

# SLIM Tach SL56

- Thin, compact, and only 0.75 inch thick
- Mounts to 4.5 inch 56 C-Face motors
- Rugged, reliable magnetoresistive sensor technology
- Easy installation with no brackets or couplings
- Anodized aluminum construction - Stainless Steel optional
- Single or dual sensor outputs available



## APPLICATION/INDUSTRY

The bearingless, heavy duty, ©NorthStar SLIM Tach SL56 mounts directly to 4.5 inch 56 C face motors. With resolutions up to 2048 PPR, it is only 0.75 inch thick and ideal for tight machine configurations.

## DESCRIPTION

This reliable encoder may be configured with one or two electrically independent and totally isolated outputs. A high temperature version is available to meet operational needs up to 120° C. It also comes in a wide variety of shaft sizes, cover choices, and connector options.

The durable SL56 operates with unequalled resistance to grease, oil, salt water, dirt, fibers, and dust. Its hardened, encapsulated electronics make it immune to contamination, heavy machine vibration, and accidental impact, decreasing downtime. Hard, anodized aluminum of aircraft quality makes the SL56 the toughest, yet lightest, C-Face encoder available. For corrosive environments, a stainless steel version is available.

A high power line driver comes standard and guarantees clean, crisp signals over long cable lengths, minimizing the need for signal repeaters.

Each version of the SL56 is easy to mount, requiring no bearings, adapter plates, or flexible couplings. Because the SL56 occupies only 0.75 inch of the motor shaft length, a brake, pulley, gear box, or coupling can also be placed on the shaft. The sandwich version provides double C-Face mounting for applications which need the encoder between the motor and another device.

## FEATURES AND BENEFITS

- Thru-shaft-shaft versions are standard; double C face sandwich version is also available
- 64, 128, 256, 512, 1024, or 2048 pulses per revolution (PPR) with optional index pulse
- 5-24VDC operation, bi-directional quadrature signals with high power, differential line driver outputs

## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

Code: Incremental  
**Pulses per Revolution:** 64-2048  
**Phasing Sense:** A leads B for Counter-Clockwise rotation (CCW) viewing encoder-mounted end  
**Quadrature Phasing:** 90° ± 22°  
**Symmetry:** 180° ± 54°  
**Index:** 270° gated to falling B edge  
**Number of Output Modules:** Single or Dual Redundant

### ELECTRICAL

**Input Voltage Requirement:** 5-15 or 5-26 Volts DC  
**Current Requirement:**  
 With Electrical Option L or H: 45 mA typical per sensor module plus line driver load  
 With Electrical Option V or 5: 65 mA typical per sensor module plus line driver load  
**Output Signals:**  
 With Elec Option L or H: 5-15 V Line Driver, 150mA  
 With Elec Option V: 5-26 V Line Driver, 100mA  
 With Elec Option 5: 5V Line Driver, 150mA  
**Frequency Response:** 0 - 120kHz Data & Index  
**Electrical Immunity:** 2kV ESD, Reverse Polarity, Short Circuit

### ELECTRICAL CONNECTIONS

**Connector:** 10 pin industrial duty latching, sealed NEMA 4 & 12, IP65; MS connector or pig-tail

Signal	Connector Pin	Pigtail Cable	MS 3102E18-IT#
Common	1	Black	F
B	2	Green	B
A	3	Blue	A
Z *	4	Violet	C
No Connection	5	—	E
Vcc (5-15 VDC)	6	Red	D
B̄	7	Yellow	I
Ā	8	Gray	H
Z *	9	Orange	J
Shield	10	Braid	G

