PRODUCT MANUAL

ELECTRONIC DISPLAYS INC.
135 S. CHURCH STREET
ADDISON, ILL. 60101

EDXXXX – 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 Ethenet 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.

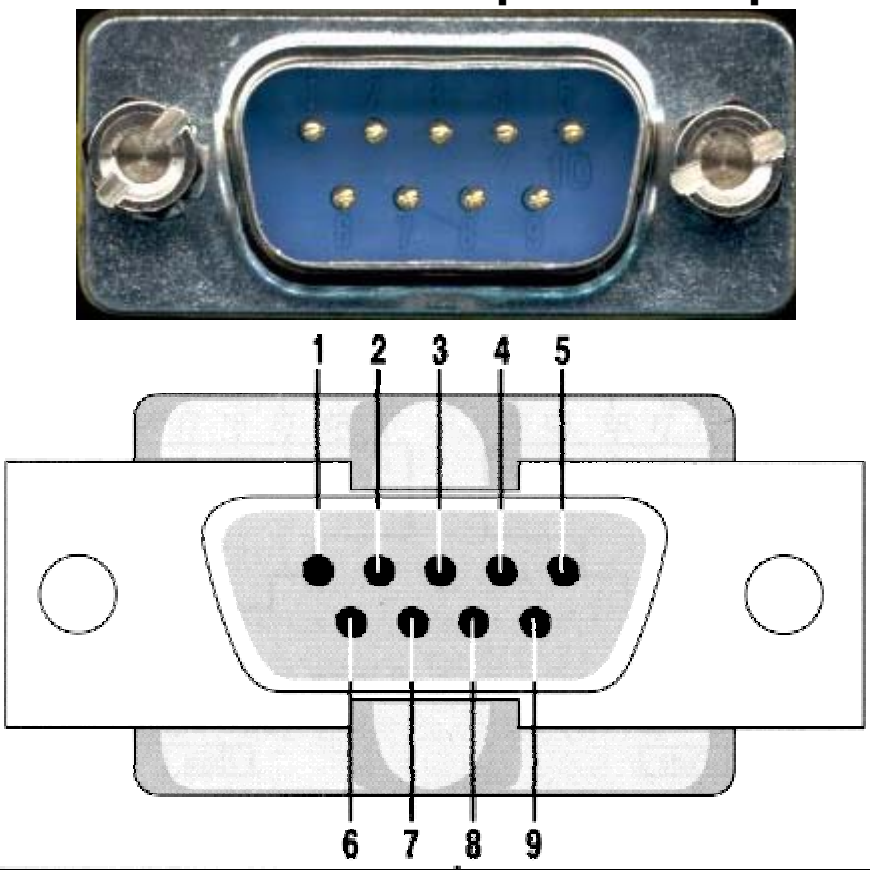
Power Requirements:

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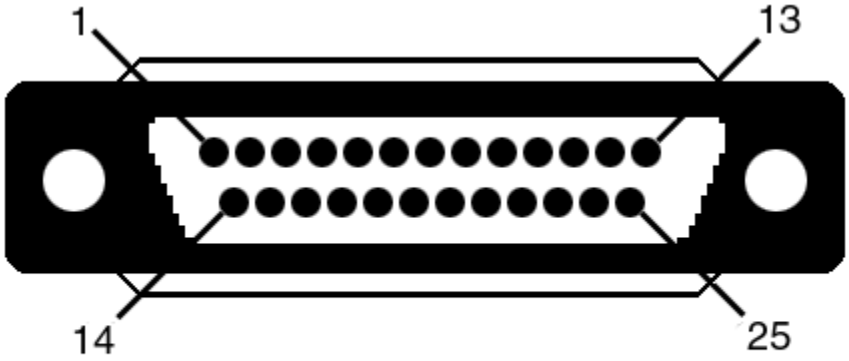
PC Com Port - RS-232 pin out DB-25 pin



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.**

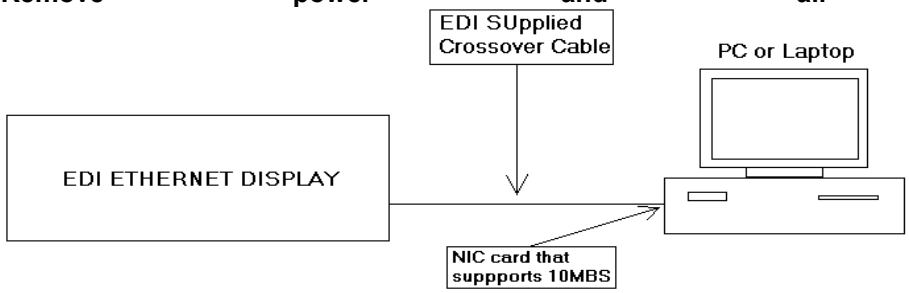


FIGURE 1:

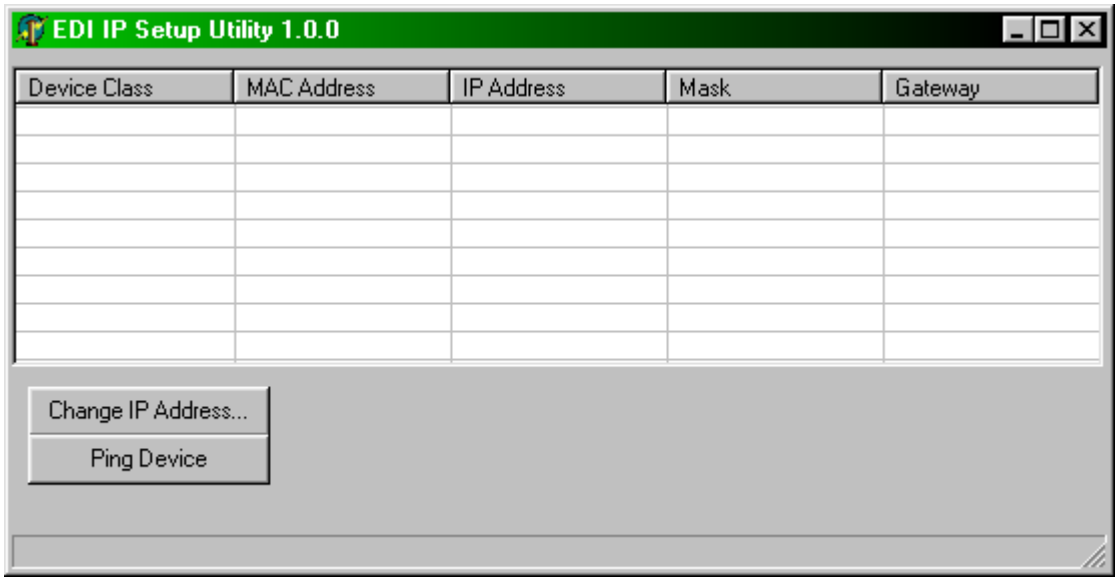


FIGURE 2

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.

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.

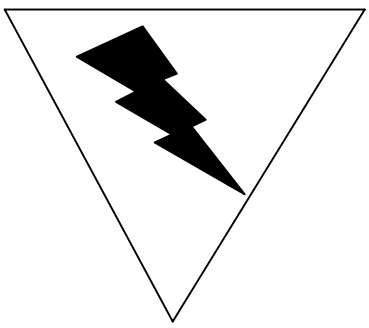
Label Definitions:

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.

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.

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	key	EDI use
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

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:

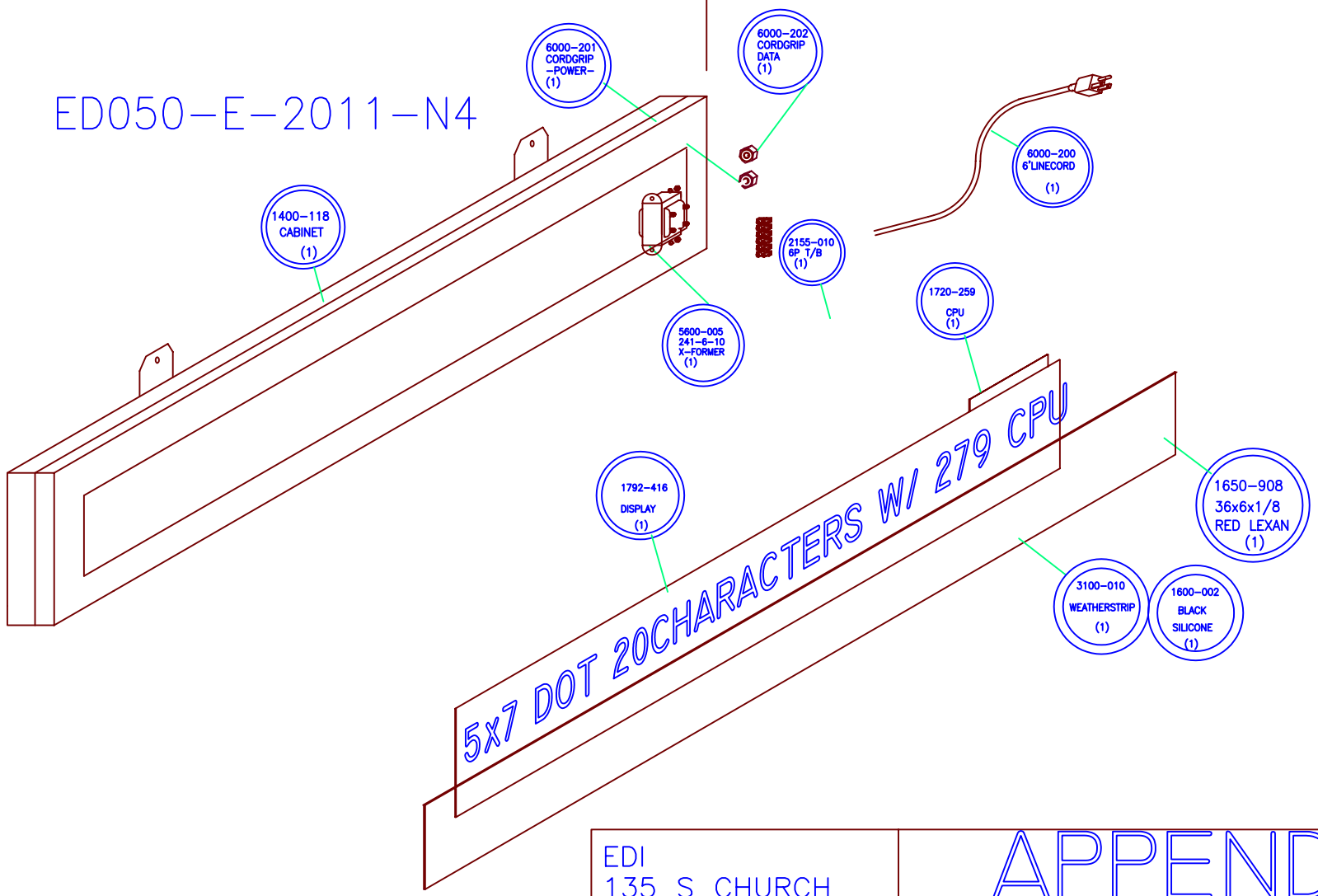
Electronic Displays Inc.
135 South Church Street
Unit A
Addison, Ill. 60101
Attn: Repair department

