



**Galaxy[®] Outdoor 68 mm
Series AF-3080**

Display Manual

ED-13620

Rev 0 16 September 2003

**Informing
& Entertaining
the World**

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DAKTRONICS

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DAKTRONICS, INC.

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Section 1: Introduction

1.1 How to Use This Manual

This manual explains the installation, maintenance and troubleshooting of the 68mm AF-3080 Galaxy signs. 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.

Important Safeguards:

1. Read and understand these instructions before installing.
2. Properly ground the display with a ground rod for each face at the display location.
3. Disconnect power when servicing the display.
4. **Do not** modify the display structure or attach any panels or coverings to the display without the written consent of Daktronics, Inc.

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

Daktronics identifies manuals by an ED number located on the cover page of each manual. For example, Daktronics refers to this manual as **ED-13620**.

Daktronics, commonly uses a number of drawing types, along with the information that each provides. 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.
- **Display Assembly:** Locations of critical internal sign components, such as power supply assemblies, controller boards, thermostats, and light detectors.

Figure 1 below illustrates Daktronics drawing label. The lower-right corner of the drawing contains the drawing number. The manual identifies the drawings by listing the last set of digits and the letter preceding them. In the example below, the manual refers to the drawing as **Drawing B-181287**. **Appendix A** contains all of the reference drawings.

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DAKTRONICS, INC. BROOKINGS, SD 57008		
PROJ: VANGUARD VARIABLE MESSAGE SIGNS		
TITLE: SHOP DRAWING; VF-****-27x75-18-W		
DES. BY: GKELLY		DATE: 13 JAN 03
REVISION	APPR. BY:	1246-E10B-181287
00	SCALE: 1=60	

Figure 1: Drawing Label

This manual shows all references to drawing numbers, appendices, figures, or other manuals in **bold** typeface, as shown below.

“Refer to **Drawing B-181287** in **Appendix A** for the power supply location.”

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

Reference Drawing:
 Shop Drawing; VF-****-27x75-18-W **Drawing B-181287**

Daktronics builds displays for long life and that require little maintenance. However, from time to time, certain sign components need replacing. The **Replacement Parts List** in **Section 4.14** provides the names and numbers of components that you may need to order 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-____-____ (component) OA-____-____ (multi-component assembly).

Following the **Replacement Parts List** is the **Daktronics Exchange and Repair and Return Programs** in **Section 4.15**. Refer to these instructions if any sign component needs replacement or repair.

1.2 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 the complexity of multiple display installations has emerged. Daktronics display systems have been designed to meet those needs.

The common thread to most client requests is a means of programming and controlling a group of displays from a central control point. Daktronics responded by developing a powerful system of interconnecting and controlling displays. 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 display or group of displays in the network which message should run
- The ability to determine the status of any display on the network
- The ability to control multiple display technologies on the same network

Tools required for mounting the display depend on the location and size of the display. For some installations, it may be possible to use pre-terminated telephone cables with the displays.

There are five (5) network systems available: RS232, RS422, modem, fiber, and radio. Up to 240 displays can exist one network.

RS232 Network

RS232 (EIA/TIA-232-E) is a standard communication interface that employs a single-ended serial transmission scheme that uses a maximum cable length of 8 meters (25 Feet). This interface was designed for computer communication at short distances. Most computers have an RS232 communication port.

RS422 Network

RS422 (EIA/TIA-422-B) is a standard communication interface that utilizes a differential balanced transmission scheme that 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.

Modem Network

The modem is a standard communication interface that utilizes standard phone transmission lines. The phone company assigns each phone line a number that the modem uses to communicate between controller and display.

Fiber Optic Network

A fiber optic network is a standard communication method transmitting light (signal) through a glass fiber. Fiber optic cable has a maximum length of 2,000 feet. A signal converter is needed to convert the computer's RS232 signal to fiber optic signal; a minimum of two fibers is required.

Radio Network

The Radio network is a standard communication method that uses radio waves at high frequencies to transmit signal. The Venus 1500 Radio network has a maximum length of 1500 feet. A nearly straight line-of-sight path must be maintained between the Server Radio connected to the computer and the Client Radio connected to the display. Refer to **Section 3** and **ED-13348** for additional information.

1.3 Sign Overview

Reference Drawings:

Shop Drawing; AF-3080-24x***-68B	Drawing B-163291
Shop Drawing; AF-3080-8/16x***-68B	Drawing B-163293
Power Specs, Amber, 8-24x48-112 Displays.....	Drawing A-163306
Power Specs, Red, 8-24x48-112	Drawing A-163751

Daktronics designs and manufactures AF-3080 Galaxy signs for performance, reliability, easy maintenance, and long life. The pixels have a 68 mm center-to-center spacing and LEDs (light emitting diodes). Each sign section has minimum 18-inch character height. An optional remotely mounted light sensor can automatically dim the LEDs based on the ambient light levels. The configuration of pixels depends on the model of sign ordered.

Refer to the drawings referenced above for the approximate size, weight, and power requirements for your model of sign.

The following describes the Galaxy model numbers: **AF-3080-RRxCCC-68-X-XF**

AF-3080	=	Outdoor 68 mm Galaxy Sign
RR	=	Number of Rows High
CCC	=	Number of Columns Wide
68	=	68 mm center-to-center spacing with 18" minimum character height
X	=	LED Color (monochrome red or amber)
XF	=	SF or DF (Single face or Double face)

A typical sign system consists of a Windows[®] based personal computer (PC) running Venus[®] 1500 software and one or more signs. Daktronics offers the signs as single-face units, which are single-sided stand-alone signs. They can become double-faced by mounting them back-to-back with a second unit.

The Venus[®] 1500 is a software package that runs under Windows[®] 98, ME[™], NT[®] 4.0, 2000, or XP Home/Professional operating systems on an IBM[®]-compatible computer. Refer to the Venus[®] 1500 operator's manual, **ED-13530**, for installation and operation of the Venus[®] 1500 editing stations.

Refer to **Section 4** for the summaries of how signal and power are routed through the displays.

1.4 Component Identification

The following illustrations and definitions depict some of the more commonly accessed Galaxy sign components. Because Daktronics occasionally alters standard design to meet customer needs, the actual sign design may vary slightly from the illustrations below.

This is only a brief overview. Refer to **Section 4** for detailed information on maintaining and troubleshooting various sign components.

Com Port: Connector on the back of the control computer. The COM port controls the sign through either a 9- or a 25-pin serial connector.

Controller: The “brains” of the display. The controller receives, translates, and activates the signal information from the control computer to the appropriate pixels on the display accordingly.

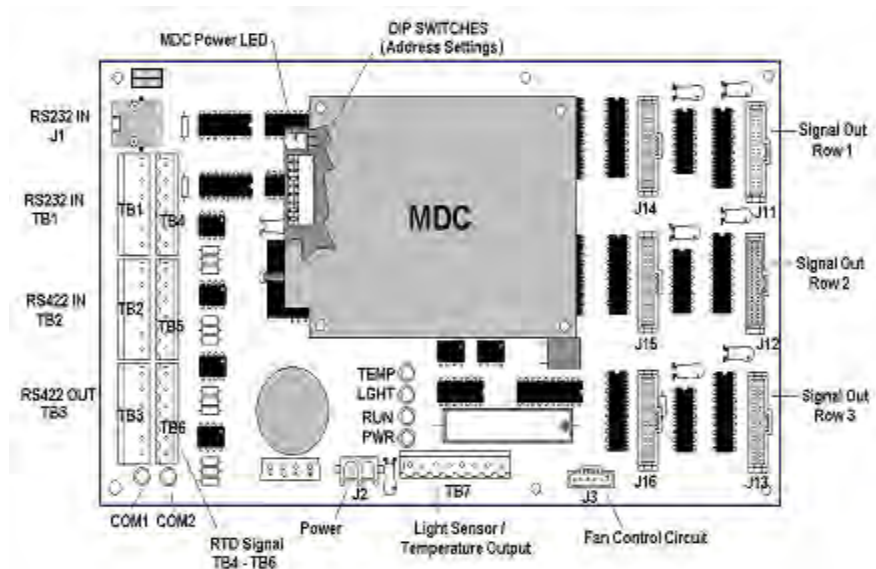


Figure 2: Controller

Display Address: The display address is an identification number assigned to each display of a network. The address is set using DIP switches on the controller. The control software uses the address to locate and communicate with each display. Displays that are on the same network **cannot** have the same address.

Driver: Circuit board responsible for switching the intensity levels of the LEDs. The driver is located inside the driver box and mounts on the back of the modules.

Fiber Optic: Technology that uses glass (or plastic) threads (fibers) to transmit data from the controller to the display. A fiber optic cable consists of a bundle of glass threads, each of which transmits messages modulated onto light waves.

Galaxy®: Daktronics trademarked name for LED monochrome or tri-colored matrix signs.

Jumper: A jumper is a metal bridge that closes an electrical circuit. In most cases, it consists of a black plastic plug (with metal wires inside) that fits over a pair of protruding pins. By placing the jumper over a set of pins, the user can change the board’s parameters.

Latch Access Fastener: Device utilizing a rotating retainer bar to hold the module firmly to the sign frame. There are two per module: one near the top center of the module and another on the bottom center.

LED (light emitting diode): Low energy, high intensity lighting units.

Louver: Black shade positioned horizontally above each pixel row. The louvers increase the level of contrast on the sign face and direct LED light.

Modem: This is the general term given to both the sending and receiving device. The sending modem can be either internal or external to the computer. Another modem must be used at the display to receive the signal and transfer it to the display's controller. Two jumpers will need to be used on the controller for it to recognize the modem.

Module: The 68mm Galaxy modules are 4 pixels high by 4 pixels wide. They consist of display boards and louvers in one unit. They are individually removable from the display. One driver is used to controller each section of four modules.

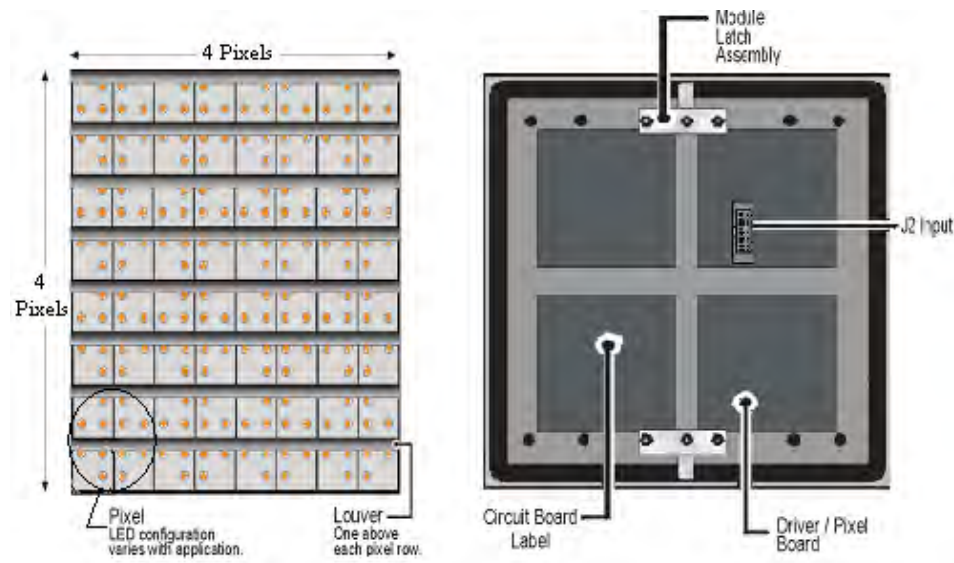


Figure 3: 68mm Amber Galaxy Module

Network: Consists of multiple signs connected to each other.

Pixel: Cluster of LEDs. The number and color of the LEDs depends on sign application.

Power Supply: Converts AC line voltage from the load center to low DC voltage for one or more module driver boards.

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)

Sign Address: Identification number assigned to each display of a network. It is set by flipping DIP switches on the controller. The control software uses the address to locate and communicate with each display. Displays that are on the same network cannot have the same address.

Signal Converter: The signal converter is a Daktronics supplied unit that converts the data from RS232 to RS422, or RS232 to fiber optic signal. The signal converter is connected to the control PC via straight through serial cable.

Venus® 1500: Daktronics designed, Windows based software used to create and edit messages on the display. Refer to **ED-13530** for more information.

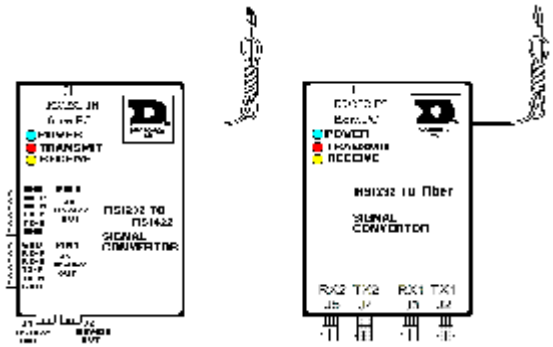


Figure 4: Signal Converter

1.5 Daktronics Nomenclature

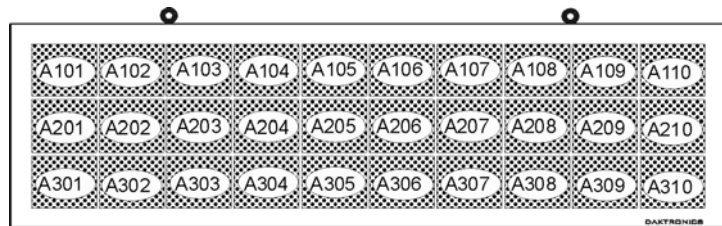


Figure 5: Module Numbering Example – 24x80 Front

To fully understand some Daktronics drawings, such as schematics, it is necessary to know how those drawings label various components. This information is also useful when trying to communicate maintenance or troubleshooting efforts.

A module is the building block of the Galaxy sign. Each module measures 4 pixels high by 4 pixels wide. By placing modules side-by-side and on top of one another, Daktronics can design and build signs of any size. A person can easily remove individual modules from the sign if required. **Figure 5** above illustrates how Daktronics numbers modules on a Galaxy sign. **Figure 6** on the right breaks down the module numbering method.

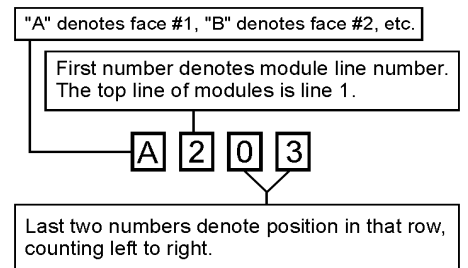


Figure 6: Module Numbering

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

- “TB_” represents a termination block for power or signal cable
- “F_” denotes a fuse
- “E_” signifies a grounding point
- “J_” indicates a power or signal jack
- “P_” shows 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-_____-____-” denotes an individual circuit board, such as a line receiver.
- “OA-_____-____-” indicates 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-____-” represents a wire or cable. Cables may also carry the assembly numbering format in certain circumstances. This is especially true of ribbon cables.
- “F-____-” stands for 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 4.12** does not list a circuit board or assembly, use the label to order a replacement. **Figure 7** below illustrates a typical label. The part number is in bold.

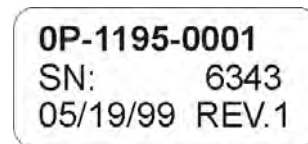


Figure 7: Typical Label

Section 2: Mechanical Installation

Note: Daktronics does not guarantee the warranty in situations where the sign is not constantly in a stable environment.

Daktronics engineering staff must approve **any** changes that may affect the weather-tightness of the sign. If you make any modifications, you must submit detailed drawings of the changes to Daktronics for evaluation and approval, or you may void the warranty.

Daktronics is not responsible for installations or the structural integrity of support structures done by others. The customer is responsible to ensure a qualified structural engineer approves the structure and any additional hardware.

2.1 Mechanical Installation Overview

Because every installation site is unique, Daktronics has no single procedure for mounting Galaxy signs. This section contains general information only and may or may not be appropriate for your particular installation.

A qualified installer must make all decisions regarding the mounting of this sign.

Read both the mechanical and electrical installation sections of this manual before beginning any installation procedures.

2.2 Support Structure Design

Support structure design depends on the mounting methods, sign size, and weight. The structure design is critical; only a qualified individual should mount the sign. Sign height and wind loading are also critical factors. It is the customer's responsibility to ensure that the structure and mounting hardware are adequate. **Daktronics is not responsible for the installations or the structural integrity of support structures done by others.**

The installer is responsible to ensure the mounting structure and hardware are capable of supporting the sign and agrees with local codes.

Before beginning the installation process, verify the following:

- The mounting structure provides a straight and square frame for the sign.
- The mounting structure supports the sign without yielding at any unsupported points after mounting.
- Clearance: 3 " of unobstructed space is available below the sign for ventilation. 1¼" of unobstructed space is available above the top of the sign.

Correct any deficiencies before installation.

2.3 Ventilation Requirements

Reference Drawings:

Shop Drawing; AF-3080-24x***-68B..... **Drawing B-163291**

Shop Drawing; AF-3080-8/16x***-68B..... **Drawing B-163293**

Fans, mounted in the back sheets toward the top of the display, allow for ventilation. Maintain a minimum distance of 3" (7.62 cm) below the sign to maintain proper airflow. Refer to the appropriate **Shop Drawing** for additional information.

If the sign cabinet is completely enclosed:

- Provide 6 square inches of unobstructed opening per module to ensure adequate cooling.
- Make allowances to compensate for the percentage of material covering the openings in the structure.
- For adequate cooling, the cabinet may require forced ventilation. If the enclosed cabinet must use forced ventilation, it must ventilate at a rate of 10 cubic feet per minute per module (10.64" x 10.64" active area).

Failure to comply with these requirements voids the Galaxy sign warranty.

2.4 Lifting the Sign

The top of the sign has eyebolts to lift the unit. **Do not** exceed the rated load of the eyebolts. Refer to the information at the end of this section labeled **Eyebolts** to determine the allowable load of the eyebolts shipped with the sign.

Figure 8 on the right illustrates both the correct (left example) and the incorrect (right example) method of lifting a sign. Lift the sign as shown on the left, with the lifting bar. **Use every lifting point provided.**

Do not attempt to permanently support the sign by the eyebolts.

If you remove the eyebolts, adequately seal the holes using 13 bolts and sealing washers, ½ inch in size. Be sure to silicone along the threads to ensure water does not enter the sign.

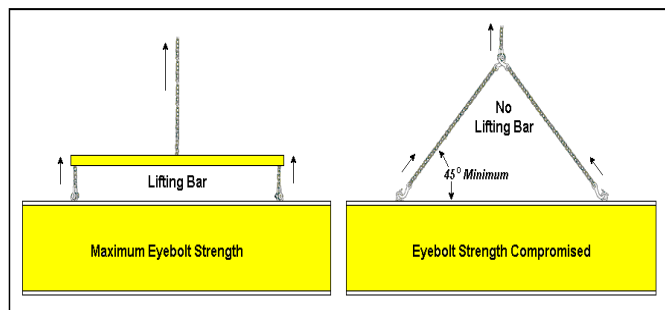


Figure 8: Lifting the Sign

2.5 Sign Mounting

Reference Drawings:

Shop Drawing; AF-3080-24x***-68B	Drawing B-163291
Shop Drawing; AF-3080-8/16x***-68B	Drawing B-163293

The method used to mount signs varies greatly from location to location. For this reason, the manual covers only general mounting topics.

The installer is responsible to ensure the installation will adequately meet local codes and standards. The installer is also responsible for the mounting method and hardware.

Before beginning the installation process, verify the following items:

- The mounting structure will provide a straight and square frame for the sign. Height variation in any four-foot horizontal section may not exceed ¼-inch.
- The mounting structure will not give way at any unsupported points after the sign is mounted.

The back of the sign uses 2x2x1/4" steel clip angles at the locations shown in **Drawing B-163291** and **Drawing B-163293**. These angles assist in mounting the sign. Remember to have **all** mounted signs inspected by a qualified structural engineer.

The customer **must** have a qualified structural engineer review the number of attachment points needed and the wall structure to ensure both meet all national and local codes. Daktronics recommends using all clip angles as attachment points.

1. Carefully uncrate the sign. Look each side of the sign over for damage during shipping.
2. Following the guidelines described in **Section 2.4**, lift the sign into position on the support structure using all provided eyebolts.
3. Weld or use ½" Grade-5 bolts and hardware to secure the clip angles to the support structure as shown in **Top View** in **Drawing B-163291** and **Drawing B-163293**.
4. Refer to **Section 3** for information on routing power and signal.
5. Upon completing the installation, carefully inspect the sign for any holes that may allow water to seep into the sign. Seal any openings with silicone. If you remove the eyebolts on the top of the sign, plug the holes with bolts and the rubber sealing washers that you removed with the eyebolts. Silicone the threads on the bolts.

2.6 Optional Temperature Sensor Mounting

The temperature sensor mounts separately and requires a location away from the influence of chimneys, air conditioners, vents, tar roofs, concrete, and parking lots, which can cause abnormal temperature fluctuations. Usually, a separation of at least 20-30 feet horizontally and 8 feet vertically is required to achieve this. Locations where air movement is restricted are also unsatisfactory. Refer to **Drawing A-79767**.

The ideal sensor location is a north eaves or a northern exposure, above grass and away from direct sunlight. This location gives extra stability and accuracy to the sensor because of the added shading usually obtained on a northern exposure. See **Figure 9** on the right for details.

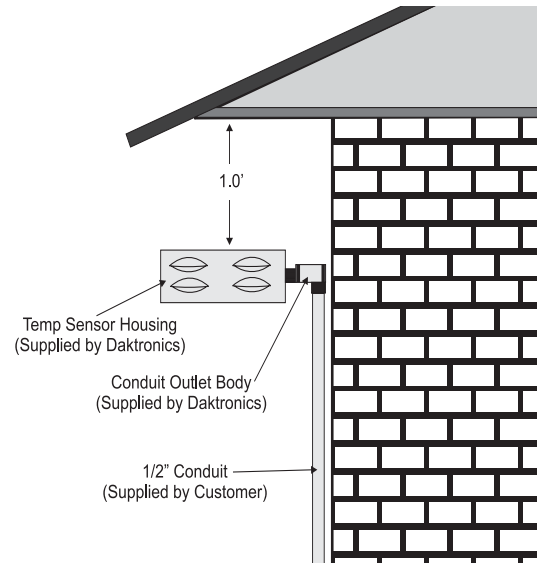


Figure 9: Temperature Sensor Eave/Wall Mount

The second choice for locating a temperature sensor is on the display itself, or somewhere on the display structure. A light-colored display is preferred in this application. Location of the sensor should be above, below, or on a northern edge of the display to keep the sensor shaded. If mounting above the display, a minimum height of 6 feet is required. If mounting below the display, a minimum of 8 feet above ground and a minimum of 1 foot between the sensor and the display are required, as seen in **Figure 10** below.

Greater accuracy is obtained if grass is below the sign rather than concrete or some other material.

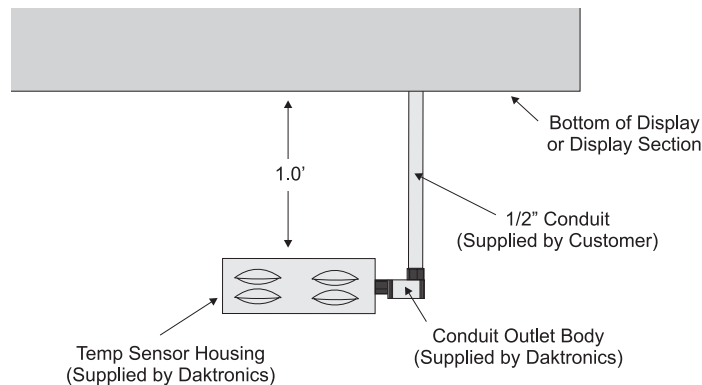


Figure 10: Temperature Sensor Mounting to Bottom of Display

Use a two pair, individually shielded cable (Belden 5594, Daktronics part number W-1234) to connect the sensor to the display controller. Maximum length is 1000 feet.

Follow these steps to mount the temperature sensor:

1. Run ½" conduit from the sensor location to the controller where the sensor cable is to be attached. The cable must be routed through ½" metal conduit, which should be earth grounded to protect the sensor and controller from lightning damage.
2. Power down the controller when the sensor cable is being attached.
3. Connect the cable to the temperature sensor terminal block as shown below. Refer to **Drawing A-79410** for the location of the terminals.

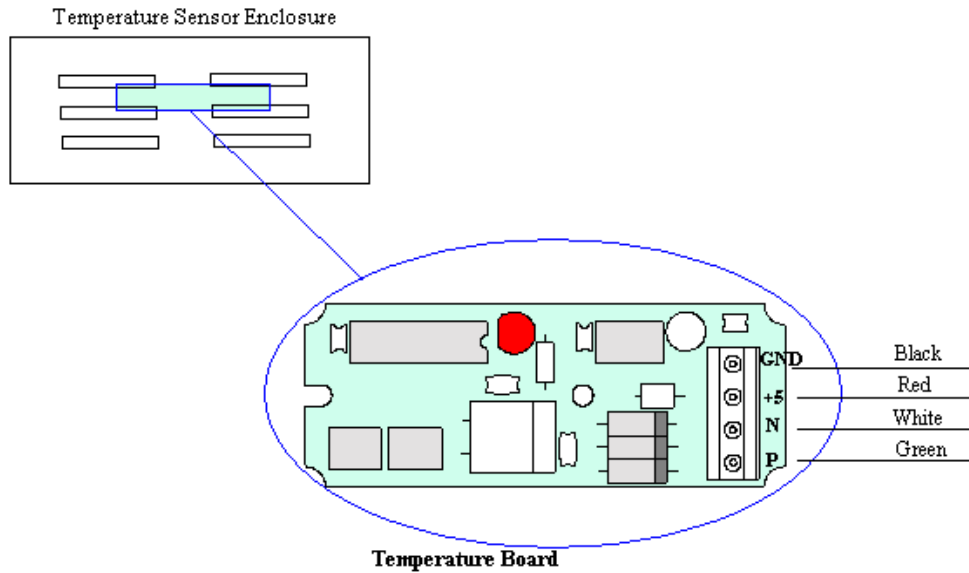


Figure 11: Temperature Board/Temperature Sensor Enclosure

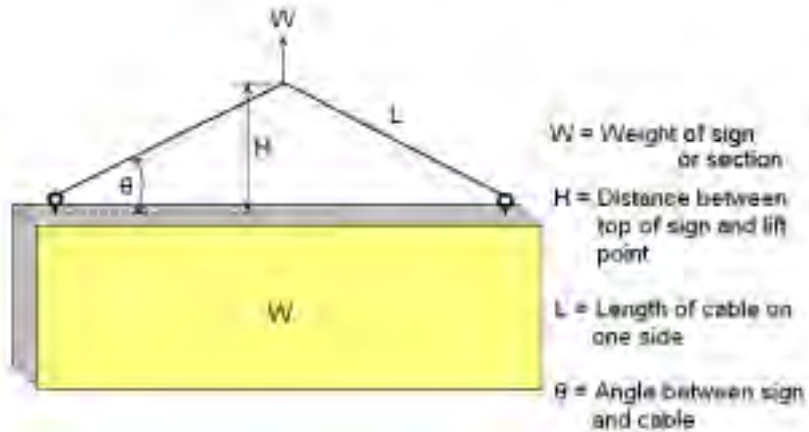
GRN	=	P
WHT	=	N
RED	=	+V
BLK	=	GND

4. Install the mesh screen with the four screws enclosed.
5. Connect the cable to the display controller as described in the controller installation manual. Start operation of the controller.

Eyebolts

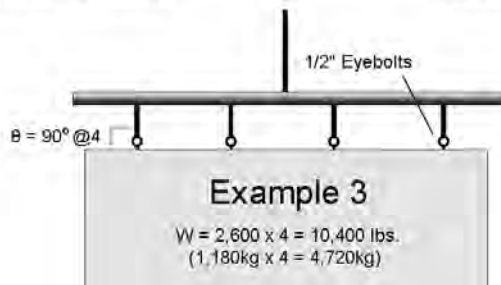
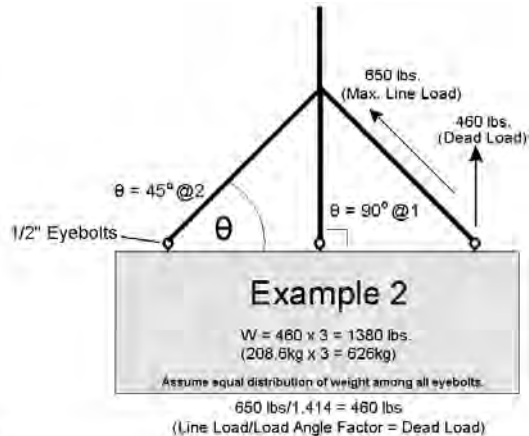
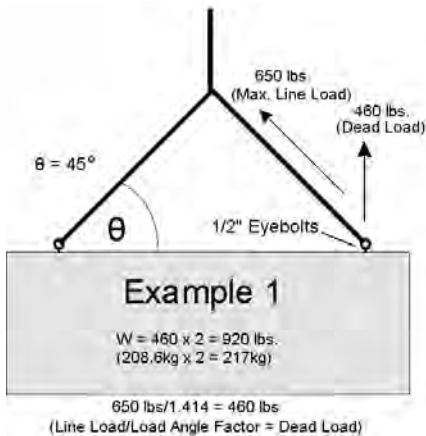
Almost every display that leaves Daktronics is equipped with eyebolts for lifting the display. There are two standard sizes of eyebolts: 1/2" and 5/8".

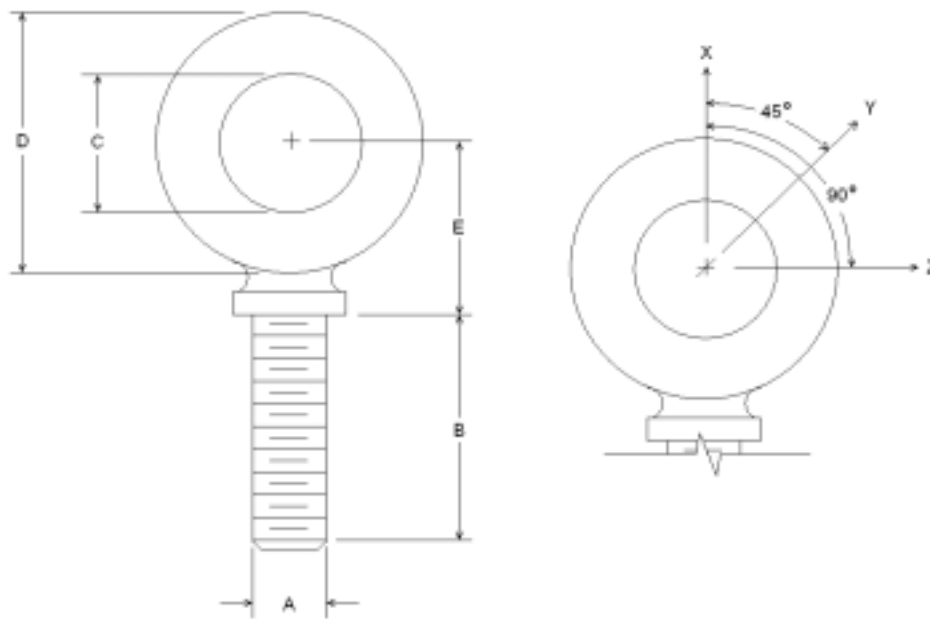
Load Increase Factor: The load increases as the lift angle (θ) decreases. The allowable load on the eyebolts also decreases with the lift angle due the bending stress on the eyebolts. In sum, the smaller the angle between the cable and the top of the display, the lighter the sign must be to safely lift it. *Do NOT attempt to lift the display when the lift angle is less than 30 degrees.*



Horizontal Angle	Load Angle Factor (L/H)
90	1.00
60	1.155
50	1.305
45	1.414
30	2.00

θ	1/2"		5/8"	
	Line Load	Weight/Anchor	Line Load	Weight/Anchor
90	2600	2600	4000	4000
60	1500	1299	3300	2858
45	650	460	1000	707
30	520	260	800	400





A	B	C	D	E	No.	Min. Proof Load (lbs.)	Min. Break Load (lbs.)	Stocked	Min. Eff. Thrd. Length	Line Loads		
										Wx	Wy	Wz
1/4	1	3/4	1-3/16	25/32	21	600	2,000	Blank 1/4-20	7/8	400	100	80
3/8	1-1/4	1	1-21/32	1-3/16	23	2,100	5,000	Blank 3/8-16	1-1/8	1,400	350	250
1/2	1-1/2	1-3/16	2-1/16	1-13/32	25	3,900	9,200	Blank 1/2-13	1-11/32	2,600	650	520
9/16	1-5/8	1-9/32	2-13/16	1-17/32	26	4,500	11,830	Blank 9/16-12	1-3/8	3,000	750	600
5/8	1-3/4	1-3/8	2-1/2	1-11/16	27	6,000	14,700	Blank 5/8-11	1-9/16	4,000	1,000	800
3/4	2	1-1/2	2-13/16	1-13/16	28	9,000	21,700	Blank 3/4-10	1-5/8	6,000	1,500	1,200
7/8	2-1/4	1-11/16	3-1/4	2-1/16	29	10,000	30,000	Blank 7/8-9	1-13/16	6,600	1,670	1,330
1	2-1/2	1-13/16	3-9/16	2-5/16	30	12,000	39,400	Blank 1-8	2-1/16	8,000	2,000	1,600
1-1/2	3-1/2	2-9/16	5-1/2	3-5/32	34	27,000	91,300	Blank 1-1/2-6	3	17,800	4,500	3,600

- A. Do not use eyebolts on angular lifts unless absolutely necessary. For angular lifts, the shoulder pattern eyebolt is preferred.
- B. Load should always be applied to eyebolts in the plane of the eye, not at some angle to this plane.
- C. Shoulder eyebolts must be properly seated (should bear firmly against the mating part), otherwise the working loads must be reduced to those indicated for regular eyebolts. A washer or spacer may be required to put the plane of the eye in the direction of the load when the shoulder is seated.
- D. No load greater than the safe working load listed in the data table should be used.
- E. To obtain the greatest strength from the eyebolt, it must fit reasonably tight in its mounting hole to prevent accidental unscrewing due to twist of cable.
- F. Eyebolts should never be painted or otherwise coated when used for lifting. Such coatings may cover potential flaws in the eyebolt.
- G. To attain the safe working loads listed for regular eyebolts, 90% of the thread length must be engaged.

Section 3: Electrical Installation

Only a qualified individual should terminate power and signal cable within this Daktronics sign.

The Daktronics engineering staff must approve **any** changes made to the sign. Before altering the sign, submit detailed drawings for the proposed modifications to the Daktronics engineering staff for evaluation and approval or you will render the warranty null and void.

3.1 Common Connectors in the Sign

The power and signal connections in the signs use many different types of connectors. Take special care when disengaging any connector so as not to damage the connector, the cable, or the circuit board.

When pulling a connector plug from a jack, **do not** pull on the wire or cable; pull on the jack itself. Pulling on the wires may damage the connector.

The following information presents some common connectors encountered during sign installation and maintenance:

1. Ribbon Cable Connectors:

Figure 12 on the upper right illustrates a typical ribbon cable connector. To disconnect the ribbon cable, push the metal clips on the sides to unlock and remove the jack.

Before replacing a ribbon cable connector, spray it with DeoxIT™ contact cleaner to remove any foreign matter that may cause signal problems. In addition, apply a generous amount of CaiLube™ protector paste in the plug before inserting it into the jack. This paste protects both the plug and the jack from corrosion.

2. Termination Blocks:

Termination blocks connect internal power and signal wires to wires of the same type coming into the sign from an external source. Most signal wires come with forked connectors crimped to the ends of the wire. Power wires need to have one-half inch of insulation stripped from the end of the wire prior to termination. Tighten all screws firmly to ensure a good electrical connection. Refer to the right for **Figure 13**.

3. Phoenix™-Style Connectors:

Phoenix-style connectors, usually green, allow for signal termination on circuit boards. Refer to **Figure 14** on the right. Strip one-quarter inch of insulation from the wire prior to termination. To remove a wire, turn the above screw counter-clockwise to loosen the connectors grip on the wire. To insert a wire, push the bare wire into the connector and turn the above screw clockwise to lock the wire into place.

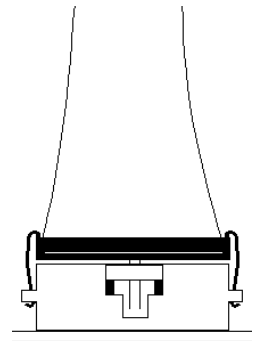


Figure 12: Ribbon Cable Connector

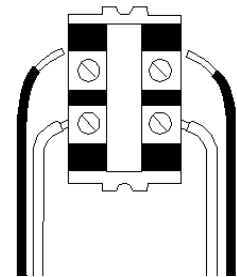


Figure 13: Termination Block

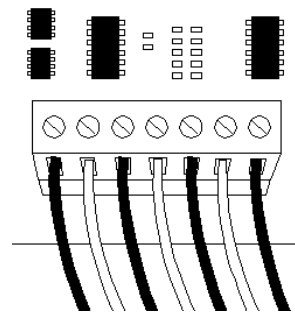


Figure 14: Phoenix Connector

4. **Mate-n-Lok™ Connectors:**

The white Mate-n-Lok connectors found in the signs come in a variety of sizes. **Figure 15** on the right illustrates a five-pin Mate-n-Lok connector. To remove the plug from the jack, squeeze the plastic locking clasps on the side of the plug and pull it from the jack.

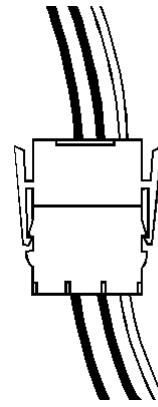


Figure 15: Mate-n-Loc Connector

5. **Fiber Optic Connectors:**

A fiber optic cable has a “twist-on” connector at each end. To remove the fiber plug, push it toward the board and twist it counter-clockwise until you can pull the plug from the jack. **Figure 16** on the right shows this connector.

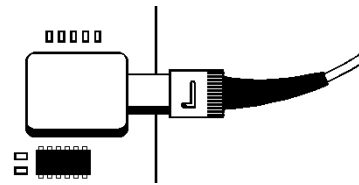


Figure 16: Fiber Optic Cable

6. **Phone Jacks (RJ11 Connectors):**

RJ connectors, as seen on the lower right in **Figure 17**, are similar to the telephone connectors found in homes. In order to remove this plug from the jack, depress the small clip on the underside of the plug.

