

Single Board Computer GH171 - Mini-ITX SBC

Datasheet v1.0



GH171 is a Mini-ITX Single Board Computer based on the AMD® Ryzen™ V1000 / R1000 Series ideal for industrial control and IOT applications.

This impressive SBC provides multiple I/O, including four independent displays via DP++, 2 GbE, 6 COM, 3 USB 3.0 and 6 USB 2.0. Its flexible expandability via 1 PCIe x16 and 1 M.2 M Key bring versatility perfect for industrial application development, edge computing, AI vision, and more.

Additionally, the GH171 provides long-term product availability up to 10 years, enabling long term system upgrade without concern for compatibility.

Key Features:

- AMD® Ryzen™ V1000/R1000 Mini-ITX
- 2 DDR4 3200MHz SODIMM up to 32GB
- Four independent displays: 4 x DP++
- Multiple expansion: 1 PCIe x16, 1 M.2 M Key
- Rich I/O: 2 GbE, 6 COM, 3 USB 3.0, 6 USB 2.0
- 10-Year CPU Life Cycle Support Until Q1' 28 (Based on AMD Roadmap)

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CPU Core

Feature	Specification
CPU	AMD® Ryzen™ Embedded V1807B, 4C/8T, 2MB Cache, 11 CU, 3.35GHz (3.8GHz), 45W (35-54W)
	AMD® Ryzen™ Embedded V1756B, 4C/8T, 2MB Cache, 8 CU, 3.25GHz (3.6GHz), 45W (35-54W)
	AMD® Ryzen™ Embedded V1605B, 4C/8T, 2MB Cache, 8 CU, 2.0GHz (3.6GHz), 15W (12-25W)
	AMD® Ryzen™ Embedded V1202B, 2C/4T, 1MB Cache, 3 CU, 2.3GHz (3.2GHz), 15W (12-25W)
	AMD® Ryzen™ Embedded R1606G, 2C/4T, 3 CU, 2.6GHz (3.5GHz), 15W
	AMD® Ryzen™ Embedded R1505G, 2C/4T, 3 CU, 2.4GHz(3.3GHz),15W
Memory	Two 260-pin SODIMM up to 32GB Dual Channel DDR4 up to 3200MHz (ECC/non ECC support)
BIOS	AMI BIOS

Graphics

Controller	AMD® Radeon™ Vega Graphics
Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9
Display	4 x DP++ DP++: resolution up to 4096x2160 @ 60Hz

Extension

Interface	1 x PCIe x16 (x8 signal with V1000 series, x4 signal with R1000 series) 1 x M.2 2280 M Key (x4 signal with V1000 series, x2 signal with R1000 series) (support 2242 by BOM opt.)
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Audio

Audio Codec	Realtek ALC887-VD2-CG
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Ethernet

Controller	2 x Realtek RTL8111HN-CG (10/100/1000Mbps)
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I/O

Feature	Specification
Rear	
Ethernet	2 x GbE (RJ-45)
Serial	1 x RS-232/422/485 (DB-9) 1 x RS-232 (DB-9)
USB	2 x USB 3.0 2 x USB 2.0
Display	4 x DP++ (V1000 series) 3 x DP++ (R1000 series)
Audio	1 x Mic-in 1 x Line-in 1 x Line-out
Internal	
Serial	4 x RS-232 (2.0mm pitch) (TX/RX signal only)
USB	4 x USB 2.0 (2.54mm pitch) 1 x Vertical Type A USB 3.0 (V1000 series) 1 x Vertical Type A USB 2.0 (R1000 series)
Audio	1 x S/PDIF 1 x Audio (Mic-in/Line-out)
SATA	2 x SATA 3.0 (up to 6GB/s) (with 7-pin VCC support) 2 x SATA Power

Watchdog Timer and Safety

Output and interval	System Reset, Programmable via Software from 1 to 255 Seconds
TPM	TPM 2.0

