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# 2500C-2572-B

## QUICK START – INSTALLATION GUIDE

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### Purpose of this Document

This document is designed to assist you in unpacking and installing a CTI 2500C-2572-B module. For additional information, see the *CTI 2572-B Installation and Operation Guide*, available for download from the CTI web site ([www.controltechnology.com](http://www.controltechnology.com)).

### Introduction

The CTI 2500C-2572-B Ethernet TCP/IP module provides the capability to interface a CTI 2500 Series® Compact controller to an Ethernet network using the TCP/IP protocol suite. The module enables supervisory control applications to access PLC memory via the local area network. In addition, it supports peer-to-peer communications for transferring data between PLCs and PLC programming activities.

### Front Panel Features

#### LED Indicators

MS	Module Status	Indicates application firmware operational status (Steady Green = Good)
NS	Network Status	Indicates TCP/IP communications status (Steady Green = Good)
ACT	Activity	Indicates network traffic is present when illuminated.
LS	Link Status	Indicates the status of the Ethernet connection (Green = Good)
FDX	Full Duplex	Operating in full-duplex mode when illuminated
100	100 Mb	Operating at 100 Mb Ethernet speed when illuminated.

#### Multi-Segment Display (MSD)

The Multi-Segment Display (MSD) is located below the status LEDs. During normal operation the MSD will display the TCP/IP address of the module and the subnet mask in CIDR format. CIDR format is a compact way of displaying the network mask. See the *CTI 2572-B /2500C-2572-B Ethernet TCP/IP Module Installation and Operation Guide* (Appendix C) for more information regarding CIDR format.

#### 1.3.3 Reset Button

The Reset button is a momentary contact switch that allows you to restart the module without having to cycle power to the base. It is recessed to prevent inadvertent use. To reset the module, use a small object such as the tip of a ball point pen to depress and hold the switch for approximately one second. When the switch is released, the module will begin the startup sequence.

**To reset the module network parameters to factory default values, hold the reset button down for 10 seconds or more.**

#### 1.3.4 Ethernet Port

The port uses an RJ-45 connector which allows attachment of Unshielded Twisted Pair (UTP) or Shielded Twisted Pair (STP) Ethernet cabling.



# Unpacking the Module

Open the shipping carton and remove the special anti-static bag that contains the module. After discharging any static build-up, remove the module from the static bag. Do not discard the static bag. Always use this bag for protection against static damage when the module is not inserted into the I/O base.

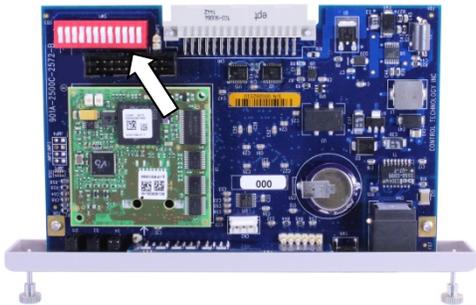
**CAUTION:**

*The components on the 2500C-2572-B module can be damaged by static electricity discharge. To prevent this damage, the module is shipped in a special anti-static bag. Static control precautions should be followed when removing the module from the bag and when handling the printed circuit board during configuration.*

