



PAC Product Description



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1 Introduction

PAC has over 40 years' experience in designing and manufacturing secure access control products. Working closely in partnership with consultant engineers, architect partners, distributors and installers, enables PAC products to be continually developed to meet the requirements of the access control market and its associated legislation.

The PAC access control range has been designed to provide unbeatable reliability and functionality to meet the rigorous demands of both the residential and commercial market sectors. There are targeted customer options to enable the PAC access control system to be tailored to suit a variety of customer requirements. With a focus on reliability and an ease of installation & maintenance we offer access control solutions that deliver affordable security for the customer.

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

Email: customerservices@pacgdx.com

Telephone: 0161 404 3400 opt. 1

PAC offers 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 on 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 PAC product range, please contact Customer Services to request contact details for the local support representative.

2 Access Control Overview

Access control is managed with security tokens that are configured to permit access to doors secured with access control. Figure 1 illustrates the access control process flow at a high level:

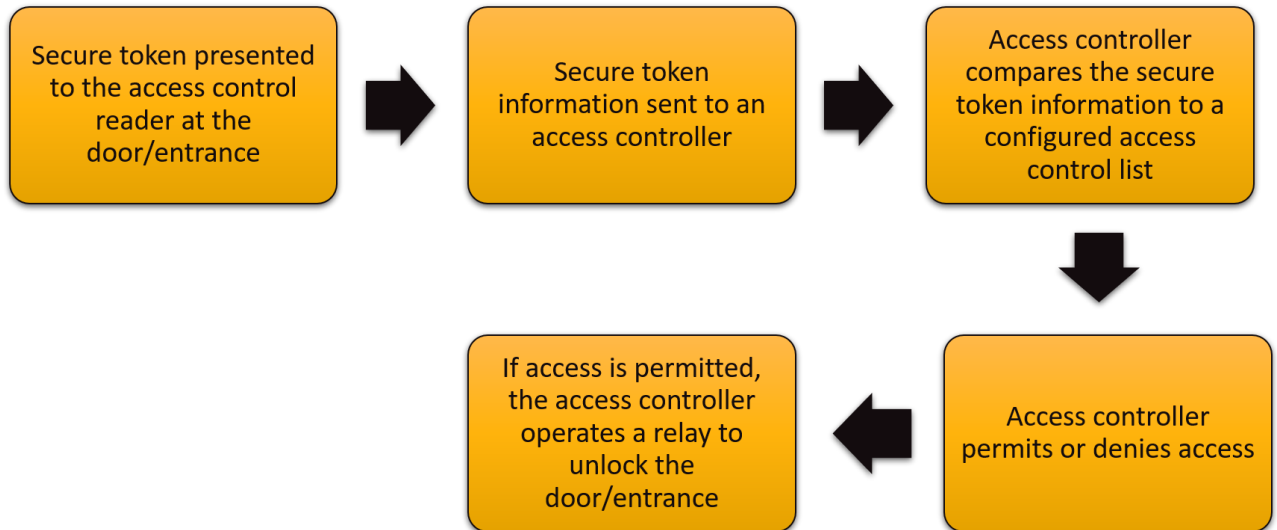


Figure 1 – Access control process flow

The following are some definitions of access control.

Access Control

The term access control refers to the practice of restricting entrance to a property, a building, or a room to authorized persons.

Physical Access Control

Physical access control can be achieved by:

- Human means i.e. a guard, receptionist, etc
- mechanical means i.e. locks and keys
- electronic means such as a PAC access control system

Electronic Access Control

Electronic access control supports a more secure access control system to human or mechanical systems using access control lists held in a database that validates users based on the use of authentication methods. A wide range of ID Devices can be used to replace mechanical keys, with the electronic access control system granting or denying access based on the credential presented. When access is granted, the door is unlocked for a predetermined time and the event is recorded. When access is refused, the door remains locked and the attempted access is recorded. The system can also monitor the door and generate an alarm if the door is forced open or held open too long after being unlocked.

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Proximity Access Control

Proximity access control supports the use of ID devices that can be read by the access control reader within a set 'read' distance i.e. within the proximity of the reader. This removes the need for any physical insertion or swiping of an ID device. The ID device is identified against an access control list within the access controller to allow or decline access through the secured door.

Integrated Access Control

Integrated access control is a system that incorporates additional features to enhance security for people and property. As well as providing access control, an integrated system may provide:

- Alarm monitoring relating to CCTV and perimeter detection. This would allow the system to control cameras, making them pan or tilt to record movement or activity if an unauthorised person is trying to gain access.
- Alarm notification so that when an event is recorded, an automatic emergency message can be sent (via telephone, pager or mobile phone) direct to authorised personnel or to a local or remote monitoring centre.
- Lift control so that the calling of a lift can be secured like any other area of the access control system
- Monitoring of heating, lighting and ventilation systems.



3 Customer Use Cases

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

3.1 Standalone 2 door access control

For a small scale, plug and play solution the PAC 212 Access Controller is ideal to secure 1 or 2 doors.

The PAC 212 Access Controller is a fully integrated access controller and administration reader.

It is feature rich and offers enhanced security when deployed in the High Frequency version that supports the non-cloneable PAC Ops™ ID Devices (Tokens or cards). It requires no additional software during installation or operation as it can be programmed and managed via its onboard keypad.

3.2 Cloud hosted residential access control

The PAC Residential Cloud allows customers to manage and monitor their access control systems in a secure cloud environment. Residential Cloud is the ultimate solution for speed and ease of deployment and in-life management. With integrated remote connectivity and an ultra-secure cloud environment, the PAC Residential Cloud minimises risks and provides real-time management for your access control in residential complexes.

[PAC Residential Cloud Datasheet](#)

3.3 Stop the risk of ID Device cloning

ID Device cloning is a serious issue faced by many organisations. The ability to get an LF ID Device readily and cheaply cloned results in large holes in the security of the access control system.

To beat this issue, PAC have developed the Oneprox™ Smart (Ops™) technology. Combining PAC systems with the industry leading DESFIRE™®EV1 encryption protocols, delivers the highest available standard of access control security within the industry. Simply the best access control security solution that removes the risk of high street ID Device cloning.

3.4 Access Control with Mobile IDs

For the latest environmentally and user-friendly method of authentication, look no further than a PAC system with Architect Readers and Mobile IDs. Offering a range of unique access features and high security multi-factor authentication via a user's smartphone, this truly is cutting edge access control technology that comes with the same bullet-proof reliability and robustness offered with all PAC systems. Removing the need for any physical ID Devices and offering tailored solutions for both visitor and staff/residents creates a feature rich access control solution for any environment.

[PAC Architect Range](#)



3.5 Scalable commercial access control

Integrated and secure building control has never been easier, by using the new PAC 512 access controllers, PAC I/O Controllers and PAC Access Central software, there is a cost effective, scalable access control solution up to 2000 doors and 75,000 ID Devices. The modular PAC Access Control system enables in-life upgrades and expansion with minimal cost.

PAC access control provides a feature rich, scalable, integrated security solution which can extend into CCTV monitoring, lift control, alarm monitoring, etc. The PAC I/O Controllers pack a lot into a small footprint and support a huge range of building management functions. The added security and visibility offered by extending the PAC access control system delivers true value to users and operators.

Access Central provides an IT friendly solution that can easily be deployed into a customer's corporate IT network, with ease of use a core design principle.

4 PAC Access Control

The PAC product range is a well-established suite of products to provide flexible access control solutions for the Commercial and Residential markets.

Figure 2 illustrates the basic components of a PAC access control solution. Please note that detailed descriptions, and further information on the components within the PAC system, will be detailed in later sections.

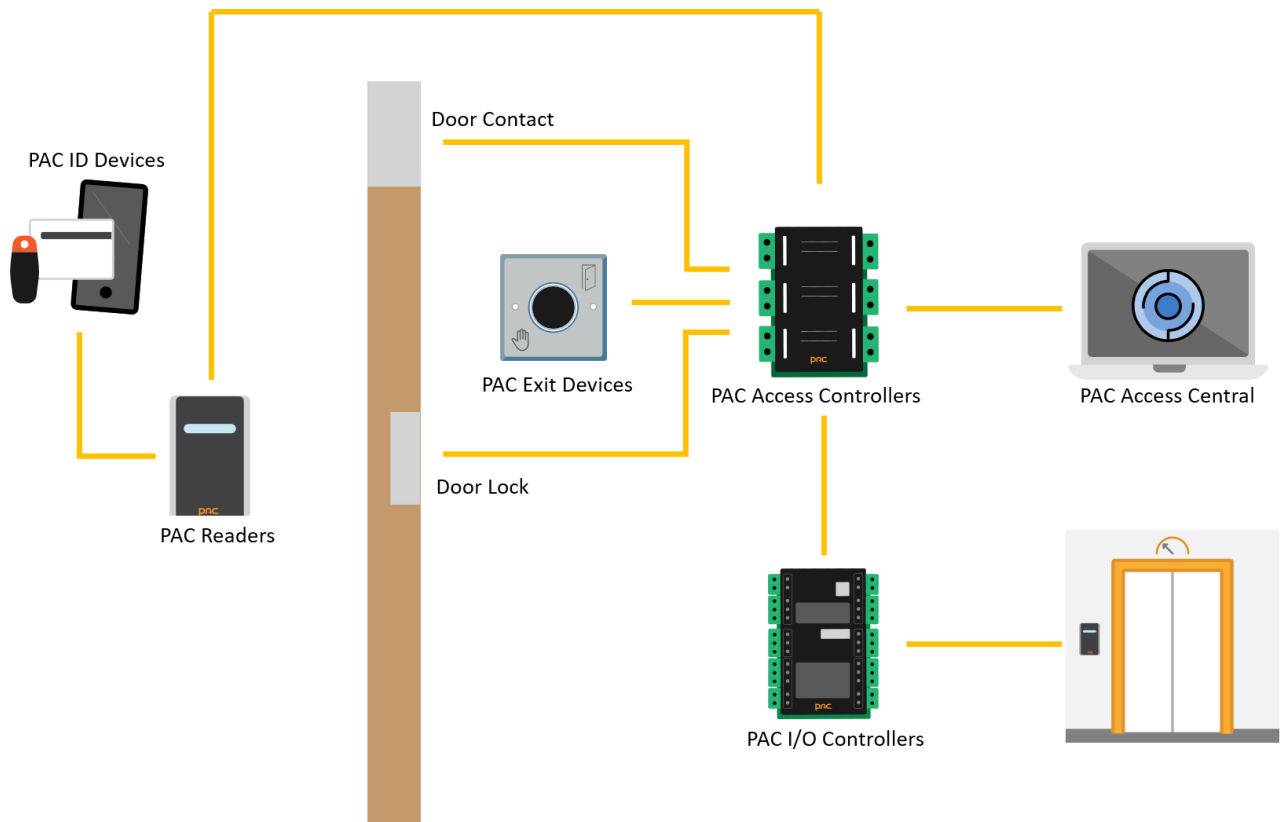


Figure 2 - PAC System overview

The above component functions are summarised below:

PAC Access Controller – this is the intelligence within the system, as it is the device that holds a local database of authorised ID Devices that grants or denies access. There are 2 variants of PAC Access Controller:

- Standalone – where it is a single integrated unit with an administration reader and on-board programming capability that enables it to be deployed in a standalone environment for the control of up to 2 doors.
- Networked – supporting the ability to deploy to very large-scale access control systems through connecting multiple access controllers together. This Access Controller is connected

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to door locks and readers to support door unlocking and alarming. It also communicates events to the Management software.

PAC Input / Output Controllers – these extend the PAC access control system with a number of inputs and output relays for connecting and driving additional devices on site. The PAC I/O Controllers are feature rich and highly configurable that deliver enhanced security and building control including: Lift control; alarm monitoring; alarm management; automated driving of external equipment such as sounders, security shutters, CCTV camera pre-sets, etc. The I/O Controllers provide actions based on event driven rules easily configured and managed within Access Central.

PAC Entry Reader – this is located on the public side of the door and is used to read ID Devices and send the data to the Access Controller for a decision on whether to grant access or not. RFID or Bluetooth technology are typically used to authenticate the user via an ID Device. LED lights are embedded to provide feedback to the ID Device holder on the status of their entry or exit request. Multi-factor authentication can be supported using Keypad readers that require an ID Device as well as PIN code authentication. Biometric readers support the ability to authenticate someone via fingerprint or iris scan.

PAC Exit Device – This is the device located on the secure side of the door to grant access out of the secured area. The Exit device may be:

- a Reader that requires an ID Device to be presented to follow the same authorisation and door unlock process as the Entry Reader.
- a Push To Exit (PTE) button that drives a door unlock via a request to the Access Controller.

PAC ID Devices – this is the token that enables the authorised user to gain access through a door. It utilises RFID or Bluetooth to connect to the PAC Reader. The ID Device has a unique code that allows it to be identified within the PAC system as an authorised or unrecognised ID Device. Please note an ID Device can take many forms from a smart card or fob to a mobile phone app or fingerprint. The main requirement is that it is unique and can be recognised by the Reader and the Access Controller.

Door Controls – These include the door locks that are connected to the Access Controller to support the door unlocking function. Door contacts can be used to provide alarm events if the door is forced or kept open for longer than a configurable time period. The PAC system supports 2 modes for the door locks: Fail Safe; and Fail Secure

Management Software – The management software supports the configuration and management of the PAC access control system including ID Device administration, event and alarm logs, access control rule management, multi-site management, etc.

On top of the above access control functions, a whole variety of additional features can be added within the PAC system, to tailor the solution towards commercial or residential use cases.



