2500 Series® PLC System
Product Bulletin

2500P-ECC1
Ethernet Communications Coprocessor

Classic

DESCRIPTION

The 2500P-ECC1 Ethernet Communications Coprocessor module provides a high performance multi-protocol networking solution for CTI 2500 Series® processors. Up to 4 modules can be connected to one processor.

IMPORTANT NOTE: Because 2500P-ECC1 employs an advanced dynamic cache communications engine, it requires a CTI 2500 Series® processor with firmware at V7.05 or above for operation.

When used in a SCADA application, the 2500P-ECC1 module can provide sub-second response, even with a large number of HMI workstations, because requests are serviced from a cache of PLC data. Since the 2500P-ECC1 module communicates with its host processor over a high speed Ethernet link instead of the special function I/O interface, items in the data cache can be kept current, even when the number of cached items is large.

When executing client protocols, the 2500P-ECC1 can initiate the requests automatically on a time interval or on change in data value, eliminating the need for additional programming. Optionally, requests can be initiated and monitored using PLC logic, if required.

The Network Data Exchange protocol provides an efficient method for sharing data among CTI 2500 Series® processors.

The 2500P-ECC1 includes an embedded Web server which can be used to display module information and diagnostic data.

Standard Communications Protocols

The 2500P-ECC1 supports the following protocols:

- **CAMP Server**

The CAMP Server protocol provides access to a wide range of data element types, including loop and alarm data. If you are already using a CAMP HMI driver to access 2500 Series® or SIMATIC 505® controller data, this driver can be used with the 2500P-ECC1 CAMP Server. The CAMP server supports TCP, UDP and UDP multicast.

- **CAMP Client**

The CAMP Client enables reading and writing of V memory locations in CTI 2500 Series® or SIMATIC 505® controllers (via a CTI 2572 or 2572-A module). You can choose to send requests using TCP, UDP, or UDP multicast.

Important Note: CAMP Server and CAMP client protocols include “IP Multicast” capability to allow operation with legacy 2572-A peer-peer applications using IP multicast.

- **Open Modbus Server**

The Open Modbus Server allows programmable controllers and other automation equipment that can act as a Modbus TCP/IP client to read and write user -designated C and V memory in the 2500 Series® processor.

- **Open Modbus Client**

The Open Modbus Client enables the 2500 Series® processor to communicate with a wide variety of automation devices that support Modbus TCP/IP. A Modbus Ethernet to Serial gateway can be used to communicate with Modbus devices that use RS-232 or RS-485 connections.

- **Network Data Exchange**

Network Data Exchange uses the publisher subscriber model to transfer data among CTI 2500 Series® processors. Each participating 2500 Series® processor requires an associated 2500P-ECC1 module to act in its behalf.

Each 2500P-ECC1 module publishes data obtained from its associated host processor. The data items to be published are specified when the module is configured. A data item is published only if a

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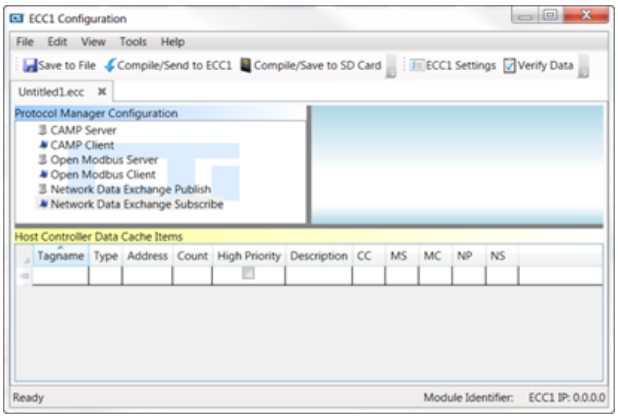
subscription to the item exists and only when the value of the data item changes.

Each participating 2500P-ECC1 module can also be configured to subscribe to data items from one or more publishers. When a subscribed data item is received, the 2500P-ECC1 writes the data to its associated host processor.

Configuration

Using the CTI 2500P-ECC1 Configuration Program, you can customize the 2500P-ECC1 module to meet your application requirements. The program allows you to select the protocol (s) to be used and specify how each will function. Protocols with a fixed function, such as the CAMP Server, require no configuration other than enabling them. For protocols with a wide variety of applications, like the Modbus Client, the program provides extensive configuration options.
The CTI 2500P-ECC1 Configuration Program also enables you to manage the 2500P-ECC1 data cache. Items that require a more timely cache update than others can be assigned to a Priority cache refresh interval. You can set the



Normal and Priority cache refresh intervals to meet your application needs.

For the CAMP Server protocol, which can directly access processor data types, data cache membership is automatically determined based on access frequency. For other protocols, which require processor data to be mapped to the protocol data, you can specify the processor data items to be cached and assign a tagname to them. When the protocol is configured, the tagname is used to reference the processor data to be mapped.

The CTI 2500P-ECC1 Configuration Program creates configuration files, which can be transferred to the 2500P-ECC1 module over an Ethernet connection. Alternately, the files can be saved to an SD card, which is then inserted in the module. Since configuration files are stored on a removable SD card, the configuration can be transferred to an emergency replacement module, if necessary.

The ECC1 CTI Configuration Program requires Microsoft Windows® 7 / 8 / 10 / 11.

Features

- Provides rapid response to HMI requests by caching PLC data on the 2500P-ECC1 module.
- Uses a high-bandwidth Ethernet link to transfer data between the module and a 2500 Series® processor.
- Initiates client requests automatically on a fixed time interval or on a change in data value, eliminating the need for additional user logic.
- Offloads communications processing workload from the 2500 Series® processor.
- Supports a large number of network connections to network devices.
- Windows-based configuration program simplifies protocol configuration.

