GAPS & HAPS SERIES

Aerospace Proximity Sensors

DESCRIPTION
Honeywell has over 30 years’ experience designing and delivering accurate and reliable proximity sensors that are currently used in a variety of military and commercial aircraft.

Honeywell has two new platforms of proximity sensors: General Aerospace Proximity Sensors (GAPS) and Harsh Aerospace Proximity Sensors (HAPS), formerly known as the IHM Series. Both platforms incorporate Honeywell’s patented Internal Health Monitoring functionality, however the products have some technical differences that allow them to be used in various aerospace applications. GAPS can be used in less harsh areas of application with some differences of electrical and environmental characteristics when compared to HAPS. Whilst, HAPS Aerospace Proximity Sensors are configurable, non-contact, hermetically sealed devices designed to sense the presence or absence of a target in harsh-duty aircraft applications.

The GAPS and HAPS platforms provide on/off outputs and can be configured with an optional health monitoring output to the host system. The sensing mechanism is based on the familiar Eddy Current Killed Oscillator (ECKO) principles; however, Honeywell has designed and implemented the patented FAVCO (Fixed Amplitude Variable Current Oscillator) technology which enables the Honeywell sensors to have the health monitoring (IHM) features. See Figure 5 to compare the ECKO and FAVCO technologies. The GAPS and HAPS Series helps to reduce downtime and maintenance costs due to a unique circuit that can detect any internal failures and display a fault output instead of a false positive or false negative. For the customer, this delivers the best performance with a lower overall cost over the life of the aircraft.

FEATURES
• Industry-leading indirect lightning and dielectric ruggedness: Meets the increased requirements of today’s composite aircraft and most challenging applications including landing gear, thrust reversers, and flight controls
• Enhanced vibration ruggedness: Capable of withstanding extremely high vibration applications
• Environmentally rugged: Fully hermetic packages provide long-term reliability in very harsh environments by eliminating the potential for contamination of the sensor from the application environment. In addition, Honeywell has developed an innovative method to environmentally seal wire-lead (pigtail) configurations
• Internal Health Monitoring Capability: Optional third output state to indicate the health of the sensor (whether it is healthy or failed). Reduces maintenance time, reduces delayed flights, and lowers overall maintenance cost across the life of the aircraft
• Non-contact design: Utilizes non-contact technology to sense the presence or absence of a target regardless of the dirty, harsh environment in which it is placed, eliminating mechanical failure mechanisms, reducing wear, minimizing downtime, increasing durability, and increasing reliability

VALUE TO CUSTOMERS
• Enhanced vibration and EMI specifications help to increase revenue (flight hours) and reduce cost to serve (system maintenance)
• Hermetic sealing helps increase revenue (flight hours), reduce cost to serve (maintenance), & reduce cost of goods (spares)
• Platform approach helps to increase revenue and reduce cost to serve
• Health monitoring helps to increase revenue, reduce cost to serve, and reduce cost of goods
• Supplier stability helps to reduce cost to serve (troubleshoot with original supplier)
• Current install base helps to reduce cost to serve (proven performance and MTBF)

PORTFOLIO
Honeywell’s GAPS and HAPS Series is part of a comprehensive line of aerospace sensors, switches, and value-added solutions. To view Honeywell’s complete product offering, click here.
# AEROSPACE PROXIMITY SENSORS, GAPS & HAPS SERIES

**GAPS** | **HAPS**
--- | ---
**GENERAL** Aerospace Proximity Sensor | **HARSH** Application Proximity Sensor

| **DIELECTRIC/IR** | **OUTPUT TYPE**
--- | ---
1000 Vdc/750 Vac | Current loop output with Internal Health Monitoring (IHM)
NPN open collector output max. load current 250 mA

| **500,000 MTBF > FLIGHT HOURS** | **500,000**
--- | ---
| **MECHANICAL CHARACTERISTICS** | **MECHANICAL CHARACTERISTICS**
| **OPERATING TEMPERATURE** | **OPERATING TEMPERATURE**
115°C | 115°C
| **VIBRATION** | **VIBRATION**
20 G | 90 G
| **OPERATING SHOCK** | **OPERATING SHOCK**
20 G | 20 G

| **ELECTRICAL CHARACTERISTICS** | **ELECTRICAL CHARACTERISTICS**
--- | ---
150 mA Level W | **RADIO FREQUENCY CONDUCTED SUSCEPTIBILITY**
300 mA Level Y
| **RADIO FREQUENCY RADIATED SUSCEPTIBILITY** | **RADIO FREQUENCY RADIATED SUSCEPTIBILITY**
200 V/m CAT G
| **LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY** | **LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY**
Level 3 | Level 3