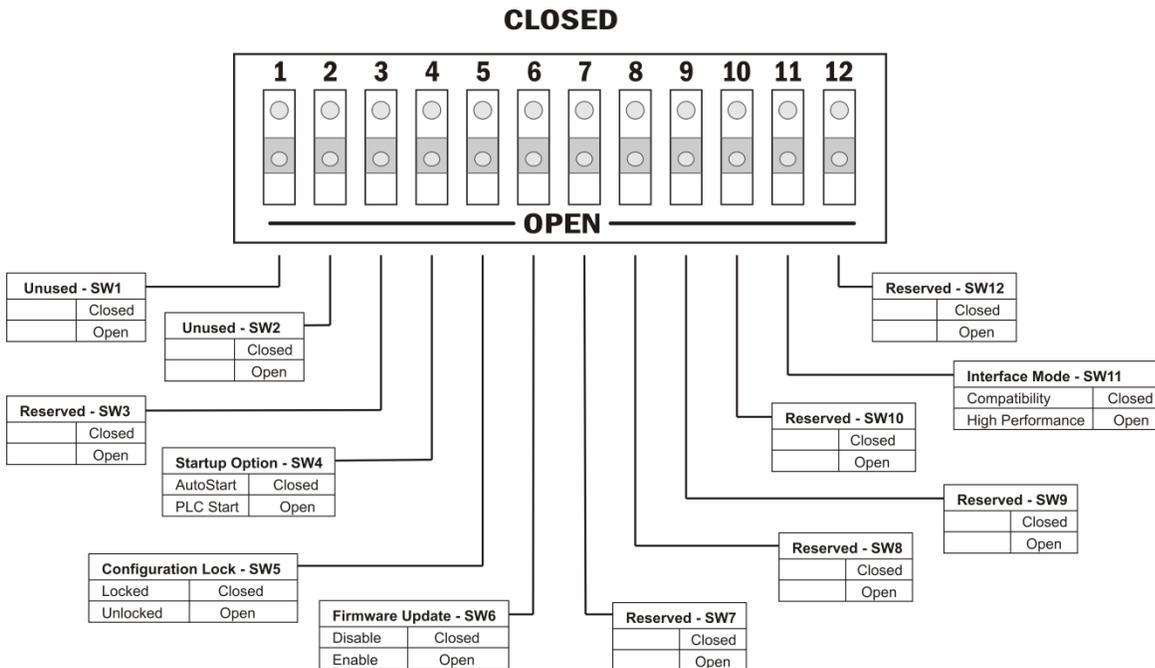
# Setting the Module Switches

Switches on the 2500C-2572-B module are used to select startup, PLC access, and access protection options.

See the illustration below to locate the switchblock on the circuit board.



The function of each switch is described in the illustration and text below.



**SW1, SW2:** These switches are unused and may be set to any position with no effect.

**SW3:** This switch position is reserved for future use. It should be set to the open position to prevent a future use from unintentionally affecting the module operation.

**SW4: Startup Option.** This switch selects how the module will start network services.

- In the AUTOSTART position, the module will automatically start up using parameters stored in non-volatile (flash) memory.
- In the PLC START position, the module will start up in a limited function mode, using the parameters stored in flash. It will then wait for PLC logic to trigger the START NETWORK SERVICES command before starting the network services that allow access to the PLC.

**NOTE:**

*When using the PLC Start Option, the PLC must be in run mode before the module will start up in full function mode.*

**SW5: Configuration Lock.** This switch allows you to prevent changes to the module IP parameters via the network. When set to the LOCKED position, changes to the module IP parameters using the Module Configuration embedded web server page will be prevented. In the UNLOCKED position changes will be allowed.

**Note:**

*If the PLC Start option is selected, PLC logic will be able to change the module IP parameters, regardless of the switch position.*

**SW6: Firmware Update.** This switch allows you to prevent updates to the module firmware. When set to the CLOSED position, this switch prevents the user from the initiating firmware update using the Update Firmware page of the embedded web server.

**SW7 – SW10:** These switches are reserved for future use. They should be set to the open position to prevent a future use from unintentionally affecting the module operation.

**SW11: PLC Interface Mode.** This switch allows you to select a PLC interface that is compatible with the CTI 2572 module and other Special Function I/O modules. By default, the module uses a high performance interface mode that increases the amount of data per scan that can be transferred between the module and the PLC and sets the task codes per scan to 8.

In most cases, you should use the high performance mode. However, in instances where minimizing PLC scan time is required, you may wish to use compatibility mode. This is especially true when the module is installed in a remote base where high performance mode can significantly increase the PLC scan time.

When this switch is set to the CLOSED position, the Special Function Interface will use the compatibility mode. When the switch set to the OPEN position, the module will use a high performance interface mode.

**SW12: Reserved.** This switch is reserved for future use. It should be set to the open position to prevent a future use from unintentionally affecting the module operation.

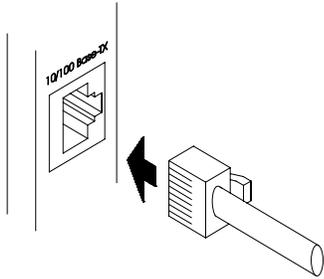
**NOTE**

*The Option switches are read only at module startup. If you change the switch position after startup, you must restart the module before the setting will take effect.*

## Physical Installation

To insert the module into the I/O base, hold the top and bottom of the bezel, align the circuit board with the guide, and slide the module carefully into the slot, pushing it all the way into the base. If you have inserted the module correctly, you will feel a slight increase in resistance as the module mates with the base backplane connector. Once the module is fully seated in the slot, tighten the captive screws at the top and bottom to hold the module in place. To remove the module from the I/O base, loosen the captive screws, and then slide the module out of the base. Take care not to damage the connector at the back of the module when inserting or removing the module.

## Connecting the Ethernet Cable



Insert the 8 pin (RJ-45) plug on your unshielded twisted pair cable into the RJ-45 jack on the 2572. Push the plug into the jack until the plug clicks into place.

## Initial Power On

Apply power to the base. The module should begin a power-up sequence during which the LEDs and the Multi-Segment Display will change state.

## Module Startup

After power is applied to the module, when the Reset button is pressed, or when the module is restarted by software or the reset switch, the module will begin the startup procedure. After the application firmware is running, all LEDs and MSD segments will be illuminated for approximately one second (multicolor LEDs will be red for ½ second and green for ½ second), and then will be turned off. This serves a display test and as an indication that module startup is in process.

