8-Zone Hardwired Takeover Module

Description

The Prima **PHW8RETRO** is a "takeover module", that will convert a total of 8 wired zones into 8 supervised wireless 433.95MHz zones. For example, if you have existing wired security system sensors such as motion detectors, glass break sensors and door/window transmitters, you can use the existing wiring for each of these devices and convert them into Prima system wireless zones. Up to four (4) PHW8RETRO Takeover Modules are allowed for each Super Panel. However, for installations conforming to UL or ETL requirements, only one zone per PHW8RETRO Takeover Module can be designated as either a Fire or CO zone, and only **one** 4-wire smoke detector or CO detector may be added to that single zone on the PHW8RETRO.

For Non-UL or Non-ETL Installations

Multiple PHW8RETRO zones can be used for Fire of CO, and the maximum number of 4-wire smoke detectors or CO detectors that can be added per zone on the PHW8RETRO is determined by the power rating of the devices added and the power supply limit, namely 200mA maximum for power reset output (all zones on the PHW8RETRO share this common reset power output). Therefore, for non-UL or non ETL installations, the system could power four 4-wire devices rated 55mA maximum alarm current and EOL relay on a designated zone on the PHW8RETRO (alternatively, each of these four detectors could be added to four open PHW8RETRO zones, if desired).

Wiring

In general, the first step is to connect all of the Zone data wires to a mounted and *unpowered* **PHW8RETRO**. Only after all zone and other wiring is connected and configuration jumpers are set should you then power the **PHW8RETRO**.

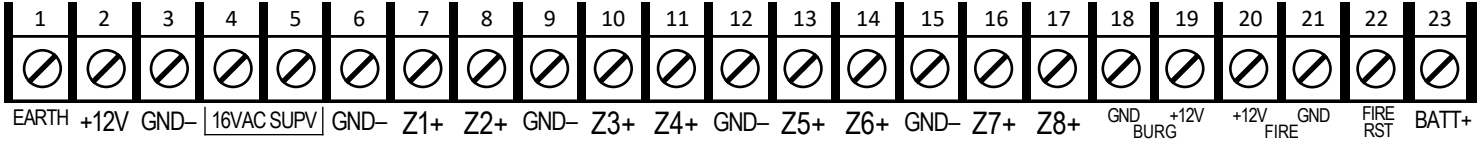
Connect the high side (positive) of each wired zone to its own screw terminal, labeled **Z1+**, **Z2+**, etc. on the **PHW8RETRO** terminal strip. Note that several burglary sensors can be wired to a single zone provided they are wired in series-parallel. Connect the low side (negative) of each wired zone to any of the ground terminals (labeled **GND-** near each zone terminal).

To supply power to the PHW8RETRO: Use a UL or ETL Certified Residential Fire/Burglary power limited power supply with battery backup to provide power if electrical power fails or drops to an unacceptable voltage level. **Ensure the backup battery is sized correctly:** *For Burglary applications, a minimum of 4 hours of battery backup is required. For Fire applications, a minimum of 24 hours of battery backup is required.* For battery and AC monitoring, see **Battery Monitoring** on page 16-4.

After all zone wires are connected, connect the power supply 12V positive connection to the **+12V** (#2) terminal followed by the negative ground connection to any **GND-** (#3) terminal. After the power supply is connected, connect the battery 12V positive lead to the **BATT+** (#23) terminal. Connect the battery ground lead to any **GND-** terminal.

Wire all zone and power connections using 18-22AWG wire. Install end-of-line resistors on all zones, even if one or more zones are not used.

Note: If battery voltage falls below the minimum level (9.5VDC), a battery trouble is triggered. Maintain minimum 1/4" separation of all power limited and non-power limited wiring (i.e., battery leads) in the **PHW8RETRO** enclosure from all other wiring.



8-Zone Hardwired Takeover Module (cont'd)

Terminal Descriptions

Located at the bottom of the module PC board, the 23 terminals are:

EARTH

This optional earth ground terminal provides protection from high-voltage transients (for example, nearby lightning discharges induce high -voltage transients into the field wiring of electronic equipment). Therefore, connect this terminal to a metal cold-water pipe or a long steel (or copper) ground rod driven deeply into the earth. Do not use a gas pipe, plastic pipe or AC ground connections. Use at least 16-gauge wire. Make the run as short and direct as possible, without any sharp bends in the wire.

+12V (13.5VDC - 10VDC)

+12 volts DC, minimum 2A, to power the **PHW8RETRO**. Connect this terminal to the +12VDC terminal of a dedicated UL or ETL Certified Residential Fire/Burglary power limited power supply with battery backup.

GND–

Common ground terminal for all sensors (all **GND** terminals are electrically equivalent). Therefore, connect the low side (negative) lead of each wired zone to the **GND** terminal next to each zone terminal (labeled **Z1+**, **Z2+**, etc.). In addition, for the purpose of powering the **PHW8RETRO**, connect this terminal to the (–) 12VDC of the dedicated power supply.

16VAC

To monitor AC:

Terminal #4 ("**16VAC**") is a non-polarized 16VAC terminal used for monitoring AC (**for supervision only, not power**). Connect to AC power source terminal of the dedicated power supply (max 18VAC).

