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# Wireless networks that make sense

Complete semiconductor solutions for wireless sensor networks



[www.dialog-semiconductor.com](http://www.dialog-semiconductor.com)



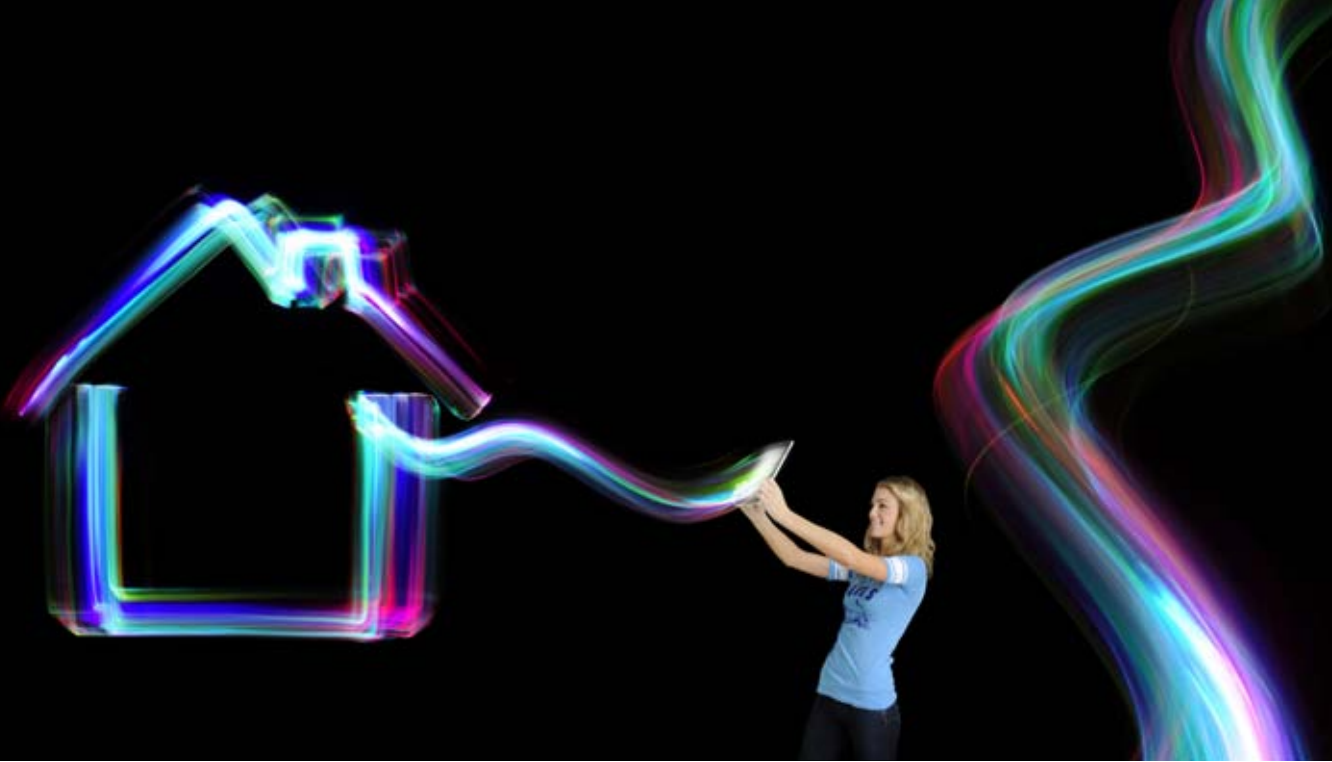
## The right choice for wireless networks

Wireless networking is an emerging, fast-growing market, and is making life easier, safer, more comfortable and more secure for users. Applications range from remote healthcare monitoring and smart homes to machine-to-machine communication for controlling industrialequipment. The applications may be very different, but the networking requirements are very similar: reliable, long-range communication between autonomous nodes and long battery lifetimes.

And the standard of choice is rapidly becoming DECT ULE. This is an ultra-low-energy extension of the DECT standard, which has been field proven in more than 600 million households to date.

