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AcuityBrands PWRLY R8 SNAP DMX Relay Lighting Control Panel Instruction Manual

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SNAP DMX Relay Lighting Control Panel

Pathway Connectivity's SNAP Lighting Control Panels provide unified DMX512 control of 0-10VDC outputs and relay switching from a single enclosure. Intended for use with LED drivers requiring mains switching and 0-10V dimming and fluorescent ballasts controllers. Each SNAP Panel consists of an LC&D GR1400-series relay panel with a Pathway Connectivity eDIN SNAP Panel Interface Controller. The interface provides DMX512 signal control over relay and analog output pairs. The interface also provides a full non-sequential DMX soft-patch, for maximum flexibility.

IMPORTANT SAFEGUARDS

1. DO NOT INSTALL OR USE OUTDOORS.
2. EQUIPMENT SHOULD BE MOUNTED IN LOCATIONS AND AT HEIGHTS WHERE IT WILL NOT READILY BE SUBJECTED TO TAMPERING BY UNAUTHORIZED PERSONNEL.
3. THE USE OF ACCESSORY EQUIPMENT NOT RECOMMEND-ED BY THE MANUFACTURER MAY CAUSE AN UNSAFE CONDITION
4. DO NOT USE THIS EQUIPMENT FOR OTHER THAN INTEND-ED USE.
5. USE THIS INSTALLATION GUIDE FOR RELAY HOOK-UP DIRECTIONS, FOR DATA WIRING OF THE INTERFACE CARD, AND FOR INTERFACE CONFIGURATION.
6. THIS PRODUCT IS NOT INTENDED FOR USE WITH BLUE BOX PROGRAMMABLE INTERFACES OTHER THAN THE PATHWAY SNAP INTERFACE MODULE. MAKE ALL CON-NECTIONS WITH THE POWER OFF.
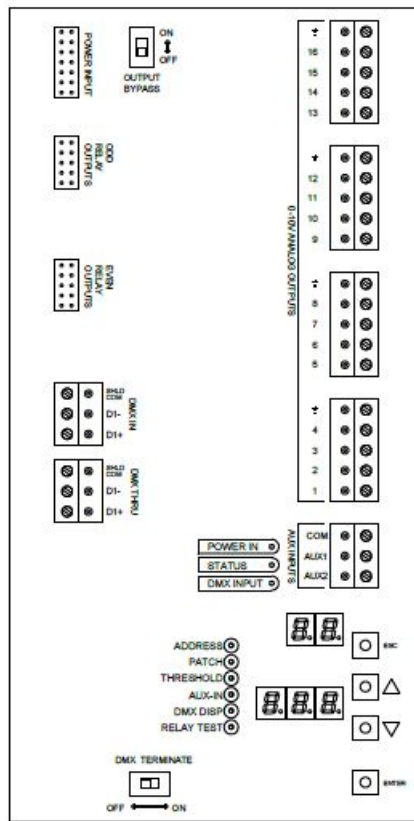
SNAP Panel Controller

INSTALLATION: MECHANICAL

1. Mount relay panel to suitable surface with appropriate hardware.
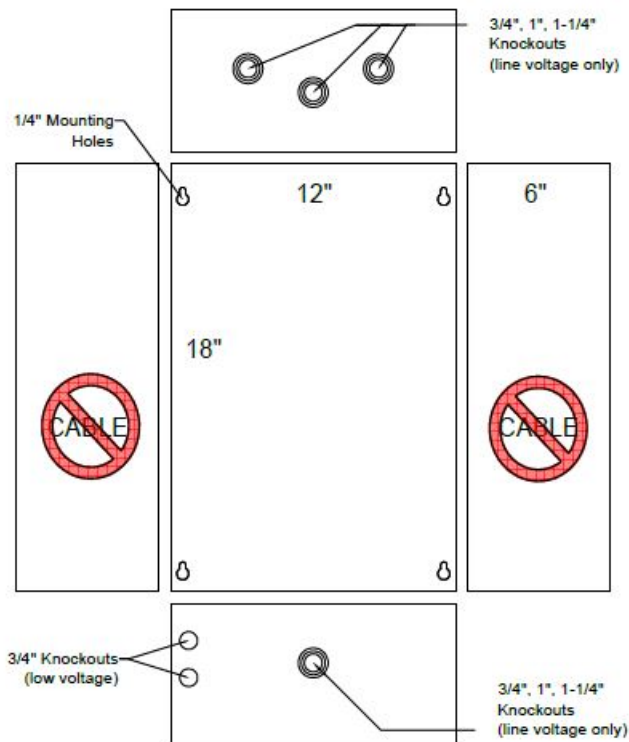
WARNING: ROUTING LINE VOLTAGE CABLES THROUGH THE SIDES OF THE ENCLOSURE IS NOT ALLOWED AS IT WILL VIOLATE NEC REQUIREMENTS SEPARATING CLASS 1 AND CLASS 2 CIRCUITS.

