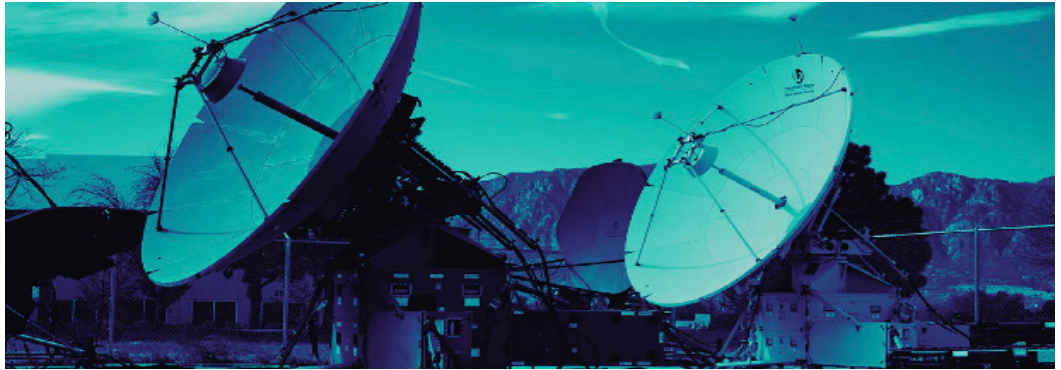


# unitronix

THE EMBEDDED EDGE



DC TO  
DAYLIGHT



**Product Guide**

RF

# ABOUT US

## Unitronix specialise in:

- The supply and support of COTS equipment for building RF systems.
- We offer RF End-to-End, Components, Modules, Boards, Boxes, Systems, covering HF to 110GHz.
- We may not have absolutely everything that you need to develop and build your next generation RF system, but it will be close.

### FORM:

VPX boards (MOSA-SOSA),  
Systems (Ether to Ethernet),  
Modules & Components.

### FIT:

Radar  
DRFM  
Sonar  
ELINT  
SIGINT  
ESM  
Electronic Attack  
DF & Recording

### FUNCTION:

Specialist Antennas,  
Signal Conditioning,  
RF-Amplifiers-Switches-Distribution,  
Wave Guides,  
Up-Down Converters,  
Tuners,  
Digitisers,  
High Performance Computing,  
Data Acquisition  
Recorders-Playback and Re-Transmit  
plus EW Emulation.

## Mantra

**As threats become more agile, deceptive and diverse, our mandate becomes more focused on delivering Electronic Warfare solutions to our customers that drastically cut deployment risk, time and cost.**



## Monitoring the Spectrum

**RF front-ends must evolve as signals increase in complexity. We supply a line of configurable frequency converters with dynamically adjustable bandwidths so a single microwave tuner can support multiple offensive and defensive missions.**

## Processing SIGINT

**The proliferation of sensors, growing data loads and deep-learning neural networks, continue to increase computational demands on hardware platforms. Serving as the processing backbone for multiple EW and SIGINT platforms, our rugged subsystems and servers minimise lag time and simultaneously tackle large amounts of actionable data for quicker analysis and decision-making.**

## OUR SUPPLIER OFFERS COMINT DOMINANCE IN THE HF SPECTRUM

In the late 20th century HF lost favour as digital and higher frequency services surged. However some communication critical sectors sustained HF use and we are now seeing a 21st century resurgence as lessons are being learned about the potential instability of the digital and/or UHF/SHF networks.

But many in COMINT lost their HF expertise - that unique understanding of the effects of atmospheric on HF signals, the cyclical nature of natural phenomena that impact signal integrity and many other factors.

PLATH sustained its investment and built on its knowledge base. In todays market its all about depth of understanding of the spectrum and we believe they lead the pack and can accelerate and enhance your solutions in HF.



### Receivers

It is obvious that excellent receivers are also used in the world's best DF receivers. So, what could be more obvious than to offer them separately and thus to provide our customers with the familiar PLATH quality for monitoring receivers? Especially in the HF frequency spectrum, we can offer you a receiver that digitises the entire spectrum in high resolution and prepares it for evaluation.

