Rugged Embedded Node
REN™
The Embedded Edge

19-14

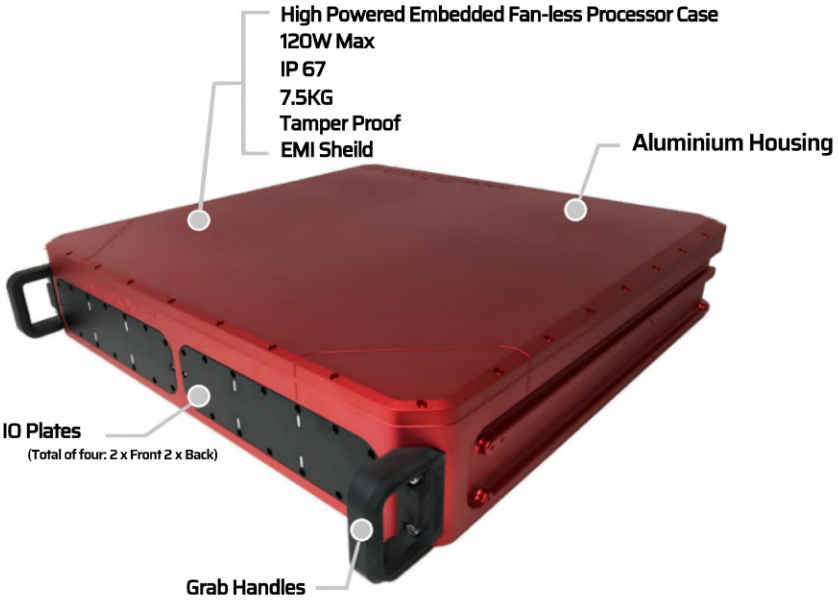
14" Deep Rugged Embedded Node - REN™

AUSTRALIAN MADE AND OWNED

The Evolution of REN™

REN™ 19 -14 is part of the 3rd generation of Unitronix's REN™ product range. It is to take VersaLogic Corporation Embedded Server Units (ESU) range of processor cards. "Grizzly" being the most suitable, as it is a very high-end processing engine with big data connectivity and I/O options including one full-size and one half-size PCIe sockets to host 3rd party cards.

(See Grizzly data sheet for more information).



What is a REN™ Box 19?

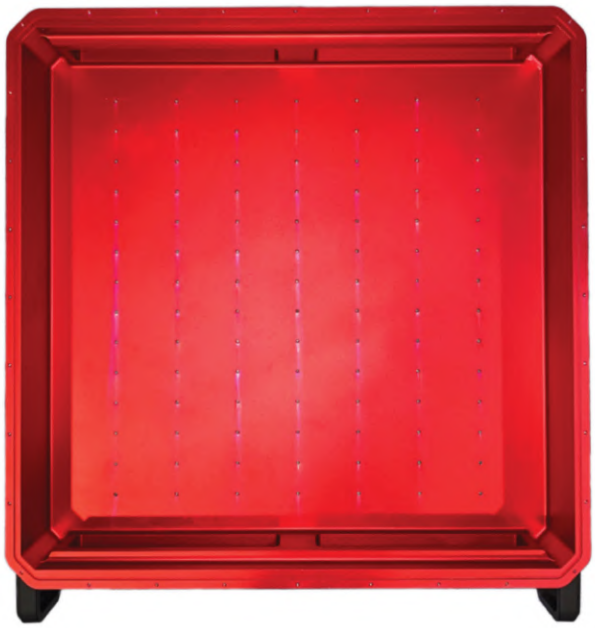
It's a project box with serious TRL and currently the fastest and cheapest route to a deployed system available in the world!

REN™ 19!

- Effectively a large heatsink for up to 3 high powered Versalogic ESU/EPU or VPX cards (Future Development) for processing in extremely rugged and harsh environments where traditional air-cooled equipment just won't do the job.
- Is an item of utility for engineers who would normally build these systems themselves, but due to a lack of project time and low quantity requirements, an off-the-shelf solution is a more viable option.
- Is well engineered. It is Gen 3 of a design that is tested underwater to a depth of 2 metres for 2 days.
- Is flexible in its design. Any of the VersaLogic ESU or EPU range can be used. Inside the case there is room for multiple ESUs or EPUs, and potentially room for customer's own specific equipment.
- Allows customers to get going immediately developing the application. No stress or worry about connectors and connections because there are none.
- Allows customers to develop with the lid OFF and the IO plates OUT. Once you have the software going, you then figure out what actual signals you need to connect out of the box and how they will be arranged on the IO plate.

