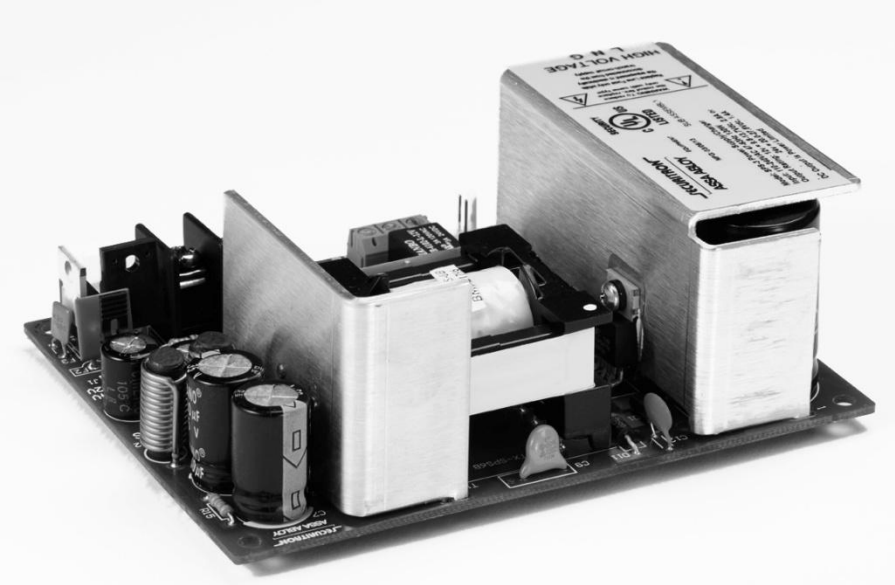
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ASSA ABLOY, the global leader in door opening solutions

AccuPower AQD3B
Installation Instructions



Recommended Tools & Additional Materials		
#2 Phillips Screw Driver	Wire connectors	Lead Acid or Gel Cell Batteries*
1/16" Flat head Screw Driver	6-32x1/4 Mounting Screws (QTY 4)	

See Battery sizing guide on page 6.

AccuPower AQD5B Power Supply/Battery Charger Specifications

Mechanical	Electrical	Environmental	Regulatory
Physical Size: Board: 3.73"x 4.84" x 2" Mounting: 3.41" x 4.5" **Weight*** **AQD5B** 2.4 lbs	**Input Voltage Operating Range** 110-240VAC 47-63Hz **Maximum Output Voltage** 36 VA 3 Amps @ 12VDC (±10%) 1.5 Amps @ 24VDC (±10%) **Continuous Output Voltage:** 33.6VA 2.8 Amps @ 12VDC ((±10%) 1.4 Amps @ 24VDC (±10%) **Voltage Range:** 9.8 -13.7 VDC/ 13.65 typical 20.0-27.5 VDC/ 27.3 typical **Frequency** 66KHz	**Operating Temperature** 0ºF to 130ºF [-17 to 54ºC] **Humidity** 10% to 95% RH For Indoor use	UL294 Listed UL603 Listed cUL Listed RoHS Compliant

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Overview of AQD3B Series Module

The Securitron AccuPower AQD3 offers clean, steady and accurate power output for peak performance of access control equipment plus flexibility unmatched by any power supply/battery charger on the market today.

- Universal AC input with brownout tolerance to 60VAC
- Tolerates and protects against input voltage fluctuations.
- External LED AC power indicator
- Form " C" contact for AC power fail notification
- Dedicated voltage for battery charging even under full load
- Low battery disconnect prevents deep discharge of batteries
- PTC protection for Thermal Runaway and Current Overload Short Circuit and Reverse Battery protection—will auto restart without removing load.

AQD3B and AQD3 provide a single Class 2 power limited output. The output can be divided into additional channels using any of the optional power distribution boards: PDB4, PDB8, PDB-8F8R, PDB-8C8R, PDB-8C1R or PDB-1R.

Applications

The AQD3 Series can be used with electrified access control equipment in conjunction with access control systems and fire/burglary systems including most electrified locking hardware and latches, card readers, keypads, electric strikes, REX and motion detectors and more.

