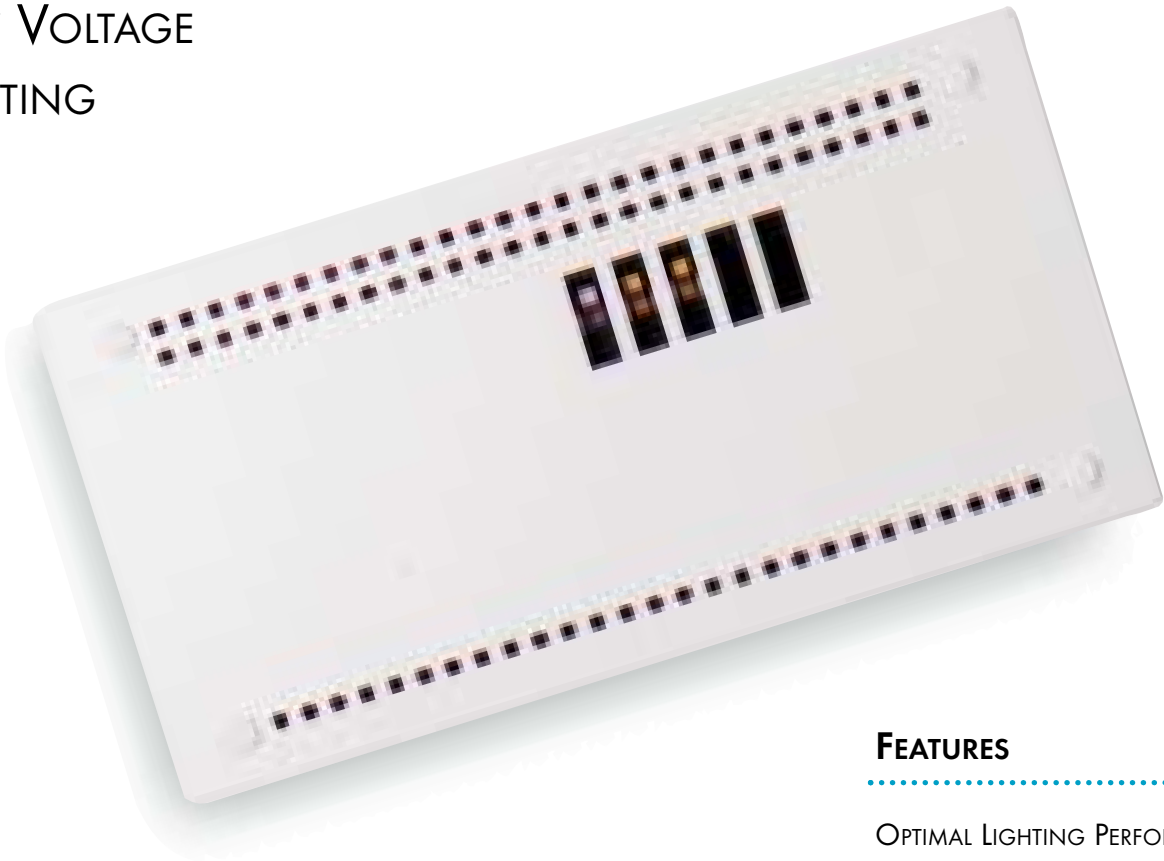


Power Supply Center™

FOR
LOW VOLTAGE
LIGHTING



FEATURES

OPTIMAL LIGHTING PERFORMANCE

QUIET OPERATION

RECESSED OR SURFACE MOUNT

ZERO CLEARANCE INSTALLATION

SIMPLE TO INSTALL

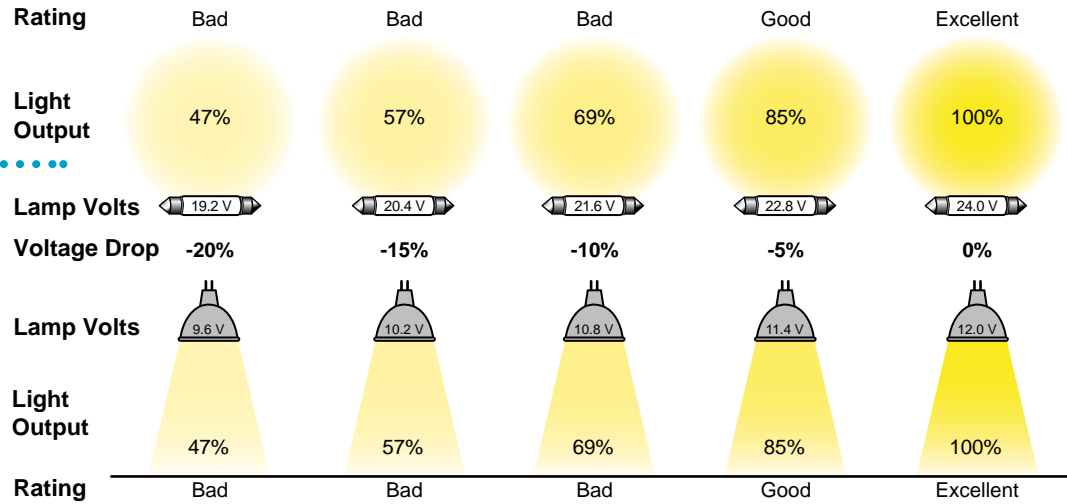
QUALITY CONSTRUCTION

BENEFITS OF A MULTI-VOLT Power Supply Center™

PERFORMANCE MAKES THE DIFFERENCE

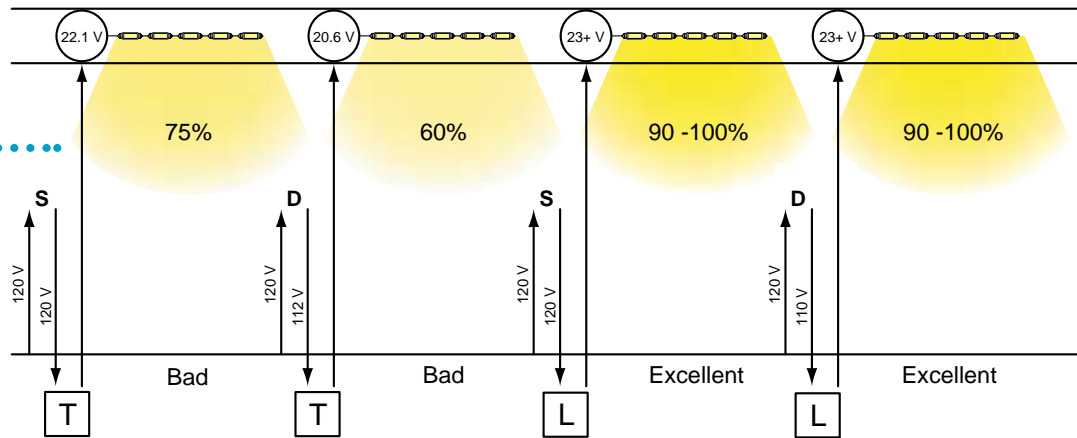
General Purpose lighting transformers do not operate Low Voltage Lighting at optimum light output levels. Low Voltage Power Supply Centers (PSC), developed and manufactured, are the first transformer systems specifically designed for today's low voltage lighting and its unique installation requirements. The heart of the PSC system is a Toroidal Multi-Volt Transformer. A Toroid is known for its small size, superior voltage regulation, quiet operation, high efficiency, cool operating temperature and its ability to take the stress of dimming.

