

# PIERBORNE

EMERGENCY POWER VAULT

Project:

Type:

## EM Power Vault Pro Series - 110W & 220W

- ✓ **UL924 Listed**
- ✓ **FlexDim Technology (0-10V)**
- ✓ **120/277V - Field Selectable**

### EM POWER VAULT PRO SERIES

Pierborne offers the EMPV Pro Series to back up any 120V or 277V device or fixture that needs to operate during a power failure. The Pro Series can provide 110W or 220W for 90 minutes, meeting UL924 requirements. Each unit is equipped with one (1) line voltage bypass, which can be upgraded to a four (4) line voltage bypass (the 4 Circuit Option).

### FLEXDIM TECHNOLOGY

The EMPV Pro Series is capable of bypassing a 0-10V dimmer and can be set to provide 25%, 50%, 75% or 100% of the fixture's output during emergency operations. This allows for more fixtures at a reduced output on one EMPV Pro unit. The FlexDim Option will bypass one (1) 0-10V dimmer and choose one (1) or two (2) output breakers. Each output can be adjusted to the desired level (25% to 100%).

EMERGENCY POWER VAULT



Let us help identify the proper amount of power needed to illuminate the selected luminaires for emergency code compliance.



UL's Standard for LIFE SAVING Emergency Lighting and Power Equipment. Easily standardize on-site UL mandatory code compliant testing.



Integrate your specified downlights to provide an emergency path of egress. Enhance the aesthetic appeal of your area by getting rid of unsightly "bug-eyes".

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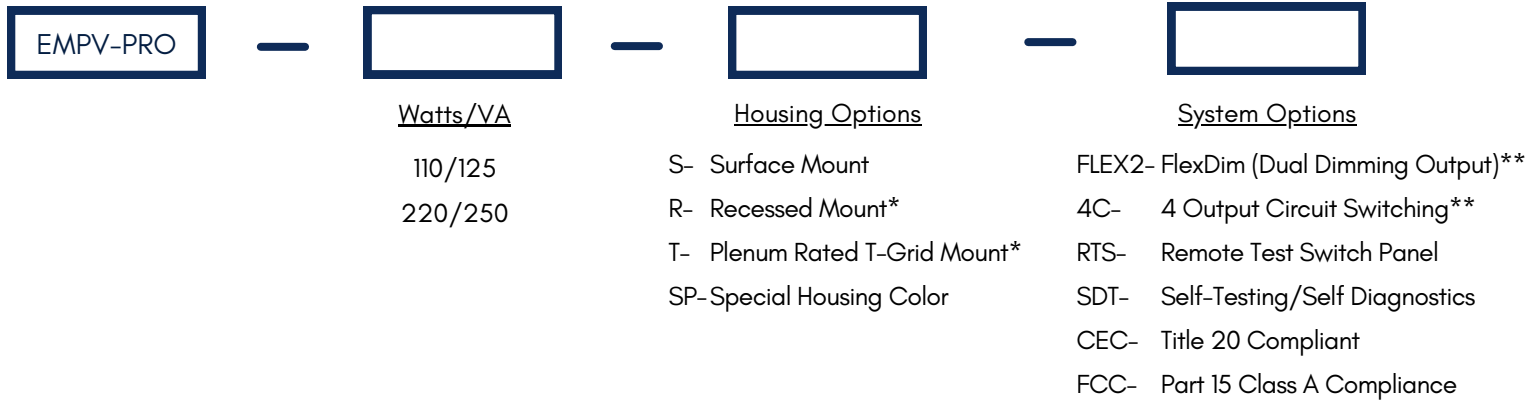


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## EMPV - Pro Series

### Ordering Guide



\*Recessed Mount and Plenum Rated T-Grid Mount ONLY available on the 110/125 Model

\*\*FlexDim & 4C Options are NOT available together

MODEL #	CAPACITY FOR 90 MINS.		WEIGHT (lbs)	ONLINE SYSTEM EFFICIENCY (FULL LOAD)	NUMBER OF BATTERIES	BATTERY VOLTAGE (VCD)	BATTERY CURRENT (AMPS)	INPUT CURRENT		THERMAL OUTPUT (BTUs)	
	WATTS	VA						120VAC (Max)	277VAC (Max)	ON-LINE	EMERGENCY
EMPV-PRO-110/125	110	125	42.0	98%	2	24	5.7	1.2	0.52	9	95
EMPV-PRO-220/250	220	250	60.0	98%	4	48	5.5	5.6	1.10	18	167

