IntesisBox® BACnet IP Server

Fidelio IP

User Manual

Issue date: 19/07/2011
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Gateway for the integration of Fidelio Hotel management system in BACnet IP enabled monitoring systems.

Order code:

IBOX-BAC-FILEDIO

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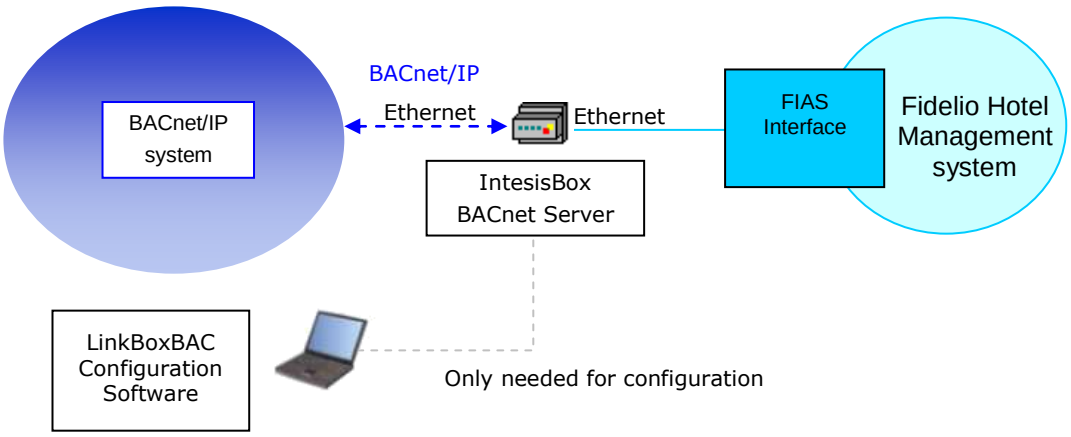
1. Description

1.1 Introduction

Integration of Micros Fidelio Hotel management system into a BACnet master device or system, using *IntesisBox BACnet Server – FIDELIO IP* gateway.

The aim of this integration is to make available the Check-in and Check-out information from individual rooms from a BACnet master device. For this, *IntesisBox BACnet Server - FIDELIO IP* gateway works, from the BACnet system point of view, acting as a BACnet slave device responding to data polls or COV requests coming from the BACnet master. From the Fidelio system point of view, it connects using TCP/IP to the FIAS interface to get the updates of the room status. Also it can re-synchronize with the current status of all the rooms.



Integration of Fidelio Hotel management system using *IntesisBox BACnet Server*

1.2 Functionality

General overview

The communication protocol of the Fidelio system is based on events, the states of the rooms are transmitted through the protocol in the form of events whenever they occur.

The role of IntesisBox consists in associating the status of the hotel rooms with BACnet objects.

The procedure of configuration of IntesisBox consists basically in the following:

- Introduction of the communication parameters for BACnet side and Fidelio side.
- Assign the rooms to integrate to BACnet objects.
- Once this configuration has been done with the configuration software tool LinkBoxBacnet, you have to download this configuration to IntesisBox via a serial connection and IntesisBox will reboot with the new configuration working.

The integration operation is as follow:

Once IntesisBox is configured and connected to both systems (Fidelio and BACnet), it maintains a "keep alive" message with the Fidelio system, being this message the request/response of panel status, also it listens continuously for new events coming from the hotel management system. With every event, the new state received is updated in the Intesisbox's memory and become available to be read by the BACnet master device through the corresponding BACnet objects or it is sent to BACnet if a COV request has been received.

As mentioned before, the protocol of the Fidelio system is based in spontaneous messages, that is, only changes of states are sent through the protocol whenever they occur. When IntesisBox starts up, a message is sent to the panel to force a response of current state of all elements to update IntesisBox BACnet registers with correct value.

