

# SMART LIGHTING WITH MASSIVE SCALE IOT





#### **WIREPAS MASSIVE**

Wirepas Massive enables wireless IoT networking at massive scale. It is a de-centralized IoT network protocol that can be used to connect, locate and identify lights, sensors, beacons, assets, machines and meters in cities, buildings, industry, logistics and energy – with unprecedented scale, density, flexibility and reliability. It can be used on any radio hardware and on any frequency band.

Wirepas Massive was built from the ground up to provide superior performance, resilience and scale. This clean sheet approach allows us to offer a unique connectivity offering for Industrial IoT applications. Wirepas has its headquarters in Tampere, Finland and offices in Australia, France, Germany, India, South Korea, the UK and the United States.

### **OUR STRATEGY IS BASED ON FOUR CORNER STONES**

**1.**

Providing the most reliable, optimized, scalable, and simple-to-use device connectivity for our customers.

**2.**

Developing and licensing our unique mesh network protocol software – and nothing else.

**3.**

Large scale IoT applications where we can create unique value and an optimized solution for our customers.

**4.**

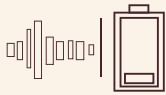
Building partnerships so that we can together offer turnkey solutions for end customers.

### **CONNECT, LOCATE AND IDENTIFY – AT ANY SCALE AND DENSITY**

## MAKING SMART LIGHTING SMARTER

The demands for lighting are growing all the time. The whole industry is evolving fast to offer smart systems that help to minimize energy usage, improve the lighting experience and gather data both in building and city-wide. Data gathering in particular is placing unprecedented demands on the wireless solutions used to connect the various elements of the lighting control and sensing systems. With smart lighting giving commercial property owners the opportunity to deliver new ways of control and data analytics of how a building is being used, the wireless technology used to deliver the mesh infrastructure for smart lighting needs to deliver the required technical performance.

A typical 10 floor building will have 100 to 200 luminaires per floor giving you a total of 1,000 to 2,000 luminaires. As a building owner or tenant, you should be able to have a single network covering all the spaces you use whether it be one floor or the entire building. Before selecting a smart lighting control system, it's crucial that you understand if you are limited to connecting 200 luminaires, or if you can connect all the luminaires in your space. With Wirepas having proven success in the real world through various partners, the following will show you how we enable our partners to deliver true smart lighting solutions.



**Wirepas  
Smart Node**



**Intelligent Network**



**Wirepas Massive**



**True Large Scale**



**IPv6 Connectivity**



**OTA Updates**



**2.4GHz Sub-1GHz**

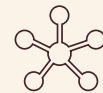
**Multiple Frequencies**



**Smart Phone  
Compatible**



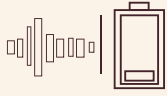
**High Data  
Throughput**



**IP-Based Support  
Tools**

## HOW DOES WIREPAS ENABLE SMART LIGHTNING SOLUTIONS?

Wirepas Massive was built bottom-up to deliver a mesh solution that delivers the needs for smart lighting platforms from lighting control and fast provisioning to building usage analytics and remote monitoring. So, what makes Wirepas Massive smarter than other mesh technologies?



### WIREPAS SMART NODE

Wirepas Smart Nodes are the key to making your network smarter. Once enabled, the Wirepas software stack takes over the connectivity of your luminaires and sensors. The Smart Nodes will regularly selfcheck the RF environment for surrounding nodes, congestion and the most efficient path to transfer data to the gateway.



### WIREPAS MASSIVE

Wirepas Massive provides a robust and stable platform with the Smart Nodes continuously scanning the RF channels, they operate on and locally self-determine if they need to switch to another channel to communicate more efficiently with other Smart Nodes. Wirepas Massive allows all Smart Nodes to scan and auto-select from all 40 channels in the 2.4Ghz spectrum without presetting during provisioning to ensure high availability of all luminaires. This allows the mesh to continue operating at high level as this enables self-healing where the network will identify a node that has a problem and re-route all data to bypass the malfunctioned node.



### INTELLIGENT NETWORK

When your smart luminaires and sensors are turned on, they self-discover surrounding luminaires and sensors with the same security credentials and automatically form the network saving time and cost on provisioning. Each node will also self-determine whether they are a router or node depending on the network conditions to allow the Wirepas Massive to operate efficiently and offer true large-scale capabilities.

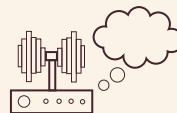
## A WIDE RANGE OF CONNECTIVITY OPTIONS

With Wirepas Massive and Smart Nodes providing the backbone of your smart lighting solution, accessing the mesh and interacting with your platform is simplified using widely used connectivity options.



### SMART PHONE COMPATIBLE

Smart devices are increasingly becoming an alternative option for provisioning and commissioning, as well as controlling lighting. Wirepas Massive is compatible with Bluetooth allowing you to develop a human centric lighting system.

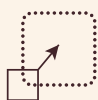


### IPV6 CONNECTIVITY

Smart lighting systems are beginning to provide new enhanced features to provide better analytics on how a building is used, monitoring lighting and environmental factors and remote monitoring. With IPv6 connectivity, data collected from sensors can be transported via the mesh to the cloud allowing you to remotely monitor, control and maintain the lighting system providing the ideal platform for Lighting-as-aService.

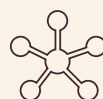
## WHAT DOES WIREPAS MASSIVE HELP YOU DELIVER IN YOUR SMART LIGHTING SYSTEMS?

When it comes to delivering a real-world system, the benefits of the Wirepas Massive help deliver a smart lighting platform that delivers you real-world benefits.



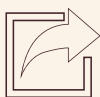
### TRUE LARGE SCALE

With Wirepas Massive, large networks can now exceed the limits of other wireless mesh networks. With Wirepas Smart Nodes, the mesh can continue to self-provision across a large scale with many networks over 1000 nodes deployed in the real world.



### IP-BASED SUPPORT TOOLS

Wirepas offer IP-based support tools to help monitor the health of your lighting network and identify any issues within the network. The Wirepas Positioning Engine is ideal for people and asset tracking.



### HIGH DATA THROUGHPUT

To deliver the building analytics and a lighting control system capable of multiple operation points, Wirepas Massive delivers up to 70 kb/s throughput and super-fast responses to command packets. This enables you to deliver real-time analytics, response and remote monitoring, and the backbone of a Lighting-as-a-Service solution.



### OTA UPDATES

Over-the-Air updates allow remote modifications to lighting scenes and lux levels, as well as issuing software updates via a single entry-point to the mesh. Updates can be done by directly connecting to a node in the mesh, or remotely from a central server on site or from maintenance company.



### MULTIPLE FREQUENCIES

Wirepas Massive is compatible with both 2.4Ghz and sub-Ghz frequencies enabling high data capture or longest distance between nodes. 2.4Ghz is ideal for more data intensive requirements in office, retail and industry, whilst sub-Ghz is ideal for street lighting and emergency systems requiring greater distances between luminaires.



Wirepas is delighted to be recognized for our innovative approach to wireless mesh with the award of Cool Vendor 2018 for Edge Computing from Gartner.

### CONTACT

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### WIREPAS

We're changing the face of IoT. To set a new standard. To skip the bullshit. To get infinitely scalable connectivity. Gentle on your wallet and way better than cellular 5G. In a network that never fails. Without middlemen or infrastructure. Totally self-managing. Tailored for commercial and industrial applications. Just more than you need. For less. We give you very very good IoT.