Power Distribution 5

In This Chapter
√ ESD SPS-20 Power Supply √ ESD SPS-10 Power Supply √ AQS 1210 Power Supply √ PDD-8PCI Power Distribution √ PDB-8C1R

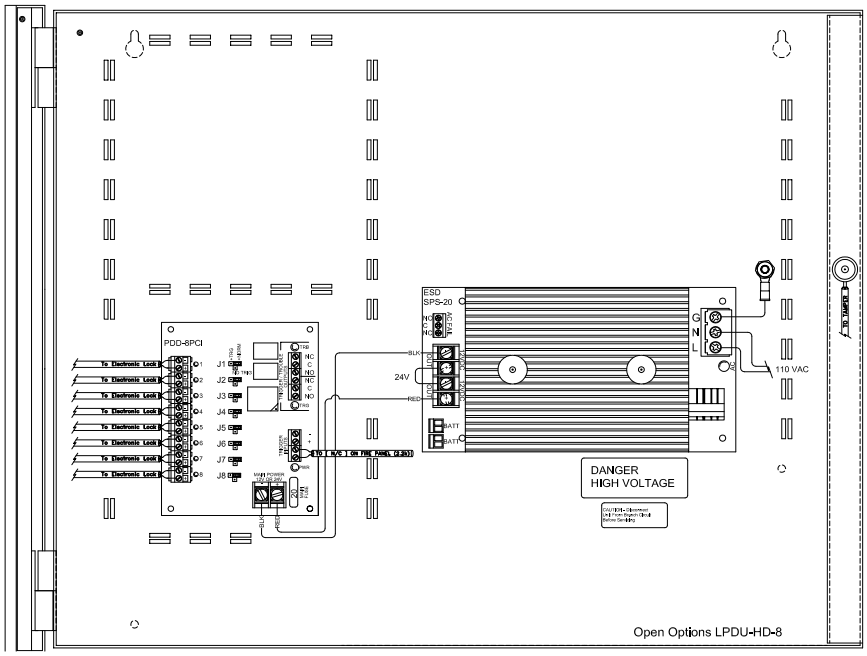
The Open Options Power Distribution Unit (PDU) is an enclosure assembly that delivers consistent, power-limited DC voltage to a wide range of field devices and equipment. It is comprised of a supervised power supply (SPS-20, SPS-10 or the AQS 1210) and power distribution device (PDD-8PCI or PDB-8C1R). The PDU offers a choice of 8 or 16 power outputs as well as a choice of 12 or 24 Vdc power supply.

The PDU accepts 110/240 volts of AC power. The 12 Vdc battery charger and supplied cables provide an uninterrupted power supply when connected to standby batteries (not included).

General Installation Guidelines

The following guidelines are best practices for installing a PDU:

- The PDU is intended for indoor installations only.
- AC mains can be connected to the flying leads provided with the PDU; however, the ground lead must be connected directly to the grounding lug, as splices are not permitted on ground bonding leads.
- All electrical connections must be made in accordance with NFPA 70, National Electrical Code (NEC).
- Power-limited cabling must be kept separate from AC mains.
- The tamper switch should be connected to an input on the access control system to provide tamper detection.
- The relay output may be used in a similar manner to indicate a power supply malfunction to the system.



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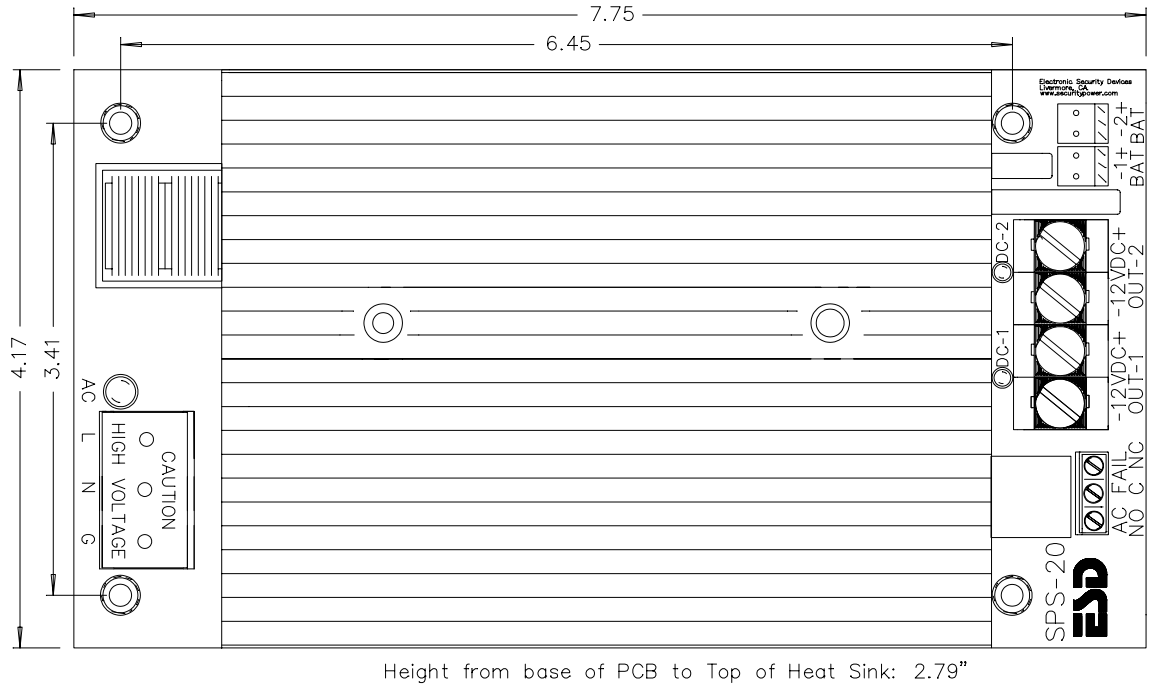
ESD SPS-20 Power Supply

The SPS-20* supervised power supply with battery charger consists of two high-powered, fully isolated, and independent power supplies, Each power supply (OUT-1 and OUT-2) is a nominal 12 Vdc at 10 amps with 12 V lead acid battery charger. The outputs can be used as separate isolated 12 Vdc power supplies, or they can be connected in parallel or series to provide 12 Vdc, 24 Vdc, or both.



Height from base of PCB to Top of Heat Sink: 2.79"

* This board is a UL-recognized component.

AC Input

The SPS-20's AC input terminal is marked High Voltage Line (L), Neutral (N), and Ground (G). The G terminal must connect to earth ground.

The terminal block and AC LED are mounted within a high-voltage barrier. The terminal block is self-clamping and accepts wires from 12 AWG to 18 AWG. The green LED adjacent to the terminals is ON when AC power is applied.

The AC input default is 120 Vac. The SPS-20 can be provisioned for 240 Vac when ordered, or the PCB trace on the bottom of the board labeled "CUT 240" can be cut. Once cut, the board can not be reprovisioned for 120 Vac.

> ***Do NOT apply 240 Vac when the SPS-20 is set for 120 Vac; this will damage the unit and void the warranty.***

AC Status Relay

Power trouble terminals are marked NO (Normally Open), C (Common), and NC (Normally Closed). The normal relay position indicates that the output power is in the normal range and the relay is energized. The contacts are rated for up to 120 volts and 2 A resistive load.

DC Outputs

The SPS-20's DC output terminals, marked DC-1 and DC-2, have a continuous rating of 12 Vdc at 8 amps per output. The red LED adjacent to the terminal block is ON when output voltage is present.

When outputs 1 and 2 are connected in parallel, the output is 13.75 Vdc at 20 amps. When outputs 1 and 2 are connected in series, the output is 27.5 Vdc at 10 amps. Because each output is independently regulated, additional current may be drawn from the 12 V output 1 while simultaneously using the 24 Vdc output. The 12 V current must be subtracted from the 10 amps available on the 24 Vdc.

The figures below illustrate the configuration options for DC outputs.

Output Terminal Block Configurations

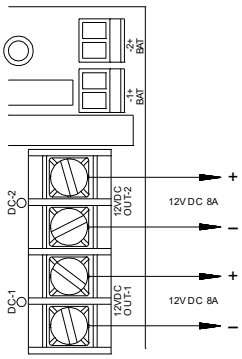


Fig 1 2-12VDC 8A

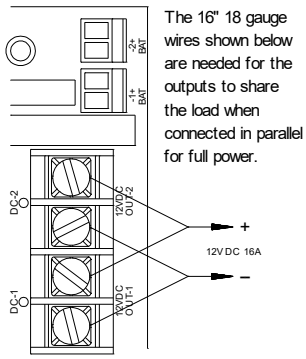


Fig 2 1-12VDC 16A

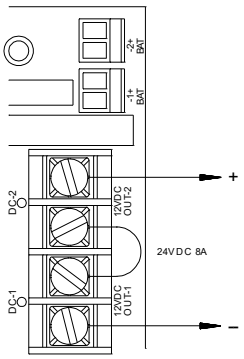


Fig 3 24VDC 8A

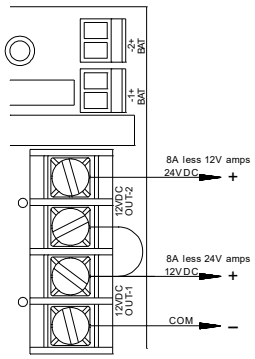


Fig 4 12VDC & 24VDC

> *Do not use series or parallel connections for the batteries or prior to circuit breaker protection. Connections should be made at the outputs as shown above. If you are connecting parallel jumpers (figure 2), the jumpers must be 16" of 18 AWG wires to add a little resistance so both outputs can share the load.*

Battery Standby

Two 12" battery cable assemblies are provided. These assemblies plug from the SPS-20 to the battery by connecting the red (+) 12 Vdc and the black (-) negative.

