

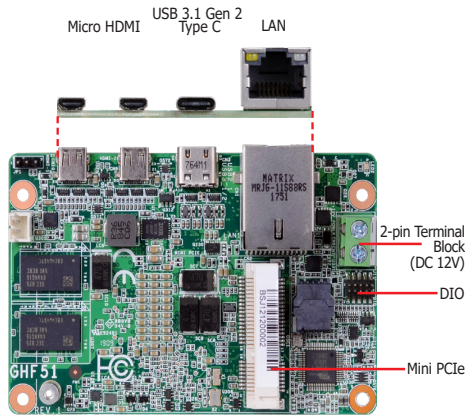


## AMD Ryzen™ Embedded R1000 Series 1.8" SBC

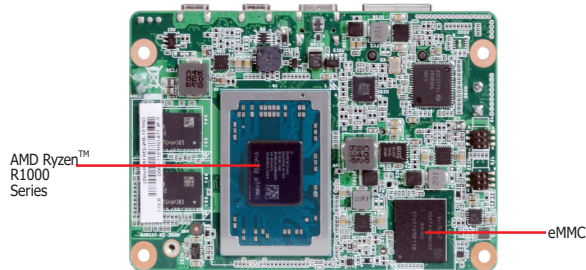


### GHF51

AMD



Top View



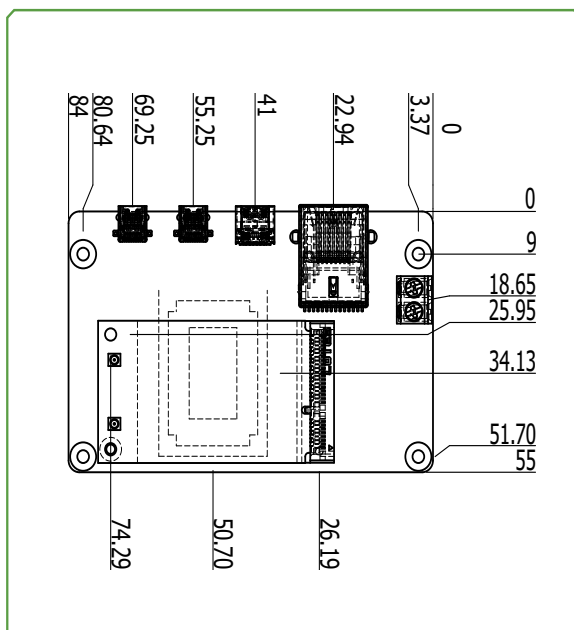
Bottom View

#### Features

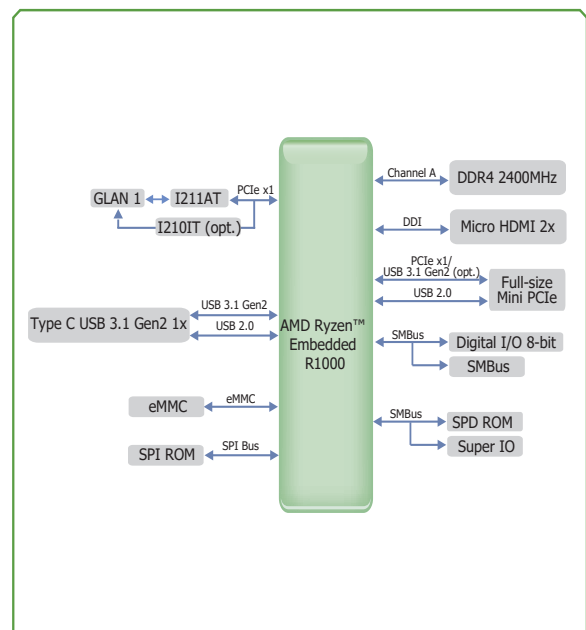
- Small form factor 1.8" SBC for space-limited applications
- Single Channel DDR4 Memory Down up to 4GB/8GB
- HDMI 1.4 resolution supports up to 4096x2160 @ 60Hz
- Expansion and Storage: 1 Mini PCIe, 1 SMBus
- Rich I/O: 1 Intel GbE, 1 USB 3.1 Gen 2, 2 Micro HDMI



