

# CTC Monitor v3.2

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# Chapter 1: Getting Started

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## 1.1 CTC Monitor Intro: Connecting Your Controller to the Computer

Welcome to CTC Monitor, CTC's program that enables you to view your CTC controller's I/O and motor values, controller/program status. CTC Monitor is also a valuable diagnostic tool for both your controller and the Quickstep program that runs on it. CTC Monitor supports CTC 2000 Series (except the Model 2200) and all 5000 Series controllers. It runs on Windows XP, Windows 7 and Windows 8.

### Connecting Your Controller to the Computer

#### Serial (RS-232) Connection

Your controller may be connected using a cable that has modular jack connectors on each end, which may be ordered from CTC by calling 888.818.2600. For additional convenience, the cable may be ordered in any one of several different lengths:

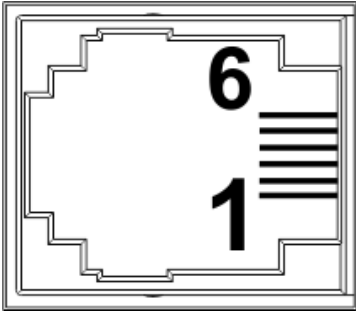
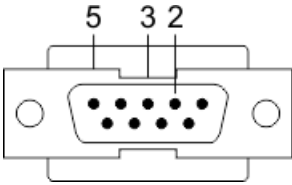
**P/N 2881:** Modular Jack Cable (7' length)

**P/N 2882:** Modular Jack Cable (15' length)

**P/N 2883:** Modular Jack Cable (25' length)

You will additionally need a Modular Jack Adapter **P/N 2880B**, a DB-9 female connector that plugs into an IBM-PC compatible RS-232 port.

You may also make your own adapter using the following pinouts plus an RJ-11(4-pin) or RJ-12 (6-pin) connector for the controller end of the cable:

Pin Mappings for COM port (on controller)	Pin Mappings for DB-9 Connector (on cable to Computer)
	
1. TxD Outbound (Comm1) <sup>2</sup>	
2. TxD Outbound (Comm0) goes to:	<b>Pin 2:</b> (RxD) Inbound
3. Common goes to:	<b>Pin 5:</b> (Signal Ground)
4. Common	
5. RxD Inbound (Comm0) goes to:	<b>Pin 3:</b> (TxD) Outbound
6. RxD Inbound (Comm1) <sup>2</sup>	

**NOTES:**

1. Model 5300 Controllers have a USB mini port on the CPU module that may be used for RS-232 communications. You may connect from the USB port on your computer to the USB mini port on the Model 5300 using a standard USB cable instead of the CTC cables listed above.
2. Comm1 is only available on controller models that have multiple COM ports.
3. All CTC COM ports use RJ-12 female receptacles. RJ-11 connectors can mate with RJ-12 receptacles.

**Ethernet Connection**

Model 2600XM, 2700 and all 5000 series controllers may be connected via Ethernet connections. Model 2600XM and 2700 controllers must have an Ethernet card installed.

Consult the [Communications Setup](#) section for additional information on establishing communications between your controller and the computer.

## 1.2 CTC Monitor Window

The main selection dialog box appears when CTC Monitor is started. The items on this dialog box may be accessed manually or by DDE conversation.

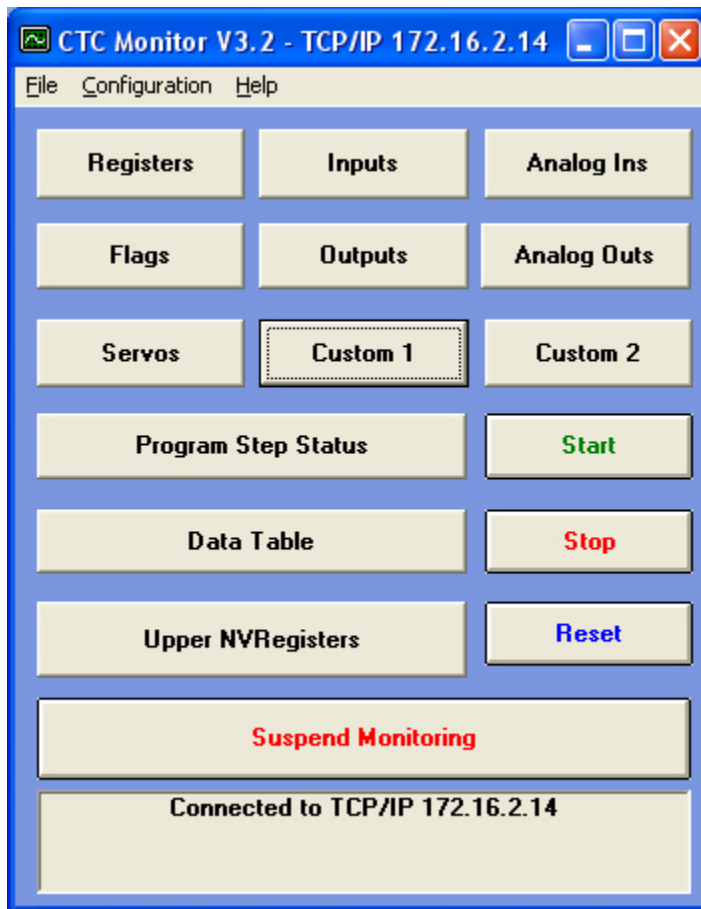


Button descriptions are discussed in the next section.

To view / change Network Settings, on the main CTCMon screen click on the second pull-down menu called **Configuration**. Select **Change Configuration** to go to the [Network Settings window](#).

To view/change Real Time Clock Settings, on the main CTCMon screen click on the second pull-down menu called **Configuration**. Select **Set Real Time Clock** to go to the [Controller Real Time Clock window](#).

## 1.3 CTC Monitor Window Buttons



**Registers:** Clicking the **Registers** button displays the Registers dialog box. From the Registers dialog box you can:

- View the values stored in registers
- Store a new value in a register
- Store a value in an empty register

**Inputs:** Clicking the **Inputs** button displays the Inputs dialog box. From the Inputs dialog box you can monitor the current state of digital inputs.

**Analog Inputs:** Clicking the **Analog Ins** button displays the Analog Inputs dialog box. From the Analog Inputs dialog box you can monitor the values of analog inputs.

**Flags:** Clicking the **Flags** button displays the Flags dialog box. From the Flags dialog box you can view or change the status of a flag.

**Outputs:** Clicking the **Outputs** button displays the Outputs dialog box. From the Outputs dialog box you can view the state of a digital output and turn outputs on and off.

**Analog Outputs:** Clicking the **Analog Outs** button displays the Analog Output dialog box. From the



Analog Output dialog box you can monitor the current value of analog outputs and change their values.

**Servos:** Clicking the **Servos** button displays the Servo Motors dialog box. From the Servo Motors dialog box you can view the current position of a servo motor and monitor the servo error.

**Custom 1 and Custom 2:** Clicking the **Custom 1** or **Custom 2** buttons displays the Custom dialog boxes. From these dialog boxes you can create custom dialog boxes that allow you to monitor a variety of controller resources, inputs, outputs, and servo positions and errors values.

**Program Step Status:** Clicking the **Program Step Status** button gives you real time monitoring of your Quickstep program. The Program Status dialog box displays a tree structure of the current running tasks.

**Start:** When pressed, the program in the controller currently connected will start. If no controller has been connected, an error message will be displayed.

**Data Table:** Clicking the **Data Table** button displays the Data Table dialog box. From the dialog box you can perform real time monitoring of a data table. You can also change the values in a data table and enter messages in the data table.

**Stop:** When pressed, the program in the controller currently connected will stop. If no controller has been connected, an error message will be displayed.

**Upper NVRegisters:** Clicking the **Upper NVRegisters** button displays the NVRegisters dialog box. From the NVRegisters dialog box you can do the following:

- View the values stored in the NV registers
- Store a new value in an NV register
- Store a value in an empty NV register.

**Reset:** When pressed, the controller currently connected will be reset. Any running program will stop, and the controller will restart with it's default configuration. If no controller has been connected, an error message will be displayed.

**Suspend/Resume Monitoring:** When pressed, CTC Monitor will stop communications to the controller. This will allow other programs to communicate with the controller without having to reload CTC Monitor later. An example of it's use is to return to Quickstep and download a new program to the controller, then restart CTC Monitor.

**Controller Operating Status:** Lists the status of the controller's dedicated inputs and operating status of the controller. You cannot change the state of the dedicated inputs from this dialog box; that can only be done by turning the appropriate input on or off.

Operating Status also lists the following information:

- If the controller running, stopped, or waiting for an input
- If it is in normal mode
- If its status is OK or if it has a fault condition

## 1.4 Communications Setup

Before you can use CTC Monitor to monitor your controller, you must indicate the type of communications used in the Configuration Setup dialog box. From this dialog box you specify the communications port used for RS-232 communications or the computer and controller node numbers for Ethernet communications.

All CTC controllers support RS-232 communications. Depending on controller model, controllers have one or more RS-232 ports. 2600XM and later model controllers can support Ethernet communications.

The Communication Setup dialog box appears when you select **Change Configuration** from the Configuration menu.

To connect to a given controller, enter its IP address in the **IP Address** field. To change the controller's network addresses, click on the blue link to open the network settings window.

Communication Port:	COMM 1	Host Node:	0
Baud Rate Selected:	19200	Target Node:	1
IP Address:	172.16.2.243	Timeout (ms):	250

[+ Change Controller Network Addresses \(Click to Open\)](#)

Number of Flags:	32	Number of Analog Outs:	8
Number of Inputs:	24	Number of Prototype:	0
Number of Outputs:	24	Number of HS Counters:	1
Number of Steppers:	0	Number of Thumbwheels:	0
Number of Servos:	2	Number of Displays:	0
Number of Analog Ins:	8	Controller Architecture:	EA

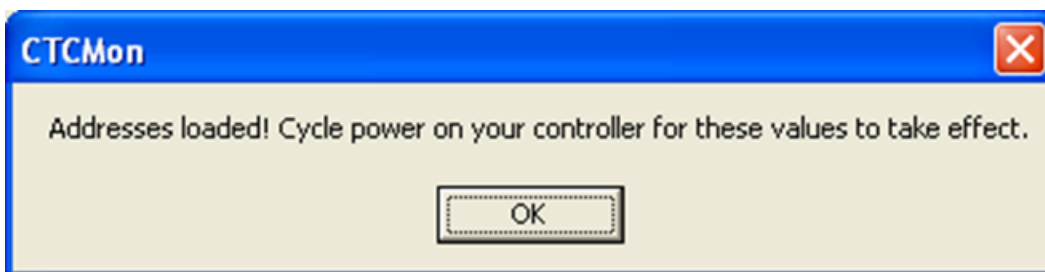
START input status:		Controller RUNNING
STOP input status:		Normal Mode
RESET input status:		Controller Status OK
STEP input status:		Controller mid-program

Exit

## 1.5 Network Settings Window

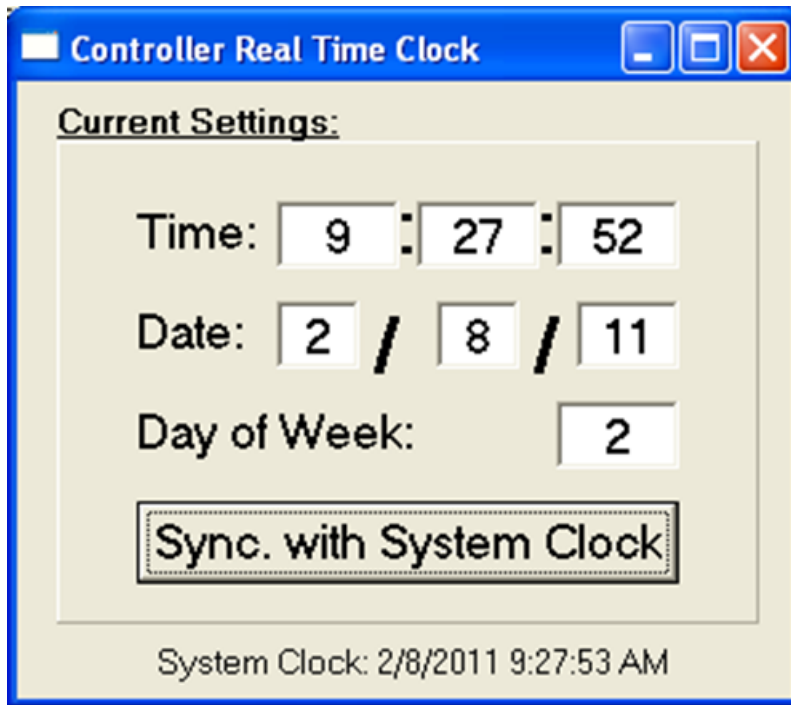


You must be connected to your controller to view and change these settings. Enter the new settings and click on the **Apply** button to save them. Once saved, the following message will appear. You must cycle power to your controller for the new settings to take effect.



