General Purpose IO
Technical Manual

www.jva-fence.com.au

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INTRODUCTION

The Z-Series Electric Fence Energisers and Peripheral Devices are designed and manufactured in Brisbane, Australia.

This document is manual for the JVA General Purpose IO (Input/Output) board. It provides stand alone Inputs and Outputs that easily integrate external equipment into the Perimeter Patrol System. The inputs can be used monitor devices such as motion detectors, IR beams or door contacts, while the outputs can be used to turn on security lighting, sirens or even water pumps.

This product can also be used as a substitute for the PAE201 as it can provide Output Expansion for one or more Energisers by monitoring its/their status. This Output Expansion is available for all current Z-Series Energiser variants (Z13, Z14, Z18, Z28) and Monitors (ZM1, ZM20).

Finally, the GPIO board can be configured to provide a combination of Perimeter Patrol Outputs and Energiser Expansion Outputs on the one board for greater flexibility.

This manual relates to:

PCB version: 1v0 and higher
Firmware version: 1.00 or higher
Current Firmware: 1.00

Scope and Purpose

- This document is intended for the training of engineering and technical personnel.
- As a reference for the features and specifications per version, as such it will be kept up to date and re-issued with each revision of the PCB or firmware. Please ask JVA for the latest version.

Glossary

GPIO	–	General Purpose IO board (acronym for this product)
IO	–	Inputs/Outputs
Zone	–	A high voltage fence output and return to provide perimeter security.
Bi-polar	–	A Bi-Polar fence is an all-live wire fence. A Bi-Polar Energiser has the ability to pulse synchronised positive and negative pulses down alternate wires of the same fence line.
Conventional	–	A Conventional electric fence is wired in such a way that alternate live and earth wires are on the fence.
On/Armed	–	The Energiser is transmitting high (or low) voltage pulses onto the fence. The fence is secure.
Off/Disarmed	–	The fence zone is unsecure, but is safe to perform maintenance on.
PCB	-	Printed Circuit Board

SPECIFICATIONS

Specification Name	Specification
Energiser Connection	Keypad Bus (+12, 0V, DAT)
Max Power Consumption (+12Vdc)	120mA
User Inputs	4
Switched Outputs	4 x Form C (5 Amp) relay
Recommended Operating Temperature	-15°C to +50°C
Enclosure	IP4x ABS Plastic
Size – PCB only	100mm high, 100mm wide, 30mm deep
Size – Enclosure	120mm high, 72mm wide, 35mm deep
Weight – packed (PCB only)	80 grams
Weight – packed (with Enclosure)	120 grams

Specifications Table

Notes for all Z-Series energisers

2.1 ☠ DANGER ☠

- *There are potentially lethal high voltages inside the Z Series Energisers.*

- *The high voltage inside the Z Series Energisers may take a long time to discharge. Wait at least 10 minutes after turning off before opening the case.*

- *Before working on the high voltage wiring of an electric fence, it is recommended that the energiser be disarmed and an intentional short circuit is placed from the fence live wires to earth. This is a sensible precaution against the energiser being turned on by others or malfunctioning while working on the fence.*

- *If an electric fence is part of a multiple energiser system and the distance between two separate electric fences, each powered by separate energisers, is less than 2.5 meters, the energisers must be configured to operate in group mode.*

PERIMETER PATROL CONFIGURATION

1. Install the GPIO (General Purpose IO) Enclosure in a water resistant housing

2. Install the GPIO circuit board into the GPIO Enclosure

3. Connect a 12V dc supply and a Keypad to the circuit board

NOTE 1: As the programming options of the GPIO are different from the Z-Series Energisers, each board must be programmed separately. Ensure that only the Keypad is connected to the GPIO when configuring it.

NOTE 2: As the GPIO board consumes approximately 100mA for normal operation, it should not be powered from the Keypad Bus.
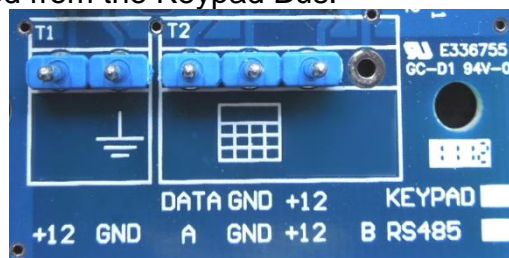
4. Connect a PAE091 programming display (not supplied) to the DISPLAY socket using the ribbon cable supplied with the unit.
    a. The Red wire should align to towards the RoHS symbol on the GPIO PCB.
    b. The Red wire should also align with the text J1 on the PAE091. Ensure the connector is centred left to right. Newer PAE091 have a 'keyed' connector at J1 making this connection easier

NOTE: The PAE091 is the same display as used in the Z28 and ZM1 and can be 'borrowed' from one of these products. It is only required for configuring the GPIO board
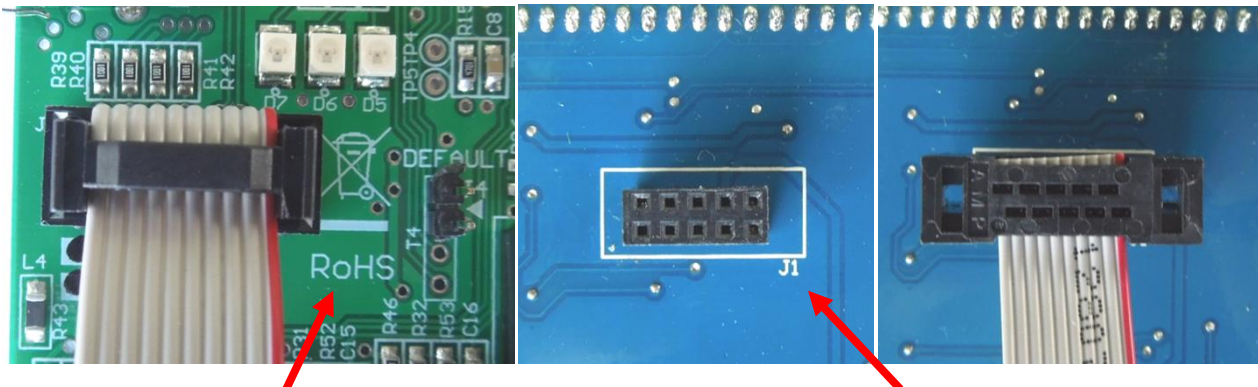

