

VNSO MULTI-AXIS JOYSTICK

J.R. MERRITT
CONTROLS 

With unmatched versatility and rugged construction, the VNSO joystick has set the standard in high-duty crane and industrial applications.

STANDARD FEATURES

- Rugged construction with nickel chromium gimbal mechanism, case hardened bearings and operating shaft
- Supports horizontal, vertical and tandem mounting of contact drives to suit the available installation space
- Stepless or stepped control with up to 7-0-7 detents
- Environmentally sealed panel mounting



HEAVY DUTY
& RUGGED



HIGHLY
CUSTOMIZABLE



PRECISION
CONTROL



JOYSTICK OPERATION

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AXIS OPTIONS
JOYSTICK ACTION OPTIONS
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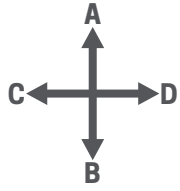
PG 8

STANDARD HANDLES
ADDITIONAL HANDLE OPTIONS

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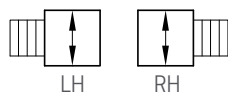
DIMENSIONS
MECHANICAL SPECIFICATIONS
ENVIRONMENTAL SPECIFICATIONS

AXIS OPTIONS				
	OR		OR	
SINGLE AXIS		DUAL AXIS		DUAL HANDLE / DUAL AXIS

JOYSTICK ACTION				
	OR		OR	
SPRING RETURN Returns to center		MAINTAINED Holds at detent steps		FRICTION HELD Holds throughout

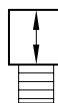
HANDLE TRAVEL OPTIONS				
	OR		OR	
OPEN GATE Unrestricted handle travel up to +/- 36°		CROSS GATE Guided handle travel up to +/- 36° travel		CUSTOM Available upon request in pattern of your choice.

SINGLE AXIS DRIVE ARRANGEMENT OPTIONS



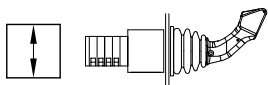
VNSO-E

OR



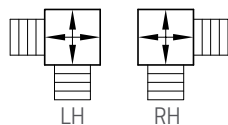
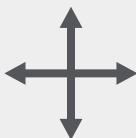
VNSO-G

OR



VNSO-A

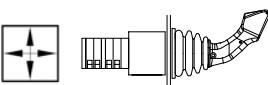
DUAL AXIS DRIVE ARRANGEMENT OPTIONS



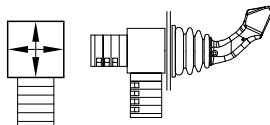
VNSO-V



OR



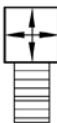
VNSO-AA



VNSO-EA

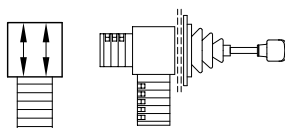


OR



VNSO-H

DUAL HANDLE / DUAL AXIS DRIVE ARRANGEMENT



VNSO-GGEA



RH = Right-hand Mount

LH = Left-hand Mount

All joysticks are supplied standard as right-hand mount orientation unless specified otherwise

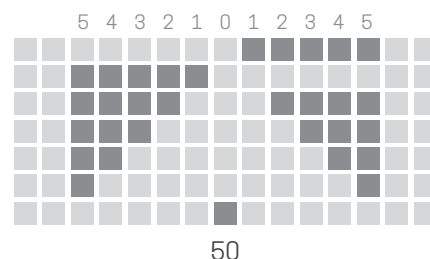
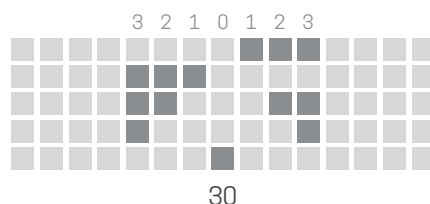
CONTACT SEQUENCES

STEPPED

DETENT OPTIONS

1-0-1
2-0-2
3-0-3
4-0-4
5-0-5
6-0-6
7-0-7

COMMON STEPPED SEQUENCES



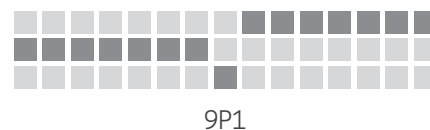
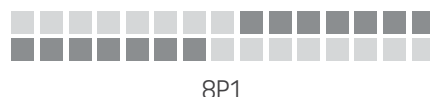
OR

STEPLESS

DETENT

0 (NULL)

COMMON STEPLESS SEQUENCES



See **contact sequences literature** to view all standard contact sequences for VNSO joysticks.

