EMS-MTU

Intel® Meteor Lake-U Core™ Ultra 7/5 Processor
Fanless Rugged Embedded System

Features

- Intel® Meteor Lake-U Core™ Ultra 7/5 Processor
- 2 x 262-pin SODIMM socket Max. up to 64GB DDR5 5600MT/s
- Rich I/O, 4-USB3.2, 2-USB2.0, 1-DP, 2-HDMI, 2-COM, 2-LAN, 1-8bit GPIO
- Support 5G (Sub-6G) module, M.2 NVMe SSD Gen4 x 4
- Fanless operation Temperature from -40°C ~ 65°C
- CE, FCC Class B, KC
- Wide range DC power input from +9 ~ 36V
- Support HW TPM 2.0

Modular Design | 5G/ Wi-Fi 6E Available | Vibration/ Shock 2G/55G | WT -40~65°C | Wide-DC Input 9~36Vdc

Specifications

System Information	
Processor	Intel® Core™ Ultra Processors (Series 1), BGA 2049 (former Metror Lake-U) Intel® Core™ Ultra 7 Processor 165U, 12C14T, 12M Cache, 1.7GHz (4.9GHz), TDP: 15W (Project Base) Intel® Core™ Ultra 7 Processor 155U, 12C14T, 12M Cache, 1.7GHz (4.8GHz), TDP: 15W Intel® Core™ Ultra 5 Processor 135U, 12C14T, 12M Cache, 1.6GHz (4.4GHz), TDP: 15W (Project Base) Intel® Core™ Ultra 5 Processor 125U, 12C14T, 12M Cache, 1.3GHz (4.3GHz), TDP: 15W
System Memory	2 x 262-pin SODIMM socket Max. up to 64GB DDR5 5600MT/s
BIOS Information	AMI uEFI BIOS 256 Mbit SPI Flash ROM
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec.
H/W Status Monitor	CPU & system temperature monitoring and Voltages monitoring
TPM	TPM 2.0
Expansion	
M.2	1 x M.2 Key-B 2242/3042/3052 support SATA3 / PCIe Gen4x1/ USB3.2 Gen2 and SIM slot (Internal) 1 x M.2 Key-E 2230 for Wi-Fi & BT Module (USB2.0 / PCIe Gen4x1)
IET	1 x IET interface (1 x DDI, 4 x PCIe Gen4x1, 3 x USB2.0, 1 x SMBus, eSPI)
Storage	
M.2	1 x M.2 Key-M 2280 (1 x PCIe Gen4x4), support NVMe 1 x M.2 Key-B 2242, support SATA (share with expansion slot)
Front I/O	
Power Button	1 x Push Button for Power on/off
Reset Button	1 x Push Button for Reset
LED Indicator	1 x Power LED (Blue) 1 x Storage LED (Yellow) 1 x LTE LED (Green) 1 x Wi-Fi LED (Green)
USB	2 x USB2.0
COM Port	2 x COM RS232/422/485 (select via BIOS, auto flow control via HW)
Digital I/O	1 x 8-bit GPIO (DB9)
Wire-Control Power On/Off	1 x 2-Pin Terminal Block for wire-control power on/off
Antenna	2 x Antenna with dust cover
Rear I/O	
USB	4 x USB 3.2 Gen.1 (5Gbp/s) (w/ USB 2.0)
LAN Port	2 x RJ-45
Audio	1 x Mic-In, 1 x Line-Out
DP	1 x DP++
HDMI	2 x HDMI
Antenna	2 x Antenna with dust cover
AC/DC Input	1 x 3-Pin Terminal Block (V+. V-, GND)
Right I/O & Left I/O	
Antenna	2 x Antenna with dust cover
Display	
Graphic Chipset	Intel® Graphics
Resolution	DP++ : Max. resolution 4096x2304 @ 60Hz HDMI : Max. resolution 4096x2304 @ 60Hz
Audio	
Audio Codec	Realtek ALC888S HD codec
Ethernet	
LAN Chipset	2 x Intel I226-IT
Specification	2 x 10/100/1000/2.5G GbE compatible
Power Requirement	
Voltage Input Spec.	DC in typical 12/24V (+9V ~ +36V), wide voltage single power input TVS component for surge protection Reverse current/voltage protection (Max. Currency: 13A)
Voltage Input Connector	1 x 3-pin Phoenix connector
ACPI	Single power ATX Support S0, S4, S5 ACPI 5.0 Compliant
Power Mode	AT/ATX (ATX is default setting)
Software Support	
OS	Win 10 / Win 11/ Linux
Certification	
Certification Information	CE, FCC Class B, KC
Mechanical & Environmental	
Operating Temp.	-40°C ~ 65°C (w/SSD) ambient air flow (w/ 32G DDR5) -40°C ~ 60°C (w/SSD) ambient air flow (w/ 64G DDR5, Maximum capacity)
Storage Temp.	-30°C ~ 70°C (-22°F ~ 158°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Dimension (W x L x H)	240mm x 150mm x 49 mm (Standard) 240mm x 150mm x 75 mm (w/ IET module)
Weight	2.1 kg (System), 2.9 kg (w_Package)
Vibration Test	With SSD : 2Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 0.5hr/axis
Shock Test	With SSD : 55Grms, IEC 60068-2-27, Half Sine, 11ms
IP Rating	IP 50
Mounting Kit	Wall mount (standard), Din rail (optional)

