WÜRTH ELEKTRONIK

# The Wireless Connectivity Firmware

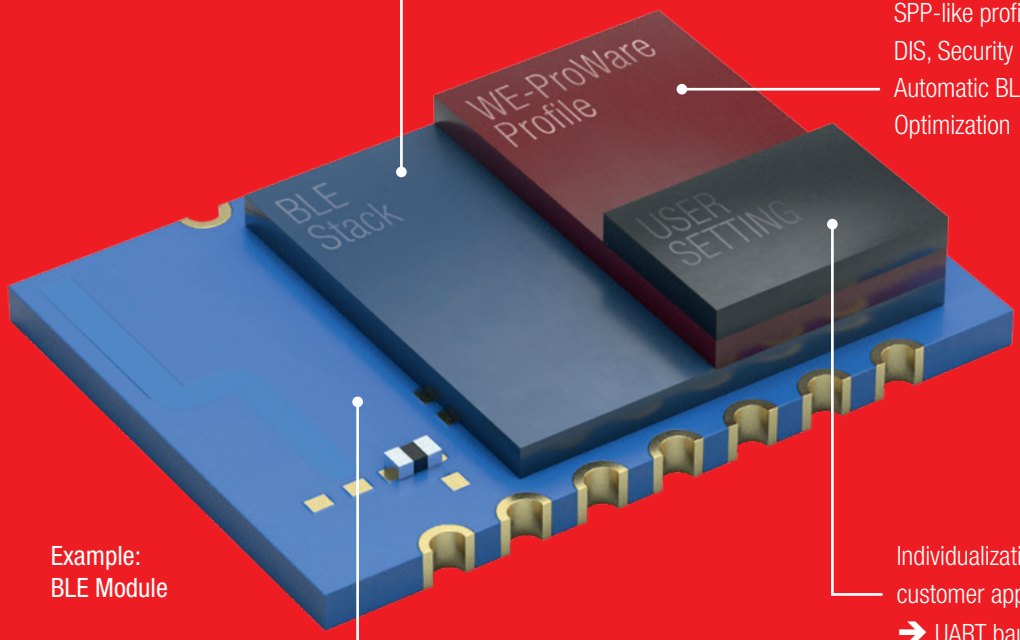
WE-PRO WARE

**SDKs were yesterday!**
**WE-ProWare – The all-inclusive Radio Stack**

# WE-ProWare Radio Stack

Fully featured & “BLE qualified” software stack

SPP-like profile (TX & RX characteristic) DIS, Security Modes, Bonding, FOTA, Automatic BLE Role switch, Low Power Optimization



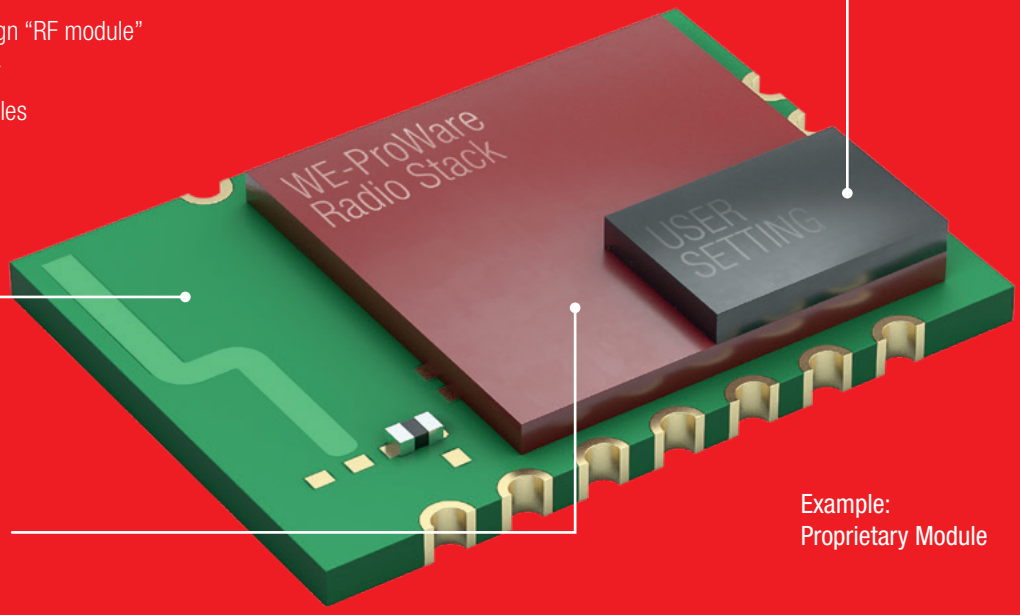

Example:
BLE Module

Individualization of parameters to match customer applications e.g. configuration of

