Mercury Systems is a leading commercial provider of secure sensor and mission processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.

**BuiltSAFE™ ARINC-8429**

ARINC 429 PMC Mezzanine

- Up to 32x ARINC 429 interface channels
- Safety-Certifiable driver (DO-178B) DAL-A (consult factory)
- Rugged conduction-cooled and Commercial Air-Cooled packages

Mercury’s BuiltSAFE™ products bring the highest level of flight safety assurance to aerospace and defense applications. Our proven, reusable Design Assurance Level (DAL) certified artifacts for mission computing, avionics, networking and datalink communications processing save time and cost while decreasing risk.

The BuiltSAFE ARINC-8429 is an ARINC 429 mezzanine that is available as either a commercial air-cooled or rugged conduction-cooled solution. It is specifically designed for ARINC 429 connection requirements in mission systems.

The ARINC-8429 can be mounted on most air or conduction-cooled processor or carrier boards. It offers up to thirty-two channels, which can be independently programmed to operate at either high or low speed. Each channel is supported with a Cyclic-Data-Buffer, 1 k deep/32 bits wide. Additionally, each receive channel is supported by a high-resolution time-stamp, which is stored in a separate cyclic buffer, one for each channel, in parallel with the received data. Optionally, the receive data and time-stamp data can be stored in the form of a Current Value Table (CVT), addressed by channel/sdi/label.

ARINC input/output is via either the front-panel SCSI 68-pin female connector or PMC-P4.

**BuiltSAFE for Avionics**

Mercury’s expertise and experience in safety certifiable solutions has been built on successful execution of dozens of programs over three decades. This domain knowledge is the foundation of our BuiltSAFE portfolio of open architecture modules, systems and software for avionics, communications, video servers, and mission computing.

**Technical Specifications**

**Compliance**

General purpose air-cooled PMC (D)(E)(F)(G)
Rugged conduction-cooled PMC (X)
ARINC 429 Specification (part 1 - 16)
(D) Applies to “D” model
(E) Applies to “E” model
(F) Applies to “F” model
(G) Applies to “G” model
(X) Applies to “X” model

**Power Consumption**

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
<td>18</td>
<td>Watts</td>
</tr>
</tbody>
</table>

Mercury Systems is a leading commercial provider of secure sensor and mission processing subsystems. Optimized for customer and mission success, Mercury’s solutions power a wide variety of critical defense and intelligence programs.
Interface

Up to 32x ARINC 429 interface channels
ARINC 429 input/output either to front-panel SCSI connector or PMC-P4
Each channel is supported by a 1 k deep/32 bits wide Cyclic-Data-Buffer
Direct access to Cyclic-Data-Buffer read/write pointers
Direct access to board registers and data memory
PCI interrupts on board events
Receiver Current Value Table
Error detection
Time-stamping logic with 1 μs precision
Bit rate selectable by software on a per channel basis

Buses

One 32-bit PCI 2.1 bus at 33 MHz on PMC-P1/P2

Connectors

One SCSI 68-pin female connector on front-panel
(D) Applies to “D” model
(E) Applies to “E” model
(F) Applies to “F” model
(G) Applies to “G” model

Ruggedization Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Cooling Type</th>
<th>Operating Temperature</th>
<th>Vibration (1 hour per axis)</th>
<th>Operating Shocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Commercial AC</td>
<td>Forced air*</td>
<td>0°C to 55°C [AC1]</td>
<td>5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.04 g2/Hz, 1000-2000Hz: decrease at 6 dB/octave [V2]</td>
<td>20g, 11ms saw-tooth, three axes [OS1]</td>
</tr>
<tr>
<td>C3</td>
<td>Rugged CC</td>
<td>Conduction</td>
<td>-40°C to 70°C [CC3]</td>
<td>5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 g2/Hz, 1000-2000Hz: decrease at 6 dB/octave</td>
<td>40g, 11ms saw-tooth, three axes</td>
</tr>
</tbody>
</table>

Environmental Specifications

<table>
<thead>
<tr>
<th>Condition</th>
<th>Limits, standards</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-operating temperature</td>
<td>-55°C to 105°C [C4]</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>-1,500 to 60,000 feet</td>
<td>May require conformal coating</td>
</tr>
<tr>
<td>Fungus resistance</td>
<td>No nutrient materials</td>
<td></td>
</tr>
<tr>
<td>Workmanship</td>
<td>IPC-A-160 class 3</td>
<td></td>
</tr>
<tr>
<td>Soldering</td>
<td>IPC J-STD-001 class 3</td>
<td></td>
</tr>
<tr>
<td>PCB Manufacturing</td>
<td>IPC-A-600 class 3</td>
<td></td>
</tr>
<tr>
<td>Conformal coating</td>
<td>IPC-CC-830</td>
<td>Optional</td>
</tr>
<tr>
<td>Materials</td>
<td>REACH compliant</td>
<td>ROHS variants as an option</td>
</tr>
<tr>
<td>Flammability</td>
<td>UL 94 Class V-0</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>EN 9100:2008</td>
<td></td>
</tr>
</tbody>
</table>

Product Ordering

ARINC-8429XA - Conduction-Cooled ARINC 429 PMC (16 Rx/6 Tx)
DXW-31290C - VxWorks®653 Driver for ARINC-8429
DXW-31290D - VxWorks Driver for ARINC-8429
CERT-8429S - ARINC-8429 DO-178B certification kit (consult factory)