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Find the *GSI Lumonics 25D-F0S3B49-3000AT00* at our website: *Click HERE*

# Model 25D-F/S/L Solid Shaft
# Incremental Optical Rotary Encoder




- **NEMA 4X equivalency rating**
- **Resolutions up to 5000 cycles / revolution. ( interpolated up to 200,000 quadrature counts)**
- **Single LED light source**
- **Optional internal 2X, 5X, or 10X cycle interpolation electronics**
- **Flange or servo mount configuration**
- **Up to 200KHz frequency response all channels**

The Model 25D-F/S/L has been designed for rugged, OEM applications where high speed and high resolution is required. The 25D series features a NEMA 4X enclosure rating, a single LED light source, MTBF rated at 100,000 hours of operation. The 25D can also achieve up to 200,000 counts per revolution when using external 4X quadrature counting. The shaft is rated to withstand up to 40 pounds axial, 35 pounds radial loading, along with being rated to withstand up to 50G's shock specification. These features allow the 25D series to be ideal choice for machine tool, robotics, or any other harsh environment application. The 25D is available in either a flange mount or servo mount for ease of mounting. The 25D is available with a wide variety of electrical output configurations from open collector to line driver.


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# Model 25D-C/P Incremental Rotary Encoder with Integral Shaft Coupling




- **Integral shaft coupling design ( 15 I.D.'s available )**
- **2.5" diameter. Heavy duty encoder**
- **Resolutions up to 5000 cycles / revolution. ( interpolated up to 200,000 quadrature counts)**
- **LED light source**
- **Optional internal 2X, 5X, or 10X cycle interpolation electronics**
- **Sealed bearings standard for maximum reliability**
- **Up to 200KHz frequency response all channels**
- **Centering tools available ( sets concentricity of flange to shaft )**

The Model 25D-C/P has been designed for rugged, OEM applications where high reliability is a prime consideration. Features such as 100K hours MTBF, LED light source, 200 KHz all channels frequency response, and 50G's shock specification allow the model 25D-C/P's to be used in machine tool, robotic, and other harsh environmental usage applications. The Model 25D-C/P's integral shaft coupling and circular mounting flange allow the user to avoid the added costs of brackets and couplings. For high ambient noise or long transmission length applications, the Model 25D-C/P's can be supplied with RS422 line drivers. In line driver or internal cycle interpolation configuration. The 25D-C/P is available with a wide variety of electrical output configurations from open collector to line driver.


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## ELECTRICAL

| | |
|---|---|
| Resolution range: | Disc resolution of up to 5,000 lines, providing a maximum of 5,000 cycles per shaft revolution. Up to 200,000 counts per revolution with internal 10X interpolation and quadrature counting. |
| Light source: | Gallium aluminum arsenide L.E.D. rated @ 100,000 Hrs. MTBF (mfg's spec). |
| Light sensor: | Photovoltaic cells. |
| Excitation voltage: | +5Vdc, +12Vdc, +15Vdc, +/- 5%. |
| Current requirements: | Line driver with ZR + 5 Vdc at 245 ma ( maximum),<br>+12 Vdc at 110 ma ( maximum), +15 Vdc at 110 ma ( maximum). |
| Output format: | Two count channels ( A & B ) in phase quadrature<br>with an optional zero reference output. |
| Quadrature: | Line driver units, 90° ± 20° ( interpolation models 90° ± 45° ) At 10 KHz output freq. |
| Symmetry: | 180° ± 10° ( at 10 KHz output frequency ). |
| Rise and fall time: | 1 microsecond max. into 1,000pf load capacitance. |
| Frequency response: | Up to 200 KHz with 1X electronics. With 2X,4X, & 5X electronics up to 100 KHz input ( 200 KHz output). With 10X interpolation, up to 100 KHz input ( 1 mHz output). |
| Zero reference width: | 1± 1/2 cycle, 1/4 cycle or 1/2 cycle gated, depending on electronic configuration. |
| ZR alignment: | Full cycle: Center of ZR aligns between 90° and 180°of channel A.<br>1/2 cycle aligns with negative transition of channel B.<br>1/4 cycle aligns with both A and B high. |
| Phase sense: | Channel A leads Channel B for counterclockwise rotation of the shaft,<br>as viewed from the shaft side of the unit. |
| Output: | Analog outputs – Differential peak to peak amplitude of 2.5 Vdc +/-.5V.<br>Square wave outputs – TTL line driver from a MC3487 with 40 ma sink and<br>–40 ma source current available. |

