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GDX™
AUDIO LITE

Product Description

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1 Introduction

GDX has over 35 years' experience in designing and manufacturing Door Entry and Access Control products. Working closely in partnership with an extensive list of local government, housing associations, consultants and architect partners. GDX continually develops its products to meet all of the requirements for the door entry market, along with meeting all the associated legislations

The GDX Door Entry range has been designed to provide unbeatable reliability and robust functionality, to continually exceed the rigorous demands of the residential and commercial market sectors. Combined with elegant styling and it is designed to provide a high level of user functionality.

With a focus on reliability and ease of installation & maintenance, we offer door entry solutions that deliver affordable door entry security for the customer. Available are targeted options, this is to enable the GDX door entry system to be tailored to suit the customer requirements.

The GDX range of equipment is supplied exclusively through authorised GDX distributors, dealers and installers. This supports quality design, installation and in-life maintenance to ensure a great customer experience. Please contact GDX Customer Services for details of approved suppliers.

Email: customerservices@pacgdx.com

Telephone: 0161 406 3400 opt. 1

GDX offer a full range of design support services to our customers and approved installers. We have an experienced sales and support team based throughout the UK who are available to offer no obligation support, help & advice in all aspects of the following:

- Pre-Sales Systems Design
- Tender & Specification Support
- Technical & Site Survey Support

If you wish to discuss your requirements on any matter related to the GDX product range, please contact Customer Services to request contact details for the local support representative.

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2 GDX Overview

The GDX product range is a well-established suite of products that provides a high-quality door entry solution with integrated access control for the Residential and Commercial markets.

GDX Door entry is a solution that enables buildings or locations (such as a landing of a building, car park, etc) to be secured whilst supporting:

- Visitor access through calling locations within the building to enable residents/staff to authenticate and remotely unlock the secured entrance
- Resident and staff access through integrated access control with secure ID Devices to unlock doors.

The following flow chart illustrates the high level GDX solution:

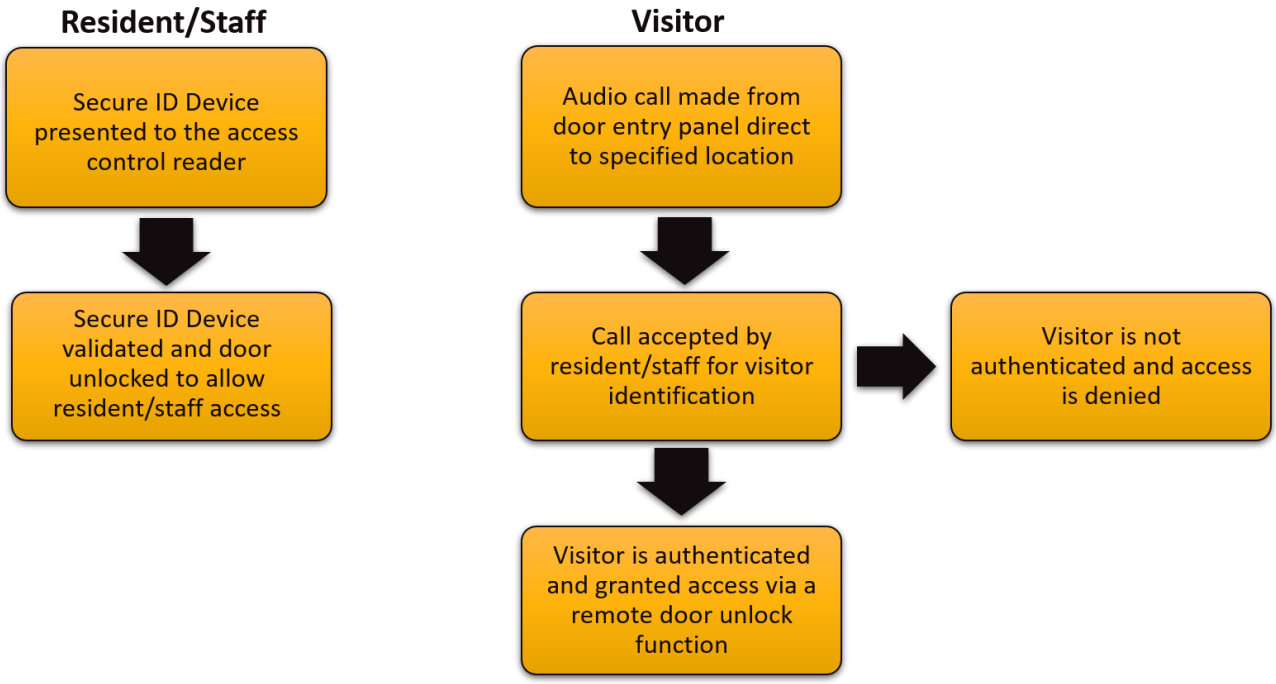

Figure 1 - Door entry process flow

On top of the basic door entry and access control functions within GDX, a whole variety of additional features can be added into the solution which can be tailored towards commercial or residential use cases.

GDX offers simple to use Door Entry solutions backed with robust, long-life components that deliver reliability and meet the demands of the environments they are deployed into.

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The GDX portfolio is based on 2 products:

- GDX Audio Lite – Audio call and Access control solution for cost effective deployment into small residential blocks or commercial buildings.
- GDX Audio & Video – Scalable IP based system that supports Audio and Video calling as well as Access Control for larger residential blocks or commercial buildings

This Product Description focuses on the GDX Audio Lite product, for GDX Audio & Video information please refer to the Product Description available at www.pacgdx.com.

The following diagram illustrates the basic components of a GDX Audio Lite Door Entry solution. Please note that detailed descriptions and components will be in later sections.

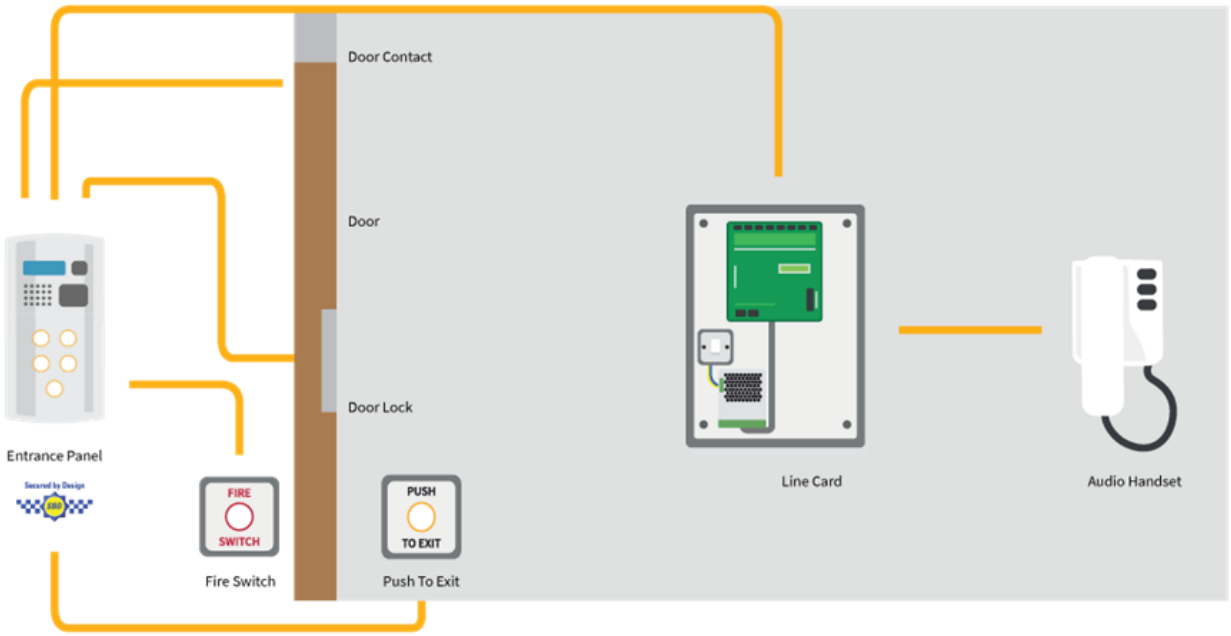

Figure 2 - GDX Audio Lite system overview

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3 Customer Use Cases

This section highlights the various customer use cases that are supported by the GDX product range.

