

QUICK GUIDE

MOP301 - Moisture in Oil Probe with Modbus RTU

Find this document and further product information on our website at www.epluse.com/mop301.

Electrical Connection



Important note:

The manufacturer cannot be held responsible for personal injuries or damage to property as a result of incorrect handling, installation, wiring, power supply and maintenance of the device.



M12 device plug front view

| Pin number | Function |
|------------|--|
| 1 | Supply voltage 24 V DC class III ⚡ (Europe)/class 2 (North America) |
| 2 | RS485 B (D-) |
| 3 | GND |
| 4 | RS485 A (D+) |

Modbus Setup

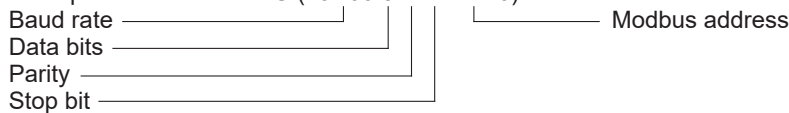
| | Factory settings | Selectable values |
|-----------------------|------------------|-----------------------------------|
| Baudrate | 9600 | 9600, 19200, 38400, 57600, 115200 |
| Data bits | 8 | 8 |
| Parity | Even | None, even, odd |
| Stop bits | 1 | 1, 2 |
| Modbus address | 70 | 1...247 |



Please note:

Customer specific factory settings deviating from the above are indicated directly on the probe.

Example: Modbus RTU (19200 8-E-1 ID: 40)



The recommended settings for multiple devices in a Modbus RTU network are 9600, 8, Even, 1. The MOP301 represents 1 unit load in a Modbus network.

Device address, baud rate, parity and stop bits can be set via:

1. PCS10, Product Configuration Software and the appropriate configuration cable HA011018. The PCS10 can be downloaded free of charge from www.epluse.com/pcs10.
2. Modbus protocol in the register 1 (0x00) and 2 (0x01).
See Application Note Modbus AN0103 (available at www.epluse.com/mop301).

The serial number in ASCII format is located in read-only registers 1 - 8 (16 bits per address). The firmware version is located in register 9 (bit 15...8 = major release; bit 7...0 = minor release). The sensor name is located in register 10.

| Communication settings (INT16) | | |
|---|-------------------------------------|--------------------------------------|
| Parameter | Register number ¹⁾ [Dec] | Register address ²⁾ [Hex] |
| Write register: function code 0x06 | | |
| Modbus address (Slave ID) | 1 | 0x00 |
| Modbus protocol settings ³⁾ | 2 | 0x01 |
| Device information (INT16) | | |
| Parameter | Register number ¹⁾ [Dec] | Register address ²⁾ [Hex] |
| Read register: function code 0x03 / 0x04 | | |
| Serial number (as ASCII) | 1 | 0x00 |
| Firmware version | 9 | 0x08 |
| Sensor Name | 10 | 0x09 |
| Device status (bit decoded) | 602 | 0x259 |

1) Register number starts from 1.

2) Register address starts from 0.

3) For Modbus protocol settings see Application Note Modbus AN0103 (available on www.epluse.com/mop301).

Modbus Register Map

| FLOAT32: | | | |
|---|------|-------------------------------------|--------------------------------------|
| Parameter | Unit | Register number ¹⁾ [Dec] | Register address ²⁾ [Hex] |
| Read register: function code 0x03 / 0x04 | | | |
| Water activity aw | - | 1135 | 0x46E |
| Water content x | ppm | 1141 | 0x474 |
| Temperature T | °C | 1003 | 0x3EA |
| | °F | 1005 | 0x3EC |
| Saturation | % | 1137 | 0x470 |
| Oil parameter A | - | 0224 | 0xDF |
| Oil parameter B | - | 0226 | 0xE1 |
| Write register: function code 0x10 | | | |
| Oil parameter A ³⁾ | - | 0101 | 0x64 |
| Oil parameter B ³⁾ | - | 0103 | 0x66 |

1) Register number starts from 1

2) Register address starts from 0

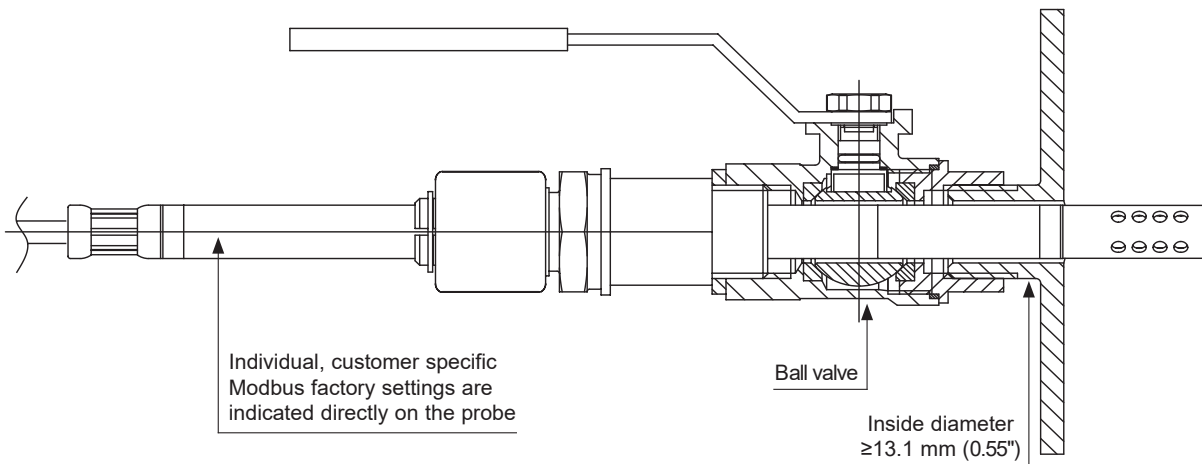
3) Examples: Writing Parameter A -2663.30005 decimal: E7 10 00 64 00 02 04 74 CD C5 26 E5 BA

Writing Parameters A and B -1663.30005 and 7.3705 decimal: E7 10 00 64 00 04 08 E9 9A C4 CF DB 23 40 EB AB 61

If two parameters are to be uploaded, it is recommended to write them with a single command.

Installation

Please note: Continuous oil flow allows for short response time. In such installations, place the sensor with the perforated filter at least partially within the oil.



Mounting example with a ball valve (not included in the scope of supply).

For further mounting options, please refer to the user manual on our website: www.epluse.com/mop301.

INFORMATION

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