Electrical, Mechanical and Environmental Specifications

Supply Voltage	Single 12V +/- 5% DC
Connector	Straight Type Connector (4-pin) DC-in Jack (available upon request) Right Angle Connector (4-pin) (available upon request)
RTC Battery	CR2032 Coin Cell
Dimensions	Mini-ITX Form Factor: 170mm (6.7") x 170mm (6.7")

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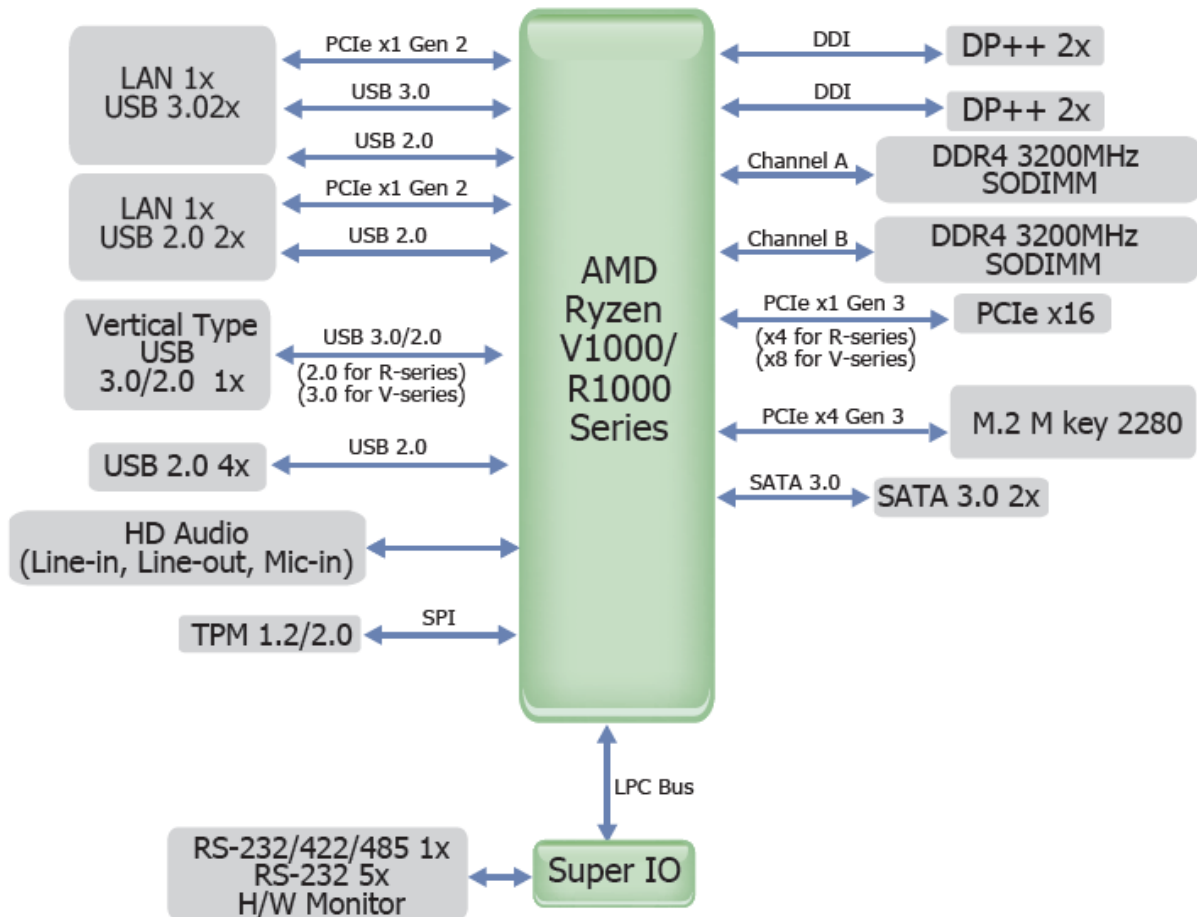
Feature	Specification
Height	PCB: 1.6mm Top Side: 40mm Bottom Side: 5mm
Operating temperature	Commercial: 0° to 60° C
Storage temperature	-40° to 85° C
Relative humidity	10% to 90% (operating) 10% to 90% (storage)
MTBF	536,492 hrs @ 25°C 334,201 hrs @ 45°C 223,268 hrs @ 60°C

