Energy Efficient Hotel solution

The hotel energy efficiency solution is based on world-widely used standard KNX/EIB. By implementing this intelligent engineering technology, hotel owner gets smaller energy bills and gains remote monitoring and control possibilities; guests get higher comfort and well-being level

Benefits:

- **Provide energy efficiency and fast return of investment (ROI)**
  By implementing KNX/EIB automation and control system, usually energy saving is up to 50% and ROI is 2-3 years
- **Liquidity of the hotel is raised up**
  Building with integrated automation and control system is much higher worth than similar building with traditional wiring
- **Flexibility in usage**
  Each control point can be reprogrammed to respond to other requirements e.g. change lighting groups
- **Security and remote monitoring with control**
  Room temperature, light status, window and heating status and other object state can be remotly changed and monitored.

ISO 9001 DNV CERTIFIED ORGANISATION

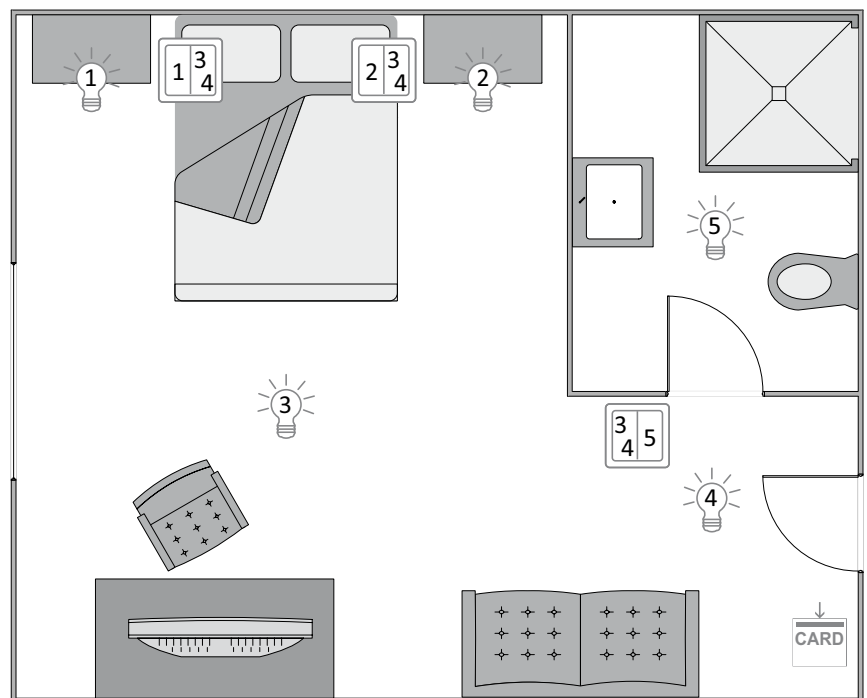KNX MEMBER

embedded systems

Functions
- 5 switched light groups
- 2 heating circuits
- 1 bath fan
- 6 push-button inputs
- switched TV socket outlet
- room card input
- room thermostat
- possibility to interconnect all rooms in one network and control from one central administration point, interconnection with Fidelio

Lighting

All lighting groups can be switched on only after activation of the card switch. When the key card is removed from the card switch, all light groups are switched off automatically. If hotel rooms are united together with central administrator panel, all light groups can be switched on and off separately from the card switch system.

Push-buttons

Any regular push-buttons can be connected to the system.

Bath fan

Bath fan can be switched on together with the ceiling lighting. It can be switched off with additional delay after the ceiling lights are switched off. Delay timing can be easily modified from the central administration point. If the room is not used for a longer period of time, the fan can be operated in "forced ventilation" mode, independent of the state of the card switch.