Hardware Specifications

Module Size: Single Wide

Ethernet Ports:
Number of Ports: 2 (Switched)
Connectors: RJ-45 (Auto-MDIX)
Speed: 10Mb or 100Mb (auto-negotiated)
Duplex: Half or Full (auto-negotiated)
Ethernet Storm Protection: Broadcast/Multicast

Status LEDs:
GOOD: Module Operational Status
HOST: Host Controller Connection Status
ACTIVE: Protocol Execution Status
XMT: Ethernet Transmit
RCV: Ethernet Receive
LINK: Link Status (Port 1 and Port 2)
ACT: Activity (Port 1 and Port2)

Status Display:
Three character LED display for system status, error reporting, and IP address.

Serial Port:
Connector: DB-9
Electrical Interface: RS-232, RS-422, RS-485
Baud Rates: 1200b -115Kb

(Note: The Serial Port is not enabled for communication Protocols.)

Backplane Power: 5.0 watts

Operating Temperature
0°-60°C (32° to 140°F)

Storage Temp
-40° to 85°C (-40° to 185° F)

Relative Humidity
5% to 95% non-condensing

Agency Approvals (pending)
UL, UL-C, CE
Class 1 Div 2

Shipping Weight
1.5 lb. (0.68 Kg)

Note: 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

Comparing 2500 Series® Ethernet Solutions

	2572	2572-A	2572-B	2500-Cxxx / 2500C-Cxxx	2500P-ECC1	2500P-ACP1	2500P-JACP	2500P-J750 / 2500C-J750	Siemens 505-CP1434-TF	Siemens 505-CP1434-TCP
Applications Supported										
Programs with				Workshop, TISoft, APT	ECC1 Configurator	Workbench (Jsoft)	Workbench (Jsoft)	Workbench (Jsoft)		
PLC programming	✓	✓	✓						✓	✓
HMI/SCADA access	✓	✓	✓	✓	✓		✓[11]	✓[11]	✓	✓
Peer-peer (CAMP)	✓	✓	✓	✓[6]	✓	✓	✓	✓		✓
Peer-peer (other)	✓[1]	✓[2]	✓[2]		✓[2,3]	✓[2,3]	✓[2,3]	✓[2,3]	✓	
Communication to SIMATIC/TI 505® CPU over the backplane	✓	✓	✓			✓	✓		✓	✓
Communication to Rockwell PLCs		✓[4]	✓[4]			✓[5]	✓[12]	✓[12]		
Communication to S7	✓									✓
Email	✓									✓
Communication to Modbus TCP devices		✓[9]	✓[9]		✓	✓	✓	✓		
Communication to Ethernet/IP devices		✓[4]	✓[4]			✓[5]	✓[12]	✓[12]		
Performance in CTI standard SCADA test										
Packets sent/received per second [10]	68	102	102	199	989	N/A	N/A	N/A	N/A	N/A
Protocols Supported										
505 Ethernet (aka CAMP, NITP)	✓	✓	✓	✓[7]	✓	✓[8]	✓	✓		✓
Multicast		✓	✓		✓	✓	✓	✓		
Data Cache with 2500-Cxxx PLCs					✓	✓	✓	✓		
Network Data Exchange					✓	✓	✓	✓		
Data Share	✓									
Modbus-TCP		✓[7]	✓[7]		✓	✓	✓	✓		
Ethernet/IP		✓[4]	✓[4]			✓[5]	✓[12]	✓[12]		
H1									✓	
Communicates Directly With (Over Ethernet)										
2572	✓	✓	✓	✓	✓	✓	✓	✓		✓
2572-A	✓	✓	✓	✓	✓	✓	✓	✓		✓
2572-B	✓	✓	✓	✓	✓	✓	✓	✓		✓
2500 Series® CPUs	✓	✓	✓		✓	✓	✓	✓		✓
2500P-ECC1	✓	✓	✓	✓	✓	✓	✓	✓		✓
2500P-ACP1	✓	✓	✓	✓	✓	✓	✓	✓		✓
2500P-JACP						✓	✓	✓		
2500P-J750 CPU						✓	✓	✓		
505-CP1434-TF									✓	
505-CP1434-TCP	✓	✓	✓	✓	✓	✓	✓	✓		✓
Other										
For Direct Use with SIMATIC TI505®	✓	✓	✓			✓	✓		✓	✓
Webserver for diagostics		✓	✓	✓	✓	✓	✓	✓		
OPC/DDE support	✓	✓	✓	✓	✓		✓	✓	✓	✓
100Mbit speed		✓	✓	✓	✓	✓	✓	✓		
1000Mbit speed							✓	✓		
Availability										
Manufactured and supported			✓	✓	✓	✓	✓	✓		
Support Only	✓	✓								

Notes V3.2

[1] Datashare protocol

[2] IP Multicast

[3] Network Data Exchange

[4] Supports accessing V memory using CIP DATA TABLE READ and CIP DATA TABLE WRITE messages

[5] Supports connections to Ethernet/IP devices via I/O Scanner, I/O Adapter, Explicit Message Adapter, and Tag Client interfaces

[6] CPU supports "server only" for peer-peer

[7] Supports "server" operation only

[8] Supports "client" operation only

[9] Supports "slave" operation only

[10] Tested with Kepware OPC Server, 3 connections from 2 different PCs, each connection polling 1000 C's and 1000 V's at 10msc speed, 30msec PLC scan

[11] Using OPC-UA or CAMP Server

[12] Supports connections to Ethernet/IP devices via I/O Scanner, I/O Adapter, Tag Client/Server, Explicit Message Client/Server, and Flex I/O Client