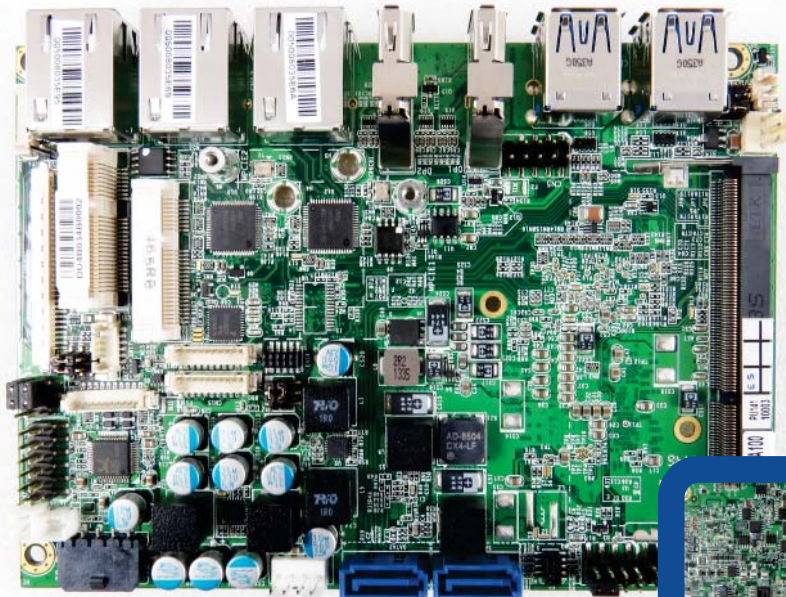# KEEX-510T Series

Intel® Embedded Compact Extended Form Factor
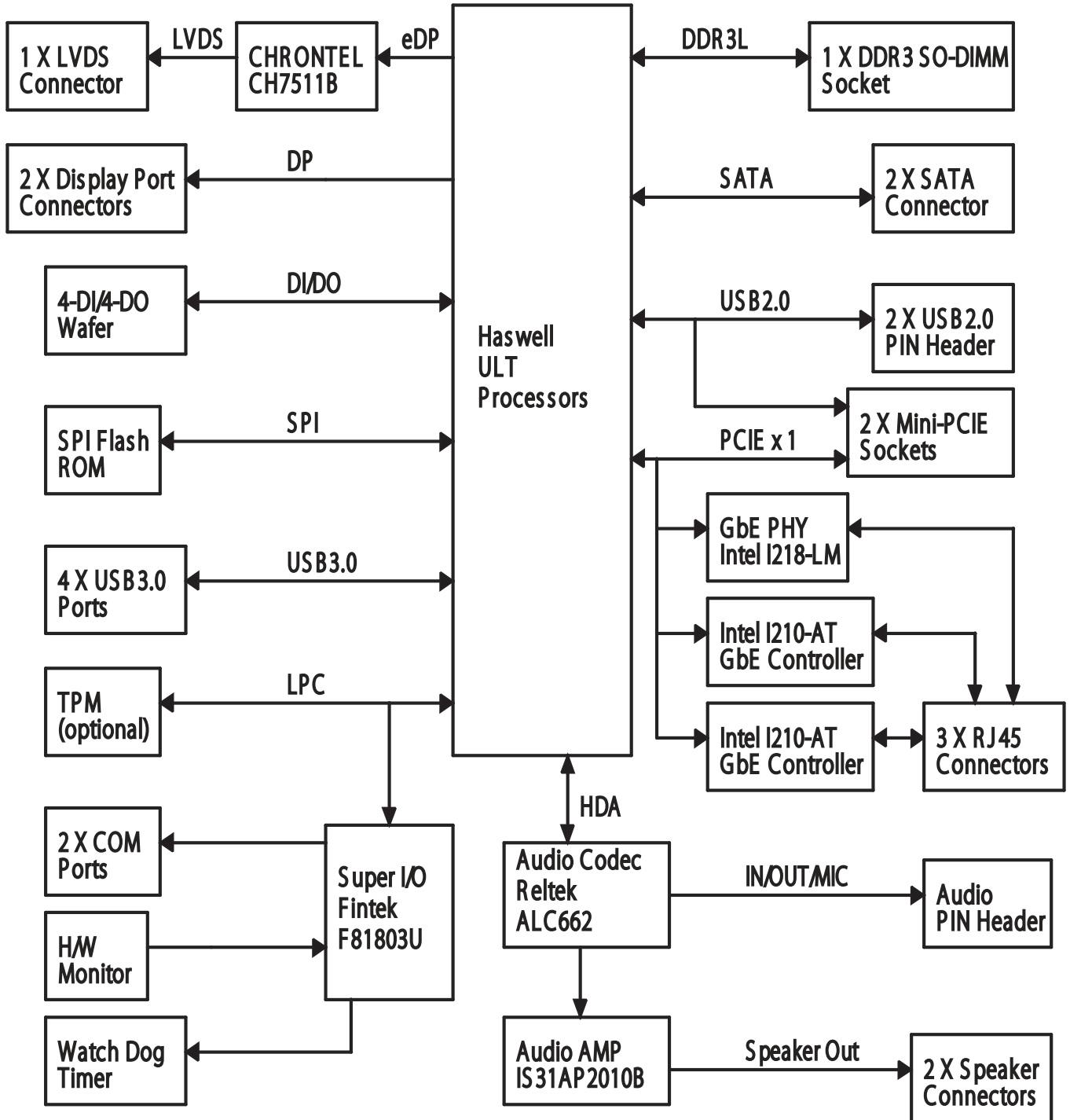with Intel® Haswell ULT Core™ Processors



