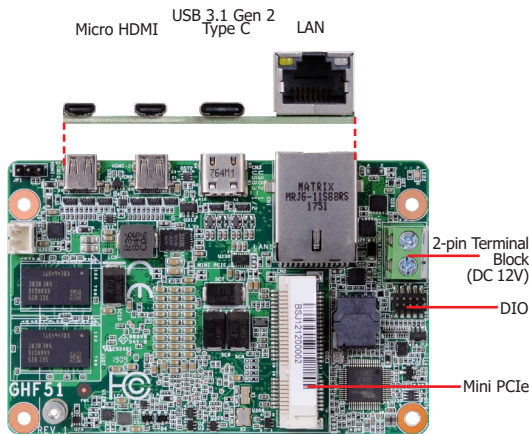




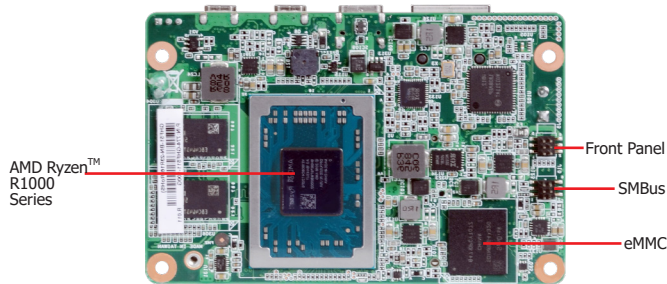
AMD Ryzen™ Embedded R1000 Series 1.8" SBC