- ➔ UART baudrate
- ➔ RF output power

Fixed hardware design “RF module”

- ➔ Small formfactor
- ➔ Robust RF modules




Offers Easy-to-Use Command Interface among other features

Example:
Proprietary Module

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WE-PRO WARE

# The WE-ProWare Radio Stack is an Industry Proven Robust Wireless Connection.

With more than 20 years of experience, Würth Elektronik eiSos offers a radio stack ready to run, build and connect out of the box – called **WE-ProWare**. This radio stack is an easy-to-use and effective networking protocol. Without a radio stack an RF module is pure hardware. Even when Software Developement Kits (SDKs) are offered, you have to spend months, sometimes years, to get your module up and running.

## It is pre-loaded on all Wireless Connectivity RF modules.

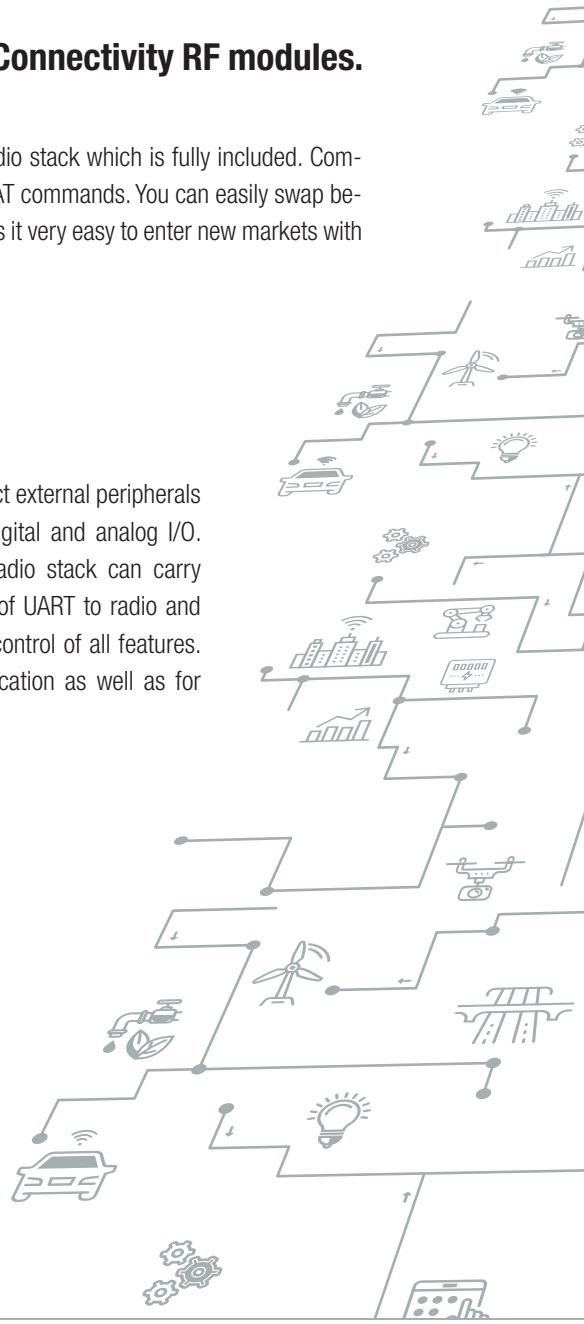
Our module added value is the **WE-ProWare** radio stack which is fully included. Communication functions are configured with simple AT commands. You can easily swap between radio channels and protocols. All this makes it very easy to enter new markets with your application.

## Extensive Features

The **WE-ProWare** offers you the option to connect external peripherals using numerous interfaces, such as UART or digital and analog I/O. In **TRANSPARENT MODE** the **WE-ProWare** radio stack can carry any kind of application data, simple conversion of UART to radio and vice versa. In **COMMAND MODE** you have full control of all features. The UART interface is used for serial communication as well as for configuration.

