INFINITY16

CONVENTIONAL FIRE ALARM CONTROL PANEL



Installation, Operation and Maintenance Manual



Version 1.0

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1.0 First version (Draft)

1 General Overview

1.1 Introduction

Infinity 16

This is the installation and operating manual for the Zeta Infinity 16 Conventional control and indicating equipment (CIE). With a reduced operating and programming instruction set, the Infinity 16 is programmed by entering instructions via the keypad.

Once mounted and correctly connected the Infinity 16 is ready to operate without further programming.

Out of the box functionality means that any detector or manual call point activation will activate all sounders and outputs.

Since the Infinity 16 does not have an LCD, all indications are given using the LEDs.

Definitions and abbreviations used are as defined in EN54-1:2011.

1.1.1 Terms and definitions

- Detection Zone: Conventional zone up to 32 detectors may be connected
- Manual call points can be connected to any zone.
 Best practice is to connect before any detectors on the same zone unless detector bases have a means to enable signal continuity with a detector removed.
 In some jurisdictions this is mandatory.
- **Sounder Group –** Group of sounders for programming
- **Output Group** Group of Outputs for programming
- Disablement Group- for grouping devices that may need regular disablement at the same time.
- Sounder Circuit: Monitored Conventional sounder circuit supporting Sounders and / or beacons
 operating at 24Vdc (nominal). If bells are connected, they must have polarity and suppression diodes
 fitted.
- System Fault: Any fault condition related to the system firmware / processor operation.

1.2 Access Levels

EN54-2

- 4 x Access Levels AL1 to AL4. Controls for higher AL shall not be accessible at lower AL.
- All indications shall be visible at AL1 without manual intervention (No door)
- Manual controls at AL1 accessible without special procedures
- Indications and controls at AL1 also available at AL2
- Entry to AL2 restricted by special procedure
- Entry to AL3 restricted by special procedure different to AL2

The Infinity 16 control panel has 4 distinct access levels:

Level 1: Public level - this is the normal access level of the control panel and is the access level for building inhabitants who are neither authorized to use the system nor instructed in its use.

- At this access level the 'access' LED will be OFF.
- The panel is in AL1 for Normal operation. This level only allows the button actions *Buzzer Silence* and *Delays Override*. At this access level the LEDs always reflect the status of the panel.

Level 2: Authorized users - this access level is for the system supervisors and for authorized personnel who are adequately instructed in the use of the system and its functions.

- To enter AL2 use the Key switch- Turn to right towards the Red dot Yellow "ON" LED is lit or insert AL2 User code "0001"
 - On this access level the 'access' LED will flash @ 1Hz.
 - AL2 allows more button press actions:
 - All actions allowed in AL1.
 - System Reset.
 - LED test.
 - Start / Silence sounders.
 - Disable / Enable sounders.
 - Disable / Enable relays.
 - Disable / Enable delays.
 - AL2 also allows the Enable / Disable of individual zones, this action is done through a simple menu. To reach this menu the user should long press the numeric button #1 on the panel.
 - Note: Once the Enable / Disable zones menu is active all the system and Zone LEDs are cleared (stops reflecting the panel status) and start being used to show and change the current programming.
 - After the AL2 timeout expires (2minutes) or user presses the 'back' button the panel leaves AL2 and exits to AL1.

Level 3: Programming - this access level is for specialized technical operators, usually installation or maintenance company technicians, who carry out system configuration, commissioning and maintenance.

- AL3 Direct from AL1 or from AL2 by AL3 code "5544"
 - The keyswitch should be in the Off position to enter the code
 - On this access level the 'access' LED will flash @ 2Hz.
 - This access level allows the same button actions as AL2.
 - This access level also allows the following configurations through menus. To reach these menus the user should long press the numeric button.

According to the desired function.

- #1 Disable Zones
- #2 Zones in Test
- #3 Zones non-latching
- #4 Zones in coincidence
- #5 Zones delayed
- #6 Delay in minutes

Level 4: Factory access. Requires manufacturer approved training and support.

