

### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.

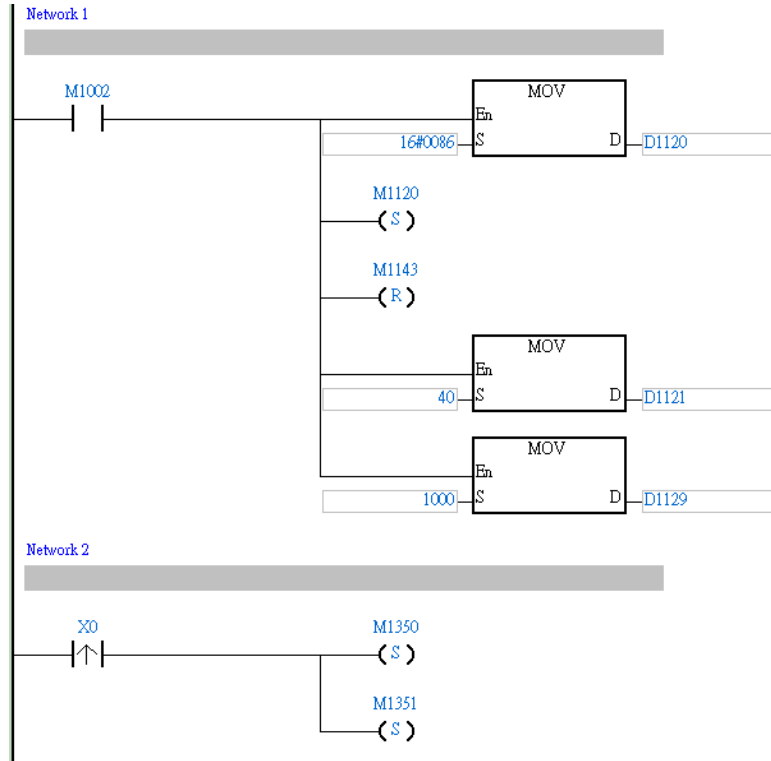
### 【PLC link wizard】

**Step 1:** Start ISPSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

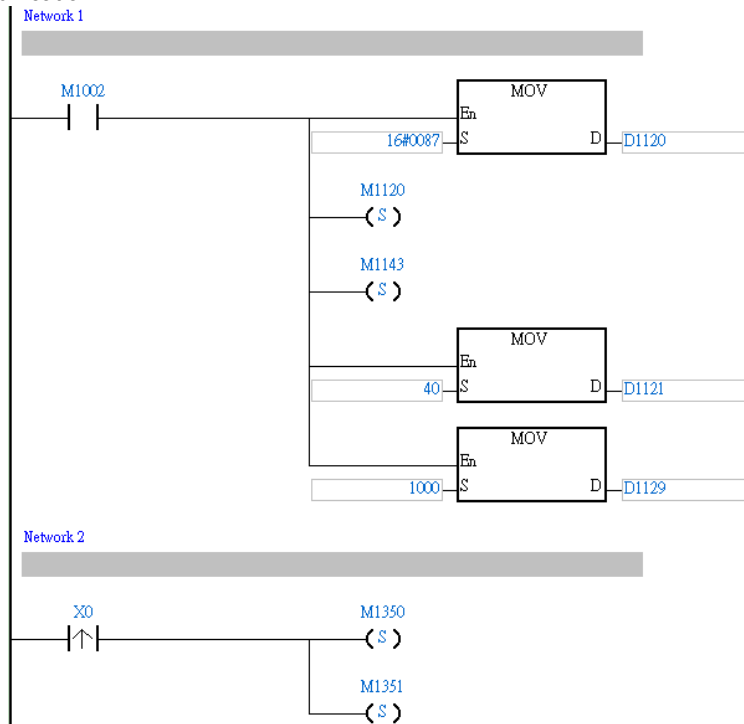




Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to manually specify the stations which need to be linked (M1351 is On).

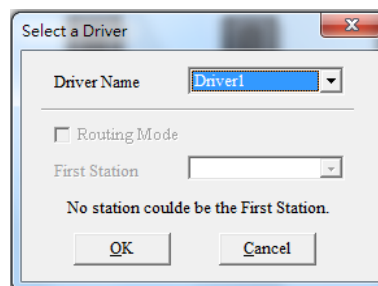
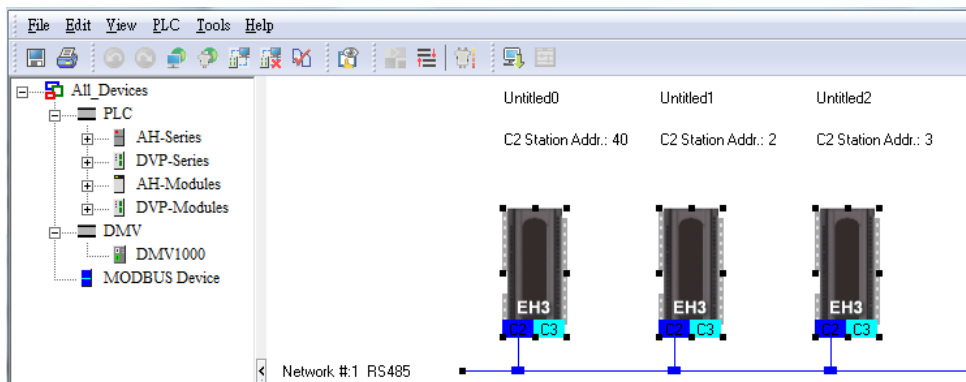
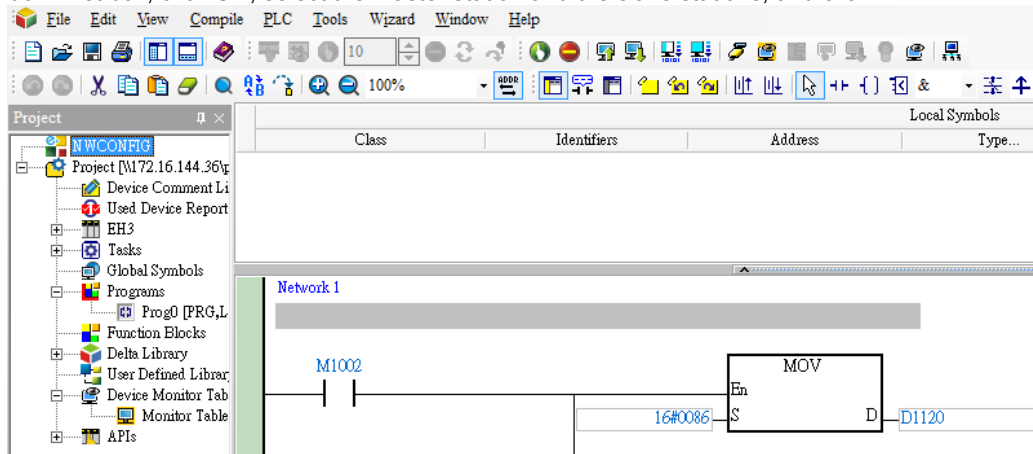
Program for ASCII communication:




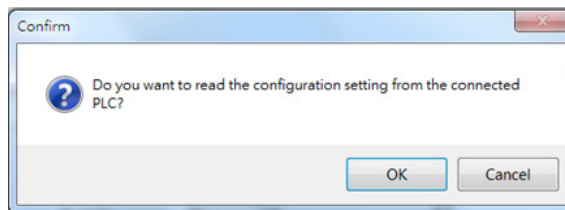
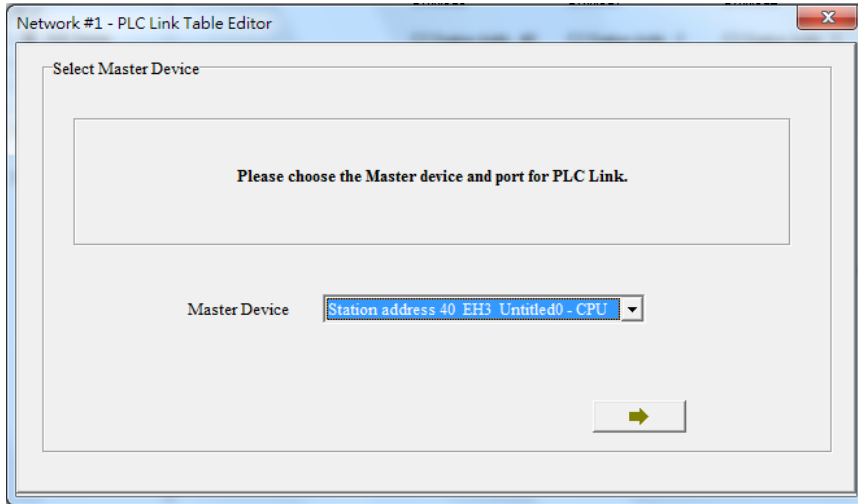
Program for RTU communication:



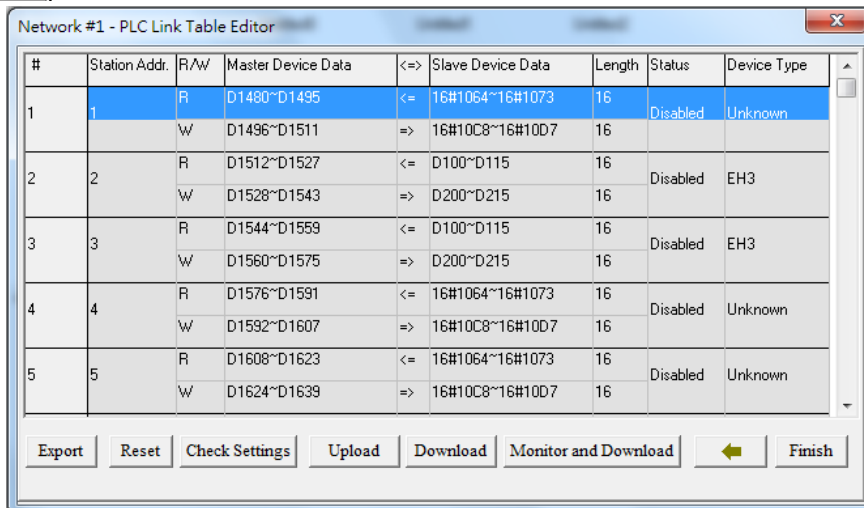
**Step 2:** Double-click **NWCONFIG** in the project management area, create a link, click , select **Driver 1** in the **Driver Name** drop-down list box, click **OK**, select the master station and the slave stations, and click .




**Step 3:** Select a PLC in the **Master Device** drop-down list box, click , and click **OK** in the window which appears.

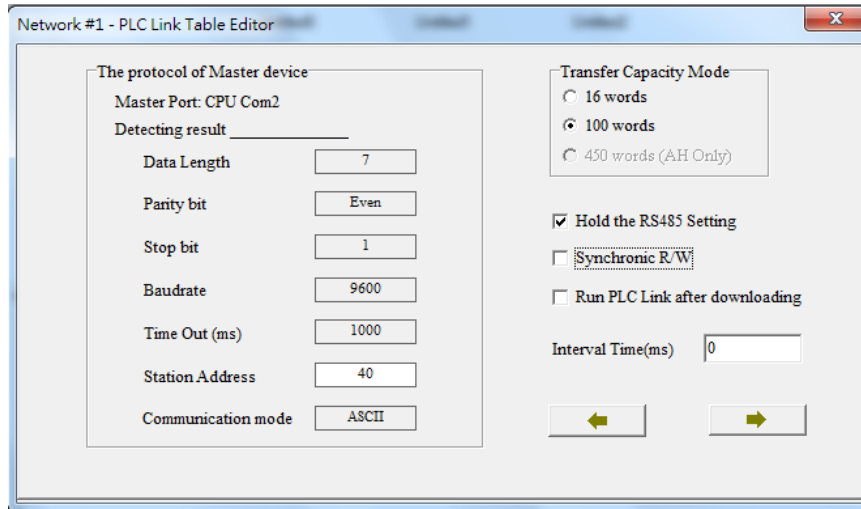


**Step 4:** Click .

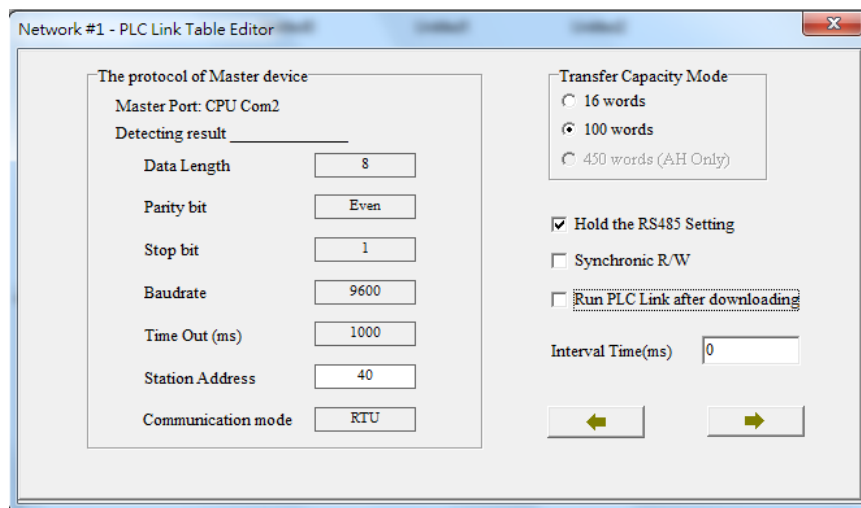


**Step 5:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **100 words** option button in the **Transfer Capacity Mode** section, unselect the **Synchronous R/W** checkbox and the **Run PLC Link after downloading** checkbox, type "0" in the **Interval Time** box, and click .

