



EnOcean Products Overview



→ EnOcean technology



INTEROPERABLE WIRELESS STANDARD



SELF-POWERED



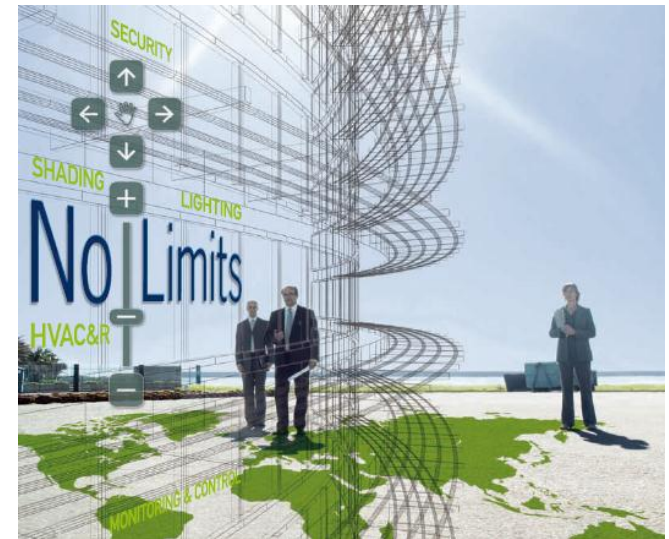
PROVEN TECHNOLOGY FOR SUSTAINABLE BUILDINGS

→ EnOcean technology



INTEROPERABLE WIRELESS STANDARD

Interoperable technology and products. HVAC, monitoring and lighting control systems are readily available and a wide-ranging portfolio of products exists, based on an interoperable standard technology together with interfaces to established automation solutions such as LON, KNX/EIB, BACnet and TCP/IP.



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SELF-POWERED



Only EnOcean wireless technology supports batteryless and maintenance-free sensors that can be freely positioned: switches next to doors, temperature sensors at the workplace, and motion detectors in the middle of rooms.

Compared to a wired solution, buildings can be planned, constructed and operated with greater flexibility and at lower cost.

Sensors harvest energy from their surroundings – tiny changes in movement, pressure, light, temperature or vibration are all that is needed.



→ EnOcean technology



PROVEN TECHNOLOGY FOR SUSTAINABLE BUILDINGS

Tried and tested. EnOcean-enabled wireless networks have been installed in 10,000s of buildings; making it the most pervasive and field-tested wireless building automation standard in the world.

From retrofitting older structures to designing new buildings, the EnOcean technology is empowering the imagination and energizing creativity; helping to make sustainable buildings a reality.

No Limits

Torre Espacio, Madrid, Spain

The world's tallest, wireless sensor-automated building is home to 4,200 EnOcean-interoperable controls.

- **NO WIRES**
 - ✓ Less cable (20 miles less than comparable wired strategy)
 - ✓ Less copper (1.3 tons, saving 5 tons of CO₂)
 - ✓ Less PVC (3.0 tons, saving 8 tons of CO₂)
- **NO BATTERIES**
 - ✓ Savings of 42,000 batteries (over 25 years)
 - ✓ Less toxic chemical waste
 - ✓ No maintenance
- **NO LIMITS**
 - ✓ Unlimited flexibility
 - ✓ Easy installation
 - ✓ Cost savings in installation, maintenance, renovation and energy use
 - ✓ Interoperable products from different EnOcean Alliance members can communicate with each other



→ EnOcean products



Key card



Window contact



Thermostat



Presence sensor



Wireless switches



Binary inputs & outputs
blind controllers



And many others...

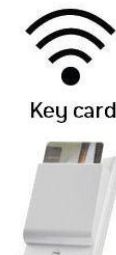
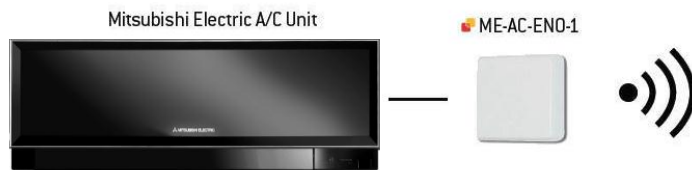
→ EnOcean AC gateway



Mitsubishi Electric Air conditioner gateway
- ME-AC-ENO-1: Domestic, Mr. Slim, City multi*



