



Data Sheet CODESYS Modbus TCP Master SL

CODESYS Modbus TCP Master is a product for extending the functionality of CODESYS compatible devices. Using a standard Ethernet adapter, Modbus Master (clients) are created from these devices. In this way, configured devices exchange data with Modbus TCP slaves.

Product description

The CODESYS Modbus TCP Master configurator, which is integrated in the CODESYS Development System, expects a license on the device. This license is either already stored in the controller by the device manufacturer or added afterwards by the end user. The product is also available for Modbus Master (RTU).

This license is already included in SoftPLC systems from 3S-Smart Software Solutions (example: CODESYS Control Win or CODESYS Control for Raspberry Pi). The license is saved to a CODESYS compatible device — on CODESYS Runtime Key (hardware device) or CODESYS Soft Key (software license container). If a license for the CODESYS Modbus TCP Master is available on the device to be programmed, then the device can communicate with connected adapters and read and write their inputs and outputs, respectively. For this purpose, the communication parameters are predefined in the configurator, for example the settings of the Ethernet adapter (baud rate, port number).

Modbus commands are defined in the configurator and are oriented to a specific Modbus slave. The commands are processed by the device at specific intervals, or triggered programmatically. For predefined commands, I/O channels are generated automatically with variables that can be mapped (I/O mapping).

Processing requires a protocol stack and CODESYS I/O driver that implements Modbus communication on the configured Ethernet port. This I/O driver is supplied with the license as CODESYS libraries.

More information

The CODESYS Modbus TCP Master is configured completely from within the CODESYS Development System.

Modbus Configurator

The CODESYS Modbus TCP Master configurator consists of editors for the following device categories that are inserted into the device tree hierarchy:

- Ethernet:
The Ethernet adapter is configured here (IP address, subnet mask, etc.)
- Modbus TCP Master:
A Modbus TCP master can be inserted below the Ethernet node. Communication settings can be defined specifically for Modbus, for example “Response Timeout” for defining the time to wait for a response from a Modbus TCP slave.
- Modbus TCP Slave:
Multiple Modbus TCP slave devices can be inserted below a Modbus TCP master. The slave address is defined here, as well as a series of Modbus commands (incl. respective I/O mapping). These are processed by the driver and exchanged with the Modbus TCP slave.

The CODESYS Modbus TCP Master is configured completely from within the CODESYS Development System.

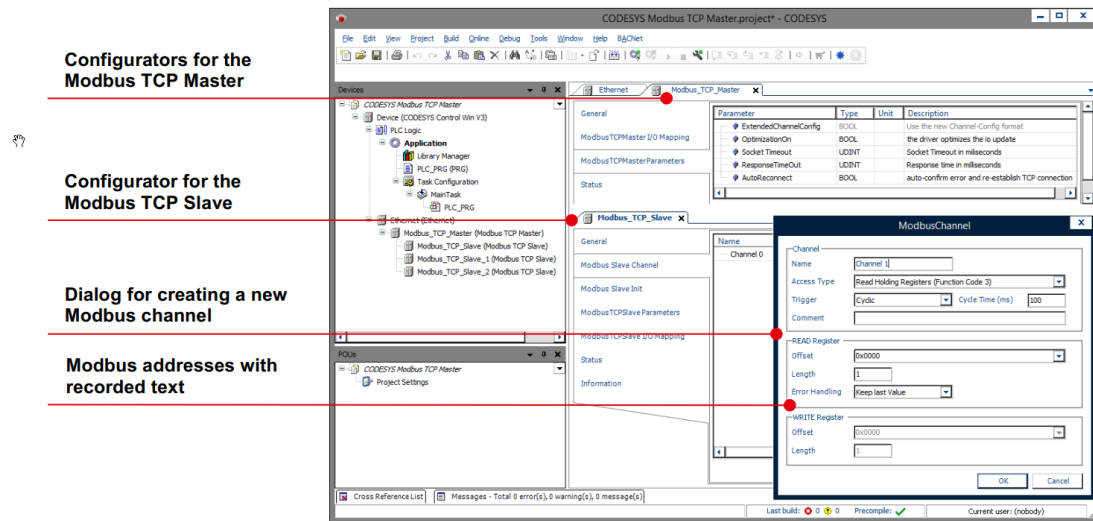
Device description files

Modbus TCP slaves are defined in the CODESYS format “devdesc.xml” because there is generally not native description format, such as GSD or GSDML, for Modbus devices. For example, description texts can be predefined for Modbus registers that are then evaluated by the configurator. Moreover, Modbus commands can be defined that are created automatically when devices are inserted into the project.

Modbus driver library

The Modbus driver supports all Modbus function codes for exchanging I/O data: * FC 01 – Read Coils * FC 02 – Read Discrete Inputs * FC 03 – Read Holding Registers * FC 04 – Read Input Registers * FC 05 – Write Single Coil * FC 06 – Write Single Register * FC 15 – Write Multiple Coils * FC 16 – Write Multiple Registers * FC 23 – Read/ Write Multiple Registers

A scheduling mechanism checks the queue for the next predefined command in each bus cycle that queued for processing. Then, it executes the first in the queue (example: trigger variable or time difference since the last execution).



Picture 1: Integrated CODESYS Modbus TCP Master configurator

General information

Manufacturer:

3S-Smart Software Solutions GmbH
 Memminger Strasse 151
 87439 Kempten
 Germany

Support:

<https://support.codesys.com>

Item:

CODESYS Modbus TCP Master SL

Item number:

2303000001

Sales:

CODESYS Store

<https://store.codesys.com>

Included in delivery:

- License key

System requirements and restrictions

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|-------------------------------------|---|
| Programming System | CODESYS Development System V3.5.5.0 or higher |
| Runtime System | CODESYS Control V3.5.5.0 or higher |
| Supported Platforms/ Devices | Note: Use the project "Device Reader" to find out the supported features of your device. "Device Reader" is available for free in the CODESYS Store. |
| Additional Requirements | <ul style="list-style-type: none"> • CODESYS Control runtime system on the device with SysSocket component • Available Ethernet adapter on the device |
| Restrictions | Max. 32 Modbus TCP slaves |
| Licensing | License activation optional on CODESYS Runtime Key or CODESYS Soft Key (free of charge component of CODESYS Controls) |
| Required Accessories | Optional: CODESYS Runtime Key |

Note: Not all CODESYS features are available in all territories. For more information on geographic restrictions, please contact sales@codesys.com.

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.