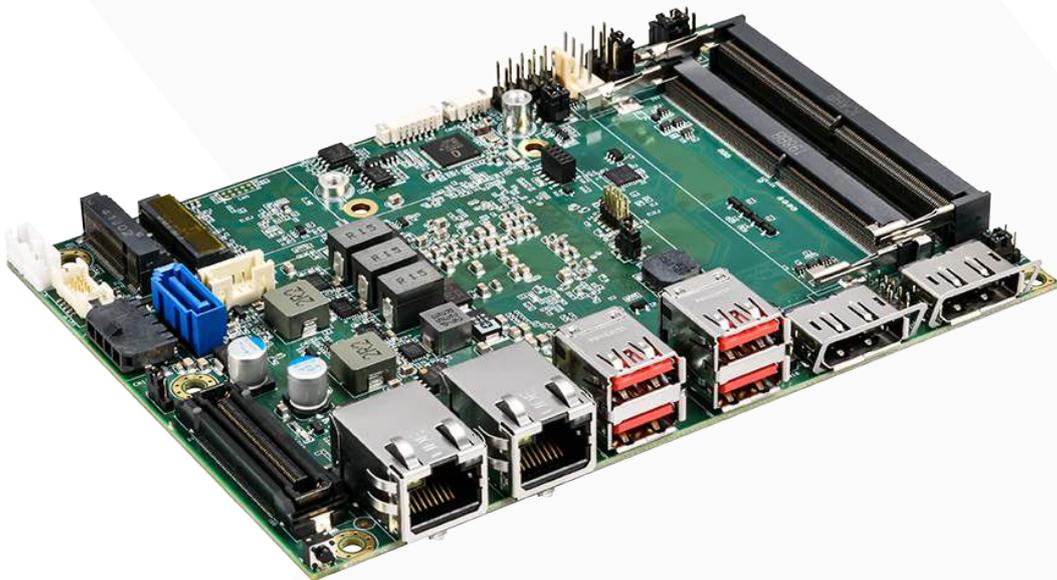# 3.5"-SBC-RPL

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

❯ Two DisplayPort connectors on rear I/O panel with 8K UHD video output support

❯ Time Coordinated Computing / Time Sensitive Networking for real-time control

❯ 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

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The Power of IoT

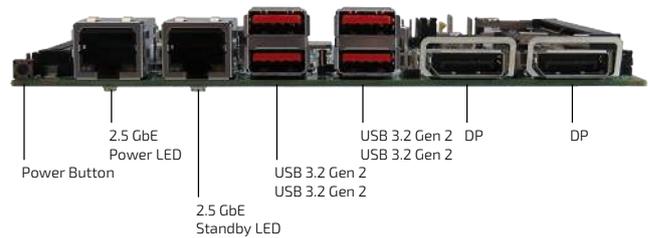## 3.5" Single Board Computer with 13th Gen Intel® Core™ U-Series Processors

