

# **2500 Series<sup>®</sup> Slice I/O**

## **CAMP Protocol Configuration Guide**

Version 1.0

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V 1.0	01JAN2013	Initial release

## 1.1 Overview

The CTI 2500S Series Slice I/O family supports the use of CAMP protocol to communicate the Slice I/O module status to a PLC over an Ethernet link. This allows Slice I/O to be used with existing CTI 2500 Series® or Siemens/TI Series 500/505 PLC (with CTI 2572 / 2572-A / 2500-ECC1 Ethernet modules) without any special programming. Using CAMP protocol, the Slice I/O module periodically sends commands directly to the PLC to read inputs, set outputs, and update status. Along with the I/O data, the module can send “heartbeat” information to the PLC to allow the PLC program to confirm that communications to the I/O module is active.

## 1.2 Requirements

1. 2500S Slice I/O module
2. One of the following
  - a. CTI 2500 Series® Processor
  - b. CTI 2500 Series® Processor with 2572, 2572-A, or 2500P-ECC1 Ethernet Module
  - c. Siemens/TI 500/505 Series Processor with 2572, 2572-A, or 2500P-ECC1 Ethernet Module
3. Ethernet network between the Slice I/O module and the Processor or Ethernet Module

## 1.3 Configuration of CAMP Protocol

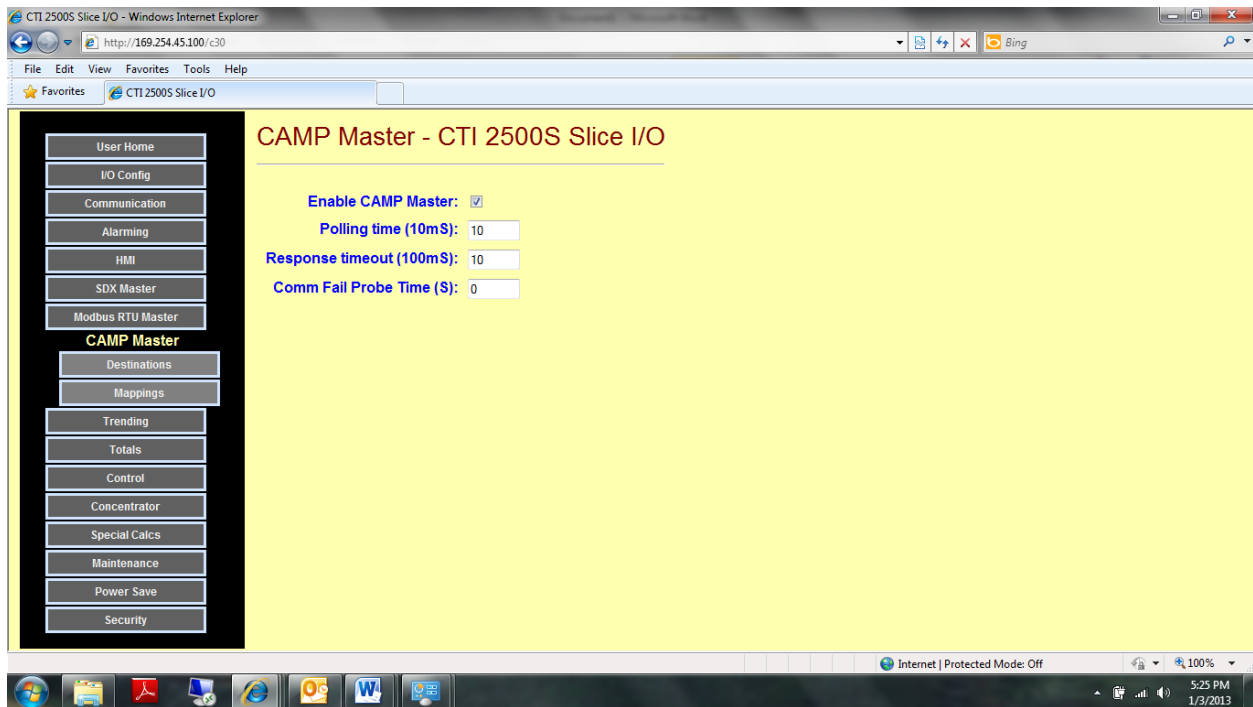
The configuration of the CAMP protocol is done within the web-browser configuration of the 2500S Slice I/O module. It allows the user to read/write the 2500S information to up to 4 separate PLCs over the network simultaneously and give the user the freedom of where to read/write the 2500S data into the PLC memory map (V, C, X, Y, WX, or WY).