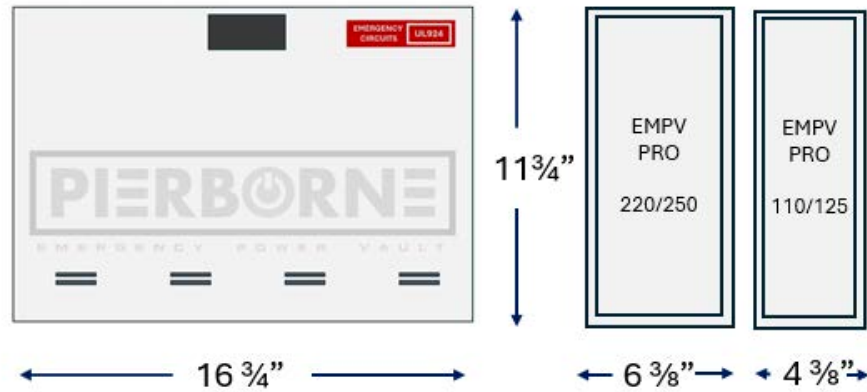


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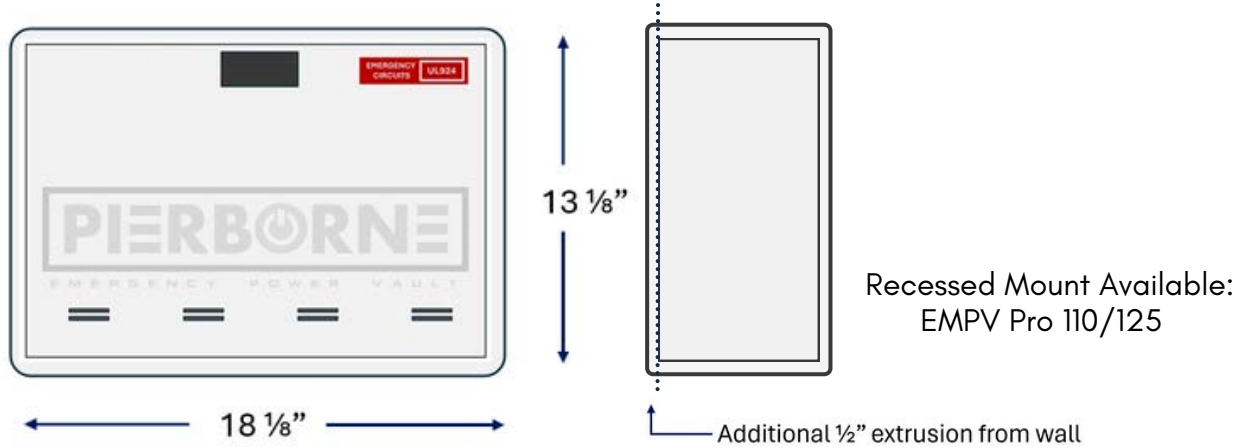
Type:

