Installation Instructions
Bulletin 842A Absolute Encoders

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

Specifications

Electrical	
Code Format	Gray or Natural Binary
Code Direction	CW or CCW
Symmetry	40% to 60%
Operating Voltage	10–32V DC
Power Requirements	150mA @ 5V (no load)
Max # of Steps/Revolution	8192
Max # of Revolutions	8192
Position Forming Time	0.5msec
Delay on Power Up	1050msec
Clock +, Clock -, Data +, Data -	Synchronous Serial Interface (SSI) RS-422
CW/CCW	"L" active (L = 0-0.9V, H = 1.9 – 24V))
Mechanical	
Angular Acceleration	5×10^5 radians/sec^2
Moment of Inertia	5×10^{-4} oz-in-sec^2 (35 gcm^2)
Maximum Working Speed	6000 RPM at max shaft loading
Maximum Operating Speed	12,000 RPM
Starting Torque	3.5oz in (2.5 Ncm)
Shaft Loading	Axial 11lb (50N) Radial 67lb (300N)
Environmental	
Housing	Aluminum
Temperature	-20°C to 85°C (-4°F to 185°F) operating -40°C to 100°C (-40°F to 212°F) max. working -40°C to 125°C (-40°F to 257°F) storage
Humidity	98% noncondensing
Protection	NEMA Type 4, 13, IP67 (IEC 529): static shaft NEMA Type 4, 13, IP66 (IEC 529): moving shaft
Shock	100g/6msec
Vibration	20g/58-2000Hz, 1.5mm displacement (10-58Hz)
Approximate Weight	0.5kg (18oz)

Selection

842A — 31 G B

a b c

a

Code Type	
Code	**Description**
31	36mm Pilot, 10mm Shaft
56	50mm Pilot, 6mm Shaft

b

Code Type	
Code	**Description**
G	Gray Code
N	Natural Binary

c

A-B Code	Pulses Per Rev.	SSI Bits MSB-LSB	No. of Revs.	SSI Bits MSB-LSB
A	8192	12-24	2048	1-11
B	4096	13-24	4096	1-12
C	2048	14-24	8192	1-13
D	4096	13-24	512	4-12
E	4096	13-24	256	5-12

Electrical Connections

The 842A comes with an M23 connector. The mating connector, 845-12P, or pre-wired cable and connector assembly 845-CA-G-* must be ordered separately. See Encoder Accessories in the *Sensors* catalog.

Function	Pin Number	Description
DC Return	1	Ground
Data +	2	SSI
Clock +	3	SSI
DC + Input	8	10-32V DC 150mA no load
Reset	9	❶
Data -	10	SSI
Clock -	11	SSI
CW/CCW	12	See below ❷

❶ Reset to zero is enabled when Pin 9 is momentarily connected to DC+ Input.

❷ When pin 12 is connected to DC + (or left floating), the 842A will count UP when the shaft is turned CW when looking at the shaft. When pin 12 is connected to DC return, the 842A will count UP when the shaft is turned in the CCW direction when looking at the shaft.

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

Mounting Instructions

1. Be sure to select the proper size flexible coupling clamp to mate to the encoder shaft, e.g., 845-FC-*-*. See Encoder Accessories in Sensor catalog.

IMPORTANT: Do not rigidly connect the encoder shaft to the machine; this will cause premature failure of the encoder or machine bearings. Always use a flexible coupling.

2. Use the dimension drawings to determine the encoder mounting hole locations.
3. Slide the flexible coupling onto the shaft, but do not tighten the set screws.
4. Mount the encoder and tighten with three size M4 mounting screws (not supplied).
5. Center the flexible coupling and tighten the set screws.
6. Rotate the machine slowly and verify that the flexible coupling is not deforming beyond specifications.
7. Align machine to its mechanical zero or home position. Remove slotted cover located on the back of the encoder and press the Reset button to make the encoder count zero. Replace cover.

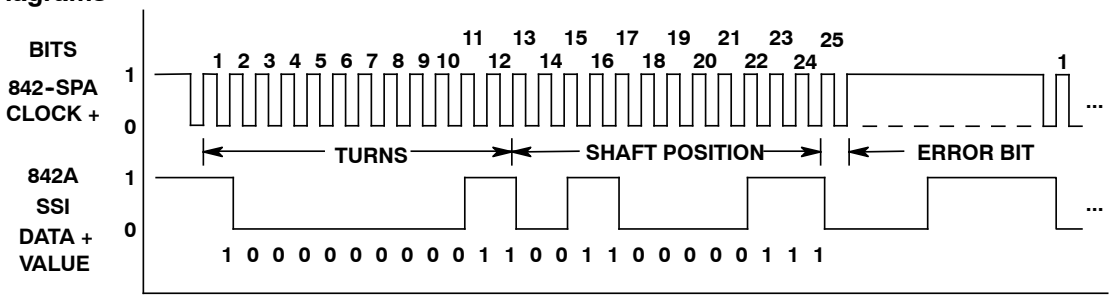
Reset

To reset the output of the encoder to zero turns and zero shaft position, remove the slotted cover from the back of the encoder and press the button inside. This can also be done by momentarily connecting pin 9 to DC+ Input.