Notice the IP Address and Target Node fields on the Communications Setup screen are automatically updated with the new settings for you.

## 1.6 Controller Real Time Clock Window

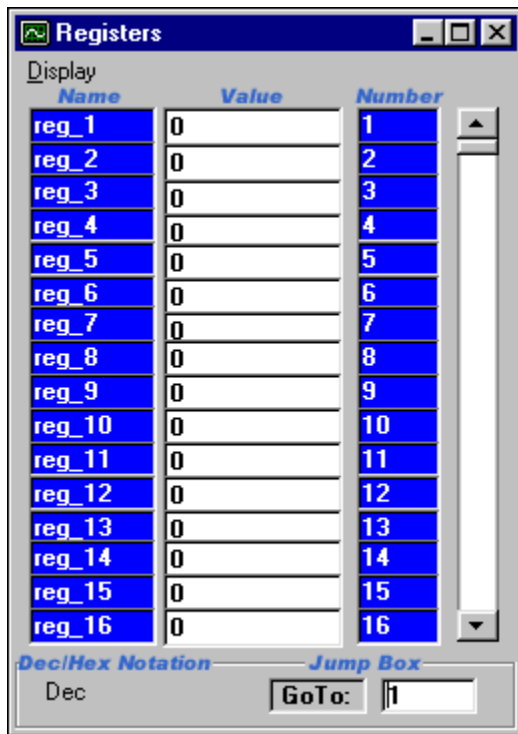


You must be connected to your controller to view and change these settings. Click on the **Sync. with System Clock** button to synchronize your PC system clock with your controller.

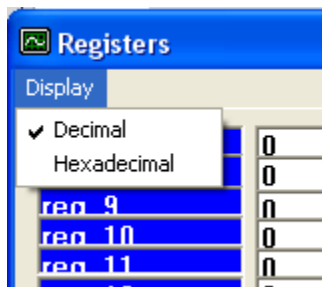
# Chapter 2: Monitoring Controller Resources

## 2.1 Registers Dialog Box

The Register dialog box appears when you press the **Registers** button on the CTC Monitor window.



**Display:** Controls how the contents of the registers are displayed. The menu toggles the register value list between decimal values or as hex values:



**NOTE:** You can only enter numbers as decimal values even if the Register dialog box is displaying values as Hex notation.

**Register Name List:** Displays the register names. If you don't choose a symbol table, the names displayed default to *reg\_* plus the register number (*reg\_10*). When you select a symbol table, the list

displays the symbol names for the registers. To display an entire symbol name, resize the window: only the name list will expand.

**Register Value List:** Displays the current numeric value for the registers shown. When a new value is entered into the text box, CTC Monitor downloads the value to the corresponding register in the controller.

**Register Number List:** Displays the register number.

**Register Scroll Bar:** Allows for quick scanning through the register list.

**Decimal or Hex Notation:** Indicates if the register values are in decimal or Hex notation.

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**NOTE:** You can only enter numbers as decimal values even if the Register dialog box is displaying values as Hex notation.

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### **Register Jump Box**

Allows you to change the range of registers displayed. Entering a register number in the jump box changes the range of registers displayed to start with the number entered. If you enter a number that exceeds the register listing, CTC Monitor displays the last range of available registers.

## **2.2 Monitoring Registers**

### **Viewing Register Values**

To view the values stored in registers, select the **Registers** button on the **CTC Monitor window**. The Registers dialog box appears.

To display a new range of registers, enter the number of the register in the **Register Jump Box** and press **Enter**.

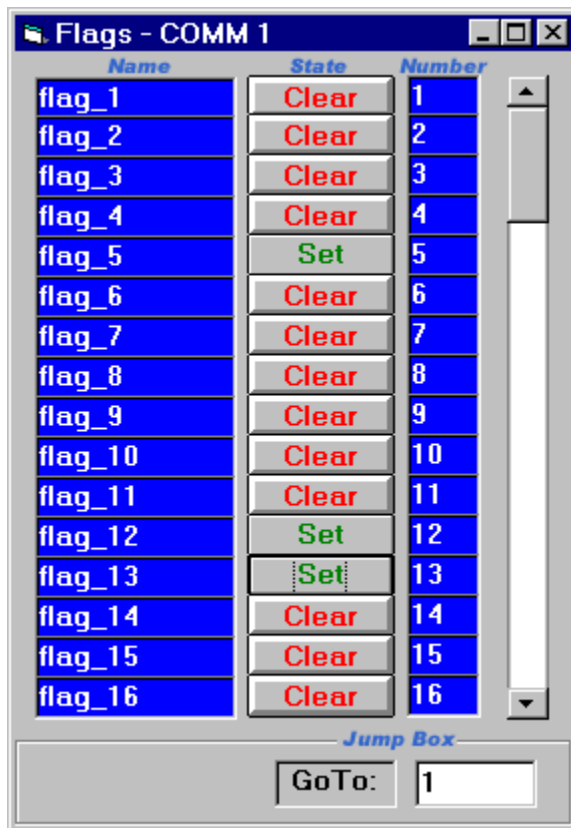
### **Changing or Entering the Value in a Register**

To enter or change a value in a register:

1. Select the **Registers** button on the **CTC Monitor window**.
2. The Register dialog box appears.
3. If necessary, enter the number of the register in the **Register Jump Box** and press **Enter**.
4. Select the register box by double clicking it with the mouse.
5. Type the new value.
6. Press **ENTER**.
7. CTC Monitor downloads the new value to the controller.

## **2.3 Flags Dialog Box**

The Flag dialog box appears when you press the **Flags** button on the CTC Monitor window.



**Flag Name List:** Displays the flag names. If you don't choose a symbol table, the names displayed default to *flag\_* plus the flag number (*flag\_2*). When you select a symbol table, the list displays the symbolic names for the flags. To display an entire symbolic name, resize the window: only the name list will expand.

**Flag State List:** Displays the current state for the flags shown. Flags are either set or clear. When you change the state of a flag, CTC Monitor downloads the new state to the corresponding flag in the controller.

**Flag Number List:** Displays the flag number.

**Flag Scroll Bar:** The scroll bar allows for quick scanning through the flag list.

**Flag Jump Box:** Allows you to change the range of flags displayed. Entering a flag number in the jump box changes the range of flags displayed to start with the number entered. If you enter a number that exceeds the flag listing, CTC Monitor displays the last range of available flags.

## 2.4 Monitoring Flags

### Viewing Flag States

To view the state of a flag, select the **Flags** button on the **CTC Monitor window**. The Flags dialog box appears.

To display a new range of flags, enter the number of the flag in the **Flag Jump Box** and press **Enter**.

### Changing the State of a Flag

To change a flag's state:

1. Select the **Flags** button on the **CTC Monitor window**.

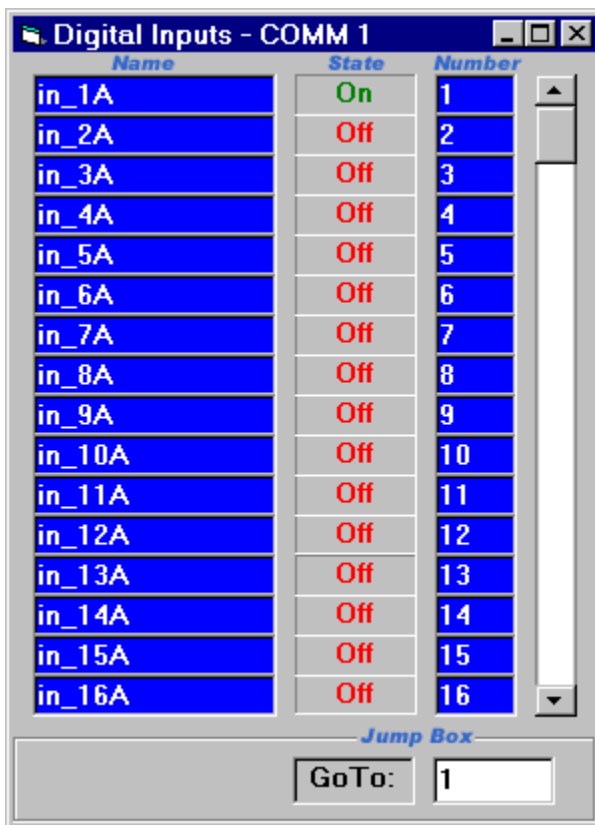
The Flags dialog box appears.

2. If necessary, enter the number of the Flag in the **Flag Jump Box** and press **Enter**.
3. Use the mouse pointer to click the **State Button** of the flag whose state you want to change.

The **State Button** changes and CTC Monitor downloads the changed state to the controller.

## 2.5 Digital Input Dialog Box

The Digital Input dialog box appears when you press the **Inputs** button on the CTC Monitor window.



**Digital Input Name List:** Displays the names of the digital inputs. If you don't choose a symbol table, the names displayed default to *in\_* plus the input number and A for open inputs, or B for closed inputs (*in\_1A* or *in\_2B*). When you select a symbol table, the list displays the symbolic names for the inputs. To display an entire symbolic name, resize the window: only the name list will expand.

**Digital Input State:** Displays the current state for the digital inputs shown. ON means that the digital input is currently pulled to Ground; OFF means that the digital input is currently at + 24 volts.

**Digital Input Number List:** Displays the input number for the digital inputs shown.



**Digital Output Scroll Bar:** The scroll bar allows for quick scanning through the digital output list.

**Digital Input Jump Box:** Allows you to change the range of inputs displayed. Entering an input number in the jump box changes the range of digital inputs displayed to start with the number entered. If you enter a number that exceeds the digital input listing, CTC Monitor displays the last range of available digital inputs.

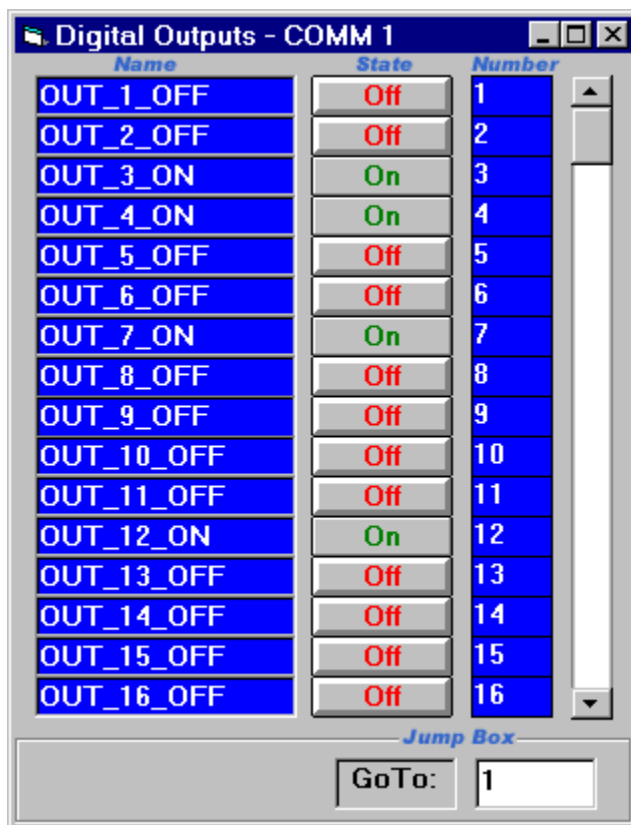
## 2.6 Monitoring Digital Inputs

To view the state of a input, select the **Inputs** button on the **CTC Monitor window**. The **Digital Inputs** dialog box appears.

To display a new range of inputs, enter the number of the input in the **Digital Input Jump Box** and press **Enter**

## 2.7 Digital Output Dialog Box

The Digital Output dialog box appears when you press the **Output** button on the CTC Monitor window is pressed.



**Digital Output Name List:** Displays the names of the digital outputs. If you don't choose a symbol table, the names displayed default to *OUT\_* plus the output number and on or off (*OUT\_1\_OFF*). When you select a symbol table, the list displays the symbol names for the outputs. To display an entire symbol name, resize the dialog box: only the name list will expand.

**Digital Output State List:** Displays the current state for the digital outputs shown. Digital outputs are either on or off. When you turn an output on or off, CTC Monitor downloads the new state to the

controller, and the controller changes the state of the corresponding output.

**Digital Output Number List:** Displays the digital output number for the digital outputs.

**Digital Output Scroll Bar:** The scroll bar allows for quick scanning through the digital output list.

**Digital Output Jump Box:** Allows you to change the range of outputs displayed. Entering an output number in the jump box changes the range of digital outputs displayed to start with the number entered. If you enter a number that exceeds the digital output listing, CTC Monitor displays the last range of available digital outputs.

## 2.8 Monitoring Digital Outputs

### Viewing Output States

To view the state of an output, select the **Outputs** button on the **CTC Monitor window**. The Outputs dialog box appears.

To display a new range of outputs, enter the number of the output in the **Output Jump Box** and press **Enter**.

### Turning Digital Outputs On and Off

To turn change the output on or off:

1. Select the **Outputs** button on the **CTC Monitor window**.

The Digital Outputs dialog box appears.

