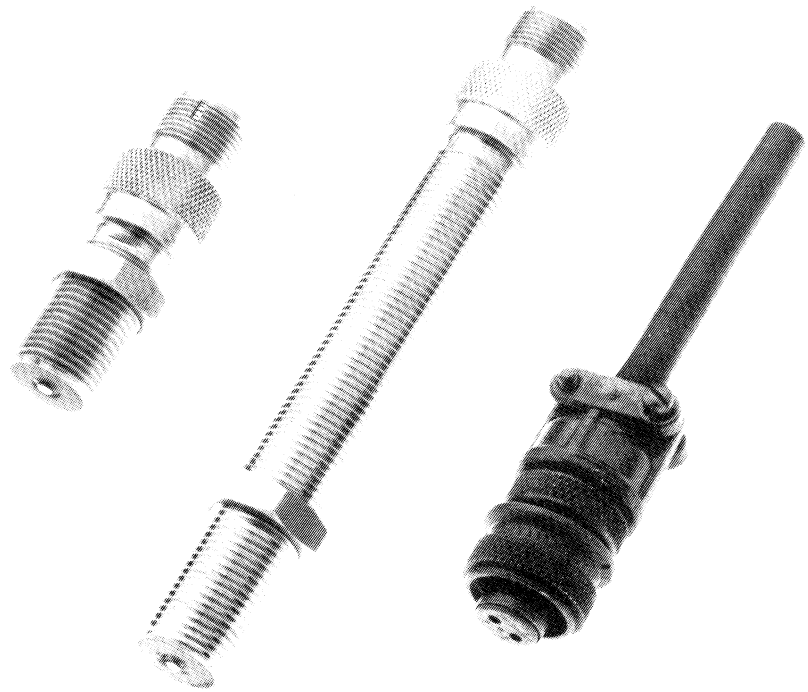
Protector Magnetic Sensors

The Crompton MAGNETIC SENSORS CMS101 and CMS131 are non-contact passive transducers for converting mechanical motion into electrical control signals, in the form of a sine wave.

For use with Speed Sensing Relay 253-PH3 in engine-generator applications, the CMS Magnetic Sensors are designed to detect rotating motion of ferromagnetic actuators, produced of material such as carbon steel, iron or magnetic stainless steel.

Common actuators include engine flywheel ring gears, impellors, sprockets, slotted discs and keyway shafts.



Principle of Operation

The device is constructed of stainless steel containing a permanent magnet, pole piece and coil. The assembly provides a permanent magnetic field through the coil.

The device in application is located in close proximity to an actuator, i.e. gear. As the gear rotates, discontinuities (gear teeth) approach and pass the pole piece resulting in a change in the magnetic field. The change in magnetic field produces a voltage in the coil, as observed in a conventional electrical generator.

The electrical signal will vary with the shape of the applied actuator, with conventional gears providing sinusoidal wave forms.

Both the voltage and frequency of the magnetic sensor output are directly proportional to the actuator's speed.

Specification

Type No.
CMS101 Standard reach
CMS131 Long reach

Output voltage	40*
Resistance	85 Ohms
Inductance	25 mh
Temperature Range	−100°F to +225°F
Pole-Piece Dia.	.106 in.
Gear Pitch (Optimum)	20DP
Gear Pitch Range	24DP or Coarser
Mating Connector	CMS3106 or MS3106A-10SL-4S

* Tested at 1,000 in./sec., with 20 pitch, 30 tooth gear at .005″ pole piece clearance and 100Kohm load.

Application Information

1) When used with the Crompton 253-PH3 Speed Sensing Relay a minimum control signal of .5p–p volts occurs at an approximate actuator speed of 35 inches per second (IPS). The formula:

$$IPS = \frac{RPM \times Gear\ Diameter\ (inches) \times \pi}{60}$$

should be applied to verify application suitability at minimum speed.

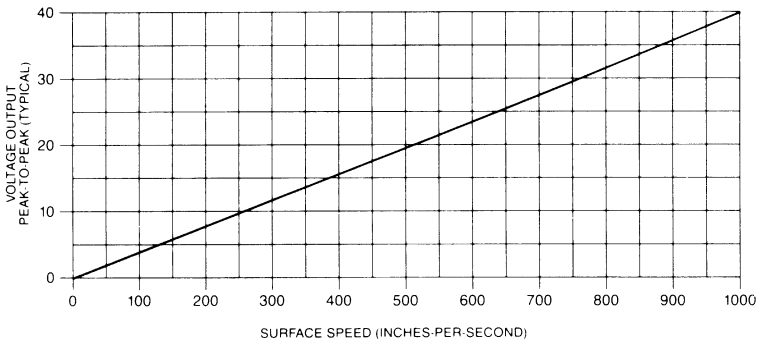
2) The Gear Pitch or Diameter Pitch range is 24DP or coarser. Apply the formula:

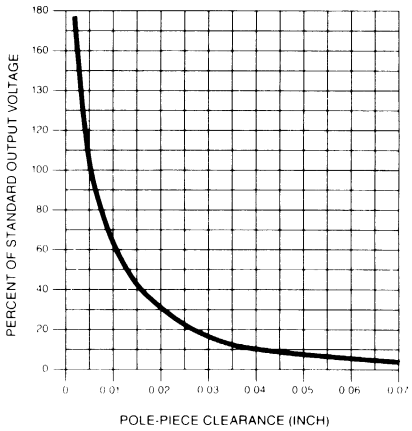
$$DP = \frac{Number\ of\ teeth + 2}{Gear\ Diameter\ (inches)}$$

to verify application suitability.

3) A 20AWG single conductor shielded cable is recommended for interconnection wiring of the CMS Magnetic Sensor to the 253–PH3 Speed Sensing Relay.

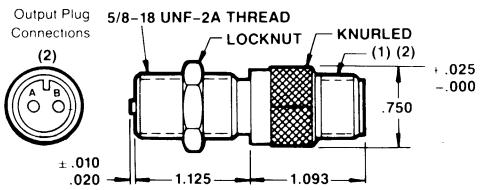
Performance Curves



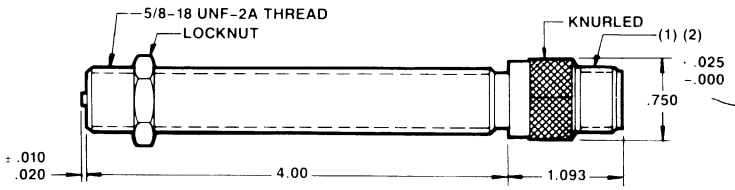


Dimensions

CMS101



CMS131



(1) Machined and threaded for mating with MS3106A–10SL–4S connector.
(2) Output connections—solder type—Pin B is electrically (+) positive with reference to Pin A (–) negative.

As development is continuous, we reserve the right to alter specifications without notice.

Our policy is one of continuous development and although the information is correct at the time of publication, we reserve the right to supply products differing in construction or dimensions from those illustrated and described.