Daikin Air conditioner gateway
- DK-AC-ENO-1: Domestic
- DK-RC-ENO-1: SKY and VRV



* PEFY-P ... VMA-E units

→ EnOcean AC gateway



Air conditioner gateways



- ME-AC-ENO-1: Mitsubishi Electric Domestic, Mr. Slim and City multi* lines
- DK-AC-ENO-1: Daikin Domestic lines
- DK-RC-ENO-1: Daikin SKY and VRV lines

Ideal solution for Hotels and Offices

EnOcean technology combined with the Air conditioner gateways are the perfect solution for Energy Saving in Offices and Hotels.

- Easy installation
- No maintenance
- Advanced control functionalities





→ EnOcean AC gateway



Air conditioner gateways



- ME-AC-ENO-1: Mitsubishi Electric Domestic, Mr. Slim and City multi* lines
- DK-AC-ENO-1: Daikin Domestic lines
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Basic functionality

- On/Off
- Mode
- Set point temperature
- Ambient temperature
- Fan speed
- Vane position
- Error flag and code notification

Advanced functionality

- Key card control
- Presence sensor control
- Open window control
- Limitation of temperature Set point
- Double Set point Temp. (Heat & Cool)
- Automatic mode change
- Virtual temperature

- Radio coverage up to 100 meters

→ EnOcean AC gateway

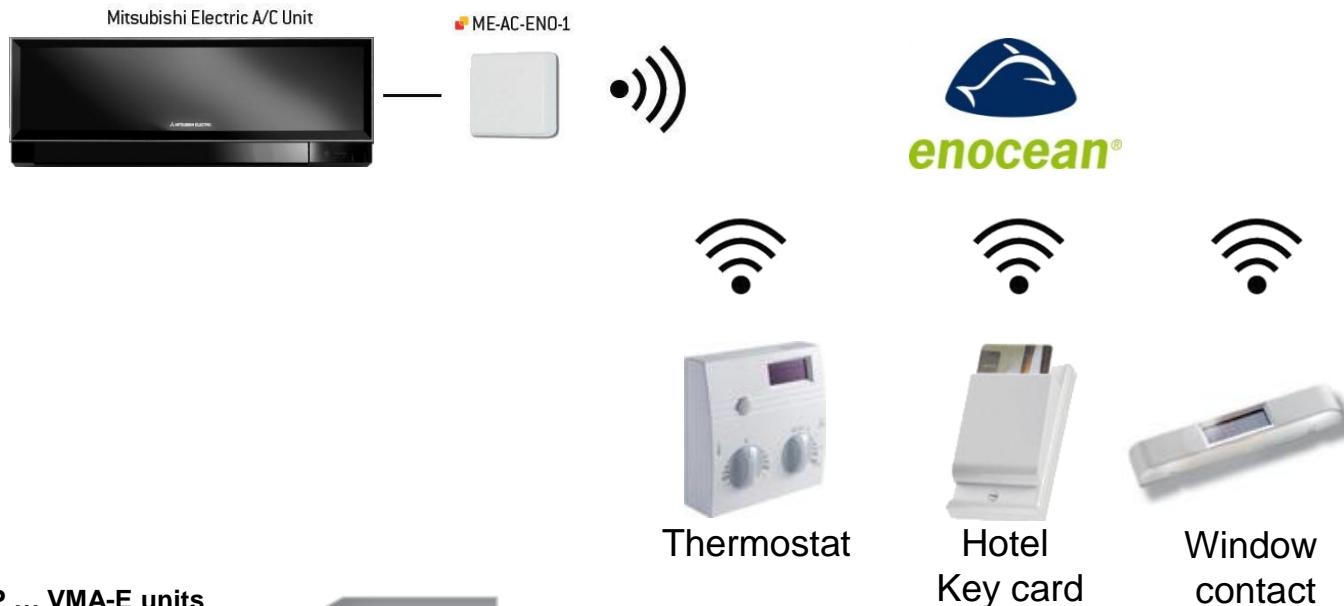


Air conditioner gateways



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Hotel application example



* PEFY-P ... VMA-E units

→ EnOcean AC gateway



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EnOcean wireless Thermostat

- On/Off button
- Fan speed selector
- Temperature sensor (sends its measured temperature to the indoor unit.)
- Set point selector



