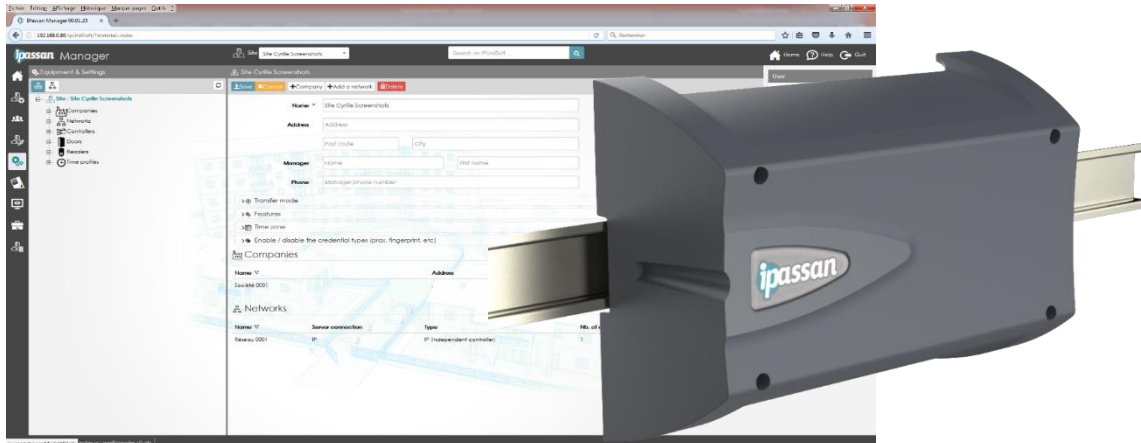# iPassan basics – Brochure

IP Access Control System

1 Genesis

After almost 20 years, the old Passan connected access control solution has been replaced by the brand new iPassan system.

Taking advantage of these years of experience, FDI Matelec kept the success keys, such as modularity or reliability, to design a new system from reliable components and modern development tools with the objective of increasing performance and facilitating integrations.

Much attention has been paid to the security of communications across the entire chain, from the key/reader pair to the system equipment and to the server. Choices needed to obtain ANSSI or Vigik certifications, for example.

2 Equipments

Controller

The iPassan control unit is available in POE/48V or in 12V version. It is also available in a 2Smart version (2-wire bus reader with FDI protocol) or in a Wiegand version. This means 4 plant references. In all cases, a controller manages up to 6 doors and 100,000 keys.

	12V DC	24/48V or POE
Wiegand reader	FD-125-004	FD-125-003
2Smart Reader	FD-125-002	FD-125-001

Modularity

iPassan manages 2 Wiegand readers or 4 2Smart readers, expandable to 6 in all cases by adding a reader/door card on the top. Additional options are available as input or output cards.

Thus, iPassan can manage, for instance, 4 readers + 12 output. When the quantity of inputs or outputs increases, RS485 boards managing 10 inputs or outputs can be added to the control panels. These RS485 boards are also added these

same 12 input or output options, bringing the total capacity of an expansion board to 22 inputs or outputs or a mixed 10/12.

Synoptic

iPassan can be connected to each other in TCP/IP or RS485. A network can be all IP, all RS485 or a mix of both. Thus, some buildings have a horizontal TCP/IP connection, but RS485 between the bottom and top controllers. Those at the top rather used for lift management.

