



HS56A Optical Kit Encoder

A, B Channel Quadrature TTL Outputs with Index



Features

- Two channel quadrature TTL compatible outputs with index channel
- Optional output type (both of voltage and line driver)
- 1000 ~ 2048 cycles per resolution (CPR)
- Widely operating environment temperature from -40°C ~ 85°C
- Intelligent mounting design
- Compact size appearance
- Cost effectively
- Single 5V DC supply
- RoHS compatible

Description

HONEST SENSOR - HS series of Kit Encoder HS30A HS30B HS56 all composed of the high intelligent device solution to the base and cover mounting, disc design, push-on-hub and the optional output including with voltage and line driver, comprising three channel A / B / Index complimentary in accordance with any standard to customized appliance respectively.

HONEST SENSOR endeavored to invent and develop the disc supplying the mostly trend toward market needs through possessing superior disc technology. Regarding to the base and cover offered are both manufactured from our own mold, injection facility constructing of the polyethylene capable to execute the protection operation against the outside impact.

The peculiar design of the slider which was included the aligning pins at side of the base enabled the aligning holes of sensor to fit directly without the extra alignment for the sensor position adjustment.

The intelligent patent mounting ensure HS series to reach at the more capability technology no matter to assemble or to disassemble the module for the disc replacement. The attached module on the side of the base plate advances the high flexible adjustment during the disc placement in the highlight security condition method. Users would be able to install the disc at the spacious environment as well as the attached module which has been prior to fix by the aligning pins simultaneously.

The optional output signal method would be available for the customized selection in either voltage or line driver. HONEST SENSOR also attentive to affix the output connection cable to meet your functional needs in advanced.

HONEST SENSOR emphasize on the constantly development of the prominent disc performances as well as the patent invention, featured the high temperature resistant disc and easy push-on-hub functional accordingly. We utilized the diversity resolution from 50 to 1024 CPR in addition to our technical manufacturing chip disc center offering the reliable quality to be with you.



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Electrical

Electrical Characteristics

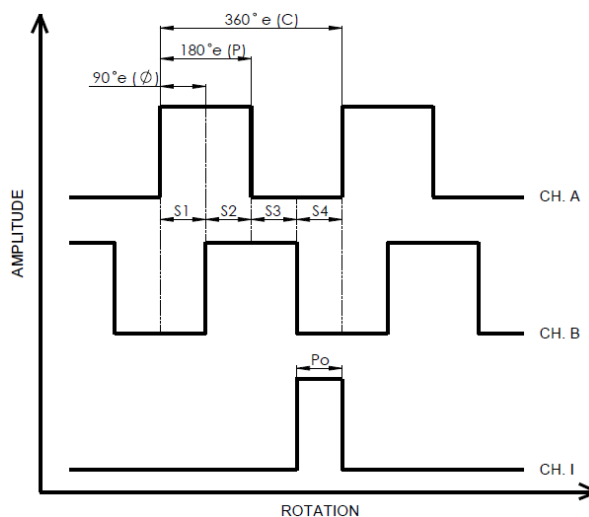
Parameter	Min.	Typ.	Max.	Units
Storage Temperature	- 40		85	°C
Operating Temperature	- 40		85	°C
Supply Voltage	4.5	5.0	5.5	V
Supply Current	30	57	80	mA
Output Voltage	- 0.5		Vcc	V
Output Current Per Channel	- 1.0		10	mA
High Level Output Voltage	0.7			V
High Level Output Current	- 0.2			mA
Low Level Output Voltage			0.4	V
Low Level Output Current			3.86	mA
Count Frequency			100	kHz
Load Capacitance			100	pF

* Typ. value measured subject to Vcc = 0.5V and Temperature 25 °C.

Encoding Characteristics

Parameter	Sym.	Min.	Typ.	Max.	Units
Cycle Error	ΔC		3	5.5	°e
Pulse Width Error	ΔP		7	30	°e
State Width Error	ΔS		5	30	°e
Phase Error	$\Delta \phi$		2	15	°e
Index Pulse Width	P ₀		90	120	°e

Output Waveform





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Count (N):

The total amount of the count (bar and window) as a pair among per rotation.

Cycle (C):

it indicates the fully one cycle of the electrical degrees measured as 360 °e degree.

Cycle Error (ΔC):

The deviation in the electrical degree among the pulse width against its ideal value. It's the symbol of the uniform cycle.

Pulse Width (P):

Normally it refers to the "HIGH" number of electrical of the output during the one cycle.

