Film-Tech

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XETRON®

XD-3K DIMMER

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NOVEMBER 1987

DIV. OF NEUMADE PRODUCTS CORP. Ten Saddle Rd., Cedar Knolls, NJ 07927 U.S.A. Telephone (201) 267-8200

DIV. OF NEUMADE PRODUCTS CORP. Ten Saddle Rd., Cedar Knolls, NJ 07927 U.S.A. Telephone (201) 267-8200

1.0 SAFETY INSTRUCTIONS

1.1 Basics

When using your equipment, basic safety precautions should always be followed, including the following:

- Read and understand all instructions before using the equipment.
- Do not operate dimmer if unit has been dropped or damaged - until it has been examined by a qualified serviceman.
- Always disconnect or turn breaker off before cleaning and servicing and when not in use.
- To reduce the risk of electric shock, do not immerse the unit in water or other liquids.
- To reduce the risk of electric shock, do not disassemble this unit, but have a qualified serviceman contacted when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.
- The use of an accessory attachment not recommended by manufacturer may cause risk of fire, electric shock or injury.
- A good earth ground is always necessary to prevent electric shock.

1.2 Fuse

When replacing the fuse of this dimmer, use UL miniature fuse rated min. 125V, with 1/4 Amp current rating.

1.3 Line Voltage

This dimmer must be used within an AC voltage of 110 to 120 V (220 V optional) and frequency 50-60 Hz.

1.4 Precautions

- In operating a dimmer system, it is important that certain good habits are developed which will insure proper operation at all times.

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- Power module and control module are to be on the same phase.

- Test your load wiring before connecting it to dimmer. (One test is to connect the power feed directly to the load).

- Rate and level settings should be set by a qualified serviceman at installation.

  IMPORTANT: Damage will occur on the setting pots if used abusively.

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2.0 FEATURES

- Dimmer can be controlled manually, automatically (pulsed) or through a remote control.
- Each channel with a Triac has a power capacity of 2.5K watts.
- Each channel functions independently.
- Each channel can be incremented with Power Modules to accomodate up to 125K watts of power.
- Bright, Dim and Half-Light levels are fully adjustable.
- Bright, Dim and Half-Light rates (speed) are fully adjustable.
- Full brightness in emergency situations (Panic).
- Manual Override in Dim and Half-Light Mode.
- Controls: Bright, Dim, Half-Light, Panic and Normal.
- Panic overrides Normal controls.
- Controls switching in a non-sequential format.
- Underwriters Laboratory Listing
- Controls low voltage Aisle lights.
- Designed for wall or rack mounting.
- Control switches illuminate when function is activated.
- Door swings down for easy access to all internal hardware.

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3.0 GENERAL DESCRIPTION

3.1 Construction

- The dimmer panel is painted aluminum 1/8 in. thick, 17 by 5-7/32 in. overall. Hinges are welded to the back box and secured to the dimmer panel by 8-32 screws and nuts.

- The wall mount dimmer back box is painted cold roll steel 1/16 in. thick with eight combo KO's for 1/2 & 3/4 conduit. Overall dimmensions are 19-1/32 by 5-7/32 by 5 in.

- The rack mount dimmer back cover is painted aluminum 1/8 in. thick. Overall dimmensions are 19 by 5-7/32 by 3-1/2 in.

- All parts of this devise are constructed for protection against corrosion.

- Designed with Solid State components.

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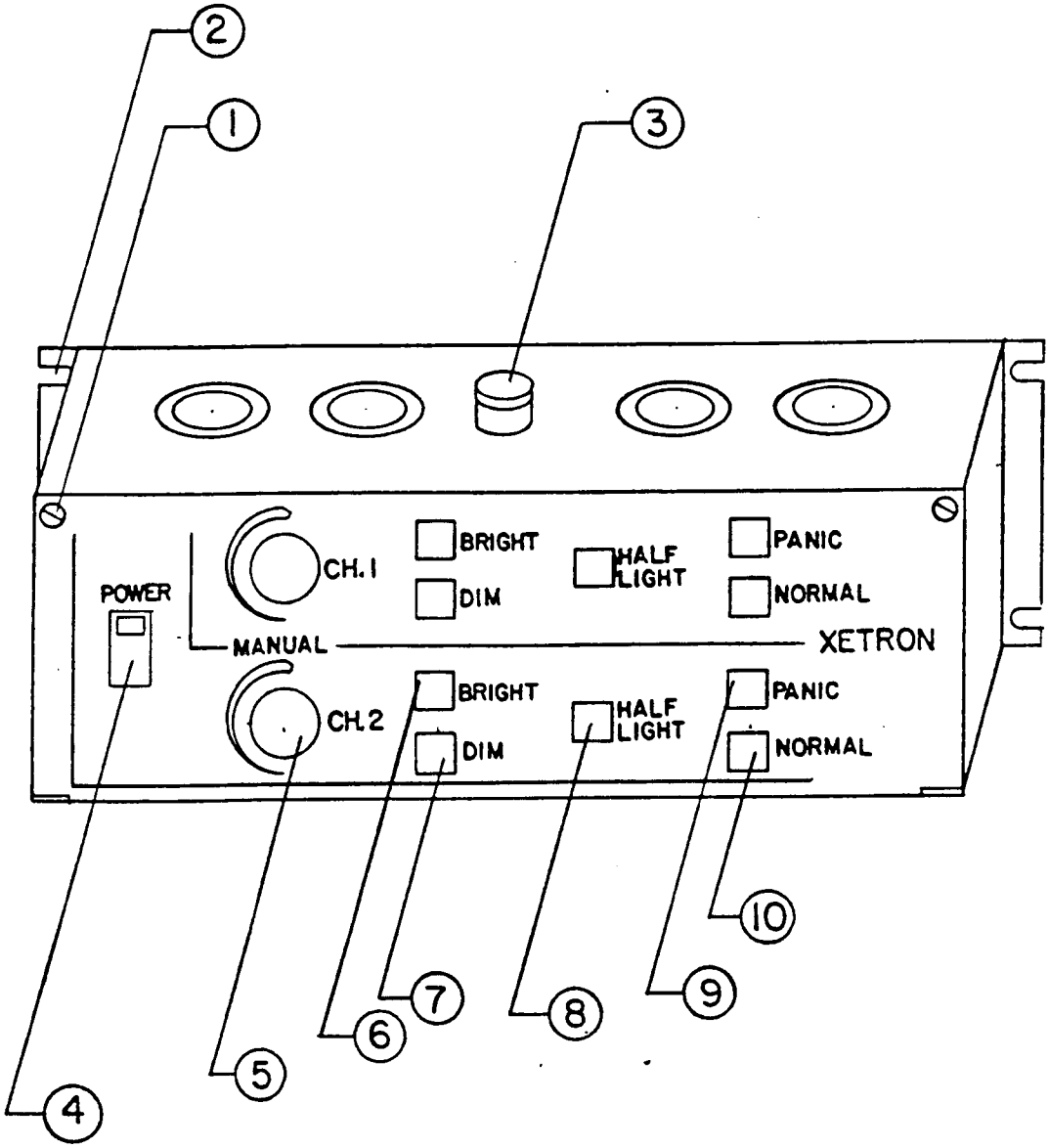
3.2 Description Diagram:



XETRON®

TOLERANCES	PROJECT	SCALE	DRAWN BY	APPROVED
	XD-3K SEREIS DIMMER	NONE	C.R.	
	TITLE: DISCRIPTION DIAGRAM			
DATE: 7/9/87	DRAWING NUMBER: XD-287			

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3.3 Description

1. Quarter Turn Fastners - They lock the access door. To open the door, turn fastners counter clockwise with a screwdriver.

2. Mounting Holes - Hold dimmer in place.

3. Fuse - UL miniature fuse rated min. 125V, with 1/4 Amp current rating. Protects the control board.

4. Power Switch - Provides power to XD-3K Series dimmer. When pressed, the red indicator illuminates.

5. Manual Control Knob - Its a pot which overrides Bright, Dim and Half-Light. It is important to realize that the Manual Control only dims to the highest level on the Mode function. For example, if dimmer is in BRIGHT mode and depending on light level, the manual control will not dim or it will only dim down to the bright level setting.

6. BRIGHT pushbutton: its function is to cause lights to change from either Dim or Half-Light mode to the Bright Mode. The red indicator illuminates either by pressing the pushbutton or through a remote or through an automation.

7. DIM pushbutton: Its function is to cause lights to change from either Bright or Half-Light mode to the Dim mode.
   The red indicator illuminates either by pressing the pushbutton or through a remote or through an automation.

8. HALF-LIGHT pushbutton: Its function is to cause lights to change from either Bright or Dim mode to the Half-Light mode.
   The red indicator illuminates either by pressing the pushbutton or through an automation.

9. PANIC pushbutton: Its function is when an emergency occurs, the lights will change from any mode to full brightness (panic). As a safety precaution, the PANIC mode will stay on until the NORMAL pushbutton is pressed. The red indicator illuminates either by pressing the pushbutton or through a remote or through an automation.

10. NORMAL pushbutton: Its function is to change from PANIC mode to NORMAL mode. The NORMAL mode gives one the capability to control the Bright, Dim and Half-Light modes.

    The red indicator illuminates either by pressing the pushbutton or through a remote or automation. Notice that the indicator is always illuminated even if one presses Bright, Dim and Half-Light.

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4.0 INSTALLATION

CAUTION: If dimmer was damaged during shipping or other circumstances, we suggest to test the dimmer by supplying 110 VAC (220 VAC-option) with a power chord to the Line Input. Connect an incandescent bulb to the Load Input Terminal.

The wall or rack mount unit may be installed through the use of four screws.

The appropriate wires should be pulled through the electrical knockouts (use connectors) on the wall mount unit. Each wire should be affixed to the proper terminals according to the supplied diagram.

4.1 Line (Input Wiring)

Wire should be suitable for 110 VAC (220 VAC-option), single phase capable to handle 20 Amps per Triac or load. For example, if the unit contains two Triacs, the total maximum load is approximately 5K watts - 40 Amps. For further instructions on wiring Power Modules, read section 4.4 and 4.5 (See Dwgs. XD-263 & XD-264).

It's advisable to check with American National Standard National Electrical Code to determine the correct wire gauge for the total load of the unit.

4.2 Load (Output Wiring)

Each Triac has a capacity to handle 2.5K watts, a minimum of 12 gauge wire is necessary. It's advisable to check with the American National Standard National Electrical Code for the proper gauge. Connect load wires to their respective terminals marked "Load Hot" and "Load Neutral" on the Power Module (See Dwgs XD-263 & XD-264).

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4.3 Control Wiring

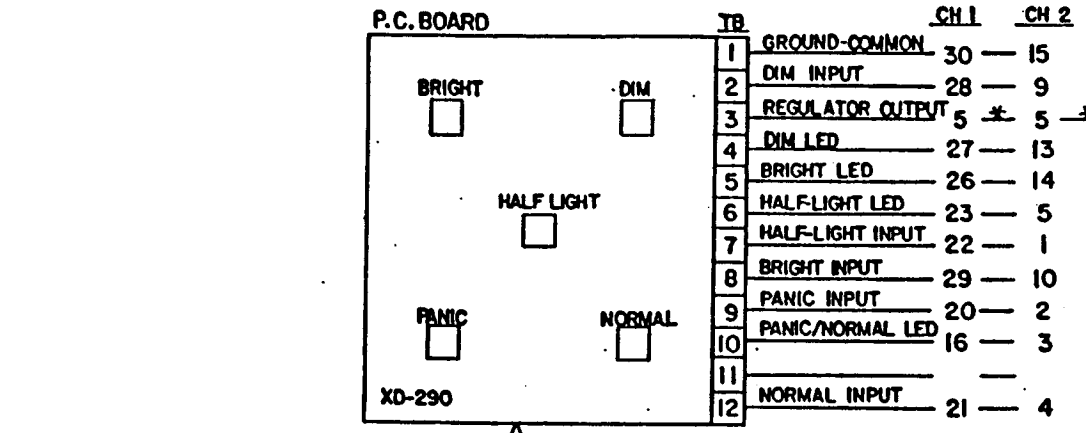
Important: Wires interfacing from the control board to the automations and remotes are to be 22 gauge.

