


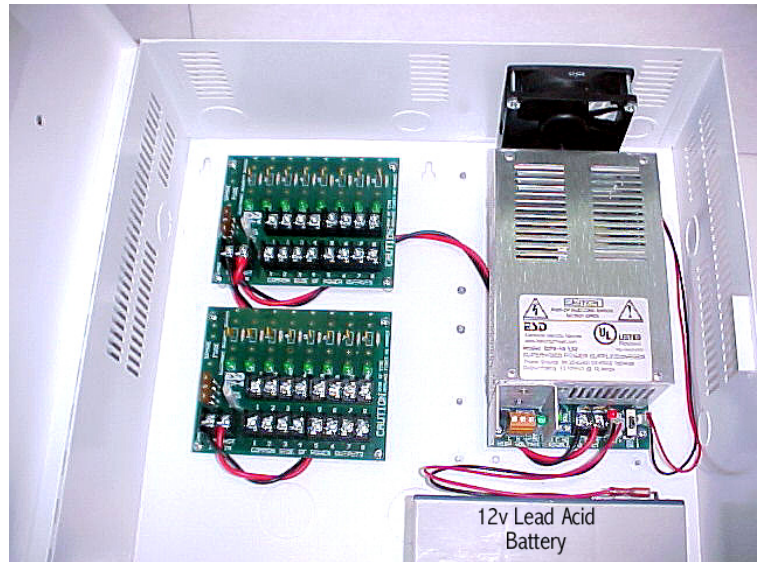
SPS-5 & SPS-10 Series Installation Instructions

Installation Instructions

- SPS-5** 24vdc 5A Supervised Power Supply/Charger module
- SPS-10** 12vdc 10A Supervised Power Supply/Charger module
- PDM-8C-.72A/1.5A** Power Distribution Module with 8 power limited output circuits
- EL** Large Enclosure with Smart Fan 14" x 14" x 4.75"
- SPS-5EL** SPS-5 mounted in large enclosure
- SPS-10EL** SPS-10 mounted in large enclosure
- SPS-5ELC8** SPS-5 with 1 PDM-8C-.72A providing 8 power limited outputs mounted in enclosure
- SPS-5ELC16** SPS-5 with 2 PDM-8C-.72A's providing 16 power limited outputs mounted in enclosure
- SPS-10ELC8** SPS-10 with 1 PDM-8C-1.5A providing 8 power limited outputs mounted in enclosure
- SPS-10ELC16** SPS-10 with 2 PDM-8C-1.5A's providing 16 power limited outputs mounted in enclosure

Features:

- Universal Input 90-240 vac
- UL and CUL Listed 
UL603 Burglar Alarm System Power Supply
UL294 Access Control Accessory
File: BP9019
- Certified Compliance with EN 55022 & FCC
- Thermal Protection
- Short Circuit Protection
- Precision Battery Charging and Output Regulation.
- Smart Fan runs as Needed for Cool Operation and Long Life
- Output ON/OFF Service Switch (*no service switch on CE marked units*)
- "ELC" model outputs are Power Limited for Class II Using PTC Circuit Breakers
- Indicating LED's for:
AC Input, Power Normal, DC On, Main Power at Each PDM-8C, and Every Output
- Power Trouble Alarm (form C Contact) Indicates AC Power Fail, Low Battery or Output Voltage too High.
- Battery Cut-off Relay Prevents Deep Discharge
- Battery is Float Charged for Faster Charging with No Switch Over when AC fails.



SPS-10ELC16

Shows SPS-10 Connected to 2 PDM-8C's with Smart Fan and Enclosure

- 12" Plug-in Battery cable assembly is provided with series cable for the SPS-5 24v models.
- 36" Plug-in Battery cable assembly is available (WA-36IBAT) for remote battery mounting.
- Quality Manufactured in the USA

SPS-5 and SPS-10 Description

The SPS-5 and SPS-10 are clean, efficient, heavy duty, low frequency off line switching power supplies with battery charger and power supervision. Even though the wattage is the same for the SPS-5 and the SPS-10, we sell them separately for optimum performance. The SPS-5 and SPS-10 use a very low switching frequency of 23KHz, just above our hearing range. This, coupled with extensive filtering, provides a balance of super clean power and efficiency. This low frequency also eliminates interference problems with card readers. The SPS-5 and SPS-10 are



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Rev. 12/18/09 © Technical data jdb specifications subject to change (more)
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Page 1 of 6

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self-contained with a universal line input of 90 to 264vac. The SPS-5 and SPS-10 each weigh less than 1.5 lbs and occupy less than ½ of a cubic foot of cabinet space.

