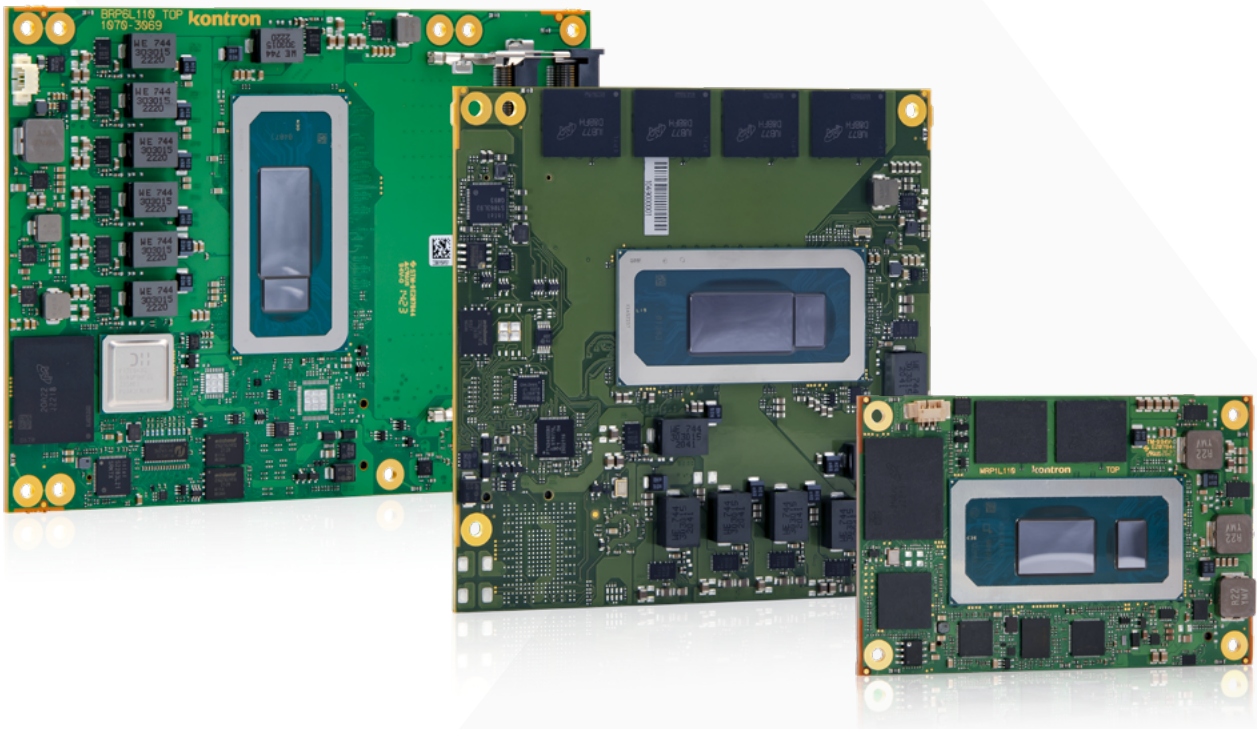


Standard Computer-On-Modules

COM Express® Type 6/7/10



COM Express® basic, compact and for the first time Intel® Core™ Technology on a mini form factor

- COM Express® basic
- COM Express® compact
- COM Express® mini
- COM Express® Carrier

COM Express® basic

Tech Specs At-a-Glance



NEW



NEW



COM Express® basic

COMe-bMT6

COMe-bRP6 (E2)

COMe-bTL6 (E2)

COMe-bV26

COMe-bCL6/-bCL6R (E2S)

