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# MAXIGARD™



## C3000SC-1 SIGNAL TRANSMITTER

### Introduction

The MAXIGARD C3000SC-1 Signal Transmitter is designed to convert rotational speed into a linear 4-20 MA or 0-10 VDC signal.

### Principle of Operation

While the shaft (with magnet disc or optional wrap attached) is rotating, a signal is generated and picked up by the sensor. This signal is not affected by build up of dust or any other foreign material on the magnet disc or sensor. The generated signal is processed through an electronic circuit and converted into a 4/20 MA or 0-10 VDC output. The output signal is linear and proportional to the speed of the shaft. A display output is provided for an optional digital or analog display.

### Components

THE C3000SC-1 SYSTEM INCLUDES:

- 4" MAGNET DISC (OTHER OPTIONAL TARGETS AVAILABLE)
- SELF CONTAINED TRANSMITTER HOUSING INCORPORATING SENSOR, AND TRANSMITTER CIRCUIT
- MOUNTING BRACKET WITH MOUNTING SADDLE

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## SECTION 1 - MECHANICAL

### 1.0 Magnet Disc

- 1.1 The end of the shaft to be monitored should be square to prevent excessive disc wobble.
- 1.2 Center drill and tap the shaft end. (Suggested #21 drill and #10-32NF tap). Bolt the magnet disc to the end of the shaft. Use "Loc-tite" to keep the bolt and disc tight on the shaft.  
(see figure 1A, page 3).

