

Installation Instructions

Bulletin 844D Blind & Through-Shaft Optical Incremental Encoders

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

Specifications

Electrical	
Code Format	2 channels with zero index
Power Requirements	120mA (no load)
Max Output Frequency	200kHz Push-Pull (120-8192 PPR) 300kHz all other drivers (120-8192 PPR) 600kHz (above 8192 PPR)
Resolution	Up to 16,384 pulses per revolution
Output Driver Capability	3487 Line driver = ± 40 mA 4469 Line driver = ± 200 mA 7272 Line driver = ± 40 mA Push-Pull Single Ended Driver = ± 70 mA
Mechanical	
Angular Acceleration	100,000 radians/sec ²
Starting Torque @ 25 °C (77 °F)	9.3Ncm (13in-oz)
Running Torque @ 25 °C (77 °F)	5Ncm (7 in-oz)
Moment of Inertia	490gcm ² (6.9 x 10 ⁻³ oz-in-sec ²)
Slew Speed	3000 rpm maximum
Shaft Loading (120-2500 PPR)	Axial 67N (15lbs) Radial 133N (30lbs)
Shaft Loading (4096-16,384 PPR)	Axial 44N (10lbs) Radial 67N (15lbs)
Permissible Shaft Radial Movement	Static +/- 0.5mm (0.02in) Dynamic +/- 0.1mm (0.004in)
Permissible Shaft Axial Movement	Static +/- 0.5mm (0.02in) Dynamic +/- 0.5mm (0.02in)
Bore Size	Supports 1/2 to 1-1/8" & 30mm shafts
Environmental	
Protection	NEMA Type 4, 13, IP66 (IEC 529) except terminal block connection type rated IP40 (IEC 529) only
Housing Material	Aluminum
Temperature	-20 °C to 85 °C (-4 °F to +185 °F)—Operating -30 °C to 85 °C (-22 °F to +185 °F)—Storage
Humidity	90% noncondensing
Shock	50g for 11ms
Vibration	20g from 5 to 2000Hz
Approximate Weight	0.91kg (2lbs)

Selection

844D — A 5 A C 1 CR
a b c d e f

a

Shaft Design	
Code	Description
A	Blind-Shaft
B	Through-Shaft

b

Shaft Size ①	
Code	Description
4	1/2in
5	5/8in
6	3/4in
7	7/8in
8	1.0in
9	1 1/8in
M	30mm

c

Mounting Configuration	
Code	Description
A	Tether, 1/2" bolt on a 7.25" dia. B.C. (to fit 8 1/2" NEMA C face)
B	Tether, 3/8" bolt on a 5.88" dia. B.C. (to fit 4 1/2" NEMA C face)
C	Tether, 3/8" bolt on a 2.5-4.0" dia. radius
D	Anti-rotation pin

d

Connection Type	
Code	Description
C	10-pin Connector
T	Terminal Block ②
1	1m (3.28ft) cable

e

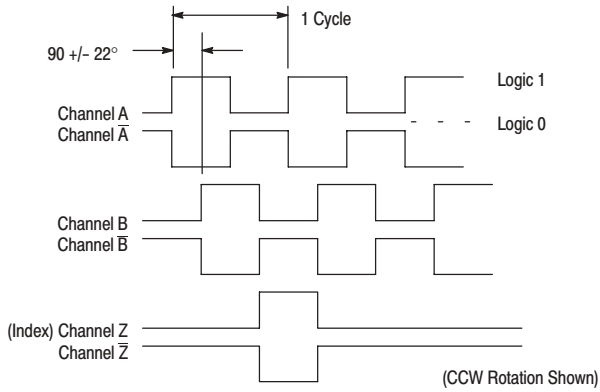
Power Supply and Output ③	
Code	Description
1	5V DC in, 5V DC DLD out (3487)
2	5-26V DC in, 5-26V DC DLD out (7272) ④
3	5-15V DC in, 5-15V DC DLD out (4469)
4	8-26V DC in, 5V DC DLD out (3487)
5	10-30V DC in, 10-30V DC Push-Pull out

f

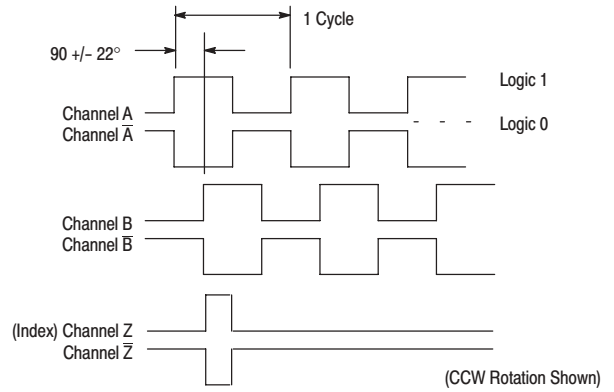
Resolution	
Code	Description (PPR)
DB	120
CK	360
FW	1024
CS	2048
CR	2500
DS	4096
DR	5000
FS	8192
CV	10000 ⑤
LS	16384 ⑤