#### Products:

- 2115
- 2210
- 5110
- 5115

### Direction Finders

DF receivers from PLATH have been continuously improved in recent decades. We have achieved this through our close cooperation with our customers. We ask for mission experience and take it seriously. We incorporate this experience and new technical skills and innovations into the development of the next generation of DF receivers. Our receivers will not be perfect, but they are very close.

#### Products:

- 5050S
- 5130
- 5135
- 2400
- 2410

### Antenna

What use to us is the best receiver or DF receiver when the antenna used would only be average? We have always considered the antenna and the receiver as a single unit and paid particular attention to the fact that the antenna in no way makes compromises on the receiver. In our in-house antenna development, we work hand-in-hand with the receivers' developers to create a fully tuned system.

#### Products:

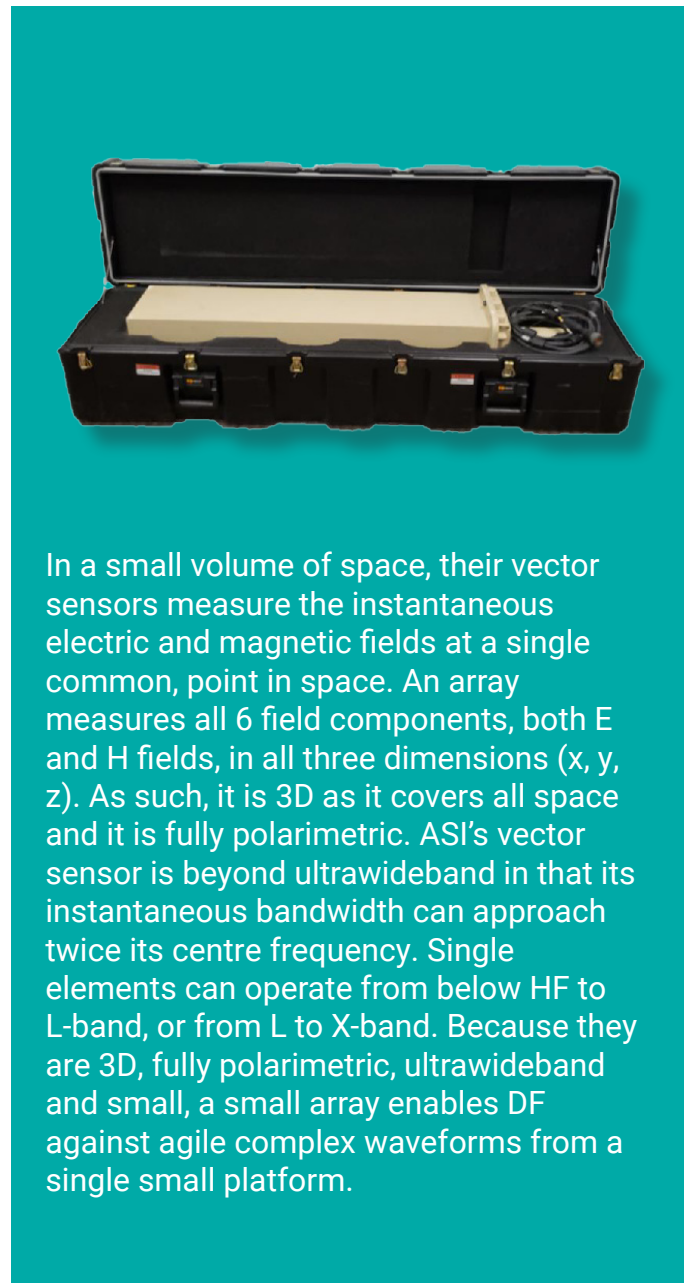
- 2450
- 2451
- 2455
- 2440
- 2441
- 2400
- 2430

ASI has developed and is refining and extending, new, patented, ultrawideband vector sensor and signal processing technologies for:

**Electronic Support Measures (ESM), Signals Intelligence (SIGINT) and Communications Intelligence (COMINT), including, instantaneous Radio Frequency (RF) Direction Finding (DF) of communication, radar & wideband, noise-like, waveforms.**

**ASI delivers software defined radios, vector sensor antennas and processors to its customers and supports platform integrations, system integrations and Concept of Operations development.**

ASI's vector sensor is electrically small (<10% wavelength), very lightweight (non-ferrous) and has extremely wide instantaneous bandwidth (e.g., 1 MHz to 1 GHz from a single aperture). These differentiators enable small, survivable, expendable and attritable, unmanned air, land and sea vehicles to deliver functionality previously available only on much larger platforms.



