Model 4010 Text Display
User's Guide

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EU Information

The Model 4010 Panel is manufactured in compliance with European Union (EU) Directives and carries the CE mark. The 4010 Panel has been tested under CE Test Standard #EN55011, and is listed under UL File #E209355. The following information is provided to comply with EU documentation requirements.

Note

Products with CE marks perform their required functions safely and adhere to relevant standards as specified by EU Directives provided they are used according to their intended purpose and that the instructions in this manual are adhered to. The protection provided by the equipment may be impaired if this equipment is not used in accordance with this manual. Only replacement parts supplied by Control Technology Corporation should be used.

SELV Circuits

All electrical circuits connected to the communications port receptacle are rated as Safety Extra Low Voltage (SELV).

Environmental Specifications

Operating Temperature	0 to 45 °C
Storage Temperature	–20 to +70 °C
Operating Humidity	10–95% R.H., noncondensing
Air Composition	No corrosive gases permitted

Preventive Maintenance and Cleaning

No preventative maintenance is required. The 4010 Panel overlay should be cleaned as needed with warm, soapy water. See Chapter 6, Maintenance, for a list of compatible/incompatible chemicals and compounds.

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Notes to Readers

The *Model 4010 User's Guide* provides the following information:

- **Introduction** – Lists the hardware and software you need to get started. Discusses how to get help with questions or problems you might encounter through Onscreen Help and Technical Support. Provides you with a table listing the various models, their part numbers and special features. Lists the important features of the 4010 Text Display. Lists the part numbers for controller cables and the programming cable. Tells how to install programming software.

- **Hardware Installation** – Provides instructions on how to install custom labels and the EMI Noise Filter. Discusses two mounting techniques — stud mounting and DIN clip mounting. Provides outline dimensions and a mounting template. Provides you with instructions on connecting the unit to power, a PC, and a controller.

- **Learning the Features** – Provides an overview of the panel features. Local and PLC Messages are described, along with types of Messages and Embedded Data Variables (DATA 1, 2, and 3).

- **Tutorial –** Provides instructions to create an example project. Takes you through the steps necessary to create a 4010 Panel project using the programming software and application worksheets. Shows you how to transfer a project to the panel.

- **Configuration** – Step-by-step instructions for configuring the 4010 Panel with the QuickText Programming Software.

- **Maintenance and Troubleshooting** – Instructions for maintaining the 4010 panel are provided. The Troubleshooting section helps diagnose problems you might encounter when installing or operating the panel.

- **Appendix A** – Application Worksheets are provided to help you plan and implement your system configuration.

- **Appendix B** – Wiring diagrams for several controller cables are provided.

- **Appendix C** – Error Messages for controller drivers, 4010 Panel, and QuickText Programming Software.

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 the controller registers, refer to the *Register Reference Guide* (available at www.ctc-control.com).
- For information on Microsoft Windows or the PC, refer to the manuals provided by the vendor.

Formatting Conventions

The following conventions are used in this book:

ALL CAPS BOLDFACE	Identifies DOS, Windows, and installation program names.
Boldface	Indicates information to be entered, an action to be performed, or a selection to be made 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 name of Quickstep instructions in text.
`Courier font`	Identifies step names, comments, output changes, and Quickstep instructions appearing in the Quickstep editor.
Art Code 2217F1	Identifies the file name of a particular graphic image.

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Errata Sheets

Refer to the Support area of Control Technology's web site (www.ctc-control.com) for any errata information on this product.

Your Comments

Suggestions and comments about this or any other Control Tech document can be e-mailed to the Technical Publications Group at techpubs@ctc-control.com.

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Introduction

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Introduction to the Model 4010 Panel

The Model 4010 Panel provides a man-machine interface to your controller automation system. The panel provides features such as 5 user-defined pushbuttons with LED indicators, annunciator lamps, arrow adjust buttons, a numeric keypad, and a built-in menu system. The panel communicates with a controller using RS-232C serial communication. Configuration software and panel programming are covered in chapter 5 of this guide.

The panel allows you to configure up to 256 20-character text strings configured as PLC messages and local messages. Local messages are internal panel messages that the operator can scroll in a menu tree hierarchy. PLC messages are displayed when prompted from the controller program. A PLC Message LED illuminates whenever a controller message is being displayed. Either message type can have up to three embedded data variables, one of which can be edited by using the arrow adjust buttons and the numeric keypad.

The panel has sealed membrane function pushbuttons that allow you to trigger controller actions with the push of a button. These pushbuttons are used for input signals to the controller. Each pushbutton can be configured to function as one of three switch types:

- **ALTERNATE—**keeps its current state until the button is pushed again
- **MOMENTARY—**is activated only while the button is being pushed
- **PANEL SET AND PLC RELEASE —**sets a bit in the controller when pressed and is reset by either the controller program or by pressing the button again.

The LCD display window supports two message lines that can display up to 20 characters each. The messages are programmed using the QuickText Panel Programming Software. The message control type may be either **static—**text displays that have NO embedded data, **dynamic —**text messages that include embedded data (READ access only), or **interactive —** text messages that allow the operator to enter data, or change values that are stored in the controller registers (READ/WRITE access).

The panel has a 12-key numeric keypad for entering values in an interactive message. A **decimal** and **ce** (clear entry) button are included. There are 3 annunciator lamps above the LCD display window. Each lamp has a tri-color indicator (red, amber, or green) that is controlled through the Quickstep program.

What you need to get started

Hardware

- Model 4010 Panel
- 24 VDC power supply
- Programming cable (PN 4071-CBL)
- RS-232C adapter and cable (PN 2880G and 2881)
- CTC automation controller
- PC requirements:
  - IBM or compatible PC (486 or better) with a mouse and separate serial port
  - VGA display with at least 800 x 600 resolution (1024 x 768 recommended)
  - Standard Windows 95/98 (Second Revision)/NT4.0/2000 requirements
  - CD-ROM Drive

Software

- QuickText Programming Software (PN 4071)

Need Help?

Note

Section 6, Maintenance and Troubleshooting, should be able to help you with most of the problems you might encounter.

On-screen Help

One of the most important features of the QuickText Panel Programming Software is the availability of context sensitive onscreen help. To access the Help windows, simply press the F1 function key while on the topic where you need help or click on HELP in the main menu bar. For example, if you need help while working with panel configuration, press the F1 function key when that dialog box is open and a pop-up HELP window will be displayed.

Controller Help

If you need help with the controller-to-4010 Panel Interface, see Appendix C or consult the QuickText Programming Software Help. The CTC controller driver has a Help topic that lists the error messages and provides an explanation for each. Also, for controller-to-4010 Panel wiring diagrams, see Appendix B or the QuickText Programming Software Help topics.

Model 4010 Description

The Model 4010 Text Display (Figure 1–1) provides a low-cost, easy-to-use operator interface alternative for your controller system. With easy-to-configure Windows-based software and simple installation, you can be connected and running in minutes. The 4010 display has the following features:

- 2 lines by 20 characters LCD display
- Character height of 0.22" (5.55 mm)
- Stores up to 256 20-character messages
- 5 user-defined function pushbuttons and LEDs
- 4 control pushbuttons
- 12 key numeric keypad
- 3 annunciator lamps (each can illuminate in red, amber, or green)
- Up to three embedded controller data variables per message
- Built-in menu system
- EMI-filtered power supply to reduce communication problems

Figure 1–1. Model 4010 Features

CTC Cables and Accessories

Table 1–1 lists part numbers for cables, programming software, and other accessories.

Table 1–1. Cables and Accessories

Part Number	Description
4071-CBL	Programming cable
2880G	RS-232 adapter
2881	RS-232 cable
4071	QuickText programming software

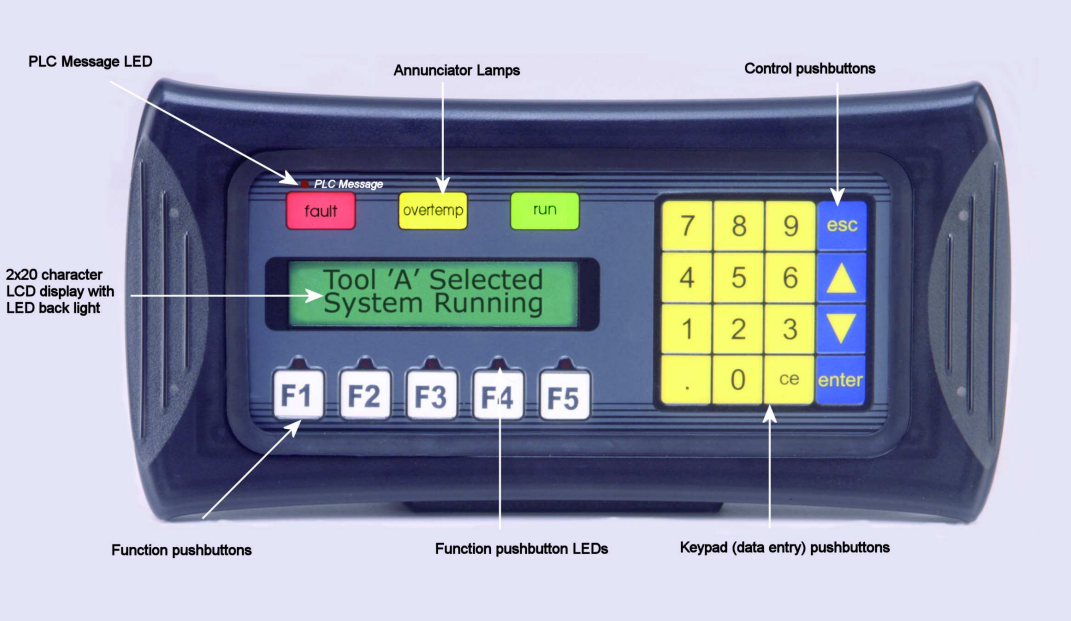
Front Panel Features

In this section, we will describe the front panel features of the Model 4010 Panel (Figure 1–2). Descriptions of the PLC Message LED, Pushbuttons, Pushbutton LEDs, Annunciator Lamps, controller messages, and local messages are provided. To understand the features, see Chapter 3, Learning the Features. For a demonstration of how to program the panel indicators and controls, please refer to Chapter 4, Tutorial.

Operator Controls and Indicators

The 4010 Panel has sealed membrane pushbuttons for operator interface with a controller. Pushbuttons may be used to begin events or tasks within the controller, such as Start/Stop Control. Pushbutton inputs can be monitored for ON/OFF conditions in your controller's Quickstep program. The 4010 Panel Pushbuttons are Control Pushbuttons, Function Pushbuttons, or Data Entry (Keypad) Pushbuttons.

Figure 1–2. Controls and Indicators



PLC Message LED

This LED (Figure 1–3) will illuminate to indicate that the controller has triggered a message that will be displayed in the LCD window. The pushbuttons are disabled for 3 seconds after a controller message is displayed to ensure that the operator sees the message. The LED will turn OFF when the operator presses the escape pushbutton, thereby acknowledging message received. Press escape again and the controller message will re-display.

Figure 1–3. PLC Message LED

Control Pushbuttons

There are 4 Control Pushbuttons (Figure 1–4) on the front panel. These buttons consist of an esc (escape), s (UP Arrow), t (DOWN Arrow), and enter pushbutton.

Figure 1–4. Control Pushbuttons

The arrow buttons are used to scroll through local messages or to change a value within an interactive message. As the operator presses the buttons, the numeric value will increment or decrement, respectively. As it is adjusted, the value will not be updated in the controller data register until the enter pushbutton is pressed. When completed, the operator will press the enter pushbutton and the value will be written to the controller. Press esc to abort or cancel the adjustment without writing the value to the controller.

Function Pushbuttons

There are 5 Function Pushbuttons (Figure 1–5) that are user-defined. They may be configured as one of three “switch” types; Alternate, Momentary, or Panel Set & PLC Release. They are configured as discrete input signals to the controller. These pushbuttons are labeled F1 through F5 or may be custom labeled to suit their function or application.

Figure 1–5. Function Pushbuttons

Pushbutton LEDs

There are LEDs located above each of the user-defined pushbuttons (Figure 1–5). These LEDs can indicate if the pushbutton status condition is ON or OFF, or they can be controlled by the controller. You may choose the LED Control while configuring your panel (see Configuration, Chapter 5). There are three different controls—By Button, By Button & Flash, or By PLC, that will determine LED response when the pushbuttons are pressed.

Annunciator Lamps

The Model 4010 contains 3 tri-color Annunciator Lamps (Figure 1–6) above the LCD message window. Each of these lamps may be programmed to illuminate in green, amber, or red and may be labeled to fit your application. The lamps are turned ON and OFF through your controller’s Quickstep program. They are configured with QuickText Programming Software and may be configured to display status or the condition of any operation being controlled within the controller.

Figure 1–6. Annunciator Lamps

Data Entry (Keypad) Pushbuttons

The Model 4010 also features a numeric keypad (Figure 1–7).

Figure 1–7. Keypad Pushbuttons

Use this keypad to enter or change embedded data values. To update or enter a data value, the enter button must be pressed to select the data value. Then you may use the numeric keypad or the Up Arrow (increment) or Down Arrow (decrement) to adjust the value. For the controller to acknowledge the change in value, you must press enter again (sends the updated value to the controller.) The CE (Clear Entry) button is used to clear, or set back to zero, the current value.

Character LCD Display with LED Backlight

Figure 1–8. LCD Display

Messages display in the Character LCD Display Window (Figure 1–8) with LED Backlight. The LCD window supports two line by twenty characters.

Messages

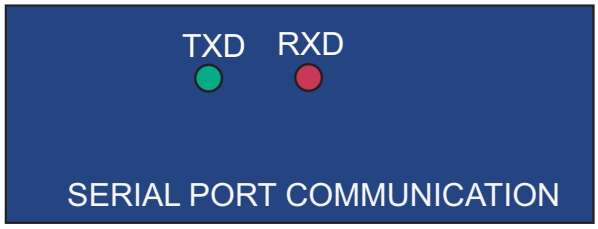
Controller Messages can be programmed to display controller register values and allow the operator to change a controller register value. Up to 3 data variables can be programmed to display in each message. The messages are entered using QuickText Programming Software. Up to 256 controller messages may be configured and stored in the 4010 Panel (Local Messages take away from the 256 Total Messages). Controller messages are numbered 1 to 256. The message control type may be static text, dynamic, or interactive. The controller logic program controls which messages are displayed. The PLC Message LED illuminates when a controller generated message is being displayed.

Local messages are also displayed in the LCD Display Window. Local messages provide pertinent information or instructions to the operator and are displayed in a menu hierarchy. They can also be programmed to display values from a controller register that the operator may change using the 4010 Panel control buttons. You may create folders to group messages pertaining to the same topic. Local messages and folders can be grouped in up to 3 levels using the QuickText Panel Programming Software. The first character in a folder message display is a "+" or "–" indicating folder status (closed or open). The next 19 characters of the display are for the folder text. For messages, all 20 characters are used as message text. Local messages allow the operator to select and initiate user-defined interaction. See Chapter 3, Learning the Features, for more information.

Rear Panel Indicators

- **TXD LED—**This LED (Figure 1–9) will toggle “on” and “off” to signal activity on the transmission line.
- **RXD LED—**This LED (Figure 1–9) will toggle “on” and “off” to signal activity on the receive line.

Figure 1–9. Rear Panel Indicators



Specifications

Display type:	Character LCD, 2 lines x 20 characters with LED backlight, 3 tri-color annunciator lamps (red, amber, or green) 0.4" x 0.75"
Character height:	0.22 in (5.55 mm)
Keypad overlay:	5 function, 4 control, and 12 data-entry pushbuttons
Service power:	24 VDC (20-30 VDC operating range)
Power consumption:	5.5 W @ 24 VDC
Inrush:	< 1 A with 50 ms rise time to 30 VDC
Fuse:	Auto-reset (0.65 A polyfuse)
Enclosure:	NEMA 4, 4X (indoors)
Agency approvals:	UL, CUL, and CE
Operating temperature:	0 to 45 °C (32 to 113 °F)
Storage temperature:	–20 to +70 °C (–4 to +158 °F)
Humidity:	10–95% R.H. (noncondensing)
Electrical noise tolerance:	NEMA ICS 2-230 showering arc, ANSI C37.90a-1974 SWC Level C Chattering Relay Test
Vibration:	5 to 55 Hz 2G for 2 hours in the X, Y, and Z axes
Shock:	10G for under 12 ms in the X, Y, and Z axes
Serial communications:	Download/Program/Controller Port – RS-232 15-pin D-sub female
External dimensions	5 x 10 x 1.6 in (127 x 254 x 40.6 mm)
Weight:	14 oz.

Hardware Installation

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Custom Labels

Create Custom Labels

You may create custom labels for the Model 4010 Panel Function Pushbuttons and Annunciator Lamps that are particular to their function within your application. The labels slide into an existing slot in the panel overlay so that the text or numbers you have printed will rest over the pushbuttons or annunciator lamps.

A Microsoft Word® document (EZ-TEXT_INSERTS.doc) was installed in the QuickText Program folder on your computer when you installed your programming software. You must have Word installed on your computer to open this document. This document will help you create your labels. Two sheets of cover stock and a sheet of transparent film have also been shipped with your panel.

Install Custom Labels

Note

A 1/2-inch x 4-inch flat metal tool (ramp tool) is shipped with each unit to aid in the installation of the label inserts.

To install the pushbutton or annunciator lamp labels into the slots, perform the following steps.

1. Carefully remove rubber trim mold from panel front to access label slots. (The trim has a barbed retaining rib that is pressed securely into a channel in the front panel housing.) The ramp tool can be used to help lift the trim.
2. The recessed slot(s) where the labels are inserted should now be visible.
3. Remove the factory installed label insert.
4. Use the corner of the ramp tool to lift the top layer of the overlay, just enough to start the custom label into the slot. Hold the overlay up with the ramp tool and start the custom label into the slot.
5. Once the label has been started into the slot, move the ramp tool behind the label insert and use as a ramp to guide the label insert into the slot until properly positioned.
6. Push label tab down into trim channel with the ramp tool.
7. Repeat this procedure for the annunciator lamp label, if required.
8. Replace the rubber trim by firmly pressing the barbed rib into the molded channel in the front panel housing.

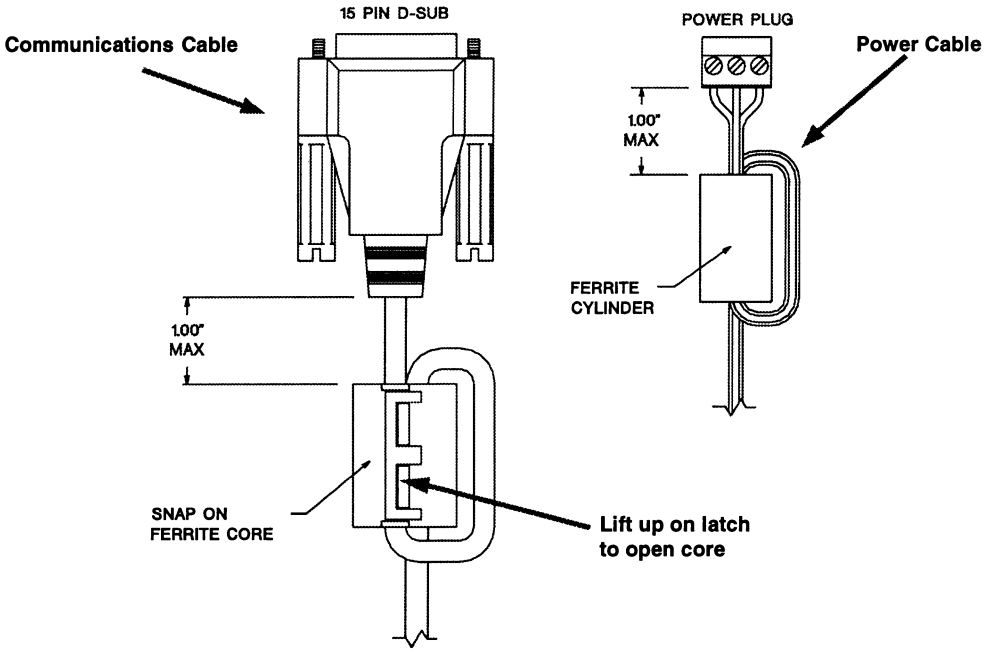
EMI Noise Filter Installation

Model 4010 Panels are supplied with two ferrite cores (Figure 2–1) that should be attached to the cables before installation. These cores are required to suppress EMI emissions that are conducted through the power cable and the communications cable. The figure below shows the ferrite cores properly installed. Attach the cores within one inch of the 4010 connector. The cable should be snugly wrapped once around the core, providing two passes through the core.

The power cable core is a solid ferrite cylinder. The power cable should pass once through the core, be looped around and pass through a second time. Pull the excess cable so that it rests snugly against the outside of the core.

The communications cable core is a snap-together, split, ferrite core. This core can be installed on a finished cable. Lift the latch to open the core. Wrap the wire through the core center, snugly around the outside, and again through the center. Close the core until the latch snaps. Ensure that the cable jacket is not pinched between the two halves of the core. The finished cable should look similar to the drawing below.

Figure 2–1. Attaching cores



Mounting

The Model 4010 can be mounted with studs (Figure 2–2) or DIN clips (Figure 2–4). The panel comes with all the necessary mounting hardware required for stud mounting. A mounting template and dimensions are shown in Figure 2–3.