2. If necessary, enter the number of the output in the **Digital Output Jump Box** and press **Enter**.

3. Use the mouse pointer to click the **State Button** of the output you want to turn on or off.

The **State Button** changes and CTC Monitor downloads the changed output state to the controller.

## 2.9 Analog Input Dialog Box

The Analog Input dialog box appears when you press the **Analog Ins** button on the CTC Monitor window.

Name	Value	Number
ain_1	10000001	1
ain_2	66835	2
ain_3	10000001	3
ain_4	10000001	4
ain_5	10000001	5
ain_6	13429	6
ain_7	33876	7
ain_8	3044740	8
Not Present	N/A	9
Not Present	N/A	10
Not Present	N/A	11
Not Present	N/A	12
Not Present	N/A	13
Not Present	N/A	14
Not Present	N/A	15
Not Present	N/A	16

Jump Box

GoTo : 1

**Analog Input Name List:** Displays the names of the analog inputs. If you don't choose a C, the names displayed default to *ain\_* plus the analog input number (*ain\_1*). When you select a symbol table, the Register menu displays the symbolic names for the inputs. To display an entire symbolic name, resize the window, only the name list will expand.

**Analog Input Value:** Displays the current numeric value for the analog inputs shown.

**Analog Input Number List:** These labels display the analog input number for the analog outputs shown. When using symbolic names where the analog input number may not be included, these labels always display the number of the controller analog input shown.

**Analog Input Scroll Bar:** The scroll bar allows for quick scanning through the analog input list.

**Analog Input Jump Box:** Entering an analog input number in this text box causes the range of analog inputs starting at the number entered to be displayed. If the number entered exceeds the analog input listing, the last range of available analog inputs is shown.

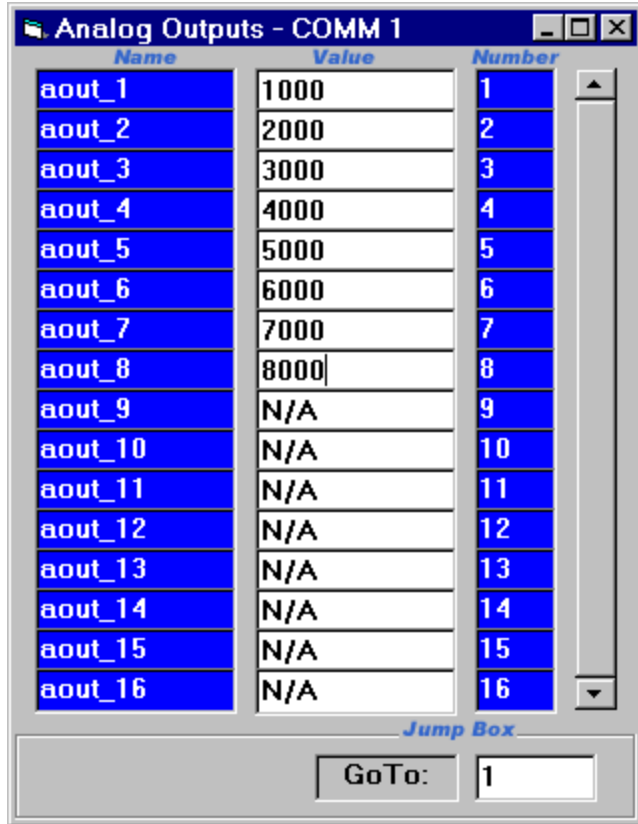
## 2.10 Monitoring Analog Inputs

To view the state of a input, select the **Analog Ins** button on the **CTC Monitor window**. The Analog Inputs dialog box appears.

To display a new range of inputs, enter the number of the input in the **Analog Input Jump Box** and press **Enter**.

## 2.11 Analog Output Dialog Box

The Analog Output dialog box appears when you press the **Analog Outs** button on the CTC Monitor window.



**Analog Output Name List:** Displays the names of the Analog outputs. If you don't choose a symbol table, the names displayed default *aout\_* plus the analog output number (*aout\_2*). When you select a symbol table, it displays the symbolic names for the outputs. To display an entire symbolic name, resize the dialog box, only the name list will expand.

**Analog Output Value List:** Displays the current value for the analog outputs shown. When you enter a new value for an output, CTC Monitor downloads the new value to the controller, and the controller enters the new value in the corresponding output.

**Analog Output Number List:** These labels display the analog output number for the analog outputs shown. When using symbolic names where the analog output number may not be included, these labels always display the number of the controller analog output shown.

**Analog Output Scroll Bar:** The scroll bar allows for quick scanning through the analog output list.

**Analog Output Jump Box:** Allows you to change the range of analog outputs displayed. Entering a number in the jump box changes the range of analog outputs displayed to start with the number entered. If you enter a number that exceeds the analog output listing, CTC Monitor displays the last range of available analog outputs.

## 2.12 Monitoring Analog Outputs

### Viewing Analog Outputs

To view the value of an analog output, select the **Analog Outs** button on the **CTC Monitor window**. The Analog Outputs dialog box appears.

To display a new range of outputs, enter the number of the output in the **Analog Output Jump Box** and press **Enter**.

### Changing Analog Output Values

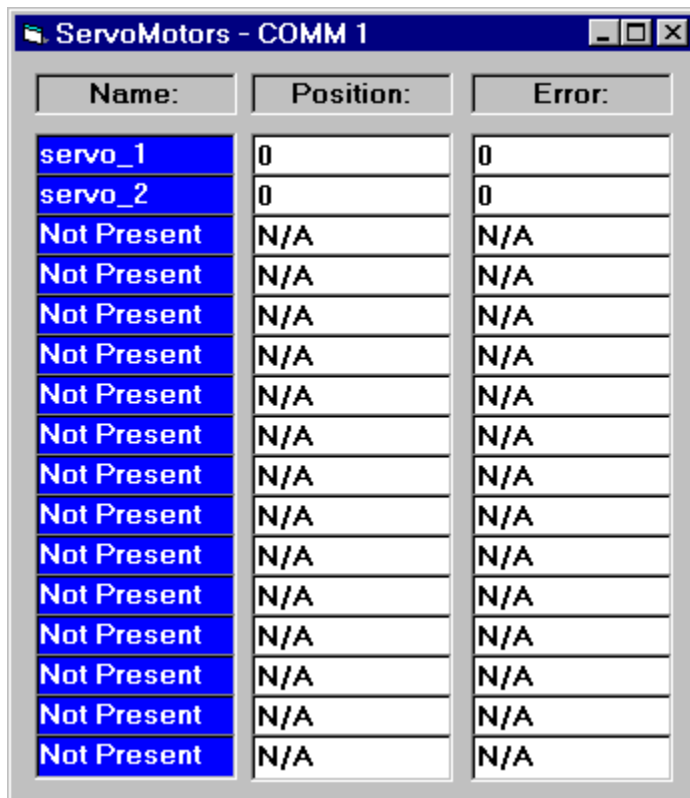
To change an output value:

1. Select the **Analog Outs** button on the **CTC Monitor window**.  
The Analog Outputs dialog box appears.  
If necessary, enter the number of the output in the **Analog Output Jump Box** and press **Enter**.
2. Use the mouse pointer to select the analog output whose value you want to change.
3. Type the new value.
4. Press **Enter**.

CTC Monitor downloads the new value to the controller.

## 2.13 ServoMotors Dialog Box

The ServoMotors dialog box appears when you press the **Servos** button on the CTC Monitor window.



Name:	Position:	Error:
servo_1	0	0
servo_2	0	0
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A
Not Present	N/A	N/A

**Servo Name List:** Displays the servo names. If you don't choose a symbol table, the names default

to *servo\_* plus the servo number (*servo\_1*). When you select symbol table, the list displays the symbolic names. To display an entire symbolic name, resize the dialog box: only the name list will expand.

**Servo Position Value List:** These text boxes display the current position value for the servos shown. When a new value is entered into the text box, the entered value is downloaded to the corresponding servo in the controller.

**To enter a new servo position value:**

1. Select the desired servo position text box by clicking on it with the mouse.
2. Type in the new value.
3. Press the ENTER key.

**Servo Error Value List**

These text boxes display the current error value for the servos shown.

## 2.14 Monitoring Servo Position and Error

To view servo position and error values, select the **Servos** button on the **CTC Monitor window**. The ServoMotors dialog box appears.

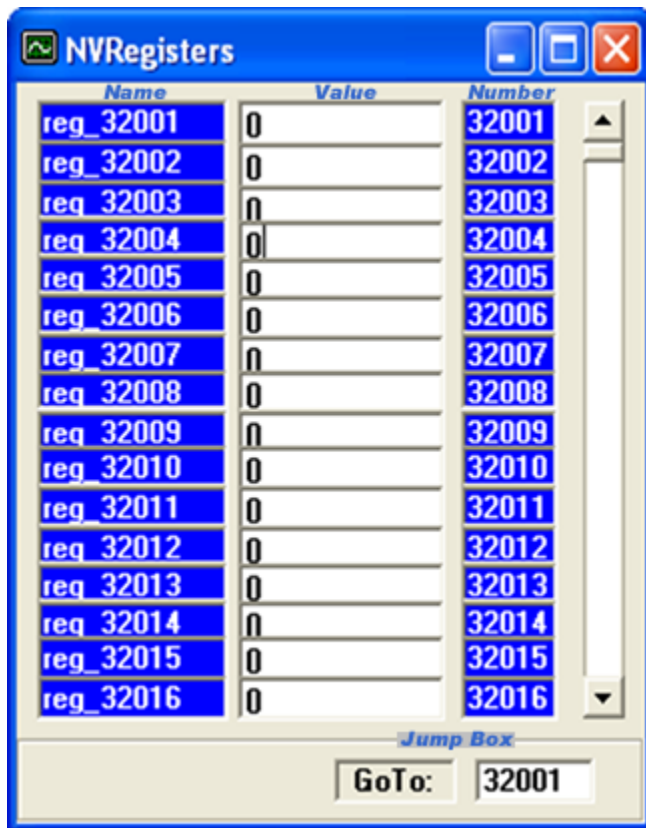
**To Enter a New Servo Position Value**

1. Select the **Servos** button on the **CTC Monitor window**. The ServoMotors dialog box appears.
2. Select the servo position text box by double clicking it with the mouse.
3. Type in the new value.
4. Press **Enter**.

CTC Monitor downloads the new value to the controller.

## 2.15 NVRegisters Dialog Box

The NVRegisters dialog box appears when you press the **Upper NV Registers** button on the CTC Monitor window. The NVRegisters dialog box provides access to extended registers 32001 through 48000.



**NVRegisters Name List:** Displays the NVRegister names. If you don't choose a symbol table, the names displayed default to *reg\_* plus the register number (*reg\_32001*). When you select a symbol table, the list displays the symbol names for the registers. To display an entire symbol name, resize the window: only the name list will expand.

**NVRegister Value List:** Displays the current numeric value for the registers shown. When a new value is entered into the text box, CTC Monitor downloads the value to the corresponding register.

**NVRegister Numbers List:** Displays the register number.

**NVRegister Scroll Bar:** The scroll bar allows for quick scanning through the register list.

**NVRegister Jump Box:** Allows you to change the range of registers displayed. Entering a register number in the jump box changes the range of registers displayed to start with the number entered.

## 2.16 Monitoring NVRegisters

### Viewing NVRegister Values

To view the values stored in registers, select the **Upper NVRegisters** button on the **CTC Monitor window**. The NVRegisters dialog box appears.

To display a new range of registers, enter the number of the register in the **Register Jump Box** and press **Enter**.

### Changing or Entering the Value in an NVRegister

To enter or change a value in an NVRegister register:

1. Select the **Upper NVRegisters** button on the **CTC Monitor window**.  
The NVRegisters Module dialog box appears.
2. If necessary, enter the number of the register in the **Register Jump Box** and press **Enter**.
3. Select the register box by double clicking it with the mouse.
4. Type the new value.
5. Press **ENTER**.

CTC Monitor downloads the new value to the controller.

## 2.17 Program Status Dialog Box

The Program Status dialog box appears when you press the **Program Step Status** button on CTC Monitor. It displays a tree structure of the currently running tasks.



**Controller Status Messages:** The Controller Status Message box indicates the current controller status and displays user prompts.

## 2.18 Reading System Fault Messages

When your controller has a fault condition, the Program Status List displays messages that can help you diagnose the problem. The Program Status List displays the step where the fault occurred and a message. A list of system default messages is on the next page.

To obtain a system fault message, select the **Program Step Status** button on the **CTC Monitor window**. The Program Status dialog box appears. To see an entire fault message, expand the dialog box to full size and read the message in the program status list.



