CTI 2500 SERIES® COMPACT CONTROLLER QUICK START INSTALLATION GUIDE

Purpose of this Document

This document is designed to assist you in unpacking and installing the CTI 2500 Series® Compact controller. For additional information, see the *CTI 2500 Series Controller Installation and Operation Guide* and the *CTI 2500 Series Programming Reference Manual,* available on our CTI web site (see link below). www.controltechnology.com/support/manuals/.

Product Overview

The CTI 2500 Series Compact controller provides all the capabilities of the CTI 2500 Series Classic Controller in a smaller form factor, combining the functionality of a programmable logic controller and a loop controller in one product and providing operational compatibility with CTI 2500 Series and Siemens SIMATIC 505® products. A particular model number of the 2500 Series Compact controller provides the same features as the 2500 Series Classic controller with the identical model number. User programs developed for the 2500 Series Classic controllers will execute without modification on the 2500 Series Compact controllers.

Unpacking the Module

Since the components on the CTI 2500 Series Compact controller can be damaged by static electricity discharge, the product is shipped in a special anti-static bag. Static control precautions should be followed when removing the product from the bag and when handling the product during configuration

After opening the shipping carton, remove anti-static bag containing the controller. 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.

Setting the CTI 2500 Series Compact Controller Switches

Switches on the CTI 2500 are used to select operational parameters such as battery power, serial port baud rate and electrical interface, TCP/IP program port, remote I/O media and polling characteristics, and firmware update mode.

The switches are located on the display circuit board, which is behind the front panel near the top as indicated by the arrow in the accompanying illustration. .

Figure 2 shows the individual switch settings. See the *CTI 2500 Series Controller Installation and Operation Guid*e for additional information.
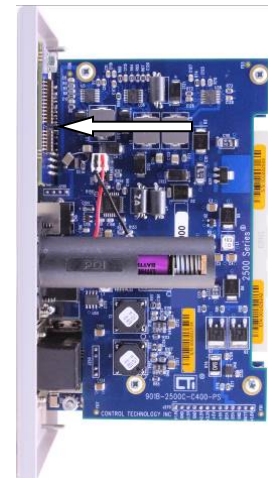
Setting the User Switches

User switches are located on the switchblock labeled ENC1 are near the top of the display board.

SW1: Battery Backup

Set the battery switch to the **ON** position to enable the battery.
CTI 2500 Series Compact controllers are shipped with the battery installed and the battery switch in the disabled position.

SW2-4: Serial Port Baud Rate

These switches are used to set the port baud rate. For most applications, you should set the baud rate to 115,200. If you are experiencing communications problems, you may need to reduce the baud rate.

### SW5: Serial Port Electrical Interface

For programming applications, you should set this switch to the RS-232 position (open).

SW6: Program Port Selection

When SW6 is open, TCP port 4452 is used as the programming port. If you need to use TCP port 1505 as the programming port also, set this switch to the closed position.

SW7: Redundant Base Polling

Switch 7 allows you to reduce the I/O scan time of the CTI 2500 controller in I/O configurations that use only one Remote Base Controller (RBC) per base. When the switch is set to the **ON** position, the CTI 2500 controller will not attempt to poll the standby RBC in each base, eliminating the timeout delay introduced by polling an RBC that is never present. If Switch 7 is in the **OFF** position, the CTI controller will always poll the standby RBC.
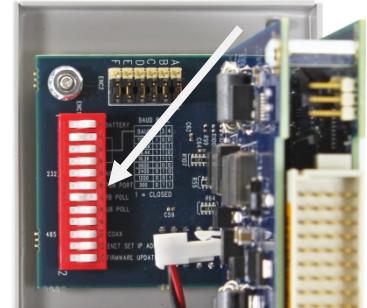
> **CAUTION:**
> **If you are using an I/O configuration that uses redundant RBCs (two RBCs per base), the switch must be in the OPEN position for the redundancy function to work properly.**

SW8: Unconfigured Base Polling

Switch 8 allows you to reduce the I/O scan of the CTI 2500 controller by eliminating polling for bases that are enabled but unconfigured. This capability is especially important for APT users needing to reduce scan time, since APT programming software does not provide a means to manually disable a base.