2 Control Panel

2.1 Specification

Zeta INFINITY 16 8-16 Zone, Conventional Fire detection and alarm control panel

Technical specification

ABS cabinet consisting of backbox, battery holder and front cover. Dimensions: 385(w) 330(h) 95(d) with cover on. Weight without batteries: 2.2Kg Operating conditions: Indoor -10°C to +40°C, Max. relative humidity 95% (non-condensing) IP 30 rating 16 Red and 16 Amber LEDs for Zonal Fire/ Fault indication 8, 12 or 16 Conventional Zones with End of Line resistor - 10k (default) or 10µF, 35V electrolytic capacitor (programmable option) Max. devices per detector Zone 32 Two monitored sounder circuits 24Vdc, End of line resistor 10k Available current max: 2 x 300mA General alarm output relay x 2 Dry contact, 30Vdc/1A resistive General Fault relay Normally closed, 30Vdc/1A resistive Aux 24Vdc output x 2, plus switched 24Vdc output, max. total current 300mA protected by resettable fuse Power supply switch mode 110 to 240Vac 65W with monitored charging circuit integrated to motherboard 12v 7Ah x 2, Rechargeable VRLA Recommended battery capacity / type: Maximum quiescent current: 460mA (Infinity 16 / 8 Zones) Maximum full load alarm current: 830mA (Infinity 16/8 Zones)

2.2 Housing options

The Infinity 16 is available in an ABS housing.



2.3 Description Infinity 16

- Eight (8), Twelve (12) or Sixteen (16) Conventional Zones
- Two (2) Sounder circuits
- 2 x Fire relay outputs (N/O N/C)
- Fault relay N/C
- 2 x Aux Power out
- 1x Aux power out switched momentarily at reset.
- Delay setting selectable per Zone, when delays are active over-ride by pressing the delay button.
- Zone can be programmed as non-latching Fire and Fault
- Zone co-incidence by adjacent Zones, 1+2, 3+4 etc.
- Access to AL2 by code or Key
- Access to AL3 by code only.
- User Code AL 2 0001
- Technician Code AL3 5544

Function of Infinity 16 Inputs/Outputs

- Zone 1 to Zone 16 Detection zones 1- 16
 - Zones 1-8 on Main PCB
 - Zones 9-12 and 13-16 expansion boards
- Sounder 1, 2: Programmable Sounder circuits Default General Fire.
- Relay 1: General Fire N/O, N/C
- Relay 2: General Fire N/O, N/C
- Relay fault: Closed –Opens to signal fault
- Aux Supply: 24Vdc out
- SW Supply: 24Vdc out interrupted during Reset

Note: Aux Supply and Switched supply outputs should not be used for non-fire detection loads such as magnetic door holders etc. Combined max. 300mA (200mA continuous) available between these outputs.

Non-Fire detection devices should use a separate monitored EN54 part 4 power supply.

Delay/Timer ranges: Global Sounder delay: Max 09m:59s in 1sec increments

Global Outputs Delay: Max 09m:59s in 1sec increments

3 User Interface

3.1 Overlay



Figure 1 Infinity 16 Overlay

Buttons and functions:

- Reset Only available at AL2, AL3 Long press All Zones, circuits and Outputs are reset. Switched supply output is also momentarily disconnected for devices that need Power removal for reset purposes.
 Note: In the event of a Fire event the sounders must be silenced before reset is allowed.
- Buzzer Press to Silence Buzzer All Access Levels
- Silence/Sound At AL2 and above, press to Sound all Alarms. Press again to Silence. When the system is activated due to a Fire event and Sounder are activated, in AL2 or above, press to Silence alarms, press again to re-sound alarms. Yellow LED is lit when Alarms are active.
- Lamp Test- Press and hold (2 sec) to test all LEDs and buzzer.
- Disable Relays Press to go directly to Disable Relay function -AL2 access required
 - Adjacent LED is lit when Relays are disabled
- Disable Sounders Press to go directly to Disable Sounders function -AL2 access required
 - Adjacent LED is lit when Sounders are disabled
- Delays Active Led On means that delays are programmed for sounders, outputs, or both at menus 05-04 and 06-05. When Flashing press button to override.

