CI

CTC Load Utility™ User Guide

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Contents

Notes to Readers

The *CTC Load Utility User Guide* provides the following information:

- Installing and launching the CTC Load Utility.

- Setting up and configuring computer-controller communications for the CTC Load Utility.

- Downloading object (DSO) files to controllers.

- Uploading object (DSO) files from controllers.

Related Documents

The following documents contain additional information:

- For information on Quickstep, refer to the *Quickstep™ Language and Programming Guide* or the *Quickstep™ User Guide*.

- For information on your controller and its modules, refer to the appropriate Installation and Applications Guide.

- For information on on the registers in your controller, refer to the *Register Reference Guide*.

- For information on Microsoft Windows or your PC, refer to the manuals provided by the vendor.

Book Conventions

The following conventions are used in this book:

ALL CAPS BOLDFACE	Identifies DOS, Windows, installation program file names.
Boldface	Indicates information you must enter, an action you must perform, or a selection you can make on a dialog box or menu.
Italics	Indicates a word requiring an appropriate substitution. For example, replace *filename* with an actual file name.
Text_Connected_With_Underlines	Indicates symbolic names used in Quickstep programs. Step Names are ALL_CAPITALS. Other symbolic names can be Initial_Capitals or lower_case.
SMALL CAPS	Identifies the names of Quickstep instructions in text.
Courier font	Identifies step names, comments, output changes, and Quickstep instructions appearing in the Quickstep editor.
Art Code	Identifies the file name of a particular graphic image.

How to Contact Control Technology Corporation

Control Technology Corporation is located in Massachusetts, and we are open from 8:30 a.m. to 5:00 p.m. eastern time. Contact us at 1-508-435-9595 and 1-800-282-5008 or FAX 1-508-435-2373.

See us on the World Wide Web: http://www.control.com/.

Your Comments

We welcome your suggestions and comments about this or any other Control Tech document. Comment forms are in the file called **BUGRPT.WRI**, which was installed in the **QSWIN21** directory during your Quickstep installation. You can also email comments to techpubs@control.com.

Getting Started

Contents

Installing the CTC Load Utility

Install the CTC Load Utility software from Windows as follows:

1. Insert the first disk into drive A or B.

2. Start the installation as follows:

    a. For Windows 3.1/3.11 users:

        Open the **Program Manager**, pull down the **File** menu, and choose the **Run** command.

    b. For Windows 95/NT users:

        Select the **Start** menu from the Taskbar and choose the **Run** command.

3. Type **A:\SETUP** (type **B:\SETUP** if you are using drive B) in either the **Command Line** (Win 3.1/3.11) or the **Open** (Win 95/NT) text box and press **ENTER** or select **OK**.

4. Enter the following information on the screen when prompted:

    *   The directory to contain the CTC Load Utility files (default is **C:\QSWIN21\CTCLOAD**)

        If Quickstep is installed in a directory other than **C:\QSWIN21**, it is recommended that you install the CTC Load Utility in a subdirectory under it called **CTCLOAD**. For example, if Quickstep was installed in **H:\QS\QSWIN21**, install the CTC Load Utility in **H:\QS\QSWIN21\CTCLOAD**.

    *   The program group for the CTC Load Utility icon (default is Quickstep 2.1)

5. When the installation is complete, select **Finish** or press **Enter**.

Setting Up Computer – Controller Connections

The CTC Load Utility can be set up to communicate with a controller through an RS-232 port or an Ethernet network. You must establish a physical connection between your PC and the controller before you can use the CTC Load Utility to communicate with the controller.

Using the RS-232 Port for CTC Load Utility – Controller Communications

Your controller is equipped with a built-in protocol allowing direct computer communications with the controller's RS-232 port. This protocol is described in the Tech Note, *Data Communications*.

The connection to the controller's RS-232 port is made through a modular jack (labeled COMM) on the controller's front panel. This jack carries the receive signal, two grounds, and the transmit signal for the communications channel. The pin diagram on the right illustrates the wiring of the jack; only the center four conductors of a six-conductor jack are used.

Standard Control Technology cables are available for connecting to this jack (see the diagram on the following page). As an alternative, many commonly available telephone cables may be substituted.

