AN139

16-127081

ASCII Command Examples

Introduction

Below is a list of ASCII commands to perform a homing routine, move, jog, and more complex trajectory update move on single and dual axis drives. Please read the ASCII Programmer's Guide for more information.

Home Single Axis Drive:

s r0xc8 0 // set trajectory profile mode to 0 = trapezoidal profile mode

s r0x24 21 // set desired state to "trajectory generator drives position loop"

s r0xc2 0x204 // set homing method configuration to "home to hardstop" in positive direction. Set to "0x214" for negative direction

s r0xc3 0x320000 // set home fast velocity to 0x320000 in units of 0.1 counts/sec

s r0xc4 0xa0000 // set home slow velocity to 0xa0000 in units of 0.1 counts/sec

s r0xc5 0xc0000 // set home accel, decel to 0xc0000 in units of 10 counts/sec^2

s r0xc6 0 // set the home offset to 0 counts

s r0xc7 53 // set the current threshold to 0.53 amps

s r0xbf 250 // set the current delay time to 250 ms

t 2 // home command

To abort homing routine, send "t 0".

Home Dual Axis Drive:

////////// AXIS A //////////

.a s r0xc8 0 // set trajectory profile mode to 0 = trapezoidal profile mode

.a s r0x24 21 // set desired state to "trajectory generator drives position loop"

.a s r0xc2 0x204 // set homing method configuration to "home to hardstop" in positive direction. Set to "0x214" for negative direction

.a s r0xc3 0x320000 // set home fast velocity to 0x320000 in units of 0.1 counts/sec

.a s r0xc4 0xa0000 // set home slow velocity to 0xa0000 in units of 0.1 counts/sec

.a s r0xc5 0xc0000 // set home accel, decel to 0xc0000 in units of 10 counts/sec^2

.a s r0xc6 0 // set the home offset to 0 counts

.a s r0xc7 53 // set the current threshold to 0.53 amps

.a s r0xbf 250 // set the current delay time to 250 ms

//////// AXIS B ////////

.b s r0xc8 0 // set trajectory profile mode to 0 = trapezoidal profile mode

.b s r0x24 21 // set desired state to "trajectory generator drives position loop"

.b s r0xc2 0x204 // set homing method configuration to "home to hardstop" in positive direction. Set to "0x214" for negative direction

.b s r0xc3 0x320000 // set home fast velocity to 0x320000 in units of 0.1 counts/sec

.b s r0xc4 0xa0000 // set home slow velocity to 0xa0000 in units of 0.1 counts/sec

.b s r0xc5 0xc0000 // set home accel, decel to 0xc0000 in units of 10 counts/sec^2

.b s r0xc6 0 // set the home offset to 0 counts

.b s r0xc7 53 // set the current threshold to 0.53 amps

.b s r0xbf 250 // set the current delay time to 250 ms

/////// TRAJECTORY COMMAND ////////

t 0x3002 // multi-axis home command

To abort homing routine, send "t 0x3000". To only home axis A send ".a t 2". To only home axis B, send ".b t 2".

Single Axis Drive Move:

s r0x24 21 // set desired state to "trajectory generator drives position loop"

s r0xc8 0x100 // set trajectory profile mode to 0x100 = trapezoidal relative move

s r0xca 4000 // set commanded position to 4000 counts

s r0xcb 250000 // set max velocity to 250,000 in units of 0.1 counts/sec

s r0xcc 50000 // set max accel to 50,000 in 10 counts/sec^2 units

s r0xcd 50000 // set max decel to 50,000 in 10 counts/sec^2 units

s r0x11b 0 // set ending velocity to 0 in 0.1 counts/sec units

t 1 // trajectory update command

Dual Axis Move:

///// AXIS A ////////

.a s r0x24 21 // Axis A set desired state to "trajectory generator drives position loop"

.a s r0xc8 0x100 // Axis A set trajectory profile mode to 0x100 = trapezoidal relative move

