



Type 8502-1041

APPLICATIONS

Monitoring the speed of:

- Diesel Engines
- Propeller Shafts
- Electric Motors
- Speed Drives
- Pumps
- Conveyors

FEATURES

Signal Conditioner

- Wide speed sensing range
- Operates with a variety of speed sensors
- One adjustable set point which may be used as a speed switch
- Set point is available with auto reset or latching functions
- 5 - 100% available hysteresis for the set point
- Set point test button simulates 20% increase in speed, allowing testing of overspeed shutdown circuit
- Independent span adjustment
- Drive capability for up to six panel meters in parallel
- Provides square wave output for alarm and monitoring
- TS 35×7,5 rail mount

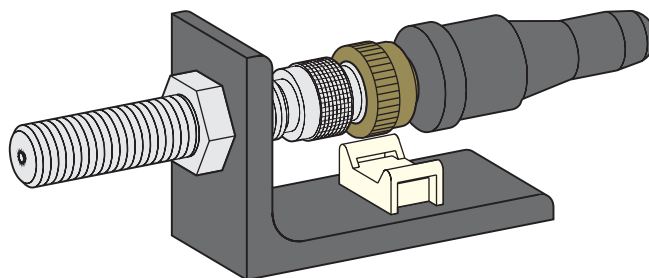
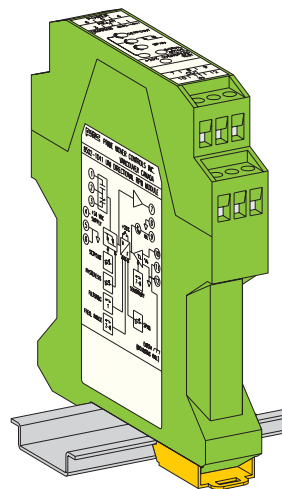
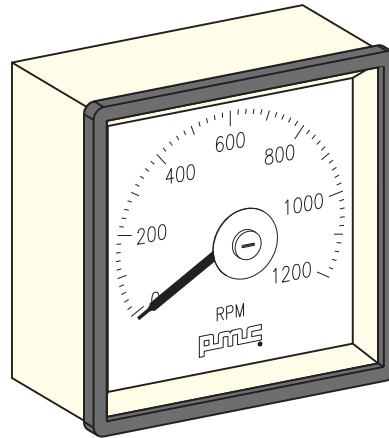
Magnetic Pickup

- Easy installation to existing systems using magnetic tape
- Wide air gap between pickup and target
- Insensitive to target direction
- Waterproof magnetic pickup, cable and connector

Panel Meters

- Illuminated, DIN style high quality panel meters, scaled to suit
- Optional waterproof covers available for panel meter

UNIDIRECTIONAL TACHOMETER SYSTEM



PRIME MOVER CONTROLS INC.

GENERAL DESCRIPTION

The PMC type 8502 unidirectional rpm Indicator system is designed to measure the speed of rotating machinery and to provide a linear analog output signal for remote displays.

A complete system consists of three units, as follows:

1. the sensor
2. the signal conditioner
3. the display.

