

## Avtron HS45 Encoders



**Heavy Mill Duty Magnetic Hollow Shaft Encoder, 5/8"-1 1/8" [16-30mm]**

### **Magnetic Durability in a Compact Encoder**

No fragile optics, no glass disks

All electronics fully potted/encapsulated

Cast aluminum heavy duty housing

3-5X heavier duty bearings

Insulated from motor shaft currents

Immune to magnetic and electrical interference from motors and brakes

3 Year No-Hassle Warranty

Mechanical Overspeed Switch Option

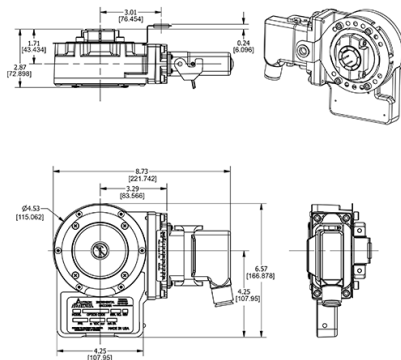
### **HS45**

Avtron HS45 EU-SMART Encoders are magnetic, hollow shaft, heavy duty encoders (incremental rotary quadrature encoders) for any mounting application including NEMA motors (incl. GE, Marathon, US Motors) and European-style motors such as ABB and Siemens. Also available: AV45 solid shaft encoder to fit European B-flanges (85mm), and foot mount applications and severe duty AV685 encoders.

The HS45 offers clamp-style and (rear) center-bolt mounting options. Clamp-style fits shafts from 5/8" to 1 1/8" [16mm-30mm]; center-bolt mounting is available for 16mm (straight) and 17mm (cone/taper shaft). Clamp-style mounting utilizes a convenient field-changable sizing sleeve and provides shaft current isolation. Center-bolt styles feature insulated ceramic ball bearings to prevent shaft current damage.

The HS45 is designed for use in rough environments with constant exposure to temperature extremes, water, oil, and dirt. Its high-power output circuits with universal 5-24V power are fully protected against surges and wiring errors. The onboard diagnostics warn of any signal quality issues before these problems cause downtime on your machine.

## OUTLINE DRAWING



## MORE HS45 ADVANTAGES

- Direct replacement for Hubner HOG8, 9, 10, Leine & Linde 861, 862, 865, and many others
- Fits US motors with shafts from 5/8" to 1 1/8"
- Fits European motors with 16mm straight and 17mm taper shaft center-bolt systems
- Full protection against wiring errors and short circuits, surges and reverse voltage
- High-power outputs for long cable runs
- Diagnostic LED & alarm output contact option
- Dual isolated output option (mix and match PPRs as needed)

## MORE HS45 SPECIFICATIONS

**Operating Power:** Volts: 5-24VDC; 100mA, no load

**Output Format:** A Quad B with marker (A,/A, B,/B, Z,/Z)

**Second Isolated Output:** Optional

**Frequency Range:** 0 to 165 kHz

**Maximum Instantaneous Current Output:** 3000mA\*

**PPR:** 8-5000

**Speed:** 5000 RPM Max. std., for higher speeds, consult factory

**Enclosure:** IP65

**Electronics:** Fully Encapsulated, IP67\*

**Temperature:** -40° to +100°C\*

**Vibration:** 18Gs

**Shock:** 100Gs

**Chemical:** Polyurethane enamel paint protects against salt spray, mild acids, and bases.

\*see manual for specification details

Check out our website for more detailed specifications, drawings, and installation instructions. [www.avtronencoders.com](http://www.avtronencoders.com)



