

TQMx130UC / -PC / -HC

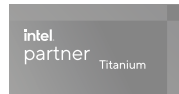
x86 Family



**COM Express® Compact Module with
13th Generation Intel® Core™ Processors.**

Based on

COM Express



HIGHLIGHTS

- ▶ 13th Generation Intel Core Processors
Codename Raptor Lake-P
- ▶ Inspiring Multi-Thread-Performance based on new Intel Performance-Hybrid-Technology with a mix of Performance-Cores and Efficient-Cores
- ▶ Flexible DDR5-5200 SO-DIMM memory configuration with up to 64 GB
- ▶ AI-Boost with VNNI + DP4a (new instruction sets for optimized inferencing and deep learning)
- ▶ Four simultaneous 4K high-resolution display outputs (or 2x 8K support) with brilliant graphics performance
- ▶ 2.5 Gigabit ETH
- ▶ PCIe Gen4 for NVMe and high-speed interconnect
- ▶ USB-4 and MIPI-CSI x4 support
- ▶ Embedded & Industrial Use Conditions with Real-Time-Support and 24/7
- ▶ Extended Temperature Option down to -40°C
- ▶ COM Express Rev. 3.1 (PICMG COM.0)

HIGHLIGHTS UC

- ▶ U15 Ultra-Low-Power Series with 12/15/28 W TDP*
- ▶ Up to 2 Performance-Cores + 8 Efficient-Cores + 96 GPU Execution Units
- ▶ Cost-optimized Design

HIGHLIGHTS PC

- ▶ P28 Performance Series with 20/28/35 W TDP*
- ▶ Up to 6 Performance-Cores + 8 Efficient-Cores + 96 GPU Execution Units
- ▶ Up to 24 MB Cache

HIGHLIGHTS HC

- ▶ H45 High-Performance Series with 35/45 W TDP*
- ▶ Up to 6 Performance-Cores + 8 Efficient-Cores + 96 GPU Execution Units
- ▶ Up to 24 MB Cache
- ▶ Additional PCIe Gen4 Lanes

* TDP = Thermal Design Power. Information based on Processor Base Power (no Turbo)



TECHNICAL SPECIFICATION (EMBEDDED VERSIONS)

