

PRODUCT MANUAL

ELECTRONIC DISPLAYS INC.

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PRODUCT PART NUMBER : ED225 / 400 MPC – 3L – N1- KYN1

DESCRIPTION:

- Indoor 4 digit, 2.25 or 4 inch high, red LED, 3 line display
- Top line is set up to be a fixed numeric value that will receive serial information via an EDI Supplied Keyboard / PC/PLC. (See the protocol sheet in this manual. Data input will be RS422 (2 wire transmission) @ 1200BPS ; NO PARITY ; 8 DATA BITS ; 1 STOP BIT.
- The 2nd line is an up-counter by 1 w/ a reset to 0. (2 contact operation).
- The 3rd line will display the calculated difference between the top and middle lines.
- Terminal block on the bottom right endplate is provided to wire a “wet” or “dry” contact closure and PC/PLC. (See wiring diagram inside this manual.)
- Power: 120 VAC @ 60Hz. (6 ft. line cord provided)
- NEMA 1 aluminum enclosure w/ white vinyl lettering.

OPERATION:

The top line of this scoreboard is designed to receive a serial input via an EDI supplied keypad or PC/PLC. This line is set up to be fixed numeric value . See Appendix E in this document for setting the display with a keypad. The 2nd line will count by 1 with a contact closure (switch , photo-eye etc.) and reset to 0 with a separate contact closure. Count for the middle line is labeled "IN1"; reset for the middle line labeled "IN2". A terminal block is included to wire the contact closures to. Positions labeled "VEXT" "GND" "IN1" & "IN2" are used for these contact closures. By placing a momentary switch between "VEXT" and "IN1" and "IN2", the display will count by 1 and reset to 0. See the wiring diagram at the end of this manual. The third line will be the calculated difference between the top 2 lines. A negative sign will appear when the negative range is entered.

**If there are any questions or comments regarding this order,
please call our Toll-free number : 1 - 800 - 367 - 6056**

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Unpacking Instructions:

A copy of these instructions is packed with each unit. Open carefully to avoid scratching the unit's paint and plastic lens or cutting the line cord.

Mechanical Mounting Instructions:

This unit is equipped with mounting tabs attached to the rear of the unit. The unit is designed to hang from a support or attached to a wall or support.

Power Requirements:

This unit is equipped with a standard, eighteen-gauge, three-wire line cord that is designed to be plugged into a standard, 120 VAC, 60 Hertz, grounded outlet. The maximum current draw for this unit (at 120 VAC) is 1.5 Amperes.

Signal Requirements:

If your unit has serial input (either RS-232, RS-422, RS-485, etc.), the standard communication format for this unit is 1200 bits per second (baud rate) with one start bit, eight data bits, no parity, and one stop bit per character. The expected sequence of characters is specified in a later section of this manual entitled 'Protocol'.

Product Components:

See appendix A.

Wiring Diagram:

See appendix B.

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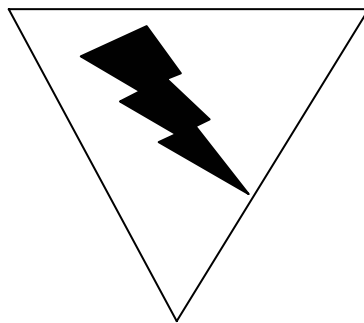
Label Definitions:

The following page shows some commonly used labels and their definitions. Not all of these labels will be found in your unit.

| <u>LABEL</u> | <u>DEFINITION</u> |
|---------------------------|--|
| IN1, IN2, IN3, IN4 | Optically coupled input, active high, requires 12 milli-amperes of current to activate. |
| RX+ | Positive side of balanced data line for RS-422 or RS-485 serial input signals |
| RX- | Negative side of balanced data line for RS-422 or RS-485 serial input signals |
| TX+ | Positive side of balanced data line for RS-422 or RS-485 serial output signals |
| TX- | Negative side of balanced data line for RS-422 or RS-485 serial output signals |
| VEXT | Positive voltage output terminal of the customer power supply. |
| COMMON | Negative voltage terminal of the customer power supply and common return for optically coupled inputs. |
| AC | Typically 10 to 12 VAC from EDI supplied transformer |
| +V | DC voltage supplied to displays |
| GND | Ground for DC voltage above |
| AUX | Ground supplied by way of 500 milli-ampere, NPN transistor |
| AUX V+ | +12 VDC to external load |

WARNING – SHOCK HAZARD

Always completely disconnect power from the display before opening the unit. Do not reapply power to the display until the unit has been securely closed.



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Customer Power Supply:

If this unit is equipped with optically coupled inputs, these inputs prevent any electrical or electronic signal from passing directly from the outside world into the logic circuits on the printed circuit boards that we have supplied.

