APPLICATION NOTES:
101
102
104
105
007

Balanced-Force Design
Hermetically sealed
Designed to the performance standards of MIL-PRF-6106

PRINCIPLE TECHNICAL CHARACTERISTICS

Contacts rated at 28 Vdc and 115 Vac, 400 Hz, 1Ø and 115/200 Vac 400Hz, 3Ø

Weight See Mounting

Special units available upon request, including models with auxiliary contacts. Optional Ground Fault Protection (GFP) feature available.

Contact rating per pole and load type

<table>
<thead>
<tr>
<th></th>
<th>28 Vdc</th>
<th>115 Vac 400 Hz</th>
<th>115/200 Vac 400 Hz, 3Ø</th>
<th>28 Vdc [3]</th>
<th>28 Vdc [8]</th>
<th>DELTA 115/200 Vac 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistive [1]</td>
<td>50</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>200</td>
<td>60</td>
</tr>
<tr>
<td>Inductive [2]</td>
<td>30</td>
<td>120</td>
<td>120</td>
<td>80</td>
<td>-</td>
<td>60</td>
</tr>
<tr>
<td>Motor</td>
<td>30</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>-</td>
<td>60</td>
</tr>
<tr>
<td>Load transfer, resistive [7]</td>
<td>-</td>
<td>-</td>
<td>120</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

CONTACT ELECTRICAL CHARACTERISTICS

Featuring LEACH® power and control solutions
www.esterline.com

Esterline Power Systems
6900 Orangethorpe Ave.
P.O. Box 5032
Buena Park, CA 90622
Tel: (01) 714-736-7599
Fax: (01) 714-670-1145

Europe
2 Rue Goethe
57430 Sarlbe
France
Tel: (33) 3 87 97 31 01
Fax: (33) 3 87 97 96 86

Asia
Units 602-603 6/F Lakeside 1
No.8 Science Park West Avenue
Pak Shek Kok, Tai Po, N.T.
Hong Kong
Tel: (852) 2 191 3830
Fax: (852) 2 389 5803

Date of issue: 01/07
## COIL CHARACTERISTICS (Vdc)

### CODE

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal operating voltage</td>
<td>28</td>
<td>12</td>
<td>6</td>
<td>115</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Maximum operating voltage</td>
<td>29</td>
<td>14.5</td>
<td>7.3</td>
<td>124</td>
<td>29</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Pick-up voltage, maximum</td>
<td>18</td>
<td>9</td>
<td>4.5</td>
<td>90</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>- Nominal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- High temp test</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>95</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>- Continuous current test</td>
<td>22.5</td>
<td>11</td>
<td>5.7</td>
<td>100</td>
<td>22.5</td>
<td>22.5</td>
<td>22.5</td>
</tr>
<tr>
<td>Drop-out voltage, maximum</td>
<td>7</td>
<td>4.5</td>
<td>2.5</td>
<td>30</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Coil resistance in Ohms ±10% at +25°C</td>
<td>113</td>
<td>28</td>
<td>7</td>
<td>-</td>
<td>113</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Coil current Amp max. @ Nom. Volt. and +25°C</td>
<td>0.31</td>
<td>0.60</td>
<td>1.20</td>
<td>0.12</td>
<td>0.31</td>
<td>6/68</td>
<td>6/68</td>
</tr>
</tbody>
</table>

### GENERAL CHARACTERISTICS

- **Temperature range**: -55°C to +71°C
- **Minimum operating cycles (life) at rated resistive load**: 50,000
- **Minimum operating cycles (life) at 25% rated resistive load**: 100,000
- **Dielectric strength at sea level**
  - All circuits to ground and circuit to circuit: 1500 Vrms
  - Coil to ground and Aux.contacts: 1250 Vrms
- **Dielectric strength at altitude**
  - Main contacts: 700 Vrms
  - Coil and auxiliary contacts: 500 Vrms
- **Insulation resistance**
  - Initial (500 Vdc): 100 MΩ min
  - After environmental tests (500 Vdc): 50 MΩ min
- **Sinusoidal vibration (55 to 1000Hz)**: 10 G
- **Shock (10-12 ms duration)**: 15 G
- **Maximum contact opening time under vibration and shock**: 10 µs
- **Operate time at nominal voltage (Including bounce)**: 60 ms max
  - 25 ms max (Economizer coil)
- **Release time at nominal voltage (Including bounce)**
  - DC: 40 ms max
  - AC: 125 ms max
- **Release time at nominal voltage (Including bounce): Economizer coil**
  - DC: 35 ms max

