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UTICOR

Irwin Research DigiSolver E7N-G0256-5T0IR Instruction & Operation Manual

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The E7N-G0256-5T0IR DigiSolver

Electrical Specifications

Input Power

- Voltage: 5 VDC \pm 5%
- Current: 0.55 Amp

Position Output:

- Gray Code: 256 counts/revolution

Output Drivers:

- **T: Tristate (Multiplexing) TTL (74LS 645), high true logic**
- **Logic True:** 2 V @ 15 mA, 20 mA leakage when tristated
- **Logic False:** 0.3 V @ 24 mA, 0.4 mA leakage when tristated
- **Mux Input:** Low active, TTL level

Direction Control:

- Rotation may be electrically selected by a remote command. The command line (pin L) is tied to +5 V for counterclockwise rotation (factory set), and 0 V (GND) for clockwise rotation.

Mounting

Servo Mount

The DigiSolver can be mounted with traditional servo-clamps or through the three 4-40 mounting holes on the face of the resolver.

Zero Reference ($\pm 5^\circ$): When flat on shaft lines up with the screw in the case and the two mounting holes on the face plate.

CAUTION NOTES:

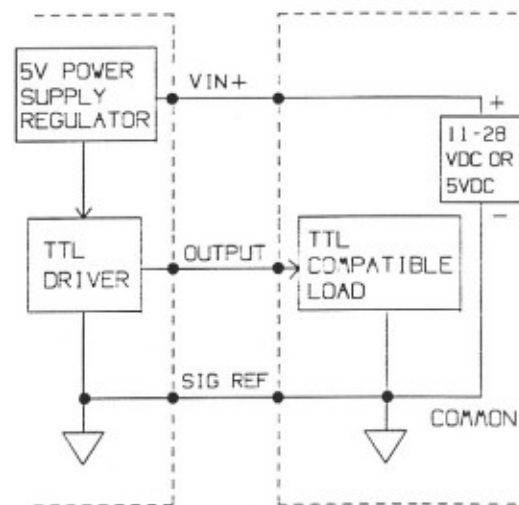
1. With E7 Series DigiSolver must be coupled to an external shaft using a flexible coupling. Autotech recommends ACR series helical couplings. For further information contact helical products company directly at 805/928-3851.
2. NEMA 13 rating - to maintain the NEMA 13 rating of the DigiSolver, the bearing seals must be checked once every six months and replaced if necessary. Lubricating the bearing seal periodically prolongs its life.
3. If the DigiSolver is to be axially driven, be sure that the shafts are aligned. If misaligned, it can destroy the DigiSolver bearing.
4. The DigiSolvers contain fully encapsulated electronics and must be returned to the factory for repair. **DO NOT ATTEMPT TO REPAIR** the Electronic Module in the field; THIS WILL VOID ALL WARRANTIES.

Field Adjustments/Electronic Module Replacement

Normally, there are no field adjustments required in the DigiSolver. However, if you need to change the direction of rotation, refer to the preceding Direction Control paragraph under Electrical Specifications. If you need to change the electronic module, remove the three mounting screws on the case and separate the electronics module from the face plate. A defective electronic module can be easily replaced in the field without dismounting the unit.

E7N DigiSolver Wiring

1. The shielded interconnecting cable should be routed in its own conduit and kept separate from other high voltages/high inductance wiring. The shield drain wire should be connected to earth ground at both ends of cable.
2. Use mating connector KPT06A-16-26S for single-turn units.
3. Data transfer logic required is same as logic selected for output drivers.
4. This equipment uses isolated Sig. Ref. (Com). Failure to assure at least 100 K Ohm resistance between Sig. Ref. and earth ground may cause erratic output data.
5. When power is applied to the DigiSolver, the outputs go to the power-up code state (Offstate) for approximately 130 milliseconds. This must be taken into consideration while designing the system.

