

3.5"-SBC-KBL

4K ULTRA HD SUPPORT



3.5" SINGLE BOARD COMPUTER WITH 7TH GEN INTEL® CORE™ / CELERON® U-SERIES PROCESSORS

- ▶ 1x LVDS, 1x HDMI 2.0, 1x DP for display output
- ▶ 2x GbE LAN for Ethernet
- ▶ 4x USB 3.0, 2x USB 2.0, 2x RS232/422/485, 1x 8-bit DIO for peripherals
- ▶ 2x SATA 3.0 for storage
- ▶ 1x mPCIe, 1x M.2 for expansion

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3.5"-SBC-KBL is a 3.5" single board computer based on 7th Generation Intel® Core™ / Celeron® U-Series Processors, providing system integrators with a high performance upgrade option.

Three valuable features which distinguishes the 3.5"-SBC-KBL from its counterparts are:

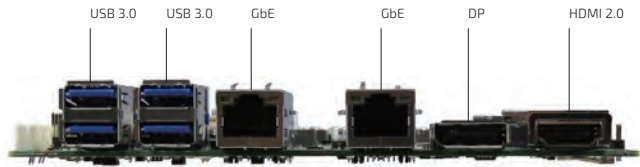
- ▶ **Faster read and write speeds:**
2x SATA 3.0 doubles the read and write speeds.

- ▶ **Supporting 4K UHD resolutions:**
Intel® HD Graphics 620 / 610 integrated GPU + 1x DP + 1x HDMI 2.0 supporting 4K Ultra HD resolutions.

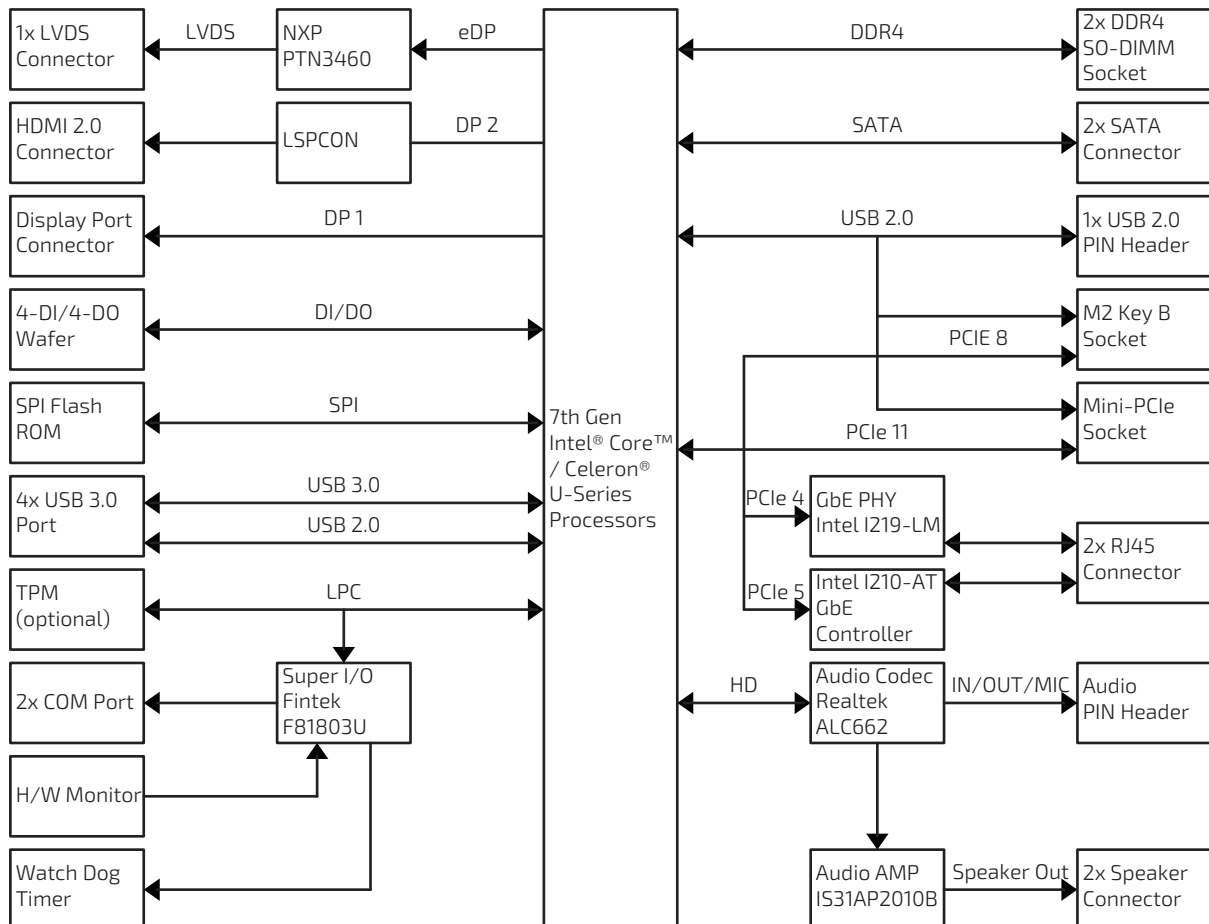
- ▶ **Multi-functional integration:**
1x M.2 (Key B) provides more expansion possibilities, such as USB, WWAN (3G, 4G, ...), GNSS (GPS ...) and SSDs.

