

# Model 86A Extra Heavy Duty Machine Tool Encoder



Ø68.0 mm

## Features

- Standard 68mm Diameter Package
- Up to 30000 PPR, Opto-Asic Technology
- Square Flange Mounting
- IP65 Double O-ring Sealed

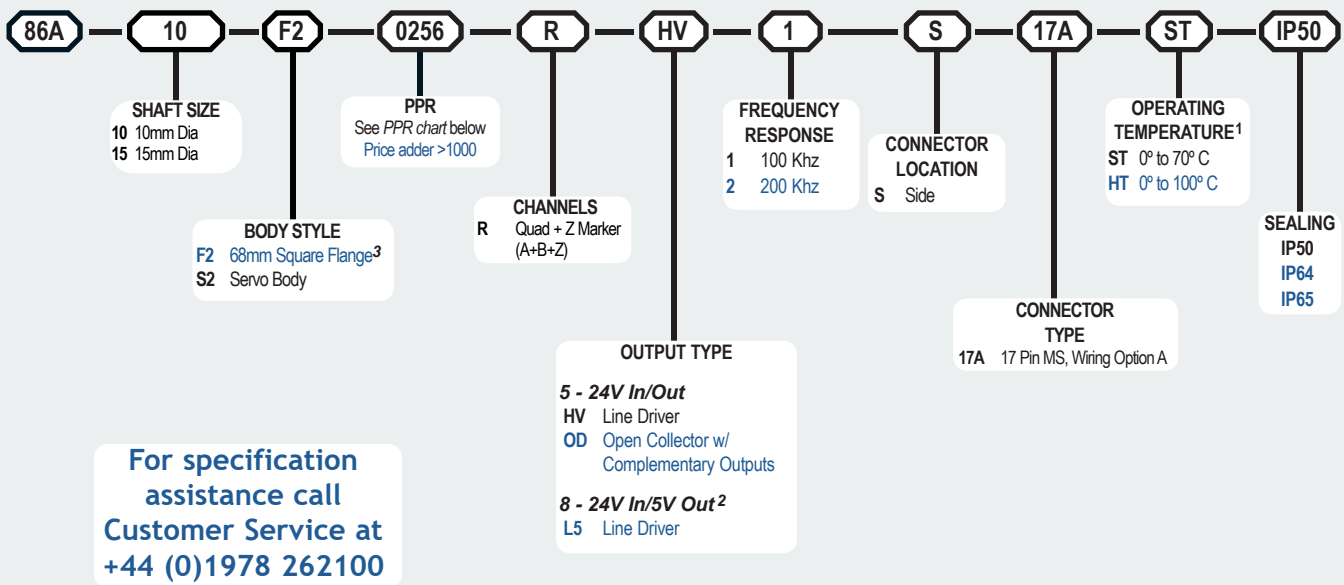
The Model 86A is an extra heavy duty unit which employs a highly reliable Opto-Asic encoder module mounted to a rugged mechanical housing. The heavy duty sealed bearings, together with double O-ring sealing makes this encoder a serious and reliable alternative to a wide range of machine tool encoders, and at an advantageous price.

## Common Applications

Motor Control Feedback, Conveyors, Elevator Controls, Machine Control, Food Processing, Process Control, Robotics, Material Handling, Textile Machines.

## Model 86A Ordering Guide

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



## Model 86A PPR Options

0001*	0002*	0004*	0005*	0006*	0007*	0008*	0010*	0011*
0012*	0014*	0020	0021*	0024*	0025*	0028*	0030*	0032*
0033*	0034*	0035*	0038*	0040*	0042*	0045*	0050*	0060
0064*	0100	0120	0125	0128*	0144*	0150*	0160*	0192*
0200	0240*	0250	0254*	0256*	0300	0333*	0360	0400
0500	0512	0600	0625*	0635	0665*	0720	0889	1000
1024	1200	1204* <sup>a</sup>	1250 <sup>a</sup>	1270 <sup>a</sup>	1440	1500	1800	2000
2048	2400 <sup>a</sup>	2500	2540 <sup>a</sup>	2880 <sup>a</sup>	3000 <sup>a</sup>	3600 <sup>a</sup>	4000 <sup>a</sup>	4096 <sup>a</sup>
5000 <sup>a</sup>	6000 <sup>a</sup>	7200 <sup>a</sup>	7500 <sup>a</sup>	9000 <sup>a</sup>	10,000 <sup>a</sup>	10,240 <sup>a</sup>	12,000 <sup>a</sup>	12,500 <sup>a</sup>
14,400 <sup>a</sup>	15,000 <sup>a</sup>	18,000 <sup>a</sup>	20,000 <sup>a</sup>	20,480 <sup>a</sup>	25,000 <sup>a</sup>	30,000 <sup>a</sup>		

\* Contact Customer Service for High Temperature Option.

<sup>a</sup> High Temperature Option (H) limited to 85° C maximum for these PPR options.

Contact Customer Service to determine all currently available PPR values. Special disk resolutions are available upon request. A one-time NRE fee may apply.

