



**ELPRA SA**  
**ELECTRONIC PRAXIS**

---

INDUSTRIAL AREA OF THERMI  
PO BOX 355 THERMI 57001  
THESSALONIKI GREECE  
<http://www.elpra.com>

Tel +30 2 310 46 40 22  
Fax +30 2 310 46 46 07  
e-mail [info@elpra.com](mailto:info@elpra.com)

## ***DirectBUS HOTEL***

### 1. GENERAL DESCRIPTION

*DirectBUS HOTEL* is an administration and control system specifically designed for hotel management. It combines both building and room-oriented functions.

Its main purpose is to execute automatically and in real-time all the supervising, energy saving, safety and access control tasks at room, as well as at "hotel" level.

*DirectBUS HOTEL* provides on a central computer, usually placed by the reception, immediate view of all possible alarms generated in the rooms or at selected hotel areas.

*DirectBUS HOTEL* allows the individual control of the electrical power, of the air-conditioning and of selected appliances of any room, or of selected areas of the building.

*DirectBUS HOTEL* manages the access control to the rooms or other selected areas of the hotel.

*DirectBUS HOTEL* presents the status of occupancy of the room and also tracks the personnel in the hotel.

*DirectBUS HOTEL* includes an optional RF switch to implement the pay-video function, for per day or per hour billing.

*DirectBUS HOTEL* may also be expanded to upgrade the access control cards as an internal credit card at selling places in the hotel.

## 2. FUNCTIONAL DESCRIPTION

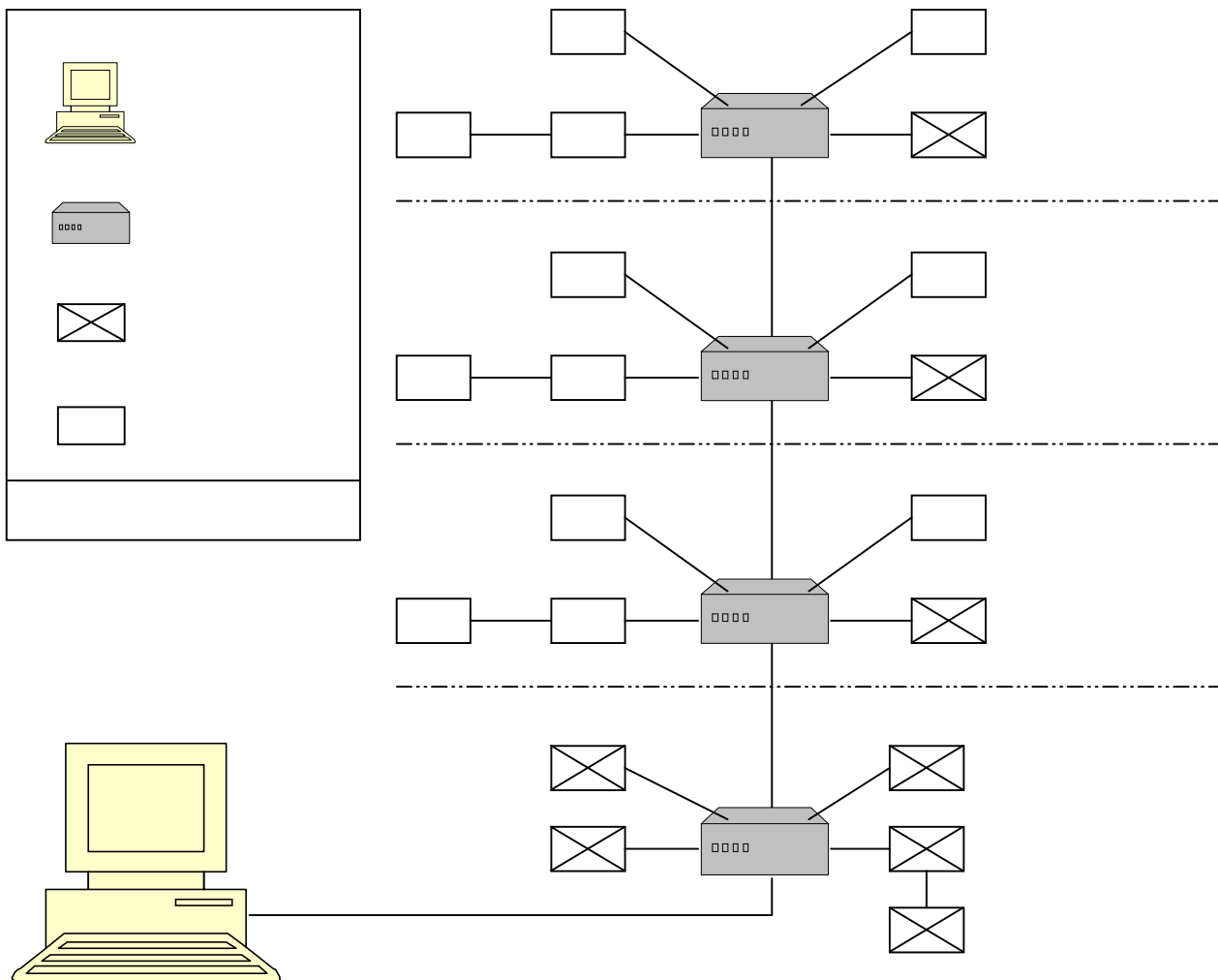
The system comprises of a central control computer, which is connected through passive DirectBUS distributors to the control Modules. The control modules are located in the rooms or other selected areas to control.

