

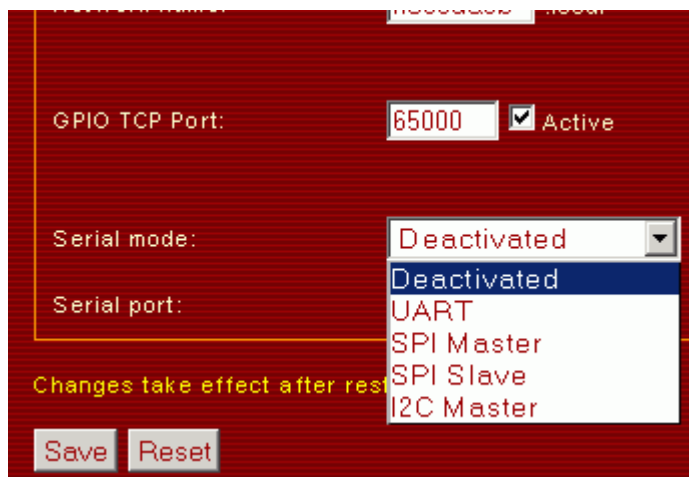
Serial server

Using the serial server, access to different serial interfaces is possible via a TCP/IP-connection.

Since **version 1.2**, the following interfaces are supported:

- Asynchronous serial interface full-duplex - [Asynchron serial interface \(UART\)](#)
- Synchronous serial interface full-duplex - [SPI Master](#)
- TCP/IP - modem at synchronous serial interface half-duplex (**now done by separate project!**) - [The SPI slave protocol](#)
- Two-Wire interface- [The I2C master protocol](#)

Since **version 1.5pro** the [I2C Monitor](#) mode is supported.



The interface as well as the TCP/IP-port of the serial server are set on the website with the general settings. The new settings always become only active after restart of the Netzer.

The interfaces occupy different [IOs](#) of the Netzer. A free configuration of those is then not possible from the [GPIO-main page](#).

Apart from the TCP/IP-modem, all modes are structures that way that after restart Netzer opens a socket with a correspondingly configured port and listens to incoming connections.

Once a connection is made, it is then possible to directly send data to the respective serial interface and received by it as well. Depending on the chosen interface, a certain protocol overhead is still required to be transferred.

A receive buffer and a send buffer are interposed between the TCP/IP-socket. Both buffers have 256 byte. All data communication is done via these buffers to increase the data throughput on the serial interfaces.

Settings

The screenshot shows a settings interface with a sidebar on the left containing menu items: SYSTEM STATE, COMMON, GPIO, and SERIAL (which is selected). The main content area is titled 'SERIAL' and contains several configuration sections:

- UART settings:** A dropdown menu for 'UART Baudrate' is set to '19200 Baud'.
- Common SPI settings (SPI Slave: Changes take effect after restart):** A 'Clock mode:' section with four radio button options: SPI Mode 0 (selected), SPI Mode 1, SPI Mode 2, and SPI Mode 3.
- SPI Master settings:** A 'Clock frequency:' dropdown is set to '10.4 MBit/s', and an 'Input sampling:' section with two radio button options: 'At middle of data output' (selected) and 'At end of data output'.
- I2C Master settings (SCL = SPI_CLK, SDA = SPI_MI):** A 'Clock frequency:' dropdown is set to '400 kHz'.

At the bottom of the settings area are two buttons: 'Save' and 'Reset'.

SPI

For SPI, particularly the clock mode is important. The setting applies likewise to Master and Slave. It defines the polarity of the clock signal as well as the transfer edge as follows:

Mode Idle mode of the clock signal transfer edge

Mode 0 0	rising
Mode 1 0	falling
Mode 2 1	falling
Mode 3 1	rising

For the successful data transfer, the modes of Master and Slave should be equivalent!

Amendments of this setting at the SPI-slave become effective after restart only.

In SPI-slave mode it is important that the Master actually creates the set resting potential for the clock signal at the beginning, since otherwise the Netzer may not activate the SPI-module!

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