→ EnOcean AC gateway



Air conditioner gateways



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+



EnOcean wireless Hotel key card

When the key card is inserted:

- Enable indoor unit On/Off
- Enable indoor unit On/Off and restores the previous state

When the key card is not inserted:

- Stops and disable the indoor unit On/Off



→ EnOcean AC gateway



Air conditioner gateways



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+



EnOcean wireless window contact

Closed window:

- Enable indoor unit On/Off
- Enable indoor unit On/Off and restores the previous state

Opened window:

- Stops and disable the indoor unit On/Off

→ EnOcean AC gateway



Air conditioner gateways



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Double Set point temperature +/- configurable differential

The gateway changes automatically the working mode depending on the room temperature keeping two different set points one for each mode (heat and cool). With that an approximate energy saving of 6% for each 1°C in ventilation mode can be achieved.

5 °C in ventilation mode equal to an energy saving of 30%



* PEFY-P ... VMA-E units

→ EnOcean AC gateway



Air conditioner gateways



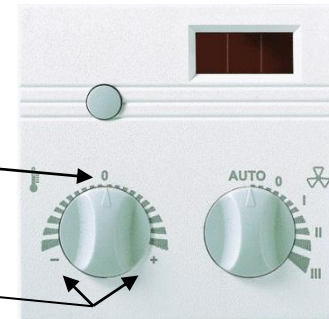
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Double Set point temperature +/- configurable differential

0 = Cool Set point when in Cool mode

0 = Heat Set point when in Heat mode

+/- = Temp. increased as configured (0,1,2,3,4,5...°C)



→ EnOcean AC gateway

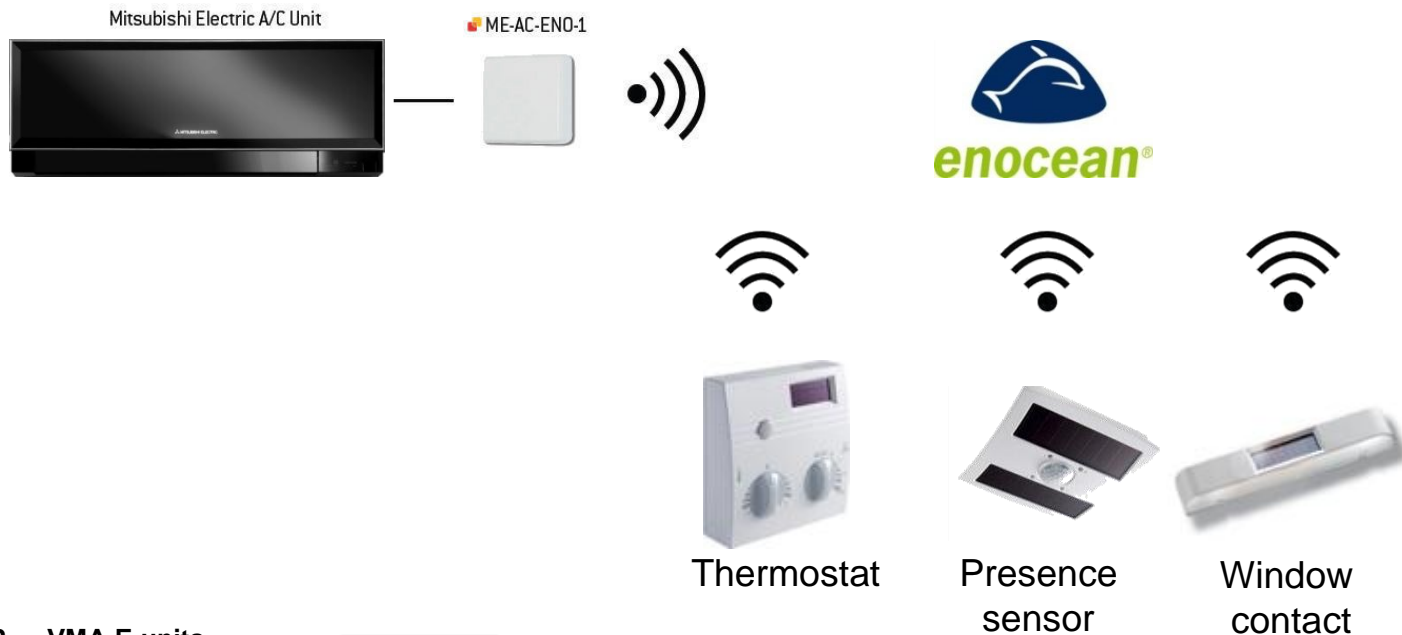


Air conditioner gateways



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Office application example



* PEFY-P ... VMA-E units



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EnOcean wireless presence sensor