In standby mode, each battery is limited to 8 amps of continuous current. When both outputs are connected in parallel and the standby current will be greater than 8 amps, two batteries must be used: one connected to the battery 1 terminal and one connected to the battery 2 terminal.

> *Paralleling cables on the batteries (*BAT 1/BAT 2*) will not double the current.*

Battery Selection

The table below provides typical standby times (in hours) for various loads and batteries. The table works for either 12 Vdc or 24 Vdc. Use the table below to determine the correct battery size.

Total Output Amps	4 Ah Battery Standby	7 Ah Battery Standby	12 Ah Battery Standby	24 Ah Battery Standby	40 Ah Battery Standby
.5 A	5.5 Hrs	12 Hrs	20 Hrs	40 Hrs	65 Hrs
1 A	2.5 Hrs	5 Hrs	9 Hrs	19 Hrs	32 Hrs
1.3 A	2 Hrs	4 Hrs	7.2 Hrs	15.5 Hrs	24 Hrs
2 A	1 Hrs	2 Hrs	5 Hrs	10 Hrs	15 Hrs
3 A	.5 Hrs	1 Hrs	3 Hrs	6 Hrs	9.5 Hrs
4 A	.5 Hrs	.8 Hrs	2 Hrs	4 Hrs	8 Hrs
5 A	N/A	.6 Hrs	1.4 Hrs	3 Hrs	7 Hrs
6 A	N/A	.4 Hrs	1 Hrs	2 Hrs	4 Hrs

* Approximate battery standby time with a reserve of 3 amps for 5 minutes of alarms.

Maintenance

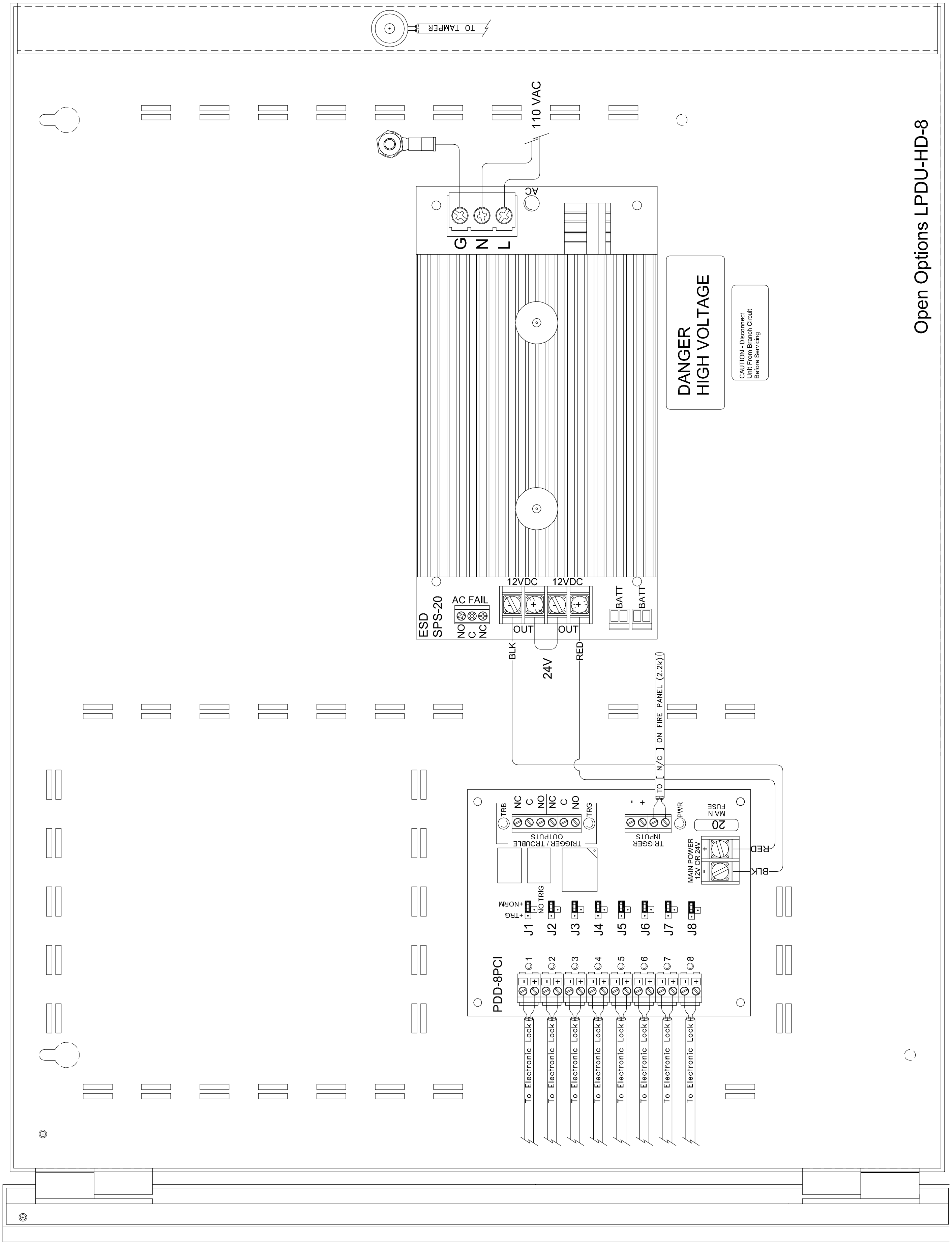
The power supply and standby batteries should be tested at least once a year.

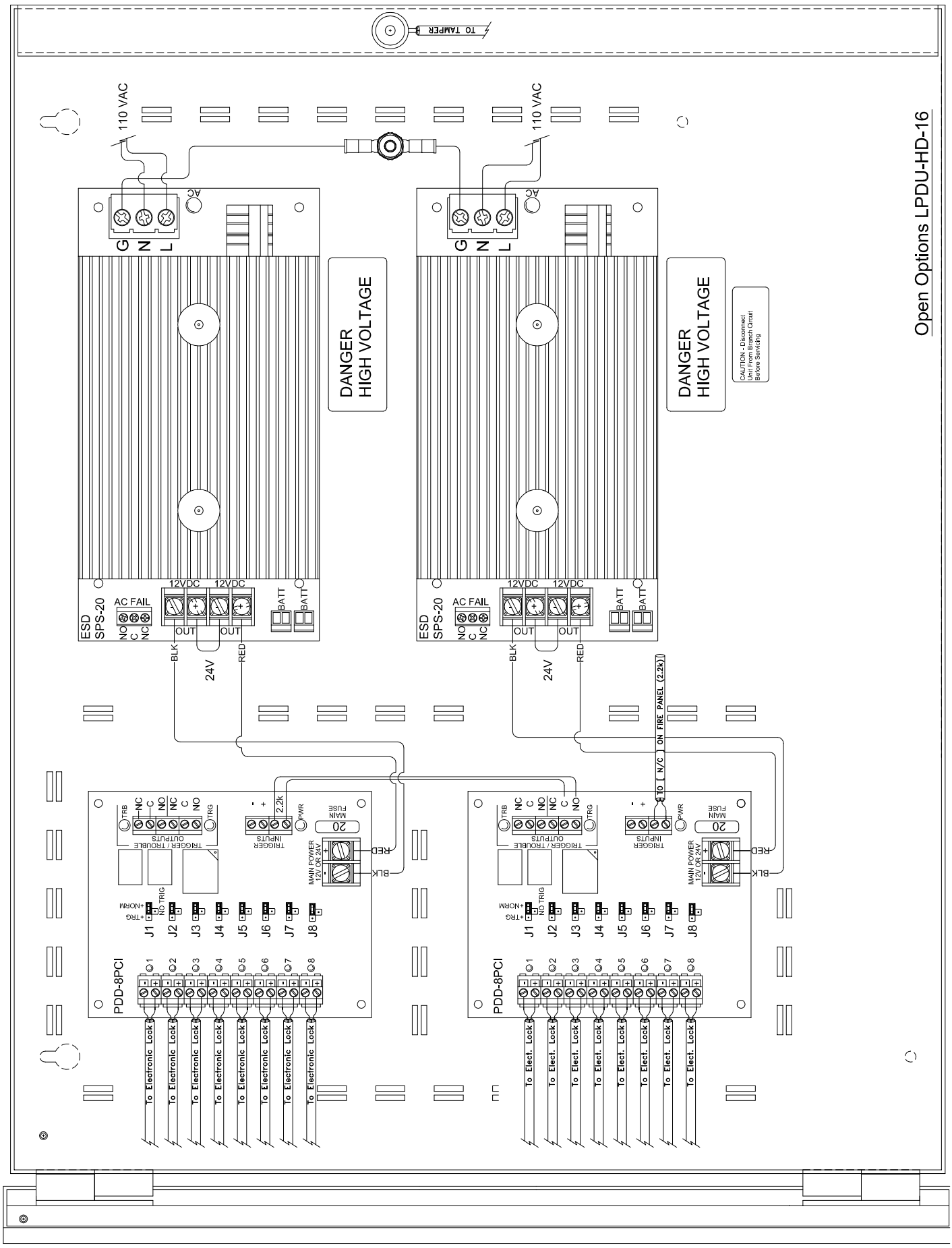
1. **Verify** that the LEDs are in the normal state.
   AC Input LED = ON (Green)
   DC Output 1 & 2 LEDs = ON (Red)
2. **Check** the output voltage with a normal load.
   DC Output 1 & 2 = Between 13.60 and 13.80 Vdc
3. **Disconnect** the AC input.
   AC Input LED = OFF
   DC Output 1 & 2 LEDs = ON
4. **Verify** that DC Outputs 1 & 2 have a reading above 12 Vdc.
   This step verifies that the standby batteries are operational. Sealed, lead acid batteries typically have a 3- to 5-year lifespan.
5. **Reapply** AC power and **verify** that the AC LED is ON.