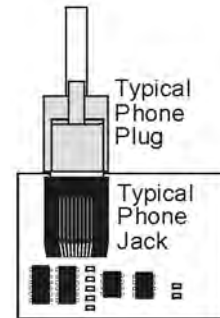


Figure 17: RJ11 Connector

Before replacing an RJ connector, spray it with DeoxIT™ contact cleaner to remove any foreign matter that may cause signal problems. In addition, apply a generous amount of CaiLube™ protector paste in the plug before inserting it into the jack. This paste will protect both the plug and the jack from corrosion.

3.2 Control Cable Requirements

RS232

This cable is a 2-conductor shielded cable used to transmit an RS232 signal (Daktronics part number W-1117). This shielded cable should not be subjected to mechanical flexing after installation. This cable is not for direct burial and should be routed in a dedicated, grounded metallic conduit at the base of the sign structure. This cable has a maximum length of 25 feet.

RS422

This cable is a 6-conductor shielded cable used to transmit an RS422 signal (Daktronics part number W-1210). This shielded cable consists of unpaired wires. They should not be subjected to mechanical flexing after installation. This cable is not for direct burial and should have one of the following routings:

- In dedicated metallic conduit
- Inside buildings-if cable is not in conduit, keep away from interface signals

With interface signals, (such as power conductors, intercom, etc.) typically a two-foot separation is required. The maximum length of an RS422 signal cable is 4,000 feet (1.22 km).

Modem

The modem option will use standard telephone cable routed through a conduit. The local telephone company will need to assist in this installation.

Ask the telephone company which colors are used by the TIP and the RING for signal hook up.

Note: The telephone lines must be dedicated lines and not run through a switchboard system.

Fiber Optic

This cable is a 4-fiber cable (Daktronics part number W-1376). Two fibers are used for display communications and the other two are saved for spares. The cable may be either direct burial or routed in conduit but should not be subjected to mechanical flexing. The maximum length of a fiber optic cable is 2,000 feet (611.6 meters).

Radio

The Server radio connected to the computer requires a six-conductor 18 AWG cable to be wired from the J-box converter to the Outdoor Server. This wire needs to be in conduit when exposed to outdoor conditions. The maximum distance from the J-box to the Server radio is 1000 feet (611.6 meters).

The Client radio at the display comes with cable that is rated for outdoor use and does not need to be in conduit.

3.3 RJ Connector Cables

The connector used for RS232 input to the display is an industry standard, 6-pin RJ11. 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 18** on the right. This cable has one end that is the mirror image of the other end (i.e., the cable is flipped). Refer to **Figure 19** below for a standard flipped cable.

Notice in **Figure 19**, at the bottom, 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.

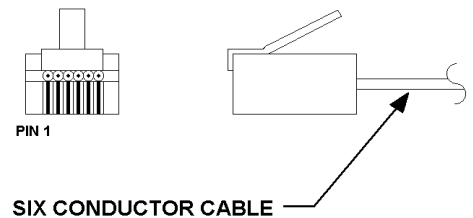


Figure 18: 6-Conductor RJ11 Connector and Cable

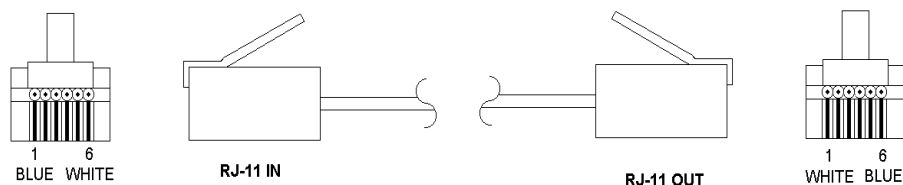


Figure 19: Flipped Cable with RJ Connectors

Installing an RJ Connector

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

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 20** on the right.

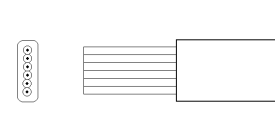


Figure 20: Wire with Outer Jacket Stripped

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

3.4 Conduit

Reference Drawings:

Shop Drawing; AF-3080-24x***-68B..... **Drawing B-163291**
Shop Drawing; AF-3080-8/16x***-68B..... **Drawing B-163293**

Daktronics does not include the conduit. Refer to **Shop Drawings** for approximate locations of power and signal conduit. You must use separate conduit to route:

- Power
- Signal IN wires
- Signal OUT wires (if another sign requires signal)

Locate the conduit holes at the bottom right (rear view) of the back of the sign (refer to the **Shop Drawings**).

Punch or drill out the desired conduit openings. **Be careful not to damage any internal components.** Attach the conduit, and route the power and signal cables. Refer to **Drawing B-163291** and **Drawing B-163293** for a picture of the power and signal termination panels.

For signs with more than one face, signal and temperature sensor wiring between signs can route through the same conduit.

3.5 Preparing for Power/Signal Connection

Reference Drawings:

Schematic, Power Supply Configurations..... **Drawing A-163951**
Shop Drawing; AF-3080-24x***-68B..... **Drawing B-163291**
Shop Drawing; AF-3080-8/16x***-68B..... **Drawing B-163293**
Schematic, AF-3080-8x***-Mono **Drawing B-164924**
Schematic, AF-3080-16x***-Mono **Drawing B-164926**
Schematic, AF-3080-24x***-Mono **Drawing C-165267**
Schematic, AF-3080-32x***-Mono **Drawing C-189404**

If the display needs openings for the power and signal, punch out the knockouts in the lower right corner from the rear. Refer to the **Shop Drawings**.

1. Locate the two hex head latch holes in the module. With a 1/8" hex-wrench, apply pressure to the latch and turn each a quarter-turn. One will turn clockwise and the counter-clockwise.
2. Route power to the display through a fused disconnect switch capable of opening all ungrounded power conductors. Locate this disconnect within the line-of-sight of any personnel performing maintenance on the display. If the disconnect is located out of sight of the display, it **must** be capable of being locked in the open position.
3. Power conductors from the disconnect to the display must route through conduit in agreement with local codes.
4. You may also route the signal cable from the control computer to the sign at this time. **Run the power and signal cables in a separate conduit.**

3.6 Power

Reference Drawings:

Power Specs, Amber, 8-24x48-112 Displays.....	Drawing A-163306
Power Specs, Red, 8-24x48-112	Drawing A-163751
Schematic, Power Supply Configurations	Drawing A-163951
Schematic, AF-3080-8x***-Mono	Drawing B-164924
Schematic, AF-3080-16x***-Mono	Drawing B-164926
Schematic, AF-3080-24x***-Mono	Drawing C-165267
Schematic, AF-3080-32x***-Mono	Drawing C-189404

Refer to drawings for voltage and current requirements for your sign size. Each uses a 120/240VAC single-phase or 120/208 three-phase power source.

Do not connect the signs to any voltage other than that listed on the Daktronics product label.

Proper power installation is imperative for proper display operation. The following sub-sections give details of display power installation. Electrical installations must be performed by qualified personnel. Unqualified personnel should not attempt to install the electrical equipment. Serious danger to equipment and personnel could occur if equipment is improperly installed.

Grounding

Displays **must** be grounded according to the provisions outlined in Article 250 of the National Electrical Code®. Daktronics recommends a resistance to ground of 10 ohms or less. Verification of ground resistance can be performed by the electrical contractor who is performing the electrical installation. Daktronics Sales and Service personnel can also perform this service.

The display system **must** be connected to earth-ground. Proper grounding is necessary for reliable equipment operation. It also protects the equipment from damaging electrical disturbances and lightning. **The display must be properly grounded or the warranty will be void.**

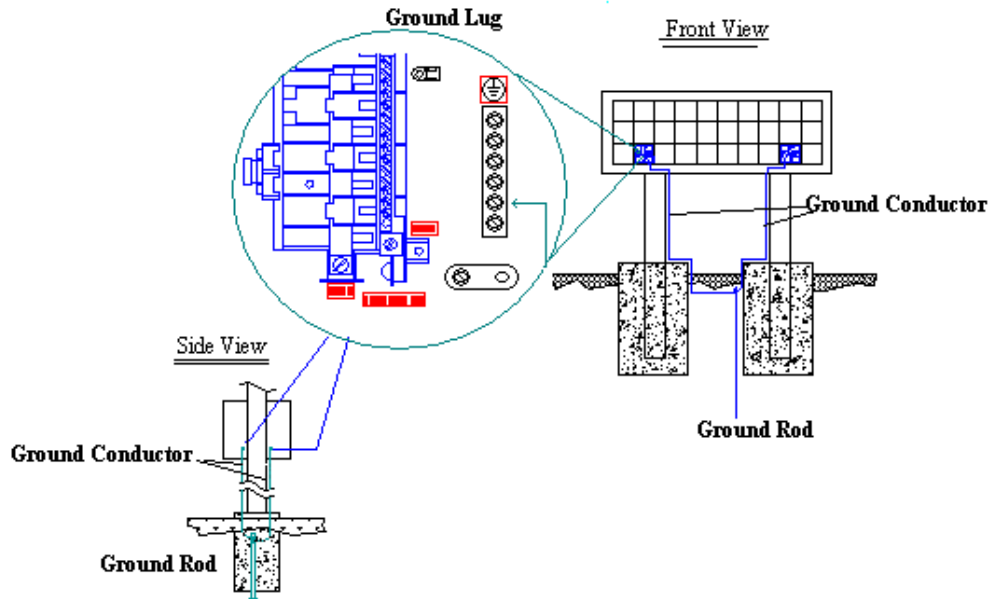


Figure 21: Grounding

A minimum of one grounding electrode must be installed for each display face. The grounding electrode is typically one grounding rod for each display face. Other grounding electrodes as described in Article 250 of the National Electric Code may be used. Daktronics recommends that the resistance to ground be 10 ohms or less. If the resistance to ground is higher than 10 ohms, it will be necessary to install additional grounding electrodes to reduce the resistance. The grounding electrode should be installed within 25 feet of the base of the display. The grounding electrode must be connected to the ground terminal in the display panel board.

This grounding electrode must be installed in addition to the equipment-grounding conductor that should be part of the power installation. The material of an earth-ground electrode differs from region to region and from conditions present at the site. The support structure of the display cannot be used as an earth ground electrode. The support is generally embedded in concrete, and if in earth, the steel is either primed or it corrodes, making it a poor ground. The grounding system and grounding electrodes must be installed according to Article 250 of the National Electrical Code and any applicable local codes.

Power Installation

There are two considerations for power installation: installation with ground and neutral conductors provided, and installation with only a neutral conductor provided. These two power installations differ slightly, as described in the following paragraphs:

Installation with Ground and Neutral Conductors Provided

For this type of installation, the power cable **must** contain an isolated earth-ground conductor. Under this circumstance, **do not** connect neutral to ground at the disconnect or at the display. This would violate electrical codes and void the warranty. Use a disconnect so that all hot lines and neutral can be disconnected. Refer to **Figure 22** below for installation details. The National Electrical Code requires the use of a lockable power disconnect within sight of or at the display.

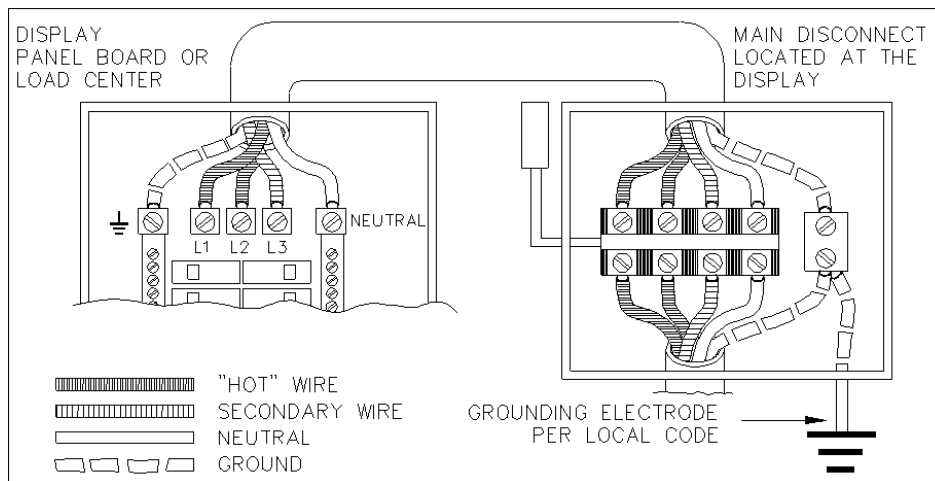


Figure 22: *Installation with Ground and Neutral Conductor Provided*

Installation with Only a Neutral Conductor Provided

Installations where no grounding conductor is provided must comply with article 250-32 of the National Electrical Code. If the installation in question meets all of the requirements of article 250-32, the following guidelines must be observed:

- Connect the grounding electrode cable at the local disconnect, never at the display panel board.
- A disconnect that opens all of the ungrounded phase conductors should be used.
- The neutral and the ground conductors should be bonded in the display panel board.

Refer to **Figure 23** below for installation details.

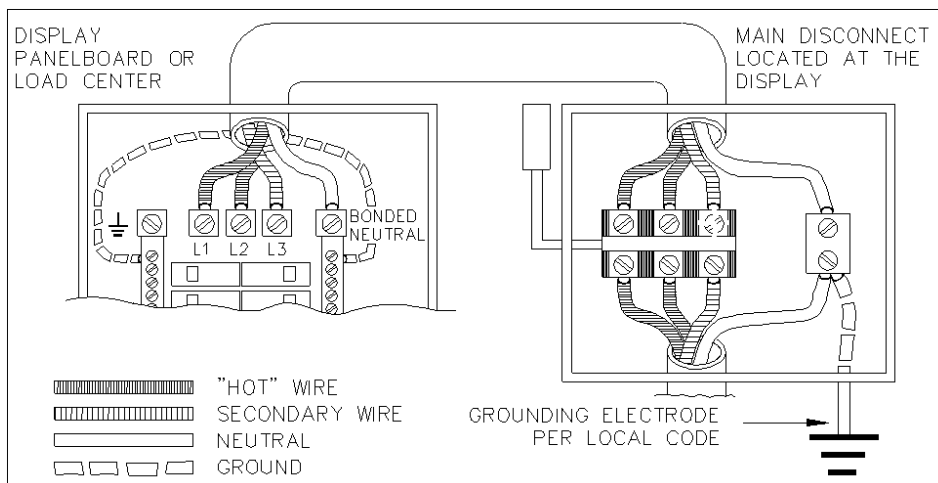


Figure 23: *Installation with only Neutral Conductor Provided*

3.7 Main Disconnect

The National Electrical Code requires the use of a lockable power disconnect near the sign. Provide a lockable disconnect switch (knife switch) at the sign location so that all power lines can be completely disconnected. Use a 3-conductor disconnect to disconnect both hot lines and the neutral. Mount the main disconnect at or near the point of power supply connection to the sign. Provide a main disconnect for each supply circuit to the sign.

You must locate the means of disconnection in a direct line of sight from the sign or outline lighting that it controls. This requirement provides protection by enabling a worker to keep the disconnecting means within view while working on the sign.

Exception: You may locate the disconnecting means that are capable of being locked in the open position elsewhere.

3.8 Signal Termination from Computer to Sign

Reference Drawings:

- System Riser Diagram, ModemDrawing A-88426
- System Riser Diagram, RS422Drawing A-92681
- System Riser Diagram, RS232Drawing A-96058
- System Riser Diagram, FiberDrawing A-110559
- Schem; Fiber, Modem, RS422 Surge Protector Input .Drawing A-125900
- Signal Input, Outdoor Venus 1500Drawing A-129110
- System Riser Diagram, RadioDrawing A-185325

RS232

One end of the signal cable should be terminated to the 6-position terminal block on the controller labeled “RS232 IN” (TB1). The opposite end is terminated at the terminal block in the J-box near the display. The controlling computer connects to the J-box through the serial cable.

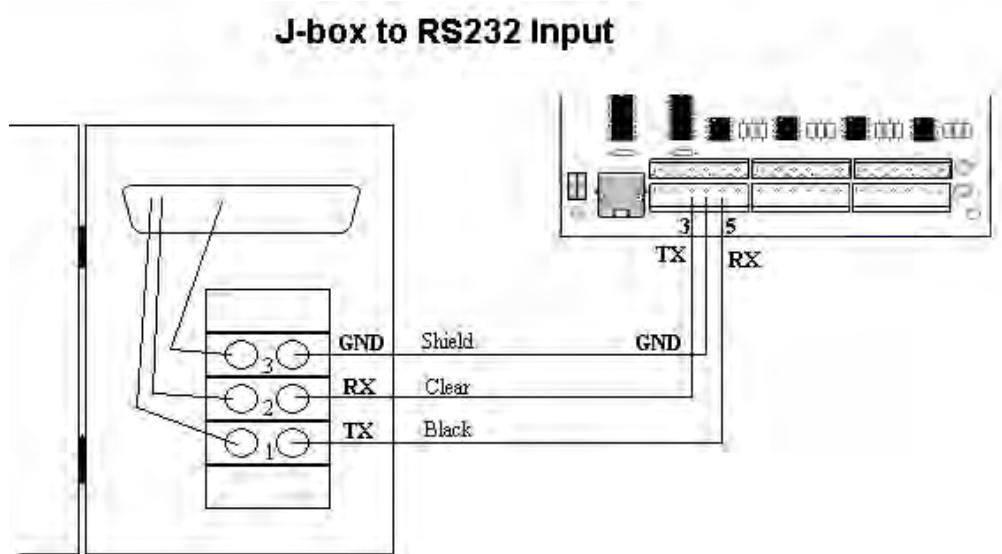


Figure 24: J-Box to RS232 Input

J-Box Terminal Block	Field Cabling	Terminal Block TB1 (RS232 IN)
		Pin 1 (RTS)
		Pin 2 (GND)
Pin 2 (RX-P)	Clear	Pin 3 (TX-P)
Pin 3 (GND)	Shield	Pin 4 (GND)
Pin 1 (TX-P)	Black	Pin 5 (RX-P)
		Pin 6 (DCD)

RS422

One end of the signal cable should be terminated to the 6-position terminal block in the display labeled “RS422 IN” (TB2). The opposite end is terminated at the signal converter (Daktronics part number 0A-1127-0237) in the control room.

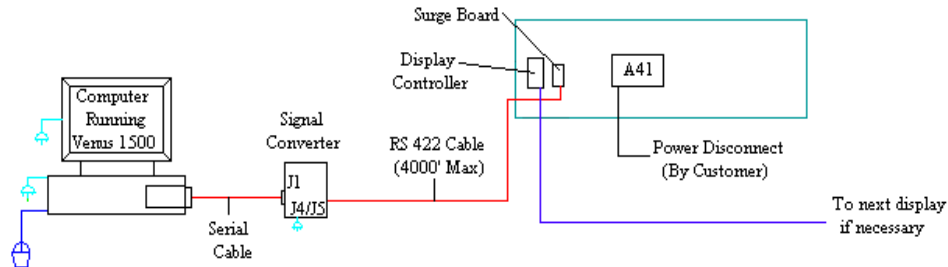


Figure 25: RS422 Layout

Note: RS422 cable must be installed so that it is separated from any source of electrical interface. A minimum of a two-foot separation between the signal cable and any power conductors is typically required, or the signal cable may be routed in grounded metallic conduit. The signal cable must **not** be routed in the same conduit as the power conductors.

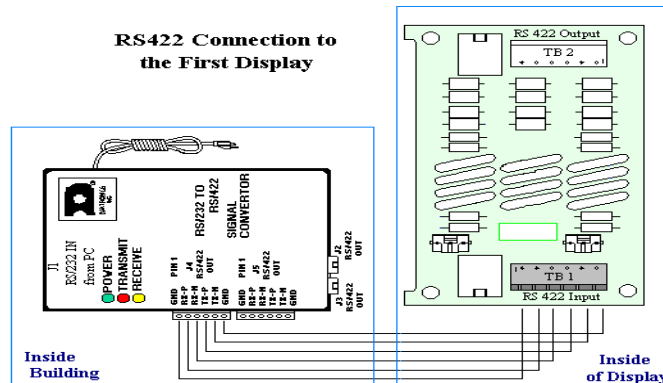


Figure 26: RS422 Connection to First Display

Signal Converter (J4/J5)	Field Cabling	Surge Suppressor, TB1 (RS422 IN)
Pin 1 (GND)	Red	Pin 1 (GND)
Pin 2 (RX-P)	Black	Pin 2 (TX-P)
Pin 3 (RX-N)	Brown	Pin 3 (TX-N)
Pin 4 (TX-P)	White	Pin 4 (RX-P)
Pin 5 (TX-N)	Blue	Pin 5 (RX-N)
Pin 6 (GND)	Green/Bare (Shield)	N.C.

Modem

In a display that uses a modem, Signal In routes first to a telecommunications connector and terminated per the table below. A 6-conductor phone cord with RJ11 connectors (part number 0A-1137-0160) relays the signal to the modem. A second phone cord (0A-1137-0160) transfers the data from the modem to J1 (RS232 IN) on the controller.

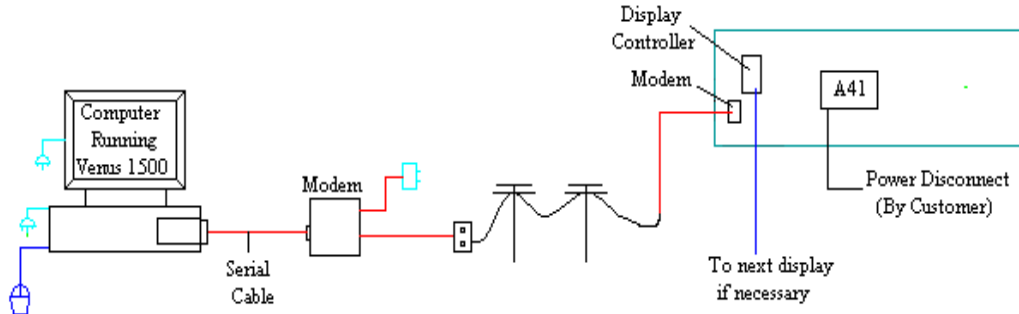


Figure 27: Modem Layout

Terminal Block TB31	Function
Pin 1	
Pin 2	
Pin 3	TIP-P
Pin 4	Ring-P
Pin 5	
Pin 6	

Fiber Optic

When the fiber optic cables are used, signal from the converter enters the fiber board (J4/J5). An adapter module (Daktronics part number 0A-1146-0029) allows the use of a 6-conductor-phone cord with RJ11 connectors (par number 0A-1137-0160) to relay the signal to J1 (RS232 IN) on the controller.

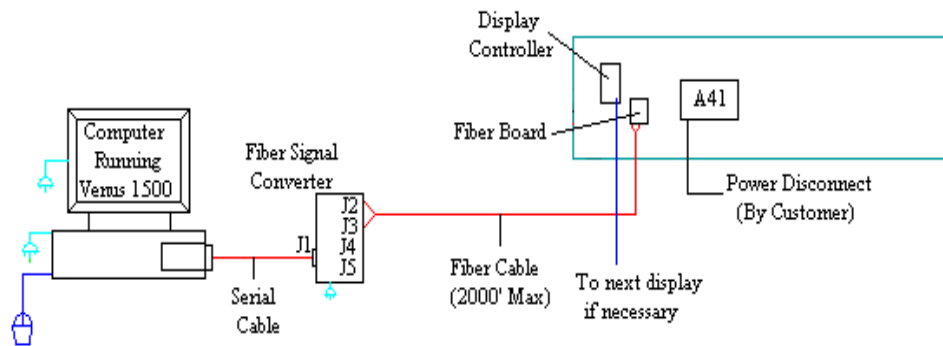


Figure 28: Fiber Optic Layout

Fiber Signal Converter to Fiber Board in Display

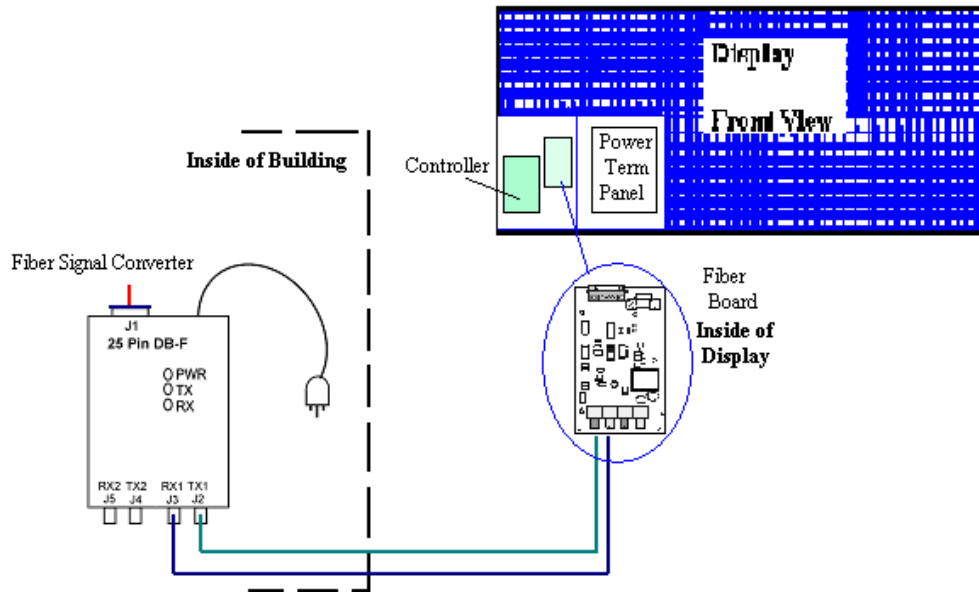


Figure 29: Fiber Signal Converter to Fiber Board in Display

Signal Converter	Field Cabling	Sign A Data In
J2 (TX1)		J5 (RX2)
J3 (RX1)		J4 (TX2)

Venus® 1500 Radio Client

Reference Drawing:

Schematic, Internal, WO/Quick Connect **Drawing B-185325**

A display that is controlled using a radio requires a Server radio connected to the control computer, and a Client radio at the display. The radios must be within line-of-site of each other.

The diagram below shows the connections to the Server radio through a Signal Converter. The Client radio must be located within 25 feet of the display, therefore 25 feet of cable is supplied with the Client radio. One end of the cable is pre-terminated to TB1 inside the radio enclosure, and the other end will need to be terminated to TB1 on the controller board in the display. Refer to **Drawing B-177662** and the Radio manual (**ED-13348**) for the correct cable terminations.

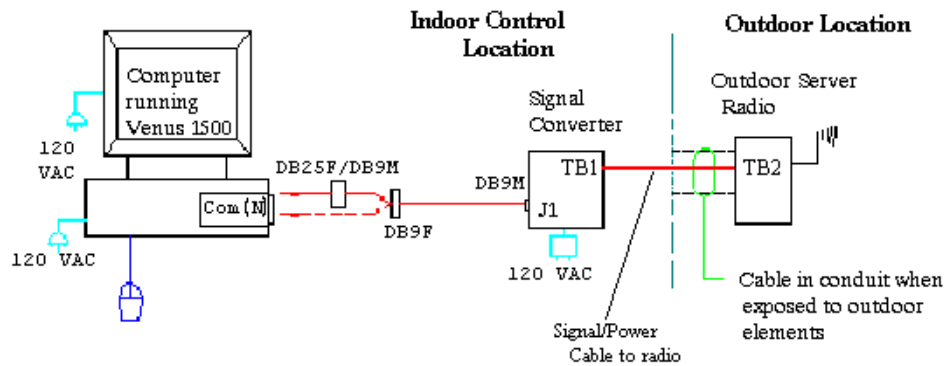


Figure 30: Venus 1500 Radio Layout

Terminate the signal wires to TB1 on the display controller and connect the power plug to the power plug in the display. Use **Figure 31** below and the table to connect the wires to the controller.

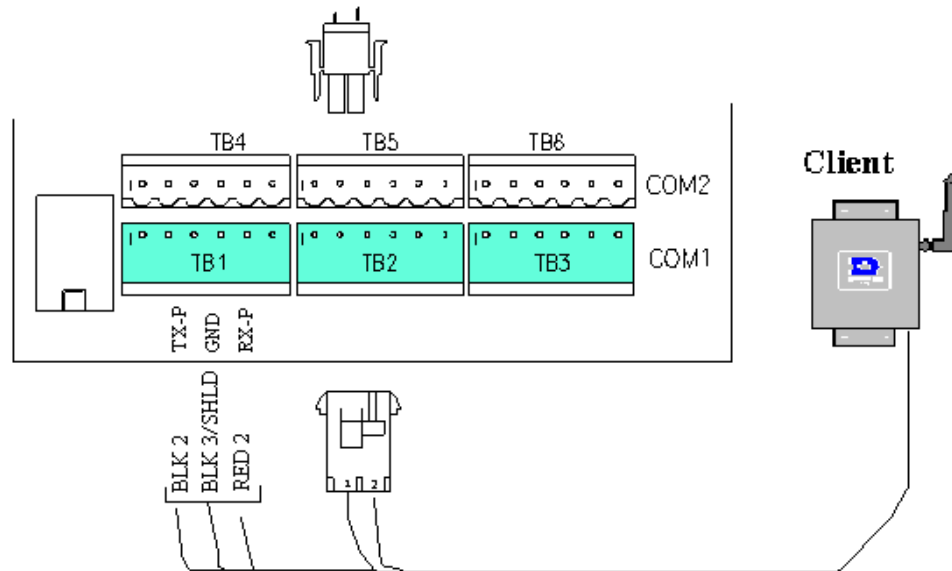


Figure 31: Controller Wire Connections

Radio Server	Cable Color	Display Terminal Block
Pin 5 (RX)	BLK 2	Pin 3 (TX-P)
Pin 6 (TX)	RED 2	Pin 5 (RX-P)
Pin 4 (GND)	BLK 3	Pin 4 (GND)
	Shield	Pin 4 (GND)

3.9 Signal Termination Between Two (or More) Signs

Reference Drawings:

- System Riser Diagram, Modem **Drawing A-88426**
- System Riser Diagram, RS422 **Drawing A-92681**
- System Riser Diagram, RS232 **Drawing A-96058**
- System Riser Diagram, Fiber **Drawing A-110559**
- Schem; Fiber, Modem, RS422 Surge Protector Input. **Drawing A-125900**
- Signal Input, Outdoor Venus 1500 **Drawing A-129110**
- System Riser Diagram, Radio **Drawing A-185325**

RS422 Interconnection

This is the most common method of terminating signal between two or more signs. A 6-conductor cable is used. One end terminates to the “RS422 OUT” 6-position terminal block (A31-TB3) on the controller in the first display. The other end of the cable will terminate on the “RS422 IN” 6-position terminal block (A31-TB2) on the controller of the second display.

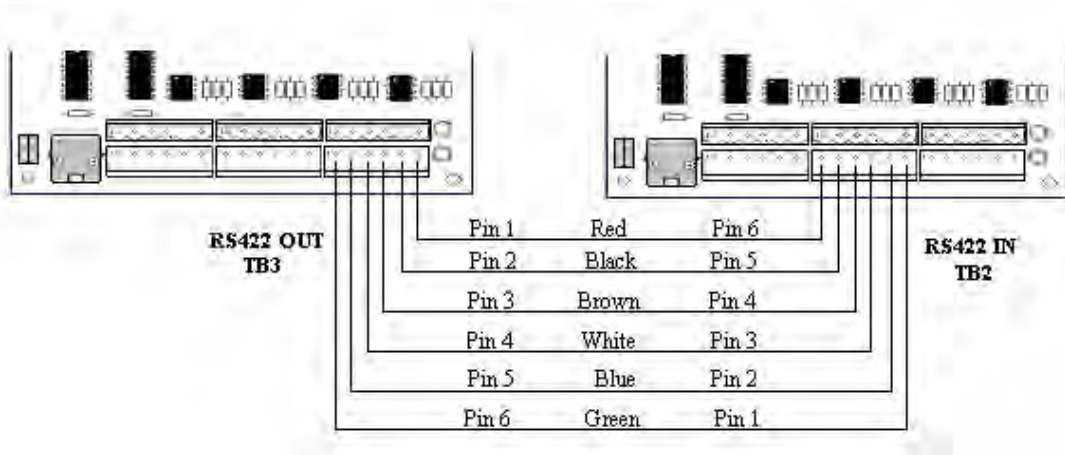


Figure 32: Signal Termination Panels

Face A – RS422 OUT (A31-TB3)	Field Cabling	Face B – RS422 IN (A31-TB2)
Pin 1 (GND)	Green	Pin 6 (NC)
Pin 2 (O-)	Blue	Pin 5 (I-)
Pin 3 (O+)	White	Pin 4 (I+)
Pin 4 (I-)	Brown	Pin 3 (O-)
Pin 5 (I+)	Black	Pin 2 (O+)
Pin 6 (GND)	Red	Pin 1 (NC)

Fiber Interconnection

A four-conductor fiber cable is used in connecting two or more displays in the Fiber Interconnection method. Two fibers will connect one fiber board to the next, and two will be spares. Connect the fiber cable to the fiber cards of the display as described in **Drawing A-174344** and on the following table.

Face A Data Out (A34)	Field Cabling	Face B Data In (A34)
J2 (TX1)		J5 (RX2)
J3 (RX1)		J4 (TX2)

3.10 Optional Temperature Sensor Electrical Installation

Reference Drawings:

Temp Sensor Mounting **Drawing A-79767**
Signal Input, Venus 1500 **Drawing A-129110**

1. After mounting the optional sensor, follow these steps to complete the electrical installation. A 2-pair, individually shielded cable (Belden 5594, Daktronics part number W-1234) is used to connect the sensor to the controller.
2. Run ½" conduit from the sensor location to the controller within the display. The cable must be routed through one-foot of ½" metal conduit that should be earth-grounded to protect the sensor and controller from lightning damage.
3. Connect the cable to the temperature sensor terminal block within the temperature sensor as follows:

Wire Color	Terminal Block
Red	V+
Green	P
Black	GND
White	N

4. Install the mesh screen with the four screws enclosed.
5. Disconnect power to the display before attaching the cable.

6. Connect the cable to the temperature sensor terminal block on the controller (TB7) per the following table:

Wire Color	Terminal Block TB7 (Temp In)
	Pin 1 (+5V)
	Pin 2 (GND)
	Pin 3 (Light +)
	Pin 4 (Light -)
Green	Pin 5 (Temp +)
White	Pin 6 (Temp -)
Red	Pin 7 (+5V)
Black and Shield	Pin 8 (GND)
Or Bare (Shield)	Pin 8 (GND)

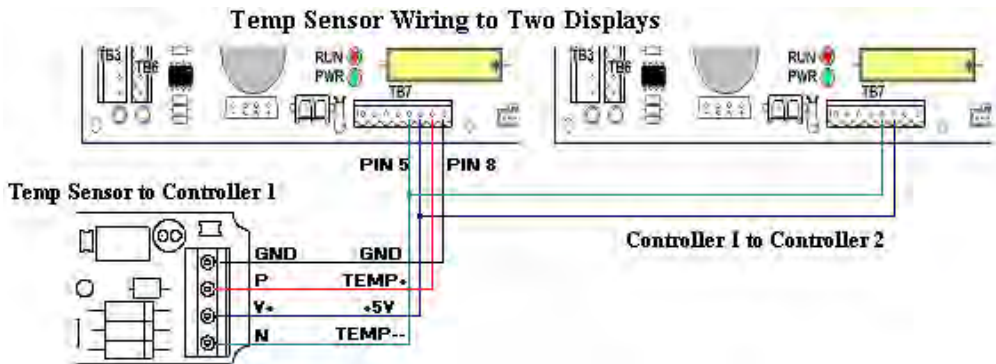


Figure 33: Temperature Sensor Wiring to Two Displays

To connect the temperature sensor to multiple displays (such as a double-face display):

Wire Color	Display 1 TB7	Display 2 TB7
Green	Pin 5 (Temp +)	Pin 5 (Temp +)
White	Pin 6 (Temp -)	Pin 6 (Temp -)
Red	NC	NC
Black	NC	NC

Note: GND and +5V (Red and Black) are connected from the temperature sensor to the first display only. **The Red and Black wires must not be connected between controllers in additional displays.**

3.11 Initial Operation

When first operated, the display will run through an initialization in which it will display the following:

1. Output Test (DDDs)
2. Product Name (Galaxy)
3. Display Size (Row x Column)
4. Firmware Number (**ED-10134**)
5. Firmware Revision (Rev X.XX)
6. COM1 Configuration (C1: V15/RTD)
7. COM Configuration (C2: None)
8. Line Frequency
9. Hardware Address (HW:XX)
10. Software Address (SW:XX)
11. Display Name
12. Modem (If modem is present)

Section 4: Maintenance and Troubleshooting



Important Notes:

1. **Disconnect power before performing any repairs or maintenance work on the sign.**
2. **Only qualified service personnel may access internal sign electronics.**
3. **The Daktronics engineering staff must approve ANY changes made to the sign. Before altering the sign, you must submit to the Daktronics engineering staff detailed drawings for the proposed modifications for evaluation and approval or you will void the warranty.**

4.1 Maintenance and Troubleshooting Overview

Daktronics Galaxy series AF-3080 signs are front accessible, so you can only access the internal components from the front of the sign.

This section provides the following Galaxy sign information:

- **Recommended Tools List** provides a listing of all tools needed in order to perform maintenance work on your display
- **Signal Routing Summaries** give a basic explanation of the signal travel through the sign.
- **Power Routing Summaries** offer a basic explanation of the power travel through the sign.
- **Service and Diagnostics** provide instructions for removing various sign components and explain the functions of circuit board connectors and the meanings of any diagnostic LEDs.
- **Maintenance** describes a number of steps to take to keep this Galaxy sign in safe, working order.
- **Troubleshooting** provides some possible sign malfunctions and provides a number of possible causes for that malfunction.
- **Replacement Parts List** includes the description and part number of sign components that could possibly need replacing during the life of this sign.
- **Daktronics Exchange and Repair and Return Programs** explain the Daktronics component return policy.

4.2 Recommended Tools List

When performing maintenance work on your display, Daktronics recommends using the following tools and placing them in a convenient, easy-access location.