Our telephone number is:
(630) 628-0658
Our FAX number is:
(630) 628-0936

PROUDLY MADE IN THE U.S.A.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

ED050-E-2011-N4



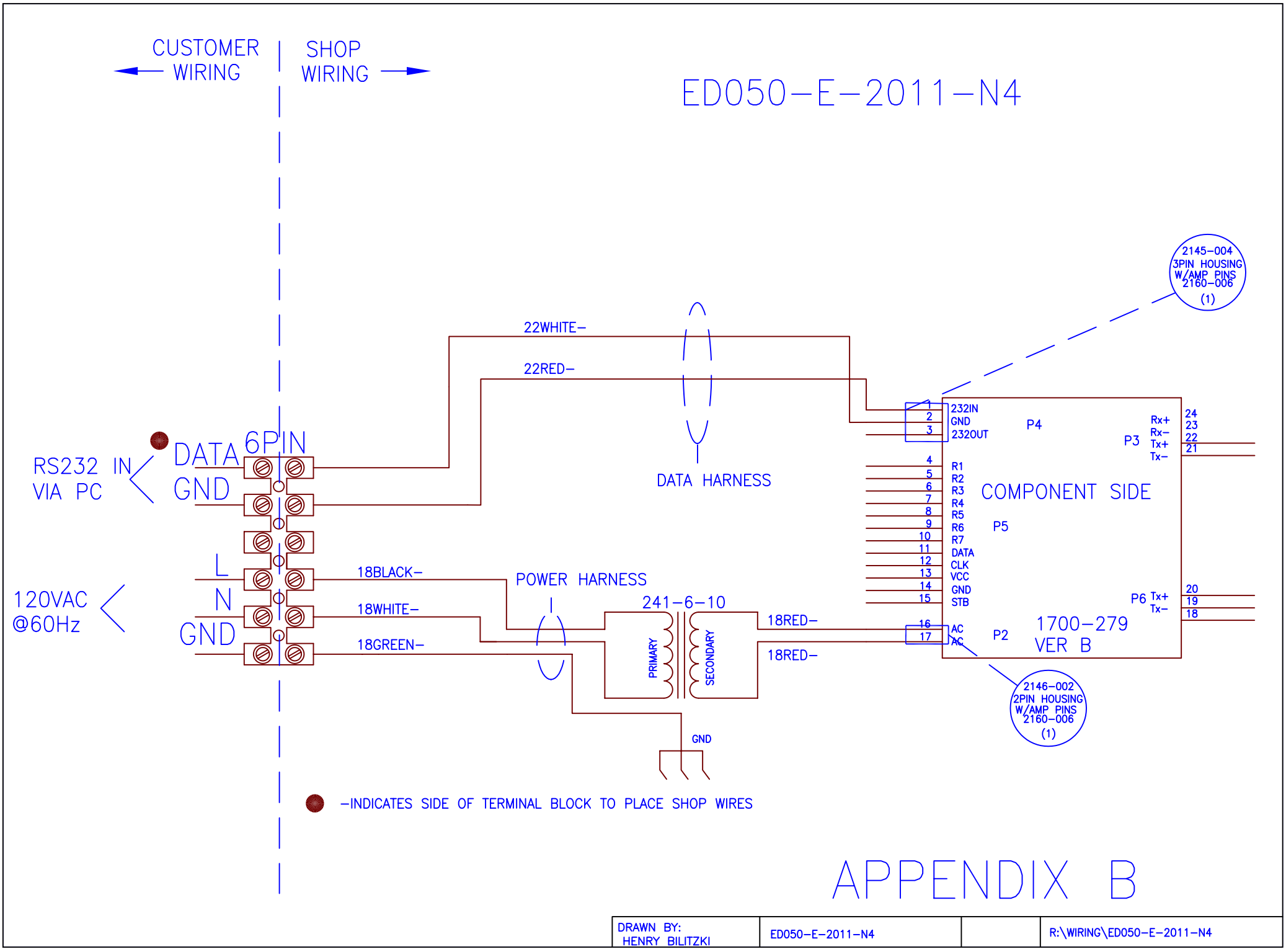
EDI
135 S CHURCH
ADDISON IL 60101
PH#630 628-0658

