

Versa-Pak

Automatic Dimmer



User Manual



Introduction

This User Manual is supplied with your system. Copies of this manual may be obtained from Electronics Diversified, Inc. for a nominal charge. It is recommended that you copy those portions of this manual applicable to your present use in the installation, maintenance or repair and preserve the original in a safe place. ©1998, by Electronics Diversified, Inc. All rights reserved.

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Description

Auto-Dim: The Versa-Pak Auto-Dim, designed for automatic fading between two preset levels, can also generate a flicker-flame action resembling candlelight. The compact self-contained dimmer can operate from a remote 24V signal or its own power supply. The dual dimmer model contains two separate control systems for individual operation. When a signal is received, the dimmer automatically fades from one preset to the other. The fade rates for the presets are individually adjustable. Each dimmer includes a heat sensor for overtemp protection, a reliable SSR package, and a toroidal filter.

Installation

Mounting: The Versa-Pak Auto-Dim is designed to be wall mounted. Adequate ventilation should be provided, with a maximum operating temperature of 40°C (104°F). A fully loaded dimmer creates approximately 200 BTU/Hr of heat. If the dimmer is being used at or near its maximum rating, consideration of the heat generated should be given.

Access: The only spacing requirements for access and working space is that required by national and local electrical codes for dead front switchboards.

Wiring: All connections are made to internal pigtail wiring, or plug connectors. All wiring should comply with local codes. All wiring must be rated for 150 volts or more, *including control wiring*. Knockouts are provided for conduit entry on all sides of the enclosure.

Input

Power: Input power is a single 20 amp, 120VAC circuit. The input power circuit must be protected by a 20 amp branch circuit breaker.

Dissipation: The Versa-Pak Auto-Dim has a power dissipation of 100 BTU for each 1000 watts of connected load.

Operation

Introduction: The Versa-Pak Auto-Dim unit may be divided into 2 main sections: card and dimmer.

AD Card: The Auto-Dim card may be configured for either auto-dim or a flicker-flame function, by randomly fading between two preset inputs.

AUTO-DIM: U2 and U3 are 100 step digital pots. They are controlled by the ramp inputs, (U1), and depending upon the condition of the input, either ramp to the low or high presets. The fade rate is controlled by U4 and U5, 555 timers, and up and down rate pots. The analog switch (U6C) selects which pot to use for the timing. The wiper of the digital pot is smoothed by R17 and C7 to eliminate the noticeable steps of the digital pot, and amplified by U8 to convert the 0 - +5 volt signal to 0 - +10 volts. The output is isolated by D9 and load resistor R17, and output to the dimmer.

FLICKER-FLAME: The flicker flame function works the same as auto-dim except that the raise/lower input is changed by a random number generator. U10 creates a 30Hz pulse train which clocks U11, a 13-stage shift register. The feedback loop of U12 causes the shift register to create a pseudo random output. This output is fed into the Up/Down inputs, the digital pots U2 and U3. The digital pots are clocked by individual clock circuits (U4 & U5) which allow the digital pots to be "turned" at different rates. The combination of the clock and up/down have the same effect of a person turning the knob of a potentiometer randomly up and down. As the level changes, the output causes a lamp to flicker randomly simulating a flickering flame. When in flicker-flame mode, the remote ramp inputs are disabled.

ENABLE: U6A allows the dimmer to be enabled or disabled. Depending upon the condition of the enable input, the analog switch will either pass the signal from the digital pot, or tie the signal to the ground. When the signal is at ground, the dimmer is disabled. When remote input P2-8 is grounded, the dimmer will be enabled regardless of the condition of the remote enable input.