No presence:

- Time 1 elapsed: Set point temp. +/-
- Time 2 elapsed: AC unit Off (can be disabled)

Presence:

- Back to previous state if in Time 1
- Nothing after time 2

→ EnOcean AC gateway



Air conditioner gateways



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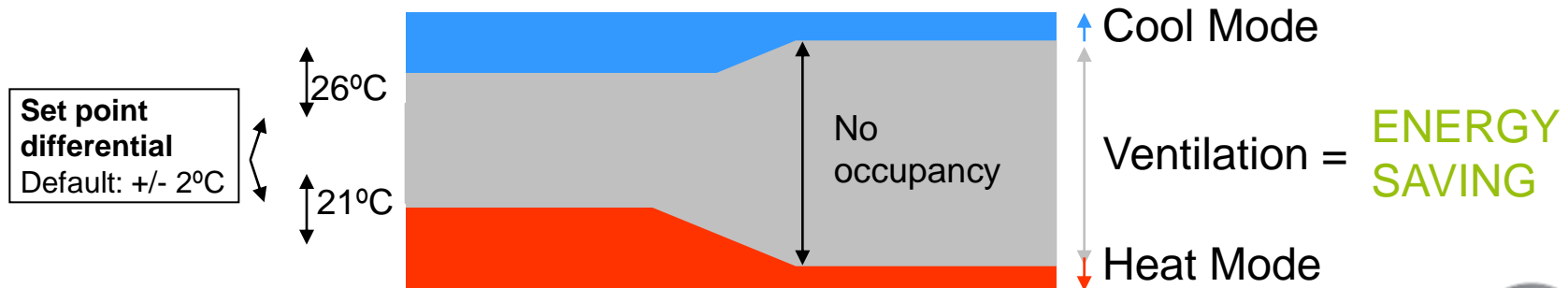
Double Set point temperature +/- configurable differential and No presence

The gateway behaves in the same way as when using the Double Set point temperature +/- configurable differential adding energy saving by the change of the set point due to the non presence in the office.

5 °C in ventilation mode equal to an energy saving of 30%

+

Savings by no presence behavior



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The EnOcean wireless technology together with your AC unit offer you the highest energy saving as well as the best installation flexibility.

AC units from with great energy efficiency
+
Presence control using EnOcean wireless key cards and presence sensors
+
Control of opened windows using EnOcean wireless window contact
+
Control of double Set point plus differential using the EnOcean AC interface

