



Auto Racing Display Model CH-1421V

Installation & Maintenance Manual

ED 6401

**ED-6401
Project#1081
Rev. 2 - 10 August, 1998**

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Section 1 :Introduction

1.1 How To Use This Manual

This manual explains the installation and maintenance of the CH-1421V display system. Setup of other control equipment or operation of the CHTS-300 timing console are not covered in this manual. 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. Do not drop the control console or allow it to get wet.
3. Be sure the display is properly grounded with a ground rod at the display location.
4. *Disconnect power to the display when it is not in use.*
5. *Disconnect power when servicing the display.*
6. Do not modify the display structure or attach any panels or coverings to the display without the written consent of Daktronics, Inc.

The box below illustrates Daktronics drawing numbering system. The drawing number “7087-P08A-69945” is how Daktronics identifies individual drawings. This number is located in the lower-right corner of the drawing. This manual refers to drawings by listing the last set of digits and the letter preceding them. In the example below, the drawing would be referred to as **Drawing A-69945**. Referenced drawings are inserted at the *end of the first section which references them*.

| | | |
|--------------------------------------|-----------------|----------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | |
| PROJ: | | |
| TITLE: | | |
| DES. BY: | DRAWN BY: DOK | DATE: 04-20-95 |
| APPR. BY: | 7087-P08A-69945 | |
| SCALE: 1=80 | | |

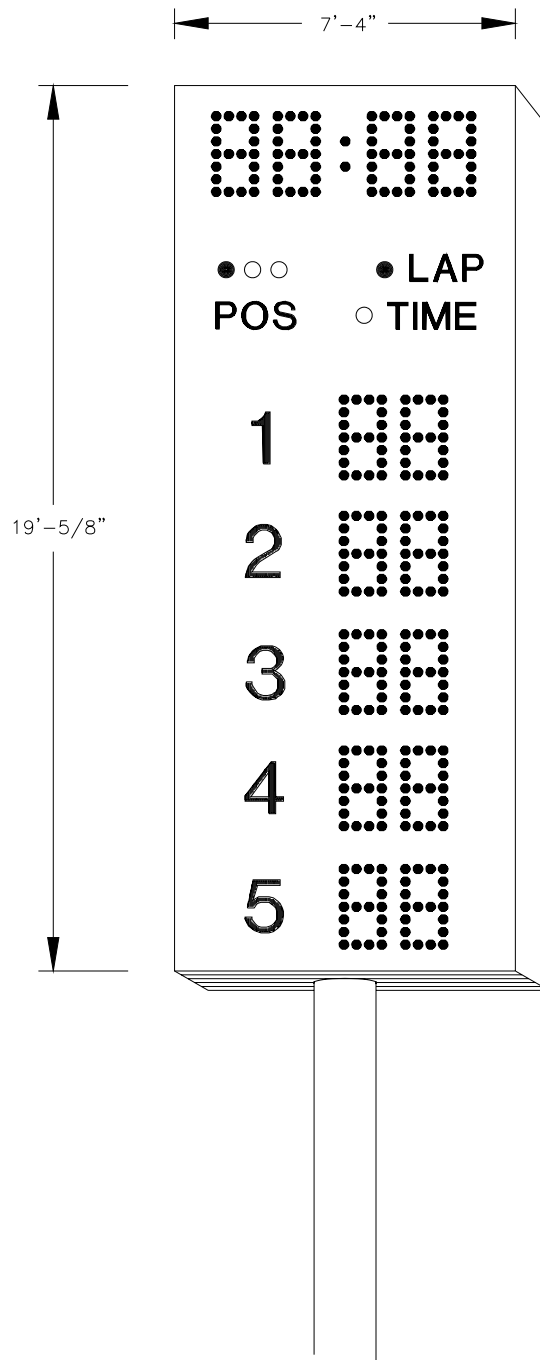
1.2 Scoreboard Overview

Reference Drawing: Specifications Drawing; CH-1421V **Drawing A-106019**

Daktronics offers a wide variety of displays for oval and road tracks. The CH-1421V auto racing display shown in **Drawing A-106019** displays lap number or elapsed race time, the top five racers and race status.

SCOREBOARD SPECIFICATIONS

- 19'-5/8" high x 7'-4" wide
- All digits are 21" high, 4x7 lamp matrices
- All digits use 30 watt incandescent lamps
- Lap/Time indicators use 55W flood lamps
- Race Status indicators use 85W flood lamps
- All captions are 8" high, vinyl
- All aluminum construction
- 100% solid state consolidated lamp drivers
- Identification and sponsor panels are available
- Optional timing system may be connected with scoreboard to automatically display qualifying times as they occur.
- Power Demand:
 - with 25W lamps - 8,102 watts
 - with 30R20 lamps - 10,248 watts
- Crated weight - 1,325 lbs
- Uncrated weight - 600 lbs



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

| | |
|---|------------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | |
| PROJ: AUTO RACING DISPLAYS | |
| TITLE: SPECIFICATIONS DRAWING; CH-1421V | |
| DES. BY: | DRAWN BY: JMOEN |
| DATE: 3 AUG 98 | |
| REVISION | APPR. BY: |
| SCALE: 3/4" = 1' | 1081-R08A-106019 |

Section 2 : Installation

2.1 General System

Reference Drawings: Driver Enclosure, Power & Signal **Drawing A-37915**
System Layout **Drawing A-38865**
Power wiring and grounding **Drawing A-45220**
Color Code, 25-Pin J-Box **Drawing A-47207**
Shop Dwg, Mounting Details..... **Drawing A-49278**
Component Numbering, CH-1421V **Drawing A-106020**

An illustration of the overall system layout for the CH-1421V is shown in **Drawing A-38865**. A typical installation depicting beams, footings, and wiring conduit is illustrated in **Drawing A-49278**. The general procedure for installing the CH-1421V display is as follows:

1. Select beam and footing recommendations from the table below.
2. Dig the footing holes and install beams and footings.
3. Route power and signal cables to the display and control locations as described in **Section 2.4**.
4. Mount the display to the beams as described in **Drawing A-49278**.
5. Route power and signal wires into the display as described in **Drawings A-37915, A-38865, A-45220, A-47207, and A-106020**.

2.2 General System

Reference Drawing: Shop Dwg, Mounting Details **Drawing A-49278**

The table below contains recommendations for W-shape beams and footings to support the display. Refer to **Drawing A-49278**. The first column is wind velocity in miles per hour. The distance in the second column is from the ground to the bottom of the display. The choice from these columns depends upon the display location.

The beams listed below are beams which provide maximum wind load strength for the weight and cost of the beams.

| Wind Speed | Height (ft) | Beam Section | Footing Depth x Dia. |
|------------|-------------|--------------|----------------------|
| 70 mph | 10 | W8 x 15 | 4 ¾ ft x 3 ft |
| | 15 | W6 x 20 | 5 ½ ft x 3 ft |
| 80 mph | 10 | W8 x 15 | 5 ½ ft x 3 ft |
| | 15 | W8 x 20 | 6 ¾ ft x 3 ft |
| 90 mph | 10 | W8 x 17 | 6 ¼ ft x 3 ft |
| | 15 | W8 x 24 | 7 ft x 3 ft |

The calculations for footing diameters and depths are based on the assumption that footings are in undisturbed soils, *not fill soils*. Lateral bearing capacity of 300 psf per foot of depth in natural grade was used to derive these figures.

The footings recommendations are based on the allowable soil bearing pressure of 3000 psf vertically and 300 psf/ft of depth horizontally. However, these recommendations *are suggestions only* and soil bearing pressure at the site must be determined by a sample test

prior to specifying the actual footings. Be sure that the installation complies with local codes and is suitable for particular soil and wind conditions. *Daktronics assumes no responsibility for displays installed by others.* Daktronics recommends that W-sections of grade 36 steel be used for beams, and that 28-day (strength 3000 psi) concrete be used for footings.

A note about beam nomenclature: For a typical beam, W8x24 for example, “W” stands for “Wide-Flange Beam”. The first number (8) is the approximate front to rear dimension of the beam in inches. The second number (24) is the weight per foot in pounds. This numbering is a standard in the steel industry. Widths are from 6.00 to 8.125 inches in the chart above.

Note: Recommendations for a single rectangular structural steel tube and footing to support the display as shown in **Drawing A-49278** must be determined by a qualified structural engineer using data from a soil sample test at the site.

2.3 Display Mounting

Reference Drawing: Shop Dwg, Mounting Details **Drawing A-49278**

Drawing A-49278 shows the typical mounting for the display.

