CONTACTLESS READER AND WRITER

RFIDAX RFID Reader and Writer Device Series

RS485-RW Series   TC-RW Series   TC-RD Series   MUSB-RD Series   MUSB-RW Series HID-TC Series   HID- MUSB Series

RFIDAX RFID reader and writer devices, developed by Black Wolf Technology, are based on 13.56 MHz contactless technology and are equipped with advanced features, including integrated NFC functionality.

RFIDAX devices, developed by Black Wolf Technology, fully support the ISO/IEC 14443 Type A protocol and MIFARE family protocols, ensuring seamless compatibility with NFC technology.

The system, equipped with HID support, enables fast and driverless communication via USB, offering plug-and-play functionality for easy integration. In addition, the standard USB protocol supports data transfer rates of up to 2000 kbps, providing a flexible infrastructure to meet various communication requirements. The independent operation of HID and standard USB protocols makes it an optimized solution for different application scenarios.

The system also supports reliable and long-distance data transfer over the RS485 physical layer at a speed of 256 kbps. With a differential signal structure, RS485 ensures stable and reliable communication even in noisy environments, while the USB interface facilitates fast data transfer and firmware update capabilities.

Designed to be compatible with a wide range of applications, including industrial automation, building management systems, energy monitoring and control, smart city infrastructure, access control systems, and financial data processing, the system features Modbus protocol compatibility and a custom CRC-based communication structure. This enables customizable data packets and a flexible command architecture, making it adaptable to diverse industry requirements. This versatile communication infrastructure provides a robust, reliable, and flexible solution for both commercial and industrial applications.

The device supports multiple communication interfaces, including USB, RS485, Type-C, and mobile communication, ensuring a versatile and adaptable architecture. It offers configurable device address, adjustable communication speed, and flexible communication protocol selection, ensuring high compatibility and ease of use. The fast reset-to-default mode enables secure and stable operation in all conditions, making it ideal for mission-critical applications.

For data integrity, users can choose between CRC-enabled or CRC-disabled operation, allowing flexibility based on system requirements. The device supports multiple operational modes, including Basic, Advanced, Enterprise, and Custom, ensuring adaptability to different application needs.

Additionally, the device offers intelligent support for two NFC modes: Reader/Writer and Keyboard Emulation. Its flexible design allows seamless integration into various applications such as e-payment systems, access control, and public transportation ticketing. With advanced capabilities, the device is a reliable, powerful, and adaptable solution for commercial and industrial use cases.

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KEY FEATURES

☑ **Support various contactless card type**

- ❖ ISO 14443 Type A (Parts 1-4)
- ❖ MIFARE® (T=CL)
- ❖ MIFARE Classic
- ❖ MIFARE Ultralight
- ❖ MIFARE DESFire EV1
- ❖ MIFARE Plus
- ❖ MIFARE Mini
- ❖ NFC Tags

Current Usage and Application Areas of the Device

Access Control Systems | Public Transportation Systems
Payment Systems | Event Management
Logistics and Inventory Management
Education and Student Tracking | Smart Devices and Prototyping
Healthcare Sector | Smart City Applications
Library Management | e-Government Services
Electronic Banking and Payment Systems
Electronic Healthcare Services
Transportation Systems
Network Security
Loyalty Programs
Smart Posters and URL Marketing
Externally utilized in various projects operating in the 13.56 MHz frequency band

☑ **Performance**

- ❖ RS485 Communication Speed: Up to 115.2 kbps (Can be increased if required)
- ❖ USB Communication Speed: Up to 2000 kbps (Can be increased if required)
- ❖ ISO 14443A Read/Write Speed: Up to 424 kbps (Can be increased if required)
- ❖ Real-time modification of device address, communication speed, and communication protocol
- ❖ Rapid and reliable restoration to factory settings during operation (ideal for defense and space industry applications)

☑ **Support various NFC features**

- ❖ Card Reader/Writer Mode
- ❖ Card Reader Only Mode
- ❖ Keyboard Mode

☑ **Security**

- ❖ Advanced Software Cryptography: Software-based cryptography support for high-level security.
- ❖ Free USB Firmware Updates: Easy updates for the latest features and improvements.