1.3 Capacity of IntesisBox

Element	Max.	Notes
Number of Rooms	1500	Room number can be higher than the allowed rooms.
BACnet objects	1500	From 1 to 1500

Ref.: IBOX-BAC-FIDELIO

2. Interfaces

2.1 BACnet

The IntesisBox integrates all the Fidelio Rooms in a single BACnet device. The communication with the other BACnet devices is done via the Ethernet port of the gateway which implements the BACnet ASHRAE 135 – 2001 Annex J - BACnet protocol.

The supported BACnet Objects and Building Blocks can be found in the PICS document available on the web:

http://www.intesis.com/pdf/IntesisBox_BACnet_IP_Server_FIDELIO_PICS.pdf

Configuration of all BACnet/IP parameters of IntesisBox and their links to Fidelio using LinkBoxBacnet software tool is covered in section 5.1.

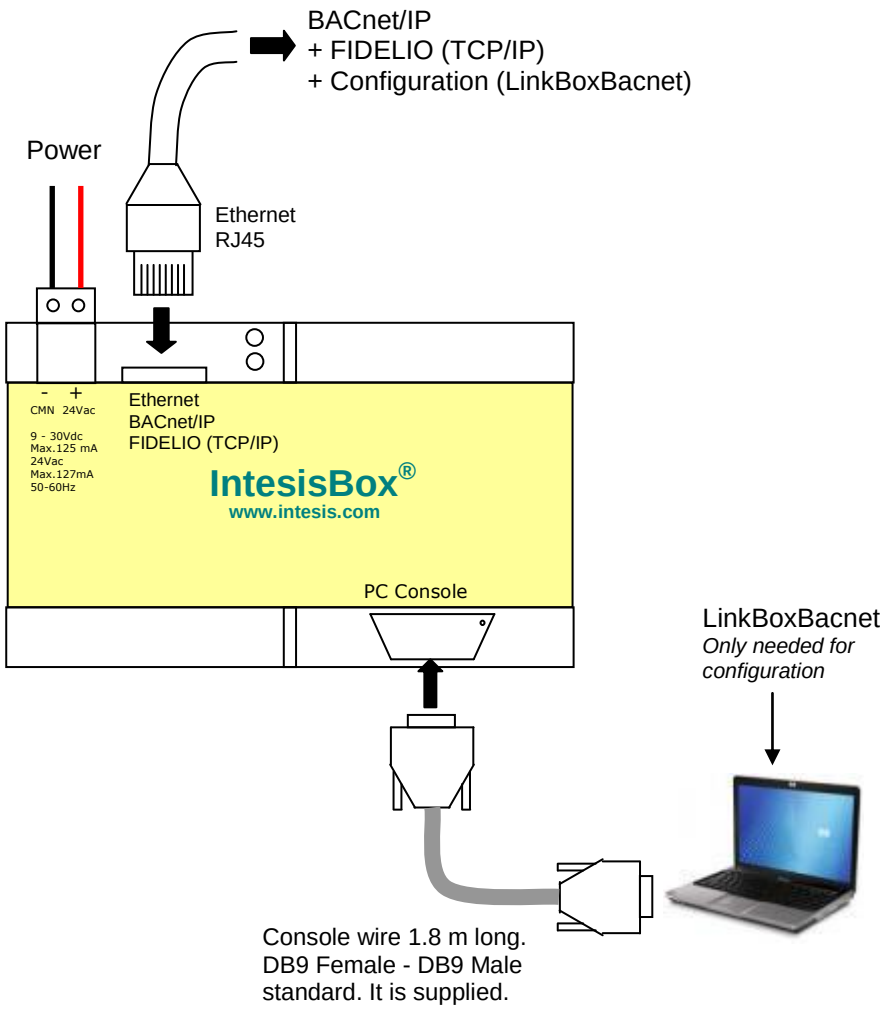
2.2 Fidelio

Micros Fidelio Hotel management system is integrated into BACnet. For that to happen it is necessary to have the FIDELIO software running and with the FIAS interface active. To do so contact the software supplier.

