

CP-300 Series Housed Rotary Optical Encoders

Incremental, sine/cosine, or absolute format

The CP-300 series shaft encoder is a small, rugged device, with a package form factor identical to that of a 39 mm stepper motor. The light source is a single light emitting diode, servo controlled for constant light output over time and temperature, the sensor is a monolithic silicon array. Up to 2,048 cycles per revolution are available for the incremental models and up to 10 bits for the absolute units.

Features & Benefits

- 39 x 39 x 36 mm
- Long-life ABEC 5 Bearings
- Digital incremental and sine/cosine models

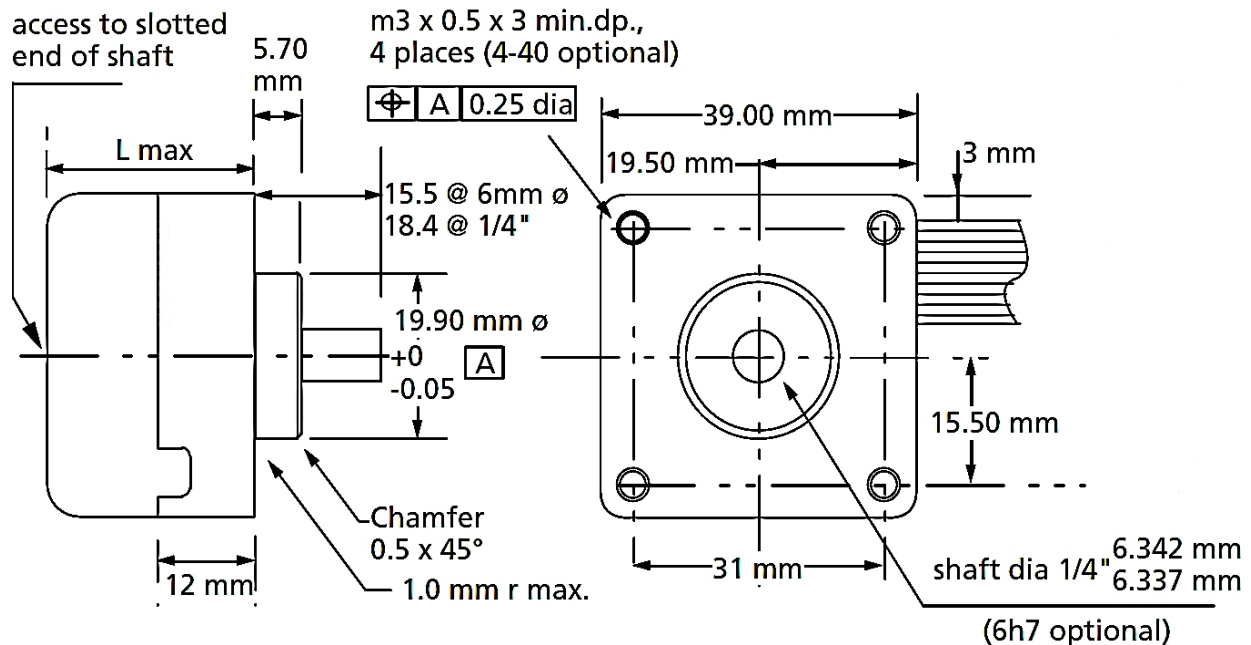
Options

- RoHS compliance
- Through shaft
- Shaft seal
- Integrated brushless DC motor version (CM-320-X)



- 39 mm square optical encoder
- Digital and sine/cosine incremental models to 2048 cpr
- Absolute models to 10-bit

DIMENSIONS



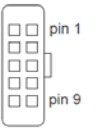
SPECIFICATIONS — MECHANICAL

Shaft Diameter	6.342 mm (1/4 in)	Housing Material	Diecast aluminum
Max. Shaft Extension	6 mm	Cover	1.5 mm wall, Ryton 4
Shaft Loading	10 N (2 lb) axial, 20 N (4 lb) radial	Bearing Life	Manufacturer's specifications
Shaft Runout	0.0125 mm T.I.R.	Moment of Inertia	1.7 gcm ²
Starting Torque	0.1 Ncm @ 20°C Max	Weight	Approximately 0.120 kg
Shaft Rotation	Continuous, reversible	Operating Temperature	-20°C to +85°C
Slew Speed	10,000 RPM	Shock	50 g @ 11 ms
Bearings	ABEC 5	Vibration	5 - 2000 Hz @ 20 g
Shaft Material	416 stainless steel	Humidity	98% without condensation
Protection	IP 64 without shaft extension	Protection	IP 40 with shaft extension