**The WE-ProWare radio stack supports different network topologies, incl.**

- Point to Point
- Point to Multipoint
- Peer to Peer
- Mesh
- Multi-hop



# WE-ProWare
# Get it Individualized

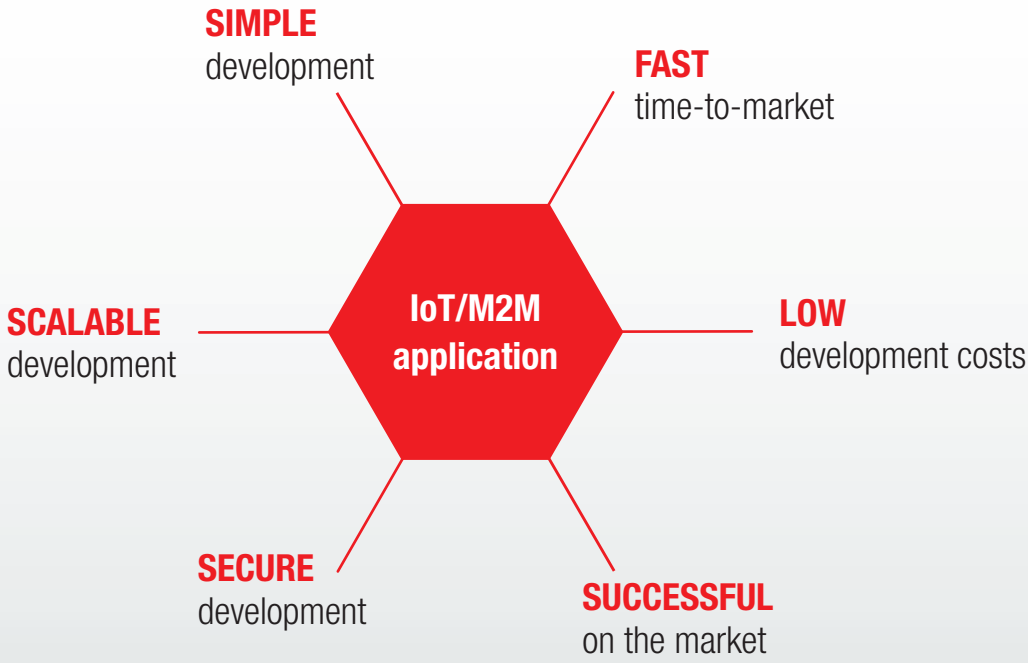
We align our standard firmware to your requirements which simplifies your production process. You can choose between our standard firmware with an update function or an individualized variation with adapted user settings or even a simple firmware freeze.

Radio parameters, for instance RF power and RF channel and protocols, can be individualized to your specific requirements. Different frequency bands are available for different regions and are running on the same hardware e.g.:

- 868 MHz for Europe
- 915 MHz for America

WE-PRO WARE

## It is pre-loaded on all Wireless Connectivity RF modules.




**Advantages WE-ProWare Radio Stack**

- More than 20 years of radio protocol experience
- Tightly integrated application framework
- We take care of protocol updates and technology upgrades
- Offers powerful application processing
- Security and Connectivity built in
- Running within license free bands (ISM) 169 MHz to 2.4 GHz
- Integrated, fully tested and validated
- Customer can focus on added value applications
- Future proof and extendable
- Ensures a perfect fit of the corresponding hardware and firmware

