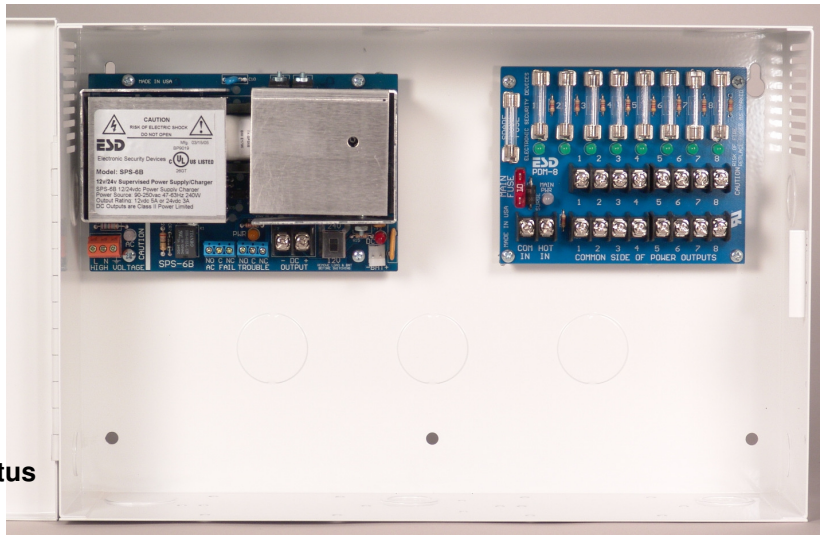
AQD5 Series 12/24 Power Supply/Charger

12VDC @ 5 Amps / 24VDC @ 3 Amps Life Time Warranty

AQD5-8F



- **Small – Light – Efficient – Clean Power**
- **Universal AC Input 90-250vac**
- **12vdc 5A/24vdc 3A Switch Selectable**
- **Smooth Linear Output Performance**
- **Input and Output Surge Protection**
- **Precise Battery Regulation for Wet, AGM, and sealed Lead Acid Battery(s)**
- **Power Limited Output with Thermal Protection**
- **Reverse Battery Protection**
- **AC , Trouble, and DC LED's**
- **Battery Online, No Drop or Switch Over with AC Power Fail**
- **Quality Manufactured in the USA**
- **UL Listed Access Control & Burglar Alarm systems**
- **Relay "C" Contacts Indicates AC Power Status**
- **Relay "C" Contacts Indicates Low Battery Amber LED Indicates Power Normal**
- **Battery Cut-Off Relay Disconnects Battery(s) when Depleted**
- **DC Output is Class II Power Limited**

Ordering examples:

AQD5	Supervised Power Supply/Charger module with a 14"x8.5"x3.5" Enclosure
-4F	AQD5 with one PDB-4F
-4C	AQD5 with one PDB-4C
-8F	AQD5 with two PDB-4F
-8C	AQD5 with two PDB-4C
-1R	AQD5 with one PDB-FT
-8C1R	AQD5 with one PDB-8C1R
-8F8R	AQD5 with one PDB-8F8R (Not UL Listed)

Description / Instructions

The AQD5 are heavy duty self contained, efficient, clean, linear performance off-line switching power supplies that are slide switch selectable between 12vdc at 5 Amps, and 24vdc at 3 Amps. Both have a precision lead acid battery(s) charger that obtains maximum battery life while providing a 12vdc or 24vdc uninterruptible power supply for access control security systems. The universal AC input allows these power supplies to be powered anywhere in the world without any alteration. The AQD5 has exceptional brown out capability with operation down to 60vac. The AQD5 has an extensive filtering system that provides linear output performance. The AQD5 is electronically protected against Battery(s) reversal, shorting or overloading. The DC output is power limited, and thermally protected. Each of these protective features will self-restore. Before connecting load and battery(s), slide 12v/24v selector switch to desired voltage. **Caution**, damage can occur when switched with DC output load. Confirm proper voltage before connecting devices. The AQD5 is UL Listed and has the additional supervisory features of a Battery disconnect relay when battery(s) are depleted, a set of form "C" relay contacts that indicates AC power failure, a set of form "C" relay contacts to indicate low battery(s) and the DC Output is Class II power limited. Depending on load, low battery trouble indicates 50-75% battery capacity remaining. Because the output of the AQD5 is Class II Power Limited, all output devices connected to the AQD5 would automatically become class II Power Limited.

