

Manual BrainCube Connect with Modbus Master

Inhalt

| | | |
|----------|--|----------|
| 1 | Modification service | 3 |
| 2 | Installation of Modbus Master Software | 4 |
| 3 | System requirements | 4 |
| 4 | Modbus Master operation | 4 |
| 4.1 | Modbus Master interface overview | 4 |
| 4.2 | Additional watch windows | 5 |
| 5 | ModBus RTU Setup | 5 |
| 5.1 | Parameter settings in BrainCube2 | 5 |
| 5.2 | 4.2 Modbus Master communication settings: READ | 5 |
| 5.3 | Modbus Master connection settings: RTU | 6 |
| 6 | Modbus TCP Setup | 8 |
| 6.1 | Parameter settings in BrainCube2 | 8 |
| 6.2 | Modbus Master communication settings: READ | 8 |
| 6.3 | Modbus Master connection settings: TCP | 9 |
| 6.4 | Modbus TCP Write | 11 |

1 Modification service

| Index Document | Chapter | addition / deleted / Modification |
|----------------|--------------|-----------------------------------|
| | Description | |
| 1711 | all | addition |
| | All chapters | |

2 Installation of Modbus Master Software

- Please download and install the Modbus monitoring program Modbus Master from <https://kent.dl.sourceforge.net/project/qmodmaster/qModMaster-Win32-exe-0.4.8.zip>
- Modbus Master is an open source program and supports RTU and TCP communications