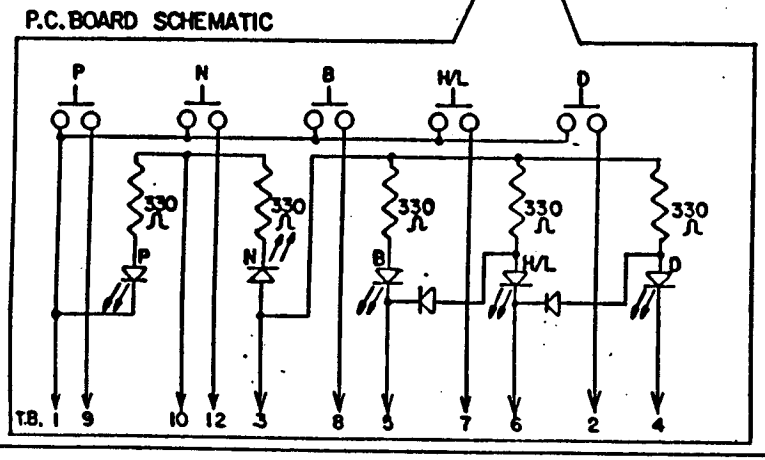
A. Automation Wiring:

TB-1	SINGLE CHANNEL Ch. 1	DUAL CHANNEL Ch. 1	DUAL CHANNEL Ch. 2
Common-Ground	#30	#15	#30
Bright Input	#29	#10	#29
Dim Input	#28	# 9	#28
Half-Light Input	#22	# 1	#22

B. Remote Wiring:

TB-1	Ch. 1	Ch. 1	Ch. 2
Common-Ground	#30	#15	#30
Bright Input	#29	#10	#29
Bright Led	#26	#14	#26
Dim Input	#28	# 9	#28
Dim Led	#27	#13	#27
Half-Light Input	#22	# 1	#22
Half-Light Led	#23	# 5	#23
Panic Input	#20	# 2	#20
Panic/Normal Led	#16	# 3	#16
Normal Input	#21	# 4	#21
TB-2			
Regulator Output	# 5	# 5	# 5





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TOLERANCES	PROJECT	SCALE	DRAWN BY	APPROVED
	XD-3K SERIES DIMMER	NONE	C.R.	
	TITLE: DIMMER REMOTE CONTROL-CONNECTION			
DATE: 8/18/87	DRAWING NUMBER: XD-289			

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4.4 Power Modules (expansion)

There is a variety of combinations to control the triacs in a single channel or dual channel. The most common or standard combinations for one dimmer box are:

A. Single channel controlling one through four triacs (two Power Modules 10K Watts max.).

B. For a Dual channel, there is two independent channels and each channel can control any combination of the four triacs.

If your Load exceeds 10K watts, then expansion is necessary. Xetron has designed a Power Module box which accomodates two Power Modules or four triacs (see dwg. XD-286). By ganging these Power Module boxes, it is possible for each channel to control 125K watts.

4.5 Power Modules (wiring)

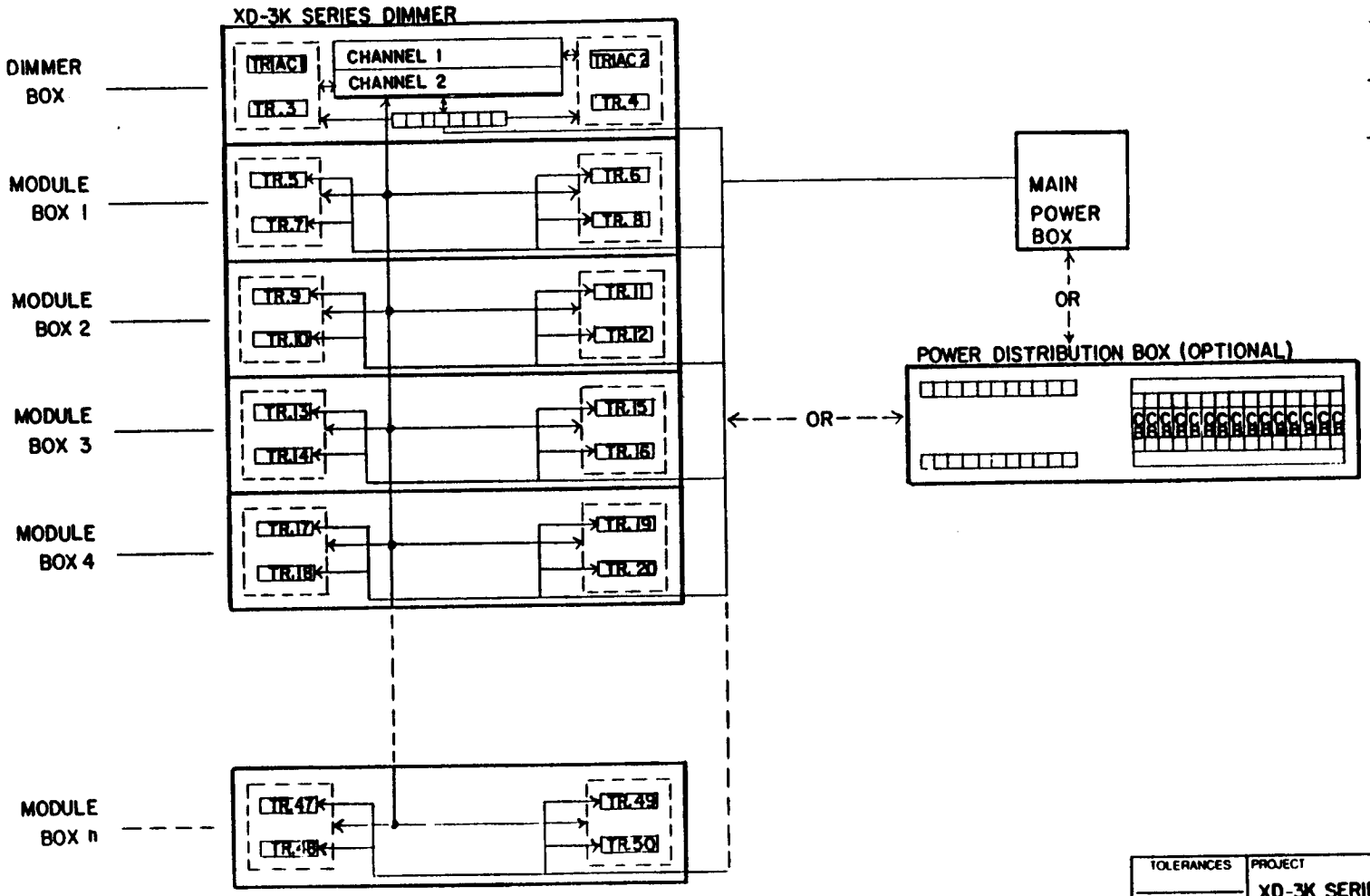
Each channel and its controlled triacs, must be on the same phase. For example, if the channel is to control twelve triacs or four Power Modules, three set of wires on the same phase from the Main Power Box to each Module box is necessary. Each set of wires must handle 80 amps (20 amps/triac). It is advisable to install one circuit breaker/80 Amps.