- **1/8" Allen wrench** removes modules in front access displays
- **7/16" Wrench** removes support hardware for power supplies
- **#2 Phillips Screwdriver** removes support hardware for power supplies and detaches power supplies

4.3 Signal Summary

Reference Drawings:

Power Specs, Amber, 8-24x48-112 Displays	Drawing A-163306
Power Specs, Red, 8-24x48-112	Drawing A-163751
Schematic, Power Supply Configurations.....	Drawing A-163951
Schematic, AF-3080-8x***-Mono	Drawing B-164924
Schematic, AF-3080-16x***-Mono	Drawing B-164926
Schematic, AF-3080-24x***-Mono	Drawing C-165267
Schematic, AF-3080-32x***-Mono	Drawing C-189404

The signal routing for the display can be summarized as follows:

1. Data from the controller computer, which runs Venus 1500 software, travels via RS232, RS422, modem, fiber optic cable, or Radio into the display.
2. For multiple face display or a display network, an RS422 (most typical) or fiber cable relays signal between the controller of the first display and the controller in the second display.
3. From the controller, the signal then travels over a 40-conductor ribbon cables from the controller (J11 through J16 provides signal out) to J2 on the driver of the first column of modules in the display.
4. Data exists at J1 and is relayed to J2 of the next driver board and so on, traveling down the entire row of modules. The drivers use this display data to control the LEDs.

4.4 Power Summary

Reference Drawings:

Power Specs, Amber, 8-24x48-112 Displays	Drawing A-163306
Power Specs, Red, 8-24x48-112	Drawing A-163751
Schematic, Power Supply Configurations.....	Drawing A-163951
Schematic, AF-3080-8x***-Mono	Drawing B-164924
Schematic, AF-3080-16x***-Mono	Drawing B-164926
Schematic, AF-3080-24x***-Mono	Drawing C-165267
Schematic, AF-3080-32x***-Mono	Drawing C-189404

The following describes the internal display power routing for the display:

1. Incoming power terminates at the panel board.
2. 15VDC power supplies power the drivers for the modules in a monochrome red display. 11.7VDC power supplies power the drives for the modules in a monochrome amber display.

4.5 Display Access

Display access for all 68 mm displays is from the front. To open the sign:

1. Locate the two hex head latch holes in the module. With a 1/8" hex-wrench, apply pressure to the latch and turn each a quarter-turn. One will turn clockwise and the counter-clockwise.
2. Interior display components may be accessed and the display boards may be removed.

When closing a display, reverse the previous steps and take note of the following points:

- The weather-stripping on the back edge of the module is intact and in good condition for preventing water from seeping into the sign.
- The module latches are fully engaged to create a water resistant seal around the edge of the module. The module must be firmly seated against the sign when the latches are fully engaged.

4.6 Service and Diagnostics

Reference Drawings:

Power Specs, Amber, 8-24x48-112 Displays.....	Drawing A-163306
Power Specs, Red, 8-24x48-112	Drawing A-163751
Schematic, Power Supply Configurations	Drawing A-163951
Schematic, AF-3080-8x***-Mono	Drawing B-164924
Schematic, AF-3080-16x***-Mono	Drawing B-164926
Schematic, AF-3080-24x***-Mono	Drawing C-165267
Schematic, AF-3080-32x***-Mono	Drawing C-189404

The following sub-sections address servicing of the below display components:

- Line filter and ground bar
- Modules, drivers and power supplies

The sub-sections also address any diagnostic LEDs, fuses, and signal/power connectors found on the components.

The **Display Assembly** drawings denote the components as follows:

Component...	Denoted As...	Location...
Line Filters and Ground Bar	0A-1241-4002	Left side, behind module AX02
Modules	0A-1281-3000 0A-1281-3001 0A-1281-3007 0A-1281-3008	Over entire face of the display
Power Supplies	0A-1280-4017 or 0A-1280-4013	Behind the modules; refer to the Display Assembly drawings

Line Filter

You can replace the filter by first removing all connecting wires, and then releasing the attachment hardware. Install the new filter and reference drawings for correct wiring.

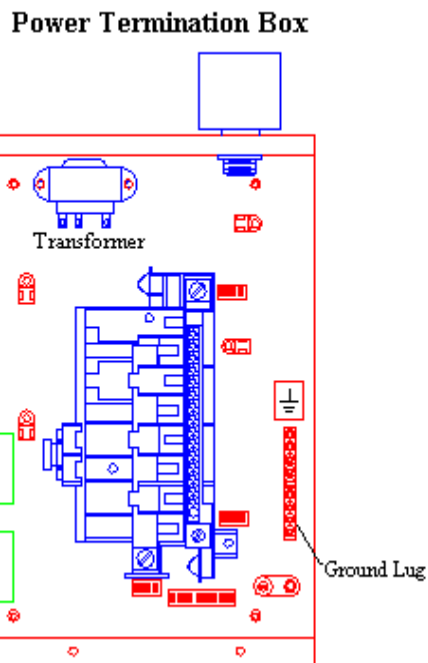


Figure 34: Power Termination Box

Modules, Display boards, and Drivers

A module consists of louvers, display boards, and a driver board for each of the four display boards, which are mounted to the back of the display boards. Refer to **Section 4.5** to open a display via the modules and access the display boards and driver boards.

A display board is a circuit board with four LED pixel clusters mounted directly on it. Each display board is removable from the module. To remove a display board from the module:

1. Open the display as described in **Section 4.5**.
2. Disconnect the signal connector from the module you wish to remove.
3. If the module you wish to replace is located behind the driver assembly, unplug all signals and power connections on the driver assembly, and remove the four corner screws.

- Reverse the above procedure to install a new display board.

The driver is a circuit board responsible for switching the intensity levels of the LEDs. It is located inside the driver box and mounts on the back of the module. To remove a driver board:

- Open the display as described in **Section 4.5**.
- Disconnect all power and signal connections from the driver board.
- Remove the four #6 nuts holding the board in place.
- Gently lift the board from the display.
- Reverse the above procedure to install a new driver board.

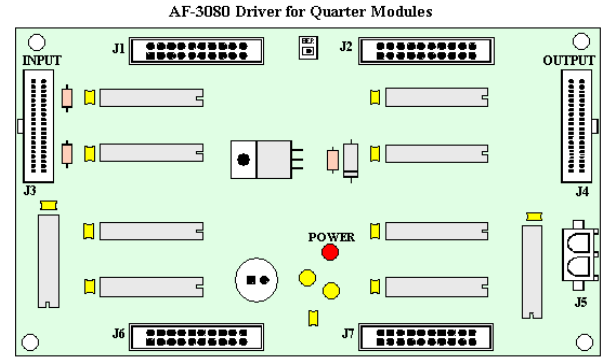


Figure 35: Driver Board

The following connectors are found on each driver board; refer above for **Figure 35**.

LED/Connector	Function
J4	Signal out to next driver board
J3	Signal in
J1-J2, J6-J7	Output to display boards
J5	Power
DS1	Power indicator

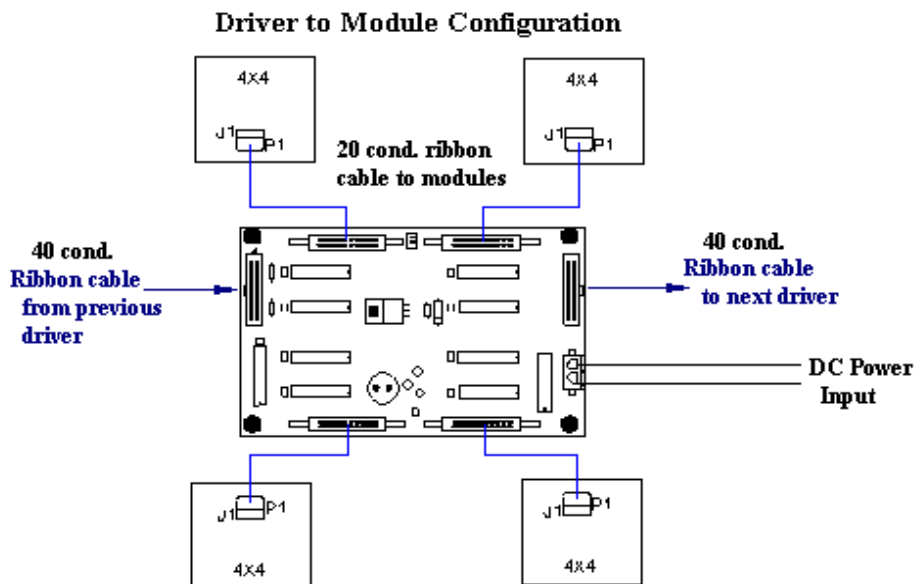


Figure 36: Driver to Module Configuration

The connectors out to the display boards connect to the display boards in the following manner:

Connector	Display board Coordinates
J1	Top Row, Column 1
J2	Top Row, Column 2
J6	Bottom Row, Column 1
J7	Bottom Row, Column 2

Controller

The controller sends data to the modules. The controller is located in the bottom left hand corner, when viewed from the front of the display. Refer to the signal summary in **Section 4.3** for more information and to the **component location drawings** for the exact location of the controller board. **Figure 37** below illustrates a typical controller.

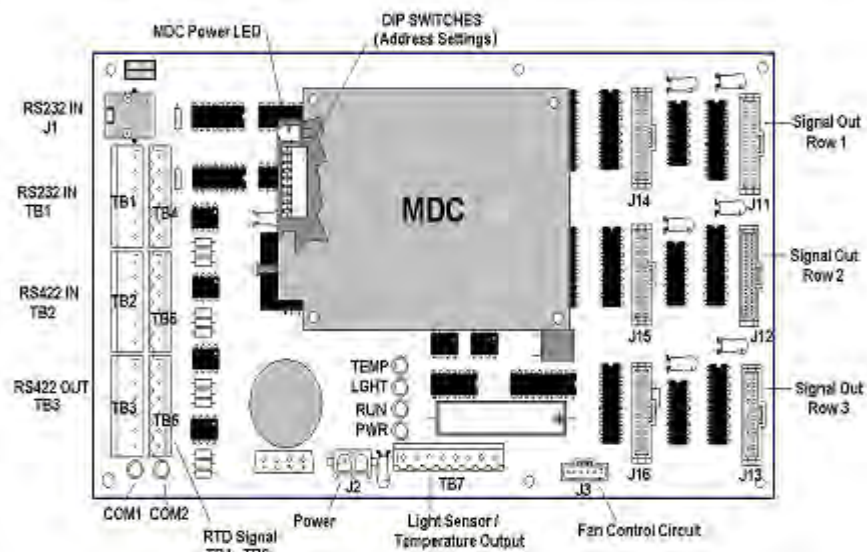


Figure 37: Controller

To replace a controller board:

1. Disconnect the power and signal connections (refer to **Figure 37** above for disconnection of power). **Note:** It is recommended to label the cables to ensure they are reconnected at the right locations.
2. The controller board is held in place with six 3/16" screws. Carefully remove them.
3. Install the new controller board, replace the screws and reconnect power and signal cables.
4. When replacing a controller board, be sure to set the DIP switches in the same address configuration as the defective controller. The "DIP" switches are located on the controller's MDC. The DIP switches set the hardware address, which the software uses to identify that particular display.
5. If this display contains a modem, the jumpers (W1 and W2) need to be set for use with a modem system. The jumpers **must** jump both pins for a modem system.

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 turned off and then turned back on to run the test mode.

Switch 8	Switch 7	Switch 6	Switch 5	Switch 4	Switch 3	Switch 2	Switch 1	Address
Off	Off	Off	Off	Off	Off	Off	Off	Test Mode
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
...
On	On	On	On	Off	Off	Off	Off	240

Six diagnostic LEDs are located on the controller; the table below tells what each LED denotes:

LED	Color	Function	Operation	Summary
TEMP	Red	Temperature Level	Flashes	Flash rate is dependent upon the temperature. Flashes faster in high temperature and slows as the temperature decreases.
LGHT	Red	Photocell Light Level	Flashes	Flash rate is dependent on the light level. Flashes faster in bright light and slows as darkness descends.
RUN	Red	Controller	Steady Flash	A steady flash indicates the controller is running correctly. Normal flash rate is about once a second.
PWR	Green	Power	Always On	Power to the data input circuit when lit.
RX1	Yellow	Com 1	Flashes	Turns on and flashes when receiving information. Normal condition is off.
RX2	Yellow	Com 2	Flashes	Turns on and flashes when receiving information, typically used in custom applications. Normal condition is off.

To remove the controller from the display:

1. Disconnect power from J2.
2. Remove all power and signal connections from the board. "Locked" connectors are released by squeezing together the tabs, and then carefully pulling them from the jack. When replacing the board, it is helpful to have the cables labeled as to which was removed from which connector.
3. Remove each of the six screws holding the board in place.
4. Follow the previous steps in reverse order to install a new controller board.

Modem

If a modem is included with the display, it is located inside the display next to the controller board.

1. To replace a modem, first disconnect the power and signal connections (refer to **Figure 38** on the right for the location of the power jack).
2. The modem is held in place with four 3/16" screws. Remove the screws and lift the modem out of the display the display.
3. Attach the new modem using the same four screws removed in **step 2**, above.

The modem module has two LEDs. The Power LED should remain lit while power is applied to the modem. The Active LED will light when the modem is in the process of communicating.

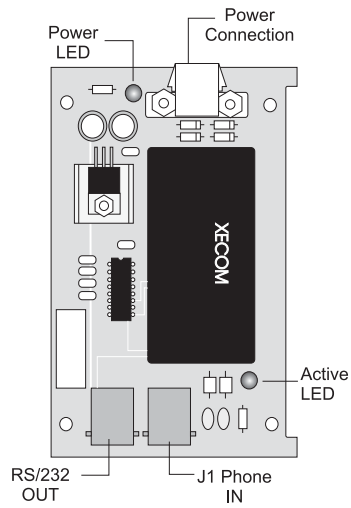


Figure 38: Modem Board

A modem system requires jumpers to be set on the controller board. When using a modem, the jumpers must be closed.

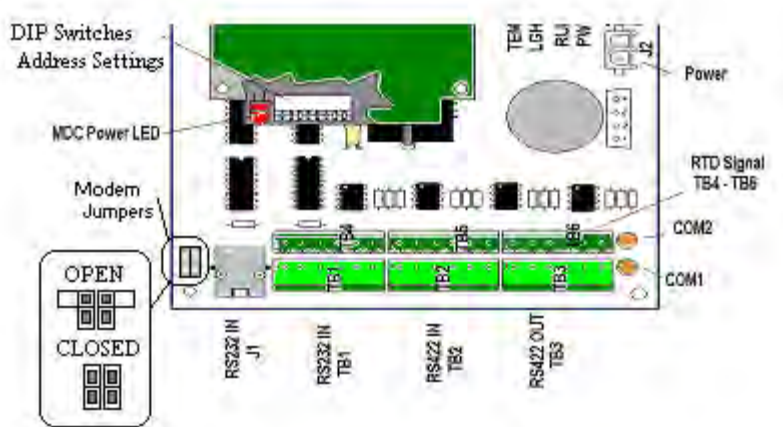


Figure 39: Modem

Fiber Board

The fiber module has three LEDs. The power LED (DS1) should remain lit while power is applied to the module. The receive LED (DS2) will flash when the display fiber board is accepting signal from the computer fiber board. The transmit LED (DS3) will flash when the display fiber board is sending to the fiber signal converter. In addition, the fiber module has two input fiber connectors, which the signal converter or the previous display connects to, and two output fiber connectors that connect to the next display. The fiber board connects to the controller board with a small DB9 adapter and straight through RJ11 cable.

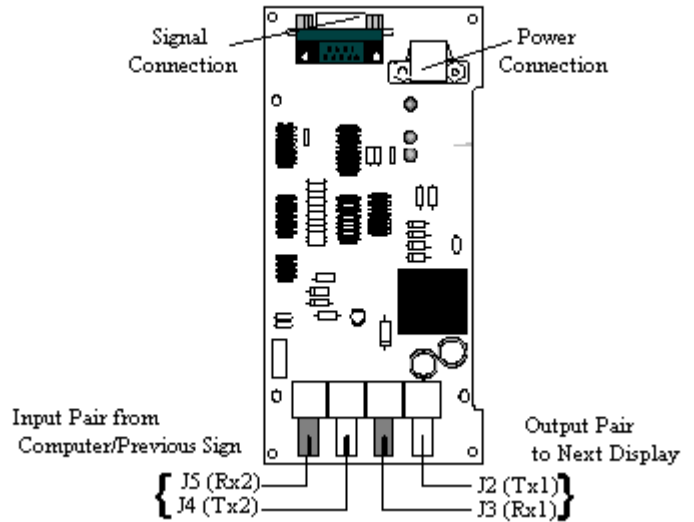


Figure 40: Fiber Board

To replace a fiber optic board:

1. Disconnect the power and signal connections (refer to **Figure 40** above for disconnection of power).
2. The fiber optic board is held in place with four 3/16" screws. Carefully remove them.
3. Install the new fiber optic board, replace the screws, and reconnect power and signal cables.

RS422 Surge Suppressor

1. Disconnect the signal connections (Refer to **Figure 41** on the right).
2. The surge suppressor is held in place with four screws. Carefully remove them.
3. Install the new surge suppressor, replace the screws, and reconnect power and signal cables.

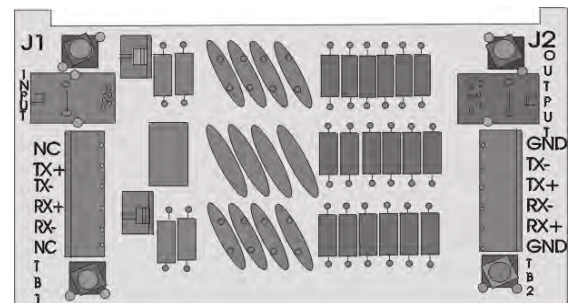


Figure 41: Surge Suppressor, RS422

Power Supplies

The LED power supplies are identified as assembly 0A-1280-4013 for red displays and assembly 0A-1280-4017 for amber displays in the **Display Assembly** drawings. Each power supply controls two modules.

Complete the following steps to remove a power supply from the sign:

1. Remove the module directly in front of the failed power supply.
2. Disconnect all the wires connected to the power supply.
3. Remove the hardware holding the power supply in place to free the unit.
4. Follow these steps in reverse order to install a new power supply.
5. Verify power supply voltage.

4.7 Optional Temperature Sensor Electrical Installation

Reference Drawings:

Temp Sensor Mounting..... **Drawing A-79767**
 Signal Input, Venus 1500..... **Drawing A-129110**

After mounting the optional temperature sensor, follow these steps to complete the electrical installation. A 2-pair, individually shielded cable (Belden 5594, Daktronics part number W-1234) is used to connect the sensor to the controller.

1. Run ½ " conduit from the sensor location to the controller within the display. The cable must be routed through one-foot of ½" metal conduit that should be earth-grounded to protect the sensor and controller from lightning damage.
2. Connect the cable to the temperature sensor terminal block within the temperature sensor as follow:

Wire Color	Terminal Block
Red	V+
Green	P
Black	GND
White	N

3. Install the mesh screen with the four screws enclosed.
4. Disconnect power to the display before attaching the cable
5. Connect the cable to the temperature sensor terminal block on the controller (TB7) per the following table:

Wire Color	Terminal Block TB7 (Temp In)
	Pin 1 (+5)
	Pin 2 (GND)
	Pin 3 (Light +)
	Pin 4 (Light -)
Green	Pin 5 (Temp +)
White	Pin 6 (Temp -)
Red	Pin 7 (+5V)
Black and Shield	Pin 8 (GND)

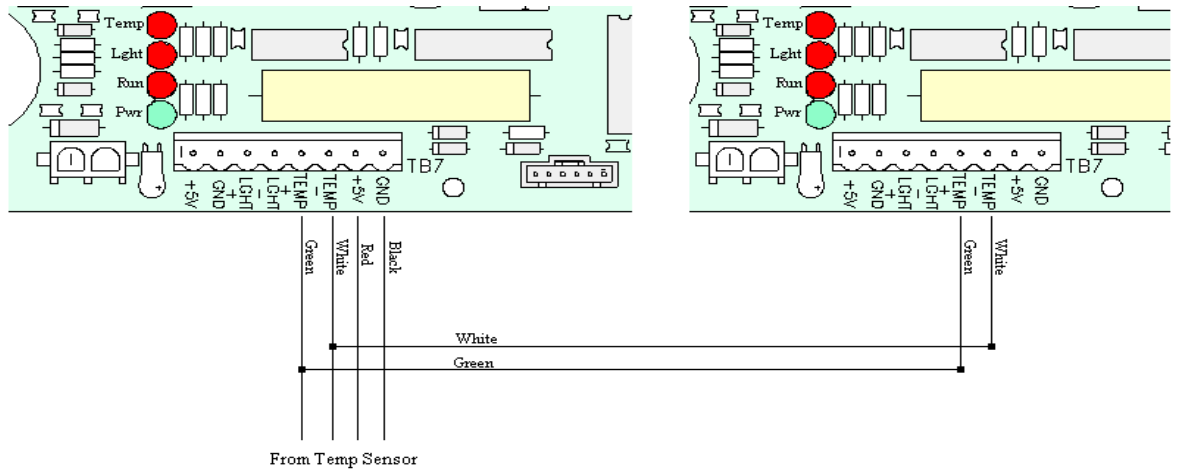


Figure 42: Temperature Sensor Installation

To connect the temperature sensor to multiple displays (such as a double-face display):

Wire Color	Display 1 TB7	Display 2 TB7
Green	Pin 5 (Temp+)	Pin 5 (Temp +)
White	Pin 6 (Temp -)	Pin 6 (Temp -)
Red	NC	NC
Black	NC	NC

4.8 Ventilation Systems

Check ventilation fans after 1,500 hours of operation and every 1,500 hours after that to ensure the sign cools properly. Check fans more often if the sign is located in a dusty or harsh weather environment (i.e. along a gravel road with dust laden air).

- 1,500 hours is equivalent to 83 days if the sign operates for 18 hours a day with the power to the sign disconnected when not in use.
- 1,500 hours is equivalent to 62 days if the sign runs non-stop for 24 hours a day.

Attention: Shut off power to the sign when it is not in use. Leaving the power on when the sign is not operating exposes electrical components to excess condensation, which shortens their life.

Each time you open the display, for whatever reason, take a minute to inspect the fans.

- Check the fan blades for dirt and debris. If the fan blades have a large accumulation of dirt and debris, change the filters more often. Keep the fan blades clean to maintain fan efficiency and ensure proper cooling.
- Spin the fan blades with a pen or pencil to ensure that the bearings are free and the fan is still in balance.

To check the operation of the fans:

- Hold your hand or a piece of light paper beneath the sign to detect air movement. If the operation of a fan is questionable, a fan-test should be performed
- Press button on the internal thermostat and ensure they run freely.
- If the fan does not turn or does not operate smoothly, replace it.

4.9 Thermostats

A thermostat controls when the ventilation fans operate in the sign. Refer to the **Display Assembly** drawing for the location of the thermostat. The ventilation fans turn on when the inside of the fan reaches 85° F (29° C), and turn off at 70° F (21° C).

4.10 Sign Maintenance

Perform a yearly inspection to maintain safe and dependable sign operation. This inspection should address the following issues:

- **Loose Hardware**
Verify fasteners, such as bolts and rivets, have not come loose. Check, tighten, and replace fasteners as required.
- **Excessive Dust Buildup**
Occasionally it may be necessary to vacuum the inside of the sign cabinet to remove dust/dirt buildup that may interfere with airflow.
- **Water Intrusion – Water Stain Marks**
Water can enter the sign where weather stripping has come loose or deteriorated or where fasteners have come loose allowing gaps in the panels or where moisture may be entering around hardware. Check electronic components for signs of corrosion.
- **Corrosion**
Check the paint; look for possible corrosion, especially at footings, structural tie points, and ground rods.

If you notice any of the above conditions, take action to correct the situation.

4.11 Weather Stripping

To ensure the sign is weather resistant, Daktronics provides weather stripping around the entire sign and around each module. The weather stripping must be properly installed at all times or water may leak into the sign, damaging the components.

4.12 Troubleshooting

This sub-section contains some symptoms that you may encounter in the signs. This list does not include every possible symptom, but does represent common situations that may occur.

Symptom/Condition	Possible Cause/Remedy
One or more LEDs on a single module fail to light.	<ul style="list-style-type: none"> • Replace/check cables on the module. • Replace display board. • Replace the driver.
One or more LEDs on a single module fail to turn off.	<ul style="list-style-type: none"> • Replace/check cables on module. • Replace display board. • Replace the driver.
A section of the sign is not working. The section extends all the way to the right side of the sign.	<ul style="list-style-type: none"> • Replace/check cables on the drivers. • Replace the first driver on the left side of the first module that is not working. • Replace the second driver that is not working. • Replace the power supply assembly on the first module that is not working.
One row of modules does not work or is distorted.	<ul style="list-style-type: none"> • Replace/check cables from driver to modules. • Replace first driver. • Replace controller. • Check the fuses in the power termination box.
A group of modules, which share the same power supply assembly, fail to work.	<ul style="list-style-type: none"> • Check power supply voltage. • Check cabling to power supply. • Check cabling from power supply to drivers. • Replace the power supply assembly.
Entire sign fails to work.	<ul style="list-style-type: none"> • Check for proper line voltage into the power termination panel. • Check the breakers to the power termination panel. • Check/replace the signal cable to the controller. • Check/replace the ribbon cable from the controller to the driver. • Check the voltage settings on the power supplies. • Replace the controller. • Verify proper use of the software in the operation manual (ED-13348).
Temperature always reads 32°F/ 0°C	<ul style="list-style-type: none"> • Check temperature sensor connections. • Replace the temperature sensor. • Replace the controller.

Sign is stuck on bright or dim.	<ul style="list-style-type: none"> • Check Manual/Auto dimming in Venus 1500 software. • Check light detector cable. • Check light detector for obstructions. • Replace the light detector. • Replace the controller.
---------------------------------	--

4.13 Initial Operation Information

Every time the display is operated, the display will run through an initialization in which it will display the following:

1. Output Test (DDDs)
2. Product Name (Galaxy)
3. Display Size (Row x Column)
4. Firmware Number (**ED-10134**)
5. Firmware Revision (Rev X.XX)
6. COM1 Configuration (C1: V15/RTD)
7. COM2 Configuration (C2: None)
8. Line Frequency (60 Hz)
9. Hardware Address (HW: XX)
10. Software Address (SW: XX)
11. Display Name
12. Modem (If modem is present)

4.14 Replacement Parts List

The following table contains some of the items in this sign that you may need to replace over time. Many of the parts within the sign also list their part numbers on labels affixed to them.

To prevent theft, Daktronics recommends purchasing a lockable cabinet to store manuals and replacement/spare parts.

Part Description	Part Number
Controller	0A-1146-0035
Signal Converter-wire	0A-1127-0237
Signal Converter-Fiber	0A-1127-0239
Modem in display	0P-1146-0003
Light Detector	0P-1151-0002
Fiber Board in Display	0P-1127-0024
Amber Display Board (V1)	0P-1281-0004
Amber Display Board (V2)	0P-1281-0012
Red Display Board (V1)	0P-1281-0005
Red Display Board (V2)	0P-1281-0011
422 Surge Protector	0P-1146-0031
Phone Surge Protector	A-1527
Thermostat Enclosure	0A-1213-4024
Flipped PC Connector, DB9F/RJ11F	0A-1146-0029
Cable; RS232, DB9F to DB25M	W-1249
Cable, 40-pin ribbon, 66 inch, Dual Row	W-1439
Cable, 2 Cond 14 Awg Blk/Wht	0A-1054-0126
Cable; 18" RJ11 6 Cond. Straight	0A-1137-0160
Cable Assy; 20 POS Ribbon, 18" Dual Row	W-1387
Cable Assy; 40 POS Ribbon 36" Dual Row	W-1423
Cable; 36" RJ11 6 Cond.	0A-1120-0134
Cable Assy; 40 POS and Ribbon, 26" Dual	W-1434
Line Filter Assembly	0A-1241-4002
Mod, 6R (1:1) 4x4 (30x70) Coated (V2)	0A-1281-3007
Mod; 12A (1:1) 4x4 (30X70) (V1)	0A-1281-3000
Mod; 6R (1:1) 4x4 (30x70) Coated (V1)	0A-1281-3001
Mod; 12A (1:1) 4x4 (30x70) Coated (V2)	0A-1281-3008
Digital Temp Sensor	0P-1151-0003
Digital Temp Sensor Housing	0A-1151-0002
68mm Driver	0P-1281-0003
Power Supply Assembly (A-1413)	0A-1280-2001
Power Supply Assembly (A-1648)	0A-1280-2003
Fan; 110CFM, 115VAC, 17W, 60Hz, 4.5"	B-1006

Power Termination Box	0A-1241-4003
Line Filter Assembly	0A-1241-4002
Transformer (120VAC input)	T-1072
Transformer (240 VAC input)	T-1106
Manual; Venus 1500 Operator's	ED-13530

4.15 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 display 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 – 877-605-1113 – 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 packaging 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: 877-605-1113 (toll free)
or 605-697-4034

Fax: 605-697-4444

E-mail: helpdesk@daktronics.com

Appendix A: Reference Drawings

Refer to **Section 1.1** for information on reading drawing numbers. This appendix lists the following drawings according to drawing type, and then according to sign size. The first set of drawings is additional drawings for these signs, listed numerically. The risers are notated as such, and listed numerically. The others are grouped according to what type of drawing (i.e., system riser, schematic, etc.) The drawings are then listed according to the sign size.

Assy, Digital Temp Sensor Housing	Drawing A-79410
Temp Sensor Mounting.....	Drawing A-79767
Schem; Fiber, Modem, RS422 Surge Protector Input	Drawing A-125900
Signal Input, Outdoor Venus 1500.....	Drawing A-129110
Schematic, Power Supply Configurations.....	Drawing A-163951
Assy; Fan Harness Routing	Drawing A-164513

System Riser Diagrams

System Riser Diagram, Modem	Drawing A-88426
System Riser Diagram, RS422	Drawing A-92681
System Riser Diagram, RS232	Drawing A-96058
System Riser Diagram, Fiber.....	Drawing A-110559
System Riser Diagram, Radio.....	Drawing A-185325

Component Layout Diagrams

Comp. Layout Diagram, AF-3080-848-68.....	Drawing A-164429
Comp. Layout Diagram, AF-3080-864-68.....	Drawing A-164461
Comp. Layout Diagram, AF-3080-880-68.....	Drawing A-164462
Comp. Layout Diagram, AF-3080-896-68.....	Drawing A-164467
Comp. Layout Diagram, AF-3080-8112-68.....	Drawing A-164471
Comp. Layout Diagram, AF-3080-1648-68.....	Drawing A-164484
Comp. Layout Diagram, AF-3080-1664-68.....	Drawing A-164483
Comp. Layout Diagram, AF-3080-1680-68.....	Drawing A-164481
Comp. Layout Diagram, AF-3080-1696-68.....	Drawing A-164479
Comp. Layout Diagram, AF-3080-16112-68.....	Drawing A-164476
Comp. Layout Diagram, AF-3080-2448-68.....	Drawing A-164485
Comp. Layout Diagram, AF-3080-2464-68.....	Drawing A-164488
Comp. Layout Diagram, AF-3080-2480-68.....	Drawing A-164489
Comp. Layout Diagram, AF-3080-2496-68.....	Drawing A-164491
Comp. Layout Diagram, AF-3080-24112-68.....	Drawing A-164495
Comp. Layout Diagram, AF-3080-3272-68.....	Drawing A-189391

Power Specs

Power Specs, Amber, 8-24x48-112 Displays	Drawing A-163306
Power Specs, Red, 8-24x48-112	Drawing A-163751

Shop Drawings

Shop Drawing; AF-3080-8/16x***-68B.....	Drawing B-163293
Shop Drawing; AF-3080-24x***-68B.....	Drawing B-163291

Final Assembly Drawings

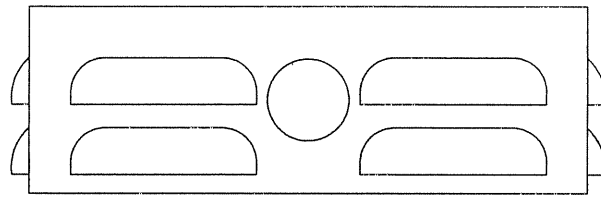
F. Assy; AF-3080-8x***-68	Drawing A-163413
F. Assy; AF-3080-16x***-68	Drawing A-163414
F. Assy; AF-3080-24x***-68	Drawing B-163415

Block Diagram Drawings

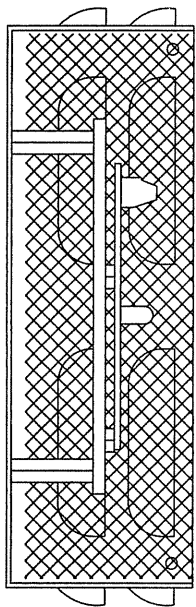
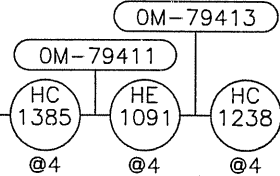
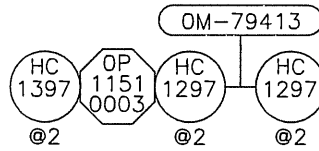
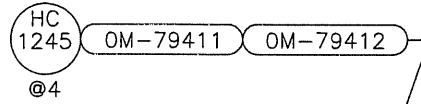
Block Diagram, Power, AF-3080-8x***, Mono.....	Drawing B-167955
Block Diagram, Power, AF-3080, 16x***, Mono.....	Drawing B-167957
Block Diagram, Power, AF-3080, 24x***, Mono.....	Drawing B-167958
Block Diagram, Power, AF-3080, 32x***, Mono.....	Drawing B-189397

Schematic Drawings

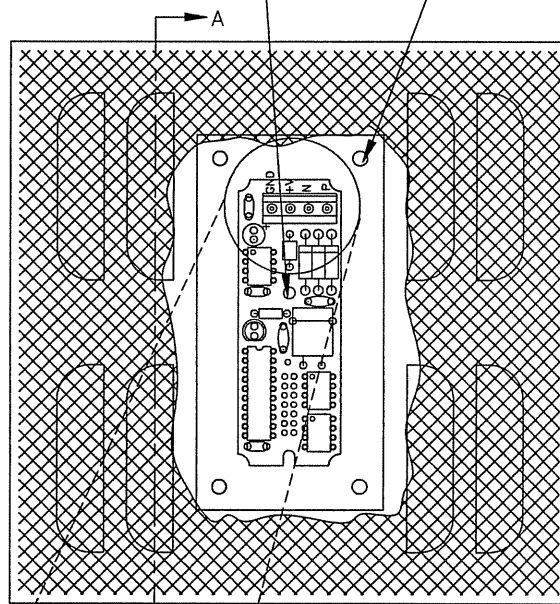
Schematic, AF-3080-8x***-Mono	Drawing B-164924
Schematic, AF-3080-16x***-Mono	Drawing B-164926
Schematic, AF-3080-24x***-Mono	Drawing C-165267
Schematic, AF-3080-32x***-Mono	Drawing C-189404



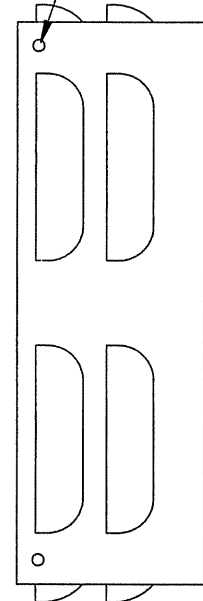
FRONT VIEW



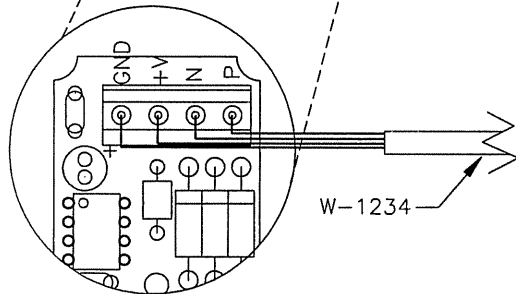
SECTION VIEW A-A



BOTTOM VIEW



RIGHT SIDE

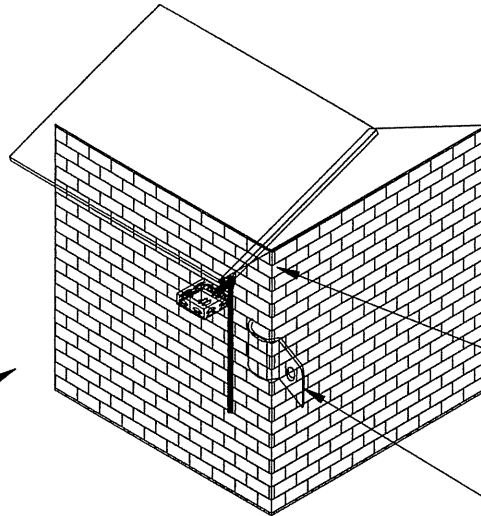


DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
2	06MAY97	ADDED W-1234 CABLE AND VIEW FOR WIRING CABLE WHEN INSTALLING TEMP SENSOR	RLONG	
1	9 APRIL 96	CHANGED HC-1141 TO HC-1385 PER ECO #7370.	MWM	

PROJ:		DATE: 26 FEB 96	
TITLE: ASSY, DIGITAL TEMP SENSOR HOUSING			
DES. BY: CIVERSEN		DRAWN BY: CIVERSEN	
REVISION	APPR. BY:	1151-E10A-79410	
	SCALE: 1=2		

THERE SHOULD BE AT LEAST 1 FT BETWEEN THE BOTTOM OF THE EAVE AND THE TOP OF THE TEMP SENSOR HOUSING FOR ACCURATE READINGS.



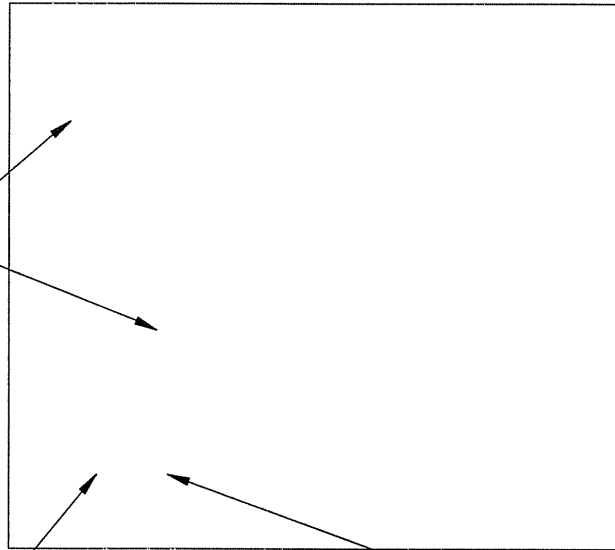
TEMP SENSOR HOUSING
(SUPPLIED BY DAKTRONICS)

CONDUIT OUTLET BODY
(SUPPLIED BY DAKTRONICS)

INSURE THAT CONDUIT IS SUPPORTED AT TOP END NEAR SENSOR.