GPIO RoHS Symbol   PAE091 PCB J1

5. Turn on the Power to the dc supply

6. On the Keypad, type [INSTALLER PIN]*0# (Star Zero Hash) to enter Programming Mode (Note: The default Installer PIN is 012345)

7. The PAE091 programming display will now show Option 1 and the value in Option 1

Option Number ← | Option Value →
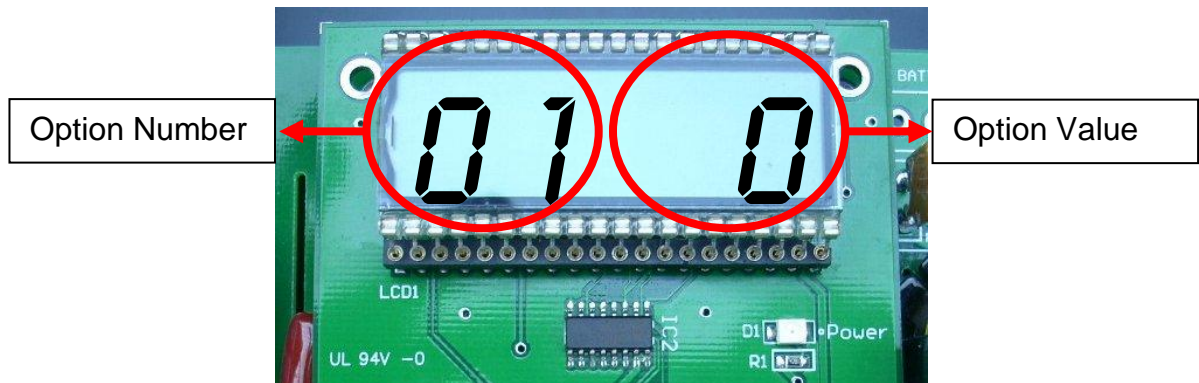
8. Change the Group ID (26xx#) of the GPIO to an unused value (1-15) in the Z-Series Energiser Group. Setting this value to 1 will configure the GPIO as the Group Master Device. Refer to page 19 (ɢʀᴏᴜᴘ ɪᴅ) for more information.

9. Configure the Inputs of the GPIO as required. Refer to page 16 (ɪɴᴘᴜᴛ ᴛʏᴘᴇꜱ).

10. Change the Relay functions as required. Refer to page 18 (ʀᴇʟᴀʏ ꜰᴜɴᴄᴛɪᴏɴꜱ). For Example: to change ʀᴇʟᴀʏ ᴏᴜᴛᴘᴜᴛ 2 to be controlled by Perimeter Patrol, type 2220# on the keypad. The programming display will show this change
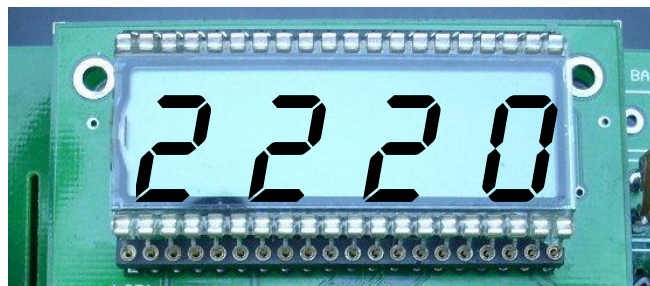
11. For each Relay Output that is not controlled by Perimeter Patrol, set the Energiser Expansion ID value. Refer to page 20 (ʀᴇʟᴀʏ ᴇxᴘᴀɴꜱɪᴏɴ ɪᴅ). For Example: to set the ʀᴇʟᴀʏ ᴏᴜᴛᴘᴜᴛ 3 to monitor the status of Energiser (ɪᴅ 3) type 3303# on the keypad. The programming display will show this change

NOTE: The GPIO relays are configured to provide Expansion for Energiser ID 1 by default
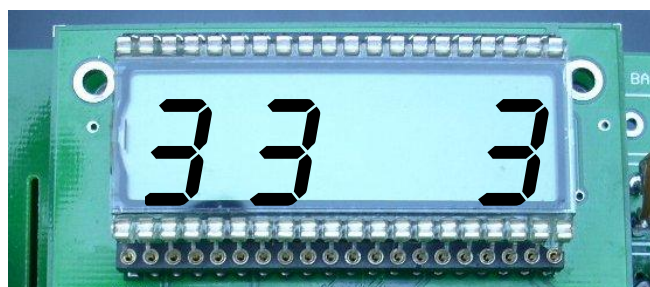
12. Change other Options as required

13. Exit Programming Mode by typing *# (Star Hash). The programming display will stop showing options. Remove the programming display

14. Disconnect the Keypad from the GPIO PCB and now connect the Energiser Keypad Bus to the DATA and GND pins of the GPIO PCB

