

Linear and Rotary Encoders



Linear Encoders

Linear encoders provide the highest measurement accuracy possible. Since linear encoders measure distance directly, leadscrew accuracy and backlash are not a factor in the measurement system.

Traditionally optical glass scale encoders were used for high accuracy direct linear measuring. Magnetic and inductive encoder alternatives today have significant advantages over glass scale technology. Inductive and magnetic encoders are more durable, use non-contact sensing, integrate better, and offer high accuracy in combination with Velmex UniSlide and BiSlide Assemblies.



*Ultra-Precision
Measurement System*



Linear Encoder Comparison

Encoder	Advantages	Disadvantages
Inductive Scale (AMO)	Accuracy equal to glass scale encoders, impervious to dirt and liquids, compact, any travel length possible, short lead-time	Costs more than magnetic encoders
Magnetic Scale (ELGO)	Impervious to dirt and liquids, compact, any travel length possible, short lead-time, less cost especially in longer lengths	Less accuracy versus inductive or glass scale encoders

Encoder	Resolution	Accuracy	Repeatability	Head to Scale Clearance
AMO Inductive	0.001 mm	0.010 mm/ meter	0.001 mm	0.15 mm (0.05 to 0.35 mm)
ELGO Magnetic	0.001 mm	0.025 mm/ 100mm 0.045 mm/ meter	0.001 mm	2.5 mm (0.1 to 0.8 mm)

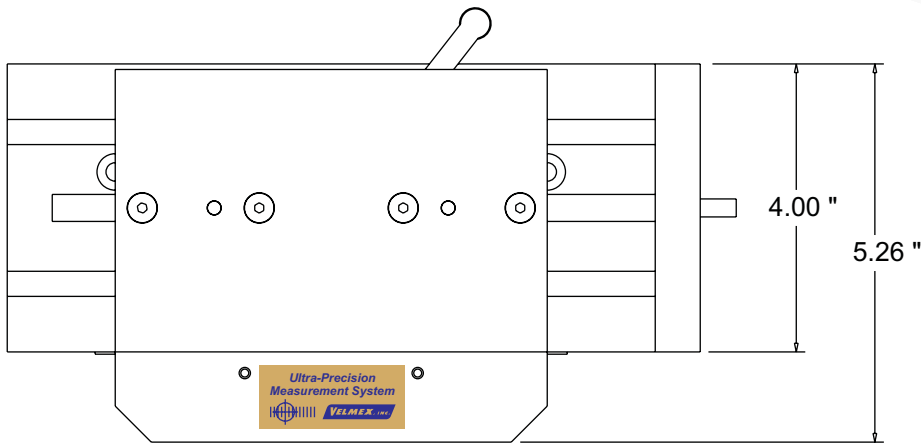
Linear and Rotary Encoders



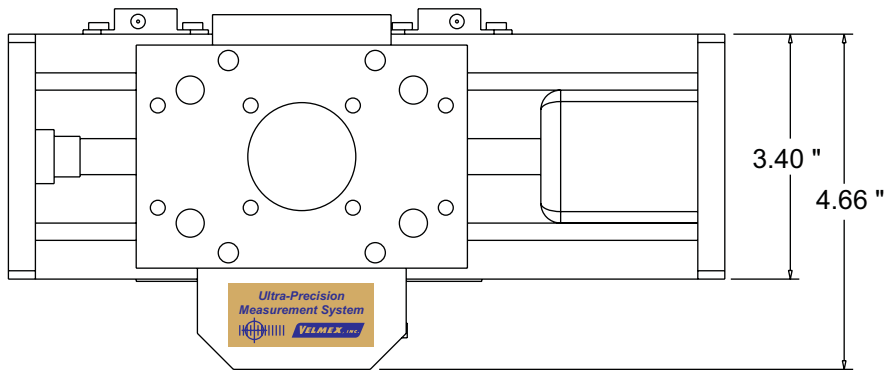
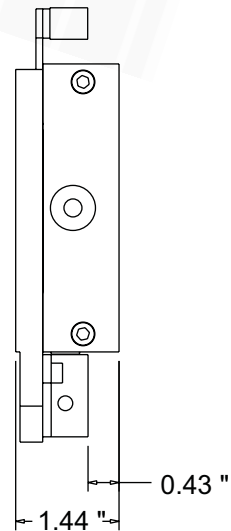
AMO Linear Encoder

Provides the highest accuracy.
For all UniSlide A40 series and BiSlide Assemblies.