Software

BSP	Full Board Support Package and ready-to-run images
OS Support	Windows 10 Linux

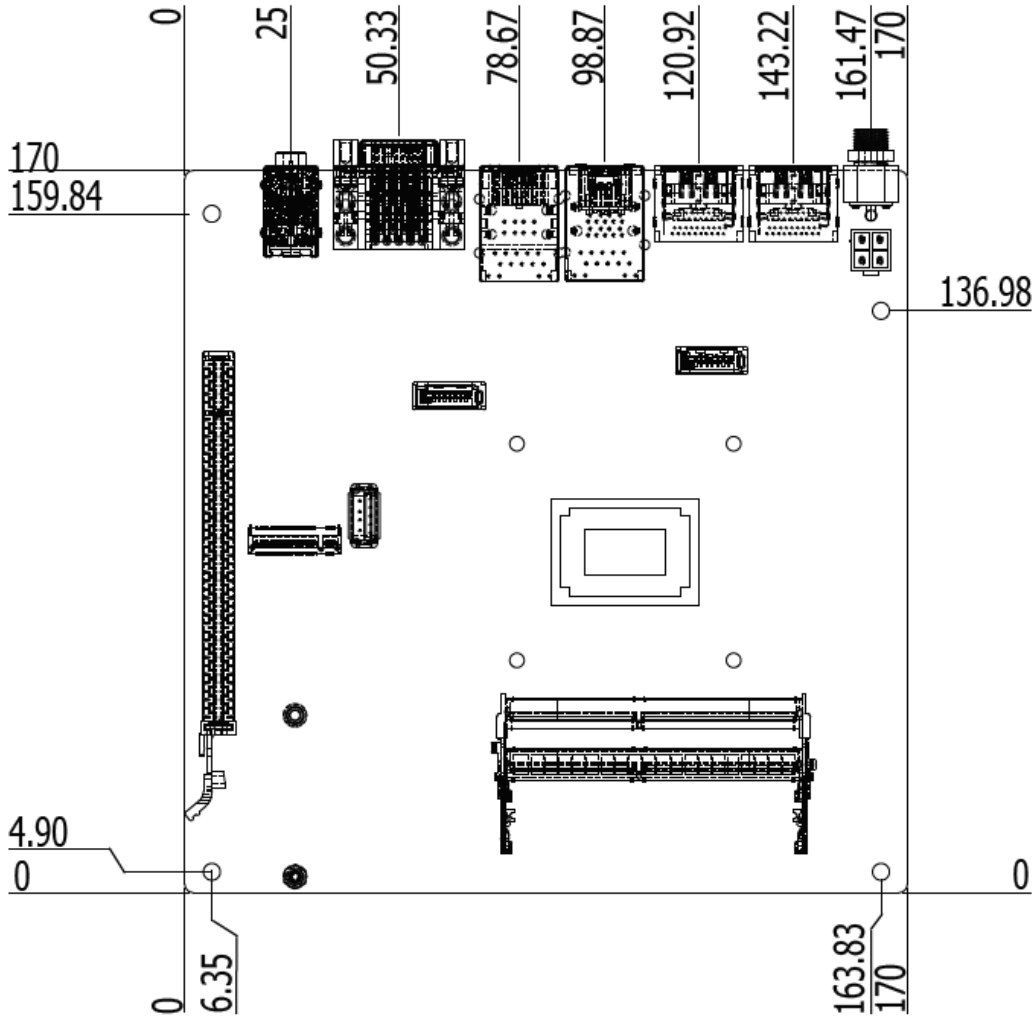
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Block Diagram



