TA620 Spindle Controller

Features

- Spindle control up to 30,000 RPM
- High acceleration and deceleration for optimized process time
- Trapezoidal, SCurve, velocity and custom move profiles
- BNC input for clock or pulse input following
- Application specific parameters stored in EEPROM
- Easy to use GUI and scripting language software
- USB 2.0 setup and diagnostics interface
- Dedicated I/O –
    - Air sense – main, bearing & clamp
    - Aux interlock
    - Clamp, controller, at speed, at zero
- User I/O - 4 outputs, 4 inputs
- 4 high speed position capture inputs
- Integrated emergency stop circuitry
- 110/220VAC power
- DC or AC brushless motor control
- Sensor or sensorless commutation startup
- Feedback – differential A quad B with index and Hall sensors

Applications

- Semiconductor processing equipment
- Disk drive test systems

The TA620 Spindle Controller continues Trust Automation Inc.'s tradition of motion control innovation. The TA620 is a single axis spindle motor controller designed for applications requiring high performance, high power and accurate velocity control. The TA620 provides advanced control from 0 – 30,000 RPM. The advanced dual processor design optimizes performance by splitting the tasks between host communication and control algorithm processing. This advanced electrical design delivers peak performance but maintains easy to use and configure software to reduce development time and shorten time to market.

The TA620 utilizes the newest technology available in today's advanced motion controllers combined with the ease of a simple 3 character programming language, providing over one hundred available commands to handle even the most demanding applications. All aspects of profile generation, velocity control and acceleration and deceleration are adjustable. The fast 100µs servo update rate is specially designed for high performance motion related systems. Extensions to the base command set provide simple commands for spindle applications. The TA620 provides advanced PID control in addition to two bi-quad noise or resonance filers.

By utilizing the dual processor architecture, optimizing the controller for high speed high accuracy motors and providing simple yet powerful text based programming tools, the TA620 Motion Controller gives engineers the tools to implement advanced motion controls quickly and easily.

Technical Specifications

- **Electrical**
  - AC Input   110/220 VAC
  - DC Motor Output   140 VDC
  - Drive Current – Continuous   8.0A
  - Drive Current – Peak   25.0A

- **Mechanical**
  - Length   11.40in (28.96cm)
  - Width   7.06in (17.93cm)
  - Height   6.75in (17.15cm)
  - Weight   20lbs
  - Mounting   Panel

- **Environmental**
  - Maximum Altitude   6,560ft (2,000M)
  - Temperature (ambient)
    - Normal operation   +0° C to +40° C
    - Storage   -20° C to +80° C

- Humidity
  - Operating   10% to 70% non-condensing
  - Storage   10% to 90%, non-condensing
  - Protection Level   Not Water Resistant

- **Connections**
  - J1, (Motor Power), 10-Pin D-Shell (unique)
  - J2, (Encoder), 15-Pin D-Shell
  - J3, (Frequency Input), BNC
  - J4, (Encoder Output), BNC
  - J5, (Auxiliary Encoder), 15-Pin D-Shell
  - J6, (User I/O), 25-Pin D-Shell
  - J7, (RS-232), 9-Pin D-Shell
 - J8, (USB)

Controller Specifications

Feature	Units	Value	Comments
Encoder Input Frequency	Mcounts/sec	5.0	
Min Control Loop Update Rate	kHz	0.1	
Max Control Loop Update Rate	kHz	19.8	
Max Commutation Rate	kHz	10.0	
Velocity Accuracy		0.0005%	Spindle Dependent
Position Accuracy		1 ct	Application Dependent
Commutation Rate	µS	100	
DAC Resolution, 2/Axis	Bits	16	
Dedicated Digital Inputs		4	750ma 24V DC
Dedicated Digital Outputs		4	Open Collector
User Digital Inputs		4	Optically Isolated
User Digital Outputs		4	Optically Isolated

Controller Features

Feature	Description
Position Range	± 2,147,483,648 counts per move (32 bit)
Velocity Range	± 655,360,000 counts/sec
Acceleration Range	± 655,360,000 counts/sec²
Jerk Range	± 8,000,000,000,000 counts/sec³
Motion Profile Modes	Trapezoidal, Point to Point
	SCurve, Point to Point
	Velocity Contouring
	Master Follower from BNC Inputs
	Custom Contouring
Filter Gain Types	Home Filter Set
	Stopped Filter Set
	Motion Filter Set
Filter Terms	(Kp)Proportional, (Ki)Integral, (Kd)Derivative
	(IL)Integral Limit, (TL)Torque Limit
	(DS)Derivative Sub Sampling
	(AF)Acceleration and (VF)Velocity Feed forward