Doc.# 500-33005 Rev A: Installation specifications subject to change without notice

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AQD5 Specifications / Instructions

AC Input: L, N, G - 3P Terminal block
Safety block with recessed hardware insulation that will accept up to 12AWG
L= Line, N= Neutral, and G = 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 Input 90-250vac/240W
AC Input Operational 60-264vac
Optional 3 wire line cord P/N: HA-LC3SZIP

AC LED Indicator *(Panel mounted on the door of PS-1485 Enclosure)*
The AC indicator is a bi-color green and red led. This LED off with AC at the terminals would indicate a blown fuse link. *A blown AC fuse link would indicate catastrophic failure and must be returned to the factory for repair.*

DC VOLTAGE SELECTOR SWITCH
The selector switch is on the right side of DC Output Terminal Block. As marked on board, up is 24vdc and down is 12vdc. **CAUTION** To prevent damage, remove DC load and battery(s) connections before switching selector switch up or down.

DC OUTPUTS: 2P Terminal block
Note: There is up to a 10 second delay for initial turn on
Output voltage Nominal 12vdc/24vdc
Output voltage Typical ..... AC on 13.70/27.40
Output range with rated load 10.4–13.7/22.7-25.2vdc
Output continuous current (UL rating) 5A/3A
Load regulation no load to max ..... .25%Typ
AC Line regulation 85-264vac ..... .03%Typ
Output ripple & noise at full load ..... 180/25mv pp/rms Typ
Current Overload Short Circuit Protection ..... Yes
Thermal runaway Protection ..... Yes
Current Overload and Thermal shutdown will auto-restart without removing load.
Ambient operating temperature range ..... 32°F to +120°F
Product was not evaluated at UL for outdoor use
Storage Temperature ..... -60°F to 190°F
Switching Frequency 132KHz
DC LED Indicator *(Adjacent to battery Header) .....* Red

Battery Charging: (Header plug marked [–Bat+])
Caution – To avoid spark, apply AC before connecting battery cable to battery.
The battery charger is precision set to float charge 12V or 24V sealed or wet lead acid batteries. Two 12V batteries are connected in series for 24V. A 12" battery cable assembly is provided that plugs from module to battery. Red (+) 12vdc, Black (–) Neg.
Optional 36" battery cable (1) P/N: WA-36IBAT
Battery(s), any type of lead acid 12v 4AH-40AH
UL evaluated 7AH
Battery(s) recharge ..... 400ma max
Battery(s) average recharging current 250ma
Battery(s) PTC self resetting Circuit Breaker ..... 6A PTC
Battery(s) Reverse hookup protection ..... Yes .4A PTC
To estimate the recharge time in hours for depleted battery(s), multiply the AH rating times 4 (AH x 4). As an example, a 24v system with two depleted 12v 7AH batteries would take about 28 hours to re-charge. See battery standby selection table on page 3. We also have a more elaborate battery standby table on our website at http://www.securitypower.com/an3batby.pdf .

AQD5 Supervised added features:
UL Listed
DC Output Class II Power Limited ..... Yes

AC Status Output Relay: 3P Terminal block
AC Fail "C" contacts rating 2A/120vac
Three position AC fail terminal block marked "NO, C, NC" are shown in the Normal, energized, AC ON condition.

Trouble Output: 3P Terminal block - annunciates low battery "C" contacts rating 2A/120vac
Three position trouble terminal block is marked "NO, C, NC" are shown in the Normal, energized, no trouble condition.
Trouble battery voltage (low) 12.1vdc/24.2vdc
Trouble LED Indicator ..... On Green Normal

Battery Cutoff
Battery Cutoff Voltage 9.8vdc/19.6vdc
Battery Cutoff internal relay contacts 15A
Battery Cutoff Relay is normally energized for fail-safe operation.

Physical
AQD5 Module Dimensions ..... 6.05"Lx3.87"Wx2.28"H
Height includes 7/16" standoffs, not provided with module only.
Mounting Holes Center to Center ..... 4.50"W x 3.41"H
AQD5 module only Weight 12.4oz
AQD5 in enclosure ..... 14" x 9" x 3.50"
AQD5 in enclosure Weight 6.85Lbs

UL Approvals for AQD5
UL 294 – Access Control System Unit
UL 603 – Power supplies for Use with Burglar-Alarm Systems
ULC S318-96 – Power supplies for Burglar Alarm Systems
ULC S533-02 – Standard for Egress Door Securing and Releasing Devices

Safety
AQD5 meets safety ..... UL1950 & EN60950
Note: evaluation to these standards was not conducted by UL.

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 Normal ON Green, DC ON Red.
2. Check output voltage with normal load. For 12v setting, voltage should read between 13.60 and 13.80vdc and 27.1 and 27.6vdc on the 24v setting. 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 12.0vdc for 12v setting and 24.0vdc for 24v setting. 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.