EMPV - Pro Series

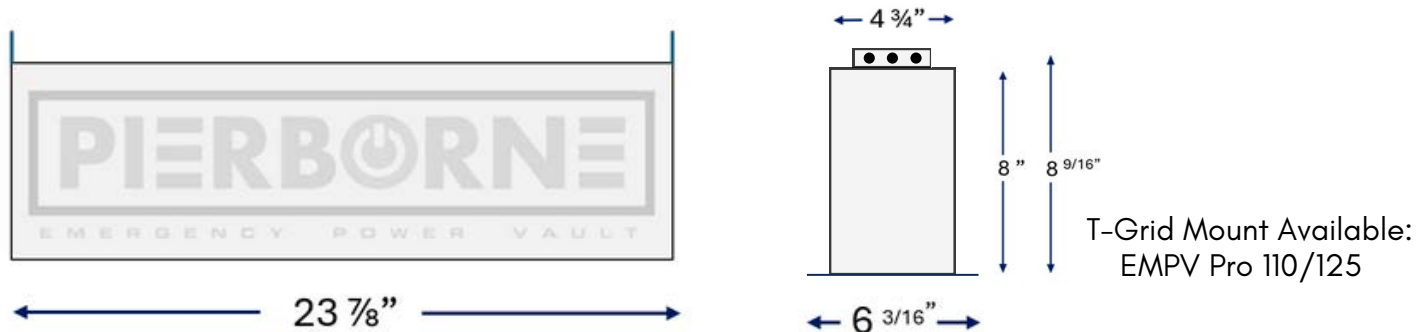
## Standard Surface Mount



## Recessed Mount



## Ceiling T-Grid Mount



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## SPECIFICATIONS

- Input Voltages: 120 or 277VAC  $\pm 10\%$  (Field Selectable)
- Input Frequencies: 60Hz  $\pm 2\%$
- Input Protection: AC Line Fuses
- Output Voltages: 120 or 277VAC (60Hz)
- Efficiency Rating: 98% at full rated load (line)
- Waveform: Sinusoidal (digitally controlled)
- Static Voltage:  $\pm 5\%$  during battery discharge 0-100% linear load
- Output Frequencies: 60Hz.  $\pm 0.3\text{Hz}$  during emergency cycle
- Output Distortion: Less than 3% THD (linear load)
- Transfer Time: Less than 1.0 second
- Load Power Factor Range: 0.44 Lead to 0.44 Lag
- Minimum Loading: 0% of rated system capacity
- Output Protection: Line and Inverter fuse

## FEATURES

- Powers incandescent, fluorescent, and LED fixtures \*
- Sinusoidal output eliminates compatibility problems
- Surface, recessed or T-Grid mount models
- Normally-ON and/or Normally-OFF load output
- Universal 120/277VAC, 60Hz. input/output
  - Field Selectable
- Unit capacities up to 220W/250VA
- "Soft Start" design reduces fixture inrush current
- Lumen output from fixture is 100% of nominal
- Unique design eliminates compatibility problems with LED drivers as well as fluorescent ballasts
- Provisions for local switching capability - Always-ON during emergency conditions regardless of local switch position
- Unit may be installed 1,000 feet from controlled fixture(s)
- Compatible with dimming ballasts
- Emergency fixtures can be ON, OFF or SWITCHED
- AC-ON, Charge-ON and Inverter-ON LED indicators
- Solid-state, line latched low voltage disconnect provides protection against deep discharge
- Long life, maintenance-free lead-calcium battery
- Momentary test switch

\*Consult factory for compatibility on other lamp types

## HOUSING & MOUNTING

- Heavy duty steel cabinet is finished in white baked-on powder paint providing scratch and corrosion resistance.
- Optional paint color (-SP) finishes available, consult factory.
- Surface Mount: Surface mount models are designed for mounting to walls by means of keyhole slots provided in the back of the unit housing.
- Recess Mount: Recess models provide recess mounting holes on both sides of the enclosure (Pro Series 110/125 only).
- T-Grid Mount: Housing design allows simple drop-in installation between t-grid runs. Safety wires (supplied by others) are required for attachment to building structure (Pro Series 110/125 Only).

## BATTERIES & CHARGER

- Battery: Sealed Lead Calcium (10 year life)
- Battery Voltage: 24 VDC for EMPV Pro 110/125 models and 48VDC for EMPV Pro 220/250 models
- Runtime: 90-minutes standard - Based on battery performance at 25°C. Other runtimes available, consult factory.
- Battery Protection: Low Voltage Battery Disconnect protects the battery from being severely damaged by deep discharge during prolonged power failures.
- DC Overload and Short Circuit Protection provided by a DC input fuse.
- Charger Type: Fully automatic, temperature compensated, dual-mode charger
- Power Consumption (Charger Only): 15W max. (2.5W in standby) for EMPV Pro 110/125 model. 30W max. (5W in standby) for EMPV Pro 220/250 model.
- Recharge Duty Cycle: Meets UL924 requirements
- Battery Circuit Breaker: Also used as battery isolator
- Controls: Momentary test switch, AC-ON, Charge-ON and Inverter-ON LED indicator lights
- Safety Circuitry: AC Lockout prevents battery discharge prior to initial unit power-up.
- Brownout Protection automatically switches the unit to emergency mode when utility voltage is significantly reduced.
- Altitude: < 10,000 feet (3,000m) above sea level without derating.
- Operating Temperature Range: 20°C to 30°C
- NOTE: Optimum system performance between 20°C and 30°C; temperatures outside of this range will affect battery performance and life.
- Relative Humidity: 95% non-condensing

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## SUGGESTED SPECIFICATIONS

An inverter system with sinusoidal output shall be supplied capable of powering any combination of lighting fixtures, including incandescent, fluorescent, induction and/or LED light sources without compatibility problems.

The system shall transfer in less than 1.0 second to reliably back up lighting fixtures without loss of illumination and operate any and all connected lighting fixtures at full lumen output during the complete 90-minute discharge cycle.

The input voltage shall be the same as the output voltage and shall be single phase 120/277 volts, 60 Hz. Output capacity will be 110W/125VA or 220W/250VA for a minimum duration of 90-minutes.

The design shall be a standby, off-line inverter with on-line efficiency of 98%; on-line double conversion UPS systems shall not be considered acceptable alternatives. EMPV Pro Series system output shall be a PWM generated sine wave with less than 3% total harmonic distortion with "Soft-Start" design reducing fixture inrush current. The system shall also provide short circuit and overload protection as standard.