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GENERAL CHARACTERISTICS CONTINUED

<table>
<thead>
<tr>
<th>Contact bounce at nominal voltage</th>
<th>4 ms max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Noted</td>
</tr>
<tr>
<td>Overload</td>
<td>800 Amps @ 115/200 Vac, 400 Hz</td>
</tr>
<tr>
<td>Rupture</td>
<td>1200 Amps @ 115/200 Vac, 400 Hz</td>
</tr>
<tr>
<td>Altitude</td>
<td>50,000 Feet</td>
</tr>
</tbody>
</table>

NOTES

[1] Auxiliary contact rating - see page 5, note [2].
[4] Alternate contact configurations and other special models available upon request. Please contact factory.
[7] Suitable for transfer between unsynchronized AC power sources at rating shown.
[8] 200 Amps resistive, 25,000 cycles only, terminal style 6.
[9] Economizer coils have a lower resistance primary coil for faster operate time. Once relay operates, the coil switches to a higher resistance for lower power drain. Do not ramp up voltage on these coils.

11. This series drawing is for general use only. Please consult factory for special requirements.

NUMBERING SYSTEM

Z - X O X
[10] ZD - X O X

1 - Mounting Style (A, B, Etc.)
2 - Terminal & Circuit (1, 2, 3 Etc.)
3 - Coil Voltage (A, B, C, F, N, Y, YN)
CONFIGURATION STYLES

SERIES Z, ZD

STANDARD TOLERANCE: XX ± .03, XXX ± .010

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WEIGHT IS DEPENDENT UPON CONFIGURATION REQUIRED.

MOUNTING STYLE A

- Lockwasher, MS35338-41
- Flatwasher, AN960-6 (Steel)
- Nut, .138-32 UNC-2B X 1/4 X 3/32
- Steel cad plate
- Power terminals

NAMEPLATE

Max 1.88

CIRCUIT DIAGRAM

TERMINAL BARRIER ASSY

Max 3.89

3.125

Max 5.06

CONNECTOR

Max 4.28

4 PLACES

4 EACH REQUIRED

Flatwasher, AN960-416L (Steel)

Lockwasher, MS35338-44

(Steel)

(Steel)

DIA

Max

2.58 ± .06

2.843

3.42 X 1

MAX

3.66 DIA

X

2.875

CIRCUIT DIAGRAM (FAR SIDE)

NAMEPLATE (NEAR SIDE)

CONNECTOR

1.88

1.88

.50 REF

1

3.375

4.19

Max

5.50

NOTES:

- Can be deleted.
- Maximum dimensions can be reduced by .500 inch.
- Polarity indication applies to D.C. coils only.
- Coil terminals may be identified as A-B, X1-X2, Y1-Y2 or X-Y.
**TERMINAL TYPE 1**

2-PDT

**TERMINAL TYPE 2**

3-PDT with SPST-NO & SPST-NC auxiliary contacts

**TERMINAL TYPE 3**

3-PST-N.O. with 2-PST & 3-PST-NO auxiliary contacts

**TERMINAL TYPE 4**

3-PDT with SPST-NO auxiliary contacts

**TERMINAL TYPE 5**

3-PST-N.O. with 2-PST-NC auxiliary contacts

**TERMINAL TYPE 6**

3-PST-N.O. with 2-PST-NC & 3-PST-NO & SPST-NC auxiliary contacts

**TERMINAL TYPE 7**

3-PST-NO auxiliary contacts

**TERMINAL TYPE 8**

3-PDT with 4-PDT auxiliary contacts

**TERMINAL TYPE 9**

Is a general category used for all terminal types not illustrated. For other variations of terminal configurations—please contact factory.

**AUXILIARY CONTACT RATING**

- Resistive: 5 AMP
- Inductive: 3 AMP
- Lamp: 1 AMP
- Bounce at nominal voltage: .004 SEC MAX

Other auxiliary contact forms available, including low level capacity.

Available in "A" and "B" mounting.

**NOTE:** Although all configuration and/or terminal type options are available, some combinations may require a setup charge and be subject to minimum order size.