CONTACT TYPE

EExd certified contacts available upon request

STANDARD (AC)

PART #: 03.016

OR

GOLD (LOW VOLTAGE)

PART #: 03.076

OR

DC

PART #: 30.105



STANDARD SPECIFICATIONS

OF CONTACTS:

Up to 10 double pole, snap-in blocks
(i.e. 20 circuits for each axis)

MAX. SWITCHING CAPACITY (AC)

Making - 100 amps
Breaking - (0.7PF) 80 amps 240V

RATING (AC)

Continuous 16 amps @ 240V
Resistive 8 amps @ 240V
Inductive 6 amps @ 240V

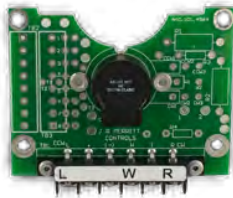
ELECTRO-MECHANICAL LIFE (AC)

Resistive Operations:

1 million @ 8 amps 240V
10 million @ 2 amps 240V

Inductive Operations:

1 million @ 6 amps 240V
10 million @ 2 amps 240V

POTENTIOMETERS		Other potentiometers available upon request					
	OR		OR		OR		
3-WIRE 5K PART # (W/ BOARD): 04.512		4-WIRE 10K PART # (W/ BOARD): 04.497		4-WIRE 2x1K PART # 04.021		4-WIRE 2x5K PART # 04.015	
TYPE Clarostat		REVOLUTIONS 2 - 5 Million		TYPE PD550/PW55		REVOLUTIONS 10 Million	
STYLE Conductive Plastic		WIPER CURRENT 0mA to 10mA		STYLE Wire Wound		WIPER CURRENT 25mA to 100mA	
RATING 0.5 Watt		ELECTRICAL ANGLE 260 degree		RATING 3 Watt		ELECTRICAL ANGLE 250 degree	

INDUCTIVE ROTARY TRANSFORMERS		
DGO-1 (115/50V) PART #: 04.024	OR	DGO-2 (220/50V) PART #: 04.025
 High life contactless rotary transformers that are ideal for high duty applications where an AC signal is a requirement. See DGO literature for more details and specifications.	ROTATION +/- 105 degrees MAX LOAD 3VA WEIGHT 1.43 LB	DGO-3 (115/30V/30V) WITH ESS03 AC/DC CONVERTER DGO-3 PART #: 04.030 Converts AC signal to a DC reference signal that commands a variable drive. See ESS03 literature for more details. 

ESS10010 ANALOG AMPLIFIER



Generates a linear output voltage proportional to the joystick's handle position. Available with 3 or 4-wire pot in the configurations shown below. See **ESS10010 literature** for more details.

SUPPLY VOLTAGE

18 - 30 VDC

STANDARD OUTPUT

+/- 10V

OUTPUT CURRENT MAX

10 mA

OUTPUT ADJ. RANGE

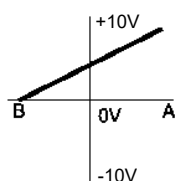
3.5 - 11VDC

OFFSET ADJ. RANGE

0 - +/- 0.1V

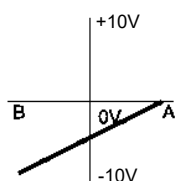
POTENTIOMETER LIFE

2 - 5 million revolutions



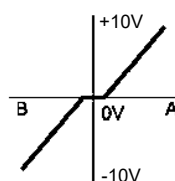
0V to +V

OR



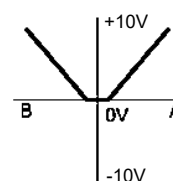
-V to 0V

OR



-V to +V with center

OR



+V to +V with center

4-20 mA TRANSMITTER (2-WIRE CIRCUIT)



Acts as a self powered control card with 4-20 mA output. Transmits a current signal which is proportional to the handle position. See **ESS420 literature** for more details.

ESS420

PART #:

05.317

SUPPLY VOLTAGE:

12 - 40 VDC

OUTPUT CURRENT

22 mA (max)

ADJUSTMENT RANGE

2-22 mA

8 BIT GRAY CODE ABSOLUTE ENCODER

Other output types available upon request



Produces a gray code digital output in a completely contactless system with high noise immunity. See **OEL8G-K literature** for more details.