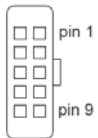
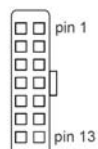
Optical Encoders

CP-300 Series Housed Rotary Optical Encoders

SPECIFICATIONS — INCREMENTAL

Model	CP-300	CP-350	CP-360				
Type	Incremental, sine/cosine	Incremental, digital	Incremental, digital, line driver				
Format	A quad B, index	A quad B, index, inverses	A quad B, index, inverses				
Resolution (cpr)	100, 128, 200, 256, 400, 512, 1024, 2048	100, 128, 200, 256, 300, 360, 400, 500, 512, 600, 720, 800, 1000, 1024, 2048	100, 200, 256, 360, 500, 600, 1000, 1024, 2048				
Frequency Response	20 kHz	100 kHz	100 kHz				
Accuracy	± 12 arc sec (typ.)						
Repeatability	1 arc sec	± 1 count	± 1 count				
Output	Voltage (peak-to-peak)	TTL, Line driver, open 4.7k pull up resistors	Line driver				
Power Supply (VDC)	±18 VDC max	±5 VDC (50 mA max)	±4.75 to 30 VDC (50 mA max)				
Connector	10-pin, 3-M 3473-6610						
10 pin connector p/n 3M™ 3473-6610 	Signal	Pin	Signal Line Driver	Signal TTL	Pin	Signal	Pin
	Ground	1	+ 5 VDC	Channel A	1	+ VDC	1
	Channel A	2	+ 5 VDC	+ Vcc	2	Channel A	2
	N/C	3	Channel A Inv	Ground	3	Channel A Inv	3
	- 12 VDC	4	Channel A	Ground	4	Channel B	4
	N/C	5	Channel B Inv	Ground	5	Channel B Inv	5
	Channel B	6	Channel B	Ground	6	Index Channel Ground	6
	N/C	7	Index Channel	+Vcc	7	Index Channel Inv	7
	+ 12 VDC	8	Ground	Channel B	8	Ground	8
	V Ref (servo ground)	9	Index Channel Inv	N/C	9	N/C	9
Index	10	Ground	Index Channel	10	N/C	10	

SPECIFICATIONS — ABSOLUTE

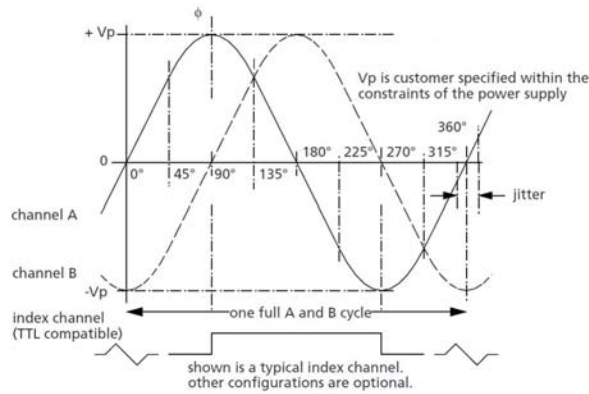
Model	CP-350-08GC	CP-350-08NB	CP-350-08AN	CP-350-10GC				
Type	Grey Code, 8-bit	Natural Binary, 8-bit	Analog, 8-bit	Grey Code, 10-bit				
Format	Parallel Grey Code	Parallel Natural Binary	Analog	Parallel Grey Code				
Freq. Response	100 kHz	100 kHz	n/a	50 kHz				
Output	TTL or LM339 (Optional Pull Up Resistors)	TTL or LM339 (Optional Pull Up Resistors)	0-10V Standard (4-20mA Optional)	TTL or LM339 (Optional Pull Up Resistors)				
Power Supply	±5, 12, 24 VDC	±5, 12, 24 VDC	12.6 VDC to 16.6 VDC @100 mA max	±5 VDC				
Connector	10-pin, 3-M 3473-6610						14-pin, 3-M 3473-6614	
10 pin connector p/n 3M™ 3473-6610 	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin
	G4	1	B4	1	N/C	1	G1	1
	G6	2	B6	2	+ VDC	2	G8	2
	G0 (lsb)	3	B0 (lsb)	3	N/C	3	G6	3
	G3	4	B3	4	N/C	4	G7	4
	Ground	5	Ground	5	Direction Control	5	Ground	5
	G2	6	B2	6	Power Ground	6	G5	6
	+ 5 VDC	7	+ 5 VDC	7	Current output	7	+ 5 VDC	7
	G5	8	B5	8	N/C	8	G0 (lsb)	8
	G7 (msb)	9	B7 (msb)	9	Voltage Output	9	G9 (msb)	9
14 pin connector p/n 3M™ 3473-6614 	G1	10	B1	10	Return (I or V)	10	G3	10
							G4	11
							G2	12
							N/C	13
							G9 inverted	14

