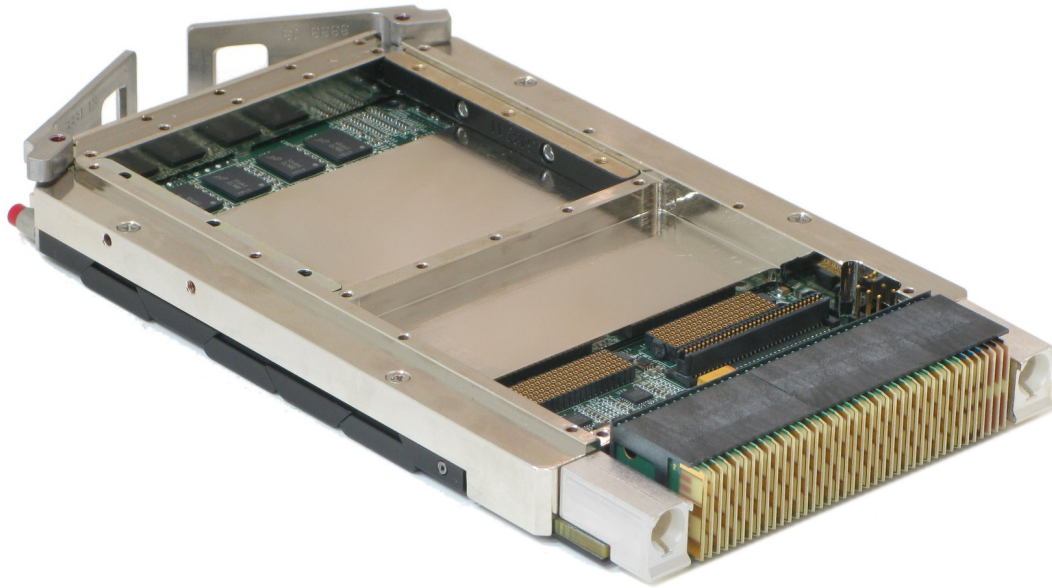


# C874

## 5<sup>th</sup> Gen. Intel Core™ i7 3U VPX SBC



Embedded Computing  
*without Compromise*



- Rugged 3U VPX Single-Slot SBC
- 5<sup>th</sup> Generation Intel® Core™ i7 CPU
  - ▶ Quad Core @ 2.6 GHz
  - ▶ HD Graphics 5600
- Up to 16 GB DDR3L with ECC
- Up to 512 GB On-Board Flash Disk
- Versatile Board I/O
  - ▶ USB
  - ▶ Serial
  - ▶ HDMI/DVI Out
  - ▶ SATA
  - ▶ Discrete
  - ▶ RGBHV Out
  - ▶ GbE
  - ▶ Audio In + Out
- PMC/XMC Slot
- WWDT, IPMI, ETR, RTC, Temp. Sensors
- Windows®, Linux®, VxWorks® Support
- OpenVPX Compliant
- 2LM Option per VITA 48.2
- Conduction and Air-Cooled Versions
- Vibration and Shock Resistant