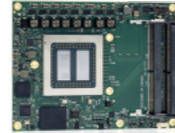
COMPLIANCE	COM Express® basic Pin-out Type 6	COM Express® basic, Pin-out Type 6	COM Express® basic, Pin-out Type 6	COM Express® basic, Pin-out Type 6	COM Express® basic, Pin-out Type 6
DIMENSIONS (H x W)	125 x 95 mm	125 x 95 mm	125 x 95 mm	125 x 95 mm	125 x 95 mm
CPU	Intel® Core™ Ultra Meteor Lake-H/U family: H-Series Intel® Core™ Ultra 7-155H, 6x 1.4/4.8 GHz, 28/20 W Intel® Core™ Ultra 5-125H, 4x 1.2/4.5GHz, 28/20 W U-Series Intel® Core™ Ultra 7-155U, 2x 1.7/4.8 GHz, 15/12 W Intel® Core™ Ultra 5-125U, 2x 1.3/4.3GHz, 15/12 W	Intel® 13th Generation Core™ family: H-Series Embedded Intel® Core™ i7-13800HE, 6x 2.5/5.0 GHz, 45/35 W Intel® Core™ i5-13600HE, 4x 2.7/4.8 GHz, 45/35 W Intel® Core™ i3-13300HE, 4x 2.1/4.6 GHz, 45/35 W H-Series Industrial Intel® Core™ i7-13800HRE, 6x 2.5/5.0 GHz, 45/35 W Intel® Core™ i5-13600HRE, 4x 2.7/4.8 GHz, 45/35 W Intel® Core™ i3-13300HRE, 4x 2.1/4.6 GHz, 45/35 W P-Series Embedded Intel® Core™ i7-1370PE, 6x 1.9/4.8 GHz, 28/20 W Intel® Core™ i5-1350PE, 4x 1.8/4.6 GHz, 28/20 W Intel® Core™ i3-1320PE, 4x 1.7/4.5 GHz, 28/20 W P-Series Industrial Intel® Core™ i7-1370PRE, 6x 1.9/4.8 GHz, 28/20 W Intel® Core™ i5-1350PRE, 4x 1.8/4.6 GHz, 28/20 W Intel® Core™ i3-1320PRE, 4x 1.7/4.5 GHz, 28/20 W	Intel® 11th Generation Xeon®/Core™/Celeron® family: Intel® Xeon® W-11865MLE, 8x 1.5/4.5 GHz, 25 W Intel® Xeon® W-11555MLE, 6x 1.9/4.4 GHz, 25 W Intel® Xeon® W-11155MLE, 4x1.8/3.1 GHz, 25 W Intel® Core™ i7-11850HE, 8x 2.6/4.7 GHz, 45/35 W Intel® Core™ i5-11500HE, 6x 2.6/4.5 GHz, 45/35 W Intel® Core™ i3-11100HE, 4x 2.4/4.4 GHz, 45/35 W Intel® Celeron® 6600HE, 2x 2.6 GHz, 35 W Intel® Xeon® W-11865MRE, 8x 2.6/4.7 GHz, 45/35 W Intel® Xeon® W-11555MRE, 6x 2.6/4.5 GHz, 45/35 W Intel® Xeon® W-11155MRE, 4x 2.4/4.4 GHz, 45/35 W	AMD Ryzen™ Embedded V-Series V2000 SoCs: AMD V2748, 8x 2.9 GHz, 35-54 W AMD V2718, 8x 1.7 GHz, 12-25 W AMD V2546, 6x 3.0 GHz, 35-54 W AMD V2516, 6x2.1 GHz, 12-25 W	Intel® Xeon® 8th Gen E-2176M, 6x 2.7/4.4 GHz, GT2, 45/35 W 9th Gen E-2276ME, 6x 2.8/4.5 GHz, GT2, 45/35 W 9th Gen E-2276ML, 6x 2.0/4.2 GHz, GT2, 25W 9th Gen E-2254ME, 4x 2.6/3.8 GHz, GT2, 45/35 W 9th Gen E-2254ML, 4x 1.7/3.5 GHz, GT2, 25 W Intel® Core™ 8th Gen i7-8850H, 6x 2.6/4.3 GHz, GT2, 45/35 W 8th Gen i5-8400H, 4x 2.5/4.2 GHz, GT2, 45/35 W 8th Gen i3-8100H, 4x 3.0/- GHz, GT2, 45/35 W 9th Gen i7-9850HE, 6x 2.7/4.4 GHz, GT2, 45/35 W 9th Gen i7-9850HL, 6x 1.9/4.1 GHz, GT2, 25 W 9th Gen i3-9100HL, 4x 1.6/2.9 GHz, GT2, 25 W Intel® Celeron® 9th Gen G4930E, 2x2.4/- GHz, GT2, 35 W 9th Gen G4932E, 2x1.9/- GHz, GT2, 25 W
CHIPSET	Integrated SoC	Integrated SoC	Integrated SoC	Integrated SoC	Integrated SoC
MAIN MEMORY	2x DDR5 SO-DIMM with up to 48 GByte per channel (non-ECC) IBEC support (dependent on used OS)	2x DDR5 SO-DIMM with up to 32 GByte per channel (non-ECC)	2x DDR5 SO-DIMM with up to 32 GByte per channel (non-ECC)	2x DDR4 SO-DIMM with up to 32 GByte per channel (non-ECC/ECC)	Up to 4x DDR4-2666 SO-DIMM with up to 128 GByte (non-ECC/ECC) (3rd/4th socket on request)
GRAPHICS CONTROLLER	Intel® Arc™ Graphics on H-series Intel® Graphics on U-series	Intel® Iris® Xe Graphics on i7/i5 processors Intel® UHD Graphics on i3 processors	Intel® Iris® Xe Graphics on i7/i5 processors Intel® UHD Graphics on i3 processors	Intel® UHD Graphics	AMD Radeon™ GPU
ETHERNET CONTROLLER	Intel® I226LM	Intel® I226LM/I226IT	Intel® I226LM/I226IT	Intel® I225LM/I225IT	Intel® I225LM
ETHERNET	Up to 2.5Gb Ethernet	Up to 2.5 Gb Ethernet with TSN support (ind. SKUs only)	Up to 2.5 Gb Ethernet with TSN support (ind. SKUs only)	Up to 2.5 Gb Ethernet with TSN support (depending on SKU)	Up to 2.5 Gb Ethernet
STORAGE	2x SATA 6Gb/s	2x SATA 6Gb/s	2x SATA 6Gb/s	4x SATA 6Gb/s	2x SATA 6Gb/s
FLASH ONBOARD	Up to 2x NVMe SSD (on request)	Up to 1 TByte NVMe SSD (on request)	Up to 1 TByte NVMe SSD (on request)	Up to 1 TByte NVMe SSD (on request)	Up to 1 TByte NVMe SSD (on request)
PCI EXPRESS®	5x PCIe 3.0 (On request: 6x without Ethernet, up to 8x without Ethernet & SATA or alternatively 4x1+1x4 config with Ethernet & SATA) 2x4 PCIe 4.0 on PEG Lanes #0-7 1x8 PCIe 4.0 on PEG Lanes #8-15 (H-series only)	5x PCIe 3.0 (On request: 6x without Ethernet, up to 8x without Ethernet & SATA or alternatively 8x with additional PCIe Switch) 2x4 PCIe 4.0 on PEG Lanes #0-7 1x8 PCIe 4.0 on PEG Lanes #8-15 (H-series only)	5x PCIe 3.0 (On request: 6x without Ethernet, up to 8x without Ethernet & SATA or alternatively 8x with additional PCIe Switch) 2x4 PCIe 4.0 on PEG Lanes #0-7 1x8 PCIe 4.0 on PEG Lanes #8-15 (H-series only)	8x PCIe x1, 1x PEG x16	4x PCIe 3.0 (up to 8 GT/s) 4x PCIe 2.0 (up to 5 GT/s) via PCIe switch 1x PEG x8
PANEL SIGNAL	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, LVDS: Dual Channel 18/24bit	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, LVDS: Dual Channel 18/24bit	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, LVDS: Dual Channel 18/24bit	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, eDP LVDS: Dual Channel 18/24bit	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, eDP LVDS: Dual Channel 18/24bit
USB	Up to 4x USB 3.2 Gen1 (incl. USB 2.0) + 4x USB 2.0	4x USB 3.2 Gen2 (incl. USB 2.0) + 4x USB 2.0	4x USB 3.2 Gen2 (incl. USB 2.0) + 4x USB 2.0	4x USB 3.1 (incl. USB 2.0) + 4x USB 2.0	4x USB 3.1 (incl. USB 2.0) + 4x USB 2.0
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)
AUDIO	High Definition Audio interface	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	High Definition Audio interface
COMMON FEATURES		(G) SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	(G) SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	(G)SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC
BIOS	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V
ON REQUEST	vPRO (AMT/TXT/AES Support) on dedicated SKUs, eDP instead of LVDS, VGA, USB-C, up to 8x PCIe x1 w/o Ethernet & SATA or 4x1+1x4 w/ Ethernet & SATA, up to 2x NVMe SSDs, discrete TPM	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, VGA, USB-C, up to 3x PCIe x1 additional w/o Ethernet & SATA or alternatively with additional PCIe Switch, NVMe SSD, Fail Safe via 2nd SPI Flash	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, VGA, USB-C, up to 3x PCIe x1 additional w/o Ethernet & SATA or alternatively with additional PCIe Switch, NVMe SSD, Fail Safe via 2nd SPI Flash	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, VGA, NVMe SSD, Fail Safe via 2nd SPI Flash, Industrial grade -40 °C to +85 °C	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, VGA, Intel® Mobile HM370 Chipset, 3rd/4th DDR4 SO-DIMM socket, NVMe SSD, Security Chip
POWER MANAGEMENT	ACPI 6.0	ACPI 6.0	ACPI 6.0	ACPI 6.0	ACPI 6.0
POWER SUPPLY	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES	Trusted Platform Module TPM 2.0 (on request)	Trusted Platform Module TPM 2.0	Trusted Platform Module TPM 2.0	Trusted Platform Module TPM 2.0	Trusted Platform Module TPM 2.0, 4k Resolutions, Flexible PEG lane configuration by Setup Option, Rapid shutdown (R E2S variants)
TEMPERATURE	Commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating	Commercial temperature: 0 °C to +60 °C Industrial temperature: -40 °C to +85 °C	Commercial temperature: 0 °C to +60 °C Industrial temperature: -40 °C to +85 °C	Commercial temperature: 0 °C to +60 °C Extended temperature: -25 °C to +75 °C Industrial temperature: -40 °C to +85 °C	Commercial temperature: 0 °C to +60 °C Extended temperature: -25 °C to +75 °C Industrial temperature: -40 °C to +85 °C
OPERATING SYSTEM	Windows®10/11, Linux, VxWorks (project based)	Windows®10, Linux, VxWorks (project based)	Windows®10, Linux, VxWorks (project based)	Windows®10, Linux, VxWorks	Windows®10, Linux, VxWorks

COM Express® basic

Tech Specs At-a-Glance



NEW



COM Express® basic

COMe-bID7 (E2)

COMe-bEP7 (E2)

COMe-bBD7 (R E2)

COMe-bDV7 (E2)

COMPLIANCE	COM Express® basic, Pin-out Type 7	COM Express® basic, Pin-out Type 7
DIMENSIONS (H x W)	125 x 95 mm	125 x 95 mm
CPU	Intel® Xeon® D-1749NT, 90 W, 10 core, 3.0 GHz Intel® Xeon® D-1735TR, 59 W, 8 core, 2.2 GHz Intel® Xeon® D-1718T, 46 W, 4 core, 2.6 GHz Intel® Xeon® D-1747NTE, 80 W, 10 core, 2.5 GHz, ind. temp. Intel® Xeon® D-1746TER, 67/56 W, 10 core, 2.0 GHz, ind. temp. Intel® Xeon® D-1732TE, 52 W, 8 core, 1.9 GHz, ind. temp. Intel® Xeon® D-1715TER, 50 W, 4 core, 2.4 GHz, ind. temp.	Commercial Temperature: SP4r2: AMD E3101 4C/4T, 35 W TDP, 2.1 GHz (2.9 GHz) AMD E3151 4C/8T, 45 W TDP, 2.7 GHz (2.9 GHz) AMD E3201 8C/8T, 30 W TDP, 1.5 GHz (3.1 GHz) AMD E3251 8C/16T, 55 W TDP, 2.5 GHz (3.1 GHz) SP4: AMD E3351 12C/24T, 65-80 W TDP, 1.9 GHz (3.0 GHz) AMD E3451 16C/32T, 85-100 W TDP, 2.45 GHz (3.0 GHz) Industrial Temperature: SP4r2: AMD E3255 8C/16T, 30-55 W TDP, 2.0/2.5 GHz (3.1 GHz)
CHIPSET	Integrated in SoC	Integrated in SoC
MAIN MEMORY	2x DDR4 SODIMM for up to 64 GByte ECC / non ECC on request: 4x DDR4 SODIMM for up to 128 GByte ECC / non ECC	2x DDR4 SODIMM for up to 64 GByte non-ECC/ECC memory SP4: 4x DDR4 SODIMM for up to 128 GByte on request
GRAPHICS CONTROLLER	-	-
ETHERNET CONTROLLER	Intel® I225LM/IT Intel® Quad 10GbE LAN integrated in SoC	Intel® i210 2x dual 10GbE LAN integrated in SoC
ETHERNET	1x 1/2.5 Gb (1/2.5 GBASE-T) 4x 10GbE (10 GBASE-KR)	1x 10/100/1000 MBit Ethernet 4x 10GbE Interfaces (KR)
STORAGE	2x SATA 6Gb/s	2x SATA
FLASH ONBOARD	Up to 1 TByte NVMe SSD (on request)	Up to 1 TByte NVMe SSD (on request)
PCI EXPRESS®	16x PCIe Gen4 (1 x16, 2 x8, 4 x4) 16x PCIe Gen3 (2 x8, 4 x4, 8 x2)	SP4r2: 24x PCIe Gen 3.0 SP4: 32x PCIe Gen 3.0
PANEL SIGNAL	-	-
USB	4x USB 3.0 / USB 2.0	4x USB 3.1, 4x USB 2.0
SERIAL	2x serial interface (RX/TX only)	2x serial interface
AUDIO	-	-
COMMON FEATURES	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI Flash, LPC, SMB, Dual Staged Watchdog, RTC
BIOS	AMI UEFI	AMI UEFI
ON REQUEST	NVMe SSD, additional 3 rd and 4 th SODIMM socket other CPU SKU	3 rd /4 th DDR4 SO-DIMM socket, NVMe SSD
POWER MANAGEMENT	ACPI 6.0	OS ACPI PM support for Critical Shutdown
POWER SUPPLY	8.5 V – 20 V Wide Range, Single Supply Power 12 V for industrial temperature SKUs	ATX, 8.5V- 20 V Wide Range Single Supply
SPECIAL FEATURES	TPM 2.0	TPM
TEMPERATURE	Commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating Industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	Commercial temperature: 0 °C to 60 °C Industrial temperature: -40 °C to 85 °C
OPERATING SYSTEM	Linux, Windows®10 IoT Enterprise, Windows Server 2022	Linux x64 – Ubuntu, Windows® Server x64 2016