When Switch 8 is set to the **ON** position, unconfigured bases will not be polled. When the switch is set to the **OFF** position, all enabled I/O bases will be polled, regardless of their configuration state.

SW9: Reserved

This switch is reserved for future use and should be set to the **OFF** position

SW10: I/O Interface

Set this switch to the open (RS-485) position if you are using RS-485 shielded twisted pair to connect to remote base controllers. Set this switch to the closed (Coax) position if you are connecting to remote base controllers via coaxial cable using a Siemens SIMATIC 505-6850 I/O Channel Converter.

> *NOTE:*
> *Setting the switch to the Coax position while connected via RS-485 will increase the remote I/O update time.*

SW11: Ethernet Port IP Address Change Enable

This switch controls whether the IP parameters (IP Address, Subnet Mask, and Default Gateway) can be changed via the local Ethernet port. In the Open position changing the IP parameters via the Ethernet port is prohibited. In the Closed position, PLC Workshop or the embedded web server can be used to change the IP parameters.

SW12: Firmware Update

This switch selects firmware update mode. It should be set to the open position for normal operation.

Setting the Auxiliary Switches

Auxiliary switches are used to select less commonly used options. They are located on a switchblock below the user switches labeled ENC2.

SW1: Unused

This switch selects how memory capacity is reported when queried by task code 6D. When the switch is in the **OFF** position, the Simatic 505 model equivalent memory capacity is reported. When the switch is in the **On** position the APT Expanded Memory capacity is reported.

SW2: Printer Port Selection

When this switch is in the **ON** position, the serial port functions as a printer port (output). When this switch is in the **OFF** position, the serial port functions as a programming port (input).

SW3: Unused

This switch is not used by the product.

SW4: IP Address Reset

When the controller is powered up while this switch is in the ON position, the stored IP parameters will be cleared. After a subsequent power up with the switch in the **OFF** position, the controller will automatically generate an IP address as described later in this document. Also see the 2500 Series Controller Installation and Operation Guide for additional information.

SW5-6: Reserved

These switches are reserved for future use and should be set to the **OFF** position.

Inserting the Controller into the I/O Base

Remove AC power from the power supply. Install the controller in the slot next to the power supply as shown below. Align the leftmost circuit board with the guide slot and slide the controller into the rack until the connector seats. Use the thumbscrews to secure the controller in the rack.

Initial Power On

Apply power to the base power supply. The POWER GOOD LED on the power supply should illuminate, indicating that power is being supplied to the base connectors. The controller will take a few seconds to complete the startup sequence.

Module Status Indicators

When this is complete, the status indicators should be in the state as shown in the table below:

Indicator	State	Comments
CPU GOOD	ON	If the CPU GOOD LED is off, check the Multi-Segment Display (MSD). If the MSD is displaying FE, a fatal error is present and must be cleared. See the CTI 2500 IOG for additional information.
RUN	OFF*	* If this is the first time you have powered the controller since installing the battery, the controller will be in Program mode and the LED will be OFF. Otherwise, the controller will be in either PROGRAM or RUN mode, depending on the state at power down.
BATTERY GOOD	ON	If a good battery has been installed **and** the Battery Switch has been set to ON, this LED will illuminate. If the LED is off, the battery is missing or bad or the battery switch is off.

The Multi-Segment Display (MSD) should display the four octets of the IP address, three characters at a time. For example, if the IP address is set to 192.10.100.1, the MSD will display 192 then 010, then 100, and then 001. If no IP address has been set, the MSD will display an IP address of 000.000.000.000. Firmware version 8.02 and above will also display the network mask in CIDR format. The CIDR number will be preceded by an underline character "_". See the *CTI 2500 Series Controller Installation and Operation Guide* for additional information regarding CIDR format.