.a s r0xca 4000 // Axis A set commanded position to 4000 counts

.a s r0xcb 250000 // Axis A set max velocity to 250,000 in 0.1 counts/sec units

.a s r0xcc 50000 // Axis A set max accel to 50,000 in 10 counts/sec^2 units

.a s r0xcd 50000 // Axis A set max decel to 50,000 in 10 counts/sec^2 units

.a s r0x11b 0 // Axis A set ending velocity to 0 in 0.1 counts/sec units

/////// AXIS B ////////

.b s r0x24 21 // Axis B set desired state to "trajectory generator drives position loop"

.b s r0xc8 0x100 // Axis B set trajectory profile mode to 0x100 = trapezoidal relative move

.b s r0xca 4000 // Axis B set commanded position to 4000 counts

.b s r0xcb 250000 // Axis B set max velocity to 250,000 in 0.1 counts/sec units

.b s r0xcc 50000 // Axis B set max accel to 50,000 in 10 counts/sec^2 units

.b s r0xcd 50000 // Axis B set max decel to 50,000 in 10 counts/sec^2 units

.b s r0x11b 0 // Axis B set ending velocity to 0 in 0.1 counts/sec units

////////////// TRAJECTORY COMMAND //////////

t 0x3001 // Simultaneously send Axis A and Axis B the trajectory update command.

To only move axis A, send ".a t 1" command. To only move axis B, send ".b t 1" command.

Single Axis Jog

s r0x24 21 // set desired state to "trajectory generator drives position loop"

s r0xc8 2 // set trajectory profile mode to 2 = profile velocity mode

s r0xca 1 // set commanded position to 1 count = jog in positive direction

s r0xcc 0x140000 // set max accel to 0x140000 in units of 10 counts/sec^2

s r0xcd 0x140000 // set max decel to 0x140000 in units of 10 counts/sec^2

s r0xcb 0x190000 // set max velocity to 0x190000 in units of 0.1 counts/sec

t 1 // trajectory update command

Send the following two commands to stop the jog:

s r0xcb 0 // set max velocity to 0 in units of 0.1 counts/sec

t 1 // perform trajectory update to stop jog

Dual Axis Jog

/////// AXIS A ////////

.a s r0x24 21 // set desired state to "trajectory generator drives position loop"

.a s r0xc8 2 // Axis A set trajectory profile mode to 2 = profile velocity mode

.a s r0xca 1 // Axis A set commanded position to 1 count = jog in positive direction

.a s r0xcc 0x140000 // Axis A set max accel to 0x140000 in units of 10 counts/sec^2

.a s r0xcd 0x140000 // Axis A set max decel to 0x140000 in units of 10 counts/sec^2

.a s r0xcb 0x190000 // Axis A set max velocity to 0x190000 in units of 0.1 counts/sec

/////// AXIS B ////////

.b s r0x24 21 // desired state to "trajectory generator drives position loop"

.b s r0xc8 2 // Axis B set trajectory profile mode to 2 = profile velocity mode

.b s r0xca 1 // Axis B set commanded position to 1 count = jog in positive direction

.b s r0xcc 0x140000 // Axis B set max accel to 0x140000 in units of 10 counts/sec^2

.b s r0xcd 0x140000 // Axis B set max decel to 0x140000 in units of 10 counts/sec^2

.b s r0xcb 0x190000 // Axis B set max velocity to 0x190000 in units of 0.1 counts/sec

////////// TRAJECTORY COMMAND //////////

t 0x3001 // multiaxis trajectory update command

Send the following three commands to stop the jog:

.a s r0xcb 0 // Axis A set max velocity to 0 in units of 0.1 counts/sec

.b s r0xcb 0 // Axis B set max velocity to 0 in units of 0.1 counts/sec

t 0x3001 // perform trajectory update to stop jog

Single Axis Drive Trajectory Sequence:

Sends two moves to the trajectory generator. End the first move with a non-zero velocity, which will be the starting velocity for the second move. The second move will have an ending velocity of zero.

