



Sensor Technik Sirmach AG

Communication example

MODBUS - protocol

PTM RS-485

Version 1.1

Dokumenten-Nr. (Navision):

Stand:

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1 Intention

In this document are some short examples for the communication with the Modbus - protocol for the PTM RS485.

2 Installation

- Connect the sensor to a RS485 interface.
- Connect the power to the sensor and switch it ON.

3 MODBUS - protocol

The communication settings for the interface are described in the user manual in chapter 1.3.2. For general information over the MODBUS – protocol, please refer to chapter 2. The syntax of the MODBUS – command can you find in chapter 4.

With a terminal program “Docklight-Scripting”, you can send the values (Hexadecimal) to the sensor. It doesn’t work with the program “HyperTerminal” from windows. The HyperTerminal send every character (value) immediately. The timing requirements will be wrong.

4 Example

4.1 Switch from Modbus – protocol to STS Layer 7 protocol

With this command you can switch the communications protocol from Modbus to STS Layer 7. After this command the sensor will work only with STS Layer 7 commands. If the power supply will be interrupted, then the sensor will work after a new power up in the Modbus – protocol.

Address:	0	(Broadcast Address for each sensor)
Function code:	16	
Start index:	0	
Length:	1	(256 in Program „Com_Test“ for PTM)
Byte count:	2	
Data word:	1	
CRC:	32815	(12160 in Program „Com_Test“ for PTM)

4.2 Read the pressure value

With this command you can read the pressure value from the sensor.

Address:	240	0xF0	
Function code:	4	0x04	
Start index:	0	0x0000	
Length:	1	0x0001	(256 in Program “Com_Test” for PTM)
CRC:	9451	0x24EB	(60196 in Program “Com_Test” for PTM)

The response value must be converted to the pressure value (refer chapter 4.2.4). The response value is a 16bit integer value (-32768...32767) with the nominal range of 0...10000 Digit ($P_{NP} \dots P_{FS}$).

4.3 Read the temperature value

With this command you can read the temperature value from the sensor.

Address:	240	0xF0	
Function code:	4	0x04	
Start index:	1	0x0001	(256 in Program “Com_Test” for PTM)
Length:	1	0x0001	(256 in Program “Com_Test” for PTM)
CRC:	29995	0x752B	(11125 in Program “Com_Test” for PTM)

The response value must be converted to the temperature value (refer chapter 4.2.5). The response value is a 16bit integer value (-32768...32767) with the nominal range of 0...10000 Digit ($T_{NP} \dots T_{FS}$).

4.4 Read the pressure and the temperature value

With this command you can read the pressure and temperature value from the sensor at the same time.

Address:	240	0xF0	
Function code:	4	0x04	
Start index:	0	0x0000	
Length:	2	0x0002	(512 in Program "Com_Test" for PTM)
CRC:	25834	0x64EA	(60004 in Program "Com_Test" for PTM)

The response values must be converted to the pressure and temperature values (refer chapter 4.2.4 and 4.2.5).
The response value is a 16bit integer value (-32768...32767) with the nominal range of 0...10000 Digit
($P_{NP} \dots P_{FS}$, $T_{NP} \dots T_{FS}$).

4.5 Read the SW Version

With this command you can read the SW Version from the sensor.

Address:	240	0xF0	
Function code:	4	0x04	
Start index:	7	0x0007	
Length:	1	0x0001	
CRC:	38186	0x952A	

Answer (Example):

Address:	240	0xF0	
Function code:	4	0x04	
Byte count:	2	0x0002	
DW1:	112	0x0070	(SW-Version = 112 => V1.12)
CRC:	50433	0xC501	

4.6 Read the SN, HW, PTyp, CalTyp

With this command you can read the SN1, SN2, HW_Number, HW_Index, PTyp, CalTyp from the sensor.

Address:	240	0xF0
Function code:	3	0x03
Start index:	210	0x00D2
Length:	6	0x0006
CRC:	28880	0x70D0

Answer (Example):

Address:	240	0xF0	
Function code:	3	0x03	
Byte count:	12	0x0C	
DW1:	54968	0xD6B8	(SN1 = 54968)
DW2:	7	0x0007	(SN2 = 7 => SN = 513720)
DW3:	330	0x014D	(HW_Number = 330)
DW4:	0	0x0000	(HW_Index = 0)
DW5:	1	0x0001	(PTyp = 1 (Relative pressure))
DW6:	1	0x0001	(CalTyp = 1 (active temperature compensated))
CRC:	65240	0xFED8	

4.7 Read Description

Whit this command you can read the description from the sensor.

Address:	240	0xF0
Function code:	3	0x03
Start index:	30	0x001E
Length:	8	0x0008
CRC:	12587	0x312B

4.8 Read Pmax, Pmin, Tmax, Tmin

Whit this command you can read Pmax1, Pmax2, Pmin1, Pmin2, Tmax1, Tmax2, Tmin1, Tmin2 from the sensor.

Address:	240	0xF0
Function code:	3	0x03
Start index:	200	0x00C8
Length:	8	0x0008
CRC:	53459	0xD0D3

Answer (Example):

Address:	240	0xF0	
Function code:	3	0x03	
Byte count:	16	0x0010	
DW1:	49034	0xBF8A	(Pmax1 = 49034)
DW2:	0	0x0000	(Pmax2 = 0 => Pmax = 0.49034bar (5mH2O))
DW3:	0	0x0000	(Pmin1 = 0)
DW4:	0	0x0000	(Pmin2 = 0 => Pmin = 0bar)
DW5:	19264	0x4B40	(Tmax1 = 19264)
DW6:	76	0x004C	(Tmax2 = 76 => Tmax = 50°C)
DW7:	48576	0xBDC0	(Tmin1 = 48576)
DW8:	65520	0xFFFF	(Tmin2 = 65520 => Tmin = -10°C)
CRC:	57594	0xE0FA	

4.9 Read Address, LPSel, PUser, TUser, PUserCal

Whit this command you can read Address, LPSel, PUserZero, PUserFullscale, TUserZero, TUserFullscale, PUserCalZero, PUserCalFullscale from the sensor.

Address:	240	0xF0
Function code:	3	0x03
Start index:	20	0x0014
Length:	8	0x0008
CRC:	4393	0x1129

Answer (Example):

Address:	240	0xF0	
Function code:	3	0x03	
Byte count:	16	0x0010	
DW1:	240	0x00F0	(Address = 240)
DW2:	0	0x0000	(LPSel = 30Hz (Standard))
DW3:	20000	0x4E20	(PUserZero = 20000 (Standard))
DW4:	10000	0x2710	(PUserFullscale = 10000 (Standard))
DW5:	20000	0x4E20	(TUserZero = 20000 (Standard))
DW6:	10000	0x2710	(TUserFullscale = 10000 (Standard))
DW7:	20000	0x4E20	(PUserCalZero = 20000 (Standard))
DW8:	10000	0x2710	(PUserCalFullscale = 10000 (Standard))
CRC:	2840	0x0B18	