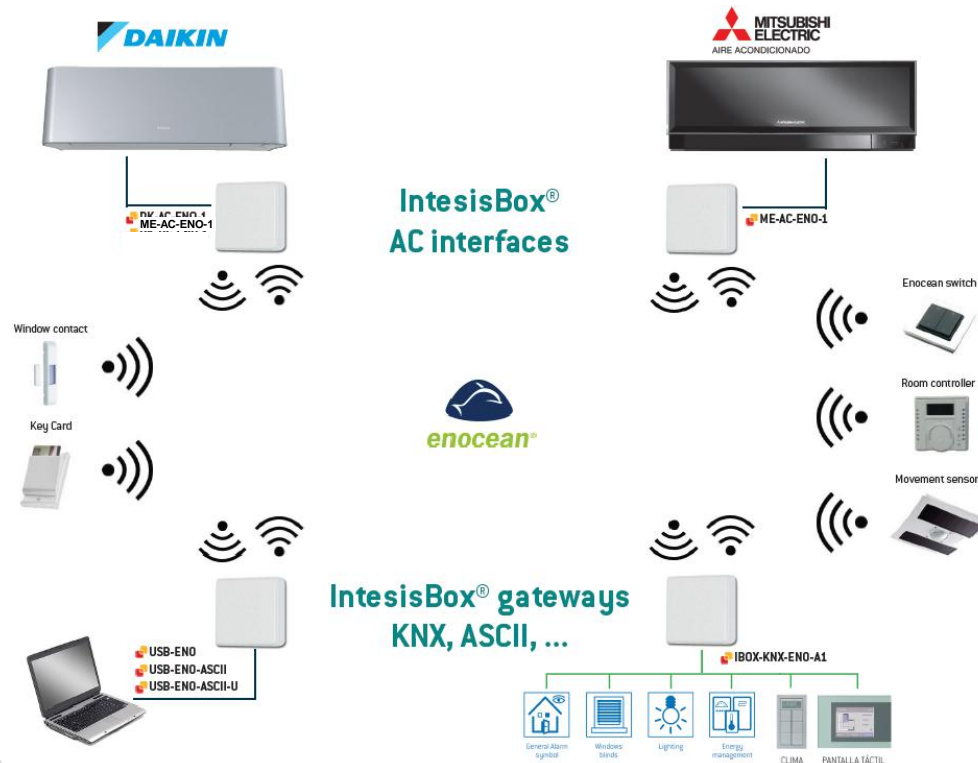
GREAT ENERGY SAVINGS

→ EnOcean gateways



Communication gateways:
USB (ASCII, ESP), KNX, ...

External control = **MORE ENERGY SAVINGS**

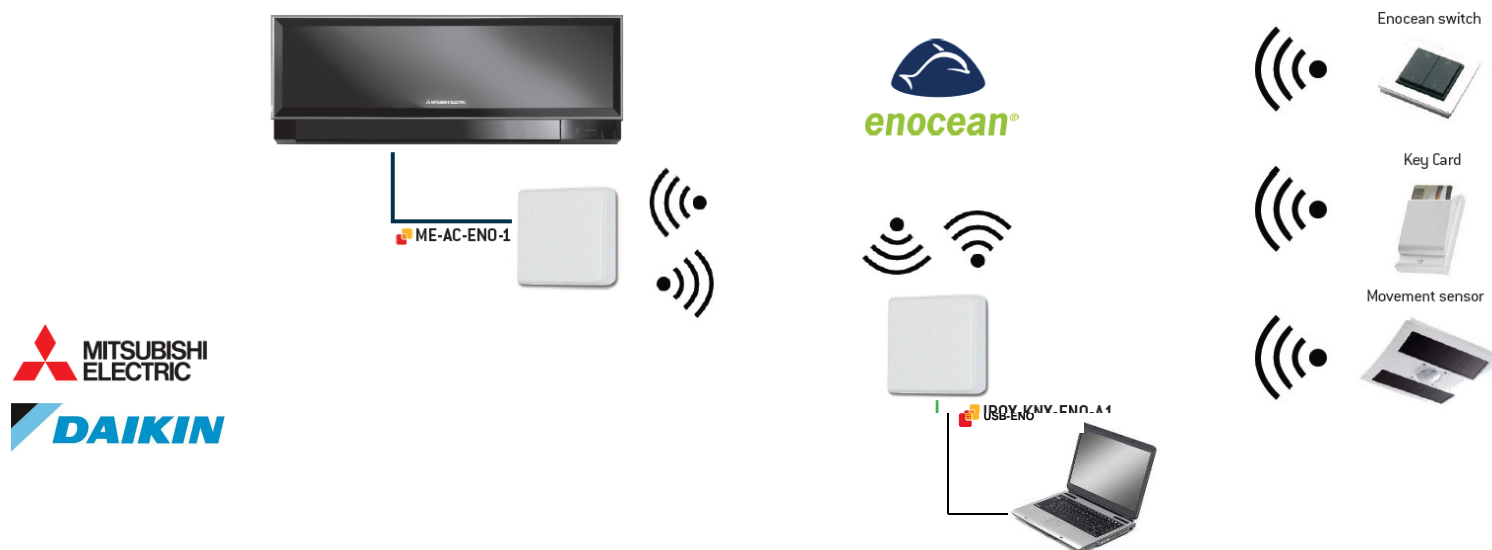


→ EnOcean USB gateways



USB-ENO:

- USB to all kind EnOcean devices
- Controllers: Laptop, PC ...
- Communication: EnOcean Serial protocol

