Rugged Embedded Node
REN™
The Embedded Edge

REN 19-14 STD

DATA SHEET

MISSION READY PROTOTYPING - Who knows where it'll take you?

REN 19-14 STD

A 14" deep, 2U, 19-inch rack mounting, fully sealed server/workstation that offers a versatility and utility to the design engineer that we honestly don't think you can get anywhere else, without building it yourself.

It can take a mix of EPU, ESU and VPX. There is a mind boggling number of combinations of systems configurations that can be achieved here.

What is a REN™ 19?

A new take on how to prototype, develop and deploy high end computing systems into future renewable energy, critical infrastructure, heavy industry and military applications.

- Effectively a large heatsink for the high powered VPX, ESU/EPU 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 SOSA aligned VPX Card or 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.

Micro Grids

REN™ 19-14 STD - Data Sheet

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.

Very flexible power supply.

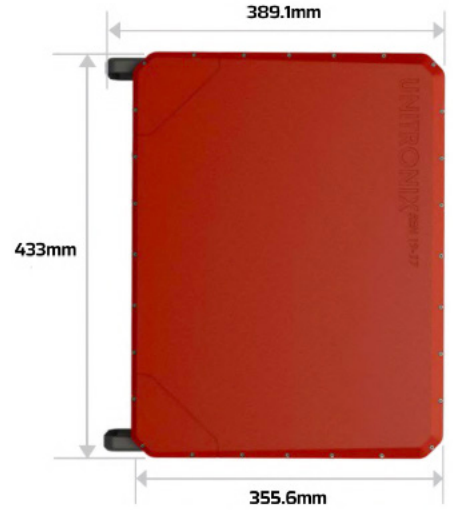
As standard the VersaLogic ESU (Grizzly) has a wide ranging on-board PSU and can accept 10 to 30 Volts DC.

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 4 x VICOR DC/DC V28B series + 4 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.



Internal Lid Configurations

Internal Mounting Grid

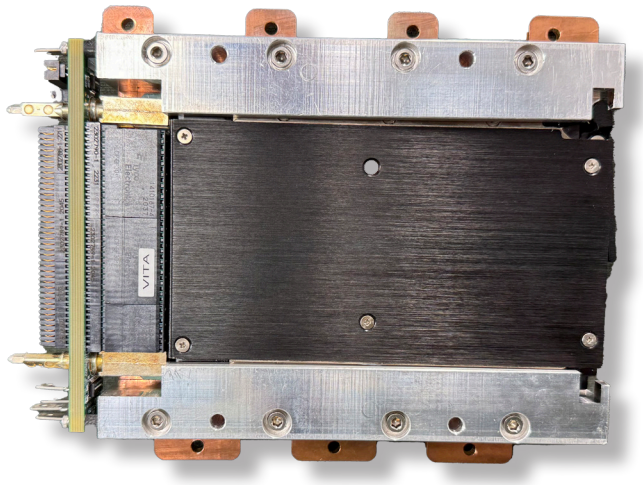
REN™ 19-14 STD - Data Sheet

EPU	DESCRIPTION
BLACKBIRD	Compact, x86-based high-performance board with Intel Skylake CPU, making it ideal for secure, low-power processing. Blackbird is well-suited for REN applications needing video processing, power management and varied I/O, with MIL-STD shock and vibration compliance.
SWIFT	High-end embedded computer with a 6-core Xeon-E processor, ECC memory and high-speed NVMe storage, designed for environments requiring intense processing and harsh condition tolerance. With its extensive I/O, Swift is ideal for REN configurations focused on compute-heavy, extended environmental resilience.
EAGLE	Similar to Swift but more compact, Eagle offers Coffee Lake 6-core Xeon-E processing, fast NVMe storage and ECC memory. Its small footprint and resilience make it versatile within REN configurations demanding high performance in confined spaces.
GRIZZLY	This 8- to 16-core server-grade solution offers significant computing power, up to 128 GB ECC memory and 10Gb Ethernet, suitable for network-heavy REN applications, such as data aggregation and real-time edge analytics in secure, low-latency operations.
OWL	With a small footprint and Apollo Lake processor, Owl supports SWaP requirements, TPM 2.0, ECC memory and extensive I/O options. It's a cost-effective choice for less intense, reliable processing applications within REN systems, particularly in constrained spaces or altitude-sensitive environments.
HARRIER	Near credit-card-sized, this ultra-compact Apollo Lake board offers error-correcting RAM and a TPM 2.0 chip, making it useful for applications needing high security and ruggedness, like mobile or small-scale REN setups where space and power efficiency are critical.
SABERTOOTH	High-performance, configurable with Xeon-E and Intel Core processors, Sabertooth is a powerful choice for REN configurations needing substantial processing with expansion flexibility. Its ECC memory and NVMe storage enhance security and performance in demanding deployments.

Each EPU's modular and rugged design aligns with the REN Series' objective as a flexible, adaptable project box, empowering clients to select the specific processing power and I/O configurations necessary for their application, from tactical edge deployments to data-heavy, secure operations.

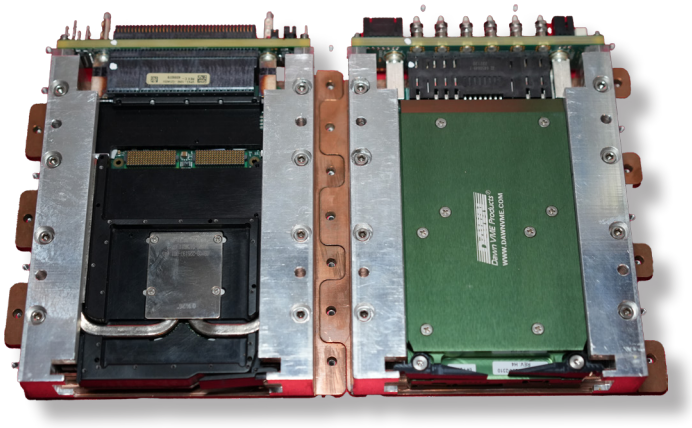
REN™ 19-14 STD - Data Sheet

REN VPX FLATPAK ASSEMBLY



REN VPX FlatPAK is a single slot VPX card carrier, it can be supplied for 3U and 6U VPX cards and can be used on its own or in clusters. It uses 1-slot VPX backplanes in the SOSA format along with VITA 62 PSU backplanes to provide a modular way of utilising VPX cards.

Request data sheet for more information.



Why doesn't REN™ have fins to help with 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.

Cables

Unitronix can supply a set of test cables to go with REN 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 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.

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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

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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@untronix.com.au
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@untronix.com.au
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
www.unitronix.co.uk