



OWNER'S MANUAL DIMMERMASTER 1224 DIGITAL DIMMER

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1. SETUP AND CONNECTION

A) MECHANICAL INSTALLATION

Remove all packing material from the unit. Make certain that all holes are free of obstruction on all sides of the unit. Replace all packing material in the carton and store it for reuse.

For portable use, set the Dimmermaster on a smooth, cool surface. Up to 2 packs may be stacked vertically. Do not remove the feet when stacking. Do not block any vent holes. Make certain that the vent holes all have at least 6 inches of free air around them. It is essential that this unit have adequate cooling for safe, reliable performance. Maximum air temperature must not exceed 40E Centigrade (105E Fahrenheit).

B) RACK MOUNTING

The Dimmermaster may be rack mounted in a standard EIA 19-inch equipment rack. The rubber feet may be removed. Do not remove the top and bottom panels. The Dimmermaster occupies 5.25 inches of space in the rack, or three rack units. For best cooling, an additional 1.75 inches, or one rack unit, between packs is recommended. The rack should be ventilated from the top at a minimum of 120 CFM.

C) ELECTRICAL INSTALLATION

The dimmer must be supplied with an amount of current equal to the combined total current of the lamps it controls. To calculate this current, use the formula $amps = watts \div volts$. For example, if twelve 2400-watt, 120 volt lighting units are connected to the dimmer, it would require $28,800 \div 120$, or 240 amps total power. This is available from a three phase 4 wire 80 amp or a single phase 3 wire 120 amp service. Usually this much power is not required and a 40 - 60 amp service may be used with lower power loads plugged in.

The Dimmermaster accepts either three phase or single phase power input and is factory configured for three phase. Line to neutral voltage is always 120 volts. Line 1 to Line 2 voltage is 208 volts in three phase service and 240 volts in single phase service. It is very important that the input voltages be checked with a meter to insure that they are correct. A mistake can place 208 to 240 volts across a 120 volt lamp. The breakers will protect the unit but may not save the lamps. A double check of voltages before applying power can guard against such disaster.

The power input connector is a terminal block. Each leg of the power feed connects to one terminal on the dimmer pack. These are marked "L1", "L2", and "L3". The neutral connection is made on the neutral bar, just to the left of the power block. The ground connection is made on the ground terminal,

just to the right of the power block. The pack has circuit breakers to protect each dimmer channel, but the primary circuit protection and disconnect is to be provided by the user.

When single phase service is used switch S2, located near the center of the board, must be moved from the "3 phase" position to the "1 phase" position. The power input terminal marked "L3" is not used. The two blue wires wrapped with red tape must be moved to the terminal marked "L1" and the two wrapped with black tape to "L2". The tiny blue wire stays in terminal "L3". Please refer to the diagrams at the rear of this manual.

D) GROUNDING

The term GROUNDING refers to a separate wire with green insulation which is connected from the equipment case to earth ground (often through a properly grounded conduit system). This is not the same as the neutral or common and must not be confused with them. The neutral is a separate, load-carrying circuit conductor. The ground conductor should not normally carry current.

When the Dimmermaster is connected to its power source by a flexible rubber cable, the ground connection is made through a wire in the cable. For maximum safety and to comply with electrical codes, this connection must be made. Cables supplied by Dove Systems are pre-wired for this connection and include the necessary green wire. Be sure this is firmly bonded to a ground connection box, a cold water pipe, or a known earth ground.

When the Dimmermaster is connected to its power source by conduit, the ground connection can be made via the conduit itself. If flexible conduit is used, a separate bonding conductor will usually be required. Always check your local codes for hook-up before operating this equipment. It is recommended that power connections to the Dimmermaster be made by a qualified electrician.

E) LOAD CONNECTIONS

The dimmer pack consists of twelve dimming channels. The Dimmermaster will dim any load from 1 watt through 2400 watts at 120 volts. The load may be incandescent, inductive, or resistive. This includes conventional incandescent, quartz incandescent, rain-lights, pin beams, and similar lamp loads. This does not include fluorescent or neon lamps. Dove Systems offers a solid state transformer to dim other types of loads, such as 12 volt MR16 lamps.

