TOSHIBA

UM-TS03***-E044

PROGRAMMABLE CONTROLLER

PROSEC **T-SERIES**

DDE SERVER

T-PSV

Version 1.1

OPERATION MANUAL

TOSHIBA CORPORATION

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Misuse of this equipment can result in property damage or human injury.
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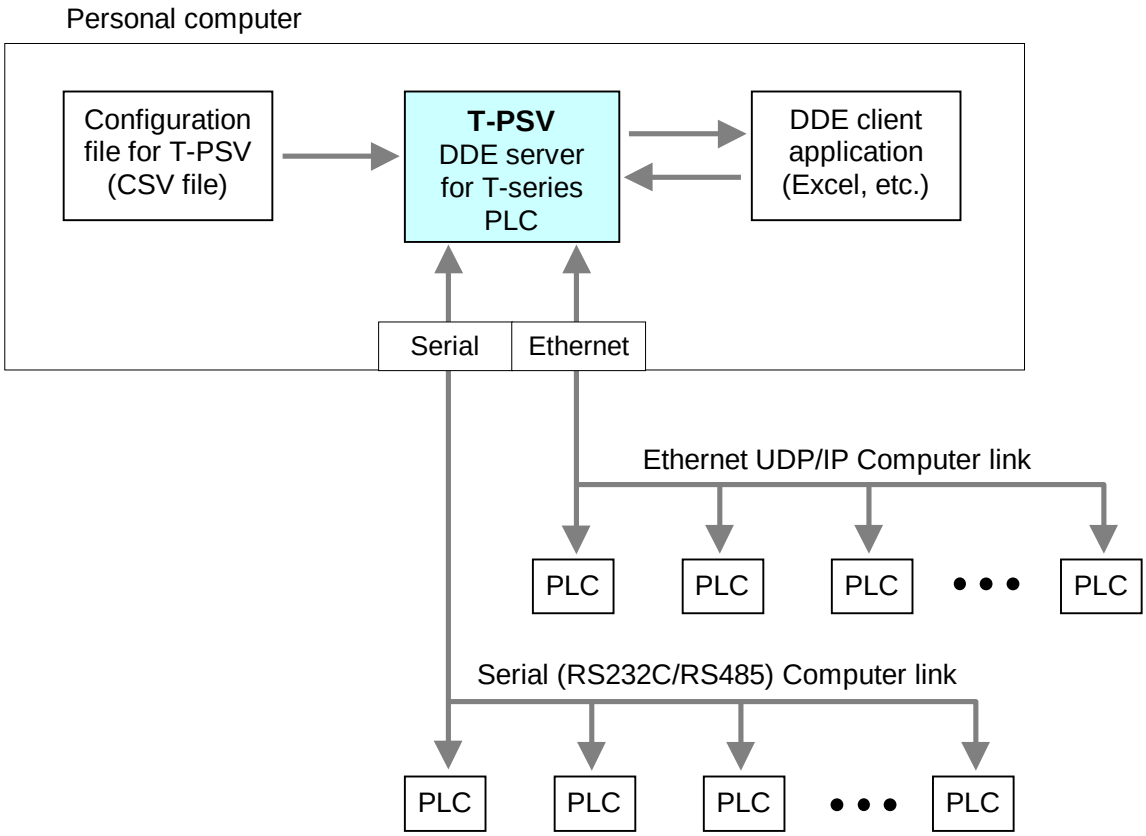
Contents

1.1 T-PSV Overview

The T-series PLC DDE Server (hereafter called T-PSV) is an application software that runs on Windows 98/Me/NT4.0/2000. The T-PSV works to collect data from T-series PLCs connected by Ethernet and/or serial communication line, and to exchange the data with other Windows application, such as Excel, using DDE (Dynamic Data Exchange). Data writing into the PLC is also possible.

You can access any register/device data in the PLCs connected on Ethernet or serial line, and can use these data on Windows application without need of developing the communication program.



Configuration file for T-PSV:
This file specifies the PLC communication method, data sampling timing, Tag name designation, etc. This file is CSV format which can be edited by Excel, etc.

DDE client application (Excel, Visual Basic, etc.):
The PLC's data can be displayed on Excel spreadsheet by designating the Tag name with the DDE expression. Data writing into the PLC is also possible by using VBA.

T-PSV program:
The T-PSV is a program to gather the PLC's data based on the configuration file. When a DDE client application requests the data, the T-PSV sends the data to the client application. After that, the T-PSV sends the data when the data is changed.

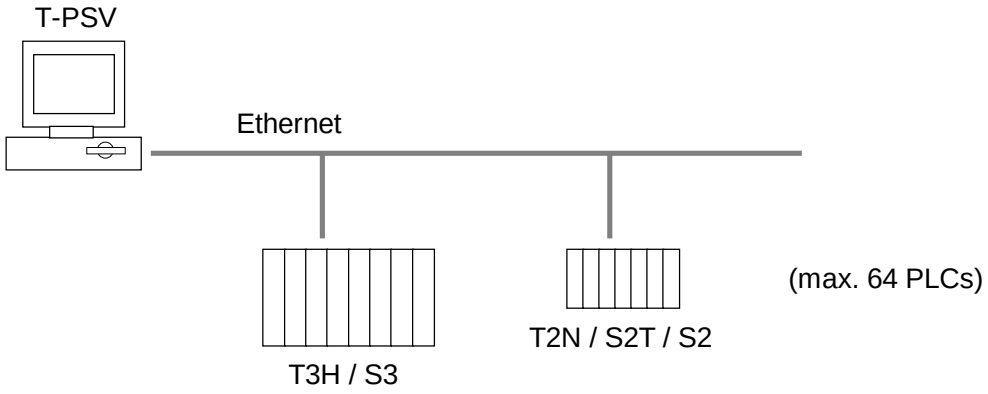
1. Overview

1.2 System configuration

The T-PSV supports one Ethernet connection and one Serial connection at the same time.
On the Ethernet connection, up to 64 PLCs can be connected.
On the other hand, the Serial connection has three types of connection systems, RS485 computer link connection, programmer port connection, and TOSLINE-S20 connection. Either one connection system can be selected among these three types.

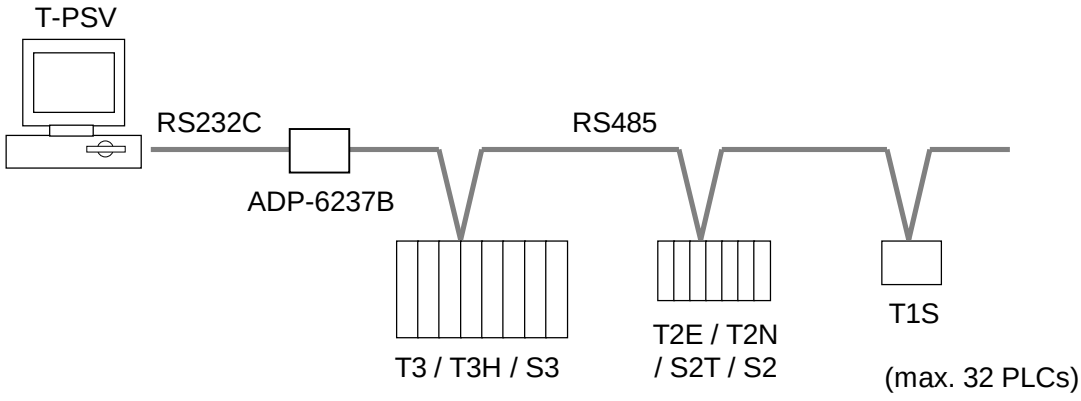
(1) Ethernet connection

The Ethernet connection is available with T2N, T3H, S2T, S2 and S3. These PLCs can have an Ethernet interface.
Up to 64 PLCs can be connected to the T-PSV. The transmission speed is 10Mbps. In this configuration, personal computer's Ethernet port is used.



(2) RS485 Computer link connection

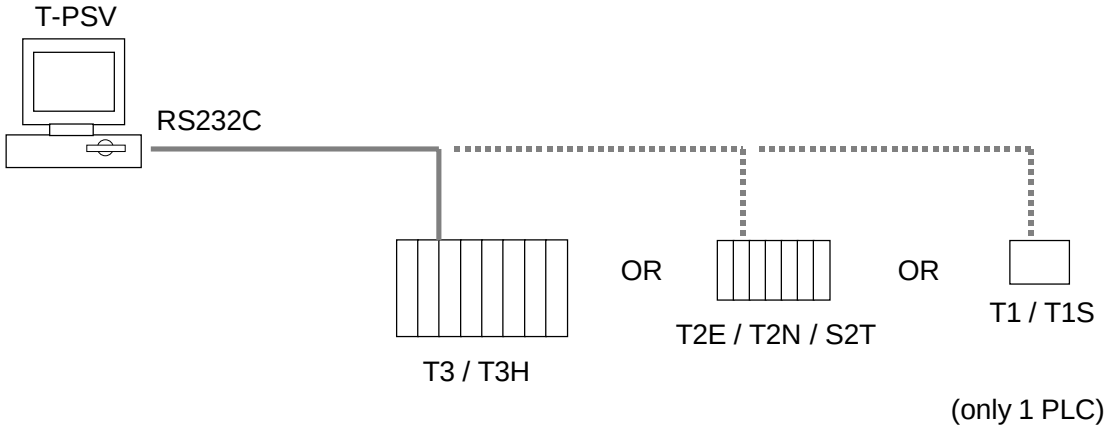
The RS485 computer link connection is available with T1S, T2E, T2N, T3, T3H, S2T, S2 and S3. These PLCs have an RS485 computer link port on the CPU module.
Up to 32 PLCs can be connected to the T-PSV. The transmission speed is up to 19.2kbps. In this configuration, personal computer's Serial port is used. The RS232C/RS485 converter (ADP-6237B) is used to convert to RS485.