15. Connect the external equipment to the Relay Output on the GPIO PCB

16. Connect the external equipment to the Inputs on the GPIO PCB

17. Test the Relay Outputs change state when the Monitored Energiser triggers the required Function

18. Close the GPIO Enclosure

ENERGISER OUTPUT EXPANSION CONFIGURATION

1. Install the GPIO (General Purpose IO) Enclosure in a water resistant housing

2. Install the GPIO circuit board into the GPIO Enclosure

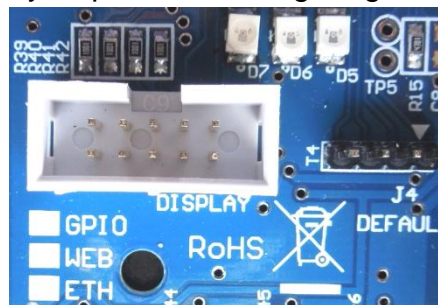3. Connect a 12V dc supply and a Keypad to the circuit board

NOTE 1: As the programming options of the GPIO are different from the Z-Series Energisers, each board must be programmed separately. Ensure that only the Keypad is connected to the GPIO when configuring it.

NOTE 2: As the GPIO board consumes approximately 100mA for normal operation, it should not be powered from the Keypad Bus.
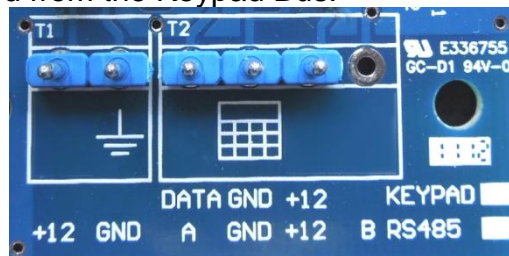
4. Connect a PAE091 programming display (not supplied) to the DISPLAY socket

NOTE: The PAE091 is the same display as used in the Z28 and ZM1 and can be 'borrowed' from one of these products. It is only required for configuring the GPIO board.

5. Turn on the Power to the dc supply

6. On the Keypad, type [INSTALLER PIN]*0# (Star Zero Hash) to enter Programming Mode (Note: The default Installer PIN is 012345)

7. The PAE091 programming display will now show Option 1 and the value in Option 1

Option Number ← 01 0 → Option Value
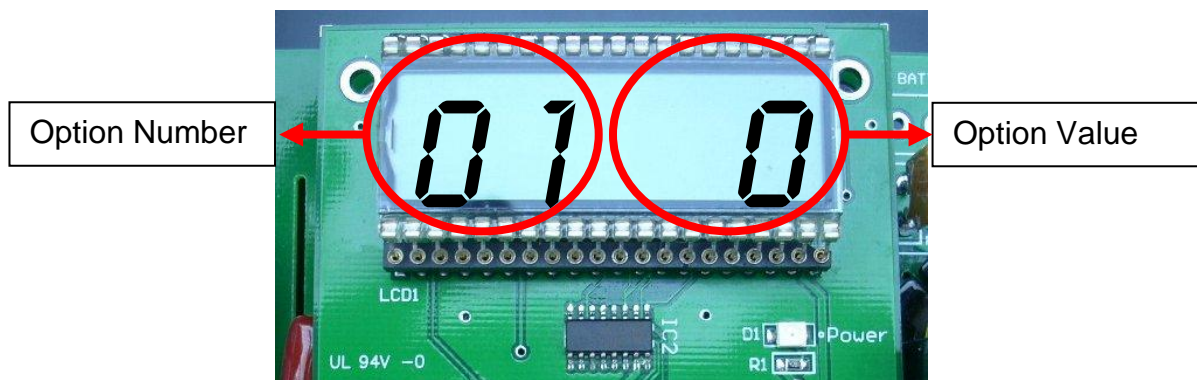
8. Change the Relay functions as required. Refer to page 17 (RELAY FUNCTIONS). For Example: to change RELAY OUTPUT 2 to trigger during a FENCE 1 ALARM, type 2200# on the keypad. The programming display will show this change.

NOTE: Defaults are: RELAY 1 = Siren; RELAY 2 = Strobe; RELAY 3 = Fence 1

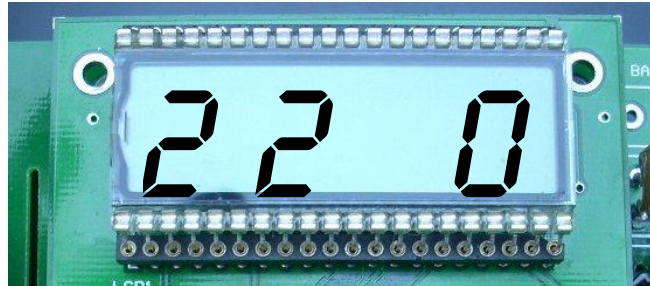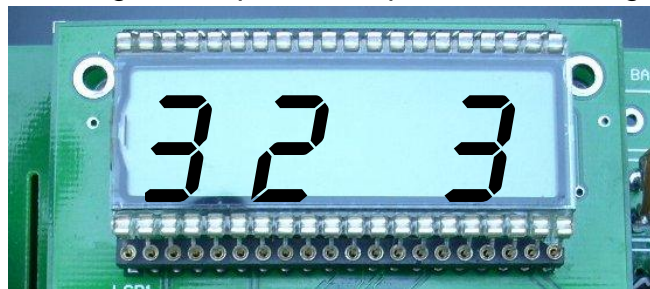9. Change the Expansion IDs for each Relay to match the Group ID of the Energiser(s) being expanded. Refer to page 20 (RELAY MONITOR). Continued Example: to set the RELAY OUTPUT 2 to trigger when Energiser (GROUP ID 3) triggers a FENCE 1 ALARM, type 3203# on the keypad.

