



## ***Application note 107: limited rotational torquer/high resolution encoder scanner actuator***

*This note describes the Allied Motion CM-450 LRT with integral high resolution encoder used as the grating actuator in a chemical analysis instrument.*

The instrument powered by the CM-450 LRT is used to analyze food products, grains, medical compounds etc. by means of measuring the reflectivity of the sample at various visible and infrared wavelengths. The reflection ratio of certain key wavelengths determines the nature and concentration of the constituent chemicals of the sample.

A limited angle rotator is essentially a two-pole, single phase brushless DC motor where it is not necessary (or even possible) to switch coils. Such a device is particularly well suited for scanning applications because of the flat torque curve over the scan angle (typically less than 60°) and the simplicity of polarity driving the device with a single 'H' bridge.

The flat torque curve avoids the position/velocity error that may be caused by the instantaneous deceleration/acceleration when switching coils in a traditional polyphase brushless DC motors.

The integral feedback device is a traditional digital output encoder with a linecount of 16,384 full A and B cycles per revolution or 65,536 measuring steps. For higher resolution, a model is available with an integral interpolator yielding 1,024,000 full A and B cycles per revolution or 4,096,000 measuring steps.

For information and assistance, please contact:

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