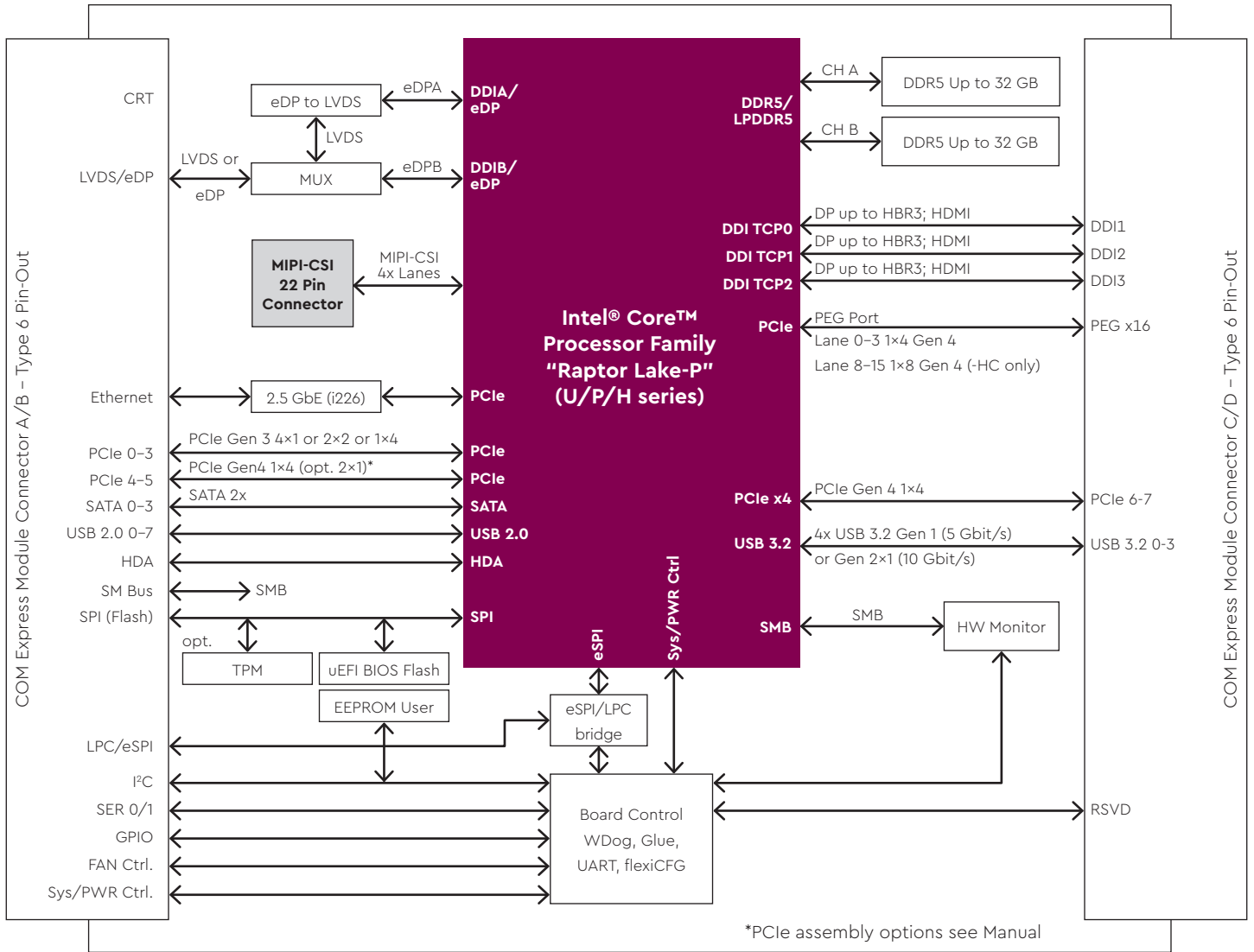
	TQMX130UC	TQMX130PC	TQMX130HC
CPU	<p>EMBEDDED USE CONDITIONS</p> <p>Intel Core i7-1365UE (10-Core) 2P+8E / 96 EU / 12 MB, up to 4.9 GHz</p> <p>Intel Core i5-1345UE (10-Core) 2P+8E / 80 EU / 12 MB, up to 4.6 GHz</p> <p>Intel Core i5-1335UE (10-Core) 2P+8E / 80 EU / 12 MB, up to 4.5 GHz</p> <p>Intel Core i3-1315UE (6-Core) 2P+4E / 64 EU / 10 MB, up to 4.5 GHz</p> <p>Intel U300E (5-Core) 1P+4E / 48 EU / 8 MB, up to 4.3 GHz</p>	<p>EMBEDDED USE CONDITIONS</p> <p>Intel Core i7-1370PE (14-Core) 6P+8E / 96 EU / 24 MB, up to 4.8 GHz</p> <p>Intel Core i5-1350PE (12-Core) 4P+8E / 80 EU / 12 MB, up to 4.6 GHz</p> <p>Intel Core i5-1340PE (12-Core) 4P+8E / 80 EU / 12 MB, up to 4.5 GHz</p> <p>Intel Core i3-1320PE (8-Core) 4P+4E / 48 EU / 12 MB, up to 4.5 GHz</p>	<p>EMBEDDED USE CONDITIONS</p> <p>Intel Core i7-13800HE (14-Core) 6P+8E / 96 EU / 24 MB, up to 5.0 GHz</p> <p>Intel Core i5-13600HE (12-Core) 4P+8E / 80 EU / 18 MB, up to 4.8 GHz</p> <p>Intel Core i3-13300HE (8-Core) 4P+4E / 48 EU / 12 MB, up to 4.6 GHz</p>
Memory	DDR5-5200: up to 64 GB (2 SO-DIMMs) EEPROM 32 kbit		
Graphics	<p>Up to 4 independent 4K display outputs:</p> <p>3x DP/DP++ 1.4a with up to 8K / HDMI 1x eDP 1.4b or dual channel LVDS interface</p>		
Additional components and controller	<p>1x TPM 2.0 (SLM9670/SLM9672) (opt.) TQMX86 board controller (WD and TQ-flexiCFG) Hardware monitor for thermal management</p>		
Interfaces	<p>8x PCIe Gen4 (up to 16 Gb/s per Lane) (x4 + x4)</p>		<p>16x PCIe Gen4 (up to 16 Gb/s per Lane) (x4 + x4 + x8)</p>
	<p>1x 2.5 Gigabit Ethernet (Intel® i226) 4x USB 3.2 Gen2 (up to 10 Gb/s) with USB 3.0 compatibility 8x USB 2.0 4x PCIe Gen3 (up to 8 Gb/s per Lane) (div. configurations) 2x SATA Gen3 (up to 6 Gb/s) 1x LPC or eSPI 1x I²C 1x SMBus 1x SPI (for external UEFI BIOS flash) 2x UART (Rx/Tx) (4-wire optional) 8x GPIO through TQ flexiCFG MIPI-CSI (4 lanes) on extra 22-pin connector (opt.)</p>		
Power supply	<p>8.5 V ... 20 V, 5 V Standby (opt.), 3 V battery Power: typ. 15 W* / max. TBD</p>	<p>8.5 V ... 20 V, 5 V Standby (opt.), 3 V battery Power: typ. 28 W* / max. TBD</p>	<p>12 V, 5 V Standby (opt.), 3 V battery Power: typ. 45 W* / max. TBD</p>
Environment	Standard temperature: 0°C ... +60°C		
Form factor/ dimensions	COM Express Compact, Type 6, 95 mm x 95 mm		