2. Plan where to land the Line and Load conductors be-fore routing cables. Write down your plan.

INSTALLATION: MECHANICAL (cont'd)

3. Power supply should be supplied from a dedicated breaker. Land 120V or 277V on appropriate lugs and Neutral and Ground as indicated.

WARNING: DO NOT POWER UP THE SNAP INTERFACE CON-TROLLER UNTIL THE BUS HAS BEEN ACTIVATED.

INSTALLATION: LINE FAULT CHECK

You may check for faults while landing conductors on the relays with the following steps:

1. Land the Line and Load conductors on the same Load terminal lug. Label the Line wire with the breaker ID.
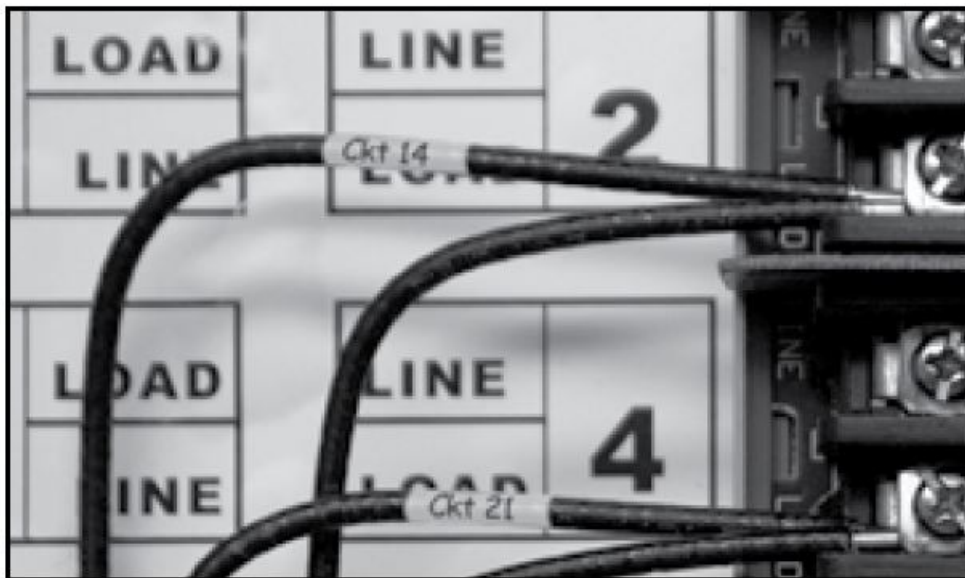
2. Check the line. Switch breakers on and clear any faults. Switch breakers off.
3. Move the Line conductor to the Line terminal lug on each relay once tested.
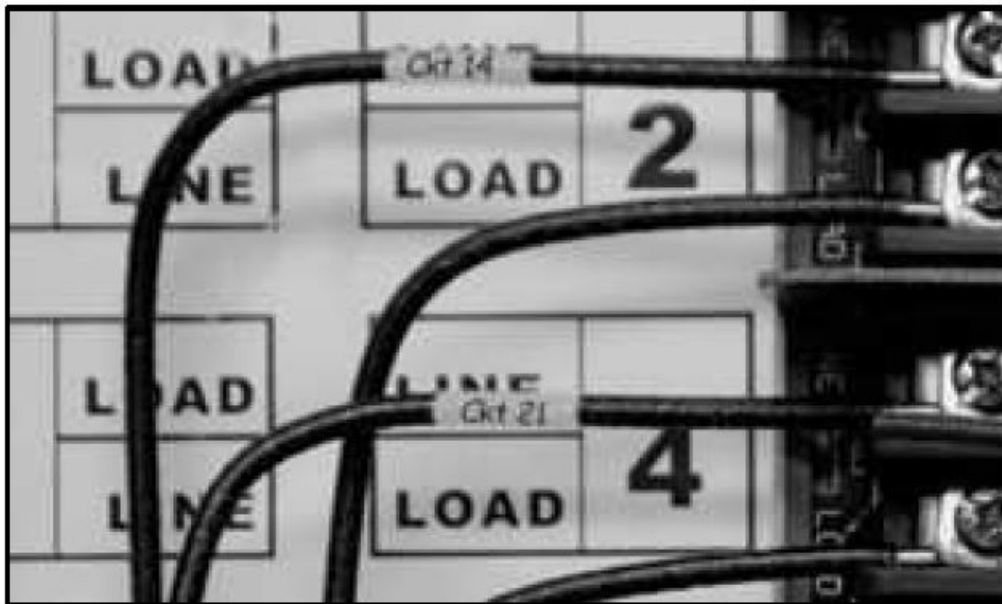
INSTALLATION: LINE VOLTAGE WIRING

