

**DataTrac  
CE-1010  
1.2", 2.1", 3.2", 4.2"**

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**Display Manual**

*ED11477*

*Rev 4*

*1 September 2004*

**DAKTRONICS**

**ED11477**  
**Product 1120**  
**Rev 4- 1 September 2004**

## **DAKTRONICS, INC.**

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# Section 1: Introduction

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This manual explains the installation and maintenance of Daktronics Panelized DataTrac™ CE-1010 displays. For questions regarding the safety, installation, operation or service of this system, please refer to the telephone numbers listed on the cover page of this manual.

The manual is divided into six sections: Introduction, Mechanical Installation, Electrical Installation, Maintenance and Troubleshooting, Appendix A and Appendix B.

- **Introduction** covers the basic information needed to make the most of the rest of this manual. Take time to read the entire introduction as it defines terms and explains concepts used throughout the manual.
- **Mechanical Installation** offers general guidance on sign mounting.
- **Electrical Installation** provides general guidance on terminating power and signal cable of the sign.
- **Maintenance and Troubleshooting** addresses such things as removing basic sign components, troubleshooting the sign, performing general maintenance, and exchanging sign components.
- **Appendix A** includes most of the drawings referenced in this manual.
- **Appendix B** includes information on the signal converter.

Daktronics identifies manuals by an ED number located on the cover page of each manual. For example, this manual would be referred to as **ED11477**.

Listed below are a number of drawing types commonly used by Daktronics, along with the information that each is likely to provide. This manual might not contain all these drawings.

- **System Riser Diagrams:** overall system layout from control computer to sign, power and phase requirements.
- **Shop Drawings:** fan locations, mounting information, power and signal entrance points and access method (front and rear).
- **Schematics:** power and signal wiring for various components.
- **Component Placement Diagrams:** locations of critical internal sign components such as power supply assemblies, controller boards, thermostats and light detectors.

**Figure 1** illustrates Daktronics drawing label. The drawing number is located in the lower-right corner of the drawing. Listing the last set of digits and the letter preceding them identifies drawings in the manual. In the example below, the drawing would be referred to as **Drawing B-206146**. Reference drawings are inserted in **Appendix A**.

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, AF-3200 & AF-3400 SERIES			
TITLE: SCHEM, PRIMARY SIGNAL, INTERNAL, W/QC			
DES. BY: PGILK		DRAWN BY: LKERR	DATE: 11 MAR 04
REVISION	APPR BY:	1229-R03B-206146	
00	SCALE: NONE		

**Figure 1:** Drawing Label

All references to drawing numbers, appendices, figures, or other manuals are presented in **bold** typeface, as shown below.

“Refer to **Drawing B-206146** for the power supply connections.”

Additionally, drawings referenced in a particular section are listed at the beginning of that section as seen in the following example:

**Reference Drawing:**

Schem; Primary Signal, Internal W/.QC ..... **Drawing B-206146**

Daktronics signs are built for long life and require little maintenance. However, from time to time, certain sign components will need replacing. The **Replacement Parts List** in **Section 7** provides the names and numbers of components that may need to be ordered during the life of the sign. Most sign components have a white label that lists the part number. The component part number is in the following format: OP-\_\_-\_\_-\_\_-\_\_ (circuit board) or OA-\_\_-\_\_-\_\_-\_\_ (multi-component assembly).

Following the **Replacement Parts List** is the **Daktronics Exchange and Repair and Return Programs**. Refer to these instructions if any sign component needs replacement or repair.

## 1.1 Safety Precautions



1. Read and understand these instructions before installing.
2. Be sure that the display is properly grounded.
3. Disconnect power before working on the display.
4. Do not modify the displays or attach any panels or coverings to the display without the express written consent of Daktronics, Inc.
5. Most products are equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a qualified electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

## 1.2 Display Overview

The Daktronics DataTrac CE-1010 Indoor LED displays have been designed and manufactured for performance, reliability, easy maintenance, and long life. The displays consist of an array of LED pixels. The configuration of the LED pixels is dependent on the family of LED displays. The standard character is seven pixels high by five pixels wide.

The DataTrac CE-1010 system is available with DataView or Venus 1500 protocol for message control. The PC controls one or more DataTrac sectional displays. The displays are offered as single-face sectional displays, which are single-sided stand-alone units. They can be mounted side-by-side and stacked on top of each other to create a larger display.

DataTrac displays are character-based indoor LED displays, which are available in tri-color (red, green and amber) characters. This display family is for 5x7 single-stroke fonts. Daktronics offers the DataTrac displays with a 1.2", 2.1", 3.2", or 4.2" character height in various lengths. The DataTrac model numbers are described as follows: **CE-1010-RRR-CCC-HH-XX**

<b>CE</b>	=	Panelized DataTrac Display
<b>1010</b>	=	1010-Panelized with screen
<b>RRR</b>	=	Number of rows of characters—1.2 available in 8 and 12 high sections; 2.1 available in 4, 8 and 12 high sections; 3.2 and 4.2 available in 4 or 6 high sections
<b>CCC</b>	=	Number of columns of characters—1.2 and 2.1 available in 24 and 30 character sections; 3.2 available in 18 and 24 character sections; 4.2 available in 12 and 18 character sections
<b>HH</b>	=	Character height—1.2, 2.1, 3.2 or 4.2
<b>XX</b>	=	RG=Tri-color (red, green and amber)

### 1.3 Network Concepts

The concept of using LED displays as a cost effective, high impact method of communication is rapidly growing throughout many industries and businesses. The reasons for this growth are many, but the need for additional features and complexity of multiple sign installations has emerged, and the Daktronics display systems have been designed to meet those needs. The common thread to most clients' requests is a means of programming and controlling a group of signs from a central control point. Daktronics responded by developing a powerful system of interconnecting and controlling signs. Great care has been taken to design products that will satisfy a wide variety of installations. Some of the design goals of these systems include the following:

- Easy transfer of messages
- The ability to tell a sign in the network which message it should run
- The ability to determine the status of any sign on the network
- The ability to control multiple sign technologies on the same network

All of the programming features would seem insignificant if the installation of the systems could not be accomplished with basic tools and without technical difficulty. Daktronics decided to use the very popular and readily available RJ11 connector. This connector is also used on modern home and office telephone equipment.

All that is required for signal installation is standard six (6) conductor modular telephone wire. For some installations, it may be possible to buy pre-terminated telephone cables for use with the displays.

The DataTrac CE-1010 display uses a RS422 networking system. RS422 (EIA/TIA-422-B) is a standard communication interface that utilizes a differential balanced transmission scheme, which uses a typical maximum cable length of 1.2 km (approximately 4000 feet). The main advantage of RS422 over RS232 is the longer cable length that is possible. A signal converter is needed to convert the computer's RS232 to RS422.

## 1.4 Part Definitions

**Com Port:** connector on the back of the controller PC. The Com Port is used to control the sign network through either a 9- or 25-pin serial connector.

**Display Configuration:** refers to a display's model number, address, etc. This information will be automatically displayed when the display is powered up.

**Flipped Cable:** six (6) conductor phone cable. Pin 1 of connector A connects to pin 6 of connector B.

**LAN:** abbreviation for Local Area Network

**Loop Back Test:** troubleshooting test that connects the transmit to receive lines. For more information on this test refer to **Appendix B**.

**Module:** one unit of the display. The 1.2" and 2.1" displays' modules consist of 4 lines by 6 characters. The 3.2" and 4.2" displays' modules consist of 2 lines by 6 characters.

**Network:** consists of multiple signs connected to each other.

**RS232:** standard PC communication type with a maximum cable length of 25 feet (7.62 meters).

**RS422:** standard differential communication type with a maximum cable length of 4000 feet (1.2 kilometers).

**RX LED:** LED on the signal converter that indicates if the display is sending data back to the signal converter.

**Sign Address:** identification number assigned to each sign of a network. The control software uses the address to locate and communicate with each display.

**Signal Cable Tester:** used to test the cable connections and data communication.

**Signal Converter:** Daktronics supplied unit that converts the data from RS232 to RS422. The signal converter is used in RS422 systems.

**TX LED:** LED on the serial converter that indicates the control PC is sending data to the display.

**X,Y Coordinates:** used to reference the location of LED blocks within the entire sectionalized DataTrac display.

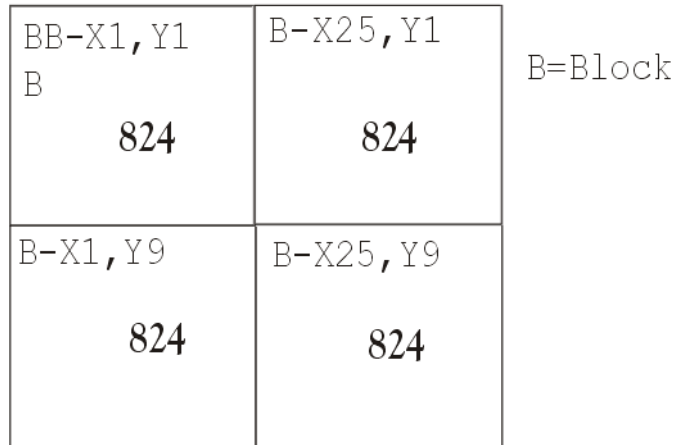


## 1.5 Daktronics Nomenclature

The X-coordinate refers to the LED block placement within a row of characters. To count the placement of the X-coordinate, begin with the left-most LED block as X=1 and continue counting across through the entire display to the right-most LED block.

The Y-coordinate refers to the LED block placement within a column of characters. To count the placement of the Y-coordinate, begin with the upper-most LED block as Y=1 and continue counting down through the entire display to the bottom-most LED block. The software on the control PC uses these coordinates to determine the placement of data within the larger display.

The X,Y coordinates at the upper left character of each section need to be configured for proper display orientation.



### Type 8X24 Sectional Displays

**Figure 2:** Positions-1648 Display

In addition, various Daktronics drawings may contain the following labeling formats:

- “TB\_” shows a termination block for power or signal cable.
- “F\_” denotes a fuse.
- “E\_” signifies a grounding point.
- “J\_” stands for a power or signal jack.
- “P\_” represents a power or signal plug for the opposite jack.

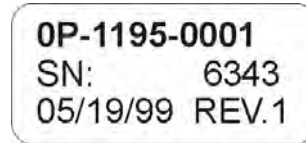
Finally, drawings commonly have Daktronics part numbers. You can use those part numbers when requesting replacement parts from Daktronics Customer Service.

Take note of the following part number formats:

- “OP-\_\_\_\_-\_\_\_\_” gives the form of an individual circuit board, such as a module driver.

- “0A-\_\_\_\_-\_\_\_\_” represents an assembly, such as a circuit board and the plate or bracket to which it mounts. A collection of circuit boards working as a single unit may also carry an assembly label.
- “W-\_\_\_\_” indicates a wire or cable. Cables may also carry the assembly numbering format in certain circumstances. This is especially true of ribbon cables.
- “F-\_\_\_\_” signifies a fuse.

Most circuit boards and components within this sign carry a label that lists the part number of the unit. If the **Replacement Parts List** in **Section 4.13** does not list a circuit board or assembly, use the label to order a replacement. **Figure 3** illustrates a typical label. The part number is in bold.



*Figure 3: Typical Label*

## Section 2: Mechanical Installation

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### Reference Drawings:

Shop Dwg; CE-1010-***-1.2-RG-Thin Mount .....	Drawing A-154011
Shop Dwg; CE-1010-4**-2.1-RG-Thin Mount .....	Drawing A-151214
Shop Dwg; CE-1010-***-2.1-RG-Thin Mount .....	Drawing A-152954
Shop Dwg; CE-1010-***-3.2-RG-Thin Mount .....	Drawing A-151283
Shop Dwg; CE-1010-***-4.2-RG-Thin Mount .....	Drawing A-154044
Spacing Plate; XX.XX" Tall-Thin Mount .....	Drawing A-152630
Shop Dwg; Install Notes-Thin Mount .....	Drawing A-152599
Mtg Brkt Assy; CE-10**-824-2.1-Thin .....	Drawing A-155773
Shop Dwg; Install Details CE-1010-1672-2.1-Thin .....	Drawing B-155789
Generic; System Riser Diagram .....	Drawing A-113523

The sectional display models shown in **Drawings A-154011, A-151214, A-152954, A-151293** and **A-154044** are available in various standard sizes and can be arranged to create larger display sizes. The arrangement of these sections requires Daktronics contract engineering.

Daktronics contract engineering and the Daktronics project manager will provide installation, layout, and riser diagrams once the overall display size has been determined. **Drawings A-152630, A-152599, A-155773, and B-155789** are typical illustrative drawings of those that are contract specific, and are made available by the Daktronics project manager. Installation drawings are also included in the installation kits that come with the display section(s).

**It is important to have received and reviewed the installation drawings and riser diagrams before installation begins. Installation personnel should be familiar with these drawings and have copies of them on site.**

**Note:** Daktronics engineering staff must approve **any** changes made to the display. If any modifications are made, detailed drawings of the changes **must** be submitted to Daktronics for evaluation and approval, or the warranty may be void.

Refer to the **shop drawings** referenced above, and the other drawings provided by the project manager.

### 2.1 Support Structure Design

The wall, framing members, or structure that will support the Daktronics supplied Z-brackets and display sections are to be designed to support the weight of the completed system. Review all drawings to determine special requirements and the total system weight. It is the customer's responsibility to ensure that the installation will meet local codes and or standards. Daktronics is not responsible for the installations or the structural integrity of support structures done by others.

## 2.2 Z-Bracket Installation for Sectional Display Mounting

Review all drawings to determine special requirements. Display sections are to be mounted to a wall or structural frame using Z-shaped aluminum brackets provided by Daktronics in an installation kit. The Z-brackets allow for one (1) inch of air space behind the displays for power and signal terminations, and for the corresponding customer supplied junction boxes. Installation drawings will provide the necessary dimensions for the mounting of the display, Z-brackets, and power termination junction boxes.

It is the customer's responsibility to attach the Z-brackets with the correct amount and type of hardware to support the weight of all display sections mounted to those Z-brackets as well as the support structure mentioned in **Section 2.1**. It is the customer's responsibility to ensure that the installation will meet local codes and standards. Daktronics is not responsible for the installations or the structural integrity of support structures done by others.

When mounting a display system containing one or multiple rows of display sections, the bottom row of displays will require two rows of Z-brackets attached to the support structure. Upper rows of displays will require only one row of Z-brackets per row of displays. This is due to the fact that each display section has alignment pins located on the top of the section that interlock into the bottom of the display section stacked on top of it. It is important to check these pins for tightness before hanging a display section.

## 2.3 Electrical Junction Box Installation

Review all drawings to determine special requirements. Installation drawings will provide the necessary dimensions for the power termination junction boxes. The contract specific riser diagram will identify power specifications for the display system. Also read **Section 3** for any other pertinent information that may be needed during the mechanical installation process.

## 2.4 Hanging Display Sections

Each DataTrac CE-1010 section has threaded insert nut holes on the rear side for the attachment of mounting brackets. These are required for the hanging of the individual sections. The mounting brackets come in the installation kit along with the required ¼-20x3/4 hex head bolts. A drawing or drawings showing the correct mounting bracket attachment will be included in the installation kit. **Drawing A-155773** illustrates the attachment of mounting brackets.

Hang the section that receives the incoming signal to the bottom left side of the mounted Z-brackets. Subsequent sections are to be mounted to the Z-brackets, as they are daisy-chained together with signal interconnects per the contract specific riser diagram and **Section 3** for electrical and signal information.

**Each section is labeled with an address and X-Y coordinate. Make sure that the proper section is mounted to the Z-bracket in the proper place.**

**Make sure that the mounted Z-brackets have screws attached vertically to each end to prevent the display sections from sliding off. This is discussed and illustrated in the included install kit drawings.**

## **2.5 Display Ventilation Requirements**

Fresh air inlets and exhaust vents should not be obstructed in any way. Using the Daktronics suggested mounting methods will ensure proper ventilation. If using a different mounting method, consult a Daktronics sales representative for clearance requirements regarding the particular display. If ventilation requirements are not met, the display warranty will be void.



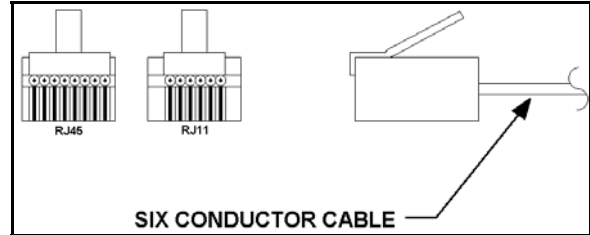
## Section 3: Electrical Installation

### 3.1 Signal

#### *Cables*

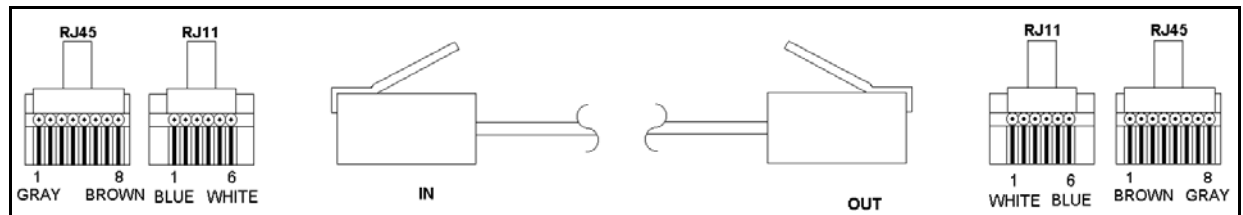
The conductor connector used in the network is an industry standard 6-pin RJ11 or an 8-pin RJ45. This connector can be found on many telephones and LANs.

The cable used in the network is a standard flat six-conductor telephone cable (standard flipped cable). Refer to **Figure 4**. This cable has one end that is the mirror image of the other end (i.e. the cable is flipped). Refer to **Figure 5** for a standard flipped cable.



**Figure 4:** Six conductor RJ11 Connector and Cable

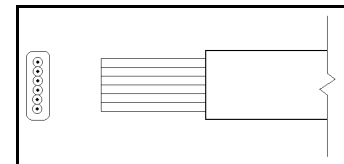
Notice in **Figure 5** that the color code on one connector must be made the opposite on the other connector. When installing a network, it is not easy to remember in which direction the previous end was oriented. One simple way to avoid confusion is to standardize the color code, having one color for the connector going into the output of a sign, and the opposite color for a connector going into the input of a sign. This will help ensure correct cabling since cables are always installed from the output jack of one sign to the input jack of the next sign.



**Figure 5:** Flipped Cable with RJ Connectors

#### *Installing an RJ11 Connector*

Installing an RJ11 connector on the end of the six-conductor cable is a simple task when the correct tools are used. The RJ11 crimping tool (Daktronics part number TH-1033) performs two separate steps.



**Figure 6:** Wire with Outer Jacket Stripped

First, use the crimping tool to strip the outer insulation from the inner wires. This does not result in bare wires since only the gray outer jacket is removed. After correct stripping, the wire will appear as shown in **Figure 6**.

The crimping tool is then used to crimp the RJ11 connector onto the cable. The RJ11 connector is locked into a special socket in the tool. The stripped wire is inserted into the RJ11 connector. Finally, the tool is squeezed like a pliers to crimp the connector onto the wire. This completes the installation of an RJ11 connector onto the wire.

### 3.2 Power

**Reference Drawing:**

Generic; System Riser Diagram..... **Drawing A-113523**

***Power Requirements***

Each display system comes with a contract specific riser diagram similar to the drawing referenced above.

Refer to the specifications sheet for voltage and current requirements. The displays accept a universal input voltage of 85-265 VAC at 50 or 60 Hz.

Do not connect the display to any voltage other than that listed on the Daktronics product label attached to the back of the display.

***Grounding***

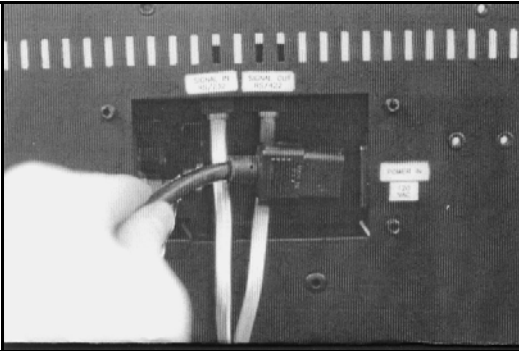
Proper grounding is necessary for reliable equipment operation, and provides some protection to the equipment from damaging electrical disturbances. All of the displays are supplied with a power cord that contains an earth ground conductor. Make sure to plug this cord into a grounded outlet. If the proper grounding methods are not followed, the warranty will be void.

**Note:** Displays **must** be earth grounded according to national and local electrical codes.

***Power Connection – Pluggable Cord Connected Displays***

The DataTrac CE-1010 displays are supplied with an eight (8) foot power cord. The socket-outlet should be installed near the equipment and be easily accessible. Plug the power cord into the socket as shown in **Figure 7**.

It is important to check this connector to make sure it is fully secured before hanging a display section.



**Figure 7: Power Cord Connection**



### 3.3 RS422 System

A RS422 system requires a signal converter to connect the first sign to the computer.

1. Plug the serial cable's 25-pin connector into the signal converter.
2. Plug either the 9-pin or the 25-pin connector (depending on your PC) into the RS232 COM port to be used.
3. Plug the signal converter's power cord into a 120 VAC grounded outlet.
4. Plug a flipped phone cable into the "RS422 OUT" of the signal converter and the opposite end into the "RS422 IN" of the first display.

The "RS422 IN" jack's pin out is as follows:

Pin	Function
1	N.C.
2	D1OUT-P
3	D1OUT-N
4	D1IN-P
5	D1IN-N
6	N.C.

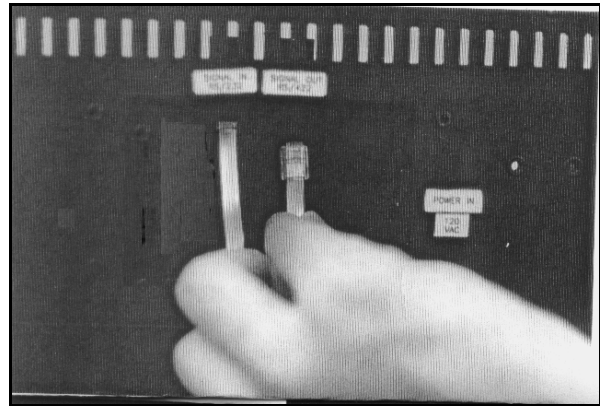


Figure 8: Output Signal Cable Connection

### 3.4 Sign to Sign/Section to Section Connections

When wiring the sign to sign network, the cable and connectors discussed earlier in this section are used. Pay special attention to the information regarding flipped cables to help ensure a successful installation. The best method of wiring the signs together is to start at the first sign, as it is designated to begin the network.

1. Plug the cable into the "SIGNAL OUT" output jack of the first sign (refer to **Figure 8**) and the other end of the cable into the input jack of the next sign.
2. Continue this procedure throughout the network. When the wiring is complete, the last sign will have nothing in the output jack.
3. Before hanging the displays, review **Section 2.4**.



# Section 4: Maintenance and Troubleshooting

---



### Important Notes:

1. Disconnect power before any repair or maintenance work is done on the display.
2. Qualified service personnel must make any access to internal display electronics.
3. Disconnect power when the display is not in use.

### Reference Drawings:

Label Detail Drawing, CE-10**-****-*.*, RS422.....	Drawing A-110324
<b>1.2" Displays</b>	
Final Assy; CE-1010-****-1.2-RG .....	Drawing B-110268
Schematic; CE-10**-824/30-1.2-** .....	Drawing B-113015
Schematic; CE-10**-1224/30-1.2-** .....	Drawing B-113344
<b>2.1" Displays</b>	
Final Assy; CE-1010-4**-2.1-SBRG .....	Drawing B-140722
Final Assy; CE-1010-****-2.1-RG .....	Drawing B-121808
Schematic; CE-10**-424/30-2.1-** .....	Drawing B-140608
Schematic; CE-10**-824/30-2.1-** .....	Drawing B-121853
Schematic; CE-10**-1224/30-2.1-** .....	Drawing B-121854
<b>3.2" Displays</b>	
Final Assy; CE-1010-****-3.2-RG .....	Drawing B-146115
Schematic; CE-10**-418/24-3.2-** .....	Drawing B-145059
Schematic; CE-10**-618/24-3.2-** .....	Drawing B-144982
<b>4.2" Displays</b>	
Final Assy; CE-1010-****-4.2-RG .....	Drawing B-110430
Schematic; CE-10**-412/18-4.2-** .....	Drawing B-107790
Schematic; CE-10**-612/18-4.2-** .....	Drawing B-109996

The DataTrac CE-1010 displays are **front** access. The components within the displays are not field repairable. In most cases, it is easiest to completely replace the failed part or return it to Daktronics for repair.

Refer to the project specific shop drawings provided by the project manager.

## 4.1 Accessing the Interior of the Display

Depending on the overall size of a display system, sectional displays may have two sizes of front access removable panels. Finding the Daktronics labels on the front of the display will help in locating the lower right corner of a display section.

For 1.2" and 2.1" display types, the module in this corner may either be a 4x6 or 4x12 panel. For 3.2" and 4.2" displays, the modules are all 2x6 panels. Panels are removed by accessing 1/4-turn fasteners in the corners of a module panel.

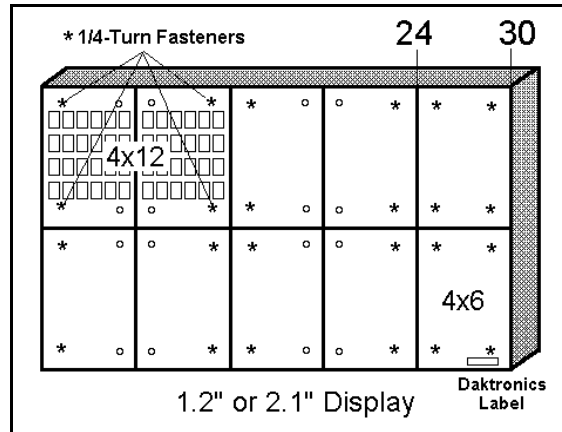
**Note:** Not every hole has a 1/4-turn fastener. Only the four corner holes of the module panel do. Refer to **Figure 9**.

The screwdriver must pass through the face panel. The 1/4-turn screws are located behind the face panel.

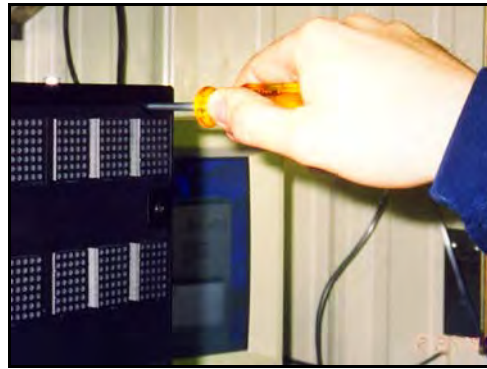
Using a #1 Philips screwdriver, turn the 4 1/4-turn screws securing the LED module panel to the cabinet of the display one-quarter turn counter-clockwise. Refer to **Figure 9** and **Figure 10**. The screws are designed to remain in the LED module flanges, but release from the cabinet.

Gently pull the LED module panel from the body of the display. It will come forward as a complete unit. Refer to **Figure 9** and **Figure 10**.

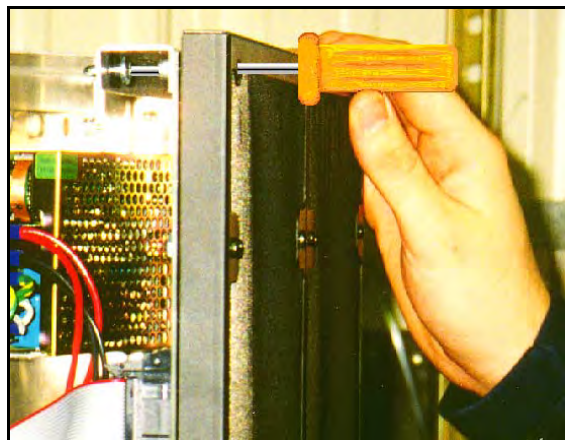
**Note:** Use caution when removing the LED module panel. The power wires and ribbon cable connecting the LEDs to the inside of the display will still be connected. Take care not to scratch the modules wire cloth filter.



**Figure 9:** Screw Locations



**Figure 10:** Locating module panel 1/4-turn fasteners



**Figure 11:** Module Panel Removal

To completely remove the LED module panel from the cabinet of the display:

1. Spread the clasps of the 40-pin connectors on the rear side of the panel.
2. Gently pull the cable to disconnect the pin connector (refer to **Figure 12**).
3. Disconnect the four-pin power connectors. The power cable is released by squeezing the tabs on each side of the connector.