Note) T1S means T1-16S and T1-40S which has the RS485 communication port.

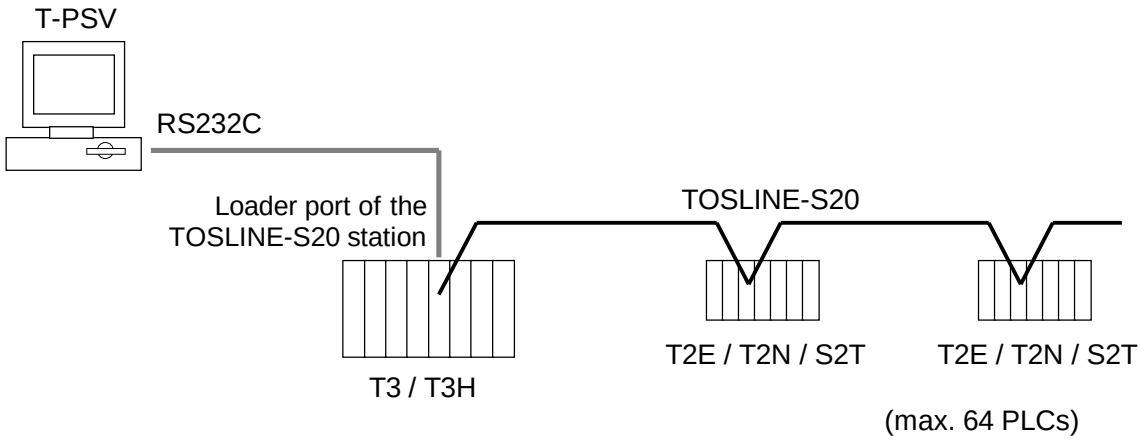
(3) Programmer port connection

The programmer port connection is available with T1, T1S, T2E, T2N, T3, T3H, and S2T. The interface of the PLC's programmer port is RS232C.
Only one PLC can be connected to the T-PSV. The transmission speed is fixed at 9.6kbps. In this configuration, personal computer's Serial port is used.



(4) TOSLINE-S20 connection

The TOSLINE-S20 connection is available with T2E, T2N, T3, T3H and S2T. These PLCs support TOSLINE-S20 connection.
Up to 64 PLCs can be connected to the T-PSV via TOSLINE-S20. The transmission speed is fixed at 9.6kbps. In this configuration, personal computer's Serial port is used to connect with the loader port of the TOSLINE-S20 station.



Note) TOSLINE-S20 is a Toshiba's high-speed control data network. Three types of network configuration are available, co-axial bus, optical bus, and optical loop. The transmission speed is 2Mbps. For details of the TOSLINE-S20, refer to the separate TOSLINE-S20 manual.

1. Overview

1.3 System Requirements

Item	Computer requirements
Operating system	Windows 98, Me, NT4.0, or 2000
CPU	Celeron 300 MHz (Pentium III 500 MHz or more is recommended)
Memory	64 MB or more (128 MB or more recommended)
Monitor	Color: 16 colors or more Graphics: 640 × 480 pixels or more (1024 × 768 pixels recommended)
Floppy disk	One 1.44 MB
Hard disk	10 MB or more free space
Communication interface	Ethernet (TCP/IP Winsock) Serial (RS-232C, asynchronous up to 19.2 kbps)

1.4 Functional specifications

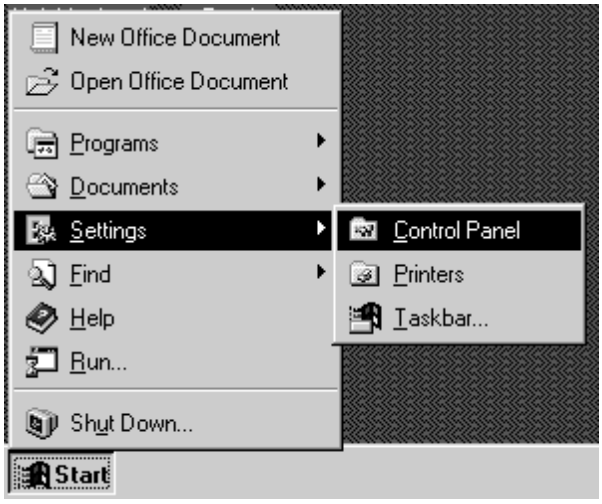
Item	T-PSV specifications	
PLC interface	Ethernet	Serial (RS232C)
Communication speed	10Mbps	1200, 2400, 4800, 9600, or 19200 bps
Number of PLC connected	Max. 64	RS485 computer link: max. 32 Programmer port: 1 TOSLINE-S20: max. 64 (Either 1 system of above)
Communication port support	1 Ethernet port, 1 Serial port, or both	
Data update cycle setting	3 cycles setting per interface High: 0.2 second or more Middle: 0.3 second or more Low: 0.4 second or more	
Number of Tag on T-PSV	Total max. 4096 (Windows NT4.0 or 2000) Total max. 1792 (Windows 98 or Me)	
Number of Tag per PLC	Continuous address data: Max. 248 words / cycle (max. 744 words / 3 update cycles) Individual address data: Max. 32 words / cycle (max. 96 words / 3 update cycles)	

Note) Either continuous address Tag or individual address Tag can be used for a PLC per one update cycle.

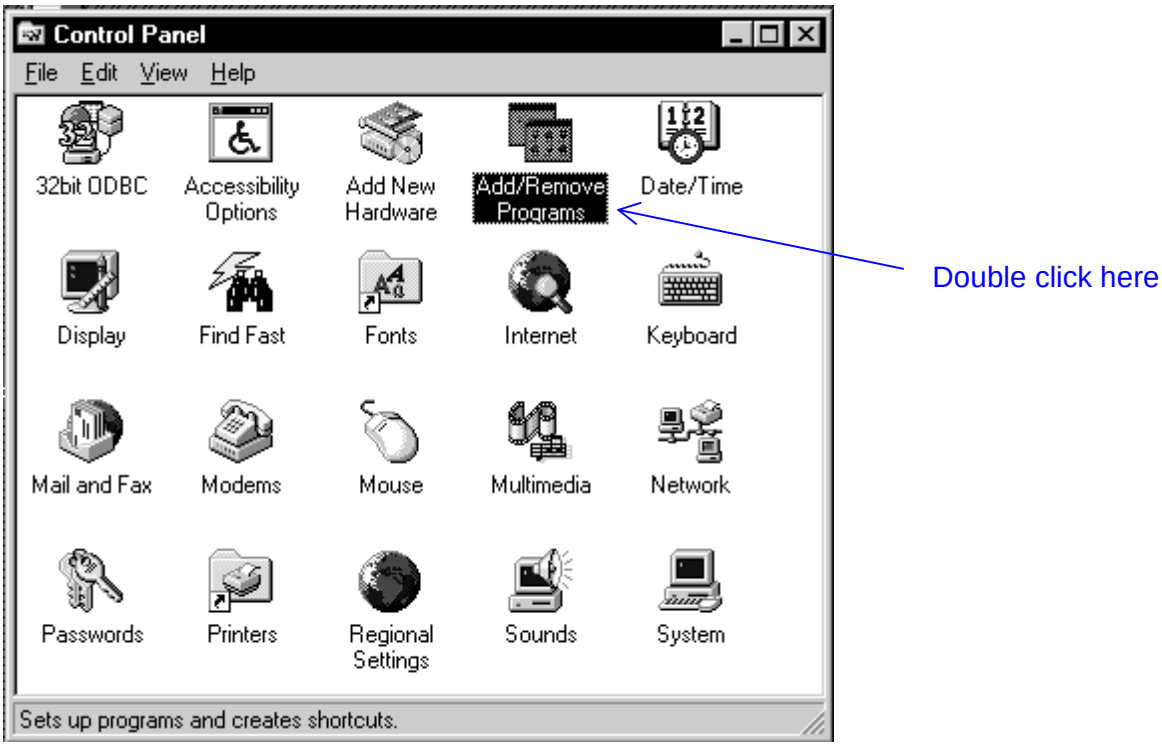
2.1 Install the T-PSV

To install the T-PSV into your hard disk, insert the T-PSV master disk into the floppy disk drive then operate as follows.