IMPORTANT:

FURTHER INFORMATION ON POWER MODULES IS IN SECTION 4.4 .

NOTES:

— EACH TRIAC CAN HANDLE UP TO 2.5K WATTS
— EACH CHANNEL CAN HANDLE UP TO 12.5K WATTS OF POWER.
— CONTROL POWER AND ITS TRIACS MUST BE IN THE SAME PHASE.
— CHECK LOCAL ELECTRICAL CODE FOR WIRING REQUIREMENTS.



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TOLERANCES	PROJECT	SCALE	DRAWN BY	APPROVED
	XD-3K SERIES DIMMER	NONE	C.R.	
	TITLE: GANGING POWER MODULES BLOCK DIAGRAM			
DATE: 8/13/87	DRAWING NUMBER: XD-286			

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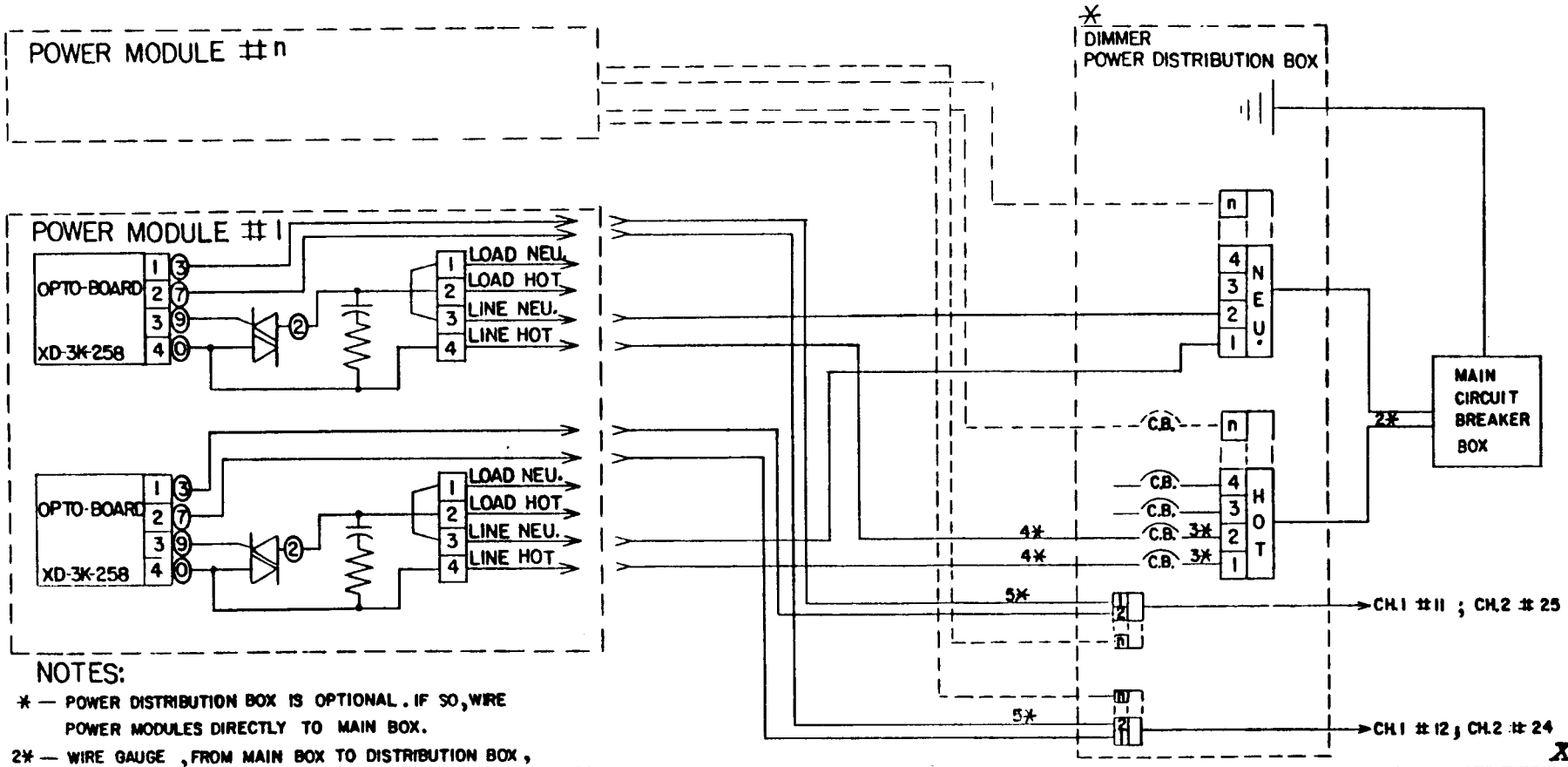
IMPORTANT: BEFORE WIRING, READ ALL FOOTNOTES AND CHECK LOCAL ELECTRICAL CODE FOR PROPER RATINGS



NOTES:

* — POWER DISTRIBUTION BOX IS OPTIONAL. IF SO, WIRE POWER MODULES DIRECTLY TO MAIN BOX.

2* — WIRE GAUGE , FROM MAIN BOX TO DISTRIBUTION BOX , SHOULD HANDLE MAXIMUM LOAD TO ALL POWER MODULES.

3* — EACH CIRCUIT BREAKER SHOULD BE RATED (AMPS) TO HANDLE EACH TRIAC LOAD (20 AMP C.B./≈2.5K WATTS MAX.).

4* — WIRE GAUGE FROM C.B. TO POWER MODULE SHOULD BE # 10 OR # 12.

5* — USE # 22 GAUGE WIRE.

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TOLERANCES	PROJECT	SCALE	DRAWN BY	APPROVED
	XD-3K SERIES	NONE	C.R.	
	TITLE: POWER MODULE FIELD WIRING DIAGRAM			
DATE: 8/11/87	DRAWING NUMBER: XD-288			

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5.0 FIELD ADJUSTMENTS

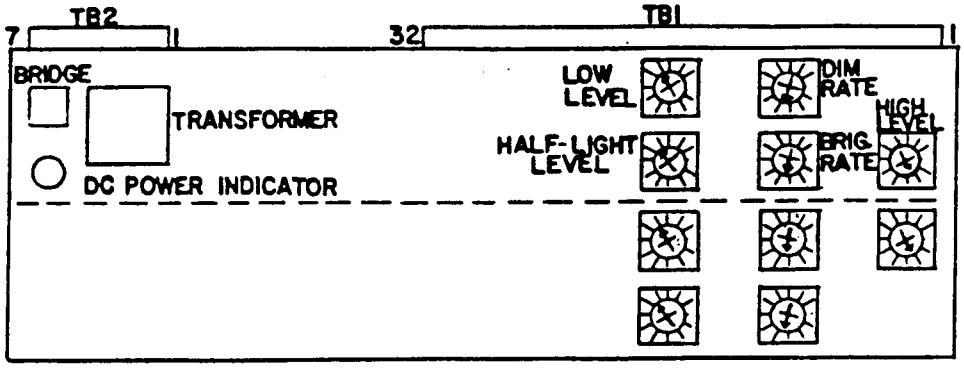

FIGURE 1: CONTROL SETTINGS.