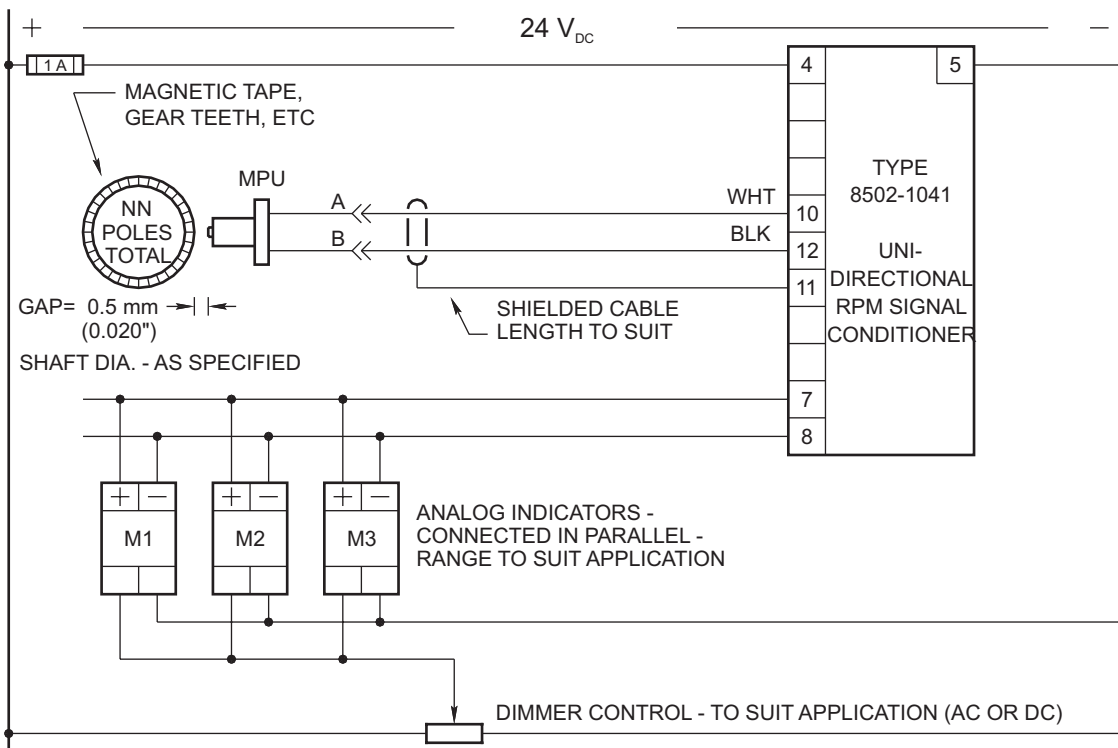
The sensor is generally a magnetic pickup which scans gear teeth and generates a frequency signal which is proportional to the speed of rotation of the machinery. As an alternative to gear teeth, the scanning target may be magnetic tape. For applications involving rotation in a single direction, a waterproof, unidirectional self-powered pickup is used.

The signal conditioning unit consists of a DIN rail mounted enclosure with terminals, which takes the AC signal from the magnetic pickup and converts it to high level 0 to +10 V_{DC} linear output signal for remote displays. It includes signal amplifiers, a voltage to frequency converter and a meter driver with gain adjustment. Input signal indicator, set-point output, and over speed test functions are standard options.

The display unit is typically an analog panel meter capable of displaying the unidirectional speed signal provided by the signal conditioner. Up to six remote panel meters may be powered simultaneously, with electrical span and mechanical zero on each meter. Internal illumination is also provided for night applications and AC or DC dimmer controls are available with 0-100% brilliance control. Various analog display options are available, including various meter sizes, bar graphs, etc.