Figure 2–2. Mounting with Studs

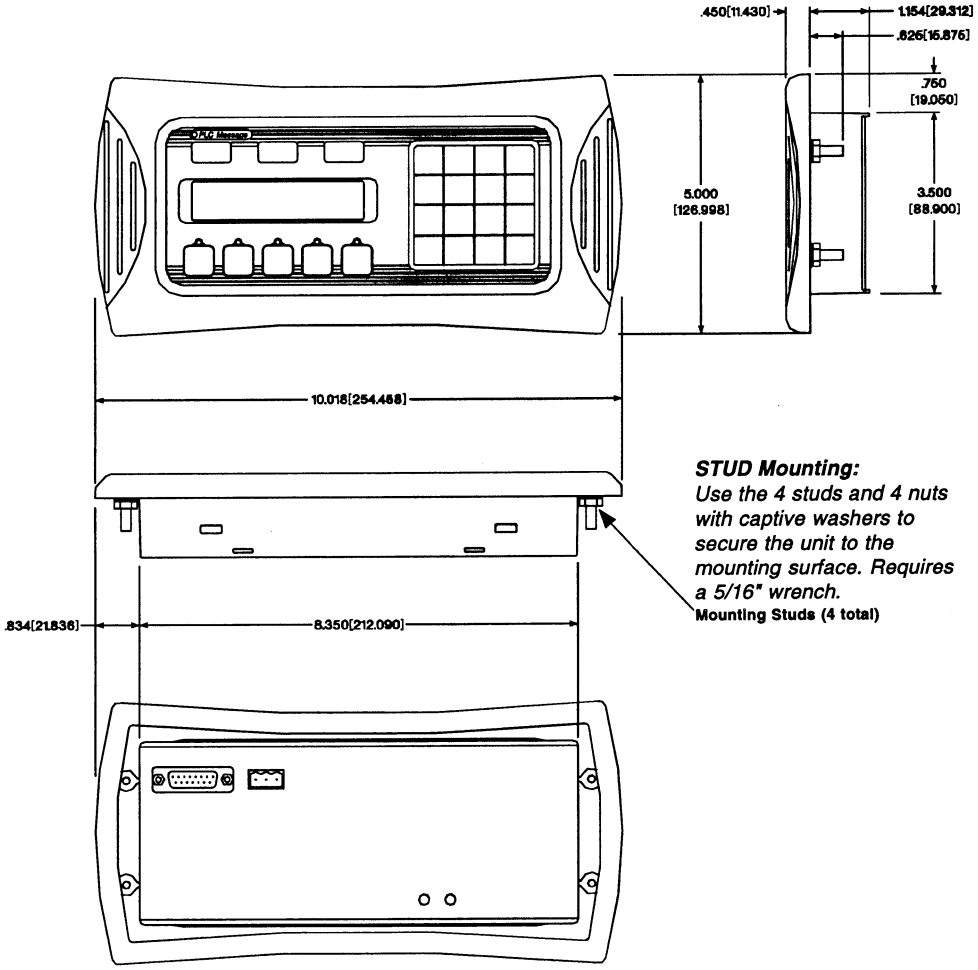
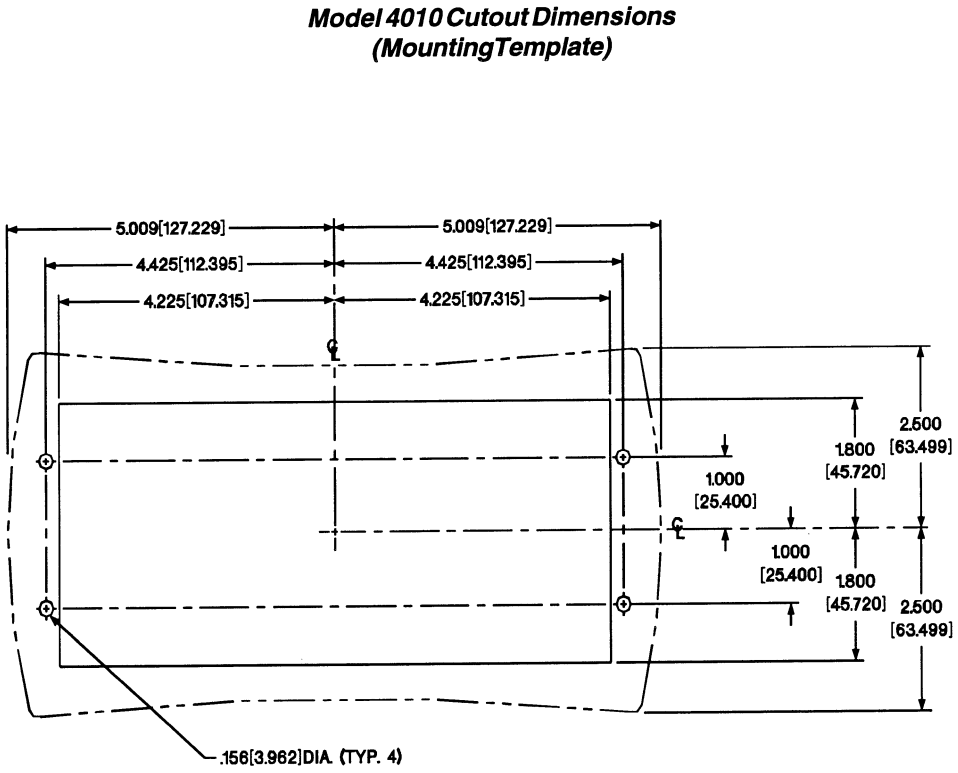


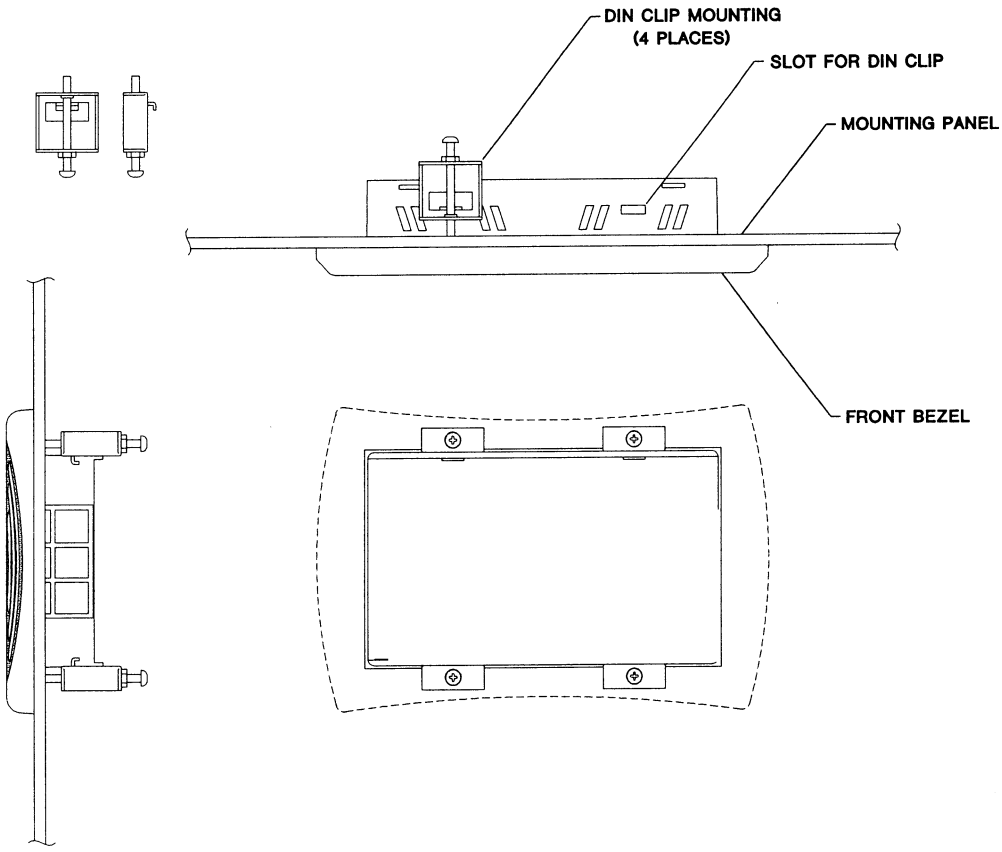
Figure 2–3. Mounting Template and Dimensions



DIN Clip Mounting

DIN clips are metal brackets that attach to the panel housing and secure the front bezel to a mounting surface with a screw (Figure 2–4). They provide an alternative to bolting the panel into the mounting surface. There are 4 square holes in the chassis (two on the top and two on the bottom). Insert the clip flanges into the holes and secure the 4010 Panel by tightening the DIN clip screws until the front bezel is firmly pressed to the mounting surface.

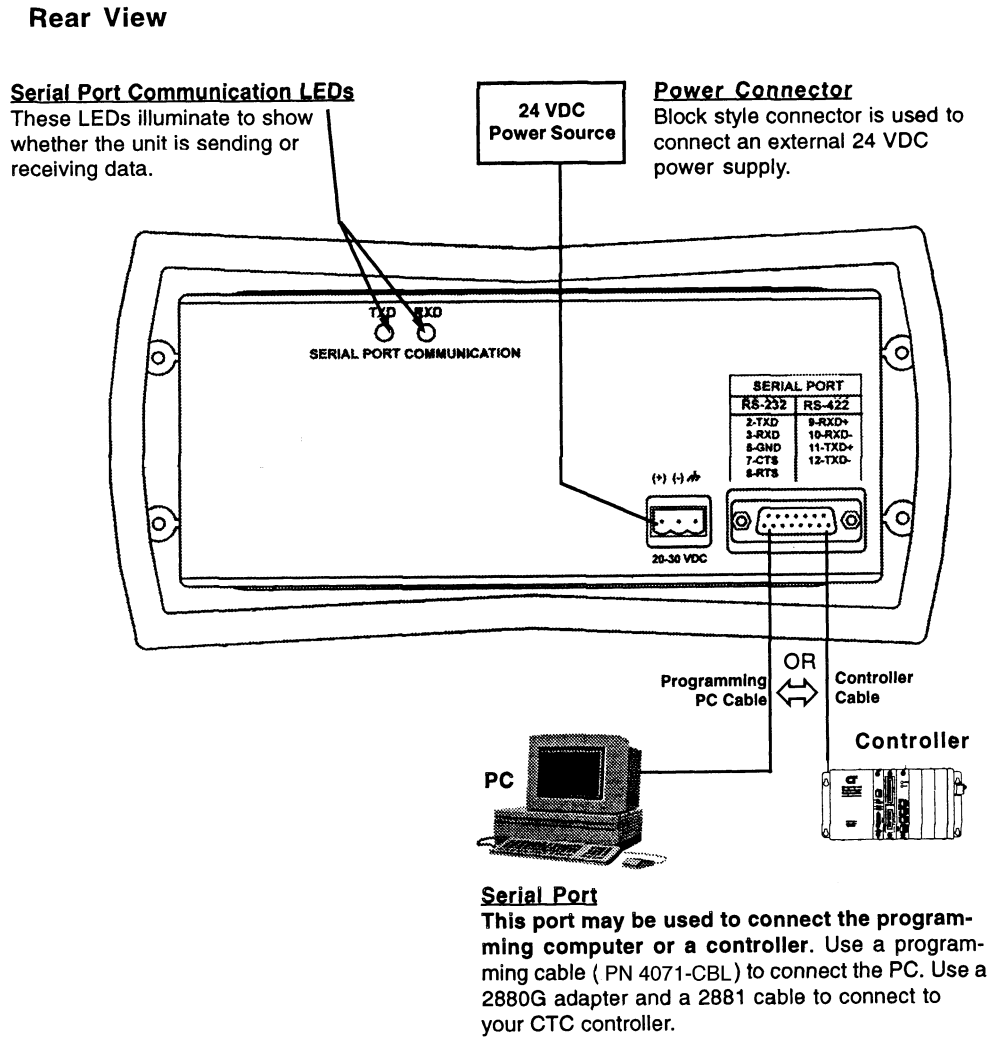
Figure 2–4. Mounting with DIN Clips



Connections and Wiring

This section describes how to connect the panel to other equipment and provides a connection diagram (Figure 2–5).

Figure 2–5. Model 4010 Rear Panel Connections and Wiring



Power Connector

This block style connector is used to connect an external 24 VDC power supply. The connector with screw terminals is provided with your 4010 Panel and allows you to plug into the power receptacle. A pinout is shown below. An external power supply is adapted to supply operating voltage to the 4010 Panel. The power supply must deliver a range of 20 to 30 VDC.

In multi-panel applications, if separate power supplies are used, please ensure the electrical ground common does not have a great potential difference. In a multi-panel application, the power supply must maintain the specified voltage and current consumption under all conditions (this includes power-up) for each of the individual units.

Pin #	Connection	
1	+V	24 VDC (20-30 VDC)
2	-V	
3	Chassis Ground	

Connect (+) on the unit to the (+) lead of your power source; (-) on the unit is connected to the (-) lead; and chassis GND (on the unit) is connected to the chassis ground of the cabinet. It is recommended you use a regulated power source isolated from relays, valves, etc.

Serial Port

The Serial Port may be used to connect your panel to a programming computer (PC) or a controller. You will only need to connect to a PC when you initially configure and program the 4010 Panel. The Serial Port is then available for connection to the controller. When you power up the 4010 Panel, it will come up in RUN Mode. While in RUN Mode the Serial Port will only communicate with a controller. To program the panel and have the Serial Port communicate with a PC, you will have to enter the SETUP Mode (see following paragraph).

Connect a Programming PC

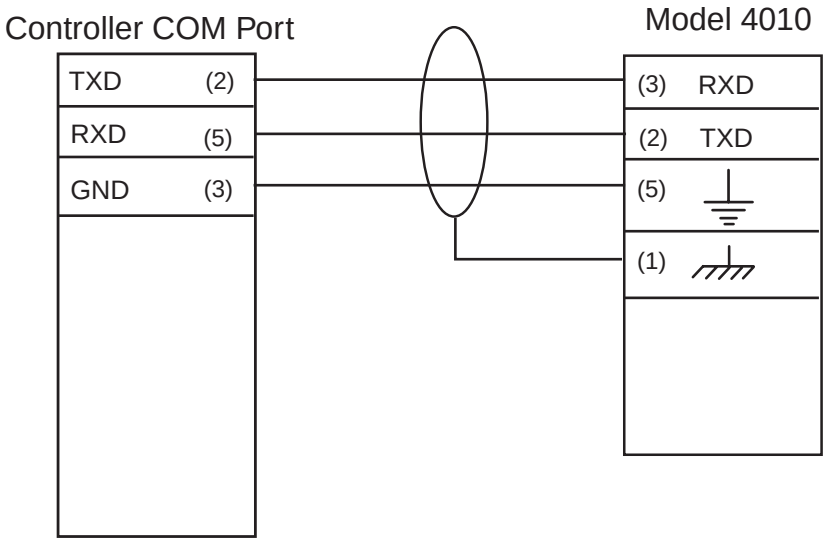
To program the 4010 Panel, you must put the panel into SETUP Mode. When the panel is powered up, it will be operating in RUN Mode. (The panel will go through "Self Initialization" before it enters Run Mode — you must wait until this is accomplished before entering Setup Mode.) To enter SETUP Mode, you must press and hold the UP Arrow button while simultaneously pressing the DOWN Arrow button. While in SETUP Mode you may also adjust the screen contrast by pressing the UP/DOWN Arrows.

The 4010 Panel is configured using a PC running the QuickText Panel Programming Software. When you are ready to download the program, connect the programming cable (PN 4071-CBL) to the serial port of the panel and the serial port of the PC. A wiring diagram for the programming cable follows.

Connection Diagrams

Figure 2–6 shows how to connect the 4010 panel to the controller's RS-232 port. Connect your controller to the 4010 Panel with a 2880G adapter and 2881 cable.

Figure 2–6. RS-232 Connections



Learning the Features

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Learning the Features

In this section, we will help you to learn and understand the features of the Model 4010 Panels. Details for using pushbuttons, controller messages, LEDs, and local messages are discussed. We recommend that you read this chapter before you attempt to configure and use the 4010 Panel features and controls. As you proceed through this section, relate the topics discussed with how you will implement your panel.

Regardless of the controller type, the concepts discussed here are applicable. To help you, the following figures use small example programs that display instruction elements and address references. Once again, this section is showing concepts for using the panel features.

Memory Mapping / Controller Data Registers

The 4010 Panels communicate with the controller through user-defined controller data registers. Controller registers are assigned during configuration using the QuickText Panel Programming Software. For discrete operations, such as pushbuttons, LEDs, and annunciator lamps, the register bits are accessed by the controller's Quickstep program. The following pages show how the pushbuttons, LEDs, and annunciator lamps are assigned to the controller bit registers.

Controller Data Types

You can access the following controller data types with the model 4010:

CTC Controller Registers: R1 – R65535

Example:

R1	general purpose register
R1001	digital output #1
R8501	analog input #1
R13002	controller millisecond timer

Notes

1. In the model 4010, only 16-bit access is available to the controller's 32-bit registers. CTC strongly recommends that you only use the Model 4010 to access values whose range is 0 – 65535.

2. Refer to the CTC Quick Reference Register Guide for a complete listing of CTC registers. It is available in the Support area of our web site at www.ctc-control.com.

CTC Data Table Locations: D1,1 – D65535,255 (Drow#,col#)

These locations access the controller data table. The actual size of the controller data table is defined in the Quickstep program running on the controller. Only data table locations that exist in the Quickstep program are accessible.

CTC Status: S0-S3

S0 Reads 1 if Running, 0 if Stopped. Write 1 to start controller, 0 to stop controller.

S1 Reads 1 if controller in Program Mode. Reads 0 otherwise.

S2 Reads 1 if controller has a software fault. Reads 0 otherwise.

S3 Write 1 to Reset controller.

Pushbuttons

Pushbuttons use 32-bit registers or one 16-bit data table location (Figure 3–1). Use bits 0 through 15 of a 32-bit register. (Address must be READ/WRITE)

Figure 3–1. BUTTONS (BIT WRITE) PLC WORD — (FROM PANEL)

(BITS)

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
NA	NA	NA	ACK F5	ACK F4	ACK F3	ACK F2	ACK F1	▼	▲	ENT	F5	F4	F3	F2	F1

F1–F5 = Function Pushbuttons 1–5

ENT = Enter

▲ ▼ = Arrow UP/DOWN

ACK F1-F5 = Panel acknowledge of controller button release

NA = not used (do not use for other controller program addresses)

Bits 0–7 are set when pressing the corresponding button on the panel.

Bits 8–12 are set when the **Panel Set and PLC Release** option is selected for the corresponding function pushbutton and the release bit for that button is set by the controller in the LED (BIT READ) PLC WORD.

LEDs

LEDs use one 16-bit register or one 16-bit data table location (Figure 3–2). Use bits 0 through 15 of a 32-bit register.

Figure 3–2. LED (BIT READ) PLC WORD — (TO PANEL)

(BITS)

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
NA	NA	NA	REL F5	REL F4	REL F3	REL F2	REL F1	NA	NA	NA	LED5	LED4	LED3	LED2	LED1

LED1–LED5 = Only used when **By PLC** has been chosen.

REL F1–REL F5 = Used by controller to release a button that is set by the panel.

NA = not used (do not use for other controller program addresses)

Example when using Panel Set & PLC Release Option for a Function Pushbutton:

Operator Presses Button: F1 is set by the Panel (Bit 0 in Button Word). This is a maintained pushbutton to the controller.

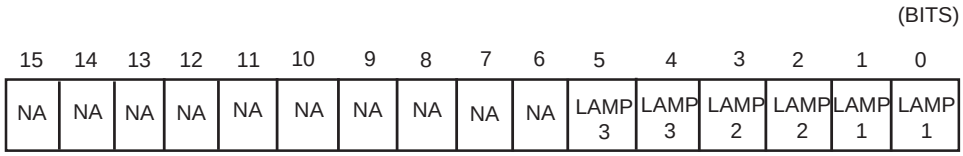
PLC Release Button: REL F1 is set by the controller (Bit 10 in LED Word). The controller resets the panel button by setting this bit in the Quickstep program.

Panel Acknowledge Button Release: ACK F1 is set by the Panel (Bit 10 in Button Word). This is the panel acknowledging to the controller that it has reset the button.

Annunciator Lamps

Annunciator Lamps use one 32-bit CTC register or one 16-bit CTC data table location (Figure 3–3). Use bits 0 through 15 of a 32-bit register.

Figure 3–3. ANNUNCIATOR (BIT READ) PLC WORD — (TO PANEL)



LAMP 1 = Left Lamp, Bits 0 and 1
LAMP 2 = Center Lamp, Bits 2 and 3
LAMP 3 = Right Lamp, Bits 4 and 5
NA = not used (DO NOT use for other controller program addresses)

Refer to Table 3–1 to set the bits in your controller's Quickstep program to have the lamps illuminate in a particular color, or not to illuminate at all.

Table 3–1. Lamp Color and Bit Settings

Color	Lamp 1		Lamp 2		Lamp 3	
	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5
Off	Off	Off	Off	Off	Off	Off
Red	On	Off	On	Off	On	Off
Amber	On	On	On	On	On	On
Green	Off	On	Off	On	Off	On

Controller Message Registers

The Model 4010 panels have 2 lines of controller message display. Each message line references a user-defined register in the controller. The registers are assigned using the QuickText Programming Software. The panel monitors each register for a value (message number) and display the message associated with the value (i.e., a value of 3 displays message 3).

Embedded Data Registers

Each message can have up to three embedded data values, DATA 1, DATA 2, and DATA 3. Embedded Data Registers are user-defined.

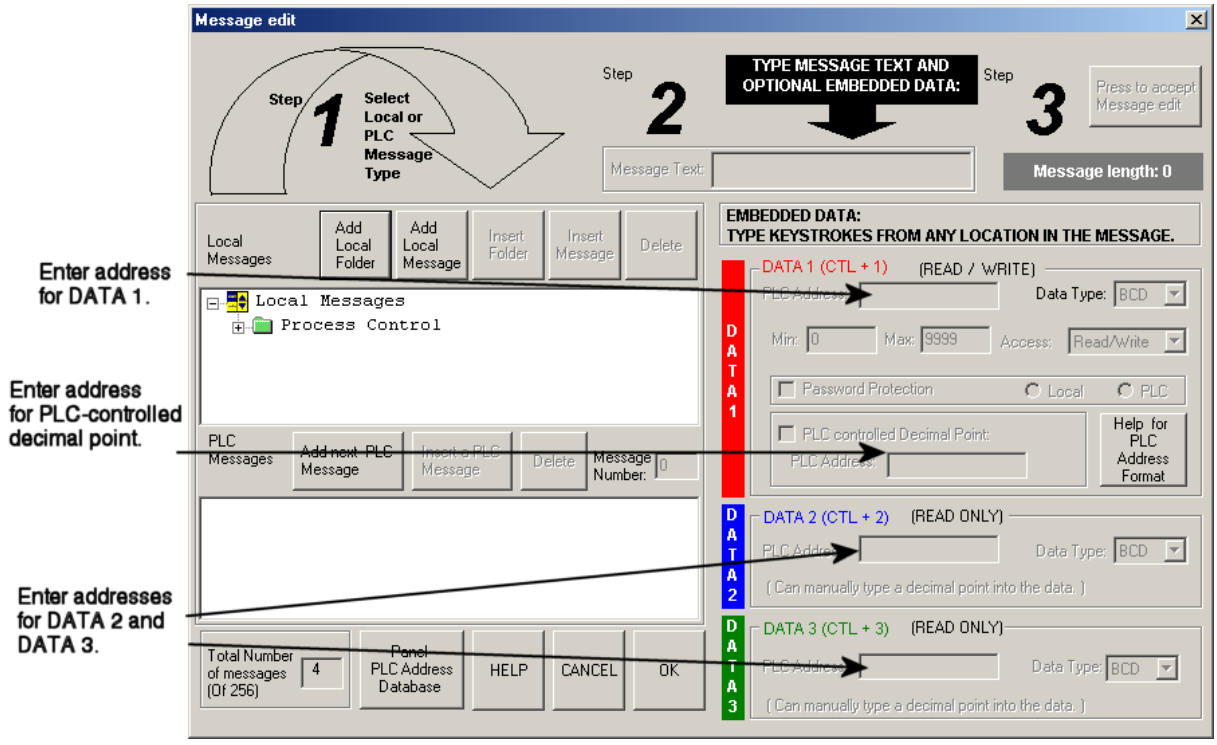
DATA 1 (**READ/WRITE**)

This is a controller register or data table location that contains the first of three possible embedded data values on a line for the message displayed. DATA 1 can be set as a READ/WRITE Register allowing the operator to change a data value. It can also be set to READ ONLY. This is the only data value that has this option.

Note

Decimal points are used with keypad entry only, not arrow adjust. The decimal point must be pressed when entering a decimal value.

Figure 3–4. PLC-Controlled Decimal Point



PLC Controlled Decimal Point

This is a register or data table location in the controller for controlling a decimal point within an embedded data value (DATA 1 only). One register holds the value and the other controls the decimal point. The register addresses are assigned from the Message Edit screen as shown in Figure 3–4. This feature only works with keypad entry, not arrow adjust. No ASCII characters are allowed in DATA 1 with a controller controlled decimal point.

DATA 2 (READ ONLY)

This is a controller register that contains the second of three possible embedded data values on a line for the message displayed. You may manually insert a decimal point. The controller address and data type are assigned from the Message Edit screen.

DATA 3 (READ ONLY)

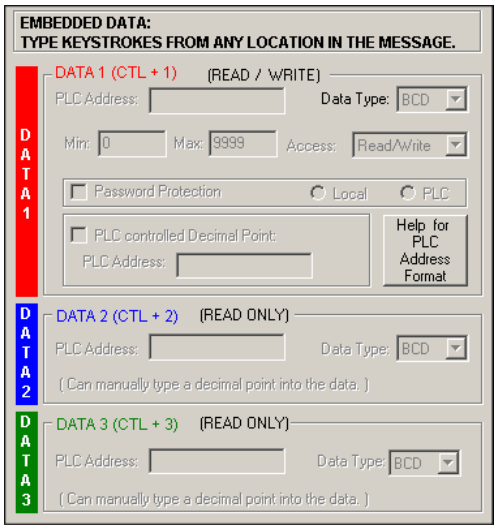
This is a controller register that contains the third of three possible embedded data values on a line for the message displayed. You may manually insert a decimal point. The controller address and data type are assigned from the Message Edit screen.