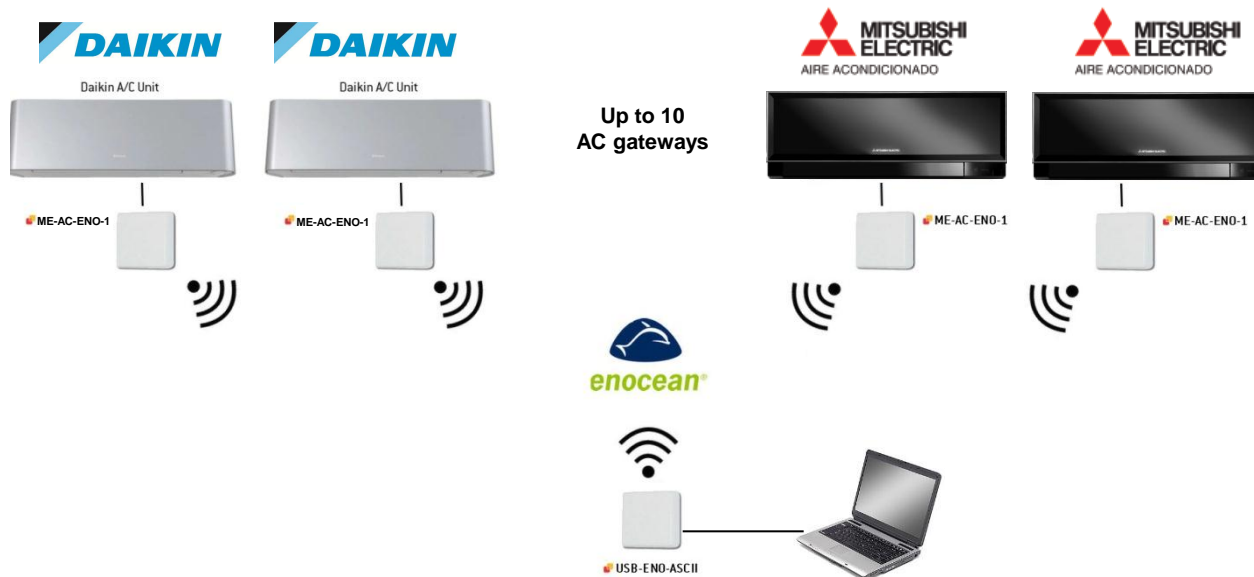


→ EnOcean USB gateways



USB-ENO-ASCII:

- USB to EnOcean gateway for Air Conditioners
- Controllers: Laptop, PC, control systems...
- Communication: simple text messages

