Motion Control AT Command Guide

The format of the AT command is as follows. Each AT command is terminated by "Enter" key or "0x0D" in hex.

Command Format

AT+	Command Word	=	Command parameters		0x0D

AT Command Summary (CR means return key)

SN	AT Command	Description	
1	AT[CR]	Check if AT command interpreter is working	
2	AT+VEL=12.34,45.78[CR]	Change Speed	
3	AT+VEL?[CR]	Read Speed	
4	AT+VELn=12.34,45.78[CR]	Change Speed of motor n (n = 0, 1)	
5	AT+VELn?[CR]	Read Speed of motor n (n = 0, 1)	
6	AT+POS=12.34,45.78[CR]	Change Position	
7	AT+POS?[CR]	Read Position	
8	AT+POSn=12.34[CR]	Change Position of Motor n (n = 0, 1)	
9	AT+POSn?[CR]	Read Position of Motor n (n=0,1)	
10	AT+PWMn=0.2[CR]	Change PWM Output for motor n (n = 0, 1)	
11	AT+PWMn?[CR]	Read PWM Output of motor n (n = 0, 1)	
12	AT+VMAX=12.34,45.78[CR]	Change Max Velocity for position mode	
1	AT+VMAX?[CR]	Read Max Velocity for position mode	
3	AT+VMAXn=12.34[CR]	Change Max Velocity for Motor n (n=0,1)	
14	AT+VMAXn?[CR]	Read Max Velocity of Motor n (n=0,1)	
15	AT+ACC=12.34,45.78[CR]	Change Acceleration	
16	AT+ACC?[CR]	Read Acceleration	
17	AT+ACCn=12.34[CR]	Change Acceleration of Motor n (n=0,1)	
18	AT+ACCn?[CR]	Read Acceleration of Motor n (n=0,1)	
19	AT+PIDn=1.2,3.4,5.6[CR]	Change PID Parameter for motor n (n = 0,1)	
20	AT+PIDn?[CR]	Read PID Parameter for motor n (n=0,1)	
21	AT+WHEELn=1.2,3.4,2048.0[CR]	Change Wheel Parameters for motor n (n = 0,1)	
22	AT+WHEELn?	Read Wheel Parameters for motor n (n = 0,1)	
23	AT+ ESTOP[CR]	Emergency Stop	
24	AT+ ESTOPn[CR]	Emergency Stop for motor n	
25	AT+ RESET[CR]	Reset Motion Controller	
26	AT+ RESETn[CR]	Reset Motion Controller for motor n (n = 0,1)	
27	AT+MOTOROFF[CR]	Turn OFF Motor Power	
28	AT+MOTORON[CR]	Turn ON Motor Power	
29	AT+MOTORnOFF[CR] (n = 0, 1)	Turn OFF Motor n Power	
30	AT+MOTORnON[CR] (n = 0, 1)	Turn ON Motor n Power	
31	AT+RCVMAX=1000.0, 1000.0[CR]	Change the MAX Velocity in RC-Independent Mode	
32	AT+RCVMAX?[CR]	Read the MAX Velocity in RC-Independent Mode	
33	AT+RCVMAXC=1000.0, 1000.0[CR]	Change the MAX Velocity in RC-Coordinated Mode	
34	AT+RCVMAXC?[CR]	Read the MAX Velocity in RC-Coordinated Mode	
35	AT+RCNBW=100[CR]	Change RC neutral band width in uSec	
36	AT+RCNBW?	Read RC neutral band width in uSec	
37	AT+RCMAXPWM=1.0,1.0	Change the MAX PWM duty cycle in RC-Independent Mode	
38	AT+RCMAXPWM?	Read the MAX PWM duty cycle in RC-Independent Mode	
39	AT+RCMAXPWMC=1.0,1.0	Change the MAX PWM duty cycle in RC-Coordinated Mode	
40	AT+RCMAXPWMC?	Read the MAX PWM duty cycle in RC-Coordinated Mode	

40	AT+SAVEALL[CR]	Save all RC related information in the non-volatile memory	

Change Speed

AT+VEL=12.34,45.78[CR]		
Description	• Set the speed of left motor and right motor in mm/sec •	
Reply	OK if successful, ERROR if unsuccessful	

Read Speed

AT+VEL?[CR]		
Description	• Read the speed of motor0 and motor1 • The motor speed is in floating point value	
Reply	+VEL=12.34,56.78 OK	

Change Speed of motor n (n = 0, 1)

AT+VELn=12.34,45.78[CR]		
Description	• Set the speed of motor n in mm/sec	
Reply	OK if successful, ERROR if unsuccessful	

Read Speed of motor n (n = 0, 1)

AT+VELn?[CR]		
Description	• Read the speed of motorn • The motor speed is in floating point value	
Reply	+VELn=12.34,56.78 OK	

Change Position

AT+POS=12.34,45.78[CR]		
Description	• Set the relative position of motor0 and motor1 with respect to the current position	
Reply	OK if successful, ERROR if unsuccessful	

Read Position

AT+POS?[CR]		
Description	• Read the current absolute position of the two motors in mm	
Reply	+POS=12.34,56.78 OK	