The output connectors can be U-ground receptacles, stage pin receptacles, twist-lock receptacles (L5-20R), or a terminal block. If your unit has receptacles installed, merely plug the load into the outlet which corresponds to the circuit you desire to use. For terminal-block-only units, there is one lug for each output and a neutral bar for all neutrals. Lugs are numbered according to their circuits. There should be a separate neutral returning from each load circuit.

F) CONTROL CONNECTIONS AND OVERTEMPERATURE SENSING

The Dimmermaster 1224 can take either of two control protocols: USITT DMX-512 or 0 to +10VDC analog. DMX control input connections are made through the five pin male XLR on the front of the unit. Analog 0 to +10VDC control input connections are made through the DB15 male on the front of the unit.

XLR DMX		DB15 ANALOG			
PIN 1	Common	PIN 1	Channel 1	PIN 9	Channel 9
PIN 2	Data	PIN 2	Channel 2	PIN 10	Channel 10
PIN 3	Data	PIN 3	Channel 3	PIN 11	Channel 11
PIN 4	-DataReturn	PIN 4	Channel 4	PIN 12	Channel 12
PIN 5	+DataReturn	PIN 5	Channel 5	PIN 13	+15V unregulated
		PIN 6	Channel 6	PIN 14	-15V unregulated
		PIN 7	Channel 7	PIN 15	Common
		PIN 8	Channel 8		

DMX pins 4 and 5 return the status of the dimmer to the controller. An option on the dimmer sends the heat sink temperature and each of the line currents back to the controller for display.

When the temperature of the heatsink exceeds 75E Celsius, the control is cut off. This prevents overheating. When the heatsink cools, the loads begin to work again. If this happens, the air circulation around the dimmer should be improved. Check that the internal fan has not failed. Note that the fan does not operate until the heatsink temperature exceeds 50E Celsius.

G) CHANNEL SELECTION AND TESTING

The thumbwheel switch on the front of the unit is the channel selection switch. The number shown is the starting dimmer. Valid starting dimmer numbers range from 1 to 501. The starting dimmer number determines the setting for the entire pack of twelve dimmers. If, for example, the starting dimmer number

is 37, the pack reads control signals for channels 37 through 48.

When the first digit of the thumbwheel switch reads "6", the pack is in *load testing* mode. The second and third digits show the dimmer being tested, from 1 to 12. The *load test* forces the output of the dimmer to full. This is helpful for focusing and troubleshooting. (e.g. Which channel is that? Is the lamp burnt out?) In addition, setting the thumbwheel switch to "600" powers all loads at approximately 20%.

H) INDICATORS

The status indicator LED is used to check the Dimmermaster for proper control and power connections. It shines amber or green when it is receiving power and a valid DMX signal, and red when it is receiving power but a bad signal. It also shines red when it is receiving an analog signal only. No light at all means that it is not receiving power.

I) INTERNAL SWITCHES

A 9 position internal DIP switch sets various options. These include DMX line termination and nondim operation. DIP switch functions are printed on the circuit board.

To terminate the DMX line (this is the last dimmer in the DMX string), turn on DIP switch number 1 (which terminates DMX pins 2 and 3) and 9 (which terminates DMX pins 4 and 5).

All outputs at or above a specified number may be set to nondim. When set to nondim, an output is full when fed with 50% (DMX level 128, analog +5V), or higher. Below this threshold, the output is off. The first nondim output is set using binary coding on the DIP switch. For example, if outputs 7 and above are to be nondim, switches 2, 3, and 4 would be set to the on position, since these correspond to nondim 1, nondim 2, and nondim 4. $1+2+4=7$, so outputs 7 and above will be nondim.

2. TROUBLESHOOTING CHART

SYMPTOM: No channels work; no lights at all.

Possible cause:

*Improper pinout on controller or cable wires

Action to take:

Check pinout. Check

cable.
 reversed
 *Control console incorrectly set up Reread operating instructions;
 check setup &
 protocol on console.
 *Defective 1224 control card Replace Control Card
 Assembly.
 *Thermostat has opened Improve air circulation or reduce
 loads. Check internal fan. Unit will start working
 when cool.

SYMPTOM: One or more channels are out.