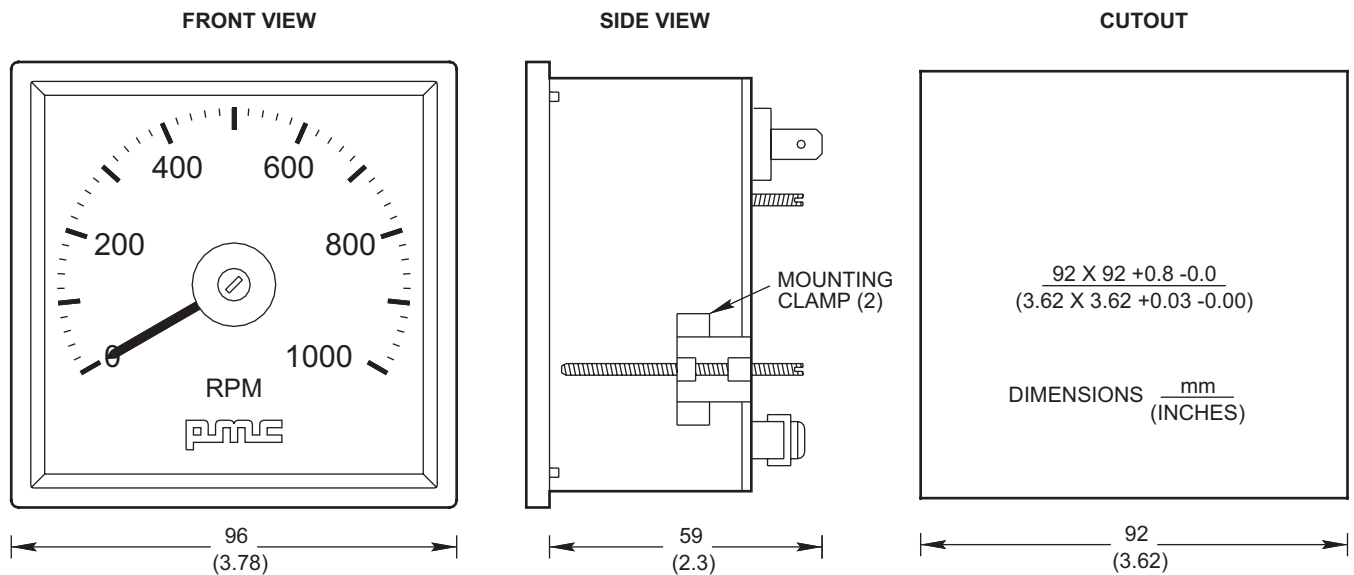
All components in the system are carefully selected for maximum quality and reliability. Printed circuit boards are CAD designed, carefully loaded and inspected, power tested, ultra-sonically cleaned and conformal coated. All components of the system are interconnected and powered for full operational testing at PMC prior to shipment. Instruction manuals are included.

CONNECTION DETAILS - BASIC CIRCUIT



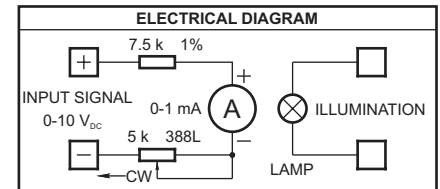
NOTE: TYPICAL CONNECTION DIAGRAM
DO NOT USE FOR
CONSTRUCTION.

ANALOG DISPLAY



TECHNICAL SPECIFICATIONS

- Scales: standard and custom scales are available
- Movement: pivot and spring jewels, vibration damped for marine applications.
- Travel: 240° pointer travel.
- Accuracy: $\pm 1.5\%$ of full scale.
- Relative humidity: 75% RH average for year.
- Temperature: -20 to +40 °C.
- Housing: dust protected with glass front.
- Mounting: two mounting clamps are included
- Adjustments: zero (mechanical) and span (electrical).
- Illumination: standard, with single rear mounted bulb, easily replaced.
- Weight: 0.260 kg (9.2 oz)



SPARE PARTS		
LAMP 12 VOLTS 2.0 WATTS	P/N 3898	
LAMP 24 VOLTS 3.0 WATTS	P/N 3899	
LAMP 32 VOLTS 1.2 WATTS	P/N 3630S	
GLASS WITH ZERO ADJUST	P/N GOS10P	
WHITE METER CASE	P/N GOS11P	
BLACK BEZEL	P/N GOS15P	
BLANK METER SCALE	P/N GOS16P	
SCALE SCREW	P/N GOS40P	
LAMP SOCKET	P/N VDO 600-813	
MOUNTING CLAMP	P/N MTG CLAMPS	