OEL8G-K

PART

04.770

RESOLUTION

255 discrete counts in each direction

SUPPLY CURRENT

Typical 100 mA

OUTPUT CURRENT

Max. 20 mA

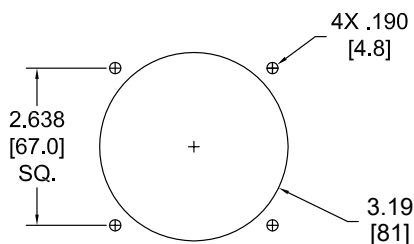
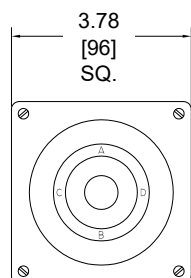
MAX SWITCHING FREQ

50 kHz

MOUNTING DETAILS

STANDARD MOUNTING*

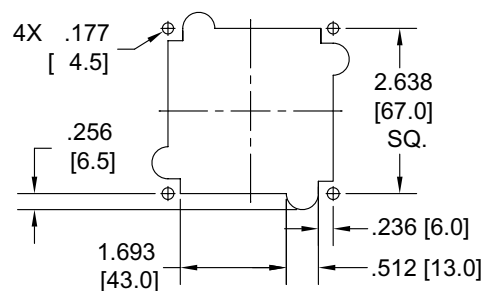
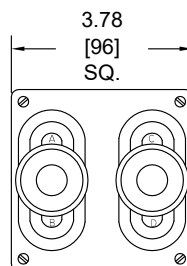
Mounts from below.



*Applicable for all handles except FG4-L and FG4-R (wide) handle types.
See **FG-4 literature** for mounting details.

GGEA MOUNTING

Mounts from below.



MOUNTING PLATE OPTIONS



OR



SNAP-ON

Clear plastic w/ white insert

SCREW-ON

Black aluminum

LABELING OPTIONS



OR



CUSTOM TEXT

With snap-on or screw-on plate

BLANK

With snap-on or screw-on plate

HANDLES

STANDARD HANDLES

STANDARD 2-PIECE



ROUND BALL



PUSH DOWN TO OPERATE (CONTACT) MODEL #: TU



PULL UP TO OPERATE (CONTACT) MODEL #: TYU



STANDARD HANDLES WITH PUSH BUTTON

EXTENDED PUSH BUTTON MODEL #: HU



FLUSH PUSH BUTTON MODEL #: HDU



RECESSED PUSH BUTTON MODEL #: HDVU



STANDARD HANDLES WITH MECHANICAL INTERLOCK

MECHANICAL INTERLOCK (MI) MODEL #: ZU



MI & EXTENDED PUSH BUTTON MODEL #: HDFUZ



MI & FLUSH PUSH BUTTON MODEL #: HDUZ

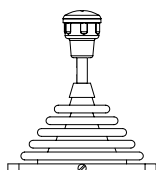


MI & RECESSED PUSH BUTTON MODEL #: HDVUZ



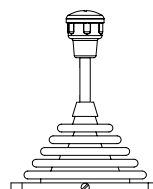
All model #s listed above feature 1 NO (normally opened) and 1 NC (normally closed) contact that is actuated by a flex shaft.
See **standard handle literature** for more contact options.

HANDLE HEIGHT*



5.75" (STANDARD)
[145 MM]

OR



7.10"
[180 MM]

*Handle height shown is an estimated measurement from the panel to the top of the handle and will vary based on handle style.

FIGHTER GRIPS

FG-3

Fighter grip handle with optional:

- Rocker Switches
- Thumbwheels
- Push Buttons
- Trigger



HEIGHT: 7.5" [191]

FG-4

Fighter grip handle with optional:

- Rocker Switches & Thumbwheels
- Push Buttons
- Trigger
- Hand Rest
- Twist Function



HEIGHT: 8" [204]

ROCKER HANDLES

RH

Rocker handle with handrest and optional:

- (Top) Rocker Switch
- (Top) Momentary Push Button
- (Top) Maintained Push Button
- (Side) Momentary Push Button



HEIGHT: 7.3" [186]

RHS

Rocker handle with optional:

- (Top) Rocker Switch
- (Top) Momentary Push Button
- (Top) Maintained Push Button



HEIGHT: 6.3" [160]

T HANDLES

MG1

T Handle
with optional:
Side Push
Button



HEIGHT: 4.9" [125]

MG2

Twist handle
with optional:
Side Push
Buttons



HEIGHT: 6.9" [175]

MG13

Twist handle
with optional:
Side Push
Button



HEIGHT: 4.5" [115]

CUSTOM HANDLES

Contact us today to
learn more about our
engineering & design
services.



