

## MISSION READY **PROTOTYPING**

Design, develop and deploy your system faster

### What is a REN™ MINI?

REN™ MINI is effectively a large heatsink for the high powered processor that allows the processing engine to be used in extremely rugged and harsh environments where the usual diecast and extruded cases just won't do the job.

REN™ **series** are items 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.

REN™ **MINI** is the smallest system in the series and offers a huge range of IO options way more than standard COTS. We can supply with;

- a). Blackbird Skylake quad core i7
- b) Eagle 6 core i9 CPU.
- c). Owl 4 core Apollo Lake ATOM.
- d). Harrier 4 core Apollo Lake ATOM.

Each of the above boards has lots of base card IO: Serial/ USB/ Ethernet/ ADC / DIO/ Multiple Display PORT. We can add single or dual miniPCle cards to gain multiple Serial/ 10GE/ ADC/ DAC/ 1553/ 429/ Wi-Fi/ LTE.



Now the important point is that the customer chooses how to connector and cable the IO they require. We do have a standard set of Fischer MiniMAX connectors / cables, but they are top shelf. Customers are free to organise this themselves. There is a standard blank removable I/O plate, take it off, cut your holes, fit the connectors you want and put it back. If you mess it up, or you want to change later, just buy a new I/O plate.

**If you think about it, the above makes this box very easy to upgrade.**

REN™ **MINI** is fully sealed against water, electromagnetic compatibility (**EMC**) and electromagnetic interference (**EMI**). Supplied with a blank IO plate & pre-drilled locations for PSU and SSD, it is a platform that is "**rugged and ready**" for engineers to develop into their required system specific to task.



## REN™ MINi Data Sheet

### What sort of Applications would run on REN™ MINi?

REN™ MINi is not a traditional industrial embedded processing computer, it is for applications that need a high powered processing engine and will need to run that processor at a high ambient (external) temperature (60°- 70°C) while completely sealing itself from the environment it is in.

### The types of applications are:

AI, Field Data Analytics, Preprocessing high-end sensors, Autonomous Control Systems.

### Get developing quickly.

As soon as you receive your REN™ MINi you can remove the lid/remove the blank I/O plate 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 the application development.

### Very flexible power supply.

As standard the VersaLogic CPU cards (Blackbird, Eagle, Owl, Harrier) have a wide ranging on-board PSU and can accept 8 to 30 Volts DC, with reverse polarity protection, filtering and transient voltage suppression.

### The choice is yours.

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

Up to 2 x VICOR DC/DC V28B series + 2 x VICOR V28C Series Filters or the VICOR Brick and filter sets can be transposed with 2.5 inch SSDs.

Adding power bricks or SSDs is the end user's choice. They can provide their own or chose to have them supplied, pre-fitted and wired up from the Unitronix range.

**Note:** Isolation plates are available for power bricks and disk holding plates for the SSDs.





## REN™ MINI Data Sheet

### What testing has been done on the REN™ Systems?

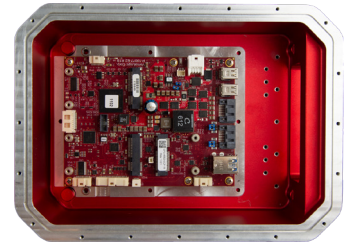
REN™ Series are 3rd generation and their design is based on previously tested systems. For this new series we will be providing what we are calling known data point testing. What this means is we will be providing engineers with test data on.

- Shock, where we will be concurrent to the CPU card shock stress test and at heat soak.
- Ambient Operating Temperature when the system is under spec.
- Vibration, where we will be concurrent to the CPU card vibration spec.
- EMC/EMI, we will provide bench test data as well as some specific test house generated data points. An engineer can then extrapolate the data to an approximation for their application.

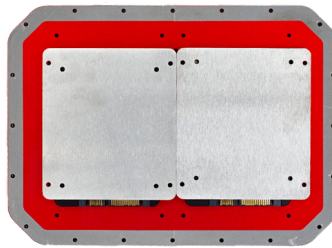
**Note:** We can do specific testing if required.



2x SSD  
Clamp Plate Required



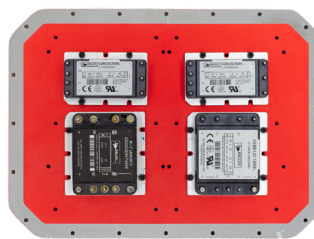
VersaLogic EPU



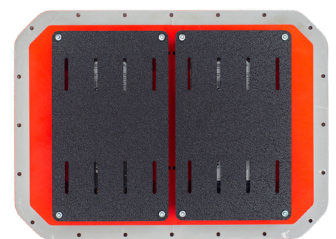
SSDs with mounting  
plates



Typical development kit



Vicor power bricks



Power isolation covers

**NB:** Some VersaLogic cards are fitted with a wide range of power supplies and do not require additional DC/DC. Where required though Unitronix can fit VICOR DC/DC supplies and filters.