Example of a wiring on a renovation project. An old access control system is replaced by iPassan. iPassan communicate with each other via an RS485 bus which can be recovered from the old system. The connection with the computer is either IP or USB.
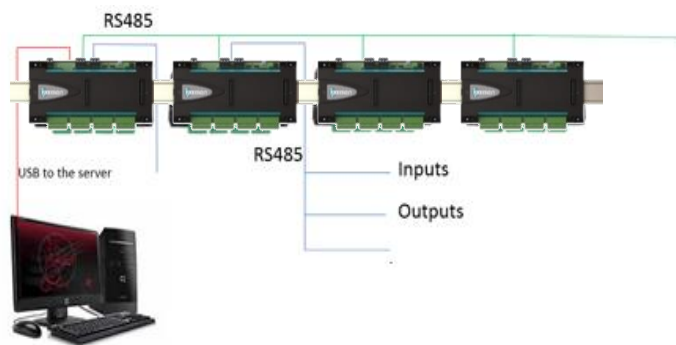
TCP/IP wiring scheme.
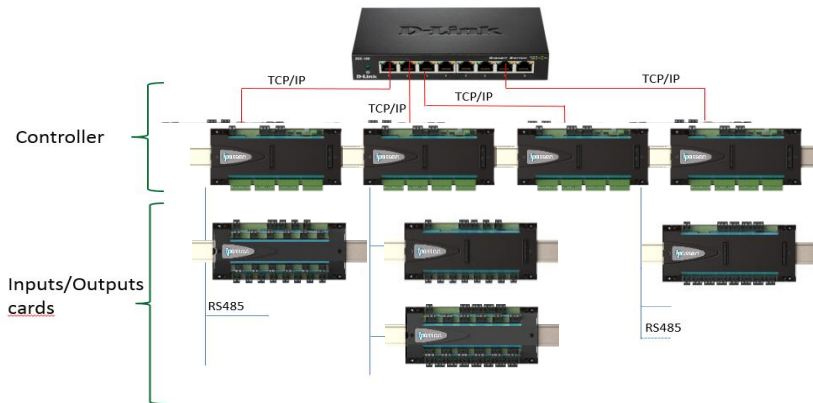
An access control network is limited to 32 Rs485 panels or 64 if the network contains IP. The network quantity is unlimited on iPassan, which lets you build freely.

Doors & readers

iPassan compatible readers can be:
- 2Smart range
- Wiegand depending on the controller
- FDI Matelec RS485
- Integrated as a number plate recognition camera.

Wiegand readers are useful for upgrading existing access controls by keeping keys and readers on site but upgrading software and controllers.

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2Smart readers offer maximum benefits such as the possibility of using DESFIRE keys, AES 128bits security, updating the firmware and the VIGIK or ANSSI compliance. 2Smart readers are also able to manage BLE dematerialized access (access by smartphone).

RS485 readers take the advantages of 2Smart 2-wire readers and operate at 1000 meters compared to 100m for 2Smart or Wiegand readers. For instance, these readers are used for elevators when the building exceeds 30 floors.

iPassan also accepts number plate recognition cameras. Such cameras communicate over IP network with the controller and transmit the entire number plate digit, not a Wiegand equivalent. The number plate appears whatever the car is allowed or denied. Since 2020, iPassan integrates the Dahua (Australia) and Innova (Europe) number plate recognition solutions

Reader profile
Led lights and buzzer settings can be customized in the system. Personalized routine can be created.

Safety mode
By default, an identification title (key, keypad code, fingerprint, etc.) is good enough to grant the access. iPassan allows you to add a time condition:

- Double identification. During office hours, a valid key is sufficient to open the door. Outside office hours, you need the key and the associated pin code. The time in seconds between the swiping and the keypad code must be entered (10 seconds in default settings)
- Dry contact: To enter a car park, you need a key or a remote control and the presence of a vehicle on a magnetic loop.
- Door contact: To open door B, door A must be closed. This mode is used to create airlocks.
- Presence of a managing person: a designated manager must be present in the area to grant the access to the other people.

Door & reader synchronization
Usually, reader #1 is linked to Door 1, Reader #2 etc. iPassan allows doors and readers to be desynchronized. This allows two readers to be linked to the same door (entry and exit) or several doors to one reader. This gives the possibility of freeing "x" doors or relays depending on the rights of the key. A key releases two doors (airlock mode) or one door and one alarm when another key, at the same door, controls other actions. Push buttons can be out of sync too.

Input & Output
An iPassan input can be I/O type, EOL (end of line) or decimal (coming soon). In this case, it returns a value between 0 and 100% depending on the voltage on this input.
The NO and NC outputs are native and can be inverted through the software. Thus, a NC contact can be configured to open in the event of a power failure.

