

# 3.5" Single Board Computer

3.5"-SBC Family



## Low-power Small Form Factor

Ideal to be integrated into a variety of compact fanless systems

## Unique Expansion Connector

Easy to expand additional connectors & functions

## Commercial & Industrial Operating Temperature

For all environmental conditions

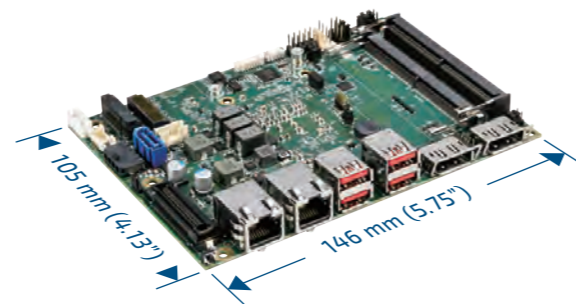


# 3.5" Single Board Computer

Kontron offers a range of 3.5" single board computers of the high quality, long-term availability and competitiveness to fulfill most different requirements for various applications from diverse vertical markets like Industrial Automation, POS/POI, KIOSK, Digital Signage, Medical, Casino Gaming, Video Surveillance or Transportation.

Kontron's 3.5" single board computers support latest processors and utilize advanced technology components. They are designed for continuous operation (24/7) under harsh operating conditions and on high system load. Most of them come up with three different operating temperature variants: commercial (0 °C ~ 60 °C), extended commercial (-20 °C~ 70 °C) and industrial (-40 °C ~ 85 °C), to cover various environmental conditions of different application scenarios.

Kontron's 3.5" single board computers ensure an extended long-term availability of up to 10 years from the release date, based on embedded key components. In addition, a corresponding portfolio of I/O expansion boards (3.5"-eIO Series) and related 3rd party accessories is also available. Furthermore, Kontron offers many value-added services like detailed documentation, a professional life-cycle management and customizing tools.



## 3.5"-SBC Family

3.5" Single Board Computer

- Same mechanical design gen-over-gen
- CE / FCC Class B compliant and UR certification
- Full speed USB and Ethernet

# 3.5"-eIO Series

The comprehensive 3.5" single board computer portfolio is rounded out by a series of I/O and function expansion boards, named 3.5"-eIO.

The 3.5"-eIO expansion boards are designed for Kontron's new generation of 3.5" single board computers with a board-to-board connector soldered on them and can be used to stack additional rear I/O connectors, internal connectors, and expansion slots on the single board computer.

This off-the-shelf expansion board can help system designers reduce time-to-market and development costs. It also minimizes technical risks and creates a more reliable system.



3.5"-eIO-GPA-0



3.5"-eIO-GPA-1



3.5"-eIO-GPA-2-XT

I/O Panel	DP	2	2	2
	2.5 GbE	2	2	2
	DC In	1	0	1
Operating Temp.	Max.	60 °C / 140 °F	60 °C / 140 °F	85 °C / 185 °F
	Min.	0 °C / 32 °F	0 °C / 32 °F	-40 °C / -40 °F



3.5"-eIO-GPA-3



3.5"-eIO-GPA-4-XT



3.5"-eIO-4ETH

I/O Panel	DP	0	0	0
	2.5 GbE	2	2	4
	DC In	0	0	0
Operating Temp.	Max.	60 °C / 140 °F	85 °C / 185 °F	85 °C / 185 °F
	Min.	0 °C / 32 °F	-40 °C / -40 °F	-40 °C / -40 °F



## About Kontron

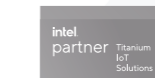
Kontron is a global leader in IoT/Embedded Computing Technology (ECT) and offers individual solutions in the areas of Internet of Things (IoT) and Industry 4.0 through a combined portfolio of hardware, software and services. With its standard and customized products based on highly reliable state-of-the-art technologies, Kontron provides secure and innovative applications for a wide variety of industries. As a result, customers benefit from accelerated time-to-market, lower total cost of ownership, extended product lifecycles and the best fully integrated applications.

For more information, please visit: [www.kontron.com](http://www.kontron.com)

## About the Intel® Partner Alliance

From modular components to market-ready systems, Intel and the over 1,000+ global member companies of the Intel® Partner Alliance provide scalable, interoperable solutions that accelerate deployment of intelligent devices and end-to-end analytics. Close collaboration with Intel and each other enables Alliance members to innovate with the latest IoT technologies, helping developers deliver first-in-market solutions.