ORDERING DATA

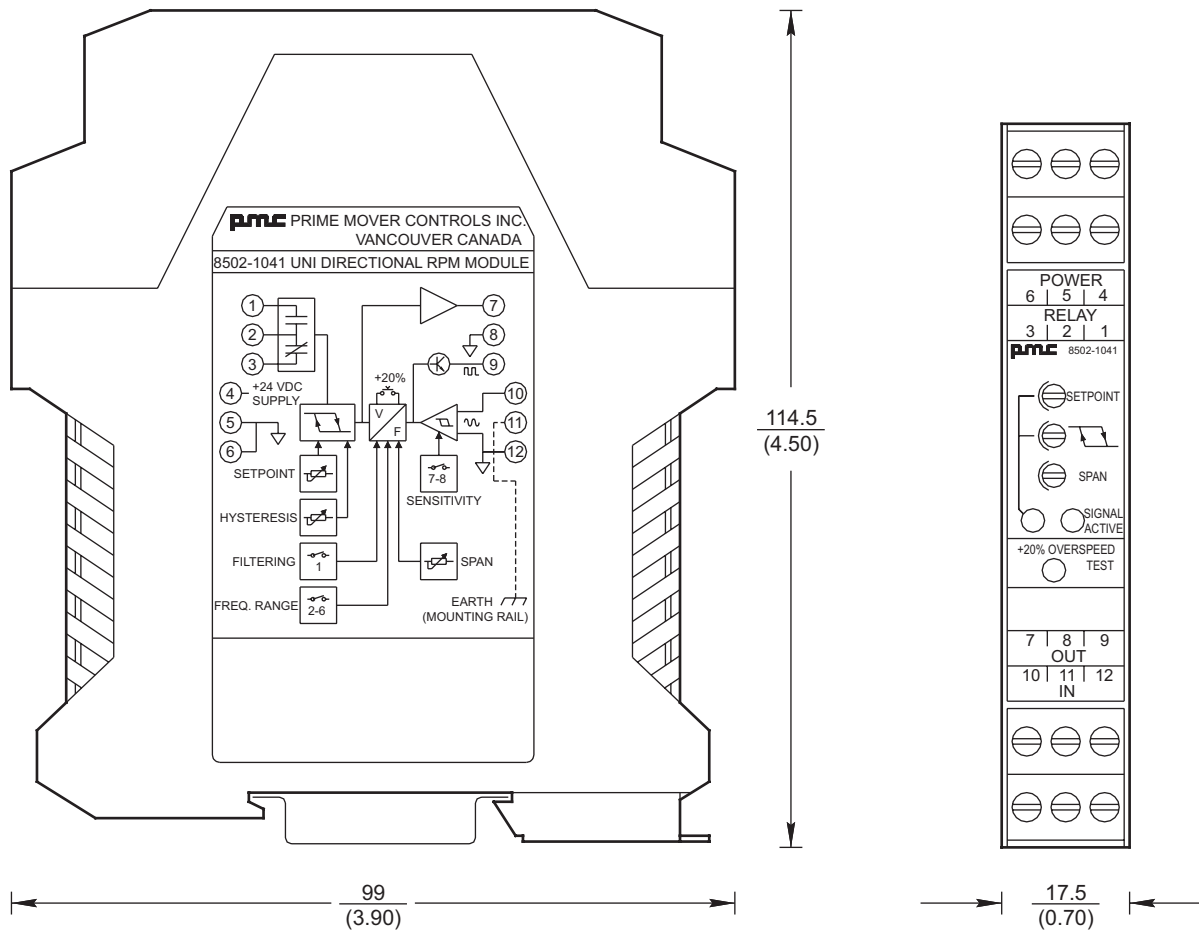
Each system includes, as standard supply, the following:

- one passive magnetic pickup.
- one magnetic pickup mounting bracket.
- one cable assembly, 10 m (33') long.
- one DIN rail mount unidirectional rpm signal conditioner module.
- one panel meter, scaled to suit.
- three instruction manuals.
- one set of spare lamps.

The following additional data is required to configure the system:

- magnetic pickup cable length.
- number of target teeth per revolution.
- magnetic tachometer tape required.
- shaft diameter (for magnetic tape).
- adjustable set-point output calibration.
- dimmer control option.
- total number of panel meters.
- meter scale range
- meter custom scale arrangement.
- additional spare lamps.
- additional instruction manuals.