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# SELECTION GUIDE

| MODEL | HOLLOW SHAFT BORE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | LEFT OUTPUT PPR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | RIGHT OUTPUT PPR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | LINE DRIVER                                                                                                                                                                                                                                            | CONNECTOR OPTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ANTI-ROTATION TETHER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CHANNELS                                                                                                                                                                     | MODIFICATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| HS45  | C - 5/8 in. bore, insulated shaft bushing, universal end or thru shaft mountable<br>D - 3/4 in. bore, insulated shaft bushing, universal end or thru shaft mountable<br>E - 7/8 in. bore, insulated shaft bushing, universal end or thru shaft mountable<br>F - 1 in. bore, insulated shaft bushing, universal end or thru shaft mountable<br>G - 1 1/8 in. bore, insulated shaft bushing, universal end or thru shaft mountable<br>N - 1.188 in. bore, requires insulated bearings special option code 001, universal end or thru shaft mountable<br>K - 1 3/8 in. bore, requires insulated bearing option 001, universal end or thru shaft mountable<br>S - 16mm bore, insulated shaft bushing, universal end or thru shaft mountable<br>T - 18mm bore, insulated shaft bushing, universal end or thru shaft mountable<br>V - 19mm bore, insulated shaft bushing, universal end or thru shaft mountable<br>W - 20mm bore, insulated shaft bushing, universal end or thru shaft mountable<br>Y - 25mm bore, insulated shaft bushing, universal end or thru shaft mountable<br>3 - 30mm bore, insulated shaft bushing, universal end or thru shaft mountable<br>L - 16mm center-bolt style mount; european end of shaft (Ceramic Bearings)<br>M - 17mm tapered shaft, center-bolt mount, european end of shaft (Ceramic Bearings)<br>P - 20mm center-bolt style with keyway; Hubner FGH4K/FGH40K end of shaft fit<br>J - 30mm, center-bolt style mount, XT45 replacement, end of shaft<br>U - 5/8 in. thru 1 in. shaft bushings (Universal USA), End and Thru shaft mountable with 1.188 in. OD<br>Z - 16mm thru 30mm shaft bushings (Universal Metric), End and Thru shaft mountable with 1.188 in. OD | XX - No Left Output<br>BD - 10 PPR<br>BF - 25 PPR<br>BT - 36 PPR<br>BC - 50 PPR<br>AF - 60 PPR<br>AK - 80 PPR<br>AG - 100 PPR<br>AH - 120 PPR<br>AA - 128 PPR<br>AM - 200 PPR<br>AL - 240 PPR<br>AN - 256 PPR<br>AP - 300 PPR<br>AE - 360 PPR<br>AC - 400 PPR<br>AB - 480 PPR<br>AQ - 500 PPR<br>AR - 512 PPR<br>AS - 600 PPR<br>AU - 720 PPR<br>AV - 900 PPR<br>AJ - 960 PPR<br>AW - 1000 PPR<br>AY - 1024 PPR<br>AZ - 1200 PPR<br>BK - 1365 PPR<br>CX - 1500 PPR<br>A3 - 2000 PPR<br>A4 - 2048 PPR<br>BA - 2400 PPR<br>A5 - 2500 PPR<br>CG - 3000 PPR<br>AT - 3072 PPR<br>A7 - 3600 PPR<br>BB - 4000 PPR<br>AD - 4096 PPR<br>A8 - 4800 PPR<br>A9 - 5000 PPR<br>A2 - 8192 PPR<br>BL - 16384 PPR<br>BM - 25000 PPR<br>A0 - Special PPR | XX - No Right Output<br>BD - 10 PPR<br>BF - 25 PPR<br>BT - 36 PPR<br>BC - 50 PPR<br>AF - 60 PPR<br>AK - 80 PPR<br>AG - 100 PPR<br>AH - 120 PPR<br>AA - 128 PPR<br>AM - 200 PPR<br>AL - 240 PPR<br>AN - 256 PPR<br>AP - 300 PPR<br>AE - 360 PPR<br>AC - 400 PPR<br>AB - 480 PPR<br>AQ - 500 PPR<br>AR - 512 PPR<br>AS - 600 PPR<br>AU - 720 PPR<br>AV - 900 PPR<br>AJ - 960 PPR<br>AW - 1000 PPR<br>AY - 1024 PPR<br>AZ - 1200 PPR<br>BK - 1365 PPR<br>CX - 1500 PPR<br>A3 - 2000 PPR<br>A4 - 2048 PPR<br>BA - 2400 PPR<br>A5 - 2500 PPR<br>CG - 3000 PPR<br>AT - 3072 PPR<br>A7 - 3600 PPR<br>BB - 4000 PPR<br>AD - 4096 PPR<br>A8 - 4800 PPR<br>A9 - 5000 PPR<br>A2 - 8192 PPR<br>BL - 16384 PPR<br>BM - 25000 PPR<br>A0 - Special PPR | 6 - 5-24V in, 5-24V out (7272) recommended for single-ended wiring (A,B,Z, no Complements, and differential wiring (A,/A,B,/B,Z,/Z) up to 500'.