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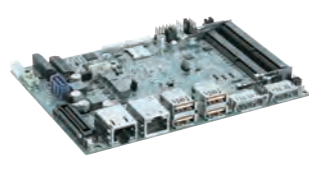
# 3.5"-SBC Family

## 3.5" Single Board Computer



coming soon

3.5"-SBC-RPL



3.5"-SBC-TGL



3.5"-SBC-WLU



3.5"-SBC-KBL



3.5"-SBC-AML/ADN



3.5"-SBC-EKL



3.5"-SBC-APL V2.0



3.5"-SBC-VR1000



project base

3.5"-SBC-i1200



project base

3.5"-SBC-R39

<b>System</b>	<b>Processor</b>	<b>Intel® Core™</b> i7-1365UE (10C, 12M, 1.7/4.9 GHz, 12~15~28 W) i5-1345UE (10C, 12M, 1.4/4.6 GHz, 12~15~28 W) i3-1315UE (6C, 10M, 1.2/4.5 GHz, 12~15~28 W) i7-1365GRE (4C, 12M, 1.8/4.4 GHz, 12~15~28 W) i5-1345GRE (4C, 8M, 1.5/4.1 GHz, 12~15~28 W) i3-1315GRE (6C, 10M, 1.2/4.5 GHz, 12~15~28 W) <b>Intel®</b> U300E (5C, 8M, 1.1/4.3 GHz, 12~15~28 W)
	<b>Memory</b>	2x DDR5 5200 SO-DIMM
<b>Video</b>	<b>Graphics Controller</b>	Intel® Iris® Xe Graphics
	<b>eDP / LVDS / eDP+LVDS Combo / DSI</b>	0 / 0 / 1 (4K@120 Hz, 24bit 2ch 2K@60Hz) / 0
	<b>DP / HDMI</b>	2 (8K@60Hz on rear) / 0
	<b>CSI</b>	0
	<b>HDMI-In</b>	0
<b>Audio</b>	<b>Speaker-Out</b>	1 (Stereo)
	<b>Line-In / Line-Out / Mic-In</b>	1 / 1 / 1
	<b>S/PDIF-Out</b>	0
<b>Network Connection</b>	<b>Ethernet Controller</b>	Intel® I226-LM/IT
	<b>2.5 GbE / GbE</b>	2 (on rear, TSN support*) / 0
	<b>Wireless</b>	-
<b>Peripheral Connection</b>	<b>USB Type-C</b>	0
	<b>USB 3.2 Gen 2 / 3.2 Gen 1 / 2.0 / OTG</b>	4 (on rear) / 0 / 3 / 0
	<b>RS232/422/485 / RS232 / UART</b>	0 / 2 (Tx / Rx only) / 0
	<b>DIO / DI / DO</b>	0 / 4 / 4
	<b>CAN / SPI / I²C</b>	2 / 0 / 0
<b>Storage &amp; Expansion</b>	<b>eMMC</b>	-
	<b>SATA</b>	1 (v3.0)
	<b>Micro SD Cage</b>	0
	<b>mSATA / mPCIe / Combo</b>	0 / 0 / 0
	<b>M.2 Key B</b>	1 (PCIe x1 / USB 2.0 / SATA 3.0 / UIM)
	<b>M.2 Key E</b>	1 (PCIe x1 / USB 2.0 / CNV)
	<b>M.2 Key M</b>	1 (PCIe x4)
	<b>Board-to-board Connector</b>	1 (DDI/TCR/PCIe x2/PCIe x1/SM Bus/PC/UART/GSPI)
<b>Power</b>	<b>Input Voltage</b>	DC 9 V ~ 36 V
<b>Security</b>	<b>Security</b>	dTPM 2.0
<b>Software</b>	<b>OS Support</b>	Windows 11, Windows 10, Linux
<b>Environmental</b>	<b>Operating Temperature</b>	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)
<b>Compliance</b>	<b>EMC &amp; Safety</b>	CE Class B, FCC Class B, UR (UL Recognized)

