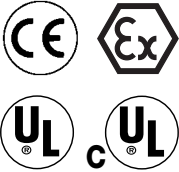


MODEL HS35

DrawWorks Optical Encoder



This specially configured DrawWorks Model HS35 encoder combines rugged, heavy-duty features into a unique through-shaft style for use as a winch-turns counter in the DrawWorks system of oil rigs. It incorporates dual bearings and shaft seals for NEMA 4 and 13 (IP65) ratings, a hard-anodized metal housing and a sealed connector. It comes with a standard 1"-14 diameter threaded connection and a convertible adapter that allows its use in systems with a 5/8"-18 threaded connection. This encoder has an ATEX/CENELEC intrinsically safe rating when installed with the proper barriers (refer to BEI P/N 924-60004-XXX series on the back of this specification sheet). This barrier is high performance, galvanically isolated and carries US and European agency approvals. It is suitable for ALL Hazardous locations, regardless of gas and dust types.

Specifications

Mechanical

Shaft Bore: 0.375" diameter through with convertible adapter for 1" or 5/8" air coupler.

Starting Torque at 25°C: 7 in-oz

Shaft Material: 416 stainless steel

Bearing Housing: Die cast aluminum

Bearing Life: 7.5×10^9 revs (50,000 hrs at 2500 RPM)

Maximum RPM: 6,000 RPM (also see frequency response)

Moment of Inertia: 0.019 oz-in-sec²

Weight: Approximately 18 oz

Electrical

Code: Incremental

Output Format: 2 channels (A and B) in quadrature $\pm 27^\circ$ electrical, with index and complements (see figure 1 on reverse)

Cycles Per Shaft Turn: Up to 5,000 (see Table A on reverse)

Supply Voltage: 5 or 9V

Current Requirements: 120mA (typical)

Output Device:

3904(R), Open collector, 40mA max current sink; 5 or 9V

4469 line driver 100mA source/sink; 5V only

Frequency Response: 150 kHz

Output Termination Pinouts: See Table 1 on reverse

Environmental

Enclosure Rating: NEMA 4, 13 (IP65)

Temperature: -40° to +85°C standard

Shock: 50 G's for 11 msec duration

Vibration: 5 to 2000 Hz @ 20 G's

Humidity: 98% RH without condensation

HS35 DrawWorks Ordering Options

For assistance, call 800-350-2727

Use this diagram, working left to right to construct your model number.

Example: HS35F-1-14-SS-200-ABZC-4469-SM18-EX-S (one possible configuration of the HS35 DrawWorks)

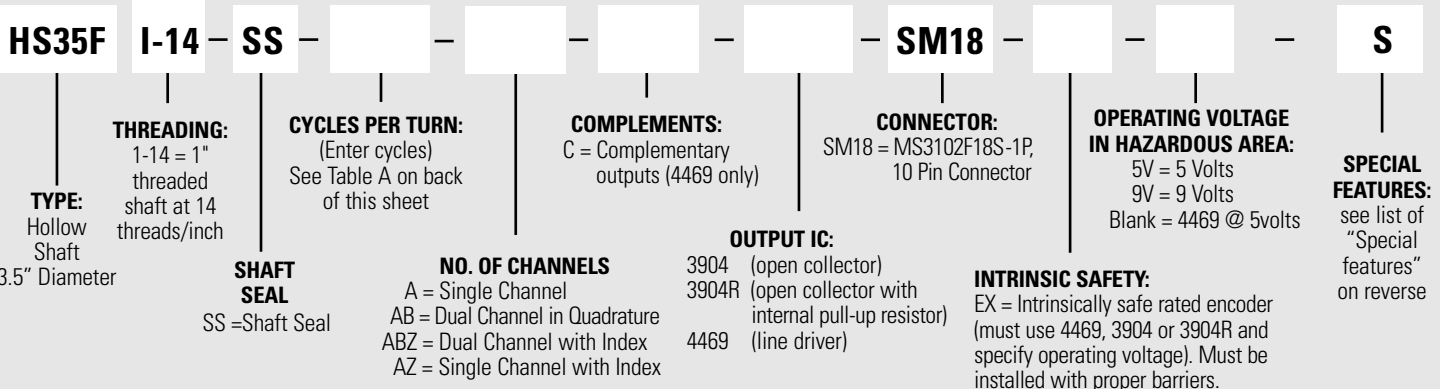
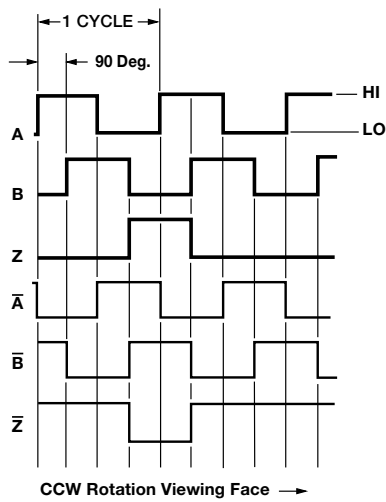