3.1 Cost effective door entry

For small deployments that require a cost-effective solution, we offer the GDX Audio Lite system. This can be supported in 8 or 16 handset options.

GDX Audio Lite is based on established analogue technology that supports secured access for staff and residents through ID Devices. It also supports audio calling between the Entrance Panel and the Audio Handsets for visitors to request access. The resident can grant access directly at the Audio Handset located in their residence.

The solution is designed to be robust, both at the Entrance Panel and the Audio Handset. Ease of use and reliability are core to this offering.

3.2 GDX5 Expansion for existing customers

GDX Audio Lite is based on the GDX5 Audio technology and can be used to seamlessly expand current GDX5 Lite Audio systems. GDX Audio Lite has been re-certified to the latest standards and offers high quality audio door entry solutions for customers with optional integrated access control.

3.3 Reliable Keyholder management

Greater operational assurance is possible by using Housing Central as your management platform as your valuable keyholder database is maintained and backed up in the cloud. It is fully flexible that allows operators to access and maintain keyholder accounts from any web connected device.

3.4 Enhanced monitoring and increased operational efficiency

The Housing Central Cloud Management service offers improved near-real time monitoring of the GDX system that reports events and status of the GDX system. This provides operators with the ability to manage the GDX system and the security of the buildings remotely and with ability to react to events when needed.

3.5 Future Proofing

With existing management communications relying on older PSTN, GSM and GPRS technologies for connecting the GDX equipment on site to the remote management station, there is a need to plan for migration to newer LTE (4G/5G) mobile technology in readiness for the closure of the GSM and GPRS networks which is an active project for Mobile Operators with closure dates ranging from 2025.

The other benefit of moving to the latest 4G connectivity offered by GDX is that it greatly improves the near-real time monitoring of the site and the GDX system and ensures vital keyholder updates are delivered quickly for better operator and end-user experience

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4 GDX Audio Lite Door Entry

This section provides technical details on the GDX Audio Lite system. The following are the main features supported:

- High quality door entry solution with optional integrated access control.
- Door Entry system that supports 1 or 2 Entrance Panels that allow direct calling for up to 16 end-user devices.
- Access control options that allow staff/residents to access the building through the presentation of authenticated tokens that electronically unlock the secured door. The options for access control include including:
    - Integrated GDX Access Control using an integrated access reader within the Entrance Panel and associated Standalone Readers that can be provided in 2 variants to match the token technology required:
        - Low Frequency
        - High Frequency
    - Integrated 3rd Party Access Control using an integrated access reader within the Entrance Panel to connect to a 3rd party access controller for validating and managing the authenticated tokens. These can also be provided in the following variants to match the token technology required:
        - Low Frequency
        - High Frequency
- Fully functional and robust Entrance Panels used to gain access at secured doors including:
    - Flush or surface mounted Entrance Panel options for different installation options.
    - Backlit LCD screen showing system status messages.
    - Functional panel with options for:
        - 1-20 buttons (maximum of 15 if braille engraving is required)
        - User designated addressing (up to 6 characters per button)
        - Each button is programmed to call a different handset
    - IP66 rated Entrance Panel buttons.
    - Equality Act compliant with Raster™ Braille and yellow button bezel options.
    - Option to add address and logo for clear company/premises identification.
    - Two programmable service/trades periods to allow entry via the service/trade button at pre-programmed times of the day.
- Optional access control readers for resident/staff access using secure ID tokens. These access readers come with the following options:

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  - Integrated access readers within the Entrance Panel.
  - Standalone access readers for location with an Entrance Panel or for resident/staff access at secured doors not used by visitors e.g. access to a waste/recycling area.
  - Access Readers are available for different ID Device technologies:
    - Low Frequency (125kHz/153.6kHz RFID).
    - High Frequency (13.56MHz RFID).
  - Option to connect the integrated access reader to a 3rd party access controller that supports 3rd party access control to use the integrated Entrance Panel readers.
- Support for simultaneous (full duplex) audio calls from 2 Entrance Panels to 2 end-user devices.
- Reliable and robust Audio Handsets that include:
  - LED indication and raised tactile symbols on Audio Handsets for Equality Act compliance.
  - Adjustable call tone volume (engineer set) within all handsets as standard.
  - Function to bring a handset back into normal operation from Do Not Disturb mode after a set (programmable) time period.
  - Option for the addition of flashing LED beacons and alarm sounders within residences.
- Control equipment that supports the system locally with features including:
  - Line card options to support either 8 or 16 Audio Handsets.
  - Integrated onboard system diagnostics within the Line Card for ease of maintenance and trouble shooting.
  - Door alarm monitoring facility with visible warning on Audio Handsets.
  - Automatic BST/GMT time clock adjustment.
  - Programmable time settings for system operations (call duration, lock release time etc).
- Management options that include:
  - Programming and ID Device management locally at the Entrance Panel.
  - Programming at the Entrance Panel with ID Device management on a PC using GDX.Net software.

The following picture illustrates the GDX Audio Lite solution:

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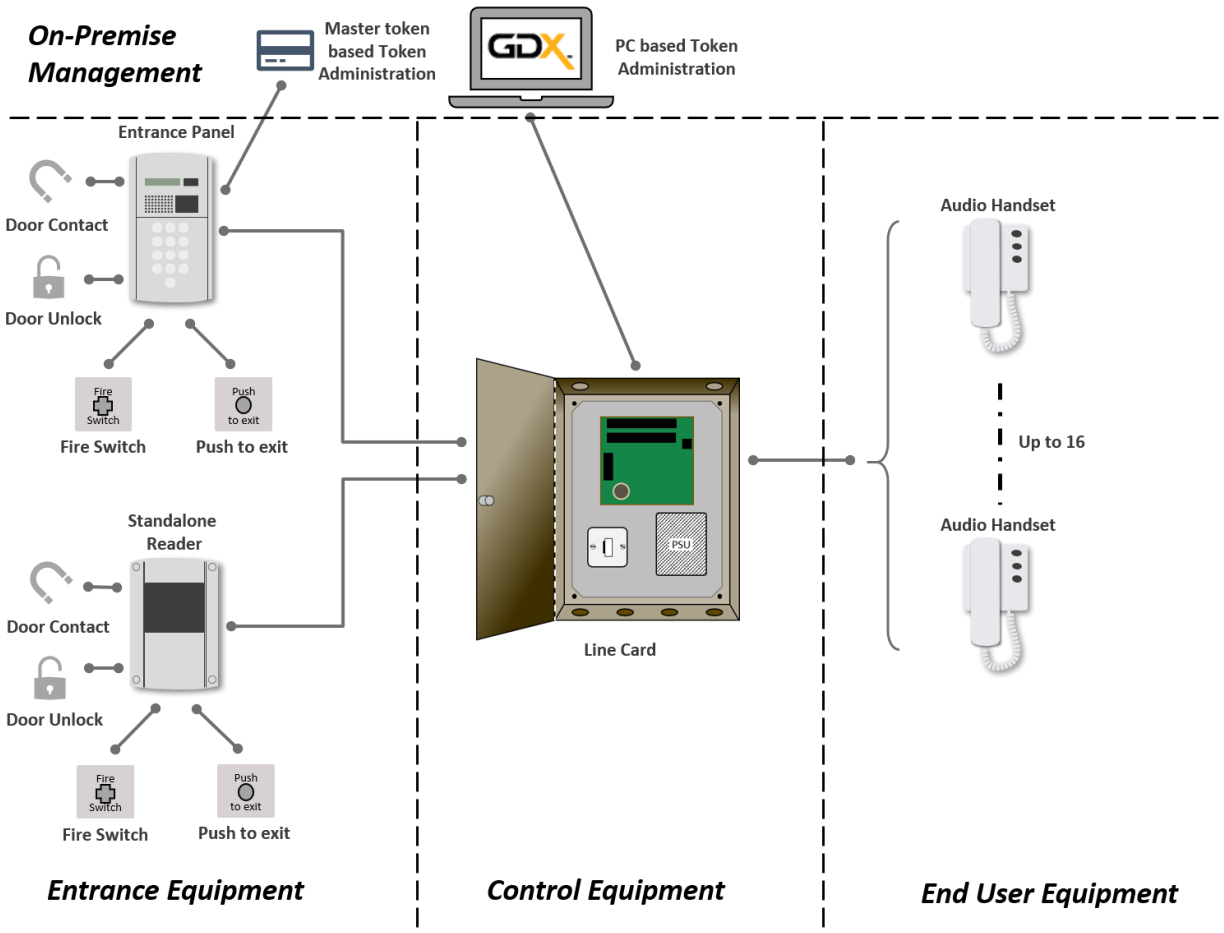

Figure 3 – GDX Audio Lite solution

The following sections provide details on all the elements shown in the figure above.