**Note:** Original testing with three 38999s fitted to the IO plate with caps on.



## REN™ MINi Data Sheet

### PC/104 SINGLE BOARD COMPUTERS

REN MINi is designed to host the latest EPU (Embedded Processing Units) from the VersaLogic rugged PC/104 range.

BOARD	DESCRIPTION
Blackbird VL-EPU-4562	High performance in a compact 95 x 125 x 37 mm footprint. Featuring the Intel "Skylake" CPU, the EPU-4562 series provides high performance video processing on-board and a TPM security chip that can lock out unauthorised hardware and software access and provide a secure "Root of Trust." Additional security is provided through built-in AES (Advanced Encryption Standard) instructions.
Eagle VL-EPU-5120	A high-performance embedded computer with an Intel® Xeon-E processor and error-correcting memory. Includes high-speed on-board NVMe SSD storage, TPM 2.0 security, and up to 32 GB ECC RAM.
Owl VL-EPU-4012	A compact 95 x 95 x 29 mm embedded computer featuring error-correcting memory, and a power-saving dual- or quad-core "Apollo Lake" processor. It includes TPM 2.0 security, latching I/O connectors, high performance video, and full -40° to +85°C operating range. Ideal for SWaP applications.
Harrier VL-EPU-4011	Credit-card sized system with error-correcting memory (ECC), TPM security, dual- or quad-core Apollo Lake processor, and plenty of on-board I/O.
Swift VL-EPU-5121	A rugged high-performance embedded computer with Intel's 6-core Xeon-E processor, up to 32 GB of error-correcting RAM, fast NVMe storage (128 GB), two M.2 and one Mini PCIe expansion slots. Engineered for harsh environments operating from -40° to +85°C.





## REN™ MINi Data Sheet

### EMBEDDED PROCESSING UNITS (EPU)

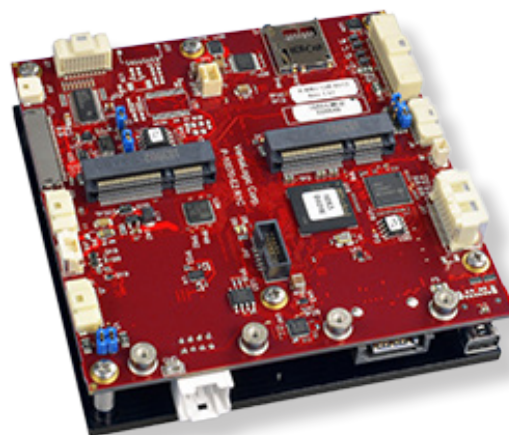
VersaLogic's EPUs are fully assembled and tested embedded computers. Each product is a two-board set with a CPU, I/O board, and integrated heat plate. The resulting product has a footprint that is about 1/2 the size of equivalent single board designs, and is very mechanically rugged. VersaLogic's EPU 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.

### 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.



### Why does REN™ MINi not have fins to help cooling?

The design for REN™ series boxes is based on the assumption of no secondary cooling. The case uses thermal mass to absorb and regulate the CPU temperature for applications that would be following a pulsed processing profile. ie one where the CPU would be heavily used but not continuously.

For customers where weight is an issue or they have other requirements we can fin and pocket the case side wall.



## REN™ MINi Data Sheet

### Cables

Unitronix can supply a set of test cables to go with REN MINi in the VersaLogic configurations. These items will be ordered separately, as some customers may only want one or two sets before building their own cable harness. As each customer will be using REN MINi for their own specific application, it is down to the customer to define their own external cable harness.

### Security

The processing board has trusted platform module (TPM 2.0) installed, Secure Key, Execute Disable Bit, Secure Boot. REN MINi 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:

Specifications are subject to change without notification. 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.