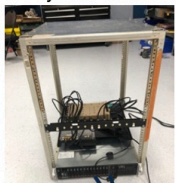
In a small volume of space, their vector sensors measure the instantaneous electric and magnetic fields at a single common, point in space. An array measures all 6 field components, both E and H fields, in all three dimensions (x, y, z). As such, it is 3D as it covers all space and it is fully polarimetric. ASI's vector sensor is beyond ultrawideband in that its instantaneous bandwidth can approach twice its centre frequency. Single elements can operate from below HF to L-band, or from L to X-band. Because they are 3D, fully polarimetric, ultrawideband and small, a small array enables DF against agile complex waveforms from a single small platform.

**Small UWB Apertures with High-SWaP Processing**

Beechcraft King Air B200  
Length 43', Wingspan 54'



Air Payload Electronics

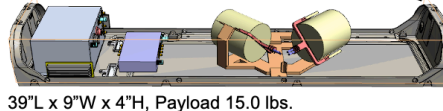


Air Payload  
24" x 7.5" x 6", 9 lbs.



**Very Small UWB Apertures with Low-SWaP Processing**

Small UAS  
Length 8', Wingspan 16'



39"L x 9"W x 4"H, Payload 15.0 lbs.



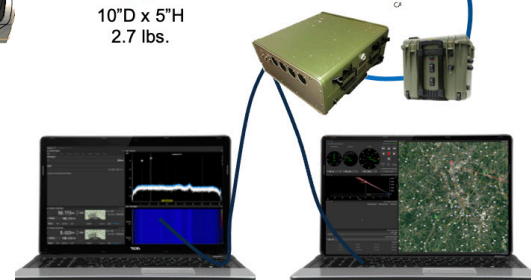
**Very Small UWB Apertures with High-SWaP Processing**

Tethered UAS  
Wheelbase 47"



10"L x 5"W x 4.5"H  
5.0 lbs.

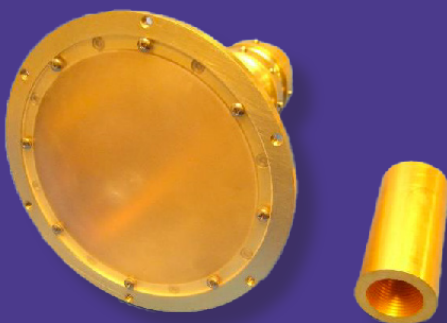
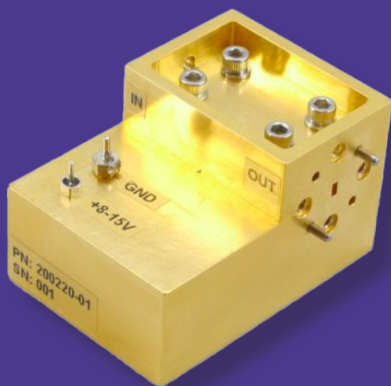
10"D x 5"H  
2.7 lbs.





MILLIMETER  
WAVE  
SYSTEMS

Miniaturised multi-function phased-array modules for radar; quantum-limited cryogenic parametric amplifiers for quantum computers; latching circulators; space-qualified millimetre wave hardware; frequency converters and antennas.



### Subsystems & Multi-Function Modules

MWS specialises in custom developed modules and sub-systems for applications demanding high performance, miniaturisation and reliability while needing to meet environmental requirements. End-to-end configuration control and product life-cycle management ensure consistent quality in production.

### COMPONENTS

**Amplifiers**

**Multipliers**

**Converters**

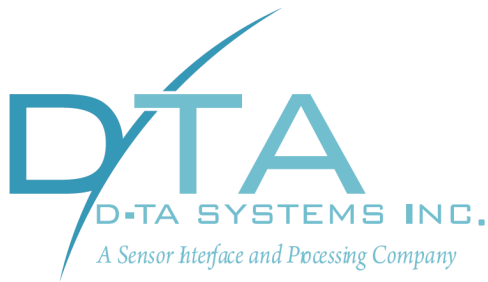
**Control Components**

**Waveguide Filters**

Working in coax and in waveguide bands from Ka-Band to W-band, their design capabilities are used to supply innovative component solutions. Our calibrated assembly and test labs ensure qualified and verified products. The New England-based suppliers provide us with high quality machining and plating allowing us to produce consistent quality and performance with minimal risk of supply disruptions.