For your convenience, we have also supplied this board with an 'isolated customer power supply' that can be used to drive the customer side of these optically coupled inputs. This isolated supply does not have a direct current connection to the power supply that is used to power the display and logic chips. It will provide 12 VDC to 14 VDC at up to 500 milli-amperes of current. This voltage is unregulated.

'Dry' Contact Configuration:

To use 'dry' contacts, the user need only supply a contact closure between the desired optically coupled input and the positive terminal of the 'isolated customer power supply'. The negative terminal of the isolated supply is already connected to the negative side of each optically coupled input. See Figure A.

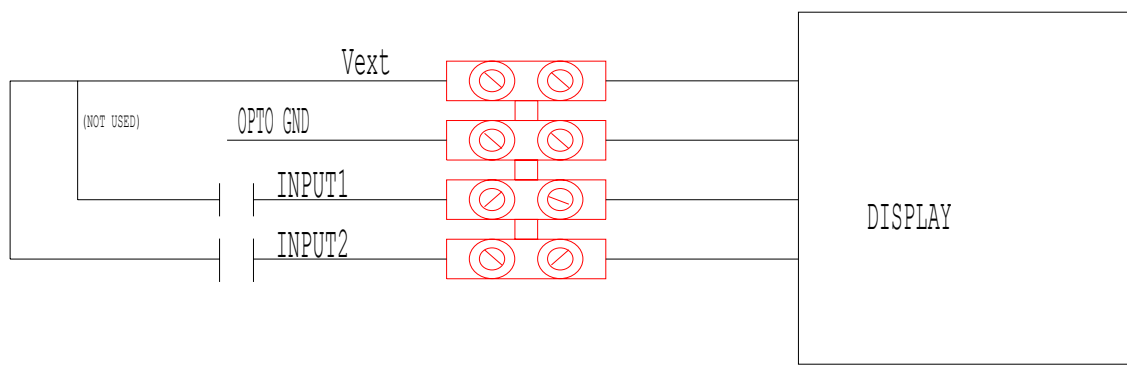


Figure A

'Wet' Contact Configuration:

To use 'wet' contacts, the user must supply his own power to activate the desired optically coupled input. The user may also wish to provide a contact closure in this circuit. The user's power supply must be capable of providing approximately twenty milli-amperes of current at 5 to 24 volts of direct current. If necessary, these inputs can also be ordered for use with higher voltages and / or with alternating current inputs. See Figure B.

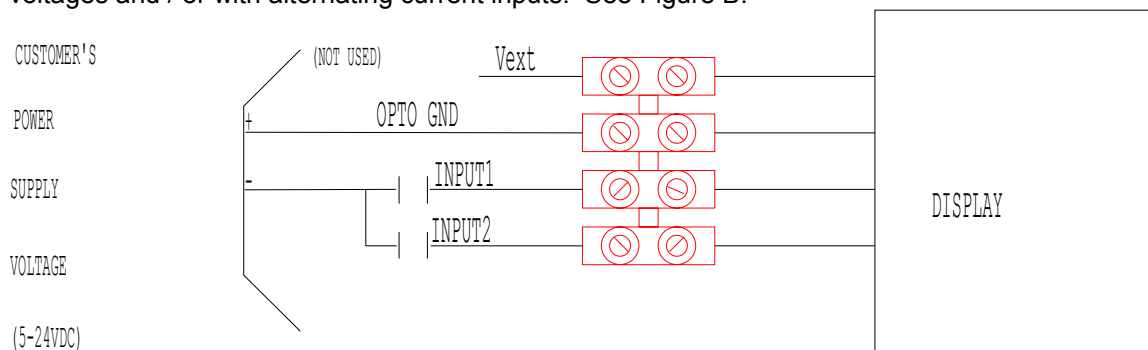


Figure B

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Power-up Response:

When power is first applied to this unit, the display will show zeros until data is received or the count input is activated. A value should be entered first on the top line. The bottom line will display the “-“ of this value.

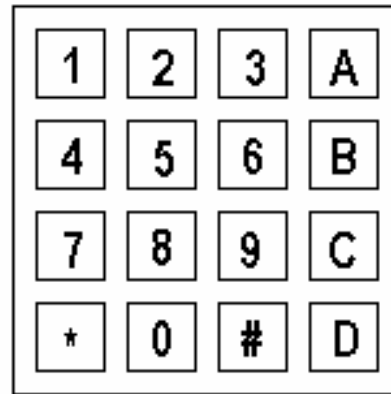
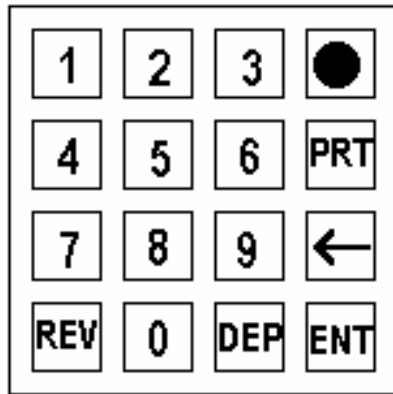
Addressing:

No addressing required. Baud rate of 1200BPS.

