

MODEL 770 - INCREMENTAL ENCODER



Ø6.5"

FEATURES

Slim profile – only 1.00" deep
 Fits NEMA Size 56C thru 184C motor faces (4.5" AK)
 Incorporates Opto-ASIC technology
 Resolutions to 4096 CPR

The Model 770 C-Face encoder is a rugged, high resolution encoder designed to mount directly on NEMA C-Face motors. Both sides of the encoder are C-Face mounts, allowing additional C-Face devices to be mounted to this encoder. Unlike many C-Face kit type encoders, the Model 770 contains precision bearings and an internal flex mount, virtually eliminating encoder failures and inaccuracies induced by motor shaft runout or axial endplay. The advanced Opto-ASIC design provides the advanced noise immunity necessary for many industrial applications. This encoder is ideal for applications using induction motors and flux vector control. The Model 770 provides speed and position information for drive feedback in a slim profile – only 1.00" thick. The thru-bore design allows fast and simple mounting of the encoder directly to the accessory shaft or to the drive shaft of the motor, using the standard motor face (NEMA sizes 56C - 184C). The tough, all-metal housing resists the vibration and hazards of an industrial environment.

COMMON APPLICATIONS

Motor Feedback, Velocity & Position Control, Conveyors, Variable Speed Drives, Mixing & Blending Motors, Assembly & Specialty Machine

MODEL 770 ORDERING GUIDE

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

770	A	H	1024	Q	OC	A	Y	N	N	CE
MODEL 770 4.5" NEMA AK dimension	OPERATING TEMPERATURE S 0° to 70° C H 0° to 100° C	HOUSING STYLE A Completely encloses motor shaft, and eliminates access to motor shaft. IP65 rated. Includes C-Face Gasket Kit. B Thru-bore housing version with IP50 dust seal ¹ .	NUMBER OF CHANNELS² Channel A leads B Q Quadrature A & B R Quadrature A & B with Index Channel B leads A K Reverse quadrature A & B D Reverse quadrature A & B with Index See Quadrature Phasing & Index Gating Options at encoder.com for additional options and waveforms	BORE SIZE A 5/8", 0.625" B 3/4", 0.750" C 7/8", 0.875" D 1", 1.000" H 14 mm I 19 mm K 24 mm	C-FACE GASKET KIT OPTION¹ "B" Housing Only N None Y Yes	CERTIFICATION N None CE CE Marked ⁷	CYCLES PER REVOLUTION 1 - 4096 See CPR Options below for available resolutions Price adder for CPR > 1024	OUTPUT TYPE 5 - 28V In / Out ³ OC Open Collector PU Pull-Up Resistor PP Push-Pull HV Line Driver ⁴	CONNECTOR TYPE⁵ P Gland nut with 24" cable ⁶ B Terminal strip in conduit box X 10-pin MS on conduit box Y 7-pin MS on conduit box ⁴ J 5-pin M12 on conduit box ⁴ K 8-pin M12 on conduit box L 10-pin industrial clamp	MATING CONNECTOR N No connector Y Yes

MODEL 770 CPR OPTIONS

0060	0100	0120	0240
0250	0256	0500	0512
1000	1024	2048	2500
4096			

Contact Customer Service for other disk resolutions; not all disk resolutions available with all output types

NOTES:

- 1 Thru-Bore version may be IP65 sealed if mounted between two C-Face devices with optional gasket kit. Select 'Yes' under C-Face Gasket Kit Option.
- 2 Contact Customer Service for index gating options.
- 3 5 to 24 VDC max for high temperature option.
- 4 Line Driver Outputs not available with 5-pin M12 connector. Available with 7-pin MS connector only without Index Z.
- 5 For mating connectors, cables, and cordsets see [Accessories](#) at encoder.com. For Connector Pin Configuration Diagrams, see Technical Information or see [Connector Pin Configuration Diagrams](#) at encoder.com.
- 6 For non-standard cable lengths, add a forward slash (/) plus cable length expressed in feet. Example: P/6 = 6 feet of cable.
- 7 Please refer to Technical Bulletin [TB100: When to Choose the CE Mark](#) at encoder.com.