COMPLIANCE	COM Express® basic, Pin-out Type 7	COM Express® basic, Pin-out Type 7
DIMENSIONS (H x W)	125 x 95 mm	125 x 95 mm
CPU	Intel® Xeon® Processor D-1577, 16 C, 1.3 GHz, 24 MByte, 45 W, Intel® Xeon® Processor D-1548, 8 C, 2.0 GHz, 12 MByte, 45 W, Intel® Xeon® Processor D-1537, 8 C, 1.7 GHz, 12 MByte, 35 W, Intel® Xeon® Processor D-1528, 6 C, 1.9 GHz, 9 MByte, 35 W, Intel® Xeon® Processor D-1527, 4 C, 2.2 GHz, 6 MByte, 35 W, Intel® Xeon® Processor D-1517, 4 C, 1.6 GHz, 6 MByte, 25 W, Intel® Pentium® Processor D1508, 2 C, 2.2 GHz, 3 MByte, 25 W, Intel® Xeon® Processor D-1559, 12 C, 1.5 GHz, 18 MByte, 45 W, ind. Temp Intel® Xeon® Processor D-1539, 8 C, 1.6 GHz, 12 MByte, 35 W, ind. Temp Intel® Pentium® Processor D1519, 4 C, 1.5 GHz, 6 MByte, 25 W, ind. Temp	Commercial temperature: Intel Atom® Processor C3958, 16C, 2.0GHz, 31W TDP Intel Atom® Processor C3858, 12C, 2.0GHz, 25W TDP Intel Atom® Processor C3758, 8C, 2.2GHz, 25W TDP Intel Atom® Processor C3558, 4C, 2.2GHz, 16W TDP Industrial temperature: Intel Atom® Processor C3808, 12C, 2.0 GHz, 25 W TDP Intel Atom® Processor C3708, 8C, 1.7 GHz, 17 W TDP Intel Atom® Processor C3508, 4C, 1.5 GHz, 11 W TDP Intel Atom® Processor C3308, 2C, 1.6 GHz, 9 W TDP
CHIPSET	Integrated in SoC	Integrated in SoC
MAIN MEMORY	2x DDR4 SODIMM dual channel up to 2 x 32 GByte ECC or non ECC	2x DDR4 SODIMM for up to 2x 32 GByte ECC/non ECC on request: 4x DDR4 SODIMM for up to 4x 32 GByte ECC/non ECC
GRAPHICS CONTROLLER	-	-
ETHERNET CONTROLLER	Intel® I210IT (uses one lane of PCIe 2.0) Intel® Dual 10GbE LAN integrated in SoC	Intel® I210IT (uses one lane of PCIe 3.0) Intel® Quad 10GbE LAN integrated in SoC
ETHERNET	1x 10/100/1000 MBit Ethernet Dual 10GbE Interface (KR) and NC-SI	1x 10/100/1000 MBit Ethernet Up to 4x 10GbE Interfaces (KR) – depending on C3000 SKU NC-SI support
STORAGE	2x SATA3, 6Gb/s	Up to 2x SATA3, 6Gb/s
FLASH ONBOARD	-	eMMC 5.1 up to 64 GByte pSLC or 128 GByte MLC (build option)
PCI EXPRESS®	24x PCIe 3.0 (6 controllers, x16, x8, x4, x1 operation) 8x PCIe 2.0 (8 controllers, x8, x4, x1 configuration), one lane used by onboard 1 GbE LAN controller	Up to 14x PCIe 3.0 lanes - depending on C3000 SKU
PANEL SIGNAL	-	-
USB	4x USB 3.0/2.0	Up to 3x USB 3.0/4x USB 2.0
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)
AUDIO	-	-
COMMON FEATURES	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC
BIOS	AMI UEFI	AMI UEFI
ON REQUEST	-	eMMC size, additional 2 SODIMM sockets for overall 4 SODIMM sockets
POWER MANAGEMENT	ACPI 5.0	ACPI 6.0
POWER SUPPLY	ATX, 8.5 V – 20 V Wide Range, Single Supply Power	ATX, 8.5 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES	Trusted Platform Module TPM 2.0	Trusted Platform Module TPM 2.0
TEMPERATURE	COMe-bBD7 - Commercial temperature: 0 °C to +60 °C COMe-bBD7R E2 - Industrial temperature: -40 °C to +85 °C	Commercial temperature 0 °C - 60 °C, Industrial temperature -40 °C to +85 °C
OPERATING SYSTEM	Linux, Windows® Server 2012/2012 R2/2016	Linux, Windows® Server 2012/2012 R2/2016

COM Express® compact

Tech Specs At-a-Glance



NEW



COM Express® compact

COMe-cRP6 (E2)

COMe-cAP6

COMe-cTL6 (E2)

COMe-cVR6 (E2)