3. Quick Setup

1. Install LinkBoxBacnet. Details in section 5
2. Install IntesisBox in the desired installation site (DIN rail mounting inside a metallic industrial cabinet connected to ground is recommended).
3. Power up and connect the communication cables. Details in section 4.
4. Open LinkBoxBacnet, open a project or create a new one. Details in section 5.
5. Connect to the IntesisBox (details in section 5).
6. (optional) Configure the IntesisBox. Details in section 5.1.
7. Check if there is communication in both BACnet and Fidelio FIAS interface (section 5)
8. The IntesisBox is ready to be used in your system.

4. Connections



Ensure proper space for all connectors when mounted.

The items supplied by Intesis Software for this integration are:

- IntesisBox BACnet/IP Server – Fidelio IP hardware
- Console cable. Standard DB9F-DB9M cable 1.8 meter long.
- Installation sheet, containing a link to the LinkBoxBacnet software and this manual.

4.1 Power device

The first step to perform is to power up the device. To do so a power supply working with any of the voltage range allowed is needed (check section 6). Once connected the ON led (Figure above) will turn on.

WARNING! In order to avoid earth loops that can damage the gateway and/or any other equipment connected to it, we strongly recommend:

- The use of DC power supplies, floating or with the negative terminal connected to earth. **Never use a DC power supply with the positive terminal connected to earth**.
- The use of AC power supplies only if they are floating and not powering any other device.

4.2 Connect to BACnet

Connect the communication cable coming from the network hub or switch to the ETH port (Figure above) of IntesisBox. The cable to be used depends on where the IntesisBox is being connected:

- Connecting directly to a BACnet/IP device: crossover Ethernet UTP/FTP CAT5 cable
- Connecting to a hub or switch of the LAN of the building: a straight Ethernet UTP/FTP CAT5 cable

In case there is no response from the BACnet devices to the frames sent by IntesisBox, check that they are operative and reachable from the network connection used by IntesisBox. Check the IntesisBox Ethernet interface sending Pings to its IP address using a PC connected to the same Ethernet network.

4.3 Connect to Fidelio FIAS interface

It is necessary to have the FIDELIO software running and with the FIAS interface active. To do so contact the software supplier.

How to connect the cable is explained in section 4.2

4.4 Connect to PC (LinkBoxBacnet)

This action allows the user to have access to configuration and monitoring of the device (more information can be found in the LinkBoxBacnet User Manual [section 5]). Two methods to connect to the PC can be used:

- Ethernet: Using the ETH port of IntesisBox. How to check connectivity is explained in section 4.2.
- Serial cable: To connect the device to the PC the serial cable supplied should be plugged to the PC console port
  The cable is a RS-232 straight cable and its pinout is at explained in Table 4.1.

IntesisBox		RS-232 (Straight)	PC	
DB9 M			DB9 F	
TX	2	→	2	RX
RX	3	←	3	TX
GND	5	↔	5	GND

Table 4.1 Configuration serial cable pinout

5. LinkBoxBacnet. Configuration & monitoring of IntesisBox BACnet series

How to install and use the LinkBoxBacnet is explained in its Manual. It can be found in the installation folder (if the Software is already installed) or it can be downloaded from the link that can be found in the installation sheet supplied with the IntesisBox.

In this section only the specific project configuration for IntesisBox® BACnet IP Server – Fidelio IP is going to be explained.

The External Protocol in this IntesisBox is Fidelio IP

5.1 Project configuration

To configure the integration connection parameters, and the points list, click on *Config* in the *Button Bar (Figure 5.1).* The Fidelio IP *Configuration* window will be opened. For integrations with a large number of points an alternative CSV based configuration method is explained in the LinkBoxBacnet Manual.