THE IMPACT OF VOLTAGE DROP ON LIGHT OUTPUT:

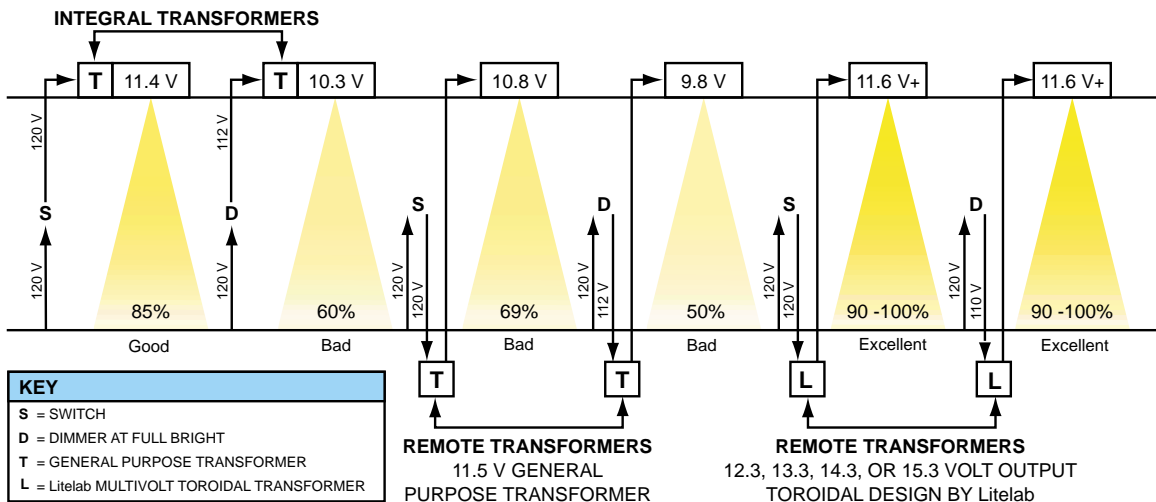


THE TRANSFORMER'S ROLE IN THE PERFORMANCE OF LOW VOLTAGE LAMPS: ASSET VS. LIABILITY

24V LOW VOLTAGE LIGHTING

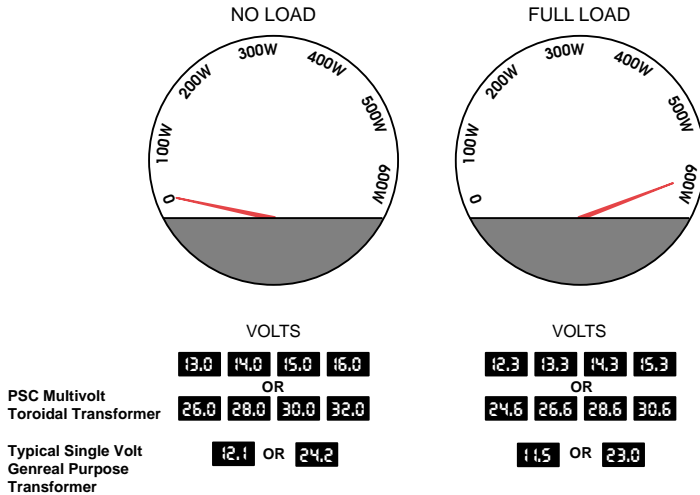


12V LOW VOLTAGE DOWN LIGHTS



MULTI-VOLT = PERFORMANCE

The **PSC** Multi-Volt feature allows it to adapt to every field condition, ensuring that proper voltage is received at the lamp. The diagram below shows the voltage available from both **PSC** Multi-Volt Toroidal Transformer and General Purpose transformers.



NO FIXTURE NOISE WITH REMOTE TRANSFORMERS

Removing the transformer from the light fixture and remote mounting transformers is the only way to guarantee a noise free installation. The **PSC** Multi-Volt feature will allow for proper voltage to the fixtures, while permitting smaller ceiling openings and decreasing fixture maintenance due to transformer heat.

SAFETY SAFETY SAFETY

The Power Supply Center is provided with three levels of circuit protection.