If you have a *Model 2600XM* or *Model 2700* controller, you can also connect the computer to one of the two RS-232 ports on either a *Model 2216 RS-232 Communications Module* or a *Model 2217 Ethernet Module*.

Modular Jack Pin Connections

1 - Not Used
2 - TxD outbound
3 - Ground
4 - Ground
5 - RxD inbound
6 - Not Used

CT1

Connecting to a D-Connector

RS-232 ports on computers are usually configured through 25-pin (DB25) or 9-pin (DB9) D-type connectors. There is a standard for wiring such connectors, which is followed by most PC manufacturers.

Control Technology has adapters available that connect directly to a male DB25 or DB9 connector. These adapters provide a modular jack wired for compatibility with the COMM port. To be fully compatible when using this adapter, the computer's communications port should be wired as a DTE (Data Terminating Equipment) device as follows:
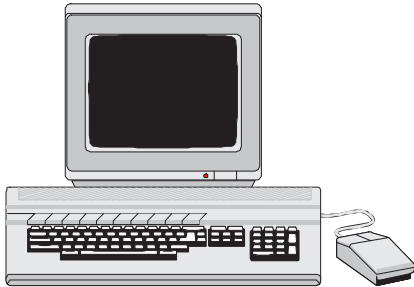
- Pin 2 = TxD
- Pin 3 = RxD
- Pin 7 = Ground

NOTE: Do not connect the controller to a telephone line.

The following illustration shows computer-controller connections using an RS-232 connection and lists the part numbers for DB25 and DB9 connectors.
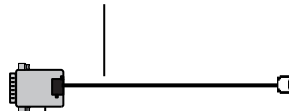
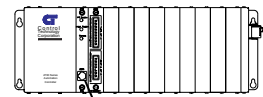Personal computer with RS-232 asynchronous communications board

Communications cable:

Model 2881 - 5 feet
Model 2882 - 15 feet
Model 2883 - 25 feet

Controller's COMM port

D-connector to modular jack adapter:

Model 2880A for 25-pin D-connectors
Model 2880B for 9-pin D-connectors

CT2

Using Ethernet for CTC Load Utility – Controller Communications

If you have a *Model 2600XM* or *Model 2700* controller, it can access an Ethernet network for controller-computer communications using a *Model 2217 Ethernet Module*. The *2217* contains 10Base2 and 10BaseT connections as well as two RS-232 ports. Using Ethernet, you can use the CTC Load Utility to communicate with any controller on your network.
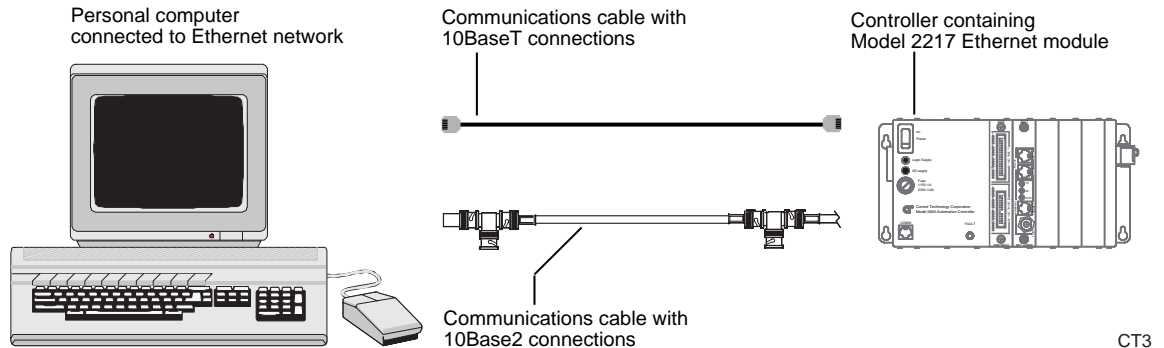
NOTE: Although you may have multiple controllers on a network, you can only communicate with one controller at a time.

The connection for the controller's Ethernet port uses Ethernet IEEE 802.3 standard 10Base2 and 10BaseT connections. For additional information about setting up Ethernet communications, refer to the *Model 2217 Ethernet Module Installation and Applications Guide*.

