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1. Introduction and settings

This user manual explains how to read and write the data of the PRO1-Mod and PRO380-Mod in Commix 1.4. To communicate with the Modbus meter you need:

- Commix 1.4
- Inepro PRO1 and PRO380 Modbus register files
- Modbus RTU to USB converter
- HEX to decimal converter (www.binaryhexconverter.com)
- IEEE Floating Point Calculator
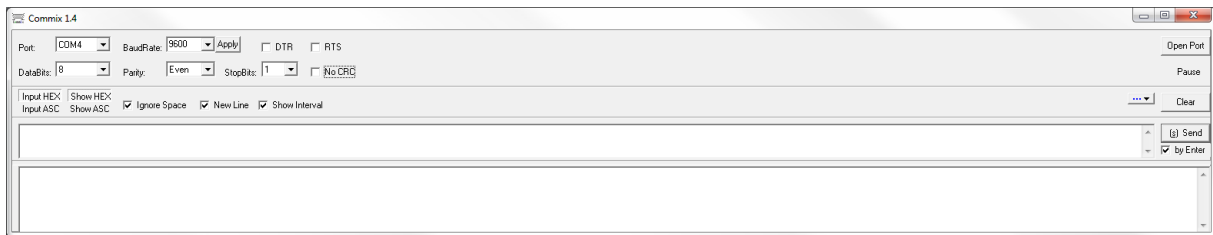
Connect the meter
1. Connect the meter to a power supply
2. Connect input A (+) and B (-) to the Modbus RTU to USB converter
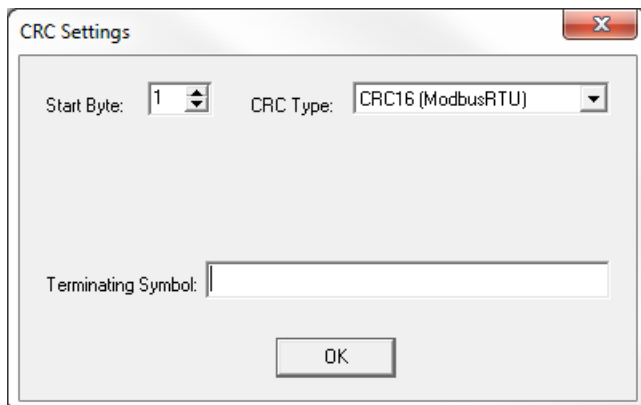3. Connect the USB converter to the PC
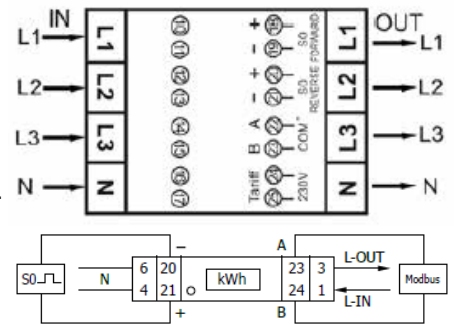
Settings
Start commix 1.4
- Select the COM port   - Databits: 8
- Baud rate: 9600 (default)   - Parity: Even (default)
- Stop bits: 1   - Select Input HEX and Show HEX

Click on no CRC and choose CRC16 (ModbusRTU). Click on 'open port' to start.

2. Read data

The Modbus command line is built up out of the following parts:

- Meter ID   001~247; 01 = default; 00 = broadcast
- Read/Write   03 = read; 06/10 = write
- Register address   address for the data you want to read/write
- Register length   0001 for 4 digits; 0002 for 8 digits
- CRC code   automatically added by Commix

Download the PRO1 or PRO380 Modbus register files from http://ineprometering.com/manuals/new.