s r0x24 21 // set desired state to "trajectory generator drives position loop"

s r0xc8 0x100 // set trajectory profile mode to 0x100 = trapezoidal relative move

s r0xca 4000 // Move 1 set commanded position to 4,000 counts

s r0xcb 250000 // Move 1 set max velocity to 250,000 in units of 0.1 counts/sec

s r0xcc 50000 // Move 1 set max accel to 50,000 in units of 10 counts/sec^2

s r0xcd 50000 // Move 1 set max decel to 50,000 in units of 10 counts/sec^2

s r0x11b 50000 // Move 1 set ending velocity to 50,000 in units of 0.1 counts/sec

t 3 // trajectory save command

s r0xca 2000 // Move 2 set commanded position to 2,000 counts

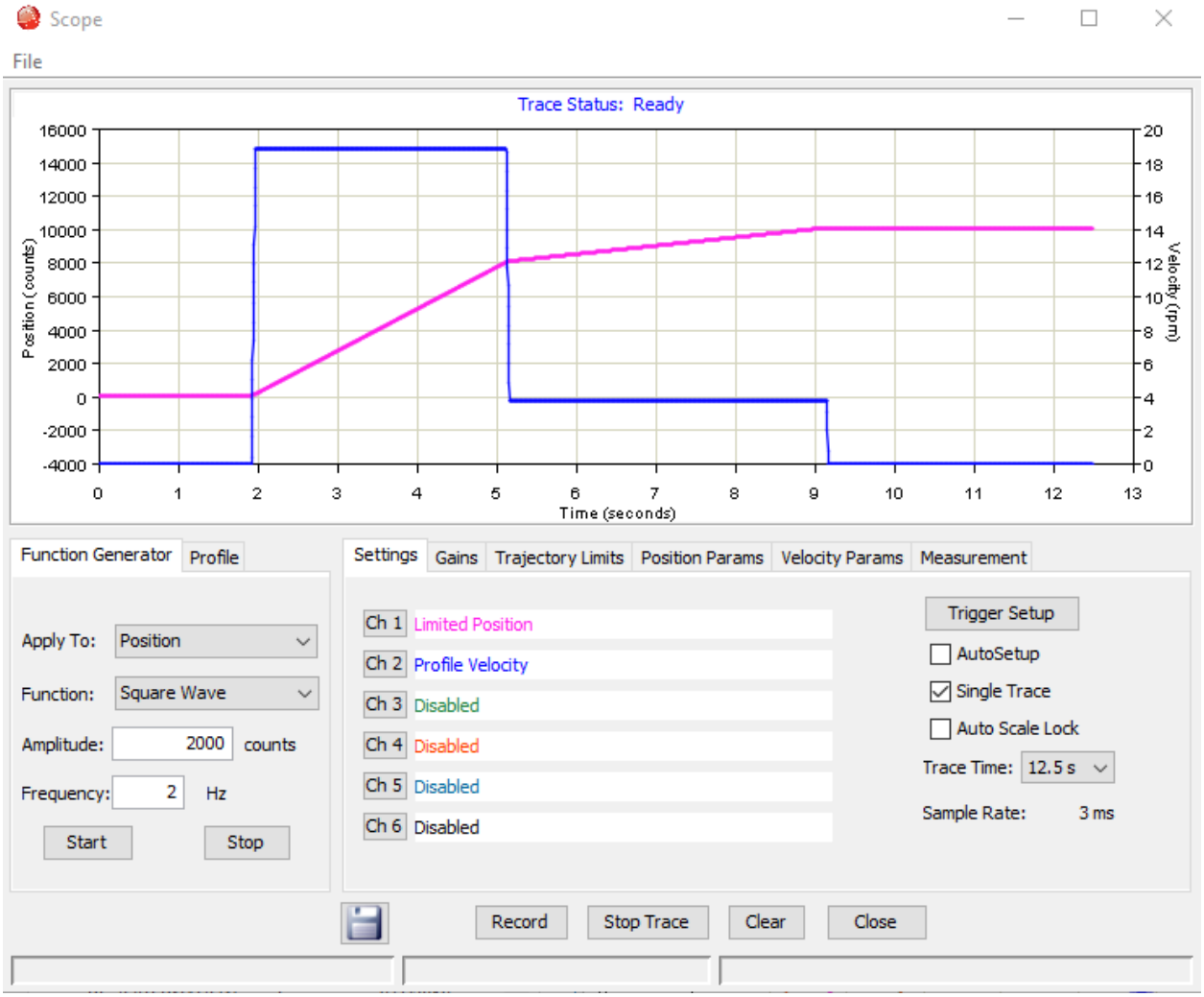
s r0xcb 50000 // Move 2 set max velocity to 50,000 in units of 0.1 counts/sec. Note that this value must equal the ending velocity of first move.

