



# Smart buildings, connected facilities management

## IoT Sensor Types



# Why Enviro-Logik's IoT Remote Monitoring Systems?

EnviroLogik is a well established IoT business **specialising in Mechanical Electrical and HVAC systems** in Commercial properties. Our systems are used to save energy, reduce operating costs and improve indoor air quality.

Our systems operate using the globally trusted **LoraWan RF network**, meaning our comms gateway can connect our sensors using a private RF network generated by the LoraWan comms platform.

This means with our set-up that we can penetrate basement plant rooms, floor slabs and roof plant using just a minimum of gateways. Several thousand devices can potentially connect to just one powerful and secure gateway. With even our largest sites we have never needed more than 3- gateways.

Our systems operate using our own tried and tested sensors specific to M&E/HVAC systems. These are not standard off the shelf devices from an endless supply of untested or proven in the areas we operate.

**Most sensors are battery powered, and sensors automatically notify when the long-life batteries are depleting**

## IoT Objectives

- To save energy
- To reduce the number of physical services needed
- To provide information on refrigerant and water leaks
- To improve indoor environmental conditions

**Sensors available (Full individual details on pages below)**

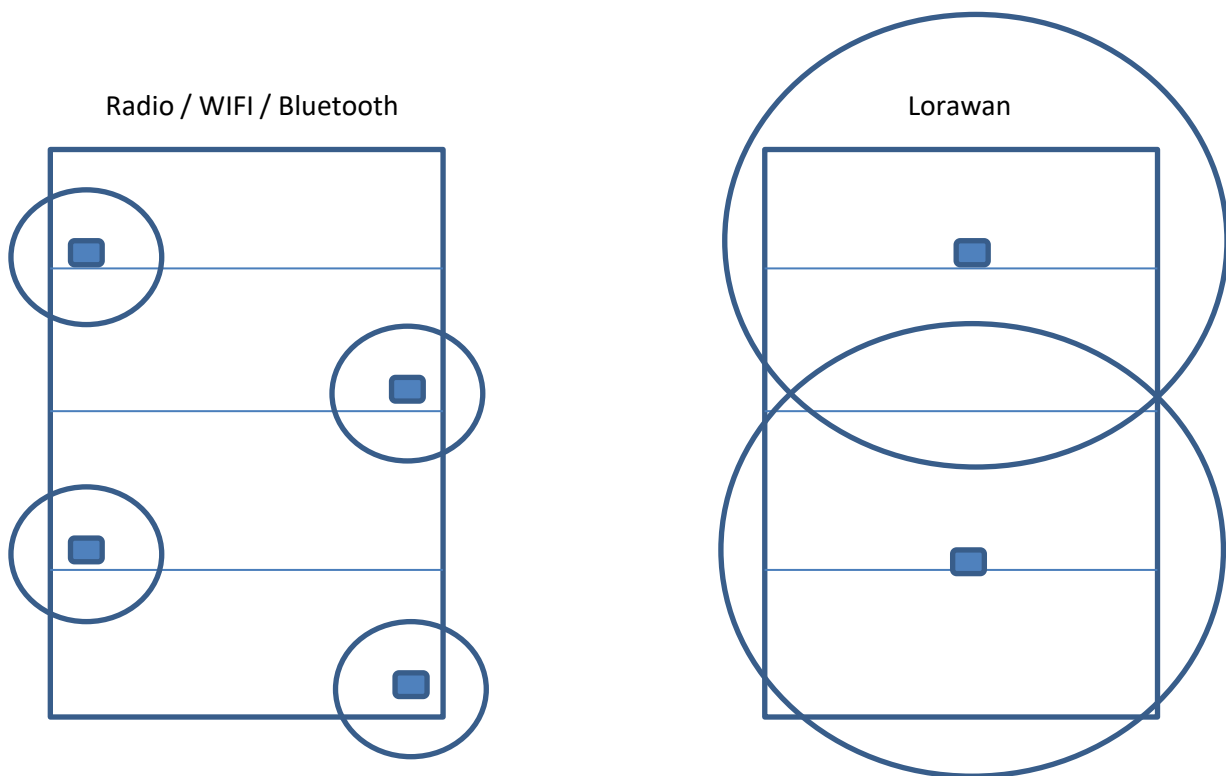
## Common Applications

- Hotels and leisure spaces
- Hospitals and health care facilities
- Commercial offices
- Retail/Hospitality
- Schools, Colleges and Universities

