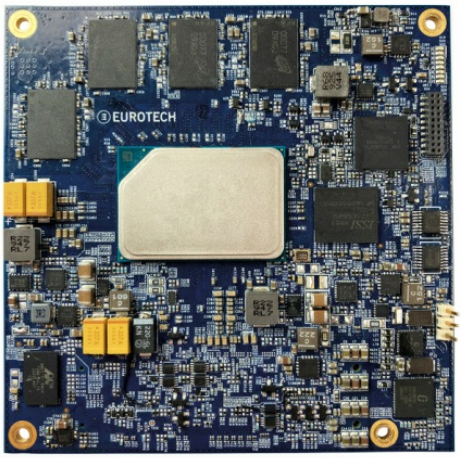
CPU-161-20

FuSa Rugged Intel Atom x6000 Series - COM Express Compact Type 6



- **Functional Safety SIL2**
- **Intel Atom x6000**
- **Powerful Graphics**
- **Rugged and Fanless**
- **Dedicated Industrial Engine**
- **Real Time Computing**
- **Up to 3x 2.5GbE Ports**
- **Customizable**
- **Professional Services**

Features

Functional Safety - Certifiable for Functional Safety applications according to IEC 61508-2:2010 SIL2 / ISO 13849-1 Cat 3 PL = d
Intel Atom x6000 Series - The Atom x6000 Series delivers up to 40% more performance compared to the previous generation, while keeping within a similar power budget
Powerful Graphics - The new integrated GPU with up to 32 Execution Units is up to 2x faster than the previous generation and supports up to 3 independent high resolution screens
Rugged and Fanless - Operates from -40 to +85°C, with error correcting code memory and soldered memory
Dedicated Industrial Engine - An integrated and independent ARM core provides unprecedented industrial capabilities and a range of native industrial interfaces (CAN-FD, UARTS, ADCs, QEPs, GPIO, Ethernet)
Real Time Computing - Support for TCC (Time Coordinated Computing) and TSN (Time Sensitive Networking) enables soft Real Time applications
Up to 3x 2.5GbE Ports - Support for 2.5GbE ranges from one port (COM Express) to 3x ports (COM Express with proprietary expansions)
Customizable - Comes with optional personalization and full customization services, ranging from factory options to deep HW/SW configuration changes
Professional Services - Provides the foundation for Eurotech Professional Services that span from carrier board development to complete system design, certification and manufacturing

Description

The CPU-161-20 is a rugged module based on COM Express that features the Intel Atom x6000 Series and provides additional features via extensions on unused pins, delivering a range of novel interfaces that can greatly simplify the design of the carrier board and reduce its cost. The CPU-161-20 is also suitable for Functional Safety (FuSa) applications, and is certifiable according to IEC 61508-2:2010 SIL2 / ISO 13849-1 Cat 3 PL = d. An integrated, independent and specialized core oversees the semi-lockstep execution of critical workloads. On the 4 core versions of the CPU-161-20, critical and non-critical workloads can be executed simultaneously, via hypervisior separation of the FuSa and non-FuSa environments. Designed for fanless applications in harsh environments where long term reliability is a must, the CPU-161-20 delivers up to 4 CPU cores and 32 GPU execution units and in-band ECC RAM. If features an all-soldered down design to improve resilience and thermal coupling, and comes with a -40 to +85°C operating temperature. Both the CPU and the integrated GPU deliver great performance improvements compared to the previous Intel Atom generation, with a speed up that is up to 40% for traditional computing and up to 2x for graphics acceleration, while keeping the TDP at 12W or less.
The CPU-161-20 fully exploits a new capability of the Intel Atom x6000 Series: an embedded ARM core provides an independent engine that manages a large number of native industrial interfaces, including Ethernet ports, ADCs, Quadrature Encoders, GPIOs, UARTs and CAN-FD. The combination of the independent engine with Time Sensitive Networking (TSN) and Time Coordinated Computing (TCC) enables soft Real Time applications. TSN is an evolution of the Ethernet standard that provides time determinism to networked communications, while staying completely compatible with the exisiting Ethernet infrastructures. TCC bridges the sinchronization of the internal clocks with the network to achieve microsecond accuracy.
Supported operating systems include Everyware Linux (based on Yocto); additionally, the CPU-161-20 supports Everyware Software Framework (ESF), a commercial, enterprise-ready edition of Eclipse Kura, the open source Java/OSGi middleware for IoT gateways. Professional Services are available for the CPU-161-20, starting from BIOS personalization and including carrier board design, system development and production. Deep module customization, such as feature changes are also available.

