Power Wave
16 Zone Control Communicator **16** *(Ver5.55)*

Crow Electronic Engineering P/L

Installation &
Programming Guide

12 – April – 2002

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Designed & Manufactured to Meet AS/NZS:4301/93

N345 - Product # CRPW16

CONTENTS

This Crow Power Wave 16 Version V5.xx alarm control panel has been designed to provide the most requested features for both the installer & the end-user. These features include ease of installation, ease of programming and user friendly operation all in a package which is reliable, functional and attractive.

Utilising many years of experience in the security industry and implementing valuable feedback, we are proud to provide you with a new generation of alarm controller. The Power Wave 16 Ver5.xx is manufactured to Crow's high standard, bringing you the quality and features which you deserve at an affordable price. In addition to the the advanced design, only the highest quality components have been used in the production of this Power Wave 16 panel to ensure the highest degree of reliability.

This manual will guide you through the installation and programming of your Power Wave 16 alarm panel. For additional information regarding the operation instructions and options, please refer to the enclosed "Power Wave 16 User's Guide".

PACKAGE CONTENTS

This **Crow Power Wave 16** package should contain the following items;

1 x	Power Wave 16 Controller PCB
1 x	Power Wave 16 Backlit LED Keypad
1 x	Power Wave 16 metal cabinet & lid
1 x	Power Wave 16 Installation Manual (80 Pages)
1 x	Power Wave 16 Programming Sheets (16 Pages)
1 x	Power Wave 16 Users Guide (4 Pages)
1 x	Cabinet hardware accessory pack including;

1 x	Spare 1.5Amp fuse
1 x	Cabinet Tamper Switch
1 x	Cabinet Tamper Bracket
1 x	Tamper Switch Wire Set
2 x	Cabinet Lid Screws
10 x	2k2 (red, red, red) End Of Line Resistors
10 x	4k7 (yellow, purple, red) End Of Line Resistors
10 x	8k2 (grey, red, red) End Of Line Resistors

If any of these items are missing from this package, please contact your supplier or nearest Crow office.

MOUNTING KEYHOLES

CABLE ENTRY

Fit Radio
PCB Here

Install Battery Here

MAIN CONTROL CABINET

*Insert Tamper
Assembly Here*
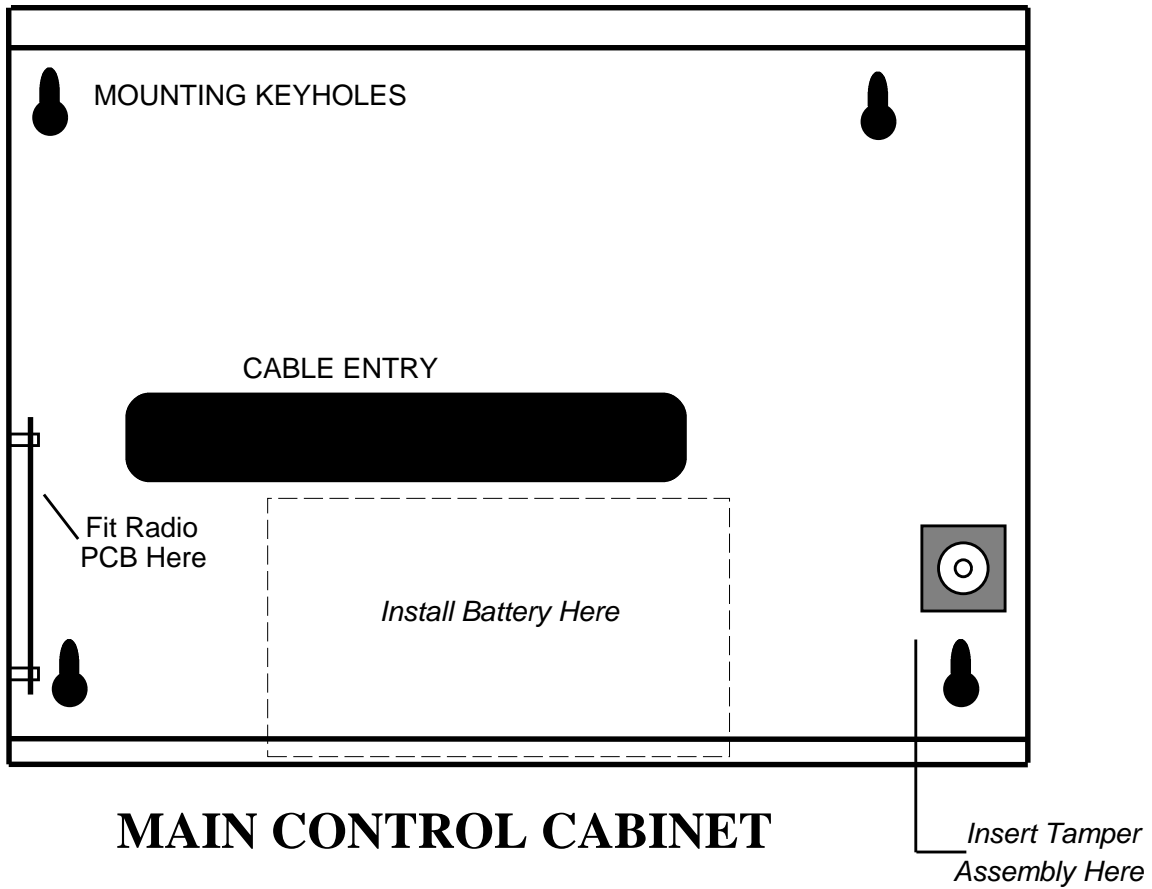
Bottom View   Left Side View
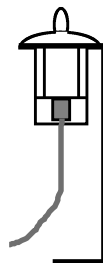
TAMPER ASSEMBLY

The Power Wave 16 version 5.xx has 10 separate programmable monitored analogue inputs,

> 8 x   Programmable, multi-state detection inputs
> 1 x   Programmable, multi-state keyswitch input
> 1 x   Programmable tamper circuit

*Each input must be terminated with the appropriate value or combination of End-Of-Line Resistors, even if the input is unused, **unless the zone is defined as a radio zone.***

ZONE INPUTS - Each of the 8 zone inputs can be assigned one of the following configuration options;

> Type 1   Single zone with No Tamper (8 zones) - 8NT
> Type 2   Single zone with Individual Tampers (8 zones high or low) - 8T
> Type 3   Double zones with One Tamper Per Input (16 zones) - 16T

The following table shows End-Of-Line Resistor configurations.

Zone Type	Low Zone Resistor	Hi Zone Resistor	Tamper End-of-line
8NT (No Tampers)	2k2 (Red-Red-Red-Gold)	-	-
8T - Low (with Tampers)	4k7 (Yellow-Violet-Red-Gold)	-	2k2 (Red-Red-Red-Gold)
8T - High (with Tampers)	-	8k2 (Grey-Red-Red-Gold)	2k2 (Red-Red-Red-Gold)
16T (with 8 Tampers)	4k7 (Yellow-Violet-Red-Gold)	8k2 (Grey-Red-Red-Gold)	2k2 (Red-Red-Red-Gold)

Type 8NT - 8 Zones, no tamper
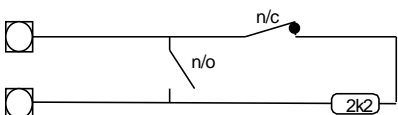
Type 8T Low - 8 Zones with tamper
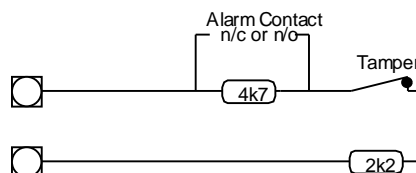
Type 8T High - 8 Zones with tamper
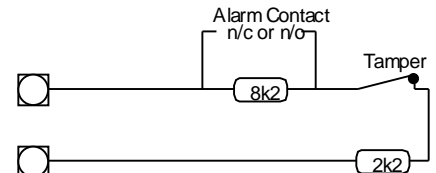
> To enable Double (16) zones with One Tamper Per Input - 16T, See Page 30
> **Single or Dual Zone Input (8 or 16 Zones) - P300E**.

Type 16T - 16 Zones with 8 tampers
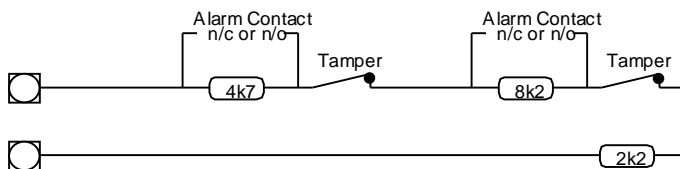
Option 1

Option 2
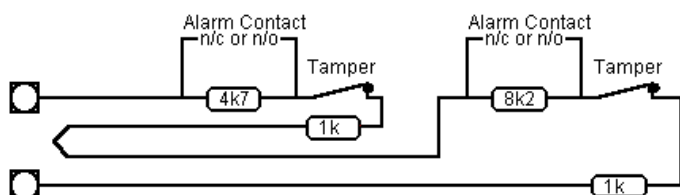
NOTE:
In all cases where 4K7 (for a low zone) & 8K2 (for a high zone) EOL Resistor is used **(EXCEPT 2K2 Tamper resistors)**, the EOL Resistor **MUST** be connected **ACROSS** (in Parallel to) the alarm contact (detector relay) and **NOT** in series with it.

Please note the following important points in the End-Of-Line examples shown on pages 7 & 8;

? Low zones refer to zones 1-8

? High Zones refer to zones 9-16

? You may use either normally closed or normally open detection devices as shown in configurations 8T - Low, 8T - High and 16T however all detectors connected to a zone **must** be of the same configuration (n/o **or** n/c)

For example, you may connect a number of normally open smoke detectors in parallel across the 4k7 end-of-line resistor in the 8T-Low configuration but you cannot connect a normally closed contact in the same zone

Example only
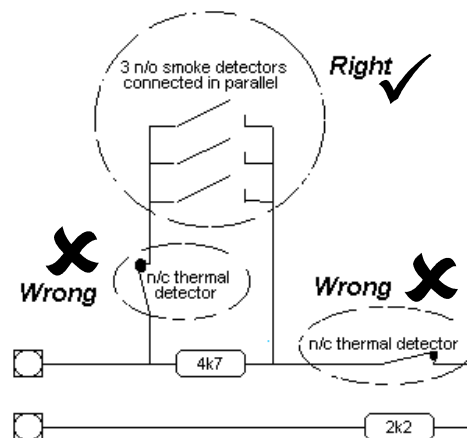
In the example above, an activation of the n/c thermal in the parallel branch of the n/o smoke detectors would not be detected at all. An activation of the thermal in series with the 2k2 End-Of-Line would produce a "Tamper" condition rather than the required alarm activation where as an activation of a n/o smoke detector in the parallel branch would produce an alarm activation.

From this example you can clearly see why you cannot mix n/o and n/c contacts on one zone

KEYSWITCH - This input can be used to control the panel via a keyswitch, digital keypad or similar. This is a multi-state input which can be End-Of-Line configured (by Default, the KeySwitch input requires a 2k2 EOL Resistor) in the same way as the 8 zone inputs. These multiple End-Of-Line configurations will produce either full set/unset, monitor mode on/off or set/unset of the A, B or C partitions on an individual basis. (See "P199E" page 28 & 29 for more details).

TAMPER - A 24Hr tamper circuit is available for monitoring tamper status of detectors, junction boxes, cabinets and satellite sirens etc. This Tamper circuit is programmable with 2 options (P201E5E) either normally closed loop or 2k2 EOL supervision. The tamper circuit must be terminated with an End-Of-Line Resistor if 2k2 EOL Supervision is selected. The activation events and outputs for this tamper circuit are mapped in the same manner as for detection zones 1-8.

In addition to the Analogue monitoring inputs, you will find the following system inputs on your Power Wave 16 V4 control PCB;

AC WITH EARTH - Connect the three wires from the Plug Pack as follows:
- 2 x 16VAC voltage wires (no polarity) to the terminals marked as "AC".
- 1 x Earth wire to the terminal marked as "Frame Earth".
The Plug Pack for the Power Wave 16 must be of High Quality and approved for electrical safety. The Plug Pack transformer should be rated at 1.5 Amps at 16 volts AC and must also incorporate an inbuilt thermal protection fuse to prevent a fire due to overheating.

EARTH - Always connect the Plug Pack earth to the "EARTH" terminals on the AC input terminal block.

N e v e r   c o n n e c t   t h e   m a i n s   e a r t h   d i r e c t l y   t o   t h e   P o w e r   W a v e   1 6   P C B   o t h e r   t h a n   t o   t h e   t e r m i n a l   m a r k e d   " F r a m e   e a r t h "

BATTERY - Connect a sealed lead acid rechargeable 12V DC 7AH (Minimum 6.5 AH) battery to these red and black battery leads. Be careful to observe correct polarity as damage may occur from incorrect connection. The minimum recommended battery capacity is 6.5 amp hours. Battery charge current at these terminals is limited to 350mA maximum.

LINE IN - This pair of terminals (Centre 2 wires (3&4) of an RJ11 type 6 way 4 wire plug) is used to connect the Power Wave 16 to the incoming telephone line from the street. The communicator uses this line for dialler reporting.

LINE OUT - This pair of terminals (Outer 2 wires (2&5) of an RJ11 type 6 way 4 wire plug) is used to connect telephones and other communication equipment to the incoming phone line via the Power Wave 16 controller. The telephone line is passed through the Power Wave 16 controller to ensure that the line is available to the controller when it is required. Full details regarding the communicator can be found in a separate section.

12 VOLT OUTPUTS - There are three 12 volt dc outputs available on the Power Wave 16 PCB. These 12 volt outputs are all regulated. Two of them are fuse protected suitable for powering detectors, sirens and other external devices. These outputs are marked 12v and 0v, and are supplied by fuses F1 and F2. A maximum total load of 1 amp may be drawn from these terminals. The third set of fused (F1) 12V terminals are found adjacent to the keypad comms clock and data terminals. This 12v output is micro controlled and **MUST** only be used to power keypads, radio boards and other intelligent devices which use the keypad comms bus.

OUTPUTS 1 & 2 - These fully programmable, high current, open collector (high-going-low) type FET outputs are capable of switching up to **1.5A @ 12V DC (Plug Pack, Battery & Power Supply Section (Total) Permitting).**

OUTPUT 3 - This is a Medium current, open collector (high-going-low) type output, capable of switching no more than **500mA**. Like Outputs 1 & 2, this is fully programmable. Besides its limitless applications, Output 3 can be used as a substitute output for a strobe, so that output 2 (with its 1.5A capacity) can used to operate a high current device. ***If utilising any output for other than its defaulted function, the powerful "De-Mapping Outputs" programming feature (P740E (Page 40) outputs 1 to 8E) may be used to simplify the re-assigning of output options, so that the selected output will no longer be governed by the usual (defaulted) system operation.***

OUTPUTS 4 To 8 - These are low current, open collector (Default – high-going-low) type outputs capable of switching no more than **100mA**. Like Outputs 1 & 2, they are fully programmable. These outputs are normally used to control a satellite siren or a relay that may operate any device.

*NOTE: - **Connecting devices which draw current in excess of 100mA to outputs 4 To 8, will cause permanent damage to the Power Wave 16 controller and Void Warranty.***

KEYPAD PORT - The terminals marked *POS, NEG, CLOCK, & DATA* make up the communications port which the keypad(s) and other intelligent field devices use to talk to the Power Wave-16 controller. The terminals are connected to corresponding terminals on the remote devices. Connection to the "Listen" terminal is only required by the keypad(s) that will be utilising the "Listen" Feature. For the Listen feature to operate, a fifth wire connection between the keypad port of the Power Wave-16 PCB and the keypad(s) is required to provide the communicator listen in facility. This feature is particularly useful when servicing Dialler Monitoring faults.

The keypad 12v output is micro controlled and **MUST only** be used to power keypads, radio boards and other intelligent devices which use the keypad comms bus.

SERIAL PORT - The serial port is for the connection of the Crow RS232 serial board. The serial board allows for printing of the 63 event buffer to a serial printer or for PC direct Up/Down load connection. It is also used for the EEPROM board to allow program back-up and re-instatement.

Outputs
(Max Rating Each)
1&2 = 1.5Amps *
3 = 500mA *
4 To 8 = 100mA *
(**All 8 Outputs Are now Available on the main PCB**)

Zone Inputs
Low Zn's
= 1, 2, 3 & 4
High Zn's
= 9, 10, 11 & 12
(Use Split EOL Resistors For The High Zones)
(See Page 7 for E-O-L Resistor Values)

Zone Inputs
Low Zn's
= 5, 6, 7 & 8
High Zn's
=13, 14, 15 & 16
(Use Split EOL Resistors For The High Zones)
(See Page 7 for E-O-L Values)

Input
For Key-switch & Siren / Cabinet / Junction Box, Etc. Tampers (Default = 2K2 EOL

12Volt Regulated / Filtered Power Supply For Detectors & Accessories

12Volt Regulated / Filtered Power Supply For Detectors & Accessories

12Volt Regulated / Filtered Power Supply For Detectors & Accessories

* = AC Plug Pack / Battery Capacity & Fuse ratings Permitting

 All **8** Outputs are now available on the Crow Power Wave-16 Control Panel

Outputs 1 & 2 = Heavy Duty 1.5Amp* Open Collector Type.
Output 3 = Medium Duty 0.5Amp* (500mA) Open Collector Type.
Outputs 4 to 8 = Low Duty 0.1Amp* (100mA) Open Collector Type.

* = Power Supply (Plug Pack + Battery) Capacity Permitting.

NOTE: The current provided through the Outputs are not fuse protected and therefore, extreme care should be taken not to overload the outputs or the power supply. Repairs to damage caused by "Overload" to the outputs or the power supply section is not covered by warranty.
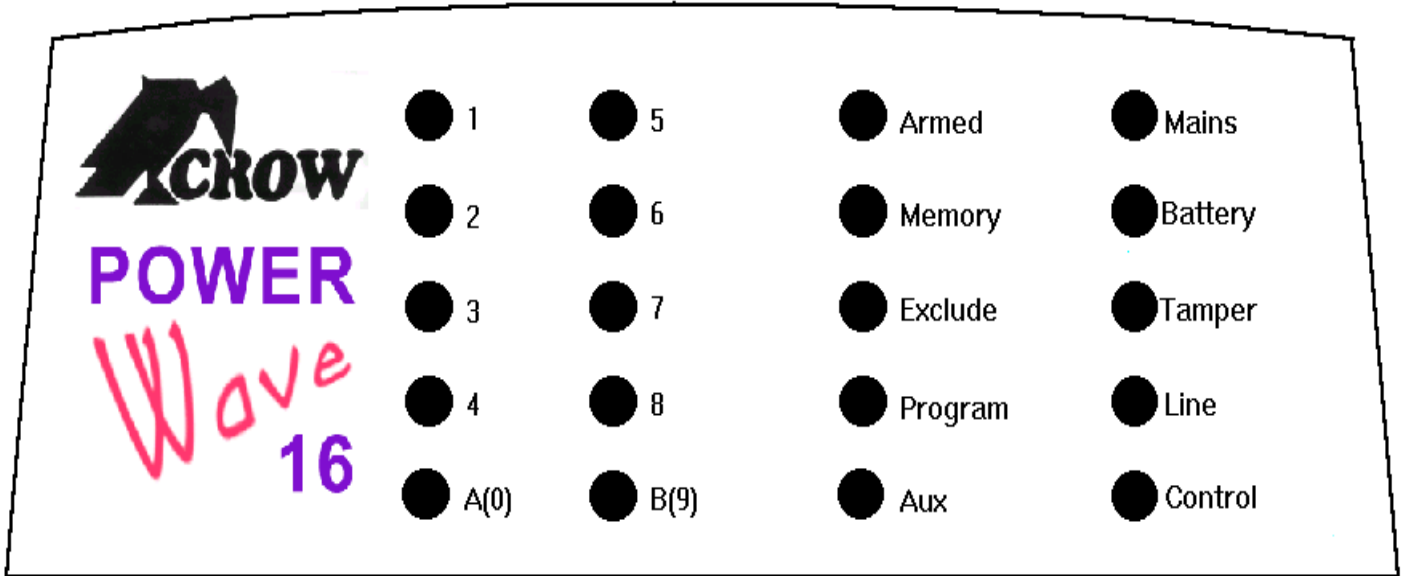
Standard Power Wave 16, LED Keypad Window Layout

When the Power Wave 16 is displaying codes and address values in program mode, it may be necessary to display the 9 and 0 digits. As there are no Zone indicators for 0 and 9 the "A" and "B" indicators are used.

ie. When displaying values in program mode

LIGHT	OFF	ON STEADY	FLASHING
BATTERY		Normal	Battery Low
MAINS		Normal	Mains Power Off
ARMED	Disarmed	Full Armed	Monitor Mode
MEMORY	Normal	Memory Display	New Event to View
EXCLUDE	Normal	Exclude Mode	Zone(s) Excluded
PROGRAM	Run Mode	Client Program Mode	Installer Program Mode
TAMPER	Normal	Tamper Violated	Tamper Alarm
LINE	Normal	Communicating	Line Fail
AUX.	Viewing 8 Low Zones	Viewing 8 High Zones	Zone violated in High 8
CONTROL	Control Function Off	Control Function On	DOTL Override On
ZONES 1-8	Zone Secure	Zone Violated	Zone in Alarm
* A	Partition A Disarmed	Partition A Armed	Partition A Monitor
* B	Partition B Disarmed	Partition B Armed	Partition B Monitor

* For an expanded explanation of how the ARMED and Area "A" and "B" lights work, please refer to

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The Power Wave 16 LED Keypad consists of; An 18 button, backlit silicone rubber keypad, 20 LED indicators and an internal piezo buzzer housed in a modern white plastic housing. The plastic housing has a hinged front lid to cover and protect the rubber buttons when not in use. All the electronics are contained on a single circuit board inside the housing.

Because the keypad(s) communicate with the controller using data, the cable run from panel to keypads is secure against tampering. For this reason there, is no tamper switch on the keypad assembly. Access to the keypad electronics will not disarm the panel.

BUTTONS

The 18 silicone rubber buttons are used for the following functions.

In normal operating mode the numeric keys are used for entering Access Codes. In Program Mode, the numeric keys are used for entering options & new values.

The buttons with text labels are used as function buttons and select the options indicated by the text and normally precede other button presses, Eg: To enter Exclude Mode during the Exit delay press <**EXCLUDE**> and the numeric key corresponding to the zone number you wish to be excluded.

The **PROGRAM** button is used to prefix option selections in the program modes e.g.<**PROGRAM**> 24 <**ENTER**> will take you to programming location 24. As it happens, program location 24 allows you to enter the code for User Code 24. The **PROGRAM** key is also used prior to a Master Code, to enter user program mode from normal operating mode.

The **ENTER** button is used to enter access or program codes. It is normally used at the end of a button sequence except when it is used in a 16 zone system where pressing the **<ENTER>** key will toggle the LED display between the low and high zones. This toggle enables the 8 zone LED's to indicate the status of zones 1-8 (low zones) and zones 9-16 (high zones). This dual status display is achieved by using the AUX. light to indicate which set of zones are currently being displayed. i.e. AUX. off = low zones (1-8) or AUX. on = high zones (9-16). The AUX. light flashing when viewing the low zones means there is a violated zone in the high group.

The **CONTROL** button, if enabled, is used to produce an output without an alarm event. This control output can be used to operate other external devices such as garage door openers, door locks, lights or other options as required.

The **PANIC** button is used to produce a keypad panic alarm event. A two (2) second activation delay is affective by default. To make the panic button activate instantly, simply cut link "D" that is located on the keypad PCB inside the back plastic cover. Link "D" is located to the right of link C. If link "D" is cut while the Power Wave 16 is powered-up, then the power to the whole system must be turned off (AC & Battery) then turned on again so that the Power Wave will recognise that link "D" has been cut.

LED INDICATORS

The LED indicators are used to display system conditions including Zone status, Battery state, Tamper etc. Please refer to the LED table on page 11 for a full explanation of the conditional displays.

KEYPAD TAMPER (wrong code alarm)

A wrong code or *Keypad Tamper* alarm is generated by the Power Wave 16, after 4 consecutive invalid code entries. The controller will not "Lock-Out" the keypad at this point but simply create an alarm condition as determined by the tamper alarm options (P111E-P118E etc). If the alarm system is a monitored installation, the Power wave 16 communicator will report a keypad tamper to the monitoring company. Entry of a valid user code will reset the Keypad Tamper alarm however, the alarm event will be written into memory and the keypad memory light will be flashing indicating the presence of a new memory entry.

This Power Wave 16 version 4 and above alarm panel has an event memory which stores the 40 most recent events including all alarm events, all system events such as mains failure etc as well as settings and unsettings This event memory is displayed via the standard keypad with the most recent event shown first and subsequent events following in descending order from newest to oldest.
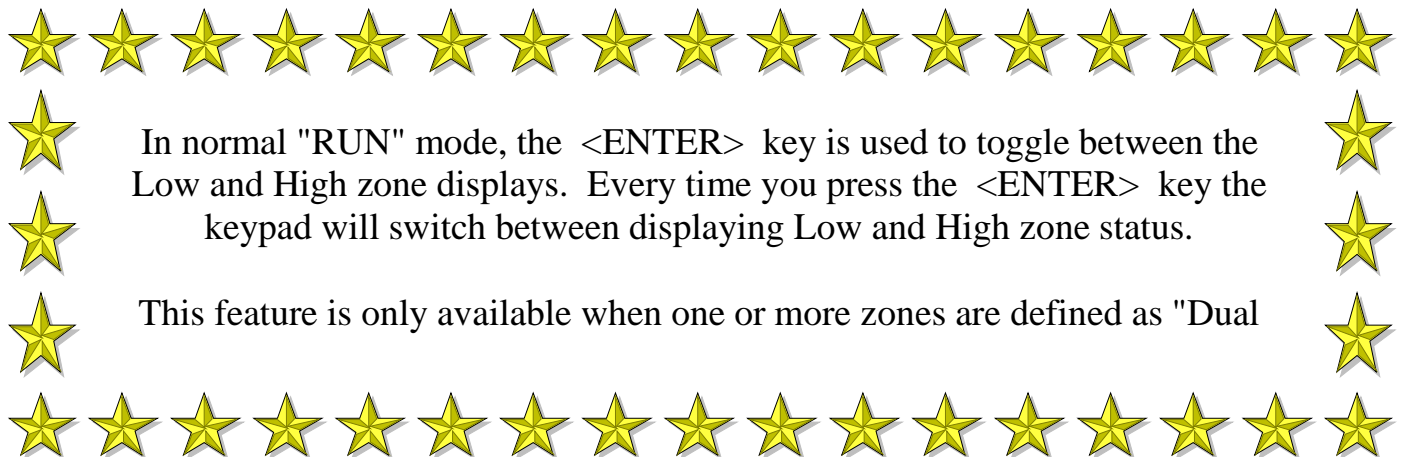
The "MEMORY" light will flash on and off when there is a new event in memory which has not been viewed. To stop the "MEMORY" light flashing, simply press the MEMORY button and the event memory will be flashed back to you with the most recent event shown first. Each event is separated by a beep tone.