Pulse Width Error (ΔP):

The deviation in the electrical degree among the pulse width against its ideal value about 180 °e degree.

State Width (S):

The number of electrical degree between Channel A and Channel B as a result of the transition in the output state. There are 4 states per cycle from the output of Channel A and Channel B. For each states nominated at 90 °e (S1-S4).

State Width Error(ΔS):

The deviation in electrical degree among each of states width upon the ideal 90 °e.

Index Pulse Width (P_0):

The high symbol of number of electrical degree around the one fully rotation.

Phase (φ):

The number of electrical degrees between the centre of the high state on channel A and the centre of the high state on channel B. This value is nominally 90 °e (the signals A and B can be used for quadrature

Phase Error ($\Delta\varphi$): The deviation in electrical degrees of the phase from its ideal value of 90 °e.

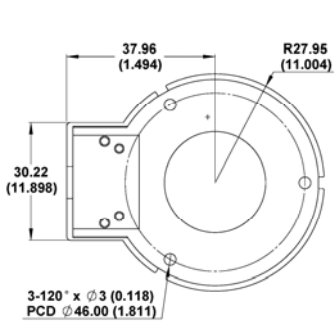


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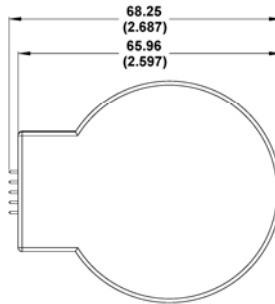
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Mechanical Specification

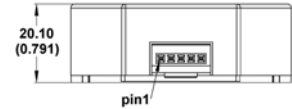
Package Dimensions



Top View (base plate only)



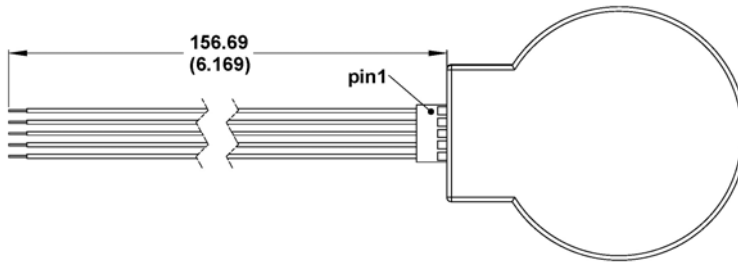
Top View



Side View

Note: Dimensions in millimeters (inches)

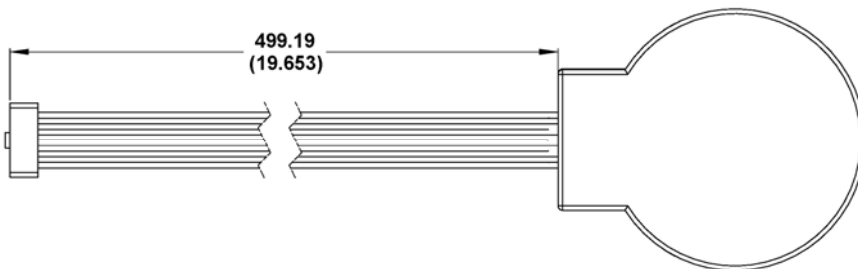
Pin-out Description



Cable: 305 mm length UL1007 / AWG26
Connector: DuPont 65039-032 with Both. 4825X-000

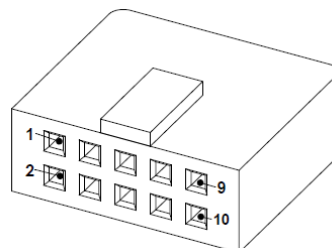
Voltage (5 pin)		
Pin	Color	Description
1	black	Ground
2	yellow	Index
3	white	Channel A
4	red	DC +5V
5	green	Channel B

Voltage



Cable: 10 conductor ribbon cable
Connector: 10 position IDC connector

Line driver (10 pin)	
Pin	Description
1	N.C.
2	DC +5V
3	Ground
4	N.C.
5	Channel A-
6	Channel A+
7	Channel B-
8	Channel B+
9	Index-
10	Index+



Line driver

Note: Dimensions in millimeters (inches)



