

# SLIM Tach HS56 *For Fan Cooled and Non-Motor Applications*

- *Hollow shaft design allows for a variety of possible mountings; ideal to retrofit AC fan cooled motors.*
- *Rugged, zero-speed, magnetoresistive sensing technology is immune to grease, salt water, dust, or other common contaminants.*
- *Up to 80° C operation*



## APPLICATION/INDUSTRY

The NorthStar brand HS56 has been designed especially for maintenance, motor repair, and field personnel. It offers an unparalleled means of applying a leading edge digital encoder to motors and other devices that require an innovative method of installation.

## DESCRIPTION

The HS56's magnetoresistive sensor technology is virtually immune to common contaminants such as grease, oil, water, and dirt. Hardened encapsulated electronics make it especially resistant to heavy machine vibration and accidental impacts. Advanced electronic design offers many features such as operation from 5-26 volts DC power, short circuit protected outputs, and EMI noise resistance. High power complimentary line driver outputs assure clean, crisp signals over long cable lengths.

A stainless steel and hard anodized aluminum alloy frame provides exceptional strength, ruggedness, and superior corrosion resistance. Its extra heavy duty bearings are designed to maximize its operational life. Since the entire encoder rides on large motor style bearings, the unit can tolerate considerable shaft movement. A strong, insulated, stainless steel anti-rotation arm with multiple mounting holes allows the encoder to move axially, radially, and at a tangent. The simple prealigned design of the HS56 does not require user adjustments.

Easily mounted on fan-cooled motor shafts, conveyor equipment, assembly machines, material feeders, pumps, hydraulic equipment, and gear boxes, the HS56 does not require mounting flanges or accessory brackets. If a suitable shaft is not available, a stub shaft installed through the fan shroud into the motor shaft provides a means of easy mounting.

The HS56 is also available in with electrically isolated dual outputs. Each output can be operated at different voltages and/or sent to different locations. The dual outputs can be used for security with encoder redundancy. A failed output can be quickly switched to the second output, thereby reducing downtime. Our accessory Intellitach™, can continuously monitor the encoder feedback, and automatically switch outputs in the case of signal failure.

## FEATURES AND BENEFITS

- Combines rugged reliable feedback with a flexible mounting design. Fits 0.625 - 1.125 inch shaft sizes
- 64, 128, 256, 512, 1024, or 2048 pulses per revolution (PPR) with optional index pulse
- 5-26VDC operation, bi-directional quadrature signals. Short circuit protected, high power line drivers are available

## 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

### ELECTRICAL

**Input Voltage Requirement:** 5-15 or 5-26 Volts DC  
**Current Requirement:**  
 With Electrical Option L: 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: 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 +	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

**Shaft Speed:** 3,600 RPM  
**Mounting Configuration:** Hollow Shaft mount with Anti-Rotation Tether  
**Housing Material:** Hard Anodized Aluminum W/Stainless Steel Hub  
**Acceleration Rate:** 3,600 rpm/sec max  
**Shaft Length Required:** 2.0" min  
**Allowable Shaft End-Play:** ± 0.150" (tether limit)  
**Allowable Shaft Runout:** 0.015" TIR typical (rpm dependent)

### ENVIRONMENTAL

**Operating Temperature Range:** -20°C to +80°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

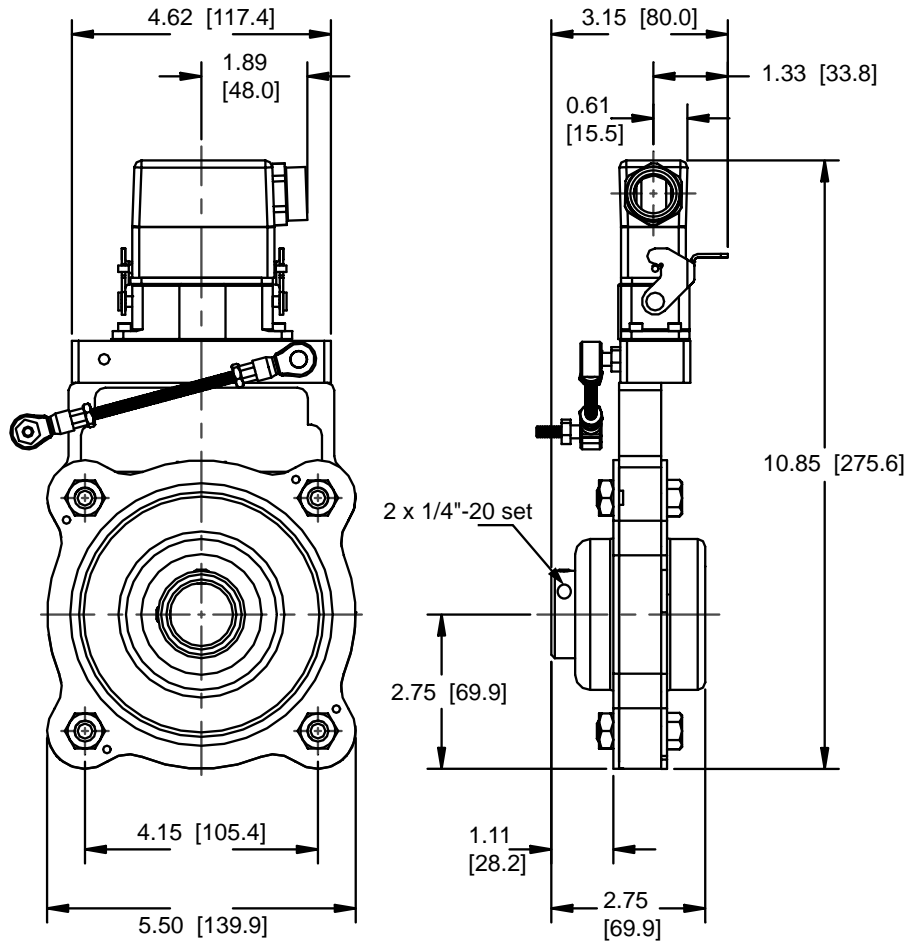
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NorthStar brand HS56 Data Sheet (02/08)

**DIMENSIONS**  
inches [mm]



**ORDERING INFORMATION**

Code 1: Model	Code 2: PPR	Code 3: Index	Code 4: Wheel Bore	Code 5: Termination	Code 6: Electrical
<b>H</b> □	□□□□	□	□□□	□	□
Ordering Information					
<b>H5</b> Hollow Shaft Mount	<b>0064</b> <b>0128</b> <b>0256</b> <b>0512</b>	<b>L</b> No Index  Available when Code 2 is 0512, 1024 or 2048	<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>C</b> 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	<b>L</b> 5-15V in, 5-15V Line Driver (4428) out <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, A, B, B)
<b>HD</b> Hollow Shaft Mount Dual Output	<b>1024</b> <b>2048</b>	<b>Z</b> Differential Index (Z, Z̄)			

Spare Mating Connector: Use "NS" followed by Code 1 (Model) and Code 5 (Termination). Example: NSH5C  
 5 foot Interface Cable: RIMCABLEDB10005. Other Length: final 4 digits is length in 5 ft increments. Example RIMCABLEDB10065 is 65 feet.