

## BRUSHLESS DC MOTOR FAMILY

### Series NT DYNAMO® Geared Brushless DC Permanent Magnet Motor



#### Spur

- Up to 600:1 Gear Ratio
- Up to 200 oz-in [1412 mN-m] of Torque
- AGMA 7 Gear Quality



#### Planetary

- Wide Selection of Gear Ratios and Features
- Inline, Right Angle, and Metric
- High Torque and Low Backlash

Some factors to consider in maximizing your application system's performance:

- Torque Multiplication
- Speed Reduction
- Inertia Matching
- Radial Loading
- Axial Loading
- Noise

Spur gearheads will suit most needs in relatively low-torque applications. However, spur configurations have higher backlash and are usually less efficient than planetary types of similar construction. For constant velocity and unidirectional applications where backlash is less of a concern, spur gearheads are ideal.

Planetary gearheads are generally specified for their high rated torque and high input speed. Planetary gearheads are more robust with higher accuracy, lower backlash, and longer life than spur gearheads. They are well suited for higher

load applications in small packages ranging from nut runners and nut setters to small medical tools, pumps, and other devices.


The gearhead solution (Spur Vs. Planetary) is primarily dependent upon the application. Some factors to be considered in making proper trade-offs between cost and performance are shown below.

DESIGN FACTORS	GEARHEAD TYPE	
	SPUR	PLANETARY
Torque Capacity	Lower	Higher
Power to Weight Ratio	Lower	Higher
Power to Size Ratio	Lower	Higher
Torsional Stiffness	Lower	Higher
Backlash	Higher	Lower
Available Number of Gear Ratios	Higher	Lower
Operating Speed	Lower	Higher
Size	Larger	Smaller
Cost	Lower	Higher

#### NT Dynamo BLDC Motor Specifications

- Standardized Modules
  - Brings high volume pricing to low volume orders
  - Makes product performance easy to specify
  - Ensures maximum product quality
- Flexible Performance
  - Operates from 12-48Vdc power sources
  - Operates in speed or torque mode
  - 4 quadrant closed loop or 2 quadrant open loop
  - Compact integrated encoder option

### Electrical

- Integral Motor Controls Matched to a Motor Winding
- 2 or 4 Quadrant Operation
- 10Vdc-48Vdc Range (depending on motor control)
- Up to 40 oz-in [282 mN-m] Torque (with no gearing)
- Ultra Smooth Precision Motion Quality
-  Approved Class B Insulation System
- 100% Final Tested
- Custom Windings Available

### Mechanical

- Long Life Ball Bearing System
- Size 17 and NEMA 23 Mounting Flange
- Neodymium Ring Magnets (not arcs)
- Stainless Steel Shaft
- Over 20,000 Hours of Design Life @ Rated Torque
- Standard Molex® Connectors
- Small Package Size with Low Rotor Inertia
- Up to 6000 RPM Operation

### Reliability

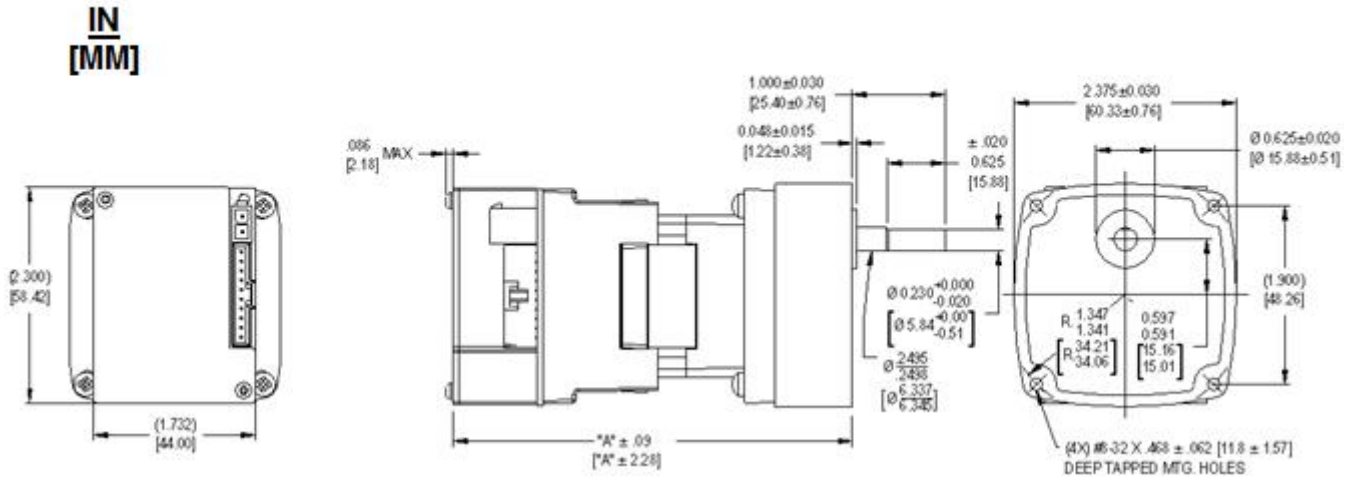
- Over 1.5 Million Hours of Combined Life and Reliability Testing
- In Use at Major OEM's in Demanding Applications
- Our Proven Design can Help Reduce the Test Time Needed to Validate Your Design
- Contact Hurst for Detailed Life and Reliability Data