NOTE: The GPIO relays are configured to provide Expansion for Energiser ID 1 by default

10. Change other Programming Options as required

11. Exit Programming Mode by typing *# (Star Hash). The programming display will stop showing options. Remove the programming display

12. Disconnect the Keypad from the GPIO circuit board and now connect the Energiser Keypad Bus to the DATA and GND pins of the GPIO circuit board

13. Connect the external equipment to the Relay Output on the GPIO circuit board

14. Test the Relay Outputs change state when the Monitored Energiser triggers the required Function

15. Close the GPIO Enclosure

DESCRIPTION

Circuit Board Layout

Keypad Bus Connections

+12 Vdc Supply Connections

Programming Display Connector

Input Connections

Relay Output Connections
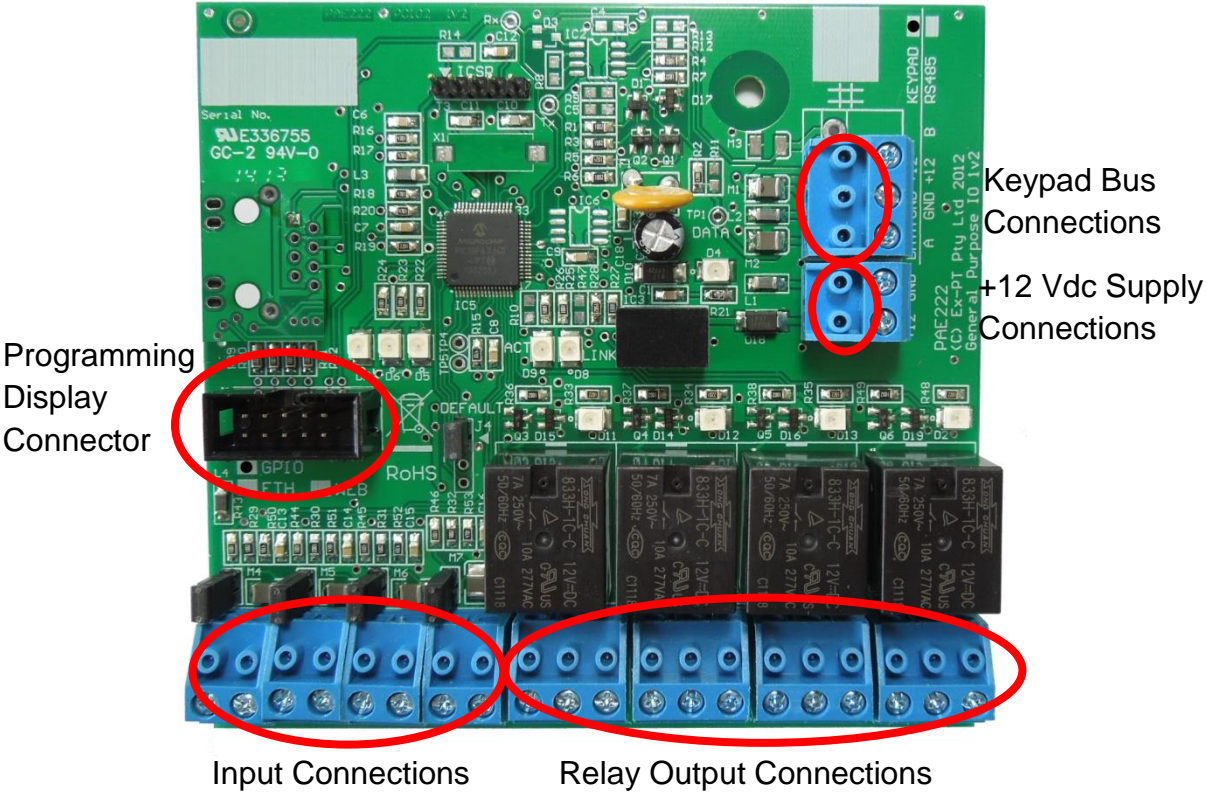
Input Wiring Examples
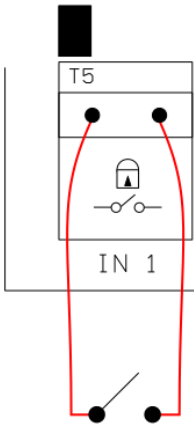
Dry Contacts   Pull down to Ground   Pull up to +5V   Pull up to +12V
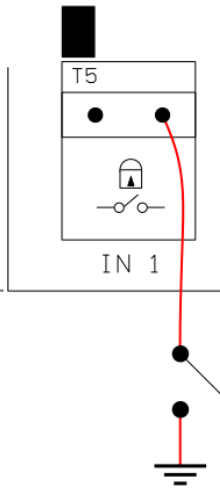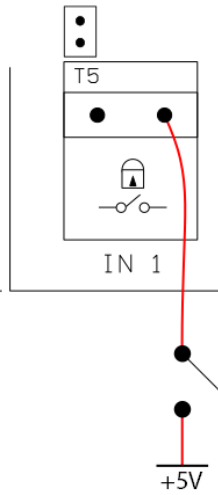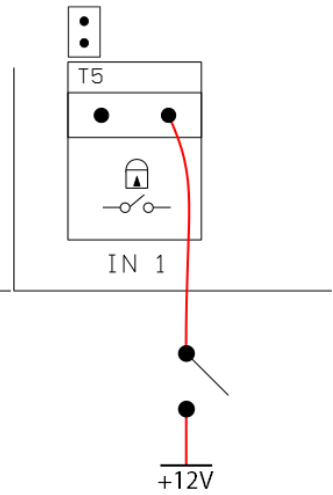
Output States