PRIMARY	Magnetic Circuit Breaker
TRANSFORMER	Thermal Auto Reset Breaker
SECONDARY	Magnetic Circuit Breaker(s)

Furthermore, the **PSC** is UL listed as an Inherently Protected IC Power Supply. This unique listing permits zero clearance to combustible materials. This allows installation in contained areas, including closets where items may come in direct contact with the **PSC** without risk of fire hazard.

LABOR SAVINGS

The **PSC** is listed for surface or recessed wall mounting. The added flexibility of mounting in a wall and in a contained area allows the **PSC** to be mounted much closer to the load. This ability will reduce labor and material costs. The Power Supply Center comes with four output voltages to assure full voltage at the lamp. Confidence is the key word spoken over and over again by contractors using the **PSC**. The contractor knows from the beginning that at the end of the job the lighting will operate correctly. Best of all, everything required is contained in a **PSC**.

1 WIRE FOR SAFETY FIRST

While 24 volt lighting operates at 1/5th the voltage of 120 systems and 12 volt lighting at 1/10th of line voltage, it also operates at 5 to 10 times the amperage. Avoid overloading the secondary wiring by using the correct American Wire Gauge (AWG) sized to the secondary circuit breaker. Wire gauge and wattage for each circuit breaker is shown below and on the Voltage Drop Calculator.

THREE KEY POINTS TO KNOW:

1. Voltage of fixture
2. Amperage or wattage rating of fixture
3. AWG recommended for fixture & installation

AWG	AMPS	12V	24V
#14	15A	180W MAX	360W MAX
#12	20A	240W MAX	480W MAX
#10	25A	300W MAX	600W MAX

SECONDARY CIRCUIT BREAKER TABLES: 12V & 24V

150W Max.*	1 - 15A 2 - 15A	1 - 15A
300W Max.*	1 - 20A 1 - 25A 4 - 15A	1 - 15A 2 - 15A
600W Max.*	2 - 20A 2 - 25A	1 - 20A 1 - 25A

*Load should not exceed transformer capacity.

2 SEPARATE RUNS

A few important reasons for separate feeds:

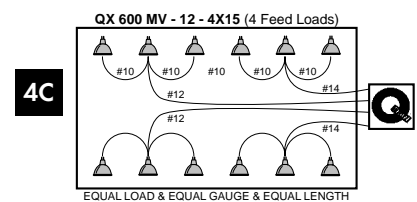
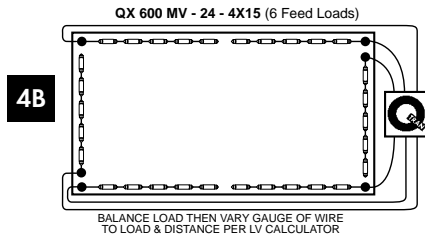
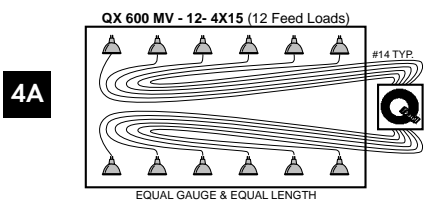
- 2A** Some remotely powered lighting fixtures are required by UL to have separate feeds from a transformer. These fixtures are not permitted to be installed by through wiring from one fixture to another. Thus, each fixture must have a separate pair of wires terminating at the **PSC**.

For example: a 12V - 750 watt Power Supply running 15 - 50W lamps should have 15 separate feeds of equal gauge and length running back to the **PSC**. (SEE 4A)

- 2B** Each 12V - 50W lamp is rated at 4.2 amps ($50W \div 12V = 4.2A$). Through wiring fixtures, the amperage would go from 4.2A to 8.4 to 12.5 to 16.7 to 20.8 to 25.0 to 29.2 quickly exceeding (in most cases) the secondary wire rating. As the amperage increases, the secondary voltage would decrease and each lamp would produce lower light levels. It is very important that all fixtures receive the same voltage to assure that light output is equal.