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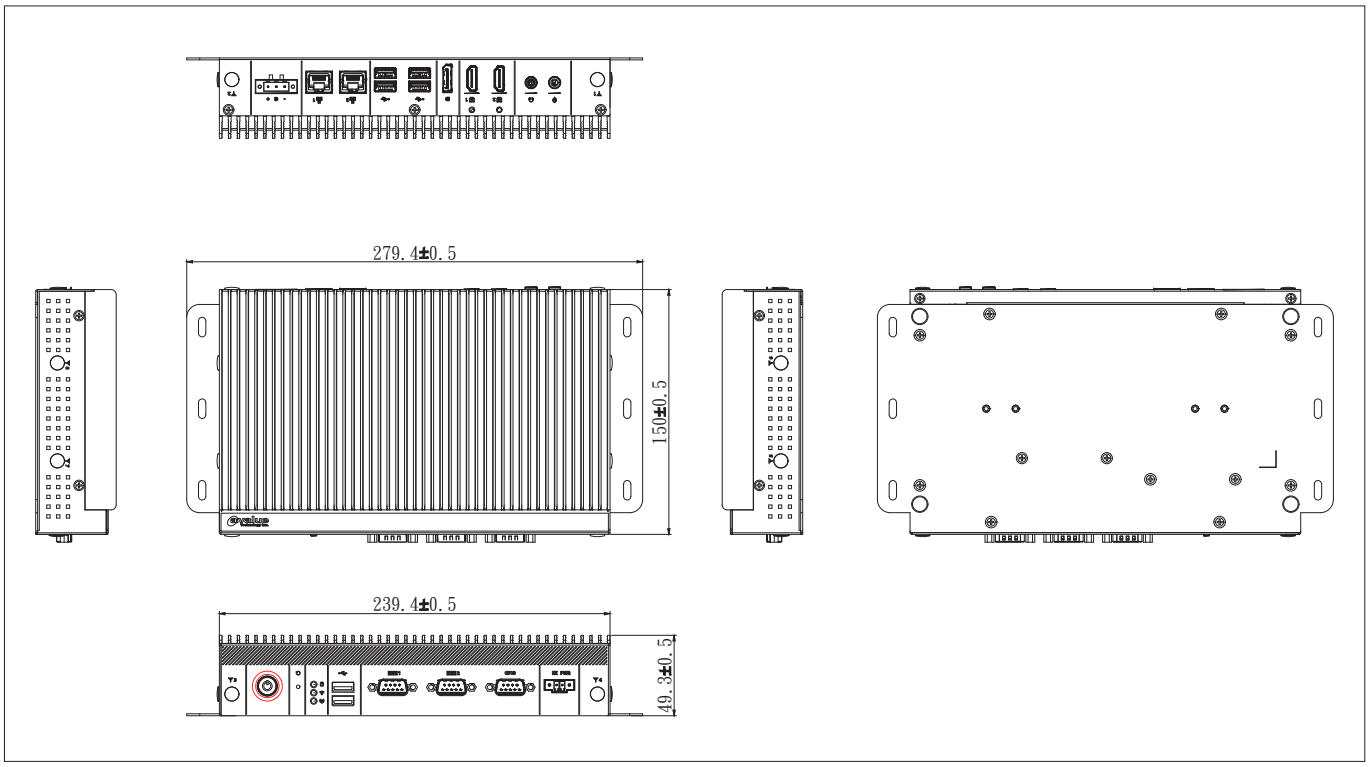
Mechanical Drawing