To monitor a power supply with an AC supervisory output:

Connect terminal #4 ("**16VAC**") to the **NC** terminal ("AC supervisory output" terminal) on the Auxiliary Power Supply (note that power supply designs will vary; see example on page 16-7). **Do NOT connect to terminal #5**. In addition, insert jumper **JP1** located on the takeover module PC board.

SUPV (Terminal #5):

The **SUPV** terminal #5 is a non-polarized 16VAC terminal used for monitoring AC. Connect to AC power source terminal of the power supply (max 16VAC).

Z1+ - Z8+

Connect the high side (positive) lead of each wired zone to its own screw terminal, Zone Inputs 1 through 8 (labeled **Z1+**, **Z2+**, etc.), for each zone 1 through 8, respectively. Connect the negative ground side to the closest **GND** terminal (for example, **GND** terminal numbers 6, 9, 12 or 15, as needed).

GND/+12V BURG

The left terminal #18 is a common ground terminal for burglary devices. The right terminal #19 provides +12V output, 500mA for burglary devices only (total combined Fire and Burglary power is a maximum of 200mA when Fire devices are connected to the takeover module). **IMPORTANT:** NEVER connect a Fire device to these terminals.

+12V/GND FIRE

The left terminal #20 is an external +12VDC power output for Fire devices (not resettable).

The right terminal is a common ground reference.

FIRE RST

Fire Reset Output Terminal. Typically used to create a power output for latching 4-wire smoke detectors and similar devices that require power to be removed for reset. When the system is in alarm, a User passcode entry on a system keypad silences the alarm, then an icon appears on the display. When selected, the screen indicates the zone in alarm and allows a choice between two selections:

8-Zone Hardwired Takeover Module (cont'd)

- **OK**: Select to allow you to further investigate the cause of the alarm
  --or--
- **Reset**: Re-enter your User passcode causes this output terminal to change state whereby power is turned off for approximately 10 seconds to allow the detector to reset.

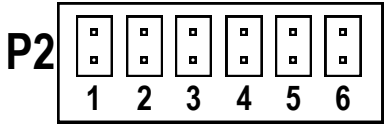
See input and output power specifications on page 16-9. Note: The Takeover module does not support Fire Alarm Verification.

BATT+

Battery monitoring input for backup battery supervision on power supply. Connect to battery [+] terminal. Remove shunt across **P2** position **3** to enable supervision.

Jumper Block P2 Descriptions

These "Learn jumpers" are in the **P2** jumper block with positions numbered, from left to right, as **1** to **6**.



P2 Position 1

Use to clear all saved Zone Learn Levels back to the factory default of 2.2KΩ termination (only applies if **P2** position **6** learn process was previously used). See **Factory Reset** on page 16-6 for instructions.

P2 Position 2

This shunt controls **16VAC / SUPV** monitoring of terminals **4** and **5**. Shunt **P2 Position 2** to disable monitoring of the **16VAC / SUPV** inputs and to disable AC FAIL reporting. When **P2 Position 2** is open, the loss of AC power to terminals **4** and **5** will cause the system to annunciate a trouble.

P2 Position 3

Shunt position **3** to **DISABLE BATTERY** monitoring on the terminal **BATT+**.

P2 Position 4 (Reserved for future use).

P2 Position 5 (Reserved for future use).

P2 Position 6

Shunting position **6** starts an **END OF LINE RESISTOR (EOLR) LEARN** process for zone terminals **Z1+** through **Z8+** whereby the value of each normal zone condition is learned by the system. Before you begin the learn process, ensure the following:

- Each zone must be wired to a sensor (see below)
- Each zone must be in a ''Normal' condition (not faulted)
- AC and battery monitoring must be disabled by shunting position **P2 Position 2** and **P2 Position 3**

Note: The factory default programmed value of the terminating resistor for each zone is 2.2KΩ and thus an EOLR LEARN process is not required (a 2.2KΩ resistor is needed).

To Program a Different EOLR Value:

Ensure the new EOLR value is in place on the zone to be learned. Remove the zone jumper from that zone to be learned, namely one of the jumpers **JP5** (zone 1) through **JP12** (zone 8).

To Start the EOLR Learn Process:

Note: You can only learn one zone at a time.

1. Shunt **P2 Position 6**; within 3 seconds **LED3** (yellow LED at the top of the PCB) will blink to indicate the learn process is active.
2. Shunt one of the zone jumpers zone **JP5** (zone 1) through **JP12** (zone 8) and verify that **LED3** turns on solid to indicate the learn process for that zone is successful.
   Note: If the zone is open/faulted, the zone condition will not be learned and **LED2** (red) will blink to indicate trouble.
3. Remove jumper from **P2 Position 6**. Within 3 seconds **LED3** will turn off to indicate the learning process for that zone has ended.
4. Repeat this process at step 1 for another zone where needed.

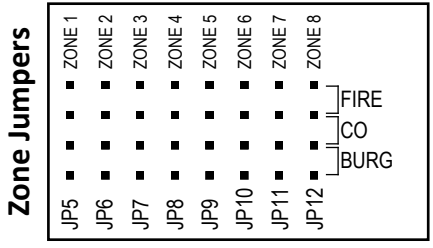
8-Zone Hardwired Takeover Module (cont'd)

To Restore all EOLR Values to 2.2KΩ:
Shunt **P2 Position 1** (see **Factory Reset** on page 16-5 for instructions).