COMPLIANCE	COM Express® compact, Pin-out Type 6	COM Express® compact, Pin-out Type 6
DIMENSIONS (H x W)	95 x 95 mm	95 x 95 mm
CPU	Intel® 13th Generation Core™ family: H-Series Industrial Intel® Core™ i7-13800HRE, 6x 2.5/5.0 GHz, 45/35 W Intel® Core™ i5-13600HRE, 4x 2.7/4.8 GHz, 45/35 W Intel® Core™ i3-13300HRE, 4x 2.1/4.6 GHz, 45/35 W P-Series Industrial Intel® Core™ i7-1370PRE, 6x 1.9/4.8 GHz, 28/20 W Intel® Core™ i5-1350PRE, 4x 1.8/4.6 GHz, 28/20 W Intel® Core™ i3-1320PRE, 4x 1.7/4.5 GHz, 28/20 W U-Series Industrial Intel® Core™ i7-1365URE, 2x 1.7/4.9 GHz, 15/12 W Intel® Core™ i5-1345URE, 2x 1.4/4.6 GHz, 15/12 W Intel® Core™ i3-1315URE, 2x 1.2/4.5 GHz, 15/12 W	Intel® 12th Generation Core™/ Celeron® family: H-Series Embedded Intel® Core™ i7-12800HE, 6x 2.4/4.6 GHz, 45/35 W Intel® Core™ i5-12600HE, 4x 2.5/4.5 GHz, 45/35 W Intel® Core™ i3-12300HE, 4x 1.9/4.3 GHz, 45/35 W P-Series Embedded Intel® Core™ i7-1270PE, 4x 1.8/4.5GHz, 28/20 W Intel® Core™ i5-1250PE, 4x 1.7/4.4 GHz, 28/20 W Intel® Core™ i3-1220PE, 4x 1.5/4.2 GHz, 28/20 W U-Series Embedded Intel® Core™ i7-1265UE, 2x 1.7/4.7, 15/12 W Intel® Core™ i5-1245UE, 2x 1.5/4.4 GHz, 15/12 W Intel® Core™ i3-1215UE, 2x 1.2/4.4 GHz, 15/12 W Intel® Celeron® 7305E, 1x 1.0 GHz, 15/12 W
CHIPSET	Integrated SoC	Integrated SoC
MAIN MEMORY	Dual-Channel LPDDR5 memory down up to 64 GByte	Dual-Channel LPDDR5 memory down up to 64 GByte
GRAPHICS CONTROLLER	Intel® Iris® X® Graphics on i7/i5 processors Intel® UHD Graphics on i3 processors	Intel® Iris® X® Graphics on i7/i5 processors Intel® UHD Graphics on i3/Celeron® processors
ETHERNET CONTROLLER	Intel® I226IT	Intel® I226LM
ETHERNET	Up to 2.5Gb Ethernet with TSN support	Up to 2.5Gb Ethernet
STORAGE	2x SATA 6Gb/s	2x SATA 6Gb/s
FLASH ONBOARD	Up to 1 TByte NVMe SSD (on request)	Up to 1 TByte NVMe SSD (on request)
PCI EXPRESS®	5x PCIe 3.0 (On request: 6x without Ethernet, up to 8x without Ethernet & SATA) 2x 4 PCIe 4.0 on PEG Lanes #0-7 1x 8 PCIe 4.0 on PEG Lanes #8-15 (H-series only)	5x PCIe 3.0 (On request: 6x without Ethernet, up to 8x without Ethernet & SATA) 2x 4 PCIe 4.0 on PEG Lanes #0-7 1x 8 PCIe 4.0 on PEG Lanes #8-15 (H-series only)
PANEL SIGNAL	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, LVDS: Dual Channel 18/24bit	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, LVDS: Dual Channel 18/24bit
USB	4x USB 3.2 Gen2 (incl. USB 2.0) + 4x USB 2.0	4x USB 3.2 Gen2 (incl. USB 2.0) + 4x USB 2.0
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)
AUDIO	Intel® High Definition Audio	Intel® High Definition Audio
COMMON FEATURES	(G) SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	(G) SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC
BIOS	AMI Aptio V	AMI Aptio V
ON REQUEST	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, USB-C, up to 3x PCIe x1 additional w/o Ethernet & SATA, NVMe SSD, Fail Safe via 2nd SPI Flash	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, USB-C, up to 3x PCIe x1 additional w/o Ethernet & SATA, NVMe SSD, Fail Safe via 2nd SPI Flash
POWER MANAGEMENT	ACPI 6.0	ACPI 6.0
POWER SUPPLY	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES	Trusted Platform Module TPM 2.0	Trusted Platform Module TPM 2.0
TEMPERATURE	Industrial temperature: -40 °C to +85 °C	Commercial temperature: 0 °C to +60 °C
OPERATING SYSTEM	Windows®10, Linux, VxWorks (project based)	Windows®10, Linux, VxWorks (project based)

COMPLIANCE	COM Express® compact, Pin-out Type 6	COM Express® compact, Pin-out Type 6
DIMENSIONS (H x W)	95 x 95 mm	95 x 95 mm
CPU	Intel® 11th Generation Core™/Celeron® family: Intel® Core™ i7-1185G7E, 4x 1.8 GHz, 28/15/12 W Intel® Core™ i5-1145G7E, 4x 1.5 GHz, 28/15/12 W Intel® Core™ i3-1115G4E, 2x 2.2 GHz, 28/15/12 W Intel® Celeron® 6305E, 2x 1.8 GHz, 15 W Intel® Core™ i7-1185GRE, 4x 1.8 GHz, 28/15/12 W Intel® Core™ i5-1145GRE, 4x 1.5 GHz, 28/15/12 W Intel® Core™ i3-1115GRE, 2x 2.2 GHz, 28/15/12 W	AMD Ryzen™ Embedded V/R-Series V/R1000 SoCs: AMD V1807B, 4x 3.35 GHz (3.75 GHz), 35-54 W AMD V1756B, 4x 3.25 GHz (3.6 GHz), 35-54 W AMD V1605B, 4x 2.0 GHz (3.6 GHz), 12-25 W AMD V1202B, 2x 2.5 GHz (3.4 GHz), 12-25 W AMD V1404I, 4x 2.0 GHz (3.6 GHz), 12-25 W AMD R1606G, 2x 2.6 GHz (3.5 GHz), 12-25 W AMD R1505G, 2x 2.4 GHz (3.3 GHz), 12-25 W
CHIPSET	Integrated SoC	Integrated SoC
MAIN MEMORY	1x DDR4 SO-DIMM up to 32 GByte, 2nd channel DDR4 memory down up to 16 GByte	1x DDR4 SO-DIMM up to 32 GByte, 2nd channel DDR4 memory down up to 16 GByte (non-ECC/ECC)
GRAPHICS CONTROLLER	Intel® Iris®X® Graphics on i7/i5 processors Intel® UHD Graphics on i3/Celeron® processors	Integrated AMD Vega Graphics (GFX9)
ETHERNET CONTROLLER	Intel® I225LM/I225IT	Intel® I210
ETHERNET	Up to 2.5Gb Ethernet with TSN support (depending on SKU)	10/100/1000 MBit Ethernet
STORAGE	2x SATA 6Gb/s	2x SATA 6Gb/s
FLASH ONBOARD	Up to 1 TByte NVMe SSD (on request)	-
PCI EXPRESS®	5x PCIe 3.0 (On request: 6x without Ethernet, up to 8x without Ethernet & SATA) 1x 4 PCIe 4.0 on PEG Lanes #0-3	Up to 5x PCIe 3.0 (On request: 6x without Ethernet) On request: Up to 8x PCIe x1 with 4x PCIe 3.0 + 4x PCIe 2.0 Up to 1x PEG x8
PANEL SIGNAL	DDI1: DP++, DDI2: DP++, DDI3: DP++, VGA: -, LVDS: Dual Channel 18/24bit	DDI1: DP++, DDI2: DP++, DDI3: DP (R-Series: DDI1 & DDI2 only), VGA: -, LVDS: Dual Channel 18/24 bit
USB	4x USB 3.1 (incl. USB 2.0) + 4x USB 2.0	3x USB 3.x (incl. USB 2.0) + 5x USB 2.0
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)
AUDIO	Intel® High Definition Audio	High Definition Audio interface
COMMON FEATURES	(G)SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC
BIOS	AMI Aptio V	AMI Aptio V
ON REQUEST	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, VGA, up to 3x PCIe x1 additional w/o Ethernet & SATA, NVMe SSD, Fail Safe via 2nd SPI Flash	eDP instead of LVDS, VGA, 1x PCIe x1 additional w/o onboard LAN, PCIe Switch, Security Chip
POWER MANAGEMENT	ACPI 6.0	ACPI 6.0
POWER SUPPLY	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES	Trusted Platform Module TPM 2.0	Trusted Platform Module TPM 2.0
TEMPERATURE	Commercial temperature: 0 °C to +60 °C Extended temperature: -25 °C to +75 °C Industrial temperature: -40 °C to +85 °C	Commercial temperature: 0 °C to +60 °C Industrial temperature: -40 °C to +85 °C
OPERATING SYSTEM	Windows®10, Linux, VxWorks	Windows® 10, Linux

COM Express® compact

Tech Specs At-a-Glance

Coming Soon

NEW



NEW



COM Express® compact

COMe-cAS6 (E2)

COMe-cEL6 (E2)

COMe-cAL6 (E2)

