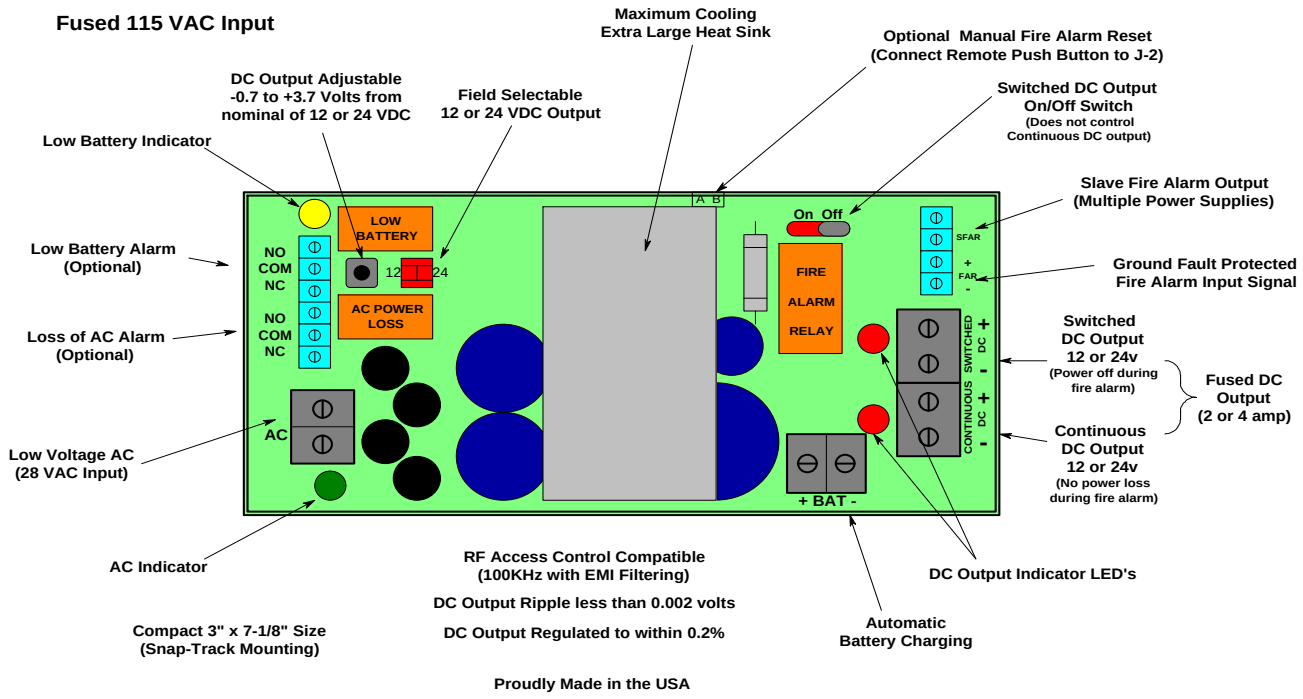
#4202 – 2 amp
#4204 – 4 amp
12/24 VDC POWER SUPPLY

INSTALLATION MANUAL

4202/4MA, Rev. E 0804

DORTRONICS SYSTEMS, INC.
1668 Sag Harbor Tpke. - Sag Harbor, NY 11963 - (800) 906-0137 - (631) 725-8148 Fax

4202/4204 Power Supply



SPECIFICATIONS:

Physical Size

Board Only - 3” wide x 7-1/8” long x 2-3/8” high (including heat sink).

Mounting - Standard 3” Snap-Track or attachment with stand-offs.

Enclosure – 12 1/8” wide x 16” high x 4” deep with hinged cover.

Electrical

Input 115 VAC/60 Hz, 480mA (4202), 1.06A (4204) @ max. load

Fused @ 115 VAC terminal block to transformer.

#4202 - 2 amp Output @ 12 or 24 VDC (28 volt - 2.8 amp transformer)

#4204 - 4 amp Output @ 12 or 24 VDC (28 volt - 4.6 amp transformer)

DC Voltage Range - Field adjustable from .7 volts below to 3.7 volts above jumper selected DC output. Example: with the jumper selected for 12VDC, the output voltage range can be adjusted from 11.3 to 15.7 VDC (27 VDC adjusted maximum @ 24 volt selection).

DC Regulation - Accurately regulated to within 0.2% of voltage setting.

