50-001-652.B



IPASSAN - INSTALLATION GUIDE







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IPassan system

IPassan is a full solution to manage door and lift access control, doorphone system, cctv and is also open to extra features such as intruder alarm, counting, etc...

It is designed to be as flexible and scalable as possible through expansion cards.

The monitoring of the building is also part of the system so that the operator is always able to turn on/off the security of a door, a floor and is aware of a door left opened.

The system is based on controllers, expanders and optional cards you can plug and /or connect together in order to create a mix of doors, lifts, inputs and outputs.

All those devices communicate together via a FDI encrypted protocol.

1.1 Features

- Up to 64 controllers per network (384 doors) in TCP/IP
- Multi network per site, unlimited number of doors, inputs, outputs per site
- Up to 32 controllers per RS485 bus (64 when the network is a mix of TCP/IP and RS485)
- Up to 14080 inputs or outputs per network (220 per controller with expansion modules)
- Encrypted RS-485 and 2 wire bus communications
- USB or TCP/IP communication with the server
- Transfer from both sides (server to controllers or controllers to server)
- Full monitoring of all sites (networks, controllers, expanders, 2-Smart readers)
- Upgradable firmware of all devices (controllers, expanders, 2-Smart readers)

1.2 Hardware

1.2.1 Controllers

The controllers are the central processing of the system. The controller is designed to manage 2 or 4 doors (it depends on the reader technology) and manage up to 6 doors with an optional door card.

The computer controller communication is USB through a dedicated plug or TCP/IP (with the dedicated controllers). Two different technologies are available: FDI 2 wire bus called 2-SMART (owner, encrypted bus) or standard Wiegand. So there is not only one controller but four different part numbers:

	12V psu <u></u>	24/48V & POE (Power over Ethernet)
Wiegand readers	2 doors / 2 Wiegand readers	2 doors / 2 wiegand readers
2-Smart readers	4 doors / 2-Smart readers	4 doors / 2-Smart readers



Features

- 2 RS485 bus
 - Main RS485 bus between controllers
 - Slave RS485 bus between controller and expanders
- Encrypted RS-485 and 2 wire bus communications (2-SMART)
- USB plug (data backup, computer connection)
- Built in Ethernet interface (POE depends on the part number)
- 4 doors (2 doors with Wiegand readers)
 - 1 reader
 - 1 REX
 - 1 door contact
 - 1 door relay
- 12Vdc +/- 15% outputs for the readers (80mA max per reader)
- Tamper
- Transfer from both sides (server to controllers or controllers to server)
- Monitoring of the site (controllers, expanders, 2-Smart readers)
- Upgradable firmware of all devices (controllers, expanders, 2-Smart readers)

Specifications

- Power Supply
- 12Vdc +/- 15 % output
- Ethernet
- USB
- Door relay
- REX input
- Door contact input
- Tamper
- Dimensions
- Operating temperature
- Humidity
- Storage
- Risk of explosion if CR2032 battery is replaced by an incorrect type
- This equipment must be powered by ES1/PS2 circuits.

12Vdc ____ (up to 1A with 6 readers)

85% RH (Relative humidity) max

master or slave depending on the setting

80mA per reader

Fixed IP or DHCP

EOL management

Normally closed

183mm X 234mm -10° + 60°

-20°C /+ 70°C

Protected by optocoupler

48Vdc 2A

1.2.2 Extra modules

Different optional devices have been designed to increase the capacity and / or the features of the system. Two different types of devices are offered:

The **expanders** are connected to the secondary RS485 bus of a controller and powered through an extra psu. Each controller manages up to 10 expanders which could be distant of 1000 meters from the controller.

The **optional cards** are plugged on the controller or on the expander. Il could be extra doors, extra inputs or extra outputs.

1.2.2.1 Expander

Two types are available: 10 inputs or 10 outputs.

Both expanders are designed to receive an extra card (12 inputs or 12 outputs)

• The 10 input expanders are useful to manage extra devices (sensors for example). The values of the end of line resistors are settable in the system.