COMe-cBTc6/cBTi6

COMPLIANCE	COM Express® compact, Pin-out Type 6	COM Express® compact, Pin-out Type 6
DIMENSIONS (H x W)	95 x 95 mm	95 x 95 mm
CPU	Intel Atom® x7000E x7000RE Series Intel Atom® x7211E, 2C, 1.0/3.2 GHz, 6 W TDP Intel Atom® x7213E, 2C, 1.7/3.2 GHz, 10 W TDP Intel Atom® x7425E, 4C, 1.5/3.4 GHz, 12 W TDP Intel Atom® x7211RE, 2C, 1.0/3.2 GHz, 6 W TDP Intel Atom® x7213RE, 2C, 2.0/3.4 GHz, 9 W TDP Intel Atom® x7433RE, 4C, 1.5/3.4 GHz, 9 W TDP Intel Atom® x7835RE, 8C, 1.3/3.6 GHz, 12 W TDP	Intel Atom® x6000E Series, Pentium® and Celeron® Processors Intel® Celeron® J6413, 4C, 1.8/3.0 GHz, 10 W TDP Intel® Pentium® J6426, 4C, 2.0/3.0 GHz, 10 W TDP Intel® Celeron® N6211, 2C, 1.3/3.0 GHz, 6.5 W TDP Intel® Pentium® N6415, 4C, 1.2/3.0 GHz, 6.5 W TDP Intel Atom® x6211E, 2C, 1.3/3.0 GHz, 6 W TDP Intel Atom® x6413E, 4C, 1.5/3.0 GHz, 9 W TDP Intel Atom® x6425E, 4C, 2.0/3.0 GHz, 12 W TDP Intel Atom® x6212RE, 2C, 1.2/n.a. GHz, 6 W TDP Intel Atom® x6414RE, 4C, 1.5/n.a. GHz, 9 W TDP Intel Atom® x6425RE, 4C, 1.9/n.a. GHz, 12 W TDP
CHIPSET	-	-
MAIN MEMORY	Up to 16 GByte DDR5 4800 MT/s via 1x SODIMM socket (In-Band ECC)	Up to 32 GByte DDR4-3200 via 2x SODIMM sockets (In-Band ECC)
GRAPHICS CONTROLLER	SOC: Intel® HD Gfx Gen12: LVDS/eDP, 2x DP	SOC: Intel® HD Gfx Gen11: 1x LVDS/eDP (3840 x 2160 @ 60 Hz) 2x DP (++) on DDI1/DDI2 up to 4K
ETHERNET CONTROLLER	Intel® I226IT/LM	SOC + LAN PHY GPHY115 (GPHY215 on request)
ETHERNET	Up to 2.5 GBit with TSN support	1 GBit Ethernet (2.5 GBit on request with GPHY215)
STORAGE	2x SATA 6Gb/s	2x SATA 6Gb/s, SDIO Interface (shared with GPIO)
FLASH ONBOARD	eMMC option – up to 256 GByte eMMC TLC	eMMC up to 256 GByte TLC - build option
PCI EXPRESS®	4x PCIe Gen3 lanes: 4x 1 / 2x 2	6x PCIe Gen 3.0 lanes - PCIe lane configurations: 1x 4 / 2x 2 / 4x 1 + 1x 2 / 2x 1
PANEL SIGNAL	DDI1/DDI2: DP++, LVDS: Dual Channel 18/24bit	DDI 1/2: DP++, LVDS: Dual Channel up to 48-bit
USB	2x USB 3.2 Gen2 (incl. USB 2.0) + 6x USB 2.0	Default: 2x USB 3.1 (incl. USB 2.0) + 6x USB 2.0 Option: 4x USB 3.1 (incl. USB 2.0) + 4x USB 2.0
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only), optional CAN
AUDIO	Intel® High Definition Audio	Intel® High Definition Audio
COMMON FEATURES	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC
BIOS	AMI Aptio V	AMI Aptio V
ON REQUEST	eMMC up to 256 GByte TLC, eDP instead of LVDS, DDI3: VGA 4x USB3.2 w/ add USB-Hub instead of 2x USB 3.2 General Purpose SPI instead of Boot SPI, Trusted Platform module TPM 2.0, de-populated LAN; 4x PCIe lanes w/o SATA-ports : 4x 1 / 2x 2 / 1x 4; 6x PCIe lanes with PCIe switch: 4x 1 / 2x 2 / 1x 4 + 2x 1 / 1x 2	eMMC Flash configuration (up to 64 GByte pSLC, up to 128 GByte MLC) eDP instead of LVDS General Purpose SPI instead of Boot SPI eSPI instead of LPC to the COMe connector 4x USB3.1 w/ add USB-Hub instead of 2x USB 3.1 Trusted Platform Module TPM 2.0, de-populated LAN PHY
POWER MANAGEMENT	ACPI 6.0	ACPI 6.0
POWER SUPPLY	8.5 V – 20 V Wide Range, Single Supply Power	8.5 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES		
TEMPERATURE	COMe-cAS6- commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating COMe-cAS6 E2 - industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	COMe-cEL6- commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating COMe-cEL6 E2 - industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating
OPERATING SYSTEM	Windows® 10, Windows 11 coming soon, Linux	Windows®10, Linux, VxWorks

COMPLIANCE	COM Express® compact, Pin-out Type 6	COM Express® compact, Pin-out Type 6
DIMENSIONS (H x W)	95 x 95 mm	95 x 95 mm
CPU	COMe-cAL6 E2: Intel Atom® x7-E3950, 4C, 1.6/2.0 GHz, 12 W TDP Intel Atom® x5-E3940, 4C, 1.6/1.8 GHz, 9.5 W TDP Intel Atom® x5-E3930, 2C, 1.3/1.8 GHz, 6.5 W TDP COMe-cAL6: Intel® Pentium® N4200, 4C, 1.1/2.5 GHz, 6 W TDP Intel® Celeron® N3350, 2C, 1.1/2.4 GHz, 6 W	COMe-cBTi6: Intel Atom® E3845 (4x 1.91 GHz, 10 W) Intel Atom® E3827 (2x 1.75 GHz, 8 W) Intel Atom® E3826 (2x 1.46 GHz, 7 W) Intel Atom® E3825 (2x 1.33 GHz, 6 W) Intel Atom® E3815 (1x 1.46 GHz, 5 W) COMe-cBTc6: Intel® Celeron® J1900 (4x 2.00 GHz, 10 W) Intel® Celeron® N2930 (4x 1.83 GHz, 7.5 W) Intel® Celeron® N2807 (2x 1.58 GHz, 4.5 W) Intel Atom® E3815 (1x 1.46 GHz, 5 W)
CHIPSET	Integrated SoC	Integrated SoC
MAIN MEMORY	2x SODIMM for DDR3L-1600/1867 (non ECC) up to 8 GByte	2x DDR3L-1333 SODIMM up to 2x 4 GByte
GRAPHICS CONTROLLER	Intel® HD Gfx Gen9: 1x LVDS/eDP (3840 x 2160 @ 60 Hz), 2x DP (++) on DDI1/DDI2 up to 4K	Intel® HD Graphics (Gen7)
ETHERNET CONTROLLER	Intel® I210IT/I210AT	COMe-cBTc6 Intel® I211AT COMe-cBTi6 Intel® I210IT
ETHERNET	10/100/1000 MBit Ethernet	10/100/1000 MBit Ethernet
STORAGE	2x SATA 6Gb/s, SDIO Interface (shared with GPIO)	2x SATA 3Gb/s
FLASH ONBOARD	eMMC up to 256 GByte TLC - build option	on E3800 CPU only: on request: - up to 64 GByte eMMC pSLC - up to 128 GByte eMMC MLC
PCI EXPRESS®	3x PCIe Gen 2.0 on request: - w/LAN and PCIe hub: 5x PCIe x1 or 1x PCIe x2 + 3x PCIe x1 - w/o LAN and PCIe hub: 2x PCIe x2 or 1x PCIe x4	3x PCIe Gen 2.0 Option: 4 Lanes if no LAN
PANEL SIGNAL	DDI 1/2: DP++, LVDS: Dual Channel up to 48-bit	DDI1: DP++, DDI2: DP++ (shared w/LVDS), DDI3: -, VGA: Yes, LVDS: Dual Channel 18/24bit
USB	4x USB 3.0/2.0, 4x USB 2.0	1x USB 3.0 (incl. USB 2.0), 3x USB 2.0 from CPU, on COMe-cBTi6 Version only: 4x USB 2.0 from HSIC Hub
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)
AUDIO	Intel® High Definition Audio	Intel® High Definition Audio
COMMON FEATURES	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC, MARS
BIOS	AMI Aptio V	Phoenix Secure Core UEFI
ON REQUEST	PCIe configurations w/PCI hub and w/o LAN chip eMMC up to 256 GByte TLC eDP instead of LVDS General Purpose SPI instead of Boot SPI, USB client	1x PCIe x1 additional w/o onboard LAN, Trusted Platform Module TPM 1.2, on E38xx CPU only: eMMC Flash on board AES-NI
POWER MANAGEMENT	ACPI 6.0	ACPI 4.0, S5 Eco
POWER SUPPLY	8.5 V – 20 V Wide Range, Single Supply Power	4.75 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES	Trusted Platform Module TPM 2.0, microSD card socket 4k Resolutions, GPIO/SDIO Switch, Industrial grade temperature	POSCAP capacitors, LVDS/DP Multiplexer
TEMPERATURE	COMe-cAL6 - commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating COMe-cAL6 E2 - industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	Commercial temperature: 0 °C to +60 °C operating Industrial temperature: -40 °C to +85 °C operating
OPERATING SYSTEM	Windows® 10 Enterprise, Windows 10 IoT, Linux, VxWorks	Windows® 8, Windows® 7, WEBS, WES7, Linux, VxWorks

