

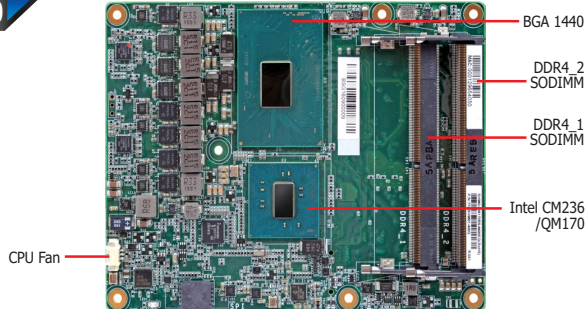


6th Gen Intel® Xeon®/Core™ Processor
COM Express® Basic



SH960-CM236/QM170

CM236
QM170



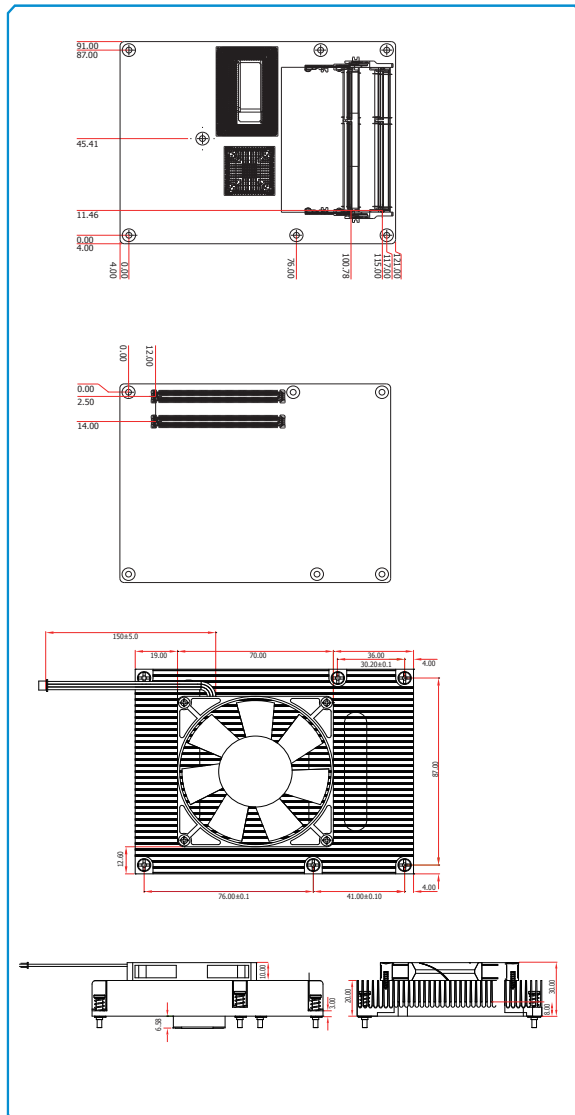
► Features

- Dual channel DDR4 2133MHz 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