Pre-Installation Survey

Before installing the AQD3 Series, the mounting location should be determined and assessed for the following:

- Availability of AC power service
- Protection from vandalism and tampering
- Sufficient clearance for air circulation and heat dispersal

CAUTION: Check with your local code inspectors to ensure your compliance with the National Electrical Code (ANSI/NFPA 70), (Canadian Electrical Code for Canada) or equivalent and any additional licensing and wiring requirements for your jurisdiction.

A. Installing the Power Module

1. Select mounting location so that AC input conduit can be aligned to maintain separation with DC power outputs.

   Ensure unit is mounted with sufficient airflow to prevent heat buildup.

   IMPORTANT: AC Power input is not power limited. AC lines must be enclosed in approved conduit. AC Input lines must be separated by at least ¼" from Class 2 power limited output wires.

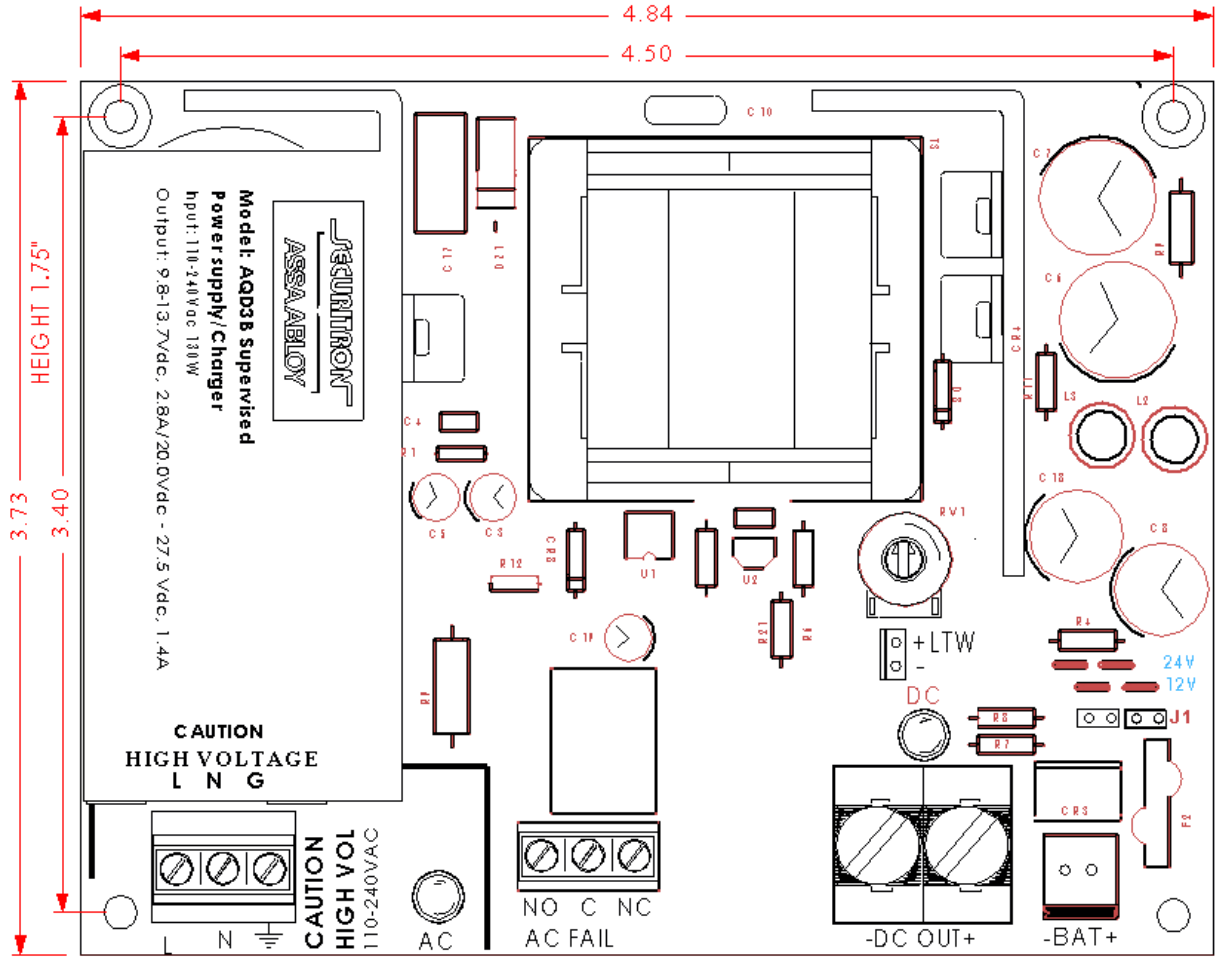
   Mark board mounting hole locations and drill. Install four 6-32 x1/4 mounting screws appropriate for the mounting location, leaving enough hardware exposed to install standoffs. Install standoffs. Place star washer on any one of the three standoff locations corresponding to a mounting location on the board that has a metal ring.