Status LEDs

The status LEDs on the SPS-20 indicate the following information:

LED	Indicator	State
AC	Green LED (Next to AC input terminal strip)	ON = AC applied OFF w/ AC power = Catastrophic failure
DC	Red LED (Adjacent to each output pair)	ON = Output voltage is present


TO TAMPER
110 VAC
G
N
L
AC
DANGER
HIGH VOLTAGE
CAUTION - Disconnect Unit From Branch Circuit Before Servicing
Open Options LPDU-HD-8
ESD
SPS-20
AC FAIL
NO
C
NC
12VDC
12VDC
OUT
OUT
BATT
BATT
BLK
RED
24V
TO [N/C] ON FIRE PANEL (2.2k)
TRB
NC
C
NO
NC
C
NO
TRG
TRIGGER / TROUBLE
OUTPUTS
TRIGGER
INPUTS
PWR
MAIN
FUSE
20
MAIN POWER
12V OR 24V
RED
BLK
+TRG
+NORM
NO TRIG
J1
J2
J3
J4
J5
J6
J7
J8
PDD-8PCI
To Electronic Lock


Open Options LPDU-HD-16
TO TAMPER
110 VAC
110 VAC
G N L
G N L
AC
AC
DANGER
HIGH VOLTAGE
DANGER
HIGH VOLTAGE
CAUTION - Disconnect Unit From Branch Circuit Before Servicing
ESD SPS-20
AC FAIL
NO C NC
12VDC
12VDC
OUT
OUT
BATT
BATT
BLK
RED
24V
To [N/C] ON FIRE PANEL (2.2k)
TRIGGER / TROUBLE OUTPUTS
TRIGGER INPUTS
MAIN POWER 12V OR 24V
MAIN FUSE
20
PWR
2.2k
+TRG
-NORM
NO TRIG
J1 J2 J3 J4 J5 J6 J7 J8
PDD-8PCI
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
To Electronic Lock
To Elect. Lock

NOTES:

Specifications

The SPS-20 interface is for use in low-voltage, Class 2 circuits only.

AC Input:	*120 Vac:*	90-132 Vac / 47-63 Hz / 400 W
	240 Vac:	133-250 Vac / 47-63 Hz / 400 W
DC Outputs:	*Continuous:*	12 Vdc @ 8 A each
	Typical Output:	13.72 Vdc each
	Individual:	12 Vdc @ 10 A max.
	Parallel:	13.75 Vdc @ 20 A max.
	Series:	27.5 Vdc @ 10 A max.
AC Status Output:	*AC Fail "C" Contacts*	2 A/120 Vac
Battery:	*Lead Acid:*	12 V, 4 Ah-100 Ah
	Recharge 1 & 2:	13.72 Vdc @ 2 A max.
	Recharge 1 & 2 PTC:	1.04 A
	Discharge 1 & 2 PTC:	8 A
	Reverse Hookup Protection:	Yes
Mechanical:	*Dimensions:*	7.75" L x 4.17" W x 3.23 H (height includes 7/16" standoffs)
	Weight:	2.4 lbs
Environmental:	*Temperature:*	-30 to 130 °C, operating -60 to 190 °C, storage

Specifications are subject to change without notice.

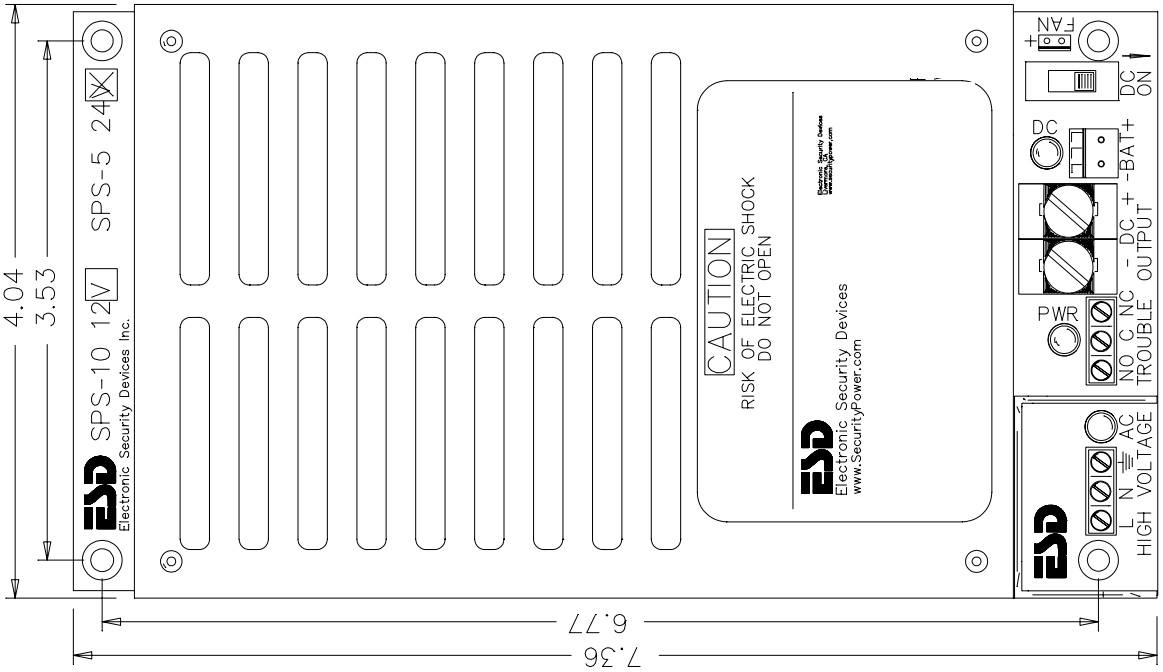
NOTES:

ESD SPS-10 Power Supply

The SPS-10 is a heavy-duty, low-frequency, offline switching power supply with a battery charger and power supervision. The SPS-10 output is nominal 12 Vdc at 10 amps with a 12 V lead acid battery charger. The power supply uses a very low switching frequency of 23 KHz. This, coupled with extensive filtering, provides a balance of super clean power and efficiency. The low-frequency design also eliminates interference problems with card readers and can be used wherever a linear power supply is required.

The SPS-10 is self-contained with a universal line input of 85 to 264 Vac. It becomes an uninterruptible power supply when a stand-by battery is connected with the supplied cables. The cables have a special power-limiting circuit that allows the batteries to float charge across the output without lock-up or chirping on and off. The battery is protected with an automatic resetting circuit breaker, a diode for overcurrent, and accidental reversed battery connections.

There is no switchover or voltage drop when power fails. Standby batteries can be any capacity between 4 and 40 amp hours. The precise output voltage provides longer battery life. The SPS-10 is rated for 8 amps continuous current with 2 amps reserved for charging the battery(s).



AC Input

The SPS-10's AC input terminal is marked High Voltage Line (L), Neutral (N), and Ground (G). The G terminal must connect to earth ground.

The terminal block and AC LED are mounted within a high-voltage barrier. The terminal block is self-clamping and accepts wires from 12 AWG to 18 AWG. The green LED adjacent to the terminal is ON when AC power is applied.

Power Supervision

The SPS-10 includes a battery cutoff relay and a separate power trouble alarm relay. The battery cutoff relay removes the battery from the load when the battery reaches its service limit. This prevents damage to the battery from deep discharge*. The power trouble alarm relay, a Form C contact, can be used to signal a buzzer and/or other signaling device. The relay is normally energized for fail-safe operation.

The power trouble terminal is marked NO (Normally Open), C (Common), and NC (Normally Closed). The normal relay position indicates that the output power is in the normal range and the relay is energized. The contacts are rated for up to 2 A resistive load and 120 volts.