### 2.0 Magnet Wrap (optional)

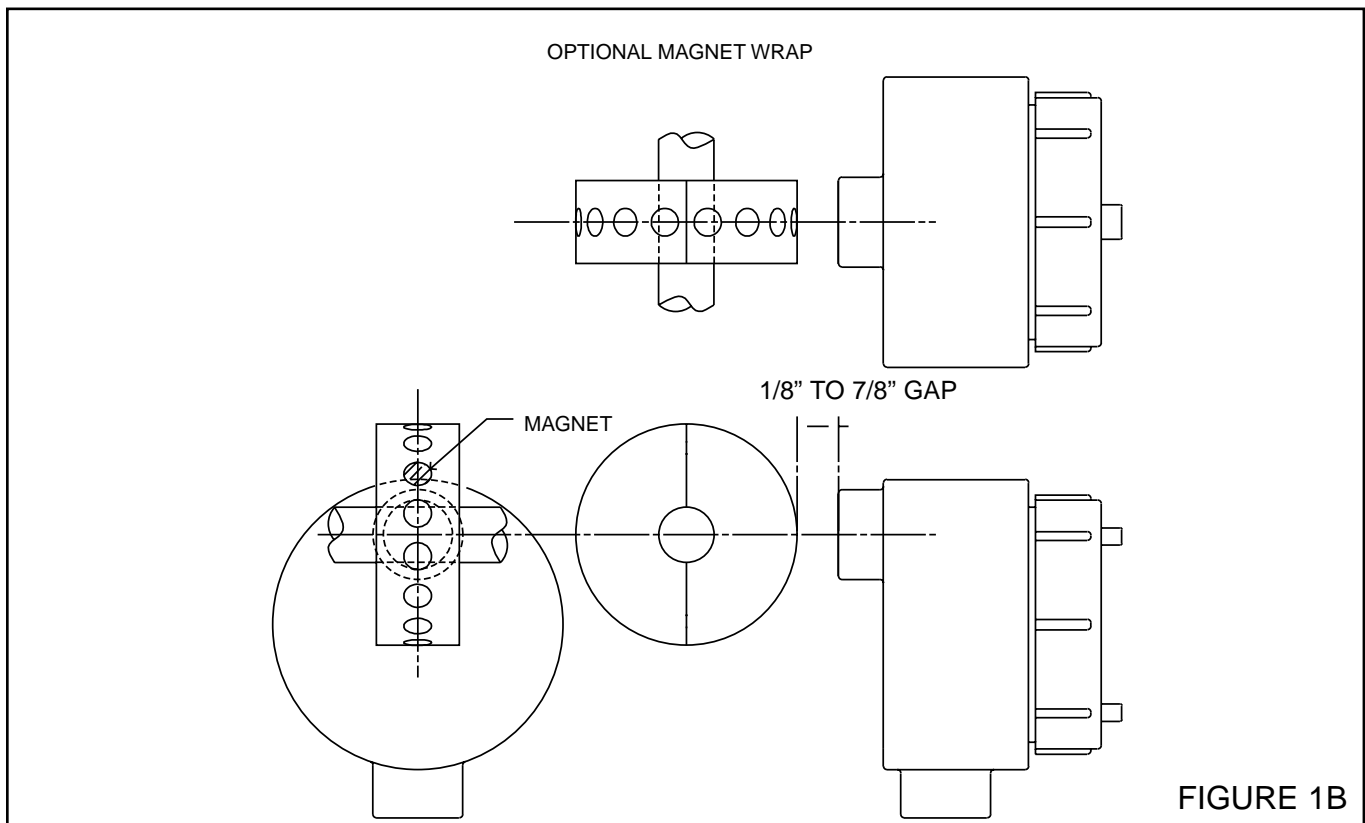
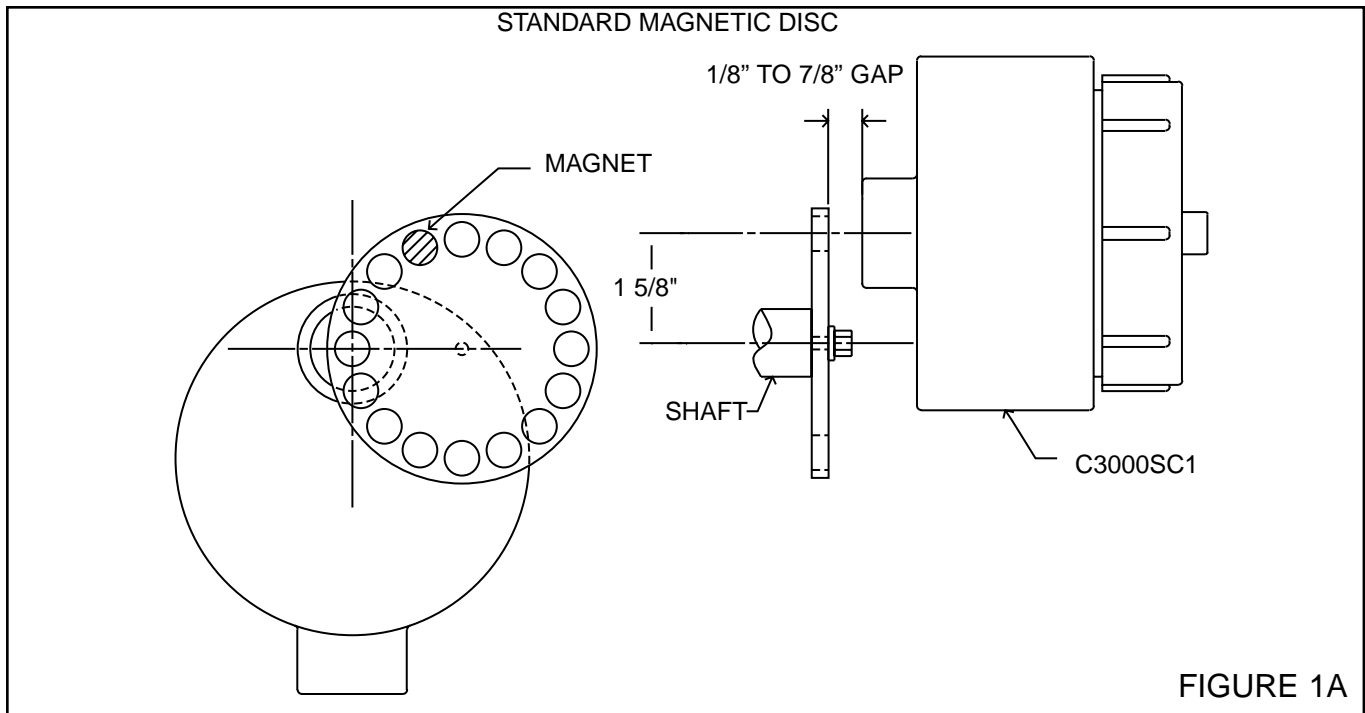
- 2.1 Separate the two halves of the magnet wrap by loosening the cap screws holding the two halves together.
- 2.2 Place both halves of the magnet wrap around the shaft. Re-insert and tighten the cap screws making sure the wrap is square to the shaft.  
(see figure 1B, page 3).

#### NOTE

There will be a slight gap between the two halves after tightening. This gap will not affect the generated signal.

### 3.0 Mounting the Sensor

- 3.1 Place the sensor/ transmitter so the sensor is centered directly in front of the magnets in the disc or optional wrap.  
(see figure 1A & 1B, page 3).
- 3.2 The gap setting between the sensor and magnet disc should be approximately 1/8" - 7/8".