• The 10 output expanders provide dry contacts and are used for lift management for example



Features

- RS485 bus with the controller (10 expanders max per controller)
- Secured RS485 bus
- Local psu. 12 to 24V Ac/dc
- 10 inputs (with end of line management) or 10 outputs (C, NO, NC 24Vdc / 2A) depending on the part number
- 12Vdc outputs 200 mA
- Monitored from the software
- Upgradable firmware
- Ability to manage an extra input / output expansion card (up to 22 inputs or outputs per expander)

Specifications

- Power Supply 12V to 24V __ or ___ (up to 1A with 22 activated relays)
- 12Vdc output 200 mA
- Relay 48Vdc 2A
- Input EOL management (resistors can be set in the software)
- Dimensions 183mm X 234mm
- Operating temperature -10° + 60°
- Humidity 85 % RHmax
- Storage -20°C / +70°C

This equipment must be powered by ES1/PS2 circuits

Door optional cards

Two or four doors can be added to the controller.

- 2 extra doors can be added to the 2 wire controller because it already manages 4 doors.
 - 4 extra doors can be added to the Wiegand controller because it already manages 2 doors.

Features

- Pluggable on a controller
- Powered through the controller. Doesn't need an extra psu
- 2 doors (4 doors with wiegand readers)
 - 1 reader
 - 1 REX
 - 1 door contact
 - 1 door relay
- 12Vdc outputs for the readers (80mA max per reader)

Specifications

- Power Supply 12Va
- 12Vdc output +/- 15% 80mA
- Door relay
- REX input
- Door contact input
- Dimensions
- Operating temperature
- Humidity
- Storage

12Vdc supplied by the controller 80mA per reader 48Vdc 2A Protected by optocouppler EOL management 183mm X 70mm -10° + 60° 85 % RH max -20°C / +70°C

Input / output expansion cards

Twelve inputs or outputs can be added onto a controller or expander by plugging an extra expansion card. Those expansion cards are pluggable on the top of a controller or expander. In this case, the controller or expander manages:

12 inputs	added to
A controller	2x wiegand or 4x 2-Smart doors (included door contact) + 12 inputs
A 10 inputs expander	22 inputs per expander
A 10 outputs expander	10 outputs + 12 inputs per expander

12 output	s added to
A controller	2x wiegand or 4x 2-Smart doors (included door contact) + 12 outputs
A 10 inputs expander	12 outputs + 10 inputs per expander
A 10 outputs expander	22 outputs per expander

12 inputs

12 outputs





1.3 **IPassan** manager

The software is web based and is designed to be installed on a computer or can be cloud based. For the Windows release, the minimal configuration is :

- Quad core processor \rightarrow 3Ghz (Intel Core i5 for example)
- 4Go Ram
- Operating system Windows 7 or higher 10GB
- Hard disk
- 100/1Go - Network interface
- Internet connection to update the software and/or use the e mail service

The software is suitable for simple to big systems, multi sites, etc The communication with the controllers is TCP/IP or USB with the first one and RS485 with the others.

2 - INSTALLATION

This equipment must be installed in a restricted area. Controllers and expanders are designed to be wall mounted through 4 screws but can also DIN rail mounted without any extra device.

A cover is supplied with controllers and expanders.

The expansion cards are pluggable on the base (controller or expander), and don't need extra psu. Two screws are supplied to maintain the expansion card to the base. The cover is also supplied with four screws to fix it on the controller.

Metal enclosure

Two metal boxes are designed to receive 2 or 4 devices (controller or expander). The two device box (left picture) is supplied with a 13.8V / 3A power supply. The four device box (right picture) is supplied with a 13.8V / 7A psu. Note, the batteries (12V / 7Ah) aren't supplied.



2.1 Controller

The controllers can communicate through TCP/IP or through RS485.

2.1.1 Power supply

Depending on the part number, the controller is designed to work with 12Vdc psu or 24V/48V with POE (Power Over Ethernet).