Note: The bolts that secure the display to the beam(s) do not go through the beam(s), but run along both sides of the beam, clamping the display to the beam(s).

A mounting kit consisting of mounting angles and ½” hardware are provided to mount the display.

1. Locate and mark where the center of the beams will be on the back of the display mounting channel if it is different from the c-c distance shown in **Drawing A-49278** and the table above.
2. Drill 9/16” holes in the mounting channel on the back of the display at a distance of plus or minus 3.50” or 4.50” from the location which each beam center was marked if it is different from the c-c distance shown in **Drawing A-49278** and the table above.
3. Position the display at the front of the beams with the threaded rods extending from the rear of the mounting channels, straddling the beams. Raise the display to the desired height.
4. Slide clamping channels over the ends of the rods and loosely install washers and nuts.
5. Make final adjustments in the positioning of the display.
6. Make sure that the threaded rods are perpendicular to the display and tighten all of the ½” nuts.

2.4 Electrical Installation

2.4.1 Control Signal Wiring

Reference Drawings: Color Code, 25-Pin J-Box **Drawing A-47207**
Component Numbering, CH-1421V .. **Drawing A-106020**

For the display, two conductors of 24 AWG are needed. For distances up to 600 ft. or 22 AWG, up to 1000 ft. are required. Daktronics has 24 AWG direct burial cable, Daktronics part no. W-1105 with 6 conductors, and 22 AWG cable that must be pulled through the conduit before burial, Daktronics part no. W-1077 with 2 conductors.

At the control location, mount the signal J-box to a convenient location. Route the cables and connect to the wires leading from the connector in the cover according to the table below and **Drawing A-47207**.

At the display, open the bottom hinged panel covering the entrance enclosure as shown on **Drawing A-106020**. Remove the cover from the entrance enclosure. Refer to **Drawing A-47207** for an illustration of the components inside the entrance enclosure. Connect the signal wires to TB31 as indicated in the table below.

| Control End | | | Display End |
|--------------------|------------|------------|-------------------|
| J-box Terminal No. | Wire Color | Output No. | TB31 Terminal No. |
| 14 | Red/Wht | 1* | 1 (+) |
| 15 | Grn/Wht | | 2 (-) |

*Auxiliary display(s) require(s) a different output no.(s). Consult your CHTS-300 console manual.

2.4.2 Power Wiring

Reference Drawing: Driver Enclosure, Power & Signal..... **Drawing A-37915**

The CH-1318V display requires a 120/240 VAC, 30 amp circuit per line. When equipped with 25W lamps, the maximum current draw is 33.33 amps. When equipped with 30 W reflector lamps, the maximum current draw is 40 amps.

Route power wires into the display and connect to TB41 in the entrance enclosure, as shown on **Drawing A-37915**.

Connect the ground wire to E41 and to a ground rod near the display, according to the local codes.

2.4.3 Grounding

Reference Drawing: Power Wiring and Grounding..... **Drawing A-45220**

The display must be connected to an earth-ground. Proper grounding is necessary for reliable equipment operation. It also serves to provide protection to the equipment against damaging electrical disturbances and lightning. If the following grounding methods are not adhered to, the warranty will be void.

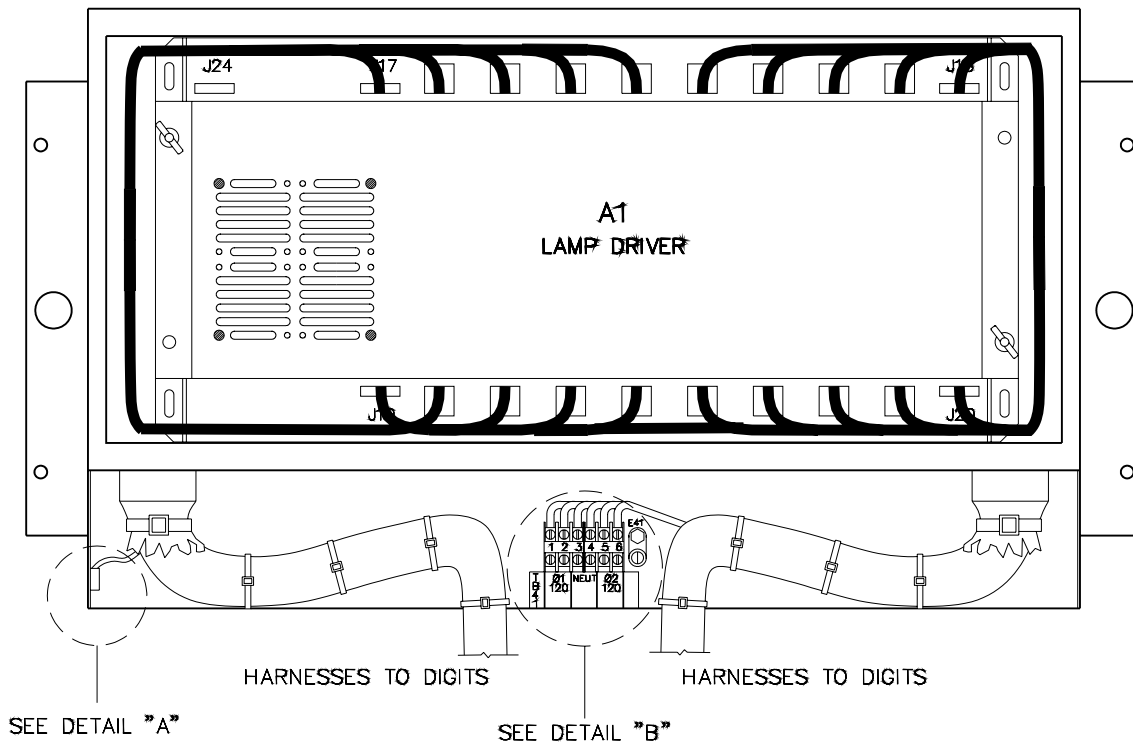
The steel support structure for the display cannot be used as grounding. The support is generally imbedded in concrete, and if in earth, the steel is either primed or it corrodes making it a poor ground. Use one ground rod at each scoreboard support column.

The National Electrical Code requires the use of lockable power disconnect near the display. Provide a lockable disconnect switch (knife switch) at the display location so that all power lines can be completely disconnected. Use a 3-conductor disconnect so that both hot lines and the neutral can all be disconnected. This is important in protecting the display against lightning.

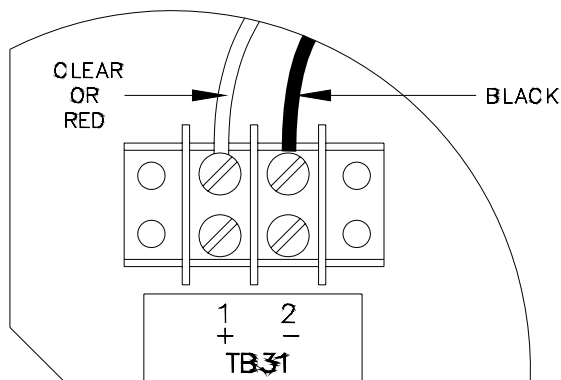
There are two considerations for power installation, New Power Installation and Existing Power Installation. These two power installations differ slightly, as described below.

New Power Installation: The power cable must contain a separate earth-ground conductor. When a separate ground conductor is used, do not connect neutral to ground at the disconnect or at the display. To do so would violate electrical codes and void the warranty. Refer to **Drawing A-45220**.

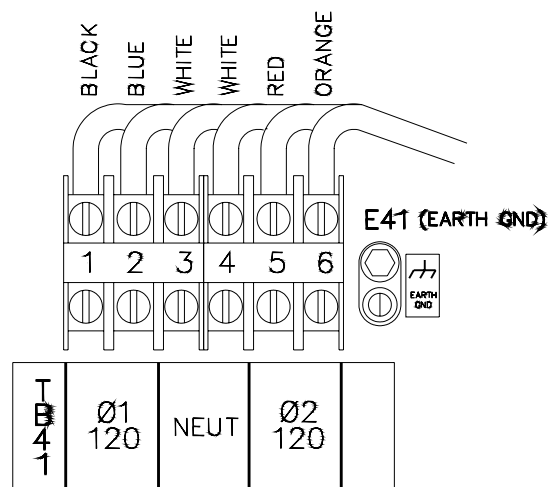
Existing Power Installation: When a separate ground conductor is not available, connect the neutral to the earth-ground at the disconnect. Refer to **Drawing A-45220**.