Torque Specification Instructions
The torque spec for the relay terminal block is 16 in-lbs. When using a 1" diameter screwdriver (1/2" radius), a turning force of 32 lbs is required to meet this spec.

Tighten and Wiggle
Copper is ductile, meaning it will compress and flow un-der pressure. To ensure a good connection in the termi-nal lug, use the following procedure:

1. Tighten the terminal to the specified torque.
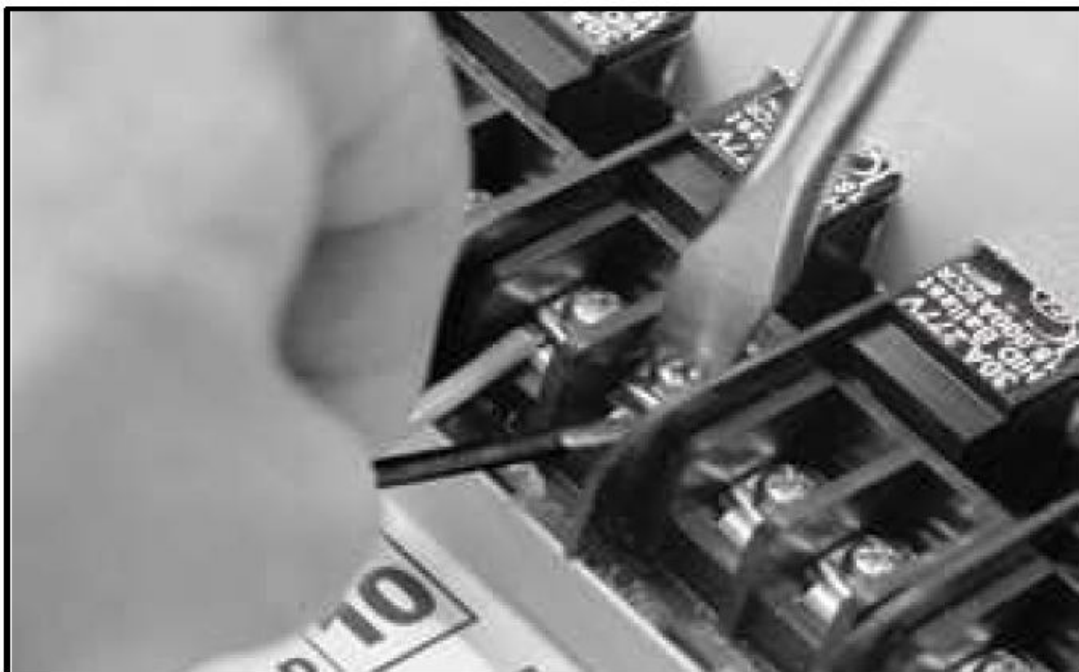
2. "Wiggle" the wire: move it slowly from side to side while gently pulling it away from the lug.
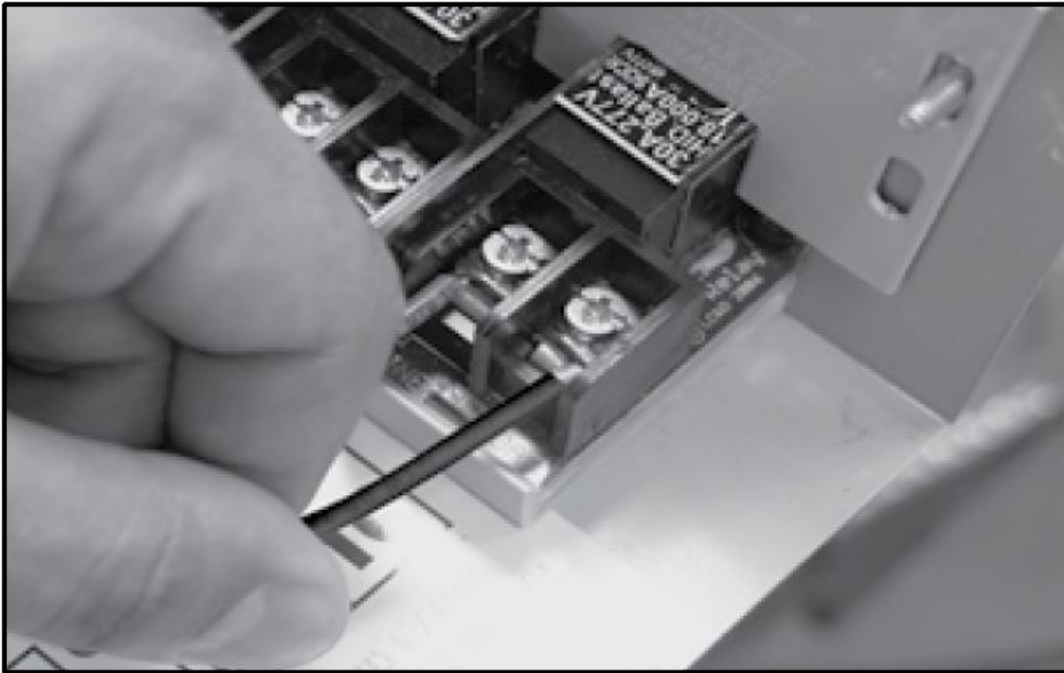