Window for ASCII communication:

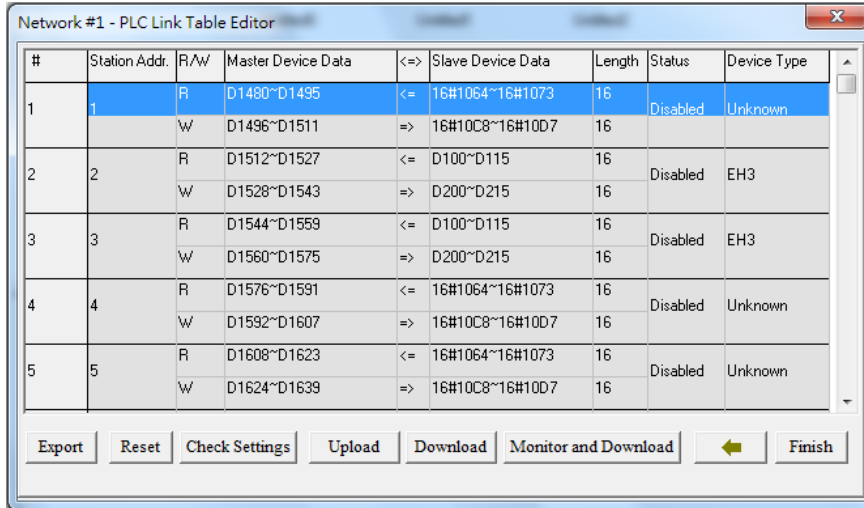


Window for RTU communication:

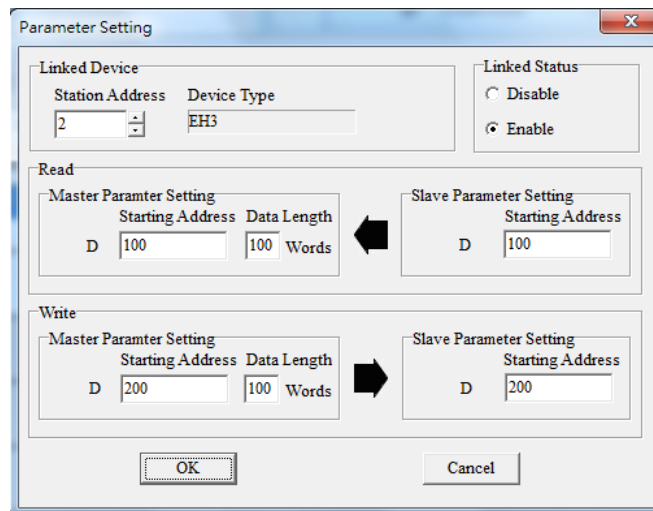




**Step 6:** Double-click the **1** block in the **PLC Link Table Editor** window, select **2** in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1360 to On), type "100" in the **Starting Address** box in the **Master Parameter Setting** section in the **Read** section, type "200" in the **Starting Address** box in the **Master Parameter Setting** section in the **Write** section, type "100" in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type "100" in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type "200" in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16		
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		



**Parameter Setting**

**Linked Device**

Station Address: 2      Device Type: EH3

**Linked Status**

Disable  
 Enable

**Read**

**Master Parameter Setting**

Starting Address: D 100      Data Length: 100 Words

**Slave Parameter Setting**

Starting Address: D 100

**Write**

**Master Parameter Setting**

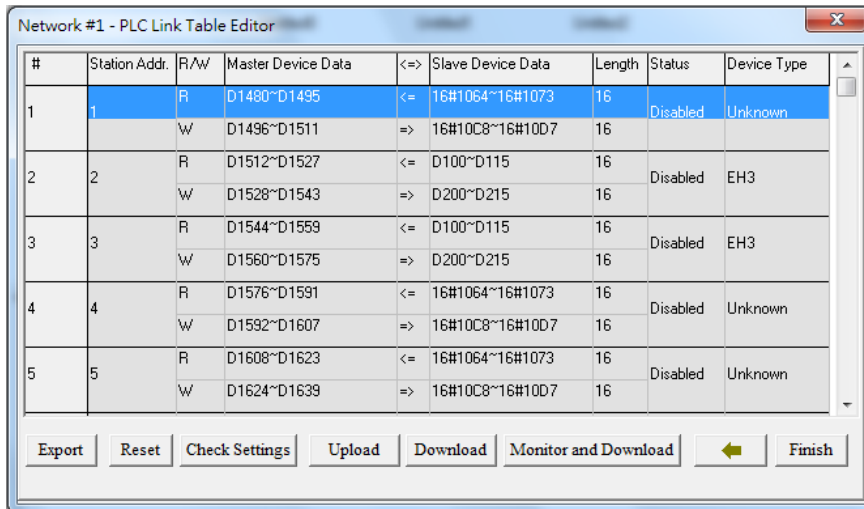
Starting Address: D 200      Data Length: 100 Words

**Slave Parameter Setting**

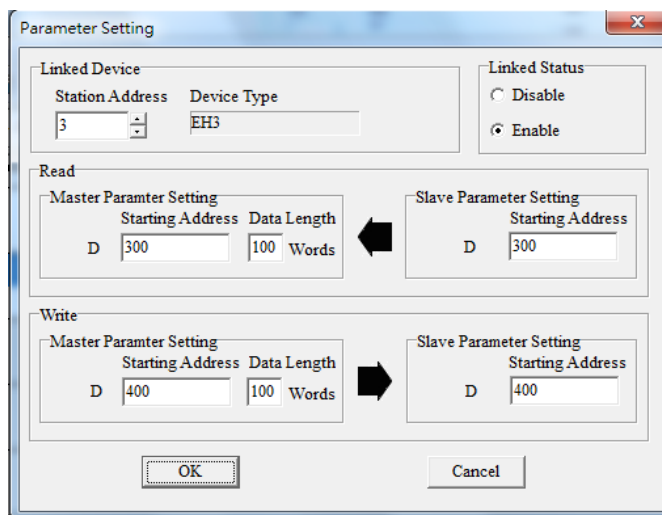
Starting Address: D 200

OK      Cancel

**Step 7:** Double-click the **2** block in the **PLC Link Table Editor** window, select **3** in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1361 to On), type “300” in the **Starting Address** box in the **Master Parameter Setting** section in the **Read** section, type “400” in the **Starting Address** box in the **Master Parameter Setting** section in the **Write** section, type “100” in the **Data Length** boxes in the **Master Parameter Setting** sections in the **Read** and **Write** sections, type “300” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type “400” in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.



#	Station Addr.	R/W	Master Device Data	<=>	Slave Device Data	Length	Status	Device Type
1	1	R	D1480~D1495	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1496~D1511	=>	16#10C8~16#10D7	16		
2	2	R	D1512~D1527	<=	D100~D115	16	Disabled	EH3
		W	D1528~D1543	=>	D200~D215	16		
3	3	R	D1544~D1559	<=	D100~D115	16	Disabled	EH3
		W	D1560~D1575	=>	D200~D215	16		
4	4	R	D1576~D1591	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1592~D1607	=>	16#10C8~16#10D7	16		
5	5	R	D1608~D1623	<=	16#1064~16#1073	16	Disabled	Unknown
		W	D1624~D1639	=>	16#10C8~16#10D7	16		



**Parameter Setting**

**Linked Device**  
 Station Address: 3 Device Type: EH3

**Linked Status**  
 Disable  
 Enable

**Read**

**Master Parameter Setting**  
 Starting Address: D 300 Data Length: 100 Words

**Slave Parameter Setting**  
 Starting Address: D 300

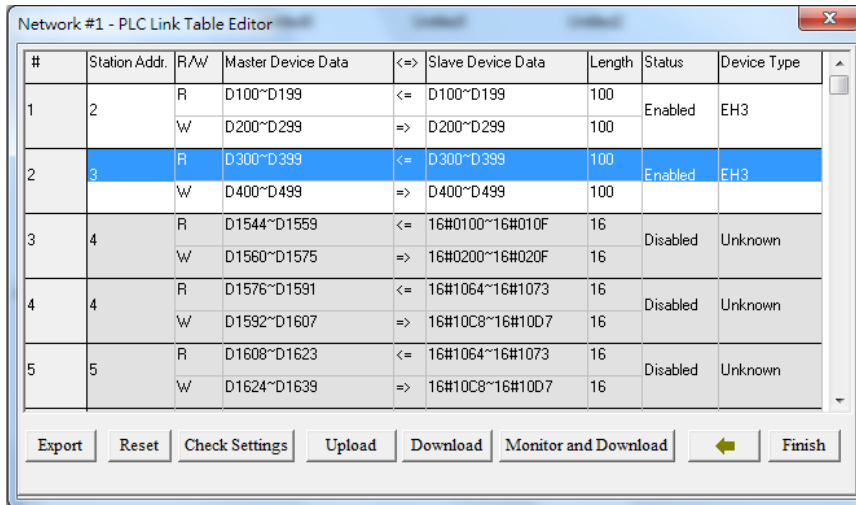
**Write**

**Master Parameter Setting**  
 Starting Address: D 400 Data Length: 100 Words

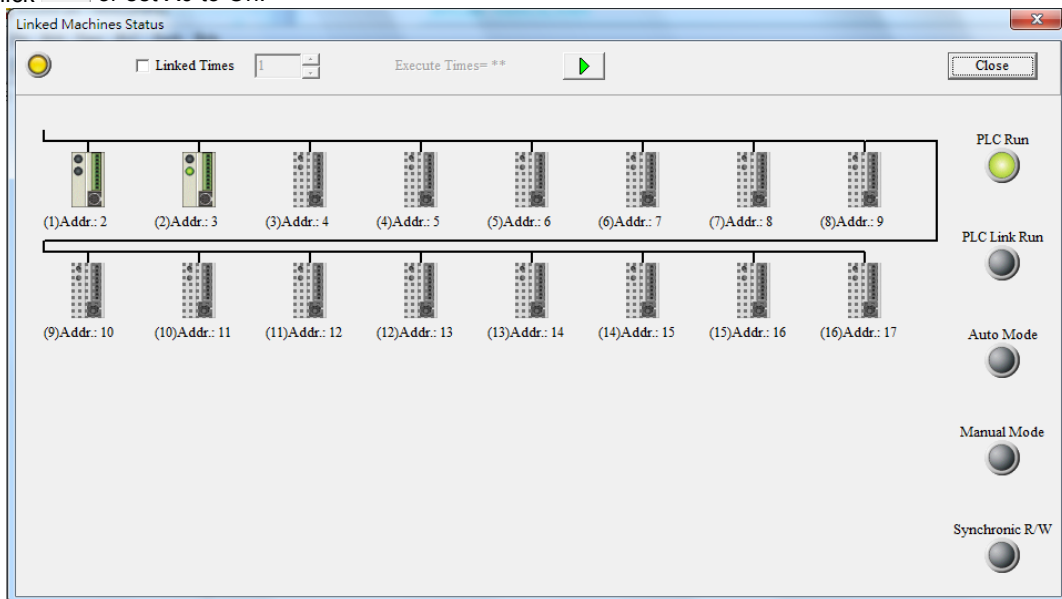
**Slave Parameter Setting**  
 Starting Address: D 400

OK Cancel



**Step 8:** Check whether the contents of the 1 block~the 2 block are correct, and then click **Monitor and Download**.

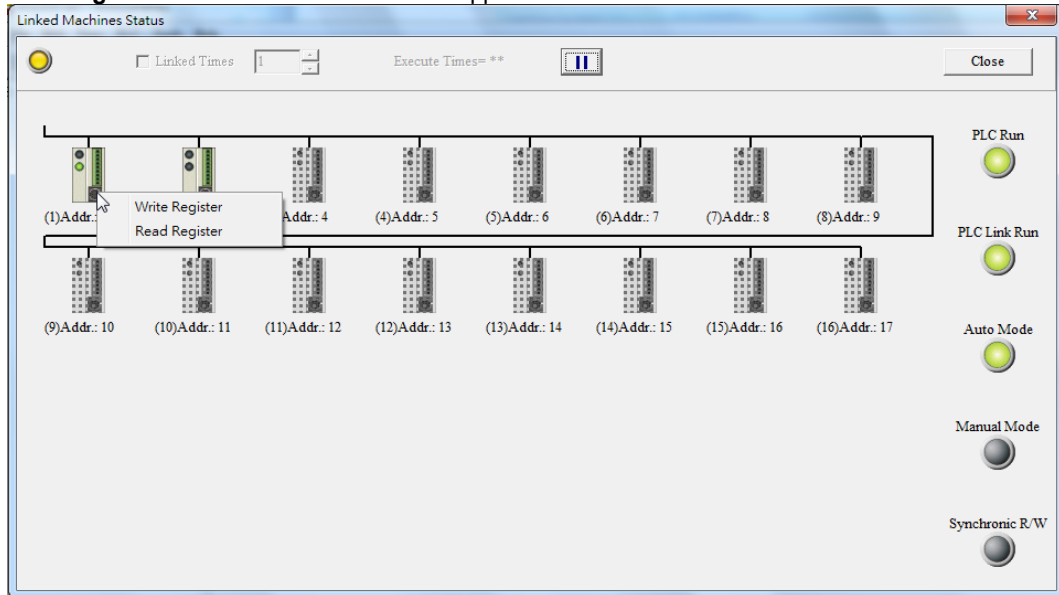


**Step 9:** Click  or set X0 to On.

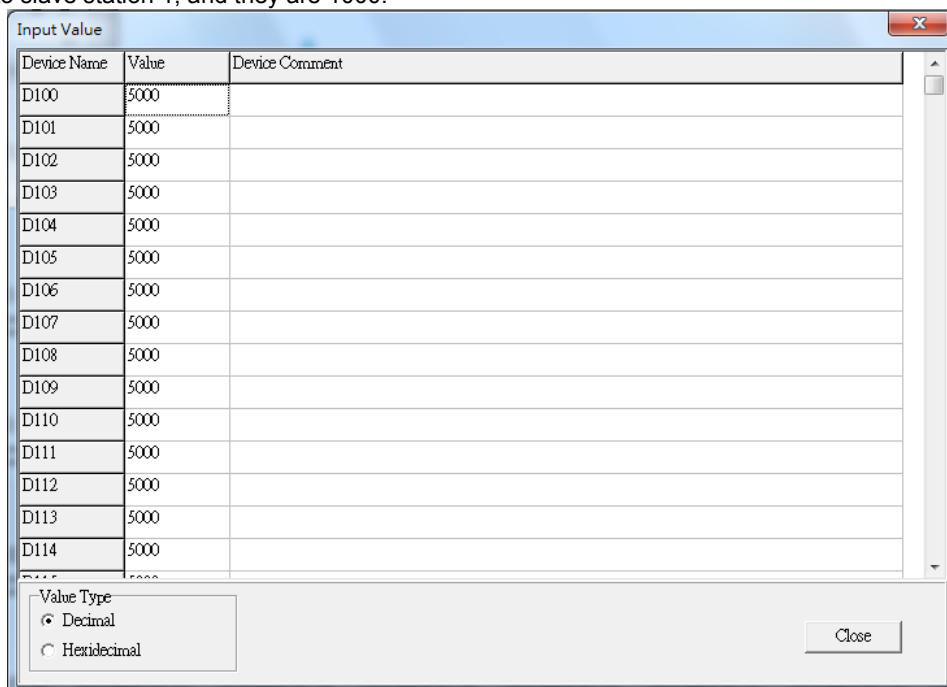


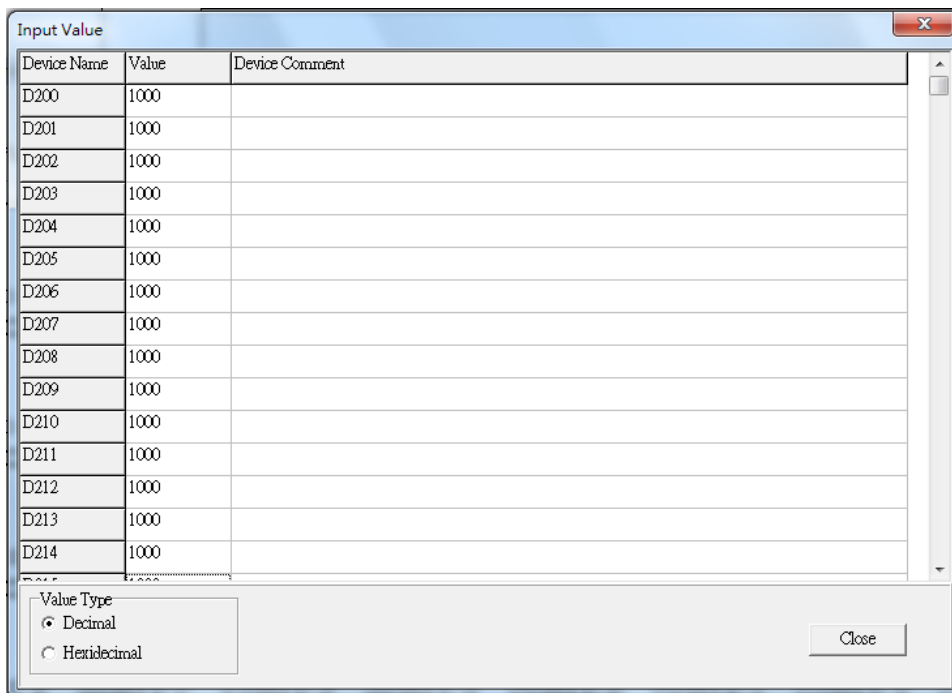
**Step 10:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading/Writing data through the PLC link wizard: Right-click slave station (1)  /slave station (2) , and click **Write Register/Read Register** on the context menu which appears.

