

INCREMENTAL ENCODERS

SERIES HC20

Dynapar™ brand

For Stepper & Small Servo Motors

Key Features

- Economical Servomotor Feedback with New Phased Array ASIC
- High 120°C Operating Temperature Won't Limit Motor Performance
- Up to 2500 PPR Direct-Read with Commutation Channels

SSM
Servo Small Motor

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

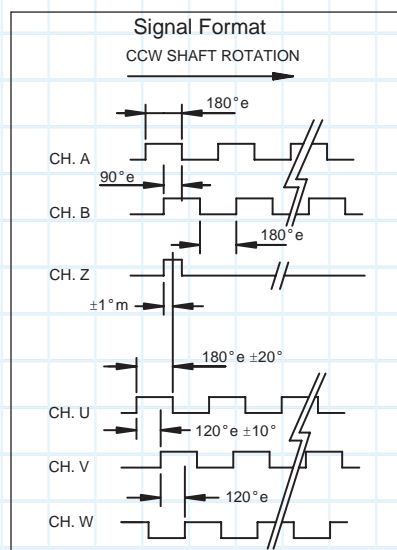
Code: Incremental, Optical
Resolution: 500 to 2500 PPR (Pulses/Revolution)
Commutation: 4/6/8 pole
Format: Two channel quadrature (AB) with optional Index (Z) and complementary outputs
Phase Sense: Phasing for CCW rotation of motor shaft (viewing from encoder cover side): A leads B by $90^\circ \pm 22.5^\circ$ electrical, and U leads V leads W by 120°

Accuracy:
 Incremental: 40 arc-sec. max. edge to any edge;
 Commutation: ± 6 arc minutes max.
Index: 90° electrical (gated A and B high)
Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pF

ELECTRICAL

Supply Voltage: DC 5V $\pm 10\%$ (SELV), 5-26V
Max. Current (w/o load):
 Incremental: 150mA
 Incremental + Commutation: 175mA
 Max. Output Frequency:
 250 kHz (up to 1024 ppr)
 500 kHz (> 1024 ppr)

Signal Level:
 NPN: Open Collector
 Differential Line Driver: RS 422
Output Current: RS422: ± 40 mA
 (26LS31); NPN O.C.: 16mA (2k. int. pull up)
Connection: Radial cable



MECHANICAL

Dimensions:
 Outside Diameter with Cover: 50 mm
 Mounting Depth: 36mm
Bore Size:
 Blind Hole Shaft: 8.00mm dia; 20mm depth
 Hollow Shaft: 6.00 or 8.00mm dia
 Taper Shaft: 9.00mm dia. nominal;
 $2.8624^\circ + 0.2289/- 0$ Taper
Mating Shaft Runout: ± 0.2 mm max. (Includes shaft perpendicularity to mounting surface)
Mating Shaft Axial Movement: max. ± 0.8 mm.
Max. Velocity: RPM = (Frequency/PPR) x 60 or 2000 min⁻¹, whichever is less
Material:
 Bearing Housing: Aluminium;
 Cover: Aluminium;
 Shaft: Brass: 699477-0001
Weight: 120g typical

ENVIRONMENTAL

Operating Temperature: 0...+120°C
Storage Temperature: -40...+120°C
Shock Resistance: 100 G for 6 ms
Vibration Resistance: 5 to 2000 Hz at 2.5 G
Humidity: Up to 98% (non-condensing)
Enclosure Rating: IP51 (cable must be oriented downwards)