DC Filter - Ripple almost nil, measuring only .002 @ 24 volts DC (Main DC output).

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FEATURES:

Standard Features

12 or 24 VDC Output – Field selectable by the on-board jumper. (Universal 28 VAC step-down transformer).

Power Switch - Slide switch provides "On/Off" control of "switched" DC output. (This switch controls the FAR relay coil to cut-off power at the switched DC output.)

DC Output - Two DC outputs provide a total power output of 2 amps for the #4202 or 4 amps for the #4204 at either 12 or 24 volts DC as selected by the on-board jumper. One DC output supplies continuous DC power while the other DC output is controlled through the fire alarm and may be switched "off" by the fire alarm input or the on-board "On/Off "switch.

Heat Sink - Extra large heat sink provides sufficient cooling to guarantee long life and maximum operation under full load.

LED Status Indicators - On-board LEDs provide a visual indication of power supply operating conditions. An illuminated amber LED indicates proper Battery/DC voltage condition, a green LED is lit to indicate the presence of AC power and two red LEDs are provided to indicate DC power at each DC output. This allows quick determination of the power supply status including the fire alarm input condition.

Fail-Safe Fire Alarm Relay - The innovative design of this power supply assures the release of the on-board fire alarm relay in an emergency by automatically detecting ground faults in wiring to the fire alarm panel. This is accomplished by providing a positive 12-volt output from the FAR (out) terminal to be wired to the dry contact at the fire alarm panel. After connecting the field wiring through the fire alarm contact (open under alarm conditions) this positive lead is brought back to the FAR (in) terminal where it is wired internally to the FAR relay coil (+). If any insulation is scraped on the field wiring to the fire alarm panel and the wire is grounded, it will cause a shorted condition and shut down the "Switched" DC output only.

Slave FAR Output – This form C dry contact output, from the fire alarm relay, can be used to connect multiple power supplies using only a single contact on the fire alarm panel. Each power supply, daisy chained off of this output, is electrically isolated from any others. This output can also be used as an alarm input for other monitoring devices.

Standard Features continued

Battery Charging - Adjustable trickle charge factory set @ 300 mA for 12 volt battery back up. A low battery, automatic cut-off is built-in to prevent total battery discharge. The battery circuit is thermally protected against shorts. When under battery back-up operation, battery power is routed through the main DC fused output.

Proximity RF Compatible - Operating at 100kHz, these power supplies are harmonically compatible with your favorite RF reader devices. Extensive filtering eliminates ripple and EMI to provide only clean, non-interfering DC power to the devices.

Security Cabinet Lock –A key lock is installed to prevent unauthorized access into the power supply.

Cabinet Tamper Switch – The tamper switch, with a SPDT dry contact output, is provided to detect unauthorized access into the power supply cabinet.

The power supply can remain secure and be fully monitored when the optional remote LED status display, and alarm outputs for loss of AC and low battery, are incorporated with the standard cabinet lock and tamper switch.

Optional Features

Power Line Cord – (Order with "xPC" suffix) A 3-conductor 6'-0" power cord is available when required. This allows the power supply to be connected to a standard 115 VAC duplex outlet by 3-prong grounded plug.

Rechargeable Batteries – (Order with "xBAT" suffix) Includes two (2) 7-AH 12 volt rechargeable batteries and universal hook-up cables (for 12 or 24-volt back up) to connect batteries to power supply. Two batteries, each measuring 6" x 2-1/2" x 4" tall, will fit in the lower portion of the standard 12 1/8" x 16" x 4" enclosure.

Multiple Enclosures – NEMA enclosures are available in several sizes to accommodate additional modules within the power supply enclosure:

12 1/8" x 16" x 4" (Standard)

15" x 18" x 4" (Order with "1824" suffix) - Not evaluated by UL

24" x 24" x 6" (Order with "/2424" suffix) - Not evaluated by UL

Additional sizes can be ordered. (Call the factory for more information.)

Remote LED Indicators – (Order with "xREM" suffix) – Not evaluated by UL. An optional LED display can be mounted on the enclosure door to provide visual indication of low battery, and DC output failure. This allows quick determination of power supply status without unlocking and opening the cabinet. Alarm Relay Outputs – (Order with "xAO" suffix) Form C dry contact outputs are available as an option to monitor and report abnormal power supply conditions to an independent alarm system. One set of SPDT relay outputs is triggered upon loss of 115 AC power input and a second SPDT output upon a low battery condition when operating off-line.