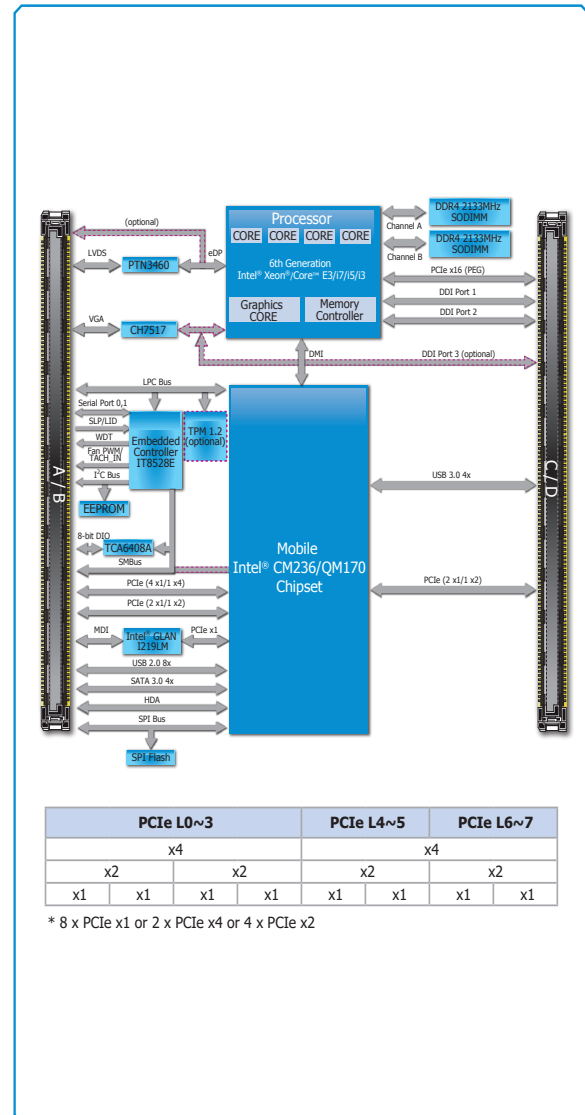
* Populated by default



► Mechanical Drawing



► Block Diagram





Specifications

| | | | |
|-----------------------|------------------------------|---|--|
| SYSTEM | Processor | 6th Generation Intel® Core™ Processors, BGA 1440 Intel® Xeon® E3-1515M v5 Processor, Quad Core, 8M Cache, 2.8GHz (3.7GHz), 45W Intel® Core™ i7-6820EQ Processor, Quad Core, 8M Cache, 2.8GHz (3.5GHz), 45W Intel® Core™ i7-6822EQ Processor, Quad Core, 8M Cache, 2.0GHz (2.8GHz), 25W Intel® Core™ i5-6440EQ Processor, Quad Core, 6M Cache, 2.7GHz (3.4GHz), 45W Intel® Core™ i5-6442EQ Processor, Quad Core, 6M Cache, 1.9GHz (2.7GHz), 25W Intel® Core™ i3-6100E Processor, Dual Core, 3M Cache, 2.7GHz, 35W Intel® Core™ i3-6102E Processor, Dual Core, 3M Cache, 1.9GHz, 25W Intel® Celeron® Processor G3900E, Dual Core, 2M Cache, 2.4GHz, 35W Intel® Celeron® Processor G3902E, Dual Core, 2M Cache, 1.6GHz, 25W | |
| | Chipset | Intel® CM236 Chipset (Support ECC) | Intel® QM170 Chipset |
| | Memory | Two 260-pin SODIMM up to 32GB | Dual Channel DDR4 2133MHz |
| | BIOS | Insyde SPI 128Mbit | |
| GRAPHICS | Controller | Intel® HD Graphics | |
| | Feature | OpenGL up to 4.4, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9 | |
| | 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 @ 24Hz or 2560x1600 @ 60Hz 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) | |
| | Interface | HD Audio | |
| 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 | |
| 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 | Typical: i7-6820EQ: 12V @ 2.39A (28.62Watt) Max.: i7-6820EQ: 12V @ 5.84A (70.10Watt) | |
| OS SUPPORT | | Windows 8.1 64-bit Windows 7 (/WES7) 32/64-bit Windows 10 IoT Enterprise 64-bit | Debian 8 (with VESA graphic driver) CentOS 7 (with VESA graphic driver) Ubuntu 15.10 (Intel graphic driver available) |
| 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 | 663,394hrs @ 25°C; 334,612 hrs @ 45°C; 193,307 hrs @ 60°C excluding accessories Calculation Model: Telcordia Issue 2, Method Case 3 Environment: GB, GC – Ground Benign, Controlled | |
| 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. |
|----------------------|-----------------|-------------|----------|---------|----------|-----|---------|---------|--------|---------------|-------------|
| SH960-CM236BS-1515M | 770-SH9604-D00G | E3-1515M v5 | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |
| SH960-QM170TS-6820EQ | 770-SH9604-A00G | i7-6820EQ | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Heat Spreader | -40 to 85°C |
| SH960-CM236BS-6100E | 770-SH9604-E00G | i3-6100E | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |
| SH960-CM236BS-3900E | 770-SH9604-F00G | G3900E | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |
| SH960-QM170BS-6440EQ | 770-SH9604-600G | i5-6440EQ | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |
| SH960-QM170BS-6820EQ | 770-SH9604-400G | i7-6820EQ | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |
| SH960-QM170BS-6822EQ | 770-SH9604-500G | i7-6822EQ | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |
| SH960-QM170BS-6442EQ | 770-SH9604-700G | i5-6442EQ | 2 SODIMM | VGA | LVDS | 1 | 4 | 8 | ATX/AT | Cooler | 0 to 60°C |

Note: Core i3 and Celeron are supported upon request with MOQ requirement.

Packing List

| | |
|---|---|
| • 1 SH960-CM236/QM170 board | |
| • 1 DVD | |
| • 1 Cooler (Height: 36.58mm) or 1 Heat spreader (Height: 11mm) | Standard : A71-111026-000G A71-011073-000G |

Optional Items

| | |
|--------------------------------|-----------------------------|
| • COM332-B carrier board kit | 770-CM3321-000G |
| • Heat spreader (Height: 11mm) | A71-011073-000G |
| • Cooler (Height: 45.3mm) | Wide-Temp : A71-111040-000G |

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