

**ShortLink**



**Radio modules**  
for low-power  
**M2M** communication

# Radio modules for low-power M2M communication

Alarms, surveillance, remote control and telemetry are some examples of areas where radio modules are used for wireless M2M communication.

Wireless communication can be a strong competitive factor, and it is becoming ever more important to find cost-effective radio solutions for various types of products. Our radio modules make this possible.

## Why choose ShortLink's modules and radio solutions?

Radio communication is our specialty.

We have vast experience and indisputable know-how in the field of wireless communication, and we design everything from standard modules to tailored radio systems – discrete as well as fully integrated ASIC solutions. We are willing to share our knowledge with you, and we can also offer a powerful complete solution with everything from design and programming to tested and CE-marked products.

## Our radio modules

To cover a wide range of applications with differing price and performance demands, we offer various types of radio modules in the series – **standard** and **standalone**. All modules can be delivered for the license-free ISM/SRD bands of 433, 868 and 915 MHz.

### Standard modules

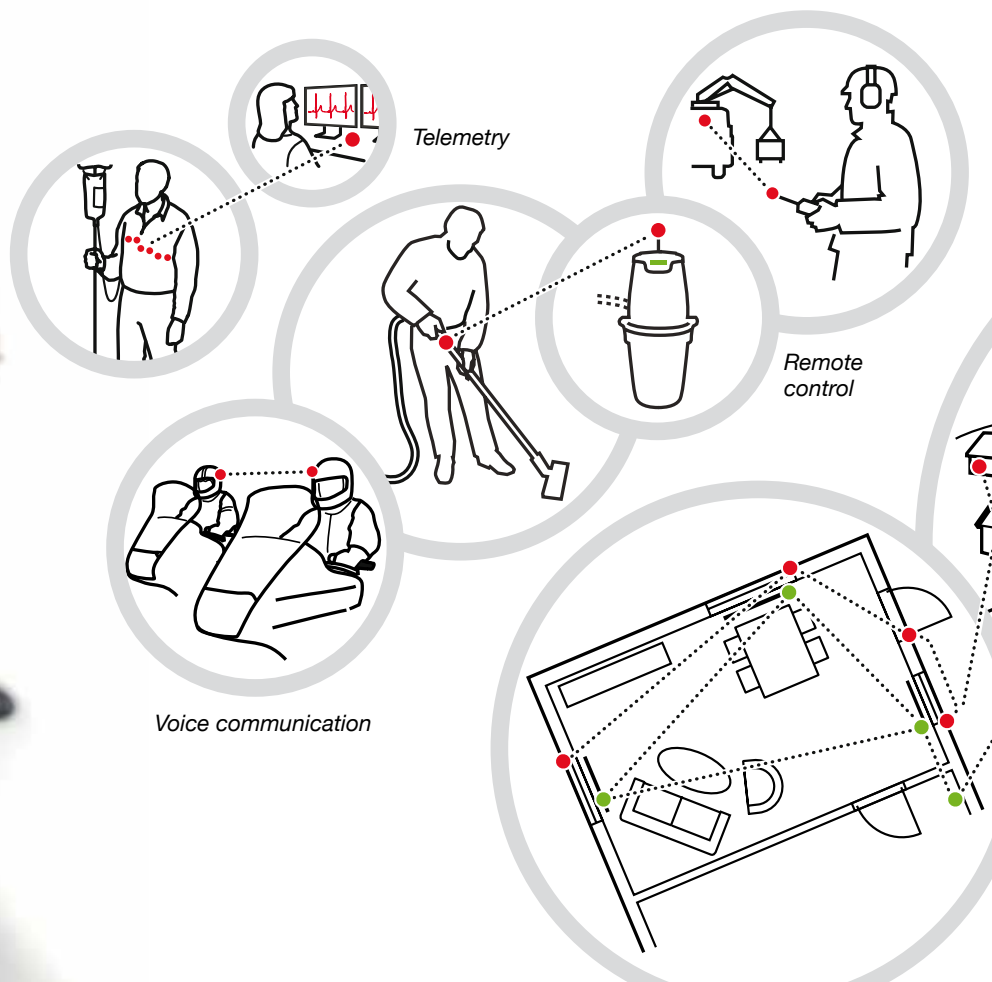
**The 4300 family** has a built-in communication protocol and is optimized for long-range operation as well as low power consumption. The modules can be used for everything from simple cable replacement to complex applications.

The built-in protocol (RSL232) makes the modules easy to configure and prevents settings that violate regulatory standards.

The modules of the 4300 family are characterized by low power consumption, and include features such as sleep mode (down to 1  $\mu$ A), automatic address check and CRC, large TX and RX buffers, functionality for Clear Channel Assessment and digital signal-strength indicator.

