

# PRODUCT MANUAL

## ***ELECTRONIC DISPLAYS INC.***

135 S. CHURCH STREET

ADDISON, ILL. 60101

***www.electronicdisplays.com***



## SERIAL INTERFACE – RS232

### PRODUCT PART NUMBER:

ED202 – 111 – 8D – N1 .....2.25” high digits

ED402 – 111 – 8D – N1 .....4.0” high digits

### DESCRIPTION:

- 8 Digit serial interface display with RS-232 input.
- Field-selectable baud rate and address.
- Terminal block on endplate to wire your DATA & GROUND wires.
- Power: 120VAC @ 60Hz.
- NEMA 1 aluminum enclosure.

### OPERATION:

This model is designed to receive serial data in an RS232 format and display it. The display is factory set to 1200-Baud; no parity; 1stop bit and 8 data bits with address 01. The protocol is listed in Appendix E of this 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.

## Mechanical Mounting Instructions:

This unit is equipped with two rivnuts in the top of the unit for mechanical mounting purposes. The bolts that are screwed into these rivnuts are standard 5/16 by 1 1/4" bolts. To avoid damaging the rivnuts, do not tighten these bolts more than 10 ft/lbs.

## 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 at 120 VAC for ED400-111-4D-N1 is 1 Ampere and for ED225-111-4D-N1 is 3/4 ampere.

## Signal Requirements:

Your unit has serial input interface RS-232, 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'.

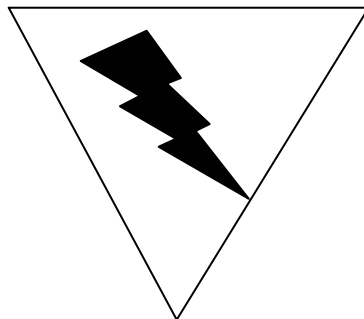
## Label Definitions:

The following page shows some commonly used labels and their definitions.

LABEL	DEFINITION
DATA	To connect data wire from your RS-232 signals
GND	To connect ground wire from your RS-232 signals

### 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:**

Upon power up, the display will show a test pattern until data is received.  
See Appendix C for Diagnostic meaning.

## **Addressing:**

Factory set @ 01. (In order to communicate always use 2 digit address – 01)  
A knockout on the back of the display is available to change the address. See Appendix C for configurations.

## **Protocol:**

See Appendix E.

## **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

## **APPENDIX C:**

This program can be run on either a 2 1/4" bar-segment board shown in Figure 1 or on a 4" bar-segment board shown in Figure 2. Each of these boards has two 8-position DIP switches that are used to control the options of the program. One of these DIP switches is labeled the "ADDRESS" switch and the other is labeled the "FUNCTION" switch. With this program, these switches are read on power-up only. In order to change the settings, it is necessary to turn power off and then turn power back on after the settings have been changed. The following pages detail the purpose of each of these switches.

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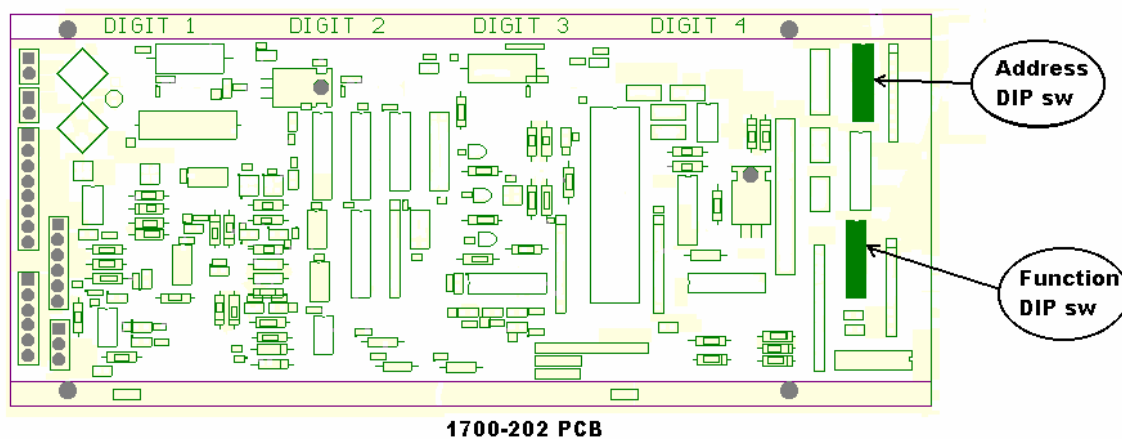