So 4 different controllers are available :

- 2 Smart controller 12Vdc
- 24/48Vdc/POE 2 Smart controller
- Wiegand controller 12 Vdc
- 24/48Vdc/POE Wiegand controller



Note : when the controller is powered through the ethernet network (POE), the + and – terminals are not connected.

2.1.2 Controller tamper

The controller offers two different tamper inputs.

When the cover is placed on the controller, it pushes a reed switch (see below : built in tamper). An extra input is available when the controller is fixed in a metal enclosure. This contact must be normally closed (closed contact when the cabinet is closed).

Note, both contacts are managed separately in the system. It manages different events when the cover is placed, removed and the enclosure opened / closed.



2.1.3 RS485 main

The RS485 bus authorizes up to 32 controllers within 1000 meters.

Note : The setting of the RS485 bus addresses is automatically done by the system, so there is no need for the installer to set up switches.

Installation rules:

- The RS485 bus is sensitive to disturbance and requires a specific twisted and shielded cable (FTP).
- A and B signals must be connected on the same pair in the cable.

- The controllers include a jump (close to the RS485 terminal) which is an end of line resistor. Insert this jump only at each side of the bus.



2.1.4 RS485 Auxiliary

Each controller manages up to 10 expanders. Those expanders are connected through the auxiliary RS485 bus as shown below.

Installation rules:

- The RS485 bus is sensitive to perturbation and requires a specific twisted and shielded cable (FTP).
- A and B signals must be connected on the same pair in the cable.

- The controllers provide a jump (close to the RS485 terminal) which is an end of line resistor. Insert this jump, or add a 120 Ohms resistor between A and B for an expander, at each side of the bus.



2.1.5 TCP/IP

The system authorizes up to 64 controllers on a TCP/IP network. This means that the 64 controllers are able to communicate together (Apb zone or counting for example)

When the system requires more than 64 controllers, a second network has to be created in the software. All controllers of the system communicate with the server (software), but controllers of a first network can't communicate directly to controllers of a second network.

2.1.6 Readers

Controllers are designed to work with 2 smart readers or Wiegand readers. Both ranges share the same aesthetics but offer different features.

The wiegand is a common protocol in the access control market. When a key is presented to the reader, the serial number of the key is sent to the controller. So the communication is one way only.

2 smart readers manage a bi-directional communication between controllers and readers. This offers many advantages:

- Own protocol, security
- Tamper management without extra wire
- Ability to load a new firmware from the controller
- Ability to increase the features of the reader

2-smart reader wiring



Note, the green led is ON while the relay is activated. The red led flashes once every 3 secs when the reader is working fine and is flashing 3 times/sec if the reader is not connected or not answering to the controller.



Wiegand reader wiring

Note, the green led of the controller is ON while the relay is activated. The red led flashes once when the controller receives some data from the Wiegand reader.

The green led of the reader is activated for the door delay when a valid credential is used.

The **red led** of the reader flashes quickly (3 times per sec) when the credential is not authorized.

The **buzzer** is activated one sec when the credential is authorized and generate three short beeps when the credential isn't authorized.

The **third led** is not managed yet.

The **tamper** input is designed to manage events when the reader is removed from the wall (tamper).



2.1.7 Lock







2.1.8 REX push button

When a fail-safe lock is used, a second security must be used to prevent an issue between the REX push button and the controller.

Basically, a break glass is connected in serial with the lock psu or the push button manages two dry contacts : 1 NO contact for the controller REX input + 1 NC contact in serial with the lock or maglock psu. (see wiring diagram above) When a fail secure lock is used, the REX push button is NO as shown below.



2.1.9 Door contact

The door contact management is provided in IPassan system to manage events as door left opened or forced door. This door contact could be a dry contact only or with eol resistors. In this case, the R1 and R2 resistors are settable in the software.