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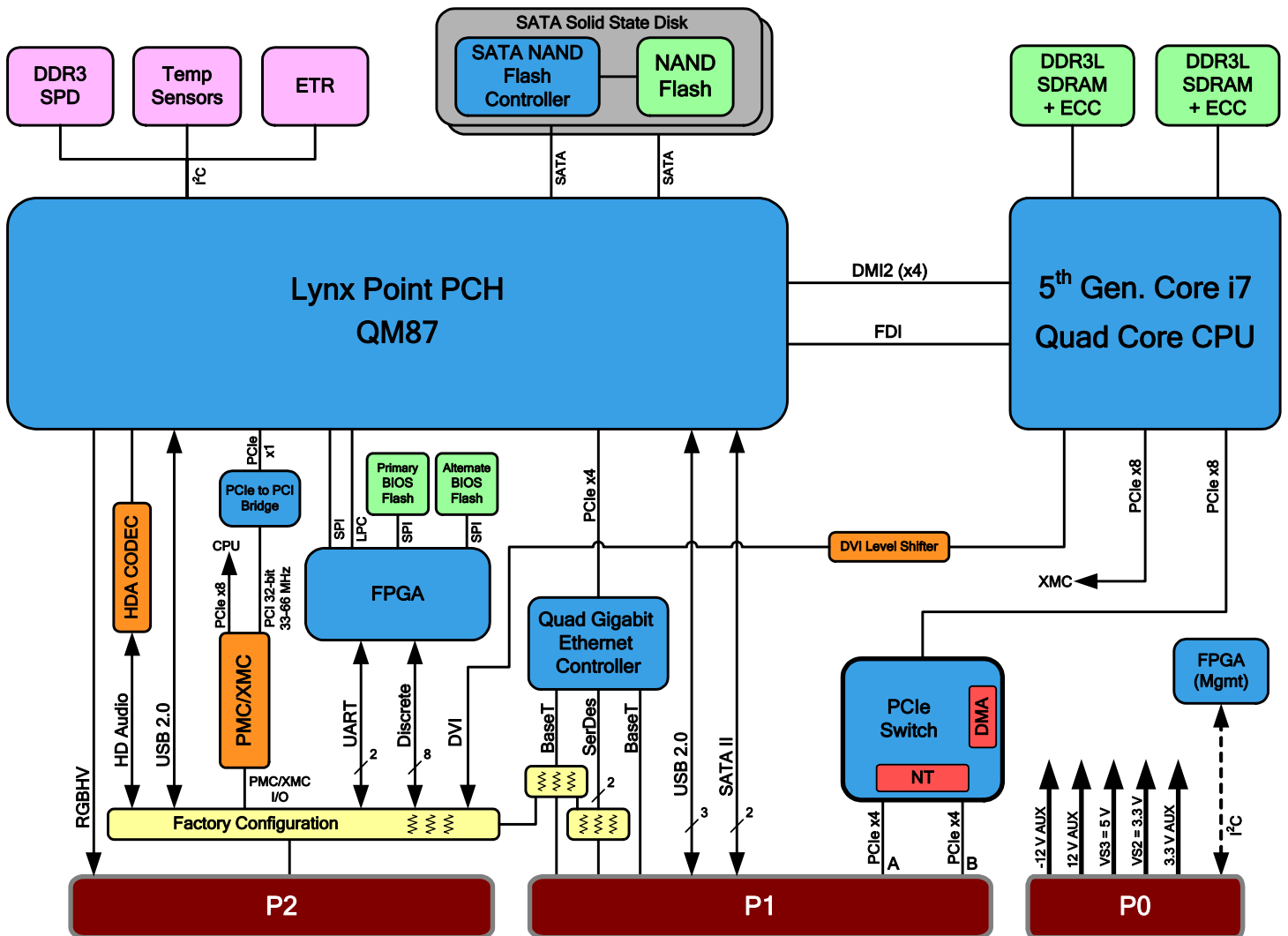
Aitech's C874 is a high-performance 3U VPX SBC for embedded and harsh environment applications. The heart of the C874 is Intel's Broadwell platform, featuring a 5<sup>th</sup> Generation Intel® Core™ i7 Quad Core processor with integrated HD Graphics 5600, coupled with a companion Lynx Point QM87 I/O Platform Controller Hub (PCH).

The processor's integrated 2D/3D graphics controller supports graphics and video processing and provides RGBHV and HDMI/DVI outputs.

The C874 integrates large on-board RAM (DDR3L) and mass storage (SATA Flash disk) resources, and provides a variety of popular I/O interfaces to meet a wide range of system requirements. Expandability and further flexibility are provided by an industry standard PMC/XMC slot.

The C874 is also pinout compatible with Aitech's C873 4<sup>th</sup> Gen. Core i7 (Haswell platform) SBC.

C874 mechanical and electrical designs guarantee operation over the full range of rugged application environments. It is available in industry standard conduction-cooled and air-cooled form factors.