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Mechanical Characteristics

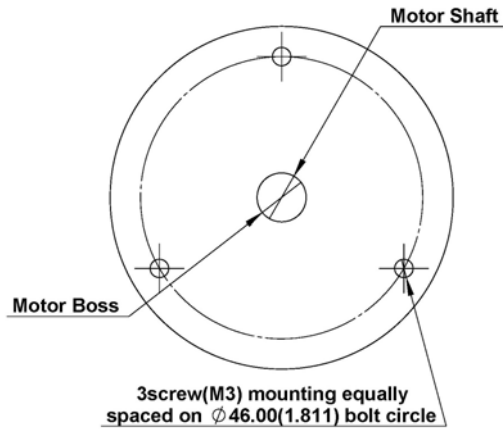
Parameter	Sym.	Value	Tolerance	Units
Dimension		68.25 x 55.9 x 20.10 (2.687 x 2.201 x 0.791)		mm (in.)
Base Plate Thickness		4.30 (0.169)		mm (in.)
Encoder Weight (with cable)				
Voltage		26.95 (0.95)		g (oz.)
Line driver		36.80 (1.30)		g (oz.)
Motor Required				
Shaft Diameters	S	8.00 (0.315)	± 0.01 (± 0.0004)	mm (in.)
Shaft Length	L	16.578 (0.653)	+0.242 (+0.01)	mm (in.)
Boss Diameter	D	25.91 (1.02) Max.		mm (in.)
Boss Height	H	4.30 (0.169) Max		mm (in.)
3 Screw Bolt Circle Diameters		46.00 (1.811)	± 0.13 (± 0.005)	mm (in.)
Mounting Screws				
3 Mounting Screw Size		M3		mm
Hub Set Screw		M3		mm



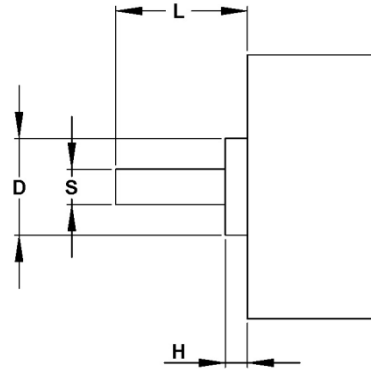
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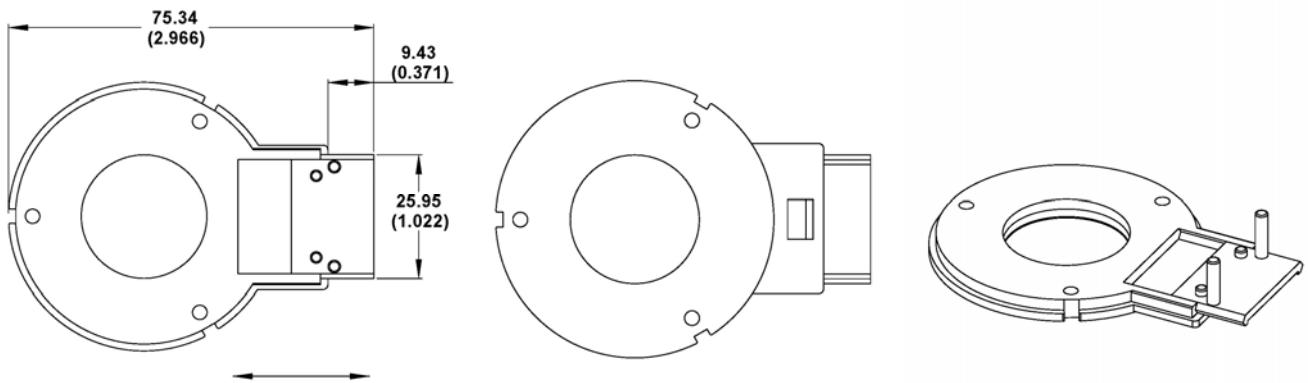
Mounting Considerations



Mounting Holes



Side View (Motor)



Base Plate with Slider (to draw out the slider precede to install encoder disc)

Note: Dimensions in millimeters (inches)



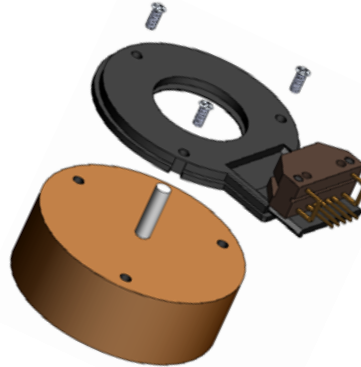
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Assembly Instruction

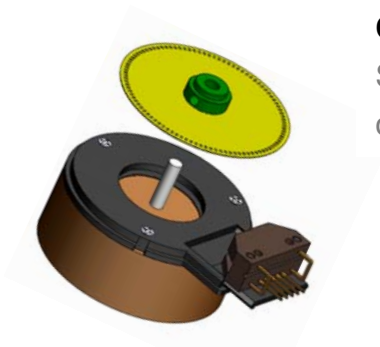
Step 1. Base Mounting:

To draw out the slider precede to install encoder disc firstly.
Then, to fix the base by tightening with two screws properly.