The following are the main features supported:

- Secure a door or building, by only allowing authorised people access using proximity access control ID Devices.
- Ability to integrate with other security solutions such as Intrusion Detection, CCTV, etc. to provide a single security system for management and monitoring of the security systems in a property
- Configure the access control system on a door by door or area basis to ensure personnel only access areas they are cleared for e.g. the IT Server room in an office will be limited to the IT department only.
- Utilise ID Devices (fobs, smart cards, mobile phone credentials, biometrics, etc) to provide a variety of authentication methods to suit residential and commercial applications.
- Supports multi-factor authentication if required e.g. an ID Device reader with a keypad for ID Devices authentication coupled with a PIN code entry.
- Support the ability to offer time-based access control which restricts access to personnel to set days or time of day e.g. reception staff are given general office access Monday to Friday 08:00 – 18:00.
- Remove a person's ability to access a door or area by deactivating their ID Device.
- Support a scalable range of doors, from a single door to thousands.
- Support a scalable range of ID Device holders from 1 to 75,000.
- Fail safe (door unlocks when power fails) or fail secure (door locks when power fails) options to meet customer requirements.
- Supports the configuration of other advanced access control functionality such as (but not limited to): -
 - Anti-passback
 - Area usage counting
 - Passage mode
 - Airlocks
 - Lift Control
 - Door and Reader Mode profiles
 - Alarms and Alarm Maps
 - Two-key access
 - First token unlock

The following sections provide details on all the components of the PAC system.

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4.1 Access Controllers

PAC access controllers come in 2 main varieties:

- Standalone – able to be programmed and managed direct at the access controller with integrated administration reader
- Networked – access controllers that are supported within a networked solution including access control readers, management, etc

4.1.1 Standalone Access Controllers

There are 2 PAC options for standalone access controllers as detailed in the following sections.

4.1.1.1 *EasiKey 250*

The EasiKey 250 is a cost effective, easy to use, two door standalone access controller with inbuilt administration reader and database for storing ID Device information and events.

Figure 3, below, shows the EasiKey 250.



Figure 3 – EasiKey 250

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The Easikey 250 has the following features:

- Standalone access controller with keypad for local programming.
- In-built administration reader for local ID Device management.
- Access control for one or two doors.
- 3 varieties of the EasiKey 250 exist:
 - Standalone access EasiKey 250
 - EasiKey 250 boxed without cut-out, pre-wired with 3Amp PSU in a metal cabinet for ease of install.
 - EasiKey 250 boxed with cut-out, pre-wired with 3Amp PSU in a metal cabinet with a cut-out to expose the in-built administration reader.
- Support for up to 250 ID Devices.
- Ability to pair with an additional EasiKey 250 to double the ID Devices support to 500.
- Integrated PAC Oneprox™ reader supporting all PAC and KeyPAC LF ID Devices (cards and fobs)
- Up to 3 master ID Devices to support the local administration of ID Devices at the EasiKey 250.
- LCD display for use when programming the EasiKey 250
- Fail safe (door unlocks when power fails) or fail secure (door locks when power fails) options to meet customer requirements.
- Buzzer/sounder option
- Battery back-up option (for the boxed EasiKey 250 options)
- EasiKey 250 supports a number of language choices:
 - English
 - Dutch
 - French
 - German
 - Norwegian
 - Swedish

For detailed installation and configuration guides please refer to the [PAC Knowledge Centre](#)

4.1.1.2 PAC 212

Built on the PAC 512 controller, The PAC 212 is a standalone access controller that supports onsite programming via an onboard keypad.



Figure 4 - PAC 212 DIN Mount Controller

The PAC 212 has the following features:

- Standalone access controller with keypad for local programming
- 2 door controller that supports up to 4 access control readers (2 readers per door).
- 8 varieties exist of the PAC 212 to meet different installation requirements:
 - LF PCB only version for installation in OEM panels.
 - LF DIN mount version for installation in optional PAC 4 or 6 way DIN cabinets.
 - LF boxed without cut-out, pre-wired with 3Amp PSU in a metal cabinet with lock for ease of install.
 - LF boxed with cut-out, pre-wired with 3Amp PSU in a metal cabinet with lock and a cut-out to expose the in-built access control reader
 - HF PCB only version for installation in OEM panels.
 - HF DIN mount version for installation in optional PAC 4 or 6 way cabinets.
 - HF boxed without cut-out, pre-wired with 3Amp PSU in a metal cabinet with lock for ease of install.
 - HF boxed with cut-out, pre-wired with 3Amp PSU in a metal cabinet with lock and a cut-out to expose the in-built access control reader
- LF and HF versions to support all PAC and KeyPAC ID Devices.

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- Supports local, standalone installations without requiring any additional software or servers.
- Events and ID Device information are stored locally with a database that holds 4000 events.
- Supports up to 2,000 ID Device holders.
- Supports both residential and commercial applications:
 - Commercial supports up to 2000 ID Devices
 - Residential supports up to 256 residences with up to 8 ID Devices per residence. Coloured ID Devices can be utilised to identify individual ID Device use.
- Supports extensive features including:
 - Time profiles that can be applied to access groups
 - Access levels
 - Case and reader tamper alarm
 - Programmable door unlock time
 - Local anti-passback
 - Residential mode where the PAC 212's database enables the ability to configure multiple ID Devices (colour coded) that can be associated to a single residence.
- Programmable relays for additional security features such as 'door forced' or 'left open' alarms.
- Can be used in conjunction with any PAC reader
- Reports and event history can be imported into Windows PC's via USB memory stick transfer from the PAC 212.
- New eco-friendly PSU that meets the stringent California Energy Commission (CEC) Level 6 standard.

For detailed installation and configuration guides please refer to the [PAC Knowledge Centre](#)

4.1.2 Networked Access Controllers

Networked access controllers create a scalable access control solution through the ability to interconnect multiple PAC controllers into a fully managed integrated security solution. The following sections detail the 2 versions of networked access controller available.

4.1.2.1 PAC 512 DC

The PAC 512 DC is an intelligent 2-door access controller that is able to be deployed within the PAC access control system to support all access control and door functions either singularly or part of a larger PAC system. It relies on management software for many additional features but has in-built databases and processing ability to execute local access control and features associated with door management.

Figure 5, below, shows the PAC 512 DC access controller.



Figure 5 - PAC 512 DC DIN Mount Controller

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The PAC 512 DC access controller has the following features:

- Manages access through 2 doors, both read-in and read-out possible using 4 available channels.
- Controls door lock with 2 modes supported:
 - Fail Safe – where the doors unlock in the event of a power failure. This requires the doors to lock when powered and unlock when power is removed or fails
 - Fail Secure – where the doors remain locked until powered. This means if there is a power failure the doors will remain locked and will need a manual over-ride to open until power is restored. Typically used in high security locations.
- Available in 2 variants:
 - DIN mount PAC 512 DC for installation in optional PAC 4 or 6 way DIN cabinets
 - Boxed with pre-wired 3Amp PSU in a metal cabinet with lock and tamper switch for ease of install.
- Up to 20,000 keyholder database. Note that this figure is reduced if multiple access groups are utilised.
- The PAC 512 DC Database provides distributed intelligence which supports the ongoing access control functions if communication to the management platform is lost.
- One-Touch™ test mode built into the access controller to support commissioning and in-life fault diagnosis. This is achieved by identifying cabling, channel and configuration issues when the One-Touch™ mode is deployed.
- Easy to install with clear labelling on the controller, terminal blocks for easy wiring, clear installation guides and the One-Touch™ testing feature.
- Multiple access groups to define different access privilege and restrictions based on time profiles
- Local anti-passback that drives the user to read-in and read-out for accurate tracking of personnel within the access control system
- New eco-friendly PSU that meets the stringent California Energy Commission (CEC) Level 6 standard, powers the PAC 512 DC and door controls.
- Able to support the following access control reader protocols:
 - PAC – for all PAC systems supporting PAC LF and PAC HF Ops™™ Lite ID Devices
 - PAC64 – for all PAC systems supporting PAC HF Ops™™ ID Devices
 - Wiegand – for Wiegand configured systems supporting Wiegand ID Devices
 - Clock and data reader protocol (magstripe)
- Built-in RS-232 for communication to administration software.
- RS-485 for connecting to other PAC 512 access controllers

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- The PAC 512 DC can be placed in a central location for controlling 2 doors as it supports the following distances from the controller to the PAC Access Control Readers:
 - 70m if the reader is powered by the PAC 512 DC output
 - 500m if the reader is powered by its own PSU
- The PAC 512 DC can connect to the PAC management software in the following ways:
 - Direct USB cable (via a PAC administration kit)
 - PSTN / GSM / GPRS dialup
- The PAC 512 DC that is connected to the PAC management software is designated as the gateway controller.
- PAC 512 DCs support larger installations using a 512 DC as a gateway controller that supports other 512 DC's as slave controllers. The slave controllers are connected in series to the gateway controller via an RS-485 bus.
- The number of controllers that can be connected in series varies dependent on the network supporting the connection between gateway controller and PAC management software:
 - 24 controllers (including the gateway controller) when connected to a local server running PAC management software
 - 4 controllers (including the gateway controller) when connected via PST/GSM dial-up connection to the remote hosted PAC management software
- The maximum length of the RS-485 bus, supporting a series of PAC 512 access controllers, is 1000m.
- 5Amp ancillary relay per door channel, supporting programmable alarm outputs.

For detailed installation and configuration guides please refer to the [PAC Knowledge Centre](#)

4.1.2.2 *PAC 512 DCi*

The PAC 512 DCi is an intelligent IP network capable 2-door access controller that is able to be deployed within the PAC access control system to support all access control and door functions either singularly or part of a larger PAC system. It relies on management software for many additional features but has in-built databases and processing ability to execute local access control and features associated with door management.

Figure 6 shows the PAC 512 DCi access controller.



Figure 6 - PAC 512 DCi Controller

The PAC 512 DCi access controller shares most of the features of the PAC 512 DC access controller, as per the following:

- Manages access through 2 doors, read-in and read-out supported using 4 reader channels.
- Controls door lock with 2 modes supported:
 - Fail Safe – where the doors unlock in the event of a power failure. This requires the doors to lock when powered and unlock when power is removed or fails
 - Fail Secure – where the doors remain locked until powered. This means if there is a power failure the doors will remain locked and will need a manual over-ride to open until power is restored. Typically used in high security locations.
- Available in 2 variants:
 - DIN mount PAC 512 DCi for installation in optional PAC 4 or 6 way DIN cabinets.
 - Boxed with pre-wired 3Amp PSU in a metal cabinet with lock and tamper switch for ease of install.
- Up to 20,000 keyholder database. Note that this figure is reduced if multiple access groups are utilised.
- The PAC 512 DCi Database provides distributed intelligence which supports the ongoing access control functions if communication to the management platform is lost.

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- One-Touch™ test mode built into the access controller to support commissioning and in-life fault diagnosis. This is achieved by identifying cabling, channel and configuration issues when the One-Touch™ mode is deployed.
- Easy to install with clear labelling on the controller, terminal blocks for easy wiring, clear installation guides and the One-Touch™ testing feature.
- Multiple access groups to define different access privilege and restrictions based on time profiles
- Local anti-passback that drives the user to read-in and read-out for accurate tracking of personnel within the access control system.
- New eco-friendly PSU that meets the stringent California Energy Commission (CEC) Level 6 standard, powers the PAC 512 DCi and door controls.
- Able to support the following access control reader protocols:
 - PAC – for all PAC systems supporting PAC LF and PAC HF Ops™™ Lite ID Devices
 - PAC64 – for all PAC systems supporting PAC HF Ops™™ ID Devices
 - Wiegand – for Wiegand configured systems supporting Wiegand ID Devices
 - Clock and data reader protocol (magstripe)
- Built-in IP and RS-485 for communication to administration software.
- The PAC 512 DCi can be placed in a central location for controlling 2 doors as it supports the following distances from the controller to the PAC Access Control Readers:
 - 70m if the reader is powered by the PAC 512 DCi output
 - 500m if the reader is powered by its own PSU
- The PAC 512 DCi can connect to the PAC management software in the following ways:
 - IP link using a CAT5e cable with RJ-45 connector:
 - direct to the management software PC
 - or via a Local Area Network (LAN) or Wide Area Network (WAN)
- PAC 512 DCi's support larger installations through connecting other 512 DC's as slave controllers to the 512 DCi gateway controller. The slave controllers are connected in series to the 512 DCi gateway controller via an RS-485 bus.
- The number of controllers that can be connected in series varies dependent on the network supporting the connection between gateway controller and PAC management software:
 - 24 controllers (including the gateway controller) when connected to a local server running PAC management software.
- The maximum length of the RS-485 bus, supporting a series of PAC 512 access controllers, is 1000m.
- 5Amp ancillary relay per door channel.

For detailed installation and configuration guides please refer to the [PAC Knowledge Centre](#)

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4.2 PAC I/O Controllers

Input / Output (I/O) Controllers extend the PAC Networked Access Controllers (PAC 512DC/DCi) to provide advanced security and building management functions including:

- Lift Control including multiple options such as:
 - Secure the calling of a lift with a PAC access reader.
 - Provide enhanced security through extending full access control to floors within a building through controlling the lift buttons that a keyholder can activate based on their privileges.
- Alarm points for monitoring and proactive notification of alarms with the following capabilities:
 - Time profiles for enabling alarm point at specific times.
 - Arm and Disarming of alarm points.
 - Proactive notifications of alarms in the Access Central Alarm Viewer.
 - Configurable Event to Action rules to trigger a large variety of automated notifications.
 - Configurable driving of outputs from an alarm input (see output examples below).
- Input monitoring of a large variety of equipment, such as:
 - Freezer temperature control monitors.
 - PIR motion sensors.
 - Door/window sensors.
 - Smoke detectors.
 - And many other building control equipment.
- Outputs that can be used to control items including:
 - Lifts.
 - Audible sounders.
 - Flashing beacons.
 - Security shutters, that can be automatically deployed in the event of an alarm.
 - Building control equipment such as PIR lighting, air-conditioning units, etc.
 - And many other building control equipment.

PAC provides two feature rich controllers for maximum flexibility and cost-effective deployment of I/O control functions:

- PAC 520 Input Controller
- PAC 530 Output Controller

User friendly configuration and ongoing management of the I/O Controllers is via the Access Central management platform.

These controllers are covered in detail in the following sections.