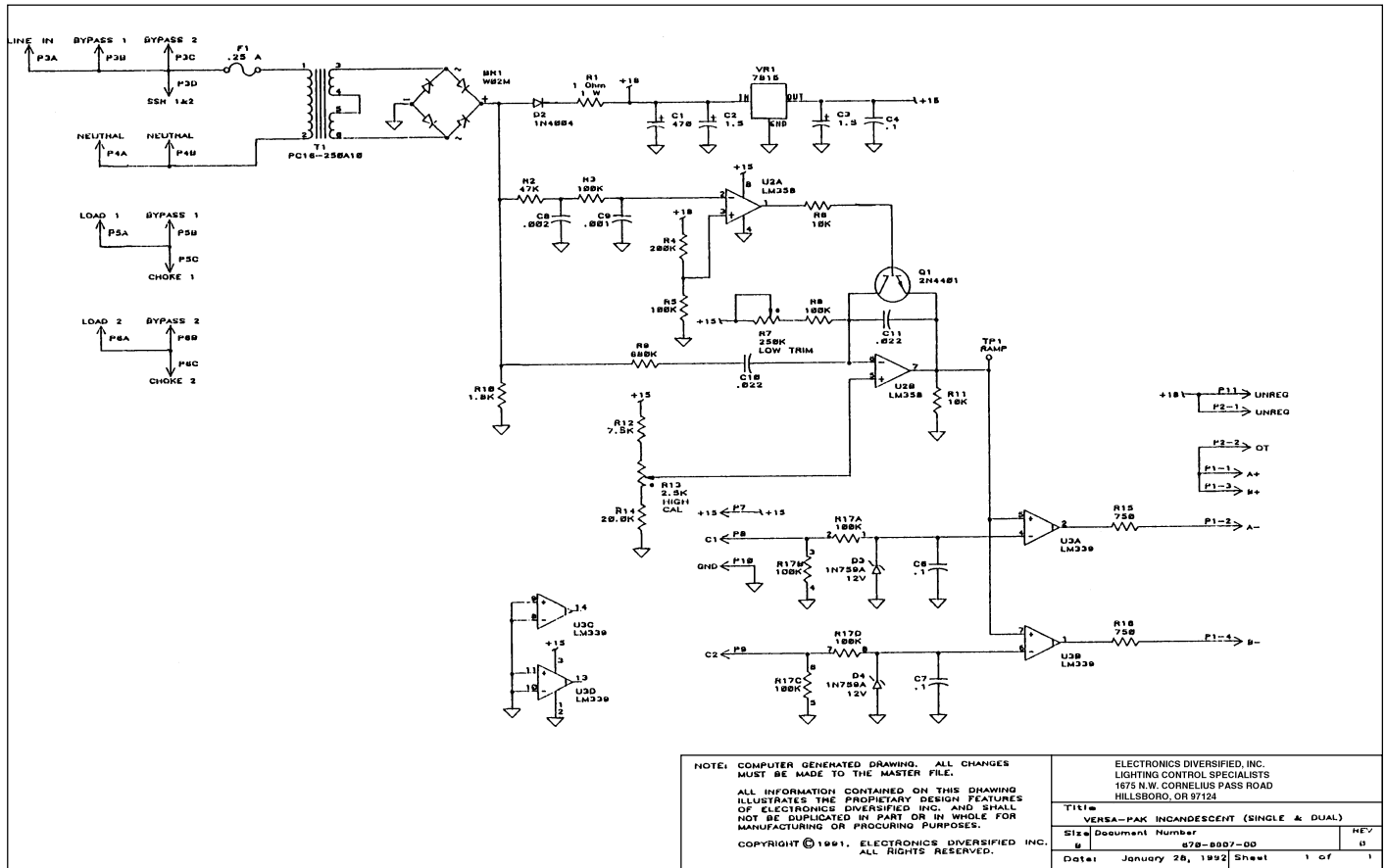
NOTE: Most systems are shipped with P2-8 grounded.

WORK: The work circuit operates the same as the enable circuit except when the dimmer is in work mode, the signal is forced to the +5v power supply. When this signal is amplified by the output section, (U8) the signal will be +10v, which will cause the