- 2C** You must balance or equalize the loads (watts) of each run so that each run receives the same voltage.

RECOMMENDED WIRING METHODS:



NEVER THRU-WIRE LOW VOLTAGE DOWNLIGHTS OR LOW VOLTAGE STRIPS!

3 WHY VOLTAGE DROP

When compared to a 120 volt system, 12 volt systems have a 10 fold increase in amperage. Longer wire runs translate into greater voltage drop due to wire resistance which impacts light output and color if not corrected. The Voltage Drop Calculator created by Litelab indicates the maximum wiring runs for individual home runs. To compensate for any voltage drop, an increased wire gauge can be used and/or a different tap of the **PSC** Multi-volt feature can boost the secondary output voltage.

4 EQUALIZING VOLTAGE DROP

When installing multiple fixtures powered from a single remote transformer, it is important to have the same wire resistance to all of the connected fixtures. Installations that have different length wire runs to each fixture will have voltage variations and could have noticeable differences in light output. The way to avoid voltage drop variations are described below.

4A EQUAL GAUGE - EQUAL LENGTH:

It is recommended that all secondary wire runs be the same wire gauge and same length. A common installation would usually require some individual wire runs to have surplus wire. The installer should staple or tie this excess wire in long loops (not coiled) to any convenient hidden mounting surface. As an example, ten 75W fixtures connected to a **PSC** with the furthest fixture is 50' away, cut 10 pieces of #14 AWG wire 50' long. Therefore, each lamp will receive exactly the same voltage and have the same light output.

4B GAUGE VARIATION:

The Voltage Drop Calculator shows how the Multi-volt feature allows you to vary the Secondary voltage and/or the wire gauge to the load to compensate for voltage drop. *Please note that there are two columns of information: one for an on/off switch and the other for a dimmer.*

4C CONDUIT ALTERNATIVE:

For non-dimmed conduit installations with fixtures listed for thru-wiring with a 50W max. lamp, feed multiple fixtures from a feed load. For proper results, balance loads so voltage is 12V at the center of all 3 lamp groups and a max. of 6' of #10 AWG run to outboard lamps. There still may be a slight difference in light output.

5 PSC MULTI-VOLT FEATURE

The **PSC** transformer is made with four taps on the primary winding. These taps increase the output of the Secondary voltage. The two columns of information on the Voltage Drop Calculator allow for different input voltages: 120V for a switch and 110V for a dimmer and optional choke.

The combination of proper length wiring runs, and wire sizing, along with the correctly chosen multi-volt tap will insure optimal lighting output to even the farthest fixture.

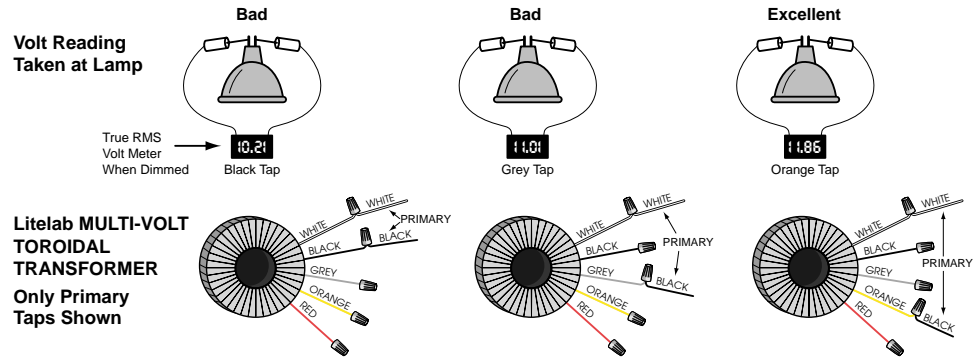
TEN VARIABLES OF LOW VOLTAGE LIGHTING

- 1 Primary Voltage
- 2 Efficiency of the Dimmer or Switch
- 3 Efficiency of the Choke Design
- 4 Efficiency of the Transformer Design or Regulation
- 5 Manufacturing Tolerance of the Transformer & Choke
- 6 Resistance of the Circuit Breaker(s)
- 7 Total Load on the Transformer
- 8 Size of the Secondary Feed Load
- 9 Size of Secondary Wire Gauge to Feed Load
- 10 Length of the Secondary wire to Feed Load