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4.2.1 PAC 520 Input Controller

The PAC 520 Input Controller is a powerful, feature rich Input Controller with:

- 20 user-configurable inputs in the following modes:
 - Normally Open
 - Normally Closed
 - Normally Open 3-state
 - Normally Closed 3-state
 - Normally Open 4-state
 - Normally Closed 4-state
 - Pulse including configurable options for:
 - Pulse count
 - Pulse count time
 - Debounce time
 - Configurable time profiles to determine active input monitored times
- 2 x 5Amp output relays configurable in the following modes:
 - Latched with configurable maximum activation time
 - Momentary with configurable momentary time
 - Toggled which toggles the output state
 - Pulsed with the following configurable options:
 - Cycle time
 - Active %
 - Number of pulses
 - Configurable to operate on a time profile
 - Commonly used templates are available within Access Central
- Connected into the PAC 512DC/DCi access controllers via an RS-485 connection.
- Additional connections include:
 - 1 x anti-tamper connection
 - 1 x over-ride connection
 - 2 x Polyfused 100mAmp auxiliary voltage output
- One-Touch™ test mode built into the access controller to support commissioning and in-life fault diagnosis. This is achieved by identifying cabling, channel and configuration issues when the One-Touch™ mode is deployed.
- Status LEDs for all Inputs and Outputs when in One-Touch™ mode.
- Available in 2 versions:
 - DIN Mount
 - Boxed
- Configured and managed via PAC Access Central management software.
- Easy to install with clear labelling on the controller, terminal blocks for easy wiring, clear installation guides and the One-Touch™ testing feature.

Figure 7, below, illustrates the PAC 520 Input Controller.

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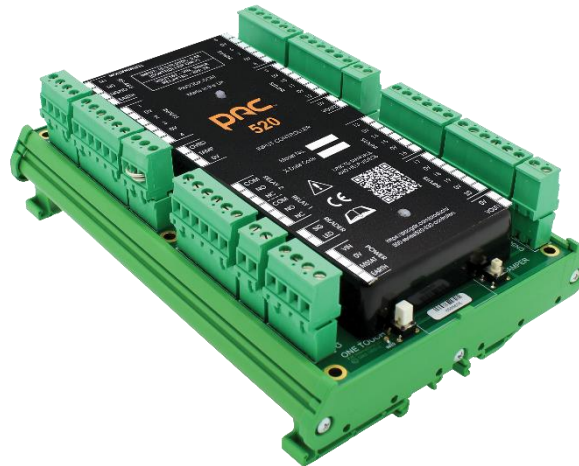


Figure 7 - PAC 520 Input Controller

4.2.2 PAC 530 Output Controller

The PAC 530 Output Controller is a powerful, feature rich Output Controller with:

- 12 user-configurable outputs in the following modes:
 - Latched with configurable maximum activation time
 - Momentary with configurable momentary time
 - Toggled which toggles the output state
 - Pulsed with the following configurable options:
 - Cycle time
 - Active %
 - Number of pulses
 - Configurable time profiles to determine active output times
- The outputs are rated as per the following:
 - 10 x outputs are 2Amp rated
 - 2 x outputs are 8Amp rated
- 2 user configurable inputs in the following modes:
 - Normally Open
 - Normally Closed
 - Normally Open 3-state
 - Normally Closed 3-state
 - Normally Open 4-state
 - Normally Closed 4-state

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- Pulse including configurable options for:
 - Pulse count
 - Pulse count time
- Debounce time
- 24 hour monitored alarm point
- Commonly used templates are available within Access Central
- Connected into the PAC 512DC/DCi access controllers via an RS-485 connection.
- Additional connections include:
 - 1 x anti-tamper connection
 - 1 x over-ride connection
 - 1 x Polyfused 100mAmp auxiliary voltage output
- One-Touch™ test mode built into the access controller to support commissioning and in-life fault diagnosis. This is achieved by identifying cabling, channel and configuration issues when the One-Touch™ mode is deployed.
- Status LEDs for all Outputs and Inputs when in One-Touch™ mode.
- Available in 2 versions:
 - DIN Mount
 - Boxed
- Configured and managed via PAC Access Central management software.
- Easy to install with clear labelling on the controller, terminal blocks for easy wiring, clear installation guides and the One-Touch™ testing feature.

Figure 8, below, illustrates the PAC 530 Output Controller.

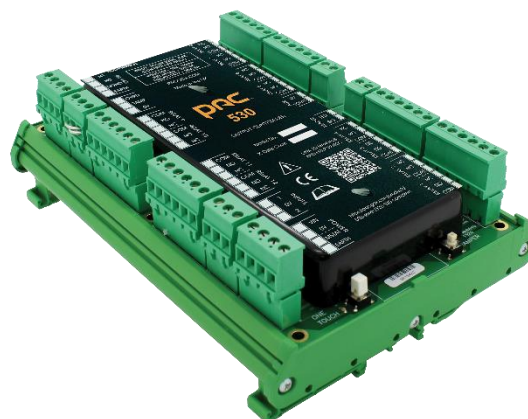


Figure 8 - PAC 530 Output Controller

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4.3 Readers

A wide range of PAC readers are available to meet customer's requirements, based on a variety of factors including authentication method, installation options or aesthetics. They are all designed and manufactured to high standards with a deserved reputation for their longevity in all environments.

The following sections provide details on all the PAC readers available.

4.3.1 PAC LF Readers

The PAC LF reader range supports all PAC LF ID Devices as well as many Wiegand format Tokens.

Designed to work in the most demanding of operating environments, the LF Readers support installations which require reliability and security.

There are 4 models available, which supports deployment for all commercial and residential scenarios. All the PAC LF Readers have the following in common:

- Robust design with Lifetime Warranty against electrical failure.
- Provides commercial grade security to underpin insurance requirements.
- Certified to the EN50131-1 and EN50131-3 standards.
- Easy to install and configure using the in-built switches for setting card and output format.
- Multiple ID Device formats supported including PAC, PAC64, Wiegand 26, Wiegand 34, Wiegand 74 and Wiegand emulation mode.
- User friendly with 2 LEDs and audible sounder for clear feedback on access request.

The following sections detail all the PAC LF Readers available.

4.3.1.1 *PAC GS3 LF Mullion Reader*

The Mullion Reader is a compact reader that is ideal for fitting on the frame of a door, internally or externally. In addition to the features in Section 4.3.1, the GS3 LF Mullion Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed onto most door frames.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - Wiegand (many variants)
- Up to 85mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers

Figure 9, below, shows the GS3 LF Mullion Reader:



Figure 9 - GS3 LF Mullion reader

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4.3.1.2 *PAC GS3 LF Standard Reader*

The Standard Reader provides the same functionality as a Mullion Reader but in a larger form. The Standard Reader is ideal for fitting into most standard electrical back boxes, internally or externally. In addition to the features in Section 4.3.1, the GS3 LF Standard Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed into most flush mounted electrical back boxes.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - Wiegand (many variants)
- Up to 85mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers

Figure 10, below, shows the GS3 LF Standard Reader:

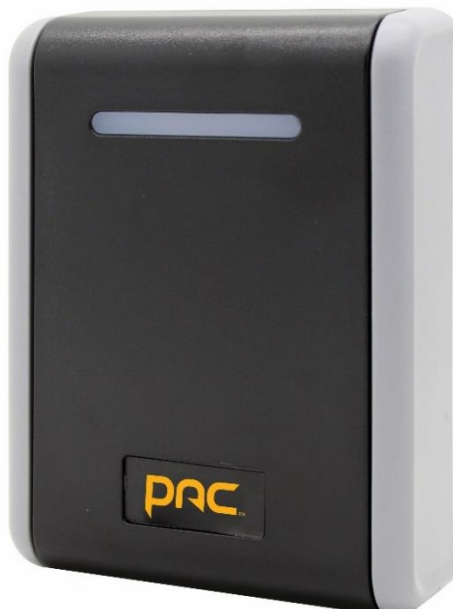


Figure 10 - GS3 LF Standard reader

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4.3.1.3 *PAC GS3 LF Vandal Resistant Reader*

The Vandal Resistant Reader is designed to work in the most demanding of operating environments as it provides a robust, intruder-graded access reader. The Vandal Resistant Reader is ideal for internal or external installations. In addition to the features in Section 4.3.1, the GS3 LF Vandal Resistant Reader comes with the following features:

- Certified to Security Grade 3 classification and to IP67 weather resistance to make this an indoor/outdoor reader.
- Raised key symbol on the front with audible and visual user feedback for Equality Act compliance
- Comes with pre-connected 2m cable for ease of installation
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - Wiegand (many variants)
- Up to 40mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers

Figure 11, below, shows the GS3 LF Vandal Resistant Reader:



Figure 11 - GS3 LF Vandal Resistant reader

4.3.1.4 *PAC GS3 LF Panel Mount Reader*

The Panel Mount Reader is designed to fit OEM door entry panels which makes it an easy retrofit reader option. In addition to the features in Section 4.3.1, the GS3 LF Panel Mount Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Raised key symbol on the front with audible and visual user feedback for Equality Act compliance
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - Wiegand (many variants)
- Up to 45mm reading range of ID Device
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers

Figure 12, below, shows the GS3 LF Panel Mount Reader:



Figure 12 - GS3 LF Panel Mount reader

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4.3.2 PAC HF Readers

The PAC HF reader range supports all PAC HF ID Devices as well as many Wiegand format Tokens.

Using PACs unique One prox smart (Ops™) technology coupled with the industry leading MIFARE™ and DESFIRE™ EV1 ID Device encryption protocols, the highest available standard of access control security is achieved. The most secure PAC access control system is via the use of a High Frequency capable reader (PAC HF, MT or Architect Reader) with the PAC Ops™ ID Device. This combination provides unrivalled security as the ID Devices are not cloneable like many LF ID Devices.

Designed to work in the most demanding of operating environments, the HF Readers support installations which require reliability and security.

There are 5 models of HF Readers available. They support deployments in all commercial and residential scenarios. All PAC HF Readers have the following in common:

- Provides commercial grade security to underpin insurance requirements.
- Certified to the EN50131-1 and EN50131-3 standards.
- Easy to install and configure using the in-built switches for setting card and output format.
- Multiple ID Device formats supported including PAC, PAC64, Wiegand 26, Wiegand 34, Wiegand 74 and Wiegand emulation mode.
- Supports high security deployments with 128bit AES (Advanced Encryption Standard) certification when used in conjunction with PAC Ops™ ID Devices and PAC 512 controllers.
- User friendly with 2 LEDs and audible sounder for clear feedback on access request.

The following sections detail all the PAC LF Readers available.

4.3.2.1 *PAC GS3 HF Mullion Reader*

The Mullion Reader is a compact reader that is ideal for fitting on the frame of a door, internally or externally. In addition to the features in Section 4.3.2, the GS3 HF Mullion Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed onto most door frames.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- Up to 45mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers
- Robust design with Lifetime Warranty against electrical failure.

Figure 13, below, shows the GS3 HF Mullion Reader:



Figure 13 - GS3 HF Mullion reader

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4.3.2.2 *PAC GS3 HF Standard Reader*

The Standard Reader provides the same functionality as a Mullion Reader but in a larger form. The Standard Reader is ideal for fitting into most standard electrical back boxes, internally or externally. In addition to the features in Section 4.3.2, the GS3 HF Standard Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed into most flush mounted electrical back boxes.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- Up to 65mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers
- Robust design with Lifetime Warranty against electrical failure.

Figure 14, below, shows the GS3 HF Standard Reader:



Figure 14 - GS3 HF Standard reader

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4.3.2.3 *PAC GS3 HF PIN Reader*

The GS3 HF PIN Reader comes in the same footprint as a PAC Standard Reader and supports dual mode authentication through:

- Proximity access control using an authenticated ID Device
- Unique Personal Identification Number (PIN) entry by the user

This increases the security of the access control system as it reduces the risk of unauthorised access into high security areas.

In addition to the features in Section 4.3.2, the GS3 HF PIN Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed into most flush mounted electrical back boxes.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- Up to 65mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers
- Robust design with Lifetime Warranty against electrical failure.
- The PIN reader supports the following PIN Modes
 - PAC PIN Blocking (PIN derived from Keycode)
 - PAC PIN
 - PAC64 PIN
 - Wiegand PIN (4-bit)
 - Wiegand PIN (8-bit)

Figure 15, below, shows the GS3 HF PIN Reader:



Figure 15 - GS3 HF PIN reader

4.3.2.4 *PAC GS3 HF Vandal Resistant Reader*

The Vandal Resistant Reader is designed to work in the most demanding of operating environments as it provides a robust, intruder-graded access reader. The Vandal Resistant Reader is ideal for internal or external installations. In addition to the features in Section 4.3.2, the GS3 HF Vandal Resistant Reader comes with the following features:

- Certified to Security Grade 3 classification and to IP67 weather resistance to make this an indoor/outdoor reader.
- Raised key symbol on the front with audible and visual user feedback for Equality Act compliance
- Comes with pre-connected 2m cable for ease of installation
- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- Up to 40mm reading range of ID Device
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers
- Robust design with Lifetime Warranty against electrical failure.

Figure 16, below, shows the GS3 HF Vandal Resistant Reader:

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Figure 16 - GS3 HF Vandal Resistant reader

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4.3.2.5 *PAC HF Panel Mount Reader*

The Panel Mount Reader is designed to fit OEM door entry panels which makes it an easy retrofit reader option. In addition to the features in Section 4.3.2, the GS3 HF Panel Mount Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Raised key symbol on the front with audible and visual user feedback for Equality Act compliance
- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- Up to 20mm reading range of ID Device
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers
- Robust design with Lifetime Warranty against electrical failure.

Figure 17, below, shows the GS3 HF Panel Mount Reader:



Figure 17 - GS3 HF Panel Mount reader

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4.3.2.6 *PAC HF Backbox Reader*

The Backbox Reader is compatible with most electrical backboxes for ease of installation. In addition to the features in Section 4.3.2, the GS3 HF Backbox Reader comes with the following features:

- For use indoor only.
- Ease to install as it is designed to fit onto most electrical backboxes, surface or flush
- Supports the following ID Devices:
 - PAC Ops[™] Lite
 - PAC Ops[™]
- Up to 100mm reading range of ID Device
- Selectable reader outputs (PAC64 or PAC) via a switch on the rear of the reader
- Reader line tamper configurable when used in conjunction with the PAC 512 controllers
- Robust design with 1 year warranty against electrical failure.

