

# Panel Mount Optical Encoders

## Technical Data

### Features

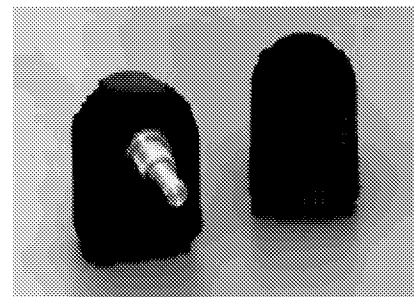
- Two Channel Quadrature Output with Optional Index Pulse
- Available with or without Static Drag for Manual or Mechanized Operation
- High Resolution – Up to 512 CPR
- Long Rotational Life, >1 Million Revolutions
- -20 to 85°C Operating Temperature Range
- TTL Quadrature Output
- Single 5 V Supply
- Available with Color Coded Leads

### Description

The HEDS-5700 series is a family of low cost, high performance, optical incremental encoders with mounted shafts and bushings. The HEDS-5700 is available with tactile feedback for hand operated panel mount applications, or with a free spinning shaft for applications requiring a pre-assembled encoder for position sensing.

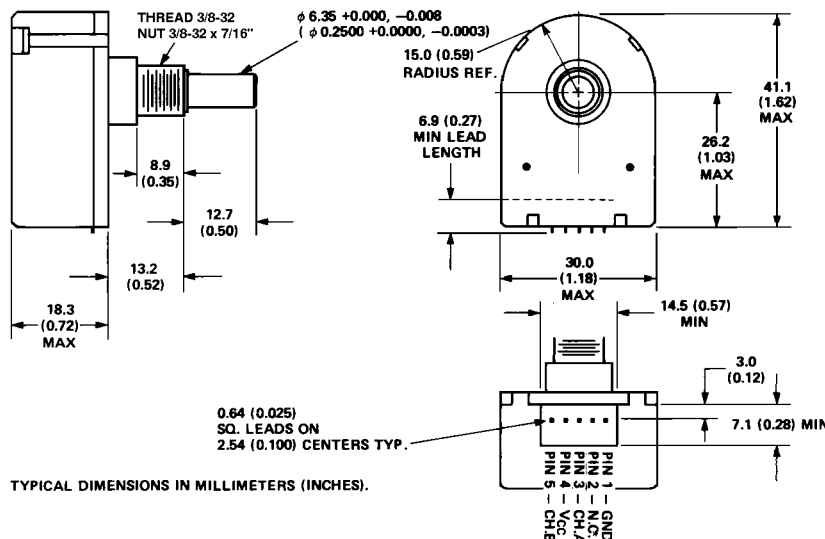
The encoder contains a collimated LED light source and special detector circuit which allows for high resolution, excellent encoding performance, long rotational

### HEDS-5700 Series

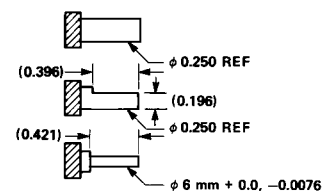


life, and increased reliability. The unit outputs two digital waveforms which are 90 degrees out of phase to provide position and direction information. The HEDS-5740 Series provides a third Index Channel.

### Package Dimensions



### SHAFT OPTIONS



OPTIONAL WIRING COLOR CODE TABLE	
COLOR	OUTPUT
WHITE	A
BROWN	B
RED	V <sub>CC</sub>
BLACK	GND
BLUE (THREE CHANNEL)	I

\*Note: For the HEDS-5700, Pin #2 is a No Connect. For the HEDS-5740, Pin #2 is Channel I, the index output.

The HEDS-5700 is quickly and easily mounted to a front panel using the threaded bushing, or it can be directly coupled to a motor shaft (or gear train) for position sensing applications.

applications requiring digital information from a manually operated knob. Typical front panel applications include instruments, CAD/CAM systems, and audio/video control boards.

operations. Typical applications are copiers, X-Y tables, and assembly line equipment.

### Applications

The HEDS-5700 with the static drag option is best suited for

The HEDS-5700 without static drag (free spinning) is best suited for low speed, mechanized

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Notes
Storage Temperature	$T_s$	-40	+85	°C	
Operating Temperature	$T_a$	-20	+85	°C	
Vibration			20	g	20 Hz - 2 kHz
Supply Voltage	$V_{CC}$	-0.5	7	V	
Output Voltage	$V_O$	-0.5	$V_{CC}$	V	
Output Current per Channel	$I_O$	-1	5	mA	
Shaft Load – Axial			1	lb	
– Radial			1	lb	

### Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Notes
Temperature	T	-20	+85	°C	Noncondensing Atmosphere
Supply Voltage	$V_{CC}$	4.5	5.5	V	Ripple <100 mV <sub>p-p</sub>
Rotational Speed – Drag			300	RPM	
– Free Spinning			2000	RPM	

### Electrical Characteristics Over Recommended Operating Range, Typical at 25°C

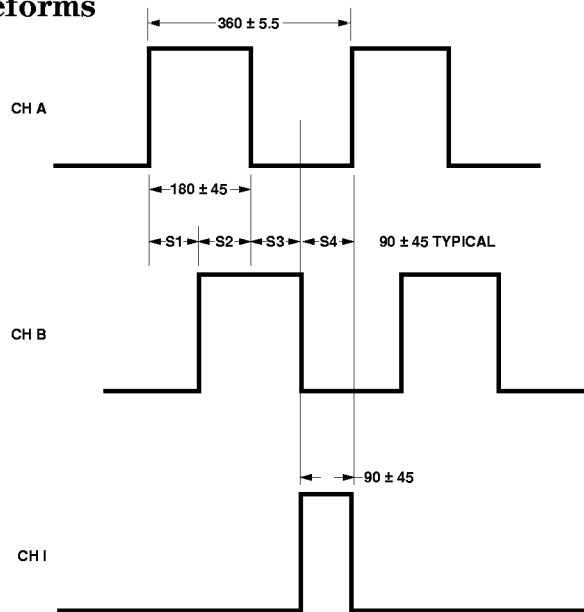
Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Supply Current	$I_{CC}$		17	40	mA	Two Channel
			57	85		Three Channel
High Level Output Voltage	$V_{OH}$	2.4			V	$I_{OH} = -40 \mu A$ Max.
Low Level Output Voltage	$V_{OL}$			0.4	V	$I_{OL} = 3.2$ mA

**Note:** If more source current is required, use a 3.2 K pullup resistor on each output.

## Mechanical Characteristics

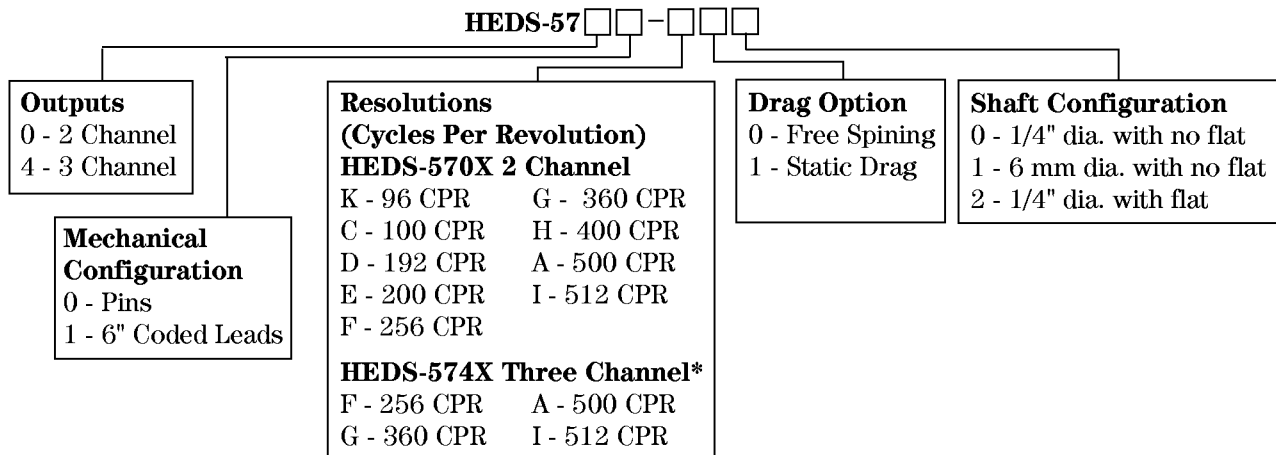
Parameter	Min.	Typ.	Max.	Units	Notes
Starting Torque		0.47		oz in	- Static Drag
					- Free Spinning
Dynamic Drag		1.1		oz in	100 RPM
					- Free Spinning
Rotational Life	1 x 10 <sup>6</sup>			Revolutions	1 lb Load
					- Free Spinning
Mounting Torque of Nut			13	lb in	4 oz Radial Load

## Output Waveforms



NOTE:  
 ALL VALUES ARE IN ELECTRICAL DEGREES, WHERE 360° = 1 CYCLE OF RESOLUTION.  
 ERRORS ARE WORST CASE OVER ONE REVOLUTION.  
 CH B LEADS CH A FOR COUNTERCLOCKWISE ROTATION.  
 CH A LEADS CH B FOR CLOCKWISE ROTATION.

## Ordering Information



\*Please contact factory for other resolutions.