

# TQMx130UC / -PC / -HC

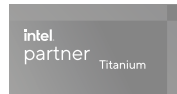
x86 Family



**COM Express® Compact Module with  
13<sup>th</sup> Generation Intel® Core™ Processors.**

Based on

**COM Express**



## HIGHLIGHTS

- ▶ 13<sup>th</sup> 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)

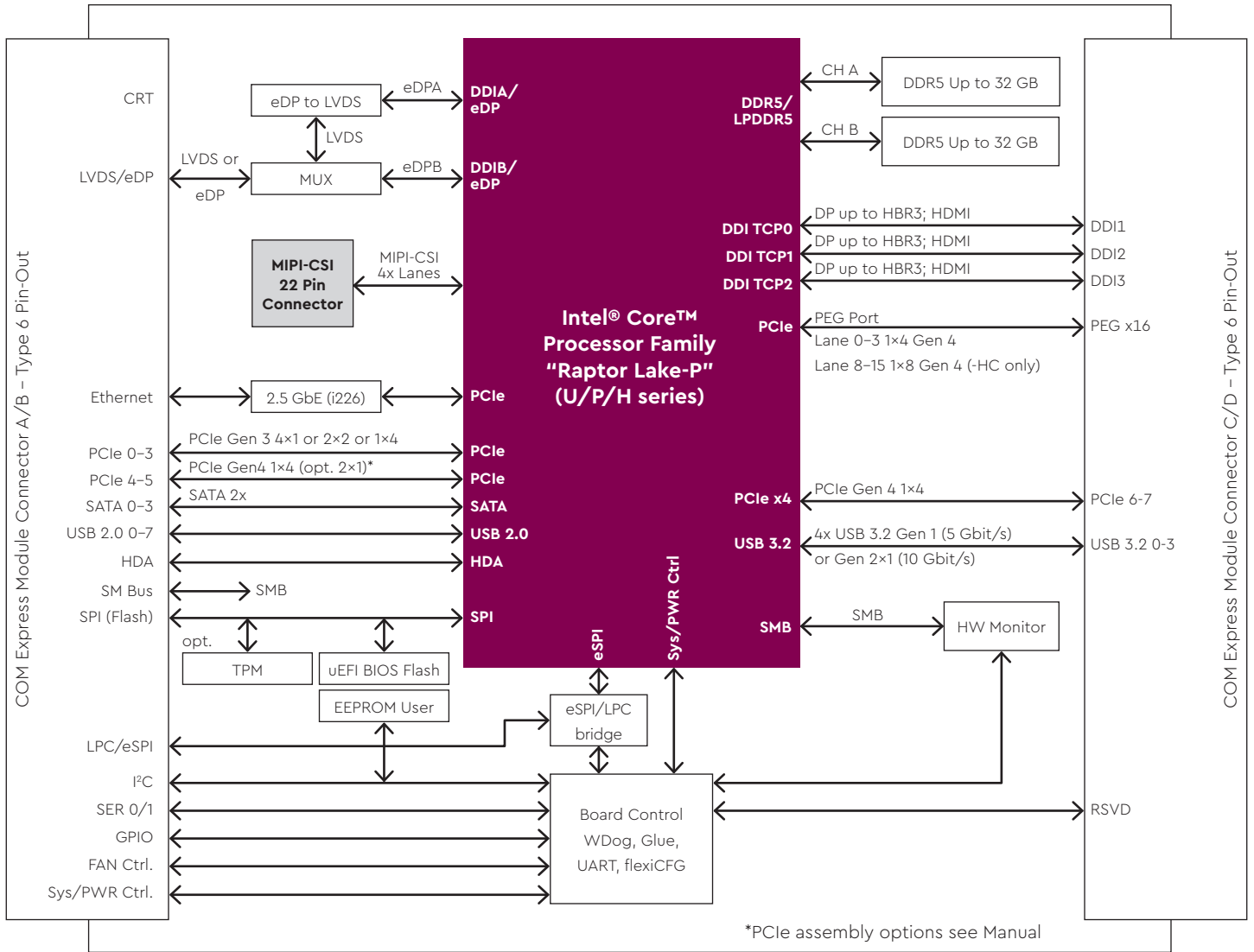
	TQMX130UC	TQMX130PC	TQMX130HC
<b>CPU</b>	<p><b>EMBEDDED USE CONDITIONS</b></p> <p><b>Intel Core i7-1365UE (10-Core)</b> 2P+8E / 96 EU / 12 MB, up to 4.9 GHz</p> <p><b>Intel Core i5-1345UE (10-Core)</b> 2P+8E / 80 EU / 12 MB, up to 4.6 GHz</p> <p><b>Intel Core i5-1335UE (10-Core)</b> 2P+8E / 80 EU / 12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



## TECHNICAL SPECIFICATION (INDUSTRIAL/FUSA)

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

## BLOCK DIAGRAM TQMX130UC / -PC / -HC



## ORDERING INFORMATION

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

**NeoMore**  
 5 rue de la Plaine  
 78860 St Nom-la-Bretèche  
 Tel. +33 1 30 64 15 81  
 sales@neomore.com  
 www.neomore.com  
 www.moreneo.com

**TQ-Systems GmbH**  
 Mühlstraße 2 | Gut Delling | 82229 Seefeld | Germany  
 Tel.: +49 8153 9308-0 | info@tq-group.com | tq-group.com

tq-embedded.com