Figure 18, below, shows the GS3 HF Backbox Reader:



Figure 18 - GS3 HF Backbox reader

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4.3.3 PAC MT Readers

PAC's MT Readers are ideal for sites where support of multiple ID Device types is required.

The PAC MT Reader range supports all PAC HF and LF ID Devices as well as many Wiegand format ID Devices. This enables the MT Readers to be used in sites which are transitioning between older LF ID Devices to higher security HF ID Devices.

Using PAC's unique One prox smart (Ops™) technology coupled with the industry leading MIFARE™ and DESFIRE™ EV1 ID Device encryption protocols, the highest available standard of access control security is achieved. The most secure PAC access control system is via the use of a High Frequency capable reader (PAC HF, MT or Architect Reader) with the PAC Ops™ ID Device. This combination provides unrivalled security as the ID Devices are not cloneable like many LF ID Devices.

Designed to work in the most demanding of operating environments, the MT Readers support installations which require reliability and security.

There are 3 models of MT Readers available. They support deployments in all commercial and residential scenarios. All PAC MT Readers have the following in common:

- Robust design with Lifetime Warranty against electrical failure.
- Provides commercial grade security to underpin insurance requirements.
- Certified to the EN50131-1 and EN50131-3 standards.
- Easy to install and configure using the in-built switches for setting card and output format.
- Multiple ID Device formats supported including PAC, PAC64, Wiegand 26, Wiegand 34, Wiegand 74 and Wiegand emulation mode.
- Supports high security deployments with 128bit AES (Advanced Encryption Standard) certification when used in conjunction with PAC Ops™ ID Devices and PAC 512 controllers.
- User friendly with 2 LEDs and audible sounder for clear feedback on access request.

The following sections detail all the PAC LF Readers available.

4.3.3.1 *PAC GS3 MT Mullion Reader*

The Mullion Reader is a compact reader that is ideal for fitting on the frame of a door, internally or externally. In addition to the features in Section 4.3.3, the GS3 MT Mullion Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed onto most door frames.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- ID Device reading range of:
 - Up to 45mm for HF ID Devices
 - Up to 85mm for LF ID Devices
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC512

Figure 19, below, shows the GS3 MT Mullion Reader:



Figure 19 - GS3 MT Mullion reader

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4.3.3.2 *PAC GS3 MT Standard Reader*

The Standard Reader provides the same functionality as a Mullion Reader but in a larger form. The Standard Reader is ideal for fitting into most standard electrical back boxes, internally or externally. In addition to the features in Section 4.3.3, the GS3 MT Standard Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed into most flush mounted electrical back boxes.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - PAC Ops[™] Lite
 - PAC Ops[™]
 - Wiegand (many variants)
- ID Device reading range of:
 - Up to 45mm for HF ID Devices
 - Up to 85mm for LF ID Devices
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC512

Figure 20, below, shows the GS3 MT Standard Reader:



Figure 20 - GS3 MT Standard reader

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4.3.3.3 *PAC GS3 MT PIN Reader*

The GS3 MT PIN Reader comes in the same footprint as a PAC Standard Reader and supports dual mode authentication through:

- Proximity access control using an authenticated ID Device
- Unique Personal Identification Number (PIN) entry by the user

This increases the security of the access control system as it reduces the risk of unauthorised access into high security areas.

In addition to the features in Section 4.3.3, the GS3 MT PIN Reader comes with the following features:

- Certified to IP65 weather resistance to make this an indoor/outdoor reader.
- Able to be installed into most flush mounted electrical back boxes.
- Certified to Security Grade 3 classification.
- Supports the following ID Devices:
 - PAC
 - Stanley
 - KeyPAC
 - PAC Ops™ Lite
 - PAC Ops™
 - Wiegand (many variants)
- ID Device reading range of:
 - Up to 45mm for HF ID Devices
 - Up to 65mm for LF ID Devices
- Integral Tamper circuit and Mounting Plate
- Reader line tamper configurable when used in conjunction with the PAC512
- The PIN reader supports the following PIN Modes
 - PAC PIN Blocking (PIN derived from Keycode)
 - PAC PIN
 - PAC64 PIN
 - Wiegand PIN (4-bit)
 - Wiegand PIN (8-bit)

Figure 21, below, shows the GS3 MT PIN Reader:



Figure 21 - GS3 MT PIN reader

4.3.4 Architect Readers

Architect Readers are high security readers that offer multiple ID Device support (including Mobile IDs), all with stunning aesthetics.

The Architect Reader range supports all PAC HF ID Devices. They also support high security Mobile ID's that allow a user's smartphone to become the ID Device. The Mobile ID's are high security by utilising the latest encryption, secure storage and authentication technologies meeting First Level Security Certification (CSPN) delivered by ANSSI (French Network and Information Security Agency).

Using PACs unique One prox smart (Ops™) technology coupled with the industry leading MIFARE™ and DESFIRE™ EV1 ID Device encryption protocols, the highest available standard of access control security is achieved. The most secure PAC access control system is via the use of a High Frequency capable reader (PAC HF, MT or Architect Reader) with the PAC Ops™ ID Device or Mobile ID on a user's smartphone. This combination provides unrivalled security as the ID Devices are not cloneable like many LF ID Devices.

Designed to work in the most demanding of operating environments, the Architect Readers support installations which require reliability and security. They are environmentally friendly through a modular design that allows the reader to be recycled as well as the support for Mobile ID's that reduce the need for physical plastic ID Devices.

There are 4 models of Architect Readers available. They support deployments in all commercial and residential scenarios. All the Architect Readers have the following features in common:

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- Robust design with Lifetime Warranty against electrical failure.
- Provides commercial grade security to underpin insurance requirements.
- Certified to IP65 weather proofing standards to support deployments both internally and externally.
- IK10 certified vandal-proof structure has been optimized to resist knocks and malicious acts.
- Self-extinguishing in the event of a fire.
- Easy to install internally and externally as it is mountable on walls and door frames without any need for a spacer. Comes with plug-in 3m cable and connector for ease of wiring.
- Multiple HF ID Device formats supported including PAC and PAC64.
- Supports high security deployments with 128bit AES (Advanced Encryption Standard) certification when used in conjunction with PAC Ops™ ID Devices/Mobile IDs and PAC 512 controllers.
- User friendly with 2 LEDs and audible sounder for clear feedback on access request.
- Unique to the market the Architect Readers support different user access modes when using Mobile IDs. This supports a variety of access modes to provide unparalleled user friendliness in gaining access to the secured area. User access modes are:
 - Card mode – place the smartphone to the reader like a physical ID Device
 - Remote mode – remotely open the door through the Mobile ID app
 - Slide mode – swipe your hand in front of the reader
 - Tap tap mode – tap your smartphone twice to activate the access request
 - Hands free mode – simply walk past the reader which will detect and authenticate you as you come into the configurable read distance of the reader
- Configurable read distance on all Architect Readers to allow for multiple readers to be deployed in close proximity without affecting the accuracy of the ID Device read.

4.3.4.1 *Architect One*

The Architect One is a mullion RFID reader specially designed for installation in small spaces, for example on door frames or narrow flush box mounting. Its small size and intelligent design make it easy to incorporate into any installation environment with a 3m plug-in/plug-out connector cable for ease of wiring.

In addition to the features in Section 4.3.4, the Architect One Reader comes with the following features:

- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
- Supports the following User Access mode:
 - Card Mode
- PAC HF ID Device reading range up to 60mm
- Accelerometer-based tamper detection system with key deletion option (patented solution)

Figure 22, below, shows the Architect One Reader:

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Figure 22 – Architect One Reader

4.3.4.2 Architect One Blue

The Architect One Blue is a million RFID/Bluetooth/NFC reader specially designed for installation in small spaces, for example on door frames or narrow flush box mounting. It is specially designed for all your high security access control applications coupled with industry leading Mobile ID support for user friendly deployments. Its small size and intelligent design make it easy to incorporate into any installation environment with a 3m plug-in/plug-out connector cable for ease of wiring.

In addition to the features in Section 4.3.4, the Architect One Blue Reader comes with the following features:

- Supports the following ID Devices:
 - PAC Ops[™] Lite
 - PAC Ops[™]
 - Mobile IDs
- Supports the following User Access mode:
 - Card mode
 - Remote mode
 - Tap tap mode
 - Hands free mode
- Configurable ID Device reading range:
 - up to 60mm for PAC HF ID Devices
 - up to 20m for Mobile IDs
- Accelerometer-based tamper detection system with key deletion option (patented solution)

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Figure 23, below, shows the Architect One Blue Reader:



Figure 23 – Architect One Blue Reader

4.3.4.3 *Architect A*

The Architect A is a standard RFID reader designed to be Vandal-proof and extremely secure, the Architect A Reader is specially designed for all your high security access control applications. Easy to incorporate into any installation environment with a 3m plug-in/plug-out connector cable for ease of wiring.

In addition to the features in Section 4.3.4, the Architect A Reader comes with the following features:

- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
- Supports the following User Access mode:
 - Card Mode
- PAC HF ID Device reading range up to 80mm
- Accelerometer-based tamper detection system with key deletion option (patented solution)

Figure 24, below, shows the Architect A Reader:



Figure 24 – Architect A Reader

4.3.4.4 Architect A Blue

The Architect A Blue is a standard RFID/Bluetooth/NFC reader designed to be Vandal-proof and extremely secure, the Architect A Blue Reader is specially designed for all your high security access control applications coupled with industry leading Mobile ID support for user friendly deployments. Easy to incorporate into any installation environment with a 3m plug-in/plug-out connector cable for ease of wiring.

In addition to the features in Section 4.3.4, the Architect A Blue Reader comes with the following features:

- Supports the following ID Devices:
 - PAC Ops™ Lite
 - PAC Ops™
 - Mobile IDs
- Supports the following User Access mode:
 - Card mode
 - Remote mode
 - Slide mode
 - Tap tap mode
 - Hands free mode
- Configurable ID Device reading range:

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- up to 80mm for PAC HF ID Devices
- up to 20m for Mobile IDs
- Accelerometer-based tamper detection system with key deletion option (patented solution)

Figure 25, below, shows the Architect A Blue Reader:



Figure 25 – Architect A Blue Reader

4.3.5 Biometric Readers

Biometric readers support the use of user’s fingerprints as the ID Device to authenticate entry to the secured location. PAC partner with iuvo® for all the biometric readers detailed in this section

The main components of an iuvo® biometric system are:

- Reader – used at point of entry to verify authenticated users via their fingerprint
- Control Board – is the biometric access controller that contains the fingerprint database (access control list)
- Desktop Reader – the administration unit used to capture and then upload a user’s fingerprint to the control board
- Peripherals – including mounting kits and LED relays

All the above have been integrated with PAC Access Central management software to all easy integration of biometric readers into a new or existing PAC access control system.

Please note that the above components are available individually but for initial install a bundle of Fingerprint reader and Control Board that is available via PAC is recommended so as to get the right number of fingerprint templates built into the system

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The following sections detail the above components.

4.3.5.1 Readers

There are 2 varieties of ievo[®] biometric readers as detailed in the following sections:

4.3.5.1.1. ievo[®] Ultimate reader

The ievo[®] Ultimate reader uses multispectral imaging combined with a secure, award winning algorithm to offer stable verification of users via their fingerprints. The following features are supported:

- Multispectral imaging sensor for reliable fingerprint identification
- Activated by capacitive proximity detection
- Vandal resistant and anti-tamper protocols
- LED indications for accepted/denied feedback
- Audio beep indication
- IP65 rated for internal and external use
- In-built environmental controls for external use including:
 - Thermostat heated sensor
 - Humidity sensor
- Supports PAC output
- 1:N matching up to 50,000 users (with the appropriate Control Board)
- Integrates into PAC systems

Figure 26, below, shows the Ultimate reader:



Figure 26 – ievo[®] Ultimate reader

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4.3.5.1.2. *ievo® Micro reader*

The ievo® Micro reader is designed for reliable fingerprint identification. It is an indoor reader with the following features supported:

- Powerful optical imaging sensor for reliable fingerprint identification
- Activated by capacitive proximity detection
- Anti-tamper protocols
- LED indications for accepted/denied feedback
- Audio beep indication
- Internal use only
- Supports PAC output
- 1:N matching up to 50,000 users (with the appropriate Control Board)
- Integrates into PAC systems

Figure 27, below, shows the Micro reader:



Figure 27 – ievo® Micro reader

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4.3.5.2 *ievo® Control Boards*

The ievo® Control Board is a powerful, dedicated fingerprint matching system, supporting any connected ievo® biometric reader. The Control Board acts as the main communication platform for a biometrics access control system, providing secure and highly reliable authentication data for processing.

There are 2 varieties of Control Board:

- Rev 4 Control Board
- Rev 4S Control Board

These are detailed in the following sections:

4.3.5.2.1 *ievo® Rev 4 Control Board*

The ievo® Rev 4 Control Board supports the latest revision of ievo® biometric systems and has the following features:

- Fingerprint matching database that comes in 2 varieties:
 - Support for 10,000 fingerprint templates
 - Support for 50,000 fingerprint templates
- Supports up to two ievo® Rev 4 readers.
- Available in 2 power options:
 - 12V DC – standalone and bundled with a Reader
 - Power over Ethernet (PoE) – standalone only
- LED indicators
- Integrates into PAC systems

Figure 28, below, shows the ievo® Rev 4 Control Board.



Figure 28 – ievo® Rev 4 Control Board

4.3.5.2.2. *ievo® Rev 4S Control Board*

The ievo® Rev 4S Control Board supports existing Rev3 versions of ievo® biometric systems and has the following features:

- Fingerprint matching database that supports up to 8,000 fingerprint templates.
- Supports one ievo® Rev 3 reader.
- Available in 2 power options:
 - 12V DC – standalone and bundled with a Reader
 - Power over Ethernet (PoE) – standalone only
- LED indicators
- Integrates into PAC systems

Figure 29, below, shows the ievo® Rev 4S Control Board



Figure 29 – ievo® Rev 4S Control Board

4.3.5.3 *ievo® Desktop Readers*

ievo® Desktop Readers are a fast and accurate way of registering fingerprints into the ievo® biometric system.

They are designed for desktop use and connect via USB to a PC running the associated software.