MISC. HANDLES

MG9 / MG25

Palm handle
with optional:
Top & Side
Push Buttons



HEIGHT: 6" [153]

MG27

Options:

Extended or
Recessed
Push Button



HEIGHT: 5.3" [135]

BH

Lever handle with optional:

- (Top) Rocker Switch
- (Top) Momentary Push Button
- (Side) Lever Actuated Momentary Push Button

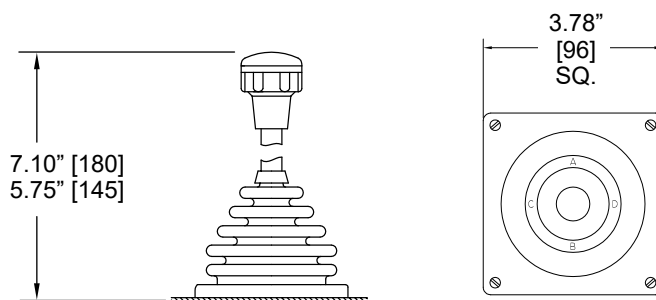


HEIGHT: 6.8" [173]

DIMENSIONS

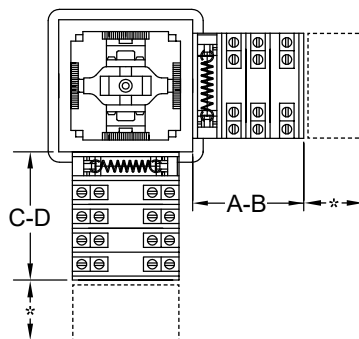
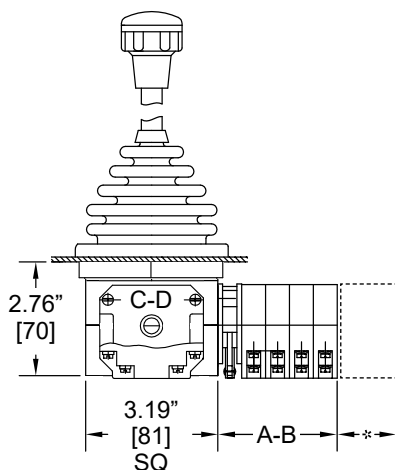
ABOVE THE PANEL

Shown with 2-piece handle.



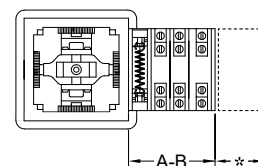
Handle	Height
BH	6.8" [173]
FG-3	7.5" [191]
FG-4	8" [204]
MG1	4.9" [125]
MG2	6.9" [175]
MG9	5" [153]
MG25	6" [153]
MG13	4.5" [115]
MG27	5.3" [135]
RH	7.3" [186]
RHS	6.3" [160]

VNSO-V

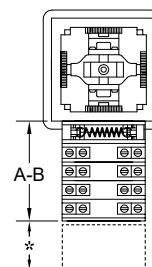


*See output device dimensions on page 13

VNSO-E



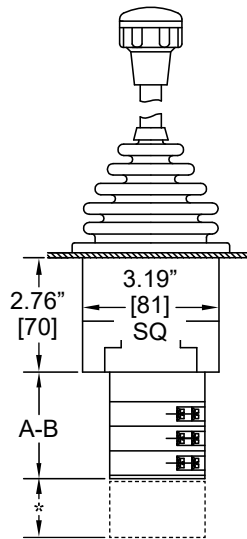
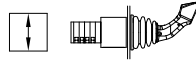
VNSO-G



