

PRODUCT MANUAL

ELECTRONIC DISPLAYS INC.

**135 S. CHURCH STREET
ADDISON, ILL. 60101**



EDXXX – YY11 – N1 / N12 / N4 – SR1 / SR2 / ETH

DESCRIPTION:

XXX = 050 (2"), 100 (4"), 150 (6"), 200 (8"), 250 (10"), 300 (12"), 450 (18").
YY* = Number of characters.

- Indoor alpha/numeric 2, 4, 6, 8, 10, 12, or 18 inch high, red LED single-line display
- Scrolling marquee with YY* number of characters of a 5 x 7 dot matrix display.
- Single line: addressable with RS232, RS485, or Ethernet input @ 1200BPS, NO PARITY / 8 DATA BITS / 1 or 2 STOP BITS
- Power: 120 VAC @ 60 Hz.
- NEMA Rated Enclosure.

OPERATION:

This single line display is designed to receive serial input via a PC/PLC, or an EDI supplied Ethernet adapter. The marquee will communicate using a serial input and has a 3 digit address. The marquee will display YY* alpha/numeric characters at one time. A terminal block or Sub-D connector is located on the right side of the display which, allows wiring between display and PC/PLC for RS232 or RS485 serial communication. An RJ-45 will be located on the display if Ethernet communication is used. A PVC jacketed twisted pair cable with a shield is recommended for RS232 and RS485 serial communication. A CAT 5E cable is required for Ethernet communication. Windows based software is provided including a 3.5 inch floppy and manual.

**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.

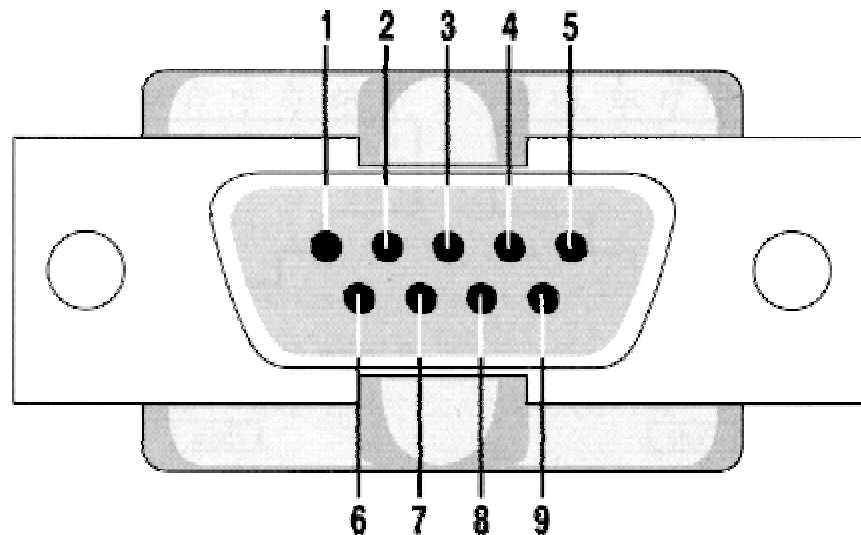
Power Requirements:

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, or Ethernet), 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'.

PC Com Port - RS-232 pin out DB-9 pin



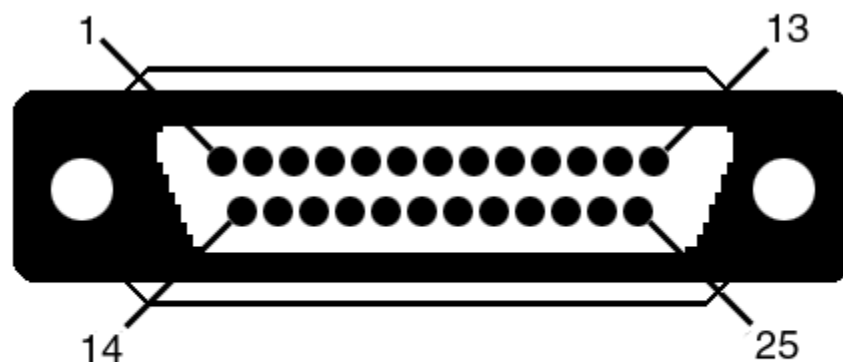
| Pin | Signal | Pin | Signal |
|-----|---------------------|-----|-----------------|
| 1 | Data Carrier Detect | 6 | Data Set Ready |
| 2 | Received Data | 7 | Request to Send |
| 3 | Transmitted Data | 8 | Clear to Send |
| 4 | Data Terminal Ready | 9 | Ring Indicator |
| 5 | Signal Ground | | |