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4.1 Entrance Panel

The GDX Audio Lite Entrance Panel is a high-quality door entry panel that has been designed and manufactured to withstand the harshest and most demanding of environments. The vandal resistant panel is made from 2.5mm type 316 high grade stainless-steel that conforms to BS1449. They are also certified to the Secured by Design standard. Developed with multiple applications in mind, the GDX Audio Lite Entrance Panel has an anti-vandal design. This meets requirements for the residential and commercial sectors as well as for installation at remote locations such as car park barriers or help points.

With ease of installation and maintenance in mind, the panel incorporates an internal hinged chassis which holds all the electronic circuitry including the external wiring connections.

GDX Entrance panels provide duplex speech, audible reassurance tones, privacy of conversation and engineer adjustable Lock release and Door alarm period as standard.

The Entrance Panel comes in two styles, Compact and Mitre Bezel.

- The Mitre Bezel panel is provided with a backbox which incorporates a bezel surrounding the faceplate to offer an additional degree of protection from vandalism
- The compact panel can be provided with a flush or surface mounted stainless-steel backbox.

They come with various options to customise to meet customer needs including:

- Button engraving (up to 6 characters per button)
- Braille engraving
- Address engraving
- Company Logo
- Silver or Yellow button bezels
- Service or Trade buttons to allow access at programmed times for service personnel such as postal workers
- Integrated access control reader options including:
    - No reader
    - Integrated Low Frequency reader
    - Integrated High Frequency reader
    - Integrated Low Frequency reader with 3rd party connector for external access controller
    - Integrated High Frequency reader with 3rd party connector for external access controller

The following diagrams show the two Entrance Panel styles.

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Figure 4 - GDX Audio Lite mitre bezel Entrance Panel

(with yellow bezels and braille engraving)

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Figure 5 - GDX Audio Lite compact Entrance Panel

The Entrance Panel supports multiple functions as the focal point at the main entrance to the building. From access control for residents to call and remote door unlock functions for visitors. The following sections provide details on all the standard functionality of the Entrance Panel as well as the options that are available to order or configure.

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4.1.1 Configuration and installation

- 1 button to 20 button variants with user definable labels per button (up to 6 characters)
- The Entrance Panels are manufactured from 2.5mm stainless-steel conforming to BS1449 Type 316.
- The Entrance Panel faceplate is secured to the back box with × 6 tamper-proof stainless-steel Mono-Drive® 5 high security screws.
- The stainless-steel Entrance Panel buttons are rated to IP66 standard.
- All electronic components within the Entrance Panel are mounted on a removable plastic hinged chassis, enabling easy access for wiring, installation & maintenance.
- For ease of installation and maintenance all internal and external cables within the Entrance Panel are connected by removable plug-in terminal blocks.
- High visibility engraved operating instructions and resident address is supported on the Entrance Panel faceplate for ease of use.
- The Entrance Panel contains a backlit LCD screen which provides the following information for call and general system status reports:
    - System Ready.
    - User Busy
    - Handset Engaged.
    - Call Answered.
    - Call Completed.
    - Door Open.
    - Fire Access.
    - Service Access.
    - Service Denied.
    - Flat Call.
- Three styles of stainless-steel Entrance Panel are available to best suit the local environment:
    - Flush Mounted Compact.
    - Surface Mounted Compact.
    - Flush Mounted Mitre Bezel.
- Entrance Panels have the following configuration option:
    - Functional operation – each button is configured to be dedicated to a specific address. A single button push will make a call to that address. Maximum 20 buttons are available on the functional Entrance Panel (or 15 if braille engraving is required).

4.1.2 Call functions

- A visitor shall request access to the property by pressing the appropriate button on the Entrance Panel to make a call to the appropriate residence.
- An audible reassurance tone sounds at the Entrance Panel on each button push.
- The resident's handset can answer the audio call initiated from the Entrance Panel. A full duplex audio conversation is then supported before the resident can admit the visitor, if they wish to do so, by selecting the lock release button on the handset.
- The door lock release functions on the Audio Handset only become active after a call is answered from the Entrance Panel.

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- The audio call will only be between the Entrance Panel and specific Audio Handset, no audio overhearing from other handsets is possible.
- The call from the Entrance Panel to the Audio Handset will last for a pre-set duration before timing out. The call time is configurable between 1-99 seconds.
- The pre-answer call duration period, before an unanswered call is reset by the system, is programmable at the Entrance Panel within the range of 1 to 99 seconds.
- The call tone duration at the handset, after a call button has been pressed, is programmable at the Entrance Panel within the range of 1 to 20 seconds.
- Speech volume at the Entrance Panel is programmable to suit local requirements.

4.1.3 Door unlock functions

- If the resident releases the door lock, an audible tone sounds at the Entrance Panel as confirmation of the lock release.
- The Entrance Panel provides visual confirmation for the visitor of the lock release by displaying “Door Open” on the LCD screen.
- The door lock release period is programmable at the Entrance Panel within the range of 1 to 20 seconds.
- If the door locking system is fitted with door contacts, the system shall automatically detect when the door is in a closed position and engage the door locking system to prevent visitor tailgating.
- An optional door monitoring facility is available that provides a visual alert on the relevant Audio Handset, if the door remains open past a programmable time threshold. This time threshold is configurable between 1 to 99 minutes.

4.1.4 Configuration options

- A Service or Trades Button option on the Entrance Panel can allow access to the property for delivery of mail, papers, etc. This can be programmed to activate at set times of the day on a day by day basis.
- The electronic time clock within the Entrance Panel has automatic BST/GMT adjustment to avoid the need to manually change time settings.
- The Entrance Panel can be programmed to provide two separate trade access periods with the ability to omit a Sunday from the valid time periods.

4.1.5 Integrated access control reader option

- Entrance Panels can be provided with an integrated access control reader to support resident/staff access using ID Devices. Note that all Entrance Panels have the facility to add the integrated access control reader at a later date.
- There are 4 variants of integrated access control readers:
    -
- No additional cabling/equipment is required with the integrated access control reader.
- The access control reader is protected by a vandal resistant, high impact polycarbonate Lexan window incorporated within the Entrance Panel stainless-steel faceplate.
- The Lexan window incorporates a raised tactile symbol and contrasting colours for Equality Act compliance.

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- The access controller can store up to 1000 ID Devices.
- The access control reader utilises RFid to grant access to validated token fobs at a read distance of up to 10mm.
- Token options are detailed in the Tokens section.
- No batteries or user replaceable parts are contained in the token fobs.
- The Entrance Panel LCD screen will provide the following visual verification upon presentation of an ID Device:
    - Valid ID Device.
    - Invalid ID Device.
- The Entrance Panel will provide the following audible verification upon presentation of a token:
    - Valid ID Device – tone for door lock release duration.
    - Invalid ID Device – single bleep to indicate ID Device read but is invalid.
- The GDX system has the following options to support ID Device administration:
    - Direct on the Entrance Panel.
    - Via GDX.Net software hosted on a PC.
- Token Administration is supported via the following methods:
    - Direct at the Entrance Panel using Master Tokens to add and delete ID Devices.
    - Remotely via a PC with GDX.Net software that is connected to the GDX Audio Lite system. The PC based central administration software platform can either be located on site (directly connected to the GDX system) or hosted remotely with connectivity provided via a mobile (GSM) network.

