



Preliminary

## 3.5" Single Board Computer with 13th Gen Intel® Core™ U-Series Processors

- Time Coordinated Computing / Time Sensitive Networking for real-time control
- 8K UHD video output support
- Additional Rear I/O expansion via board-to-board connector
- Industrial-grade operating temperature range for extreme environmental conditions
- Wide power input voltage range for more application scenarios

## 3.5" Single Board Computer with 13th Gen Intel® Core™ U-Series Processors

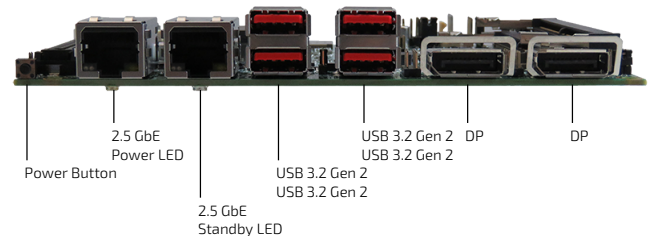
3.5"-SBC-RPL is a 3.5" single board computer powered by 13th Gen Intel® Core™ U-Series processors. Besides great performance improvement in graphics, it features 2.5 GbE with TSN (Time Sensitive Networking) capability and enhanced TPM 2.0 security / encryption support, ideal for a variety of IoT applications, such as

industrial automation, retail, smart city and healthcare.

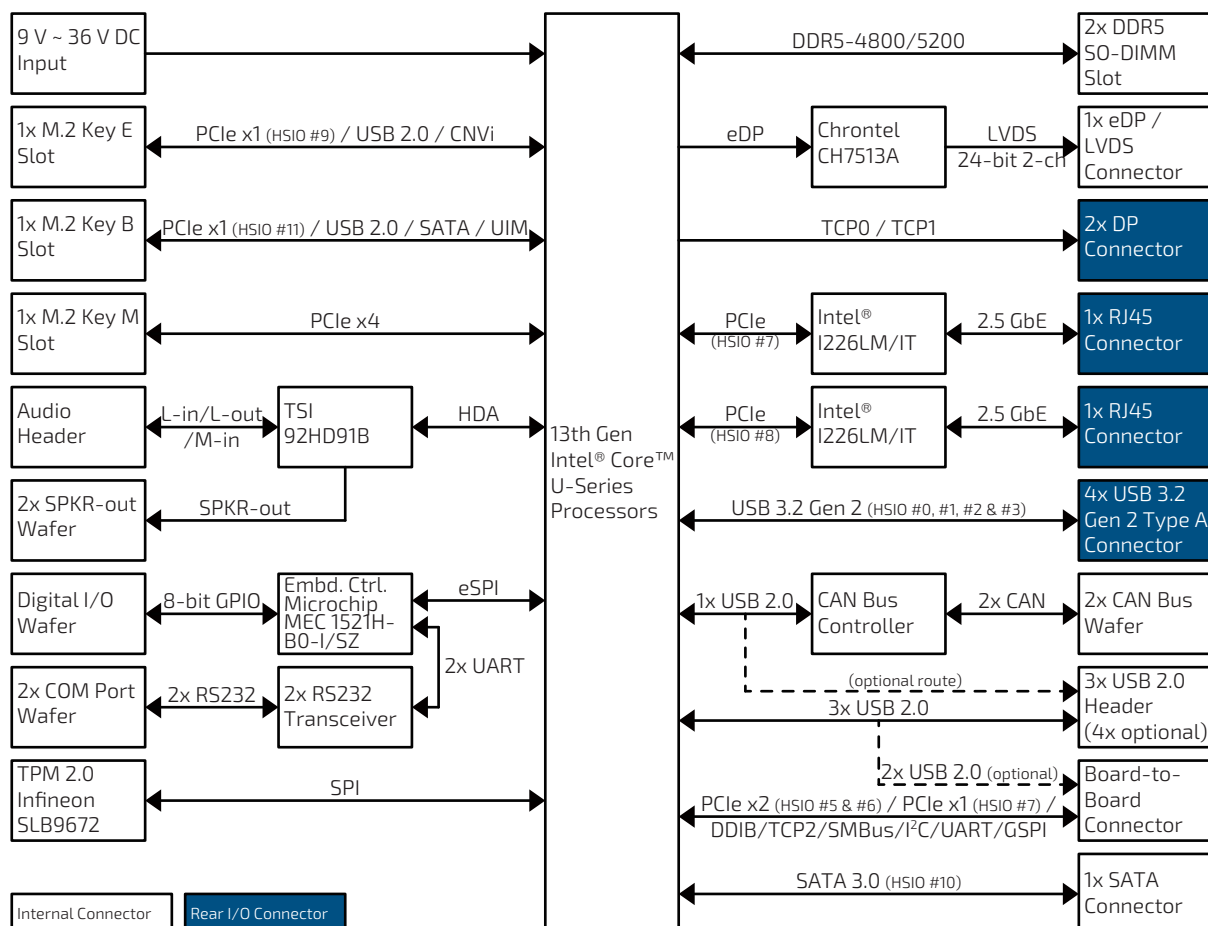
The board supports an extended board-to-board connector, providing additional I/O port expansion to fulfill possible application requirements.

