



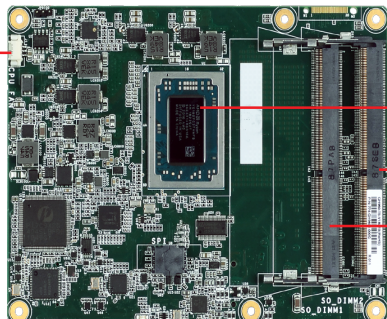
## AMD<sup>®</sup> Ryzen<sup>™</sup> V1000/R1000 Series Processor COM Express<sup>®</sup> Basic



### GH960

**V1000  
/R1000**

CPU Fan



AMD<sup>®</sup> Ryzen<sup>™</sup>  
V1000 Series

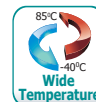
DDR4\_2  
SODIMM

DDR4\_1  
SODIMM

#### Features

- Dual channel DDR4 2400/3200MHz SODIMM up to 32GB
- Four display ports: VGA\*/DDI + LVDS\*/eDP + 2 DDI Supports three independent displays
- DP++ resolution supports up to 4096x2304 @ 60Hz
- Multiple expansion: 1 PCIe x8, 7 PCIe x1
- Rich I/O: 1 Intel GbE, 4 USB 3.1, 8 USB 2.0

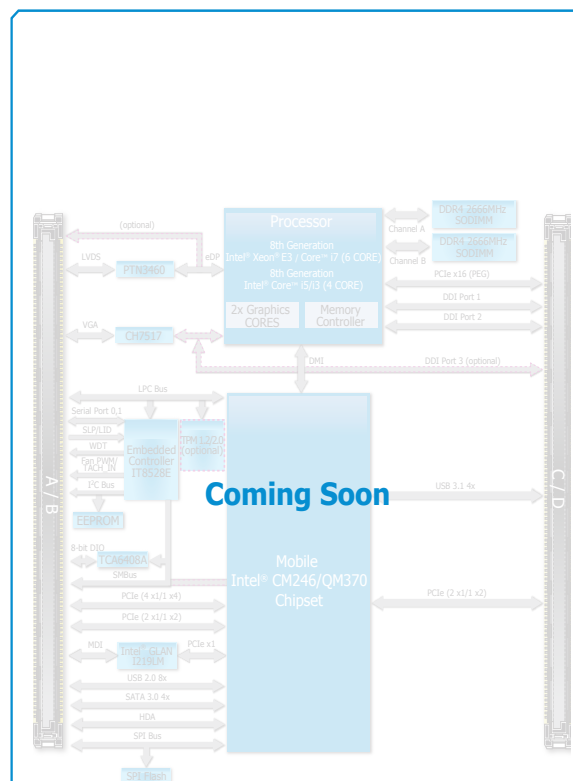
\* Populated by default



#### Mechanical Drawing

Coming Soon

#### Block Diagram



Coming Soon

| PCIe L0~3 |    |    |    | PCIe L4 | PCIe L5 | PCIe L6 | PCIe L7 |
|-----------|----|----|----|---------|---------|---------|---------|
| x4        |    |    |    |         |         |         |         |
| x2        |    | x2 |    |         |         |         |         |
| x1        | x1 | x1 | x1 | x1      | x1      | x1      |         |

