

DSP Group's DHAN module offers application developers a turn-key platform for Ultra Low Energy (ULE) nodes, whether battery or AC-powered. Built around the company's DHX91 chipset, DSP Group's DHAN module is easily integrated into the smallest of Smart Home nodes. The module can serve as a wireless connectivity channel for an application running on an external MCU or can act as a standalone solution using the DHX91's internal ARM926® processor.

The complete platform includes everything an Internet of Things (IoT) node designer needs – HW, SDK, API GUI and documentation – to bring competitive applications rapidly to market. Home automation, security, monitoring, metering and healthcare customers benefit not only from readily available applications but from DECT's outstanding wireless range and ULE's lowest power consumption.

### ULE for IoT Applications

ULE is a software protocol extension of DECT, a standard already deployed in 10's of millions of conventional (PSTN) base stations and gateways. These devices can be easily upgraded to support ULE for IoT. For service providers and retailers, a dedicated Over-the-Top (OTT) base stations can easily manage ULE devices.

ULE utilizes star topology, taking advantage of extended indoor (over 70 meters / 210 feet) and outdoor (over 500 meters / 1500 feet) range to provide full coverage without deployment of a costly mesh network. ULE also benefits from DECT's interference-free frequency band.

ULE-based devices are suitable for diverse business models ranging from Do-It-Yourself (DIY) retailers to professional installers, and including self/professionally-monitored services.

### Benefits

- Fast Time-To-Market, production-ready ULE module for easy integration and implementation of battery and mains-based devices.
- Full SW stack, requiring no prior knowledge of the ULE or HAN-FUN standards
- Straightforward application reference design, HW and SW

### ULE Starter Kit

DSP Group offers a development system which includes a ULE node (incorporating the DHAN Module) and a Controller with a Graphical Use Interface Application that runs on a PC. With this system, the ULE Node developer can quickly generate and insert the code needed to interact with the ULE Controller: pairing, alarms, events, actuate switches, locks and adjust sensor settings. Upon embedding the DHAN-Module into the actual node application, the ULE Controller can once again serve to validate node connectivity.



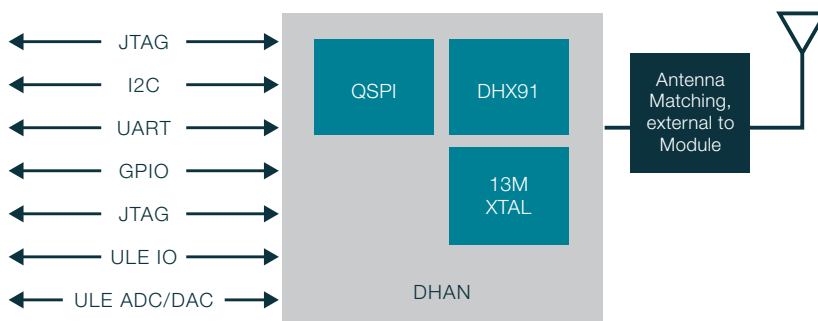
# DHAN Module for ULE Applications

## Jump-Start Your IoT

### Features

- Appropriate for both battery- powered and AC-powered ULEnodes
- Embedded HAN-FUN ULE SW stack
- Well-documented API for control via external MCU using the serial UART interface
- Alternatively, the ARM926 32-bit RISC processor and memory can be utilized for standalone, customized DHAN solutions
- Best-in-class radio performance
  - Tx power: +23.5 dBm
  - Rx sensitivity: -96 dBm @ 1000 ppm BER
- Low-power Hibernation mode: <2uA)
- Support for EU, US and other regional DECT bands
- Compliance with EN301406, FCC Part 15.329 & ARIB STD-T101
- Small form factor: 15 mm x 32.5mm x 3.8 mm
- Low external BOM
- Well-matched RF port, easily routed to an off-module 50-Ohm antenna
- Operating temperature: -40°C to +85° C

### DHAN Module Block Diagram



For purchasing information, please visit DSP Group site or designated distributors.

DSP Group®, Inc. (NASDAQ: DSPG) is a leading global provider of wireless chipset solutions for converged communications. Delivering semiconductor system solutions with software and hardware reference designs, DSP Group enables OEMs/ODMs, consumer electronics (CE) manufacturers and service providers to cost-effectively develop new revenue-generating products with fast time to market. At the forefront of semiconductor innovation and operational excellence for over two decades, DSP Group provides a broad portfolio of wireless chipsets integrating DECT/CAT-iq, DECT ULE, Wi-Fi, PSTN, HDClear™, video and VoIP technologies. DSP Group enables converged voice, audio, video and data connectivity across diverse mobile, consumer and enterprise products – from mobile devices, connected multimedia screens, and home automation & security to cordless phones, VoIP systems, and home gateways. Leveraging industry-leading experience and expertise, DSP Group partners with CE manufacturers and service providers to shape the future of converged communications at home, office and on the go.

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