There are 2 varieties of Desktop Readers:

- ievo® Ultimate Desktop Reader
- ievo® Micro Desktop Reader

These are detailed in the following sections:

4.3.5.3.1. *ievo® Ultimate Desktop Reader*

The ievo® Ultimate Desktop Reader has the following features:

- Used for systems that contain:
 - Ultimate Readers only
 - A mix of Ultimate and Micro Readers
- 500 dpi image resolution
- Multispectral imaging sensor
- USB powered

Figure 30, below, shows the ievo® Ultimate Desktop Reader



Figure 30 – ievo® Ultimate Desktop Reader

4.3.5.3.2. *ievo® Micro Desktop Reader*

The ievo® Micro Desktop Reader has the following features:

- Used for systems that contain Micro Readers only
- 500 dpi image resolution
- Optical imaging sensor
- USB powered

Figure 31, below, shows the ievo® Ultimate Desktop Reader



Figure 31 – ievo® Micro Desktop Reader

4.3.5.4 *ievo® Peripherals*

These are items that support the installation and operation of the ievo® biometric systems and comprise of:

- ievo® Ultimate Surface Mount Kit – enables surface mounting of the ievo® Ultimate Reader
- ievo® Ultimate Flush Mount Kit – enables flush mounting of the ievo® Ultimate Reader
- Relay Module – used to enable the LED indicator on the ievo® Readers when integrated into a PAC access control system

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4.4 ID Devices

PAC ID Devices come in a range of forms (token, card or mobile) and technology types that enable a variety of user options. This enables PAC ID Devices to suit many different access control deployments throughout the commercial, residential and educational sectors. The following sections detail the ID Devices orderable with the PAC access control system.

4.4.1 Low Frequency ID Devices

The following range of Low Frequency (LF) ID Devices can be used with all PAC LF or MT Readers.

4.4.1.1 PAC ID Devices



PAC ID Devices are available in 2 forms:

- Token – designed to fit onto a keyring or lanyard, these tokens are often used in residential installations.
- Card – is credit card sized with the ability to print other user details for additional identification. Often used in educational and commercial installations.

PAC ID Devices utilise the proprietary PAC protocol which was developed by PAC before RFID standards were established for access control. They utilise 153.6kHz RFID passive proximity technology to be self-powered and built to last. The following sections provides full details on the PAC LF ID Devices available:

4.4.1.1.1 PAC LF Tokens


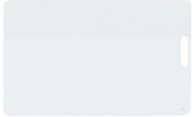


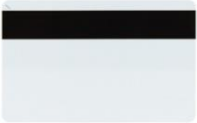
PAC LF Tokens come in 2 variants as detailed in the following table:

Token	Description	Accessories
 <p>PAC Token with clip</p>	<ul style="list-style-type: none"> • Unique pre-configured identity code • Fully Encapsulated in black ABS plastic • Double sealed and ultrasonically welded • Metal eyelet for attachment to keyring or lanyard • Self-powered, no need for batteries • Lifetime Guarantee against electronic failure 	None
 <p>PAC Token without clip</p>	<ul style="list-style-type: none"> • Unique pre-configured identity code • Interchangeable colour clip for ease of identification • Fully Encapsulated in black ABS plastic • 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 	Colour Logo Clips options: <ul style="list-style-type: none"> • Red • Green • Blue • Yellow • White • Black • Orange • Turquoise • Brown • Pink • Purple

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4.4.1.1.2. PAC LF Cards

PAC LF Cards come in 5 varieties as detailed in the following table:

Card	Description
PAC ISO Card 	<ul style="list-style-type: none"> • Unique pre-configured identity code • ISO Card supporting direct thermal or image transfer printing • Hole punching guide included • Self-powered, no need for batteries • Lifetime Guarantee against electronic failure
PAC ISO Card – punched short edge 	<ul style="list-style-type: none"> • Same as ISO Card above • Pre-punched on the short side of the card • Allows easy attachment to lanyard or other ID carrier
PAC ISO Card – punched long edge 	<ul style="list-style-type: none"> • Same as ISO Card above • Pre-punched on the long side of the card • Allows easy attachment to lanyard or other ID carrier
PAC ISO Card – punched both edges 	<ul style="list-style-type: none"> • Same as ISO Card above • Pre-punched on both short and long sides of the card • Allows easy attachment to lanyard or other ID carrier
PAC ISO Card – with magnetic stripe 	<ul style="list-style-type: none"> • Same as ISO Card above • With magnetic stripe for customer encoding

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4.4.1.2 *KeyPAC ID Devices*

KeyPAC ID Devices are available in 2 forms:

- Token – designed to fit onto a keyring or lanyard, these tokens are often used in residential installations.
- Card – is credit card sized with the ability to print other user details for additional identification. Often used in educational and commercial installations.

KeyPAC ID Devices utilise 125kHz RFID passive proximity technology to be self-powered and built to last.

The following sections provides full details on the KeyPAC LF ID Devices available:

4.4.1.2.1 *KeyPAC LF Tokens*

The KeyPAC LF Token comes with the following features:

- Unique pre-configured identity code
- Fully Encapsulated in black ABS plastic
- Double sealed and ultrasonically welded
- Metal eyelet for attachment to keyring or lanyard
- Self-powered, no need for batteries
- Lifetime Guarantee against electronic failure

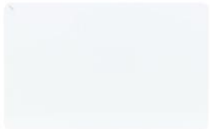


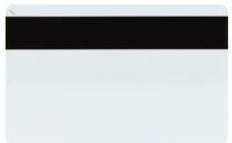
Figure 32, below, shows the KeyPAC token:



Figure 32 – KeyPAC Token

4.4.1.2.2. *KeyPAC LF Cards*

KeyPAC LF Cards come in 4 varieties as detailed in the following table:

Card	Description
<p>KeyPAC ISO Card</p> 	<ul style="list-style-type: none"> • Unique pre-configured identity code • ISO Card supporting direct thermal or image transfer printing • Hole punching guide included • Self-powered, no need for batteries • Lifetime Guarantee against electronic failure
<p>KeyPAC ISO Card – punched short edge</p> 	<ul style="list-style-type: none"> • Same as ISO Card above • Pre-punched on the short side of the card • Allows easy attachment to lanyard or other ID carrier
<p>KeyPAC ISO Card – punched long edge</p> 	<ul style="list-style-type: none"> • Same as ISO Card above • Pre-punched on the long side of the card • Allows easy attachment to lanyard or other ID carrier
<p>KeyPAC ISO Card – with magnetic stripe</p> 	<ul style="list-style-type: none"> • Same as ISO Card above • With magnetic stripe for customer encoding

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4.4.1.3 *Stanley ID Devices*

Stanley ID Devices are available in Token form.

Stanley Tokens utilise the proprietary PAC protocol which was developed by PAC before RFID standards were established for access control. They utilise 153.6kHz RFID passive proximity technology to be self-powered and built to last.

Stanley Tokens come with the following features:

- Unique pre-configured identity code
- Fully Encapsulated in ABS plastic
- Available in 7 colours for ease of identification:
 - Black
 - Blue
 - Green
 - Orange
 - Purple
 - Red
 - Yellow
- Double sealed and ultrasonically welded
- Metal eyelet for attachment to keyring or lanyard
- Self-powered, no need for batteries
- Lifetime Guarantee against electronic failure

Figure 33, below, shows the different coloured Stanley Tokens:



Figure 33 – Stanley Tokens

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4.4.2 HF ID Devices

The following range of HF ID Devices can be used with the following range of Readers:

- PAC HF Readers
- PAC MT Readers
- PAC Architect Readers

4.4.2.1 PAC Ops™ Lite ID Devices

PAC Ops™ Lite ID Devices are available in 2 forms:



- Token – designed to fit onto a keyring or lanyard, these tokens are often used in residential installations.
- Card – a credit card sized ID device with the ability to print other user details for additional identification. Often used in educational and commercial installations.

Ops™ Lite ID Devices utilise 13.56MHz RFID passive proximity technology to be self-powered and built to last.

The following sections provides full details on the PAC Ops™ Lite ID Devices available:

4.4.2.1.1 PAC Ops™ Lite Tokens

The PAC Ops™ Lite Tokens come in 2 variants and are detailed in the following table:

Token	Description	Accessories
PAC Ops™ Lite Token with clip 	<ul style="list-style-type: none"> • Pre-configured identity code using a 1K MIFARE™ 4 Byte serial number • Fully Encapsulated in blue ABS plastic • Double sealed and ultrasonically welded • Metal eyelet for attachment to keyring or lanyard • Self-powered, no need for batteries • ISO 14443 compliant • Lifetime Guarantee against electronic failure 	None
PAC Ops™ Lite Token without clip 	<ul style="list-style-type: none"> • Pre-configured identity code using a 1K MIFARE™ 4 Byte serial number • Interchangeable colour clip for ease of identification • Fully Encapsulated in blue ABS plastic • Double sealed and ultrasonically welded • Metal eyelet for attachment to keyring or lanyard • Self-powered, no need for batteries • ISO 14443 compliant • Lifetime Guarantee against electronic failure 	Colour Clips in the following colours: <ul style="list-style-type: none"> • Red • Green • Blue • Yellow • White • Black • Orange • Grey

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4.4.2.1.2. *PAC Ops™ Lite Card*

The PAC Ops™ Lite Card comes with the following features:

- Pre-configured identity code using a 1K MIFARE™ 4 Byte serial number
- ISO Card supporting direct thermal or image transfer printing
- Hole punching guide included
- Self-powered, no need for batteries
- Lifetime Guarantee against electronic failure
- Supplied in packs of 10

Figure 34, below, shows the PAC Ops™ Lite Card:



Figure 34 – PAC Ops™ Lite Card

4.4.2.2 *PAC Ops™ ID Devices*

PAC Ops™ ID Devices are available in 2 forms:



- Token – designed to fit onto a keyring or lanyard, these tokens are often used in residential installations.
- Card – is credit card sized with the ability to print other user details for additional identification. Often used in educational and commercial installations.

With the increasing risk of ID Device cloning, the PAC Ops™ ID Devices provide customers with industry leading MIFARE™® smart technology. This provides the highest security of the access control system by removing the risk of ID Device cloning associated with LF ID Devices.

The following sections provides full details on the PAC Ops™ ID Devices available:

4.4.2.2.1. PAC Ops™ Tokens

The PAC Ops™ Tokens come in 2 variants and are detailed in the following table:

Token	Description	Accessories
PAC Ops™ Token with clip 	<ul style="list-style-type: none"> • MIFARE DESFire EV1 unique 7 byte CSN per card • Unique identity code per card/token • Fully Encapsulated in blue ABS plastic • Double sealed and ultrasonically welded • Metal eyelet for attachment to keyring or lanyard • Self-powered, no need for batteries • ISO 14443 compliant • Lifetime Guarantee against electronic failure 	None
PAC Ops™ Token without clip 	<ul style="list-style-type: none"> • MIFARE DESFire EV1 unique 7 byte CSN per card • Unique identity code per card/token • Interchangeable colour clip for ease of identification • Fully Encapsulated in blue ABS plastic • Double sealed and ultrasonically welded • Metal eyelet for attachment to keyring or lanyard • Self-powered, no need for batteries • ISO 14443 compliant • Lifetime Guarantee against electronic failure 	Colour Clips in the following colours: <ul style="list-style-type: none"> • Red • Green • Blue • Yellow • White • Black • Orange • Grey

4.4.2.2.2. PAC Ops™ Card

The PAC Ops™ Card comes with the following features:

- MIFARE DESFire EV1 unique 7 byte CSN per card
- Unique identity code per card/token
- ISO Card supporting direct thermal or image transfer printing
- Hole punching guide included
- Self-powered, no need for batteries
- Lifetime Guarantee against electronic failure
- Supplied in packs of 10

Figure 35, below, shows the PAC Ops™ Card:

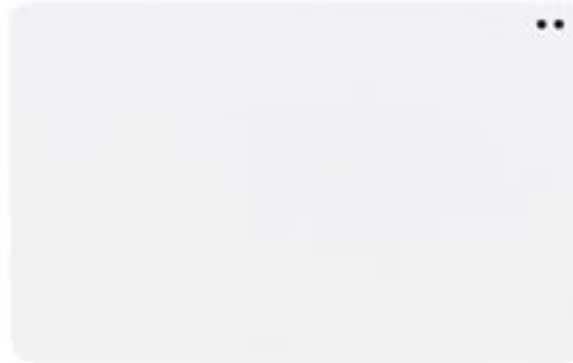


Figure 35 – PAC Ops™ Card

4.4.3 Mobile ID

Mobile ID's are usable with the Architect range of Readers. Mobile ID's are access control credentials stored on a smartphone (Android™ and iOS®). Mobile ID's work alongside, extend or replace traditional ID Devices.

Supported through a dedicated app called STid Mobile ID. The Mobile ID is securely stored on the user's smartphone using 128bit AES standards to encrypt and authenticate the unique Mobile ID.