Optional Features continued

Terminal Strips – (Order with "xTERM" suffix) – Not evaluated by UL. This option provides one 10-position, double row, barrier strip with screw terminals (6-1/2" long overall). Typically used to allow convenient connection of field wiring or integration of other modules for custom applications.

Fused Power Distribution – (Order with "xFO" suffix) - Not evaluated by UL. This module provides eight individually fused outputs to prevent one shorted circuit from cutting off power to the other powered devices. The 12 or 24 volt (AC or DC) main power input is fused to 2 or 4 amps(dependent on power supply), and each of the eight outputs is individually fused to 1.6 amps. each. On-board LEDs provide visual indication of main power input and for each of the outputs. (Note this option may require a larger non-standard power supply enclosure if ordered with battery back-up or relay modules.)

Power Distribution with Auxiliary Relay – (Order with "xFO/AUX" suffix) This module provides eight individually fused outputs with LEDs as described above plus an auxiliary control relay. This relay can be used as the fire alarm interface relay to de-activate devices connected to the outputs. This is normally used when some devices should remain powered but others should be cut-off during a fire alarm condition. The relay operating voltage is matched to the desired input voltage when the power supply is initially ordered, i.e. 24v relay used with 24VDC input. See manual for Fused Output module for additional information. (Note this option may require a larger non-standard power supply enclosure if ordered with battery back-up or relay modules.)

Isolation Relay Module – (Order with "xRO" suffix) – Not Evaluated by UL. A 4-relay module is available as an option to provide power-isolated control to powered devices. Each of the DPDT relays is equipped with one fused common and one non-fused common. See manual for Relay Output module for additional information. (Note this option may require a larger non-standard power supply enclosure if ordered with battery back-up or fused output modules.)

24/7 Programmable Timer – (Order with "x24/7-DT" suffix) – Not Evaluated by UL. A programmable seven day, twenty-four hour timer is available to control powered devices. This timer is field programmable with one NO/NC dry contact output to provide up to fifty Events.

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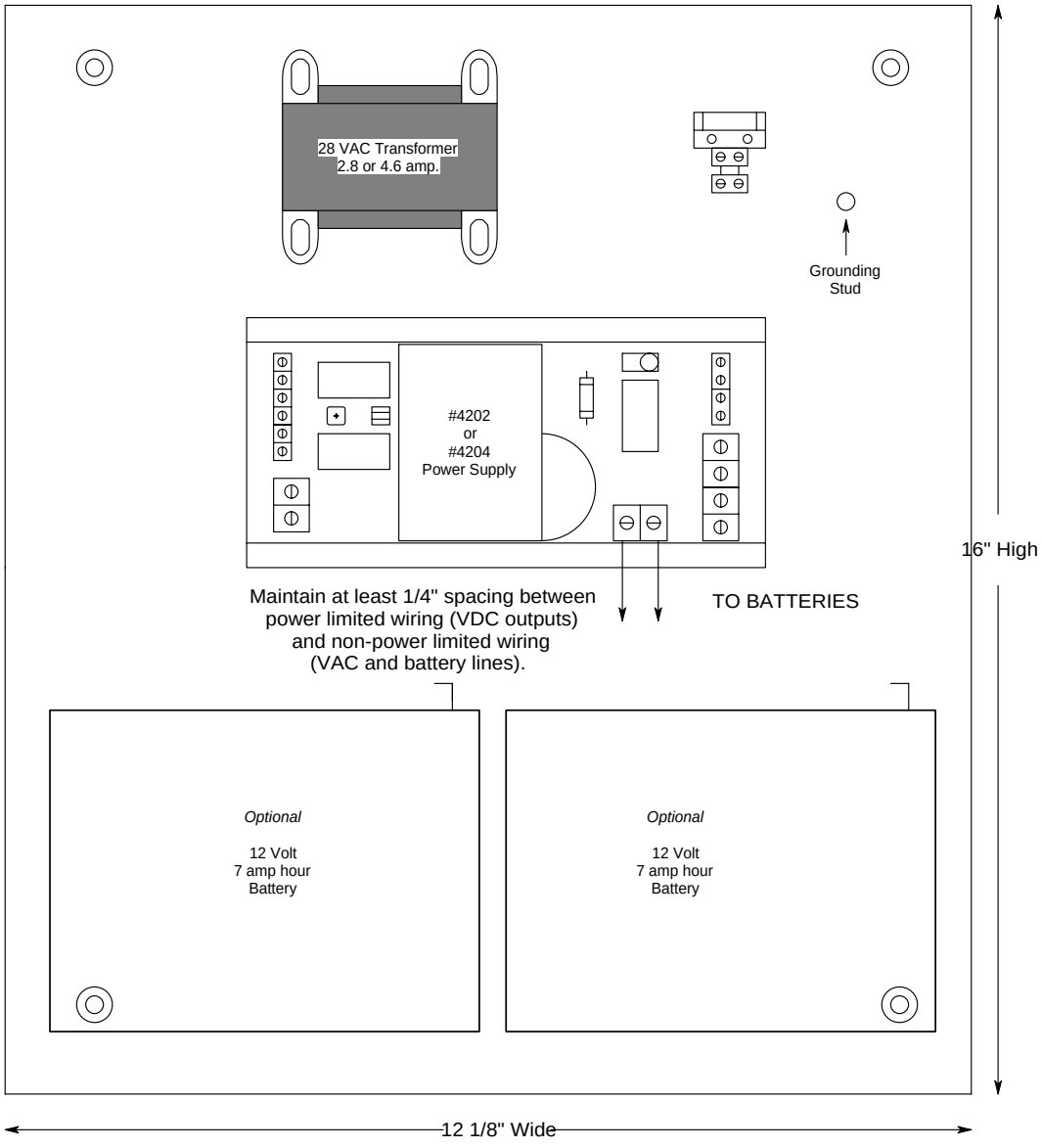
4202/4204 Power Supply

