

Modbus Functions Supported

Table 1

Function code (hex)	Description	Note
03 (0x03)	Read Holding Registers	Group request not enabled
16 (0x10)	Write Multiple Registers	Group request not enabled
08 (0x08)	Serial line diagnostic	Only sub-function 0 supported - Return Query Data

Modbus Exception Codes

Table 2

Code	Name	Meaning
01	ILLEGAL FUNCTION	Function not supported
02	ILLEGAL DATA ADDRESS	Invalid register number (not used)
03	ILLEGAL DATA VALUE	Invalid data: - Value out of range - Response is longer than the size of communication buffer - Number of data bytes does not match the declared one
04	SLAVE DEVICE FAILURE	Command cannot be executed

Modbus Registers

Table 3

Parameter name	Description	Address (hex)	Data format	Decimal places
<b>Function 0x03, read only</b>				
<b>StAt</b>	Status Register (see Table 5)	0x0000	Binary	-
<b>Pv1</b>	I1 Process value	0x0001	INT16	*
<b>Pv2</b>	I2 Process value	0x0002	INT16	**
<b>LUPv</b>	Calculator output value	0x0003	INT16	*
<b>SP</b>	Setpoint	0x0004	INT16	*
<b>SELP</b>	Current setpoint value	0x0005	INT16	*
<b>o</b>	Calculated control signal	0x0006	UINT16	0
<b>Function 0x03/0x10, read/write</b>				
<b>r-L</b>	Network control	0x0007	UINT16	0
<b>r.oUt</b>	Network control signal	0x0008	UINT16	3
<b>r-S</b>	Remote Start/Stop	0x0009	UINT16	0
<b>At</b>	Autotuning	0x000A	UINT16	0
<b>Function 0x03, read only</b>				
<b>dEv</b>	Device name	0x1000...0x1003	Char[8]	-
<b>vEr</b>	Firmware version	0x1004...0x1007	Char[8]	-
<b>StAt</b>	Status Register (see Table 5)	0x1008	Binary	-
<b>Pv1</b>	I1 Process value	0x1009...0x100A	Float32	-
<b>Pv2</b>	I2 Process value	0x100B...0x100C	Float32	-
<b>LUPv</b>	Calculator output value	0x100D...0x101E	Float32	-
<b>SP</b>	Setpoint	0x100F...0x1010	Float32	-
<b>SELP</b>	Current setpoint value	0x1011...0x1012	Float32	-
<b>o</b>	Calculated control signal	0x1013...0x1014	Float32	-
<b>Function 0x03/0x10, read/write</b>				
<b>Prot</b>	Protocol	0x0100	UINT16	0
<b>bPS</b>	Baud rate	0x0101	UINT16	0
<b>A.LEn</b>	Address bits	0x0102	UINT16	0
<b>Addr</b>	Address	0x0103	UINT16	0
<b>rSdL</b>	Response delay	0x0104	UINT16	0
<b>LEn</b>	Data bits	0x0105	UINT16	0
<b>PrtY</b>	Parity	0x0106	UINT16	0
<b>Sbit</b>	Stop bits	0x0107	UINT16	0
<b>n.Err</b>	Last network error code	0x0108	Hex word	0
<b>PrtL</b>	Apply new network protocol (command)	0x0109	UINT16	-
<b>APLY</b>	Apply new network settings (command)	0x010A	UINT16	-
<b>init</b>	Device restart (command)	0x010B	UINT16	-
<b>in.t1</b>	I1 Sensor	0x0200	UINT16	0
<b>dPt1</b>	I1 Decimal point displayed	0x0201	UINT16	0
<b>dP1</b>	I1 Decimal point	0x0202	UINT16	0
<b>in.L1</b>	I1 Signal lower limit	0x0203	INT16	*
<b>in.H1</b>	I1 Signal upper limit	0x0204	INT16	*
<b>SH1</b>	I1 Offset	0x0205	INT16	*
<b>KU1</b>	I1 Slope	0x0206	UINT16	3
<b>Fb1</b>	I1 Filter bandwidth	0x0207	UINT16	*
<b>inF1</b>	I1 Filter time constant	0x0208	UINT16	0
<b>Sqr1</b>	I1 Square root	0x0209	UINT16	0
<b>in.t2</b>	I2 Sensor	0x020A	UINT16	0
<b>dPt2</b>	I2 Decimal point displayed	0x020B	UINT16	0
<b>dP2</b>	I2 Decimal point	0x020C	UINT16	0
<b>in.L2</b>	I2 Signal lower limit	0x020D	INT16	**
<b>in.H2</b>	I2 Signal upper limit	0x020E	INT16	**
<b>SH2</b>	I2 Offset	0x020F	INT16	**
<b>KU2</b>	I2 Slope	0x0210	UINT16	3
<b>Fb2</b>	I2 Filter bandwidth	0x0211	UINT16	**
<b>inF2</b>	I2 Filter time constant	0x0212	UINT16	0
<b>Sqr2</b>	I2 Square root	0x0213	UINT16	0
<b>inP2</b>	Auxiliary input function	0x0300	UINT16	0
<b>CALC</b>	Calculator function	0x0301	UINT16	0
<b>KPv1</b>	PV1 weight factor	0x0302	INT16	2
<b>KPv2</b>	PV2 weight factor	0x0303	INT16	2
<b>SL-L</b>	Setpoint lower limit	0x0304	INT16	*
<b>SL-H</b>	Setpoint upper limit	0x0305	INT16	*
<b>orEU</b>	Control function	0x0306	UINT16	0
<b>Pv0</b>	Initial value	0x0307	INT16	0
<b>rAmP</b>	"Quickly to Setpoint" mode	0x0308	UINT16	0
<b>P</b>	P component (proportional band)	0x0309	UINT16	*
<b>i</b>	I component (integral time)	0x030A	UINT16	0
<b>d</b>	D component (derivative time)	0x030B	UINT16	0
<b>db</b>	Control deadband	0x030C	UINT16	*
<b>vSP</b>	Setpoint ramp	0x030D	UINT16	*

