Control and status messages for controllers: 28.08.2019

EM-241C, EM-243C, EM-A24C, EM-A34C, EM-282, EM-288, EM-324, EM-341, EM-348, EM-362, EM-363

*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 supplyvoltage. 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.*

*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 multible 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 w ith timeout, stop at timeout, 3=Bus control w ith local buttons stop, 4=Both 2 and 3 in use. Returns 0 in bus mode 2 w hen timeout and in bus mode 3 w hen local stop and w ith both in mode 4. To continue, reset this by first setting bus mode to 0 and then again to w anted value. |
| Direction | 0-3 | 0=off, 1=Forw ard, 2=Stop, 3=Backw ard, 4=Reset fault* |
| Speed | 0-255 | Motor speed. 0-255, 255 = 100%. This can be used to overw rite driver's ow n speed value. With 0 driver uses its ow n 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 overw rite driver's ow n current limit value. With 0 driver uses its ow n 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 | |
|---|---|---|
| Slave address | 1 – 247 | |
| Write multible 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 | |

Version history major/minor:

*2.1 Initial version*

*2.2 Added reset fault command to direction cmd. Reset = 4.*