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Ordering Information

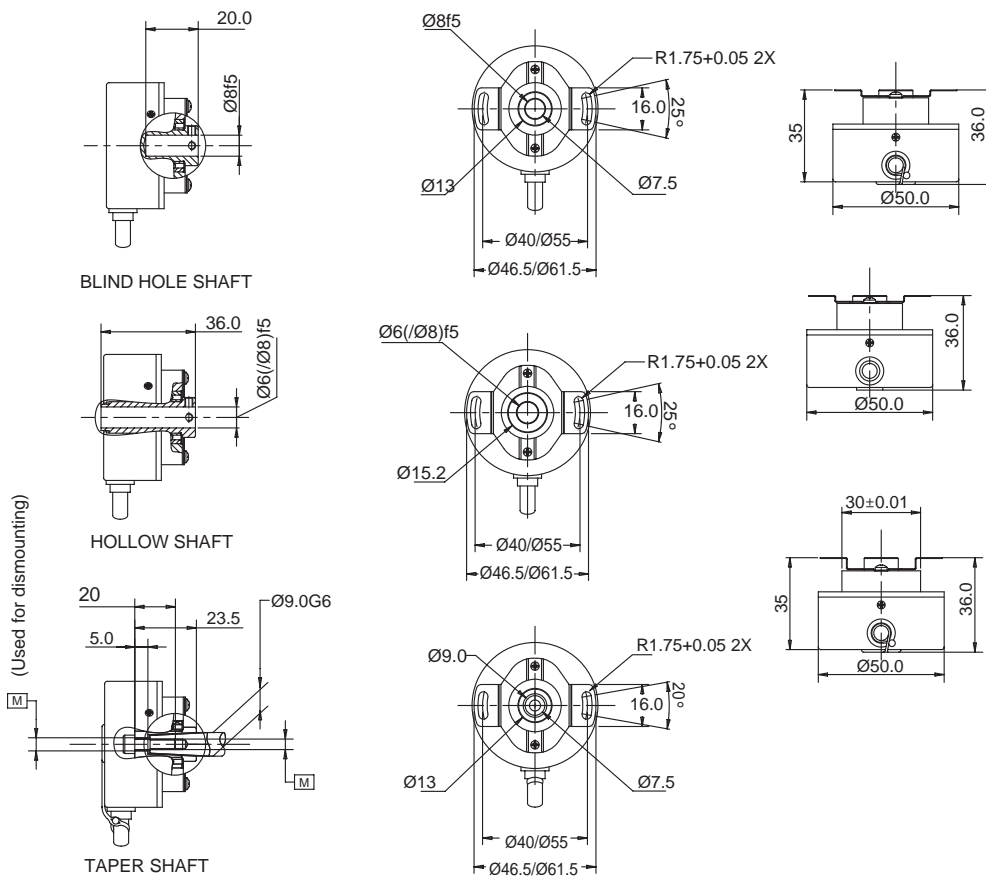
To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR Incremental ²	Code 3: Poles Commutation ²	Code 4: Mounting	Code 5: Electrical ¹	Code 6: Shaft	Code 7: Connection
HC20	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Ordering Information																																																						
HC20 Compact Hollowshaft Encoder	0500 2000 0512 2048 1000 2500 1024	0 None 4 4 Pole 6 6 Pole 8 8 Pole	0 No tether Tether 1 1.575" (40mm) TK 2 2.166" (55mm) TK	incremental only, <=2048/0 (ppr/poles) 0 U _{inc} = DC 5V; output _{inc} = NPN-O.C. incremental only without commutation 2 U _{inc} = DC 5-26V; output _{inc} = RS 422 3 U _{inc} = DC 5V; output _{inc} = RS 422 incremental plus commutation signals 6 U _{inc} = DC 5V; output _{inc} = RS 422 U _{com} = DC 5V; output _{com} = NPN-O.C. 9 U _{inc} = DC 5V; output _{inc} = RS 422 U _{com} = DC 5V; output _{com} = RS 422	0 Taper shaft(Ø9,1:10) 1 Blind vertical shaft Ø6 2 Blind vertical shaft Ø8 3 Hollow shaft Ø6 4 Hollow shaft Ø8	Radial plug A 1 Ft. cable B 2 Ft. cable C 3 Ft. cable D 4 Ft. cable E 5 Ft. cable F 6 Ft. cable G 7 Ft. cable H 8 Ft. cable																																																
	<table border="1"> <thead> <tr> <th colspan="5">Available Combinations (PPR/Poles)</th> </tr> <tr> <th rowspan="2">Incremental PPR</th> <th colspan="4">Number of Poles</th> </tr> <tr> <th>0</th> <th>4</th> <th>6</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>0500</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>0512</td> <td></td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>1000</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>1024</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>2000</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>2048</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>2500</td> <td>x</td> <td>x</td> <td>x</td> <td>x</td> </tr> </tbody> </table>		Available Combinations (PPR/Poles)					Incremental PPR	Number of Poles				0	4	6	8	0500	x	x	x	x	0512				x	1000	x	x	x	x	1024	x	x	x	x	2000	x	x	x	x	2048	x	x	x	x	2500	x	x	x	x			
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1 U_{inc}: Supply voltage incremental, U_{com}: Supply voltage commutation (only if commutation is selected); 2 See available combinations (pulses/poles)

Dimensions (mm)



Connection:

Pin	Signal	Color
1	Vcc	Red
2	U	Brown
3	GND	Black
4	V	Gray
5	A	Blue
6	W	White
7	A̅	Blue/Black
8	N.C.	—
9	B	Green
10	U̅	Brown/Black
11	B̅	Green/Black
12	V̅	Gray/Black
13	Z	Violet
14	W̅	White/Black
15	Z̅	Violet/Black
16	N.C.	—