### Integral Motor Control and Encoders

- External Motor Module
  - For Use with Customer Supplied Motor Control
  - Provides Hall Sensor and/or Encoder Outputs
- Analog Motor Control
  - Economical Control via a Simple Speed Pot or a 0-5Vdc Control Signal
- PWM Motor Control
  - Control via Customer Generated PWM Signal
- Encoders – 100, 250, 256 with Index Pulse, 400, or 1000 Line Resolution

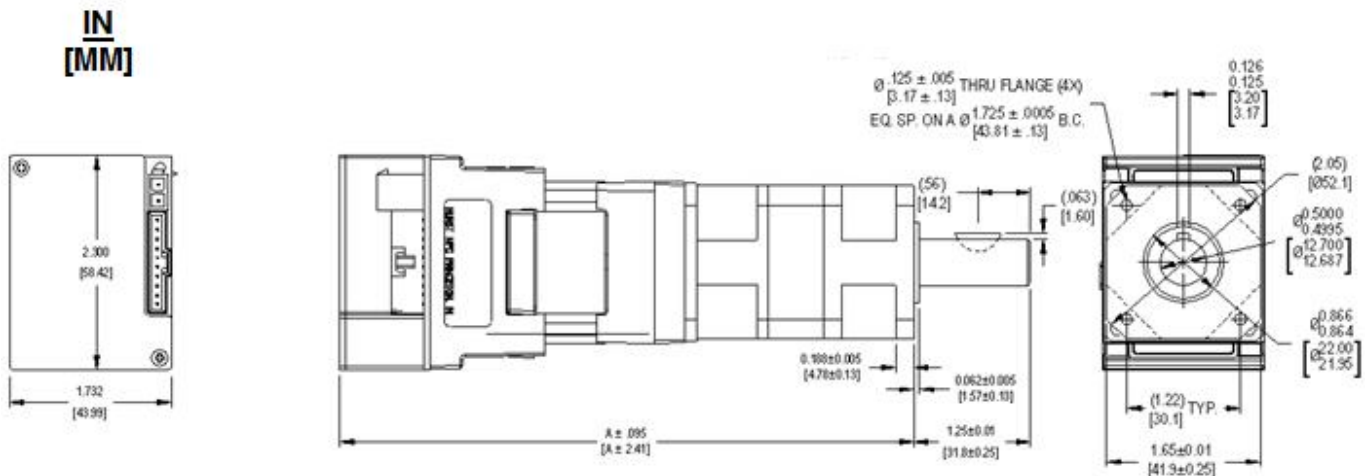
**INTEGRATED CONTROL DRAWINGS**

**SPUR GEAR MOUNTING**



Model	Overall Length (A) in [mm]
0	4.87 [123.7]
6	7.12 [180.8]

