Supervised Remote Power Supply, 12VDC   ELK-P212S

APPLICATION

The ELK-P212S is a Supervised Remote Power Supply / Battery Charger, providing 12 VDC output with up to 2 Amps of total current. It supervises the AC Power Input as well as the rechargeable Battery, and can report abnormal conditions back to an ELKM1 Control over the RS485 four (4) wire data bus. It also features relay outputs for AC and Low Battery to allow "stand-alone" operation with other Controls (Security, Access, CCTV products, etc.). Power from the P212S can be used to increase the capacity of a control, or to remotely power devices such as motion detectors, keypads, zone expanders, sirens, annunciators, etc. Surveys have shown that large installations can benefit from remote (decentralized) placement of zone expanders and other devices into strategic wiring closets and enclosures, with each location having its own local supervised power supply. The benefits include ease of maintenance and service, reduction in the amount of wire homeruns, and reduced labor costs.

The P212S monitors the AC Power Input and periodically loads tests the Battery. There are two (2) sets of 12 VDC power outputs with a combined rating of 2 Amps. The outputs are protected against overcurrent by PTC self-restoring circuit protectors. A convenient On/Off switch provides the ability to quickly and easily disconnect both the AC and DC for maintenance. The P212S also includes automatic low battery disconnect circuitry to protect against battery deep discharge during an extended power outage.

FEATURES

- Regulated 12VDC Output with up to 2 Amps of current
- Energy Efficient *ESMT - Elk Switch Mode Technology* ensures low idle power with maximum output headroom
- Automatic output over-current protection (PTC)
- Master AC and Battery ON / OFF Power Switch
- Visual AC Power Indicator
- Innovative *EBT - Elk Battery Technology* circuit provides maximum battery life
  - Controlled charge ramp and maintenance algorithm
  - Low Battery cut-off protects battery from deep discharge
- M1 Control allows
  - Remote power reset of powered peripherals
  - Data-bus supervision of AC and Battery status
- Stand-alone flexibility
  - Two (2) sets of DC outputs
  - One (1) on-board relay to supervise battery status
  - One (1) on-board relay to supervise AC status

SPECIFICATIONS

- AC Input: 16.5VAC, 45VA (ELK-TRG1640 or equiv.)
- DC Output Voltage: 13.8 Volts D.C. +/- 5%
- Current Rating: 2.0 Amps
- Wattage: 30 Watts
- DC Output Protection: Auto Resetting PTC
- Rechargeable Battery Size: Max. 12 Ah
- Low Battery Cutoff Threshold: ~10 Volts.
- Load Regulation: + / - 2%

Features and Specifications subject to change without notice.

Ordering Part Numbers & Optional Accessories:

ELK-P212S	Switching Power Supply Board, 12VDC 2.0A
ELK-TRG1640	Transformer, 16.5VAC 40VA w/PTC Protection
ELK-1280	Battery, 12VDC 8Ah
ELK-W018B	4 Conductor Ribbon Cable for local connection of input/output expander modules
ELK-UB12	Metal Enclosure, 12" x 12" x 3.25"
ELK-SWP3	Mounting Plate for Structured Wiring Enclosures

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ELK-P212S Installation

1. Turn Master Power Switch (SW1) to Off.

2. The P212S board can be mounted using Double Sided Tape (provided), or using an optional Elk-SWP3 Mounting Plate & accompanying nylon standoffs. The SWP3 Plate makes it easy to snap the P212S into a structured wiring enclosure such as the ELK-SWB14, SWB28, ELK-UB12, and many other manufacturer brands.

3. Connect a 16.5V, 45VA Transformer to the AC terminals. Use 18 ga. (min.) wire. DO NOT plug Transformer into Switched Outlet.

4. Devices being powered from the P212S can be connected to one of the two sets of DC Output Terminals. These outputs are overload protected by a single self-restoring PTC.