Identification title
The system manages different fob technologies:
- MIFARE 13.56MHz & remote control 13.56 MHz.
- 125KHz keys & remote controls (old key & remote-control technology).
- MIFARE + key & remote control.
- Pin code: 3 to 8 digits.
- Number plate: Integration known as "intelligent" since the camera or the OCR (Optical Characters Recognition) software communicates to iPassan the complete number plate.
- Other hex or decimal: useful when using readers and keys from a previous access control. Keys can be engraved in decimal.
- QR code: the software can generate QR codes which can be used in visitor management and more.
- Bluetooth: iPassan manages access by Android or iOS phone. To do this, FDI Matelec sells virtual credits to give rights to the phone owners. The access is then granted via a K-app application to download.

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3 Software

iPassan is designed to answer all market needs, from the small site to large projects with several hundred doors managed on a single server.

iPassan Manager software is accessible by two different ways. A Software to download and install on the computer of an installer/building manager and an online software trough www.iPassan.com. By default, the controllers are configured to communicate with the cloud server, but it is possible to switch to local management. Although both versions are free. The cloud version offers various advantages such as the assurance of being always up to date as well as the backup management provided by FDI Matelec.

4 Features

The system is intended to be as simple as possible, but it can also handle advanced features.

Architecture concept

The software offers the possibility to generate buildings, floors, apartments or offices. This concept of architecture makes possible to sort equipment or users by geographic location, access profile or group.

One of the advantages of this concept is the ease of use in management since the software operator finds his keys in the software via a building, floor, office rather than in a list of access profiles. Another advantage is the automatic assignment of floor access to all lifts.

Multi-company management

iPassan Manager offers multi-company management, also called co-management or management unit. For the same building, software users supervise and manage their doors, access profiles or users without seeing what belongs to the others. Only site administrators or operators with rights to several companies see everything.

Multi-company management finds other applications in the residential sector (where a building is occupied by co-owners for some levels and social housing for others). In this case, the property owner and the property manager are considered as two companies. iPassan (Cloud version) makes easy the multi-company management since it is simple to create 2 independent networks. In this case, www.iPassan.com is the link between both network and avoid additional controller wiring.

Zones

iPassan offers the possibility of managing counting and Anti-passback. A counting area is defined by entry and exit doors/readers. Therefore, the system knows how many people or vehicles are on site and can lock entrances when a threshold is reached. This feature is useful for car parks but can also be used to limit a number of people in an area (swimming pool, common room).

An additional iPassan option allows you to count by apartment, group of people or company.

Example 1: In a residential building, each housing pays and uses 1 or "x" car park space, but has several keys or remote controls valid in the car park. iPassan Manager allows to define the number of places per accommodation. When an accommodation occupies all its allocated places, the other keys of this accommodation are refused at the entrance.

Example 2: Several companies use the same car park, but each of it has only a predefined number of spaces. Every employees of Company A have a key, but only some of them can park at the same time. For an effective counting, we use the Anti-passback (APB). The APB prohibits a user from entering an area until they have exited. If he paid 1 car space, he cannot enter a second vehicle. iPassan offers variants of Anti-passback:

- Anti pass time: The APB cancels after a scheduled delay.
- Anti-passback entry and exit or Entry only: In this second case, users are always allowed to exit.
- Soft APB: Users can leave the area even after expiration. The only condition to be allowed to leave is to be present in the area. This option is useful for visitors leaving the car park after the end of the visit.

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Intercom

2Voice URMET integration: the intercom as well as all the column material is supplied by URMET Italy. Integration into iPassan is via an FDI interface connected to the 2voice bus.

2Voice FDI: integration is based on 2Voice door panels manufactured by FDI and is detailed below.

URMET iPerCom system: The dialogue between the controller and the intercom works on the TCP/IP.

The benefits of integrating intercom into access control are multiple:

- When the events are not modified natively in the intercom system, they are stored in the control panel. Thus, it is possible to know when a call was made and who opened the door to the visitor. This event management meets certain regulations (as Secured by Design in UK)

- Increase security by using the iPassan relay rather than the entrance panel relay which can be vandalized. When the resident opens the door to the visitor, the control unit turns on the message on the 2Voice bus and releases the correct door. Wiring is also simplified.

- As iPassan knows the level where this accommodation is located, it can also allow the visitor to the designated lift(s) and to the designated floor(s) only.

