

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.

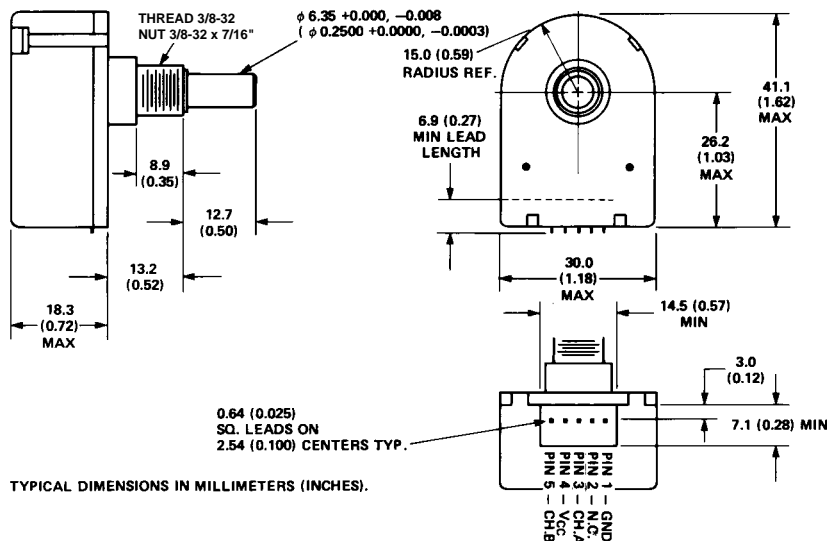
The encoder contains a collimated LED light source and special detector circuit which allows for high resolution, excellent encoding performance, long rotational

HEDS-5700 Series

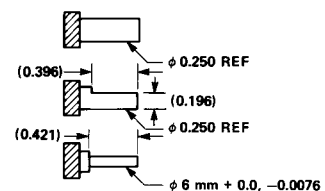


life, and increased reliability. The unit outputs two digital waveforms which are 90 degrees out of phase to provide position and direction information. The HEDS-5740 Series provides a third Index Channel.

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

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

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

The HEDS-5700 without static drag (free spinning) is best suited for low speed, mechanized operations. Typical applications are copiers, X-Y tables, and assembly line equipment.

Note: Agilent Technologies encoders are not recommended for use in safety critical applications. Eg. ABS braking systems, power steering, life support systems and critical care medical equipment. Please contact sales representative if more clarification is needed.

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

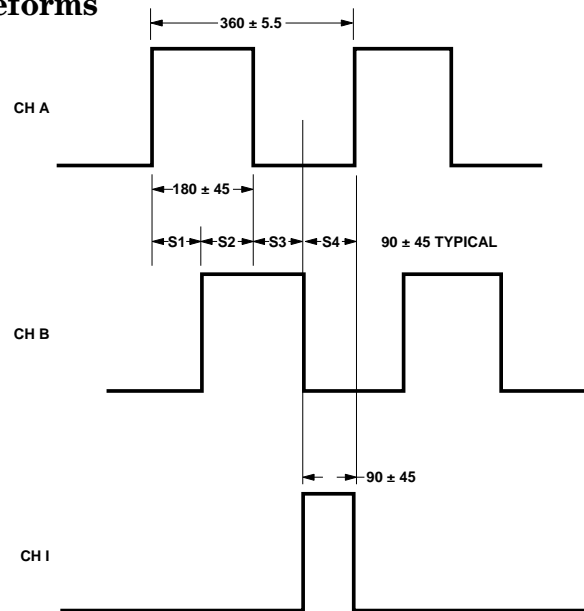
Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Supply Current	I_{CC}		17	40	mA	Two Channel
			57	85		Three Channel
High Level Output Voltage	V_{OH}	2.4			V	$I_{OH} = -40 \mu A$ Max.
Low Level Output Voltage	V_{OL}			0.4	V	$I_{OL} = 3.2$ mA

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

Mechanical Characteristics

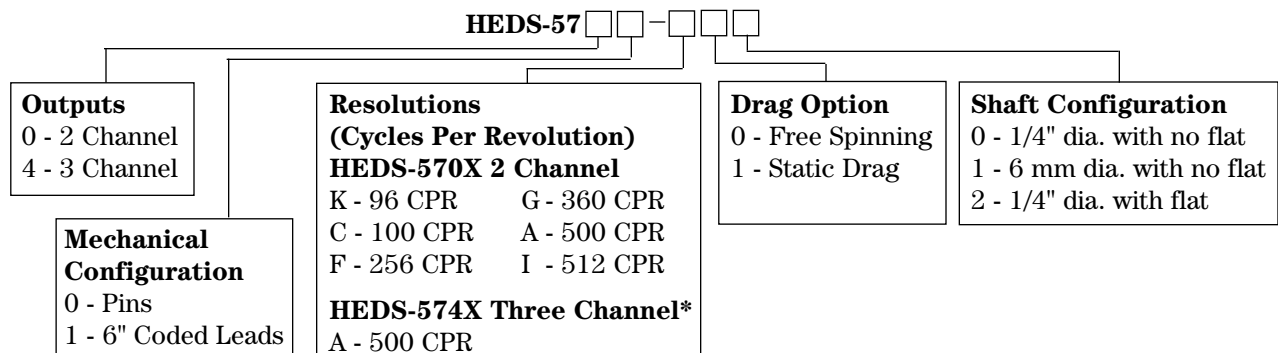
Parameter	Min.	Typ.	Max.	Units	Notes
Starting Torque – Static Drag		0.47		oz in	
– Free Spinning			0.14	oz in	
Dynamic Drag – Static Drag		1.1		oz in	100 RPM
– Free Spinning		0.70		oz in	2000 RPM
Rotational Life – Static Drag	1 x 10 ⁶			Revolutions	1 lb Load
– Free Spinning	12 x 10 ⁶			Revolutions	4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

Output Waveforms



NOTE:
ALL VALUES ARE IN ELECTRICAL DEGREES, WHERE $360^\circ \text{ e} = 1 \text{ CYCLE OF RESOLUTION}$.
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.

		00	01	02	10	11	12
HEDS-5700#	A		*	*	*		
	C		*	*	*	*	
	F	*				*	*
	G	*					
	I	*	*	*	*		*
	K		*		*		
HEDS-5701#	A	*		*			*
	C				*		
	F	*	*		*	*	
	G	*					
	H		*				*
	I			*			
HEDS-5740#	A			*			

www.agilent.com/semiconductors

For product information and a complete list of distributors, please go to our web site.

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Data subject to change.

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