**Figure 12:** LED Module Ribbon Cable Removal

## 4.2 Display Interior

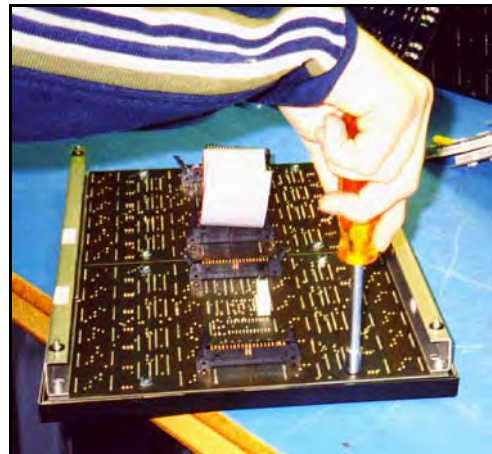
Once the LED module panel is removed, the display interior is visible. Various internal components, including the display controller and the power supplies, are now accessible for repair or replacement.

### ***LED Module Replacement***

If any LED modules fail, the recommended procedure is to replace the failed module, send it to Daktronics, or send it to a certified dealer for repair. Refer to **Section 4.6** for information on packaging components for shipment.

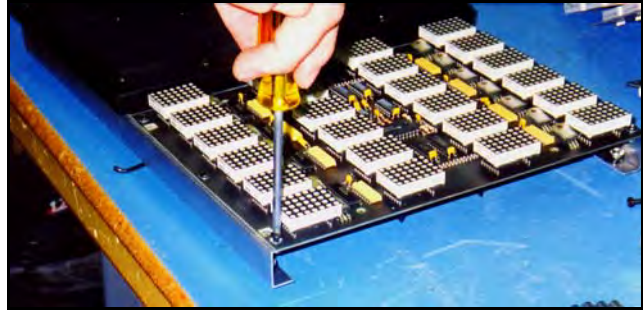
To remove an LED module:

1. Remove the appropriate LED module panel as described in **Section 4.1**.
2. Disconnect the remaining 40-pin ribbon cable from the failed module.
3. Removing the wire cloth retainer frame requires the following: For 1.2" displays, remove the four nuts located along the rear edge of the LED circuit board. For the 2.1" displays, remove the four perimeter nuts and one in the center of the circuit board. For the 3.2" and 4.2" displays, remove the six perimeter nuts and two in the center. Refer to **Figure 13**.
4. Flip the module panel over and remove the wire cloth filter from the front of the failed module.



**Figure 13:** Removing the wire cloth retainer frame nuts

5. Remove the screws located along the top and bottom edge of the module, and lift the PC board off of the rails. Refer to **Figure 14**.
6. Reverse the previous procedure to attach a new module.

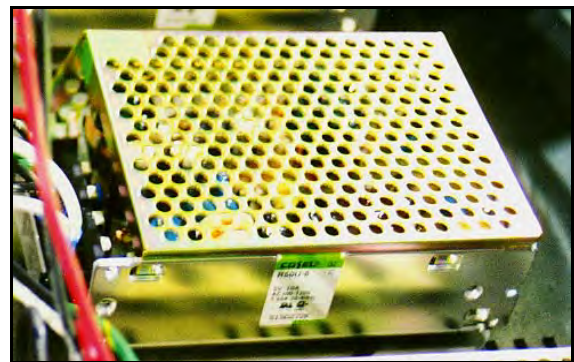


**Figure 14:** Removing Top and Bottom Module Screws

### ***Power Supply Replacement***

**1.2" and 2.1"** Power to the LED modules is provided by small 5V power supplies. Each power supply can support two 4x6 modules. The controller board also requires a 5V power supply. The power supplies are mounted to the back sheet within the display cabinet.

**3.2" and 4.2"** Power to the LED modules is provided by 6.5V power supplies. Each power supply can support two 2x6 modules. The controller board also requires a 5V power supply.

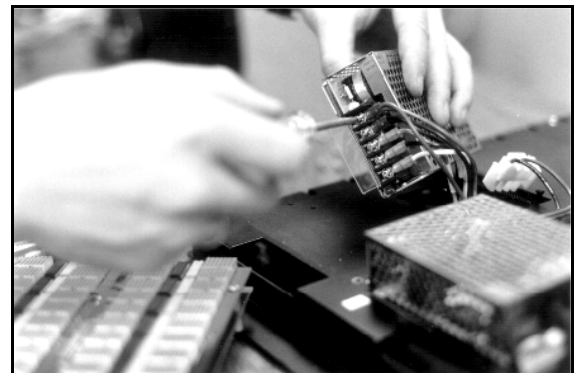


**Figure 15:** Power Supply

To remove a power supply that has failed, first remove the LED module in front of the failed power supply as described in **Section 4.1**.

Each power supply is attached to a power supply plate by two metric screws. The plate is secured to the back sheet by two (2) #6 hex head screws. Refer to **Figure 15**. Use a  $\frac{3}{16}$ -nut driver to remove the #6 hex head screws.

Lift the power supply and plate back. The metric screws securing the power supply to the plate are now accessible. Use a #1 Philips head screwdriver to remove the screws and free the power supply.

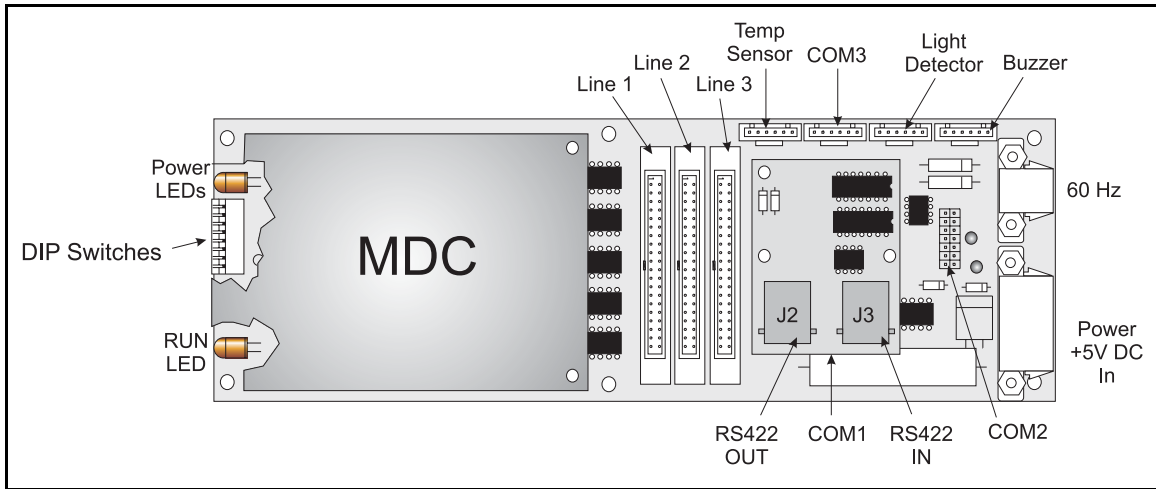


**Figure 16:** Power Supply Cable Connections

Disconnect the power cables as shown in **Figure 16**. The power supply is now fully released and ready for replacement. Follow the previous steps in reverse order to reattach the new power supply. Refer to the display's schematic for the proper wiring configuration.

### Display Controller

The display controller is mounted to the inside rear of the display cabinet. Refer to **Figure 17** for an illustration of the controller and the **appropriate schematic** for its location in the display. The controller receives information from the computer, interprets it, and activates the appropriate LEDs on the display. The display controller also has a set of eight switches by which an address can be set using standard binary code (refer to **Section 4.3**).



**Figure 17:** MDC Controller

Under normal operation, the normal state of the controller's status indicator LEDs is as follows:

Status Indicator	Normal State
MDC Power LED	On Constant
Product Board Power LED	On Constant
Run LED	Flashes once per second

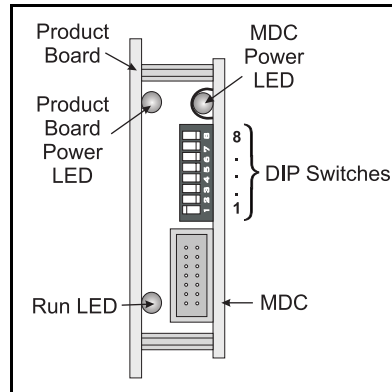
To replace a failed controller:

1. Remove the module panels as described in **Section 4.1**. Each display section has one controller mounted inside it. Refer to the **appropriate schematic for the controller location**.
2. Disconnect the power cable and signal ribbon cables. Release the power cable by squeezing the tabs on each side of the connector. Release the signal ribbon cables by spreading the clasps on the jack and gently pulling up on the ribbon cable. Take note of the signal cables and their appropriate jacks.
3. Remove all #6 connecting screws and the controller will be free. If the address switches are used, take note of the switch configuration and set the same address on the new controller.
4. To install a new controller, reverse the previous procedure.

### 4.3 Controller Address and Test Mode

The controller has a set of “DIP” switches on the side of the controller as shown in **Figure 18**. These DIP switches set the hardware address. When replacing a controller board, be sure to set the DIP switches in the same address configuration as the defective controller. Turn power off and then back on to recognize the new address.

**Note:** Setting the DIP switches to address 0 (turn all the switches to OFF by flipping them toward the printed switch numbers) can activate a test mode. The display’s power must be downed and then reconnected to run the test mode.



**Figure 18:** End View; Display Controller DIP Switches

Switch 8	Switch 7	Switch 6	Switch 5	Switch 4	Switch 3	Switch 2	Switch 1	Address
Off	Off	Off	Off	Off	Off	Off	On	1
Off	Off	Off	Off	Off	Off	On	Off	2
Off	Off	Off	Off	Off	Off	On	On	3
Off	Off	Off	Off	Off	On	Off	Off	4
Off	Off	Off	Off	Off	On	Off	On	5
Off	Off	Off	Off	Off	On	On	Off	6
Off	Off	Off	Off	Off	On	On	On	7
Off	Off	Off	Off	On	Off	Off	Off	8
Off	Off	Off	Off	On	Off	Off	On	9
Off	Off	Off	Off	On	Off	On	Off	10
Off	Off	Off	Off	On	Off	On	On	11
...	...	...	...	...	...	...	...	...
On	On	On	On	Off	Off	Off	Off	240

### 4.4 Troubleshooting

This section contains some symptoms that may be encountered with the LED displays. Possible remedies are provided. This list does not include every possible problem, but does represent some of the more common situations that may occur.

Symptoms/Conditions	Possible Cause/Remedy
Cannot communicate with the display.	<ul style="list-style-type: none"> <li>• Check flipped phone cable connections.</li> <li>• Check display configuration.</li> <li>• Check signal converter TX and RX LEDs.</li> </ul>
Display will not run.	<ul style="list-style-type: none"> <li>• Check power cord.</li> <li>• Power down, then power up the display.</li> <li>• Check the controller status indicators.</li> </ul>



Entire display is garbled or a section of the display is bad.	<ul style="list-style-type: none"> <li>Power down, then power up the display.</li> </ul>
Section of the display network is not working.	<ul style="list-style-type: none"> <li>Bad input on the first bad display.</li> <li>Bad output on the last good display.</li> <li>Switch the suspect display with a known good display.</li> </ul>

**Note:** The display configuration is shown on operation and contains the following information:

1. Positions (x=1, y=1)
2. Firmware Version
3. Size 4x8
4. COM1 Configuration (DataView™ 19200)
5. COM2 Configuration (DataView™ 9600)
6. Display Address—displayed in binary code (i.e. 001)
7. Modem (if present)

## 4.5 Replacement Parts

Common Parts	
Part Description	Part Number
DataTrac CE-1010 Display Manual	ED11477
Signal Converter- 120 VAC	0A-1127-0255
Signal Converter- 240 VAC	0A-1127-0250
Serial Cable	W-1249
Adapter DB9M to DB25F	A-1603
Patch Cable, 10ft, RJ45, 4 Pair Twisted	W-1383
Network Tester	0A-1146-0005
Display Interconnect Cable	0A-1120-0176
Power Cord, 120VAC	W-1181
Cable, 18" RJ11 6-cond straight	0A-1137-0160
Cable; 25" RJ11 6-cond straight	W-1265
Cable, 36" RJ11 6-cond straight	0A-1120-0134
Cable, 100" RJ11 6-cond straight	0A-1146-0002
Cable; 500" RJ11 6-cond straight	0A-1146-0003
Cable Assy; 40 Pos 8"	W-1341
Cable Assy; 40 Pos 18"	W-1362
Cable Assy; 40 Pos 36"	0A-1000-0006
Power Supply; 5V @10A	A-1568
Power Supply; 6.5V @15A	A-1591
1.2" Display	
Controller- 422 DVIEW	0A-1120-0135
Controller- 422 V1500	0A-1120-0016
Module; CE-10**-4x6-1.2-RG	0P-1120-0030
Panel; CE-1010-4x6-1.2-RG-Flush	0A-1120-0514
Panel; CE-1010-4x6-1.2-RG-Flush	0A-1120-0515
2.1" Display	
Controller- 422 DVIEW	0A-1120-0135

Controller- 422 V1500	0A-1120-0016
Module; CE-10**-4x6-2.1-SBRG	0P-1120-0034
Panel; CE-1010-4x6-2.1-RG	0A-1120-0132
Panel; CE-1010-4x12-2.1-RG	0A-1120-0131
Panel; CE-1010-4x6-231-RG	0A-1120-0448
Panel; CE-1010-4x12-2.1-RG	0A-1120-0496
<b>3.2" Display</b>	
Controller- 422 DVIEW	0A-1120-0136
Controller- 422 V1500	0A-1120-0530
Module; CE-10**-26-3.2-RG	0P-1120-0035
Panel; CE-1010-2x6-3.2-RG-Flush	0A-1120-0533
<b>4.1" Display</b>	
Controller- 422 DVIEW	0A-1120-0136
Controller- 422 V1500	0A-1120-0530
Module; CE-10**-2x6-4.2-RG	0P-1120-0031
Panel; CE-1010-2x6-4.2-RG	0A-1120-0529

<b>Previously Used Parts</b>		
<b>Part Description</b>	<b>Part Number</b>	<b>Dates Used In Displays</b>
Panel: CE-1010-4x6-1.2-RG	0A-1120-0152	Before 10/31/00
Panel : CE-1010-4x12-1.2-RG	0A-1120-0153	Before 10/31/00
Module; CE-10**-4x6-2.1-RG	0A-1120-0130	7/16/98-9/15/99
Module; CE-10**-4x6-2.1-SBRG	0P-1120-0032	9/15/99-10/31/00
Panel; CE-1010-4x6-2.1-RG	0A-1120-0132	7/16/98-9/15/99
Panel; CE-1010-4x12-2.1-RG	0A-1120-0131	7/16/97-9/15/99
Panel; CE-1010-4x6-2.1-RG	0A-1120-0448	9/15/99-10/31/00
Panel; CE-1010-4x12-2.1-RG	0A-1120-0449	9/15/99-10/31/00
Panel; CE-1010-2x6-4.2-RG	0A-1120-0137	11/19/98-3/8/01

## 4.6 Daktronics Exchange and Repair and Return Programs

To serve customers' repair and maintenance needs, Daktronics offers both an Exchange Program and a Repair and Return Program.

Daktronics' unique Exchange Program is a quick, economical service for replacing key components in need of repair. If a component fails, Daktronics sends the customer a replacement, and the customer, in turn, sends the failed component to Daktronics. This not only saves money but also decreases scoreboard downtime.

Daktronics provides these plans to ensure users get the most from their Daktronics products, and it offers the service to qualified customers who follow the program guidelines explained below. Please call the Help Desk 877-605-1115 if you have questions regarding the Exchange Program or any other Daktronics service.

When you call the Help Desk, a trained service technician will work with you to solve the equipment problem. You will work together to diagnose the problem and determine which replacement part to ship. If, after you make the exchange, the equipment still causes problems, please contact our Help Desk immediately.

If the replacement part fixes the problem, package the defective part in the same box and wrapping in which the replacement part arrived, fill out and attach the enclosed UPS shipping document, and **return the part to Daktronics**. In most circumstances, you will be invoiced for the replacement part at the time it is shipped. This bill, which represents the exchange price, is due when you receive it.

Daktronics expects immediate return of an exchange part if it does not solve the problem. The company also reserves the right to refuse equipment that has been damaged due to acts of nature or causes other than normal wear and tear.

If you do not ship the defective equipment Daktronics within 30 working days from the invoice date, Daktronics assumes you are purchasing the replacement part outright (with no exchange), and you will be invoiced for it. This second invoice represents the difference between the exchange price and the full purchase price of the equipment. The balance is due when you receive the second invoice.

If you return the exchange equipment after 30 working days from the invoice date, you will be credited for the amount on the second invoice, minus a restocking fee.

**To avoid a restocking charge, you must return the defective equipment within 30 days from the invoice date.**

Daktronics also offers a Repair and Return Program for items not subject to exchange.

**Return Materials Authorization:** To return parts for service, contact your local representative prior to shipment to acquire a Return Material Authorization (RMA) number. If you have no local representative, call the Daktronics Help Desk for the RMA. This expedites repair of your component when it arrives at Daktronics.

**Packaging for Return:** Package and pad the item well so that it will not be damaged in shipment. Electronic components such as printed circuit boards should be installed in an enclosure or placed in an antistatic bag before boxing. Please enclose your name, address, phone number and a clear description of symptoms.

*This is how to reach us:*

**Mail:** Customer Service, Daktronics Inc.  
PO Box 5128  
331 32nd Ave  
Brookings SD 57006

**Phone:** Daktronics Help Desk: 877-605-1115 (toll free)  
or 605-697-4036

**Fax:** 605-697-4444

**E-mail:** helpdesk@daktronics.com



# Appendix A: Reference Drawings

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## General Drawings:

Generic; System Riser Diagram.....	Drawing A-113523
Label Detail Drawing, CE-10**-****-*. *, RS422 .....	Drawing A-110324
Spacing Plate; XX.XX" Tall-Thin Mount .....	Drawing A-152630
Shop Dwg; Install Notes-Thin Mount.....	Drawing A-152599
Mtg Brkt Assy; CE-10**-824-2.1-Thin.....	Drawing A-155773

Shop Dwg; Install Details CE-1010-1672-2.1-Thin .....	Drawing B-155789
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## 1.2" Displays

Shop Dwg; CE-1010-***-1.2-RG .....	Drawing A-154011
------------------------------------	------------------

Final Assy; CE-1010-****-1.2-RG .....	Drawing B-110268
Schematic; CE-10**-824/30-1.2-** .....	Drawing B-113015
Schematic; CE-10**-1224/30-1.2-** .....	Drawing B-113344

## 2.1" Displays

Shop Dwg; CE-1010-4**-2.1-RG.....	Drawing A-151214
Shop Dwg; CE-1010-***-2.1-RG .....	Drawing A-152954

Final Assy; CE-1010-4**-2.1-SBRG .....	Drawing B-140722
Final Assy; CE-1010-****-2.1-RG .....	Drawing B-121808
Schematic; CE-10**-424/30-2.1-** .....	Drawing B-140608
Schematic; CE-10**-824/30-2.1-** .....	Drawing B-121853
Schematic; CE-10**-1224/30-2.1-** .....	Drawing B-121854

## 3.2" Displays

Shop Dwg; CE-1010-***-3.2-RG .....	Drawing A-151283
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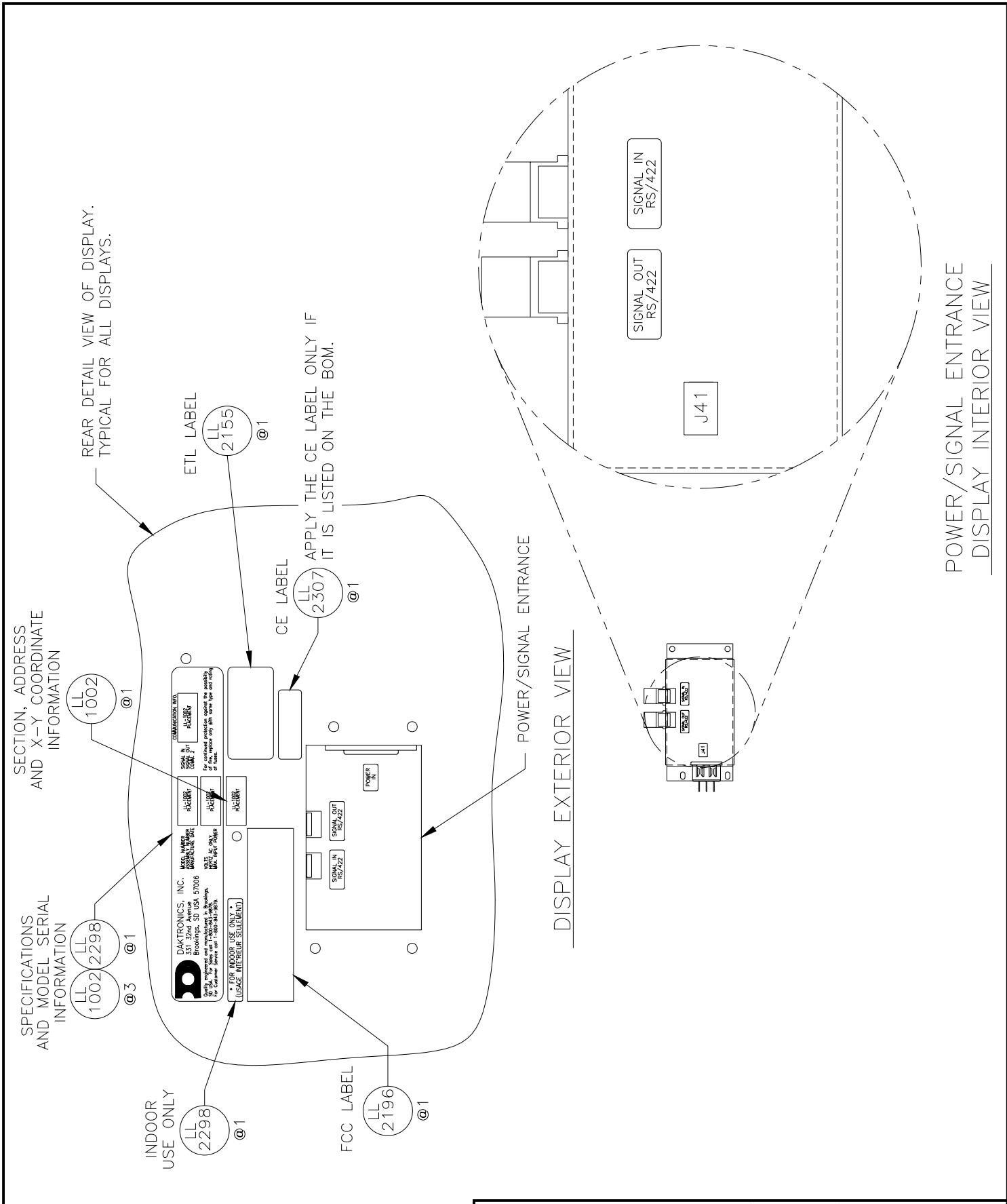
Final Assy; CE-1010-****-3.2-RG .....	Drawing B-146115
Schematic; CE-10**-418/24-3.2-** .....	Drawing B-145059
Schematic; CE-10**-618/24-3.2-** .....	Drawing B-144982

## 4.2" Displays

Shop Dwg; CE-1010-***-4.2-RG .....	Drawing A-154044
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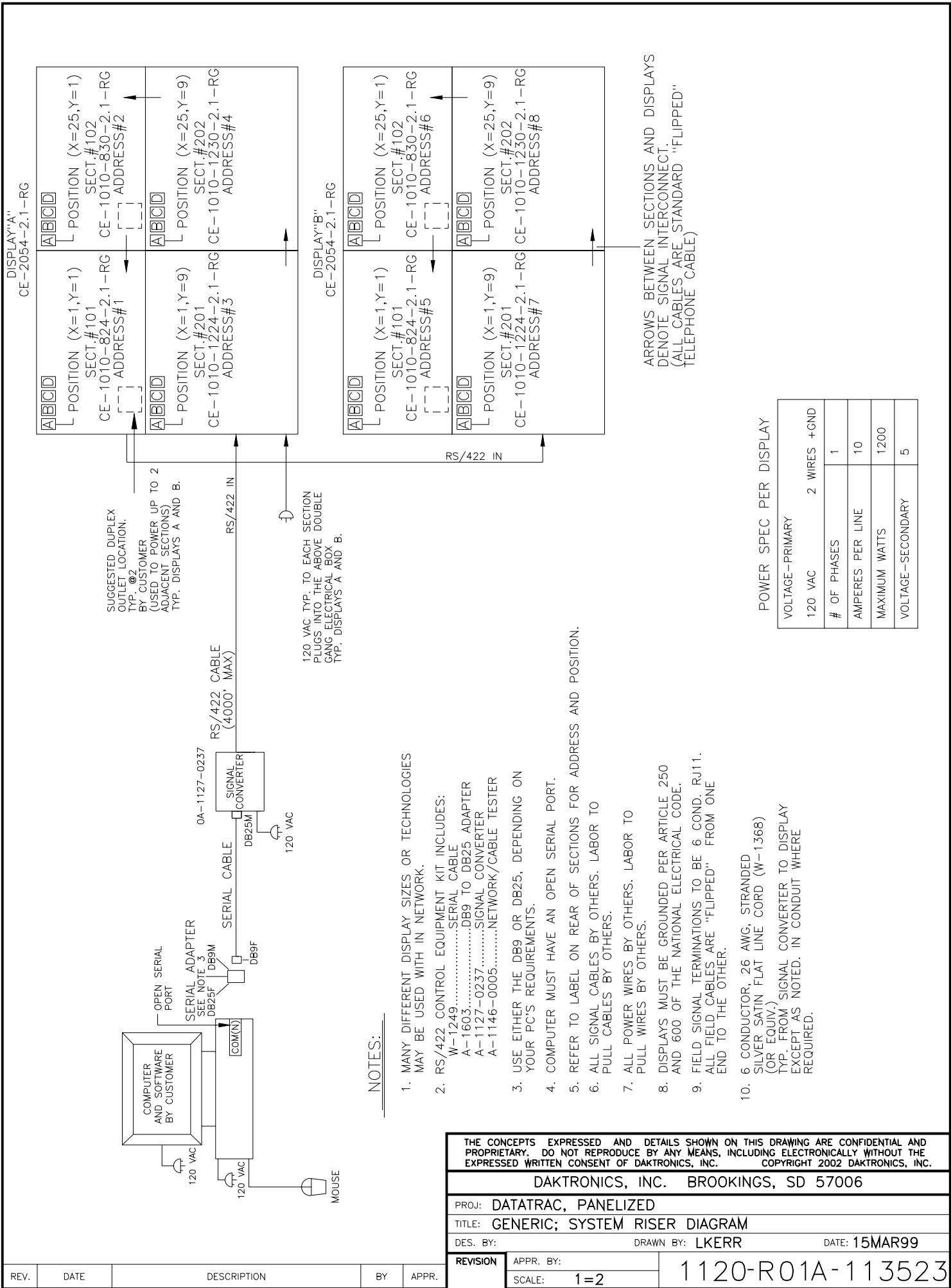
Final Assy; CE-1010-****-4.2-RG .....	Drawing B-110430
Schematic; CE-10**-412/18-4.2-** .....	Drawing B-107790
Schematic; CE-10**-612/18-4.2-** .....	Drawing B-109996





REV.	DATE	DESCRIPTION	BY	APPR.
04	31AUG01	SWITCHED SIGNAL IN AND SIGNAL OUT LABELS TO HAVE CONSISTANT LABEL PLACEMENT WITH OTHER PRODUCT LINES PER ECO-31230.	WRT	
03	08AUG01	CHANGED POSITION OF LABELS	BGB	
02	27APR99	ADDED ONE LL-1002 AND ONE LL-2307 LABEL.	WRT	
01	11MAR99	CHANGED POWER JACK STYLE	WRT	

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DAKTRONICS, INC. BROOKINGS, SD 57006				
PROJ: DATATRAC LED DISPLAYS				
TITLE: LABEL DETAIL DRAWING, CE-10**-****-*.*, RS422				
DES. BY: MSOLHEIM		DRAWN BY: MSOLHEIM		DATE: 15DEC98
REVISION	APPR. BY:	1120-E10A-110324		
	SCALE: 1=5			



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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC, PANELIZED

TITLE: GENERIC; SYSTEM RISER DIAGRAM

DES. BY: DRAWN BY: LKERR DATE: 15MAR99

REVISION APPR. BY: SCALE: 1=2

1120-R01A-113523



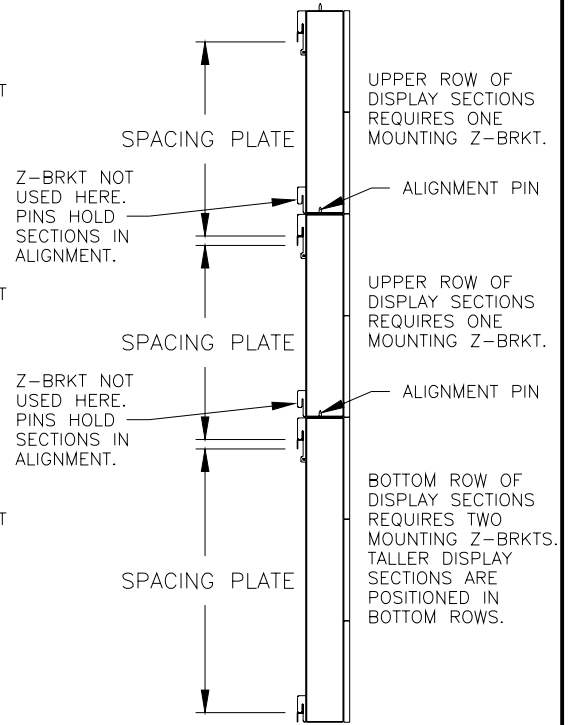
NOTE:  
 USE THIS TABLE FOR DETERMINING THE SPACER PLATES NEEDED FOR THE SPACING AND INSTALLATION OF THE MOUNTING Z-BRACKETS. PROVIDE A MINIMUM OF TWO PLATES FOR EACH SIZE NEEDED. DETAILS TO THE RIGHT SHOW HOW THIS WILL WORK IN AN ACTUAL SITUATION WHERE THREE DISPLAY SECTIONS ARE TO BE STACKED TO MAKE A LARGER DISPLAY.