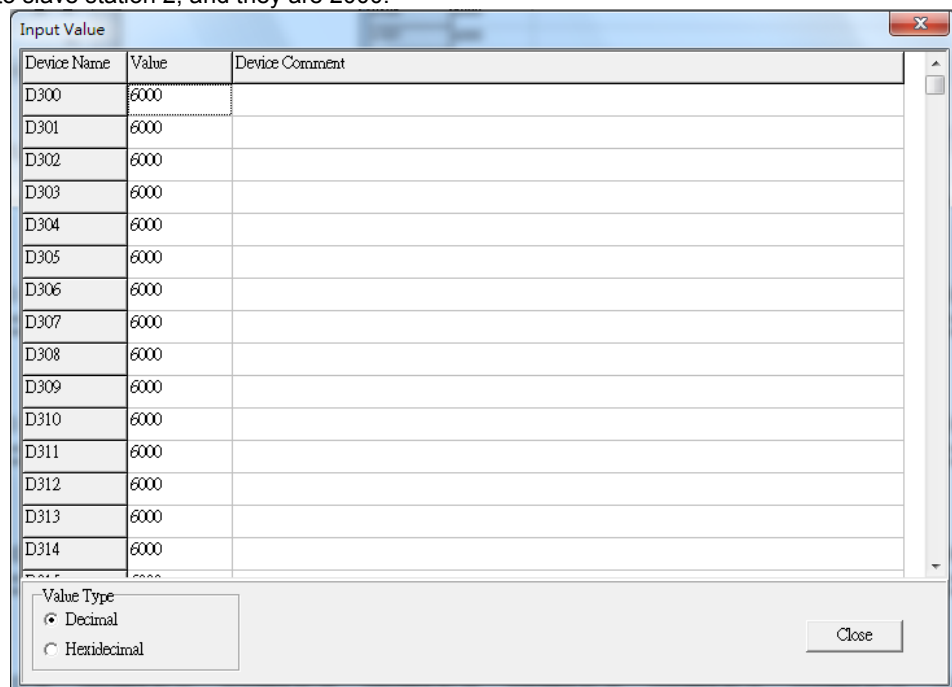


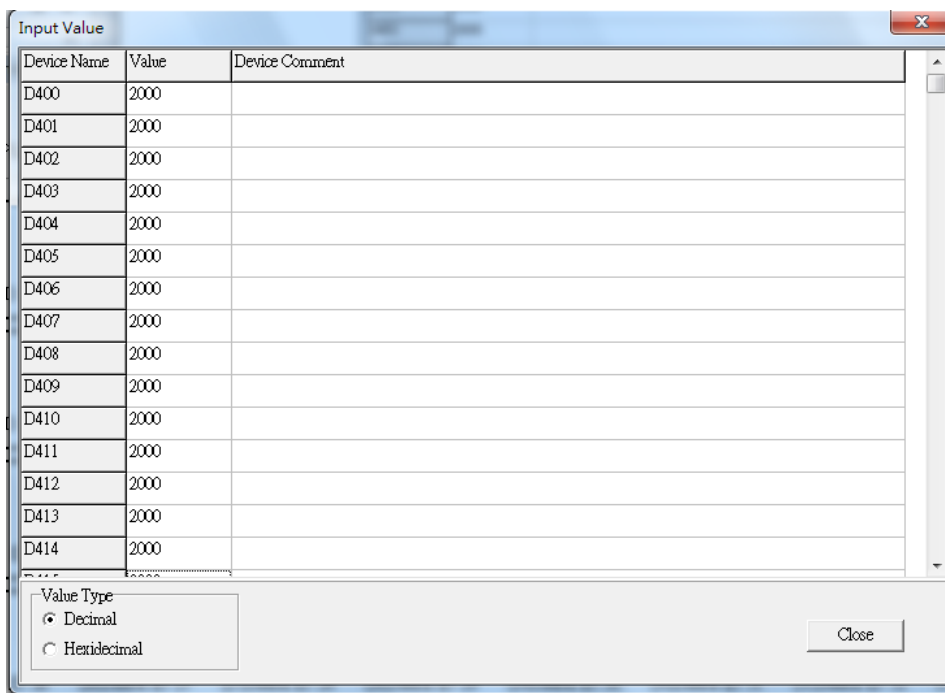
**Step 11:** The values in D100~D199 are values read from slave 1, and they are 5000. The values in D200~D299 are values written to slave station 1, and they are 1000.






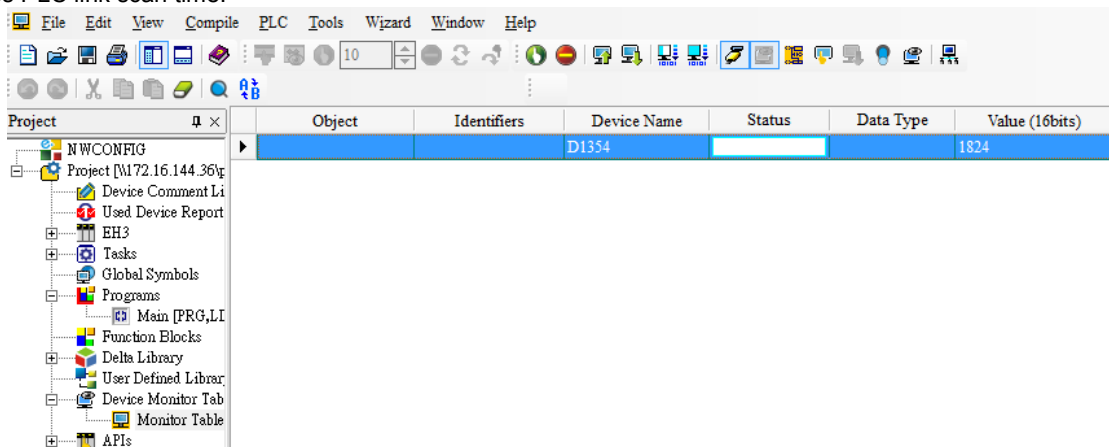
**Step 14:** The values in D300~D399 are values read from slave 2, and they are 6000. The values in D400~D499 are values written to slave station 2, and they are 2000.





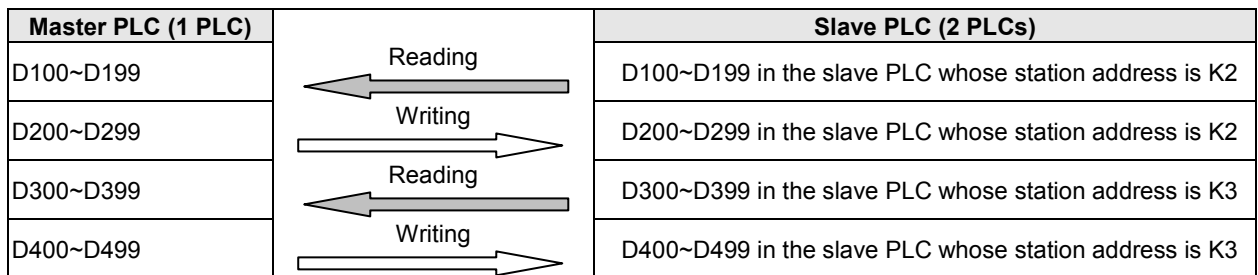
**Step 13:** Close the **Linked Machines Status** window, create a device monitoring table by means of **Device Monitor**

**Table** in the project management area, type "D1354" in the device monitoring table, and click . The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1, and the PLC whose station address is K3 is slave station 2.
- The master station exchanges data with the two slave stations by means of a PLC link. The values in D100~D199 in slave station 1 are written to D100~D199 in the master station, and the values in D200~D299 in the master station are written to D200~D299 in slave station 1. The values in D300~D399 in slave station 2 are written to D300~D399 in the master station, and the values in D400~D499 in the master station are written to D400~D499 in slave station 2.



- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave stations are the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D199	All are 0.	D100~D199 in slave station 1	All are 5000.
D200~D299	All are 1000.	D200~D299 in slave station 1	All are 0.
D300~D399	All are 0.	D300~D399 in slave station 2	All are 6000.
D400~D499	All are 2000.	D400~D499 in slave station 2	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave stations will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D100~D199	All are 5000.	D100~D199 in slave station 1	All are 5000.
D200~D299	All are 1000.	D200~D299 in slave station 1	All are 1000.
D300~D399	All are 6000.	D300~D399 in slave station 2	All are 6000.
D400~D499	All are 2000.	D400~D499 in slave station 2	All are 2000.

## 8. Example 6—Sending a Write Command after the Change of Values

During the execution of a PLC link, the master station continuously sends a read command (function code H'03) to a slave station, and does not send any write command. If values in the master station are changed, and need to be written to a slave station, a write command (function code H'10) will be sent. (The master stations and the slave stations in the examples below are DVP-EH3 series PLCs.)

### 8.1 Using the PLC Link Wizard in WPLSoft (ASCII/RTU Mode)

#### 【Control requirement】

A master station (A DVP-EH3 series PLC) reads sixteen pieces of data (sixteen words) in a slave station (a DVP-EH3 series PLC) through a PLC link. If three values (three words) in the master station are changed, the master station will send a write command to the slave station.

#### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	1. ASCII, 9600, 7, E, 1 (D1120=H'86) 2. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	

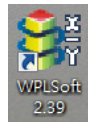
#### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout

Device in a PLC	Description
	Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.
M10~M12	They are used to enable timers, and write 0 to D1450.
T0~T2	They are used to set M10~M12 to Off.
D0~D2	The values in D0~D2 are the previous values in D1496~D1498.
D50~D65	The values in D50~D65 are the values in D1480~D1495.
D1450	The value in D1450 indicates the length of the data written to slave PLC 1.
D1496~D1498	The values in D1496~D1498 are values written to D150~D152 in slave PLC 1.

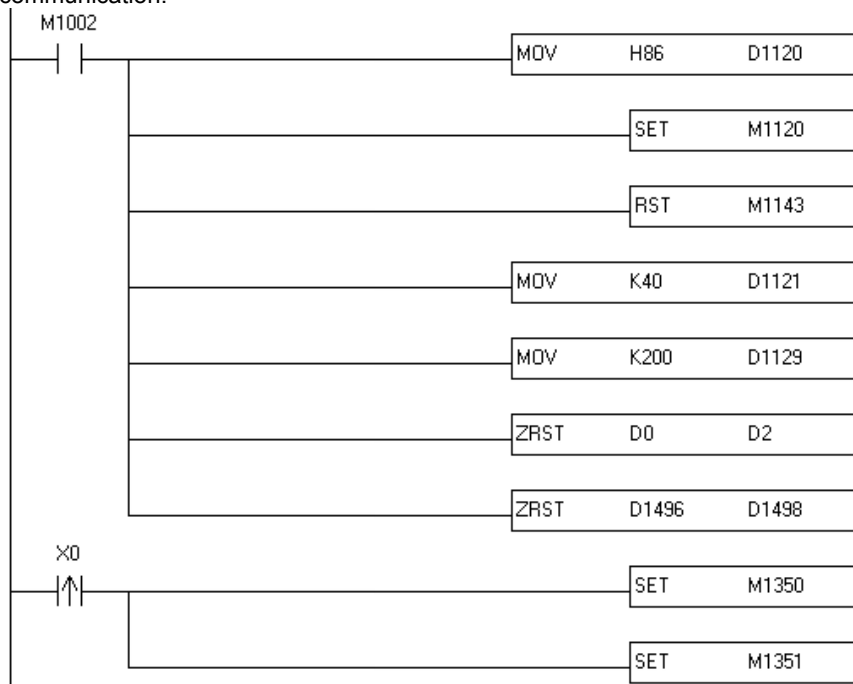
【 PLC link wizard 】

**Step 1:** Start WPLSoft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

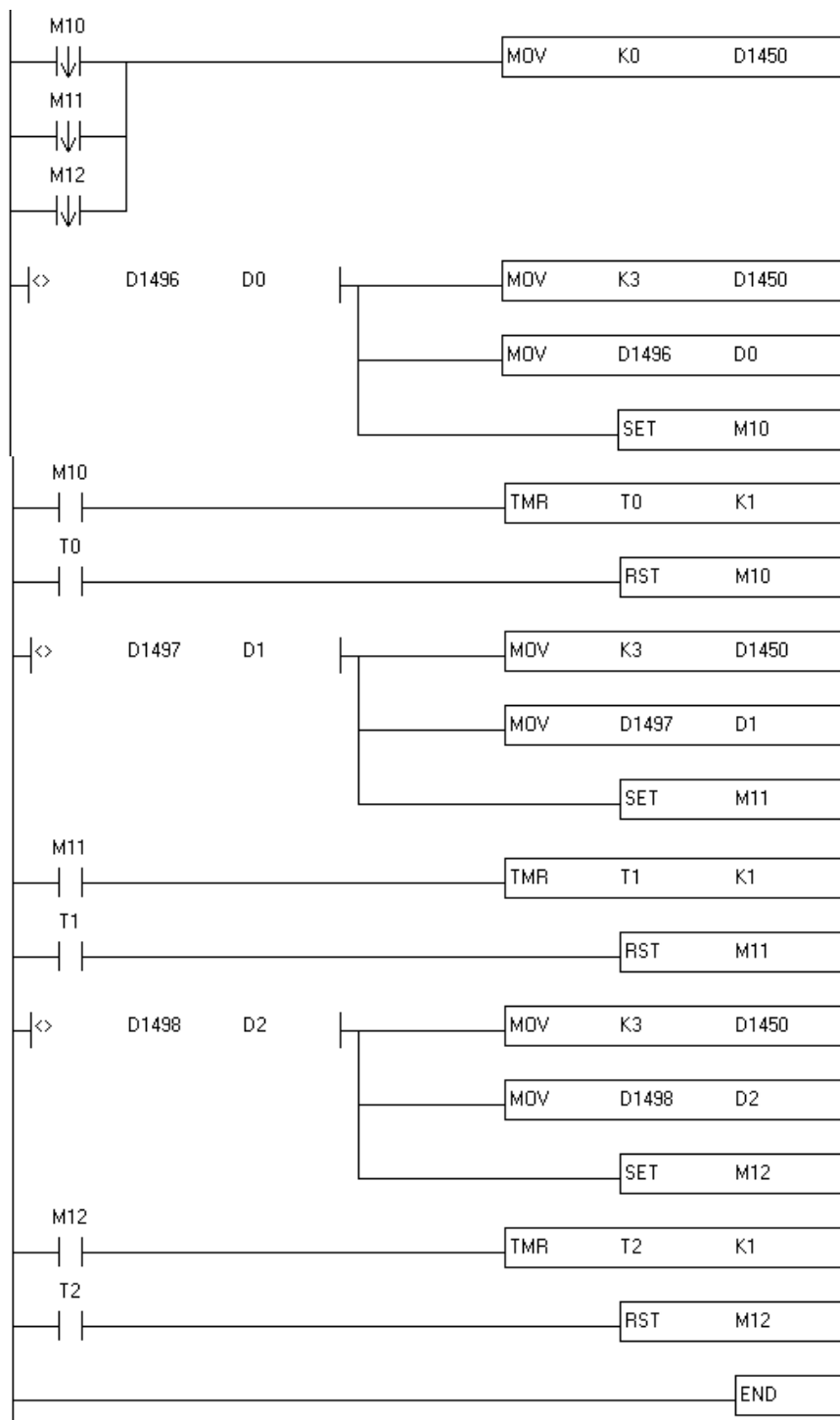


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to specify the stations which need to be linked (M1355 is On).

