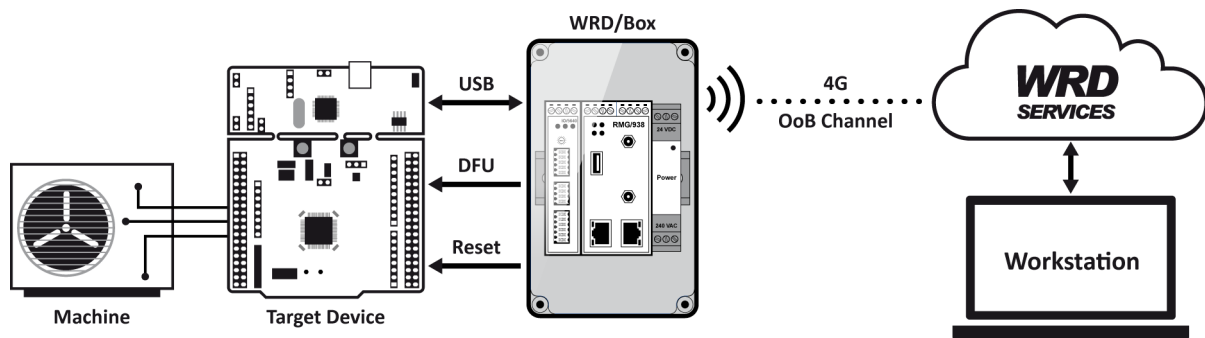


WIRELESS REMOTE DEVELOPMENT

WRD/Box

Secure wireless remote testing and monitoring in real application environments

- ✓ End-to-end (E2E) tests of embedded IoT/OT applications
- ✓ Development, test and monitoring of Edge AI applications



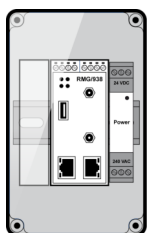
A typical WRD/Box application example would be the end-to-end (E2E) testing of a newly developed condition monitoring module with a highly integrated microcontroller (MCU) and an 868/915 MHz short-range radio interface. The module is ultimately intended for integration into production machines to enable condition-based maintenance. Using sensors, the module collects various condition data and generates a data object that is sent as a datagram via LoRa/LoRaWAN over the radio interface to an internet gateway. The gateway forwards the condition data via an appropriate infrastructure to a cloud service, which supplies maintenance management software with the required condition data via a REST API.

For E2E testing with machines in a real application environment, the MCU-based target device is equipped with a firmware development version that sends various debug messages as a string via UART or USB. From this text, the current software state can be determined, including, for example, the data sent to the gateway via 868/915 MHz radio. In this example, there is a UART/USB connection between the target and the WRD/Box, as well as a binary reset and device firmware update (DFU) signal from the WRD/Box to the target. Furthermore, the WRD/Box has direct access to the entire application's REST API via an OoB channel.

FEATURES FOR SAMPLE CONFIGURATION

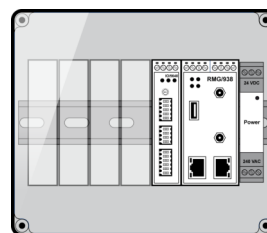
- 1x RMG/938 gateway:
 - 2x SMA antenna connector + 1x external LTE cellular antenna with 3m cable
 - 1x SIM card slot with Mobile Virtual Network Operator (MVNO) SIM card with IoT data plan pre-installed
 - 2x 10/100 Mbps Ethernet LAN
 - 1x USB 2.0 host
 - 1x RS485 + 1x RS232/RS485 serial port (screw terminal)
- 1x IO/5640 A/D extension:
 - 4x Analog input 4-20 mA + 4x 0-10 V
 - 5x Digital input + 6x digital output
 - 1x RS485 (for Modbus-RTU)
- Integrated 110 - 230 VAC/24 VDC power supply with power cable
- Embedded Debian Linux operating system
- Support for all common cloud protocols
- SSV wireless remote development software stack
- PKI-based chain of trust for end-to-end security
- GNSS (Global Navigation Satellite System) option available
- Two housing variants: 110 x 180 mm, 254 x 180mm with dust cover
- Internal mounting via 35 mm DIN rail

APPLICATION SPECIFIC VARIANTS



Variant 1
110 mm housing for 4x 22.5 mm DIN rail devices

Sample equipment:
1x 110 - 230 VAC/24 VDC power supply
1x RMG/938 gateway



Variant 2
254 mm housing for 8x 22.5 mm DIN rail devices

Sample equipment:
1x 110 - 230 VAC/24 VDC power supply
1x RMG/938 gateway
1x IO/5640 A/D extension