

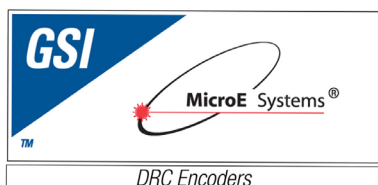
MODEL HS30

Incremental Optical Rotary Encoder



- Hollow shaft will accept up to .75 inch dia. shafts
- Up to 5,000 line disc with internal 5X cycle interpolation
- Small compact size
- Flexible spring mount
- Unique split collar shaft mount
- Frequency response up to 100 KHz all channels
- Available with top or bottom collar shaft mount

The Model HS30 is a high speed hollow shaft optical rotary encoder. The units unique split collar and flexible spring make installation of the HS30 very simple. The unit is available with disc resolutions up to 5,000 lines and internal cycle interpolation of 5X to generate up to 100,000 counts per revolution. The large inside diameter bearing used on the HS30 will accept up to 3/4 inch diameter shafts. The HS30 series is ideal for applications which require a high resolution, hollow shaft encoder.



HS30 SPECIFICATIONS

ELECTRICAL

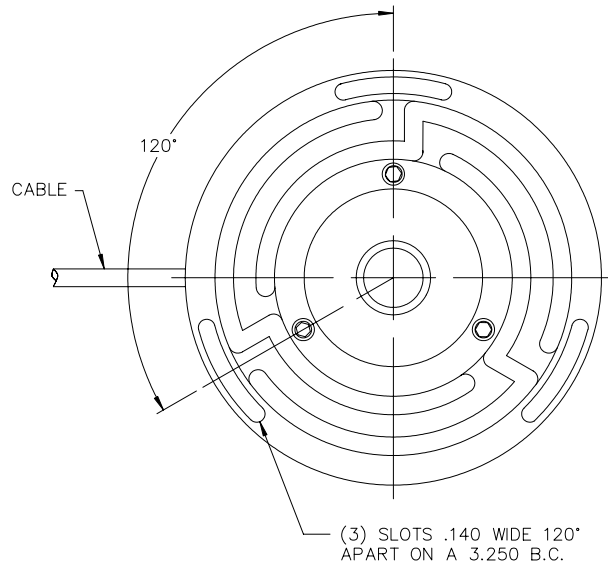
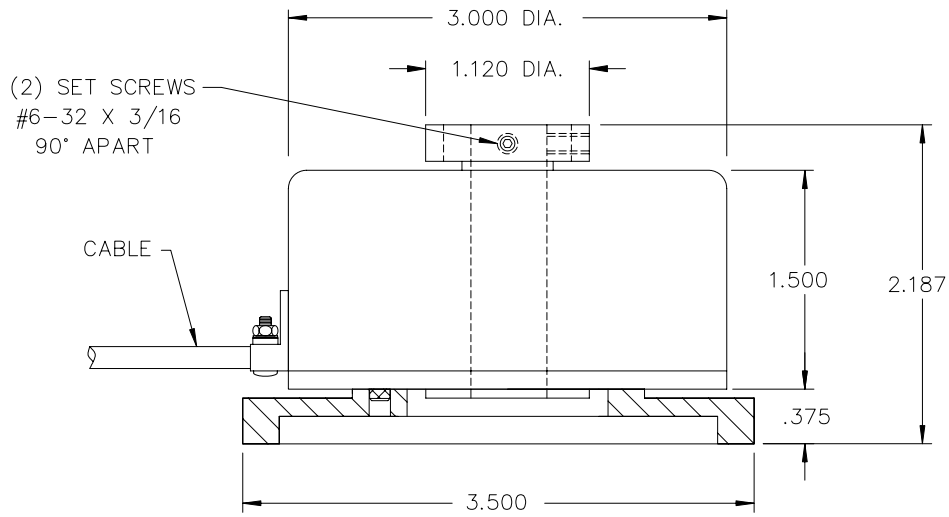
Resolution range:	Up to 5,000 cycles per shaft revolution.
Interpolation factors:	1X, 4X, or 5X for up to 100,000 counts with user's quadrature detection.
Light source:	Gallium aluminum arsenide L.E.D. rated @ 100,000 Hrs. MTBF (mfg's spec).
Light sensor:	Silicon photo voltaic cells.
Excitation voltage:	+5 VDC, +12 VDC and +15 VDC \pm 5%.
Max. current draw:	245ma. Without interpolation, 275ma. with interpolation.
Output format:	Two count channels (A & B) in phase quadrature with an optional ZR output.
Quadrature:	90° \pm 22.5° (line driver 1x); 90° \pm 45° (interpolation); at 10KHz output frequency.
Symmetry:	180° \pm 18° (at 10 KHz output frequency).
Rise and fall time:	1 microsecond max. into 1,000pf load capacitance.
Frequency response:	DC to 100 KHz for 1x units; DC to 50 KHz for 4x and 5x units. (250 KHz max. output frequency after 5x interpolation).
Phase sense:	Channel A leads Channel B for clockwise rotation of the shaft, as viewed from the cover side of an installed unit.
Zero reference:	1/4 , 1/2 , and full count channel cycle wide, once per revolution (see table).
ZR alignment:	1/4 cycle ZR aligns with both A & B high. 1/2 cycle ZR aligns with B- high. Full cycle ZR aligns between 90° & 180° of channel A.
Output spec:	Differential, TTL compatible RS422 line driver signals.