#### 4.0 C3000SC-1 Signal Transmitter Enclosure

- 4.1 The C3000SC-1 signal transmitter enclosure is UL/CSA listed and certified for Class I, Div. 1 & 2, Group D. Class II, Div. 1 & 2, Group E, F, & G. Class III. (see figure 2, page 4)

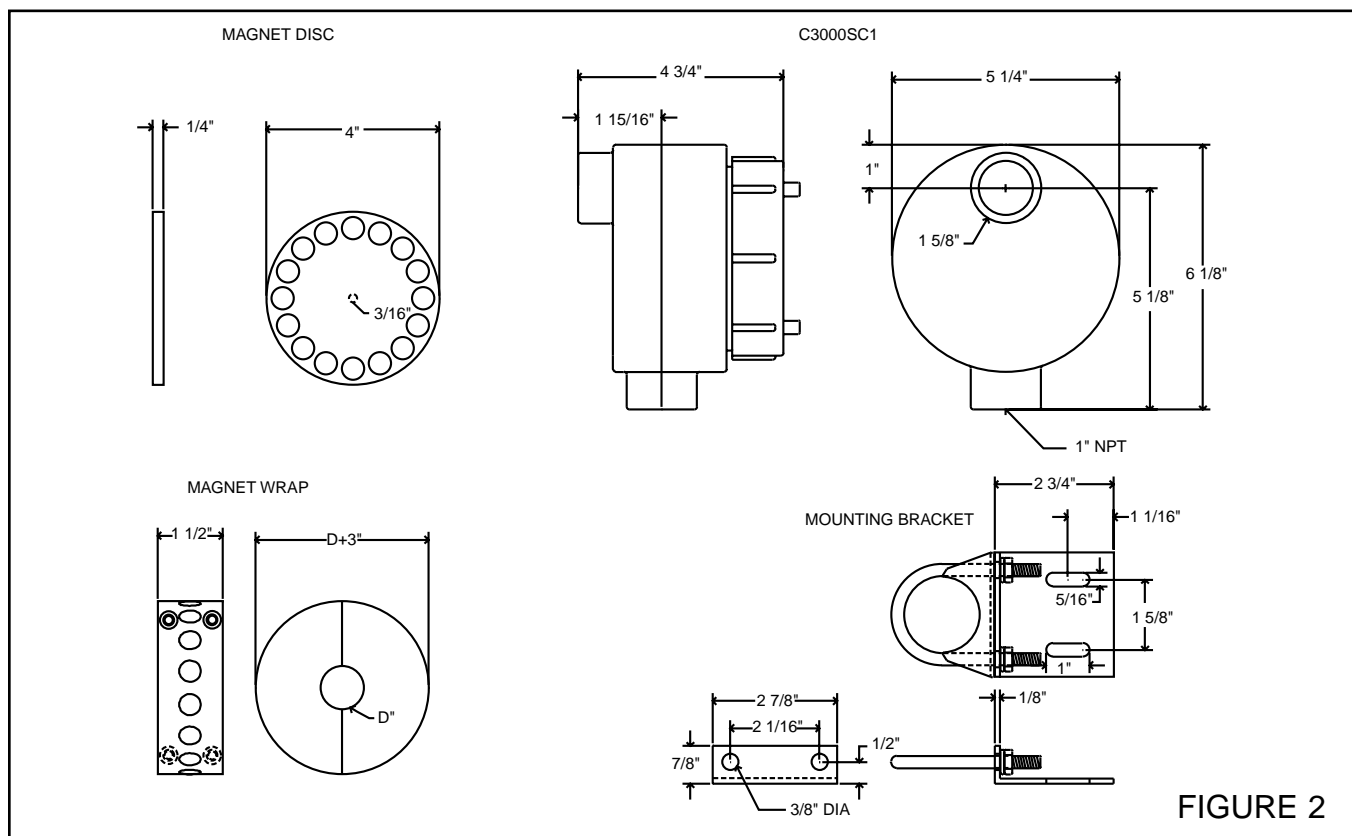


FIGURE 2

## SECTION 2 - FIELD WIRING

### 5.0 Wiring the C3000SC-1 Transmitter

- 5.1** Power connections and output connections to the C3000SC-1 Signal Transmitter are shown on figure 3, page 5.
- 5.2** Connect 120 VAC power to 120 VAC and Neutral on terminals 1 & 2 of the C3000SC-1 terminal strip. Connect the equipment safety ground to terminal 3 on the C3000SC-1 terminal strip. (see figure 3, page 5).
- 5.3** Make connections to terminal positions 6 & 7 for 0-10 VDC output or terminal positions 9 & 10 for 4-20 MA output.
- 5.4** If the optional display is provided connect the + to terminal position 4 and the - to terminal position 5.