- ① Shaft sizes below 1.0in include an insulating insert.
- ② Terminal block unit is not rated for fluid ingress protection (IP40 (IEC 529) only).
- ③ DLD = Differential Line Driver
- ④ 7272 line driver has a voltage drop of 1.9V.
- ⑤ Available with power supply and output options 1, 2, 3 and 4.

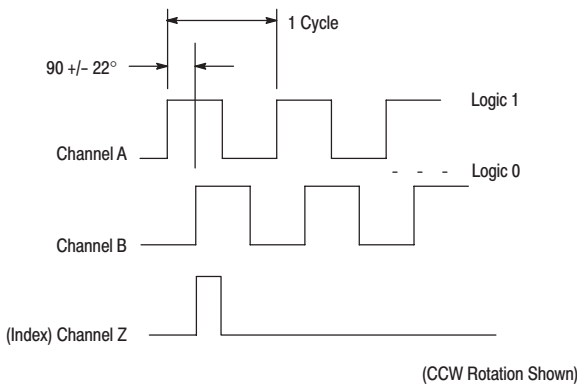
Differential Line Driver Output (for resolution ≤ 8192 PPR)



Differential Line Driver Output (for resolution > 8192 PPR)



Push-Pull Single End Driver Output



Electrical Connections

Table A: Differential Line Driver Outputs

Function	10-Pin Connector	Shielded Cable	Terminal
Channel A Output	A	White	1
Channel B Output	B	Pink	2
Channel Z Output	C	Violet	7
DC+ Input	D	Red	3
DC Return	F	Blue	4
Case Ground	G	Green	—
Channel A-bar Output	H	Brown	5
Channel B-bar Output	I	Black	6
Channel Z-bar Output	J	Yellow	8

Table B: Push-Pull Outputs

Function	10-Pin Connector	Shielded Cable	Terminal
Channel A Output	A	White	1
Channel B Output	B	Pink	2
Channel Z Output	C	Violet	7
DC+ Input	D	Red	3
DC Return	F	Blue	4
Case Ground	G	Green	—
Not connected	—	Brown	—
Not connected	—	Black	—
Not connected	—	Yellow	—

Note: 10-pin connector type MS3102R18-1P

**844D
Blind-Shaft Tolerance**

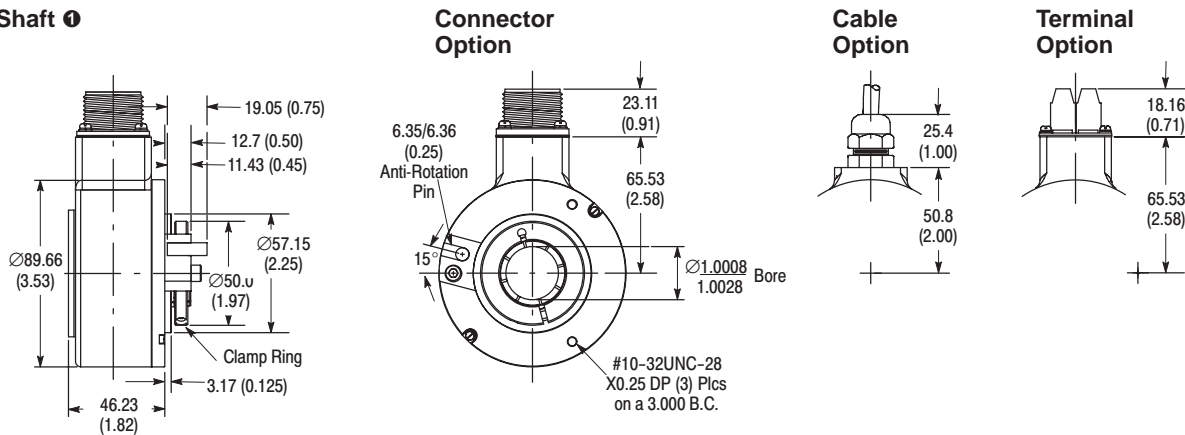
Size	Bore	Mating Shaft	Length
1/2"	0.500/0.501	0.500/0.499	0.70/2.00
5/8"	0.625/0.626	0.625/0.624	0.70/2.00
3/4"	0.750/0.751	0.750/0.749	0.70/2.00
7/8"	0.875/0.876	0.875/0.874	0.70/2.00
1.0"	1.000/1.001	1.000/0.999	0.70/2.00
1 1/8"	1.125/1.126	1.125/1.124	0.70/2.00
30mm	30.000/30.025mm	30.000/29.975mm	18/50mm

