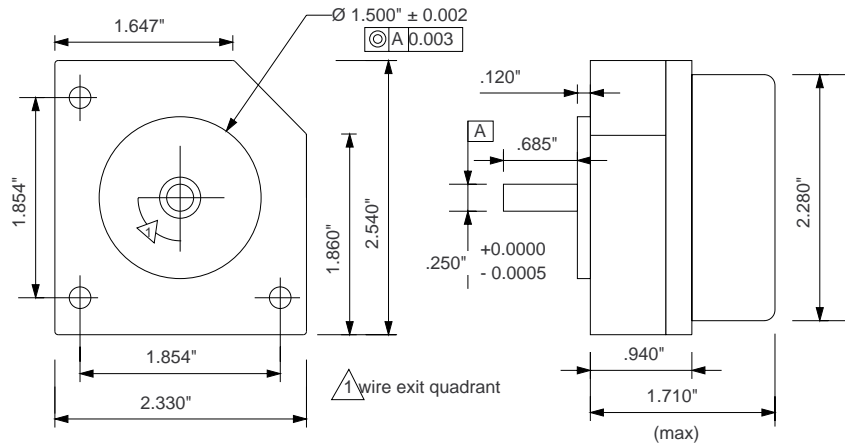




### Mechanical Data:



### Description:

The CM-400 series is a two pole brushless DC LRT with an integral optical encoder, designed for high resolution scanning. The torquer is characterized by a flat torque curve over a 115° angle, the encoder by a large choice of digital or low distortion sine/cosine quadrature outputs. The sine/cosine versions allow interpolation of up to 36 million full quadrature cycles (144 million measuring points).

### Standard linecounts:

*sine/cosine:* 16, 50, 96, 110, 120, 128, 155, 192, 200, 210, 240, 254, 256, 280, 288, 300, 360, 384, 400, 480, 500, 576, 600, 720, 850, 1000, 1024, 2000, 2048, 3600, 4096, 5000, 5625 & 6000 c/r.  
*digital, in addition to the above:* 4000, 7200, 8192, 10000, 11250, 12000 & 16384 c/r

### Ordering information, digital output: **CM-450-(linecount)**

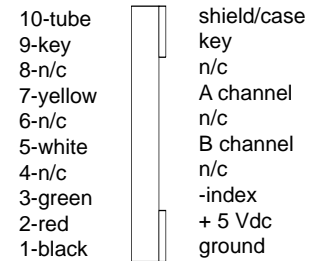
For sine/cosine encoder output, please contact the factory.

### Motor characteristics @ 20°C ambient:

parameter	symbol	unit	value
design voltage	Vp	Volt	8.75
peak torque ±10%	Tp	oz.in Nm	13 0.095
peak current ±10%	Ip	Ampere	2.36
torque constant ±10% (*)	Kt	oz.in/A Nm/A	5.5
DC resistance ±12%	Rm	Ohm	3.7
BEMF ±10%	Kb	V/rad/sec	0.0388
rotor inertia ±10%	J	oz.in.sec <sup>2</sup> g.cm <sup>2</sup>	.0015 106
viscous damping	Fi	oz.in/rad/sec Nm/rad/sec	14 0.1
thermal resistance	TPR	° C/Watt	10
torque linearity (*)		%	10
continuous torque	Tr	oz.in Nm	8.6 .06

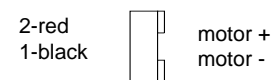
(\*) over active range

### encoder pinout (digital):



shielded cable, connector "Molex" # 22-10-3187, terminals # 08-56-0110

### motor pinout



connector "Molex" # 22-10-3027, terminals # 08-56-0110

cable length motor + encoder 15" ± 0.5" from encoder cover to connector end

The LRT assumes two zero-torque positions dependent on the polarity on the terminals. The reference position of the shaft is obtained when a positive voltage is applied to the black lead, return to the red lead. The index position is referred off this reference, either indicating the mid point (default) or the end/start of the linear range. The direction of rotation is CCW if a positive voltage is applied to the red wire, as seen from the load side of the motor.

### Mechanical

radial play < 0.0001" @ 1 lb sideload, axial play : 0.0003" max @ 2 lbs in the direction of encoder, less than 0.0001" @ 2 lbs in the direction of the load.

### Environmental

operating temperature: 0° - 75°C  
 storage temperature: -40° - 85°C  
 operating RH: 95% (non-condensing)  
 storage RH: 95% (non-condensing)  
 shock (half sine): 50 g's for 11 ms  
 vibration (sine): 0-2000 Hz @ 16 g's  
 altitude: 40,000 ft max.