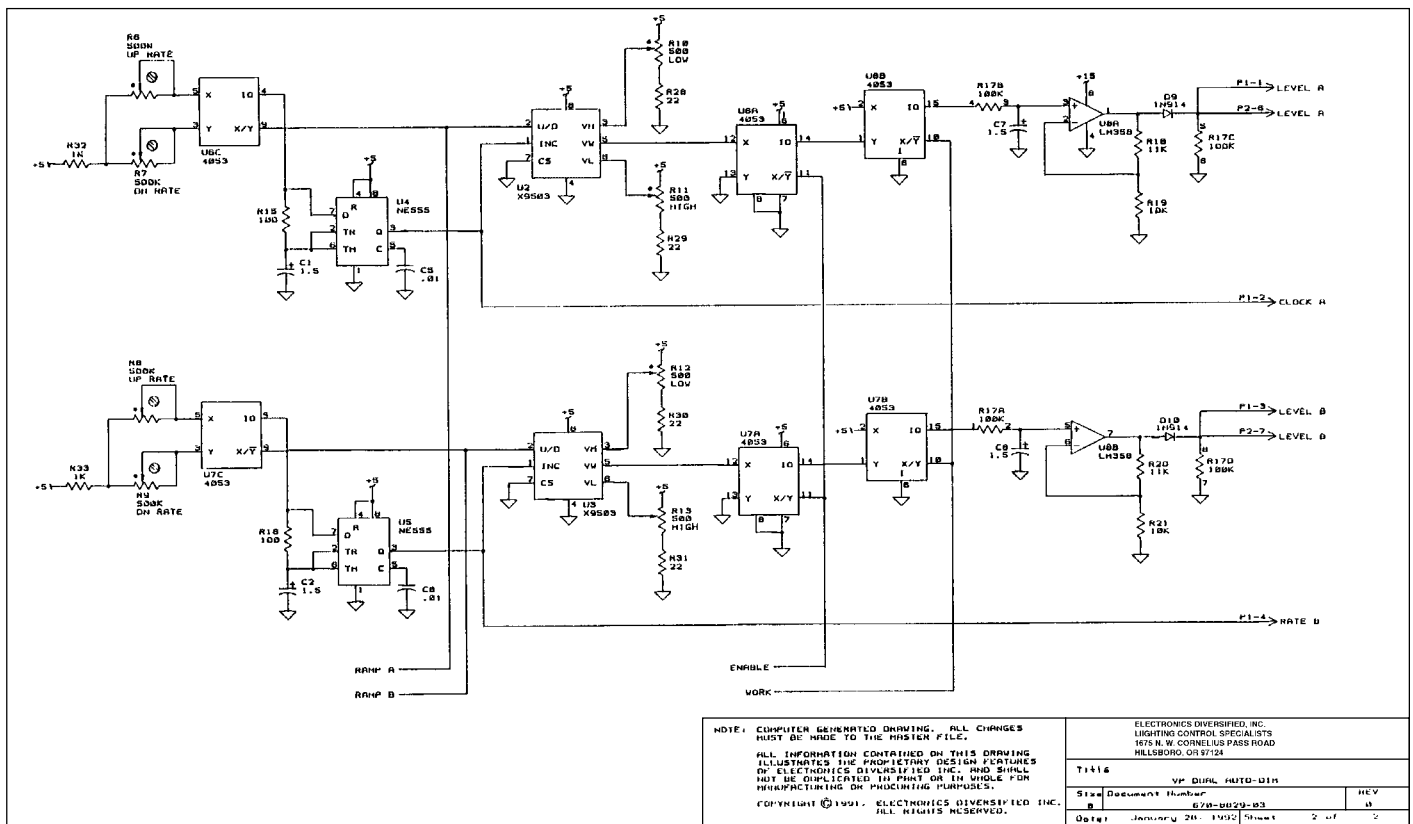