   Affix board to standoffs with provided metal screws.

   IMPORTANT: User is responsible for observing all electrical and code requirement when installing in self-provided enclosure or mounting location.

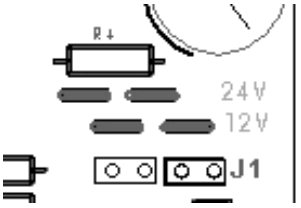
B. Make Electrical Connections

1. **Component Locations**



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2. **Understanding the Power Module**

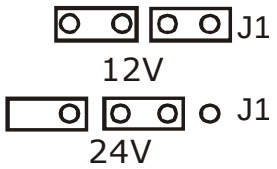
Component Label	Component Name	Function
Fuse 250V	AC Input Fuse	GMA-2 5mmx20mm 2A/250VAC fuse protects power module from AC line power spikes. **CAUTION: Disconnect battery and AC input power before replacing fuse. Use approved fuse size only.**
LNG	AC –In Terminal Block	A 3-wire terminal block for AC power input. Handles 110-240 VAC. Accepts wire gauge 12AWG to 24AWG. L= Line (+) N=Neutral G=Ground
AC LED	AC Power Indicator	Green LED indicator is lit when AC power from AC circuit or battery is ON. Indicator may be on board or on exterior of enclosure.
AC FAIL	AC Status Relay	A 3-wire terminal block providing a SPDT-Form C contact that changes state when the AC power is interrupted. Provides 2amp@24VDC output for triggering alert notification NO = Normally Open C = Common NC = Normally Close The switch is NO/C open when energized, C/NC closed when energized. During power loss, the switch changes state with NO/C closed and C/NC open.
-DC OUT+	DC-Out Terminal Block	A 2-wire terminal block for DC output voltage to devices, power distribution or accessory board. DC output is Class 2 power limited and accepts 10AWG to 24AWG wire.
-BAT+	Battery Backup Plug	A 2-pin plug for connecting battery cables for uninterruptable battery backup.
J1	Jumper 1 12/24VDC Output Voltage Selector	A 4-pin jumper for output voltage selection. Default setting is 12VDC = jumper on Pin 1 & 2 and jumper on Pin 3 & 4. For 24VDC = jumper on Pin 2 & 3, jumper on Pin 4. 
DC LED	DC Output Power Indicator	Red LED indicator is lit when DC power is ON.
±LTW	Battery Limited Time Warning	2 position header providing an open collector output from the negative position to annunciate low battery. Default position is Normally Open. Circuit closes to trigger a signal when battery falls to 95% depleted. Terminal accepts 22-30AWG wire.

3. ## Select Output Voltage

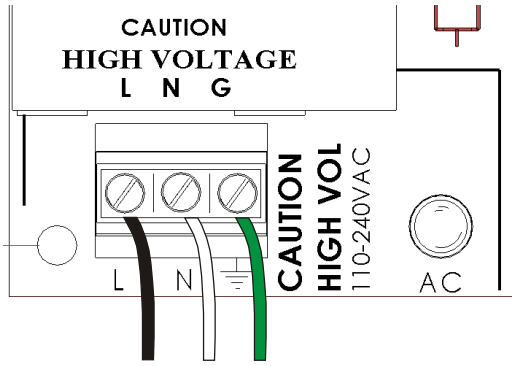
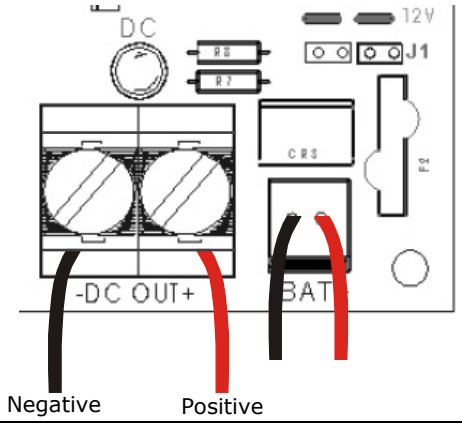
Determine voltage of devices that will be powered by the power supply unit. The AQD3 provides 2.8 amps continuous output at 12VDC or 1.4 amps @ 24 VDC. The unit is factory set for 12 VDC.