#### NOTE

The 0-10VDC and 4-20MA outputs must be connected to isolated or differential inputs. Single ended inputs are not supported.

## 6.0 Speed Range Selection

- 6.1 Set dip switch (SW 1) located on the top of the transmitter module for the monitored shaft operating speed range.  
(see figure 3, 4, 5 page 5)

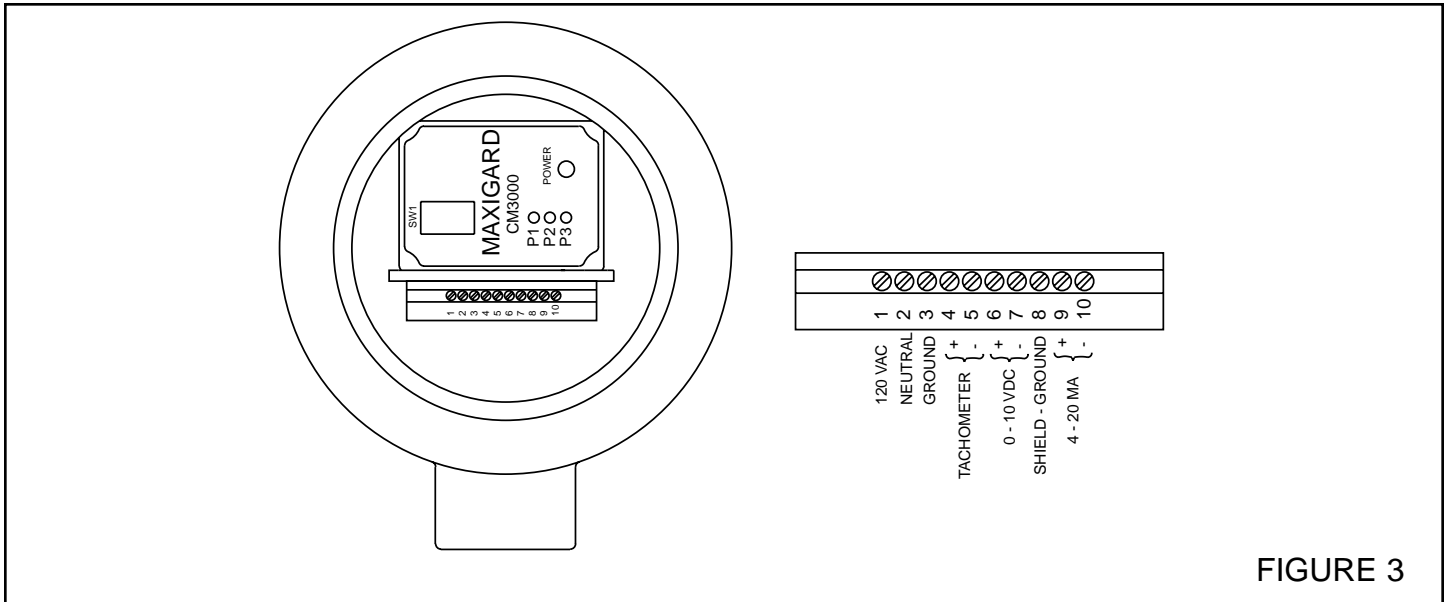


FIGURE 3

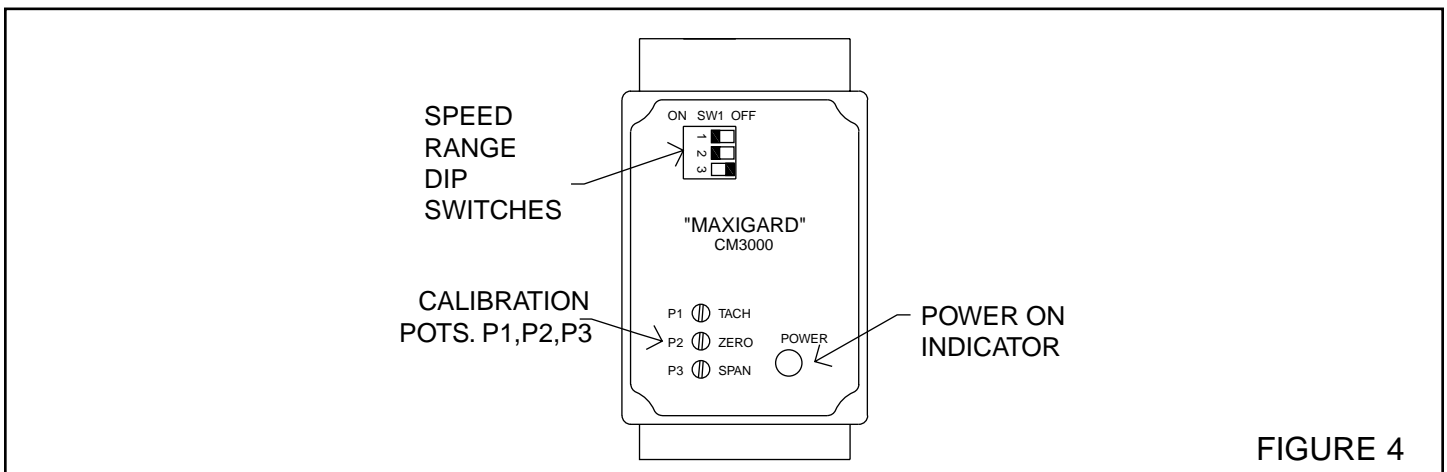


FIGURE 4

SPEED RANGE SELECTION DIP SWITCH SETTINGS				
LO SPEED	MED SPEED	MED HI SPEED	HI SPEED	VERY HI SPEED
OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ON <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ON <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ON <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ON <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ON <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
0 to 300 RPM	0 to 750 RPM	0 to 1000 RPM	0 to 3000 RPM	0 to 5000 + RPM

FIGURE 5

## **7.0 4/20 MA Output Signal**

- 7.1** Set voltmeter to the milli-amp scale adequate for 4/20 MA calibration.
- 7.2** Connect the voltmeter positive and negative leads to the C3000SC-1 terminals 8 (+) and 9 (--).  
(see figure 3, page 5)
- 7.3** With 120 VAC power applied to the C3000SC-1 and monitored machine at zero speed, adjust POT P2 until output reads 4 MA. (CW to increase signal / CCW to decrease signal)  
(see figure 4, page 5)
- 7.4** With 120 VAC power applied to the C3000SC-1 and monitored machine running at maximum speed, adjust POT P3 until output reads 20 MA. (CW to increase signal / CCW to decrease signal)  
(see figure 4, page 5)

### **NOTE**

POT P1 does not require adjustment unless system includes an optional display meter.  
(see section 9, page 7 for calibration)

## **8.0 0-10 VDC Output Signal**

- 8.1** Set voltmeter to the VDC scale adequate for 0-10 VDC output.
- 8.2** Connect the voltmeter positive and negative leads to the C3000SC-1 terminals 6 (+) and 7 (--).  
(see figure 3, page 5)
- 8.3** With 120 VAC power applied to the C3000SC-1 and monitored machine at zero speed, adjust POT P2 until output reads 0 VDC. (CW to increase signal / CCW to decrease signal)  