TV socket outlet

When the key card is removed from the card switch, the socket outlet of the TV is switched off, saving energy. However, the socket outlet can be switched on via the central administration point e.g. for displaying welcome information on the TV.
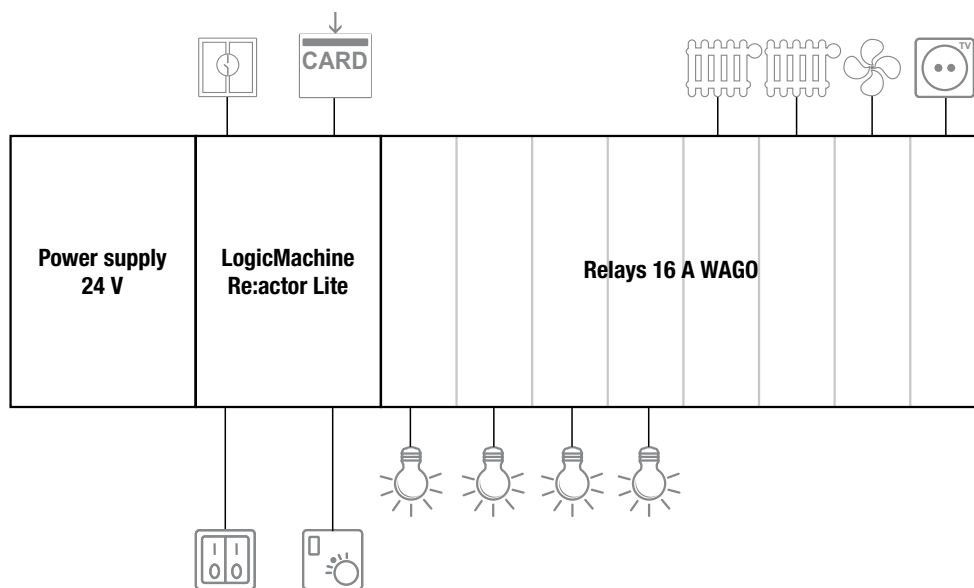
Heating

There are normally two operating states – key card activated (comfort) and key card removed (economy). The setpoint values can be modified via the central administration point. When a window is opened, the heating circuit in the room is operated automatically with a setpoint value of 7 °C, thus saving energy. Each degree lowered provides additional 6% in energy savings.

LogicMachine Re:actor Lite

- 18 x Binary inputs
- 16 x Digital outputs
- 1 x RS485
- 1 x 10/100 Ethernet (PoE supported)
- 1 x 1-Wire
- Unlimited scenario and logic engine
- Unlimited visualization platform for PC and for touch devices

	CARD						

Power supply 24 V	LogicMachine Re:actor Lite	Relays 16 A WAGO					

Bath fan	TV socket outlet	Heating	Light	Hotel card switch	Window contact	Push-buttons	Operating device

Functions

- 5 switched light groups
- 2 heating circuits, integration possibility with HVAC system (ModBus, KNX, BACnet etc.)
- 1 bath fan
- 1 shutter group
- 6 push-button inputs
- switched TV socket outlet or control of TV over CEC or IR
- room card input
- streaming audio solution
- iOS or Android device for control, monitoring, viewing a list of ordered services, check-out time, local weather and map, messaging possibilities with concierge, service request
- possibility to interconnect all rooms in one network and control from one central administration point, interconnection with Fidelio

Lighting

All lighting groups can be switched on only after activation of the card switch. When the key card is removed from the card switch, all light groups are switched off automatically. If hotel rooms are united together with central administrator panel, all light groups can be switched on and off separately from the card switch system. DALI or 0-10V systems can be used if dimmable lights are required.

Further, all lighting groups can be controlled individually from centralized mobile/tablet visualization and lighting scenes can be created with specific dimming level.

Push-buttons

Any regular push-buttons can be connected to the system.

Bath fan

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TV

When the key card is removed from the card switch, the TV is switched off, saving energy. However, the TV can be switched on via the central administration point e.g. for displaying welcome information on the TV. Further, TV channel and volume control can be integrated into centralized mobile/tablet visualization.

Audio

A streaming audio solution allows to stream audio files from a central data storage in the hotel, play internet radios. There is a possibility for a guest to play his own phone music over Airplay or UPnP protocols. Everything is controlled from the centralized visualization system on the tablet/smartphone or from dedicated wall push-buttons. Specific presets can be made like "Morning playlist", "Pop" etc.

Further, the audio solution allows to use the system as a notification center in case of emergency.

Heating, Ventilation, Air-Conditioning

Heating, Ventilation, A/C can be controlled either directly via switching on/off relays and doing logical scenarios on LogicMachine or interacting with HVAC devices over KNX, ModBus, BACnet protocols. There are normally two operating states – key card activated (comfort) and key card removed (economy). The setpoint values can be modified via the central administration point. When a window is opened, the heating circuit in the room is operated automatically with a setpoint value of 7 °C, thus saving energy. Each degree lowered provides additional 6% in energy savings.