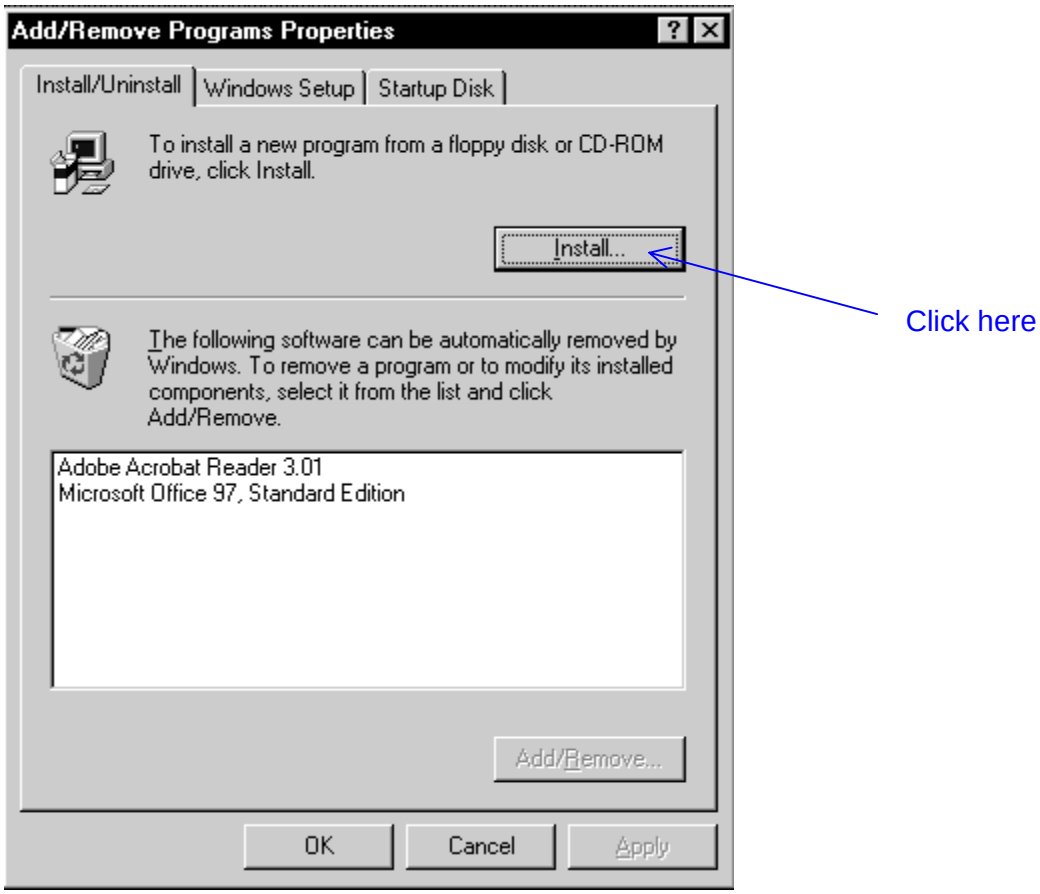
Windows **[Start]** menu → **[Settings]** → **[Control Panel]**



Double click **[Add/Remove Programs]**



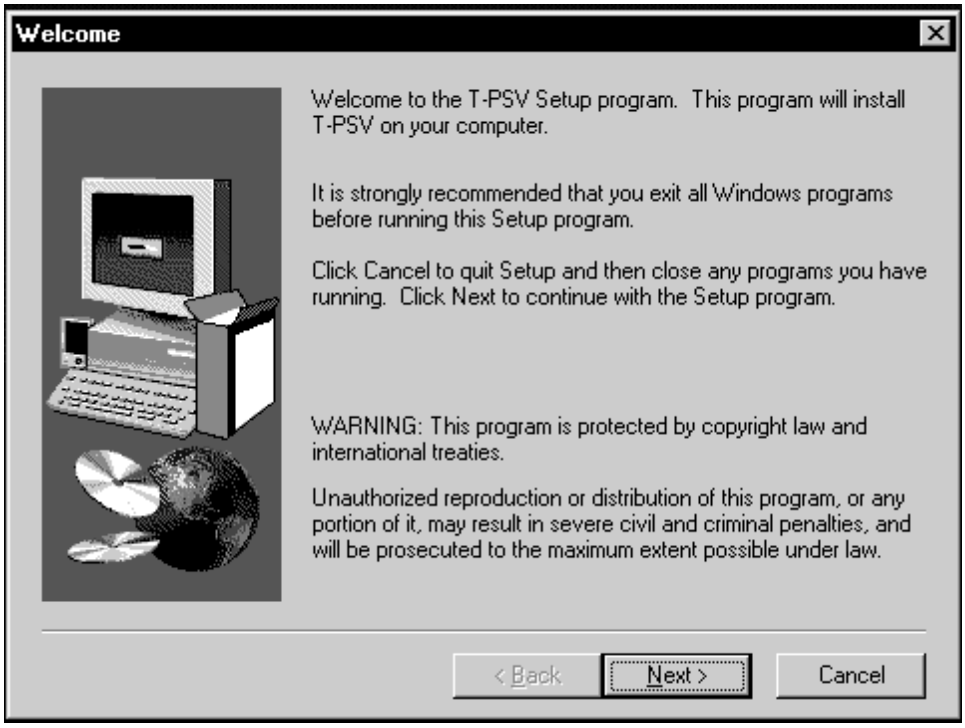
Click **[Install]**



Then follow the message displayed on the screen.

You will install the T-PSV from floppy disk. Its installation program is "A:\Setup.exe".

When you select the T-PSV installation program correctly, the T-PSV installation wizard will be started as follows.



Click **[Next]** to start installation.

2. Getting Started

The default installation folder is c:\Program Files\Toshiba\T-PSV.
If you change the installation folder, click **[Browse]** and select the folder.

Click **[Next]** and follow the message to proceed the installation.

When T-PSV is installed normally, the following screen will be displayed.

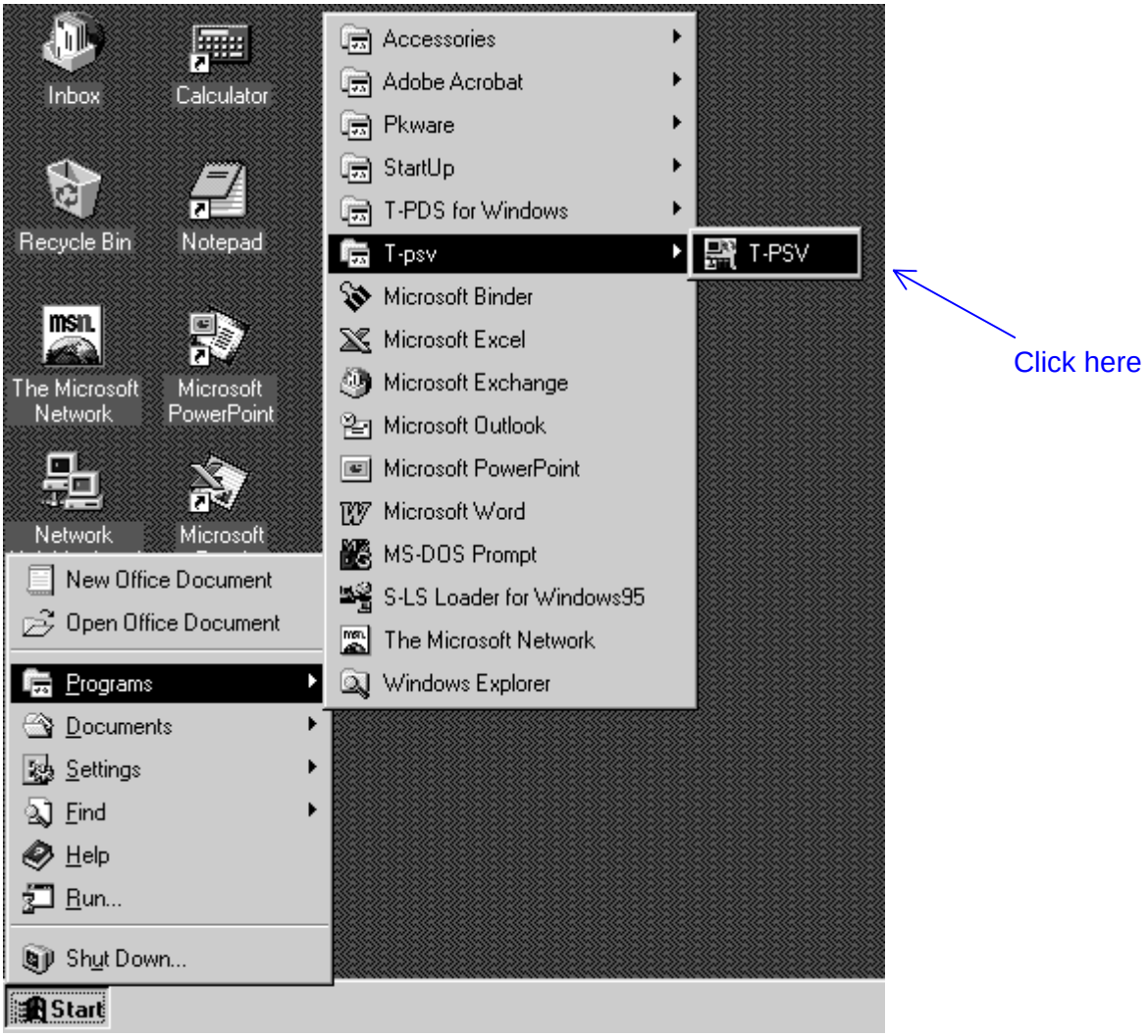
Click **[Finish]**

2.2 Startup the T-PSV

When installation is completed normally, let's startup the T-PSV.