**DIFFERENTIATORS**

**HAPS**
- 100 V/m CAT F
- Level 3
- Current loop output with Internal Health Monitoring (IHM)
- NPN open collector output max. load current 250 mA
- 1000 Vdc/750 Vac

**GAPS**
- 500,000 MTBF > FLIGHT HOURS
- 115°C OPERATING TEMPERATURE
- 20 G VIBRATION
- 20 G OPERATING SHOCK
- 150 mA Level W RADIO FREQUENCY CONDUCTED SUSCEPTIBILITY
- 100 V/m CAT F RADIO FREQUENCY RADIATED SUSCEPTIBILITY
- Level 3 LIGHTNING INDUCED TRANSIENT SUSCEPTIBILITY
- Current loop output with Internal Health Monitoring (IHM)
- NPN open collector output max. load current 20 mA
- 1000 Vdc/750 Vac
<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical Characteristics</strong></td>
<td><strong>GAPS</strong></td>
</tr>
<tr>
<td>Weight</td>
<td>Less than 60 grams (inline variants); 85 grams (right-angle variants)</td>
</tr>
<tr>
<td>Sealing</td>
<td>Hermetically sealed</td>
</tr>
<tr>
<td>Connector/leads</td>
<td>D38999/25YA98PN D38999/25YA98PA EN2997Y10803MN</td>
</tr>
<tr>
<td>Form factor</td>
<td>• Inline, cylindrical, threaded • Right angle, cylindrical, threaded • Inline, cylindrical, flanged • Right angle, cylindrical, flanged</td>
</tr>
<tr>
<td>Sensing distance</td>
<td>3.5 mm max.</td>
</tr>
<tr>
<td>Sensing face</td>
<td>Inconel®</td>
</tr>
<tr>
<td>Outer body material</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Sensor head diameter</td>
<td>13.5 mm [0.53 in]</td>
</tr>
<tr>
<td>Sensor length</td>
<td>55 mm [2.17 in] max.</td>
</tr>
<tr>
<td>Target (typical)</td>
<td>SS 17-4PH rectangular target with dimensions 25 mm x 18 mm x 3 mm [0.98 in x 0.71 in x 0.12 in]</td>
</tr>
<tr>
<td>MTBF</td>
<td>500,000 flight hours</td>
</tr>
<tr>
<td><strong>Electrical Characteristics</strong></td>
<td><strong>GAPS</strong></td>
</tr>
<tr>
<td>Supply voltage</td>
<td>12 Vdc to 32 Vdc (input)</td>
</tr>
<tr>
<td>Supply current</td>
<td>&lt;10 mA</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-55°C to 115°C [-67°F to 239°F]</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-65°C to 115°C [-85°F to 239°F]</td>
</tr>
<tr>
<td>Target response time</td>
<td>5 ms</td>
</tr>
<tr>
<td>Power on delay time</td>
<td>&lt;1 second</td>
</tr>
<tr>
<td>Bonding resistance</td>
<td>&lt; 2.5 mΩ</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>1000 Vdc/750 Vac for 1 minute</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>200 MΩ min. at 50 Vdc</td>
</tr>
<tr>
<td><strong>Sensing Characteristics</strong></td>
<td><strong>GAPS</strong></td>
</tr>
<tr>
<td>Ga/Gd</td>
<td>see Figure 3</td>
</tr>
<tr>
<td>Target material</td>
<td>17-4 PH stainless steel heat treated to condition H1025</td>
</tr>
<tr>
<td>Target dimension</td>
<td>Rectangular target of 25 mm x 18 mm x 3 mm</td>
</tr>
</tbody>
</table>
## TABLE 2. GAPS SERIES AND HAPS SERIES PERFORMANCE SPECIFICATIONS