Step 2. Disc Installation: (Option A: Aluminum hub, Option P: Push-on-hub)

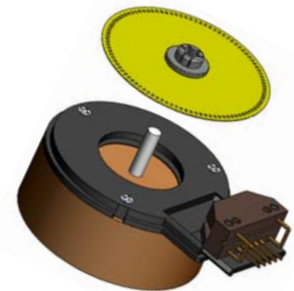
Step 2.1



Aluminum hub

Option A:

Slip the aluminum hubdisc on the shaft of motor.

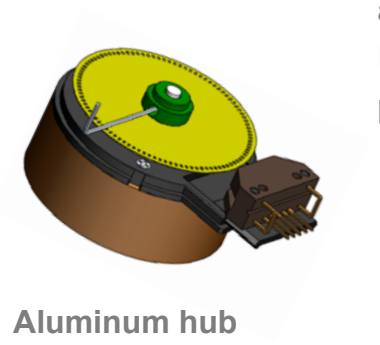


Push-on-hub

Option P:

Slip the push-on-hubdisc on the shaft of motor.

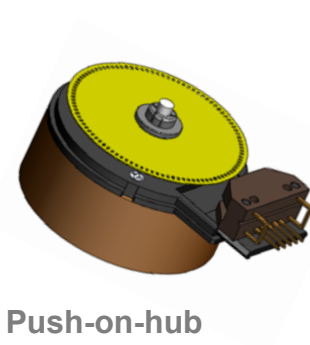
Step 2.2



Aluminum hub

Option A:

Tighten screw with the hex wrench after pressing down the hub.
In the mean time to adjust the proper gap of hub position.



Push-on-hub

Option P:

To ensure the proper gap of hub position by the manual adjustment.

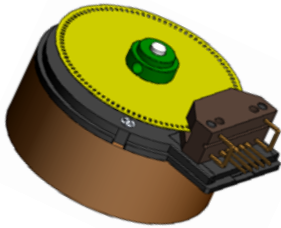


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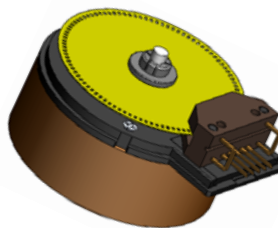
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Step 3. Module Installation:

Slip the slider into the optical module until the bottom reached.



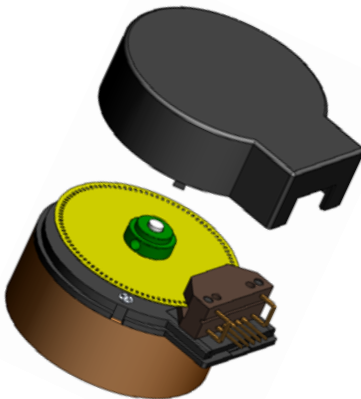
Aluminum hub



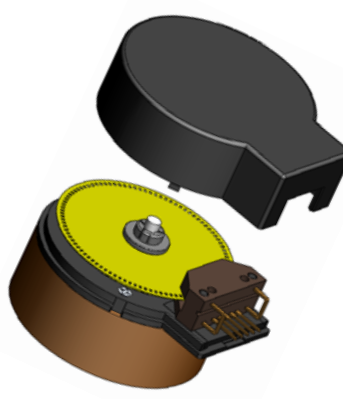
Push-on-hub

Step 4. Cover Mounting:

Place and press the cover down the module with a snap.



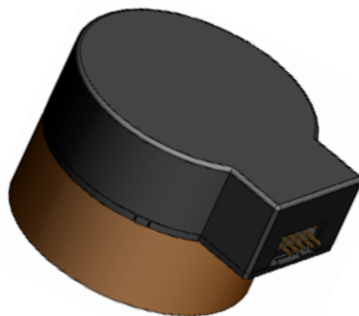
Aluminum hub



Push-on-hub

Step5. Completion:

The encoder is available for use.





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Ordering Information

HS56A - C - -

<u>Resolution</u>	<u>Shaft Diameter</u>	<u>Hub</u>	<u>Output</u>
1000: 1000 CPR	8: 8mm	A: aluminum	V: voltage
1024: 1024 CPR		P: plastic (push-on-hub)	L: line driver
2000: 2000 CPR			
2048: 2048 CPR			