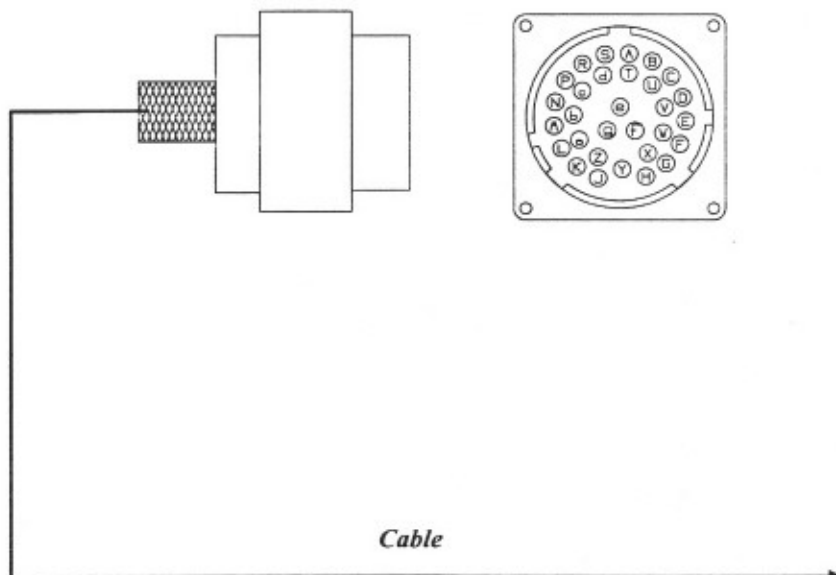


TTL Type of Output

CAUTION: Check the cable wiring before applying power to the DigiSolver

*Mating Connector Autotech's
KPT06A-16-26S*

*Connector on DigiSolver
KPT02A-16-26P*



Connector Pin	Function
A	G0
B	N/C
C	G1
D	N/C
E	G2
F	N/C
G	G3
H	N/C
J	G4
K	N/C
L	Direction Control
M	G5
N	N/C
P	G6
R	N/C
S	G7
T	N/C
U	G8
V	N/C
W	G9
a	N/C
b	+5 VDC
c	GND
X	Case Ground
Y	Spare
Z	Spare

Grounding and Shielding

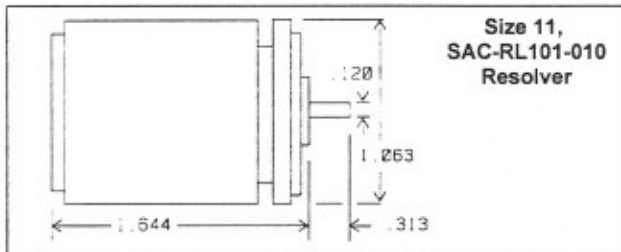
CAUTION: Failure to observe any of these requirements may cause unpredictable operation and will void any warranty.

1. All logic level wiring (including external power supply) must be done using overall **foil shielded cables**, with shields and equipment grounded. It is recommended that the DigiSolver shielded cable be run in its own separate conduit.
2. All ground planes on which the DigiSolver and all external equipment are mounted must be held to the same RF potential, by good metallic connections to building frames, conduit or wiring trays.
3. All shielded cable must be kept at a minimum distance of 2 inches from all high voltage or inductive wiring.
4. All shielded resolver cable must be kept at a minimum distance of 12 inches from all motor wiring controlled by AC or DC drives.
5. **CAUTION:** This equipment has an isolated Sig. Ref. (common). Failure to maintain this isolation between chassis ground (earth ground) and Sig. Ref. in external equipment (power supply or I/O cards) may cause electrical noise interference resulting in unpredictable operation of this equipment.

Outline Dimensions/Specifications

The outline dimensions of the DigiSolver are shown in the following diagrams. The specifications are provided in the table below.

Resolver Outline Dimensions:

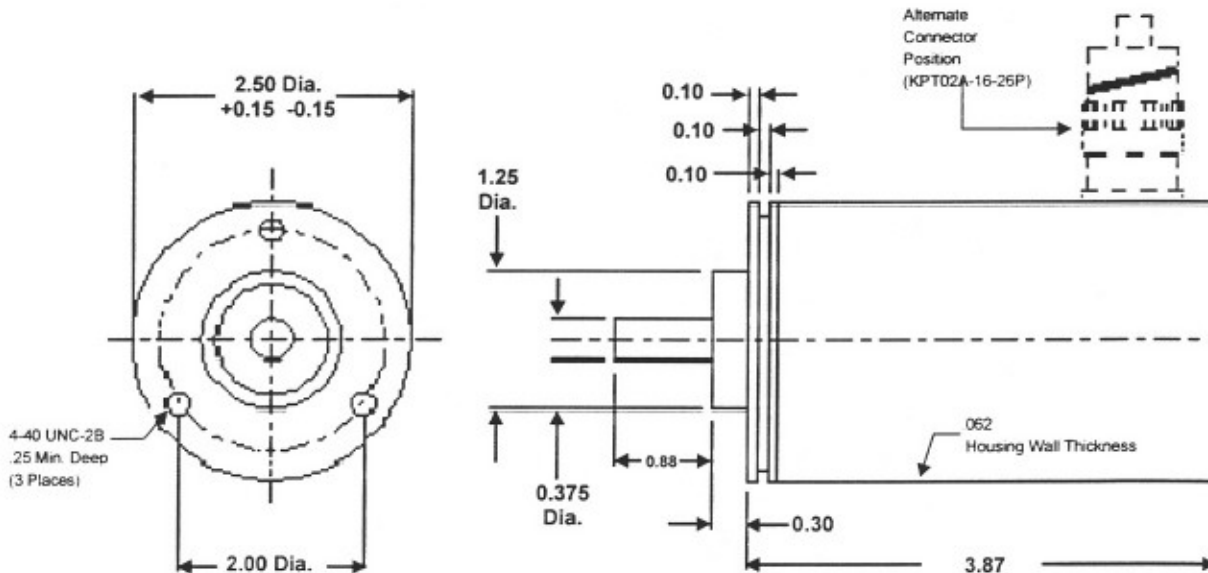


E7N DigiSolver with Servo-Mount Specifications		
Mechanical Specification	Value	Unit
Maximum Starting Torque @ 25°C	5.0	oz-in
Moment of Inertia	45	gm/cm ²
Maximum Slew Speed	5000	RPM
Shaft Size	3/8	inch
Maximum Shaft Load		
Axial	40	50
Radial	36	100

E7N DigiSolver with Servo-Mount Specifications		
Mechanical Specification	Value	Unit
Bearing Life at Max. Manufacturer Spec.	2 x 10 ⁸	Revolutions
Weight	1.75	lbs.
Environmental Specification	Value	Unit
Shock	200	g for 11 mSec
Vibration	20	g for 200 Hz
Ambient Operating Temperature	-10 to +176 @ 5V -10 to +167 @ 12V -10 to +131 @ 24V	°F
Storage Temperature	-85 to +302	°F
Enclosure	NEMA 13	

DigiSolver Outline Dimensions:

Size 25 E7N DigiSolver Servo-Mount



How to Order

DigiSolver: Single-Turn and Geared Single-Turn

E X X - X X X X X - X X X X X
1 2 3 4 5 6 7 8 9

1. **Housing Type**
7 NEMA 13, size 25 (2.5" dia.), medium duty bearings
2. **Short-Circuit Protection**
N: NONE
3. **Output Format**
G: Standard Gray Code
4. **Number of Words or Counts Per Turn** (*Custom Counts available, consult factory*)
0256: Gray Code
5. **Input Power Supply**
5: 5 VDC
6. **Digital Output**
T: TTL with multiplexing
7. **Options**
O: None
8. **Mounting Style for Single-Turn DigiSolver or Gear Ratio for Geared Single-Turn DigiSolver**
I: Servo Mount (3-hole configuration)
9. **Connection Position**
R: 26-Pin connection on the side

WARRANTY

Autotech Controls warrant their products to be free from defects in materials or workmanship for a period of one year from the date of shipment, provided the products have been installed and used under proper conditions. The defective products must be returned to the factory freight prepaid and must be accompanied by a Return Material Authorization (RMA) number. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.

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CAUTION

Autotech Controls' products are carefully engineered and rigorously tested to provide many years of reliable operation. However any solid-state device may fail or malfunction sometime. The user must ensure that his system design has built-in redundancies if Autotech Controls' product is being used in applications where a failure or malfunction of the unit may directly threaten life or cause human injury. The system should be so designed that a single failure or malfunction does not create an unsafe condition. Regularly scheduled inspections, at least once a week, should be made to verify that the redundant circuits are fully functional. All faults should be immediately corrected by repair or replacement of the faulty unit. In addition, the user may have to comply with OSHA, ANSI, state or local standards of safety. The user of Autotech Controls' products assumes all risks of such use and indemnifies Autotech Controls against any damages.

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