Jumper Block JP5 to JP12 (Zone Monitoring) Descriptions

To enable zone monitoring type, place a jumper on one of the 8 jumper blocks labeled **JP5** (for **ZONE 1**) through **JP12** (for **ZONE 8**). Each zone 1 - 8 is assigned to terminals **Z1+** through **Z8+**, respectively.
Each jumper block labeled **JP5** through **JP12** contains vertical 4 pins:

- **FIRE** (top two pins): Selected zone reports as a Fire transmitter.
- **CO** (middle two pins): Selected zone reports as a carbon monoxide transmitter.



- **BURG** (lower two pins): Selected zone reports as a Burglary window / door transmitter with one point (i.e. reports the zone change from "normal" to "open").

LED Descriptions

LED2, **LED1** and **LED3** are located at the top center edge of the PCB. **LED4** is located at the lower left edge of the PCB. Only **LED1** and **LED4** are visible with the cover closed. Each LED is described as follows:

- **LED1** (Green): Blinking = RF Receiving/Transmitting.
- **LED2** (Red): Monitors external AC at the Super Panel (the Takeover Module operates using DC only). When lit = AC is not present. When off = AC is present.
- **LED3** (Yellow): Monitors external battery connection from the control panel or power supply that is taken over. When lit = Low battery. When off = Battery OK.
- **LED4** (Red): When lit = Takeover Module DC power OK. When off = Takeover Module DC power loss.

Takeover Module Tamper

The tamper switch on the PCB is always active to monitor the opening of the front cover. Cut jumper **JPR1** to enable the rear tamper switch to monitor the removal of the **PHW8RETRO** from the mounting surface. When the unit is in operation and a tamper switch is triggered, a Tamper alert and its location is displayed on the Super Panel screen.

Battery Monitoring

To enable external backup battery monitoring, remove the shunt across **P2** position **3**. When enabled, the system will test battery voltage on the **BATT+** terminal and will be detect a low battery below 10.5V. **Note:** The system continually monitors the 12VDC input power circuit; a low power alarm will trip if the 12V power supply drops to low voltage.

Battery Wiring:

1. Disconnect the battery of the panel to be taken over and unplug its AC transformer.
2. Cut the control panel's red battery flying lead approximately 3 inches from the battery terminal.
3. Strip both sides of the cut flying lead to expose wire.
4. Inside the panel housing, using a suitable wire connector, crimp both sides of the stripped flying battery lead and one side of the supplied EOLR2.2K.
5. Using a suitable connector, crimp the remaining side of the EOLR2.2k

8-Zone Hardwired Takeover Module (cont'd)

to the wire that extends outside the panel housing to the PHW8RETRO "**BATT+**" terminal.

6. Ensure the wires connected to the battery are separated by at least 1/4 inch from any non-power limited wire inside the panel housing. Ensure there are no exposed wires that could short circuit.

Enable AC Fail Monitoring:

Remove shunt across header **P2** position **2** to enable AC monitoring. For the panel to be taken over, connect the AC terminal to the PHW8RETRO "**16VAC**" terminal #4. When **P2** is not shunted, the removal of AC will cause the system to annunciate.

Add the PHW8RETRO to the Super Panel

Please review the steps before performing them.

1. Open the **PHW8RETRO** module cover and connect the 12VDC power supply. Wait at least 30 seconds for the module to power up fully. **Note:** See **Specifications** on page 16-9 for description of control panel or Certified power supply to supply power to the **PHW8RETRO**.
2. If NOT used, disable AC monitoring and battery monitoring by inserting jumpers into pin header **P2** on the PC board, as follows:
   - Insert a jumper into position **2** to disable AC monitoring.
   - Insert a jumper into position **3** to disable battery monitoring.
3. On the Panel screen, select **Settings** > **Devices** > **+** to access the **Add Devices** screen, then select "**Takeover Module**".
4. Press / release the takeover module tamper switch and verify the serial number displayed matches the PCB sticker. **Note:** This number will always end with a zero, and can be displayed again later, if needed.
5. On the screen, select the module installation location. Ensure the Signal Strength of the takeover module is "Good" or "Excellent" on the Super Panel. If necessary, relocate the takeover module to obtain at least "Good" Signal Strength.
6. Mount the module. Select a location near the power source and devices. When finished, tap **Done**.

To re-display the serial number: Select the **Takeover Module** from the list of devices or Groups.

Add Devices to a Takeover Module Zone

Add one device at a time. Before adding a device, we recommend reviewing the steps before proceeding, and locating the device serial number printed on a label (location varies with the device).

1. Open the **PHW8RETRO** module cover.
2. Power all devices to be added into the system (to be enrolled into the takeover module).
3. On the Panel screen, select **Settings** > **Devices** > **+** to access the **Add Devices** screen.
4. Select a 'device type' you wish to associate with the takeover module zone.
5. When the screen prompts you to trigger the device, do so in the manner consistent with the device:
   Trigger the device by placing a jumper on the takeover module PCB for the selected **ZONE** number (1-8) and for the type of device (**FIRE** or **CO** or **BURG**). For example, for a burglary **PWD** Window/Door Transmitter, place the jumper on the (bottom two pins labelled "**BURG**").
6. Verify the serial number displayed on the screen matches the serial number on the device label. The last digit MUST match the jumper zone number selected in the previous step. This serial number can be displayed again later, as needed.