\* 7 x PCIe x1 or 2 x PCIe x2 or 1 x PCIe x4



## Specifications

|                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|----------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM         | Processor         | AMD® Ryzen™ Embedded V1807, Quad Core, 2MB Cache, 11 CU, 3.35GHz (3.8GHz), 35-54W<br>AMD® Ryzen™ Embedded V1756, Quad Core, 2MB Cache, 8 CU, 3.25GHz (3.6GHz), 35-54W<br>AMD® Ryzen™ Embedded V1605, Quad Core, 2MB Cache, 8 CU, 2.0GHz (3.6GHz), 12-25W<br>AMD® Ryzen™ Embedded V1202, Dual Core, 1MB Cache, 3 CU, 2.3GHz (3.2GHz), 12-25W<br>AMD® Ryzen™ Embedded R1606G, Dual Core, 1MB Cache, 3 CU, 2.6GHz (3.5GHz), 12-25W<br>AMD® Ryzen™ Embedded R1505G, Dual Core, 1MB Cache, 3 CU, 2.4GHz (3.3GHz), 12-25W |                                                                                                                                                                                                                                                                                                       |
|                | Memory            | Two 260-pin SODIMM up to 32GB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Dual Channel DDR4 up to 2400/3200MHz                                                                                                                                                                                                                                                                  |
|                | BIOS              | Insyde SPI 64Mbit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                       |
| GRAPHICS       | Controller        | AMD® Radeon™ Vega Graphics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                       |
|                | Feature           | OpenGL 4.5, DirectX 12, OpenCL 2.1<br>HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9<br>HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                       |
|                | Display           | 1 x VGA/DDI (DDI available upon request)<br>1 x LVDS/eDP (eDP available upon request)<br>2 x DDI (HDMI/DVI/DP++)                                                                                                                                                                                                                                                                                                                                                                                                    | VGA: resolution up to 1920x1200 @ 60Hz<br>LVDS: dual channel 24-bit, resolution up to 1920x1200 @ 60Hz<br>eDP: resolution up to 3840x2160 @ 60 Hz<br>HDMI: resolution up to 2560x1600 @ 60Hz or 4096x2160 @ 24Hz<br>DVI: resolution up to 1920x1200 @ 60Hz<br>DP++: resolution up to 4096x2304 @ 60Hz |
|                | Triple Displays   | VGA + LVDS + DDI or VGA + DDI 1 + DDI 2 eDP + 2 DDI (available upon request)                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                       |
| EXPANSION      | Interface         | 1 x PCIe x8 (Gen 3)<br>7 x PCIe x1 or 2 x PCIe x2 or 1 x PCIe x4<br>1 x LPC<br>1 x I <sup>2</sup> C<br>1 x SPI<br>1 x SMBus<br>2 x UART (TX/RX)                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
|                |                   | HD Audio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                       |
| AUDIO          | Interface         | HD Audio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                       |
| ETHERNET       | Controller        | 1 x Intel® I210AT with iAMT12.0 PCIe (10/100/1000Mbps) (normal temp.) or<br>1 x Intel® I210IT with iAMT12.0 PCIe (10/100/1000Mbps) (wide temp.)                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
| I/O            | USB               | 4 x USB 3.1<br>8 x USB 2.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                       |
|                | SATA              | 1 or 2 x SATA 3.0 (up to 6Gb/s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | RAID 0/1                                                                                                                                                                                                                                                                                              |
|                | DIO               | 1 x 8-bit DIO (Default 4 inputs and 4 outputs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                       |
| WATCHDOG TIMER | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                       |
| SECURITY       | TPM               | TPM1.2/2.0 (Available Upon Request)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                       |
| POWER          | Type              | 12V, 5VSB, VCC_RTC (ATX mode)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 12V, VCC_RTC (AT mode)                                                                                                                                                                                                                                                                                |
|                | Consumption       | TBD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                       |
| OS SUPPORT     |                   | Windows: Windows 10 IoT Enterprise 64-bit Linux                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |
| ENVIRONMENT    | Temperature       | Operating: 0 to 60°C<br>-40 to 85°C (with cooler)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Storage: -40 to 85°C                                                                                                                                                                                                                                                                                  |
|                | Humidity          | Operating: 5 to 90% RH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Storage: 5 to 90% RH                                                                                                                                                                                                                                                                                  |
|                | MTBF              | TBD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                       |
| MECHANICAL     | Dimensions        | COM Express® Basic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 95mm (3.74") x 125mm (4.9")                                                                                                                                                                                                                                                                           |
|                | Compliance        | PICMG COM Express® R3.0, Type 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                       |

## Packing List

|                              |     |
|------------------------------|-----|
| • 1 GH960 board              |     |
| • 1 DVD                      |     |
| • 1 Cooler (Height: 36.58mm) | TBD |

## Optional Items

|                                |     |
|--------------------------------|-----|
| • carrier board kit            | TBD |
| • Heat spreader (Height: 11mm) | TBD |

## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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