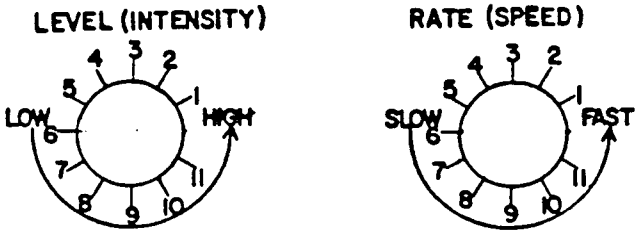

FIGURE 2: LEVEL AND RATE ROTATION.

CHART 1. CONTROL SETTING (FIG. 1 & 2)

	Outpower Power (VAC)	Time (Sec)	Pot Setting
High Level	40-120	-	10
Half-Light Level	0-120	-	4.5
Low Level	0-80	-	4.0
Bright Rate	-	1-1800	8.5
Dim Rate	-	1-1800	8.5

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TOLERANCES	PROJECT	SCALE	DRAWN BY	APPROVED
	XD-3K SERIES DIMMER	NONE	C.R.	
	TITLE: POT SETTINGS			
DATE: 7/1/87	DRAWING NUMBER: XD-285			

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5.1 Definitions

High level - A setting between 40-120 VAC for light intensity. This setting occurs during BRIGHT mode.

Half-Light level - A Setting between 0-120 VAC for light intensity. This setting occurs during Half-Light mode.

Low level - A setting between 0-80 VAC for light intensity. This setting occurs during DIM mode.

Bright Rate - A setting between 1-1800 seconds to determine the speed from a low level to high level.

Low Rate - A setting between 1-1800 seconds to determine the speed from a high level to a low level.

5.2 Settings

Xetron has established standard settings for the XD-3K Series dimmer. They have become part of the manufacturer's test procedure. Therefore, we strongly recommend the settings to be kept to designed format (See Dwg. XD-285).

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PART#	DESCRIPTION	QUANTITY
XD-246	FRONT PANEL	1
XD-255	-L & R Hindges	2
XD-266	-Quarter Turn Fastners (Rack Mount Only)	2
XD-265	-Quarter Turn Fastners (Wall Mount Only)	2
XD-267	-Retainers (Quarter Turn Fastners)	2
XD-279	-Power Switch (Rocker)	1
XD-277	-25K Potentiometer	1
XRS-018	-Potentiometer Knob	1
XD-269	-1/4" Nylon Spacer	16
	-6-32 ESNA Lock Nuts	10
	-Q.C. Label	1
XD-274	SINGLE CHANNEL BOARD	1
XD-271	-Pushbutton Switch	5
XD-248	WALL MOUNT BACK BOX	1
XM-005	-Field Wire Label	1
XD-282	-10-32 Ground Screw	1
	-U.L. Label	1
	-10-32 Hex Kep Nuts (Ground)	2
	-Ground Label	1
XM-003	-Terminal Block Label	1-4
XD-268	-Receptacle Clips (Quarter Turn Fastners)	2
XD-278	-Fuse Holder	1
	-1/4 Amp Fuse	1
XD-270	-Power Module Blank Cover	0-1
	-8-32 Screws (Hold Power Module)	8
XM-002	-Fuse Label	1
XM-001	-Nameplate	1
XD-262	POWER MODULE BRACKET	1-2
XD-253	-Triacs	1-2
	-6-32 Screws	2 or 4
XD-259	-Heat Sink (10 Fins)	1
	-6-32 Screws	2
XCN-059	-4 Output terminal block -300V, 20A	1-2
	-8-32 Screws	2 or 3
XD-269	-1/4" Nylon Spacer	4 or 8
	-6-32 Screws	1 or 2
XD-258	OPTO BOARD	4 or 8
	-6-Pin Socket	1
	-6-Pin Opto Isolator MOC 633A	1
	-.1M Disc Capacitor	1
	-4 Terminal Block	1
	-47 Ohm Resistor	1
XD-256	RACK MOUNT BACK BOX	1
XD-278	-Fuse Holder	1
	-1/4 Amp Fuse	1
XD-268	-Receptacle Clips	2
XM-002	-Fuse Label	2
XM-005	-Field Wiring Label	1
XM-001	-Name Plate	1
XD-282	-U.L. Label	1

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PART#	DESCRIPTION	QUANTITY
XD-244	FRONT PANEL	1
XD-255	-L & R Hindges	2
XD-266	-Quarter Turn Fastners (Rack Mount Only)	2
XD-265	-Quarter Turn Fastners (Wall Mount Only)	2
XD-267	-Retainers (Quarter Turn Fastners)	2
XD-279	-Power Switch (Rocker)	1
XD-277	-25K Potentiometer	2
XRS-018	-Potentiometer Knob	2
XD-269	-1/4" Nylon Spacer	16
	-6-32 ESNA Lock Nuts	10
	-Q.C. Label	1
XD-273	DUAL CHANNEL BOARD	1
XD-271	-Pushbutton Switch	10
XD-248	WALL MOUNT BACK BOX	1
XM-004	-Main Power Input Label	1
XM-005	-Field Wire Label	1
XD-283	-Main Power 4-Terminal Block	0 or 1
	-10-32 Ground Screw	1
XD-284	-Main Power 6 - Terminal Block	0 or 1
	-10-32 Hex Kep Nuts (Ground)	2
XD-282	-U.L. Label	1
	-Ground Label	1
XM-003	-Terminal Block Label	1-4
XD-268	-Receptacle Clips (Quarter Turn Fastners)	2
XD-278	-Fuse Holder	1
	-1/4 Amp Fuse	1
XD-270	-Power Module Blank Cover	8
	-8-32 Screws (Hold Power Module)	8
XM-002	-Fuse Label	1
XM-001	-Nameplate	1
XD-262	POWER MODULE BRACKET	1-2
XD-253	-Triacs	1-2
	-6-32 Screws	2 or 4
XD-259	-Heat Sink (10 Fins)	1
	-6-32 Screws	2
XCN-059	-4 Output terminal block -300V, 20A	1-2
	-8-32 Screws	2 or 3
XD-269	-1/4" Nylon Spacer	4 or 8
	-6-32 Screws (Opta Board)	4 or 8