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### Board Architecture

|  |   |  |   |
|--|---|--|---|
| <b>Processor</b>                       | 5 <sup>th</sup> Gen. Intel® Core™ i7 – Quad Core @ 2.6 GHz, Integrated HD Graphics 5600, 6 MB Last Level Cache  |  |   |
| <b>Chipset</b>                         | Intel Lynx Point QM87 Platform Controller Hub   |  |   |
| <b>Board Resources</b>                 | <ul style="list-style-type: none"> <li>Watchdog Timers (Windowed + Standard)</li> <li>Intelligent Platform Management Interface (IPMI)</li> </ul>   | <ul style="list-style-type: none"> <li>Temperature Sensors</li> <li>Elapsed Time Recorder</li> </ul> | <ul style="list-style-type: none"> <li>Real Time Clock</li> </ul> |
| <b>OpenVPX (VITA 65) Slot Profiles</b> | <p>Available per factory configuration (see <i>Ordering Information</i> below):</p> <ul style="list-style-type: none"> <li><b>SLT3-PAY-2F2U</b> Payload board, 2 PCIe x4 ports, 2 1000Base-BX/KX ports</li> <li><b>SLT3-PAY-2F2T</b> Payload board, 2 PCIe x4 ports, 2 1000Base-T ports</li> </ul> <p>Implemented via software configuration of the SLT3-PAY-2F2T option:</p> <ul style="list-style-type: none"> <li><b>SLT3-PAY-1D</b> Payload board, 1 PCIe x8 port</li> <li><b>SLT3-PAY-2F</b> Payload board, 2 PCIe x4 ports</li> <li><b>SLT3-PAY-1F4U</b> Payload board, 1 PCIe x4 port, 4 PCIe x1 ports</li> <li><b>SLT3-PAY-8U</b> Payload board, 8 PCIe x1 ports</li> <li><b>SLT3-PER-2F</b> Peripheral board, 2 PCIe x4 ports</li> </ul> |  |   |

### Memory Resources

|                   |  |
|-------------------|--|
| <b>RAM</b>        | Up to 16 GB of DDR3L SDRAM in dual channels with ECC operates at 1600 MT/s   |
| <b>Flash Disk</b> | Up to 512 GB SATA Flash Disk, SLC (Single-Level Cell) & MLC (Multi-Level Cell) options per <i>Ordering Information</i> below |
| <b>Boot Flash</b> | Dual BIOS Flash devices (Primary device for normal board operation, Alternate device for board maintenance)                  |

### I/O

|   | I/O Variant <sup>(1)</sup>               |  |  |            |
|---|--|--|--|------------|
|   | Variant #1                               | Variant #2                                 | Variant #3                               | Variant #4 |
| <b>USB 2.0</b>  | 4  |  | 3  |            |
| <b>SATA II</b>  | 2  |  | 1  |            |
| <b>GbE Ports: 1000Base-T+1000Base-BX/KX</b>   | 2+0 <sup>(2)</sup> or 2+2 <sup>(3)</sup> |  | 2+0 <sup>(2)</sup> or 1+2 <sup>(3)</sup> |            |
| <b>Audio - Stereo</b>   | 1 In + 1 Out                             |  | 0  |            |
| <b>RGBHV Out</b>  | 1  |  | 1  |            |
| <b>DVI/HDMI Out</b>   | 1  |  | 0  |            |
| <b>Serial Ports (RS-232/422/485)</b><br>Software configurable as RS-232/422/485   | 2  |  | 1  |            |
| <b>Discrete I/O Lines/Serial Ports (RS-422/485)</b><br>Discretes are individually software configurable as input (with optional interrupts) or output, and as SE (1 line per channel) or DIFF RS-422 (2 lines per channel).<br>Four Discrete I/O lines can also be software configured as one RS-422/485 serial port. | 8/2                                      |  | 4/1                                      |            |
| <b>PMC I/O</b><br>Routed per VITA 46.9 pattern P64s   | 35 <sup>(2)</sup> or 27 <sup>(3)</sup>   | N/A  | 64                                       | N/A        |
| <b>XMC I/O: Diff Pairs+SE</b><br>Routed per VITA 46.9 pattern X24s+X8d+12d  | N/A                                      | 7+21 <sup>(2)</sup> or 3+21 <sup>(3)</sup> | N/A                                      | 20+24      |

