

# 120E

## Optical Encoder



The model 120E is a light-duty optical encoder that can be manually or motor operated. This unique device outputs two square waves at a maximum rate of 128 pulses in quadrature with other resolutions as low as 10 pulses available. Typical applications includes Motion sensing and control, Motor control, Flow control, Low-to-high input for test and measurement, Medical instrumentation, Robotics and Computer Peripherals.



### ELECTRICAL

| Parameter               | Min.                                                         | Nom. | Max. |
|-------------------------|--------------------------------------------------------------|------|------|
| VCC Range (V)           | 4.75                                                         | 5    | 5.25 |
| Supply Current (mA)     |                                                              |      | 30   |
| Voh (V)                 | 2.4                                                          |      |      |
| Vol (V)                 |                                                              |      | .4   |
| Pull-up Resistor (KOhm) |                                                              | 10   |      |
| Output                  | Channel A leads Channel B by 90° electrically, CCW direction |      |      |

### ENVIRONMENTAL

| Parameter           | Min.                  | Nom. | Max.  |
|---------------------|-----------------------|------|-------|
| Operating Temp (°C) | -40°                  |      | +65°  |
| Storage Temp (°C)   | -55°                  |      | +110° |
| Humidity:           | 85%RH @ 40°C, 240 hrs |      |       |

### TERMINAL

B66: PC Terminals, horizontal mounting  
 C24: PC Terminals, vertical mounting  
 CBL: 7.5 including cable  
 CN1: 7.5 including cable with connector

### MECHANICAL

|                    |                                                    |
|--------------------|----------------------------------------------------|
| Vibration:         | 10 to 2000Hz, 15G Mil Std, Method 204 Test Cond. C |
| Shock:             | 100G @ 6ms Mil Std. 202, Method 213 Test Cond. C   |
| Rotational Torque: |                                                    |
| Sleeve             | 1.5 oz. in.                                        |
| Ball bearing       | .25 oz. in. max.                                   |
|                    | <b>Low torque available</b>                        |
| Operating Speed:   | 300 RPM                                            |
| Rotational Life:   | 10,000,000 cycles                                  |
| Shaft End Play:    | .005 max.                                          |
| Shaft Radial Play: | .010 @ 1 in.                                       |
| Shaft Axial Force: | 15 lbs. push/pull                                  |
| Terminal Strength: | 2 lbs.                                             |
| Weight:            | .74 oz.                                            |

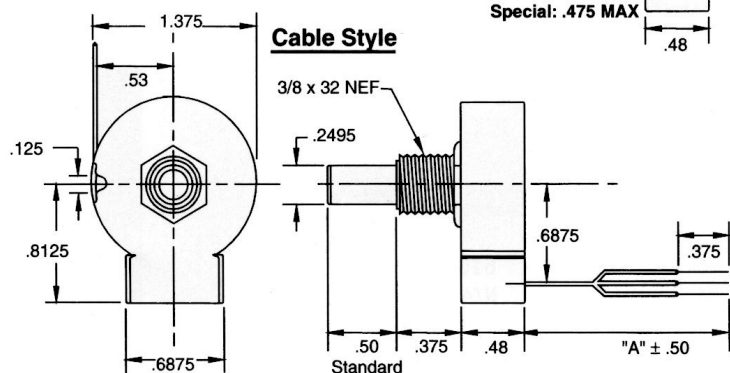
### FEATURES

- Long life-10 million revolutions minimum (contactless)
- Cost effective - elimination of A/D converters
- Stainless steel shafts and nickel-plated bushings in various lengths
- Stability- -40°C to +65°C operating temperature
- Variability-Cable and printed circuit terminations available

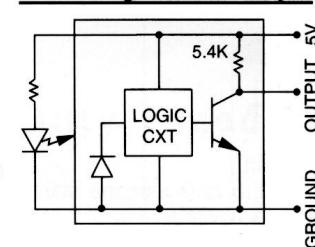
# Model 120E

DIMENSIONS  
Styles

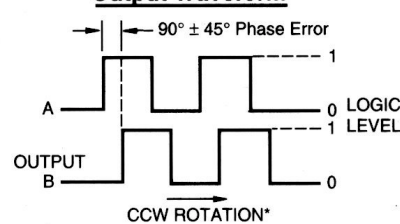
## 120E Series



## Block Diagram One Output

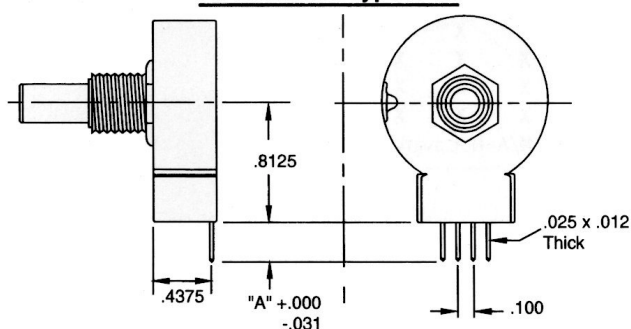


## Output Waveform



\*Channel A leads Channel B by 90° electrically in CCW direction

## PC Terminals Type B-66



| TERM # | FUNCTION             |
|--------|----------------------|
| 1      | 5VDC ± 5% @ 30ma MAX |
| 2      | "A" Out              |
| 3      | Ground               |
| 4      | "B" Out              |

## Dimension Tolerances, Unless Otherwise Specified

FRACTIONS = ± 1/64 (0.40mm) DECIMALS = ± .005 GRDS = ± .010 (0.25mm)

## NOTE:

- "A" Cable Length Standard 7.50 ± .50  
Other lengths available, specified by customer
- "A" and "B" Outputs are TTL compatible on all models

## CABLE CODE

| COLOR  | FUNCTION             |
|--------|----------------------|
| Red    | 5VDC ± 5% @ 30ma MAX |
| Green  | Ground               |
| Yellow | "A" Out              |
| Orange | "B" Out              |

## ORDERING INFORMATION

120

E

N

-

128

-

CBL

| SERIES                                                             |
|--------------------------------------------------------------------|
| 120 Sleeve-bearing construction with two channel quadrature output |

| SHAFT & BUSHING SIZE                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------|
| N= 1/4 in. (6.35mm) diameter by 3/4 in. (19.05mm) FMS long shaft. 3/8 in. (9.53mm) diameter x 32 NEF 2A by 3/8 in. (9.53mm) long bushing |

| TERMINATION                                     |
|-------------------------------------------------|
| B66= PC Terminal Type B-66, Horizontal mounting |
| C24= PC Terminal Type C-24, vertical mounting   |
| CBL= 7.5 in. (190.5mm) Long cable/lead          |
| CNI= 7.5 in. (190.5mm) Long cable/connector     |

PULSES PER RESOLUTION

PRODUCT ID  
E=Encoder

ISO9001/QS9000



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