There are a number of events which are stored in memory which do not have a specific indicator associated with them such as Panic and Duress. Other events such as tampers and low battery are shared across many devices. For this reason, the following table has been created. This table details which indicator lights correspond to which events in memory.

EVENT	DEVICE	INDICATOR	STATUS
ACTIVATION	Zones 1-8	LED's 1-8	On Steady
ACTIVATION	Zones 9-16	LED's 1-8 AUX	On Steady On Steady
EXCLUDE	Zones 1-8	EXCLUDE LED's 1-8	On Steady On Steady
EXCLUDE	Zones 9-16	EXCLUDE LED's 1-8 AUX	On Steady On Steady On Steady
DETECTOR TAMPER (SHORT CIRCUIT)	Zones 1-8	TAMPER LED's 1-8	Flashing On Steady
DETECTOR TAMPER (OPEN CIRCUIT)	Zones 9-16	TAMPER LED's 1-8 AUX	Flashing On Steady On Steady
CABINET TAMPER	Cabinet or Satellite Siren	TAMPER	Flashing
WRONG CODE ALARM	Keypad Tamper	TAMPER	On Steady
LOW BATTERY	Controller Battery	BATTERY	Flashing
MAINS FAILURE	Controller Mains Supply	MAINS	Flashing
LOW BATTERY	Radio PIR Zone 1-8	BATTERY LED's 1-8	Flashing On Steady
LOW BATTERY	Radio PIR Zone 9-16	BATTERY LED's 1-8 AUX	Flashing On Steady On Steady
LOW BATTERY	Radio Key User 1-8	BATTERY LED's 1-8 CONTROL	Flashing On Steady Flashing
LOW BATTERY	Radio Key User 9-16	BATTERY LED's 1-8 CONTROL AUX	Flashing On Steady Flashing On Steady

EVENT	DEVICE	INDICATOR	STATUS
DURESS ALARM	Area "A" Partition	"A" LINE	On Steady Flashing
DURESS ALARM	Area "B" Partition	"B" LINE	On Steady Flashing
DURESS ALARM	Area "C" Partition	"A" & "B" LINE	On Steady Flashing
PANIC	Keypad	LINE	Flashing
PANIC	Radio Key User 1-8	LINE LED's 1-8	Flashing On Steady
PANIC	Radio Key User 9-16	LINE LED's 1-8 AUX	Flashing On Steady On Steady
ARMED	Area "A"	"A"	On Steady
ARMED	Area "B"	"B"	On Steady
ARMED	Area "C"	ARMED	On Steady
MONITOR MODE ON	Area "A"	"A"	Flashing
MONITOR MODE ON	Area "B"	"B"	Flashing
MONITOR MODE ON	Area "C"	ARMED	Flashing
TELEPHONE LINE FAIL	Panel	LINE	On Steady

In normal "RUN" mode, the <ENTER> key is used to toggle between the Low and High zone displays. Every time you press the <ENTER> key the keypad will switch between displaying Low and High zone status.

This feature is only available when one or more zones are defined as "Dual

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INSTALLATION

Separate the two keypad halves by *carefully* inserting a small screwdriver into the release slots on the bottom edge of the keypad front half and applying *__gentle__* pressure. This will release the bottom edge of the housing enough for you to unclip the top.

Screw the base to the wall using the mounting holes provided. These holes will match the standard single switch plate spacing. Ensure the base is mounted right side up. It is marked with the word "TOP" to aid orientation. When fixing the base to the wall, make sure the top of the screw heads will not touch or short out the underside of the PCB when the top half of the keypad is reinstalled. Bring the cables through the centre of the base.

Connect the 4 or 5 wires to the 5 way terminal block on the rear of the keypad PCB making sure to match the cables up with the terminals as marked on the control panel's keypad port. The 5th wire is connected from the "LIN" terminal of the keypad to the "Listen" terminal of the Power Wave 16 PCB keypad port.

Once the cables have been terminated and the required keypad address allocated (see section below) clip the front half of the keypad onto the base by first engaging the clips at the top edge and then close the front down and clip it in at the bottom. Now stick the zone list label that is provided, to the inside of the hinged keypad lid.

WIRING

The Power Wave 16 keypad connects to the Power wave 16 Controller via a 4 or 5 wire data & power connection. A maximum of 8 LED keypads can be connected, each wired in parallel. A 5th wire may be used to provide a Phone Line "Listen-in" facility at the keypad when the Power Wave 16 communicator panel is dialling out.

The maximum recommended cable length using standard 0.2mm security cable is 50m. Cable runs exceeding this distance may require 0.5mm cable. Always use good quality cable. Some installations may require data cable to ensure data integrity in noisy sites.

KEYPAD ADDRESS ASSIGNMENT

Keypad Address	Address Links		
#	A	B	C
1			
2	X		
3		X	
4	X	X	
5			X
6	X		X
7		X	X
8	X	X	X

X   denotes link is cut

"IMPORTANT NOTE: KEYPAD ADDRESS CHANGES ARE ONLY RECOGNISED AT POWER-UP. ALL CHANGES SHOULD BE MADE IN THE POWERED DOWN STATE AND THEN ON POWER-UP, THE NEW KEYPAD

Each of the 8 possible LED keypads which are able to be connected to your Power Wave 16 panel must be addressed individually to avoid BUS conflicts and other communication problems. As default, each keypad comes addressed as #1 with all links intact.

Use the table on the left to determine which links to cut to assign the correct address to the keypads you are installing.
eg. To assign a keypad as address #2, you must cut link A only. To assign a keypad as address # 4, you must cut link A&B.

When cutting address links, it is important to make a clean cut between the link blocks as shown below. If required, Links can be restored by soldering across the effected pads

A   B   C   D

Cut appropriate Link(s) here between the solid blocks.
Links A, B & C = Keypad Address.
Link D (Uncut) = Keypad Panic is Delayed.
Link D (Cut) = Keypad Panic is Instant.
(Default (Uncut) = 1.5 Second Delay)

15
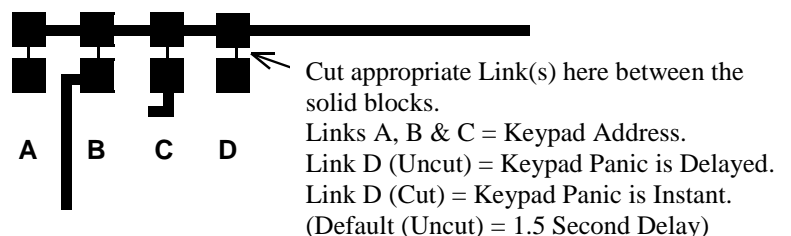
INSTALLING RX-40 RADIO RECEIVER

The Power Wave 16 Ver.4 and above is fully, high level compatible with the new RX-40 radio receiver. Adding this receiver will add wireless capability to your system in the form or wireless PIR / Smoke detectors, Wireless Radiokey transmitters and wireless reed switch transmitters. The RX-40 receiver connects to the same communications port as the keypads and can be installed, either inside the cabinet, or if preferred, may be installed at a remote location. An ABS plastic housing is available for the RX-40 if you are mounting it out of the cabinet.

The RX-40 receiver requires 4 wires and can successfully be run in 0.2mm unscreened cable over a distance of up to 100 metres. Like the keypads, the RX-40 has 12v and 0v terminals for connection to the micro controlled 12v supply and CLK and DATA terminals for connection to the communications bus. Incorrect connection of the RX-40 receiver will cause a communications bus to re-boot which is seen at the keypads when they die (LED's turn off) and re-boot (LED's turn on) over and over again.

The green LED fitted to the RX-40 receiver will indicate when the unit is in "Learn" mode (Flashing - see P501E) or when it is receiving an actual radio transmission (On Steady)

INSTALLING OPTIONAL SPEECH UNIT

The Power Wave 16 (Ver4 and above) control communicator can also be fitted with Speech Modules of either a 20 second (For Panel Versions Below 5.32) or 90 second (For Panel Versions 5.53 and above) . This module stores either alarm event messages for speech dial monitoring and / or status messages for use with Command Control. The Power Wave 16 speech module is supplied with all the required mounting hardware including stand-offs and is installed directly onto the control panel PCB via the "EXPANSION" socket.

Installation procedure for the Speech module is as follows.

1   Power-down the Power Wave 16 fully (including battery) before starting the installation procedure.
2   Install the 2 plastic PCB stand-offs
3   Carefully install the speech module in the EXPANSION socket and engage into the stand-offs
4   Plug-In the speech dialler programmer (See next paragraph below for instructions).
5   Power-up the Power Wave 16.

Before any programming on the communicator, including recording speech messages can begin, the Enable Communicator option at P260E "Option One (1) **MUST BE ON.** If this option is off, you **CAN NOT** program or play-back any speech messages.

Once you have enabled the communicator, you can record your personalised speech messages into the module with the speech dialler programmer. The programmer plugs onto the Single-In-Line set of pins that are immediately below the speech module expansion socket and must be installed with the Brown wire to the right. Some programmers are fitted with a polarisation pin on the connection socket which will prevent incorrect insertion however, some earlier units are not so.

To record your messages once the programmer is installed, first press the reset button on the side of the speech board, then hold the programmer about 5 cm away from the mouth and speak clearly at normal level into the microphone while holding down the "REC" button. When you reach the end of your message release the REC button. When recording your voice message, you must ensure that you clearly identify the origin of the call. You can play the message back through the programmer by first pressing the reset button on the voice module, then by pressing the programmer "PLAY" button momentarily. Because the Power Wave 16 Ver4 and above control communicator has the ability to store up to 8 alarm event messages, you must store individual messages at what is known as recording slots within the speech module. Every time you press and release the REC button of the programmer, you create an end of message marker. These markers are used to define the recording slots within the speech module and are of varying length according to each message duration.

To re-record a message you must first press the "RESET" button on the speech module to get back to recording slot #1. Once you are at slot #1 you can re-record your messages in order as required.

NOTE: To start a recording at slot #1 or to play-back starting at slot #1, you must always press the voice module reset button first.

If you have finished recording your alarm messages, unplug the programmer and the process is complete.

HOW TO PROGRAM

The programming sequence always follows this pattern;

<PROGRAM> - <2 or 3 digit address> - <ENTER>
3 short beeps if OK - 1 long beep if error
The LEDs will display current value or status
Enter the new value or option
<New Value> - <ENTER>
3 short beeps if OK - 1 long beep if error

Throughout this manual you will see program instructions expressed as
P 23 E 5 E   as an example.

In this example the <P> represents the **PROGRAM** key and <E>represents the **ENTER** key.

ACCESS TO "INSTALLER" PROGRAMMING – ON POWER UP

When power is applied to the controller for the first time, with the panel tamper input open, the panel will inhibit tamper alarms and ready the panel to enter PROGRAM Mode (unless the Installer Lock-out option P201E6E has previously been enabled.) At this point you can go to any keypad which is connected to the panel and the first button press will automatically put that keypad into full Program mode.(NOTE:Only one keypad can be in Program mode at any time)

ACCESS TO "MASTER CODE" PROGRAM MODES – FROM RUN MODE

Before you can enter program mode, the panel must be unset with no monitor mode.

Press   <**PROGRAM**> - <Code 1 (or Master Code)> - <**ENTER**>
Program light steady
Note: Default Master Code (Code 1) is 123

You are now in Client Program Mode. When you are in Client programming mode you have access to program addresses P1E to P24E. To enter Install Program Mode

Press <**PROGRAM**> - <Install Code> - <**ENTER**>
Program light flashing
Note: Default Install Code (P99) is 000000

TO CLEAR PROGRAM INFORMATION (From Install Mode Only)

There are five (5) options available for clearing program information (Reset to defaults). These are detailed on page 40.

e.g.To reset all User Codes 1-24, Including Radio Users 1-16 to Default (P 741 E), .

Press <**PROGRAM**> - 741 - <**ENTER**>
3 beeps - Program light flashing

e.g.To reset Radio Detection Device parameters to Defaults (P 743 E)

Press <**PROGRAM**> - 743 - <**ENTER**>
3 beeps - Program light flashing

After the system configuration or User Codes have been reset, all values, options & Codes will be set to the values shown in the Program Option Summary as defaults. These value & option selections have been chosen as the most common set-up for the majority of systems.

TO EXIT PROGRAM MODES

To exit program modes when you have finished programming:

Press <**PROGRAM**> - <**ENTER**>
Program light goes out

The panel is now back in Run Mode, any program changes you have made will have replaced previous values and be in effect.

Note: During programming Tampers and 24 hour alarms are disabled which allows quiet access to the panel, detectors and satellite siren units etc. On exiting program mode, all inputs are scanned and if any tampers or 24Hr alarms are present an activation will occur.

Note: Where there are multiple options at one address, options 0 & 9 have been reserved. Entering a 0 at

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PROGRAMMING USER CODES

USER CODES / INSTALLER CODE - (P1E to P24E) / (P99E)

There are 25 codes available in the Power Wave-16. 24 user codes and 1 install code. The user codes are located in addresses 1-24. As default, Code 1 has Master Code permission's and must be used to enter program mode. The Installer code is stored at address 99 and is used to move from *Client* Program mode up to *Installer* Program mode.

Codes may be varied in length from 3 to 6 digits.

To program a User Code you must first be in client or installer program mode, then select the address from 1-24. (If there is already a code programmed at this address, it will be flashed back to you) Now enter the code then press the **ENTER** key.

eg. P 1 E 1234 E
3 beeps - program light flashing

In this example we have set User Code 1 (Master Code) to be 1234.

eg. P 5 E 567 E
3 beeps - program light flashing

In this example we have set User code 5 to be 567

To replace a code, simply enter the new code in the same address as the old code. This will overwrite the previous code but maintain the user permission's as mapped to that user number.

To clear or delete a code simply enter the EXCLUDE button at the address where the old code is stored.

eg. P 3 E *<EXCLUDE>* E
3 beeps - Program light flashing

When flashing back codes and values, Zone indicators 1-8 are used to indicate digits 1-8. The digit 0 is indicated by the "A" light and 9 is indicated by the "B" light.

USER CODE PERMISSION'S (Code Options) 1st Set - P25E-P48E

Option 0 - Turns all options off
Option 1 - Code has Area A permission's
Option 2 - Code has Area B permission's
Option 3 - Code has Area C permission's
Option 4 - Code can Arm Area
Option 5 - Code can Disarm Area
Option 6 - Code can turn Monitor on
Option 7 - Code can turn Monitor off
Option 8 - Code can Operate control Functions
Option 9 - Turns all options on.

NOTE: Options 4, 5, 6 & 7 are used in conjunction with options 1, 2 & 3 whereby options 4, 5, 6 & 7 determine the functions and options 1, 2 & 3 determine the area of operation.

USER CODE PERMISSION'S (Code Options) 2nd Set - P49E-P72E

Option 0 - Turns all options off
Option 1 - Code can override DOTL (Door Open Too Long) timer
Option 2 - Code can change dialler telephone numbers
Option 3 - Code can alter the real time clock
Option 4 - User can start a print dump of the event buffer
Option 5 - User can answer an incoming call and start up/down load
Option 6 - User can enter Client Program and change **their** code only.
Option 7 - User can enter Client Program and change **all** codes.
Option 8 - User can enter Client Program mode and then Installer Program Mode (If Installer Code Is Known).
Option 9 - Turns all options on.

NOTE: Option 8 can not be removed from Code #1

USER CODE TIME ZONES - P73E-P96E

Users codes may have Time Zones or windows assigned to control their operation. These Time Zones determine when a particular user code will work. Addresses P73E - P96E are used to map the user code to the required Time Zones. The actual Time Zone parameters are defined at addresses P681E - P704E.

A single value from 0-8 must be assigned to each user code. Time Zone zero (0) is fixed as 24 hour seven day access and is the default time zone for all 24 user codes.

P73E   TZ E   Where TZ represents the Time Zone from 0-8 valid for User Code #1 **(Fixed as TZ-0)**
P74E   TZ E   Where TZ represents the Time Zone from 0-8 valid for User Code #2
  ~
P96E   TZ E   Where TZ represents the Time Zone from 0-8 valid for User Code #24

  NOTE: More than one Time Zone may be assigned to each user allowing different time based controls for different days of the week etc.

INSTALLER CODE - P99E

This code is used to enter full Installer Program mode (Program light flashing) from Client Program mode (Program light steady) The default installer code is 000000. To change this code enter your new installer code at the P99E address. The new code will be flashed back to you automatically. Like User codes, the Program code may vary from 3-6 digits in length

P100E Option 8   If this option is ON (LED 8 on), then the Installer Code can access Installer Mode directly, without needing to enter via Client Program Mode first. (All Areas Must Be UnSet
and Not In   Monitor Mode). Default = LED 8 On

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OUTPUT OPTIONS FIRST SET- P101E To P108E

This block of addresses (P101E To P108E) are used to map output modifiers to each of the 8 outputs available on the Power Wave 16. Note: Only 5 outputs are available on the Power Wave-16 PCB. The additional outputs (Outputs 6, 7 & 8) are available on the Optional "8" Output module. The Optional "8" Output module operates in parallel to the onboard outputs and includes outputs 6, 7 & 8 that are in addition to the 5 outputs available on the Power Wave PCB.

P101E	**1E**	Invert output #1 - Default off
	2E	Flash output #1 - Default off
	3E	Single pulse to output #1 - Default off
	4E	Lockout output #1 once reset - Default off
	5E	Output mapped to Remote Command Control - Default off
	6E	Output mapped to local Command Control - Default off
	7E	Day zones linked to pulse timer - Default off
	8E	Pulsed output for 24Hr alarms – Default Off

Option 1   **Invert Output** - This option is used to invert the normal state of the output. The Power Wave 16 uses open collector type transistor switches and the default state of all outputs is off (or high). When in alarm, the transistor switch is turned on and the output is switched low (to ground). The invert option reverses this function.

Option 2   **Flash Output** - This option causes the output to switch on and off at 2 second intervals when in alarm, and is normally used to flash a lamp during an activation.

Option 3   **Single Pulse to Output** - This option, when applied, produces a single 1 second pulse at the output during an alarm (the pulse time is the value programmed at the output pulse timer address).

Option 4   **Lockout Once Reset** - This option is used to limit the output to one operation per arming period.

Option 5   **Output mapped to Remote Command Control** - This option is used to map an output to the remote command control function whereby the output can be controlled via the telephone (this requires the optional speech board unit)

Option 6   **Output mapped to Local Command Control** - This option is used to map an output to the local command control feature whereby the output can be controlled directly from the keypad.

Option 7   **Day Zones Linked to Pulse Timer** - Day Zones programmed to this output will pulse at the pulse timer rate (P441E) for the duration of the day zone to keypad timer (e.g. if the day zone is in partition A, then the timer at P457E applies)

Option 8   **Pulsed Output for 24Hr Alarms** - This option enables the pulsed siren output when a 24hr alarm is activated. When selected On, the corresponding output will pulse according to the pulse timer selected. eg: P441E, page 32, if this location is set to a value of "1", then output 1 will pulse at a rate of 1/10 second. If set to a value of 5, then the output will pulse at a rate of 1/2 second on, 1/2 second off, everytime a 24hr zone is activated. If this option is Not Enabled, then a 24hr alarm will be a continuous output, same as a burglary alarm. Default = Off.

P102E To P108E   As per P101E above, but for Outputs 2-8.

OUTPUT OPTIONS SECOND SET - P111E To P118E

In this block of addresses, P111E relates to output #1, P112E relates to output #2 etc

P111E	**1E**	Keypad panic to Output #1
	2E	Keypad Tampers to Output #1
	3E	Zone Tampers to Output #1
	4E	Cabinet Tamper to Output #1
	5E	Radio Panic to Output #1
	6E	Mains Fail to Output #1
	7E	Battery Low to Output #1
	8E	Phone Line Fail

Option 1   **Keypad Panic to Output** - This option is used to map the operation of the keypad panic button to an output ie. when the Panic button on a keypad is pressed any output with this option enabled will turn on.

Option 2   **Keypad Tampers to Output** - This option is used to map Keypad Tampers to an output. Keypad Tampers are generated when an invalid code is entered four times.

Option 3   **Zone Tampers to Output** - Where dual End-Of-Line resistors are being used to provide individual zone tampers, Option 3 at this address is used to map the Zone Tampers to an output.

Option 4   **Cabinet Tamper to Output** - This option is used to map activations of the common Tamper Input to an output. This common tamper input is normally used to monitor the panel cabinet and external siren / satellite tamper switches.

Option 5   **Radio Panic to Output** - This option will map the operation of a Crow Radio pendant panic button to an output. Programming of Crow Radio Pendant options is found at P581E To P596E

Option 6   **Mains (AC) Fail To Output** - A mains (AC) failure will be indicated at this output when option 6 is enabled at this address. The Alarm Reset Timer **MUST NOT** be used in conjunction with this option.

Option 7   **Low (System) Battery** - A Power Wave-16 System battery Low condition will be indicated at this output when option 7 is enabled at this address. The alarm reset timer **MUST NOT** be used in conjunction with this option.

Option 8 -   **Phone Line Fail** - A telephone line failure will be indicated at this output when option 8 is enabled at this address. When the line restores, this output will return to normal.

OUTPUT AUTO ON/OFF TIME ZONES - P121E To 128E

This block of addresses are used to map automatic turn on and turn off periods to each of the outputs where required. The start of the time zone will cause outputs mapped at these addresses to turn on whereas the end of the time zone will cause the output to turn off. As with User Code time zones, the actual times assigned to each time zone (1-8) are defined at addresses P681E To P704E. Multiple Time Zones may be assigned to each output

P121E	**TZE**	Where TZ represents the Time Zone # which defines the turn on and turn off times required for output #1
P122E	**TZE**	Where TZ represents the time zone # which defines the turn on and turn off times required for output #2
P123E	**TZE**	Where TZ represents the Time Zone # which defines the turn on and turn off times required for output #3

P124E - P128E   As per above but for outputs 4-8

> *NOTE: A value of zero (0) at these addresses will disable any auto turn on turn off features at that output.*

OUTPUT ENABLE TIME ZONES - P131E To P138E

This block of addresses are used to map enable time zones to each of the outputs as required. The assigned time zone will enable the output to be activated. As with User Code time zones, the actual times assigned to each time zone (1-8) are defined at addresses P681E To P704E. This feature is normally used to restrict the Access Control functions to pre-determined times and days

P131E	**TZE**	Where TZ represents the time zone which enables output #1
P132E	**TZE**	Where TZ represents the time zone which enables output #2
P133E	**TZE**	Where TZ represents the time zone which enables output #3

P134E - P138E   As per above but for outputs 4-8

> *NOTE: A value of zero (0) at these addresses will enable that output 24hrs 7 days.*

PROGRAMMING KEYPAD OPTIONS

KEYPAD OPTIONS - P140E To P158E

All keypads must be assigned to a partition or area. Keypads may be assigned in more that one area whereby the area Setting and UnSetting is determined by the user code permissions. If a keypad is assigned to one area only, activity in another area will not be shown. (with the exception of zone indications).

> *NOTE: A keypad can only be used to control the partition or area to which it has been assigned.*

Within the display of the Power Wave-16 Ver4 (and above Version) keypads, you will find an "**ARMED**" indicator as well as area "**A**" and area "**B**" indicators. When a keypad is assigned to **only one** area, the "**ARMED**" indicator will show steady on for armed, flashing on and off for monitor and steady off for disarmed.

If a keypad is assigned to multiple areas the area "**A**" and "**B**" indicators will show steady for area armed, flash on and off for area in monitor and remain off for area disarmed. Area "**C**" is indicated by the "**ARMED**" light in the same way as the "**A**" and "**B**"

> *NOTE: In a partitioned system areas A, B & C can be set, unset and monitored independently*

The block of addresses from P140E to P158E are used to assign the basic function options of each keypad in the system. Each of the address lines from P140E to P158E may have 8 options assigned where the 8 options represent the individual addresses of the keypads in the system. i.e. if options 1, 2 & 4 are enabled at address P140E then keypads 1, 2 and 4 would be assigned to area "A".

P140E	**1-8E**	Keypads assigned to Area A (Default 1-8)
P141E	**1-8E**	Keypads assigned to Area B (Default none)
P142E	**1-8E**	Keypads assigned to Area C (Default none)
P143E	**1-8E**	Keypads with permission to Set (Default 1-8)
P144E	**1-8E**	Keypads with permission to Monitor (Default 1-8)
P145E	**1-8E**	Keypads with permission to use the Control Function (Default 1-8)
P146E	**1-8E**	Keypads with permission to Exclude (Default 1-8)
P147E	**1-8E**	Keypads with permission to Line Monitor (Default 1-8)
P148E	**1-8E**	Keypads with permission to program User Codes (Default 1-8)
P149E	**1-8E**	Keypads with permission to Installer Program Mode (Default 1-8)
P152E	**1-8E**	Keypads with facility to turn the LED's off after Exit Delay (Default none)
P153E	**1-8E**	Keypads with buzzer mapped to keypad tampers (Default 1-8)
P154E	**1-8E**	Keypads with buzzer mapped to zone tampers (Default 1-8)
P155E	**1-8E**	Keypads with buzzer mapped to system tampers (Default 1-8)
P156E	**1-8E**	Keypads with Panic button enabled (Default 1-8)
P157E	**1-8E**	Keypads with buzzer mapped to keypad panic activation (Default 1-8)
P158E	**1-8E**	Keypads with buzzer mapped to phone line failure (Default none)

At address lines such as P140E (above) where there are 8 bits or options available, each option can be selected by pressing the numeric key which corresponds to the option or bit number you wish to enable.

