REACT

Modbus

20150922

Transmission protocol

Protocol:	ModBus / RTU
Baud rate:	1200, 2400, 4800, 9600, 19200, 38400
Byte sequence:	MSB / LSB
Byte format:	8 data bits, 2 stop bits, none parity 8 data bits, 1 stop bits, even parity 8 data bits, 1 stop bits, odd parity
Resistance:	120 Ohm (external)
Delay:	Some master devices need a certain amount of time to switch from the transmission mode to reception mode. The delay time can be set in 3 ms steps. Maximum 765 ms (255 × 3 ms)
Response time:	≤ 10 ms + delay.
Standard communication parameter: Communication setting 14	1 start bit 19200 baud 8 data bits 1 stop bits even parity delay 0 ms

The values of baud rate, parity, stop-bit and delay are programmable.

Function-code Modbus

Following functions codes are implemented:

Function code	Name	Description
03h	Read hold register	Device parameter / actual values read (integer / float)
06h	Write single register	Device parameter single word write

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Holding register Costumer (parameter table)

Name	Address decimal	Data type	Value range	r/w	Description
Set point	0	WORD	0…10000	r/w	Set point [%] 0=0%, 10000=100% see register 122: '0': set point is read only
Override control	1	WORD	0…4	r/w	Override control '0' Override control not available '1' open '2' close '3' min '4' max
Command	2	WORD	0…4	r/w	Command '0' - - - '1' adaption '2' - - - '3' - - - '4' controller reset
Device ID	3	WORD	0..3	r	Device ID '0' - - - '1' standard actuator '2' VAV '3' fire damper
Relative position	4	WORD	0…10000	r	Relative position [%] 0=0%, 10000=100% 65535 = this function is not supported
Absolute position	5	WORD	0…65000	r	Absolute position [°] 0..650.00 65535 = this function is not supported
Relative flow	6	WORD	0…10000	r	VAV flow [%] 0=0%, 10000=100%
Absolute flow	7	WORD	0…65535	r	VAV flow [m³/h][l/s]
Analog output (optional)	10	WORD	[mV] 0…10000	r/w	Analog output [mV] 0 ..10000 see register 122

Service Values

Name	Address decimal	Data type	Value range	r/w	Description
Software version	103	WORD	1..65535	r	Software version
Min value relative	105	WORD	0..10000	r/w	Min flow in % of nominal flow [%] 0=0%, 10000=100%
Max value relative	106	WORD	0..10000	r/w	Max flow in % of nominal flow [%] 0=0%, 10000=100%
Bus fail position	108	WORD	0..2	r/w	Bus fail position '0' - - - No bus monitoring '1' at timeout position close bus monitoring timeout 120s '2' at timeout position open bus monitoring timeout 120s
Min value absolute	120	WORD	0..65535	r/w	Min value [m³/h][l/s]
Max value absolute	121	WORD	0..65535	r/w	Max value [m³/h][l/s]
Mode signal set point analog output	122	WORD	0..3	r/w	Value / Referencing signal / Analog Out 0 / Analog In 1 [V] 0(2)…10 / Absolute position [V] 0 ..10 1 / Communication via Modbus register 0 / absolute position[V] 0 ..10 2 / Communication via Modbus register 0. 0% = Min. flow, 100% = Max. flow / Value register 10 3 / Analog IN 1 [V] 0(2)…10 / Value register 10
Modbus address	130	WORD	1 -247	r/w	Modbus address 1 – 247

Customer values

Name	Address decimal	Data type	Value range	r/w	Description
V_{nom} unit/function	201	WORD	0…1	r/w	V_{nom} '0' [l/s], '1' [m³/h]

Error handling

Error code	Name	Description
01h	Illegal function	The function code received in the query is not an allowable action.
02h	Illegal data address	The data address received in the query is not an allowable register address. Register address are read only.
03h	Illegal data value	A value contained in the query data field is not an allowable value. Wrong number of registers. Register address are read only.
06h	Slave device busy	Specialized use in conjunction with programming commands. The server (or slave) is engaged in processing a long–duration program command.

Description interface parameter ModBus

Display number	EEPROM value	Baudrate	Parity	Stop bits
1	0	1200	None	2
2	1	1200	Even	1
3	2	1200	Odd	1
4	3	2400	None	2
5	4	2400	Even	1
6	5	2400	Odd	1
7	6	4800	None	2
8	7	4800	Even	1
9	8	4800	Odd	1
10	9	9600	None	2
11	10	9600	Even	1
12	11	9600	Odd	1
13	12	19200	None	2
14	13	19200	Even	1
15	14	19200	Odd	1
16	15	38400	None	2
17	16	38400	Even	1
18	17	38400	Odd	1