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Temperature and altitude</td>
<td>RTCA/DO-160G – Section 4, Category D3</td>
</tr>
<tr>
<td>Temperature variation</td>
<td>RTCA/DO-160G – Section 5, Category S2</td>
</tr>
<tr>
<td>Humidity</td>
<td>RTCA/DO-160G – Section 6, Category C</td>
</tr>
<tr>
<td>Operational shock and crash safety</td>
<td>RTCA/DO-160G – Section 7, Category B</td>
</tr>
<tr>
<td>Vibration</td>
<td>RTCA/DO-160G – Section 8, Category R (Curve E, E1, and W)</td>
</tr>
<tr>
<td>Explosion safety</td>
<td>RTCA/DO-160G – Section 9, Category H</td>
</tr>
<tr>
<td>Water proofness</td>
<td>RTCA/DO-160G – Section 10, Category R</td>
</tr>
<tr>
<td>Fire proofness</td>
<td>CPR option (Case Pressure Relief Port) (GAPS only)</td>
</tr>
<tr>
<td>Fluid susceptibility</td>
<td>RTCA/DO-160G – Section 11, Category F</td>
</tr>
<tr>
<td>Sand and dust</td>
<td>RTCA/DO-160G – Section 12, Category D</td>
</tr>
<tr>
<td>Fungus resistance</td>
<td>RTCA/DO-160G – Section 13, Category F</td>
</tr>
<tr>
<td>Salt spray</td>
<td>RTCA/DO-160G – Section 14, Category T</td>
</tr>
<tr>
<td>Magnetic effects</td>
<td>RTCA/DO-160G – Section 15, Category A</td>
</tr>
<tr>
<td>Power input</td>
<td>RTCA/DO-160G – Section 16, Category A</td>
</tr>
<tr>
<td>Voltage spike</td>
<td>RTCA/DO-160G – Section 17, Category A</td>
</tr>
<tr>
<td>Audio frequency conducted susceptibility</td>
<td>RTCA/DO-160G – Section 18, Category Z</td>
</tr>
<tr>
<td>Induced signal susceptibility</td>
<td>RTCA/DO-160G – Section 19, Category CWE</td>
</tr>
<tr>
<td>Radio frequency radiated susceptibility</td>
<td>RTCA/DO-160G – Section 20, Category F</td>
</tr>
<tr>
<td>Radio frequency conducted susceptibility</td>
<td>RTCA/DO-160G – Section 20, Category W</td>
</tr>
<tr>
<td>Radio frequency emission</td>
<td>RTCA/DO-160G – Section 21, Category M</td>
</tr>
<tr>
<td>Lightning induced transient susceptibility</td>
<td>RTCA/DO-160G – Section 22, Category B3K3L3</td>
</tr>
<tr>
<td>Icing</td>
<td>RTCA/DO-160G – Section 24, Category A</td>
</tr>
<tr>
<td>Electrostatic discharge</td>
<td>RTCA/DO-160G – Section 25, Category A</td>
</tr>
</tbody>
</table>
### FIGURE 1. GAPS PRODUCT NOMENCLATURE

<table>
<thead>
<tr>
<th>Series</th>
<th>Form Factor</th>
<th>Range Ga/Gd (mm/in)</th>
<th>Electrical Output Type</th>
<th>Termination</th>
<th>Hardware</th>
<th>Reserved for Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CT</strong></td>
<td>Inline, cylindrical threaded</td>
<td>1.75/2.75 (0.069/0.108)</td>
<td>3A - 3-wire, current sink output normally open</td>
<td>D39999/25YA988PN</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td><strong>RT</strong></td>
<td>Right angle cylindrical threaded</td>
<td>2.00/3.00 (0.078/0.118)</td>
<td>3A - 3-wire, current sink output normally open</td>
<td>D39999/25YA988PA</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td><strong>CF</strong></td>
<td>Inline, cylindrical flanged</td>
<td>2.25/3.25 (0.088/0.128)</td>
<td>3B - 3-wire, open collector output normally closed</td>
<td>EN2997Y10803MN</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td><strong>RF</strong></td>
<td>Right angle cylindrical flanged</td>
<td>2.50/3.50 (0.098/0.138)</td>
<td>3C - 3-wire, open collector output normally open</td>
<td>Custom connector</td>
<td>N</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note: These grayed-out options with blue code letters are non-qualified listings (not released as production listings in Honeywell’s system for ordering). These listings will be qualified upon customer request. A project needs to be raised to qualify these listings based on customer request and related documents to be revised (PRS, QTP, etc.).

