Modbus with MAC00-B4 and MAC400/800

This document describes how to set up hardware and software to use Modbus with a MAC00-B4 module mounted in a MAC400 or MAC800 motor.

Hardware
This setup is for an RS485 connection with two wires plus ground.

To use Modbus, connect the three wires from the Modbus master to the "IO" M12 8-pin male connector on the MAC00-B4 as follows:

RS485+ must be connected to both pins 1 and 3.
RS485- must be connected to both pins 2 and 4.
Ground must be connected to pin 7.

Set DIP switches 1 and 4 to ON. Set DIP switches 2 and 3 to OFF.
Set DIP switch 6 to ON on the module at the end of the RS485 cable or set it OFF on modules that are not at the end of the RS485 cable.

Note that Modbus can only be used with the "IO" connector – it can not be used with the "COM1" or "COM2" connectors. Modbus can not be used over RS232.

Software
Modbus uses another physical connection to the motor than regular MacTalk. Both MacTalk and Modbus can be used simultaneously.

None of the released versions of MacTalk gives access to the complete Modbus setup at the time of this writing. It is therefore necessary to use MacRegIo:

The Modbus master and slaves must be configured to the same values for: Baudrate, Parity and Number of stop bits. The Modbus standard recommends to use Even parity and one stop bit. The node address is normally the same address as the motors MacTalk address.

In MacRegIo, use the following values to use the above default settings with different baudrates:

9600	0x310
19200	0x311
38400	0x312
57600	0x313
115200	0x314
230400	0x315
444444	0x316
1000000	0x317

1) Write one of the values 0x310 ..0x317 to register 213.
2) Write the wanted node address to register 202.
3) Press the "Enter Safemode" button
4) Press the "Write To Flash" button.

The motor will then reset and will respond to valid Modbus telegrams of types 3 (Read Holding Registers) and type 16 (Write Registers)

Please also see the document Modbus in MAC400/800 for more information on register numbers and data formats.