PAE222 without power   Relay Function in Alarm / Coms Fail to Energiser / Perimeter Patrol Disconnected   Relay Function not in Alarm
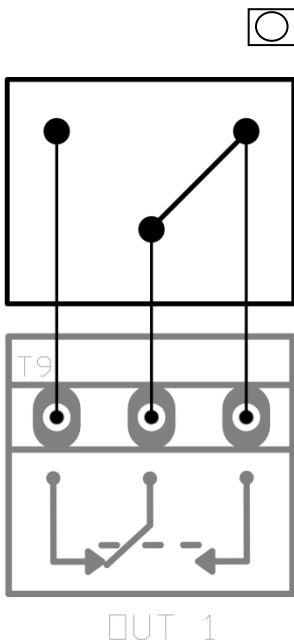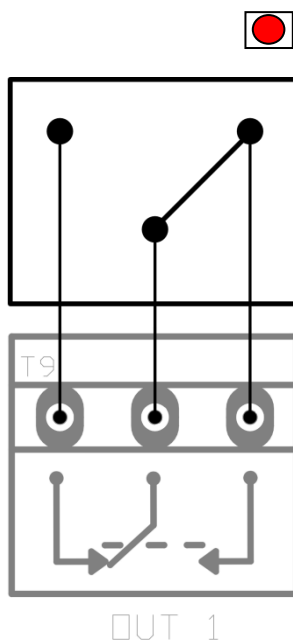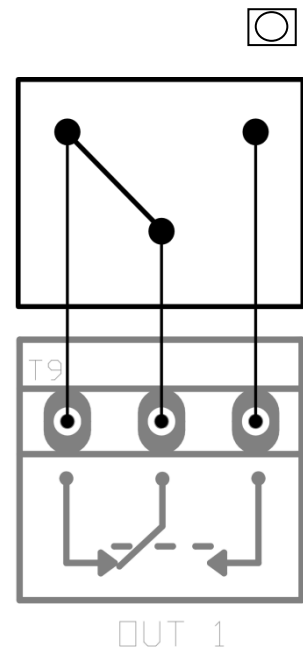
When an Output is configured as ʜᴏꜱᴛ ᴄᴏɴᴛʀᴏʟʟᴇᴅ, the Output State will vary depending on how Perimeter Patrol is configured for this output.

LED Indications
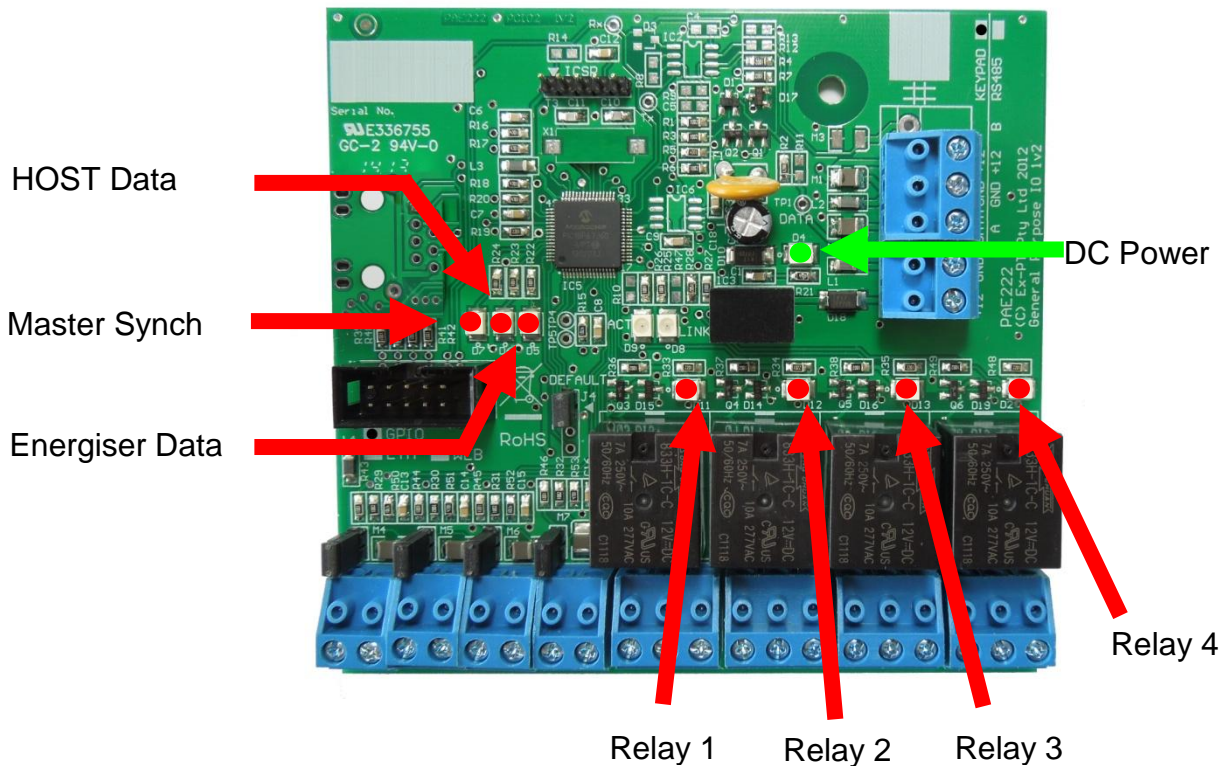
DC Power – the Green LED (D4) will be ON when the GPIO board has power