## MECHANICAL

| | |
|---|---|
| Disc accuracy: | +/- 30 Arc sec. |
| Shaft loading: | 40 Lbs axial; 35 Lbs radial. ( 25D-F/S/L units ) |
| Shaft radial run-out: | .001" TIR. |
| Starting torque: | 5.0 oz.-in. with shaft seal ( maximum): 2.0 oz.-in. without shaft seal (maximum). |
| Shaft angular acceleration: | 100,000 radians per sec. sq. (maximum). |
| Bearing type: | Sealed ABEC class 5 or better. |
| Moment of inertia: | 4.5 x 10 to the –4 oz.-in.-sec squared. ( 25D-C/P 4.7 x 10 to the –4 oz.-in.-sec sq.) |
| Connectors: | MS312R18-1P ( 10 pin ) , MS312R16S-1P ( 7pin ), on the encoder.<br>MS316A18S-1S ( 10 pin ), MS3106A16-1S ( 7 pin ), mating connector. |
| Cable type: | Individually twisted pairs plus an overall shield. Cable contains 10 conductors. |
| Case sealing: | Enclosure sealing per NEMA 4X ( IP65) . |
| Shaft material: | Stainless steel. |
| Housing material: | Aluminum. |
| Shaft seal ( optional): | Garlock type 63 ( operation above 3,000 RPM with seal is not recommended). |
| Weight: | 17 oz. ( maximum ). |
| **Model 25D-C/P**: | |
| Coupling characteristics: | wind-up: 30 arc seconds/oz.-in. ( maximum).<br>Maximum allowable angular misalignment: 5 deg.<br>Maximum axial play +/- .010" ( .26mm).<br>Maximum parallel misalignment .010". |

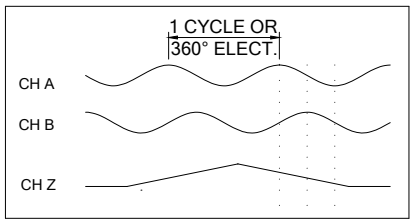
## ENVIRONMENTAL

| | |
|---|---|
| Operating temperature: | Standard 0°C to +70°C |
| :Storage temperature range: | -25°C TO +90°C |
| Shock: | 50 G for 11 millisecond duration. |
| Vibration: | 20 Hz to 2000 Hz @ 20 G. |
| Humidity: | To 98% R.H. ( non-condensing). |
| Enclosure rating: | NEMA 4X |

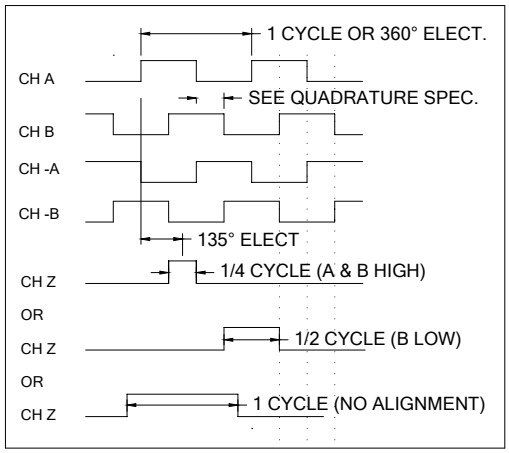

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# DRC Encoder

ANALOG OUTPUT




SQUARE WAVE OUTPUT

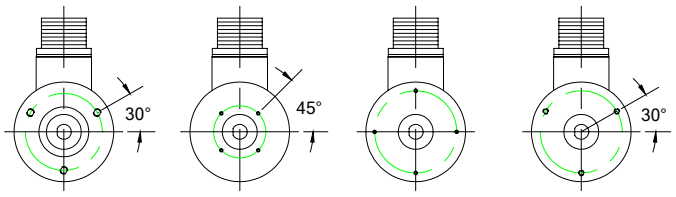



| CABLE | |
|---|---|
| CHANNEL | WIRE COLOR |
| +A | ORANGE |
| +B | YELLOW |
| +ZR | BROWN |
| +Vdc | RED |
| COMMON | BLACK |
| CASE GND | VIOLET |
| -A | GREEN |
| -B | BLUE |
| -ZR | GREY |

| CIRCUITRY TYPES | AVAILABLE ZR OPTIONS |
|---|---|
| 2, 3, 4, 5, 6, 7, D E, G, H, L, M, N | 0, 1, 2, 4 |
| 8, 9, V | 0, 4 |
| Q, R, S, T, U, W Y, Z, SP, TP, ZP | 0, 1 |

| 7 PIN CONNECTOR | | |
|---|---|---|
| | ELECTRONICS WITH | |
| PIN | NO ZR | NO COMPLEMENTS |
| A | +A | +A |
| B | +B | +B |
| C | -A | ZR |
| D | +Vdc | +Vdc |
| E | -B | |
| F | COMMON | COMMON |
| G | CASE GND | CASE GND |

| 10 PIN CONNECTOR | |
|---|---|
| PIN | CHANNEL |
| A | +A |
| B | +B |
| C | +ZR |
| D | +Vdc |
| E | - |
| F | COMMON |
| G | CASE GND |
| H | -A |
| I | -B |
| J | -ZR |