CE-1010 SECTION SIZE	BOTTOM ROW SPACING PLATE	UPPER ROW SPACING PLATE
8X**-1.2"	OM-152630-D 17.20" TALL	OM-152630-F 20.60" TALL
12X**-1.2"	OM-152630-K 28.00" TALL	OM-152630-M 31.40" TALL
4X**-2.1"	OM-152630-A 9.00" TALL	OM-152630-B 12.40" TALL
8X**-2.1"	OM-152630-G 22.40" TALL	OM-152630-J 25.80" TALL
12X**-2.1"	OM-152630-N 35.80" TALL	OM-152630-P 39.20" TALL
4X**-3.2"	OM-152630-C 15.40" TALL	OM-152630-E 18.80" TALL
6X**-3.2"	OM-152630-H 25.30" TALL	OM-152630-L 28.70" TALL
4X**-4.2"	OM-152630-G 22.40" TALL	OM-152630-J 25.80" TALL
6X**-4.2"	OM-152630-N 35.80" TALL	OM-152630-P 39.20" TALL

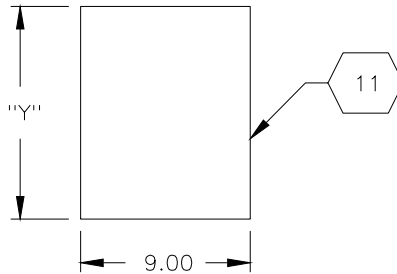
THE Z-BRACKET SPACING PLATE IS BASED ON THE DISPLAY SIZE IN THIS UPPER ROW.

THE Z-BRACKET SPACING PLATE IS BASED ON THE DISPLAY SIZE IN THIS UPPER ROW.

THE Z-BRACKET SPACING PLATE IS BASED ON THE DISPLAY SIZE IN THIS BOTTOM ROW.



END VIEW  
 STACKED DISPLAY SECTIONS  
 FOR ILLUSTRATIVE PURPOSES.  
 SCALE: 1=20



PART NO.	PART NAME	LAYOUT DIMENSIONS		RAW MAT'L/PART
		"X"	"Y"	
OM-152630-A	SPACING PLATE, 9.00" TALL	9.00"	9.00"	0.563 FT2
OM-152630-B	SPACING PLATE, 12.40" TALL	9.00"	12.40"	0.775 FT2
OM-152630-C	SPACING PLATE, 15.40" TALL	9.00"	15.40"	0.963 FT2
OM-152630-D	SPACING PLATE, 17.20" TALL	9.00"	17.20"	1.075 FT2
OM-152630-E	SPACING PLATE, 18.80" TALL	9.00"	18.80"	1.175 FT2
OM-152630-F	SPACING PLATE, 20.60" TALL	9.00"	20.60"	1.288 FT2
OM-152630-G	SPACING PLATE, 22.40" TALL	9.00"	22.40"	1.400 FT2
OM-152630-H	SPACING PLATE, 25.30" TALL	9.00"	25.30"	1.581 FT2
OM-152630-J	SPACING PLATE, 25.80" TALL	9.00"	25.80"	1.613 FT2
OM-152630-K	SPACING PLATE, 28.00" TALL	9.00"	28.00"	1.750 FT2
OM-152630-L	SPACING PLATE, 28.70" TALL	9.00"	28.70"	1.794 FT2
OM-152630-M	SPACING PLATE, 31.40" TALL	9.00"	31.40"	1.963 FT2
OM-152630-N	SPACING PLATE, 35.80" TALL	9.00"	35.80"	2.238 FT2
OM-152630-P	SPACING PLATE, 39.20" TALL	9.00"	39.20"	2.450 FT2

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

TITLE: SPACING PLATE, \*\*.\*\*" TALL - THIN MOUNT

DES. BY: WTUCKER

DRAWN BY: WTUCKER

DATE: 19JULY2001

REVISION

APPR. BY:

00

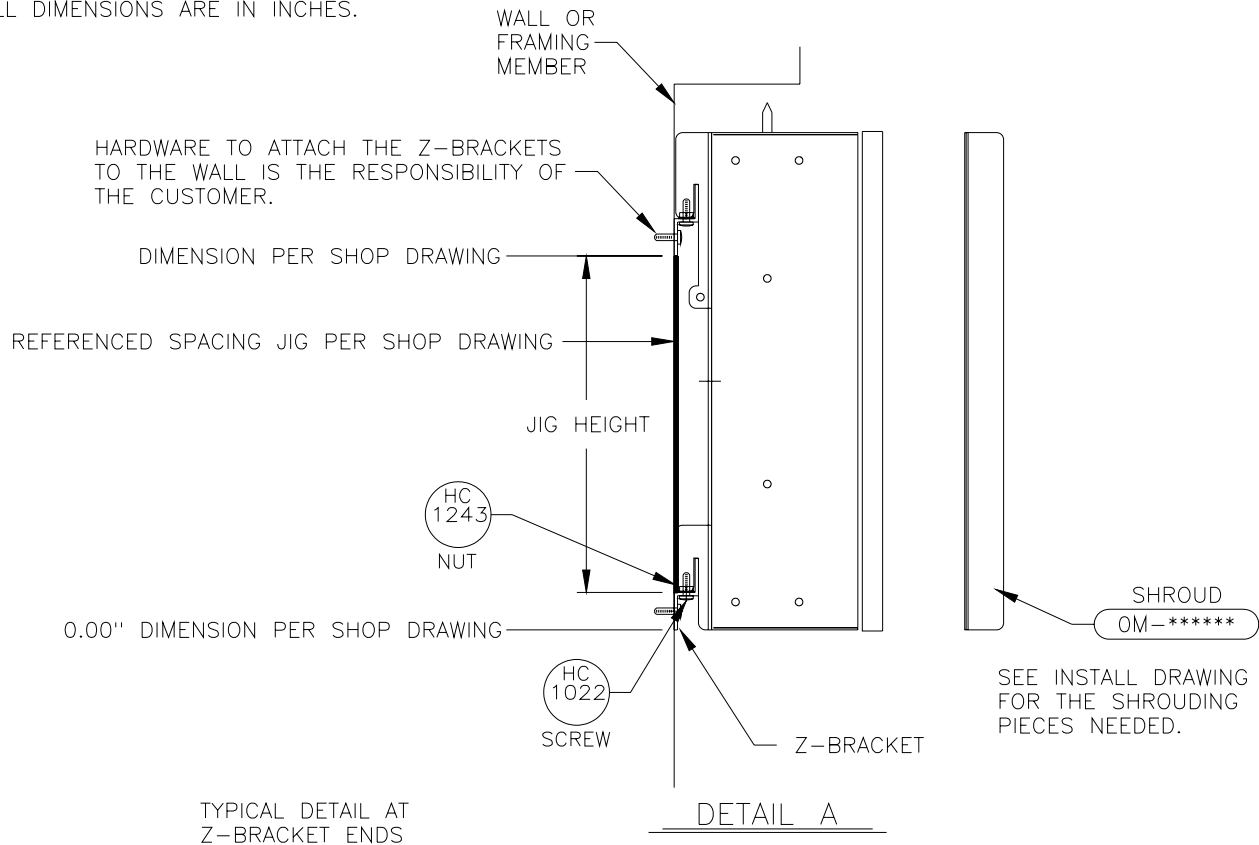
SCALE: 1=10

1120-E07A-152630

REV.	DATE	DESCRIPTION	BY	APPR.

NOTES:

1. USING THE OVERALL DISPLAY SIZE DIMENSIONS SHOWN ON THE INSTALL DETAILS SHOP DRAWING, DETERMINE THE LOCATION OF THE DISPLAY ON THE WALL OR FRAMING MEMBER CONSIDERING REQUIRED OVERHEAD CLEARANCE. NOW MARK OUT THE LOWER LEFT CORNER OF THE DISPLAY ON THE WALL OR FRAMING MEMBER FOR REFERENCE PURPOSES. THE Z-BRACKETS AND POWER J-BOXES ARE LOCATED BASED ON THIS REFERENCE POINT.
2. FRAME OR WALL SHOULD BE PLUMB AND STRAIGHT OR SHIMMING OF THE Z-BRACKETS MAY BE REQUIRED.
3. ATTACH THE BOTTOM Z-BRACKET FIRST. THE BOTTOM Z-BRACKET STARTS AT THE LOWER LEFT CORNER OF THE TOTAL DISPLAY SYSTEM. ( 0.00" REFERENCE POINT)
4. DRILL AND ATTACH EACH Z-BRACKET TO THE FRAME OR WALL WITH ENOUGH HARDWARE TO SUPPORT THE WEIGHT OF EACH SECTION MOUNTED TO IT. SEE DRAWING 1120-E10A-154011 (\*\*X\*\*-1.2" DISPLAYS), 1120-E10A-151214 (4X\*\*-2.1" DISPLAYS), 1120-E10A-152954 (\*\*X\*\*-2.1" DISPLAYS), 1120-E10A-151283 (\*\*X\*\*-3.2" DISPLAYS), OR 1120-E10A-154044(\*\*X\*\*-4.2" DISPLAYS) FOR SECTIONAL DISPLAY WEIGHTS AND OTHER PERTINENT SECTIONAL DISPLAY DETAILS.
5. USE SPACER PLATE JIGS REFERENCED TO SPACE THE NEXT Z-BRACKET ABOVE THE BOTTOM Z-BRACKET AND ATTACH AS PER ABOVE INSTRUCTIONS. IT IS VERY CRITICAL THAT Z-BRACKETS ARE LEVEL AND PARALLEL. VERIFY THE LOCATIONS OF THE Z-BRACKETS WITH DIMENSIONS GIVEN.
6. USE SPACER PLATES REFERENCED TO SPACE ANY UPPER Z-BRACKETS AND ATTACH AS PER ABOVE INSTRUCTIONS.
7. ATTACH HC-1022 (SCREWS) AND HC-1243 (NUTS) TO THE ENDS OF THE Z-BRACKETS TO PREVENT THE DISPLAYS FROM SLIDING OFF THE ENDS OF THE BRACKETS.
8. ROUTE AND INSTALL THE POWER J-BOXES TO THE APPROXIMATE AREAS SHOWN SO AS NOT TO BE DIRECTLY BEHIND A DISPLAY SECTION'S RECESSED TERMINATION PANEL. IT IS PREFERRED TO HAVE FLUSH MOUNT J-BOXES IN WALL APPLICATIONS. THE Z-BRACKET MOUNTING METHOD ALLOWS FOR ONLY 1" OF SPACE BETWEEN THE MOUNTING SURFACE AND THE DISPLAY FOR WIRING, SIGNAL INTERCONNECTS AND POWER CORDS. REFER TO YOUR CONTRACT SPECIFIC RISER DIAGRAM DRAWING FOR THE SECTION REQUIRING THE INCOMING SIGNAL AND HOW THE SIGNAL INTERCONNECTS BETWEEN DISPLAY SECTIONS. TYPICALLY THE INCOMING SIGNAL ROUTES TO THE LOWER LEFT HAND DISPLAY SECTION.
9. THE HARDWARE FOR MOUNTING THE Z-BRACKETS AND THE MAIN POWER AND SIGNAL RUN TO THE DISPLAY IS THE RESPONSIBILITY OF THE CUSTOMER.
10. SEE THE APPROPRIATE AND REFERENCED DRAWING FOR THE ASSEMBLY OF MOUNTING BRACKETS TO THE BACK OF THE DISPLAYS. HANG THE DISPLAYS TO THE Z-BRACKET PER THE RISER DIAGRAM DRAWING SECTION, ADDRESS AND X-Y COORDINATE INFORMATION. ALSO SEE THE BACK OF EACH DISPLAY FOR THIS INFORMATION. CRITICAL.
11. ATTACH SHROUDING PARTS TO THE ENDS OF THE DISPLAY TO COVER EXPOSED Z-BRACKETS, CORDS, ETC. THE SHROUDS ARE SUPPLIED WITH 3M VHB ADHESIVE TAPE FOR ATTACHMENT TO THE WALL. SEE DETAIL A.
12. ALL DIMENSIONS ARE IN INCHES.



TYPICAL DETAIL AT Z-BRACKET ENDS

DETAIL A

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

TITLE: SHOP DWG, INSTALL NOTES - THIN MOUNT

DES. BY: WTUCKER

DRAWN BY: WTUCKER

DATE: 19JULY2001

REVISION

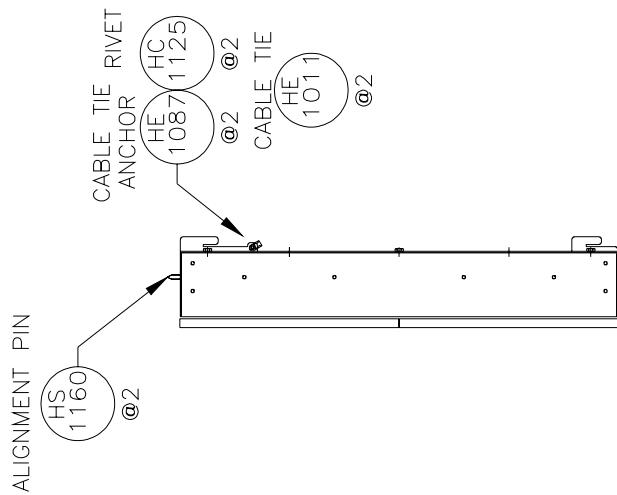
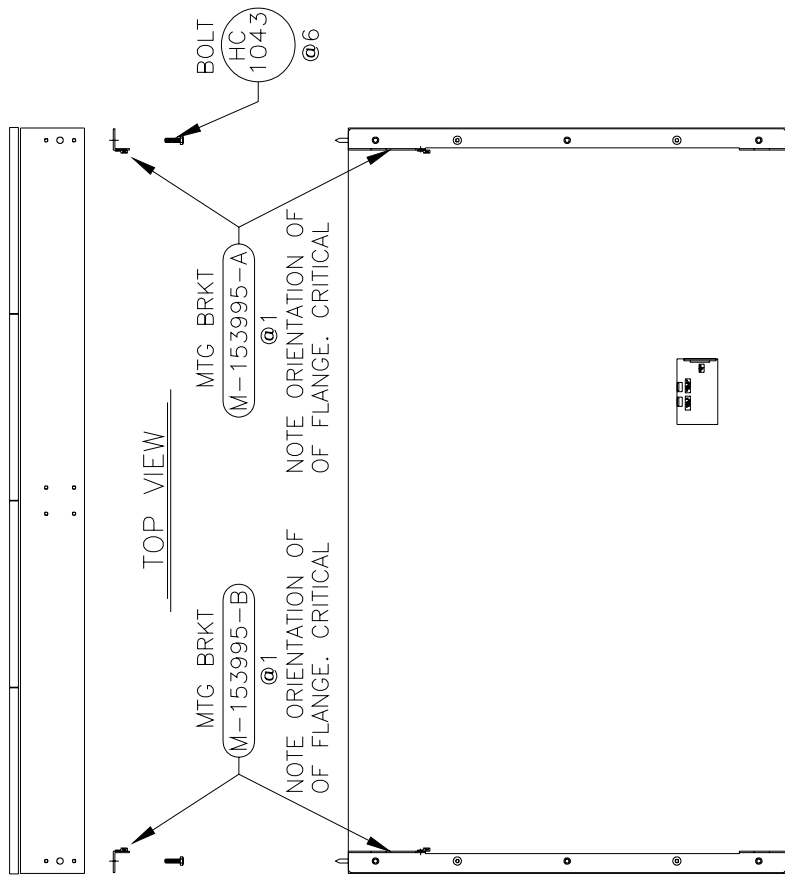
APPR. BY:

00

SCALE: 1=5

1120-E10A-152599

REV.	DATE	DESCRIPTION	BY	APPR.



REAR VIEW

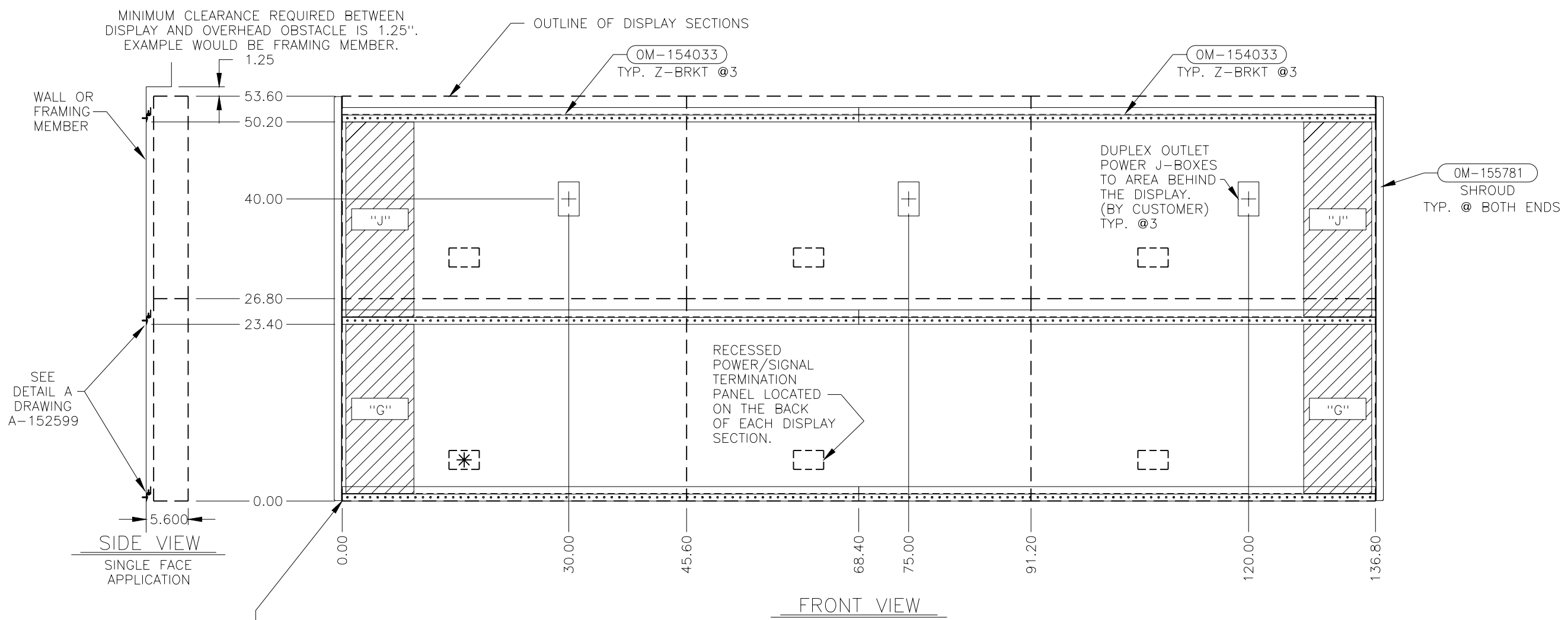
SIDE VIEW

- NOTE:
1. ATTACH CABLE TIE ANCHORS TO THE MOUNTING BRACKETS USING THE HC-1125 RIVETS.
  2. INSTALL AND TIGHTEN ALIGNMENT PINS TO THE TOP OF THE CABINET WHEN STACKING DISPLAYS ON TOP OF EACH OTHER.
  3. PINS MAY BE REMOVED IF DISPLAYS ARE NOT IN A STACKED SITUATION.
  4. ATTACH MOUNTING BRACKETS TO THE BACK OF THE DISPLAY AS SHOWN AND SECURELY FASTEN USING 1/4-20X3/4" SERRATED FLANGE HEX HEAD BOLTS HC-1043.
  5. HE-1011 CABLE TIES CAN BE USED TO SUPPORT AND HOLD UP POWER AND SIGNAL CABLES BEHIND DISPLAY WHEN MOUNTING. THIS MAY AID IN KEEPING THESE CABLES FROM GETTING PINCHED BETWEEN THE MOUNTING BRACKETS AND THE Z-BRACKETS WHILE HANGING THE DISPLAYS.

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATRAC LED DISPLAYS			
TITLE: MTG BRKT ASSY, CE-10**-8X24-2.1-THIN			
DES. BY: WTUCKER		DRAWN BY: WTUCKER	
		DATE: 10SEPT2001	
REVISION	APPR. BY:	1120-E10A-155773	
00	SCALE: 1=12		

REV.	DATE	DESCRIPTION	BY	APPR.





FRONT VIEW  
 CE-1010-16X72-2.1  
 CONSISTS OF THREE CE-1010-8X24-2.1 DISPLAY SECTIONS STACKED ON TOP OF THREE CE-1010-8X24-2.1 DISPLAY SECTIONS.  
 TOTAL DISPLAY SIZE IS 136.80" WIDE BY 53.60" TALL.

- NOTES:
- SEE SHOP DRAWING 1120-E10A-152954 (2.1" DISPLAYS)
  - SEE SHOP DRAWING 1120-E10A-152599 (INSTALL NOTES)
  - USE SPACING PLATES LISTED BELOW TO INSTALL Z-BRACKETS.  
 "G" OM-152630-G SPACING PLATE; 22.40" TALL  
 "J" OM-152630-J SPACING PLATE; 25.80" TALL  
 SEE DRAWING 1120-E07A-152630 SPACING PLATES
  - \*\* IMPORTANT \*\*** SEE NOTE 7 ON DRAWING 1120-E10A-152599.  
 FOR ATTACHMENT OF SCREWS AND NUTS TO ENDS OF Z-BRACKETS.
  - SEE MOUNTING BRACKET ASSEMBLY DRAWING 1120-E10A-155773.
  - ATTACH SHROUDING TO WALL AT BOTH ENDS OF DISPLAY.
  - APPROXIMATE DISPLAY WEIGHT IS 260 LBS.
  - THE INCOMING SIGNAL GOES TO THE TERMINATION PANEL MARKED WITH AN \* AND IS THE LOWER LEFT SECTION.  
 THE OTHER SECTIONS' SIGNAL IS INTERCONNECTED EXTERNALLY. SEE THE RISER DIAGRAM DRAWING.

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

TITLE: SHOP DWG, INSTALL DETAILS CE-1010-16X72-2.1-THIN

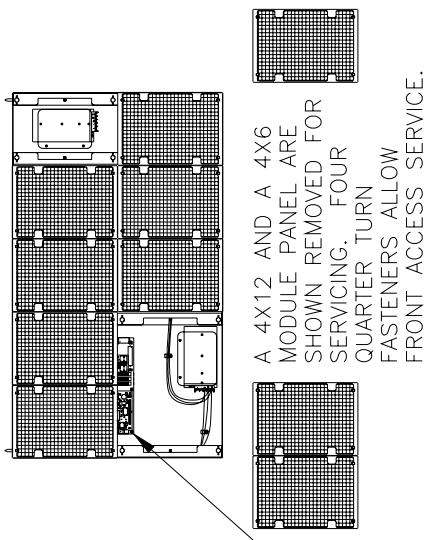
DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 10SEPT2001

REVISION 01 APPR. BY: SCALE: 1=15 1120-E10B-155789

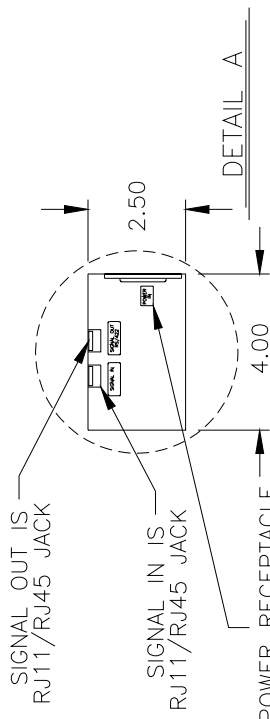
REV.	DATE	DESCRIPTION	BY	APPR.
1	18 JUL 02	ADDED INFORMATION TO NOTES.	JMM	

MODEL	"X"	"Y"	WEIGHT LBS.	MAX. WATTS
CE-1010-8X24-1.2	30.00	21.60	26.00	370
CE-1010-8X30-1.2	37.50	21.60	32.00	460
CE-1010-12X24-1.2	30.00	32.40	38.00	550
CE-1010-12X30-1.2	37.50	32.40	47.00	690

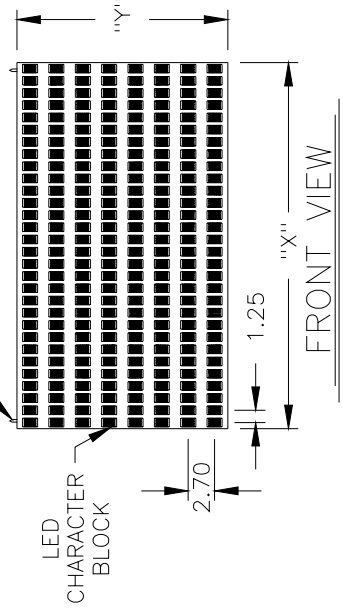
- NOTES:
- THE SECTIONAL DISPLAY MODELS SHOWN TO THE RIGHT ARE AVAILABLE IN THESE STANDARD SIZES AND CAN BE ARRAYED IN ANY COMBINATION TO CREATE LARGER DISPLAY SIZES.
  - THE ARRAYING OF THESE SECTIONS REQUIRES DAKTRONICS CONTRACT ENGINEERING. EACH SECTION IS INDIVIDUALLY ADDRESSED AND WILL HAVE A PREDETERMINED LOCATION.
  - DAKTRONICS CONTRACT ENGINEERING WILL PROVIDE MOUNTING LAYOUT AND RISER DIAGRAMS FOR INSTALLATION ONCE THE OVERALL DISPLAY SIZE HAS BEEN DETERMINED.
  - DISPLAY SECTIONS ARE TO BE MOUNTED TO A WALL USING Z-SHAPED ALUMINUM BRACKETS PROVIDED BY DAKTRONICS. THE Z-BRACKETS AND DISPLAY MOUNTING BRACKETS ALLOW 1" OF AIR SPACE BEHIND THE DISPLAYS FOR POWER AND SIGNAL TERMINATION AND JUNCTION BOXES. INSTALLATION DRAWINGS SHOW THE Z-BRKT LAYOUT.
  - DISPLAYS ARE OF ALUMINUM CONSTRUCTION WITH STAINLESS STEEL WIRE CLOTH FILTERING PANELS COVERING THE LED BLOCKS. THE LED BLOCKS HAVE A CENTER TO CENTER SPACING OF 2.70" X 1.25". SEE FRONT VIEW BELOW.
  - 1.2" LED CHARACTER BLOCKS ARE TRI-COLOR (RED, GREEN, AMBER)
  - POWER REQUIREMENT PER DISPLAY SECTION IS 85 TO 265 VAC SINGLE PHASE (2 WIRES PLUS GROUND). DISPLAY SECTIONS CONTAIN UNIVERSAL VOLTAGE INPUT AUTO-RANGING POWER SUPPLIES. MAX WATTS SHOWN IN TABLE TO THE RIGHT. SEE POWER RECEPTACLE NOTE BELOW.
  - MAINTENANCE OF DISPLAY SECTION IS FRONT ACCESS. SEE DETAILS TO RIGHT.
  - ALL DIMENSIONS SHOWN ARE IN INCHES.



