Installation Instructions for the following:

AQU126-4F 12vdc - 6A - 4 class II Power Limited Outputs - Supervised Power Supply/Charger module

AQU243-4F 24vdc – 3.3A - 4 Outputs, 3 are class II power limited, – supervised power supply/Charger module

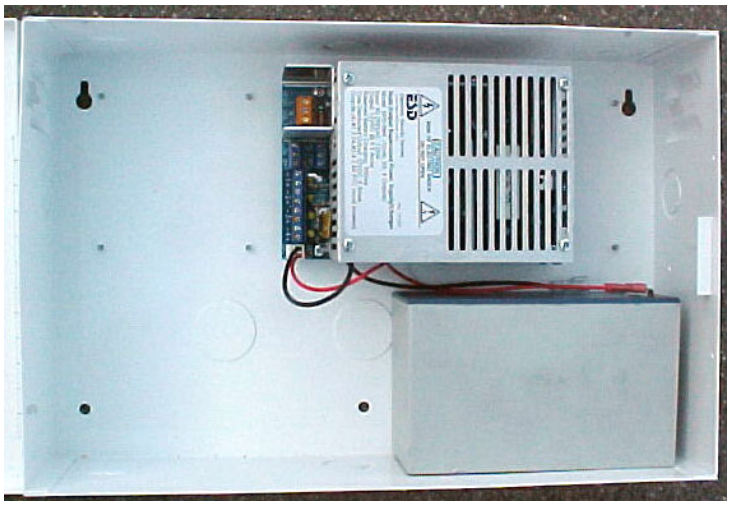
AQU243-8F 24vdc – 3.3A - 8 Outputs, 3 are class II power limited, – supervised power supply/Charger module (not UL Listed)

Both mounted in an Enclosure

"F" Smart Fan Temperature controlled

"RT" Rain Tight NEMA 3R 6x8x4 Enclosure

AQU126-4F



Features:

- Super Clean DC Outputs
- Tolerates Brownouts
- Universal Input: 85vac – 260vac
- Self contained No External Transformer Required
- Precision Battery Charging and Output Regulation.
- Outputs are class II Power Limited with PTC Circuit Breakers *(output 1 on AQU243-4F (&-8F) is not class II power limited)*
- Indicating LEDs:
  AC Input, Green
  DC Main Power, Red
  Each Output Yellow
- AC Fail Alarm Form C Contacts
- Low Battery Alarm Form C Contacts
- Battery Cut-off Relay Prevents Deep Discharge
- Battery is Float Charged for Faster Charging with No Switch Over when AC fails.
- Thermal Protection
- Short Circuit Protection
- Plug-in Battery cable assembly is provided
- 36" Plug-in Battery cable assembly is available (WA-36IBAT) for remote battery mounting.
- Quality Manufactured in the USA
- UL and CUL Listed (AQU126-4F & AQU243-4F only)
  UL603 Burglar Alarm System Power Supply
  UL294 Access Control Accessory
  UL1481 & NFPA72 Power Supplies for Fire-Protective Signaling Systems
- Certified Compliance with EN 55022 & FCC A

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AQU243-4F (&-8F) (&-8F) and AQU126-4F Description

The AQU243-4F (&-8F) and AQU126-4F are clean, efficient, heavy duty, low frequency off line switching power supplies with precision battery charger and power supervision. These supplies are so clean that they can be used anywhere a linear or switching supply is recommended. The filtering and switching systems we use are very similar to what you would find on high quality computers. Even though the AQU243-4F (&-8F) (24v) and the AQU126-4F (12v) are both 100 watt power supplies utilizing the same printed wiring board, we use separate supplies for 12v and 24v models for optimum performance. The universal input of 85vac to 260vac allows them to used anywhere in the world without adjustments to the power input. The ability to run at very low AC voltages allows the AQU126-4F and AQU243-4F (&-8F) to tolerate brownouts very well. The AQU243-4F (&-8F) and AQU126-4F are fully self-contained and isolated from the AC power input line to all world safety standards. Each power supply weighs less than 1.5 lbs and occupies less than ½ of a cubic foot of cabinet space.

The AQU243-4F (&-8F) and AQU126-4F become an uninterruptible power supply when a stand by battery(s) is connected with the battery cable provided. 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. Precision float charging means faster recovery time and longer life for the battery(s). There is no switch over or voltage drop when input power fails. Standby battery(s) can be any capacity between 4 and 40 Amp hours. The AQU243-4F (&-8F) 24vdc is rated for 3 Amps continuous current with 300ma reserved for battery charging. The AQU126-4F 12vdc is rated for 6 Amps continuous current with 500ma reserved for battery charging.