There are 2 forms of Mobile ID as described in the following table:

Mobile ID	Description
Green Mobile ID	<ul style="list-style-type: none"> • Standard security, equivalent to PAC Ops™ Lite security • Unique card number issued on successful download of the Mobile ID app • Allows mobile phone to be used as the ID device via a Bluetooth/NFC connection to a supported Architect Reader • Only the card user access mode supported (see Section 4.3.4) • Recommended for visitor access
Blue Secure Mobile ID	<ul style="list-style-type: none"> • High security, equivalent to PAC Ops™ security • Unique private card number issued via a customer dedicated web portal • Allows mobile phone to be used as the ID device via a Bluetooth/NFC connection to a supported Architect Reader • The following access modes supported (see Section 4.3.4): <ul style="list-style-type: none"> ○ Card mode ○ Remote mode ○ Slide mode ○ Tap tap mode ○ Hands free mode • Multi-mode identification and authentication can be implemented (providing the smartphone supports them) including: <ul style="list-style-type: none"> ○ PIN Code ○ Biometrics ○ Voice recognition • Recommended for staff/resident access

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Figure 36, below, shows the virtual wallet, which contains all Mobile IDs applicable to a single user:

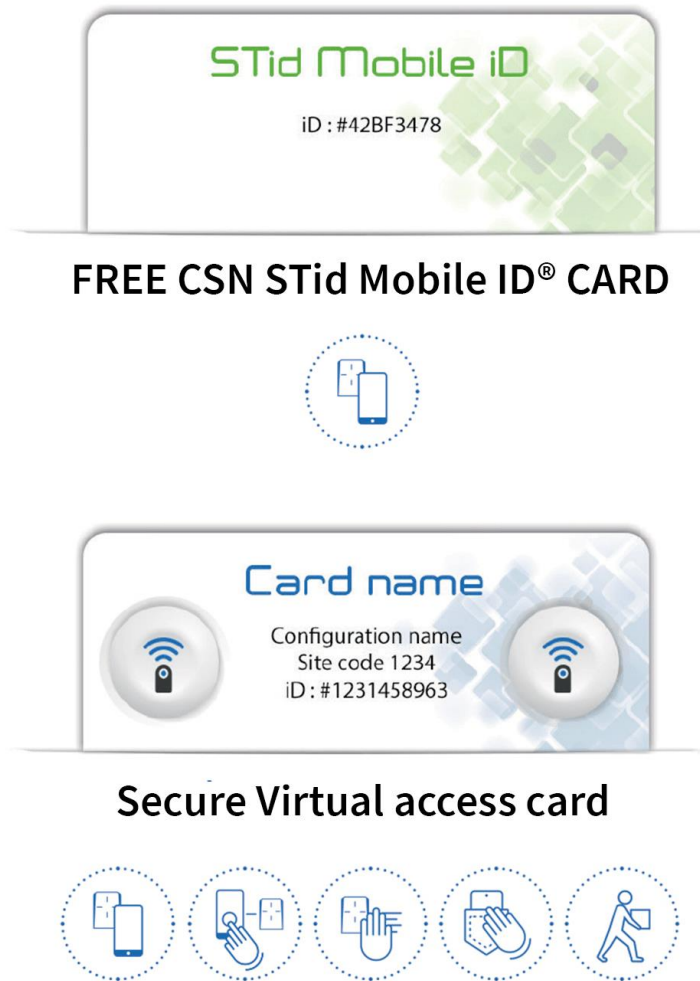




Figure 36 – Mobile ID's

4.5 Door hardware

4.5.1 Push To Exit Buttons

There are 2 variants of Push To Exit buttons available. As described in the following table:

Push To Exit button	Description
	<ul style="list-style-type: none"> • Stainless Steel plate • 25mm push button • Engraved with Push To Exit • Fits into a single gang electrical backbox
	<ul style="list-style-type: none"> • Stainless Steel plate • 25mm push button • Yellow bezel around the push button • Engraved with Push To Exit • Fits into a single gang electrical backbox

4.5.2 Hands-free Request to Exit Device

The device uses Infrared to detect a request to exit without the user needing to push a button. This limits the threat of transference of disease, infections and dirt between users.

The Hands-free Request to Exit (RTE) device comes with the following features:

- Stainless Steel plate
- IR button rated to IP65
- 12V-20V DC powered
- LED indication with visual indication of successful request
- Adjustable latch time from 0.5 to 30 seconds
- Adjustable trigger distance from 4 to 15cm
- Designed to prevent any interference with other infra-red devices
- Fits into a single gang electrical backbox

Figure 37, below, shows the Hands-free RTE device:

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Figure 37 – Hands-free RTE button

4.6 Power Supplies

The new PAC power supply units are designed with efficient eco-friendly credentials coupled with high performance.

The features for the PSU are as follows:

- The new PSUs for PAC have been designed and tested to be more efficient than previous versions.
- New eco-friendly PSU that meets the stringent California Energy Commission (CEC) Level 6 standard, that comes in the following options:
 - 12V DC – used for 12V DC door locks
 - 24V DC –used for 24V DC door locks
- Drawing less mains power, because of the high efficiency (80% efficiency rate at most load scenarios), to provide a stable 12V or 24V output.
- The PSUs come in a DIN rail mountable form.
- Battery charger leads are supplied as standard to easily connect a battery back-up capability. For battery back-up the following batteries are needed in addition:
 - A 7 Amp 12V DC battery is required for a 12V DC PSU
 - 2 x 7 Amp 12V DC batteries, connected in series, for a 24V DC PSU

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Figure 38, below, shows the new 12V PSU:



Figure 38 – PAC 12V PSU

Figure 39, below, shows the new 24V PSU:



Figure 39 – PAC 24V PSU

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4.7 Management

There are 2 PAC management solutions designed to configure and maintain PAC access control systems as well as ability to extend into integrated security and building management control:

- PAC Access Central – focussed for commercial/educational environments.
- PAC Easinet Residential – focussed for residential environments.

These management platforms are fundamentally the same software and differ in their dedicated user interfaces focussed on their specific user audience.

They both provide an integrated security software solution that is reliable, scalable and can be adapted to suit every access control installation be it a single site business or a global organisation. Easily configured to operate on a standalone PC or across a corporate network, they provide real-time management of the access control system with event and alarm monitoring and alerting. Feature enhancements also offer integration with a host of customer facilities, security and IT components including:

- Monitoring alarm points.
- Lift control.
- Managing fire doors.
- CCTV integration and control.
- Active Directory integration.
- Input control for monitoring other devices.
- Output control for driving other devices.
- Configurable Event to Action for flexible building and security management functions including on-site or proactive alerts, security shutter deployment, alarm management, etc.

The following sections detail the 2 management options.

4.7.1 PAC Access Central

The PAC Access Central software is designed for commercial applications to support the easy configuration and in-life management of the PAC access control system. It supports scalability, when coupled with the PAC 512 access controllers, to serve all customers in a cost-effective manner.

- Supported on a Windows operating system (min. Windows 8)
- Downloadable from www.pacgdx.com
- PAC Access Central has the following licence tiers:
 - SE edition
 - Professional edition
- Supports multiple deployment options including:
 - Local Standalone PC
 - Local/remote web browser interface for distributed access across a customer's intranet

For detailed installation and configuration guides please refer to the [PAC Knowledge Centre](#)

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4.7.1.1 Software Features

The following table provides details on the features within PAC Access Central:

Features	SE Edition	Professional Edition
Feature License Limits		
No. of doors	250	2000
Areas	✓	✓
No. of Time Profiles	20	2000
No. of Holiday Profiles	5	200
No. of Access Groups	1000	5000
Event To Action Manager	✓	✓
Area Management	✗	✓
Lift Control	✓	✓
No. of Lifts	20	100
CCTV	✓	✓
Time Zones	✓	✓
Card Designer	✓	✓
Access Options	✓	✗
Alarm Management	✓	✓
Alarm Point Time Profiles	✓	✓
Alarm configurable Arm/Disarm	✓	✓
Event Archiving	✓	✓
Personal Access	✓	✓
Area Mode Profiles	✗	✓
Door Mode Profiles	✓	✓
Reader Mode Profiles	✓	✓
No. of Muster Points	10	100
Audit Trail	✓	✓
Map Designer	✓	✓
Token Formats	Feature Pack	✓
Visual Verification	✓	✓
Local Anti-Passback	✓	✓
Event Relay	✓	✓
Hardware License Limits		
IP channels support	✓	✓
No. of Direct channels	50	100
No. of Dialup channels	50	750
Over-Air-IP	✓	✓
VPN for Over-Air-IP	✓	✓
No. of 512 controllers on a direct channel	24	24
No. of 512 controllers on an IP channel	24	24
No. of 512 controllers on a dialup channel	4	4
PAC 520/530 support	✓	✓
No. of 520/530 controllers supported	4	4000
No. of 520/530 controllers on a PAC 512 DC/DCi Channel	4	4
Biometric Reader Support	✓	✓

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Compatibility Features		
No. of PAC 500 channels	✗	500
No. of PAC 500 (and PAC 500 controlled 520/530) controllers on a PAC 500 Channel	✗	24
PAC 212 support	Feature Pack	Feature Pack
User License Limits		
Keys	20000	75000
Keyholders	✓	✓
Operators	25	100
Unused key expiry	✓	✓
Guest Access End Dates	✓	✓
System License Limits		
Org Units	5	100
Client PCs	5	15
Alarm Workstations	2	8
Web Browser Interface	Feature Pack	✓
Active Directory	Feature Pack	Feature Pack

4.7.1.2 Software Ordering

The software is available to order and download as follows:

Licence	Part Numbers	Description	Chargeable
SE edition	13490/1.00	SE edition - software downloadable from the www.pacgdx.com website.	No
Professional edition	13491/1.00	Professional edition is supplied as a licence key that is orderable through PAC customer services. This key is used on the SE edition software to unlock the professional features	Yes
Feature Packs	13492/1.00 - PAC 212 support 13493/1.00 - Web Browser Interface 13494/1.00 - Active Directory 13495/1.00 - Token Format	Feature packs are supplied as licence keys that are orderable through PAC customer services. This key is used on the SE edition software to unlock the Feature Packs.	Yes

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4.7.1.3 *Management Options*

The PAC Access Central software can be deployed as per the following:

- Local standalone PC – software loaded and running on a customer owned PC that is directly connected to the PAC system via a Local Area Network (LAN)
- Local/remote web browser interface – with the software running on a customer owned PC, it is then possible to remotely log in via a web browser over the customer's own intranet

4.7.2 PAC Easinet Residential

The PAC Easinet Residential software is specifically designed for residential customers, with the User Interface (UI) developed to allow easy management of access control for residents/staff in a residential environment.

- PAC Easinet Residential is supported on a Windows operating system (min. Windows 8)
- Downloadable from www.pacgdx.com
- PAC Easinet Residential has the following licence tiers:
 - Easinet Residential edition
 - Easinet Professional edition
- PAC Easinet Residential also supports the following upgrade data packs:
 - Extra 10 door pack
 - Extra 50 door pack
 - Extra 10 dial-up channels
 - Extra 50 dial-up channels
 - 500 Access Group upgrade
 - 5000 keyholder upgrade
 - 10 operators upgrade
 - Additional Client PC upgrade
- Supports multiple deployment options including:
 - Local Standalone PC
 - PAC supplied PC with pre-loaded Easinet Residential software
 - Local/remote web browser interface for distributed access across a customer's intranet
 - Remotely hosted cloud management called PAC Residential Cloud

For detailed installation and configuration guides please refer to the [PAC Knowledge Centre](#)

4.7.2.1 Software Features

The following table provides details on the features within PAC Easinet Residential:

Features	Easinet Residential Edition	Easinet Professional Edition
Hardware License Limits		
PAC 512 controller support	✓	✓
No. of PAC 2100/2200 controllers	250	750
IP channels support	✓	✓
No. of Direct channels	50	100
No. of Dialup channels	50	500
Over-Air-IP	✓	✓
Online controllers	✓	✓
Data switch support	✓	✓
Biometric Reader support	✓	✓
Easikey 1000 Support	✓	✓
Feature License Limits		
No. of doors	200	750
Areas	✓	✓
User defined Access Groups	✗	✓
Time zones	✓	✓
No. of Time Profiles	50	100
No. of Holiday Profiles	2	5
No. of Access Groups	500	2000
Department access	✗	✓
Timed access	✗	✓
Card Designer	✓	✓
Event Archiving	✓	✓
Personal Access	✓	✓
Audit Trail	✗	✓
Token Formats	FP	✓
User License Limits		
Keyholders	20000	30000
Operators	10	15
Unused Key Expiry	✓	✓
System License Limits		
Org Units	1	25
Client PCs	2	15
Web Browser Interface	✓	✓

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4.7.2.2 *Software Ordering*

The software is available to order and download as follows:

Licence	Part Numbers	Description	Chargeable
Easinet Residential edition	52909	Residential edition - software downloadable from the www.pacgdx.com website.	No
Easinet Professional edition	52915	Professional edition is supplied as a licence key that is orderable through PAC customer services. This key is used on the Residential edition software to unlock the professional features	Yes
Feature Packs	<ul style="list-style-type: none"> • 13086 – 5,000 Keyholder upgrade Feature Pack • 13114 – 10 Operators upgrade Feature Pack • 13402 – 500 Access Group upgrade Feature Pack • 13967 – Extra 10 dialup channel Feature Pack • 13968 – Extra 50 dialup channel Feature Pack • 13969 – Extra 10 door Feature Pack • 13970 – Extra 50 door Feature Pack • 52910 – Additional Client PC upgrade Feature Pack 	Feature packs are supplied as licence keys that are orderable through PAC customer services. This key is used on the Residential edition software to unlock the Feature Packs.	Yes

There is also the option of a PAC provided PC with Easinet Residential software preloaded as detailed in the following table:

PC	Part Number	Description
Dell pre-configured PC	40403	Dell Optiplex 3020M Micro PC - Intel Dual Core 2.8 GHz with 3MB RAM and 500 GB 2.5" Serial ADA Hard Drive Windows 8.1 with PAC Easinet Residential edition software Wired Mouse and Keyboard PAC GS3 MT Desktop Reader kit for token administration



4.7.2.3 *Management Options*

The PAC Easinet Residential software is able to be deployed as per the following:

- Local standalone PC – software loaded and running on a customer owned PC that is connected to the PAC system directly or via a customer’s network
- PAC supplied PC with pre-loaded Easinet Residential software – software loaded on a Dell PC and supplied with a PAC administration kit. Connected directly or via the customer’s network, this offers an out of the box management solution for Easinet Residential
- Local/remote web browser interface – with the software running on a customer owned PC, it is then possible to remotely log in via a web browser over the customer’s own intranet.
- Remotely hosted cloud management called PAC Residential Cloud – offers all the features and capabilities of Easinet Residential in a secure and scalable environment called The Bunker. The ultimate management option for security, convenience and user friendliness.