A service switch is provided to disable the power output. When the switch is turned off, the power supply is electronically disabled and the battery cutoff relay is de-energized to remove battery power from the output terminal.

*A typical gel cell battery will need to be replaced if left in deep discharge for more than a couple of days.

DC Outputs

The SPS-10's DC output terminal is marked -DC+ and has a continuous rating of 12 Vdc at 8 amps, reserving 2 amps for battery charging. The terminal block is self-clamping and accepts wires from 10 AWG to 24 AWG. The red LED adjacent to the terminal is ON when output voltage is present.

The SPS-10 output is not Class 2 power-limited. The DC output is fed to a PD-10 fuse board. The spacing of power-limited wires to non-power limited wires must be kept at a minimum of 0.25".

Battery Standby

The battery connector, a .156" 2-position header with lock, is marked -BAT+. A 12" battery cable assembly is provided. The assembly connects the SPS-10 to the battery by connecting the red (+) 12 Vdc and the black (-) negative.

The battery charger is precision set to float charge to 12 V or 24 V sealed or wet lead acid batteries. The amp hour capacity must be between 4 Ah to 40 Ah.

Battery Selection

The table below provides typical standby times (in hours) for various loads and batteries. Use the table below to determine the correct battery size.

Total Output Amps	4 Ah Battery Standby	7 Ah Battery Standby	12 Ah Battery Standby	24 Ah Battery Standby	40 Ah Battery Standby
.5 A	6.5 Hrs	13.2 Hrs	23.5 Hrs	47.5 Hrs	79.5 Hrs
1 A	3 Hrs	6.3 Hrs	11.7 Hrs	23.7 Hrs	39.7 Hrs
2 A	1.3 Hrs	2.5 Hrs	5.5 Hrs	11.2 Hrs	19.7 Hrs
3 A	.7 Hrs	1.5 Hrs	3.6 Hrs	7.2 Hrs	13 Hrs
4 A	.5 Hrs	1 Hrs	2.3 Hrs	5 Hrs	9.6 Hrs
5 A	N/A	.8 Hrs	1.7 Hrs	3.7 Hrs	7.4 Hrs
6 A	N/A	.6 Hrs	1.3 Hrs	3 Hrs	5.5 Hrs
7 A	N/A	N/A	1.1 Hrs	2.2 Hrs	4.4 Hrs
8 A	N/A	N/A	.8 Hrs	1.8 Hrs	3.4 Hrs

* Approximate battery standby time with a reserve of 3 amps for 5 minutes of alarms.

Maintenance

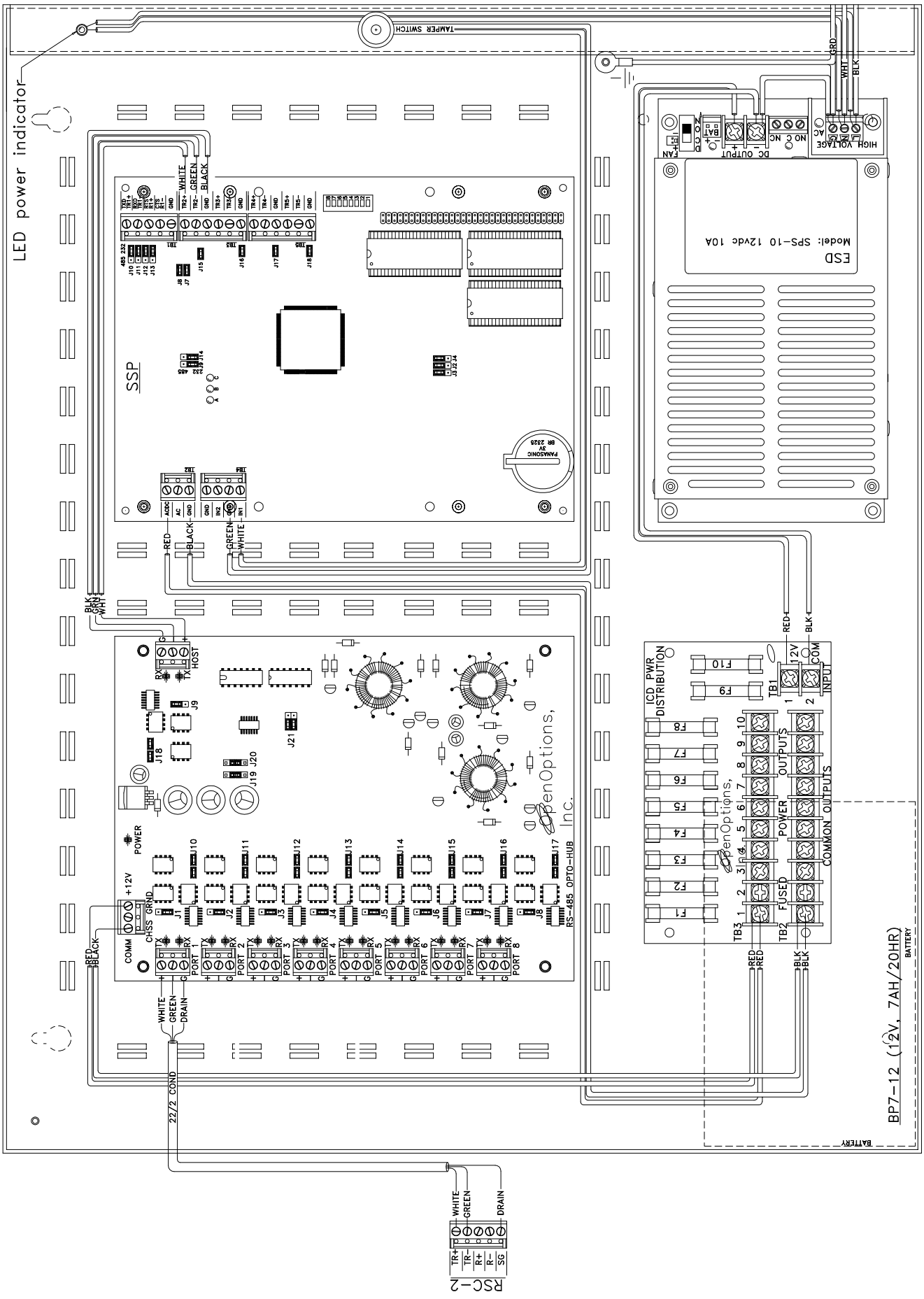
The power supply and standby battery(s) should be tested at least once a year.

1. **Verify** that the LEDs are in the normal state.
   AC Input LED = ON (Green)
   DC Output LED = ON (Red)
2. **Check** the output voltage with a normal load.
   DC Output = Between 13.60 and 13.85 Vdc
   This ensures power voltage to float charge batteries.
3. **Disconnect** the AC input.
   AC Input LED = OFF
   DC Output LED = ON
4. **Verify** that the DC Output has a reading above 12 Vdc.
   This step verifies that the standby batteries are operational. Sealed, lead acid batteries typically have a 3- to 5- year lifespan.
5. **Reapply** AC power and **verify** that the AC LED is ON.

Status LEDs

The status LEDs on the SPS-10 indicate the following information:

LED	Indicator	State
AC	Green LED (Next to AC input terminal strip)	ON = AC applied OFF w/ AC power = Catastrophic failure
DC	Red LED (Adjacent to each output pair)	ON = Output voltage is present


LED power indicator
TAMPER SWITCH
SSP
ESD
Model: SPS-10 12vdc 10A
HIGH VOLTAGE
DC OUTPUT
FAN
WHITE
GREEN
BLACK
RED
BLK
GRN
WHT
GRD
HOST
POWER
+12V
GRND
CHASS
COMM
OPTO-HUB
RS-485
PORT 1
PORT 2
PORT 3
PORT 4
PORT 5
PORT 6
PORT 7
PORT 8
ICD PWR DISTRIBUTION
INPUT
OUTPUTS
COMMON OUTPUTS
FUSED
TB1
TB2
TB3
BP7-12 (12V, 7AH/20HR)
BATTERY
22/2 COND
DRAIN
RSC-2
TR+
TR-
R+
R-
SG
OpenOptions, Inc.