Figure 1

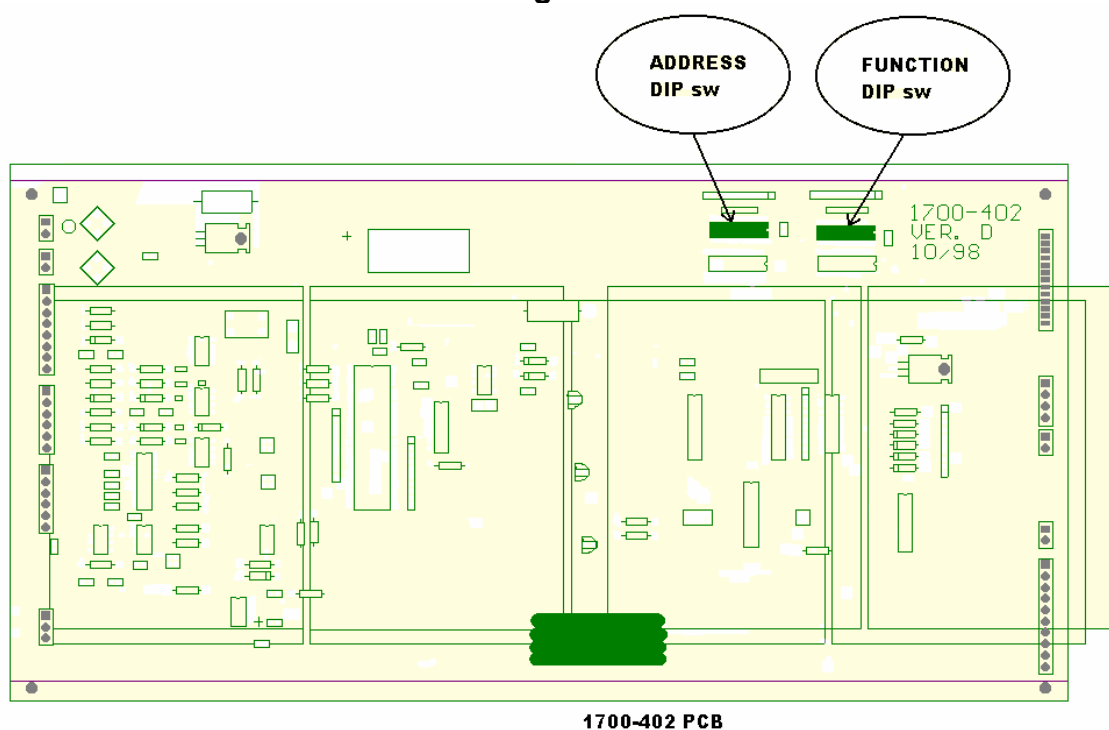


Figure 2

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## “ADDRESS” Switch:

### *Switches 1 through 6:*

Switches 1 through 6 of the “ADDRESS” DIP switch are used in binary fashion to specify the address of the display. Sample settings are shown below in Table 1.