For example, to assign keypads 1,2, & 4 to Area "B"

P 141 E 124 E
LED's 1,2 & 4 come on
3 beeps, program light flashing

When you enter the program address, i.e. P140E, any existing options will be displayed. As you enter your options, the display will be updated to show the current (new) option status.

NOTE: If an option is already enabled pressing the numeric key which corresponds to that option will toggle the option off.

Note: Where there are multiple options at one address, options 0 & 9 have been reserved. Entering a 0 at

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P170E   1-8   Time Zone to use for Auto Arm or Disarm (Default 0) - This option will determine which Time Zone will cause Area "A" to arm, disarm or both, based on the programmed options set at P180E. (See Page 26).

PARTITION "A" PRIMARY OUTPUT OPTIONS first set - P171E To P178E

This block of addresses sets a number of output options which are specific and unique to the operation of partition or Area "A". Activity in Areas "B" or "C" will have NO direct effect on the options set at these addresses.

P171E   1E   Normal zone alarms to output #1
      2E   24 hour alarms to output #1
      3E   Monitor Mode alarms to output #1
      4E   Pendant chirps to output #1
      5E   All zones sealed indication to output #1
      6E   2 second pulse on arming or disarming to output #1
      7E   Intelligent smoke reset pulse to output #1
      8E   Day zone alarms to output #1

Option 1   **Normal zone alarms to output #1** - This option will map activation from normal zone alarms from Area "A" to output #1. Normal zones are those which will only activate when the partition is armed (Set)

Option 2   **24 Hour alarms to output #1** - This option will map activations from zones defined as Area "A" 24 Hour to output #1. Zones are defined as 24 Hour at P338E (For Zones 1-8 "Low Zones") and P358E (For Zones 9-16 "High Zones"). (See Page 31).

Option 3   **Monitor Mode alarms to output #1** - This option will map activations from zones defined as Area "A" Monitor Mode to output #1. Zones are defined as Monitor Mode at P339E (For Zones 1-8 "Low Zones") and P359E (For Zones 9-16 "High Zones"). (See Page 31).

Option 4   **Pendant Chirps to output #1** - This option will map two short pulses (Chirps) to output #1 when Area "A" is set via a Crow radio key (Pendant) and four short pulses to output #1 when Area "A" is unset again.

Option 5   **All zones sealed indication to output #1** - This option will map a Area "A" safe indication to output #1. A safe indication is produced when all zones in an area are sealed, i.e. zone lights off.

Option 6   **2 second pulse to output #1 on arming or disarming** - This option will map a 2 second pulsed output at Output #1 each time Area "A" is armed or disarmed as defined at P199E (Page 28) options 6 & 7.

Option 7   **Intelligent Smoke Reset pulse to output #1** - This option is similar to option 6 in that it produces a momentary pulse at the output when Area "A" is armed and is used to reset latching smoke detectors. The difference is that this option will only produce a pulsed output if a 24 Hour zone in Area "A" has been activated during the previous armed period.

Option 8   **Day zone alarms to output #1** - This option will map activations from Area "A" zones defined as Day Zones to output #1. Zones are defined as Day Zones at P340E, page 31 (For Zones 1-8 "Low Zones") and P360E page 31 (For Zones 9-16 "High Zones"). Day zones are those which operate only during periods when the Area is disarmed and are normally used as door bells and shop minders etc.

Note: P172E through P178E are as above but apply to outputs 2-8

Option 7 *MUST* be used on systems where ESL brand 449 series smoke detectors are installed rather than option 6. This is due to the way in which the 449 series detectors perform a "self check" function every 24 hours. Interrupting the power supply to these detectors restarts their internal timer and in normal system

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PARTITION "A" SPECIFIC OUTPUT OPTIONS second set - P181E To P188E

As with P171E to P178E (Page 24), this block of addresses sets a number of output options which are specific and unique to the operation of partition or Area "A". Activity in Areas "B" or "C" will have NO direct effect on the options set at these addresses.

P181E	**1E**	Any Exclude to output #1
	2E	Auto-Exclude warning to output #1
	3E	Entry beeps to output #1
	4E	Exit beeps to output #1
	5E	Control function to output #1
	6E	Set/Unset indication to output #1
	7E	Monitor Mode on/off to output #1
	8E	Keypad Duress to output #1

Option 1 **Any Exclude to output #1** - This option will produce a change of state at output #1 if there are any zones excluded, either manually or automatically. This change of state will occur at the end of the Exit delay. The output reset time (P421E, Page 32) should be set to zero when this option is enabled.

Option 2 **Auto-Exclude warning to output #1** - This option will produce a 2 second pulse at output #1 at the end of the exit period if a zone has been Auto-excluded in Area "A". An Auto-Exclude occurs when a zone is left un-sealed at the end of the exit delay. At the end of the exit delay, zones not defined as Auto-Exclude which are left un-sealed will produce an activation. Auto-Exclude assignments are found at P342E, Page 31 For Zones 1-8 "Low Zones" and P362E, Page 31 For Zones 9-16 "High Zones".

Option 3 **Entry beeps to output #1** - This option will map the keypad entry beeps to output #1.

Option 4 **Exit beeps to output #1** - This option will map the keypad exit beeps to output #1.

Option 5 **Control function to output #1** - This option maps the control functions in Area "A" to output #1. Control function parameters for Area "A" are defined at P198E see Page 27, options 5-8

Option 6 **Set / Unset indication to output #1** - This option will turn output #1 on when Area "A" is armed and turn output #1 off when Area "A" is disarmed. This change of state occurs at the start of the exit delay and when the Area is disarmed. Output reset time should be set to zero (P421E0E, see Page 32)

Option 7 **Monitor Mode on / off** - This option will turn output #1 on when Area "A" is placed in Monitor Mode and turn output #1 off when Area "A" Monitor Mode is turned off. Like option 6 this change of state occurs either at the start of the exit delay or when the Area is disarmed. Output reset time should be set to zero (P421E0E, see Page 32)

Option 8 **Keypad Duress to output #1** - This option will produce a change of state at output #1 when a Duress Alarm is activated. A Duress Alarm is activated only when the pre-defined "Duress Digit" (P197E, see Page 26) is prefixed to a valid Area "A" user code and entered at an Area "A" keypad. Output reset time should be set to zero (P421E0E, see Page 32)

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* *   NOTE-1: The Duress Alarm can only be reset by arming then disarming the affected area   * *

****Note-2: P182E through P188E are as above but apply to outputs 2-8****

PARTITION "A" KEYPAD OPTIONS - P189E & P190E

P189E   **"ARM" key can disarm during exit delay** - This option enables the one key disarm during exit delay feature on a keypad by keypad basis with Partition boundaries . Options 1-8 represent keypads 1-8

P190E   **"MONITOR" key can disarm during Monitor Mode** - This options enables single button disarm of the monitor mode via the "MONITOR" key. Options 1-8 represent keypads 1-8

P191E   1-8   **Day Zone alarms to keypad buzzer**   (Default all) - This option will operate the keypad buzzer when a day zone is activated. The duration of the buzzer is defined at P457E, see Page 32. Day zones are those which are active during periods when the Area is unset.

P192E   1-8   **Standard zone alarms to keypad buzzer**   (Default all) - This option will map standard zone activations to the keypad buzzer. Normal zones are those which will only activate when the partition is set

P193E   1-8   **Monitor mode alarms to keypad buzzer**   (Default all) - This option will map activations from zones defined as Monitor Mode to the keypad buzzer.

P194E   1-8   **24 Hour alarms to keypad buzzer**   (Default all) - This option will map activations from zones defined as 24 Hour to the keypad buzzer. 24 Hour zones are those which will activate whether the Area is set or unset.

P195E   1-8   **Exit beeps to keypad buzzer**   (Default all) - This option will produce beeps at the keypad during the Exit delay. Pressing any button during the Exit period will cancel the beeps.

P196E   1-8   **Entry beeps to keypad buzzer**   (Default all) - This option will produce beeps at the keypad during the Entry Delay. Pressing the first digit of your user code will cancel the beeps.

P197E   0-9   **Duress Digit**   (Default 0=Disabled) - A Duress Alarm is activated only when the "Duress Digit" defined at this address is prefixed to a valid Area "A" user code and entered at a keypad which has been assigned Area "A" permissions. The resulting Duress Alarm will unset the Area in the normal way, operate an output if one is defined and report a duress event via the communicator. **Values of 0-9 may be entered at this address where 0 = option disabled and 1-9 represent the digits 1-9.**

NOTE: At addresses P191E to P196E options 1-8 refer to keypads 1-8

PARTITION "A" TIME AND DELAY OPTIONS - P180E

P180E   1E Set partition when time zone ends -Default off
         2E Unset partition when time zone starts - Default off
         3E Disable monitor mode exit delay - Default off
         4E Disable set mode exit delay - Default off
         5E Disable monitor mode entry delay - Default off
         6E Disable set mode entry delay - Default off
 (NEW)   **7E** Disable Monitor Mode Zone Alarms to Dialler - Default off = Alarms **WILL** Report
         8E Disable zone tampers during exit delay time - Default off

Option 1   **Set partition when time zone ends** - This option will automatically arm partition "A" when the time zone programmed at address P170E (Page 24) finishes.

Option 2   **Unset partition when the time zone starts** - This option will automatically disarm partition "A" when the time zone programmed at address P170E (Page 24) starts.

Option 3   **Disable monitor mode exit delay.** If this option is on the exit delay for partition "A" does not apply to monitor mode.

Option 4   **Disable set mode exit delay** - If this option is on the exit delay for partition "A" does not apply when setting (the delay will still apply to monitor mode unless option 3 is also on).

Option 5   **Disable monitor mode entry delay** - If this option is on, then all zones are instant in monitor mode regardless of any entry delays programmed to zones.

Option 6   **Disable set mode entry delay** - If this option is on then all zones are instant in full set mode regardless of any entry delays programmed to zones (entry delays will still apply to zones in monitor mode unless option 5 (above) is also on).

Option 7   **Disable Monitor Mode Zone Alarms from being Reported.** Default off = Alarms **WILL** Report

Option 8   **Disable zone tampers during exit time.** If this option is set, then the zone tampers for this Partition are ignored during the exit delay (useful for monitoring zone troubles on smoke detectors)

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PARTITION "A" MISCELLANEOUS KEYPAD OPTIONS - P198E

P198E   **1E**   Spare
        2E   Arm key required before code to Set
        3E   Monitor key required before code to turn on Monitor Mode
        4E   Code required to arm area
        5E   Control function requires code
        6E   Control function toggles
        7E   Control function is momentary
        8E   Control shunts "Day" mode

Option 1   **Spare**

Option 2   **Arm key required before code to set** - This option determines if the "ARM" key must be pressed before a valid code is entered to set Area "A"..

Option 2 (above) must be enabled when a keypad is assigned to more than one area.

Option 3   **Monitor key required before code to turn on Monitor Mode** - This option determines if the "MONITOR" key must be pressed before a code is entered to turn on Monitor Mode in Area "A". This option must be enabled where a keypad is assigned to more than one area.

Option 4   **Code required to arm area** - If this option is off the partition can be shortcut armed. Shortcut arming is when the area can be set by pressing the "ARM" key only, i.e. no code is required. If this option is on, a valid Area "A" user code is required to set the area.

Option 5   **Control function requires code** - This option determines if a code is required to operate the Control function. The Control function provides the ability to operate an output from a key press rather than from an alarm event. If this option is off, pressing the "CONTROL" key will produce an output as assigned at P181E through P188E option 5. See Page 25 for P181E through to P188E.

Option 6   **Control function toggles** - If this function is enabled, the output which is mapped to the control function will toggle to the opposite state each time the control function is operated, i.e. if the output is on it will turn off etc.

            If the reset time mapped to the control output is zero, the output will remain on until the control function operates again and toggles it off. If there is a reset time mapped to the control output, the output will turn off at the end of the reset time as expected. The next time the Control function is operated, the output will come on again for the reset period then turn off.

Option 7   **Control function is momentary** - If this option is enabled, the output which is mapped to the control function will turn on for the time period as determined by the value of the pulse timer mapped to the control output.

Option 8   **Control shunts "Day" mode** - If this option is enabled, pressing the CONTROL button will shunt or override any Day mode activations. When the Control shunt is active, the CONTROL light will be on.

Note: To overcome confusion, it is advisable that only _ONE_ of the above Control Function

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PARTITION "A" MISCELLANEOUS OPTIONS 2nd set - P199E

P199E	1E	Keyswitch Input enabled
	2E	Use 2nd Keyswitch
	3E	Keyswitch arms Area "A"
	4E	Pendant chirps on Area "A" Arming / disarming
	5E	Pendant chirps on Area "A" Monitor on / off
	6E	2 second output on setting
	7E	2 second output on unsetting
	8E	Access Control enabled even when Area "A" is set

Option 1   **Keyswitch Input enabled** - This option will enable the Keyswitch input. Operating the Keyswitch input will arm Area "A" as determined by P199E option 3.   The Keyswitch type is programmed at P201E options 3&4. See Page 29 for P201E.

Option 2   **Use 2nd Keyswitch** - This option will enable dual end of line configuration of the Keyswitch input and assign the high value End-Of-Line (8k2) to Area "A"

Option 3   **Keyswitch arms Area "A"** - If this option is enabled, operating the Keyswitch will arm Area "A". If this option is disabled, operating the Keyswitch will turn Area "A" Monitor Mode on and off.

Option 4   **Pendant Chirps when Arming / Disarming** - This option will send two short pulses (Chirps) to the output mapped at P171E - P178E (Page 24) option 4 when Area "A" is set via a radio key (Pendant) and four short pulses to the output when Area "A" is unset again.

Option 5   **Pendant Chirps when Monitor Mode on / off** - This option will send two short pulses (Chirps) to the output mapped at P171E - P178E (Page 24) option 4 when Monitor Mode Area "A" is turned on with a Crow radio key (Pendant) and four short pulses to the output when Area "A" Monitor Mode is turned off.

Option 6   **2 second output on setting** - If this option is enabled, the output which is assigned by P171E6E through P178E6E will turn on for 2 seconds when Area "A" is armed.

Option 7   **2 second output on unsetting** - If this option is enabled, the output which is assigned by P171E6E through P178E6E will turn on for 2 seconds when Area "A" is disarmed. See Page 24 for P171E-P178E.

Option 8   **Access Control enabled when Area "A" set** - If this option is enabled, the Access Control functions, as determined by P343E, P344E, P363E and P364E (Page 31) will work at all times, even when Area "A" is in the set condition.

NOTE: At this address, options 3, 4 & 6 are on as default

Where addresses P170E through P199E relate to Area "A", addresses P270E through P299E define the same options but relevant to Area "B" with addresses

MISCELLANEOUS OPTIONS - P201E to P206E

P201E	**1E**	Mains input is AC or DC
	2E	Ignore Mains input
	3E	Low Keyswitch is momentary or latching
	4E	High Keyswitch is momentary or latching
	5E	Cabinet tamper is loop or End-Of-Line
	6E	Installer lockout
	7E	Area "C" is zones shared with Area "A" & "B", ie. Area "C" zones are common to Areas "A" & "B"
	8E	Local serial port speed

Option 1   **Mains input is AC or DC** - The AC input on the panel can be 17VAC @ 50Hz or a DC input between 16 to 30VDC. This option stops the Mains Fail from occurring if a DC input is applied.

Option 2   **Ignore Mains input** - If the panel must be run from a 12VDC supply only, such as a solar application, the 12Volt can be applied to the battery input and if this option is selected, the mains input is then ignored.

Option 3   **Low Keyswitch is momentary or latching** - This option determines if the low Keyswitch (4k7) is momentary or latching. If option 3 is on, then the low Keyswitch will be momentary (Default).

Option 4   **High Keyswitch is momentary or latching** - This option determines if the high Keyswitch (8k2) is momentary or latching. If option 4 is on, then the high Keyswitch will be momentary (Default).

Option 5   **Cabinet tamper is loop or End-Of-Line** - This option determines if the Cabinet tamper input uses a closed loop or 2k2 End-Of-Line resistor. If option 5 is on, then the tamper is a 2k2. (Default)

Option 6   **Installer lockout** - If this option is enabled, the installer "Back Door" power up access to program mode will be disabled. (Default off)

Option 7   **Area "C" has zones shared with Areas "A" & "B"** - If the system uses zones which are common to Area "A" and Area "B", then Area "C" is used for those shared zones. If zones in Area "C" are not shared between "A" & "B", then Area "C" is available as an independent partition. Light on = Shared

Option 8   **Local serial port speed** - If this option is on, it sets the local communications speed of the local RS232 port to be 9600bps. If this option is off, the communications port speed is set to 2400bps. This option affects the communications speed while dumping the Event Buffer from the serial port of the Power Wave-16 to a serial printer or the communications speed during the Direct Connect up / download session. **This option has NO affect to the remote up / download speed through a telephone line.**

P204E   **Spare**
P205E   **Spare**
P206E   **Spare**

SINGLE OR DUAL ZONE INPUT (8 or 16 zones) - P300E

P300E   1-8E   **Single or dual zone input** - This option is used to define the Power Wave 16, as an 8 or 16 zone panel, where options 1-8 represent zones 1-8. If a zone is Selected "ON" at this address, it means that the zone has been assigned for "Zone Doubling" (Split Resistors if EOL's are used), whereby the one zone input is used for both a low (1-8) and a high (9-16) zone. When zone doubling is used, zone 1 input is used for zones 1 & 9, Zone 2 input is used for zones 2 & 10, zones 3 input is used for zones 3 & 11 etc. **Zone doubling is assigned on a zone-by-zone basis.**

VIBRATION SENSOR ZONE ASSIGNMENTS - P301E To P308E & P161E To P168E

All 16 zones (if used) may be defined as vibration sensor zones with a vibration sensitivity level as required, although due to the interaction using dial zones with vibration sensors, we recommend using a low sensitivity setting or preferably treating the panel as an 8 zone only with up to 8 vibration zones. This feature has been designed to be used with most vibration sensors that do Not require an analyser. If a value other than zero is assigned at addresses P301E to P308E (for Zones 1-8) or P161 to P168 (for Zones 9-16), the zone which has been assigned that value automatically becomes a vibration zone. To turn a vibration zone back into a normal zone, assign a zero value at the relevant address. Default is Zero for all Zones.

P301E   0-8E   **Zone 1 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P302E   0-8E   **Zone 2 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P303E   0-8E   **Zone 3 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P304E   0-8E   **Zone 4 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P305E   0-8E   **Zone 5 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P306E   0-8E   **Zone 6 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P307E   0-8E   **Zone 7 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P308E   0-8E   **Zone 8 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P161E   0-8E   **Zone 9 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P162E   0-8E   **Zone 10 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P163E   0-8E   **Zone 11 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P164E   0-8E   **Zone 12 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P165E   0-8E   **Zone 13 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P166E   0-8E   **Zone 14 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P167E   0-8E   **Zone 15 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.
P168E   0-8E   **Zone 16 vibration sensitivity** - Where 0 = none, 1 is highest and 8 is lowest sensitivity level.

LOW ZONE ASSIGNMENTS (1-8) - P331E To P344E

Combinations of options in addresses P331E to P344E may be used to give the most suitable zone behaviour.

P331E   1-8E   **Zone is a normally open input** - where options 1-8 represent zones 1-8. This option is used when normally open detectors such as smoke detectors are to be connected to a zone.. Default is all zones normally closed.

P332E   1-8E   **Zone is a radio detector** - Where options 1-8 represent zones 1-8. This option is used when the Crow Radio (wireless) devices are used as detectors. (Default none)

P333E   1-8E   **Zone is in Area "A"** - Where options 1-8 represent zones 1-8. This option assigns a zone to Area "A" within a partitioned system. If the system is not partitioned, all zones must be assigned to Area "A". (Default all zones in Area "A"). See also P201E7E Page 29.

P334E   1-8E   **Zone is in Area "B"** - Where options 1-8 represent zones 1-8. This option assigns a zone to Area "B" within a partitioned system. (Default none in Area "B"). See also P201E7E Page 29.

If a zone is defined in both Area "A" and Area "B", it is deemed to be in Area "C"

P335E   1-8E   **Zone is isolatable** - Where options 1-8 represent zones 1-8. This option determines if a zone can be isolated or excluded either manually or via the Auto-Exclude process. (Default all on).

P336E 1-8E Zone Is A Handover - Where options 1-8 represent zones 1-8. Zones defined at this address as handover are given the unique ability to behave as both delay and instant zones. If a zone defined as an entry delay zone has been activated and the entry delay is running, a handover zone will behave as another entry delay zone with a delay time as defined at P401E to P416E (see page 32). If an entry delay zone has not been activated and there is no entry delay running, a handover zone becomes an instant zone with no entry delay. (Default = Zone 2 only) The Handover zone **MUST** have an entry delay programmed.

P337E 1-8E Two Trigger Zones - Where options 1-8 represent zones 1-8. A zone defined as two trigger at this address will only cause an activation if one of the following conditions are met;

a   The zone is triggered twice within the two trigger time period as defined by Address P451E, P452E or P453E (See Page 32).

b   Any two zones defined as two trigger activate once each within the two trigger time period as defined by Address P451E, P452E or P453E (See Page 32).

c   A zone defined as two trigger is left violated for longer than the two trigger time period as defined by Address P451E, P452E or P453E (See Page 32).

P338E 1-8E Zone is 24 Hour - Where options 1-8 represent zones 1-8. 24 hour zones will activate whether the panel or partition is set or unset. (Default none)

P339E 1-8E Monitor Mode Zones - Where options 1-8 represent zones 1-8. Zones included at this address will become active when the panel is in Monitor Mode. Zones not assigned at this address will be excluded.   (Default Zones 1-4). **Note: Monitor Mode Zones are linked to Area assignments.**

P340E 1-8E Day Zones - Where options 1-8 represent zones 1-8. Day zones are active during periods where the panel or partitions are unset and revert to normal zones during set periods (Default none)

P341E 1-8E Siren Lockout Zones - Where options 1-8 represent zones 1-8. Zones with siren lockout designation will only cause their assigned outputs to operate once per armed period. LED on = zone locked out. (Default none)

P342E 1-8E Auto Exclude Zones - Where options 1-8 represent zones 1-8. Zones assigned Auto Exclude function at this address will be automatically excluded by the system if they are unsealed when the exit timers expire. Zones not given Auto Exclude status will cause an activation if they are unsealed at the end of the exit delay period. (Default all on)

P343E 1-8E Access Control door position input - Where options 1-8 represent zones 1-8. (Default none)

P344E 1-8E Access Control Request to exit input - Where options 1-8 represent zones 1-8. (Default none)

P345E 1-8E Continuous Day Zone - Where options 1-8 represent zones 1-8. The zone acts as a day zone at all times (Armed and Disarmed) and will operate day alarms but not normal zone alarms (Default none)

P346E 1-8E Zone will report multiple activations to communicator - Default = Zones 1-8

Where addresses P331E through P346E relate to

the 8 low zones, addresses P351E through P366E define the

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SYSTEM DELAYS AND TIMERS - P401E to P459E

All timers are defined with 1 second increments. A zero (0) value at these addresses will result in a latch or no timed function at all. **NOTE: All values are in seconds**

P401E	0-999E	**Zone 1 entry delay** - 0-999 seconds - default 20 seconds
P402E	0-999E	**Zone 2 entry delay** - 0-999 seconds - default 20 seconds
P403E	0-999E	**Zone 3 entry delay** - 0-999 seconds - default 0 (Instant)
P404E	0-999E	**Zone 4 entry delay** - 0-999 seconds - default 0 (Instant)
P405E	0-999E	**Zone 5 entry delay** - 0-999 seconds - default 0 (Instant)
P406E	0-999E	**Zone 6 entry delay** - 0-999 seconds - default 0 (Instant)
P407E	0-999E	**Zone 7 entry delay** - 0-999 seconds - default 0 (Instant)
P408E	0-999E	**Zone 8 entry delay** - 0-999 seconds - default 0 (Instant)
P409E	0-999E	**Zone 9 entry delay** - 0-999 seconds - default 0 (Instant)
P410E	0-999E	**Zone 10 entry delay** - 0-999 seconds - default 0 (Instant)
P411E	0-999E	**Zone 11 entry delay** - 0-999 seconds - default 0 (Instant)
P412E	0-999E	**Zone 12 entry delay** - 0-999 seconds - default 0 (Instant)
P413E	0-999E	**Zone 13 entry delay** - 0-999 seconds - default 0 (Instant)
P414E	0-999E	**Zone 14 entry delay** - 0-999 seconds - default 0 (Instant)
P415E	0-999E	**Zone 15 entry delay** - 0-999 seconds - default 0 (Instant)
P416E	0-999E	**Zone 16 entry delay** - 0-999 seconds - default 0 (Instant)

120 sec	2 min
180 sec	3 min
240 sec	4 min
300 sec	5 min
360 sec	6 min
420 sec	7 min
480 sec	8min
540 sec	9 min
600 sec	10

P417E	0-999E	**Area "A" exit delay** - 0-999 seconds - Default 60 seconds
P418E	0-999E	**Area "B" exit delay** - 0-999 seconds - Default 60 seconds
P419E	0-999E	**Area "C" exit delay** - 0-999 seconds - Default 60 seconds
P421E	0-999E	**Output #1 reset time** - Default 300 seconds (5 min)
P422E	0-999E	**Output #2 reset time** - Default 0 seconds (Latching)
P423E	0-999E	**Output #3 reset time** - Default 600 seconds (10 min)
P424E	0-999E	**Output #4 reset time** - Default 600 seconds (10 min)
P425E	0-999E	**Output #5 reset time** - Default 0 (latching)
P426E	0-999E	**Output #6 reset time** - Default 0 (latching)
P427E	0-999E	**Output #7 reset time** - Default 0 (latching)
P428E	0-999E	**Output #8 reset time** - Default 0 (latching)
P431E	0-999E	**Output #1 delay on timer** - Default 0 (instant)
P432E	0-999E	**Output #2 delay on timer** - Default 0 (instant)
P433E	0-999E	**Output #3 delay on timer** - Default 0 (instant)
P434E	0-999E	**Output #4 delay on timer** - Default 0 (instant)
P435E	0-999E	**Output #5 delay on timer** - Default 0 (instant)
P436E	0-999E	**Output #6 delay on timer** - Default 0 (instant)
P437E	0-999E	**Output #7 delay on timer** - Default 0 (instant)
P438E	0-999E	**Output #8 delay on timer** - Default 0 (instant)
P441E	0-999E	**Output #1 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse) Times are in 1/10 second
P442E	0-999E	**Output #2 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse) increments
P443E	0-999E	**Output #3 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse)
P444E	0-999E	**Output #4 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse)
P445E	0-999E	**Output #5 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse)
P446E	0-999E	**Output #6 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse)
P447E	0-999E	**Output #7 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse)
P448E	0-999E	**Output #8 pulse time** -Default 0 (0 = Minimum 0.1 sec pulse)
P451E	0-999E	**Area "A" Two Trigger time period** - Default 60 seconds
P452E	0-999E	**Area "B" Two Trigger time period** - Default 60 seconds
P453E	0-999E	**Area "C" Two Trigger time period** - Default 60 seconds
P457E	1-999E	**Area "A" Day Zone keypad buzzer duration** - Default 2 seconds
P458E	1-999E	**Area "B" Day Zone keypad buzzer duration** - Default 2 seconds
P459E	1-999E	**Area "C" Day Zone keypad buzzer duration** - Default 2 seconds

The Power Wave-16 Ver4 and above, provides a basic Access Control function which utilises the keypad Control Function, one of the outputs as a switching device and separate zone inputs as Request-to-Exit and door position

monitoring. Address P343E (Page 31) is used to assign a zone to be the door position monitor input and address P344E (Page 31) is used to assign a zone as the request to exit input. Once options have been programmed, a door which is fitted with a reed switch, monitored by the zone as defined at P343E (Page 31) will cause a 24 hour alarm if it is opened without the Control Function being operated. Once the control function has been operated with a valid code, a DOTL (Door Open Too Long) timer is started and if the door is not closed again within the time determined by P454E below (for Area "A"), P455E below (for Area "B:) or P456E below (for Area "C"), a 24Hr alarm will be created. The control function to output mapping is defined at addresses P181E through P188E for Area "A" (See Page 25).