☑ **Reliability and Durability**

- ❖ Compliance with International Standards: The device is designed to meet international regulations and standards, making it suitable for military systems.
- ❖ Mean Time Between Failures (MTBF): Provides a reliable operational lifespan of up to 750,000 hours.
- ❖ Short Circuit and ESD Protection: Integrated protection ensures electrical safety.
- ❖ EMI-Compliant Design: Protects against electromagnetic interference.
- ❖ Use of ASA, ABS, and Carbon Materials: Manufactured with high-quality materials to enhance durability and ensure long-term usage.
- ❖

☑ **Compatibility**

- ❖ Support for all major operating systems
  - ▪ Windows®, Linux®, macOS, Android™

RS485-RW Series   TC-RW Series   TC-RD Series   MUSB-RD Series   MUSB-RW Series HID-TC Series   HID- MUSB Series
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Black Wolf Technology A.Ş.
RFIDAX Advanced RFID Card Reader Writer

TECHNICAL SPECIFICATIONS

Contactless Smart Card Interface	
Supported Card Types	ISO 14443 Type A (Parts 1-4), MIFARE® (T=CL), MIFARE Classic, MIFARE Ultralight, MIFARE DESFire EV1, MIFARE Plus, MIFARE Mini, NFC Tags
Operating Frequency	13.56 MHz
Reading Distance	Up to 100 mm (Depending on tag type)
Read/Write Speed	106/212/424/848 kbps (ISO14443)
Supported NFC Mode	Card Reader, Card Reader/Writer, Keyboard Mode

Host Interface	
Protocol	USB ,RS485
Connector Type	USB Mini USB,RS485,TYPE-C
Speed	USB 2.0 Full Speed (12 Mbps) compatible with USB 3.0 RS485 1115.2 kbps
Supply Voltage	5VDC/12VDC/24VDC
Current Consumption	Type-C 5V 90mA(max) USB mini 5V 90 mA(max) Rs485-12V 25mA(max) Rs485-24V 15mA(max)
USB Firmware Upgrade	Supported

Model/Part Number	
Mini USB Series	MUSB-RD, MUSB-RW, HID- MUSB
Type-C Series	TC-RW, TC-RD, TC-Mobile
Rs485 Serisi	RS485-RW, TC-RW

Physical Characteristics	
Dimension (L x W x H) (Note1)	Main Body(Ver1): 63.4 x 101.4 x21.7mm Main Body Ver2: 71.9 x 104.4 x25.5mm Antenna size:50.0 x 40.0mm
Weight (±2 g) Note(1)	72 g (RS485 Ver1) 70 g (Type C Ver1) 72 g (Mini USB C Ver1) 91 g (RS485 Ver2) 90 g (Type C Ver2) 91 g (Mini USB C Ver2)
Available Colour	Black-Silver
USB/RS485 Cable Length	1m (removable, replaceable) RS485 Adjustable to desired length

Peripherals	
Buzzer	1 x Programmable Buzzer (Mono-tone)
LED	1 x Programmable LED (Red & Green)

Operating Condition	
Temperature	0 - 60°C
Humidity	90% (Non-condensing)
MTBF	750,000 Hours

Compliances	
Compliances(CRC Mode)	*USB *CRC-16/MODBUS * CRC-16/PROFIBUS CRC-16/IEC-61158-2 *CRC-16/KERMIT, CRC 16/BLUETOOTH, CRC-16/CCITT, CRC-16/CCITT-TRUECRC-16/V-41-LSB, *CRC-16/ISO-IEC-14443-3-A *CRC-16/IBM-3740,CRC-16/AUTOSAR CRC-16/CCITT-FALSE *CRC-16/USB *Serial Communication Without CRC

Libraries & Tools	
Libraries	RFID Reader Writer BW Tech
Tools	Software Development Kit

Drivers & Support	
Driver Supported OS	Windows®, Linux®, macOS, Android™
Warranty	1 Year

Part Number	Device Description
HID- MUSB	A HID-compliant device utilizing a Mini USB connector, operating as a keyboard interface.
HID- TYPEC	A HID-compliant device utilizing a Type-C connector, operating as a keyboard interface.
MUSB-RD	A Mini USB-connected device designed for read operations, supporting multiple software protocols. (Note 2)
TC-RD	A Type-C-connected device designed for read operations, supporting multiple software protocols. (Note 2)
RS485-RD	An RS485-connected device designed for read operations, supporting multiple software protocols. (Note 2)
MUSB-RW	A Mini USB-connected device capable of both read and write operations, supporting multiple software protocols. (Note 2)
TC-RW	A Type-C-connected device capable of both read and write operations, supporting multiple software protocols. (Note 2)
TC-Mobile	A Type-C-connected device for tablets and mobile phones, capable of both read and write operations, supporting multiple software protocols. (Note 2)
RS485-RD	An RS485-connected device capable of both read and write operations, supporting multiple software protocols. (Note 2)

(Note 1): In the physical characteristics section, the weight and dimension table for Ver1 and Ver2 reflects differences only in the casing design. There are no differences in terms of electronics or software.