FRONT VIEW (COVER REMOVED)

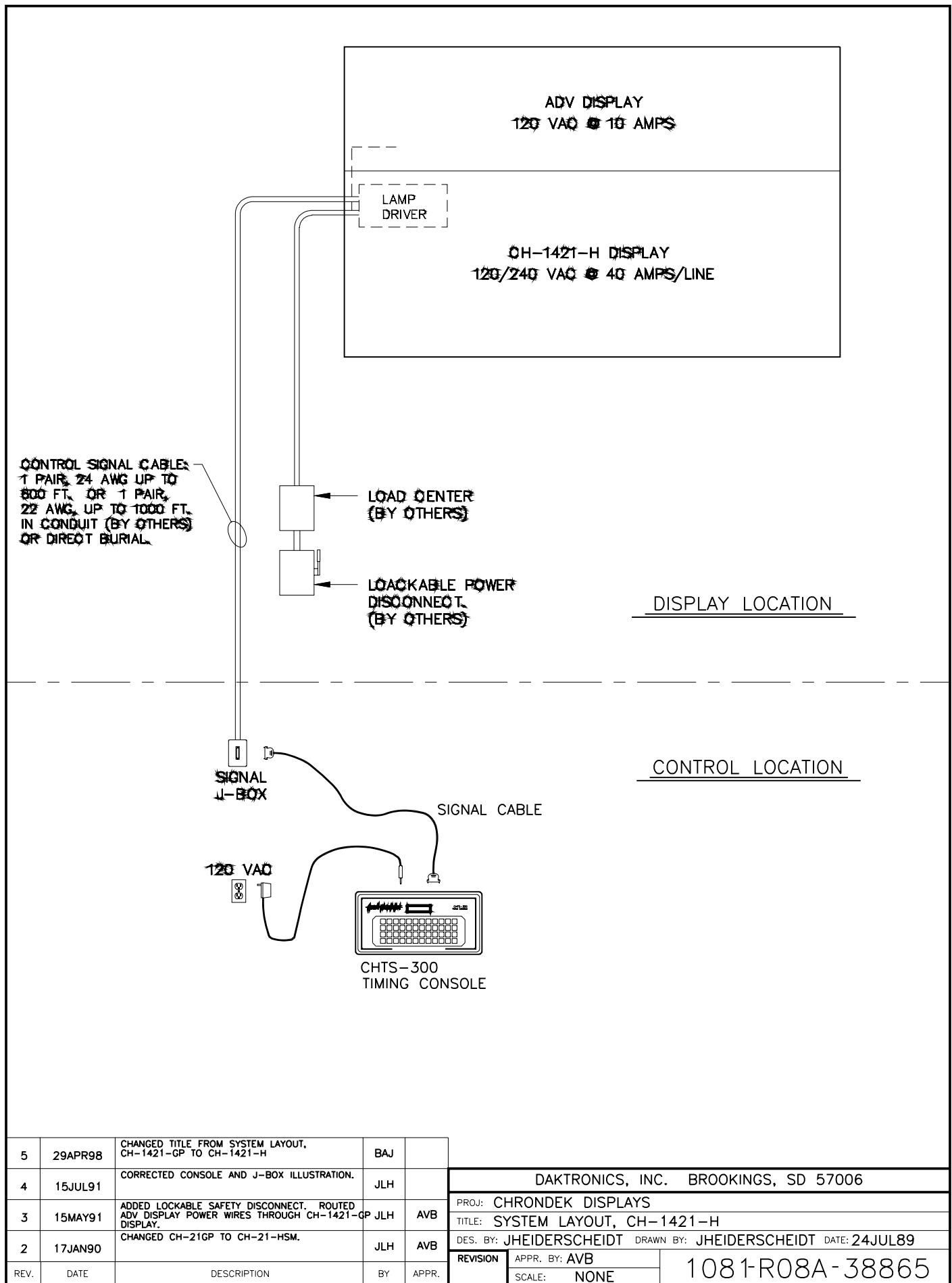


D
A DETAIL "A" (SIGNAL)



D
B DETAIL "B" (POWER)

| | | | | | | | | | | | | | | |
|------|--|----------|--|---|---|--|----|-------|---------------------|------------|----------------------|--|-----------------|--|
| | | | | | DAKTRONICS, INC. BROOKINGS, SD 57006 | | | | | | | | | |
| | | | | | PROJ: CHRONDEK DISPLAYS | | | | | | | | | |
| | | | | | TITLE: DRIVER ENCLOSURE, POWER & SIGNAL | | | | | | | | | |
| 1 | | 8 MAR 91 | | ADDED E41 AND CHANGED FROM "B" TO "A" SIZE DWG. | | | CF | CF | DES. BY: T. WOODARD | | DRAWN BY: T. WOODARD | | DATE: 10 MAY 89 | |
| REV. | | DATE | | DESCRIPTION | | | BY | APPR. | REVISION | APPR. BY: | 1081-R08A-37915 | | | |
| | | | | | | | | | | SCALE: 1=5 | | | | |



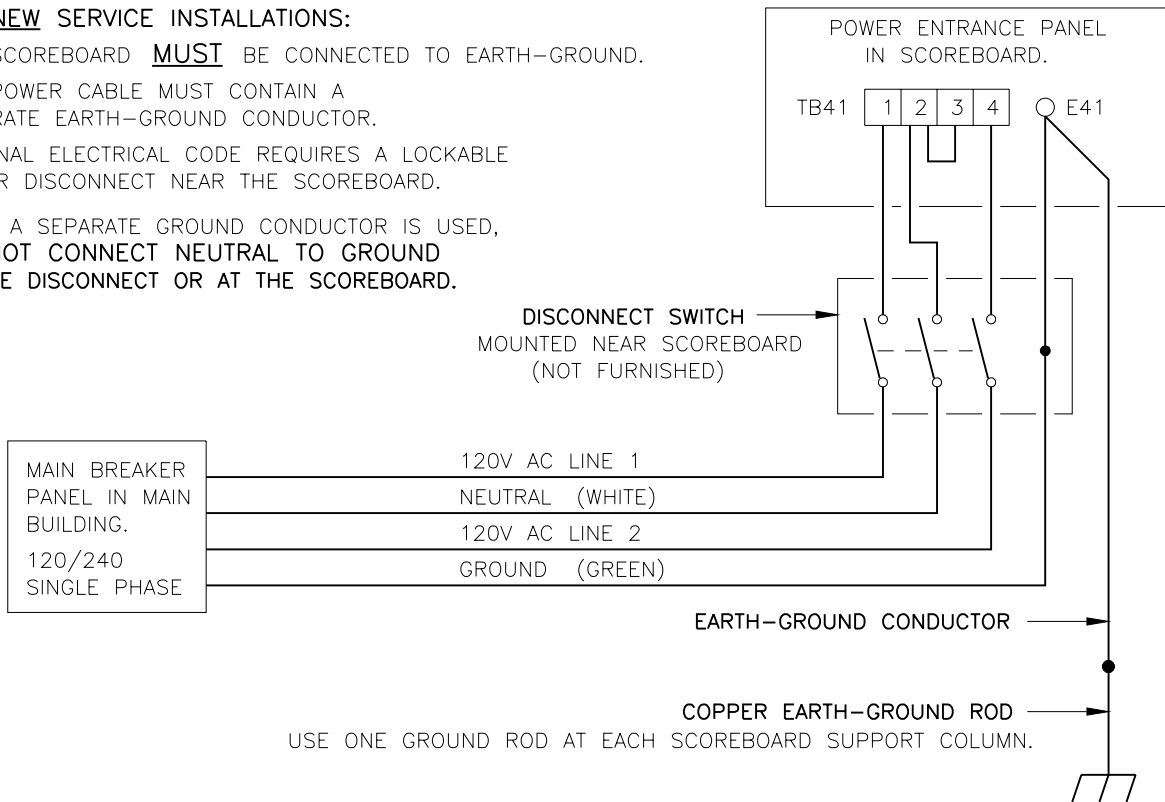
FOR NEW SERVICE INSTALLATIONS:

THE SCOREBOARD **MUST** BE CONNECTED TO EARTH-GROUND.

THE POWER CABLE **MUST** CONTAIN A SEPARATE EARTH-GROUND CONDUCTOR.

NATIONAL ELECTRICAL CODE REQUIRES A LOCKABLE POWER DISCONNECT NEAR THE SCOREBOARD.