P454E   1-999E   **Area "A" door open too long time period** - default 10 sec
P455E   1-999E   **Area "B" door open too long time period** - default 10 sec
P456E   1-999E   **Area "C" door open too long time period** - default 10 sec

MAINS POWER FAIL REPORTING

P460E   1 - 9 9 E
        Delay Mains Fail Report - where the option value between 0 and 99 represent time delays
        from 0 to 99 minutes. **A value of 0 will result in an instant report of mains failure**
                (Default = 60)

REPORT DELAY ON ZONES

P450E   1-99E   **Report Delay on Zones** - this delay pauses the zone reporting of alarms via the
        communicator for the programmed period (0 = No delay, 1-99 seconds). **If the alarm is
        reset before this delay expires, No alarms will be reported.**

ENROLLING WIRELESS (RADIO) DETECTORS - P501E to P516E

This block of 16 addresses is where Crow Wireless (radio) PIR's and other wireless detection devices are enrolled into the Power Wave-16 and assigned to zones. Assigning a zone as radio at addresses P332E (Page 30 For Zones 1-8 "Low Zones") & P352E (Page 30 For Zones 9-16 "High Zones"), will enable this function and disable the zone input terminals for that specific zone on the PCB. **Zones assigned as wireless zones Do Not require End-Of-Line Resistors.**

To load a radio detector, it is **best** to have **one** Radio **PIR powered-up** by a 9 Volt Alkaline battery **at-a-time.** Whilst in installer program mode, **Press** the **location number of** the "Enrol **Radio** Detector **Zone"** (See below). Eg: For Zone 1, press P501 **But do Not press Enter Yet** on the keypad**.** Now, **press** the side **"Test" Button of the Crow (AE) PIR for 3 Seconds (Count 1000 & 1, 1000 & 2, 1000 & 3).** This will enable the **10** bursts (One (1) every 6 seconds) of **"Test Transmissions"** from the Crow (AE) PIR. **When** the **LED on** the Crow (AE) **PIR comes on** to indicate the Test Transmission, **Press the "Enter" Button on the keypad.** The keypad will start beeping until the Transmission Code of the Crow (AE) PIR gets learnt by the Control Panel. Once the Transmission code is learnt by the panel, the keypad will stop beeping. Now, **take** the **battery out** of the PIR you just programmed into the panel **and put it into the next PIR** you want to teach into the panel. **Repeat** the above **sequence for all** of the **radio detectors,** moving through the addresses which correspond to the zones you require.

P501E - Enrol Radio Detector Zone 1	**P509E** - Enrol Radio Detector Zone 9	
P502E - Enrol Radio Detector Zone 2	**P510E** - Enrol Radio Detector Zone 10	
P503E - Enrol Radio Detector Zone 3	**P511E** - Enrol Radio Detector Zone 11	
P504E - Enrol Radio Detector Zone 4	**P512E** - Enrol Radio Detector Zone 12	
P505E - Enrol Radio Detector Zone 5	**P513E** - Enrol Radio Detector Zone 13	
P506E - Enrol Radio Detector Zone 6	**P514E** - Enrol Radio Detector Zone 14	
P507E - Enrol Radio Detector Zone 7	**P515E** - Enrol Radio Detector Zone 15	
P508E - Enrol Radio Detector Zone 8	**P516E** - Enrol Radio Detector Zone 16	

> **It is recommended that the "Walk Test" Procedure be Performed to verify the correct operation and Reliable transmission range of all wireless devices (Detectors / Reeds, etc).**
>
> **See (P735E) bottom of Page 40**

SET WIRELESS (RADIO) DETECTOR OPTIONS - P521E To P536E

This block of addresses is used to assign additional functions to the radio detectors and Reed Swiches.

Please see below for New DEFAULT Information on Radio Device Functions

P521E	**1E**	Spare
	2E	Spare
	3E	**Crow (AE) Radio PIR Enable + PIR Low Battery Detect Enable – (NEW DEFAULT)**
	4E	Spare
	5E	Spare
	6E	**Crow (AE) Radio Reed Switch Door Open / Close Status Enable + Radio Reed Switch Low Battery Status Detect Enable.**
		*** If this option "6E" is NOT enabled, then the Black Jumper inside the Crow (AE) Radio Reed Switch (Part#AEDW-101A) should be Opened to Disable the Restore Transmission which will also prolong the units battery life.***
	7E	**Crow (MERLIN) _Non-Supervised_ Radio PIR Enable + PIR Low Battery Detect + PIR Tamper Enable.** This option is Only available on Power Wave-16 PCB Version 5.45 or Version 5.53 and above. _(For the Merlin PIR to work, an RX-40 (40 Bit Receiver) Must be installed)._
	8E	Spare

Where P521E assigns options to the radio detector at zone 1, P522E assigns options to the radio detector at zone 2 etc.

P521E	Radio detector zone 1 options			
P522E	Radio detector zone 2 options			
P523E	Radio detector zone 3 options	P529E	Radio detector zone 9 options
P524E	Radio detector zone 4 options	P530E	Radio detector zone 10 options
P525E	Radio detector zone 5 options	P531E	Radio detector zone 11 options
P526E	Radio detector zone 6 options	P532E	Radio detector zone 12 options
P527E	Radio detector zone 7 options	P533E	Radio detector zone 13 options
P528E	Radio detector zone 8 options	P534E	Radio detector zone 14 options
		P535E	Radio detector zone 15 options
		P536E	Radio detector zone 16 options

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ENROLLING RADIO KEYS - P541E To P556E

In the Power Wave-16 Ver4 and above, we refer to wireless pendant transmitters as "Radio Keys". Because the Power Wave-16 recognises each button as a separate function or user, we refer to each button or user separately in that if you are loading a four button radio key, you would actually be enrolling 4 separate radio users. It is possible to enrol several radio users as one, where you are able to program the transmitter code of the radio key (usually via dip switches) to key them alike. Where you can not program the transmitter code of the radio keys, you must enrol them as separate users. For example, when you are using the CROW 2 button radio key, you can enrol a maximum of 8 radio keys into the system as each radio key will take up 2 address lines, one for each of the two buttons.

Radio users are enrolled in the same way as Radio Detectors. **Press** the **program key**, **then** the address **location Number** (Eg: P541 to Enrol Radio user # 1) **Do Not Press "Enter" Yet.** Now, **press** and hold down one of the "Radio-Key" **Transmitter Buttons** and as soon as you press transmitter button down, **Press** the **"ENTER"** key on the keypad. The **keypad will start beeping** for a short time (1 or 2 seconds) **until** the transmitted **code** is **learnt** by the system. **To verify** the **proper operation** of the transmitter, **exit** the Installer **Program Mode** (by pressing the "Program" button followed by the "Enter" key), **then** simply **press** the **transmitter button(s)** you have programmed into the system. **If** the **programming** procedure was **successful,** the **system will perform** the appropriate **function assigned to** the particular **transmitter button** (Eg: Set/Unset the system or activate an output, etc).

P541E	- Enrol Radio user # 1	**P549E**	- Enrol Radio user # 9
P542E	- Enrol Radio user # 2	**P550E**	- Enrol Radio user # 10
P543E	- Enrol Radio user # 3	**P551E**	- Enrol Radio user # 11
P544E	- Enrol Radio user # 4	**P552E**	- Enrol Radio user # 12
P545E	- Enrol Radio user # 5	**P553E**	- Enrol Radio user # 13
P546E	- Enrol Radio user # 6	**P554E**	- Enrol Radio user # 14
P547E	- Enrol Radio user # 7	**P555E**	- Enrol Radio user # 15
P548E	- Enrol Radio user # 8	**P556E**	- Enrol Radio user # 16

RADIO KEY OPTIONS 1st Set - P561E - P576E

In the same way that permissions are set for user codes, Radio Keys are also assigned permissions which determine their functionality.

P561E	**1E**	Radio user #1 has Area "A" permissions - (Default all)
	2E	Radio user #1 has Area "B" permissions
	3E	Radio user #1 has Area "C" permissions
	4E	Radio user #1 will set (Arm) - (Default all)
	5E	Radio user #1 will unset (Disarm) - (Default all)
	6E	Radio user #1 will turn Monitor Mode on
	7E	Radio user #1 will turn Monitor Mode off
	8E	Radio user #1 is disabled during alarm state

Option 1   **Radio user #1 has Area "A" permissions** - The functions set by options 4-7 will be active in Area "A"

Option 2   **Radio user #1 has Area "B" permissions** - The functions set by options 4-7 will be active in Area "B"

Option 3   **Radio user #1 has Area "C" permissions** - The functions set by options 4-7 will be active in Area "C"

Option 4   **Radio user #1 will set (Arm)** - When this option is enabled, radio user #1 will set (Arm) which ever area is assigned by options 1-3

Option 5   **Radio user #1 will unset (Disarm)** - When this option is enabled, radio user #1 will unset (Disarm) which ever area is assigned by options 1-3

Option 6   **Radio user #1 will turn Monitor Mode on** - When this option is enabled, radio user #1 will turn Monitor Mode on in which ever area is assigned by options 1-3

Option 7   **Radio user #1 will turn Monitor Mode off** - When this option is enabled, radio user #1 will turn Monitor Mode off in which ever area is assigned by options 1-3

Option 8   **Radio user #1 is disabled during alarm state** - When this option is enabled, radio user #1 can not be used to reset an alarm, ie. it must be reset at the keypad.

NOTE: Where P561E sets options for radio user #1, P562 sets options for radio user #2 etc

P561E	Radio user #1 options		P569E	Radio user # 9 options
P562E	Radio user #2 options		P570E	Radio user #10 options
P563E	Radio user #3 options		P571E	Radio user #11 options
P564E	Radio user #4 options		P572E	Radio user #12 options
P565E	Radio user #5 options		P573E	Radio user #13 options
P566E	Radio user #6 options		P574E	Radio user #14 options
P567E	Radio user #7 options		P575E	Radio user #15 options
P568E	Radio user #8 options		P576E	Radio user #16 options

RADIO KEY OPTIONS 2nd Set - P581E - P596E

P581E	**1E**	Radio user #1 turns control function on
	2E	Radio user #1 turns control function off (Toggles if 1 on)
	3E	Radio user #1 turns output on
	4E	Radio user #1 turns output off (Toggles if 3 ON)
	5E	Radio user #1 Spare
	6E	Radio user #1 is instant panic
	7E	Radio user #1 is delayed panic (1.5 sec)
	8E	Reserved for future use.

Option 1   **Radio user #1 turns control function on** - When this option is enabled, the radio user will turn on the Control Function as if it were operated from the keypad.

Option 2   **Radio user #1 turns control function off** - When this option is enabled, the radio user will turn the control output off as if it were operated from the keypad. (Dependant on control options)

Option 3   **Radio user #1 turns output on** - When this option is enabled, the radio user will turn on the output as assigned by P601E (see Page 37).

Option 4   **Radio user #1 turns output off** - When this option is enabled, the radio user will turn off the output as assigned by P601E (see Page 37). This function is only valid when there is no reset time assigned to the output in question.

Option 5   **Spare**.

Option 6   **Radio user #1 is instant panic** - When this option is enabled, the radio user will produce an instant panic.

Option 7   **Radio user #1 is delayed panic** - When this option is enabled, the radio user will produce a delayed panic after transmitting for 1.5 seconds.

Option 8   **Reserved for future use.**

MAPPING WIRELESS (RADIO) USERS TO OUTPUTS

MAPPING RADIO USERS TO OUTPUTS - P601E to P616E

This block of addresses is used to map radio users to outputs in conjunction with P581E To P596E (Page 36). All output modifiers such as reset timers and lock out functions are maintained and will determine the behaviour of the assigned output.

P601E	1-8E	**Radio user # 1 to output 1-8**	- Where options 1-8 represent outputs 1-8
P602E	1-8E	**Radio user # 2 to output 1-8**	- Where options 1-8 represent outputs 1-8
P603E	1-8E	**Radio user # 3 to output 1-8**	- Where options 1-8 represent outputs 1-8
P604E	1-8E	**Radio user # 4 to output 1-8**	- Where options 1-8 represent outputs 1-8
P605E	1-8E	**Radio user # 5 to output 1-8**	- Where options 1-8 represent outputs 1-8
P606E	1-8E	**Radio user # 6 to output 1-8**	- Where options 1-8 represent outputs 1-8
P607E	1-8E	**Radio user # 7 to output 1-8**	- Where options 1-8 represent outputs 1-8
P608E	1-8E	**Radio user # 8 to output 1-8**	- Where options 1-8 represent outputs 1-8
P609E	1-8E	**Radio user # 9 to output 1-8**	- Where options 1-8 represent outputs 1-8
P610E	1-8E	**Radio user #10 to output 1-8**	- Where options 1-8 represent outputs 1-8
P611E	1-8E	**Radio user #11 to output 1-8**	- Where options 1-8 represent outputs 1-8
P612E	1-8E	**Radio user #12 to output 1-8**	- Where options 1-8 represent outputs 1-8
P613E	1-8E	**Radio user #13 to output 1-8**	- Where options 1-8 represent outputs 1-8
P614E	1-8E	**Radio user #14 to output 1-8**	- Where options 1-8 represent outputs 1-8
P615E	1-8E	**Radio user #15 to output 1-8**	- Where options 1-8 represent outputs 1-8
P616E	1-8E	**Radio user #16 to output 1-8**	- Where options 1-8 represent outputs 1-8

DEFINING TIME ZONES - P681E To P704E

This block of addresses is used to define the time zones used by outputs, users and the Auto Setting/UnSetting feature, etc. Time zones require a start and a finish time with the effective window as the difference between start and finish. For this reason, **the finish time value must be higher than the start value**. All times are set in 24 hour clock format.

P681E	1-8E	**TZ1 days of the week** - Where 1-7 represent the days of the week which the time zone will operate, where 1 = Sunday, 2 = Monday etc. A value of 8 at this address will invert the TZ function so that instead of being effective during the window created by the start and finish times, the TZ is effective during the times outside the window set by the start and finish times.
P682E	0000 - 2359E	**TZ1 Start time** - This is the time of day when the TZ will start. Use 24 hour format. (HHMM).
P683E	0000 - 2359E	**TZ1 Finish time** - This is the time of day when the TZ will finish. The finish time must be greater than the start time. Use 24 hour format. (HHMM).

There are 8 time zones available and they occupy addresses P681E to P704E, as each time zone requires 3 addresses to be assigned.

P681E	TZ1 Day of the week		P693E	TZ5 Day of the week
P682E	TZ1 Start Time		P694E	TZ5 Start Time
P683E	TZ1 Finish Time		P695E	TZ5 Finish Time
P684E	TZ2 Day of the week		P696E	TZ6 Day of the week
P685E	TZ2 Start Time		P697E	TZ6 Start Time
P686E	TZ2 Finish Time		P698E	TZ6 Finish Time
P687E	TZ3 Day of the week		P699E	TZ7 Day of the week
P688E	TZ3 Start Time		P700E	TZ7 Start Time
P689E	TZ3 Finish Time		P701E	TZ7 Finish Time
P690E	TZ4 Day of the week		P702E	TZ8 Day of the week
P691E	TZ4 Start Time		P703E	TZ8 Start Time
P692E	TZ4 Finish Time		P704E	TZ8 Finish Time

PROGRAMMING DAYLIGHT SAVING ADJUSTMENTS - P712E - P717E

Given that your Power Wave-16 Ver4 and above controller has a real time clock compliant with minutes & hours of the day, days of the week and months of the year, it is only reasonable to assume automatic adjustments for daylight saving. This block of addresses provides the Power Wave-16 Ver4 and above, with the information required to perform the daylight saving adjustments as required.

P712E   0-5E   **Daylight Saving Start Sunday** - This is the Sunday number in the month that daylight saving will begin (values of 1-5 are allowed).

P713E   0-12E   **Daylight Saving Start Month** - This is month in which the above Sunday will occur.(Values of 1-12 are allowed)

P714E   0-24E   **Daylight Saving Start Hour** - This is the hour that daylight savings will begin (values of 0-24 are allowed).

P715E   0-5E   **Daylight Saving End Sunday** - This is the Sunday number in the month that daylight savings will end (values of 1-5 are allowed).

P716E   0-12E   **Daylight Saving End Month** - This is the month in which the Sunday number will occur (values of 1-12 are allowed).

P717E   0-24E   **Daylight Saving End Hour** - This is the hour that daylight savings will end (values of 0-24 are allowed.

ZONE RESPONSE TIME SETTING

P709E   **Zone Response Time Setting -** 1-32E. Default = 6

The input response count sets the total time the zones must be in alarm before the state is recognised by the panel. A count of 1 = 45ms. The default setting of 6 (6 x 45ms) therefore, results in a zone response time of 270ms.

DYNAMIC DIAGNOSTIC ONLY DATA

DYNAMIC DATA -
P720E - P725E

The addresses in this block are used to provide real time feedback from the panel as to the current status. These are intended as view only addresses and only available in installer program mode.

P720E   **Time Zones active at this time** - This address displays the time zones which are currently active in the system.

P721E   **Misc System Flags** - This address shows the status of up to 8 system operating parameters as follows

        1 -7 = Spare
        8 = Daylight Saving active

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P722E   **Active Outputs** - This option will cause the keypad to display the outputs which are currently turned on, ie. active

P723E   **Display keyboard address** - This option will cause the keypad you are operating to display it's address from 1-8. This feature is only available in installer program mode.

P724E   **Display partitions assigned to this keypad** - This option will cause the keypad you are operating to display the Area(s) to which it has been assigned permissions.

P725E   **Display software version** - This address will cause the panel software version to be flashed back at the keypad.

START EVENT PRINTING

P726E   **Start Event Printing** - The alarm system stores the last 63 events in a printer buffer. These events include time, date and an event description. To print the events, assuming the Crow serial "Direct Connect Cable" is plugged into the serial port of the panel and connected to a printer with an RS232 input, a user with permission to print (e.g. P49-P72 option 4 - see Page 19), enters client program mode (P-code-E, program LED on solid), then enters P726E which will send the buffer data to the printer.

SETTING THE REAL TIME CLOCK

SETTING THE REAL TIME CLOCK - P730E - P734E

This block of addresses is used to set the internal real time clock used by the time zone functions.

P730E   1-7E   **Set day of the week** - where values of 1-7 represent Sunday to Saturday (Sunday = 1).
P731E   0000 - 2359E   **Set time** - Use 24 hour format to set current time of day.
P732E   1-31E   **Set day of the month** - where values of 1-31 represent days in the month.
P733E   1-12E   **Set Month**
P734E   0-99   **Set Year** - Where 0-99 represent years, ie. 97 = 1997. The Power Wave-16 Ver4 and above is fully 2000 compliant so values of 00 or higher will represent the year 2000 etc.

EEPROM UP/DOWN LOAD

P736E   **Write to EEPROM Board** - With the optional EEPROM back-up board (Program Key) plugged into the serial port on the panel and the write enable link on the EEPROM board in the "ON" position, entering P736E will write a copy of the panel program files to the EEPROM board.

P738E   **Read from EEPROM Board** - This address allows a copy of a panel program files that has already loaded into the EEPROM board, to be downloaded into another panel. (Note: The program files must first have been copied to the EEPROM board - refer P736E, see above, Page 40).

DE-MAPPING OUTPUTS

P740E   1-8E   **DE-mapping Outputs 1-8** - This powerful option is used to DE-Map or un-assign outputs from all zone and system functions. This is a particularly useful tool when reassigning outputs to special functions such as smoke detector reset etc. In addition to removing all programmed links, this option will also remove the reset time and reset the output as a latch.

RESET TO DEFAULTS

SET TO DEFAULTS -
          P741E - P745E
This block of addresses is used to reset sections of the programming back to defaults. Defaults are the values set when the panel was sent from the factory. Each of the addresses in this block defaults one part of the programming. To reset the entire configuration, it would be necessary to call each of the addresses individually.

P741E   **Reset user codes (Keypad Codes Only)**
P742E   **Reset communicator parameters**
P743E   **Reset Radio parameters (Wireless Detectors and Wireless Users)**
P744E   **Reset all other parameters (Outputs, Timers, Zone Allocations, etc.)**
P745E   **Clear event memory**

WALK TEST MODE

P735E   Walk test mode: When in installation program mode, entering P735E at the keypad will toggle walk test mode ON / OFF. When in walk test mode, the zone LED's (For Hardwired & Wireless Zones) will latch on at the keypad display. To reset the display, Enter P735E to clear the display and turn off walk test mode.
NOTE: **Walktest** Mode **Does Not Activate** any of the Output(s) such as **siren.** Keypad **LED's** Indication **Only.**

Another powerful feature available from your Power Wave-16 Ver4 and above control communicator is Command Control. This feature is a remote control facility which allows valid users to access the panel via a standard touch tone telephone and check the Set/Unset status of each of the areas and operate each of the eight (8) outputs.

The Command Control feature is only available on panels fitted with the Speech module (see page 16), as the voice prompts which guide you are stored on this module. In some installations, voice message storage space will be shared between the speech dial alarm event messages and the command control status messages.

There are five program addresses which must be defined before Command Control can be effective, in addition to the process of recording the actual status messages. These program addresses are;

P261E   code E   **4 Digit Code for Output Command Control** - This is the code used to access the Output Command menu. A number from 1-8 is entered after this code to take control of output(s) 1-8. (For this feature to work, option 5 at addresses P101E to P108E must be turned on – see Page 20).

P262E   code E   **4 Digit Code for Area "A" Command Control** - This is the code used to access the Area "A" Command menu.

P263E   code E   **4 Digit Code for Area "B" Command Control** - This is the code used to access the Area "B" Command menu.

P264E   code E   **4 Digit Code for Area "C" Command Control** - This is the code used to access the Area "C" Command menu.

P680E   1-9E   **Status Message Starting Number** - This value determines the place in the speech module where the command control status messages start. On installations where the speech module is also used to store alarm event messages, the command control status messages are stored in sequence from the point where the last alarm event message finishes. For example, if there are 3 alarm event messages stored in the speech module, the Command Control status messages will start at #4. In this example, a value of 4 would be entered at P680E Default = 1

RECORDING STATUS MESSAGES

The process for recording Command Control status messages is the same as that for recording alarm event messages, except for the following critical difference. The speech module command control status message storage is divided into twenty two (22) separate areas or "slots" Each of these slots is assigned a status from the possible 22, as listed below. The content of the messages is programmable but the order in which the panel expects to find the correct message for the relevant voice prompts is pre-defined. Eg: If the panel was giving the status of output 1 as being "ON", it would select message number 7.

1	Area "A" Armed
2	Area "A" Disarmed
3	Area "B" Armed
4	Area "B" Disarmed
5	Area "C" Armed
6	Area "C" Disarmed
7	Output 1 On
8	Output 1 Off
9	Output 2 On
10	Output 2 Off
11	Output 3 On
12	Output 3 Off
13	Output 4 On
14	Output 4 Off
15	Output 5 On
16	Output 5 Off
17	Output 6 On
18	Output 6 Off
19	Output 7 On
20	Output 7 Off
21	Output 8 On
22	Output 8 Off

To record your individual status messages into the speech module, you follow the same procedure as that for the alarm event messages except.

The messages must be recorded in the storage slots assigned for that particular status.

For example, if you are installing a system with a Command Control requirement to remotely set and unset Area "A" (Main Alarm) as well as turn lighting on and off which is controlled by output #2, you must record appropriate status messages as follows

Slot 1   "*Main alarm set*"
Slot 2   "*Main Alarm unse*t"
Slot 9   "*Lights on*"
Slot 10   "*Lights off*"

You must leave blank messages at recording slots which are not to be used. In this example, blank messages must be left at slots 3,4,5,6,7 & 8. Blank messages are created by pressing the record button on the speech programmer for only a moment, then releasing the button without recording an actual message. As soon as the record LED comes ON on the programmer, you can release it again.