(Note 2): The device uses the CRC-16-CCITT algorithm by default. Upon request, other algorithms such as CRC-16/MODBUS, CRC-16/USB, or CRC-16/ISO-IEC-14443-3-Acan be implemented.
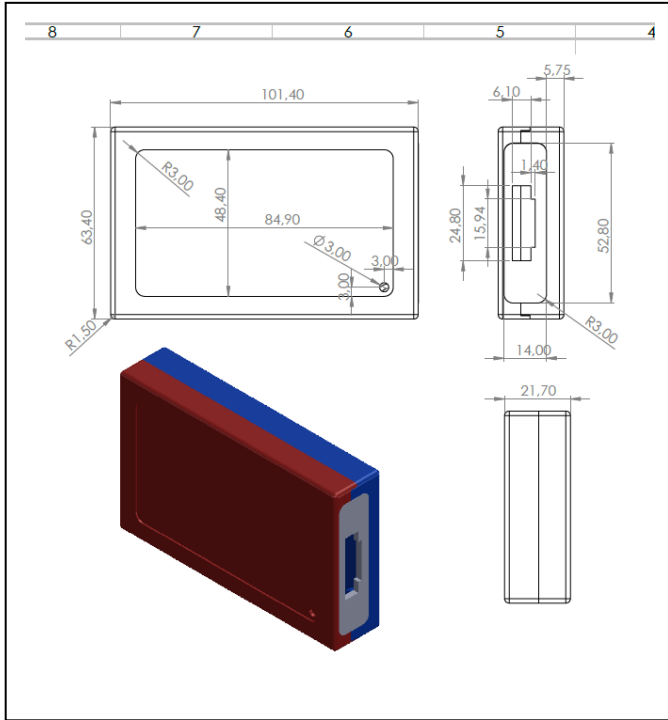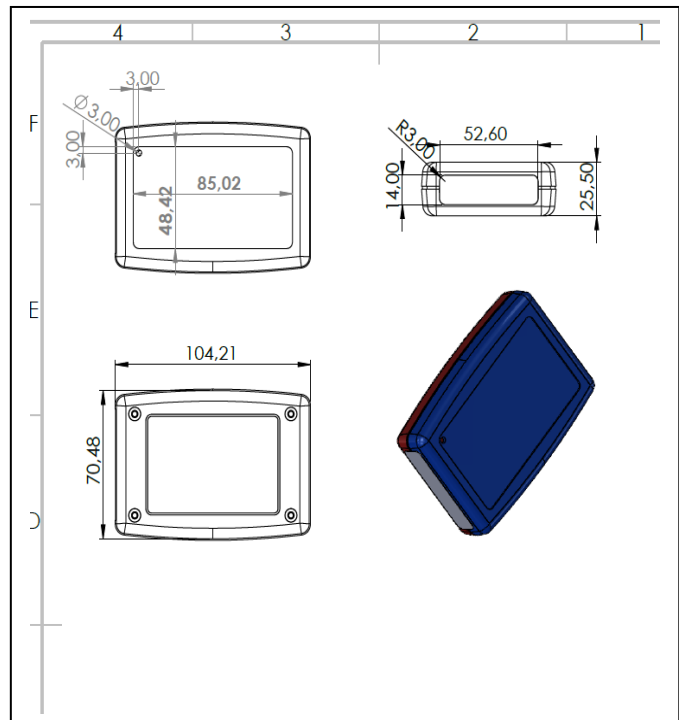
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MECHANICAL SPECIFICATIONS AND DIMENSIONS

Version 1 Technical Image

Version 2 Technical Image

About Black Wolf Technology A.Ş.

Black Wolf Technology Inc. is an innovative R&D company **with 12 years** of experience in the production of electrical and electronic boards, headquartered in Europe. The company offers high-value-added solutions with its expertise in developing advanced technology products. Black Wolf Technology exports devices designed by its team of experienced engineers to **over 50 countries worldwide**, primarily in Europe and America. These devices are in high demand in international markets due to their innovative designs and superior performance. The company specializes in developing groundbreaking products, particularly in the **defense industry and industrial production**, and manufactures these products to the highest quality standards. Its products are designed using modern engineering techniques and innovation-driven approaches, enhancing its competitive edge in global markets. The production portfolio of Black Wolf Technology spans a wide range, from defense industry solutions to smart industrial devices, energy management systems, and automation technologies. With a customer-centric approach, the company ensures that every product meets the highest standards in design and production phases. Through continuous investments in R&D, Black Wolf Technology closely follows industry developments and offers solutions that drive technology forward. By embedding innovation into its corporate culture, the company has established itself as a leader in both local and international markets, shaping the future of the industry.

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