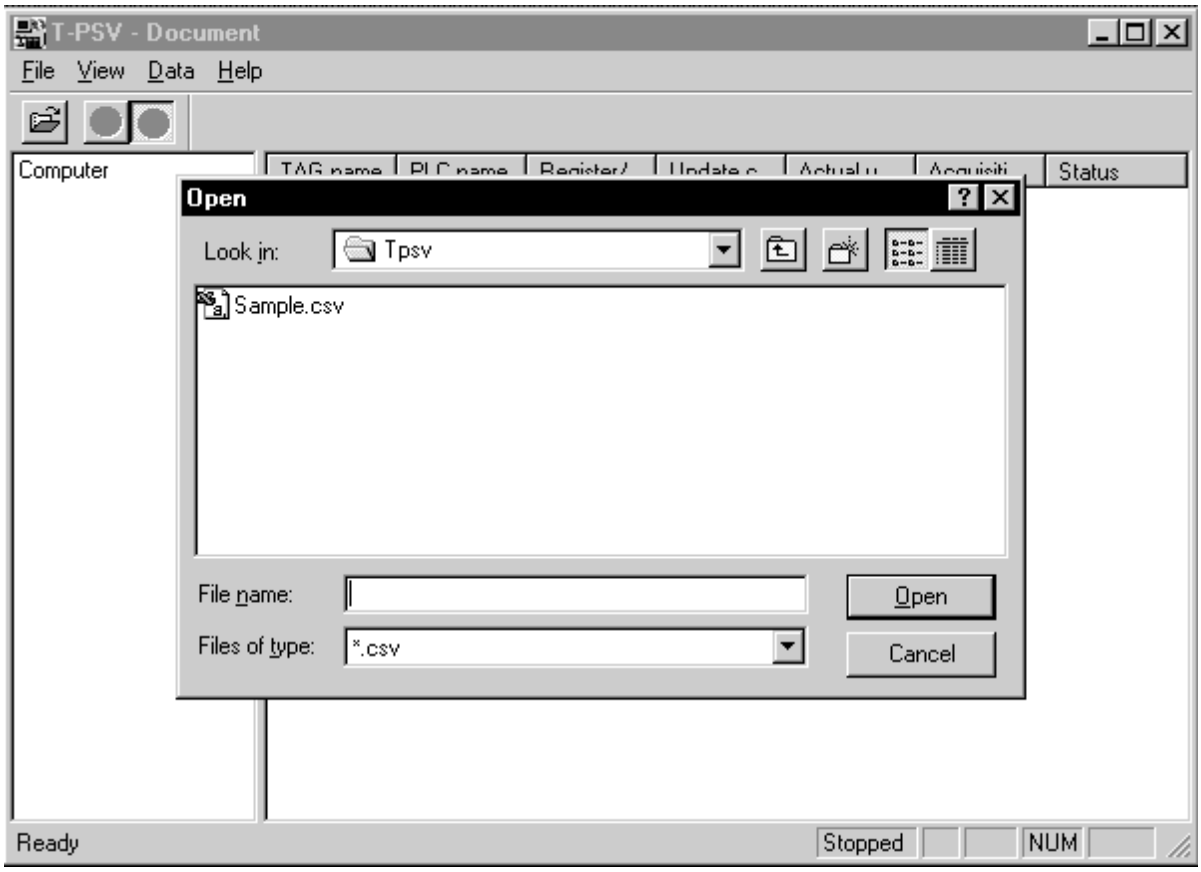
The detailed operation/setup procedure will be explained in the following sections.
This section introduces basic operation for starting up and finishing the T-PSV, and T-PSV screen description.

To startup the T-PSV, select **[T-PSV]** from the **[Start]** menu.



Then the T-PSV is started and the configuration file open dialog is displayed as follows.

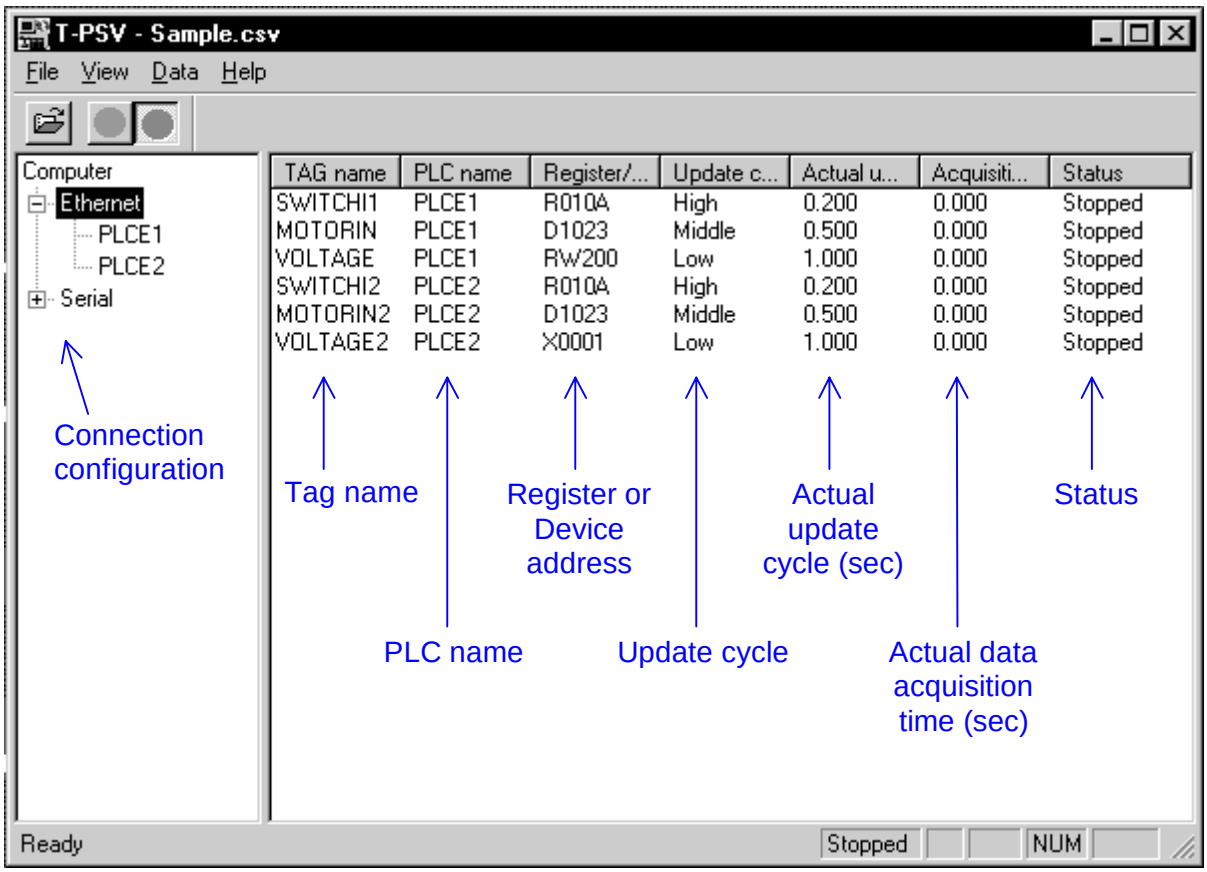
Configuration file open dialog is displayed only at the initial starting up. Once a configuration file is designated, the T-PSV will be started with the latest configuration at the next time.



As you can see, a sample configuration file (Sample.csv) has been installed with the T-PSV. Let's select the Sample.csv here.

2.3 T-PSV screen description

When a configuration file is designated, the T-PSV read the configuration and the following screen will appear.



Tag name, PLC name, register/device address and update cycle are specified by the configuration file.

Actual update cycle shows the actual interval of data read from the PLC.

Actual data acquisition time shows the PLC's response time.

Status shows the communication status between the T-PSV and the PLC as follows.

Stopped:	Communication with the PLC is not executing.
Receiving:	Data is receiving from the PLC within the specified update cycle.
Cycle over:	Data could not be received within the specified update cycle.
Timeout:	There is no response from the PLC within the specified timeout setting.
Error:	Error response is received or TCP/IP is not ready.

Menu structure:

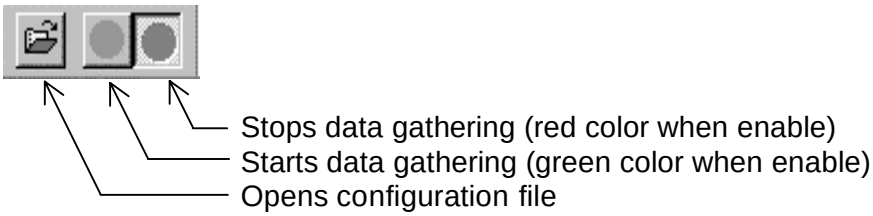
File
- Open (Ctrl+O) — Opens configuration file
- Recent files — Displays the recent used four configuration files
- Exit — Finish the T-PSV

View
- Toolbar — Displays or hides the toolbar
- Status Bar — Displays or hides the status bar
- Split — Changes the screen split position
- Status Hold — Holds the status display except Receiving
- Refresh — Displays the latest status

Data
- Start — Starts data gathering (on-line)
- Stop — Stops data gathering (off-line)

Help
- About T-PSV — Displays the version information of the T-PSV

Toolbars:



2.4 Finish the T-PSV

To finish the T-PSV, select **[File]** → **[Exit]**.

3.1 Operation procedure

(1) Create the configuration file

The configuration file is used to specify the setting information for the T-PSV.
The T-PSV does not have the function to edit the configuration. The T-PSV works based on the configuration described on the configuration file that is created separately.
The configuration file is CSV format, and it is created by other application, such as Excel.