Controller Messages and Local Messages

Embedded Data

The user message contains the ASCII characters and optional embedded data to be displayed (Figure 3–5). The embedded data can be up to 3 different values — DATA 1, DATA 2, and DATA 3.

Figure 3–5. Embedded Data Entry



Special characters in the message determine where the embedded data from the registers should go. When programming, each character for DATA 1 values will be represented by a “1” for up to five digits. For example, if you want to display a five digit value from the controller, you will press Ctrl + 1 or F5, five times, and “11111” will display in your message (in red) representing the five digit value.

Only DATA 1’s embedded value can be Interactive (READ/WRITE register), meaning that data values will display and can be changed from the message. DATA 2 and DATA 3 are Dynamic (READ ONLY register) meaning that they will display a value, but the value cannot be changed from the message. DATA 2 values are entered into the message by pressing Ctrl +2 or F6, and are represented by a “2” for each numerical digit, displayed in blue. DATA 3 values are entered into the message by pressing Ctrl +3 or F7, and are represented by a “3” for each numerical digit, displayed in green. Again, these values can be up to five digits. Data values are only represented by a “1,” “2,” or “3” when you are programming the message. The actual values will be displayed on the Model 4010 LCD Display window, or will be blank if no value is present.

Password protection may be used on DATA 1 only and can be local or controller defined. Passwords allow you to prevent unauthorized users from changing a controller register value.

For DATA 1, you can select a minimum and maximum range for the embedded data value. The Maximum is to set an upper limit for the data value and Minimum is to set a lower limit for the data value. This will let the user update the value between the ranges. Data values are incremented or decremented with the UP/DOWN Arrow Buttons, or by using the numeric keypad.

Also for DATA 1, you can choose to have the Decimal Point in the value controlled by the controller, or you can manually insert it in the message.

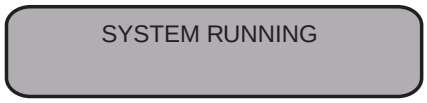
Message Types

This section discusses the three types of messages: Static, Dynamic, and Interactive.

Static Messages

Static Messages (Figure 3–6) are text displays that have NO embedded data. The Static Message may be displayed when an event or condition becomes true. You will enter the messages using the QuickText Programming Software.

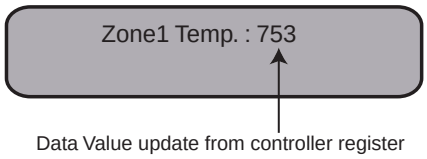
Figure 3–6. Static Message Display



Dynamic Messages

Dynamic messages (Figure 3–7) are text messages that include embedded data. These messages are used to display values from the controller (READ only access to a controller register). This data is information that helps the operator closely monitor and/or control the machine or process.

Figure 3–7. Dynamic Message Display



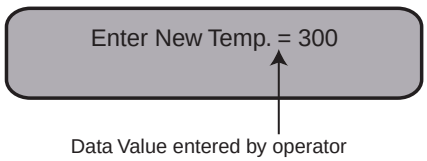
Embedded Data Values

Embedded Data Values in messages can be of two types — BCD or Binary. DATA 1 can have a decimal point controlled by the controller or manually inserted. DATA 2 and DATA 3 allow you to manually insert a decimal point. The maximum number of data values per message is three. Data type and decimal points are programmed when configuring the message from the Message Edit screen.

Interactive Messages (with an embedded DATA 1 value, only)

An Interactive Message (Figure 3–8) is commonly used for operator data entry. This type of message is used for changing values that are stored in the controller registers (READ/WRITE access). Typical values are Setpoint, Upper and Lower Limits, etc. Interactive Messages may be configured to enter data using the UP/DOWN Arrow buttons.

Figure 3–8. Interactive Message Display



Passwords

Passwords are used to protect DATA 1 values from being accessed by unauthorized users. When pressing the enter button to select a data value to change, the panel will perform a check to see if there is a password on the data value, and whether it is a locally defined password or defined by the controller. Locally defined passwords are set using the QuickText Programming Software. If there is a password on the data value, the operator will be prompted to enter a password. Once entered, the password allows the operator to edit the data value. If the password is not valid, the operator will receive an "Invalid Password" message and then is prompted again to enter a password. You must program the value of the controller password into the register (defined in the QuickText Programming Software) manually, or with an Interactive Message programmed into the panel file structure.

Displaying Controller Messages

Static Message Operation

To display a Static controller message, you simply put the message number (1–256) in the appropriate controller register. These messages are text only, no embedded data.

Dynamic Message Operation

Dynamic messages are text messages that include embedded data. These messages present the operator with important controller data. You may program message numbers 1–256 to be used as dynamic messages. Dynamic messages may be displayed on either the top or bottom line. The maximum number of digits that may be displayed is five (if Binary data format or four if BCD). Use the QuickText Programming Software to configure dynamic messages. See Section 5, Configuration for more information.

Interactive Message Operation

An interactive message is a text display that allows operator data entry. Use these messages to enter or change values that are stored in controller registers. When the interactive message is displayed, the operator can enter data. Check the controller's installation guide to verify which data formats are supported. Depending on the controller, the data format will be either Binary or BCD (Binary Coded Decimal). Five digits may be entered in a 16-bit register using Binary data format. Four digits may be entered in a 16-bit register using BCD data format. For CTC controllers, you must only use binary format.

Interactive messages are configured within the QuickText Panel Programming Software by embedding a DATA 1 value in a controller message. An interactive message requires that you define the format (Binary or BCD), and decimal point position. There are two types of decimal point placements — PLC controlled and fixed placement (decimal point entered between characters when configuring the message). A controller controlled decimal is only allowed in Data 1 using the keypad entry. Data 2 and Data 3 allow you to enter a fixed point (manually inserted). Two controller registers are used to store controller controlled decimal point values, one for the data value and the other for decimal point control. When the decimal point is controller controlled it must be configured in your controller logic program. For more information, see Chapter 5, Configuration, or your controller Configuration Manual.

Arrow Adjustment Entry

Arrow adjust is often used when minimum and maximum setpoint ranges are required or a setpoint value requires only minor adjustment. These arrow adjustments are only possible using the UP or DOWN Arrow pushbuttons. As you press the UP and down Arrow pushbuttons, the numeric value will increment (up) or decrement (down) one count at a time. (The longer you hold down the button, the faster the count will increase or decrease.) When the adjustment is complete, press the enter pushbutton, and the value will be placed in the data register for display and the bit is set. When the UP/DOWN Arrows are used to increment or decrement a value, the cursor is disabled and will not be visible again until you press enter, esc, or return from a Controller Message. Arrow adjustment does not work when using decimals.

Numeric Keypad Entry

Numeric Keypad entry is used when a decimal point is being used and is the preferred method for data entry instead of arrow adjust. The decimal point button must be used when entering a decimal value.

Annunciator Lamps

There are three tri-color lamps located above the LCD Message Display. They can be illuminated as red, amber or green through the controller program.

PLC Message LED

The PLC Message LED will illuminate any time a controller message is being displayed. Press the esc key to exit the controller message and return to Local Messages. Press esc again to redisplay the last controller message.

Displaying Local Messages

In a Local Message, the first message (root level) or folder in the hierarchy is displayed on the top line at start up and the following message or folder is displayed on the second line.

A plus (+) is displayed in front of a folder's or subfolder's name if it is closed. If a folder or subfolder is open, a minus (–) is placed in front of the name. Any messages within that folder will be displayed below it.

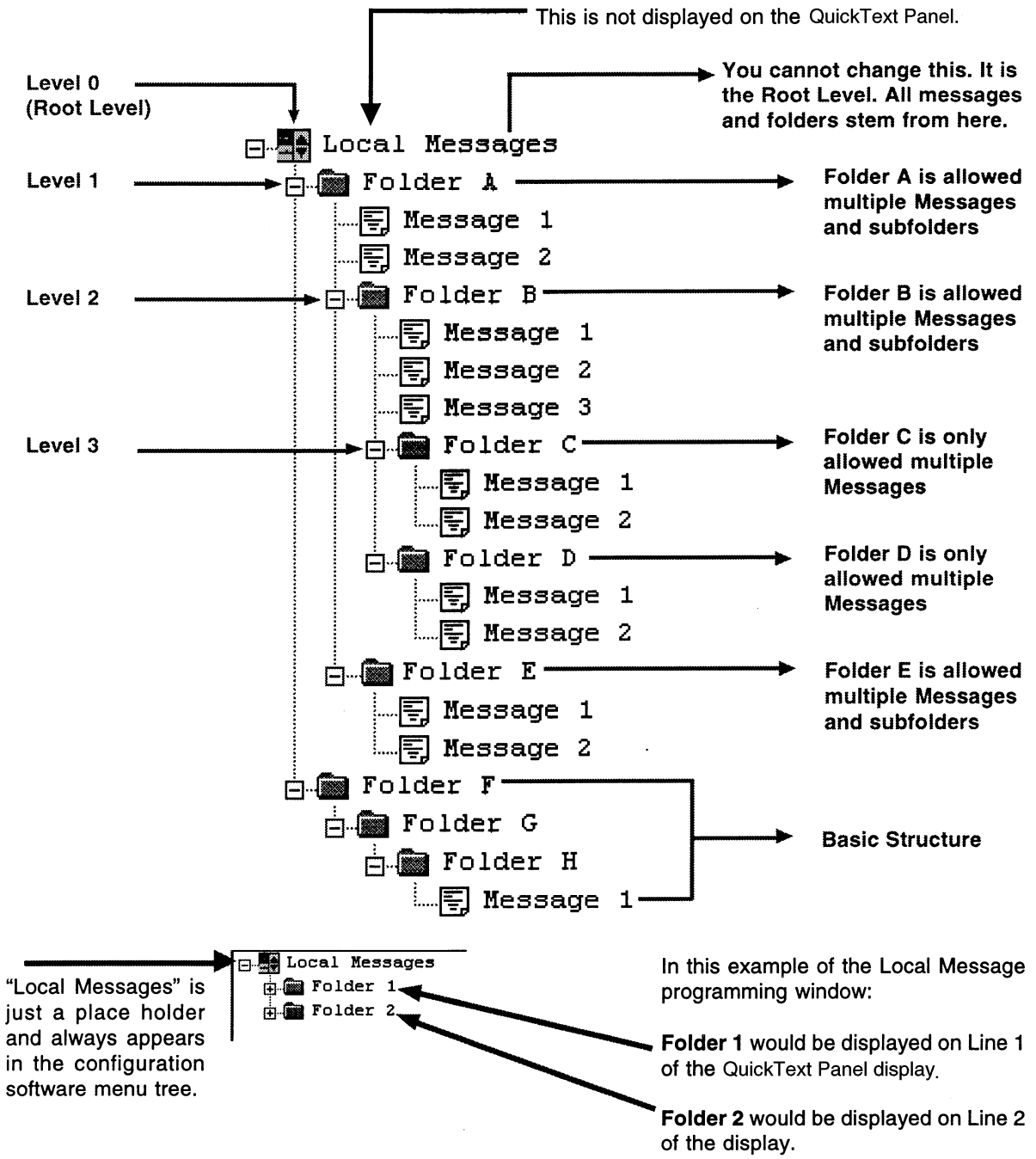
+Local Folder 1
+Local Folder 2

–Local Folder 2
Local Message 2.1

You may use the UP/DOWN Arrow buttons to scroll down to the next message in that folder. At the end of the messages for that folder, you can press the esc button to move to the previous folder or level.

The Local Message menu hierarchy can only extend three levels deep (after the root level) but each folder (level 1 and level 2) may have many subfolders or messages on that level. Folder level 3 may have many messages, but no folders. Messages can contain up to three embedded data values. See the following examples of a menu tree and how it may appear from within the QuickText Programming Software, and how it may appear on your Model 4010 Panel display.

Figure 3–9. Local Message File Structure Example



A plus (+) is displayed in front of the folder icon if it is closed. If a folder is open, a minus (–) is placed next to the folder icon, and any message in that folder will be displayed.

Local Message Menu Structure Example

This example resembles what you would see on the Model 4010 Panel Display except that the levels are indented here to make them easier to see.

Viewing the menu from the root (*A folder is also counted as a message.)*
Local Messages (Root)
Message 1 *(Root message)*
Message 2 *(Root message)*
+Folder A *(Folder is closed, but it contains 3 messages and two subfolders with 3 messages each)*
Message 16 *(Root message)*
Message 17 *(Root message)*
+Folder D *(Folder is closed, but it contains 5 messages and one subfolder also with 5 messages)*
Message 29 *(Root message)*

Viewing the menu from open Folder A
–Folder A *(Folder is open and it contains 3 messages and one subfolder with 3 messages)*
Message 4 *(Folder A message)*
Message 5 *(Folder A message)*
+Folder B *(Folder is closed, but is contains 3 messages and one subfolder also with 3 messages)*
Message 14 *(Folder A message)*

Viewing the menu from open Folder B
–Folder B *(Folder is open and it contains 3 messages and one subfolder with 3 messages)*
Message 7 *(Folder B message)*
Message 8 *(Folder B message)*
Message 9 *(Folder B message)*
+Folder C *(Folder is closed, but it contains 3 messages)*

When a folder is opened, a minus sign "–" appears before the folder name. A "+" sign indicates that the folder is closed.
Local Messages (Root)
Message 1 *(Root message)*
Message 2 *(Root message)*
–Folder A *(Folder A is open)*
Message 4 *(Folder A message)*
Message 5 *(Folder A message)*
–Folder B *(Folder B is open and is a subfolder of Folder A)*
Message 7 *(Folder B message)*
Message 8 *(Folder B message)*
Message 9 *(Folder B message)*
–Folder C *(Folder C is open and is a subfolder of Folder B)*
Message 11 *(Folder C message)*
Message 12 *(Folder C message)*
Message 13 *(Folder C message)*
Message 14 *(Folder A message)*
Message 15 *(Root message)*
Message 16 *(Root message)*
+Folder D *(Folder D is closed)*
Message 29 *(Root message)*

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Tutorial

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Model 4010 Panel Setup

SETUP Mode

In order to download the program to the Model 4010 Panel with the QuickText Panel Programming Software, you must be in the Setup Mode (Figure 4–1). Setup Mode is also where you will adjust the 4010's display contrast.

Figure 4–1. Setup Mode Display

The 4010 Panel will start up in the RUN Mode. To access the SETUP Mode, follow these steps:

1. Press the **UP Arrow** Pushbutton and hold while simultaneously pressing the **DOWN Arrow** Pushbutton to enter the SETUP Mode.

2. At any time you may press the Escape (**esc**) button to go back to RUN Mode. You will be taken back to the start of the Local Message menu (cursor is placed at root level when you return from setup).

Adjust Display Contrast

You may only adjust the Display Contrast when in Setup Mode. To adjust the display contrast use the UP and DOWN Arrows to increase or decrease the contrast.

Internal Software and Hardware Revisions

While in **SETUP** Mode the Panel Hardware Revision, Driver Revision, Boot Revision, and Exec (Firmware) Revision numbers will display on the panel.

Preparing for Configuration

If you prepare and plan ahead of time, your use of the QuickText Panel Programming software will be successful. Below are a few important steps to take to prepare to program your application.

- Prepare your personal computer and ensure proper installation of the QuickText Panel Programming Software

- Know your operator interface requirements such as the number of 4010 Panels required by your application

- Know your controller type and available resources such as programming tools, CPU capabilities, user memory, and so forth.

- Verify type of communications port, as well as protocol used. Determine the CPU link(s) available for connecting a Model 4010 Panel (RS-232/RS-422, baud rate, parity, stop bits.) For CTC, use RS-232, 9600 or 19200 baud, no parity, and 1 stop bit.

- Determine how the pushbuttons, LEDs, controller messages, and local messages will be assigned in your panels with respect to your machine or process.

- To prepare your application, use the application worksheets provided in appendix A of this manual. The example worksheets will help you understand how the 4010 Panel program is configured. Blank worksheets can be used in planning, implementing, and using your 4010 Panels.

Installing QuickText Programming Software

Model 4010 Panels are configured with software running on an IBM or compatible personal computer. This software (PN 4071) is available through Control Technology Corporation. The software is used to download your configuration before connecting the panel and communicating with a controller. Help Topics are provided to help you configure your panel. You design and configure your 4010 Panel program off-line and save it to disk. The program may then be transferred to the Model 4010 Panel. To install QuickText Programming Software, perform the following steps:

1. Place the CD into your **CD ROM Drive.**

2. From Windows click on the **Start** Button, and then click on **Run** from the menu. The **Run** dialog box will pop up.

3. At the prompt type D:\ (or your CD Drive) setup.exe or click on the **Browse** Button and find the **Setup.exe** file for QuickText Programming Software.

4. Click on the **OK** button to begin the installation. The QuickText Programming Software Installation Screen will appear.

5. Follow the onscreen prompts to load the software.

Planning the Project using Application Worksheets

The following is a project tutorial. It will take you through the process of creating a new project, configuring buttons and annunciator lamps, creating messages, and transferring a project to the Model 4010 Panel. This should help familiarize you with the QuickText Programming Software.

Let's start by filling out the application worksheet found in Appendix A. For tutorial purposes, we have already filled in the information. For your project, make copies of the forms in Appendix A. Follow steps 1 through 4 as shown below to fill out the application worksheet for the QuickText Demo Project.

Model 4010 Panel Application Worksheet

1. Fill in the project and controller information.

① **PROJECT NAME:** Tutorial

CONTROLLER CONFIGURATION:
Model: 2700
Protocol: CTC
Address:
Timeout: 30
PANEL TYPE: 4010

Baud Rate: 9600
Parity: None
Data Bits: 8
Stop Bits: 1
Checksum:

② **BUTTONS/LEDS**

2. Assign a controller word (R202) to the buttons and to the Panel Acknowledge (if using Panel Set/ PLC Release for Button Action). See the next page.

BUTTON ACTION/PANEL ACKNOWLEDGE (BIT WRITE) PLC WORD R202

Button Action:

	(PLC Address)	Mom.	Alt.	Pnl Set/ PLC Rel *
F1	Bit 0 = 1	☐	☒	☐
F2	Bit 1 = 2	☒	☐	☐
F3	Bit 2 = 4	☒	☐	☐
F4	Bit 3 = 8	☐	☐	☒
F5	Bit 4 = 16	☐	☒	☐

*** Panel Acknowledge of PLC Release:**

	(PLC Address)
ACK F1	Not Used
ACK F2	Not Used
ACK F3	Not Used
ACK F4	Bit 11 = 2048
ACK F5	Not Used

LED CONTROL/PLC BUTTON RELEASE (BIT READ) PLC WORD R201

③

3. Assign a controller word (R201) to the LED Control (if using By PLC) and PLC Button Release (if using Panel Set & PLC Release Button Action). See the next page.

LED Control:

	(PLC Address)	By Button	By Button & Flash	PLC **
LED1	Not Used	☒	☐	☐
LED2	Not Used	☒	☐	☐
LED3	Not Used	☒	☐	☐
LED4	Bit 3 = 8	☐	☐	☒
LED5	Not Used	☐	☒	☐

*** PLC Button Release:**

	(PLC Address)
REL F1	Not Used
REL F2	Not Used
REL F3	Not Used
REL F4	Bit 11 = 2048
REL F5	Not Used

** Panel Acknowledge and PLC Button Release are only used when using the Panel Set & PLC Release Button Action.*
*** LED Control by PLC is the only LED function that uses a Controller Address.*

This example shows the bit addresses for the Button PLC Word (R202) and LED PLC Word (R201) in this tutorial.

Note

Please note that any unused bit address SHOULD NOT BE USED in your controller program. The 4010 Panel will control the unused bits.

Pushbuttons
Pushbuttons use one 32-bit register or one 16-bit data table location. Use bits 0-15 of a CTC register.

BUTTONS (BIT WRITE) PLC WORD – (FROM PANEL)

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R200	NA	NA	NA	ACK F5	ACK F4	ACK F3	ACK F2	ACK F1	▼	▲	ENT	F5	F4	F3	F2	F1

F1-F5 = Function pushbuttons 1-5
ENT = Enter
▲▼ Arrow UP / DOWN
ACK F1-F5 = Panel acknowledge of controller button release
NA = Not used (do not use for other controller program addresses)

Bits 0-7 are set when pressing the corresponding button on the panel. Bits 8-12 are set when the Panel Set and PLC Release option is selected for the corresponding function pushbutton and the release bit for that button is set by the PLC in the LED (BIT READ) PLC WORD.

LEDs
LEDs use one 32-bit register or one 16-bit data table location. Use bits 0-15 of a CTC register.

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
R201	NA	NA	NA	REL F5	REL F4	REL F3	REL F2	REL F1	NA	NA	NA	LED5	LED4	LED3	LED2	LED1

LED1-LED5 = Only used weh **By PLC** has been chosen.
RELF1-RELF5 Used by the controller to release a button that is set by the panel.
NA = Not used (do not use for other controller program addresses)

Model 4010 Panel Application Worksheet

④ **ANNUNCIATOR:**

ANNUNCIATOR LAMPS (BIT READ) PLC WORD R203

(PLC Addresses)

LAMP 1 (BIT 0) _____ **(BIT 1)** _____
LAMP 2 (BIT 2) _____ **(BIT 3)** _____
LAMP 3 (BIT 4) _____ **(BIT 5)** _____

4. Assign a PLC Word (R203) to the Annunciator Lamps.

Color	LAMP 1		LAMP 2		LAMP 3	
	BIT 0	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5
OFF	OFF	OFF	OFF	OFF	OFF	OFF
Red	ON	OFF	ON	OFF	ON	OFF
Amber	ON	ON	ON	ON	ON	ON
Green	OFF	ON	OFF	ON	OFF	ON

⑤ **PLC Messages (PLC Words)**

Line 1 R204 **Line 2** R205

5. Assign a PLC Word for each controller message line.

For the next part of our project planning, we'll create four local messages using the local message worksheet. These messages will be configured later in our QuickText Demo Project using the QuickText Programming Software.

Model 4010 Panel Application Worksheet

LOCAL MESSAGES:

1. Add a folder at Level 1.

① ☑ **Folder** ☐ **Message** **Level:** ①2 3 4

P	R	O	C	E	S	S		C	O	N	T	R	O	L					

Folder = 19 characters, **Message** = 20 characters

DATA 1 _____ ☐ Read Only
☐ BCD ☐ Binary ☐ Read/Write
☐ PLC Decimal _____ Min _____ Max _____
DATA 2 _____ DATA 3 _____
☐ BCD ☐ Binary ☐ BCD ☐ Binary

2. Add a message under the folder at Level 2.

② ☐ **Folder** ☑ **Message** **Level:** 1②3 4

F	1		T	O		T	O	G	G	L	E		O	U	T	P	U	T	1

Folder = 19 characters, **Message** = 20 characters

DATA 1 _____ ☐ Read Only
☐ BCD ☐ Binary ☐ Read/Write
☐ PLC Decimal _____ Min _____ Max _____
DATA 2 _____ DATA 3 _____
☐ BCD ☐ Binary ☐ BCD ☐ Binary

3. Add another message at Level 2. This message is a read-only with one data point (DATA1).

③ ☐ **Folder** ☑ **Message** **Level:** 1②3 4

Z	O	N	E		1		T	E	M	P		=		1	1	1	.	1	

Folder = 19 characters, **Message** = 20 characters

DATA 1 R206 ☑ Read Only
☑ BCD ☐ Binary ☐ Read/Write
☐ PLC Decimal _____ Min _____ Max _____
DATA 2 _____ DATA 3 _____
☐ BCD ☐ Binary ☐ BCD ☐ Binary

4. Add another message at Level 2. This message is a read/write for data entry with one data point (DATA1) with a min. and max. value range.

