GENE-ARH6

3.5" SubCompact Board with Intel® Core™ Ultra SoC

M.2 3052 B-Key
DDR5 x 2
Power Input
Audio
M.2 2230 E-key
SATA Power
Front Panel
SATA
USB x 4
COM x 4
LVDS
DIO
M.2 2280 M-Key
eDP
USB3.2 x 2
LAN x 3
DP
HDMI
FPC2
Fan
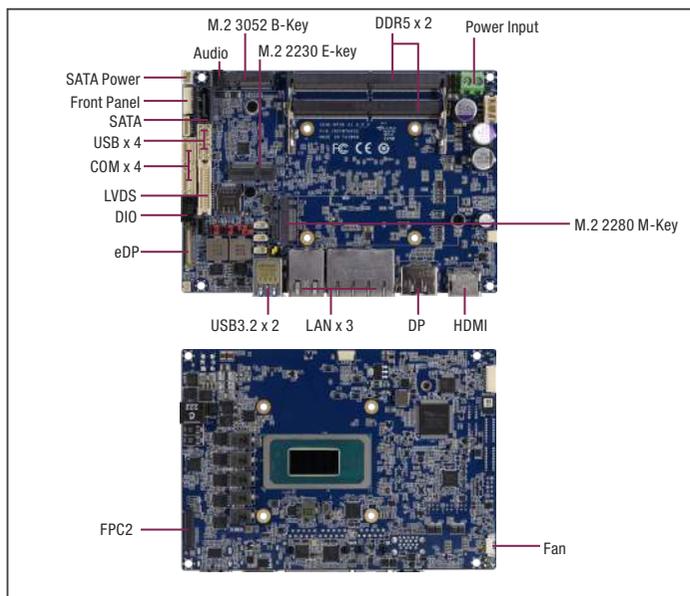
Features

- **Intel® Core™ Ultra processors (Series 2)**
- **DDR5 6400 MHz, Dual Channel SODIMM x 2, up to 96GB**
- **LVDS x 1, eDP x 1, DP x 1, HDMI x 1**
- **LAN x 3, SATA 6Gb/s x 1, 8-bit GPIO**
- **USB 3.2 Gen 2 x 2, USB 2.0 x 4**
- **M.2 2280 M-Key x 1, M.2 3052 B-Key x 1, M.2 2230 E-Key x 1**
- **DC Input 9 ~ 36V**

2500 2.5Giga LAN | DDR 5 | Audio | LVDS | USB 3.2 Gen 2 | HDMI | CE | FC

Specifications

System

Form Factor	3.5" SubCompact Board
CPU	Intel® Core™ Ultra Processors (Series 2): Intel® Core™ Ultra 7 Processor 255H (16C/16T, up to 5.1 GHz, 28W) Intel® Core™ Ultra 5 Processor 225H (14C/14T, up to 4.9 GHz, 28W) Intel® Core™ Ultra 7 Processor 255U (12C/14T, up to 5.2 GHz, 15W) Intel® Core™ Ultra 5 Processor 225U (12C/14T, up to 4.8 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 6400, Dual Channel SODIMM x 2 Max. 96GB, Non-ECC Note: Max capacity up to 2x 48GB DDR5 SODIMM up to 5600 MT/s
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM2.0
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.88 lb. (0.4Kg)
OS Support	Windows® 10 (64-bit) Windows® 11 (64-bit) Linux Ubuntu 24.04.2 (Kernel 6.11.0-25-generic)

Power

Power Requirement	+9-36V (Optional: +12V), support ERP
Power Supply Type	AT/ATX, support 3pin ATX
Connector	Phoenix 2-pin Connector (Colay 4 pin connector)
Power Consumption	Intel® Core™ Ultra 7, DDR5 48GB x 2, 5.44A @+12V (Typical) Intel® Core™ Ultra 7, DDR5 48GB x 1, 9.56A @+12V (Max)

Display

Controller	Intel® Arc™ Graphics Intel® Graphics
LVDS/eDP	LVDS x 1, Dual-Channel 18/24-bit, up to 1920 x 1080 eDP 1.4b HBR3 x 1, up to 3840 x 2160 @60Hz
Display Interface	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 2.0 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++)
Multiple Display	Up to 4 Simultaneous Displays