HOUSING TYPE USED WITH COUPLING MOUNTING
C = COUPLING
P = PILOT

COUPLING I.D.
2E = 1/8" 03 = 3 MM
3E = 3/16" 04 = 4 MM
4E = 1/4 05 = 5 MM
5E = 5/16 06 = 6 MM
6E = 3/8" 07 = 7 MM
7E = 7/16" 08 = 8 MM
8E = 1/2" 09 = 9 MM
10 = 10 MM

25D- ○ ○ ○ ○ ○ ○ ○ ○ - ○○○○ ○○○○

HOUSING TYPE
L = LESS PILOT
S = SERVO
F = FLANGE

SHAFT SEAL
S = SEAL
N = NO SEAL

FACE TYPE BOLT CIRCLE
0 = NO B.C.
1 = #10-32 (3) on 1.875 BC
2 = #4-40 (4) on 1.272 BC
3 = #4-40 (4) on 2.000 BC
4 = #6-32 (3) on 2.000 BC

CONNECTOR/CABLE
1 = 10 PIN SIDE MOUNT CONN.
2 = 7 PIN SIDE MOUNT CONN.
3 = 10 PIN END MOUNT CONN.
4 = 7 PIN END MOUNT CONN.
5 = SIDE EGRESS CABLE 18"
6 = END EGRESS CABLE 18"

SUPPLY VOLTAGE
B = 5 VOLTS
C = 12 VOLTS
D = 15 VOLTS

ZERO REFERANCE
0 = W/O ZR
1 = 1/4 CYCLE
2 = 1/2 CYCLE
4 = 1 CYCLE

ELECTRONICS TYPE
2 = 2X INTERPOLATION
3 = SQ/WAVE SINGLE ENDED (7404)
4 = 4X INTERPOLATION
5 = 5X INTERPOLATION
6 = DIFF. LINE DRIVER (RS422)
9 = AMP ANALOG SQ WAVE ZR
Y = 10X INTERPOLATION, 100kHz INPUT FREQ.

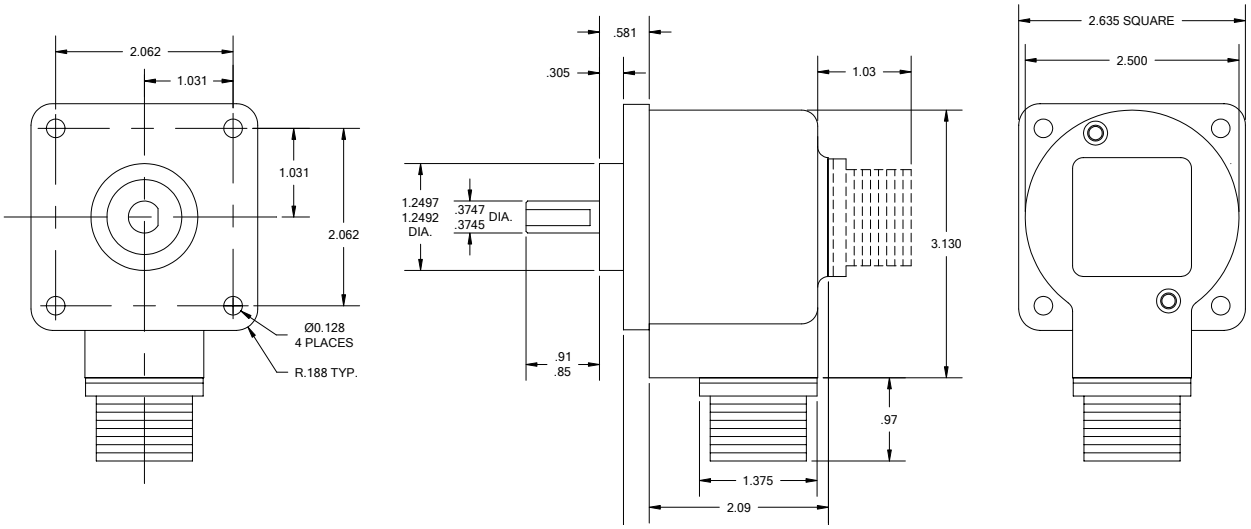
CYCLES PER REVOLUTION (LINE COUNT)
1000
1270
2000
2500