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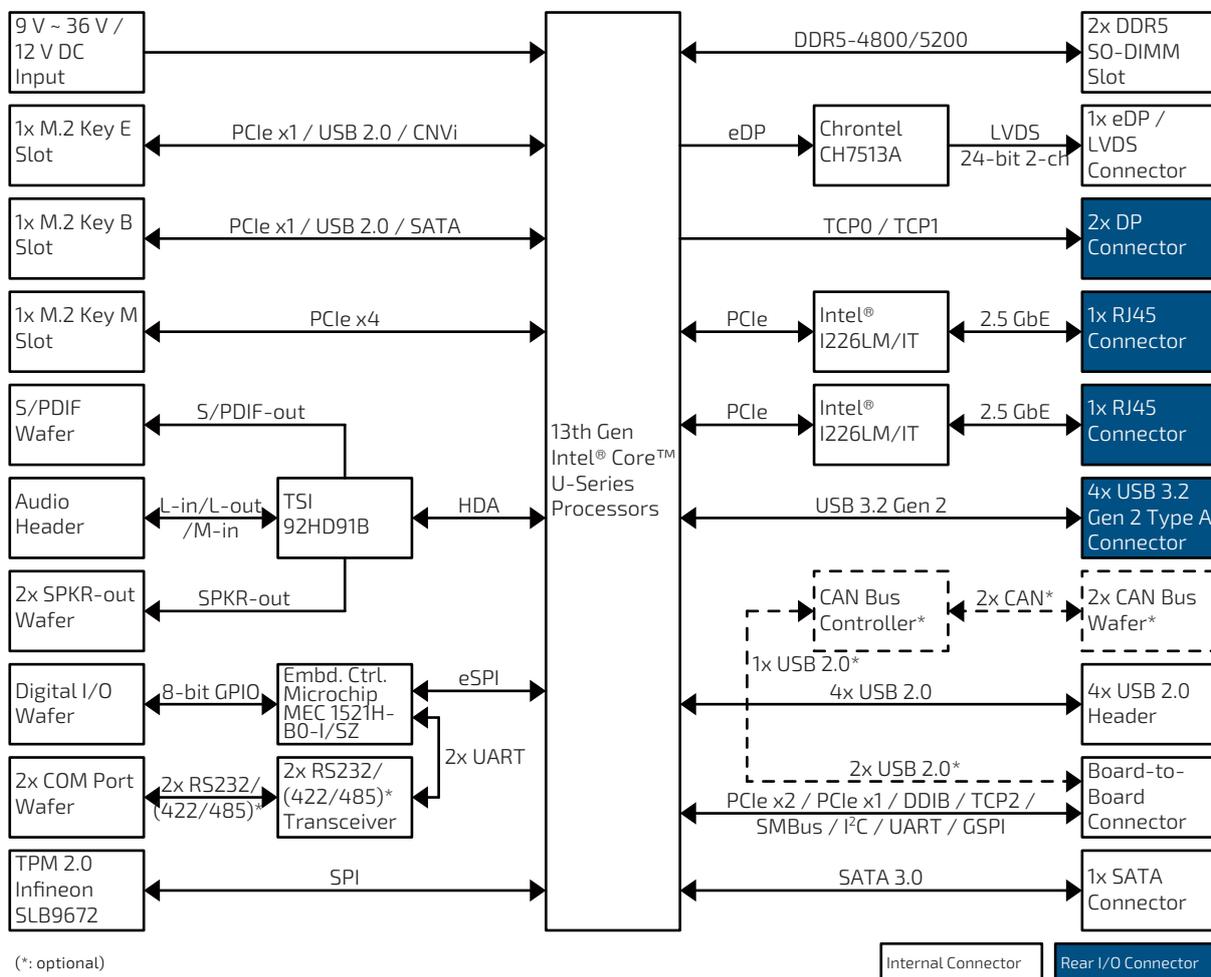
The board supports an extended board-to-board connector, providing additional I/O port expansion to fulfill possible application requirements.

- 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, 4x USB 2.0 for USB device connection
- 2x RS232 or 2x RS232/422/485 for serial device connection
- 4x DI, 4x DO for device / signal control
- 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 available: DC 9 V ~ 36 V
- Extreme temperature model available: -40 °C ~ 85 °C

Power Button
2.5 GbE Power LED
2.5 GbE Standby LED
USB 3.2 Gen 2
USB 3.2 Gen 2
USB 3.2 Gen 2
USB 3.2 Gen 2
DP
DP

Block Diagram

| 9 V ~ 36 V / 12 V DC Input | | | | 2x DDR5 SO-DIMM Slot |

| 1x M.2 Key E Slot | PCIe x1 / USB 2.0 / CNVi | eDP | Chrontel CH7513A | LVDS 24-bit 2-ch | 1x eDP / LVDS Connector |

| 1x M.2 Key B Slot | PCIe x1 / USB 2.0 / SATA | TCP0 / TCP1 | 2x DP Connector |

| 1x M.2 Key M Slot | PCIe x4 | PCIe | Intel® I226LM/IT | 2.5 GbE | 1x RJ45 Connector |

DDR5-4800/5200

S/PDIF Wafer — S/PDIF-out

Audio Header — L-in/L-out /M-in — TSI 92HD91B — HDA

13th Gen Intel® Core™ U-Series Processors

PCIe — Intel® I226LM/IT — 2.5 GbE — 1x RJ45 Connector

USB 3.2 Gen 2 — 4x USB 3.2 Gen 2 Type A Connector

2x SPKR-out Wafer — SPKR-out

CAN Bus Controller* — 2x CAN* — 2x CAN Bus Wafer*

1x USB 2.0*

Digital I/O Wafer — 8-bit GPIO — Embd. Ctrl. Microchip MEC 1521H-B0-I/SZ — eSPI

4x USB 2.0 — 4x USB 2.0 Header

2x COM Port Wafer — 2x RS232/(422/485)* — 2x RS232/(422/485)* Transceiver — 2x UART