5. Connect a rechargeable lead-acid Battery (maximum 12 Ah) to the red and black battery wires. Observe polarity.

Stand-Alone Application (Factory Default Setting)

The P212S in stand-alone mode is compatible with virtually any Control or annunciator. It provides two (2) form "C" relay outputs for AC and Battery supervisory notification. If AC and Battery are normal (good) the relays will be energized (active) and the Com and N/O contacts will be CLOSED. Upon detection of an AC failure or Low Battery condition the respective relay will change state (de-energize) and the Com & N/O contacts will OPEN. At this time the Com and N/C terminals will become CLOSED. The advantage of having form "C" relays is being able to obtain an Open or a Close upon trouble. This capability allows the P212S to be compatible with any alarm panel or notification device. Refer to the hookup diagrams.
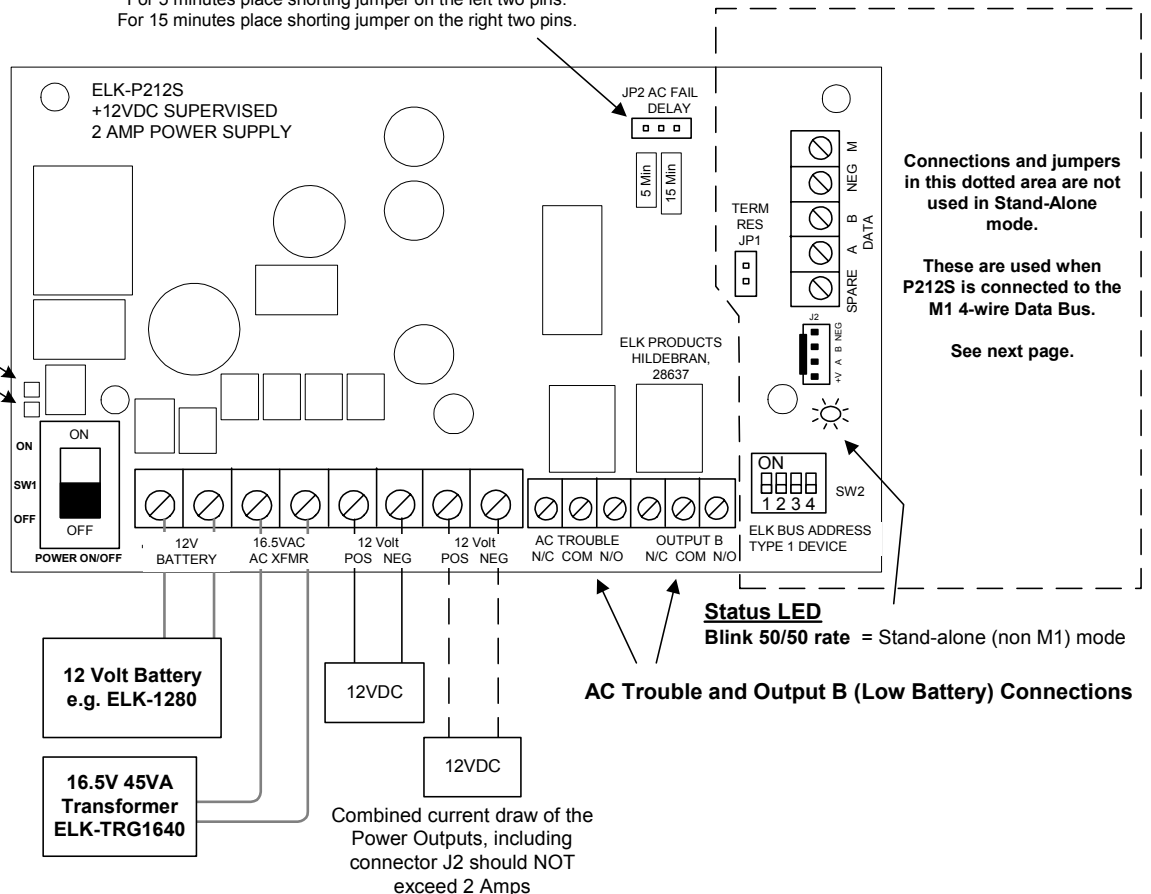
AC Time Delay:

The AC Trouble Output detection circuitry has a built-in time delay after loss of AC. This delay helps avoid nuisance troubles caused by brief power outages. The Jumper marked "JP2 selects the amount of delay time (5 or 15 minutes).

