**ELMO Tuning Wizard Setup**

**Rotation:** CAN ID=126

Gear Ration wrt motor output shaft: 1:1

**RSF-8B-100F**

Continuous Stall: 1.5A

Maximum Mechanical Speed: 6000 RPM

Main Feedback Sensor: Encoder & Digital Halls

Pulses Per Revolution: 1000

Application Continuous Current: 1.5A

Application Peak Current: 2.9A

Speed: 5000 rpm

Stop Deceleration: 3,666,667

Counts/degree = 100\*1000\*4/360 = 1111.11

**Rotation Drive Manual Tuning**

Note: to complete commutation setup for Tilt axis, tilt motor must be decoupled from gear train.

Velocity Loop: KP = 65; KI=2

Velocity move: 1000 cts @ 5000 rpm; halve default time resolution for scope

Start with “Advanced Filter” disabled, i.e. button is not green

Check “Profiler Mode” checkbox

Position Loop: KP = 30

**Tilt:** CAN ID=127

Gear Ration wrt motor output shaft: 8:1

**RSF-5A-30**

Continuous Stall: 1.11A

Maximum Mechanical Speed: 9990 RPM

Main Feedback Sensor: Encoder & Digital Halls

Pulses Per Revolution: 500

Application Continuous Current: 1.11 A

Application Peak Current: 2.3A

Speed: 6000 rpm

Stop Deceleration: 210,000,000

Counts/degree = 8\*30\*500\*4/360 = 1333.33

**Tilt Drive Manual Tuning**

Note: to complete commutation setup for Tilt axis, tilt motor must be decoupled from gear train.

Velocity Loop: KP = 46.5; KI=1.1

Velocity move: 1000 cts @ 5000 rpm; halve default time resolution for scope

Start with “Advanced Filter” disabled, i.e. button is not green

Check “Profiler Mode” checkbox

Position Loop: KP = 72

Also added feed forward to reduce following error: FF[1]=5; FF[2]=2.3;

Digital inputs: IL[3]=9 (RLS); IL[4]=11 (FLS); IL[5]=7 (general purpose);

**Home Position**

HM[2] = 0; /\* set absolute reference to 0 for now, correct when measure true offset \*/

HM[3]=7; HM[4]=0; HM[5]=2; HM[1]=1; /\* move to RLS limit and stop \*/

MO = 1; JV = -10000; BG; /\* 300 rpm on input shaft \*/

MO = 0; /\* suspend motion \*/

HM[3]=17; HM[4]=0; HM[5]=2; HM[1]=1; /\* move to home position and stop \*/

MO = 1; JV = 10000; BG; /\* 300 rpm on input shaft \*/

MO = 0; /\* suspend motion \*/

HM[3]=3; HM[4]=0; HM[5]=0; HM[1]=1; /\* move to next index pulse and set absolute position \*/

MO = 1; JV = 10000; BG; /\* 300 rpm on input shaft \*/

**Useful Motor Parameters to Check/Set**

PL[1], CL[1] : Peak and continuous current limits

VH[2], VL[2] : High and Low velocity limits

VH[3], VL[3] : High and Low position limits

FF[1], FF[2] : Feed forward multiply factor (0, default), feed forward term (1 default)

ER[2], ER[3] : Max velocity following error, max position following error

IL[N] : Defines behavior of digital input, N

KI[1], KP[1] : Integrator and gain values of current loop

KI[2], KP[2] : Integrator and gain values of velocity loop

KP[3] : Gain value of position loop

AC, DC : Acceleration and deceleration values applied to next move (cts/sec^2)

SD : Stop deceleration, i.e. largest value motor can handle for “emergency” stops

SP : Velocity used in point to point (PTP) moves in cts/sec

TR[1],TR[2] : Defines distance (cts) and time (milliseconds) that load must be in position for to complete motion