Options to incorporate - **ASINE** Rugged M2 Flash drives & Rugged SATA SSD's

Internal Mounting Grid



What sort of applications would run on REN™ 19?

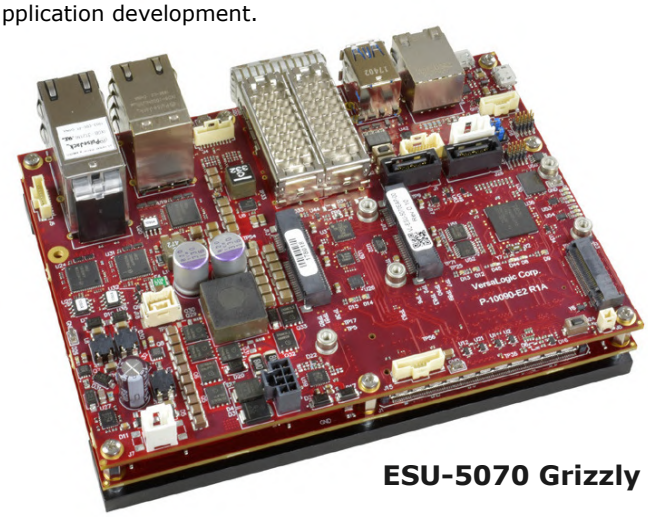
REN™ 19 is not a traditional industrial embedded processing computer. It is for applications that need a high powered processing engine or cluster of engines, and will need to run those processors at a high ambient (external) temperature (60°-70°C) whilst completely sealing itself from the environment it is in.

Types of applications are:

The next generation of Industrial, Energy, Robotics and Public Sector applications utilising AI, Data Analytics, IoT.

Get developing quickly.

As soon as you receive your REN™ 19 you can remove the lid, remove the blank I/O plate's and plug-in the development cable kit to be up-and-running developing the application. In parallel, customers can design their own I/O plate configuration and test whilst not interfering with application development.



ESU-5070 Grizzly

Internal Lid Confgurations

Very flexible power supply.

As standard the VersaLogic ESU (Grizzly) has a wide ranging on-board PSU and can accept 10 to 30 Volts DC.

Should a customer wish for more flexibility with the power supply, the REN 19 lid comes pre-drilled to take VICOR DC/DC power bricks and filters in the following configurations:

Up to 6 x VICOR DC/DC V28B series + 6 x VICOR V28C Series Filters or the VICOR Brick and filter sets can be transposed with 2.5 inch SSDs.

A version will be available with an AC power brick layout, for now it is DC only. Adding power bricks or SSDs is the customer's choice and they can do this themselves or Unitronix can supply with these items wired up.

Note: There are isolation plates available for the power bricks and disk holding plates for the SSDs.

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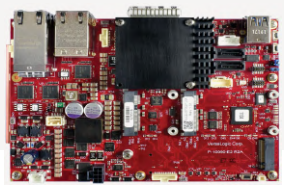
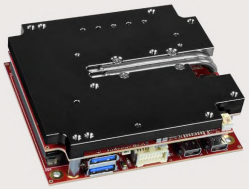
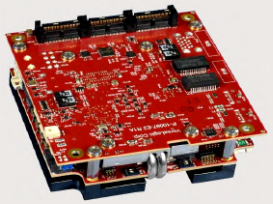
REN™ EPU Data Sheet