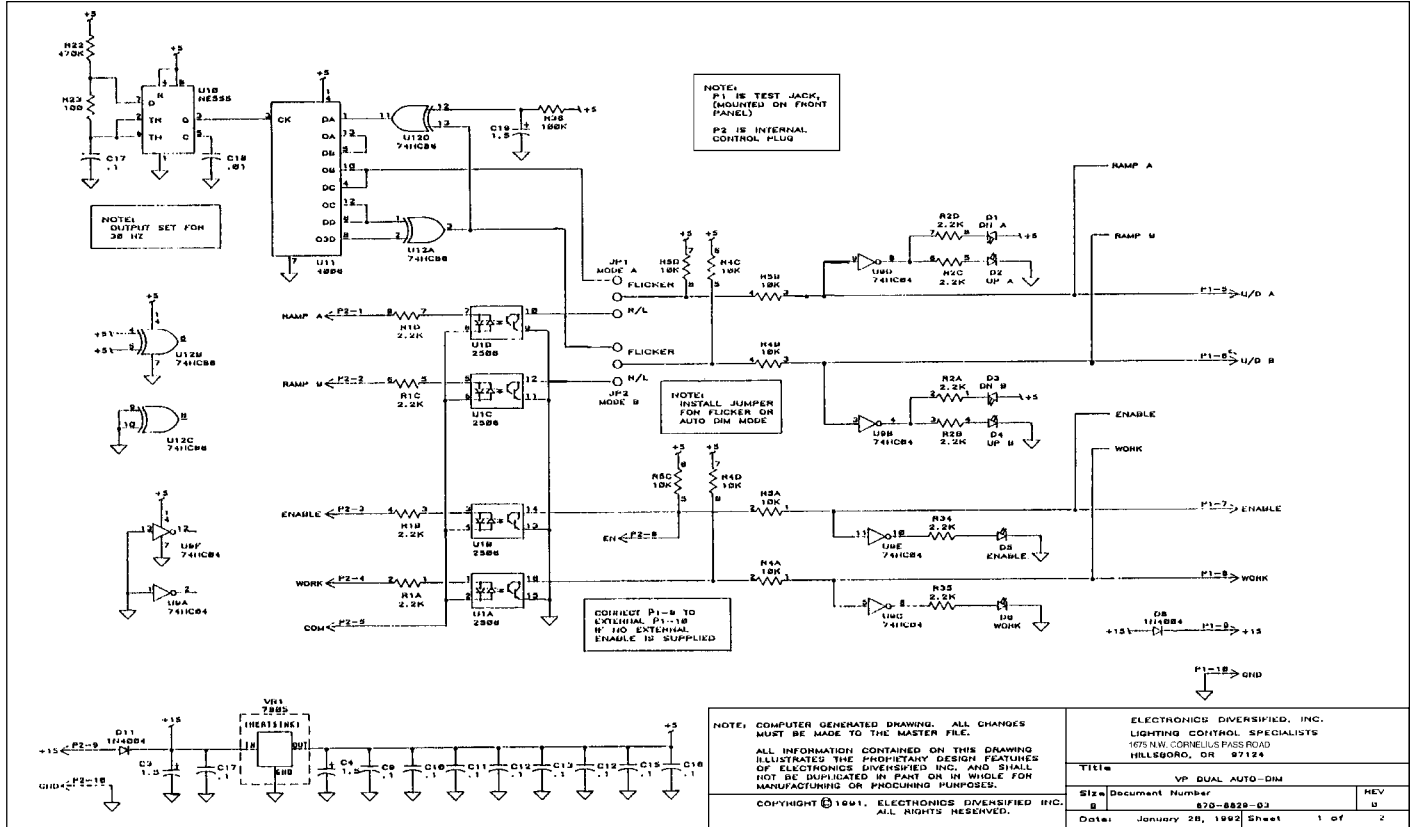
Schematics