The configuration file includes the following information.

- PLC connection information (Ethernet or serial)
- For serial connection, communication parameters (baudrate, parity, etc.)
- Time-out and update cycle settings for the connection
- PLC information (IP address for Ethernet, station number for serial, PLC model, etc.)
- Tag setting (tag name, corresponding PLC register, update cycle designation, etc.)

Refer to section 4 for the configuration file setting details.
A sample configuration file (Sample.csv) has been installed together with the T-PSV in the same folder. You can use this file to create your configuration file by modifying it.

(2) Create the DDE client application

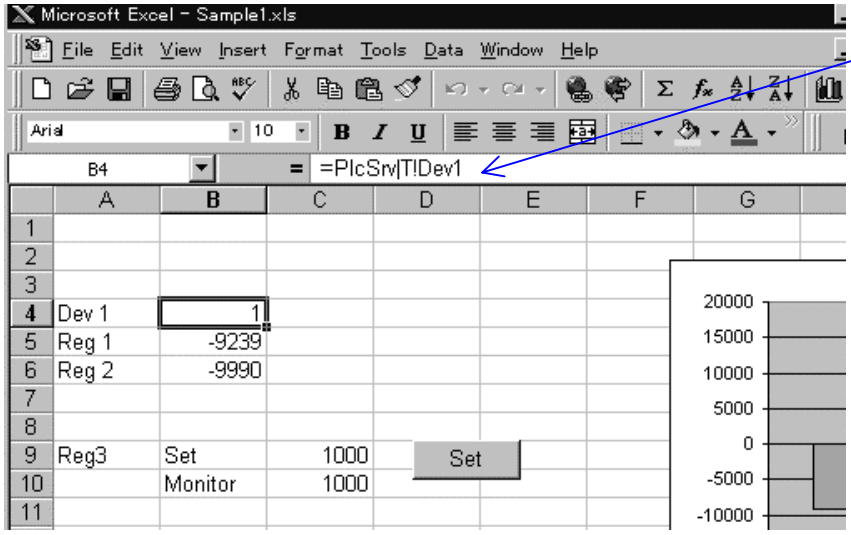
The T-PSV functions to link the PLC data with the DDE client application, such as Excel, Visual Basic, etc.
In the client application, the Tag of the T-PSV is linked through the following convention.

<application>|<topic>!<item>

Where;
application = PLCSRV
topic = T
item = Tag name

application and topic are fixed as above. (Upper and lower cases are not distinguished)
item is the Tag name used in the T-PSV.

The following is an example screen of Excel. The cell B4 has been linked with a tag named "Dev1" of the T-PSV.



Refer to section 5 for more information. A sample Excel file (PlcBook.xls) has been installed together with the T-PSV in the same folder for your reference.

(3) Execute the T-PSV

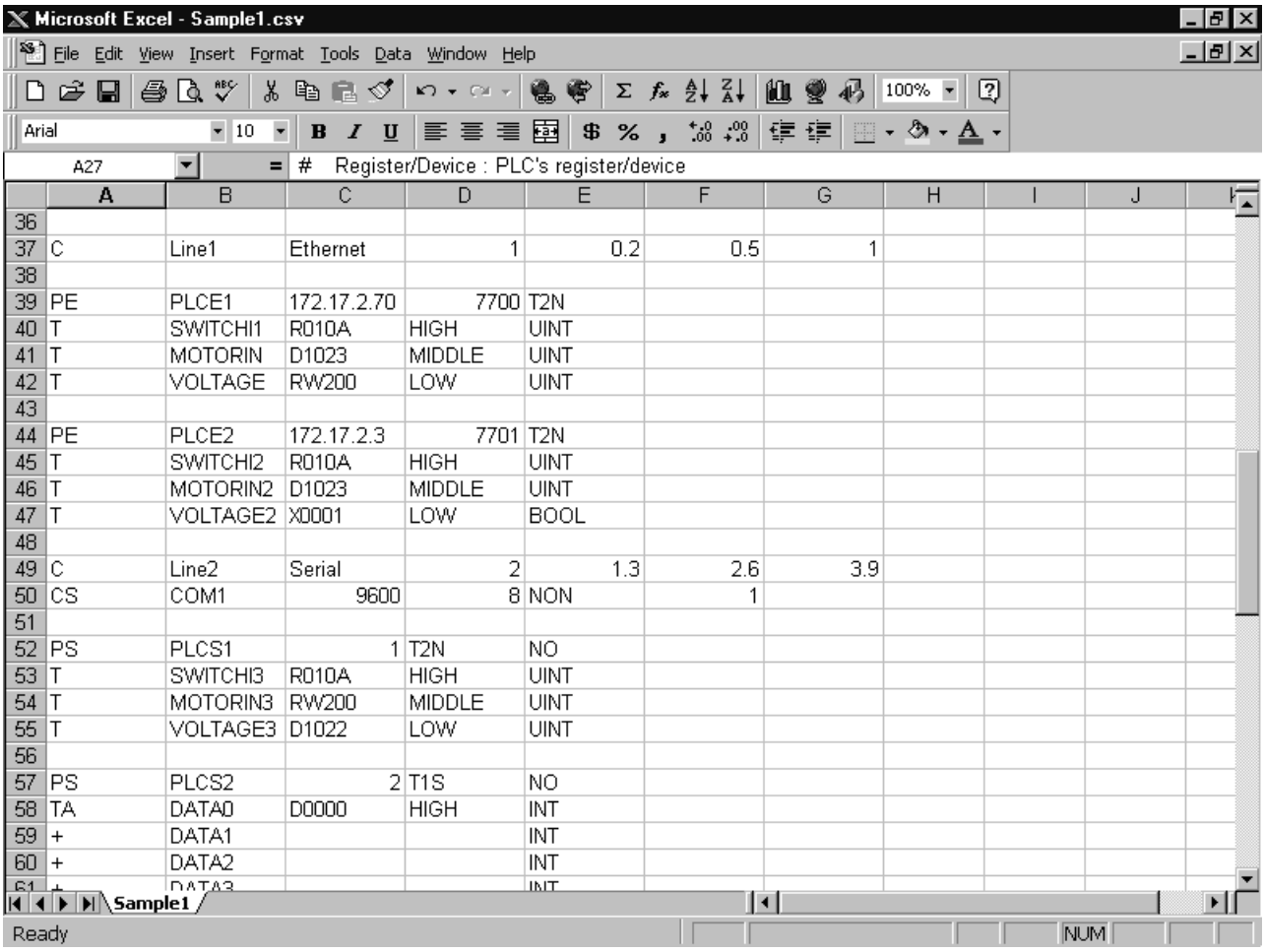
Execute the T-PSV and open the configuration file you created.
If PLCs are connected on the communication line, you can start the data gathering (on-line). Then you will see the communication status on the T-PSV screen.

(4) Execute the DDE client application

When you start the DDE client application and the DDE link is established, you will see the data is updating on your DDE client application.

4.1 Example of the configuration file

An example of the configuration file is shown below. (Excel 97 screen)



	A	B	C	D	E	F	G	H	I	J
36										
37	C	Line1	Ethernet	1	0.2	0.5	1			
38										
39	PE	PLCE1	172.17.2.70	7700	T2N					
40	T	SWITCHI1	R010A	HIGH	UINT					
41	T	MOTORIN	D1023	MIDDLE	UINT					
42	T	VOLTAGE	RW200	LOW	UINT					
43										
44	PE	PLCE2	172.17.2.3	7701	T2N					
45	T	SWITCHI2	R010A	HIGH	UINT					
46	T	MOTORIN2	D1023	MIDDLE	UINT					
47	T	VOLTAGE2	X0001	LOW	BOOL					
48										
49	C	Line2	Serial	2	1.3	2.6	3.9			
50	CS	COM1	9600	8	NON	1				
51										
52	PS	PLCS1	1	T2N	NO					
53	T	SWITCHI3	R010A	HIGH	UINT					
54	T	MOTORIN3	RW200	MIDDLE	UINT					
55	T	VOLTAGE3	D1022	LOW	UINT					
56										
57	PS	PLCS2	2	T1S	NO					
58	TA	DATA0	D0000	HIGH	INT					
59	+	DATA1			INT					
60	+	DATA2			INT					
61	+	DATA3			INT					

Note that the configuration file must be CSV (comma delimited) format. When you create and save the file by Excel, specify as CSV format.
In CSV format, comma is used to separate each column. Therefore you cannot use comma even in the comment line.

4. Configuration File

4.2 Inside the configuration file

The configuration file contains the connection, PLC, and Tag settings.
The first column of each line designates the setting ID as follows.

Setting ID (first column):

Comment line	#
Connection setting	C
Serial setting	CS
PLC setting for Ethernet	PE
PLC setting for Serial	PS
Tag setting for individual address	T
Tag setting for continuous address (Staring)	TA
Tag setting for continuous address (Following)	+

The setting line order should be as follows.