To select 24 VDC, remove jumpers from both sets of pins. Reinstall one jumper onto Pins 2&3.

CAUTION: CHANGE OUTPUT VOLTAGE SETTING ONLY WHEN AC POWER, BATTERY AND OUTPUT LOAD ARE DISCONNECTED. Ensure that the battery voltage matches the power supply output voltage before connecting batteries.



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4.	**Make AC Power Input Connections** **IMPORTANT: VERIFY AC POWER IS OFF BEFORE MAKING CONNECTIONS** The AQD3 has a universal transformer that accommodates 90-240 VAC input. Connect AC power wires as indicated Connect AC power wires as follows: Black/Positive = L White/Negative = N Green/Ground= G 
5.	**Make DC Power Output Connections to Distribution or Accessory Boards** Using 18 to 24AWG wire, connect the DC OUT Positive (+) terminal to the positive (+) IN terminal on the distribution board. Connect the DC OUT Negative (-) terminal to the Negative/Common/C (-) IN terminal on the distribution board. It is recommended to pass the wires under the power module board before connecting to the accessory board in order to maintain separation from battery cables.
6.	**Make DC Power Output Connections to Devices** Route wires through knock-out opening created in step A3. Maintain separation from battery cable placement by passing wires under power module before connecting to terminal screws. Connect the Positive wire to DC OUT Positive (+) terminal Connect the Negative wire to DC OUT Negative (-) terminal **Note: Use appropriate wire gauge for the Amperage and distance of the run.** **For more info, see Wire Loss Calculator at http://www.securitypower.com/AN2Wire.html** 
7.	**Turn on AC Power** After making electric connections, turn on AC power before installing batteries. The AC LED power indicator should be lit.

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C. Install Batteries

1. Understanding Battery Charging and Backup Power

The AQD3B is a backup battery charger with automatic fail over to battery power in case of primary AC power failure when batteries are installed and connected to the power module. The use of battery backup is optional - the unit will function without batteries installed, but no internal backup power will be available in case of AC power failure.

Note: The battery circuit features automatic disconnect when the battery output falls to 9.8 VDC/19.6 VDC to prevent deep discharge and also protects the power module in case the battery is connection is reversed.

IMPORTANT: Battery configuration must match the DC output voltage setting.

For battery backup in 12VDC operation, a single 12V battery may be used, or two (2) 12V batteries may be used wired in parallel for longer run time.

For battery backup in 24VDC operation, two 12V batteries **wired in series** must be used**.**

Backup power run time depends on the continuous output needed to support the load and the ambient temperature at the enclosure. Estimates are provided in the table below:

Total Current Draw of Load	**Desired Battery Run Time with 5 min Alarm**		
	1HR	**4HR**	**12HR**
1A	**2AH**	5AH	12AH
1.4A	**3AH**	8AH	20AH
2A	**5AH**	10AH	26AH
2.8A	**5AH**	12AH	40AH

Larger batteries may be used external to the enclosure by running the battery cable through a dedicated knockout separate from the AC input and DC output.

Battery charge current is not less than 250mA @12VDC at peak load.

2. Connecting the Battery

Plug battery cable assembly into battery backup plug - BAT+.

IMPORTANT: DO NOT REMOVE CLEAR TUBING FROM BATTERY CABLE. THIS IS REQUIRED TO PROVIDE REQUIRED SEPARATION FROM CLASS 2 POWER LIMITED WIRING.

Install batteries. Mark batteries with "Installed" date and "Replace By" date according to manufacturer's battery life recommendations.

Connect leads to batteries.