The SPS-5 and SPS-10 become an uninterruptible power supply when a stand by battery(s) is connected with the supplied cable. These supplies have a special power limiting circuit that allows the batteries to be float charged across the output without lock up or chirping on and off. The battery(s) is protected with an automatic resetting circuit breaker and diode for over current and accidental reversed battery hookup. Float charging means faster recovery time for the battery(s). There is no switch over or voltage drop when power fails. Standby battery(s) can be any capacity between 4 and 40 Amp hours. The precise output voltage provides longer battery life. The SPS-5 24vdc is rated for 4 Amps continuous current with 1 Amp reserved for battery charging. The SPS-10 12vdc is rated for 8 Amps continuous current with 2 Amps reserved for battery charging.

Power Supervision includes a battery cut off relay and a separate power trouble alarm relay. The battery cut off relay removes the battery from the load when the battery reaches its service limit. This prevents damage to the battery from going into deep discharge. The power trouble alarm relay output, form C contacts, can be used to signal a buzzer and/or other signaling device. The relay is normally energized for fail-safe operation. The relay has a green LED that is on when power is good. The relay will drop off of normal when the standby battery(s) reaches about 70% of capacity after a power a power failure. This low voltage indication represents power trouble. High voltage failure will also indicate power trouble.

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 cut off relay is de-energized to remove battery from the output terminal. The switch is marked DC ON with arrow indicating ON. *Note On SPS-5CE and SPS-10CE units with the CE Mark for Europe do not have the service switch.*

The **Smart Fan Power Header** provides power for the Smart Fan when the SPS-5 or SPS-10 is mounted in our “EL” large enclosure. The Smart Fan regulates the temperature in the enclosure by varying the fan speed to keep the enclosure cool.

PDM-8C Description

The PDM-8C is a power distribution board. The PDM-8C works much like the circuit breaker panel you will find most homes. There is a main power input and a main fuse then the positive side is feed to 8 circuit breakers. The circuit breakers provide class II power limited outputs with fault isolation of each output circuit. Each circuit has a green LED to indicate its status. These output wires can be run outside of the enclosure without conduit. You must keep a minimum separation of .25” between power limited and non-power limited wiring.

Explanation of Terminals and LED's

AC Input Terminals are marked High Voltage (L)ine, (N)eutral, and (G)round. The terminal block and AC LED are mounted within a high voltage barrier. The terminal block is self-clamping and can accept wires from 12awg to 18awg. The Green LED adjacent to terminals is ON Green when AC is applied.

Power Trouble Terminals are marked NO-Normally Open, C-Common, and NC-Normally Closed. The normal relay position indicates the output power is in the normal range and the relay is energized. The terminal block is self-clamping and can accept wire from 14awg to 24awg. The contacts are rated for up to 2A resistive load to 120 volts. The Green LED adjacent to the terminal block is ON Green when power is in the normal range. When the AC fails and the battery(s) drop to about 70% capacity, the power trouble relay and LED will go off normal. If an internal failure caused the output to rise above normal, this would also cause the power trouble relay and LED will go off normal.

DC Output Terminals on the SPS-5 and SPS-10 are marked –DC+ output. The SPS-5 has a DC output of 24vdc with 4 Amps of continuous current, reserving 1 Amp for battery charging. The SPS-10 has a DC output of 12vdc with 8 Amps of continuous current, reserving 2 Amps for battery charging. The terminal block is self-clamping and can accept wires from 10awg to 24awg. The Red LED adjacent to terminal block is ON when output voltage is present.

The SPS-5 and SPS-10 output is not class II power limited. The multi-output “ELC” models mounted in an enclosure have one or two PDM-8C distribution boards. The DC output of the SPS-5 or SPS-10 is fed to these distribution boards where each output has a PTC circuit breaker. The outputs from the PTC circuit breakers are class II power-limited. You must keep a .25” minimum spacing of power-limited wires to non-power limited wiring.

The input and output terminals on the PDM-8C's are self-clamping and accept wires from 10awg to 24awg. Each output has a Green LED adjacent to its output that indicates voltage present. Adjacent to the input terminals of the PDM-8C boards is main Power LED and Fuse. The fuse is an ATO automotive type. Replace with recommended size. The main power LED will be Green when main power is on. If polarity is incorrect the main LED will light RED.

Battery Connector is marked –Bat+. This is a .156" 2 position header with lock. The provided battery cable plugs in to this. The provided cable is 12" long. For remote battery mounting, part WA-36IBAT is a 36" battery cable. The battery cable wires are Red and Black. The red connects to the positive and black to the negative of the battery. The SPS-5 24vdc model comes with a 12" black wire with female slip on connectors on each end for connecting 2 12v batteries in series.

