MPU-A Series Hall-Effect Geartooth Pick-up

The MPU-A Series geartooth speed pick-up provides speed sensing capabilities using an integrated Hall-Effect sensor in conjunction with a permanent magnet which supplies a bias field. This ready-to-use pick-up directly senses rotating ferrous gear and other similar gear-type targets.

The MPU-A Series is capable of sensing various target tooth sizes over wide ranges of airgap. The operational airgap achieved is independent of gear rotation speed. The small module size makes it ideal in applications where space considerations are of concern. The rugged design allows the operation of these sensor assemblies in hostile environments where dirt and oil are major problems.

The MPU-A Series pick-up can be used in place of a PU-E, OPU or CF Series to monitor motor speeds when access to the motor shaft or restraints limit their use.

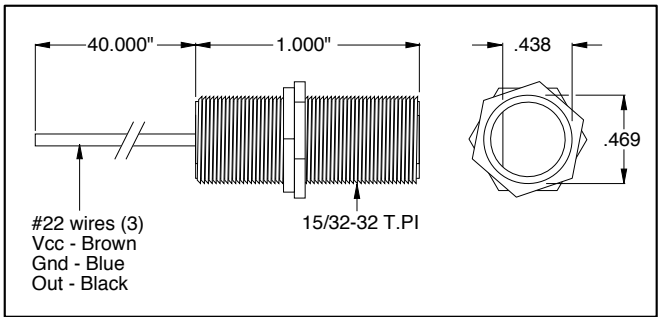
STANDARD FEATURES

- Senses motion of ferrous gear type targets.
- Digital output signal (square wave).
- NPN Open collector output, capable of sinking up to 20mA.
- Zero speed sensing capabilities.
- Larger operational airgap than magnetic pick-ups.
- No additional conditioning electronics needed.
- Immune to hostile environments.
- Operates from +4.5 to +24 volts DC supply.
- Operating temperature range of -40° to +125° C.
- Rugged cylindrical threaded aluminum housing.
- Compatible with all Dart digital speed controls and tachometers.

MPU-A SELECTION GUIDE

MODEL	PULSES PER REVOLUTION
MPU-A	Based on number of teeth on target

DIMENSIONAL SPECIFICATIONS



Caution: The MPU-A cord should not be grouped with any other wires or cords. For applications with MPU-A wires over 6 feet long, or for particularly noisy environments, a SHIELDED CABLE is recommended. Connect the shield to the COMMON terminal on the wire end opposite the MPU-A housing.

INSTALLATION AND WIRING

The MPU-A Series must be installed so that the mounting axis is perpendicular to the direction of rotation. The flat side of the sensor housing must be parallel to the direction of the gear rotation.

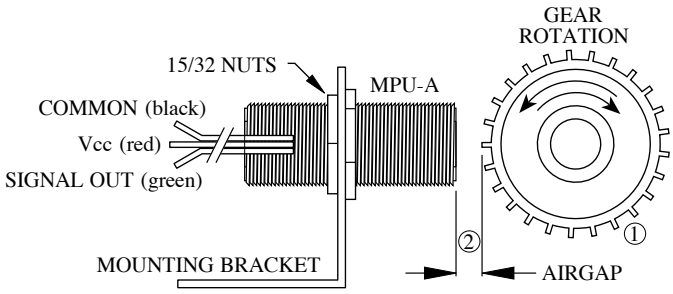


FIGURE 1

1) The practical **minimum** target dimensions are: 0.10" top of tooth, 0.15" tooth depth, and 0.10" spacing between teeth.

2) The working airgap for target dimensions approaching the minimum is approximately .005", and up to .100" for larger targets. Optimum airgap performance is achieved using target materials with a high magnetic permeability such as low carbon steels.

All Dart products requiring digital pulse feedback are designed with internal pullup resistors. However, if the MPU-A is being used with a peripheral that does not have a pullup resistor, then the resistor value can be determined below:

$R = (Vcc - 0.2) \div I_{sink}$

where Isink is the desired sink current (typically 5 mA, max. 20 mA). For 5 volt Vcc and a desired 5 mA sink current, a resistor value of 960 ohm is calculated (1K ohm may be used).

MPU-A SERIES SCHEMATIC