The following table lists the system fault messages:

- |                                      |   |
|--------------------------------------|---|
| 1. Illegal Function                  | 16.No Such Proto Board                      |
| 2. Corrupt Program Data              | 17.Illegal Sample Time                      |
| 3. Destination Step is Empty         | 18.Analog Input# does NOT exist             |
| 4. Bad Thumbwheel Data               | 19.Analog Output# does NOT exist            |
| 5. Step#1 is Empty                   | 20.Display# does NOT exist                  |
| 6. Too Many Tasks                    | 21.Digital Input# does NOT exist            |
| 7. No Such Stepper Motor             | 22.Digital Output# does NOT exist           |
| 8. Motor Not Ready                   | 23.Thumbwheel# does NOT exist               |
| 9. Motor Unprofiled                  | 24.Illegal Data Table Value                 |
| 10.Servo # does NOT exist            | 25.Message Transmitting Busy                |
| 11.Servo# Is Not Ready               | 26.Divide-By-Zero Error                     |
| 12.Servo# Error                      | 27.Caused by Register# or Data Out of Range |
| 13.Register# does NOT exist          | 28.Watch dog / Hardware Fault               |
| 14.Data Table Column# does NOT exist | 29.Error Network Fault                      |
| 15.Data Table Row# does NOT exist    | 30.Network Access Time-out                  |

# Chapter 3: Creating Custom Dialog Boxes

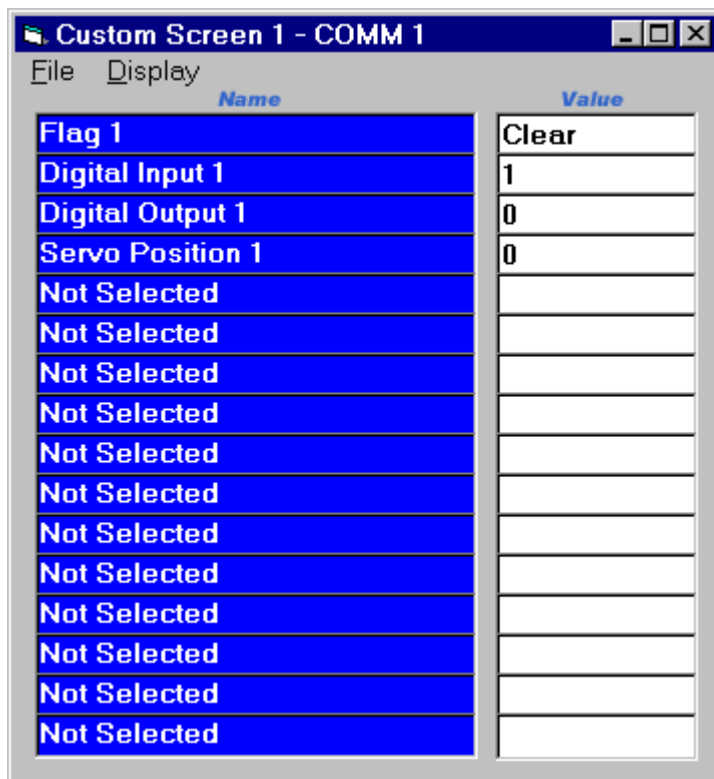
## 3.1 Creating Custom Dialog Boxes

CTC Monitor gives you the option of creating custom dialog boxes that allow you to monitor a variety of controller resources, inputs, outputs, and servo positions and errors values. To access the custom dialog boxes select the **Custom 1** or **Custom 2** buttons on the CTC Monitor window. Each custom dialog box can list up to 16 different resources. You can create custom dialog boxes and save them for monitoring different machines or processes.

There are two different Custom Display dialog boxes. The [Resource Display dialog box](#) is for creating custom dialog boxes, and the [Label Display dialog box](#) is used to view the information.

## 3.2 Label Display Dialog Box

The Label Display dialog box appears when you press the **Custom 1** or **Custom 2** button on CTC Monitor window. The Label Display dialog box is used to view custom dialog boxes.



### Custom File Menu Commands

**New:** Clears the existing custom resource display. All resource listings in the workspace are returned to the non-selected state.

**Open:** Loads an existing custom resource CFG file from disk. The resource configuration

saved in the file will be used to update the display listing in the workspace.

**Save:** Saves the existing custom resource configuration displayed to a .CFG file. The resource configuration saved in the file can be recalled for later use in the workspace.

**Save As:** Saves the existing custom resource dialog box configuration to a new .CFG file. You can recall the Custom Resource dialog box configuration saved in the file for later use.

**Exit:** Closes the Custom Resource dialog box.

### Custom Dialog Box Display Menu Commands

**Display Labels:** Displays the Label Display dialog box and shows a listing of controller resources using the symbolic names (if loaded) and their values. The resources displayed are the ones defined by the current Custom Resource dialog box or .CFG file.

**Display Resources:** Displays the Custom Resource dialog box and shows a resource listing. From this dialog box you can change the controller resources listed.

**Label Resource List:** Displays the symbolic names for the controller resources chosen. To choose a new resource, select **Display Resources** from the **Display** menu.

**Resource Value List:** Displays the current value for the controller resource chosen. A new value may be entered in the appropriate text box for controller resources that accept input.

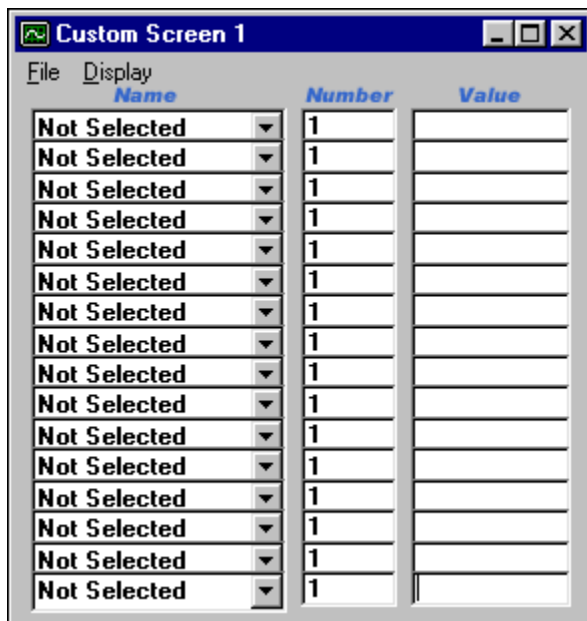
---

**NOTE:** You cannot update the value of all the resources displayed.

---

## 3.3 Resource Display Dialog Box

The Resource Display dialog box appears when you press the **Custom 1** or **Custom 2** button on CTC Monitor window. The Resource Display dialog box is used to create custom dialog boxes.



### Custom File Menu Commands

**New:** Clears the existing custom resource display. All resource listings in the workspace are returned to the non-selected state.

**Open:** Loads an existing custom resource CFG file from disk. The resource configuration saved in the file will be used to update the display listing in the workspace.

**Save:** Saves the existing custom resource configuration displayed to a .CFG file. The resource configuration saved in the file can be recalled for later use in the workspace.

**Save As:** Saves the existing custom resource dialog box configuration to a new .CFG file. You can recall the Custom Resource dialog box configuration saved in the file for later use.

**Exit:** Closes the Custom Resource dialog box.

### Custom Dialog Box Display Menu Commands

**Display Labels:** Displays the Label Display dialog box and shows a listing of controller resources using the symbolic names (if loaded) and their values. The resources displayed are the ones defined by the current Custom Resource dialog box or .CFG file.

**Display Resources:** Displays the Custom Resource dialog box and shows a resource listing. From this dialog box you can change the controller resources listed.

**Display Resource List:** Displays a drop down list of controller resources. When you select a resource, CTC Monitor evaluates the resource number to make sure it is a valid resource. The custom resource value list field immediately displays the current value or state of the resource.

**Resource Numbers List:** Specifies and displays the number for the controller resource chosen. Enter the number of the resource in the appropriate text box. When you enter the new resource number, the custom resource value list field immediately displays the current value or state of the resource.

**Resource Value List:** Displays the current value for the controller resource chosen. A new value may be entered in the appropriate text box for controller resources that accept input.

---

**NOTE:** You cannot update the value of all the resources displayed.

---

## 3.4 Setting Up a Custom Dialog Box

When you create a new custom display dialog box, you start with an empty Resource Display dialog box. To create a new custom display dialog box:

1. Select **Custom 1** or **Custom 2** button on the **CTC Monitor window**.
2. When the Label Display dialog box appears, select **Display Resources** from the **Display** menu.
3. Display the drop down list of controller resources, by clicking on the **Not Selected** field with the mouse.
4. Choose a resource from drop down list of controller resources.
5. Select the **Resource Number** field by placing the mouse pointer in the field and clicking the mouse.
6. Type in the **number** of the resource and press **Enter**.  
The Resource Value field immediately displays the current value or state of the resource.
7. Continue selecting resources until you have defined your custom dialog box.

8. To save the dialog box, select **Save** from the **File** menu and enter a name for the dialog box.

### 3.5 Saving a Custom Dialog Box

To save a new custom dialog box:

1. Select **Save as** or **Save** from the **File** menu.
2. When the Save As dialog box appears, enter a name for the new dialog box. If necessary, select the correct directory.
3. Select **OK**.

#### Saving an Existing Custom Dialog Box

To save an existing custom dialog box, select **Save** from the **File** menu.

### 3.6 Changing Values in a Custom Dialog Box

Whenever CTC Monitor is communicating with a controller, the fields on the resource value list display the current value or state of the resources on the custom dialog box. You can change a value in a register or analog output or change the state of a flag or digital output from a custom dialog box.

To enter a new value for a controller resource:

1. Place the mouse pointer in the resource value field and click the mouse.
2. Type in the new value or state of the resource and press the **Enter**.

On the Resource Display Dialog Box you can select a field in resource number list and enter a different resource number.

1. Place the mouse pointer in the resource number field and click the mouse.
2. Type a different resource number and press the **Enter**.

### 3.7 Opening a Custom Dialog Box

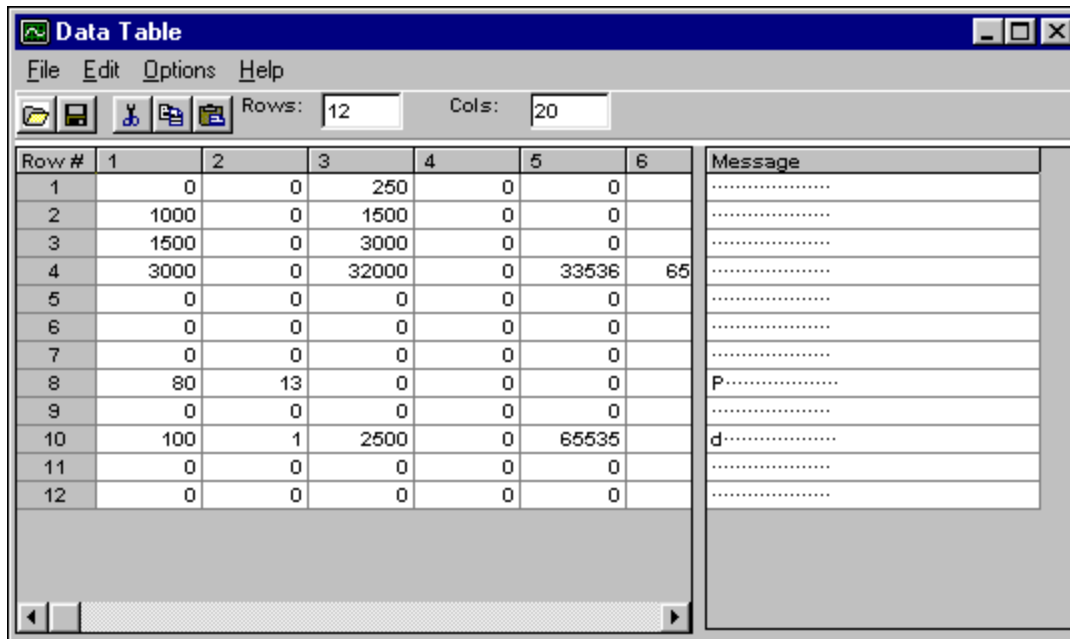
You can display previously defined and saved custom dialog box by opening it. To open a custom dialog box:

1. Select **Custom 1** or **Custom 2** from **CTC Monitor window**.
2. When the Resource Display dialog box appears, select **Open** from the **File** menu.
3. When the Open dialog box appears, select the file you want to open. If necessary, select a different directory.
4. Select **OK** or press **Enter**.

# Chapter 4: Monitoring Data Tables

## 4.1 Data Table Dialog Box

The dialog box appears when the **Data Table** button on CTC Monitor is pressed. Click the part of the dialog box you want to know more about.



### Data Table File Menu Commands

**Open:** Opens an existing data table file. When the Load Data Table dialog box appears, select the data table file to load.

**Save:** Saves the data table to a file.

**Save As:** This command saves the data table in the workspace to a file. When the Save Data Table dialog box appears, specify the file name.