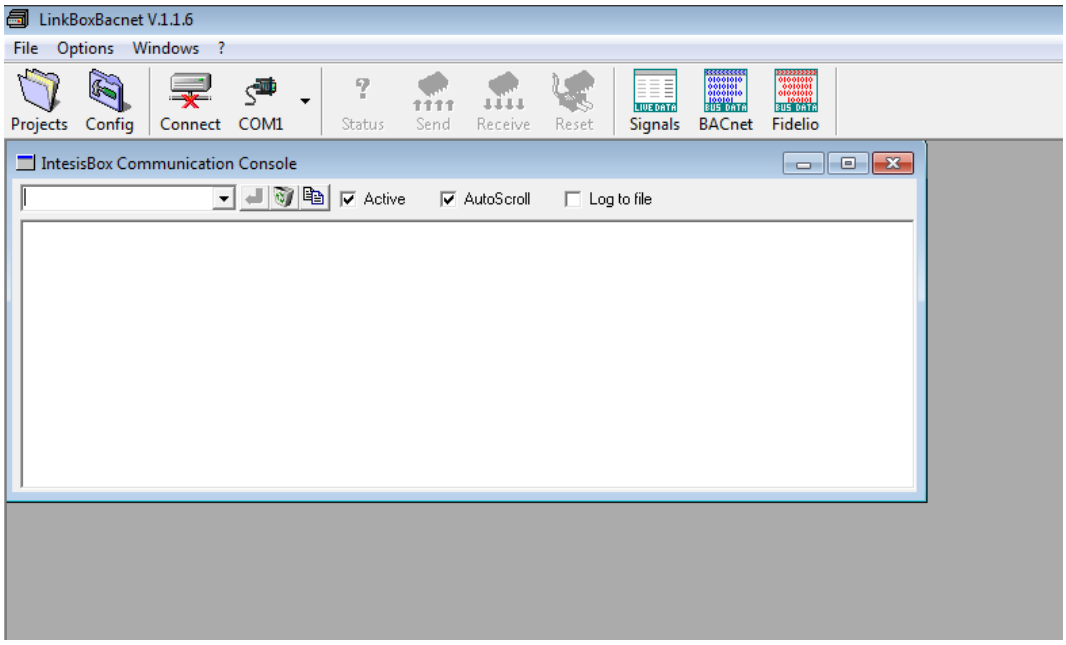


Figure 5.1 Menu and Button Bar in LinkBoxBacnet

5.1.1 Connections configuration

Two subsets of information are configured using this window, the BACnet/IP parameters of the IntesisBox, and the parameters of the Fidelio IP interface.

BACnet section configuration parameters:

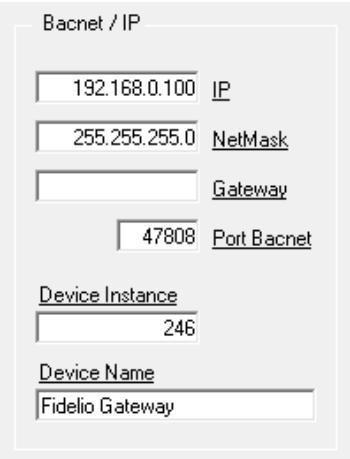


Figure 5.2 BACnet interface configuration.

- **IP IntesisBox:** IntesisBox IP address.
- **Net Mask:** IntesisBox Net mask.
- **Gateway:** Router address. Only needed when there is a router. Otherwise leave it blank.
- **BACnet Port:** Enter the TCP port to use, by default 47808.
- **Device instance:**
- **Device Name:**

Fidelio side configuration parameters:

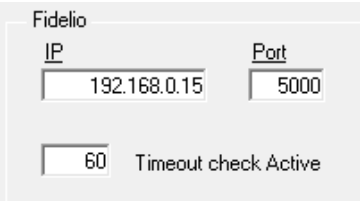
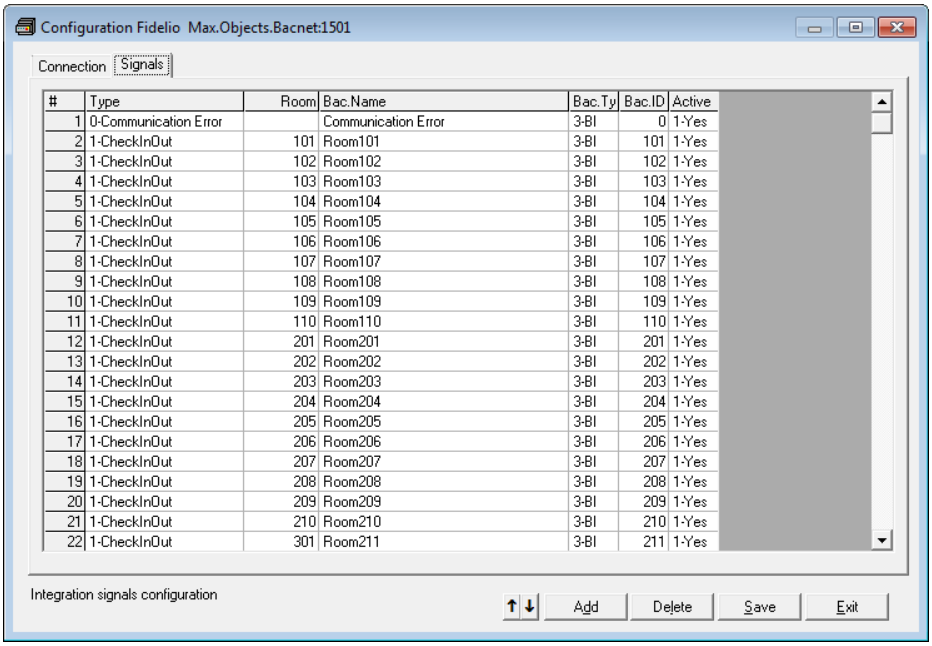


Figure 5.3 Fidelio interface Parameters.

- **IP:** IP of the FIAS interface in the Fidelio Software
- **Port:** Port of the FIAS interface in the Fidelio Software
- **Timeout Check Active:** Time that the IntesisBox will wait to check the connectivity with the Fidelio's system.

5.1.2 Signals Configuration

Select the *Signals* tab for a description of the IntesisBox's signals.



#	Type	Room	Bac.Name	Bac.Ty	Bac.ID	Active
1	0-Communication Error		Communication Error	3-BI	0	1-Yes
2	1-CheckInOut	101	Room101	3-BI	101	1-Yes
3	1-CheckInOut	102	Room102	3-BI	102	1-Yes
4	1-CheckInOut	103	Room103	3-BI	103	1-Yes
5	1-CheckInOut	104	Room104	3-BI	104	1-Yes
6	1-CheckInOut	105	Room105	3-BI	105	1-Yes
7	1-CheckInOut	106	Room106	3-BI	106	1-Yes
8	1-CheckInOut	107	Room107	3-BI	107	1-Yes
9	1-CheckInOut	108	Room108	3-BI	108	1-Yes
10	1-CheckInOut	109	Room109	3-BI	109	1-Yes
11	1-CheckInOut	110	Room110	3-BI	110	1-Yes
12	1-CheckInOut	201	Room201	3-BI	201	1-Yes
13	1-CheckInOut	202	Room202	3-BI	202	1-Yes
14	1-CheckInOut	203	Room203	3-BI	203	1-Yes
15	1-CheckInOut	204	Room204	3-BI	204	1-Yes
16	1-CheckInOut	205	Room205	3-BI	205	1-Yes
17	1-CheckInOut	206	Room206	3-BI	206	1-Yes
18	1-CheckInOut	207	Room207	3-BI	207	1-Yes
19	1-CheckInOut	208	Room208	3-BI	208	1-Yes
20	1-CheckInOut	209	Room209	3-BI	209	1-Yes
21	1-CheckInOut	210	Room210	3-BI	210	1-Yes
22	1-CheckInOut	301	Room211	3-BI	211	1-Yes

Figure 5.4 Signal configuration Tab

- **Type:** IP of the FIAS interface in the Fidelio Software
- **Room:** Room number. This number must match the one in the Fidelio system.
- **BAC Name:** Description of the room. If no value is intered is created automatically with the Room number
- **BAC Type:** Fixed value (3-BI)
- **BAC ID:** BACnet object instance number for the point. It can be manually entered by the user or can be automatically assigned by LinkBoxBacnet when saving the configuration
- **Active:** Indicates if the signal is active or not for the integration
- ↑↓**:** Buttons to move the selected row (or rows) up or down inside the grid. To move up or down inside the grid a single row or a group of consecutive rows, just select the row or rows using the left button of the mouse and push the desired up or down button. This can be done also using the key combinations *ALT+arrow up* or *ALT+arrow down* instead of up or down buttons
- **Add:** Button that adds a row under the selected one.
- **Delete:** Buttons to delete the selected row (or rows).
- **Save:** Save the configuration.
- **Exit:** Exits the configuration window.