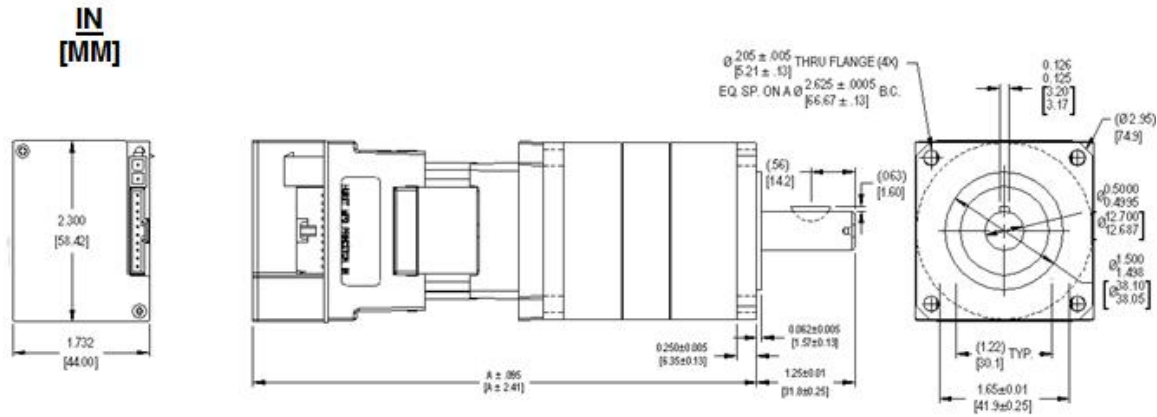
**SIZE 17 PLANETARY GEAR MOUNTING**



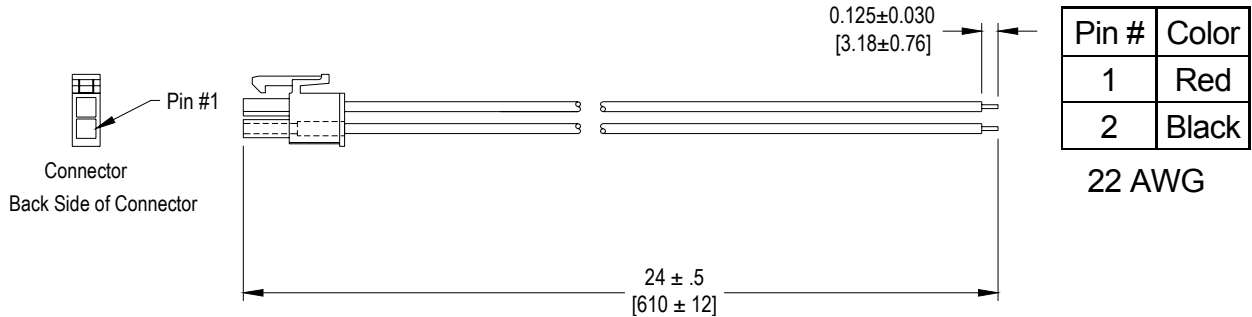
Model	Overall Length (A) in [mm]	Model	Overall Length (A) in [mm]
0	6.49 [164.8]	4	8.74 [222.0]
0*	6.98 [177.3]	4*	9.23 [234.4]