8-Zone Hardwired Takeover Module (cont'd)

7. For an applicable **BURG** device such as a window/door transmitter, wire the burglary zone with a 2.2ΩK terminating resistor.
   Note: The **PHW8RETRO** takeover module does not support panic buttons; however, the Prima model **PPANIC** button is an available wireless panic button compatible with the Prima System.

Factory Reset

Use jumper block **P2** position **1** to clear all saved Zone Learn Levels back to the factory default of 2.2K (only applies if **P2** position **6** learn process was previously used). Proceed as follows:

1. Remove power and place a jumper into position **1** (far left) of pin header **P2** on the PC board.
2. Power the Takeover module.
3. Remove the jumper. If the default process is successful, upon power up **LED1** will slowly blink.

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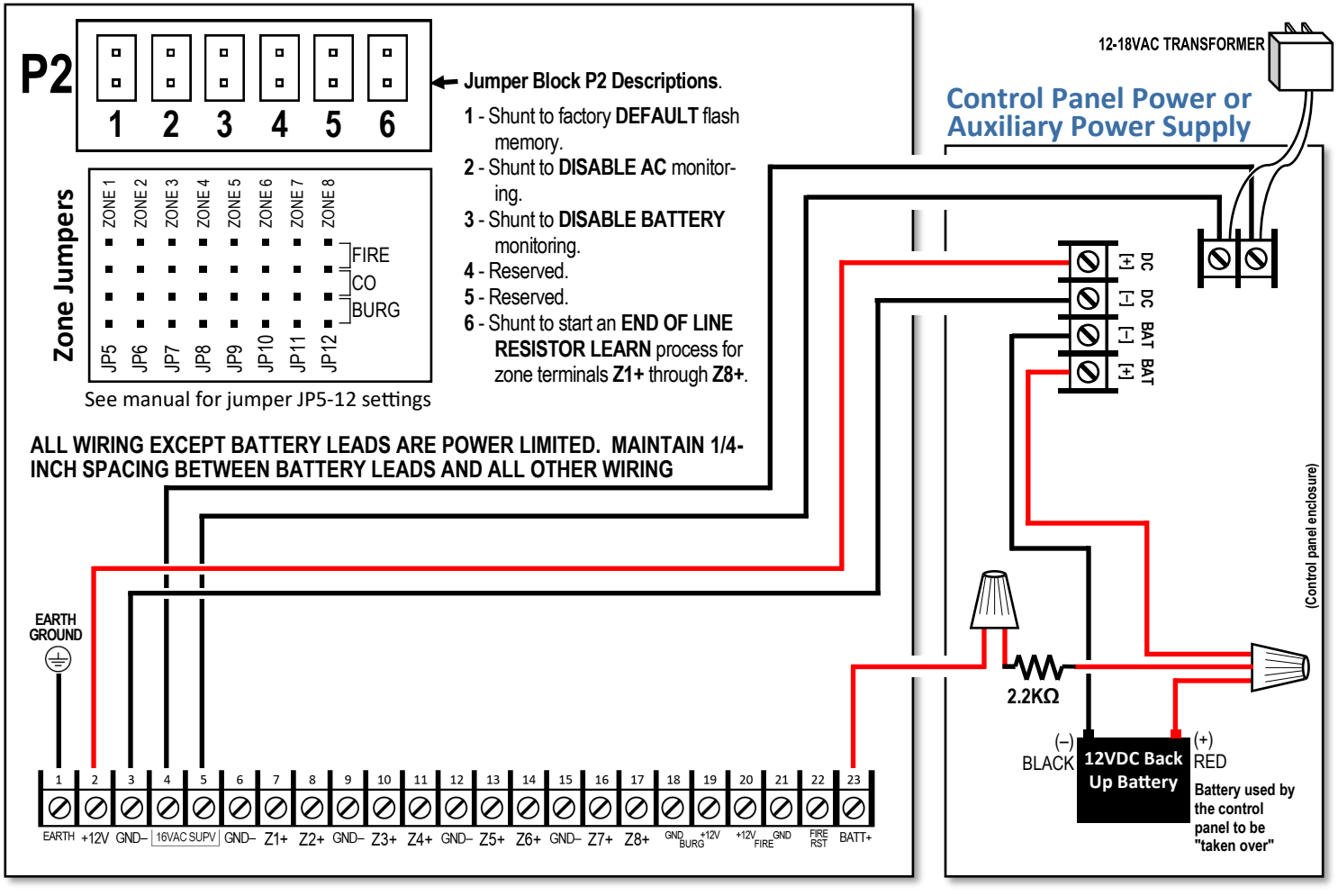
8-Zone Hardwired Takeover Module (cont'd)