s r0x11b 0 // Move 2 set ending velocity to 0 in units of 0.1 counts/sec

t 3 // trajectory save command

t 4 // trajectory sequence command

Below is a scope trace of the limited position and profile velocity during the single axis trajectory sequence. The trace was recorded using the oscilloscope feature in CME.



Dual Axis Drive Trajectory Sequence:

/////// AXIS A ////////

.a s r0x24 21 // Axis A set desired state to "trajectory generator drives position loop"

.a s r0xc8 0x100 // Axis A set trajectory profile mode to 0x100 = trapezoidal relative move

.a s r0xca 4000 // Axis A Move 1 set commanded position to 4,000 counts

.a s r0xcb 25000 // Axis A Move 1 set max velocity to 25,000 in units of 0.1 counts/sec

.a s r0xcc 5000 // Axis A Move 1 set max accel to 5,000 in units of 10 counts/sec^2

.a s r0xcd 5000 // Axis A Move 1 set max decel to 5,000 in units of 10 counts/sec^2

.a s r0x11b 5000 // Axis A Move 1 set ending velocity to 5,000 in units of 0.1 counts/sec

.a t 3 // trajectory save command

.a s r0xca 2000 // Axis A Move 2 set commanded position to 2,000 counts

.a s r0xcb 5000 // Axis A Move 2 set max velocity to 5,000 in units of 0.1 counts/sec. Note that this value must equal the ending velocity of first move of this axis.

.a s r0x11b 0 // Axis A Move 2 set ending velocity to 0 in units of 0.1 counts/sec

.a t 3 // trajectory save command

//////// AXIS B ///////////

.b s r0x24 21 // Axis B set desired state to "trajectory generator drives position loop"

.b s r0xc8 0x100 // Axis B set trajectory profile mode to 0x100 = trapezoidal relative move

.b s r0xca 4000 // Axis B Move 1 set commanded position to 4,000 counts

.b s r0xcb 25000 // Axis B Move 1 set max velocity to 25,000 in units of 0.1 counts/sec

.b s r0xcc 5000 // Axis B Move 1 set max accel to 5,000 in units of 10 counts/sec^2

.b s r0xcd 5000 // Axis B Move 1 set max decel to 5,000 in units of 10 counts/sec^2

.b s r0x11b 5000 // Axis B Move 1 set ending velocity to 5,000 in units of 0.1 counts/sec

.b t 3 // trajectory save command

.b s r0xca 2000 // Axis B Move 2 set commanded position to 2,000 counts

.b s r0xcb 5000 // Axis B Move 2 set max velocity to 5,000 in units of 0.1 counts/sec. Note that this value must equal the ending velocity of first move of this axis.