**Upload:** Uploads the data table in the controller into the workspace.

**Download:** Downloads the data table to the controller.

**Exit:** Closes the Data Table dialog box.

### Data Table Edit Menu Commands

**Cut:** Cuts the selected item and places it into the clipboard.

**Copy:** Copies the selected item and places it into the clipboard.

**Paste:** Inserts the contents of the clipboard into the selected position in the data table.

### Data Table Options Menu Commands

**Font:** Allows you to change the data table display fonts.

**Begin Monitoring:** Starts monitoring the data table in the controller.

**End Monitoring:** Ends the data table monitoring operation.

**Monitoring Setup:** Opens a Monitoring Setup dialog box. From this dialog box you select the section of the data table to be monitored and specify the monitoring update interval.

#### Data Table Rows

Indicates the number of rows in the data table.

#### Data Table Columns

Indicates the number of columns in the data table.

#### Data Table Rows and Columns

Displays the rows and columns in your data table. The data table is a two-dimensional array of numbers.

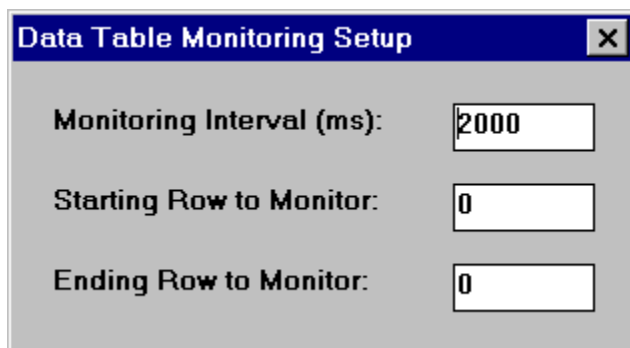
#### Message List

Displays each row of data table elements in character-equivalent form (ASCII character representation). You can use this area to create messages for transmission to external devices.

## 4.2 Setting Data Table Monitoring Parameters

CTC Monitor lets you perform real time monitoring of a data table. Using the data table monitoring, you can check the current values in a data table while your controller is running. You can specify the monitor time interval and the beginning and ending rows to be monitored. You access this dialog box by selecting Monitor Setup from the Options menu.

Click the part of the Monitor Setup dialog box you want to know more about.



To set the monitor parameters:

1. Select **Monitor Setup** from the **Options** menu. Then set the time interval, starting and ending rows as necessary.
2. To specify the time interval, place the mouse pointer on the **Monitor Interval** field and double click the mouse.
3. Type the time interval and press **Enter**.

4. To specify the starting or ending row to monitor, place the mouse pointer on the **Starting Row to Monitor** or **Ending Row to Monitor** field and double click the mouse.
5. Type the row number and press **Enter**.

### 4.3 Beginning and Ending Data Table Monitoring

When data table monitoring begins, CTC Monitor uploads the data table from the controller and displays it in the Data Table dialog box. CTC Monitor uploads the data table at the time interval specified in the Monitor Setup dialog box. When you cancel data table monitoring, the Data Table dialog box continues to display the last uploaded data table.

You can start and stop monitoring a data table as follows:

- To begin data table monitoring, select **Begin Monitoring** from the **Options** menu.
- To end data table monitoring, select **End Monitoring** from the **Options** menu.

### 4.4 Entering and Editing Numbers in the Data Table

You can enter or edit a number by typing from the keyboard or pasting it from the Clipboard.

To enter or edit a value:

1. Select the appropriate cell using the **Arrow** keys or **mouse pointer**. The data table editor highlights the cell.
2. Type or paste the number and press **Enter**. The number appears in the cell.
3. To enter a value in another cell, press **Enter** again to move to the next cell in a row. You can also use the **Arrow** keys or **mouse pointer** to move to the another cell.
4. To send the new values to the controller, select **Download** from the **File** menu.

### 4.5 Entering Messages

Using the Data Table dialog box, you can create messages for the data table. The length of message (letters, numbers, and spaces) cannot be longer than the number of columns in the table.

To enter a message:

1. Select the message field by placing the **mouse cursor** in the message field and **click** the mouse. The dots in the message indicate that the corresponding cell in the data table does not contain a number which is an ASCII code for a printing character.
2. Type the message and press **Enter**. CTC Monitor enters the message in the Data Table dialog box.
3. To send the message to the controller, select **Download** from the **File** menu.

### 4.6 Opening a Data Table

To open an existing data table:

1. Select **Open** from the **File** menu. The Load Data Table dialog box appears.
2. Choose the name of the data table from the Load Data Table dialog box and select **OK**. If the data table is in a different directory, select the appropriate directory.

CTC Monitor opens the data table.



## 4.7 Uploading and Downloading a Data Table

From CTC Monitor you can upload or download a data table from your controller to the CTC Monitor Data Table dialog box. If there is not a data table open, use the Open command from the File menu.

- To upload a data table, select **Upload** from the Data Table **File** menu. The uploaded data table appears in the Data Table dialog box and the message, Upload complete, appears in the Status Message Display on the CTC Monitor window.
- To download a data table, select **Download** from the Data Table **File** menu. When CTC Monitor has finished downloading the data table, the message, Download complete, appears in the Status Message Display on the CTC Monitor window.

## 4.8 Saving a Data Table

### Saving a Data Table Under a New Name

To save a data table under a new name:

1. Select **Save as** or **Save** from the **File** menu.
2. When the Save As dialog box appears, enter a new name for the data table. If necessary, select the correct directory.
3. Select **OK**.

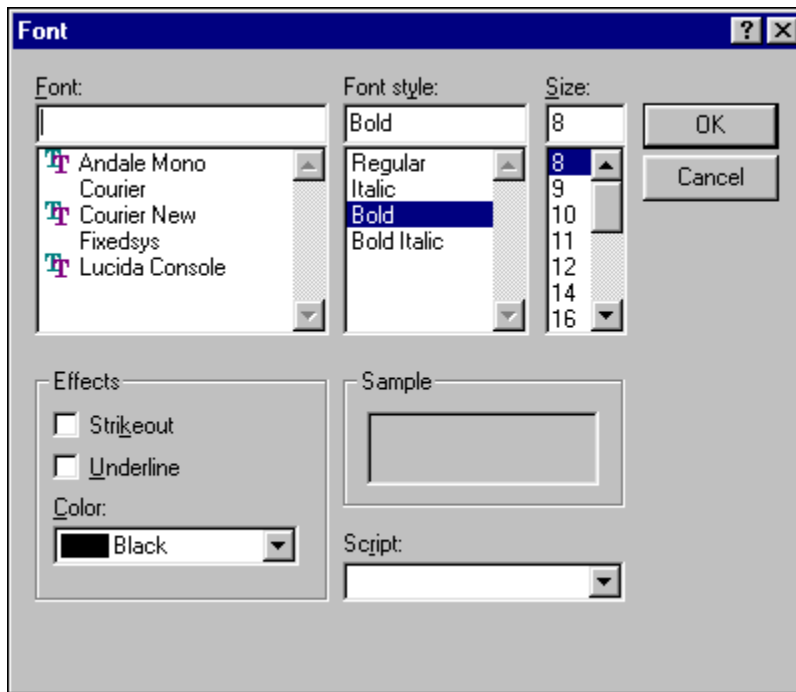
### Saving an Existing Data Table

To save an existing data table, do one of the following:

- Select **Save** from the **File** menu (shortcut, type **CTRL + S**).
- Select the **Save** icon on the **Toolbar**.

## 4.9 Changing the Font

The data table editor displays text in Courier font. You can change the default font using the Font dialog box.



1. Select **Font** from the **Options** menu.
2. When the Fonts dialog box appears, select the **Font**, **Font Style**, **Size**, and **Color**.  
The Sample box displays the current font.

---

**NOTE:** We do not recommend selecting the Strikeout or Underline effects.

---

3. Select **OK** to apply your changes.
4. To exit with out saving your changes, select **Cancel**.

# Chapter 5: Using CTC Monitor as a DDE Server

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## 5.1 DDE Communications Overview

From CTC Monitor you can use dynamic data exchange (DDE) to transfer information and communicate with another application, such as WonderWare™, Intellution's Fix™, Labview™, or Excel™. The DDE protocol permits two applications to communicate by continuously and automatically exchanging data through a DDE channel.

To establish DDE communications you must establish a channel, select a topic, request and send data. The DDE channel must be specified in both applications in order for them to exchange data.

There are two different DDE dialog boxes, the Flag Register Configuration dialog box and the Block Write Configuration dialog box. You access these dialog boxes by selecting **Change DDE Setup** from the **Configuration** menu on the CTC Monitor window. Selecting Change DDE Setup displays the Flag Register Configuration dialog box. To display the Block Write Configuration dialog box select the Block Write Configuration tab.

## 5.2 Flag Register Configuration Dialog Box

From the Flag Register Configuration dialog box you can set up a DDE conversation that can read or change a specific flag or register. From this dialog box you can also read the state of all the flags and specify a block of 50 registers to be read at one time.

DDE Screen 1									
Flag Register Configuration					Block Write Configuration				
Flag Write Address: <input type="text" value="1"/>					Flag Write Data: <input type="text"/>				
Flag 1:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Flag 9:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Flag 17:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Flag 25:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
<hr/>									
Register Write Address: <input type="text" value="1"/>					Register Write Data: <input type="text"/>				
50 Reg Read Address: <input type="text" value="0"/>					Register Read Data: <input type="text" value="0"/>				
Reg#:					Register Values:				
Reg 1:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 6:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 11:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 16:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 21:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 26:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 31:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 36:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 41:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Reg 46:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

### Flag Write Address

Sets the flag address to write data to a specific flag. If the flag address is 0, the DDE application cannot display the flag data. The DDE conversation must establish the correct flag address here before sending the new data to the Flag Write Data box.

The DDE link for this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **FlagAddress**

### Flag Write Data

Displays the current state of the flag specified in the Flag Write Address box. If the flag is set, its value is 1; if the flag is clear, its value is 0.

The DDE link for this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **FlagWrite**

### Flag Data List

Displays the flag data. If the flag is set, its value is 1; if the flag is clear, its value is 0.

The DDE link for this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **FlagValue** (1 - 32, 0 = inactive)

### **Register Write Address**

Allows you to set the register address so that the DDE conversation can write data to a specific register. The DDE conversation must establish the correct register address here before sending the new data. If the register address is 0, the DDE application cannot write to the register.

The DDE link for this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **RegAddress**

### **Register Write Data**

Allows the DDE conversation to change the value for the register specified in the Single Register Write Address box.

The DDE link for this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **RegWrite**

### **50 Register Read Address**

Specifies a block of 50 registers to read. The data for the 50 register block selected is displayed in the Register Data listing. Register block addressing may be used to read registers 1 - 1000. Since the registers are displayed in blocks of 50, you must enter a value from 1 to 20 to access the corresponding block of registers. For example, entering 13 would display the values in registers 601 through 650.

If the register address is 0, the DDE application cannot display the register block data.

The DDE link for this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **Reg50Address**

### **Single Register Read Data**

Displays the current value of the register specified in the Single Register Write Address box.

The DDE link to this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **RegRead**

### Register Data List

Displays the data for the register block selected in the 50 register read address box.

The DDE link to this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **RegValue** (1 - 50, 0 = inactive)

## 5.3 Block Write Configuration Dialog Box

From the Block Write Configuration dialog box you can specify a set of up to 16 registers to read and write to as a block. These registers can be any register in the controller you have read or write access to. Selecting the Block Write Configuration tab displays the dialog box.

Reg#:	Write Value:	Read Value:
1		0
2		0
3		0
4		0
5		0
6		0
7		0
8		0
9		0
10		0
11		0
12		0
13		0
14		0
15		0
16		0

**Update Interval:** Displays the current update time in milliseconds that the DdeSetup screen uses to update its controls. A value from 10 ms to 10000 ms (0.01 to 10 seconds) may be entered using the scroll bar. Use the scroll bar thumb for gross adjustments and the scroll bar arrows for fine adjustments. 200 ms or greater interval recommended.

The DDE link to this information is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **DdeInterval**

**Message Area:** Displays the current state of the monitor program communication with your controller.

The DDE link to this information is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **Message**

**Start/Cancel Button:** Toggles between the monitoring of the controller and the updating of the DDE Setup screen. Any DDE conversation that supports command execution can access this button.

The DDE link to this control is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **START**

**Exit Button:** Exits the DDE Setup screen and returns to the CTC Monitor main screen. Any DDE conversation that supports command execution can access this button.

The DDE link to this control is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **EXIT**

**Block Register Address:** Allows you to specify which register addresses to write data to during a Block Register Write operation. If the register address is 0, any new write value is ignored, and the DDE application cannot display the register data.

The DDE link to this information is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **BlockAddress** (1 - 16, 0 = inactive)

**Block Register Write Value:** Allows DDE conversations to change the value for the registers specified in the Block Register Address boxes.

The DDE link to this information is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **BlockWrite** (1 - 16, 0 = inactive)

**Block Register Read Value:** Displays the values for the register specified in the block register address shown.

The DDE link to this information is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **BlockRead** (1 - 16, 0 = inactive)

**Write Block Data Button:** Writes all block write register data changes. Any DDE conversation that supports command execution can access this button.