If ventilation and A/C devices are present, they can be operated manually as from touch devices or a room panel.
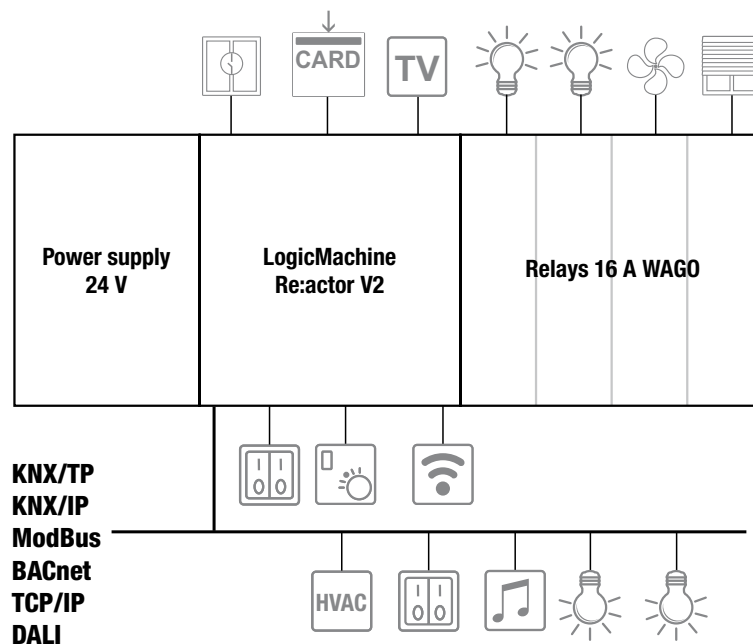
Shutters

Shutters can be controlled from a wall push-button or from a touch device visualization. The hotel administration can also create scenes like "Morning": shutters are opened automatically, lights are set to a specific level, bathroom floor heating is enabled, specific playlist is played; or "Night": shutters are closed, all lights go off, music is switched off.

Tablet/Mobile control

Besides manual control of all mentioned functionality, there is an option for centralized control from one common visualization system on touch devices. There are broader, more flexible and interactive configurations possible for your guests. Besides room control, it will allow your guests to order room services, view a list of previous orders, check-out time, local weather and map, messaging possibilities with concierge, service requests (Clean-up my room, Wake-up call, Do not disturb).

A connection to visualization is done over WiFi connection directly to the LogicMachine.

| Power supply 24 V | LogicMachine Re:actor V2 | Relays 16 A WAGO |

KNX/TP
KNX/IP
ModBus
BACnet
TCP/IP
DALI

| Bath fan | Light | Window contact | Push-buttons | Operating device | Shutters |
| TV | Heating, Ventilation, Air-Conditioning | Hotel card switch | Audio | Tablet/Mobile control | |
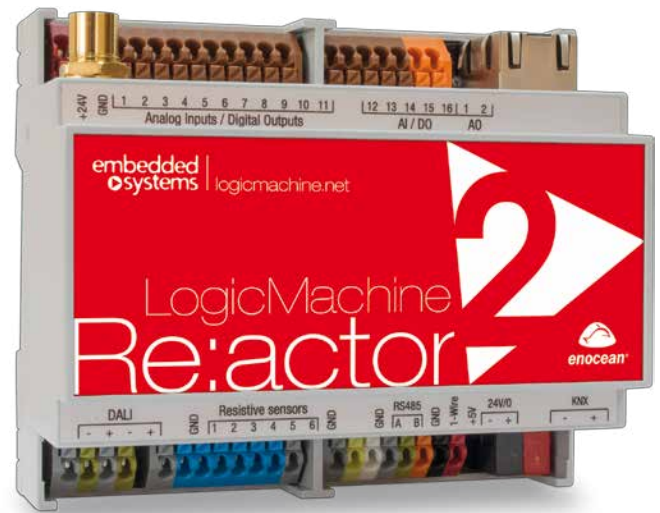
LogicMachine Re:actor V2

- 16 x Programmable Digital outputs or Analog inputs
- 6 x Resistive sensor inputs
- 2 x 0-10V outputs
- 1 x RS485
- 1 x USB2.0 for WiFi or GSM adapter
- 1 x 10/100 Ethernet
- 1 x 868MHz radio transceiver (Enocean compatible)
- 1 x KNX TP1 (TP-UART2 physical layer IC)
- 1 x DALI (requires external DALI power supply)
- 1 x 1-Wire
- Unlimited scenario and logic engine
- Unlimited visualization platform for PC and for touch devices
- Gateway and uniform way of control of different standards
  (KNX, Modbus, BACnet etc.)