3. Tighten again to the specified torque. Usually this takes 1/16 to 1/4 of a turn or more.
4. Repeat as needed.

CHASSIS REMOVAL

If the rough-in will create a lot of dust or metal shavings, it may be best to remove the chassis prior to installation.

1. Remove the two locking nylon nuts from the line volt-age backplane (red circles above).
2. With the front plate closed, gently remove the chassis from the enclosure. Avoid rubbing the sides of the chassis against the enclosure
3. Store the chassis in the original shipping case or a safe location until needed. Replace nylon nuts so they don't get lost.
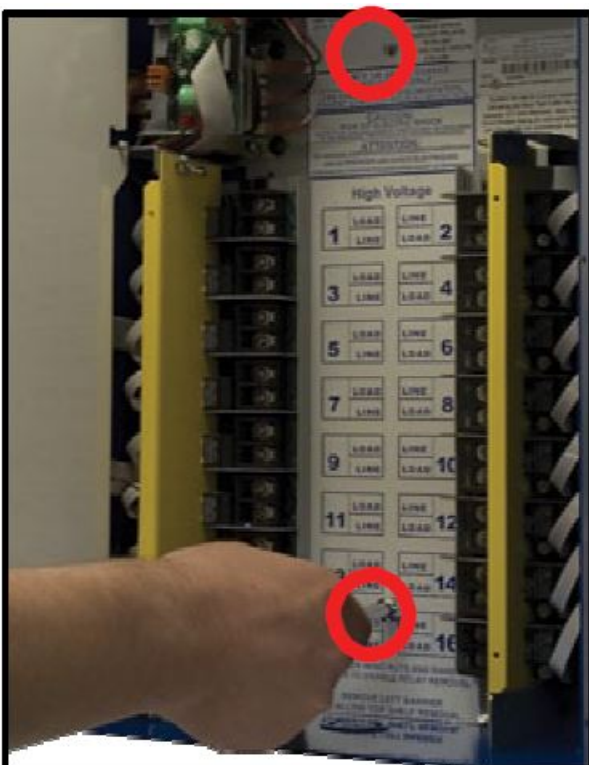
RELAY SPECIFICATIONS