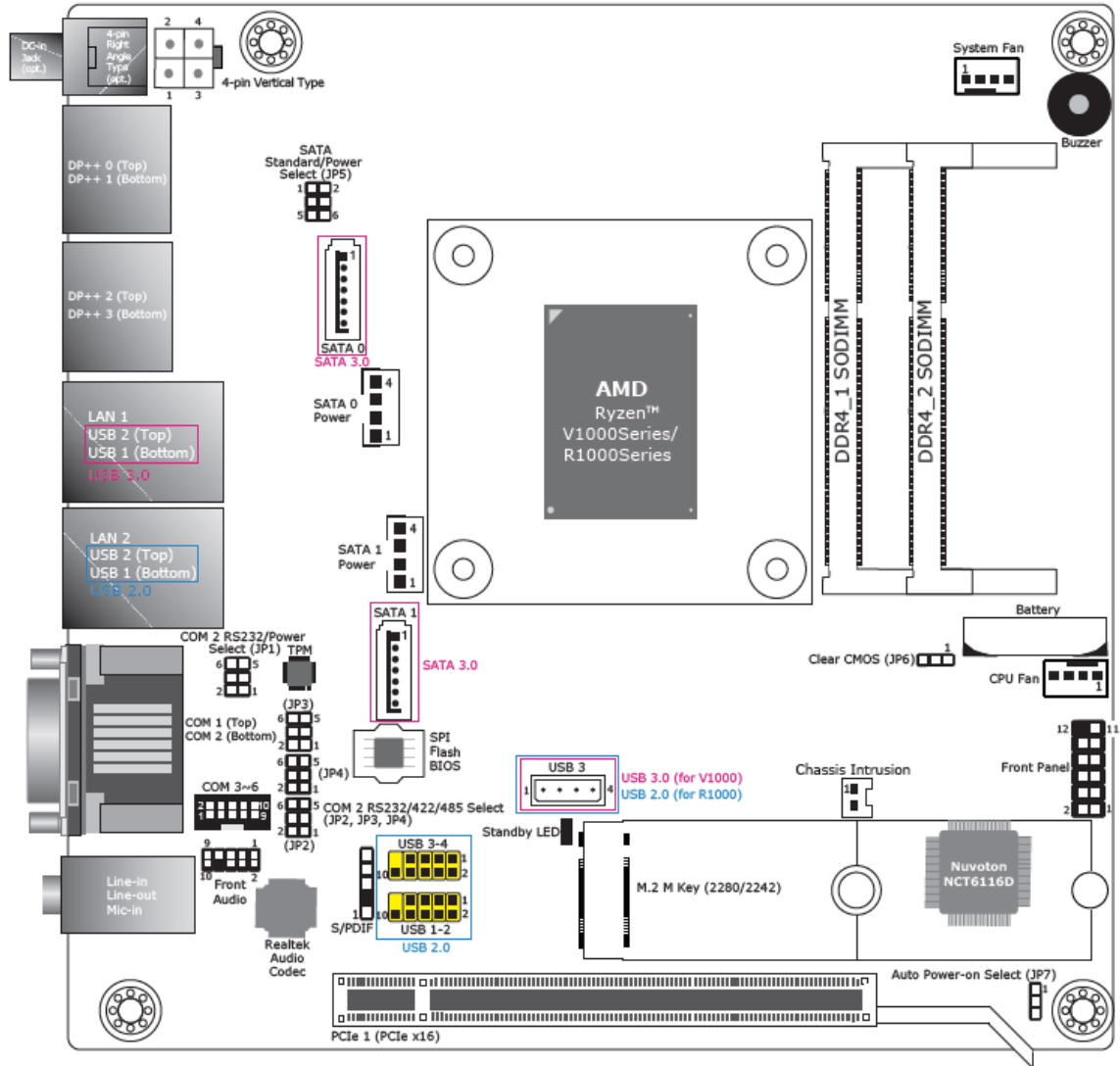
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Mechanical Drawing



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Board Layout



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GHF51 Packing list

- 1 GH171 motherboard
- 1 I/O shield
- 1 Cooler

Optional Items

- SATA signal and power cable (Length: 300mm)
- USB port cable (Length: 200mm)
- COM port cable (Length: 300m)
- Cooler (for 25W, height: 35mm)
- Cooler (for 54W, height: 47mm)