Example 1: Reading the serial number
Send: Meter ID (00) Read (03) Register address (1000) Register length (0002) CRC code (CRC16)
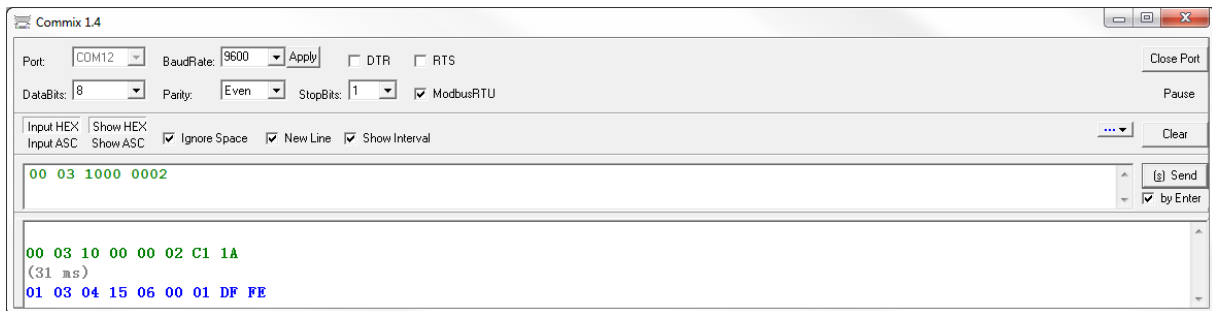
Reply: Meter ID (01) Read (03) Data length (04) Data (15 06 00 01) CRC (DF FE)

The Modbus register table shows that the response of the register 'serial number' is 'signed'. This means that the data (15 06 00 01) is the actual answer. The meter address is 15060001.

Example 2: Reading the baud rate
Send: Meter ID (00) Read (03) Register address (1020) Register length (0001) CRC code (CRC16)

Reply: Meter ID (01) Read (03) Data length (02) Data (25 80) CRC (A3 74)

The Modbus register table shows that the response of the register 'baud rate' is in HEX and should be converted to decimal. Use the binary hex converter to convert the data (2580) to decimal (9600). The baud rate is 9600.

Example 3: Reading the L1 voltage
Send: Meter ID (00) Read (03) Register address (2008) Register length (0002) CRC code (CRC16)

Reply: Meter ID (01) Read (03) Data length (04) Data (43 69 CC CD) CRC (AB 3E)

The Modbus register table shows that the response of the register 'L1 voltage' is in HEX and should be converted to Float. Use the IEEE Floating Point Calculator to convert the data (4369CCCD) to Float (233,8). The voltage on L1 is 233,8V.
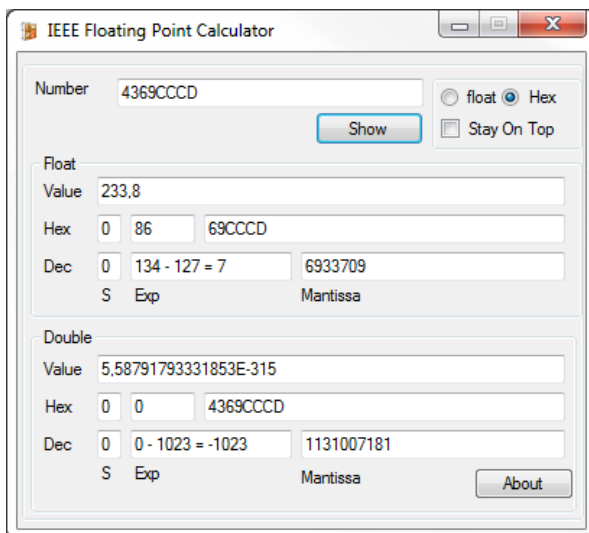
Reading multiple registers

It is possible to read multiple Modbus registers with one command. You need to have a PRO1-Mod or PRO380-Mod with software version V1.18 to do this. To make sure you have a V1.18 meter you can readout the software version (address 1050) or check the LCD. The softwareversion on the LCD for V1.18 is 007B8CAF for the PRO1 and 009F7302 for the PRO380.