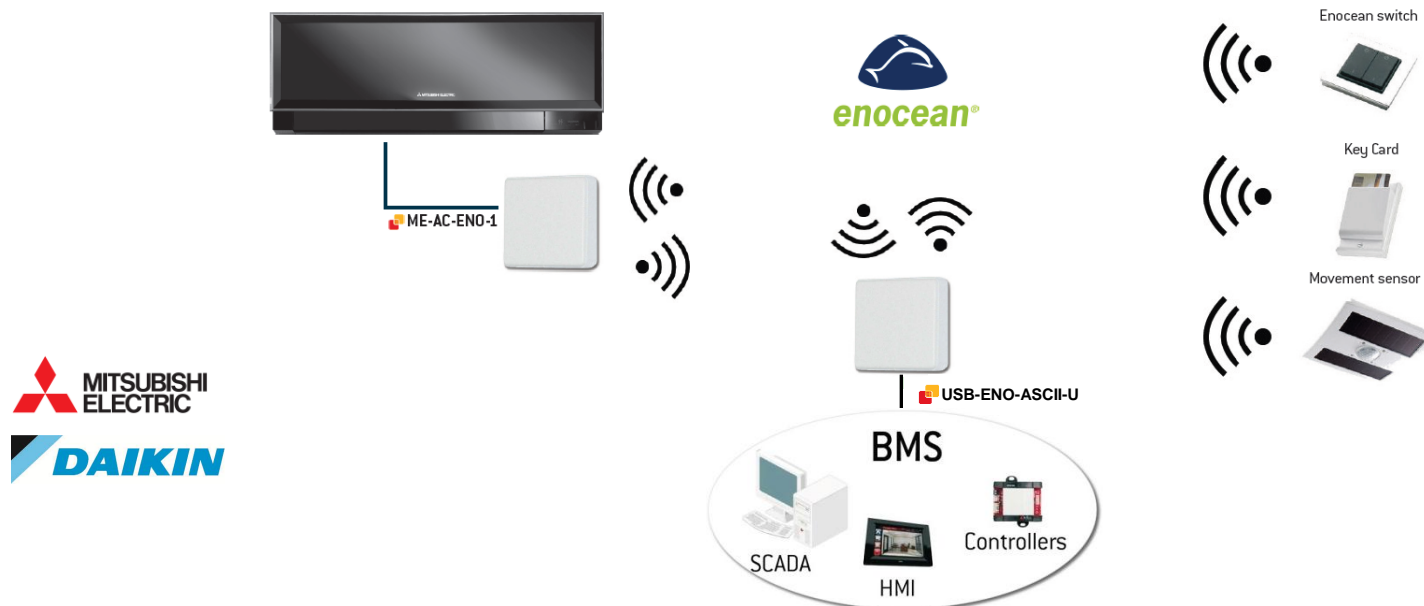


→ EnOcean USB gateways



USB-ENO-ASCII-U:

- USB to all kind EnOcean devices
- BMS: PC, HMI, Controllers ...
- Communication: simple text messages

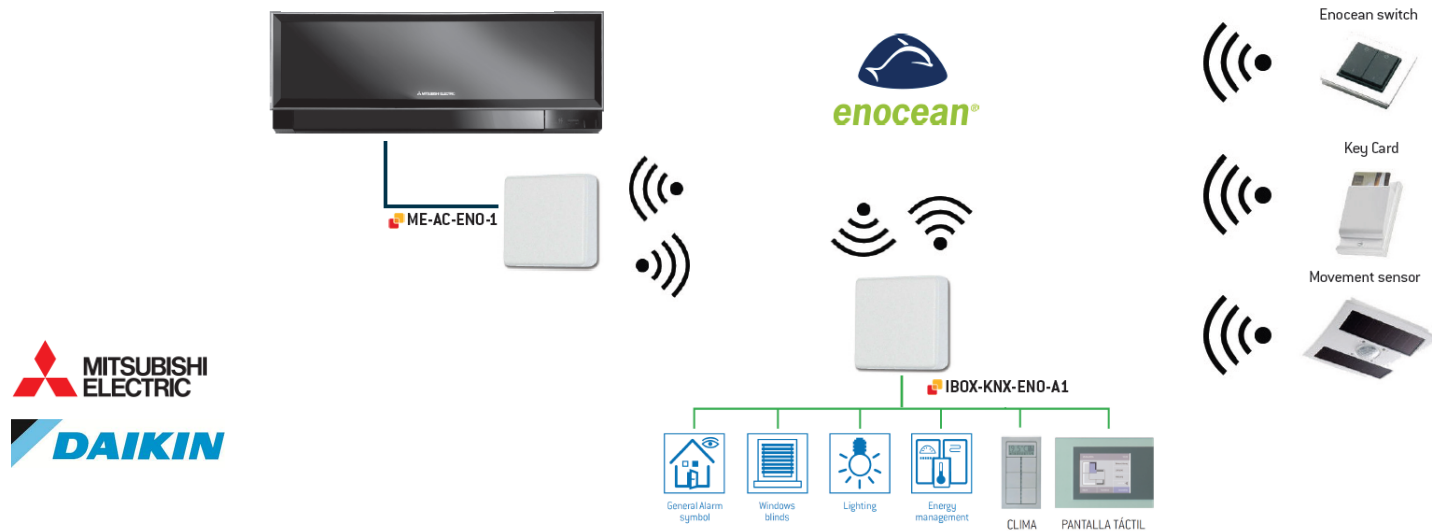


→ EnOcean KNX gateway



IBOX-KNX-ENO-A1:

- Integration of any EnOcean device in KNX



Intesis

software



C/ Milà i Fontanals, 1 bis 1º. 08700 Igualada - Barcelona
Tel. +34 93 804 71 34 • Fax. +34 93 804 71 35 • info@intesis.com

www.intesis.com