SPECIAL MODIFIERS

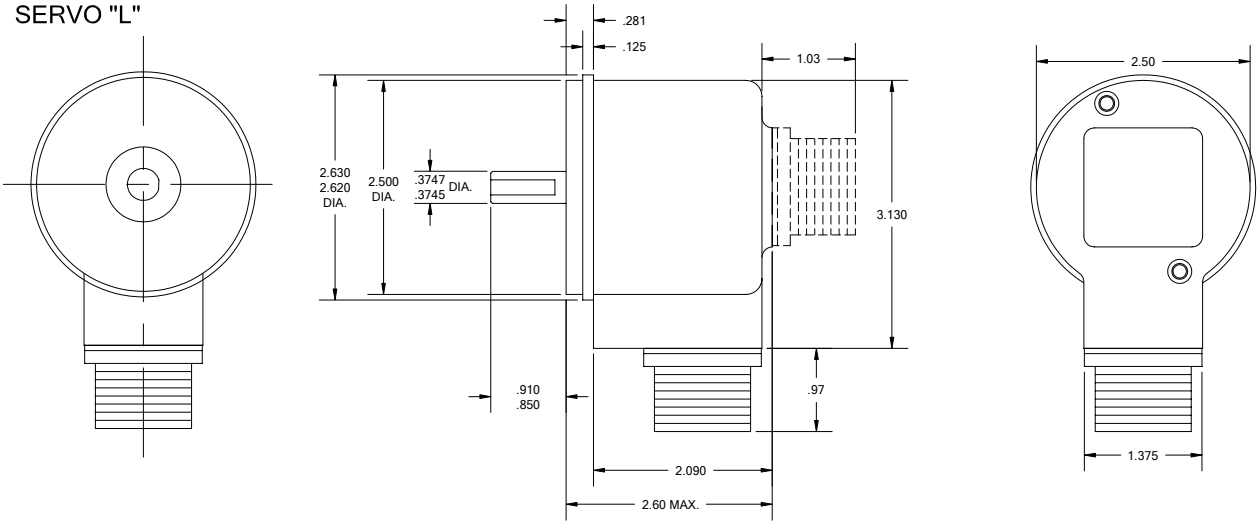


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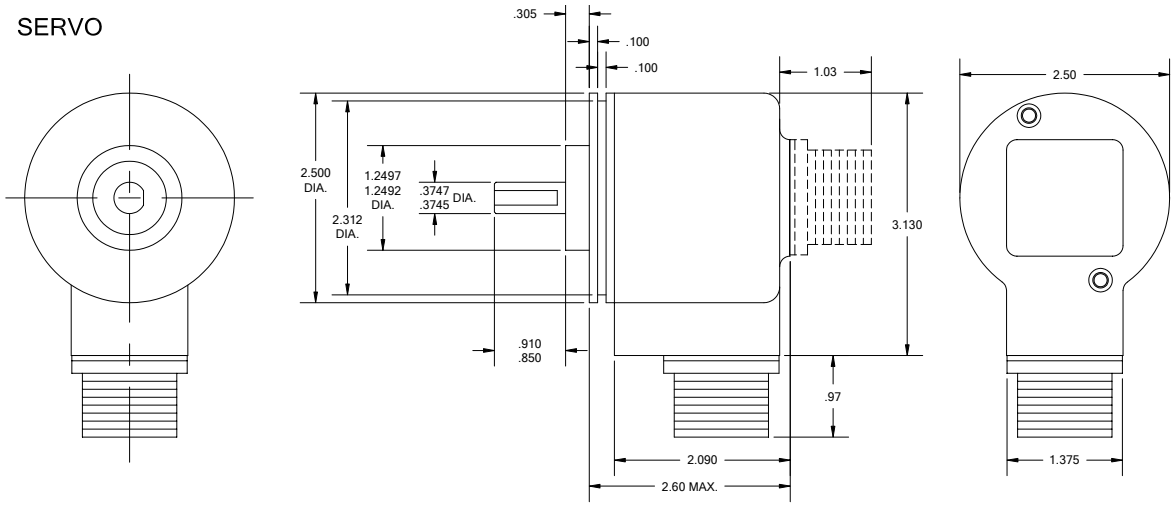
FLANGE




SERVO "L"