The following diagram shows the integrated reader on the front of the GDX Entrance Panel.

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Figure 6 - GDX integrated access control reader

4.1.6 Equality Act compliance

- The Entrance Panel is Equality Act (previously known as Disability Discrimination Act) compliant. It should be mounted and positioned to take into consideration all requirements and guidelines within the Equality Act and any other relevant codes of practice.
- The Entrance Panels shall incorporate Raster™ Braille for all button numbers and block addresses engraved on the Entrance Panel for the benefit of visually impaired visitors.
- Raster™ Braille is a patented technology for braille signage that produces braille with perfectly rounded domed Braille dots, that complies with all of the latest standards and codes.
- As a visual aid the Entrance Panel buttons can be provided with bright yellow bezels to make them highly visible. The yellow bezels consist of a vandal resistant baked enamel coating for durability.

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4.2 Entrance auxiliaries

Options exist to enhance the GDX Audio Lite system with standardised auxiliary equipment as per the following sections.

4.2.1 Standalone readers

- Standalone vandal resistant readers are available for doors/entrances that do not require the ability for a visitor to place an audio call.
- The Standalone readers are paired to an Entrance Panel and copy the keyholder database from the Entrance Panel to provide the same keyholder access across the system.
- The token access proximity reader is protected by a vandal resistant, metal housing incorporating a high impact polycarbonate lexan window.
- The lexan window incorporates contrasting colours for Equality Act compliance.
- The standalone access control reader supports up to 1000 ID Devices.
- The standalone access control reader provides the following audible verification upon presentation of a token for user reassurance:
    - Valid Token – tone for release duration to indicate door release.
    - Invalid Token – single bleep to indicate token read but invalid.
- Standalone access control readers are available to support either Indigo or PAC ID Device standards, to match the GDX access control protocol being used throughout the system.

The following diagram shows a standalone reader.

Figure 7 - Standalone access control reader

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4.2.2 Fire switch

- A stainless-steel vandal resistant housing manufactured from 2.5mm Type 316 stainless-steel conforming to BS1449, is an optional part to support Fire Service access in the event of an emergency.
- Two variants are available
    - Flush mounted
    - Surface mounted
- A drop key is also available for use with the fire switch
- A purpose designed mechanical key switch provides the over-ride access for authorised emergency services personnel.

4.2.3 Exit Devices

- Request to Exit buttons provide the door unlocking function for exit from the secure side of the entrance.
- All request to Exit Buttons are provided with a stainless-steel vandal resistant plate.
- Four variants of request to Exit exist as per the following:
    - Push to Exit Single Gang - provided with a 25mm stainless-steel vandal resistant button rated to IP66.
    - Push to Exit Single Gang with yellow bezel - provided with a 25mm stainless-steel vandal resistant button with a bright yellow bezel around the exit button. This yellow bezel consists of a vandal resistant baked enamel coating for durability and is rated to IP66.
    - Push to Exit Architrave - provided with a 20mm stainless-steel vandal resistant push button rated to IP66.
    - Hands-free Request to Exit Single Gang – stainless steel plate rated to IP65 that supports touch free exits through an infra-red sensor.

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4.3 Line Card

The GDX Audio Lite Line Card is the control equipment that connects the Entrance Panel to the Audio Handsets, as well as providing centralised power to the handsets for operation.

There are 4 variants of the GDX Audio Lite Line Card:

- 8-way – fully enclosed boxed unit with power supply that supports up to 8 Audio Handsets
- 8-way – fully enclosed IP65 rated boxed unit with power supply that supports up to 8 Audio Handsets
- 16-way – fully enclosed boxed unit with power supply that supports up to 16 Audio Handsets
- 16-way – fully enclosed IP65 rated boxed unit with power supply that supports up to 16 Audio Handsets

The following figure shows a 16-way Line Card within its enclosure.

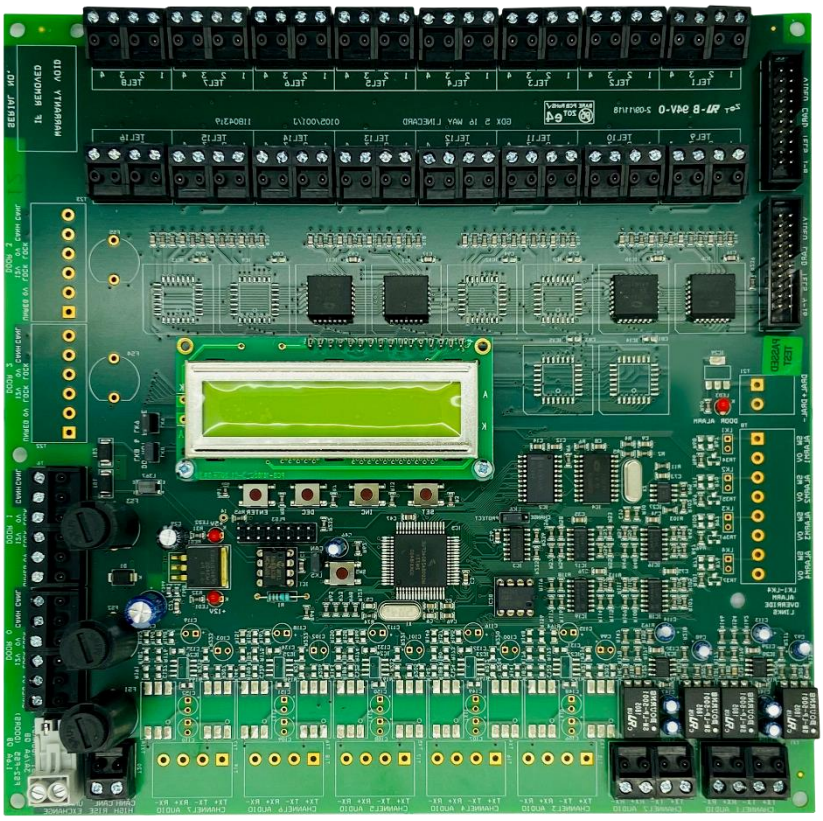

Figure 8 - GDX 16-way Audio Lite Line Card

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4.3.1.1 Functionality

- The Line Card is available in two variants:
  - 8 way – supporting up to 8 Audio Handsets and 2 simultaneous audio calls.
  - 16 way – supporting up to 16 Audio Handsets and 2 simultaneous audio calls.
- The Line Card provides:
  - The audio call connection between the Entrance Panel and the Audio Handset being called
  - The Door unlock signal from the Audio Handset to the Entrance Panel
- Audio Handsets are fully isolated ensuring complete privacy of speech between the handset and Entrance Panel, so it is not possible for any other handset on the system to overhear a call.
- The handsets registered to the Line Card are protected by a self-resetting electronic fuse. Should a fault develop in an Audio Handset the electronic fuse disconnects the handset from the system. All other handsets connected to the system continue to operate as per normal. When the fault is cleared from the system the fuse will automatically reset, enabling the Audio Handset to return to an active state.
- Audio Handsets connected to the Line Card are continuously monitored. An LCD display on the Line Card provides a visual indication of the status of each connected handset for ease of maintenance and trouble shooting.
- The Line Card also controls the signal to the Entrance Panel to unlock the door when the resident presses the Enter button during a call.
- The door unlock outputs to the Entrance Panel is powered by a 12V DC signal and is protected by a 1.6 Amp slow blow glass fuse.
- Supports the following door lock functions via jumper configuration:
  - ‘normally open’ (fail safe).
  - ‘normally closed’ (fail secure).
- Supports a Door contact connection for providing alerts when a door is forced or left open.
- Supports a Fire switch connection for manual over-ride by authorised emergency personnel.
- Supports a Request To Exit (RTE) connection for a door to be unlocked from the secure side when exiting the building via a push button switch.
- The Line Card is supplied within an enclosure and can be ordered in the following two variants:
  - Standard Enclosure – Line Card with pre-wired PSU (including battery back-up cabling) and a Fused Spur for mains termination. All enclosed in a lockable, metal cabinet.
  - Waterproof Enclosure – Line Card with pre-wired PSU (including battery back-up cabling) and a Fused Spur for mains termination. All enclosed in an IP65 rated, lockable, metal cabinet.

