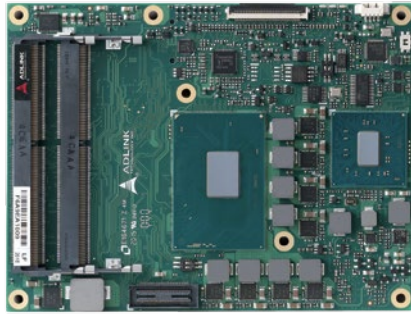


# Express-SL/SLE

COM Express Basic Size Type6 Module with 6th Gen Intel® Xeon®, Core™ and Celeron® Processors

**NEW**



## Features

- 6th Generation Intel® Xeon®, Core™ and Celeron® Processor with Intel® QM170, HM170 and CM236 Chipset
- 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 (opt.)

## Specifications

### Core System

CPU	Mobile 6th Generation Intel® Xeon® and Core™ Processors - 14nm (formerly "Skylake-H") 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. Dual channel 1867/2133 MHz DDR4 memory up to 32GB in dual SODIMM sockets (ECC/non-ECC support dependent on selected CPU/PCH) AMI EFI with CMOS backup in 16MB SPI BIOS with Intel® AMT 11.0 support
Memory	8MB for Xeon® and Core™ i7, 6MB for Core™ i5, 3MB for Core™ i3, 2MB for Celeron®
Embedded BIOS	CM236 (supports ECC memory, Intel® AMT) QM170 (supports non-ECC memory, Intel® AMT) HM170 (supports non-ECC memory, no Intel® AMT support)
Cache	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), I <sup>2</sup> C (user)
PCH	Supports : Voltage/current monitoring, power sequence debug support, AT/ATX mode control, logistics and forensic information, flat panel control, general purpose I <sup>2</sup> C, failsafe BIOS (dual BIOS), watchdog timer and fan control
Expansion Busses	40-pin multipurpose 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
SEMA Board Controller	
Debug Headers	

### 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
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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 Interface	I219LM with AMT 11.0 support 10/100/1000 GbE connection
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### 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

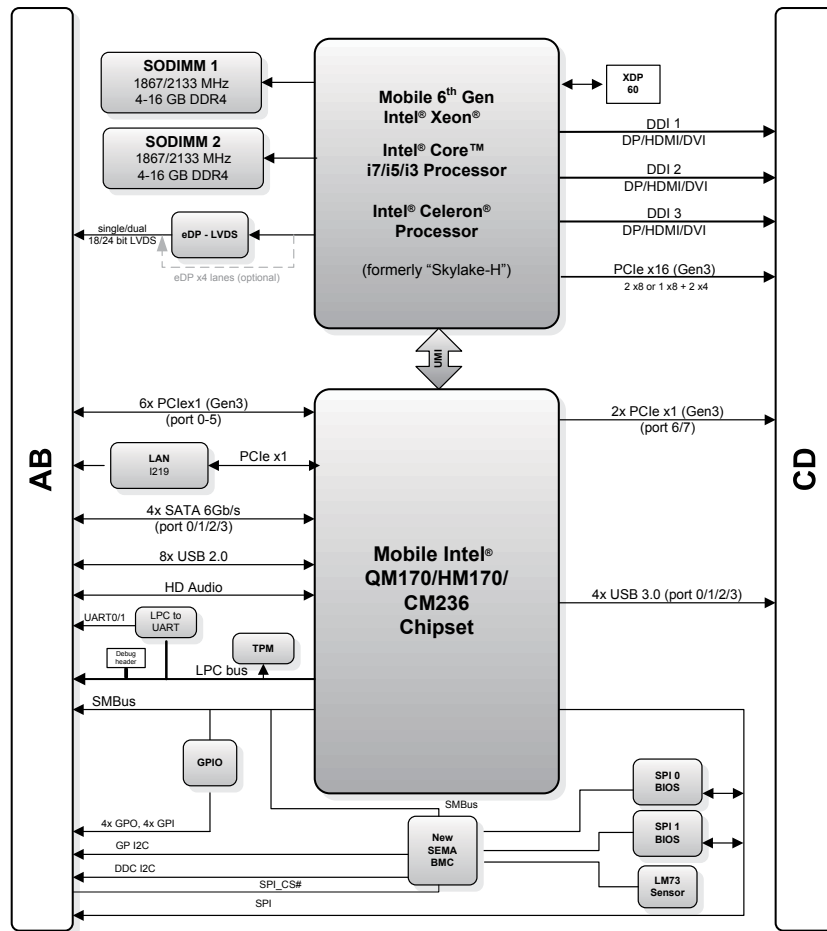
### Mechanical and Environmental

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 (optional)
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)

## Functional Diagram



## Ordering Information

### Modules

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

### Accessories

Model Number	Description/Configuration
<b>Heat Spreaders</b>	
HTS-SL-B	Heatspreader for Express-SL with threaded standoffs for bottom mounting
HTS-SL-BT	Heatspreader for Express-SL with through hole standoffs for top mounting
<b>Passive Heatsinks</b>	
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
<b>Active Heatsink</b>	
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	Starter kit for COM Express Type 6

Notes: All specifications are subject to change without further notice. V05  
 \* Part number not listed above might support as project base, please contact local sales