- Intel® Haswell ULT Core™ Processors
- 1x DDR3L SO-DIMM Socket
- 2x DP, 1x 24-bit/2-ch LVDS
- 2x SATA, 1x mSATA
- 3x GbE, 4x USB3.0, 2xUSB2.0, 2x COM
- 2x mini-PCIe Sockets (1x wafer for SIM card support)
- 8-bit Digital I/O supported (4-bit input/4-bit output)
- Watchdog Timer, Hardware Monitor, TPM, iAMT
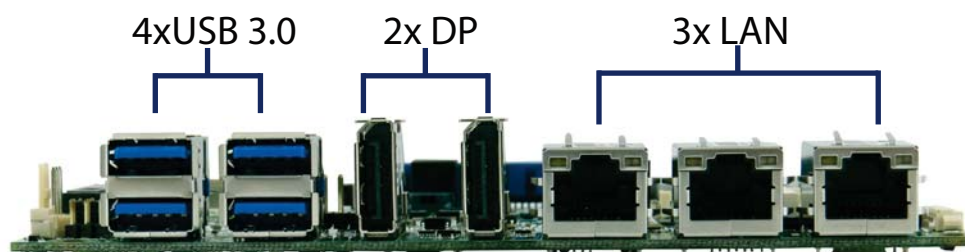- Wide operating temperature range from -20°C to 70°C

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## Block Diagram



```
1 X LVDS          ──LVDS──   CHRONTEL      ──eDP──
Connector                    CH7511B

2 X Display Port  ──DP──                                  Haswell
Connectors                                               ULT
                                                         Processors
4-DI/4-DO         ──DI/DO──
Wafer

SPI Flash         ──SPI──
ROM

4 X USB3.0        ──USB3.0──
Ports

TPM              ──LPC──
(optional)

2 X COM          Super I/O
Ports            Fintek
                 F81803U
H/W Monitor

Watch Dog Timer
```

Haswell ULT Processors connections:

- DDR3L → 1 X DDR3 SO-DIMM Socket
- SATA → 2 X SATA Connector
- USB2.0 → 2 X USB2.0 PIN Header
- PCIE x 1 → 2 X Mini-PCIE Sockets
- GbE PHY Intel I218-LM
- Intel I210-AT GbE Controller
- Intel I210-AT GbE Controller
- 3 X RJ45 Connectors
- HDA → Audio Codec Reltek ALC662
  - IN/OUT/MIC → Audio PIN Header
- Audio AMP IS31AP2010B → Speaker Out → 2 X Speaker Connectors