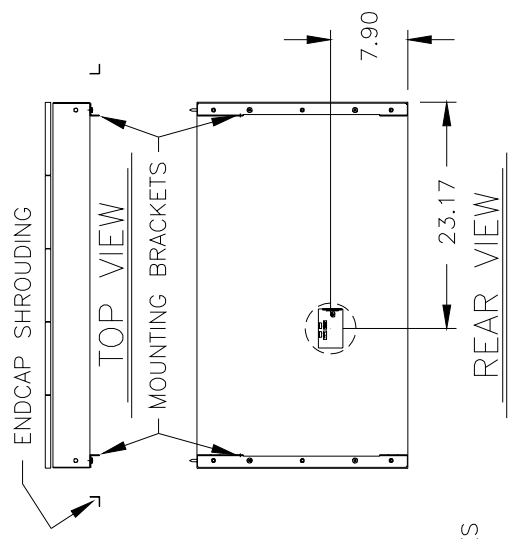
FRONT VIEW  
MODEL CE-1010-8X30-1.2 SHOWN WITH THE WIRE CLOTH FILTER PANELS.



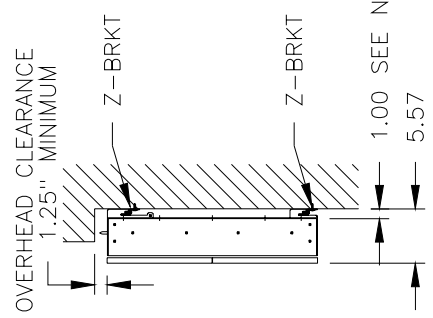
ALIGNMENT PINS PROVIDED FOR THE STACKING OF MULTIPLE DISPLAY SECTIONS.



SHOWN WITH THE WIRE CLOTH FILTER PANELS REMOVED TO BETTER ILLUSTRATE THE CENTER TO CENTER SPACING OF THE LED CHARACTER BLOCKS.



RECESSED TERMINATION PANEL LOCATION IS ALWAYS THE SAME FROM THE LOWER RIGHT CORNER OF EACH DISPLAY WHEN VIEWED FROM THE REAR. SEE DETAIL A FOR POWER/SIGNAL CONNECTIONS.

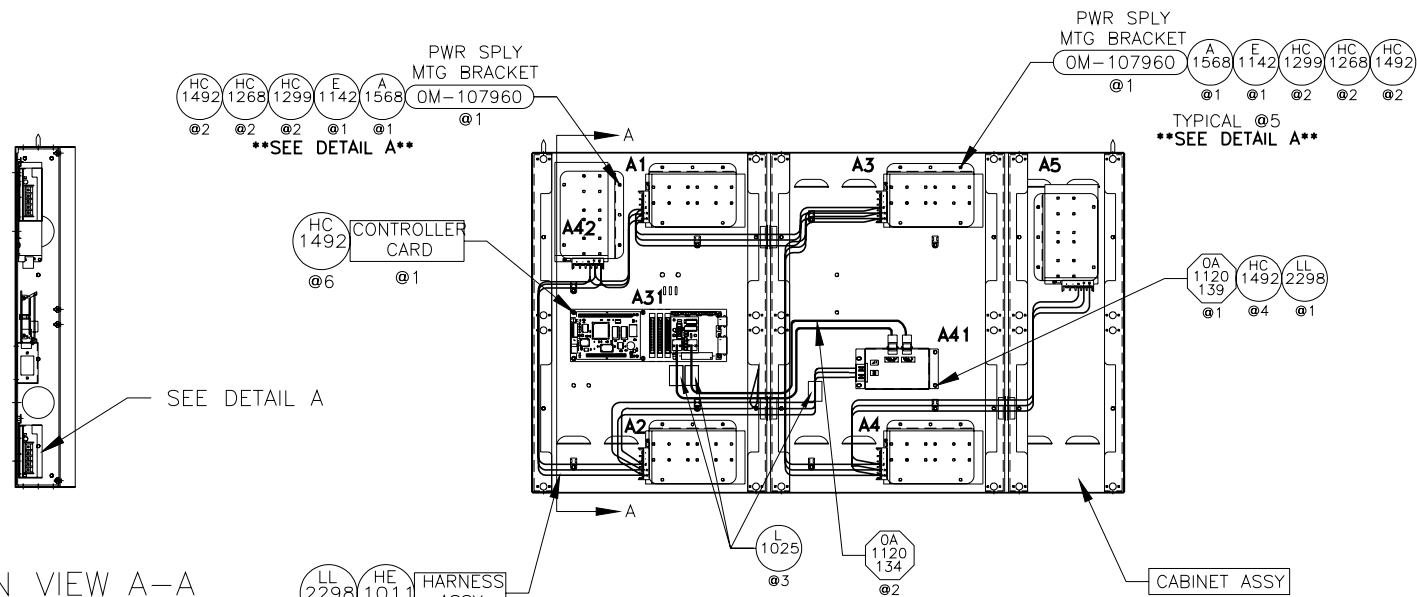


NOT SHOWN ABOVE IS THE ENDCAP SHROUDDING THAT COVERS THE EXPOSED Z-BRKT. (INCLUDED)

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: DATATRAC LED DISPLAYS			
TITLE: SHOP DWG, CE-1010-***X**-1.2-RG-THIN MOUNT			
DES. BY: WTUCKER		DRAWN BY: WTUCKER	
DATE: 07AUG2001			
REVISION	APPR. BY:	1120-E10A-154011	
01	SCALE: 1=20		

REV.	DATE	DESCRIPTION	BY	APPR.
01	03JUNE04	UPDATE NOTES AND REMOVE RS/422 NOTE FROM DETAIL A TO REFLECT A MORE GENERIC TERM PANEL IN CASES OF ETHERNET REQUIREMENTS.	WRT	





SECTION VIEW A-A

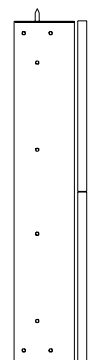
SHOWN WITHOUT  
PANEL ASSEMBLY

FRONT VIEW

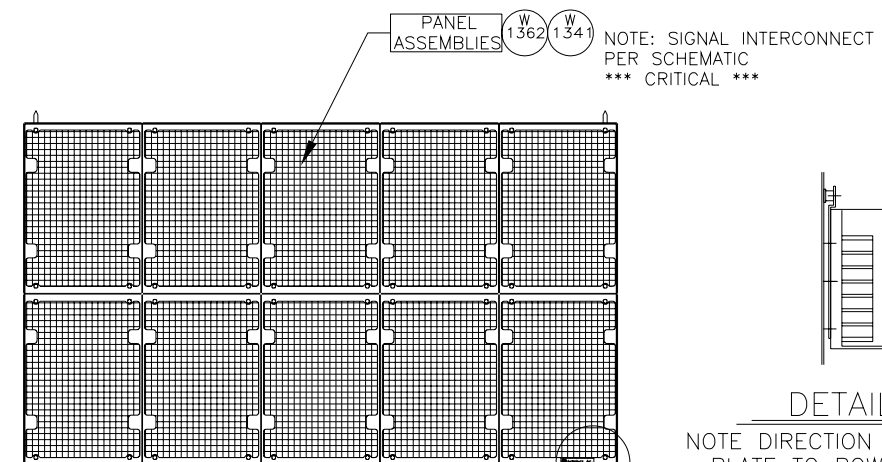
SHOWN WITHOUT  
PANEL ASSEMBLY

MODEL SHOWN CE-1010-830-1.2-RG

- NOTE:  
1. ROUTE HARNESS AS SHOWN AND ATTACH LABELS AS SHOWN AND NOT ON THE PART.  
2. MODULE PWR HARNESS ROUTING NOT SHOWN REFER TO SCHEMATIC FOR DETAILS.  
3. ATTACH FERRITE BEADS (L1025) @2 TO SIGNAL CABLES PER DWG A-91523.



SIDE VIEW

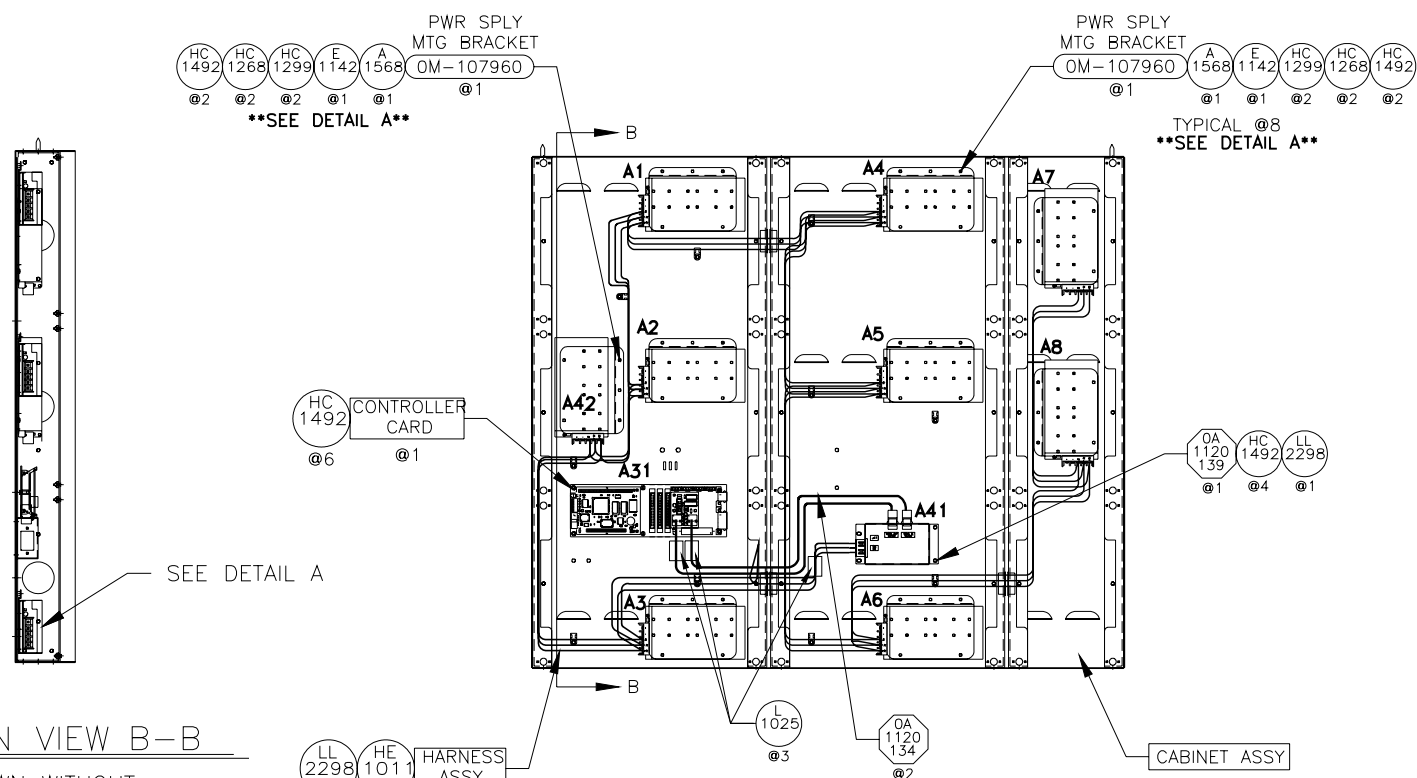


FRONT VIEW

SHOWN WITH  
PANEL ASSEMBLIES

SEE DETAIL C

NOTE DIRECTION OF MOUNTING  
PLATE TO POWER SUPPLY.



SECTION VIEW B-B

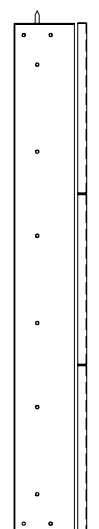
SHOWN WITHOUT  
PANEL ASSEMBLY

FRONT VIEW

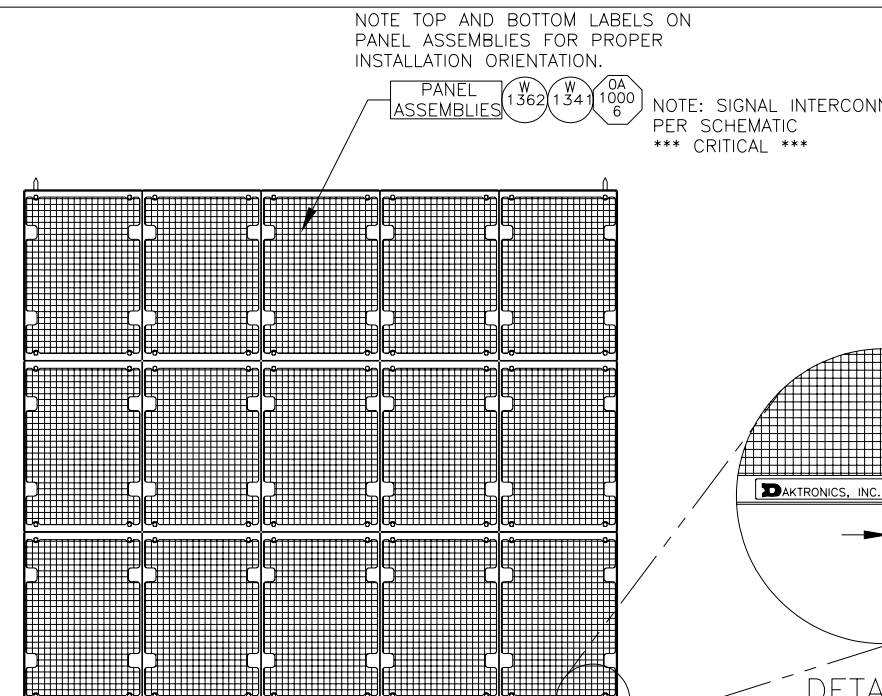
SHOWN WITHOUT  
PANEL ASSEMBLY

MODEL SHOWN CE-1010-1230-1.2-RG

- NOTE:  
1. ROUTE HARNESS AS SHOWN AND ATTACH LABELS AS SHOWN AND NOT ON THE PART.  
2. MODULE PWR HARNESS ROUTING NOT SHOWN REFER TO SCHEMATIC FOR DETAILS.  
3. ATTACH FERRITE BEADS (L1025) @2 TO SIGNAL CABLES PER DWG A-91523.



SIDE VIEW



FRONT VIEW

SHOWN WITH  
PANEL ASSEMBLIES

DETAIL C

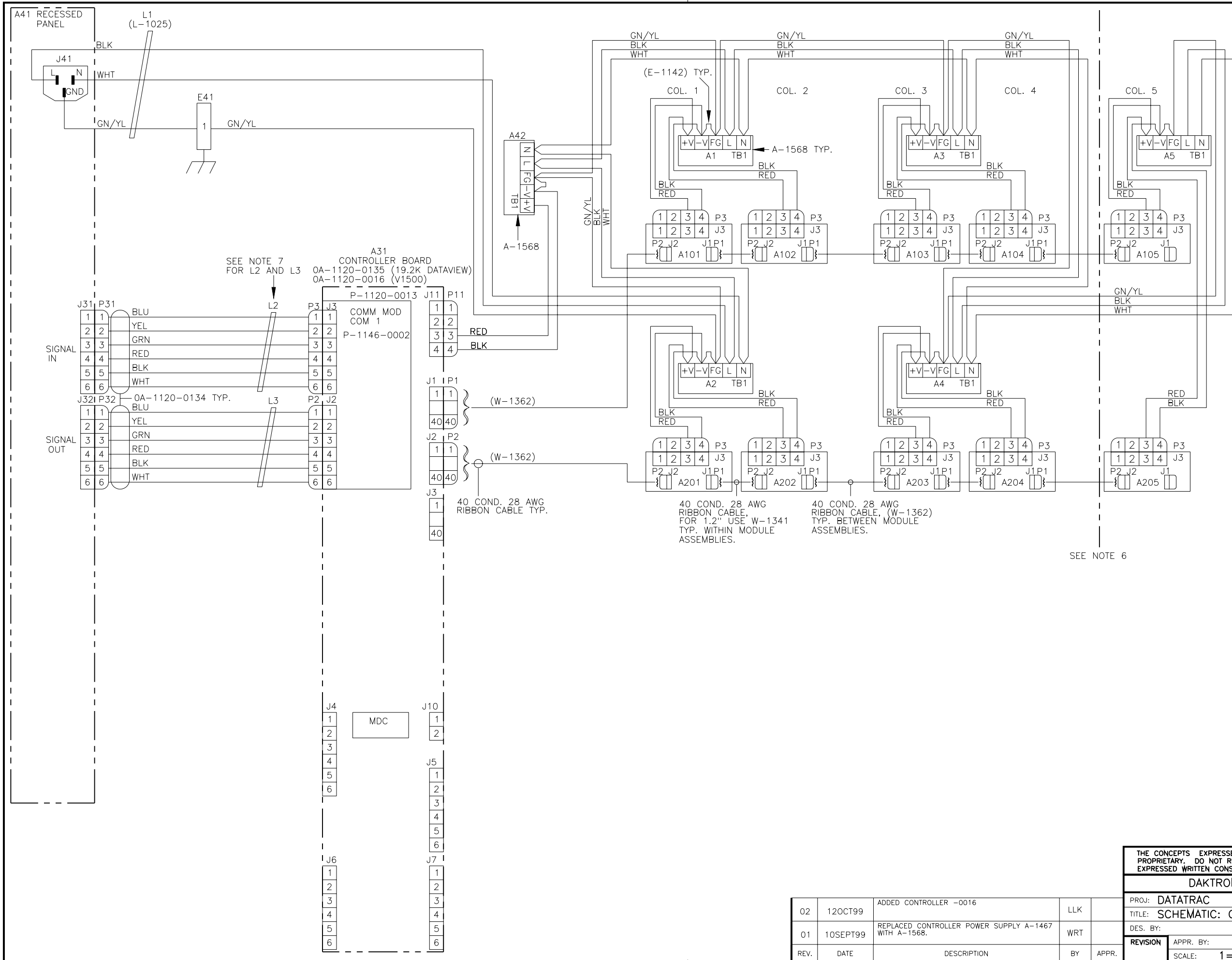
TYP FOR ALL  
DISPLAY SIZES

REV.	DATE	DESCRIPTION	BY	APPR.
05	11 SEP 01	REPLACED HC-1179, HC-1012, AND HC-1395 WITH HC-1492. UPDATED POWER SUPPLY MOUNTING. SWITCHED SIGNAL IN AND OUT LABELS. ADDED LOUVERS TO CABINET.	JAA	WRT
04	22FEB2001		WRT	
03	10SEPT99	REPLACED CONTROLLER POWER SUPPLY A-1467 WITH A-1568.	WRT	
02	27APR99	MINOR UPDATED TO DRAWING.	WRT	
01	05MAR99	ADDED POWER SUPPLY. CHANGE LOCATION OF HOLES. CHANGED DEPTH OF CABINET FROM 3.85 TO 3.80.	MDM	

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DAKTRONICS, INC. BROOKINGS, SD 57006  
 PROJ: DATATRAC LED DISPLAYS  
 TITLE: FINAL ASSY; CE-1010-\*\*\*\*-1.2-RG  
 DES. BY: WTUCKER DRAWN BY: MSOLHEIM DATE: 11DEC98  
 REVISION APPR. BY: SCALE: 1=12  
 1120-E10B-110268





- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 5VDC.
  - 4) EACH LED MODULE IS 4 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 8 LINE SECTION (830). COL. 5 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 824 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.

POWER SPEC'S

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
24	370	3.1	1.6
30	460	3.9	2.0

SEE NOTE 6

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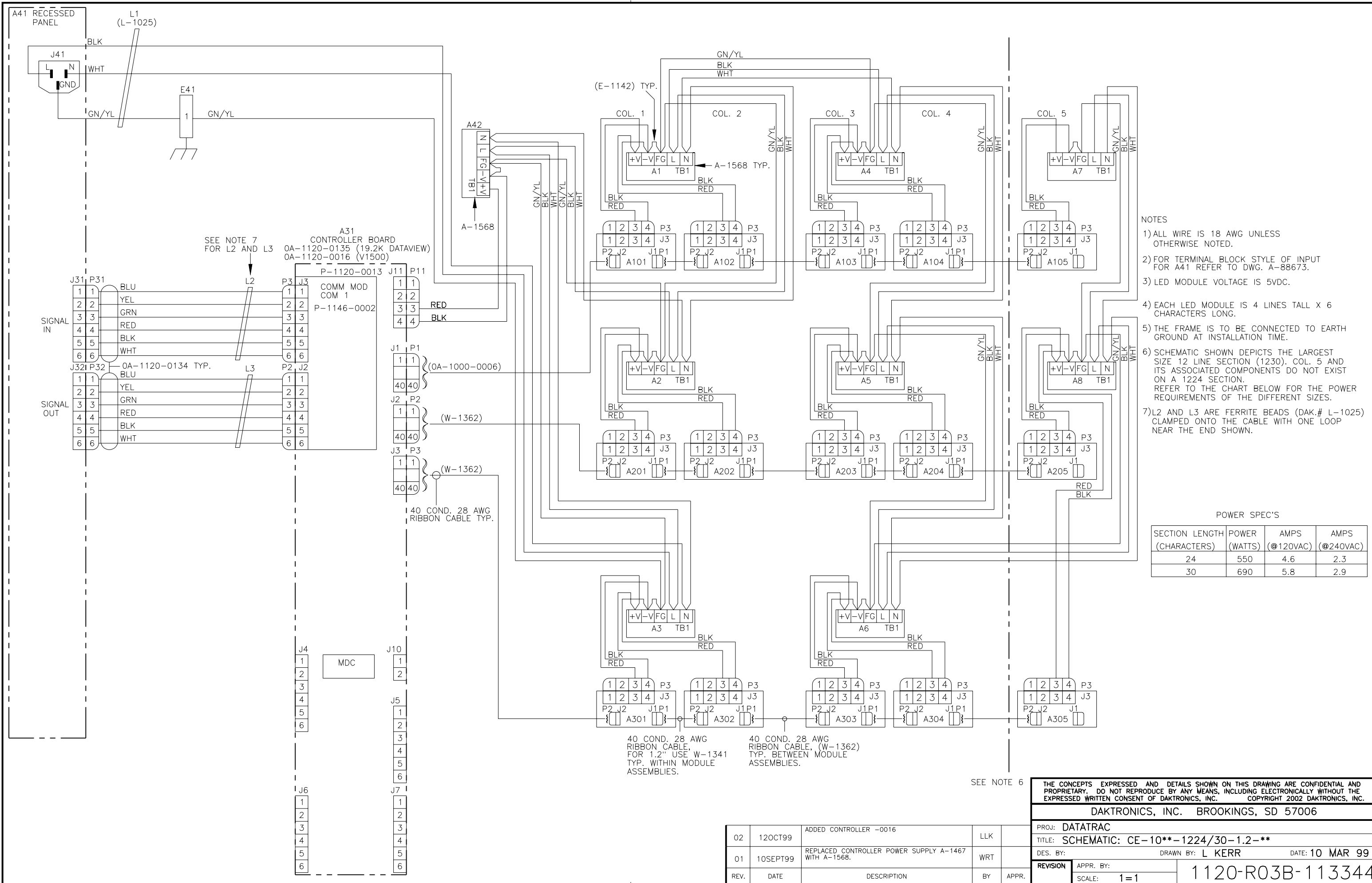
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC  
 TITLE: SCHEMATIC: CE-10\*\*-824/30-1.2-\*\*-\*\*  
 DES. BY: DRAWN BY: L KERR DATE: 25 FEB 99

REVISION APPR. BY: SCALE: 1=1

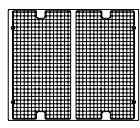
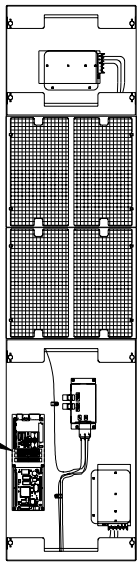
1120-R03B-113015

REV.	DATE	DESCRIPTION	BY	APPR.
02	12OCT99	ADDED CONTROLLER -0016	LLK	
01	10SEPT99	REPLACED CONTROLLER POWER SUPPLY A-1467 WITH A-1568.	WRT	



MODEL	"X"	"Y"	WEIGHT LBS.	MAX. WATTS
CE-1010-4X24-2.1	45.60	13.40	22.00	187
CE-1010-4X30-2.1	57.00	13.40	28.00	232

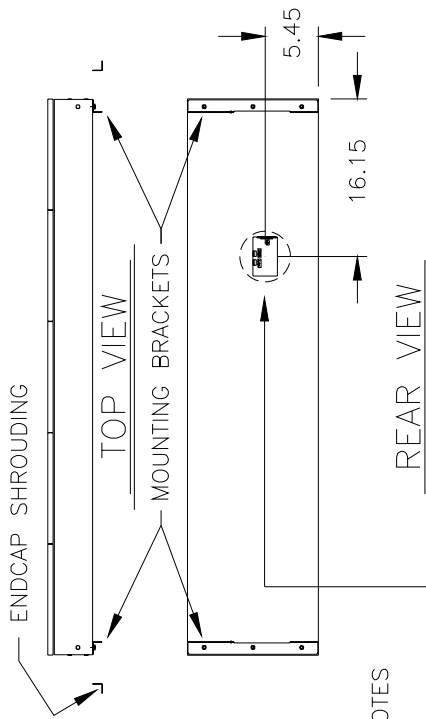
A CONTROLLER BOARD IS IN THE UPPER LEFT CORNER OF EACH DISPLAY SECTION.



A 4X12 AND A 4X6 MODULE PANEL ARE SHOWN REMOVED FOR SERVICING. FOUR QUARTER TURN FASTENERS ALLOW FRONT ACCESS SERVICE.

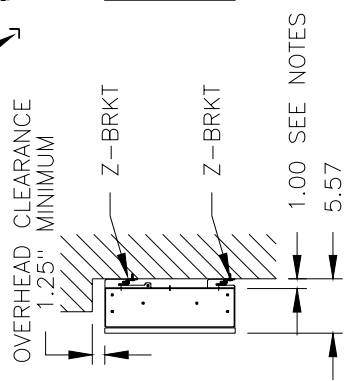
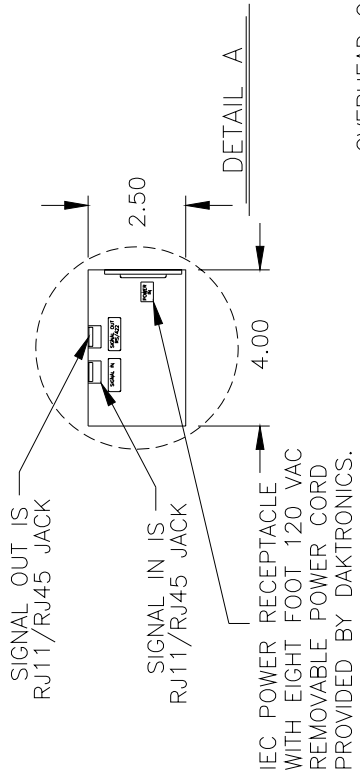
**FRONT VIEW**

MODEL CE-1010-4X30-2.1 SHOWN. SHOWN WITH THE WIRE CLOTH FILTER PANELS.



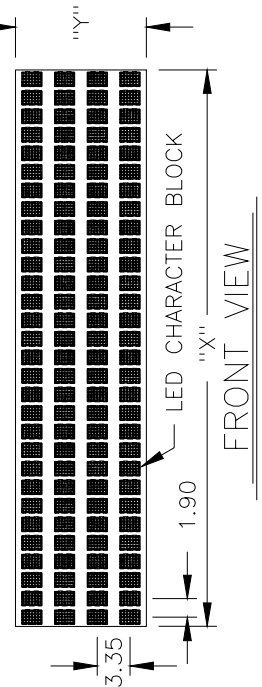
RECESSED TERMINATION PANEL LOCATION IS ALWAYS THE SAME FROM THE LOWER RIGHT CORNER OF EACH DISPLAY WHEN VIEWED FROM THE REAR. SEE DETAIL A FOR POWER/SIGNAL CONNECTIONS.

- NOTES:
- THE SECTIONAL DISPLAY MODELS SHOWN TO THE RIGHT ARE AVAILABLE IN THESE STANDARD SIZES AND CAN BE ARRAYED HORIZONTALLY IN ANY COMBINATION TO CREATE LONGER (FOUR CHARACTER HIGH) DISPLAY SIZES.
  - THE ARRAYING OF THESE SECTIONS REQUIRES DAKTRONICS CONTRACT ENGINEERING. EACH SECTION IS INDIVIDUALLY ADDRESSED AND WILL HAVE A PREDETERMINED LOCATION.
  - DAKTRONICS CONTRACT ENGINEERING WILL PROVIDE MOUNTING LAYOUT AND RISER DIAGRAMS FOR INSTALLATION ONCE THE OVERALL DISPLAY SIZE HAS BEEN DETERMINED.
  - DISPLAY SECTIONS ARE TO BE MOUNTED TO A WALL USING Z-SHAPED ALUMINUM BRACKETS PROVIDED BY DAKTRONICS. THE Z-BRACKETS AND DISPLAY MOUNTING BRACKETS ALLOW 1" OF AIR SPACE BEHIND THE DISPLAYS FOR POWER AND SIGNAL TERMINATION AND JUNCTION BOXES. INSTALLATION DRAWINGS SHOW THE Z-BRKT LAYOUT.
  - DISPLAYS ARE OF ALUMINUM CONSTRUCTION WITH STAINLESS STEEL WIRE CLOTH FILTERING PANELS COVERING THE LED BLOCKS. THE LED BLOCKS HAVE A CENTER TO CENTER SPACING OF 3.35" X 1.90". SEE FRONT VIEW BELOW.
  - 2.1" LED CHARACTER BLOCKS ARE TRI-COLOR (RED, GREEN, AMBER)
  - POWER REQUIREMENT PER DISPLAY SECTION IS 85 TO 265 VAC SINGLE PHASE (2 WIRES PLUS GROUND). DISPLAY SECTIONS CONTAIN UNIVERSAL VOLTAGE INPUT AUTO-RANGING POWER SUPPLIES. MAX WATTS SHOWN IN TABLE TO THE RIGHT. SEE POWER RECEPTACLE NOTE BELOW.
  - MAINTENANCE OF DISPLAY SECTION IS FRONT ACCESS. SEE DETAILS TO RIGHT.
  - ALL DIMENSIONS SHOWN ARE IN INCHES.