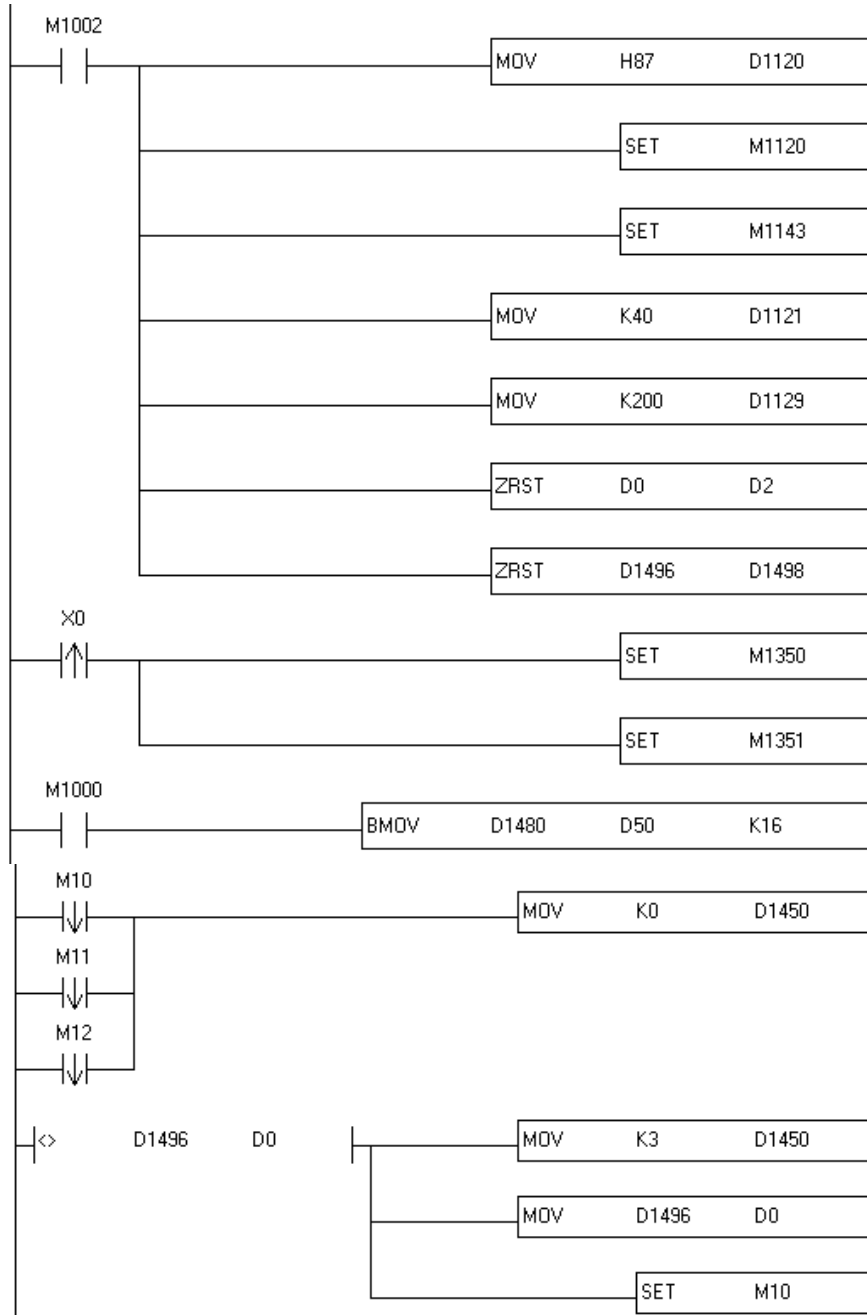
Program for ASCII communication:

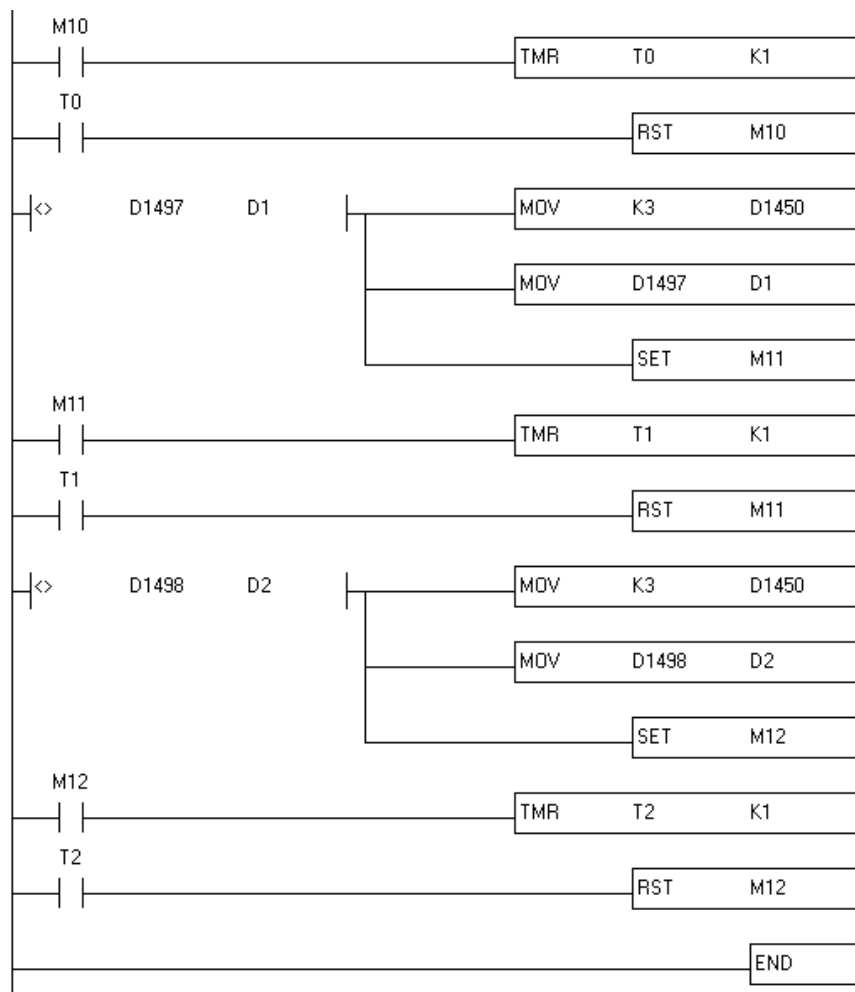




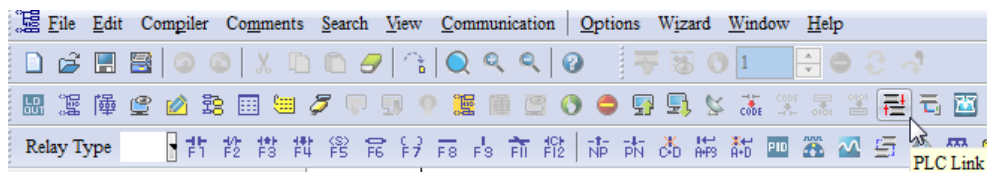



Program for RTU communication:

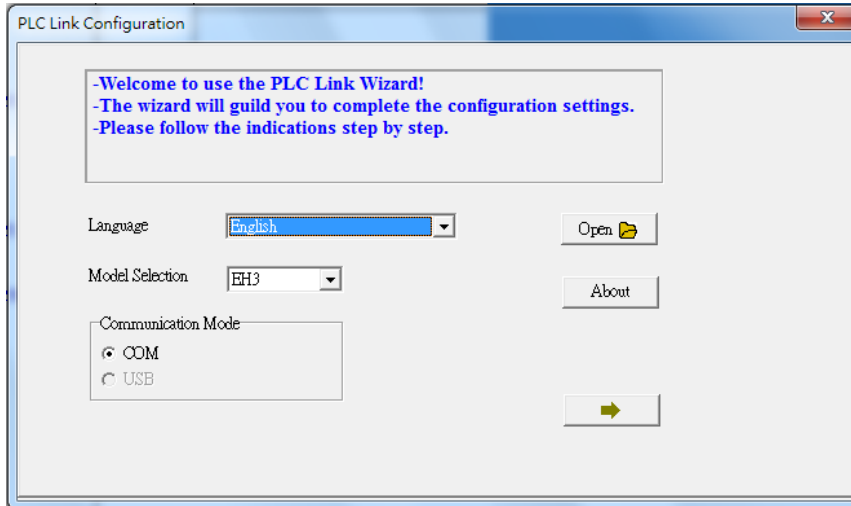





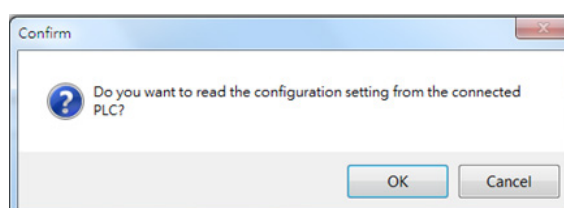
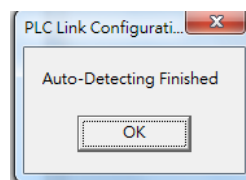
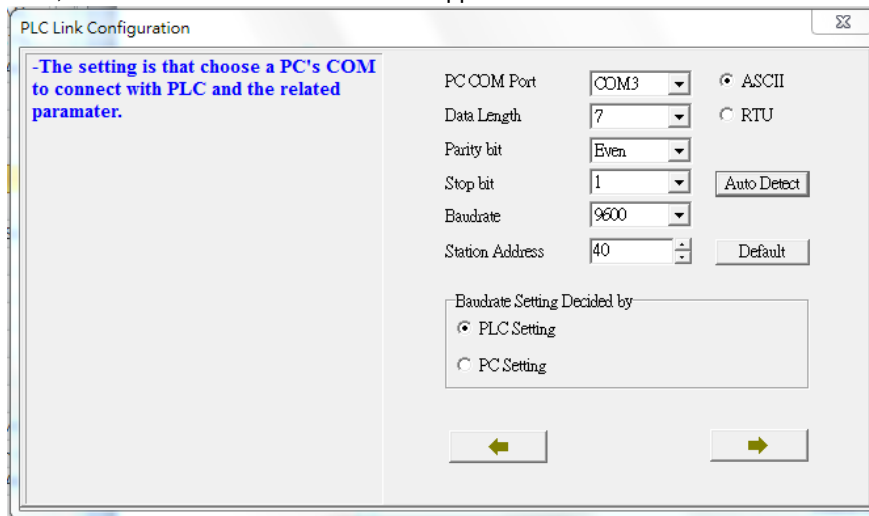
**Step 2:** Click the PLC link wizard  in WPLSoft.



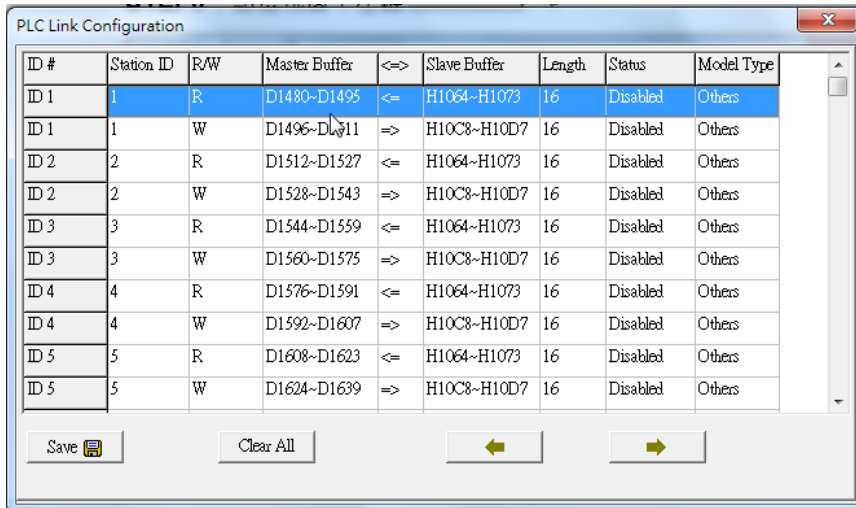
**Step 3:** Select a language in the **Language** drop-down list box, select a model in the **Model Selection** drop-down list box, and click .




**Step 4:** Set a communication format for COM1 in the master PLC, click **Auto Detect**, click **OK** in the window which appears, click , and click **OK** in the window which appears.

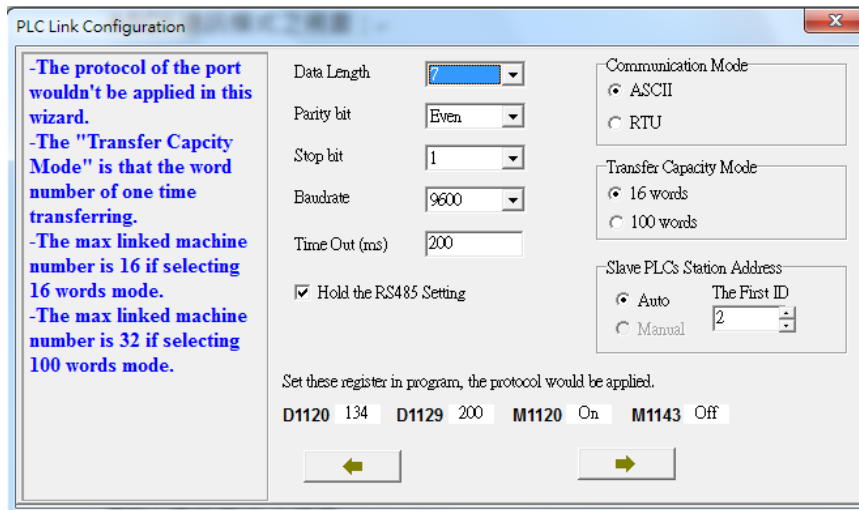


**Step 5:** Click 

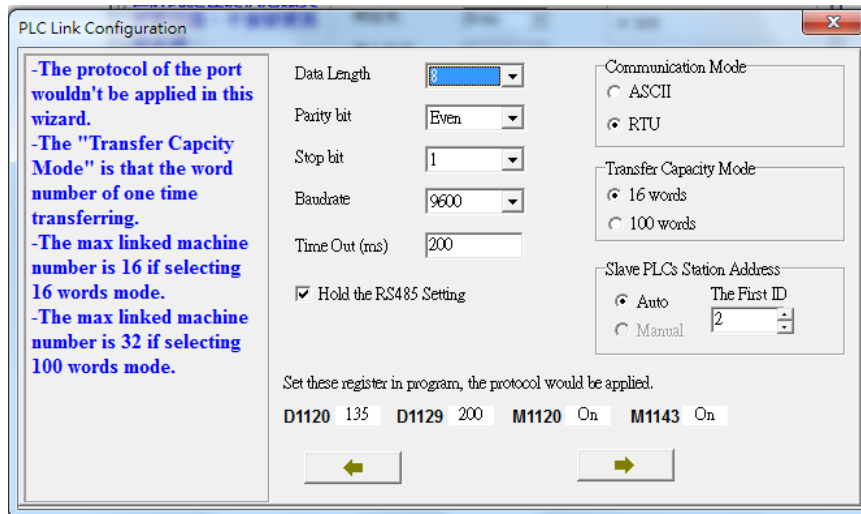


**Step 6:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, select the **Auto** option button, select **2** in the **The First ID** box in the **Slave PLCs Station Address** section, and click .