④ ☐ **Folder** ☑ **Message** **Level:** 1②3 4

L	O	A	D		P	A	R	T		#	1	1	1	1					

Folder = 19 characters, **Message** = 20 characters

DATA 1 R207 ☐ Read Only
☐ BCD ☐ Binary ☑ Read/Write
☐ PLC Decimal _____ Min 1200 Max 1999
DATA 2 _____ DATA 3 _____
☐ BCD ☐ Binary ☐ BCD ☐ Binary

The last part of our project planning is creating three CONTROLLER Messages using the CONTROLLER Message Worksheet. These messages will be configured later in our QuickText Demo Project using the QuickText Programming Software.

Model 4010 Panel Application Worksheet

PLC MESSAGES:

1. Add message No. 1. When F3 button on panel is pressed, this message will be displayed.

Message No. 1

F	3		B	U	T	T	O	N		M	E	S	S	A	G	E			

20 characters

DATA 1 _____ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal _____ Min _____ Max _____

DATA 2 _____ DATA 3 _____

❑ BCD ❑ Binary ❑ BCD ❑ Binary

2. Add message No. 2. This message will be displayed to let the operator know that the controller has turned off F4 button on the panel.

Message No. 2

P	L	C		R	E	L	E	A	S	E		B	I	T		A	C	K	N

20 characters

DATA 1 _____ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal _____ Min _____ Max _____

DATA 2 _____ DATA 3 _____

❑ BCD ❑ Binary ❑ BCD ❑ Binary

3. Add message No 3. This message will be displayed when either of the other messages are displayed to let the operator know how to return to local messages.

Message No. 3

E	S	C		F	O	R		L	O	C	A	L		M	S	G	S		

20 characters

DATA 1 _____ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal _____ Min _____ Max _____

DATA 2 _____ DATA 3 _____

❑ BCD ❑ Binary ❑ BCD ❑ Binary

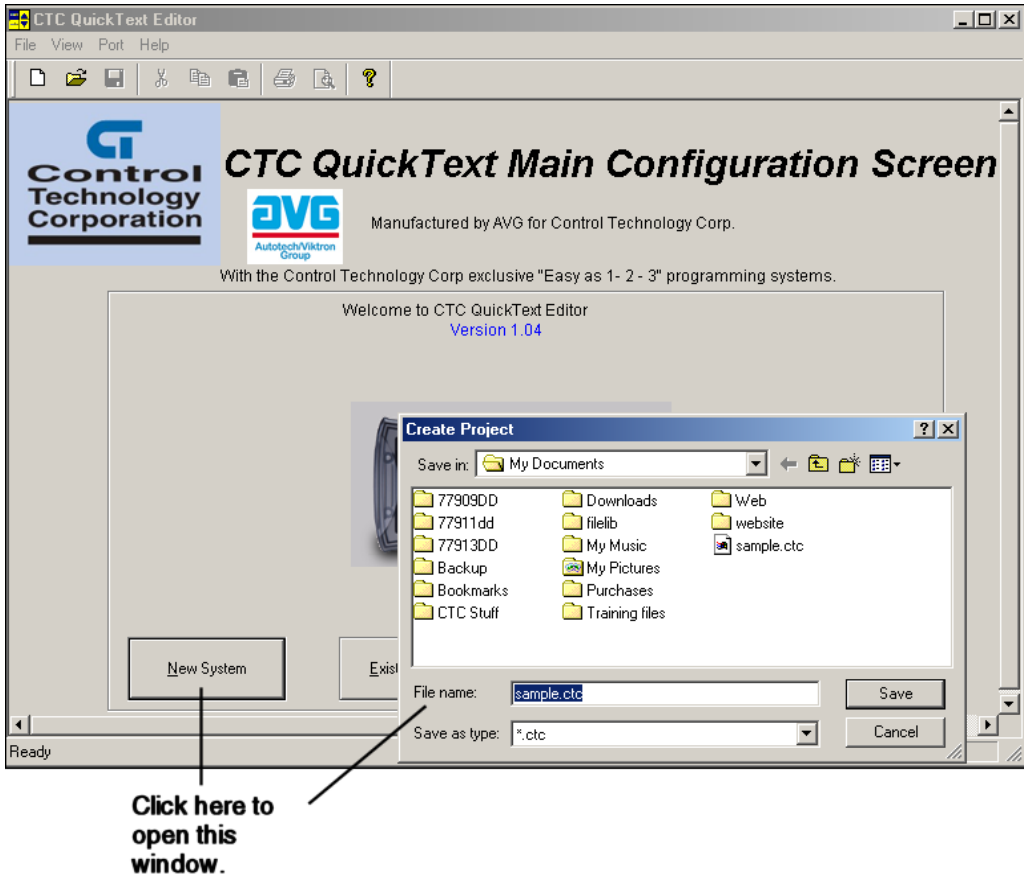
Tutorial – Creating the Project using QuickText Programming Software

This procedure assumes that you have the programming software installed on your PC. Connect the Model 4010 Panel to your PC using a programming cable (PN 4071-CBL). Apply 24 VDC to the panel power connector.

1. From the **Welcome** screen, click on the **New System** button.

2. The **Create Project** window (Figure 4–2) will appear. Type in “QuickText Demo Project” in the **File name** field. Click on **Save**. (If you don’t want your project saved to the default “Project” folder, navigate to the directory and/or folder where you want it to reside.)

Figure 4–2. Creating a Project



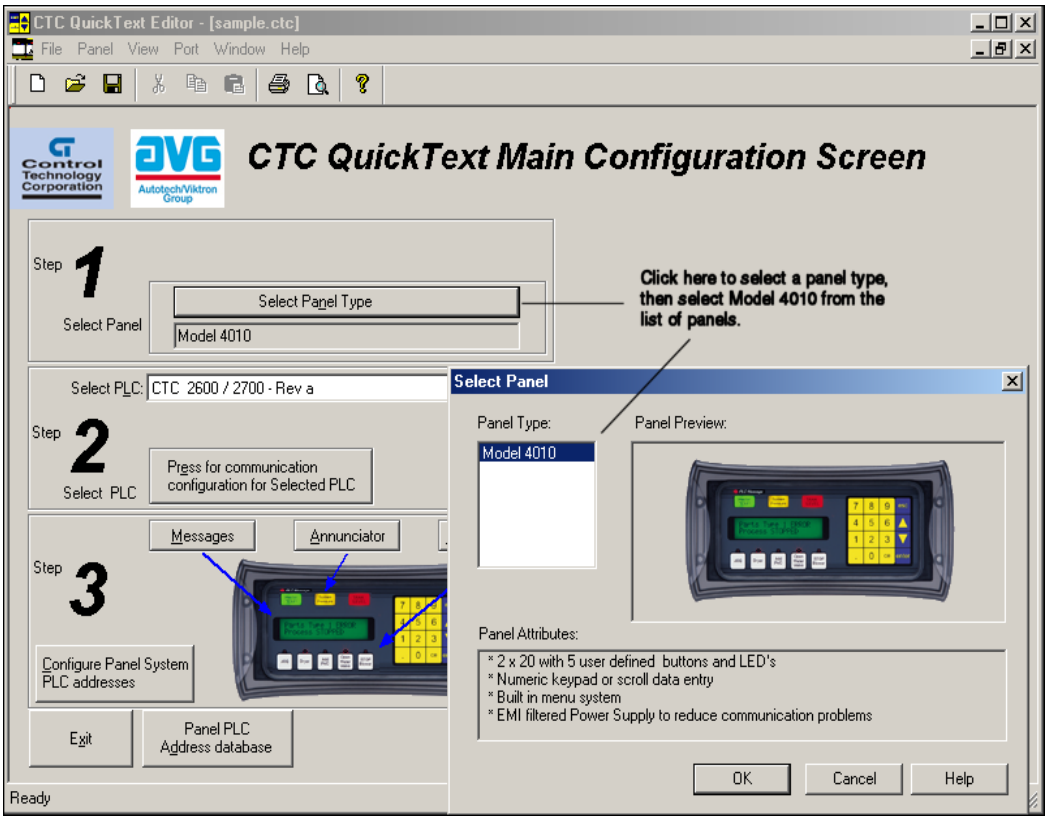
3. In **Step 1, Select Panel**, you will start your project by selecting the panel type you are using.

   a. From the **Main Configuration** Screen, click on the **Select Panel Type** button.

   b. The **Select Panel** dialog box will open (Figure 4–3). Under **Panel Type**, click on the panel type you are using to highlight it. A picture of the panel will appear under **Panel Preview**, and key features of the panel are displayed under **Panel Attributes**.

   c. Click on the **OK** button to select, and close the dialog box.

Figure 4–3. Selecting a panel



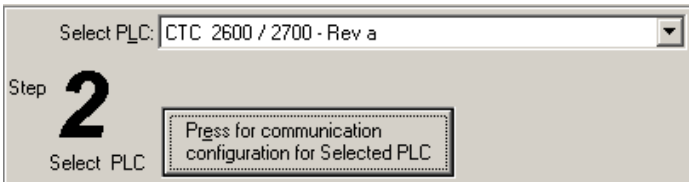
4. In **Step 2, Select PLC,** you will choose the type of controller you are using.

   a. Click on the DOWN arrow next to the **Select PLC** field to view the drop-down menu (Figure 4–4). **You can use the 2600/2700 protocol for all 2600/2700 series, MultiPro, and 5100 series controllers.**

Figure 4–4. Selecting a controller type

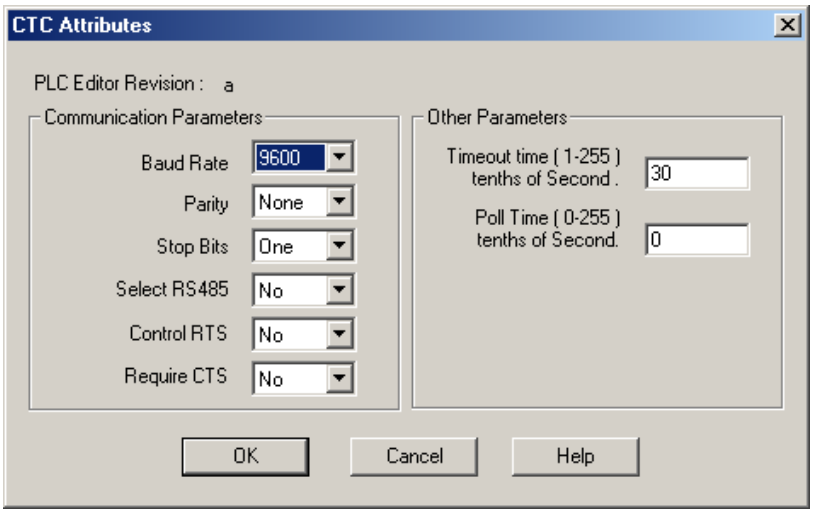
b. Click on the **Press for communication configuration for Selected PLC** button (Figure 4–5).

Figure 4–5. Configuration button



c. The **Controller Attributes** window (Figure 4–6) will appear for the controller you have selected. Set the attributes to match those in the screen capture below. **For 5100 series controllers, use a baud rate of 19200 instead of 9600.** Click on the OK button.

Figure 4–6. Controller Attributes



5. In **Step 3** you will configure the **Buttons/LEDs**, **Messages, Annunciators**, and **Panel System PLC Addresses**.

6. Click on the **Buttons/LEDS** button (Figure 4–7) to display the Buttons/LEDs screen (Figure 4–8).

Figure 4–7. Buttons and LEDs

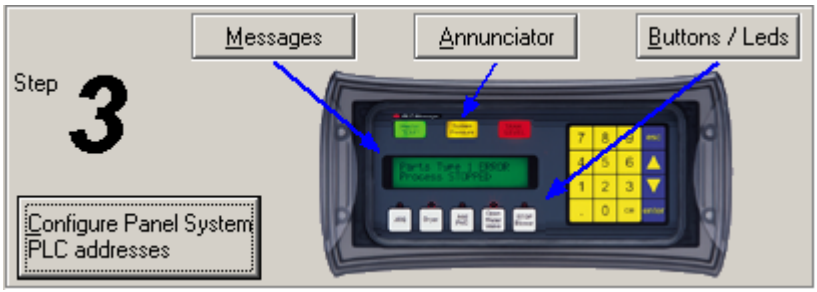
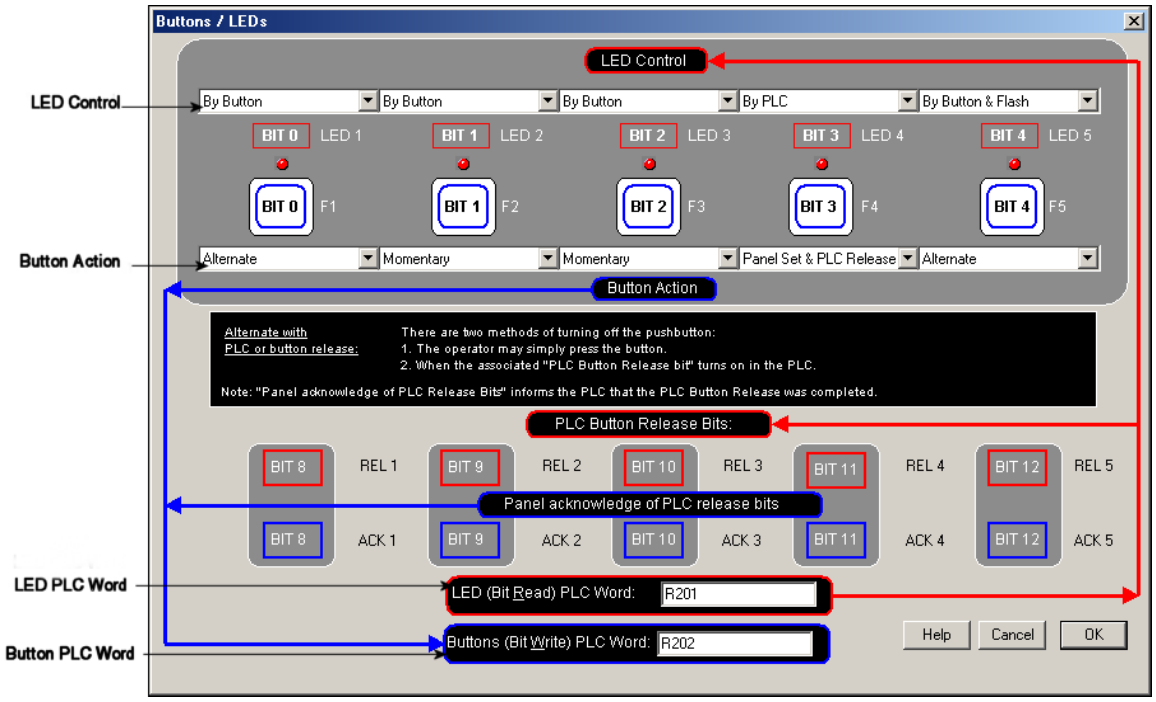


Figure 4–8. Buttons/LEDs screen



a. Under **LED Control**, click on the down arrow to view control choices. Select **By Button** for **LED 1, LED 2** and **LED 3**. Select **By PLC** for **LED 4,** and **By Button & Flash** for **LED 5** (Figure 4–8).

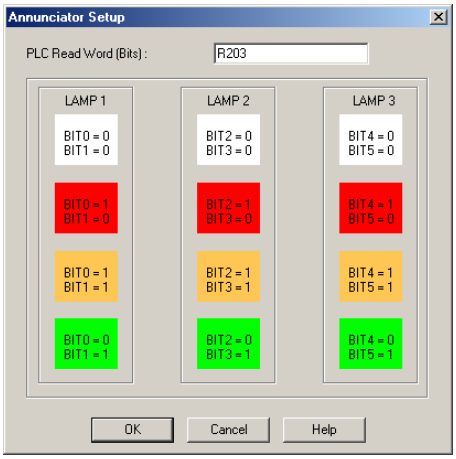
b. Under Button Action, click on the down arrow to view control choices. Select **Alternate** for **F1** and **F5**, **Momentary** for **F2** and **F3**, and **Panel Set & PLC Release** for **F4**.

c. Assign PLC Word **R201** for the LEDs and **R202** for the Buttons.

d. Click on **OK** to accept and exit the screen.

7. Click on the **Annunciator** button. The Annunciator Setup screen (Figure 4–9) will appear.

Figure 4–9. Annunciator Setup

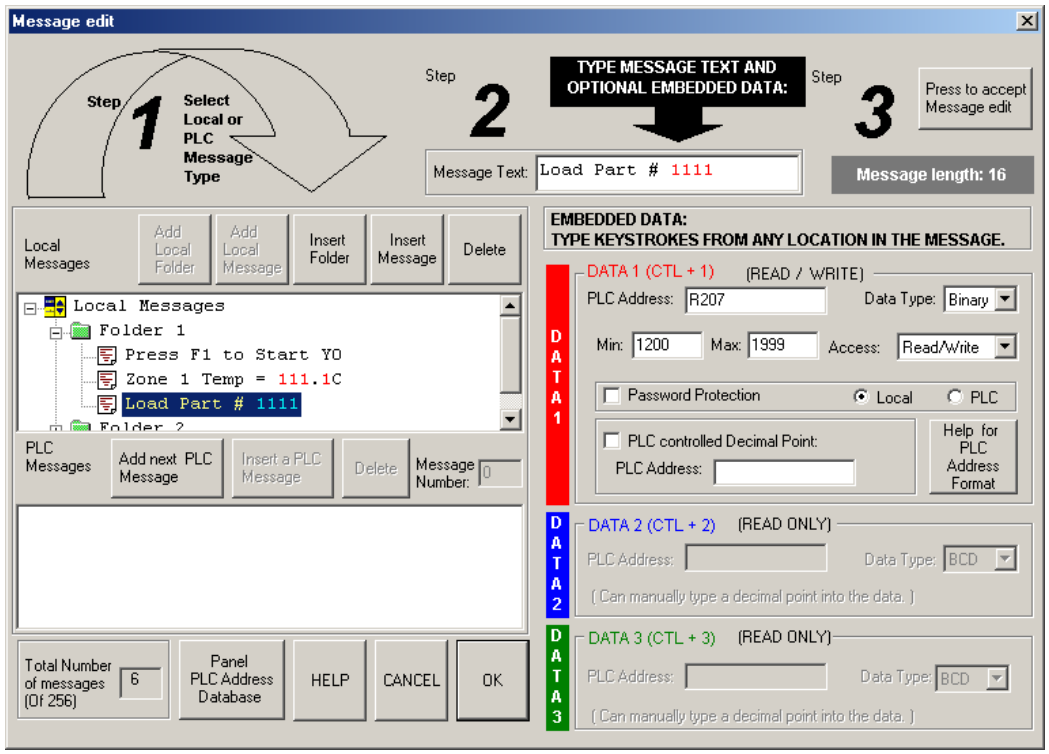


a. Assign a **PLC Read Word (Bits)**.

b. Click on **OK** to accept and exit the screen.

8. Next, we'll show you how to configure **Local Messages**. Click on the **Messages** button for **Step 3** on the Main Configuration Screen. The Message Edit screen will appear (Figure 4–10).

Figure 4–10. Message Edit screen



a. Click on the **Add Local Folder** button (**Step 1**). In the **Message Text** field (**Step 2**), type in **"Process Control**." Click on the **Press to accept Message edit** button (**Step 3**).

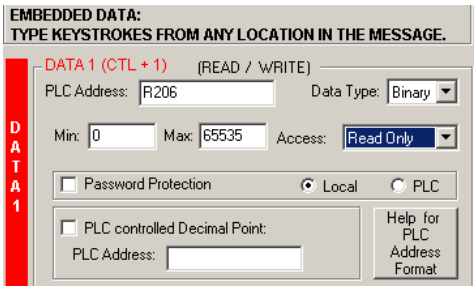
b. Click on the **Process Control** Folder to select it, and then click on the **Add Local Message** button.

c. Enter **"F1 to toggle Output1"** in the **Message Text** field and then click on the **Press to accept Message edit** button.

d. Next we'll configure a **Dynamic Message**. Click on the **Process Control** Folder, then click on **Add Local Message** and type in **"Zone 1 Temp ="**. After Zone 1 Temp =, enter a space and press F5 (or Ctrl +1) three times, type in a decimal point, then press F5 again. Type in a "**C**" immediately after the "**111.1**". (DATA 1 will appear as four, red ones in the message.)

e. Under the **DATA 1** section of the screen shown in Figure 4–11, type in **"R206"** in the **PLC Address** field. The **Data Type** should be set to **Binary**, and **Access** should be **Read Only**.

Figure 4–11. Entering the first message



f. Click on the **Press to accept Message edit** button.

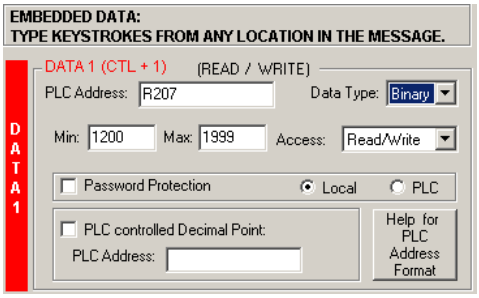
g. The last **Local Message** to be configured will be an **Interactive** message (**DATA 1**).

h. Click on the **Process Control** Folder, then click on **Add Local Message**.

i. In the **Message Text** field, type in **"Load Part #"**, leave a space, and then press F5, or Ctrl + 1, four times. (**DATA 1** will appear in the **Message Text** field as four, red ones).

j. The **DATA 1** configuration area is now available (no longer grayed out). Next to **PLC Address**, type in **"R207"**. **Data Type** should be **Binary**. **Access** is **Read/Write**. Set the **Min.** value to **"1200"** and the **Max.** value to **"1999"** (settings are shown in Figure 4–12). This will limit what value can be entered by the operator.

Figure 4–12. Entering the second message



k. Click on the **Press to accept Message edit** button to save it.

9. Create PLC Messages 001, 002, and 003 (Figure 4–13) as follows:

Figure 4–13. PLC Messages

a. Click on the **Add next PLC Message** button.

b. Type in the **Message Text** field, **"F3 Button Message**".

c. Click on the **Press to accept Message edit** button to save it.

d. Click on the **Add next PLC Message** button.

e. Type in the **Message Text** field, **"PLC Release Bit Ackn**".

f. Click on the **Press to accept Message edit** button to save it.

g. Click on the **Add next PLC Message** button.

h. Type in the **Message Text** field, **"ESC for Local Msgs**".

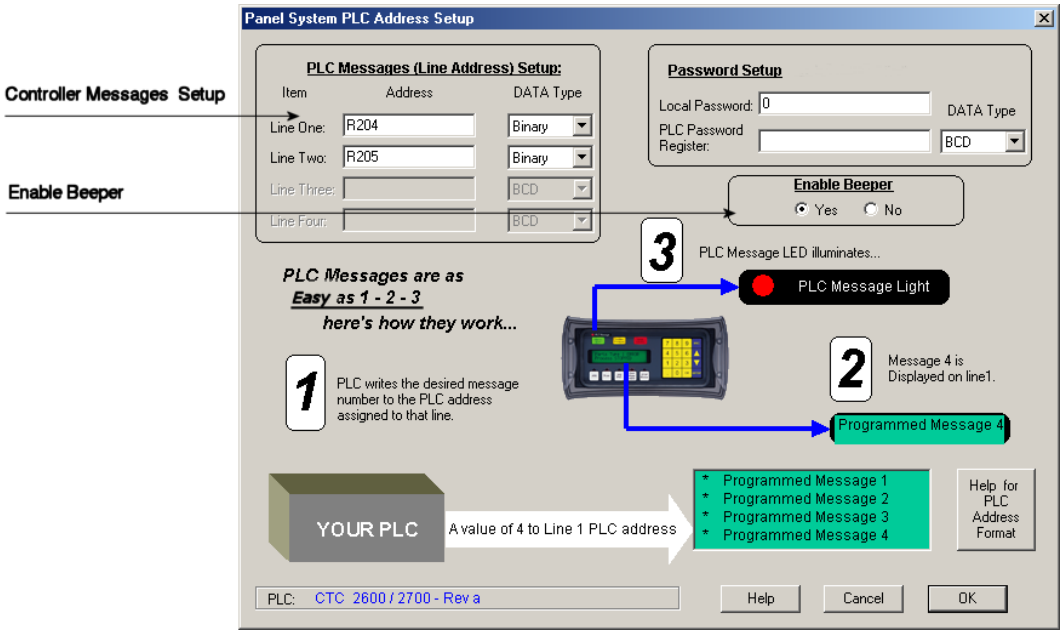
i. Click on the **Press to accept Message edit** button to save it.