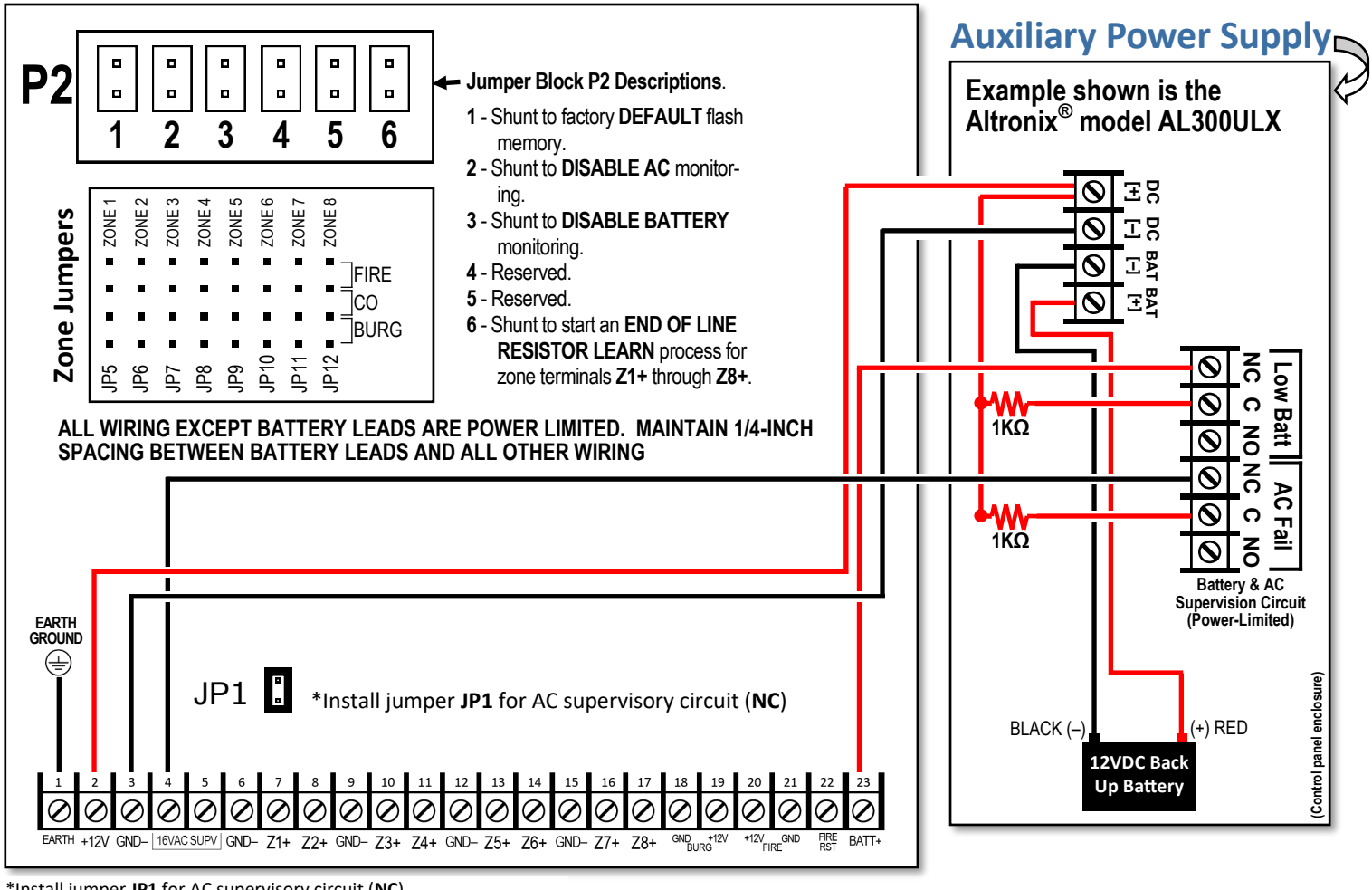
Specifications -- 8-Zone Hardwired Takeover Module (Model PHW8RETRO)

Input Power	Input 12VDC nominal, 55mA with no devices connected to Fire and Burg isolated power output terminals. 555mA maximum power rating with maximum devices as Smoke, CO, motion detectors connected to Fire and Burg power output terminals (500mA for burglary power plus 55mA for the module or 200mA for Fire/Burglary and 55mA for the module). Input power into the PHW8RETRO from a control panel or UL (or ETL) Certified Residential Fire/Burglary power limited power supply with battery backup to provide power if electrical power fails or drops to an unacceptable voltage level (a battery trouble is triggered if battery voltage falls below 9.5VDC).
Output Power	Burg Aux Power maximum 500mA. Fire Aux Power maximum 200mA. Maximum 200mA combined Fire/Burg Aux Power
End-of-Line Resistor	UL Certified end-of-line resistor required for Fire/CO zone (2.2KΩ default supplied, can learn 0 - 10KΩ)
Operating Temperature	32° to 120.2°F (0° to 49°C)
Relative Humidity (Storage)	85% Max. non-condensing
Weather Proofing	N/A, Indoor Use Only
Dimensions (W x H x D)	6¾" x 3⅜" x 1½" (17.2 x 9.2 x 3.8cm)