- Normally Closed (NC)
- 30A @ 277VAC Ballast
- 20A @ 120VAC Tungsten
- 20A @ 347VAC Ballast
- SCCR 18kA @ 277VAC
- Mixed voltages are allowed in accordance with the NEC and local code requirements.

STATUS LED
LED is ON when the relay is OFF. (Relay is NC.)

INSTALLATION: SNAP INTERFACE MODULE

If the SNAP interface is not already installed, slide the interface module into the 'snap-track' mounted on the Electronics (Low Voltage) backplane.
Alternately, insert the long edge of the card into the top- most slot of the snap-track, then GENTLY push on the other long edge until the module snaps into place in the track. Plug in the two 10-pin ribbon headers to connect the interface to the smacker strips controlling the relay coils. Plug in the 14-pin ribbon header to connect the inter-face to the power supply. The interface is hot-pluggable.

DATA/ANALOG CONNECTIONS

Seven removable terminal strip connectors allow for easy wiring installation for the DMX data and analog volt-age outputs.

DMX512

WARNING: DMX INPUT/OUTPUT PORTS MUST BE CONNECTED TO LOW-VOLTAGE DATA LINES ONLY. DO NOT CONNECT DMX PORTS TO HIGH VOLTAGE SOURCES.
DMX IN is wired to the control console output, or to an-other DMX source.
DMX THRU is wired to additional downstream DMX receivers (daisy-chain), such as the SNAP interface in an adjoining cabinet.
DMX wiring connections consist of a shield and a data pair. Connect DATA– and DATA+ to D- (pin 2) and D+ (pin 3) respectively. Observe the same polarity conven-tion throughout the system. Connect the cable shield or common to the SHLD/COM terminal (pin 1).

ANALOG OUTPUTS

WARNING: ANALOG OUTPUTS MUST BE CONNECTED TO LOW -VOLTAGE CONTROL BUS WIRING ONLY. DO NOT CONNECT ANALOG OUTPUTS TO HIGH VOLTAGE SOURCES. Sixteen analog output terminals are provided in groups of four, with each group having an common terminal. All common terminals are internally connected (shared). Outputs are rated at 10VDC, 100mA per channel, sink-ing control. Maximum wire run is 150m (500ft). Analog outputs are typically wired to the violet-colored 0-10V control bus wire, while the analog common is typi-cally wired to the grey 0-10V control bus wire. While wir-ing the control bus zone, it is very important to ensure proper wiring continuity.

AUX INPUTS

WARNING: DO NOT WIRE AUX INPUTS TO VOLTAGE SOURCES The auxiliary inputs act as an override input.

AUX1 to COM: When wired to a normally open momen-tary dry contact closure, will close associated relays when the momentary is closed.

AUX2 to COM: When wired to a normally open mo-mentary dry contact closure, will open associated relays when the momentary is closed.

STATUS INDICATORS

- POWER IN
  - Blue. Glowing steadily indicates power supply OK; off indicates no power.
- STATUS
  - Red. Glowing steadily indicates processor is OK; off when POWER is lit indicates proces-sor failure.
- DMX INPUT
  - Amber. Glowing steadily indicates data signal received; off indicates no valid signal.

INSTALLATION: CONFIGURATION

The SNAP interface is configured directly from the mod-ule, using four push buttons (ESC, Up, Down, and Enter), six parameter LEDs (Address, Patch, Threshold, Aux-In, DMX Disp, and Relay Test) and a two– and a three–character 7-segment display. The module may also be configured remotely using ANSI E1.20 RDM. Press any button to awaken the interface. Use the Up/Down buttons to select the parameter to configure. By default, the Address LED indicator is lit. Press and hold the Enter button. Dots will flash at the bottom of one of the 7-segment screens. Typically the two-character display will show the relay or output number, while the three character display will show a DMX channel or other value. Use the Up/Down arrows to ad-just the value for each parameter, as described below.