C *(Connection setting) … Ethernet or serial, update cycle setting, etc.*
--- If above line is for Ethernet ---
PE *(1st PLC on Ethernet) … IP address, port number, PLC model, etc.*
T/TA *(1st Tag of 1st PLC) … Tag name, corresponding PLC register/device, update cycle, etc.*
T/+ *(2nd Tag of 1st PLC) … Ditto*
:
PE *(2nd PLC on Ethernet) … IP address, port number, PLC model, etc.*
T/TA *(1st Tag of 2nd PLC) … Tag name, corresponding PLC register/device, update cycle, etc.*
T/+ *(2nd Tag of 2nd PLC) … Ditto*
:
C *(Connection setting) … Ethernet or serial, update cycle setting, etc.*
--- If above line is for serial ---
CS *(Serial setting) … COM port number, baudrate, parity, etc.*
PS *(1st PLC on serial line) … PLC station address, PLC model, etc.*
T/TA *(1st Tag of 1st PLC) … Tag name, corresponding PLC register/device, update cycle, etc.*
T/+ *(2nd Tag of 1st PLC) … Ditto*
:
PS *(2nd PLC on serial line) … PLC station number, PLC model, etc.*
T/TA *(1st Tag of 2nd PLC) … Tag name, corresponding PLC register/device, update cycle, etc.*
T/+ *(2nd Tag of 2nd PLC) … Ditto*
:

4.2.1 Connection setting

The connection setting specifies the connection name, type of connection (Ethernet or Serial), Time-out setting, and Update cycles (High, Middle and Low).
The setting details and the column order are as follows.

Setting ID	C
Connection name	Any name (within 11 characters)
Type of connection	Ethernet or Serial
Time-out (in second)	Response time-out setting Minimum 0.2 (0.1 s increments)
High update cycle (in second)	High-speed update cycle setting Minimum 0.2 (0.1 s increments)
Middle update cycle (in second)	Middle-speed update cycle setting Minimum 0.3 (0.1 s increments) It must be larger than high-speed setting
Low update cycle (in second)	Low-speed update cycle setting Minimum 0.4 (0.1 s increments) It must be larger than middle-speed setting

4.2.2 Serial setting

If the connection setting is serial, the serial setting is required.
The serial setting specifies the computer's communication port, baudrate, data bit length, parity, and stop bit length.
The setting details and the column order are as follows.

Setting ID	CS
Communication port	COM1, COM2, COM3, or COM4
Baudrate	1200, 2400, 4800, 9600, or 19200 bps
Data bit length	8 (fixed)
Parity	ODD, EVEN, or NON (upper and lower cases are not distinguished)
Stop bit length	1 or 2

Note) When the programmer port or TOSLINE-S20 is used, set the communication parameter as follows.
- Baudrate : 9600 bps
- Data bit : 8 bits
- Parity : Odd (for Programmer port) or Even (for TOSLINE-S20) at default state (Parity can be changed by user)
- Stop bit : 1 bit

4.2.3 PLC setting for Ethernet

This is the PLC setting for Ethernet. It specifies the PLC name, IP address and port number of the PLC, and the PLC model.
The setting details and the column order is as follows.

Setting ID	PE
PLC name	Any name (within 15 characters)
IP address	IP address of the remote PLC
Port number	Port number of the remote PLC
PLC model	T2N, T3H, S2T, S2, or S3

4.2.4 PLC setting for Serial

This is the PLC setting for serial connection. It specifies the PLC name, PLC station address, and PLC model.
The setting details and the column order is as follows.

Setting ID	PS
PLC name	Any name (within 15 characters)
Station address	1 to 32 (If TOSLINE-S20 is used, it is 1 to 64)
PLC model	T1, T1S, T2, T2E, T2N, T3, T3H, S2T, S2, or S3
Programmer port	Yes or No (If programmer port is used, set Yes)

Note) When the programmer port is used, only one PLC can be connected on the serial line. In this case, set the station address as 1 except T1/T1S. In case of T1/T1S, the programmer port station address is user setting. Refer to T1/T1S User's Manual.

4.2.5 Tag setting

The tag setting specifies the tag name, corresponding register/device, update cycle, and data type.
Two types of designation are available. These are the individual address designation (T) and the continuous address designation (TA).
When the individual address designation is used, up to 32 tags can be used for one PLC per one update cycle. On the other hand, when the continuous address designation is used, up to 248 tags can be used for one PLC per one update cycle.
Either individual or continuous designation can be used for one PLC per one update cycle.
The setting details and the column order is as follows.

Individual address designation:

Setting ID	T
Tag name	Any name (within 13 characters)
Register/device address	PLC's register/device address Allowable types are X, Y, Z, L, R, S, XW, YW, W, LW, RW, SW, T, C, D, F, T., or C. (18 types) Allowable address is dependent on the PLC type
Update cycle	HIGH, MIDDLE, or LOW (upper and lower cases are not distinguished)
Data type	INT (integer), DINT (double-word integer), UINT (unsigned integer), UDINT (unsigned double-word integer), HEX (hexadecimal), DHEX (double-word hexadecimal), REAL (floating-point data), BOOL (logic), BCD (binary coded decimal), or DBCD (double-word BCD) Default is INT (integer) (upper and lower cases are not distinguished)

Setting example:

```
T   PLC1TAG00   RW005   HIGH     INT
T   PLC1TAG01   D1234   HIGH     INT      } Up to 32 Tags for High update cycle
:
T   PLC1TAG32   X0002   MIDDLE   BOOL
T   PLC1TAG33   D4000   MIDDLE   INT      } Up to 32 Tags for Middle update cycle
:
T   PLC1TAG64   D2500   LOW      INT
:                                         } Up to 32 Tags for Low update cycle
```

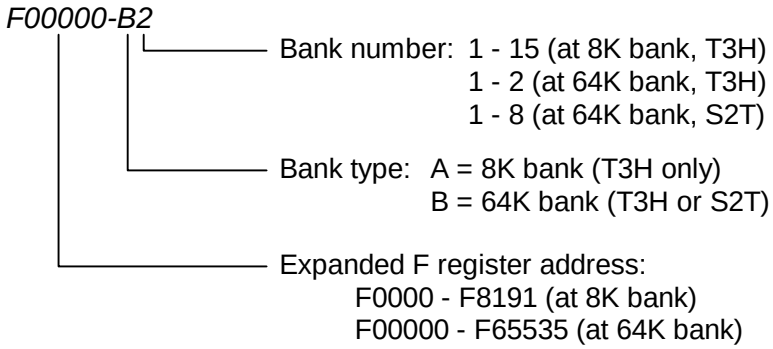
Continuous address designation:

Setting ID	TA (for starting address) + (for following address)
Tag name	Any name (within 13 characters)
Register address	PLC's register address Allowable types are XW, YW, W, LW, RW, SW, T, C, D, or F (10 types) Allowable address is dependent on the PLC type (TA line only)
Update cycle	HIGH, MIDDLE, or LOW (upper and lower cases are not distinguished) (TA line only)
Data type	INT (integer), DINT (double-word integer), UINT (unsigned integer), UDINT (unsigned double-word integer), HEX (hexadecimal), DHEX (double-word hexadecimal), REAL (floating-point data), BOOL (logic), BCD (binary coded decimal), or DBCD (double-word BCD) Default is INT (integer) (upper and lower cases are not distinguished)

Setting example:

```
TA  PLC2NAM0    D0000    HIGH      INT
+   PLC2NAM1                       INT     } Up to 248 Tags for High update cycle
:
TA  PLC2NAM248  D0248    MIDDLE    INT
+   PLC2NAM249                     INT     } Up to 248 Tags for Middle update cycle
:
TA  PLC2NAM496  D0496    LOW       INT
+   PLC2NAM497                     INT     } Up to 248 Tags for Low update cycle
:
```

Note (1) In the continuous address designation, T3H/S2T's expanded F register can be used. In this case, specify the register as follows.



Example:

TA TAG0010 F10000-B2 LOW INT
+ TAG0011 INT
:

Expanded F register F10000 of bank 2 at 64K bank

Note (2) Available data range of each data type is as follows.

Data type	Data range	Remarks
INT	-32768 to 32767	
DINT	-2147483648 to 2147483647	Occupies 2 Tags
UINT	0 to 65535	
UDINT	0 to 4294967295	Occupies 2 Tags
HEX	0 to FFFF	
DHEX	0 to FFFFFFFF	Occupies 2 Tags
BOOL	0 or 1, False or True	0/1 is for data writing only
REAL	-3.40282E+38 to 3.40282E+38	Occupies 2 Tags
BCD	0 to 9999	
DBCD	0 to 99999999	Occupies 2 Tags

5. Using Excel as DDE Client

5.1 Reading PLC data into Excel spreadsheet

The following procedure is used to display the data gathered by the T-PSV on your Excel spreadsheet.

(1) Open the Excel workbook you want to create DDE client.

(2) Set the DDE function ("Plcsrv|T!Tag name") to the cells where you want to display the tag data. (Underlined part is fixed characters)
For example,

Cell A1 =Plcsrv|T!Reg2 (Tag name is "Reg2" in this case)

(3) Save the file as Excel workbook (*.xls).

(4) Run the T-PSV.

(5) Open the Excel file saved in (3).

(6) The following message will be displayed when you open the file.
The workbook you opened contains automatic links to information in another workbook. Do you want to update this workbook with changes made to the other workbook?
(in case of Excel 97)
Then click [Yes] button.

By the above operation, DDE link will be established.
If you start the data gathering with T-PSV, the data of the Excel cell will be changed.
By using the Chart wizard function of Excel, you can monitor the data in the graph view.

Note (1) When you modify/change the configuration file for the T-PSV, close the Excel file once, and open the file again to setup the links.