5.1.3 Saving the configuration

When the configuration of the project is finished follow the next steps:

1. Click the button *Save.* Once accepted the pop-up message, that will save the project in the folder on hard disk (more information in LinkBoxBacnet Manual).

2. You will be prompted to generate the configuration file to be sent to the gateway,

    a. If *YES* is selected, the binary file (Fidelio.LBOX) containing the configuration for the gateway will be generated and saved also into the project folder.

    b. If *NO* is selected the binary file needs to be created before following the next steps. To do so open the Configuration window (section 5.1) and restart from step 1

3. A pop-up message will show up asking if you want to **preserve the Object instance numbers. BE CAREFUL** using this feature.

    a. If ***NO*** is selected all the object instance numbers for the points will be automatically reconstructed and thus loosing previous instance numbers, if defined. **ONLY** USE this option **for a brand new configuration** not previously running in the gateway and therefore not yet integrated into the BACnet system

    b. Select **Yes** for configurations **previously running** in the gateway and **already integrated into the BACnet system** that had been extended with a few more points that **must respect the previously defined object instance numbers**. All the points with object instance numbers defined will be respected. LinkBoxBacnet will automatically assign object instance numbers to ones without it.

4. As the final step, a pop-up message will ask if you want to see the BACnet points list report, If you select *Yes,* a text file called *Fidelio- BACNET OBJECT LIST.TXT* will be generated and saved into the project folder containing a report of all the point's BACnet information (for informative purposes at user level). The file will be also opened in the notepad, it looks like this:

ObjIdent	ObjType	OInst	ObjName
12582912	3-BI	0000	Communication Error
12583013	3-BI	0101	Room101
12583014	3-BI	0102	Room102
12583015	3-BI	0103	Room103
12583016	3-BI	0104	Room104
12583017	3-BI	0105	Room105
12583018	3-BI	0106	Room106
12583019	3-BI	0107	Room107
12583020	3-BI	0108	Room108
12583021	3-BI	0109	Room109
12583022	3-BI	0110	Room110
12583113	3-BI	0201	Room201
12583114	3-BI	0202	Room202
12583115	3-BI	0203	Room203
12583116	3-BI	0204	Room204
12583117	3-BI	0205	Room205

5. Once in the configuration window again, click on exit. The configuration is ready to be sent to the IntesisBox (check LinkBoxBacnet Manual)

The configuration cannot be received from the gateway to* LinkBoxBacnet*, it can only be sent.