Audio

Codec	Realtek ALC897
Audio Interface	Line-in/Line-out/MIC (Audio function not available for WiTAS SKU)
Speaker	—

External I/O

Ethernet	Intel® Ethernet Connection I219 1GbE, RJ-45 x 1 Intel® Ethernet Controller I226 2.5GbE, RJ-45 x 2, support PEX (Intel vPro® support with Intel® Core™ Ultra 7 Processor 265H)
USB	USB 3.2 Gen 2 x 2
Serial Port	—

Video	HDMI 2.1 x 1 DP 2.0++ x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232)
Video	LVDS x 1 Inverter x 1 (12V/2A) eDP x 1
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
Touch	—
Fan	4 wire Smart Fan x 1
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA) Default: PCIe 4.0 [x4] (selected by BOM) M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.2/PCIe 3.0 [x2]) Default: PCIe 3.0 [x1] (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0), supports Wi-Fi 6E CNVi (RAID 0, RAID 1 support on PCIe storage)
Others	FPC2 x 1 (PCIe Gen4 [x4] x 2), Support RAID 0, RAID 1
Environment & Certification	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C)
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	753,493
EMC	CE/FCC Class A

Packing List

Part Number	Description	QTY
GENE-ARH6	GENE-ARH6 MB	1

Optional Accessories

Part Number	Description	QTY
GENE-MTH6-FAN01	CPU Cooler.12V.Smart FAN	1
GENE-MTH6-HSP01	Heatspreader.100*72*9.5mm	1
PER-SB2B-A01-0001	FPC2.M.2 2280 M key x2.PCIe[x4]	1
1702150155	SATA HDD Power Cable, 15cm	1
170204010R	Power Cable.Double 4P , 10cm	1
170X000398	Power Cable, DC JACK, 30cm	1
170X000603	Front Panel Cable , 10cm	1
170X000156	Audio Cable, 25cm	1
1701090150	COM Port Cable, 15cm	4
1700050207	USB 2.0 Cable, 20cm	4

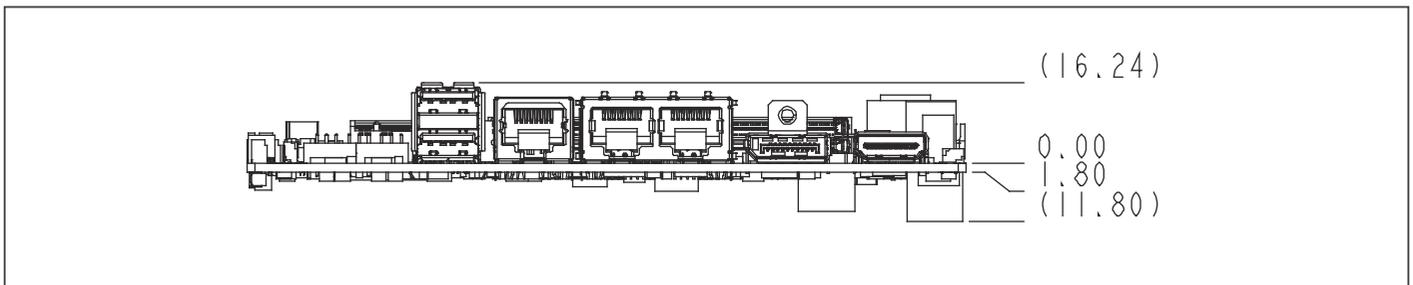Note: All specifications are subject to change without notice.