\* Gear Reductions 16:1 and higher

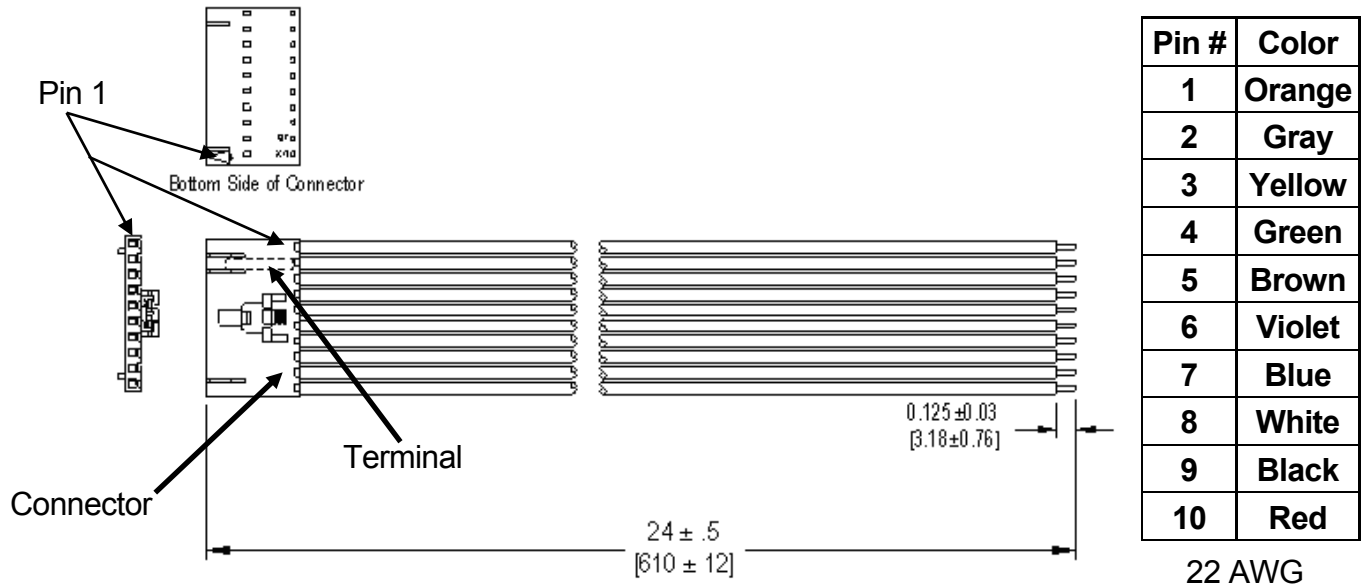
## NEMA 23 PLANETARY GEAR MOUNTING



Model	Overall Length (A) in [mm]	Model	Overall Length (A) in [mm]
<b>0</b>	<b>6.68 [169.7]</b>	<b>4</b>	<b>8.93 [226.8]</b>
<b>0*</b>	<b>7.50 [190.5]</b>	<b>4*</b>	<b>9.75 [247.7]</b>
<b>* Gear Reductions 16:1 and higher</b>			



Description	Manufacturer	Manufacturer Part #
Connector	Molex	39-01-2020
Terminal	Molex	39-00-0038 (chain)
	Molex	39-00-0039 (loose)

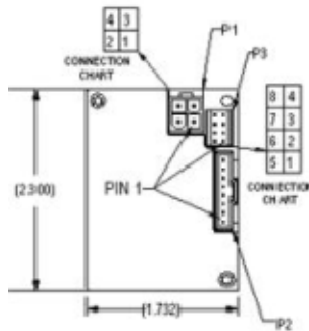


Description	Manufacturer	Manufacturer Part #
Connector	Molex	50-57-9410
Terminal	Molex	16-02-0087 (chain)
	Molex	16-02-0103 (loose)

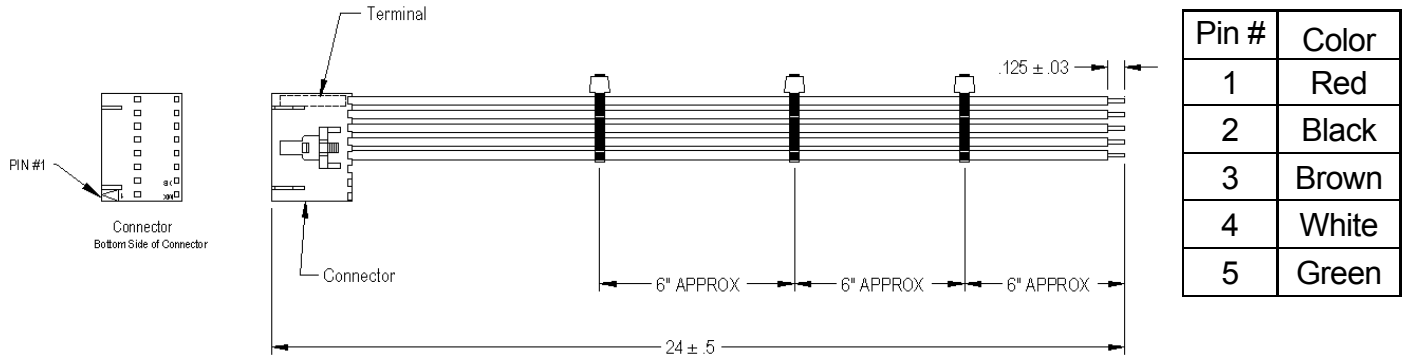
## NOTICE

Minimum Gauge Size is recommended to be 22 AWG or greater.