Change Position of Motor n (n = 0, 1)

AT+POSn=12.34[CR]

Description	• Set the relative position of motor n with respect to the current position	
Reply	OK if successful, ERROR if unsuccessful	

Read Position of Motor n (n=0,1)

AT+POSn?[CR]		
Description	• Read the current position of the motor n in mm	
Reply	POSn=12.34 OK	

Change PWM Output for motor n (n = 0, 1)

AT+PWMn=0.2[CR]		
Description	• Set the duty cycle (1.0 for 100%) of the PWM output to the motor n •	
Reply	OK if successful, ERROR if unsuccessful	

Read PWM Output of motor n (n = 0, 1)

AT+PWMn?[CR]		
Description	• Read the current PWM output duty cycle of motor n • Return value is from -1.0 to +1.0 (-100% to +100%)	
Reply	+PWMn=0.112 OK	

Change Max Velocity for position mode

AT+VMAX=12.34,45.78[CR]		
Description	• Set the maximum absolution velocity limit in mm/sec for position mode.	
Reply	OK if successful, ERROR if unsuccessful	

Read Max Velocity for position mode

AT+VMAX?[CR]		
Description	• Read the maximum absolution velocity limit in mm/sec for position mode.	
Reply	+VMAX=12.34,56.78 OK	

Change Max Velocity for Motor n (n=0,1)

AT+VMAXn=12.34[CR]		
Description	• Set the maximum absolution velocity limit of motor n in mm/sec for position mode.	
Reply	OK if successful, ERROR if unsuccessful	

Read Max Velocity of Motor n (n=0,1)

AT+VMAXn?[CR]		
Description	• Read the maximum absolution velocity limit of motor n in mm/sec for position mode.	
Reply	+VAMXn=12.34 OK	

Change Acceleration

AT+ACC=12.34,45.78[CR]		
Description	• Set the Acceleration limit of motor 0 and motor 1 in mm/sec*sec	
Reply	OK if successful, ERROR if unsuccessful	

Read Acceleration

AT+ACC?[CR]		
Description	• Read the Acceleration limit of the two motors	
Reply	+ACC=12.34,56.78 OK	

Change Acceleration of Motor n (n=0,1)

AT+ACCn=12.34[CR]		
Description	• Set the Acceleration limit of motor n in mm/sec*sec	
Reply	OK if successful, ERROR if unsuccessful	

Read Acceleration of Motor n (n=0,1)

AT+ACCn?[CR]		
Description	• Read the Acceleration limit of the two motors	
Reply	+ACCn=12.34 OK	

Change PID Parameter for motor n (n = 0,1)

AT+PIDn=1.2,3.4,5.6[CR]		
Description	• Set the Kp, Ki, Kd for motor n •	
Reply	OK if successful, ERROR if unsuccessful	

Read PID Parameter for motor n (n=0,1)

AT+PIDn?[CR]		
Description	• Read the Kp, Ki, Kd for motor n •	
Reply	+PIDn=1.1,2.2,3.3 OK	

Change Wheel Parameters for motor n (n = 0,1)

AT+WHEELn=1.2,3.4,2048.0[CR]		
Description	• Set the Gear Ratio, Wheel Diameter, CPR for motor n •	
Reply	OK if successful, ERROR if unsuccessful	

Read Wheel Parameters for motor n (n = 0,1)

AT+WHEELn?		
Description	• Read the Gear Ratio, Wheel Diameter, CPR for motor n	
Reply	+WHEELn=1.2,3.4,2048.0 OK	

Emergency Stop

AT+ ESTOP[CR]		
Description	• Stop the 2 motors immediately at best effort.	
Reply	OK if successful, ERROR if unsuccessful	

Emergency Stop for motor n

AT+ ESTOPn[CR]		
Description	• Stop the 2 motors immediately at best effort.	

Reply	OK if successful, ERROR if unsuccessful	

Reset Motion Controller

AT+ RESET[CR]		
Description	• Reset the motion controller. Distance counter unchanged	
Reply	OK if successful, ERROR if unsuccessful	

Reset Motion Controller for motor n (n = 0,1)

AT+ RESETn[CR]		
Description	• Reset the motion controller for motor n. Distance counter unchanged	
Reply	OK if successful, ERROR if unsuccessful	

Turn OFF Motor Power

AT+MOTOROFF[CR]		
Description	• Turn OFF the power for the 2 motors. The 2 motors are in free-running state.	
Reply	OK if successful, ERROR if unsuccessful	

Turn ON Motor Power

AT+MOTORON[CR]		
Description	• Turn ON the power for the 2 motors. The 2 motors are in velocity mode.	
Reply	OK if successful, ERROR if unsuccessful	

Turn OFF Motor n Power

AT+MOTORnOFF[CR] (n = 0, 1)		
Description	• Turn OFF the power for the motor n. The motor is in free-running state.	
Reply	OK if successful, ERROR if unsuccessful	

Turn ON Motor n Power

AT+MOTORnON[CR] (n = 0, 1)		
Description	• Turn ON the power for the motor n. The motor is in velocity mode.	
Reply	OK if successful, ERROR if unsuccessful	