UNIDIRECTIONAL RPM MODULE



SPECIFICATIONS

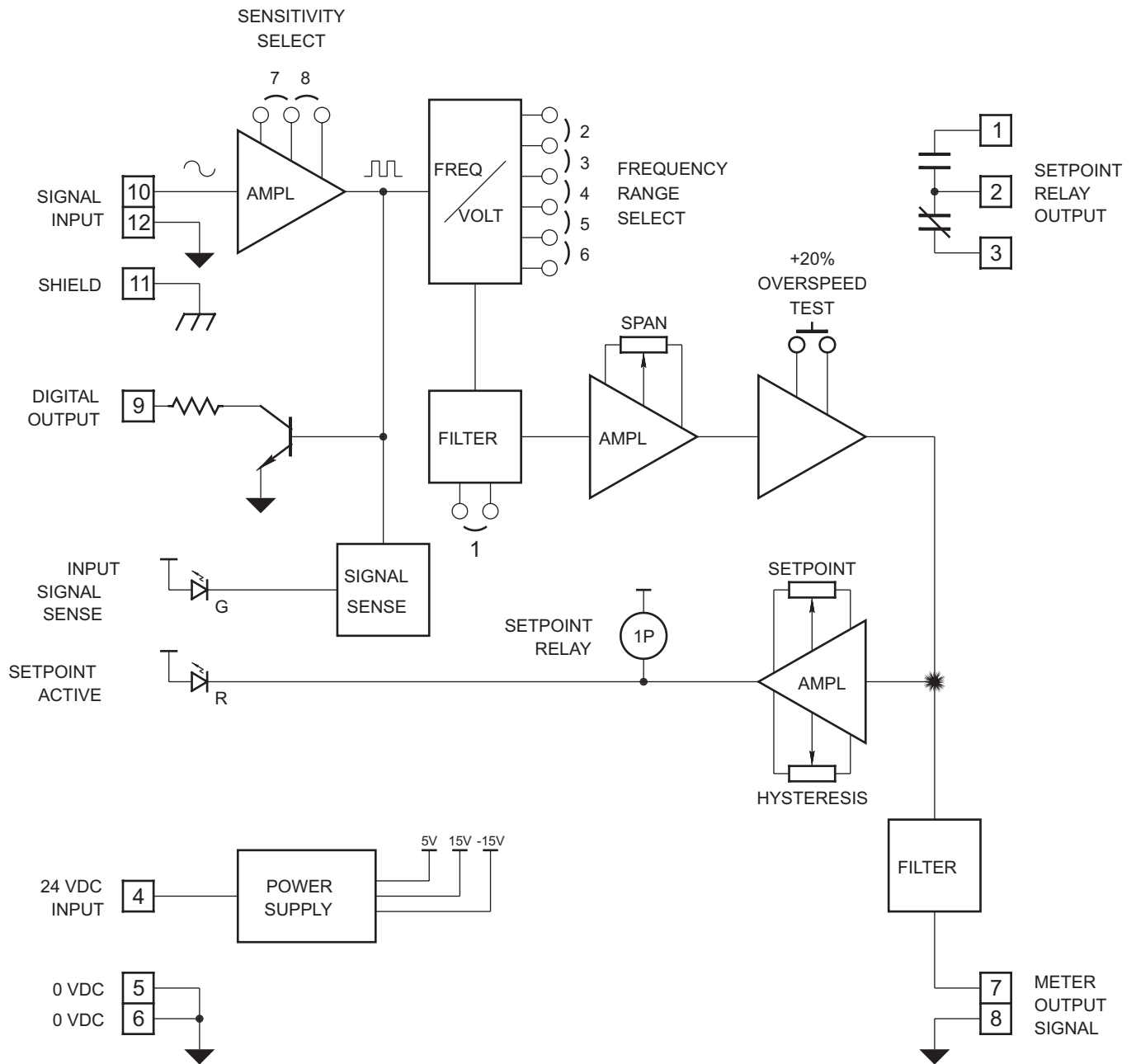
The unidirectional rpm circuit board is installed in a DIN rail mount enclosure. This enclosure is suitable for installing on TS 35 x 7,5 (DIN EN 50 022) mounting rail. PMC can supply the mounting rail if required.