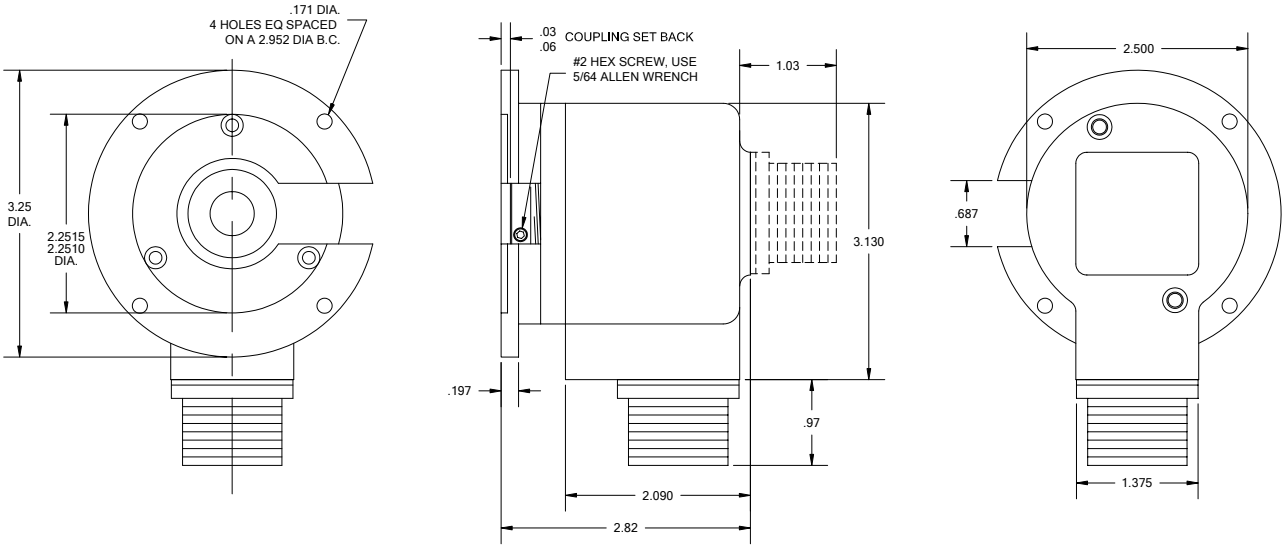

SERVO



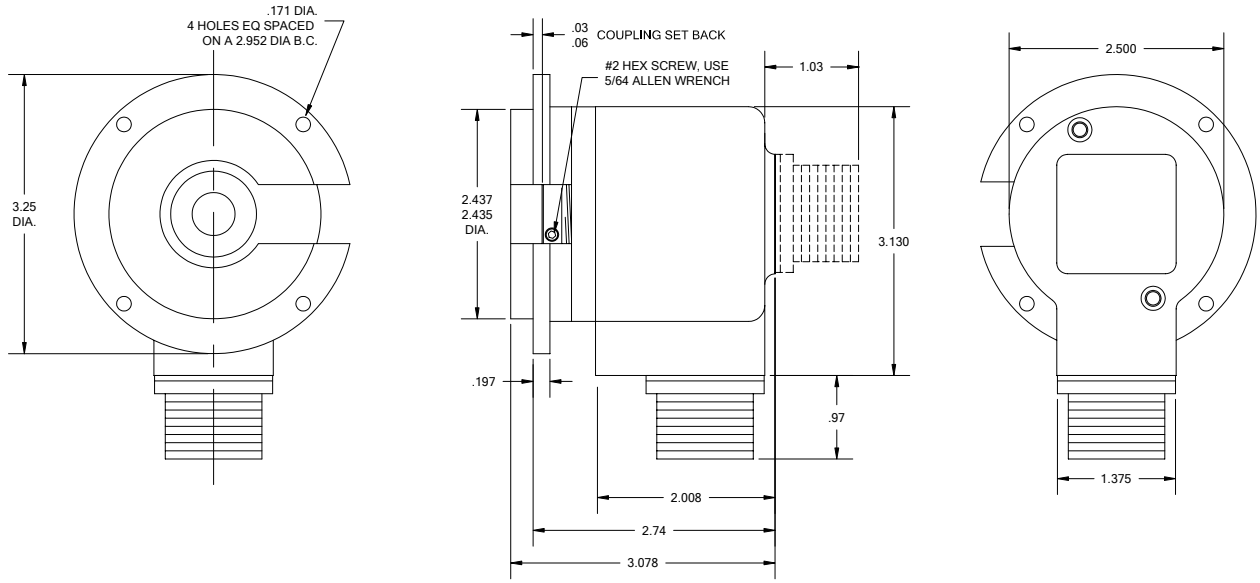


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## FLANGE - COUPLING




## PILOT





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