Configuring the CAMP Protocol requires four easy steps:

1. Select the CAMP Protocol and select your update times and comm time out windows
2. Make sure your 2500S IP address and your PLC IP address are unique and are on the same network. In many installations, two addresses are on the same network if they match in the first three octets of the address.
3. Define your destination PLC systems (by IP address and “PLC name”). Up to 4 destination PLCs are allowed.
4. Define the data table where you want the 2500S data to be written to in the PLC memory or where you want the PLC memory to write to in the 2500S. Up to 32 separate mappings can be defined.

**IMPORTANT NOTE:** If you are using a CTI 2500 Series® Processor to communicate with Slice I/O, you must upgrade your CPU firmware to V7.05 or greater.

### 1.3.1 Selecting CAMP protocol and setting parameters



To enable the CAMP protocol the 2500S must be enabled as a CAMP master. Click “Enable CAMP Master” box.

Select your polling time. Since the 2500S initiates all communications, it will manage the reading and writing requests into the PLC CPU on a time slice you select. Maximum expected performance for communications is approximately 100msec for a wired connection, wifi and other methods will be slower due to the latency in the communication method. We have defaulted to 10 (or 100 msec).

Select the response timeout time. The 2500S initiates the communication so it knows if the communication between it and the PLC is good. In a later field you will have the option of entering a heartbeat bit (C bit) that the 2500S controls so that the user can use to **monitor communication to the 2500S on the PLC side**. The system defaults to 1 sec in this case. You can make it longer to account for latencies in your communication structure should you be using a wireless scheme.

Comm fail probe time selection is used to define the delay time you want before the 2500S attempts communication to the PLC system again should a prior request have failed.

### 1.3.2 Configuring PLC system destinations for 2500S data

The 2500S allows for up to 4 separate PLC destinations for its data. This feature can be very useful in control scenarios where having the 2500S data sent to multiple PLCs for proper control is required (e.g. peer-peer communications)



Under the Destinations tab you can enter up to 4 separate PLC Destination names/addresses that you want 2500S to communicate with.

Destination name should be a name given to a particular PLC control system. **Please use only alpha or numeric characters, other symbols are not supported.** In the above example we have created two destination PLCs – **My CTI PLC** and **CTI CPU 3**

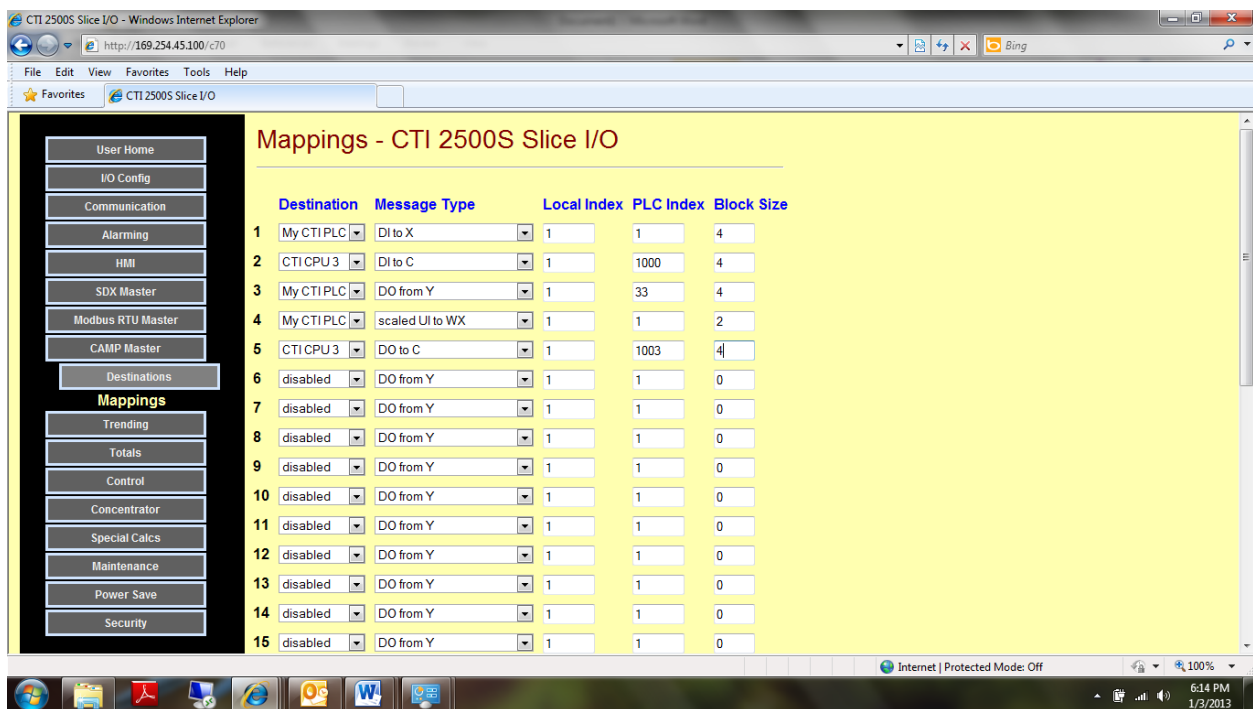
Enter the IP address for the Ethernet connection into that specific PLC. This is the IP address of the 2572, 2572-A, 2500P-ECC1, or 2500-Cx00 Processor. For **My CTI PLC** the IP address is 169.254.75.100. For **CTI CPU 3** the IP address is 169.254.75.101. Acceptable IP address for your 2500S would be 169.254.75.XXX with XXX being a unique number not 100 or 101.