### Standalone modules

**The 4510 family** can be used in a standalone configuration, that is, without any controlling system, and the software is tailored to a specific application. These modules have a good number of analog and digital I/O functions that are well suited to simplifying and minimizing the external hardware. Often, it is sufficient to connect one or a few external sensors and an appropriate indicator to implement an entire customer application. This is what we call "standalone solutions", and they are often very cost-effective, minimizing both development and manufacturing costs.



## Customized modules

We can adapt our standard modules according to your needs, for example, to a frequency band outside the standard ISM bands. We can also integrate customer-specific electronics with any radio module, and adapt the chip design to your preferences. In some cases, the functionality of the entire product can be accommodated in such a solution.

## Tailored radio solutions

Building tailored solutions is a more extensive design task than adapting standard modules, but there are many advantages – we can, for example, optimize range, bit rate, power consumption and size. Furthermore, the design can be optimized for any frequency band you may require. In addition, the tailored radio solution can be fully integrated with your other electronics.

If the requirements regarding size and power consumption are extreme, such as in a hearing aid, the only option may be a fully integrated ASIC solution – which happens to be one of our specialties.

## CE-marking

Sweden and the rest of Europe have adopted the practice of self-assessment. That means that you, as the supplier of a product, are responsible for its compliance with the necessary norms and standards.

### What is needed for CE marking?

First you need to know which standards your product is to meet. Then, the product must be tested according to these standards, and when all the requirements have been fulfilled, it is time to write a Declaration of Conformity. This is a document where you, as the supplier, certify that the product meets all the necessary standards. After that, you can mark your product with the CE tag.