There are two registers for each content in the V1.18 Modbus register files. The first registers (1000 – 30B0) are used to read single data. The second registers (4000 – 6048) are used to read multiple registers at once. The Modbus command line for reading multiple registers is built up out of the following parts:

- Meter ID   001~247; 01 = default; 00 = broadcast
- Read   03 = read
- Register address   start address
- Register length   sum of the register lengths of the registers you want to read (HEX)
- CRC code   automatically added by Commix
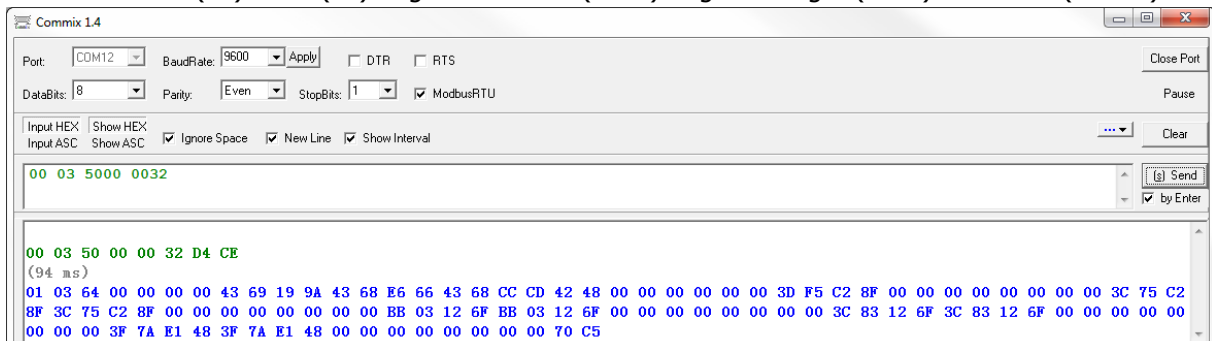
Example 1: Reading registers 4000 – 4011:
Send: Meter ID (00) Read (03) Register address (4000) Register length (0012) CRC code (CRC16)
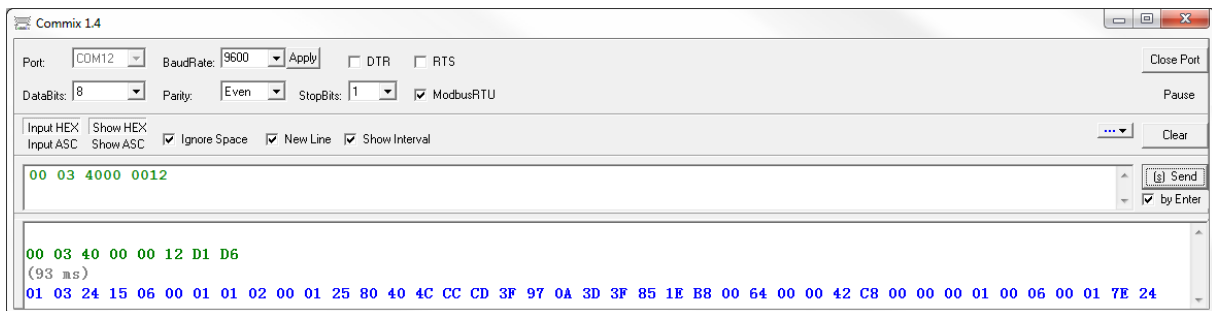
Reply: Meter ID (01) Read (03) Data length (24) Data (all data of the registers 4000-4011) CRC (7E 24)

