L18 Absolute Encoder

BEI Industrial Encoders

The L18 absolute encoder provides system designers with high precision in a small, lightweight package. This small industrial encoder features a 13-bit absolute SSI output in a 1.8-inch servo package. The L18 encoder contains field-proven ASIC electronics, sealed bearings and BEI's accurate code disk in an all metal housing to ensure its ruggedness and reliability. Ideal for space or weight limited applications requiring high accuracy, including semiconductor fabrication, mobile platforms and industrial robotics.

The L18 Incremental Encoder is available with the following certification:

CE EN 55011 and EN 61000-6-2

Mechanical Specifications

Shaft Diameter: 1/4"
Shaft Loading: 2 lbs axial and radial max
Shaft Runout: .002: max
Starting torque at 25° C: 1 oz-in max.
Bearings: Shielded
Shaft Material: Stainless steel
Bearing Housing: Aluminum
Cover: Aluminum
Bearing Life @2 lbs max. Radial Shaft Loading: 1.2×10^9 revs
Maximum RPM: 500 (mechanical)
Moment of Inertia: 0.5×10^{-4} in-oz-sec^2
Weight: 6 oz max

Electrical Specifications

Code: 13 Bits Natural Binary or Gray Code
Counts per Shaft Turn: 8192
Supply Voltage: 5–28 VDC
Current Requirements: 120 mA typical
Voltage/Output: SSI: 5–28 VDC in/$5V_{out}$
Clock Rate: 50 kHz to 100 kHz
Protection Level: Reverse, overvoltage and output short circuit protection
Output Termination Pinouts: See table 1

Environmental Specifications

Enclosure: IP66
Temperature: 0º C to +70º C; extended range testing available (see note 8); Storage, -25º to 90º
Shock: 50 g's for 11 msec (1/2 sine)
Vibration: 20 to 2000 Hz @ 20 g's
Humidity: 98% RH non-condensing

NOTES & TABLES: All notes and tables referred to in the text can be found on the back of this page.

L18 Absolute Encoder Ordering Options

FOR ASSISTANCE CALL 800-350-2727

Use this diagram, working from left to right to construct your model number (example: L18E-F71-SS-13NB-S3-CW-SK8).
All notes and tables referred to can be found on the back of this page.

L18	–	E	–	F71	–	SS	–	13	–		–	S3	–	CW	–	SK8	–	
TYPE: L = Light Duty 18 = 1.8" diameter		**HOUSING:** E = Standard		**FACE MOUNT:** F71 = Standard		**SHAFT SEAL CONFIGURATION:** SS = Shaft Seal *(See note 1)*		**NUMBER OF BITS:** 13 = 13 bits, 8192 counts		**CODE TYPE:** GC = Gray Code NB = Natural Binary		**VOLTAGE/OUTPUT:** S3 = Serial Synchronous Interface *(See note 3 and consult factory for more information on SSI)*		**DIRECTION OF COUNT:** CW = Clockwise increasing count		**TERMINATION TYPE:** SK8 = Side mounted, M12x1, 8 Pin (Euro style)		**SPECIAL FEATURES:** S = Special feature specified on purchase order *(consult factory) See note 6*

