

Series 600 Optical Rotary Encoder



Description

The series 600 controls are manually-operated, rotary, optical encoders that output two square waves in quadrature at a rate of 128 pulses per channel per revolution as a standard, with other resolutions down to 10 pulses available.

The outputs are TTL compatible. The variation by construction is the terminal configuration, with one model having 4 cable leads, and the other model having 4 pin leads and internal resistors

Features

- **Long Life** - 10 million revolutions minimum (contactless)
- **Cost effective** - Elimination of A/D converters
- **Rugged** - 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

Series 600 Electrical Specifications

Input Power

5 volts DC +/-5% @ 30ma maximum plus external requirements.

Output Rate

128 pulses/revolution per channel, standard. Other pulses/revolution between 10 and 180 are available

Channels

Two separate output channels in quadrature, 90° +/-45°

Output Voltage

High level voltage - 2.4 volts minimum with 10Kohms load to ground.

Low level voltage - .4 volt maximum

Series 600 Mechanical Specifications

Shaft Rotation

Continuous in either direction

Body Size

(Single module) .5 in (12.70 mm) square
+/- .031 in. (.790 mm), except at standoffs

Operating Speed

300 rpm maximum

Rotational Life

10 million revolution minimum

Rotational Torque

1.5 oz. in. minimum.

Other torque ranges available.

Shaft

1/4 in.(6.35 mm) diameter, standard

1/8 in.(3.175 mm) diameter available, stainless steel

Bushing

3/8 in.(9.53 mm) diameter, standard

1/4 in.(6.35 mm) diameter available, brass, nickel-plated

Shaft End Play

.005 in. (.127 mm) maximum

Shaft Radial Play

.010 in. (.254 mm) maximum @ 1 in. (25.4 mm) FMS
with 3/8 in. (9.53mm) long bushing

Axial Force

15 lb. minimum push or pull force applied to shaft end.

Terminals

PC Type: .025 in. (0.635mm) by .012 in. (0.305mm)
thick brass, gold plated to facilitate soldering.

Cable Type: Four lead ribbon cable, color-coded, with
.050 in. (1.27mm) spacing, 28 AWG. Strength:

Terminals withstand 2 lb. push or pull and a 90° bend.

Mechanical Specifications continued on next page

Mounting Hardware

For 3/8 in. (9.53mm) bushing,
hex mounting nut 3/8 in. (9.53mm) x 32 thread,
1/2 in. (12.7mm) across flats,
3/32 in. (2.38mm) thick internal tooth lockwasher
11/16 in (17.46mm) O.D. by .022 in. (0.56mm) thick.

Seals

Mounting seal and shaft seal available.
Controls are not sealed for board washing.
Consult Factory for specifications.

Marking

Consists of customer or Clarostat part number and EIA source and date code. Ink stamped on periphery of the control meets EIA RS230 & RS327 specifications

Weight

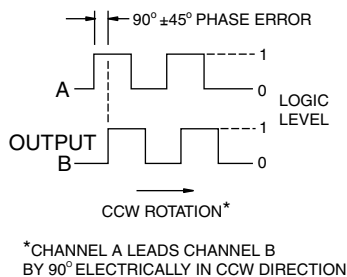
PC type or cable type
1 in. (25.4mm) FMS shaft and 3/8 in. (9.53mm)
bushing, .046 lb. (21 gm.)

Locating Pin

Single pin located 17/32 in. (13.49mm) from center can be supplied. Pin withstands 5 in. lb. torque.

Figure 1

Output Waveform



Block Diagram One Output Channel

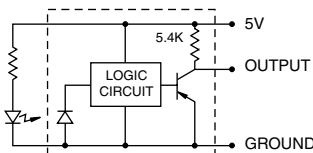
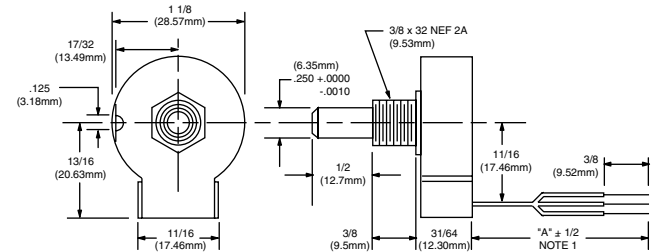


Figure 2
Cable Style



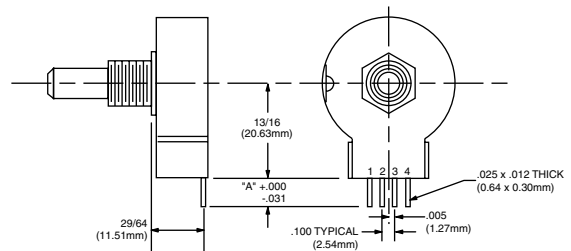
1. "A" Cable length standard 7 1/2 in. +/- 1/2 in. (190.5mm +/- 12.70mm)
2. A AND B OUTPUTS ARE TTL COMPATIBLE ON ALL MODELS.

