



PART NUMBER: 3U-CPU-11G

- CompactPCI® serial (PICMG® CPCI-S.0) CPU card
- Single size Eurocard - 3U mounting height
- 3 x 10Gbps USB Type-C DP alt mode
- 3 x 2.5Gbps Ethernet RJ45
- Backplane communication via PCI Express®
- New AirMax VSe® backplane connectors up to 25Gb/s differential pair
- On-board PCIe® mezzanine expansion options
- Side cards and low profile mass storage modules available as COTS

SPECIFICATION

<p>Processor</p>	<ul style="list-style-type: none"> • Intel® 11th Generation Mobile Xeon® W or Core™ processor • Tiger Lake H45 platform • Up to 8-core, up to 3MB cache per core • DDR4 3200 ECC RAM • Gen 12 graphics, 4 displays up to 8k60 • TCC/TSN • Extended temperature operation • Embedded & industrial use conditions • 45/35W configurable TDP, 25W TDP • BGA soldered for optimum reliability • Mobile Intel® Series 500 PCH (RM590E IOTG) • Intel® Xeon® W processors (Industrial Use Case*) <ul style="list-style-type: none"> • Up to 8 cores, 24MB cache, 32EU, Intel® vPro™ eligible • W-11865MRE 8c 24M 4.7GHz 45/35W 32EU 1350MHz ECC TCC/TSN VPro -40° C to +100° C • W-11555MRE 6c 12M 4.5GHz 45/35W 32EU 1350MHz ECC TCC/TSN VPro -40° C to +100° C • W-11155MRE 4c 8M 4.4GHz 45/35W 16EU 1250MHz ECC TCC/TSN -40° C to +100° C • W-11865MLE 8c 24M 4.5GHz 25W 32EU 1350MHz ECC TCC/TSN VPro 0° C to +100° C • W-11555MLE 6c 12M 4.4GHz 25W 32EU 1350MHz ECC TCC/TSN VPro 0° C to +100° C • W-11155MLE 4c 8M 3.1GHz 25W 16EU 1250MHz ECC TCC/TSN 0° C to +100° C • *Disable core/graphics turbo for industrial use condition • Intel® Core™ processors (Embedded Use Case) <ul style="list-style-type: none"> • Up to 8 cores, 24MB cache, 32EU, Intel® vPro™ eligible • i7-11850HE 8c 24M 4.7GHz 45/35W 32EU 1350MHz VPro 0° C to +100° C • i5-11500HE 6c 12M 4.5GHz 45/35W 32EU 1350MHz VPro 0° C to +100° C • i3-11100HE 4c 8M 4.4GHz 45/35W 16EU 1250MHz 0° C to +100° C • 6600HE 2c 8M 2.6GHz 35W 16EU 1100MHz 0° C to +100° C
<p>AI Resources</p>	<ul style="list-style-type: none"> • DL Boost - set of instructions to accelerate AI workloads • AVX512 - Advanced Vector Extensions & VNNI - Vector Neural Network Instructions - X86 instruction set which is designed to accelerate convolutional neural network for INT8 inference, helps accelerate workloads like image recognition • GNA - Gaussian & Neural Accelerator - a low-power neural coprocessor for continuous inference at the edge, designated for offloading workloads including but not limited to noise reduction or speech recognition, saves power and frees CPU resources • Intel® OpenVINO™ (Open Visual Inference and Neural network Optimization) toolkit 2022 - deploy high-performance, deep learning inference • Intel® Edge Software Hub - edge computation software and packages • Intel® DevCloud for the Edge - allows you to actively prototype and experiment with AI workloads for computer vision
<p>Firmware</p>	<ul style="list-style-type: none"> • Phoenix® UEFI (Unified Extensible Firmware Interface) • Secure Boot and Measured Boot supported • Windows®, Linux and other (RTOS)' supported • Intel® AMT supported (disabled by default, must be enabled via BIOS setup)
<p>Main Memory</p>	<ul style="list-style-type: none"> • Integrated memory controller up to 64GB DDR4 3200 with hardware ECC* • DDR4 +ECC soldered memory up to 32GB (ultra rugged basic memory) • DDR4 +ECC SO-DIMM memory module socket up to 32GB (memory expansion option) • Total memory encryption • *ECC with Xeon® processor SKUs (industrial use)
<p>Graphics</p>	<ul style="list-style-type: none"> • Integrated graphics engine, 4 displays • Codec support HEVC/SCC/VP9/AV1 • HDR support power optimized • Decode up to 8k60: <ul style="list-style-type: none"> • 2x 4k60 8b 4:2:0 AVC • 5k60 12b 4:2:2/4:4:4 HEVC/VP9/SCC • 8k60 12b 4:2:0 HEVC/VP9/SCC • 4k60 10b 4:2:0 AV1 • Encode up to 8k30: <ul style="list-style-type: none"> • 2x 4k60 8b 4:2:0 AVC • 5k60 10b 4:4:4 HEVC/VP9/SCC • 8k30 10b 4:2:0 HEVC/VP9/SCC • 2x 4k HEVC encode speed • Up to 4 displays supported: <ul style="list-style-type: none"> • 1 Display: 8k60 HDR