Specifications

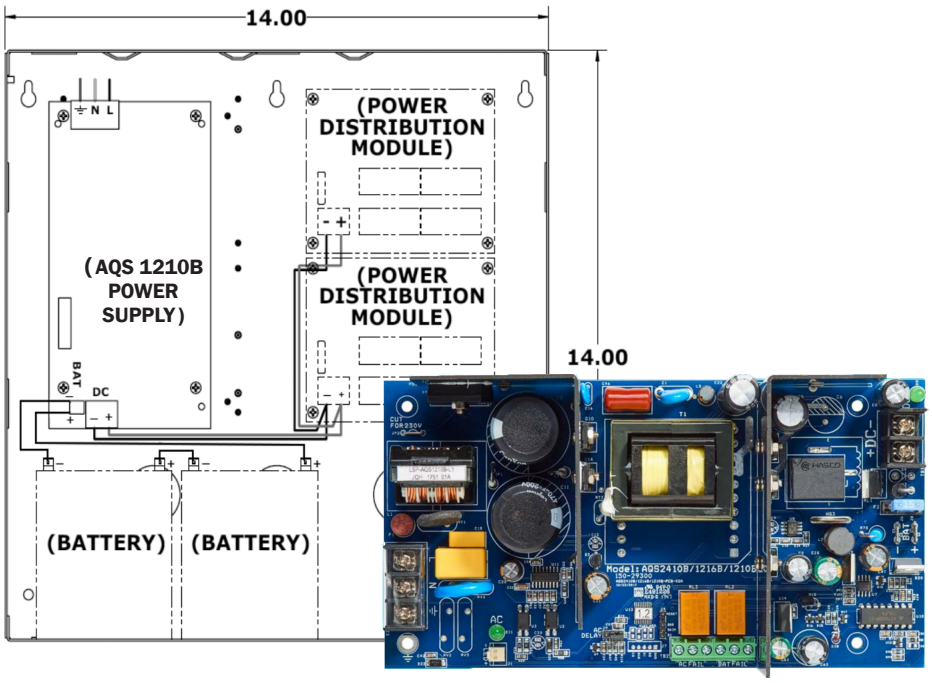
The SPS-10 is for use in low-voltage, Class 2 circuits only.

AC Input:		85-264 Vac / 47-63 Hz / 220 W max.
DC Outputs:	*Nominal:*	12 Vdc
	Continuous:	8 amps
	Typical:	13.75 Vdc
Trouble Output:	*AC Fail "C" Contacts:*	2 A/120 Vac
Battery:	*Cutoff Voltage:*	9.8 Vdc
Mechanical:	*Dimensions:*	7.40" H x 3.94" W x 2.5" D
	Weight:	1.6 lbs
Environmental:	*Temperature:*	-30 to 120 °C, operating -60 to 190 °C, storage

NOTES:

AQS 1210 Power Supply

The AQS 1210 power supply is a heavy-duty, self-contained, efficient, clean, offline, switching power supplies, with linear-type performance. The AQS 1210 has a dedicated lead acid battery charger that maintains maximum battery life while providing power for access control devices. The AQS 1210 are exceptional during brownout conditions, capable of operating at 85% of nominal voltage.



AC Input

The AQS's 1210's AC inputs are marked High Voltage Line (L), Neutral (N), and Ground (⏚). The ⏚ terminal must connect to earth ground. The green LED adjacent to the -LED+ terminal is ON when AC power is applied. The terminal block accepts up to 12 AWG wires.

The AC input default is 120 Vac. The AQS 1210 can be provisioned for 240 Vac when ordered, or the PCB trace at the top of the board is labeled "CUT FOR 240V" can be cut. Once cut, the board can not be reprovisioned for 120 Vac.

> ***Do NOT apply 240 Vac when the AQS 1210 is set for 120 Vac; this will damage the unit and void the warranty.***

AC Status Relay

Power trouble terminals are marked NO (Normally Open), C (Common), and NC (Normally Closed). The normal position indicates that the output is in normal range and the relay is energized. The contacts are rated for up to 3 A, 30 Vdc, 240 Vac.

DC Output

The AQS 1210 DC output terminal is a one (1) output, two (2) pin terminal block , labeled -DC+. the AQS 1210 has a continuous current rating of 12 Vdc at 10 amps. A green LED adjacent to the terminal block is ON when a output voltage is present. Nominal output voltage should read 12 Vdc, 12.5 Vdc is typical for output voltage.

> *There is a 10 second delay for initial turn on.*

> *Current overload and thermal shutdown will auto-restart without removing the load.*

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Battery Standby

The battery connector is a 2 spade terminal block marked -Bat+. A 12 inch battery cable assembly is provided to plug the modules on the battery connector: red (+) and black (-) negative.

> ***!*** *To avoid a spark, AC MUST be applied before connecting the battery cable to the battery.*

The battery charger is precision set to float charge 12 V or 24 V sealed or wet lead acid batteries.

> ***i*** *Battery Cutoff Relay is normally energized for fail-safe operations.*

Maintenance

The power supply and standby batteries should be tested at least once a year as follows.

1. **Verify** that the LEDs are in the normal state.
   AC Input LED = ON (Green)
   DC Output LED = ON (Red)
2. **Check** the output voltage with a normal load (assure proper voltage to float charge batteries).
   DC Output = between 13.6 and 13.8 Vdc
3. **Disconnect** the AC input.
   AC Input LED = OFF
   DC Output LED = ON
4. **Verify** that the DC output has a reading over 12.0 Vdc for 12 V.
   This step verifies that the stanby batteries are operational. Sealed lead, acid batteries have a typical life of 3 to 5 years. Make sure to mark batteries with the date they are installed.
5. **Reapply** AC power and verify that the AC LED is ON.

UL Compliance

For UL 294 compliance when using an 8 output PDB boards with fire trigger, the Fire Alarm disconnect wire length must be less than 98.5 ft (30 m).

ULC-S318 compliance requires that the power supply battery fail line must be connected to and monitored by a control panel trouble zone. AQS series uses a standard power supply enclosure, not an attack proof enclosure. As such, they should not be used to power to a mercantile bell.

When using a battery that is not housed inside the power supply enclosure, the battery leads require protection from the enclosure via the use of conduit. For UL compliance the enclosure used must be listed to the categories Listed above and shall have sufficient space to house the standby batteries.

All power supplies are required to have a minimum of a 48 hour recharge period to provide standby power of a minimum 4 hours 15 minutes of alarm under full load conditions. Standby power has been evaluated in accordance with UL 1076 proprietary burglar alarm systems.

UL verified ambient operating temperature is between +32F to +122F (-20C to 50C). The operating temperature is not evaluated for outdoor use.

Status LEDs

The status LEDs on the AQS 1210 indicate the following information.

LED	Indicator	State
AC	Green LED	ON = AC applied OFF w/ AC power = Failure
Trouble Normal	Green/Amber LED	Green = Normal Amber = Trouble
DC	Red LED	ON = Output voltage is present

Specifications

Power Supplies should be installed in accordance with electrical and building codes.

AC Input:	120 / 240 Vac:	456 W
	Frequency:	50-60 Hz
	Fuse Rating:	12 A / 32 Atm
DC Output:	Continuous Current Ratings:	10 A
	Nominal Voltage:	12 Vdc
	Typical Voltage:	12.5 Vdc
	Range with Rated Load:	12.5 Vdc
	UL Recorded Range for battery Compatibility:	9.8-13.2 Vdc
	Load Regulation No Load Max (no battery):	+/- 0.2%
	Curent Overload Short Circuit Protection:	Yes
	Thermal Runaway Protection:	Yes
	Power Limited Output:	Yes
	LED Indicator:	Green
AC Status Output Relay:	AC Status Output Relays:	3 Pin terminal block
	AC Fail "C" Contacts Rating:	30 Vdc, 240 Vdc, 3 A, resistive load only
Battery:	Charging:	2 spade terminal block marked "-Bat+"
	Battery Type:	12 V / 24 V, 4 Ah-40 Ah
	UL Elevated battery:	120 Ah
	Recharge:	1.5 A max
	Average Recharging Current:	1 A
	PTC Self-resetting circuit breaker:	2 A
	Reverse Hookup Protection:	Yes, 500 mA PTC
	LED Indicator:	Red
	Max. Charge Voltage (No Load):	13.6 Vdc
	Cutoff Internal Relay Contacts:	30 Vdc, 240 Vac, 3 A, resistive load
	Low Battery Cutoff:	9 Vdc
Mechanical:	Module Dimensions:	7.75" L x 4.125" W x 2.94" H (height includes 1/2" min standoffs
Environmental:	Temperature:	4 F to 122 F (-20 C to 50 C)
	UL Verified Temperature Range:	32 F to 122 F (0 C to 49 C), not evaluated for outdoor use
UL Approvals:	UL 294 6th Edition:	Listed
	Line Security:	1
	Endurance Test Level:	1
	Attack Test Level:	1
	Battery Standby Level:	4
	UL 603:	Listed
	ULC-S318:	Listed
	ULC-S533:	Listed

Specification are subject to change without notice.

