



Intel® Xeon®/7th Gen Intel® Core™ Processor  
COM Express® Basic



# KH960-CM238/QM175

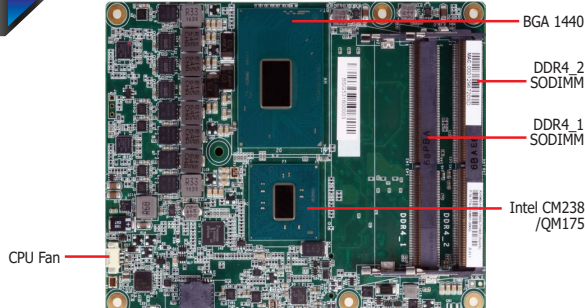
## ► Features

- Dual channel DDR4 2400MHz SODIMM up to 32GB
- Four display ports: VGA\*/DDI + LVDS\*/eDP + 2 DDI Supports three independent displays
- eDP resolution supports up to 4096x2304 @ 60Hz
- Multiple expansion: 1 PCIe x16, 8 PCIe x1
- Rich I/O: 1 Intel GbE, 4 USB 3.0, 8 USB 2.0

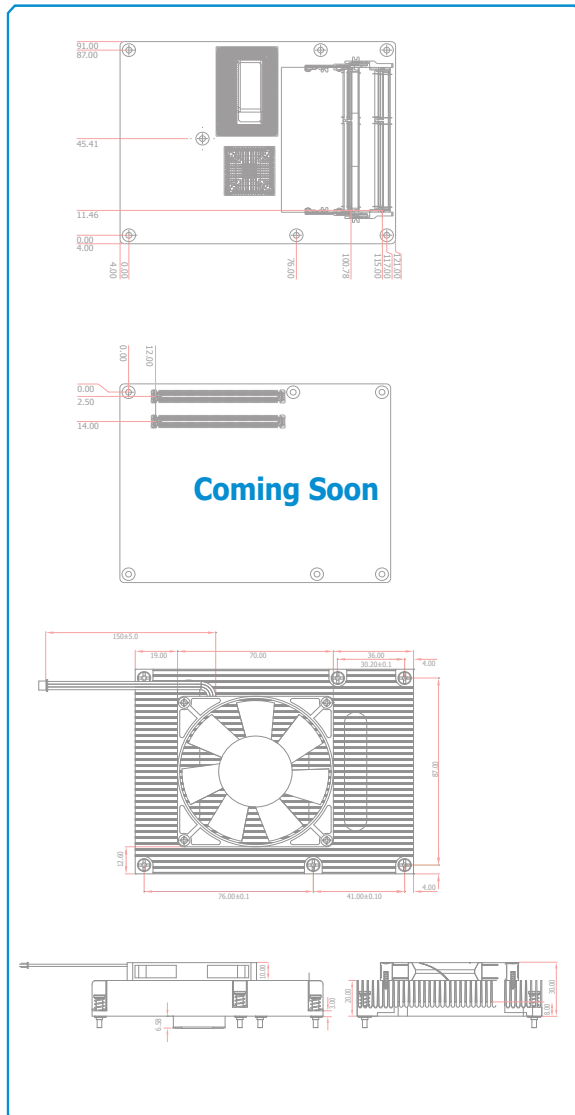
\* Populated by default



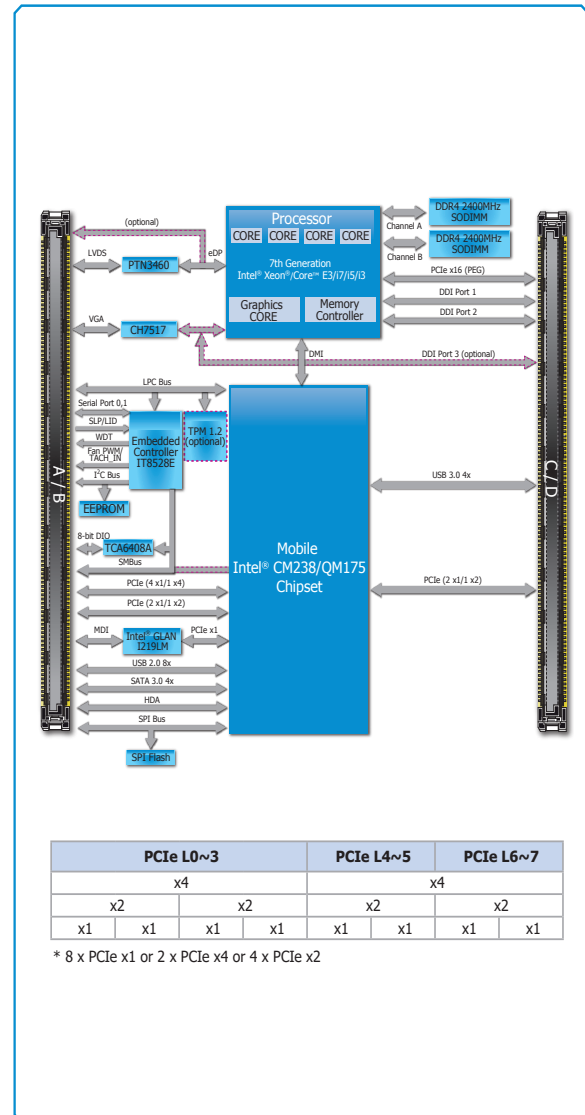
**CM238**  
**QM175**



## ► Mechanical Drawing



## ► Block Diagram





**Specifications**

<b>SYSTEM</b>	<b>Processor</b>	7th Generation Intel® Core™ Processors, BGA 1440 Intel® Xeon® E3-1505M v6 Processor, Quad Core, 8M Cache, 3.0GHz (4.0GHz), 45W Intel® Xeon® E3-1505L v6 Processor, Quad Core, 8M Cache, 2.2GHz (3.0GHz), 25W Intel® Core™ i7-7820EQ Processor, Quad Core, 8M Cache, 3.0GHz (3.7GHz), 45W Intel® Core™ i5-7440EQ Processor, Quad Core, 6M Cache, 2.9GHz (3.6GHz), 45W Intel® Core™ i5-7442EQ Processor, Quad Core, 6M Cache, 2.1GHz (2.9GHz), 25W Intel® Core™ i3-7100E Processor, Dual Core, 3M Cache, 2.9GHz, 35W Intel® Core™ i3-7102E Processor, Dual Core, 3M Cache, 2.1GHz, 25W	
	<b>Chipset</b>	Intel® CM238 Chipset (Support ECC)	Intel® QM175 Chipset
	<b>Memory</b>	Two 260-pin SODIMM up to 32GB	Dual Channel DDR4 2400MHz
	<b>BIOS</b>	Insyde SPI 128Mbit	
	<b>GRAPHICS</b>	<b>Controller</b>	Intel® HD Graphics
	<b>Feature</b>	OpenGL up to 5.0, DirectX 11, OpenCL 2.1 HW Decode: HEVC/H.265, H.264, M/JPEG, MPEG2, VC1/WMV9, VP8 (8-bit), VP9 (10-bit) HW Encode: HEVC/H.265, M/JPEG, MPEG2, VP8	
	<b>Display</b>	1 x VGA/DDI (DDI available upon request) 1 x LVDS/eDP (eDP available upon request) 2 x DDI (HDMI/DVI/DP++)	VGA: resolution up to 1920x1200 @ 60Hz LVDS: dual channel 24-bit, resolution up to 1920x1200 @ 60Hz HDMI: resolution up to 4096x2160 @ 30Hz 24bpp DVI: resolution up to 1920x1200 @ 60Hz DP++/eDP: resolution up to 4096x2304 @ 60Hz
	<b>Triple Displays</b>	VGA + LVDS + DDI or VGA + DDI1 + DDI2	eDP + 2 DDI (available upon request)
<b>EXPANSION</b>	<b>Interface</b>	1 x PCIe x16 or 2 x PCIe x8 (Gen 3) 8 x PCIe x1 or 2 x PCIe x4 or 4 x PCIe x2 (Gen 3) 1 x LPC 1 x I <sup>2</sup> C 1 x SMBus 2 x UART (TX/RX)	