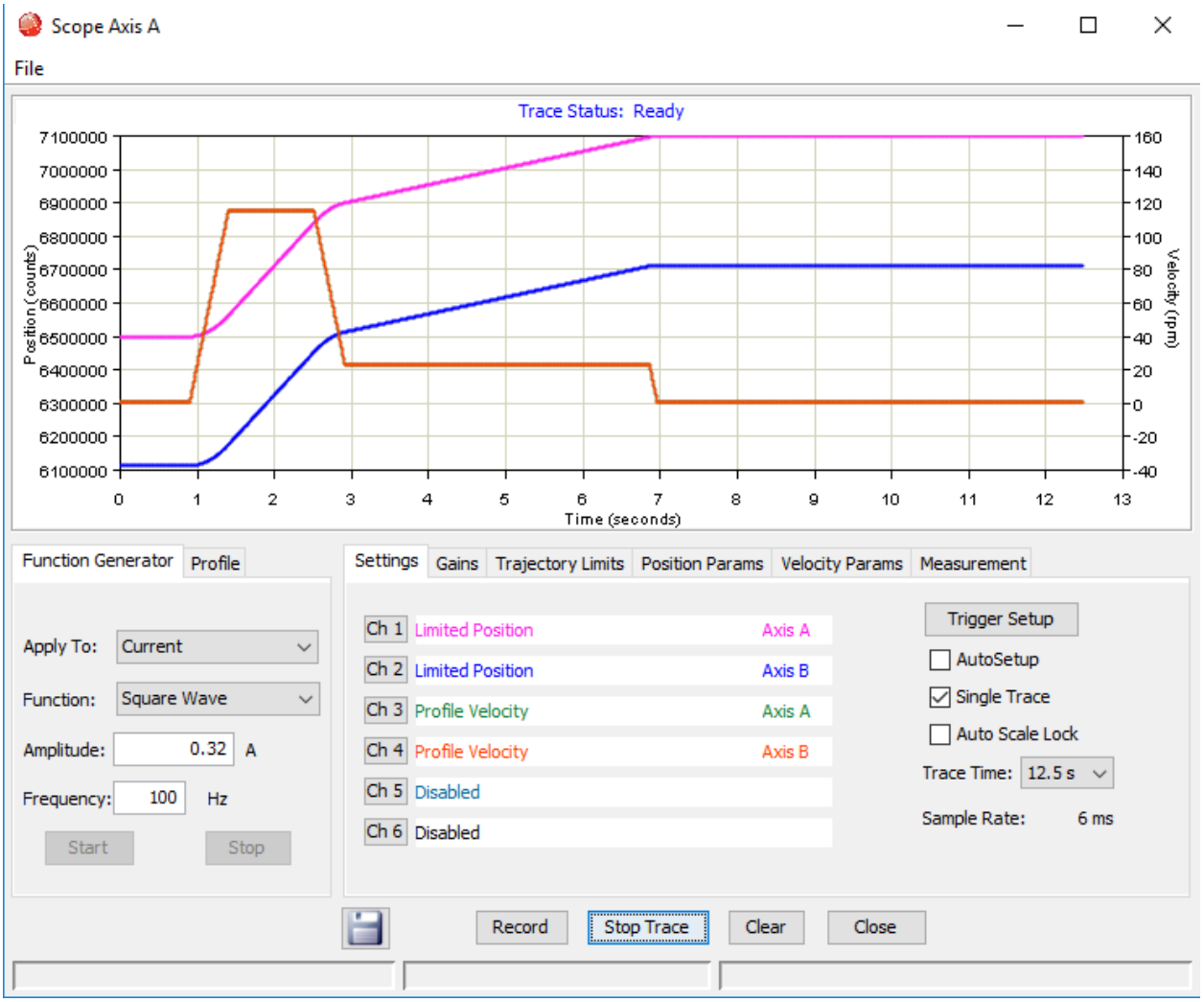
.b s r0x11b 0 // Axis B Move 2 set ending velocity to 0 in units of 0.1 counts/sec

.b t 3 // trajectory save command

////////// TRAJECTORY COMMAND //////////

t 0x3004 // trajectory sequence command multi-axis

Below is a scope trace of the limited position and profile velocity for both axes during the dual axis trajectory sequence. The trace was recorded using the oscilloscope feature in CME.



Revision History

Date	Version	Revision
4/28/2020	Rev 00	Initial release