6. Mechanical & electrical characteristics

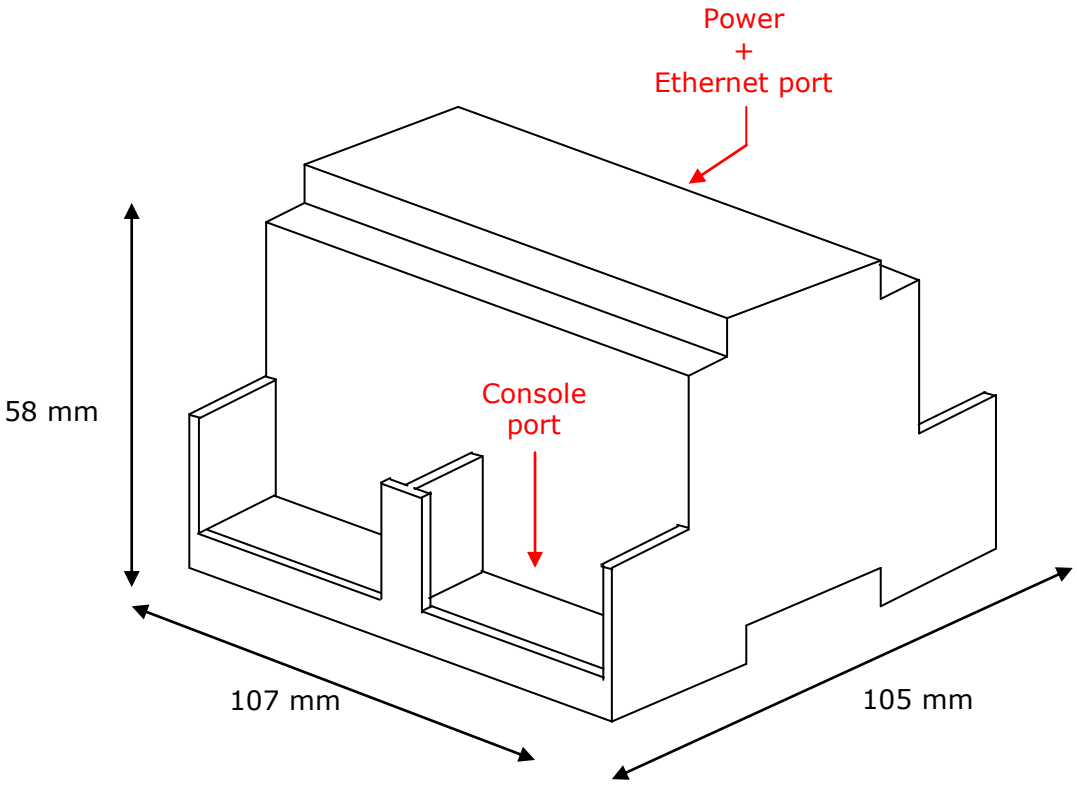
Enclosure	Plastic, type PC (UL 94 V-0). Dimensions: 107mm x 105mm x 58mm.
Colour	Light Grey. RAL 7035.
Power	9 to 30Vdc +/-10%, Max.: 125mA. 24Vac +/-10% 50-60Hz, Max.: 127mA Must use a NEC Class 2 or Limited Power Source (LPS) and SELV rated power supply. Plug-in terminal block for power connection (2 poles).
Terminal wiring (for power supply and low-voltage signals)	Per terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5mm^2… 2.5mm^2 2 cores: 0.5mm^2… 1.5mm^2 3 cores: not permitted
Mounting	Wall. DIN rail EN60715 TH35.
BACnet/IP and FIDELIO (TCP/IP) port	1 x Ethernet 10Base-T (RJ45).
LED indicators	1 x Power. 2 x Ethernet port link and activity (LNK, ACT).
Console port	EIA232. (DB9 female connector, DCE). SELV
Configuration	Via console port.[1]
Firmware	Allows upgrades via console port.
Operational temperature	0°C to +70°C
Operational humidity	5 to 95%, non condensing
Protection	IP20 (IEC60529).
RoHS conformity	Compliant with RoHS directive (2002/95/CE).
Norms and standards	CE conformity to EMC directive (2004/108/EC) and Low-voltage directive (2006/95/EC) EN 61000-6-2 EN 61000-6-3 EN 60950-1 EN 50491-3

[1] Standard cable DB9male-DB9female 1,8 meters long is supplied with the device for connection to a PC COM port for configuring and monitoring the device. The configuration software, compatible with Windows® operating systems, is also supplied.

7. Functional characteristics

Fidelio interface	
Type	TCP/IP (needs the FIAS interface)
Configuration parameters	• IP address • TCP port
Interactivity with Fidelio system	• Fidelio check in/out status can be read from the gateway.
BACnet interface	
Device type	Slave.
BACnet modes supported	IP
BACnet IP configuration parameters	• IP address. • Subnet mask. • Default gateway. • BACnet port.
Points	
BACnet objects	All the BACnet objects are 3-BI (Binary inputs)

8. Dimensions



Free space recommended to install the device, with spacing enough for external connections.