Graphics (Continued)	<ul style="list-style-type: none"> • 2 Displays: 8k60 SDR or 4k120 HDR + 5k120 HDR • 3 Displays: 4k60 HDR • 4 Displays: 4k60 HDR • DisplayPort DP1.4a HBR3 • Multi-Stream Transport (MST) - display daisy chaining • Integrated DP Alt Mode MUX • Integrated audio • Display front panel options: <ul style="list-style-type: none"> • 3 x Type-C connectors (DisplayPort Alternate Mode) • 4th DisplayPort optional via Type-C connector on low profile mezzanine card S40 or S48
Networking	<ul style="list-style-type: none"> • Up to 11 Gigabit Ethernet networking interfaces in total • 3 x Front 2.5GBASE-T RJ45 - 3 x Intel® I226-IT NIC • 2.5GBASE-T, 1000BASE-T, 100BASE-TX, 10BASE-T connections • RJ45 Front port 1 - Intel® I226-IT, Intel® vPRO™/AMT (Wake on LAN) • RJ45 Front port 2 - Intel® I226-IT, TCC/TSN capable, PPS/PPM • RJ45 Front port 3 - Intel® I226-IT, TCC/TSN capable • Integrated TCC/TSN controller for front ports 2 & 3 (RM590E PCH) - Real Time networking • TSN Precision time protocol (Time-Sensitive-Networking) as required e.g. for OPC UA and OpenAvnu • Intel® Time Coordinated Computing (Intel® TCC) for time synchronisation and timeliness • Option 8 x 1000BASE-T backplane w. S80-P6 mezzanine module - Marvell® Peridot switch • Option 4 x 1000BASE-T backplane w. S82-P6 mezzanine module - 4 x Intel® I210-IT NIC • Option 4 x 2.5GBASE-T backplane w. S83-P6 mezzanine module - 4 x Intel® I226-IT NIC • Option 4 x 2500BASE-T RJ45 front w. SCJ-VEENA short side card - 4 x Intel® I226-IT NIC (8HP assy) • Option 4 x 1000BASE-T M12-X front w. SCL-RHYTHM short side card - 4 x Intel® I210-IT NIC (8HP assy)
Security	<ul style="list-style-type: none"> • Total memory encryption - hardware based • ROP attack prevention - hardware based protection against browser malware attacks • Advanced Crypto Key protection - hardware based • Trusted Platform Module SLM9670 • TPM 2.0 for highest level of certified platform protection • Infineon Optiga™ cryptographic processor
Front Panel I/O (4HP)	<ul style="list-style-type: none"> • 3 x 2.5 Gigabit Ethernet RJ45 receptacles • (2.5GBASE-T, 1000BASE-T, 100BASE-TX, 10BASE-Te) • Intel® vPRO™/AMT support • Port 2 & 3 TCC/TSN enabled • 3 x 10Gbps USB Type-C receptacles DisplayPort Alt Mode • USB and/or DisplayPort usage • USB 3.2 Gen 2x1 (formerly USB 3.1 Gen2) SuperSpeed+ 10Gbps • USB-PD downstream facing ports 5V/3A (Infineon CYPD5225 EZ-PDT CCG5 controller) • DisplayPort 1.4 • Additional Type-C front I/O with low profile mezzanine S40 or S48
Front Panel I/O (8/12HP)	<ul style="list-style-type: none"> • Variety of side cards available, common front panel 8HP/12HP with CPU card • Various I/O ports e.g. UART, Audio, RJ45 Ethernet, M12-X Ethernet, Wireless (SMA) • Custom specific front panel and side card design
CompactPCI® Serial Backplane Resources	<ul style="list-style-type: none"> • PICMG® CPCI-S.0 CPU card & system slot controller • 16 x PCIe Gen4¹ 16GT/s (2 links x8 for two fat pipe slots, derived directly from the Xeon® or Core™ CPU) • 9 x PCIe Gen3 8GT/s (1 link x4, 5 links x1 for peripheral slots, derived from the PCH) • 5 x SATA 6G (from the PCH) • 8 x USB3² (from the PCH) • Option 8 x Gigabit Ethernet Marvell 88E6390 switch (S80-P6 low profile mezzanine expansion card) • Option 4 x Gigabit