The control modules are locally connected to the appropriate sensors and peripherals, in order to collect information or to activate devices.

In a typical application, we may distinguish two types of control modules: The room and the common modules. The room modules are responsible for the room control, while the common modules are responsible for the control of the other selected areas e.g. stairs, breakfast room, lobby, machinery room, or other.

There is a two-way digital communication path between the control modules and the central computer. The computer sends control instructions to all control modules and receives status information and data from them. The physical connection is realized with UTP or FTP type cable. The passive DirectBUS distributors facilitate the installation and the transmission of the digital information.

This multi-point interconnection may be freely designed as a star or loop topology, to fit the building morphology.



### 3. ROOM SERVICES

Each room possesses a module, which is connected to the local sensors and to the controlled devices, such as the air-conditioning, the electric switch box, or the television.

Each room module stores locally up to eight smart card access codes, allowing up to eight different smart card holders the access. Usually half of them are reserved for the customers and the rest to the personnel.

A typical room has the following peripherals and features:

- An external smart card reader mounted on the wall, by the door. Insertion of a valid smart card activates a green led on the reader and also the door opener allowing entrance to the room. Additionally, the electrical and the air conditioning systems of the room are activated for two minutes to ease the access. An invalid card activates temporarily a red led on the reader.
- An internal smart card reader. Insertion of a valid smart card retains the electrical and the air conditioning systems active. The central computer is notified in real time about the inserted card and therefore the identity of the guest. Thus it monitors the status of the room (free or occupied), as well as it tracks the hotel personnel. Exit of the smart card from the reader deactivates the electrical and the air conditioning systems after two minutes.
- “Do Not Disturb” room state. In this state the automatic door opening procedure is deactivated. This state is entered either locally by inserting twice a valid smart card in the internal reader, or through the central computer.
- Smart air conditioning system management. The fan coil is activated only when a customer is present. In case a window opens the fan coils is deactivated, in order to reduce energy costs. A simple magnetic sensor is used to detect the window opening.
- Connection with a bathroom emergency switch. An alarm produces an immediate visual and audible notification to the central computer.
- Spare input to implement an intrusion sense function or a valuable object removal within the room, with instant notification of the central system.
- Spare input to monitor a mini-bar visit sensor.
- An optional vhf switch to activate the Pay TV service through the central computer, on a per day or per hour basis. One of the above spare inputs may be used to implement a room based Pay TV selection, with immediate notification of the central computer .
- The access codes stored in the internal non-volatile memory of the room module, may be refreshed at any time by the central computer.