1/2" CONDUIT
(SUPPLIED BY CUSTOMER)

EAVE/WALL MOUNT



BOTTOM OF DISPLAY

1 FT OF 1/2" CONDUIT
(SUPPLIED BY CUSTOMER)

MOUNTING TO THE TOP OF THE DISPLAY IS DONE IN THE SAME MANNER EXCEPT THE CONDUIT HAS TO BE 6 FT LONG.

TEMP SENSOR HOUSING
(SUPPLIED BY DAKTRONICS)

CONDUIT OUTLET BODY
(SUPPLIED BY DAKTRONICS)

MOUNTING TO BOTTOM OF DISPLAY

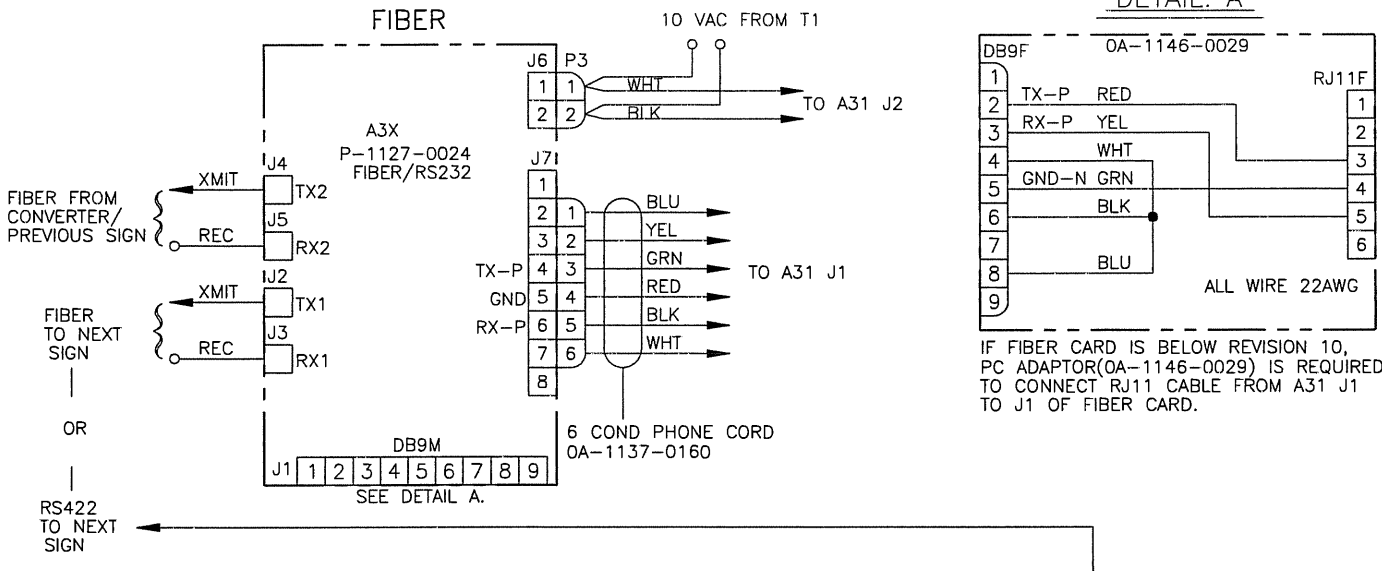
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DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
2	27DEC99	CLEANED UP DRAWING.	NJA	
1	19AUG98	ADDED CONDUIT CLAMP FOR EAVE/WALL MOUNT	JRT	

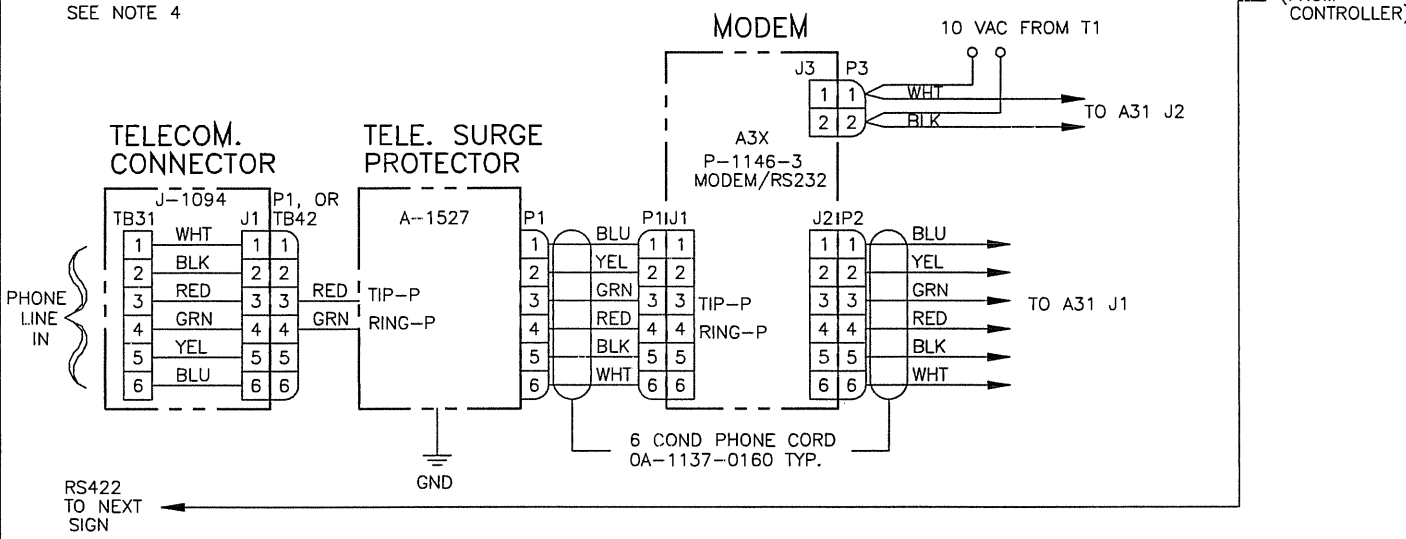
PROJ:			
TITLE: TEMP SENSOR MOUNTING			
DES. BY:		DRAWN BY: NJA	
		DATE: 20 MAR 96	
REVISION	APPR. BY:	1151-R11A-79767	
	SCALE: NONE		

DETAIL: A

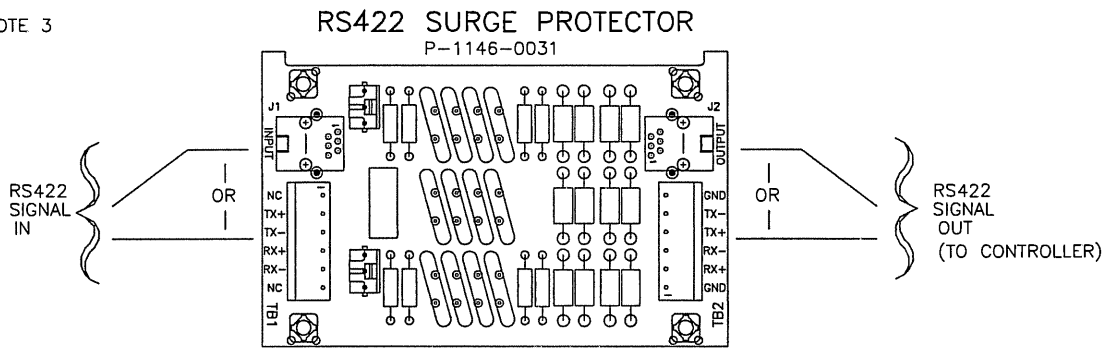


IF FIBER CARD IS BELOW REVISION 10, PC ADAPTOR(OA-1146-0029) IS REQUIRED TO CONNECT RJ11 CABLE FROM A31 J1 TO J1 OF FIBER CARD.

SEE NOTE 4



SEE NOTE 3



NOTES

- 1) ALL WIRE IS 18 AWG UNLESS OTHERWISE NOTED.
- 2) REFER TO DISPLAY SCHEMATICS FOR COMPLETE SIGN WIRING.
- 3) SURGE PROTECTOR CARD MUST BE CONNECTED TO THE SIGN'S CHASSIS IN ORDER TO BE EFFECTIVE. THE MOUNTING HOLES (GROUND PADS) OR PIN 1 & 6 OF TB2 ARE USED FOR THIS GROUND CONNECTION.
- 4) AF-3010 DOES NOT USE TELCOM CONNECTOR. TERMINATE TO TB42 PINS 3 (RED) & 4 (GRN).

REV.	DATE	DESCRIPTION	BY	APPR.
04	09SEPT03	ADDED DETAIL A. J7 WAS ADDED ON REVISION 10 OF FIBER CARD. PC ADAPTOR IS NO LONGER REQUIRED FOR CONNECTION TO CONTROLLER.	DJM	
03	27FEB02	ADDED TELE. SURGE PROTECTOR	JHH	
02	12NOV01	ADDED SURGE PROTECTOR DETAIL	LLK	
01	13MAR00	REMOVED A31 LAYOUT	LLK	

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: _____

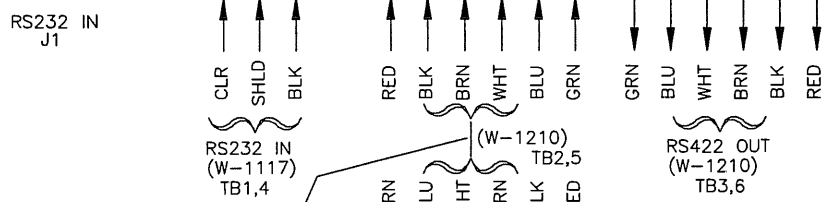
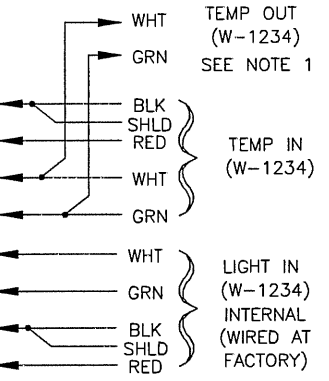
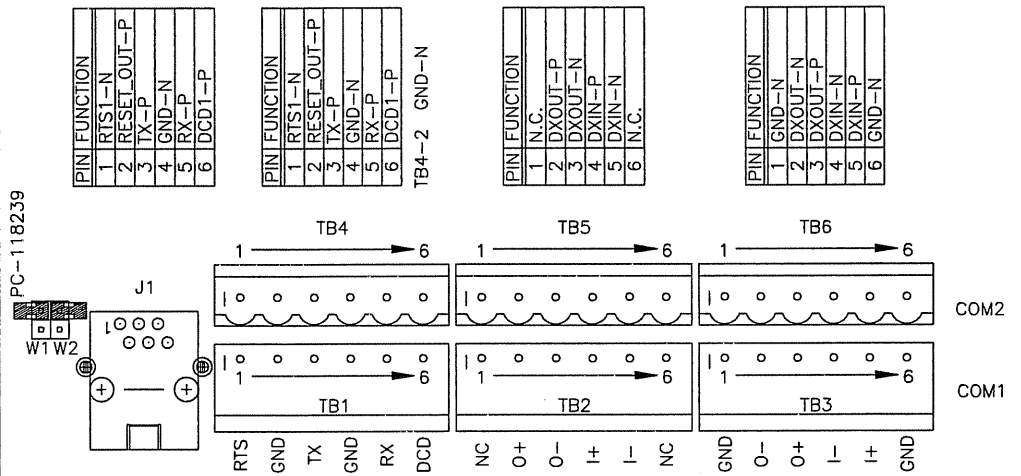
TITLE: SCHEM; FIBER, MODEM, RS422 SURGE PROTECTOR INPUT

DES. BY: _____ DRAWN BY: LKERR DATE: 14DEC99

REVISION 04 APPR. BY: _____ SCALE: _____

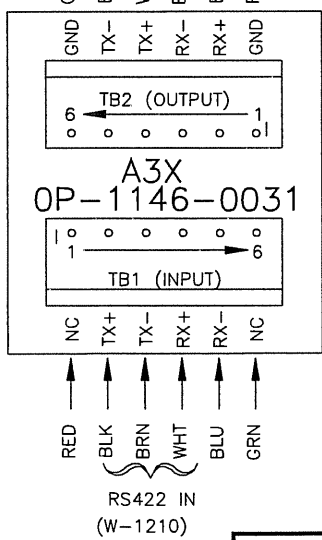
1146-R03A-125900

A31 CONTROLLER CARD



CABLE BETWEEN IS PINNED ONE TO ONE

GROUND CONNECTION MUST BE MAINTAINED

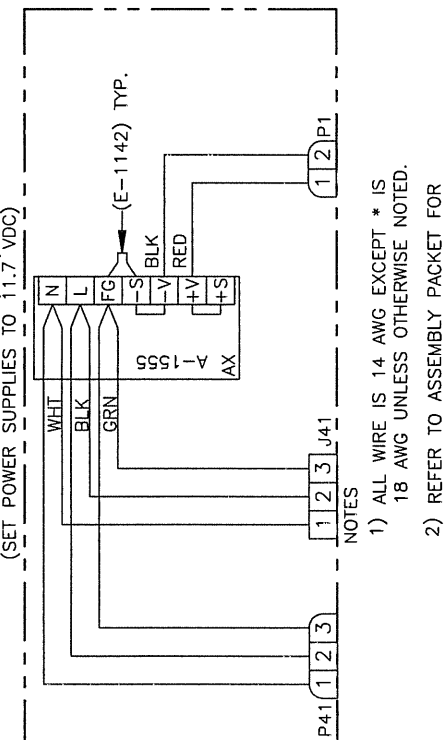
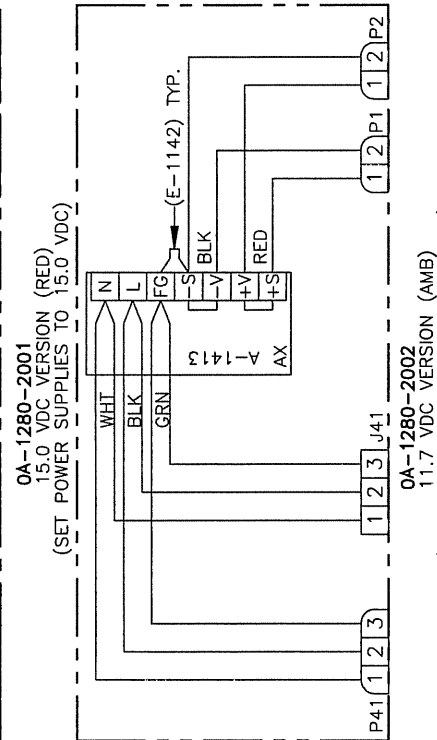
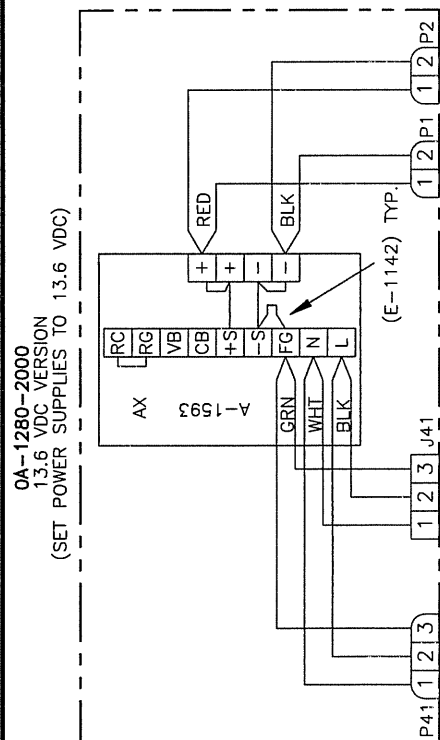
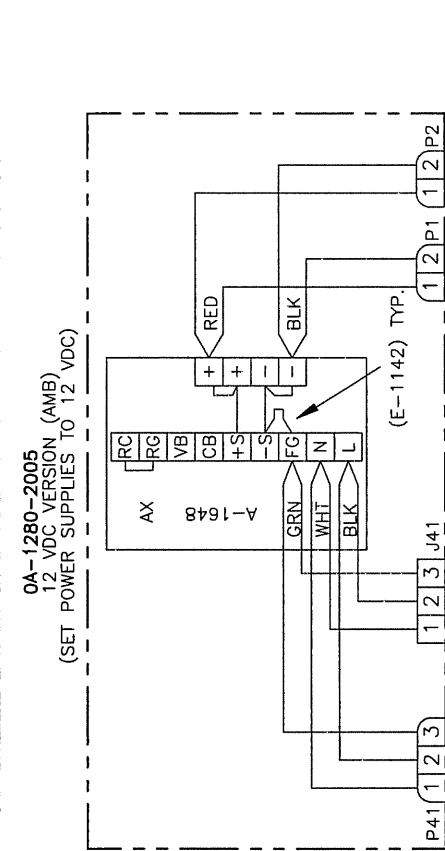
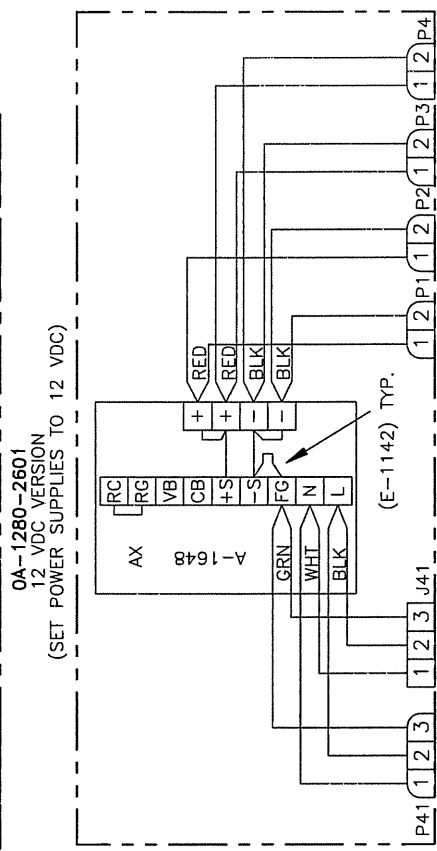
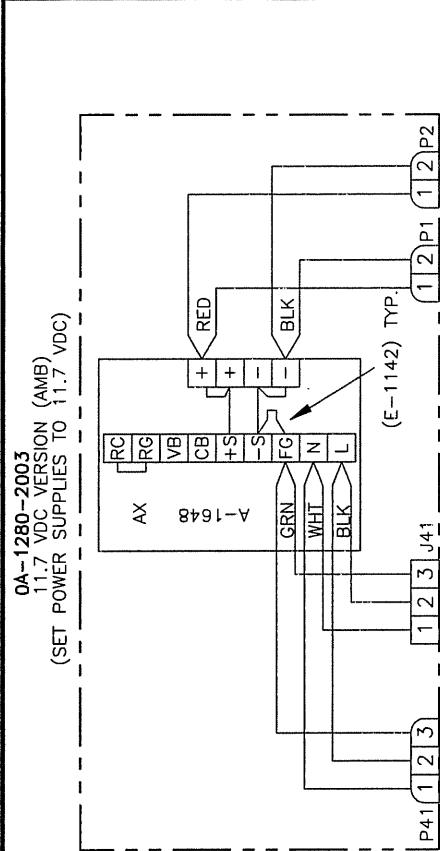


- NOTES:**
- TO ADDITIONAL DISPLAYS WHEN USING A SINGLE TEMP SENSOR. (NOTE THAT THE RED AND BLK WIRES ARE NOT CONNECTED TO SUBSEQUENT CONTROLLER CARDS)

DAKTRONICS, INC. BROOKINGS, SD 57006

02	13DEC01	ADDED WIRE COLORS TO TB2 OF A3X	LLK	LLK
01	13NOV01	ADDED OP-1146-0031	LLK	
REV.	DATE	DESCRIPTION	BY	APPR.

PROJ:		1146-R01A-129110	
TITLE:		SIGNAL INPUT, OUTDOOR VENUS 1500	
DES. BY:	DRAWN BY:	DATE: 9MAR00	
REVISION	APPR. BY:		
	SCALE:	NONE	



- NOTES
- 1) ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
 - 2) REFER TO ASSEMBLY PACKET FOR WIRE ROUTING COMING OFF OF POWER SUPPLIES.
 - 3) BE CERTAIN ALL TERMINALS ON ALL POWER SUPPLIES ARE TIGHTENED.

REV.	DATE	DESCRIPTION	BY	APPR.
05	13JAN03	ADDED POWER SUPPLY OA-1280-2005	MDP	TW
04	24OCT02	CHANGED ASSEMBLY OA-1280-2004 TO OA-1280-2601.	TCW	
03	30SEP02	ADDED ASSEMBLY OA-1280-2004.	MDP	TW
02	30SEP02	ADDED ASSEMBLY OA-1280-2003.	LLK	
01	20AUG02	CHANGED POWER SUPPLY SETTING FROM 16.3 TO 15.0 ON -2001 ASSEMBLY. ADDED -2002 ASSEMBLY. CHANGED -2000 FROM 16.3 TO 13.6.	LLK	

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: _____

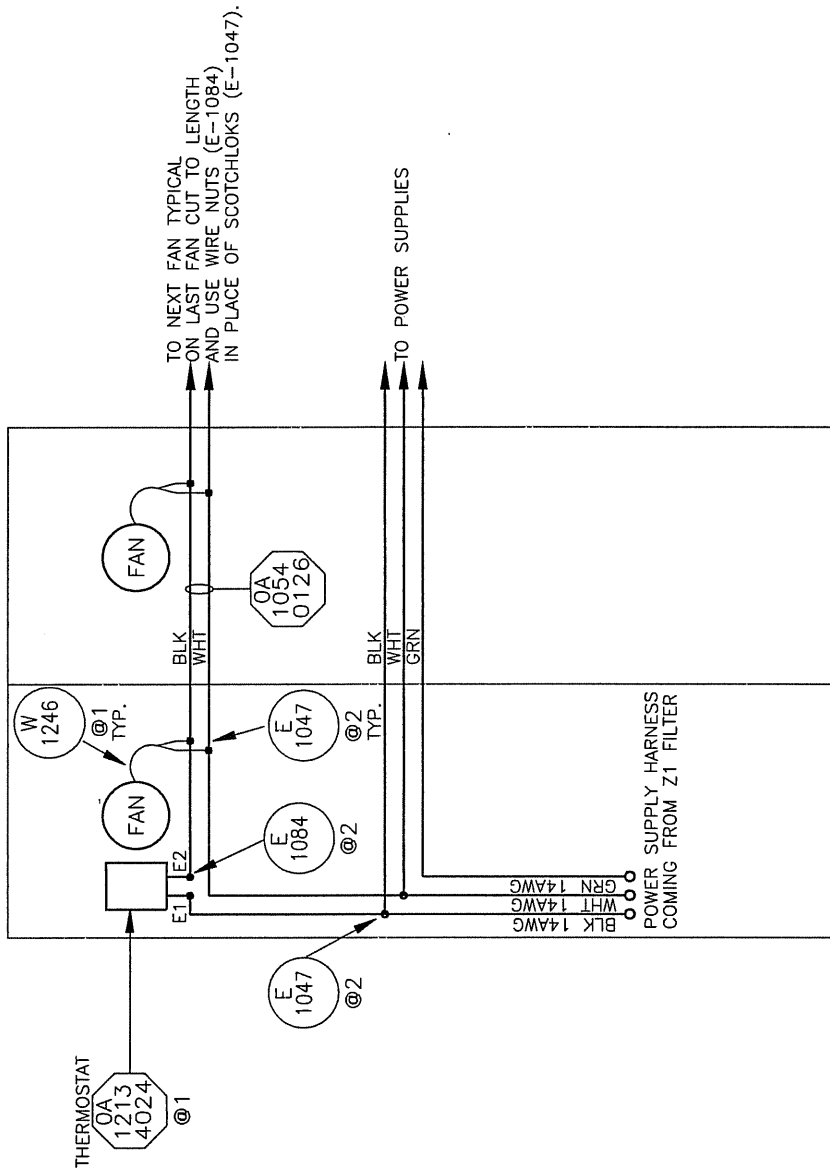
TITLE: SCHEMATIC; POWER SUPPLY CONFIGURATIONS

DES. BY: _____ DRAWN BY: LKERR DATE: 12MAR02

REVISION _____ APPR. BY: _____

SCALE: _____

1280-R03A-163951



- NOTES:
- OA-1054-0126 WILL BE RUN ALONG WITH THE 120V POWER HARNESS WHICH GOES TO THE POWER SUPPLIES.
 - FANS HAVE NO POLARITY.

REV.	DATE	DESCRIPTION	BY	APPR.
------	------	-------------	----	-------

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:			
TITLE: ASSY., FAN HARNESS ROUTING			
DES. BY:		DRAWN BY: LKERR	DATE: 22MAR02
REVISION	APPR. BY:	1280-R06A-164513	
	SCALE: NONE		

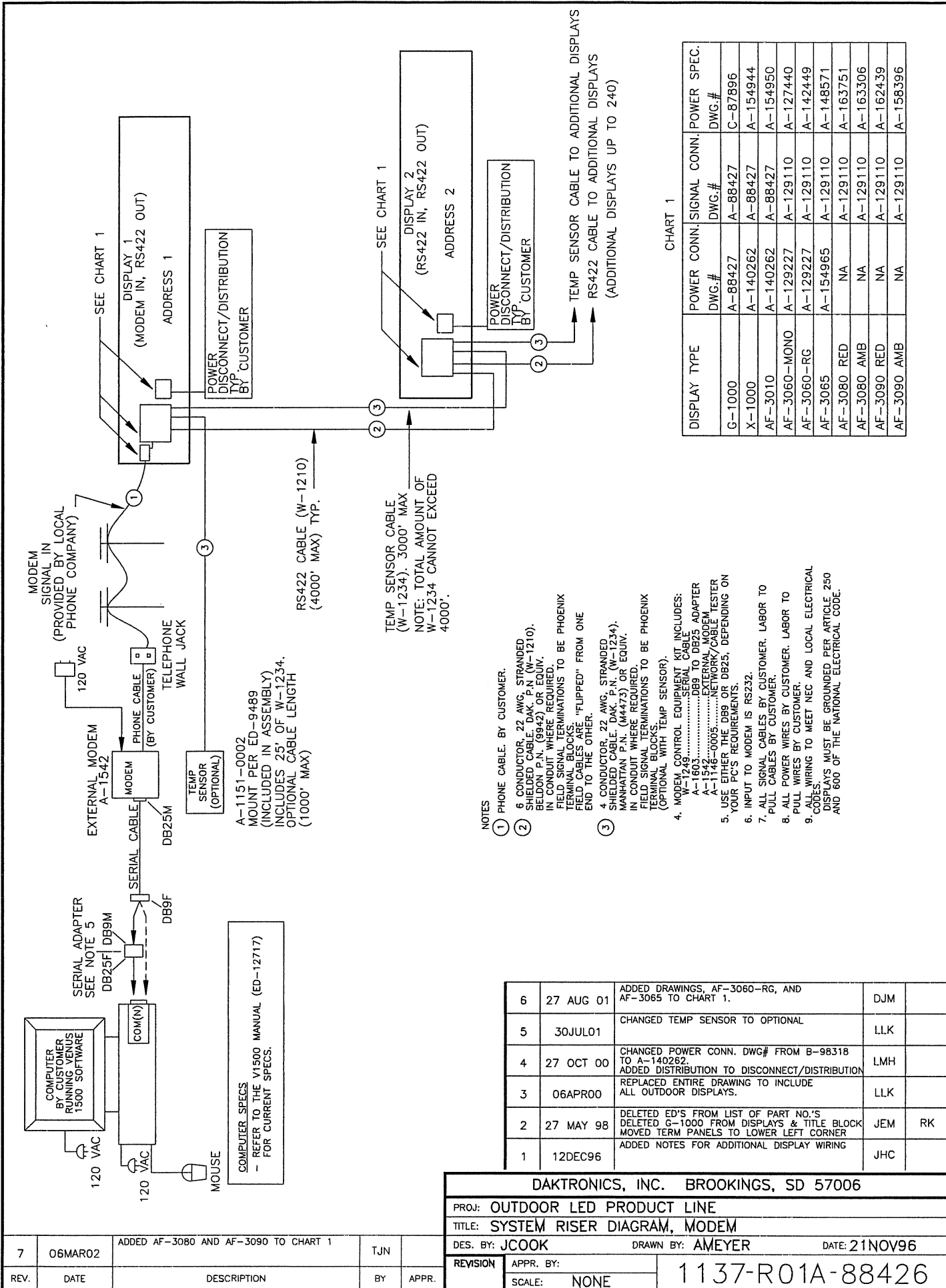


CHART 1

DISPLAY TYPE	POWER CONN. DWG.#	SIGNAL CONN. DWG.#	POWER SPEC. DWG.#
G-1000	A-88427	A-88427	C-87896
X-1000	A-140262	A-88427	A-154944
AF-3010	A-140262	A-88427	A-154950
AF-3060-MONO	A-129227	A-129110	A-127440
AF-3060-RG	A-129227	A-129110	A-142449
AF-3065	A-154965	A-129110	A-148571
AF-3080 RED	NA	A-129110	A-163751
AF-3080 AMB	NA	A-129110	A-163306
AF-3090 RED	NA	A-129110	A-162439
AF-3090 AMB	NA	A-129110	A-158396

- NOTES**
- PHONE CABLE BY CUSTOMER.
 - 6 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK P/N (W-1210), BELDON P.N. (9942) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX FIELD CABLES ARE "FLIPPED" FROM ONE END TO THE OTHER.
 - 4 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK P/N (W-1234), BELDON P.N. (9942) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS (OPTIONAL WITH TEMP SENSOR).
 - MODEM CONTROL EQUIPMENT KIT INCLUDES:
A-1603.....DB9 TO DB25 ADAPTER
A-1542.....EXTERNAL MODEM TESTER
A-1146-0005.....NETWORK/CABLE
5. USE EITHER THE DB9 OR DB25, DEPENDING ON YOUR PC'S REQUIREMENTS.
 - INPUT TO MODEM IS RS232.
 - ALL SIGNAL CABLES BY CUSTOMER. LABOR TO PULL CABLES BY CUSTOMER.
 - ALL POWER WIRES BY CUSTOMER. LABOR TO PULL WIRES BY CUSTOMER.
 - ALL WIRING TO MEET NEC AND LOCAL ELECTRICAL CODES.
DISPLAYS MUST BE GROUNDED PER ARTICLE 250 AND 600 OF THE NATIONAL ELECTRICAL CODE.

6	27 AUG 01	ADDED DRAWINGS, AF-3060-RG, AND AF-3065 TO CHART 1.	DJM	
5	30JUL01	CHANGED TEMP SENSOR TO OPTIONAL	LLK	
4	27 OCT 00	CHANGED POWER CONN. DWG# FROM B-98318 TO A-140262. ADDED DISTRIBUTION TO DISCONNECT/DISTRIBUTION	LMH	
3	06APR00	REPLACED ENTIRE DRAWING TO INCLUDE ALL OUTDOOR DISPLAYS.	LLK	
2	27 MAY 98	DELETED ED'S FROM LIST OF PART NO.'S DELETED G-1000 FROM DISPLAYS & TITLE BLOCK MOVED TERM PANELS TO LOWER LEFT CORNER	JEM	RK
1	12DEC96	ADDED NOTES FOR ADDITIONAL DISPLAY WIRING	JHC	

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR LED PRODUCT LINE	
TITLE: SYSTEM RISER DIAGRAM, MODEM	
DES. BY: JCOOK	DATE: 21NOV96
REVISION	APPR. BY:
SCALE: NONE	1137-R01A-88426

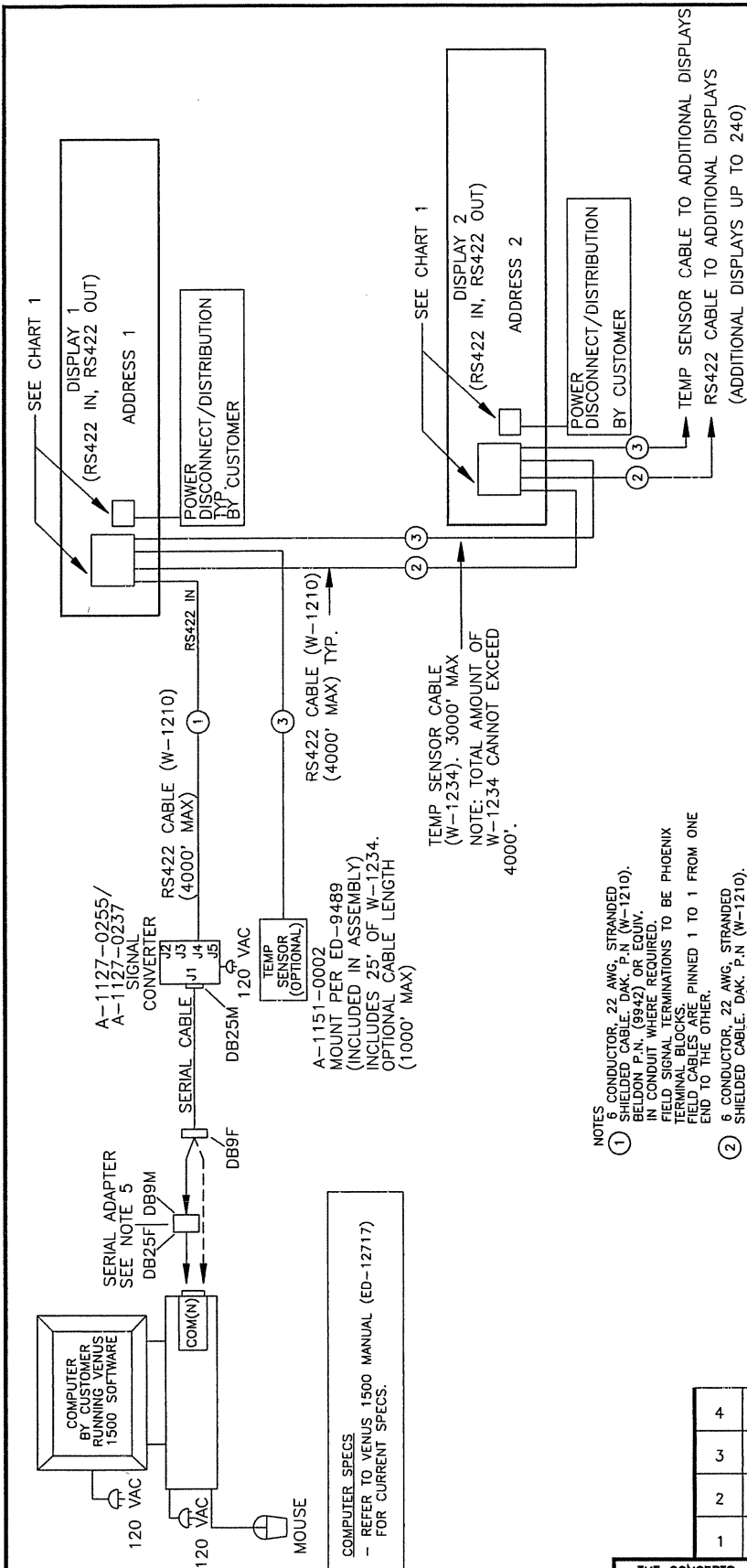
REV.	DATE	DESCRIPTION	BY	APPR.
7	06MAR02	ADDED AF-3080 AND AF-3090 TO CHART 1	TJN	

COMPUTER SPECS
- REFER TO THE V1500 MANUAL (ED-12717) FOR CURRENT SPECS.

A-1151-0002 MOUNT PER ED-9489 (INCLUDED IN ASSEMBLY) INCLUDES 25' OF W-1234. OPTIONAL CABLE LENGTH (1000' MAX)

RS422 CABLE (W-1210) (4000' MAX) TYP.

TEMP SENSOR CABLE (W-1234). 3000' MAX NOTE: TOTAL AMOUNT OF W-1234 CANNOT EXCEED 4000'.



COMPUTER SPECS
 - REFER TO VENUS 1500 MANUAL (ED-12717)
 - FOR CURRENT SPECS.

- NOTES**
- 6 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK, P-N (W-1210). BELDON P-N (9942) OR EQUIV. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS. FIELD CABLES ARE PINNED 1 TO 1 FROM ONE END TO THE OTHER.
 - 6 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK, P-N (W-1210). BELDON P-N (9942) OR EQUIV. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS. FIELD CABLES ARE "FLIPPED" FROM ONE END TO THE OTHER.
 - 4 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK, P-N (W-1234). MANHATTAN P-N (M4473) OR EQUIV. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS.
 - RS422 CONTROL EQUIPMENT KIT INCLUDES: W-1243.....SERIAL TO DB25 ADAPTER A-1127-0255.....SIGNAL CONVERTER A-1146-0005.....NETWORK/CABLE TESTER
 - USE EITHER THE DB9 OR DB25, DEPENDING ON YOUR PC'S REQUIREMENTS.
 - INPUT TO CONVERTER IS RS232, OUTPUTS RS422.
 - ALL SIGNAL CABLES BY CUSTOMER. LABOR TO PULL CABLES BY CUSTOMER.
 - ALL POWER WIRES BY CUSTOMER. LABOR TO PULL WIRES BY CUSTOMER.
 - ALL WIRING TO MEET NEC AND LOCAL ELECTRICAL CODES. DISPLAYS MUST BE GROUNDED PER ARTICLE 250 AND 600 OF THE NATIONAL ELECTRICAL CODE.