**The typical IoT/M2M application life time is 5 to 10 years.**

# Würth Elektronik eiSos offers long term scalability

# WE-ProWare
# Perfect Fit with our Hardware

## Get your Application to Market Faster

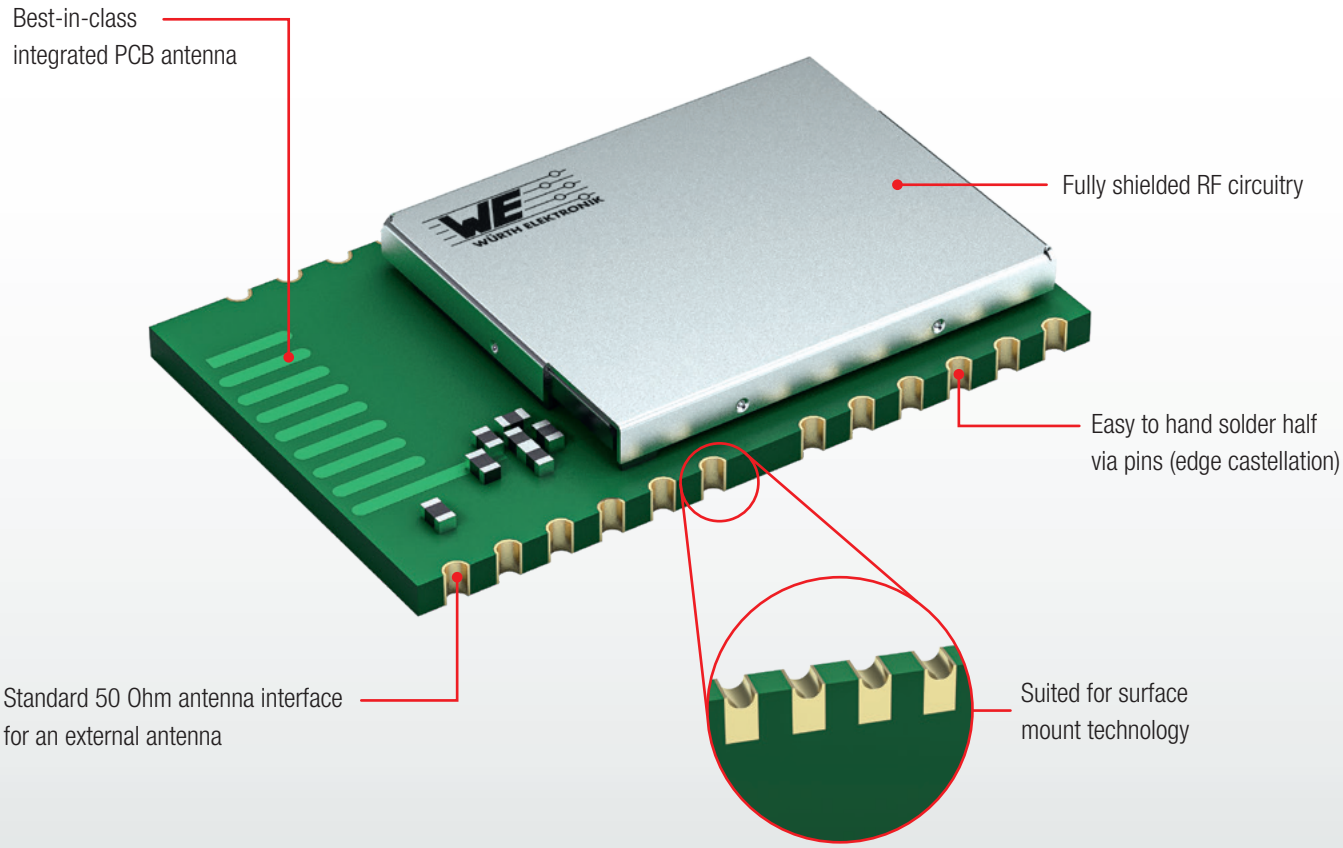
Our modules are fully developed, tested and validated. The modules include all essential components. Running **WE-ProWare** radio stack on our modules ensures a reliable communication through standard protocols and proven RF performance.

## Open New Markets

Most of our modules offer the same foot print and form factor. Make use of this feature to easily exchange modules and adapt your application to specific requirements.

**WE support multiple variants**

- Different frequency bands for Europe, America, Asia and even for global operations
- Different power levels (long range and low power consumption)




**Enter the Market with your Application**

- Take advantage of our pre-qualified and pre-assessed hardware
- Compact sized and fully tested RF modules
- Pin-compatibility between high-power (long range) modules for extended range
- No external components needed
- Robust and industry proven

**Files available:**

ALTIUM + EAGLE

**and long term availability.**

# WE-ProWare
# Get Started Immediately

## Reduce Development Time and Costs

If you want to reduce development time and accelerate production ramp up, there is no way around – take advantage of our easy-to-use modules. Thanks to this, you will increase your market success and significantly reduce investment and risk.

## Shipped as your Module – with Unique Part Number

Once you are done with development we can upload your specific firmware to the modules. We use our proven programming and testing processes to ensure high quality and reliability. On top, we will create and provide you with a unique part number. If requested, we can protect your IP and sell your modules only to authorized customers.