Parameter name	Description	Address (hex)	Data format	Decimal places
<b>Function 0x03/0x10, read/write</b>				
<b>oL-L</b>	Output lower limit	0x030E	UINT16	0
<b>oL-H</b>	Output upper limit	0x030F	UINT16	0
<b>LbA</b>	LBA detection time	0x0310	UINT16	0
<b>LbAb</b>	LBA detection range	0x0311	UINT16	*
<b>mvEr</b>	Output safe state	0x0312	UINT16	0
<b>mvSt</b>	Output stop level	0x0313	UINT16	0
<b>mdSt</b>	Output stop state	0x0314	UINT16	0
<b>ALt</b>	Alarm mode	0x0315	UINT16	0
<b>AL-d</b>	Alarm threshold	0x0316	UINT16	*
<b>AL-H</b>	Alarm Hysteresis	0x0317	UINT16	*
<b>v.mot</b>	Full stroke time	0x0400	UINT16	0
<b>v.db</b>	Valve deadband	0x0401	UINT16	0
<b>v.GAP</b>	Dead time	0x0402	UINT16	1
<b>v.rEv</b>	Backlash time	0x0403	UINT16	1
<b>v.toF</b>	Wind-up pulse interval	0x0404	UINT16	0
<b>rEt</b>	Rest time	0x0500	UINT16	0
<b>diS1</b>	Display mode 1	0x0501	UINT16	0
<b>diS2</b>	Display mode 2	0x0502	UINT16	0
<b>diS3</b>	Display mode 3	0x0503	UINT16	0
<b>diS4</b>	Display mode 4	0x0504	UINT16	0
<b>diS5</b>	Display mode 5	0x0505	UINT16	0
<b>nodE</b>	Number of nodes	0x0500	UINT16	0
<b>X1</b>	Auxiliary input signal	0x0501	INT16	*
<b>Y1</b>	Corrective value	0x0502	INT16	*
<b>X2...X10</b> <b>Y2...Y10</b>	X2 (0x0603) Y2 (0x0604) X3 (0x0605) Y3 (0x0606) X4 (0x0607) Y4 (0x0608) X5 (0x0609) Y5 (0x060A) X6 (0x060B) Y6 (0x060C) X7 (0x060D) Y7 (0x060E) X8 (0x060F) Y8 (0x0610) X9 (0x0611) Y9 (0x0612) X10 (0x0613) Y10 (0x0614)		INT16	*
<b>oAPt</b>	Read access	0x0700	UINT16	0
<b>wtPt</b>	Write access	0x0701	UINT16	0

Note:

- \* see **dP1**
- \*\* see **dP2**

Data format

Table 4

Data format	Description
UINT16	2-byte integer When transmitting the parameter the format X*10-n is used, where X – integer value n – power of 10 (specified in the column "Decimal places" for each parameter)
INT16	2-byte signed integer When transmitting the parameter the format X*10-n is used, where X – integer value n – power of 10 (specified in the column "Decimal places" for each parameter)
Float32	4-byte floating-point "Big-endian"
Char[8]	String of 8 symbols 1 byte each, direct order
Hex word	2-byte integer in hexadecimal format
Binary	2-byte numbers in binary format When transmitting the bit numbering starts at zero for the most significant bit (MSB 0)

Parameter "StAt" – bit assignment

Table 5

Bit No.	Assignment
0	Analog input error
1	0
2	0
3	Other error (e.g. <b>Er.Ad</b> , <b>Er.64</b> )
4	Relay 1 on
5	Relay 2 on
6	Network control ( <b>r-L</b> )
7	0
8	Manual control
9	Remote Start/Stop
10	Autotuning
11	LBA
12 - 15	0