- 13th Gen Intel® Core™ U-Series processors (TDP up to 28 W)
- 2x DDR5 SO-DIMM memory socket
- 2x DP, 1x eDP / LVDS for video output
- 2x 2.5 GbE LAN for Ethernet
- 4x USB 3.2 Gen 2, 3x USB 2.0 for USB device connection
- 2x RS232 (Tx / Rx) for serial devices
- 4x DI, 4x DO for device / signal control
- 2x CAN Bus for industrial networking
- 1x SATA 3.0 for storage device
- 1x M.2 Key B for SSD, WWAN or other expansion
- 1x M.2 Key E for WLAN, Bluetooth or other expansion
- 1x M.2 Key M for SSD
- 1x board-to-board connector for additional real I/Os

- TPM 2.0 support
- Wide power input voltage range support: DC 9 V ~ 36 V
- Extreme temperature model available: -40 °C ~ 85 °C



## Block Diagram



|                             |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM                      | PROCESSOR                                                      | Intel® Core™ i5-1345UE<br>(10C, 12M, 1.4 / 4.6 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP)<br>Intel® Core™ i3-1315UE<br>(6C, 10M, 1.2 / 4.5 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP)<br>Intel® U300E<br>(5C, 8M, 1.1 / 4.3 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP)<br>Intel® Core™ i7-1365URE<br>(10C, 12M, 1.7 / 4.9 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP)<br>Intel® Core™ i5-1345URE<br>(10C, 12M, 1.4 / 4.6 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP)<br>2x DDR5 5200 SO-DIMM |
|                             | MEMORY                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| VIDEO                       | GRAPHICS<br>DISPLAY INTERFACE                                  | Intel® Iris® X® Graphics<br>1x eDP (4096 x 2304 @ 120 Hz) / LVDS (24-bit, 2-ch, 1920 x 1200 @ 60 Hz)<br>2x DP (7680 x 4320 @ 60 Hz, on rear)<br>Quadruple Display (more display I/Os supported via board-to-board connector)                                                                                                                                                                                                                                                |
|                             | MULTIPLE DISPLAY                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| AUDIO                       | AUDIO CODEC<br>AUDIO INTERFACE                                 | TSI 92HD91B<br>1x Speaker-out (Stereo, 3 W, by header)<br>1x Line-in (by header)<br>1x Line-out (by header)<br>1x Mic-in (by header)                                                                                                                                                                                                                                                                                                                                        |
| NETWORK CONNECTION          | ETHERNET                                                       | 2x 2.5 GbE LAN (RJ45 on rear, Intel® I226-LM/IT, TSN support*)                                                                                                                                                                                                                                                                                                                                                                                                              |
| PERIPHERAL CONNECTION       | USB                                                            | 4x USB 3.2 Gen 2 (Type A on rear)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                             | SERIAL PORT                                                    | 3x USB 2.0 (by header, +1 in case of no CAN Bus, -2 in case of 2x USB 2.0 in B2B)                                                                                                                                                                                                                                                                                                                                                                                           |
|                             | OTHER I/Os                                                     | 2x RS232 (Tx / Rx only)<br>4x DI (by header)<br>4x DO (by header)<br>2x CAN Bus (by header)                                                                                                                                                                                                                                                                                                                                                                                 |
| STORAGE & EXPANSION         | SATA<br>M.2                                                    | 1x SATA 3.0<br>1x M.2 Key B (Type 2242/3042/3052/2280, w/ PCIe x1 / USB 2.0 / SATA / UIM)<br>1x M.2 Key E (Type 2230, w/ PCIe x1 / USB 2.0 / CNVi)<br>1x M.2 Key M (Type 2280, w/ PCIe x4)                                                                                                                                                                                                                                                                                  |
