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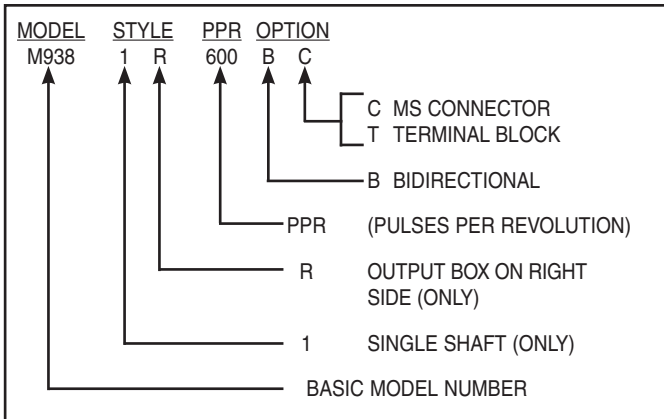
Encoder Instructions

M938
 INACTIVE DESIGN
 Replaced by Model AV485

DESCRIPTION

The Model M938 Pulse Generator is a zero-speed rotary transducer; that is, it can operate effectively down to zero RPM. The M938 generates a specific number of pulses for each rotation of its shaft. When the M938 is coupled to a machine, its output is directly proportional to process travel (pulse count) or speed (pulse rate). A rugged cast aluminum housing, 5/8" steel shaft, and heavy-duty sealed bearings provide mechanical ruggedness required for industrial applications.

The M938 options and how they are indicated in the M938 part number are shown below:



CAUTION

The M938 is often used for speed feedback in drive systems, where any failure can cause a machine shutdown. While the M938 is designed for continuous mill operation, it is important to follow proper procedures with this unit.

DO NOT force or drive a coupling onto the shaft. This can damage bearings so that a failure will happen at a later time.

REPAIR of defective units requires returning the unit to the factory, where there is special test equipment. Turn-around time is minimal, and charges are nominal for out-of-warranty units.

DO NOT connect grounded oscilloscope or any grounded instrument to M938 output.

DO NOT connect oscilloscope or any instrument common to any pulse generator connection other than common (Blk wire or pin A).

M938 SPECIFICATIONS

OPERATING POWER	12-15 VDC @ 140 mA (TYP)
OUTPUT SIGNAL	TWO CHANNELS IN QUADRATURE (TWO-PHASE, BIDIRECTIONAL, A, B), WITH COMPLEMENTS (Ā, B̄)
PULSES PER REVOLUTION.....	300, 360, 600, 1200, 1800, 2000 STANDARD. OTHERS AVAILABLE UPON REQUEST.
WAVE SHAPE.....	SQUARE WAVE, 50 ±15% DUTY CYCLE
A TO B TRANSITION SEPARATION	15% MINIMUM
VOLTAGE OUTPUT.....	HIGH: SUPPLY VOLTAGE MINUS 1 VOLT (NO LOAD) 1000 OHMS PULL-UP LOW: 0.7 VOLT MAX., 20 mA SINK
FREQUENCY	50 KHZ MAX.
OUTPUT PROTECTION	SHORT CIRCUIT PROTECTED TO COMMON
SPEED RANGE	0 TO 3000 RPM
OPERATING TEMPERATURE	32° TO 140° F AMBIENT
WEIGHT	15 LBS.
MECHANICAL	
STARTING TORQUE.....	2.2 Oz. - In. (TYP.)
SHAFT INERTIA.....	0.1 Oz. - In. - Sec ²
ACCELERATION (MAX.).....	5000 RPM/Sec.
COUPLING RECOMMENDED.....	ZERO BACKLASH, THOMAS DBZ OR EQUAL. (WHERE AXIAL END PLAY EXCEEDS ± 0.020", USE THOMAS CCX OR EQUAL).

Features subject to change without notice.

INSTALLATION

The pulse generator must be driven by a positive drive rather than a friction drive. The following means of coupling are acceptable when properly installed: Direct Coupling, Timing Belt/Pulleys, Chain/Sprockets.

With a direct drive, use a flexible coupling and align the shafts as accurately as possible. The pulse generator should not be subjected to any axial thrust. Overhung loads should also be minimized. Installations using timing belts/pulleys should have just enough belt tension to eliminate belt sag. Excessive tension will shorten belt and bearing service life. If a rubber slinger disc is used, position it on the shaft so it will rotate freely.

CAUTION

Do not force or drive coupling member onto the shaft, or damage to the bearings, pickup, or the rotor disc will result. Coupling must slide easily on shafts. Remove nicks or rust if necessary. Consider driving shaft end play when positioning coupling.

For more details and special considerations in specifying and installing drive components, refer to the Avtron Pulse Generator Handbook.

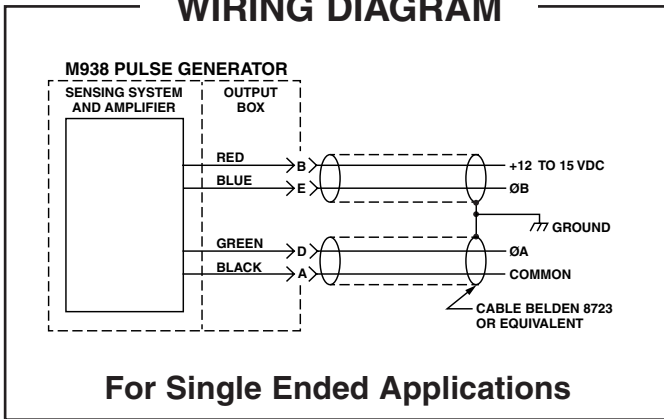
SPECIAL APPLICATION NOTES

For bidirectional operation of the two-phase M938, proper phasing of the two output channels is important. Phase A channel leads phase B for clockwise rotation of the shaft as viewed from the anti-drive end of the housing.

