

Ethernet Setup for the S2T

Ethernet communications with the S2T CPU is done through the GEN651A Ethernet module. Prior to using this module, it must be configured using the EtherSetup_E setup software. The EtherSetup_E software is used to configure the network parameters (IP Address, Subnet Mask, and Multicast Addresses) in the GEN651A Ethernet module. When all the following setup steps described below are completed, Ethernet connection to the S2T through the GEN651A Ethernet module will be possible. There are two methods of connection:

• T-PDS (Toshiba Program Development Software). • UDP/IP Socket Interface.

Setup GEN651 Ethernet Module

This module must be setup 1st before either of the connections methods are possible.

1, Install the EtherSetup_E software on an MS Windows computer. See the installation instructions in the User's Guide for the Ethernet Module Parameter Setting Tool, 6F8C1103.

2[,] Set the network parameters in the GEN651A module.

2.1 Set the DIP switches on the front of the EN6651A to enable setting the network parameters from the EtherSet_E. Set DIP Switches 7 & 8 to ON (Note: 7 & 8 are the **top** two switches).

- 2.2 Mount the EN651A on the S2T rack, then turn on power.
- 2.3 Connect PC and EN6651A with the V-Tool cable (standard RS232C cross cable).

2.4 Run the EtherSet_E software on the PC.

2.5 Click the Read button on the EtherSetup_E screen. The current settings are read from the GEN651A and are displayed on the screen.

😭 Ethernet Parameter Setting				
E (X) Parame	eter(P) View	(V) Set(S)	Help(H)	
IP AddressT	ype S	et From tool		Read
IP Address				Write
II Address	12	0.0.0		
Subnet masl	< 🔟	0.0.0		Option >>
Gateway IP.	Address 🔟	0.0.0		Exit

On reading a module for the 1st time, settings will appear as shown to the left.

2.6 Click the Option button. Set the required parameters, then click the Write button to write into GEN651A module.

2.7 Close the EtherSetup_E software. DIP Switches 7 and 8 must be left in the ON position for T-PDS to work through the GEN651A module.

2.8 <u>Cycle Power on the GEN651A module.</u> The new IP address will not be valid until power is cycled on the module.

This completes setup of the GEN651A Ethernet module. If the EtherSetup_E can not establish communications with the GEN651A, please make sure:

- 1. The computer is connected directly to the GEN651A using as RS232 cross cable.
- 2. The EtherSetup_E software is using the correct Com Port setting.
- 3. No other computer software is running that uses the computer's RS232 port.

T-PDS Setup

In addition to setting up the Ethernet module, network parameters must be setup in two additional places; the computer's Ethernet card and the T-PDS software.

Assume the following settings were made in the EN651A Ethernet module with the EtherSetup_E software.

😭 Ethernet Parameter Setting			
Exit(X) Parameter(P)	View(V) Set(S) Help(H)	
IP AddressType	Set From too	I	Read
IP Address	172.16.64.1		Write
Subnet mask	255,255,192	.0	Option >>
Gateway IP Address	0.0.0.0		Exit

Computer Ethernet Card Setup: The computer's Ethernet card must be setup first. Go to the Control Panel and double click on Network Connections. Find the Ethernet card, alternate click on it and then click on Properties.

🕹 Local Area Connection 2 Properties 🛛 🔹 👔	Internet Protocol (TCP/IP) Properties
General Authentication Advanced	General
Connect using: 3Com EtherLink XL 10/100 PCI For C <u>C</u> onfigure	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
This connection uses the following items:	Obtain an IP address automatically
Reveal Distributed Print Services	Ouse the following IP address:
File and Printer Sharing for Microsoft Networks Trenet Protocol (TCP/IP)	IP address: 172 . 16 . 64 . 2
	Subnet mask: 255 . 255 . 192 . 0
Install	Default gateway:
Description	 Obtain DNS server address automatically
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication	Use the following DNS server addresses:
across diverse interconnected networks.	Preferred DNS server:
Show icon in notification area when connected	Alternate DNS server:
Notify me when this connection has limited or no connectivity	Advanced
OK Cancel	OK Cancel

Note that the IP Address and Subnet Mast must be the same as set in T-PDS & the GEN651A (the last digit of the IP Address must be different however, it cannot be .1 The address of the GEN651A module is 172. 16.64.1). Click OK. In case of difficulty setting up the computer Ethernet card, contact the company MIS/IT Department.

T-PDS Setup: In T-PDS under the Option Menu, select Communications. Set as follows:

Connection Method	Ethernet Setup	
Connection Method Ethernet Setup OK Cancel Help	Ethernet Target Name: -PDS Connection - IP Address: 172.16.64.1 Port No.: 5012	OK Cancel Help
5.000000 10.000 -[D0011·D0010 F/ D0001·D00 50000 -[0000500000 DM0V D0013·D001:	Timeout offset: 0 S	Save Delete

Using T-PDS, set the following in special register SW63:

⊘ [OnLine] - Register/Device Data				
Block UInt Int	Hex Real Char Dbl			
Address Value	FEDC BA98 7654 3210			
SW063 05012	0000 0000 0000 0000			

This setting can also be made in the ladder logic with a MOV instruction.

