

Transportation



How Avalue will shape transportation in smart cities?

We support our customers with innovative solutions in fields of public transport, first response, logistic and related infrastructure in a smart city. We also help our customers to achieve faster time-to-market within our ideal solutions, how to make this world smarter, at the same time, with the best quality, performance and support.



Essential Professional Capabilities



Wide Range of Product Series Selection



Domain Know-How in Transportation Market



Solution-Build Thinking



Dedicated Teams to Support



Win/ Linux/ Android OS Support

Transportation Product Highlights

Application Layer						
Computing platform						
Software layer						

Marine



Railway



Vehicle



Model Number	EMS-SKLU-Marine	VMS-EHLR	VMS-CFS	VMS-CFS-PSE	VMS-APL
Processor	i7-6600U, i5-6300U, i3-6100U, Celeron 3955U	Intel Atom X6425E, 2.0 GHz (up to 3.0GHz), 12W	i7-8700T, i7-9700TE, i5-8500T, i5-9500TE, i3-8100T, i3-9100TE, G5400T, G4900T	i7-8700T, i7-9700TE, i5-8500T, i5-9500TE, i3-8100T, i3-9100TE, G5400T, G4900T	N4200, N3350, x7-E3950, x5-E3940, x5-E3930
System Memory	1x 260-Pin DDR4 2133MHz SO-DIMM up to 16 GB	1x 260-pin SODIMM socket Max. up to 32GB DDR4 3200MT/s	2x 260-pin SODIMM socket Max. up to 64GB DDR4 2666MT/s	2x 260-pin SODIMM socket Max. up to 64GB DDR4 2666MT/s	1x 204-Pin DDR3L 1866MHz SO-DIMM up to 8 GB
Expansion	1x M.2 Key-B 2242/ 3042 (SATA/ PCIe/ USB 3.0) 1x Mini PCIe (PCIe/ USB 2.0)	1x M.2 Key-B 2242/ 3042/ 3052 (PCIe/ USB 3.1 Gen.2), w/SIM slot1 (external) 1x M.2 Key-E 2230 (PCIe/ USB 2.0) 1x mPCIe (PCIe/ USB 2.0), w/ SIM slot2 (external)	1x Avalue 80-Pin IET Interface 1x Mini PCIe (PCIe/ USB 2.0), w/ SIM1 Slot (external) 1x M.2 Key-E 2230 (PCIe/ USB 2.0) 2x M.2 Key-B 2242/ 3042/ 2280 (PCIe/ USB 3.1/ SATA), w/ SIM2, 3 Slot (external) 1x CANBus Module Interface	1x Mini PCIe (PCIe/ USB 2.0), w/ SIM1 Slot (external) 1x M.2 Key-E 2230 (PCIe/ USB 2.0) 2x M.2 Key-B 2242/ 3042/ 2280 (PCIe/ USB 3.1/ SATA), w/ SIM2, 3 Slot (external) 1x CANBus Module Interface	1x Avalue 80-Pin IET Interface 1x Mini PCIe (PCIe/ USB2.0), w/ SIM1 Slot (external) 1x Mini PCIe (PCIe/ USB2.0), w/ SIM2 Slot (external) 1x CANBus module Interface
Storage	1x 2.5" Drive Bay, 1x M.2 (SATA)	1x 2.5" SSD/HDD drive Bay (SATA III), external w/9.5 mm height; 1x M.2 2242 (SATA III)	2x 2.5" Drive Bay (Front Access) 2x M.2 Key-B SSD (2242/2280)	2x 2.5" Drive Bay (Front Access) 2x M.2 Key-B SSD (2242/2280)	1x 2.5" Drive Bay (SATA III) 1x M.2 (SATA III, 2242) 1x SD (3.0)
USB	4 x USB 3.0, 2 x USB 2.0	2x USB 3.1 Gen.2 (10Gbps), Type A 1x USB 2.0 (w/ M12 A-coded)	6 x USB 3.1	6 x USB 3.1, 2 x USB 2.0	4 x USB 3.0
COM Port	2 x RS-232/422/485 (Jumper) 4 x RS-232/422/485 (BIOS, 2.5KV isolation)	2 x COM RS232/422/485 (auto flow control via HW, via BIOS and Jumper)	1 x RS232, 2 x RS-232/422/485	1 x RS232, 2 x RS-232/422/485	2 x RS-232/422/485 (Jumper)