ENCLOSURES:

Standard 12 1/8” x 16” x 4” Layout



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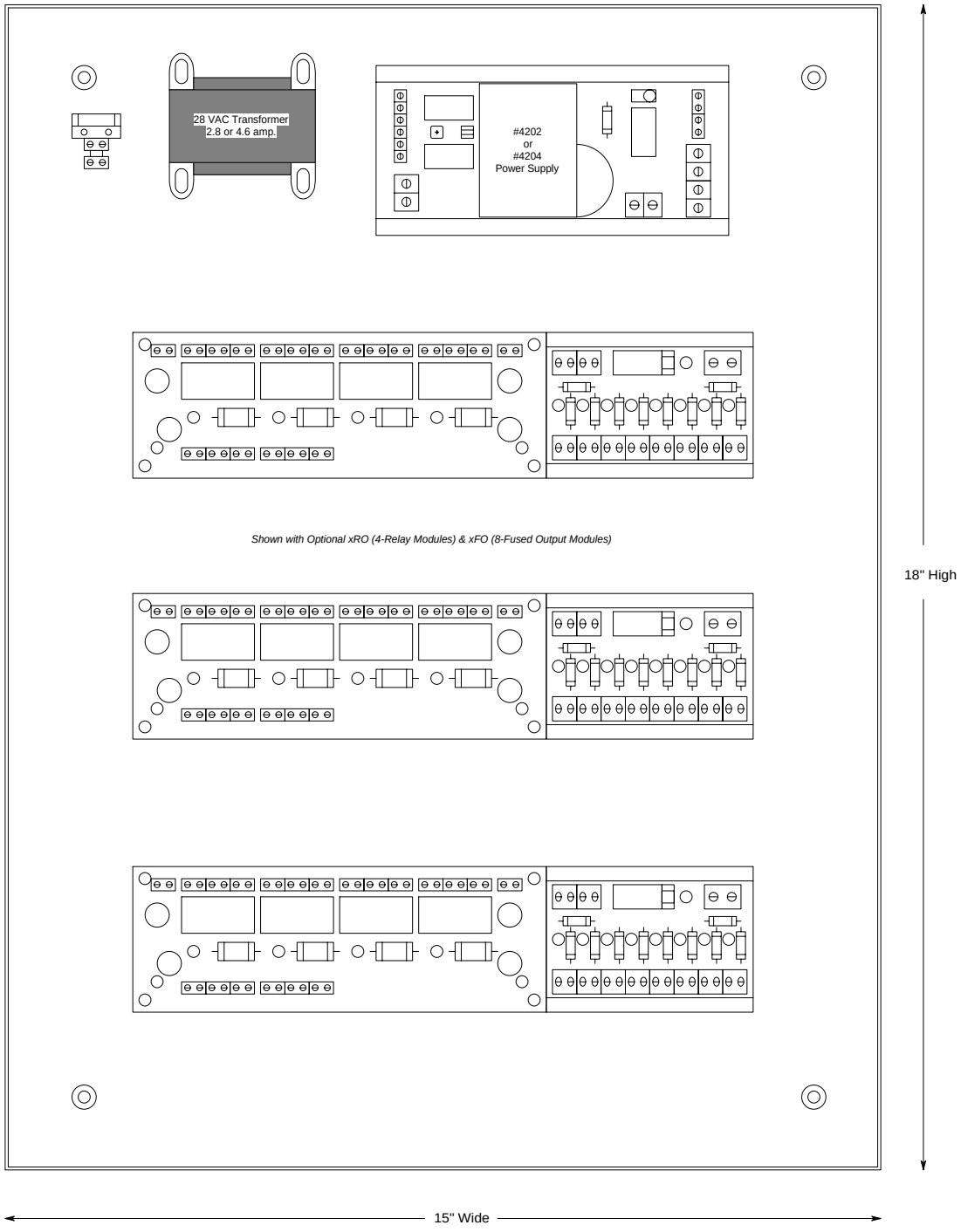
Optional 15” x 18” x 4” Layout (Custom) “Not Evaluated By UL”