FAN Power is marked FAN. This is a .1" 2 position header with lock. The fan cable plugs here to provide power for fan on "EL" units mounted in enclosure.

Specifications

AC INPUT: 3 position terminal block in High Voltage barrier. Line, Neutral, and Earth Ground

AC Input 90-240vac/47-63Hz/220Watts Max
Wide range AC input does not require any selection switching. Earth ground terminal must be properly connected to earth ground. Note: The Ground connection is connected to the enclosure back with a metal standoff. In the case of enclosures with a removable lid, a ground wire is used to ensure the ground continuity to the lid. If lid is removed, this ground wire must be reconnected securely.

AC Fuse Link is inside unit for catastrophic failure. This fuse is not field replaceable, unit must be returned to factory for service should this fuse blow. A blown fuse is indicated by the AC LED off with AC power applied.

DC OUTPUT(S):

SPS-5EL, SPS-5ELC8 and SPS-5ELC16 Output Rating 18.5-28.0vdc, 24vdc nominal, 4A
 SPS-10EL, SPS-10ELC8 and SPS-10ELC16 Output Rating 9.7-14.0vdc, 12vdc nominal, 8A
Note: The SPS-5 has 1 Amp in reserve for battery charging while the SPS-10 has 2 Amps in reserve for Battery Charging.

SPS-5ELC8 (8 Outputs) & SPS-5ELC16 (16 Outputs) Continuous current rating for each output 720ma
Note: Total Current must not exceed 4 Amps continuous.

SPS-10ELC8 (8 Outputs) & SPS-10ELC16 (16 Outputs) Continuous current rating for each output 1.5 Amps
Note: Total current must not exceed 8 Amps continuous.

Typical Output Voltage SPS-5/SPS-10 27.5vdc/13.75vdc

Typical Output Ripple & Noise SPS-5/SPS-10 30mv/15mv

Current Overload Short Circuit Protection Yes
Note: Output is short circuit protected with electronic power limiting (Not Class II) and a self-resetting circuit breaker in series with Battery.

Service Switch Disables DC power and Battery from Output Yes
(Note: The service switch has been removed on European models SPS-5CE & SPS-10CE with CE mark)

Battery PTC Circuit Breaker SPS-5/SPS-10 6A/9A

Over Temperature protection Yes

Ambient Operating Temperature Range 0°C to 49°C

Switching Frequency 23KHz

Battery Cutoff Voltage SPS-5/SPS-10 9.9vdc/19.8vdc

Battery Cutoff relay contacts 20A Resistive
Note: Battery Cutoff Relay is normally energized for fail-safe operation

Power Trouble trip points SPS-5 <24.2vdc or >28.2vdc

Power Trouble trip points SPS-10 <12.1vdc or >14.1vdc

Trouble Relay Form C Contacts 2A up to 120vac
Relay is normally energized for fail-safe operation.

Battery Charging: (Keyed header plug marked –Bat+)

The battery charger is precision set to float charge 12v or 24v sealed or wet lead acid batteries. Typically two 12v batteries are connected in series for 24v. The Amp hour capacity must be between 4Ah and 40Ah capacity.

Mechanical Characteristics:

Smart Fan comes with "EL" models mounted in an enclosure. The smart fan adjusts fan speed to keep power supply cool.

SPS-5/SPS-10 weight (module only) 1.6 lbs

PDM-8C weight (module only) 22lbs

SPS-5EL or SPS-10EL weight 12.8 lbs

SPS-5/SPS-10 size (module only) 7.40H" x 3.94"W x 2.5"D

SPS-5/SPS-10 mounting holes center to center (4 holes) 3.5"H x 6.8"W

All "EL" Enclosure size 14" x 14" x 4.75"

Note: For knock out and mounting locations, see graphic drawing of SPS-5ELC16 example

Approvals:



Specifications are subject to Change without notice.

Battery Selection

The table below shows typical standby time in hours for various loads and batteries. The table works for either SPS-5 24v, or SPS-10 12v.

Approximate Battery Standby Time Table with a reserve of 3 Amps for 5 minutes for Alarm

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

The recharge table below gives approximate recharge times for different loads and battery sizes. The table is based on batteries depleted to battery cut-off and recharged back to approximately 90% capacity.