- The electrical and/or the air conditioning system of the room, may be activated through the central computer, regardless of the status of the room (free or occupied).

#### 4. CENTRAL SERVICES

The common modules are installed in selected areas of the hotel to perform building management and also to provide fire detection. They are connected to the appropriate sensors, and also to the DirectBus. The critical areas are additionally connected to a separate fire alarm bus system to construct a redundant communication system. The following services are available:

- Fire detection and instant notification of the central computer.
- Access control of selected areas and intrusion detection with instant notification of the central computer.
- Light control in programmable time, or in real time from the central computer.
- With the use of specialized modules, connected to the *DirectBus*, light dimming can be controlled, with ambient illumination compensation, in order to spare energy. Furthermore, selected or programmable lighting scenarios may be designed.
- Air conditioning control in selected areas, combined with local temperature measurements together with heater in the boiler-room management may greatly reduce energy expenses.
- Card readers, connected to the DirectBus, installed by sale points, or service centers within the hotel, may allow the guests to use their access cards as internal credit or as cash cards, with real time notification of the central computer.

#### 5. FIRE SAFETY

Fire detection is done using standard ionization type smoke detectors. Fire alarm is provided using two redundant communication systems. The main system is the DirectBus communication means. The redundant system is realized using a separate utp line, interconnecting all the common modules connected to smoke detectors, called fire alarm bus.

In a typical installation, the room modules are not connected to the fire alarm bus. Only the common modules, connected to smoke detectors placed at critical areas usually have the double communication path. The fire alarm bus ends in a specialized module, usually by the reception. This module is also connected to the DirectBUS. The fire alarm bus has functional priority over the DirectBUS, thus implementing a robust design. This module has physical buttons to pause momentarily the general fire alarm, though the horns connected to the common module where the detector signaled an alarm, are automatically and independently activated.

The system may easily be adapted to any local fire regulations, using both software and hardware modifications.

The central computer provides constantly, a global view of any activated smoke detector, or of any possible malfunction of the fire detection system.

## 6. CENTRAL CONTROL COMPUTER

The central computer provides a global view of the hotel in real-time. At the same time it creates logging files, where all the events that take place in the hotel are recorded.

Furthermore, the hotel manager has full control over all the functional parameters of the rooms and of the selected hotel areas.

The access cards may be refreshed in real time for any individual room or selected area.

The fire-alarm system is continuously monitored.

On command, the log files may produce real time links to other hotel managements applications, in order to transfer information, such as billing information originating from the Pay TV or the internal credit card system.

The displayed information on the central computer screen is possible to be relayed in real time on another distant computer through LAN or Internet.

Below, a typical capture of the hotel control screen, is displayed.

	Floor 1							Floor 2							Floor 3							Floor 4							Floor 5								
	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5
Module Error																																					
Checksum Error																																					
FireAlarm																																					
Firealarm Error																																					
Firealarm Masked																																					
Power On																																					
Fan Coil On																																					
Do Not Disturb																																					
Window Open																																					
Bathroom Card																																					
Steal Contact																																					
Minibar Opened																																					
User Valid																																					
Last User																																					
Pay TV																																					
Room Reserved																																					

	RCP	LR	BFRM	BAR	SBFL	GYM	SAU	1st	2nd	3rd	4th	5th	FGRD
Module Error													
Checksum Error													
Alarm ON													
Firealarm													
Firealarm Error													
Firealarm Masked													
General Alarm													
Start Pressed													
Stop Pressed													
Alarm Paused													
Smart Card Inserted													
Smart Card Invalid													
Card Not Writeable													
Smart Card PIN Error													
Card PIN Retries	0												

Fire Alarm Control

Start Alarm

Stop Alarm

Pause Alarm

Room Fire Alarm

Floor Fire Alarm

Alarm ON