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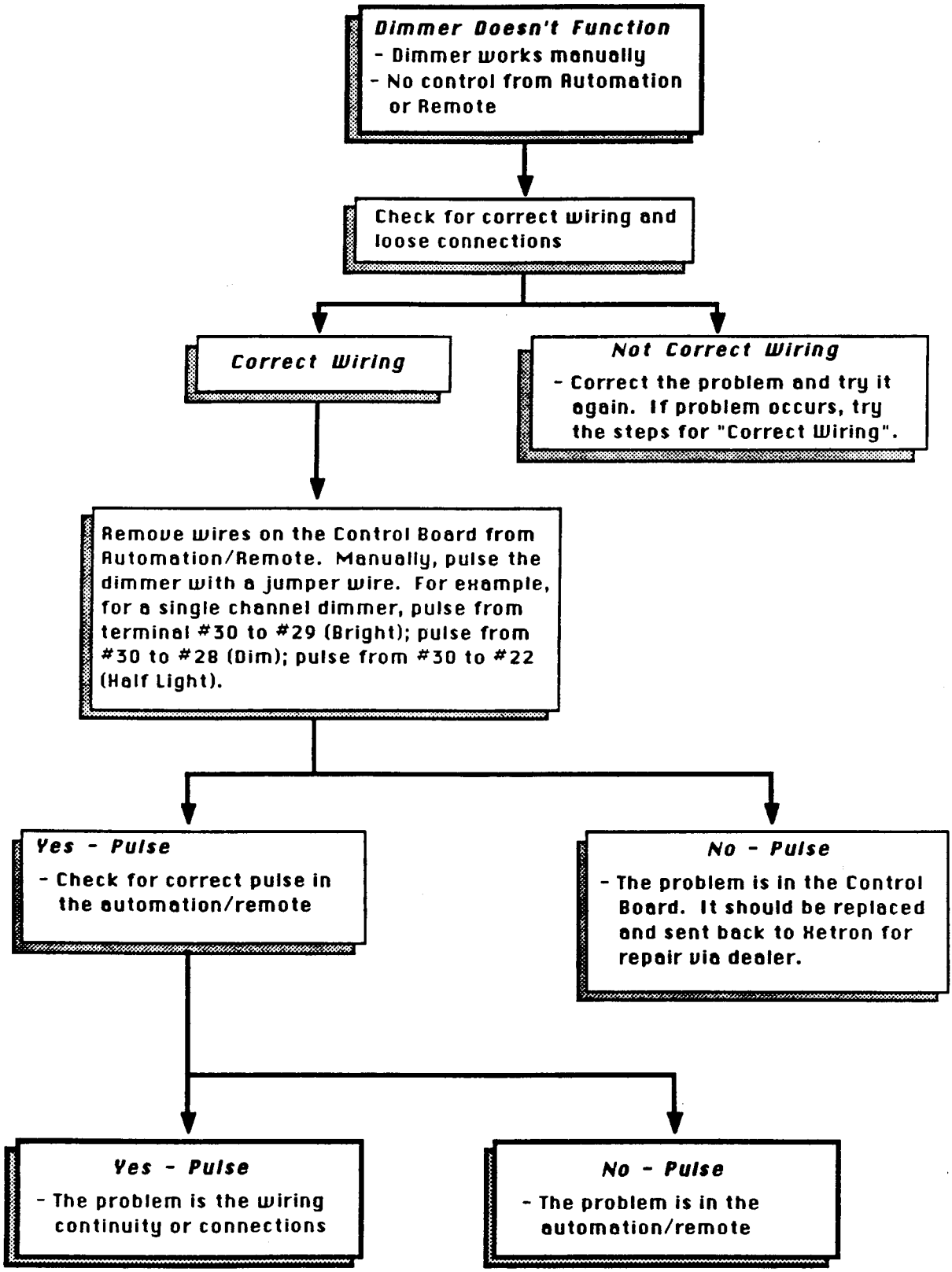
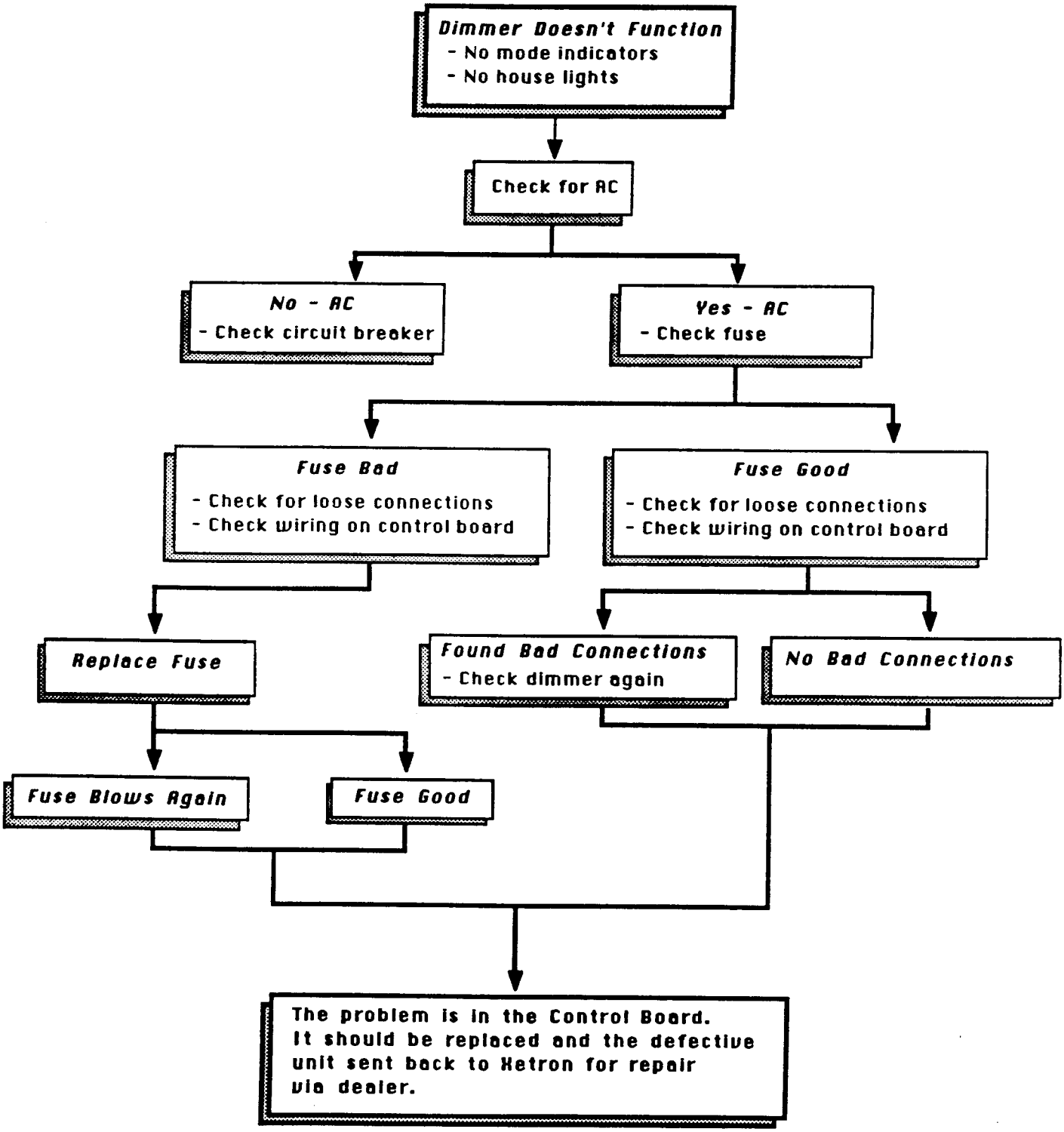
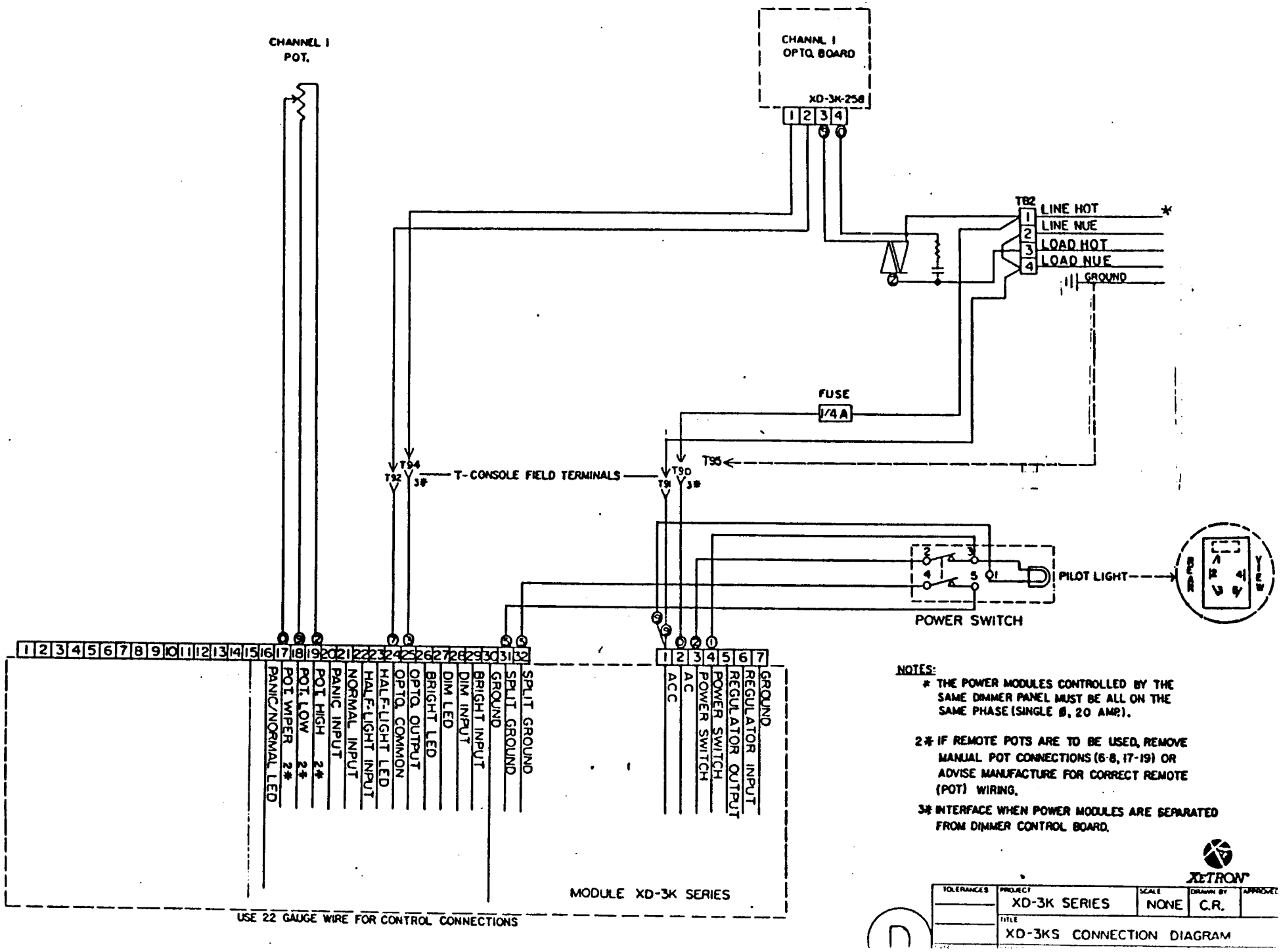
PART#	DESCRIPTION	QUANTITY
XD-258	OPTO BOARD	1 or 2
	-6-Pin Socket	1
	-6-Pin Opto Isolator MOC 633A	1
	-.1M Disc Capacitor	1
	-4 Terminal Block	1
	-47 Ohm Resistor	1
XD-256	RACK MOUNT BACK BOX	1
XD-278	-Fuse Holder	1
	-1/4 Amp Fuse	1
XD-268	-Receptacle Clips	2
XM-002	-Fuse Label	1
XM-005	-Field Wiring Label	1
XM-001	-Name Plate	1
XD-282	-U.L. Label	1