- Add flexibility: For each button on the intercom and door panel, it is possible to control up to 4 doors or relays.
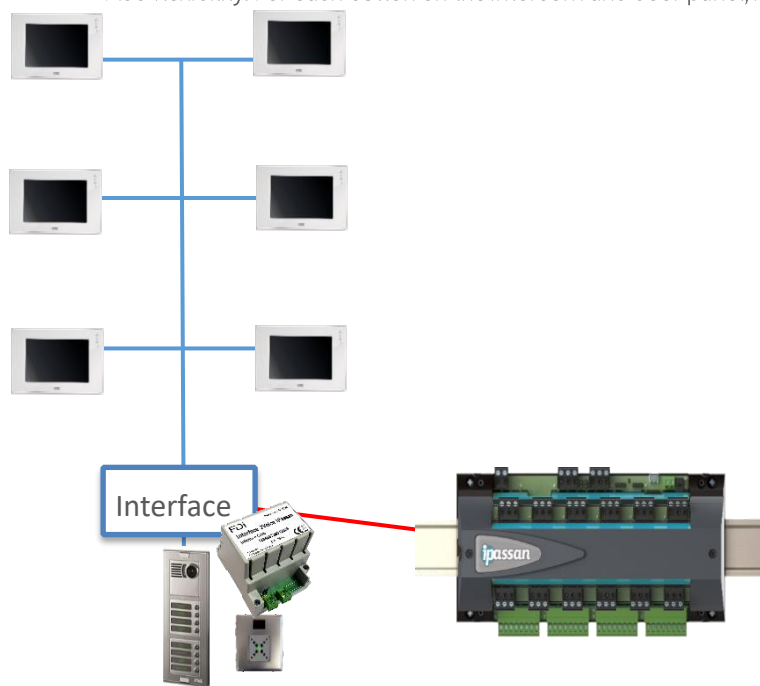
Interface

The 2Voice FDI integration is based on 2Smart door panels (FDI manufacturing). In this case, the complete interface features are available. In addition, the names on the entrance panels are managed in iPassan Manager. In that way, the building manager uses the software as a single access point for the access control of doors, floors and intercom.

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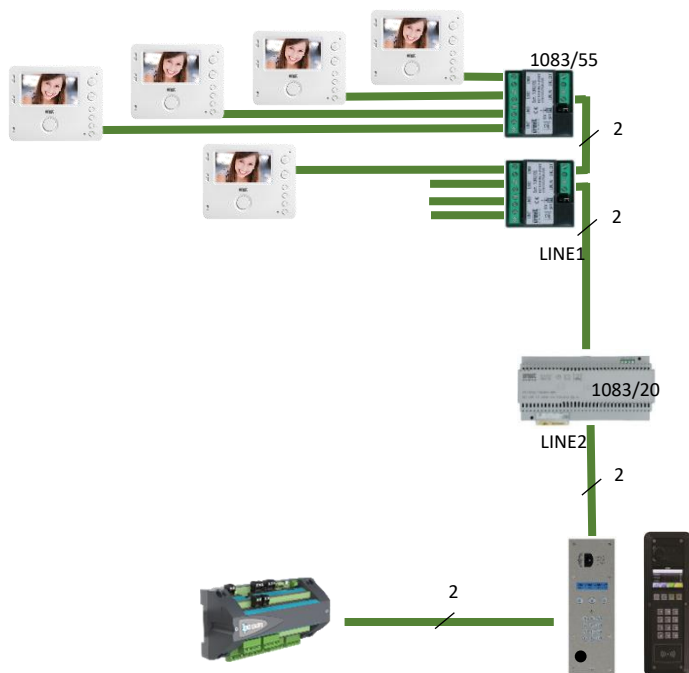
Lift management

iPassan offers several lift integrations. Most of the time, the lift management integration into the access control is done with dry contacts. But iPassan also offers smart integrations with the KONE and OTIS brands. These integrations explained below are based on TCP / IP protocol. iPassan allows 110 floors by elevators. The lift functionality can also be used to manage lockers, letter boxes or even storage boxes.

Conventional lift integration

Access control readers are located inside the lift cabin. The user calls the elevator, goes inside, swipes, and press the destination floor. Usually, the buttons corresponding to its authorized floors will light up after he swiped.

