ADDENDUM
GEM-EZM4/8
ZONE EXPANSION MODULE for the
GEM-P1664 Control Panel

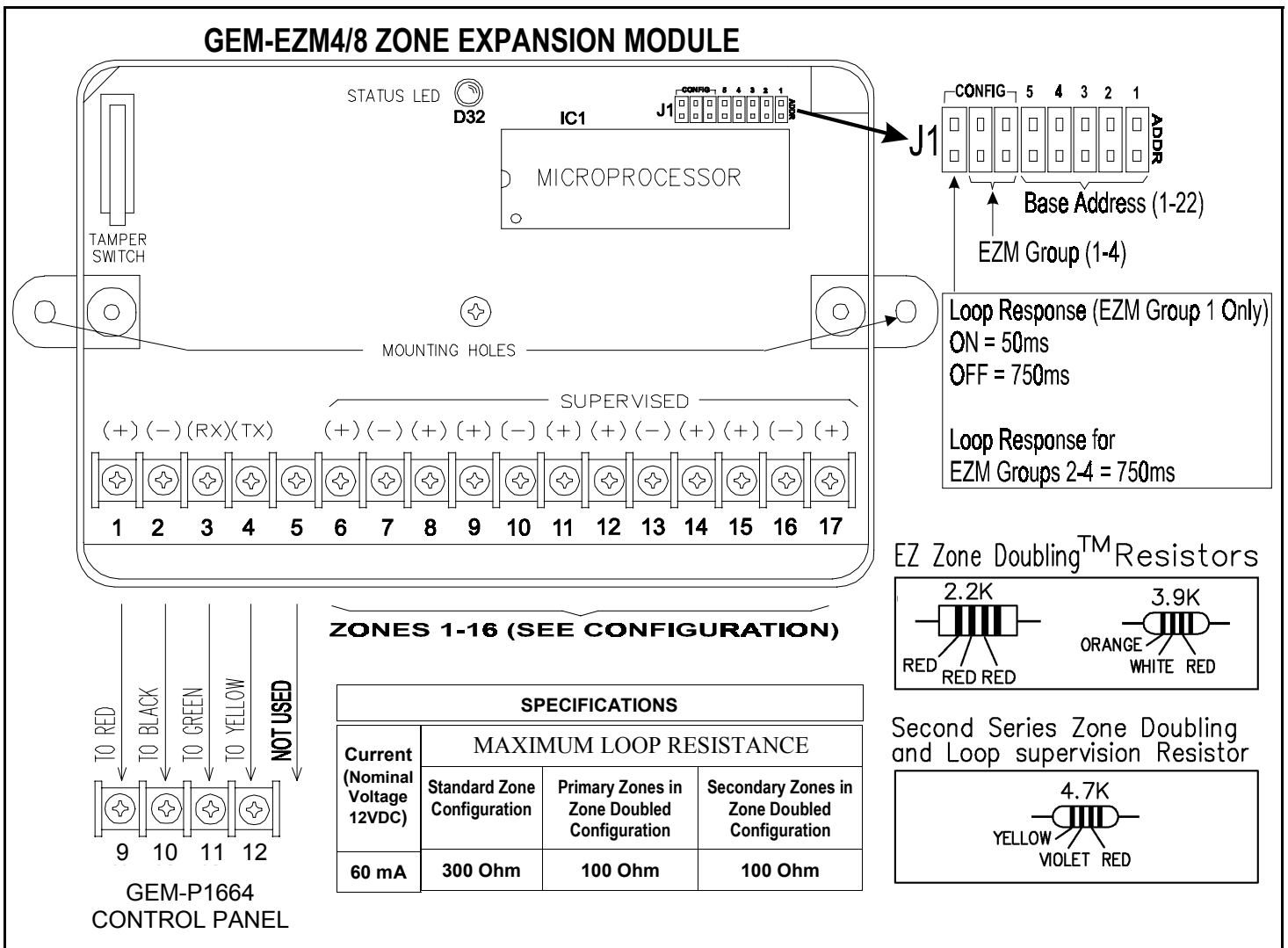## DESCRIPTION

The capacity of the GEM-P1664 control panel may be expanded through the use of a **GEM-EZM4/8** Zone Expansion Module. Each GEM-EZM4/8 module provides up to 16 additional zones, and may be configured in a number of methods: 4 zones, 8 zones, 12 zones or 16 zones. Using any of these configurations, several GEM-EZM4/8 modules may be combined as necessary to supply the required number of zones to the GEM-P1664 control panel. Refer to the GEM-P1664 Installation Instructions and GEM-P1664 Programming Instructions for wiring requirements. **Note:** Although the GEM-EZM4/8 may also be used with the GEM-P816 and GEM-P1632 control panels, the features described in this addendum apply only to the GEM-P1664.
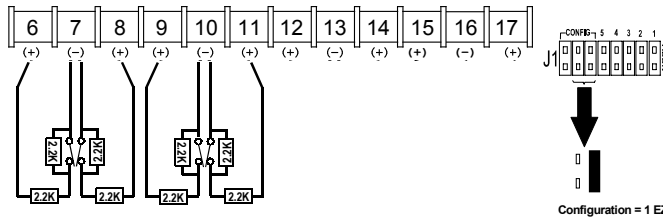
WIRING