(see figure 4, page 5)
- 8.4** With 120 VAC power applied to the C3000SC-1 and monitored machine running at maximum speed, adjust POT P3 until output reads 10 VDC. (CW to increase signal / CCW to decrease signal)  
(see figure 4, page 5)

## 9.0 Optional Meter Calibration

- 9.1** Connect the meter positive and negative leads to the C3000SC-1 terminals 4 (+) and 5 (--).  
(see figure 3, page 5)
- 9.2** With 120 VAC power applied to the C3000SC-1 and monitored machine running, adjust POT P1 until the meter matches the operating speed of the machine.  
(CW to increase signal / CCW to decrease signal)  
(see figure 4, page 5)

### SPARE PARTS LIST

Part No.	Description
1735	C3000SC-1 Without Disc or Bracket
1217	Mounting Bracket
1136	Magnet Disc 4" Diameter
1378	Magnet Disc 8" Diameter
1177	Analog Meter
1324	Digital Meter (3-1/2 digit)

## LIMITED WARRANTY

Process Control Systems, Inc. will repair or replace, at their option, F.O.B. factory, any part or unit which proves to be defective in material or workmanship within five years of purchase date, provided that part of the unit was installed and operated as recommended, to be established by examination of the part or unit at the factory. Goods returned under warranty must be shipped prepaid to the factory and accompanied by the serial number, description of defect, order number and date of purchase.

This warranty shall not apply to any Maxigard™ product which shall have been repaired or altered outside of the Process Control Systems factory or has been subject to misuse, negligence or accident.

Process Control Systems, Inc. warrants its products, but not their application, and shall not be liable for any incidental or consequential damages incurred through the use or loss of use of a Process Control Systems product. No representatives or other person is authorized or permitted to make any warranty or assume for this company any liability not strictly in accordance with this guarantee.

There is no further warranty either expressed or implied beyond that set forth herein.