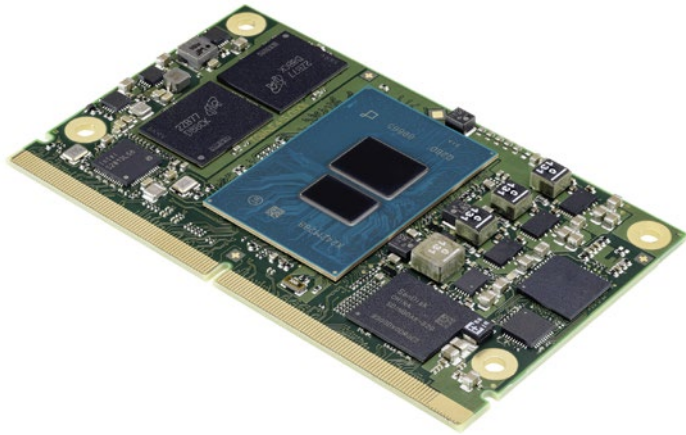


# TQMxE41S (Refresh 2024)

x86 Family



**SMARC 2.1 Module with Intel Atom® Processors x7000 Series, Intel® Core™ i3-N305 Processor, and Intel® Processor N Series ("Alder Lake-N" and "Amston Lake").**

## HIGHLIGHTS

- ▶ Intel Atom® Processors x7000E Series, Intel Atom® Processors x7000RE Series, Intel® Core™ i3-N305 Processor, and Intel® Processor N Series
- ▶ One common design for 12 CPU options
- ▶ High efficiency with 6 W to 15 W processor power
- ▶ Three independent high-resolution display outputs including DP++, HDMI and eDP/LVDS
- ▶ Intel® AVX256 and Intel® Deep Learning Boost support
- ▶ 2x 2.5 Gigabit ETH, high-speed PCIe and IO
- ▶ Extended temperature and industrial use conditions (24/7) available
- ▶ Small size (82 mm x 50 mm)
- ▶ SGeT SMARC 2.1 (RC1) compliant

## TECHNICAL SPECIFICATION

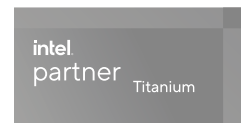
### Supported CPUs

<b>Intel® Core™ i3 and Intel® Processor N series ("Alder Lake-N")</b>	Intel® Core™ i3-N305 (8-Core, 1.8/3.8 GHz, 32 EU, 15 W TDP)
	Intel® Core™ i3-N305* (8-Core, 1.0/3.8 GHz, 32 EU, 9 W cTDP)
PC-Client Use-Conditions – C-Temp	Intel® Processor N200 (4-Core, 1.0/3.7 GHz, 32 EU, 6 W TDP)
	Intel® Processor N97 (4-Core, 2.0/3.6 GHz, 24 EU, 12 W TDP)
	Intel® Processor N50 (2-Core, 1.0/3.4 GHz, 16 EU, 6 W TDP)

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<b>Intel Atom® Processors x7000E series ("Alder Lake-N")</b>	Intel Atom® x7425E (4-Core, 1.5/3.4 GHz, 24 EU, RT, 12 W TDP)
Embedded Use-Conditions – C-Temp	Intel Atom® x7213E (2-Core, 1.7/3.2 GHz, 16 EU, RT, 10 W TDP)
	Intel Atom® x7211E (2-Core, 1.0/3.2 GHz, 16 EU, RT, 6 W TDP)

Based on



<b>Intel Atom® Processors x7000RE series ("Amston Lake")</b>	Intel Atom® x7835RE (8-Core, 1.3/3.6 GHz, 32 EU, RT, 12 W TDP)
Industrial Use-Conditions with 24/7 – I-Temp	Intel Atom® x7433RE (4-Core, 1.5/3.4 GHz, 32 EU, RT, 9 W TDP)
	Intel Atom® x7213RE (2-Core, 2.0/3.4 GHz, 16 EU, RT, 9 W TDP)
	Intel Atom® x7211RE (2-Core, 1.0/3.2 GHz, 16 EU, RT, 6 W TDP)

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<b>Memory</b>	LPDDR5: 4, 8, 16 GB, with In-Band-ECC option (BIOS config) eMMC: 16, 32, 64, 128, 256 GB EEPROM 32 KB
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<b>Graphics</b>	1x eDP (4K @ 60 Hz) or Dual Channel LVDS (18/24-bit) (assembly option) 1x DP++ (4K @ 60 Hz) 1x DP++ or HDMI (4K @ 60 Hz) (assembly option)
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<b>Additional components and controller</b>	1x TPM 2.0 (SLM9670) (assembly option) TQMx86 board controller Hardware monitor for thermal management
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**Interfaces**

