Linear Encoder

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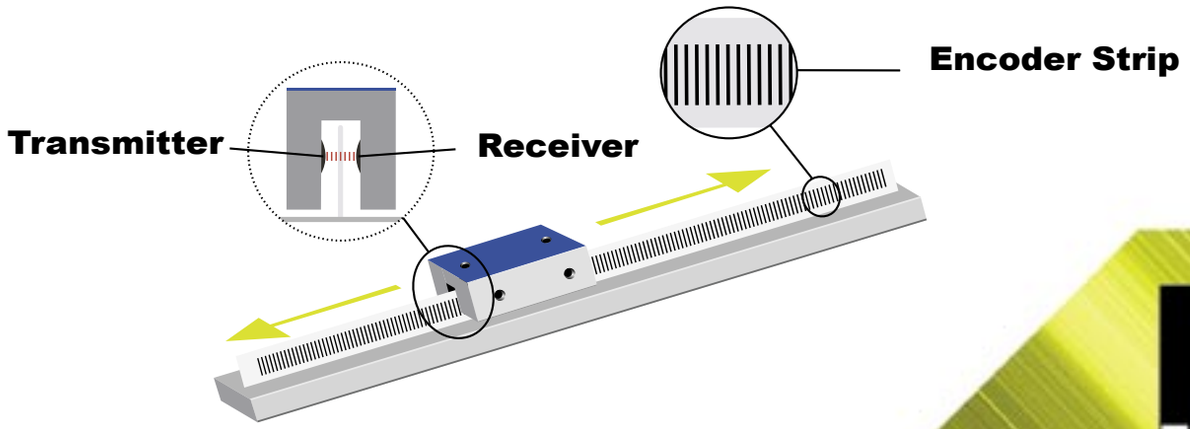
What is a Linear Encoder?
Linear encoders are simple, yet sophisticated, devices used to perform two functions:

1) ***Location:*** Linear encoders provide precise positioning information that controls the movement of the motion control system so the laser always fires precisely where it is suppposed to fire.
2) ***Timing:*** Linear encoders also provide timing input that coordinates not only where the laser fires, but when it fires.

If you've ever watched an Epilog laser system engraving at 100% speed, you quickly realize that there must be some pretty sophisticated engineering available to move the system so fast and fire the laser at such high speeds. When the engraving is finished and you take a close look at the quality of the engraved piece, you quickly realize that it's not just sophisticated - it's astounding!

Is it really that good? One of the reasons that Epilog lasers are recognized as producing the best engraving quality is our use of linear encoders. In fact, Epilog is the only manufacturer of "desktop" laser systems that incorporates this astounding technology into every system we manufacture.

How do linear encoders work?
The illustration below shows our linear encoder technology. The encoder is a simple light transmitter/receiver that straddles the encoder strip and transmits a continual beam of light towards the light detector on the other side of the encoder. The very precisely marked lines on the encoder strip block the light, and the spaces between the lines allow the light to pass through. This alternating pattern of the light being blocked or not blocked creates the necessary electrical pulses that are used to keep track of precisely where and when the laser needs to be fired.



The linear encoders that Epilog incorporates into every system we manufacture are so advanced that they can track precise location to within 0.0008 inch!

Accuracy and timing are everything in a laser system. There are other ways of determining location and timing, but every other method affects either quality or speed. There simply isn't a system that produces the image quality of an Epilog at the speeds that our systems can run. It's no coincidence that our use of linear encoders and our renowned quality go hand in hand.

Where would I be without a linear encoder?
Real time positioning: Since our linear encoders are mounted directly to the parts that are actually moving, there is no time delay between when we think we're at a specified location and when we're actually there. This is important, because if there's a delay of even a tenth of a second between actual and perceived location we could be out of position by as much as 10 inches! (if we're moving at 100% speed). In essence, the closer you are to where you need to fire the laser, the better image you're going to produce.

Some systems (most systems using stepper motors for instance) don't even use encoders and lack the ability to determine how far and how fast they are moving. Instead of using encoders to provide exact positioning information, stepper systems are simply told to move a given distance to the next location. They don't have any way of knowing if or when they have arrived at the correct location. As you can imagine, this lack of feedback can be costly in term of speeds and especially image quality.

Accuracy, Repeatability, and Precision

These are the attributes that define the output of an Epilog laser system. Compare an engraved image from an Epilog to any other system available. Look at the detail and sharpness of the image. We think you'll agree that when it comes to speed and precision, nothing compares to an Epilog!