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4.3.1.2 Installation and specifications

- The Line Card is housed in a durable lockable sheet steel metal enclosure suitable for wall mounting. Two options of metal enclosure are available:
    - Indoor version
    - Indoor/outdoor version rated to IP65
- The enclosure dimensions for both variants are H 500 x W 400 x D 100mm.
- The enclosure is supplied in a polyester powder coated finish.
- The enclosure is secured by a high security barrel type key lock.
- All equipment in the enclosure (Line Card electronics, PSUs and mains isolation devices) are mounted on a removable galvanised sheet steel metal chassis plate for ease of system installation.
- The Line Card is provided with a PSU that has the following specification:
    - Input 230V AC mains
    - Output – 13.5V DC, 51W, 3.4 Amp.
    - The PSU is isolated by a fused double pole mains isolation spur to BS 5733 standard.
- Internal and external cables into the Line Card are via removable plug-in connectors for ease of installation and maintenance.

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4.4 End -user Devices

4.4.1 Audio Handset

The Audio Handset provided with the GDX Audio Lite solution is designed to provide reliable audio call and door unlocking functionality. With a sleek modern design, it offers true ease of use with user feedback during operation.

The following diagram shows the two-button audio handset.

Figure 9 - GDX two-button Audio Handset

The following provides the detailed functionality of the GDX Audio Lite Audio Handset:

- The audio handset is a two-button handset manufactured from high quality white UL rated ABS plastic suitable for wall mounting.
- This is an analogue handset supported within the analogue Audio Lite system.
- It has been designed to be robust with vandal resistant construction.

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- The handset incorporates spring loaded mountings within the base of the handset to alleviate any potential mounting or handset operational difficulties due to fixing onto uneven wall surfaces.
- The handset has large 20mm buttons with raised tactile symbols and LED indicators for Equality Act compliance.
- The Audio Handset has 2 functioning buttons:
    - Privacy button.
    - Enter button.
- The following are provided to indicate an incoming call:
    - A tone will sound at the Audio Handset.
    - The Privacy button lights up green.
- Having answered the call, the resident can hold a full duplex audio conversation with the visitor to ascertain their identity. The following indicators are provided during a call:
    - The Privacy button remains lit up in green for the duration of the call
    - The Enter button flashes red for the duration of the call
- If the resident wants to admit the visitor, they press the Enter button to release the lock. On activating the door lock the following are provided to indicate operation:
    - A tone will sound at the Audio Handset
    - The Enter button will light up red
- The Privacy button on the handset can be used to provide a Do Not Disturb mode for the resident. When the Privacy button is pressed it will light up red to indicate that privacy mode is active.
- This privacy mode can be reverted by the following means:
    - Press the Privacy button once. At this point the red light switches off.
    - The system has a user configurable time setting to automatically revert the Audio Handset to normal operation to avoid handsets being inadvertently left in privacy mode. This defaults to 6 hours but can be programmed within the range of 1 to 99 hours by the administrator of the GDX system.
- If the door monitoring facility is utilised and the door remains physically open beyond a configured period, the Audio Handset Enter button remains red until the door is closed.
- A high-quality microphone and speaker provide clear duplex speech between the Entrance Panel and the Audio Handset.
- All handsets on the system shall have complete privacy of speech to ensure that the call is only between the Entrance Panel and residence being called. Another residence cannot intercept or listen into this call.
- The only time the call system will be busy is if a resident is talking to a visitor at one Entrance Panel and another visitor is attempting to call the same resident from another Entrance Panel. The visitor will be informed by the Entrance Panel LCD display with a “Phone engaged” message.
- The Audio Handset supports configurable volume control. This is adjusted by the administrator of the GDX system to limit disputes on noise levels.

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4.5 ID Devices

The following section details the ID Devices available for the GDX Audio Lite system. These are designated into two categories:

- Low Frequency (LF) ID Devices supported by any of the Low Frequency Entrance Panel or Reader options.
- High Frequency (HF) ID Devices supported by any of the High Frequency Entrance Panel or Reader options.

4.5.1 Low Frequency ID Devices

4.5.1.1 PAC ID Devices

PAC secure Tokens come with the following features:

- Black Token format with optional colour clips.
- Unique pre-configured identity code.
- 153.6kHz RFID passive proximity technology.
- Fully Encapsulated in black ABS plastic.
- Interchangeable colour clips available in the following colours:
    - Red.
    - Green.
    - Blue.
    - Yellow.
    - White.
    - Orange.
    - Turquoise.
    - Brown.
    - Pink.
    - Purple.
- Double sealed and ultrasonically welded.
- Metal eyelet for attachment to a keyring or lanyard.
- Self-powered, no need for batteries.
- Lifetime Guarantee against electronic failure.

Figure 10 **- PAC ID Device** below, shows the PAC ID Device

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Figure 10 - PAC ID Device

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4.5.2 High Frequency ID Devices

4.5.2.1 PAC MIFARE® 1K Classic ID Device (Ops Lite)

The PAC MIFARE 1K Classic ID Device has the following functionality:

- ID Device required for all High Frequency (HF) access control readers within the GDX Audio Lite system.
- ISO 14443 standard.
- Incorporating the standard 1K MIFARE® Classic device.
- Constructed in UL rated ABS plastic.
- Robust design suitable for harsh environments.
- 4byte serial number.
- Ops™ Lite compatible.
- Lifetime guarantee against electronic failure (terms and conditions apply).
- Has optional coloured clips to allow easy recognition for multiple ID Device holders within a single residence.
- Colour clips available include:
    - Black.
    - Green.
    - Orange.
    - White.
    - Blue.
    - Grey.
    - Red.
    - Yellow.

The following illustrates the PAC MIFARE 1K Classic ID Device and the associated red clip.

Figure 12 - PAC MIFARE 1K Classic ID Device and red clip

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4.6 Management

The management options for the GDX Audio Lite system are detailed in the sections below.

4.6.1 Local Entrance Panel management

It is possible to configure and maintain the GDX Audio Lite system through the Entrance Panel. Please note this is an offline solution that requires being physically on site to configure and maintain options. This supports the following capability:

On-premise management is based around using the Entrance Panel and/or a local Web browser interface to configure the GDX Audio Lite system. The following functions are supported:

- Configuration settings at the Entrance Panel include:
  - Entrance Panel number setting – this is to ensure a unique system ID for each panel within the system.
  - Pre-answer ring time – ring duration for an unanswered call.
  - Post-answer call duration – maximum call duration of an answered call.
  - Lock release duration – to determine the door lock release time.
  - Door open alarm – time period before an open door will raise an alert to the resident's handset.
  - Speaker volume – volume of the Entrance Panel speaker.
  - Common Mode – enables ID Device rights to be copied to all Entrance Panels/Backdoor readers in the system.
  - Pair slave – links a Backdoor reader to the Entrance Panel.
  - Factory Default – restores the system back to default settings.
  - Date and time – system date and time setting.
  - Service period – service period time settings for up to 2 programmable service periods and option to enable or disable Sundays from the service periods.
  - Code Access – configuration for setting the PIN number for an optional PIN reader.
- ID Device administration (for integrated access reader options only) at the Entrance Panel for up to 1000 tokens include:
  - Master Token – up to three Master Tokens can be configured for use in adding/deleting ID Devices into the system.
  - Add ID Device.
  - Delete ID Device.
  - Search ID Device.
  - ID Device count.
- Handset configuration
  - Audio handset ring volume setting.