CP-300 Series Housed Rotary Optical Encoders

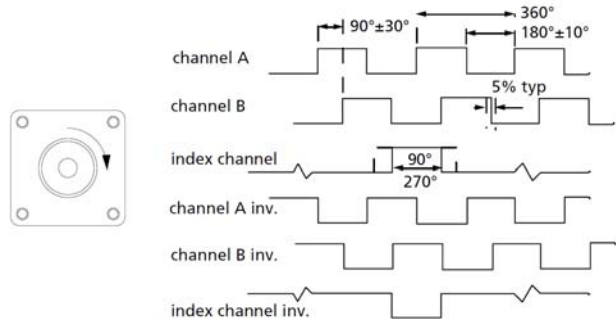
OUTPUT WAVEFORMS

Note: All waveforms shown for CW rotation viewed from encoder shaft end

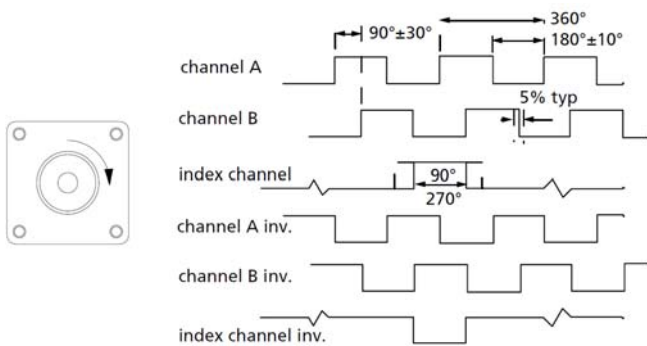
CP-300



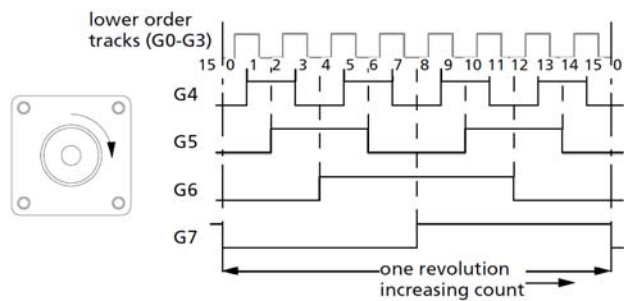
CP-350



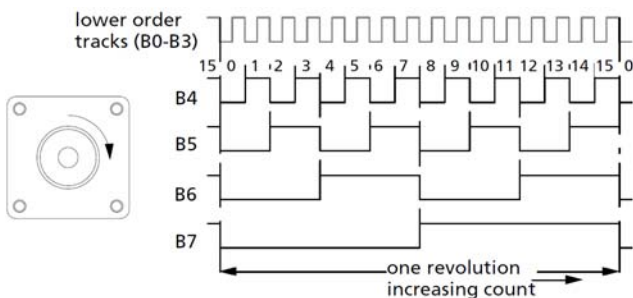
CP-360



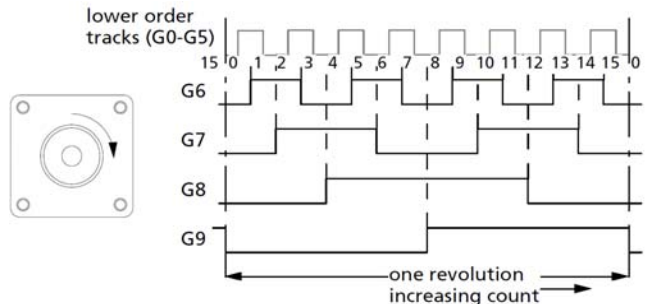
CP-350-08GC



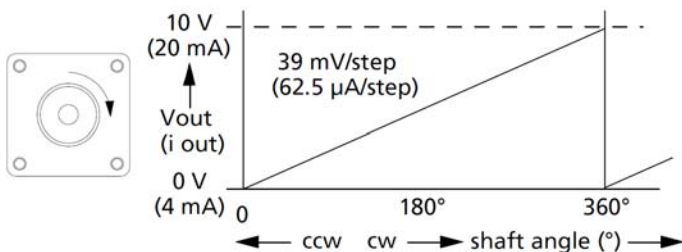
CP-350-08NB



CP-350-10GC



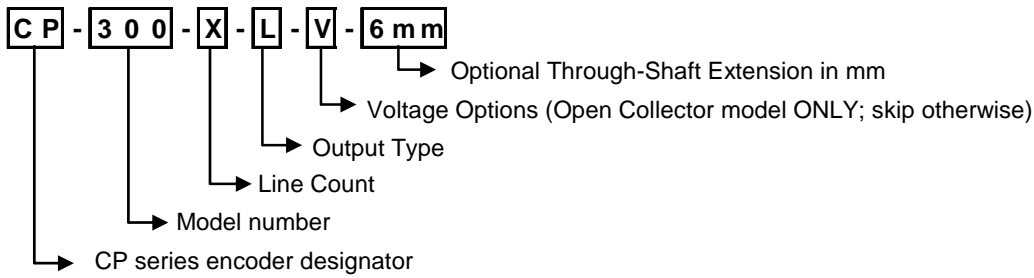
CP-350-08AN



Optical Encoders

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MODEL NUMBERING — INCREMENTAL

