The HS45 is a large bore, heavy duty, rugged encoder designed to operate in very demanding environments. It is available in both single and dual output versions as shown above. These encoders use a preloaded bearing set for mechanical stability and a long service life. The dual output version has redundant electronics internal to the encoder simplifying signal distribution to multiple controllers.

The HS45 Incremental Encoder is available with the following certifications:

- EN 50011 and EN 61000-6-2
- CEMELEC EX ia IIC T4
- UL U.S. Standards Class I, Group A,B,C & D; Class II Groups F & G
- Canadian Standards Class I, Zone 0, Group IIC

**HS45 Incremental Ordering Options**

Use this diagram, working from left to right to construct your model number (example: HS45F-175-R2-SS-8192-AB2C-28VV-SM18).

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

**Mechanical Specifications**

- **Shaft Bore**: 1.750" max
- **Allowable Misalignment**: Axial: ±0.030 (with R2), ±0.050 (with R1), Radial: 0.005 T.I.R.
- **Bore Runout**: 0.002 T.I.R.
- **Running Torque at 25° C**: Dual seals (SS) = 30 in-oz (max); Single seal (BS) = 18 in-oz (max)
- **Bearings**: 52100 dual preloaded bearings
- **Shaft Material**: Stainless Steel
- **Bearing Housing**: Die cast aluminum with protective finish
- **Cover**: Die cast aluminum with protective finish
- **Bearing Life**: 5 x 10⁶ revs
- **Maximum RPM**: 5,000 RPM (see Frequency Response, below)
- **Moment of Inertia**: 0.063 oz-in-sec² max
- **Weight**: Approximately 2.3 lbs single output, 2.6 lbs dual output

**Electrical Specifications**

- **Code**: Incremental
- **Output Format**: Incremental output format, 2 channels with complements, in quadrature, 1/2 cycle index gated with negative B channel
- **Cycles per Shaft Turn**: Up to 8192
- **Supply Voltage**: 5–28 VDC (+5%)
- **Current Requirements**: 100 mA (typical) per side + output load, 250 mA (max)
- **Voltage/Output**: (see note 5)
  - 28V/V: Line Driver, 5–28 VDC in, Vout = VIn
  - 28V/V: 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**: 150kHz
- **Output Terminations**: see Table 1

**Environmental Specifications**

- **Enclosure Rating**: IP65 (NEMA 4 & 13)
- **Temperature**: Operating: 0° to 70°C standard, -40° to 85°C optional, storage -40 to 90°C
- **Shock**: 50 g’s for 11 ms
- **Vibration**: 10–2000 Hz @ 20 g’s
- **Humidity**: 86% RH non-condensing

**NOTES & TABLES**: All notes and tables referred to in the text can be found on the back page.
Table 1 Incremental Output Terminations

The connector style will determine pinouts. For example, an encoder with ABC channels and an M18 connector uses the table to the right.
CABLE DESCRIPTION:
TINNED COPPER, PVC INSULATED,
OVERALL FOIL ALUMINUM-POLYESTER SHIELD,
24 AWG STRANDED TINNED COPPER DRAIN WIRE,
OVERALL TINNED COPPER BRAID SHIELD, 6% COVERAGE
(65% COVERAGE), CHROME PVC JACKET.

CONDUCTORS:
AWG PER TABLE
4 TWISTED PAIRS

APPLICATION:
THIS CABLE IS INTENDED FOR DIFFERENTIAL LINE DRIVER
OUTPUT ENCODERS OR THOSE WITH COMPLIMENTARY OUTPUTS.
REFER BEI DRAWING 924–08069–002 FOR DETAILED
TERMINATION GUIDELINES.

WARNING:
CABLE SHIELD IS FLOATED (NOT CONNECTED)
AT CONNECTOR. SHIELD CONNECTION MAY BE
REQUIRED FOR SAFETY OR NOISE IMMUNITY.

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.