The unidirectional rpm module is powered from nominal $24 V_{DC} \pm 25\%$. The unidirectional rpm module is capable of accepting input signals from 0 to 100,000 Hz. The input signals are converted by the unidirectional rpm module to a meter output signal 0 to $+10 V_{DC}$ at 6 mA max. The output signal can be used to drive remote analog panel meters, or fed to independent set point boards for control functions. Inputs may be any AC or pulsed DC signal sources generated by passive magnetic pickups, open collector outputs, frequency sources, tachogenerators, magnetos, etc.

The input signal gain and the frequency-to-voltage converter reference signal are preset at the factory for optimum performance using DIP switches. The output signal gain is then adjusted to provide a meter signal of 0 to $10 V_{DC}$. A secondary digital output signal, with a pulse rate proportional to the input signal, is also available.

A LED mounted on the unidirectional rpm module indicates the presence of an input signal. An adjustable set point output is available. When the meter output signal exceeds the adjustable preset voltage level of the set point, a Form C relay contact is actuated. When the meter output signal falls below the preset value by an adjustable differential (hysteresis), the set point output is reset.

BLOCK DIAGRAM



INPUT RATINGS:

- Nominal supply voltage 24 V_{DC}
- Nominal supply current 50 mA
- Maximum supply current 100 mA

OUTPUT RATINGS:

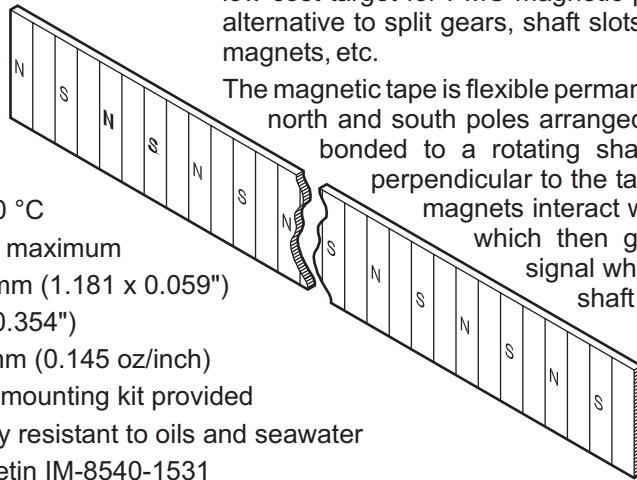
- Meter output 6 mA
- Digital output 100 mA @ 24 V_{DC}
- Set point relay output 2.0 A @ 120 V_{AC} / 24 V_{DC}

SENSOR

MAGNETIC TAPE

PMC Type 8540-1531 magnetic tape provides a convenient, simple and low cost target for PMC magnetic pickups. It is offered as a low cost alternative to split gears, shaft slots, drilled holes, individually installed magnets, etc.

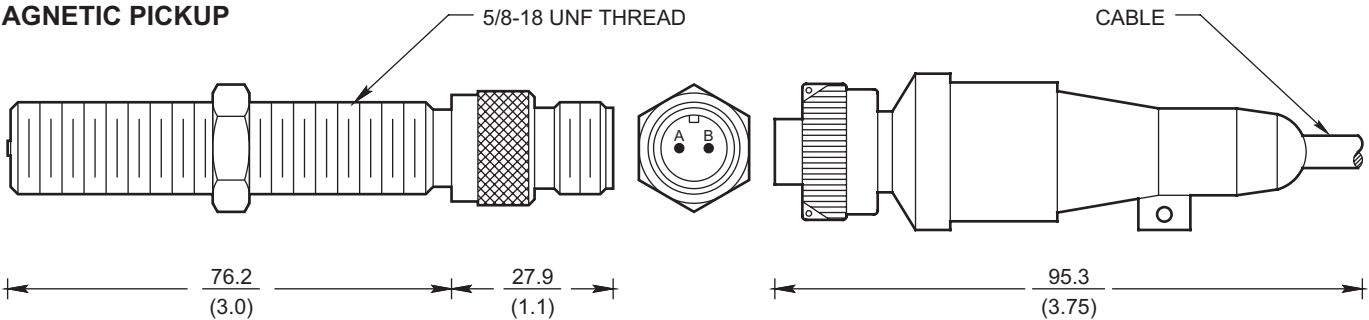
The magnetic tape is flexible permanent magnet consisting of alternating north and south poles arranged along the tape. The tape can be bonded to a rotating shaft and a magnetic pickup placed perpendicular to the tape surface. As the tape rotates, the magnets interact with the magnetic field of the pickup which then generates the pulsating AC output signal whose frequency is proportional to the shaft speed.