WHEN A SEPARATE GROUND CONDUCTOR IS USED, **DO NOT CONNECT NEUTRAL TO GROUND AT THE DISCONNECT OR AT THE SCOREBOARD.**



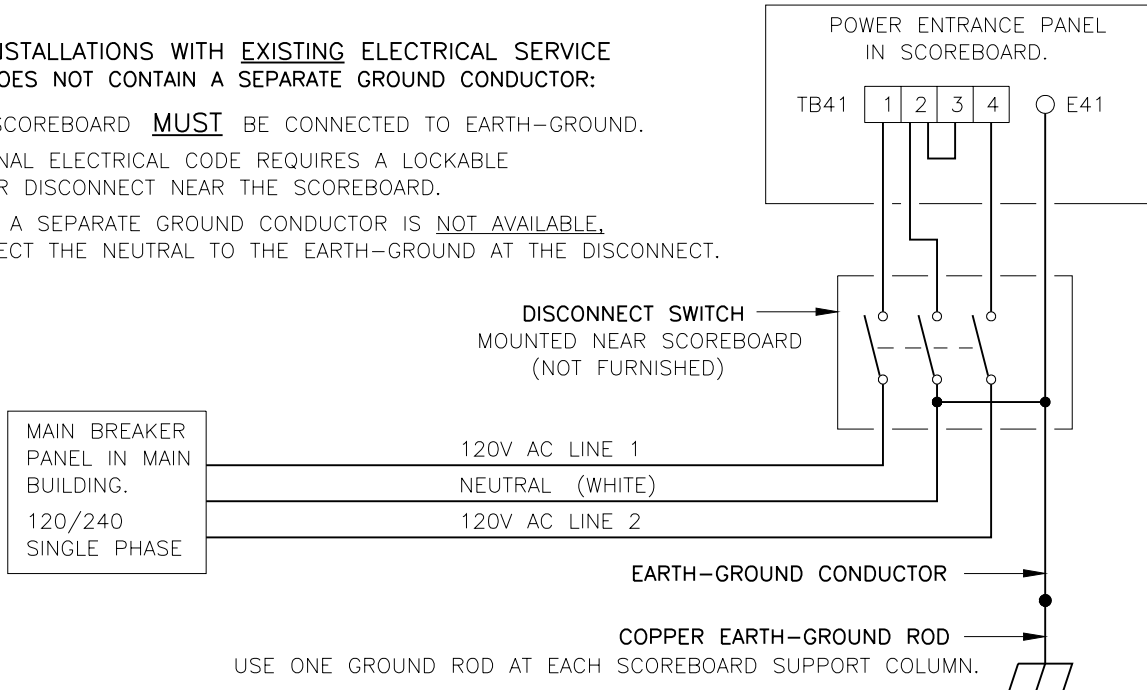
FOR LIGHTNING PROTECTION, DAKTRONICS RECOMMENDS A THREE-CONDUCTOR DISCONNECT THAT CAN BREAK BOTH HOT LINES AND THE NEUTRAL.

FOR INSTALLATIONS WITH EXISTING ELECTRICAL SERVICE THAT DOES NOT CONTAIN A SEPARATE GROUND CONDUCTOR:

THE SCOREBOARD **MUST** BE CONNECTED TO EARTH-GROUND.

NATIONAL ELECTRICAL CODE REQUIRES A LOCKABLE POWER DISCONNECT NEAR THE SCOREBOARD.

WHEN A SEPARATE GROUND CONDUCTOR IS NOT AVAILABLE, CONNECT THE NEUTRAL TO THE EARTH-GROUND AT THE DISCONNECT.



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: POWER WIRING AND GROUNDING

DES. BY:

DRAWN BY: AVB

DATE: 09NOV90

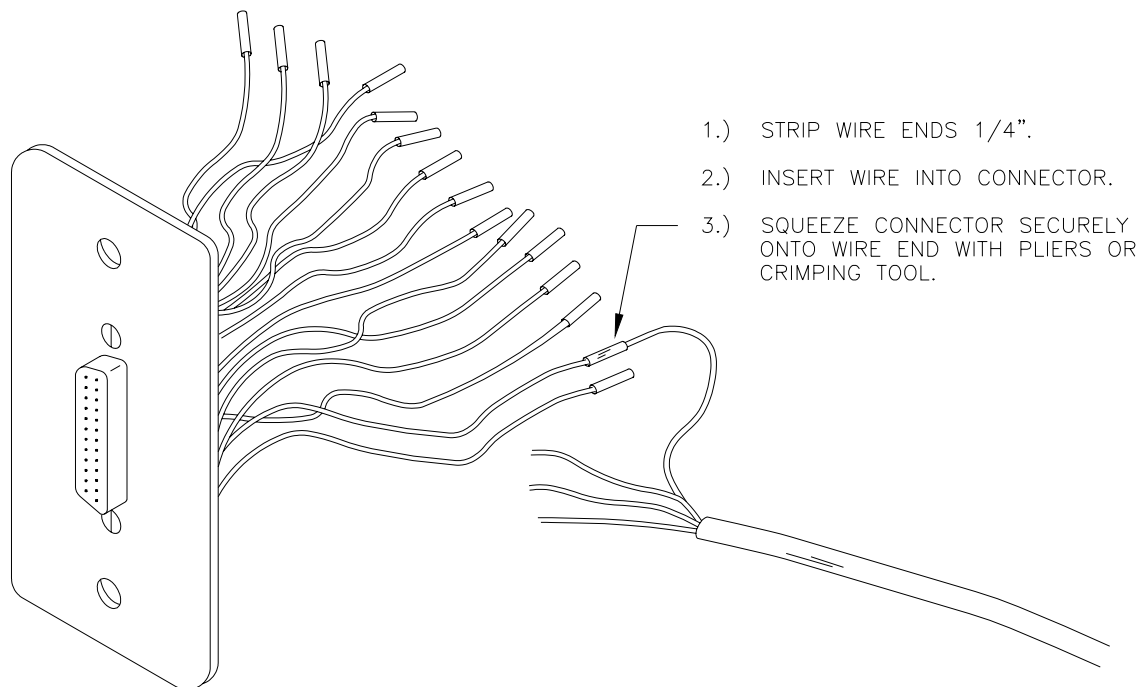
REVISION

APPR. BY:

SCALE: NONE

1091-R03A-45220

| | | | | |
|------|---------|--|-----|-------|
| 1 | 06MAY91 | ADDED FIGURE FOR USING EXISTING SERVICE. | AVB | |
| REV. | DATE | DESCRIPTION | BY | APPR. |