Amati.linea streaming audio player

- 2 x 55W built-in amp (2 speakers)
- 1 x analog output for subwoofer
- 2 x USB on board for Music storage
- 1 x InfraRed input
- 4 x Binary inputs for standard push-button connection
- High quality sound (Up to 24 bit 192 kHz;
  Lossless audio format support)
- KNXnet/IP, Modbus TCP, BACnet IP supported
- Music sources supported: DLNA/UPnP server, AirPlay, FTP, NFS, HTTP servers, Internet radio (built-in >6000 radios), built-in 32GB media storage, playback from USB storage
- Easy operation using iPhone / iPod / iPad app, Android compatible apps
- WEB-based visualization and built-in player

Functions

- 5 switched light groups
- 2 heating circuits, integration possibility with HVAC system (ModBus, KNX, BACnet etc.)
- 1 bath fan
- switched TV socket outlet
- 6 pushbutton inputs
- gesture control of lighting, shutter, HVAC
- sensor platform with air quality, humidity, barometer, temperature, ambient light readings
- iOS or Android device for control, monitoring, viewing a list of ordered services, check-out time, local city and map, messaging possibilities with concierge, service request
- possibility to interconnect all rooms in one network and control from one central administration point, interconnection with Fidelio

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Gesture control

Gesture control can be used to control all above functionality separately or in a scene mode. By swiping right/left across the LogicMachine enclosure a guest enters specific modes – e.g. Lighting, Shutters or Thermostat. Each mode comes with RGB light notification behind the enclosure. By swiping In/Out the guest controls the chosen object – either switches lights on/off or increases/decreases a setpoint.

Sensor platform

There are air quality, humidity, barometer, temperature and ambient light sensors on-board. Readings can be shown on a common visualization system. HVAC can be adjusted based on sensors readings or hotel administration can be warned in case of possible problems.
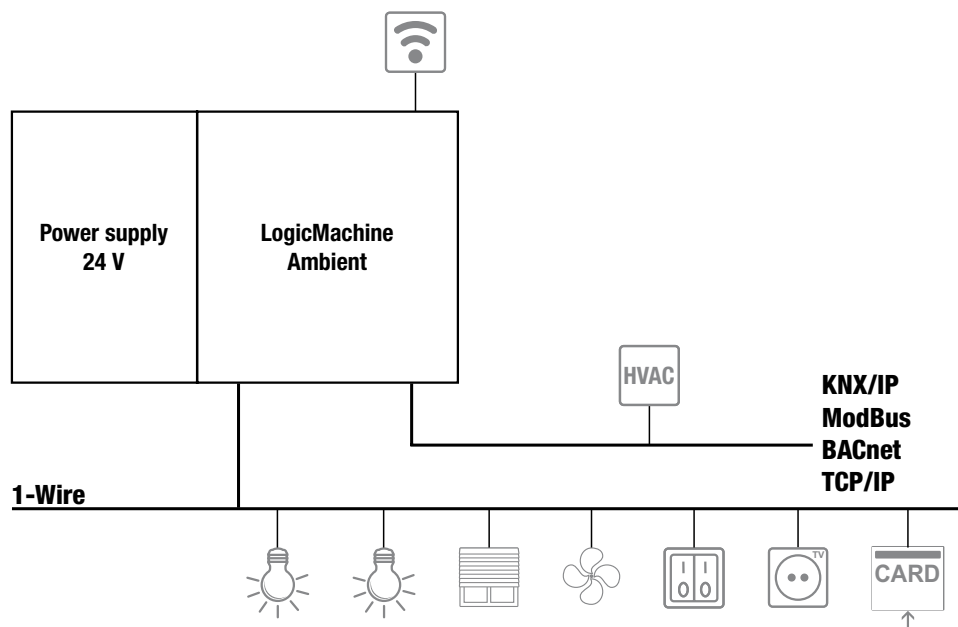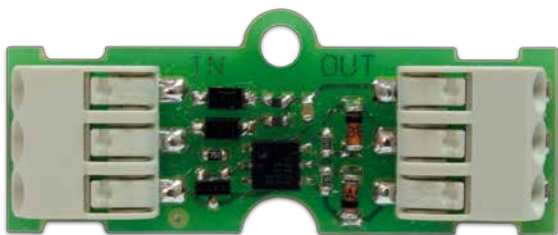
Bath fan	TV socket outlet	Heating, Ventilation, Air-Conditioning	Light	Shutters	Tablet/Mobile control	Push-buttons	Hotel card switch

LogicMachine Ambient

- 1 x USB2.0 for WiFi or GSM adapter
- 1 x 10/100 Ethernet (with PoE support)
- 1 x Bluetooth module
- Sensors: air quality, humidity, barometer, temperature, ambient light
- RGB LED light
- Beeper

1-Wire Puzzle

- 2 programmable binary inputs or digital outputs
- Up to 64 PUZZLE devices can be connected to one 1-wire port of LogicMachine

embedded systems

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#poweredbylogicmachine
/logicmachine