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MODEL 770 SPECIFICATIONS

Electrical

Input Voltage.....	4.75 to 28 VDC max for temperatures up to 70° C
.....	4.75 to 24 VDC for temperatures between 70° C and 100° C
Input Current.....	100 mA max with no output load
Input Ripple.....	100 mV peak-to-peak at 0 to 100 kHz
Output Format.....	Incremental – Two square waves in quadrature with channel A leading B for clockwise shaft rotation, as viewed from the mounting face. See Waveform Diagrams.
Output Types.....	Open Collector – 100 mA max per channel
.....	Pull-Up – Open Collector with 2.2K ohm internal resistor, 100 mA max per channel
.....	Push-Pull – 20 mA max per channel
.....	Line Driver – 20 mA max per channel (Meets RS 422 at 5 VDC supply)
Index.....	Once per revolution.
.....	.0001 to 0512 CPR: Ungated
.....	.0513 to 4096 CPR: Gated to output A
.....	See Waveform Diagrams.
Max Frequency.....	200 kHz
Electrical Protection.....	Reverse voltage and output short circuit protected. NOTE: Sustained reverse voltage may result in permanent damage.
Noise Immunity.....	Tested to BS EN61000-4-2; IEC801-3;
.....	BS EN61000-4-4; DDENV 50141; DDENV 50204; BS EN55022 (with European compliance option);
.....	BS EN61000-6-2;
.....	BS EN50081-2
Quadrature.....	67.5° electrical or better is typical,
Edge Separation.....	54° electrical minimum at temperatures > 99° C
Rise Time.....	Less than 1 microsecond

Mechanical

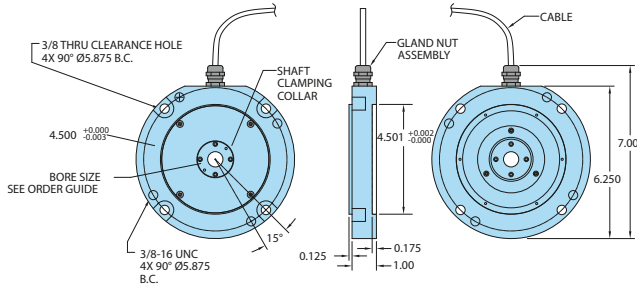
Max Shaft Speed.....	6000 RPM. Higher shaft speeds may be achievable, contact Customer Service.
User Shaft Tolerances	
Radial Runout.....	0.005"
Axial Endplay.....	±0.050"
Moment of Inertia.....	3.3×10^{-3} oz-in-sec ² typical
Housing.....	All metal construction
Weight.....	2.60 lb with gland nut
.....	3.00 lb with all other connector options
.....	Note: All weights typical

Environmental

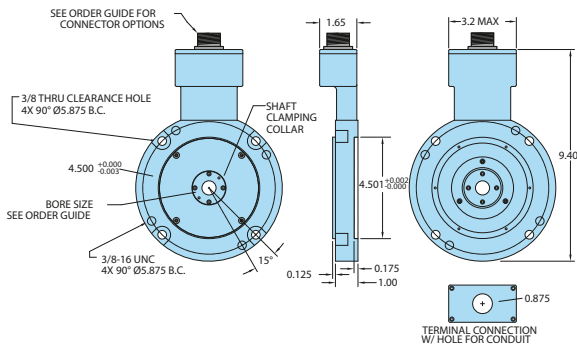
Storage Temp.....	-25° to 100° C
Humidity.....	98% RH non-condensing
Vibration.....	10 g @ 58 to 500 Hz
Shock.....	50 g @ 11 ms duration
Sealing.....	IP65 for Option A housing style with gasket kit; IP50 for Option B housing style

