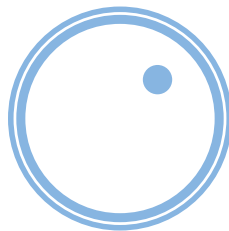




**orbis**mesh<sup>®</sup>

# LET'S GET TECHNICAL

**SYSTEM OVERVIEW**



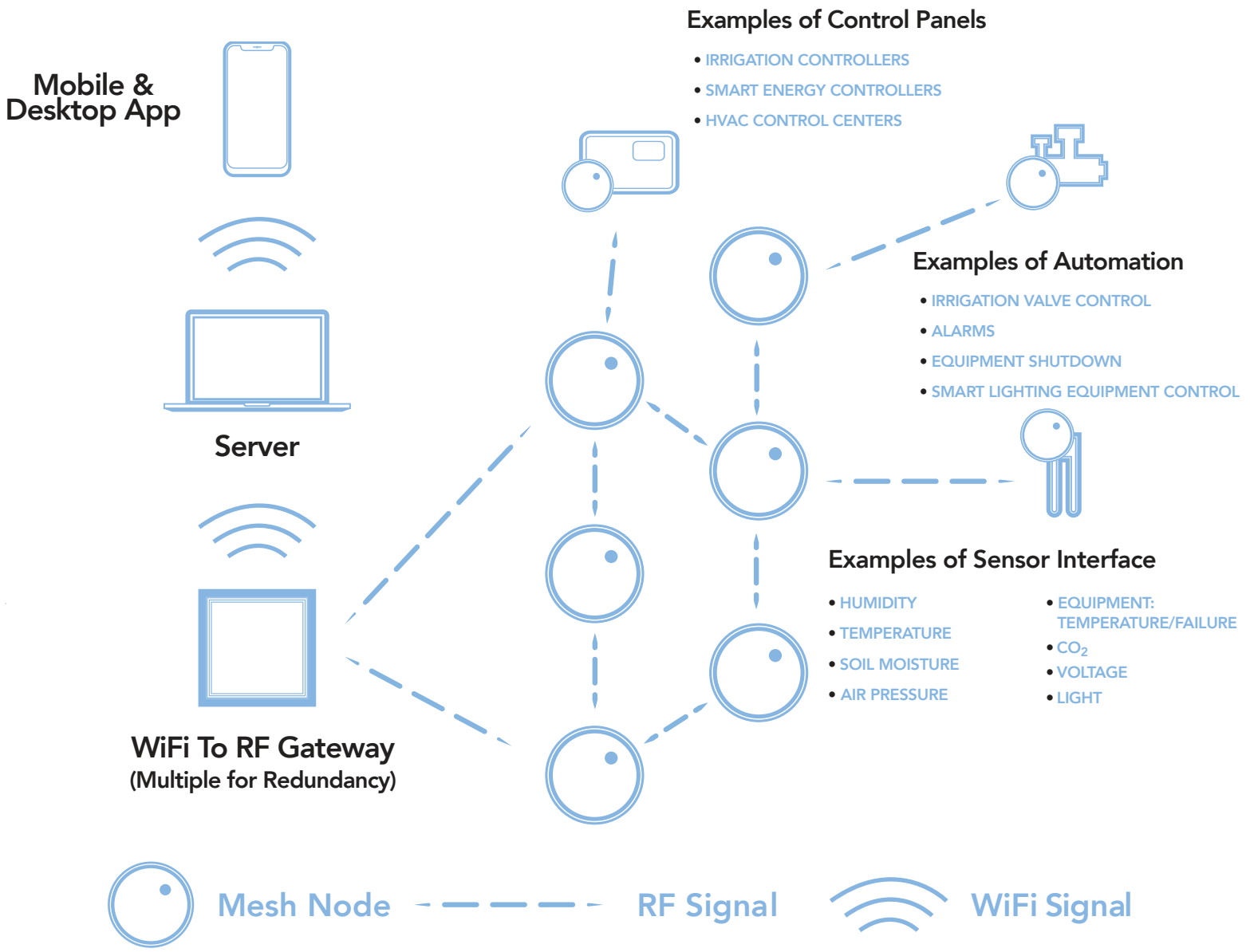
RF MESH RADIOS FOR INDUSTRIAL APPLICATIONS

# SYSTEM DIAGRAM

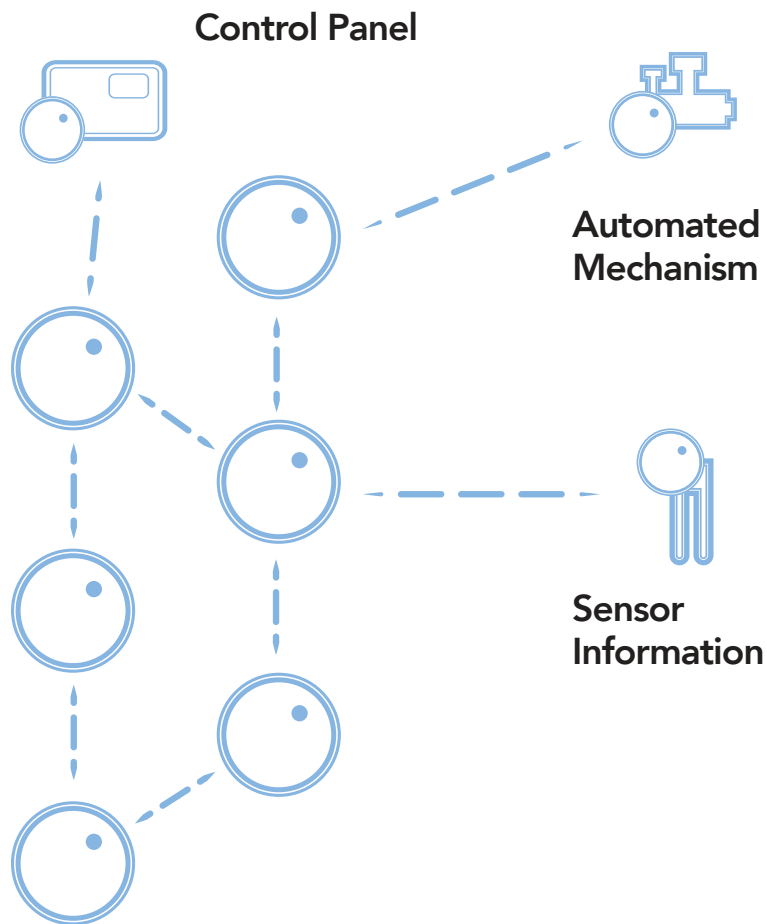
## Orbis Mesh builds RF Mesh Networks

RF Mesh Networks are stable, self-configuring wireless systems which use Mesh Nodes (Radios) to transform any connected device into a router, linking to neighbouring devices to build the most efficient path of communication using a radio frequency. This system eliminates wires and cords in short range applications and replaces them with a wireless, low energy alternative, free of airtime charges.

## DATA STORAGE & AUTOMATION TRIGGERS



# POINT TO POINT AUTOMATION TRIGGERS



Mesh Node



RF Signal



WiFi Signal

## CONTROL OUTPUTS

The **Orbis Mesh Wireless Node** can be used to relay output signals to a control panel and can be a bi-directional signal. The control panel can then take action based on this data as if the sensor was directly wired (i.e. – turn on a sprinkler, turn off equipment).

The **Wireless Node** can also receive a message from the control panel and relay to the device that needs to be activated. In the above examples this would be the water valve actuator or the HVAC equipment that was in alarm.

The Orbis Mesh Node will transparently relay control outputs across the network enabling it to support/interface to a wide range of signal types. **Currently supported are the following:**

- **EQUIPMENT ON / OFF** – Sends a signal to turn on / off the designated equipment.
- **TEMPERATURE CONTROL** – Sends a signal to increase / decrease temperature
- **IRRIGATION CONTROL** – Sends a signal to activate an irrigation system and interface with any sensors with an SDI-12 interface