Wire the expansion zones to the module and the module to the control panel in accordance with the wiring diagrams shown using wire no thinner than #22AWG. Install EOL (end-of-line) resistors on all zones even if one or more zones are not used. **NOTE:** The addition of Zone Expansion Modules will reduce the amount of current available by 60mA at the control panel's Auxiliary Power Output terminals.

GEM-EZM4/8 ZONE EXPANSION MODULE

Loop Response (EZM Group 1 Only)
ON = 50ms
OFF = 750ms

Loop Response for
EZM Groups 2-4 = 750ms

Base Address (1-22)
EZM Group (1-4)

EZ Zone Doubling™ Resistors
2.2K — RED RED RED
3.9K — ORANGE WHITE RED

Second Series Zone Doubling and Loop supervision Resistor
4.7K — YELLOW VIOLET RED

		SPECIFICATIONS		
Current (Nominal Voltage 12VDC)	**MAXIMUM LOOP RESISTANCE**			
	Standard Zone Configuration	**Primary Zones in Zone Doubled Configuration**	**Secondary Zones in Zone Doubled Configuration**	
60 mA	**300 Ohm**	**100 Ohm**	**100 Ohm**	

GEM-P1664 CONTROL PANEL

GEM-EZM4/8 Wiring Diagram

SERIES ZONE AND LOOP SUPERVISION CONFIGURATION (1 EZM-4 ZONES)

Loop supervision with one contact using a 2.2K across the contact and a 2.2K EOL resistor, as shown in the illustration at right:
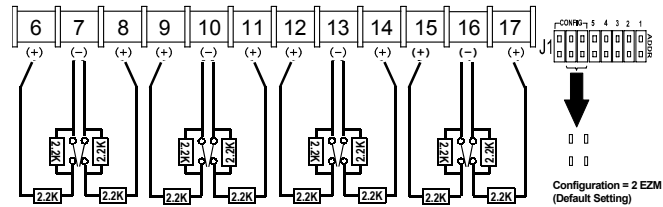

Configuration = 1 EZM

For "Series Zone and Loop Supervision Configuration":
1. Do not program NO EOLR (by zone)
2. Program Day Zone on Open (by zone)
3. Enable Zone Supervision (global)

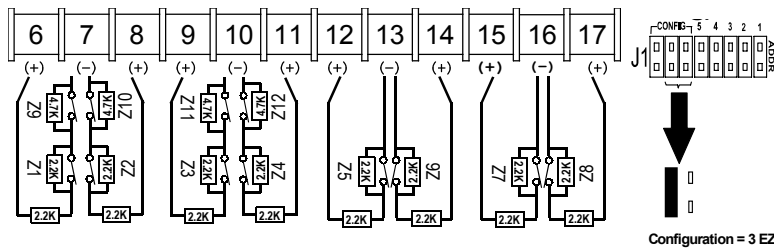# SERIES ZONE AND LOOP SUPERVISION CONFIGURATION (2 EZM-8 ZONES)

Loop supervision with one contact using a 2.2K across the contact and a 2.2K EOL resistor, as shown in the illustration at right:

Configuration = 2 EZM (Default Setting)

"Series Zone and Loop Supervision" Zone Operation		
	Armed (Set) or 24H	Disarmed (unset)
1) Series N/C device active	Alarm	Zone Fault
2) Parallel N/O device active	N/A	N/A
3) Zone Short	Alarm and Day Zone TBL*	Day Zone TBL* and Zone Fault
4) Zone Open	Alarm and Day Zone TBL*	Day Zone TBL* and Zone Fault

* Day Zone TBL generates a pulsing keypad sounder, "DAY ZONE TROUBLE" on LCD and SYS TBL Icon on when disarmed. A System Trouble E98-00 will remain on the system until all day zone troubles have been reset.