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4202/4204 Power Supply

INSTALLATION:

The unit must be installed within the protected premise in accordance with the National Electric Code (ANSI/NFPA 70), local codes, and the authorities having jurisdiction.

Mounting Instructions

Locate equipment in a dry environment. Room temperatures should range between +32 and +120 degrees Fahrenheit.

Anchor enclosure securely to a vertical surface.

Protect electronics from metal shavings, and other debris of the mounting process.

115 VAC Wiring Instructions

Connect the incoming ground wire to the enclosure.

Remove the fuse holder in the 115 VAC terminal block before connection of any power wiring. This deactivates all AC and DC power.

Wire 115 VAC to separate fused terminal block marked for this connection.

If the optional (xPC) power cord is used, the cord must be plugged into a grounded UL listed receptacle. The receptacle must not be controlled by a switch.

Low Voltage Transformer

Each power supply is shipped with a 115 to 28 VAC transformer installed and wired to the power supply circuit board.

The high side (115 VAC input) is protected through the fuse located in the 115 hook-up terminal block.

The secondary (28 VAC) output of the transformer is factory wired to the “AC” input terminal.

Do not substitute transformer with one of lower voltage or lower current output. The design of this power supply requires a minimum of 28 VAC at the current specified to perform at the rated DC output (2 amp @ 12/24 VDC or 4 amp @ 12/24 VDC).

The DC output is fused at 2 amps for the #4202 and 4 amps for the #4204 power supply. *DO NOT USE FUSES OF A GREATER AMPERAGE RATING.*

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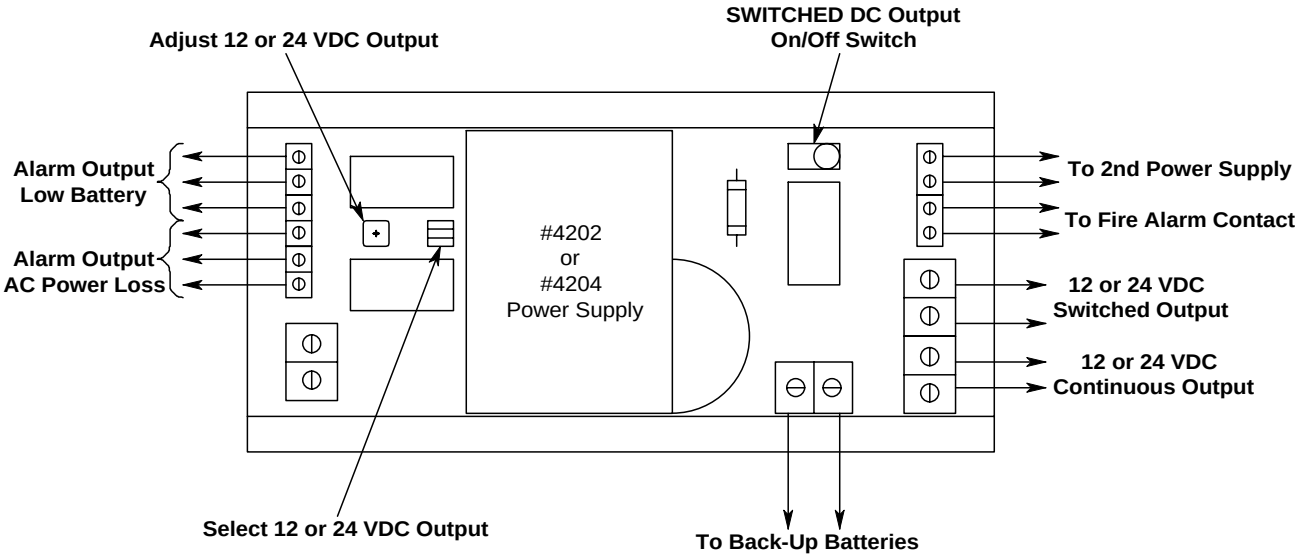