## Always Up to Date

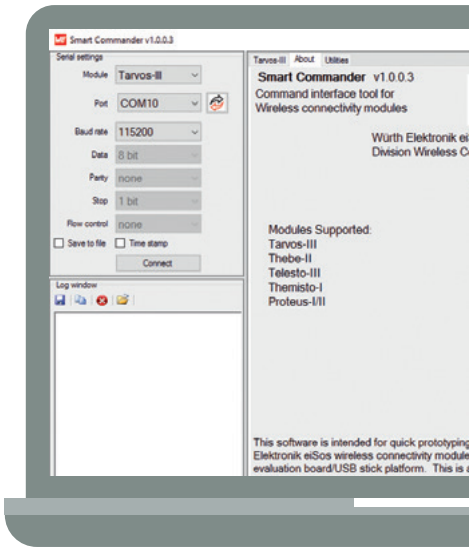
- Fast development equals to short time-to-market
- High flexibility
- Fully tested & pre-certified modules
- Customer does not need to take care of
  - Development
  - Maintenance
  - Updates
  - Documentation
- Technology upgrades and radio stack updates are taken care of

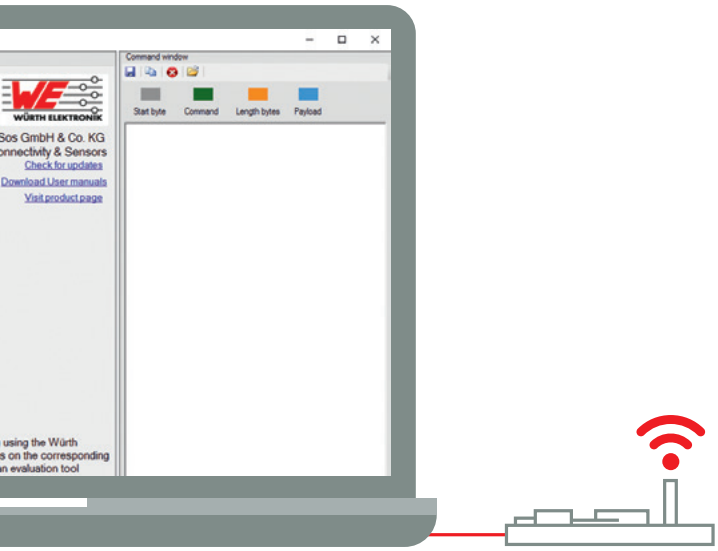
## Integration of Radio Technology Global Certification and Approvals for Worldwide Use

One of the last steps before a product with integrated wireless technology can be launched on the market is the certification and/or declaration of conformity. I.e. a product with integrated RF technology can be placed in the EU market with the necessary declaration of conformity. Our modules are certified and approved for international standards like CE/RED, FCC, IC, ARIB and more, as well as for Bluetooth®, Wi-Fi and wM-BUS.

CE FC National ARIB Bluetooth WiFi M-Bus wireless

# WE-ProWare
# In Action




## WE Smart Commander
## “Kickstart your Prototyping instantly”

The WE Smart Commander is an easy-to-use PC software that enables complete control of the Würth Elektronik eiSos wireless modules through an intuitive GUI. This tool along with the evaluation boards allow quick prototyping and testing of various features of the radio modules.

- Simple setup
- Intuitive interface
- Color coded Packet interpretation
- 100 % log traceability


## Wireless SDK and Sensor SDK
## “The missing piece to complete your puzzle”

The WE Wireless Connectivity SDK (Software Developement Kit) and Sensor SDK enable quick software integration of Würth Elektronik eiSos wireless modules and sensor into any host processors by offering a set of drivers and sample applications.

```
bool TarvosIII_Reset()
{
    bool ret = false;
    /* fill CMD_ARRAY packet */
    uint8_t CMD_ARRAY[4];
    CMD_ARRAY[0] = CMD_STX;
    CMD_ARRAY[1] = TarvosIII_CMD_RESET_REQ;    CMD_ARRAY[2] = 0x00;
    if(FillChecksum(CMD_ARRAY,sizeof(CMD_ARRAY)))
    {
        /* now send CMD_ARRAY */
        SendBytes(CMD_ARRAY,sizeof(CMD_ARRAY));
    }
    return ret;
}
```

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# more than you expect

## Internet of Things

## Sense & Control

## Automated Meter Reading

DIENECKARPRINZEN 9999639 1119 2.5.100