LED Descriptions



3.1.1 Operating and Programming

- Code Prompt (For Programming or AL2/AL3 operations)
 - Code prompt can be called from access level 1 by 'long press' on the button 'Enter'.
 - Once the code prompt is active (Access LED ON) the user should introduce a valid 4-digit code via the numeric keypad and confirm with a short press on the button 'Enter'.
 - The Zone LEDs give feedback to the user indicating how many digits are expected for the access code and if the button press was accepted.
 - \circ $\;$ LEDs are flashing to start and become steady for each correctly entered number.
 - o When all 4 are steady press 'Enter'
 - If the code introduced does not match any of the programmed codes, it will clear automatically and wait for a new code.
 - If the code matches the AL2 or AL3 then it will exit the code prompt and start the corresponding access level.
 - If the user short presses the button 'back' or the timeout expires (5 seconds without any button pressed) while in code prompt, it will exit to AL1.
- AL1
 - At this access level the 'access' LED will be OFF.
 - The panel is in AL1 for Normal operation. This level only allows the button actions *Buzzer Silence* and *Delays Override*. At this access level the LEDs always reflect the status of the panel.
- AL2 (Key switch- Turn to right towards Red dot Yellow "ON" LED lit or insert AL2 User code "0001"
 - On this access level the 'access' LED will flash @ 1Hz.
 - AL2 allows more button press actions:
 - All actions allowed in AL1.
 - System Reset.
 - LED test.
 - Start / Silence sounders.
 - Disable / Enable sounders.
 - Disable / Enable relays.
 - Disable / Enable delays.

- AL2 also allows the Enable / Disable of individual zones, this action is done through a simple menu. To reach this menu the user should long press the numeric button #1 on the panel and follow the steps detailed in Section 3.1.3 : Disable / Enable Zones
 - Note: Once the Enable / Disable zones menu is active all the system and Zone LEDs are cleared (stop reflecting the panel status) and are used to indicate the current programming status and actions.
- After the AL2 timeout expires (2minutes) or the user presses the 'back' button the panel leaves AL2 and exits to AL1.
- AL3 Direct from AL1 by AL3 code "5544"
 - Code prompt can be called from access level 1 by 'long press' on the Enter button.
 - On this access level the 'access' LED will flash @ 2Hz.
 - This access level allows the same button actions as AL2.
 - This access level also allows the following additional configurations through menus. To reach these menus the user should long press the numeric button to access the desired function.
 - #1 Disable Zones
 - #2 Zones in Walk Test
 - #3 Zones non-latching
 - #4 Zones in coincidence
 - #5 Zones delayed
 - #6 Delay in minutes

3.1.2 LED indications

- LED 'Online'
 - The online LED will be ON if the panel is operating normally, and all the LEDs reflect the real status of the panel. It is OFF if user is programming the panel and LEDS are being used to reflect the status of programmed parameters.
- LED 'Access'
 - This LED has the following behaviour:
 - OFF Normal operation at access level 1.
 - ON Code prompt active, the user can introduce the access code.
 - Flashing 1Hz Panel in access level 2.
 - Flashing 2Hz Panel in access level 3.
- Delays Active
 - This LED will be ON if delays status is active in the panel, and OFF otherwise. Delays status is toggled (active/non-active) with the associated button in AL2 / AL3.
- Disable Sounders
 - This LED will be ON if the sounders are disabled, and OFF otherwise. The sounders disablement status is toggled (disabled/enabled) with the associated button in AL2 / AL3.
- Disable Relays
 - This LED will be ON if the Relays are disabled, and OFF otherwise. The relays disablement status is toggled (disabled/enabled) with the associated button in AL2 / AL3.
- Silence Sound
 - This LED will be ON if the Sounders are active (sounding), and OFF otherwise. The sounder output status is toggled with the associated button in AL2 / AL3 and switched ON when an alarm is triggered by a zone.