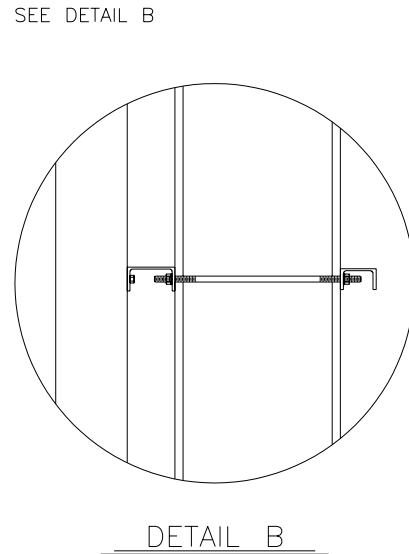
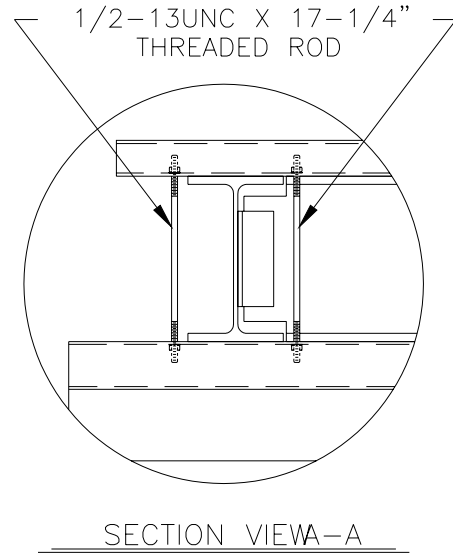
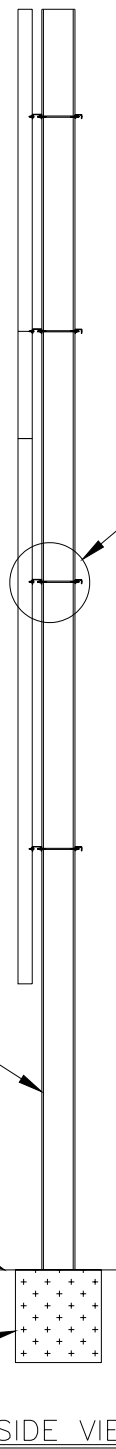
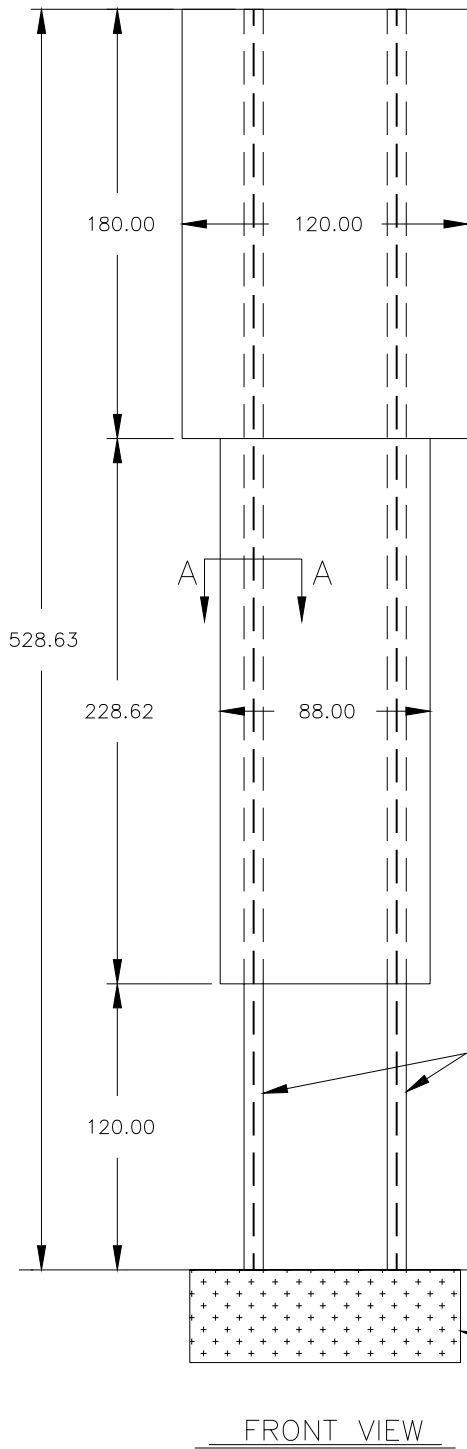
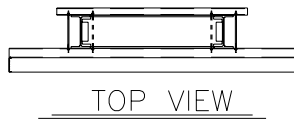


| PIN NO. | WIRE COLOR | FUNCTION | |
|---------|--------------|-----------|--|
| 1 | BLACK | PHOTO 1-N | PHOTOCELL POWER INPUTS |
| 2 | WHITE | PWR 1-P | |
| 3 | RED | GND 1-N | |
| 4 | GREEN | PHOTO 2-N | |
| 5 | ORANGE | PWR 2-P | |
| 6 | BLUE | GND 2-N | |
| 7 | WHITE/BLACK | PHOTO 3-N | |
| 8 | RED/BLACK | PWR 3-P | |
| 9 | GREEN/BLACK | GND 3-N | |
| 10 | ORANGE/BLACK | PHOTO 4-N | |
| 11 | BLUE/BLACK | PWR 4-P | |
| 12 | BLACK/WHITE | GND 4-N | |
| 14 | RED/WHITE | 1 SIG-P | SCOREBOARD SIGNAL OUTPUTS |
| 15 | GREEN/WHITE | 1 SIG-N | |
| 16 | BLUE/WHITE | 2 SIG-P | |
| 17 | BLACK/RED | 2 SIG-N | |
| 18 | WHITE/RED | 3 SIG-P | |
| 19 | ORANGE/RED | 3 SIG-N | |
| 22 | BLUE/RED | 4 SIG-P | |
| 23 | RED/GREEN | 4 SIG-N | |
| 13 | ORANGE/GREEN | NOT USED | THESE PINS TYPICALLY NOT USED BY CHTS TIMER |
| 20 | BLK/WHT/RED | NOT USED | |
| 21 | WHT/BLK/RED | NOT USED | |
| 24 | RED/BLK/WHT | 12 VAC | |
| 25 | GRN/BLK/WHT | 12 VAC | |

| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | | |
|--------------------------------------|----------|---|--------|-------|
| 2 | 10MAR97 | ADDED WIRES TO PINS 13,20,21,24,25 | EB | |
| 1 | 4 JUN 92 | CHANGED "SIGNAL INPUTS" TO "SIGNAL OUTPUTS" | C FICK | |
| REV. | DATE | DESCRIPTION | BY | APPR. |

| | |
|---------------------------------|---------------|
| PROJ: CHRONDEK | |
| TITLE: COLOR CODE, 25-PIN J-BOX | |
| DES. BY: CF | DRAWN BY: CF |
| DATE: 1 MAY 91 | |
| REVISION | APPR. BY: AVB |
| SCALE: 1=2 | |

1067-R10A-47207



W14X53
STRUCTURE
BEAMS
ASTM A36

GRADE

FOOTING

| | | | |
|--------------------------------------|-------------|-------------------|-----------------|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: ACE SPEEDWAY | | | |
| TITLE: SHOP DWG, MOUNTING DETAILS | | | |
| DES. BY: WTUCKER | | DRAWN BY: WTUCKER | |
| | | DATE: 10/28/91 | |
| REVISION | APPR. BY: | | 4702-E10A-49278 |
| | SCALE: 1=75 | | |

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



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

Section 3 : Maintenance & Troubleshooting



IMPORTANT NOTES:

1. Disconnect power before any repair or maintenance work is done on the display!
2. Any access to internal display electronics must be made by qualified service personnel.
3. Disconnect power when the display is not in use.

3.1 Lamp Replacement

Reference Drawing: Digit Service **Drawing A-27674**

The primary service required by the CH-1421V display is to replace burned-out lamps. Refer to **Drawing A-27674** for an illustration of lamp changing. Digit lamps are 25W, 120 volt, Daktronics part number DS-1029. Some displays may be equipped with 30W, 120 volt digit lamps, Daktronics part number DS-1126. Lamps may be bought at your local store or directly from Daktronics.

Do not use lamps larger than those originally installed in the display. Using higher powered lamps will likely cause fuse failures in the display and could exceed the current levels that the display's circuits can safely handle.

3.2 Lamp Driver

Reference Drawings: Lamp Driver, 16 Col., w/ Fan **Drawing A-37070**
Component Numbering, CH-1421V **Drawing A-106020**

In the display, the task of switching lamps on and off is performed by the lamp driver. **Drawing A-106020** in **Section 2** shows the location of the lamp driver in the display. **Drawing A-37070** is an illustration of the lamp driver and the fuses located in it.

The lamp driver has 21 connectors, providing power and signal inputs and outputs to digits. The functions of these connectors are as follows:

| Connector Number | Function |
|------------------|---|
| 1-16 | Outputs to digits |
| 17 | Signal Input |
| 18 | Power input for outputs 1-8 (120 V) |
| 19 | Power input for driver logic and fan (120V) |
| 20 | Power input for outputs 9-16 (120V) |
| 24 | Dim option selector |

In **Drawing A-106020**, the numbers on the digits refer to the lamp driver output connector wired to each digit.

3.3 Digit Segmentation

Reference Drawing: Segments, 4x7 Lamp Matrix Digit..... **Drawing A-37685**

In a digit certain lamps always go on and off together. These groupings of lamps are known as “segments”. Each digit has eight segments, referred to by letters A through H. **Drawing A-37685** illustrates these segments and shows which connector pin and wire color is wired to each segment.

3.4 Schematic

Reference Drawings: Schematic, 1 Driver Display **Drawing A-38788**
Pwr/Sig Entrance, 1 Driver Display **Drawing A-46755**
Component Numbering, CH-1421V **Drawing A-106020**

The schematic diagram in **Drawing A-38788** shows the power and signal inputs into the display and to the lamp driver. The component numbers correspond to those shown on **Drawings A-106020** and **A-46755**.

