

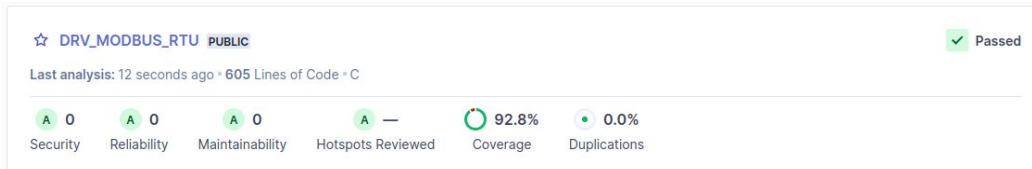
Modbus :: RTU

MODBUS is an application-layer messaging protocol that operates at Layer 7 of the OSI model and enables client-server communication between devices connected to various types of buses or networks.

This library implements Modbus RTU for client and server over UART (data link layer) and is compatible with RS-485 transceivers (e.g., MAX3485, SN65HVD1781) at the physical layer, enabling reliable embedded industrial communication.

The software is architected with long-term maintainability, portability across MCU platforms, and adherence to high software quality standards as core design principles.

- ✔ Layered architecture with clear HAL abstraction
- ✔ Conforms to ISO C99 standard
- ✔ Portable across multiple MCU platforms
- ✔ Supports both RTOS and bare-metal environments
- ✔ CMake build system for scalable integration
- ✔ Seamless integration with GCC toolchain
- ✔ Statically analyzed for MISRA, CERT, and CWE compliance



Initialization Interface

```
modbus_rtu_result_t modbus_rtu_init( modbus_rtu_handle_t*,
                                     modbus_rtu_attr_t )

modbus_rtu_result_t modbus_rtu_server_init( modbus_rtu_handle_t*,
                                             modbus_rtu_server_attr_t )
```

Server Interface

```
modbus_rtu_result_t modbus_rtu_server_process( modbus_rtu_handle_t* )
```

Data Retrieval Interface

```
modbus_rtu_result_t modbus_rtu_read( modbus_rtu_handle_t*, ... )
```

Write Interface

```
modbus_rtu_result_t modbus_rtu_write( modbus_rtu_handle_t*, ... )
```

Operation Interface

```
modbus_rtu_result_t modbus_rtu_stop( modbus_rtu_handle_t* )
modbus_rtu_status_t modbus_rtu_get_status( modbus_rtu_handle_t* )
uint16_t modbus_rtu_get_crc( uint8_t*, ... )
```

Communication Interface:

UART