Pin 3 from your PC to Pin 3 on our DB-25 or DATA on our terminal block.

Pin 5 from your PC to Pin 7 on our DB-25 or GND on our terminal block.

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PC Com Port - RS-232 pin out DB-25 pin



**RS232 Cable - DB25 Male
(on Cable)**

| RS232 - 25 Pin | | |
|----------------|-----|------------------------|
| | | |
| 1 | GND | Chassis / Frame Ground |
| 2 | TD | Transmitted Data |
| 3 | RD | Receive Data |
| 4 | RTS | Request to Send |
| 5 | CTS | Clear to Send |
| 6 | DSR | Data Set Ready |
| 7 | GND | Signal Ground |
| 8 | DCD | Data Carrier Detect |
| 9 | TD+ | Transmit + |
| 11 | TD- | Transmit - |
| 18 | RD+ | Receive + |
| 20 | DTR | Data Terminal Ready |
| 22 | RI | Ring Indicator |
| 25 | RD- | Receive - |

Pin 2 from your PC to Pin 3 on our DB-25 or DATA on our terminal block.

Pin 7 from your PC to Pin 7 on our DB-25 or GND on our terminal block.

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Ethernet Communication:

I: Initial Setup:

NOTE: DURING THIS PROCEDURE, DO NOT POWER UP UNIT UNTIL INSTRUCTED TO DO SO!

1. Place unit on table near a PC or Laptop used only for initial configuration.
NOTE: PC must have a 10 base T or 10/100 base T network card installed and must be configured for Auto Detect or 10 Megabits only. (Please refer to your Network Card Manual if you need to change this.) This PC should be running Windows 98/ME/2000, /XP/NT 4.0.
2. Attach one end of the supplied crossover cable the Ethernet device located on the right endplate.
3. Connect the other end to the network in the PC (See Diagram in Figure 1).
4. Power up the unit with 110 VAC.
5. Insert the 3.5" floppy disk into your floppy drive. Navigate to the floppy drive and you will find IPUTIL.EXE. Double click on the IPUTIL.EXE
6. Run IPUTIL and you should see all the network settings that were set to the EDI Ethernet device.
7. Highlight the Device you would like to change and Click Change IP Address...(See Figure 2)
8. This screen allows you to enter the Subnet Mask, the IP address, and the Gateway. (These settings will have to be obtained from your IT department).
9. Enter the settings and click OK. The Ethernet device will reset in 5 seconds.
10. Remove power and all cables.

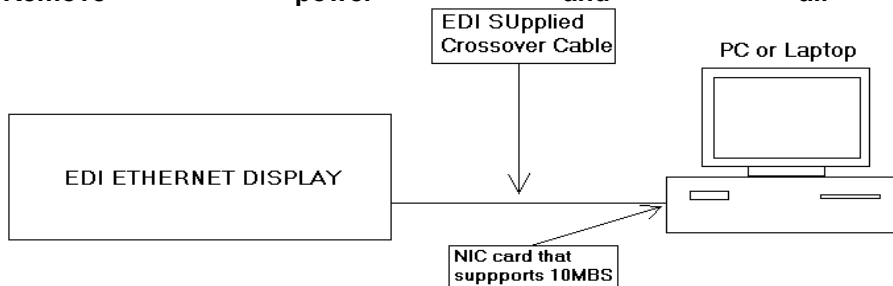


FIGURE 1:

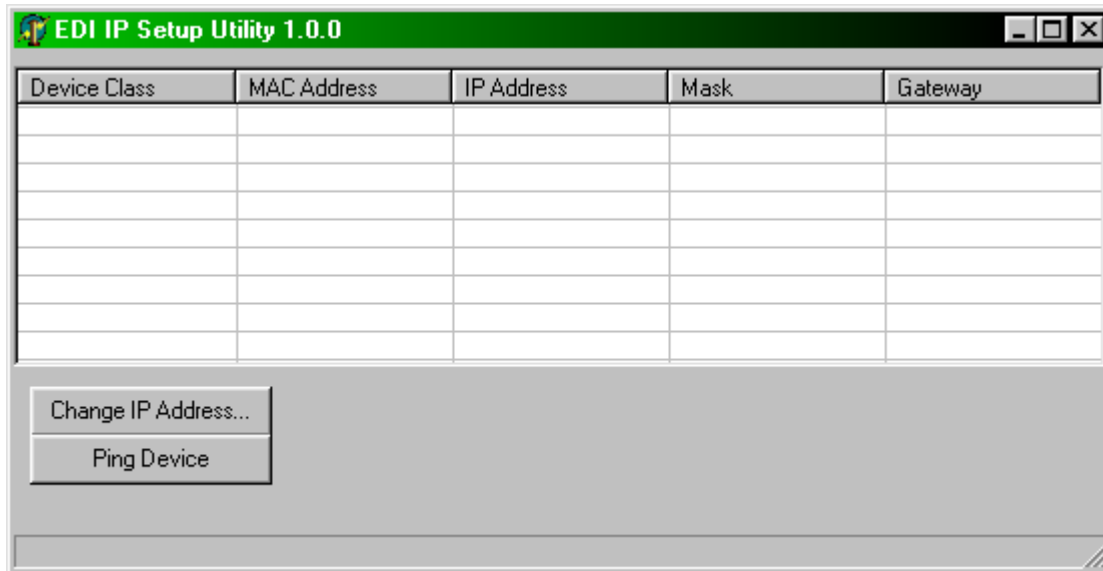


FIGURE 2

II. Final Configuration:

1. Connect one end of a CAT5E cable to our display's RJ-45, Ethernet connection.
2. Run the other end to a Hub on your network. Plug the RJ-45 into the hub that supports 10MBPS.
NOTE: The wire positions on this end must be the same as the other end to create a "Pass Through" cable.

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3. The unit is now ready to be mounted.
4. Mount to a structure using one of the following methods:
 - Wall mount
 - Hang mount

This Ethernet device is equipped with RS485 serial output to the display.

Other Important Notes:

These Ethernet adapters were tested on a Windows N.T. 4.0 server network. The actual workstations operating systems these devices would communicate to were as follows:

- Windows 98/NT/2000/ME/XP

All other operating systems have not been tested.

Disclaimer.

Although our Ethernet units will support gateways, we cannot provide technical support due to the amount and variety of network configurations when using gateways. Please contact your IT department for technical support when using gateways.

Product Components:

See appendix A.

Wiring Diagram:

See appendix B.

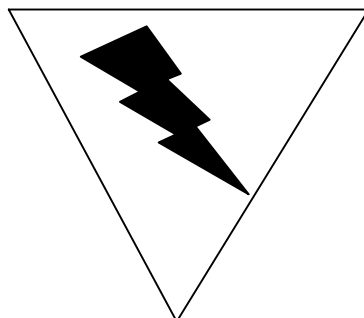
Label Definitions:

The following page shows some commonly used labels and their definitions. A terminal block inside the unit allows wiring between driving device and display.

| LABEL | DEFINITION |
|-------|---|
| DATA | Serial data in for RS-232 signals. |
| GND | Data ground for RS-232 signals |
| 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 |
| AC | Typically 10 to 12 VAC from EDI supplied transformer |

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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Power-up Response:

When power is first applied to this unit, it will respond by displaying the following message until it receives the first message from the user: "CONFIG: Address = XX, Baud = YYYY Length = ZZ. Where XX = the address of the display from 0 to 999, YYYY = the baud rate of 1200, 2400, 4800, or 9600, and ZZ = the length of display from 1 to 40.