- System status LEDs
 - Fire ON if any fire event is active on the panel.
 - Fault ON if any fault is active on the panel.
 - Disabled ON if any disablement is active on the panel.
 - Test ON if any test is active on the panel.
 - System Fault Fault with the microprocessor or internal memory
 - Supply Fault ON if any fault related with the Supply (primary or battery)
 - Earth Fault ON if earth leakage is detected on the panel.
 - Sounder Fault On if any sounder output is faulty.
 - Repeater Fault On if any connected repeater reports a fault. (Future feature)
- Zone LEDs
 - Reflect zone status.
 - Fire Zone LED Will be ON if the correspondent zone is in Fire condition.
 - Fault LEDs will be:
 - Flashing if the correspondent zone is faulty.
 - ON if the correspondent zone is disabled or in test.
 - OFF if none of the above.
- Code prompt status
 - Fire zone LEDs 1 to 4 will be used as feedback for code digits accepted. At the code entry
 prompt all 4 LEDs will flash @ 2hz and will become steady ON as the user introduce the
 code.
 - Fault Zone LEDs are not used in this operation.

4 Configuration functions

Configuration functions

During configuration the Zone LEDs are used to show the status of each setting as described below. To identify the setting being accessed, all functions operate a different fault LED. The fire LEDs will then be used to show the current status of that setting, "On" meaning this setting is active, "Off" inactive.

To navigate through all the zones, etc. we need a cursor that will be moved with the buttons '<-' and '->'. The buttons 'up' and 'down' will toggle the current option. The cursor is represented by a flashing LED at the current position, and the flashing would be @1Hz if current setting is ON and @2Hz if current option is OFF.

4.1 Enable / Disable Zones

- Long press in button #1 (AL2/AL3 access)
 - \circ $\;$ Fault zone LED 1 will be ON identifying the current configuration function.
 - Fire Zone LEDs will be ON if correspondent zone is disabled and OFF if enabled.
 - Use left/right arrows to select zone then
 - Use Up/Down arrow to Enable / disable
 - Press Enter to complete the disablement

Note: When Disable is being used for a Zone that is in Fault or Fire condition, press Reset after disablement is complete to clear the fault or Fire event.

Disable Zones will have the Fault LED "ON"

To Re-Enable, after entering the configuration mode use the arrows to move the cursor (yellow LED) to the required Zone(s) then press down arrow and Enter.

4.2 Program zones for Walk Test

- Long press in button #2 (AL3 access)
 - Fault zone LED 2 will be ON identifying the current configuration function.
 - Fire Zone LEDs will be ON if correspondent zone is in test and OFF if in normal operation.
 - Use left/right arrows to select zone then
 - Use Up/Down arrow to Enter / Leave Test
 - o Press Enter to complete the action
 - Zones in Test will have the Fault LED Lit- when a device is triggered the sounders will briefly operate and then the zone resets.
 - **NOTE:** Zones remain in test until the panel is reset or you manually take the Zone out of Test mode by repeating the process above and use the Down arrow followed by Enter to take the Zone out of Test mode.

4.3 Program zones non-latching

- Long press in button #3 (AL3 access)
 - Fault zone LED 3 will be ON identifying the current configuration function.
 - Fire Zone LEDs will be ON if correspondent zone is non-latching and OFF if latched.
 - Use left/right arrows to select zone then
 - o Use Up arrow to set Non-Latching, Down arrow to return to Latching
 - o Press Enter to complete the action

When a non-latching zone is triggered the Fire indication, buzzer and sounders will be active as long as the Fire event is present. In the case of Fault only the fault LED, buzzer and relay are activated.

Note: By default, all zones are latching for Fire and Fault. When non-latching is set both fire and fault activations are non-latching. This is useful for interconnecting panels for example.

4.4 Coincidence

- Long press in button #4 (AL3 access)
 - Fault zone LED 4 will be ON identifying the Coincidence function.
 - Fire Zone LEDs of adjacent zones (1-2, 3-4, 5-6, ...) will be ON if correspondent zones are to work in coincidence and OFF if independent.
 - Use left/right arrows to select the next pair of Zones
 - Use Up arrow to set Coincidence, Down arrow to Unset
 - Press Enter to complete the action

When the first zone of the pair is activated, the panel will enter the Alarm state with the buzzer sounding and indicate the activated Zone

When the second zone is activated the sounders and alarm relays will activate with the buzzer and the second zone indication.