Other	2 x SIM Card Slot, 1x SMBus, 2 x PS2/ KB & MS 2 x Antenna mounting w/ cover	2 x SIM Card Slot (external), 9 x Antenna with dust cover, 1x CAN.2.0B (DB9), optional	1 x DC-Out (12V/4A), 3 x SIM Card Slot (External Accessible) 5x Antenna Mounting w/ Dust Cover	3 x SIM Card Slot (External Accessible) 5x Antenna Mounting w/ Dust Cover	1 x DC-Out (12V/6A), 2 x SIM Card Slot (External Accessible) 5x Antenna Mounting w/ Dust Cover
DIO	1x 12-bit GPIO	1x DB9 GPIO - 4 x DI and 4 x DO with 2.5KV isolation	1 x 8-Bit GPIO, w/ 1.5KV isolation	1 x 8-Bit GPIO, w/ 1.5KV isolation	1 x 8-Bit GPIO
Display Chipset	Intel® HD Graphics 520/ 510	Intel® UHD Graphics for 10th Gen Intel® Processors	Intel® UHD Graphics 630/610	Intel® UHD Graphics 630/610	Intel® HD Graphics 505/500
Display Resolution	DP: Max. resolution 4096x2304 @ 60Hz	DP++ 1.4: 4096x2304 @ 60Hz HDMI 2.0 : Max. resolution 4096 x 2304 @ 60Hz VGA: 1920 x 1080 @ 60Hz (optional)	DP 1.2: 4096 x 2160 @ 60Hz w/HDR HDMI 1.4: 4096 x 2160 @ 30Hz LVDS: 1920 x 1200 @ 60Hz, supports 2 channels 18/24-bit	DP 1.2: 4096 x 2160 @ 60Hz w/HDR HDMI 1.4: 4096 x 2160 @ 30Hz LVDS: 1920 x 1200 @ 60Hz, supports 2 channels 18/24-bit	DP: Max. Resolution 4096 x 2160 @ 60Hz LVDS: Max. Resolution 1920 x 1200 @ 60Hz
Audio Interface	Mic-In, Line-In and Line-Out	Mic-In, Line-Out, Line-in (DB15)	2 x Mic-In, 2 x Line-Out	2 x Mic-In, 2 x Line-Out	2 x Mic-In, 2 x Line-Out
Ethernet Chipset	2 x Intel® I211AT	2 x Intel® I210-IT	1 x Intel® I211-AT GbE Controller, 1 x Intel® I219-LM GbE PHY	1 x Intel® I211-AT GbE Controller, 1 x Intel® I219-LM GbE PHY	2 x Intel® I211AT
Ethernet Interface	2 x RJ45	2 x M12, X-coded	2 x RJ45; 4 x Port RJ45/ M12, supports 802.3af PoE (optional)	2 x RJ45 (LAN); 4 x RJ45/ M12 (PoE), supports 802.3af PoE.	2 x RJ45
Power Requirement	Typical 12/24Vdc (+9V ~ +36V), w/ isolation	Typical 12/24Vdc (+9V ~ +36V), w/ isolation	Typical 12/24Vdc (+9V ~ +36V), w/ isolation	Typical 12/24Vdc (+9V ~ +36V), w/ isolation	Typical 12/24Vdc (+9V ~ +36V), w/ isolation
Power Mode	AT/ATX (ATX is the default setting)	AT/ATX (AT default), w/ignition control and power management	AT/ATX (AT default), w/ignition control and power management	AT/ATX (AT default), w/ignition control and power management	AT/ATX (AT default), w/ignition control and power management
Dimension (L x W x H)	(240 x 151.5 x 75 mm)	240 mm x 150 mm x 55mm	(210 x 240 x 110 mm)	(210 x 240 x 110 mm)	(239 x 186 x 62 mm)
Operating Temperature	(w/SSD), ambient w/ air flow -20°C ~ 60°C (-4°F ~ 140°F)	-40°C ~ 70°C (w/SSD) ambient w/ air flow. Follow EN50155, Class OT4 -40 ~ 70°C, 85°C for 10 minutes	With extended temperature peripherals, w/ air flow: -40°C ~ 70°C (-40°F ~ 158°F)	With extended temperature peripherals, w/ air flow: -40°C ~ 60°C (-40°F ~ 140°F)	With extended temp. peripherals N4200/N3350: -20°C ~ 70°C (-4°F ~ 158°F) w/ air flow ; E3950/E3940/E3930: -40°C ~ 70°C (-40°F ~ 158°F) w/ air flow
Certification Information	CE, FCC Class A, IEC 60945	CE, FCC Class A, EN50155 (24Vdc in), EN50121-3-2, EN45545-2	CE, FCC Class A, E13 Mark, ISO7637-2, IP50 Rating	CE, FCC Class A, E13 Mark, ISO7637-2, IP50 Rating	CE, FCC Class B, E13 Mark, ISO7637-2, IP50 Rating