MECHANICAL

Shaft angular acceleration:	10 ⁵ Radian / sec ² (maximum).
² Maximum shaft run-out:	\pm .005 inch (.127mm) radial max., \pm .010 inch (.25mm) axial max.
Shaft perpendicularity to Mounting surface:	.005 inch per inch max.
Moment of inertia:	4.0 x 10 to the -4 oz.-in.-sec squared.
Bearing type:	#540 torque tube bearing, ABEC class 5 or better.
Max. operating speed:	6000 RPM or max. operating frequency response, whichever occurs first.
Angular acceleration:	100,000 radians per sec. squared max.
Customer shaft O.D. tolerance:	Nominal -.0002" (.005mm) to -.0007" (.018mm).
Cable description:	Individually shielded twisted pairs plus an overall shield. Cables contain 11 conductors.
Housing material:	Aluminum.
Shaft material:	Stainless steel.
Starting Torque:	5.0 oz.- in.@ 25°C

ENVIRONMENTAL

Operating temperature:	0°C to +70°C
Storage temperature range:	-25°C TO +90°C
Shock:	50 g FOR 11 millisecond duration.
Vibration:	20 Hz to 2000 Hz @ 5 G.
Humidity:	To 98% R.H. (non-condensing).



HS30

STYLE
 T = TOP CLAMP
 B = BOTTOM CLAMP
 C = BOTTOM CLAMP WITH COVER HOLE

CUSTOMER SHAFT DIAMETER (NOMINAL)

5E = 5/16"	08 = 8 MM	14 = 14 MM
6E = 3/8"	09 = 9 MM	15 = 15 MM
7E = 7/16"	10 = 10 MM	16 = 16 MM
8E = 1/2"	11 = 11 MM	17 = 17 MM
0E = 5/8"	12 = 12 MM	18 = 18 MM
AE = 3/4"	13 = 13 MM	19 = 19 MM