ADDRESS: SET DMX START ADDRESS

Use DMX Address to set the start channel for a continu-ous channel block, to control the relays in sequence. With the indicator LED lit beside ADDRESS, press and hold the Enter button. Dots will flash along the bottom of the three character display. Use the Up/Down buttons to select the desired DMX start channel. Press Enter to ac-cept, or Esc to discard the changes. Valid range is 1 through 512. Practical maximum is 497 (16 relays) or 505 (8 relays). Three dashes indicates a soft (non-sequential) patch is in use. Setting a start ad-dress will clear a soft patch.

PATCH: SET DMX SOFT PATCH

Soft patch assigns relays and analog outputs to non-sequential DMX channels, and/or allows multiple relays and outputs to be controlled by the same DMX channel. However, a single relay or analog output may not be con-trolled by multiple DMX channels. When soft patching, a DMX channel must be separately assigned to each relay and analog output. With the indi-cator LED lit beside PATCH, press and hold the Enter button. Dots will flash along the bottom of the two charac-ter display. Use the Up/Down buttons to select the relay or analog output to configure. A hash mark in the upper left hand corner of the two-character display indicates an analog output. Press Enter. The dots will now flash along the bottom of the three-character display. Use the Up/Down buttons to select the desired DMX address. Press Enter again. The dots will move back to the to-character display. Use the same steps to configure the remaining

PATCH: SET DMX SOFT PATCH (cont'd)

relays and analog outputs. Once done, press ESC to exit. When Soft Patch is used, the Start Address screen will display three dashes. Setting a start address will clear (over-write) a soft patch.

THRESHOLD: SET RELAY TRIGGER THRESHOLD

The relay trigger threshold may required adjustment, due to fixture performance or to meet energy conservation criteria. The threshold applies to all outputs. With the indicator LED lit next to THRESHOLD, press and hold the Enter button. Dots will flash along the bot-tom of the three-character display. Use the Up/Down ar-row buttons to set a threshold. The threshold applies to all relay outputs. Valid range is 1% through 99%, or "Lo" which equals an 8-bit value of 001. When the threshold is set as a percentage, hysteresis is 3, so at a threshold of 10%, the relay will close when DMX rises through an 8-bit value of 027, and open when DMX falls through an 8-bit value of 024. When the threshold is set as "Lo" there is no hysteresis.

AUX-IN: SET AUXILIARY INPUTS

Auxiliary inputs allow a dry contact closure to force a re-lay to close or an analog output to open (go to full) —in effect over-riding the DMX value.
For control from a momentary contact, short AUX1 to COM to close the relay and/or open the analog output. Short AUX2 to COM to return the outputs to DMX control. For control from a maintained contact, AUX1 and AUX2 must be jumpered together. When a contact is closed between COM and AUX1/AUX2, the associated relays will close and the analog outputs will open. When the contact is opened, DMX control will be restored. Both relays and analog outputs must be assigned to AUX control. With the indicator next to AUX-IN, press and hold the Enter button until dots flash on the two character dis-play. Use UP/Down to select the desired output – a hash mark in the upper left of the display indicates an analog out, while no has is a relay. Press Enter. The dots now flash on the three character display. Use Up/Down to switch between 'No' and 'Yes' to assign the output to AUX control. Press enter to accept and continue selection. Press ESC to complete and exit.

DMX DISP—INCOMING DMX LEVEL

DMX Display allows the user to review incoming DMX channel levels, as a trouble-shooting aid. With the indicator LED lit next to DMX DISP, press and hold the Enter button. Dots will flash along the bottom of the three-character display. Use the Up/Down button to select the DMX channel to review (1 to 512). The incoming DMX level for the selected channel will be shown on the two-character display as a percentage (0—99%), with "FL" indicating 100%, or full on.

RELAY TEST

Relay Test allows the user to open or close relays, inde-pendent of incoming DMX levels, as a trouble-shooting aid. With the indicator LED lit next to RELAY TEST, press and hold the Enter button. Dots will flash along the bot-tom of the two-character display. Use the Up/Down but-tons to select the relay to be tested. Press the Enter but-ton to switch the relay state between 'Off' and 'On'. A clicking noise should also be heard. Use the Up/Down arrow to continue through the in-stalled relays. Press ESC to exit at any time.