NOTE:
If the MSD displays "U01", the controller is in Firmware Update mode. Remove power, set SW12 to the closed position, and re-apply power to the controller.
If the MSD displays "Enn" (where n represents a number), an error has occurred during startup. See the Installation and Operation Guide for steps to clear the error.

Setting the Controller IP Parameters

Using the Serial or USB Port
When connected to the serial or USB port, you can set the IP address and other IP parameters using PLC Workshop (V4.11 or greater) or IPSET, a standalone utility that you can download from the CTI web site.

Using the Ethernet Port
Firmware version 8.02 and above allows you to set the IP address and other IP parameters when connected to the Ethernet port. To enable this capability, SW11 must be set to the closed position. You can change the parameters using PLC Workshop (V4.11 or greater) or by accessing the 2500 controller embedded web server with your PC web browser.

Automatic IP Address Assignment

The 2500 controller is shipped from CTI with the IP parameters cleared. After you power up the controller, the IP address will be displayed as 0.0.0.0. When you connect the Ethernet port to a switch or PC, the controller will automatically generate a temporary IP address. You can connect to this address to set a permanent IP address. The address will be selected from a range of "Link-Local" addresses reserved for this purpose (169.254.1.0 to 169.254.254.255) with a subnet mask of 255.255.0.0 (/16).

You can use Windows Control Panel to set your PC to a static address that is compatible with the selected address. A compatible address is:

- Within the Link-Local Range above,
- Not the same as the PLC IP address (displayed on the MSD),
- Uses the same subnet mask (255.255.0.0)

Alternately, if your PC is using DHCP to obtain an IP address, you can automatically connect using the following method:

1. Connect an Ethernet cable from the PC to the 2500 controller Ethernet port.
2. Reboot the PC.

NOTE
Depending on the PC configuration, it may take several minutes before the PC stops attempting to contact a DHCP server and generates the link-local address. You can confirm when this is done by opening the Command Prompt box and typing IPCONFIG.

Programming Software

Workshop (from FasTrak Softworks), TISOFT, or APT may be used to program the CTI 2500 controller. TISOFT and APT provide access to features compatible with Siemens SIMATIC 505® controllers. Workshop provides access to the advanced features of the controller. See the *CTI 2500 Series Controller Installation and Operation Guide* and the *CTI 2500 Programming Reference Manual* for additional information.

Programming Ports

Depending on the programming software being used, you can program the CTI 2500 via the USB port, the Ethernet port, or the RS-232 serial port. When using TISOFT, the RS-232 port is the only option. When using APT, the RS-232 port or the Ethernet port can be used. Programming with APT over the Ethernet port requires the installation of CTI APTNet on the PC. Workshop allows you to program the CTI 2500 using USB, Ethernet, or RS-232 ports.

In order to use the USB port, you must install a CTI USB device driver on your PC. This driver may be downloaded from www.controltechnology.com/downloads.

WARNING
The USB Port is for temporary connection only.
Do not use, connect, or disconnect unless area is known to be non-hazardous.
Connection or disconnection in an explosive atmosphere could result in an explosion.

I/O Support

The CTI 2500 supports CTI 2500 Series I/O, Siemens Series 505® I/O, and Profibus DP I/O. See the *CTI 2500 Series Controller Installation and Operation Guide* for detailed information.

Firmware Update

Prior to using the CTI Controller, you should verify that the controller firmware is current. The firmware version number for the controller may be obtained by displaying Status Word 260 and Status Word 261 using your programming software or by using your web browser to access the web server embedded in the CTI 2500 controller. You may determine the current firmware level by accessing the CTI web site - http://www.controltechnology.com/support/software-revision/

If newer firmware is required, you may obtain it directly from the CTI web site - www.controltechnology.com/downloads. The *CTI 2500 Series Controller Installation and Operation Guide* includes a chapter that explains how to update your firmware.

Technical Assistance

If you need assistance from CTI please email CTI Technical Support at support@controltechnology.com or contact call us at 865-584-0440 or 800-537-8398 (USA only).