Application Note:
Guide for Converting Ethernet Applications from 2572 / 2572-A / 2572-B to 2500P-ECC1

There are four CTI solutions for connecting Ethernet to 2500 Series® systems: 2572, 2572-A, 2572-B, and the new 2500P-ECC1 Ethernet Communications Coprocessor. The 2572 Ethernet TCP/IP Adapter was matured in January 2012 and is now out of production. The 2572-A is replaced by 2572-B effective June 2016. CTI recommends migrating to 2500P-ECC1 for all new applications, as this solution offers many advantages in cost, performance, and ease of use. IMPORTANT NOTE: Use of 2500P-ECC1 requires a CTI 2500 Series® processor. It is not compatible with Simatic®/ TI CPUs.
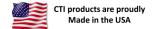
The 2500P-ECC1 Ethernet Communications Coprocessor Module extends the communications capabilities of CTI 2500 Series® processors, offering increased connectivity and additional protocols. By offloading the processing of communications protocols from the 2500 Series® processor, the 2500P-ECC1 module minimizes the impact of network communications on controller performance.

The 2500P-ECC1 module communicates with the 2500 Series® processor via a high-speed Ethernet link. Data is transferred between the controller and module using a high-density Ethernet messaging protocol, which is capable of transferring a large amount of data while minimizing the impact on the 2500 Series® processor. The controller processes data transfer requests from the 2500P-ECC1 in a configurable time slice, allowing the user to limit the amount of scan time used to service the requests. Up to four 2500P-ECC1 modules can communicate concurrently with a 2500 Series® processor.

Client requests to read data from the 2500 Series® processor are serviced from a data cache maintained on the 2500P-ECC1 module. The frequency of cache updates is user configurable. This data cache design allows protocols such as CAMP Server to provide rapid response to a high volume of requests from SCADA workstations, HMI equipment, and operator panels while providing a means to manage data quality.

Client protocols, such as Modbus-TCP, can be used to access data in other controllers and devices. PLC logic is not required to initiate client requests, since the 2500P-ECC1 can automatically initiate requests based on a change in data value or on a designated time interval. However, client requests can be triggered using PLC logic, if necessary. The 2500P-ECC1 module supports the following communications protocols:

- CAMP Server
- CAMP Client
- Modbus Server
- Modbus Client
- Network Data Exchange

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Using a CTI-supplied configuration program, you can select the protocols to be used and designate how they will operate. Configuration data is saved on a removable SD memory card, located on the 2500P-ECC1 circuit board. If a module ever fails, a replacement can quickly be placed in service by transferring the SD card from the failed unit to the new one.

The table below compares the capabilities of the three products.

Feature	2500P-ECC1	2572 Ethernet Module	2572-A/B Ethernet Module
100Mbit ethernet	yes	no	yes
TCP communications	yes	yes	yes
UDP communications	yes	yes	yes
DHCP for IP address assignment	no	no	yes (2572-A)
Modbus-TCP	yes	no	yes
Ethernet-IP (communicate to ControlLogix®)	no	no	yes
Send/Receive (communicate to S7®)	no	yes	no
Multicast	yes	no	yes
Datashare	no	yes	no
Peer-Peer communications	client/server	client/server	client/server
Communicates with CTI OPC/DDE servers	yes	yes	yes
Port configuration using PLC logic	no	yes	yes
Email	no	yes	no
Webserver for diagnostics	yes	no	yes
Number of TCP connections	see note 1 below	16	see note 2 below
Compatible with Siemens® CPUs	no	yes	yes

Note 1—2500P-ECC1 Maximum Ethernet Connections
CAMP Server—16 TCP + UDP
CAMP Client—16 (total of TCP and UDP)
Modbus Server—16 TCP only
Modbus Client/Master—64 (total of TCP and UDP)
Network Data Exchange Publisher—20 TCP
Network Data Exchange Subscriber—20 TCP

Note 2—2572A Maximum Ethernet Connections
CAMP Server—24 TCP + UDP
CAMP Client—8 (total of TCP and UDP)
Ethernet/IP Server—8 connections
Modbus Server—8 connections

When converting existing applications from 2572, 2572-A, or 2572-B to 2500P-ECC1, there are several important points to consider:

1. If your application is limited to HMI/SCADA connectivity (using CAMP TCP or UDP) then the 2500P-ECC1 is a good replacement and will normally provide much higher performance. For this case the 2500P-ECC1 configuration step is simply a checkbox to enable the CAMP server, as shown in Section 5.3.5 of the Installation and Operation Guide.

2. If you use Modbus-TCP on the 2572-A or 2572-B, then the 2500P-ECC1 is a good replacement and will normally provide much higher performance. You will need to configure the Modbus-TCP server on 2500P-ECC1 and map Modbus variables to the PLC memory. This setup is described in Section 5.3.7 of the Installation and Operation Guide.

3. If your application uses peer-peer communications between PLCs, then the new 2500P-ECC1 offers you two choices: CAMP client/server or Network Data Exchange. You will no longer need PLC logic to operate the communications, so this part of your PLC program can be removed or disabled. Setup of CAMP client/server operations using 2500P-ECC1 is quick and requires no PLC logic or data. See Section 5.3.6 of the Installation and Operation Guide. If you prefer to use Network Data Exchange, with its performance advantages of "exception only" communication, refer to Section 5.3.9 and 5.3.10.

4. If your application uses the "multicast" feature of 2572-A to accomplish peer-peer communications with other PLCs, this is supported using CAMP client and server on 2500P-ECC1 with multicast options enabled. See Section 5.3.5 and 5.3.6 of the Installation and Operation Guide for complete details.

5. If your application uses 2572, 2572-A. or 2572-B to communicate to Rockwell or Siemens PLCs using Ethernet/IP or Send/Receive protocols, then you will need to redesign the communications using Modbus-TCP in order to use 2500P-ECC1. See the application note Communication to Simatic S7 Using Open Modbus on the CTI web site for more information.

6. If your application uses the "email" feature of 2572, this is not supported and will need to be accomplished in another way. Most modern HMI/SCADA systems support event-driven messaging, including email.

7. If your application uses 2572-A in "DHCP mode" to assign an IP address and start the server, you will need to configure a fixed IP address on the 2500P-ECC1. See Section 5.3.2 of the Installation and Operation Guide.

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