2x USB 2.0* — Board-to-Board Connector

PCIe x2 / PCIe x1 / DDIB / TCP2 / SMBus / I²C / UART / GSPI

TPM 2.0 Infineon SLB9672 — SPI — SATA 3.0 — 1x SATA Connector

(*: optional)

Internal Connector   Rear I/O Connector

SYSTEM	PROCESSOR	Intel® Core™ i7-1365UE / i7-1365URE (10C, 12M, 1.7 / 4.9 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP) Intel® Core™ i5-1345UE / i5-1345URE (10C, 12M, 1.4 / 4.6 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP) Intel® Core™ i3-1315UE / i3-1315URE (6C, 10M, 1.2 / 4.5 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP) Intel® U300E (5C, 8M, 1.1 / 4.3 GHz, FCBGA1744, 12 W ← 15 W → 28 W TDP)
	MEMORY	2x DDR5 5200 SO-DIMM up to 96 GByte
VIDEO	GRAPHICS DISPLAY INTERFACE MULTIPLE DISPLAY	Intel® Iris® Xᵉ Graphics 1x eDP (4096 x 2304 @ 120 Hz) / LVDS (24-bit, 2-ch, 1920 x 1200 @ 60 Hz) 2x DP (7680 x 4320 @ 60 Hz, on rear) Quadruple Display (more display I/Os supported via board-to-board connector)
AUDIO	AUDIO CODEC AUDIO INTERFACE	TSI 92HD91B 1x Speaker-out (Stereo, 3 W, by header) 1x Line-in (by header) 1x Line-out (by header) 1x Mic-in (by header) 1x S/PDIF Out (by header)
NETWORK CONNECTION	ETHERNET	2x 2.5 GbE LAN (RJ45 on rear, Intel® I226-LM/IT, TSN support*)
PERIPHERAL CONNECTION	USB SERIAL PORT OTHER I/Os	4x USB 3.2 Gen 2 (Type A on rear) 4x USB 2.0 (by header, -1 in case of 2x CAN Bus, -2 in case of 2x USB 2.0 in B2B) 2x RS232 (def.) / RS232/422/485 (opt.) (by header, Tx/Rx only for RS232 signal) 4x DI (by header) 4x DO (by header) 2x CAN Bus (optional, by header, trade off 1x USB 2.0 header)
STORAGE & EXPANSION	SATA M.2 SIM CARD HOLDER BOARD-TO-BOARD CONNECTOR	1x SATA 3.0 1x M.2 Key B (Type 2242/3042/3052/2280, w/ PCIe x1 / USB 2.0 / SATA / UIM) 1x M.2 Key E (Type 2230, w/ PCIe x1 / USB 2.0 / CNVi) 1x M.2 Key M (Type 2280, w/ PCIe x4) 1x SIM Card Holder (by header) 1x DDI 1x TCP 1x PCIe x2 1x PCIe x1 1x SM Bus 1x I²C 1x UART 1x GSPI 2x USB 2.0 (optional, trade off 2x USB 2.0 header)
POWER	INPUT VOLTAGE CONNECTOR	DC 9 V ~ 36 V (Configuration 1) DC 12 V (Configuration 2) 1x4-pin pitch 3.0 mm Wafer
FIRMWARE	BIOS WATCHDOG H/W MONITOR REAL TIME CLOCK SECURITY	AMI uEFI BIOS w/ 256 Mb SPI Flash Programmable WDT to generate system reset event Voltages, Temperatures Processor integrated RTC TPM 2.0 Support (Infineon SLB 9672)
SYSTEM CONTROL & MONITORING	FP HEADER BUTTON, SWITCH & INDICATOR	1x Header for Reset Button, HDD LED & External Speaker 1x Header for Power Button, Power LED & SM Bus 1x Standby LED (Yellow, on rear) 1x Power LED (Green, on rear) 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 STORAGE TEMPERATURE HUMIDITY	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme) -20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard) -55 °C ~ 85 °C / -67 °F ~ 185 °F (Extreme) 0 % ~ 95 %
COMPLIANCE	EMC SAFETY	CE Class B, FCC Class B, ICES Class B, UKCA Class B UR (UL Recognized), CSA