GHF51

AMD



Top View



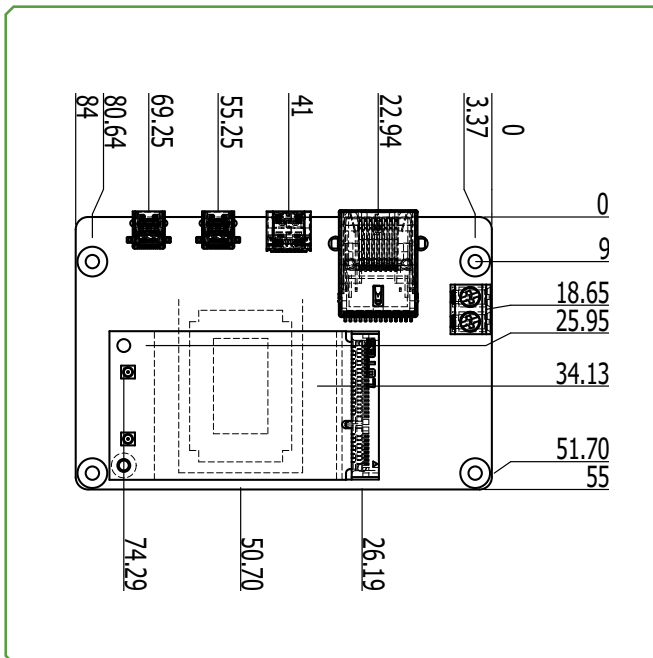
Bottom View

Features

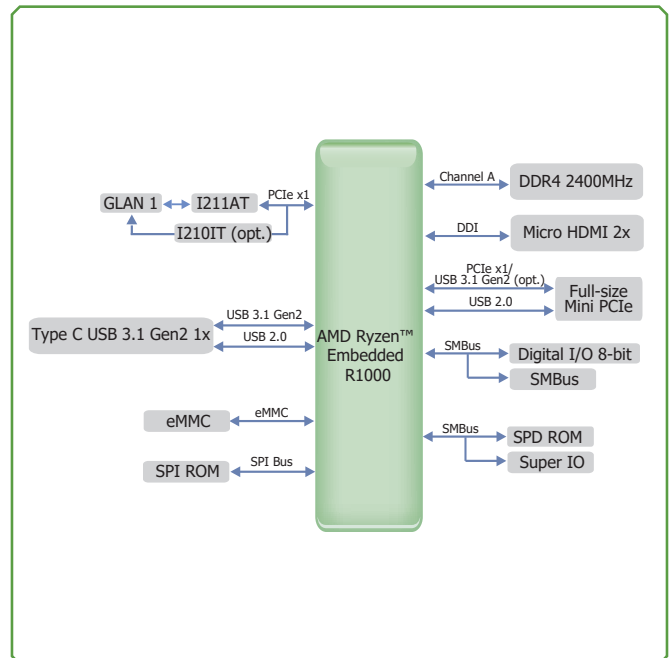
- Small form factor 1.8" SBC for space-limited applications
- Single Channel DDR4 Memory Down up to 4GB/8GB
- HDMI 1.4 resolution supports up to 4096x2160 @ 24Hz
- Expansion and Storage: 1 Mini PCIe, 1 SMBus
- Rich I/O: 1 Intel GbE, 1 USB 3.1 Gen 2, 2 Micro HDMI



Mechanical Drawing



Block Diagram



Specifications

| | | |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM | Processor | AMD® Ryzen™ Embedded R1606G, Dual Core, 1MB Cache, 3 CU, 2.6GHz (3.5GHz), 12W AMD® Ryzen™ Embedded R1505G, Dual Core, 1MB Cache, 3 CU, 2.4GHz (3.3GHz), 12W AMD® Ryzen™ Embedded R1305G, Dual Core, 3 CU, 1.5GHz (2.8GHz), 8-10W AMD® Ryzen™ Embedded R1102G, Dual Core, 3 CU, 1.2GHz (2.6GHz), 6W AMD® Ryzen™ Embedded V1605B, 4C/8T, 2MB Cache, 8 CU, 2.0GHz (3.6GHz), 12W (Planning) |
| | 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 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) 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 (Kernel 5.3) | |
| ENVIRONMENT | Temperature Operating: 0 to 60°C/ -20 to 70°C(opt.) Storage: -40 to 85°C | |
| | Humidity Operating: 5 to 90% RH Storage: 5 to 90% RH | |
| | MTBF 872,484 hrs @ 25°C; 635,789 hrs @ 45°C; 460,442 hrs @ 60°C | |
| 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-46R15 | 770-GHF511-000G | R1505G | 4 GB | 64 GB | 2 Micro HDMI | 1 | 1 | 12VDC | Fanless | 0 to 60°C |
| GHF51-BN-46R16 | 770-GHF511-100G | R1606G | 4 GB | 64 GB | 2 Micro HDMI | 1 | 1 | 12VDC | Fanless | 0 to 60°C |
| GHF51-EN-46R16 | 770-GHF511-300G | R1606G | 4 GB | 64 GB | 2 Micro HDMI | 1 | 1 | 12VDC | Fanless | -20 to 70°C |
| GHF51-BN-46R11 | 770-GHF511-400G | R1102G | 4 GB | 64 GB | 2 Micro HDMI | 1 | 1 | 12VDC | Fanless | 0 to 60°C |
| GHF51-BN-46R13 | 770-GHF511-500G | R1305G | 4 GB | 64 GB | 2 Micro HDMI | 1 | 1 | 12VDC | Fanless | 0 to 60°C |
| GHF51-BN-86R16 | 770-GHF511-600G | R1606G | 8 GB | 64 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 |
| • 1 Screw of Mini PCIe card | A32-E12016-050G |

Optional Items

| | |
|-------------------------------------------|-----------------|
| • Power adapter (60W, 12V, DC jack) | 671-106012-000G |
| • SMBus cable | A81-009353-016G |
| • 2-pole terminal to DC Jack cable | A81-004013-000G |
| • DIO cable | A81-009203-018G |
| • Front panel cable | A81-020047-016G |
| • Heat sink for 0~60°C (Height: 29.66mm) | A71-008127-010G |
| • Heat sink for -20~70°C (Height: 30.7mm) | A71-008127-020G |