(2) The displayed data format is based on the setting specified by the configuration file. However if the cell format is specified in Excel, the displayed data format will be based on the Excel's setting.

A sample Excel file (PlcBook.xls) has been installed together with the T-PSV in the same folder. Refer to this file when you create your file.

In addition to the standard DDE expression described in the previous page, the following DDE data monitoring is possible.

(1) Bit position designation for a register Tag

Bit on/off status of a register Tag can be monitored by using the following expression.

Plcsrv|T!TAG name.n

Bit position: n = 0 to F

For example)

Plcsrv|T!Reg2.5 ← If the Tag (Reg2) is RW100, this expression shows bit-5 status of RW100.

Applicable register types are XW, YW, RW, SW, LW, and W.
Display format is fixed to INT (0 or 1).
This method is useful when using the continuous address designation.

(2) PLC status monitor

The PLC status can be monitored by using the following expression.

PLC operation mode:

Plcsrv|T!PLC name.mode

This DDE function gives the following data according to the PLC current operation mode.

1 = HALT, 2 = RUN, 3 = RUN-F, 4 = HOLD, 6 = ERROR

Display format is fixed to INT.

PLC status:

Plcsrv|T!PLC name.sts

This DDE function gives the sum value of the following data according to the PLC current status.

16 = Memory protect, 64 = Diagnostic display request, 128 = Constant scan delay
2048 = Battery alarm

Display format is fixed to INT.

5. Using Excel as DDE Client

5.2 Starting up T-PSV from Excel

It is possible to start the T-PSV (go to on-line) from Excel by the following procedure.

(1) Open the Excel file.

(2) The following message will be displayed when you open the file.
The workbook you opened contains automatic links to information in another workbook. Do you want to update this workbook with changes made to the other workbook?
(in case of Excel 97)
Then click [Yes] button.

(3) Then the following message will be displayed.
Remote data not accessible. Start application 'PLCSRV. EXE'?
Click [Yes] button.

(4) T-PSV will start data gathering with the latest configuration setting.

5.3 Writing data from Excel into PLC

It is possible to write data from Excel into the PLC via T-PSV, using Excel's VBA code.
An example procedure to do is shown below.

(1) Go to the menu [Tools] [Macro] [Record New Macro] (in case of Excel 97).

(2) Enter the macro name. For example "Record1".

(3) Go to the menu [Tools] [Macro] [Stop Recording] (in case of Excel 97).

(4) Go to the menu [Tools] [Macro] [Macros] (in case of Excel 97).

(5) Select the macro name that you named (Record1), and click [edit] button.

(6) Enter the VBA code as an example shown on the next page.

(7) Return to the spreadsheet.

(8) To assign a command button to your VBA code, go to the menu [View] [Toolbars] [Forms].

(9) Select the button item from the Form Toolbar and paste it onto the Excel sheet.

(10) Assign Macro dialog is displayed. Then select the macro name that you created (Rtecord1), and click [OK] button.

(11) Then, when you click the button, your VBA code will be executed.

(12) If your T-PSV is already started, the data will be written into the PLC.

Note that the data to be written into the PLC must be within the available range that is determined by the data type specified by your configuration file.

Note) The sample code shown on the next page uses PlcPoke function. The PlcPoke function is automatically installed in your computer together with T-PSV.
The standard DDEPoke function can also be used. However, when you write data using the bit designation for register Tag, you must use the PlcPoke function.

5. Using Excel as DDE Client

< Sample VBA code to write data into PLC >

```
' DLL
Public Declare Function PlcPoke Lib "PlcPoke" Alias "plc_poke" ( _
                ByVal sValtagName As String, _
                ByVal sData As String) As Long

'
' Record1 Macro
' Date : 2000/11/07  UserName : Sample
'
'
Sub Record1()
   Dim lRet As Long
   Dim szData As String

   szData = Sheets("Sheet1").Range("A1").Value
   lRet = PlcPoke("SWITCHI1", szData)

End Sub
```

This sample writes the data of cell "A1" into the Tag named "SWITCH1".

Above sample VBA code is included in the sample Excel file PlcBook.xls which is installed in your computer together with T-PSV.

6.1 List of error messages

The error messages that are displayed on the T-PSV screen are listed below.

Message	Contents
Baudrate setting is not correct. Baudrate must be 1200,2400,4800, 9600,or 19200.	In the serial setting, invalid baudrate is designated. Designate any of 1200, 2400, 4800, 9600, or 19200.
Connection Name is 11 characters or less.	In the connection setting, a connection name of more than 11 characters is used. Modify the connection name within 11 characters.
Connection setting and PLC setting are required before TAG setting.	In the configuration file, Tag setting is appeared before connection or PLC setting. The connection and PLC settings are required before Tag setting.
Connection setting is required before PLC setting.	In the configuration file, PLC setting is appeared before connection setting. The connection setting is required before PLC setting.
Connection setting is required before Serial setting.	In the configuration file, serial setting is appeared before connection setting. The connection setting is required before serial setting.
Continuous Register Tag cannot be used for Device (Bit-data).	In the Tag setting, Device (bit-data) is designated as continuous address Tag. Use Register for the continuous address Tag.
Continuous Register Tag must be started with 'TA'.	In the Tag setting, the starting address Tag is missing. The starting address Tag (TA) is necessary.
Continuous Register Tags and Individual Tags cannot be used simultaneously for one PLC in High-speed cycle.	In the Tag setting, continuous address Tags and individual address Tags are designated for one PLC in High-speed cycle. Use either one.
Continuous Register Tags and Individual Tags cannot be used simultaneously for one PLC in Low-speed cycle.	In the Tag setting, continuous address Tags and individual address Tags are designated for one PLC in Low-speed cycle. Use either one.
Continuous Register Tags and Individual Tags cannot be used simultaneously for one PLC in Middle-speed cycle.	In the Tag setting, continuous address Tags and individual address Tags are designated for one PLC in Middle-speed cycle. Use either one.
Cycle error.	UDP thread control becomes incorrect.
Data length setting is not correct. Data length must be 8.	In the serial setting, data bit length is designated other than 8. Designate the data bit length as 8.

6. List of Error Messages

Message	Contents
Illegal Connection Type.	In the connection setting, connection type specified is other than Ethernet or Serial. Designate Ethernet or Serial.
Illegal data type.	In the Tag setting, illegal characters are used for the data type designation. Designate any of INT, DINT, UINT, UDINT, HEX, DHEX, REAL, BOOL, BCD, or DBCD.
Illegal Parity setting. Parity must be ODD, EVEN, or NON.	In the serial setting, illegal parity setting is designated. Designate the parity any of odd, even, or non.
Illegal PLC model.	In the PLC setting, invalid PLC model is designated. Set the PLC model correctly.
Illegal setting type. Use C, CS, CM, PE, PS, PM, T, TA, or +.	In the configuration file, other than #, C, CS, CM, PE, PS, PM, T, TA, or + is used in the first column. Check the configuration file.
Illegal Update Cycle setting (High-speed/ Middle-speed/Low-speed).	In the connection setting, update cycle setting contains other than number. Set the update cycle correctly.
Illegal Update Cycle setting.	In the Tag setting, there is illegal update cycle setting. Set high, middle, or low.
IP address is duplicated.	In the PLC setting, IP address is duplicated. Set the IP address correctly.
IP address is not correct.	In the PLC setting, illegal IP address is used. Set the IP address correctly.
Item must be separated by comma.	In the configuration file, setting items are not separated by comma. Separate each item by comma. Use CSV format.
Low-speed cycle must be greater than Middle-speed cycle.	In the connection setting, low-speed update cycle is smaller than the middle-speed update cycle. Set the low-speed update cycle greater than middle-speed.
Maximum number of TAGs per High-speed/Middle-speed/Low-speed cycle of the [PLC Name] is 32.	In the configuration file, the number of Tags for a PLC per each update cycle exceeds 32. (Individual address Tag) The maximum number of Tags available in 1 PLC is 32 per each update cycle.
Maximum number of TAGs per High-speed/Middle-speed/Low-speed cycle of the [PLC Name] is 32.(1 double-word Tag requires 2 registers)	In the configuration file, the number of Tags for a PLC per each update cycle exceeds 32. (Individual address Tag) Because one double-word Tag requires two registers. Reduce the Tags.
Memory allocation error.	It could not allocate the Windows shared memory that holds the collecting data.

Message	Contents
Memory initialization error.	It could not get the Windows shared memory that holds the collecting data.
Middle-speed cycle must be greater than High-speed cycle.	In the connection setting, middle-speed update cycle is smaller than the high-speed update cycle. Set the middle-speed update cycle greater than high-speed.
Minimum Timeout is 0.2.	In the connection setting, timeout setting is less than 0.2 sec. Set the timeout within the range of 0.2 to 65.5 sec.
Minimum Update Cycle (High-speed) is 0.2.	In the connection setting, high-speed update cycle setting is less than 0.2 sec. Set the high-speed update cycle 0.2 sec or more.
Multiple Continuous Register Tags per one PLC cannot be used in High-speed cycle.	In the Tag setting, multiple blocks of continuous address Tags are designated for one PLC in High-speed cycle. Only one block is allowed.
Multiple Continuous Register Tags per one PLC cannot be used in Low-speed cycle.	In the Tag setting, multiple blocks of continuous address Tags are designated for one PLC in Low-speed cycle. Only one block is allowed.
Multiple Continuous Register Tags per one PLC cannot be used in Middle-speed cycle.	In the Tag setting, multiple blocks of continuous address Tags are designated for one PLC in Middle-speed cycle. Only one block is allowed.
No ‘machine.plc’ file.	The PLC definition file 'machine.plc' could not be found. Install the T-PSV again.
No Baudrate setting.	In the serial setting, there is no baudrate setting. Set the baudrate.
No Connection Name setting.	In the connection setting, connection name is not designated. Set the connection name.
No Connection Type setting.	In the connection setting, connection type is not designated. Designate Ethernet or Serial.
No Data length setting.	In the serial setting, there is no data bit length setting. Designate the data bit length as 8.
No IP address setting.	In the PLC setting, IP address is not designated. Set the IP address.
No Parity setting.	In the serial setting, there is no parity setting. Set the parity, odd, even or non.
No PLC model setting.	In the PLC setting, PLC model is not designated. Set the PLC model.
No PLC name setting.	In the PLC setting, PLC name is not designated. Set the PLC name.
No Port number setting.	In the PLC setting, port number is not designated. Set the port number.

