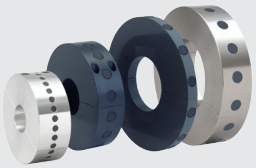
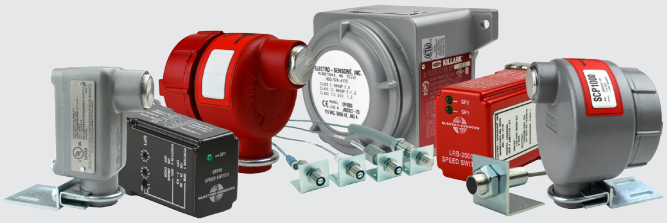
7 Tips for Buying Shaft Speed Switches and Sensors

Speed switches, sensors, pulser discs, and wraps come in a wide variety of shapes and sizes designed to cover virtually every industrial application where there is a rotating shaft. There are two piece systems, three piece systems, systems designed for hazardous environments, corrosive environments, dirty, dusty and greasy environments – all with the same end result in mind—to protect your machinery and industrial processes. The following tips will help you when specifying and ordering a speed switch system from Electro-Sensors.

Pulser Discs



Pulser Wraps



Shaft Speed Sensors and Switches

1. Determine whether you need a two- or three- piece system

Many applications are more suited to having the switch electronics and sensor right at the monitoring point (a two piece system) – that way everything is calibrated right there. Other applications require the switch to be remotely mounted from the sensor and disc (a three piece system). Space limitations, environmental considerations, and personal preference all play a part in determining the speed switch system required – figure out what you need before installation begins – it will save you time and money in the long term.

Example 2-Piece System

- *M100T Speed Switch*
- *255 Pulser Disc*

Example 3-Piece System

- *LRB1000 Speed Switch*
- *907 XP Shaft Speed Sensor*
- *PVC Pulser Wrap*

2. Determine what type of sensor your application demands

Electro-Sensors' offers several different types of sensor housings to meet even the most demanding and diverse of application needs. Our standard aluminum body sensors will work in most applications, but we also have explosion proof sensors and the choice of either stainless steel or PVC sensors for corrosive environments. Our explosion proof sensors are also a great choice for harsh environments such as rock quarries or mining applications where a rugged housing is required to protect the sensing head. All of our sensors can be supplied with high-temp Teflon cable if required for higher temperature applications. All sensors are provide NPN output with the exception of the Series 18, which is configurable to output PNP, NPN, and TTL.

3. Evaluate all your pulse generating options before choosing one

Electro-Sensors offers a wide range of shaft end mount pulser discs (Nylon, PVC, Aluminum, Stainless Steel) and over shaft mount pulser wraps (PVC, Aluminum, Stainless Steel). If the end of the shaft to be monitored is readily available, then in many cases, it makes sense to choose a pulser disc to generate pulses. If the shaft end is not available, then you can use a pulser wrap – this is a custom made pulse generator that is a split collar that clamps around the shaft and installs in seconds. Over the years we have manufactured thousands of custom pulser discs and wraps, and either way we've got you covered.

4. Measure the shaft diameter and spacing carefully

Electro-Sensors' pulser wraps are custom made to fit your specific shaft size. As a result they are non-returnable and unless careful shaft measurements are taken before ordering, they can become expensive mistakes. Careful measurement with calipers is the preferred method and accuracy up to 1/64th of an inch where possible. Wrap width must also be taken into consideration depending on the room you have. Our standard wrap sizes range from narrow (3/4") to standard (1-1/2").

5. Operating RPM range and relay setpoint range and knowing the difference

Most Electro-Sensors' speed switches can be used to monitor shafts that operate at speeds of up to 10,000 RPM. The relay setpoint range varies from switch to switch; this range is where the relay will trip when a fault condition occurs. The M100T switch for example has an operating RPM range up to 10,000 RPM, but a setpoint range of between 5 and 150 RPM. When calibrated the relay will trip somewhere between these 5 and 150 RPM. Knowing the difference between operating RPM range and relay setpoint range will assist you and save time when specifying a switch – for any speed.

6. How many pulses per revolution (PPR) you need depends on the pulser disc or wrap, and sensor you choose

Electro-Sensors' standard pulser discs and wraps come with 16 magnets, and when used with our standard Hall Effect sensors will generate 8 PPR or 1 pulse for every 2 magnets. All of our speed switches and ratemeters are set up to deal with 8 PPR, but can easily be calibrated to deal with an alternative number of pulses. For applications where more pulses can be advantageous (such as at slow speeds) we offer magnetoresistive sensors and discs or wraps with increased numbers of magnets. Magnetoresistive sensors generate 1 pulse for each magnet that they see and can often be the solution when more pulses per revolution are required. Hall Effect sensors are always recommended unless more pulses are required. More pulses per revolution means a faster relay response time.

7. Leverage our expertise—Involve our application specialists from step one

Contact us from the beginning of your project and we will help you in selecting the best and most cost-effective shaft speed switch solution for your application. As your project advances, let our excellent technical support team assist you with any installation or calibration questions that you have. In many cases our switches can be preset at the factory requiring minimal calibration.