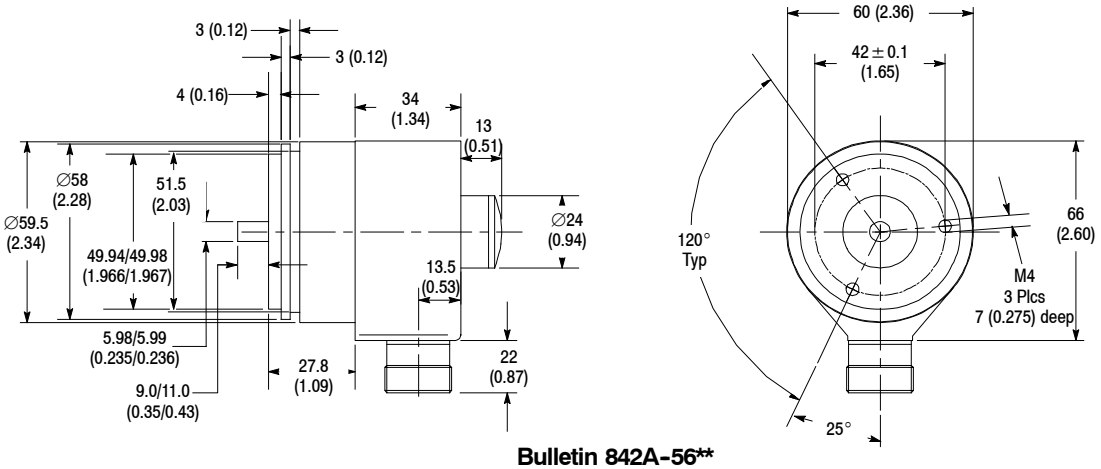
ATTENTION: Pressing the reset button results in a change of position reading. This can cause unexpected motion which could result in damage to the product, equipment, or personal injury.

Below is an example of a timing diagram as viewed on an oscilloscope. In this example, the 842A-31NB, a binary code output with 4096 pulses per revolution and 4096 turns is connected to an 842-SPA serial to parallel interface adaptor. The 842-SPA generates an SSI clock burst of pulses. On the positive slope of the start pulse, the 842A-31NB begins to transmit its position data. In the example below, the 842A-31NB is returning 100000000011 (2051 Turns) and 001100000111 (775 position). After the data is sent, the output remains in a low state for a short duration, then goes to a high state in anticipation of the next SSI clock burst. The Error Bit (bit 25) is normally zero. If there is a power interruption (e. g. - low voltage) during data transmission, the Error Bit is set high.

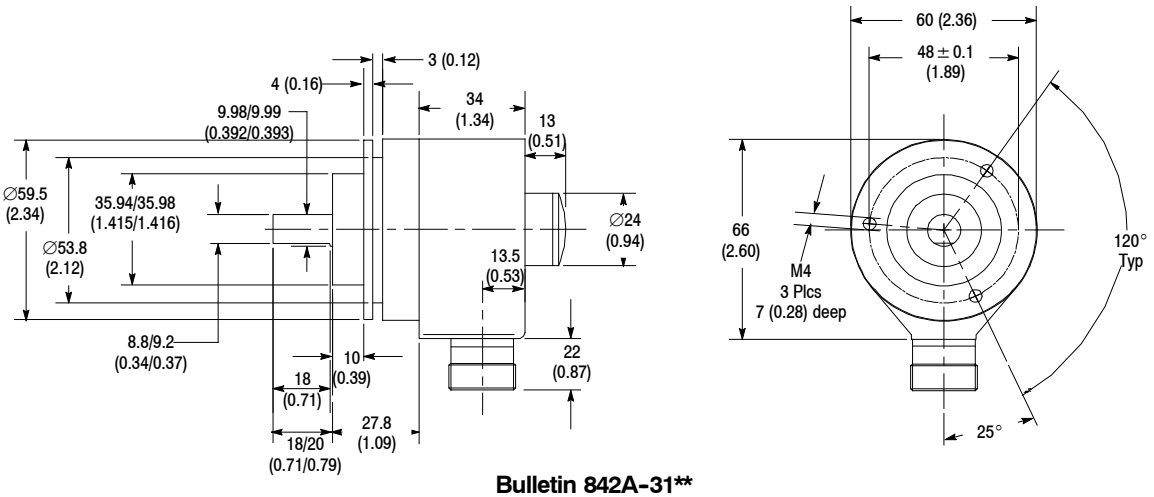
Timing Diagrams



Dimensions—mm



Bulletin 842A-56**



Bulletin 842A-31**