ModView nRF52833 BLE + RS485 Data Logger

Overview

The ModView nRF52833 BLE + RS485 Data Logger (V1.1) is a high-performance, low-power embedded board for industrial data logging, IoT communication, and sensor interfacing. It features the Nordic nRF52833 SoC with BLE 5.1, RS485/422 communication, SD card storage, USB-C connectivity, and Li-ion battery management. Its compact SMD design and modular interfaces make it ideal for remote monitoring, solar-powered IoT systems, and wireless telemetry applications.
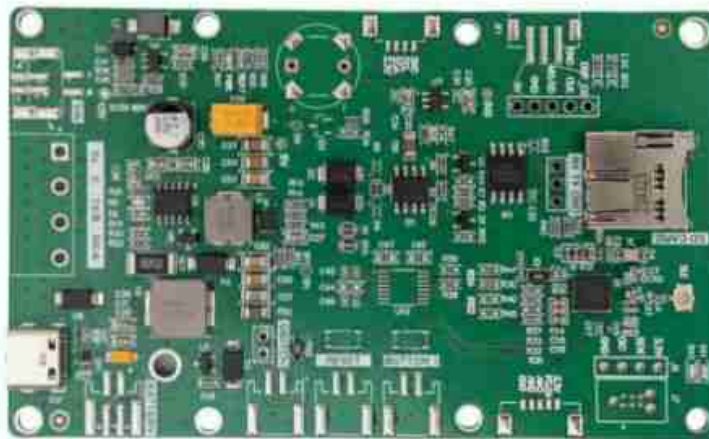

Fig:ModView

Key Features

- High-Performance MCU: Nordic nRF52833-QDAA with BLE 5.1, 802.15.4, ANT, and 2.4 GHz protocols
- Industrial Connectivity: RS485/422 via MAX13487EESA with automatic direction control
- Smart Power Management: Li-ion battery & solar support with CN3791 MPPT charger
- Flexible Power Options: USB-C, VIN (2–16 V), or battery operation
- Stable & Reliable Supply: Buck-boost (TPS63070) and LDO (TLV75533) regulators
- Expandable Storage: Optional microSD slot and W25Q16 SPI Flash for data logging
- Intuitive Interface: User/reset buttons, status LEDs, and UFL external BLE antenna
- Robust Protection: ESD, TVS diodes, and reverse-polarity safeguards for industrial reliability

Technical Specifications

- Microcontroller: nRF52833-QDAA (ARM Cortex-M4F, 64 MHz, 512 KB Flash, 128 KB RAM)
- Wireless Connectivity: BLE 5.1, 2.4 GHz proprietary protocols
- Communication Interfaces: RS485 (MAX13487EESA), UART, SPI, I²C, GPIO
- Flash Memory (optional): W25Q16 SPI Flash (16 Mbit)
- External Storage (optional): microSD card (SPI)
- Battery Charging: CN3791, 4 A Li-ion charger with MPPT
- Voltage Regulation: TPS63070 (Buck-Boost), TLV75533 LDO 3.3V, 500 mA
- Indicators: Power, BLE status (green), fault/error (red)
- Connectors: UFL antenna, SD card, USB-C, RS485 screw terminal, JST headers
- Protection: ESD, TVS diodes, reverse polarity via MOSFET
- Clock Sources: 32 MHz & 32.768 kHz crystals
- Operating Temperature: -40 °C to +85 °C

Applications

- Industrial RS485 Modbus communication with BLE monitoring
- Solar-powered IoT data logging and environmental monitoring
- Remote telemetry and condition monitoring systems
- Battery-operated BLE sensors or gateways
- Wireless configuration of RS485 devices
- Energy and environmental monitoring platforms