Enter the IP Port number for the Ethernet connection. The 2500S defaults to 4450. Note that this port must match the port number of your CAMP server on the Ethernet module to which you're connecting. This is normally 4450 or 1505.

Lastly, when configuring the Destinations tab a heartbeat register (C bit) can be monitored by the PLC system for communication failure to the 2500S. Enter the memory location that the 2500S will control (toggle on/off on every other Ethernet request) to ensure communication. In both destination PLCs above, C100 will be the heartbeat register.

### 1.3.3 Mapping your 2500S data into CPU PLC memory

The 2500S will allow for up to 32 “transactions” or “mappings” to get data into/out of the PLC CPU. Simple examples using the two destination PLCs are shown and discussed below.



Mapping 1. The destination PLC for the 2500S is **My CTI PLC** which was selected from the dropdown menu. The message type is “DI to X” selected from numerous options from the dropdown menu. The local index is 1 which is the first input point in the 2500S system. The PLC index in this case is also 1 which means that the 2500S inputs starting with input 1 (a 2500S-23-XXXX has 4 inputs) will write its input one state (on or off) into X1 inside **My CTI CPU** memory. Selecting block size of 4 indicates that all 4 inputs of the 2500S-23-XXXX will be written into the PLC memory X1-X4.

Mapping 2. The destination PLC is **CTI CPU 3**. In this example we are writing the same 4 DIs (as above) in the 2500S and mapping them into C1000-C1003 inside **CTI CPU 3** CPU.

Mapping 3. In this case we are controlling discrete outputs (determined in the PLC logic program inside **My CTI PLC**) on the 2500S. A 2500S-23-XXXX has four (4) DOs built in. In this mapping the logic state of Y33-Y36 are mapped to DOs 1-4 in the 2500S.

Mapping 4. In this example we are taking scaled analog inputs from the 2500S and placing them in the memory location WX1 and WX2 in **CTI CPU 3**

Mapping 5. Because the 2500S has control capabilities built-in that can be configured and controlled outside of the PLC system status of those control operations might be needed inside the PLC system. In this example the states of the DOs of a 2500S are mapped into C1003-1007 inside **CTI CPU 3**.

Local Index. The local index is the memory location inside the 2500S unit. For example a 2500S has 4 DIs. If you only wanted DI2 and DI3 written into PLC memory than a local index value of “2” and blocks size of “2” would write DI2 and DI3 state to memory location you define in PLC index.

PLC Index. This is the starting address for the destination memory you select in the PLC memory map (V, C, X, Y, WX or WY).

Block Size. It he number of contiguous data values (bits or integers – depending on memory type) that will be mapped.