Takeover Module Control Panel Power Supervision Wiring Diagram

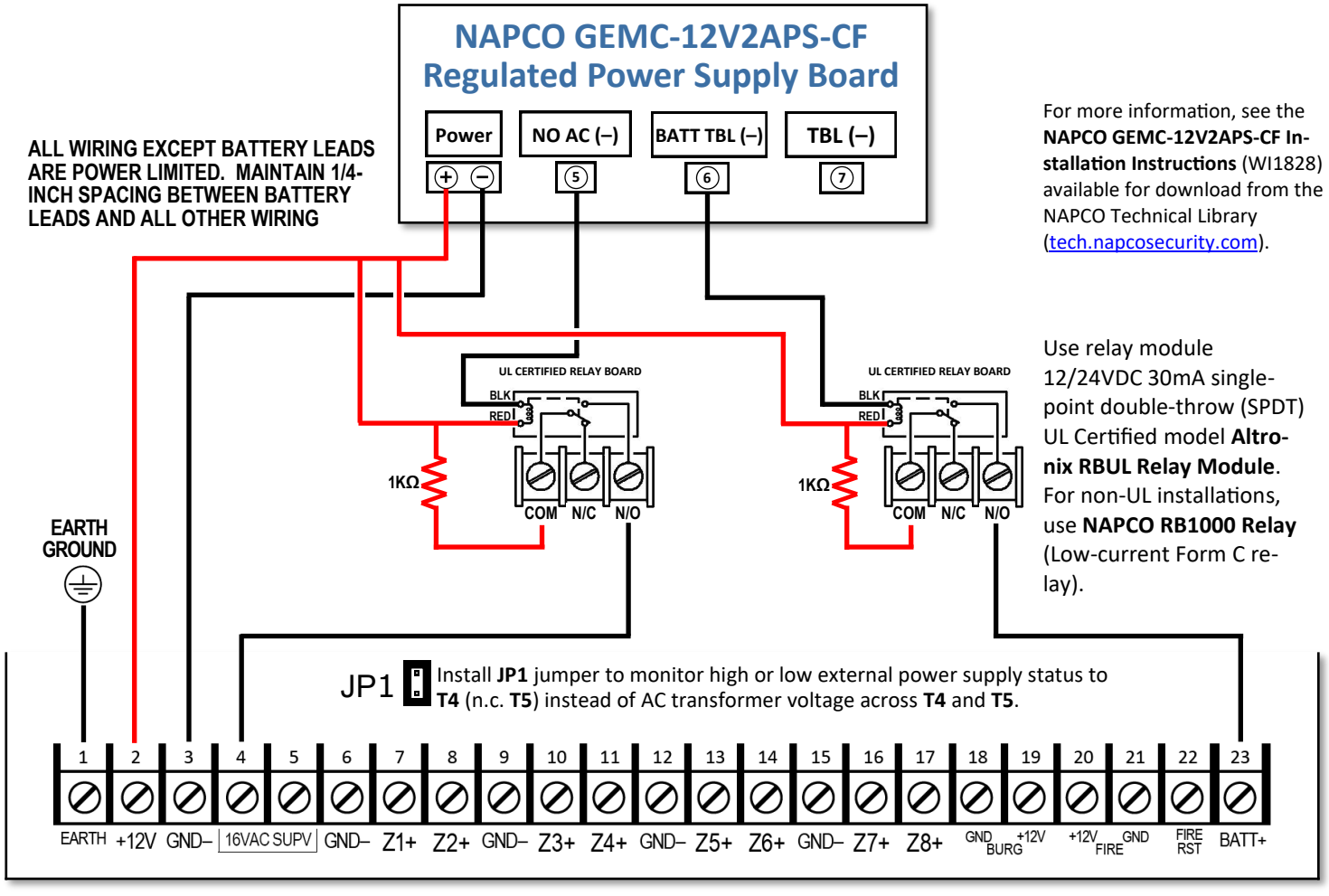


Takeover Module Aux Power Supply Supervision Wiring Diagram*



*Install jumper **JP1** for AC supervisory circuit (**NC**)

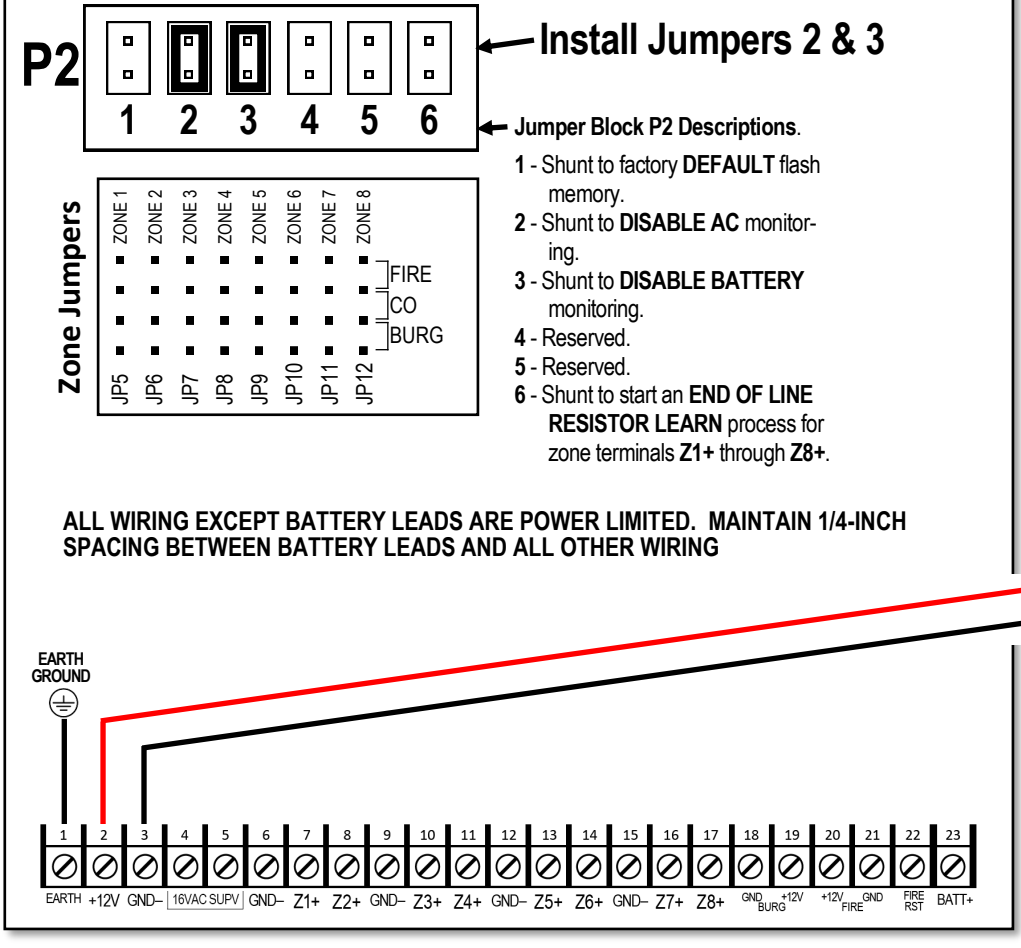
Takeover Module Aux Regulated Power Supply Wiring Diagram