4.5 Program delayed zones

- Long press in button #5 (AL3 access)
 - \circ $\;$ Fault zone LED 5 will be ON identifying the current configuration function.
 - Fire Zone LEDs will be ON if correspondent zone is delayed and OFF if immediate.
 - Use left/right arrows to select zone then
 - Use Up arrow to set Delayed, Down arrow to unset
 - Press Enter to complete the action

Note: Set Delay Time at the next step (6)

4.6 Program delay time

- Long press in button #6 (AL3 access)
 - Fault zone LED 6 will be ON identifying the current configuration function.
 - Fire Zone LEDs will be reflecting the current delay from 0 to 10 minutes by illuminating all the LEDs until the current number of minutes. The cursor is not needed here, we increase/decrease the number with the 'up' (increase) and 'down' arrow buttons.
 - \circ $\,$ $\,$ Press Enter to set the timer.

Note: The Delay button must be pressed in AL2 to activate the delay function (LED ON)

When the delayed Zone(s) activates, the delay LED flashes, pressing the Delay button will bypass the delays.

4.7 Configure EOL type

- Long press in button #7 (AL3 access)
 - Fault zone LED 7 will be ON identifying the current configuration function.
 - By default, the panel uses a resistive EOL.
 - Fire Zone LEDs will be reflecting the EOL type, if LEDs are all OFF the panel is in resistive mode. If the LEDs are all ON, the panel is working in capacitive mode. To change the mode, use UP to select Capacitive mode and DOWN to re-select resistive.
 - Exit the mode and press reset, this will set the new monitoring function.
 - **NOTE**: this selection applies to all Zones.

4.8 Erase all programming.

- Long press in button #0 (AL3 access)
 - Other events, Disable and Delays LEDs will blink to confirm the success of the operation.

4.9 Quick Reference - Configuration

Press Button #	Function	Fault LED indication	Fire LED indication (per Zone)		
1	Enable/Disable Zone	#1 ON	Zone LED ON if disabled		
2	Zones in Test	#2 ON		Zone LED ON if in test	
3	Non-Latching	#3 ON	Zone LED ON if Non-Latching		
4	Coincidence	#4 ON	LED of Coincident zones ON		
5	Delayed Zones	#5 ON	LED of Delayed Zones ON		
6	Delay timer	#6 ON	LEDs 1-10 reflect minutes		
7	EOL type	#7 ON	All Off for Resistive		
0	Erase programming	None	None:	Other/Disable/Delays flash	

5 Setting Up

5.1 Initial Power up

With mains and battery power connected, and end of line resistors fitted to all Zones and sounder circuits, the panel will show the Green Power Led "On".

If any fault indications are showing at this stage please inspect the panel, check EOL setting is correct for the EOL type used, resistive/capacitive and if necessary, contact your supplier for support.

5.2 Connect Zones, Sounder circuits, Outputs, Inputs and Aux supply

- 1. Remove mains and battery power.
- Remove the end of line resistors from the terminal blocks of the zones that will be used. Fit the end of line resistor to the last device on each Zone circuit. Zone cabling should be continuous with no spurs. Do not remove End of line resistors from Zones that will not be used.
- Note: The Infinity 16 can be programmed to use End of line capacitors per zone in place of resistors.

If this option is preferred use $10\mu F$, 35V electrolytic capacitors and set the end of line monitoring to capacitor in menu 04-06.

- 3. Test each zone cable for continuity and correct reading of EOL resistor (10K ohm), no earth faults and induced voltage less than 1Vac. Connect Zone cables to the required Zones, terminal blocks can be removed from the PCB for ease of connection.
- 4. Zones 1 to 8 are connected on the main PCB, Zones 9-12 and 13-16, if fitted, are connected to the Zone expansion boards behind the main PCB.
- 5. For conventional sounders EOL resistors should be fitted to the last device on each sounder circuit and the cables connected to the panel sounder circuits 1 and/or 2. (See Fig 2.) If bells are

connected, they must be polarity conscious and have suppression diodes fitted. Sounders and sounders with strobes must also have protection fitted, if not built in. Unused circuits must have the EOL resistor fitted at the panel.