Approximate Battery Recharge Times in Hours

Total Output Amps	4Ah Battery 12/24	7Ah Battery 12/24	12Ah Bat 12/24	24Ah Bat 12/24	40Ah Bat 12/24
.5A	8/8	10/10	11/11	12/12	14/14
1A	8/8	10/10	11/11	12/12	14/14
2A	8/8	10/10	11/11	12/12	14/14
3A	8/8	10/10	11/12	12/14	14/16
4A	8/10	10/12	11/14	12/16	14/20
5A	8/NA	10/NA	11/NA	12/NA	14/NA
6A	8/NA	11/NA	12/NA	14/NA	15/NA
7A	8/NA	12/NA	13/NA	15/NA	17/NA
8A	12/NA	14/NA	16/NA	18/NA	20/NA

Maintenance

The power supply and stand by battery(s) should be tested at least once a year as follows:

1. Check LED's for normal state. AC ON Green, Trouble ON Green, DC ON Red.
2. Check output voltage with normal load. The SPS-10 should read between 13.60 and 13.85vdc. The SPS-5 should read between 27.00 and 27.8vdc. This assures proper voltage to float charge batteries.
3. Disconnect AC input. AC LED should be off, all other LED's should remain normal.
4. Check DC Output to be above 12.1vdc for SPS-10 and 24.2vdc for SPS-5. This checks standby batteries to be operational. Sealed lead acid batteries have a typical life of 3 to 5 years.
5. Re Apply AC and verify AC LED ON.

Lead acid batteries have a typical life of 3 to 5 years.



SPS-5 and SPS-10 Multiple Output, Off Line Supervised Power Supply/Chargers Installation Guide

The SPS-5 and SPS-10 Supervised Power Supply/Chargers with standby battery(s) provide an uninterruptible 24vdc or 12vdc power source. The PDM-8C Power Distribution modules provide 8 or 16 class II power limited outputs, each with circuit breaker protection.

1. This installation should be made by a qualified service person, should conform to all local codes and should comply with The National Electrical Code (or equivalent).
2. Mount the Power Supply in desired location.
3. Connect Line voltage, 90 to 240vac and Earth Ground to the 3 position terminal block marked HIGH VOLTAGE. The Earth Ground terminal is connected to the enclosure and outer heat sink case for safety and EMI filtering.
4. Use Power Service Switch to remove all output power. *(No service switch on European models)*
5. Connect DC devices to the Output Terminals (*). (-) Negative power is the bottom row of terminals marked common 1 – 8. (+) Positive power is the top row of terminals marked 1 – 8. These terminals are just under the green status LED's. Each (+) terminal is protected with a PTC circuit breaker. Observe polarity.
6. You may connect a maximum of 2 outputs in parallel to double output current for a branch and still keep the class II power limited classification. The power table below shows the continuous current you may use for each output.
7. Be sure that the total current requirement conforms to the total available output current.
8. Connect Power Trouble alarm contacts.
9. Use Power Service Switch to restore output power.
10. Each Output Power/Fuse ready is indicated with a Green LED ON below each Circuit Breaker. See instructions for more details regarding LED indicators.
11. To reset a tripped PTC Circuit Breaker, you may have to turn power switch off, or remove faulted circuit output for up to 2 minutes. This allows the PTC re-settable fuse to cool and reset to it's normal "ON" condition.
12. Refer to the Installation Instruction P/N SPS510 instructions Rev 01/29/01 for further details.

Selection Table

Part number is shown on outside label.

 SPS-5 SPS-10 Off Line Power Supplies	Total Continuous DC Amps	Reserved for Battery(s) Charging	DCV Output	Power Limited Class II Outputs	ATO Main Fuse(s) Power Pull	Continuous current for Individual Outputs	AC Input Voltage
SPS-5ELC8	4 Amps	1 Amp	24vdc	8	7.5A (1) ATO	720ma	85-240vac 220watt
SPS-5ELC16	4 Amps	1 Amp	24vdc	16	7.5A (2) ATO	720ma	85-240vac 220watt
SPS-10ELC8	8 Amps	2 Amps	12vdc	8	15A (1) ATO	1.50A	85-240vac 220watt
SPS-10ELC16	8 Amps	2 Amps	12vdc	16	15A (2) ATO	1.50A	85-240vac 220watt
(*) P/N's: SPS-10EL & SPS5EL do not have any class II Multi-output distribution boards. Each output has a status LED. SPS-5 and SPS-10 Module only is not power limited to class II. Dress wires to keep a minimum space of .25" between non-power limited and power-limited circuits.				 Enclosure "EL": 14W x 14"H x 4.75"D With Smart Fan UL294, C294 Access Control Accessory UL603,C603 Burglar Alarm System Power Supply			