

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 EZText Panels. Details for using pushbuttons, PLC Messages, LEDs, and Local Messages are discussed. We recommend that you read this chapter well before you attempt to configure and use the EZText Panel features and controls. As you proceed through this section, relate the topics discussed with how you will implement your panel.

Regardless of the PLC product type, the concepts discussed here are applicable. To help you, the following figures use small example programs that display DirectLogic instruction elements and address references. Once again, this section is showing concepts for using the panel features. For complete DirectLogic examples and other PLC solutions, such as Allen-Bradley, please refer to the PLC manufacturer's manual.

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Memory Mapping/PLC Data Registers

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

Pushbuttons

Pushbuttons use one 16-bit register. All bit designations are in octal (0–7 and 10–17), used by DirectLogic PLCs. Use bits 0 through 15 for PLCs using decimal numbering. (Address must be READ/WRITE)

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

(BITS)

17	16	15	14	13	12	11	10	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 PLC button release

NA = not used (Do not use for other PLC program addresses)

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

Bits 10–14 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 16-bit register. All bit designations are in octal (0–7 and 10–17), used by DirectLogic PLCs. Use bits 0 through 15 for PLCs using decimal numbering.

LED (BIT READ) PLC WORD — (TO PANEL)

(BITS)

17	16	15	14	13	12	11	10	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 PLC to release a button that is set by the panel.

NA = not used (Do not use for other PLC 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 PLC.

PLC Releases Button:

REL F1 is set by the PLC (Bit 10 in LED Word). The PLC resets the panel button by setting this bit in the ladder program.

Panel Acknowledge Button Release:

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

Annunciator Lamps

Annunciator Lamps use one 16-bit register. All bit designations are in octal (0–7 and 10–17), used by DirectLogic PLCs. Use bits 0 through 15 for PLCs using decimal numbering.

ANNUNCIATOR (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	NA	NA	NA	NA	NA	NA	NA	LAMP 3	LAMP 3	LAMP 2	LAMP 2	LAMP 1	LAMP 1

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 PLC program addresses)

To have the lamps illuminate in a particular color, or not to illuminate at all, set the bits in your PLC Ladder Logic as follows:

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 Message Registers

The EZ-220P panels have 2 lines of PLC Message display. Each message line references a user-defined register in the PLC. The registers are assigned using the EZText Programming Software. The panel monitors each register for a value (message number) and displays 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.

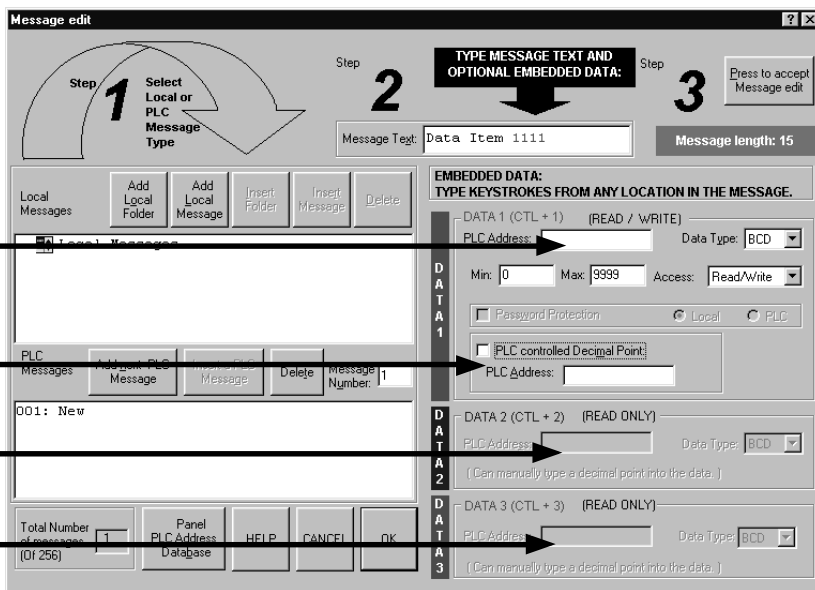
DATA 1 (16-Bit Register, READ/WRITE)

This is a PLC register 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.



Enter address for DATA 1

Enter address for PLC Controlled Decimal Point

Enter addresses for DATA 2 and DATA 3

PLC CONTROLLED DECIMAL POINT (16-Bit Register)

This is a register in the PLC 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 above. This feature only works with keypad entry, not arrow adjust. No ASCII characters are allowed in DATA 1 with a PLC Controlled Decimal Point.

DATA 2 (16-Bit Register, READ ONLY)

This is a PLC 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 **PLC Address** and **Data Type** are assigned from the **Message Edit** screen, shown above.

DATA 3 (16-Bit Register, READ ONLY)

This is a PLC 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 **PLC Address** and **Data Type** are assigned from the **Message Edit** screen, shown above.

PLC Messages and Local Messages

Embedded Data

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



NOTE:

When selecting BCD Data Type, only a 4-digit value can be used (0–9999).

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 PLC, 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 EZText Panel 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 PLC defined. Passwords allow you to prevent unauthorized users from changing a PLC 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.

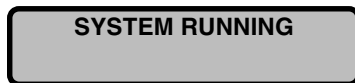
Also for DATA 1, you can choose to have the Decimal Point in the value controlled by the PLC, or you can manually insert it in the message.

Message Types

There are three types of messages: Static, Dynamic, and Interactive identify the different message types.

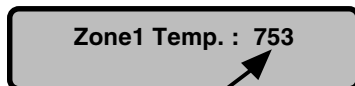
Static Messages

Static Messages 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 EZText Programming Software.