DC Output Wiring Instructions

Remove the fuse for the 115 VAC input (see above) to de-activate all AC power in the power supply. Remove the fuse for the DC output adjacent to the "DC output" terminal strips to de-activate all DC power from the batteries and the supply. (The slide switch next to the FAR interface will only cut off power from the DC "switched" output terminals. When "Off" this FAR interface also opens the dry contact output marked "SFAR".

With the 115 VAC power de-activated, select desired DC output voltage (12 or 24) by the plug-on jumper located on the "AC input" end of the power supply board.

Connect (with AC and DC power de-activated) battery back-up cables according to selected main voltage output (12 or 24) per diagram. Use the potentiometer next to the 12/24 selection jumper to increase DC charging voltage to 13.5 or 27.0 volts maximum. *Maintain at least ¼" spacing between power limited wiring (VDC outputs) and non-power limited wiring (VAC and battery lines).*

Connect fire alarm input (dry contact – closed in non-alarm condition). If a fire alarm signal is to unlock doors in an emergency (wire all controlled devices to the "switched" DC output terminals), *remove the factory-installed jumper* on the FAR terminals. Connect to the fire alarm panel dry contact using these terminals to provide a (+) 12 VDC output to the fire alarm panel relay contact and back to the FAR interface relay coil. A short to ground in this field wiring will result in the cutoff of 12 VDC power to this circuit.

If a manual reset is required after a power cutoff by the fire alarm, remove the “reset “ jumper adjacent to the slide switch. Connect the momentary normally open FAR reset switch (provided as an option) to the 3-pin “reset” header. After fire alarm restore or power-on by slide switch, the reset switch contact must provide a momentary closure between pins A - B, to restore the FAR interface to operating status and provide power on the main DC output.

If additional power supplies are to be operated off of the same fire alarm panel, connect the SFAR (Slave Fire Alarm Release) dry contact output to the FAR terminals of the second power supply. Additional supplies may be connected similarly.

If this power supply is to remain powered continuously (not connected to a fire alarm panel), leave the FAR jumper in place (or utilize the “continuous” DC output terminals to connect the powered devices).

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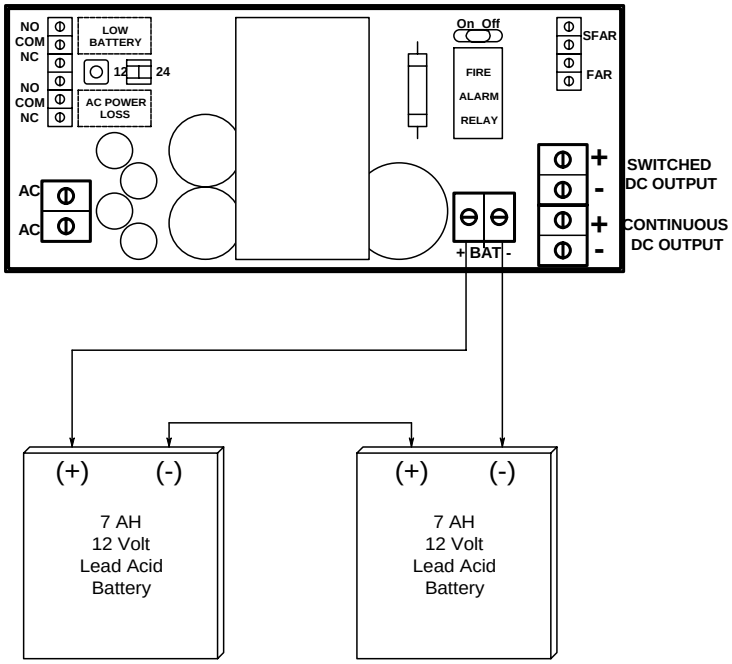
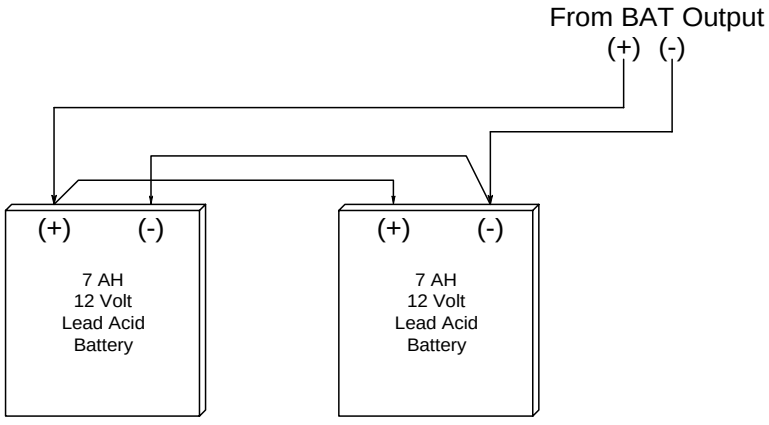
BATTERY HOOK-UP

