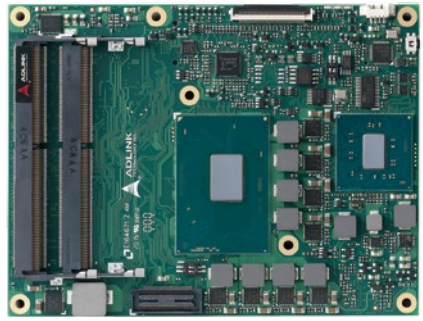
Express-SL/SLE

COM Express Basic Size Type 6 Module with 6th Gen Intel® Core™, Intel® Xeon® E3-1500 and Celeron® G3900E Processor

Features

New



- 6th Gen Intel® Core™, Intel® Xeon® E3-1500 and Celeron® G3900E Processor
- Up to 32 GB Dual Channel DDR4 at 1867/2133 MHz (supports both ECC and non-ECC memory)
- 3x DDI channels, 1x LVDS (or 4 lanes eDP), supports up to 3 independent displays
- 8x PCIe x1 (Gen3) and 1x PCIe x16 (Gen3)
- GbE, 4x SATA 6 Gb/s, 4x USB 3.0 and 4x USB 2.0
- Supports Smart Embedded Management Agent (SEMA®) functions
- Extreme Rugged operating temperature: -40°C to +85°C (build option)

Specifications

Core System

CPU	Mobile Intel® Xeon®, Core™ and Celeron® Processors - 14nm
	Xeon® E3-1515M v5 2.8/3.7GHz (Turbo), 0.35-1.0GHz (Graphics), 8MB, 45W(35W cTDP) (4C/GT4e) Xeon® E3-1505M v5 2.8/3.7GHz (Turbo), 0.35-1.0GHz (Graphics), 8M, 45/35W (cTDP) (4C/GT2) Xeon® E3-1505L v5 2.0/2.8GHz (Turbo), 0.35-1.0GHz (Graphics), 8M, 25W (4C/GT2) Core™ i7-6820EQ 2.8/3.5GHz (Turbo), 0.35-1.0GHz (Graphics), 8M, 45/35W (cTDP) (4C/GT2) Core™ i7-6822EQ 2.0/2.8GHz (Turbo), 0.35-1.0GHz (Graphics), 8M, 25W (4C/GT2) Core™ i5-6440EQ 2.7/3.4GHz (Turbo), 0.35-1.0GHz (Graphics), 6M, 45/35W (cTDP) (4C/GT2) Core™ i5-6442EQ 1.9/2.7GHz (Turbo), 0.35-1.0GHz (Graphics), 6M, 25W (4C/GT2) Core™ i3-6100E 2.7GHz, 0.35-0.95GHz (Graphics), 3M, 35W (2C/GT2) Core™ i3-6102E 1.9GHz, 0.35-0.95GHz (Graphics), 3M, 25W (2C/GT2) Celeron® G3900E 2.4GHz, 0.35-0.95GHz(Graphics), 2MB, 35W (2C/GT1) Celeron® G3902E 1.6GHz, 0.35-0.95GHz (Graphics), 2MB, 25W (2C/GT1)
	Supports: Intel® VT, Intel® TXT, Intel® SSE4.2, Intel® HT Technology, Intel® 64 Architecture, Execute Disable Bit, Intel® Turbo Boost Technology 2.0, Intel® AVX2, Intel® AES-NI, PCLMULQDQ Instruction, Intel® Secure Key and Intel® TSX. Note: Availability of the features may vary between processor SKUs.
Memory	Dual channel 1867/2133 MHz DDR4 memory up to 32GB in dual SODIMM sockets (ECC/non-ECC support dependent on selected CPU/PCH)
Embedded BIOS	AMI EFI with CMOS backup in 16MB SPI BIOS with Intel® AMT 11.0 support
Cache	8MB for Xeon® and Core™ i7, 6MB for Core™ i5, 3MB for Core™ i3, 2MB for Celeron®
PCH	CM236 (supports ECC memory, Intel® AMT) QM170 (supports non-ECC, Intel® AMT) HM170 (supports non-ECC, no Intel® AMT support)
Expansion Busses	PCIe x16 or 2 PCIe x8 or 1 PCIe x8 with 2 PCIe x4 (Gen3) 6 PCI Express x1 (Gen3); AB connector, Lanes 0/1/2/3/4/5
	2 PCI Express x2 (Gen3): CD connector, Lanes 6/7 LPC bus, SMBus (system) , I²C (user)
SEMA® Board Controller	Voltage/current monitoring, power sequence debug support, AT/ATX mode control, logistics and forensic information, flat panel control, general purpose I²C, failsafe BIOS (dual BIOS), watchdog timer and fan control
Debug Headers	40-pin flat cable connector for use with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, power testpoints, debug LEDs
	60-pin XDP header for ICE debug of CPU/chipset

