

KH960-CM238/QM175

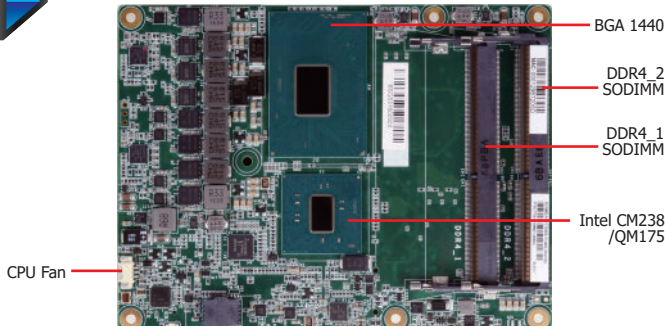
Features

- 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

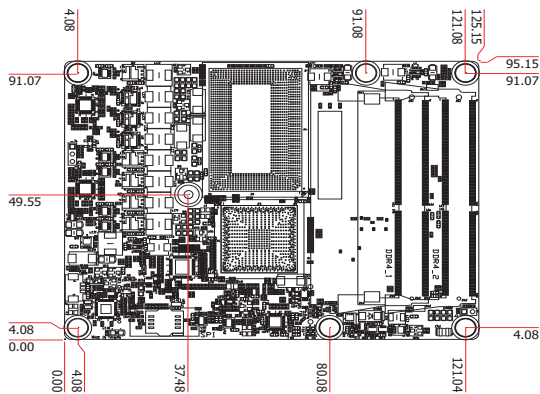
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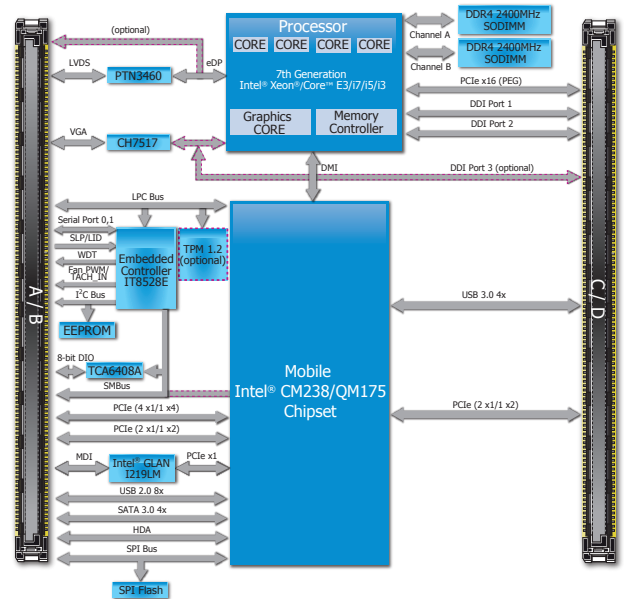
CM238
QM175



Mechanical Drawing



Block Diagram



PCIe L0~3				PCIe L4~5		PCIe L6~7	
x4				x4			
x2	x1	x1	x1	x2	x2	x1	x1
x1	x1	x1	x1	x1	x1	x1	x1

* 8 x PCIe x1 or 2 x PCIe x4 or 4 x PCIe x2

Specifications

SYSTEM	Processor	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	
	Chipset	Intel® CM238 Chipset (Support ECC)	Intel® QM175 Chipset
	Memory	Two 260-pin SODIMM up to 32GB	Dual Channel DDR4 2400MHz
	BIOS	Insyde SPI 128Mbit	
	GRAPHICS	Controller	Intel® HD Graphics
	Feature	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	
	Display	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
	Triple Displays	VGA + LVDS + DDI or VGA + DDI1 + DDI2	eDP + 2 DDI (available upon request)
EXPANSION	Interface	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 ² C 1 x SMBus 2 x UART (TX/RX)	
AUDIO	Interface	HD Audio	
ETHERNET	Controller	1 x Intel® I219LM with iAMT11.0 PCIe (10/100/1000Mbps)	
I/O	USB	4 x USB 3.0 8 x USB 2.0	
	SATA	4 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5/10
	DIO	1 x 8-bit DIO (Default 4 inputs and 4 outputs)	
	WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	TPM	Available Upon Request	
POWER	Type	12V, 5VSB, VCC_RTC (ATX mode)	12V, VCC_RTC (AT mode)
	Consumption	TBD	
OS SUPPORT		Windows: Windows 10 IoT Enterprise 64-bit	LINUX: Yocto Project v2.2
ENVIRONMENT	Temperature	Operating: 0 to 60°C -40 to 85°C	Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH	Storage: 5 to 90% RH
	MTBF	TBD	
MECHANICAL	Dimensions	COM Express® Basic	95mm (3.74") x 125mm (4.9")
	Compliance	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.
KH960-CM238BS-1505M	770-KH9602-000G	E3-1505M v6	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
KH960-CM238BS-1505L	770-KH9602-100G	E3-1505L v6	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
KH960-QM175BS-7820EQ	770-KH9602-200G	i7-7820EQ	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
KH960-QM175BS-7440EQ	770-KH9602-300G	i5-7440EQ	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
KH960-QM175BS-7442EQ	770-KH9602-400G	i5-7442EQ	2 SODIMM	VGA	LVDS	1	4	8	ATX/AT	Cooler	0 to 60°C
KH960-QM175BS-7442EQ	770-KH9602-700G	i5-7442EQ	2 SODIMM	DDI	eDP	1	4	8	ATX/AT	Cooler	0 to 60°C
KH960-CM238TS-1505M	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 Cooler (Height: 36.58mm) or 1 Cooler (Height: 45.3mm)	Standard : A71-111026-000G Wide-Temp : A71-111040-000G

Optional Items

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