JP2 - Selects AC Fail Delay in Stand Alone applications:
For 5 minutes place shorting jumper on the left two pins.
For 15 minutes place shorting jumper on the right two pins.

NOTE: The low battery shutoff circuitry intentionally prevents the P212S to be powered-up on Battery only (No AC Power).

However, for testing purposes when no AC power is available (i.e. constructions sites), then it is possible to power up on Battery ONLY by simply momentarily shorting the two circuit pads marked "START" with the tip of a screwdriver. This should ONLY be used for testing when AC power is not yet available.!

ELK-P212S
+12VDC SUPERVISED
2 AMP POWER SUPPLY

JP2 AC FAIL DELAY

5 Min   15 Min

TERM RES JP1

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Connections and jumpers in this dotted area are not used in Stand-Alone mode.

These are used when P212S is connected to the M1 4-wire Data Bus.

See next page.

SPARE A B NEG M
       DATA

J2 +V A B NEG

ON
1 2 3 4   SW2
ELK BUS ADDRESS
TYPE 1 DEVICE

ON SW1 OFF
POWER ON/OFF

12V BATTERY   16.5VAC AC XFMR   12 Volt POS NEG   12 Volt POS NEG   AC TROUBLE N/C COM N/O   OUTPUT B N/C COM N/O

12 Volt Battery e.g. ELK-1280

16.5V 45VA Transformer ELK-TRG1640

12VDC

12VDC

Combined current draw of the Power Outputs, including connector J2 should NOT exceed 2 Amps