In the case of a resident, only his home floor and his car park level light up. In the other hand, for a guard, all floors can be authorized.

iPassan provides a dry contact per floor and per elevator.

KONE COP (Car Operating Panel) or OTIS EMS

The principle is the same as conventional lift integration, but here the communication between the access control and the elevator is based on TCP/IP protocol.

Example: an 80-floor building with 10 lift would require 800 relays on the access control side and 800 entrances on the lift side to supply power and wires in a conventional integration. The KONE COP integration does this without any additional hardware. The functionality is sold as a software license.

KONE DOP (Destination Operating Panel)

The user uses a terminal to swipe his key and informs his destination floor. The terminal then tells him which lift to use. By this system, the lift management is more efficient since several people leaving from the same floor, in the same direction and at the same time are guided to the same lift. Therefore, the elevator carries more people per hour and consumes less energy.

The lift management integration is software-to-software and requires a software license. All the elevator configuration is done in KONE Access. The iPassan Manager operator then links his database to the KONE Access one and uses the existing profiles.

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OTIS Compass

Similar to the KONE DOP system, the difference is that the communication is done here from iPassan controller to the OTIS terminals directly.

Lift – Intercom integration

Lift management in iPassan concerns residents who access authorized floors with their keys. But it also concerns visitors who must be authorized only on the correct floor via the intercom.

Because iPassan manages the lift and intercom integration in addition of the access control, it allows a common management under the same software.

Low Level Integration (LLI): It is carried out via dry contacts. For each floor, the intercom provides a dry contact. When this contact is activated, iPassan authorizes the elevator(s) for the designated floor. An important point is that iPassan manages two relay tempos. A time delay in seconds for residents (key access) and one in minutes for visitors. Indeed, the resident enters the lift, swipes and presses the push button of his floor. In the other hand, a visitor is authorized from outside the building, enters the lobby, calls the elevator that goes down to the ground floor, enters the lift and press on the push button.

High Level Integration (HLI): The iPassan system also manages intelligent integrations with the intercom.
The first concerns the URMET 2Voice intercom. By adding an interface on the 2Voice bus, iPassan knows which accommodation is called and which accommodation has opened the door to the visitor. There is no longer need for dry contacts per floor, but the function requires a software license.

The second intelligent integration is carried out with the 2Smart door panels and has the same benefits. Since 2020, a third integration is available using the URMET IPerCom and based on TCP/IP protocol.

CCTV (Closed-Circuit TV) integration

iPassan Manager allows the integration of CCTV via the RTSP protocol (Real Time Streaming Protocol). All NVRs (Network Video Recorders) supporting this protocol can be integrated.
By joining CCTV to the access control, a link is created between a camera and a door. Thus, in the event of a forced door, the software operator views the event in iPassan Manager and is able to consult the video of the break-in.
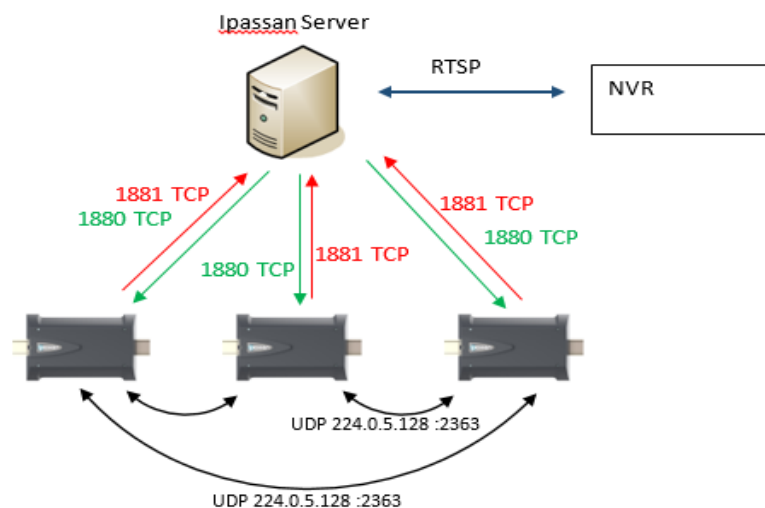
This integration works for live or replay. Note that when the NVR also supports the ONVIF protocol, iPassan Manager also allows you to control the PTZ (Pan Tilt Zoom) cameras from its supervision window.