2.2 Door expansion card

A 2 smart reader door expansion card offers 2 extra doors to the base for a maximum of 6 doors per controller. And a Wiegand reader expansion card allows the connection of 4 extra doors for a maximum of 6 doors per controller. Please note that it is not possible to plug a Wiegand expansion card on a 2 smart reader one or a 2 smart expansion card on a Wiegand controller.

Any input or output expansion card can be associated with the controllers.

2.2.1 Psu

The power supply is supplied by the controller itself.

2.2.2 Readers, door contact, lock, etc

The wiring is the same for the extension card as for the controllers. See chapter 2.1.6 Reader, 2.1.7 lock, 2.1.8 REX push button, 2.1.9 door contact.

2.3 Inputs or outputs RS485 expander

The 10 output expander provides 10 dry contacts through 5A relays.

The 10 input expander offers 10 inputs with end of line resistor management.

2.3.1 Psu



2.3.2 RS485 bus

Each controller manages up to 10 expanders. Those expanders are connected through the auxiliary RS485 bus as shown below.

Installation rules:

- The RS485 bus is sensitive to disturbance and requires a specific twisted and shielded cable (FTP).
- A and B signals must be connected on the same pair in the cable.

- The controllers provide a jump (close to the rs485 terminal) which is an end of line resistor. Insert this jump, or add a 120 Ohms resistor between A and B for an expander, at each side of the bus.



2.3.3 12Vdc output

The expander provides a 12Vdc output that can be used to power extra devices. This output is protected through a current limiter (200mA).



2.3.4 Inputs

The input could be setup in the software as active /not active (2 levels) or with eol resistors (4 levels). When the box "EOL resistors" is ticked, the values of both resistors must be entered so the system is able to calculate the thresholds.



2.3.5 Outputs

The relays are fully independent



2.4 Inputs / outputs expansion card

2.4.1 Psu

The psu is provided by the controller or expander on which the expansion card is plugged.

2.4.2 Inputs

The 12 inputs work as described in the chapter 2.3.4

2.4.3 Outputs

The 12 outputs work as described in the chapter 2.3.5

2.4.4 Mode maintenance

A maintenance mode is designed to easily test the system.

In this position **ODD**, the behavior of the controller is standard. Only authorized keys can open the door or activate floors.

In the following position \bigcirc , any key opens any door (reader 1 = \rightarrow door 1, reader 2 = \rightarrow door 2, etc). Please note that in the maintenance mode the controller does not link a reader to outputs so the lift management can't be tested in this mode.



3 - LED INDICATION

Different leds on the controller or expander provide a status of the communication, psu, etc...

- Status of the output relay
- Status of the input relay
- Communication with the server

Overview







4 - FIRST START

Each controller and expander is supplied with a single serial number which includes a checksum to avoid any faulty entry.

Write out those serial number on site to setup the system in the software.

Note, by default, the tcp/ip configuration of the controller is setup to dhcp. This means that when the controller is powered, it asks for an ip address to the dhcp server. If there is no answer, the controller takes the following setting :

lp address	192.168.1.250
Mask	255.255.255.0
Gateway	empty field

The controller is also designed to work with static Ip address. See chapter 4.3. Two ways are planned to setup the site :

- Add controllers and expanders then enter the serial number in the software. This choice is useful when the site configuration is done before wiring the devices on site.

- Use the built-in tool to detect the controllers and expanders then select those belong to your site.

4.1 Server controllers communication over Internet

In the Ipassan system, the controller asks to the server if it has any new data to download. This means the server IP address has to be setup in the controllers.

This setting is automatically done by the communication server when a controller is added to the site. When controllers are managed through internet. The server is not able to communicate with them. FDI provides an extra tool Ipsearch which has to be launched on the same network than the controllers and which offers the possibility to change the IP setting and the server Ip address the controller has to join.

On this specific case, a nat (network address translation) has to be setup in the rooter on the server side not on the controller side(s).

This also means that the system doesn't require public static IP on the controller sides.

4.2 Software installation

See Ipassan manager install guide.