3.5 Troubleshooting

This section lists some symptoms that may be encountered with the CH-1421V display. For these symptoms, possible causes and corrective actions are indicated. This list does not include every possible problem, but does represent some of the more common situations that may occur.

| Observed Problem | Possible Cause |
|------------------------------|--|
| One lamp won't light | <ul style="list-style-type: none">• Burned-out lamp• Broken wire behind digit |
| Digit segment won't light | <ul style="list-style-type: none">• Broken wire• Poor contact at driver connector• Internal driver malfunction |
| Entire digit won't light | <ul style="list-style-type: none">• Broken wire (black)• Poor contact at connector, pin 7• Fuse blown in driver |
| Half the display won't light | <ul style="list-style-type: none">• Service breaker tripped• Main fuse blown• Poor contact at main power connection• P18 disconnected |
| Entire display won't light | <ul style="list-style-type: none">• Power disruptions• Poor signal connection• Driver logic fuse blown• Control not connected to display• P20 disconnected |
| Segment stays lit | <ul style="list-style-type: none">• Broken wire behind digit• Internal driver malfunction |
| Garbled display | <ul style="list-style-type: none">• Control malfunction• Internal driver malfunction |

If a problem is observed in one digit, the cause may be isolated by swapping plugs on the driver (connect the plug from the digit into a different jack). If the same digit shows the same problem, the cause may be in the digit or the wiring. If the problem moves to another digit, then the cause is probably an internal driver problem.

Use a volt meter at driver inputs to determine if power is being supplied to the driver. An ohmmeter can be helpful in finding broken wires and bad connections. Internal electronic problems must be correct by Daktronics or an authorized service center.

3.6 Replacement Parts

| Part Name or Description | Type | Part Number |
|--------------------------|---------|--------------|
| Lamp Driver | | 0A-1033-0122 |
| J-Box, CHTS-300 Timer | | 0A-1067-0056 |
| Fuse, Lamp Driver, 10A | AGC-10 | F-1006 |
| Fuse, Driver Logic, 1/2A | AGC-1/2 | F-1000 |
| Digit Lampbank | | 0A-1027-0075 |
| Digit Screen, 21" 4x7 | | 0S-1027-0018 |
| Socket, Med. Base | | X-1046 |
| Lamp, 25W Frosted | | DS-1029 |
| Lamp, 30W Reflector | 30R20 | DS-1126 |
| Lamp, 55W Clear Flood | 55PAR38 | DS-1101 |
| Lamp, 85W Amber Flood | 85PAR38 | DS-1184 |
| Lamp, 85W Green Flood | 85PAR38 | DS-1185 |
| Lamp, 85W Red Flood | 85PAR38 | DS-1186 |

3.7 Unit Exchange/Replacement Procedure

Daktronics unique exchange program offers our clients the quickest, most economical way of receiving product repairs. If a component fails, Daktronics will send the customer a replacement. The customer, in turn, sends the failed component to Daktronics. This not only saves money but decreases the time the display is inoperable. Daktronics offers repair and return on a timely basis; in urgent situations, every attempt is made to ship by the fastest transit method available.

1. **Packaging for Return:** Package and pad the item well to prevent damage during shipment. Electronic components, such as printed circuit boards, should either be installed in an enclosure or placed in an anti-static bag before boxing.

Please enclose your name and address along with a list of all the symptoms. Please be as specific as possible.

2. **Driver Packaging Instructions:** Drivers should be placed in a static-free enclosure for return shipping. An anti-static convoluted foam packing is available from Daktronics (part number PK-1135). The shipping box (Daktronics part number PK-1006) should be used along with the foam.
3. **Where to Send:** Contact your local representative prior to shipment to acquire a Return Material Authorization Number (RMA#). This will speed up the repair of your unit.

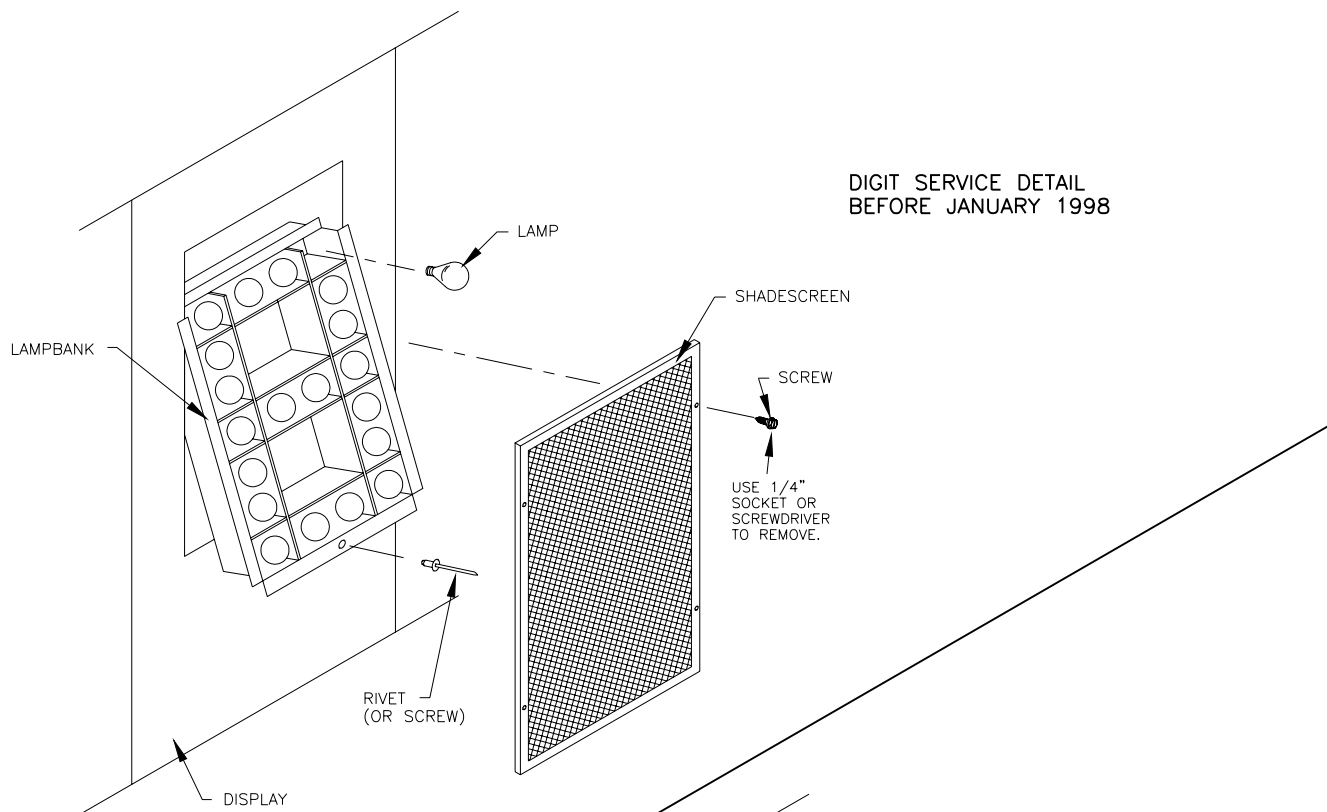
When returning defective items under the exchange program, please use the UPS Blue Return Tags found in the package containing the exchange unit sent from Daktronics. This will speed up the transaction and help avoid confusion when the part is returned to Daktronics. **The defective item must be returned within 15 days of receiving a replacement part.** Using the UPS Blue Return Tag immediately will eliminate the possibility of late charges being assessed against your account.