CABLE LENGTH
 1 = 1.0 FOOT
 2 = 2.0 FEET
 3 = 3.0 FEET

ZERO REFERENCE
 0 = WITHOUT
 1 = 1/4 CYCLE
 2 = 1/2 CYCLE
 4 = 1 CYCLE +ZR

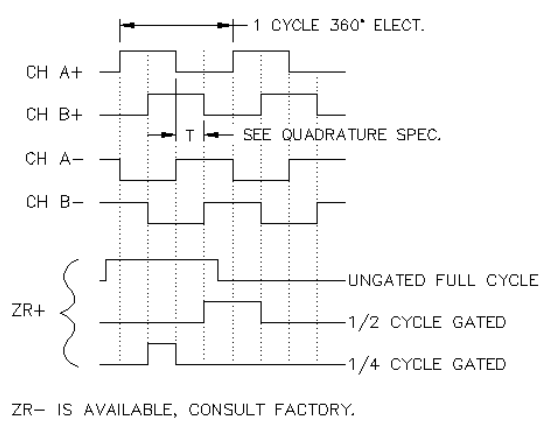
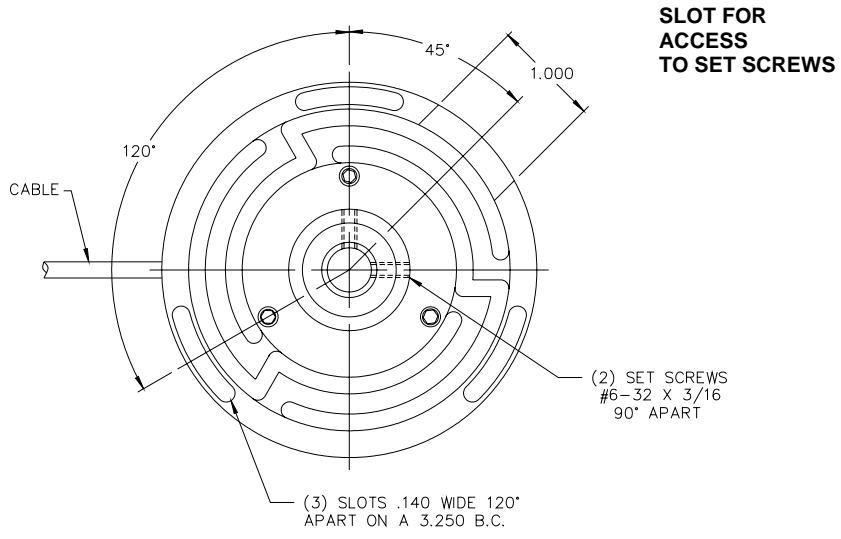
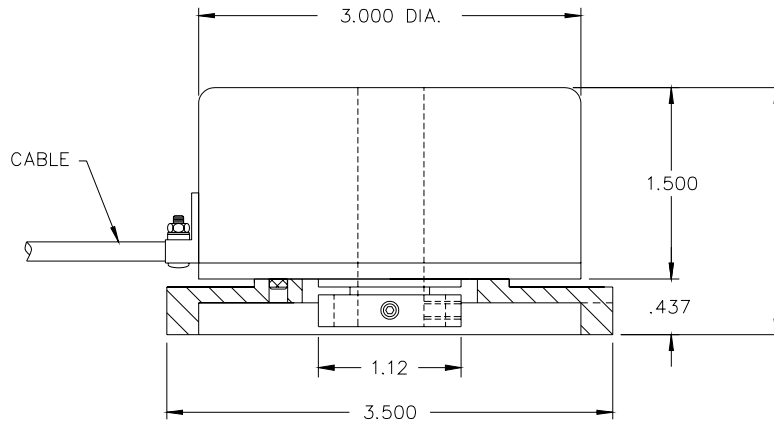
SUPPLY VOLTAGE:
 B = 5 VOLTS
 C = 12 VOLTS
 D = 15 VOLTS

ELECTRONIC TYPE
 4 = 4X INTERPOLATION
 5 = 5X INTERPOLATION
 6 = DIFFERENTIAL LINE DRIVER (RS422)
 (ZR TYPES 2 & 4 ONLY)
 R = HV OUT (RS422)

CYCLES PER SHAFT REVOLUTION
 2680
 4096
 5000

SPECIAL MODIFICATIONS CONSULT FACTORY

N



Electrical Connections	
FUNCTION	WIRE COLOR
CHANNEL A+	ORANGE
CHANNEL A-	GREEN
CHANNEL B+	YELLOW
CHANNEL B-	BLUE
CHANNEL ZR+	BROWN
CHANNEL ZR-	GRAY
GROUND	BLACK
VDC	RED
CASE GROUND	VIOLET
DRIAN	BARE WIRE