### FIGURE 2. HAPS SERIES PRODUCT NOMENCLATURE

<table>
<thead>
<tr>
<th>Series</th>
<th>Form Factor</th>
<th>Range Ga/Gd (mm/in)</th>
<th>Electrical Output Type</th>
<th>Termination</th>
<th>Pigtail Length</th>
<th>Hardware</th>
<th>Reserved for Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CT</strong></td>
<td>Inline, cylindrical threaded</td>
<td>1.75/2.75 (0.069/0.108)</td>
<td>3A - 3-wire, current sink output normally open</td>
<td>D39999/25YA988PN</td>
<td>3A</td>
<td>0</td>
<td>000</td>
</tr>
<tr>
<td><strong>RT</strong></td>
<td>Right angle cylindrical threaded</td>
<td>2.00/3.00 (0.078/0.118)</td>
<td>3B - 3-wire, open collector output normally closed</td>
<td>D39999/25YA988PA</td>
<td>3B</td>
<td>0</td>
<td>000</td>
</tr>
<tr>
<td><strong>CF</strong></td>
<td>Inline, cylindrical flanged</td>
<td>2.25/3.25 (0.088/0.128)</td>
<td>3C - 3-wire, open collector output normally open</td>
<td>EN2997Y10803MN</td>
<td>3C</td>
<td>0</td>
<td>000</td>
</tr>
<tr>
<td><strong>RF</strong></td>
<td>Right angle cylindrical flanged</td>
<td>2.50/3.50 (0.098/0.138)</td>
<td>3A - 3-wire, current sink output normally open</td>
<td>Custom connector</td>
<td>3A</td>
<td>0</td>
<td>000</td>
</tr>
</tbody>
</table>

*Note: These grayed-out options are non-qualified listings (not released as production listings in Honeywell’s system for ordering). These listings will be qualified based on customer request. Contact Honeywell for further information on the grayed-out customization options.
### TABLE 3. GAPS SERIES INTERFACE DETAILS

<table>
<thead>
<tr>
<th>SUPPLY VOLTAGE</th>
<th>SUPPLY CURRENT</th>
<th>OUTPUT TYPE</th>
<th>OUTPUT CONDITION</th>
<th>CONNECTOR</th>
<th>CATALOG LISTING</th>
<th>PIN CONFIGURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 Vdc to 32 Vdc</td>
<td>10 mA max.</td>
<td>Current sink</td>
<td>Target near: 4 mA ≤ Io ≤ 6 mA</td>
<td>D38999/25YA98PN</td>
<td>LGXXD3AAX-000</td>
<td>Pin A: Supply excitation, Pin B: Supply return, Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Target far: 12 mA ≤ Io ≤ 16 mA</td>
<td>D38999/25YA98PA</td>
<td>LGXXD3ABX-000</td>
<td>Pin A: Supply excitation, Pin B: Supply return, Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Internal fault: 9 mA ≤ Io ≤ 11 mA or Io &lt; 1 mA</td>
<td>EN2997Y10803MN</td>
<td>LGXXD3ACX-000</td>
<td>Pin 1: Supply excitation, Pin 2: Supply return, Pin 3: Output</td>
</tr>
<tr>
<td>12 Vdc to 32 Vdc</td>
<td>10 mA max.</td>
<td>Open collector (normally closed)</td>
<td>Target near: Switch open, Io &lt; 100 μA</td>
<td>D38999/25YA98PN</td>
<td>LGXXD3BAX-000</td>
<td>Pin A: Supply excitation, Pin B: Supply return, Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Target far: Switch close, Vo ≤ 1 V @ 20 mA of Io</td>
<td>D38999/25YA98PA</td>
<td>LGXXD3BBX-000</td>
<td>Pin A: Supply excitation, Pin B: Supply return, Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EN2997Y10803MN</td>
<td>LGXXD3BCX-000</td>
<td>Pin 1: Supply excitation, Pin 2: Supply return, Pin 3: Output</td>
</tr>
<tr>
<td>12 Vdc to 32 Vdc</td>
<td>10 mA max.</td>
<td>Open collector (normally open)</td>
<td>Target near: Switch close, Vo ≤ 1 V @ 20 mA of Io</td>
<td>D38999/25YA98PN</td>
<td>LGXXD3CAX-000</td>
<td>Pin A: Supply excitation, Pin B: Supply return, Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Target far: Switch open, Io &lt; 100 μA</td>
<td>D38999/25YA98PA</td>
<td>LGXXD3CBX-000</td>
<td>Pin A: Supply excitation, Pin B: Supply return, Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EN2997Y10803MN</td>
<td>LGXXD3CCX-000</td>
<td>Pin 1: Supply excitation, Pin 2: Supply return, Pin 3: Output</td>
</tr>
</tbody>
</table>
### TABLE 4. HAPS SERIES INTERFACE DETAILS