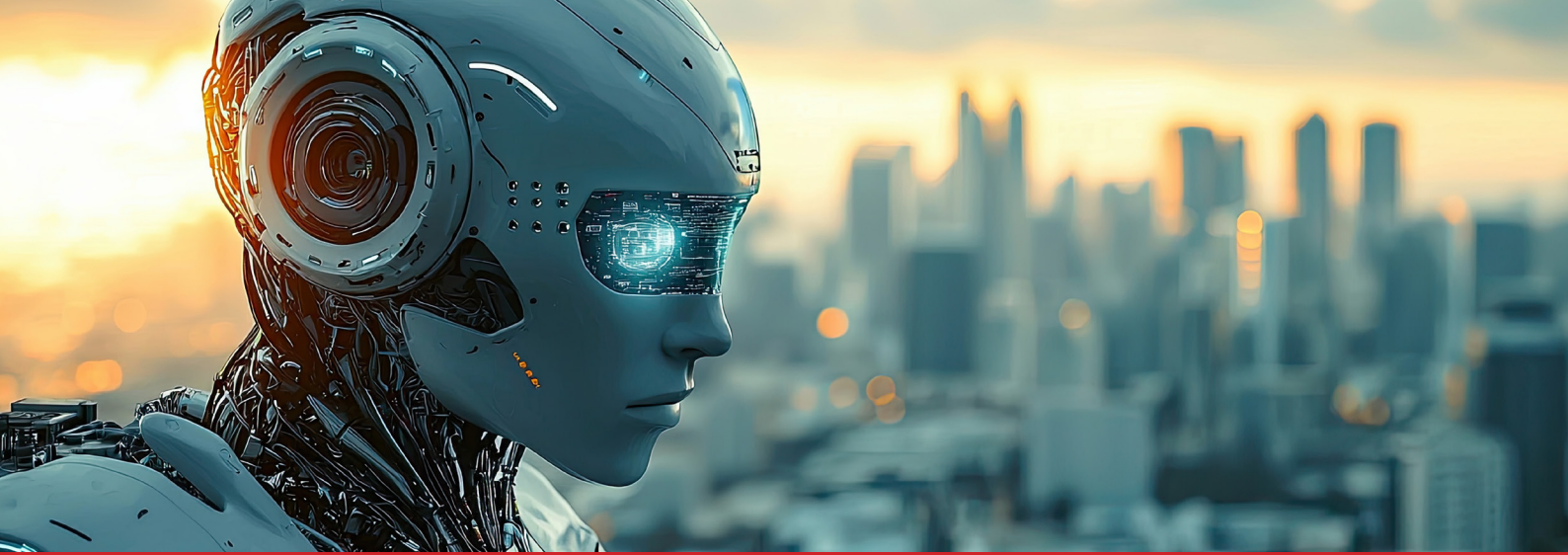
## TH!NK INSIDE THE BOX

Choose from a range of processors, power options and storage configurations ensuring it aligns perfectly with your goals.

**You decide, what's inside.**

If you're ready to tackle the challenges of emerging technologies head-on and transform your vision into reality, REN™ is here to empower you. Step into the future of engineering, where possibilities are limitless and solutions are boundless.

**THE FUTURE STARTS HERE**  
**- It's right inside the box.**



## REN™ MINI Data Sheet

Unitronix are an innovative engineering-capable distributor and manufacturer of rugged, embedded computing solutions for military, aerospace and high-end industrial applications.

Established in 1984, we have supplied and supported Australian civil and defence programmes with reliable equipment needed to survive in some of the harshest environments.

In addition we design, develop and manufacture our own innovative Rugged Embedded Nodes - REN. These fully sealed project boxes have a high TRL and are aimed at new commercial industries such as: IoT, AI, Smart Grids, Data Analytics & Enterprise at the EDGE.

**REN boxes are reusable, reconfigurable, recyclable, cutting carbon footprint and saving cost.**

REN™ products are designed in Australia by Unitronix.  
REN™ boxes are made in Australia by Unitronix.  
REN™ 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 generalised nature, 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 are entirely responsible for the testing and subsequent performance of this equipment in their application. All sales are subject to Unitronix's general terms and conditions.

### REN SERIES

REN MINi
REN MAXi
REN 19-14 STD
REN 19-17 STD
REN 19 EW
REN 19-14 VPX
REN 19-17 VPX
REN Ai
REN VPX 4 Slot
REN VPX 6 Slot
REN VPX FlatPAK Assembly

**Unitronix  
New South Wales Office**  
Unit 9,  
37 Currans Road,  
Cooranbong,  
NSW 2265,  
Australia.

T: +61 (0)2 4977 3511  
E: [unisales@unitronix.com.au](mailto:unisales@unitronix.com.au)  
[www.unitronix.com.au](http://www.unitronix.com.au)

**Unitronix  
Queensland Office**  
Unit 7, 229 Junction Road  
Cannon Hill,  
Brisbane  
QLD 4170,  
Australia.

T: +61 (0)438 274333  
E: [unisales@unitronix.com.au](mailto:unisales@unitronix.com.au)  
[www.unitronix.com.au](http://www.unitronix.com.au)

**Unitronix UK**  
Office 102 Milton Keynes Business Centre  
Hayley Court, Foxhunter Drive,  
Linford Wood,  
Milton Keynes  
MK14 6GD  
United Kingdom

T: +44 (0)1908 698810  
E: [sales@unitronix.co.uk](mailto:sales@unitronix.co.uk)  
[www.unitronix.co.uk](http://www.unitronix.co.uk)