
Modbus implementation

Design of this device follows “Modbus protocol specification” and “MODBUS over Serial Line Specification & Implementation guide V1.0”.

http://www.modbus.org/docs/Modbus_Application_Protocol_V1_1b3.pdf

http://www.modbus.org/docs/Modbus_over_serial_line_V1.pdf.

Following functions are supported:

- * 0x03 Read Holding Registers
- * 0x04 Read Input registers
- * 0x06 Write Single Register
- * 0x10 Write Multiple Registers

Modbus Communication

Modbus slave module support following communication settings. Settings can change with EM-236 interface unit and communication parameters found on product documentatation.

Protocol:	Modbus RTU
Baudrates:	9600, 19200 (default value 19200)
Parity:	none, odd, even (default value even)
Stop bit:	1, 2 (default value 1)
Slave address:	1...247, (default value 1)
RS-485:	Two wire, half duplex



Modbus registers definitions

Holding registers

All holding registers are 16bit.

Modbus Function: Read/ Write holding register
Function codes: 3, 6, 16

Mem variable	Register numbers	Modbus Data Addr	Range	Description
MB_Bus_enable	40001	0	0 ... 1	0 = Local, 1 = Bus enable See definition at Device parameter description
MB_Zero_Position	40002	1	0 ... 1	1 = Set current position immediately to Zero and then this Mem value back to 0
MB_Disable	40003	2	0 ... 1	1 = Disable 0 = Disable, if controlmode = 8
MB_Home	40004	3	0 ... 1	Home/Learn depending on parameter selection
MB_Reset	40005	4	0 ... 1	Change 0 → 1 produce Reset function
MB_Set_Position_MSB	40006	5	0 ... 65536	Servo will drive at this position
MB_Set_Position_LSB	40007	6	0 ... 65536	If bus drive is selected. Value is 32bit int
user Memory	40008	7		
user Memory	40009	8		
user Memory	40010	9		
user Memory	40011	10		
user Memory	40012	11		
user Memory	40013	12		
user Memory	40014	13		
MB_Device ID	40015	14	ASCII value	
MB_Device ID	40016	15	ASCII value	
MB_Device ID	40017	16	ASCII value	
MB_Device ID	40018	17	ASCII value	
MB_Device ID	40019	18	ASCII value	
MB_Device ID	40020	19	ASCII value	



Modbus Control definitions for motor drivers
EM-352-SBL, EM-356A-SBL
EM-366-SBL

Parameter Update	40021	20	0 ... 3	0 = no change to parameters 1 = write MB registers to parameters 2 = write MB registers to parameters and store parameters to EEPROM 3 = read parameters to MB registers After read/write this is set to zero (0)
Parameter_1	40022	21		check device parameter list
Parameter_2	40023	22		check device parameter list
Parameter_3	40024	23		check device parameter list
Parameter_4	40025	24		check device parameter list
Parameter_5	40026	25		check device parameter list
Parameter_6	40027	26		check device parameter list
Parameter_7	40028	27		check device parameter list
Parameter_8	40029	28		check device parameter list
Parameter_9	40020	29		check device parameter list
Parameter_10	40021	30		check device parameter list
Parameter_11	40022	31		check device parameter list
Parameter_12	40023	32		check device parameter list
Parameter_13	40024	33		check device parameter list
Parameter_14	40025	34		check device parameter list
Parameter_15	40026	35		check device parameter list
Parameter_16	40027	36		check device parameter list
Parameter_17	40028	37		check device parameter list
Parameter_18	40029	38		check device parameter list
Parameter_19	40030	39		check device parameter list
Parameter_20	40031	40		check device parameter list
Parameter_21	40032	41		check device parameter list
Parameter_22	40033	42		check device parameter list
Parameter_23	40034	43		check device parameter list
Parameter_24	40035	44		check device parameter list
Parameter_25	40036	45		check device parameter list
Parameter_26	40037	46		check device parameter list
Parameter_27	40038	47		check device parameter list
Parameter_28	40039	48		check device parameter list
Parameter_29	40040	49		check device parameter list

Data inputs

Modbus Function: Read input registers
Function code: 4

Mem variable	Register numbers	Modbus Data Addr	Range
N/A	30001	0	
MB_Current	30002	1	Motor Current
MB_Voltage	30003	2	Supply voltage
MB_I/O disable	30004	3	I/O Input state
MB_I/O home	30005	4	I/O Input state
MB_I/O speed	30006	5	I/O Input state
MB_I/O local	30007	6	I/O Input state
MB_I/O safety	30008	7	I/O Input state
MB_Fault	30009	8	I/O Input state
MB_Fail current	30010	9	I/O Input state
MB_Fail temperature	30011	10	I/O Input state
MB_Fail Vs	30012	11	I/O Input state
MB_Position_MSB	30013	12	Motor Position 32bit MSB
MB_Position_LSB	30014	13	Motor Position 32bit LSB
MB_Position_diff_MSB	30015	14	Motor Position 32bit MSB, int type
MB_Position_diff_LSB	30016	15	Motor Position 32bit LSB, int type
MB_PWM	30017	16	Motor PWM