See graphic on the page below which shows the difference between the coverage of Wifi and Bluetooth devices vs LoraWan and the number of gateways needed

# Why LoraWan IoT Remote Monitoring Systems?

LoraWan is a trusted Global Standard used by many thousands of properties around the world that uses a low powered network to provide wide coverage of equipment installed in basements and on Roofs. You can find out more by [clicking here](#)



Lorawan provides a larger network meaning reduced gateways and also allows for future installation of additional sensors to the existing network without needing to add more gateways, unlike other systems.

EnviroLogik  
0203 916 5158  
[www.enviro-logik.co.uk](http://www.enviro-logik.co.uk)  
[info@enviro-logik.co.uk](mailto:info@enviro-logik.co.uk)

# Temperature and Humidity Monitoring



With the EnviroLogik Temperature and Humidity Sensor, you can measure ambient temperature and relative humidity levels within specified building environments to avoid conditions that could potentially cause discomfort, or dampness leading to poor indoor conditions.

#### **Battery powered**

#### **Used to monitor**

- Ambient temperature
- Humidity

#### **Common installation locations**

- **Food Storage:** Install inside food storage or display areas to ensure that temperatures remain constant for food safety.
- **Cold Rooms:** Install within a cold or frozen unit to ensure temperatures remain constant for stored items.
- **Server Room:** Install within a server room to ensure temperatures are kept cool enough for optimum server performance.
- **Offices:** Install in an office to monitor room temperatures and ensure the comfort of staff.
- **Switchroom / Distribution:** Install within a switchroom or distribution board to measure temperature and ensure safe levels are maintained.
- **Warehouse storage:** Install in warehouses to protect items that could spoil as a result of temperatures rising above or below specific parameters.

#### **Common Applications**

- Hotels and leisure spaces
- Hospitals and health care facilities
- Commercial offices
- Retail/Hospitality
- Schools

# Indoor Environmental Monitoring



Measure indoor air quality environments for PM2.5, PM10, noise levels, temperature, humidity, atmospheric pressure, light, CO, CO<sub>2</sub> and VOCs and track whether conditions move outside set parameters, thus ensuring occupants stay safe in their optimum conditions.

**Mains power | Powered over ethernet optional**

#### Used to monitor

- Sound pressure
- Temperature
- Humidity
- Light and illumination
- CO and CO<sub>2</sub>
- VOCs (volatile organic compounds)
- PM2.5 & 2.10

#### Common installation locations

- **Commercial offices:** Install on ceilings within offices rooms to detect changes in air quality, temperature and humidity levels that could potentially cause health issues.
- **Hospital wards:** Install to measure air toxicity and maintain air quality.
- **Care Homes:** Install within shared/common occupied rooms to maintain and ensure air quality does not limit the occupants health.

#### Common installation locations

- Hotels and leisure spaces
- Hospitals and health care
- Commercial offices
- Care Homes
- Schools

# HVAC Equipment Temperature Monitoring



Measure temperature variations in heating, cooling and hot water equipment to reduce the risk of downtime and monitor performance. This sensor can measure temperature at up to three individual locations. By attaching temperature probes, temperatures can be measured from  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ .

#### **Battery powered**

#### **Used to monitor**

- Temperatures up to three external points, can be combined with multiple units

#### **Common installation points**

- **Rotating Machinery:** Install temperature probes to measure rotating machine temperatures (such as pumps) and ensure equipment is running in optimal conditions. Reduce equipment downtime to protect your equipment from critical failure.
- **Chillers:** Install temperature probes in multiple locations of a chiller to ensure a consistent temperature is maintained, allowing contents to be kept in the best condition and preventing the loss of perishable items.
- **Office spaces:** Install within office environments to ensure Fan Coils are maintaining consistent temperatures across large areas.
- **Pipes:** Install within pipework to monitor liquid temperature.
- **Heating, Hot Water flow and return systems:** Install in a heating or hot water flow and return system to ensure consistent temperatures are maintained.
- **Water storage:** Install within a water storage tank to maintain temperatures.