Another example might be a system with two areas "A" (Office Alarm) and "B" (Factory Alarm) as well as controlling lighting via output #1 and a furnace controlled via output 4. For this system, you would record appropriate status messages as follows

Slot 1   "*Office Alarm set*"
Slot 2   "*Office Alarm unset*"
Slot 3   "*Factory Alarm set*"'
Slot 4   "*Factory Alarm unset*"
Slot 7   "*Lights on*"
Slot 8   "*Lights off*"
Slot 13   "*Furnace on*"
Slot 14   "*Furnace off*"

In this example, blank messages would be recorded at slots 5,6,9,10,11 & 12

Both of these examples have no alarm event messages to confuse the message recording slots. Alarm event messages used when the communicator reports in speech dial format may be stored at message slots from 1-8. Alarm event messages are recorded in order starting at slot #1 so if there are three event messages, then the first Command Control status message will be stored at slot #4. Using this example, because there are three alarm event messages stored in record slots 1,2, & 3, the 22 Command Control status messages must therefore be stored in record slots 4-26.

The table of record slots versus status messages shown on page 41 must be amended to suit each site, where varying numbers of speech dial alarm event messages are required. In these cases, the 22 status messages are simply shuffled down the order by the number of alarm event messages required for each job on an individual basis. For example, if there are two alarm event messages they would be stored at slots 1 & 2, therefore the status message for Area "A" set would be stored at slot 3 (2+1) and the status message for Area "A" unset would be stored at slot 4 (2+2). Accordingly if a status message was required for output #5 "ON", it would be stored at slot 17 (2+15) with the message for output #5 "OFF" stored at slot 18 (2+16).

NOTE: The starting slot for the status messages must be programmed at P680E as per page 41

Power Wave-16 Command Control provides a powerful, easy to use remote telephone control of your control communicator. User operation of the Power Wave-16 Command Control has been designed to be as simple and user friendly as possible, with recorded voice status messages to prompt you through the 11 menu options, providing a status report of the section of the system which you are currently commanding. Because these status messages are recorded on-site, they can be customised to suit each specific application. For example, rather than the status message saying "*Output #1 off*" you can record a message which describes exactly what is being controlled like "*Factory heating off", etc.*

In the previous section, you would have seen how you program access codes for each of the Command Areas and outputs. These are the codes you will enter over the phone to access the command menus. In order to start the Command Control feature, you must first ring the phone number which the panel is connected to. The panel may be set up to answer after a specific number of rings or it may be set-up to use the fax defeat" option. Either way, when you ring the phone number and finally get through to the Power Wave-16, the first thing you will hear over the phone is a burst of modem tone. The panel produces this tone in order to communicate with the upload/download option. After 5 seconds, this tone will stop and you must enter the access code which is associated with the Command menu option you wish to access. *Remember, the code you enter will determine which menu option you access.* If you miss the pause, the communicator will repeat the modem tone and then again pause for 5 seconds looking for your access code. This process will be repeated 4 times before hanging up if no valid code is received. When entering codes or other information in Command Control, the "#" key acts as a "*Clear*" button

When you have entered the required 4 digit access code the communicator will reply with the status message associated with that menu option. For example, let's say we have a code of 2045 programmed at address P262E (Page 41), we would use this code to set and unset Area "A" of the alarm system. If we had a status message recorded at slot 1 which said "*Main alarm set*" and one at slot 2 which said *"Main alarm unset"* When we ring through to the panel and we enter the code 2045, we would hear the message "*Main alarm set*" or "*Main alarm unset"* depending on the actual status of Area "A"

Once you have reached the desired menu and the status message has informed you of the actual state, you can use the "*" key to toggle the option on & off or set and unset, eg; in our example above, code 2045 accesses the Area "A" menu and lets say the status message we received was "*Main alarm unset"* If we press the "*" key, Area "A" will be armed with exit delay, etc. and we would receive a status message "*Main alarm set".* If we had accessed one of the output menus, we could turn ancillary devices like lighting, etc. on and off with the "*" key in the same way.

While you are on-line with the panel, you can move between menu options by entering the code of the option you want to move to. For example in the examples above, we had a code of 2045 programmed to give us access to Area "A". Lets say we have a code of 4321 programmed to access Output #1 which is interfaced to the factory lighting. While we are on-line in the Area "A" menu which we accessed with the 2045 code, if we enter the 4321 code (to move to the outputs menu) then the digit 1 (for output 1), we will be transported to the Output #1 menu and would hear the status message which had been programmed for the state of the factory lights (Note; For output control, you must enter in the 4 digit code eg 4321 followed by the output number you wish to control, in this case 1).

As in the previous example where we used the "*" key to toggle the alarm between set and unset, we can use the "*" key to toggle the output on and off. As you toggle the output on and off, you would hear the status message "*Factory lights on"* and "*Factory lights off".*

To end a Command Control session, simply hang up the phone. The communicator is monitoring the line at all times and 15 seconds after the last key press, it will automatically hang up the line. This 15 second timer is active during the whole command control process so a period of 15 seconds without a key press will cause the panel to hang-up. The "#" key is used as a "*Clear"* button at all stages during command control, so if you make a mistake or enter your code incorrectly, all you have to do is press the # key and start again.

LOCAL COMMAND CONTROL OF OUTPUTS

If a command control code for outputs is programmed (P261E, Page 41), and the output(s) are allowed to be locally controlled (P101-P108, option 6, Page 20), then entering the 4 digit code at a keypad will blank the display and the zone LED's will now indicate the output status. eg: If output 1 is on zone 1, the LED will be on. By now pressing the "1" button, output 1 can be turned off provided it is allowed to be locally controlled.

The communicator facility of this Ver4 (and above) of the Power Wave-16D has been designed to provide optimum flexibility in the way which alarm events are reported. This flexibility includes options for reporting to a central monitoring station using Ademco "Contact ID" format, an option for "Domestic" reporting using alternating siren tones, a format for reporting alarms to an "Alpha Numeric" pager and a powerful reporting feature to report events using the speech dialler.

In accordance with statutory requirements of Austel standards, we must bring the following points to your attention;

Connect the Telephone line via a Mode 3 lead (supplied) to the Mode 3 phone socket on the wall (not supplied). Using a Mode 3 socket on the wall, allows the Power Wave-16D to cut off existing telephones or other devices connected to the same phone line and seize the telephone line to ensure the alarm call can be made. The control panel is supplied with an RJ11 socket and/or terminal blocks for connecting the panel to the telephone line. If using the RJ11 phone socket on the PC Board, ensure that the supplied phone lead is used to connect the panel to the telephone line socket on the wall.

All connections must comply with Australian Standards ACA TS008.

If using the (Optional) terminal blocks on the PCB, then the system must be wired in accordance with the diagram below and the lead must comply with Australian Standards ACA TS008.

The following diagram shows how the Mode 3 (Type 600) plug should be wired to the Power Wave-16D.

Bottom View Of The Mode 3 (Type 600) Plug And Wall Socket

Australian Mode - 3 Connection Diagram
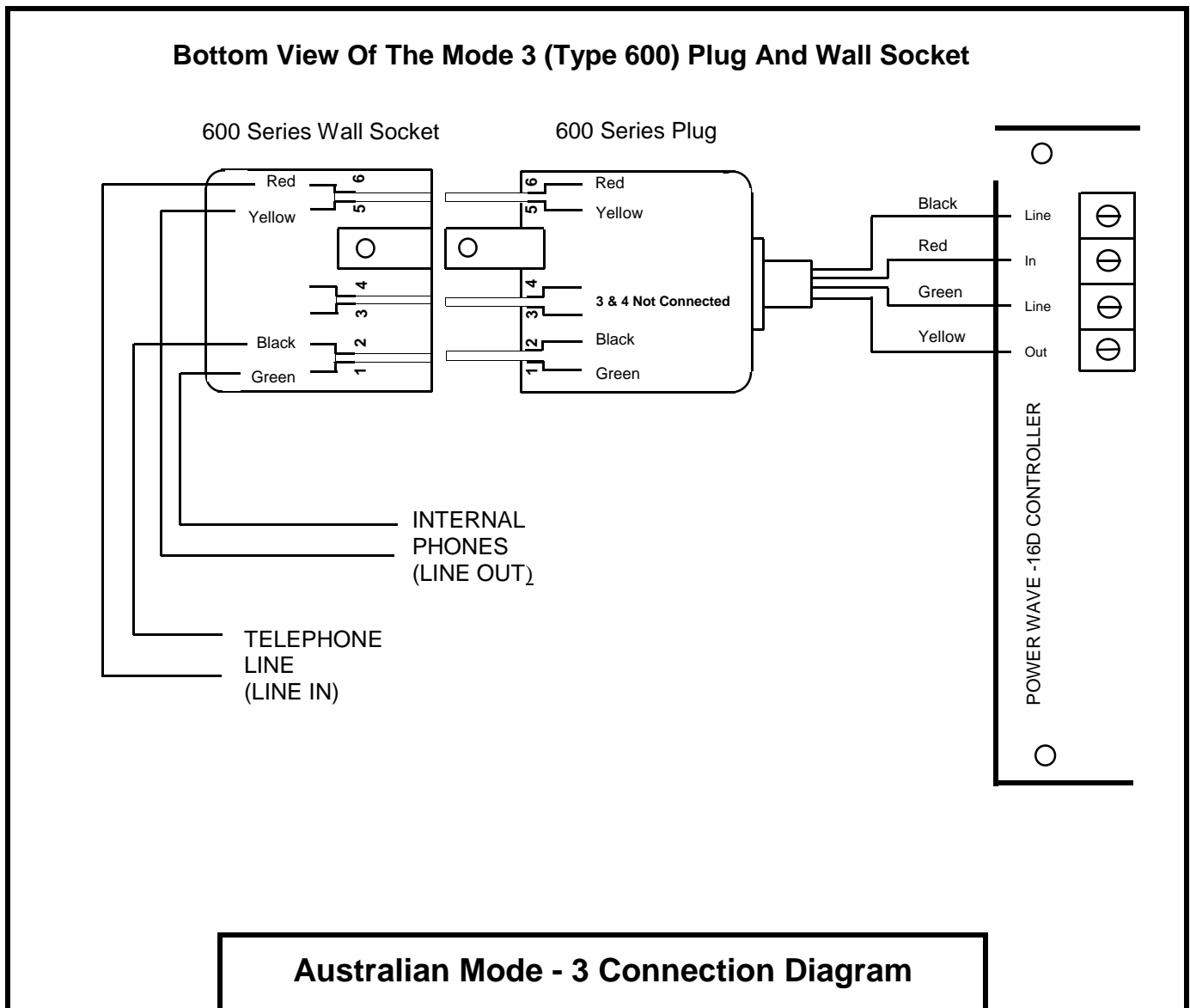
The flexibility of the system is further extended by the way in which you can assign different reporting formats to each of the **six** possible phone numbers.

1   **Ademco Contact ID Reporting Format** - This is a high speed, DTMF format used to report alarm events to a commercial monitoring station equipped with a computerised receiver. This format can only be kissed-off by the monitoring company receiver.

2   **Crow Domestic Dial Format** - This format has been developed by Crow to provide a basic, low cost means of reporting alarm events for up to 6 private phone numbers that do not require any additional receiving equipment. Domestic dial will only report zone activation's, panic alarms and battery low alarms. When the communicator uses this domestic dial format to report an event, an alternating siren type (alarm tone) will be heard over the telephone. This alternating alarm tone continues for 5 seconds followed by a 5 second pause in which the communicator is looking for a kiss-off (call acknowledgment). If a kiss-off is not received within the 5 second pause period, another round of alarm tones will be sent followed by another pause to check for kiss-off. This routine is repeated 4 times, at which point if a kiss-off has not been received, the communicator will hang up and dial the next phone number. To kiss-off the communicator during the pause period, all you do is press any (one only) of the "Digit" buttons on your touch tone telephone.

3   **Pager Format** - This format is used to report the same alarm events as the Domestic Dial format above but the report is sent to an Alpha / Numeric pager. The event report is in the form of a 12 bit message which consist of a unique 4 digit account code, a 3 digit event code and a 3 digit identifier extension. The account code is used to identify the panel which is calling, the event code is used to identify the type of alarm event and the extension is used to identify the zone or user number. The spaces between the account code, event code and extension, make up the 12 bits of the message. Note - There is no kiss-off required in Pager Format reporting.

As an example, a pager which displays this message;

<p align="center">1 2 3 4   1 3 0   0 0 1</p>

Would have received an alarm message from alarm 1234 (1234) that there is a burglar activation (130) on zone one (001)

The event codes and their meanings are listed on page 54 and are the same for Contact ID.

4   **Speech Dial Format** - This format is similar to the Crow Domestic Dial format in that it reports alarm events via private phone numbers and is kissed-off by pressing any one button on the telephone, but there is one important difference. This format will report the alarm events using a combination of up to eight pre-recorded voice messages. These messages are recorded directly into the speech module which is a "plug in" option to your Power Wave-16 Ver4 (and above) control communicator. Speech modules are available in versions of 20 second and 90 second recording capacity.

When an alarm event is reported using the Speech Dial format, the messages assigned at addresses P660E to P679E (Pages 54 / 55) are played and like the Domestic Dial format, a 5 second pause follows in which the communicator is looking to be kissed-off (call acknowledgment). If not kissed-off the communicator will repeat the messages and pause again. This routine is repeated 4 times at which point, if a kiss-off has not been received, the communicator will hang up and dial the next phone number. To kiss-off the communicator during the pause period, all you do is press one of the "Digit" buttons on your touch tone telephone.

If a kiss-off is not received from any of the phone numbers dialled, the communicator will make the number of dial attempts as programmed in "Maximum Dial Attempts Per Scenario", P215E To P218E, Page 47) Default = 10 call attempts and then shut down.

*The communicator will also shut down if the control panel is reset with a valid code before a kiss-off is received **EXCEPT** when reporting in Contact ID format.*

COMMUNICATOR REPORTING SCENARIOS

In order to provide you with the most convenient way of assigning one or more of these possible formats to each alarm event, we have developed a unique system called "Reporting Scenarios". These Scenarios define what action is taken by the communicator for each alarm event. eg: Alternately call numbers 1&2 until one is Kissed-Off or dual report to numbers 1&2 until both Kissed-Off. There are four individual scenarios available, each with up to 16 possible steps. The method of programming the scenarios is to associate a phone number with an action for Kiss-Off And/Or No Kiss-Off. The selectable values for Scenarios are 0, 1, 2, 3, ... To 9. The Phone numbers are assigned the values from 1 to 6, which leaves 7, 8, 9, & 0 as values for assigning the action(s) to be taken.

Scenario Options

> 1 = Call Telephone Number 1
> 2 = Call Telephone Number 2
> 3 = Call Telephone Number 3
> 4 = Call Telephone Number 4
> 5 = Call Telephone Number 5
> 6 = Call Telephone Number 6
> 7 = Return to step 1 until all numbers are kissed-off (until all calls are acknowledged). *This can ALSO be used to Action a Further Sequence which can be Tagged at the end of a Scenario (Eg: 1 9 2 9 7 **3 7**). In this example, the 3rd number will **ONLY** be dialled **AFTER** the 1st & 2nd numbers have been Kissed-Off (acknowledged).*
> 8 = Return to previous step if not Kissed-Off
> 9 = Stop if Kissed-Off
> 0 = Stop whether kissed-off or not Kissed-Off

Example 1 (alternate reporting)   (Default = 1 9 2 9 7)
In this example, we have defined a scenario with five actions as follows; The dialler will alternate between phone numbers 1 & 2 until One of the numbers gets Kissed-Off.

Step	Option	Action
1	1	Call phone number 1
2	9	Stop if Kissed-Off
3	2	If not Kissed-Off call phone number 2
4	9	Stop if Kissed-Off
5	7	Return to step 1 until all numbers are Kissed-Off (acknowledged).

Example 2 (dual reporting)   2 4 7
In this example, we have defined the three following actions. The dialler will alternate between phone numbers 1 & 4 until both numbers have been kissed off.

Step	Option	Action
1	2	Call phone number 2
2	4	Call phone number 4
3	7	Return to step 1 until all numbers are Kissed-Off (acknowledged).

If the last step in a scenario is reached and there is no instruction to define what the communicator is to do, it will stop. You **must** therefore include either a 7 or 8 if you want the dial routine or part of the routine repeated.

COMMON REPORTING SCENARIOS

To assist you in programming your Power wave-16 communicator, we have set out a number of the most common reporting scenarios for you to copy. Because the defaults of the panel assign Reporting Scenario #1 to all zone activations, tamper activations and system events etc., it is advisable to make the required alterations to Scenario #1 (P211E, see below), should you require a different dialling sequence.

Once you decide what is the most appropriate scenario for each installation, choose it from the following list or create it from scratch and program it at Address P211E below and Any "Special" zones or events can have other scenarios created and assigned on an individual basis as required.

Scenario	Code	Actions
Std Monitoring Company	1 9 2 9 7 (Default)	Alternate calling until One of the numbers is Kissed-Off
4 Number Speech Dial	1 9 2 9 3 9 4 9 7	Call 4 numbers in sequence until One Number is Kissed-Off
Plant Monitoring via Pager	1 1 0	Call pager twice then stop - Kiss-Off not required
Dual Reporting	1 2 7	Call numbers 1&2 until both Kissed-Off
Call Monitoring Co. if Speech Dial Not Kissed-off	1 9 2 9 3 8	If no Kiss-Off from speech dial number, (phone #. 1 & 2) then dial monitoring company until Kissed Off (Phone #. 3)

COMMUNICATOR REPORTING SCENARIOS - P211E To P214E

P211E　1-16E　**Reporting Scenario #1 options**　　　　1 = Call phone number 1
　　　　　　　(Default = 1 9 2 9 7)　　　　　　　　　2 = Call phone number 2
　　　　　　　　　　　　　　　　　　　　　　　3 = Call phone number 3
　　　　　　　　　　　　　　　　　　　　　　　4 = Call phone number 4
　　　　　　　　　　　　　　　　　　　　　　　5 = Call phone number 5
　　　　　　　　　　　　　　　　　　　　　　　6 = Call phone number 6
　　　　　　　　　　　　　　　　　　　　　　　7 = Return to step 1 if NOT Kissed-Off
　　　　　　　　　　　　　　　　　　　　　　　8 = Return to previous step if Not Kissed-Off
　　　　　　　　　　　　　　　　　　　　　　　9 = Stop if Kissed-Off
　　　　　　　　　　　　　　　　　　　　　　　0 = Stop whether kissed-off or not Kissed-Off

P212E　1-16E　**Reporting Scenario #2 options**　(Default = 0)
P213E　1-16E　**Reporting Scenario #3 options**　(Default = 0)
P214E　1-16E　**Reporting Scenario #4 options**　(Default = 0)

PROGRAM TELEPHONE NUMBERS - P221E To P226E

There are 16 characters available in each of the telephone number strings including the special codes

P221E　1-16E　**Telephone Number 1** - where options 1-16 represent up to 16 digits
P222E　1-16E　**Telephone Number 2** - where options 1-16 represent up to 16 digits
P223E　1-16E　**Telephone Number 3** - where options 1-16 represent up to 16 digits
P224E　1-16E　**Telephone Number 4** - where options 1-16 represent up to 16 digits
P225E　1-16E　**Telephone Number 5** - where options 1-16 represent up to 16 digits
P226E　1-16E　**Telephone Number 6** - where options 1-16 represent up to 16 digits

From time to time it is necessary to program special codes within the telephone number string. These codes include a 2.5 second pause, the ***** and # characters and a new option called "Wait for 2nd dial tone" Use the following table to select and program special characters as required.

Character	Button	Displayed As
2.5 sec pause	CONTROL	Control
* Character	MEMORY	Memory
# Character	PANIC	Line
Wait for 2nd Dial Tone	ARM	Armed

DEFINE REPORTING FORMATS - P231E To

47

P236E

This group of addresses is used to define which format the communicator will use when contacting each of the six phone numbers on an individual basis. For example, phone number 1 may be a speech dial report to a domestic home with numbers 2 and 3 reporting in Contact ID to a monitoring company

| P231E | 1-8E | **Define Reporting Format for Phone Number 1** | 1 = Ademco Contact ID (Default) |

2 = Domestic Dialler (Tone Alarm Messages)
3 = Pager
4 = Speech Dialler (Voice Module Required)
5 = Spare
6 = Monitor "Call Progress" (Default)
7 = Spare
8 = Spare

Option 1   **Ademco Contact ID** - Use Contact ID format to report alarm and system events to a monitoring companies receiving equipment.

Option 2   **Domestic Alarm Tone** - Use Crow "Domestic" format to report alarm events. This format uses alternating alarm tones to report and can be kissed-off by pressing any "digit" key on a touch tone phone.

Option 3   **Pager** - Report alarm events using Crow "Pager" format. This format utilises Telstra's pager network or other public subscriber networks like Answerscan etc, to post numeric messages to a compatible pager.(NOTE: The client account number should not start with a "0")

            When an event is received by a pager, it will display the alarm system account code followed by an event code followed by a zone or user designation. For example - 1234 130 004 displayed on a pager would correspond to a zone 4 activation from a system with account code 1234. The event codes are listed in the Communicator Program Summary section of this manual.

Option 4   **Speech Dialler** - Report alarm events by using the optional add-on speech dialler module. This module is available is either 20 or 90 second versions and can be kissed-off by pressing any digit key on a touch tone phone. The first 8 recording slots may be reserved for alarm messages which are mapped to events at addresses P660E to P676E (See Page 55).

            The Power Wave-16 **"Command Control"** feature utilises the same speech dialler module to provide voice prompted control and status reporting of your alarm system via a standard touch tone telephone. These voice prompts are stored at recording slots which follow in order, from the alarm event messages. The optional 90 second speech module is particularly useful where a speech dialler is used to report alarm events and Command Control is used to control a large number of functions such as setting and unsetting, on an area basis and operating outputs to control lighting, or heating etc.

Option 5   **Spare** - This option is reserved for future developments

Option 6   **Monitor Call Progress** - When this option is enabled, the Power Wave-16 communicator monitors the call progress to determine if the destination phone number is ringing, engaged or disconnected. As a result, if the number is engaged or disconnected, the communicator will move on to the next number immediately rather than timing out after a pre-determined wait period.

Option 7   **Spare** - This option is reserved for future developments

Option 8   **Spare** - This option is reserved for future developments

P232E	1-8E	**Define Reporting Format for Phone Number 2**	(Default 1&6)
P233E	1-8E	**Define Reporting Format for Phone Number 3**	
P234E	1-8E	**Define Reporting Format for Phone Number 4**	
P235E	1-8E	**Define Reporting Format for Phone Number 5**	
P236E	1-8E	**Define Reporting Format for Phone Number 6**	

ZONE ACTIVATION SCENARIO MAPPING - P241E To P256E

This group of addresses is used to map activations from each of the 16 possible alarm zones to one of the 4 possible reporting scenarios. If a value of zero (0) is assigned at an address in this block, alarms from that zone will not be reported by the communicator.

P241E   1-4E   **Zone 1 Activations mapped to Scenario 1-4** - Default 1
P242E   1-4E   **Zone 2 Activations mapped to Scenario 1-4** - Default 1
P243E   1-4E   **Zone 3 Activations mapped to Scenario 1-4** - Default 1
P244E   1-4E   **Zone 4 Activations mapped to Scenario 1-4** - Default 1
P245E   1-4E   **Zone 5 Activations mapped to Scenario 1-4** - Default 1
P246E   1-4E   **Zone 6 Activations mapped to Scenario 1-4** - Default 1
P247E   1-4E   **Zone 7 Activations mapped to Scenario 1-4** - Default 1
P248E   1-4E   **Zone 8 Activations mapped to Scenario 1-4** - Default 1
P249E   1-4E   **Zone 9 Activations mapped to Scenario 1-4** - Default 1
P250E   1-4E   **Zone 10 Activations mapped to Scenario 1-4** - Default 1
P251E   1-4E   **Zone 11 Activations mapped to Scenario 1-4** - Default 1
P252E   1-4E   **Zone 12 Activations mapped to Scenario 1-4** - Default 1
P253E   1-4E   **Zone 13 Activations mapped to Scenario 1-4** - Default 1
P254E   1-4E   **Zone 14 Activations mapped to Scenario 1-4** - Default 1
P255E   1-4E   **Zone 15 Activations mapped to Scenario 1-4** - Default 1
P256E   1-4E   **Zone 16 Activations mapped to Scenario 1-4** - Default 1

MULTIPLE ZONE REPORTING - P346E & P366E

P346E   1-8E   **Zone will report multiple activations to communicator for zones 1-8 (Default ON)**
P366E   1-8E   **Zone will report multiple activations to communicator for zones 9-16 (Default ON)**

ZONE EXCLUDE SCENARIO MAPPING - P461E To P476E

This group of addresses is used to map zone excludes (isolations) from each of the 16 possible alarm zones to one of the 4 possible reporting scenarios. If a value of zero (0) is assigned at an address in this block, excludes from that zone will not be reported by the communicator.

P461E   1-4E   **Zone 1 Exclude mapped to Scenario 1-4** - Default 1
P462E   1-4E   **Zone 2 Exclude mapped to Scenario 1-4** - Default 1
P463E   1-4E   **Zone 3 Exclude mapped to Scenario 1-4** - Default 1
P464E   1-4E   **Zone 4 Exclude mapped to Scenario 1-4** - Default 1
P465E   1-4E   **Zone 5 Exclude mapped to Scenario 1-4** - Default 1
P466E   1-4E   **Zone 6 Exclude mapped to Scenario 1-4** - Default 1
P467E   1-4E   **Zone 7 Exclude mapped to Scenario 1-4** - Default 1
P468E   1-4E   **Zone 8 Exclude mapped to Scenario 1-4** - Default 1
P469E   1-4E   **Zone 9 Exclude mapped to Scenario 1-4** - Default 1
P470E   1-4E   **Zone 10 Exclude mapped to Scenario 1-4** - Default 1
P471E   1-4E   **Zone 11 Exclude mapped to Scenario 1-4** - Default 1
P472E   1-4E   **Zone 12 Exclude mapped to Scenario 1-4** - Default 1
P473E   1-4E   **Zone 13 Exclude mapped to Scenario 1-4** - Default 1
P474E   1-4E   **Zone 14 Exclude mapped to Scenario 1-4** - Default 1
P475E   1-4E   **Zone 15 Exclude mapped to Scenario 1-4** - Default 1
P476E   1-4E   **Zone 16 Exclude mapped to Scenario 1-4** - Default 1

LOW ZONE TAMPERS SCENARIO MAPPING - P481E To P488E

This group of addresses is used to map the eight possible low zone tampers to one of the four possible reporting scenarios. If a value of zero (0) is assigned at an address in this block, low tampers from that zone input will not be reported by the communicator.