SERIES ZONE DOUBLING™ AND LOOP SUPERVISION (3 EZM-12 ZONES)
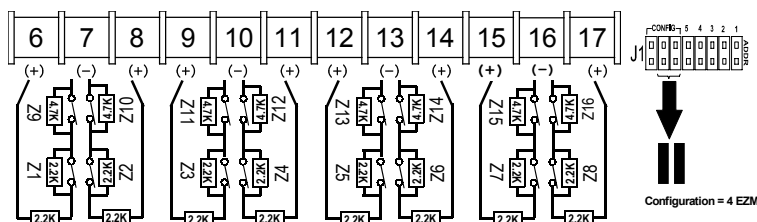

Configuration = 3 EZM

Each loop has 2 zone resistors (2.2K and 4.7K) for each zone, and a third 2.2K EOLR provides loop supervision (see diagram). In loop 1, the 2.2K contact resistor ("Z1") represents the primary zone and the 4.7K resistor ("Z9") represents the secondary zone. In the disarmed state, a loop open or shorted (day zone trouble) will display at the keypad and is reported to the central station (if selected). The loop supervision function will continue to operate regardless of the state of the zone contacts on that loop, even if a loop is bypassed. In the armed state, the loop supervision function will report and display a system trouble notification. When the door/window contact is actuated by a magnet, the contact is closed (shorting out the zone resistor). When the contact is open, the contact places the zone resistor in the circuit. The panel can detect the following loop conditions, as follows:
- A. Loop completely open or shorted: Day Zone Trouble
- B. All Contacts closed: Loop Resistance=2.2K (Normal)
- C. All Contacts Open: Loop Resistance=9.1K
- D. Contact 1 ("Z1") open: Loop Resistance= 4.4K
- E. Contact 2 ("Z9") open: Loop Resistance= 6.9K

To activate programming addresses for Zone Doubling and Loop Supervision, refer to the GEM-P1664 Programming Instructions.

For "Series Zone Doubling & Loop Supervision" Configuration:
1. Do not program NO EOLR (by zone)
2. Program Day Zone on Open (by zone)
3. Enable Zone Supervision (global)

SERIES ZONE DOUBLING™ AND LOOP SUPERVISION (4 EZM-16 ZONES)

Configuration = 4 EZM

"Series Zone Doubling and Loop Supervision" Zone Operation		
	Armed (Set) or 24H	Disarmed (unset)
1) Series N/C device active	Alarm	Zone Fault
2) Parallel N/O device active	N/A	N/A
3) Zone Short	Alarm and Day Zone TBL*	Day Zone TBL* and Zone Fault
4) Zone Open	Alarm and Day Zone TBL*	Day Zone TBL* and Zone Fault

* Day Zone TBL generates a pulsing keypad sounder, "DAY ZONE TROUBLE" on LCD and SYS TBL Icon on when disarmed. A System Trouble E98-00 will remain on the system until all day zone troubles have been reset.

The base address is assigned to the module by proper selection of Address Jumpers (to the right of the LED) in accordance with the following tables. Also refer to the Zone Wiring Diagram.

GEM-P1664 WITH ZONE DOUBLING DISABLED (ZONES 1-8 ON CONTROL PANEL)												
Base Address Jumpers					Config.1(EZM) 4 Zone		Config.2 (2EZM) 8 Zone		Config.3 (3 EZM) 12 Zone		Config.4(4 EZM) 16 Zone	
5	4	3	2	1	Base Addr	Zone No.	Base Addr	Zone No.	Base Addr	Zone No.	Base Addr	Zone No.
OFF	OFF	OFF	OFF	ON	1	9-12	1,2	9-16	1,2,3	9-20	1,2,3,4	9-24
OFF	OFF	OFF	ON	OFF	2	13-16	2,3	13-20	2,3,4	13-24	2,3,4,5	13-28
OFF	OFF	OFF	ON	ON	3	17-20	3,4	17-24	3,4,5	17-28	3,4,5,6	17-32
OFF	OFF	ON	OFF	OFF	4	21-24	4,5	21-28	4,5,6	21-32	4,5,6,7	21-36
OFF	OFF	ON	OFF	ON	5	25-28	5,6	25-32	5,6,7	25-36	5,6,7,8	25-40
OFF	OFF	ON	ON	OFF	6	29-32	6,7	29-36	6,7,8	29-40	6,7,8,9	29-44
OFF	OFF	ON	ON	ON	7	33-36	7,8	33-40	7,8,9	33-44	7,8,9,10	33-48
OFF	ON	OFF	OFF	OFF	8	37-40	8,9	37-44	8,9,10	37-48	8,9,10,11	37-52
OFF	ON	OFF	OFF	ON	9	41-44	9,10	41-48	9,10,11	41-52	9,10,11,12	41-56
OFF	ON	OFF	ON	OFF	10	45-48	10,11	45-52	10,11,12	45-56	10,11,12,13	45-60
OFF	ON	OFF	ON	ON	11	49-52	11,12	49-56	11,12,13	49-60	11,12,13,14	49-64
OFF	ON	ON	OFF	OFF	12	53-56	12,13	53-60	12,13,14	53-64		
OFF	ON	ON	OFF	ON	13	57-60	13,14	57-64				
OFF	ON	ON	ON	OFF	14	61-64						