**SIDE VIEW**

NOT SHOWN ABOVE IS THE END CAP SHROUDDING THAT COVERS THE EXPOSED Z-BRKT. (INCLUDED)



SHOWN WITH THE WIRE CLOTH FILTER PANELS REMOVED TO BETTER ILLUSTRATE THE CENTER TO CENTER SPACING OF THE LED CHARACTER BLOCKS.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

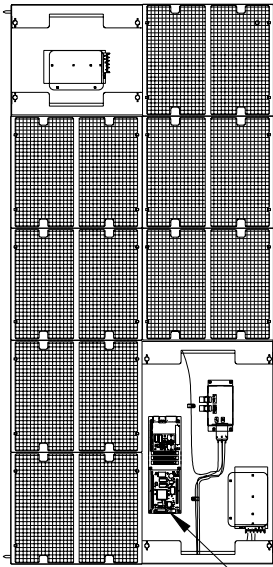
TITLE: SHOP DWG, CE-1010-4X\*\*-2.1-RG-THIN MOUNT

DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 27JUNE2001

REVISION	APPR. BY:	1120-E10A-151214
02	SCALE: 1=20	

REV.	DATE	DESCRIPTION	BY	APPR.
02	28JUN04	UPDATE NOTES AND REMOVE RS/422 NOTE FROM DETAIL A TO REFLECT A MORE GENERIC TERM PANEL IN CASES OF ETHERNET REQUIREMENTS.	JJP	
01	11JULY2001	MODIFIED REAR MOUNTING BRACKET	WRT	

MODEL	"X"	"Y"	WEIGHT LBS.	MAX. WATTS
CE-1010-8X24-2.1	45.60	26.80	43.00	370
CE-1010-8X30-2.1	57.00	26.80	53.00	460
CE-1010-12X24-2.1	45.60	40.20	64.00	550
CE-1010-12X30-2.1	57.00	40.20	80.00	690



- NOTES:
- THE SECTIONAL DISPLAY MODELS SHOWN TO THE RIGHT ARE AVAILABLE IN THESE STANDARD SIZES AND CAN BE ARRAYED IN ANY COMBINATION TO CREATE LARGER DISPLAY SIZES.
  - THE ARRAYING OF THESE SECTIONS REQUIRES DAKTRONICS CONTRACT ENGINEERING. EACH SECTION IS INDIVIDUALLY ADDRESSED AND WILL HAVE A PREDETERMINED LOCATION.
  - DAKTRONICS CONTRACT ENGINEERING WILL PROVIDE MOUNTING LAYOUT AND RISER DIAGRAMS FOR INSTALLATION ONCE THE OVERALL DISPLAY SIZE HAS BEEN DETERMINED.
  - DISPLAY SECTIONS ARE TO BE MOUNTED TO A WALL USING Z-SHAPED ALUMINUM BRACKETS PROVIDED BY DAKTRONICS. THE Z-BRACKETS AND DISPLAY MOUNTING BRACKETS ALLOW 1" OF AIR SPACE BEHIND THE DISPLAYS FOR POWER AND SIGNAL TERMINATION AND JUNCTION BOXES. INSTALLATION DRAWINGS SHOW THE Z-BRKT LAYOUT.
  - DISPLAYS ARE OF ALUMINUM CONSTRUCTION WITH STAINLESS STEEL WIRE CLOTH FILTERING PANELS COVERING THE LED BLOCKS. THE LED BLOCKS HAVE A CENTER TO CENTER SPACING OF 3.35" X 1.90". SEE FRONT VIEW BELOW.
  - 2.1" LED CHARACTER BLOCKS ARE TRI-COLOR (RED, GREEN, AMBER)
  - POWER REQUIREMENT PER DISPLAY SECTION IS 85 TO 265 VAC SINGLE PHASE (2 WIRES PLUS GROUND). DISPLAY SECTIONS CONTAIN UNIVERSAL VOLTAGE INPUT AUTO-RANGING POWER SUPPLIES. MAX WATTS SHOWN IN TABLE TO THE RIGHT. SEE POWER RECEPTACLE NOTE BELOW.
  - MAINTENANCE OF DISPLAY SECTION IS FRONT ACCESS. SEE DETAILS TO RIGHT.
  - ALL DIMENSIONS SHOWN ARE IN INCHES.

A CONTROLLER BOARD IS IN THE LOWER LEFT CORNER OF EACH DISPLAY SECTION.

**FRONT VIEW**

MODEL CE-1010-8X30-2.1 SHOWN. SHOWN WITH THE WIRE CLOTH FILTER PANELS.

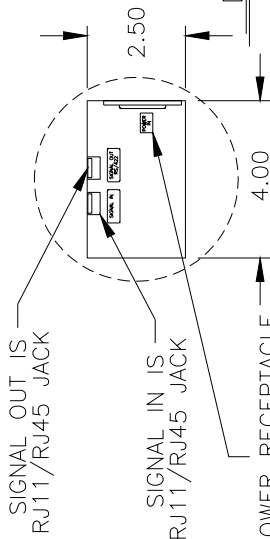
ENDCAP SHROUDDING

**TOP VIEW**

MOUNTING BRACKETS

RECESSED TERMINATION PANEL LOCATION IS ALWAYS THE SAME FROM THE LOWER RIGHT CORNER OF EACH DISPLAY WHEN VIEWED FROM THE REAR. SEE DETAIL A FOR POWER/SIGNAL CONNECTIONS.

**REAR VIEW**

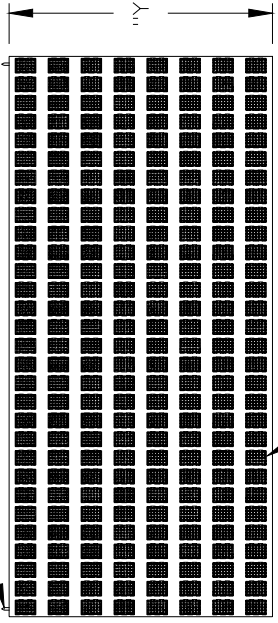


SIGNAL OUT IS RJ11/RJ45 JACK

SIGNAL IN IS RJ11/RJ45 JACK

IEC POWER RECEPTACLE WITH EIGHT FOOT 120 VAC REMOVABLE POWER CORD PROVIDED BY DAKTRONICS.

ALIGNMENT PINS PROVIDED FOR THE STACKING OF MULTIPLE DISPLAY SECTIONS.



**FRONT VIEW**

SHOWN WITH THE WIRE CLOTH FILTER PANELS REMOVED TO BETTER ILLUSTRATE THE CENTER TO CENTER SPACING OF THE LED CHARACTER BLOCKS.

OVERHEAD CLEARANCE 1.25" MINIMUM

Z-BRKT

Z-BRKT

1.00 SEE NOTES

5.57

**SIDE VIEW**

NOT SHOWN ABOVE IS THE ENDCAP SHROUDDING THAT COVERS THE EXPOSED Z-BRKT. (INCLUDED)

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

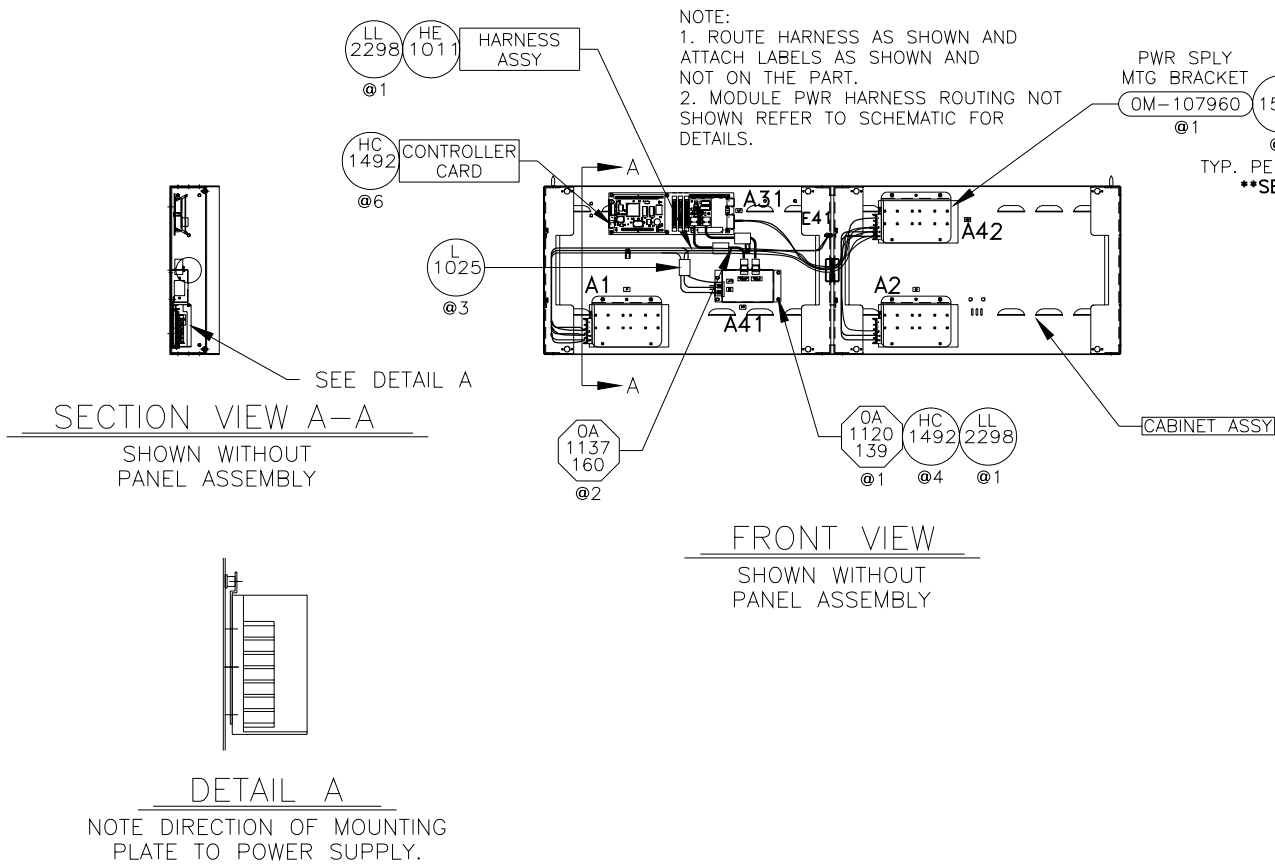
TITLE: SHOP DWG, CE-1010-\*\*X\*\*-2.1-RG-THIN MOUNT

DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 24JULY2001

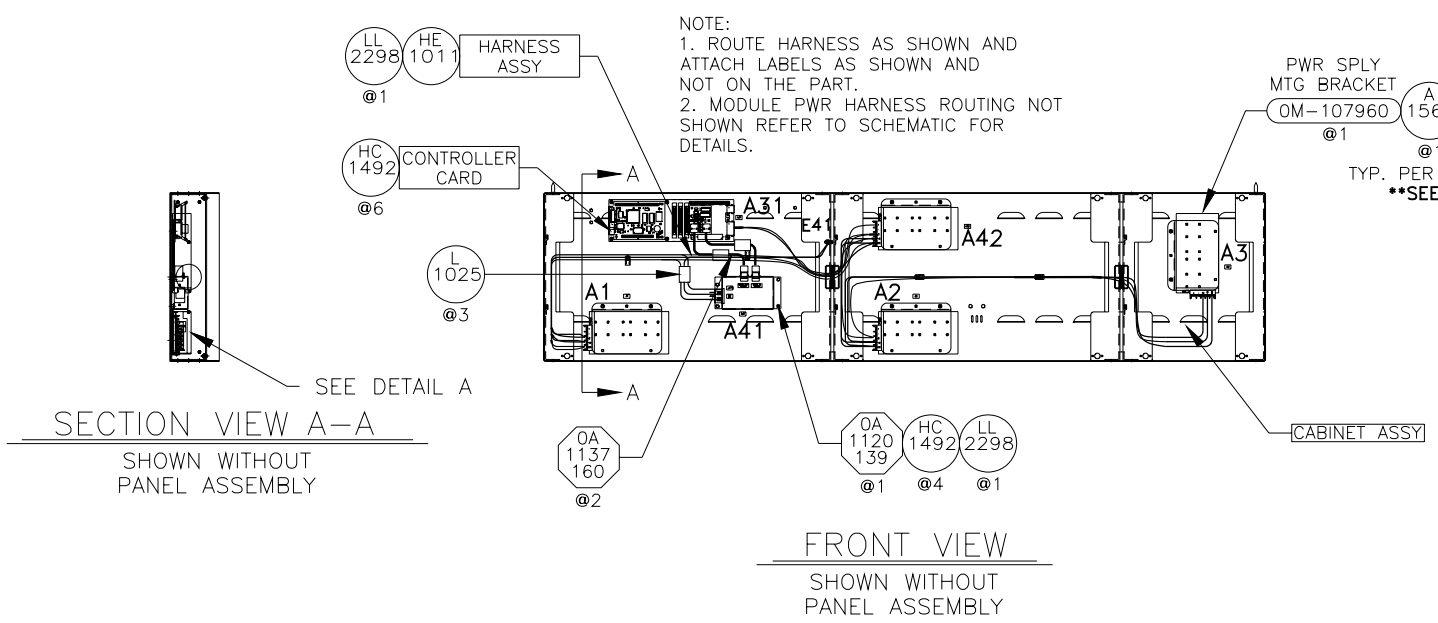
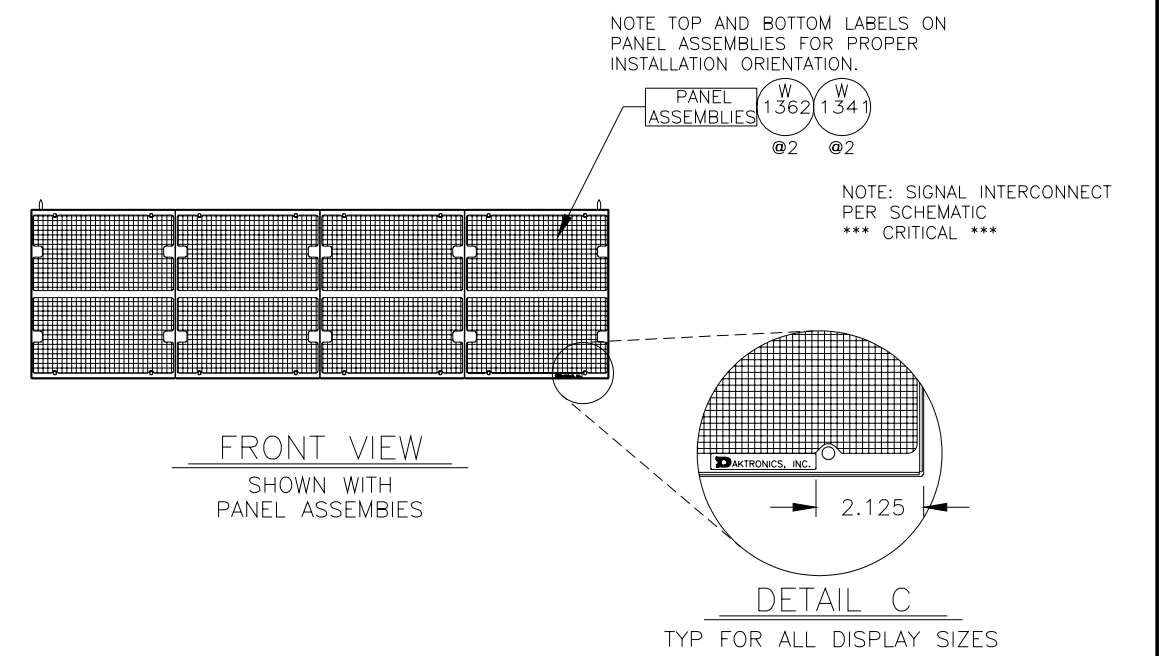
REVISION 01 APPR. BY: SCALE: 1=20

1120-E10A-152954

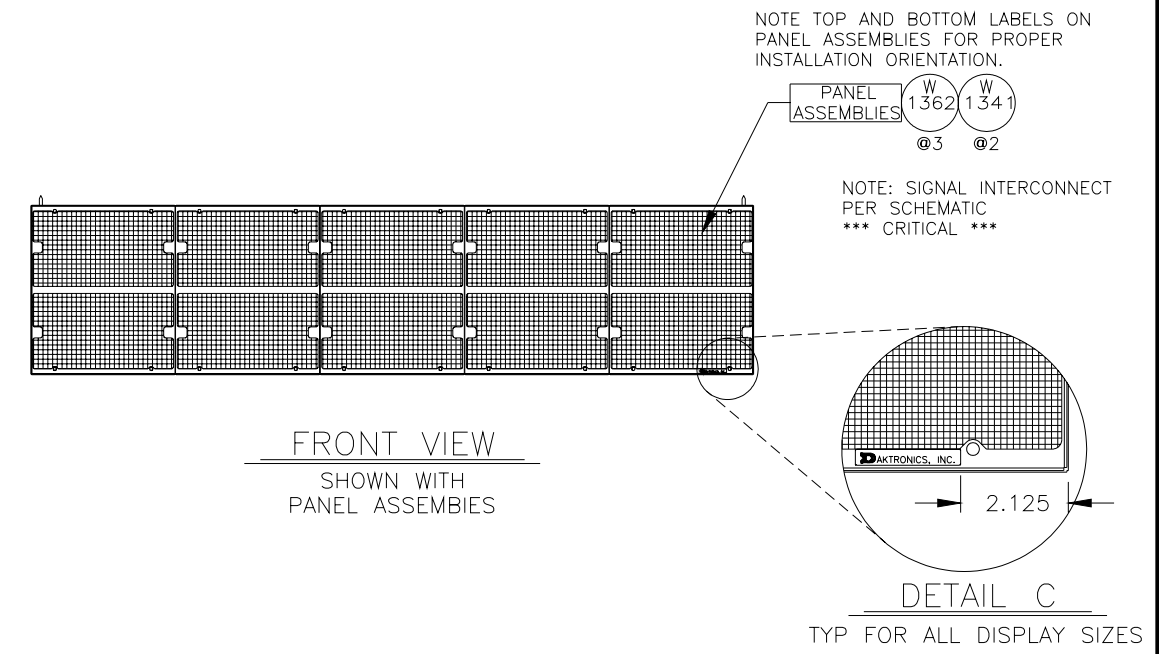
REV.	DATE	DESCRIPTION	BY	APPR.
01	15JUNE04	UPDATE NOTES AND REMOVE RS/422 NOTE FROM DETAIL A TO REFLECT A MORE GENERIC TERM PANEL IN CASES OF ETHERNET REQUIREMENTS.	WRT	



MODEL SHOWN CE-1010-424-2.1-SBRG



MODEL SHOWN CE-1010-430-2.1-SBRG



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DAKTRONICS, INC. BROOKINGS, SD 57006

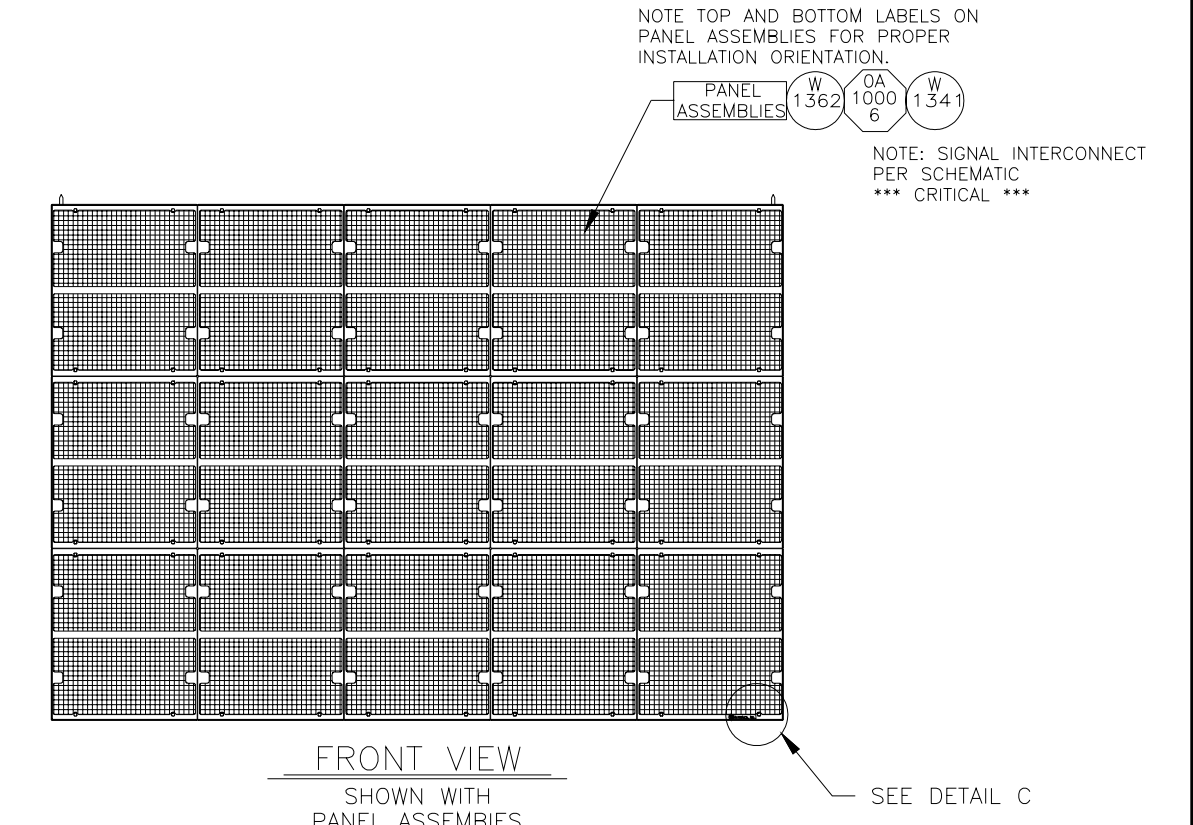
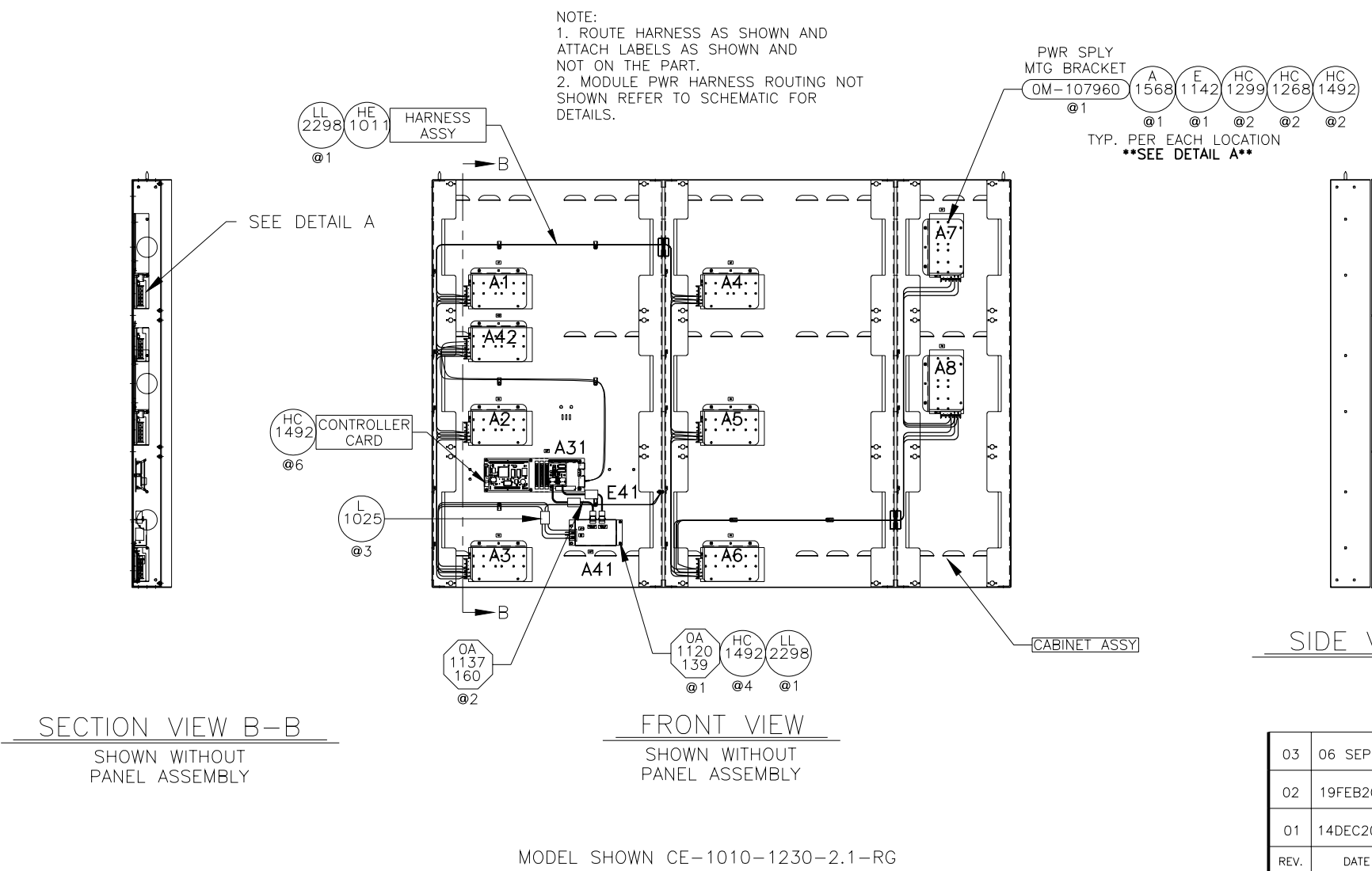
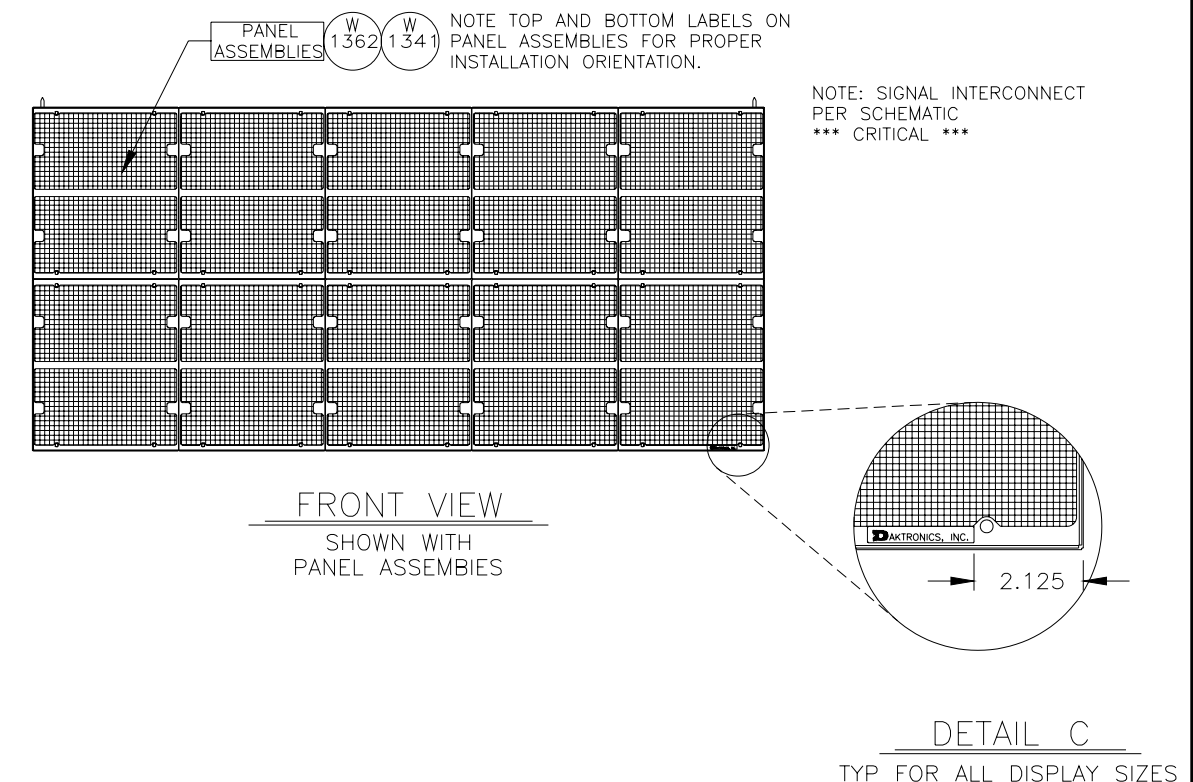
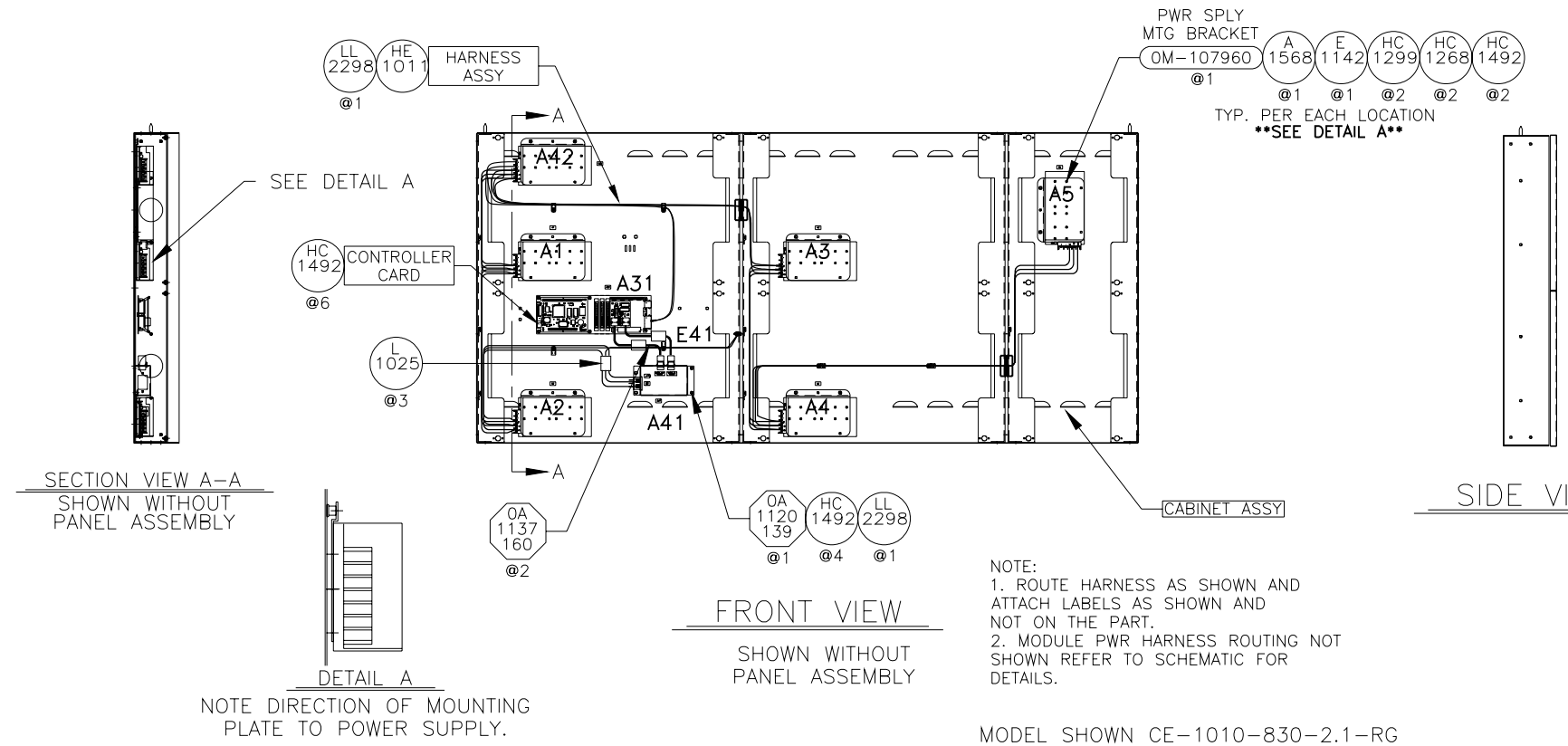
PROJ: DATATrac LED DISPLAYS