▶ PRODUCT HIGHLIGHTS

- ▶ 7th Generation Intel® Core™ / Celeron® U-Series Processors
- ▶ 2x DDR4 SO-DIMM memory socket
- ▶ 1x LVDS, 1x DP, 1x HDMI 2.0 for triple display support
- ▶ 2x GbE LAN for Ethernet
- ▶ 4x USB 3.0, 2x USB 2.0 for USB device connection
- ▶ 2x RS232/422/485 for serial device connection
- ▶ 8-bit DIO for device / signal control
- ▶ 2x SATA 3.0 for storage
- ▶ 1x mPCIe, 1x M.2 Key B for expansion
- ▶ Extended temperature model available: -20 °C~ 70 °C



▶ BLOCK DIAGRAM



TECHNICAL INFORMATION

SYSTEM	PROCESSOR	Intel® Core™ i7-7600U (Dual Core, 4M Cache, up to 3.90 GHz, FCBGA1356, 15 W TDP) Intel® Core™ i5-7300U (Dual Core, 3M Cache, up to 3.50 GHz, FCBGA1356, 15 W TDP) Intel® Core™ i3-7100U (Dual Core, 3M Cache, 2.40 GHz, FCBGA1356, 15 W TDP) Intel® Celeron® 3965U (Dual Core, 2M Cache, 2.20 GHz, FCBGA1356, 15 W TDP)
	MEMORY	2x DDR4 2133 SO-DIMM up to 32 GByte
VIDEO	GRAPHICS	Intel® HD Graphics 620 (Core™ processor) Intel® HD Graphics 610 (Celeron® processor)
	DISPLAY INTERFACE	1x LVDS (24-bit, 2-ch) 1x HDMI2.0 (on rear, 3840 x 2160 @ 60 Hz) 1x DP (on rear, 4096 x 2304 @ 60 Hz)
	MULTIPLE DISPLAY	Triple Display
AUDIO	AUDIO CODEC AUDIO INTERFACE	Realtek ALC662 2x Speaker-out (3 W) 1x Line-in (by header) 1x Line-out (by header) 1x Mic-in (by header)
NETWORK CONNECTION	ETHERNET	2x GbE LAN (RJ45 on rear, 1x Intel® I219-LM, 1x Intel® I210-AT)
PERIPHERAL CONNECTION	USB	4x USB 3.0 (Type A on rear) 2x USB 2.0 (by header)
	SERIAL PORT OTHER I/Os	2x RS232/422/485 (by header, w/ auto flow control for RS485) 1x 8-bit DIO (by header)
STORAGE & EXPANSION		2x SATA 3.0 1x mPCIe (full size) 1x M.2 Key B Socket (mixed w/ USB 2.0 or SATA) 1x SIM Card Cage (by wafer, switchable for mPCIe or M.2)
POWER	CONNECTOR INPUT VOLTAGE	1x4-pin Wafer (Straight & Right Angle dual-footprint) DC 12 V
FIRMWARE	BIOS WATCHDOG H/W MONITOR REAL TIME CLOCK TPM iAMT	AMI uEFI BIOS w/ 128 Mb SPI Flash Programmable WDT to generate system reset event Voltages, Temperatures Processor integrated RTC Supported by default for Core™ i7 / i5, optional for Core™ i3 / Celeron® (Infineon SLB 9665 TPM 2.0) Supported for Core™ i7 / i5 models