Example 2: Reading registers 5000 – 5030:
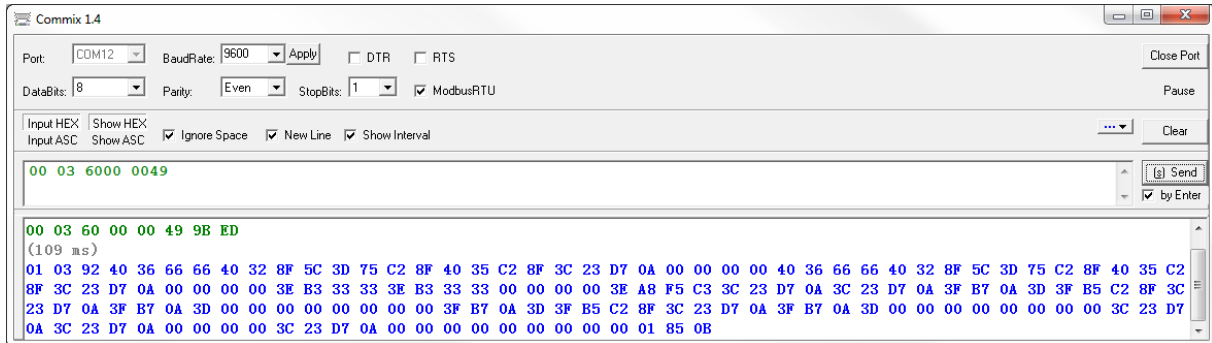Send: Meter ID (00) Read (03) Register address (5000) Register length (0032) CRC code (CRC16)

Reply: Meter ID (01) Read (03) Data length (64) Data (all data of the registers 5000-5030) CRC (70 C5)

Example 3: Reading registers 6000 – 6048:
Send: Meter ID (00) Read (03) Register address (6000) Register length (0049) CRC code (CRC16)

Reply: Meter ID (01) Read (03) Data length (92) Data (all data of the registers 6000-6048) CRC
(85 0B)

3. Write data

Use a Modbus write command to send new data to the meter. You can find the Modbus write commands in the second column of the Modbus register files. The command for writing data is 06 or 10 instead of 03. Always use the actual Modbus ID to write data to the meter, it is not possible to write data using the broadcast address 00.

Example 1: Writing a new baud rate (9600 = 2580 in HEX):
Send: Meter ID (01) Write (06) Register address (1020) New value (2580) CRC code (CRC16)

Reply: Meter ID (01) Write (06) Register address (1020) New value (2580) CRC (97 F0)

Example 2: Writing a new S0 output rate (2000 Float = 44FA0000 in HEX:
Send: Meter ID (01) Write (10) Register address (1066) Register length (0002) Data length (04) New value (44FA0000) CRC code (CRC16)
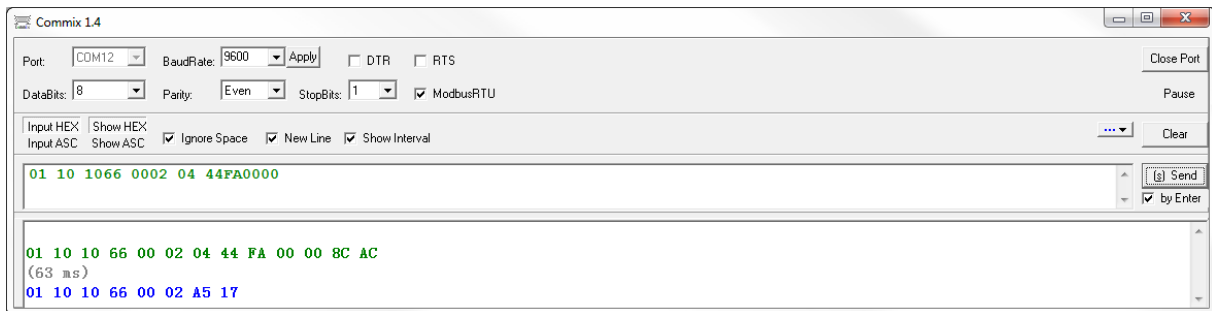
Reply: Meter ID (01) Write (10) Register address (10 66) Register length (0002) CRC (A5 17)

Visit www.ineprometering.com to download the full manual of our PRO1-Mod and PRO380-Mod.

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