### Antennas

MWS has a wide range of antenna design and test capabilities including Gaussian optic lens antennas, profiled Gaussian horns, ridged horns, range feeds, and reflector antennas covering Ka-Band through W-Band. In addition we have supplied Terahertz (THz) antennas for special applications up to 640 GHz.



D-TA provides 'end-to-end' coverage with RF, IF, Record & Playback and Multi-Core Software Processing with the most advanced technologies anywhere.

D-TA products are designed to fit customer requirements exactly. Platform optimised SDKs enable users to quickly build command and control software. FDK and Ready to run FPGA cores help to reduce development time. With D-TA 'plug & play' sub-systems customers can set up field trials immediately.



## COMINT

Open-architecture solutions for demanding COMINT applications: including, Electronic Surveillance (ES); Direction Finding (DF); Communications (COMMS) and, Electronic Attack (EA).

A portable search receiver based on dual channel RFvision1-Supermini system, offers full functionality, including signal detection, channelisation, modulation recognition, demodulation and decoding. The DTA-3380 multi-antenna transceiver system can be configured for user specified number of receive and/or transmit channels for ES, DF, COMS & EA functionalities. An N-Channel DF system based on RFvision-Broadview (DTA-3380 receiver & DTA-5000 RAID server) uses a unique recorder-centric multi-core software processing where recorded data is processed while recording is continuing. Any complex algorithm can be implemented as data is always there. This also allows running multiple algorithms on the same data set to improve the accuracy of estimates.

## ELINT

D-TA's high performance transceiver solutions coupled with recorder centric multi-core software processing have created multi-function ELINT solutions that combine advanced pulse processing, real-time data collection, query based search and data reduction. Their highly popular System-95 ELINT Record/Playback system handles multiple IF inputs and bandwidths up to 1 GHz.



## EW Simulation

D-TA's open architecture multi-channel COMINT & ELINT signal emulator systems are based on streaming I/Q data from hard drives at real-time rates. Any signal with any BW can be simulated for virtually any duration (due to virtually limitless hard drive capacity). Very dense electromagnetic environments including multi-paths, pulse-on-pulse etc, can be created by using the multi-channel feature of D-TA's solutions. Further, due to a wide frequency tuning range and programmable bandwidths capabilities both communications and radar signals can be simulated simultaneously.



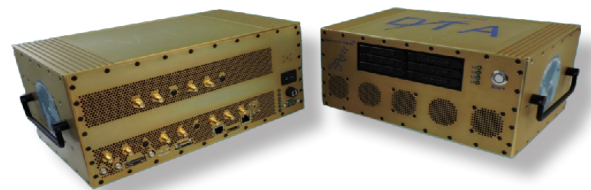
## Spectrum Fusion

D-TA's 10 Gigabit Sensor Processing (10GSP) concept allows convenient fusion of Acoustic (LF), Radio (VHF & UHF) and Radar (V/UHF & SHF) spectra into a common processing site for total situational alertness & countermeasures. The RFvision-360 is a convenient platform that offers that capability in a multi-channel/ multi-antenna Rx and Tx environment.



## HF Processing

For high dynamic range HF processing in the crowded HF band, D-TA offers DTA-3200H multi-channel HF front-end which channels the HF band into 5 sub-bands. The output from each sub-band is digitised by System-23 and down-converted to baseband (I/Q) data using on-board DDC's. The solution supports phase-coherent operation for HF direction finding and HF radar beamforming. They also offer phase-coherent HF transmit.