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## Technical Information

| CPU Support | |
|---|---|
| Intel® Haswell ULT Core™ i3-4010U Processor (KEEX-510A) | |
| Intel® Haswell ULT Core™ i5-4300U Processor (KEEX-510T) | |
| Intel® Haswell ULT Core™ i7-4650U Processor (KEEX-510B) | |

| Memory |
|---|
| 1x DDR3L SO-DIMM Socket |

| BIOS |
|---|
| AMI uEFI BIOS |
| 1x 128Mb SPI Flash ROM onboard |

| Display |
|---|
| 2x DP (on rear) |
| 1x 24-bit/2-ch LVDS |

| Peripheral Support |
|---|
| 2x SATA connectors |
| 1x mSATA Sockets (Mixed with mPCIe socket) |
| 2x wafers for COM port support (COM1 & COM2 support RS-232/422/485) |
| 2x USB 2.0 |
| 4x USB 3.0 type A Connectors (on rear) |
| 1x DIO (4-bit in and 4-bit out) |

| MSIC Support |
|---|
| 1x Header for Reset button, HDD LED and External Speaker |
| 1x Header for Power button, Power LED and SM bus |
| 1x Header for mPCIe activity LED |

| LAN |
|---|
| 2x RJ-45 Connectors for Dual GbE LAN (Intel I210-AT) |
| 1x RJ-45 Connectors (Intel I218-LM) |

| Audio |
|---|
| 1x header for Line-In, Line-Out and Mic-In |
| 2x Wafers for Stereo Speaker output |

| Power Connector |
|---|
| One 1x4-pin, pitch 3.0mm Wafer for +12VDC input |
| One 1x4-pin, pitch 2.5mm Wafer for HDD Power supply |
| One 1x7-pin, pitch 1.25mm Wafer for Panel Power supply |
| ATX/AT Mode Support |
| ACPI 3.0 support |

| Expansion |
|---|
| 2x mPCIe sockets |
| 1x wafer for SIM card support |

| Cooling |
|---|
| 1x Wafer for +12VDC CPU Smart FAN support |

| Watchdog Timer |
|---|
| Programable WDT to generate System reset event |

| Hardware Monitor |
|---|
| Voltage and System temperature monitoring |

| OS Support |
|---|
| Windows 7 / Windows 8 / Linux |

| Dimensions |
|---|
| Intel® ECX Form Factor (105 x 146 mm / 4.13" x 5.75") |

| Environmental Factors |
|---|
| Operation Temp: -20ºC - 70ºC |
| Storage Temp: -40ºC - 85ºC |
| Humidity: 0% - 95% |

| RTC |
|---|
| Processor intergrated RTC |

| Certification |
|---|
| CE, FCC Class A |

## KEEX-510T Series I/Os



4xUSB 3.0　　2x DP　　3x LAN

## Ordering Information

| Article | Part No. | Description |
|---|---|---|
| KEEX-510A | B3EX510A-000000T | ECX CPU Board, Intel® Haswell Core™ i3-4010U Processor, 1x DDR3L SODIMM, 3x GbE, 1x LVDS, 2x DP, 4x USB3.0, 2x USB2.0, 2x COM, without TPM & iAMT support |
| KEEX-510T | B3EX510T-010000T | ECX CPU Board, Intel® Haswell Core™ i5-4300U Processor, 1x DDR3L SODIMM, 3x GbE, 1x LVDS, 2x DP, 4x USB3.0, 2x USB2.0, 2x COM, with TPM & iAMT support |
| KEEX-510B | B3EX510B-030000T | ECX CPU Board, Intel® Haswell Core™ i7-4650U Processor, 1x DDR3L SODIMM, 3x GbE, 1x LVDS, 2x DP, 4x USB3.0, 2x USB2.0, 2x COM, with TPM & iAMT support |

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