COM Express® mini

Tech Specs At-a-Glance



NEW



NEW



NEW



COM Express® mini

COMe-mRP10 (E2)

COMe-mAS10 (E2)

COMe-mEL10 (E2)

COMe-m4AL10 (E2)

COMe-mAL10 (E2)

COMe-mBTi10/COMe-mBTc10

COMPLIANCE	COM Express® mini Pin-out Type 10	COM Express® mini, Pin-out Type 10	COM Express® mini, Pin-out Type 10	COM Express® mini, Pin-out Type 10	COM Express® mini, Pin-out Type 10	COM Express® mini, Pin-out Type 10
DIMENSIONS (H x W)	84 x 55 mm	84 x 55 mm	84 x 55 mm	84 x 55 mm	84 x 55 mm	84 x 55 mm
CPU	Intel® 13th Generation Core™/Pentium® family: U-Series Embedded Intel® Core™ i7-1365UE, 2x 1.7/4.9 GHz, 15/12 W Intel® Core™ i5-1345UE, 2x 1.4/4.6 GHz, 15/12 W Intel® Core™ i3-1315UE, 2x 1.2/4.5 GHz, 15/12 W Intel® Pentium® U300E, 1x 1.1/4.3 GHz, 15/12 W U-Series Industrial Intel® Core™ i7-1365URE, 2x 1.7/4.9 GHz, 15/12 W Intel® Core™ i5-1345URE, 2x 1.4/4.6 GHz, 15/12 W Intel® Core™ i3-1315URE, 2x 1.2/4.5 GHz, 15/12 W	Intel Atom® x7000E x7000RE Series Intel Atom® x7211E, 2C, 1.0/3.2 GHz, 6 W TDP Intel Atom® x7213E, 2C, 1.7/3.2 GHz, 10 W TDP Intel Atom® x7425E, 4C, 1.5/3.4 GHz, 12 W TDP Intel Atom® x7211RE, 2C, 1.0/3.2 GHz, 6 W TDP Intel Atom® x7213RE, 2C, 2.0/3.4 GHz, 9 W TDP Intel Atom® x7433RE, 4C, 1.5/3.4 GHz, 9 W TDP Intel Atom® x7835RE, 8C, 1.3/3.6 GHz, 12 W TDP	Intel Atom® x6000E Series, Pentium® and Celeron® Processors Intel® Celeron® J6413, 4C, 1.8/3.0 GHz, 10 W TDP Intel® Pentium® J6426, 4C, 2.0/3.0 GHz, 10 W TDP Intel® Celeron® N6211, 2C, 1.2/3.0 GHz, 6.5 W TDP Intel® Pentium® N6415, 4C, 1.2/3.0 GHz, 6.5 W TDP Intel Atom® x6211E, 2C, 1.3/3.0 GHz, 6 W TDP Intel Atom® x6413E, 4C, 1.5/3.0 GHz, 9 W TDP Intel Atom® x6425E, 4C, 2.0/3.0 GHz, 12 W TDP Intel Atom® x6212RE, 2C, 1.2/n.a. GHz, 6 W TDP Intel Atom® x6414RE, 4C, 1.5/n.a. GHz, 9 W TDP Intel Atom® x6425RE, 4C, 1.9/n.a. GHz, 12 W TDP	COMe-m4AL10: Intel® Pentium® N4200, 4C, 1.1/2.5 GHz, 6 W TDP Intel® Celeron® N3350, 2C, 1.1/2.4 GHz, 6 W TDP COMe-m4AL10 E2: Intel Atom® x7-E3950, 4C, 1.6/2.0 GHz, 12 W TDP Intel Atom® x5-E3940, 4C, 1.6/1.8 GHz, 9.5 W TDP Intel Atom® x5-E3930, 2C, 1.3/1.8 GHz, 6.5 W TDP	COMe-mAL10: Intel® Pentium® N4200, 4C, 1.1/2.5 GHz, 6 W TDP Intel® Celeron® N3350, 2C, 1.1/2.4 GHz, 6 W TDP COMe-mAL10 E2: Intel Atom® x7-E3950, 4C, 1.6/2.0 GHz, 12 W TDP Intel Atom® x5-E3940, 4C, 1.6/1.8 GHz, 9.5 W TDP Intel Atom® x5-E3930, 2C, 1.3/1.8 GHz, 6.5 W TDP	Intel Atom® E3845, 4C, 1.91 GHz, 10 W TDP Intel Atom® E3827, 2C, 1.75 GHz, 8 W TDP Intel Atom® E3826, 2C, 1.46 GHz, 7 W TDP Intel Atom® E3825, 2C, 1.33 GHz, 6 W TDP Intel Atom® E3815, 1C, 1.46 GHz, 5 W TDP
MAIN MEMORY	Dual-Channel LPDDR5(x) memory down up to 32 GByte	Up to 16 GByte LPDDR5 4800 MT/s memory down (In-Band ECC)	Up to 16 GByte LPDDR4-4267 memory down (In-Band ECC)	up to 16 GByte LPDDR4 (COMe-m4AL10)	up to 8 GByte DDR3-1866 (-1600) memory down, (ECC for E2-versions)	Up to 8 GByte DDR3L-1333 memory down (ECC on request)
GRAPHICS CONTROLLER	Intel® Iris® X® Graphics on i7/i5 processors Intel® UHD Graphics on i3/Pentium® processors	SOC: Intel® HD Gfx Gen12: LVDS/eDP, 1x DP	SOC: Intel® HD Gfx Gen11: LVDS/eDP, 1x DP++, up to 4K	Intel® HD Gfx Gen9	Intel® HD Gfx Gen9	Intel® HD Graphics (Gen7)
ETHERNET CONTROLLER	Intel® I226LM/I226IT	SOC + LAN PHY GPY115 (GPY215 on request)	SOC + LAN PHY GPY115 (GPY215 on request) + 2x optional as SGMII instead of SATA	COMe-m4AL10: Intel® I210AT COMe-m4AL10 E2: Intel® I210IT	COMe-mAL10: Intel® I210AT COMe-mAL10 E2: Intel® I210IT	Intel® I210IT
ETHERNET	Up to 2.5Gb Ethernet with TSN support (ind. SKUs only)	1 GBit Ethernet (2.5 GBit on request with GPY215)	1 GBit Ethernet (2.5 GBit on request with GPY215) + 2x optional 2.5 Gbit	10/100/1000 Mbit Ethernet	10/100/1000 Mbit Ethernet	10/100/1000 Mbit Ethernet
STORAGE	2x SATA 6Gb/s	2x SATA 6Gb/s	2x SATA 6Gb/s, SDIO Interface (shared with GPIO)	2x SATA 6 Gb/s	2x SATA 6 Gb/s	2x SATA 3Gb/s
FLASH ONBOARD	Up to 1TByte NVMe SSD (on request)	eMMC option – up to 256 GByte eMMC TLC	eMMC up to 256 GByte TLC - build option	eMMC up to 256 GByte TLC - build option	eMMC up to 256 GByte TLC - build option	to 64 GByte pSLC or 128GByte MLC (build option)
PCI EXPRESS®	4x PCIe 3.0	PCIe Gen 3.0 - PCIe lane configurations: 4 x1, 2 x1 + 1 x2, 2 x2	PCIe Gen 3.0 - PCIe lane configurations: 4 x1, 2 x1 + 1 x2, 2 x2	4x PCIe x1	4x PCIe x1	3x PCIe x1
PANEL SIGNAL	DDI1: DP++, LVDS: Single Channel 18/24bit	DDI: DP++, LVDS: Single Channel 18/24 bit	DDI: DP++, LVDS: Single Channel 18/24 bit	DDI: DP++, LVDS: Single Channel 18/24 bit	DDI: DP++, LVDS: Single Channel 18/24 bit	DDI: DP++, LVDS: Single Channel 18/24 bit or eDP
USB	2x USB 3.2 Gen2 (incl. USB 2.0) + 6x USB 2.0	2x USB 3.2 Gen2 (incl. USB 2.0) + 6x USB 2.0	2x USB 3.1 (incl. USB 2.0) + 6x USB 2.0,	2x USB 3.0 (incl. USB 2.0) 6x USB 2.0 Port 7 is dual role (Client/Host)	2x USB 3.0 (incl. USB 2.0) 6x USB 2.0 Port 7 is dual role (Client/Host)	1x USB 3.0 (incl. USB 2.0), 3x USB 2.0 from CPU, 4x USB 2.0 from HSIC Hub
SERIAL	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)	2x serial interface (RX/TX only), optional CAN	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)	2x serial interface (RX/TX only)
AUDIO	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio
COMMON FEATURES	(G) SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC	SPI, LPC, SMB, Fast I ² C, Staged Watchdog, RTC, MARS
BIOS	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V	Phoenix Secure Core UEFI
ON REQUEST	vPRO (AMT/TXT/AES Support), eDP instead of LVDS, NVMe SSD	eMMC up to 256 GByte TLC, eDP instead of LVDS General Purpose SPI instead of Boot SPI, Trusted Platform module TPM 2.0, de-populated LAN PHY, 2.5Gbit LAN instead of 1Gbit	eMMC up to 256 GByte TLC eDP instead of LVDS General Purpose SPI instead of Boot SPI Trusted Platform Module TPM 2.0, de-populated LAN PHY	eMMC up to 256 GByte TLC eDP instead of LVDS, General Purpose SPI instead of Boot SPI, AES-NI, USB client	eMMC up to 256 GByte TLC eDP instead of LVDS, General Purpose SPI instead of Boot SPI, USB client	1x PCIe x1 additional w/o onboard LAN, Trusted Platform Module TPM 1.2, ECC memory, eMMC Flash onboard (2-32 GByte SLC, 4-64 GByte MLC), eDP instead of LVDS, General Purpose SPI instead of Boot SPI, AES-NI
POWER MANAGEMENT	ACPI 6.0	ACPI 6.0	ACPI 6.0	ACPI 6.0	ACPI 6.0	ACPI, S5 Eco
POWER SUPPLY	8.5 V – 20 V Wide Range*, Single Supply Power	4.75 V – 20 V Wide Range, Single Supply Power	4.75 V – 20 V Wide Range, Single Supply Power	4.75 V – 20 V Wide Range, Single Supply Power	4.75 V – 20 V Wide Range, Single Supply Power	4.75 V – 20 V Wide Range, Single Supply Power
SPECIAL FEATURES				Trusted Platform Module TPM 2.0, GPIO / SDIO Switch, General Purpose SPI optional, Industrial Temperature Grade versions	Trusted Platform Module TPM 2.0, GPIO / SDIO Switch, General Purpose SPI optional, Industrial Temperature Grade versions	POSCAP capacitors, GPIO/SDIO Switch, General Purpose SPI optional
OPERATING SYSTEM	Windows®10, Linux, VxWorks (project based)	Windows® 10, Windows 11 coming soon, Linux	Windows® 10, Linux, VxWorks	Windows® 10 Enterprise, Windows 10 IoT, Linux, VxWorks	Windows® 10 Enterprise, Windows 10 IoT, Linux, VxWorks	Windows® 8, Windows® 7, WEBS, WES7, WEC7, Linux, VxWorks
TEMPERATURE	Commercial temperature: 0 °C to +60 °C Industrial temperature: -40 °C to +85 °C	COMe-mAS10- commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating COMe-mAS10 E2 - industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	COMe-mEL10- commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating COMe-mEL10 E2 - industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	COMe-m4AL10 Commercial temperature: 0 °C to +60 °C operating / -30 °C to +85 °C non-operating COMe-m4AL10 E2 Industrial temperature: -40 °C to +85 °C operating / -40 °C to +85 °C non-operating	COMe-mAL10 Commercial temperature: 0 °C to +60 °C operating / -30 °C to +85 °C non-operating COMe-mAL10 E2 Industrial temperature: -40 °C to +85 °C operating / -40 °C to +85 °C non-operating	Industrial temperature: -40 °C to +85 °C operating