<table>
<thead>
<tr>
<th>SUPPLY VOLTAGE</th>
<th>SUPPLY CURRENT</th>
<th>OUTPUT TYPE</th>
<th>OUTPUT CONDITION</th>
<th>CONNECTOR</th>
<th>CATALOG LISTING</th>
<th>PIN/WIRE CONFIGURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 Vdc to 32 Vdc</td>
<td>10 mA max.</td>
<td>Current sink</td>
<td>Target near: 4 mA ≤ Io ≤ 6 mA Target far: 12 mA ≤ Io ≤ 16 mA Internal fault: 9 mA ≤ Io ≤ 11 mA or Io &lt; 1 mA</td>
<td>D38999/25YA98PN</td>
<td>1PXXX3AANX-000</td>
<td>Pin A: Supply excitation Pin B: Supply return Pin C: Output</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D38999/25YA98PA</td>
<td>1PXXX3ABNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EN2997Y10803MN</td>
<td>1PXXX3ACNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y1005N</td>
<td>1PXXX3ADNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10056</td>
<td>1PXXX3AEAX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10057</td>
<td>1PXXX3AFNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10058</td>
<td>1PXXX3AGNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td>Pigtail (Flying Lead)</td>
<td>1PXXX3AHXX-000</td>
<td></td>
<td></td>
<td>White wire (orange stripes): Supply excitation White wire (blue stripes): Output White wire (no stripes): Supply return</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Vdc to 32 Vdc</td>
<td>10 mA max.</td>
<td>Open collector (normally closed)</td>
<td>Target near: Switch close, Io &lt; 50 μA Target far: Switch open, Vo &lt; 1 V @ 20 mA of Io</td>
<td>D38999/25YA98PN</td>
<td>1PXXX3AANX-000</td>
<td>Pin A: Supply excitation Pin B: Output Pin C: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D38999/25YA98PA</td>
<td>1PXXX3ABNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EN2997Y10803MN</td>
<td>1PXXX3ACNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y1005N</td>
<td>1PXXX3ADNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10056</td>
<td>1PXXX3AEAX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10057</td>
<td>1PXXX3AFNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10058</td>
<td>1PXXX3AGNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td>Pigtail (Flying Lead)</td>
<td>1PXXX3AHXX-000</td>
<td></td>
<td></td>
<td>White wire (orange stripes): Supply excitation White wire (blue stripes): Output White wire (no stripes): Supply return</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Vdc to 32 Vdc</td>
<td>10 mA max.</td>
<td>Open collector (normally open)</td>
<td>Target near: Switch close, Vo &lt; 1 V @ 20 mA of Io Target far: Switch open, Io &lt; 50 μA</td>
<td>D38999/25YA98PN</td>
<td>1PXXX3AANX-000</td>
<td>Pin A: Supply excitation Pin B: Output Pin C: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D38999/25YA98PA</td>
<td>1PXXX3ABNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EN2997Y10803MN</td>
<td>1PXXX3ACNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y1005N</td>
<td>1PXXX3ADNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10056</td>
<td>1PXXX3AEAX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10057</td>
<td>1PXXX3AFNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M83723/90Y10058</td>
<td>1PXXX3AGNX-000</td>
<td>Pin 1: Supply excitation Pin 2: Output Pin 3: Supply return Pin 4: No connection Pin 5: No connection</td>
</tr>
<tr>
<td>Pigtail (Flying Lead)</td>
<td>1PXXX3AHXX-000</td>
<td></td>
<td></td>
<td>White wire (orange stripes): Supply excitation White wire (blue stripes): Output White wire (no stripes): Supply return</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 3. SLIDE-BY CURVES

Proximity Sensor Actuation and De-Actuation Curves

FIGURE 4. KEEP OUT ZONE MAP

7,62 mm [0.3 in]
20,32 mm [0.8 in]

40,64 mm [1.6 in]
Eddy currents within the target cause a load on the sensor decreasing the amplitude of the oscillator, monitored by a trigger switching the output state on or off.