The following illustration shows computer-controller connections using an Ethernet connection.
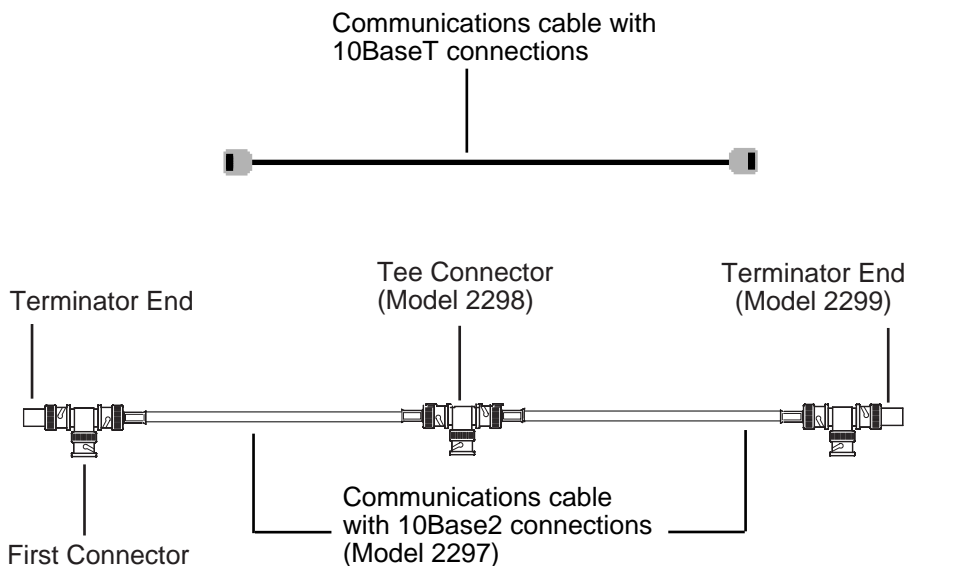

Personal computer connected to Ethernet network

Communications cable with 10BaseT connections

Controller containing Model 2217 Ethernet module

Communications cable with 10Base2 connections

CT3

The following illustration shows the different types of communications cables with 10Base2 and 10BaseT connectors and their associated part numbers.

Communications cable with
10BaseT connections

Terminator End

Tee Connector
(Model 2298)

Terminator End
(Model 2299)

First Connector

Communications cable
with 10Base2 connections
(Model 2297)

All Ethernet 10Base2 connections with a connector
on only one end must use a connector with a terminator.

CT4

Launching the CTC Load Utility

1. Launch the CTC Load Utility as follows:

   a. For Windows 3.1/3.11 users:

      Open the **Program Manager**, pull down the **File** menu, and choose the **Run** command.

   b. For Windows 95/NT users:

      Select the **Start** menu from the Taskbar and choose the **Run** command.

   c. Type **C:\QSWIN21\CTCLOAD\CTCLOAD.EXE** in either the **Command Line** text box (Win 3.1/3.11) or in the **Open** text box (Win 95/NT) and press **ENTER** (or select **OK**).

NOTE: You can also launch the program by locating the **CTC Load Utility** icon with the **Program Manager** (Windows 3.1/3.11) or the **Start** menu (Windows 95/NT).

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2. The CTC Load Utility main window appears.
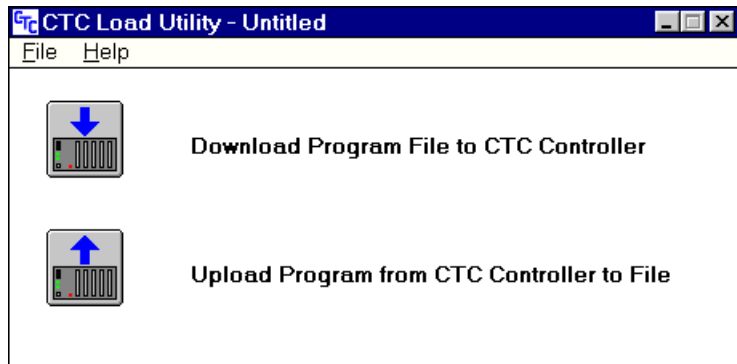
LD1

CTC Load Utility Overview

The CTC Load Utility consists of two utilities that interact closely with your controller and Quickstep for Windows programs. You can communicate with your controller through either a serial or Ethernet connection. Refer to *Configuring Computer - Controller Communications* for details on how to configure such a connection.