CABLE CODE

COLOR	FUNCTION
RED	5VDC +/-5% @ 30ma MAX.
ORANGE	B CHANNEL
YELLOW	A CHANNEL
GREEN	GROUND

Figure 3

PC Terminals Type B-66



TERM #	FUNCTION
1	5VDC +/-5% @ 30ma MAX.
2	A CHANNEL
3	GROUND
4	B CHANNEL

"A" DIMENSION

STANDARD	.160 (4.06mm)
SPECIAL	.400 (10.16mm) MAX

Series 600 Operational Specifications

Storage Temperature

-55°C to +110°C.

Operating Temperature

-40°C to +65°C.

Humidity

85% RH @ 40°C, 240 hours

Vibration

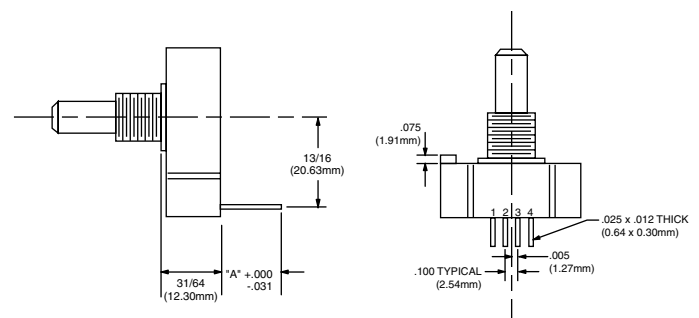
10 to 2000 Hz., 15G peak MIL-STD-202; method 204, test C

Shock

100G @ 6 MS per MIL-STD-202; method 213, condition I

Figure 4

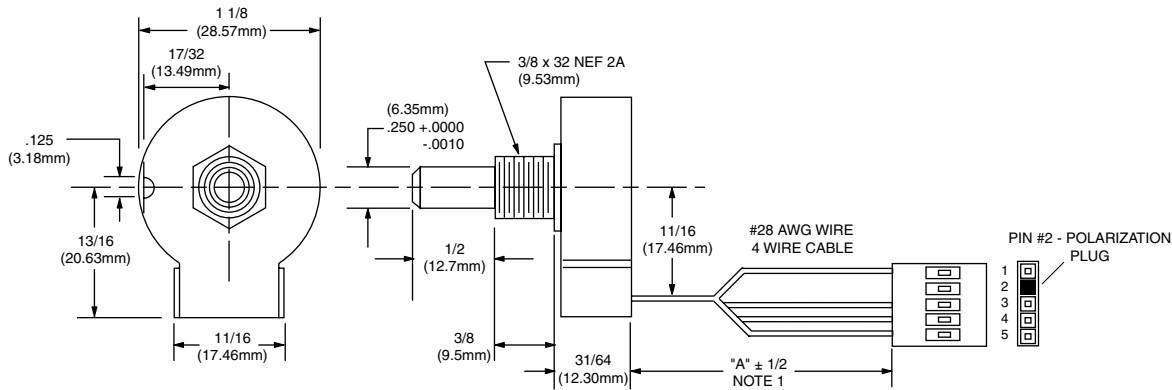
PC Terminals Type c-24



"A" DIMENSION

STANDARD	.160 (4.06mm)
SPECIAL	.475 (12.07mm) MAX

Figure 4
Cable Style with Connector



NOTE:

1. "A" Cable length standard 7 1/2 in. +/- 1/2 in. (190.5mm +/- 12.70mm)
2. A AND B OUTPUTS ARE TTL COMPATIBLE ON ALL MODELS.

CABLE CODE		
COLOR	PIN #	FUNCTION
RED	1	5VDC +/-5% @ 30mg MAX.
ORANGE	3	B CHANNEL
YELLOW	4	A CHANNEL
GREEN	5	GROUND

Series 600 Standard Stock Options

Stocked Part Numbers

- 600EN-128-B66: PC Terminals Type B-66
- 600EN-128-C24: PC Terminals Type C-24
- 600EN-128-CBL: 7.5 in. (190.5mm) Long cable/lead
- 600EN-128-CNI: 7.5 in. (190.5mm) Long cable/connector

Series 600 How to Order

Example: **388-E-N-128-B66**

600	E	N	128	B66
Series	Encoder	Shaft & Bushing	Pulses	Terminal Configuration
		Shaft: 1/4" dia. x 7/8" FMS long (6.35mm x 22.23mm)	Number of pulses per Revolution	B66 = PC Pins, horizontal
		Bushing: 3/8" dia. x 3/8" long (9.53mm x 9.53mm)		C24 = PC Pins, vertical
				CN1 = Cable with connector
				CBL = 7.5 in. cable (190.5mm)



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