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CUSTOM SENSORS & TECHNOLOGIES
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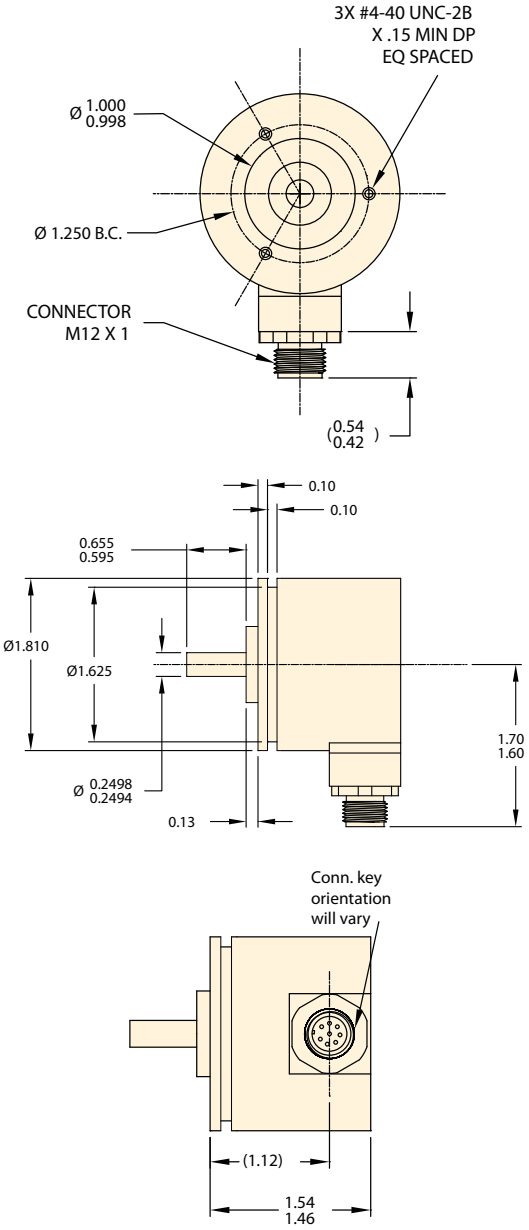
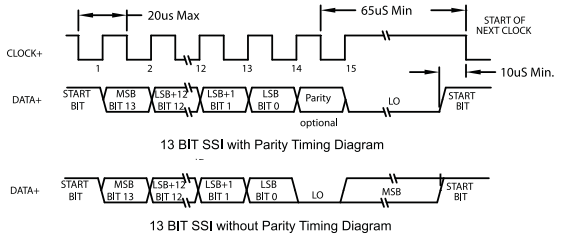
Tables and Figures



SSI Compatible Output with Party Option Timing Diagram



Diagrams

Table 1: Output Wiring

CONN. PIN	FUNCTION
1	DATA +
2	+V
3	DATA -
4	CLOCK +
5	CLOCK -
6	Direction[1]
7	0V
8	Enable[2]

[1] See note 4
[2] Optional. See Note 5

Figure 1 Gray Code

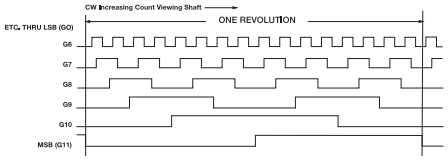
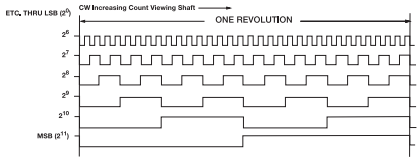


Figure 2 Natural Binary



Notes

1. The shaft seal is recommended in virtually all installations. The most common exceptions are applications requiring a very low starting torque or those requiring operation at both high temperature and high speed.

2.Complementary outputs are recommended for use with line driver type (source/sink) outputs. When used with differential receivers, this combination provides a high degree of noise immunity.

3. Output IC's: Data from the encoder is sent with a MAX491 transceiver in transmit mode. It is recommended to use any RS-422/485 compatible receiver and provide a termination resistor based on the RS-422/485 specification for your DATA line length.

4. Direction Control: Normal operation: CW increasing count when viewed from the shaft end. This pin is normally pulled HI internally. To reverse the count direction this pin must be pulled LO (Circuit Common). Optionally this can be designated as CCW increasing count when HI, in which case LO will be CW increasing count.

5. ENABLE (optional): This option allows the operator to momentarily deactivate the outputs from the encoder. This may be useful in instances where the outputs from several different encoders must be sampled independently. Output is active when this pin is HI. When pulled LO (Circuit Common) all outputs go to high impedance state (Tri-state) and are inactive until the LO state is removed. This pin is pulled HI internally. To order this option, make sure the model number has –S on the end, followed by a description, -S = output enable.

5. PARITY (optional): Parity is even. The sum of all HI data bits and the parity bit is even. Parity is used to validate the transmitted data.

6. Special –S at the end of the model number is used to define a variety of non-standard features such as special shaft lengths, voltage options, or special testing. Please consult factory to discuss your special requirements.

7. Extended Temperature ratings are available in the following ranges:

-40 to 70°C, -40 to 85°C, -20 to 105°C and -40 to 105°C depending on the particular model. Some models can operate down to -55°C. Extended temperature ranges can affect other performance factors. Consult with factory for more specific information.

8. K8 Connector cable assemblies may be ordered from the factory:

For 1 meter cable length, use part number 924-31320-K81M
For 5 meter cable length, use part number 924-31320-K85M
For 6 meter cable length, use part number 924-31320-K86M
For 10 meter cable length, use part number 924-31320-K810M