SPECIFICATIONS

OF

TILT SWITCH

MODEL NAME : D7E-3

OUTLINE DRAWING NO. 6421363-0

WRITTEN: Y. Kamihashi July 1, 1997

CHECKED: S. Mori July 1, 1997

APPROVED: N. Ashikaga July 1, 1997

OMRON CORPORATION
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1 Outline dimensions</td>
<td>DRWG. No. 6421363-0</td>
</tr>
<tr>
<td>1-2 Switching mechanism</td>
<td>To output the ON/OFF signal by mechanical switching of the internal switch contact by moving a ball inside with the tilt.</td>
</tr>
<tr>
<td>1-3 Enclosure rating</td>
<td>IP67 (Only internal switch)</td>
</tr>
<tr>
<td>1-4 Operating angle</td>
<td>Operate with the tilt of 50 to 80 degrees.(ON→OFF) Angle: degree when tilting gradually (approx. 1 degree/s) from the horizontal.</td>
</tr>
<tr>
<td>1-5 Returning angle</td>
<td>Return with the tilt of more than 25 degrees Angle: degree when returning gradually (approx. 1 degree/s) from operating condition</td>
</tr>
<tr>
<td>1-6 Permissible mounting level</td>
<td>1 degree max. from the horizontal</td>
</tr>
<tr>
<td>1-7 Contact form</td>
<td>Single pole single throw (NC contacts / slow action)</td>
</tr>
<tr>
<td>1-8 Terminal</td>
<td>#187 quick connect /solder terminal (thickness=0.5mm)</td>
</tr>
<tr>
<td>1-9 Mounting</td>
<td>Pitch: 30mm 2 screws(M3) Height of the product: 5.3mm (Please refer to the drawing in detail.)</td>
</tr>
<tr>
<td>1-10 Soldering</td>
<td>Soldering iron: temperature 350±10℃, 3 second max.</td>
</tr>
</tbody>
</table>
2. ELECTRICAL CHARACTERISTICS

2-1 Ratings
5VDC, 0.1mA to 30VDC, 100mA (Resistive load)

2-2 Insulation resistance and dielectric strength

<table>
<thead>
<tr>
<th>Measuring parts</th>
<th>Insulation resistance (250 VDC Megger)</th>
<th>Dielectric strength (50 to 60 Hz, 1 min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between each terminal ** of the same polarity</td>
<td>100 M Ω min.</td>
<td>250 VAC</td>
</tr>
</tbody>
</table>

* Leak current is 1mA max.
** To measure off condition

2-3 Contact resistance
100 m Ω max. (Initial value)

3. MECHANICAL CHARACTERISTICS

3-1 Vibration during transporting
Must be free from any malfunctions both electrically and mechanically
Condition Vibration : 200 Gal (1cycle : 0.5 seconds)
Vibration direction : in the 2 axial directions
Time : Total 50 hours

3-2 Shock
Must be free from any malfunctions both electrically and mechanically
Condition Acceleration : 980 m/s² (100G) 3 times
Shock direction : in the three axial directions

3-3 Shock during transporting
Must be free from any malfunctions both electrically and mechanically
The box which packaged switches are dropped from 50±1cm high toward a composite plate.
(thickness 30mm min.)

3-4 Terminal strength
Must be free from any malfunctions both electrically and mechanically (Refer to Note 2.)
Apply force to the terminal, 78.4N vertically and 49N horizontally, 1 minute each.
4. ENVIRONMENT CHARACTERISTICS

4-1 Operating temperature and humidity
   Temperature: -25°C to +60°C (No icing and condensation)
   Humidity: 45 to 95% RH

4-2 Storage temperature and humidity
   Temperature: -25°C to +60°C (No icing and condensation)
   Humidity: 45 to 95% RH

5. ENDURANCE CHARACTERISTICS

5-1 Salt spray
   The switch is sprayed with 5 ± 0.5% salt water for 96 hours.
   No remarkable corrosion is allowed and must be free from any malfunctions both electrically and mechanically.
   Contact resistance should be 100 Ω max. (To measure after salt is removed by water and the switch dries well.)

5-2 Moisture Endurance
   Must be free from any malfunctions both electrically and mechanically after the switch is left in a temperature of 40 ± 2°C and humidity of 90 to 98% RH for 240 hours. (To measure after the switch dries well.)

5-3 Oil Endurance
   Change of weight must be 20% max. after the switch is dipped in Gasoline 1 at 20 ± 5°C for 24 hours.

5-4 Heat Endurance
   Must be free from any malfunctions both electrically and mechanically after the switch is left in a temperature of 70 ± 5°C for 96 hours.

5-5 Cold Endurance
   Must be free from any malfunctions both electrically and mechanically after the switch is left in a temperature of -35 ± 5°C for 96 hours.

5-6 High temperature/humidity
   Must be free from any malfunctions both electrically and mechanically after the switch is left in a temperature of 70 ± 2°C and humidity of 90 to 98% RH for 240 hours.
5-7 Corrosive gas

\[ \text{H}_2\text{S} : 3 \pm 1 \text{ppm, } \text{SO}_2 : 10 \pm 3 \text{ppm, } 40^\circ \text{C, 75}\% \text{RH, 96 hours} \]

Must be free from any malfunctions both electrically and mechanically after the switch is left under above condition.

6. ELECTRICAL SERVICE LIFE

Must be free from any malfunctions both electrically and mechanically after 5,000 operations under the rated resistive load of 30VDC, 100mA at a frequency of 10 to 20 operations per minute.

7. OTHERS

Note1.

1) If mounting surface is warped, there is a possibility that switch performance might be changed because of switch deformation when it’s mounted. (Warp of mounting surface : 0.3mm max.)

Use two M3 screws with spring washers to mount the switch.

Tighten the screws to a torque of 0.4N to 0.8N·m (4 to 8kgf·cm).

2) Do not set the switch where its mechanically characteristics is affected badly, like door opening, car passage and other vibration and shock.

3) Do not put the switch in direct sunshine.

4) Mechanical deterioration caused by water cleaning, water covered, leak of oil and other organic solvent.

Is not guaranteed by us.

Note2.

To be evaluated as “free from any malfunctions both electrically and mechanically” the switch must satisfy following requirements.

1) Operating angle

   More than \( \pm 20\% \) of specified range is not acceptable

   Releasing angle

   More than \( \pm 20\% \) of specified range is not acceptable

2) Contact resistance

   1 \( \Omega \) max.

3) Insulation resistance

   10M\( \Omega \) min. (250VDC megger)

4) Dielectric strength

   250VAC 50/60Hz for 1 minute (Leak current : 1mA max.)

Note3.

This specification is invalid if we receive no approval or no order replacement of yours within a year since this is submitted. In a case of service parts, we will replace with new specifications.

Note4.

Others not included in this specifications are subjects to change without notice.

OMRON
1. Operating angle: 50° to 80°
   Release angle: 25° MIN.

2. Rating
   DC5V 0.1mA ~ DC30V 100mA

3. LOT NO.

4. Contact resistance
   100mΩMAX. (Initial value)

#187 Quick connect/solder terminal

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