These utilities allow you to:

- Download programs to your controller.

- Upload programs from your controller.

CTC Load Utility Main Window Overview

The following illustration shows the CTC Load Utility main window and describes the different parts of the window.

Menu bar - Contains the File and Help menus, which allow you to configure computer/controller communications, access the on-line Help file, or exit the program.

Utility selection buttons - Give you access to each utility.
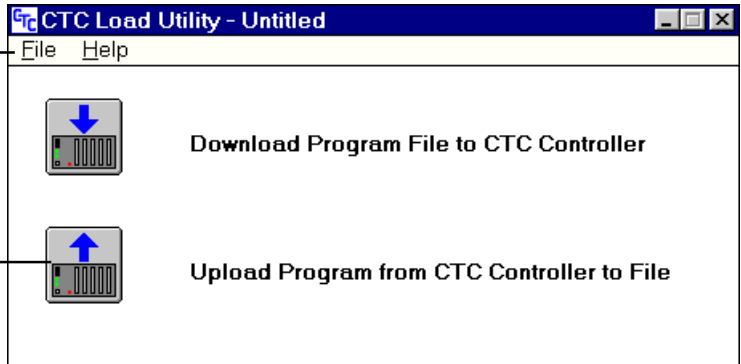

LD1

Configuring Computer – Controller Communications

Before you can use the CTC Load Utility to communicate with your controller, you must indicate the type of communications used in the Communications Setup dialog box. From this dialog box, you can specify the communications port used for RS-232 communications or the computer and controller node numbers for Ethernet communications.
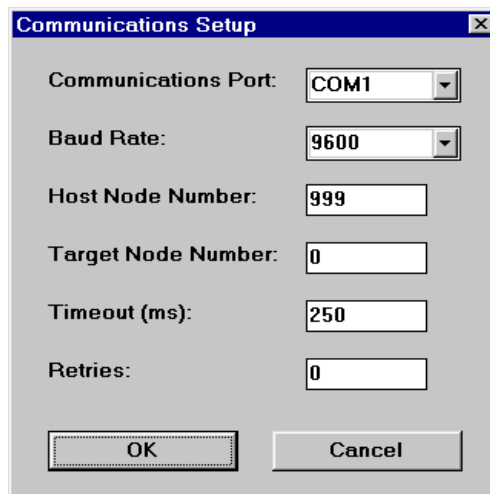
Configuring RS-232 Communications

To configure RS-232 communications:

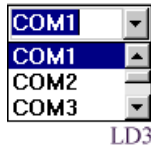1. Select **Setup** from the **File** menu.
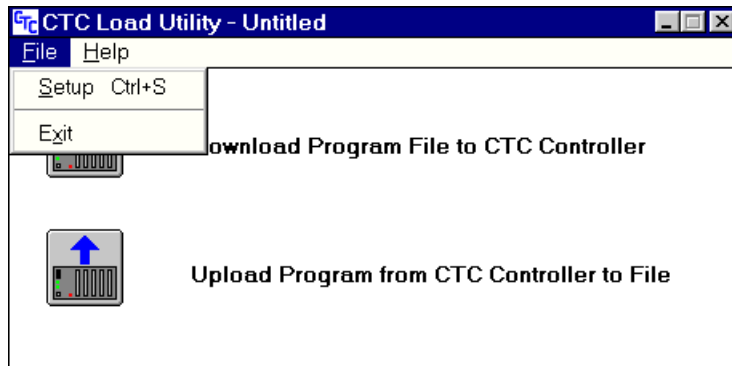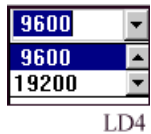

LD6

The Communications Setup dialog box appears.