A Low Zone Tamper is a short circuit input.

P481E   1-4E   **Low Zone 1 Tamper Alarms mapped to Scenario 1-4** - Default 1
P482E   1-4E   **Low Zone 2 Tamper Alarms mapped to Scenario 1-4** - Default 1
P483E   1-4E   **Low Zone 3 Tamper Alarms mapped to Scenario 1-4** - Default 1
P484E   1-4E   **Low Zone 4 Tamper Alarms mapped to Scenario 1-4** - Default 1
P485E   1-4E   **Low Zone 5 Tamper Alarms mapped to Scenario 1-4** - Default 1
P486E   1-4E   **Low Zone 6 Tamper Alarms mapped to Scenario 1-4** - Default 1
P487E   1-4E   **Low Zone 7 Tamper Alarms mapped to Scenario 1-4** - Default 1
P488E   1-4E   **Low Zone 8 Tamper Alarms mapped to Scenario 1-4** - Default 1

HIGH ZONE TAMPERS SCENARIO MAPPING - P491E To P498E

This group of addresses is used to map the eight possible High zone tampers to one of the four possible reporting scenarios. If a value of zero (0) is assigned at an address in this block, high tampers from that zone input will not be reported by the communicator.

A High Zone Tamper is an open circuit input.

P491E   1-4E   **High Zone 1 Tamper Alarms mapped to Scenario 1-4** - Default 1
P492E   1-4E   **High Zone 2 Tamper Alarms mapped to Scenario 1-4** - Default 1
P493E   1-4E   **High Zone 3 Tamper Alarms mapped to Scenario 1-4** - Default 1
P494E   1-4E   **High Zone 4 Tamper Alarms mapped to Scenario 1-4** - Default 1
P495E   1-4E   **High Zone 5 Tamper Alarms mapped to Scenario 1-4** - Default 1
P496E   1-4E   **High Zone 6 Tamper Alarms mapped to Scenario 1-4** - Default 1
P497E   1-4E   **High Zone 7 Tamper Alarms mapped to Scenario 1-4** - Default 1
P498E   1-4E   **High Zone 8 Tamper Alarms mapped to Scenario 1-4** - Default 1

SYSTEM EVENTS SCENARIO MAPPING - P311E To P320E

This group of addresses is used is used to map the ten (10) possible System Events as listed below to one of the four possible reporting scenarios. If a value of zero (0) is assigned at an address in this block, that event will not be reported by the communicator.

P311E   1-4E   **Keypad Panic mapped to Scenario 1-4** - Default 1
P312E   1-4E   **Battery low mapped to Scenario 1-4** - Default 1
P313E   1-4E   **240VAC Mains failure mapped to Scenario 1-4** - Default 1
P314E   1-4E   **Phone line restore mapped to Scenario 1-4** - Default 1
P315E   1-4E   **Radio PIR Battery Low mapped to Scenario 1-4** - Default 1
P316E   1-4E   **Radio Key Battery Low mapped to Scenario 1-4** - Default 1
P317E   1-4E   **Keypad Tamper mapped to Scenario 1-4** - Default 1
P318E   1-4E   **Cabinet Tamper mapped to Scenario 1-4** - Default 1
P319E   1-4E   **Radio Panic mapped to Scenario 1-4** - Default 1
P320E   1-4E   **Communicator Test Calls mapped to Scenario 1-4** - Default 1

REPORT DELAY ON MAINS FAIL

P460E   1-99E   **Mains failure report delay 0-99 minutes - Default = 60**

AREA BASED REPORTING SCENARIOS - P322E To 327E

This group of addresses is used to define which events will be reported and also to assign these Area based events to one of the four possible scenarios

Multiple options can be assigned to the Area or partition based addresses but only one value (1-4) can be assigned to the scenario mapping addresses.

REPORT DELAY ON ZONE ALARMS

P450E   0-99E   **Zone Dialler Reporting Delay** - Default = 0

This delay pauses the reporting of zone alarms for all reporting formats. This delay can be used to prevent false alarms from reporting if the alarm is cancelled before this delay expires.

| P322E | 1-8E | **Area A Reporting Options** - Default 1, 2 & 4 | 1 = Sent Set / Unset - Default=On |

P322E 1-8E **Area A Reporting Options** - Default 1, 2 & 4

- 1 = Sent Set / Unset - Default=On
- 2 = Send Monitor On/Off - Default=On
- 3 = Send Unset only after activations
- 4 = Send Duress Alarms - Default=On
- 5 = Enable 24hr alarms to Voice / Domestic
- 6 = send set immediately
- 7 = Spare
- 8 = Spare

Option 1 **Send Set / Unset** - If this option is enabled, the communicator will report Area "A" sets and unsets following the steps as determined by the reporting scenario assigned by P323E below.

Option 2 **Send Monitor On / Off** - If this option is enabled, the communicator will report Area "A" monitor on and monitor off events following the steps as determined by the reporting scenario assigned by P323E below.

Option 3 **Send Unsets only after activation** - If this option is enabled, the communicator will report Area "A" Unsets (opens) after alarm activation only. This option is often used in conjunction with alarm only reporting.

Option 4 **Send Duress Alarms** - If this option is enabled, the communicator will report Duress Alarms as defined by address P197E (See Page 26).

Option 5 **Enable 24hr Alarms to Voice/Domestic** - If this option is enabled, then 24hr zone alarms will report using voice or domestic alarm tone reporting even when the alarm is unset.

Option 6 **Send Set Immediately** - If enabled, the communicator will report a set immediately the panel is armed. If not enabled, the set report is sent at the expiry of the exit delay.

Option 7 **Spare**

Option 8 **Spare**

P323E 1-4E **Area "A" Reports mapped to Scenario 1-4** - This option is used to map Area "A" reports as defined by P322E above, to one of the four possible reporting scenarios - Default 1

P324E 1-8E **Area "B" Reporting Options** - Default 1,2&4

P325E 1-4E **Area "B" Reports mapped to Scenario 1-4** - Default 1

P326E 1-8E **Area "C" Reporting Options** - Default 1,2&4

P327E 1-4E **Area "C" Reports mapped to Scenario 1-4** - Default 1

SYSTEM REPORTING OPTIONS - P329E, P260E, P264E, P265E & P266E

This block of addresses is used to define a number of global system options. Multiple options may be assigned at address P260E below.

P329E 1-99E **Auto-Answer Rings** - This options defines the number of rings before the communicator will auto-answer the incoming call. A value of zero (0) at this address will disable auto-answer.
- Default = 0

P260E 1-8E **System Options**
- 1 = Enable **Communicator** – Default = **Off**
- 2 = DTMF or Decadic – Default = On
- 3 = NZ style Decadic
- 4 = Blind Dial – Default = Off
- 5 = Send Restores – Default = On
- 6 = Use Group code or Multiple Accounts – Default = Off (=Multiple Acct)
- 7 = Fax defeat – Default = Off
- 8 = Disable line monitoring – Default = Off

Option 1   **Enable Communicator** - This option is used to activate the communicator hardware. If this option is not assigned, all communicator activity, including recording messages on the speech dialler module, will be disabled. - **Default = Communicator Off**

Option 2   **DTMF or Decadic.** Selects touchtone (DTMF) dialling. LED ON = DTMF - **Default = On**

Option 3   **NZ Style Decadic** - With this option OFF, the decadic pulses are NZ style pulses. If this option is ON, then the pulses are reversed

Option 4   **Blind Dial** - If this option is selected, the communicator will make a dial attempt even if it can not detect a valid dial tone. If this option is not selected the communicator will seize the phone line and listen for dial tone. If dial tine is not present the communicator will release (Hang up) the line wait five seconds and repeat the process. If dial tone is still not present after 3 attempts, the communicator will Blind Dial. On = Blind Dial, off = Standard Dial. - **Default = Off**

Option 5   **Send Restores** - If this option is selected, restores will be reported for all events. If this option is not selected, restores will be disabled. On = Send Restores, off = No Restores. - **Default = On**

Option 6   **Use Group Codes or Multiple Accounts** - This option is used to determine if a system using multiple Areas will send Group Code reporting to one account number or report individual Area activity to individual account numbers. Option 6 on = group code and option 6 off = multiple account numbers - **Default = Off.**

Option 7   **Fax Defeat -** This option enables fax defeat mode. When enabled the panel will look for incoming rings between 2-6 rings (inclusive). If the incoming call is then terminated the panel will answer the next incoming call within 2 rings. If another call is not established within 60 sec of the first call, the fax defeat mode is reset. For fax defeat to work, the auto answer rings must be enabled by putting in a suitable ring count (eg 15).

Option 8   **Disable Line Monitoring** -If this option is enabled, then the panel no longer tests the telephone line.

AREA ACCOUNT CODES - P266E To P268E

P266E   XXXXE   **Account Code for Area "A" Reports** - The Account code set at this address will be used to report all system events sets and unsets, zone activations, restores and excludes, etc., from Area "A" - Default Account = 0000

P267E   XXXXE   **Account Code for Area "B" Reports** - The account code set at this address will be used to report sets and unsets, zone activations, restores and excludes, etc., from Area "B"

P268E   XXXXE   **Account Code for Area "C" Reports** - The account code set at this address will be used to report sets and unsets, zone activations, restores and excludes, etc., from Area "C"

COMMAND CONTROL CODES P261E To P264E

P261E   XXXXE   **DTMF Command Output Control Code -** This is a 4 digit code used to control the 8 outputs either locally (set by options P101 - P108 opt 6, see Page 20) or by DTMF remote (set by options P101 - P108 opt 5, see Page 20).

P262E   XXXXE   **DTMF Command Code For Area A** - This is a 4 digit code used to remotely set/unset Area "A".

P263E   XXXXE   As per P262E but controls Area "B".

P264E   XXXXE   As per P262E but controls Area "C".

P680E   1-9E   Starting message number to command control voice prompts.

This block of addresses from P620E to P658E is used to assign the Ademco Contact ID codes to all of the definable events your Power Wave-16 Ver4 (and above) control communicator can report.

P620E	XXXE	**Duress Alarm**	Default = 121	
P621E	XXXE	**Zone 1 Activation**	Default = 130	0 = No Report
P622E	XXXE	**Zone 2 Activation**	Default = 130	
P623E	XXXE	**Zone 3 Activation**	Default = 130	
P624E	XXXE	**Zone 4 Activation**	Default = 130	
P625E	XXXE	**Zone 5 Activation**	Default = 130	
P626E	XXXE	**Zone 6 Activation**	Default = 130	
P627E	XXXE	**Zone 7 Activation**	Default = 130	
P628E	XXXE	**Zone 8 Activation**	Default = 130	
P629E	XXXE	**Zone 9 Activation**	Default = 130	
P630E	XXXE	**Zone 10 Activation**	Default = 130	
P631E	XXXE	**Zone 11 Activation**	Default = 130	
P632E	XXXE	**Zone 12 Activation**	Default = 130	
P633E	XXXE	**Zone 13 Activation**	Default = 130	
P634E	XXXE	**Zone 14 Activation**	Default = 130	
P635E	XXXE	**Zone 15 Activation**	Default = 130	
P636E	XXXE	**Zone 16 Activation**	Default = 130	
P641E	XXXE	**Zone 1 Low Tamper**	Default = 137	0 = No Report
P642E	XXXE	**Zone 2 Low Tamper**	Default = 137	
P643E	XXXE	**Zone 3 Low Tamper**	Default = 137	
P644E	XXXE	**Zone 4 Low Tamper**	Default = 137	
P645E	XXXE	**Zone 5 Low Tamper**	Default = 137	
P646E	XXXE	**Zone 6 Low Tamper**	Default = 137	
P647E	XXXE	**Zone 7 Low Tamper**	Default = 137	
P648E	XXXE	**Zone 8 Low Tamper**	Default = 137	
P651E	XXXE	**Zone 1 High Tamper**	Default = 137	**0 = No Report**
P652E	XXXE	**Zone 2 High Tamper**	Default = 137	
P653E	XXXE	**Zone 3 High Tamper**	Default = 137	
P654E	XXXE	**Zone 4 High Tamper**	Default = 137	
P655E	XXXE	**Zone 5 High Tamper**	Default = 137	
P656E	XXXE	**Zone 6 High Tamper**	Default = 137	
P657E	XXXE	**Zone 7 High Tamper**	Default = 137	
P658E	XXXE	**Zone 8 High Tamper**	Default = 137	

ALARM VOICE MESSAGE MAPPING - P660E To P679E

This block of addresses is used to assign up to eight possible voice messages to the Panic alarm battery low and 16 zone activation's. More than one message can be assigned to each zone activation. The voice messages will be replayed over the phone in response to an alarm activation to those phone numbers which have been assigned. Speech Dial format at options P231E to P236E (see Page 48). More than one message may be assigned to an alarm event, however, if multiple messages are assigned to one event, the messages will be replayed in numerical order.

For example, if message #1 said "*Fire*" and message #5 said "*Activation at Acme premises*" and if both messages were mapped to Zone 1 activation's (P661E15E), the replay message in response to a zone 1 activation would be heard as "*Fire alarm at Acme premises".*

It is possible to map up to eight messages to an alarm event but it should be noted that they will always be replayed in numerical order so when recording your messages into the speech module, you must organise the messages in the correct order.

P660E	1-8E	**Voice Messages Mapped to Panic Alarm** - Default 1	
P661E	1-8E	**Voice Messages Mapped to Zone 1 Activation's** - Default 1	

P662E	1-8E	**Voice Messages Mapped to Zone 2 Activation's** - Default 1
P663E	1-8E	**Voice Messages Mapped to Zone 3 Activation's** - Default 1
P664E	1-8E	**Voice Messages Mapped to Zone 4 Activation's** - Default 1
P665E	1-8E	**Voice Messages Mapped to Zone 5 Activation's** - Default 1
P666E	1-8E	**Voice Messages Mapped to Zone 6 Activation's** - Default 1
P667E	1-8E	**Voice Messages Mapped to Zone 7 Activation's** - Default 1
P668E	1-8E	**Voice Messages Mapped to Zone 8 Activation's** - Default 1
P669E	1-8E	**Voice Messages Mapped to Zone 9 Activation's** - Default 1
P670E	1-8E	**Voice Messages Mapped to Zone 10 Activation's** - Default 1
P671E	1-8E	**Voice Messages Mapped to Zone 11 Activation's** - Default 1
P672E	1-8E	**Voice Messages Mapped to Zone 12 Activation's** - Default 1
P673E	1-8E	**Voice Messages Mapped to Zone 13 Activation's** - Default 1
P674E	1-8E	**Voice Messages Mapped to Zone 14 Activation's** - Default 1
P675E	1-8E	**Voice Messages Mapped to Zone 15 Activation's** - Default 1
P676E	1-8E	**Voice Messages Mapped to Zone 16 Activation's** - Default 1
P679E	1-8E	**Voice Message Mapped to Battery Low Alarm** - Default 0

P718E **XXXXXXXX**. Up to 8 digit security code for upload / download.

UPLOAD/DOWNLOAD OPTIONS

P719E **Upload/Download options**
1E Data transfer is allowed -Default = on
2E Can get data "from panel" - Default = on
3E Can send data "to panel" - Default = on
4E Can monitor keypad activity - Default = on
5E Can monitor panel status - Default = on
6E Can change panel status - Default = on
7E Can clear event buffer - Default = on
8E V21/Bell 103 - Default = Bell 103

Option 1 **Data Transfer is Allowed** - This option must be on for **ANY** Panel To PC data transfer to occur (if OFF, connection can still be achieved with P728E command, see Page 56.

Option 2 **Can Get Data "From Panel" -** This option **must** be on to allow the PC to retrieve programmed data from the panel.

Option 3 **Can Send Data "To Panel"** - To allow changes to be sent to the panel from the PC, this option plus options 1 & 2 must be on.

Option 4 **Can Monitor Keypad Activity** - This option allows an operator to view the last 16 keypad buss entries at a panel via a dial-up link. To work, this option plus options 1 & 2 must be on.

Option 5 **Can Monitor Panel Status** - This option allows display of the partitions, zones, outputs, mains and battery status. This option must be on with options 1 & 2.

Option 6 **Can Change Panel Status** - This option allows control of Setting / Unsetting for partitions A, B & C, control of the 8 outputs and excluding of zones via the PC upload / download dial up link. This option must be **ON** with options 1,2 & 5.

Option 7 **Can clear event buffer-** This option allows the user to clear the panels event buffer from the PC.

Option 8 **V21/Bell103–** If this option is OFF, Bell103 format is selected, if ON, V21 format is selected. The choice of either 300Baud rate format is dependent upon your modem type.

P728E   **Answer incoming call** - provided a user with option 5 set (P49 To P72, see Page 19), enters in P728E while in client program mode, the panel will answer an incoming call and initiate an upload / download connection (overrides P719E opt 1-6 setting see Page 55).

PROGRAMMING TEST CALL OPTIONS - P706E To P707E

Because the Power Wave-16 Ver4 (and above) runs a real time clock, it is possible to assign test calls by day of the week and time of day rather than the more common practice of spacing test calls so many hours apart.

P706E   0-7E   **Test Call Days of the Week** - Where 1 = Sunday and 7 = Saturday. 0 = No Test

P707E   XXXXE   **Test Call Time of Day** - Where the time of the day you wish the panel to make its daily test call is programmed in **24** hour format.

P727E   **Keypad Listen-in Options**
1 = While dialling
2 = During Entire call
3 = At all times - Default = off
4 = Spare
5 = Spare
6 = Spare
7 = Spare
8 = Spare

COMMON CONTACT ID CODES

Medical Alarm	100	Low Temperature	159
Medical Pendant	101	High Temperature	158
Fire Alarm	110	Refrigeration Alarm	152
Smoke Detector	111	Water Leakage	154
Heat Detector	114	Gas Detector	151
Manual Call Point	115		
Duct Detector	116		
Silent Panic	122		
Audible Panic	123		
Perimeter Zone	131		
24 Hour Zone	133		
Entry Exit Zone	134		

In addition to the programmable Contact ID code assignments defined at P 620E To P658E (see Page 54), there are a number of event codes with extensions pre-defined as listed below. This extensions list is for your reference only and can not be re-assigned.

Event	Code	Extension	Comment
Cabinet Tamper	137	120	Panel & Siren / Sat Tamper etc
Zone Tamper - Low (short circuit)	137	001 to 008	Zones 1-8
Zone Tamper - High (open circuit)	137	009 to 016	Zones 1-8
Keypad Tamper (Wrong Code)	137	101	At keypad #1
		102	At keypad #2
	through to	108	At keypad #8
Keypad Panic	120	101	At keypad #1
		102	At keypad #2
	through to	108	At keypad #8
Arm by "ARM key (shortcut)	401	000	User number zero
Arm by user code	401	001	User #1
		002	User #2
	through to	024	user #24
Arm by Radiokey	401	051	Radio User #1
		052	Radio User #2
	through to	066	Radio User #16
Arm by Command Control (remote set)	401	090	Command Control user
Arm by Time Zone	403	98	Time Zone User Number
Arm by Keyswitch	409	91	Keyswitch Arm/Disarm User#91
Arm by Up/Download	401	99	Remote User Number
Radiokey Panic	120	120	All radio panics
Radio PIR / Reed Switch Activation	130	001	Zone 1
		002	Zone 2
	through to	016	Zone 16
System Battery Low	302	000	Control Panel Battery low
Mains Fail	301	000	Mains power to control panel lost
Radio PIR / Reed Switch Battery Low	384	001	Zone 1
		002	Zone 2
	through to	016	Zone 16
Radiokey Battery Low	384	051	Radiokey #1
		052	Radiokey #2
		053	Radiokey #3
	through to	066	Radiokey #16
TEST Calls	602	000	24 hour test
Zone Excludes	570	001	Exclude Zone 1
		002	Exclude Zone 2
	through to	016	Exclude Zone 16
Phone Line Failure	351	000	Reported when line is restored
Monitor Mode (part set)	574	000	Group by-pass
	401	001	User 1
	through to	024	User 24
Duress Alarm	121	101	Duress at Keypad #1
		102	Duress at Keypad #2
	through to	108	Duress at keypad #8

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CLIENT MODE PROGRAMMING

PROGRAMMING USER CODES P1E To P24E

P1E	User Code # 1 (Master Code) if deleted code is reset to 987654 - Default 123	Page 18
P2E	User Code # 2	Page 18
P3E	User Code # 3	Page 18
P4E	User Code # 4	Page 18
P5E	User Code # 5	Page 18
P6E	User Code # 6	Page 18
P7E	User Code # 7	Page 18
P8E	User Code # 8	Page 18
P9E	User Code # 9	Page 18
P10E	User Code #10	Page 18
P11E	User Code #11	Page 18
P12E	User Code #12	Page 18
P13E	User Code #13	Page 18
P14E	User Code #14	Page 18
P15E	User Code #15	Page 18
P16E	User Code #16	Page 18
P17E	User Code #17	Page 18
P18E	User Code #18	Page 18
P19E	User Code #19	Page 18
P20E	User Code #20	Page 18
P21E	User Code #21	Page 18
P22E	User Code #22	Page 18
P23E	User Code #23	Page 18
P24E	User Code #24	Page 18

INSTALLER PROGRAM MODE

PROGRAMMING USER CODE PERMISSIONS

P25E	Standard Access Permissions for user # 1 - Default 1-8	**P25E To 48E OPTIONS**	Page 19
P26E	Standard Access Permissions for user # 2 - Default 1-8	1 = Area "A"	Page 19
P27E	Standard Access Permissions for user # 3 - Default 1-8	2 = Area "B"	Page 19
P28E	Standard Access Permissions for user # 4 - Default 1-8	3 = Area "C"	Page 19
P29E	Standard Access Permissions for user # 5 - Default 1-8	4 = Code can arm	Page 19
P30E	Standard Access Permissions for user # 6 - Default 1-8	5 = Code can disarm	Page 19
P31E	Standard Access Permissions for user # 7 - Default 1-8	6 = Code can monitor	Page 19
P32E	Standard Access Permissions for user # 8 - Default 1-8	7 = Code can un-monitor	Page 19
P33E	Standard Access Permissions for user # 9 - Default 1-8	8 = Code can operate Control	Page 19
P34E	Standard Access Permissions for user #10 - Default 1-8		Page 19
P35E	Standard Access Permissions for user #11 - Default 1-8		Page 19
P36E	Standard Access Permissions for user #12 - Default 1-8		Page 19
P37E	Standard Access Permissions for user #13 - Default 1-8		Page 19
P38E	Standard Access Permissions for user #14 - Default 1-8		Page 19
P39E	Standard Access Permissions for user #15 - Default 1-8		Page 19
P40E	Standard Access Permissions for user #16 - Default 1-8		Page 19
P41E	Standard Access Permissions for user #17 - Default 1-8		Page 19
P42E	Standard Access Permissions for user #18 - Default 1-8		Page 19
P43E	Standard Access Permissions for user #19 - Default 1-8		Page 19
P44E	Standard Access Permissions for user #20 - Default 1-8		Page 19
P45E	Standard Access Permissions for user #21 - Default 1-8		Page 19
P46E	Standard Access Permissions for user #22 - Default 1-8		Page 19
P47E	Standard Access Permissions for user #23 - Default 1-8		Page 19
P48E	Standard Access Permissions for user #24 - Default 1-8		Page 19

PROGRAMMING EXTENDED USER CODE PERMISSIONS

P49E	Extended Access Permissions for user # 1 - Default 1238	**P49E To P72E OPTIONS**	Page 19
P50E	Extended Access Permissions for user # 2 - Default 3	1 = Code can override DOTL	Page 19
P51E	Extended Access Permissions for user # 3 - Default 3	2 = Can change phone numbers	Page 19
P52E	Extended Access Permissions for user # 4 - Default 3	3 = Can change real time clock	Page 19
P53E	Extended Access Permissions for user # 5 - Default 3	4 = Can start a printout	Page 19
P54E	Extended Access Permissions for user # 6 - Default 3	5 = Can answer call for u/d load	Page 19
P55E	Extended Access Permissions for user # 7 - Default 3	6 = Can change their code only	Page 19
P56E	Extended Access Permissions for user # 8 - Default 3	7 = Can change all codes	Page 19
P57E	Extended Access Permissions for user # 9 - Default 3	8 = Allows access to Installer	Page 19
P58E	Extended Access Permissions for user #10 - Default 3	Mode via Client Mode	Page 19
P59E	Extended Access Permissions for user #11 - Default 3		Page 19
P60E	Extended Access Permissions for user #12 - Default 3		Page 19
P61E	Extended Access Permissions for user #13 - Default 3		Page 19
P62E	Extended Access Permissions for user #14 - Default 3		Page 19
P63E	Extended Access Permissions for user #15 - Default 3		Page 19
P64E	Extended Access Permissions for user #16 - Default 3		Page 19
P65E	Extended Access Permissions for user #17 - Default 3		Page 19
P66E	Extended Access Permissions for user #18 - Default 3		Page 19
P67E	Extended Access Permissions for user #19 - Default 3		Page 19
P68E	Extended Access Permissions for user #20 - Default 3		Page 19
P69E	Extended Access Permissions for user #21 - Default 3		Page 19
P70E	Extended Access Permissions for user #22 - Default 3		Page 19
P71E	Extended Access Permissions for user #23 - Default 3		Page 19
P72E	Extended Access Permissions for user #24 - Default 3		Page 19