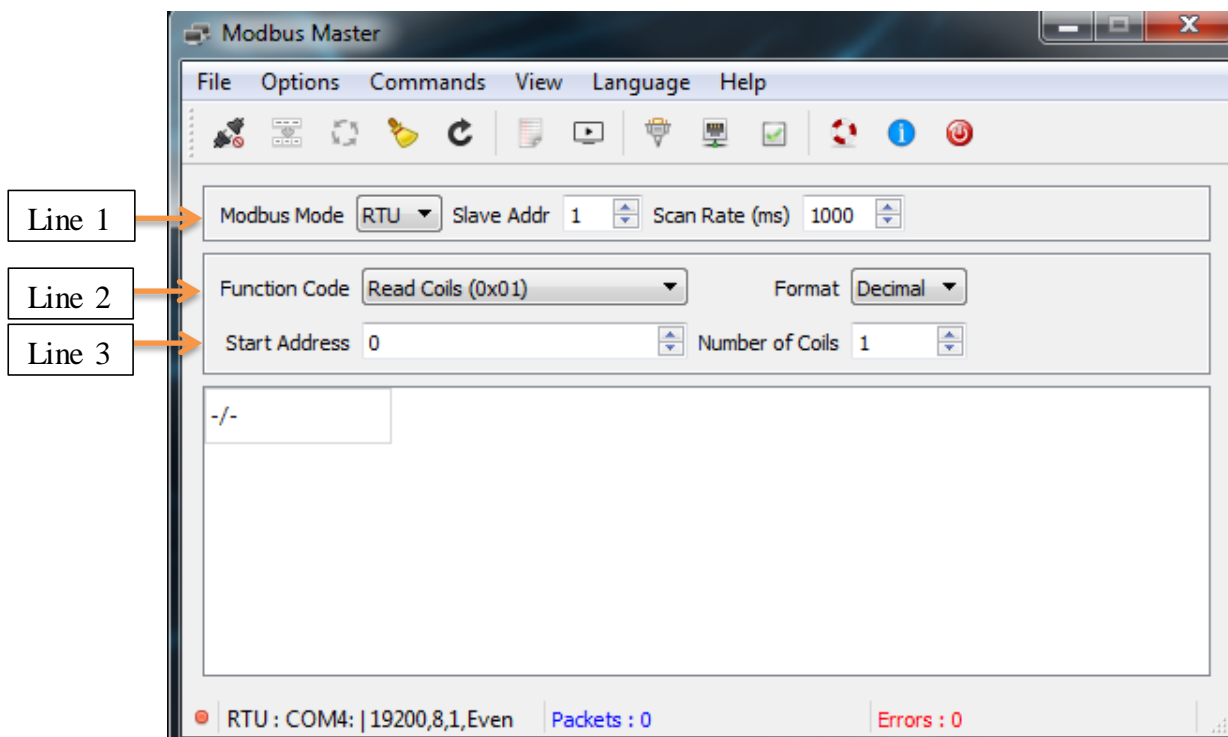
3 System requirements

- For Modbus RTU you will need a RS485 to USB adapter. A solution from FTDI is recommended.
- For Modbus TCP a ethernet connection has to be established between the computer and the network having BrainCube2 communication.

4 Modbus Master operation

4.1 *Modbus Master interfae overview*

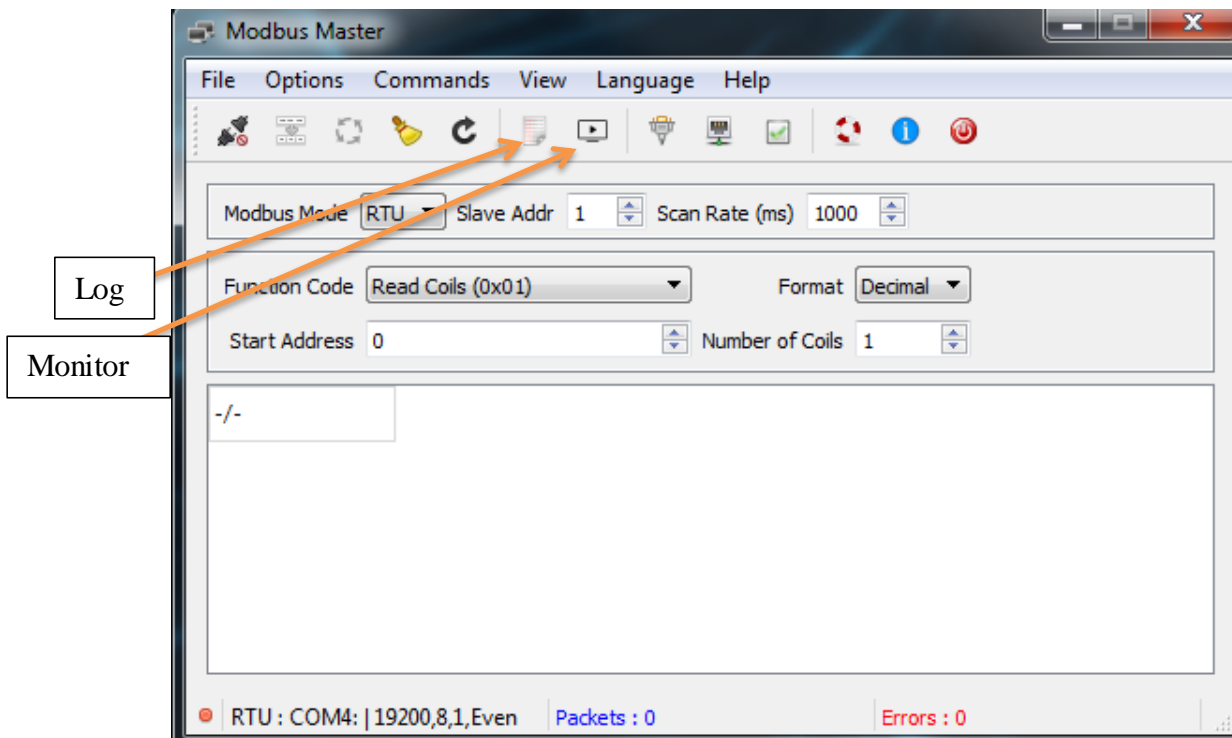
- With default settings the program shows the following screen:



- Line 1 shows the Modbus Mode. RTU or TCP is applicable. The Slave Addr is used to set the BrainCube's Modbus address. The Scan Rate specifies the interval how often the data should be polled.
- Line 2 shows the Function Code and the format of the values in the communication area below.
Function Code 03: Read Holding Registers and 06: Write Single Register are advised.
- Line 3 shows the start address of the first register and the number of register to be read

4.2 Additional watch windows

To Monitor and log the communication you can enable a bus monitor and a log file.