Possible cause:
 *No load connected or lamp known burned out
 *Channel breaker is tripped breaker.
 *Power wire not connected on power wiring
 *Test switch in *load test* mode channel

Action to take:
 Check instrument in good outlet.
 Check load, reset
 Check for proper phasing
 Select proper starting

SYMPTOM: Channels 9 & 10 and/or 11 & 12 are stuck on or off or work backwards

Possible cause:
 *Incorrect power wiring or switch setting switch S2

Action to take:
 Check power wiring and

SYMPTOM: Channel breaker keeps tripping.

Possible cause:
 *Shorted cord or fixture breaker.
 *Channel overload connected and reset breaker.

Action to take:
 Clear fault and reset
 Reduce wattage

SYMPTOM: One or more channels are up full and won't dim.

Possible cause:
 *SCR failure
 *Control console incorrectly set up (Unplug control line to verify)
 *Test switch in *load test* mode channel

Action to take:
 Replace SCR module.
 Reread the operating instructions of console
 Select proper starting

SYMPTOM: Some channels flicker

Possible cause:
 *Intermittent connection in control or load lines
 *SCR or control circuit failure card
 *Slide controls are broken replaced. Treat temporarily or dirty
 Tri-flo

Action to take:
 Recheck all connections.
 Replace SCR module or
 Have slide control
 with WD-40 or

TO CHANGE AN SCR MODULE OR SSR: 1. DISCONNECT POWER FROM DIMMER. 2. REMOVE FIVE SCREWS BINDING TOP PANEL TO SIDE PANELS AND BACK. 3. REMOVE CONNECTIONS FROM THE SUSPECT SCR MODULE. THERE ARE SIX MODULES WITH TWO CHANNELS IN EACH. THE MODULE CLOSEST TO THE FAN IS CHANNELS 1 AND 2. 4. REMOVE SCREWS BINDING MODULE TO HEAT SINK AND REPLACE MODULE. 5. REASSEMBLE IN REVERSE ORDER OF DISASSEMBLY.

TO CHANGE THE CIRCUIT CARD: 1. DISCONNECT POWER FROM DIMMER. 2. UNSCREW FOUR SCREWS HOLDING CIRCUIT BOARD PANEL TO FRONT PANEL. 3. SLIDE CARD OUT. SET JUMPERS AND SWITCHES ON REPLACEMENT CARD TO MATCH. 4. SLIDE REPLACEMENT CARD IN UNTIL IT SEATS INTO EDGE CONNECTOR AND SCREW DOWN.

Users with further technical questions may call the factory at (805) 541-8292.
 NOTE: DOVE SYSTEMS DIMMER PACKS USE TRADE SECRET AND PROPRIETARY CIRCUITY. FOR THIS REASON, SCHEMATICS CANNOT BE RELEASED FOR THIS PRODUCT. To obtain service, pack the unit with the original packing materials or crushed newspaper and return it, freight prepaid, to:

Dove Systems
3563 Sueldo Street Unit E
San Luis Obispo, CA 93401
USA

(Repair process is expedited when you include a note describin the problem; your return UPS shipping address.)

3. WARRANTY INFORMATION

The manufacturer agrees that the Dimmermaster 1224 shall be free from defects in material or workmanship from date of shipment over a period of one year. Said warranty will not apply if equipment is used under conditions of service for which it is not specifically intended. The manufacturer is not responsible for damage to its apparatus through improper installation, physical damage, or poor operating practice.

If any device is found unsatisfactory under the warranty, the buyer should notify the manufacturer, and after receipt of shipping advice, buyer may return it directly to Dove Systems, San Luis Obispo, CA, shipping prepaid. Such equipment will be replaced or put in proper operating condition, free of all charges except transportation. The correction of any defects by repair or replacement by the manufacturer shall constitute fulfillment of all obligations to the purchaser. Manufacturer does not assume responsibility for unauthorized repairs to its apparatus, even though defective.

Manufacturer shall not be liable for any consequential damage in case of any failure to meet the conditions of any warranty of shipping schedule, nor will claims for labor, loss of profits, repairs, or other expenses incidental to replacement be allowed.

No other representations, guarantees or warranties, expressed or implied, are made by the manufacturer in connection with the manufacture and sale of its equipment. This warranty is non-transferable and applies to the original buyer only.

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