Power Supervision utilizes 2 relays and electronics to indicate 2 levels of the stand by battery. The AC FAIL relay provides a form C contact set to indicate the AC has failed, the supply is running on standby batteries. The LOW BAT relay provides a form C contact set to indicate the battery(s) is low, not much stand by power is left. Either of these form C contacts can be used to signal a buzzer and/or other signaling device. Both of these relays are normally energized for fail-safe operation.

Battery-Cut Off uses a 3rd relay with electronics to disconnect the battery from the power supply and load at the end of it's service limit, preventing deep discharge that will damage the battery(s). This relay is normally energized as are the supervision relays.

Explanation of Terminals and LEDs

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.

AC LED adjacent to the AC input terminals is ON Green when AC is applied.

AC FAIL Terminals NO-Normally Open, C–Common, and NC–Normally Closed. The normal relay position indicates the AC power is on 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. When the AC fails the relay drops off normal. AC fail is detected by a small drop in output voltage equating to about 99% battery capacity.

LOW BAT Terminals NO-Normally Open, C–Common, and NC–Normally Closed. The normal relay position is energized and indicates the output battery voltage is in the normal range. When stand battery(s) reach a low level, the relay drops off normal.

DC Output Terminals on the AQU243-4F (&-8F) and AQU126-4F are marked (–1+) for dc output number 1, and (–2+) for dc output number 2 repeating through 4. Each of these outputs are class II power limited with PTC auto resetting circuit breakers. *(Note: Output #1 of AQU243-4F (&-8F) is not class II power limited).* You must keep a .25" minimum spacing of power-limited wires to non-power limited wiring. See specifications and door label for current ratings. The terminal block is clamping and can accept wires from 14awg to 24awg.

DC Output LEDs are adjacent to each output are ON Yellow when output is ON. If a circuit is overloaded and tripped, the associated LED will be off.

DC Power LED adjacent to battery connector is ON Red when main DC is on.

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, a 36" battery cable is available, part WA-36IBAT. The battery cable wires are Red and Black. The red connects to the positive and black to the negative of the battery. The AQU243-4F (&-8F) 24vdc model comes with a 12" black wire with female slip on connectors on each end for connecting 2 12v batteries in series.

Specifications

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

AC Input 90-250vac/47-63Hz/150W

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 stand off. 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 Outputs:

AQU243-4F (&-8F) Output Rating (-4F total of outputs 1 – 4: -8F=1- 8 outputs) 20.0-27.8vdc, 24vdc nominal, 3A

- Output #1 PTC circuit breaker rated (non power limited) 1.93A
- Output #2 - #4 Power Limited Class II PTC circuit breaker rated 1.42A

AQU126-4F Output Rating (total of outputs 1 - 4) 10.0-13.9vdc, 12vdc nominal, 6A

- Outputs #1 PTC circuit breaker rating (non power limited) 3.5A
- Outputs #2 - #4 Power Limited Class II PTC circuit breaker rated 2.4A

Typical Output Voltage AQU243-4F/AQU126-4F 27.3vdc/13.65vdc

Typical Output Ripple & Noise AQU243-4F/AQU126-4F 50mv/25mv

Current Overload Short Circuit Protection ..... Yes

Battery PTC Circuit Breaker AQU243-4F/AQU126-4F 3A/6A

Over Temperature protection ..... Yes

Ambient Operating Temperature Range ..... 0^{o}C to 49^{o}C

Switching Frequency 30KHz

Supervisory Functions:

Battery Cutoff Voltage AQU243-4F/AQU126-4F 10.0vdc/20.0vdc

Battery Cutoff relay contacts (no user connections) ..... 15A Resistive

AC fail trip point AQU243-4F/AQU126-4F ..... <25.8vdc/12.9vdc

This equates to about 99% battery capacity remaining

AC fail relay form C Contacts ..... 2A up to 120vac

Low battery trip point AQU243-4F/AQU126-4F ..... <22.0/11.0vdc

Low battery relay form C Contacts ..... 2A up to 120vac

AC fail, Low Battery, and Battery cut-off Relays are 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:

AQU243-4F/AQU126-4F weight (module only) ..... 1.5 lbs

AQU243-4F/AQU126-4F weight in enclosure ..... 7.2 lbs

AQU243-4F/AQU126-4F (module only) size .....

