PDU400A11H11

Customer | Model Name
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<th>Checked by</th>
<th>Approved by</th>
<th>Customer approved</th>
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</tbody>
</table>
PDU400A11H11

1. Applications

1.1) Level measurement
1.2) Automation control
1.3) Proximity
1.4) Obstacle avoidance
1.5) Robotics

2. Features

2.1) Rugged sealed construction.
2.2) Cylindrical design allows for installation in various applications.
2.3) Short-range measurement capabilities.

3. Technical terms

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Unit</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Construction</td>
<td></td>
<td>Waterproof</td>
</tr>
<tr>
<td>2.</td>
<td>Using Method</td>
<td></td>
<td>Dual Use</td>
</tr>
<tr>
<td>3.</td>
<td>Center Frequency</td>
<td>KHz</td>
<td>400±16</td>
</tr>
<tr>
<td>4.</td>
<td>Receive Sensitivity Echo</td>
<td>V</td>
<td>$\geq 0.25V$ (driver signal: 200Vp-p, 400KHz at 20cm)</td>
</tr>
<tr>
<td>5.</td>
<td>Capacitance</td>
<td>pf</td>
<td>500±30% at 1KHz</td>
</tr>
<tr>
<td>6.</td>
<td>Max. Input Voltage</td>
<td>Vp-p</td>
<td>300Vp-p</td>
</tr>
<tr>
<td>7.</td>
<td>Directivity (-3dB)</td>
<td>°</td>
<td>7±2</td>
</tr>
<tr>
<td>8.</td>
<td>Distance of Detection</td>
<td>M</td>
<td>0.05~0.3M</td>
</tr>
<tr>
<td>9.</td>
<td>Protection class</td>
<td></td>
<td>IP65</td>
</tr>
<tr>
<td>10.</td>
<td>Material</td>
<td></td>
<td>Aluminum</td>
</tr>
<tr>
<td>11.</td>
<td>Operating Temp. Range</td>
<td>°C</td>
<td>-40 ~ +85</td>
</tr>
<tr>
<td>12.</td>
<td>Storage Temp. Range</td>
<td>°C</td>
<td>-40 ~ +85</td>
</tr>
<tr>
<td>13.</td>
<td>Weight</td>
<td>g</td>
<td>1.6</td>
</tr>
</tbody>
</table>
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4. Drawing

Acoustic Matching Layer

Aluminum case

unit:mm

Date: 2012.07.31

A 2012.07.31

Rev. Date Drawn Note Approved by

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5. Beam Pattern

Directivity in Overall Sensitivity

6. Test circuit

F.G.  U.S.  T.G.

O.S.

F.G.: Function Generator
U.S.: Ultrasonic Sensor
T.G.: Target
O.S.: Oscilloscope

7. Echo sensitivity/Ringing

Driver signal: 200Vp-p, 20cm
BPU11400IFAH11
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8. Reliability Test

8.1 Heat Cycle Test
   Temperature must be changed within 1min
   Temperature: +85±3°C 30min
   Temperature: -40±3°C 30min
   Cycles: 1000cycles

8.2 Humidity Test
   Temperature: +85±3°C
   Relative Humidity: 85%
   Duration: 1000hrs

8.3 Vibration Test
   Vibration Frequency: 10~200Hz
   Sweep Period: 15min
   Acceleration: 43.12m/s² (4.4G)
   Direction: 3(x,y&z)
   Time: 96hours/direction

8.4 Drop test
   Height: 1m onto concrete floor
   Times: 10 times

After reliability test, all characteristic (Frequency, Ringing time, Sensitivity, etc..) must within -2dB compared to initial condition
9. Notice

9.1 Export Control <For customers outside The People's Republic of China>
No PD Inc. products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

9.2 Please contact our sales representatives or product engineers before using the products in the specification or catalogue for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this specification.
   a) Aircraft equipment or Aerospace equipment
   b) Undersea equipment and Power plant equipment
   c) Medical equipment and Transportation equipment (vehicles, trains, ships, etc.)
   d) Traffic signal equipment i Disastr prevention / crime prevention equipment
   e) Data-processing equipment including Application of similar complexity and/or reliability requirements to the applications listed above

9.3 Product specifications and catalogues are subject to change and our products in them may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

9.4 Please read rating and CAUTION (for storage, operating, rating, soldering, mounting and handling) in this specifications in order to prevent smoking and/or burning, etc.

8.5 Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our specifications and catalogues. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

9.6 No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.
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10. Packing

1) 50 pcs/tray
2) 40 trays/carton
3) 2000 pcs/carton in total
4) carton size: 500X280X340mm
11. History change record

<table>
<thead>
<tr>
<th>version No.</th>
<th>Change Items</th>
<th>Date</th>
<th>Drawn</th>
<th>Approved</th>
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<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>2012.07.31</td>
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IBPU11400IFAH11
Ultrasonic Sensor

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