Developed specifically for wireless home networking, the DECT ULE standard allows typical sensor applications to run for many years on a standard AAA battery pack. Yet it retains all the familiar benefits of DECT, such as Interference-free communication, long-range transmission and an excellent quality of service. Furthermore, DECT ULE can be used alongside other DECT systems, which already support a wide range of voice, data and video applications.

Co-developed by Dialog DECT ULE is easy to use and install, cutting costs for manufactures and consumers alike. And DECT ULE based home automation, security, healthcare or M2M applications can be brought to market quickly and easily using Dialog's family of SmartPulse™ sensor nodes, actuators and basestation devices, which integrate all the hardware and software needed – including the antenna. These can be dropped into an application with no pre-existing RF expertise or resources required.



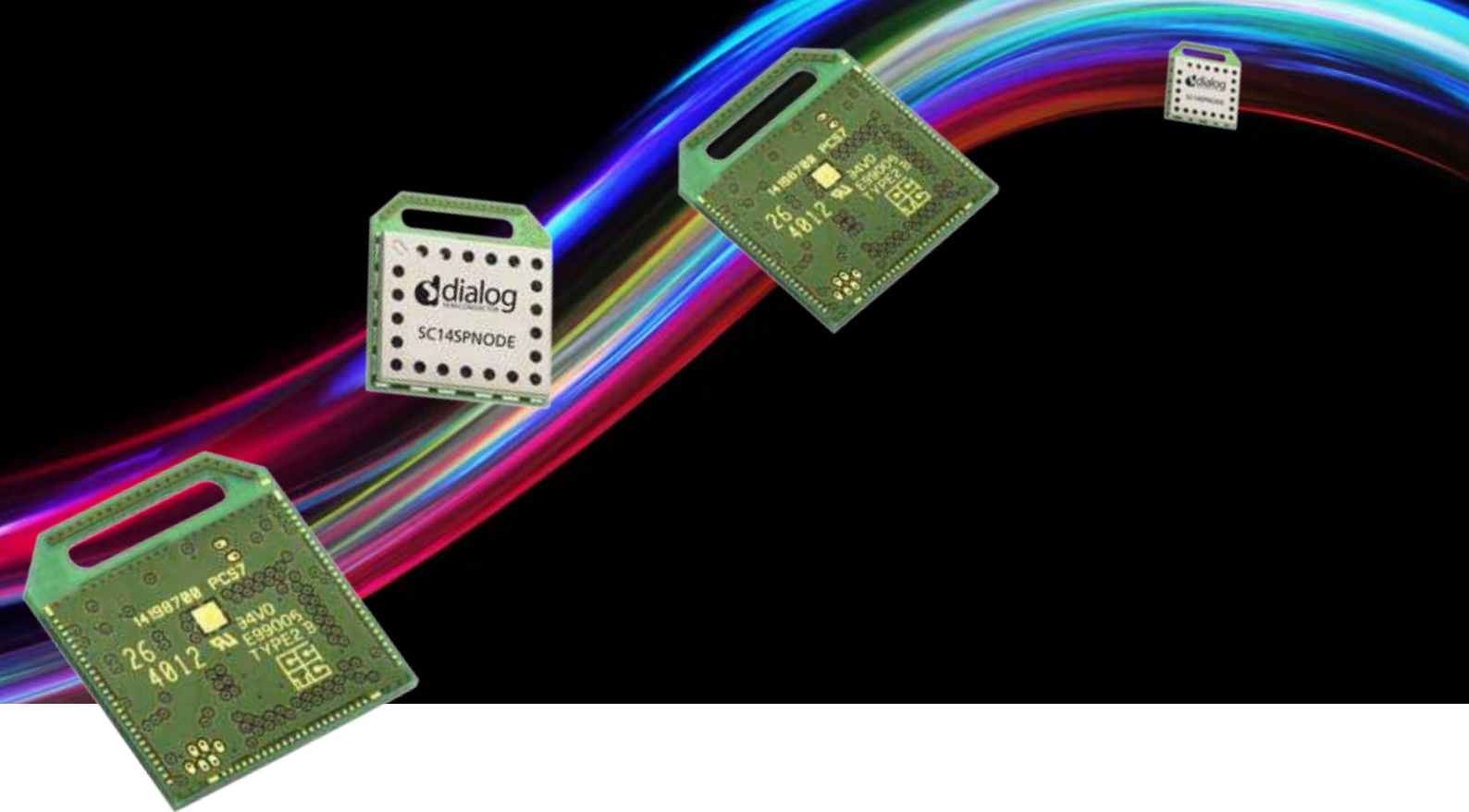
#### Technology benefits

- Whole house coverage
- No need for complex mesh networks
- Self-configuration of system
- Push-button registration of new nodes to expand network
- Reliable operation for maximum user satisfaction
- Operates in interference-free DECT band
- Data is transferred using an extensively proven protocol
- System chooses the right frequency channel in every situation
- Nodes can operate for years on standard batteries

#### The Dialog difference

- Proven expertise in wireless networks and IP solutions
- Low-cost internet access solutions
- Type-approved SmartPulse™ modules include antenna
- No RF knowledge required
- Can be used worldwide
- Easy-to-use, open-source development environment
- Co-creator of the DECT ULE standard





## Hardware platform

DECT ULE's long, 50m indoor range (300m outdoor) enables it to handle most wireless sensor networking applications using a simple star configuration. This avoids the complexity of creating a mesh or carefully placed repeaters.

SmartPulse™ wireless sensor modules are the ideal networking choice for sensor nodes. These certified, drop-in modules combine a transceiver, baseband, power amplifier and antenna – as well as complete protocol and application interface software – in one compact package. You can choose between two SmartPulse™ wireless sensor module software variants: data-only / voice-and-data depending on your application needs.

Offering the same level of integration as a wireless sensor module, the SmartPulse™ cordless voice module makes it easy to develop a basestation for the heart of your network. The module handles all networking needs; controlling sensors and voice module-based nodes. Simply combine it with a host processor for controllers in standalone networks or to bridge to the outside world.