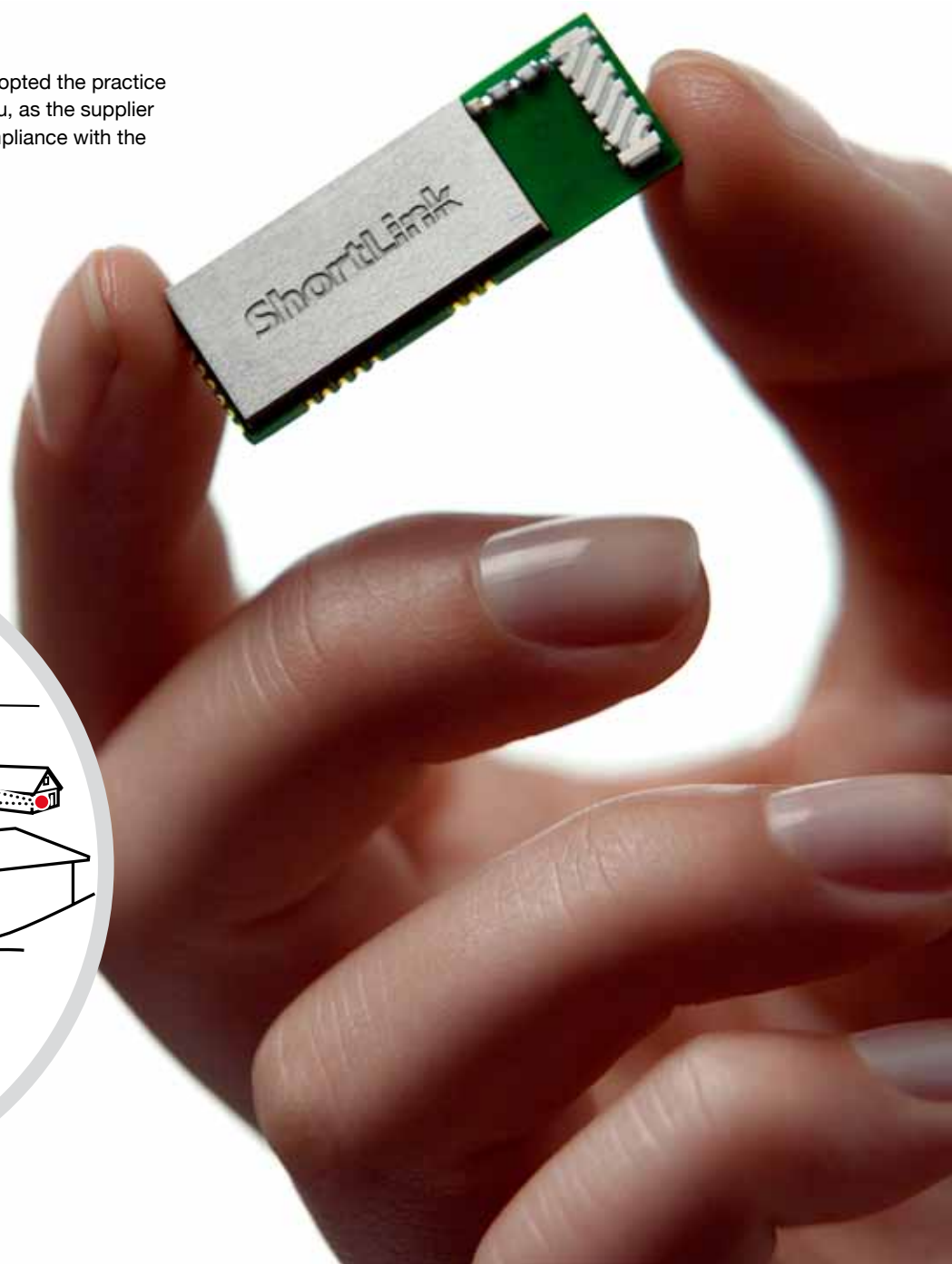


### Can we start selling the product now?

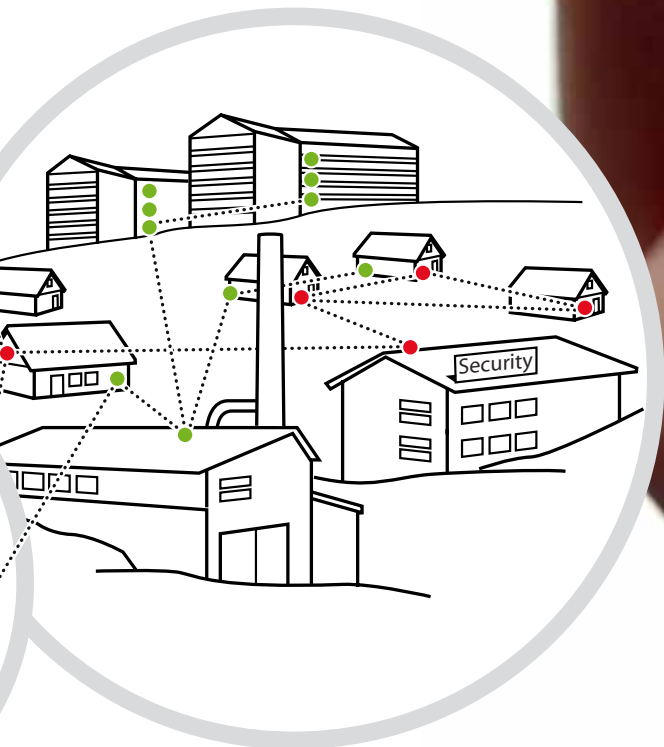
No – before you can introduce the product to a market, it must be registered by the telecommunications authorities of the country where you intend to sell it.

### Does it seem complicated? Stay calm.

We can assist you in most stages of the process. We have our own laboratory for EMC and radio testing, and we are also well versed in the twists and turns of CE-marking and registration of radio-based products – let us know, and we will tell you more!



*AMR (Automatic Meter Reading)  
Building and home automation  
Security systems*



# Why choose us as a supplier and development partner?

We have extensive experience and solid competence in the area of **low-power portable electronics and wireless communication systems**.

Our skills are comprised of ASIC (application-specific integrated circuit), discrete electronics, and embedded systems with focus on mixed-signal, RF and advanced analog functions. In addition, we have a well-equipped lab for test and measurement, and we can, therefore, offer our customers unique total solutions.

We develop solutions for the following areas:

- wireless communications – audio , data communication, and remote control
- portable measurement instruments – often requiring very high measurement sensitivity
- protection equipment – hearing, vision, and radiation
- home electronics
- medical products

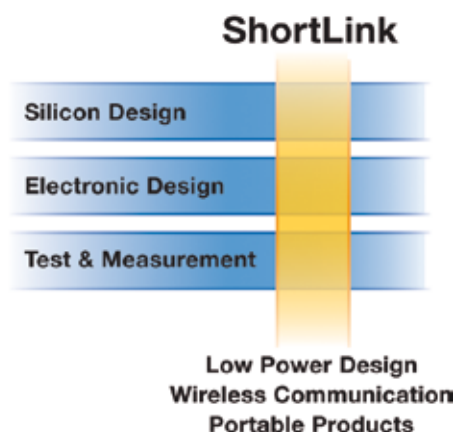
Our objective is to provide top competence within ASIC and electronic design, when developing your products – to make you more competitive.

## References

We have vast experience with several market-leading customers from various industry sectors, including:

- Ericsson Mobile Communications
- Ericsson Microwave Systems
- Great Nordic Netcom (GNN)
- Hörnell Elektrooptik
- Sordin
- 3M
- ZMD
- Comfort Audio
- Nilfisk Advance
- StoraEnso

Read more at [www.shortlink.se](http://www.shortlink.se).



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