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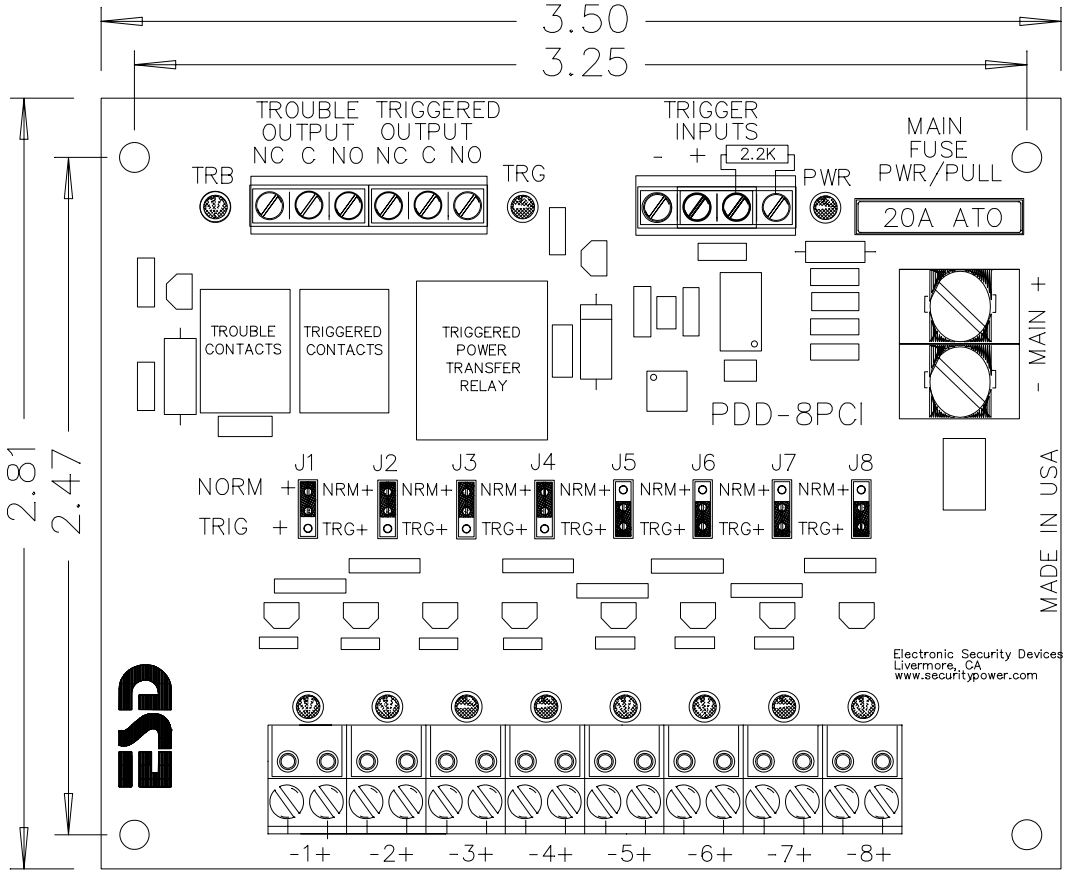
PDD-8PCI Power Distribution

The PDD-8PCI* power distribution control interface converts a main, non-power limited DC power source to eight (8) Class 2 power-limited outputs that can be controlled by a Fire Alarm Control Panel (FACP). Each output (J1-J8) can be set to turn ON, turn OFF, or disabled always ON when triggered by the panel. The FACP or other control system can interface to the PDD-8PCI with one or both supervised trigger inputs. One trigger is activated with a reverse polarity voltage from an FACP. This trigger is fully isolated with an optical isolator. The other trigger is a 2.2K end-of line (EOL) resistor input that accepts a Normally Open (NO) or Normally Closed (NC) switch.

When triggered, the Trigger Transfer Relay removes power from the NORM + buss and transfers it to the TRIG + buss. Jumpers J1-J8 determine the buss to which each output is connected. The triggered Form C contacts also drop off normal when triggered, and the red LED (TRG) turns ON. These contacts can be used to provide feedback to the system.

The Trouble Form C Relay drops off normal if any one of the PTC circuit breakers is tripped, or if the main power/fuse is lost. The green LED (TRB) is ON during normal operation and turns OFF when trouble is detected. All three relays are fail-safe and energized in the normal condition. Each output (1-8) has a green LED that is ON when the associated output is energized.



* This board is a UL-recognized component.

NOTES:

DC Power Input

The main DC power input is labeled -MAIN+. The input voltage will be the voltage on the output. Power limiting is not required. If the DC input is not power-limited, the non-power limited wires must maintain a minimum distance of 1/4" from the power-limited outputs. Input wires should be sized appropriately for the total load. The -MAIN+ terminal block can accept multiple wires ranging from 10 AWG to 24 AWG. Input wiring and power must be suitable for the total output load.

Observe polarity for 11-30 Vdc.

Triggered Outputs

Triggerable Outputs

The PDD-8PCI's triggerable outputs are marked -1+ through -8+. Each of these paired output terminal blocks can be unplugged for easy service. The outputs are Class 2 power-limited and are rated at 1.25 amps continuous duty. Each output is protected by a PTC circuit breaker. If a PTC is tripped, the load must be unplugged or removed for up to one minute to allow the PTC to cool and reset. Jumpers J1-J8 determine whether these outputs are normally ON or OFF. The output terminal blocks accept 14 to 26 AWG wire.

Triggered Output

Three Form C relay contacts drop off normal when triggered. These contacts are marked NC (Normally Closed), C (Closed), and NO (Normally Open). The terminal block accepts 14 to 26 AWG wire.

Trouble Output

The PDD-8PCI contains three Form C relay contacts that drop off normal when there is Trouble. The normal state is energized with no fault. If one of the output PTC circuit breakers trips—or the main power is lost—the Trouble Output contacts will drop off normal to trouble.

Trigger Inputs

End-of-Line Resistor

When the 2.2K EOL resistor changes by more than 50% due to an open or a short, the trigger is activated. If this trigger is not used, leave the 2.2K EOL resistor on the terminals to keep this trigger in a normal state.

DC Input

The Trigger DC Input is marked - and +. A DC voltage between 11 and 30 Vdc applied to this terminal with the indicated polarity will activate the trigger. This input is fully isolated with an optical isolating relay. The input terminal block accepts 14-26 AWG wire. The minimum input voltage for this trigger is 20% less than the main input supply voltage.

Jumper Settings

Jumpers J1 through J8 set the following options for outputs 1-8.

On four-pin models, setting the jumper on the two middle pins in a horizontal position will disable the trigger; the associated output will permanently remain ON.

Jumper Setting	Trigger Normal	Trigger Active
	ON	OFF
	OFF	ON
	ON	ON

Status LEDs

The status LEDs on the PDD-8PCI indicate the following information:

LED	Indicator	State
TRB	Trouble (Green LED)	ON = Normal operation
		OFF = Trouble fault (one or more outputs have a tripped PTC circuit breaker, blown main fuse, or lost power)
TRG	Trigger (Red LED)	ON = Activated trigger
		OFF = Deactivated trigger
PWR	Power (Green LED)	ON = Power
		OFF = No input power or blown main fuse
L1-L8	Output (Green LED)	ON = Active output
		OFF = Inactive output

Installation and Setup

1. **Set** jumpers J1 through J8. See page 6-25 for more information.
2. **Connect** security devices to the proper outputs for the above jumper settings.
3. **Connect** the Trigger Input.
4. To trigger the PDD-8PCI from a Normally Open or Normally Closed switch, **open** or **short** the EOL resistor as shown in the diagram below.

   If this trigger is not used, leave the EOL resistor connected so this input will not trigger, allowing the voltage trigger input to be operational.
5. If applicable, **connect** the Triggered Output contacts.

   These contacts can connect to auxiliary devices to indicate that the unit is triggered.
6. **Connect** the Trouble Output contacts.

   NC means Normally Closed in the normal, energized condition. C and NC will open when trouble is detected.