5 ModBus RTU Setup

5.1 Parameter settings in BrainCube2

The RS485 communication has to be enabled at
Parameter/Interface-Communication/RS485 ⇔ BMS ⇔ TecBoxes

- Activate RS485 (marked)
 - RS485 protocol has to be Modbus RTU
- In this screen you can also set BrainCube's address and baud rate.
- At BrainCube the implemented protocol uses 8bit with even parity and one stop bit (8E1)

5.2 4.2 Modbus Master communication settings: READ

Select RTU for Modbus Mode and type the BrainCube's RS485 address in the Slave Addr field.

To get the address please have a look in the menu at

Parameter/Interface-Communication/RS485 ⇔ BMS ⇔ TecBoxes

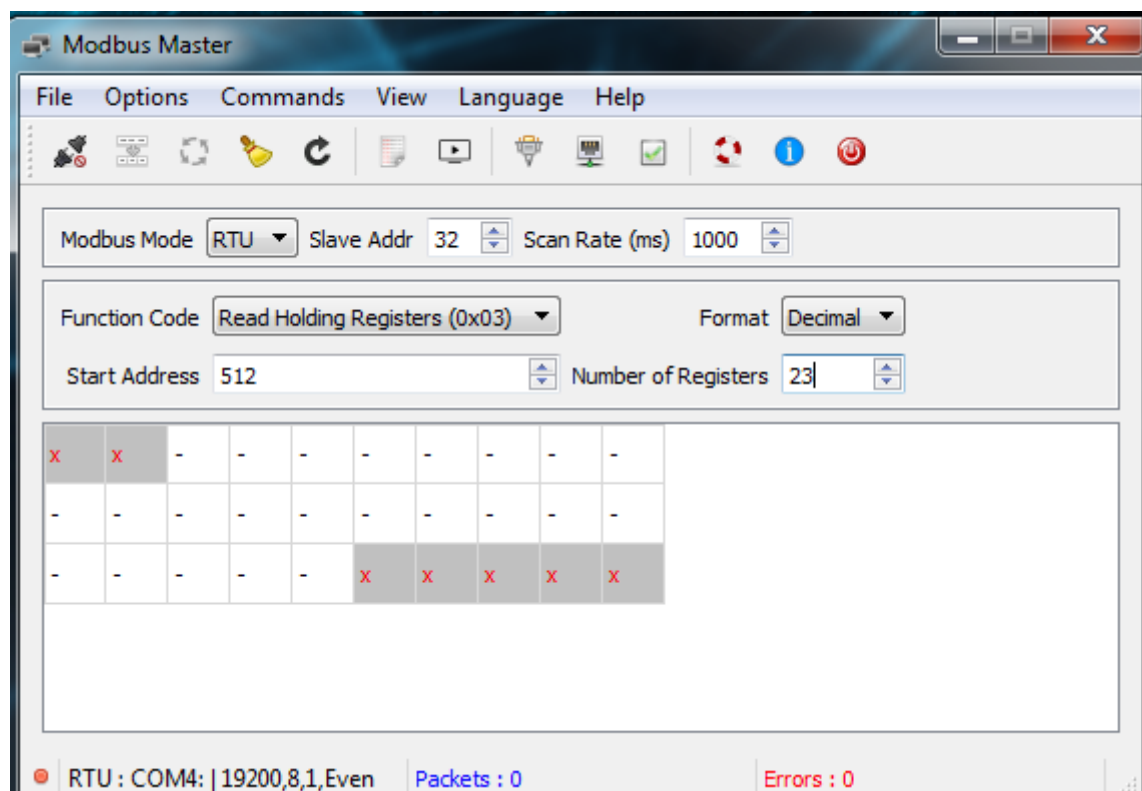
Set 03: Read Holding Registers in the drop down bar as function code.

