



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:

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-sec²
- 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

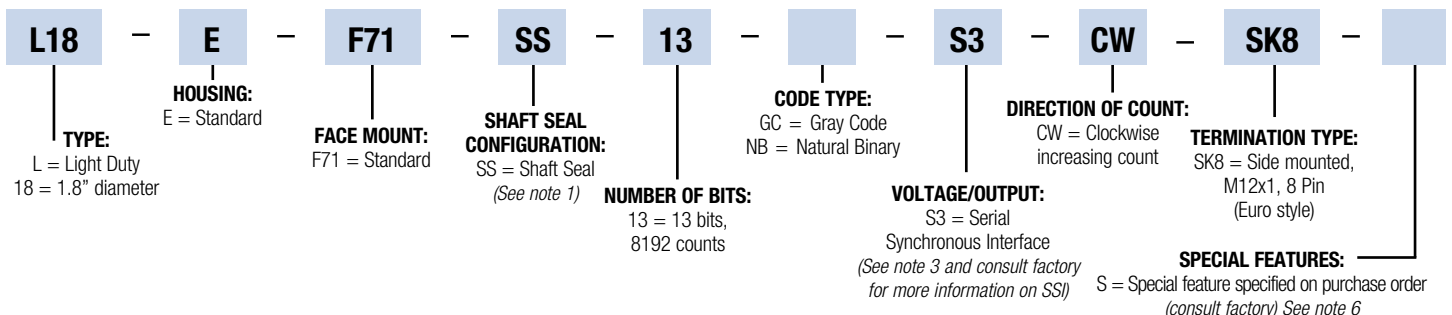
- Enclosure:** IP66
 - Temperature:** 0° C to +70° C; extended range testing available (see note 8); Storage, -25° to 90°
 - Shock:** 50 g's for 11 msec (1/2 sine)
 - Vibration:** 20 to 2000 Hz @ 20 g's
 - Humidity:** 98% RH non-condensing
- NOTES & TABLES:** All notes and tables referred to in the text 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.



Tables and Figures

Diagrams

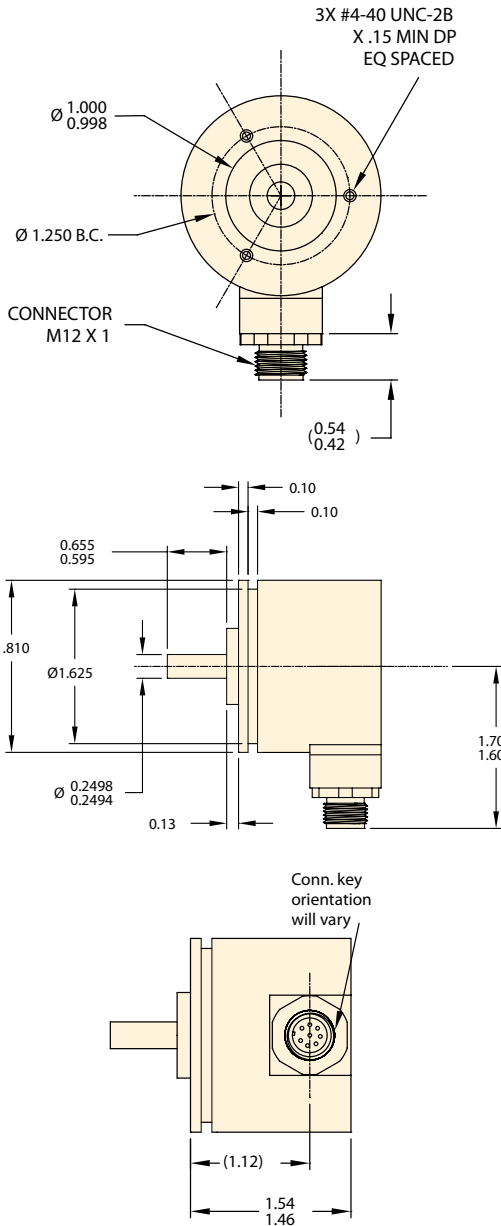


Table 1: Output Wiring

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

¹ See note 4
² Optional. See Note 5

Figure 1 Gray Code

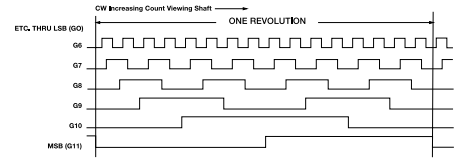
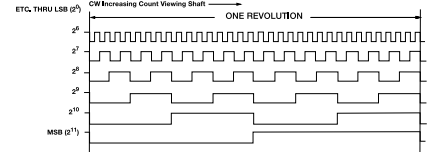


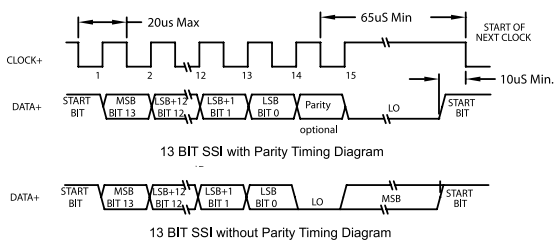
Figure 2 Natural Binary



Notes

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

SSI Compatible Output with Parity Option Timing Diagram



- 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.
- 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