Status LED
Blink 50/50 rate = Stand-alone (non M1) mode

AC Trouble and Output B (Low Battery) Connections

AC TROUBLE RELAY

Energized with continuity between terminals COM and N/O when AC power is present. Connect to these terminals if the Control or Annunciator requires a OPEN condition to indicate AC failure. Connect to terminals N/C and COM if the Control or Annunciator requires a SHORT condition to indicate AC failure.
NOTE: Upon an AC failure there is a time delay (selectable for 5 or 15 minutes) before the relay changes state.
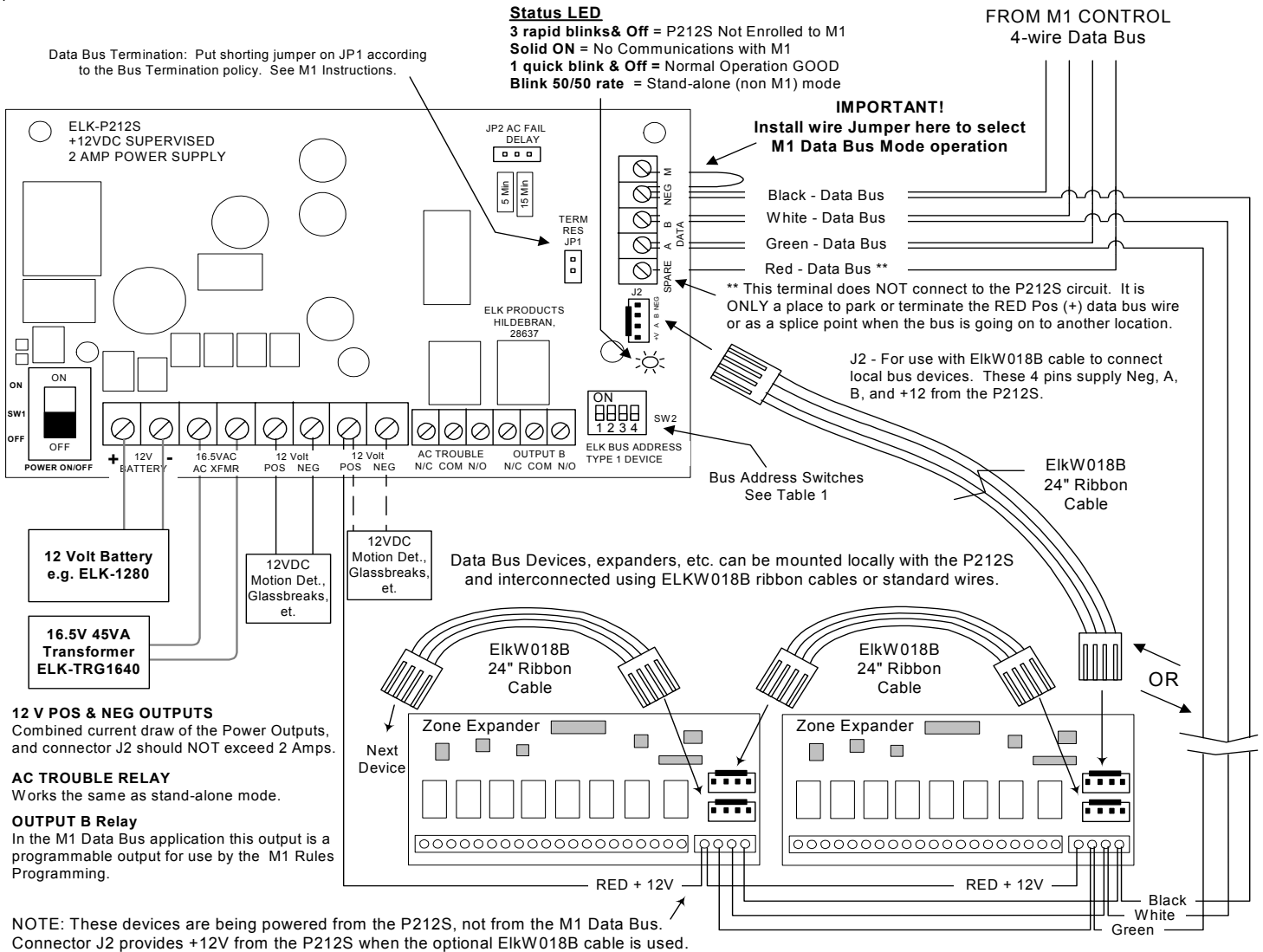
OUTPUT B Relay [Stand-Alone Mode]

Energized with continuity between terminals COM and N/O when the rechargeable battery tests OK. Connect to these terminals if the Control or Annunciator requires a OPEN condition to indicate Low Battery. Connect to terminals N/C and COM if the Control or Annunciator requires a SHORT condition to indicate Low Battery.
NOTE: A Battery test is performed 1.5 minutes after power-up and every 15 minutes thereafter.

Elk-M1 Data Bus Application

The P212S was primarily designed as a Remote Supervised Power Supply for the M1 Control. It connects to the Four (4) Wire "RS485" Data Bus and enrolls as a "Type 1" Keypad device with a Bus Address ID. The reason the P212s is enrolled as a Keypad is so that it can have a Zone Input and a Programmable Output, just like an M1 Keypad. The Zone is exclusively used for transmitting AC and Battery supervisory information back to the M1, however the Output is programmable for most any application. The identification of the Zone and Output can be determined by the Bus Address of the P212S. See Table 2. Each enrolled P212S does take the place of a regular M1 Keypad, thereby reducing the total number of keypads from the maximum of 16.

IMPORTANT EXTRA STEPS

1. Install a short wire jumper as per diagram below to setup the P212S for M1 Data Bus mode operation. Jumper connects the top right (unmarked) terminal to the "NEG" data bus terminal. Connect the M1 data bus coming from the M1 Control.