Make	VersaLogic™	VersaLogic™	VersaLogic™	VersaLogic™	VersaLogic™	
Model	**Grizzly** VL-ESU-5070	**Eagle** EPU-5120	**Blackbird** VL-EPU-4563	**Sabertooth** VL-EPMe-51	**Harrier** VL-EPU-4011	**VPX**
Type	**Embedded Server Unit**	**Embedded Processing Unit**	**Embedded Processing Unit**	**External Phase Modulation Enable**	**Embedded Processing Unit**	
Processor	**Intel Server-Class Processor** 8, 12, or 16-core processor.	**Intel Xeon Processor** Hex-core with 4.2 GHz turbo clock rate.	**Intel Core "Skylake" Processor** Up to 2.6 GHz clock rate. Quad- and dual-core options.	**Intel Xeon or iCore "Coffee Lake Refresh"** Processor. Quad-core or hex -core, up to 4.2 GHz turboclock rate.	**Intel Atom Apollo Lake Processor** Up to 2 GHz burst clock rate. Quad or dual-core options. Low power consumption.	**Coming Soon**
Features	A processor with up to 16 cores coupled with up to 128 GB of ECC memory supports the use of hypervisors for running of virtual machines. Intel 8, 12, or 16-core processor Full -40°C to +85°C operation Two 10 Gigabit Ethernet + ports Four Gigabit Ethernet ports, Up to 128 GB of ECC memory and Intelligent Platform Management Interface (IPMI 2.0) functionality. Typical power consumption is as low as 27.6 W. Ideal for edge server, network appliance and IoT applications requiring multi-core processing and high data bandwidth within the constraints of a tight power budget. Two Mini PCIe sockets and a PCIe x 4 M.2 site provide for on-board I/O expansion and high speed / high-capacity on-board storage. The capability of the Grizzly makes it ideal for situations where data gathering, processing, & storage need to be kept local for security. or latency reasons, or to provide local cloud capability. The Grizzly also contains additional interfaces including USB, serial and digital I/O, and SATA.	High Performance Processor 6-core Xeon-E High Speed On-board Storage 128 Gb NVMe fast read/write SSDstorage Error-Correcting Memory Up to 32 GB of ECC RAM Hyper-Threading On-board I/O includes two USB 3.1 ports, four USB 2.0 ports, RS-232/422/485 serial ports, 8254 timer/counters. I2C support, and 8 digital I/O lines. On-board power conditioning supports nominal 12V input between 10V – 15VDC. Meets MIL-STD-202H specifications for shock and vibration Intel UHD Graphics P630 supports DirectX 12 OpenGL 4.5, 4K hardware video acceleration	-40°to+85° core operating temperature models Trusted Platform Module (TPM) security chip Shock & vibration per MIL-STD-202G 6th Generation Intel® Core™ "Skylake" processor -i7-6822EQ (quad core) or -i5-6442EQ (quad core) or -i5-6300U (dual core) or -i3-6100U (dual core) On-board Power Management -8 to 30 volt DC input 12 & 24 24 volt system compatible -Over and reverse-voltage protection -RF noise filtering -Transient voltage protection High Speed On-board Storage Trusted Platform Module (TPM) security chip Shock & vibration per MIL-STD-202G A complete x86 embedded computer COM Basic size: (95x125x37 mm) Up to 32GB DDR4 RAM Two Gigabit Ethernet Two mini Display Ports and LVDS video outputs Three Mini PCIe Sockets Two USB 3.0 port, four USB-2.0 ports Serial I/O ports,SATA, Digital I/O Analog Inputs (8 chan.) Analog Outputs (4 chan.) HD Audio	High Performance Processors 6-core Xeon-E or 4-core i3 3-Bank Expansion Gen 3 PCIe x16 with bifurcation High Speed On-board Storage 128 Gb NVMe fast read/write SSD storage PC104 "3-Bank" Expansion Connector Gen 3 PCIe x16 bus with bifurcation, four PCIe x1, two USB 2.0, and SMB. High-performance Video Intel UHD Graphics (P)630 supports DirectX 12and OpenGL 4.5, 4K hardware video acceleration with HEVC (10-bit), VP8, VP9, and MPEG2 encoding/decoding and VC-1 decoding. Two Mini Display Port outputs. Network Two Gigabit Ethernet (GbE) ports. Storage On-Board fast read/write bootable 128 GB NVMe SSD. Larger capacities available Gb/s SATA port supports bootable SATA hard drive. Dual-port (non-latching) option available. Industrial I/O Two USB 3.1 ports (5a) and four USB 2.0 ports (5b) support video cameras, keyboard, mouse, and other devices. Two RS-232/422/485 serial ports (5c). Three 8254 timer/counters. I2C support (5d). 6 Digital I/O Eight TTL I/O Lines 3.3V. On-board Power Conditioning 10V–15VDC input for nominal 12V power sources	Error-correcting memory (up to 8 GB) Very small (55 x 95 x 29 mm) TPM 2.0 security chip -40° to +85°C Operating Temperature Wide Input Voltage Range (8 to 17 volts) Dual- or quad-core Intel® Atom™ Apollo Lake processor On-board Power Conditioning (on back) Accepts 8 to 17 volts (12V typical). High-performance Video Integrated Intel HD Graphics 505/500 supports Ultra HD 4k, DirectX 12, OpenGL 4.3, and H.264, MPEG-2 encoding/decoding. Display Port++ (2a) and LVDS (2b) video outputs support multiple display modes including Extended Desktop and Clone. LVDS backlight control (2c). Network Dual GbE Ethernet interfaces. Autodetect 10BaseT / 100BaseTX / 1000 BaseT with remote boot support. SATA (on back) SATA III port supports bootable SATA drives. SATA (on back) SATA III port supports bootable SATA drives. Mini PCIe Card Sockets Full-(5a) and half-(5b) size sockets. Supports Wi-Fi modems, GPS, MIL-STD-1553, Ethernet Flash data storage, and other mini PCIe modules. MicroSD Socket Supports removable microSD card solid-state drives. Industrial I/O One USB 3.0 port (7a on back) and four USB 2.0 ports (7b) support keyboard, mouse, and other devices.	
						