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

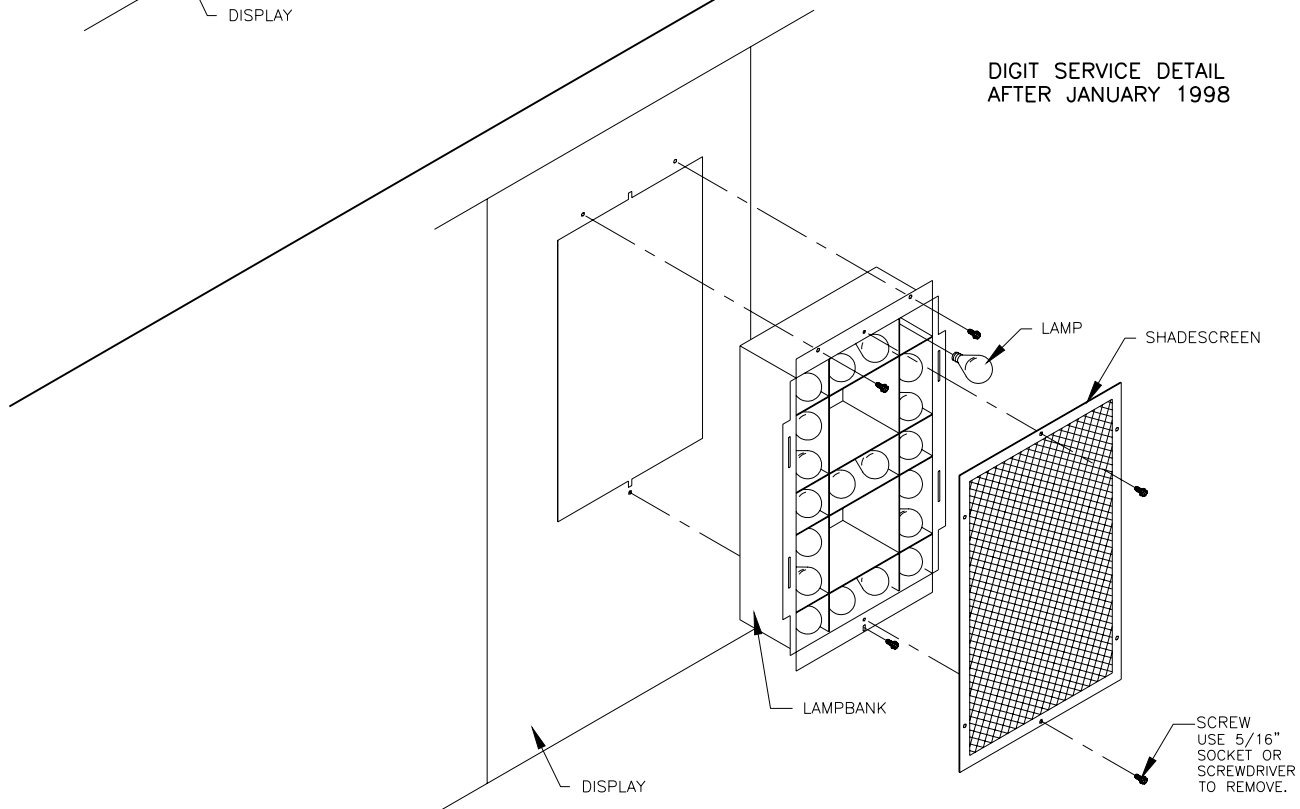
Phone: Toll Free: 1-800-843-9879
or 1-605-697-4400

Customer Service Fax: 1-605-697-4444

E-Mail: helpdesk@daktronics.com



DIGIT SERVICE DETAIL
BEFORE JANUARY 1998



DIGIT SERVICE DETAIL
AFTER JANUARY 1998

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: OUTDOOR SCOREBOARDS

TITLE: DIGIT SERVICE

DES. BY:

DRAWN BY: TERRY P.

DATE: 31 JULY 86

REVISION

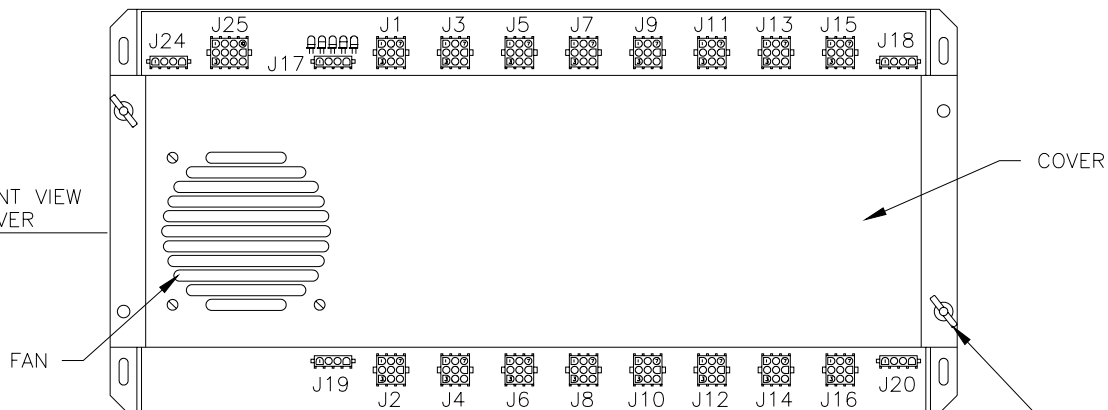
APPR. BY:

SCALE: 1=15

1064-E10A-27674

| | | | | |
|------|----------|---|-----|-------|
| 2 | 10NOV97 | ADDED DIGIT SERVICE AFTER JANUARY 1998 CHANGED SCALE FROM 1=10 TO 1=15 | BDP | |
| 1 | 5 MAR 91 | CHANGED FROM "B" TO "A" SIZE DWG. | CF | |
| REV. | DATE | DESCRIPTION | BY | APPR. |

DRIVER FRONT VIEW
WITH COVER



REMOVE TWO WING NUTS
TO REMOVE COVER AND
GAIN ACCESS TO FUSES.

| J24 | | | |
|-----|----------|-----|------------|
| PIN | FUNCTION | PIN | FUNCTION |
| 1 | NETWORK+ | 7 | ADDR 3 - |
| 2 | NETWORK- | 8 | NTW GND - |
| 3 | NTWREF-P | 9 | NTW GND - |
| 4 | ADDR 0 - | 10 | FAN SW HOT |
| 5 | ADDR 1 - | 11 | FAN HOT |
| 6 | ADDR 2 - | 12 | NEUT |

| J17 | |
|-----|----------|
| PIN | FUNCTION |
| 1 | SIGNAL + |
| 2 | SIGNAL - |
| 3 | N.C. |
| 4 | N.C. |

| J1 - J16 | |
|----------|----------|
| PIN | FUNCTION |
| 1 | SEG C |
| 2 | SEG B |
| 3 | SEG A |
| 4 | SEG F |
| 5 | SEG E |
| 6 | SEG D |
| 7 | COMMON |
| 8 | SEG H |
| 9 | SEG G |

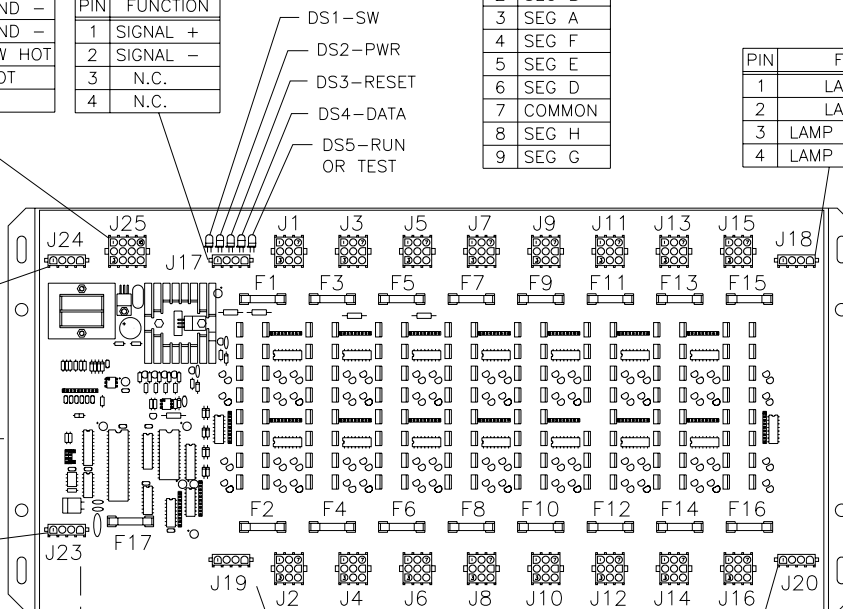
| J18 | |
|-----|---------------------|
| PIN | FUNCTION |
| 1 | LAMP NEUT |
| 2 | LAMP NEUT |
| 3 | LAMP HOT 1, 3, 5, 7 |
| 4 | LAMP HOT 2, 4, 6, 8 |

| J24 | |
|-----|-----------|
| PIN | FUNCTION |
| 1 | -5V |
| 2 | DIM SEL 1 |
| 3 | -5V |
| 4 | DIM SEL 2 |

DRIVER FRONT VIEW
WITH COVER REMOVED

| J23 | |
|-----|------------|
| PIN | FUNCTION |
| 1 | FAN SW HOT |
| 2 | N.C. |
| 3 | FAN HOT |
| 4 | NEUT |

PLUG FROM FAN IN COVER
CONNECTS TO J23

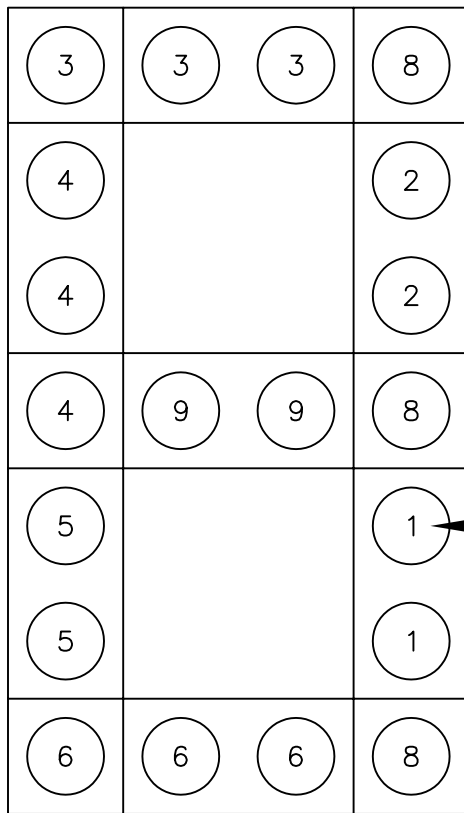


| J19 | |
|-----|----------|
| PIN | FUNCTION |
| 1 | NEUTRAL |
| 2 | NEUTRAL |
| 3 | 120V HOT |
| 4 | 120V HOT |

| J20 | |
|-----|----------------------|
| PIN | FUNCTION |
| 1 | LAMP NEUT |
| 2 | LAMP NEUT |
| 3 | LAMP HOT 9,11,13,15 |
| 4 | LAMP HOT 10,12,14,16 |