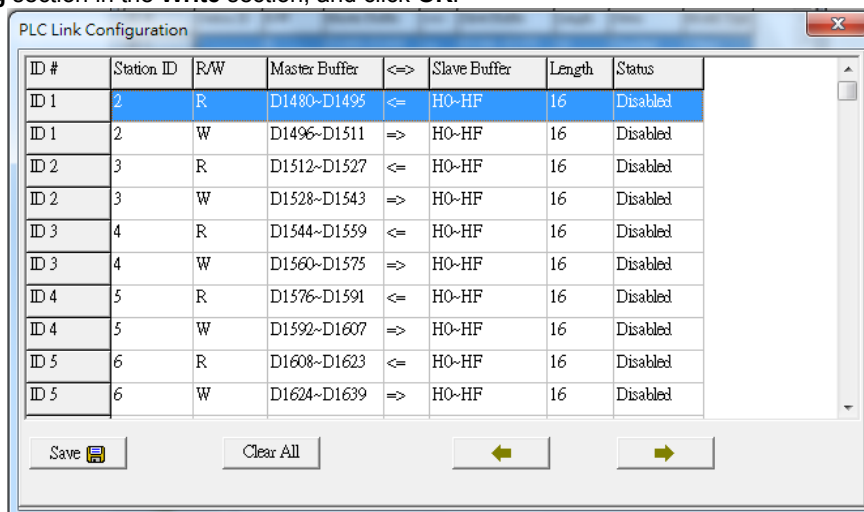
Window for ASCII communication:

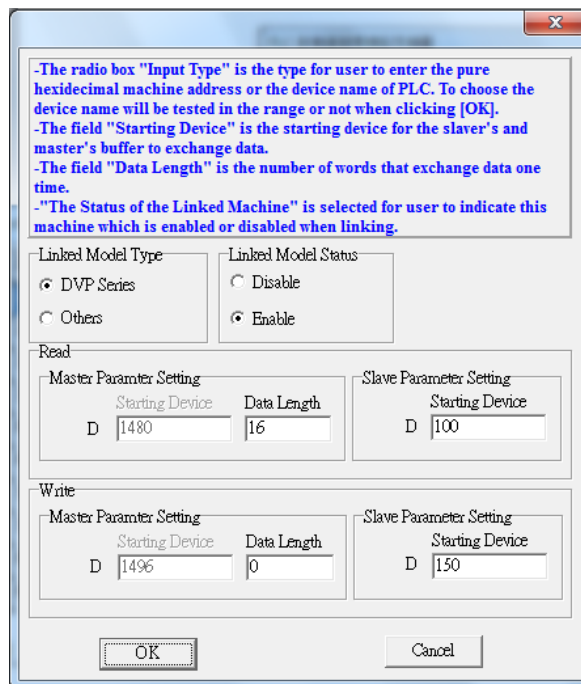


Window for RTU communication:



**Step 7:** Double-click the **ID 1 (Station ID 2)** block in the **PLC Link Configuration** window, select the **DVP Series** option button in the **Linked Model Type** section, select the **Enable** option button in the **Linked Model Status** section (set M1360 to On), type "16" in the **Data Length** box in the **Master Parameter Setting** section in the **Read** section, type "0" in the **Data Length** box in the **Master Parameter Setting** section in the **Write** section, type "100" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Read** section, type "150" in the **Starting Device** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.





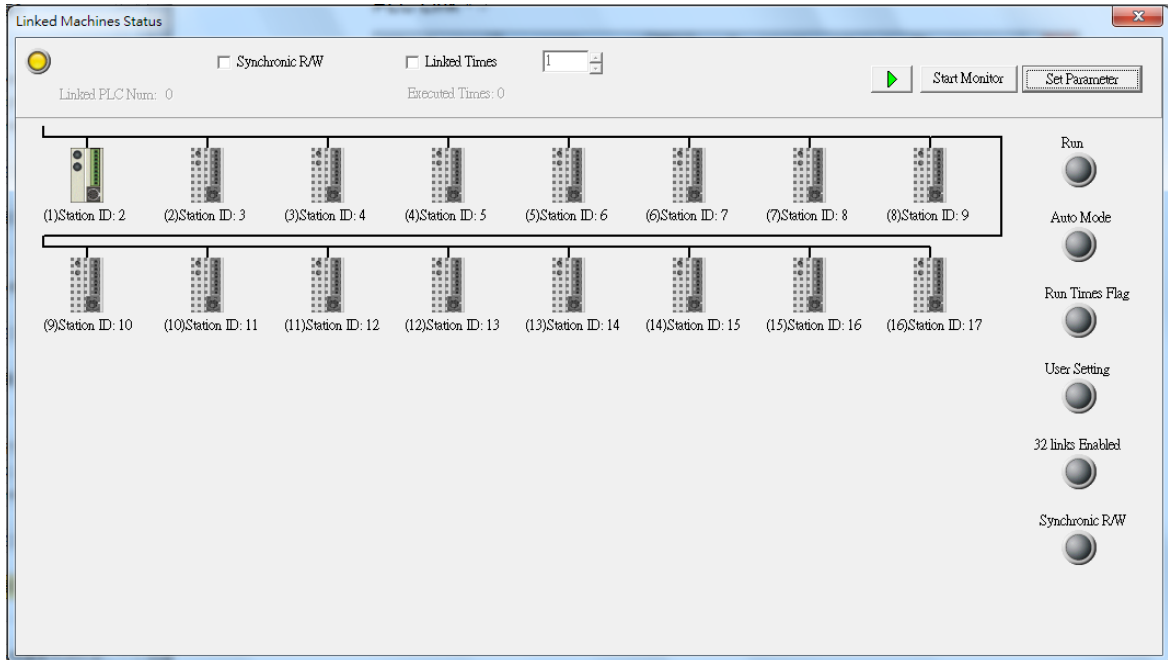
**Step 8:** Check whether the contents of the ID 1 block are correct, and then click 

PLC Link Configuration


ID #	Station ID	R/W	Master Buffer	<=>	Slave Buffer	Length	Status	Model Type
ID 1	2	R	D1480~D1495	<=>	D100~D115	16	Enabled	DVP Series
ID 1	2	W	D1496	=>	D150~D149	0	Enabled	DVP Series
ID 2	3	R	D1512~D1527	<=>	H1064~H1073	16	Disabled	Others
ID 2	3	W	D1528~D1543	=>	H10C8~H10D7	16	Disabled	Others
ID 3	4	R	D1544~D1559	<=>	H1064~H1073	16	Disabled	Others
ID 3	4	W	D1560~D1575	=>	H10C8~H10D7	16	Disabled	Others
ID 4	5	R	D1576~D1591	<=>	H1064~H1073	16	Disabled	Others
ID 4	5	W	D1592~D1607	=>	H10C8~H10D7	16	Disabled	Others
ID 5	6	R	D1608~D1623	<=>	H1064~H1073	16	Disabled	Others
ID 5	6	W	D1624~D1639	=>	H10C8~H10D7	16	Disabled	Others

Buttons: Save, Clear All, left arrow, right arrow

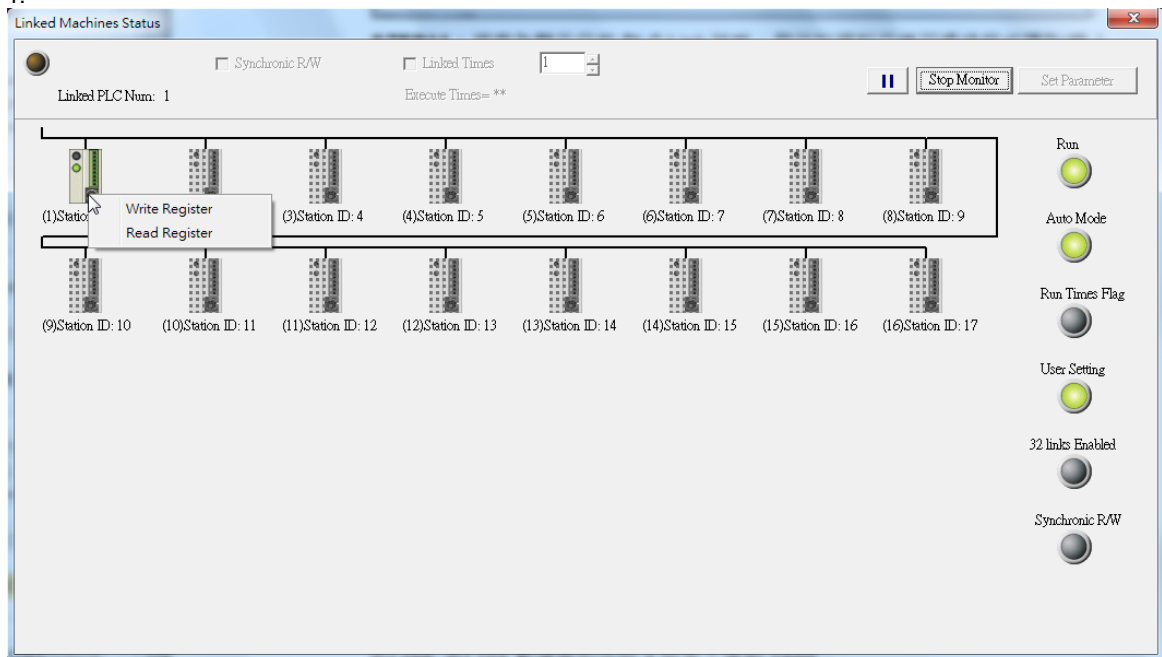
**Step 9:** Click the **Set Parameter** button, click the **Start Monitor** button, and click  or set X0 to On.



**Step 10:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave station through a program or the PLC link wizard.

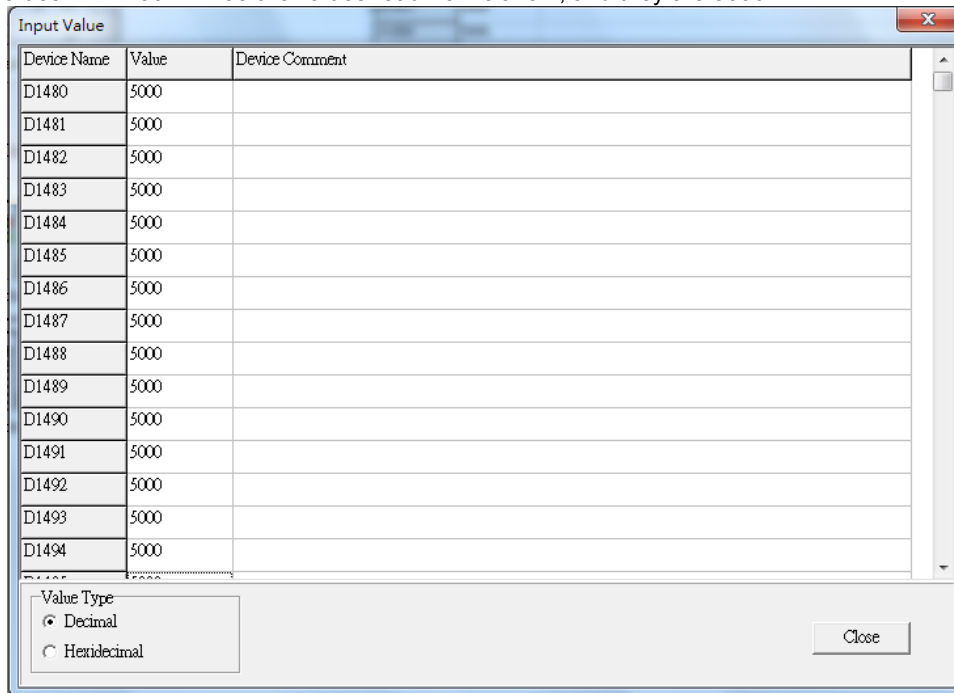
Reading data through the PLC link wizard: Right-click slave station (1) , and click **Read Register** on the context menu which appears.

Writing data through the PLC link wizard: Owing to the fact that "0" is typed in the **Data Length** box in the **Master Parameter Setting** section in the **Write** section (D1450=0), the PLC link wizard can not be used to write any data to slave 1.





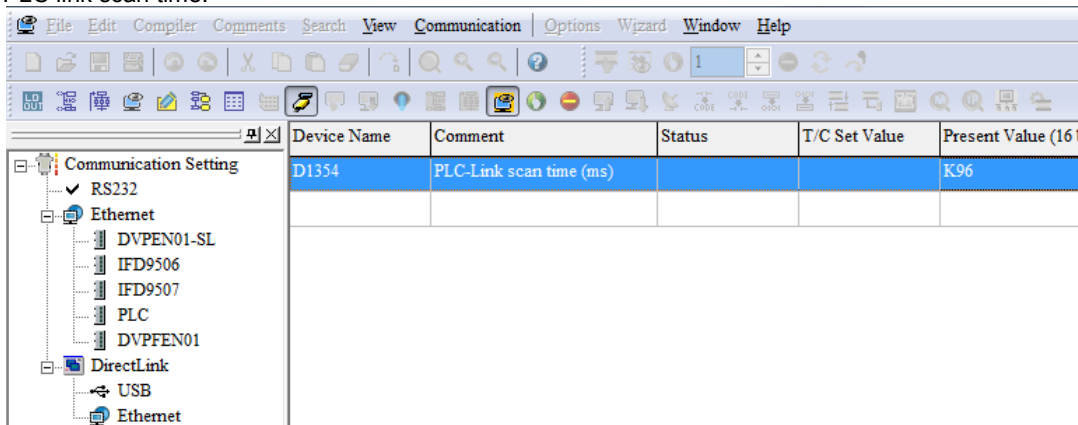


**Step 11:** The values in D1480~D1495 are values read from slave 1, and they are 5000.



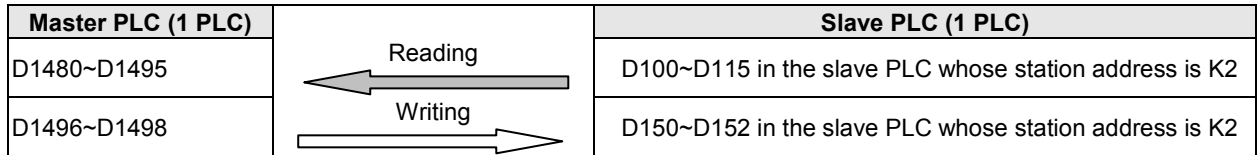
**Step 12:** If any values in D1496~D1498 in the master PLC are changed, the value in D1450 in the master PLC will become 3, and the values in D1496~D1498 in the master PLC will be written to D150~D152 in slave 1.

**Step 13:** Close the **Linked Machines Status** window, click , click , and type "D1354". The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1.
- The master station reads 16 pieces of data in slave 1 (D1434=16), and writes 0 pieces of data to slave 1 (D1450=0). If any values in D1496~D1498 in the master PLC are changed, the value in D1450 in the master PLC will become 3, the values in D1496~D1498 in the master PLC will be written to D150~D152 in slave 1, and the value in D1450 will become 0 after 100 milliseconds.
- The master station exchanges data with the slave station by means of a PLC link. The values in D100~D115 in the slave station are written to D1480~D1495 in the master station, and the values in D1496~D1498 in the master station are written to D150~D152 in the slave station.



- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave station are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1498	All are 0.	D150~D152 in slave station 1	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave station will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1498	All are 0. (Unchanged)	D150~D152 in slave station 1	All are 0.

If any values in D1496~D1498 in the master PLC are changed, the values in the data registers used for data exchange in the master station and the slave station will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1498	All are 1000. (Changed)	D150~D152 in slave station 1	All are 1000.

## 8.2 Using the PLC Link Wizard in ISPSOft (ASCII/RTU Mode)

### 【Control requirement】

A master station (A DVP-EH3 series PLC) reads sixteen pieces of data (sixteen words) in a slave station (a DVP-EH3 series PLC) through a PLC link. If three values (three words) in the master station are changed, the master station will send a write command to the slave station.