2. Program the Zone Definition of the Zone ID associated with the P212S as a Def - "Power Supervisory Zone".

Status LED
3 rapid blinks & Off = P212S Not Enrolled to M1
Solid ON = No Communications with M1
1 quick blink & Off = Normal Operation GOOD
Blink 50/50 rate = Stand-alone (non M1) mode

FROM M1 CONTROL
4-wire Data Bus

Data Bus Termination: Put shorting jumper on JP1 according to the Bus Termination policy. See M1 Instructions.

IMPORTANT!
Install wire Jumper here to select M1 Data Bus Mode operation

ELK-P212S
+12VDC SUPERVISED
2 AMP POWER SUPPLY

JP2 AC FAIL DELAY

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Black - Data Bus
White - Data Bus
Green - Data Bus
Red - Data Bus **

** This terminal does NOT connect to the P212S circuit. It is ONLY a place to park or terminate the RED Pos (+) data bus wire or as a splice point when the bus is going on to another location.

J2 - For use with ElkW018B cable to connect local bus devices. These 4 pins supply Neg, A, B, and +12 from the P212S.

ElkW018B 24" Ribbon Cable

Bus Address Switches See Table 1

ELK BUS ADDRESS TYPE 1 DEVICE

Data Bus Devices, expanders, etc. can be mounted locally with the P212S and interconnected using ELKW018B ribbon cables or standard wires.

12 V POS & NEG OUTPUTS
Combined current draw of the Power Outputs, and connector J2 should NOT exceed 2 Amps.

AC TROUBLE RELAY
Works the same as stand-alone mode.

OUTPUT B Relay
In the M1 Data Bus application this output is a programmable output for use by the M1 Rules Programming.

12 Volt Battery e.g. ELK-1280

16.5V 45VA Transformer ELK-TRG1640

12VDC Motion Det., Glassbreaks, et.

12VDC Motion Det., Glassbreaks, et.

ElkW018B 24" Ribbon Cable

ElkW018B 24" Ribbon Cable

Zone Expander

Zone Expander

Next Device

RED + 12V

RED + 12V

OR

Black
White
Green

NOTE: These devices are being powered from the P212S, not from the M1 Data Bus. Connector J2 provides +12V from the P212S when the optional ElkW018B cable is used.

* * Red Data Bus Wire - Positive (+): This wire is not actually needed as the P212S is a power supply. An isolated screw terminal marked "Spare" is provided for parking (terminating) this wire or for splicing with another cable if the bus is continuing on. The important point is that the P212S ONLY NEEDS THREE (3) connections to the M1 Data Bus, Negative (-), Data A, and Data B.

CAUTION: DO NOT connect the Positive (+) wires of <u>multiple</u> power supplies together! It is OK to connect all Negative (-) wires together, as this will assure the entire system has a common reference to Negative.

12 V POS and NEG Outputs: These two (2) terminals may be used for powering motion sensors, zone expanders, etc., or to extend "boost" power on the data bus outgoing from the P212S. DO NOT connect the incoming data bus Positive (+) RED wire as this would result in unsafe backfeeding of power to previous devices/sources. See caution above. We recommend terminating or "parking" the Positive (+) RED wire of the incoming data bus to the terminal marked "Spare". Data bus devices prior to the P212S will be powered by the previous power supply, and devices after the P212S will be powered by the P212S. In the case of multiple P212S Supplies, this procedure can be repeated up to the maximum distance (4,000 feet) of the M1 data bus.

NOTE: Connector "J2" provides Positive (+) 12VDC from the P212S and is ideal for locally connecting zone expanders, etc. using an optional ELKW018B cable. Devices must be mounted in close proximity (within 24") of the P212S.

