ENCODER PRODUCTS COMPANY

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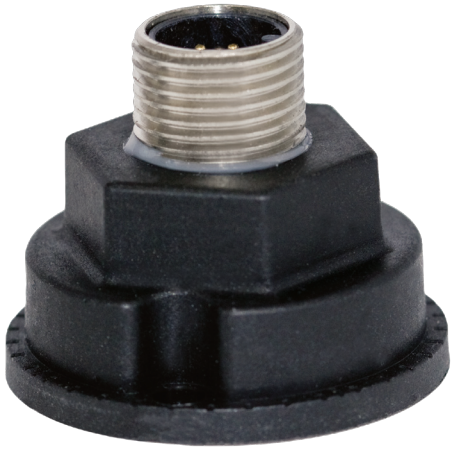
When to Choose a Magnetic Encoder Module

You've probably seen the new magnetic encoder modules that have come on the market in the last few years. Most of them are compact and offer some intriguing options. Magnetic encoder modules can be used in a wide range of applications, including, but certainly not limited to, the following:

- Servo/stepper motor feedback
- Mobile equipment speed and steering sensing
- Timber processing machinery
- Studio lighting and stage equipment control
- Rotary valve position monitoring and control
- Solar panel positioning
- Vending machines
- Punch presses
- Tank level monitoring
- Robotics



A magnetic encoder module. Just 30 mm in diameter, this module has an M12 connector that affords it an IP69K seal.

How do you know when you need something as specialized as a magnetic encoder module? There are many points to consider when trying to determine if it's the best solution for your application.

1. You need an encoder with a bearing-less design. In the vast majority of applications, an encoder with bearings is the best choice, because it provides an easier installation and a more stable platform for the encoder to run on. However, there are instances where a bearing-less encoder is a better option:

- **In your application, there are factors that are hard on bearings.** Magnetic encoder modules tend to be more tolerant to shock and vibration – factors that typically shorten bearing life. If your encoder will be subjected to factors that are hard on bearing life, a magnetic encoder module might be the right encoder solution for your application.

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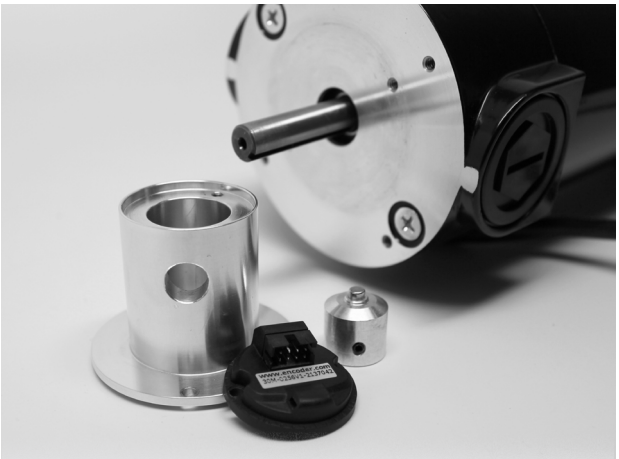
- **You need an encoder that can work in a high-speed application.** An encoder's bearings often limit operational speed to 12,000 RPMs or less. If you need to run at higher speeds, a bearing-less module might be the solution.
- **Cost is a major factor.** Since encoder modules have no bearings and associated support parts, they often cost less and can be more economical. If cost is a factor, an encoder module might be the right solution. Keep in mind, however, that an encoder module often requires more effort to install, and this effort may negate any up-front savings on the cost of the encoder.

Figure 4A

1. EPC 30M encoder
2. Adaptor*
3. Push In/On Magnet Holder
4. Brand XYX motor

In this mounting option, a magnetic encoder module is coupled with a magnet holder that pushes onto the shaft.

Figure 4B



This installation is using an over-the-shaft magnet holder. This magnet holder includes a set-screw, for precise placement of the magnet on the shaft.

2. You have limited space. It can happen for different reasons. Maybe the encoder was overlooked in the design phase, and you suddenly find yourself with very little space for a key component in your configuration. Maybe the constraints of your machine's design simply won't allow more space. In any case, magnetic encoder modules tend to be compact in size, but – when designed well – will still give you the accurate feedback and motion control you need.

3. You need versatile mounting options. The "magnetic" in "magnetic encoder module" gives you some options you may not have with typical encoders. Even with the tolerance for a large air gap and tolerance for misalignment, you may still have a tricky installation that requires a creative solution.

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Many magnetic encoder modules offer various mounting options, such as the ones pictured in Figures 4A and 4B.

4. You need a heavy-duty seal on your encoder. Not all magnetic encoder modules offer heavy-duty sealing options, so be sure to check the IP Ratings. If you need protection from washdown, you cannot settle for IP50. Conversely, if your encoder will be fairly well protected, it might not make sense to pay for a higher IP Seal than you need.

Know your IP ratings and make sure the magnetic encoder module you choose has the appropriate rating for your application. (For more information on IP ratings and what they mean, refer to *WP2013: What Is an IP Rating and What Does It Mean?*)

SUMMARY

If you're considering a magnetic encoder module for your design, ask yourself if any of these factors apply to your application:

- Application requires a bearing-less design
- Have limited space
- Require versatile mounting options
- Encoder requires a heavy-duty seal

EPC's **Model 30M** is a compact magnetic encoder module with sealing options up to IP69K and an operating temperature range of -40° to 120° C, so it can handle the most extreme industrial environments. With a large air gap and tolerance to misalignment, up to 1024 CPR (4096 PPR with Quadrature Counting), optional 2, 4 or 8 pole commutation, and easy alignment and installation, the Model 30M is an excellent solution when you need a magnetic encoder module.

Contact EPC today and you'll talk to real engineers who can help you incorporate the 30M into your application.