

# Neon Remote Terminal (NRT) Modbus Protocol Support

## Overview

The Modbus protocol implemented in the NRT is a partial implementation of the full Modbus protocol (refer attachments for the full Modbus protocol)

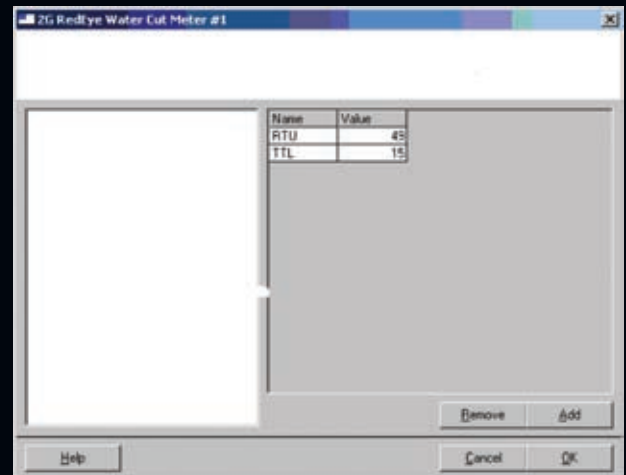
The Unidata approach to this partial implementation is to provide two NRT functions:

- Function 1 is to extract (get) data from specified registers within a Modbus RTU.
- Function 2 is to place data (put) into a specified register within a Modbus RTU

The specific register information and its corresponding encoding and decoding information required for interpretation is defined when the NRT logging scheme is created.

There are two ways that this register information can be set up using the NRT logger support software, Starlog 4:

- 1 allocate a special instrument and define required register information for that special instrument
- 2 Use a (yet to be developed) generic Modbus instrument, and make the register entries in a similar way that the generic SDI 12 instrument is used.



*In the future Starlog 4 will provide a Modbus Instrument Screen similar to the SDI Instrument screen with all the settings and definitions required to manage Modbus transactions.*

## NRT Modbus Implementation

The NRT Modbus implementation follows the recommendations of the Modbus-IDA specifications ([www.modbus.org](http://www.modbus.org)) for the Basic Implementation of a Modbus Master. (Specification and Implementation Guide V1.02 20/12/ 2006 Chapter 5)

### Modbus Master - Basic Implementation

RTU Transmission Mode      Baud rate: 1200, 2400, 4800, 9600, 19200  
 Parity: 8,n,1; 8,e,1; 8,o,1; 8,n,2  
 No Line Termination provided  
 No Line Polarisation/Biasing required (or provided)

The NRT Basic Modbus implementation will Read Coils, Discrete Inputs and Registers (Functions 01, 02, 03, 04) and Write Coils and Registers (Function codes 05/15, 06/16)

Request Timeout:                      250 ms    (CDT adjustable)  
 Failed Request – number of retries: 3    (CDT adjustable)  
 Frame turnaround delay:              3.5 chars  
 Buffer size:                                20 bytes  
 RS-485:                                    3V

## NRT Modbus Connections

The NRT can be connected to a Modbus RTU using the Standard NRT FTS, which has RS485 signal levels available.

Note that some NRT implementations, such as the Neon Metering Module and other Modules do not have RS485 support. For Modbus applications the NRT Terminal and the NRT Terminal FTS must be used.

## Using Instruments from the MODBUS.sil Starlog V4 Instrument File

Clicking on the instrument allows you to enter two parameters: -

RTU = Address number of the RTU on the BUS (1..247) Note: Addr = 0 is the broadcast address and is supported by the NRT

TTL = Time\_To\_Log ... Number of seconds before the next Scheme Log Interval. This defines when the Modbus will be interrogated, so that the RTU readings can be collected and placed into the Logger Channels before the next Log takes place.

WARNING: The TTL value must be modulo scan rate. i.e. if the scan rate is 5 secs then the TTL value must be in units of 5 secs, otherwise NRT MODBUS will not activate.



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