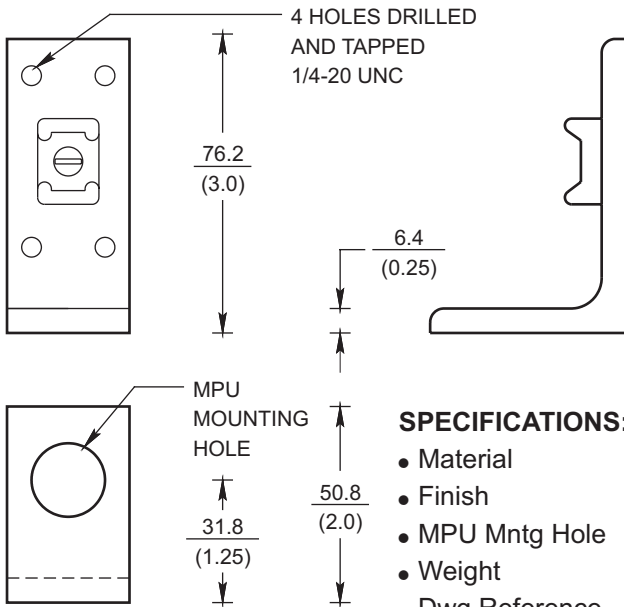
SPECIFICATIONS:

- Temperature: -30 to +70 °C
- Rotational Speed: 3000 rpm maximum
- Dimensions: 30 x 1.5 mm (1.181 x 0.059")
- Pulse Spacing: 9.0 mm (0.354")
- Weight: 0.164 g/mm (0.145 oz/inch)
- Installation: adhesive mounting kit provided
- Material: chemically resistant to oils and seawater
- Reference: PMC bulletin IM-8540-1531

MAGNETIC PICKUP



PICKUP MOUNTING BRACKET - FIXED



SPECIFICATIONS:

- Material: aluminum
- Finish: black anodize
- MPU Mntg Hole: 5/8-18 UNF
- Weight: 0.060 kg (2.1 oz)
- Dwg Reference: A-8890-1001

The PMC type 8540-1521 Magnetic Pickup is a passive, non-contact, self-powered speed transducer that converts mechanical motion into an electrical signal. When its permanent magnetic field is altered by a moving ferrous object (the sensor target), the pickup generates an AC output signal. When the pickup is positioned close to a target mounted on a rotating shaft, the output signal has a frequency which is proportional to rpm. The target may be gear teeth, bolts, magnets, holes or PMC magnetic tape.

SPECIFICATIONS:

- Sensing Frequency: 10 Hz to 15 kHz
- Output Volts: 190 V_{AC} p-p max.
- Operating Temp.: -20 to +120 °C
- Typical Air Gap: 0.020" (0.5 mm)
- Housing Material: stainless steel
- Housing: watertight
- Connector: watertight - provided
- Cable: one pair - shielded
- Resistance (max.): 1200
- Inductance (max.): 450 mH
- Pole Piece Dia.: 0.106" (2.7 mm)
- Body Length: std 3" optional 5"
- Weight with conn.: 0.120 kg (4.2 oz)
- Dwg Reference: B-8540-1521

PRIME MOVER CONTROLS INC.

3600 GILMORE WAY, BURNABY BC CANADA V5G 4R8

TEL 604 433-4644 FAX 604 433-5570 www.pmc-controls.com