



## 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 Information

<b>Processor</b>	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
<b>System Memory</b>	2 x 260-pin SODIMM socket Max. up to 64GB DDR4 3200 MT/s
<b>I/O Chipset</b>	EC ITE IT8528E
<b>BIOS Information</b>	AMI uEFI BIOS 256 Mbit SPI Flash ROM
<b>Watchdog Timer</b>	H/W Reset, 1sec. ~ 65535sec.
<b>H/W Status Monitor</b>	CPU & system temperature monitoring and Voltages monitoring
<b>SBC</b>	EBM-TGLS

##### Expansion

<b>Expansion</b>	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(CNV1) 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)
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##### Storage

<b>Storage</b>	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)
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##### I/O

<b>USB Port</b>	2 x USB 3.1 Gen.2 (10Gbp/s) 2 x USB 3.1 Gen.1 (5Gbp/s)
<b>COM Port</b>	2 x COM RS232/422/485 (select via BIOS, auto flow control via HW)
<b>GPIO</b>	1 x 8-bit GPIO (DB9)
<b>SIM Slot</b>	1 x internal SIM slot
<b>Antenna</b>	8 x Antenna with dust cover (6 x LTE+GPS / 2 x Wifi)
<b>Wire-Control Power On/Off</b>	2-Pin Terminal Block

##### Display

<b>Graphic Chipset</b>	Intel® Iris® Xe Graphics (i7-1185GRE/i5-1145GRE/i7-1185G7E/i5-1145G7E) Intel® UHD Graphics for 11th Gen Intel® Processors (i3-1115GRE/i3-1115G4E)
<b>Spec. &amp; Resolution</b>	DP++ 1.4: 4096x2304 @ 60Hz HDMI 2.0b : Max. resolution 4096x2304 @ 60Hz
<b>Multiple Display</b>	Dual Displays

##### Audio

<b>Audio Codec</b>	Realtek ALC888S HD codec
<b>Audio Interface</b>	Mic-In, Line-Out

##### Certifications

<b>Certification Information</b>	CE FCC Class B
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##### Ethernet

<b>LAN Chipset</b>	1 x Intel® I225-LM 1 x Intel® I219-LM
<b>Ethernet Interface</b>	1 x 10/100/1000/2.5G Base-Tx GbE compatible 1 x 10/100/1000Base-Tx GbE compatible.
<b>LAN Port</b>	2 x RJ-45

##### Power Requirement

<b>DC Input</b>	DC in 12/24V (+9V ~ +32V), wide voltage single power input TVS component for surge protection Reverse current/voltage protection (Max. Currency: 13A)
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<b>DC Input Connector</b>	3-Pin Terminal Block (V+, V-, GND)
<b>ACPI</b>	Single power ATX Support S0,S3, S4, S5 ACPI 5.0 Compliant
<b>Power Mode</b>	AT/ATX (ATX is default setting)
<b>Mechanical &amp; Environmental</b>	
<b>Operating Temperature</b>	-40°C ~ 70°C (w/SSD) ambient w/ air flow, WT sku 0°C ~ 70°C (w/SSD) ambient w/ air flow, ST sku
<b>Storage Temperature</b>	-40°C ~ 75°C (-40°F ~ 167°F)
<b>Operating Humidity</b>	40°C @ 95% Relative Humidity, Non-condensing
<b>Dimension (W x L x H)</b>	240mm x 150mm x 48 mm (Standard) 240mm x 150mm x 69 mm (w/ IET module)
<b>Weight</b>	2.1 kg (System) 2.9 kg (w/ Package)
<b>Vibration Test</b>	With SSD : 5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 1hr/axis
<b>Shock Test</b>	With SSD : 55Grms, IEC 60068-2-27, Half Sine, 11ms
<b>IP Rating</b>	IP 50
<b>Mounting Kit</b>	Wall mount kit (standard) DIN RAIL (optional)
<b>Software Support</b>	
<b>OS Information</b>	Win 10 64bit Linux
<b>Ordering Information</b>	
<b>Ordering Information</b>	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)