## RF/IF Recording & Playback

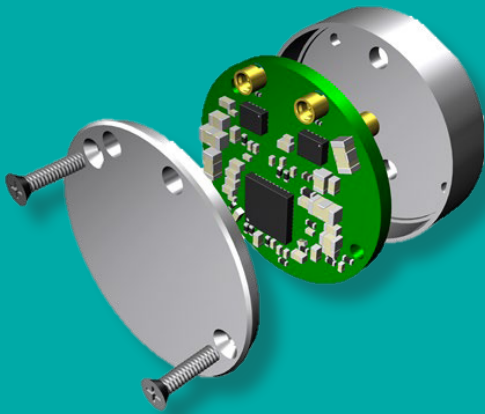
Their 10 Gigabit network attached sensor interface units use commercial off-the-shelf RAID servers to offer record/playback at throughput rates that remain unmatched in the industry. The record/playback engine is entirely software based and hence readily upgraded.



An engineering Research & Development company specialising in high performance Electronic Warfare (EW) Systems development

### Catalyst™ Modular Sensor Technology

An extremely small SWAP form factor, low-cost, modular multi-mission platform. Catalyst building blocks can be combined and scaled in numerous ways to create tailored, multi-mission systems.

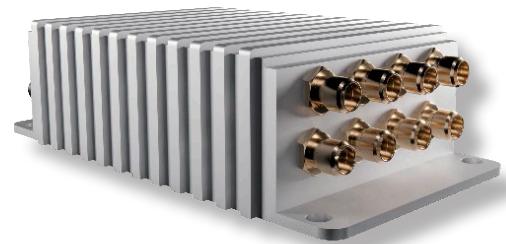


#### Catalyst 2 (CR2) Ultra Wideband RF. Programmable. Coherent. Tiny.

- Coherent Dual-channel Single Conversion RF Front End
- Extreme Low SWAP / High Performance Design Objective
- Downconverter, Upconverter or Transceiver use case
- RF Port Operation: 3 -20 GHz
- IF Port Operation: 0.5 –9 GHz
- Integrated Programmable fast tuning Local Oscillator
- Integrated ARM M4 Processor
- Coin Size Form Factor
  - PCB: 0.9 Inch, 24mm diameter
  - Case: 1 inch, 25.4 mm diameter
- Weight: 6 g
- Power Dissipation 1.98W

#### CAPABILITIES:

- Requirements development (M&S)
- Specifications development
- Design (CAD/PCB/Electrical)
- Rapid Prototype Development
- Design for Manufacturing
- Design Verification Testing
- Production Development
- Quality Control Programmes



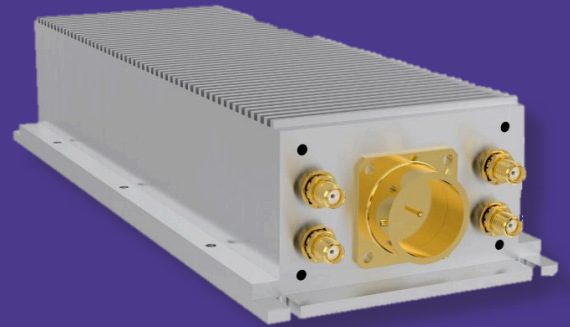
#### Catalyst 4 (CR4) Quad Channel. Ultra Wideband. Programmable. Compact.

- Coherent Quad-Channel Dual Conversion Superhet receiver
- Extreme Low SWAP / High Performance Design Objective
- RF Operation: 0.02 -20 GHz
- 2 GHz Instantaneous Bandwidth
- Programmable fast tuning Local Oscillators
- ARM M4 Processors
- Programmable RF tunable Band Pass Filters
- Programmable 1stIF tunable BPFs
- Programmable Output IF tunable BPFs
- Credit Card Form Factor
  - PCB: 2 x 3 Inch
  - Case: 2.5w x 3.6d x 1.2h Inch
- Weight: 290 g
- Power Dissipation 35W