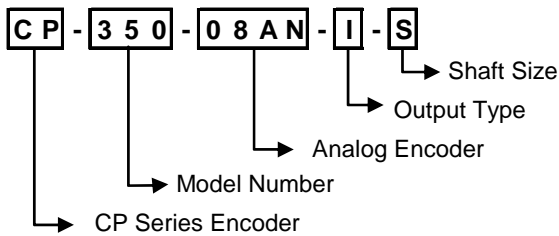


Output Type Options
L = Line Driver
T = TTL
O = Open Collector

Open Collector Vcc Options
5 = 5 VDC
12 = 12 VDC
24 = 24 VDC

Through Shaft Extension Options
3mm, 4mm, 5mm, 6mm

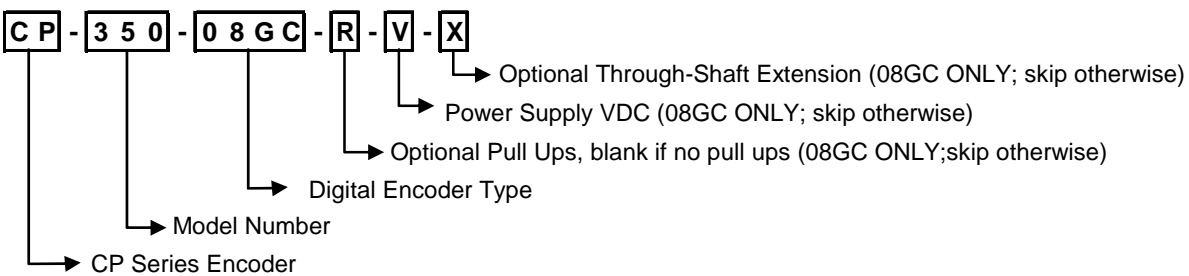
MODEL NUMBERING — ABSOLUTE ANALOG



Analog Output Type
V = Voltage (0 - 10 VDC)
I = Current (4 - 20 mA)

Shaft Size Options
6mm or 1/4"

MODEL NUMBERING — ABSOLUTE DIGITAL



Power Supply VDC
5 = 5 VDC
12 = 12 VDC
24 = 24 VDC

Through Shaft Extension Options
3mm, 4mm, 5mm, 6mm