4.3 IP setting

If the controllers have to be installed on an existing network, ask the IT manager for the IP setting (dhcp or static). In case of static IP, one Ip address is required for each controller connected to the IP network. The extra controllers connected to the server through Rs485 and a first TCP/IP one doesn't require an Ip address. If the dhcp mode is selected, you just need to connect the controllers to the network.

If the controllers use static IP addresses, don't connect all new controllers in the same time because all those controllers will have the same 192.168.1.250 Ip address and this will generate IP conflicts.

In this case, follow these steps :

1) connect a first controller to the IP network

2) add the controller in the software as describe in the 4.4 chapter (manually adding) or 4.5 chapter (auto detection adding)

3) Enter a valid Ip address, mask, gateway, etc for this controller then click on Save

Name *	LG desktop Right controller
Serial number	24C11DE131EC0BBC3
Model	Wiegand / Ip controller
Option	Name
Орнон	
Activation of the leds	
Disable communication \mathcal{D}	
Status	Connected - fV0010 27/10/2016
옮Configuration IP	
Mode	DHCP IP fixe
IP address	172.18.0.249
Mask	255.255.255.0
Mask Gatewax	255.255.255.0 172.18.0.1
Mask Gateway	255.255.255.0
Mask Gatewax primary DNS	255.255.255.0 172.18.0.1 8.8.8.8

4) check in Tools / Controller detection that the controller uses the new IP address

5-0 C	onirolier delectior) Manual search	IP			Port	٩			
)Sel.	Controller name	Serial number		Mac address	Version	Address	Port	Option	RS485	
0	Right controller	24C11DE131ED67A83		00:26:DE:13:1E:D6	fV0010 27/10/2016	192.168.10.44	1880			٩
8	Left controller	24C11DE131ED4EF13		00:26:DE:13:1E:D4	fv0010 27/10/2016	192.168.10.89	1880			٩
2	LG desktop Left	24C11DE131EDA3CA7		00:26:DE:13:1E:DA	tV0010 27/10/2016	172.18.0.128	1880			٩
1	LG desktop Right	24C11DE131EC0BBC3		00:26:DE-13:1E:C0	tV0010 27/10/2016	172.18.0.249	880			Q
	Centrale 0001	24C01DE131B25D547		00:26:DE:13:18:25	fV0009 12/10/2016	172.18.0.113	1880			٩
	24C11DE131EBA149	24C11DE131EBA1499		00:26:DE-13:1E:BA	fV0010 21/10/2016	172.18.0.131	1880			٩

5) Connect a new controller to the network then do the same

4.4 Manually add a device

In the site creation wizard, step 3 "Network", entre the number of controller for each network.

1. 品Site 2. Secures 3. 品Netw	vorks 4. IIII Architecture 5. Controllers	6. Doors 7. Dilits 8. Zones	9. 🔁 Access profiles 10. 🗞 Tokens 11. 🖗 Read / Er	code
品Site networks				
Number of networks	1			
Name	Server connection D	Туре 🗇	Number of control	lers Actions
First network	IP	IP (Independent controller)	× 2	Q 2 / 📋

Step 5 "Controllers", enter the serial numbers of the controllers and expanders then rename the devices.

1. 🖧 Site 2. 🗞 Features	3.	6. Doors 7.	Lifts 8. 🚺 Zones 9. 🗗 Access profile	es 10. 🏷 Tokens 11. 🖟	Read / Encode		
Controllers of the	site					t	
옳First network (IP (Ind	dependent controller))					+ Add a control	ller
Name	Serial number	Model	Option		Doors Li	IO fts cards Actions	
Block A Left controller	Controller serial number	Wiegand / Ip controller	• None		• 2 •		
Block A Right controller	Controller serial number	Wiegand / Ip controller	• None		• 2 •		
	Name	Serial number	Model	Option		Action	
	Input / output expander		10 relais SA	* None		- / 🛍	

4.5 Auto detection

On step 3 "Network", click on the magnifying glass then wait for the software to detect the controllers on the networks. Note, the networks could be TCP/IP or USB. The controllers and expanders which are connected to the server through a first TCP/IP or usb controller are detected in a second step.