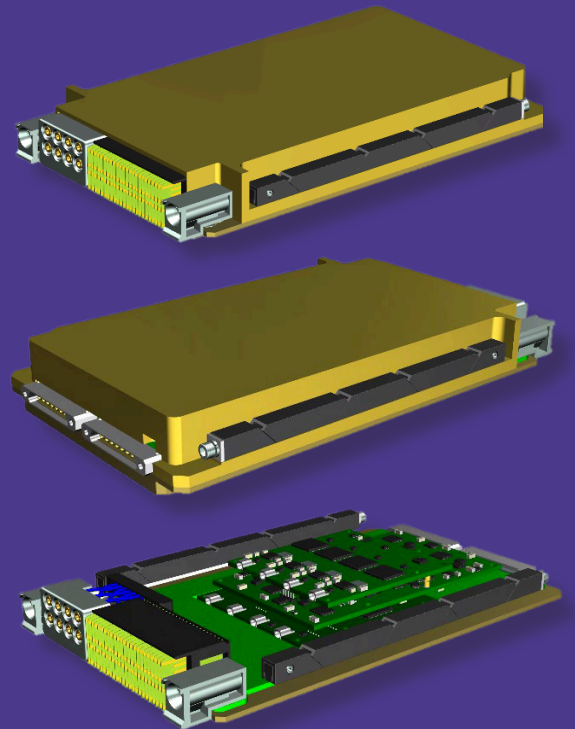
### **Catalyst 4 (CR4b) Quad Channel. Ultra Wideband. Programmable. Compact.**

- Coherent Quad-Channel Dual Conversion Superhet receiver
- Extreme Low SWAP / High Performance Design Objective
- RF Operation: 0.02 -20 GHz
- 2 GHz Instantaneous Bandwidth
- Programmable fast tuning Local Oscillators
- ARM M4 Processors
- Programmable RF tunable Band Pass Filters
- Programmable 1stIF tunable BPFs
- Programmable Output IF tunable BPFs
- Credit Card Form Factor
  - PCB: 2 x 3 Inch
  - Case: 3.09(W) x 9.31(L) x 1.76(H) Inch
- Weight: 290 g
- Power Dissipation 35W



### **Catalyst 4 3U Ultra Wideband RF. Programmable. Modular.**

- Coherent 4-Channel Dual Conversion Superhet Receiver
- Modular/ High Performance Design Objective
- RF Operation: 0.02 -20 GHz
- 2 GHz Instantaneous Bandwidth per IF Channel
- Integrated Programmable Local Oscillators
- Integrated ARM M4 Processors
- Integrated Programmable RF tunable Band Pass Filters
- Integrated Programmable 1st IF tunable BPFs
- Integrated Programmable Output IF tunable BPFs
- 3U Open VPX Single Slot Form Factor
  - Case: 4w x 6.61d x 0.94h Inch
  - (100w x 168 d x 24.1h mm)
- Power Dissipation 35W





### **Catalyst 8 (CR8) Ultra Wideband RF. Programmable. Scaled for apertures.**

- Coherent 8-Channel Dual Conversion Superhet Receiver
- Expands to 8-Channels using two CR4 systems
- Extreme Low SWAP / High Performance Design Objective
- RF Operation: 0.02 -20 GHz
- 8 Output IF Channels
- 2 GHz Instantaneous Bandwidth
- Integrated Programmable fast tuning Local Oscillators
- Integrated ARM M4 Processors
- Integrated Programmable RF tunable Band Pass Filters
- Integrated Programmable 1stIF tunable BPFs
- Integrated Programmable Output IF tunable BPFs
- Credit Card Form Factor  
PCB: 2 x 3 Inch  
Case: 4.7w x 3.6d x 1.2h Inch
- Power Dissipation 70W

### **Catalyst 8b (CR8b) Ultra Wideband RF. Programmable. Scaled for apertures.**

- Coherent 8-Channel Dual Conversion Superhet Receiver
- Expands to 8-Channels using two CR4 systems
- Extreme Low SWAP / High Performance Design Objective
- RF Operation: 0.02 -20 GHz
- 8 Output IF Channels
- 2 GHz Instantaneous Bandwidth
- Integrated Programmable fast tuning Local Oscillators
- Integrated ARM M4 Processors
- Integrated Programmable RF tunable Band Pass Filters
- Integrated Programmable 1stIF tunable BPFs
- Integrated Programmable Output IF tunable BPFs
- Credit Card Form Factor  
PCB: 2 x 3 Inch  
Case: 4.7w x 3.6d x 1.2h Inch
- Power Dissipation 70W