Booking Management

iPassan Manager allows you to manage goods or equipment for residents, employees or visitors. The managers or the users themselves can book a room, a tennis court, a coworking space, a car park place for visitors via the dedicated web portal (see below). When the reservation is confirmed, they automatically receive the authorizations to the doors and floors concerned for the booking period.

Depending on the settings, access to goods is carried out by swiping, free access or a combination as free access after the badging of a manager.

Advanced features are available such as the possibility of controlling relays before, during or after the booking. This is useful to turn on / off a heater, switch on the lighting, etc.

Visitor Management

iPassan offers visitor management. Via the dedicated portal (see below), managers, residents or employees add and manage their visitors who inherit access rights to doors and floors during defined visiting periods. Visits can be scheduled or immediate, one-time or periodic and managed as desired by the system or a receptionist.

In the first case, the visitor's key works automatically at the programmed time slot. There is no one to greet the visitor and hand over the key.

In the second mode, it is a person at the reception who activates and deactivates the key at the start and after the visit.

Resident/employee view

iPassan Manager offers a light version of the software dedicated to residents or employees. This portal adapts to the screen size and is sometimes used on 7" intercom monitors. This allows users to access booking and visitor management functions.

5 Schedule & day off/ works

iPassan offers different types of schedule:
- Key access: A key works only during an authorized period.
- Door, exit or floor timetable: The door or the floor is free of access, locked or requires a key to be controlled according to the timeslot.
- Reader timetable: During the day, a valid key is sufficient, but at night, an additional condition must be fulfilled such as entering a pin code, deactivated alarm contact, etc.
- Process timetable: The process used in relationships operate according to the timeslot.
- Intercom schedule: Names scroll across the 2Smart panels at the scheduled periods. An hourly profile includes the 7 days of the week plus a public holiday and workday. Thus, a person can have different accesses depending on the current period (normal, holiday, work)

6 Users & keys

An access control user has several credentials. A credential refers to a key, fingerprint, number plate, keypad code, etc. A person (or user) of access control is defined as follows:

- His name, first name, additional information such as a number, an e-mail, an address, etc.
- His authorizations
  - o Two permanent access profiles for doors and floors
  - o Two temporary access profiles for doors and floors (limited in time by start and end dates / times of validity)
- Its specific features
  - o Anti-passback: The APB functionality must have been checked in the building settings to access the option. The user is not subject to the APB rules.
  - o Added extra time to each gate: In this case, the time defined is added to the time set for the door or the floor.
- Individual access: By default, iPassan Manager manages access profile. It manages up to 1000. In the event a huge quantity of users with for each different rights, rather than create many access profiles, the software

offers to check doors for each user. This option is useful, for example, for professors whose rights are different for each one.

7 Supervision

Different tools are used to supervise the sites:

- The events window keep track of the controller notifications. Each new event is displayed on the screen.
- Network status displays the iPassan status, input / output cards, readers, door panel and connected interfaces
- Manual controls allow you to control doors, floors, exits from customizable dashboards.
- Report is a tool allowing to generate Excel exports on keys, people, events, etc. It allows you to create personalized reports.
  Example: Possibility to receive a list of people on site every morning at 9 a.m
- Zone attendance displays the list of people present by area.
- Message displays only the events for which a specific display has been set. In general, this is a "forced door" type alert event, etc.

8 Software advanced features

Mass modification

Various renaming and / or configuration tools have been provided to simplify the life of the installer. These tools are used on control panels, inputs, outputs, doors and allow that a modification to be applied to multiple elements in the same operation.

Example: These tools allow to change the IP addresses of "x" controllers to 192.168.1.101 / 102/103 / etc or to rename "x" outputs "Output 1, output 2, etc." with automatic increment or configure end-of-line resistors for impedant inputs in one tap.