10. Click on **OK** to exit the **Message Edit** screen.

11. Configure the panel system PLC addresses (main Configuration screen) by clicking on the **Configure Panel System PLC addresses** button.

12. The **Panel System PLC Address Setup** screen (Figure 4–14) will appear. Enter settings as follows:

Figure 4–14. PLC Address Setup



a. Type in "**R204"** in the **Line One** field. Select **Binary** as the **DATA Type**. Type in **"R205"** in the **Line Two** field. Select **Binary** as the **DATA Type**.

b. The panel beeper is defaulted to **Yes**. If you do not want to hear the beeper each time a button is pressed, select **No** under **Enable Beeper**.

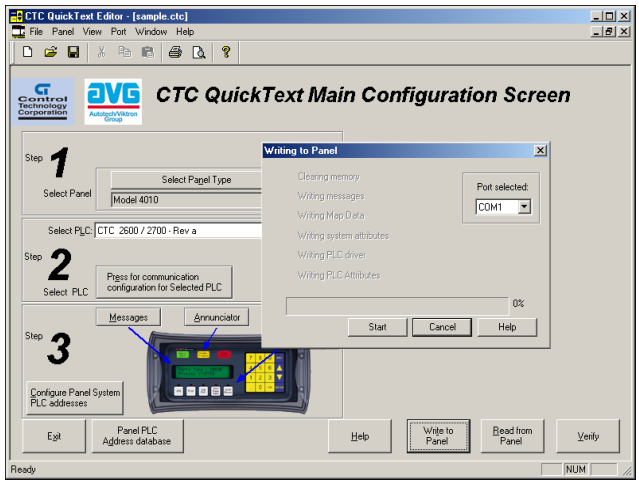
c. Click on the **OK** button to save and exit.

13. You are now ready to write the project to the Model 4010 Panel.

14. Click on the **Write to Panel** button on the **Main Configuration Screen.**

15. The **Writing to Panel** screen (Figure 4–15) will appear. Click on the down arrow under **Port selected** and select the COM port on your PC that is connected to the Model 4010 Panel (COM1, COM2, COM3 or COM4).

Figure 4–15. Writing the project to the panel

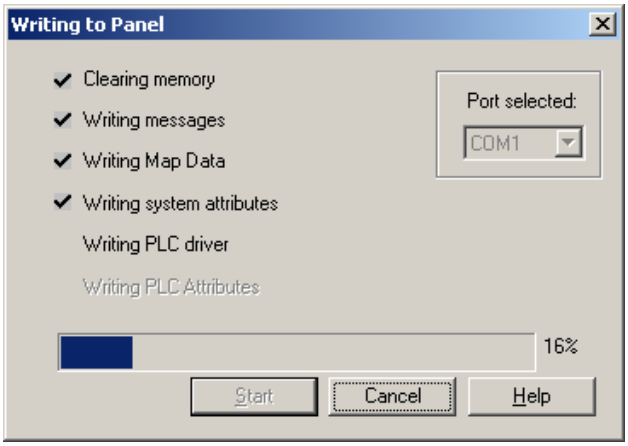


16. Before proceeding, ensure that the panel you are about to write to is in the **Setup Mode**. To enter the **Setup Mode**, press the UP and DOWN arrows on the 4010 Panel simultaneously. The panel display will read **SETUP MODE** on the first line.

17. Click on the **Start** button on the **Writing to Panel** screen (Figure 4–15).

18. The progress of the **Write to Panel** process (Figure 4–16) will be shown by a check mark placed in front of the items as the project is written to the panel. The status bar along the bottom portion of the screen will also show the progress.

Figure 4–16. Writing to Panel progress



19. Now that the panel is configured, let's connect our controller programming software to the controller and write the Quickstep program.

Tutorial – Configure a Controller

For the purposes of this tutorial, we will be using a Model 2700 Series controller. To configure the controller, we are using Quickstep software. The purpose of this part of the tutorial is to show you how to configure your controller to communicate with a 4010 Panel.

This Quickstep program is compatible with any 2600/2700 series, MultiPro, or 5100 series controller where digital I/O is used.

1. Connect to the controller with Quickstep.

2. Enter the following Quickstep code:

```
[1] Start
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    do (Output_1 Output_2 F3_Message Output_3 OI_Mapping) goto Start

[2] Output_1
    ;;; This task turns Ouput 1 On and Off and turns lamp 1 Red or off
    ;;; according to the value the Model 4010 returns for the F1 key.
    ;;;
    ;;; A value of 1 to the Lamp_1_R215 register will turn it red,
    ;;; a value of 0 will turn the lamp off.
    ------------------------------------------------------------------------
    Output_1_Off
    ------------------------------------------------------------------------
    store 0 to Lamp_1_R215
    if F1_Pressed_R210=1 goto Next

[3] Turn_Out_1_On
    ------------------------------------------------------------------------
    Output_1_On
    ------------------------------------------------------------------------
    store 1 to Lamp_1_R215
    if F1_Pressed_R210=0 goto Output_1

[4] Output_2
    ;;; This task turns Ouput 2 On and Lamp 2 Green for 5 seconds whenever
    ;;; F2 is pressed on the Model 4010 operator interface.
    ;;; Note that F2 should be configured on the Model 4010 as
    ;;; a momentary push button.
    ------------------------------------------------------------------------
    Output_2_Off
    ------------------------------------------------------------------------
    store 0 to Lamp_2_R216
    if F2_Pressed_R211=1 goto Next

[5] Turn_Out_2_On
    ------------------------------------------------------------------------
    Output_2_On
    ------------------------------------------------------------------------
    store 2 to Lamp_2_R216
    delay 5 sec goto Output_2

[6] F3_Message
    ;;; This task puts a PLC message on the Model 4010 when
    ;;; F3 is pressed. The PLC message is indicated by writing
    ;;; values to the Message registers, which should be configured
    ;;; as registers 204 and 205 for the Model 4010.
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    if F3_Pressed_R212=1 goto Next
```

```
[7] Show_F3_Message
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    store 1 to OI_Line_1_R204
    store 3 to OI_Line_2_R205
    goto F3_Message

[8] Output_3
    ;;; This task illustrates the Model 4010's PLC release feature.
    ;;; This works as follows:
    ;;; Operator presses F4. This is checked in Step 8.
    ;;; Controller turns output 3 on and the LED for F4.
    ;;; The controller writes the F4 release bit to clear F4.
    ;;; The Model 4010 clears the F4 pressed bit when it
    ;;;   recognizes that the release bit is set.
    ;;; The Model 4010 sets the ACK bit for F4, indicating to
    ;;;   the controller that it is now OK to look for the next
    ;;;   instance of F4 being pressed. Checked in Step 9
    ------------------------------------------------------------------------
    Output_3_Off
    ------------------------------------------------------------------------
    store 0 to F4_Release_R223
    store 0 to LED4_R221
    if F4_Pressed_R213=1 goto Next

[9] Turn_Out_3_On
    ------------------------------------------------------------------------

    Output_3_On
    ------------------------------------------------------------------------
    store 1 to LED4_R221
    store 1 to F4_Release_R223
    store 3 to Lamp_3_R217
    if F4_ACK_R224=1 goto Next
    delay 500 ms goto Turn_Out_3_On

[10] Wait_for_Out_3_Off
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    store 0 to F4_Release_R223
    if F4_Pressed_R213=1 goto OI_Out_3_Off
    monitor Input_1 goto In_Out_3_Off

[11] OI_Out_3_Off
    ------------------------------------------------------------------------
    Output_3_Off
    ------------------------------------------------------------------------
    store 0 to LED4_R221
    store 1 to F4_Release_R223
    store 0 to Lamp_3_R217
    if F4_ACK_R224=1 goto Output_3
    delay 500 ms goto Turn_Out_3_On

[12] In_Out_3_Off
    ------------------------------------------------------------------------
    Output_3_Off
    ------------------------------------------------------------------------
    store 0 to LED4_R221
    store 0 to Lamp_3_R217
    store 2 to OI_Line_1_R204
    store 3 to OI_Line_2_R205
    goto Output_3
```

```
[13] OI_Mapping
    ;;; This maps the F Keys from the 4010 interface into individual registers
    ;;; This is done using boolean bitwise operators. For more details on usin
    ;;; boolean math operators, please see page 3-49 of the
    ;;; Quickstep Language and Programming Guide.
    ;;;
    ;;; After the bits are masked using the boolean operation, we divide by th
    ;;; bit value, so the resulting register has a value of 0 or 1, instead of
    ;;; or the bit value.
    ;;;
    ;;; Because we are using the PLC release feature of the F4 key, we also ne
    ;;; to map the acknowledge bit of the button register for use in the Quick
    ;;; program.
    ;;; Because F5 is not used in the program, these statements have not
    ;;;   been included:
    ;;;     store OI_Buttons_R202 and 16 to F5_Pressed_R214
    ;;;     store F5_Pressed_R214 / 16 to F5_Pressed_R214
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    store OI_Buttons_R202 and 1 to F1_Pressed_R210
    store OI_Buttons_R202 and 2 to F2_Pressed_R211
    store F2_Pressed_R211 / 2 to F2_Pressed_R211
    store OI_Buttons_R202 and 4 to F3_Pressed_R212
    store F3_Pressed_R212 / 4 to F3_Pressed_R212
    store OI_Buttons_R202 and 8 to F4_Pressed_R213
    store F4_Pressed_R213 / 8 to F4_Pressed_R213
    store OI_Buttons_R202 and 2048 to F4_ACK_R224
    store F4_ACK_R224 / 2048 to F4_ACK_R224
    goto Next

[14] OI_Mapping_2
    ;;; This step combines the three registers used for the
    ;;; annunciator lamps on the 4010 into the single register
    ;;; used by the 4010 to control those lamps.
    ;;;
    ;;; The values for the individual registers and the lamp
    ;;; color that they represent:
    ;;;
    ;;; Off = 0
    ;;; Red = 1
    ;;; Green = 2
    ;;; Amber = 3
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    store Lamp_2_R216 * 4 to Temp_R499
    store Lamp_3_R217 * 16 to Temp_R498
    store Temp_R498 + Temp_R499 to Temp_R499
    store Temp_R499 + Lamp_1_R215 to Lamps_R203
    goto Next
```

```
[15] OI_Mapping_3
    ;;; This step is used to set the LED and Release bits for
    ;;; F4 in the Model 4010 LED register.
    ;;;
    ;;; First, the two bits we are looking at are cleared by the
    ;;; first store instruction. 2056 is a bitwise representation of
    ;;; bit 3 and bit 11. The andnot is used to clear only those two
    ;;; bits in the register.
    ;;;
    ;;; The individual registers are then scaled to reflect the
    ;;; bit values of 8 for bit 3 and 2048 for bit 11. The bitwise
    ;;; or instruction is used to set these bits when they are a 1.
    ;;; If the individual bits are 0, the or instruction will not
    ;;; change them.
    ------------------------------------------------------------------------
    <NO CHANGE IN DIGITAL OUTPUTS>
    ------------------------------------------------------------------------
    store OI_Leds_R201 andnot 2056 to OI_Leds_R201
    store LED4_R221 * 8 to Temp_R497
    store OI_Leds_R201 or Temp_R497 to OI_Leds_R201
    store F4_Release_R223 * 2048 to Temp_R497
    store OI_Leds_R201 or Temp_R497 to OI_Leds_R201
    goto OI_Mapping
```

3. Save the program to the controller and to disk (QuickText Demo Project).

4. Place the controller in Run Mode.

Testing the Project

The controller is now configured and running. Now, to test our project, connect the Panel to controller communications cable (PN 2880G adapter and 2881 cable) to the panel port and the controller port.

1. Press the **esc** (escape) button on the 4010 panel. The Local Message (folder), "- **Process Control**", will be displayed on the first line.

2. Press the enter button to open the folder. Level 2 Local Message "Press F1 to Start Y0" will be displayed. Use the up/down (arrow) buttons to scroll through the messages. Press the esc button to go back to the Folder Level 1.

3. Press **F1** to turn ON or OFF **Output 1,** and turn **LAMP 1** Red.

4. Press **F2** to turn ON **Output 2** and LAMP 2 Green for 5 seconds.

5. Press **F3** to display **Controller Message No. 1**.

6. Press **F4** to turn ON **Output 3** and **LAMP 3** Amber. Either press **F4** again to turn it OFF, or turn on **Input 1** in the controller. If the controller turns OFF **F4**, a message will be displayed.

7. Press **F5** to see an alternate button with flashing LED.

CONGRATULATIONS! You have now successfully configured a Model 4010 Panel!

Configuration

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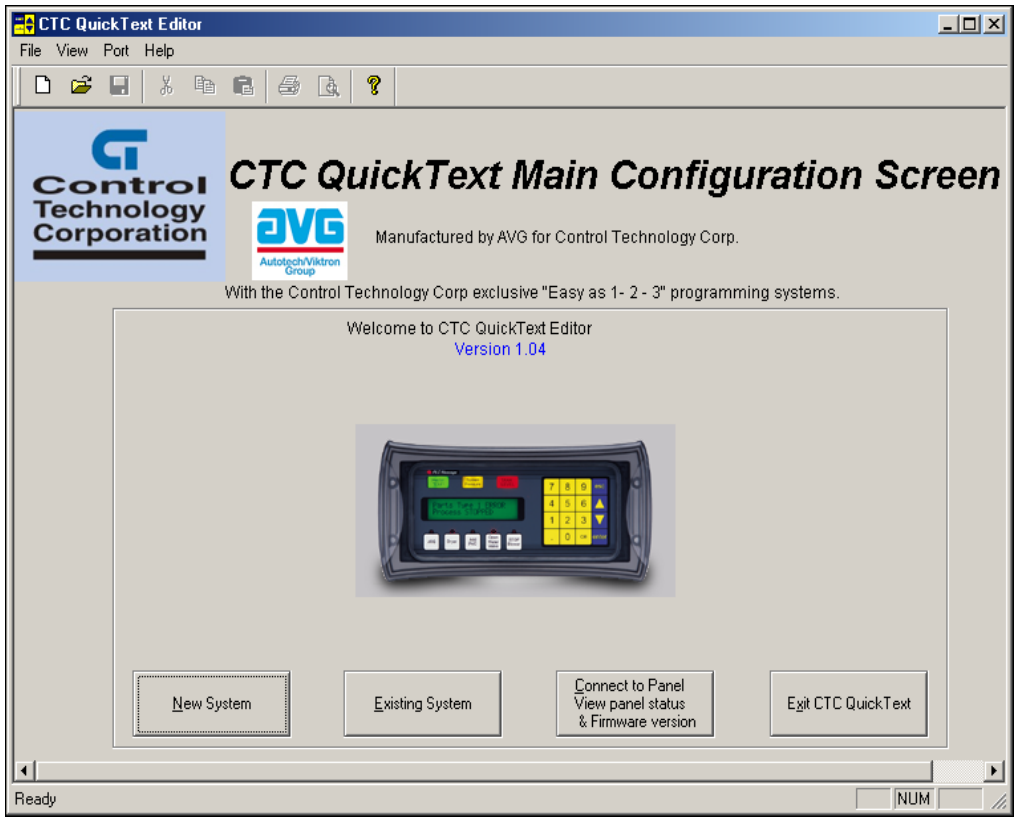
Configuration

This section describes how to configure a new system, edit an existing system, view panel status, and upgrade the Model 4010's firmware.

Configure a New System

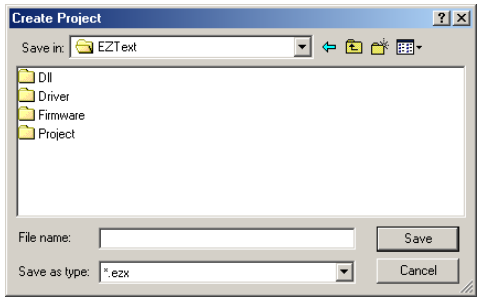
1. Click on the QuickText Editor Icon to open the QuickText Panel Programming Software. The main screen will appear (Figure 5–1).

Figure 5–1. Main QuickText Programming screen



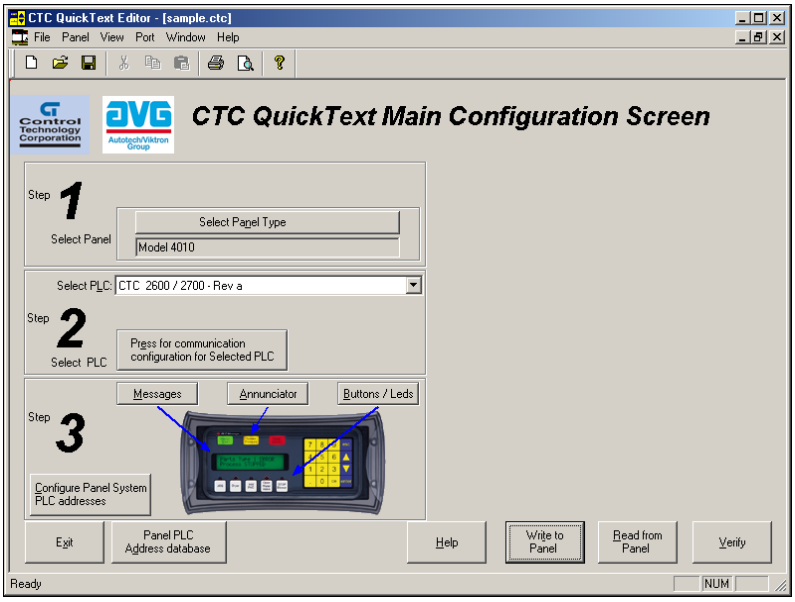
2. Click on the **New System** button to configure the QuickText Panel program. The **Create Project** screen will appear (Figure 5–2).

Figure 5–2. Creating a New Project



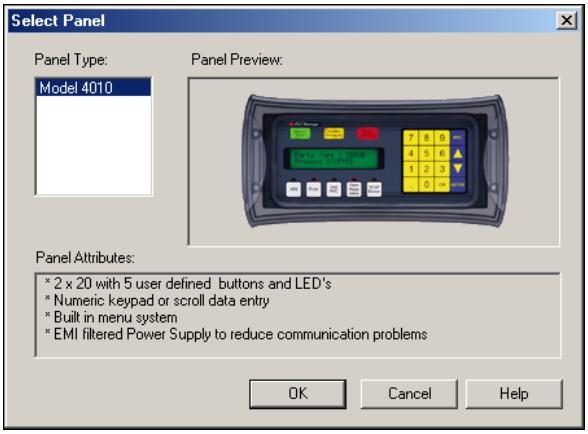
3. Enter a name for the project in the **File name** field. Navigate to the directory and folder where you want to keep the file (or except default location), and click on the **Save** button to save. The Configuration screen will appear (Figure 5–3).

Figure 5–3. Configuration screen



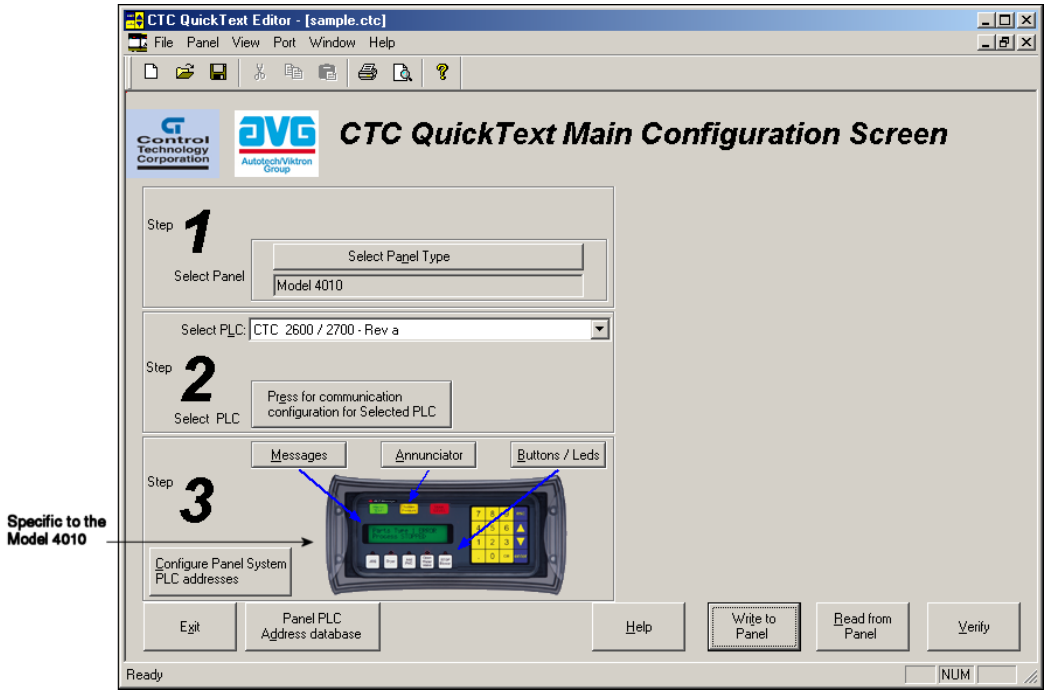
4. For **Step 1**, click on the **Select Panel Type** button to display the Select Panel screen (Figure 5–4). Under **Panel Type**, click on the model you are using. A **Panel Preview** and **Panel Attributes** specific to the type of panel you have chosen will appear in this dialog box. Click **OK** to enter your selection.

Figure 5–4. Selecting a panel type



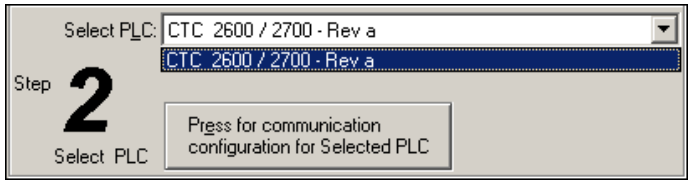
5. The Main Configuration screen (Figure 5–5) changes and shows you the 4010 configuration options.

Figure 5–5. Configuration options



6. For **Step 2**, click on the Down Arrow next to the **Select PLC** field (Figure 5–6). Choose the controller and Protocol type you are using. **MultiPro and 5100 series also use the 2600/2700 series protocol.**

Figure 5–6. Select PLC field



7. Click on the **Press for Communication Configuration for Selected PLC** button (Figure 5–7). A **Controller Attributes** dialog box specific to your type controller will appear (Figure 5–8).