### 【Setting station addresses of PLCs】

Master/Slave station	Station address	Communication format
Master PLC	K40 (D1121=K40)	3. ASCII, 9600, 7, E, 1 (D1120=H'86) 4. RTU, 9600, 8, E, 1 (D1120=H'87) The communication format of the slave PLCs needs to be the same as the communication format of the master PLC.
Slave PLC 1	K2 (D1121=K2)	

### 【Descriptions of devices】

Device in a PLC	Description
X0	X0 functions as a conditional contact used to enable M1350 and M1351.
D1120	Communication protocol of COM2 (RS-485)
D1121	PLC Communication address
D1129	Abnormal communication timeout Time unit: ms
M1120	M1120 is used to retain the communication format of COM2 (RS-485).
M1143	M1143 is used to determine whether the communication format set for COM2 (RS-485) is an ASCII mode or an RTU mode. Off: ASCII mode

Device in a PLC	Description
	On: RTU mode
M1350	M1350 is used to enable a PLC link.
M1351	If M1351 is ON, the PLC link executed will be an automatic mode.
M10~M12	They are used to enable timers, and write 0 to D1450.
T0~T2	They are used to set M10~M12 to Off.
D0~D2	The values in D0~D2 are the previous values in D1496~D1498.
D50~D65	The values in D50~D65 are the values in D1480~D1495.
D1450	The value in D1450 indicates the length of the data written to slave PLC 1.
D1496~D1498	The values in D1496~D1498 are values written to D150~D152 in slave PLC 1.

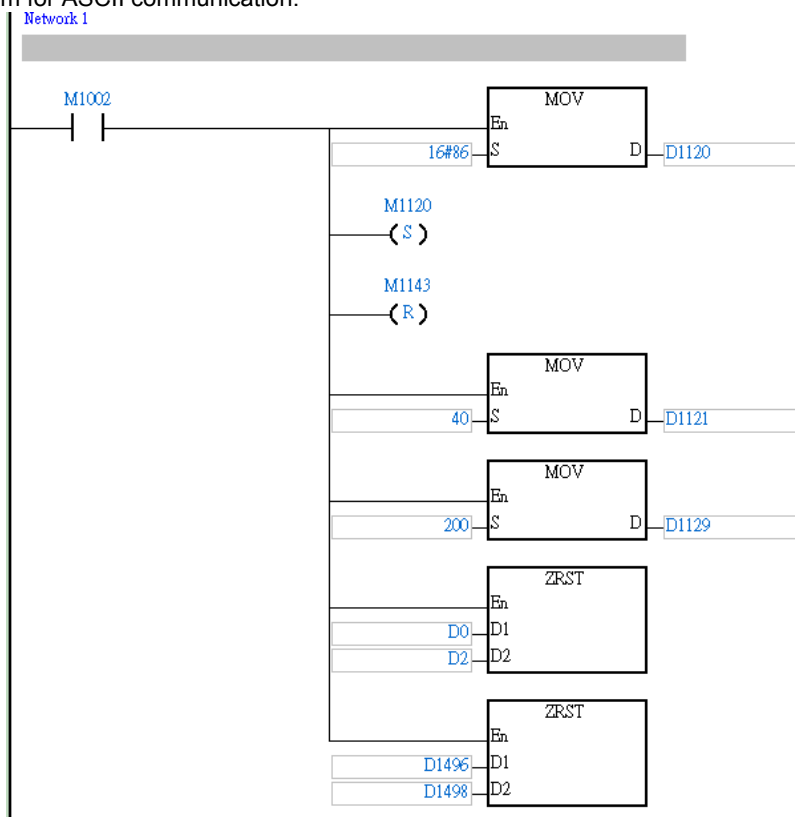
【 PLC link wizard 】

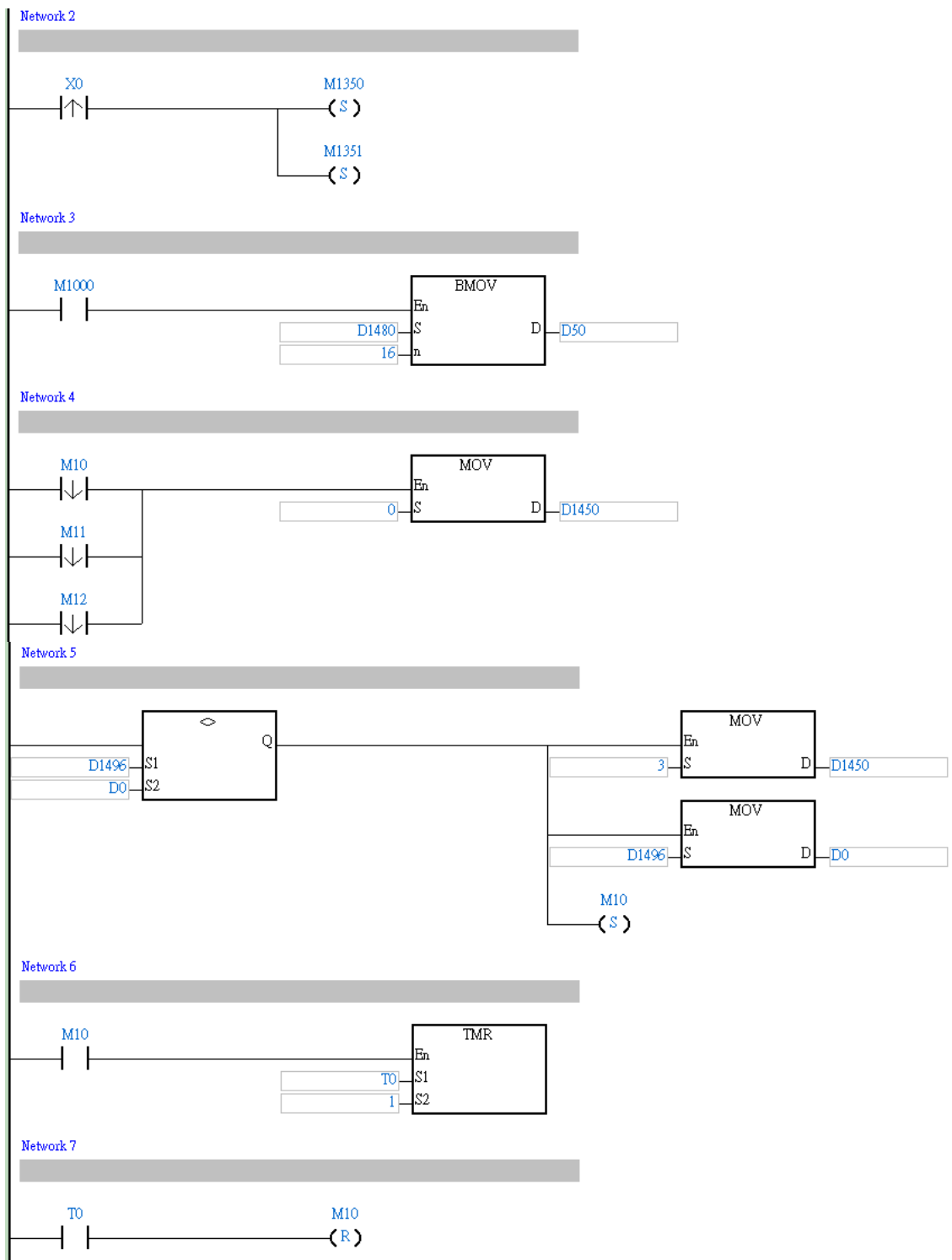
**Step 1:** Start ISPSOft, write a program to the master PLC connected, move the RUN/STOP switch on the PLC into the RUN position, and write related values to the PLC.

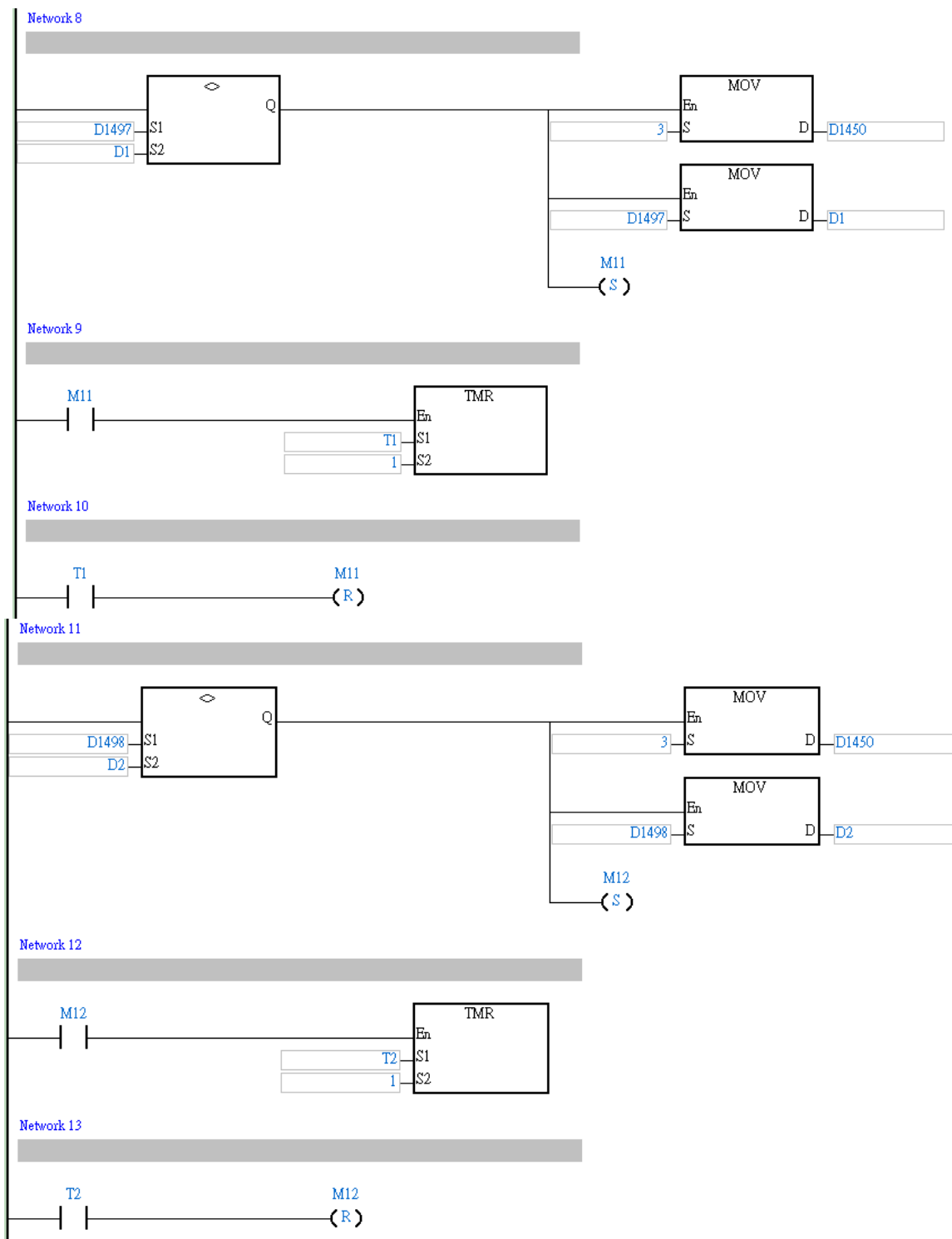


Owing to the fact that devices used to set related communication and a PLC link (M1350 and M1351) are not latching devices, they need to be set by means of a program. The PLC link wizard is used to manually specify the stations which need to be linked (M1355 is On).

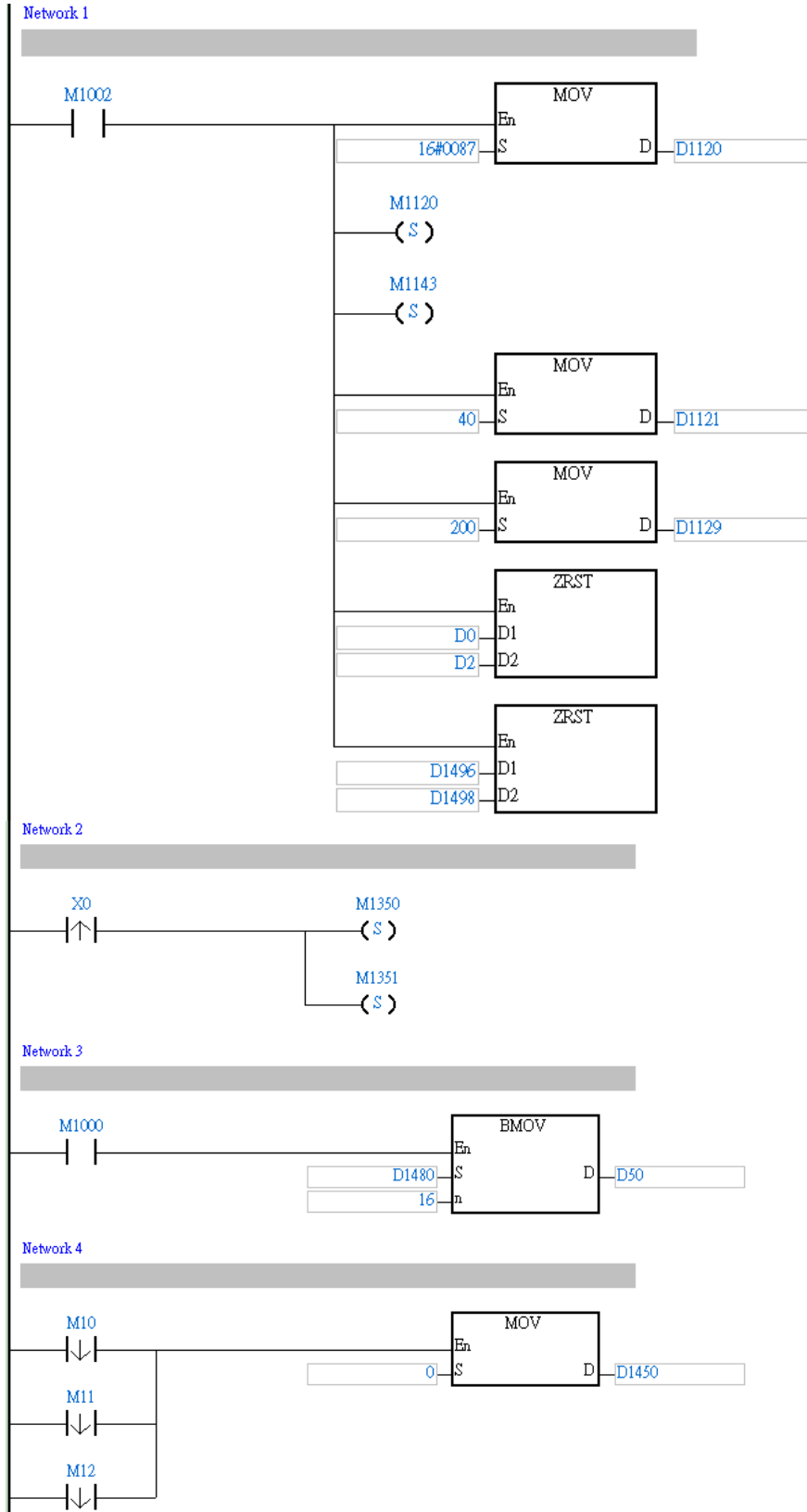
Program for ASCII communication:

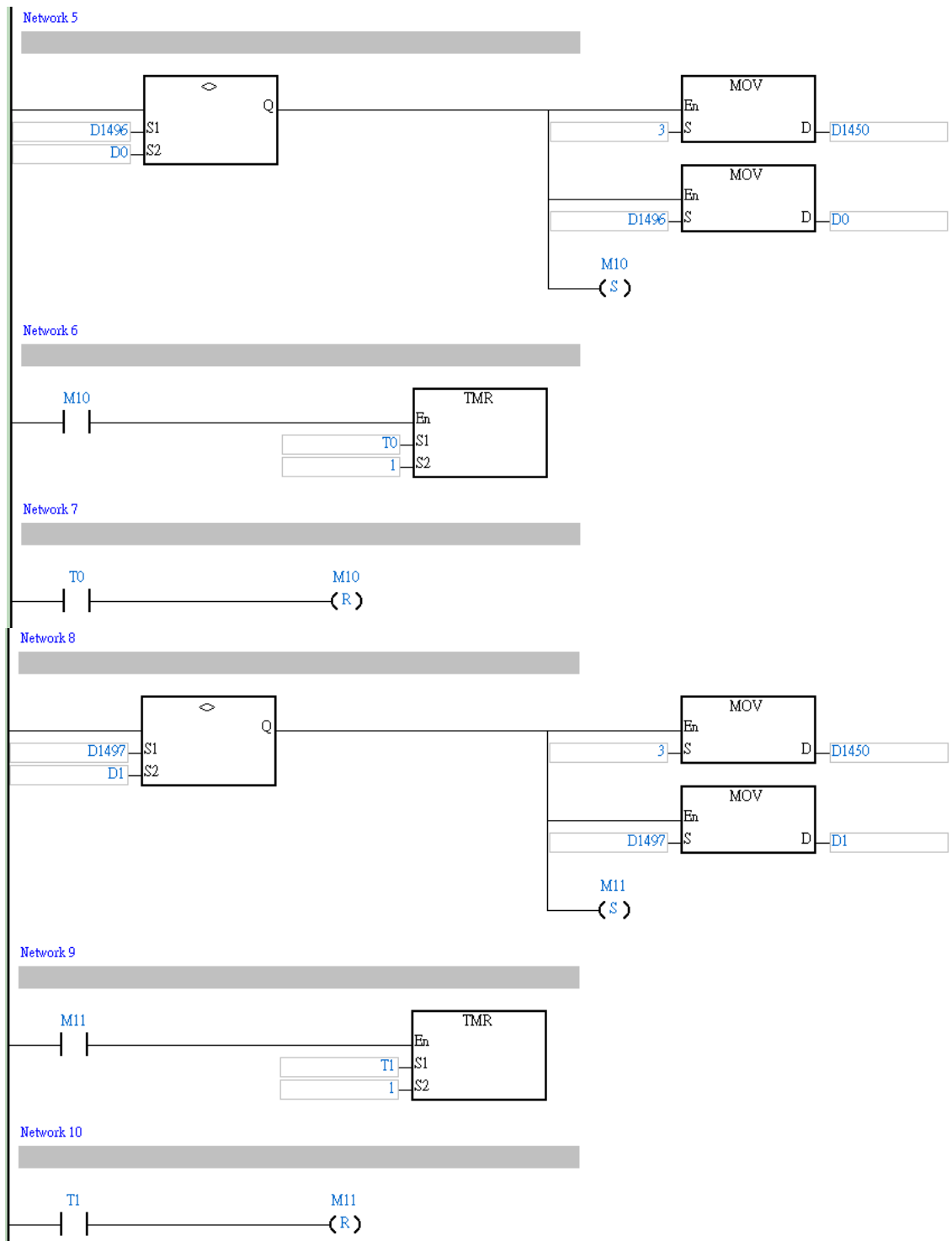


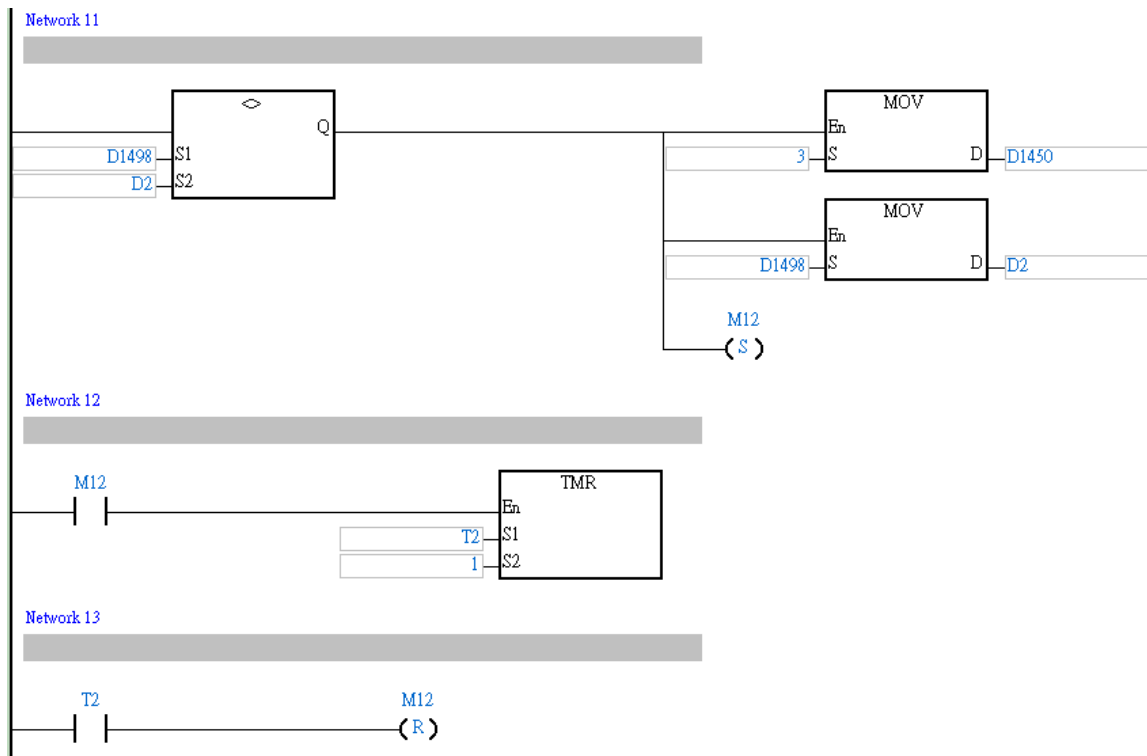






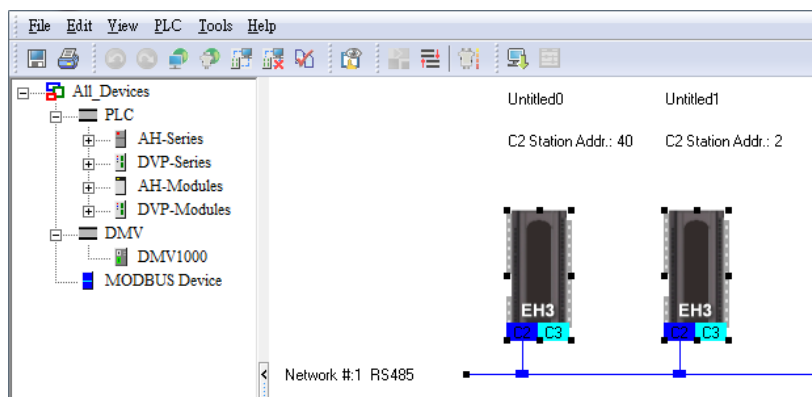
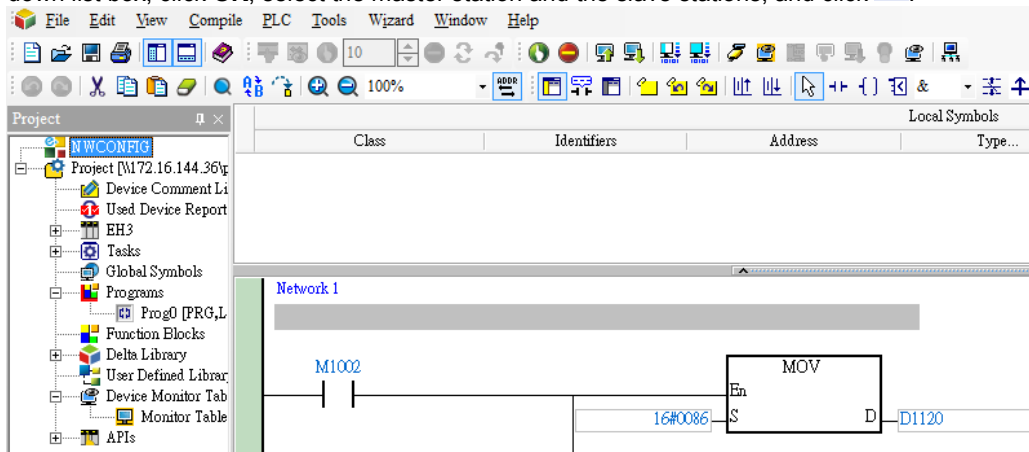
Program for RTU communication:



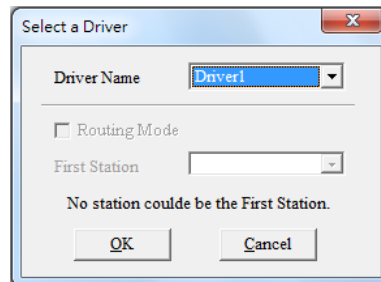





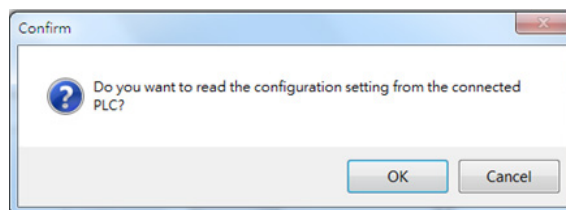
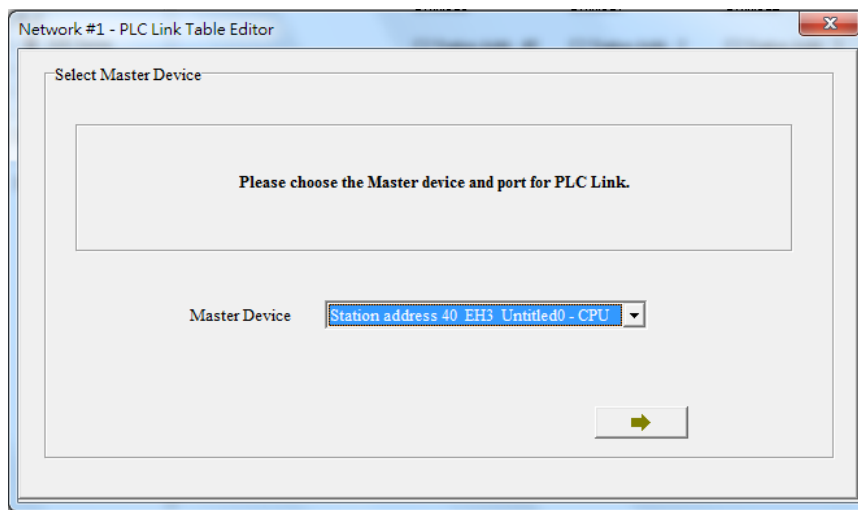
**Step 2:** Double-click **NWCONFIG** in the project management area, create a link, click , select **Driver 1** in the **Driver Name** drop-down list box, click **OK**, select the master station and the slave stations, and click .



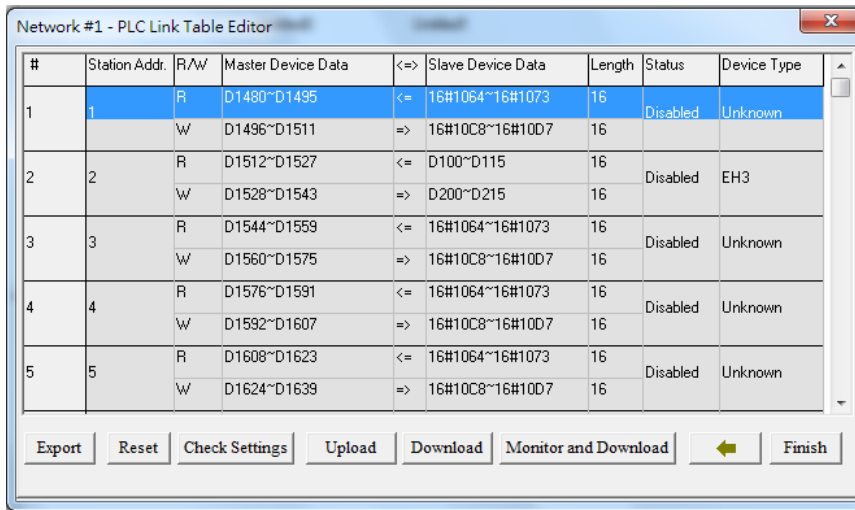





**Step 3:** Select a PLC in the **Master Device** drop-down list box, click , and click **OK** in the window which appears.

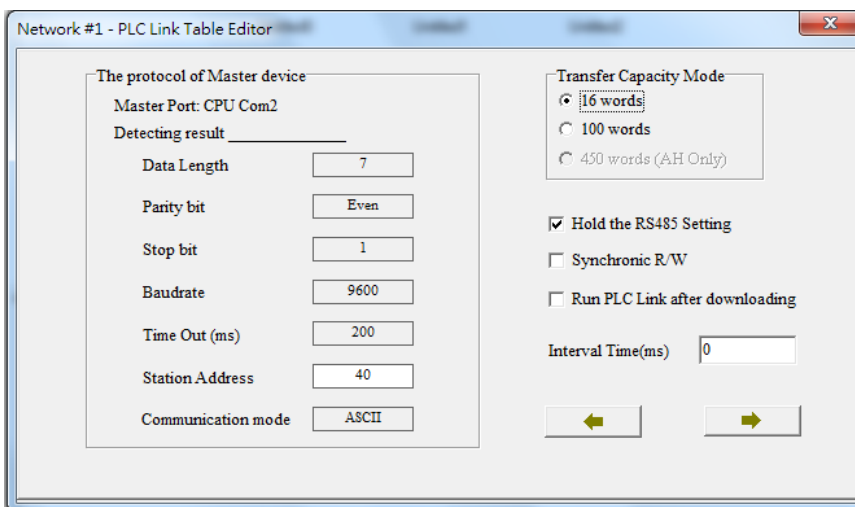


**Step 4:** Click .

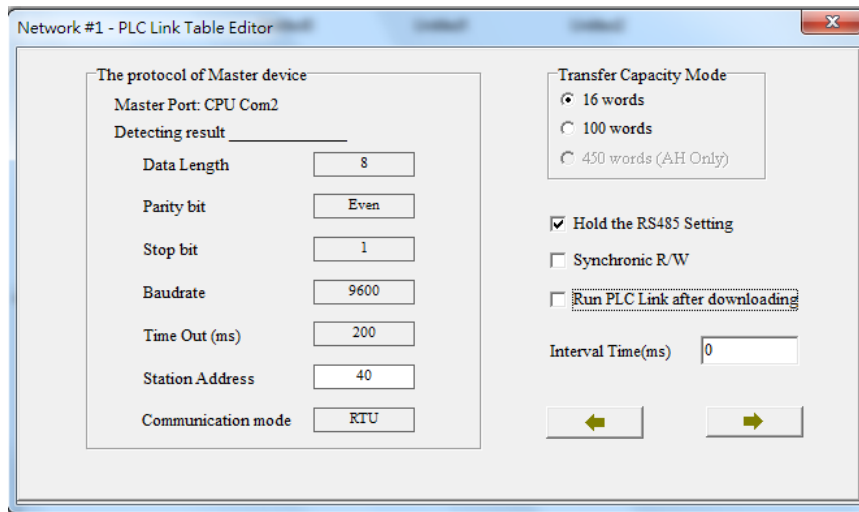


**Step 5:** The PLC link wizard reads values according to the communication format set for COM2 in the master PLC. Select the **16 words** option button in the **Transfer Capacity Mode** section, unselect the **Synchronic R/W** checkbox and the **Run PLC Link after downloading** checkbox, type "0" in the **Interval Time** box, and click .