Protocol:

PROTOCOL

SECTION #1 - GENERAL PROCEDURE

Step 1: Enter a control D (^D = ASCII character 'EOT' which has a value of 4). This character must precede all messages.

Step 2: Enter a control G (^G = ASCII character 'BEL' which has a value of 7) and the three ASCII decimal digits of the address of the display (from '000' through '255'). **NOTE:** If the address of '000' is sent to a display, ALL displays will display the message.

Step 3: Enter a control J (^J = ASCII character 'LF' which has a value of 10 decimal or 0A hexadecimal) and the two ASCII decimal digits of the message number (this program is capable of storing 32 different messages, '01' through '32'). Note: if message number 00 is entered, the signs default configuration setting will be displayed.

Step 4: Enter the message to be displayed (see note below).

Step 5: Enter a control R (^R = ASCII character 'DC2' which has a value of 18 decimal or 12 hexadecimal). The display will immediately begin displaying the next message.

Step 6: In order to change the speed at which messages scroll for one or more signs, while a message is scrolling, enter a control Y (^Y = ASCII character 'SUB' which has a value of 25 decimal or 19 hexadecimal) and a decimal ASCII digit from 4 (slowest) through 7 (fastest). This will simultaneously change the scrolling speed of all signs. In order to change the scroll speed of only one of the signs, see the section on 'MESSAGE CONTROL COMMANDS' in section #2.

SECTION #2 - MESSAGE ENTRY

SCROLLING MESSAGES

To enter a simple scrolling message, merely enter that message text and then terminate it with a ^R.

TOGGLE COMMANDS

To cause one or more words to flash on and off as they are being displayed, enter a 'FLASH' command which consists of a control O (^O = ASCII character 'SI' which has a value of 15 decimal or 0F hexadecimal) before and after the word or words to be flashed.

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To cause one or more of the words to be displayed in wide mode (every character is ten columns wide instead of the normal five columns), enter a 'WIDE' command which consists of a control back-slash (^ \ = ASCII character 'FS' which has a value of 28 decimal or 1C hexadecimal) before and after the text to be displayed in wide mode.

MESSAGE TIMING COMMANDS

To cause the message to stop and pause for two seconds, enter a 'PAUSE' command which consists of a control P (^P = ASCII character 'DLE' which has a value of 16 decimal or 10 hexadecimal) at the position of the desired pause. If the user desires a pause of more than two seconds, it is perfectly acceptable to enter multiple 'PAUSE's. The display will pause for two seconds for each 'PAUSE' command. To cause the message to stop completely, enter the 'FREEZE' command which consists of two consecutive Escape (or control right-bracket) characters (each ^[= ASCII character 'ESC' which has a value of 27 decimal or 1B hexadecimal) at the desired position. When the message is displayed, it will stop at the point that the 'FREEZE' is encountered until a new message is received.

SECTION #2 - MESSAGE ENTRY (continued)

MESSAGE BLOCK COMMANDS

In addition to scrolling, the display is also capable of several other display formats by using one or more of the message block commands. When using one of these commands, place the command before the text of the message. These commands are normally terminated by entering the 'CENTER' command after the text. The 'CENTER' command consists of a control B (^B = ASCII character 'STX' of value 2). These message block commands can also be terminated by a new message block command. The message block commands are as follows:

The 'JUMP' command is the "TAB" key or control I (^I = ASCII character 'HT' of value 9). The 'JUMP' command causes the text to appear "instantaneously" on the display, remain there for two seconds, and then disappear "instantaneously". See note below with regard to message timing.

The 'UP' command is a control K (^K = ASCII character 'VT' of value 11 decimal or 0B hexadecimal). The 'UP' command causes the text to scroll up from the bottom, pause for two seconds in the center, and then scroll up and off of the display. See note below with regard to message timing.

The 'DOWN' command is a control N (^N = ASCII character 'SO' of value 14 decimal or 0E hexadecimal). The 'DOWN' command causes the text to scroll down from the top, pause for two seconds in the center, and then scroll down and off of the display. See note below with regard to message timing.