Energy measured to maintain the oscillation when a load on the sensor is applied caused by the eddy currents of the target.
AEROSPACE PROXIMITY SENSORS, GAPS & HAPS SERIES

GAPS WIRING DIAGRAMS

FIGURE 6. GAPS SERIES D38999/25YA98PN CONNECTOR

FIGURE 7. GAPS SERIES EN2997Y10803MN CONNECTOR

PRODUCT DIMENSIONS

FIGURE 8. GAPS SERIES LGCTD3CA01–000

DIMENSIONS mm [in]
FIGURE 9. GAPS SERIES LGCTD3CB01–000 DIMENSIONS mm [in]

- Housing: 5/8-24 UNEF-2A
- Front Disc: 2.5 ±0.25 [0.098 ±0.009]
- Master Keyway: 1 ±0.4 [0.039 ±0.015]
- Ø13.8 ±0.15 [0.543 ±0.005]
- D38999/25YA98PA Connector mates with D38999/28KA98SA or equivalent
- Electrical Connector: D38999
- Electrical Connector mates: D38999/25YA98PA or equivalent

Dimensions:
- 3X Ø1.19 [0.047] lockwire holes
- Ø19.0 ±0.15 [0.748 ±0.005]
- 3.3 [0.130]
- 20.6 [0.811]
- 14.85 [0.585]
- 54.24 ±0.25 [2.135 ±0.009]
AEROSPACE PROXIMITY SENSORS, GAPS & HAPS SERIES

FIGURE 10. GAPS SERIES LGRTD3CA01-000 DIMENSIONS mm [in]

Back cap
24.74 ±0.3
[0.974 ±0.011]

21.34 ±0.2
[0.840 ±0.007]

Ω 19.05 ±0.2
[0.75 ±0.007]

Housing
28 ±0.15
[1.102 ±0.005]

2 ±0.1
[0.08 ±0.004]

Front Disc
1 ±0.4
[0.039 ±0.0157]

D38999/25YA98PN
Connector mates
D38999/26KA98SN
or equivalent

Master Keyway
2.5 ±0.25
[0.098 ±0.009]

Housing
38.23 ±0.35
[1.505 ±0.013]

5/8-24 UNEF-2A
Ω13.8 ±0.15
[0.543 ±0.005]
AEROSPACE PROXIMITY SENSORS, GAPS & HAPS SERIES

FIGURE 11. HAPS SERIES: CYLINDRICAL, FLANGED HOUSING WITH EN2997Y10803MN CONNECTOR mm [in]

- Connector: EN2997Y10803MN (mates with EN2997SEC0803FN or equivalent)
- Master keyway 55°
- 2X Ø 5 [Ø 0.20]
- 15.5 [0.61]
- 16.5 [0.65]
- End cap
- Upper housing
- Lower housing
- Electrical Schematic

FIGURE 12. HAPS SERIES: CYLINDRICAL, FLANGED HOUSING WITH M83723/90Y1005N CONNECTOR mm [in]

- Connector: M83723/90Y1005N (mates with M83723/97S1005N or equivalent)
- Master keyway 55°
- 2X Ø 5 [Ø 0.20]
- 15.5 [0.61]
- 16.5 [0.65]
- Electrical Schematic

ECC  Proximity Sensor
Supply/Excitation
To measuring unit
Output
Supply Return

No Connection
FIGURE 13. HAPS SERIES: CYLINDRICAL HOUSING WITH D38999/25YA98PN CONNECTOR mm [in]