*) A range down to 4.75 V is possible under specific conditions. Please get in contact with us for further information

COM Express® Carrier and Evaluation Boards

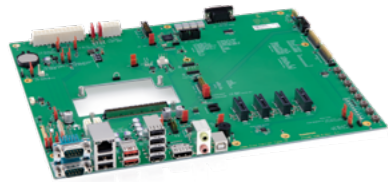
COM Evaluation Boards

minimize installation requirements and reduce dramatically design time. They help to control and cut-back pre-market costs. Evaluation boards are recommended for testing in every design-in.



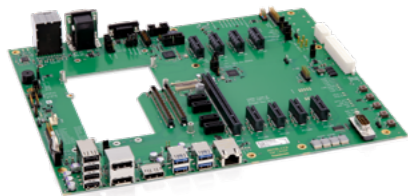
➤ COMe Ref.Carrier-i T10 TNI COM Express® Reference Carrier Type 10 for industrial temperature Specifications

- COM Express® Rev. 2.1, Pin-out Type 10
- nano-ITX Form Factor (120 mm x 120 mm)
- Comprehensive connectivity
- Industrial temperature grade



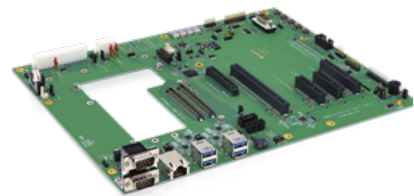
➤ COMe Eval Carrier T10 Gen3

- COM Express® Rev. 3.1 Pin-out Type 10
- ATX Form Factor (305 mm x 244 mm)
- GbE support up to 2.5Gbit
- 4x PCIe x1
- 2x USB 3.1
- 2x SATA
- 1x DP
- LVDS/eDP



➤ COMe Eval Carrier2 T6 COM Express® Eval Carrier2 Type 6

- Pin-Out Type 6, COM Express® Rev. 3.1 compliant
- ATX Form Factor (305 mm x 244 mm)
- 3x DP, LVDS/eDP, VGA
- GbE, USB, SATA, 8x PCIe x1 + PEG x16



➤ COMe Eval Carrier2 T7 COM Express® Evaluation Carrier Type 7

- COM Express® Rev. 3.0 and R3.1 Pin-out Type 7
- 4x 10GbE: via adapter cards
- 32x PCIe Lanes: 1x PCIe Gen4 x16, 1x PCIe Gen3 x8, 2x PCIe Gen3 x4
- 4x USB 3.0
- 2x SATA
- 2x RS232
- GPIO