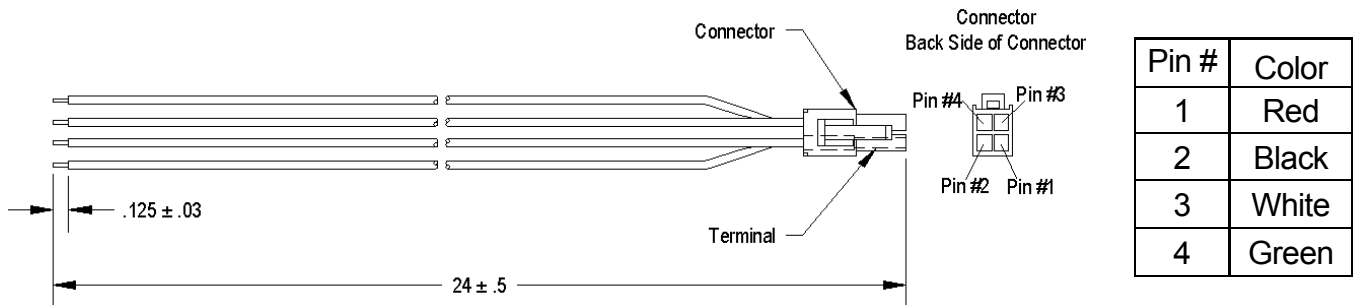
**EXTERNAL CONTROL DRAWINGS**



HALL CONNECTIONS (P2)				POWER CONNECTIONS (P1)	
PIN #	DESCRIPTION	PIN #	DESCRIPTION	PIN #	DESCRIPTION
1	Vs	5	HALL C	1	PHASE C
2	Vs (return)	6	BLANK	2	PHASE B
3	HALL B	7	BLANK	3	PHASE A
4	HALL A	8	BLANK	4	FRAME GROUND
ENCODER CONNECTIONS (P3)					
1	+5Vs	4	N/C	7	/B
2	A	5	+5Vs (return)	8	N/C
3	B	6	/A		

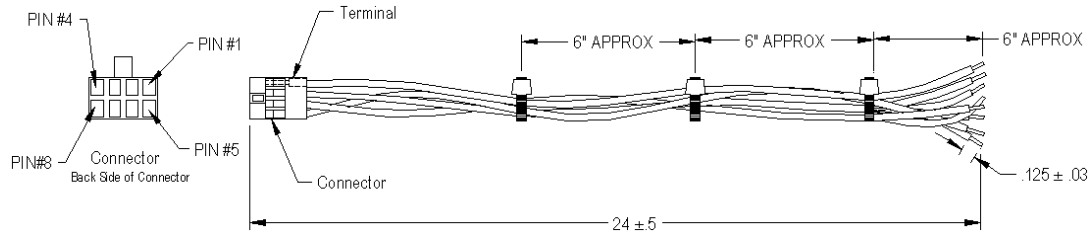


Description	Manufacturer	Manufacturer Part #
Connector	Molex	50-57-9408
Terminal		16-02-0087 (chain) 16-02-0103 (loose)
22 AWG Wire, Red	Belden	32822 0025000
22 AWG Wire, Black	Belden	32822 0105000
22 AWG Wire, Brown	Belden	32822 0015000
22 AWG Wire, White	Belden	32822 0095000
22 AWG Wire, Green	Belden	32822 0055000
Cable Tie		



Description	Manufacturer	Manufacturer P/N
Connector	Molex	39-01-2040
Terminal	Molex	39-00-0038 (chain) 39-00-0039 (loose)
22 AWG Wire, Red	Belden	32822 0025000
22 AWG Wire, Black	Belden	32822 0105000
22 AWG Wire, White	Belden	32822 0095000
22 AWG Wire, Green	Belden	32822 0055000





Pin #	Color
1	Red
2	White
3	Blue
4	Gray
5	Black
6	Orange
7	Brown
8	Green

Description	Manufacturer	Manufacturer Part #
Connector	FCI	65846-016
Terminal	FCI	48051-000 (chain)
		48236-000 (loose)
22 AWG Wire, Red	Belden	32822 0025000
22 AWG Wire, White	Belden	32822 0095000
22 AWG Wire, Blue	Belden	32822 0135000
22 AWG Wire, Gray	Belden	32822 0085000
22 AWG Wire, Black	Belden	32822 0105000
22 AWG Wire, Orange	Belden	32822 0035000
22 AWG Wire, Brown	Belden	32822 0015000
22 AWG Wire, Green	Belden	32822 0055000
Cable Tie		

## NOTICE

Minimum Gauge Size is recommended to be 22 AWG or greater.