6.40H” x 3.95”W x 2.5”D

AQU243-4F/AQU126-4F module mounting holes center to center (4 holes) ..... 5.36”H x 3.54”W

Enclosure size (inside dimensions) ..... 14W” x 9H” x 3.5”D”

Enclosure mounting holes center to center (4 holes) ..... 12.74” x 6.98”

Note: For knock out and mounting locations, see graphic drawing of AQU126-4F

Approvals:

EMI Conducted and Radiated EN5022 CISPR-22 A, FCC A

UL and CUL Listed File S8102 UL603, C603-M1988 UL294, C294, UL1481, C1481

Does not include the AQU243-8F

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 AQU243-4F (&-8F) 24v, or AQU126-4F 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	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.

Approximate Battery Recharge Times in Hours

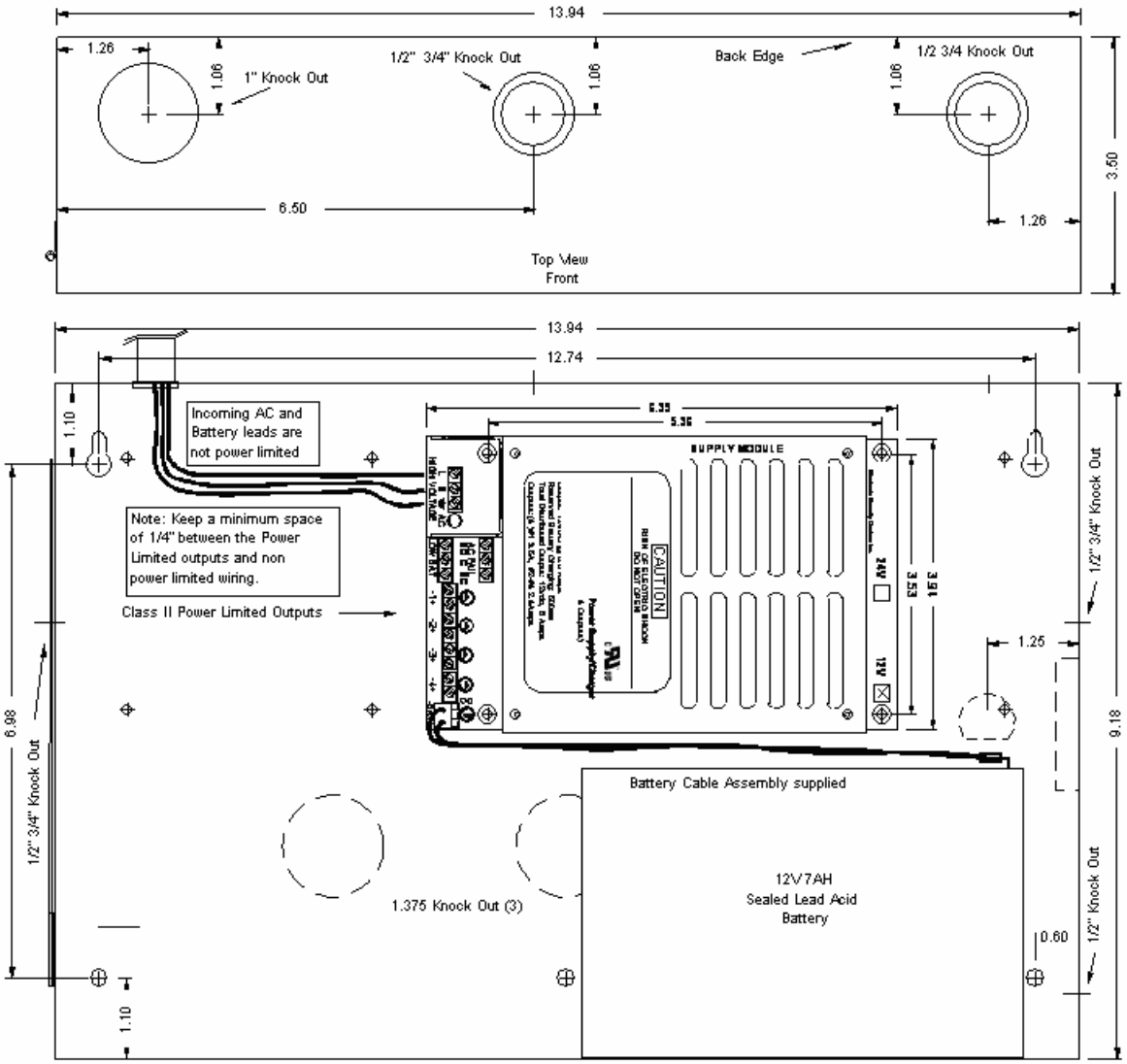
Total Output Amps	4Ah Battery 12v/24v	7Ah Battery 12v/24v	12Ah Bat 12v/24v	24Ah Bat 12v/24v	40Ah Bat 12v/24v
.5A	8Hrs/8Hrs	10Hrs/10Hrs	13Hrs/13Hrs	14Hrs/15Hrs	24Hrs/24Hrs
1A	8Hrs/8Hrs	10Hrs/12Hrs	13Hrs/13Hrs	14Hrs/15Hrs	24Hrs/24Hrs
1.3A	8Hrs/12Hrs	10Hrs/12Hrs	13Hrs/16Hrs	14Hrs/16Hrs	24Hrs/26Hrs
2A	8Hrs/14Hrs	10Hrs/12Hrs	13Hrs/16Hrs	14Hrs/17Hrs	24Hrs/28Hrs
3A	8Hrs/16Hrs	10Hrs/16Hrs	13Hrs/20Hrs	14Hrs/20Hrs	26Hrs/38Hrs
4A	8Hrs/NA	10Hrs/NA	14Hrs/NA	15Hrs/NA	28Hrs/NA
5A	9Hrs/NA	12Hrs/NA	15Hrs/NA	17Hrs/NA	32Hrs/NA
6A	10Hrs/NA	16Hrs/NA	18Hrs/NA	22Hrs/NA	38Hrs/NA

