

TMOT1 - RS485 communication parameters

Adr.	Memory	Bytes	Default	Min	Max	Unit	Prot.	R/W
100	Serial Number	4		0	2 ³¹			R/W
104	Motor Version	1		0	254			R
105	Firmware Version	1		0	254			R
106	Firmware Sub-version	1		0	254			R
107	Boot loader version	1		0	254			
110	Actual Position (Note 2)	4		-2 ³¹	+2 ³¹	step		R/W
114	Actual Torque (Note 9)	2		0	1000	0.1%		R
116	Actual Acceleration (Note 7)	2		0	255			R
118	Actual Velocity (Note 8)	2		-10k	+10k			R
120	Actual Current	2		0		1 mA		R
122	Actual Voltage	2		0		0.1 V		R
124	Actual Temperature	1		0	254	1 °C		R
125	Moving Status (Note 1)	1		0	254			R
126	Hardware Error Status	1		0	254			R
150	Write protection (Note 10)	1	1	0	1			W
151	Working Mode (Note 12)	1	1	0	253		Prot.	W
152	Reply Mode (Note 18)	1	0	0	1			W
153	Broadcast Code	1	254	200	254			W
154	Baud Rate Index	1	4	0	7			W
155	ID (device identifier) (Note 11)	1	1	0	199		Prot.	W
156	ID Setting Tolerance (degree)	1	10	1	254			W
158	Goal Position (Note 2)	4		-2 ³¹	+2 ³¹	step		W
162	Goal Torque (Note 9)	2		0	1000			W
164	Goal Acceleration (Note 7)	2		0	255			W
166	Goal Velocity (Note 8)	2		-10k	10k			W
168	Position P Gain	1	32	0	254			W
169	Position D Gain	1	32	0	254			W
170	Position I Gain	1	32	0	254			W
171	CW Dead Band	1	0	0	254	step		W
172	CCW Dead Band	1	0	0	254	step		W
173	Velocity P Gain	1	32	0	254			W
174	Velocity I Gain	1	32	0	254			W

NOTES

(1) 0 = Not moving

(2) The position unit is "step". Before the armonic drive the steps are $384 * 60$ (23040) per turn. After the armonic drive the steps are $384 * 60 * 20$ (460800) per turn. Writing zero to the Present Position the actual motor position becomes the zero point. But you could also assign a non zero value that will be the actual motor position.

(7) Acceleration unit = 500 steps / s^2 (direct) --- 10000 steps / s^2 (if reduced by 20)

(8) Velocity unit = 250 steps / s (direct) --- 5000 steps / s (if reduced by 20)

FeeTech acceleration unit = 100 steps / s^2 (100 steps are 1/41 of turn (4096))

FeeTech velocity unit = 50 steps / s (50 steps are 1/82 of turn (4096))

----- Maybe they have changed to 1 step/s in the new firmware ? -----

Feetech old firmware : "speed_unit_0.732rpm"

Feetech new firmware : "speed_unit_step_per_second"

(10) Some parameters may be written also in flash to retain the value between power cycles. <Write protection> needs to be turned Off (0) before modifying a value to write it also in flash .

(11) This value is preserved between the power cycles.

To modify this value the WriteProtect must be unlocked with a zero.

The max value is 199 because the broadcast codes are from 200 to 254

(12) 1 = position mode / 2 = constant speed mode / 253 = RESET MOTOR

To modify this value the WriteProtect must be unlocked with a zero.

-- TODO --

Add rotation inversion.

For example: 11 = position inverted / 12 = constant speed inverted

(18) Reply Mode: 0=Reply only for read instructions 1=Reply for all instructions

OLD NOTES

(1) Baud rates: 0=1M 1=500K 2=250K 3=128K
 4=115200 5=76800 6=57600 7=38400

(2) Reply Mode: 0=Reply for all instructions 1=Reply only for read instructions

(4) Torque Enable 0=Disable 1=Enable 128=Actual position is center (2048 value)

(5) Acceleration = 0 is not working.

(6) The position is writable to reset to a desired value

(7) The unit for acceleration is : 100 steps / s²

(8) The unit for speed is : 50 steps / s

(9) The torque value is two bytes (60 - 61), like Position (56 - 57) and Velocity (58 - 59). But the Torque is not codified as a signed 16 bit. It is codified as a signed 11 bit, making it a particular case, out of any standard and impossible to decode with the same functions used for all the other values. The "Torque" is not really a force, it is the motor drive current with a scale from 0 to 1023, where 1023 is the max Torque and from 1024 to 2047 there are the negative values.

Addr.	Memory	Bytes	Default	Min	Max	Unit	Prot.	R/W
	Sync Write Flag							
	Position Offset Value	2	0	-2047	2047	step		
167	Startup force	2	0	0	1000	0.1%		
	Torque Enable (Note 4)	1	1	0	254			