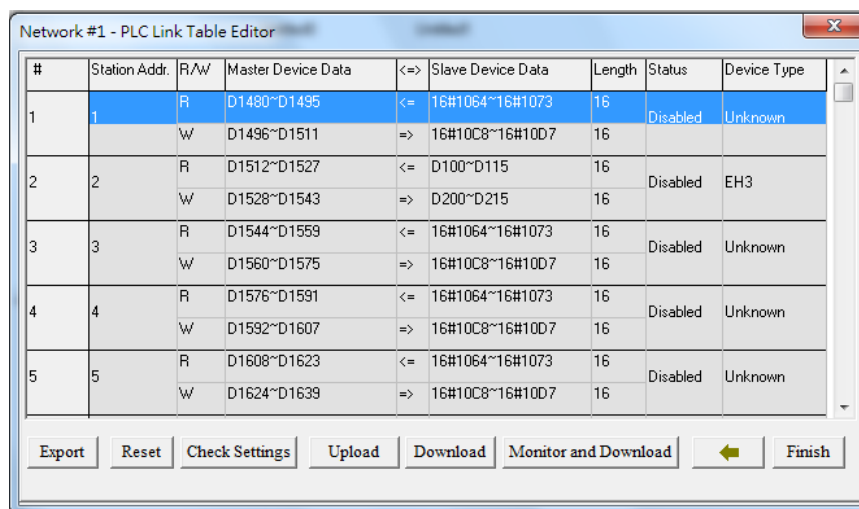
Window for ASCII communication:

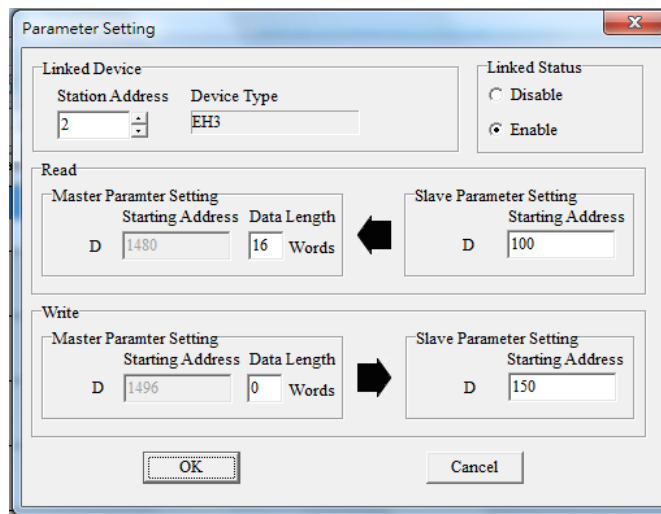


Window for RTU communication:

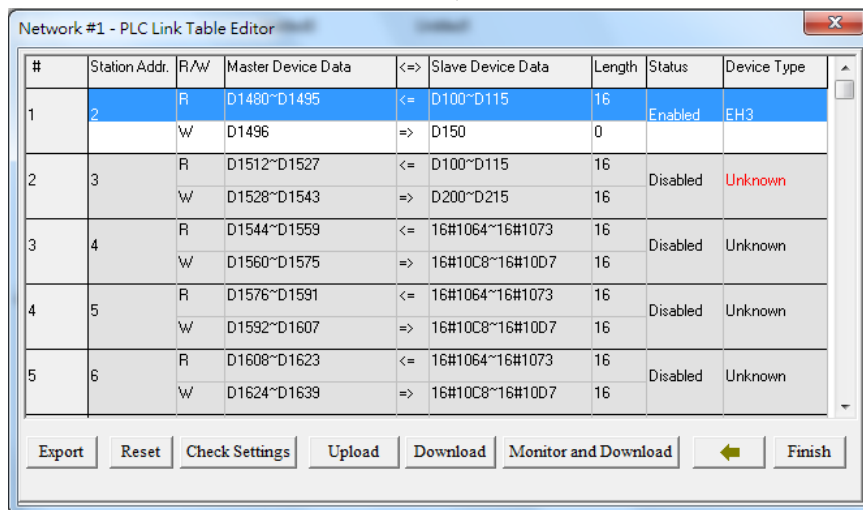



**Step 6:** Double-click the 1 block in the **PLC Link Table Editor** window, select 2 in the **Station Address** box, select the **Enable** option button in the **Linked Status** section (set M1360 to On), type "16" in the **Data Length** box in the **Master Parameter Setting** section in the **Read** section, type "0" in the **Data Length** box in the **Master Parameter Setting** section in the **Write** section, type "100" in the **Starting Address** box in the **Slave Parameter Setting** section in the **Read** section, type "150" in the **Starting Address** box in the **Slave Parameter Setting** section in the **Write** section, and click **OK**.

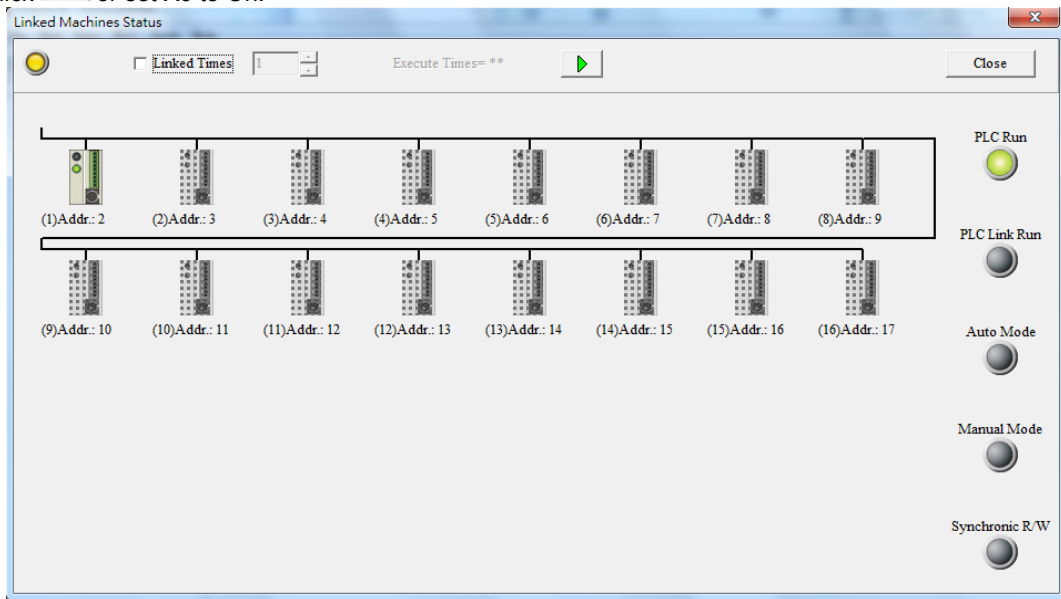





**Step 7:** Check whether the contents of the 1 block are correct, and then click **Monitor and Download**.



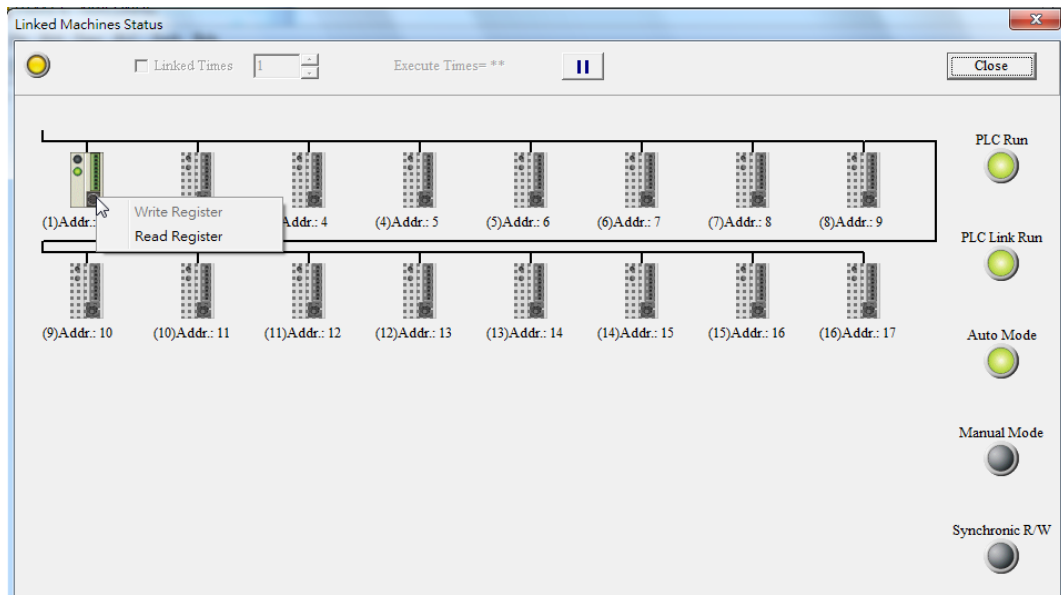
**Step 8:** Click  or set X0 to On.



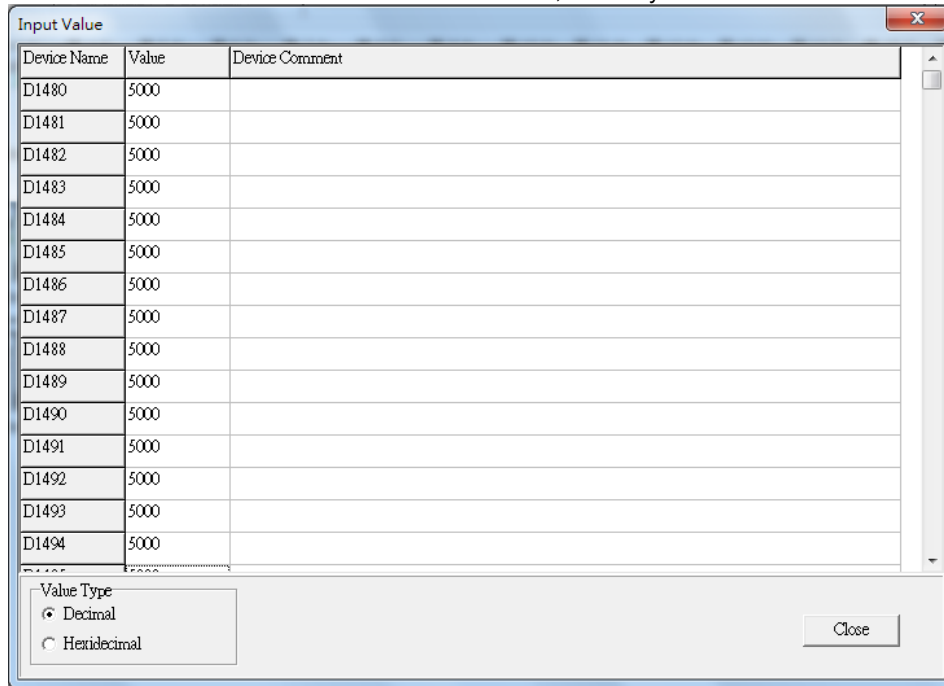
**Step 9:** The state of the PLC link executed is shown in the **Linked Machines Status** window. The master PLC can exchange data with the slave stations through a program or the PLC link wizard.

Reading data through the PLC link wizard: Right-click slave station (1) , and click **Read Register** on the context menu which appears.



Writing data through the PLC link wizard: Owing to the fact that "0" is typed in the **Data Length** box in the **Master Parameter Setting** section in the **Write** section (D1450=0), the PLC link wizard can not be used to write any data to slave 1.

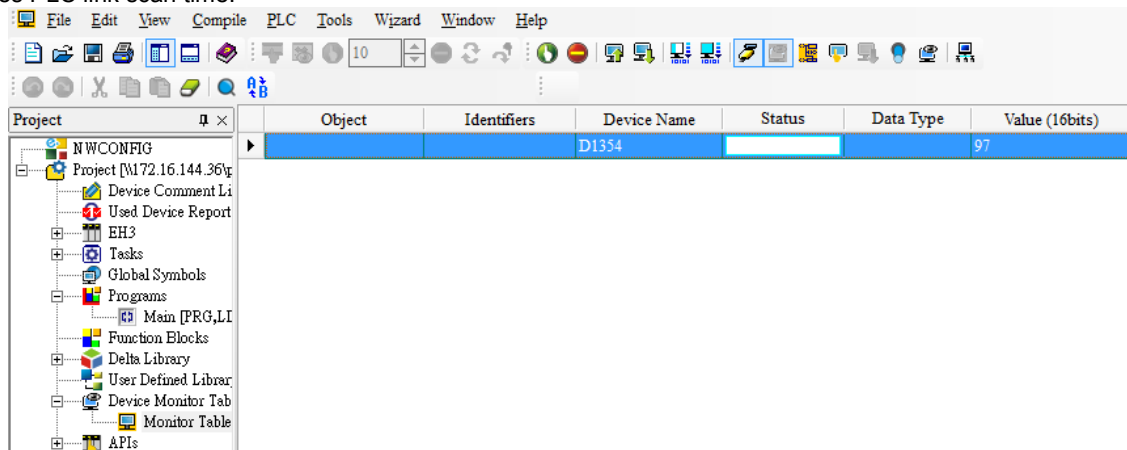


**Step 10:** The values in D1480~D1495 are values read from slave 1, and they are 5000.



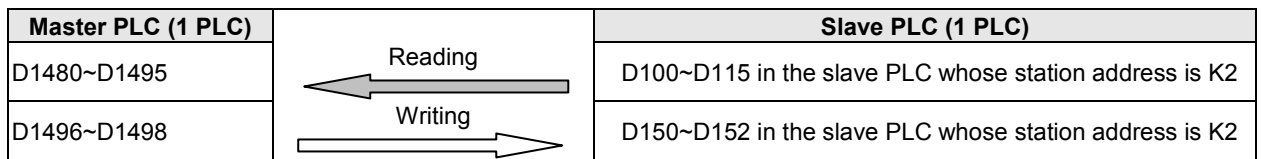
**Step 11:** If any values in D1496~D1498 in the master PLC are changed, the value in D1450 in the master PLC will become 3, and the values in D1496~D1498 in the master PLC will be written to D150~D152 in slave 1.

**Step 12:** Close the **Linked Machines Status** window, create a device monitoring table by me  of **Device Monitor Table** in the project management area, type "D1354" in the device monitoring table, and click . The value in D1354 indicates PLC link scan time.



**【Description of control】**

- D1399 in the master PLC is used to set a start slave station address. The value in D1399 is K2, that is, the PLC whose station address is K2 is slave station 1.
- The master station reads 16 pieces of data in slave 1 (D1434=16), and writes 0 pieces of data to slave 1 (D1450=0). If any values in D1496~D1498 in the master PLC are changed, the value in D1450 in the master PLC will become 3, the values in D1496~D1498 in the master PLC will be written to D150~D152 in slave 1, and the value in D1450 will become K0 after 100 milliseconds.
- The master station exchanges data with the slave station by means of a PLC link. The values in D100~D115 in the slave station are written to D1480~D1495 in the master station, and the values in D1496~D1498 in the master station are written to D150~D152 in the slave station.



- When M1350 is Off, the values in the data registers used for data exchange in the master station and the slave station are the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 0.	D100~D115 in slave station 1	All are 5000.
D1496~D1498	All are 0.	D150~D152 in slave station 1	All are 0.

After M1350 is set to ON, the values in the data registers used for data exchange in the master station and the slave station will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1498	All are 0. (Unchanged)	D150~D152 in slave station 1	All are 0.

If any values in D1496~D1498 in the master PLC are changed, the values in the data registers used for data exchange in the master station and the slave station will become the ones shown below.

Master PLC	Value	Slave PLC	Value
D1480~D1495	All are 5000.	D100~D115 in slave station 1	All are 5000.
D1496~D1498	All are 1000. (Changed)	D150~D152 in slave station 1	All are 1000.