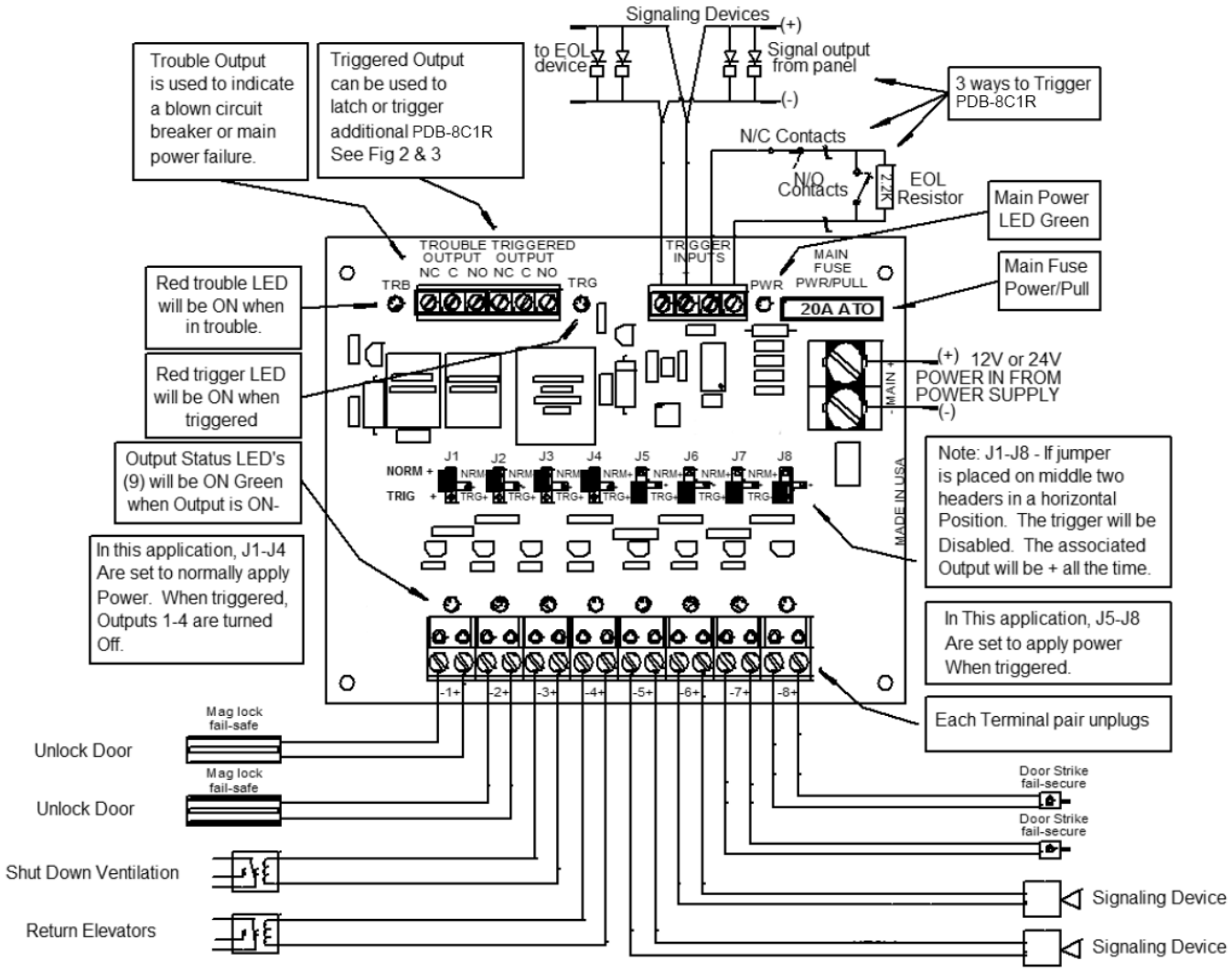


Fig. 2 - Latching Application with N/O Manual Reset.
In this application, the Triggered Output contacts are fed back to
The Trigger Input, latching the trigger until reset with the N/O contacts.

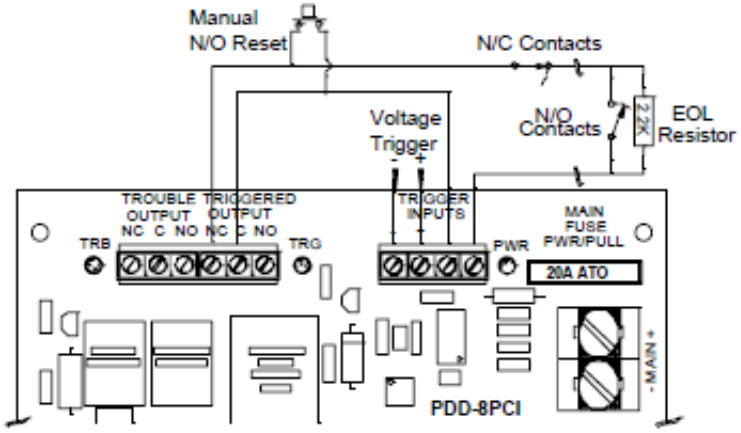


Fig. 3 - Latching Application with N/C Manual Reset.
In this application, the Triggered Output contacts are fed back to
the Trigger Input, latching the trigger until reset with the N/C contacts.

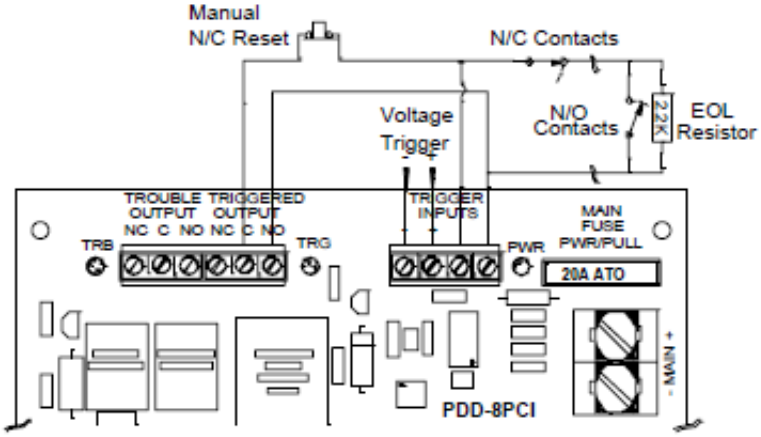
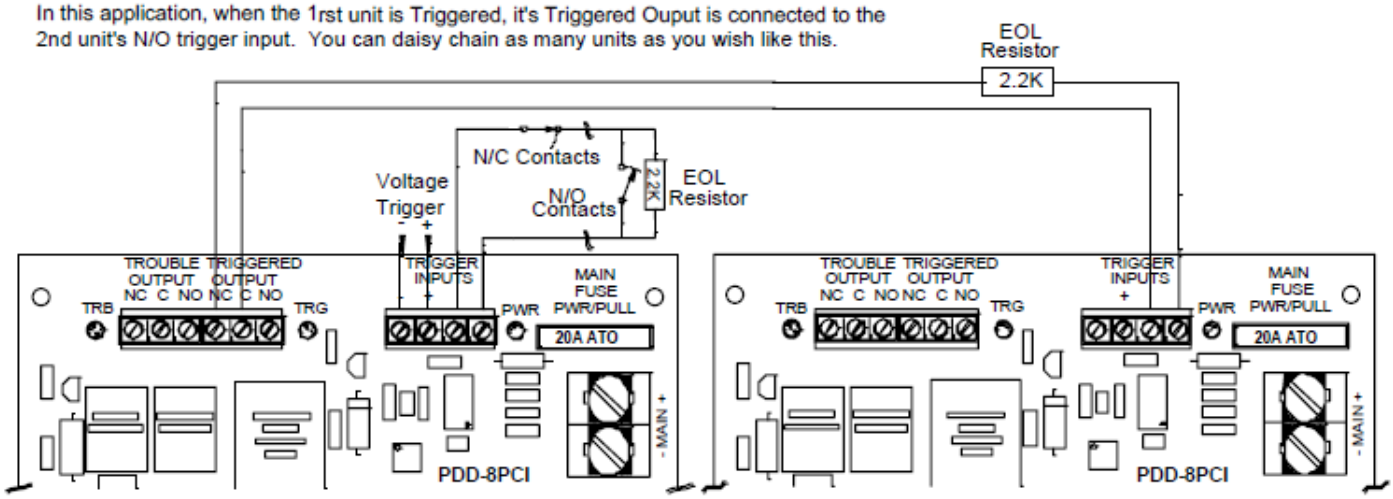


Fig. 4 - Triggering multiple PDD-8PCI's. Non Latching.
In this application, when the 1rst unit is Triggered, it's Triggered Ouput is connected to the
2nd unit's N/O trigger input. You can daisy chain as many units as you wish like this.



Specifications

Input Voltage:	*Current, Typical w/ No Output Load:*	11-28 Vdc, 90-160 mA
Outputs 1-8:	*Continuous:*	1.23 amps each
Trouble Output:	*Form C Contacts:*	2 A, 120 Vac / 1 A, 220 Vac
Triggered Output:	*Formc C Contacts:*	2 A, 120 Vac / 1 A, 220 Vac
Transfer Relay Contacts:		15 amps
Voltage Trigger:		20% < Input min., 30 Vdc max.
Voltage Trigger Isolation:		Optical
EOL Trigger:		Trip ± 50% of 2.2 K ohms

Specifications are subject to change without notice.

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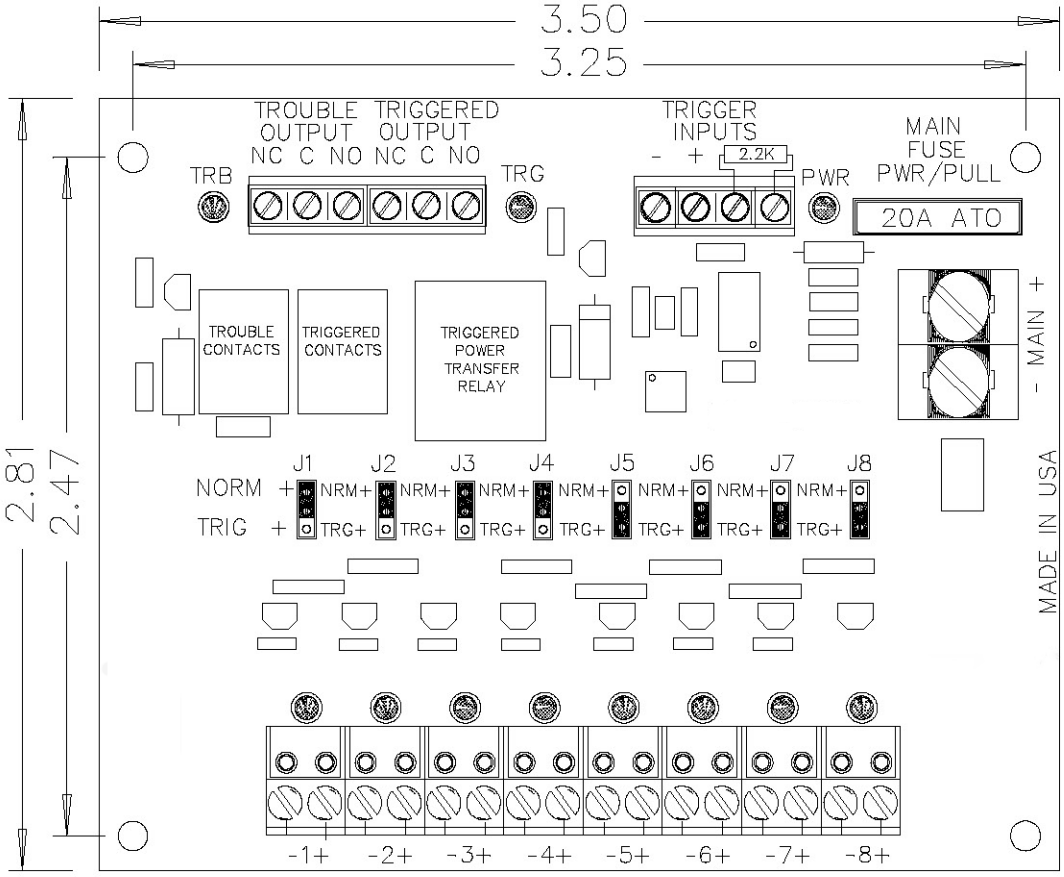
PDB-8C1R DC Power Distribution