GEM-P1664 WITH ZONE DOUBLING ENABLED (ZONES 1-16 ON CONTROL PANEL)												
Base Address Jumpers					Config.1(EZM) 4 Zone		Config.2 (2EZM) 8 Zone		Config.3 (3 EZM) 12 Zone		Config.4(4 EZM) 16 Zone	
5	4	3	2	1	Base Addr	Zone No.	Base Addr	Zone No.	Base Addr	Zone No.	Base Addr	Zone No.
OFF	OFF	OFF	OFF	ON	1	17-20	1,2	17-24	1,2,3	17-28	1,2,3,4	17-32
OFF	OFF	OFF	ON	OFF	2	21-24	2,3	21-28	2,3,4	21-32	2,3,4,5	21-36
OFF	OFF	OFF	ON	ON	3	25-28	3,4	25-32	3,4,5	25-36	3,4,5,6	25-40
OFF	OFF	ON	OFF	OFF	4	29-32	4,5	29-36	4,5,6	29-40	4,5,6,7	29-44
OFF	OFF	ON	OFF	ON	5	33-36	5,6	33-40	5,6,7	33-44	5,6,7,8	33-48
OFF	OFF	ON	ON	OFF	6	37-40	6,7	37-44	6,7,8	37-48	6,7,8,9	37-52
OFF	OFF	ON	ON	ON	7	41-44	7,8	41-48	7,8,9	41-52	7,8,9,10	41-56
OFF	ON	OFF	OFF	OFF	8	45-48	8,9	45-52	8,9,10	45-56	8,9,10,11	45-60
OFF	ON	OFF	OFF	ON	9	49-52	9,10	49-56	9,10,11	49-60	9,10,11,12	49-64
OFF	ON	OFF	ON	OFF	10	53-56	10,11	53-60	10,11,12	53-64		
OFF	ON	OFF	ON	ON	11	57-60	11,12	57-64				
OFF	ON	ON	OFF	OFF	12	61-64						

PROGRAMMING

The control panel must be programmed with regard to the total number of zones required.   When keypad programming the control panel for the first time, the first programming option of the Easy Menu Driven Program Mode will be to enter the total number of zones in the system, rounded up to the nearest four. You can then support this total by adding the appropriate number of GEM-EZM4/8 modules which can be configured as 4, 8, 12 or 16 zone modules. The number of modules required is a function of the number of zones required as well as the configuration of the EZM's. If 24 additional zones are required and Config 2 (8 zones) is chosen, the number of EZM's required will be 24/8 = 3 EZM's.

When downloading a control panel, the total number of zones is determined on the Zone Features screen by activating the required number of EZM modules in the System Configuration screen.

For Fire Zones, if an EZM module is selected as Config 3 or Config 4, which are both zone doubled configurations, and one of these doubled zones is programmed as a fire zone, the complimentary zone is lost. For example, if an EZM is configured as a 16 zone module (Config 4), and zone 1 of the module is programmed as a Fire Zone, zone 9 of the module will lose the zone doubling profile and cannot be used. It must be strapped out with a Z resistor (3.9K) across the zone. Zone 9 must be skipped in your control panel programming, and the next available zone will be Zone 10.

TAMPER

If the cover is removed, the keypad sounder will pulse, and the display will indicate a zone-module tamper condition along with the module number. Press RESET to silence the sounder.

LOOP RESPONSE

Loop response times for Zones 1 through 8 are programmed in the control panel. Normal loop response for all expansion zones is 750mS. The module already comes without the jumper installed (defaulted to 750ms). To reduce the response time of zones 1 through 4 of the EZM Module to 50mS, add the Loop Response Jumper. To enable normal loop response (750 ms), remove the jumper. Refer to the Wiring Diagram.

STATUS LED

The Status LED displays the condition of the zone module. The following is a list of conditions for the LED:

1. OFF = Control Panel has no power applied.

2. ON Steady = Control Panel has power applied but the panel is not polling because:
   a. the panel is in "CONFIG",
   b. the panel is not programmed correctly to poll the address of the EZM,
   c. the GRN wire is not connected correctly.

3. PULSES off the EZM groups that are being polled.
   a. If the first EZM group (the base number) is polled the LED is normally on and pulses off once slowly.
   b. If the first and second EZM group are polled then the LED is normally on and pulses off once then twice sequentially.
   c. If the first, second, third and fourth groups are polled the LED is normally off and will pulse 1, 2, 3, 4 sequentially.

4. Rapid Flashing.
   a. GEM-EZM4/8 is connected to wrong panel type.
   NOTE: Only GEM-P1664 may be connected.