HD-3K Series
Troubleshooting Guide



XD-3K Series
Troubleshooting Guide





NOTES:

* THE POWER MODULES CONTROLLED BY THE SAME DIMMER PANEL MUST BE ALL ON THE SAME PHASE (SINGLE Ø, 20 AMP.).

2# IF REMOTE POTS ARE TO BE USED, REMOVE MANUAL POT CONNECTIONS (6-8, 17-19) OR ADVISE MANUFACTURE FOR CORRECT REMOTE (POT) WIRING.

3# INTERFACE WHEN POWER MODULES ARE SEPARATED FROM DIMMER CONTROL BOARD.

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	XD-3K SERIES	NONE	C.R.	
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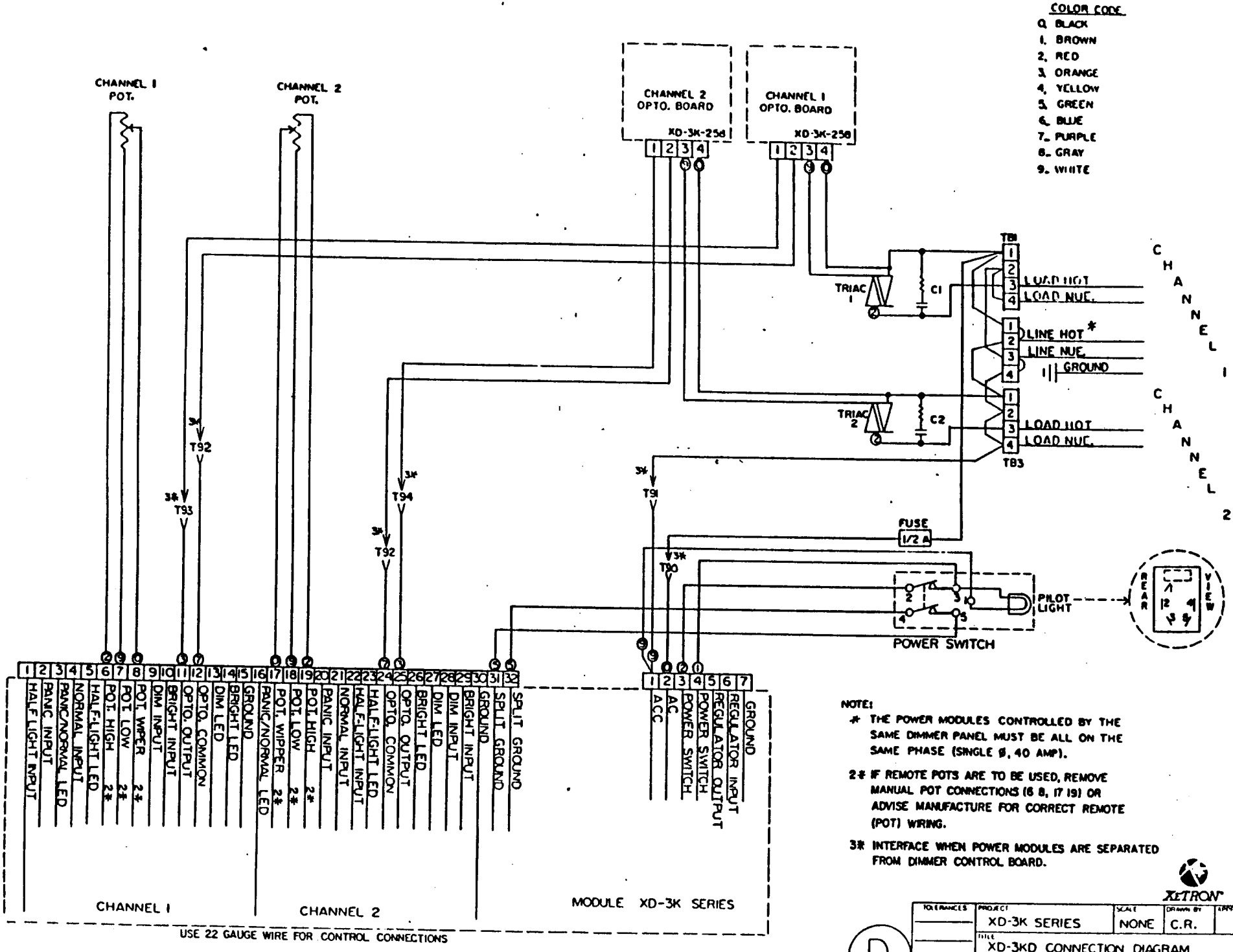

NOTE:

* THE POWER MODULES CONTROLLED BY THE SAME DIMMER PANEL MUST BE ALL ON THE SAME PHASE (SINGLE Ø, 40 AMP).

2* IF REMOTE POTS ARE TO BE USED, REMOVE MANUAL POT CONNECTIONS (6 8, 17 19) OR ADVISE MANUFACTURE FOR CORRECT REMOTE (POT) WIRING.

3* INTERFACE WHEN POWER MODULES ARE SEPARATED FROM DIMMER CONTROL BOARD.

XETRON

TOLERANCES	PROJECT	SCALE	DRAWN BY	APPROVED
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DATE: 8.12.86	DRAWING NUMBER: XD-264			

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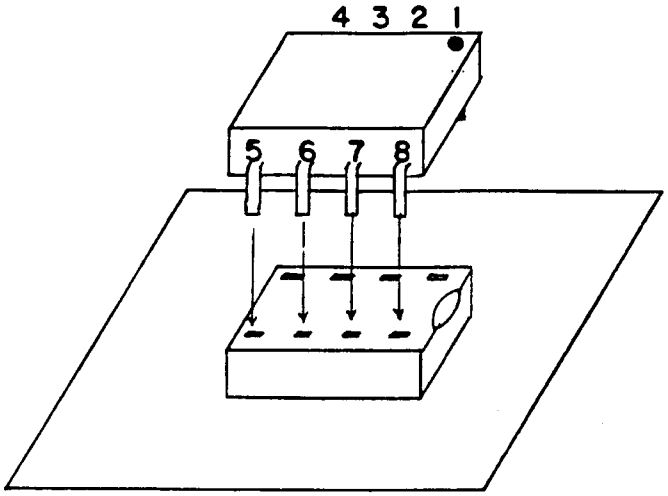

FIGURE A: OPTO-COUPLER MOUNTING

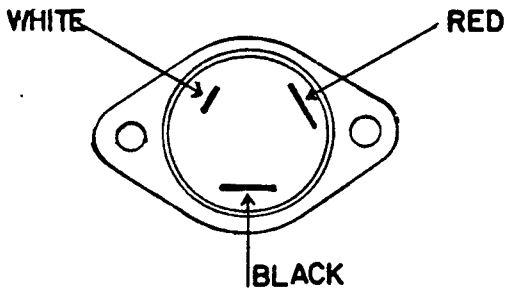

FIGURE B: TRIAC WIRING