An intuitive three LED display shall provide system operational information at a glance and alert user to any malfunction in system performance. Authorized maintenance personnel shall have access to the system's controls while being protected from any live exposed connections.

Protective devices shall include AC Line fuses, DC input breaker and a DC input fuse. The entire EMPV Pro Series system, including batteries, shall be incorporated into compact cabinetry which shall have provisions for (surface, recessed or T-Grid) mounting.

System shall be capable of providing up to 4 switch bypass circuits, adjustable output or 0 to10 volt dimmer bypass, remote test switch, and self-test/self-diagnostics, were necessary.

System shall utilize a sealed lead calcium battery with a 10 year design life. The charger shall be temperature compensated, dual mode type, and recharge the batteries as per UL924 guidelines. Entire system shall be tested, approved, and labeled to UL924 Emergency Lighting and Power Systems standards. T-Grid models will be plenum rated.

## WARRANTY & UL LISTING

- Unit: (excluding lamps) Full coverage against defects in materials and workmanship for 3 years from date of shipment.
- Battery: 3 years full warranty plus an additional 7 years of pro-rata coverage.
- All models are UL924 Listed and meet NFPA 101 Life Safety Code, NEC, OSHA, Local and State Codes. Optional T-Grid models are plenum rated, to UL2043 and meets city of Chicago CCEA Requirements.
- UL Listed for damp locations (20°- 30°C).
- Optional -CEC models are Certified to CEC Under Title 20 regulations
- FCC Part 15 Class A Compliant



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## Pro Series with FlexDim Option

- For use with 0 to 10 volt dimmable LED lighting fixtures
- FlexDim Option for use with EMPV Pro Series models provides two user-adjustable emergency output circuits
- Delivers 25%, 50%, 75% or 100% of full illumination levels to selected LED fixtures during emergency mode operation regardless of local dimmer control switch position
- Works with all standard 0 to 10 volt dimmer controls
- Reduced emergency illumination levels means fewer total emergency inverter units required on jobs
- FlexDim for EMPV Pro Series models eliminate the need for bypass devices on 0 to 10 volt dimmer controlled fixtures
- All wiring is done within the EMPV Pro Series housing, no need for additional j-boxes.
- Allows normally-on, normally-off, combination and switched wiring of connected loads
- System may be remotely mounted up to 1,000 feet

FlexDim is designed for use with the EM Power Vault Pro Series. This option will bypass one 0 to 10 volt local dimmer switch as well as allow user-programmable setting of emergency output lighting levels. Two load terminals as well as two dip-switch sets for independent output settings are provided to allow 25%, 50%, 75% or 100% of nominal illumination output during power outages. This outstanding level of control allows for fewer EM Power Vaults systems to be required in typical applications.

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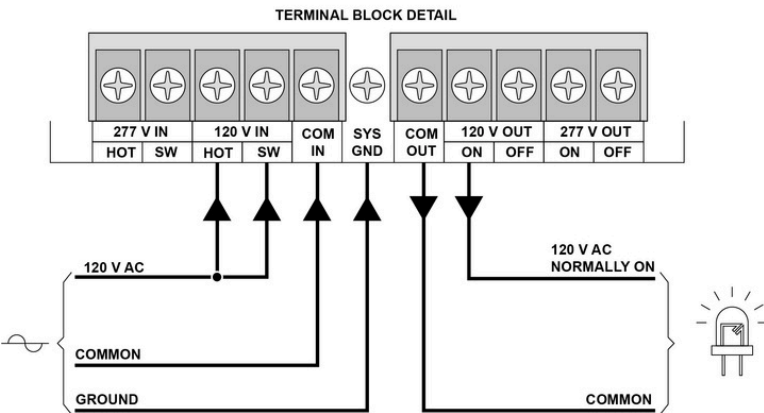
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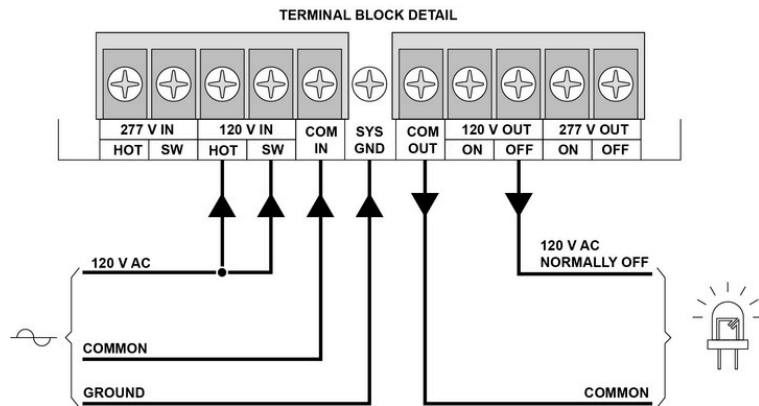
EMPV - Pro Series

