



MICROTECH MODBUS RTU CONNECTION BOX USER MANUAL

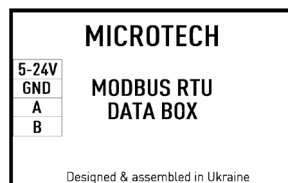
MICROTECH Modbus RTU connection box can be connected to MICROTECH computerized devices.

WORKING CONDITONS

Working temperature °C	5-40°
Humidity	70%
Water protection	IP40
Dimensions, mm	53x82x31
Weight, kg	0,15

GENERAL INFORMATION

- **Protocol:** Modbus RTU
- **Baud rate:** 9600 bps (configurable)
- **Data bits:** 8
- **Stop bits:** 1
- **Parity:** None



SUPPORTED FUNCTIONS

- **0x03 (Read Holding Registers):** data reading
- **0x06 (Write Single Register):** single register writing

FRAME DESCRIPTION

Address fields (8 bits)	Function code (8bits)	Data (any bits)	Error check (CRC) (16 bits)
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CRC CALCULATION EXAMPLE IN C

```
uint16_t modbus_crc16(uint8_t *data, uint16_t length) {  
    uint16_t crc = 0xFFFF;  
    for (uint16_t i = 0; i < length; i++) {  
        crc ^= data[i];  
        for (uint8_t j = 0; j < 8; j++) {  
            if (crc & 0x0001) {  
                crc >>= 1;  
                crc ^= 0xA001;  
            } else {  
                crc >>= 1;  
            }  
        }  
    }  
    return crc;  
}
```

ACCESS TYPES

- **R/W:** Read and write
- **RO:** Read only
- **WO:** Write only
- **R/W*:** Variable can be read but always returns 0

REGISTER MAP

Register address	Description	Parameters	Default value	Access Type
0x2000	Device Address	1-254	20	R/W
0x2001	Data Exchange Rate	0 - 1200 bps, 1 - 2400 bps, 2 - 4800 bps, 3 - 9600 bps, 4 - 19200 bps, 5 - 38400 bps, 6 - 56000 bps, 7 - 57600 bps, 8 - 76800 bps, 9 - 115200 bps, 10 - 128000 bps, 11 - 187500 bps, 12 - 230400 bps, 13 - 256000 bps	4	R/W
0x2002	Measurment Units	0 - mm, 1 - inch	0	R/W
0x2003	Precision	mm: 0-x, 1-.x, 2-.xx, 3-.xxx, 4-.xxxx inch: 0-x, 1-.x, 2-.xx, 3-.xxx, 4-.xxxx, 5-.xxxxx	2	R/W
0x2004	Direction	0- direct, 1 - reverse	0	R/W
0x2005	Screen Brightness	10-100%	50	R/W
0x2006	Alarm	0 - no errors, 1 - communication lost	0	RO
0x2007	Device Type	1 - Indicator, 2 - Caliper, 3 - Micrometer, 5 - Bore Gauge, 9 -Protractors	-	RO
0x2008	Calibration Date	high 8 bits - day, low 8 bits - month	high 16 bit	RO
0x2009		16 bit - year	low 16 bit	RO
0x200A	Zero Setting	Writing 1 resets min and max values, then register set to 0	0	R/W*
0x200B	Reset Min	Writing 1 resets min value, then register set to 0	0	R/W*
0x200C	Reset Max	Writing 1 resets max value, then register set to 0	0	R/W*
0x200D	Device Position	Float position = int/10000	high 16 bit	RO
0x200E			low 16 bit	RO
0x200F	Device Position.	Float value coded according to IEEE754	high 16 bit	RO
0x2010	Float value according to IEEE754		low 16 bit	RO
0x2011	Min Position	Float value coded according to IEEE754	high 16 bit	RO
0x2012	Float value according to IEEE754		low 16 bit	RO
0x2013	Max Position	Float value coded according to IEEE754	high 16 bit	RO
0x2014	Float value according to IEEE754		low 16 bit	RO
0x2015	Max-Min Difference	Float value coded according to IEEE754	high 16 bit	RO
0x2016	Float value according to IEEE754		low 16 bit	RO
0x2017	Preset Value	Float value coded according to IEEE754	high 16 bit	R/W
0x2018	Float value according to IEEE754		low 16 bit	R/W

EXAMPLE OF REGISTER DATA

Device measuring value - 25.66 mm. **The position is stored as a 32-bit integer** (int32).

Formula for conversion to physical value: float position = (int32_value) / 10000.0f

Example: int32 = 0x0003EA58 = 256,856 (dec)

position = 256856 / 1000 = 25.6586

Register 0x200D = 0x0003 (high word)

Register 0x200E = 0xEA58 (low word)

Float format (IEEE754, 32-bit):

25.66(dec) = 0x41CD47AE

Split into 16-bit Modbus register:

Register 0x200F = 0x41CD (high word)

Register 0x2010 = 0x47AE (low word)

Request (read 4 registers starting from 0x200D):

01 03 20 0D 00 04 CRC

Device response:

01 03 08 00 03 EA 58 41 CD 47 AE CRC

Decoded data:

Register	Value	Description
0x200D	0x0003	High word, int32 position
0x200E	0xEA58	Low word, int32 position
0x200F	0x41CD	High word, IEEE754 float
0x2010	0x47AE	Low word, IEEE754 float

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