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1 Introduction

This guide is designed to help you quickly install the RVT Modbus adapter and to give an overview of the commissioning process. This guide makes reference to more detailed documents made for installers, commissioning people and network managers who are familiar with Modbus protocol and related matters.

2 Overview

2.1 Introduction to Modbus

Modbus is a serial, asynchronous protocol. The Modbus protocol does not specify the physical interface. The RVT Modbus adapter has an RS-485 interface.

[Detailed information is available in “RVT Modbus RS485 adapter – Installation and Start up Guide”]

Modbus is designed to allow a communication between components of an installation including one or several supervision systems.

Amongst the countless advantages and benefits of a communication capability, Modbus is a well spread protocol in the industrial world and allow, for example, interconnection between components for linked actions and information centralization.

Gateway between Modbus and other fieldbus can be found in the market giving access to several other fieldbus systems.

The Modbus adapter is an optional device for the RVT Touchscreen which enables the connection of the RVT to a Modbus system. The RVT is considered as a slave unit in the Modbus network.

With the RVT Modbus adapter, all RVT information (measurements, serial number, alarm messages...) and all parameters settings (switching strategy, protection levels...) are accessible. [Detailed information is available in “RVT – Installation and Operating Instructions”]

2.2 Modbus adapter mounting

The Modbus adapter has a customized design to fit the RVT case.

1. Plug the RVT Modbus adapter in the RVT dedicated connectors.
2. Fix the RVT Modbus adapter with the fixing screw (included in the delivery).
3. Ensure that all connections are tight
RVT RS485 Modbus adapter

To be connected to RVT RS232 input (optical transceiver)

To be connected to RVT power supply connector

Please note that if the RVT is already installed and connected, the RVT power supply has to be switched OFF during the Modbus adapter connection. [Detailed information on RVT mounting is available in “RVT – Installation and Operating Instructions”]

2.3 Modbus adapter wiring

A proper cable must be used for the connection between the RVT Modbus adapter and the Modbus master. For a RS-485 connection and up to 1200 m (4000 ft), a 24 AWG twisted pair with foil shield and drain wire on each pair is usually required (Belden 9841 for 2-wire and 9729 for 4-wire or equiv.) [Detailed information is available in “RVT Modbus RS485 adapter – Installation and Start up Guide”]

Please note that if the RVT is already installed and connected, the RVT power supply has to be switched OFF during the Modbus adapter connection. [Detailed information on RVT wiring is available in “RVT – Installation and Operating Instructions”].
2.4 Modbus adapter terminal switch

- Depending on the position of the RVT-Modbus in the Modbus line topology, the resistor termination switch must be switched ON or OFF.
- If the RS485 Modbus adapter is one of the two ending station on the communication line, the resistor termination switch must be switched in the ON position. If not, it must be switched in the OFF position.
- Make sure all other Modbus stations (master and slaves) are properly connected.

[Detailed information is available in “RVT Modbus RS485 adapter – Installation and Start up Guide”]

2.5 RVT access level

The RVT has several access levels in order to prevent unauthorized modification of all or some of the parameters. Three levels are described here below. The access levels have to be taken into account for parameter settings through Modbus as same rules apply.

Locking switch:

A locking switch, located at the back of the RVT allows the RVT to be locked in AUTO mode or in MAN mode.

When the lock is set:

- A 🔄 will appear in the status bar of the display.
- The editable parameters are grey
- Access to the Change mode and Commissioning menus will be denied.
- No modification can be made to the settings
- The setting values may be consulted

This access level cannot be modified by software (with RVT Touchscreen or Modbus communication). Pressing the locking switch physically can only modify the access permission.

AUTO/ MAN mode:

The RVT has three functional modes: AUTO, MAN and SET modes.

When the AUTO or the MAN mode is set:
The editable parameters are grey
Access to the Commissioning menu will be denied.
Access to the Change mode menu will be allowed.
The setting values may be consulted.
No modification can be made to the settings

In SET mode, the RVT parameters can be set manually and automatic and guided commissioning can be performed.

Please note that parameter settings can only be modified in SET mode.

Bank settings item:
The bank settings item, available at the bottom of the bank settings list, can be either locked or unlocked.

When the bank settings item is set as locked (whatever the Mode used):
- The editable parameters are grey
- No modification can be made to the bank settings
- The bank settings values may be consulted.
- The installation and user settings can be modified, if the locking switch is unlocked.

2.6 RVT parameter settings for Modbus communication
By selecting the following buttons in the menus, the Modbus parameters can be set.
All RVT parameters as well as all the RVT measurements are accessible through Modbus.
**Slave address**: to adjust the address of the Modbus/RTU slave.

The Modbus master will refer to this address for each query/answer transaction with this RVT.

**Baud rate**: to adjust the communication speed (bits/second).

**Parity**: to set the parity checking.

**Stop bit**: to set the number of stop bit(s).

### 2.7 Modbus data table

Each data, measurement value and parameter setting available on the RVT can be read or set (parameter settings) through the Modbus communication.

The Modbus data table gives all the necessary information (addresses, access levels and storage types) for a proper Modbus communication. [Detailed information is available in “RVT Modbus RS485 adapter – RVT Modbus data table”].
3 Appendix: references

- Installation and operating instructions RVT
- RVT communication with Modbus RTU, Modbus TCP and PQ Link protocols
- Installation and start-up guide RS485 Modbus Adapter.
Additional information

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