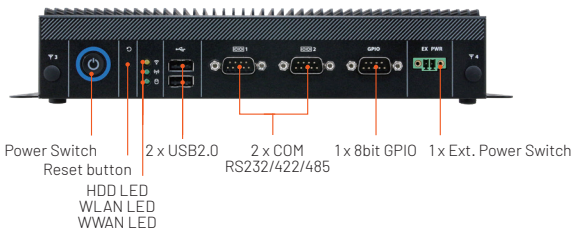
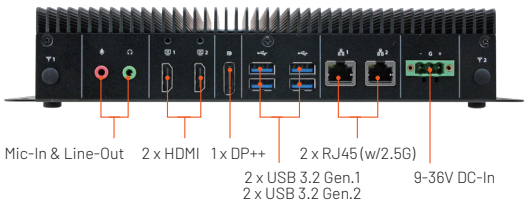
Ordering Information

P/N	Processor	Memory	Storage	Adapter/ PSU	Mounting Kit	Temp.
EMS-MTU-U7-A1-1R	Intel® Core™ Ultra 7 Processor 155U	8GB DDR5 (Up to 64G Optional)	(Optional)	120W Adapter (Optional)	Wall Mount (Din Rail Optional)	-40°C ~ 65°C
EMS-MTU-U5-A1-1R	Intel® Core™ Ultra 5 Processor 125U	8GB DDR5 (Up to 64G Optional)	(Optional)	120W Adapter (Optional)	Wall Mount (Din Rail Optional)	-40°C ~ 65°C
EMS-MTU-U7E-A1-1R (By Project)	Intel® Core™ Ultra 7 Processor 165U	8GB DDR5 (Up to 64G Optional)	(Optional)	120W Adapter (Optional)	Wall Mount (Din Rail Optional)	-40°C ~ 65°C
EMS-MTU-U5E-A1-1R (By Project)	Intel® Core™ Ultra 5 Processor 135U	8GB DDR5 (Up to 64G Optional)	(Optional)	120W Adapter (Optional)	Wall Mount (Din Rail Optional)	-40°C ~ 65°C

Packing List

Item	Quantity
Intel® Meteor Lake-U Core™ Ultra 7/5 Processor Fanless Rugged Embedded System	1
Terminal block to lockable DC Jack cable	1
DP to VGA converter	1
Wire tie for HDMI	2
Screw kits for peripheral	1
Thermal pad kits for memory and M.2 NVMe SSD	1

Optional Items

Item	P/N
AC/DC adapter 12V/10A 90 Screw Type	ACC-ADP-120N-07R
Power Cord 3P (F)-3P (M) 183cm, USA type	E1702031833R
Power Cord SL-6+SL-3 183cm, EU type	E1702031000R
Power Cord 3P (F)-3P (M) 183cm, Japan w/PSE type	E1702031834R
Power Cord QP-026+SL-3 183cm, UK type	E170P060380R
Power Cord 3P (F)-3P (M) 183cm, Australia type	E1702031831R
Din Rail Kit	ACC-EMS-DIN-01R

I/O Overview