1. 品 Site 2. Sectores 3. 品 Netwo	rks 4. 🛲 Architecture 5. 🖻 Contro	llers 6. Doors 7. 🏨Lifts 8. 🛄Zones 9. 🔛	Access profiles 10. 🗞 Tokens 11. 🖲 Read / Encode	
음Site networks	*			
Name	Server connection D	Туре 🗇	Number of controllers	Actions
First network	IP	IP (Independent controller)	•	

In the following window, select the controllers which belong to the site then click on **Validate**.

Sel.	Controller name	Serial number	Mac address	Version	Address	Port	Option	R\$485	IO card
2	Centrale 05	24C01DE131B3BDAC7	00:26:DE:13:18:38	fV0010 27/10/2016	172.18.14.143	1880			٩
2	Centrale 01	24C01DE131B28724C	00:26:DE:13:18:28	fV0010 27/10/2016	172.18.14.54	1880			٩
2	Centrale 03	24C01DE131B1C4886	00:26:DE:13:18:1C	fV0010 27/10/2016	172,18.14.126	1880			٩
2	Centrale 02	24C01DE131B1AEEA6	00:26:DE:13:18:1A	fV0010 27/10/2016	172.18.14.39	1880			٩
2	Centrale 0001	24C01DE131B191651	00:26:DE:13:18:19	fV0010 27/10/2016	172.18.14.53	1880			٩
2	Centrale 0002	24C01DE131B1441FC	00:26:DE:13:18:14	fV0010 27/10/2016	172.18.14.250	1880			٩
a	Centrale 06	24C01DE131B1624CA	00:26:DE:13:18:16	fV0010 27/10/2016	172.18.14.74	1880			٩
2	Centrale 08	24C01DE131B233C39	00:26:DE:13:18:23	fV0010 27/10/2016	172.18.14.215	1880			٩
2	Centrale 07	24C01DE131B3F9CE3	00:26:DE:13:18:3F	fV0010 27/10/2016	172.18.14.73	1880			٩
2	Centrale 09	24C01DE131B2740D7	00:26:DE:13:18:27	fV0010 27/10/2016	172,18.14.200	1880			٩
2	Centrale 04	24C01DE131B211F2B	00:26:DE:13:18:21	fV0010 27/10/2016	172.18.14.111	1880			Q

In the next step, the computer checks for each controller if other devices are connected to the RS485 buses. The following window appears :

Centrale 08	24C01DE131B233C39	00:26:DE:13:18:23	fV0010 27/10/2016	172.18.14.215	1880	Q
	117162222619AEB	16222261	fV1001 25/09/2012			
Centrale 07	24C01DE131B3F9CE3	00:26:DE:13:18:3F	fV0010 27/10/2016	172.18.14.73	1880	Q
	117162222608862	16222260	fV1001 25/09/2012			
Centrale 09	24C01DE131B2740D7	00:26:DE:13:18:27	fV0010 27/10/2016	172.18.14.200	1880	Q
	11716222250FEF6	16222250	fV1001 25/09/2012			
Centrale 04	24C01DE131B211F2B	00:26:DE:13:18:21	fV0010 27/10/2016	172.18.14.111	1880	Q
	Aucun périphérique détecté					
						Save Vali

Click on Save to add all devices in the site then rename the controllers and expanders in the following step. (as described for the manual setting)

INFORMATION ON UNION HARMONISATION LEGISLATION

FDI MATELEC, as a manufacturer, declares under its sole responsibility that the product IPassan complies with the relevant Union harmonisation legislation :

RED 2014/53/EU - CEM 2014/30/EU SECURITY 2014/35/EU - ROHS 2011/65/EU

This declaration is fully available on request at sales@fdimatelec.com or on our web site www.fdimatelec.com under this product part number.

PRODUCT END OF LIFE MANAGEMENT

Do not throw this product away with household waste. Please use your local recycling collection points to make sure this product is properly recycled.