BrainCube's register addresses start from 0200h or in decimal 512.

Please set 512 to the start address field.

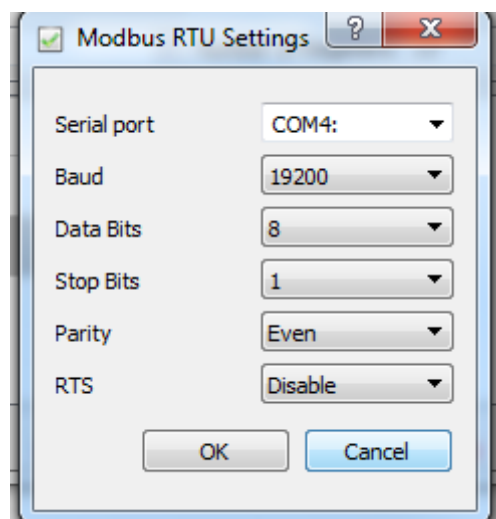
The number of registers should be set to a value equal or less than the allowed maximum.

The screenshot below shows example settings.

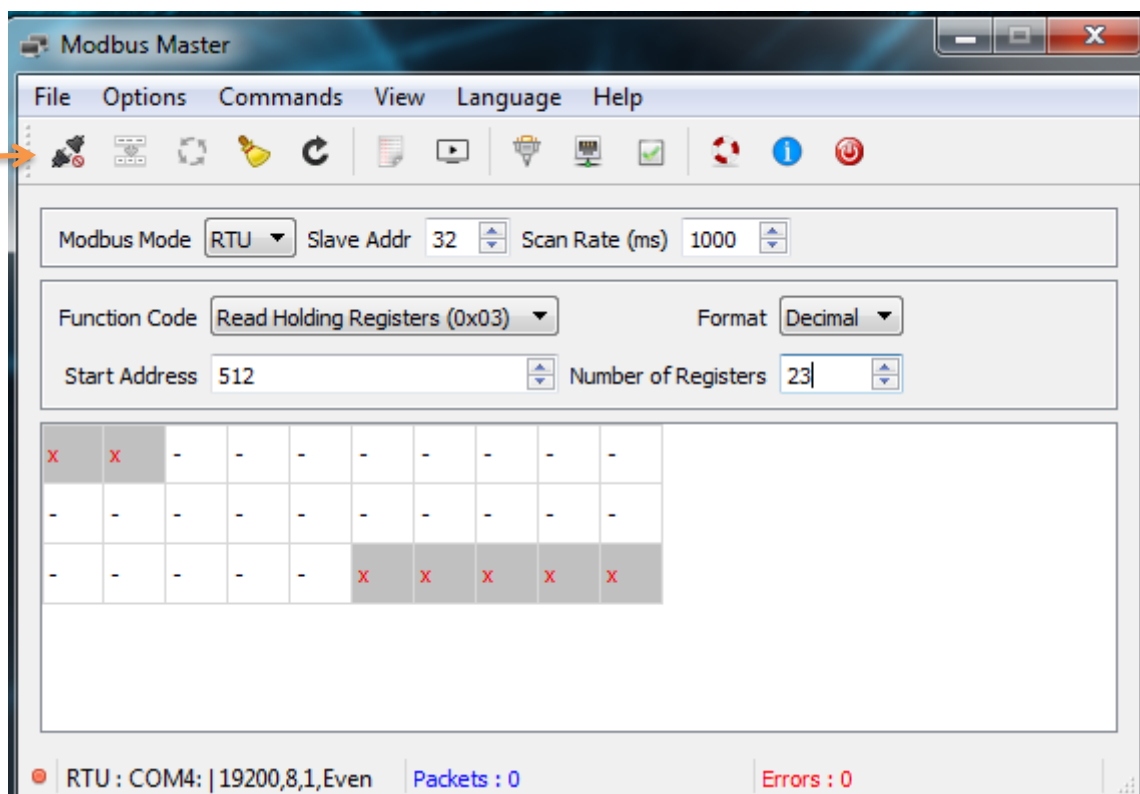


5.3 Modbus Master connection settings: RTU

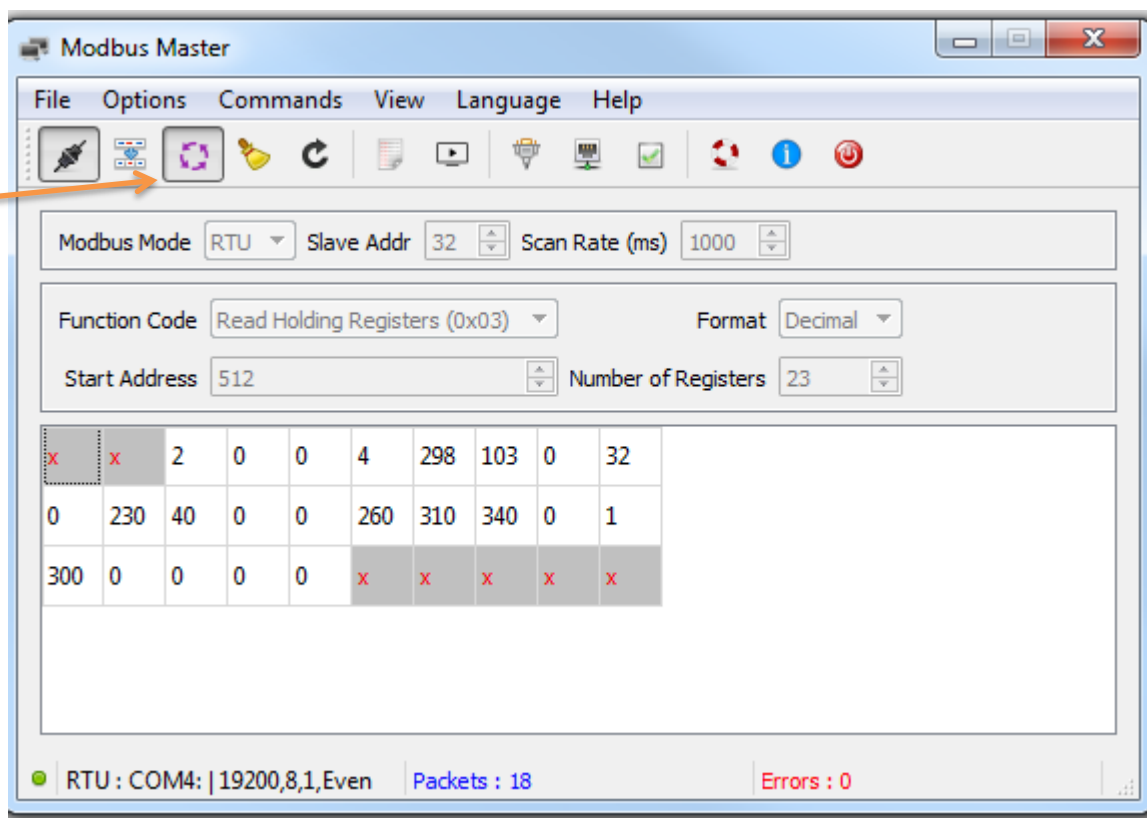
- To setup a connection please press on the top menu bar options > Modbus RTU



- Please select the COM-Port at which your RS485 to USB adapter is mounted.
- At BrainCube the implemented protocol uses 8bit with even parity and one stop bit (8E1)
- Baud rate is by default 19200 baud. This can be adjusted in BrainCube's parameter menu.
- There is no hardware flow control available.
- Press the Connect button to enable the communication.