\* TSN support only for Core™

<b>Intel® Core™</b> i7-1185G7E (4C, 12M, 1.8/4.4 GHz, 12~15~28 W) i5-1145G7E (4C, 8M, 1.5/4.1 GHz, 12~15~28 W) i3-1115G4E (2C, 6M, 2.2/3.9 GHz, 12~15~28 W) i7-1185GRE (4C, 12M, 1.8/4.4 GHz, 12~15~28 W) i5-1145GRE (4C, 8M, 1.5/4.1 GHz, 12~15~28 W) <b>Intel® Celeron®</b> 4305UE (2C, 2M, 2.0 GHz, 15 W)	<b>Intel® Core™</b> i7-1185G7E (4C, 12M, 1.8/4.4 GHz, 12~15~28 W) i5-1145G7E (4C, 8M, 1.5/4.1 GHz, 12~15~28 W) i3-1115G4E (2C, 6M, 2.2/3.9 GHz, 12~15~28 W) <b>Intel® Celeron®</b> 4305UE (2C, 2M, 2.0 GHz, 15 W)	<b>Intel® Core™</b> i7-7600U (2C, 4M, 2.8/3.9 GHz, 15 W) i5-7300U (2C, 3M, 2.6/3.5 GHz, 15 W) i3-7100U (2C, 3M, 2.4 GHz, 15 W) <b>Intel® Celeron®</b> 3965U (2C, 2M, 2.2 GHz, 15 W)
2x DDR4 3200 SO-DIMM	2x DDR4 3200 SO-DIMM	2x DDR4 2400 SO-DIMM (Core™) 2x DDR4 2133 SO-DIMM (Celeron®)
Intel® Iris® X <sup>e</sup> Graphics (Core™ i7 / i5) Intel® UHD Graphics (Core™ i3 / Celeron®)	Intel® Iris® X <sup>e</sup> Graphics (Core™ i7 / i5) Intel® UHD Graphics (Core™ i3 / Celeron®)	Intel® UHD Graphics 620 (Core™) Intel® HD Graphics 610 (Celeron®)
0 / 1 (24bit 2ch 2K@60Hz) / 0 / 0	0 / 1 (24bit 2ch 2K@60Hz) / 0 / 0	0 / 1 (24bit 2ch 2K@60Hz) / 0 / 0
2 (8K@60 Hz* on rear) / 0	2 (8K@60 Hz* on rear) / 0	2 (4K@60Hz on rear) / 1 (v2.0, 4K@60Hz on rear)
0	0	0
0	0	0
1 (Stereo)	1 (Stereo)	1 (Stereo)
1 / 1 / 1	1 / 1 / 1	1 / 1 / 1
0	0	0
Intel® I226-LM/IT & Intel® I210-AT/IT	Intel® I226-LM/IT & Intel® I210-AT/IT	Intel® I219-LM & Intel® I210-AT
1 (on rear, TSN support**) / 1 (on rear)	1 (on rear, TSN support**) / 1 (on rear)	0 / 2 (on rear)
-	-	-
0	0	0
4 (on rear) / 0 / 4 / 0	4 (on rear) / 0 / 4 / 0	0 / 4 (on rear) / 2 / 0
2 / 0 / 0	2 / 0 / 0	2 / 0 / 0
8 / 0 / 0	8 / 0 / 0	8 / 0 / 0
0 / 0 / 0	0 / 0 / 0	0 / 0 / 0
-	-	-
1 (v3.0)	1 (v3.0)	1 (v3.0, Celeron®) 2 (v3.0, others)
0	0	0
0 / 0 / 0	0 / 0 / 0	0 / 1 (PCIe x1 / USB 2.0 / UIM) / 0
1 (PCIe x1 / USB 2.0 / SATA 3.0 / UIM)	1 (PCIe x1 / USB 2.0 / SATA 3.0 / UIM)	1 (PCIe x1 / USB 2.0 / UIM)
1 (PCIe x1 / USB 2.0 / CNV)	1 (PCIe x1 / USB 2.0 / CNV)	0
1 (PCIe x4)	1 (PCIe x4)	0
0	0	0
1 (2xDDI/PCIex2/PCIex1/SM Bus/PC/UART/GSPI)	1 (2xDDI/PCIex2/PCIex1/SM Bus/PC/UART/GSPI)	1 (PCIex1/SM Bus/PC/UART/GSPI)
DC 12 V	DC 12 V	DC 12 V
dTPM 2.0	dTPM 2.0	dTPM 2.0 (Core™ i7 / i5)
Windows 10, Linux	Windows 10, Linux	Windows 10, Linux
0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)
CE Class B, FCC Class B	CE Class B, FCC Class B	CE Class B, FCC Class B