- 2x 2.5 Gigabit Ethernet (Intel® i226)
- 2x USB 3.2 Gen2 (up to 10 Gb/s)
- 6x USB 2.0
- 4x PCIe Gen3 (up to 8 Gb/s per Lane) (div. configurations)
- 1x SATA Gen3 (up to 6 Gb/s) (n/a in PCIe x4 config)
- 1x HD audio (HDA)
- 1x eSPI (standard) or SPI (assembly option)
- 1x SPI (for external UEFI BIOS flash)
- 1x I2C
- 1x SMBus
- 4x Serial port (2x 16550, 2x HS-UART)
- 14x GPIO, incl. fan-control
- 2x MIPI-CSI-2 ports (limited SW support)

**Power supply**

- Main Voltage: 4.75 V – 5.25 V
- RTC Battery Voltage: 3 V
- Power: typ. 3 – 12 W / max. TBD

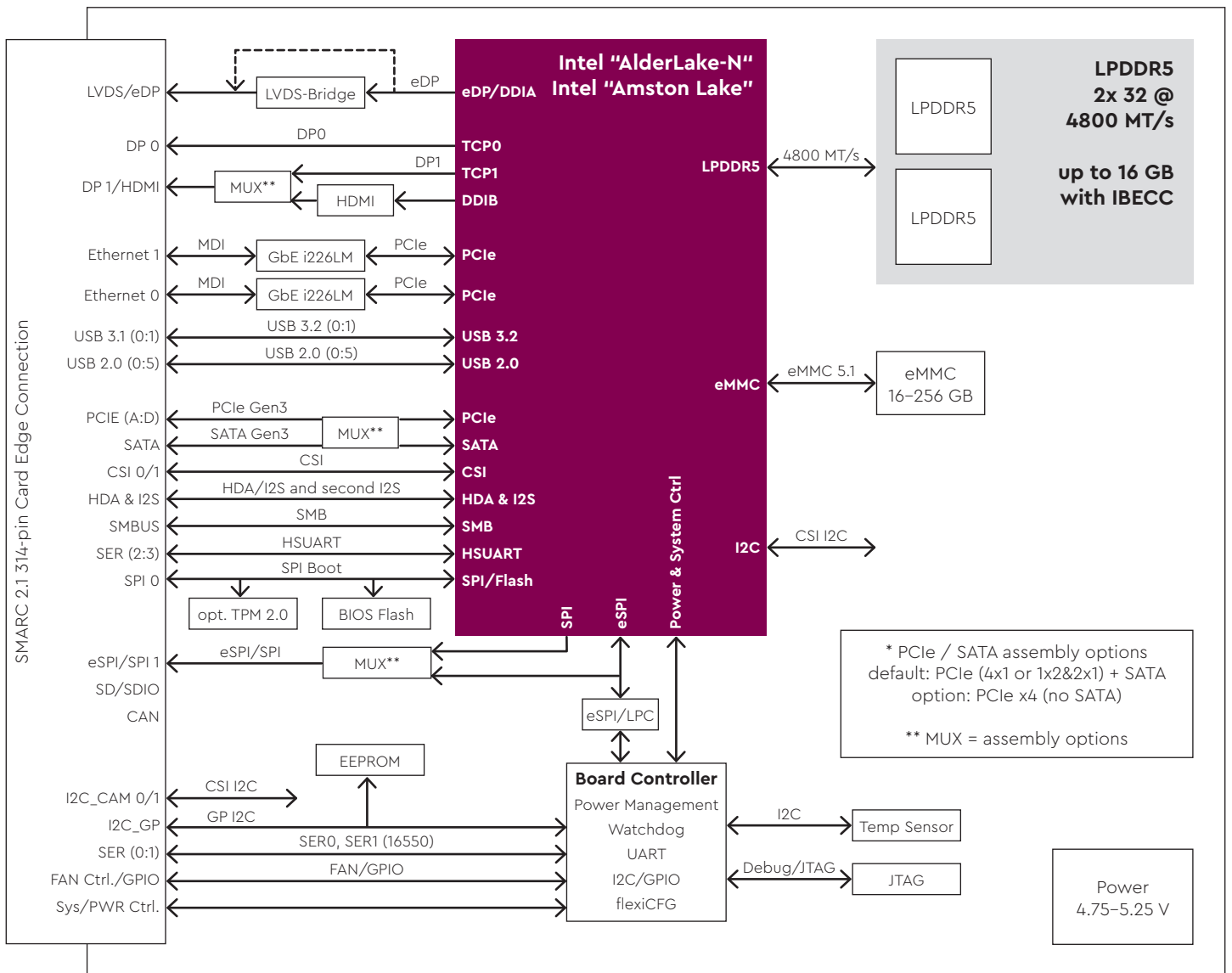
**Environment**

- For x7000E / N series:
  - Standard temperature: 0°C...+60°C (DTR +/- 70°C Tj CPU)
- For x7000RE series:
  - Extended temperature: -40°C...+85°C (DTR +/-110°C Tj CPU)

**Form factor/ dimensions**

- SMARC 2.1
- 82 mm x 50 mm

**BLOCK DIAGRAM TQMxE41S**



**ORDERING INFORMATION**

Standard configurations are listed on the website. Custom specific configurations on request.

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