- 6. Re-apply mains and then battery power, if all circuits are correctly installed only the Green "Power On" LED will be lit.
- 7. Now the panel is ready to operate with the default settings.

Fig 2. Main board terminals and connectors



1 - 8	Zone wiring for Zones 1 to 8. Leave EOL resistor in unused Zones	10	Sounder Circuit 1	15	Fault relay
		11	Sounder Circuit 2	16	Aux 24V out 1/2
		12	Not Used	17	Switched 24Vdc out
		13	Fire Relay 1	18	Battery connector.
9	USB port for factory use only	14	Fire Relay 2		

Fig 3. Smart card-C (Zone expansion)



- The Smart card-C has connections for 4 Zones. •
- Terminal blocks 1 to 4 are for Zone wiring. Keep • EOL resistor fitted if not used
- Each terminal block is labelled on the PCB + E
- Dil switch 5 is for setting the card address. This is • pre-set at the factory in a new panel but in case of onsite replacement address should be set to 11 for Zones 9 to 12 and **12** for Zones 13 to 16.
- Connector **6** is where the flat cable to the panel is connected.

Fig. 4. Infinity 16 rear view



- 1 Connection from Power supply
- 2 Not used
- 3 connection for Zone expansion
- 4 connection for Zone expansion

5.3 Default settings

- Access Codes User 1(AL2), Installer 1(AL3), See notes above for codes.
- Zone Delays None
- Zones non-latching events Off
- Zones co-incidence Off
- End of Line type Resistor
- Disablements: None- All Zones, Sounders, Outputs Enabled

5.3.1 Change Default settings

To change default settings, you must be at AL2 or AL3 depending on the setting. Consult the <u>Configuration functions</u> on pages 11-13 of this document and select the desired option, then follow the steps given.

5.4 Installation notes

- Manual call points installed on the same Zone as detectors should be wired before the detectors so that detector removal will not prevent call point operation, unless detector bases have a means to enable signal continuity with a detector removed. In some jurisdictions this is mandatory.
- If delays are implemented for a Zone, then Manual call points should be connected to a separate Zone.
- Before connection to the control panel all wiring should be tested for continuity, no short circuits, high resistance to Earth >20Mohm and no induced voltage <1Vac.
- With devices connected use only a multi-meter for circuit checking, <u>do not</u> use a Megger.
- Wiring should be carried out in accordance with local regulations with 2 core plus earth cable. The Earth wire should be continuous and connected to Earth at one end only.
- Cables with conductor sizes between 0.5mm² and 2.5mm² should be used.
- Mains cable 3 core 1.5mm² fed from an isolated fused spur (3A) labelled as per local standards.
- If a remote input is programmed for Reset, the source of the remote signal should be a key switch, code entry device or similar equivalent to AL2 access.
- All installation should be carried out by suitably qualified personnel and in accordance with local regulations.

5.5 Mounting Instructions



- 1. Mark the location of the upper mounting positions then drill holes. Do not drill with the housing in place, this will cause dust to settle on the PCB.
- 2. Hang the housing on the two screws through the keyhole slots then mark the position of the two lower fixing positions.
- 3. Remove the housing then drill the two holes.
- 4. In the case of the metal housing all holes are prepared for heavy mounting, use appropriate rawl bolts or similar capable of supporting the empty weight of 6Kg plus the weight of selected batteries.
- 5. Re-fix the housing and secure all four screws.

6 Commissioning

Having carried out all site-specific programming as required, and confirming that the system is fault free, the system should be commissioned in accordance with local regulations.

It is recommended, and generally required, that all devices are tested using test smoke / heat generators as required, activating manual call points and any input devices while confirming that the required cause and effect programming operates as intended. At the same time confirm operation of sounders and/or beacons whilst ensuring that required minimum sound pressure levels are achieved.

The results of the commissioning process should be preserved as part of the handover documentation.

7 Maintenance

Maintenance of the fire detection and alarm system should be carried out in accordance with local regulations and requirements of the authority having jurisdiction.

In relation to the control panel there are no end user serviceable components.

Maintenance should be carried out by an accredited fire detection and alarm systems service provider.



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