6 FINAL ADJUSTMENTS

It is important to follow the guidelines previously suggested and to always check the lamp voltage at the end of an installation to be sure the correct primary tap has been chosen. Please note that when checking the voltage of a dimmed circuit, a True Root-Mean-Squared (RMS) volt meter is required to take proper voltage readings due to the sine wave distortion created by electronic dimmer.

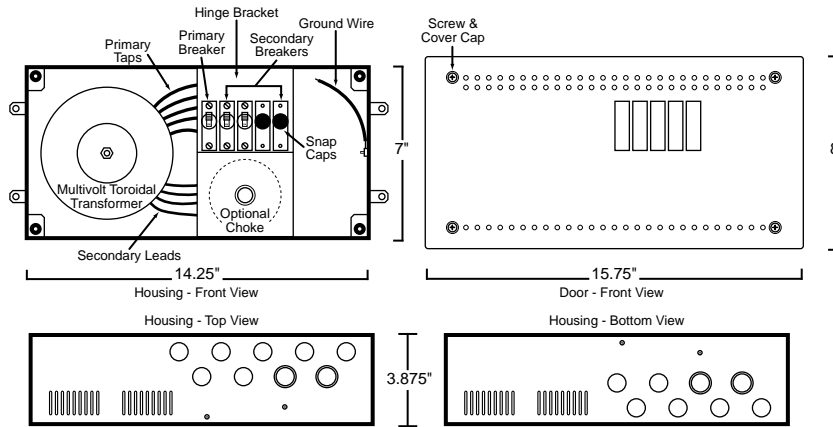
PRIMARY TAPS	12 VOLT	24 VOLT
BLACK	12.3 V	24.6 V
GREY	13.3 V	26.6 V
ORANGE	14.3 V	28.6 V
RED	15.3 V	30.6 V



Power Supply Center™ ORDERING INFORMATION AND SPECIFICATIONS

SPECIFICATIONS

LOW VOLTAGE LIGHTING POWER SUPPLY CENTER



TYPE: _____
PROJECT: _____

NOTES: _____



HINGED BRACKET OPEN (RECESSED MOUNTED)



HINGED BRACKET CLOSED (SURFACE MOUNTED)

NOTE: Manufacturer reserves the right to make product specification changes without prior notice.

HOUSING:

18 gauge welded steel measuring 14.25"L x 7.00"H x 3.875"D with 18 knockouts. Built-in support bracket incorporated for securing housing to a 2 x 4 wall stud for recess wall mounting.

PRIMARY CIRCUIT:

Protected by a magnetic circuit breaker of appropriate size per the N.E.C. Article 450-3(b). All wiring by the electrical contractor must be Class 1 compliant N.E.C.

SECONDARY CIRCUIT:

Protected by color coded magnetic circuit breaker(s) (15A, 20A or 25A) appropriately sized to the Feed Load per 1996 N.E.C. Article 411(not to exceed 25 Amps per load). All wiring by the electrical contractor must be Class 1 compliant N.E.C.

TRANSFORMER:

Protected by an auto re-set thermal circuit breaker mounted internally and connected to the white common primary lead.

MULTI-VOLT TOROIDAL TRANSFORMER:

Four taps on the primary winding to produce the following nominal voltages on the Secondary side: 12, 13, 14 & 15 volts or 24, 26, 28 & 30 volts. The splice area has more than 125 cu. in. of useable space and can incorporate an optional choke for dimming.