For further information on PAC Residential Cloud please visit:

<https://pacgdx.com/products/partner-products/pac-residential-cloud>

5 Glossary

Abbreviation	Description
AES	Advanced Encryption Standard
CEC	California Energy Commission
DDA	Disability Discrimination Act
EN	European Standards
GDx	Glasgow Digital eXchange
HF	High Frequency
IP	Internet Protocol
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LF	Low Frequency
MT	Multi-Technology
Ops™	One prox smart
PAC	Proximity Access Control
PLE	Power Line Ethernet
PSU	Power Supply Unit
PTE	Push To Exit
RFid	Radio Frequency Identification
RJ45	Ethernet cable connector standard
RTE	Request To Exit
SIP	Session Initiation Protocol
SMB	Small / Medium Business
TFT	Thin Film Transistor
UI	User Interface

Table 1 - Glossary of terms

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6 Appendix A – PAC Data Sheets

6.1 Access Controllers

PAC EasiKey 250		
Part Numbers	909022370 – Unboxed EasiKey 250 Controller	909022275 –Boxed EasiKey 250 (Pre-wired controller in metal case without cut-out & 3Amp PSU) 909022277 –Boxed EasiKey 250 (Pre-wired controller in a metal case with cut-out & 3Amp PSU)
Dimensions	W 198 x H 90 x D 28mm	Boxed without cut-out - W 350 x H 420 x D 100mm Boxed with cut-out – W 255 x H 406 x D 72mm
Operating Temperature	0°C to +50°C	
Operating Humidity	0% to 90% Relative Humidity	
Number of ID Devices supported	250	
Supported access control reader protocol	PAC	
Supported ID Device formats	PAC (Cards and Tokens) Key PAC (Cards and Tokens) Stanley (Tokens)	
Number of doors supported	2 doors with up to 4 access control devices as per the following options: <ul style="list-style-type: none"> • An access control reader per door • An access control reader and Push To Exit (PTE) device per door 	
LCD Display	Backlit LCD display for full user notification and engineering settings	
Configuration	Locally using integrated keypad and administration reader	
Event storage	Last 5 events	
Access Controller inputs	PAC readers PAC PTE switches PAC EasiKey 250 pairing to support up to 500 ID Devices	
Distance to input devices	100m	
Recommended Cabling	0.22mm 8 core alarm cable	
Power input	10.5 – 20V DC 8 – 14.5V DC 50/60 Hz @ 100mA	
Power outputs	2 x 2Amp @ 24V DC	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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PAC 212		
Part Numbers	909033075 – Unboxed PAC 212 LF - with DIN Mount 909033079 – Unboxed PAC 212 LF - PCB only 909034075 – Unboxed PAC 212 HF - with DIN Mount 909034079 – Unboxed PAC 212 HF - PCB only	909033074 – Boxed PAC 212 LF with 3 Amp PSU 909033076 – Boxed with cutout PAC 212 LF with 3 Amp PSU 909034074 – Boxed PAC 212 HF with 3 Amp PSU 909034076 – Boxed with cutout PAC 212 HF with 3 Amp PSU
Dimensions	W 181 x H 70 x D 125mm	Boxed without cut-out - W 335 x H 335 x D 90mm Boxed with cut-out – W 225 x H 400 x D 95mm
Operating Temperature	0°C to +35°C	
Operating Humidity	10% to 85% Relative Humidity	
Number of ID Devices supported	2000	
Supported access control reader protocol	PAC and PAC64	
Supported ID Device formats	PAC (Cards and Tokens) Key PAC (Cards and Tokens) Stanley (Tokens) PAC Ops™ Lite (Cards and Tokens) PAC Ops™™ (Cards and Tokens)	
Number of doors supported	2 doors with up to 4 access control devices as per the following options: <ul style="list-style-type: none"> • An access control reader per door • An access control reader and Push To Exit (PTE) device per door • 2 access control readers per door (read-in and read-out) 	
LCD Display	Backlit LCD display for full user notification and engineering settings	
Configuration	<ul style="list-style-type: none"> • Locally using integrated keypad and administration reader • via PC with PAC Access Central/Easinet Residential software (4.6 version or above required) 	
Event storage	4000 events stored locally that can be exported to a PC via a USB memory device	
Access Controller input devices	PAC readers (LF, HF and MT) PAC PTE switches Door contacts	
Input connection features	Programmable relays for Door forced / left open 1 x tamper alarm input 1 x override input	
Output connection features	2 x Lock outputs 2 x Auxiliary Outputs	
Distance to input devices	70m	
Recommended Cabling	0.22mm 8 core alarm cable	
Power input	10.5 – 28 V DC 50/60 Hz @ 350mA	
Power outputs	2 x 5Amp @ 30V DC	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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PAC 512DC		
Part Numbers	909030055 – PAC 512 DC Access Controller - DIN Mount 909030765 – PAC 512 DC Access Controller - PCB only	909030054 – Boxed PAC 512 DC Access Controller with 3 Amp PSU 909031074 – Boxed PAC 512 DC Access Controller in a Sarel Cabinet with 3 Amp PSU 909031076 - Boxed PAC 512 DC Access Controller in a Sarel Cabinet with 3 Amp PSU, GSM Modem Kit and Low Profile Aerial
Dimensions	W 181 x H 65 x D 125mm	Boxed - W 335 x H 335 x D 90mm
Operating Temperature	0°C to +35°C	
Operating Humidity	10% to 85% Relative Humidity	
Number of ID Devices supported	20000	
Supported access control reader protocol	PAC PAC64 Wiegand	
Supported ID Device formats	PAC (Cards and Tokens) KeyPAC (Cards and Tokens) Stanley (Tokens) PAC Ops™ Lite (Cards and Tokens) PAC Ops™ (Cards and Tokens)	
Number of doors supported	2 doors with up to 4 access control devices as per the following options: <ul style="list-style-type: none"> • An access control reader per door • An access control reader and Push To Exit (PTE) device per door • 2 access control readers per door (read-in and read-out) 	
Configuration	via PC with PAC Access Central or Easinet software	
Event storage	20,000 events	
Access Controller input devices	PAC readers (LF, HF, MT, Architect and Biometric) PAC PTE devices Door contacts Alarm inputs	
Input connections	1 x tamper alarm input 1 x override input 1 x RS-232 input 1 x RS-485 input	
Output connections	2 x 5Amp Relays @ 30V DC	
Distance to input devices	70m	
Recommended Cabling	0.22mm 8 core alarm cable	
Power input	10.5 – 28 V DC 50/60 Hz @ 350mA	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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PAC Product Description

PAC 512 DCi		
Part Numbers	909030155 – PAC 512 DCi Access Controller - DIN Mount	909030154 – Boxed PAC 512 DCi Access Controller with 3 Amp PSU
Dimensions	W 181 x H 65 x D 125mm	Boxed - W 335 x H 335 x D 90mm
Operating Temperature	0°C to +35°C	
Operating Humidity	10% to 85% Relative Humidity	
Number of ID Devices supported	20000	
Supported access control reader protocol	PAC PAC64 Wiegand	
Supported ID Device formats	PAC (Cards and Tokens) Key PAC (Cards and Tokens) Stanley (Tokens) PAC Ops™ Lite (Cards and Tokens) PAC Ops™™ (Cards and Tokens)	
Number of doors supported	2 doors with up to 4 access control devices as per the following options: <ul style="list-style-type: none"> • An access control reader per door • An access control reader and Push To Exit (PTE) device per door • 2 access control readers per door (read-in and read-out) 	
Configuration	via PC with PAC Access Central or Easinet software	
Event storage	20,000 events	
Access Controller input devices	PAC readers (LF, HF, MT, Architect and Biometric) PAC PTE devices Door contacts Alarm inputs	
Input connections	1 x tamper alarm input 1 x override input 1 x RS-485 input 1 x TCP/IP input (RJ-45)	
Output connections	2 x 5Amp Relays @ 30V DC	
Distance to input devices	70m	
Recommended Cabling	0.22mm 8 core alarm cable	
Power input	10.5 – 28 V DC 50/60 Hz @ 350mA	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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6.2 I/O Controllers

PAC 520 Input Controller		
Part Numbers	909020053 – PAC 520 Input Controller - DIN Mount	909020051 – Boxed PAC 520 Input Controller
Dimensions	W 180 x H 125 x D 40mm	W 150 x H 220 x D 40mm
Operating Temperature	-10°C to +55°C	
Operating Humidity	0% to 85% Relative Humidity	
Controller Inputs	20 configurable inputs: <ul style="list-style-type: none"> • Normally Open, Normally Closed and 2, 3 or 4 state • 5Amp Relays @ 30V DC 	
Controller Outputs	2 configurable outputs: <ul style="list-style-type: none"> • Latched, Momentary, Toggled and Pulsed • 5Amp Relays @ 30V DC 	
Additional connections	1 x tamper alarm input 1 x override input 1 x RS-485 input	
Auxiliary power outputs	2 x Polyfused 200mA Auxiliary voltage output	
Configuration	via PC with PAC Access Central software	
Connection to PAC 512	RS-485	
Maximum Distance to PAC512	1000m	
Power input	10.5 – 28 V DC 115mA @ 10.5 V DC 45mA @ 28 V DC	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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PAC 530 Output Controller		
Part Numbers	909020052 – PAC 530 Output Controller - DIN Mount	909020050 – Boxed PAC 530 Output Controller
Dimensions	W 180 x H 125 x D 40mm	W 150 x H 220 x D 40mm
Operating Temperature	-10°C to +55°C	
Operating Humidity	0% to 85% Relative Humidity	
Controller Outputs	12 configurable outputs: <ul style="list-style-type: none"> • Latched, Momentary, Toggled and Pulsed • 10 x 2Amp Relays @ 30V DC • 2 x 8Amp Relays @ 30V DC 	
Controller Inputs	2 configurable inputs: <ul style="list-style-type: none"> • Normally Open, Normally Closed and 2, 3 or 4 state • 5Amp Relays @ 30V DC 	
Additional connections	1 x tamper alarm input 1 x override input 1 x RS-485 input	
Auxiliary power outputs	1 x Polyfused 200mAmp Auxiliary voltage output	
Configuration	via PC with PAC Access Central software	
Connection to PAC 512	RS-485	
Maximum Distance to PAC512	1000m	
Power input	10.5 – 28 V DC: 115mA @ 10.5 V DC 45mA @ 28 V DC	
Warranty	5 years against electronic failure	
Standards Compliance	CE, RoHS & WEEE compliant	
Boxed Product Contents	Installation guide	

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6.3 Readers

6.3.1 LF Readers

PAC – GS3 LF Mullion Reader	
Part Numbers	909020110 – PAC OneProx™ GS3 LF Mullion Reader
Dimensions	W 48 x H 105 x D 28mm
Weight	150g
RFid frequency	Low Frequency (125kHz and 153.6kHz)
PAC ID Devices	PAC, Stanley, KeyPAC, Wiegand
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <100mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

PAC – GS3 LF Standard Reader	
Part Numbers	909020111 – PAC OneProx™ GS3 LF Standard Reader
Dimensions	W 89 x H 115 x D 28mm
Weight	290g
RFid frequency	Low Frequency (125kHz and 153.6kHz)
PAC ID Devices	PAC, Stanley, KeyPAC, Wiegand
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <100mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

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PAC – GS3 LF Vandal Resistant Reader	
Part Numbers	909020116 – PAC OneProx™ GS3 LF Vandal Reader - yellow and black 909022116 – PAC OneProx™ GS3 LF Vandal Reader - blue and grey
Dimensions	W 100 x H 100 x D 16mm
Weight	410g
RFid frequency	Low Frequency (125kHz and 153.6kHz)
PAC ID Devices	PAC, Stanley, KeyPAC, Wiegand
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	40mm
Intruder Grading	Security Grade 3
Environment	IP67 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <90mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	Stainless Steel & Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

PAC – GS3 LF Panel Mount Reader	
Part Numbers	909020117 – PAC OneProx™ GS3 LF Panel Reader - yellow and black 909022117 – PAC OneProx™ GS3 LF Panel Reader - blue and grey
Dimensions	W 75 x H 80 x D 16mm
Weight	90g
RFid frequency	Low Frequency (125kHz and 153.6kHz)
PAC ID Devices	PAC, Stanley, KeyPAC, Wiegand
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	45mm
Intruder Grading	N/A
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <90mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

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PAC Product Description

6.3.2 HF Readers

PAC – GS3 HF Mullion Reader	
Part Numbers	909020120 – PAC OneProx™ GS3 HF Mullion Reader
Dimensions	W 48 x H 105 x D 28mm
Weight	150g
RFid frequency	High Frequency (13.56MHz)
PAC ID Devices	PAC Ops™ Lite and PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <90 mAmp @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

PAC – GS3 HF Standard Reader	
Part Numbers	909020121 – PAC OneProx™ GS3 HF Standard Reader
Dimensions	W 89 x H 115 x D 28mm
Weight	290g
RFid frequency	High Frequency (13.56MHz)
PAC ID Devices	PAC Ops™ Lite and PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <100 mAmp @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

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PAC Product Description

PAC – GS3 HF PIN Reader	
Part Numbers	909020122 – PAC OneProx™ GS3 HF PIN & Prox Reader
Dimensions	W 89 x H 115 x D 30mm
Weight	300g
RFid frequency	High Frequency (13.56MHz)
PAC ID Devices	PAC Ops™ Lite and PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <100 mAmp @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

PAC – GS3 HF Vandal Resistant Reader	
Part Numbers	909020118 – PAC OneProx™ GS3 HF Vandal Reader - yellow and black 909022118 – PAC OneProx™ GS3 HF Vandal Reader - blue and grey
Dimensions	W 103 x H 103 x D 17.5mm
Weight	402g
RFid frequency	High Frequency (13.56MHz)
PAC ID Devices	PAC Ops™ Lite and PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	40mm
Intruder Grading	Security Grade 3
Environment	IP67 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <90 mAmp @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	Stainless Steel & Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

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PAC – GS3 HF Panel Mount Reader	
Part Numbers	909020119 – PAC OneProx™ GS3 HF Panel Reader - yellow and black 909022119 – PAC OneProx™ GS3 HF Panel Reader - blue and grey
Dimensions	W 75 x H 80 x D 16mm
Weight	90g
RFid frequency	High Frequency (13.56MHz)
PAC ID Devices	PAC Ops™ Lite and PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	20mm
Intruder Grading	N/A
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <90 mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

PAC – GS3 HF Backbox Reader	
Part Numbers	909020124 – PAC OneProx™ GS3 HF Back Box Reader
Dimensions	W 86 x H 86 x D 8mm
Weight	36g
RFid frequency	High Frequency (13.56MHz)
PAC ID Devices	PAC Ops™ Lite and PAC Ops™
Programmable output formats	PAC and PAC64
Maximum Read Range	100mm
Intruder Grading	N/A
Environment	Not recommended for outdoor use
Power	12V DC, 120mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Red/Green LED
Tamper output	None
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	1 year against electronic failure