TITLE: FINAL ASSY; CE-1010-4\*\*-2.1-SBRG

DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 29NOV2000

01	06 SEP 01	SWITCHED SIGNAL IN AND SIGNAL OUT LABELS REPLACED HC-1238, HC-1179, AND HC-1012 WITH HC-1492 UPDATED PWR SUPPLY MTG PLATE	JAA	WRT
REV.	DATE	DESCRIPTION	BY	APPR.

REVISION APPR. BY: SCALE: 1=15 1120-E10B-140722



REV.	DATE	DESCRIPTION	BY	APPR.
03	06 SEP 01	SWITCHED SIGNAL IN AND SIGNAL OUT LABELS REPLACED HC-1238, HC-1179, AND HC-1012 WITH HC-1492 UPDATED PWR SUPPLY MTG PLATE ADDED LOUVERS TO CABINET	JAA	WRT
02	19FEB2001		WRT	
01	14DEC2000	UPDATED LOOK OF PANEL MODULE ASSY.	WRT	

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

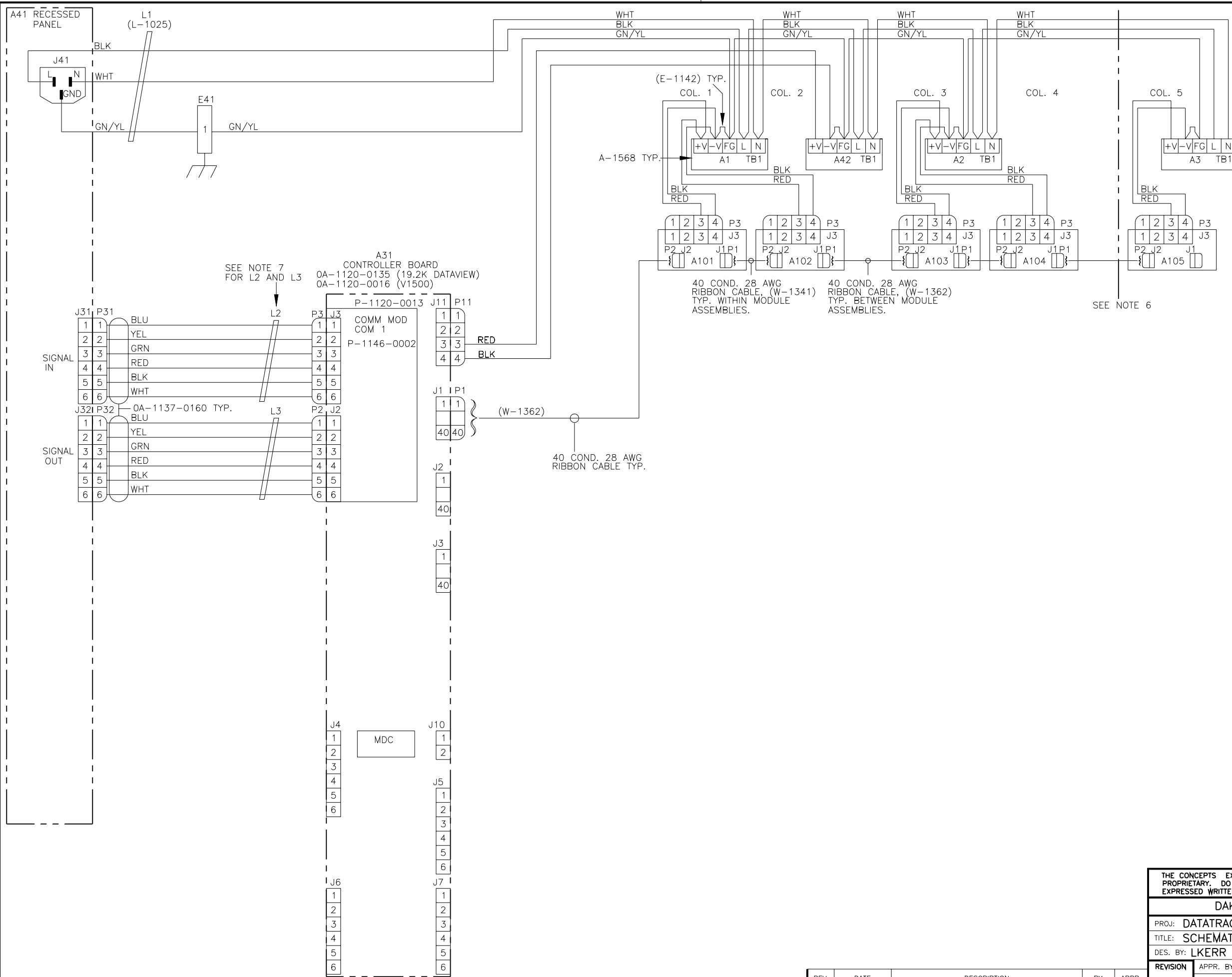
PROJ: DATATrac LED DISPLAYS

TITLE: FINAL ASSY; CE-1010-\*\*\*\*-2.1-RG

DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 17SEPT99

REVISION APPR. BY: 1120-E10B-121808

SCALE: 1=15



- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 5VDC.
  - 4) EACH LED MODULE IS 4 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 4 LINE SECTION (430). COL. 5 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 424 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.

POWER SPEC'S

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
24	187	1.56	0.78
30	232	1.93	0.97

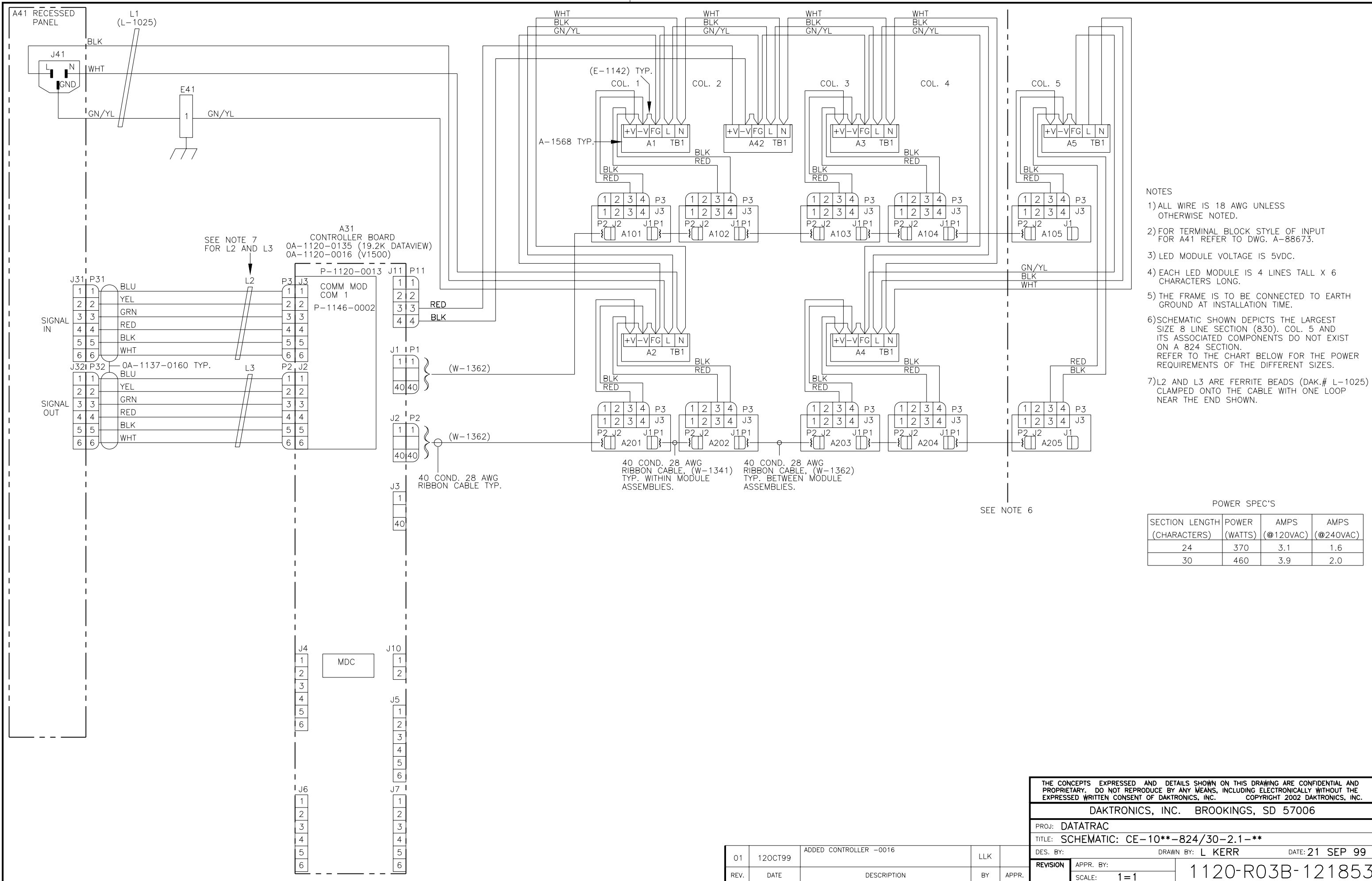
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC  
 TITLE: SCHEMATIC: CE-10\*\*-424/30-2.1-\*\*  
 DES. BY: LKERR DRAWN BY: LHARTE DATE: 01 NOV 00

REVISION APPR. BY: SCALE: 1=1 1120-R03B-140608

REV.	DATE	DESCRIPTION	BY	APPR.



- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 5VDC.
  - 4) EACH LED MODULE IS 4 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 8 LINE SECTION (830). COL. 5 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 824 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.

POWER SPEC'S

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
24	370	3.1	1.6
30	460	3.9	2.0

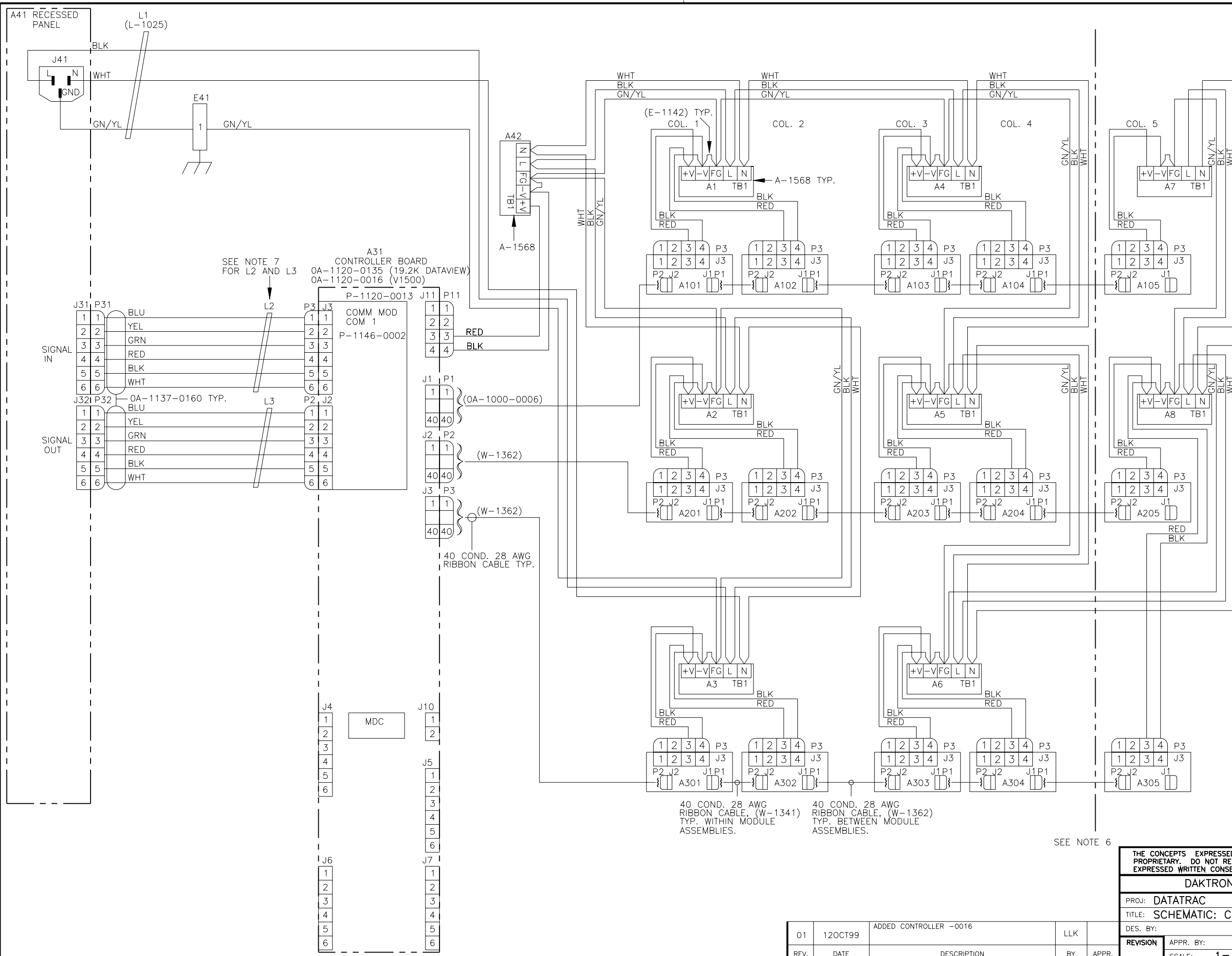
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC  
 TITLE: SCHEMATIC: CE-10\*\*-824/30-2.1-\*\*-  
 DES. BY: DRAWN BY: L KERR DATE: 21 SEP 99  
 REVISION APPR. BY: 1120-R03B-121853  
 SCALE: 1=1

REV.	DATE	DESCRIPTION	BY	APPR.
01	12OCT99	ADDED CONTROLLER -0016	LLK	





- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 5VDC.
  - 4) EACH LED MODULE IS 4 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 12 LINE SECTION (1230). COL. 5 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 1224 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.

POWER SPEC'S

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
24	550	4.6	2.3
30	690	5.8	2.9

SEE NOTE 6

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC

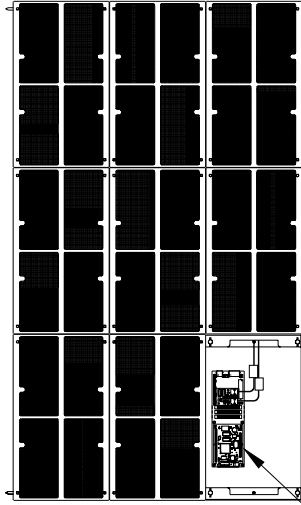
TITLE: SCHEMATIC: CE-10\*\*-1224/30-2.1-\*\*-\*\*

DES. BY: DRAWN BY: L KERR DATE: 21 SEP 99

01	12OCT99	ADDED CONTROLLER -0016	LLK	
REV.	DATE	DESCRIPTION	BY	APPR.

REVISION APPR. BY: SCALE: 1=1 1120-R03B-121854

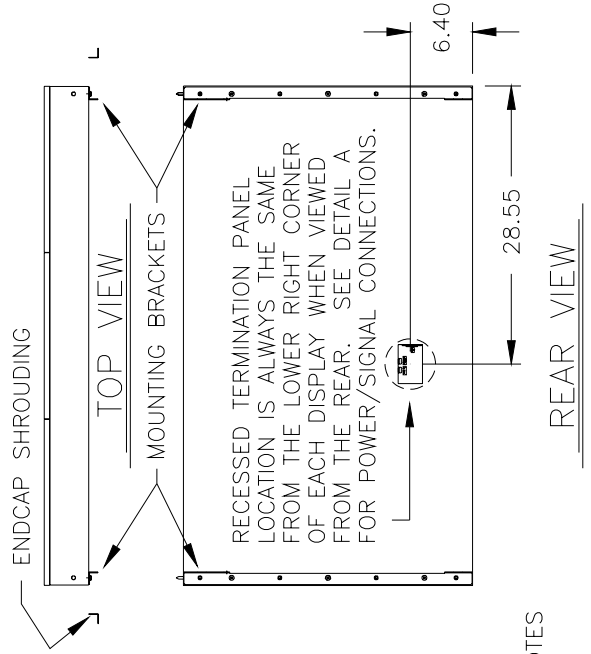
MODEL	"X"	"Y"	WEIGHT LBS.	MAX. WATTS
CE-1010-4X18-3.2	51.30	19.80	35.00	433
CE-1010-4X24-3.2	68.40	19.80	47.00	575
CE-1010-6X18-3.2	51.30	29.70	53.00	646
CE-1010-6X24-3.2	68.40	29.70	70.00	859



A 2X6 MODULE PANEL IS SHOWN REMOVED FOR SERVICING. FOUR QUARTER TURN FASTENERS ALLOW FRONT ACCESS SERVICING.

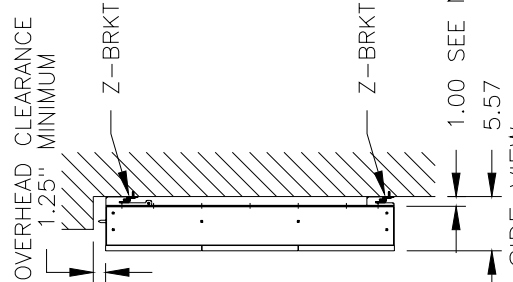
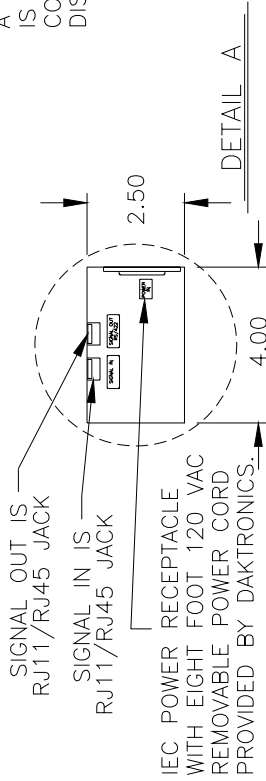
**FRONT VIEW**

MODEL CE-1010-6X18-3.2 SHOWN. SHOWN WITH THE WIRE CLOTH FILTER PANELS.

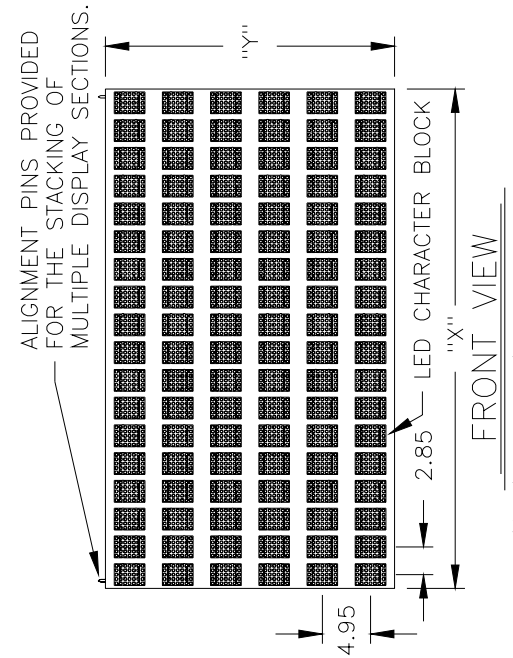


- NOTES:**
- THE SECTIONAL DISPLAY MODELS SHOWN TO THE RIGHT ARE AVAILABLE IN THESE STANDARD SIZES AND CAN BE ARRAYED IN ANY COMBINATION TO CREATE LARGER DISPLAY SIZES.
  - THE ARRAYING OF THESE SECTIONS REQUIRES DAKTRONICS CONTRACT ENGINEERING. EACH SECTION IS INDIVIDUALLY ADDRESSED AND WILL HAVE A PREDETERMINED LOCATION.
  - DAKTRONICS CONTRACT ENGINEERING WILL PROVIDE MOUNTING LAYOUT AND RISER DIAGRAMS FOR INSTALLATION ONCE THE OVERALL DISPLAY SIZE HAS BEEN DETERMINED.
  - DISPLAY SECTIONS ARE TO BE MOUNTED TO A WALL USING Z-SHAPED ALUMINUM BRACKETS PROVIDED BY DAKTRONICS. THE Z-BRACKETS AND DISPLAY MOUNTING BRACKETS ALLOW 1" OF AIR SPACE BEHIND THE DISPLAYS FOR POWER AND SIGNAL TERMINATION AND JUNCTION BOXES. INSTALLATION DRAWINGS SHOW THE Z-BRKT LAYOUT.
  - DISPLAYS ARE OF ALUMINUM CONSTRUCTION WITH STAINLESS STEEL WIRE CLOTH FILTERING PANELS COVERING THE LED BLOCKS. THE LED BLOCKS HAVE A CENTER TO CENTER SPACING OF 4.95" X 2.85". SEE FRONT VIEW BELOW.
  - 3.2" LED CHARACTER BLOCKS ARE TRI-COLOR (RED, GREEN, AMBER)
  - POWER REQUIREMENT PER DISPLAY SECTION IS 85 TO 265 VAC SINGLE PHASE (2 WIRES PLUS GROUND). DISPLAY SECTIONS CONTAIN UNIVERSAL VOLTAGE INPUT AUTO-RANGING POWER SUPPLIES. MAX WATTS SHOWN IN TABLE TO THE RIGHT. SEE POWER RECEPTACLE NOTE BELOW.
  - MAINTENANCE OF DISPLAY SECTION IS FRONT ACCESS. SEE DETAILS TO RIGHT.
  - ALL DIMENSIONS SHOWN ARE IN INCHES.

A CONTROLLER BOARD IS IN THE LOWER LEFT CORNER OF EACH DISPLAY SECTION.