Video

GPU Feature Support	Intel® Generation 9 LP Graphics Core Architecture, supporting 3 independent and simultaneous display combinations of DisplayPort/HDMI/LVDS or eDP outputs
	Hardware encode/transcode HD content (including HEVC) DirectX 12, DirectX 11.2, DirectX 11.1, DirectX 11, DirectX 10.1, DirectX 10, DirectX 9 support OpenGL 4.4/4.3 and ES 2.0 support OpenCL 2.1, 2.0/1.2 support
	Digital Display Interface DDI1/2/3 supporting DisplayPort/HDMI/DVI
LVDS	Single/dual channel 18/24-bit LVDS from eDP-to-LVDS IC
eDP	4 lane support optional, in place of LVDS

Audio

Chipset	Intel® HD Audio integrated in chipset
Audio Codec	located on carrier Express-BASE6 (ALC886 standard supported)

Ethernet

Intel® MAC/PHY	I219LM with AMT 11.0 support
Interface	10/100/1000 GbE connection

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product.
Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.

Specifications

I/O Interfaces

USB	4x USB v. 3.0 (USB 0,1,2,3) and 4x USB 2.0 (USB 4,5,6,7)
SATA	Four ports SATA 6Gb/s (SATA0,1,2,3)
Serial	2 UART ports with console redirection
GPIO	4 GPO and 4 GPI

Super I/O

	Supported on carrier if needed (standard support for W83627DHG-P)

TPM

Chipset	Atmel AT97SC3204
Type	TPM1.2/2.0 (TPM 2.0 release later)

Power

Standard Input	ATX = 12V±5% / 5Vsb ±5% or AT = 12V±5%
Wide Input	ATX = 8.5-20 V / 5Vsb ±5% or AT = 8.5 ~20V (Standard temp. only)
Management	ACPI 5.0 compliant, Smart Battery support
Power States	C1-C6, S0, S1, S3, S4, S5 , S5 ECO mode (Wake-on-USB S3/S4, WOL S3/S4/S5)
ECO mode	Supports deep S5 mode for power saving

Mechanical and Environmental

Form Factor	PICMG COM.0, Rev 2.1 Type 6
Dimension	Basic size: 125 mm x 95 mm
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to +85°C (build option)
Humidity	5-90% RH operating, non-condensing 5-95% RH storage (and operating with conformal coating)
Shock and Vibration	IEC 60068-2-64 and IEC-60068-2-27 MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D
HALT	Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

Operating Systems

Standard Support	Windows 10/8.1 64-bit, Windows 7 32/64-bit, Linux 64-bit, VxWorks (TBD)
Extended Support (BSP)	WES 7 32/64-bit, Linux 64-bit, VxWorks (TBD)