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6.3.3 MT Readers

PAC – GS3 MT Mullion Reader	
Part Numbers	909020112 – PAC OneProx™ GS3 MT Mullion
Dimensions	W 48 x H 105 x D 28mm
Weight	150g
RFid frequency	Low Frequency (125kHz and 153.6kHz) and High Frequency (13.56MHz)
PAC ID Devices	PAC, KeyPAC, Stanley, PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <120 mAmp @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

PAC – GS3 MT Standard Reader	
Part Numbers	909020113 – PAC OneProx™ GS3 MT Standard
Dimensions	W 89 x H 115 x D 28mm
Weight	290g
RFid frequency	Low Frequency (125kHz and 153.6kHz) and High Frequency (13.56MHz)
PAC ID Devices	PAC, KeyPAC, Stanley, PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <100mAmp @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

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PAC – GS3 MT PIN Reader	
Part Numbers	909020114 – PAC OneProx™ GS3 MT PIN & Prox
Dimensions	W 89 x H 115 x D 30mm
Weight	300g
RFid frequency	Low Frequency (125kHz and 153.6kHz) and High Frequency (13.56MHz)
PAC ID Devices	PAC, KeyPAC, Stanley, PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64 and Wiegand
Maximum Read Range	up to 100mm
Intruder Grading	Security Grade 3
Environment	IP65 – Indoor/Outdoor weather resistant
Power	12 – 24V DC, <100mA @ 12V DC
Operating temperature	-40 to 66 °C
Operating humidity	10-85% Relative humidity
Audio/Visual indicators	Audible Sounder and Red/Green LEDs
Tamper output	Yes, certified to EN 50131-1 and EN 50131-3
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened) Wiegand output – 5 core 22 AWG cable
Material	UL rated Polycarbonate
Certification	CE compliant
Warranty	Lifetime against electronic failure

6.3.4 Architect Readers

PAC – Architect One Reader	
Part Numbers	7257710 – Architect One RFID Mullion Reader
Dimensions	W 42 x H 112 x D 22mm
RFID frequency	High Frequency (13.56 MHz: ISO14443A types A & B, ISO18092)
PAC ID Devices	PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64
Maximum Read Range	60mm
Vandal resistance	IK10 certification
Environment	IP65 – Indoor/Outdoor weather resistant
Power	9 – 15V DC, 130mA @ 12V DC
Operating temperature	-30 to 70 °C
Operating humidity	0-95% Relative humidity
Audio/Visual indicators	Audible Sounder and 2 x RGB LEDs (360 configurable colours)
Tamper output	Accelerometer-based tamper detection system with key deletion option (patented solution)
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened)
Material	UL rated ABS Plastic
Certification	CE / FCC/ UL compliant
Warranty	Lifetime against electronic failure

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PAC – Architect One Blue Reader	
Part Numbers	7257711 – Architect One Blue RFID & Bluetooth Mullion Reader
Dimensions	W 42 x H 112 x D 22mm
RFID frequency	High Frequency (13.56 MHz: ISO14443A types A & B, ISO18092) Bluetooth / NFC
PAC ID Devices	PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64
Maximum Read Range	60mm for PAC HF ID Devices 20m for Mobile IDs (configurable)
Vandal resistance	IK10 certification
Environment	IP65 – Indoor/Outdoor weather resistant
Power	9 – 15V DC, 150mA @ 12V DC
Operating temperature	-30 to 70 °C
Operating humidity	0-95% Relative humidity
Audio/Visual indicators	Audible Sounder and 2 x RGB LEDs (360 configurable colours)
Tamper output	Accelerometer-based tamper detection system with key deletion option (patented solution)
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened)
Material	UL rated ABS Plastic
Certification	CE / FCC/ UL compliant
Warranty	Lifetime against electronic failure

PAC – Architect A Reader	
Part Numbers	7257712 – Architect A - RFID Standard Reader
Dimensions	W 80 x H 107 x D 26mm
RFID frequency	High Frequency (13.56 MHz: ISO14443A types A & B, ISO18092)
PAC ID Devices	PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64
Maximum Read Range	80mm
Vandal resistance	IK10 certification
Environment	IP65 – Indoor/Outdoor weather resistant
Power	7 – 28V DC, 130mA @ 12V DC
Operating temperature	-30 to 70 °C
Operating humidity	0-95% Relative humidity
Audio/Visual indicators	Audible Sounder and 2 x RGB LEDs (360 configurable colours)
Tamper output	Accelerometer-based tamper detection system with key deletion option (patented solution)
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened)
Material	UL rated ABS Plastic
Certification	CE / FCC/ UL compliant
Warranty	Lifetime against electronic failure

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PAC – Architect A Blue Reader	
Part Numbers	7257713 – Architect A Blue - RFID & Bluetooth Standard Reader
Dimensions	W 80 x H 107 x D 26mm
RFID frequency	High Frequency (13.56 MHz: ISO14443A types A & B, ISO18092) Bluetooth / NFC
PAC ID Devices	PAC Ops™ Lite, PAC Ops™
Programmable output formats	PAC, PAC64
Maximum Read Range	80mm for PAC HF ID Devices 20m for Mobile IDs (configurable)
Vandal resistance	IK10 certification
Environment	IP65 – Indoor/Outdoor weather resistant
Power	7 – 28V DC, 150mA @ 12V DC
Operating temperature	-30 to 70 °C
Operating humidity	0-95% Relative humidity
Audio/Visual indicators	Audible Sounder and 2 x RGB LEDs (360 configurable colours)
Tamper output	Accelerometer-based tamper detection system with key deletion option (patented solution)
Recommended cabling	PAC output - 6 core 24 AWG alarm cable (unscreened)
Material	UL rated ABS Plastic
Certification	CE / FCC/ UL compliant
Warranty	Lifetime against electronic failure

6.3.5 Biometric Readers

PAC – ievo® Readers		
Part Numbers	7255493 – Ultimate Rev 4 Biometric Reader	7255495 – Micro Rev 4 Biometric Reader
Dimensions	Surface Mount: W 93 x H 128 x D 93mm Flush Mount: W 119 x H 153 x D 45mm (visible)	Surface Mount: W 55 x H 155 x D 70mm Flush Mount: W 80 x H 230 x D 33mm (visible)
Image Sensor	Multispectral imaging	Optical imaging
Power	12V DC, 600mA @ 12V DC	12V DC, 400mA @ 12V DC
Environment	IP65 – Indoor/Outdoor weather resistant	Indoor use only
Operating temperature	-20 to 70 °C	0 to 60 °C
Certification	CE, FCC and CPNI compliant	CE and FCC compliant
Programmable output formats	PAC	
Audio/Visual indicators	Audible Sounder and Full colour LED	
Tamper output	Yes	
Recommended cabling	Shielded CAT5e/6 cable	
Material	UL rated ABS Plastic	
Warranty	1 year	

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PAC – ievo® Control Boards		
Part Numbers	7256412 – Ultimate Rev 4 Biometric Reader and Control Board 10K 7256413 – Ultimate Rev 4 Biometric Reader and Control Board 50K 7256414 – Micro Rev 4 Biometric Reader and Control Board 10K 7256415 – Micro Rev 4 Biometric Reader and Control Board 50K	7255489 – Rev 4 Control Board 7255490 – Rev 4 PoE Control Board 7255510 – Rev 4S Compatible Control Board 7255511 – Rev 4S Compatible PoE Control Board
Dimensions	W 93 x H 128 x D 27mm	
CPU	ARM @454MHz or 528MHz	
Memory	RAM 256MB Flash 256MB	
Event Log	200,000 rolling capacity	
Power	12 - 24V DC, 400mA to 1.2A @ 12V DC PoE IEEE 802.3at	
Certification	CE and FCC compliant	
Audio/Visual indicators	LEDs for power and status	
Recommended cabling	Shielded CAT5e/6 cable	
Warranty	1 year	

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6.4 ID Devices

6.4.1 LF ID Devices

PAC – PAC ID Devices		
Part Numbers	909021020 – PAC Token with clip, single – black 20204 – PAC Token no clip, single - black	909021039 - PAC ISO Proximity Card, (pack of 10) 909021039/1.00 - PAC ISO Proximity Card - Punched Long Edge (pack of 10) 909021039/2.00 - PAC ISO Proximity Card - Punched Short Edge (pack of 10) 909021039/11.00 - PAC ISO Proximity Card - Punched Both Edges (pack of 10) 909021041 - PAC ISO Proximity Card with Magnetic stripe - Not Encoded (pack of 10)
Dimensions	W 12 x H 40 x D 6mm	W 85 x H 54 x D 1.1mm
RFid Frequency	Low Frequency (153.6kHz)	
RFid Technology	PAC	
Supported Access Control Reader(s)	PAC LF Readers PAC MT Readers	
ID Code	Unique	
Power	No batteries required	
Warranty	Lifetime against electronic failure	

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PAC Product Description

PAC – KeyPAC ID Devices		
Part Numbers	20250 – KeyPAC Token, single - black	21030 - KeyPAC ISO Proximity Card, single 909021030/10.00 - KeyPAC ISO Proximity Card - Punched Short Edge (pack of 10) 909021030/11.00 - KeyPAC ISO Proximity Card - Punched Long Edge (pack of 10) 21031 - KeyPAC ISO Proximity Card with Magnetic stripe, single - Not Encoded 909021018 – KeyPAC ISO Proximity Card (pack of 10) 909021019 – KeyPAC ISO Proximity Card with Magnetic stripe (pack of 10) - Not Encoded
Dimensions	W 12 x H 40 x D 6mm	W 85 x H 54 x D 1.1mm
RFid Frequency	Low Frequency (125kHz)	
RFid Technology	KeyPAC	
Supported Access Control Reader(s)	PAC LF Readers PAC MT Readers	
ID Code	Unique	
Power	No batteries required	
Warranty	Lifetime against electronic failure	

PAC – Stanley ID Devices	
Part Numbers	909021081 – STANLEY Token, single - red 909021082 – STANLEY Token, single - green 909021083 – STANLEY Token, single - blue 909021084 – STANLEY Token, single - yellow 909021085 – STANLEY Token, single - orange 909021086 – STANLEY Token, single - purple 909021087 – STANLEY Token, single - black
RFid Frequency	Low Frequency (153.6kHz)
RFid Technology	PAC
Supported Access Control Reader(s)	PAC LF Readers PAC MT Readers
Dimensions	W 33 x H 60 x D 6mm
ID Code	Unique
Power	No batteries required
Warranty	Lifetime against electronic failure

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6.4.2 HF ID Devices

PAC – PAC Ops™ Lite ID Devices		
Part Numbers	909021104 – Standard MIFARE® Token with clip (pack of 10) - blue 909021101 – Standard MIFARE® Token without clip (pack of 10) - blue	909021105 - Standard MIFARE® Card 4 byte none UID (pack of 10)
Dimensions	W 33 x H 60 x D 5.5mm	W 85 x H 54 x D 1.1mm
RFid Frequency	High Frequency (13.56MHz)	
RFid Technology	PAC Ops™ Lite 1K MIFARE™	
Supported Access Control Reader(s)	PAC HF Readers PAC MT Readers Architect Readers	
ID Code	Unique	
Power	No batteries required	
Warranty	Lifetime against electronic failure	

PAC – PAC Ops™ ID Devices		
Part Numbers	909021103 – Ops™ MIFARE® DESFire® EV1 Token, 4K with clip (pack of 10) - grey 909021102 – Ops™ MIFARE® DESFire® EV1 Token, 4K without clip (pack of 10) - grey	909021106 – Ops™ MIFARE® DESFire® EV1 Card, 4K (pack of 10)
Dimensions	W 33 x H 60 x D 5.5mm	W 85 x H 54 x D 1.1mm
RFid Frequency	High Frequency (13.56MHz)	
RFid Technology	PAC Ops™ 4K MIFARE™ DESFIRE™ EV1	
Supported Access Control Reader(s)	PAC HF Readers PAC MT Readers Architect Readers	
ID Code	Unique	
Power	No batteries required	
Warranty	Lifetime against electronic failure	

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6.5 Door Hardware

PAC – Hands-free RTE device	
Part Numbers	GB014617 – Hands-free Request to Exit button
Dimensions	W 86mm x H 86mm x D 15mm
Operating Temperature	-10 to 70°C
Input Voltage	12V – 20V DC
Output Voltage	30V DC @ 1Amp
Environment	IP65
Trigger Distance	Adjustable 4 – 15cm
Latch Time	Adjustable 0.5 – 30 secs
Audio/Visual indicators	2 colour LED (red LED turns green when activated)
Warranty	1 year against electronic failure
Environment	IP65

6.6 Power Supplies

PAC – PS50 12V Power Supply	
Part Numbers	952/2.00 – Power Supply with Battery Charger - Output 12 V DC at 50W (0.3Amp) 909032059 – DIN Rail Power Supply with Battery Charger - Output 12 V DC at 50W (0.3Amp)
Dimensions	W 176mm x H 50mm x D 90mm
Operating Temperature	-20 to 50°C
Input Voltage	100-230V AC
Output Voltage	13.8V DC @ 3.3Amp
Frequency	50/60Hz
Efficiency	Efficiency Level VI (CEC)
Warranty	5 years against electronic failure
Certifications	CE, RoHS & WEEE compliant CEC level 6 certified

PAC – PS50 24V Power Supply	
Part Numbers	952/3.00 – Power Supply with Battery Charger - Output 24 V DC at 50W (0.3Amp) 909032059/1.00 – DIN Rail Power Supply with Battery Charger - Output 24 V DC at 50W (0.3Amp)
Dimensions	W 176mm x H 50mm x D 90mm
Operating Temperature	-20 to 50°C
Input Voltage	100-230V AC
Output Voltage	27.6V DC @ 1.5Amp
Frequency	50/60Hz
Efficiency	Efficiency Level VI (CEC)
Warranty	5 years against electronic failure
Certifications	CE, RoHS & WEEE compliant CEC level 6 certified

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