Data Logger

Overview

The Data Logger is a high-performance LTE Cat 1 OpenCPU IoT development board powered by the Quectel EC200U module. Designed for industrial-grade and remote applications, it combines powerful processing, integrated LTE and GPS antennas, and a wide range of communication interfaces in a compact form factor.It supports QuecPython, enabling direct Python-based development on the module without an external microcontroller—reducing complexity, cost, and power consumption. With advanced MPPT-based solar charging, dual SIM support, and multi-protocol connectivity (UART, I²C, SPI, RS232, RS485), the board delivers exceptional flexibility for scalable IoT, telemetry, and data logging systems

Fig:Data logger

Key Features

- OpenCPU architecture based on Quectel EC200U LTE Cat 1 module
- Built-in LTE and GPS antennas for cloud connectivity and location tracking
- Dual SIM switching for reliable network redundancy
- MPPT solar charging and power management with battery and USB-C input
- Multi-protocol interfaces: UART, I²C, SPI, RS232, and RS485
- Integrated RTC and data logging for time-stamped sensor monitoring
- Supports QuecPython (MicroPython) for rapid IoT application development
- Compact, rugged design suitable for field deployment

Technical Specification

- Processor Module: Quectel EC200U LTE Cat 1
- Input Voltage Range: 5 V – 12 V DC
- Operating Temperature: –30 °C to +75 °C

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- Input Voltage Range: 5 V – 12 V DC
- Operating Temperature: –30 °C to +75 °C
- Storage Support: microSD card slot (up to 32 GB)
- Communication Interfaces:
- 3× UART (Main, Debug, Auxiliary)
- 2× I²C, 1× SPI
- RS232 and RS485 industrial interfaces
- Wireless Connectivity: LTE (4G), GPS
- Power Management: MPPT solar charging via CN3791, Li-ion battery, USB-C, and terminal input
- Protection Circuit: SMAJ18A TVS diodes for surge and ESD protection
- Real-Time Clock: RV-3028-C7 with backup power

APPLICATIONS

- Smart Agriculture: Real-time monitoring of soil, weather, and irrigation systems using cloud connectivity and solar power.
- Industrial Automation: Remote equipment control, predictive maintenance, and data logging over LTE and RS485 networks.
- Environmental Monitoring: Collection of air quality, temperature, and humidity data using onboard sensors and GPS tracking.
- Asset Tracking: Location-based monitoring of mobile assets with built-in LTE and GPS antennas for reliable data transmission.
- Remote Data Logging: Continuous acquisition and cloud upload of multi-sensor data for smart city and IoT applications.
- Weather Stations: Integration with sensors for rainfall, temperature, and humidity logging with real-time reporting.
- Smart Infrastructure: Used in connected streetlights, water management, and energy metering systems.
- IoT Gateways: Acts as a central hub for sensor nodes, aggregating and transmitting data to cloud platforms securely.