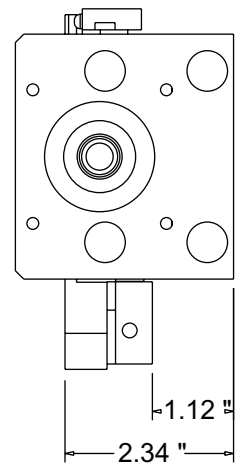
Part# ENCINDL1-xx (xx=inch of travel)



A40 Series UniSlide with AMO Encoder



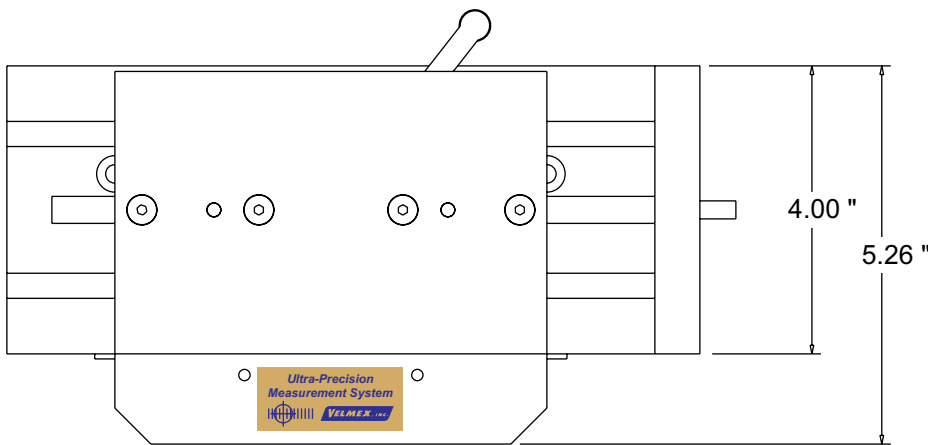
BiSlide Assembly with AMO Encoder



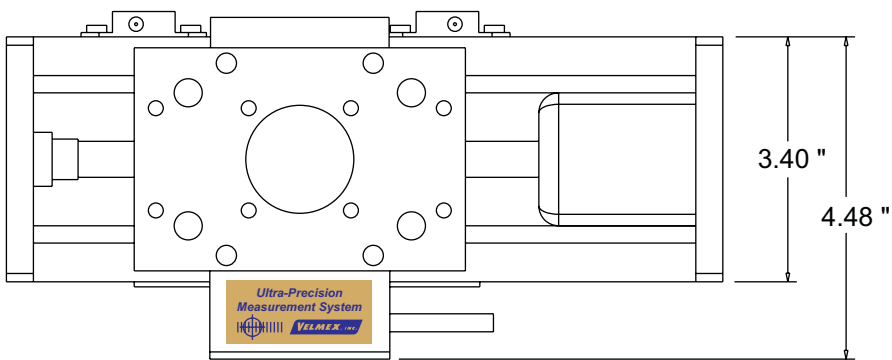
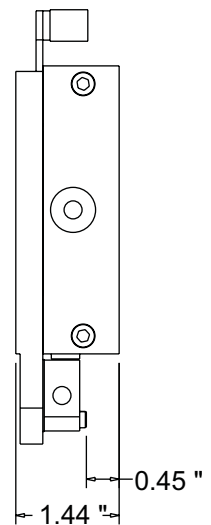
ELGO Linear Encoder

Economical for long travel lengths.
For all UniSlide A40 series and BiSlide Assemblies.

