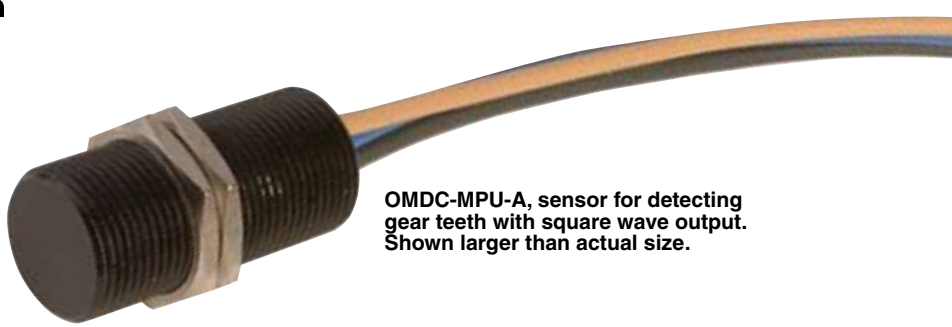
# HALL EFFECT GEARTOOTH PICK-UP SENSOR
## SPEED SENSOR

*OMDC-MPU-A Series*



**OMDC-MPU-A, sensor for detecting gear teeth with square wave output. Shown larger than actual size.**

- **Senses Motion of Ferrous Gear Type Targets**
- **Zero Speed Sensing Capabilities**
- **Digital Output Signal (Square Wave)**
- **Large Operational Air Gap**
- **No Additional Conditioning Electronics Needed**
- **Immune to Hostile Environments**
- **Operates from 4.5 to 24 Vdc**
- **Not Subject to Rotational Orientation**

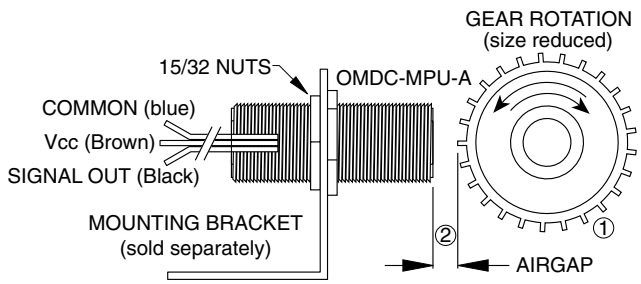
The OMDC-MPU-A Series geartooth speed pick-up provides speed sensing capabilities using an integrated hall-effect sensor in conjunction with a permanent magnet which supplies a bias field. This ready-to-use pick-up directly senses rotating ferrous gear and other similar gear-type targets.

The OMDC-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.

## SPECIFICATIONS

**Operating Temperature:** -40 to 125°C (-40 to 257°F)
**Input Volgate:** 4.5 to 24 Vdc
**Output:** NPN open collector output–sinking up to 20 mA
**Connection:** 3-wire 22 AWG with stripped leads 1 m (40") long
**Mounting:** Can be mounted in any orientation
**Material:** Cylindrical aluminum housing
**Dimensions:** 25.4 mm L (1") x 11.9 mm diameter (15⁄32")

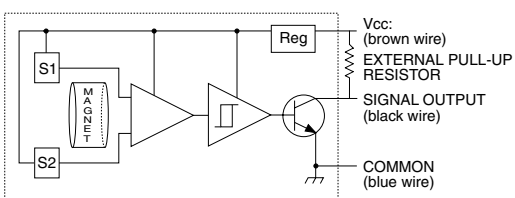
**Installation and Wiring:** The OMDC-MPU-A Series must be installed so that the mounting axis is perpendicular to the direction of rotation. The flat side of the sensor housing must be parallel to the direction of the gear rotation.




1) The practical minimum target dimensions are: 2.54 mm (0.10") top of tooth width, 3.81 mm (0.15") tooth depth, and 2.54 mm (0.10") spacing between teeth.
2) The working airgap for target dimensions approaching the minimum is approximately 0.127 mm (0.005"), and up to 2.54 mm (0.100") for larger targets. Optimum airgap performance is achieved using target materials with a high magnetic permeability such as low carbon steels.

If the OMDC-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) ÷ Isink where Isink is the desired sink current (typically 5 mA, maximum 20 mA). For 5V Vcc and a desired 5 mA sink current, a resistor value of 960Ω is calculated (1 KΩ may be used).

SCHEMATIC:




**Caution:**
The OMDC-MPU-A cord should not be grouped with any other wires or cords. For applications with OMDC-MPU-A wires over 1.8 m (6') long, or for particularly noisy environments, a shielded cable is recommended. Connect the shield to the COMMON terminal on the wire end opposite the OMDC-MPU-A housing.

## To Order

| MODEL NO. | DESCRIPTION |
|---|---|
| **OMDC-MPU-A** | Hall-effect pick-up speed sensor with square wave output |