COM Baseboard Design Training

Kontron Academy Workshop

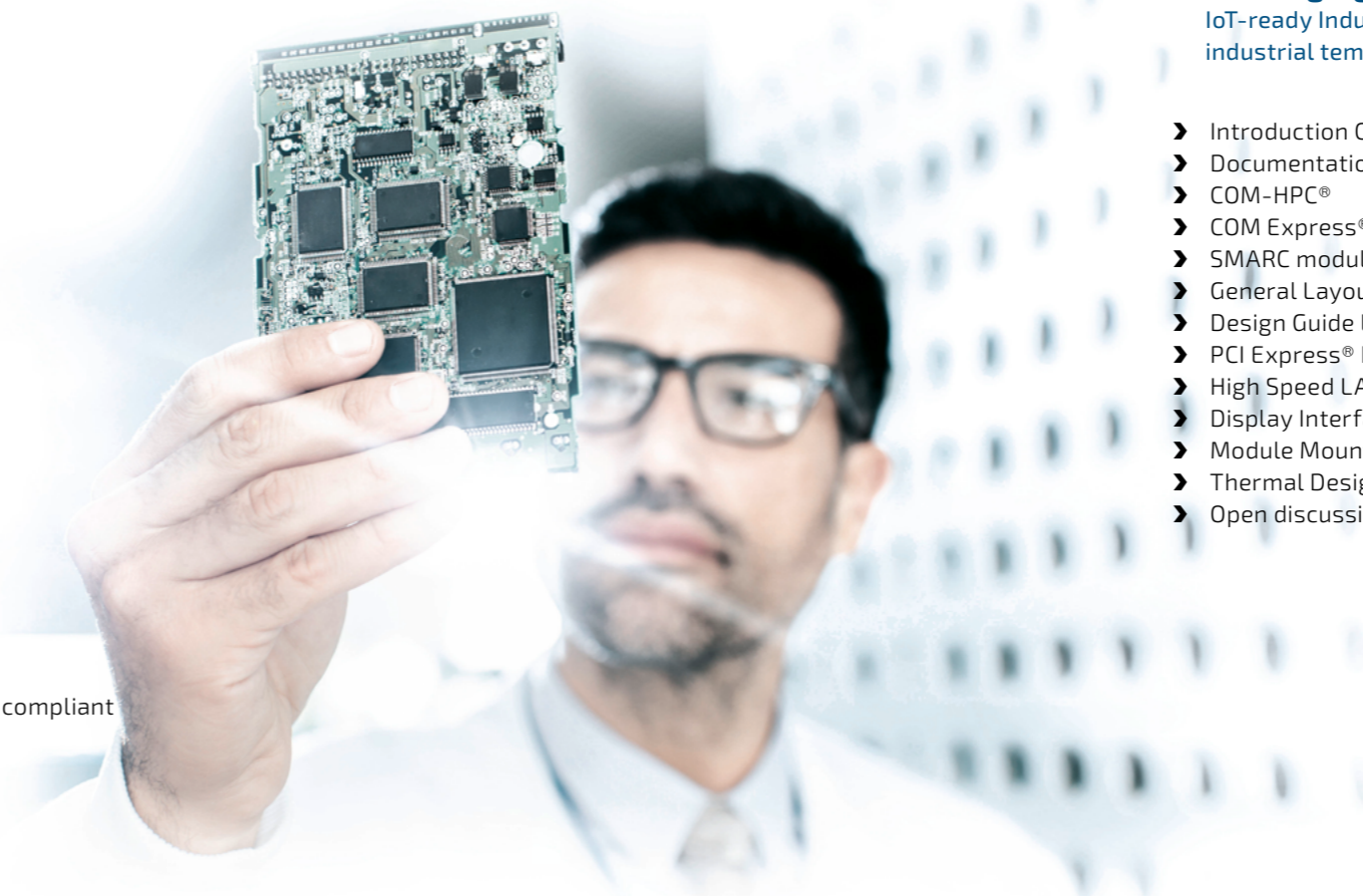
COM Baseboard Design Training

This training is recommended for development engineers, product managers and others involved in the design, verification and validation of COM baseboards. This training is highly recommended as the knowledge gained will assist with avoiding expensive corrective actions during the run of your project. Kontron experts with field experience will provide instruction to ensure you will understand how to avoid common mistakes.

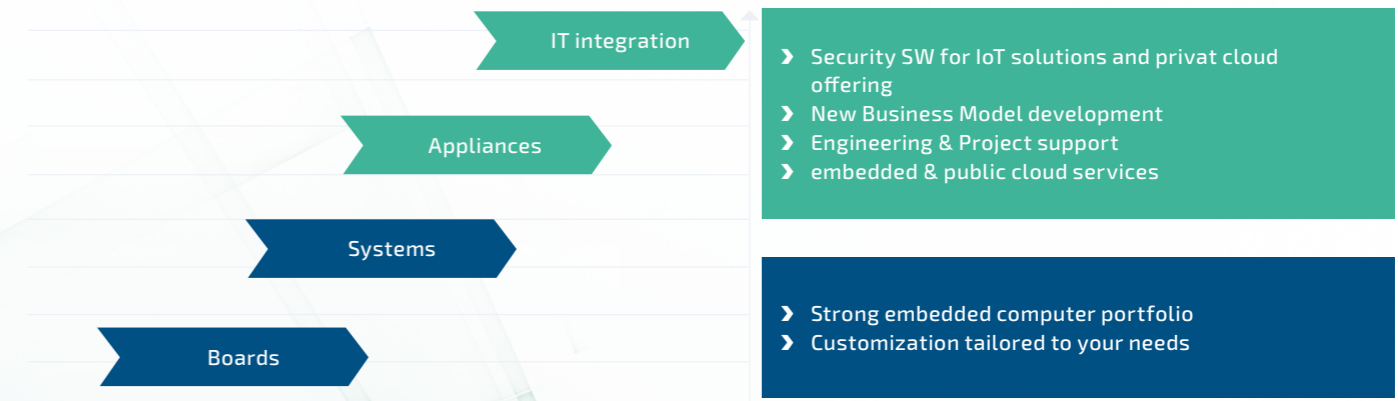
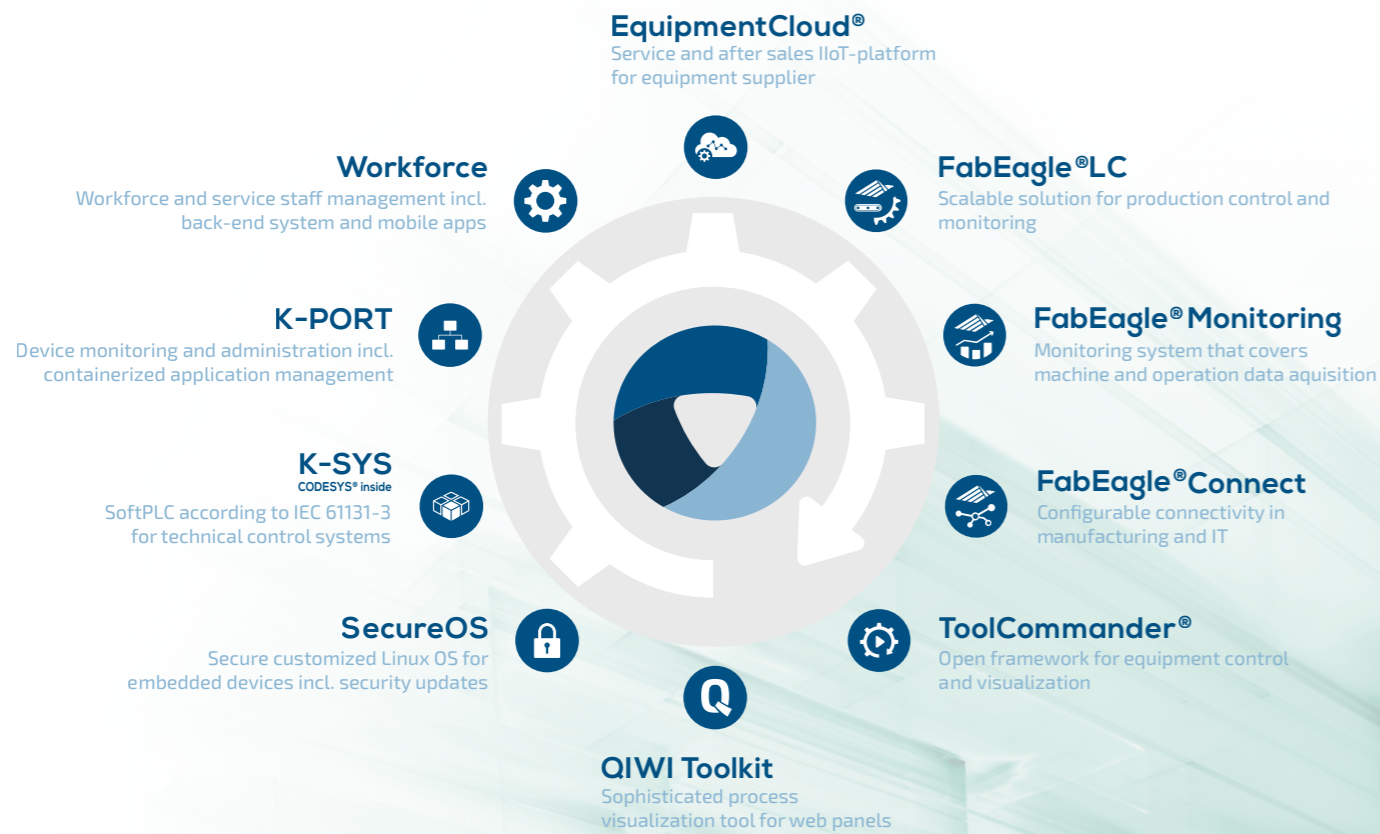
➤ Training Agenda

IoT-ready Industrial Computer Platform
industrial temperature Specifications

- Introduction COM concept with product highlights
- Documentation, Specification, Support
- COM-HPC®
- COM Express® Rev. 3.0/3.1: Type 6, 7 and Type 10
- SMARC modules
- General Layout Rules
- Design Guide Lines
- PCI Express® Design
- High Speed LAN connectivity
- Display Interfaces
- Module Mounting
- Thermal Design & Management
- Open discussion



➤ Find out more about our offering:
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- › Vertical Market solutions
- › Application specific
- › Fully integrated software
- › Highly secure
- › Scalable
- › Self hosted or cloud

- › Choose from a broad standard embedded computer portfolio
- › Use application specific computer systems and HMIs
- › Benefit from engineering competence for industrial standard & custom Boards and Systems
- › Tailor the software products and Toolkits to your market specific applications
- › Get project support from our engineering teams for local IT and cloud solutions



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

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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