Versa-Pak Incandescent (Single & Dual)



Schematics

Versa-Pak Dual Auto-Dim (Dwgs 1&2)

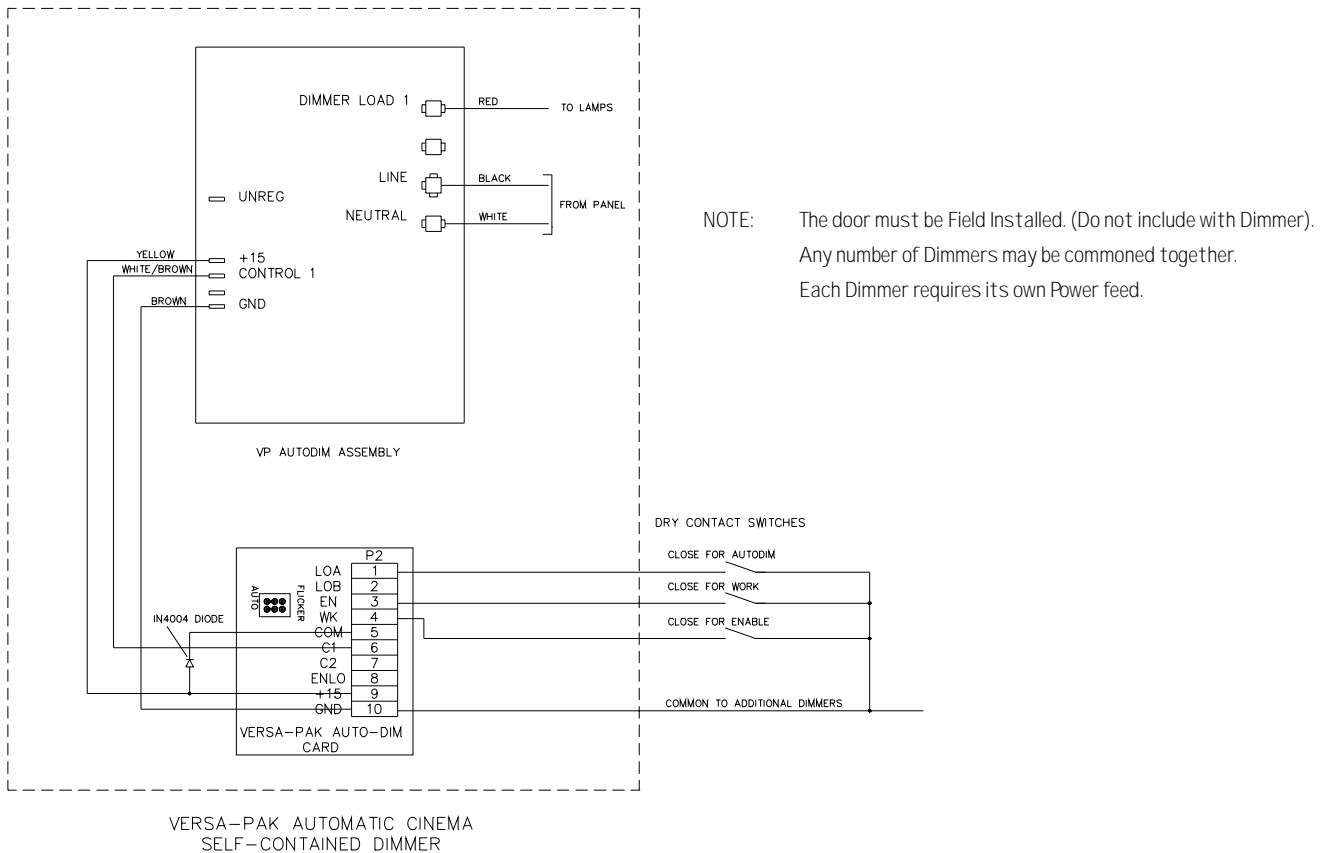
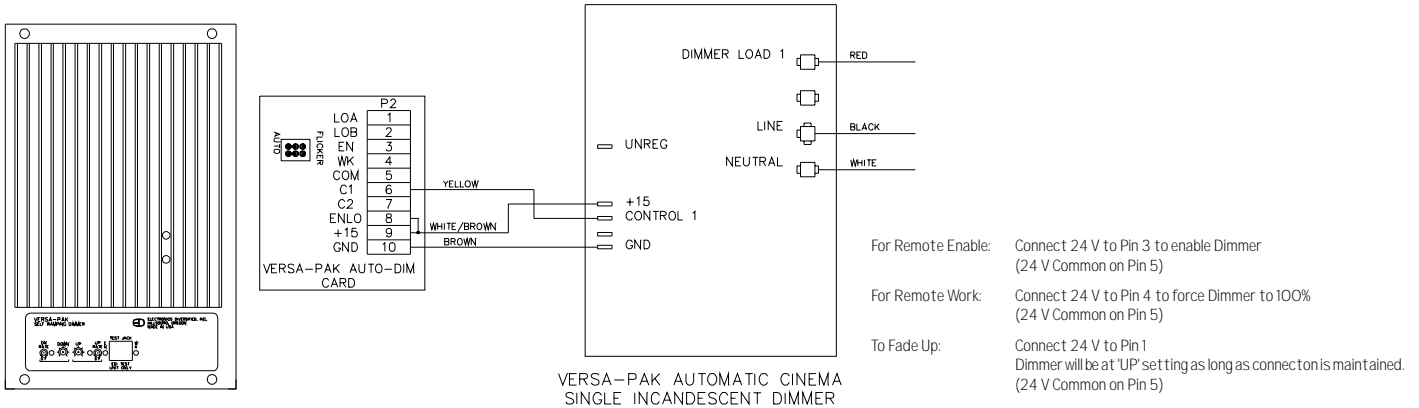


dimmer to come on to Full.