PROGRAMMIMG USER CODE TIME CONTROL

P73E	Access Time Zones for user # 1 - Default 0 (24 Hr 7 Days)	Page 19
P74E	Access Time Zones for user # 2 - Default 0 (24 Hr 7 Days)	Page 19
P75E	Access Time Zones for user # 3 - Default 0 (24 Hr 7 Days)	Page 19
P76E	Access Time Zones for user # 4 - Default 0 (24 Hr 7 Days)	Page 19
P77E	Access Time Zones for user # 5 - Default 0 (24 Hr 7 Days)	Page 19
P78E	Access Time Zones for user # 6 - Default 0 (24 Hr 7 Days)	Page 19
P79E	Access Time Zones for user # 7 - Default 0 (24 Hr 7 Days)	Page 19
P80E	Access Time Zones for user # 8 - Default 0 (24 Hr 7 Days)	Page 19
P81E	Access Time Zones for user # 9 - Default 0 (24 Hr 7 Days)	Page 19
P82E	Access Time Zones for user #10 - Default 0 (24 Hr 7 Days)	Page 19
P83E	Access Time Zones for user #11 - Default 0 (24 Hr 7 Days)	Page 19
P84E	Access Time Zones for user #12 - Default 0 (24 Hr 7 Days)	Page 19
P85E	Access Time Zones for user #13 - Default 0 (24 Hr 7 Days)	Page 19
P86E	Access Time Zones for user #14 - Default 0 (24 Hr 7 Days)	Page 19
P87E	Access Time Zones for user #15 - Default 0 (24 Hr 7 Days)	Page 19
P88E	Access Time Zones for user #16 - Default 0 (24 Hr 7 Days)	Page 19
P89E	Access Time Zones for user #17 - Default 0 (24 Hr 7 Days)	Page 19
P90E	Access Time Zones for user #18 - Default 0 (24 Hr 7 Days)	Page 19
P91E	Access Time Zones for user #19 - Default 0 (24 Hr 7 Days)	Page 19
P92E	Access Time Zones for user #20 - Default 0 (24 Hr 7 Days)	Page 19
P93E	Access Time Zones for user #21 - Default 0 (24 Hr 7 Days)	Page 19
P94E	Access Time Zones for user #22 - Default 0 (24 Hr 7 Days)	Page 19
P95E	Access Time Zones for user #23 - Default 0 (24 Hr 7 Days)	Page 19
P96E	Access Time Zones for user #24 - Default 0 (24 Hr 7 Days)	Page 19

P99E	Installer Code - Default 000000 - must be more than 3 digits long	Page 19

P100E	Option 8 = LED 8 ON, means Installer Code can go directly into Installer Program Mode.	Page 19

PROGRAMMING OUTPUT OPTIONS

P101E To P108E OPTIONS

P101E	Output #1 Primary options - Default none	1 = Invert	Page 20
P102E	Output #2 Primary options - Default none	2 = Flashing	Page 20
P103E	Output #3 Primary options - Default none	3 = Single pulse	Page 20

PROGRAMMING KEYPAD OPTIONS

PROGRAMMING PARTITION 'A' PARAMETERS

PARTITION 'A' PRIMARY OUTPUT OPTIONS

P172E	Area "A" primary options for output #2 - Default 1 & 3	2 = 24 hour activation's	Page 24
P173E	Area "A" primary options for output #3 - Default 1	3 = Monitor Mode activation's	Page 24
P174E	Area "A" primary options for output #4 - Default 1	4 = Radio key chirps	Page 24
P175E	Area "A" primary options for output #5 - Default 1	5 = All zones sealed (ready)	Page 24
P176E	Area "A" primary options for output #6 - Default 1	6 = 2 sec pulse on arm / disarm	Page 24
P177E	Area "A" primary options for output #7 - Default 1	7 = Intelligent smoke reset pulse	Page 24
P178E	Area "A" primary options for output #8 - Default 1	8 = Day zone activation's	Page 24

PARTITION 'A' SPECIFIC OUTPUT OPTIONS

P181E To P188E OPTIONS

P181E	Area "A" specific options for output #1 - Default 0	1 = Any exclude	Page 25
P182E	Area "A" specific options for output #2 - Default 0	2 = Auto exclude warning	Page 25
P183E	Area "A" specific options for output #3 - Default 0	3 = Entry beeps	Page 25
P184E	Area "A" specific options for output #4 - Default 0	4 = Exit beeps	Page 25
P185E	Area "A" specific options for output #5 - Default 0	5 = Control	Page 25
P186E	Area "A" specific options for output #6 - Default 0	6 = Set/unset	Page 25
P187E	Area "A" specific options for output #7 - Default 0	7 = Monitor set/unset	Page 25
P188E	Area "A" specific options for output #8 - Default 0	8 = Keypad duress	Page 25

PARTITION 'A' KEYPAD OPTIONS

P189E	Arm key can disarm during exit - Default 1-8	Page 25
P190E	Monitor can disarm during mon. - Default l-8	Page 25
P191E	Day mode beeps to keypads - Default 1-8	Page 26
P192E	Zone set alarm to keypads - Default 1-8	Page 26
P193E	Zone monitor alarms to keypads - Default 1-8	Page 26
P194E	24 Hour alarms to keypads - Default 1-8	Page 26
P195E	Exit beeps - Default 1-8	Page 26
P196E	Entry beeps - Default 1-8	Page 26

PROGRAMMING DURESS DIGIT FOR PARTITION 'A'

P197E	Duress digit - Default 0 = No Digits Assigned	Page 26

PARTITION 'A' MISC OPTIONS

P198E	Misc partition options 1 - Default 0 = No Options Selected	1 = Spare	Page 27
		2 = 'Arm' required before code	
		3 = 'Monitor' required before code	
		4 = Code required to arm	
		5 = Code required for control	
		6 = Control toggles	
		7 = Momentary control	
		8 = Control disables day zones	

P199E	Misc partition options 2 - Default 3,4,6	1 = Keyswitch enabled	Page 28
		2 = Use 2nd Keyswitch	
		3 = Keyswitch ARM's / MONITOR	
		4 = Pendant chirps when armed	
		5 = Pendant chirps when monitoring	
		6 = 2 sec pulse at set (Arm)	
		7 = 2 sec pulse at unset (Disarm)	
		8 = Access control even when armed	

P180E **PARTITION "A" TIME AND DELAY OPTIONS**   Page 26
1 = Set partition When Time Zone Ends
2 = Unset Partition When Time Zone Starts
3 = Disable Monitor Mode Exit Delay
4 = Disable Set Mode Exit Delay
5 = Disable Monitor Mode Entry Delay
6 = Disable Set Mode Entry Delay
7 = Disable Monitor Mode Zone Alarms To Dialler - Default = Off = Monitor Alarms **WILL** Report
8 = Disable zone tampers during exit delay

PROGRAMMING PARTITION 'B' PARAMETERS

PARTITION 'B' PRIMARY OUTPUT OPTIONS

P271E To P278E OPTIONS

PARTITION 'B' SPECIFIC OUTPUT OPTIONS

P281E To P288E OPTIONS

PARTITION 'B' KEYPAD OPTIONS

PROGRAMMING DURESS DIGIT FOR PARTITION "B"

PARTITION 'B' MISC OPTIONS

P298E   Misc partition "B" options 1 - Default 0

1 = Spare   Page 27
2 = Arm required before code
3 = Monitor required before code
4 = Code required to arm
5 = Code required for control
6 = Control toggles
7 = Momentary control
8 = Control disables day zones   Page 27

P299E   Misc partitions "B" options 2 - Default 3,4,6

1 = Keyswitch enabled   Page 28
2 = Use 2nd Keyswitch
3 = Keyswitch ARM's / MONITOR
4 = Pendant chirps when Arm/Disarm
5 = Pendant chirps when Monitoring
6 = 2 sec pulse at Set
7 = 2 sec pulse at Unset
8 = Access control even when armed

P280E   **PARTITION "B" TIME AND DELAY OPTIONS**

PROGRAMMING PARTITION 'C' PARAMETERS

PARTITION 'C' PRIMARY OUTPUT OPTIONS

P371E To P378E OPTIONS

PARTITION 'C' SPECIFIC OUTPUT OPTIONS

P381E To P388E OPTIONS

PARTITION "C" KEYPAD OPTIONS

PROGRAMMING DURESS DIGIT FOR PARTITION 'C'

PARTITION 'C' MISC OPTIONS

2 = 'Arm' required before code
3 = 'Monitor' required before code
4 = Code required to arm
5 = Code required for control
6 = Control toggles
7 = Momentary control

8 = Control disables day zones

P399E Misc partition "C" options 2 - Default 3,4,6   1 = Keyswitch enabled   Page 28
2 = Use 2nd Keyswitch
3 = Keyswitch ARM's/MONITOR
4 = Pendant chirps when arm/disarm
5 = Pendant chirps when monitoring
6 = 2 sec pulse at set (Arm)
7 = 2 sec pulse at unset (Didarm)
8 = Access control even when armed

P380E   PARTITION "C" TIME AND DELAY OPTIONS (Default 0)
1 = set partition When Time Zone Ends   Page 26
2 = Unset Partition When Time Zone Starts
3 = Disable Monitor Mode Exit Delay
4 = Disable Set Mode Exit Delay
5 = Disable Monitor Mode Entry Delay
6 = Disable Set Mode Entry Delay
7 = Disable Monitor Mode Zone Alarms To Dialler - Default = Off = Monitor Alarms **WILL** Report
8 = Disable zone tampers during exit delay   Page 26

MISC SYSTEM OPTIONS

P201E Options - Default 3,4,5,7,8   1 = Mains input AC or DC   Page 29
2 = Ignore Mains Fail
3 = Low Keyswitch is momentary or latching
4 = High Keyswitch is momentary or latching
5 = Cabinet tamper is loop or End-Of-Line
6 = Installer lockout
7 = Area "C" is zones shared with Area A & B
8 = Local serial port is 9600bps or 2400bps

P204E Spare   Page 29
P205E Spare   Page 29
P206E Spare   Page 29

SINGLE OR DUAL ZONE INPUT (8 or 16 ZONES)

P300E Single or dual zone input - Default-All Off (zones 1-8 only)   Page 30

VIBRATION SENSOR ZONE ASSIGNMENTS

P301E Zone 1 vibration sensitivity - Default 0   0 = No vibration sensor   Page 30
P302E Zone 2 vibration sensitivity - Default 0   Sensitivity 1-8   Page 30
P303E Zone 3 vibration sensitivity - Default 0   1 = High sensitivity   Page 30
P304E Zone 4 vibration sensitivity - Default 0   8 = Low sensitivity   Page 30
P305E Zone 5 vibration sensitivity - Default 0   Page 30
P306E Zone 6 vibration sensitivity - Default 0   Page 30
P307E Zone 7 vibration sensitivity - Default 0   Page 30
P308E Zone 8 vibration sensitivity - Default 0   Page 30
P161E Zone 9 vibration sensitivity - **Default 0**   Page 30
P162E Zone 10 vibration sensitivity - **Default 0**   Page 30
P163E Zone 11 vibration sensitivity - **Default 0**   Page 30
P164E Zone 12 vibration sensitivity - **Default 0**   Page 30
P165E Zone 13 vibration sensitivity - **Default 0**   Page 30
P166E Zone 14 vibration sensitivity - **Default 0**   Page 30
P167E Zone 15 vibration sensitivity - **Default 0**   Page 30
P168E Zone 16 vibration sensitivity - **Default 0**   Page 30

LOW ZONE ASSIGNMENTS (ZONES 1-8)

P331E Zone is a normally open/closed output - **Default N/C**   Off = N/C On = N/O   Page 30
P332E Zone is a radio detector - **Default OFF**   Page 30
P333E Zone is in Area "A" - **Default ALL**   *(If zone is in both A+B, it is then a partition "C" zone)*   Page 30
P334E Zone is in Area "B" - **Default none**   *(If zone is in both A+B, it is then a partition "C" zone)*   Page 30

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HIGH ZONE ASSIGNMENTS (ZONES 9-16)

SYSTEM DELAYS & TIMERS

0 = Instant, No Delay	
120 sec	2 min
180 sec	3 min
240 sec	4 min
300 sec	5 min
360 sec	6 min
420 sec	7 min
480 sec	8min
540 sec	9 min
600 sec	10 min

Reset time values

1 to 999 seconds

Delay time values

P434E	Output #4 delay on timer - Default 0		Page 32
P435E	Output #4 delay on timer - Default 0	1 to 999 seconds	Page 32
P436E	Output #5 delay on timer - Default 0		Page 32
P437E	Output #6 delay on timer - Default 0		Page 32
P438E	Output #7 delay on timer - Default 0		Page 32

0 Sec	Latch
120 sec	2 min
180 sec	3 min
240 sec	4 min
300 sec	5 min
360 sec	6 min
420 sec	7 min
480 sec	8 min
540 sec	9 min
600 sec	10 min

P441E	Output #1 pulse time - Default 0	Pulse time values	
P442E	Output #2 pulse time - Default 0	1-999 (min of 1)	Page 32
P443E	Output #3 pulse time - Default 0	1 to 999 in 1/10 secs	Page 32
P444E	Output #4 pulse time - Default 0	e.g. 1 = 0.1 second	Page 32
P445E	Output #5 pulse time - Default 0	10 = 1 second	Page 32
P446E	Output #6 pulse time - Default 0		Page 32
P447E	Output #7 pulse time - Default 0		Page 32
P448E	Output #8 pulse time - Default 0		Page 32
P450E	Report delay on zone alarms - 1-99 seconds - Default 0		Page 33
P451E	Area "A" two trigger time period - Default 60 sec		Page 32
P452E	Area "B" two trigger time period - Default 60 sec		Page 32
P453E	Area "C" two trigger time period - Default 60 sec		Page 32
P454E	Area "A" door open too long timer (DOTL) - Default 10 sec		Page 33
P455E	Area "B" door open too long timer (DOTL) - Default 10 sec		Page 33
P456E	Area "C" door open too long timer (DOTL) - Default 10 sec		Page 33
P457E	Area "A" day zone keypad buzzer duration - Default 2 sec		Page 32
P458E	Area "B" day zone keypad buzzer duration - Default 2 sec		Page 32
P459E	Area "C" day zone keypad buzzer duration - Default 2 sec		Page 32

ENROLLING RADIO DETECTORS (ZONES 1-16) - (MUST ALSO PROGRAM P332E & P352E ADDRESSES)

P501E	Enrol Radio Detector Zone 1	Page 34
P502E	Enrol Radio Detector Zone 2	Page 34
P503E	Enrol Radio Detector Zone 3	Page 34
P504E	Enrol Radio Detector Zone 4	Page 34
P505E	Enrol Radio Detector Zone 5	Page 34
P506E	Enrol Radio Detector Zone 6	Page 34
P507E	Enrol Radio Detector Zone 7	Page 34
P508E	Enrol Radio Detector Zone 8	Page 34
P509E	Enrol Radio Detector Zone 9	Page 34
P510E	Enrol Radio Detector Zone 10	Page 34
P511E	Enrol Radio Detector Zone 11	Page 34
P512E	Enrol Radio Detector Zone 12	Page 34
P513E	Enrol Radio Detector Zone 13	Page 34
P514E	Enrol Radio Detector Zone 14	Page 34
P515E	Enrol Radio Detector Zone 15	Page 34
P516E	Enrol Radio Detector Zone 16	Page 34

SET RADIO DETECTOR OPTIONS

P521E To P536E OPTIONS

P521E	Radio Detector zone # 1 options - Default 1	1 = Reserved for future use	Page 34
P522E	Radio Detector zone # 2 options - Default 1	2 = Reserved for future use	Page 34
P523E	Radio Detector zone # 3 options - Default 1	3 = Crow (AE) Radio PIR Enable +	Page 34
P524E	Radio Detector zone # 4 options - Default 1	PIR Low Battery Detect	Page 34
P525E	Radio Detector zone # 5 options - Default 1	Enable – (NEW DEFAULT)	Page 34
P526E	Radio Detector zone # 6 options - Default 1	4= Spare	Page 34
P527E	Radio Detector zone # 7 options - Default 1	5 = Spare	Page 34
P528E	Radio Detector zone # 8 options - Default 1	6 = Crow (AE) Radio Reed	Page 34
P529E	Radio Detector zone # 9 options - Default 1	Switch Door Open / Close	Page 34
P530E	Radio Detector zone #10 options - Default 1	Status Enable + Radio Reed	Page 34
P531E	Radio Detector zone #11 options - Default 1	Switch Low Battery Status	Page 34
P532E	Radio Detector zone #12 options - Default 1	Detect Enable.	Page 34
P533E	Radio Detector zone #13 options - Default 1	7 = **Crow** (MERLIN) PIR +	Page 34
P534E	Radio detector zone #14 options - Default 1	Low Bat + Tamper	Page 34
P535E	Radio Detector zone #15 options - Default 1	**(Non-Supervised)**	Page 34
P536E	Radio Detector zone #16 options - Default 1	8 = Spare	Page 34

ENROLLING RADIO KEYS

P541E	Enrol Radio user # 1	Page 35
P542E	Enrol Radio user # 2	Page 35
P543E	Enrol Radio user # 3	Page 35
P544E	Enrol Radio user # 4	Page 35
P545E	Enrol Radio user # 5	Page 35
P546E	Enrol Radio user # 6	Page 35
P547E	Enrol Radio user # 7	Page 35
P548E	Enrol Radio user # 8	Page 35
P549E	Enrol Radio user # 9	Page 35
P550E	Enrol Radio user #10	Page 35
P551E	Enrol Radio user #11	Page 35
P552E	Enrol Radio user #12	Page 35
P553E	Enrol Radio user #13	Page 35
P554E	Enrol Radio user #14	Page 35
P555E	Enrol Radio user #15	Page 35
P556E	Enrol Radio user #16	Page 35

RADIO KEY OPTIONS 1ST SET

P561E To 576E OPTIONS

P561E	Radio user # 1 options - Default 1,4,5	1 = Area "A" permission	Page 35-36
P562E	Radio user # 2 options - Default 1,4,5	2 = Area "B" permission	Page 35-36
P563E	Radio user # 3 options - Default 1,4,5	3 = Area "C" permission	Page 35-36
P564E	Radio user # 4 options - Default 1,4,5	4 = User can Set (Arm)	Page 35-36
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MAPPING RADIO USERS TO OUTPUTS

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DEFINING TIME ZONES

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		2 = Spare	6 = Spare	
		3 = Spare	7 = Spare	
		4 = Spare	8 = Daylight saving active	

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DEFINE REPORTING FORMATS

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                        1 = Ademco Contact ID
                        2 = Crow Domestic Dial
                        3 = Pager format
                        4 = Speech Dial
                        5 = Spare
                        6 = Monitor Call Progress
                        7 = Spare
                        8 = Spare

P232E   Define report format for phone number 2   Page 48
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ACTIVATION TO SCENARIO MAPPING

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MULTIPLE ZONE ACTIVATION REPORTING

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LOW ZONE TAMPERS TO SCENARIO MAPPING

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P483E	Low zone 3 tamper alarms mapped to scenario 1-4 default 1		Page 50
P484E	Low zone 4 tamper alarms mapped to scenario 1-4 default 1		Page 50
P485E	Low zone 5 tamper alarms mapped to scenario 1-4 default 1		Page 50
P486E	Low zone 6 tamper alarms mapped to scenario 1-4 default 1		Page 50
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HIGH ZONE TAMPERS TO SCENARIO MAPPING

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P493E	High zone 3 tamper alarms mapped to scenario 1-4 default 1		Page 50
P494E	High zone 4 tamper alarms mapped to scenario 1-4 default 1		Page 50
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SYSTEM EVENTS TO SCENARIO MAPPING

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P313E	Mains fail mapped to scenario 1-4 default 1	Page 50
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P315E	Crow Radio PIR battery low mapped to scenario 1-4 default 1	Page 50
P316E	Crow Radiokey battery low mapped to scenario 1-4 default 1	Page 50
P317E	Keypad tamper mapped to scenario 1-4 default 1	Page 50
P318E	Cabinet tamper mapped to scenario 1-4 default 1	Page 50
P319E	Crow Radio panic mapped to scenario 1-4 default 1	Page 50
P320E	Test calls mapped to scenario 1-4 default 1	Page 50

REPORT MAINS FAIL DELAY

P460E	Mains fail report delay 0-99 min - Default = 60 min	Page 50

REPORT DELAY ON ZONES

P450E	Zone Dialler Reporting Delay (0-99 sec) - Default = 0	Page 51

AREA BASED REPORTING SCENARIO MAPPING

P322E   Area "A" reporting options   Page 52

1 = Send Set / Unset	4 = Send duress alarms
2 = Send monitor on / off	5 = Enable 24hr alarms to voice/ domestic dialler
3 = Send unset only after activation's	6 = Send set immediately

P323E	Area A reports mapped to scenario 1-4 default 1	Page 52
P324E	Area B reporting options	Page 52
P325E	Area B reports mapped to scenario 1-4 default 1	Page 52
P326E	Area C reporting options	Page 52
P327E	Area C reports mapped to scenario 1-4 default 1	Page 52

SYSTEM REPORTING OPTIONS

P329E	Auto-answer ring count - default = 0	Page 52
P260E	System options	Page 52

1 = Enable communicator - default = Off	5 = Send restores - default = On
2 = DTMF or Decadic - default = On	6 = Send group code or Multiple client code - default = Off
3 = NZ Style Decadic - default = Off	7 = Fax defeat - default = Off
4 = Blind dial - default = Off	8 = Disable line monitoring - default = Off

COMMAND CONTROL OPTIONS

CONTACT ID CODE ASSIGNMENTS

ALARM VOICE MESSAGE MAPPING

TEST CALLS

KEYPAD LISTEN IN OPTIONS

   1 = Only while dialling   7 & 8 Off = Low modem level
   2 = During entire call   7 On = Medium modem level
   3 = At all times   8 On = High modem level

UPLOAD/DOWNLOAD OPTIONS

   1E Data Transfer is allowed
   2E Can Get Data "From Panel"
   3E Can Send Data "To Panel"
   4E Can Monitor Keypad Activity
   5E Can Monitor Panel Status
   6E Can Change Panel Status
   7E Can clear event buffer
   8E V21/Bell103 (Off=Bell103, On=V21)

ARMING THE PANEL   (CODE = A VALID 3-6 DIGIT USER CODE)

PRESS <ARM>
OR   <CODE> <ENTER>
OR   <ARM> <CODE> <ENTER>

The mode for arming above, depends upon the programmed panel operation. Also, the arming mode can vary from one keypad to another, depending upon how the system is programmed.

If the arm sequence was successful, the relevant armed LED will turn on (ARMED, A or B) or a combination of these, depending upon the areas assigned to a particular user code.

DISARMING THE PANEL

PRESS   <CODE> <ENTER>

If the disarm sequence was successful, the relevant armed LED (ARMED, A or B) will turn off depending upon the area/s assigned to a particular user code.

EXCLUDING ZONES

FIRST ARM THE ALARM AS ABOVE
DURING THE EXIT DELAY PRESS <EXCLUDE>
(The exclude LED will turn ON).

Next; Select any zone/s from 1-8 that you wish to exclude by pressing numbers 1-8 on the keypad. The appropriate green zone LED will turn on to show that the zone/s will be excluded.

To exclude zones 9-16 (if the panel is set up as a 16 zone panel);
PRESS   <EXCLUDE> again.

The "Aux." LED should be ON. Now numbers 1-8 (and zone LEDs 1-8) will select 9-16 (eg 1=9 - 8=16)

Once all the zones you wish to exclude have been selected;
PRESS   <ENTER>.
This will then start the full exit delay timer and you should exit the building.

MONITOR MODE ARMING

PRESS   <MONITOR>
OR   <MONITOR> <CODE> <ENTER>

Above choice depends upon programmed options.

The relevant monitor LED (either ARMED, A or B) will flash to indicate that monitor mode is on.

MONITOR MODE DISARMING

PRESS   <CODE> <ENTER>
Monitor mode LED (ARMED, A or B) will turn OFF.

If the keypad is programmed for one button monitor mode disarming then simply pressing the <MONITOR> button will disarm monitor mode.

CONTROL OPERATION

If the system has been programmed with a control function, then the control mode is operated as follows;

PRESS <CONTROL>
or   <CONTROL> <CODE> <ENTER>

The control LED on the keypad will turn ON.

If control mode was set as a timed function, the control LED will turn off automatically after a pre-defined period.

If the control mode was set as a toggle function entering in the above sequence will turn off the control function and the control LED will turn off.

Also, if the control function is used to control a security door which has door open too long monitoring, this function can be inhibited temporarily by any user with DOTL (Door Open Too Long) override assigned to their code.

CONTROL DOTL OVERRIDE

PRESS <PROGRAM> <CODE> <ENTER>

Program LED will turn ON.

PRESS <CONTROL>.

Control LED will flash.

PRESS <PROGRAM> <ENTER>

The control LED will continue to flash. The controlled door can now be opened for an indefinite period of time. Once the door closes again, the control led will turn OFF and the door will alarm if the door is forced open or left open too long.

VIEWING MEMORY DISPLAY

If an alarm occurs, the event will be stored in the Power Wave-16's 40 event memory, which will cause the "MEMORY" indicator to flash on and off.

To display the memory events;

PRESS   <MEMORY>

The memory LED will turn on and events will be displayed sequentially starting with the newest event. The display changes to a new event every 2 seconds.

When all of the events have been displayed,. the memory LED turns off and the keypad is back in normal mode.

To stop the memory display at any time and return to normal mode press <ENTER>.

COMMAND CONTROL OPERATING INSTRUCTIONS

1) Dial the alarm panel from a remote DTMF (push button) telephone.

2) The panel will answer with a continuous tone for 5 seconds. When this tone stops, enter in your 4 digit code for the function you wish to control

eg   P262, Eg: Area A code 1,1,1,1
         P263, Eg: Area B code 2,2,2,2
         P264, Eg: Area C code 3,3,3,3
         P261, Eg: Output code 4,4,4,4

(The above codes are examples only and should not be used).

If you entered in code 1,1,1,1, the panel will give you the current status of Area A using a pre-recorded voice message.