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4.6.2 Local PC management

GDX.Net is a software package that supports the following functions:

- Runs on a Windows 10 PC in compatibility mode.
- Supports the configuration of Access Control areas for which resident tokens are enabled for. Note that Areas require configuring prior to adding any ID Devices into the system.
- Provides the following ID Device administration functions:
    - Ability to add and delete ID Devices (staff or resident) utilising a Desktop Reader connected directly to the PC.
    - ID Devices are defined into one of the 2 following token types:
        - Staff tokens are automatically allocated access to all readers on all Areas as default.
        - Resident tokens are associated with a telephone and can be allocated access to all or only some of the readers within an Area.
    - An Admin Reader is available to enable effective keyholder management when connected to the GDX.Net software.
- Supports the following diagnostic and report functions:
    - Action Log – a rolling log of the latest 250 events.
    - Report Generator – to provide a report based on filters.
    - Database back-up – ability to back up the keyholder database.
- Provided through GDX as a Windows PC based server with GDX.Net pre-loaded. The PC has the following specs:
    - Windows 10 Pro 64 bit Operating System
    - Intel i5 processor, 8GB RAM, 1TB hard drive

4.6.3 Remote PC management

The Remote PC management option is the ability to support GDX.Net on a PC located remotely to the GDX Audio Lite system with the following functions:

- Supports the same functions as described in the above Section 0.
- The connectivity between the GDX Audio Lite system and the remotely installed GDX.Net software is via a (GSM) dial-up modem.
- The modem connects into the GDX Audio system via the Line Card.
- The modem provides the ability to insert a customer provided GSM SIM to allow the GDX.Net server to dial the line card and update keyholder records from a remote location

4.6.4 Housing Central management

The Management of the GDX Audio and Video system is a critical component for:

- Ease of configuration on initial set-up of the system including:
    - Set up guide to support the initial configuration of the system.
    - User Interface designed for clarity.
    - Quick operator registration process.

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    - Role based access profiles to offer flexibility on what operators can view and edit.
- In-life management and monitoring including:
    - Keyholder administration for residents / staff.
    - Monitoring activity and alarms across the GDX system.
    - System status monitoring and reports.
- Business continuity and enhanced security through:
    - Keyholder database automatically backed up to reduce the operational risk and user impact for losing this if on-premise equipment fails.
    - Near-real time event log for keeping up to date on user, system and security based events.

The ongoing security of property and residents is reliant on the Management capability of the GDX system and therefore the Housing central cloud management service has been developed to deliver high quality management and monitoring capability.

Near-real time reporting of events and alarms enable the operators of the system to be informed on the health of the GDX Audio & Video system.

The security of the Housing Central account is critical and so security has been designed into the platform as per the following:

- Secure communications using HTTPS (TLS 1.3) encryption from the operator's web browser to their Housing Central account.
- Secure and encrypted communications from the GDX Gateway on site to the Housing Central platform using TLS 1.3 protcol.
- An operator registration process that requires:
    - the Main administrator to invite the new Operator to register via an email sent from Housing Central.
    - The Operator to complete a mandatory registration process.
    - Email verification of the Operator's email account.
- A zero-trust hardware commissioning process which restricts Hardware and Gateway device configuration to registered GDX Audio & Video equipment.
- Gateways are coded to only communicate with Housing Central and cannot send data to another destination.
- Housing Central is hosted within Microsoft Azure which provides a monitored, secure and scalable cloud platform to ensure high availability and stability of the Housing Central application.

Figure 13, below, shows the Housing Central cloud management platform with the fully managed mobile network connection.

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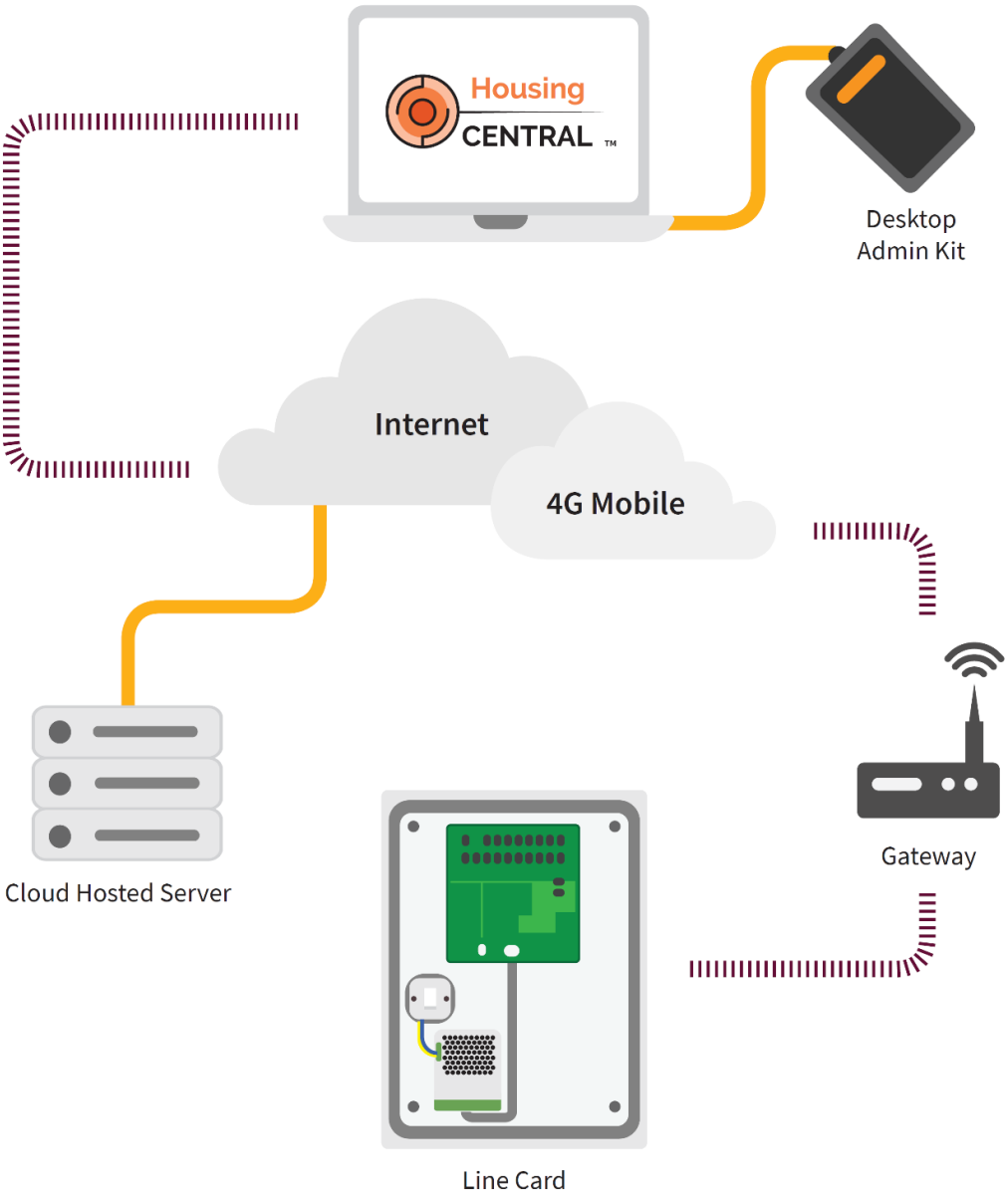

Figure 13 – Housing Central Cloud Management

4.6.4.1 Home Page

The Housing Central landing page is illustrated in the following diagram. Please note this is the main Administrator view with all menu options shown:

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Figure 14 - Housing Central Home Page

Key features include:

- Clear and easy to navigate User Interface.
- Menu system for drilling down into the sub-sections of the application.
- Set-up Guide to aid with initial configuration of the Housing Central account.
- Key Seek search to aid easy look up of a keyholders ID.

The following sections detail the menu choices (sections) on the left-hand side of the Home page.

4.6.4.2 Keyholders

The Keyholders section provides the area where Tenants and Staff can be added and managed. This allows token-based access for Tenants and Staff at the secured entrances to the properties.

Keyholder ID Device administration is supported in Housing Central by use of an Admin Desktop Reader. The Desktop reader is directly connected to the PC running the Housing Central via a USB cable. This allows ID Device management with the following functionality supported:

- Add Staff ID Devices and associate them to an Estate.
- Delete Staff ID Devices.
- Add Resident ID Devices and associate them to an Estate, Block and Residence.
- Delete Resident ID Devices.