CHART 1

DISPLAY TYPE	POWER CONN. DWG.#	SIGNAL CONN. DWG.#	POWER SPEC. DWG.#
G-1000	A-88427	A-88427	C-87896
X-1000	A-140262	A-88427	A-194944
AF-3010	A-140262	A-88427	A-154950
AF-3060-MONO	A-129227	A-129110	A-127440
AF-3060-RG	A-129227	A-129110	A-142449
AF-3065	A-154965	A-129110	A-148571
AF-3080 RED	NA	A-129110	A-163751
AF-3080 AMB	NA	A-129110	A-163306
AF-3090 RED	NA	A-129110	A-162439
AF-3090 AMB	NA	A-129110	A-158396

4	27 AUG 01	REVISED COMPUTER SPEC BOX, ADDED DRAWINGS, AF-3060-RG, AND AF-3065 TO CHART 1.	DJM	
3	27 OCT 00	CHANGED POWER CONN. DWG# FROM B-98318 TO A-140262. ADDED DISTRIBUTION TO DISCONNECT/DISTRIBUTION	LMH	
2	06APR00	REPLACED ENTIRE DRAWING TO INCLUDE ALL OUTDOOR DISPLAYS	LLK	
1	27 MAY 98	DELETED ED'S FROM LIST OF PART NO.'S DELETED G-1000 FROM DISPLAYS MOVED TERM PANELS TO LOWER LEFT CORNER	JEM	RK

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DAKTRONICS, INC. BROOKINGS, SD 57006

6	26 MAR 04	REPLACED 0A-1127-0237 WITH 0A-1127-0255 (INCLUDES SURGE PROTECTION)	SAI	DJM
5	06MAR02	ADDED AF-3080 AND AF-3090 TO CHART 1	TJN	
REVISION	DATE	DESCRIPTION	BY	APPR.
06				

PROJ: OUTDOOR LED PRODUCT LINE
 TITLE: SYSTEM RISER DIAGRAM, RS422

DES. BY: JCOOK DRAWN BY: AMEYER DATE: 30APR97

REVISION APPR. BY: SCALE: NONE 1137-R01A-92681

REV	DATE	DESCRIPTION	BY	APPR.
5	06 MAR 02	ADDED AF-3080 AND AF-3090 TO CHART 1	TJN	
4	27 AUG 01	REVISED COMPUTER SPEC BOX, ADDED DRAWINGS, AF-3060-RG, AND AF-3065 TO CHART 1.	DJM	
3	27 OCT 00	CHANGED POWER CONN. DWG# FROM B-98318 TO A-140262. ADDED DISTRIBUTION TO DISCONNECT/DISTRIBUTION	LMH	
2	06APR00	REPLACED ENTIRE DRAWING TO INCLUDE ALL OUTDOOR DISPLAYS.	LLK	
1	27 MAY 98	DELETED ED'S FROM LIST OF PART NO.'S DELETED G-1000 FROM DISPLAYS & TITLE MOVED TERM PANELS TO LOWER LEFT CORNER	JEM	RK

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED PRODUCT LINE			
TITLE: SYSTEM RISER DIAGRAM, RS232			
DES. BY:	DRAWN BY: CIVERSEN		DATE: 28 AUG 97
REVISION	APPR. BY:	1137-R01A-96058	
	SCALE: NONE		

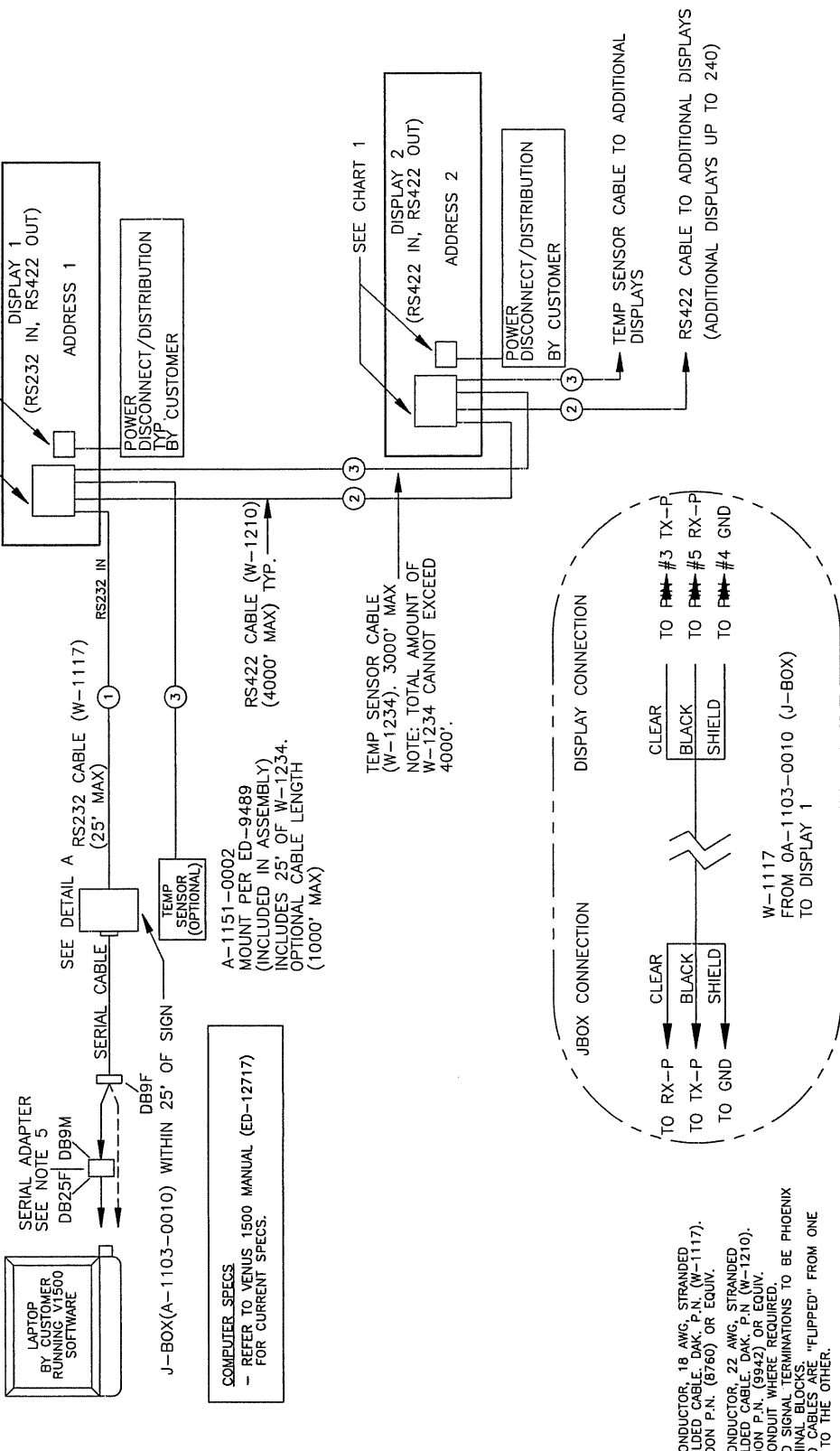


CHART 1

DISPLAY TYPE	POWER CONN. DWG.#	SIGNAL CONN. DWG.#	POWER SPEC. DWG.#
G-1000	A-88427	A-88427	C-87896
X-1000	A-140262	A-88427	A-154944
AF-3010	A-140262	A-88427	A-154950
AF-3060-MONO	A-129227	A-129110	A-127440
AF-3060-RG	A-129227	A-129110	A-142449
AF-3065	A-154965	A-129110	A-148571
AF-3080 RED	NA	A-129110	A-163751
AF-3080 AMB	NA	A-129110	A-163306
AF-3090 RED	NA	A-129110	A-162439
AF-3090 AMB	NA	A-129110	A-158396

COMPUTER SPECS
- REFER TO VENUS 1500 MANUAL (ED-12717) FOR CURRENT SPECS.

TEMP SENSOR CABLE (W-1234)
NOTE: TOTAL AMOUNT OF W-1234 CANNOT EXCEED 4000'.

TEMP SENSOR CABLE (W-1210)
NOTE: TOTAL AMOUNT OF W-1234 CANNOT EXCEED 4000'.

TEMP SENSOR CABLE (W-1117)
NOTE: TOTAL AMOUNT OF W-1234 CANNOT EXCEED 4000'.

RS422 CABLE (W-1210)
(4000' MAX) TYP.

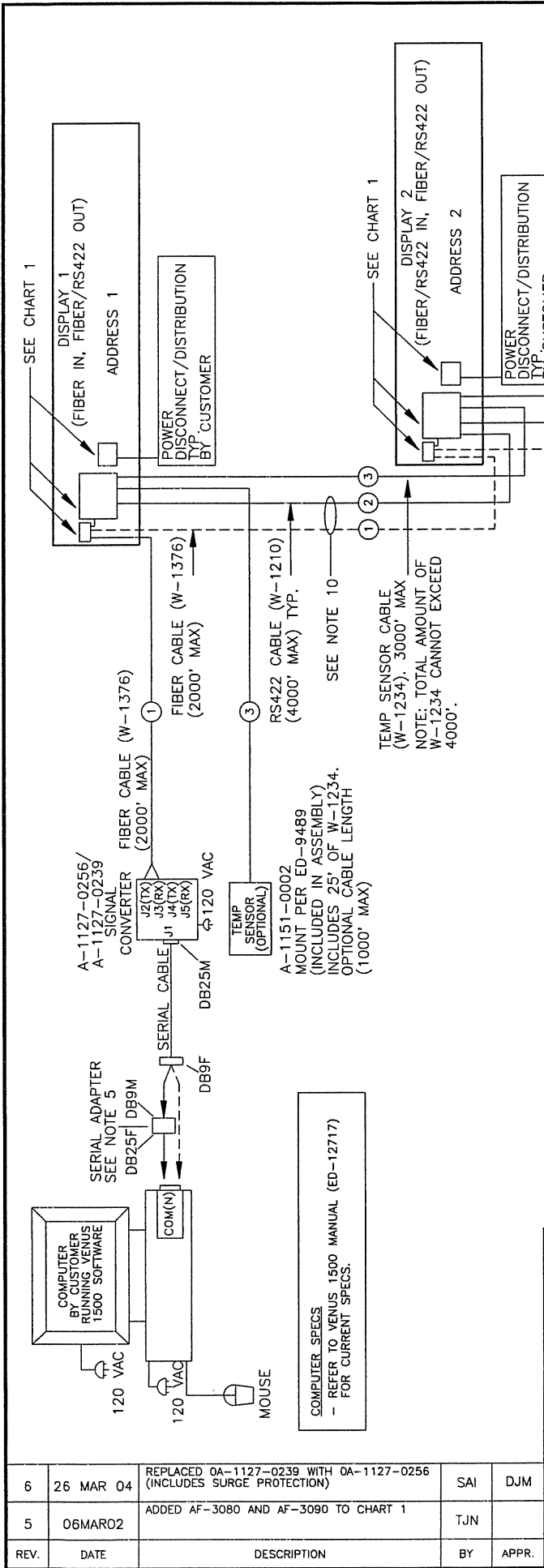
RS232 CABLE (W-1117)
(25' MAX)

DISPLAY CONNECTION
TO RX-P
TO TX-P
TO GND
TO #3 TX-P
TO #5 RX-P
TO #4 GND

DISPLAY CONNECTION
TO RX-P
TO TX-P
TO GND
TO #3 TX-P
TO #5 RX-P
TO #4 GND

DETAIL A
W-1117 FROM OA-1103-0010 (J-BOX) TO DISPLAY 1

- NOTES**
- 2 CONDUCTOR, 18 AWG, STRANDED SHIELDED CABLE, DAK, P.N. (W-1117), BELDON P.N. (8760) OR EQUIV.
 - 3 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK, P.N. (W-1210), BELDON P.N. (9942) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS. FIELD CABLES ARE "FLIPPED" FROM ONE END TO THE OTHER.
 - 4 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK, P.N. (W-1234), BELDON P.N. (14473) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS.
 - RS/232 CONTROL EQUIPMENT KIT INCLUDES: W-1249.....SERIAL CABLE A-1603.....DB9 TO DB25 ADAPTER A-1103-0005.....J-BOX A-1103-0010.....J-BOX/CABLE TESTER USE EITHER THE DB9 OR DB25, DEPENDING ON YOUR PC'S REQUIREMENTS.
 - INPUT TO J-BOX IS RS232, OUTPUT IS RS232.
 - ALL SIGNAL CABLES BY CUSTOMER. LABOR TO PULL CABLES BY CUSTOMER.
 - ALL POWER WIRES BY CUSTOMER. LABOR TO PULL WIRES BY CUSTOMER.
 - ALL WIRING TO MEET NEC AND LOCAL ELECTRICAL CODES.
 - DISPLAYS MUST BE GROUNDED PER ARTICLE 250 AND 600 OF THE NATIONAL ELECTRICAL CODE.



- NOTES**
- 4 FIBER CABLE, 62.5/125 GRADE DAK P.N. (W-1376). GRAYBAR P.N. (BX04080-W35B1UC900R) IN CONDUIT WHERE REQUIRED.
 - 6 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK P.N. (W-1234). BELDON P.N. (8942) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS ARE "FLIPPED" FROM ONE END TO THE OTHER.
 - 4 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE, DAK P.N. (W-1234). MANHATTAN P.N. (M4473) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS
 - FIBER CONTROL EQUIPMENT KIT INCLUDES: A-1603.....SERIAL CABLE A-1603.....DB9 TO DB25 ADAPTER A-1127-0236.....SIGNAL CONVERTER A-1146-0005.....NETWORK/CABLE TESTER
 - USE EITHER THE DB9 OR DB25, DEPENDING ON YOUR PC'S REQUIREMENTS.
 - INPUT TO CONVERTER IS RS232.
 - ALL SIGNAL CABLES BY CUSTOMER. LABOR TO PULL CABLES BY CUSTOMER.
 - ALL POWER WIRES BY CUSTOMER. LABOR TO PULL WIRES BY CUSTOMER.
 - ALL WIRING TO MEET NEC AND LOCAL ELECTRICAL CODES.
 - DISPLAYS MUST BE GROUNDED PER ARTICLE 250 AND 600 OF THE NATIONAL ELECTRICAL CODE.
 - DISPLAY OUTPUTS CAN BE EITHER FIBER OR RS422.

CHART 1

DISPLAY TYPE	POWER CONN. DWG.#	SIGNAL CONN. DWG.#	POWER SPEC. DWG.#
G-1000	A-88427	A-88427	C-87896
X-1000	A-140262	A-88427	A-154944
AF-3010	A-140262	A-88427	A-154950
AF-3060-MONO	A-129227	A-129110	A-127440
AF-3060-RG	A-129227	A-129110	A-142449
AF-3065	A-154965	A-129110	A-148571
AF-3080 RED	NA	A-129110	A-163751
AF-3080 AMB	NA	A-129110	A-163306
AF-3090 RED	NA	A-129110	A-162439
AF-3090 AMB	NA	A-129110	A-158396

4	27 AUG 01	REVISED COMPUTER SPEC BOX AND ADDED DRAWINGS, AF-3060-RG, AF-3065 TO CHART 1.	DJM
3	27 OCT 00	CHANGED POWER CONN. DWG# FROM B-98318 TO A-140262. ADDED DISTRIBUTION TO DISCONNECT/DISTRIBUTION	LMH
2	06APR00	REPLACED ENTIRE DRAWING TO INCLUDE ALL OUTDOOR DISPLAYS.	LLK
1	20JAN99	REVISED FIBER CABLE LENGTH FROM 3000' MAX TO 2000' MAX.	LLK

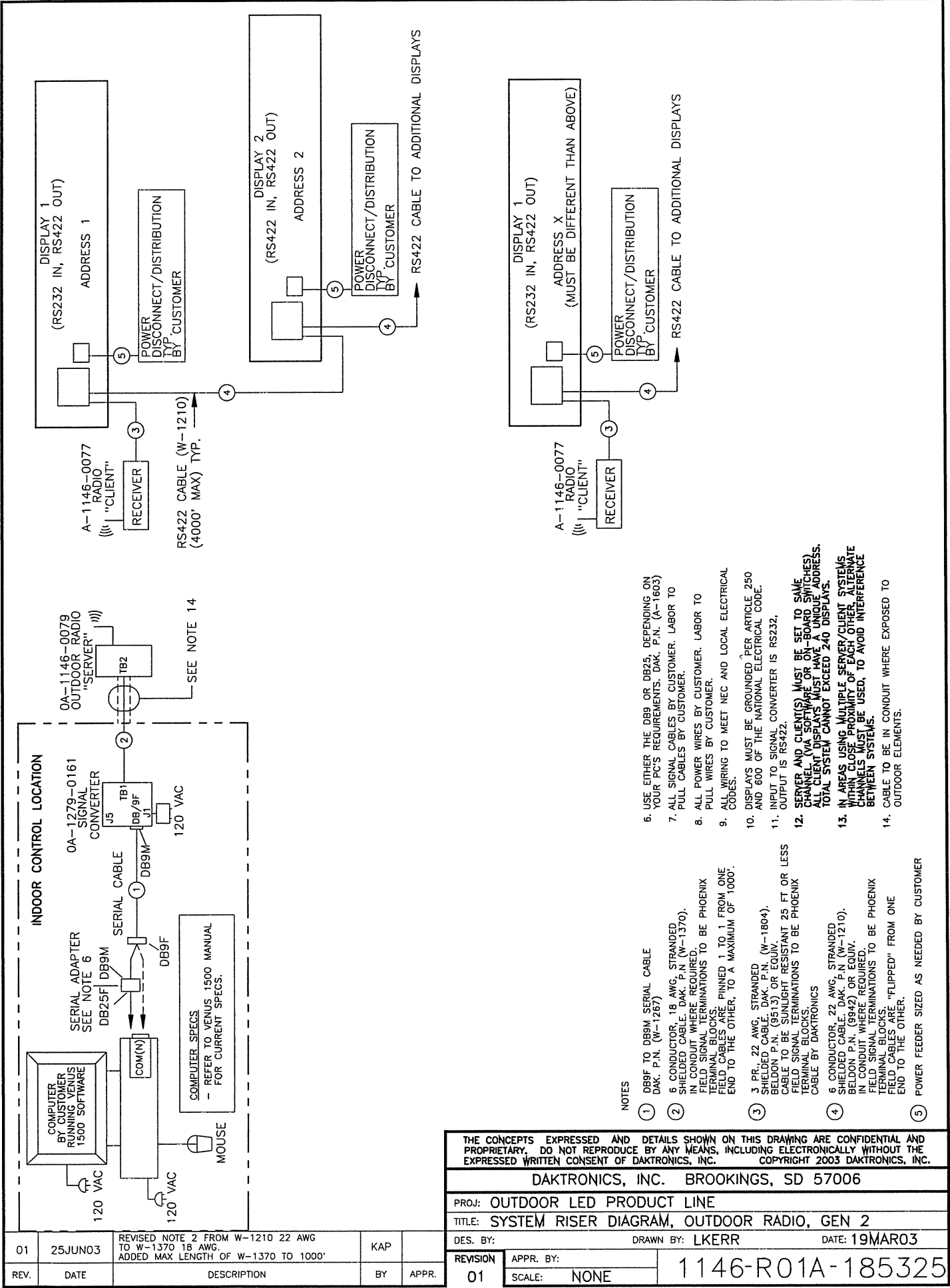
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DAKTRONICS, INC. BROOKINGS, SD 57006

6	26 MAR 04	REPLACED 0A-1127-0239 WITH 0A-1127-0256 (INCLUDES SURGE PROTECTION)	SAI	DJM
5	06MAR02	ADDED AF-3080 AND AF-3090 TO CHART 1	TJN	
REV.	DATE	DESCRIPTION	BY	APPR.

PROJ: OUTDOOR LED PRODUCT LINE
 TITLE: SYSTEM RISER DIAGRAM, FIBER
 DES. BY: DRAWN BY: LKERR DATE: 29DEC98

REVISION	APPR. BY:	1137-R01A-110559
06	SCALE: NONE	



6. USE EITHER THE DB9 OR DB25, DEPENDING ON YOUR PC'S REQUIREMENTS. DAK. P.N. (A-1603) PULL CABLES BY CUSTOMER.
7. ALL SIGNAL CABLES BY CUSTOMER. LABOR TO PULL CABLES BY CUSTOMER.
8. ALL POWER WIRES BY CUSTOMER. LABOR TO PULL WIRES BY CUSTOMER.
9. ALL WIRING TO MEET NEC AND LOCAL ELECTRICAL CODES.
10. DISPLAYS MUST BE GROUNDED PER ARTICLE 250 AND 600 OF THE NATIONAL ELECTRICAL CODE.
11. INPUT TO SIGNAL CONVERTER IS RS422.
12. SERVER AND CLIENT(S) MUST BE SET TO SAME CHANNEL (VIA SOFTWARE OR ON-BOARD SWITCHES) ALL CLIENT DISPLAYS MUST HAVE A UNIQUE ADDRESS. TOTAL SYSTEM CANNOT EXCEED 240 DISPLAYS.
13. IN AREAS USING MULTIPLE SERVER/CLIENT SYSTEMS WITHIN CLOSE PROXIMITY OF EACH OTHER, ALTERNATE CHANNELS MUST BE USED, TO AVOID INTERFERENCE BETWEEN SYSTEMS.
14. CABLE TO BE IN CONDUIT WHERE EXPOSED TO OUTDOOR ELEMENTS.

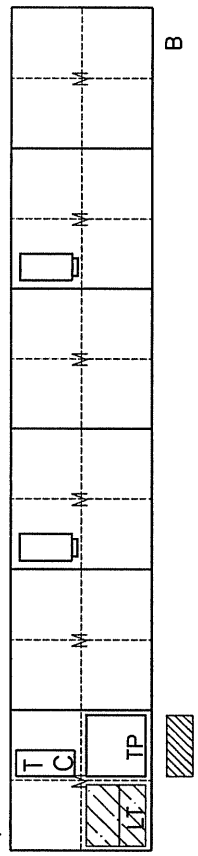
1. DB9F TO DB9M SERIAL CABLE DAK. P.N. (W-1267)
2. 6 CONDUCTOR, 18 AWG, STRANDED SHIELDED CABLE. DAK. P.N. (W-1370). IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS. FIELD CABLES ARE PINNED 1 TO 1 FROM ONE END TO THE OTHER, TO A MAXIMUM OF 1000'.
3. PR. 22 AWG, STRANDED SHIELDED CABLE. DAK. P.N. (W-1804). BELDON P.N. (9513) OR EQUIV. CABLE TO BE SUNLIGHT RESISTANT 25 FT OR LESS. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS. CABLE BY DAKTRONICS.
4. 6 CONDUCTOR, 22 AWG, STRANDED SHIELDED CABLE. DAK. P.N. (W-1210). BELDON P.N. (9942) OR EQUIV. IN CONDUIT WHERE REQUIRED. FIELD SIGNAL TERMINATIONS TO BE PHOENIX TERMINAL BLOCKS. FIELD CABLES ARE "FLIPPED" FROM ONE END TO THE OTHER.
5. POWER FEEDER SIZED AS NEEDED BY CUSTOMER

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: OUTDOOR LED PRODUCT LINE			
TITLE: SYSTEM RISER DIAGRAM, OUTDOOR RADIO, GEN 2			
DES. BY:	DRAWN BY: LKERR		DATE: 19MAR03
REVISION	APPR. BY:	1146-R01A-185325	
01	SCALE: NONE		

01	25JUN03	REVISED NOTE 2 FROM W-1210 22 AWG TO W-1370 18 AWG. ADDED MAX LENGTH OF W-1370 TO 1000'	KAP	
REV.	DATE	DESCRIPTION	BY	APPR.

DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)

PS103



FRONT VIEW



POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)



POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L



THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.



FAN
OA-1213-4014
B-1006 W/HARDWARE



LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM



CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD



FILTER
EN-1774
FILTER W/ WEATHERSTRIP



MODULE DRIVER
OA-1280-4014
ASSY, DRIVER

NOTES:

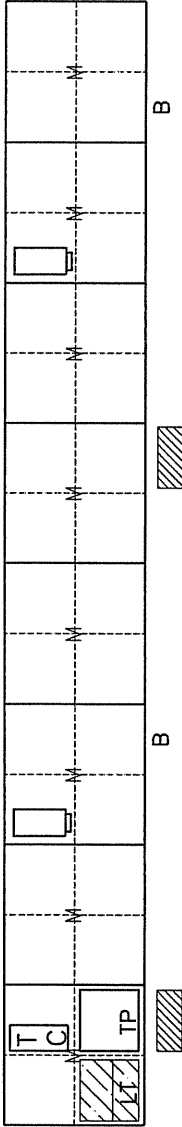
1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-848-68			
DES. BY: MMAMMENGA		DRAWN BY: MMAMMENGA	
		DATE: 21 MAR 02	
REVISION	APPR. BY:	1280-E10A-164429	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.
01	03FEB03	CHANGED FAN & FILTER CONFIGURATION.	EJY	

DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)

PS103



FRONT VIEW



POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)



POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L



FAN
OA-1213-4014
B-1006 W/HARDWARE



LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM



THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.



CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD



FILTER
EN-1774
FILTER W/ WEATHERSTRIP



MODULE DRIVER
OA-1280-4014
ASSY, DRIVER

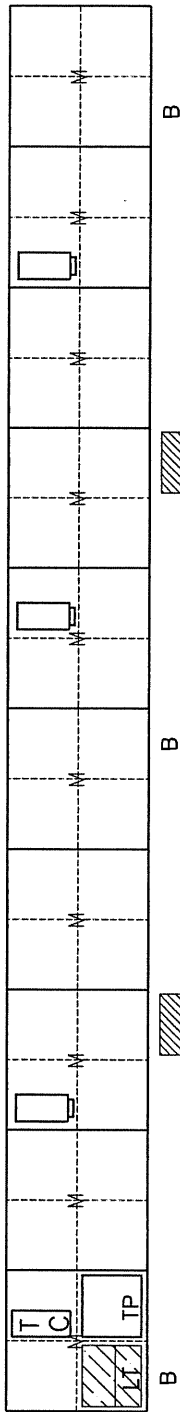
NOTES:

1. 10.64" FOR MODULE SIZE









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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-864-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	DATE: 21 MAR 02
REVISION	APPR. BY:	1280-E10A-164461	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.
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PS103 → DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

- | | | | |
|--|--|--|---|
| <p> POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L</p> | <p> THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.</p> | <p> LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM</p> | <p> MODULE DRIVER
OA-1280-4014
ASSY, DRIVER</p> |
| <p> B
FAN
OA-1213-4014
B-1006 W/HARDWARE</p> | <p> POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)</p> | <p> LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM</p> | <p> MODULE DRIVER
OA-1280-4014
ASSY, DRIVER</p> |

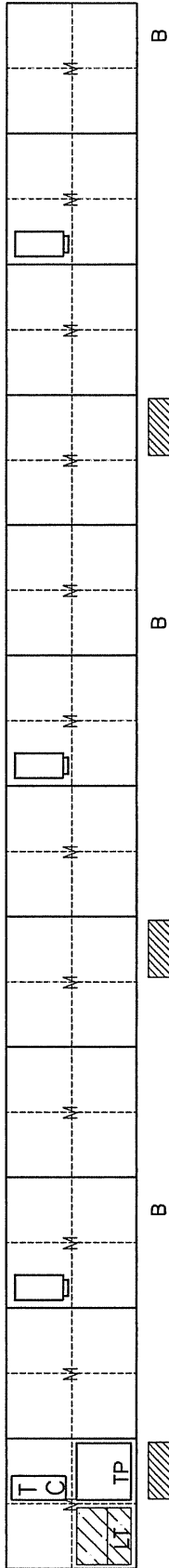
NOTES:

1. 10.64" FOR MODULE SIZE








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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-880-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	
DATE: 21 MAR 02			
REVISION	APPR. BY:	1280-E10A-164462	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

PS103 ← DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

-  THERMOSTAT
OA-1213-4024
-  FAN
OA-1213-4014
B-1006 W/HARDWARE
-  POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)
-  LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM
-  FILTER
EN-1774
FILTER W/ WEATHERSTRIP
-  CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD
-  MODULE DRIVER
OA-1280-4014
ASSY, DRIVER

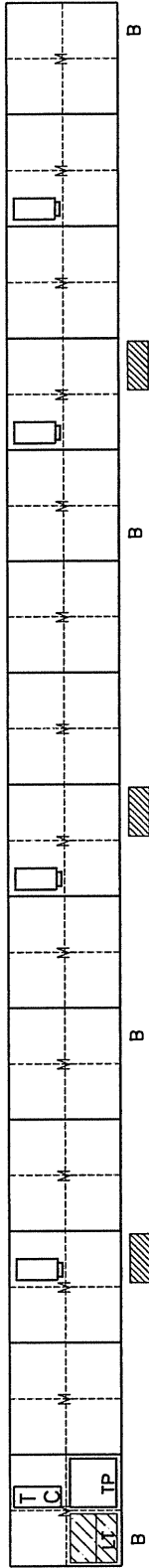
NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-896-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	
DATE: 21MAR02			
REVISION	APPR. BY:	1280-E10A-164467	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.
01	03MAR03	CHANGED FAN & FILTER CONFIGURATION.	EJY	

PS103 ← DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

T C
THERMOSTAT
0A-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B
FAN
0A-1213-4014
B-1006 W/HARDWARE

TP
POWER SUPPLIES
0A-1280-4015
ASSY, DRIVER & PS (1, A-1593)
0A-1280-4013
ASSY, DRIVER & PS (1, A-1413)

LT
CONTROLLER BOARD
0A-1146-0035
CONTROLLER BOARD

LT
LIGHT DETECTOR
0A-1215-4001
ASSY; LIGHT DETECTOR-34MM

TP
POWER TERMINATION BOX
0A-1241-4003
ASSY; POWER TERM BOX 120V-*L

M
MODULE DRIVER
0A-1280-4014
ASSY, DRIVER

LT
FILTER
EN-1774
FILTER W/ WEATHERSTRIP

NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, 68MM, V1500

TITLE: COMP. LAYOUT DIAGRAM, AF-3080-8112-68

DES. BY: MMAMMENGA DRAWN BY: MSTUBBE DATE: 21 MAR 02

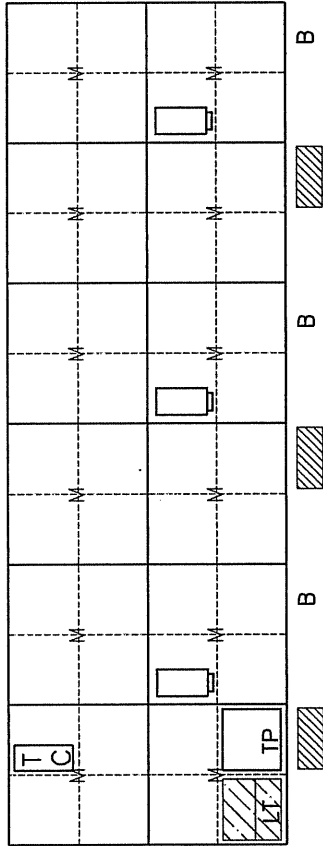
REVISION APPR. BY:
SCALE: NONE

1280-E10A-164471

REV.	DATE	DESCRIPTION	BY	APPR.

DENOTES POWER SUPPLY LOCATION.
(I.E. PS102 IS LOCATED BEHIND A102.)

PS102



FRONT VIEW

TC

THERMOSTAT

0A-1213-4024

ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B

FAN

0A-1213-4014

B-1006 W/HARDWARE

LT

LIGHT DETECTOR

0A-1215-4001

ASSY; LIGHT DETECTOR-34MM

M

FILTER

EN-1774

FILTER W/ WEATHERSTRIP

TP

POWER SUPPLIES

0A-1280-4015

ASSY, DRIVER & PS (1, A-1593)

0A-1280-4013

ASSY, DRIVER & PS (1, A-1413)

TP

POWER TERMINATION BOX

0A-1241-4003

ASSY; POWER TERM BOX 120V-*L

M

CONTROLLER BOARD

0A-1146-0035

CONTROLLER BOARD

M

MODULE DRIVER

0A-1280-4014

ASSY, DRIVER

NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, 68MM, V1500

TITLE: COMP. LAYOUT DIAGRAM, AF-3080-1648-68

DES. BY: MMAMMENGA

DRAWN BY: MSTUBBE

DATE: 21 MAR 02

REVISION

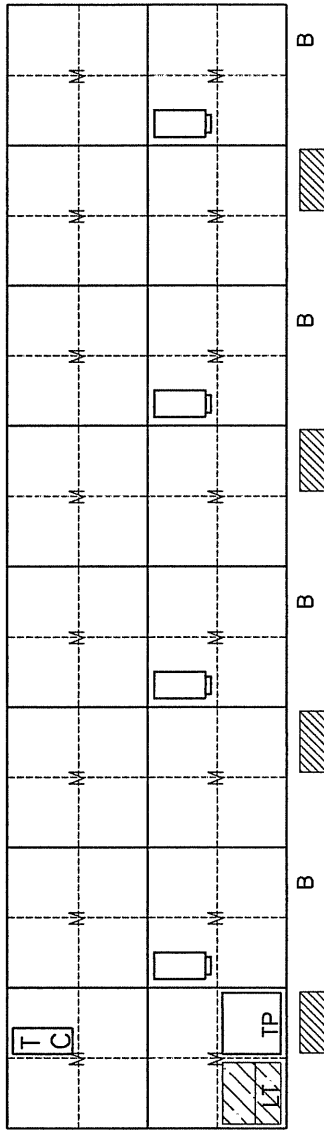
APPR. BY:

SCALE: NONE

1280-E10A-164484

REV.	DATE	DESCRIPTION	BY	APPR.

PS202 → DENOTES POWER SUPPLY LOCATION.
(I.E. PS202 IS LOCATED BEHIND A202.)



FRONT VIEW

TC

THERMOSTAT

OA-1213-4024

ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B

FAN

OA-1213-4014

B-1006 W/HARDWARE

TP

POWER SUPPLIES

OA-1280-4017 (12 LED)

ASSY, DRIVER & PS (1, A-1648)

OA-1280-4013 (6 LED)

ASSY, DRIVER & PS (1, A-1413)

TP

POWER TERMINATION BOX

OA-1241-4003

ASSY; POWER TERM BOX 120V-*L

LT

LIGHT DETECTOR

OA-1215-4001

ASSY; LIGHT DETECTOR-34MM

TC

CONTROLLER BOARD

OA-1146-0035

CONTROLLER BOARD

M

FILTER

EN-1774

FILTER W/ WEATHERSTRIP

M

MODULE DRIVER

OA-1280-4014

ASSY, DRIVER

NOTES:

1. A FULL MODULE CONSISTS OF 4 - 4X4 PIXEL MODULES 10.64" SQUARE.

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, 68MM, V1500

TITLE: COMP. LAYOUT DIAGRAM, AF-3080-1664-68

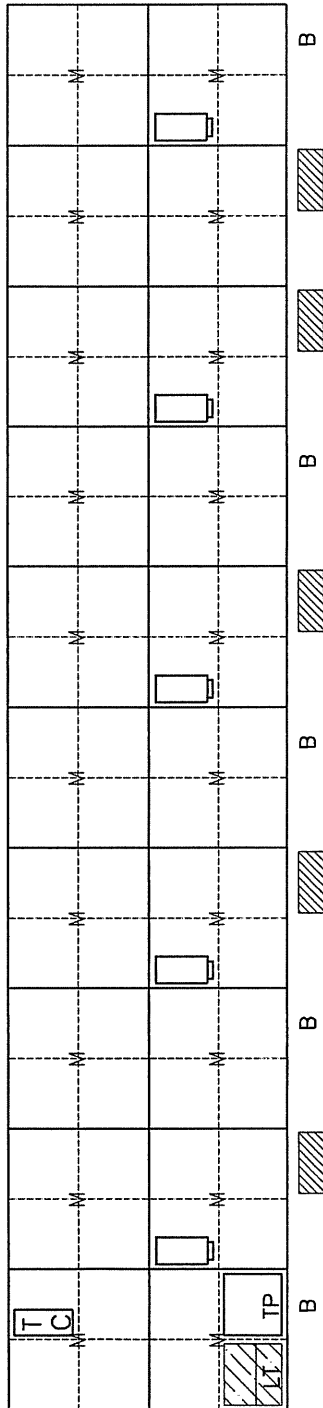
DES. BY: MMAMMENGA DRAWN BY: MSTUBBE DATE: 21 MAR 02

REV.	DATE	DESCRIPTION	BY	APPR.
01	07 FEB 03	CHANGED PWR SPLY FROM OA-1280-4015 TO OA-1280-4017 AND CHANGED PLACEMENT OF FILTERS.	EJY	

REVISION	APPR. BY:
	NONE

1280-E10A-164483

PS102 → DENOTES POWER SUPPLY LOCATION.
(I.E. PS102 IS LOCATED BEHIND A102.)



FRONT VIEW

TC

THERMOSTAT

OA-1213-4024

ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B

FAN

OA-1213-4014

B-1006 W/HARDWARE

LT

LIGHT DETECTOR

OA-1215-4001

ASSY; LIGHT DETECTOR-34MM

M

FILTER

EN-1774

FILTER W/ WEATHERSTRIP

TP

POWER SUPPLIES

OA-1280-4017

ASSY, DRIVER & PS (1, A-1648)

OA-1280-4013

ASSY, DRIVER & PS (1, A-1413)

TP

POWER TERMINATION BOX

OA-1241-4003

ASSY; POWER TERM BOX 120V-*L

M

CONTROLLER BOARD

OA-1146-0035

CONTROLLER BOARD

M

MODULE DRIVER

OA-1280-4014

ASSY, DRIVER

NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, 68MM, V1500

TITLE: COMP. LAYOUT DIAGRAM, AF-3080-1680-68

DES. BY: MMAMMENGA

DRAWN BY: MSTUBBE

DATE: 21 MAR 02

REVISION

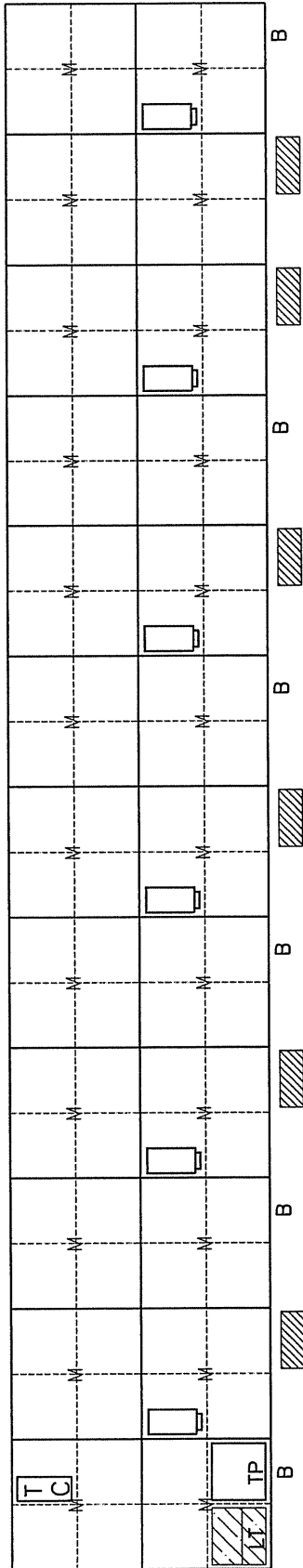
APPR. BY:

SCALE: NONE

1280-E10A-164481

REV.	DATE	DESCRIPTION	BY	APPR.