#### Mechanical Drawing



#### Block Diagram





## Specifications

|                        |                   |                                                                                                                                                                                                                                                                                                                                         |                                             |
|------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| SYSTEM                 | Processor         | AMD® Ryzen™ Embedded R1606G, Dual Core, 1MB Cache, 3 CU, 2.6GHz (3.5GHz), 12W<br>AMD® Ryzen™ Embedded R1505G, Dual Core, 1MB Cache, 3 CU, 2.4GHz (3.3GHz), 12W<br>AMD® Ryzen™ Embedded R1305G, Dual Core, 3 CU, 1.5GHz (2.8GHz), 8-10W (Coming soon)<br>AMD® Ryzen™ Embedded R1102G, Dual Core, 3 CU, 1.2GHz (2.6GHz), 6W (Coming soon) |                                             |
|                        | Memory            | DDR4 Memory Down up to 4GB/8GB                                                                                                                                                                                                                                                                                                          | Single Channel DDR4 2400MHz                 |
|                        | BIOS              | AMI SPI 64Mbit                                                                                                                                                                                                                                                                                                                          |                                             |
| GRAPHICS               | Controller        | AMD Vega GPU with up to 3 computing units.                                                                                                                                                                                                                                                                                              |                                             |
|                        | Feature           | H.265 decode/encode support, VP9 decode                                                                                                                                                                                                                                                                                                 |                                             |
|                        | Display           | 2 x Micro HDMI                                                                                                                                                                                                                                                                                                                          | HDMI 1.4: resolution up to 4096x2160 @ 24Hz |
| EXPANSION              | Interface         | 1 x Full-size Mini PCIe (PCIe Gen2/USB 2.0, opt: USB 3.1 Gen2/USB 2.0)                                                                                                                                                                                                                                                                  |                                             |
| ETHERNET               | Controller        | 1 x Intel® I211AT PCIe (10/100/1000Mbps) or<br>1 x Intel® I210IT PCIe (10/100/1000Mbps) (available upon request)                                                                                                                                                                                                                        |                                             |
| REAR I/O               | Ethernet          | 1 x GbE (RJ-45)                                                                                                                                                                                                                                                                                                                         |                                             |
|                        | USB               | 1 x Type C USB 3.1 Gen 2                                                                                                                                                                                                                                                                                                                |                                             |
|                        | Display           | 2 x Micro HDMI (HDMI 1.4)                                                                                                                                                                                                                                                                                                               |                                             |
| INTERNAL I/O           | DIO               | 1 x 8-bit DIO                                                                                                                                                                                                                                                                                                                           |                                             |
|                        | SMBus             | 1 x SMBus                                                                                                                                                                                                                                                                                                                               |                                             |
| STORAGE                | eMMC              | 1 x 16GB/32GB/64GB eMMC                                                                                                                                                                                                                                                                                                                 |                                             |
| WATCHDOG TIMER         | Output & Interval | Software Reset, Programmable via Software from 1 to 655,535 Seconds                                                                                                                                                                                                                                                                     |                                             |
| SECURITY               | TPM               | fTPM 2.0                                                                                                                                                                                                                                                                                                                                |                                             |
| POWER                  | Type              | Single 12V +/-5% DC                                                                                                                                                                                                                                                                                                                     |                                             |
|                        | Connector         | 2-pin Terminal Block                                                                                                                                                                                                                                                                                                                    |                                             |
|                        | Consumption       | Typical: R1505G: 12V @ 0.37A (4.44W)<br>Max: R1505G: 12V @ 1.74A (20.88W)                                                                                                                                                                                                                                                               |                                             |
|                        | RTC Battery       | CR2032 Coin Cell                                                                                                                                                                                                                                                                                                                        |                                             |
| OS SUPPORT (UEFI Only) | Microsoft/Linux   | Windows 10 IoT Enterprise 64-bit                                                                                                                                                                                                                                                                                                        | Linux                                       |
| ENVIRONMENT            | Temperature       | Operating: 0 to 60°C/ -20 to 70°C(opt.)<br>Storage: -40 to 85°C                                                                                                                                                                                                                                                                         |                                             |
|                        | Humidity          | Operating: 5 to 90% RH                                                                                                                                                                                                                                                                                                                  | Storage: 5 to 90% RH                        |
|                        | MTBF              | TBD                                                                                                                                                                                                                                                                                                                                     |                                             |
| MECHANICAL             | Dimensions        | 1.8" SBC Form Factor                                                                                                                                                                                                                                                                                                                    | 84mm (3.31") x 55mm (2.17")                 |
|                        | Height            | PCB: 1.60mm                                                                                                                                                                                                                                                                                                                             | Top Side: 13.8mm, Bottom Side: 2.00mm       |

## Ordering Information

| Model Name     | P/N             | Processor | Memory | eMMC  | Display      | GbE | USB 3.1 Gen 2 | Power | Thermal | Temp.     |
|----------------|-----------------|-----------|--------|-------|--------------|-----|---------------|-------|---------|-----------|
| GHF51-BN-43R15 | 770-GHF511-000G | R1505G    | 4 GB   | 32 GB | 2 Micro HDMI | 1   | 1             | 12VDC | Fanless | 0 to 60°C |
| GHF51-BN-43R16 | 770-GHF511-100G | R1606G    | 4 GB   | 32 GB | 2 Micro HDMI | 1   | 1             | 12VDC | Fanless | 0 to 60°C |

## Packing List

|                                  |                 |
|----------------------------------|-----------------|
| • 1 GHF51 board                  |                 |
| • 1 Heat spreader (Height: 11mm) | A71-808322-000G |

## Optional Items

|                                     |                 |
|-------------------------------------|-----------------|
| • 2 pole terminal to DC Jack cable  | A81-004013-000G |
| • Power adapter (60W, 12V, DC jack) | 671-106012-000G |
| • 1 Heat sink (Height: 29mm)        | A71-008127-000G |

## 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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