PRODUCT OVERVIEW

The new Model MSD is comprised of two different components, a control unit and a speed sensor. The MSD-800 control unit is a programmable controller that has two set points permitting it to indicate two under-speed points, or two over-speed points, or one of each. The control unit acts as a digital tachometer that constantly displays the actual rotary speed of the equipment being monitored. The control unit is installed remotely in a control panel where it is free from dust, dirt and vibration. This allows the operator to monitor equipment from one central location.

The speed sensor, which is installed directly to the shaft of the rotating equipment being monitored, is enclosed in a rugged cast aluminum housing designed to withstand harsh environments. The enclosure is weatherproof, dust-tight and meets NEMA Type 3S, 4, 4X classifications. For hazardous environments, explosion proof sensors are available that meet NEMA Type 7, Class I Groups C and D and NEMA Type 9, Class II, Groups F and G classifications.

OPERATION

The Model MSD-1 sensor detects motion by means of a precision metal disc with slots on its periphery generating electronic pulses as the disc rotates past an infra-red light source. These pulses are transmitted to the MSD-800 control unit where the signal is analyzed and the relays are activated or deactivated at preset signal speeds. The MSD-800 control unit is designed to permit two signal set points. Field adjustment of the signal set points is easily accomplished through the buttons on the face of the control unit.
TECHNICAL SPECIFICATIONS

MSD-1 SENSOR - COVER REMOVED
(INTERIOR VIEW)

3/4" NPT CONDUIT OPENING
(TWO PLACES)

HEAVY DUTY ALUMINUM HOUSING
TERMINAL BLOCK AND PC BOARD

PRECISION OPTICAL ROTATING DISC

MSD-1 (or MSD-1X) SENSOR
Power Input: 12 VDC from the control unit
Output: 12 VDC NPN square wave to control unit
Ambient Temperature: 4°F to 149°F (-20° to 65°C)
Max. Operating Temperature: 14°F to 131°F (-10°C to 55°C)
Maximum Speed Limit: 1000 RPM
Shaft Load: 125 lbs. radial, 100 lbs. end thrust
Rotation: Clockwise or Counterclockwise
Drive Torque: 1 inch-pound
Shaft: 5/8" dia. x 1-1/4" long stainless steel
Enclosure: 319 cast aluminum;
NEMA Type 3S, 4, 4X compliant (MSD-1)
Optional: Type 7 Class I Groups C and D,
and Type 9 Class II Groups F and G compliant (MSD-1X)
Bearings: Permanently lubricated and sealed for life ball bearings
Operating Range: 0-1000 RPM
Signal Accuracy: +/- 1 RPM

MSD-800 CONTROL UNIT:
Power Input: 100 - 240 VAC, 50/60 Hz
Optional: 24 VDC (MSD-800-24)
Power Consumption: Less than 10 VA (AC input), less than 5 W (DC input)
Output Power to Sensor: 12 VDC
Signal Input From Sensor: 12 VDC square-wave, NPN or PNP
(field programmable)
Output 1: SPST Relay: rated 5amps resistive at a maximum of 250 VAC;
Transistor: NPN open collector. When 100mA/30 VDC,
residual voltage = 1.5 VDC max.
Output 2: SPDT rated 5amps resistive at 125/250 VAC;
Ambient Temperature: 32°F to 122°F (-0°C to 50°C)
Storage Temperature: -4°F to 149°F (-20° to 65°C)
Reading Accuracy: .1 to 1 RPM
Alarm Set Accuracy: .001 to 1 RPM
Mounting: 1/16 DIN panel mount (45 mm x 45 mm cutout)
Certifications: UL, CE

CONTROL UNIT DIMENSIONS

INSTALLATION AND WIRING:
Mount the MSD-1 or MSD-1X sensor in any position on a smooth,
flat surface using 1/4" mounting bolts and lock washers. If vibration
is extreme, use dowels in two mounting holes and use bolts in
the other two mounting holes. The sensor shaft must be in line or
parallel with the drive shaft.
Wiring and conduit installation is done by the customer, including
the use of appropriate conduit fittings and seals rated for the
installation environment.
Use two conductor shielded cable (such as our MSD-14 or Belden
8760 equivalent) to connect the MSD-800 control unit with the MSD-
1 sensor. A maximum of 4,000 feet of cable can be used between
the control unit and sensor.
The control unit should be mounted prior to final wiring. With the
mounting bracket removed, slide the control unit into a 1/16 DIN (45
mm x 45 mm) cutout. Then slide the mounting bracket onto the rear
of the unit and secure with the attached screws.
The control unit contains three failsafe output circuits: one SPST
relay (Output 1, normally open), one Transistor (Output 1, NPN),
and one SPDT relay (Output 2). Output relays/transistor are energized
under normal conditions and de-energize under alarm conditions.
The relays/transistor de-energize (alarm) in the event of power
failure, during a start-up delay, and during a reset event. NOTE:
Relay contacts are labeled in reference to their de-energized (alarm)
state.
The MSD-800 control unit comes fully programmed from the
factory, ready for use with the MSD-1 sensor. The primary menu
settings that may need to be changed in the field are the
Tachometer Output Mode (Overspeed/Underspeed configuration)
and the Startup Delay.