PS102 → DENOTES POWER SUPPLY LOCATION.
(I.E. PS102 IS LOCATED BEHIND A102.)



FRONT VIEW

TC

THERMOSTAT

OA-1213-4024

ENCLOSURE: THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B

FAN

OA-1213-4014

B-1006 W/HARDWARE

LT

LIGHT DETECTOR

OA-1215-4001

ASSY; LIGHT DETECTOR-34MM



FILTER

EN-1774

FILTER W/ WEATHERSTRIP

M

MODULE DRIVER

OA-1280-4014

ASSY, DRIVER



POWER SUPPLIES

OA-1280-4015

ASSY, DRIVER & PS (1, A-1593)

OA-1280-4013

ASSY, DRIVER & PS (1, A-1413)

TP

POWER TERMINATION BOX

OA-1241-4003

ASSY; POWER TERM BOX 120V-*L



CONTROLLER BOARD

OA-1146-0035

CONTROLLER BOARD

NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, 68MM, V1500

TITLE: COMP. LAYOUT DIAGRAM, AF-3080-1696-68

DES. BY: MMAMMENGA

DRAWN BY: MSTUBBE

DATE: 21 MAR 02

REVISION

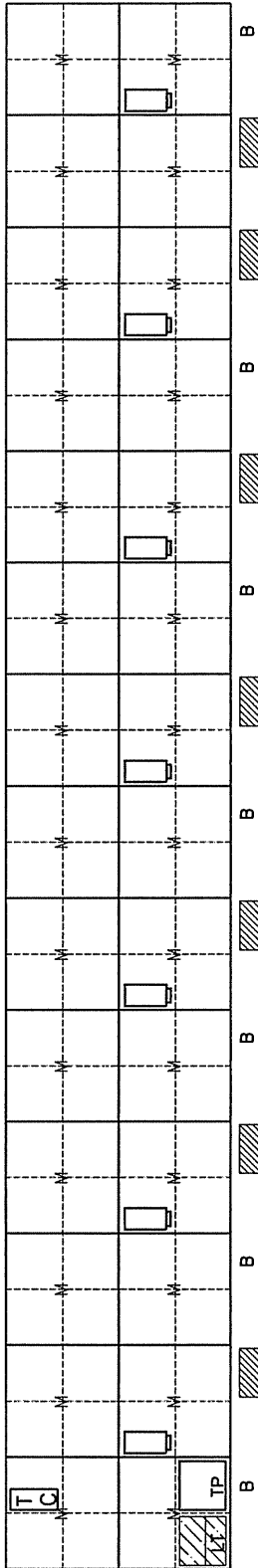
APPR. BY:

SCALE: NONE

1280-E10A-164479

REV.	DATE	DESCRIPTION	BY	APPR.

PS102 ← DENOTES POWER SUPPLY LOCATION.
(I.E. PS102 IS LOCATED BEHIND A102.)



FRONT VIEW

- TC**
THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.
- B**
FAN
OA-1213-4014
B-1006 W/HARDWARE
- TP**
POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)
- LT**
LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM
- M**
MODULE DRIVER
OA-1280-4014
ASSY, DRIVER
- B**
POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-1L
- B**
CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD
- B**
FILTER
EN-1774
FILTER W/ WEATHERSTRIP

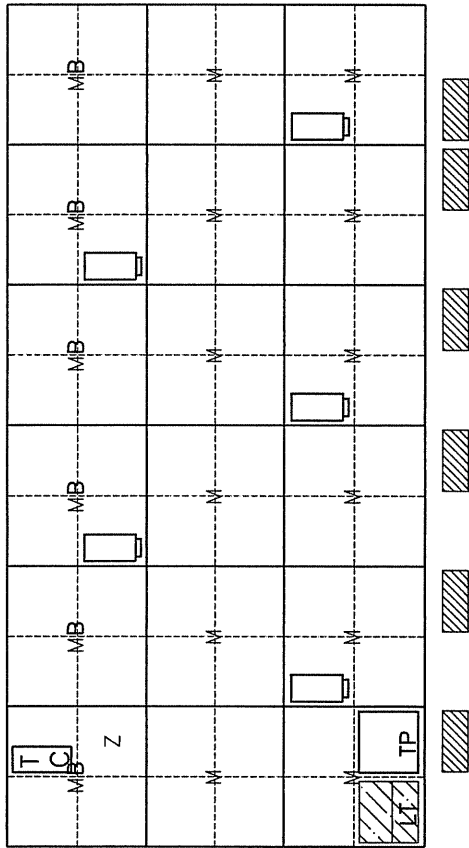
NOTES:

1. 10.64" FOR MODULE SIZE









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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-16112-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	
DATE: 21MAR02			
REVISION	APPR. BY:	1280-E10A-164476	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

-  THERMOSTAT
0A-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.
-  FAN
0A-1213-4014
B-1006 W/HARDWARE
-  POWER SUPPLIES
0A-1280-4015
ASSY, DRIVER & PS (1, A-1593)
0A-1280-4013
ASSY, DRIVER & PS (1, A-1413)
-  LIGHT DETECTOR
0A-1215-4001
ASSY; LIGHT DETECTOR-34MM
-  LINE FILTERS
0A-1241-4002
Z-FILTER ASY, 2 W/ GND BAR
-  CONTROLLER BOARD
0A-1146-0035
CONTROLLER BOARD
-  MODULE DRIVER
0A-1280-4014
ASSY, DRIVER
-  FILTER
EN-1774
FILTER W/ WEATHERSTRIP

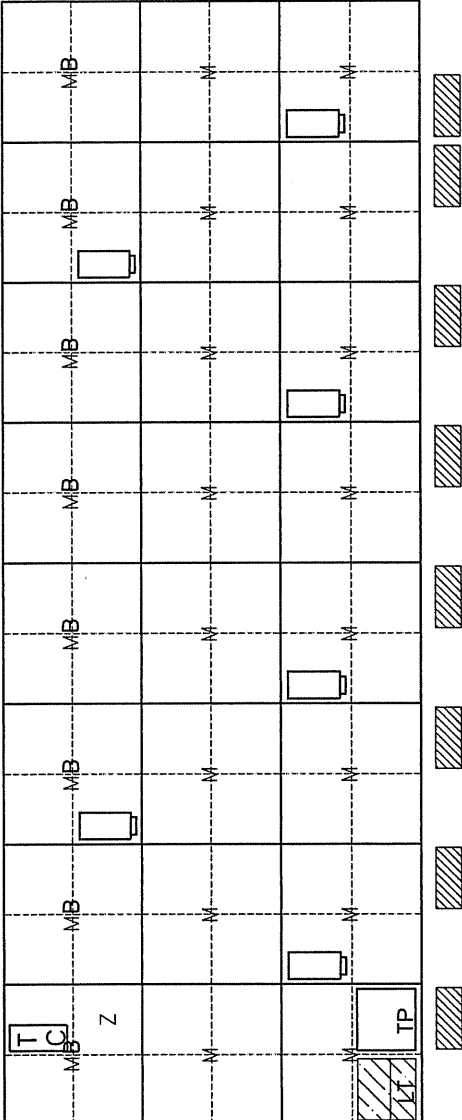
NOTES:

1. 10.64" FOR MODULE SIZE












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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-2448-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	
DATE: 21 MAR 02			
REVISION	APPR. BY:	1280-E10A-164485	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

-  THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.
-  FAN
OA-1213-4014
B-1006 W/HARDWARE
-  POWER SUPPLIES
OA-1280-4017
ASSY, DRIVER & PS (1, A-1648)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)
-  LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM
-  LINE FILTERS
OA-1241-4002
Z-FILTER ASSY, 2 W/ GND BAR
-  MODULE DRIVER
OA-1280-4014
ASSY, DRIVER
-  POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L
-  LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM
-  FILTER W/ WEATHERSTRIP
EN-1774
-  CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD
-  FILTER W/ WEATHERSTRIP
EN-1774
-  MODULE DRIVER
OA-1280-4014
ASSY, DRIVER

NOTES:

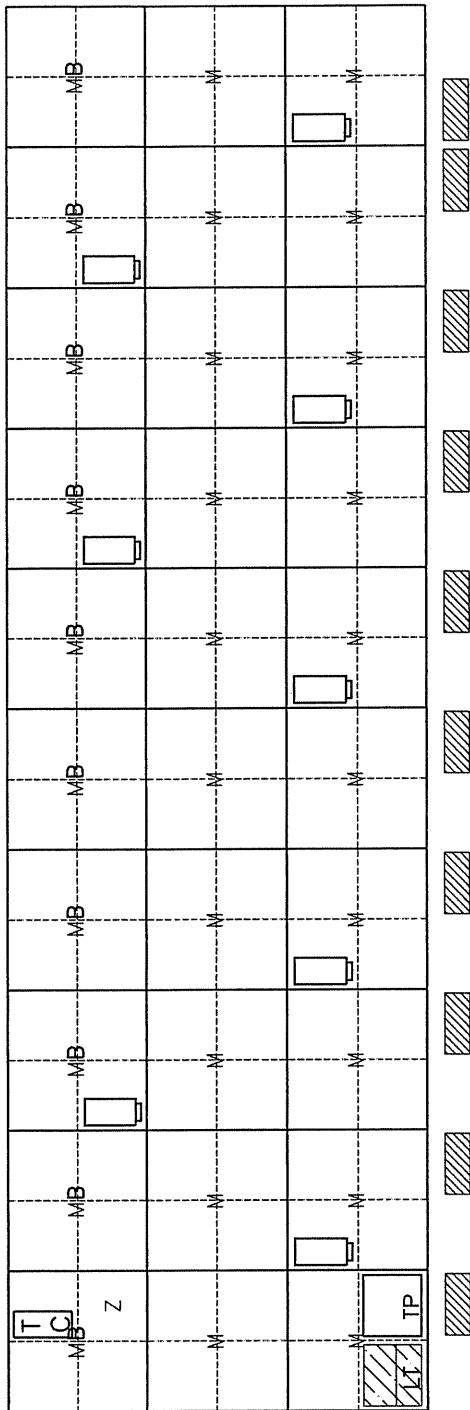
1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-2464-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	
DATE: 21 MAR 02			
REVISION	APPR. BY:	1280-E10A-164488	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

DENOTES POWER SUPPLY LOCATION.
 (I.E. PS103 IS LOCATED BEHIND A103.)

PS103



FRONT VIEW

- POWER SUPPLIES
 OA-1280-4015
 ASSY, DRIVER & PS (1, A-1593)
 OA-1280-4013
 ASSY, DRIVER & PS (1, A-1413)
- FAN
 OA-1213-4014
 B-1006 W/HARDWARE
- THERMOSTAT
 OA-1213-4024
 ENCLOSURE; THERMOSTAT 85-70-9L
 MOUNTED ON VERTICAL.
- LIGHT DETECTOR
 OA-1215-4001
 ASSY; LIGHT DETECTOR-34MM
- LINE FILTERS
 OA-1241-4002
 Z-FILTER ASSY, 2 W/ GND BAR
- FILTER
 EN-1774
 FILTER W/ WEATHERSTRIP
- MODULE DRIVER
 OA-1280-4014
 ASSY, DRIVER
- CONTROLLER BOARD
 OA-1146-0035
 CONTROLLER BOARD

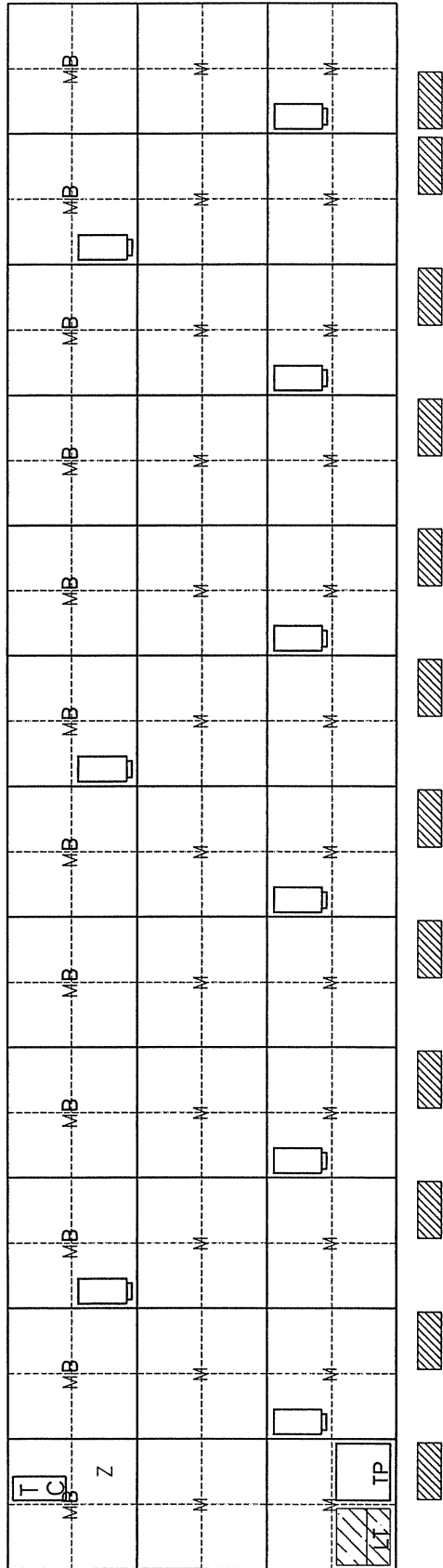
NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-2480-68			
DES. BY: MMAMMENA		DRAWN BY: MSTUBBE	
DATE: 21 MAR 02			
REVISION	APPR. BY:	1280-E10A-164489	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

PS103 ← DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

- POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)
- FAN
OA-1213-4014
B-1006 W/HARDWARE
- THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.
- LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM
- POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L
- LINE FILTERS
OA-1241-4002
Z-FILTER ASY, 2 W/ GND BAR
- MODULE DRIVER
OA-1280-4014
ASSY, DRIVER
- CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD
- FILTER W/ WEATHERSTRIP
EN-1774

NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, 68MM, V1500

TITLE: COMP. LAYOUT DIAGRAM, AF-3080-2496-68

DES. BY: MMAMMENGA DRAWN BY: MSTUBBE DATE: 21 MAR 02

REVISION

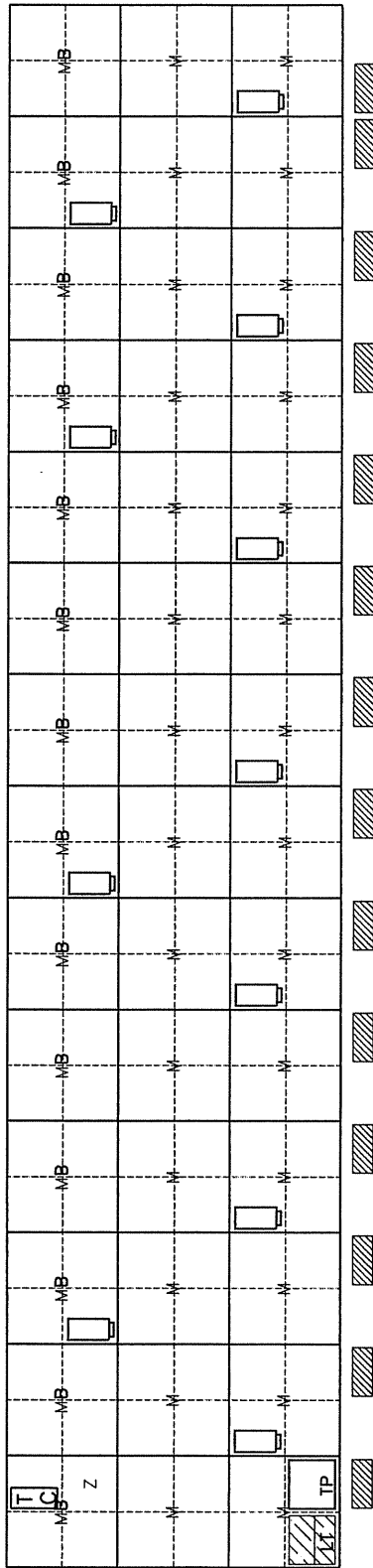
APPR. BY:

SCALE: NONE

1280-E10A-164491

REV.	DATE	DESCRIPTION	BY	APPR.

PS103 ← DENOTES POWER SUPPLY LOCATION.
(I.E. PS103 IS LOCATED BEHIND A103.)



FRONT VIEW

T C
THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B
FAN
OA-1213-4014
B-1006 W/HARDWARE

LT
LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM

M
MODULE DRIVER
OA-1280-4014
ASSY, DRIVER

TP
POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L

Z
LINE FILTERS
OA-1241-4002
Z-FILTER ASY, 2 W/ GND BAR

PS
POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)

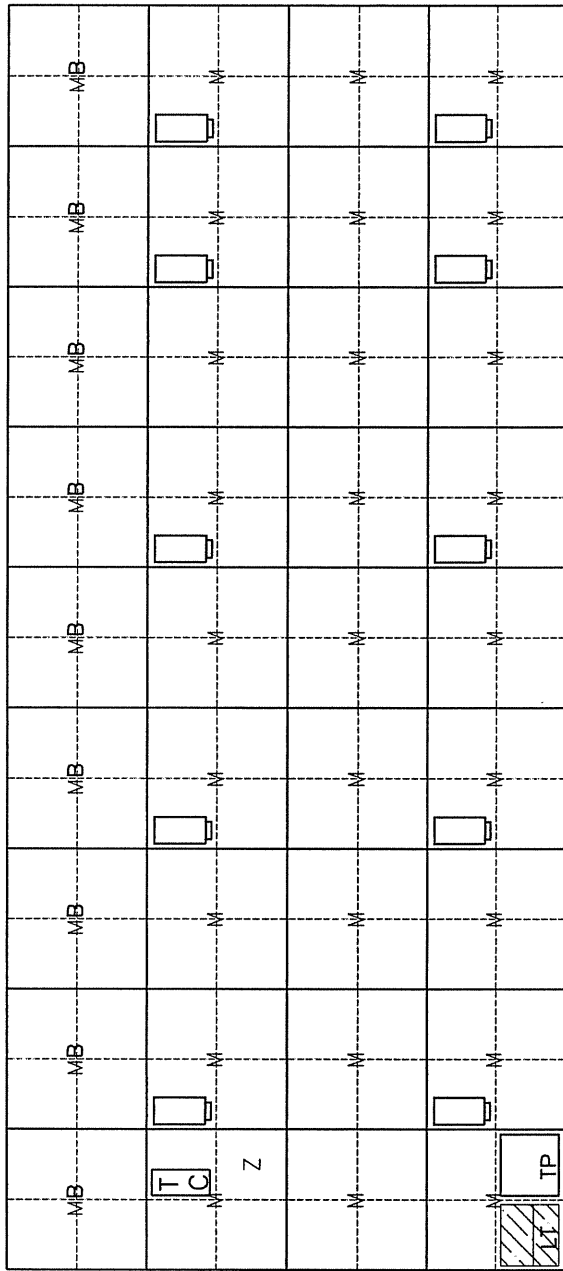
NOTES:
1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP. LAYOUT DIAGRAM, AF-3080-24112-68			
DES. BY: MMAMMENGA		DRAWN BY: MSTUBBE	DATE: 21MAR02
REVISION	APPR. BY:	1280-E10A-164495	
SCALE: NONE			

REV.	DATE	DESCRIPTION	BY	APPR.

DENOTES POWER SUPPLY LOCATION.
(I.E. PS202 IS LOCATED BEHIND A202.)

PS202



FRONT VIEW

TC

THERMOSTAT
OA-1213-4024
ENCLOSURE; THERMOSTAT 85-70-9L
MOUNTED ON VERTICAL.

B
FAN
OA-1213-4010
B-1019 W/HARDWARE

POWER SUPPLIES
OA-1280-4015
ASSY, DRIVER & PS (1, A-1593)
OA-1280-4013
ASSY, DRIVER & PS (1, A-1413)

LT

CONTROLLER BOARD
OA-1146-0035
CONTROLLER BOARD

LT

LIGHT DETECTOR
OA-1215-4001
ASSY; LIGHT DETECTOR-34MM

TP

POWER TERMINATION BOX
OA-1241-4003
ASSY; POWER TERM BOX 120V-*L

M

MODULE DRIVER
OA-1280-4014
ASSY, DRIVER

Z

FILTER
EN-1774
FILTER W/ WEATHERSTRIP

Z

LINE FILTERS
OA-1241-4002
Z-FILTER ASSY, 2 W/ GND BAR

NOTES:

1. 10.64" FOR MODULE SIZE

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DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: COMP, LAYOUT DIAGRAM, AF-3080-3272-68			
DES. BY: KMILLER		DRAWN BY: KMILLER	
DATE: 30MAY03			
REVISION	APPR. BY:	1280-E10A-189391	
00	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.

68mm LOUVERED AMBER GALAXY DISPLAYS
POWER SPECIFICATION CHART

MATRIX SIZE	TOTAL WATTS	120V AMPS	120/240 3, wire		240V AMPS
			LINE 1 AMPS	LINE 2 AMPS	
8X48	615	5.12	2.80	2.32	2.56
8X64	800	6.66	3.57	3.09	3.33
8X80	1010	8.41	3.00	5.41	4.20
8X96	1195	9.95	3.78	6.18	4.98
8X112	1404	11.70	6.29	5.41	5.85
16X48	1195	9.95	3.78	6.18	4.98
16X64	1590	13.24	7.07	6.18	6.62
16X80	1985	16.53	7.27	9.27	8.27
16X96	2379	19.82	10.56	9.27	9.91
16X112	2774	23.11	10.76	12.36	11.56
24X48	1823	15.19	6.70	8.49	7.60
24X64	2428	20.23	10.96	9.27	10.11
24X80	3032	25.26	10.59	14.67	12.63
24X96	3636	30.30	14.85	15.44	15.15
24X112	4240	35.33	17.57	17.76	17.67

THE ABOVE DISPLAY SIZES CAN BE POWERED BY EITHER 120VAC (2 WIRE + GND), 120/240 (3 WIRE + GND) OR 240VAC (2 WIRE + GND) SERVICES. 240VAC (2 WIRE + GND) SERVICES (TYPICAL OVERSEAS) REQUIRE BREAKERS DESIGNED FOR SUCH USE. * WHERE 2 WIRE + GND SYSTEMS ARE USED, LINE 1 AND LINE 2 TERMINALS NEED TO BE CONNECTED BY FIELD INSTALLED JUMPER. JUMPER SIZED PER NEC.

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: 68MM MONO GALAXY

TITLE: POWER SPECS, AMBER, 8-24X48-112 DISPLAYS

DES. BY: DRAWN BY: TNYSTRO DATE: 26FEB02

1	30SEP02	REVISED ALL POWER SPECS (MODULE DESIGN WAS CHANGED)	LLK	LLK
REV.	DATE	DESCRIPTION	BY	APPR.

REVISION	APPR. BY:
	SCALE: 1=1

1280-R10A-163306

68mm LOUVERED RED GALAXY DISPLAYS
POWER SPECIFICATION CHART

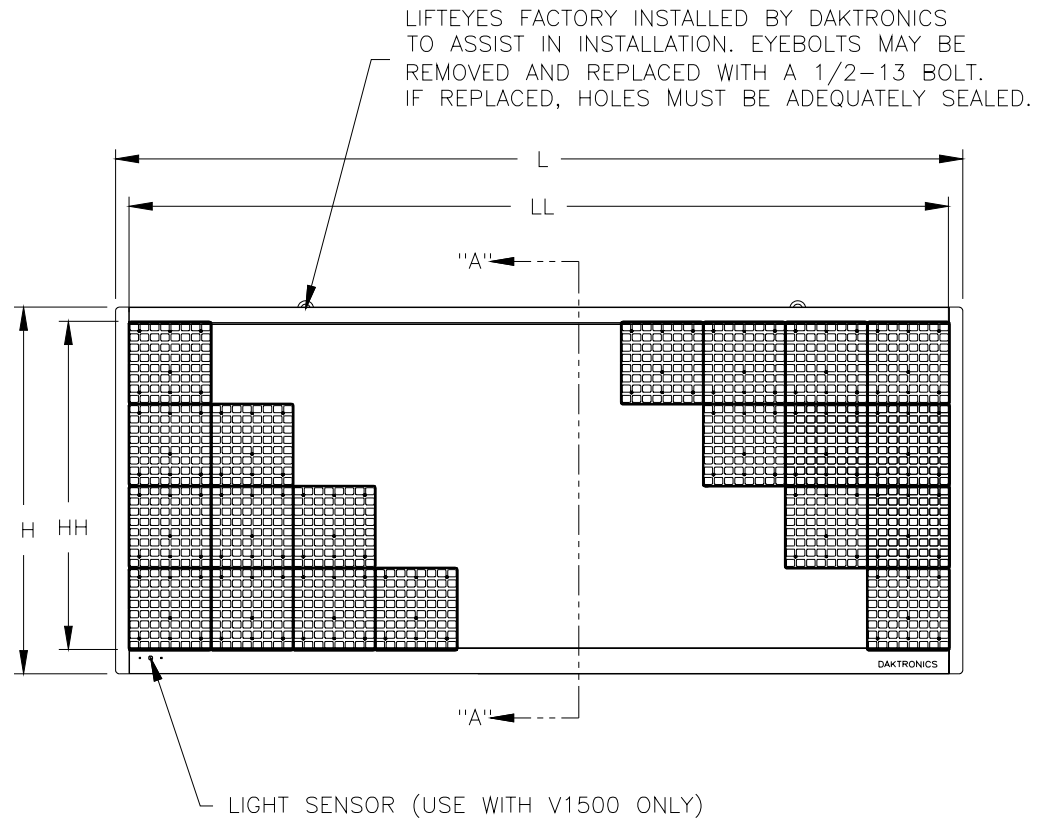
MATRIX SIZE	TOTAL WATTS	120V AMPS	120/240 3, wire		240V AMPS
			LINE 1 AMPS	LINE 2 AMPS	
8X48	294	2.44	1.46	0.98	1.22
8X64	372	3.09	1.79	1.30	1.55
8X80	474	3.95	1.67	2.28	1.97
8X96	552	4.60	1.99	2.61	2.30
8X112	655	5.45	3.17	2.28	2.73
16X48	552	4.60	1.99	2.61	2.30
16X64	733	6.10	3.50	2.61	3.05
16X80	914	7.61	3.70	3.91	3.80
16X96	1094	9.11	5.20	3.91	4.56
16X112	1275	10.62	5.40	5.22	5.31
24X48	860	7.16	3.57	3.59	3.58
24X64	1143	9.52	5.61	3.91	4.76
24X80	1426	11.88	5.68	6.19	5.94
24X96	1709	14.23	7.71	6.52	7.12
24X112	1992	16.59	9.09	7.50	8.30

THE ABOVE DISPLAY SIZES CAN BE POWERED BY EITHER 120VAC (2 WIRE + GND), 120/240 (3 WIRE + GND) OR 240VAC (2 WIRE + GND) SERVICES.
240VAC (2 WIRE + GND) SERVICES (TYPICAL OVERSEAS) REQUIRE BREAKERS DESIGNED FOR SUCH USE.
* WHERE 2 WIRE + GND SYSTEMS ARE USED, LINE 1 AND LINE 2 TERMINALS NEED TO BE CONNECTED BY FIELD INSTALLED JUMPER. JUMPER SIZED PER NEC.

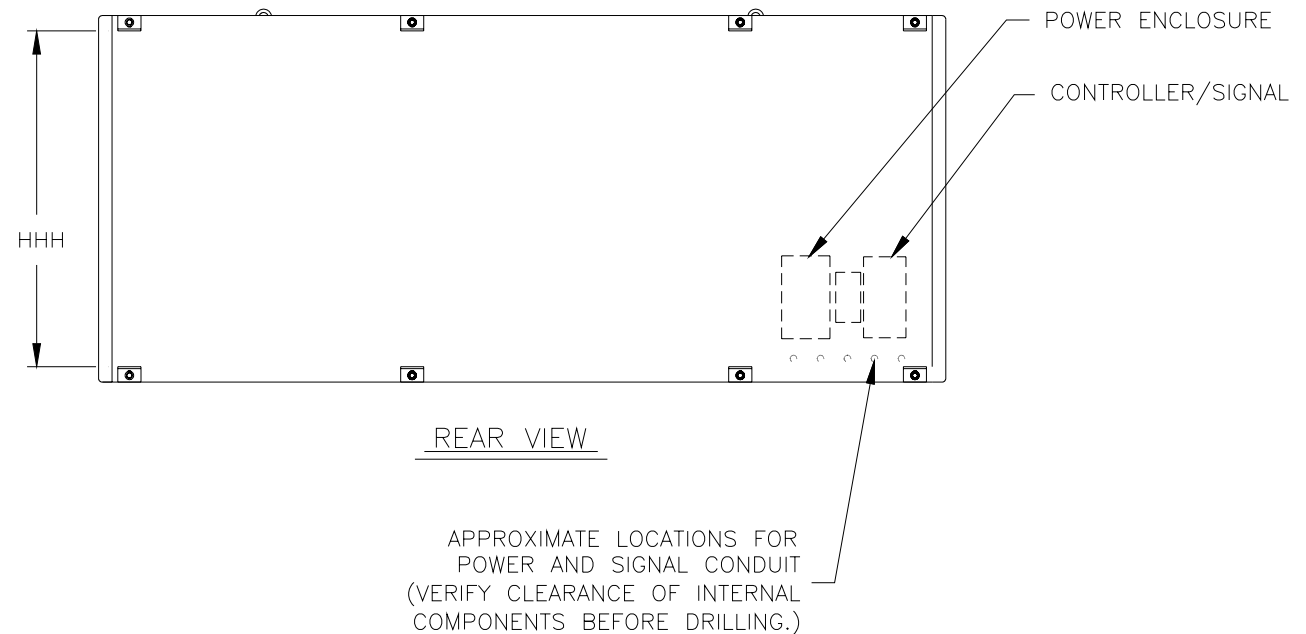
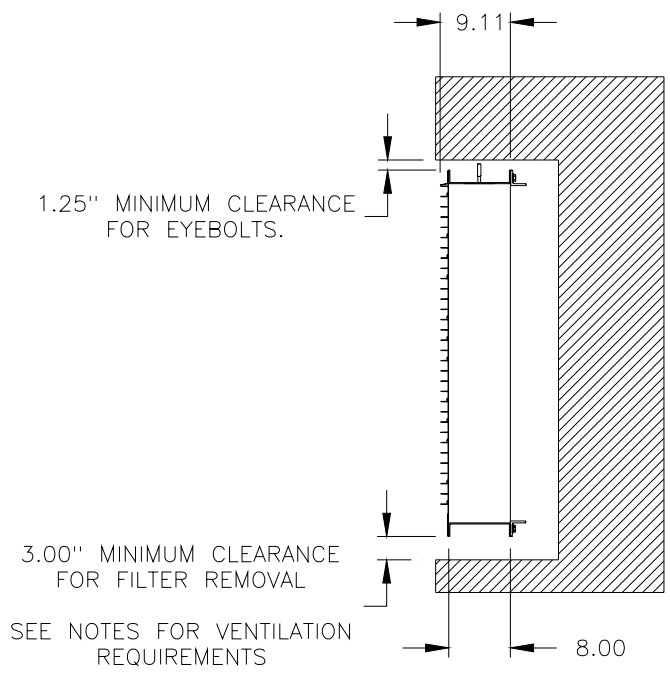
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: 68MM MONO GALAXY	
TITLE: POWER SPECS, RED, 8-24X48-112 DISPLAYS	
DES. BY:	DRAWN BY: TNYSTRO
REVISION	DATE: 06MAR02
APPR. BY:	1280-R10A-163751
SCALE: 1=1	

REV.	DATE	DESCRIPTION	BY	APPR.

SIZES AND (APPROX.) WEIGHTS FOR 68 mm DISPLAYS AX-XXXX-8/16XX-68B						
SIZE	TOTAL DISPLAY		ACTIVE AREA		CLIP DISTANCE HHH	(APPROX.) WEIGHT
	H	L	HH	LL		
8X48	26.28	131.18	21.28	127.68	22.28	270 lbs
8X64	26.28	173.74	21.28	170.24	22.28	360 lbs
8X80	26.28	216.30	21.28	212.80	22.28	440 lbs
8X96	26.28	258.86	21.28	255.36	22.28	530 lbs
8X112	26.28	301.42	21.28	297.92	22.28	620 lbs
16X48	47.56	131.18	42.56	127.68	43.56	530 lbs
16X64	47.56	173.74	42.56	170.24	43.56	710 lbs
16X80	47.56	216.30	42.56	212.80	43.56	880 lbs
16X96	47.56	258.86	42.56	255.36	43.56	1060 lbs
16X112	47.56	301.42	42.56	297.92	43.56	1240 lbs



FRONT VIEW
(16X40 SHOWN)



REAR VIEW

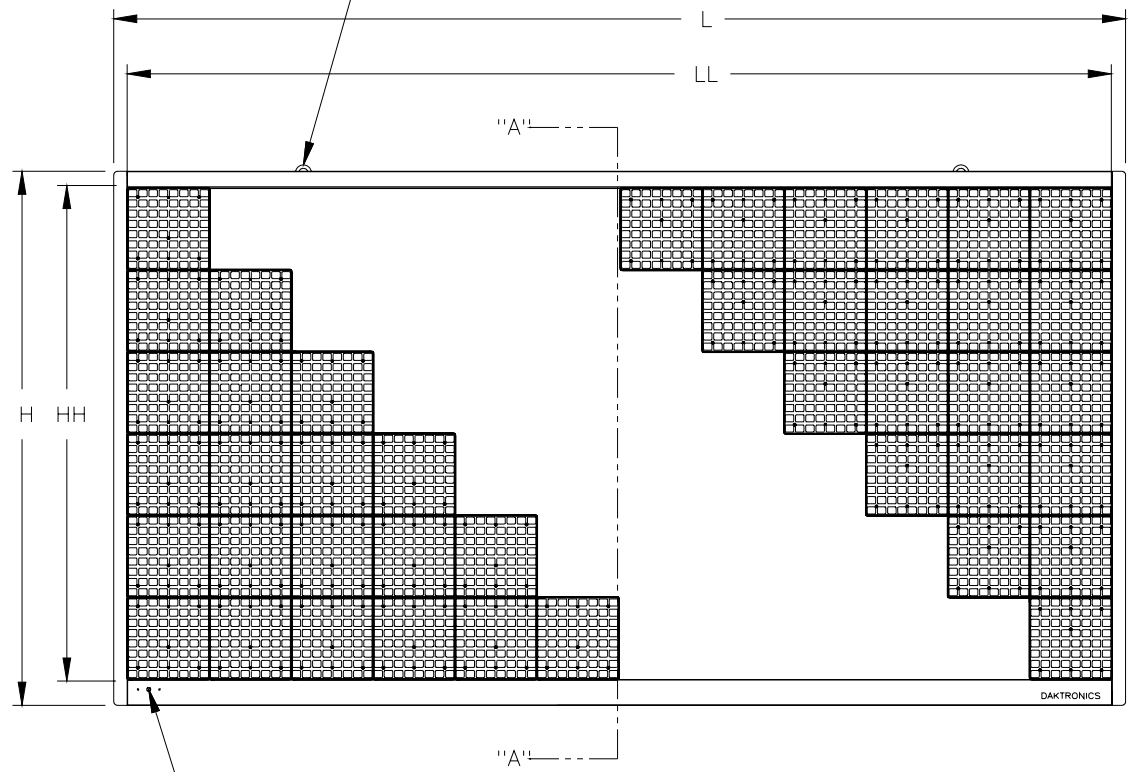
NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DISPLAY CABINET IS ALUMINUM.
3. DISPLAY CABINET COLOR IS FLAT BLACK.
4. FRONT ACCESS FOR SERVICE.
5. THE DISPLAY IS BOTTOM VENTILATED.
6. MINIMUM BOTTOM CLEARANCE IS 3.00".
7. MINIMUM TOP CLEARANCE IS 1.25".
7. MAIN ELECTRICAL DISCONNECT TO BE FURNISHED BY CUSTOMER."
8. FOR SIZES AND APPROX. WEIGHTS SEE ABOVE TABLE.
9. FOR POWER REQUIREMENTS REFER TO 1280-R10A-163306.
10. DAKTRONICS INC. IS NOT RESPONSIBLE FOR HARDWARE ATTACHING DISPLAY TO STRUCTURE.
11. FOR MOUNTING DETAIL REFER TO 1213-E10A-128801.
12. VENTILATION: IN ENCLOSED CABINET SITUATION, 6 SQUARE INCHES OF UNOBSTRUCTED OPENING PER MODULE MUST BE PROVIDED TO INSURE ADEQUATE DISPLAY COOLING. ALLOWANCES MUST BE MADE TO COMPENSATE FOR THE PERCENTAGE OF A MATERIAL COVERING THE OPENINGS IN THE STRUCTURE. FOR ADEQUATE COOLING, FORCED VENTILATION OF THE ENCLOSED STRUCTURE MAY BE REQUIRED. IF AIR MUST BE FORCED INTO THE ENCLOSED CABINET, 10 CUBIC FEET PER MINUTE MUST BE PROVIDED PER MODULE (10.6" X 10.6" ACTIVE AREA).
13. CUSTOMER IS RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE STRUCTURE THAT THE DISPLAY IS MOUNTED TO.

REV.	DATE	DESCRIPTION	BY	APPR.

