NSO-SFA
RUGGED CAST DESIGN
SINGLE AXIS CONTROLLER

Construction:
The TYPE NSO-SFA single axis vertical mill masterswitch controllers are characterized by their unmatched versatility and rugged construction.

Space saving design, cast aluminum construction, IP56 housing, heavy-duty torsion spring and marine epoxy paint make this controller resistant to abuse and ideally suited for high-duty cycle mill applications and environmentally challenging marine applications.

Your specific control requirements can be accommodated by a variety of standard and custom engineered configurations including directional and speed control of AC/DC drives, electro-hydraulic valves or any other control applications requiring discrete, stepped and digital or analog proportional outputs.

This single axis controller is available with a variety of standard and custom handles and grips with push buttons and levers.

Application:
For use on shipboard applications, dredgers and offshore rigs for both above and below deck controlling of cranes, windlasses, engine governors and bow thrusters. The NSO-SFA is also popular on cranes and other material handling equipment in steel mills, foundries and process lines as well as mining vehicles, excavating and logging equipment.

Features:
- Compact, versatile design
- Rugged, IP56, cast construction
- Space saving design
- 10 million cycle mechanical operating life
- Rugged 8mm diameter stainless steel handle shaft
- Corrosion resistant components
- Double pole field replaceable contacts
- Direct drive proportional output system

Options:
- Maintained or friction held handle
- Large variety of optional handle configurations including: push button, mechanical interlock and rocker switch handles
- Stepped detents up to 7-0-7
- Large selection of proportional outputs including potentiometer, Rotary Differential Transformer (DGO), encoder, 4-20ma, 10V amplifier and CAN bus
- Variety of steel enclosures and pedestals
NSO-SFA ORDERING INFORMATION

Drive Arrangement: Single axis cast housing
Basic Assembly: 5.7 [145] handle height off panel, housing and mounting gasket supplied standard
Handle: 2 Piece (standard)
Handle Action: Spring return (standard)
Output: Proportional, discrete
Output Devices: Potentiometer, Rotary Differential Transformer (DGO), encoder, 4-20mA, 10V amplifier and CAN bus

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NSO-SFA Technical Data

Mechanical:
- **Mechanical Life:** 10 million cycles for maintained action
- **Gear Ratio:** 3.3:1
- **Detented Positions:** 0° neutral & 1-0-1 to 7-0-7
- **Handle Travel:** ±42° max.
- **Potentiometer Rotation:** ±140° (other angles available – consult factory)

Environmental:
- **Operating Temperature:** -25 to +60° C
- **Storage temperature:** -40 to +60° C
- **Protection above the panel:** IP56 (above the panel)

Mechanical Options:
- **Handle:** See handle section for a selection of handle options
- **Shaft Length:** Consult factory for special shaft length requirements
- **Handle Action:** Maintained, Friction Brake
- **Gates:** Consult factory for special gate requirements

Please consult factory for other available options not listed.

Electrical:
- **Contacts:** Up to 10 double pole snap-in blocks (20 circuits) furnished standard
  Consult factory if additional circuits are required
- **Terminals:** Captive saddle clamps
- **Wire size:** 12 AWG maximum
- **AC Rating:** AC continuous: 16 amps @ 240 volts
  AC resistive: 6 amps @ 240 volts
  AC inductive: 6 amps @ 240 volts
  DC resistive: 1.7 amps @ 42 volts max
  DC inductive: 1.1 amps @ 42 volts max
- **Electro Mechanical Life:**
  Resistive: 1 million operations @ 8 amps 240V
  10 million operations @ 2 amps 240V
  Inductive: 1 million operations @ 6 amps 240V
  10 million operations @ 2 amps 240V
- **Approvals:** CSA file number: 15040
  UL recognized File number: E106738(M)

Electrical Options:
- **Potentiometers:** 0.5 watt 5K 3-wire or 10K 4-wire center tap, 5 million revolutions
  Connections: 6 position terminal block with #6 screw terminal
  Please consult factory for special potentiometer requirements
- **Rotary Differential Transformers:**
  115/50 VAC (DGO-1)
  220/50 VAC (DGO-2)
  115/30/30 VAC (DGO-3)
- **Electronics:** Encoders, 4-20mA, pot amplifiers, CAN bus and motor control
  Connections: Varies with product
Arrangement: Important if contact sequence is not symmetrical.

Mounting:
Mount attachment plate 1 and gasket 2 with (4) 10-32 screws to the panel 3. Mount the contact drive system 4 with (4) screws onto the attachment plate. Mount the drive 5 with (4) screws onto the attachment plate.

<table>
<thead>
<tr>
<th>Contact Blocks:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length &quot;L&quot;:</td>
<td>1.57</td>
<td>2.17</td>
<td>2.76</td>
<td>3.35</td>
<td>3.93</td>
<td>4.52</td>
<td>5.12</td>
<td>5.71</td>
<td>6.30</td>
<td>6.89</td>
</tr>
</tbody>
</table>

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