Master Synch – the Red LED (D7) will BLINK approximately once every second when the GPIO board is configured as a Master Device (Option 26). This is the Energiser Synchronisation

Energiser Data – the Red LED (D5) will BLINK rapidly (one blink per Energiser/Monitor connected) when the GPIO board is receiving data from an Energiser or Monitor

HOST Data – the Red LED (D5) will BLINK when the GPIO board is receiving data from the HOST such as Perimeter Patrol

Relay 1, 2, 3, 4 – the Red LED (D11, D12, D13 and D14) will be ON when the Output Relay is in the Alarm state

INSTALLATION PROGRAMMING OPTIONS

The GPIO board has non-volatile memory that holds programming options (Setup Parameters). These are factory pre-set but can be field programmed using a keypad.

Entering Programming Mode

To enter programming mode, enter the 6 digit Installer PIN followed by *0# keys (Star, Zero, Hash). The keypad will beep twice to indicate that the command was accepted. If the PIN was incorrect the keypad will beep 3 times. The LCD on the PAE091 programming display will now show the first programming option and its current setting (value).

Pressing the # key will cycle through all the options on the LCD.

Note: Not all numbers are used.

The default Installer PIN is 012345

To Exit Programming Mode

To exit programming mode press *# (Star, Hash). If left unattended the GPIO will Time Out and Auto Exit Programing mode after 1 minute.

Changing the Installer PIN

The installer PIN may only be changed while in programming mode.

To enter a new installer pin, press 00 (Zero, Zero) followed by the new 6 digit PIN, then the # key.

If you cannot remember your Installer or User PIN, return the GPIO memory to default. To do this, remove power (+12dc), remove jumper J4 and reconnect the power for about 10 seconds. Do not forget to re-fit J4.

This will return all options to the factory set defaults.

Changing an Option

Most of the options have possible values in the range of 0 to 9.

To change any options, first check the option number (see table below) and then the table of values for that option. Then press the option number followed by the required value.

Example 1 (a one digit value):

To change the Siren On Time (Option 08) to 1 Minute (Value 2) press **082#**, the keypad will beep twice to indicate that the command was successful. The LCD will immediately show the updated value.

Example 2 (a two digit value):

To change the Group ID (Option 26) to 5 (Value 5) press **2605#**, the keypad will beep twice to indicate that the command was successful. The LCD will immediately show the updated value.

Programming Options

Option	Function	Description
08	SIREN ON TIME	Time that the siren (and keypad beeper) will stay ON after an alarm
09	SIREN OFF TIME	The amount of time the siren will be OFF for after the SIREN ON TIME has expired
10	SIREN CYCLES	The number of times the siren will sound for the SIREN ON TIME.
11	INPUT 1 TYPE	Allows the Input to function as a Normally Open, Normally Closed, Momentary or Pulse Extend switch
12	INPUT 2 TYPE	Allows the Input to function as a Normally Open, Normally Closed, Momentary or Pulse Extend switch
13	INPUT 3 TYPE	Allows the Input to function as a Normally Open, Normally Closed, Momentary or Pulse Extend switch
14	INPUT 4 TYPE	Allows the Input to function as a Normally Open, Normally Closed, Momentary or Pulse Extend switch
16	BINARY OPTIONS	Miscellaneous options
18	BINARY OPTIONS 2	Miscellaneous options
20	AUTO REARM TIME	Sets the time which must elapse after an alarm has timed out (completed the SIREN CYCLES) before the GPIO board will automatically re-arm ready for the next alarm event
21	RELAY 1	Used to assign an alarm function to relay 1
22	RELAY 2	Used to assign an alarm function to relay 2
23	RELAY 3	Used to assign an alarm function to relay 3
24	RELAY 4	Used to assign an alarm function to relay 4
26	GROUP ID	Allows the device to be set as a Master or slave in a synchronised group.
31	RELAY 1 MONITOR ID	Used to assign an Energiser ID to the relay function
32	RELAY 2 MONITOR ID	Used to assign an Energiser ID to the relay function
33	RELAY 3 MONITOR ID	Used to assign an Energiser ID to the relay function
34	RELAY 4 EXPANSION ID	Used to assign an Energiser ID to the relay function
36	RELAY 1 ZM20 SECTOR	Set relay 1 to trigger when this ZM20 Sector alarms
37	RELAY 2 ZM20 SECTOR	Set relay 2 to trigger when this ZM20 Sector alarms
38	RELAY 3 ZM20 SECTOR	Set relay 3 to trigger when this ZM20 Sector alarms
39	RELAY 4 ZM20 SECTOR	Set relay 4 to trigger when this ZM20 Sector alarms

Siren On Time (08x#)

This option sets the duration of time that the siren will remain ᴏɴ after a fence alarm occurs. After this time the siren will turn off for the Sɪʀᴇɴ Oғғ Tɪᴍᴇ indicated in Siren Off Time. The siren will sound again if the alarm is still present after this *off* time has passed.

The default is 3 Minutes. This may be the subject of local regulations to stop an alarm causing undue disturbance to neighbours, etc.

Note: the Sɪʀᴇɴ Oɴ Tɪᴍᴇ will be cut short if the battery falls below the low battery level.