LD2

2. Click the **arrow** on the right side of the **Communications Port** field
    to display the choices for communications.

```
COM1      ▼
COM1      ▲
COM2      ═
COM3      ▼
```
    LD3

3. Select the communications port (COM1 through COM8).

4. Click the **arrow** on the right side of the **Baud Rate** field to display the
    baud rates.

```
9600      ▼
9600      ▲
19200     ▼
```
    LD4

5. Select the baud rate; the default is 9600 baud.

NOTE: Although the baud rate is generally selectable, some controllers
have a fixed baud rate. Refer to your controller's installation
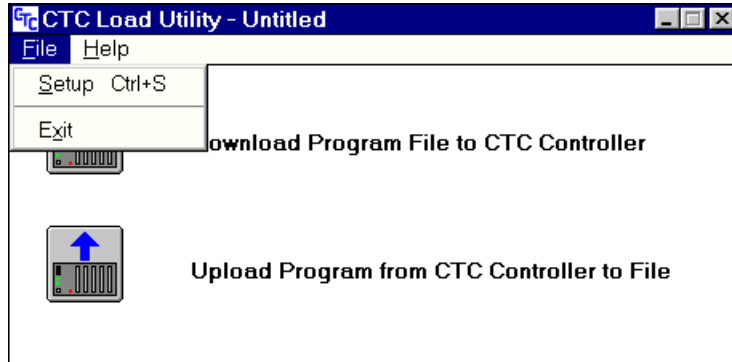guide for configuration specifications.

---

6. Enter a delay time in milliseconds in the **Timeout** field. This value
    specifies the amount of time elapsed before a communications failure
    is reported.

7. Enter the number of communication retries in the **Retries** field. This
    value specifies the number of communication retries that occur before
    a communications failure is reported.

8. Select **OK** when you have finished making your selections.
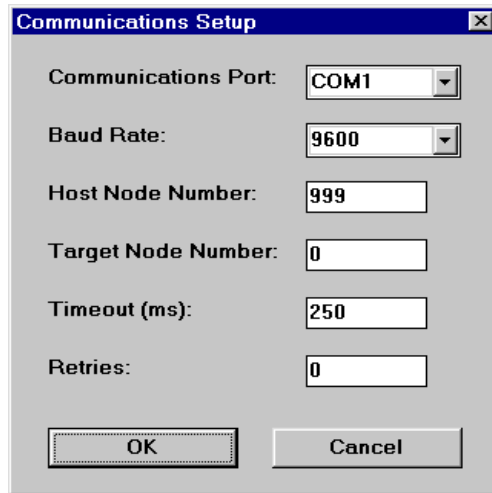
Configuring Ethernet Communications

To configure Ethernet communications:

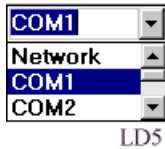1. Select **Setup** from the **File** menu.

LD6

The Communications Setup dialog box appears.

LD2

2. Click the arrow on the right side of the **Communications Port** field to display the choices for communications.

```
COM1        ▼
Network     ▲
COM1
COM2        ▼
```
LD5

3. Select **Network**.

NOTE: Network communications are accomplished with either a *Model 2217 Ethernet Module* or with a *MultiPro* controller containing a built-in Ethernet connector.

---

4. Enter the address of the host computer in the **Host Node Number** field.

5. Enter the network node address of your controller in the **Target Node Number** field.

6. Enter a delay time in milliseconds in the **Timeout** field. This value specifies the amount of time elapsed before a communications failure is reported.

7. Enter the number of communication retries in the **Retries** field. This value specifies the number of communications retries that occur before a communications failure is reported.

8. Select **OK** when you have finished making your selections.

Download File Utility

## Contents

Downloading Files

This utility takes a compiled Quickstep object (DSO) file and downloads this information to your controller. Although it performs the same function as the **Download** command used in Quickstep, this utility provides you with quick access to the download function when Quickstep is not available.

To open this utility:

1. Launch the CTC Load Utility as described in the *Launching the CTC Load Utility* section in Chapter 1, *Getting Started*.