For more information, see the **NAPCO GEMC-12V2APS-CF Installation Instructions** (WI1828) available for download from the NAPCO Technical Library (tech.napcosecurity.com).

Use relay module 12/24VDC 30mA single-point double-throw (SPDT) UL Certified model **Altronix RBUL Relay Module**. For non-UL installations, use **NAPCO RB1000 Relay** (Low-current Form C relay).

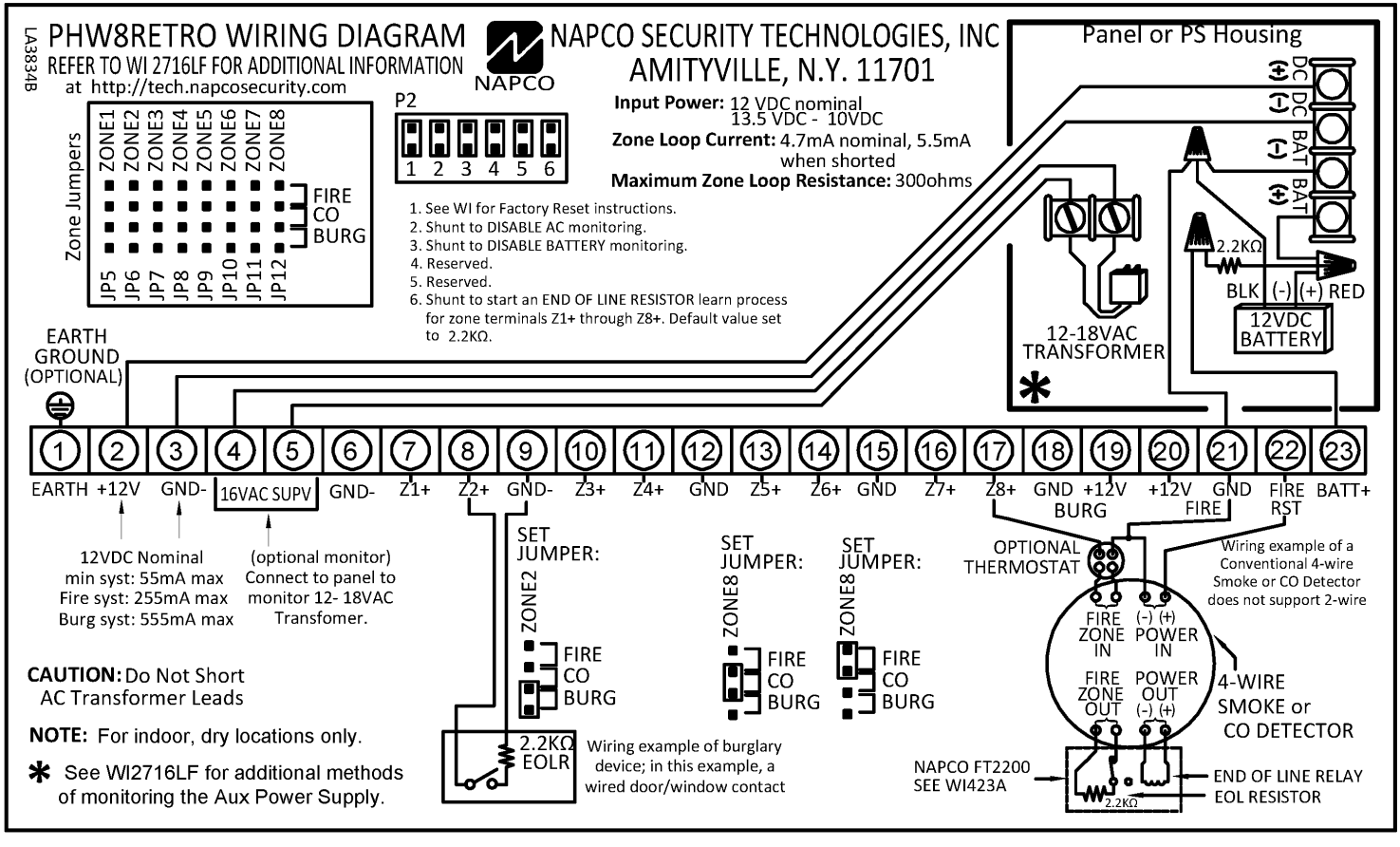
For Burglary Installations Only (No AC Monitoring / No Battery Monitoring)