VP Dimmer: The Versa-Pak dimmer is a 0 - +10 Volt controlled dimmer. U2A is a zero cross detector. At zero cross (line voltage at 0) Q1 is turned on, discharging C11. The dimmer creates a ramp signal (U2B) by integrating a constant current (low trim) and the sine

wave input (R9) to create a falling ramp. The ramp is compared to the input control voltage, by U3.

When the control voltage exceeds the ramp voltage, the output of the comparator goes low, which causes the SSR module to turn on. This is repeated every half-cycle (120Hz). Depending upon the control voltage, the amount of time the SSR is on will vary the intensity of the lamp. A toroidal filter is placed in series with the SSR pack to limit lamp filament noise.



Interfacing

Power

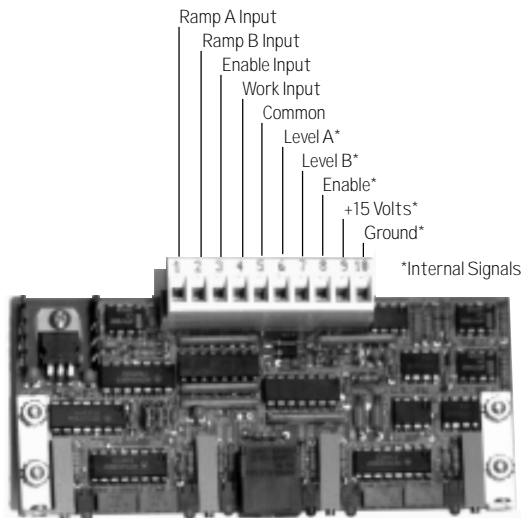
Connection: Connect 120VAC from a breaker panel to Line and Neutral. Connect the lamp loads to the Dimmed Out connection. Do not exceed 1920 watts load on a single 20 amp dimmer, or 960 watts load on a dual 10 amp dimmer.

Auto-Dim

Inputs:

The following table gives the Auto-Dim input connections. Control voltage may be 12 to 30 volts common positive or negative.

Auto-Dim Input Connections



Internal Enable:

All signals are maintained contact. For proper operation, an Enable signal must be supplied. Ramp inputs are not required for dimmers set to flicker-flame. The remote enable requirement may be bypassed by connecting Pins 8 and 10 together. All wiring must be rated for at least 150 VAC.

Under some circumstances, you may not need the enable input. This input may be strapped as always enabled by placing a jumper between Pins P2-8 and P2-10. When this jumper is in, the dimmer will always be enabled.

Dry Contact

Interfacing:

Under some circumstances, you may not have a power supply to operate the inputs (dry contact closures). You may use the internal power supply to operate the inputs by placing a diode between P2-9 and P2-5, and return your contact closures to P2-10. (See drawings on page 5).

Operation

Introduction:

The Auto-Dim card fades between two presets. For proper operation, the low and the high levels and the fade up, fade down rates must be set. In addition, a remote input for the ramp function and work or enable inputs may be required.

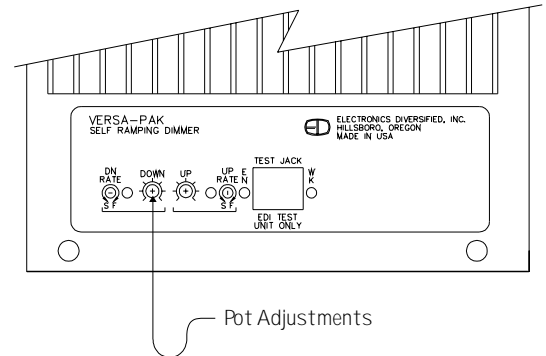
Auto-Dim

Settings:

Each channel has four adjustment pots. The two rate pots set the fade rates. When the remote input is enabled, the dimmer will fade to the level set by the UP pot at the rate set by the UP RATE pot. When the control is removed, the dimmer will fade to the level set by the DOWN pot at the rate set by the DOWN RATE pot.