NOT SHOWN ABOVE IS THE ENDCAP SHROUding THAT COVERS THE EXPOSED Z-BRCKTS. (INCLUDED)



SHOWN WITH THE WIRE CLOTH FILTER PANELS REMOVED TO BETTER ILLUSTRATE THE CENTER TO CENTER SPACING OF THE LED CHARACTER BLOCKS.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

TITLE: SHOP DWG, CE-1010-\*\*\*X\*\*-3.2-RG-THIN MOUNT

DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 28JUNE2001

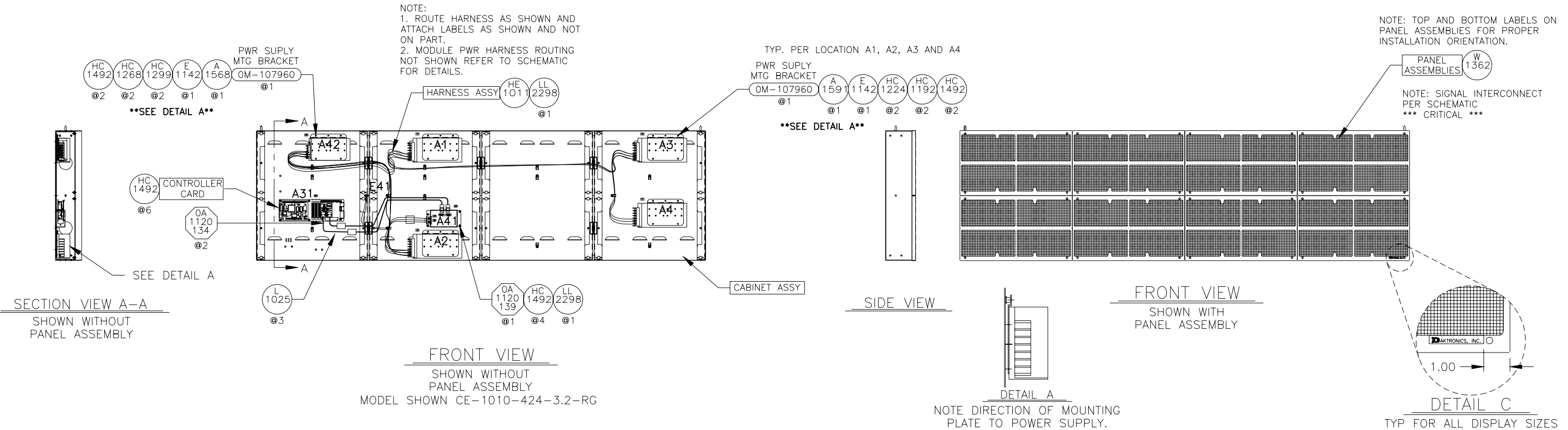
REVISION 01 APPR. BY: SCALE: 1=20

1120-E10A-151283

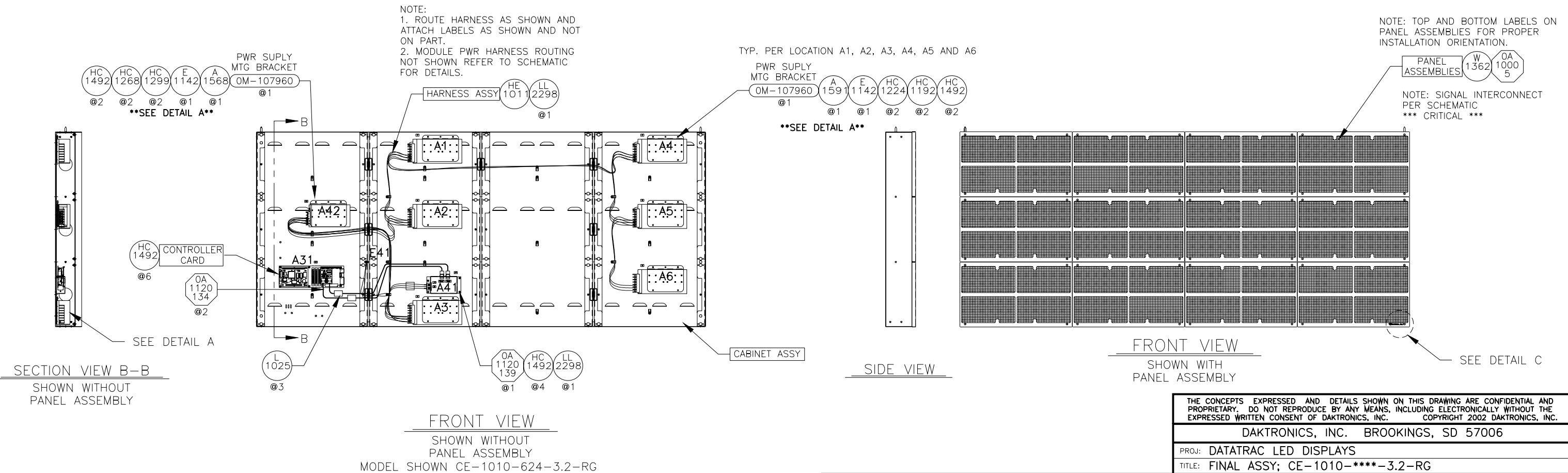
REV.	DATE	DESCRIPTION	BY	APPR.
01	21JUNE04	UPDATE NOTES AND REMOVE RS/422 NOTE FROM DETAIL A TO REFLECT A MORE GENERIC TERM PANEL IN CASES OF ETHERNET REQUIREMENTS.	WRT	



NOTE:  
 1. ROUTE HARNESS AS SHOWN AND ATTACH LABELS AS SHOWN AND NOT ON PART.  
 2. MODULE PWR HARNESS ROUTING NOT SHOWN REFER TO SCHEMATIC FOR DETAILS.



NOTE:  
 1. ROUTE HARNESS AS SHOWN AND ATTACH LABELS AS SHOWN AND NOT ON PART.  
 2. MODULE PWR HARNESS ROUTING NOT SHOWN REFER TO SCHEMATIC FOR DETAILS.



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DAKTRONICS, INC. BROOKINGS, SD 57006

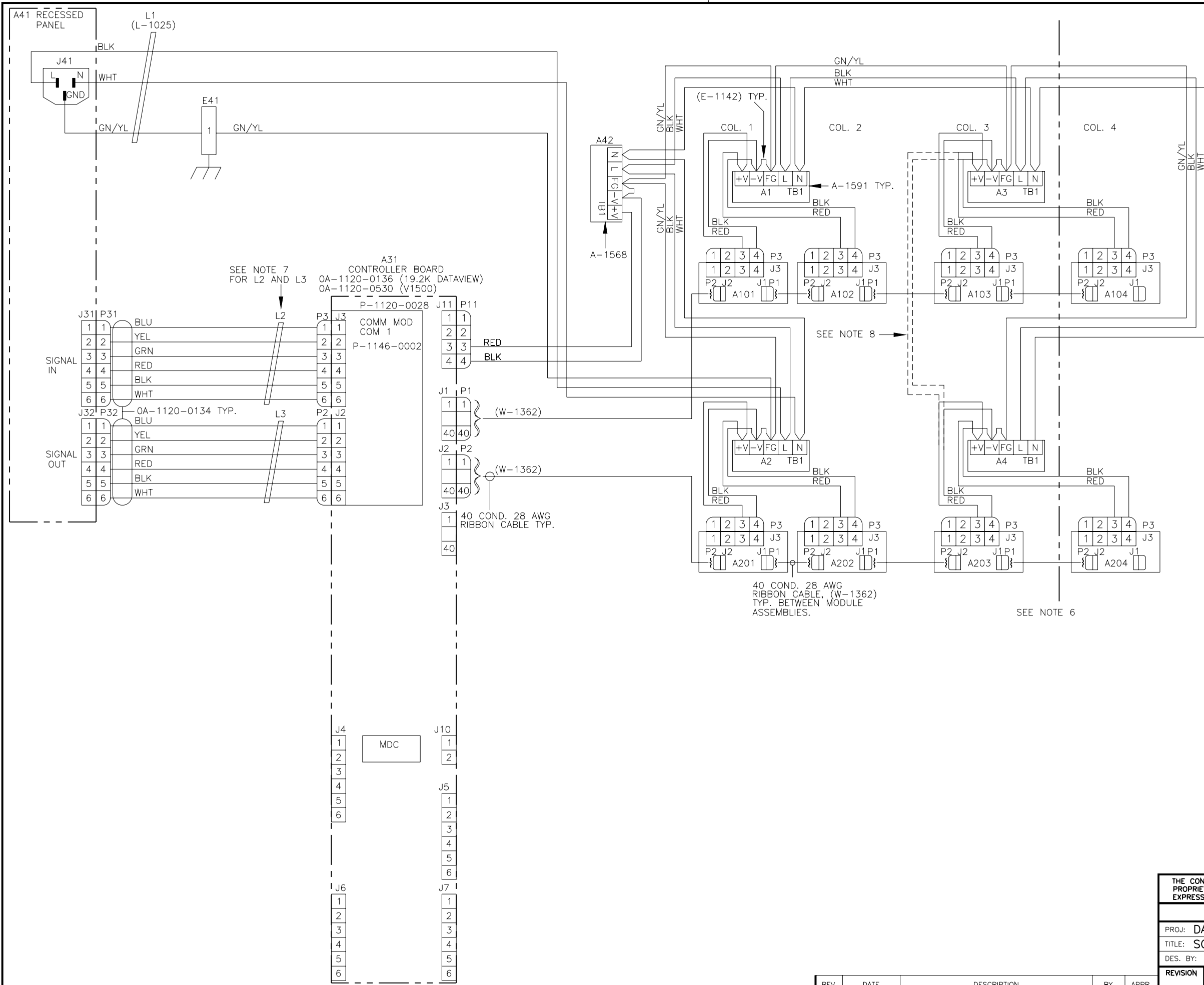
PROJ: DATATRAC LED DISPLAYS

TITLE: FINAL ASSY; CE-1010-\*\*\*\*-3.2-RG

DES. BY: WTUCKER      DRAWN BY: WTUCKER      DATE: 16MAR2001

REVISION	APPR. BY:	SCALE:	1120-E10B-146115
01	13 SEP 01	SWITCHED SIGNAL IN AND SIGNAL OUT LABELS UPDATED PWR SUPPLY MTG. REPLACED HC-1238, HC-1395, HC-1179, HC-1012 WITH HC-1492.	JAA WRT
REV.	DATE	DESCRIPTION	BY APPR.

SCALE: 1=15



- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 6.5VDC.
  - 4) EACH LED MODULE IS 4 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 4 LINE SECTION (424). COL. 4 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 418 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.
  - 8) FOR SECTION SIZE 418 REFER TO HIDDEN LINES FOR THE POWER SUPPLY DC WIRING OF THE LAST COLUMN OF MODULES. (A4 DOES NOT EXIST ON A 418 SECTION SIZE)

POWER SPEC'S

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
18	433	3.6	1.8
24	575	4.8	2.4

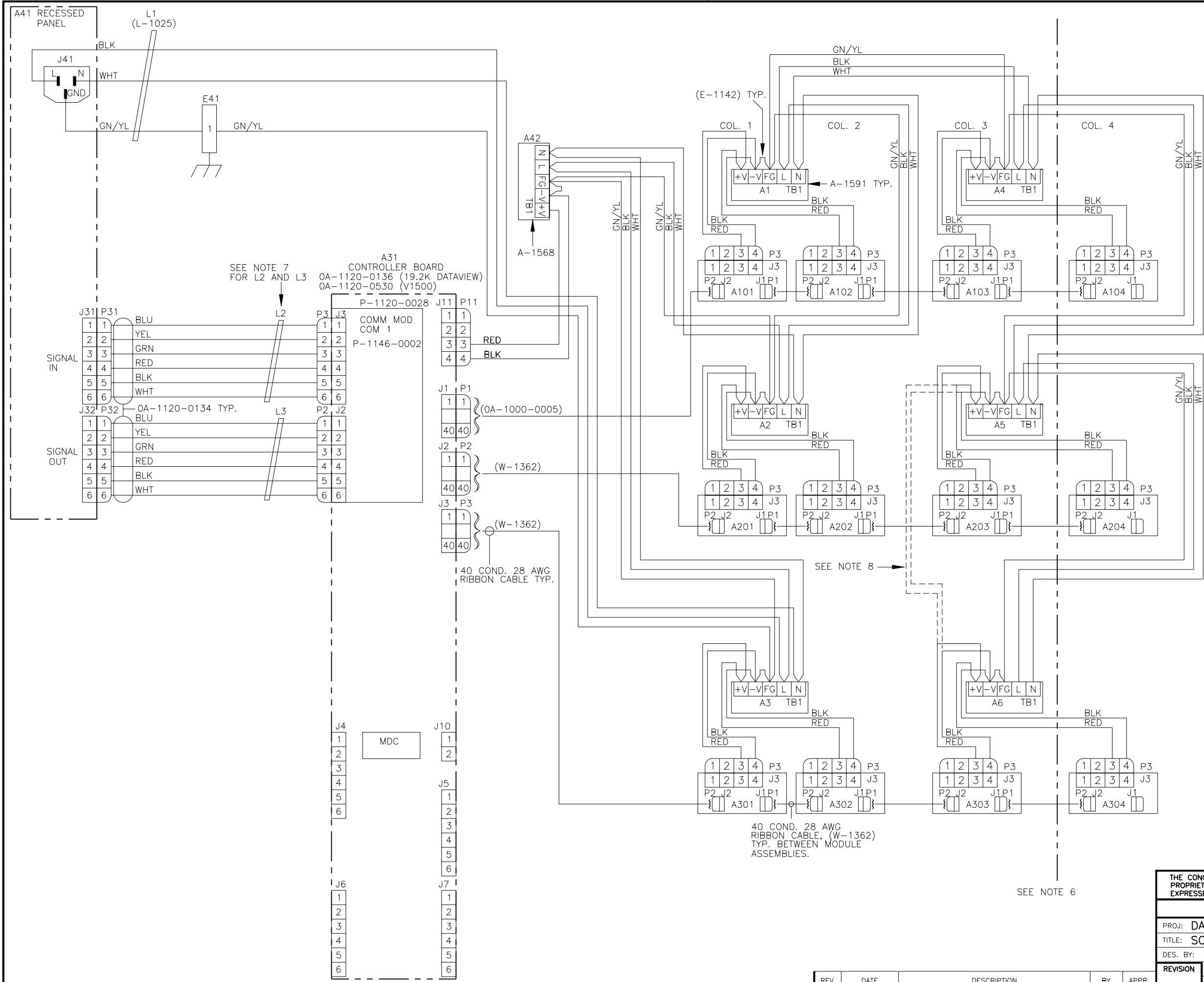
THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC  
 TITLE: SCHEMATIC, CE-10\*\*-418/24-3.2-\*\*-\*\*  
 DES. BY: DRAWN BY: LKERR DATE: 22FEB01

REVISION APPR. BY: 1120-R03B-145059  
 SCALE: 1=1

REV.	DATE	DESCRIPTION	BY	APPR.



- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 6.5VDC.
  - 4) EACH LED MODULE IS 4 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 6 LINE SECTION (624). COL. 4 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 618 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.
  - 8) FOR SECTION SIZE 618 REFER TO HIDDEN LINES FOR THE POWER SUPPLY DC WIRING OF THE LAST COLUMN OF MODULES. (A6 DOES NOT EXIST ON A 618 SECTION SIZE)

POWER SPEC'S

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
18	646	5.4	2.7
24	859	7.1	3.6

THE CONCEPTS EXPRESSED AND DETAILS SHOWN ON THIS DRAWING ARE CONFIDENTIAL AND PROPRIETARY. DO NOT REPRODUCE BY ANY MEANS, INCLUDING ELECTRONICALLY WITHOUT THE EXPRESSED WRITTEN CONSENT OF DAKTRONICS, INC. COPYRIGHT 2002 DAKTRONICS, INC.

DAKTRONICS, INC. BROOKINGS, SD 57006

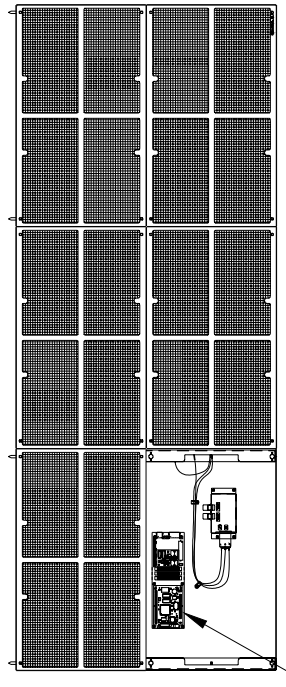
PROJ: DATATRAC  
 TITLE: SCHEMATIC: CE-10\*\*-618/24-3.2-\*\*-\*\*  
 DES. BY: DRAWN BY: LKERR DATE: 21FEB01

REVISION APPR. BY: SCALE: 1=1  
 1120-R03B-144982

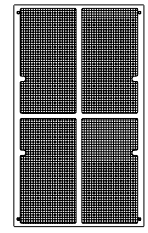
REV.	DATE	DESCRIPTION	BY	APPR.

MODEL	"X"	"Y"	WEIGHT LBS.	MAX. WATTS
CE-1010-4X12-4.2	45.60	26.80	43.00	290
CE-1010-4X18-4.2	68.40	26.80	64.00	435
CE-1010-6X12-4.2	45.60	40.20	64.00	435
CE-1010-6X18-4.2	68.40	40.20	96.00	645

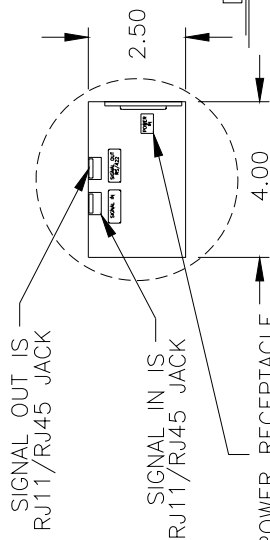
- NOTES:
- THE SECTIONAL DISPLAY MODELS SHOWN TO THE RIGHT ARE AVAILABLE IN THESE STANDARD SIZES AND CAN BE ARRAYED IN ANY COMBINATION TO CREATE LARGER DISPLAY SIZES.
  - THE ARRAYING OF THESE SECTIONS REQUIRES DAKTRONICS CONTRACT ENGINEERING. EACH SECTION IS INDIVIDUALLY ADDRESSED AND WILL HAVE A PREDETERMINED LOCATION.
  - DAKTRONICS CONTRACT ENGINEERING WILL PROVIDE MOUNTING LAYOUT AND RISER DIAGRAMS FOR INSTALLATION ONCE THE OVERALL DISPLAY SIZE HAS BEEN DETERMINED.
  - DISPLAY SECTIONS ARE TO BE MOUNTED TO A WALL USING Z-SHAPED ALUMINUM BRACKETS PROVIDED BY DAKTRONICS. THE Z-BRACKETS AND DISPLAY MOUNTING BRACKETS ALLOW 1" OF AIR SPACE BEHIND THE DISPLAYS FOR POWER AND SIGNAL TERMINATION AND JUNCTION BOXES. INSTALLATION DRAWINGS SHOW THE Z-BRKT LAYOUT.
  - DISPLAYS ARE OF ALUMINUM CONSTRUCTION WITH STAINLESS STEEL WIRE CLOTH FILTERING PANELS COVERING THE LED BLOCKS. THE LED BLOCKS HAVE A CENTER TO CENTER SPACING OF 6.70" X 3.80". SEE FRONT VIEW BELOW.
  - 4.2" LED CHARACTER BLOCKS ARE TRI-COLOR (RED, GREEN, AMBER)
  - POWER REQUIREMENT PER DISPLAY SECTION IS 85 TO 265 VAC SINGLE PHASE (2 WIRES PLUS GROUND). DISPLAY SECTIONS CONTAIN UNIVERSAL VOLTAGE INPUT AUTO-RANGING POWER SUPPLIES. MAX WATTS SHOWN IN TABLE TO THE RIGHT. SEE POWER RECEPTACLE NOTE BELOW.
  - MAINTENANCE OF DISPLAY SECTION IS FRONT ACCESS. SEE DETAILS TO RIGHT.
  - ALL DIMENSIONS SHOWN ARE IN INCHES.



2X6 MODULE PANEL IS SHOWN REMOVED FOR SERVICING. FOUR QUARTER TURN FASTENERS ALLOW FRONT ACCESS SERVICING.



A CONTROLLER BOARD IS IN THE LOWER LEFT CORNER OF EACH DISPLAY SECTION.



IEC POWER RECEPTACLE WITH EIGHT FOOT 120 VAC REMOVABLE POWER CORD PROVIDED BY DAKTRONICS.

ALIGNMENT PINS PROVIDED FOR THE STACKING OF MULTIPLE DISPLAY SECTIONS.

FRONT VIEW

MODEL CE-1010-4X18-4.2 SHOWN. SHOWN WITH THE WIRE CLOTH FILTER PANELS.

TOP VIEW

ENDCAP SHROUDING

OVERHEAD CLEARANCE 1.25" MINIMUM

MOUNTING BRACKETS

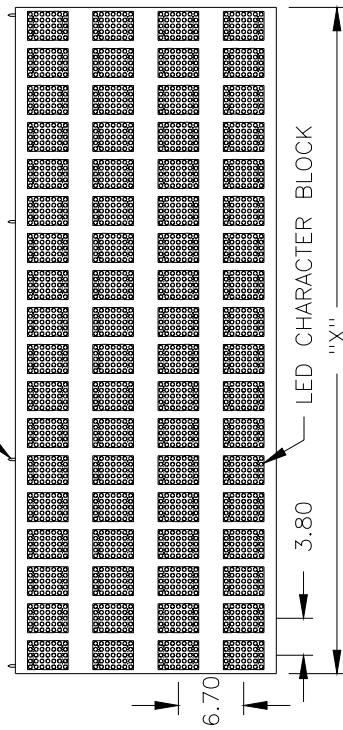
RECESSED TERMINATION PANEL LOCATION IS ALWAYS THE SAME FROM THE LOWER RIGHT CORNER OF EACH DISPLAY WHEN VIEWED FROM THE REAR. SEE DETAIL A FOR POWER/SIGNAL CONNECTIONS.

REAR VIEW

1.00 SEE NOTES

SIDE VIEW

NOT SHOWN ABOVE IS THE ENDCAP SHROUDING THAT COVERS THE EXPOSED Z-BRKT. (INCLUDED)



FRONT VIEW

SHOWN WITH THE WIRE CLOTH FILTER PANELS REMOVED TO BETTER ILLUSTRATE THE CENTER TO CENTER SPACING OF THE LED CHARACTER BLOCKS.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

TITLE: SHOP DWG, CE-1010-\*\*X\*\*-4.2-RG-THIN MOUNT

DES. BY: WTUCKER DRAWN BY: WTUCKER DATE: 07AUG2001

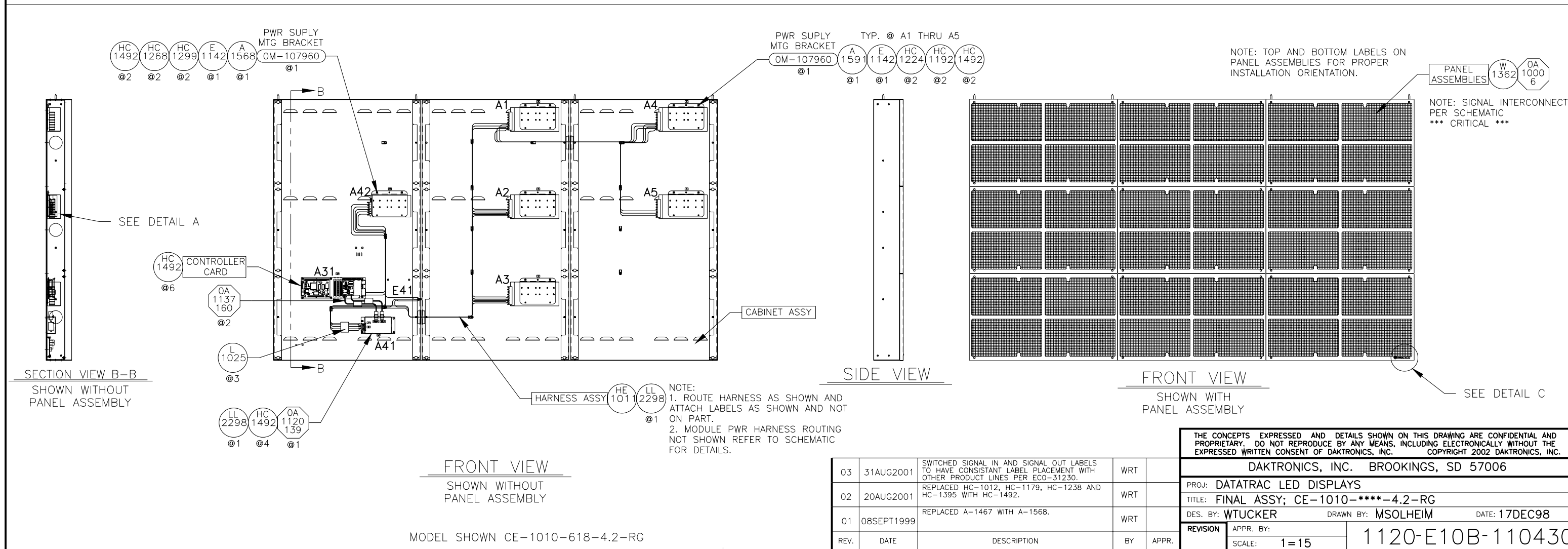
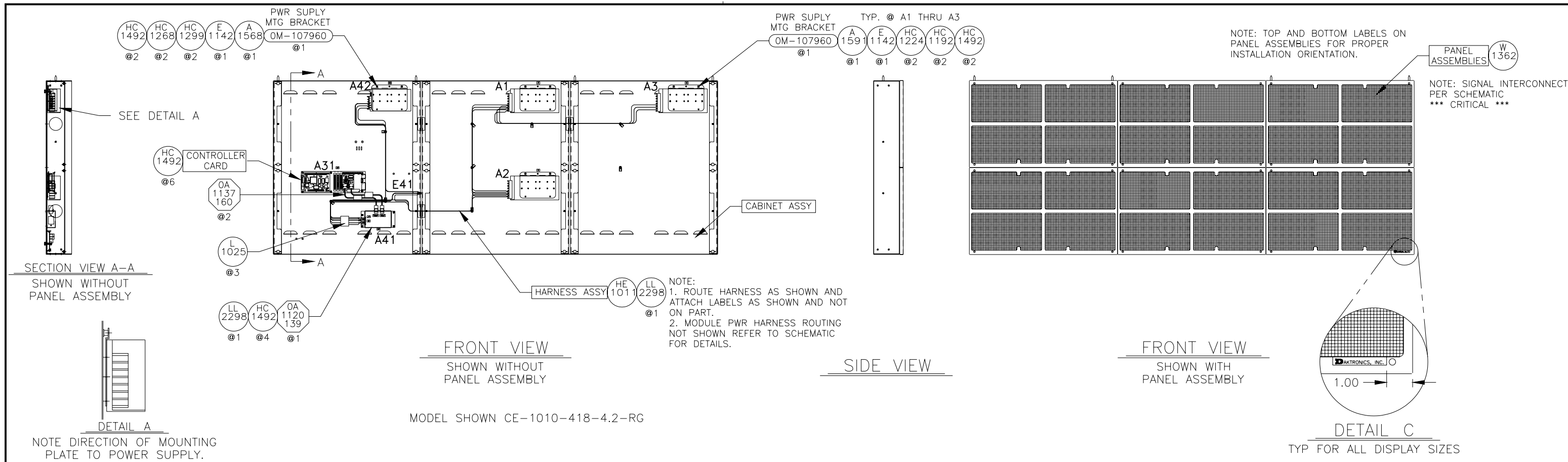
REVISION 01 APPR. BY: SCALE: 1=20

1120-E10A-154044

REV.	DATE	DESCRIPTION	BY	APPR.
01	28JUN04	UPDATE NOTES AND REMOVE RS/422 NOTE FROM DETAIL A TO REFLECT A MORE GENERIC TERM PANEL IN CASES OF ETHERNET REQUIREMENTS.	JJP	







REV.	DATE	DESCRIPTION	BY	APPR.
03	31AUG2001	SWITCHED SIGNAL IN AND SIGNAL OUT LABELS TO HAVE CONSISTANT LABEL PLACEMENT WITH OTHER PRODUCT LINES PER ECO-31230.	WRT	
02	20AUG2001	REPLACED HC-1012, HC-1179, HC-1238 AND HC-1395 WITH HC-1492.	WRT	
01	08SEPT1999	REPLACED A-1467 WITH A-1568.	WRT	

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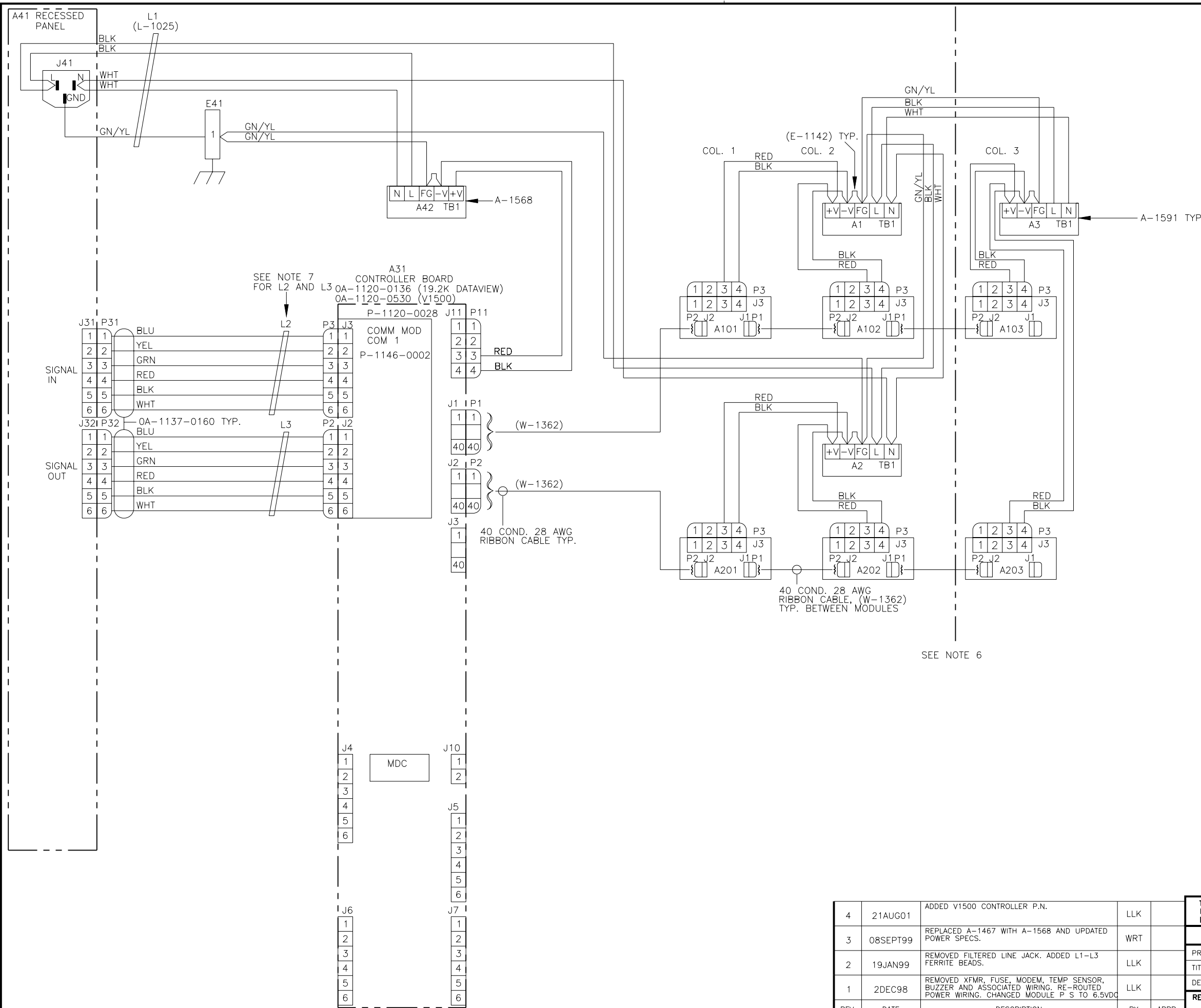
DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC LED DISPLAYS

TITLE: FINAL ASSY; CE-1010-\*\*\*\*-4.2-RG

DES. BY: WTUCKER DRAWN BY: MSOLHEIM DATE: 17DEC98

REVISION APPR. BY: SCALE: 1=15 1120-E10B-110430



- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 6.5VDC.
  - 4) EACH LED MODULE IS 2 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 4 LINE SECTION (418). COL. 3 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 412 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.