In addition, our flexible VoIP processors provide a simple route for creating IP basestations that connect to the internet, helping you combine the unique benefits of a DECT ULE network with the limitless possibilities of the world wide web.

For connected smart home applications, we've created a number of solutions for integrated access devices that combine sensor networking with cordless telephony, digital TV delivery and Wi-Fi in a single box (further information is available on Dialog's website: <http://www.dialog-semiconductor.com/products/short-range-wireless-technology/applications>).



## Software

### DECT ULE protocol software

All our SmartPulse™ modules are supplied with complete DECT ULE protocol software, which is downloadable from the Dialog website. This easy to use stack provides all high-level networking functionality, so you can focus on your application. The module hardware and software can be easily configured via an AT command set or directly through the Application Programming Interface (API).

### DECT ULE products solution concepts

#### World Wide Web



DECT IP Base



#### sensors



#### actuators



#### sensor & actuator



#### System host processor



SC14WSDMDECT Basestation



#### data



#### voice



#### data & voice





## Development tools

Dialog's SmartPulse comes with all the support needed to bring your product to market quickly; with an extensive range of services and tools developed by Dialog and third-party vendors.

### Development kits

To help accelerate your product creation cycle, Dialog offers complete development kits for all SmartPulse modules.

The wireless module development kit includes a SC14CVMDECT basestation, a SC14CVMDECT portable part, a SC14SPNODE development board (featuring a module, various interfaces, battery and power connector), headsets and USB cables. Demonstration software, application examples and the Athena IDE are also included to enable the rapid creation of applications.

Meanwhile, the DECT IP basestation reference kit offers easy prototyping of internet-enabled DECT ULE systems. The kit features a DECT IP basestation that combines a SC14CVMDECT for basestation node communication and Dialog's energy-efficient VoIP processor, giving hassle-free internet connectivity. It comes complete with example sensor and actuator nodes based on the SC14SPNODE wireless sensor module, plus the Rhea  $\mu$ Clinux-based VoIP software development platform.