Figure 5–7. Communication Configuration button

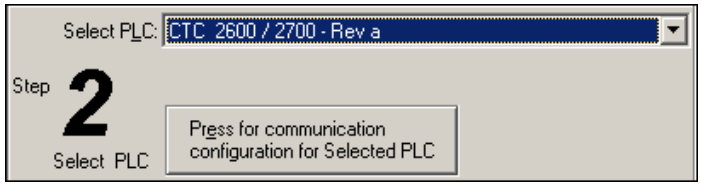
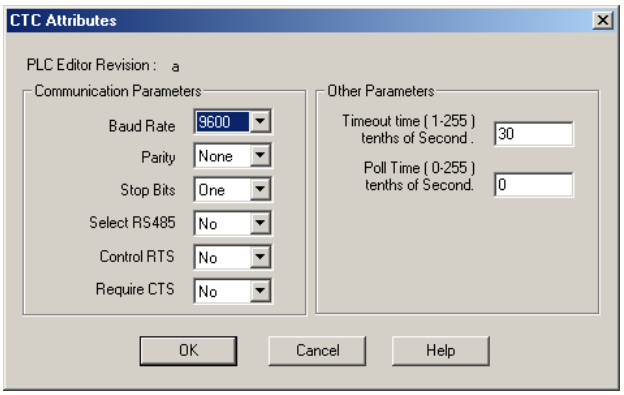


Figure 5–8. Attributes screen



8. Complete the communications information. After selecting the controller type, you must define the remaining protocol items, such as baud rate, parity, etc. For CTC controllers, use the following settings --Parity: None, Select RS485: No, Control RTS: No, Require CTS: No. The baud rate is determined by the controller's baud rate setting. The default baud rate for 2600, 2700, and MultiPro controllers is 9600. For the 5100 series controller, it is 19,200.

9. During configuration, ensure that your address and communications parameters match the controller port settings. There will be a selection for controller time-out. When the panel sends a message to the controller and does not receive a response or does not understand the response, it will wait the time-out period before sending the message again. A communication failure initiates the error message "PLC COMMUNICATION TIMEOUT" on the panel.

10. For **Step 3**, click on the **Configure Panel System PLC Addresses** button (Figure 5–9). The **Panel System PLC Address Setup** window will appear (Figure 5–10).

Figure 5–9. Configuring PLC Addresses button

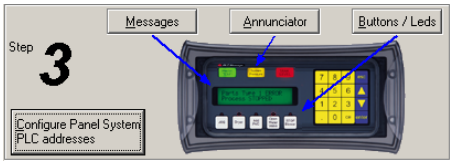
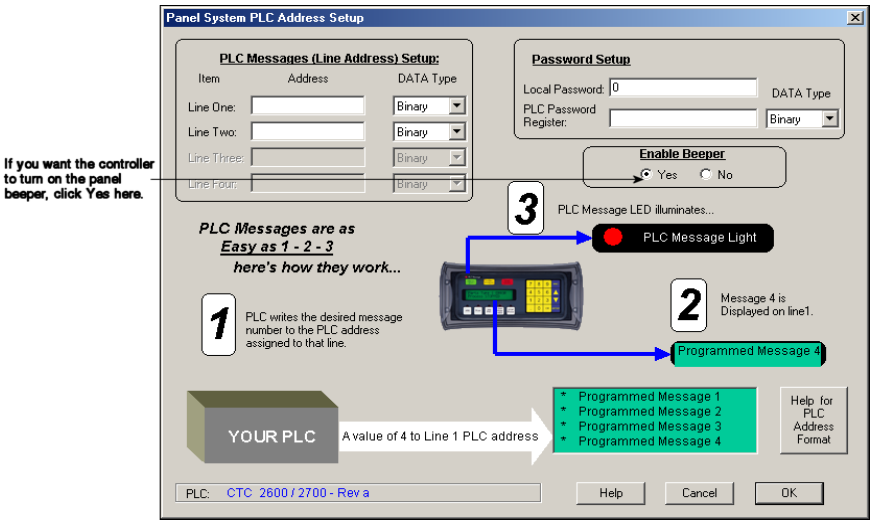


Figure 5–10. PLC Address Setup



11. Under **PLC Messages (Line Address) Setup**, enter the controller addresses for **Line One** and **Line Two**. Select the **Data Type** for the controller. Select **Yes** or **No** to **Enable Beeper**.

12. If you want Password Protection (Figure 5–11), to restrict access to data entry, enter a Local Password (up to 5 digits, 0–65535). If you want to store the password in the controller, enter a register address (Controller Password Register) and select the Data Type for the controller. Click OK to exit the Setup screen.

Figure 5–11. Password Protection

13. Next, click on the **Buttons/LEDs** button (Figure 5–12) to configure the Panel Functions. The Buttons/LEDs screen (Figure 5–13) will appear.

Figure 5–12. Buttons/LEDs button

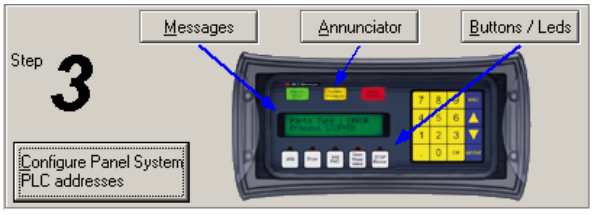
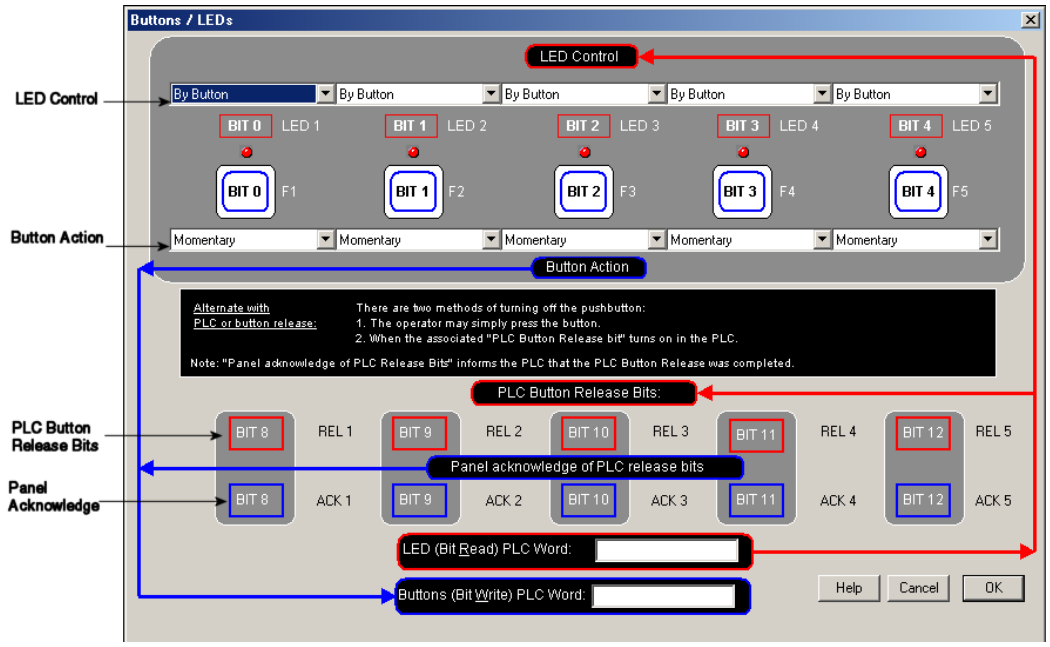
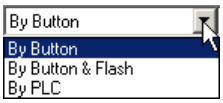


Figure 5–13. Buttons/LEDs screen



14. First select the **LED Control** for Button F1 (Figure 5–14). You may choose to have the LED controlled **By Button**, **By Button & Flash**, or **By PLC.** Make selections for Bit 0 through Bit 4. The LED function depends on the type of **Button Action** selected.

Figure 5–14. LED Control pull-down menu



- **By Button** means that the LED illuminates when the button is pressed.
- **By Button & Flash** means that the LED illuminates and flashes when the button is pressed.
- **By PLC** means that the LED illuminates when triggered by the controller.

15. Select the **Button Action** for each button Bit 0 through Bit 4 (Figure 5–15). You may choose from **Momentary**, **Alternate**, or **Panel Set and PLC Release**.

Figure 5–15. Button Action pull-down menu

- **Momentary** means that the Button is ON only while the button is being pressed.
- **Alternate** means that the Button it turned ON when the button is pressed and only turns OFF when the button is pressed again.

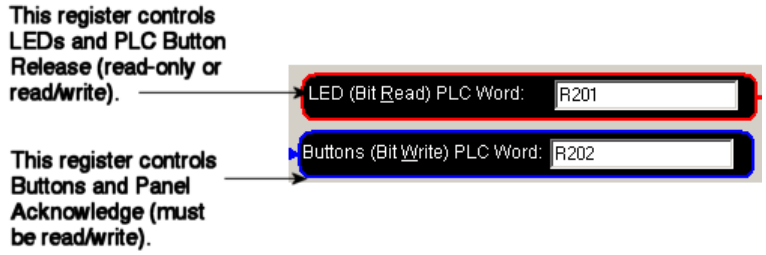
- **Panel Set and PLC Release** means that the Button is turned ON when the button is pressed and turns OFF when pressed again or when turned off by the controller.

  – **PLC Button Release Bits** use Bits 8 through 12 (Decimal). If the button is ON, the controller can release the button by setting the corresponding release bit.

  – **Panel Acknowledge of PLC Release Bits** use Bits 8 through 12 (Decimal). The panel turns ON these bits to acknowledge the PLC Release Bits.

16. Enter a **LED (Bit Read) PLC Word** and a **Buttons (Bit Write) PLC Word** address (Figure 5–16).

Figure 5–16. LED and PLC Word Addresses



17. Click on **OK** to save your Button/LED control selections.

18. Now you are ready to configure the Annunciator Lamps. Click on the **Annunciator** Button (Figure 5–17). The Annunciator Setup screen (Figure 5–18) will appear.

Figure 5–17. Annunciator Button

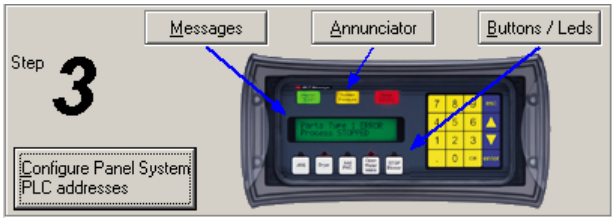
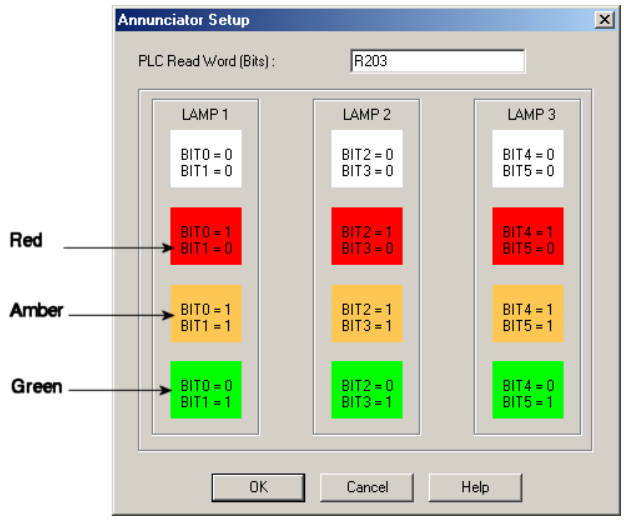


Figure 5–18. Annunciator Setup screen



19. Enter a controller address in the **PLC Read Word (Bits)** field. When you configure the controller's Quickstep program, use the bit assignments as shown in Figure 5–18 to control the three annunciator lamps. (White represents OFF.)

20. Click on the **OK** button to save the register address and exit the screen.

21. Now you are ready to configure **Local** and **PLC Messages**. Click on the **Messages** button (Figure 5–19). The Message Edit screen (Figure 5–20) will appear.

Figure 5–19. Messages Button

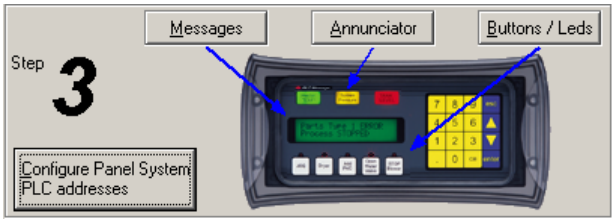
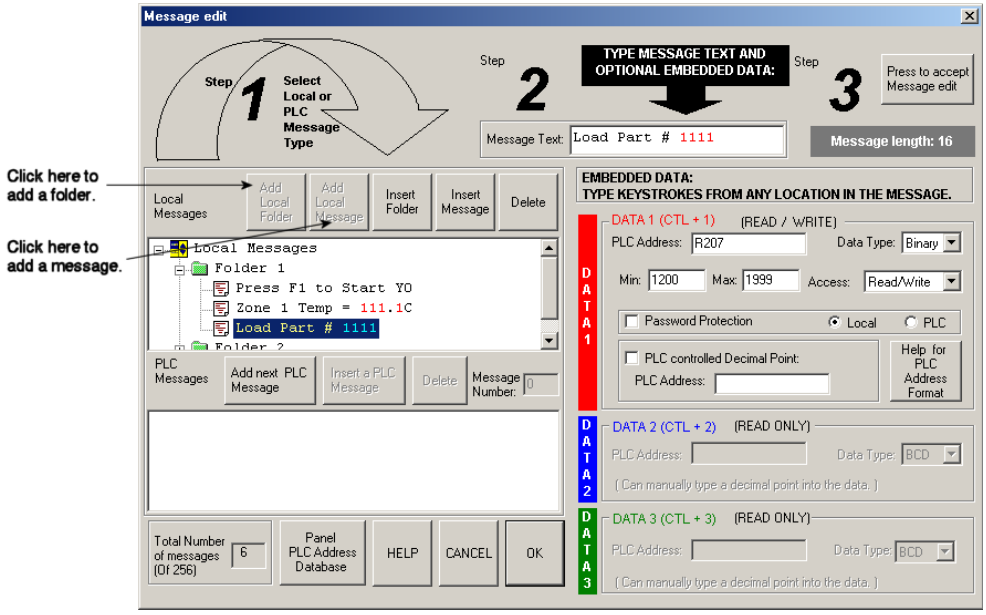


Figure 5–20. Message Edit screen



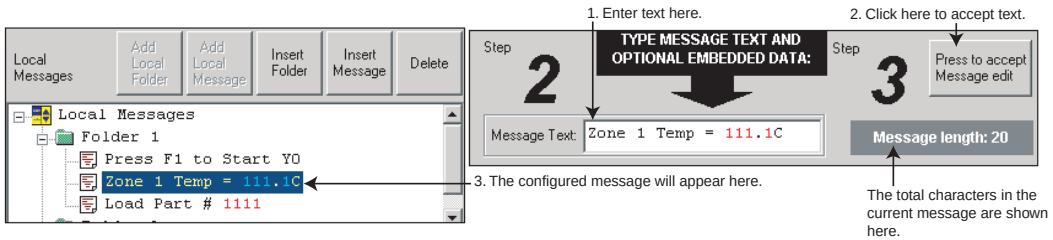
22. For **Step 1**, choose to configure a **Local** or **PLC Message**. Local Messages are messages stored in the panel in a menu hierarchy and provide information and instructions to the operator. PLC Messages are triggered by a value in a controller register. The PLC Message LED will illuminate to tell the operator that the controller has triggered a message. The buttons will not respond for 3 seconds after the PLC Message has been triggered to ensure that the operator has a chance to read the message. See step 23 to program a **PLC Message**. To program a **Local Message**, perform the following steps.

    a. Next to **Local Messages**, click on the **Add Local Folder** button or the **Add Local Message** Button (Figure 5–20).

    b. Under **Step 2**, type in up to 20 characters in the **Message Text** field.

    c. **Step 3**, click on the **Press to Accept Message Edit** button. The message text you have typed in will appear in the Local Message field (Figure 5–21).

Figure 5–21. Entering a local message

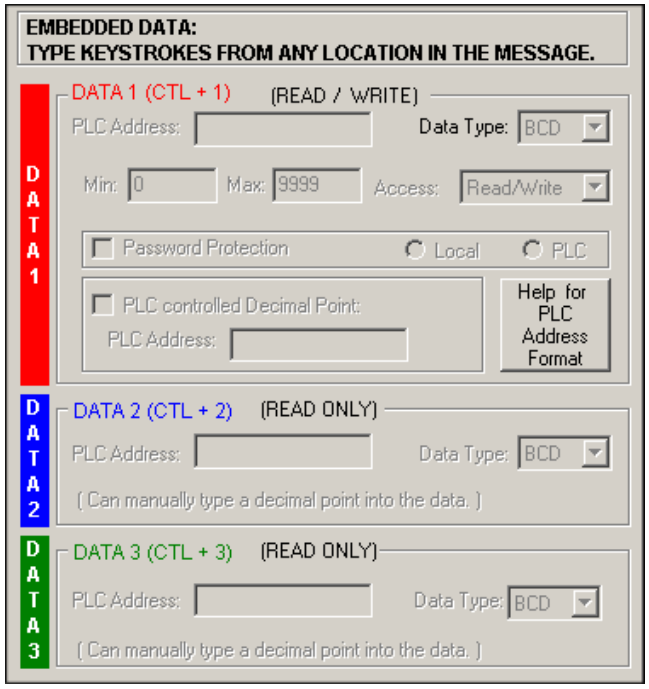


Note

Folders can have a maximum of 19 characters.

d. If you want to embed data from a controller register in a Local Message, place the cursor in the message where you want the value to appear and press F5 or (CTRL+1) for Data 1, F6 or (CTRL+2) for Data 2, or F7 or (CTRL+3) for Data 3. Each press of the function key will enter one data value digit. You may enter up to 5 characters (depending on the data type). In the message, the data will be represented by red 1's for DATA 1, blue 2's for DATA 2, and green 3's for DATA 3 (Figure 5–22). The actual value will display in the message on your Model 4010 Panel.

Figure 5–22. Representation of data

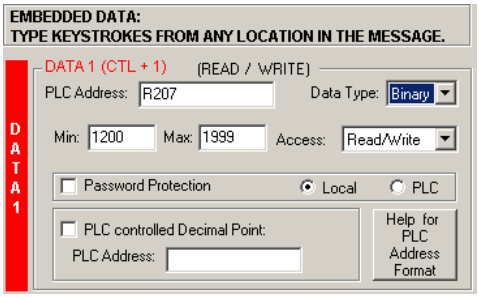


Note

Data 1 is READ/WRITE and allows the option for the operator to change data values in the controller register using the Control Keys on the Model 4010 Panel. Data 2 and Data 3 are READ ONLY and will display a value from the controller register. You cannot change the DATA 2 or DATA 3 value from the panel.

e. Now you will need to configure the embedded data (Figure 5–23). If you have embedded data, you will notice that the DATA 1, DATA 2, or DATA 3 field is now available.

Figure 5–23. Embedded Data



f. You must first enter the **PLC Address** where the value resides. Select the Binary **Data Type** (format) for your CTC controller.

g. Select the **Access** for the controller register. Will you want the message to display a register value (READ only)? Do you want the message to display a register value and allow the operator to change the value with the numeric keypad (READ/WRITE)?

h. If you select **READ/WRITE** Access, you can enter a **Minimum** and **Maximum** Range that the operator can write to the controller.

i. Select whether or not to enable **Password Protection** for this data value. Select **Local** or **PLC**. Passwords are entered by the operator with the numeric keypad. The operator will not be able to change the data value if the correct password is not entered.

j. You may configure **DATA 1** to display a decimal point that is controlled by the controller. The location of the decimal point must be configured in your Quickstep program. Place a check mark in the box next to **PLC Controlled Decimal Point** and then enter the **PLC Address** where the control resides. (This is DATA 1 only — you cannot configure PLC Control for a DATA 2 or DATA 3 embedded value.) Keypad entry, not arrow adjust, must be used when using decimals.

Figure 5–24. Local Message 1111

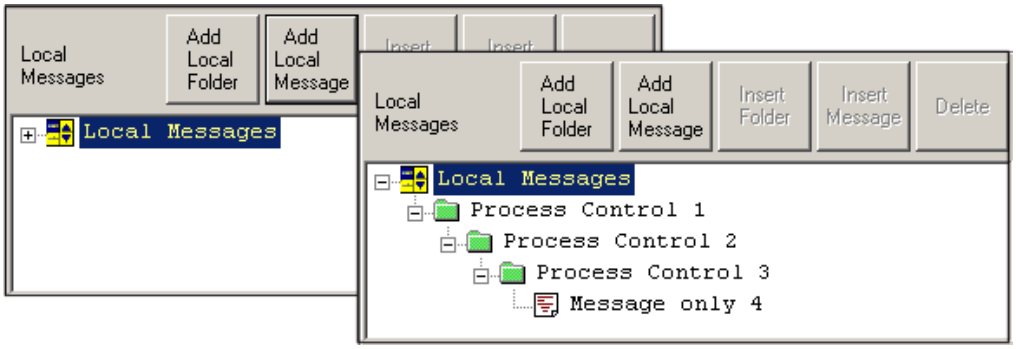
k. If PLC control for the decimal point is enabled, the program will place a decimal point at the end of the characters representing the data value in the Message Text field — **1111.** in Figure 5–24. Then placing a value of 1–4 (BCD) or 1–5 (Decimal) in the controller register will place the decimal in the appropriate location.

l. You may manually enter a decimal point in DATA 1, DATA 2 or DATA 3, by placing your cursor in the message where you want it to appear in the value, and then insert the decimal point as shown in Figure 5–25.

Figure 5–25. Local Message 222.22

m. Create Folders to group messages relating to the same topic. The first message or folder you program will appear on the first line of the Model 4010 Panel display when it is in Run Mode. (Second programmed message displays on second line, etc., up to four lines, depending on the type of panel you are using.) The Local Message and Folder menu tree can have up to 3 levels as shown in Figure 5–26.

Figure 5–26. Local Message and Folder Menu tree



n. To add a folder, click on the **Add Local Folder** button.

o. To insert a Message or Folder between already configured messages, you must first have a message or folder highlighted. Click on **Insert Folder** or **Insert Message**. The inserted Message or Folder will be placed above the highlighted Message or Folder.

p. To delete a Message or Folder, click on it to highlight it and then click on the **Delete** button.

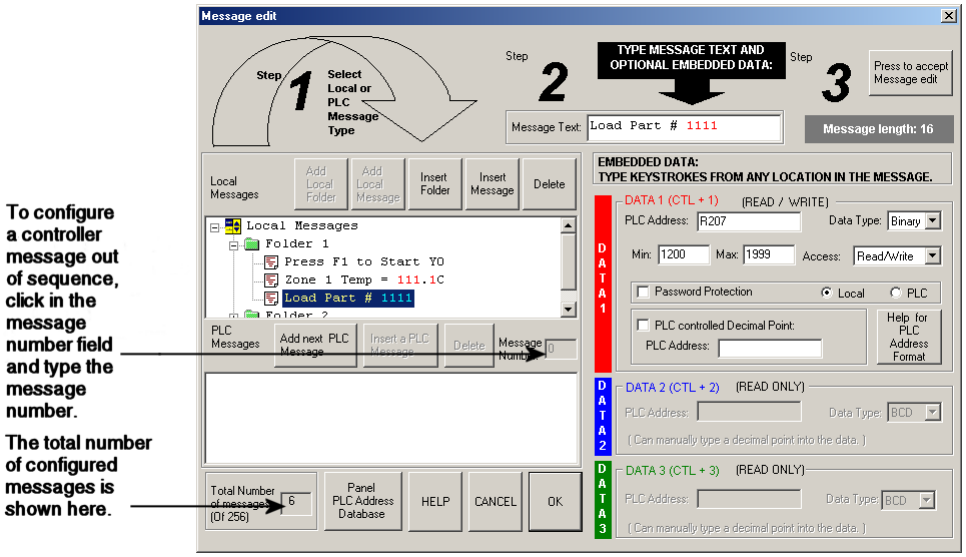
q. To save your messages, click on the **OK** button at the bottom of the **Message Edit** window. To exit without saving, click on the **Cancel** button.

23. **PLC Messages** are triggered by a value in a controller register. The PLC Message LED (Figure 5–27) will illuminate to show the operator that the controller has triggered the message. To program a PLC Message, click on the **Add Next PLC Message** button.

a. Type in text up to 20 characters in the **Message Text** field. The 20 character maximum includes **Data Items**, also, if you choose to enter them. You will see the **Message Length** value change as you enter characters to let you know how many you have used. The current **Message Number** and **Total Number of Messages (of 256)** programmed are also displayed for your information (Figure 5–28).