Protocol:

Appendix E - Protocol for Keypad

Figure 1 below shows the layout of the older style keypads. Figure 2 below shows the layout of the newer style keypads. Note that the lettering differs between the keypads but the characters generated are the same on a position by position basis. Table 1 below and on



the next page details what characters are generated.

Figure 1

Figure 2

Common ASCII Characters:

Here are some definitions of characters commonly used by EDI programs:

| CHAR | VALUE (decimal) | DEFINITION / USE |
|-------|--------------------|---|
| <STX> | 2 | This is the standard ASCII character for ‘start-of-text’, also known as a ‘Control B’. It must be the first character in every message. If you are using an older style EDI keypad, the key labeled ‘●’ will send this character. If you are using a newer style EDI keypad, the key labeled ‘A’ will send this character. This key will blank the LCD display. |

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| | | |
|-------|---|---|
| <ETX> | 3 | <i>This is the standard ASCII character for 'end-of-text', also known as a 'Control C'. It must be the last character in every most messages. If you are using an older style EDI keypad, the key labeled 'ENT' will send this character. If you are using a newer style EDI keypad, the key labeled 'D' will send this character. Until this key is pressed, the keys entered will flash on the LCD display. Once this key is pressed, the LCD display will show the keys entered solid.</i> |
|-------|---|---|

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| CHAR | VALUE (decimal) | DEFINITION / USE |
|-----------|--------------------|---|
| <LF> | 10 | <i>This is the standard ASCII character for 'line-feed', also known as a 'Control J'. It must be the last character in a few messages for some programs. If you are using an older style EDI keypad, the key labeled 'PRT' will send this character. If you are using a newer style EDI keypad, the key labeled 'B' will send this character. Note: This key is not used in this application. If it is pressed, the display will do nothing.</i> |
| <CR> | 13 | <i>This is the standard ASCII character for 'carriage-return', also known as a 'Control M'. It must be the last character in a few messages for some programs. If you are using an older style EDI keypad, the key labeled '←' will send this character. If you are using a newer style EDI keypad, the key labeled 'C' will send this character. Note: This key is not used in this application. If it is pressed, the display will do nothing.</i> |
| '0' – '9' | 48 - 57 | These are the standard ASCII decimal digit characters used as data, and when needed, as addresses in messages. If you are using either style EDI keypad, the keys labeled '0' through '9' will send these characters. When any of these keys are pressed, the LCD display show them. |
| '*' | 42 | This is the standard ASCII character for an asterisk. For the older EDI keypad, the key that represents an asterisk is labeled ' REV '. For the new EDI keypad, the key is labeled '*'. Note: This key is not used in this application. If it is pressed, the display will do nothing. |
| '_' | 45 | This is the standard ASCII character for a dash or minus sign. On the older EDI keypad, the key that represents a dash is labeled ' DEP '. On the new EDI keypad, the key is labeled '#'. Note: This key is not used in this application. If it is |

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| | | |
|--|--|---------------------------------------|
| | | pressed, the display will do nothing. |
|--|--|---------------------------------------|

Table 1

Example Messages:

- 1 *If you wish to preset the display set to address 01 to 1300, press the following sequence of keys:*
'●' '0' '1' '1' '3' '0' '0' 'ENT' (older style)
'A' '0' '1' '1' '3' '0' '0' 'D' (newer style)
Both of these sequences consist of eight keys.
- 2 If you wish to preset the display set to address 02 to 500, press the following sequence of keys:
'●' '0' '2' '5' '0' '0' 'ENT'
'A' '0' '2' '5' '0' '0' 'D'
Both of these sequences consist of seven keys.

Service:

There are no parts in your unit classified as 'user serviceable' parts. The plastic or glass cover can be cleaned using a soft cloth and a gentle glass cleaning solution.

Warranty:

The standard warranty for all products is one year on all parts and labor at our facilities. All products are designed and manufactured by Electronic Displays Inc. If you need assistance, please call or FAX us and we will be happy to provide technical assistance. If you feel that your unit needs repair, please call us first and then ship the unit to:

Electronic Displays Inc.

135 South Church Street

Unit A

Addison, Ill. 60101

Attn: Repair department

Our telephone number is:

(630) 628-0658

Our FAX number is:

(630) 628-0936

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