Figure 1-Output Waveforms



Certifications

-  EN 55011 and EN 61000-6-2
RFI immunity, emissions, and ESD.
-  ATEX/CENELEC
EEX ia IIC T4
-  U.S. Standards Class I, Div 1
Group A,B,C & D; Class II, Div 1
Group E,F & G
-  Canadian Standards Class I,
Zone 0, Group IIC

All the Components
You Need for a
Complete Solution for
Any Hazardous
Environment—
All from One Source



DrawWorks Encoder



Cable Assemblies



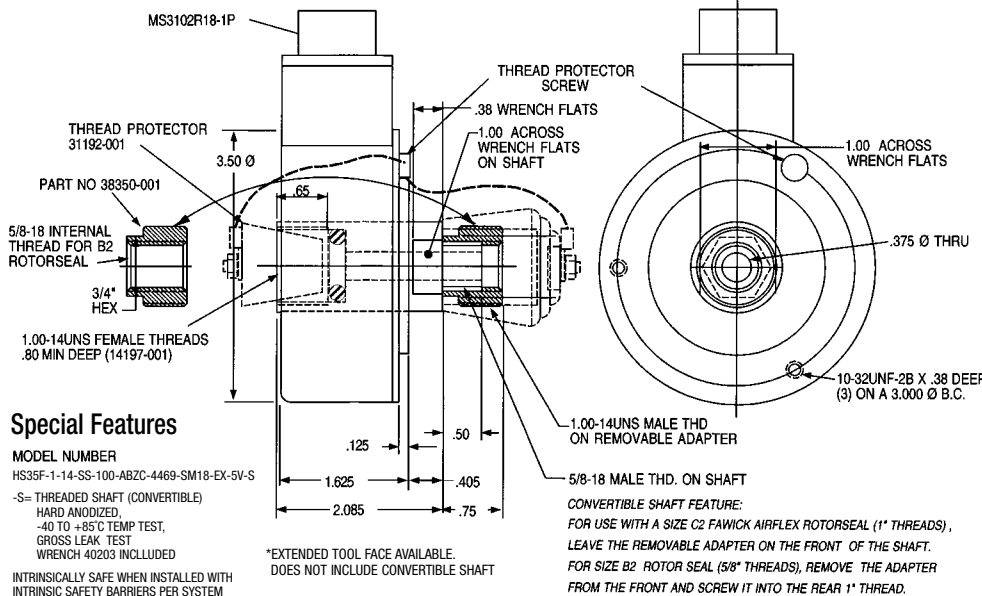
Intrinsic Safety Barrier

You no longer need to search through a stack of catalogs, mixing and matching sensors and barriers. With BEI's ATEX-approved components you can put together a full system—encoder, cable and barrier—with complete confidence that all components will work together perfectly. Integrating all three differential data inputs, as well as power and ground into a single, galvanically isolated barrier reduces both engineering and installation time. What's more, this complete system is Intrinsically Safe rated for ALL Gas and Dust groups. Let us provide you with one complete system that's easy to specify, easy to install, and can be used anywhere.

HS35 DrawWorks Dimensions

MS Connector Termination

TOLERANCES: .XX = ±0.01, .XXX = ±0.005



Special Features

MODEL NUMBER
HS35F-1-14-SS-100-ABZC-4469-SM18-EX-5V-S
-S= THREADED SHAFT (CONVERTIBLE)
HARD ANODIZED,
-40 TO +85°C TEMP TEST,
GROSS LEAK TEST
WRENCH 40203 INCLUDED

INTRINSICALLY SAFE WHEN INSTALLED WITH
INTRINSIC SAFETY BARRIERS PER SYSTEM
DIAGRAM 924-09067-001

*EXTENDED TOOL FACE AVAILABLE.
DOES NOT INCLUDE CONVERTIBLE SHAFT

CONVERTIBLE SHAFT FEATURE:
FOR USE WITH A SIZE C2 FAWICK AIRFLEX ROTORSEAL (1" THREADS),
LEAVE THE REMOVABLE ADAPTER ON THE FRONT OF THE SHAFT.
FOR SIZE B2 ROTOR SEAL (5/8" THREADS), REMOVE THE ADAPTER
FROM THE FRONT AND SCREW IT INTO THE REAR 1" THREAD.

Table 1—Output Terminations

PIN	ABZ	ABZC
A	CH A	CH A
B	CH B	CH B
C	INDEX, Z	INDEX, Z
D	+V SUPPLY VOLTAGE	
E	—	
F	OV/ (CIRCUIT COMMON)	
G	CASE GROUND	
H	N/C	CH \bar{A}
I	N/C	CH \bar{B}
J	N/C	CH \bar{Z}

BEI Intrinsic Safety Barrier

SUPPLY VOLTAGE TO BARRIER	OUTPUT TYPE FROM BARRIER	BARRIER PART NUMBER
12–24 VDC	V _{out} = 5 VDC	924-60004-002
12–24 VDC	V _{out} = V _{in}	924-60004-003
12–24 VDC	V _{out} = Open Collector	924-60004-004

Table A—Disc Resolutions (cycles per turn)

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