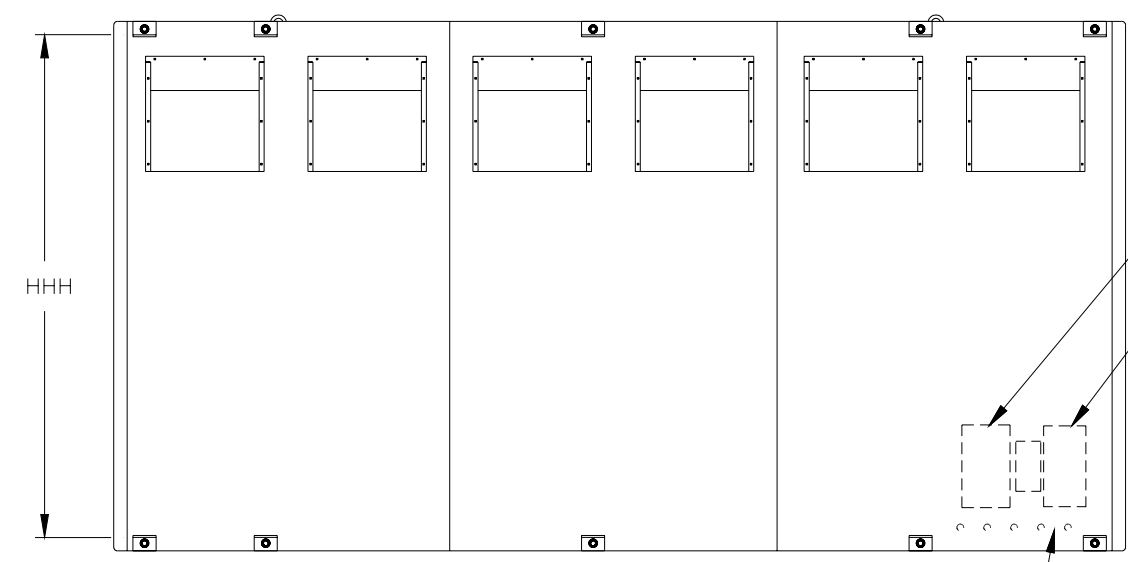
DAKTRONICS, INC. BROOKINGS, SD 57006	
PROJ: GALAXY, 68MM, V1500	
TITLE: SHOP DWG; AF-3080-8/16XXXX-68B	
DES. BY: MMAMMENGA	DRAWN BY: BBENNING
	DATE: 26FEB02
REVISION	APPR. BY:
SCALE: 1=25	1280-E10B-163293

LIFTEYES FACTORY INSTALLED BY DAKTRONICS TO ASSIST IN INSTALLATION. EYEBOLTS MAY BE REMOVED AND REPLACED WITH A 1/2-13 BOLT IF REPLACED, HOLES MUST BE ADEQUATELY SEALED.



LIGHT SENSOR (USE WITH V1500 ONLY)

FRONT VIEW
(24X48 SHOWN)

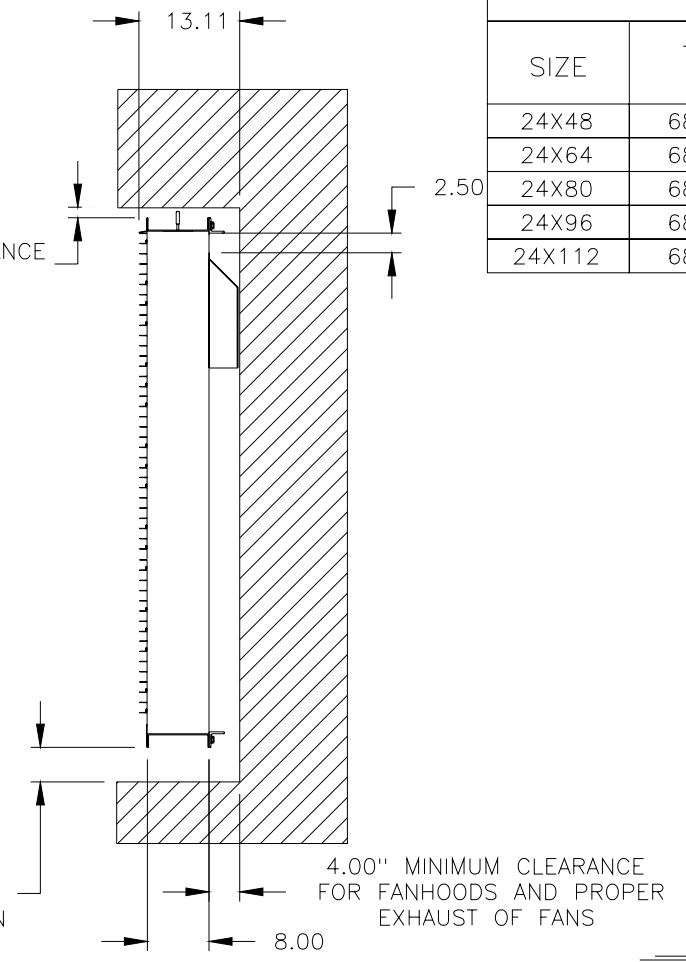


REAR VIEW

APPROXIMATE LOCATIONS FOR POWER AND SIGNAL CONDUIT (VERIFY CLEARANCE OF INTERNAL COMPONENTS BEFORE DRILLING.)

1.25" MINIMUM CLEARANCE FOR EYEBOLTS.

3.00" MINIMUM CLEARANCE FOR REMOVAL OF FILTERS.
SEE NOTES FOR VENTILATION REQUIREMENTS.



SECTION: A-A

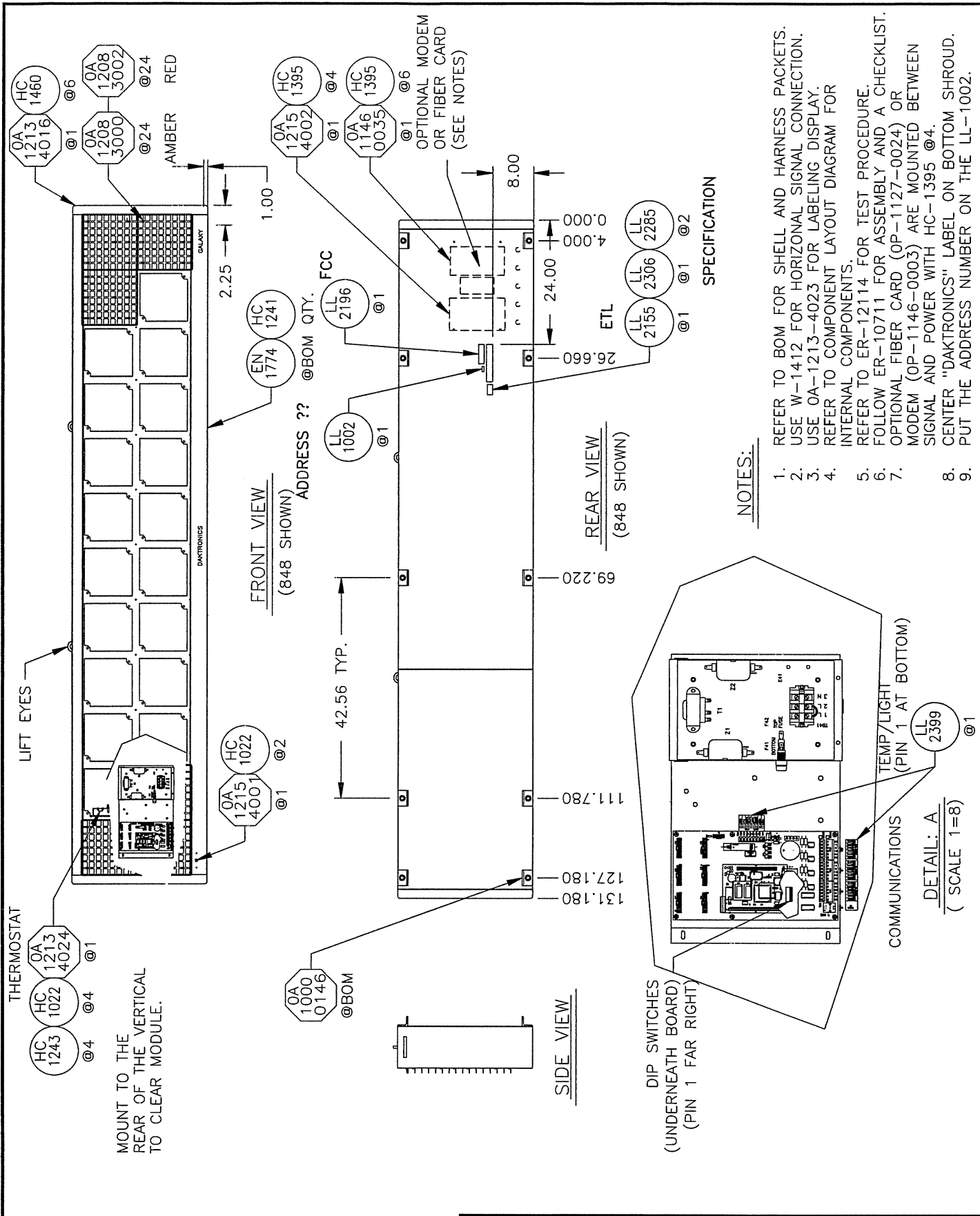
SIZES AND (APPROX.) WEIGHTS FOR 68 mm DISPLAYS AX-XXXX-24XX-68B.						
SIZE	TOTAL DISPLAY		ACTIVE AREA		CLIP DISTANCE HHH	(APPROX.) WEIGHT
	H	L	HH	LL		
24X48	68.84	131.18	63.84	127.68	64.84	800 lbs
24X64	68.84	173.74	63.84	170.24	64.84	1060 lbs
24X80	68.84	216.30	63.84	212.80	64.84	1320 lbs
24X96	68.84	258.86	63.84	255.36	64.84	1590 lbs
24X112	68.84	301.42	63.84	297.92	64.84	1850 lbs

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DISPLAY CABINET IS ALUMINUM.
3. DISPLAY CABINET COLOR IS FLAT BLACK.
4. FRONT ACCESS FOR SERVICE.
5. THE DISPLAY IS BOTTOM VENTILATED.
6. MINIMUM BOTTOM CLEARANCE IS 3.00"
7. MINIMUM TOP CLEARANCE IS 1.25"
8. FOR SIZES AND APPROX. WEIGHTS SEE ABOVE TABLE.
9. FOR POWER REQUIREMENTS REFER TO 1280-R10A-163306.
10. DAKTRONICS INC. IS NOT RESPONSIBLE FOR HARDWARE ATTACHING DISPLAY TO STRUCTURE.
11. FOR MOUNTING DETAIL REFER TO 1213-E10A-128799.
12. VENTILATION: IN ENCLOSED CABINET SITUATION, 6 SQUARE INCHES OF UNOBSTRUCTED OPENING PER MODULE MUST BE PROVIDED TO INSURE ADEQUATE DISPLAY COOLING. ALLOWANCES MUST BE MADE TO COMPENSATE FOR THE PERCENTAGE OF A MATERIAL COVERING THE OPENINGS IN THE STRUCTURE. FOR ADEQUATE COOLING, FORCED VENTILATION OF THE ENCLOSED STRUCTURE MAY BE REQUIRED. IF AIR MUST BE FORCED INTO THE ENCLOSED CABINET, 10 CUBIC FEET PER MINUTE MUST BE PROVIDED PER MODULE (10.6" X 10.6" ACTIVE AREA).
13. CUSTOMER IS RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE STRUCTURE THAT THE DISPLAY IS MOUNTED TO.
14. MAIN ELECTRICAL DISCONNECT TO BE FURNISHED BY CUSTOMER.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:	GALAXY, 68MM, V1500		
TITLE:	SHOP DWG; AF-3080-24XXX-68B		
DES. BY:	MMAMMENGA	DRAWN BY:	BBENNING
		DATE:	26FEB02
REVISION	APPR. BY:	1280-E10B-163291	
	SCALE: 1=25		

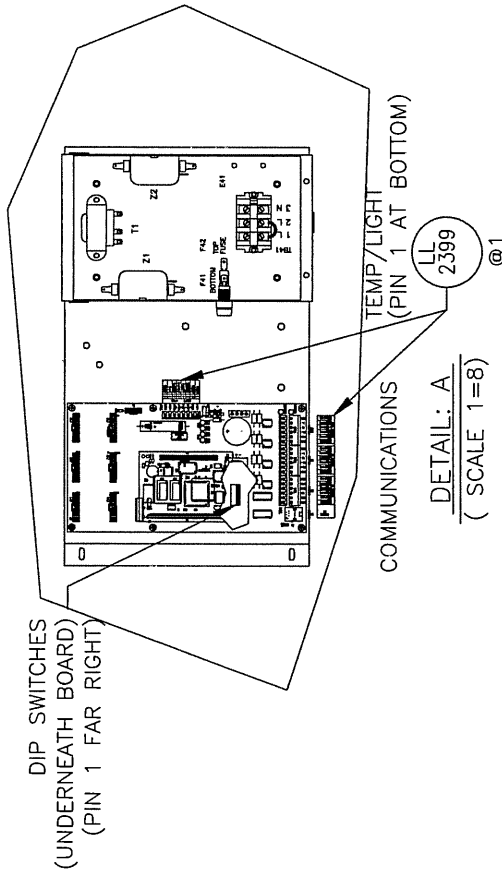
REV.	DATE	DESCRIPTION	BY	APPR.



NOTES:

1. REFER TO BOM FOR SHELL AND HARNESS PACKETS.
2. USE W-1412 FOR HORIZONTAL SIGNAL CONNECTION.
3. USE OA-1213-4023 FOR LABELING DISPLAY.
4. REFER TO COMPONENT LAYOUT DIAGRAM FOR INTERNAL COMPONENTS.
5. REFER TO ER-12114 FOR TEST PROCEDURE.
6. FOLLOW ER-10711 FOR ASSEMBLY AND A CHECKLIST.
7. OPTIONAL FIBER CARD (OP-1127-0024) OR MODEM (OP-1146-0003) ARE MOUNTED BETWEEN SIGNAL AND POWER WITH HC-1395 @4.
8. CENTER "DAKTRONICS" LABEL ON BOTTOM SHROUD.
9. PUT THE ADDRESS NUMBER ON THE LL-1002.

SPECIFICATION

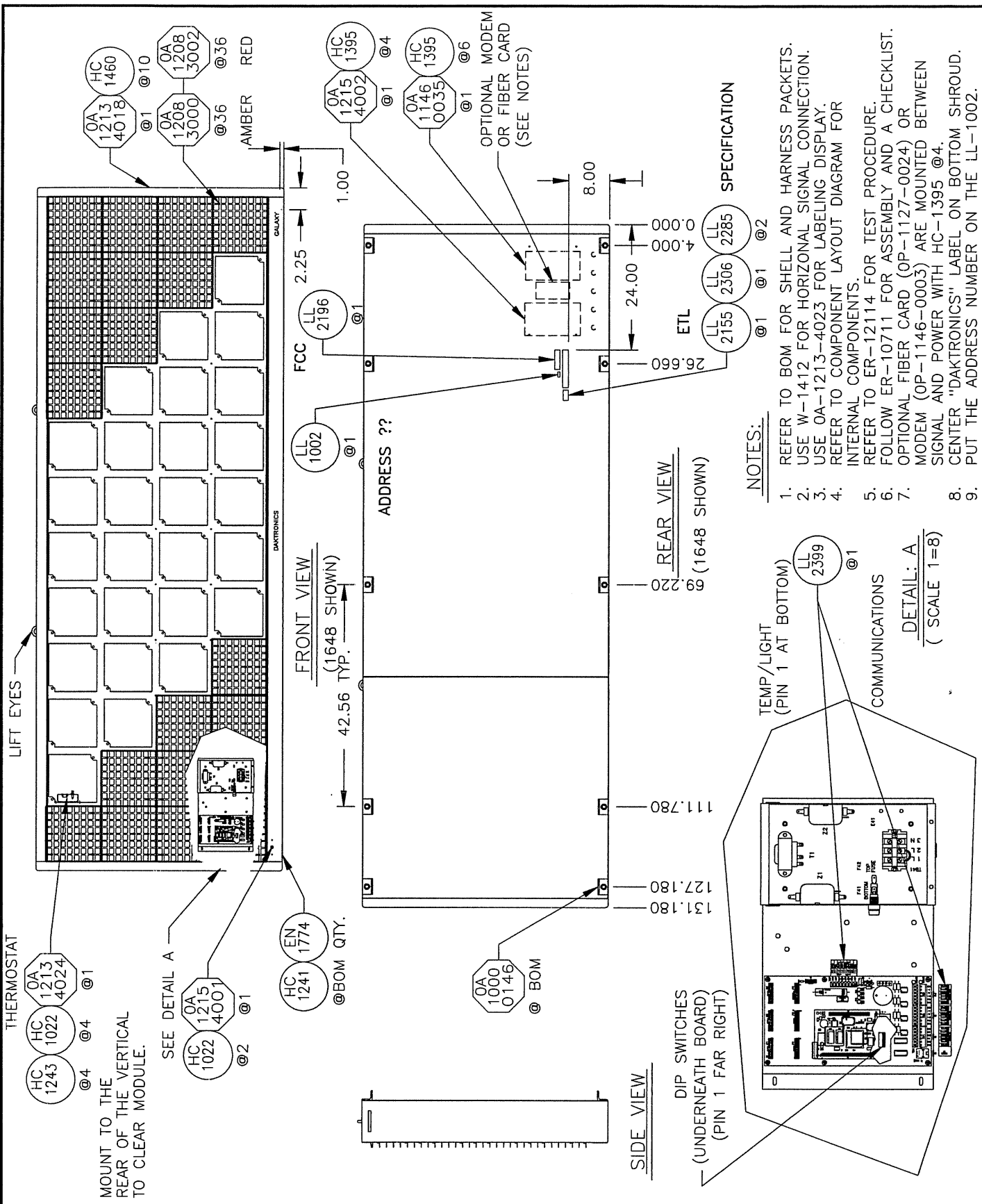


DIP SWITCHES
(UNDERNEATH BOARD)
(PIN 1 FAR RIGHT)

DETAIL: A
(SCALE 1=8)

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: F.ASSY; AF-3060-8***-68			
DES. BY: MMAMMENGA	DRAWN BY: B BENNING	DATE: 27FEB02	
REVISION	APPR. BY:	1280-E10A-163413	
	SCALE: 1=25		

REV.	DATE	DESCRIPTION	BY	APPR.

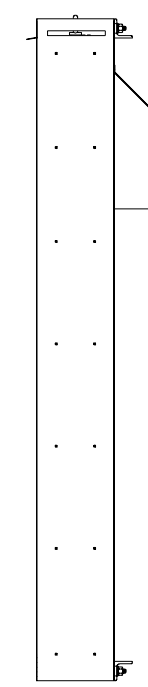
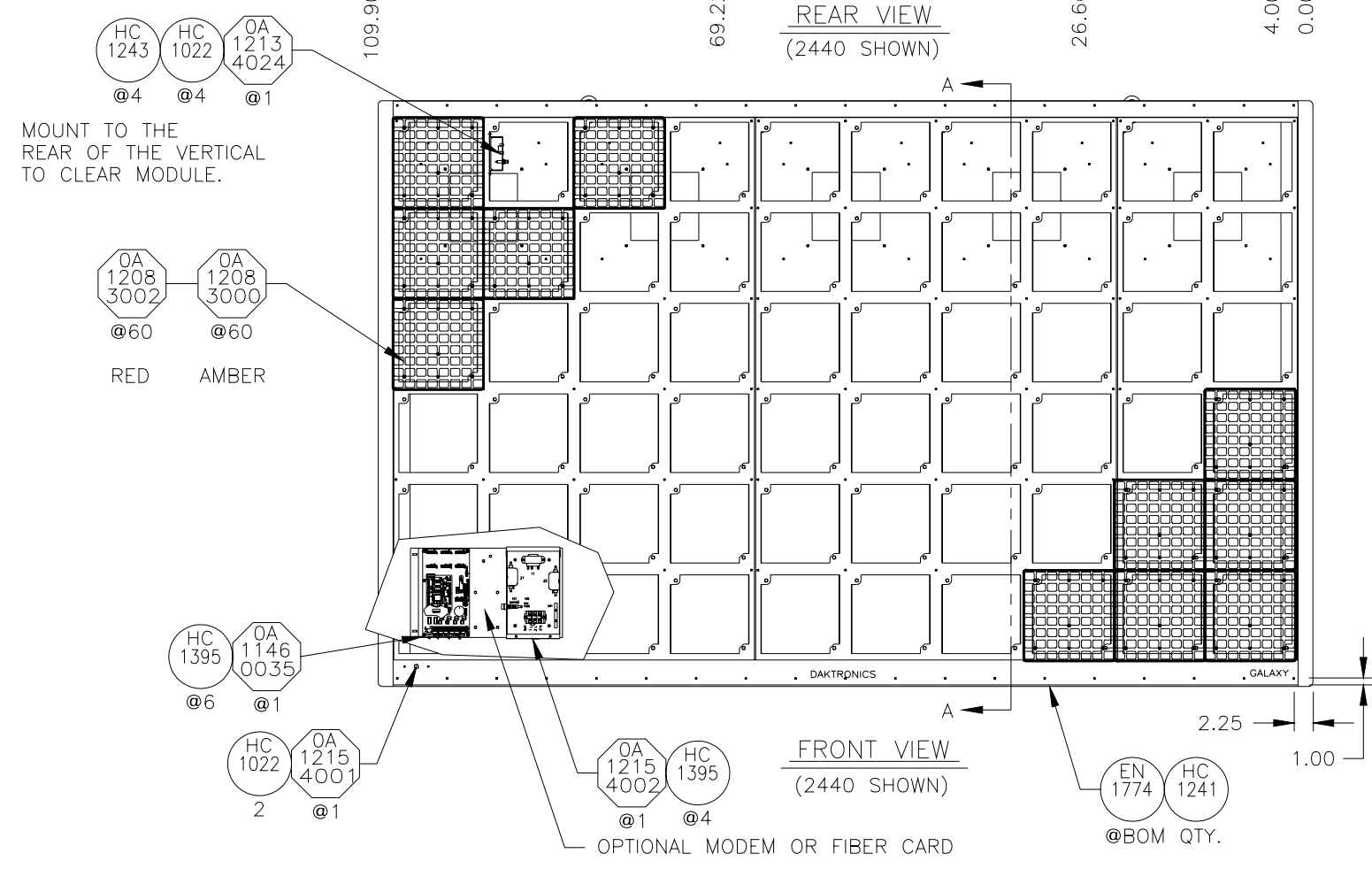
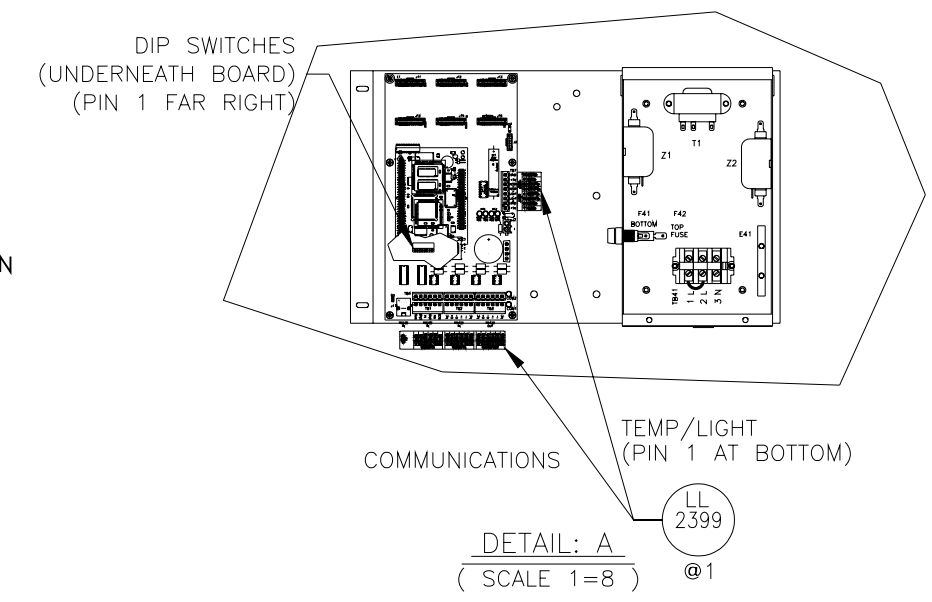
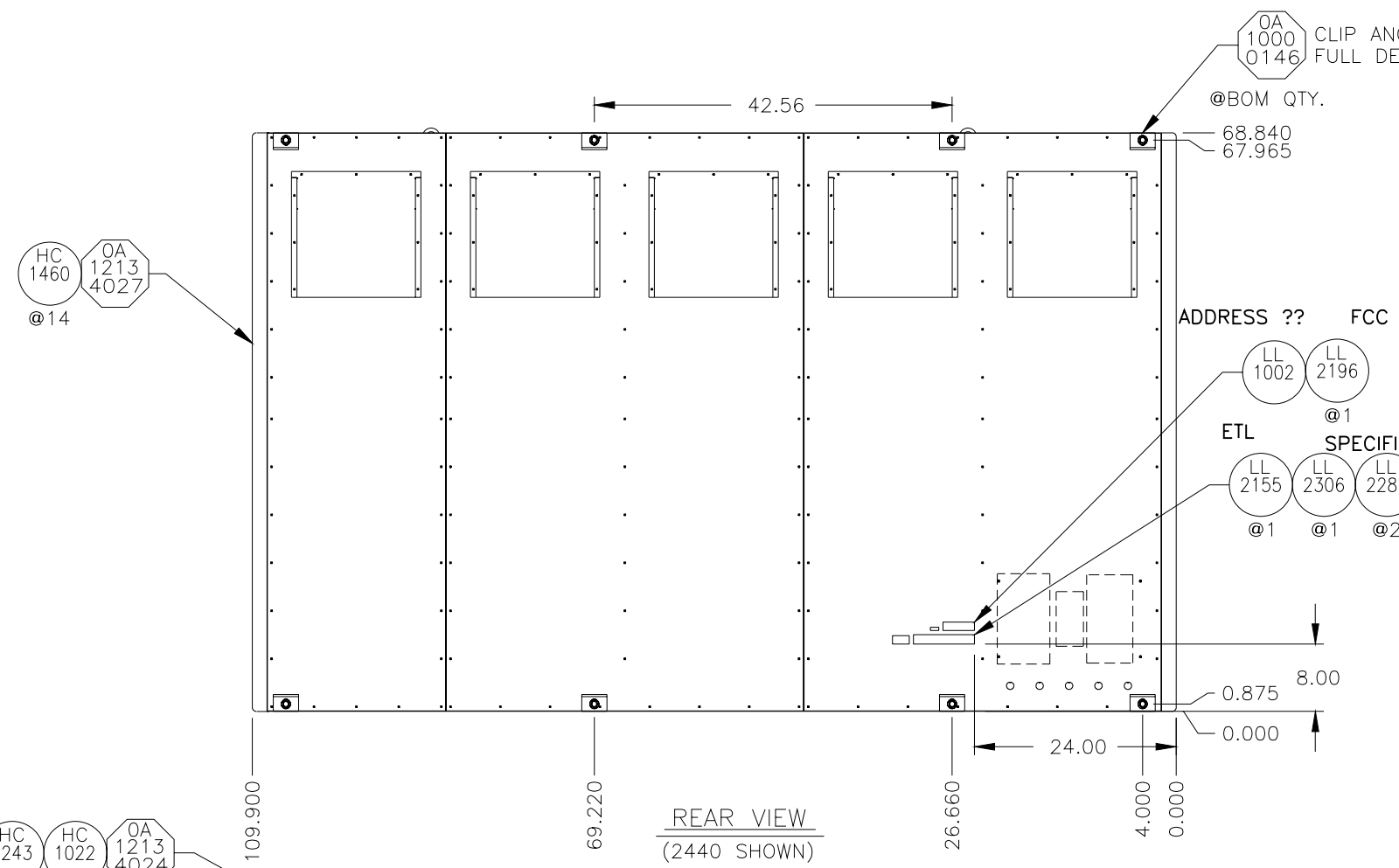


NOTES:

1. REFER TO BOM FOR SHELL AND HARNESS PACKETS.
2. USE W-1412 FOR HORIZONTAL SIGNAL CONNECTION.
3. USE OA-1213-4023 FOR LABELING DISPLAY.
4. REFER TO COMPONENT LAYOUT DIAGRAM FOR INTERNAL COMPONENTS.
5. REFER TO ER-12114 FOR TEST PROCEDURE.
6. FOLLOW ER-10711 FOR ASSEMBLY AND A CHECKLIST.
7. OPTIONAL FIBER CARD (OP-1127-0024) OR MODEM (OP-1146-0003) ARE MOUNTED BETWEEN SIGNAL AND POWER WITH HC-1395 @4.
8. CENTER "DAKTRONICS" LABEL ON BOTTOM SHROUD.
9. PUT THE ADDRESS NUMBER ON THE LL-1002.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM, V1500			
TITLE: F.ASSY; AF-3080-16***-68			
DES. BY: MMAMMENGA		DRAWN BY: B BENNING	
DATE: 27FEB02			
REVISION	APPR. BY:	1280-E10A-163414	
	SCALE: 1=25		

REV.	DATE	DESCRIPTION	BY	APPR.

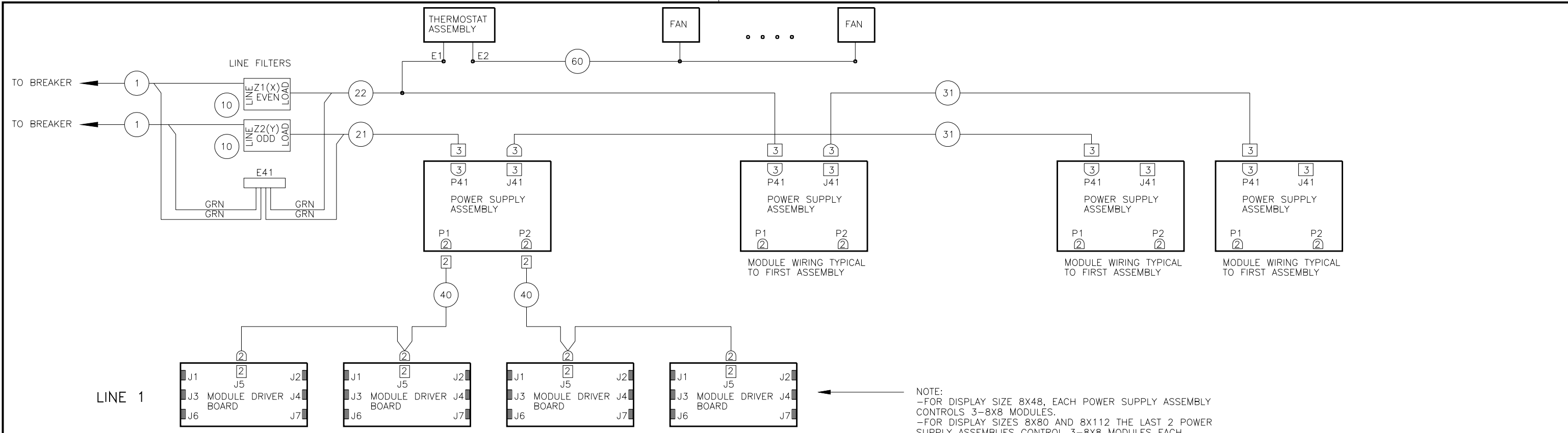


NOTES:

1. REFER TO BOM FOR SHELL AND HARNESS PACKETS.
2. USE W-1412 FOR HORIZONTAL SIGNAL CONNECTION.
3. USE OA-1213-4023 FOR LABELING DISPLAY.
4. REFER TO COMPONENT LAYOUT DIAGRAM FOR INTERNAL COMPONENTS.
5. REFER TO ER-12114 FOR TEST PROCEDURE.
6. FOLLOW ER-10711 FOR ASSEMBLY AND A CHECKLIST.
7. OPTIONAL FIBER CARD (OP-1127-0024) OR MODEM (OP-1146-0003) ARE MOUNTED BETWEEN SIGNAL AND POWER WITH HC-1395 @4.
8. CENTER "DAKTRONICS" LABEL ON BOTTOM SHROUD.
9. PUT THE ADDRESS NUMBER ON THE LL-1002.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, 68MM V1500			
TITLE: F.ASSY; AF-3080-24***-68			
DES. BY: MMAMMENGA		DRAWN BY: B BENNING	
DATE: 27FEB02		REVISION	
APPR. BY:	SCALE: 1=20	1280-E10B-163415	

REV.	DATE	DESCRIPTION	BY	APPR.



NOTE:
 -FOR DISPLAY SIZE 8X48, EACH POWER SUPPLY ASSEMBLY CONTROLS 3-8X8 MODULES.
 -FOR DISPLAY SIZES 8X80 AND 8X112 THE LAST 2 POWER SUPPLY ASSEMBLIES CONTROL 3-8X8 MODULES EACH.

LINE 1

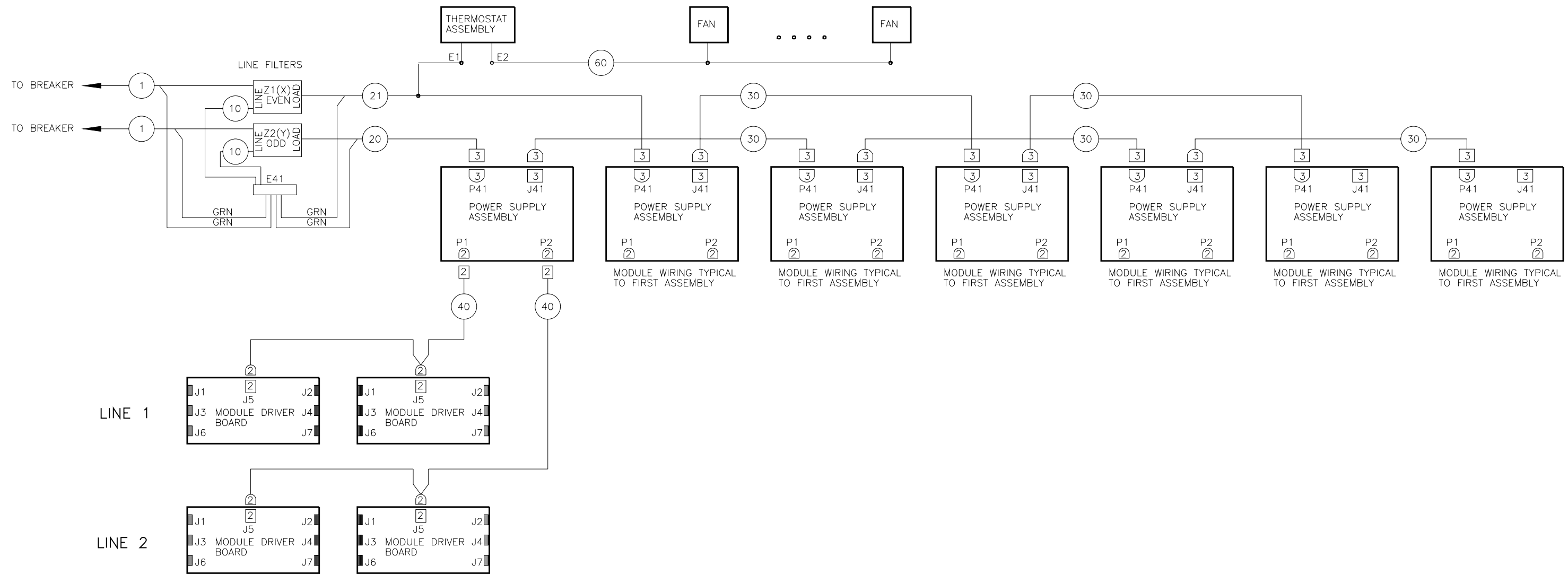
REFER TO SCHEMATIC DRAWING 1280-R03B-164924 FOR EXACT WIRE TERMINATION AND ALL SIGNAL CONNECTIONS.

REFER TO DRAWING 1280-R06A-164513 FOR FAN WIRING.

- 1 OA-1175-2027 HARN, FILTER TO PANEL BOARD 5FT (14AWG)
- 10 OA-1175-2017 HARN, FILTER GND 6IN (14AWG)
- 21 OA-1280-4011 HARN, PWR, FILTER TO POWER SUPPLY 6FT (14AWG)
- 22 OA-1280-4012 HARN, PWR, FILTER TO POWER SUPPLY 12FT (14AWG)
- 31 OA-1280-4001 HARN, PWR, INTC, 3 PIN PLUG TO 3 PIN JACK 16FT (14AWG)
- 40 OA-1280-2010 HARN, 1 PS TO 2 MODS, 2FT,3FT (14AWG)
- 60 OA-1054-0126 CABLE, 2 COND BLK/WHT, LENGTH AS NEEDED (14AWG)

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: GALAXY, LOUVERED, V1500, MONO, 68MM			
TITLE: BLOCK DIAGRAM, POWER, AF-3080, 8X***, MONO			
DES. BY: LKERR		DRAWN BY: LKERR	
DATE: 30MAY02		DATE: 30MAY02	
REVISION	APPR. BY:	1280-R01B-167955	
SCALE: NONE			

REV.	DATE	DESCRIPTION	BY	APPR.