**844D
Through-Shaft Tolerance**

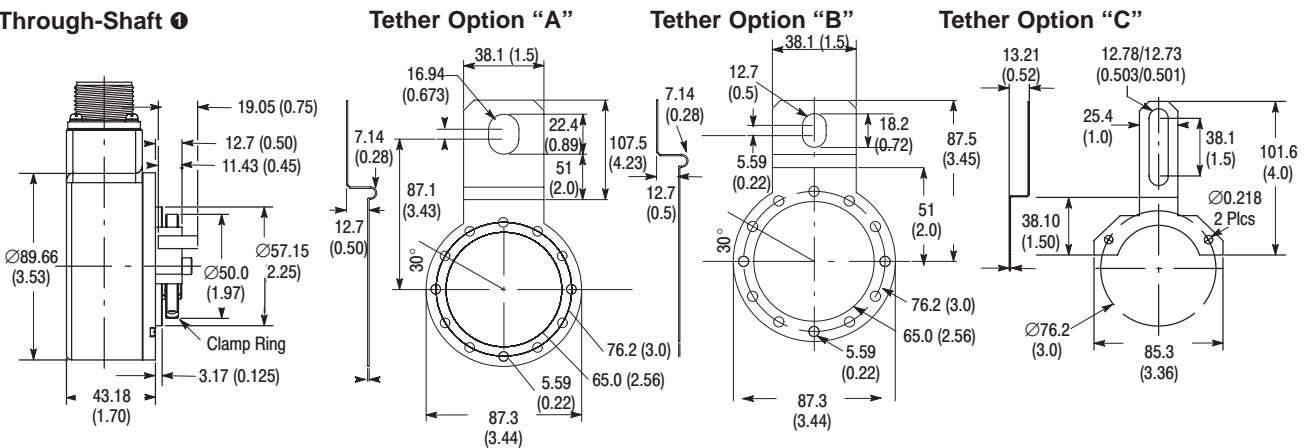
Size	Bore	Mating Shaft	Length—min.
1/2"	0.500/0.501	0.500/0.499	0.70
5/8"	0.625/0.626	0.625/0.624	0.70
3/4"	0.750/0.751	0.750/0.749	0.70
7/8"	0.875/0.876	0.875/0.874	0.70
1.0"	1.000/1.001	1.000/0.999	0.70
1 1/8"	1.125/1.126	1.125/1.124	0.70
30mm	29.980/29.959mm	30.000/29.975mm	18mm

Dimensions—mm (inches)

Blind-Shaft ①



Through-Shaft ①



① Shown with optional anti-rotation pin.

Mounting Instructions

IMPORTANT: Be sure mating shaft is chamfered and grease-free.

1. Loosen the screw on the clamping ring with a 3/32 inch hexagon socket wrench.
2. Slide the encoder onto the mating shaft until the tether mount or anti-rotation pin rests on the machine surface. The encoder should slide freely on the shaft; if not, do not force. Check the shaft for interferences such as gouges, burrs, rust or size. If a mounting hole or anti-rotation pin stop already exists, proceed to step 6.
3. Mark the mounting hole and/or anti-rotation pin stop location.
4. Slide the encoder off. Drill and tap the marked hole to accept the 0.375 inch x 16 (tether option B or C) or 0.5 inch x 13 (tether option A) bolt.

5. Slide the encoder back in the shaft until the tether mount or anti-rotation pin rests on the machine surface.
6. Attach the encoder with either the 0.375 inch or 0.5 inch bolt.

IMPORTANT: Do not stress the tether mount while tightening the bolt.

7. Tighten the clamping ring to 8 inch-lbs.
8. Make the electrical connections according to the table under "Electrical Connections."

IMPORTANT: Wiring must be in accordance with the National Electric Code and applicable local codes and ordinances.

9. Apply the specified voltage (see Table "e" under "Selection" on page 1 of this publication).