Feature	Description
Filter Terms	(PW)Position Window
	(SH)Parameter Global Scale
Position Error Size	± 4,294,967,296 encoder counts
Dedicated Emergency Stop Circuit	1 E-Stop Monitor Input
	1 E-Stop Trigger Output
	Hardware Disable of Drive Enables on E-Stop

Mechanical Dimensions
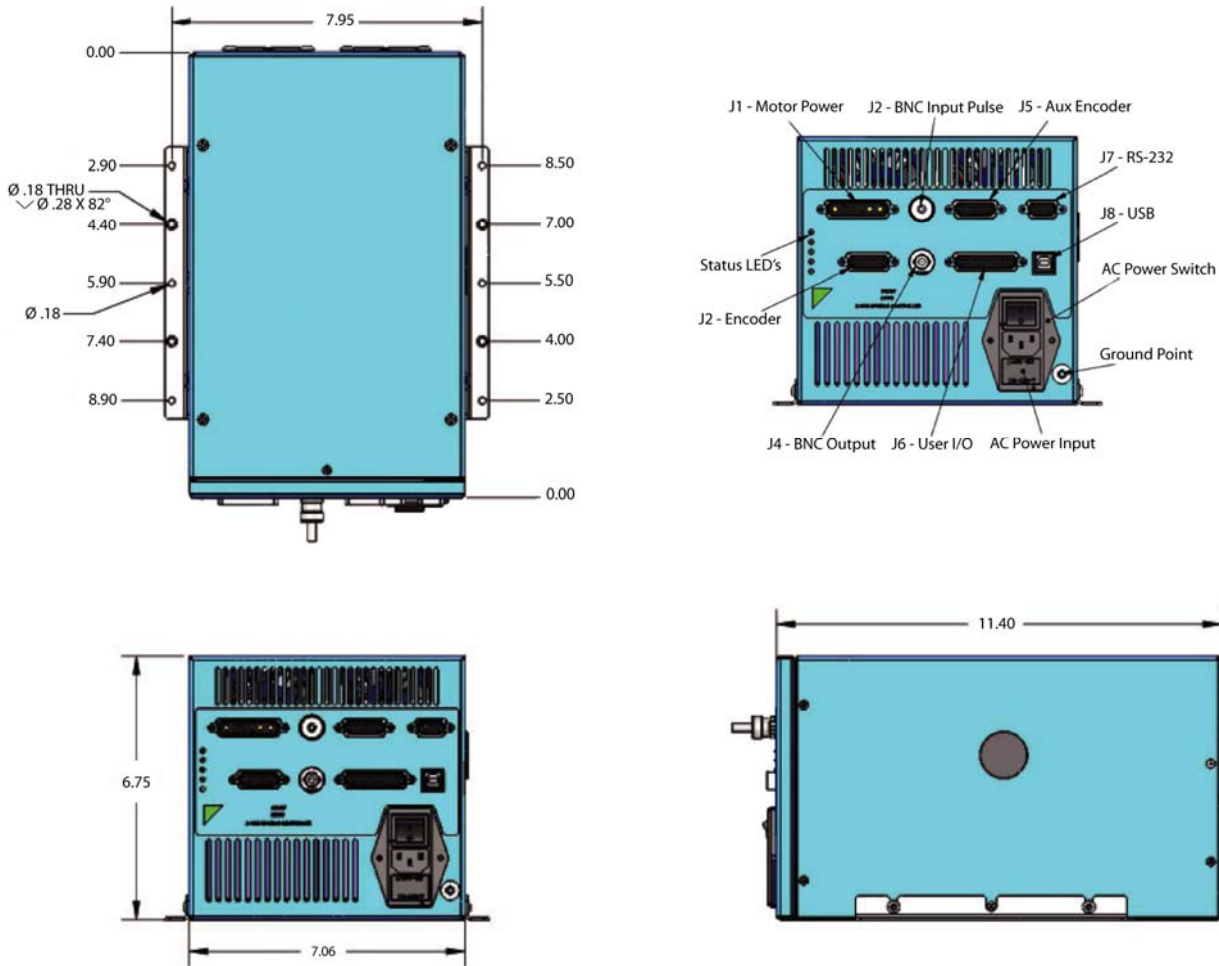
Ordering Information

Spindle Motor Controller
TA620-D01   Single Axis Spindle Motor Controller