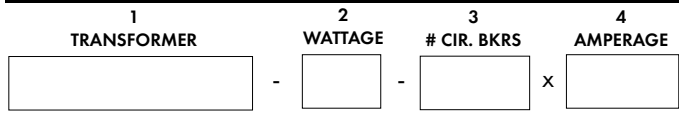
CHOKE & CIRCUIT BREAKERS:

Mount to an internal hinge bracket. This hinge bracket is designed to swing out to permit easy access to the splice compartment.

DOOR:

Measures 15.75"L x 8.00"H. Made of .090 aluminum. Slots in the door are positioned over circuit breakers to allow resetting without door removal.

ORDERING FORMAT FOR QX SERIES



PART NO.	DESCRIPTION
XMV120/12	120 volt primary to 12 volt output Multi-Volt Isolation Toroidal Transformer
XMV230/12	230 volt primary to 12 volt output Multi-Volt Isolation Toroidal Transformer
XMV277/12	277 volt primary to 12 volt output Multi-Volt Isolation Toroidal Transformer
150 300 600 750	150 watt output 300 watt output 600 watt output 750 watt output
1 2 3	3: NUMBER OF SECONDARY CIRCUIT BREAKERS* One to three Secondary Circuit Breakers Can Be Used
15 20 25 50 60	4: AMPERAGE OF SECONDARY CIRCUIT BREAKERS*

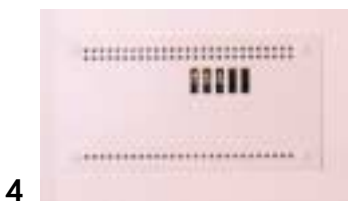


Low Voltage Fixture Power Supply Center LISTED

- Surface mounting - wall or ceiling
- Recessed mounting - wall only
- Inherently Protected
- Suitable for use in insulated spaces - zero clearance.
- Suitable for use in closets with clothes in direct contact.
- Suitable for Damp Locations
- 60 Cycle A.C. Only
- Isolation Multi-Volt Toroidal Transformer per NEC Article 411

Installation Instructions

RECESSED MOUNTING



1 Install housing in level position. Pull Rough-In wiring per instruction in this brochure and in Voltage Drop Calculator/Rough-In Wiring Guide. Remember that all Primary and Secondary wiring should be Class 1 per the National Electric Code. Install (Optional) choke if shipped separately. Install Secondary Circuit Breakers on the hinged panel, if not factory installed, by first removing the snap cap covering the hole.

COLOR	VOLTAGE	AMPS	AWG	12V	24V
PURPLE	Secondary	25A	#10	300W max	600W max
BLUE	Secondary	20A	#12	240W max	480W max
YELLOW	Secondary	15A	#14	180W max	360W max
WHITE	Primary	ALWAYS	FACTORY	INSTALLED	

2 Connect Primary and Secondary wires per wiring diagrams below. Make sure all connections are tight.

3 After wiring and lamping all fixtures turn the power on (if dimmed, set dimmer to full bright) and check voltage at the lamps. Adjust the output voltage of the PCS by changing the transformer tap so lamps receive the proper voltage. Remember to use a True-Root-Mean-Squared volt meter when dimmed.

4 Install cover and snap screw cover caps closed.

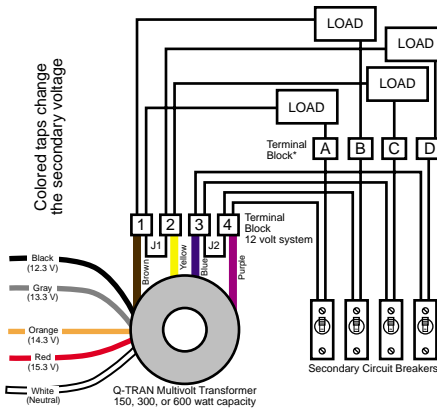
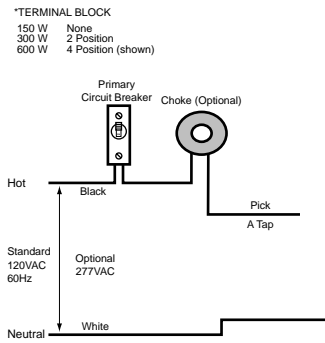