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Ordering code: CPU-161-20-XX			
XX		-21	-22
PROCESSOR	CPU	Atom x6200FE 1.00GHz, 2 Cores	Atom x6427FE 1.90GHz, 4 Cores
GPU	Type	Not Available	Integrated, 11th Generation
	Execution Units	Not Available	32EU@400MHz
MEMORY	RAM	4GB DDR4 IBECC, 3200MT/s, Memory Down	16GB DDR4 IBECC, 3200MT/s, Memory Down
STORAGE	Embedded	1x SPI-Flash - 1x EEPROM	
	SATA	2x SATA 3.0 (up to 6Gb/s)	
	SD	1x SDXC (Factory Option)	
MULTIMEDIA	Video Ports	Not Available	2x DDI (HDMI/DVI/DP++), 1x LVDS/eDP (eDP Factory Option), 1x VGA (Factory Option), Triple Display: VGA+DDI1+DDI2 or LVDS+DDI1+DDI2 or eDP+DDI1+DDI2
	Video Resolution	Not Available	DDI1 and DDI2: 4Kp60 / VGA: 1920x1200@60Hz LVDS: 1920x1200@60Hz, Dual Channel, 24bit
	Video Acceleration	Not Available	HW Encode: HEVC/H.265, H.264/AVC, VP9, M/JPEG; HW Decode: HEVC/H.265, H.264/AVC, VP8, VP9, VC1, M/JPEG, MPEG2
		Yes (SPI)	
	Audio	HDA Interface / Speaker / I2S / DMIC	
I/O INTERFACES	Ethernet	1x 10/100/1000/2500Mbps with TSN 2x SGMII 10/100/1000/2500Mbps (Factory Option)	
	USB	2x USB 3.0 / 8x USB 2.0	
	Serial	3x UART 2-wire 5x UART 4-wire	
	CANBus	2x CAN-FD	
	Digital I/O	5x GPI / 4x GPO / 3x GPIO or 1x GPI / 3x GPIO / SDXC (Factory Option)	
	Other Industrial	6x ADC, 2x Quadrature Encoder	
	PCI Express	1x PCIe x4 Gen3 (or 2x PCIe x2 Gen3, or 4x PCIe x1 Gen3) 2x PCIe x1 Gen3 (Mutually Exclusive with SGMII)	
	System Bus	1x LPC / 2x I2C / 3x SPI / 1x SMBus	
OTHER	RTC	Yes	
	Watchdog	Yes	
	TPM	TPM 2.0 (Discrete Chip)	
	Sensors	Temperature	
POWER	Input	12V, 5VSBY, 3V_RTC (ATX Mode) / 12V, VCC_RTC (AT Mode)	
	Consumption	4.5W (CPU TDP)	12W (CPU TDP)
ENVIRONMENT	Operating Temp	-40 to +85°C	
	Storage Temp	-40 to +85°C	
	Humidity	5% to 90% RH	
CERTIFICATIONS	Functional Safety	Certifiable according to IEC 61508-2:2010 SIL2 / ISO 13849-1 Cat 3 PL = d	
	Regulatory	CE, FCC, ISED	
	Safety	EN 62368, UL 60950	
	Environmental	RoHS3, REACH	
	Compliance	Based on PICMG COM Express R3.0, Type 6, with Proprietary Extensions	
MECHANICAL	Dimensions	95x95mm (LxW) - COM Express Compact	

Supported Software		
SOFTWARE	OS	Everyware Linux (Professional Services: Other OS and RTOS)
	IoT Framework	Everyware Software Framework (Java/OSGi)