

HS35 Incremental Optical Encoder

BEI SENSORS

The HS35 combines the rugged, heavy-duty features usually associated with shafted encoders into a hollow shaft style. Its design includes dual bearings and shaft seals for NEMA 4, 13 and IP65 environmental ratings, a rugged metal housing, and a sealed connector or cable gland. The HS35 accommodates shafts up to 1" in diameter. With optional insulating inserts, it can be mounted on smaller diameter shafts. It can be mounted on a through

shaft or a blind shaft with a closed cover to maintain its environmental rating. The HS35 is also available with a dual output option (inset) to provide redundant encoder signals, dual resolutions, or to supply two separate controllers from a single encoder. Applications include motor feedback and vector control, printing industries, robotic control, oil service industries, and web process control.

The HS35 Incremental Encoder is available with the following certifications:



EN 55011 and EN 61000-6-2



CSA Class I, Div 1 Group C&D



CENELEC EEX ia IIC T4



U.S. Standards Class I,
Group A,B,C & D; Class II
Group E,F & G



Canadian Standards
Class I, Zone 0, Group IIC



Groups: A, B, C, D,
F & G



The HS35 Dual Output Encoder

Mechanical Specifications

Shaft Bore: 1.00", 0.875", 0.750", 0.625", 0.500".

All are supplied with insulating sleeves.

Allowable Misalignment: 0.005" T.I.R. on mating shaft 0.75" from shaft end

Bore Runout: 0.001" T.I.R. maximum

Starting Torque at 25°C: Through shaft version (SS) = 7 in-oz (max);
Blind shaft version (BS) = 4 in-oz (max)

Bearings: 52100 SAE High carbon steel

Shaft Material: 416 stainless steel

Bearing Housing: Die cast aluminum with protective finish

Cover: Die cast aluminum with protective finish

Bearing Life: 7.5 X 10⁶ revs (50,000 hrs at 2500 RPM)

Maximum RPM: 6,000 RPM (see Frequency Response below)

Moment of Inertia: 0.019 oz-in-sec²

Weight: 18 oz typical

Electrical Specifications

Code: Incremental

Output Format: 2 channels in quadrature, 1/2 cycle index gated with negative B channel

Cycles Per Shaft Turn: 1 to 80,000 (see table A, page 25).

For resolutions above 5000 see interpolation options on pages 36 and 37

Supply Voltage: 5 to 28 VDC available (see note 5)

Current Requirements: 100 mA typical + output load, 250 mA (max)

Voltage/Output: (see note 5)

15V/V: Line Driver, 5-15 VDC in, Vout = Vin

28V/V: Line Driver, 5-28 VDC in, Vout = Vin

28V/5: Line Driver, 5-28 VDC in, Vout = 5 VDC

28V/OC: Open Collector, 5-28 VDC in, OCout

Protection Level: Reverse, overvoltage and output short circuit (See note 5)

Frequency Response: 150 kHz (up to 5000 cpt resolution; 300 KHz above 5000 cpt, also see note 7)

Output Terminations: See table 1 page 65

Note: Consult factory for other electrical options

Environmental Specifications

Enclosure Rating: NEMA 4 & 13 (IP65) when ordered with shaft seal (on units with an MS connector) or a cable gland (on units with cable termination)

Temperature: Operating, 0° to 70° C; extended temperature testing up to 105° C available (see note 8); Storage, -25° to 90° C unless extended temperature option called out

Shock: 50 g's for 11 msec duration

Vibration: 5 to 2000 Hz @ 20 g's

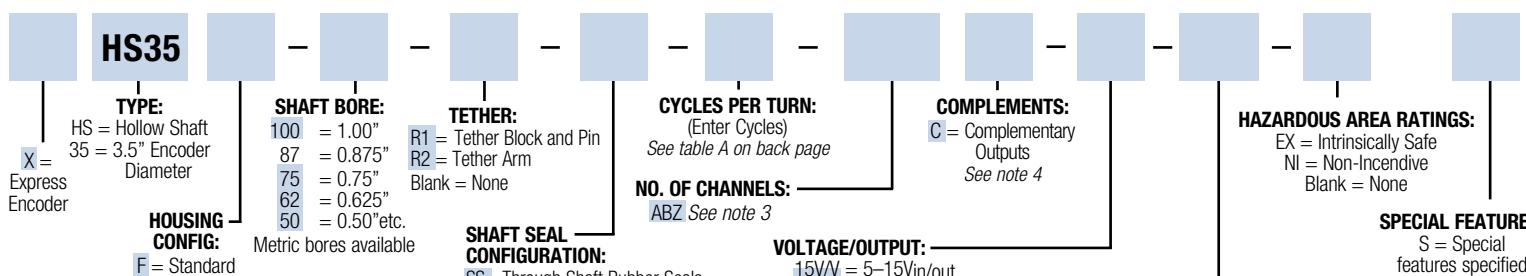
Humidity: 98% RH without condensation

NOTES & TABLES: All notes and tables referred to in the text can be found on the back of this page.