Maintenance

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

1. Check LEDs for normal state. AC ON Green, Output ON Yellow, DC ON Red.
2. Check output voltage with normal load. The AQU126-4F should read between 13.60 and 13.85vdc. The AQU243-4F (&-8F) should read between 27.20 and 27.7vdc. This assures proper voltage to float charge batteries.
3. With normal load, disconnect AC input. AC LED should be off, all other LEDs should remain normal.
4. Check DC Output to be above 12.1vdc for AQU126-4F and 24.2vdc for AQU243-4F. 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.

Drawing of AQU126-4FE



AQU243-4F (&-8F) and AQU126-4F Multiple Output, Off Line Supervised Power Supply/Chargers Installation Guide

The AQU243-4F (&-8F) and AQU126-4F Supervised Power Supply/Chargers with standby battery(s) provide an uninterruptible 24vdc or 12vdc power source. The DC power outputs are class II power limited outputs, each with PTC 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 DC devices to the Output Terminals. Observe polarity.
4. The power table below shows the continuous current you may use for each output.
5. Be sure that the total current requirement conforms to the total available output current.
6. Connect AC FAIL alarm contacts. N/O means normally open with AC ON.
7. Connect LOW BAT alarm contacts. N/O means normally open with battery voltage normal.
8. Connect Line voltage, 90 to 250vac 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.
9. Each Output Power/Fuse ready is indicated with a Yellow LED ON centered above each output terminal pair. See instructions for more details regarding LED indicators.
10. To reset a tripped PTC Circuit Breaker, you may have to correct the fault and remove load for up to 1 minute. This allows the PTC re-settable fuse to cool and reset to it's normal “ON” condition.

Selection Table **Part number is shown on outside label.**

AQU243-4F **AQU243-8F** **AQU126-4F Power Supplies**	**Total Continuous DC Amps**	**Reserved for Battery(s) Charging**	**DCV Output**	**Output #1 continuous rating**	**Outputs #2 - #4 Power Limited Class II continuous rating**	**AC Input Rating**
AQU243-4F	3 Amps	300ma	24vdc	1.93A	1.42A	90-260vac 150W
AQU126-4F	6 Amps	500ma	12vdc	3.5A	2.4A	90-260vac 150W

Each output has a Yellow status LED.
The power outputs 2, 3, & 4 of the AQU243-4F (&-8F) and AQU126-4F are class II power limited. Dress wires to keep a minimum space of .25” between non-power limited and power-limited circuits.
Output #1 of the AQU243-4F (&-8F) & AQU126-4F are not power limited

Enclosure : 14W x 9”H x 3.5”D

c UL us LISTED

UL603 Burglar Alarm System Power Supply
UL294 Access Control Accessory
UL1481 Power Supplies for Fire-Protective Signaling
The AQU243-8F is not UL recognized