## Wiring Diagram 1 - 120VAC Connections

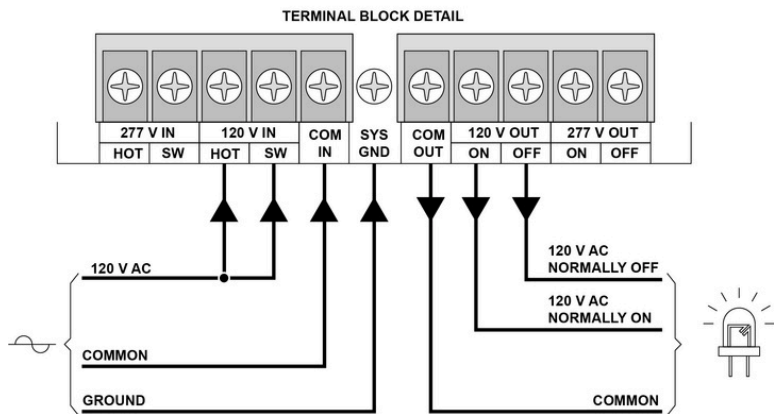
A) NORMALLY ON LOADS



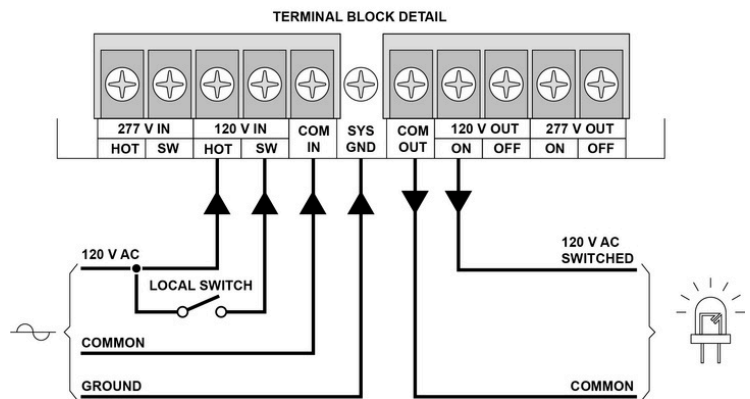
B) NORMALLY OFF LOADS



C) NORMALLY ON & OFF LOADS



D) SWITCHED LOADS



### WIRING

Connection to an unswitched AC circuit is required by the NEC. Wiring access is provided for by conduit knockouts in the unit housing. EMPV Pro Series models also provide knockouts in the back of the housing for rear wiring from standard electrical boxes when surface mounting.

### LOAD COMPATIBILITY

EMPV Pro Series model's clean, sinusoidal AC output will operate incandescent lamps as well as all common fluorescent and LED lamp types. Consult factory for compatibility with all other lamp types. Lighting loads are driven at 100% output for the entire emergency power cycle. This outstanding feature translates into greater occupant egress vision and safety.

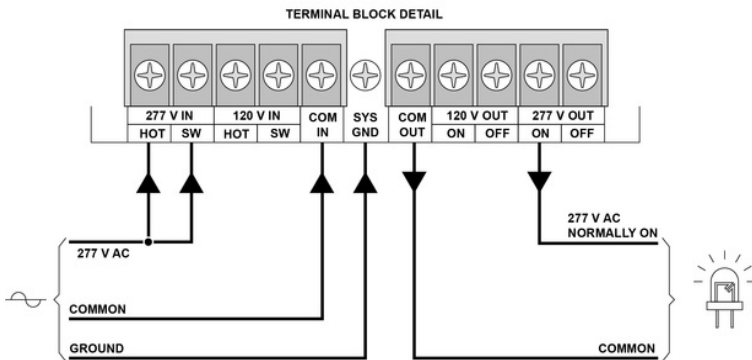
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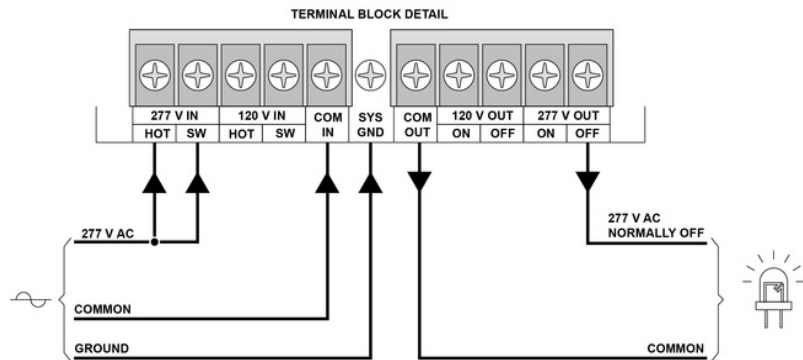
EMPV - Pro Series