Notes: (1) C874 I/O Variants offer different combinations/quantities of on-board and PMC/XMC I/O via factory configuration; additional I/O routing options may be available per customer request, contact an Aitech representative for more information

(2) In slot profile SLT3-PAY-2F2T

(3) In slot profile SLT3-PAY-2F2U

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### PMC/XMC Slot

|            |   |
|------------|---|
| <b>PMC</b> | 32-bit PCI at 33/66 MHz, universal site supports 3.3V and 5V PCI I/O signaling levels       |
| <b>XMC</b> | PCIe x8 port supporting Gen2 and Gen1 speeds and port widths of x8/x4/x2/x1, 5V VPWR supply |

Note: The SDRAM devices on the second memory channel may cause a mechanical conflict with some PMC/XMCs. Contact an Aitech representative for more information.

### Software

|                          |  |
|--------------------------|--|
| <b>Operating Systems</b> | Windows®, WindRiver VxWorks®, and Linux® are supported                     |
| <b>Drivers</b>           | Operating system specific device drivers for board resources are available |
| <b>BIT</b>               | Built-In Tests are available   |

### Mechanical

|                              | Form Factor & Dimensions                                   | Pitch | Weight   |
|------------------------------|--|-------|--|
| <b>Air-Cooled</b>            | 3U VPX REDI per ANSI/VITA 48.1                             | 1"    | < 400 g (0.88 lbs.) – Commercial version           |
|                              |  |       | < 700 g (1.55 lbs.) – Rugged and Military versions |
| <b>Conduction-Cooled</b>     | 3U VPX REDI per ANSI/VITA 48.2                             | 0.8"  | < 780 g (1.72 lbs.)                                |
|                              |  | 1"    | < 930 g (2.05 lbs.)                                |
| <b>Conduction-Cooled 2LM</b> | 3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2 | 0.85" | < 860 g (1.90 lbs.)                                |

### Power

|                              | +3.3V | +3.3V_AUX | +5V  | +12V_AUX <sup>(3)</sup> | -12V_AUX <sup>(3)</sup> | Total <sup>(4)</sup> |
|------------------------------|-------|-----------|------|-------------------------|-------------------------|----------------------|
| <b>Typical<sup>(1)</sup></b> | 1.8 A | 200 mA    | 4 A  | 0 A                     | 0 A                     | 26.6 W               |
| <b>Maximum<sup>(2)</sup></b> | 1.8 A | 200 mA    | 10 A | 0 A                     | 0 A                     | 56.6 W               |

Notes: (1) Measured in Windows 7 idle condition

(2) Measured when running the PassMark® BurnInTest

(3) ±12V\_AUX required for PMC/XMC only

(4) Total power consumption depends on configuration and assembly options. Tests performed on fully featured configuration, no PMC/XMC installed.

### Environmental

| Specs per VITA 47                      | Air-Cooled                      |                                   |                                     | Conduction-Cooled                        |                                     |
|--|---------------------------------|-----------------------------------|-------------------------------------|--|-------------------------------------|
|  | Commercial                      | Rugged                            | Military                            | Rugged                                   | Military                            |
| <b>Operating Temp.</b>                 | AC1 (0 to +55°C) <sup>(2)</sup> | AC3 (-40 to +70°C) <sup>(2)</sup> | AC4 (-40 to +85°C) <sup>(1,2)</sup> | CC3 (-40 to +70°C) <sup>(3)</sup>        | CC4 (-40 to +85°C) <sup>(1,3)</sup> |
| <b>Non-Operating Temp.</b>             | C1 (-40 to +85°C)               | C3 (-50 to +100°C)                | C4 (-55 to +125°C)                  | C3 (-50 to +100°C)                       | C4 (-55 to +125°C)                  |
| <b>Vibration</b>                       | V1                              | V2                                | V2                                  | V3                                       | V3                                  |
| <b>Operating Shock</b>                 | OS1                             | OS1                               | OS1                                 | OS2                                      | OS2                                 |
| <b>Altitude</b>                        | 15,000 ft.                      | 35,000 ft.                        | 70,000 ft.                          | 35,000 ft.                               | 70,000 ft.                          |
| <b>Relative Humidity<sup>(4)</sup></b> | 0 - 90%                         |                                   |                                     | 0 - 100%                                 |                                     |
| <b>Conformal Coating</b>               | N/A                             |                                   |                                     | Acrylic (Silicone and Urethane Optional) |                                     |