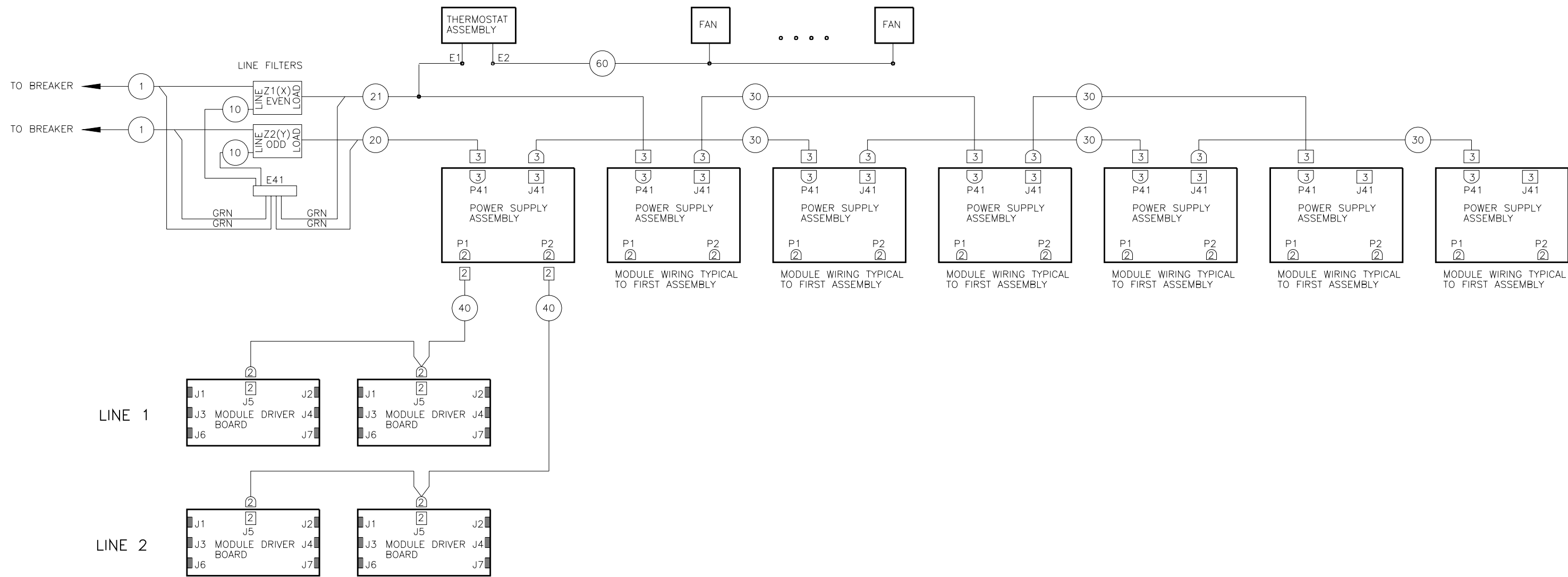
REFER TO SCHEMATIC DRAWING 1280-R03B-164926
FOR EXACT WIRE TERMINATION AND ALL SIGNAL
CONNECTIONS.

REFER TO DRAWING 1280-R06A-164513
FOR FAN WIRING.

- ① 0A-1175-2027
HARN, FILTER TO PANEL BOARD 5FT (14AWG)
- ⑩ 0A-1175-2017
HARN, FILTER GND 6IN (14AWG)
- ⑳ 0A-1280-4010
HARN, PWR, FILTER TO POWER SUPPLY 2FT (14AWG)
- ㉑ 0A-1280-4011
HARN, PWR, FILTER TO POWER SUPPLY 6FT (14AWG)
- ③① 0A-1280-4000
HARN, PWR, INTC, 3 PIN PLUG TO 3 PIN JACK 8FT (14AWG)
- ④① 0A-1280-2010
HARN, 1 PS TO 2 MODS, 2FT,3FT (14AWG)
- ⑥① 0A-1054-0126
CABLE, 2 COND BLK/WHT, LENGTH AS NEEDED (14AWG)

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: GALAXY, LOUVERED, V1500, MONO, 68MM			
TITLE: BLOCK DIAGRAM, POWER, AF-3080, 16X***, MONO			
DES. BY: LKERR		DRAWN BY: LKERR	
		DATE: 30MAY02	
REVISION	APPR. BY:	1280-R01B-167957	
	SCALE: NONE		

REV.	DATE	DESCRIPTION	BY	APPR.



LINES 3 AND 4 ARE WIRED THE SAME AS ABOVE EXCEPT THERE ARE NO FANS.

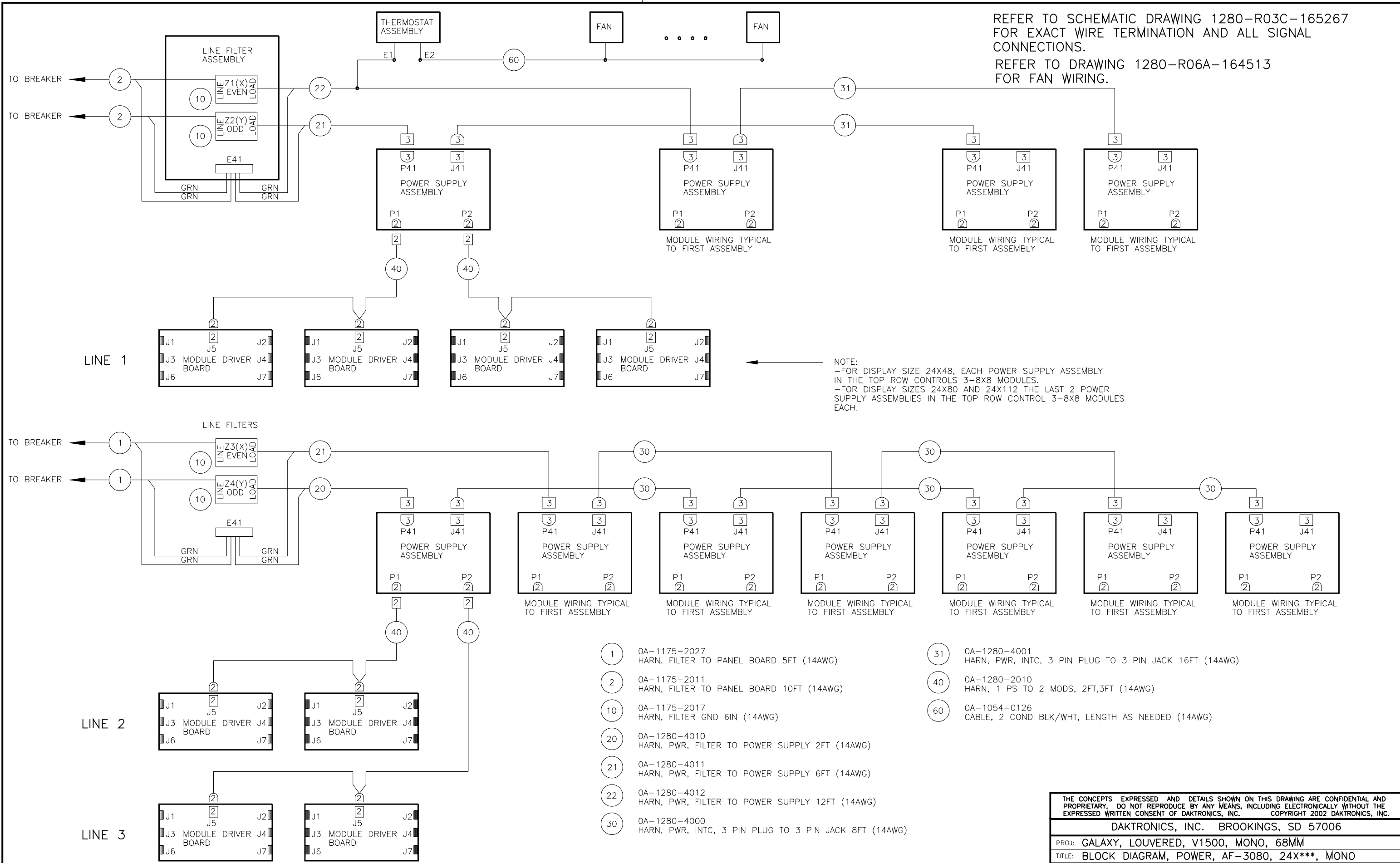
REFER TO SCHEMATIC DRAWING 1280-R03C-189404 FOR EXACT WIRE TERMINATION AND ALL SIGNAL CONNECTIONS.

REFER TO DRAWING 1280-R06A-164513 FOR FAN WIRING.

- 1 0A-1175-2011
HARN, FILTER TO PANEL BOARD 10FT (14AWG)
- 10 0A-1175-2017
HARN, FILTER GND 6IN (14AWG)
- 20 0A-1280-4010
HARN, PWR, FILTER TO POWER SUPPLY 2FT (14AWG)
- 21 0A-1280-4011
HARN, PWR, FILTER TO POWER SUPPLY 6FT (14AWG)
- 30 0A-1280-4000
HARN, PWR, INTC, 3 PIN PLUG TO 3 PIN JACK 8FT (14AWG)
- 40 0A-1280-2010
HARN, 1 PS TO 2 MODS, 2FT,3FT (14AWG)
- 60 0A-1054-0126
CABLE, 2 COND BLK/WHT, LENGTH AS NEEDED (14AWG)

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 2003 DAKTRONICS, INC.			
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GALAXY, LOUVERED, V1500, MONO, 68MM			
TITLE: BLOCK DIAGRAM, POWER, AF-3080, 32X***, MONO			
DES. BY: LKERR		DRAWN BY: LKERR	
DATE: 30MAY03		REVISION	
APPR. BY:		1280-R01B-189397	
SCALE: NONE			

REV.	DATE	DESCRIPTION	BY	APPR.



REFER TO SCHEMATIC DRAWING 1280-R03C-165267 FOR EXACT WIRE TERMINATION AND ALL SIGNAL CONNECTIONS.
 REFER TO DRAWING 1280-R06A-164513 FOR FAN WIRING.

NOTE:
 -FOR DISPLAY SIZE 24X48, EACH POWER SUPPLY ASSEMBLY IN THE TOP ROW CONTROLS 3-8X8 MODULES.
 -FOR DISPLAY SIZES 24X80 AND 24X112 THE LAST 2 POWER SUPPLY ASSEMBLIES IN THE TOP ROW CONTROL 3-8X8 MODULES EACH.

- 1 0A-1175-2027 HARN, FILTER TO PANEL BOARD 5FT (14AWG)
- 2 0A-1175-2011 HARN, FILTER TO PANEL BOARD 10FT (14AWG)
- 10 0A-1175-2017 HARN, FILTER GND 6IN (14AWG)
- 20 0A-1280-4010 HARN, PWR, FILTER TO POWER SUPPLY 2FT (14AWG)
- 21 0A-1280-4011 HARN, PWR, FILTER TO POWER SUPPLY 6FT (14AWG)
- 22 0A-1280-4012 HARN, PWR, FILTER TO POWER SUPPLY 12FT (14AWG)
- 30 0A-1280-4000 HARN, PWR, INTC, 3 PIN PLUG TO 3 PIN JACK 8FT (14AWG)
- 31 0A-1280-4001 HARN, PWR, INTC, 3 PIN PLUG TO 3 PIN JACK 16FT (14AWG)
- 40 0A-1280-2010 HARN, 1 PS TO 2 MODS, 2FT,3FT (14AWG)
- 60 0A-1054-0126 CABLE, 2 COND BLK/WHT, LENGTH AS NEEDED (14AWG)

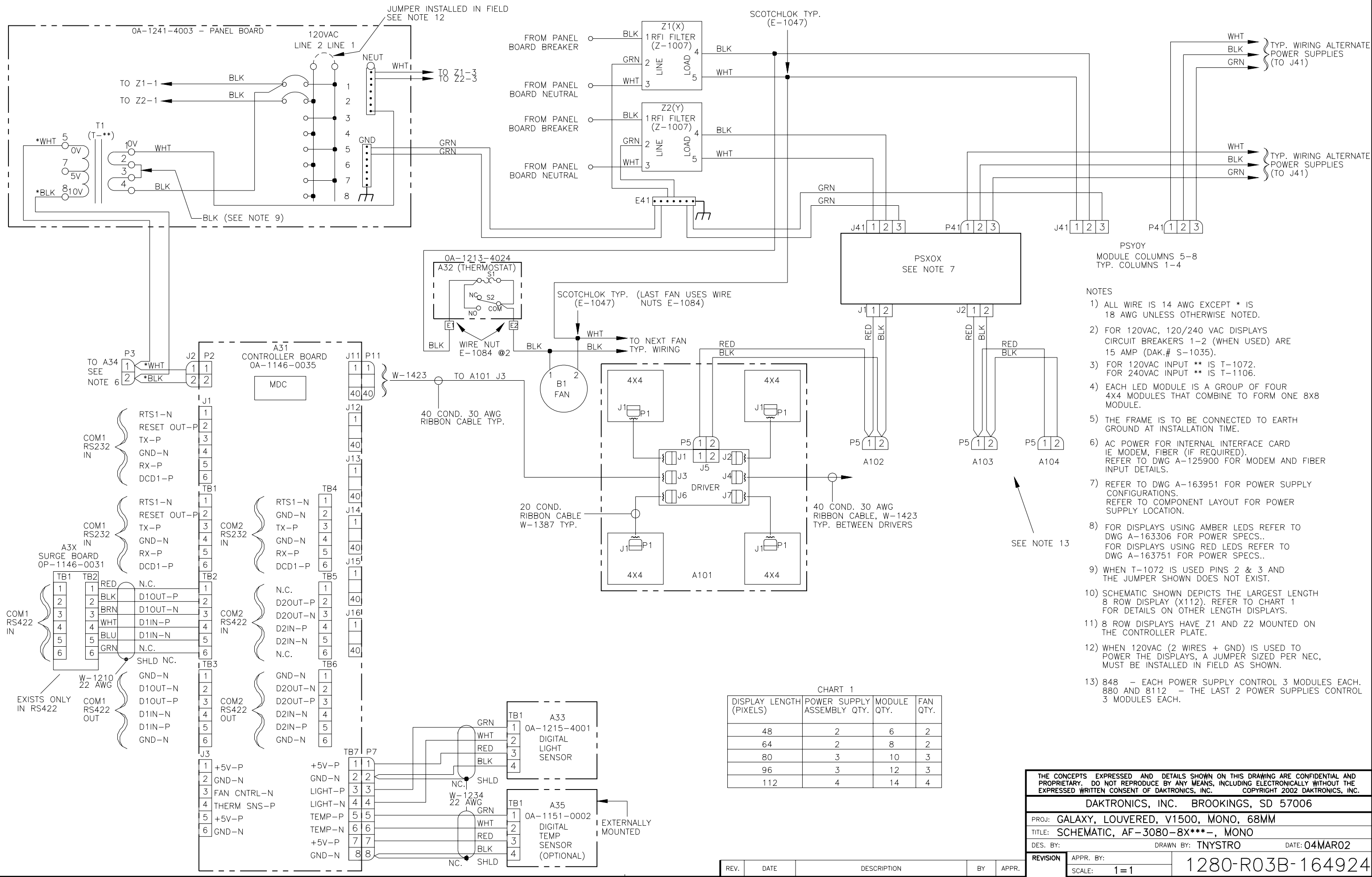
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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, LOUVERED, V1500, MONO, 68MM
 TITLE: BLOCK DIAGRAM, POWER, AF-3080, 24X***, MONO
 DES. BY: LKERR DRAWN BY: LKERR DATE: 30MAY02

REVISION	APPR. BY:	1280-R01B-167958
	SCALE: NONE	

REV.	DATE	DESCRIPTION	BY	APPR.



- NOTES
- 1) ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
 - 2) FOR 120VAC, 120/240 VAC DISPLAYS CIRCUIT BREAKERS 1-2 (WHEN USED) ARE 15 AMP (DAK.# S-1035).
 - 3) FOR 120VAC INPUT ** IS T-1072. FOR 240VAC INPUT ** IS T-1106.
 - 4) EACH LED MODULE IS A GROUP OF FOUR 4X4 MODULES THAT COMBINE TO FORM ONE 8X8 MODULE.
 - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
 - 6) AC POWER FOR INTERNAL INTERFACE CARD IE MODEM, FIBER (IF REQUIRED). REFER TO DWG A-125900 FOR MODEM AND FIBER INPUT DETAILS.
 - 7) REFER TO DWG A-163951 FOR POWER SUPPLY CONFIGURATIONS. REFER TO COMPONENT LAYOUT FOR POWER SUPPLY LOCATION.
 - 8) FOR DISPLAYS USING AMBER LEDS REFER TO DWG A-163306 FOR POWER SPECS.. FOR DISPLAYS USING RED LEDS REFER TO DWG A-163751 FOR POWER SPECS..
 - 9) WHEN T-1072 IS USED PINS 2 & 3 AND THE JUMPER SHOWN DOES NOT EXIST.
 - 10) SCHEMATIC SHOWN DEPICTS THE LARGEST LENGTH 8 ROW DISPLAY (X112). REFER TO CHART 1 FOR DETAILS ON OTHER LENGTH DISPLAYS.
 - 11) 8 ROW DISPLAYS HAVE Z1 AND Z2 MOUNTED ON THE CONTROLLER PLATE.
 - 12) WHEN 120VAC (2 WIRES + GND) IS USED TO POWER THE DISPLAYS, A JUMPER SIZED PER NEC, MUST BE INSTALLED IN FIELD AS SHOWN.
 - 13) 848 - EACH POWER SUPPLY CONTROL 3 MODULES EACH. 880 AND 8112 - THE LAST 2 POWER SUPPLIES CONTROL 3 MODULES EACH.

CHART 1

DISPLAY LENGTH (PIXELS)	POWER SUPPLY ASSEMBLY QTY.	MODULE QTY.	FAN QTY.
48	2	6	2
64	2	8	2
80	3	10	3
96	3	12	3
112	4	14	4

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, LOUVERED, V1500, MONO, 68MM

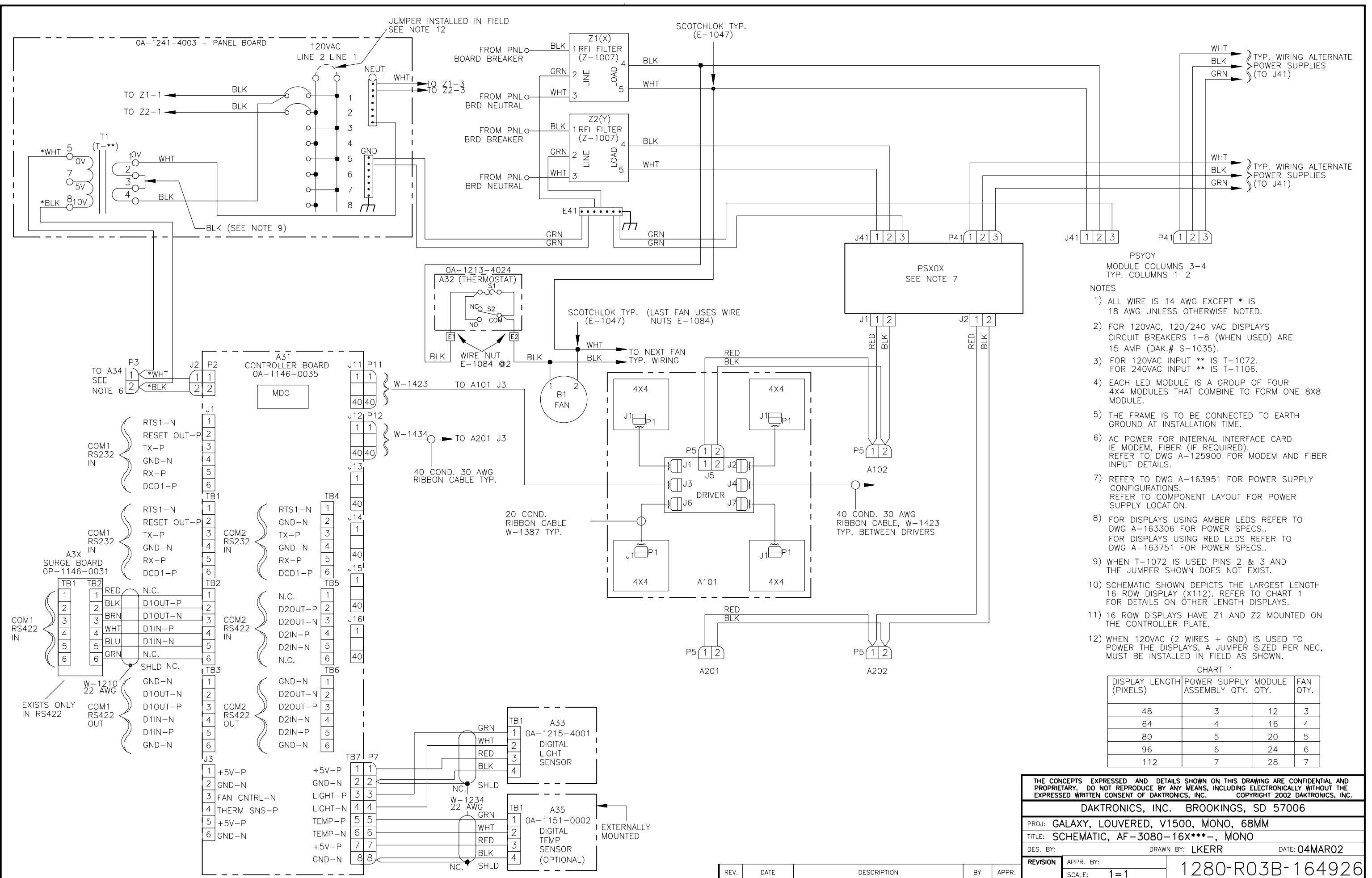
TITLE: SCHEMATIC, AF-3080-8X***-, MONO

DES. BY: DRAWN BY: TNYSTRO DATE: 04MAR02

REVISION APPR. BY: SCALE: 1=1

1280-R03B-164924

REV.	DATE	DESCRIPTION	BY	APPR.



- PSYOY
MODULE COLUMNS 3-4
TYP. COLUMNS 1-2
- NOTES
- 1) ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
 - 2) FOR 120VAC, 120/240 VAC DISPLAYS CIRCUIT BREAKERS 1-8 (WHEN USED) ARE 15 AMP (DAK.# S-1035).
 - 3) FOR 120VAC INPUT ** IS T-1072. FOR 240VAC INPUT ** IS T-1106.
 - 4) EACH LED MODULE IS A GROUP OF FOUR 4X4 MODULES THAT COMBINE TO FORM ONE 8X8 MODULE.
 - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
 - 6) AC POWER FOR INTERNAL INTERFACE CARD IE MODEM, FIBER (IF REQUIRED). REFER TO DWG A-125900 FOR MODEM AND FIBER INPUT DETAILS.
 - 7) REFER TO DWG A-163951 FOR POWER SUPPLY CONFIGURATIONS. REFER TO COMPONENT LAYOUT FOR POWER SUPPLY LOCATION.
 - 8) FOR DISPLAYS USING AMBER LEDS REFER TO DWG A-163306 FOR POWER SPECS.. FOR DISPLAYS USING RED LEDS REFER TO DWG A-163751 FOR POWER SPECS..
 - 9) WHEN T-1072 IS USED PINS 2 & 3 AND THE JUMPER SHOWN DOES NOT EXIST.
 - 10) SCHEMATIC SHOWN DEPICTS THE LARGEST LENGTH 16 ROW DISPLAY (X112). REFER TO CHART 1 FOR DETAILS ON OTHER LENGTH DISPLAYS.
 - 11) 16 ROW DISPLAYS HAVE Z1 AND Z2 MOUNTED ON THE CONTROLLER PLATE.
 - 12) WHEN 120VAC (2 WIRES + GND) IS USED TO POWER THE DISPLAYS, A JUMPER SIZED PER NEC, MUST BE INSTALLED IN FIELD AS SHOWN.

CHART 1

DISPLAY LENGTH (PIXELS)	POWER SUPPLY ASSEMBLY QTY.	MODULE QTY.	FAN QTY.
48	3	12	3
64	4	16	4
80	5	20	5
96	6	24	6
112	7	28	7

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY, LOUVERED, V1500, MONO, 68MM

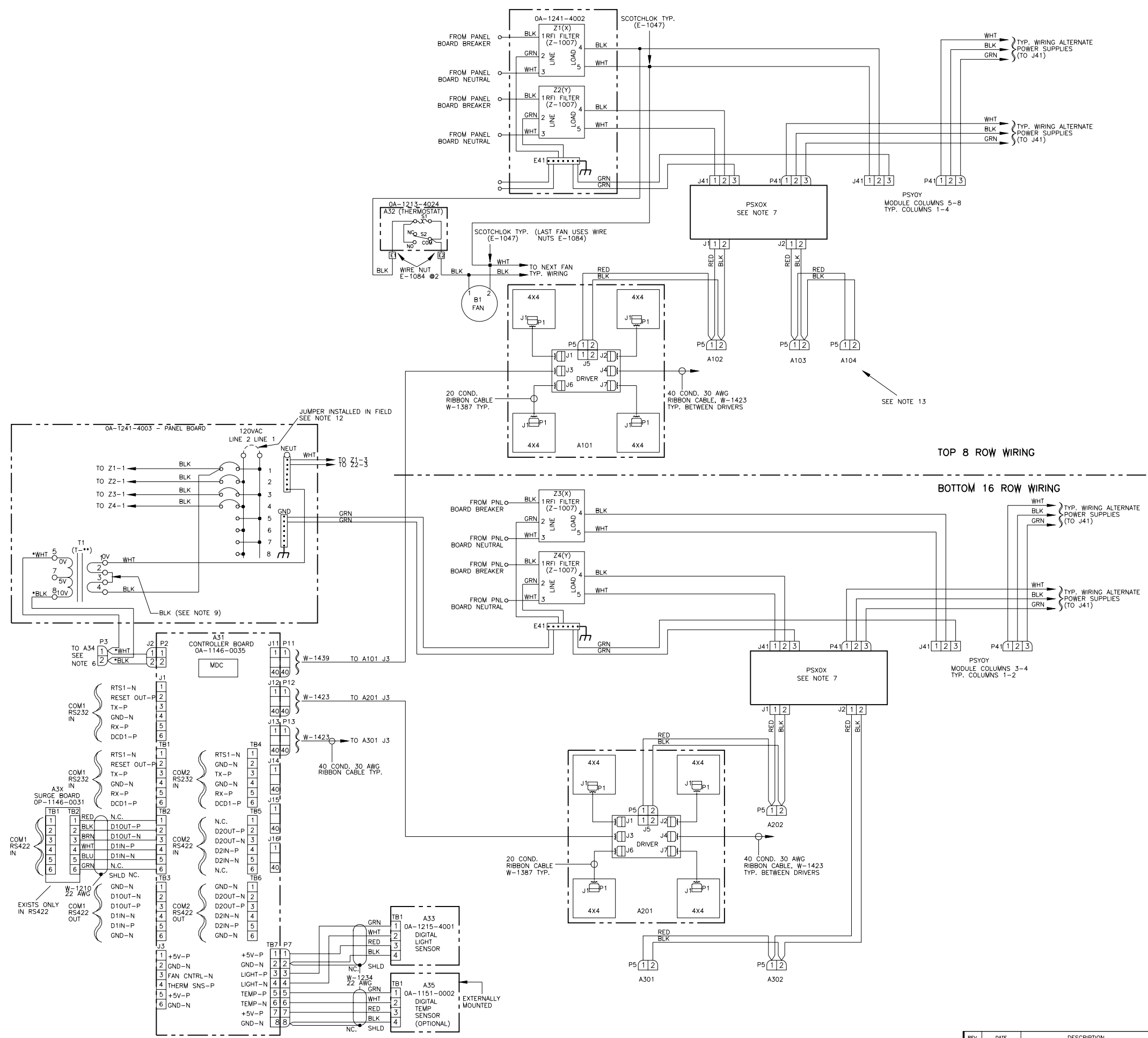
TITLE: SCHEMATIC, AF-3080-16X***-, MONO

DES. BY: DRAWN BY: LKERR DATE: 04MAR02

REVISION APPR. BY: SCALE: 1=1

1280-R03B-164926

REV.	DATE	DESCRIPTION	BY	APPR.



- NOTES
- 1) ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
 - 2) FOR 120VAC, 120/240 VAC DISPLAYS CIRCUIT BREAKERS 1-8 (WHEN USED) ARE 15 AMP (DAK# S-1035).
 - 3) FOR 120VAC INPUT ** IS T-1072. FOR 240VAC INPUT ** IS T-1106.
 - 4) EACH LED MODULE IS A GROUP OF FOUR 4X4 MODULES THAT COMBINE TO FORM ONE 8X8 MODULE.
 - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
 - 6) AC POWER FOR INTERNAL INTERFACE CARD (IE. MODEM, FIBER (IF REQUIRED)). REFER TO DWG A-125900 FOR MODEM AND FIBER INPUT DETAILS.
 - 7) REFER TO DWG A-163951 FOR POWER SUPPLY CONFIGURATIONS. REFER TO COMPONENT LAYOUT FOR POWER SUPPLY LOCATION.
 - 8) FOR DISPLAYS USING AMBER LEDS REFER TO DWG A-163306 FOR POWER SPECS.. FOR DISPLAYS USING RED LEDS REFER TO DWG A-163751 FOR POWER SPECS..
 - 9) WHEN T-1072 IS USED PINS 2 & 3 AND THE JUMPER SHOWN DOES NOT EXIST.
 - 10) SCHEMATIC SHOWN DEPICTS THE LARGEST LENGTH 24 ROW DISPLAY (X112). REFER TO CHART 1 FOR DETAILS ON OTHER LENGTH DISPLAYS.
 - 11) THE BOTTOM 16 ROWS OF THE DISPLAY HAS Z3 AND Z4 MOUNTED ON THE CONTROLLER PLATE.
 - 12) WHEN 120VAC (2 WIRES + GND) IS USED TO POWER THE DISPLAYS, A JUMPER SIZED PER NEC. MUST BE INSTALLED IN FIELD AS SHOWN.
 - 13) REFER TO THE FOLLOWING FOR THE TOP 8 ROWS OF THE DISPLAY
 B48 - EACH POWER SUPPLY CONTROLS 3 MODULES EACH.
 880 AND 8112 - THE LAST 2 POWER SUPPLIES CONTROL 3 MODULES EACH.

CHART 1

DISPLAY LENGTH (PIXELS)	POWER SUPPLY ASSEMBLY QTY.	MODULE QTY.	FAN QTY.
48	5	18	6
64	6	24	8
80	8	30	10
96	9	36	12
112	11	42	14

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DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GALAXY LOUVERED, V1500, MONO, 68MM

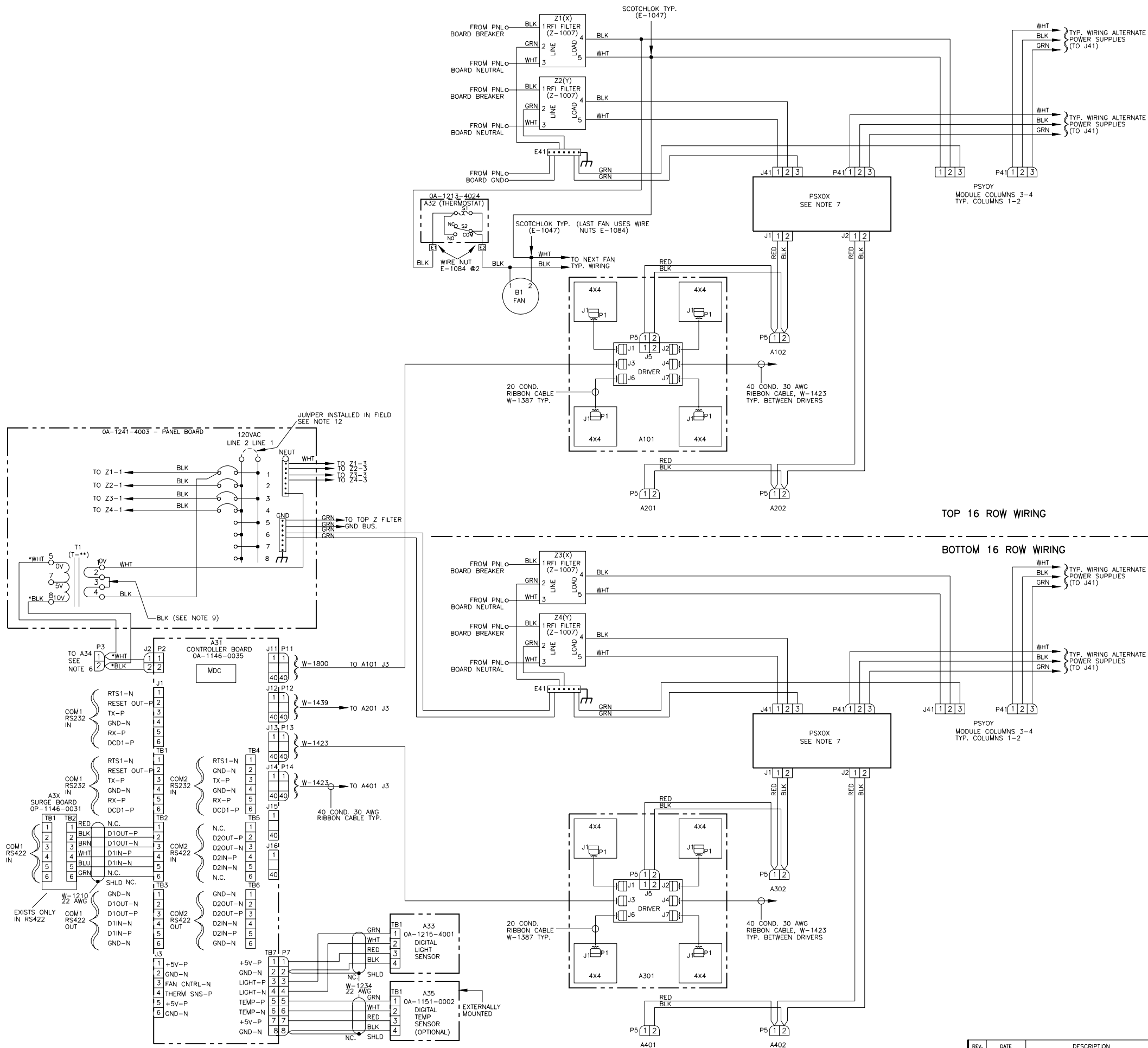
TITLE: SCHEMATIC, AF-3080-24X***- MONO

DES. BY: DRAWN BY: LKERR DATE: 02APR02

REVISION APPR. BY: SCALE: 1=1

1280-R03C-165267

REV.	DATE	DESCRIPTION	BY	APPR.



- NOTES
- 1) ALL WIRE IS 14 AWG EXCEPT * IS 18 AWG UNLESS OTHERWISE NOTED.
 - 2) FOR 120VAC, 120/240 VAC DISPLAYS CIRCUIT BREAKERS 1-8 (WHEN USED) ARE 15 AMP (DAK.# S-1035).
 - 3) FOR 120VAC INPUT ** IS T-1072. FOR 240VAC INPUT ** IS T-1106.
 - 4) EACH LED MODULE IS A GROUP OF FOUR 4X4 MODULES THAT COMBINE TO FORM ONE 8X8 MODULE.
 - 5) THE FRAME IS TO BE CONNECTED TO EARTH GROUND AT INSTALLATION TIME.
 - 6) AC POWER FOR INTERNAL INTERFACE CARD (IE MODEM, FIBER (IF REQUIRED)). REFER TO DWG A-125900 FOR MODEM AND FIBER INPUT DETAILS.
 - 7) REFER TO DWG A-163951 FOR POWER SUPPLY CONFIGURATIONS. REFER TO COMPONENT LAYOUT FOR POWER SUPPLY LOCATION.
 - 8) FOR DISPLAYS USING AMBER LEDS REFER TO DWG A-163306 FOR POWER SPECS.. FOR DISPLAYS USING RED LEDS REFER TO DWG A-163751 FOR POWER SPECS..
 - 9) WHEN T-1072 IS USED PINS 2 & 3 AND THE JUMPER SHOWN DOES NOT EXIST.
 - 10) SCHEMATIC SHOWN DEPICTS THE LARGEST LENGTH 32 ROW DISPLAY (X112). REFER TO CHART 1 FOR DETAILS ON OTHER LENGTH DISPLAYS.
 - 11) THE BOTTOM 16 ROWS OF THE DISPLAY HAS Z3 AND Z4 MOUNTED ON THE CONTROLLER PLATE.
 - 12) WHEN 120VAC (2 WIRES + GND) IS USED TO POWER THE DISPLAYS, A JUMPER SIZED PER NEC, MUST BE INSTALLED IN FIELD AS SHOWN.

CHART 1

DISPLAY LENGTH (PIXELS)	POWER SUPPLY ASSEMBLY QTY.	MODULE QTY.	FAN QTY.
48	6	24	6
64	8	32	8
72	10	36	9
80	10	40	10
96	12	48	12
112	14	56	14

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DAKTRONICS, INC. BROOKINGS, SD 57006
 PROJ: GALAXY LOUVERED, V1500, MONO, 68MM
 TITLE: SCHEMATIC, AF-3080-32X***- MONO
 DES. BY: DRAWN BY: LKERR DATE: 30MAY03
 REVISON APPR. BY: SCALE: 1=1 1280-R03C-189404

REV.	DATE	DESCRIPTION	BY	APPR.

Appendix B: Signal Converter

The following table gives the typical state of the signal converter when the LEDs are either on or off. Refer to **Figure 43** below for an illustration of the signal converters and the locations of the various components.

LED Indicators	Typical States	
PWR	ON	Signal Converter (SC) is receiving power.
	OFF	SC is not receiving power. Internal 1 AMP Fuse is bad.
TX	ON Steady	SC is not connected to a serial port. (If connected to serial port) Serial port or serial cable may be bad.
	OFF Steady	Normal state, SC is not transmitting data.
	Brief Flicker	SC is transmitting data.
RX	ON Steady	Field cabling between SC and display is bad, connected to display out, or terminated incorrectly.
	OFF Steady	Normal state, SC is not receiving data.
	Brief Flicker	SC is receiving data.

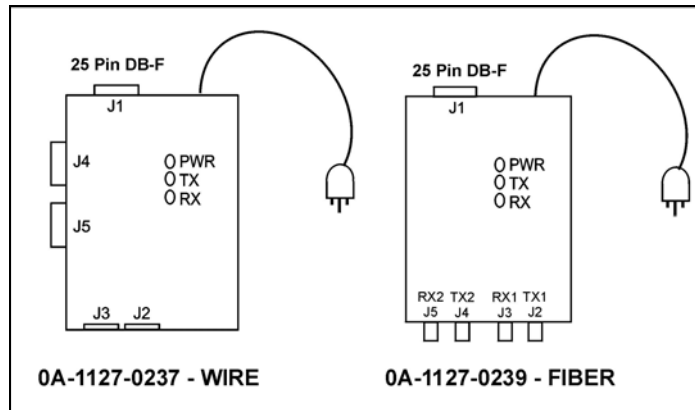


Figure 43: Signal Converters

0A-1127-0237 – Wire

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

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

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

Loop-Back Test: To perform a loop-back, for testing purposes only, connect the following using copper conductor jumpers.

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

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

J2 and J3	OR	J4 and J5
TX-N to RX-N		RX-P to TX-P
TX-P to RX-P		RX-N to TX-N

0A-1127-0239 – Fiber

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

Loop-Back Test: To perform a loop-back, for testing purposes only, connect the following using a fiber optic cable jumper.

J2 and J3 or J4 and J5
TX to RX

Serial Cable (W-1249)

This table lists the pin connections when using a serial cable (W-1249).

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

Serial Adaptor (A-1603)

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