\* 2x 8K for Core™ i7 / i5, 1x 8K for Core™ i3 / Celeron®

\*\* TSN support only for Core™ GRE Series

<b>Intel® Atom®</b> x7211RE (2C, 6M, 1.0/3.2 GHz, 6 W) x7433RE (4C, 6M, 1.5/3.4 GHz, 9 W) <b>Intel® Core™</b> i3-N305 (8C, 6M, 1.8/3.8 GHz, 9~15 W) <b>Intel® Celeron®</b> J6413 (4C, 1.5M, 1.8/3.0 GHz, 10 W)	<b>Intel® Atom®</b> x6211E (2C, 1.5M, 1.3/3.0 GHz, 6 W) x6212RE (2C, 1.5M, 1.2 GHz, 6 W) x6425RE (4C, 1.5M, 1.9 GHz, 12 W) <b>Intel® Celeron®</b> J6413 (4C, 1.5M, 1.8/3.0 GHz, 10 W)	<b>Intel® Atom®</b> x7-E3950 (4C, 2M, 1.6/2.0 GHz, 12 W) x5-E3940 (4C, 2M, 1.6/1.8 GHz, 9.5 W) x5-E3930 (2C, 2M, 1.3/1.8 GHz, 6.5 W) <b>Intel® Pentium®</b> N4200 (4C, 2M, 1.1/2.5 GHz, 6 W) <b>Intel® Celeron®</b> J3455 (4C, 2M, 1.5/2.3 GHz, 10 W) N3350 (2C, 2M, 1.1/2.4 GHz, 6 W)
1x DDR5 4800 SO-DIMM	2x DDR4 3200 SO-DIMM	2x DDR3L 1867 SO-DIMM
Intel® UHD Graphics Gen12	Intel® UHD Graphics Gen11	Intel® HD Graphics 505 (Atom® x7, Pentium®) Intel® HD Graphics 500 (Atom® x5, Celeron®)
0 / 1 (24bit 2ch 2K@60Hz) / 0 / 0	0 / 1 (24bit 2ch 2K@60Hz) / 0 / 0	0 / 1 (18/24bit 1/2ch 2K@60Hz) / 0 / 0
2 (4K@60Hz on rear) / 0	2 (4K@60Hz on rear) / 0	1 (4K@60Hz on rear) / 1 (v1.4, 4K@30 Hz on rear)
0	0	0
0	0	0
1 (Stereo)	1 (Stereo)	1 (Stereo)
1 / 1 / 1	1 / 1 / 1	1 / 1 / 1 (standard & extended temperature model) 0 / 0 / 0 (extreme temperature model)
1	0	0
Intel® I226-LM/IT	Intel® I226-LM/IT	Intel® I210-AT
2 (on rear, TSN support*) / 0	2 (on rear, TSN support*) / 0	0 / 2 (on rear)
-	-	-
1 (on rear, v3.2 G2 w/ DP & PD 5 V / 3 A)	0	0
2 (on rear) / 0 / 3 (1x on rear) / 0	2 (on rear) / 0 / 6 (2x on rear) / 0	0 / 4 (on rear) / 2 (default) / 0 2 (on rear, R1000) / 3 (3.5"-SBC-APL-6-E3950) / 0
2 / 2 (Tx / Rx only) / 0	2 / 0 / 0	2 / 4 / 0
0 / 4 / 4	8 / 0 / 0	8 / 0 / 0
0 / 0 / 0	2 (w/ Intel® PSE) / 1 (GP-SPI, w/ Intel® PSE) / 1	0 / 0 / 0
-	-	-
1 (v3.0)	1 (v3.0)	1 (v3.0)
0	0	1 (on front)
0 / 0 / 0	0 / 0 / 0	0 / 1 (PCIe x1 / USB 2.0 / UIM) / 0
1 (PCIe x1 / USB 2.0 / UIM)	1 (PCIe x1 / USB 2.0 / UIM)	1 (USB 2.0 / SATA 3.0 / PCIe x1 / UIM, default) 1 (SATA 3.0 / PCIe x1 / UIM, 3.5"-SBC-APL-6-E3950)
1 (PCIe x1 / USB 2.0 / CNV)	1 (PCIe x1 / USB 2.0 / SIO / UART / I²C)	0
1 (SATA 3.0 default) / PCIe x1 (optional)	1 (SATA 3.0)	0
1 (PCIex1/SM Bus/PC/UART/GSPI)	1 (2x PCIe2/SM Bus/PC/UART/GSPI)	0
DC 9 V ~ 36 V	DC 12 V	DC 12 V
dTPM 2.0	dTPM 2.0	dTPM 2.0 (optional)
Windows 10, Linux	Windows 10, Linux	Windows 10, Linux
0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)
CE Class B, FCC Class B, UR (UL Recognized)	CE Class B, FCC Class B, UR (UL Recognized)	CE Class B, FCC Class B