Value	On Time
0	10 Seconds
1	30 Seconds
2	1 Minute
3	2 Minutes
4	3 Minutes
5	4 Minutes
6	5 Minutes
7	6 Minutes
8	7 Minutes
9	8 Minutes

Siren On Time

Siren Off Time (09x#)

This option sets the amount of time the siren will be ᴏғғ for after the Sɪʀᴇɴ Oɴ Tɪᴍᴇ has expired. If an alarm is still present after this *off* time the siren will sound again.

Value	Off Time
0	10 Seconds
1	1 Minute
2	2 Minute
3	5 Minutes
4	10 Minutes
5	20 Minutes
6	30 Minutes
7	40 Minutes
8	50 Minutes
9	60 Minutes

Siren Off Time

Siren Cycles (10x#)

This option sets the maximum number of times the siren will sound for the "on time" if the alarm continues. This may be limited by local regulations to stop an alarm causing undue disturbance to neighbours etc.

Note: This is the maximum number of cycles for 1 continuous alarm, intermittent alarm events could cause more than this number of siren soundings.

Value	Cycles
0	1
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

Siren Cycles

NOTE: Up-to 4 outputs can be configured as Siren Outputs. Each of these outputs operates independently however they utilise the same initial values as configured in options 8, 9 and 10. There is no support for Sirens with different Sɪʀᴇɴ Oɴ Tɪᴍᴇ and Sɪʀᴇɴ Oғғ Tɪᴍᴇ times.

Input Type (11x# - 14x#)

All Inputs can be configured to any of the available Iɴᴘᴜᴛ Tʏᴘᴇs (user assignable).

Iɴᴘᴜᴛ 1 is (11x#), Iɴᴘᴜᴛ 2 is (12x#), Iɴᴘᴜᴛ 3 is (13x#), Iɴᴘᴜᴛ 4 is (14x#).

All Inputs Default to Nᴏʀᴍᴀʟʟʏ Oᴘᴇɴ.

Setting the Iɴᴘᴜᴛ Tʏᴘᴇ to Mᴏᴍᴇɴᴛᴀʀʏ will allow the input to see a momentary switch. This requires an Oɴ time of greater than 100ms but less than 2 seconds. The input value sent to the Perimeter Patrol will toggle every momentary action.

Value (x)	Input type
0	NO Normally open
1	NC Normally Closed
2	Momentary
3	NO Pulse Extend
4	NC Pulse Extend

Input Type

Setting the Iɴᴘᴜᴛ Tʏᴘᴇ to Pᴜʟsᴇ Eхᴛᴇɴᴅ will extend the input signal by 5 seconds. For Example: if a device connected to this input sends a pulse signal that is 0.5 seconds long, Perimeter Patrol will see this as a signal of 5.5 seconds.

Binary Options 2 (18x#)

Each option in this table can be turned on by adding the corresponding value.

For option +1 set 18 to 01, for + 1 and +2 set to 03.

+4: Sets the keypad bus baud rate to 4800 (default is 2400), all units in a group, PC and Keypad must be set to the same baud rate. The change will not take effect until after a reset.

+8: Sets the keypad bus baud rate to 9600 (default is 2400)

Value	Function
0	None
+1	Reserved
+2	Reserved
+4	4800 baud
+8	9600 baud
+16	
+32	

Table 1 - Binary Options 2

Auto Re-Arm time (20x#)

This option sets the time which must elapse before another alarm will sound after the first alarm has timed out (gone completely through its cycles).

If an event occurs (such as a low fence voltage) which triggers the siren, any other events which would otherwise trigger the siren (such as a gate alarm) will be ignored while the siren is sounding and until after the Auto re-arm time has passed. Timing diagrams displaying how the siren reacts to different event combinations are available in section 7.5 of this manual

A setting of 9 will disable auto re-arm.

If this time is set to less than the Sɪʀᴇɴ Oꜰꜰ Tɪᴍᴇ, the Energiser may re-arm in the "Off" time and the number of Sɪʀᴇɴ Cʏᴄʟᴇꜱ will be reduced.

Value	Re-Arm Time
0	0 Seconds (Immediate)
1	30 Seconds
2	1 Minutes
3	2 Minutes
4	3 Minutes
5	4 Minutes
6	5 Minutes
7	6 Minutes
8	7 Minutes
9	Disabled – Do not auto rearm

Auto Re-Arm Time

Relay Functions (21xx# - 24xx#)

The three relays can be set to any of the available functions listed.

Relay 1 is **(21xx#)**

Relay 2 is **(22xx#)**

Relay 3 is **(23xx#)**

Relay 4 is **(24xx#)**   **(PCB version 1v2)**

Defaults

- Relay 1 – Siren   (2108#)
- Relay 2 – Strobe (2209#)
- Relay 3 – Fence 1 (2300#)
- Relay 4 – General (2407#)

NOTE: Each Relay function is connected to a specific energiser, not the GPIO board. Refer to Options 31 – 33.

See the following table for function description.

* These relay functions require the Binary Options (16#) of the Energiser Monitored to be changed. The Do not send Alarm memory feature must be enabled. This will also affect Perimeter Patrol for this Energiser.