VMS-EHLR

Intel® Atom® x6425E Processor Rugged Fanless Railway System

- > Intel® Elkhart Lake Atom™ x6425E Processor
- > Intel® UHD Graphic for 10th Gen Intel® Processor
- > 1-Memory Socket, Max. Up to 32GB DDR4 3200
- > 2-COM Port (RS-232/422/485 by BIOS & Jumper)
- > 2-Storage (Front Access 2.5" & M.2 Key-B SSD)
- > 3-Display (DP 1.4 & HDMI 2.0 & VGA)
- > 3-Expansion (mPCIe & M.2 Key-E/B)
- > 4-M12 (DC-Input, USB 2.0, 2-LAN Port)
- > 8-Bit Programmable GPIO with 2.5KV Isolated
- > Default Wall Mount Kit, dTPM 2.0 onboard

+ Spec

System Information (CS)	
Processor	Intel® Atom™ x6425E Processor (1.5M Cache, up to 3.00 GHz)
System Memory	1 x 260-Pin SODIMM Socket Max. up to 32GB DDR4 3200MT/s
I/O Chipset	AMI uEFI BIOS 256 Mbit SPI Flash ROM
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec.
H/W Status Monitor	Horizontal battery socket Supports wide operating temperature Supports no RTC battery mode
TPM	dTPM 2.0 (Default)
SBC	EBM-EHLR + EBM-EHLR DB-A
Expansion (CS)	
mPCIe	1 x mPCIe support PCIeIII x1/ USB2.0 and SIM slot2 (external)
M.2	1 x M.2 Key-B 2242/3042/3052 support PCIeIII x1/ USB3.1 Gen.2 and SIM slot1 (external) 1 x M.2 Key-E 2230 for Wi-Fi & BT Module (PCIeIII x1/ USB2.0)
Storage (CS)	
M.2	1 x M.2 2242 (SATA III)
2.5" Drive Bay	1 x 2.5" Front Access Drive Bay (SATA III), supports w/9.5mm SSD
Edge I/O (Front) (CS)	
USB Port	2 x USB 3.2 Gen.2 (10Gbp/s)
Power Button	Push Button for Power on/off (w/LED)
Reset Button	Push Button for Reset (Hidden)
LED Indicator	3 x LED indicator (PWR/Wi-Fi/LTE) Storage LED (Yellow)- M.2 B-key SATA/ 2.5" SSD Storage LTE LED (Green)- M.2 B-key PCIe/USB3 Wi-Fi LED (Green)- M.2 E key
Digital I/O	1 x 8-Bit 2.5KV Isolated GPIO in DB-9
CAN Bus	1 x 4-Pin CAN Bus H/L in DB-9
SIM Slot	2 x Front Access SIM Slot
Antenna	3 x Antenna Mount
Edge I/O (Rear) (CS)	
USB Port	1 x USB 2.0 in M12-A code connector
COM Port	2 x COM Port (RS-232/422/385 in DB-9, select via BIOS, auto flow control via HW)
HDMI	1 x HDMI 2.0
DP	1 x DP 1.4
VGA	1 x VGA
Audio	1 x Line-In, Line-Out and Mic-In in DB-15
RJ-45	2 x LAN Port in M12-X code connector
Edge I/O (Right) (CS)	
Antenna	2 x Antenna Mount
Edge I/O (Left) (CS)	
Antenna	2 x Antenna Mount
GPS (CS)	
Chipset	u-blox NEO-M9N GNSS LCC module with Untethered Dead Reckoning and onboard sensors
Protocol	BeiDou, Galileo, GLONASS, GPS / QZSS
Display (CS)	
Graphic Chipset	Intel® UHD Graphics for 10th Gen Intel® Processors
Resolution	DP++ 1.4: 4096x2304 @ 60Hz (DP to HDMI cable can not support 4K@60Hz, max support 1920x1080(60Hz)) HDMI 2.0b: Max. resolution 4096x2304 @ 60Hz VGA: 1920 x 1080 @ 60Hz
Audio (CS)	
Audio Codec	Realtek ALC888S
Ethernet (CS)	



LAN Chipset	Intel® Ethernet Controller I210-IT
Specification	10/100/1000Base-T
LED Indicator	4 x LED indicator (LAN for active, speed)
Power Requirement (CS)	
DC Input	Typical 24Vdc (+9~ 36Vdc) w/ Isolation TVS component for surge protection Reverse current/voltage protection
DC Input Connector	M12-A code (4 Poles: V+, V-, GND, IGN)
ACPI	Single power ATX Support S0,S3, S4, S5 ACPI 5.0 Compliant
Power Mode	AT/ATX (ATX is default setting)
Software Support (CS)	
OS Information	Win 10 64bit / Linux
Certification (CS)	
Certification Information	CE, FCC Class A, UKCA, EN50155, EN50121, EN45545
Mechanical & Environmental	
Operating Temperature	-40°C ~ 70°C (w/SSD) ambient w/ 0.2 or 0.5 air flow
Storage Temperature	-30°C ~ 70°C (-22°F ~ 158°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Dimension (W x L x H)	240*150*55 mm
Weight	2.2kg
Vibration Test	Operating with SSD : MIL-STD-810G, Method 514.6, Category 4, common carrier US highway truck vibration exposure
Shock Test	Operating with SSD: MIL-STD-810H, Method 516.8, Procedure I, functional shock=20G
IP Rating	IP50
Mounting Kit	Wall Mount Kit (standard) DIN RAIL (optional)
Ordering Information	
Ordering Information	VMS-EHLR-A1-1R Intel® Elkhart Lake Atom™ x6425E Processor Rugged Fanless Railway System