6. List of Error Messages

Message	Contents
No register/device setting.	In the Tag setting, register/device is not designated. Set the register/device.
No Serial port setting.	In the serial setting, there is no COM port setting. Set the COM port.
No Station Address setting.	In the PLC setting, PLC station address is not designated. Set the station address.
No Stop bit length setting.	In the serial setting, there is no stop bit setting. Set the Stop bit length, 1 or 2.
No TAG Name setting.	In the Tag setting, Tag name is not designated. Set the Tag name.
No TAG setting for the [Connection Name].	In the configuration file, no Tag is designated in the connection. Set up the Tag.
No Timeout setting.	In the connection setting, timeout is not designated. Set the Timeout.
No Update cycle setting (High-speed/ Middle-speed/Low-speed).	In the connection setting, update cycle is not designated. Set the update cycle.
No Update Cycle setting.	In the Tag setting, update cycle (high, middle, or low) is not designated for a Tag. Set the update cycle.
Only 1 Ethernet connection is allowed.	In the configuration file, more than one (1) Ethernet connections are designated. Only 1 Ethernet connection is allowed.
Only 1 Serial connection is allowed.	In the configuration file, more than one (1) serial connections are designated. Only 1 serial connection is allowed.
Only one PLC is available with the programmer port connection.	In the PLC setting, 2 or more PLCs are designated for programmer port connection. Only one PLC connection is allowed for the programmer port connection.
PLC Name is 15 characters or less.	In the PLC setting, a PLC name of more than 15 characters is used. Modify the PLC name within 15 characters.
PLC setting ID on Ethernet must be 'PE', and PLC setting ID on serial must be 'PS'.	In the configuration file, setting ID for PLC setting is illegal. The PLC setting is 'PS' for Serial connection and' PE' for Ethernet connection.
PLC setting ID on serial connection is 'PS'.	In the configuration file, 'PE' is used for the serial connection. Use 'PS' for PLC setting on serial connection.

Message	Contents
PLC setting ID on Ethernet connection is 'PE'.	In the configuration file, 'PS' is used for the Ethernet connection. Use 'PE' for PLC setting on Ethernet connection.
PLC setting is required before TAG setting.	In the configuration file, Tag setting is appeared before PLC setting. The PLC setting is required before Tag setting.
Port number is not correct.	In the PLC setting, illegal port number is used. Set the port number correctly.
Programmer port connection could not be established.	Communication with the PLC using the programmer port was failed. (Programmer port connection sequence was not succeeded) Check the cable and the programmer port setting in the PLC.
Register and Device name cannot be set on '+' line.	In the Tag setting, register/device is designated in the middle of continuous address Tags. Correct the setting.
Register/Device is 10 character or less.	In the Tag setting, more than 10 characters are used for a register/device. The register/device must be 10 characters or less.
Register/Device is not correct.	In the Tag setting, invalid register/device type or invalid address is designated. Check the register/device.
Register/Device is out of the allowable range.	In the Tag setting, register/device address is out of the range. Set the register/device correctly.
Runtime Error! Program: [pass name] R6028 -unable to initialize heap	Windows heap memory is not sufficient.
Serial port setting is not correct.	In the serial setting, illegal COM port setting is used. As for the COM port, designate any of COM1 to COM4.
Serial setting and PLC setting are required before TAG setting.	In the configuration file, Tag setting is appeared before serial or PLC setting. The serial and PLC settings are required before Tag setting.
Serial setting is duplicated.	In the configuration file, there are multiple serial settings. Only one serial setting is allowed.
Serial setting is not used for Ethernet connection.	In the configuration file, serial setting is used for Ethernet connection. Check the setting.
Serial setting is required before PLC setting.	In the configuration file, PLC setting is appeared before serial setting. The serial setting is required before PLC setting.

6. List of Error Messages

Message	Contents
Settings for the programmer port connection are not correct.	In the PLC setting, invalid character is used in the programmer port setting. Set Yes or No.
Station address is duplicated.	In the PLC setting, station address is duplicated. Set the station address correctly.
Station address is not correct.	In the PLC setting, illegal station address is designated. The allowable station address is 1 to 64.
Stop bit length is not correct. Stop bit length must be 1 or 2.	In the serial setting, illegal stop bit setting is designated. Designate the stop bit length, 1 or 2.
TAG Name is 13 characters or less.	In the Tag setting, a Tag name of more than 13 characters is used. Modify the Tag name within 13 characters.
TAG Name is duplicated.	In the configuration file, same Tag name is used. Tag name must be unique in the configuration .
The data type ‘BOOL’ cannot be used for the TAG.	In the Tag setting, data type 'BOOL' is designated for a register (word data). Set the data type correctly.
The data type ‘Double-word’ cannot be used for the TAG.	In the Tag setting, double-word data type is designated for device or register that cannot designate as double-word. Set the data type correctly.
The expanded F Register cannot be used for the Individual Tags.	In the Tag setting, expanded F register is designated as the individual address Tag. Expanded F register access is available as the continuous address Tag.
The expanded F Register cannot be used for the selected PLC type.	In the Tag setting, expanded F register is designated for the PLC other than T3H or S2T. Expanded F register access is available with T3H or S2T.
The maximum number of Continuous Register Tags per the [PLC name] in High-speed cycle is 248.	In the configuration file, the number of Tags for a PLC per High-speed update cycle exceeds 248. (Continuous address Tag) The maximum number of Tags available in 1 PLC is 248 per each update cycle.
The maximum number of Continuous Register Tags per the [PLC name] in Low-speed cycle is 248.	In the configuration file, the number of Tags for a PLC per Low-speed update cycle exceeds 248. (Continuous address Tag) The maximum number of Tags available in 1 PLC is 248 per each update cycle.
The maximum number of Continuous Register Tags per the [PLC name] in Middle-speed cycle is 248.	In the configuration file, the number of Tags for a PLC per Middle-speed update cycle exceeds 248. (Continuous address Tag) The maximum number of Tags available in 1 PLC is 248 per each update cycle.

Message	Contents
The number of Continuous Register Tags in High-speed cycle exceeds 248 registers. (1 double-word Tag requires 2 registers)	In the Tag setting, the number of registers for a PLC per High-speed update cycle exceeds 248. (Continuous address Tag) One double-word Tag requires two registers. The maximum number of registers available in 1 PLC is 248 words per each update cycle.
The number of Continuous Register Tags in Low-speed cycle exceeds 248 registers. (1 double-word Tag requires 2 registers)	In the Tag setting, the number of registers for a PLC per Low-speed update cycle exceeds 248. (Continuous address Tag) One double-word Tag requires two registers. The maximum number of registers available in 1 PLC is 248 words per each update cycle.
The number of Continuous Register Tags in Middle-speed cycle exceeds 248 registers. (1 double-word Tag requires 2 registers)	In the Tag setting, the number of registers for a PLC per Middle-speed update cycle exceeds 248. (Continuous address Tag) One double-word Tag requires two registers. The maximum number of registers available in 1 PLC is 248 words per each update cycle.
The number of PLC setting for the [Connection Name] exceeds the maximum. (MAX.64 for each connection.)	In the configuration file, the number of PLCs for one connection exceeds 64. Reduce the PLCs.
The number of TAGs exceeds the maximum.(Max.4096 in total).	In the configuration file, more than 4096 Tags are designated. The maximum number of Tags is 4096.
Timeout is out of allowable range.	In the connection setting, timeout setting is more than 65.5 sec. Set the timeout within the range of 0.2 to 65.5 sec.
Timeout must be 0.1 increments.	In the connection setting, timeout setting is not 0.1 increments. Set the timeout correctly.
Timeout value must be numerical value.	In the connection setting, timeout setting contains other than number. Set the timeout correctly.
Total connection must be 2 or less.	In the configuration file, more than two (2) connections are designated. One Ethernet and one serial are maximum connections.
Update Cycle is out of allowable range (High-speed/ Middle-speed/Low-speed).	In the connection setting, update cycle setting is more than 65.5 sec. Set the update cycle within the range of 0.2 to 65.5 sec.
Update Cycle must be 0.1 increments (High-speed/Middle-speed/Low-speed).	In the connection setting, update cycle is not 0.1 increments. Set the update cycle correctly.
Windows socket initialization failure.	It failed to initialize the socket service. Check Windows network setting. TCP/IP protocol must be installed.

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