Maintain at least 1/4" spacing between power limited wiring (VDC ouputs) and non-power limited wiring (VAC and battery lines).



TYPICAL HOOK-UP FOR 24 VOLT BATTERY BACK-UP
(Select proper DC voltage output by on-board jumper)



TYPICAL HOOK-UP FOR 12 VOLT BATTERY BACK-UP
(Select proper DC voltage output by on-board jumper)

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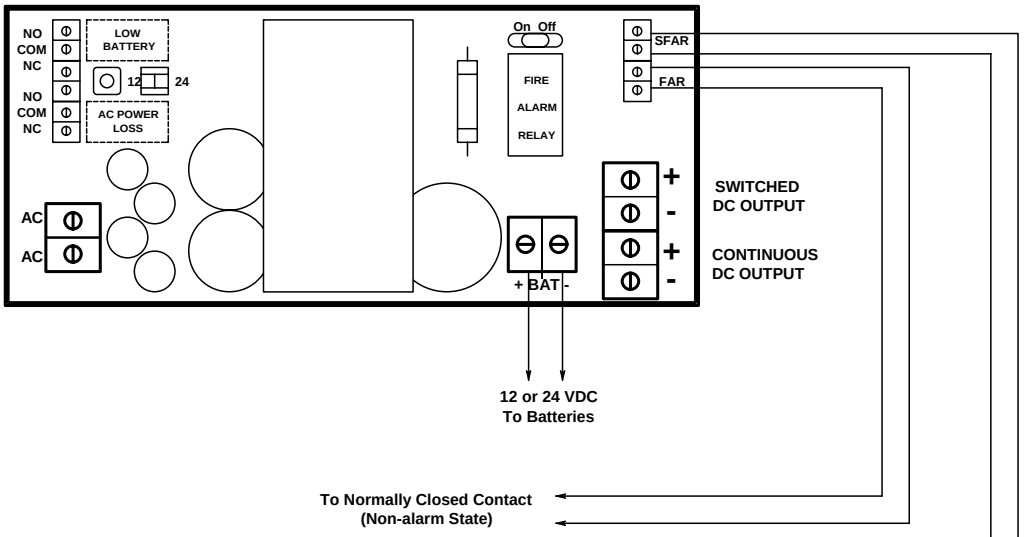
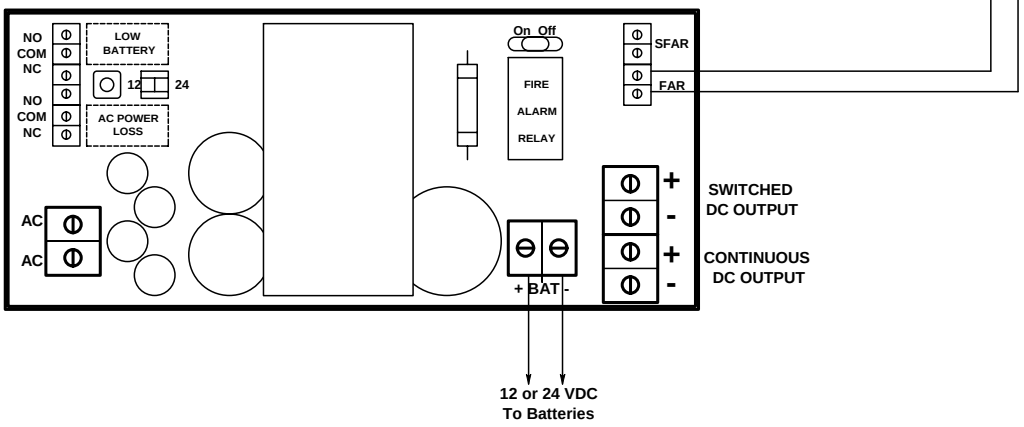
FIRE ALARM INTERFACE