			5012
١H	05012	MOV	SM093]

This completes the T-PDS setup. T-PDS can now be connected to the S2E via Ethernet through the GEN651A Ethernet module.

Note: If an attempt is made to assign an IP address in T-PDS before the computer's Ethernet card is assigned a corresponding IP address, then T-PDS will return a Win Socket error.

UDP/IP Socket Interface:

To use UDP/IP transmission, it is necessary to create a small program in the S2T. The program will utilize the SEND and RECV instructions. The general procedure is as follows:

1. Execute UDP socket open: The Specified Port number must be different from the Port number for T-PDS connection. If the Port number for T-PDS is 2000, the Port number for UDP socket must be other than 2000 to 2002. It is recommended that 2 UDP sockets be opened. One for data send and one for data receive respectively.

2. Execute UDP send and/or UDP receive to exchange data via Ethernet.

3. UDP socket close.

The instruction information on these functions is shown as follows.

UDP Socket Open: SEND instruction is used. -[A SEND B]-.

A: H3100 (fixed) A+1: UDP open command (H0031) A+2: Socket number (1 to 12) A+3: UDP Port number *B*: Result status *B*+1: Error code

Sample Program

Port number = 4000

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When R0620 is set to ON, the UDP open operation is executed. When the operation is finished R0620 is reset to OFF automatically.

UDP Send: SEND instruction is used. –[A SEND B]–

```
A: H3100 (fixed)
                                                B: Result status
A+1: UDP send command (H0032)
                                                B+1: Error code
A+2: Socket number (1 to 12)
A+3: Receiver IP address (note 1)
A+4: Ditto
A+5: Receiver Port number
A+6: Transmit data word size (1 to 1000)
A+7: Source data table register type (note 2)
A+8: Source data table register starting address
     Note 1
     If receiver IP address is 192.0.0.5 (HC0.0.0.5), set as follows.
          A+3 = H0005
          A+4 = HC000
     Note 2
          RW register = 3
          D register = 4
```

Sample Program

R0622 2┝━┥┝┯┮[12544 MOU RV320]{ 00050 MOU RV321]			
- [00001 MOV RV322]			
- [00200 MOV RW326]			
[00004 MOV RV327]-[01000 MOV RV328]			
- [RW320 SEND RV420]-[RST R0622]			
12544 = H3100			
50 = H0032			
Socket number = 1			
Receiver IP address = 192.0.0.5 (-16384 = HC000)			

Receiver IP address = 192.0.0.5 (-16384 = HC000) Receiver Port number = 4000 Transmit ward size = 200 Source data table is D1000 and after

When R0622 is set to ON, 200 data words D1000 to D1199 are transmitted to the destination (IP address = 192.0.0.5, Port number = 4000). When the operation is finished, R0622 is reset to OFF automatically.

UDP Receive: RECV instruction is used, -[A RECV B]-

A: H3100 (fixed) B: Result status A+1: UDP receive command (H0033) B+1: Error code A+2: Socket number (1 to 12) A+3: Sender IP address (note 1) A+4: Ditto A+5: Sender Port number A+6: Receive data word size (1 to 1000) A+7: Destination data table register type (note 2) A+8: Destination data table register starting address *A*+*9*: Timeout setting (0.1s units, see note 3) Note 1: If sender IP address is 192.0.0.5 (HC0.0.0.5), set as follows. A+3 = H0005A+4 = HC000For broadcast receiving, set 0.0.0.0. Note 2: RW register = 3D register = 4

Note 3: If A+9 = 0, there is no timeout.

Sample program

8063 3 → 1	21 [12544 MOU RV310]{[00051 MOU RV311]
-	-[00002 MOV RV312]
-	-[00005 MOV RV313]{[-16384 MOV RW314]{[05000 MOV RW315]}
-	-[00100 MOV RV316]
-	-[00004 MOV RV317]-[02000 MOV RV318]
-	-[00000 MOV RV319]
	[RW310 SEND RW410]{ RST R0621]

12544 = H3100 51 = H0033 Socket number = 2 Sender IP address = 192.0.0.5 (-16384 = HC000) Sender Port number = 5000 Receive word size = 100 Destination data table is D2000 and after, no timeout setting When R0621 is set to ON, 100 data words are received from the sender (IP address = 192.0.0.5, Port number = 5000) and are stored in D2000 to D2099. When the operation is finished, R0621 is reset to OFF automatically.

UDP Socket Close SEND instruction is used. [A SEND B]-

A: H3100 (fixed)	<i>B</i> : Result status
A+1: UDP close command (H0034)	B+1: Error code
A+2: Socket number (1 to 12)	

Sample program

R062 4 -	3 [12544 MOV RV330]{ 00052 MOV RV331]	
-	[00001 MOV RV332]	
┝	_[RW330 SEND RV430]-[RST R0623]	

12544 = H3100 52 = H0034 Socket number =1

When R0623 is set to ON, the UDP socket is closed. When the operation is finished, R0623 is reset to OFF automatically.

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