Low Voltage Fixture Power Supply Center

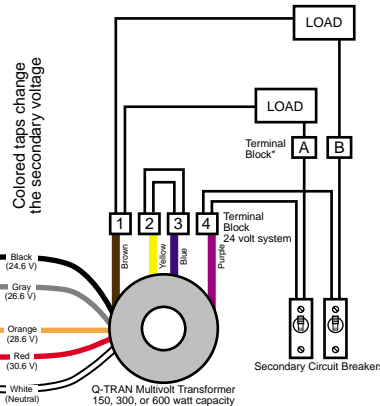
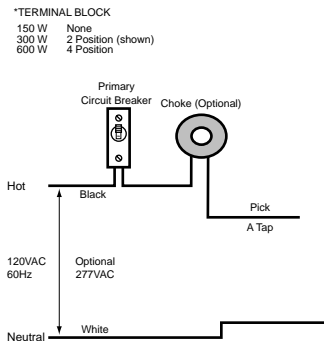
Surface mounting - wall or ceiling • Recessed mounting - wall only
 Inherently Protected • Suitable for use in insulated spaces - zero clearance.
 • Suitable for use in closets with clothes in direct contact. • Suitable for Damp Locations • 60 Cycle A.C. Only • Isolation Multi-Volt Toroidal Transformer

WIRING DIAGRAMS

12 VOLT SYSTEM



24 VOLT SYSTEM



SURFACE MOUNTING



1

2

3

4

N.E.C. 1996 CODE - ARTICLE 411 (excerpted from) LIGHTING SYSTEMS OPERATING AT 30 VOLTS OR LESS

411-1. Scope.

This article covers lighting systems operating at 30 volts or less and their associated components.

411-2. Lighting Systems Operating at 30 Volts or Less.

A lighting system consisting of an isolating power supply operating at 30 volts (42.4 Vpk) or less, under any load condition, with one or more secondary circuits, each limited to 25 amperes maximum, supplying lighting fixtures and associated equipment identified for the use.

411-3. Listing Required.

Lighting systems operating at 30 volts or less shall be listed for the purpose.

411-4. Locations Not Permitted.

Lighting systems operating at 30 volts or less shall not be installed (1) where concealed or extended through a building wall, unless using a wiring method specified in Chapter 3 or (2) within 10 ft. (3.05 m) of pools, spas, fountains, or similar locations, except as permitted by Article 680.

411-5. Secondary Circuits.

(a) **Grounding.** Secondary circuits shall not be grounded.
 (b) **Isolation.** The secondary circuit shall be insulated from the branch circuit by an isolating transformer.

(c) **Bare Conductors.** Exposed bare conductors and current-carrying parts shall be permitted. Bare conductors shall not be installed less than 7 ft (2.2m) above the finished floor, unless specifically listed for a lower installation height.

411-6. Branch Circuit.

Lighting systems operating at 30 volts or less shall be supplied from a maximum 20-ampere branch circuit.

411-7. Hazardous (Classified) Locations.

Where installed in hazardous (classified) locations, these systems conform with Articles 500 through 517, in addition to this article.

WARRANTY:

Power Supply Centers (PSC) are fully warranted for five years from date of shipment. This warranty covers only properly installed PSCs used under specified conditions. Manufacturer will, at its option, repair or replace without charge, defective PSCs, provided they are returned to the factory and our inspection determines the unit to be defective under the terms of warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to in-bound freight, installation, labor or any other charges.