- Press the Scan button to start reading cyclic with the specified scan rate.



Some register values are bit masked values. It might be useful to change the format to hexadecimal values.

6 Modbus TCP Setup

6.1 *Parameter settings in BrainCube2*

The RS485 communication has to be enabled at

Parameter/Interface-Communication/RS485 ⇔ BMS ⇔ TecBoxes

- Activate RS485 marked
- RS485 protocol has to be Modbus RTU
- At BrainCube the implemented protocol uses 8bit with even parity and one stop bit (8E1)
- At Parameter/Interface-Communication/Ethernet ⇔ Server you have to decide if DHCP is available or if a static IP has to be assigned. If DHCP times out the device falls back to AutoIP.
- At Parameter/Interface-Communication/Ethernet Modbus TCP ⇔ GLT the TCP port is 502 by default

6.2 *Modbus Master communication settings: READ*

Select TCP for Modbus Mode and type the BrainCube's RS485 address in the Unit ID field.

To get the address please have a look in the menu at

Parameter/Interface-Communication/RS485 ⇔ BMS ⇔ TecBoxes

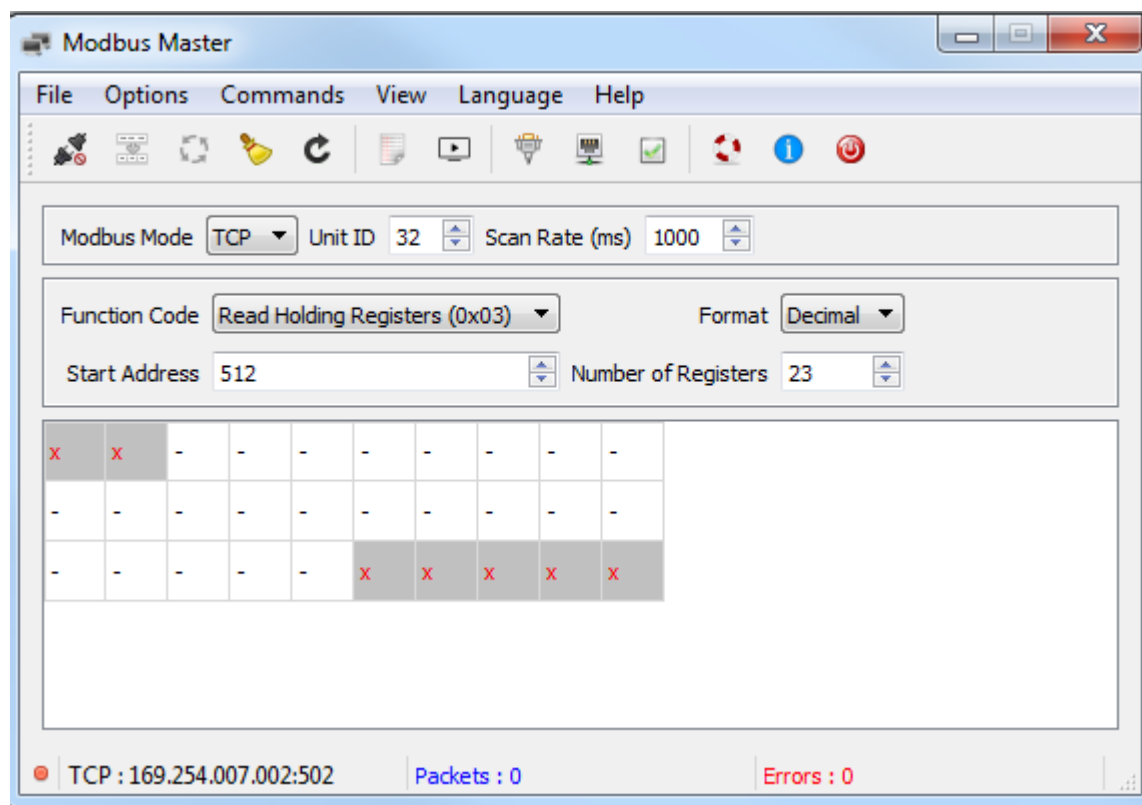
Set 03: Read Holding Registers in the drop down bar as function code.

