



IoT Product Range

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Modbus General Notes

General information	Parameterisation:	through the integrated web server
Modbus TCP	Protocol	TCP over IP network
	Port	open <i>Default: 502</i>

Register implementation All data is arranged in a table and addressed by 1..n (register) or 0..n-1 (address). No distinction is made between data types (Discrete Inputs, Coils, Input Registers and Holding Registers). As a consequence, all data can be accessed with the two commands for Holding Register. The commands for Discrete Inputs and Input Registers can be used as an alternative.

Standard commands

- Read Holding Registers [3]
- Write Single Register [6]
- Read Discrete Inputs [2]
- Read Input Registers [4]
- Write Multiple Registers [16]

Command "Read Discrete Inputs" The command reads one or more bits and can alternatively be used for Register No. 105 (Malfunction and Service information).

Example The start address to be used is 1664 → **104 (Register Address) * 16 (Bit) = 1664**

Interpret values in the registers All values in the register are unsigned integer.

Example unsigned integer Read (Function 03, 1 Register) Value Register No. 12 = 0001'1010'1100'1000₂ = 6,856₁₀
Actual Value = Value * Scaling factor * Unit = 6,856 * 0.01 * m³/h = **68.56 m³/h**

32-Bit Values in two registers Values that exceed 65,535 are stored in two consecutive Registers and have to be Interpreted as "little endian" / LSW (Least Significant Word) first

Example Register No. 10 (AbsFlow LowByte) = 14,551₁₀ = 0011'1000'1101'0111₂
Register No. 11 (AbsFlow HighByte) = 19₁₀ = 0000'0000'0001'0011₂

AbsFlow High Byte	AbsFlow Low Byte
19	14,551
0000'0000'0001'0011	0011'1000'1101'0111

→ AbsFlow = 0000'0000'0001'0011'0011'1000'1101'0111₂ = 1,259,735₁₀ = **1259.735 l/h**

Math formula:

AbsFlow = (AbsFlow HighByte * 65,536) + AbsFlow LowByte

AbsFlow = (19 * 65,536) + 14,551 = 1,259,735 = **1259.735 l/h**

Modbus Register Overview

No.	Adr	Register	R/W
1	0	Setpoint [%]	R/W
2	1	Override control	R/W
3	2	-	R
4	3	Actuator Type	R
5	4	Relative position [%]	R
6	5	Absolute position [°]	R
7	6	-	R
8	7	-	R
9	8	Sensor 1	R
10	9	Sensor 2	R
11	10	-	R
12	11	-	R
13	12	Setpoint Analog [%]	R

101	100	Series number 1 st part	R
102	101	Series number 2 nd part	
103	102	Series number 4 th part	
104	103	Firmware version	R
105	104	Malfunction & Service information	R
106	105	-	R
107	106	-	R
108	107	Sensor1 Type override	R/W
109	108	-	R
110	109	-	R
111	110	-	R
112	111	-	R
113	112	-	R
114	113	-	R
115	114	Sensor2 Type override	R/W
116	115	-	R
117	116	-	R
118	117	-	R
119	118	Setpoint Source	R/W

Modbus Register Description

Register 1: Setpoint Setpoint for actuator setting in hundredths of one percent
Scaling factor: 0.01 → i.e. 0...10,000 corresponds to 0...100%

Register 2: Override control Overriding the setpoint (Register No. 1) with defined values

0	None
1	Open
2	Close
3	-
4	-
5	MotStop

Register 3: (Reserved) Not used in this device. Constant value 65'535

Register 4: Actuator type Actuator type; the allocation may deviate from the basic category with some actuators.

0	Unknow
1	Air & Water
2	EPIV / VAV
3	Fire
4	EnergyValve
5	6way EPIV

Register 5: Relative position Relative position of actuator in hundredths of one percent [%]
Scaling factor: 0.01 → i.e. 0...10,000 corresponds to 0...100%

Register 6: Absolute Position Absolute position of actuator in hundredths of one degree [°]
Scaling factor: 0.01 → i.e. 0 ... 9,000 corresponds to 0...90°

Register 7: (Reserved) Not used in this device. Constant value 65'535

Register 8: (Reserved) Not used in this device. Constant value 65'535

Register 9: Sensor 1 Sensor 1 in mV or Ohm or 0/1 depending on the Sensortype 1
if active / analog setpoint Scaling factor: 1 → i.e. 1'000 corresponds to 1'000 mV
if passive Scaling factor: 1 → i.e. 1'235 corresponds to 1'235 Ohm
if switch

0	Inactive
1	Active

Register 10: Sensor 2 Sensor 2 in mV or Ohm or 0/1 depending on the Sensortype 2
if active Scaling factor: 1 → i.e. 1'000 corresponds to 1'000 mV
if passive Scaling factor: 1 → i.e. 1'235 corresponds to 1'235 Ohm
if switch

0	Inactive
1	Active

Register 11: (Reserved) Not used in this device. Constant value 65'535

Register 12: (Reserved) Not used in this device. Constant value 65'535

Register 13: Setpoint Analog Setpoint as analog value in hundredths of one percent [%]
Scaling factor: 0.01 → i.e. 0...10,000 corresponds to 0...100%

**Register 101-103:
Series number**

Each device has an unambiguous series number which is either impressed on or glued to the housing. The series number consists of 4 segments, although only parts 1, 2 and 4 are displayed on Modbus.

Example: 21706-20004-022-028

Register 101	Register 102	Register 103
1 st part	2 nd part	4 th part
21706	20004	028

**Register 104:
Firmware Version**

Model version
e.g. 101 V1.01

**Register 105:
Malfunction and service information**

The status information is split into messages about the actuator (malfunctions) and other service information

Bit	Description
0	-
1	-
2	-
3	Actuator cannot move
4	-
5	-
6	-
7	-
8	-
9	Gear disengagement active
10	-
11	-
12	-
13	-
14	-
15	-

Description Actuator can't move: Mechanical overload due to blocked valve, etc.
Gear disengagement active: Gear disengaged button is pressed

**Register 106:
(Reserved)** Not used in this device. Constant value 65'535

**Register 107:
(Reserved)** Not used in this device. Constant value 65'535

**Register 108:
Sensortype 1** Define Sensortype 1 !**This setting needs to be confirmed on the webserver!**

0	None
1	Switch
2	Passive
3	Active

**Register 109:
(Reserved)** Not used in this device. Constant value 65'535

**Register 110:
(Reserved)** Not used in this device. Constant value 65'535

**Register 111:
(Reserved)** Not used in this device. Constant value 65'535

**Register 112:
(Reserved)** Not used in this device. Constant value 65'535

Register 113: Not used in this device. Constant value 65'535
(Reserved)

Register 114: Not used in this device. Constant value 65'535
(Reserved)

Register 115: Define Sensortype 2 !**This setting needs to be confirmed on the webserver!**
Sensortype 2

0	None
1	Switch
2	Passive
3	Active

Register 116: Not used in this device. Constant value 65'535
(Reserved)

Register 117: Not used in this device. Constant value 65'535
(Reserved)

Register 118: Not used in this device. Constant value 65'535
(Reserved)

Register 119: Source of setpoint. The actuator has the possibility to be controlled with an analog input and at the same time being integrated on Modbus (Monitoring).
Setpoint Source Depending on this setting the setpoint by bus or analog input is valid.

0	Analog
1	Bus

Description Analog: Setpoint from analog signal (0)2...10V
->Only if Sensortype 1 = Active !**This setting needs to be confirmed on the webserver!**
Analog signal setting can be made on the webserver

Bus: Setpoint from Modbus → Register No. 1