To set these adjustments, first set the minimum and maximum level intensities with the UP and DOWN pots, and turn the rate pots to the desired rate.

NOTE: Using the AUTO-DIM Calibrator will allow intensities and fade times to be set precisely.



Flicker

Settings:

To operate the dimmer in the flicker-flame mode, the auto-dim card must be strapped for flicker-flame operation.

The standard factory setting is for auto-dim operation.

To change the card to flicker-flame operation, there are two jumpers. Move the proper jumper on the auto-dim card from the "auto-dim" to the "flicker" position. When the dimmer is in flicker-flame mode, the green LEDs on the front panel should alternate rapidly between up and down.

Each channel has four adjustment pots. The two rate pots should be set to the same rate. Turning the pots clockwise will increase the flicker rate, causing a rapidly changing vibrating effect. Turning the pots counterclockwise will decrease the flicker rate, causing a slow, throbbing effect. To set these adjustments, first set the minimum and maximum level intensities with the UP and DOWN pots, and turn the rate pots all the way clockwise (fastest). Then rotate the pots back to the desired effect.

NOTE: Using the AUTO-DIM Calibrator will help greatly in setting the flicker rates, and the High and Low intensities.



Auto-Dim

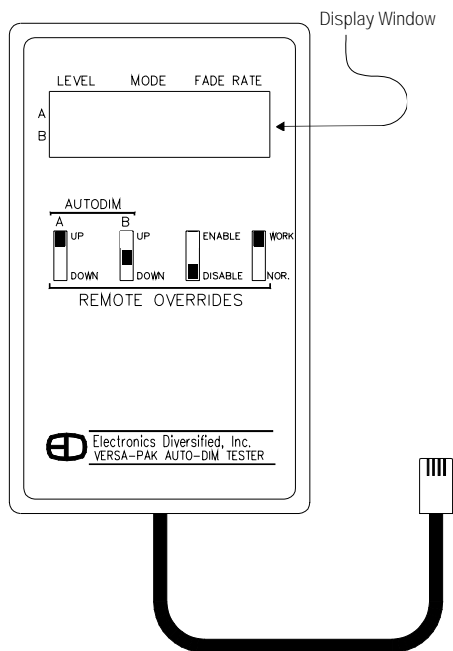
Calibrator: The Auto-Dim calibrator allows you to easily set up the dimmer fade rates and levels. It also allows you to override the remote control inputs.

To install the calibrator, insert the plug in the front of the Versa-Pak unit. The calibrator will display two lines of text. The top line is for the left channel on the Auto-Dim card (Dimmer A), and the bottom line is for the right channel on the Auto-Dim card (Dimmer B).

NOTE: If your Versa-Pak Auto-Dim card has only one channel, ignore the second line of text on the display screen.

The display will show the current fade rate, and the current level the dimmer is set to. The switches on the calibrator allow you to override the remote inputs. If the switch is in the center position, the remote input will control that function. If the switch is in the bottom position, the input will be forced into the OFF setting (as if the remote input was inactive). If the switch is in the top position, the input will be forced into the ON setting (as if the remote input was active). When the Auto-Dim calibrator is removed the Auto-Dim card will revert to the remote inputs.

Versa-Pak Auto-Dim Tester

**Setting a****Channel:**

To set a channel, follow the procedure below:

1. Set the desired Auto-Dim switches (A or B) to Up.
Set Enable/Disable to ENABLE.
Set Work/Norm to NORM.
2. Adjust the Up fade rate by turning the UP RATE pot until the desired rate is displayed.
3. Adjust the Up level by turning the UP pot until the desired level is displayed.
4. Set the Auto-Dim switches to DOWN.
5. Adjust the Down fade rate by turning the DOWN RATE pot until the desired rate is displayed.
6. Adjust the Down level by turning the DOWN pot until the desired level is displayed.
7. You may test the operation by moving the UP/DOWN switch to cause the dimmer to fade between the presets, or by removing the tester and using your remote control system.
8. For dual units, repeat the above procedure to set the second dimmer.