BrainCube's register addresses start from 0200h or in decimal 512.

Please set 512 to the start address field.

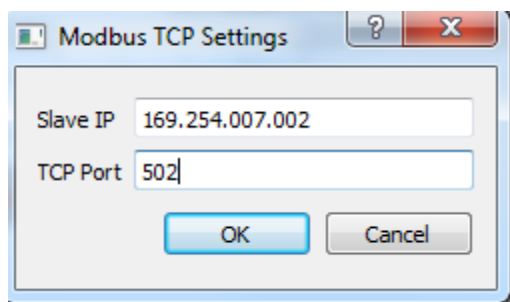
The number of registers should be set to a value equal or less than the allowed maximum.

The screenshot below shows example settings.

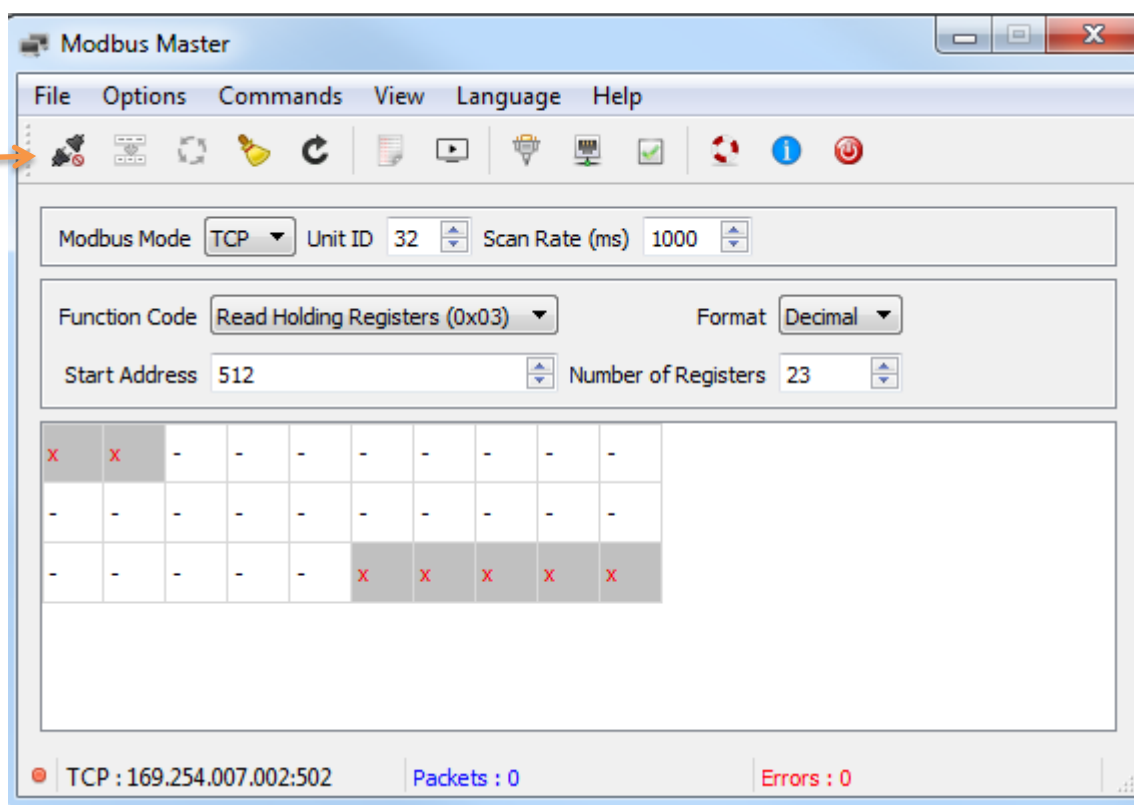


6.3 Modbus Master connection settings: TCP

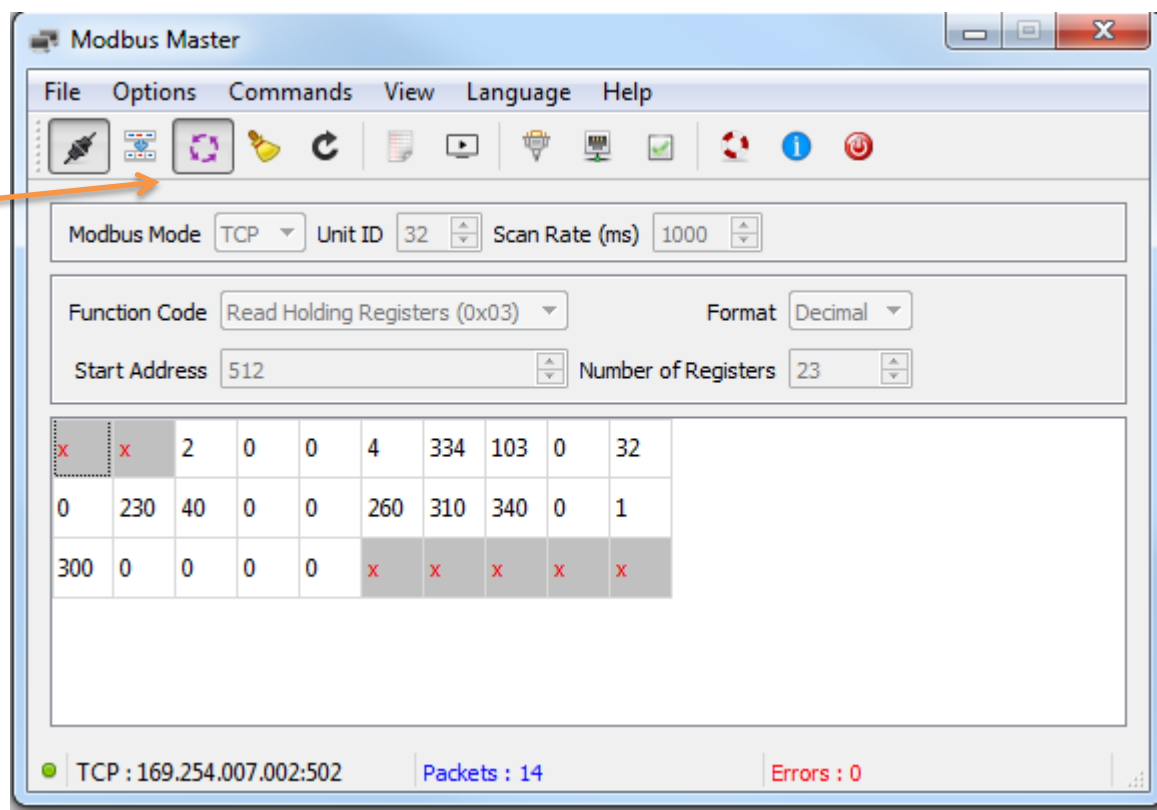
- To setup a connection please press on the top menu bar options > Modbus TCP



- Please enter BrainCube's IP address in the Slave IP field.
- Press the Connect button to enable the communication.
- In this case AutoIP is used with DHCP off



- Press the Scan button to start reading cyclic with the specified scan rate.



Some register values are bit masked values. It might be useful to change the format to hexadecimal values.

6.4 Modbus TCP Write

The following example describes how to set the operation mode to auto by writing a 1 to Register 43.

- Set the function code to Write Single Register 0x06
- Set the Start Address to 1067
- Set the value to 1