HS35 Incremental Ordering Options FOR ASSISTANCE CALL 800-350-2727

Use this diagram, working from left to right to construct your model number (example: HS35F-100- R1-SS-2048-ABZC-28V/V-SM18).

All notes and tables referred to can be found on the back of this page.



BEI SENSORS

Tel: 805-968-0782 / 800-350-2727 | Fax: 805-968-3154 / 800-960-2726
7230 Hollister Ave., Goleta, CA 93117-2807 | www.beisensors.com

Specification No. 02063-001 Rev.09-12

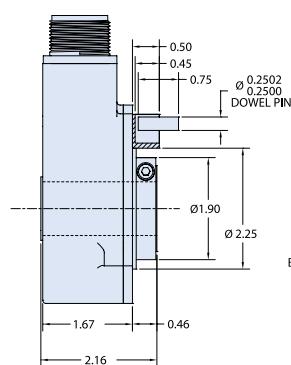
These commodities, technology or software if exported from the United States must be in accordance with the Bureau of Industry, and Security, Export Administration regulations. Diversion contrary to U.S law is prohibited.

HS35 Incremental Optical Encoder

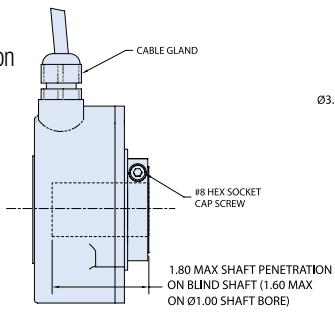
BEI SENSORS

Dimensions

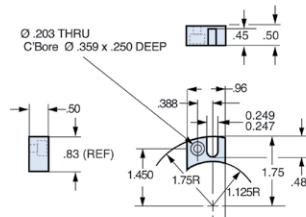
MS Connector Termination



Cable Termination

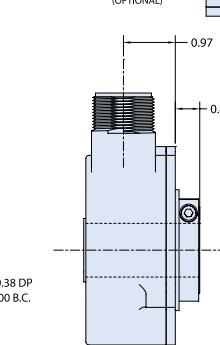


R1 Tether Block and Pin



Dual Output

DUAL MS STYLE CONNECTIONS
CAST INTO COVER WILL
MATE WITH MS3106F18S-1P
(OPTIONAL)



R2 Tether Arm

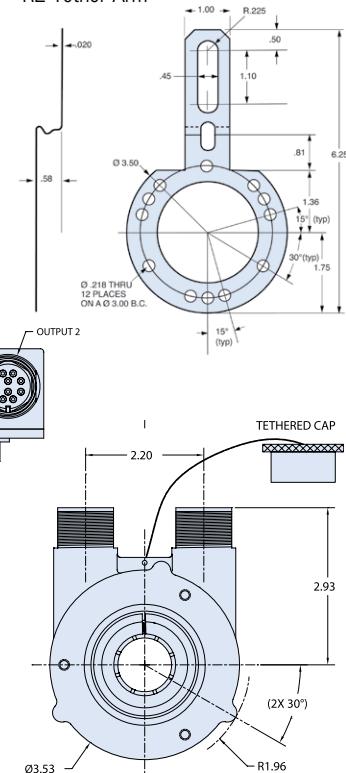


Table 1

Incremental Output Terminations

The connector style will determine inouts. For example, an encoder with ABC channels and an M18 connector uses the table to the right.