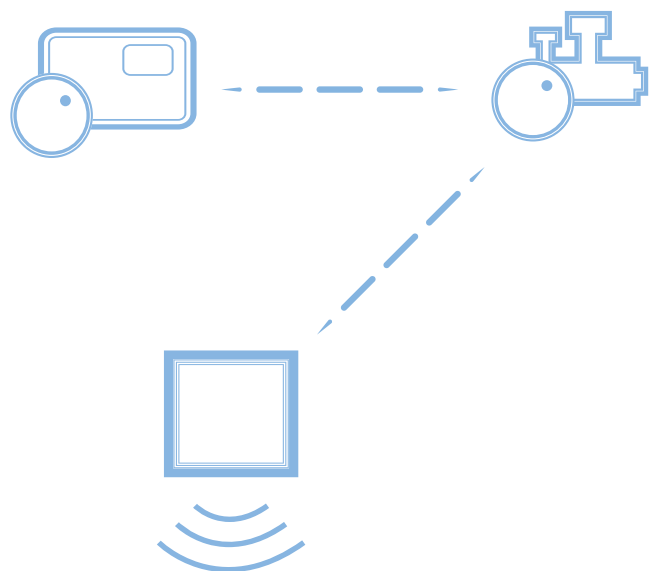
## OPTIONAL WIFI TO RF GATEWAY

- **MESH NETWORK WITHOUT GATEWAY (POINT TO POINT AUTOMATION TRIGGER)**

Autonomous operation between sensors, automation equipment and a control panel. The Mesh Nodes communicate directly amongst themselves. In this manner they operate transparently relaying signals across the RF Mesh Network.

- **MESH NETWORK WITH GATEWAY (DATA STORAGE AND AUTOMATION TRIGGER)**

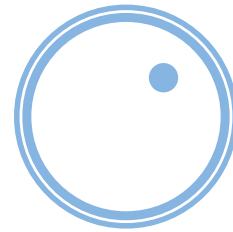
An RF to WiFi gateway converts the data from the Mesh Network into an IP format that can be delivered anywhere in the world via the Internet. Signal integrity and security is maintained over the Internet as it is on the RF network.



## THE WIRELESS NODE

The Orbis Mesh Node is a durable, lightweight, waterproof, self-contained unit. Capable of operating at 2.4 GHz it has a typical range of 40-50 meters.

The unit is currently battery powered offering operation for approximately one year.



## SENSOR INTERFACES SUPPORTED

The Orbis Mesh Node will transparently relay sensor data across the network enabling it to support / interface to a wide range of signal types. Currently supported are the following:



- Temperature
- Humidity
- Air Pressure
- Soil Moisture
- Solar Radiation
- Motion and Occupancy Detection
- Equipment: Temperature/Failure
- CO<sub>2</sub>
- Voltage

The system is programmable so that the sampling frequency of the above sensors can be controlled. This can vary from milliseconds to hours depending on the above sensor and requirements of the application.

## KEY BENEFITS

### DESIGN ADVANTAGE / NO SINGLE POINT OF FAILURE

- Provides redundancy with no single point of failure
- Devices connect to each other to build a network as opposed to a single point
- Self-configures to build most efficient path of communication
- Network is self-healing ensuring continuity of communications
- Offers 50 metre range per node
- Supports unlicensed spectrum in the Bluetooth 2.4 GHz band
- All communications are securely encrypted (AES 128)
- Optimized for industrial applications with outdoor design

### TRANSPARENT TELEMETRY DELIVERY

*WIFI TO RF GATEWAY MODEL ONLY*

- Relay data or any other signal to the gateway and control centre
- Send/receive command signals (analog or digital) to turn on/off devices

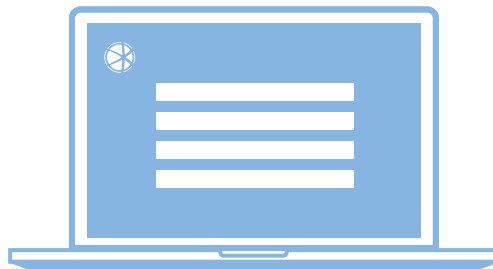
### LOWER COST

- Eliminates labour cost for outdoor cabling
- Unlicensed spectrum eliminates telecommunication airtime charges
- Industry standard Bluetooth Low Energy (BLE) nodes consume low power

## MOBILE & DESKTOP APPLICATION

Orbis Mesh provides a **software application that displays a comprehensive overview with detailed readings** of each individual measurements, so end users can hone in on the micro-environment of each node.

Users can click each icon on our software application to see information such as temperature, humidity, and all other applicable readings; **updated continuously every 30 seconds.**



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