|                             | SIM CARD HOLDER<br>BOARD-TO-BOARD CONNECTOR                    | 1x SIM Card Holder (by header)<br>1x DDI<br>1x TCP<br>1x PCIe x2<br>1x PCIe x1<br>1x SM Bus<br>1x I²C<br>1x UART<br>1x GSPI<br>2x USB 2.0 (optional, trade off w/ USB 2.0 header)                                                                                                                                                                                                                                                                                           |
| POWER                       | INPUT VOLTAGE<br>CONNECTOR                                     | DC 9 V ~ 36 V<br>1x4-pin pitch 3.0 mm Wafer                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| FIRMWARE                    | BIOS<br>WATCHDOG<br>H/W MONITOR<br>REAL TIME CLOCK<br>SECURITY | AMI uEFI BIOS w/ 256 Mb SPI Flash<br>Programmable WDT to generate system reset event<br>Voltages, Temperatures<br>Processor integrated RTC<br>TPM 2.0 Support (Infineon SLB 9672)                                                                                                                                                                                                                                                                                           |
| SYSTEM CONTROL & MONITORING | FP HEADER<br>BUTTON, SWITCH & INDICATOR                        | 1x Header for Reset Button, HDD LED & External Speaker<br>1x Header for Power Button, Power LED & SM Bus<br>1x Standby LED (Yellow, on rear)<br>1x Power LED (Green, on rear)<br>1x Power Button (on rear)                                                                                                                                                                                                                                                                  |
| COOLING                     | FAN                                                            | 1x Wafer for Smart Fan                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SOFTWARE                    | OS SUPPORT                                                     | Windows 11, Windows 10, Linux                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| MECHANICAL                  | DIMENSION (L x W)                                              | ECX (146 mm x 105 mm / 5.75" x 4.13")                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ENVIRONMENTAL               | OPERATING TEMPERATURE                                          | 0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard)<br>-20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended)<br>-40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)                                                                                                                                                                                                                                                                                                                                        |
|                             | STORAGE TEMPERATURE                                            | -20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard)<br>-40 °C ~ 85 °C / -40 °F ~ 185 °F (Extended)<br>-55 °C ~ 85 °C / -67 °F ~ 185 °F (Extreme)                                                                                                                                                                                                                                                                                                                                     |
|                             | HUMIDITY                                                       | 0 % ~ 95 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| COMPLIANCE                  | EMC & SAFETY                                                   | CE Class B, FCC Class B, UR (UL Recognized)                                                                                                                                                                                                                                                                                                                                                                                                                                 |

\* TSN support only for models with Core™ processors

| ARTICLE                      | DESCRIPTION                                                    |
|------------------------------|----------------------------------------------------------------|
| 3.5"-SBC-RPL-0-i7-1365URE-XT | Intel® Core™ i7-1365URE, Operating temperature: -40 °C ~ 85 °C |
| 3.5"-SBC-RPL-1-i5-1345URE-XT | Intel® Core™ i5-1345URE, Operating temperature: -40 °C ~ 85 °C |
| 3.5"-SBC-RPL-2-i3-1315UE     | Intel® Core™ i3-1315UE, Operating temperature: 0 °C ~ 60 °C    |
| 3.5"-SBC-RPL-3-U300E         | Intel® U300E, Operating temperature: 0 °C ~ 60 °C              |
| 3.5"-SBC-RPL-4-i5-1345UE     | Intel® Core™ i5-1345UE, Operating temperature: 0 °C ~ 60 °C    |

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