3) By pressing the "*" button on the telephone, you can toggle the current status of Area "A" and another pre-recorder voice message will give the now current status of Area "A".

You can toggle the status of Area A back to its original state by pressing the " * " button again. Every change of state will initiate a voice message giving the current status.

4) If you wish to control one of the 8 outputs, you must first enter in the 4 digit code, followed by the output number you wish to control eg 4,4,4,4,1 will cause a pre-recorded voice message to give the current status of output 1.
Once again pressing the "*" button on the telephone will toggle the output and the new status will be given by another voice message.

5) If you make a mistake at any stage, press the "#" button and re-enter your code.

6) When finished, just hang up. The panel will automatically disconnect 15 seconds later.

LOCAL OUTPUT CONTROL

The same code used for remote DTMF remote control can be entered at the alarm panel keypad to allow control of all 8 outputs locally (this facility needs to be programmed by the installer).

1) Enter in your output control code eg 4,4,4,4, ENTER.

The keypad display will now turn off all indicators except the 8 green zone LEDs. If an output from 1-8 is currently on, it will be displayed by the appropriate green zone LED being on. Eg: zone 3 LED ON, means output 3 is currently on.

2) If the output is allowed to be locally controlled, you may now press the keypad number associated with the output and the output will toggle (change state) every time that number is pressed. Eg: button number 1 will control output 1, number 2 will control output 2 etc.

3) When the desired outputs have been turned On or Off, press the "ENTER" button to return back to normal mode.

INITIATING A PRINT COMMAND

If a user has permission to print the event log to a printer, they must first enter into the client program mode.

eg <PROGRAM><CODE No.><ENTER>
(program LED on steady)

THEN ENTER <PROGRAM><726><ENTER>

Up to 63 events will then be transferred to the printer.

Note; The printer must be connected and on-line to receive the event log information

INITIATING AN UPLOAD/DOWNLOAD CONNECTION FROM THE PANEL

There are two ways of initiating a PC upload/download connection with a dial-up link;

1) **Direct dial-In:** By default (provided the auto-answer rings are turned on by entering a value other than "0" at P329E, Page 52), the panel will answer an incoming call from a PC and initiate modem handshaking to start the connection.

2) **User initiated auto-answer:** If a user who has permission to locally initiate an upload/download link (option 5, P49 - P72, Page 19) enters client program mode and enters P728E (Page 56), the panel will answer an incoming call from the PC after 2 rings and then start the modem handshaking.

SOFTWARE CHANGES TO POWER WAVE 16D

There have been a couple of changes to the latest version of panel software (V4.20) which differ from previous versions of software V4.16 and below. These are;

1) The PWM or siren driver option for outputs 1 & 2 have now moved from P201E options 1 & 2 to P101E and P102E option 8.

This is an important change as connecting a horn speaker to output 1 & 2 without first making the output a PWM siren output could cause damage to the panel.

2) The auto arming time zone for a partition P170E, P270E & P370E is now an auto-arming and/or auto-disarming time zone.

Having selected a suitable time at the above address the desired option of auto-arming, auto-disarming or both is selected at addresses P180E, P280E, P380E option 1 & 2.

3) The output pulse timer is now programmable in 1/10 second increments instead of 1 second increments. The radio chirps to an output are now linked to the pulse timer for that output eg if the pulse timer has a value of 1 programmed then the chirp duration will be 1/10 second on then 1/10 second off, etc.

If you require the chirps to be longer in duration, eg: to allow a satellite board to provide the chirps, then you must make the pulse timer value larger. Typically a value of 3 or 4 for the pulse timer will give the same length of chirp pulses that earlier software versions provided.

4) Programming of daylight saving has changed to fit in with the international standard for setting daylight saving. Refer to the manual for more details.

5) Previously if you did not require an exit delay for monitor mode you programmed this option at addresses P198E, P298E and P398E option 1. This option has moved and been expanded.

At P180E, P280E and P380E options 3,4,5 and 6 you can now select no entry or exit delay for monitor mode or full set.

6) If a day zone is programmed to operate an output, the duration of the output on time is now linked to the day zone to keypad buzzer timer (P457E, P458E and P459E).

The day zone output can also be made to pulse the output at a rate equivalent to the pulse timer setting for that output at addresses P101E to P108E option 7.

ADDITIONAL FEATURES NOW AVAILABLE WITH V4.20

1) Upload/download is now available via a dial up link or by direct connection of a PC via the serial port.

2) The zone response time is now adjustable from 1 - 32 (default = 6). The program address is P709E.

3) The panel has a time and date stamped 63 event buffer which can be sent to a serial printer via the serial port.

4) A back-up of the panel programmed data can be made to a EEPROM board via the serial port. This allows re-instatement of the panel program at a later date (refer P736E and P738E).

5) A zone reporting delay P450E has now been included which delays the reporting of zone alarms via the dialler (default = no delay).

6) A fax defeat option is now included for the auto-answer feature in dialler panels (refer P260E)

7) 24hr alarms can now be programmed to send an alarm in voice or domestic reporting modes (refer P322E, P324E and P326E).

8) The sending of set signals can now be programmed to be sent immediately upon setting or at the end of the exit delay (refer P322E, P324E and P326E).

1)   On powering up the panel with the panel tamper open, tamper alarms are inhibited as before but the panel does not now default to putting keypad 1 into program mode. Instead, all keypads on the system start up in normal mode and you may now go to any keypad connected to the panel and the first button press will automatically put that keypad into full program mode.

2)   You can now select one of two 300Baud modem formats. Either Bell103 or V21.(P719E Option8). This allows for the modern high speed modems which may only support one of these formats. You can also set the modem level generated by the panel at address P727E Option 7 & 8.If both 7 & 8 are off the level is LOW, if 7 is on the level is MEDIUM, and if 7 is off and 8 is on the level is HIGH. The default setting is Medium which is recommended for most situations.

3)   At addresses P180E, P280E & P380E Option 8, you can now select an option to ignore zone tamper alarms during the exit delay. This feature has been provided so that smoke detectors with trouble or power supervisory outputs can be automatically reset on arming without causing a trouble alarm. (Assuming the zone tamper indication is used to monitor the trouble signal)

NEW FEATURES WITH Ver5.1 SOFTWARE

1– The Siren driver options for outputs 1 & 2 are now a hardware
device rather that the previous software driven outputs. The siren driver to outputs 1 & 2 are now set by 2 links on the main control board (refer to diagram on page 10 of the installation manual). *If the links are fitted, then outputs 1 & 2 are switched outputs designed to drive 12Volt devices. If the links are removed, then the outputs are modulated siren outputs designed to device horn speakers.* Link 1 relates to output 1 and Link 2 relates to output 2.

2– *The listen-in* feature on the keypads can now be assigned to output 1, as well as via the listen-in link on the main control board. (refer to diagram on page 10 of the installation manual). The *link should only be fitted if a horn speaker is wired to output 1.* Otherwise, the link should be left off.

3– Access to program mode can now be further defined for each of the 24 user codes. Eg: User can have access to view and change their code only, access program mode to view and change all user codes and gain access to installer program mode via client program mode.
The Installer code can also now be programmed to allow access
directly into full program mode without having to go via client program mode first. However, as a safety feature, the panel must not be armed or in monitor mode to allow this to happen.

4– The panel now allows the entry delay timer for each of the 16 zones to be assigned to 24 hour zones, to provide an abort delay for these zones. If the entry delay for the 24 hour zone is set to 0, then the alarm is instant. If the entry delay is set to a value other than 0 (eg: 600), then the zone has to be in alarm for 10 minutes before it will
activate. If the zone seals before the 10 minutes expires, then the
delay is reset and no alarm is created. *This feature is very useful for plant monitoring.*

5– There is now a new set of program addresses for the
communicator (P215E, P216E, P217E & P218E). These addresses
allow a maximum number of dial attempts for each of the 4 dialling scenario's. Now, *if you need to restrict the number of calls that will be made following an alarm, these new program options will allow you to control and limit the maximum number of calls.*

Latest (New) Features for Power Wave-16 (Ver5.51)

As a result of customer feedback, we have Added the following features as listed below
(Software Version V5.51).

- Control Panel Version 5.51 (released January 2001) or above, will now include the software change
to allow monitor mode zone alarms to be reported to the monitoring company, independent from
the "Send Monitor Mode Set/Unset" feature being on Or off.

1) To Enable / Disable "Send Monitor Mode Set/Unset" report, refer to Page 52 of this Installation
manual (Prog. locations P322E-Option-2 (Partition-1), P324E-Option-2 (Partition-2), P326E-Option-2
(Partition-3). Default = ON = Monitor Mode Set/Unset WILL be reported.

2) **To Disable** the **Monitor** Mode **ZONE Alarms** from **being reported** to the monitoring company,
there is a (NEW) option Per Partition that allows this. Refer to Page 26 of this Installation manual
(Prog. locations **P180E-Option-7** (Partition-1), P280E-Option-7 (Partition-2), P380E-Option-7
(Partition-3). **Default** = **OFF =** Zone Alarms in Monitor Mode **WILL Report** to the dialler. If Option 7
Is turned ON, then Monitor Zones WILL NOT Report.

NOTE: The current version of the Upload/Download Software (Ver4.45) will still work with this
(Panel Software) version V5.51 but you will Not the able to have access to the above (New)
features through the Up/Download until the Upload/Download Software has been updated
which is expected to be during March 2001.

Features Update for Power Wave-16 (V5.24)

As a result of customer feedback, we have Changed the **DEFAULT** settings to the features listed below
(Software Version V5.24).

1) In "Programming Wireless (Radio) Detectors" Page 34 of this Installation manual (Prog.
locations P521E through to P536E). Option 3 is now selected as Default (which is the
option that selects the **Crow (AE) Radio PIR Operation + the Low Bat. Detection of this Device).**

2) In line with EPA regulations in most parts of Australia, The Reset Time for Output 1 **(SIREN
OUTPUT)** in now **DEFAULTED** to "300" Seconds **(5 Min).** If you would like to change this setting,
refer to Page 32 of this Installation manual (Prog. locations P421E for "Output 1 Reset Time").

3) Output 2 **(STROBE OUTPUT)** in now **DEFAULTED** to "0" Seconds **(Latching).** If you would like to
change this setting, refer to Page 32 of this Installation manual (Prog. locations P422E for "Output 2
Reset Time").

NOTE: The current version of the Upload/Download Software (Ver4.41) will still work with the this
(Panel Software) version V5.24 but if you wish to revert to the above (New Panel Default)
Settings from the Up/Download software, then you will need to make the changes manually
on your PC screen because the Upload/Download Software (Ver4.41) will still have the
previous list of Default Settings.

New Features for Power Wave-16 (V5.23)

As a result of customer feedback, we have added the following features to the POWER WAVE-16D (Software Version V5.23)

1)There is a new option to pulse any output when a 24 Hour alarm occurs to identify a fire alarm from a burglar alarm.

The new option address is **P101E To P108E, Option 8.**
If Option 8 is OFF (default) then a 24 hour alarm will sound the alarm output continuously as will a normal alarm.
If Option 8 is ON then the output will turn on and off at the rate programmed at the pulse timer address (eg P441E, Page 32 will set the pulse rate for output 1).
If P441E (Page 32) is set to a value of "1" then output 1 will pulse at a rate   of 1/10 second. If set to a value of "5", then the output

will pulse at a 1/2 second rate following a 24 hour zone alarm.

2)The second new option is that the Crow radio reed switch can now be connected to the Power Wave-16D with extended functions.

The new program address for this option is **P521E To P536E, Option 6.**
After enrolling the radio reed switch and setting Option 6 for the appropriate radio zone, the panel will automatically recognise the Door Open / Door Close and battery low signals from the reed switch.
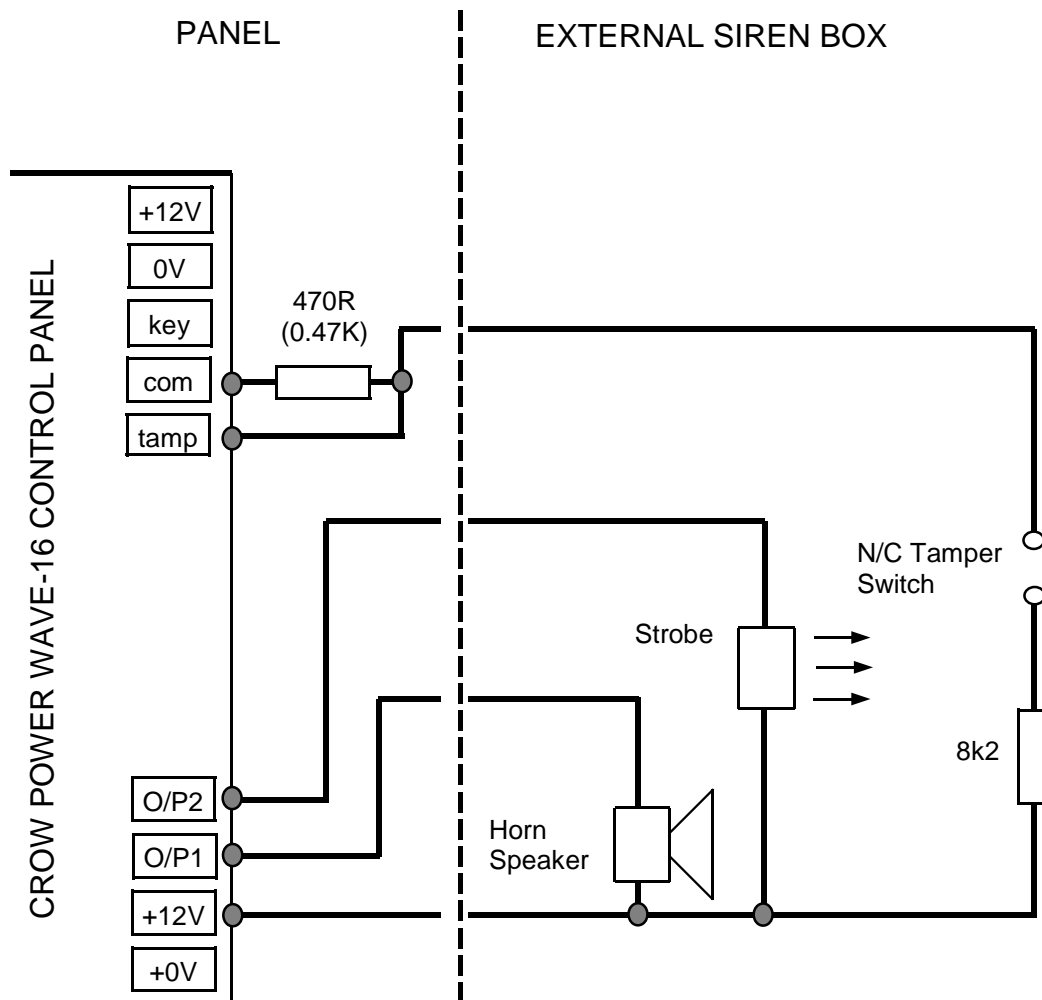
NOTE: The current version of the upload/download software will still work with version V5.23 but if you want to change these options at the PC end, you will need to update the software.

A free upgrade is available to all users of the software. Please return your original disks to Crow Melbourne for an upgrade.

Power Wave-16

4 Wire Connection to External Tampered Siren and Strobe Box

PANEL | EXTERNAL SIREN BOX

CROW POWER WAVE-16 CONTROL PANEL

+12V
0V
key
com
tamp

470R (0.47K)

O/P2
O/P1
+12V
+0V

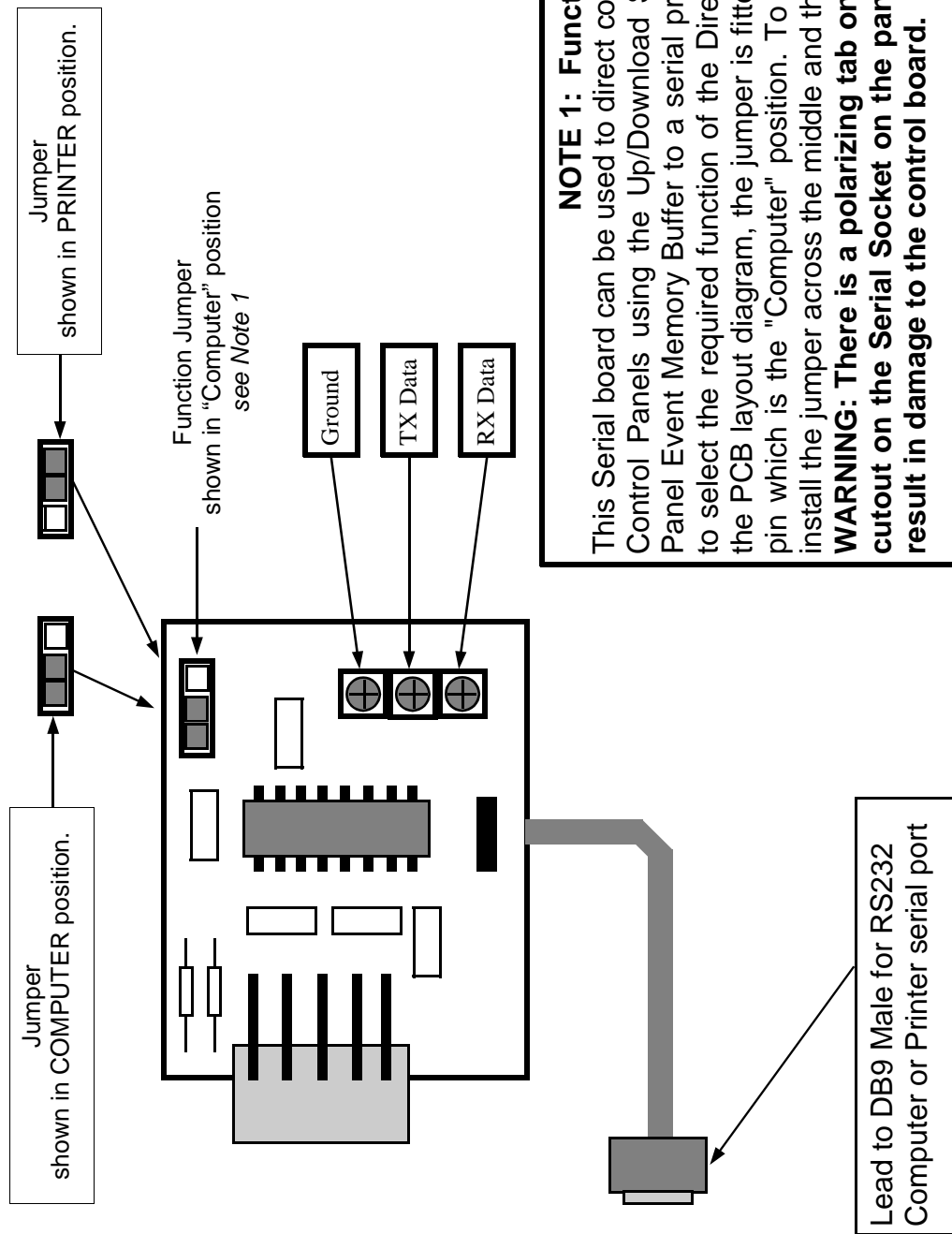Strobe

N/C Tamper Switch

8k2

Horn Speaker

The circuit above is intended for use with a Tampered Siren Cover incorporating an 8 Ohm Horn Speaker and a 12v DC Strobe.

The 2 resistors on the tamper line allow the tamper circuit to operate with a 12v pull-up configuration, allowing the system to be wired as the above diagram with the Tamper Circuit being monitored using a 4 core cable *(Above Resistor **Values** are calculated for proper operation and **Must Not Be Changed**)*.

With the AC switched off (AC Fail), the battery voltage must be 8.5Volts or greater to prevent an erratic tamper alarm. This voltage limitation is not unique to the Power Wave as it applies to most panels on the market that can be wired as above.

Crow "Power Wave" Direct Connect Cable

Jumper shown in PRINTER position.

Function Jumper shown in "Computer" position
see *Note 1*

Jumper shown in COMPUTER position.

Ground

TX Data

RX Data

Lead to DB9 Male for RS232 Computer or Printer serial port

NOTE 1: Function Jumper

This Serial board can be used to direct connect to the Crow Power Wave 8 & 16 Control Panels using the Up/Download Software or send the contents of the Panel Event Memory Buffer to a serial printer. The two position jumper is used to select the required function of the Direct Connect cable. As shown above in the PCB layout diagram, the jumper is fitted across the middle and the left-hand pin which is the "Computer" position. To change to the printer function, simply install the jumper across the middle and the right-hand pin.

WARNING: There is a polarizing tab on the PCB that must line up with the cutout on the Serial Socket on the panel PCB. Failure to do so is likely to result in damage to the control board.

Appendix " A "

Crow Part Arming Station
(MON-KEYBD)

Introduction

The MON-KEYBD is designed to provide simple arming / dis-arming of monitor mode and panic facilities when connected to a Power Wave-16D panel.

Installation & Programming

The MON-KEYBD connects to the Power Wave-16D alarm panel through the keypad buss (Pos, Neg, Clk & Data). The keyboard unit mimics the operation of keypad number 4. Therefore, any options programmed to keypad 4 at the panel end, will affect the MON-KEYBD operation. (eg: If keypad 4 was programmed to partition 'B' only, then the MON-KEYBD will only be able to set & unset Monitor Mode for Partition 'B'). By default, there is no need to do any special programming to make the MON-KEYBD work. However, if you wanted the unit to do panic only, with no Monitor Mode arming functions, or make it silent when an alarm is created, then refer to keypad 4 program options in the full Power Wave-6D programming manual.

Operation

If all zones are sealed, then the green ready LED will be ON. Pressing either of the silver Night Monitor buttons for at least 1/2 a second will put the panel into Monitor Mode and the Green LED will turn off and the red armed LED will Flash, to indicate monitor mode is on. Pressing either button again for 1/2 a sec. will turn monitor mode off.To create a Panic alarm, press both of the silver buttons simultaneously. Once a panic alarm has been created at the MON-KEYBD, the two buttons are locked out for 15 seconds. Following the activation of a panic alarm, you must reset the alarm at the system keypad (s).

CROW (AUST) P/L - EEPROM BOARD

The EEPROM board (Programming Key) fits into the keyed RS232 socket on the main Power Wave-8 &16 panel PCB's.

To write to the EEPROM board (with the <u>jumper on & while the panel is in Installer Program Mode);</u>

For Power Wave-8, enter program address P628E.

For Power Wave-16, enter program address P736E.

To Read from the EEPROM board, (with the <u>jumper off & while the panel is in Installer Program Mode);</u>

For Power Wave-8, enter program address P629E.

For Power Wave-16, enter program address P738E

NOTE: With the jumper off, the data in the EEPROM board can NOT be over-written.

Crow Power Wave-16 Upload/Download Software (Ver 4.45) Installation Notes

This Latest Upload/Download software (Ver 4.45) will ask for an ID Number following the initial installation and upon the first time running of this program.
There are two ID Numbers. One with ALL Programming Options Enabled and the other with NO "PA" (Public Address) Programming capabilities but all other options enabled.

1- ALL Option capabilities ID# = 3283-4074-7902 .

2- NO PA (Public Address) Programming capabilities ID# = 3283-2072-7300 .

3- The PASSWORD is always PW16 .

You will only have to enter the ID number once (the 1ˢᵗ time you start the program), from that time onwards the program will run without the need to enter the ID number.

If this program is replacing an earlier version of the Power Wave-16 Upload/Download software, You _MUST_ (_BEFORE you install this version of the software)_ do an "Un-install" of the Previous Power Wave software versions first from;
"My Computer" \ "Control Panel" \ "Add-Remove Programs")

If this program is replacing an earlier version, you will notice that it will create and install in a new Folder "Directory" called upload download at;

C:\program files\upload download

Whereas it was previously, C:\program files\power wave16

The Up/Downloaded panel (Customer) data files (with " .ELT " file extensions) you have saved while using the previous version of the Upload/Download software, will still be in the power wave16 Folder (directory). This is because, when you Un-Install the previous Version of this Software, you in fact delete the Program (software) only and not the Customer Data Files.

To have easy access to your (Customer) data files from the new upload download software, move the files with " .ELT " file extensions from the Previous power wave 16 Folder (directory), to the New upload download Folder (directory).

Alternatively, you can (When Prompted to do so during the installation of this software), Specify that this installation takes place in the C:\program files\power wave 16 Folder (directory), which will be where the previous version of the software was located.
(The above only applies if updating to this Software Version (Ver 4.45)

Your modem has to be configured to talk to the Power Wave-16 in 300 bps rate. **You have to experiment with different "AT" commands (from your modem handbook) to do this.** The panels default coms format is set for **Bell103** (300 bps). Depending on the modem type you have, you may need to change the panel configuration to coms format **V21** (300 bps), see Prog. Location 719, option 8 on Pg: 55 of Panel manual.

Appendix " D "

Product Warranty

CROW (AUSTRALIA) P/L WARRANTY

(Crow) warrants this product to be free from defects in materials and workmanship under normal use and service for a period of one year from the last day of the week and year whose numbers are printed on the printed circuit board inside his product.

Crow's obligation is limited to repairing or replacing this product, at its option, free of charge for materials or labor, if it is proved to be defective in materials or workmanship under normal use and service. Crow shall have no obligation under this Limited Warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other then Crow.

There are no warranties, expressed or implied, of merchantability or fitness for a particular purpose or otherwise, which extend beyond the description on the face hereof. In no case shall Crow be liable to anyone for any consequential or incidental damages for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever, even if the loss or damage is caused by Crow's own negligence or fault.

Crow does not represent that this product can not be compromised or circumvented; that this product will prevent any person injury or property loss or damage by burglary, robbery, fire or otherwise; or that this product will in all cases provide adequate warning or protection. Purchaser understands that a properly installed and maintained product can only reduce the risk of burglary, robbery or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss or damage as a result. Consequently, Crow shall have no liability for any personal injury, property damage or any other loss based on claim that this product failed to give any warning. However, if Crow is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, Crow's maximum liability shall not in any case exceed the purchase price of this product, which shall be the _COMPLETE AND EXCLUSIVE_ remedy against Crow.

Crow Power Wave 16, Version 5.55 Control Communicator Installation Guide
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