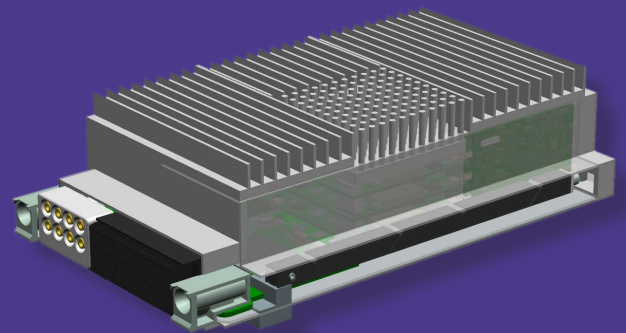
**Catalyst 32 (CR32) Ultra Wideband RF.  
Programmable. Modular.**

- Coherent 32-Channel RF Converter
- Modular/ High Performance Design Objective
- RF Operation: 2 -18 GHz
- 2 GHz Instantaneous Bandwidth per IF Channel
- Integrated Programmable Local Oscillators
- Integrated ARM M4 Processors
- Integrated Programmable RF tunable Band Pass Filters
- Integrated Programmable 1stIF tunable BPFs
- Integrated Programmable Output IF tunable BPFs
- Stand Alone Form Factor



**Catalyst 32 (MC32) Ultra Wideband RF.  
Programmable. Modular.**

- Coherent 32-Channel RF Converter
- Modular/ High Performance Design Objective
- RF Operation: 2 -18 GHz
- 2 GHz Instantaneous Bandwidth per IF Channel
- Integrated Programmable Local Oscillators
- Integrated ARM M4 Processors
- Integrated Programmable RF tunable Band Pass Filters
- Integrated Programmable 1stIF tunable BPFs
- Integrated Programmable Output IF tunable BPFs
- 3U Open VPX Dual Slot Form Factor  
Case: 4w x 6.61d x 0.94h Inch  
(100w x 168 d x 24.1h mm)





### Turning Signals Into Intelligence

Silver Palm Technologies is a wireless engineering company that specialises in high quality products, custom services, and quick-reaction solutions that support radio frequency and microwave distribution, signal conditioning, down and up conversion, and signal processing.

### RF Switches, Amplifiers and Distributions

Silver Palm offers high-performance 0.5 MHz to 6 GHz RF system components. Broadly classified into amplifiers, distributions, and switches, these products operate between the antennas and receivers to amplify, filter and distribute signals prior to collection and analysis.

### Receivers, Transceivers and SDRs

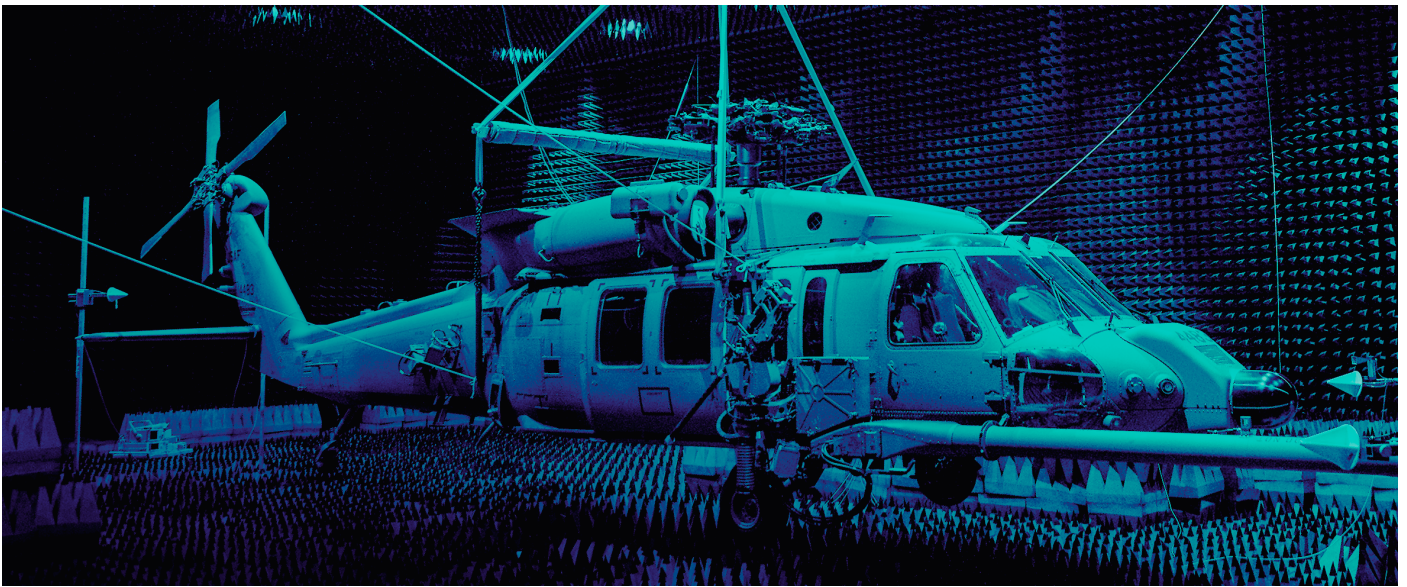
Their line of radios encompasses products with different sets of capabilities and form factors. They also specialise in Software-Definable Radio (SDR)-supporting hardware, allowing for an effective SDR system to be put together with minimal components

