

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.

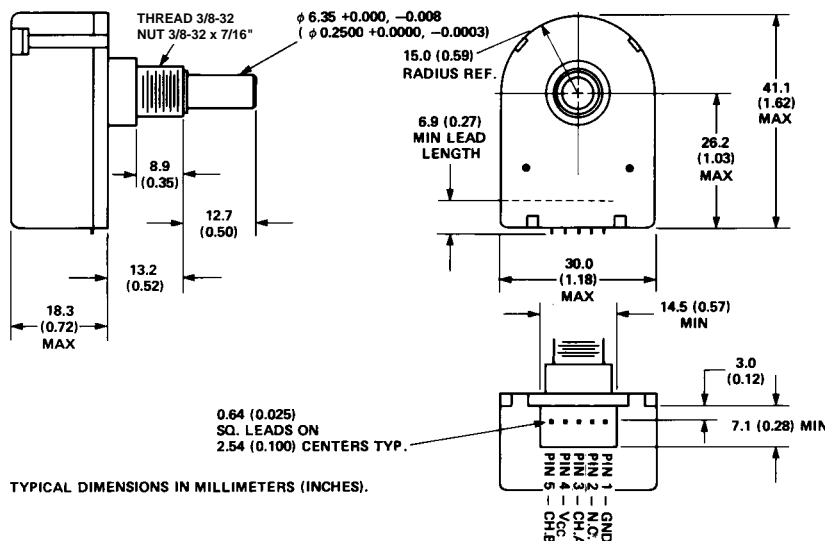
The encoder contains a collimated LED light source and special detector circuit which allows for high resolution, excellent encoding performance, long rotational

HEDS-5700 Series

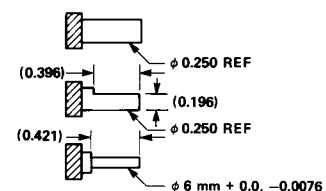


life, and increased reliability. The unit outputs two digital waveforms which are 90 degrees out of phase to provide position and direction information. The HEDS-5740 Series provides a third Index Channel.

Package Dimensions



SHAFT OPTIONS



OPTIONAL WIRING COLOR CODE TABLE	
COLOR	OUTPUT
WHITE	A
BROWN	B
RED	V _{CC}
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 _{p-p}
Rotational Speed – Drag			300	RPM	
– Free Spinning			2000	RPM	

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

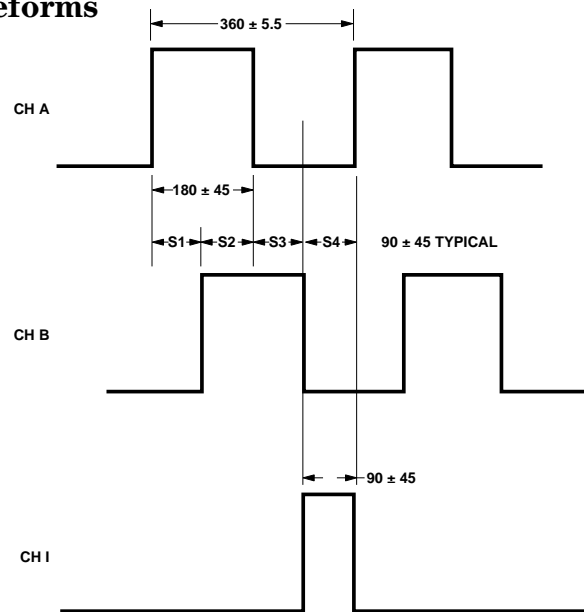
Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Supply Current	I_{CC}		17	40	mA	Two Channel
			57	85		Three Channel
High Level Output Voltage	V_{OH}	2.4			V	$I_{OH} = -40 \mu A$ Max.
Low Level Output Voltage	V_{OL}			0.4	V	$I_{OL} = 3.2$ mA

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

Mechanical Characteristics

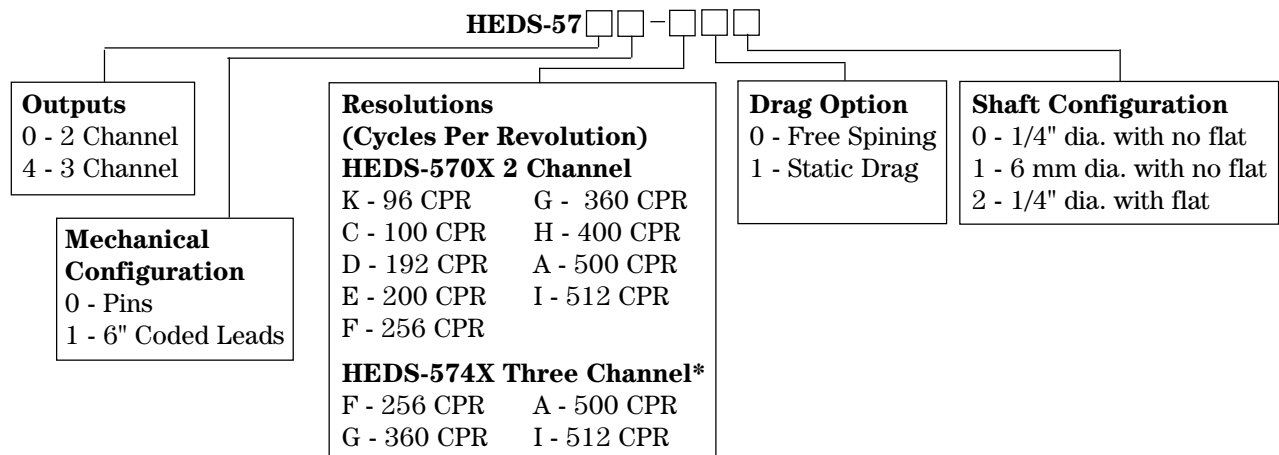
Parameter	Min.	Typ.	Max.	Units	Notes
Starting Torque – Static Drag		0.47		oz in	
– Free Spinning			0.14	oz in	
Dynamic Drag – Static Drag		1.1		oz in	100 RPM
– Free Spinning		0.70		oz in	2000 RPM
Rotational Life – Static Drag	1 x 10 ⁶			Revolutions	1 lb Load
– Free Spinning	12 x 10 ⁶			Revolutions	4 oz Radial Load
Mounting Torque of Nut			13	lb in	

Output Waveforms



NOTE:
ALL VALUES ARE IN ELECTRICAL DEGREES, WHERE $360^\circ = 1$ 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.