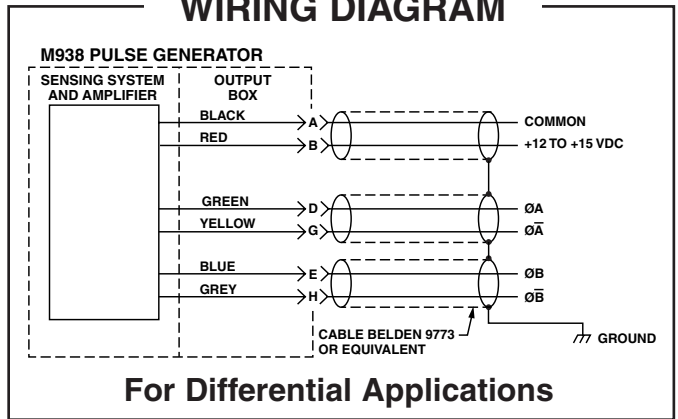
Interconnection cables specified in the wiring diagrams below are based on typical applications. Reference system drawing for specific cable requirements where applicable.

Physical properties of cable such as abrasion, temperature, tensile strength, solvents, etc., are dictated by the specific application. General electrical requirements are: stranded copper, 22 thru 16 gauge, braid or foil with drain wire, 0.05 MF maximum total mutual or direct capacitance, outer sheath insulator, 1,000 ft. max. A typical installation might use Belden 8723 for single ended applications or Belden 9773 for differential applications. If used with K661, consult K661 manual.

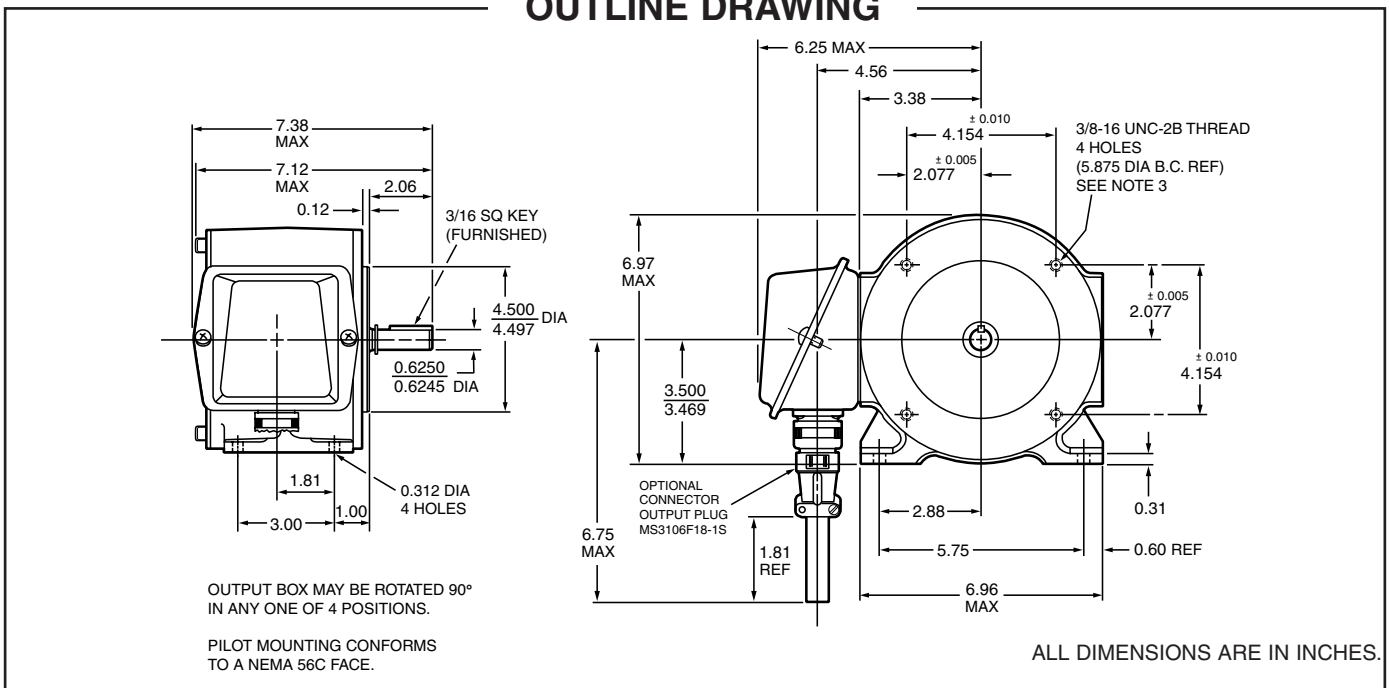
WIRING DIAGRAM



WIRING DIAGRAM



OUTLINE DRAWING



Avtron standard warranty applies. Copies available upon request.

REV. A