### Athena IDE

The Athena integrated development environment (IDE) is an easy-to-use, open-source toolset for creating new application software. It features an Eclipse-based IDE, a GNU C/C++ compiler and linker, and a code download and verification tool – all preconfigured and tested to work straight out of the box.



## Applications

### Utility metering

- Remote metering
- Energy monitoring
- Equipment control

### Healthcare

- Personal Help Button (PHB) (healthcare alarms for the elderly)
- Home care monitoring
- Activity monitoring
- Assisted living services e.g. fall detection

### Security

- Smoke / fire detector and alarm system
- Burglar alarm (with automatic police notification)
- Alarm buttons with voice
- Door entry system
- Surveillance system

### Home automation

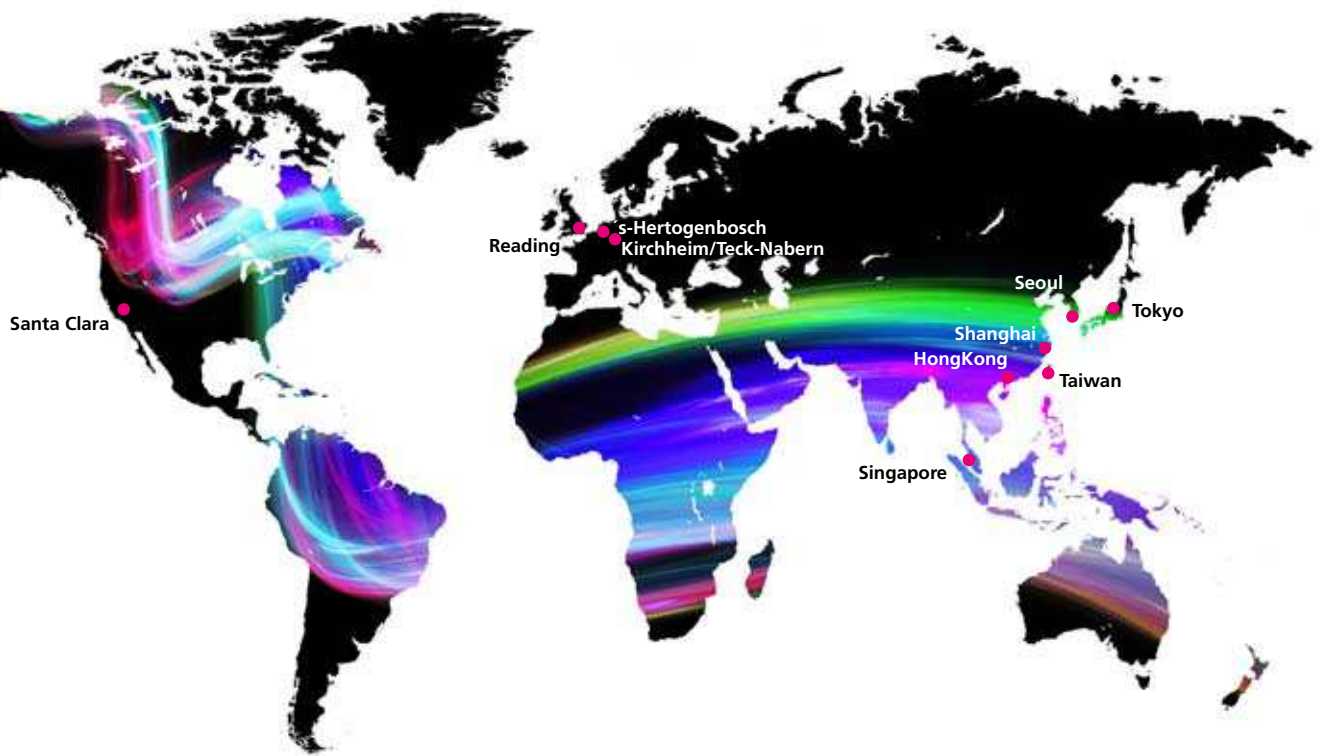
- Climate control (Heating Ventilation Air Conditioning system)
- Internet controlled home appliances
- Home control display



Detailed application information



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