## Wiring Diagram 2 - 277VAC Connections

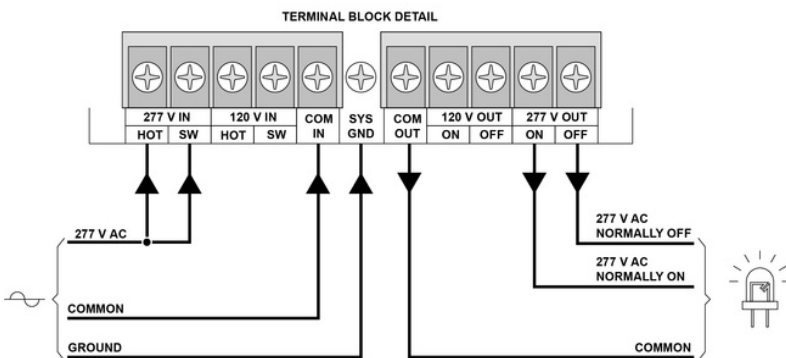
H) NORMALLY ON LOADS



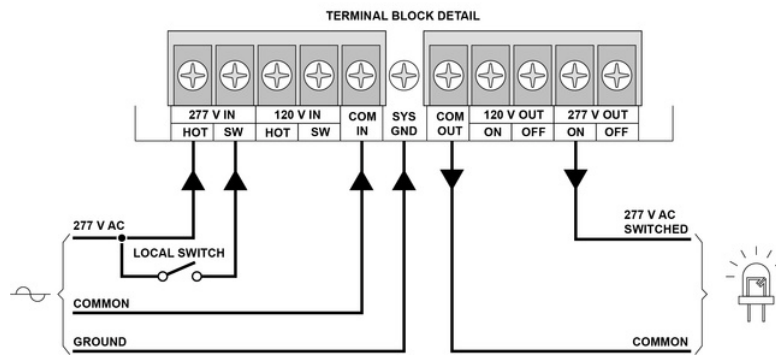
I) NORMALLY OFF LOADS



J) NORMALLY ON & OFF LOADS



K) SWITCHED LOADS



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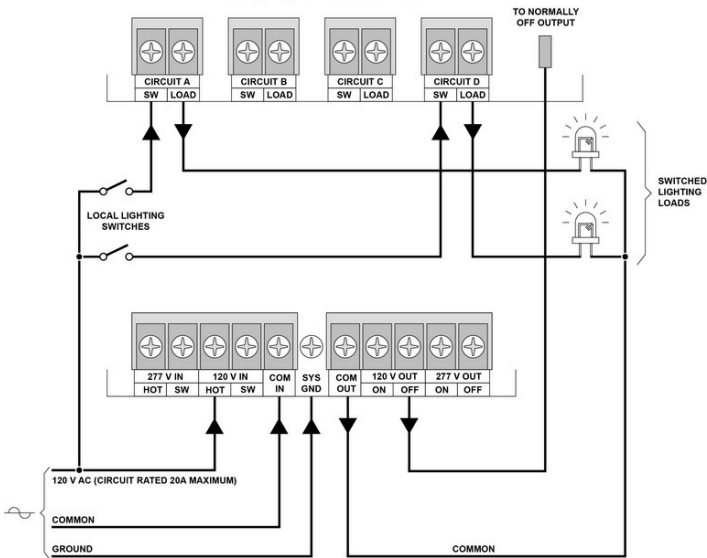
EMPV - Pro Series