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product.
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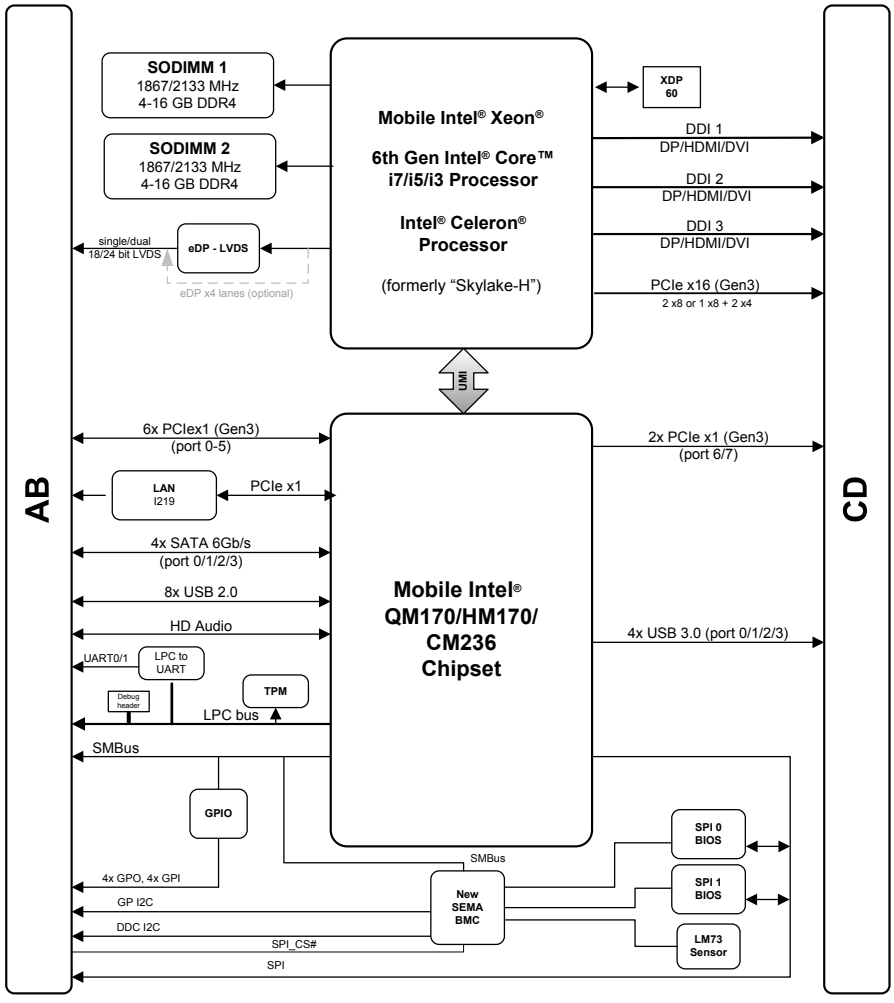
Functional Diagram



Ordering Information

Modules

Model Number	Description/Configuration
Express-SLE-E3-1515M v5	Basic COM Express Type 6 module with Intel® Xeon® E3-1515M v5 and GT4e level graphics, CM236 chipset, support ECC
Express-SLE-E3-1505M v5	Basic COM Express Type 6 module with Intel® Xeon® E3-1505M v5 and GT2 level graphics, CM236 chipset, support ECC
Express-SLE-E3-1505L v5	Basic COM Express Type 6 module with Intel® Xeon® E3-1505L v5 and GT2 level graphics, CM236 chipset, support ECC
Express-SL-i7-6820EQ	Basic COM Express Type 6 module with Intel® Core™ i7-6820EQ and GT2 level graphics, QM170 chipset
Express-SL-i7-6822EQ	Basic COM Express Type 6 module with Intel® Core™ i7-6822EQ, Celeron® G3900E, G3902E and Xeon® 1515M and GT2 level graphics, QM170 chipset
Express-SL-i5-6440EQ	Basic COM Express Type 6 module with Intel® Core™ i5-6440EQ and GT2 level graphics, QM170 chipset
Express-SL-i5-6442EQ	Basic COM Express Type 6 module with Intel® Core™ i5-6442EQ and GT2 level graphics, QM170 chipset
Express-SL-i3-6100E	Basic COM Express Type 6 module with Intel® Core™ i3-6100E and GT2 level graphics, HM170 chipset
Express-SL-i3-6102E	Basic COM Express Type 6 module with Intel® Core™ i3-6102E and GT2 level graphics, HM170 chipset
Express-SL-G3900E	Basic COM Express Type 6 module with Intel Celeron G3900E and GT1 level graphics, HM170 chipset
Express-SL-G3902E	Basic COM Express Type 6 module with Intel Celeron G3902E and GT1 level graphics, HM170 chipset

Accessories

Model Number	Description/Configuration
Heat Spreaders	
HTS-SL-B	Heatspreader for Express-SL with threaded standoffs for bottom mounting
HTS-SL-BT	Heatspreader for Express-SL with through hole stand-offs for top mounting
Passive Heatsinks	
THS-SL-BL	Low profile heatsink for Express-SL with threaded standoffs for bottom mounting
THS-SL-BT	Low profile heatsink for Express-SL with through hole standoffs for top mounting
THSH-SL-BL	High profile heatsink for Express-SL with threaded standoffs for bottom mounting
Active Heatsink	
THSF-SL-BL	High profile heatsink with fan for Express-SL with threaded standoffs for bottom mounting

Starter Kit

Model Number	Description/Configuration
COM Express Type 6 Starter Kit Plus	COM Express formfactor starter kit with Express-BASE6 board, power supply, and accessory kit