TECHNICAL SPECIFICATION (INDUSTRIAL/FUSA)

	TQMX130UC	TQMX130PC	TQMX130HC
CPU	<p>INDUSTRIAL USE CONDITIONS</p> <p>Intel Core i7-1365URE (10-Core) 2P+8E / 96 EU / 12 MB, up to 4.9 GHz</p> <p>Intel Core i5-1345URE (10-Core) 2P+8E / 80 EU / 12 MB, up to 4.6 GHz</p> <p>Intel Core i3-1315URE (6-Core) 2P+4E / 64 EU / 10 MB, up to 4.5 GHz</p> <p>PREPARED FOR FUSA/FSEDP</p> <p>Intel Core i7-1366URE (10-Core) 2P+8E / 96 EU / 12 MB, up to 4.9 GHz</p>	<p>INDUSTRIAL USE CONDITIONS</p> <p>Intel Core i7-1370PRE (14-Core) 6P+8E / 96 EU / 24 MB, up to 4.8 GHz</p> <p>Intel Core i5-1350PRE (12-Core) 4P+8E / 80 EU / 12 MB, up to 4.6 GHz</p> <p>Intel Core i3-1320PRE (8-Core) 4P+4E / 48 EU / 12 MB, up to 4.5 GHz</p> <p>PREPARED FOR FUSA/FSEDP</p> <p>Intel Core i7-1375PRE (14-Core) 6P+8E / 96 EU / 24 MB, up to 4.8 GHz</p>	<p>INDUSTRIAL USE CONDITIONS</p> <p>Intel Core i7-13800HRE (14-Core) 6P+8E / 96 EU / 24 MB, up to 5.0 GHz</p> <p>Intel Core i5-13600HRE (12-Core) 4P+8E / 80 EU / 18 MB, up to 4.8 GHz</p> <p>Intel Core i3-13300HRE (8-Core) 4P+4E / 48 EU / 12 MB, up to 4.6 GHz</p>
Memory	DDR5-5200: up to 64 GB (2 SO-DIMMs) with In-Band-ECC Option EEPROM 32 kbit		
Graphics	<p>Up to 4 independent 4K display outputs:</p> <p>3x DP/DP++ 1.4a with up to 8K / HDMI</p> <p>1x eDP 1.4b or dual channel LVDS interface</p>		
Additional components and controller	<p>1x TPM 2.0 (SLM9670/SLM9672) (opt.) TQmX86 board controller (WD and TQ-flexiCFG)</p> <p>Hardware monitor for thermal management</p>		
Interfaces	<p>8x PCIe Gen4 (up to 16 Gb/s per Lane) (x4 + x4)</p>		<p>16x PCIe Gen4 (up to 16 Gb/s per Lane) (x4 + x4 + x8)</p>
	<p>1x 2.5 Gigabit Ethernet (Intel® i226) 4x USB 3.2 Gen2 (up to 10 Gb/s) with USB 3.0 compatibility 8x USB 2.0</p> <p>4x PCIe Gen3 (up to 8 Gb/s per Lane) (div. configurations) 2x SATA Gen3 (up to 6 Gb/s) 1x LPC or eSPI</p> <p>1x I²C 1x SMBus 1x SPI (for external UEFI BIOS flash) 2x UART (Rx/Tx) (4-wire optional) 8x GPIO through TQ flexiCFG</p> <p>MIPI-CSI (4 lanes) on extra 22-pin connector (opt.)</p>		
Power supply	<p>8.5 V ... 20 V, 5 V Standby (opt.), 3 V battery</p> <p>Power: typ. 15 W* / max. TBD</p>	<p>8.5 V ... 20 V, 5 V Standby (opt.), 3 V battery</p> <p>Power: typ. 28 W* / max. TBD</p>	<p>12 V, 5 V Standby (opt.), 3 V battery</p> <p>Power: typ. 45 W* / max. TBD</p>
Environment	<p>Extended temperature: -40°C ... +60°C (T_{junction} CPU: max. +100°C)</p> <p>(max. temperature can be extended up to +85°C depending on CPU / UEFI BIOS config, see user manual)</p>		
Form factor/ dimensions	COM Express Compact, Type 6, 95 mm x 95 mm		

BLOCK DIAGRAM TQMX130UC / -PC / -HC



ORDERING INFORMATION

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

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