## NOTES:

- 1 24 Vcc Max for high temperature option.
- 2 Standard temperature, 60 to 3000 PPR only.
- 3 Features a removable square flange (M-K Flange).

# Model 86A Extra Heavy Duty Machine Tool Encoder

## Model 86A Specifications

### Electrical

Input Voltage.....4.75 to 24 VCC max for temperatures up to 70° 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 rotation, as viewed from the encoder mounting face. See *Waveform Diagrams* below.

Output Types.....Push-Pull- 20 mA max per channel  
Line Driver- 20 mA max per channel (Meets RS 422 at 5 VCC supply)

Index.....Occurs once per revolution. The index is Ungated. See *Waveform Diagrams* below.

Freq Response.....Up to 200 KHz

Noise Immunity.....Tested to BS EN61000-4-2; IEC801-3; BS EN61000-4-4; DENV 50141; DENV 50204; BS EN55022 (with European compliance option); BS EN61000-6-2; BS EN50081-2

Symmetry.....180° (±18°) electrical at 100 kHz output

Quad Phasing.....1 to 2540 PPR: 90° (±22.5°) electrical at 100 kHz output

Min Edge Sep.....1 to 2540 PPR: 67.5° electrical at 100 kHz output

Rise Time.....Less than 1 microsecond

Accuracy.....Instrument and Quadrature Error: For 5000 to 2540 PPR, 0.017° mechanical (1.0 arc minutes) from one cycle to any other cycle.

### Mechanical

Max Shaft Speed.....3600 RPM. Higher shaft speeds may be achievable, contact Customer Service.

Shaft Size.....See order code

Shaft Material.....303 stainless steel

Shaft Rotation.....Bi-directional

Radial Shaft Load.....35kg max

Axial Shaft Load.....35kg max

Starting Torque..... $2.118 \times 10^{-2}$  Nm typical.

Electrical Conn.....17-pin MS Style, or gland with 2M of cable (foil and braid shield, 24 AWG conductors)

Housing.....Anodised Aluminium

Bearings.....Precision ABEC ball bearings

Mounting.....Square Flange with 4 Holes 5.50mm Dia on a 71.19 PCD

Weight.....800 grams typical

### Environmental

Operating Temp.....0° to 70° C for standard models  
0° to 100° C for high temperature option

Storage Temp.....-25° to +85° C

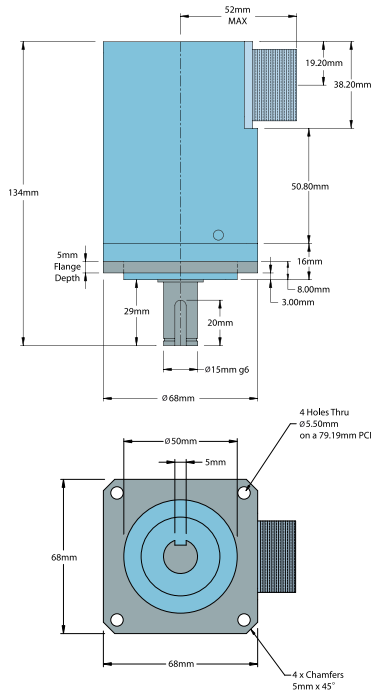
Humidity.....95% RH non-condensing

Vibration.....10 g @ 58 to 500 Hz

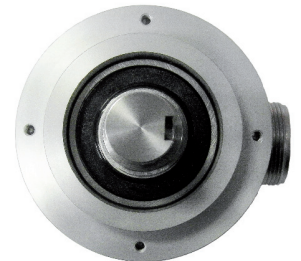
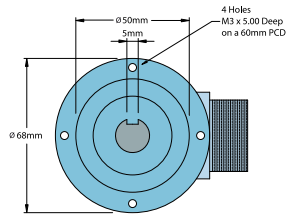
Shock.....50 g @ 11 ms duration

Sealing.....IP64, (IP65 optional)

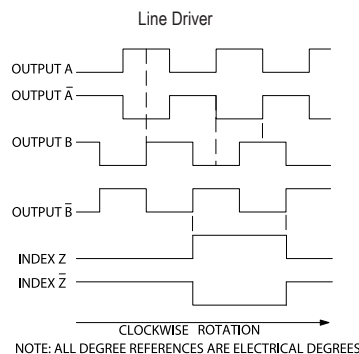
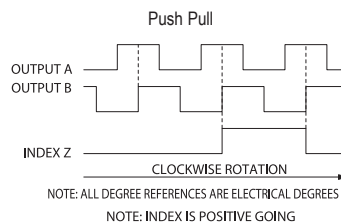
## Model 86A F2 Body Option



## Model 86A S2 Body Option



## Waveform Diagrams



## Wiring Tables

17 Pin Conn*	Option A**
A	A Channel
B	Z Channel
C	B Channel
D	--
E	--
F	--
G	--
H	+ Vcc
J	-
K	0 Volts
L	--
M	--
N	/A Channel
P	/Z Channel
R	/B Channel
S	--
T	--

\*CE: Cable shield (bare wire) is connected to internal case.

\*\*CE: Shield is connected to connector case unless otherwise specified.