#### **Common installation locations**

- Hotels and leisure spaces
- Hospitals and higher care facilities
- Commercial offices
- Social housing
- Schools

# Water Leak Detection Monitoring



Small Unit to measure the presence of water leaks and excessive moisture. Once a leak is detected, the device immediately alerts the system about the risk of flooding. The sensor is small and water resistant so it can be installed in any location where leaks could occur, such as toilets, bathrooms, kitchens or office based Fan Coils.

#### **Battery powered**

#### **Used to monitor**

- Water presence
- High Moisture levels

#### **Common installation points**

- **Toilet washroom blocks:** Install under toilet waste drains to monitor potential leaks.
- **Key plantroom assets:** Place in plant rooms under pipes, pumps pressurisation units carrying water to monitor leaks.
- **Unoccupied locations:** Prevent leaks within spaces that have limited or low access by monitoring for potential water leaks in real time.
- **Vacant sites:** Install within a vacant site to prevent flooding when it can't be occupied.
- **Hot water system / boilers:** Install under boilers
- **Chillers :** Install around chillers to be alerted of any water leaks.

#### **Common installation locations**

- Industrial warehouses and manufacturing spaces
- Hospitals
- Commercial kitchens and hospitality establishments
- Residential houses and apartments blocks
- Hotels and accommodation
- Schools
- Retail stores
- Commercial office buildings

# Radiator Control & Monitoring



A Special Thermostatic Radiator Controller, that measures the temperature of a room and switches the radiator off if the room is unoccupied. Once occupancy is required, the device immediately switches the heating back on via user App or management. The controller can be installed in any radiator location in either a vertical or horizontal mounting. Saves at least 30% in Energy with Fast Payback

#### System powered

#### Used to control

- Radiator Operation when room is unoccupied
- Automatically activate the valve pin to reduce scaling

#### Common installation points

- **Student Accomodation:** Install on radiators to stop heating empty rooms.
- **Corridors & Unoccupied offices :** Shut down radiators in areas when empty r unused
- **Vacant sites:** Keep minimum levels of heat for frost protection when it can't be occupied.

#### Common installation locations

- Industrial units
- Hospitals and care homes
- Hospitality establishments
- Residential houses and apartments blocks
- Hotels and accommodation
- Schools
- Student Accommodation
- Commercial offices



# Air Filter and Air Pressure Monitoring



Automatically measure air filter conditions within Air Handling units and Fan Coil systems. Automatically shows when air conditioning filter replacements or cleans are needed without needing visual inspections or automatic replacement. Saves at least 1-2 AHU filter replacements annually, and 2 Fan Annual Coil Filter cleans.

#### **Battery powered**

#### **Used to monitor**

- Air Filter Condition
- Air pressure

#### **Common installation points**

- **HVAC system filters:** Install within Air Handling units to identify differences in pressure. Filters can then be replaced or cleaned when actually required rather than on a pre-set schedule
- **HVAC system fans:** Install near a fan within an air conditioning system to identify faulty airflow and ensure fans maintain optimal performance.
- **Heat recovery systems:** Install on a heat recovery system to measure and maintain consistent ventilation and airflow.

#### **Common installation locations**

- Commercial offices
- Hotels and leisure spaces
- Hospitals
- Schools

# Refrigerant Pressure Monitoring



Constantly monitor the refrigerant pressure within each chiller circuit, VRF and packaged units. The refrigerant monitoring sensor can be easily connected to existing refrigerant system charging valves via a special pressure transducer.

It allows for constant measurement of system pressures to ensure the system is not leaking refrigerant and that compressors can be protected from failure. This prevents potential refrigerant leaks, reducing the associated compliance costs and optimising operational performance costs.

#### **Battery powered**

#### **Used to monitor**

- Refrigerant pressures in each refrigerant circuit pressure

#### **Common installation points**

- **Chillers / cold rooms:** Install within a chiller to measure and maintain air pressure, and provide awareness of potentially malfunctioning equipment.
- **Commercial refrigerators:** Install within a commercial refrigerator to measure and maintain refrigerant pressure, and provide awareness of potentially malfunctioning equipment.