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The 'BLINK' command is a control right-bracket (^] = ASCII character 'GS' of value 29 decimal or 1D hexadecimal). The 'BLINK' command causes the text to appear starting with the center row and expanding rapidly up and down simultaneously, pause for two seconds, and then shrink towards the center row of the display. See note below with regard to message timing.

The 'OPEN' command is a control carrot (^ ^ = ASCII character 'RS' of value 30 decimal or 1E hexadecimal). The 'OPEN' command causes the text to appear starting with the center column of the text and expanding rapidly both to the left and the right simultaneously, pause for two seconds, and then shrink towards the center column of the text. See note below with regard to message timing.

SECTION #2 - MESSAGE ENTRY (continued)

MESSAGE BLOCK COMMANDS (continued)

The 'WIPE' command is a control under-score (^_ = ASCII character 'US' of value 31 decimal or 1F hexadecimal). The 'WIPE' command causes the text to appear starting with the left side and expanding rapidly towards the right (but not scrolling), pause for two seconds, and then disappear starting at the left side. See note below with regard to message timing.

NOTE: If the user wishes the message to remain for more than two seconds, it is entirely permissible to place one or more 'PAUSE' commands or a 'FREEZE' command in the message, normally just before the terminator.

SECTION #4 - COMMAND SUMMARY

| dec | octal | hex | ASCII | ke | EDI use |
|-----|-------|-----|-------|----|---------------------------------|
| | | | | y | |
| 00 | 000 | 00 | NULL | ^@ | -- |
| 01 | 001 | 01 | | ^A | cursor right one character |
| 02 | 002 | 02 | STX | ^B | center the message |
| 03 | 003 | 03 | ETX | ^C | -- |
| 04 | 004 | 04 | EOT | ^D | activate data entry mode |
| 05 | 005 | 05 | ENQ | ^E | activate 'On Screen' editor |
| 06 | 006 | 06 | ACK | ^F | cursor to far left (beginning) |
| 07 | 007 | 07 | BEL | ^G | activate sign addressing |
| 08 | 010 | 08 | BS | ^H | delete character left of cursor |
| 09 | 011 | 09 | HT | ^I | JUMP block command |
| 10 | 012 | 0A | LF | ^J | activate message numbering |
| 11 | 013 | 0B | VT | ^K | UP block command |
| 12 | 014 | 0C | FF | ^L | -- |
| 13 | 015 | 0D | CR | ^M | -- |
| 14 | 016 | 0E | SO | ^N | DOWN block command |
| 15 | 017 | 0F | SI | ^O | FLASH toggle command |

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| | | | | | |
|----|-----|----|-----|----|----------------------------|
| 16 | 020 | 10 | DLE | ^P | PAUSE timing command |
| 17 | 021 | 11 | DC1 | ^Q | cursor left 10 characters |
| 18 | 022 | 12 | DC2 | ^R | display current message |
| 18 | 022 | 12 | DC2 | ^R | display current message |
| 19 | 023 | 13 | DC3 | ^S | -- |
| 20 | 024 | 14 | DC4 | ^T | cursor to far right (end) |
| 21 | 025 | 15 | NAK | ^U | -- |
| 22 | 026 | 16 | SYN | ^V | -- |
| 23 | 027 | 17 | ETB | ^W | cursor right 10 characters |
| 24 | 030 | 18 | CAN | ^X | clear current message |
| 24 | 030 | 18 | CAN | ^X | clear current message |
| 25 | 031 | 19 | EM | ^Y | set scroll speed |
| 26 | 032 | 1A | SUB | ^Z | cursor right one character |
| 27 | 033 | 1B | ESC | ^[| FREEZE timing command |
| 28 | 034 | 1C | FS | ^\ | WIDE toggle command |
| 29 | 035 | 1D | GS | ^] | BLINK block command |
| 30 | 036 | 1E | RS | ^^ | OPEN block command |
| 31 | 037 | 1F | US | ^_ | WIPE block command |

MODES:

MC - these commands are intended to be embedded in the message

RM - these commands can only be entered while display is running

DE - these commands are active while in data entry mode

OS - these commands are active while in on screen edit mode

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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