SETTING THE DATA BUS ADDRESS: Prior to installation and enrollment on the M1 Data Bus the P212S must be set to a data bus address from 1 to 16. Refer to the 4 gang Address Switch. Starting on the left side, each tiny switch represents a binary value. (1, 2, 4, 8). Add up the binary value of each switch in the ON (UP) position to obtain the address setting. Example: If switch 1 & 3 are ON (UP) the result is address 5 (1 + 4). All switches OFF (DN) is address 16. Each address setting must be unique, DO NOT DUPLICATE an address that already belongs to any existing enrolled Keypads.

Table 1: Data Bus Address Switch Settings

ENROLLING THE P212S ONTO THE DATA BUS: VERY IMPORTANT!

1. From an enrolled M1 Keypad press the ELK key, then press 9 (or scroll up) to display 9 - Installation Programming. Press the RIGHT arrow key to select this menu. The Installer Program Code (PIN) must be entered to access this menu.

2. Enter the Installer Program Code. (See M1 Manual for the default Code)

3. The first Installer Programming menu displayed will be "Bus Module Enrollment"

4. Press the RIGHT arrow key to select this menu. "Enrolling Bus Modules" will display

5. The M1 sends an enrollment message to all data bus devices, followed by a display of the total enrolled Bus Modules. To view the enrolled devices and/or remove a device press the RIGHT arrow key for "Edit".

6. Press the * or Exit keys to exit Installer Programming.

Keypad Display

| Auth. Required |
| Enter Valid Pin |

| 01-Bus Module |
| Enrollment |

| XX Bus Modules |
| Enrolled, Edit▶ |
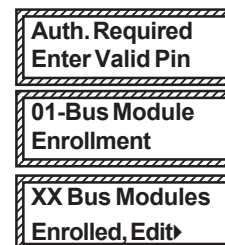
PROGRAMMING THE APPROPRIATE M1 ZONE FOR AC AND BATTERY SUPERVISION: VERY IMPORTANT!
Once the P212S is enrolled on the M1 Data Bus it will appear as a Type 1 (Keypad) device with its own unique Bus Address. The Bus Address determines the Zone ID and Output ID assigned to that P212S. Example: Type 1, Address 1 belongs with Zone 193 / Output 193. Type 1, Address 2 belongs with Zone 194 / Output 194. The last address (16) belongs with Zone 208 / Output 208.

Table 2: Zone & Output Assignments Based on Data Bus Address of "Type 1" Devices

Address 1	Address 2	Address 3	Address 4	Address 5	Address 6	Address 7	Address 8
ZONE 193 OUTPUT 193	ZONE 194 OUTPUT 194	ZONE 195 OUTPUT 195	ZONE 196 OUTPUT 196	ZONE 197 OUTPUT 197	ZONE 198 OUTPUT 198	ZONE 199 OUTPUT 199	ZONE 200 OUTPUT 200

Address 09	Address 10	Address 11	Address 12	Address 13	Address 14	Address 15	Address 16
ZONE 201 OUTPUT 201	ZONE 202 OUTPUT 202	ZONE 203 OUTPUT 203	ZONE 204 OUTPUT 204	ZONE 205 OUTPUT 205	ZONE 206 OUTPUT 206	ZONE 207 OUTPUT 207	ZONE 208 OUTPUT 208

1. Refer to the information above to determine which Zone ID belongs with the bus address of the P212S just installed.

2. Use Keypad Installer Programming to set the appropriate Zone Definition to Definition " 32 = Power Supervisory Zone" and make sure the Type is set to "0 = EOL Supervised/RF".

   NOTE: ElkRP Programming software can be used to program the Zone Definition, but ElkRP will not even display zones 193 - 208 until a Hardwired Exp. (Exp. 13) group of zones has been setup or added to the display. From the ElkRP software highlight (click) Zones (Inputs), then right click and select New Hardwired Zones... A box will now appear titled New Hardwired Zones. Click on the radio button (lower right side) labeled Zones 193-208 (Group 13). Then click OK. This will add a display for Hardwired - Exp 13 under the Zones (Inputs). It will now be possible to program the appropriate zone assigned to the P212S.