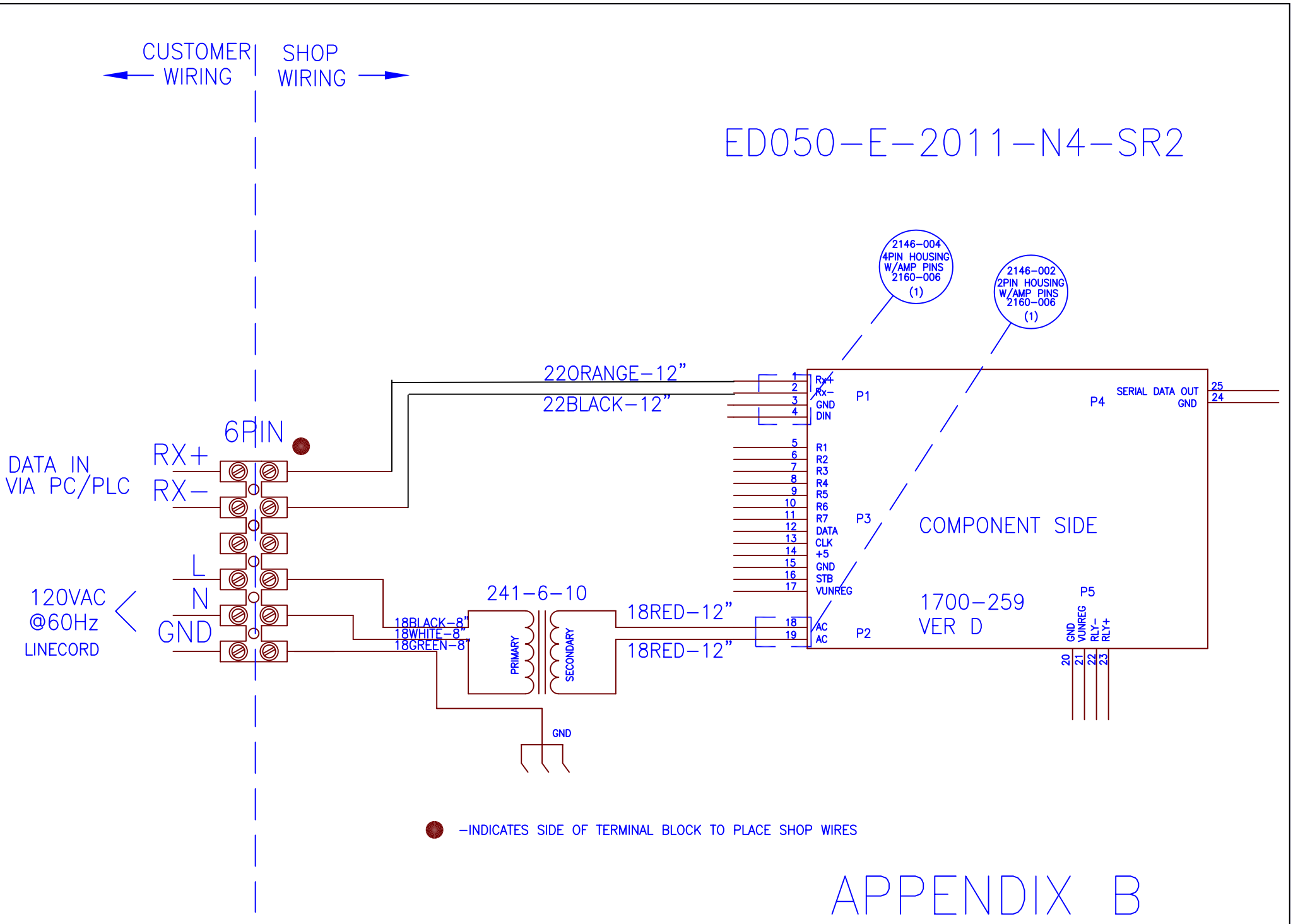
APPENDIX A

LEVEL1

ED050-E-2011-N4

APPROVED BY:				
DRAWN BY: Z.JAKUBCZAK 8/08/97	SIZE A	FSCM NO.	DWG NO. R:\LV1\MESSAGE-SIGN\ED050-E-1605-N4	REV 0
	SCALE NONE			SHEET


CUSTOMER WIRING
SHOP WIRING
ED050-E-2011-N4
RS232 IN VIA PC
DATA
GND
6PIN
22WHITE-
22RED-
DATA HARNESS
2145-004
3PIN HOUSING
W/AMP PINS
2160-006
(1)
232IN
GND
232OUT
P4
P3
Rx+
Rx-
Tx+
Tx-
24
23
22
21
R1
R2
R3
R4
R5
R6
R7
DATA
CLK
VCC
GND
STB
COMPONENT SIDE
P5
120VAC @60Hz
L
N
GND
18BLACK-
18WHITE-
18GREEN-
POWER HARNESS
241-6-10
PRIMARY
SECONDARY
18RED-
18RED-
AC
AC
P2
1700-279
VER B
P6
Tx+
Tx-
20
19
18
2146-002
2PIN HOUSING
W/AMP PINS
2160-006
(1)
GND
-INDICATES SIDE OF TERMINAL BLOCK TO PLACE SHOP WIRES
APPENDIX B
DRAWN BY:
HENRY BILITZKI
ED050-E-2011-N4
R:\WIRING\ED050-E-2011-N4


CUSTOMER WIRING
SHOP WIRING
ED050-E-2011-N4-SR2
2146-004
4PIN HOUSING
W/AMP PINS
2160-006
(1)
2146-002
2PIN HOUSING
W/AMP PINS
2160-006
(1)
22ORANGE-12"
22BLACK-12"
6PIN
DATA IN
VIA PC/PLC
RX+
RX-
L
N
GND
120VAC
@60Hz
LINECORD
18BLACK-8"
18WHITE-8"
18GREEN-8"
241-6-10
PRIMARY
SECONDARY
18RED-12"
18RED-12"
GND
P1
P2
P3
P4
P5
Rx+
Rx-
GND
DIN
R1
R2
R3
R4
R5
R6
R7
DATA
CLK
+5
GND
STB
VUNREG
AC
AC
SERIAL DATA OUT
GND
COMPONENT SIDE
1700-259
VER D
GND
VUNREG
RLY-
RLY+
-INDICATES SIDE OF TERMINAL BLOCK TO PLACE SHOP WIRES
APPENDIX B
DRAWN BY:
HENRY BILITZKI
R:\WIRING\ED050-E-2011-N4-SR2