M18 CONNECTOR	
PIN	CHANNEL
A	A
B	B
C	Z
D	+V
E	—
F	0V
G	CG
H	Ā
I	Ā
J	Z

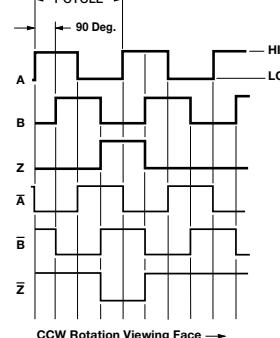
M12 CONNECTOR	
PIN	CHANNEL
A	A
B	B
C	Z
D	+V
E	—
F	0V
G	CG
H	Ā
I	Ā
J	Z

M16 CONNECTOR	CHANNELS DESIGNATED IN MODEL NO.	
	ABZ	ABC
A	A	A
B	B	B
C	Z	Ā
D	+V (SUPPLY VOLTAGE)	
E	—	Ā
F	0V (CIRCUIT COMMON)	
G	CASE GROUND (CG) (except H20)	

WIRE COLOR (22AWG)	DA 15P CONNECTOR	CHANNELS DESIGNATED IN MODEL NO.		
		ABZ	ABC	ABZC
YEL	13	A	A	A
BLUE	14	B	B	B
ORN	15	Z	Ā	Z
W-Yel	10	—	Ā	Ā
W-Blu	11	—	Ā	Ā
W-Orn	12	—	—	Z
RED	6	+V (SUPPLY VOLTAGE)		
BLK	1	0V (CIRCUIT COMMON)		
GRN	9	CASE GROUND (CG) (except H20)		
WHITE		SHEILD DRAIN (Shielded Cable Only)		

Figure 1

Output Waveform



NOTE: Index location is displaced 180° (mechanical) on second output with dual output option.

Notes

1. Mounting is usually done either using the D-style square flange mount, E- or G-style servo mounts, or one of the standard face mounts, F1 for example. Consult factory for additional face mount options.

2. The rubber shaft seal is recommended in virtually all installations. The most common exceptions are applications requiring a very low starting torque or those requiring operation at both high temperature and high speed. For these exceptions, a felt shaft seal is recommended. Felt seals require very low starting torque and can virtually eliminate frictional heat. Encoders ordered with felt shaft seals will have an enclosure rating of IP50 and will have less than 1/10th the Starting Torque specified under Mechanical Configurations.

3. Non-standard index widths and multiple indices are available by special order. Consult factory.

4. Complementary outputs are recommended for use with line driver type (source/sink) outputs. When used with differential receivers, this combination provides a high degree of noise immunity.

5. **Output IC's:** Output IC's are available as either Line Driver (LD) or NPN Open Collector (OC) types. Open Collectors require pull-up resistors, resulting in higher output source impedance (sink impedance is similar to that of line drivers). In general, use of a Line Driver style output is recommended. Line Drivers source or sink current and their lower impedance mean better noise immunity and faster switching times. **Warning:** Do not connect any line driver outputs directly to circuit common/0V, which may damage the driver. Unused outputs should be isolated and left floating. Your applications specialists would be pleased to discuss your system requirements and the compatibility of your receiving electronics with Line Driver type outputs.

6. Special -S at the end of the model number is used to define a variety of non-standard features such as special shaft lengths, voltage options, or special testing. Please consult the factory to discuss your special requirements.

7. Higher frequency response may be available. Please consult with the factory.

8. Extended temperature ratings are available in the following ranges:

-40 to 70°C, -40 to 85°C, -20 to 105°C and -40 to 105°C depending on the particular model. Some models can operate down to -55°C. Extended temperature ranges can affect other performance factors. Consult with factory for more specific information.

9. Mating straight plug receptacles may be ordered from the factory:

For M12 use MS3116F12-10S

For M14 use MS3106F14S-6S

For M14/19 use MS3116J14-1S

For M16 use MS3106F16S-1S

For M18 use MS3106F18-1S

For M20 use MS3106F20-2S

BEI SENSORS

Tel: 805-968-0782 / 800-350-2727 | Fax: 805-968-3154 / 800-960-2726
7230 Hollister Ave., Goleta, CA 93117-2807 | www.beisensors.com

These commodities, technology or software if exported from the United States must be in accordance with the Bureau of Industry and Security, Export Administration regulations. Diversion contrary to U.S. law is prohibited.

Table A

HS35 Disc Resolutions

32 100 250 360 420 500 512
600 720 1000 1024 1200
1500 1650 1800 2000 2100
2048 2500 2881 2884 3600
3710 4096 5000

For interpolation please specify the multiplied output (up to 80,000 for the HS35) in the model number, i.e. 80,000-T16. Other resolutions available—consult factory.

NOTE: Dual resolutions available, consult factory.



OCEAN CHIPS

Океан Электроники

Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибутором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибутором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А