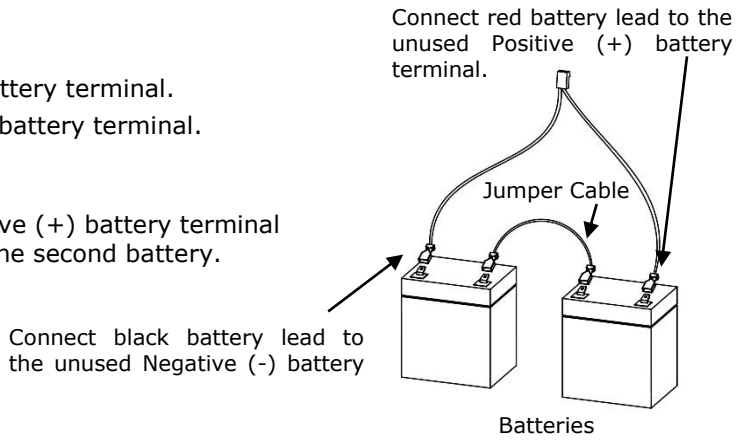
For 12VDC operation:

Connect red battery lead to the Positive (+) battery terminal.

Connect black battery lead to the Negative (-) battery terminal.

For 24VDC operation:

Using Battery Jumper Cable, connect the Positive (+) battery terminal of one battery to the Negative (-) terminal of the second battery.



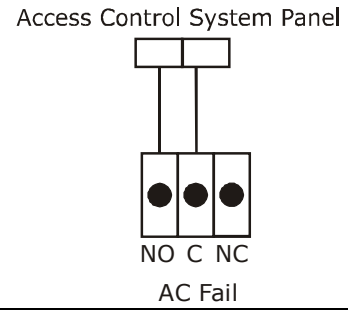
CAUTION: Connect and disconnect batteries with AC power ON. Battery circuit is engaged when AC power is OFF. Adding or removing batteries with circuit engaged could result in electrical shock and injury.

Configure Status Monitoring

1. Wiring for AC Status Monitoring

The diagram below shows a basic wiring diagram to provide output to a control panel or local alarm for notification of AC power loss.

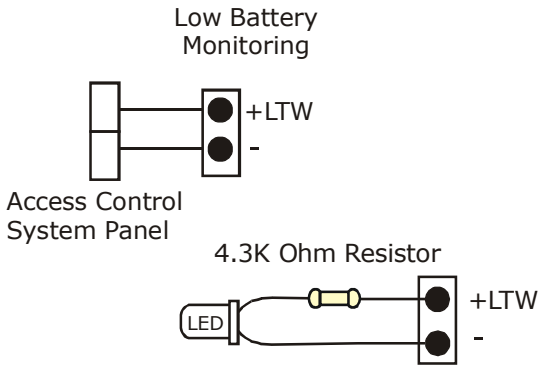
AC-ON state energized the NO/C switch. The Switch changes state when power is lost.



2. Wiring for Limited Time Warning/Low Battery

The diagram shows wiring to an access system controller to provide low battery warning.

It is also possible to provide a local indicator by using an LED, 4.3K Ohm Resistor and 22-30 AWG wire.



Testing

1. Test Input and Outputs

AC Input: Enable AC power to input line. Confirm LED on front of enclosure is lit.

DC output: If connected to load or distribution board, DC output indicator on power module will be lit.

If not connected to load or distribution board, test output with Amp Meter to verify continuous current.

AC Fail Notification: Disable AC power to input line. If AC fail notification is configured, the switch will change state, triggering the notification output.

LTW Notification: Disable AC power to input and allow batteries to run down to Limited Time Warning.

Recommended Annual Maintenance

AC Fail Notification	Remove battery leads
	Turn off AC power
	Check AC fail notification
	Restore Power
	Remove battery leads
	Turn off AC power
	Check AC fail notification
	Restore Power
	Re-connect battery leads
Battery Test	Disconnect Power
	Check DC output voltage under battery operation.
	For fully charged batteries, voltage should be above 11.5VDC for 12 VDC setting and above 23.0 VDC for 24VDC operation. If voltage is below this range, test batteries per battery manufacturer instructions and replace if needed.

Problems with installation? Call Securitron: **1-800-MAG-LOCK**

For warranty information visit: **www.securitron.com/en/site/securitron/About/MagnaCare-Warranty**