XL-VNSO
HIGH-DUTY CYCLE
JOYSTICK CONTROLLERS

Construction:
The TYPE XL-VNSO 1, 2 and 3 Axis Joysticks are characterized by their compact design and super rugged construction for High-Duty cycle applications. XL-VNSO Joysticks are utilized for controlling electro-hydraulic proportional valves (EHPV) and AC/DC variable speed drives. Your specific control requirements can be accommodated by a variety of standard and custom engineered configurations.

Application: For use on cranes, bucket trucks, aerial work platforms and material handling equipment in the forestry, mining and construction industries.

Features:
- Versatile design
- Super heavy-duty construction
- Long-life, dual compression return springs each axis
- Nickel chromium gimbal yokes (properties similar to stainless steel)
- Hardened steel bearings and polished steel shaft guides
- Bronze gate handle stops
- Conformal coated electronics to resist moisture
- Type V7 11A form C switches.
- Long-life resistive element potentiometers, Hall-effect position sensor and Hall-effect PCB
- Hall-effect PCB meets or exceeds CE EMC requirements

Options:
- Large selection of multi-function handles with rocker switches, push-buttons, and triggers, or mechanical interlock
- Variety of standard and special handle restricting gates available
- Large selection of proportional outputs including potentiometer, Hall-effect, PWM and CAN bus
- Bang / Bang design
- Special potentiometers
- Redundant Hall-effect output
- Hall-effect input voltage options
XL-VNSO POTENTIOMETERS AND CONTACTS
ORDERING INFORMATION

Drive Arrangement: Single axis and double axis – horizontal
Basic Assembly: 5.5” shaft length and boot supplied standard
Handle: 2 piece standard
Handle Action: Spring return
Output: Proportional, discrete or bang/bang
Output Devices: Potentiometer, PWM, CAN or 10A micro-switch

XL-VNSO TECHNICAL DATA

Mechanical:
- Mechanical Life: 20 million cycles
- Gear Ratio: 3.5:1
- Detented Positions: Not available with XL-VNSO, use VNSO
- Handle Travel:
  - ±36° for proportional
  - ±20° for Bang/Bang
- Potentiometer Rotation: ±126°

Environmental:
- Operating Temperature: -25 to +70°C
- Storage temperature: -40 to +70°C
- Protection above the panel: IP55

Electrical:
- Contacts: 11A 125, 250 VAC Form C V7 micro-switch (3 max. each axis) with .187” quick connect tab
- Potentiometers: Conductive Plastic, 0.5 watt 5K 3-wire or 10K 4-wire center tap, 5 million revolutions
  Connections: 20 AWG UL1430 wire with Molex connector (03-06-2042)
- Electronics: PWM Amplifiers, Pot Amplifiers, Motor Control, CAN Bus
  Connections: Varies with product

Options:
- Handle: See handle section for a selection of handle options
- Shaft Length: 4.125” and 7.125”
- Handle Action: Friction brake and maintained action are not available with XL-VNSO, use VNSO
- Mounting: See mounting section for a selection of mounting options
- Gates: Variety of standard and special handle restricting gates available
- Special Pots: Please consult factory with special potentiometer requirements

Please consult factory for other available options not listed.
XL-VNSO WITH POTENTIOMETER & CONTACTS
OVERALL DIMENSIONS

XL-VNSO PANEL MOUNTING DETAIL

2.638
[67.0]
SQ.

3.150
[80.0]

4X 0.189
[4.8]

3.8
[96]
SQ.

36° MAX

RHN-01 handle

Mounting bezel

Optional
EHPV
driver
boards

(Consult factory for other handle options)
XL-VNSO HALL-EFFECT
ORDERING INFORMATION

Drive Arrangement: Single axis and double axis – horizontal
Basic Assembly: 5.5" shaft length and boot supplied standard
Handle: 2 piece standard
Handle Action: Spring return
Output: Proportional Hall-effect position sensor
Output Devices: Hall-effect PCB
Immunity: Meets or exceeds CE requirements (Hall-effect PCB only)

XL-VNSO HALL-EFFECT TECHNICAL DATA

Mechanical:
- Mechanical Life: 20 million cycles
- Gear Ratio: 3.5:1
- Detented Positions: Not available with XL-VNSO, use VNSO
- Handle Travel:
  - ±36° for Hall-effect position sensor
  - ±20° for Hall-effect PCB
- Hall-Effect Position Sensor Rotation: ±126°

Environmental:
- Operating Temperature: -25 to +70°C
- Storage temperature: -40 to +70°C
- Protection above the panel: IP55
- Hall-Effect PCB EMC Emissions:
  Complies with EN61000-6-4:2007
  Class A Group 1, 80 – 1000 MHz
- Hall-Effect PCB EMC Immunity:
  Complies with or exceeds EN61000-6-2:2005 expanded to include:
  RFI Immunity of 100 V/M @ 80 – 1000 MHz
  ESD Immunity of 15 Kv air, 8 Kv contact

Electrical:
- Hall-Effect PCB:
  Supply Voltage: 4.5 to 5.5VDC
  Output Voltage: Ratiometric 0.5 – 2.5 – 4.5V ±0.15V @ 5.0V supply
  Output Current: 10mA
  Power Consumption: 10mA @ full load
  Connections: 4 position terminal block with #6 screw terminal

- Hall-Effect Position Sensor:
  Supply Voltage: 4.5 to 5.5VDC
  Output Voltage: Ratiometric 0.5 – 2.5 – 4.5V ±0.15V @ 5.0V supply
  Output Current: 8mA
  Power Consumption: 19mA @ full load
  Connections: 20 AWG UL1430 wire with Molex connector (03-06-2042)

Options:
- Handle: See handle section for a selection of handle options
- Shaft Length: 4.125" and 7.125"
- Handle Action: Friction brake and maintained action are not available with XL-VNSO, use VNSO
- Mounting: See mounting section for a selection of mounting options
- Gates: Variety of standard and special handle restricting gates available
- Hall-Effect PCB:
  Option 1:
  Supply Voltage: 7 to 30VDC
  Output Voltage: 0.5 – 2.5 – 4.5V ±0.15V
  Connections: 4 position terminal block with #6 screw terminal
  Option 2:
  Supply Voltage: 4.5 to 5.5VDC
  Output Voltage: Redundant – ratiometric 0.5 – 2.5 – 4.5V ±0.15V complementary @ 5.0V supply
  Connections: 6 position terminal block with #6 screw terminal

Please consult factory for other available options not listed.

J.R. MERRITT CONTROLS, INC.
Stratford, CT ● 1-800-333-JRMC ● www.jrmerritt.com
Pub. #20.C25
XL-VNSO WITH HALL-EFFECT PCB
OVERALL DIMENSIONS

SINGLE SENSOR

Input (I)
Ground (G)
Output (O)

REDUNDANT

Main input (I)
Main ground (G)
Main out (O)
Redundant input (I)
Redundant ground (G)
Redundant out (O)

XLVNSO-E
(Single axis)

XLVNSO-V
(Dual axis)

OVERALL DIMENSIONS

3.8 [96] SQ.

A
B

20°  20°

C
D

4.3 [110]
5.7 [145]
7.1 [180]
0.4 [10]

1.6 [41]
1.5 [39]
2.9 [74]
3.4 [86]

J.R. MERRITT
CONTROLS, INC.

Stratford, CT • 1-800-333-5762 • www.jrmerritt.com

Pub. # 20.C17