2. Press the first utility selection button on the main CTC Load Utility window as indicated below.

Select this button ———

LD1
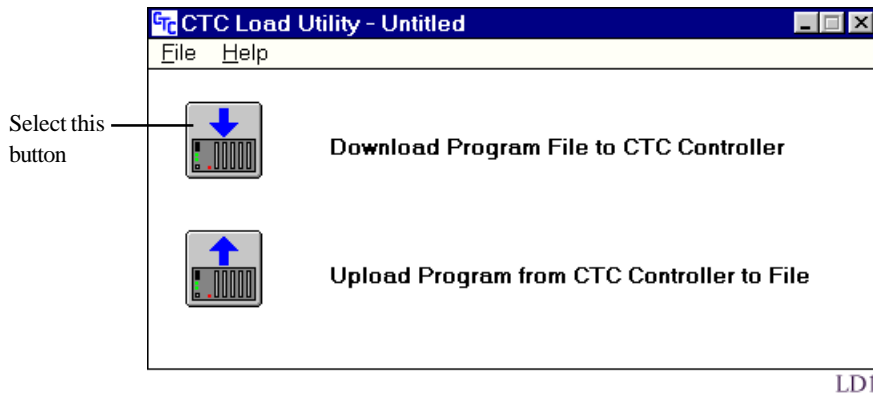
A dialog box (shown below) appears which asks if you want to upload a controller program before downloading a new program.


LD7
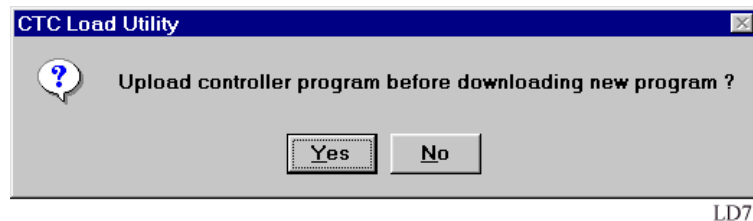
NOTE: Downloading an object file replaces the code residing in your controller. Make sure that you have back-up copies of your controller code before downloading any files. If you need to upload your controller code to make a back-up, then select **Yes** and follow the instructions in Chapter 3, *Upload File Utility*.

---

3. Select **No** to download a new program. The **Download File** dialog box appears (shown below).
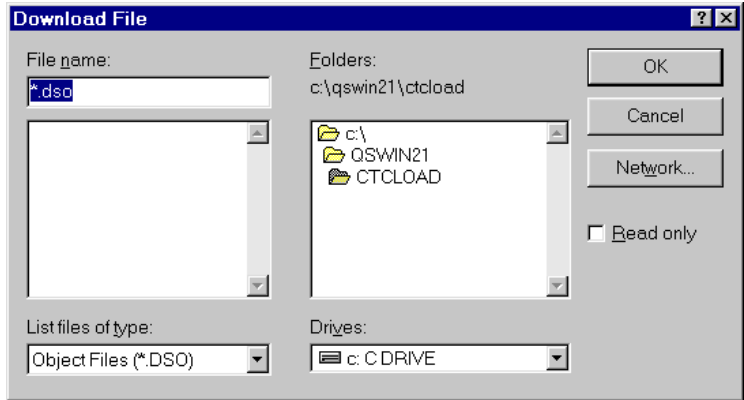

LD8

4. Locate the DSO file that you want to download and select the file by clicking once with the mouse; the file name appears in the **File name** field.

NOTE: If you are running CTC Monitor, make sure that monitoring is suspended before you attempt to download a program.

---

5. Select **OK**. The utility downloads the file to the controller and displays a message similar to the illustration below.
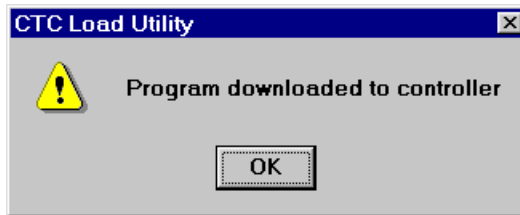

LD9

Upload File Utility

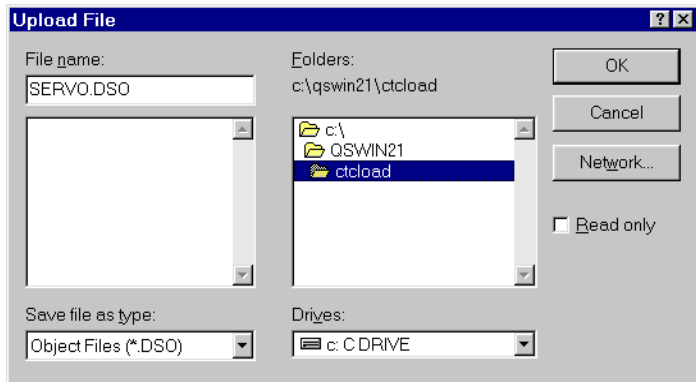Contents

Uploading Files

This utility uploads a controller program and creates a Quickstep object (DSO) file.