* TSN support only for models with Core™ URE Series processors

ARTICLE	ORDERING CODE*	DESCRIPTION		
	EMEA / AMERICA	PROCESSOR	OP. TEMP.	DC IN
3.5"-SBC-RPL-0-i7-1365URE-XT	43020-XT-2006	Intel® Core™ i7-1365URE	-40 °C ~ 85 °C	9 V ~ 36 V
3.5"-SBC-RPL-1-i5-1345URE-XT	43020-XT-2004	Intel® Core™ i5-1345URE	-40 °C ~ 85 °C	9 V ~ 36 V
3.5"-SBC-RPL-2-i3-1315UE	43020-ST-2001	Intel® Core™ i3-1315UE	0 °C ~ 60 °C	9 V ~ 36 V
3.5"-SBC-RPL-3-U300E	43020-ST-2000	Intel® U300E	0 °C ~ 60 °C	9 V ~ 36 V
3.5"-SBC-RPL-4-i5-1345UE	43020-ST-2003	Intel® Core™ i5-1345UE	0 °C ~ 60 °C	9 V ~ 36 V
3.5"-SBC-RPL-5-i3-1315URE-XT	43020-XT-2002	Intel® Core™ i3-1315URE	-40 °C ~ 85 °C	9 V ~ 36 V
3.5"-SBC-RPL-6-i7-1365UE	43020-ST-2005	Intel® Core™ i7-1365UE	0 °C ~ 60 °C	9 V ~ 36 V

* For ordering code for APAC, contact your local account manager.

Accessories

NO.	ARTICLE	ORDERING CODE		DESCRIPTION
		EMEA / AMERICA	APAC	
1	DC IN CABLE*	1075-3152	0C5020000001920L	1x4P 3.0 pitch to EHDP-2P 5.08 pitch + JST 110 1x2P, L = 230 mm
2	SATA CABLE	1064-2431	0C5020000004240L	1x7P connector with lock, pitch = 1.27 mm, L = 460 mm
3	SATA POWER CABLE	1064-2430	0C5020000004230L	1x4P 2.0 mm pitch to SATA 1x15P 1.27 mm pitch, L = 460 mm
4	COM PORT CABLE	1064-2427	0C5020000005130L	1x10P 1.25 mm pitch to DB9 connector, L = 350 mm
5	DIO CABLE	1065-3137	0C5020000003360L	D-SUB-9P (Female) to MX51021-10P 1x10P 1.25 mm pitch, L = 200 mm
6	USB CABLE (2 PORT)	1069-7893	0C5020003000010L	2x5P 2.0 mm pitch to 2x USB 2.0 Type A female w/ bracket, L = 27 cm
7	AUDIO CABLE	1070-1245	0C5020000005840L	2x5P 1.25 mm pitch to 3x 3.5 mm ear phone jack, L = 400 mm
8	ADAPTER	1074-9217	0I0902SPU151A02L	Input: AC 100 V ~ 240 V, output: DC 24 V @ 6.25 A Max. 150 W
9	SCREW COPPER PILLAR KIT	TBD	0ZHK35SBC0000002	2x 39.6 mm pillar, 6x 19 mm pillar, 5x 5 mm screw
10	COOLER	1067-5535	0H05XX000002270L	Al heatsink w/ pad, 4-wire PWM controlled fan, Max. 15 W TDP
11	HEATSINK	TBD	0ZHK35SRPL000001	Al +Cu heatsink w/ pad, 4x M3x6L screw
12	I/O CARD (3.5"-eIO-GPA-0)	1069-6159	B35EGPA0-001001T	2x DP, 2x 2.5 GbE, 1x UART, 1x I²C, 1x SMBus, 1x GSPI, 1x DC In, 0 ~ 60 °C
13	I/O CARD (3.5"-eIO-GPA-1)	1069-6922	B35EGPA0-011001T	2x DP, 2x 2.5 GbE, 1x UART, 1x I²C, 1x SMBus, 1x GSPI, 0 ~ 60 °C
14	I/O CARD (3.5"-eIO-GPA-2-XT)	1073-9682	B35EGPAI-021000T	2x DP, 2x 2.5 GbE, 1x UART, 1x I²C, 1x SMBus, 1x GSPI, 1x DC In, -40~85°C

(*: standard supplied accessories for single-piece box packing)

Starter Kits

ARTICLE	ORDERING CODE		DESCRIPTION
	EMEA / AMERICA	APAC	
STARTER KIT FOR 3.5"-SBC-RPL (ACTIVE)	1074-8826	0ZHK35SRPL000003	Including above accessories table No. 1 ~ 8 & 10
STARTER KIT FOR 3.5"-SBC-RPL (PASSIVE)	1075-2197	0ZHK35SRPL000002	Including above accessories table No. 1 ~ 8, 9 & 11

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The Power of IoT