‘ADDRESS’ DIP SWITCHES						POWER-UP DISPLAY	ADDRESS
SW 6	SW 5	SW 4	SW 3	SW 2	SW 1		
OFF	OFF	OFF	OFF	OFF	OFF	A64	64
OFF	OFF	OFF	OFF	OFF	ON	A01	01
OFF	OFF	OFF	OFF	ON	OFF	A02	02
OFF	OFF	OFF	OFF	ON	ON	A03	03
OFF	OFF	OFF	ON	OFF	OFF	A04	04
OFF	OFF	OFF	ON	OFF	ON	A05	05
OFF	OFF	OFF	ON	ON	OFF	A06	06
OFF	OFF	OFF	ON	ON	ON	A07	07
OFF	OFF	ON	OFF	OFF	OFF	A08	08
OFF	OFF	ON	OFF	OFF	ON	A09	09
...							
OFF	OFF	ON	ON	ON	OFF	A14	14
OFF	OFF	ON	ON	ON	ON	A15	15
OFF	ON	OFF	OFF	OFF	OFF	A16	16
OFF	ON	OFF	OFF	OFF	ON	A17	17
...							
OFF	ON	ON	ON	ON	OFF	A30	30
OFF	ON	ON	ON	ON	ON	A31	31
ON	OFF	OFF	OFF	OFF	OFF	A32	32
ON	OFF	OFF	OFF	OFF	ON	A33	33
...							
ON	ON	ON	ON	OFF	ON	A61	61
ON	ON	ON	ON	ON	OFF	A62	62
ON	ON	ON	ON	ON	ON	A63	63

**Table 1**

### *Switches 7 AND 8:*

Switches 7 AND 8 of the “ADDRESS” DIP switch are used to specify the baud rate. Available options are shown below in Table 2.

‘ADDRESS’ DIP SWITCHES		POWER-UP DISPLAY	BAUD rate
SW 8	SW 7		
OFF	OFF	3	1200
OFF	ON	4	2400
ON	OFF	5	4800
ON	ON	6	9600

**Table 2**

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## “FUNCTION” Switch:

*Switches 1, 2, and 3:*

“FUNCTION” switches 1, 2, and 3 are used to define the serial input protocol. Not all combinations of these switches have been assigned at this time. The combinations that have been defined are shown in Table 3.

‘FUNCTION’ DIP			POWER-UP DISPLAY	PROTOCOL
SW 3	SW2	SW1		
OFF	OFF	OFF	-0	Non-addressable without LZB
OFF	OFF	ON	-1	Non-addressable with LZB
OFF	ON	OFF	-2	2-digit addressable flexible without LZB
OFF	ON	ON	-3	2-digit addressable flexible with LZB
ON	OFF	OFF	-4	2-digit addressable decimal-locator without LZB
ON	OFF	ON	-5	2-digit addressable decimal-locator with LZB

**Table 3**

## NOTES:

‘LZB’ is “leading zero blanking. When it is enabled, leading zero’s (except the least significant digit) are shown as blanks.

‘Flexible’ indicates that the ‘number’ can include digits, a decimal point, and a minus sign. This protocol also allows for space characters.

‘Decimal-locator’ indicates that the ‘number’ must not include the decimal point character. The last digit in the ‘number’ is an indication of where the decimal point (if any) should be placed.

*Switches 4 and 5:*

*These switches are not currently in use and should be left in the OFF position.*

*Switches 6, 7, and 8:*

*These switches are used to specify how big the display is in digits. These switches are interpreted as shown in Table 4.*

‘FUNCTION’ DIP			POWER-UP DISPLAY	DISPLAY SIZE
SW 8	SW 7	SW 6		
OFF	OFF	OFF	U02	1 or 2 digits
OFF	OFF	ON	U04	3 or 4 digits
OFF	ON	OFF	U06	5 or 6 digits
OFF	ON	ON	U08	7 or 8 digits
ON	OFF	OFF	U10	9 or 10 digits
ON	OFF	ON	U12	11 or 12 digits
ON	ON	OFF	U14	13 or 14 digits
ON	ON	ON	U16	15 or 16 digits

**Table 4**

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## APPENDIX E:

### PROTOCOL FOR NUMERIC DISPLAYS

ASCII CODE	VALUE (Decimal)	FUNCTION
STX	2	'Start of text', also known as a 'control B', this character must be the first character of each message
AD1 AD2	48-57 48-57	These two ASCII decimal digits represent the address of the display as set on the display. See appendix C for address setting information
DATA	48-57	Numeric value to be displayed in ASCII decimal digits. It is also permissible to include space characters (character value 32 decimal), minus sign characters (character value 45 decimal), and one decimal point character (character value 46 decimal) with the digits.
ETX	3	'End of text', also known as a control C, this character must be the last character of each message

#### Example:

To set the display that has an address of '07' to a value of "1234", the following **<STX>071234<ETX>**

*NOTE: the <>'s are not to be included in the message.*

**or from a terminal program such as PCPLUS, Hyper-terminal, or a TELNET screen if the display has the Ethernet Option.**

character sequence should be sent:

'control B' "01" "1234" 'control C' (a total of eight characters)

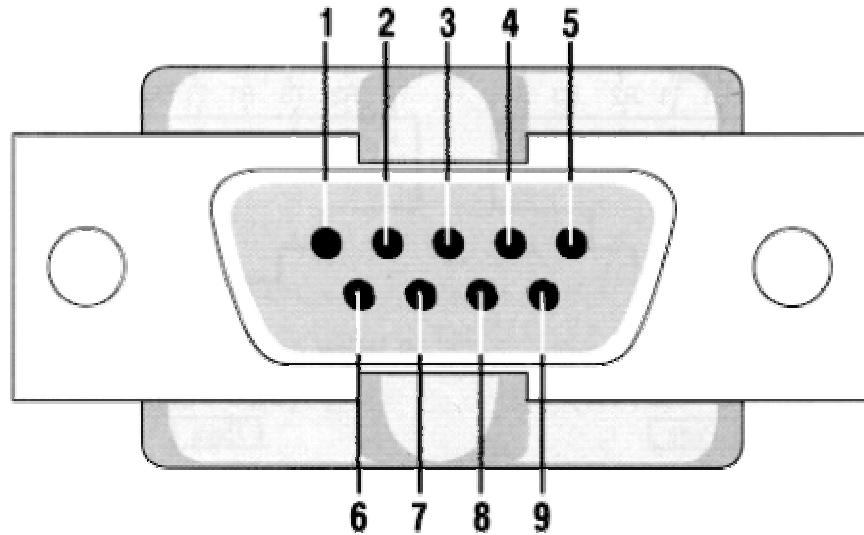
**The leading zeros will remain blank in all cases.**

Factory set @ 1200BPS ; No parity ; 8 Data bits ; 1 or 2 Stop bits.

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## APPENDIX G:

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



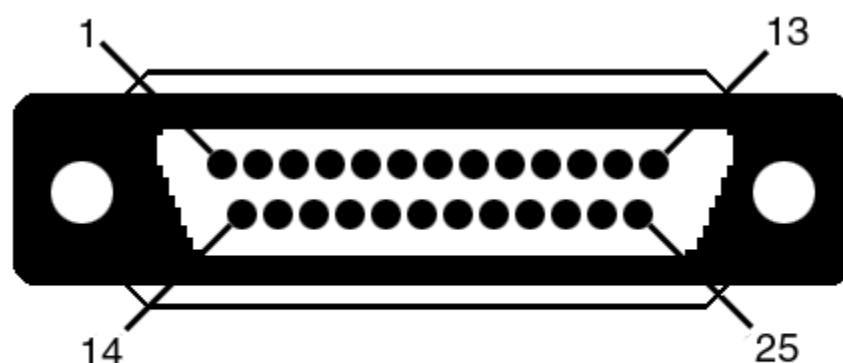
Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Received Data	7	Request to Send
3	Transmitted Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Signal Ground		

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.

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



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

<b>RS232 - 25 Pin</b>		
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.