#### **Common Applications**

- Commercial Offices
- Data Centres
- Manufacturing Plants
- Hospitals
- Hotels and leisure centres



# Energy Monitoring

Measure the energy being consumed on high consumers such as Air Conditioning Chiller circuits, VRF Condensers, Pumps, AHU's. This device can be connected with up to six current clamps, allowing for single phase or three phase assets to be simultaneously measured.

With this device, you can quickly and easily identify equipment operational status and diagnose excessive consumption. This can aid in identifying potential problem assets that are consuming unusually large amounts of energy and may be in need of maintenance or replacement.

**Requires mains power to power the node**

#### Used to monitor

- Chillers
- VRF Units
- Pumps
- AHU's

#### Common Applications

- Commercial Offices
- Manufacturing
- Data Centres

# Utility Meter Monitoring



Measure the Energy consumption of Main Incoming Utility supplies. Identify actual consumption from Gas, Water and Electricity usage by remotely reading compatible meters.

#### This device is typically used as below:

- **Pulse counting:** For utility consumption such as Gas, water and electricity. Pulses are converted into consumption data on simPRO IoT Dashboards based on predefined rules.
- **Analogue Readings:** Older style analogue meters can be remotely read with our Reed switch retrofit which converts analogue into pulse data.
- **Bill Validation:** Used to ensure that occupants are receiving accurate Bills
- **Sub Meter and Heat Meters:** We can supply and install sub-meters to allow for Tenant Billing based on tenants actual consumption

#### Requires mains power to power the node

#### Used to monitor

- Mains Utilities consumption
- Tenants energy consumption

#### Common installation location

- Utility Meters
- Distribution Boards
- Tenants demise

# Occupancy Monitoring



Monitor the number of Occupants in an entire building or in certain areas including on office floors, meeting rooms and Restrooms. Our small unobtrusive special radar monitoring devices are ceiling mounted. They are designed to allow for interacting with external systems such as VRF and Fan Coil systems via a control system to reduce energy consumption based on low or no occupancy.

#### This device is typically used as below:

- **Air Conditioning Energy Reduction:** Hybrid working has meant changes to building occupancy. Why heat or cool an area or floor when there is low or no occupancy?.
- **Heating & Hot Water Systems:** Reduce Energy consumption on the same basis as above. Reduced occupancy can mean less usage.
- **Ventilation Changes:** Varying Occupancy can affect Indoor air quality. When occupancy is connected to Indoor air quality the ventilation strategy and us can change especially with heat recovery.
- **Smart Cleaning:** Restroom usage and occupancy can mean that cleaning teams can e directed to ccheck and clean restroom based on usage rather thn on a pr-set schedule

**Requires mains power to power the node**

#### Used to monitor

- Building Occupancy
- Tenant/Occupancy per floor/area
- Restroom Usage
- Energy Consumption Reductions

#### Common installation location

- Building Entrances/Exits
- Floor Occupancy
- Tenants occupancy
- Restrooms

# Send data to your IoT Dashboard with the IoT gateway



Gateways connect the data captured from our sensors to an intuitive dashboard, allowing for easy site and asset monitoring in real time. Once plugged into mains, the gateways instantly establish an RF based private network to the sensors on-site.

Data from the sensors is then pushed to the simPRO IoT platform via a GSM sim card or LAN connection within the gateway where it is transformed into customer facing insights on simPRO IoT Dashboards.

Gateways connected via sim card are not reliant on any local IT networks and do not require to bypass firewalls. As such, the FM provider can quickly develop a private 'FM Network' across the site.

- The gateway transmits senso data directly to the simPRO IoT Dashboard. Here, sensor data for multiple sites can be managed from a single layered dashboard with widgets and reporting options to suit a range of requirements.
- Alerts can be set to triggered if an asset is outside a predetermined parameter.
- If a compatible job management software system is in use, alerts can automatically create work orders for further investigation and resolution.

## Common installation points

- Gateways are typically positioned in the centre and/or the high floor of a site.
- Although exact requirements are dependent on the specific site layout/ building fabric etc, real world installs have shown one or two gateways can typically cover a multi-story building (up to ten storeys).
- Within a 1.5 km radius of your nodes and sensors (depending on obstruction) to ensure data is collected and sent to your dashboard in real time.
- Further gateways can be added for enhanced coverage and redundancy.