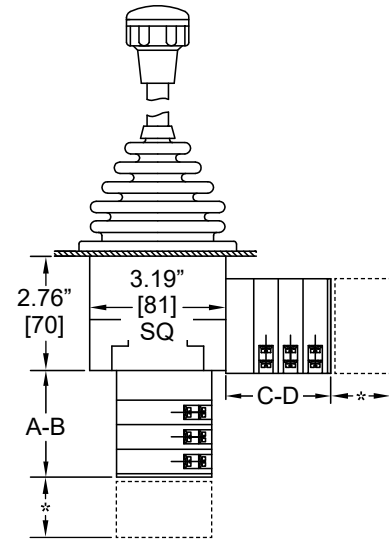
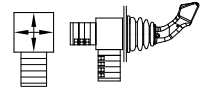
# of Contact Blocks	1	2	3	4	5	6	7	8	9	10
Length of A-B and/or C-D Drives	1.38" [35]	1.97" [50]	2.56" [65]	3.15" [80]	3.74" [95]	4.34" [110]	4.92" [125]	5.51" [140]	6.10" [155]	6.69" [170]

DIMENSIONS

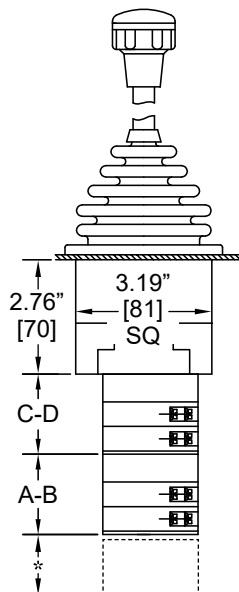
VNSO-A



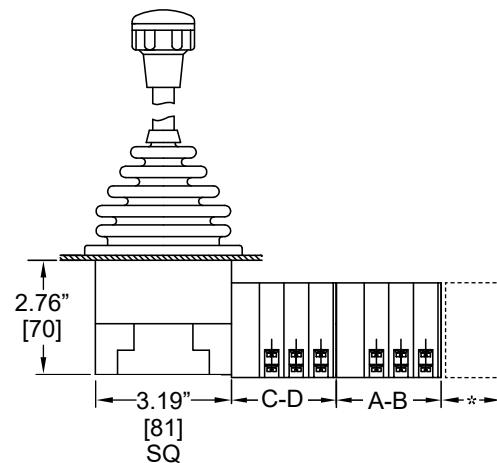
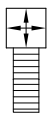
VNSO-EA



VNSO-AA



VNSO-H



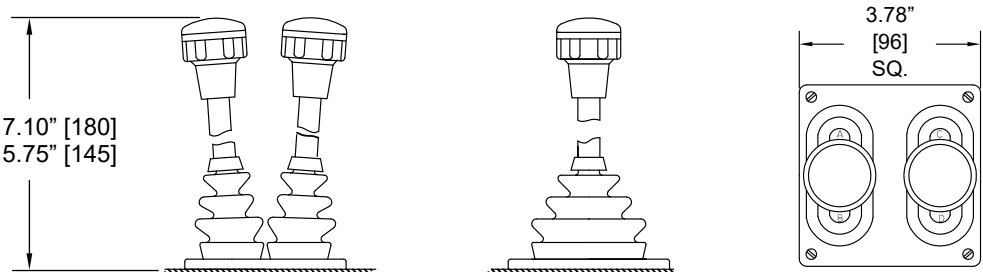
*See output device dimensions on page 13