POWER SPECS

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
12	290	2.4	1.2
18	435	3.6	1.8

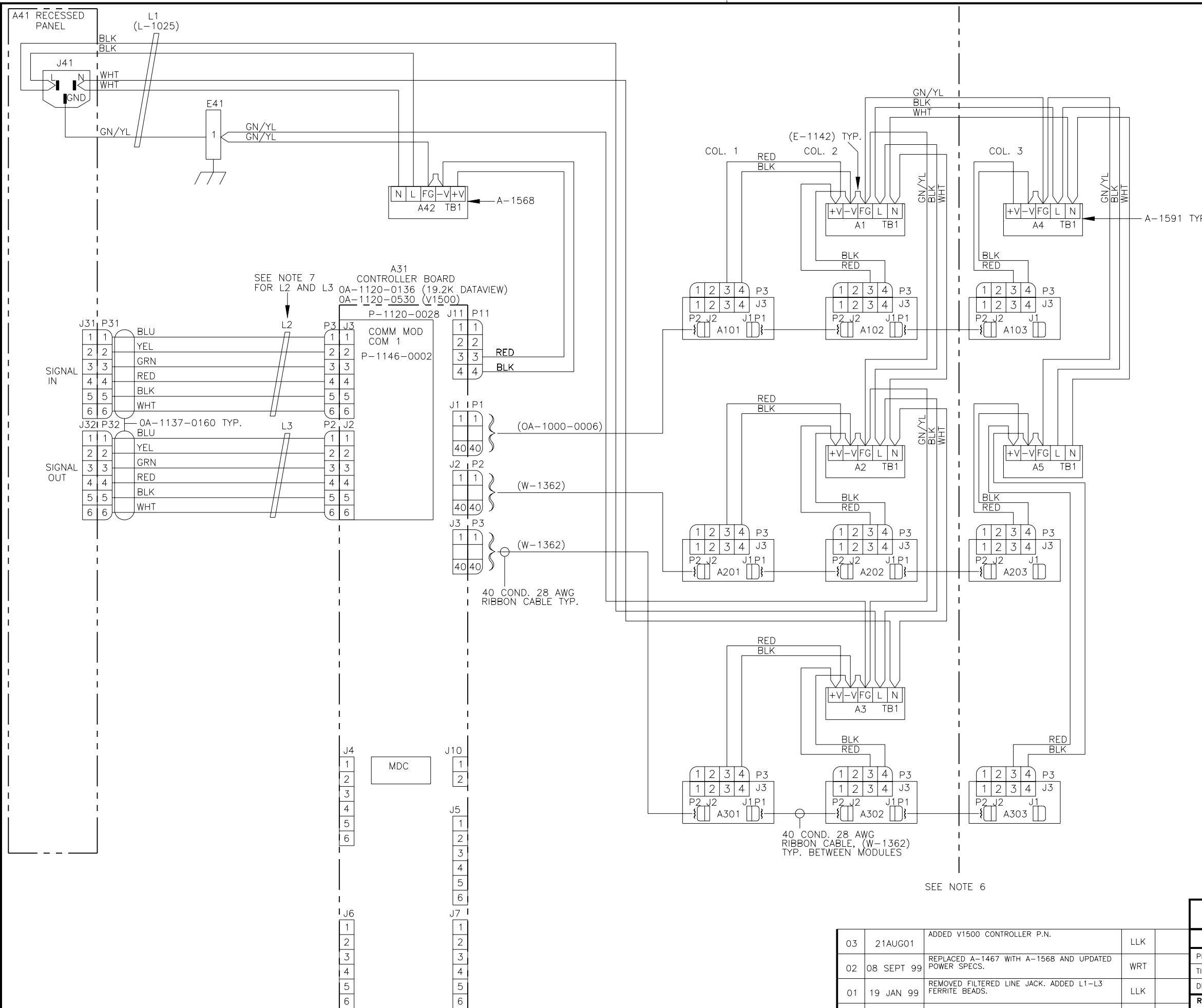
REV.	DATE	DESCRIPTION	BY	APPR.
4	21AUG01	ADDED V1500 CONTROLLER P.N.	LLK	
3	08SEPT99	REPLACED A-1467 WITH A-1568 AND UPDATED POWER SPECS.	WRT	
2	19JAN99	REMOVED FILTERED LINE JACK. ADDED L1-L3 FERRITE BEADS.	LLK	
1	2DEC98	REMOVED XFMR, FUSE, MODEM, TEMP SENSOR, BUZZER AND ASSOCIATED WIRING. RE-ROUTED POWER WIRING. CHANGED MODULE P S TO 6.5VDC	LLK	

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC  
 TITLE: SCHEMATIC: CE-10\*\*-412/18-4.2-\*\*\*  
 DES. BY: DRAWN BY: L KERR DATE: 22 SEP 98

REVISION APPR. BY: SCALE: 1=1 1120-R03B-107790



- NOTES
- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
  - 2) FOR TERMINAL BLOCK STYLE OF INPUT FOR A41 REFER TO DWG. A-88673.
  - 3) LED MODULE VOLTAGE IS 6.5VDC.
  - 4) EACH LED MODULE IS 2 LINES TALL X 6 CHARACTERS LONG.
  - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
  - 6) SCHEMATIC SHOWN DEPICTS THE LARGEST SIZE 6 LINE SECTION (618). COL. 3 AND ITS ASSOCIATED COMPONENTS DO NOT EXIST ON A 612 SECTION. REFER TO THE CHART BELOW FOR THE POWER REQUIREMENTS OF THE DIFFERENT SIZES.
  - 7) L2 AND L3 ARE FERRITE BEADS (DAK.# L-1025) CLAMPED ONTO THE CABLE WITH ONE LOOP NEAR THE END SHOWN.

POWER SPECS

SECTION LENGTH (CHARACTERS)	POWER (WATTS)	AMPS (@120VAC)	AMPS (@240VAC)
12	435	3.6	1.8
18	645	5.4	2.7

REV.	DATE	DESCRIPTION	BY	APPR.
03	21AUG01	ADDED V1500 CONTROLLER P.N.	LLK	
02	08 SEPT 99	REPLACED A-1467 WITH A-1568 AND UPDATED POWER SPECS.	WRT	
01	19 JAN 99	REMOVED FILTERED LINE JACK. ADDED L1-L3 FERRITE BEADS.	LLK	

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: DATATRAC  
 TITLE: SCHEMATIC: CE-10\*\*-612/18-4.2-\*\*  
 DES. BY: DRAWN BY: L KERR DATE: 02 DEC 98

REVISION APPR. BY: SCALE: 1=1 1120-R03B-109996

## **Appendix B: Signal Converter**

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# Signal Converters and Loop-back Testing for Direct Connections

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The following table gives the typical state of the signal converter when the LEDs are either on or off. Refer to **Figure 1** and **Figure 2** on next the page for an illustration of the signal converters and the locations of the various components.

LED Indicators	Typical States		Troubleshooting
Power	ON	Signal Converter (SC) is receiving power	
	OFF	SC is not receiving power Internal 1 AMP fuse is bad	Check power/Replace fuse Replace fuse
TX	On Steady	SC is not connected to a serial port	Connect to open computer COM port (COM port could be sleep mode.)
		1. Serial port or serial cable is bad 2. Computer COM port is in sleep mode	1. Try another port or replace serial cable 2. Communicate with display
	OFF Steady	Normal state, SC is not transmitting data	
	Brief Flicker	SC is transmitting data	
RX	ON Steady	1. Field cabling between SC and display is bad	1. Eliminate cabling by disconnecting wire/cable from SC to display controller 2. Check connections and terminations 3. Eliminate by disconnecting wire/cable to display controller
		2. Is connected to display output jack or terminated incorrectly	
	3. Bad COM port is on display controller		
	OFF Steady	Normal state, SC is not receiving data	
	Brief Flicker	SC is receiving data	
<b>TX/RX</b>	ON Steady	(If serial cable is connected) Bad SC	Replace SC

## RS422 Wire Signal Converter

The following tables list the jack pin-outs for a wire signal converter:

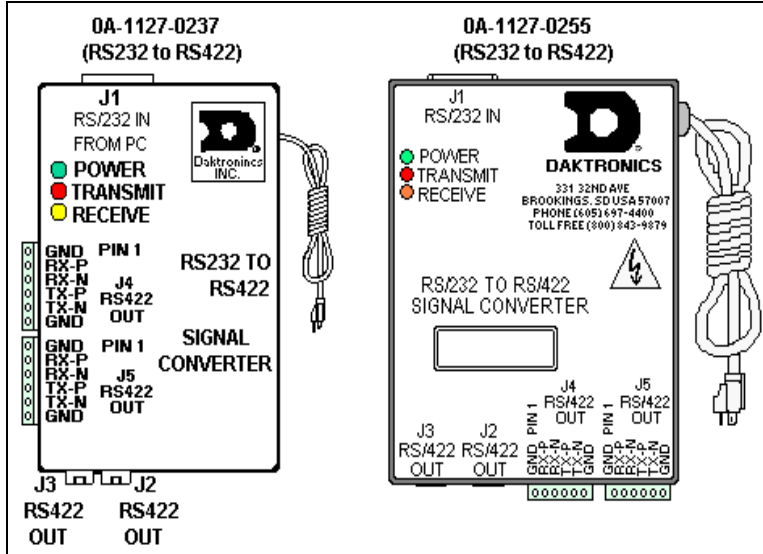


Figure 1: RS232/RS422 Signal Converter

J4 and J5 – Phoenix	
PIN	OPERATION
1	GND
2	RX-P (in)
3	RX-N (in)
4	TX-P (out)
5	TX-N (out)
6	GND

J2 and J3 – RJ/11	
PIN	OPERATION
1	GND
2	TX-N (out)
3	TX-P (out)
4	RX-N (in)
5	RX-P (in)
6	GND

J1 – 25 Pin DB-F	
PIN	OPERATION
2	TX-P (out)
3	RX-P (in)
7	GND

## Fiber Signal Converter

The following tables give the jack pin-outs for a fiber signal converter.

JACK	OPERATION
J2	TX1 (out)
J3	RX1 (in)
J4	TX2 (out)
J5	RX2 (in)

J1 - 25 Pin DB-F	
PIN	OPERATION
2	TX-P (out)
3	RX-P (in)
7	GND

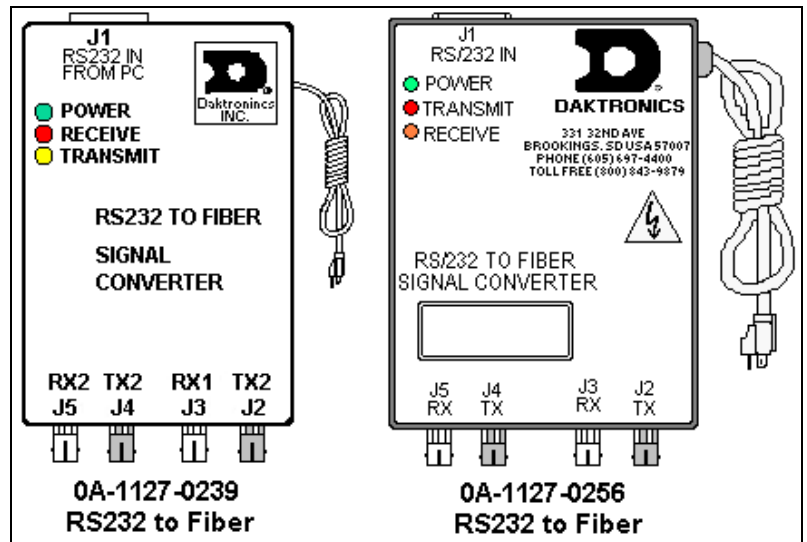


Figure 2: RS232/Fiber Signal Converter

## RS422 Loop-Back Test (Outdoor Displays)

**Note:** This test should be performed with only one jack at a time. Do not connect a loop-back to more than one jack at a time.

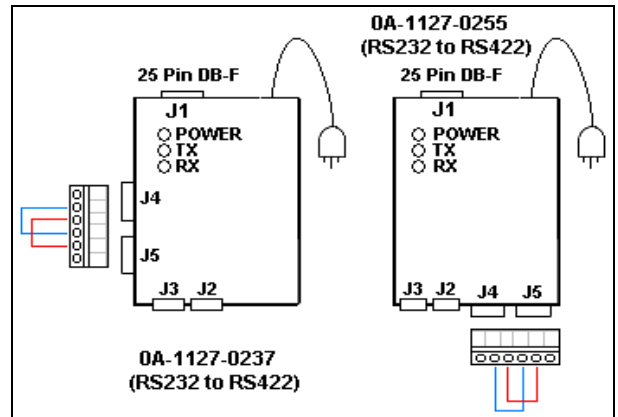
### Serial Cable (W-1249)

To complete the test, the serial cable must be plugged into the signal converter. The table below lists the pin connections when using a serial cable (Daktronics part# -1249).

DB9-F	DB25-F
Pin 3 – TX	Pin 2 – TX
Pin 2 – RX	Pin 3 – RX
Pin 5 – GND	Pin 7 - GND

**Loop-Back Test:** To perform a loop-back for testing purposes only, use the spare plug in the signal converter and connect the copper conductor jumpers using the following table. Refer to **Figure 3**. (To eliminate the display, pull out the phoenix plug with the signal wires connected into it.)

J2 and J3	OR	J4 and J5
(Pin 5) TX-N to (Pin 3) RX-N		(Pin 2) RX-P to (Pin 4) TX-P
(Pin 4) TX-P to (Pin 2) RX-P		(Pin 3) RX-N to (Pin 5) TX-N



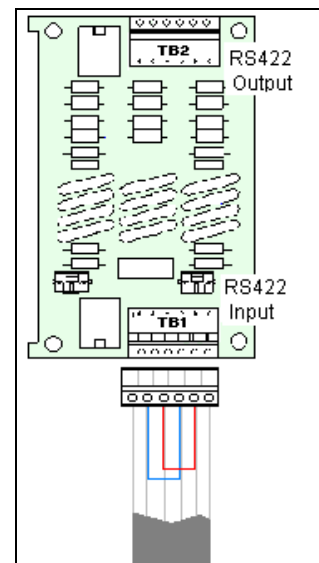
**Figure 3:** Jumpers at RS232/RS422 Signal Converter

When the wires are connected, perform the loop-back test using the Venus 1500 software as described in **Conducting the Venus 1500 Software Test**

This test can also be done at the signal termination enclosure on the surge board assembly, as shown in **Figure 4**, or, on some displays, at the controller board input. In that case, the wires coming from the signal converter must remain connected, and the jumpers will be inserted along with them. **Leave the plug disconnected from the surge board while conducting the test.**

TB1 - RS422 In
(Pin 4) RX-P to (Pin 2) TX-P
(Pin 5) RX-N to (Pin 3) TX-N

When the wires are connected, perform the loop-back test using the Venus 1500 software as described in **Conducting the Venus 1500 Software Test**



**Figure 4:** Jumpers at Surge Board



## RS422 Loop-Back Test (Indoor/Outdoor Displays)

All indoor displays and some outdoor displays (AE-3010, AF-3010, AF-3020, and X-1000) use RJ11 plugs or connectors. In those cases, a “Network Cable Tester” (Figure 7) is provided to conduct the test.

The Network cable tester is used to test for two things:

1. A flipped RJ11 cable used instead of a straight through cable.
2. A good connection from a computer or signal converter to a through the connecting cable.

The use of a flipped (reversed) or straight cable can be determined visually. Use the figures below as a guide, or use the Network Cable Tester box for assistance.

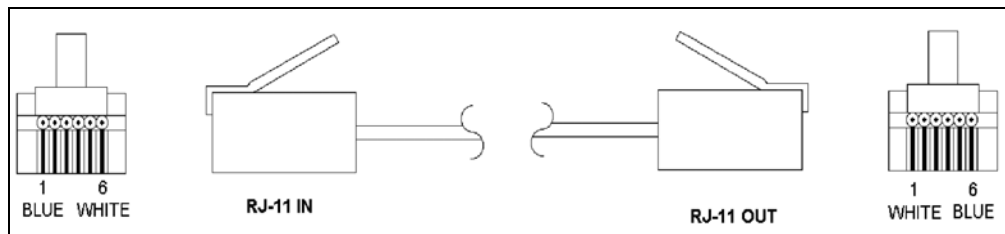


Figure 5: Flipped Cable (Reversed)

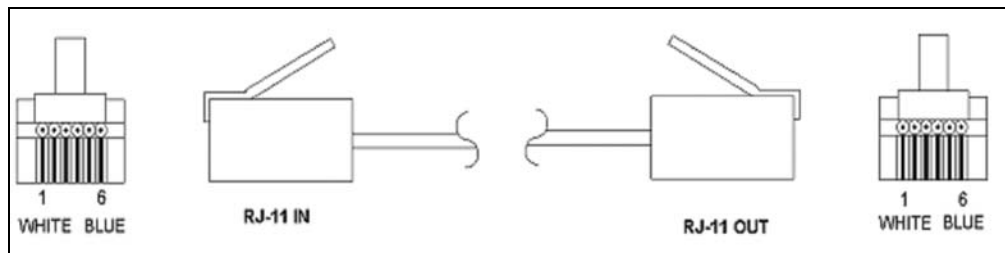


Figure 6: Straight Cable

1. Plug one end of the **flipped** cable into the output from the computer or signal converter.
2. Plug one end of the flipped cable into J2 (Loopback Connector) on the Network cable tester box.

3. When both ends are connected, perform the loop-back test using the Venus 1500 software as described in **Conducting the Venus 1500 Software Test**.

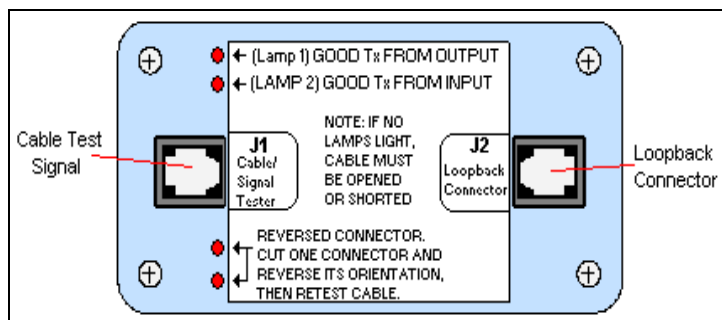
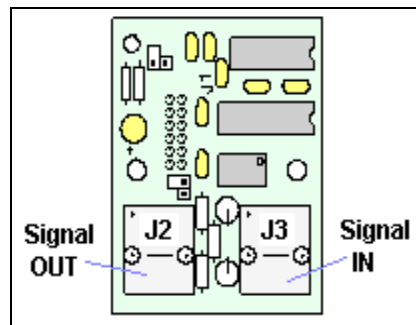


Figure 7: Network Cable Tester

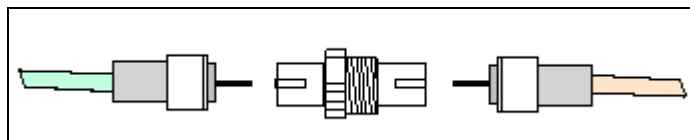
4. For AE-3010, AF-3010, AF-3020, and X-1000 displays only, disconnect the cable going into the COM module input (J3) on the controller and connect to J2 on the loop-back box. See **Figure 8** for location of the RJ11 connector.



**Figure 8:** AF-3010/X-1000 COM Module

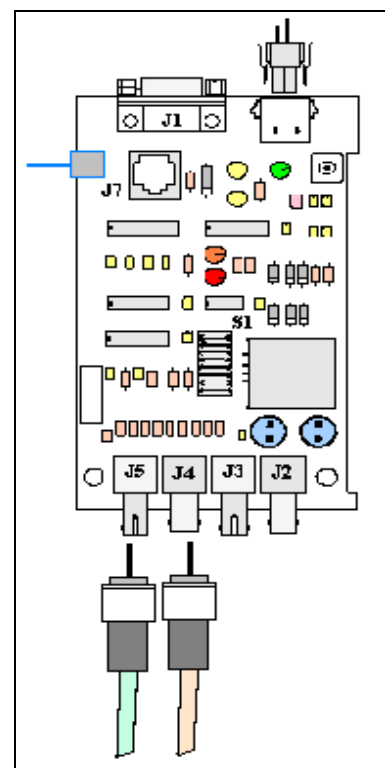
## Loop-Back test with Fiber

1. Locate the signal termination enclosure or open the bottom left corner of the display
2. Locate the fiberboard, as shown in **Figure 9**, and label the fiber ends connected to the board.
3. Remove the ends from the board that are in jacks J5 and J4.
4. Connect the ends into the fiber splice (Daktronics part# P-1197), as shown in **Figure 10**.



**Figure 10:** Connecting TX and RX Fibers with Fiber Splice

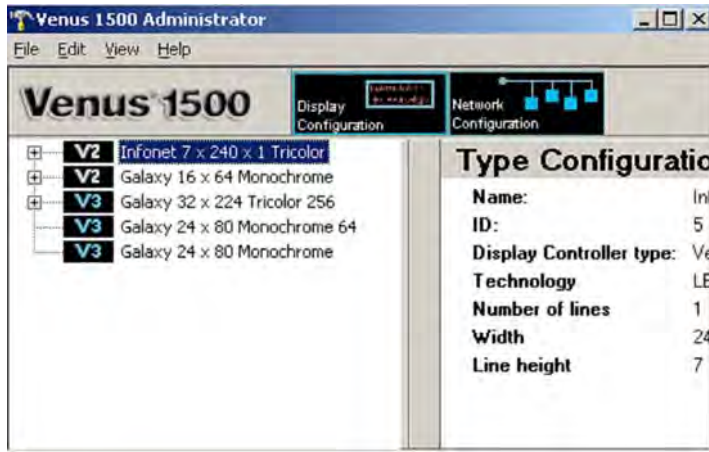
5. When the fibers are connected, perform the loop-back test using the Venus 1500 software as described in **Conducting the Venus 1500 Software Test**
6. For AF-3010 and X-1000 displays only, the cable that connects the fiberboard to the controller board input uses a RJ11 jack at the controller and can be connected to a loop-back box at J2 to run the test as usual.



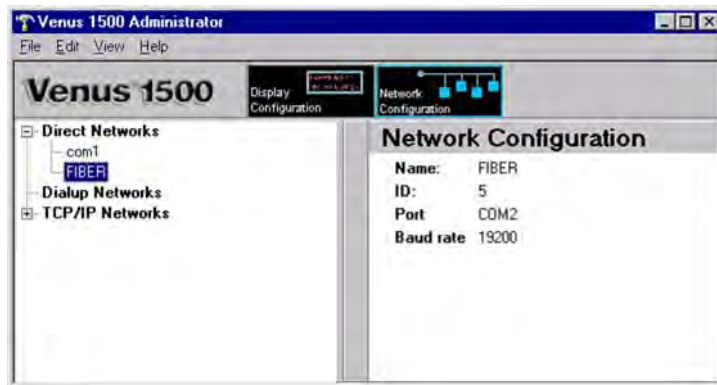
**Figure 9:** Fiber Optic Board

# Conducting the Venus 1500 Software Test

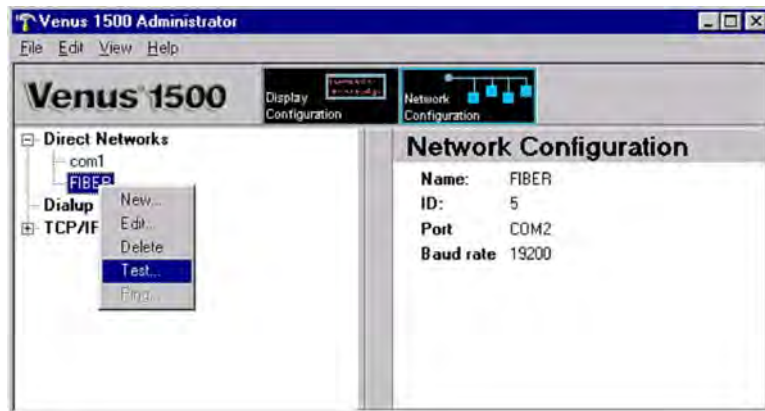
1. Open Venus 1500 Administrator.



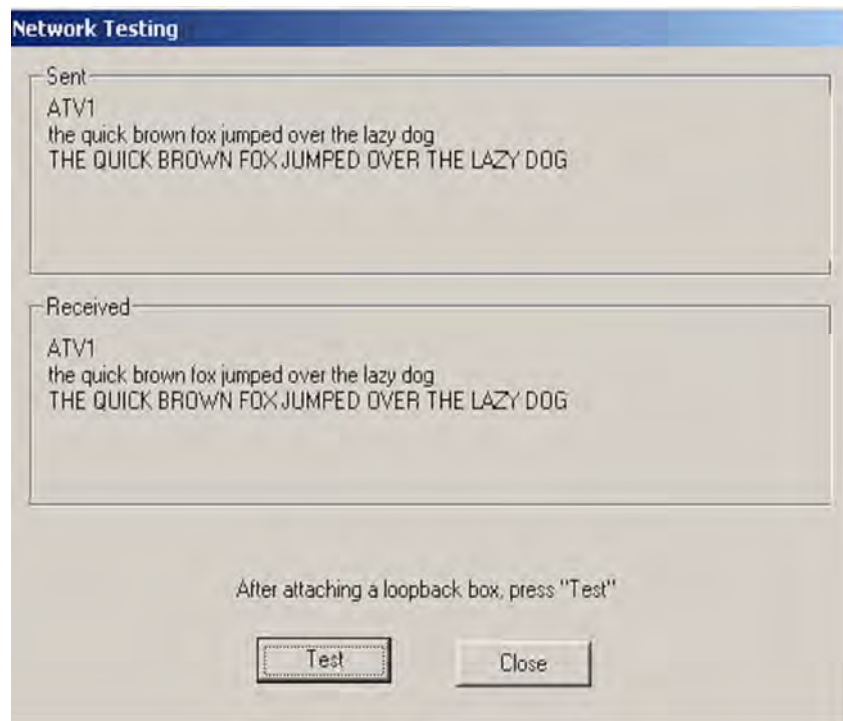
2. Click Network Configuration and open the direct network by clicking on the [+] in front of Direct Network.



3. Right click the network you want to test.



4. Click [TEST].



5. If the Transmit LED on the signal converter flickers, the signal is getting to the signal converter. That means that the right Com port is being used. However, if it does not flicker, the computer has either a software or hardware problem.
6. If you get the same message in the "Received" box as in the "Sent" box, the loopback test was successful, implying that the cable has continuity to the point of the connection.  
**Note:** Flipped and straight cables will provide the same results. Check for correct order of the wires.
7. If "No Response" appears in the "Received" box, the test failed due to one of the following problems:
  - a. The correct computer COM port is not being used, or USB port is not configured as a "serial" port. (If the Transmit LED flickered, this was not the problem.)
  - b. A communication problem exists:
    - The fiber or the ends on the fiber are bad.
    - (or) The wire or the terminations are bad.
  - c. There was a problem conducting the test:
    - The serial cable to the signal converter is bad or not plugged in.
    - The signal converter is not plugged in.
8. If the words "It appears as if this port has a modem attached" appear, the modem will need to be moved, or you need to use a different COM port.

**After the test is complete:**

1. Remove the wire jumpers and make sure terminations are correct.
2. (or) Remove the fiber splice, and reconnect fiber to fiberboard.
3. Run the test again without the jumpers, splice, or loop-back box. The test should fail.
4. Use Venus 1500 Display Manager to receive the status to ensure communication now works correctly.