Block Diagram
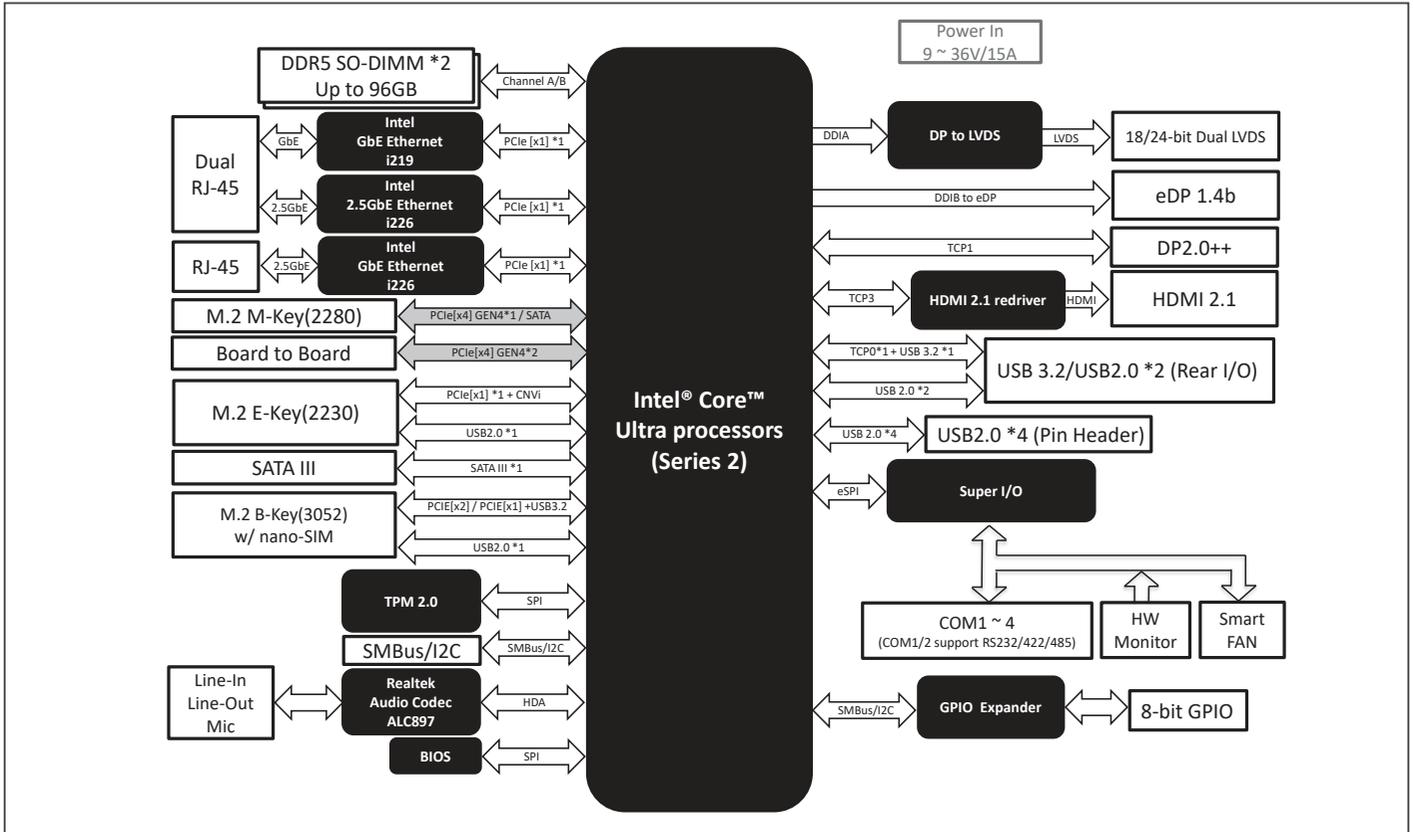
Dimension

Unit: mm

Ordering Information

Part Number	CPU	Display	LAN	USB	Audio	COM	Storage	Expansion Slot	TPM	Power	TEMP	Others
GENE-ARH6-A10-0001	Intel® Core™ Ultra 7 Processor 255H	HDMI x 1 DP x 1 LVDS x 1 eDP x 1	GbE x 1 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 FPC2 x 1	2.0	9~36V	0°C ~ 60°C	Nano SIM, GPIO x 8, SMBUS
GENE-ARH6-A10-0002	Intel® Core™ Ultra 5 Processor 225H	HDMI x 1 DP x 1 LVDS x 1 eDP x 1	GbE x 1 2.5GbE x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 4	Line-in/Line-out/MIC	4	SATA x 1	M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 M.2 2230 E-Key x 1 FPC2 x 1	2.0	9~36V	0°C ~ 60°C	Nano SIM, GPIO x 8, SMBUS