SYSTEM CONTROL & MONITORING	FRONT PANEL HEADER	1x Header for Reset button, HDD LED & External Speaker 1x Header for Power button, Power LED & SM bus 1x Header for mPCIe activity LED 1x Header for M.2 activity LED
COOLING	FAN	1x header for System Fan
SOFTWARE	OS SUPPORT	Windows 10
MECHANICAL	DIMENSION (L x W)	ECX (146 mm x 105 mm / 5.75" x 4.13")
ENVIRONMENTAL	OPERATION TEMPERATURE	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard)
	STORAGE TEMPERATURE	-20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended)
	HUMIDITY	-20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extended) 0 % ~ 95 %
CERTIFICATION	EMC & SAFETY	CE Class B, FCC Class B

► ORDERING INFORMATION

ARTICLE	DESCRIPTION
3.5"-SBC-KBL-7600U	Intel® Core™ i7-7600U, w/ TPM, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-KBL-7300U	Intel® Core™ i5-7300U, w/ TPM, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-KBL-7100U (w/ TPM)	Intel® Core™ i3-7100U, w/ TPM, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-KBL-7100U (w/o TPM)	Intel® Core™ i3-7100U, w/o TPM, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-KBL-3965U (w/ TPM)	Intel® Celeron® 3965U, w/ TPM, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-KBL-3965U (w/o TPM)	Intel® Celeron® 3965U, w/o TPM, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-KBL-7600U-ET	Intel® Core™ i7-7600U, w/ TPM, Operating Temperature: -20 °C ~ 70 °C
3.5"-SBC-KBL-7300U-ET	Intel® Core™ i5-7300U, w/ TPM, Operating Temperature: -20 °C ~ 70 °C

ACCESSORIES

ARTICLE	PART NO.	DESCRIPTION
COM PORT CABLE*	OC5020000005130L	10-pin pitch = 1.25 mm to DB-9 connector, L = 35 cm
DIO CABLE*	OC5020000003360L	D-SUB-9P (Female) to MX51021-10P 1x10P 1.25 pitch, L = 20 cm
USB CABLE (2 PORT)*	OC5040000000110L	2.54 mm 2x5P to 2x USB connectors, L = 34 cm
SATA POWER CABLE*	OC5020000005260L	PH 2.54 HSG 1x4P to SATA 1x15P Pitch: 1.27 mm, L = 46 cm
SATA CABLE*	OC5020000004240L	7-pin connector with lock, L = 46 cm
AUDIO CABLE*	OC5020000002050L	WL6008H 2x6P 2.54 pitch to EAR phone jack x3 pitch: 3.5 mm, L = 35 cm
DC IN CABLE	OC5020000004220L	2.5 DC Jack w/ 2 mm nut, 0.5 mm washer to H-300F-XX 1x4P 3.0 pitch, L = 30 cm
3G MINI SIM CARD HOLDER KIT*	OZHK12003GSIM003	W/ SIM card holder x1, 3G SIM card cable x1

(* = Optional)