**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 Machines

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**Model 770 Ordering Guide**

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

- **Model 770**
  - A
  - H
  - 1024
  - Q
  - OC
  - A
  - Y
  - N
  - N
  - CE

**Housing Style**

- A: Cover 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

**Operating Temperature**

- S: 0° to 70°C
- H: 0° to 100°C

**Cycles Per Revolution**

- 1 - 4096
  - See CPR Options below for available resolutions. Price adder for CPR >1024

**Number of Channels**

- 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


**CPR Options**

0060 0100 0120 0240 0250 0256 0500 0612 1000 1024 2048 2500 4096

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

**Output Type**

- 5 - 28V In/Out
- OC: Open Collector
- PU: Pull-Up Resistor
- PP: Push-Pull
- HV: Line Driver

**Bore Size**

- A: 5/8", 0.625" [Price adder for 5/8"]
- B: 3/4", 0.750" [Price adder for 3/4"]
- C: 7/8", 0.875" [Price adder for 7/8"]
- D: 1", 1.000" [Price adder for 1"]
- H: 14 mm
- I: 19 mm
- K: 24 mm
- J: 19 mm
- L: 24 mm
- Q: 14 mm
- H: 14 mm
- I: 19 mm
- K: 24 mm

**Connector Type**

- P: 24" Cable with Gland Nut
- B: Terminal Strip in Conduit Box
- X: 10-pin MS on Conduit Box
- Y: 7-pin MS on Conduit Box
- J: 5-pin M12 on Conduit Box
- K: 8-pin M12 on Conduit Box
- L: 10-pin Industrial Clamp

**Mating Connector**

- N: No Connector
- Y: Yes

**Certification**

- N: None
- CE: CE Marked

**RPM Options**

- 1 - 4096

**Model 770 CPR Options**

- 0060 0100 0120 0240 0250 0256 0500 0612 1000 1024 2048 2500 4096

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

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**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.
MODELL 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
Push-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 0474 CPR: Ungated
0475 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 EN61000-6-2; IEC801-3;
BS EN61000-4-4; DDENV 50014; DDENV 50020; BS EN50082 (with European compliance option); BS EN61000-6-2; BS EN50081-2

Quadrature .......... 67° 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.

Bore Tolerance ........ +0.0015°/-0.000°
User Shaft Tolerances
Radial Runout ......... 0.0005°
Axial Endplay ........ 0.010°

Moment of Inertia ....... 3.3 x 10-3 oz-in-sec2 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

Noise Immunity ........ BS EN61000-6-2; IEC801-3;
BS EN61000-4-4; DDENV 50014; DDENV 50020; BS EN50082 (with European compliance option); BS EN61000-6-2; BS EN50081-2

Quadrature .......... 67° electrical or better is typical,
Edge Separation 54° electrical minimum at temperatures > 99°C

Rise Time .............. Less than 1 microsecond

MODELL 770 WITH GLAND NUT (P)

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

OPTIONAL HOUSING STYLE (A)
PROTECTIVE COVER

ALL DEGREES ARE ELECTRICAL DEGREES, EXCEPT A, B, Z FOR HV OUTPUT ONLY.

MODELL 770 WITh gland NUT (P)

WAVEFORM DIAGRAMS

Line Driver and Push-Pull

WIRING TABLE

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

VDC
Red 1 2
White 4 1
Black 7 4
Yellow 5 6
Orange 5 6
Brown 3 5
Green 6 7
Blue 2 4
Yellow 8 1
Red 9 9
Black 10

Shield Bare* – – – – 9°
**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 8 and 10 are connected to Case. Non-CE Option: Pins 8 and 10 have No Connection.
++CE Option: Use cable conduit with shield connected to M12 connector coupling nut.
1Standard cable is 24 AWG conductors with foil and braid shield.