The DDE link to this control is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **DOWNLOAD**

For applications that do not support command execution through DDE conversations, you can duplicate the action of this button by writing the value 1 to the hidden WriteBox control.

The DDE link to this control is:

Application: **CTCMON**

Topic: **DdeSetup**

Item: **WriteBox**

## 5.4 Opening a DDE Communications Channel

To establish or open DDE communications you must establish a channel, select a topic, and request and send data. Depending on what type of information you want, you may either leave the channel open to receive continual updates from the controller via CTC Monitor or you can close the channel after the initial data exchange. The DDE channel must be specified in both applications in order to exchange data.

You open a DDE channel and establish communications from the Block Write Configuration dialog box.

1. Start **CTC Monitor**.
2. Select **DDE Setup** from the **Configuration** menu.
3. When the DDE Configuration dialog box appears, select the tab for the **Block Write Configuration** dialog box.
4. Enter the update interval in the DDE Update Interval field. The update interval is specified in milliseconds.  
CTC does not recommend using an interval shorter than 200 milliseconds.
5. Select the **Start DDE** button by clicking it with the mouse.
6. After starting DDE from CTC Monitor, start the DDE application.

## 5.5 Reading Data from CTC Monitor

You can read the state of a flag or the value of a register using a DDE application. Before you can read information from CTC Monitor, you must open a DDE channel between CTC Monitor and the DDE application. See [Opening a DDE Communications Channel](#).

To read the information you must specify the DDE link for the field on the Flag Register Configuration



or Block Write Configuration dialog box. The link contains the application name, topic and item. For example, the DDE link to read a flag's state is:

Application: **CTCMON**  
 Topic: **DdeSetup**  
 Item: **FlagValue** (1 - 32, 0 = inactive)

Set up the DDE application as follows:

1. Open the DDE application.
2. To start the DDE exchange, specify the application name, topic, and item. For example, to read a flag state, you would enter:

```
=CTCMON|DdeSetup!'FlagValue(1)
```

'Where (1) specifies the first flag in the Flag Data List on the Flag Register Configuration dialog box. Some DDE applications require single quotes around FlagValue(1) when specifying an item from an array. Make sure you have the correct format for your DDE application.

3. If you have the DDE server running from CTC Monitor when you are setting up your DDE application, the information from the controller appears in the appropriate field.

## 5.6 Overview - Writing to CTC Monitor from a DDE Application

In addition to reading flag states and register values, you may set up a DDE conversation with CTC Monitor to change a flag's state and write values to registers. This is done by specifying the DDE information for a specific flag or register and then sending the changes to CTC Monitor. You can set up the links to either the Flag Register Configuration dialog box or to the Block Write Configuration dialog box.

In both cases you must specify the following information:

- The flag or register number
- The new state or value
- Assign a Visual Basic macro to send the flag or register number and value to CTC Monitor.

Once you have written the macro, you must design a method of executing the macro. One method of executing the macro is to create a button and assign the macro to it. For instructions on how to create a macro, see the documentation for your DDE application. For sample macros, see Appendix B, *Sample Visual Basic Macros for DDE Applications*. In the *CTC Monitor User Guide* available from Control Technology's web site ([www.ctc-control.com](http://www.ctc-control.com)).

## 5.7 Using DDE to Write to the Flag Register Configuration Dialog Box

When entering or changing flag or register values using the Flag Register Configuration dialog box, you need to specify the following information:

- The flag or register number by writing to one of the following fields Flag Write Address and Single Register Write Address on the Flag Register Configuration dialog box. The DDE information for this is:

Application:	CTCMON
Topic:	DdeSetup
Item:	RegAddress for registers
Item:	FlagAddress for flags

- The new value by writing to the Single Register Write Data field. The DDE information for this is:

Application: CTCMON  
Topic: DdeSetup  
Item: RegWrite for registers  
Item: FlagWrite for flags

Before you can write new values to a flag or register, you must open a DDE channel between CTC Monitor and the DDE application. See [Opening a DDE Communications Channel](#).

To write to the Flag Register Configuration dialog box:

1. Start the DDE application and enter the following information in it.
2. Enter the application name, topic, and item for the Single Register Write Address field or Flag Write Address field.
3. Enter the application name, topic, and item for the Single Register Write Value field or Flag Write Data field.
4. The DDE application displays the current register or flag address and the register value or flag state.
5. Create the Visual Basic Macros required to access the RegAddress and RegWrite or FlagAddress and FlagWrite fields on the Flag Register Configuration dialog box. Refer to the documentation for your DDE application for information on creating Visual Basic Macros. For sample macros, see Appendix B, *Sample Visual Basic Macros for DDE Applications*. In the *CTC Monitor User Guide* available from Control Technology's web site ([www.ctc-control.com](http://www.ctc-control.com)).
6. In the DDE application, specify a register by entering the register number in the RegAddress field or specify a flag by entering the flag number in the FlagAddress field.
7. In the DDE application, write a new value to the register by entering it in the RegWrite field or specify a different flag state by entering it in the FlagWrite field.
8. Execute the Visual Basic Macros to send the information to CTC Monitor.

Once CTC Monitor receives the information, it downloads the new value to the controller.

## 5.8 Using DDE to Write to the Block Write Configuration Dialog Box

When entering or changing register values using the Block Configuration dialog box, you need to specify the following information:

- The register number by writing to Block Register Address on the Block Write Configuration dialog box. The DDE information for this is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **BlockWrite (1 - 16)**

- The new value by writing to the Block Register Write Value field. The DDE information for this is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **Block Write (1 – 16)**

- Execute the download function on the Block Write Configuration dialog box. The DDE information for this is:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **DOWNLOAD**

If your application does not support command execution through DDE conversations, you can duplicate the action of the **Write Block Data** button by using the following DDE command:

Application: **CTCMON**  
Topic: **DdeSetup**  
Item: **WriteBox**

Before you can write new values to a flag or register, you must open a DDE channel between CTC Monitor and the DDE application. See [Opening a DDE Communications Channel](#).

To write to the Flag Register Configuration dialog box:

1. Start the DDE application and enter the following information in it.
2. Enter the application name, topic, and item for the Block Register Write Value field.
3. Enter the application name, topic, and item for the Block Register Write Value field.
4. Enter the application name, topic, and item for the **Block Write Data** button.
5. The DDE application displays the current register value.
6. Create the Visual Basic Macros required to access the BlockAddress, BlockWrite, DOWNLOAD fields on the Block Write Configuration dialog box. Refer to the documentation for your DDE application for information on creating Visual Basic Macros. For sample macros, see Appendix B, *Sample Visual Basic Macros for DDE Applications*. In the *CTC Monitor User Guide* available from Control Technology's web site ([www.ctc-control.com](http://www.ctc-control.com)).
7. In the DDE application, specify a register by entering the register number in the BlockAddress field.
8. In the DDE application, write a new value to the register by entering it in the BlockWrite field.
9. Execute the Visual Basic Macros to send the information to CTC Monitor.

Once CTC Monitor receives the information, it downloads the new value to the controller.

# Chapter 6: File Transfers

## 6.1 File Transfer Overview

CTC Monitor enables you to transfer files between your computer and the controller. CTC Monitor supports the following operations:

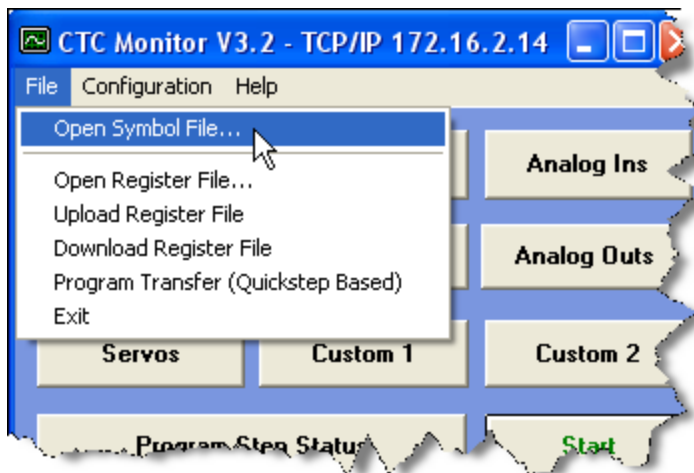
- opening symbol and register files on your computer,
- uploading register and Quickstep files from your controller to your computer,
- downloading register and Quickstep files from your computer to your controller.

You can use file transfer functions to create backups of your controller or make edits and upgrades to existing programs.

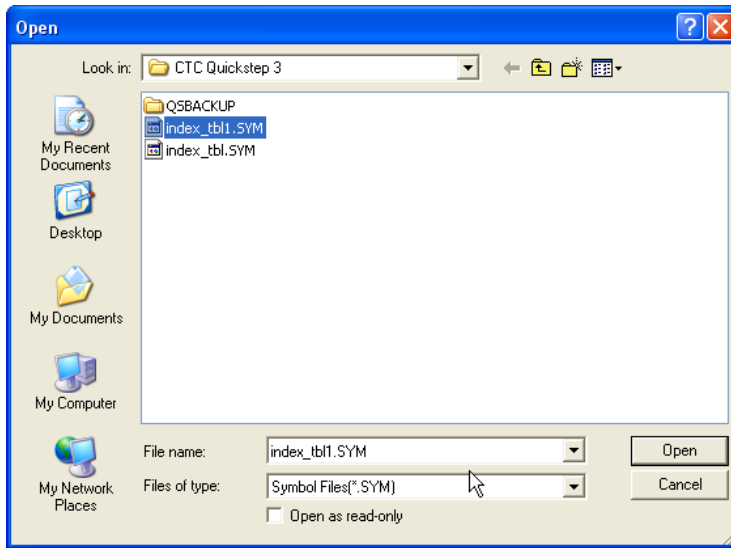
## 6.2 Open Symbol File

Symbols are used in Quickstep to define meaningful names for program steps and for resources such as I/O and axes. Symbols are organized in a table in Quickstep, and this table may be exported as a .sym file for use in other Quickstep programs. To open a symbol file on your computer and download it to the controller:

1. Select **Open Symbol File...** from the **File** menu:



2. Select a .sym file from your computer:



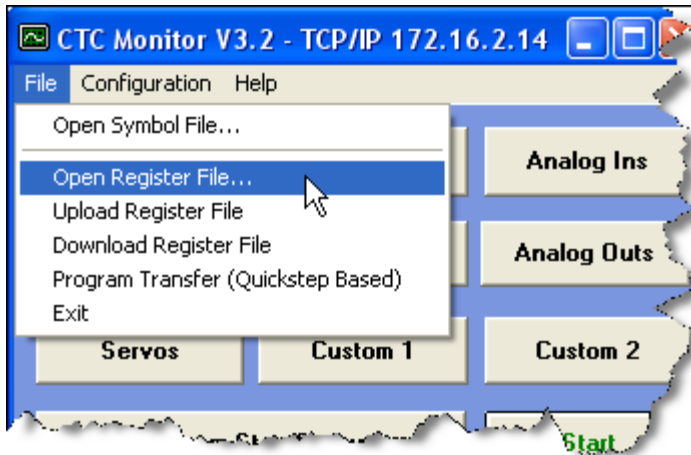
3. The Controller Operating Status Window on the CTC Monitor Main Screen will momentarily display a message of ***New Symbol Database created:***



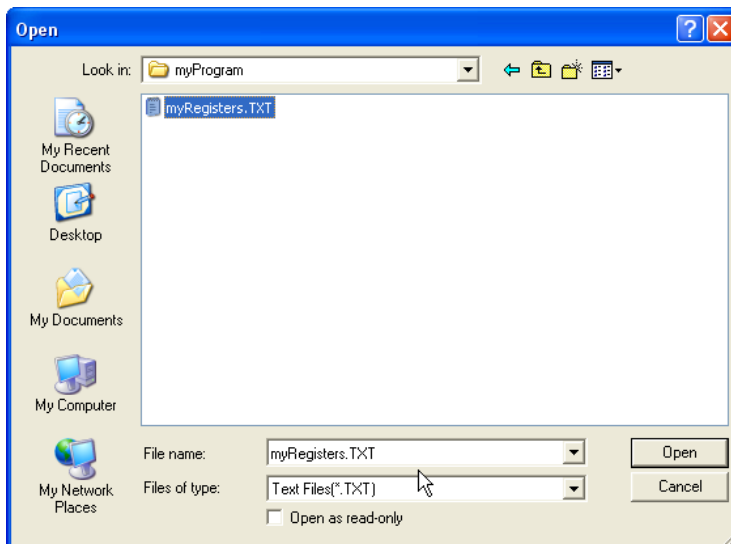
### 6.3 Open Register File

Registers are resources in the controller that are used to store information about the controller's configuration, status, I/O values, user-defined values, and more. You may use CTC Monitor's **Upload Register File** command to upload a snapshot of register values from the controller and save them as a .txt file. The **Open Register File...** command enables you to open, edit and save the register values. To open a register file:

1. Select **Open Register File...** from the **File** menu:



2. Select a .txt register file from your computer:



3. Click the **Open** button to view the register file with your designated text editor. You may edit the values in the file, save the file and then use the **Download Register File** command to download the edited values back to the controller.