Troubleshooting

While the Versa-Pak Auto-Dim is generally trouble-free, there will be occasions which require changes, corrections, or replacement of faulty components. This section will provide information necessary to isolate and pinpoint problem areas. A technical background is assumed, and a digital multimeter is necessary to perform some of the checks.

Dimmer: If the display on the Auto-Dim tester shows valid fades and intensities, the problem is primarily with the dimmer. If the output of the dimmer is on at 100%, the SSR pack is probably defective.

Auto-Dim**Interface:**

If no LEDs light up on the card, the problem is usually with the +15V power supply in the dimmer module. If the LEDs function, but the Auto-Dim tester will not give the proper levels or fade rates, then the Auto-Dim card is probably defective. If the unit works properly with the tester but not with the remote inputs, then check to make sure the remote inputs are working.

Symptoms: Although the vast majority of systems are powered up without incident, there will inevitably be occasions which require changes, corrections, or replacement of faulty components. This section is intended to cover the majority of problems which could appear.

Troubleshooting (cont'd)

Symptom	Possible Cause	Remedy
System is dead, no indicators come on.	No power. Bad Fuse Bad 15V Power Supply	Verify presence of voltage at power input. Replace fuse. Check +15V supply on dimmer.
Front panel indicators come on, but no dimmer output.	Unit not enabled. Output levels set to 0. Bad SSR Pack. Bad Unit	If yellow enable LED is off, the unit is disabled. Check remote input controls to enable dimmer. Make sure the dimmer is not set to the Low preset, or at a level set to 0. Replace SSR Pack. Replace unit.
Front panel indicators come on, dimmer stuck at full On.	Unit in Work mode. Output levels set to 100%. Bad SSR Pack. Bad Dimmer unit	If red Work LED is on, the unit is in work. Check remote input controls to dimmer. Make sure the dimmer is not set to the High preset, or at a level set to 100%. Replace SSR Pack. Replace unit. The problem is in the control unit.
Works properly with tester, but not with remote inputs.	Incorrectly connected remote inputs. Defective card.	Check input wiring and control circuitry. Replace Auto-Dim card.

Replacement Parts

Replacement parts are available from Electronics Diversified, Inc.

To obtain replacement parts, call (503) 645-5533 or (800) 547-2690 and ask for Customer Service.

Since these systems are customized for individual applications, it is important that you have the following information available when you call.

The equipment type or number, serial number, and original EDI system drawing number (As-Built Drawing Number).

When calling, the customer service representative will help to determine the proper part you need, and any additional parts, if necessary, depending upon your requirement.

EDI Part No.	Description
020-1000	Dimmer Module (Single 20A Dimmer)
020-1005	Dimmer Module (Dual 10A Dimmer)
152-2016	SSR Pack (Single 40A Dimmer)
152-2025	SSR Pack (Dual 40A Dimmer)
670-8829	Auto-Dim Card
970-4003	Test Unit
970-4002	VP-D1/AD Dimmer Assembly (Dual 10A)
970-4004	VP-2/AD Dimmer Assembly (Single 20A)

Service

EDI offers a 24 hour Service / Support Network.

For technical questions about this product or operational assistance, ask for Customer Service at: 1-800-547-2690

You may communicate by FAX: 1-503-629-9877

After Hours Emergency--

Ask for Emergency Assistance: 1-503-645-5533

Internet: WWW.edionline.com

Internet E-Mail: service@edi.org

If your Versa-Pak needs repair, call 503-645-5533 for a Return Materials Authorization number, and a **shipping address** will be furnished.



Electronics Diversified, Inc.
1675 N.W. Cornelius Pass Road
Hillsboro, Oregon, 97124



Attention Versa-Pak Auto-Dim owners!

Please return this registration card immediately.

Your prompt attention to this matter will ensure your receiving updated technical information for this product as it becomes available. Please complete all information. Look for acknowledgment of your registration within 6-8 weeks.

Name: _____

Title: _____

Facility and/or Company: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

E-mail: _____

Web site: _____

CUT ALONG DOTTED LINE



Mail to:
EDI User Manual Registration
1675 NW Cornelius Pass Road
Hillsboro, Oregon 97124

or FAX to: (503) 629-9877

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