

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
Function 0x03, read only				
StAt	Status Register (see Table 5)	0x0000	Binary	–
Pv	Process value	0x0001	INT16	*
SP	Setpoint	0x0002	INT16	*
SEt.P	Current setpoint value	0x0003	INT16	*
o	Control	0x0004	UINT16	0
Function 0x03/0x10, read/write				
r-L	Network control	0x0005	UINT16	0
r.oUt	Network output signal	0x0006	UINT16	3
r-S	Remote Start/Stop	0x0007	UINT16	0
At	Autotuning	0x0008	UINT16	0
Function 0x03, read only				
DEv	Device name	0x1000...0x1003	Char[8]	–
vEr	Firmware version	0x1004...0x1007	Char[8]	–
StAt	Status Register (see Table 5)	0x1008	Binary	–
Pv	Process value	0x1009...0x100A	Float32	–
SP	Setpoint	0x100B...0x100C	Float32	–
SEt.P	Current setpoint value	0x100D...0x101E	Float32	–
o	Control	0x100F...0x1010	Float32	–
Function 0x03/0x10, read/write				
Prot	Protocol	0x0100	UINT16	0
bPS	Baud rate	0x0101	UINT16	0
ALEn	Address bits	0x0102	UINT16	0
Addr	Address	0x0103	UINT16	0
rSdL	Response delay	0x0104	UINT16	0
LEn	Data bits	0x0105	UINT16	0
PrtY	Parity	0x0106	UINT16	0
Sbit	Stop bits	0x0107	UINT16	0
n.Err	Last network error code	0x0108	Hex word	0
PrtL	Apply new network protocol (command)	0x0109	UINT16	–
APLY	Apply new network settings (command)	0x010A	UINT16	–
init	Device restart (command)	0x010B	UINT16	–
in-t	Sensor	0x0200	UINT16	0
dPt	Decimal places displayed	0x0201	UINT16	0
dP	Decimal places	0x0202	UINT16	0
in-L	Signal lower limit	0x0203	INT16	*
in-H	Signal upper limit	0x0204	INT16	*
SH	Offset	0x0205	INT16	*
KU	Slope	0x0206	UINT16	3
Fb	Filter bandwidth	0x0207	UINT16	*
inF	Filter time constant	0x0208	UINT16	0
SL-L	Setpoint lower limit	0x0300	INT16	*
SL-H	Setpoint upper limit	0x0301	INT16	*
orEU	Control function	0x0302	UINT16	0
CntL	Control type	0x0303	UINT16	0
CP	Pulse period	0x0304	UINT16	0
rAmP	“Quickly to Setpoint” mode	0x0305	UINT16	0
P	P component (proportional band)	0x0306	UINT16	*
i	I component (integral time)	0x0307	UINT16	0
d	D component (derivative time)	0x0308	UINT16	0
db	Deadband	0x0309	UINT16	*
vSP	Setpoint Ramp	0x030A	UINT16	*
oL-L	Output lower limit	0x030B	UINT16	0
oL-H	Output upper limit	0x030C	UINT16	0
orL	Output signal ramp	0x030D	UINT16	1
mvEr	PID safe state	0x030E	UINT16	0
mdSt	PID stop state	0x030F	UINT16	0

Parameter name	Description	Address (hex)	Data format	Decimal places
Function 0x03/0x10, read/write				
mvSt	PID stop level	0x0310	UINT16	0
HYS	Control hysteresis	0x0311	UINT16	*
onSt	On-off stop state	0x0312	UINT16	0
onEr	On-off safe state	0x0313	UINT16	0
Ev-1	DI function	0x0400	UINT16	0
LbA	LBA time	0x0401	UINT16	0
LbAb	LBA range	0x0402	UINT16	*
ALt	Alarm mode	0x0403	UINT16	0
AL-d	Alarm threshold	0x0404	UINT16	*
AL-H	Alarm hysteresis	0x0405	UINT16	*
An-L	Retransmission lower limit	0x0406	INT16	*
An-H	Retransmission upper limit	0x0407	INT16	*

Note:
* see *dP*

Data format

Table 4

Data format	Description
UINT16	2-byte integer When transmitting the parameter the format $X \cdot 10^{-n}$ 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 $X \cdot 10^{-n}$ 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. Er.Ad , Er.64)
4	Relay 1 on
5	Relay 2 on
6	Network control (r-L)
7	0
8	Manual control
9	Remote Start/Stop
10	Autotuning
11	LBA
12 - 15	0