Automatique user/key creation

A tool has been specifically designed to automatically create users and their keys. It allows you to create "x" keys

- By access profile / building / floor / office / department
- For one or all profiles / buildings / etc.
- To name them automatically
- Select the right access profile for each user
- Create floor access profiles and assign them to people.
  Example: users created for floor 6 will use the "Floor 6" access profile automatically created in the same procedure.
- To choose several keys, remote controls, keypad codes per person. The keypad code can be generated automatically by the software.

Emergency command

A feature allows doors to be released if an entry is active. This arrangement makes it possible to wire a contact from a fire alarm to an iPassan input and force the doors to open as long as this contact is active.

This arrangement does not replace neither the green glass breakage nor the No / Nf exit buttons. Note, this function is sometimes diverted to control several doors from a single command.

Example: when the first person signs in in the morning on the main door, it frees up other doors inside the building until the last person leaves the building in the evening.

Automatism

For anything that is not provided by the system, automatisms, called reflexes in iPassan Manager, make it possible to create relationships between conditions and actions.

AND, OR or exclusive OR conditions control processes.

Examples of functions achievable via relations are:

- Force a relay or the sending of messages as soon as a door is forced
- Drop this relay when a particular key is swiped to a particular reader
- Activate a relay to disable an alarm, for example, when a key of a particular profile is swiped to certain readers
- Display a message in the software when a "suspended" key is presented to a reader of the site

A relation is therefore a link between one or more conditions and one or more processes.

Virtual relay

iPassan manages virtual relays. A virtual relay, or state, can be driven by a process, but it can serve as a condition in another reflex.
Example of employment:
- Reflex 1: if access authorized to the "Service door" reader of a "master" profile => paste a virtual relay for 3 seconds.
- Reflex 2: if access to the "Service door" reader of a "master" profile AND virtual relay activated => control alarm relay
Thus, only authorized persons of the "master" profile can activate / deactivate the alarm by double swiping. A single swiping opens the door only.

Counter

iPassan manages counters which can be incremented, decremented, reset or forced to a value via reflexes. They can therefore count anything (a number of authorized or prohibited swiping, quantity of relay activation, controller restarts, loses communication, etc.)
Counters can serve as a condition for reflexes. When a counter reaches a number, a message can be displayed on the screen.

Customization

Customized fields

The software manages a name, first name, e-mail, etc. for users, but when the manager wishes one or more additional fields, he has the possibility to create these fields and to define the type (numeric, alphanumeric, tick, list of choices…)

File management

iPassan Manager allows you to store documents such as a driver's license, an insurance certificate and more.

9 Tools

Several tools are offered in the software and allow:

- Update the firmware (controller, input / output card, readers, door panels…)
- Restore sites via backup files
- Rebuild the data in the server by transfer from the controller. Useful in the event of loss or theft of the computer used for commissioning and in the absence of a backup file, it is possible to recover site information.
- Events log
- Possibility in iPassan Manager to create scheduled tasks. This is an action that the server will perform automatically on scheduled dates / times. A scheduled task can be an action on the controller, a data backup or reporting by email.
- To detect controllers on a network and configure the network.

10 Software user management

The software allows the creation of operator profiles limited to sites and / or software functionalities.
Thus, an administrator has all the rights, access to every feature as well as the possibility of creating other operators.
The existing profiles except Administrator, can be modified. It is also possible to create as many profiles as necessary. There is also no limit in terms of operators per profile.
The actions of each operator are recorded in a log. It is possible to filter these logs by user, dates, sites and more.

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11 Integration

iPassan Manager integrates different businesses, but also offers several solutions allowing it to be integrated with third-party software. The easiest is an Excel file import which can be automatic. Another software places one or more Excel files in a selected directory. At scheduled time, iPassan recovers and integrates these files.

A variant of this mode makes possible to integrate the ONITY (USA) door handles used in the hotel industry. Visitors' keys are created in the ONITY Onportal software and then automatically added to iPassan manager. The same key allows the hotel guest to open the doors and common floors managed by iPassan and the hotel doors managed by ONITY.

The second possibility is to create read-only access to the database. A developer can then recover information related to supervision (integration into time management). As a variant, this access to the database can be read / write.

Finally, an ONVIF integration is available on iPassan, which allows third-party software to control doors and relays, to retrieve controller events and to manage users and their keys.