



EMS-TGL

11th Gen Intel® Core™ Processor i7/i5/i3 Fanless Rugged Embedded System

- > On board 11th Gen. Intel® Core™ i7/i5/i3 BGA Processor
- > 2x 260-pin SODIMM socket Max. up to 64GB DDR4 3200MT/s
- > Rich I/O, 4-USB3.1, 1-DP, 1-HDMI, 2-COM, 2-LAN, 1-8bit GPIO.
- > Support 5G (Sub-6G) module, M.2 NVMe SSD Gen. III x 4, HDMI 2.0b (4K @ 60Hz), LAN 2.5G Base-Tx GbE
- > Fanless operation temperature from -40°C ~ 70°C (WT) / 0°C ~ 70°C (ST)
- > CE, FCC Class B, IP50
- > Wide range DC power input from +9~32V
- > Support HW TPM 2.0

+ Spec

System	
Processor	On board 11th Gen. Intel® Core™ i7/i5/i3 BGA Processor Intel® Core™ i7- 1185GRE (15W, 12M Cache, up to 2.80 GHz), WT Intel® Core™ i5- 1145GRE (15W, 8M Cache, up to 2.60 GHz), WT Intel® Core™ i3- 1115GRE (15W, 6M Cache, up to 3.00 GHz), WT Intel® Core™ i7- 1185G7E (15W, 12M Cache, up to 2.80 GHz), ST Intel® Core™ i5- 1145G7E (15W, 8M Cache, up to 2.60 GHz), ST Intel® Core™ i3- 1115G4E (15W, 6M Cache, up to 3.00 GHz), ST
System Memory	2 x 260-pin SODIMM socket Max. up to 64GB DDR4 3200 MT/s
I/O Chip	EC ITE IT8528E
BIOS	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
Battery	Horizontal battery socket, supporting wide operating temperature Supports no RTC battery mode
Expansion	
Expansion	1 x M.2 Key-B 2242/3042/3052 support SATA3/ PCIeIII x1/ USB3.1 and SIM slot1 1 x M.2 Key-E 2230 for Wi-Fi & BT Module(CNVi) 1 x IET interface (1 x DDI, 2x PCIe3 x 2, 3 x USB2.0, 1 x Line-Out(R/L), 1 x SMBus, LPC)
Storage	
Storage	1 x M.2 Key-M 2242/2280, support PCIe Gen. III x 4 (NVMe SSD) 1 x M.2 Key-B 2242, support SATA (share with expansion slot)
I/O	
USB	2 x USB 3.1 Gen.2 (10Gbp/s) 2 x USB 3.1 Gen.1 (5Gbp/s)
COM Port	2 x COM RS232/422/485 (select via BIOS, auto flow control via HW)
SIM	1 x internal SIM slot
GPIO	1 x 8-bit GPIO (DB9)
Other	8 x Antenna with dust cover (6 x LTE+GPS / 2 x Wifi)
Display	
Chipset	Intel® Iris® Xe Graphics (i7-1185GRE/i5-1145GRE/i7-1185G7E/i5-1145G7E) Intel® UHD Graphics for 11th Gen Intel® Processors (i3-1115GRE/i3-1115G4E)
Resolution	DP++ 1.4: 4096x2304 @ 60Hz HDMI 2.0b : Max. resolution 4096x2304 @ 60Hz
Multiple Display Interface	2 displays 1x DP 1.4 (eDP to DP) (DP to VGA converter is the standard accessory, and optional DP to DVI, DP to HDMI converters) 1x HDMI 2.0b (DDI)
Audio	
Chipset	Realtek ALC892 HD codec
Audio Interface	Mic-In, Line-Out
Ethernet	
Chipset	1 x Intel® I225-LM 1 x Intel® I219-LM
Ethernet Interface	1 x 10/100/1000/2.5G Base-Tx GbE compatible 1 x 10/100/1000Base-Tx GbE compatible.
LAN Port	2 x RJ-45
Mechanical & Environmental	
Operating Temperature	-40°C ~ 70°C (w/SSD) ambient w/ air flow, WT sku 0°C ~ 70°C (w/SSD) ambient w/ air flow, ST sku



Storage Temperature	-40°C ~ 75°C (-40°F ~ 167°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Weight	2.1 kg (System) 2.9 kg (w/ Package)
Mounting Kit	Wall mount kit (standard) DIN RAIL (optional)
Dimension (L x W x H)	240mm x 150mm x 48 mm (Standard) 240mm x 150mm x 69 mm (w/ IET module)
IP Rating	IP 50
Vibration Test	With SSD : 5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 1hr/axis
Shock Test	With SSD : 55Grms, IEC 60068-2-27, Half Sine, 11ms
Color	Avalue Box PC family design
Certifications	
Certification Information	CE FCC Class B
Software Support	
OS Information	Win 10 64bit Linux
Power Requirement	
Power Connector	3-Pin Terminal Block (V+, V-, GND)
Power Requirement	DC in 12/24V (+9V ~ +32V), wide voltage single power input TVS component for surge protection Reverse current/voltage protection (Max. Current: 13A)
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI5.0 Compliant
Power Mode	AT/ATX (ATX is default setting)

+ Ordering

EMS-TGL
11th Gen Intel® Core™ Processor i7/i5/i3 Fanless Rugged Embedded System
EMS-TGL-W85-A1-1R (i7-1185GRE)
EMS-TGL-W45-A1-1R (i5-1145GRE)
EMS-TGL-W15-A1-1R (i3-1115GRE)
EMS-TGL-S85-A1-1R (i7-1185G7E)
EMS-TGL-S45-A1-1R (i5-1145G7E)
EMS-TGL-S15-A1-1R (i3-1115G4E)

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