### Integrated Systems and System Components

This line of products showcase all of our engineering expertise condensed into a single deployable package. We also offer the stand-alone products essential to our high performance integrated radio system. Born as custom solutions, these off-the-shelf products are ready to support your mission.

Their products cover high frequency (HF) through super high frequency (SHF) and include radio frequency (RF) distributions, non-blocking switches, receivers, software-definable radios, tuners, upconverters and wideband digitisers. They specialise in airborne, shipboard, pole-mount, and low size, weight and power (SWaP) applications.





## DEPLOY FASTER

Designed and manufactured in Australia by Unitronix the REN™ box series offers an innovative and unique way of looking at how to deploy high-end processing systems

### REN™ EW: Electronic Warfare, Reinvented

A suggested use for our REN™ 19 Chassis: For electronic warfare systems, the REN™ EW offers a game-changing solution. Three Pentek 6003 SOM RF SoC Xilinx boards and a 100G E switch make this a conduction-cooled 2U powerhouse.



**REN 19:** Two versions are available a 14 inch deep and a 17 inch deep option.

These are 19 inch rack mounting 2U fully sealed boxes and offer a versatility and utility to the design engineer that we honestly don't think you can get anywhere else, without building it yourself.

They can take combinations of rugged conduction cooled boards and provides a new way of looking at military systems development and deployment.

Specifically on this point it takes away the months of agonising that systems engineers have to go through looking at chassis and connectors for traditional COTS based systems.

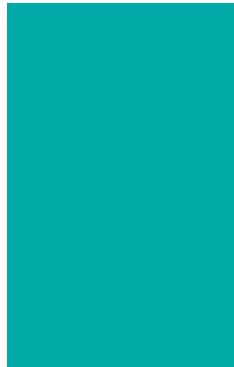
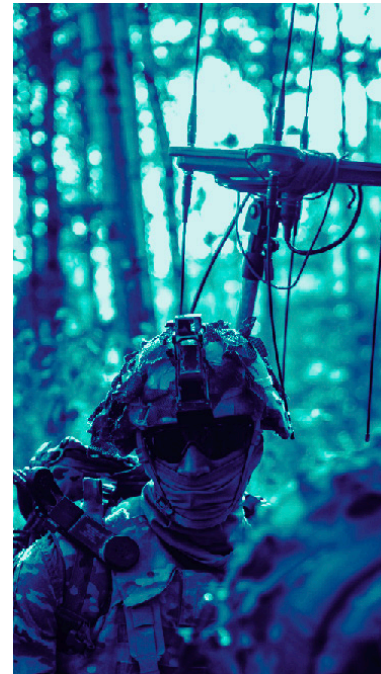
A semi-custom assembly the REN 19 is for applications where COTS will not do and the customer has to build a custom solution and in this scenario the REN 19 offers a possible solution.

**THE PROJECT BOX WITH A HIGH TRL LEVEL**

**unitronix**  
THE EMBEDDED EDGE

**UNITRONIX LTD**  
130 Aztec West,  
Bristol  
BS32 4UB  
UK

**Consult** – **Collaborate**  
**Create** – **Construct**  
**Design** – **Develop**  
**Invent** – **Innovate**  
**Supply** – **Support**



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

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