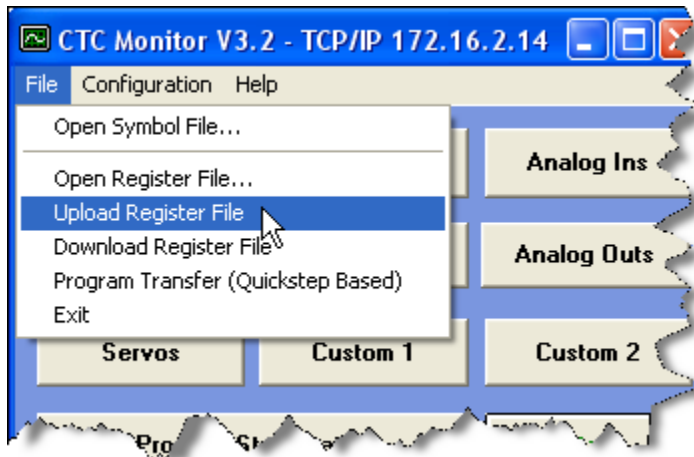
**WARNING:** Changing register values can have serious consequences that may injure people or equipment. Edits should only be done by experienced individuals who are familiar with both the controller and the application.

## 6.4 Upload Register File

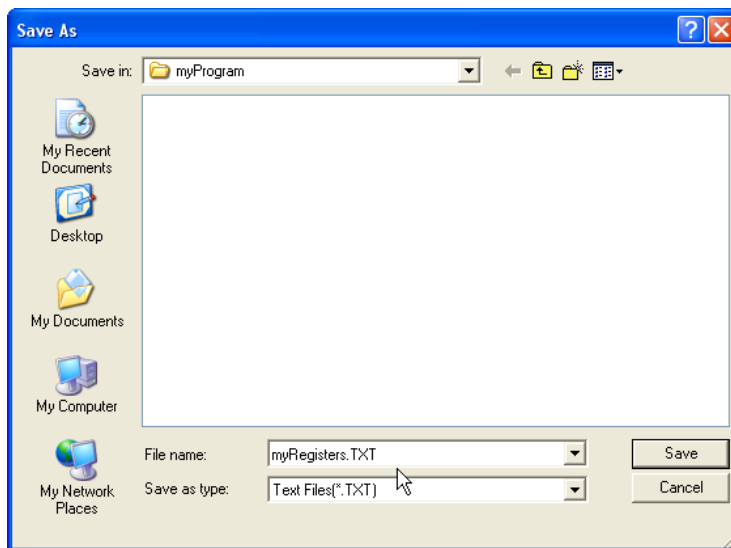
Registers are resources in the controller that are used to store information about the controller's configuration, status, I/O values, user-defined values, and more. The **Upload Register File** command uploads a snapshot of register values from the controller and saves them as a .txt file on your

computer. To upload a register file from the controller to your computer:

1. Select **Upload Register File** from the **File** menu:



2. Enter a name for your register file:



3. Click the **Save** button to view the register file with your designated text editor.

## 6.5 Download Register File

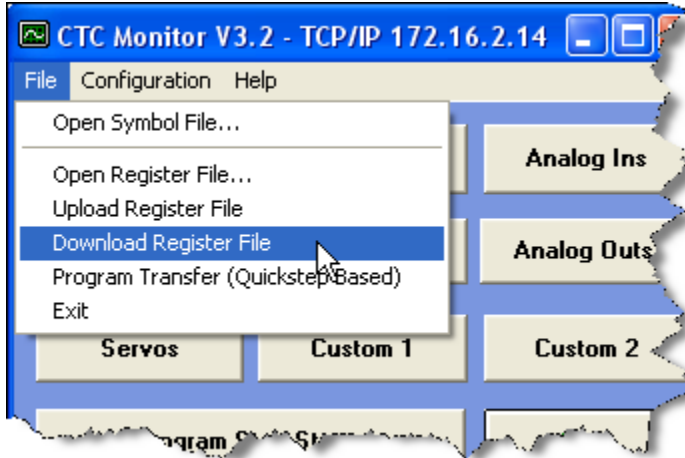
Registers are resources in the controller that are used to store information about the controller's configuration, status, I/O values, user-defined values, and more. The **Download Register File** command downloads a file that contains a new set of register values that will then update the controller.



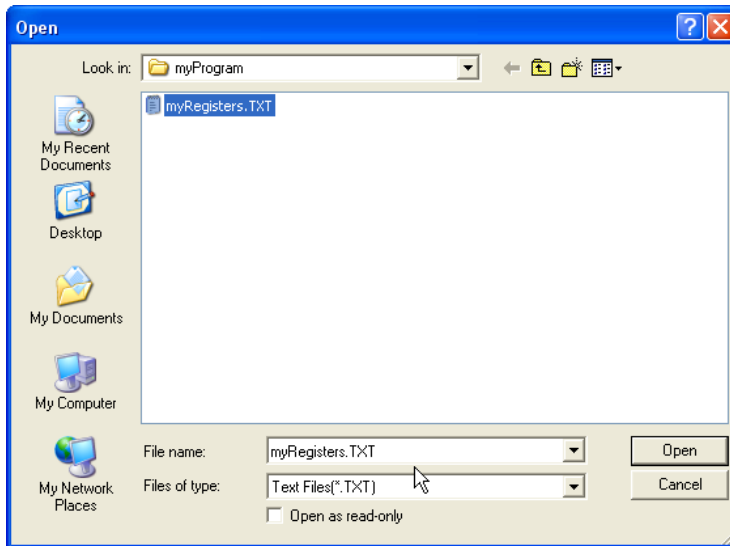
**WARNING:** Changing register values can have serious consequences that may injure people or equipment. Edits should only be done by experienced individuals who are familiar with both the controller and the application.

To download a register file from the controller to your computer:

1. Select **Download Register File** from the **File** menu:

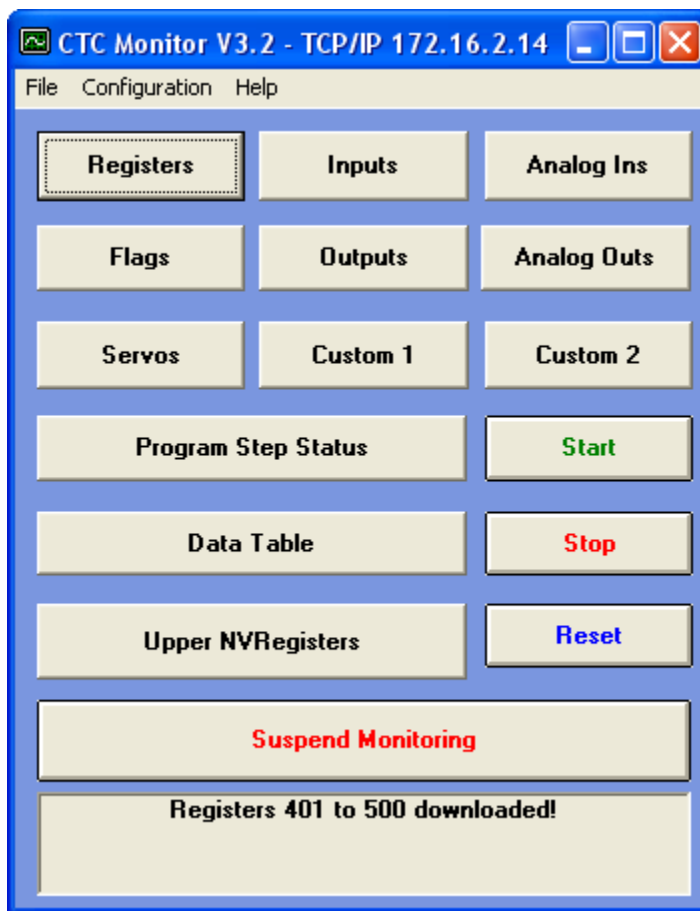


2. Select the register file you want to download:



3. Click the **Open** button to download the register file to the controller. The Controller Operating Status Window on the CTC Monitor Main Screen will momentarily display a message of **Registers 401 to 500 downloaded!**:



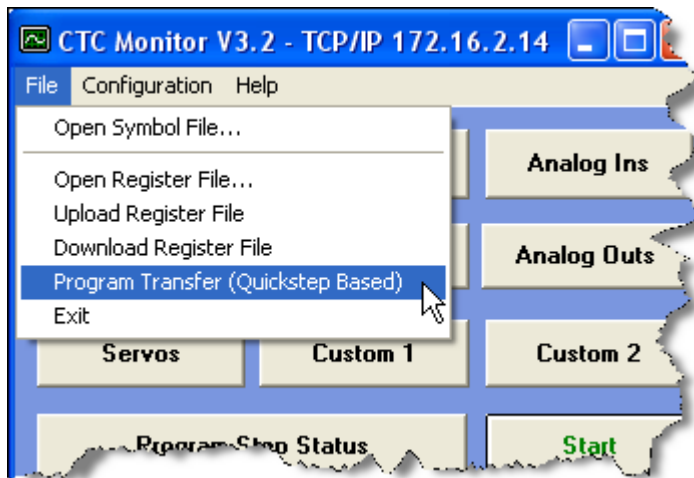


## 6.6 Program Transfer (Quickstep Based) - Uploads

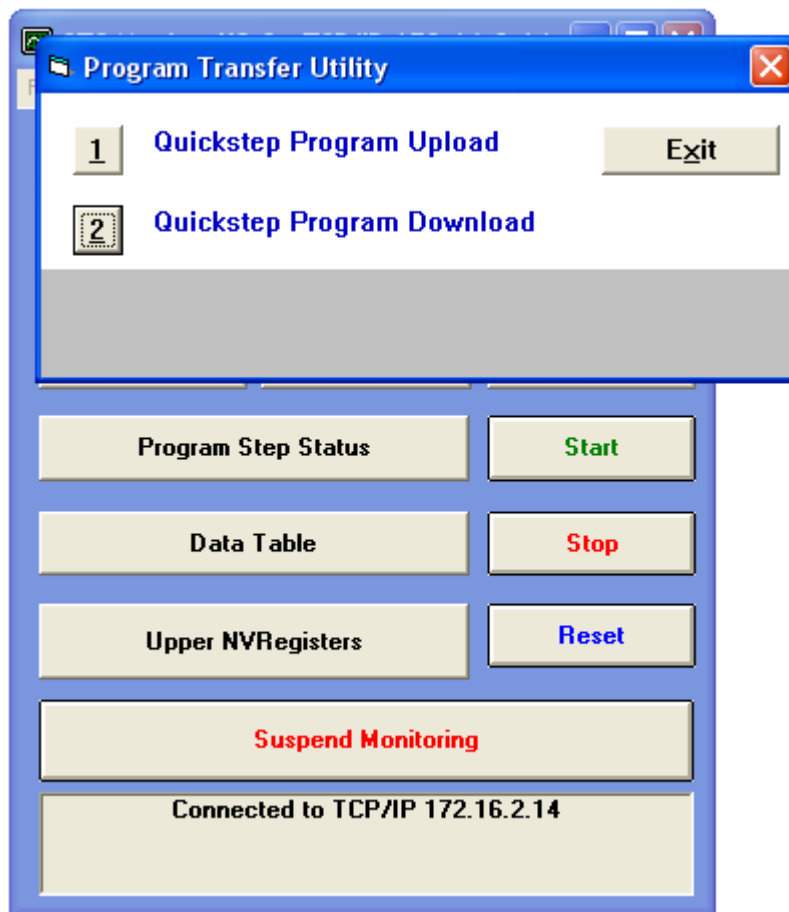
The Program Transfer Utilities enable you to move your Quickstep program back and forth between the controller and your computer. Once you have uploaded your program from the controller, the CTC Utilities may be used to decompile the .dso file for editing. Contact CTC Sales to order CTC Utilities.