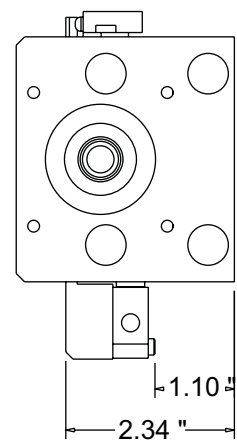
Part# ENCMAGL1-xx (xx=inch of travel)



A40 Series UniSlide with ELGO Encoder



BiSlide Assembly with ELGO Encoder



Rotary Encoders

Rotary encoders are a cost effective method to measure rotational distance on a leadscrew or motor shaft. Several cycles per rev (CPR) options and shaft bores are available. The resolution per rev is equal to 4x the CPR. For example: 400 CPR = 1600 increments of resolution per revolution.

ENCODER PRODUCTS (EPC) Rotary Encoder



The EPC differential encoders are the preferred choice for durability and reliability.

Part# 15T-06 SB-0100 N 5 Q HV-M03	(5mm bore for Size 17 motors, 100 CPR, 3M cable)
Part# 15T-06 SB-0200 N 5 Q HV-M03	(5mm bore for Size 17 motors, 200 CPR, 3M cable)
Part# 15T-06 SB-0400 N 5 Q HV-M03	(5mm bore for Size 17 motors, 400 CPR, 3M cable)
Part# 15T-06 SB-0500 N 5 Q HV-M03	(5mm bore for Size 17 motors, 500 CPR, 3M cable)
Part# 15T-01 SF-0100 N 5 Q HV-M03	(1/4" bore for Size 23 motors, 100 CPR, 3M cable)
Part# 15T-01 SF-0200 N 5 Q HV-M03	(1/4" bore for Size 23 motors, 200 CPR, 3M cable)
Part# 15T-01 SF-0400 N 5 Q HV-M03	(1/4" bore for Size 23 motors, 400 CPR, 3M cable)
Part# 15T-01 SF-0500 N 5 Q HV-M03	(1/4" bore for Size 23 motors, 500 CPR, 3M cable)
Part# 15T-02 SF-0100 N 5 Q HV-M03	(3/8" bore for Size 34 motors, 100 CPR, 3M cable)
Part# 15T-02 SF-0200 N 5 Q HV-M03	(3/8" bore for Size 34 motors, 200 CPR, 3M cable)
Part# 15T-02 SF-0400 N 5 Q HV-M03	(3/8" bore for Size 34 motors, 400 CPR, 3M cable)
Part# 15T-02 SF-0500 N 5 Q HV-M03	(3/8" bore for Size 34 motors, 500 CPR, 3M cable)

HEDS Rotary Encoder

For compactness in less demanding applications, the HEDS modular encoders are a single ended low cost alternative.

Contact the Velmex Technical Sales Department for more information.



Single Ended / Differential Encoders

Single ended encoders are the simplest to interface to external electronics. Modern digital readouts like the Velmex VRO have the necessary electronics for use with the more robust differential type encoders. Differential encoders are the preferred choice to greatly increase the integrity of a measurement system. AMO, ELGO, and EPC encoders sold by Velmex are differential.

Single Ended and Differential Comparison

Encoder	Advantages	Disadvantages
Single Ended	Lowest cost	Limited cable length, vulnerable to electrical noise
Differential	Long cable lengths possible, high noise immunity	More costly than single ended

VRO Digital Readout for Encoders

The Velmex model VRO is a high performance digital encoder readout. It offers an easy to read OLED display and a full featured serial interface for computer integration.

Refer to the “VRO Encoder Readout” literature for more information.



CONTACT INFORMATION

By Phone: 585-657-6151 and 800-642-6446
By Fax: 585-657-6153
On the Internet: www.velmex.com and www.velmexcontrols.com
By mail: Velmex, Inc.
7550 State Route 5 & 20
Bloomfield, NY 14469 USA