Connector: D38999/25YA98PN (mates with D38999/26MA98SN or equivalent)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 14.05</td>
<td>0.556</td>
</tr>
<tr>
<td>Ø 14.05</td>
<td>0.556</td>
</tr>
<tr>
<td>Ø 19</td>
<td>0.748</td>
</tr>
<tr>
<td>1.02</td>
<td>0.04</td>
</tr>
<tr>
<td>1.32</td>
<td>0.05</td>
</tr>
<tr>
<td>17.17</td>
<td>0.68</td>
</tr>
<tr>
<td>19.89</td>
<td>0.78</td>
</tr>
<tr>
<td>3.89</td>
<td>0.15</td>
</tr>
<tr>
<td>14.77</td>
<td>0.58</td>
</tr>
<tr>
<td>1.02</td>
<td>0.04</td>
</tr>
<tr>
<td>1.32</td>
<td>0.05</td>
</tr>
<tr>
<td>19.89</td>
<td>0.78</td>
</tr>
<tr>
<td>3.89</td>
<td>0.15</td>
</tr>
<tr>
<td>14.77</td>
<td>0.58</td>
</tr>
</tbody>
</table>

FIGURE 14. HAPS SERIES: CYLINDRICAL HOUSING WITH PIGTAIL CONNECTION mm [in]

Refer to pigtail length in nomenclature

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 14.05</td>
<td>0.556</td>
</tr>
<tr>
<td>Ø 14.05</td>
<td>0.556</td>
</tr>
<tr>
<td>Ø 19</td>
<td>0.748</td>
</tr>
<tr>
<td>1.02</td>
<td>0.04</td>
</tr>
<tr>
<td>1.32</td>
<td>0.05</td>
</tr>
<tr>
<td>17.17</td>
<td>0.68</td>
</tr>
<tr>
<td>19.89</td>
<td>0.78</td>
</tr>
<tr>
<td>3.89</td>
<td>0.15</td>
</tr>
<tr>
<td>14.77</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Electrical Schematic

Proximity Sensor

Supply/Excitation

Output

To measuring unit

EEC

White with orange stripes

White with blue stripes

White
AEROSPACE PROXIMITY SENSORS, GAPS & HAPS SERIES

FIGURE 15. HAPS SERIES: RIGHT ANGLE, FLANGED HOUSING WITH D38999/25YA98PN CONNECTOR mm [in]

Electrical Schematic

Proximity Sensor

Supply/Excitation

Output

Supply Return

To measuring unit

Proximity Sensor

EEC

Supply/Excitation

Output

Supply Return

To measuring unit

End cap

Back cap

Lower housing

Upper housing

Connector: D38999/25YA98PN (mates with D38999/26MA98SN or equivalent)

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

-19.8 [0.78]

30.24 [1.19]

2X 0.33 [0.013] x 45°

62 [2.44]

31 [1.22]

3 [0.12]

Master keyway

Upper housing

Lower housing

End cap

Back cap

Electrical Schematic

Proximity Sensor

EEC

Supply/Excitation

Output

Supply Return

To measuring unit

End cap

Back cap

Lower housing

Upper housing

Connector: EN2997Y10803MN (mates with EN2997SEC0803FN or equivalent)

2X Ø 5.3 [Ø 0.21]

22 [0.87]

14,77 [0.58]

2 [0.04]

δ 19 [δ 0.748]

3,89 [0.153]

Ø 13.5 [Ø 0.53]

25.1 [0.988]

9,69 [0.38]

60 [2.36] max.

19.89 [0.78]

29.61 [1.17]

13.9 [0.55]

17 [0.67]

A

60 [2.36] max.

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]

2X Ø 5.3 [Ø 0.21]

22 [0.87]

25 [0.98]

19.8 [0.78]

30.24 [1.19]
**FIGURE 17. HAPS SERIES: RIGHT ANGLE, FLANGED HOUSING WITH PIGTAIL CONNECTION mm [in]**

**FIGURE 18. HAPS SERIES: RIGHT ANGLE WITH M83723/90Y1005N CONNECTOR mm [in]**
WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell’s standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. The foregoing is buyer’s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer’s sole responsibility to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

WARNING
PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING
MISUSE OF DOCUMENTATION

• The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
• Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

FOR MORE INFORMATION

Honeywell Sensing and Internet of Things services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit sensing.honeywell.com or call:

USA/Canada  +302 613 4491
Latin America +1 305 805 8188
Europe  +44 1344 238258
Japan  +81 (0) 3-6730-7152
Singapore  +65 6355 2828
Greater China  +86 4006396841