Figure 5–27. PLC Message LED

Figure 5–28. Configuring Messages

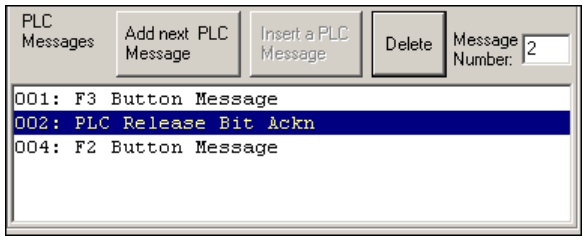


b. If you want to embed data values from a controller register in the message, press **F5 or (Ctrl+1)** for **DATA 1, F6 or (Ctrl+2)** for **DATA 2,** or **F7 or (Ctrl+3)** for **DATA 3**. Each press of the function key will enter 1 data value character. You may enter up to 5 characters depending on the data type you have selected.

c. You will configure Data 1, Data 2, and Data 3 values the same way as described in a Local Message.

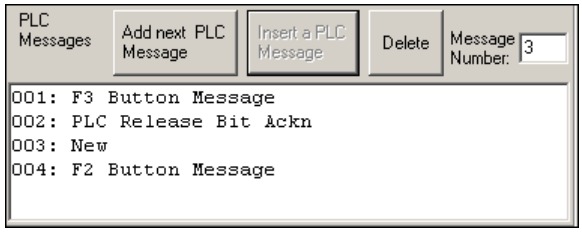
d. If you have configured messages out of sequence and you want to insert a message between messages already programmed, click on **Insert a PLC Message**. Be aware that blank messages count in the Total Messages allowed. For example, you have programmed PLC messages numbered 001, 002 and 004, skipping PLC Message number 003 (Figure 5–29).

Figure 5–29. Out of sequence messages



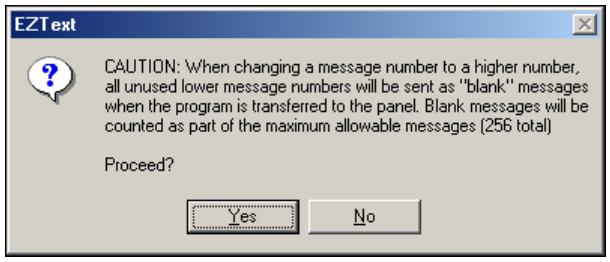
e. Click on **004: PLC Message 4** in the message field to highlight it, and then click on the **Insert a PLC Message** button. PLC Message Number 003 will appear above PLC Message Number 004 and you may enter the new message (Figure 5–30).

Figure 5–30. Inserting a PLC Message



f. Be aware that when programming messages out of sequence, that the “blank” messages are counted in the Total Messages allowed. The “CAUTION” message in Figure 5–31 will appear when you enter a message number higher than the next number in sequence.

Figure 5–31. High Message Numbers



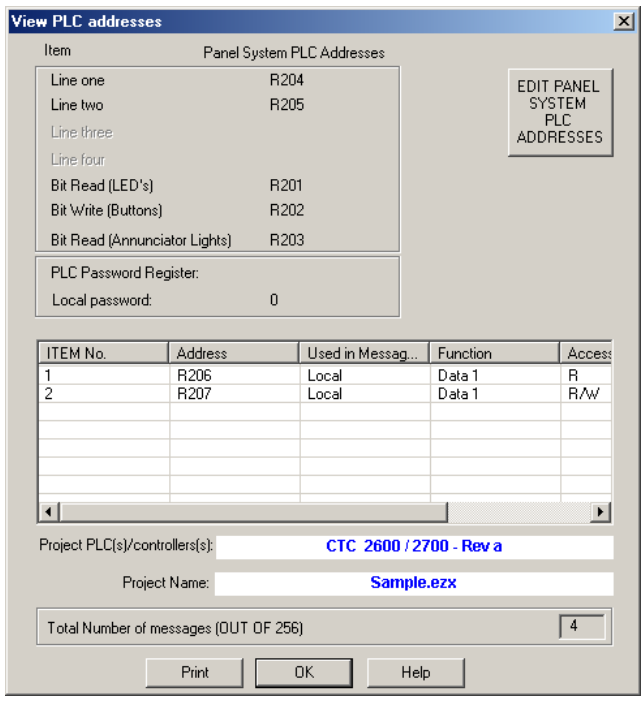
g. If you have skipped more than one message number (e.g., you have programmed messages 1 through 4, skipped messages 5, and 6, and then programmed 7), and highlight message 7 and click on Insert a PLC message, the dialog box in Figure 5–32 will appear asking you to enter the number (e.g., 5 or 6) of the message you want to insert.

Figure 5–32. Inserting out of sequence messages

h. To delete a message, click on it to highlight and then click on the **Delete** button.

24. To view the controller addresses you have programmed, click on the **Panel PLC Address Database** button. The window in Figure 5–33 will open. Shown here will be the addresses mapped to the panel display lines (Line one, Line two, etc.), the **Bit Write (Buttons), Bit Read (LEDs), Bit Read (Annunciator Lights), PLC Password Register or Local Password**, and the PLC Message Data Items. (Items grayed out are not available for the Model 4010). The controller you have selected and the Project Name are also displayed, along with the Total Number of messages (OUT OF 256) programmed. This is for information only—to edit the addresses, click on the **EDIT PANEL SYSTEM PLC ADDRESSES** button.

Figure 5–33. Viewing PLC addresses



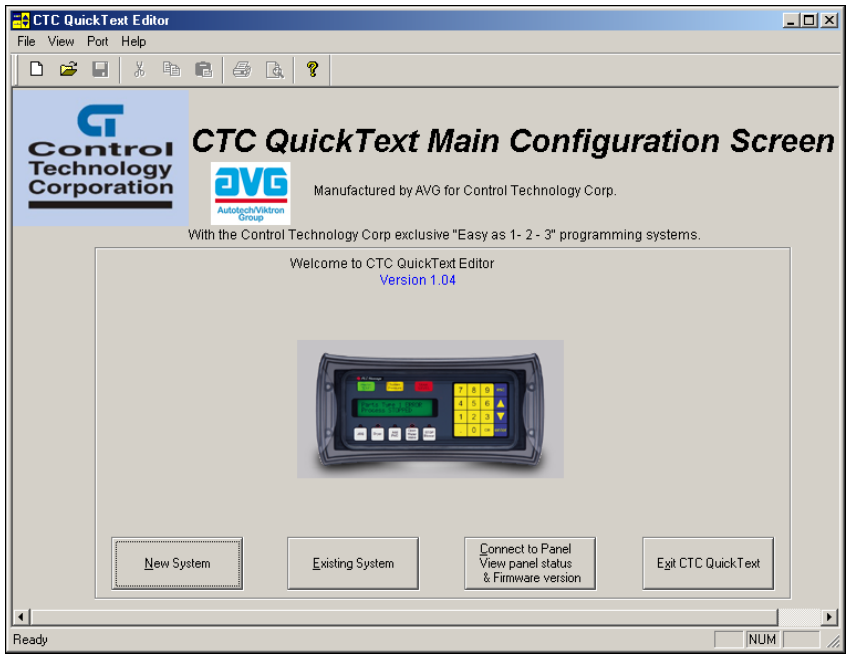
25. Click on the **Print** button to print the database or the **OK** button to exit.

Configure Existing System

Configure an existing system as follows:

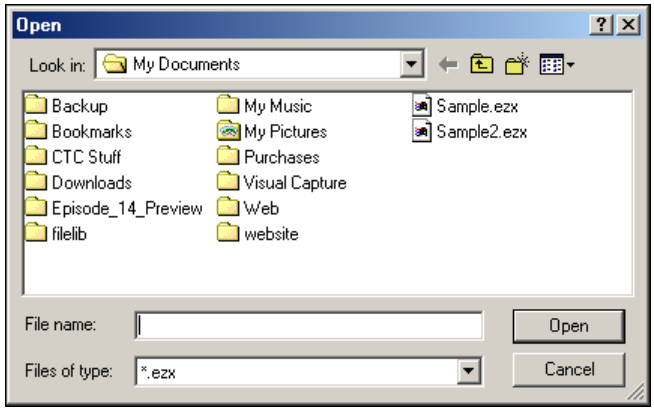
1. Click on the QuickText Editor Icon to open the QuickText Programming Software; the main programming screen will appear (Figure 5–34).

Figure 5–34. Main Programming screen



2. Click on the **Existing System** button to edit an QuickText Panel program. The Open dialog box (Figure 5–35) will appear.

Figure 5–35. Opening an existing project



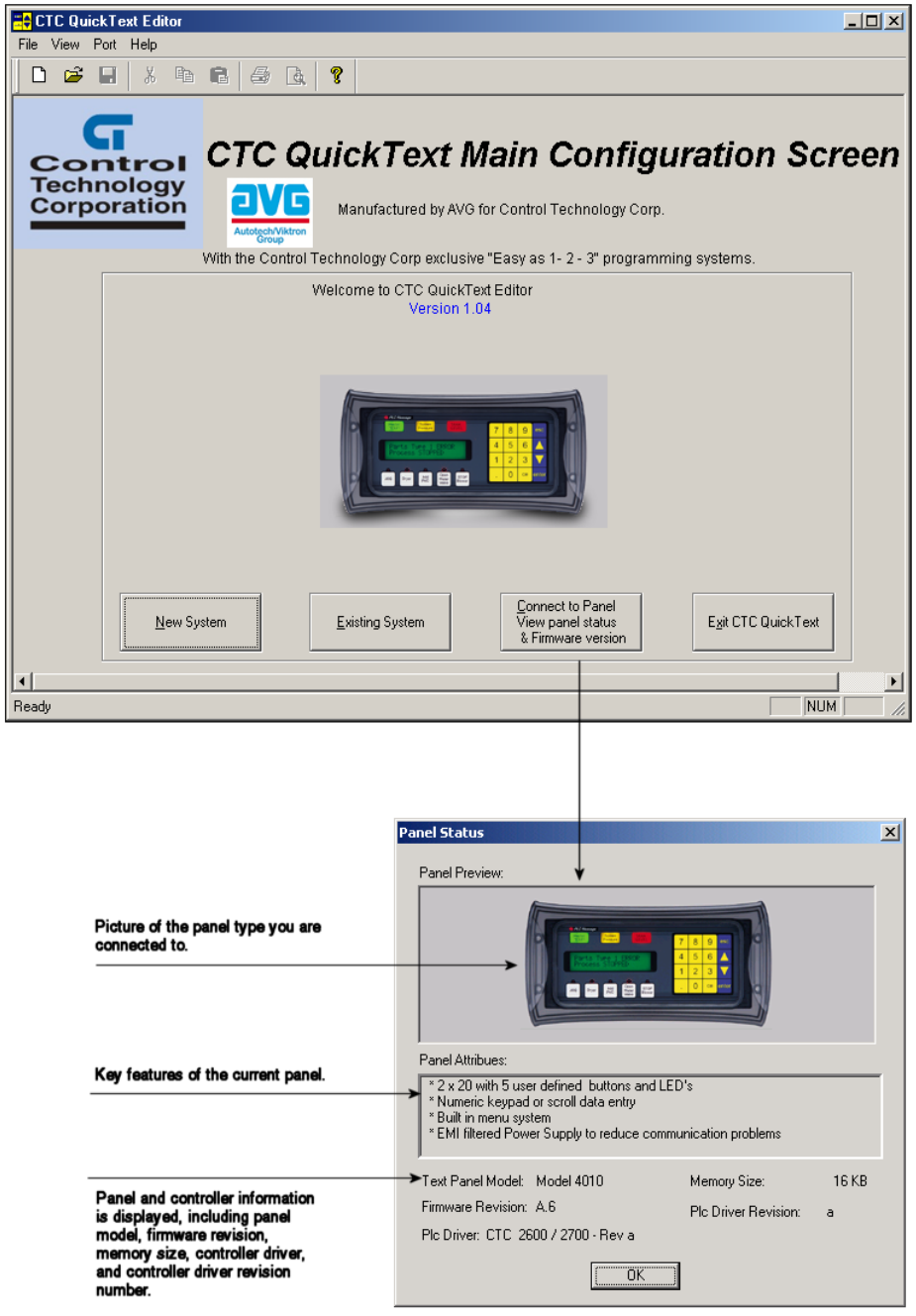
3. Select the project you want to edit from the default program directory or navigate to where the project resides. Click on it to highlight, and then click on the **Open** button and the project you have selected will open to the Main Configuration Screen.

4. Begin editing your project.

Connect to Panel, View Panel Status and Firmware Version

Click on the **Connect to Panel, View Panel Status & Firmware Version** button to view the panel status. The **Panel Status** window will open. An example is shown below (Figure 5–36).

Figure 5–36. Panel and Controller information



Upgrade Firmware

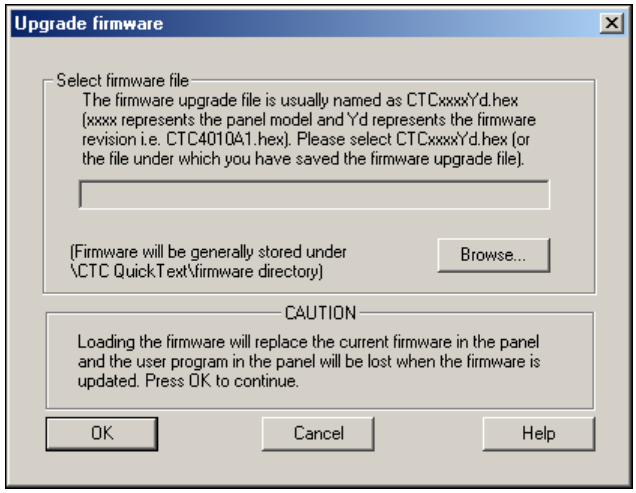
There may be occasional upgrades to the Model 4010 Panel internal software, also referred to as the Exec or Firmware. Check Control Technology's web site at www.ctc-control.com periodically for information about software and firmware upgrades.

Upgrade firmware as follows:

1. Place the panel in **Setup Mode** by pressing the UP/DOWN arrows on the 4010 Panel simultaneously.

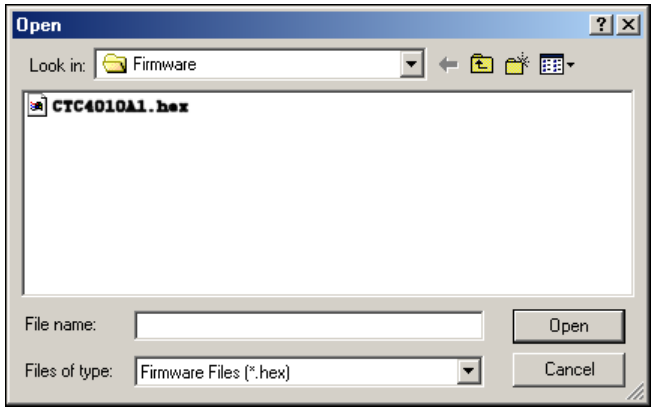
2. Under the **Panel Menu**, click on **Upgrade Firmware.** The Upgrade Firmware screen will appear (Figure 5–37).

Figure 5–37. Upgrade Firmware screen



3. Click on the **Browse** button. The window in Figure 5–38 will open to the default folder **Firmware** (located in the QuickText Program directory). If the firmware file has been downloaded from CTC's web site at www.ctc-control.com and moved to another location, navigate to the new firmware file (.hex file).

Figure 5–38. Opening a firmware file

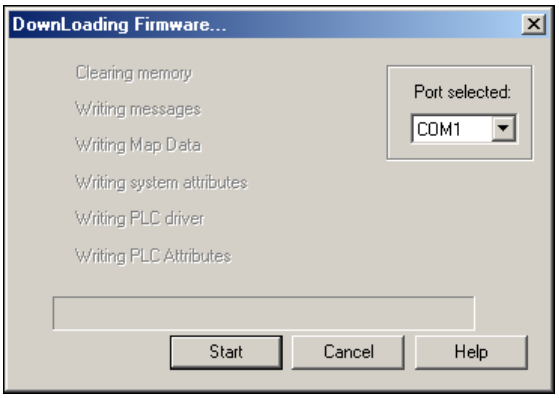


Note

The firmware file is called **CTC4010xy.hex**. The "x" represents the major revision of the firmware (e.g., A). "y" represents the minor revision (e.g., 1).

4. Select the appropriate **COM** port under **Port Selected** (if necessary) and click on the **Start** button to begin downloading the firmware to the Model 4010 Panel (Figure 5–39). A status bar will let you know when the upgrade is complete. Click on **Close** when complete.

Figure 5–39. Downloading firmware



5. When you initialize the **Upgrade Firmware** process, the Model 4010 Panel Message display will read **SELF TESTING**. When the download begins, the display will read **LOADING EXEC**. When the download is complete, the panel will enter Run Mode.

6. If the message **INCOMPATIBLE EXEC** is displayed on the panel while the Upgrade is in process, it means that the wrong firmware file has been sent to the panel. You will also receive an error message from the QuickText Programming Software. If this happens, follow the procedure outlined on the top of the next page.

Fixing a downloading error

1. Click on the **OK** button on the Error Message.
2. Click on the **Cancel** button on the **Downloading Firmware** window.
3. Click on **Upgrade Firmware** to start the process over, being careful to select the correct firmware.hex file.

Notes

1. When you upgrade firmware and press the Start button, the panel will display **SELF TESTING** while the upgrade is initializing.
2. When the download begins, the panel will display **LOADING EXEC**.
3. The message **INCOMPATIBLE EXEC** indicates that you have sent the wrong firmware file. Exit all windows, start the Upgrade Firmware process again, and make sure you select the correct file.

Maintenance and Troubleshooting

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Maintenance

Fuse Reset

The Model 4010 Panel features an AUTO-RESET fuse (0.65 Amp polyfuse). It is reset by removing power for 5 minutes and then reapplying power to the unit.

Precautions

To ensure the longevity and effectiveness of the 4010 Panel, please take note of the following precautions:

- Do not press sharp objects against the pushbuttons or screen overlay.
- Do not strike the panel with hard objects.
- Do not press the pushbuttons or screen overlay with excessive force.
- Once the panel is mounted and has power applied, do not place any objects over the ventilation slots. This will result in heat buildup and may damage the unit.

Screen Overlay / Chemical Compatibility

The screen overlay has a polycarbonate surface. The following list is provided to make you aware of the general compatibility between chemicals that may be present in your work environment and the polyester surface of the overlay. Use the chart to determine those chemicals that are safe to use around your 4010 Panel and those that may harm the overlay. The list rates these chemicals as **E—Excellent**, **G—Good**, **F—Fair**, and **N—Not Recommended.** Because the ratings are for conditions at 134 °F (57°C), consider all factors when evaluating your application.

CHEMICAL	RATING	CHEMICAL	RATING
Acetaldehyde	N	Ammonium Hydroxide @ 5%	N
Acetamide	N	Ammonium Hydroxide @ 30%	N
Acetic Acid @ 5%	G	Ammonium Oxalate	E
Acetic Acid @ 50%	G	Ammonium Salts	G
Acetone	N	n-Amyl Acetate	N
Acetonitrile	N	Amyl Chloride	N
Acrylonitrile	N	Aniline	N
Adipic Acid	E	Benzaldehyde	N
Alanine	N	Benzene	N
Allyl Alcohol	F	Benzoic Acid	G
Alum. Hydroxide	N	Benzyl Acetate	G
Aluminum Salts	G	Benzyl Alcohol	G
Amino Acids	E	Bromine	F
Ammonia	N	Bromobenzene	N
Ammonium Acetate	E	Bromoform	N
Ammonium Gloclate	F	Butadiene	N

CHEMICAL	RATING	CHEMICAL	RATING
n-Butyl Acetate	N	Ethylene Oxide	N
n-Butyl Alcohol	F	Fluorides	E
sec-Butyl Alcohol	F	Fluorine	F
tert-Butyl Alcohol	F	Formaldehyde	
Butyric Acid	N	Formaldehyde @ 40%	G
Calcium Hydroxide	N	Formic Acid @ 3%	G
Calcium Hypochlorite	N	Formic Acid @ 50%	G
Carbazole	N	Formic Acid @ 99%	F
Carbon Disulfide	N	Fuel Oil	G
Carbon Tetrachloride	N	Gasoline	F
Cedarwood Oil	F	Glacial Acetic Acid	N
Cellosolve Acetate	N	Glycerin	E
Chlorine @ 10% in air	G	n-Heptane	G
Chlorine @ 10% moist	F	Hexane	N
Chloroacetic Acid	N	Hydrochloric Acid @ 5%	E
p-Chloroacetophenone	N	Hydrochloric Acid @ 20%	F
Chloroform	N	Hydrochloric Acid @ 35%	N
Chromic Acid @ 10%	N	Hydrofluoric Acid @ 5%	F
Chromic Acid @ 50%	N	Hydrofluoric Acid @ 48%	N
Cinnamon Oil	F	Hydrogen Peroxide @ 5%	E
Citric Acid @ 10%	G	Hydrogen Peroxide @ 30%	E
Cresol	N	Hydrogen Peroxide @ 90%	E
Cyclohexane	G	Isobutyl Alcohol	G
Decalin	N	Isopropyl Acetate	N
o-Dichlorobenzene	N	Isopropyl Alcohol	E
p-Dichlorobenzene	N	Isopropyl Benzene	N
Diethyl Benzene	N	Kerosene	E
Diethyl ether	N	Lactic Acid @ 3%	G
Diethyl Ketone	N	Lactic Acid @ 85%	G
Diethyl Malonate	N	Methoxyethyl Oleate	N
Diethylene Glycol	F	Methyl Alcohol	F
Diethylene Glycol Ethyl Ether	N	Methyl Ethyl Ketone	N
Dimethylformamide	N	Methyl Isobutyl Ketone	N
Dimethyl Sulfoxide	N	Methyl Propyl Ketone	N
1, 4-Dioxane	F	Methylene Chloride	N
Dipropylene Glycol	F	Mineral Oil	G
Ether	N	Nitric Acid @ 10%	G
Ethyl Acetate	N	Nitric Acid @ 50%	F
Ethyl Alcohol	G	Nitric Acid @ 70%	N
Ethyl Alcohol @ 40%	G	Nitrobenzene	N
Ethyl Benzene	N	n-Octane	F
Ethyl Benzoate	N	Orange Oil	F
Ethyl Butyrate	N	Ozone	G
Ethyl Chloride Liquid	N	Perchloric Acid	N
Ethyl Cyanoacetate	N	Perchloroethylene	N
Ethyl Lactate	N	Phenol Crystals	N
Ethylene Chloride	N	Phosphoric Acid @ 5%	E
Ethylene Glycol	F	Phosphoric Acid @ 85%	G
Ethylene Glycol Methyl Ether	N	Pine Oil	E

CHEMICAL	RATING	CHEMICAL	RATING
Potassium Hydroxide @ 1%	N	Sulfuric Acid @ 60%	F
Potassium Hydroxide conc.	N	Sulfuric Acid @ 98%	N
Propane Gas	N	Sulfur Dioxide Liquid	G
Propylene Glycol	F	Sulfur Dioxide dry	G
Propylene Oxide	F	Sulfur Salts	N
Resorcinol sat.	F	Tartaric Acid	G
Resorcinol @ 5%	F	Tetrahydrofuran	N
Salicylaldehyde	F	Thionyl Chloride	N
Salicylic Acid Powder	G	Toluene	N
Salicylic Acid sat.	G	Tributyl Citrate	N
Salt Solutions Metallic	E	Trichloroethane	N
Silver Acetate	G	Trichloroethylene	N
Silver Nitrate	E	Triethylene Glycol	G
Sodium Acetate sat.	G	Tripropylene Glycol	G
Sodium Hydroxide @ 1%	N	Turpentine	N
Sodium Hydroxide @ 50%+	N	Undecyl Alcohol	F
Sodium Hypochlorite @ 15%	F	Urea	N
Stearic Acid Crystals	G	Vinylidene Chloride	N
Sulfuric Acid @ 6%	E	Xylene	N
Sulfuric Acid @ 20%	G	Zinc Stearate	E

Screen Overlay Cleaning

The Model 4010 Panel screen should be cleaned as needed with warm, soapy water.