## AutoStart Mode

If the **AUTOSTART** option is selected (SW4), the module will start up using the IP address stored in flash. If the startup is successful, all module network services, including the embedded web server, CAMP Server, Modbus TCP Server, and the Ethernet IP server, will be enabled. After startup, the MS LED should be **STEADY GREEN** and the Multi-Segment Display (MSD) should display the module IP address and subnet mask (in CIDR format). The NS LED should be either **STEADY RED** if a duplicate IP has been detected (indicating the module IP address is the same as another IP Host on the network) or **STEADY GREEN** if no duplicate has been detected. If the module is not in this state, see the *CTI 2572-B /2500C-2572-B Ethernet TCP/IP Module Installation and Operation Guide* for troubleshooting instructions.

## PLC Start Mode

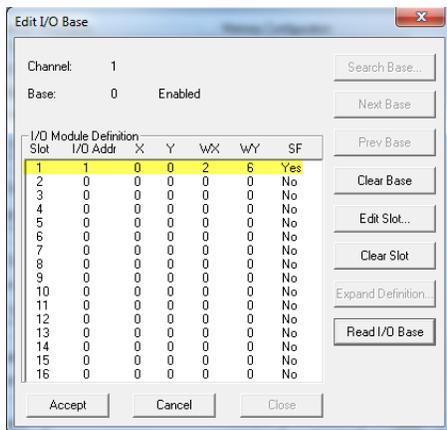
If the **PLC START** option is selected (SW4), the module will start up in a limited function mode using the IP address stored in flash, enabling only the embedded web server. Then it will wait on the PLC logic to set the IP address and enable the application servers using the Start Network Services command. While the module is waiting on the PLC command, the MSD should display the characters "PLC" interleaved with the IP address read from flash. The NS LED should be **FLASHING RED** if the IP address read from flash memory is a duplicate of another IP host on the network or

FLASHING GREEN if no duplicate has been detected. While in the state, you can access the module web server pages only.

Once the PLC successfully initiates the Start Network Services command, the module will begin using the IP parameters specified in the command and will enable all module network services. The MSD should display the IP address and subnet mask (in CIDR format) specified by the PLC logic. The NS LED should be STEADY RED if a duplicate IP address is detected; otherwise, the NS LED should be STEADY GREEN. If the module is not in this state, see the *CTI 2572-B /2500C-2572-B Ethernet TCP/IP Module Installation and Operation Guide* for troubleshooting instructions.

## Entering the Module into the PLC I/O Configuration

If you want to use PLC logic to monitor and/or control the module operation, you must enter the module into the PLC I/O configuration using your PLC programming application. The 2500C-2572-B module is configured as a Special Function module with 2 WX and 6 WY words. In the following example, the module is installed into slot 1 on I/O base 0 (local base) and will be logged in starting at address 1.



After you read the I/O base, if the number of WX and WY words are the same as those shown in the example above and Special function = YES, then the PLC can recognize the module. Change the address as required by your application and save the result. If the line is blank or erroneous, re-check the module to ensure that it is firmly seated in the I/O base slot. Generate the PLC I/O configuration chart again by reading the I/O base. If the problem persists, contact your distributor or CTI customer support.

### NOTE:

*The module must be configured in the I/O table before you can use PLC logic to start the module, monitor the module status, or control the module operation.*

## Storing Network Parameters in Flash

If you have selected the AutoStart option (SW4), you will need to manually set the IP parameters to correspond to your networking requirements.

The 2500C-2572-B module IP parameters (IP Address, Subnet Mask, and Default Gateway) can be set using the embedded web server. Point your browser to the main Product Information page by entering the IP address of the module in the browser URL field. From the list of pages on the left hand side of the page, select the MODULE CONFIGURATION page. When the configuration page is displayed, enter the new IP address information in the appropriate fields and press the Update Module button.

The module is shipped from CTI with the IP address set to 169.254.1.1 and the subnet mask set to 255.255.0.0. To connect to the module, you must ensure that your PC has an IP address that is on the same IP network and is not the same as the module IP address.

One method of providing your PC with compatible IP address is to use Windows Control Panel (or Windows Settings in Windows 10) to configure a static IP address. In this case, the first two octets of the PC IP address must be 169.254, the last two octets of the PC IP address must not be 1.1, and the PC subnet mask must be set to 255.255.0.0. For example, an IP address of 169.254.1.2 would work.

*Note:*

*Holding down the reset button for 10 seconds or more will cause the 2500C-2572-B module to restart with the CTI factory default address described above.*

Instead of manually setting a static address, you can cause your PC to generate a compatible address, if your PC is using DHCP (Dynamic Host Configuration Protocol) to obtain an IP address.

The IP address 169.254.1.1 is a link local IP address, which is used only to communicate on the local network. When a Windows PC is unable to obtain an IP address from DHCP, it automatically generates a link local address using a feature called Automatic Private IP Addressing. To cause the PC to generate a compatible address, do the following:

- Connect an Ethernet cable directly between your PC and the 2500C-2572-B module;
- Reboot the PC.

*NOTE: It may take several minutes before the PC will stop trying to contact a DHCP server and generate the Link Local address.* You can display the IP parameters being used by the PC by opening the Command Prompt window and entering IPCONFIG at the prompt. Once the link local IP address is generated, you can connect by typing <http://169.254.1.1> in your browser's URL box.

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