## 4 Circuit Output Option Wiring Diagrams

Switched Load Operation - Four Circuit  
120VAC or 277VAC Connections

E) SWITCHED LOADS - FOUR CIRCUIT

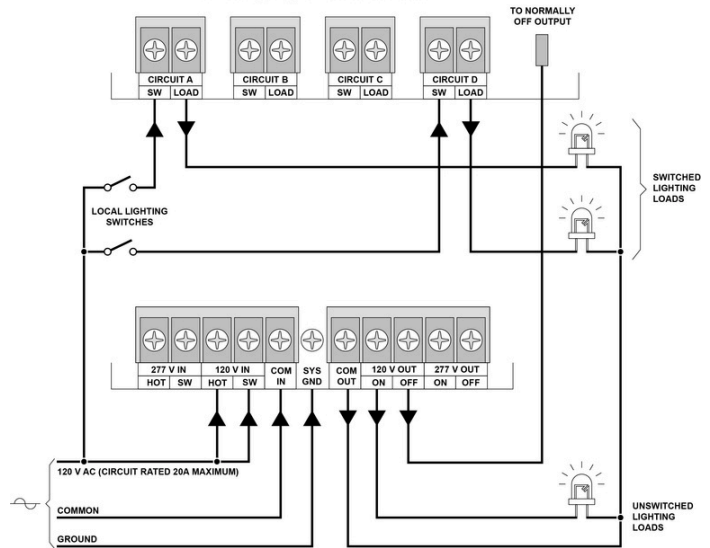
NOTE: ONLY (2) OF (4) POSSIBLE CIRCUITS SHOWN



120V

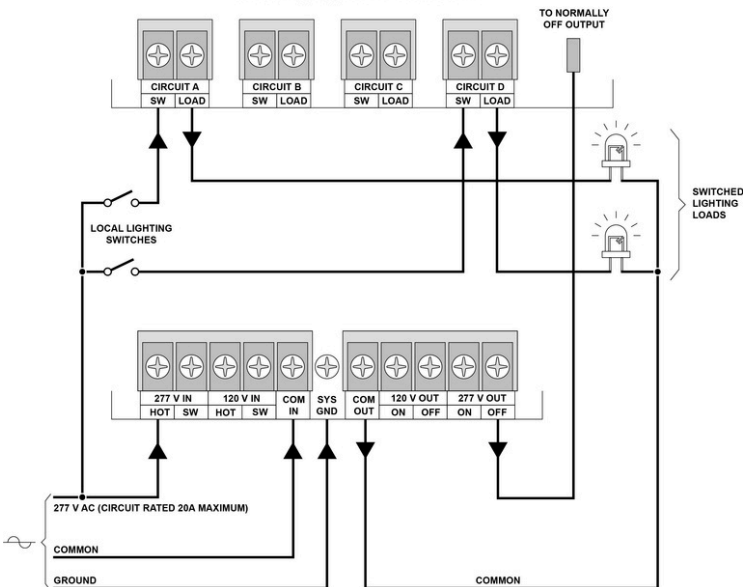
F) SWITCHED AND UNSWITCHED LOADS, 120V OPERATION

NOTE: ONLY (2) OF (4) POSSIBLE CIRCUITS SHOWN



L) SWITCHED LOADS - FOUR CIRCUIT

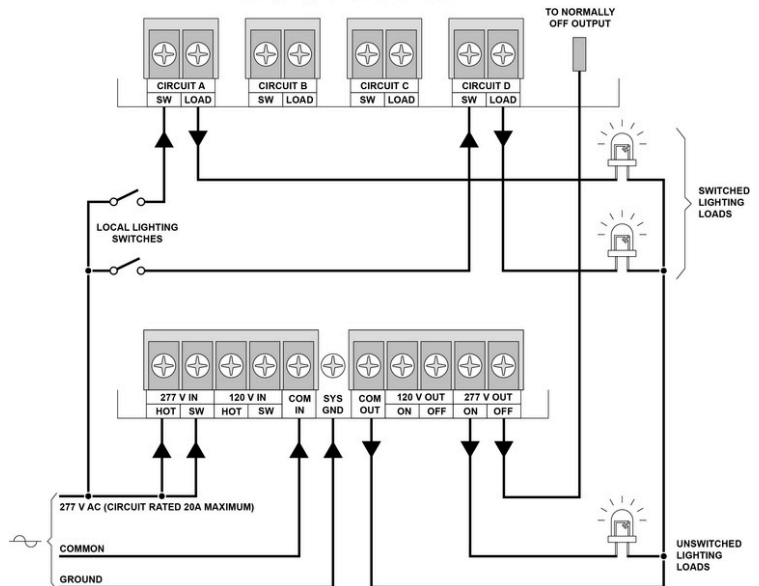
NOTE: ONLY (2) OF (4) POSSIBLE CIRCUITS SHOWN



220V

M) SWITCHED AND UNSWITCHED LOADS, 277V OPERATION

NOTE: ONLY (2) OF (4) POSSIBLE CIRCUITS SHOWN



Project:

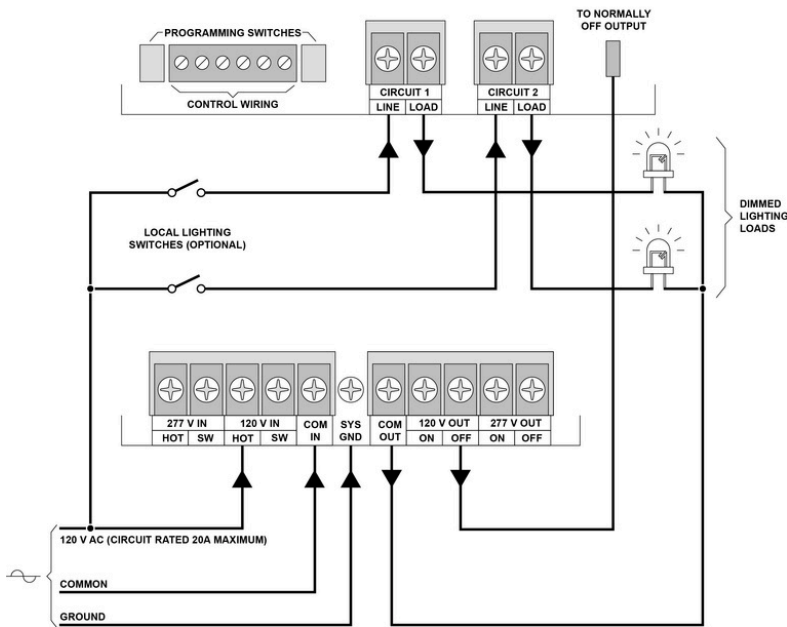
Type:

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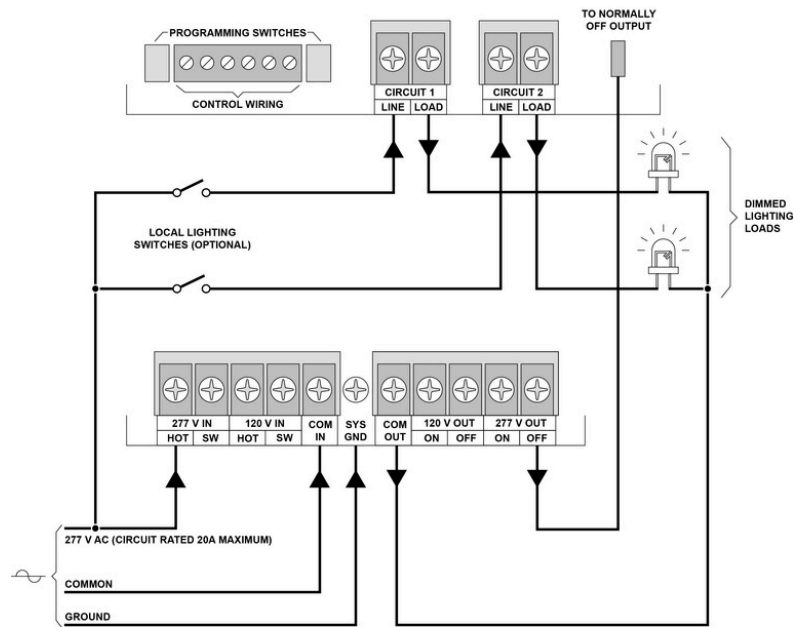
## FlexDim Wiring Diagrams

120VAC or 277VAC Connections

G) DIMMING OPTIONS, 120V OPERATION



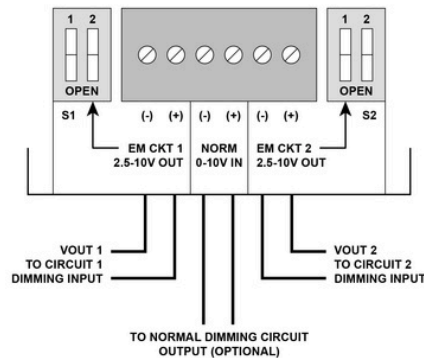
N) DIMMING OPTION, 277V OPERATION



O) DIMMING OPTION PROGRAMMING TABLE

S-1, 2-1	S-1, 2-2	VOUT1, VOUT 2
OPEN (OFF)	OPEN (OFF)	10.0V
OPEN (OFF)	CLOSED (ON)	7.50V
CLOSED (ON)	OPEN (OFF)	5.00V
CLOSED (ON)	CLOSED (ON)	2.50V

DIMMING OPTION CONTROL WIRING



NOTE: Dimming switches S1 and S2 are designed for independent setting to allow different emergency voltages for Output Circuits 1 and 2 if required.

CAUTION: Dimming switches must be programmed such that loads do not exceed unit rating in emergency mode

CAUTION: The sum of loads connected to Output Circuits 1 and 2 must not exceed unit rating in emergency mode.