Value (x)	Mode
00*	Fence 1
01*	Fence 1 or Disarmed
02	Armed 1
03*	Fence 2
04*	Fence 2 or Disarmed
05	Armed 2
06*	Fence Bi-Polar
07	General
08*	Siren
09	Strobe
10	AC Fail
11	Low / Bad Battery
12	Tamper
13	N/A
14	Gate 1 or 2
15	N/A
16	Armed (1 or 2)
17	Group Armed
18	Group General
19	ZM20 Sector
20	HOST Controlled
21	HOST Controlled, non-failsafe
22	ZM20 Sector Siren

Relay Functions

Function	Logic for alarm state (opposite of normal state)
Fence x	Zone x of the Energiser is Armed (Pulsing) AND the Energiser is indicating that this Zone is in Alarm.
Fence x alarm or Disarmed	Zone x of the Energiser is Disarmed OR the Energiser is indicating that this Zone is in Alarm.
Fence Bi-polar	The Energiser is Armed (Pulsing) AND the Energiser is indicating that Either Fence 1 (Positive Fence Voltage) OR Fence 2 (Negative Fence Voltage) is in Alarm.
Armed x	Zone x of the Energiser is Armed (Pulsing)
General	AC Fail OR Tamper OR Low Battery OR Gate Alarm OR Internal Error. Latched for internal errors only.
Siren	Fence Alarm 1 OR Fence Alarm 2 OR Gate Or Tamper, will time out after the Siren Time Out time. This function is latched.
Strobe	As per Siren but does not time out, will remain On until both Zones are Disarmed. The Clear Alarm Memory command will turn the Strobe Off if the Alarm has cleared.
AC Fail	The Monitored Energiser is indicating an Alarm on AC Fail
Battery	The Monitored Energiser is indicating an Alarm on low or bad battery
Tamper	The Monitored Energiser is indicating an Alarm due to the Enclosure cover being opened AND J3 is not fitted
Group wide x	Group relay functions are the collected status of the whole group of Z energisers. Group Armed for example is set only if all energisers in the group are armed.
HOST Controlled	This Relay is only controlled by the HOST device such as Perimeter Patrol. If Perimeter Patrol is disconnected for 30 seconds, this Output will revert to the Alarm state.
HOST Controlled non-failsafe	This Relay is only controlled by the HOST device such as Perimeter Patrol. The Output will remain on the "Last Known Good" state sent from Perimeter Patrol. It will not revert to the Alarm State on PP disconnect
ZM20 Sector Siren	This output will operate as a Siren Function when the specific ZM20 Sector Number is in Alarm. The timings for the Siren are configured in options 8, 9, 10.

Group ID (26xx#)

A group must have only 1 master. The other Devices in the group are slaves.

Value (x)	Mode
0	No Group
1	Master
2	Slave 1
3	Slave 2
4	Slave 3
5	Slave 4
6	Slave 5
7	Slave 6
⋮	⋮
15	Slave 14

Group ID

Relay Expansion ID (31xx# - 33xx#)

Each Relay can be configured to provide Output Expansion for the same or different Energisers on the Keypad Bus.

For Example: Relay 1 could provide expansion for Energiser 1, while Relays 2 and 3 are providing expansion for Energiser 5.

This is achieved by changing options 31-33 to match the Group ID of the Energiser to be Expanded. For example, setting Option 32 to 5 (3205#) with Option 21 set to 0 will trigger Relay 2 on the GPIO when Energiser (ID 5) goes into Fence Alarm.

Value (x)	Relay will Monitor
00	All Energisers
01	Master
02	Slave 1
03	Slave 2
04	Slave 3
05	Slave 4
06	Slave 5
07	Slave 6
⋮	⋮
15	Slave 14

Relay Monitor ID

Relay 1 Expansion is **(31xx#)**

Relay 2 Expansion is **(32xx#)**

Relay 3 Expansion is **(33xx#)**

Relay 4 Expansion is **(34xx#)**

Defaults
- Relay 1 – 1 (Energiser with Group ID = 1)
- Relay 2 – 1 (Energiser with Group ID = 1)
- Relay 3 – 1 (Energiser with Group ID = 1)
- Relay 4 – 1 (Energiser with Group ID = 1)

NOTE: When set to 0, the relay will trigger if any of the Energisers in the Group triggers the same Relay Function.

ZM20 Sector Number (36xx# - 39xx#)

NOTE: Setting a value in the ᴢᴍ20 Sᴇᴄᴛᴏʀ location will automatically change the corresponding Rᴇʟᴀʏ Fᴜɴᴄᴛɪᴏɴ to 19 (ZM20 Sector) for this relay.

Rᴇʟᴀʏ 1 Sector is **(36xx#)**

Rᴇʟᴀʏ 2 Sector is **(37xx#)**

Rᴇʟᴀʏ 3 Sector is **(38xx#)**

Rᴇʟᴀʏ 4 Sector is **(39xx#)**

Defaults
- Rᴇʟᴀʏ 1 – 0 (No ZM20 Sector selected)
- Rᴇʟᴀʏ 2 – 0 (No ZM20 Sector selected)
- Rᴇʟᴀʏ 3 – 0 (No ZM20 Sector selected)
- Rᴇʟᴀʏ 4 – 0 (No ZM20 Sector selected)

An Example of configuring outputs for monitoring ZM20 Sectors:

A site contains an MB8 connected to a ZM20 fence that contains 10 sectors. The ZM20 is within a Group of other Energisers and the ZM20 is configured to Gʀᴏᴜᴩ ɪᴅ 3. A PTZ camera has been configured to monitor sectors 4, 5, 6 based on its wired inputs. The rest of the sectors are visible from the guardhouse.

Programming required in the PAE222:

Relay Info	Relay Function	Monitor ID	Sector Number
Relay 1 configured for Sector 4	2119#	3103#	3604#
Relay 2 configured for Sector 5	2219#	3203#	3705#
Relay 3 configured for Sector 6	2319#	3303#	3806#

NOTE: Monitor ID must be set between 1 – 15 for this function to work. A setting of 0 for Monitor ID will not Monitor all ZM20s