Dynamic Messages

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



Data Value update from PLC register

Embedded Data Values in messages can be of two types — BCD or Binary. DATA 1 can have a decimal point controlled by the PLC 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 is commonly used for operator data entry. This type of message is used for changing values that are stored in the PLC registers (READ/WRITE access). These values are typically; Setpoint, Upper and Lower Limits, etc. Interactive Messages may be configured to enter data using the **UP/DOWN Arrow** buttons.



Enter New Temp. = 300

Data value entered by operator

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 PLC. Locally defined passwords are set using the EZText 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 PLC Password into the register (defined in the EZText Programming Software) manually, or with an Interactive Message programmed into the panel file structure.

Displaying PLC Messages

Static Message Operation

To display a Static PLC message, you simply put the message number (1–256) in the appropriate PLC 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 PLC 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 EZText 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 PLC registers. When the interactive message is displayed, the operator can enter data. Check

the PLC product user manual to verify which data formats are supported. Depending on the PLC, 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.

Interactive messages are configured within the EZText Panel Programming Software by embedding a DATA 1 value in a PLC 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 PLC 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 PLC registers are used to store PLC controlled decimal point values, one for the data value and the other for decimal point control. When the decimal point is PLC controlled it must be configured in your PLC logic program. For more information, see Chapter 5, *Configuration*, or your PLC 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 PLC 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 PLC program.

PLC Message LED

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

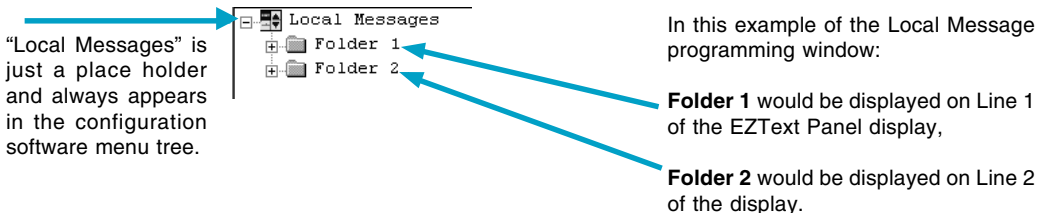
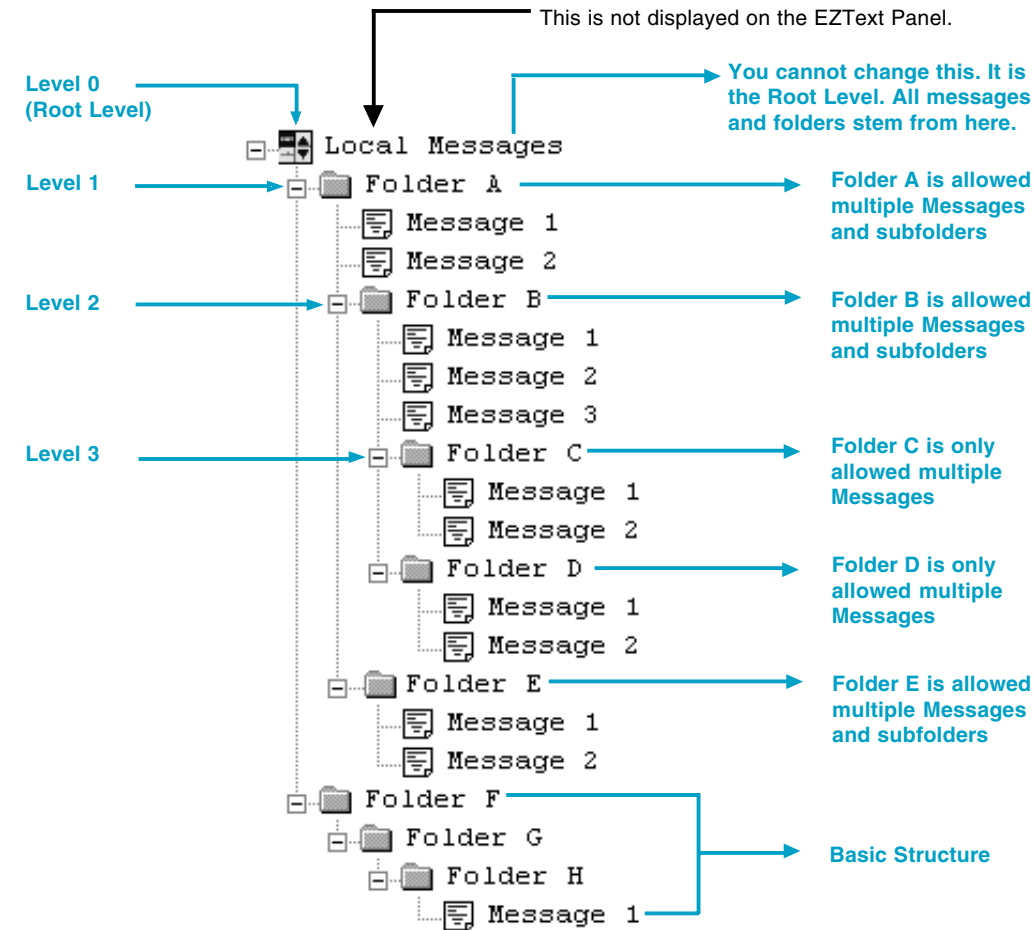
-Local Folder 2
Local Message 2.1
```

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 EZText Programming Software, and how it may appear on your EZText Panel display.

Local Message File Structure Example

(as seen when configuring messages in the EZText Panel Programming Software)



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

(as would be seen on the EZText Panel Display, except that 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*)