<b>AUDIO</b>	<b>Interface</b>	HD Audio	
<b>ETHERNET</b>	<b>Controller</b>	1 x Intel® I219LM with iAMT11.0 PCIe (10/100/1000Mbps)	
<b>I/O</b>	<b>USB</b>	4 x USB 3.0 8 x USB 2.0	
	<b>SATA</b>	4 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5/10
	<b>DIO</b>	1 x 8-bit DIO (Default 4 inputs and 4 outputs)	
<b>WATCHDOG TIMER</b>	<b>Output &amp; Interval</b>	System Reset, Programmable via Software from 1 to 255 Seconds	
<b>SECURITY</b>	<b>TPM</b>	Available Upon Request	
<b>POWER</b>	<b>Type</b>	12V, 5VSB, VCC_RTC (ATX mode)	12V, VCC_RTC (AT mode)
	<b>Consumption</b>	TBD	
<b>OS SUPPORT</b>		Windows: Windows 10 IoT Enterprise 64-bit	LINUX: Yocto Project v2.2
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: 0 to 60°C -40 to 85°C	Storage: -40 to 85°C
	<b>Humidity</b>	Operating: 5 to 90% RH	Storage: 5 to 90% RH
	<b>MTBF</b>	TBD	
<b>MECHANICAL</b>	<b>Dimensions</b>	COM Express® Basic	95mm (3.74") x 125mm (4.9")
	<b>Compliance</b>	PICMG COM Express® R2.1, Type 6	

**Ordering Information**

Model Name	P/N	Processor	Memory	VGA/DDI	LVDS/eDP	GbE	USB 3.0	USB 2.0	Power	Thermal	Temp.
<b>KH960-CM238BS-1505M</b>	770-KH9602-000G	E3-1505M v6	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
<b>KH960-CM238BS-1505L</b>	770-KH9602-100G	E3-1505L v6	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
<b>KH960-QM175BS-7820EQ</b>	770-KH9602-200G	i7-7820EQ	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
<b>KH960-QM175BS-7440EQ</b>	770-KH9602-300G	i5-7440EQ	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
<b>KH960-QM175BS-7442EQ</b>	770-KH9602-400G	i5-7442EQ	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
<b>KH960-QM175BS-7442EQ</b>	770-KH9602-700G	i5-7442EQ	2 SODIMM	DDI	eDP	1	4	8	ATX/AT	Cooler	0 to 60°C
<b>KH960-CM238TS-1505M</b>	770-KH9602-800G	E3-1505M v6	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	-40 to 85°C

Note: Core i3 is supported upon request with MOQ requirement.

**Packing List**

• 1 KH960-CM238/QM175 board	
• 1 DVD	
• 1 Cooler (Height: 36.58mm)	A71-111026-000G

**Optional Items**

• COM332-B carrier board kit	770-CM3321-000G
• Heat spreader (Height: 11mm)	A71-011073-000G

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