

VEmesh - a novel WSN Mesh solution



VEmesh™ is a mesh wireless network solution for distributed control, monitoring and data collection of lighting, metering and sensor systems, with a highly reliable and cost effective bi-directional communication.

With synchronized-flooding at its core, the network nodes act as relays in addition to their own activity, i.e. retransmitting other unit's data in order to create a modular solution with a practical unlimited number of nodes and practical unlimited coverage area. The network's design incorporates a built-in secured message delivery with space, time and frequency diversity, eliminating the need

for routing, configuration and self-healing.

VEmesh family includes two types of products: (1) modules - standard or customized for OEM, and (2) chipsets. In addition, VEmesh is the technology used in Wireless extension for DALI line of products.

Features – standard and optional

- Mesh topology with any node to any node bi-directional communication
- Use of synchronized flooding in the unlicensed sub-1Giga frequency bands
- Simultaneous use of all available propagation paths for communication between all nodes
- Single-hop range - 70 m ÷ 1.5 km
- Practically unlimited scalability and number of hops - from a few nodes to thousands of nodes
- Optimized for minimum number-of-hops
- Practically unlimited coverage extension - from a single hop to tens of hops
- Designed for simple deployment and maintenance
- Mobility of gateway and nodes
- Designed for interface to IP-based, DALI, RS232, RS485, USB, MODBUS, Dry-Contacts & current loop
- Frequency Hopping with at least 51 pseudo-random frequency hops
- TDMA access
- Option for data security using 128-bit AES encryption
- Fragmentation option
- PCB and chipset versions
- Customization and optimization services available.

Proven applications

- Outdoor and Indoor Smart Lighting
- Emergency Lighting
- Utility Smart Metering
- Building Automation, HVAC
- Industrial sensors
- Wireless Credit Card terminals
- Geo-fencing, pipeline protection
- Security applications

Benefits

- “Plug & Play” replacement of standard wire
- Setting up a new network, or adding and removing nodes is done in seconds
- Eliminates the need for network management software
- Network deployment and maintenance by untrained personnel
- Eliminates the need for routing and configuration - cost and specialization
- Achieves maximum mesh network range in class, both open space and densely built area
- Achieves minimum dead spots in class
- Highest known communication reliability in RF interferences and propagation change conditions
- Highest known reliability to single point (node) failure
- Lowest known power consumption in class
- Minimum overall latency
- Same equipment can be used in several physical configurations, such as fixed and drive-by
- Multi-layered security: FHSS and AES
- Covers a large variety of applications.

Main Specifications

- RF Data
 - Frequency Band: 902-928 MHz (US), 863-870 MHz with AFA and LBT (Europe), 916 MHz (Israel) and other regions
 - Channel spacing: 256 KHz
 - RF hops: 51
 - Modulation: FHSS
- Interface and protocols
 - UART, DALI, RS232/485, USB, TCP/IP
 - MODBUS, M-Bus and others - optional
 - Serial Data Rate: Up to 300 kbps
- Output Power
 - Standard Power: +8 dBm nominal
 - High Power Unit: +30 dBm nominal

February 21, 2011

Copyright © 2011 Virtual Extension Ltd. All rights reserved worldwide. Virtual Extension, VEmesh, Diversity Path Mesh, VESniffer and VEstester are trademarks of Virtual Extension Ltd. Other trademarks and trade names mentioned maybe marks and names of their owners as indicated. Product specifications, configurations, prices, system/component/options availability are all subject to change without notice.