Notes: (1) -55°C available, contact an Aitech representative for more information

(2) Operating ambient air temperature (with sufficient airflow)

(3) Operating card edge temperature

(4) Non-condensing

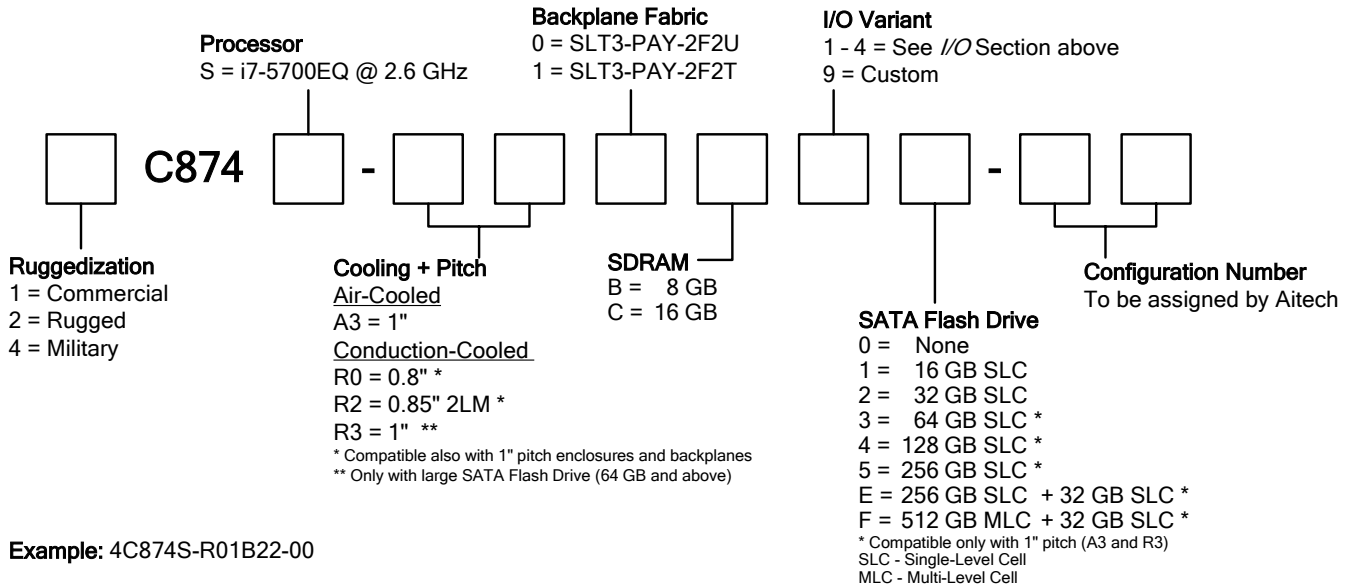
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### Ordering Information



### Accessories

|              |   |
|--------------|---|
| <b>TM870</b> | Rear Transition Module (RTM) providing convenient access to C874 I/O interfaces via standard connectors and to all PMC/XMC I/O via headers. Supports both air and conduction-cooled C874 mounted in commercial air-cooled chassis.<br>Refer to the TM870 datasheet for further information. |
| <b>CM870</b> | 3U VPX PMC/XMC carrier board. Using one or more CM870s, system functionality can be significantly expanded, enabling the C874 to control additional PMCs/XMCs over the VPX backplane.<br>Refer to the CM870 datasheet for further information.  |

### Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the C874 and additional software support.

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