3. Additional programming such as the Zone Name, Dialer Reporting Codes, etc. is optional and varies by Installation.

PROGRAMMING THE M1 FOR AC FAIL OR LOW BATTERY DIALER REPORTS
To enable Central Station reporting of AC Fail and Low Battery coming from the P212S the Zone Report Code for the respective zone MUST be set to a value of one (1). To enable Central Station reporting in cases where the P212S Power Supply is removed, turned off, or the bus wiring becomes severed, it will be necessary to program the "System Report Codes", "SR07 Exp Module Tbl" to a value of one (1).

OPERATION

No Trouble Conditions (AC Power and Battery OK)

When both AC and Battery conditions are OK, the Zone ID assigned to the Bus Address of the P212S will be in a normal (secure) state. For diagnostic purposes this can be confirmed from "Keypad Menu 86, System Diagnostics". Select option 3, "Display Zone Voltage" and enter the 3 digit Zone ID. The display should be "Volt = 06.8" or very close to that value.

AC Power Failure:

AC Power is considered OK when supplied by a 16.5 VAC Transformer and the master On/Off switch is ON. The local AC Trouble Relay on the P212S will be energized (active ON) when AC Power is OK.

Upon failure of AC Power, the P212S immediately transmits the event to the M1 Control by creating an electrical SHORT condition on the assigned Zone. For diagnostic purposes this can be confirmed using the System Diagnostics (Keypad Menu 86). Select option 3, "Display Zone Voltage" and then enter the 3 digit zone ID. The display should be "Volt = 00.0".

AC Failure Delay Time - Although the P212S immediately notifies the M1 upon AC failure, the M1 uses it's AC Fail Delay timer to determine when to display and/or report the AC failure. This time value is programmed under Installer "Menu 12 - Sys Rpt Code Options & Codes", option "SR01 AC Fail Rpt Delay". The programmable time is 000 to 255 minutes. (000-no delay) Upon expiration of the time delay all connected M1 Keypads should display "AC Failure", and the M1 event log will show "RemACFail". The Zone ID and Area (Partition) ID will also display on that same event. Refer to the M1 Installation & Programming Manual.

NOTE: Locally the P212S AC Trouble Relay will continue to follow the time delay settings according to Jumper JP2.

Low Battery:

The Battery is considered OK only if it passes the prescribed load test performed by the P212S. See "Battery Autotest Timing".

Upon detection of Low Battery, the P212S immediately transmits the event to the M1 Control by creating an electrical OPEN condition on the assigned Zone. For diagnostic purposes this can be confirmed using the System Diagnostics (Keypad Menu 86). Select option 3, "Display Zone Voltage" and then enter the 3 digit zone ID. The display should be "Volt = 12.x".

All connected M1 Keypads should display "Low Battery" and the M1 event log will show "RemLoBattt". The Zone ID and Area (Partition) ID will also display on that same event. Refer to the M1 Installation & Programming Manual.

Output "B" Functionality:

The local "Output B" relay is free to be used as a programmable output when the P212S is used in M1 mode. In other words, in the M1 mode this relay does not represent or follow the Low Battery or Battery condition. It can be used by the M1 Rules Programming for various applications. Some examples of its use are:
- For tripping or activating a local door strike
- For resetting (breaking) power to a latching detector. This can easily be done by series wiring either the POS or NEG power lead powering the detector through the contacts of Output B.
NOTE: Remember that the identity of the assigned output is based on the Bus Address assigned to the P212S.

BATTERY AUTOTEST TIMING

An initial test of the battery is performed 1.5 minutes after initial power up. After that the load test occurs every 4 hours. When connected to the M1 Bus the P212S syncronizes its test with the M1 main battery test time, offset in minutes equal to the Bus Address value. This helps to stagger the battery tests. When AC Power is OFF the battery testing occurs once a minute.