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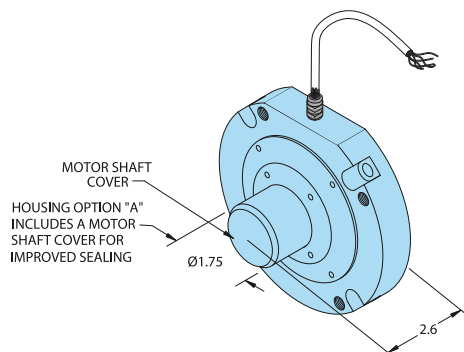
MODEL 770 WITH GLAND NUT (P)



MODEL 770 WITH CONDUIT BOX (B, X, Y, J, K)



OPTIONAL HOUSING STYLE (A) PROTECTIVE COVER



Connector Type	Height
6- or 7-pin MS	0.67"
10-pin MS	0.90"
5- or 8-pin M12	0.50"

All dimensions are in inches with a tolerance of ± 0.005 " or ± 0.01 " unless otherwise specified.

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WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.
Trim back and insulate unused wires.

Function	Gland Cable Wire Color†	5-pin M12 ⁺⁺ PU, PP, OC	8-pin M12 ⁺⁺	10-pin MS	7-pin MS HV	7-pin MS PU, PP, OC	Terminal Block	10-pin Industrial Clamp
Com	Black	3	7	F	F	F	2	1
+VDC	Red	1	2	D	D	D	1	6
A	White	4	1	A	A	A	3	3
A'	Brown	--	3	H	C	--	4	8
B	Blue	2	4	B	B	B	5	2
B'	Violet	--	5	I	E	--	6	7
Z	Orange	5	6	C	--	C	7	4
Z'	Yellow	--	8	J	--	--	8	9
Case	--	--	--	G ^{**}	G ^{**}	G ^{**}	--	--
Shield	Bare*	--	--	--	--	--	9+	10+

*CE Option: Cable shield (bare wire) is connected to internal Case.

**CE Option: Pin G is connected to Case. Non-CE Option: Pin G has No Connection.

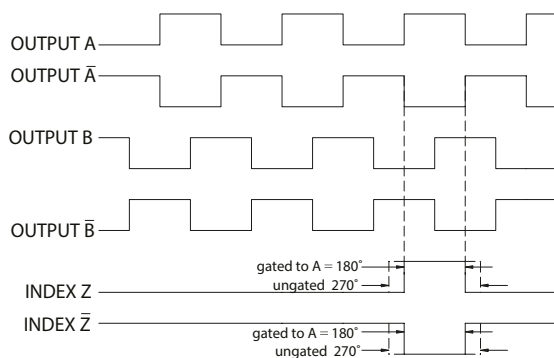
+CE Option: Pins 9 and 10 are connected to Case. Non CE Option: Pins 9 and 10 have No Connection.

++CE Option: Use cable cordset with shield connected to M12 connector coupling nut.

†Standard cable is 24 AWG conductors with foil and braid shield.

WAVEFORM DIAGRAMS

Line Driver and Push-Pull



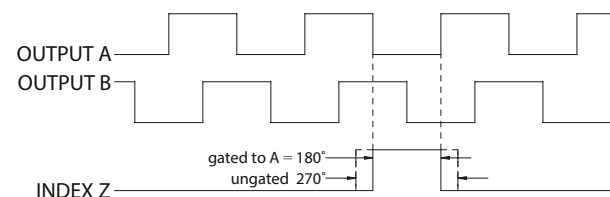
Clockwise rotation as viewed from the mounting face.

NOTE: All degree references are electrical degrees.

Waveform shown with optional complementary signals.

A, B, Z for HV output only.

Open Collector and Pull-Up



Clockwise rotation as viewed from the mounting face.

NOTE: All degree references are electrical degrees. Index is positive going.