The PDB-8C1R DC Power Distribution control interface converts a main, non-power limited DC power source to eight (8) Class 2 power-limited outputs that can be controlled by a Fire Alarm Control Panel (FACP). Each output (J1-J8) can be set to ON, turn OFF, or disabled always ON when triggered by the panel. The FACP or other control systems can interface to the PDC-8C1R with one or both supervised trigger inputs. One trigger is activated with a reverse polarity voltage from an FACP. This trigger is fullly isolated with an optical isolator. The other trigger is a 2.2K end-of-line (EOL) resistor input that accepts a Normally Open (NO) or Normally Closed (NC) switch.

When triggered, the Trigger Transfer Relay removes power for the NORM+ bus and transfers it to the TRIG+ bus. Jumpers J1-J8 determines which bus each output is connected to. These contacts can be used to daisy chain other PDB-8C1R, latch, or provide feedback to a system.

The Trouble Form-C Relay drops off Normal if any one of the PTC circuit breakers is tripped, or main power / fuse is lost. The Green (TRB) LED is ON during normal operation.



* This board is a UL-recognized component

NOTES:

DC Power Input

The main DC power input is labeled -MAIN+. The input voltage will be the voltage on the output. Power limiting is not required. If the DC input is not power-limited, the non-power limited wires must maintain a minimum distance of 1/4" from the power-limited outputs. Input wiress should be sized appropriately for the total load.

Triggered Outputs

Triggerable Outputs

The PDC-8C1R's triggerable outputs are marked -1+ through -8+. Each of these paired output terminal blocks can be unplugged for easy service. The outputs are Class 2 power limited and are rated at 1.23 amps continuous duty. Each output is protected by a PTC circuit breaker. If a PTC is tripped, the load must be unplugged or removed for up to one minute to allow the PTC to cool and reset. Jumpers J1-J8 determine whether these outputs are normally ON or OFF. The output terminal blocks accepts 14 to 28 AWG wire.

Triggered Output

Three Form-C relay contacts drop off normal when triggered. These contacts are marked NC (Normally Closed), C (Closed), and NO (Normally Closed). The terminal block accepts 14 to 28 AWG wire.

Troubled Outputs

The PDB-8C1R contains three Form-C relays. The normal state is energized with no fault. If one of the output PTC circuit breakers trips, or the main power is lost, the Trouble Output contacts will change from normal to trouble.

Trigger Inputs

End-of-Line Resistor

When the 2.2K EOL resistor changes by more than 50% due to an open or a short, the trigger is activated. If this trigger is not used, leave the 2.2K EOL resistor on the terminals to keep this trigger in a normal state.

DC Input

The Trigger DC Input is marked - and +. A DC voltage between 12 and 28 Vdc applied to this terminal with the indicated polarity will activate the trigger. This input is fully isolated with an optical isolating relay. The input terminal block accepts 14-28 AWG wire. The minimum input voltage for this trigger is 20% less than the main input supply voltage.

Jumper Settings

Jumpers J1 through J8 set the following options for outputs 1-8.

> *On Four-pin models, setting the jumper on the two middle pins in a horizontal position will disable the trigger; the associated output will permanently remain ON.*

Jumper Settings	Trigger Normal	Trigger Active
	ON	OFF
	OFF	ON
	ON	ON

Status LEDs

The status LEDs on the PDB-8C1R indicate the following information:

LED	Indicator	State
TRB	Trouble (Green LED)	ON = Normal operation
		OFF = Trouble fault (one or more outputs have tripped PTC circuit breaker, blown main fuse, or lost power)
TRG	Trigger (Red LED)	ON = Activted trigger
		OFF = Deactivated trigger
PWR	Power (Green LED)	ON = Power
		OFF = No input power or blown main fuse
L1-L8	Output (Green LED)	ON = Active output
		OFF = Inactive output

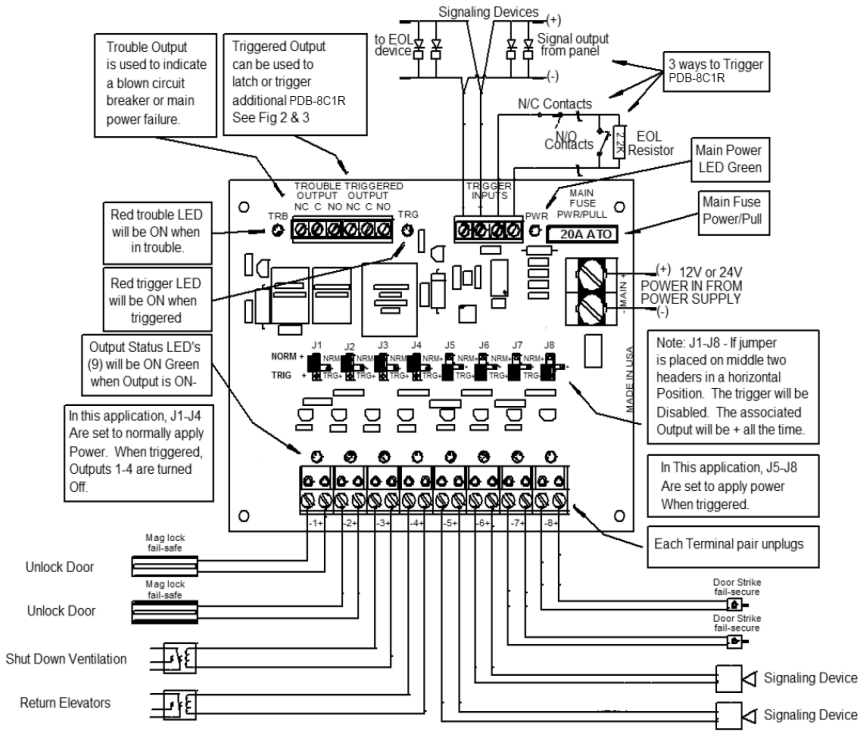
Installation and Setup

1. **Set** jumpers J1 through J8. See page 6-33 for more information.
2. **Connect** security devices to the proper outputs for the above jumper settings.
3. **Connect** the Trigger Input.
4. To trigger the PDB-8C1R from a Normally Open or Normally Closed switch, **open** or **short** the EOL resistor as shown below.

   If this trigger is not used, leave the EOL resistor connected so this input will not trigger, allowing the voltage trigger input to be operational.
5. If applicable, **connect** the Triggered Output contacts.

   These contacts can be connected to auxiliary devices to indicate that the unit is triggered.
6. **Connect** the Trouble Output contacts.

   NC means Normally Closed in the normal, energized condition. C and NC will open when trouble is detected.



Specifications

Input Voltage:	Current, Typical w/ No Output Load:	12-28 Vdc (Nominal 12-24), 149-211 mA
Output Voltage:		11.4 - 28 Vdc
Output 1-8:	Continuous:	1 A or 2 A per output based on model, 10 A maximum
Terminal Block Ratings:	Input:	5mm spacing 14-28 AWG
	Output:	5mm spacing 14-28 AWG
Main Fuse Rating:		15A for 2A variant, 10A for 1A variant
Main Fuse Type:		mini-ATO
Trouble Output:	Form C Contacts:	3 A, 30 Vac / 3 A, 120 Vac
Triggered Output:	Form C Contacts:	3 A, 30 Vac / 3 A, 120 Vac
Transfer Relay Contacts:		10 A for 2 amp variant / 8 A for 1 A variant
Voltage Trigger:		< 20% input min., 30 Vdc max.
Voltage Trigger Isolation:		Optical
EOL Trigger:		Trips +/- 50% of 2.2kΩ
Ambient Operating Temperature:		+32 to 120F (0 to 49C)
UL 294 - Access Control System Unit:	Line Security:	Level I
	Endurance:	Level IV
	Standby Power:	Level I
	Attack Test:	Level I

Specifications are subject to change without notice.

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