<br>8 - 5-24V in/5-24V Out Hi-Power (HX) w/wiring protection<br>9 - 5-28V In, 5V Out (7272 Line Driver) | A - 10 Pin MS style w/o Plug, Avtron/BEI Pin Out<br>B - 10 Pin MS style w/o Plug, Dynapar HS35 Pin Out<br>C - 10 Pin MS style w/Plug, Avtron/BEI Pin Out<br>D - 10 Pin MS style w/Plug, Danaher HS35 Pin Out<br>E - 6 Pin MS style w/o Plug<br>F - 6 Pin MS style w/o Plug, Dynapar HS35 Pin Out<br>H - Terminal Box for USA 1/2 in. conduit, LED & Remote Alarm Diagnostics<br>L - Terminal Box w/CoDr Grip, EU Labels, LED & Remote Alarm Diagnostics<br>K - 7 Pin MS style w/o Plug, Dynapar HS35 Pin Out<br>M - 7 Pin MS style w/o Plug on 4 ft cable w/HD cable sheath, Avtron/BEI HS35 Pin Out<br>P - 10 pin Industrial (mini-EPIC Style) w/Plug, Remote Alarm Diagnostics<br>G - 10 pin mini-EPIC Style w/Plug, Northstar Pin Out<br>Q - 18 in. Cable w/10 Pin Industrial (mini-EPIC Style) w/Plug, Adapter Block & Remote Alarm Diagnostics<br>R - 10 pin Mini-MS Twist-Lock (Baldor/Bayonet Style) w/Plug, Avtron/BEI Pin Out<br>S - 10 pin Mini-MS Twist-Lock (Baldor/Bayonet Style) on 36 in. cable w/Plug, Avtron/BEI Pin Out<br>T - M12-8 Pin Turck Pin Out<br>U - M12-8 Pin USA Pin Out<br>W - Cable (36 in. or special length) with Remote Alarm Diagnostics<br>Y - 12 in. Cable w/10 Pin MS In-Line Connector, w/Plug<br>Z - Base Mounted mini-Epic Style on 18 in. cable w/Plug with Remote Alarm Diagnostics<br>1 - Base Mounted Large-Epic Style on 18 in. cable w/Plug with Remote Alarm Diagnostics<br>2 - M23-12 Pin w/o plug, Leine & Linde, and Hubner Pin Out<br>3 - M23-12 Pin w/o plug, Inverted Hubner Pin Out<br>4 - 10 pin MS style w/Plug, Large Encoder Pin Out (Avtron M3/M4, Mxxx & Northstar Models) with Remote Alarm Diagnostics<br>5 - Conduit Box Assy, Hubner "C" Compatible Pinout<br>0 - Special connector, see special option code for details | D - Fan Cooled Motor T-Bolt Tether Kit, w/1/4 in., 5/16 in., and 3/8 in. Hardware<br>E - 4.5 in. / Reliance 6.75" NEMA 56 C-Face Tether<br>F - 8.5 in. NEMA C-Face Tether<br>G - Threaded Rod Torque Arm Kit, Adjustable 70-500mm (4.25 in.-19 in.) w/M6 x 30mm Screw<br>H - Fan Cooled Motor T-Bolt and 8.5 in. NEMA FC-Face Tethers (Options D&F)<br>M - Fan Cooled Motor T-Bolt and 4.5 in. / Reliance 6.75 in. NEMA 56 C-Face Tethers (Options D&E)<br>P - Threaded Rod Torque Arm Kit, Fixed 70mm Length, w/M6 x 30mm Screw<br>T - Threaded Rod Torque Arm Kit, Adjustable 70-500mm and Fan Cooled Motor T-Bolt Tether Kit, w/M6 x 35mm T-Bolt<br>Y - Dual Stacked HS45 - Outboard Encoder Short Torque Arm - Tethers Outboard Encoder to back of HS45 Inboard Encoder<br>U - Universal Tether/Torque Arm Kit (includes all standard tethers)<br>2 - Hubner ADAPTER FLANGE 68 MM TAPERED PILOT<br>X - No Tether | A - All Channels (A, A/, B, B/, Z, Z/)<br>B - Channels (A, A/, B, B/, No Marker)<br>E - Channels (A, B, Z, No Complements)<br>F - Channels (A, B, No Complements, No Marker) | 000 - No Special Options<br>001 - Ceramic (Insulating) Bearings for 1.188 in. and 1.375 in. native bore sizes only.<br>004 - Super Magnetic Shielding<br>012 - Black Paint & 5 ft. [1.5m] cable built in to sensor(s)<br>020 - Add Finger Guard (B36039)<br>021 - Add Finger Guard (B36039) & Super Magnetic Shielding<br>022 - Rail Option Package w/stub shaft, coupling, spc1 conn, hose<br>026 - Super Sealing, 300 RPM Max, End of Shaft Mount Only<br>035 - Cabinet mounted Electronic Overspeed + Super Magnetic Shielding<br>036 - Add Cabinet mounted Electronic Overspeed<br>500 - Add 100C temperature range to shaft bores 5/8 in.-1 in. and 16mm-25mm (Not required for 16mm & 17mm center bolt and 1.188 in. and 30mm clamp styles)<br>503 - Add 100C temperature range to shaft bores 5/8 in.-1 in. and 16mm-25mm; also add special cable length 1m/3ft<br>504 - Add 100C temperature range to shaft bores 5/8 in.-1 in. and 16mm-25mm; also add super magnetic shielding<br>901 - 0.3m/1 ft. Special Cable Length<br>902 - 0.6m/2 ft. Special Cable Length<br>903 - 0.9m/3 ft. Special Cable Length<br>904 - 1.2m/4 ft. Special Cable Length<br>905 - 1.5m/5 ft. Special Cable Length<br>908 - 2.4m/8 ft. Special Cable Length<br>910 - 3m/10 ft. Special Cable Length<br>915 - 4.5m/15 ft. Special Cable Length<br>920 - 6m/20 ft. Special Cable Length<br>925 - 7.5m/25 ft. Special Cable Length<br>930 - 9m/30 ft. Special Cable Length<br>933 - 10m/33 ft. Special Cable Length |



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