Smart cities

VERSALOGIC CORPORATION

EMBEDDED PROCESSING UNITS (EPU)

VersaLogic's EPU's are fully assembled and tested embedded computers. Each product is a two-board set with a CPU, I/O board and integrated heat plate. The resulting product has a footprint that is about 1/2 the size of equivalent single board designs, and is very mechanically rugged. VersaLogic's EPU products are based on industry standard form factors with regard to size and mounting-hole locations.

EPU products are designed from the outset to be rugged, reliable, compact and flexible. They are deployed in defence, aerospace, medical and other markets. Where there's a need for rugged high performance embedded computers, VersaLogic delivers.

Advantages of EPUs

EPUs are drop-in embedded computers that are a fully assembled and tested including CPU, I/O, BIOS, and thermal solution. As off-the-shelf products, they provide a huge head start for system designers. Being based on industry standard sizes and mounting-hole locations makes them even easier to use when upgrading existing designs.

Where there's a need for rugged high performance embedded computers, VersaLogic delivers.

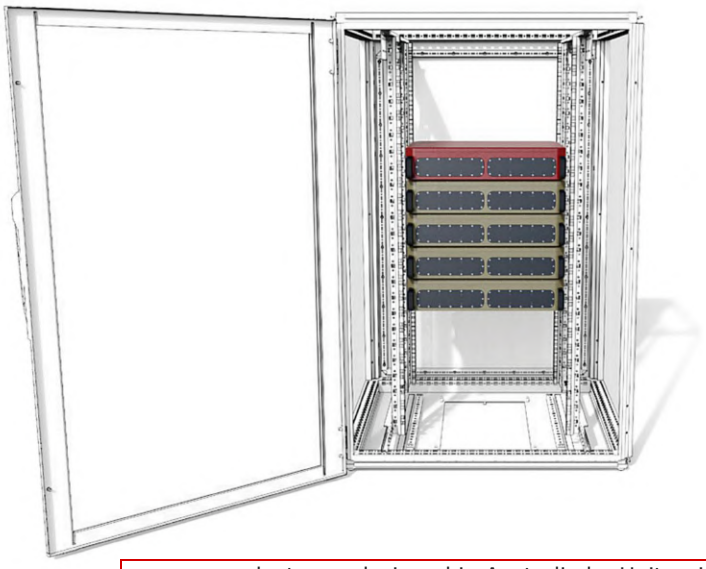
Security

The processing board has trusted platform module (TPM 2.0) installed, Secure Key, Execute Disable Bit, Secure Boot. REN™ 19 can also be supplied with tamper proof screws and even screws where there is a customer unique pattern/tool for removal.

In addition the use of non standard PC connectors (customer's choice) means that there is a high degree of physical security added to the system.

ADDITIONAL INFORMATION:

Specifcations are subject to change without notifcation. Intel is a trademark of Intel Corp. PCI Express is a registered trademark of PCI-SIG. SATA and mSATA are trademarks of the Serial ATA International Organisation. All other trademarks are the property of their respective owners.



REN™ products are designed in Australia by Unitronix.
REN™ boxes are made in Australia by Unitronix.
Systems are built and tested in Australia by Unitronix.

For UK customers in the future we will look at designing and manufacturing new designs in UK.

Product Statement:

UNITRONIX provides an item of engineering utility of a generalisednature, COTs (commercial off-the-shelf). It is the customers responsibility to decide if this product is suitable and safe to use in the application they will be using the equipment. Customers areentirely responsible for the testing and subsequent performance of this equipment in their application. All sales are subject to Unitronix's general terms and conditions found on our website.
www. unitronix.com.au/about-us/terms-and-conditions/

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