Please note it is possible to perform bulk imports or uploads of multiple Tenants or Staff members via the System menu which is available to the main Administrator of the Housing Central account.

4.6.4.3 Properties

The Properties section allows a logical representation of the site to be built into Housing Central. This in turn supports the registration of hardware to the Properties to allow effective keyholder management (staff and resident) and in life monitoring and maintenance.

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Properties are built into a hierarchical model as per the following:

Estates

The Estate logically defines the overall area covered by the GDX Audio & Video system and represents:

- One or more blocks.
- The perimeter of a gated area.

Blocks

Blocks allow the Estate to be organised into sub sections and represent where an Entrance Panel (or Backdoor Reader) will be located to control access into the Block.

Each block contains one or more residences.

Residences

Residences represent a unique address within a Block.

4.6.4.4 Hardware

The Hardware section provides a means for associating the following unique hardware within the Housing Central system

Gateways

Registers the customer gateway(s) to their Housing Central account and enables:

- communication to the GDX Audio & Video system.
- Gateway settings for event reporting, messaging, etc.

Hardware

Supports the association of the following GDX Audio & Video hardware:

- Entrance Panel(s).
- Backdoor Reader(s).
- Handset(s).

Enabling Hardware within Housing Central supports the events and report functions for tracking of calls, access control events, etc.

4.6.4.5 System

This section provides the following functionality for the Housing Central main Administrator:

Events

Provides a rolling event log of all reportable events and alarms from the GDX Audio & Video system with the following functionality:

- Event log is synchronised with the on-site gateway every 10 minutes to provide a near-real time status of activities on-site.
- Ability to export the event log as a CSV file.

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- Events are retained for 6 months.
- Live Event Log shows the last 50 events

The Events shown are as detailed in the following table:

Event Type	Event
Call Events	Call made by panel
	Call answered
	Call Busy
	Call Cancelled
	Call door opened
Access Events	PTE activated
	Fire activated
	Door Alarm activated
	Token activated
	Token declined
System Events	Watchdog activated

Operators

Enables the operator accounts for the Housing Central account to be defined and managed including:

- Creation of Operator account that drives the Registration process via an email sent to the designated Operator's email account.
- Allocation of user privileges to an Operator to allow access to view and edit sections within the Housing Central account.
- Ability to disable an Operator's account.
- Ability to delete an Operator's account.

Reports

Enables the ability to run a report based on current data within the Housing Central account. The criteria for report creation are as follows:

- All events.
- Call Events.
- Door Open Events.
- Keyholder Token Access events.
- Alarms.
- Engineering events.
- Residence Handset Privacy events.

The report can be generated against a specified entry of:

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- From (day, month and year).
- To (day, month and year).

System

This menu is for the main Administrator of the Housing Central account and includes the following functionality:

- Categories – ability to add and delete categories that can be assigned to operator profiles for role-based access management.
- Service Log – details all the service activities performed on the GDX Audio & Video system. 6 months of data are maintained within this log.
- Import Tenants – allows an external spreadsheet of tenants to be uploaded into the system.
- Bulk Add Tenants – allows a rapid addition of multiple tenants to the system.
- Import Staff – allows an external spreadsheet of Staff members to be uploaded into the system.
- Bulk Add Staff – allows a rapid addition of multiple Staff members to the system.
- Activity Log – details all operator activity. 6 months of data is maintained within this log.

4.6.4.6 Operator Registration Process

The registration process for Operator's to grant access into the Housing Central account is easy and secure as per the following steps:

- Main administrator creates a Username and Email Account entry for each Operator.
- A registration email is sent to the email account created.
- The operator follows the link and registers with the following information:
    - Name.
    - Company.
    - Address.
    - Password.
- On completion of the registration form, an email is sent to the operator's designated email account for verification.
- Once the email account has been verified, the Operator can log into their Housing Central account. They will be restricted to views and editing ability based on the User privileges assigned by the main Administrator.

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4.6.5 Gateway

The Gateway is the device that securely connects the GDX system to the Housing Central cloud management platform.

The Gateway has the following functions:

- Connects into the GDX Line Card on site via an Ethernet (CAT 5e/6) cable.
- End-to-end encryption of data using the TLS 1.3 protocol between gateway and Housing Central
- Near real-time reporting of on-site events to Housing Central.
- Integrated network connectivity via:
    - LTE Mobile SIM – fully managed 4G SIM enabled mobile broadband service tuned for reliable communication to Housing Central.
    - Creates a secure connection to the Housing Central cloud management platform via a private mobile APN.
    - Comes with an aerial tuned for LTE mobile network use.
    - Designed to be easily mounted where the Mobile signal strength offers the best connectivity.
- Visual LED indicators:
    - Gateway status – green LED to show the Gateway is on.
    - Connection status – green LED to show successful connection to Housing Central.
- Supplied with Power Supply Unit
- Optional wall mounting kit

Figure ***15***, below, shows the GDX Gateway

Figure 15 - GDX Gateway

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4.6.5.1 Mobile Connectivity

The mobile connectivity option for Housing Central connectivity is a fully managed service including:

- A roaming SIM card that is installed in the gateway, dedicated to connection to the Housing Central management platform.
- Mobile data package that is tuned to the GDX Housing Central management platform.
- Managed mobile network connection with support via the GDX support team.
- Flexible mobile network choice that enables the best connection from the site to the secure cloud hosted Housing Central platform
- Fully secure solution including:
    - Secure (encrypted) end-to-end communications between the Gateway and Housing Central using the latest and most secure Transport Layer Security protocol (TLS1.3).
    - Use of a private Access Point Name (APN) on the mobile network that secures traffic between GDX Gateways and Housing Central.
    - Zero trust provisioning methodology that means that only GDX Gateways can connect to Housing Central through a controlled private IP Address range

For a reliable mobile connection, it is necessary to ensure that the signal strength of the mobile network is sufficient at the location where the Gateway is installed. The Gateway comes with a plug-in aerial. If signal strength is an issue, it is advised that the customer uses an off-the-shelf signal boosting solution. These are readily available to boost the signal strength and the mobile connectivity that supports a reliable connection.

Installers will need to conduct signal strength surveys prior to install and ensure installation of the gateway is planned to ensure reliable mobile signal (including any required 3rd party boosting equipment).

4.7 Installation

An installation guide for a GDX Audio Lite system is provided at:

https://pacgdx.com/support/product-literature/gdx-product-literature

This install guide provides the workflow and process for successful install of a GDX Audio Lite system with all relevant component installation instructions.

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5 Glossary

Abbreviation	Description
4G	4th Generation Mobile Network
EA	Equality Act
GDX	Glasgow District eXchange
GSM	Global System for Mobile communication
HF	High Frequency
IP	Internet Protocol
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LF	Low Frequency
LTE	Long Term Evolution (wireless broadband for mobile devices)
PAC	Proximity Access Control
PSU	Power Supply Unit
RFID	Radio Frequency Identification
TFT	Thin Film Transistor

Table 1 - Glossary of terms

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6 Appendix A –Data Sheets

6.1 Entrance Panel

GDX Audio Lite – Entrance Panel		
Model	Compact Entrance Panel	Mitre Bezel Entrance Panel
Dimensions	Panel – W 150 x H 280 x D 2.5mm Back box – W 255 x H 123 x D 65mm (flush)	Panel – W 150 x H 280 x D 2.5mm Back box – W 255 x H 123 x D 75mm (flush)
Part Numbers	Various depending on button options. Please refer to the Product Catalogue for full details.	
Material	2.5mm high grade BS316 stainless-steel faceplate	
Operating Temperature	-10ºC to +35ºC	
Operating Humidity	0% to 90% Relative Humidity	
Power	12V DC	
Audio Specification	Duplex	
LCD Display	Backlit LCD display for full user notification and engineering settings	
Integrated Access Reader ID Options	Low Frequency 3rd Party Low Frequency	High Frequency 3rd Party High Frequency
Reader Supported Tokens	Indigo Tokens PAC Tokens 3rd party compatible tokens	PAC Classic Mifare® Tokens (Ops Lite) 3rd party compatible tokens
Lock Release Time	Default of 8 secs, configurable settings of 1-99 secs	
Door Alarm Time	Default of 5 mins, configurable settings of 1-99 mins	
Visual Indication	Valid token – LCD displays valid token message Invalid token – LCD displays invalid token message	
Audio Indication	Valid token – tone for the release duration of the door Invalid token – single bleep to indicate invalid token presentation	
Panel Connections	Line Card Door Lock	
Distance from Entrance Panel to connected components	Up to 100m to Line Card	
Recommended Cabling	1 x 6 pair CW1308 cable to Line Card 1 x 2 core 1mm to Door Lock	
Power Requirements	0.35 Amp @12V DC	
Panel Engraving	Numerical, alphabetical, address and colour logo options	
Button Options	1 to 20 buttons that can be programmed to work functionally (dedicated button per residence). Options for Equality Act compliant deployments include: • Raster Braille engraving • High Visibility yellow bezels	
Configuration	Locally at the Entrance Panel	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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6.2 Entrance auxiliaries