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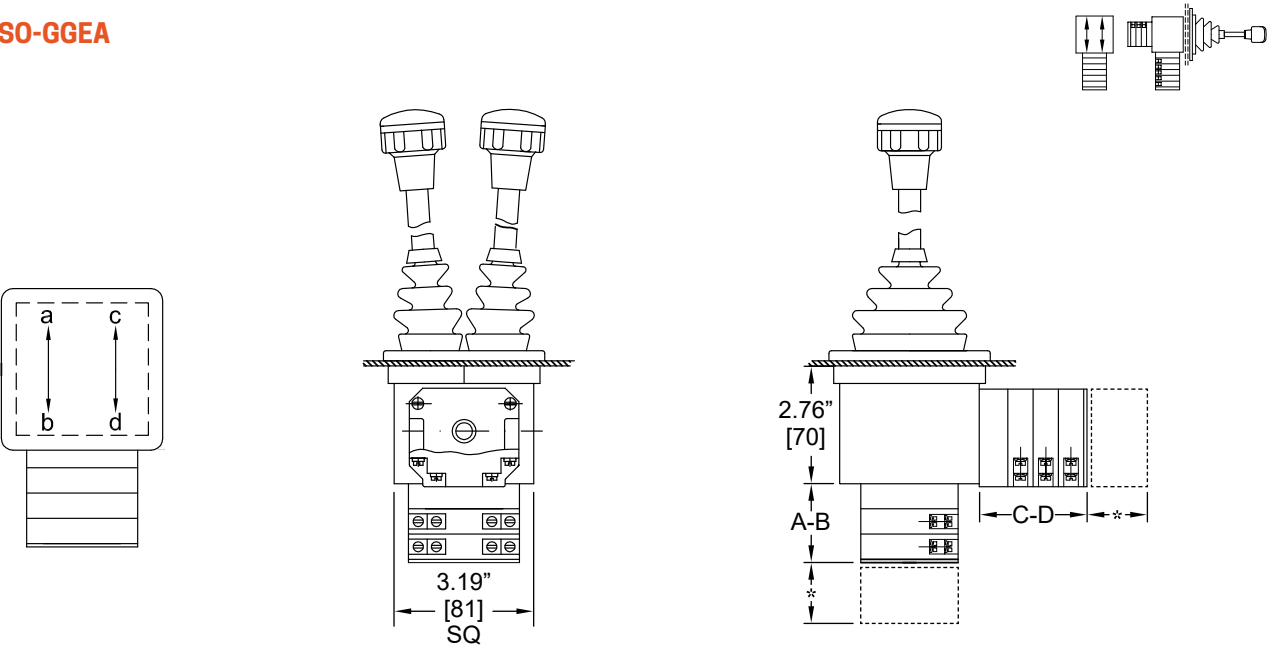
DIMENSIONS

VNSO-GGEA
ABOVE THE PANEL

Shown with 2-piece handles.



VNSO-GGEA



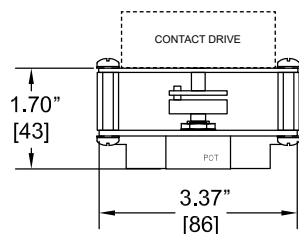
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OUTPUT DEVICE DIMENSIONS

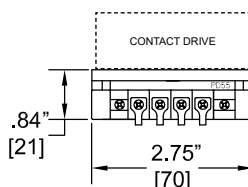
CLAROSTAT POTENTIOMETERS

Adds 1.70 inches onto contact drive



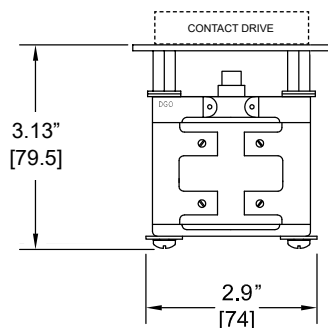
PD550 POTENTIOMETERS

Adds .84 inches onto contact drive



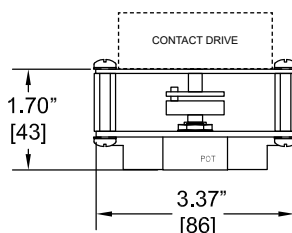
DGO TRANSFORMERS

Adds 3.13 inches onto contact drive



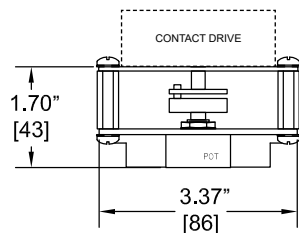
4-20 mA TRANSMITTER

Adds 1.70 inches onto contact drive



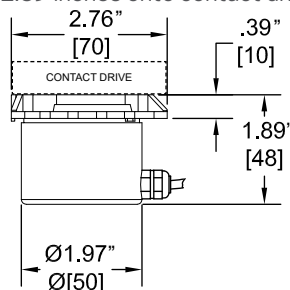
ESS10010 ANALOG AMPLIFIER

Adds 1.70 inches onto contact drive



OEL8G-K (OER8G-1) 8-BIT GRAY CODE ENCODER

Adds 1.89 inches onto contact drive



MECHANICAL DATA

Mechanical Life 20 million plus life cycles

Handle Travel Up to ±36 degrees

Gear Ratio 3.5:1

ENVIRONMENTAL DATA

Operating Temperature -25° to +70°C

Storage Temperature -40° to +70°C

IP Rating IP54 (Standard)
Up to IP56 (Handle Dependent)