Gasket Replacement

The gasket may need to be replaced if it becomes damaged or worn. To replace the gasket perform the following steps:

1. The gasket is removed and replaced from the back of the unit. Ensure that all pieces of old gasket have been removed from the panel enclosure surface where the gasket is affixed.

2. Remove the new replacement gasket from its plastic bag.

3. Remove the temporary protective covering from the adhesive side of the gasket.

4. Position gasket (adhesive side down) over the panel gasket surface and press firmly.

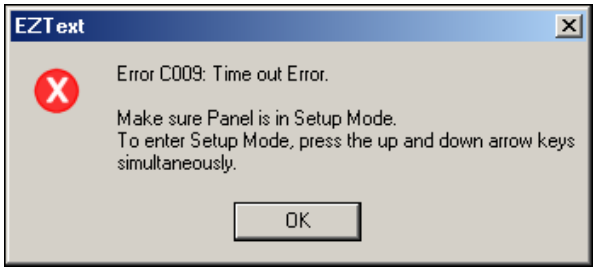
Troubleshooting

In this section we will explain how to isolate potential problems. If you cannot isolate and remedy the problem using the procedures we have outlined below, call Technical Support. For a list of Model 4010 Panel, QuickText Programming Software, and CTC Controller Driver Error Messages, see Appendix C.

Panel Configuration Problems

QuickText Panel Programming Software is used to create panel applications and to download/upload panel programs. If you are online with the 4010 Panel and communication fails, the following error message (Figure 6–1) is displayed:

Figure 6–1. Time-Out error



If you receive this QuickText Panel Programming Software error message, check the following:

1. On the rear panel of the unit, observe Serial Port Communication TXD/RXD LEDs while attempting to Upload/Download a program. Both LEDs should be slowly and alternately flashing to indicate that the programming PC and the panel are connected. If the TXD (transmitter) LED is the only one flashing, or if the TXD/RXD LEDs are NOT alternating between flashes, check to ensure that the 4010 Panel is set to the Setup (programming) Mode. (To enter the Setup Mode, press and hold the UP Arrow Button while simultaneously pressing the DOWN Arrow button.)

2. Check to ensure that the programming cable (PN 4071-CBL) is properly connected at both ends.

3. Check that the correct communications port is selected with the QuickText Programming Software (i.e., COM1, COM2)

4. Check the 24 VDC power source and its connections.

5. After completing steps 1 through 4, above, repeat the procedure to Upload/Download a program.

Controller Errors

If you experience communication problems between the Model 4010 Panel and your controller, you will receive an error message. Look in Appendix C of this manual, or the QuickText Panel Programming Software Help for error messages for your type PLC. The CTC Help topic lists the error messages and provides an explanation for the CTC driver. To access the Help topics, perform the following steps.

1. Run QuickText Panel Programming Software.
2. From the Main Menu, click on **Help > Help Topics**.
3. Under the **Contents** tab, find the controller you are using (next to a closed book icon) and click on it to view help topics.
4. Click on Driver Errors Topic.

Pushbuttons, LEDs, and Messages

You may also notice that the **Pushbuttons**, **Pushbutton LEDs**, and/or **Messages** are not working. Check the following:

1. Observe the TXD and RXD LEDs on the rear of the panel. If both LEDs are not steadily flashing or illuminated (depending upon the baud rate) check to ensure the proper communications cable is connected securely at both ends.
2. Check the controller communication information for the controller type, protocol, baud rate, parity, stop bits, and address number.
3. If you have configured your own cable, verify the cable pinout using the Controller Wiring diagrams provided in Appendix B.
4. Check the 24 VDC power source.
5. If connected to a multiplexer, connect the panel directly to the controller port.
6. Verify that the Model 4010 Panel registers are mapped correctly. Does the 4010 Panel register exist in the controller? Is the register read-only? Is the register write-only?

Frequently Asked Questions (FAQs)

1. **Can I connect multiple panels to a single controller?**
   Yes, you can connect one panel per serial port on the CTC controller.

2. **What is the maximum number of messages I can have in a project?**
   The maximum amount of PLC and Local messages is 256.

3. **What are Local Messages?**
   A Local Message is a text message that is used to provide instructions or information to the machine operator using a hierarchical file structure. The operator can scroll through these messages using the arrow keys to find information pertaining to a particular part of a process.

4. **What are PLC Messages?**
   A PLC Message is a text message that can be triggered by the controller to provide the operator with important instructions, information, or warnings. PLC Messages will be displayed for 3 seconds before they can be cleared in order to make sure the operator has a chance to read the message. The operator can also view the last PLC Message displayed by pressing the ESC key.

5. **How many characters can I have per message?**
   The maximum number of characters per message is 20. This is true for all messages except folder names. They are limited to 19 because of the plus "+" or minus "-" sign displayed in front of the folder name.

6. **What is the maximum number of Embedded Data values I can have in a project?**
   The maximum number of Embedded Data values in a project is 300.

7. **How do I get my panel into Setup Mode?**
   To get the panel into Setup Mode press and hold the up arrow key while simultaneously pressing the down arrow key. To exit Setup Mode, press the **ESC** key.

8. **How do I get my panel to display PLC Messages?**
   To display a PLC message, using your Quickstep program, place the number of the PLC Message you wish to display into one of the PLC Message Line Addresses. When the message number is placed in this register the panel will display the message corresponding with that number.

   Example: I want to display PLC Message One on Line One of my panel display. Using the Quickstep program, I write a value of 1 to register 201, which is set as PLC Message Line Address One. The panel displays PLC Message One on Line One of my panel display. The message will remain on the display until the **ESC** key is pressed.

9. **Why won't the panel display the same PLC Message twice in a row on the same message line?**
   This is because the message line must be reset by either setting the Line Register to zero, or by changing the value in the Line Register to some unused PLC Message number.

10. **Why do PLC Messages not clear when the ESC key is pressed?**
    The panel locks out all key presses for 3 seconds after a PLC Message is displayed in order to ensure the operator has a chance to read the message. Pressing **ESC** 3 seconds after the PLC Message is displayed will display the Local Message screen.

11. **Does the Model 4010 panel support discrete addresses?**
    No. All addressing for the 4010 Panels must be in Word format.

12. **How do I insert a PLC Message?**
    In order to insert a PLC Message, there must be a gap in the message numbers. For example, I have PLC Message #1 and PLC Message #3 programmed. If I click on PLC Message #3 and click the INSERT A PLC MESSAGE button, PLC Message #2 will be inserted between PLC Messages 1 and 3.

13. **Can I renumber PLC Messages?**
    Yes, you can renumber PLC Messages; however, when changing a message number to a higher message number, all unused lower message numbers will be sent as "blank" messages when the project is transferred to the panel. Blank messages will count towards the maximum number of allowed messages in a project (256).

14. **Can you copy and paste messages?**
    Yes, you can copy and paste messages. Currently, however, you can copy or paste only one message at a time. (This may be changed to multiple message and folders in the future).

15. **It is hard to read the display on my panel. It's too bright. Is there a way to adjust the contrast?**
    Yes, to adjust the contrast on the display, simply place the panel into Setup Mode. While in Setup Mode you can use the up and down arrow keys to adjust the contrast.

16. **What protocol do I use for my MultiPro or 5100 series controller?**
    All CTC controllers can use the CTC 2600/2700 protocol. This includes the MultiPro and 5100 series controllers.

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Application Worksheets

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Worksheets

This appendix contains worksheets for buttons and LEDs, annunciators, PLC messages, and local messages.

Model 4010 Panel Application Worksheet

PROJECT NAME: _____

_____

CONTROLLER CONFIGURATION:
Model: _____
Protocol: _____
Address: _____
Timeout: _____
PANEL TYPE: _____

Baud Rate: _____
Parity: _____
Data Bits: _____
Stop Bits: _____
Checksum: _____

BUTTONS/LEDS

BUTTON ACTION/PANEL ACKNOWLEDGE (BIT WRITE) PLC WORD _____

Button Action:

(PLC Address)	Mom.	Alt.	Pnl Set/ PLC Rel *
F1 _____	❑	❑	❑
F2 _____	❑	❑	❑
F3 _____	❑	❑	❑
F4 _____	❑	❑	❑
F5 _____	❑	❑	❑

*** Panel Acknowledge of PLC Release:**

(PLC Address)
ACK F1 _____
ACK F2 _____
ACK F3 _____
ACK F4 _____
ACK F5 _____

LED CONTROL/PLC BUTTON RELEASE (BIT READ) PLC WORD _____

LED Control:

(PLC Address)	By Button	By Button & Flash	PLC **
LED1 _____	❑	❑	❑
LED2 _____	❑	❑	❑
LED3 _____	❑	❑	❑
LED4 _____	❑	❑	❑
LED5 _____	❑	❑	❑

*** PLC Button Release:**

(PLC Address)
REL F1 _____
REL F2 _____
REL F3 _____
REL F4 _____
REL F5 _____

** Panel Acknowledge and PLC Button Release are only used when using the Panel Set & PLC Release Button Action.*
*** LED Control by PLC is the only LED function that uses a Controller Address.*

Model 4010 Panel Application Worksheet

ANNUNCIATOR:

ANNUNCIATOR LAMPS (BIT READ) PLC WORD _____

(PLC Addresses)

LAMP 1 (BIT 0) _____ **(BIT 1)** _____
LAMP 2 (BIT 2) _____ **(BIT 3)** _____
LAMP 3 (BIT 4) _____ **(BIT 5)** _____

Color	LAMP 1		LAMP 2		LAMP 3	
	BIT 0	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5
OFF	OFF	OFF	OFF	OFF	OFF	OFF
Red	ON	OFF	ON	OFF	ON	OFF
Amber	ON	ON	ON	ON	ON	ON
Green	OFF	ON	OFF	ON	OFF	ON

PLC Messages (PLC Words)

Line 1 _____ **Line 2** _____

Model 4010 Panel Application Worksheet

LOCAL MESSAGES:

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ______________ Min _____ Max _____
DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ______________ Min _____ Max _____
DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ______________ Min _____ Max _____
DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ______________ Min _____ Max _____
DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

Model 4010 Panel Application Worksheet

LOCAL MESSAGES:

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ____________ Min ____ Max ____

DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ____________ Min ____ Max ____

DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ____________ Min ____ Max ____

DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

❑ **Folder**
❑ **Message**

Folder = 19 characters, **Message** = 20 characters

Level:
1 2 3 4

DATA 1 ____________________ ❑ Read Only
❑ BCD ❑ Binary ❑ Read/Write
❑ PLC Decimal ____________ Min ____ Max ____

DATA 2 ________ DATA 3 ________
❑ BCD ❑ Binary ❑ BCD ❑ Binary

Model 4010 Panel Application Worksheet

PLC MESSAGES:

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ____________________ Min ______ Max ______

DATA 2 _________ DATA 3 _________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ____________________ Min ______ Max ______

DATA 2 _________ DATA 3 _________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ____________________ Min ______ Max ______

DATA 2 _________ DATA 3 _________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ____________________ Min ______ Max ______

DATA 2 _________ DATA 3 _________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Model 4010 Panel Application Worksheet

PLC MESSAGES:

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No.__________

20 characters

DATA 1 ____________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Model 4010 Panel Application Worksheet

PLC MESSAGES:

Message No._________ | | | | | | | | | | | | | | | | | | | | |

20 characters

DATA 1 ___________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No._________ | | | | | | | | | | | | | | | | | | | | |

20 characters

DATA 1 ___________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No._________ | | | | | | | | | | | | | | | | | | | | |

20 characters

DATA 1 ___________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

Message No._________ | | | | | | | | | | | | | | | | | | | | |

20 characters

DATA 1 ___________________________ ❑ Read Only

❑ BCD ❑ Binary ❑ Read/Write

❑ PLC Decimal ___________________ Min _____ Max _____

DATA 2 ________ DATA 3 ________

❑ BCD ❑ Binary ❑ BCD ❑ Binary

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Wiring Diagrams

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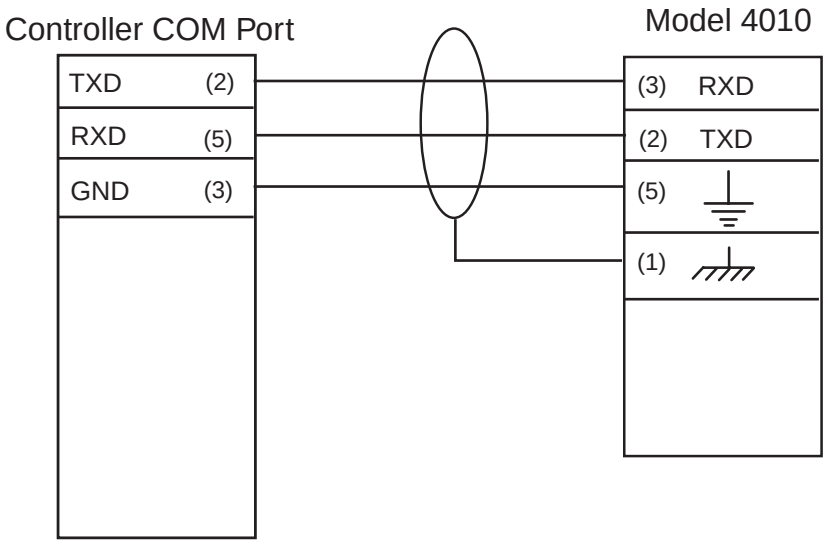
Wiring Diagrams

This section has wiring diagrams that show panel to controller and panel to PC connections.

Panel to Controller Connection Diagram

Figure B–1 shows connections between the controller's COM port and the Model 4010 display.

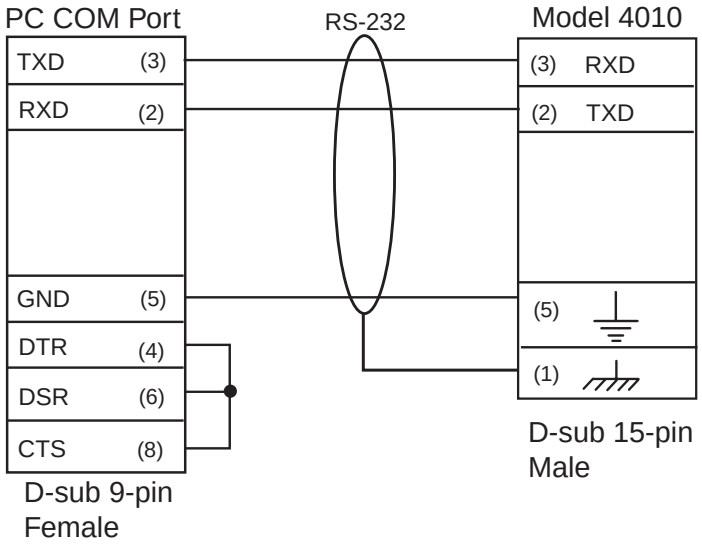
Figure B–1. Model 4010 Panel Communications Cable RS-232 (P/N 2880G and 2881)



Panel to PC Connection Diagram

Figure B–2 shows connections between the PC's COM port and the Model 4010 display.

Figure B–2. QuickText Panel Programming Cable (P/N 4071-CBL)



Communication Connector (J1, D-sub 15-pin female)

This table lists the connections for Figure B–2.

Pin #	Connection
1	Chassis GND
2	PLC TXD (RS-232)
3	PLC RXD (RS-232)
4	+5V (100
5	Logic GND
6	LE ***(DO NOT CONNECT)***
7	PLC CTS (RS-232)
8	PLC RTS (RS-232)
9	RD+ (RS-422)
10	RD– (RS-422)
11	SD+ (RS-422)
12	SD– (RS-422)
13	Termination Resistor (connect to pin 9)
14	NC
15	NC

Error Messages

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CTC Driver Error Messages

The following section lists the most common error messages for the CTC driver.

PLC Timeout

Reason: The controller does not respond to the Model 4010.

Solution: Check the communication settings on the 4010 and the CTC controller. Make sure that the communications cable is properly installed.

Invalid Register Read

Reason: An invalid register number is specified in the project file.

Solution: Check the register number in your project file and change it to the correct number.

Value Out of Range

Reason: An invalid data table location is specified in the project file.

Solution: Check the data table location in your project file and change it to the correct location.

Model 4010 Panel Error Messages

READ ONLY VALUE

This message indicates that the operator has tried to edit to a read only data item.

INVALID

This message indicates that the operator has entered an illegal password.

NO DATA SET

This message indicates that the operator has tried to enter a data item in a message that contains no data items.

OUT OF RANGE

This message indicates that the operator has entered a value in a data item that is out of range.

QuickText Programming Software Error Messages

Error Codes are divided into categories and are numbered with prefixes and 3 digits as follows:

PLC DLL Errors	Pxxx
Communications Errors	Cxxx
Tag Errors	Txxx
Message Errors	Mxxx
Miscellaneous Errors	Zxxx

PLC DLL Error Messages

Error P001: Load DLL Procedure failed. Unable to validate PLC address.
Possible reason: Unable to locate correct PLC DLL.

Reason: A PLC .dll file has been moved or deleted from the program directory.

Solution: Reinstall the software.

Error P002: Unable to load library: PlcUtils.dll
Error P003: Unable to load PLC DLL.
Error P004: Unable to unload PLC DLL.
Error P005: PLC DLL load failed.

Reason: Unable to load selected PLC DLL.

Solution:
1. Try closing all other applications and retry.
2. Reboot the system.
3. Reinstall the software.

Error P006: PLC1 is not compatible with PLC2. Do you want to change the PLC anyway?
Error P007: Unable to rebuild the address for new PLC.

Reason: When changing controllers, check the addressing in the controller's installation guide to see if they are compatible (same addressing type is followed in both controllers). If they are not compatible, then the database is no longer valid and the addresses will have to be reentered.

Communication Error Messages

Error C001: The panel connected to the PC is different from the configured one.

Reason: When writing to the panel, if the panel type selected does not match the panel that the computer is physically connected to, the program loader will not upload the project.

Solution: Select the appropriate panel type for the connected panel.

Error C002: Cannot Locate the Driver File

Reason: Driver file (*.plx) has been moved or deleted from the program directory.

Solution: Reinstall the software.

Error C003: Error opening port

Reason: Either you have not selected a valid COM port available on your computer or some other program is using this port.

Solution: Select another available COM port or close the program that is using this COM port. If this does not work, reboot your system and try again.

Error C004: Error in setting communication attributes

Reason: Unable to set the attributes for the Panel to PC communication.

Solution: Reboot the system.

Error C005: Unable to write to Panel. Possible cause: No local messages configured.

Reason: No local messages are configured. At least one local message should be configured before downloading the program to the panel.

Solution: Configure local messages.

Error C006: Error in reading the project from the panel. Project in the panel is corrupted.

Solution: Please upload the project from the computer to the panel. You cannot read the project from the panel.

Error C007: Invalid Length in Reply

Reason: Length of the panel reply buffer is less than the maximum replay length (70)

Solution: If you receive this error message consistently, please report it to Technical Support.

Standard Reply Error Messages

Error Code	Error Message
1	Error C008: Checksum error
2	Error C009: Time out Error. Make sure Panel is in Setup Mode. To enter Setup Mode, press the up and down arrow keys simultaneously
3	Error C010: Invalid Message Code
4	Error C011: Start Load Not Requested
5	Error C012: Start Dump Not Requested
6	Error C013: Insufficient space in Text Panel
7	Error C014: Invalid Message Number
8	Error C015: Invalid Message Length
9	Error C016: The firmware being loaded into the panel does not match the panel type
10	Error C017: E2 Memory failed to program correctly
11	Error C018: Invalid Load Format
12	Error C019: Invalid LED control
13	Error C020: Option Not included
14	Error C021: Memory is Read Only
21	Error C022: Invalid with Random PLC loaded
22	Error C023: Invalid with Random/standard format
24	Error C024: Invalid Byte in the data fields of Command

PLC Address Error Messages

Error T001: PLC Address count exceeds maximum limit.

Solution: You cannot assign another controller address. Only 300 controller addresses can be defined. If you want to assign a new address, delete one or more addresses and try again.

Error T002: Invalid Access Type

Reason: Access type of the specified address is invalid (e.g., entering a READ only address where a READ/WRITE address type is expected.

Solution: Supply the correct address.

Error T02_1: Invalid Unit Number
Error T02_2: Invalid Address Type
Error T02_3: Invalid Address
Error T02_4: Invalid Bit Number
Error T02_5: Address in not Word Aligned (Even address is required)
Error T02_6: Address is not Word Aligned (Odd address is required)

Reason: Address entered for the controller address is not correct.

Solution: Specify a valid controller address.

Error T003: The value entered is invalid.

Reason: The value entered for Minimum or Maximum field is out of range.

Solution: Supply values in the range 0…9999 for BCD and 0…65535 for Binary

Error T004: Unable to open tag map file: <filename> Please choose the map file
Error T005: Unable to open map file <map file>

Reason: Think N Do map (.map) file not found

Solution: Locate the correct map file.

Error T006: Error in reading controller addresses

Reason: Unable to generate controller address while reading from the panel.

Solution: Project in the Panel is corrupted. Reload the project to the panel.

Error T007: Unknown access type specified for controller address

Reason: Invalid access type found while reading a project from disk.

Solution: Project in the Panel is corrupted. Reload the project to the panel.

Message Error Messages

Error M001: Unable to add a new Message/Folder.
Possible cause: All the available 256 messages have been programmed

Solution: Delete one or more messages or folders and try adding your message again.

Error M002: Invalid message number or this message number has already been configured.

Solution: Please change the message number to a valid message number and ensure that this message number was not programmed earlier.

Error M003: Cannot add a message with message number greater than 256.

Solution: Message numbers have to be numbered with the range of 1 to 256. Please enter a valid message number within this range.

Error M004: Invalid Message Number

Solution: Valid range for message number is 1 to 256. Please enter a valid message number.

Error M005: Message number is out of range

Solution: Message number is out of range. Valid range is 1-256

Miscellaneous Error Messages

Error Z001: Error in printing page

Solution: 1. Check whether you have printer attached to the PC and set to Ready.
2. If you are still receiving this error, reboot the system and check printer to PC connection.

Error Z002: You are trying to read from an invalid file

Reason: Either project file is corrupted or you are trying to open an non-QuickText file.

Solution: If the project file is corrupted, then, recreate the project.

Error Z003: The file may be corrupted

Reason: The Exec file is corrupted.

Solution: If you receive this error message consistently, please report this to Technical Support.

Error Z004: Unable to open the controller driver file

Reason: Invalid controller driver file.

Solution: If you receive this error message consistently, please report this to Technical Support.

Error Z005: The Maximum message length has been exceeded

Reason: Maximum message length exceeded.

Solution: Reduce length of message.

Error Z006: Unknown value type encountered while loading project. Known values are 0 (BCD) and 1 (Binary)

Reason: Invalid value type found while reading project from disk.

Solution: Project file in the panel is corrupted. Reload the project to the panel.

Error Z007: Discrete addresses are not allowed here

Reason: Discrete addresses are not allowed in the QuickText Panel.

Solution: Use the correct address type.

Error Z008: Invalid Device Type

Reason: The connected equipment may not be an QuickText Panel.

Solution: Ensure that you are connected to an QuickText Panel.

Error Z009: Error in project file Line: <line number> Column: <column number> <filename>

Reason: The project file (XML version) is invalid.

Solution: Use a valid project file.

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