GDX Audio Lite – Standalone Vandal Resistant Readers		
Part Numbers	909025131 - GDXAL Vandal Reader LF S/Mount. 909025151 - GDXAL Vandal Reader LF F/Mount. 909020116 - PAC OneProx™ GS3 LF Vandal Reader - yellow and black. 909022116 - PAC OneProx™ GS3 LF Vandal Reader - blue and grey.	909025161 -GDXAL Vandal Reader HF F/Mount. 909025141 - GDXAL Vandal Reader HF S/Mount. 909020118 - PAC OneProx™ GS3 HF Vandal Reader - yellow and black. 909022118 - PAC OneProx™ GS3 HF Vandal Reader - blue and grey.
Dimensions	W 100 x H 158 x D 27mm	
Weight	750g	
Reader ID Technology	Low Frequency	High Frequency
Reader Supported Tokens	Indigo GDX Tokens PAC Tokens 3rd party compatible tokens	PAC Classic Mifare® (Ops Lite) tokens 3rd party compatible tokens
Maximum Read Range	150mm	40mm
Input Voltage	12V DC	
Input Current	0.35 Amps standby excluding locks	
Environment	IP65 – Indoor/Outdoor weather resistant	
Operating Temperature	-10ºC to +35ºC	
Operating Humidity	0% to 90% Relative Humidity	
Audio Indication	Valid token – tone for release duration of the door Invalid token – single bleep to indicate token read that is invalid	
Standards Compliance	CE, ROHS, WEEE compliant	
Connection to Entrance Panel	1 x 3 pair CW1308 cable	
Max Distance to Entrance Panel	Up to 100m	
Warranty	5 years against electronic failure	
Boxed Product Contents	Installation guide	

GDX Audio Lite – Entrance Auxiliaries	
Part Numbers	110025 – Surface Fire Switch 110026 – Drop Leaf Key for Fire Switch 110027 – Flush Fire Switch 23002 – Push to Exit 23003 – Equality Act Push to Exit 23000 – Architrave Push to Exit GB014617 – Hands-free Request to Exit
Material	2.5mm stainless-steel
Environment	IP66 – Indoor/Outdoor weather resistant for all auxiliaries apart from IP65 for GB014617
Warranty	5 years against electronic failure

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6.3 Line Card

GDX Audio Lite - Line Card	
Part Numbers	909024402/08.00 - GDX AL 8-way Line Card & PSU 909024412/08.00 - GDX AL 8-way Line Card & PSU in IP Enclosure 909024402/16.00 - GDX AL 16-way Line Card & PSU 909024412/16.00 - GDX AL 16-way Line Card & PSU in IP Enclosure
Dimensions	W 400 x H 500 x D 100mm
Operating Temperature	0ºC to +35ºC
Operating Humidity	0% to 90% Relative Humidity
Weight	10000g
Housing	Standard metal case with removable lid IP65 rated metal case with removable lid
Input Voltage	240V AC, 50 Hz
Output Voltage	12V DC
No. of Entrance Panels or Standalone Readers	2 x Entrance Panels or Standalone Access Control Readers
No. of handsets	8 x Audio Handsets for 8-way Line Card 16 x Audio Handsets for 16-way Line Card
Line Card Connections	Audio Handsets Entrance Panel Door Lock
Distance from Line Card to connected components	Up to 100m to Entrance Panel/Standalone Readers Up to 50m to Audio Handsets
Recommended Cabling	1 x 3 pair CW1308 to Audio Handsets/Standalone readers 1 x 6 pair CW1308 to Entrance Panel 1 x 2 core 1mm to Door Lock
Power Requirements	0.8 Amp @240V AC
Configuration	Locally via browser screen
Warranty	5 years against electronic failure
Compliance	CE, RoHS & WEEE compliant
Cable Entry Points	6 x 20mm knockouts
Boxed Product Contents	Installation guide

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6.4 Audio Handset

GDX Audio Lite – Audio Handset	
Part Numbers	909023121 – GDX AL Audio Handset
Dimensions	W 120 x H 200 x D 40mm
Operating Temperature	0ºC to +35ºC
Operating Humidity	0% to 90% Relative Humidity
Weight	400g
Audio	Duplex
Distance from Line Card	50m using standard 2-Core 0.75mm cable
Configuration	Locally via Line Card or browser
Buttons	Two LED enabled buttons showing operation and status of the handset. The two buttons are: Enter - for door unlocking during an active call Privacy - to enable Do Not Disturb mode
Equality Act Options	Each button has a raised tactile symbol and LED for indication Hard of Hearing handset includes audio loop for use with hearing aids
User Settings	Adjustable ringer volume
Power Requirements	0.2 Amp @12V DC at standby (provided by the Line Card)
Material	ABS White
Warranty	2 years against electronic failure

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6.5 ID Devices

GDX Audio Lite – PAC LF ID Devices	
Part Numbers	20204 – PAC LF Token with no clip (Pack of 10) 40101 – Red PAC Token clip (Pack of 10) 40102 – Green PAC Token clip (Pack of 10) 40103 – Blue PAC Token clip (Pack of 10) 40104 – Yellow PAC Token clip (Pack of 10) 40105 – White PAC Token clip (Pack of 10) 40108 – Orange PAC Token clip (Pack of 10) 40109 – Turquoise PAC Token clip (Pack of 10) 40204 – Brown PAC Token clip (Pack of 10) 40205 – Pink PAC Token clip (Pack of 10) 40206 – Purple PAC Token clip (Pack of 10)
RFid Frequency	Low Frequency (153KHz)
RFid Technology	PAC
Supported Access Reader(s)	Integrated LF Access Reader 3rd Party LF Access Reader Standalone LF Access Readers
Material	UL rated ABS
Dimensions	W 33 x H 60 x D 5.5mm
ID Code	Unique
Power	No batteries required
Warranty	Lifetime against electronic failure

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GDX Audio Lite – PAC HF ID Devices	
Part Numbers	909021101 – Standard MIFARE Token without clip (Pack of 10) 909021104 – Standard MIFARE Token with clip (Pack of 10) 20267 – Red Key Logo Token Clip (Pack of 10) 20268 – Green Key Logo Token Clip (Pack of 10) 20269 – Blue Key Logo Token Clip (Pack of 10) 20270 – Yellow Key Logo Token Clip (Pack of 10) 20271 – White Key Logo Token Clip (Pack of 10) 20272 – Black Key Logo Token Clip (Pack of 10) 20273 – Orange Key Logo Token Clip (Pack of 10) 20274 – Grey Key Logo Token Clip (Pack of 10)
RFid Frequency	High Frequency (13.56MHz)
RFid Technology	PAC 1K MIFARE (Ops Lite)
Supported Access Reader(s)	Integrated HF Access Reader 3rd Party HF Access Reader Standalone HF Access Readers
Material	UL Rated ABS Plastic, double sealed and ultrasonically welded
Dimensions	W 33 x H 60 x D 5.5mm
ID Code	Unique
Power	No batteries required
Warranty	Lifetime against electronic failure

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