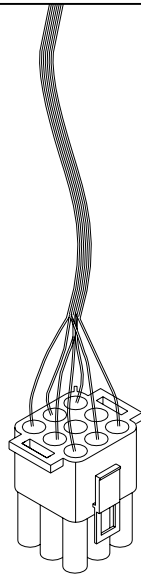
F1 THRU F16 ARE TYPE AGC-10, DAKTRONICS PART NUMBER F-1006.
F17 IS TYPE AGC-1/2, DAKTRONICS PART NUMBER F-1000

| | | | | | | | | |
|------|-----------|-------------------------------------|-----|-------|--------------------------------------|--|-----------------|-----------------|
| | | | | | DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| | | | | | PROJ: MULTIPLEX CONTROLLERS | | | |
| | | | | | TITLE: LAMP DRIVER, 16 COL., W/FAN | | | |
| | | | | | DES. BY: JLH | | DRAWN BY: JLH | DATE: 20 FEB 89 |
| | | | | | REVISION | | APPR. BY: | |
| | | | | | SCALE: 1=5 | | 1033-R04A-37070 | |
| | | | | | | | | |
| | | | | | | | | |
| 2 | 29 APR 97 | ADDED TABLES OF PINS AND FUNCTIONS. | AVB | AVB | | | | |
| 1 | 5 MAR 91 | CHANGED FROM "B" TO "A" SIZE DWG. | CF | | | | | |
| REV. | DATE | DESCRIPTION | BY | APPR. | | | | |



4 x 7 LAMP MATRIX DIGIT

CONNECTOR PIN NUMBER
WIRED TO THAT SEGMENT

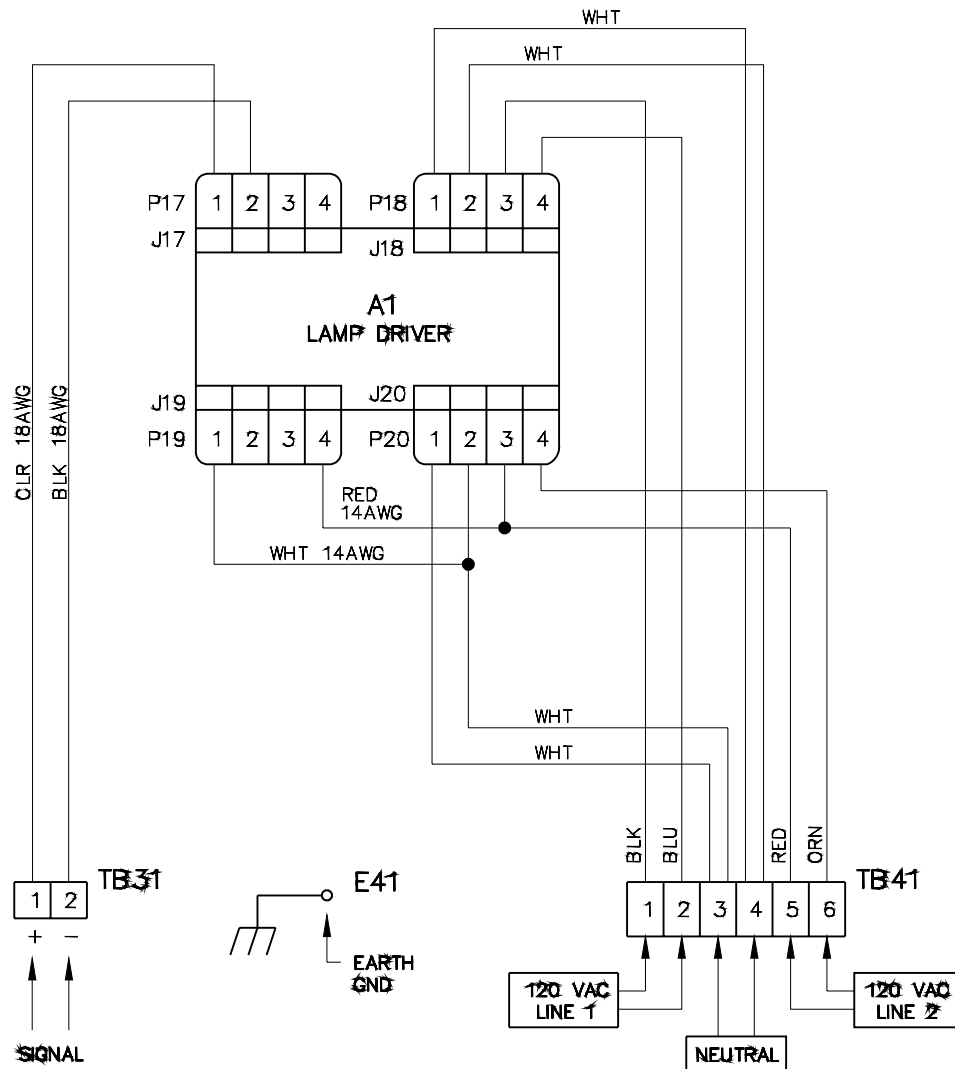


LAMP DRIVER
CONNECTOR

| COLOR CODE | | |
|------------|------------|----------------|
| PIN NO. | WIRE COLOR | DRIVER SEGMENT |
| 1 | ORANGE | C |
| 2 | RED | B |
| 3 | BROWN | A |
| 4 | BLUE | F |
| 5 | GRN OR PNK | E |
| 6 | YEL OR TAN | D |
| 7 | BLACK | COMMON |
| 8 | GRAY | H |
| 9 | VIOLET | G |

| | | | |
|--|---------------|-----------------|--|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: OUTDOOR SCOREBOARDS | | | |
| TITLE: SEGMENTS, 4 x 7 LAMP MATRIX DIGIT | | | |
| DES. BY: | DRAWN BY: AVB | DATE: 18 APR 89 | |
| REVISION | APPR. BY: | 1064-R04A-37685 | |
| | SCALE: 1=1 | | |

| | | | | |
|------|----------|-----------------------------------|----|-------|
| 1 | 5 MAR 91 | CHANGED FROM "B" TO "A" SIZE DWG. | CF | |
| REV. | DATE | DESCRIPTION | BY | APPR. |



NOTE:
ALL WIRES ARE 12 AWG UNLESS
OTHERWISE SPECIFIED.

| | | | | |
|------|-----------|--|--------|-------|
| 10 | 30APR98 | CHANGED MODEL NUMBER FROM CH-21GP TO CH-1421-H & CH-1521-H | RDA | RDA |
| 9 | 11 MAR 93 | REMOVED LIST OF DISPLAY MODELS. | C FICK | |
| 8 | 01 JUL 92 | ADDED MODEL CH-1024V TO NOTE. | TWEBER | |
| 7 | 18 JUN 92 | ADDED CH-1421V, CH-1421GP, CH-1424WB AND CH-36-DS TO LIST OF MODELS. | C FICK | |
| REV. | DATE | DESCRIPTION | BY | APPR. |

| | | | |
|---|------------|-----------------|--|
| DAKTRONICS, INC. BROOKINGS, SD 57006 | | | |
| PROJ: CHRONDEK DISPLAYS | | | |
| TITLE: SCHEMATIC; PWR/SIG CH-1421-H & CH-1521-H | | | |
| DES. BY: | | DRAWN BY: JLH | |
| DATE: 19JUL89 | | | |
| REVISION | APPR. BY: | 1081-R03A-38788 | |
| | SCALE: 1=1 | | |