

Protocol v2.2. Check version with info msg.

**Read status 1**

Data bytes	Value/range	Description
Slave address	1 – 247	
Read holding registers	3	
Address msb	0x04	Address 41101
Address lsb	0x4C	
Quantity msb	0	It can be selected to read all or only part of the status data. When zero is used all status data is returned.
Quantity lsb	0-5	Note that quantity is as 16bit registers, but data can have 8bit, 16bit and 32bit values.
CRC lsb	0-255	Read only status data that is needed to keep com. fast.
CRC msb	0-255	

**Read status 1 response**

Data bytes	Value/range	Description
Slave address	1 – 247	
Read holding registers	3	
Byte count	2-10	
Bus mode	0-3	0=Bus not controlling direction, 1=Bus controls direction, 2=Bus control with 5s timeout, stop at timeout, 3=Bus control with local buttons stop. Returns to 0 in bus mode 2 when timeout and in bus mode 3 when local stop.
Direction	0-3	0=off, 1=Forward, 2=Stop, 3=Backward
Speed	0-255	* Motor speed value. 255 = 100%.
Motor current	0-255	Measured motor current. 10=1A. ***
Current limit	0-255	Motor current limit value.
Supply voltage	0-255	** Measured supply voltage. 10V=25.
Fault code	0-7	1=over current, 2=over heat, 3=zero current stop, 4=timeout, 5=over voltage, 7=fault in.
Speed2 input	0-255	Analog value of speed 2 input.
Inputs	0-63	Fwd,rev,stop,speed2, limit fwd, limit rev inputs state on/off shown as bitmap: Fwd=bit0,rev=bit1,stop=bit2, speed2=bit3, limit fwd=bit4, limit rev=bit5.Example: bitmap 0b00001001 means fwd and speed2 inputs are on, others are off.
Not in use	0	
CRC lsb	0-255	
CRC msb	0-255	

\* Speed can have value even when motor output is off. This can happen when freewheel is activated f.ex. In overvoltage fault.

\*\*EM-241C-48V 10V=16. \*\*\*EM-282 1=1A starting from bus minor v4.

### Read status 2

Data bytes	Value/range	Description
Slave address	1 – 247	
Read holding registers	3	
Address msb	0x04	Address 41201
Address lsb	0xB0	
Quantity msb	0	It can be selected to read all or only part of the status data. When zero is used all status data is returned.
Quantity lsb	0-3	Note that quantity is as 16bit registers, but data can have 8bit, 16bit and 32bit values.
CRC lsb	0-255	Read only status data that is needed to keep com. fast.
CRC msb	0-255	

### Read status 2 response

Data bytes	Value/range	Description
Slave address	1 – 247	
Read holding registers	3	
Byte count	1-6	
Starttimes msb	0-255	32bit starttimes counter show s how many times driver has started a motor. Byte 1.
Starttimes	0-255	Byte 2
Starttimes	0-255	Byte 3
Starttimes lsb	0-255	Byte 4
Drive hours msb	0-255	16bit drive hours counter show s how many hours driver has driven a motor. Byte 1.
Drive hours lsb	0-255	Byte 2.
CRC lsb	0-255	
CRC msb	0-255	

### Control command

Data bytes	Value/range	Description
Slave address	1 – 247	
Write multiple registers	16	
Address msb	0x03	Address 41001
Address lsb	0xE8	
Quantity msb	0	
Quantity lsb	1-2	
Byte count	2-4	
Bus mode	0-6	0=Bus not controlling direction, 1=Bus controls direction, 2=Bus control with timeout, stop at timeout, 3=Bus control with local buttons stop, 4=Both 2 and 3 in use. Returns 0 in bus mode 2 when timeout and in bus mode 3 when local stop and with both in mode 4. To continue, reset this by first setting bus mode to 0 and then again to wanted value.
Direction	0-3	0=off, 1=Forward, 2=Stop, 3=Backward, 4=Reset fault*
Speed	0-255	Motor speed. 0-255, 255 = 100%. This can be used to overwrite driver's own speed value. With 0 driver uses its own value from parameter, speed2 input or analog value depending on settings.
Current limit	0-255	Motor current limit value, 0-255. This can be used to overwrite driver's own current limit value. With 0 driver uses its own value from parameter or analog value depending on settings. During start ramp current limit is higher. Value 10= 1A. *
CRC lsb	0-255	
CRC msb	0-255	

\*When resetting, clear this command after status msg fault code returns to 0. Some faults can't be reset like overvoltage, its on as long as overvoltage is present.

### Control command response

Data bytes	Value/range	Description
Slave address	1 – 247	
Write multiple registers	16	
Address msb	0x03	Address 41001
Address lsb	0xE8	
Quantity msb	0	
Quantity lsb	1-2	
CRC lsb	0-255	
CRC msb	0-255	

\*EM-282 1=1A starting from bus minor v4.