DMX TERMINATION SWITCH

DMX512 requires that the final receiver in line must have a termination resistor. If no devices or modules are con-nected to the DMX THRU terminal, the DMX TERMI-NATE switch should be in the 'ON' position. If other de-vices or modules are connected to the DMX THRU, the DMX TERMINATE switch should be in the 'OFF' position.

BY-PASS SWITCH

The By-Pass switch, located near the Power Input, closes all relays and forces all analog outputs open (full intensi-ty). The by-pass may be used to test all circuits without the need for DMX input. The two-character screen will display "bP" as the DMX Address.

PRECEDENCE OF OPERATION

Input signal and triggers will take precedence, from high-est to lowest, as follows: Relay Test; By-Pass switch, Aux input (shorting AUX1 to COM), DMX level.

ANSI E1.20 RDM CONFIGURATION

The SNAP interface card is an RDM responder. The following properties may be set remotely, with an appropriate RDM controller on the DMX line: DMX Start Address (global or per sub device output); Device Label (global); Sub device Label; Threshold; Auxiliary Input (per sub device).

CONTROLLER SPECIFICATION

- **INPUT SIGNAL:**
  - ANSI E1.11 DMX512-A, ANSI E1.20 RDM
- **OUTPUTS:**
  - 16 analog 0-10VDC nominal
- **OUTPUT RATING:**
  - 100mA current drive per channel sinking 10mA current drive per channel sourcing
  - **EXCEEDING THESE RATINGS MAY RESULT IN DAMAGE TO THE DEVICE**
- **CONNECTIONS:**
  - Two piece compression screw terminals, 16 – 24 AWG
- **SIZE:**
  - 3.5" x 6.25" x 1.25" (90mm x 160mm x 35mm)

TECHNICAL BULLETIN #14_09_5-1

- **Product:**
  - SNAP Lighting Control Panel model 4850-8 and 4850-16; PWRLY R8 & R16
- **Subject:**
  - 0-10V Dimming of Non-Isolated LED Drivers
- **Scope:**
  - Applies to all model revisions

OVERVIEW

Connection of the SNAP Lighting Control panel's 0-10V analog dimming outputs to non-isolated LED fixture drivers is not recommended.
The SNAP Lighting Control Panel is designed to provide sinking control of LED fixture drivers that have a secondary Class 2 dimming circuit that is isolated from the mains power input. Connection of the SNAP panel's analog outputs to non-isolated drivers, or drivers with Class 1 rated dimming circuits, will cause damage to the SNAP panel controller.
This damage is considered non-warranty for the purpose of repair and replacement.

DETAILS

Pathway has determined that one or more LED luminaire manufacturers are now providing non-isolated fixture drivers with a non-Class 2, 0-10V volt dimming option. The lack of isolation between the mains power leads and the low voltage wiring in the drivers results in transient voltages on the low voltage control leads. The transient voltages may be as high as or higher than 120V. In compliance with ANSI C82.11c Low Voltage Control Interfaces for Controllable Ballasts, the analog outputs on the SNAP panel controller will accept voltages between -15V and +15V with no damage. Application of voltages outside this range to any of the analog outputs may result in damage to all outputs on the SNAP panel controller. Damage will result in reduced dimming range or loss of dimming capability altogether. The damage caused by this misapplication of the product is readily determined

when the SNAP panel controller is returned for repair. Repairs to the SNAP panel controller deemed to be damaged by connection to non-isolated LED fixture drivers will only be performed on a non-warranty basis, and all non-warranty repair fees and policies will apply.

Pathway Connectivity

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Documents / Resources

AcuityBrands PWRLY R8 SNAP DMX Relay Lighting Control Panel [pdf] Instruction Manual PWRLY R8, SNAP DMX Relay Lighting Control Panel, PWRLY R8 SNAP DMX Relay Lighting Control Panel, Relay Lighting Control Panel, Control Panel

References

- **DMX Lighting & Networking | Pathway Connectivity**