Power Supply* (12VDC / 2A)

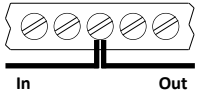
For Non-UL installations with no fire devices and no backup battery

*Example shown is the MG Electronics® model ST122A

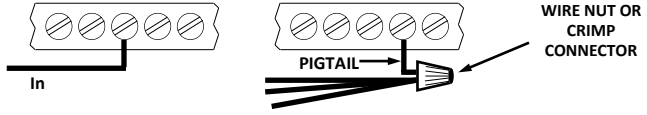

LA3834B
PHW8RETRO WIRING DIAGRAM
REFER TO WI 2716LF FOR ADDITIONAL INFORMATION
at http://tech.napcosecurity.com
NAPCO
NAPCO SECURITY TECHNOLOGIES, INC
AMITYVILLE, N.Y. 11701
Input Power: 12 VDC nominal
13.5 VDC - 10VDC
Zone Loop Current: 4.7mA nominal, 5.5mA when shorted
Maximum Zone Loop Resistance: 300ohms
Zone Jumpers
ZONE1 ZONE2 ZONE3 ZONE4 ZONE5 ZONE6 ZONE7 ZONE8
FIRE
CO
BURG
JP5 JP6 JP7 JP8 JP9 JP10 JP11 JP12
P2
1 2 3 4 5 6
1. See WI for Factory Reset instructions.
2. Shunt to DISABLE AC monitoring.
3. Shunt to DISABLE BATTERY monitoring.
4. Reserved.
5. Reserved.
6. Shunt to start an END OF LINE RESISTOR learn process for zone terminals Z1+ through Z8+. Default value set to 2.2KΩ.
Panel or PS Housing
DC (+)
DC (-)
BAT (-)
BAT (+)
2.2KΩ
BLK (-) (+) RED
12VDC BATTERY
12-18VAC TRANSFORMER
*
EARTH GROUND (OPTIONAL)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
EARTH +12V GND- 16VAC SUPV GND- Z1+ Z2+ GND- Z3+ Z4+ GND Z5+ Z6+ GND Z7+ Z8+ GND +12V +12V GND FIRE BATT+
BURG FIRE RST
12VDC Nominal
min syst: 55mA max
Fire syst: 255mA max
Burg syst: 555mA max
(optional monitor)
Connect to panel to monitor 12- 18VAC Transfomer.
SET JUMPER:
ZONE2
FIRE
CO
BURG
2.2KΩ EOLR
Wiring example of burglary device; in this example, a wired door/window contact
SET JUMPER:
ZONE8
FIRE
CO
BURG
SET JUMPER:
ZONE8
FIRE
CO
BURG
OPTIONAL THERMOSTAT
Wiring example of a Conventional 4-wire Smoke or CO Detector does not support 2-wire
FIRE ZONE IN
(-) (+) POWER IN
FIRE ZONE OUT
POWER OUT (-) (+)
4-WIRE SMOKE or CO DETECTOR
NAPCO FT2200
SEE WI423A
END OF LINE RELAY
EOL RESISTOR
2.2KΩ
CAUTION: Do Not Short AC Transformer Leads
NOTE: For indoor, dry locations only.
* See WI2716LF for additional methods of monitoring the Aux Power Supply.

IMPORTANT WIRING METHODS

For single-conductor terminal blocks (like the type shown at left), to terminate more than one conductor to a terminal, use the wiring methods shown at right:

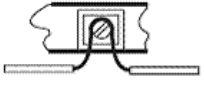


Incorrect

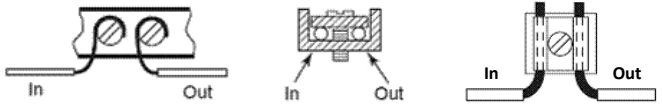


Correct -- Single incoming and/or pigtail with UL Certified wire nut / crimp connectors

For "barrier" type terminal blocks (like the type shown at left), to terminate two conductors to a terminal, use the wiring methods shown at right:

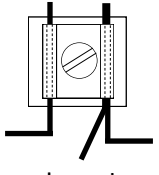


Incorrect

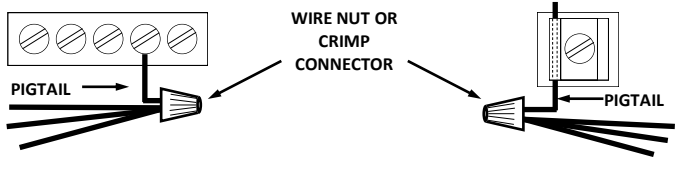


Correct -- Separate incoming and outgoing conductors

To terminate more than two conductors or conductors of different wire sizes to a terminal, use the "pigtail" type wiring method as shown at right. Use insulated wire for the pigtail, and firmly secure the conductors to the pigtail using an appropriate wire nut or crimp connector for the number and gauge of conductors used.



Incorrect



Correct -- Use UL Certified pigtail or wire nut / crimp connector