\* Index (Z) optional. See Ordering Information

### MECHANICAL

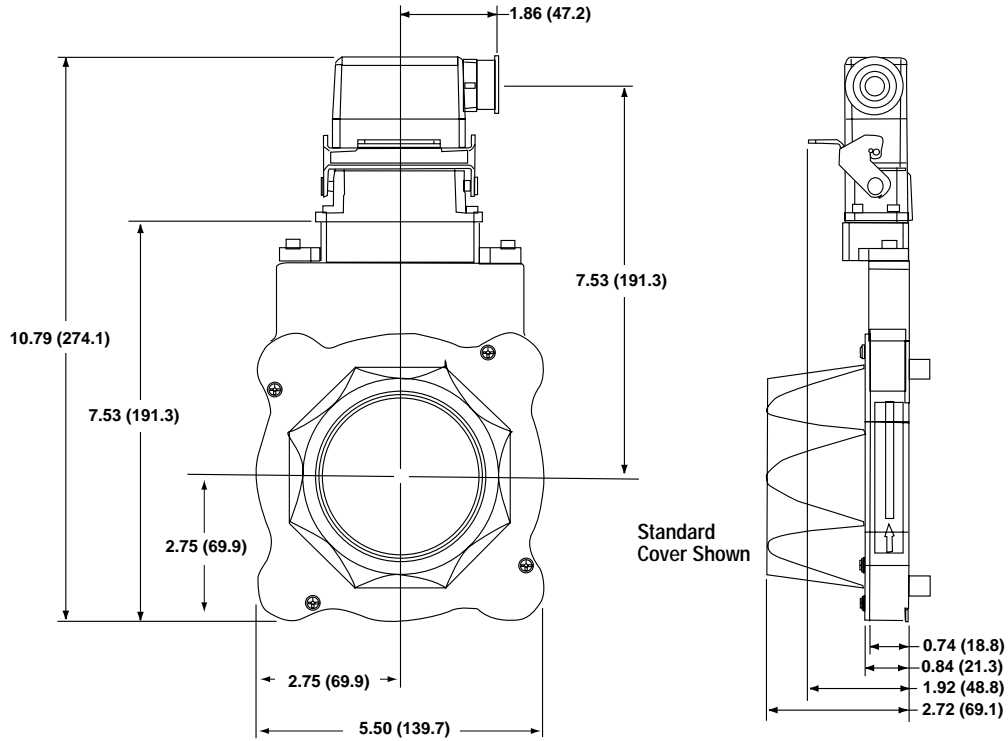
**Max. Shaft Speed:** 5,000 RPM  
**Mounting Configuration:** 4.5" 56C face mount for NEMA MG1 standards  
**Housing Material:** Cast Aluminum (Stainless Steel optional)  
**Acceleration Rate:** 12,000 rpm/sec max  
**Shaft Length Required:** 0.7" min  
**Allowable Shaft End-Play:** ± 0.045"  
**Allowable Shaft Runout:** 0.002" TIR  
**Weight:** Aluminum: 1.7 lbs (0.77 kg); Stainless: 3 lbs (1.36 kg)

### ENVIRONMENTAL

**Operating Temperature Range:**  
 Standard: -40°C to +90°C  
 Extended: -40°C to +120°C  
**Storage Temperature Range:** -40°C to +120°C  
**Humidity:** to 98% RH (non-condensing)  
**Shock (Sensor Module):** 1 meter drop test, 30 G's Min  
**Vibration:** 18 G's @ 5-2000 Hz spectrum

## DIMENSIONS

inches [mm]



## ORDERING INFORMATION

Code 1: Model	Code 2: PPR	Code 3: Index	Code 4: Wheel Bore	Code 5: Termination	Code 6: Electrical	Code 7: Cover/Adapter
<input type="checkbox"/> 5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ordering Information						
<b>S5</b> Motor Mount Ring, for 4 1/2" C-Face Motors (56C) Single Output	<b>0064</b> <b>0128</b> <b>0256</b> <b>0512</b> <b>1024</b> <b>2048</b>	<b>L</b> No Index  Available when Code 2 is 0512, 1024 or 2048  <b>Z</b> Differential Index (Z, $\bar{Z}$ )	<b>J04</b> 5/8" bore <b>J05</b> 7/8" bore <b>J06</b> 1.00" bore <b>J07</b> 1-1/8" bore <b>K09</b> 1-3/8" bore <b>K10</b> 1-1/2" bore <b>K11</b> 1-5/8" bore <b>K12</b> 1-3/4" bore <b>K13</b> 1-7/8" bore <b>K14</b> 2.00" bore <b>K15</b> 2-1/8" bore <b>K16</b> 2-1/4" bore <b>K17</b> 2-3/8" bore <b>K18</b> 2-1/2" bore <b>K19</b> 2-7/8" bore Additional Shaft Sizes Available Up to 3.75" Maximum	<b>C</b> Latching Industrial Connector with 1/2" NPT  <b>E</b> 3" extended height Latching Industrial Connector with 1/2" NPT  <b>M</b> 10 pin MS Connector  <b>P</b> 18" pigtail cable  <b>Q</b> Latching Industrial Connector on 18" pigtail cable  Available when Code 1 is S5 and Code 4 is J04 thru J07:  <b>S</b> 18" pigtail cable with stainless steel housing	<b>L</b> 5-15V in, 5-15V Line Driver (4428) out  <b>H</b> Same as L with extended temp. to 120°C  <b>V</b> 5-26V in, 5-26V Line Driver (IC-WE) out  <b>5</b> 5-15V in, 5V Line Driver (4428) out  Differential, bidirectional signals (A, $\bar{A}$ , B, $\bar{B}$ )	<b>C</b> Standard Cover <b>E</b> Extra heavy duty steel cover <b>F</b> Flat Thru-hole cover <b>S</b> Double 56 C-Face Sandwich Adapter <b>T</b> Flat No Hole Cover
<b>D5</b> Motor Mount Ring, for 4 1/2" C-Face Motors (56C) Dual Output						

Spare Pulse Wheel: Use "NS" followed by Code 2 (PPR) & Code 3 (Index) & Code 4 (Bore Size). Example: NS0512ZK11

Spare Mating Connector: Use "NS" followed by Code 1 (Model) & Code 5 (Termination). Example: NSS5C

Spare Cover: Use "NS" followed by Code 1 (Model) & Code 4 (Bore Size) & Code 7 (Cover). Example: NSS5K11C

5 foot Interface Cable: RIMCABLEDB10005. Other Length: final 4 digits is length in 5 ft increments. Example RIMCABLEDB10065 is 65 feet.