To upload a Quickstep file from the controller to your computer:

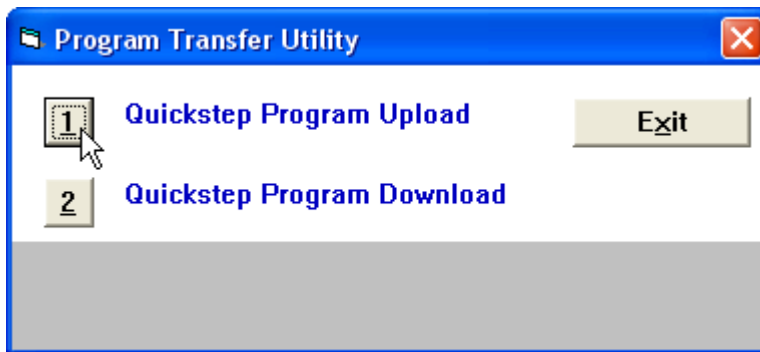
1. Select **Program Transfer (Quickstep Based)** from the **File** menu:



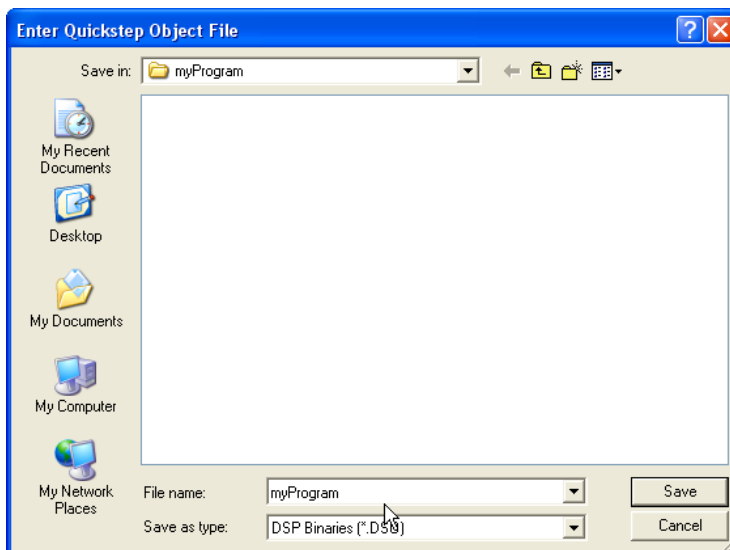
2. The Program Transfer Utility pop-up appears:



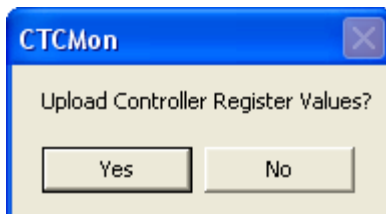
3. To upload the program from your controller to the computer, select the 1 button for **Quickstep Program Upload**:



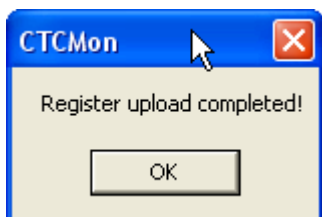
4. Enter a name for the .dso file when prompted and click the **Save** button:



5. You will see a pop-up asking you if you want to save the registers:

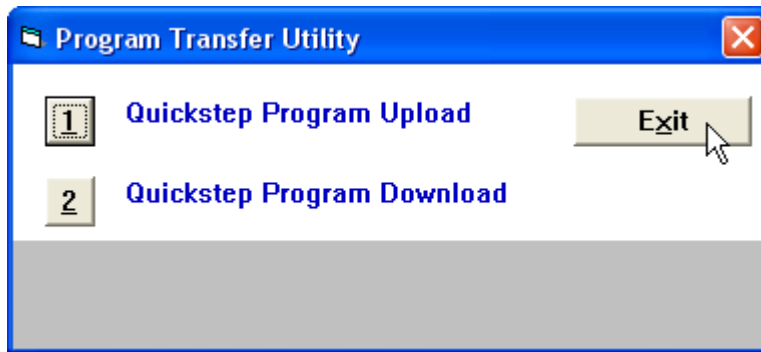


Select the **Yes** button and you will see another pop-up when the upload is complete:



Click **OK** and your program and register values are uploaded.

6. Click on the **Exit** button of the Program Transfer Utility pop-up to return to the main screen:



**NOTE:** To transfer programs to and from the Model 2200 controller, use the Legacy CT Load v2.0 Utility, available as a download from <http://www.ctc-control.com/customer/downloads/ctLoadLegacy/ctLoadSetup20.zip>.

## 6.7 Program Transfer (Quickstep Based) - Downloads

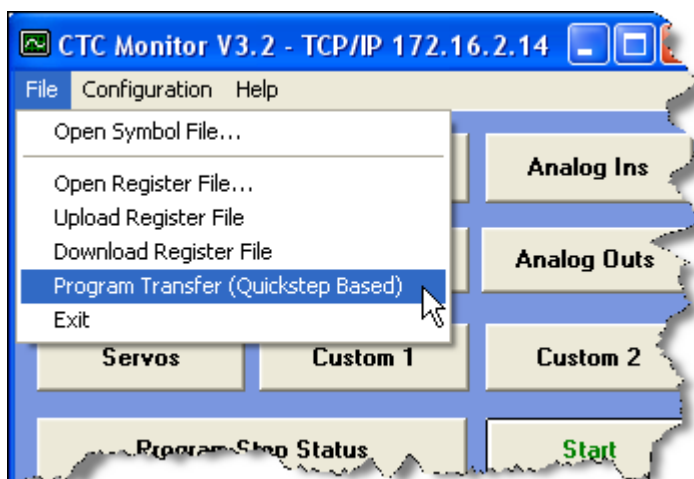
The Program Transfer Utilities enable you to move your Quickstep program back and forth between the controller and your computer. The procedure below enables you to transfer a Quickstep .dso file from the computer to the controller.



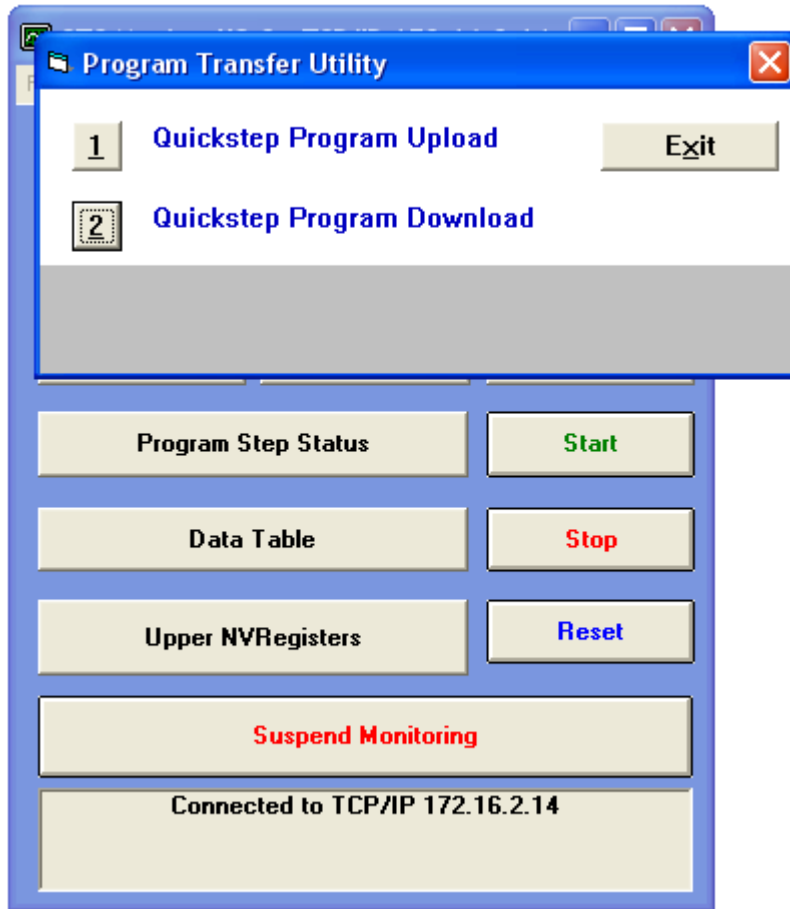
**WARNING:** Downloading programs to the controller can have serious consequences that may injure people or equipment. It should only be done by experienced individuals who are familiar with both the controller and the application.

To download a Quickstep file from the controller to your computer:

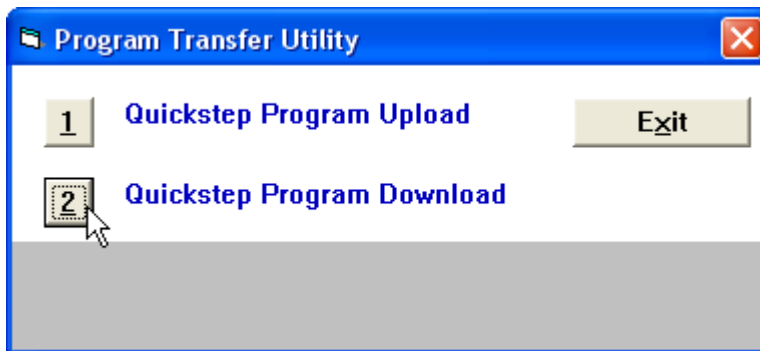
1. Select **Program Transfer (Quickstep Based)** from the **File** menu:



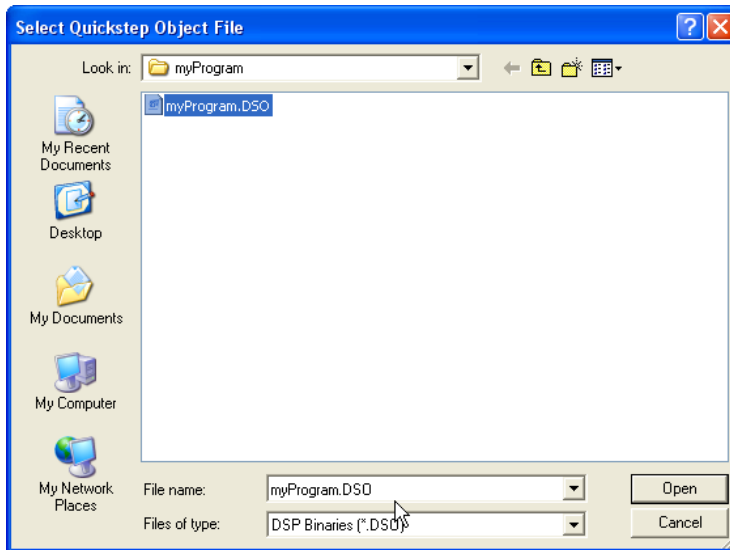
2. The Program Transfer Utility pop-up appears:



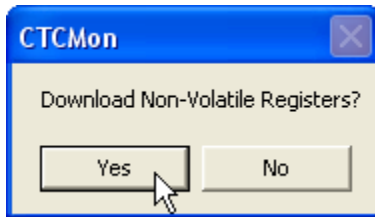
3. To upload the program from your controller to the computer, select the **2** button for **Quickstep Program Download**:



4. Select the .dso file you want to download and click the **Open** button:

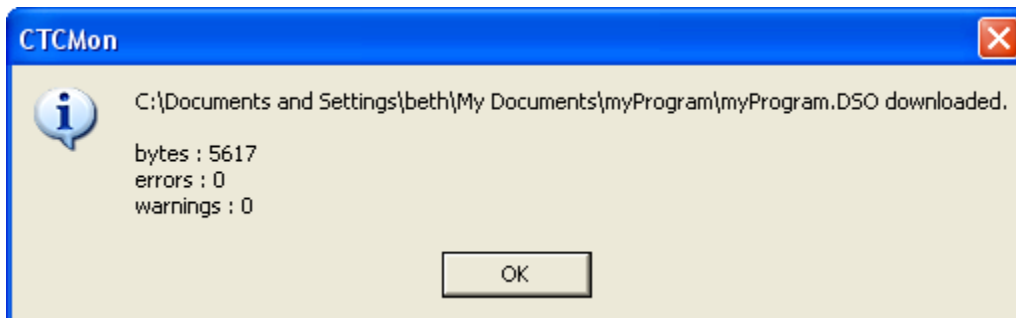


5. You will see a pop-up asking you if you want to download the registers:



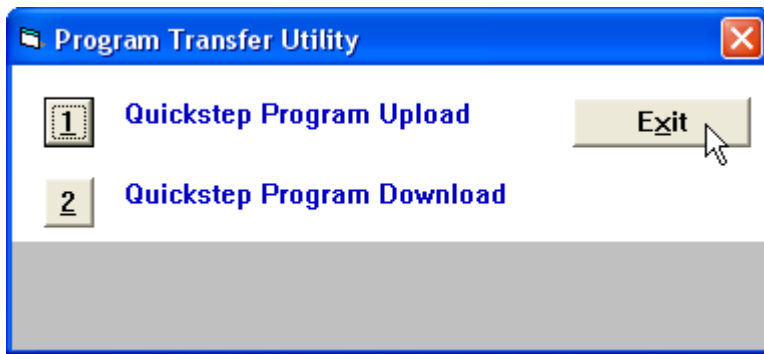
Select the **Yes** or **No**.

6. When the program transfer has completed you will see a pop-up similar to the following:



7. Click on the **Exit** button of the Program Transfer Utility pop-up to return to the main screen:

---



# Chapter 7: Contacting Technical Support

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## 7.1 Contacting Technical Support

More information about Control Technology products and the Quickstep language may be obtained from our staff of systems specialists. Call the numbers below for information.

**Control Technology Corporation**

25 South Street  
Hopkinton, MA 01748

Telephone	508-435-9595
Toll Free	800-282-5008
FAX	508-435-2373
email	<a href="mailto:customersupport@ctc-control.com">customersupport@ctc-control.com</a>

See us on the World Wide Web: [www.ctc-control.com](http://www.ctc-control.com)



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