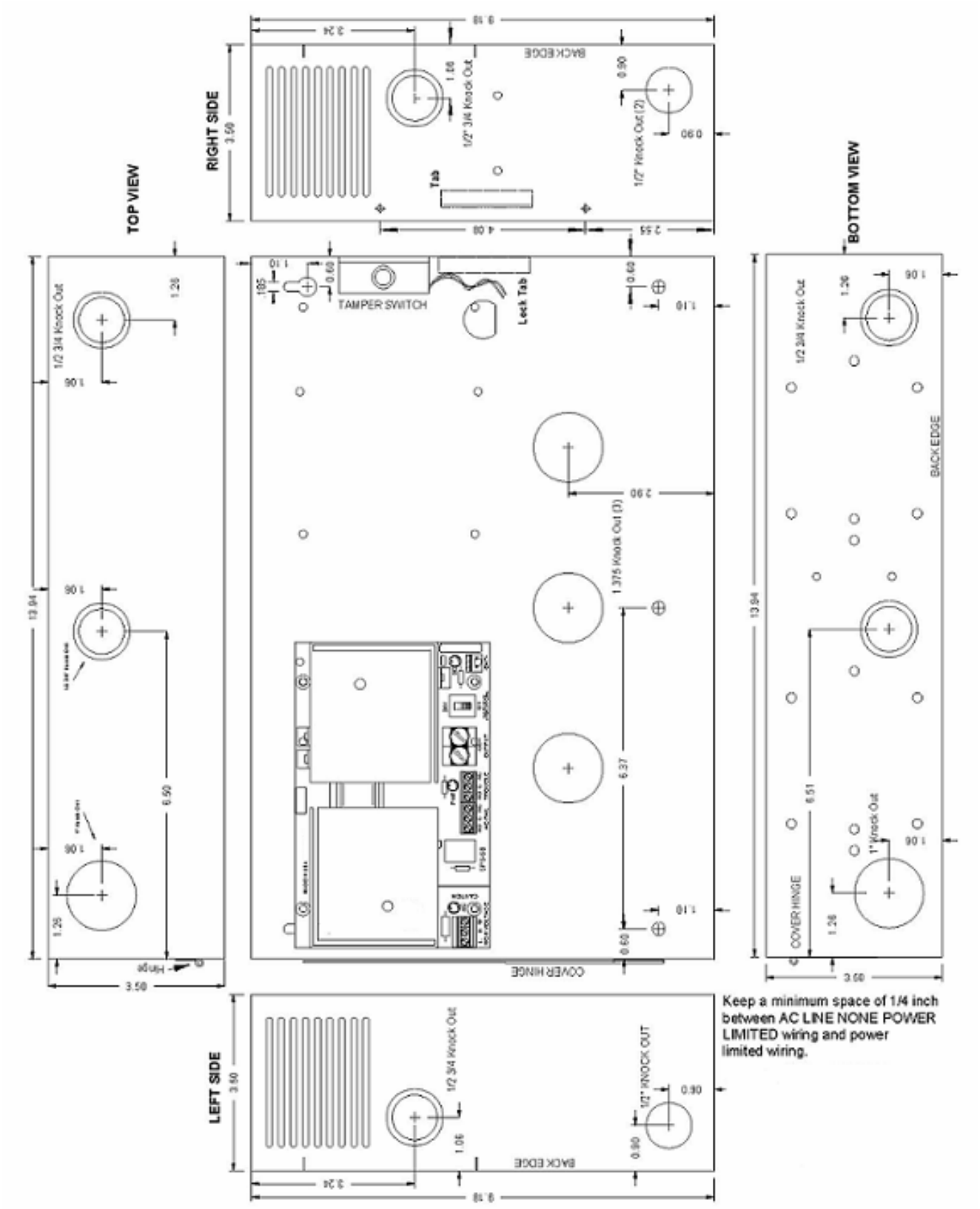
Battery Selection

The table below shows typical standby time in hours for various loads and batteries. The table works for either 12vdc or 24vdc. The AQD5 was evaluated at UL with a 7AH sealed lead acid battery with a 1 hour stand by.

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	5.5 Hrs	12 Hrs	20 Hrs	40 Hrs	65 Hrs
1A	2.5 Hrs	5 Hrs	9 Hrs	19 Hrs	32 Hrs
1.3A	2 Hrs	4 Hrs	7.2 Hrs	15.5 Hrs	24 Hrs
2A	1 Hrs	2 Hrs	5 Hrs	10 Hrs	15 Hrs
3A	.5 Hrs	1 Hrs	3 Hrs	6 Hrs	9.5 Hrs
4A	.5 Hrs	.8 Hrs	2 Hrs	4 Hrs	8 Hrs
5A	NA	.6 Hrs	1.4 Hrs	3 Hrs	7 Hrs
6A	NA	.4 Hrs	1 Hrs	2 Hrs	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.


TOP VIEW
RIGHT SIDE
BOTTOM VIEW
LEFT SIDE
TAMPER SWITCH
Lock Tab
Tab
COVER HINGE
BACK EDGE
1/2 3/4 Knock Out
1/2" Knock Out (2)
1/2" KNOCK OUT
1.375 Knock Out (3)
1" Knock Out
Keep a minimum space of 1/4 inch between AC LINE NONE POWER LIMITED wiring and power limited wiring.