TYPICAL HOOK-UP FOR FIRE ALARM INTERFACE



TYPICAL HOOK-UP FOR SLAVE FIRE ALARM INTERFACE

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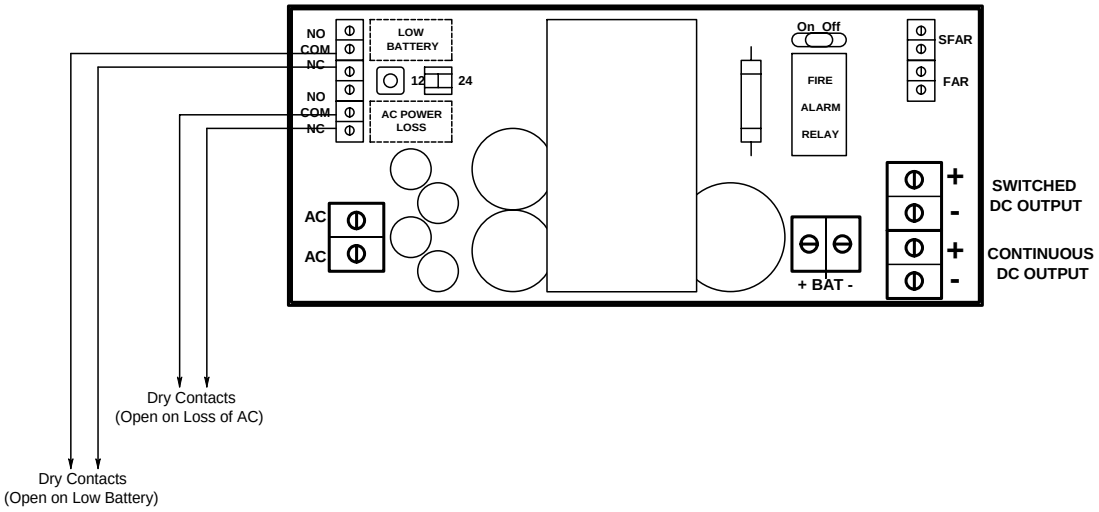
ALARM OUTPUTS



HOOK-UP FOR OPTIONAL ALARM RELAY OUTPUTS

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4202/4204 Power Supply
TROUBLE SHOOTING

No DC Power @ "Continuous" DC Output - Red LED "off"

- Check Main DC Output fuse @ F1
- Check AC Input @ Transformer secondary – Green LED should be "on"
- Check 115 VAC Input fuse @ 115 VAC Terminal Block
- Check Back-up Battery Connections (for reversed or shorted wiring)

No DC Power @ "Switched" DC Output - Red LED "off"

- Check DC Output "On/Off" Switch @ SW1
- Check Main DC Output fuse @ F1
- Push FAR Reset Switch (if installed)
- Check AC Input @ Transformer secondary – Green LED should be "on"
- Check 115 VAC Input fuse @ 115 VAC Terminal Strip
- Check Back-up Battery Connections (for reversed or shorted wiring)
- Check that jumper is present on FAR input if not connected to fire alarm system

Wrong DC Voltage @ T5 - DC Output

- Check Voltage Selection @ Jumper J1
- Adjust Main DC Output Voltage @ R2
- Measure AC Input Voltage @ Transformer secondary terminal T1 (Should be 28 to 31 VAC)
- Measure 115 VAC Input @ 115 VAC Terminal Block
- Check 115 VAC Input fuse @ 115 VAC Terminal Block

DC Output Normal - Batteries Not Charging

- Check Voltage Selection @ Jumper J1
- Adjust Main DC Output Voltage @ R2
- Check Back-up Battery Connections (for incorrect wiring)