Ethernet Intel® I210-IT NIC (S82-P6 low profile mezzanine expansion card) • Option 4 x 2.5Gigabit Ethernet Intel® I226-IT NIC (S83-P6 low profile mezzanine expansion card) • New backplane connectors AirMax VSe® up to 25Gbps per differential pair according to CompactPCI® Serial R3.0 (backward compatible to backplanes with AirMax VS® 12.5Gbps) • 4HP CPU card front panel width when the adjacent board to the right is equipped with legacy AirMax VS® connectors (e.g. peripheral cards according to the CompactPCI® Serial R2.0 connector specification) • 5HP CPU card front panel width and backplane slot pitch according to CompactPCI® Serial R4.0 when the adjacent board to the right is also equipped with the new AirMax VSe® connectors (e.g. multi CPU card system) <ul style="list-style-type: none"> • ¹ The CPU is PCIe® Gen4 capable on these links (specified with CompactPCI® Serial R3.0) • ² USB 3.2 Gen 2x1 SuperSpeed+ 10Gbps
Local Expansion	<ul style="list-style-type: none"> • Low profile mezzanine modules available (4HP front panel) • HSE1 - PCIe Gen4 x4, 1 x USB3 10Gbps & 2 x USB2 • HSE2 - PCIe Gen3 x4 (configurable also 2x2, 4x1), 4thDisplayPort • EXP - Legacy interface (eSPI, Audio, UART, I2C, GPIO) • 4HP Low profile mezzanine module options (to be ordered separately) <ul style="list-style-type: none"> • S20-NVME Mezzanine module - 1 x M.2 2280 NVME SSD socket, 1 x Type-C • S40-NVME Mezzanine module - 1 x M.2 2280 NVME SSD socket, 1 x M.2 2280 SATA SSD socket, 2 x Type-C • S42-MC Mezzanine module - 1 x M.2 2280 NVME SSD socket, 2 x Mini Card sockets • S48-SSD Mezzanine Module - 2 x M.2 2280 NVME SSD sockets, 1 x Type-C • S80-P6 Mezzanine module - 1 x M.2 2280 NVMe SSD socket, 8 x Gigabit Ethernet via P6 backplane connector • S82-P6 Mezzanine module - M.2 NVMe SSD & 4 x GbE NIC via P6 backplane connector • S83-P6 Mezzanine module - M.2 Ne SSD socket, 4 x 2.5GbE NIC via P6 backplane connector • Custom specific storage & I/O module design • 8HP Mezzanine side card options (to be ordered separately) <ul style="list-style-type: none"> • SCJ-VEENA Short side card - M.2 2280 NVMe SSD socket, 4 x 2.5GbE NIC, front panel RJ45, USB3 • SCL-RHYTHM Short side card - M.2 2280 NVMe SSD socket, 4 x GbE NIC, front panel M12-X • SCX-PCIE - M.2 2280 NVMe/SATA SSD socket, PCIe® Mini Card socket, 3 x USB3, 3 x GbE RJ45 connectors, coupler for secondary CompactPCI® Serial backplane • SCZ-NVM - M.2 22110 NVMe SSD socket, quad UART, DisplayPort & USB3 connectors • ECX-PCIE - Front I/O same as SCX, coupler for CompactPCI® Express secondary backplane • Custom specific side card design - I/O and storage
Environmental & Regulatory	<ul style="list-style-type: none"> • ISO 9001 certified quality management • EC Regulatory EN55035, EN55032, EN62368-1 • Operating temperature -40°C to +85°C (industrial temperature range) • Storage Temperature: -40°C to +85°C, max. Gradient 5°C/min • Humidity 5% ... 95% RH non Condensing • Altitude -300m ... +3000m • Shock 15g 0.33ms, 6g 6ms • Vibration 1g 5-2000Hz • MTBF 20.2 years (MIL-HDBK-217F, SN29500 @+40°C)

The Power to Outperform

Would you like to find out more? Be sure to speak to our on-stand team or contact us via the details here and we would be happy to help.

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