\* TSN support only for Atom®

\* TSN support only for Atom® RE Series

<b>AMD Ryzen™</b> V1605B (4C, 4M, 2.0/3.6 GHz, 12~15~25 W) V1202B (2C, 4M, 2.3/3.2 GHz, 12~15~25 W) R1606G (2C, 4M, 2.6/3.5 GHz, 12~15~25 W) R1505G (2C, 4M, 2.4/3.3 GHz, 12~15~25 W) R1305G (2C, 4M, 1.5/2.8 GHz, 8~10 W)	<b>MediaTek® Genio</b> 1200 (4C Cortex-A78 2.2GHz + 4C A55 2.0GHz, 3.1 W)	<b>Rockchip</b> RK3399 (2C Cortex®-A72 + 4C A53 up to 1.8 GHz) RK3399K (2C Cortex®-A72 + 4C A53 up to 2.0 GHz)
2x DDR4 2400 SO-DIMM	4 GByte / 8 GByte LPDDR4X	2 GByte / 4 GByte LPDDR4
AMD Radeon™ Vega 8 (V1605B) AMD Radeon™ Vega 3 (V1202B & R1000)	ARM® Mali-G57 MP5	Mali-T864
0 / 1 (18/24bit 2ch 2K@60Hz) / 0 / 0	0 / 1 (24bit 2ch 2K@60Hz) / 0 / 1 (4K@60Hz)	1 (4K@60Hz) / 1 (24bit 2ch 2K@60Hz) / 0 / 0
1 (4K@60Hz on rear) / 1 (v2.0, 4K@60Hz on rear)	1 (4K@60Hz on front) / 0	1 (4K@60Hz on front) / 1 (v2.0, 4K@60Hz on front)
0	3 (48MP / 16MP+16MP @30fps)	-
0	1 (4K@60Hz on front)	-
1 (Stereo)	0	1 (Stereo)
1 / 1 / 1	0 / 1 / 1 (CTIA type on front)	1 / 1 / 1
0	0	0
Intel® I210-AT & Intel® I211-AT	Intel® I226IT & Realtek RTL8211FD	Realtek RTL8211F + Realtek RTL8153B
0 / 2 (on rear)	1 (on front) / 1 (on front)	0 / 2 (on front)
-	-	Wi-Fi + Bluetooth (AMP&K AP6236)
0	0	0
4 (on rear, V1000) / 0 / 4 (V1000) / 0 2 (on rear, R1000) / 0 / 6 (2x on rear, R1000) / 0	0 / 1 (on front) / 4 (2x on front) / 0	0 / 2 (on front) / 3 (1x on front) / 1 (on front)
2 / 2 / 0	2 / 2 / 1 (debug support)	0 / 2 (Tx / Rx only) / 0
8 / 0 / 0	8 / 0 / 0	8 / 0 / 0
0 / 0 / 0	0 / 0 / 1 (for touch control)	0 / 0 / 0
-	32 GByte	16 GByte or 32 GByte
0	0	0
0	1 (on rear)	1
0 / 1 (PCIe x1 / USB 2.0 / UIM) / 0	0 / 0 / 0	0 / 1 (PCIe x1 / USB 2.0) / 0
0	1 (USB 2.0 / USB 3.2 / UIM)	1 (USB 3.2 / UIM)
0	1 (PCIe x1 / USB 2.0)	1 (PCIe x1 / USB 2.0)
0	1 (PCIe x2)	0
0	1 (eDP/HDMI/PCIex2/I²C/UART/SPIM)	0
DC 12 V	DC 12 V	DC 13 V ~ 30 V (Configuration 1) DC 12 V (Configuration 2)
dTPM 2.0	dTPM 2.0 (optional)	SHA-based CryptoAuthentication
Windows 10, Linux	Linux, Android	Linux, Android
0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)	0 °C ~ 60 °C / 32 °F ~ 140 °F (standard)
CE Class B, FCC Class B	CE Class B, FCC Class B	CE Class A, FCC Class A