To open this utility:

1. Launch the CTC Load Utility as described in the *Launching the CTC Load Utility* section in Chapter 1, *Getting Started*.

2. Press the second utility selection button on the main CTC Load Utility window as indicated below.
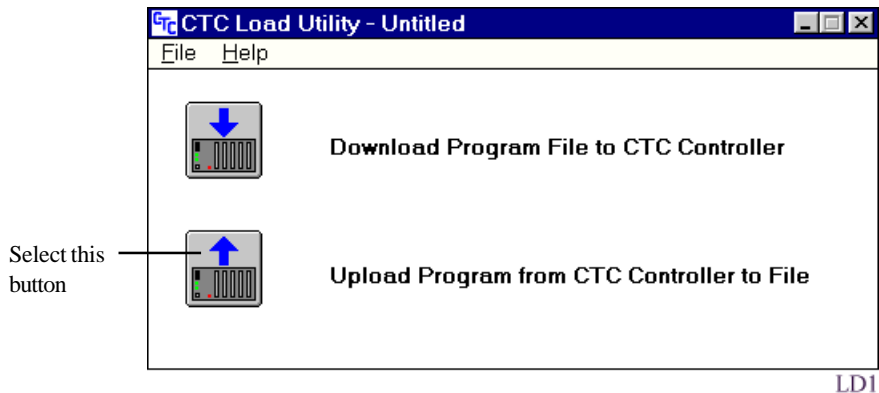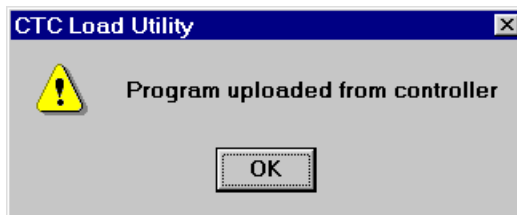

The **Upload File** window appears (shown on the next page).

LD10

3. Type the DSO file name in the **File name** field.

4. Select **OK**. The utility uploads the controller information, stores it in the DSO file, and displays a message similar to the one shown below.

LD11

Appendix

Contents

Function Return Codes by CTCCOM16.DLL

Return Value	Likely Cause
0	Function failed
1	Function succeeded
158	Serial port in use; select another port
159	Serial port not found; select another port
160	Unknown serial port error
165	Illegal stop-bits value; serial port settings incorrect
166	Illegal word length value; serial port settings incorrect
167	Illegal parity value; serial port settings incorrect
168	Illegal baud rate value; serial port settings incorrect
169	Serial port receive warning; check for noisy serial connection
177	Serial port receive time-out; check time-out value in use
178	Network/serial connection in use; close existing connection
179	Unable to initialize serial port
180	End of file found when not expected; corrupted object file
181	Bad file position found in file; corrupted object file
182	Bad file length; corrupted object file
183	Bad object record; corrupted object file
184	Not a DSO file; corrupted object file
185	DSO file has different architecture type than destination controller
186	Quickstep object (DSO) file not found
187	Quickstep file (DSP, FIG, TAB, or DSO) not found
194	Failed network connection; cannot access network
195	Unknown remote node; controller node cannot be found on network
196	Unsupported remote operation; cannot perform action over network
205	Bad response protocol; message not a binary protocol message
206	Bad response; message not for requested data
214	Bad response length; message fails length test
215	Bad response checksum; message does not pass checksum test
216	Out-of-range; data requested does not exist (e.g. Flag 33)
235	Network not ready; make sure network connection is in use
236	Network communications time-out; check time-out value in use
246	Windows timer not accessible
255	Unknown network error