



## EMS-TGL-USB

11th Gen Intel® Core™ Processor i7/i5/i3 Fanless  
Rugged Embedded System w\_ USB IET Module

- > 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, 8-USB3.1, 3-USB2.0, 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 +9~36V
- > Support HW TPM 2.0

### Spec

| -System Information-             |                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Processor</b>                 | Intel® Core™ i7-1185GRE (15W, 12M Cache, up to 2.80 GHz), WT<br>Intel® Core™ i5-1145GRE (15W, 8M Cache, up to 2.60 GHz), WT<br>Intel® Core™ i3-1115GRE (15W, 6M Cache, up to 3.00 GHz), WT<br>Intel® Core™ i7-1185G7E (15W, 12M Cache, up to 2.80 GHz), ST<br>Intel® Core™ i5-1145G7E (15W, 8M Cache, up to 2.60 GHz), ST<br>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 + EBM-BYTS DB-E                                                                                                                                                                                                                                                                                                                                                                 |
| Expansion                        |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Expansion</b>                 | 1 x M.2 Key-B 2242/3042/3052 support SATA3/ PCIeIII x1/ USB3.1 and SIM slot1<br>1 x M.2 Key-E 2230 for Wi-Fi & BT Module(CNV1)                                                                                                                                                                                                                                                           |
| Storage                          |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Storage</b>                   | 1 x M.2 Key-M 2242/2280, support PCIe Gen. III x 4 (NVMe SSD)<br>1 x M.2 Key-B 2242, support SATA (share with expansion slot)                                                                                                                                                                                                                                                            |
| I/O                              |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>USB Port</b>                  | 2 x USB 3.1 Gen.2 (10Gbp/s)<br>6 x USB 3.1 Gen.1 (5Gbp/s)<br>3 x USB 2.0                                                                                                                                                                                                                                                                                                                 |
| <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>Other</b>                     |                                                                                                                                                                                                                                                                                                                                                                                          |
| Display                          |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Graphic Chipset</b>           | Intel® Iris® Xe Graphics (i7-1185GRE/i5-1145GRE/i7-1185G7E/i5-1145G7E)<br>Intel® UHD Graphics for 11th Gen Intel® Processors (i3-1115GRE/i3-1115G4E)                                                                                                                                                                                                                                     |
| <b>Spec. &amp; Resolution</b>    | DP++ 1.4: 4096x2304 @ 60Hz<br>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<br>FCC Class A                                                                                                                                                                                                                                                                                                                                                                        |
| Ethernet                         |                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>LAN Chipset</b>               | 1 x Intel® I225-LM<br>1 x Intel® I219-LM                                                                                                                                                                                                                                                                                                                                                 |
| <b>Ethernet Interface</b>        | 1 x 10/100/1000/2.5G Base-Tx GbE compatible<br>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 ~ +36V), wide voltage single power input<br>TVS component for surge protection<br>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<br>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<br>0°C ~ 70°C (w/SSD) ambient w/ air flow, ST sku                                                                                                                                                                                                                    |
| <b>Storage Temperature</b>            | -30°C ~ 70°C (-22°F ~ 158°F)                                                                                                                                                                                                                                                                                          |
| <b>Operating Humidity</b>             | 40°C @ 95% Relative Humidity, Non-condensing                                                                                                                                                                                                                                                                          |
| <b>Dimension (W x L x H)</b>          | 240mm x 150mm x 69 mm (w/ IET module)                                                                                                                                                                                                                                                                                 |
| <b>Weight</b>                         | 2.3 Kg                                                                                                                                                                                                                                                                                                                |
| <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)<br>DIN RAIL (optional)                                                                                                                                                                                                                                                                      |
| <b>Software Support</b>               |                                                                                                                                                                                                                                                                                                                       |
| <b>OS Information</b>                 | Win 10 64bit<br>Linux                                                                                                                                                                                                                                                                                                 |
| <b>Ordering Information</b>           |                                                                                                                                                                                                                                                                                                                       |
| <b>Ordering Information</b>           | EMS-TGL-USB<br>11th Gen Intel® Core™ Processor i7/i5/i3 Fanless Rugged Embedded System, w_ USB IET Module<br>EMS-TGL-W85-A1-8R (i7-1185GRE)<br>EMS-TGL-W45-A1-8R (i5-1145GRE)<br>EMS-TGL-W15-A1-8R (i3-1115GRE)<br>EMS-TGL-S85-A1-8R (i7-1185G7E)<br>EMS-TGL-S45-A1-8R (i5-1145G7E)<br>EMS-TGL-S15-A1-8R (i3-1115G4E) |

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