



# Maritime VHF Data Exchange System VDES



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## Introduction

CML Microcircuits is a world-leader in the design, development and supply of low-power analogue, digital and mixed-signal semiconductor products and solutions into wireless communications systems globally.

CML has three UK based design centres covering RF, Silicon and DSP software with a manufacturing plant at the head office in Langford, Essex. CML's global presence is also supported by sub-offices based in Singapore and the USA.

CML develops and supplies innovative communication products, provides a high level of support and works closely with customers to enable them to produce world-class end products. Our wide and varied portfolio covering RF building block ICs and highly integrated wireless voice/data solutions means that CML expertise is used in an extensive range of commercial, industrial, marine and military equipment. Quality assurance is embedded deeply within CML's design and manufacturing processes, ensuring ultimate reliability and highest performance end products.



CML Microcircuits is a member of the CML Microsystems Plc Group

The combined skill sets of CML Microcircuits and Stone Three Venture Technology have developed a VDES module based on a bespoke Software Defined Radio (SDR). This VDES solution presents an industry leading performance, the flexibility to adapt with evolving standards and delivers a fast time-to-market to the maritime industry.



Stone Three Venture Technology is based in Cape Town, South Africa and has more than 15 years experience of developing cutting edge Software Defined Radio (SDR) including a ground breaking software defined radar system and Digital Signal Processing (DSP) solutions for industry leaders.

Stone Three has been involved in pioneering VDES feasibility, development and field trials since the middle of 2014. In conjunction with the Australian Maritime Safety Authority (AMSA) and successfully trialled VDES technology in Brisbane, Australia. The positive results of that field trial were presented to the IALA VDES working group.

### VDES Development

CML has a long history of supplying products into all aspects of the marine communications industry. This new VDES1000 solution is seen as an extension to CML's established track record, in developing the VDES SoC technology.

### VDES - The Software Defined Radio (SDR) Solution

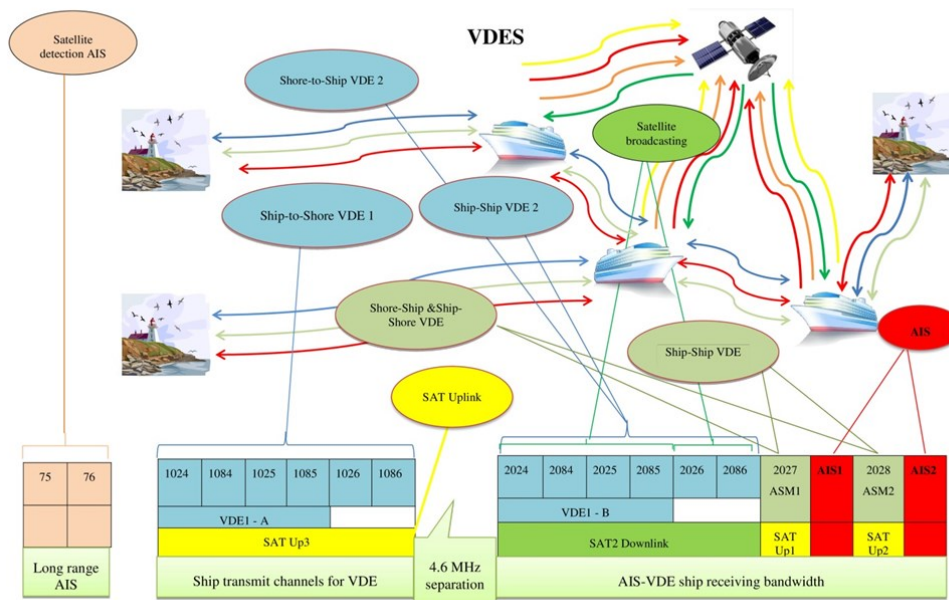
The introduction of VDES channels in the marine band requires an evolution in radio design. Following intensive research and consultations by CML and its technology partner, a decision to employ a Software Defined Radio (SDR) solution was agreed. A key factor in deciding upon an SDR solution is its flexibility to support new functionality as system use develops and new features are added.

# VHF Data Exchange System (VDES)

The volume of marine vessels and craft carrying an Automatic Identification System (AIS) transceiver unit continues to increase, resulting in the two channels that carry AIS transmissions becoming overloaded. In response to this situation, the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) is moving marine traffic to the VHF Data Exchange System (VDES) protocol.

Adoption of the VDES protocol will:

- Increase the number of transmission channels from two to six
- Provide terrestrial data communication as well as satellite components using VHF channels
- Preserve the original function of AIS
- Bring new channel allocations for Application Specific Messaging (ASM)
- Enable important new applications such as e-Navigation



The VDES ITU-R Recommendation (ITU-R M.2092) is a completely new standard. As with most new standards, future amendments should be anticipated. This situation demands a proactive stance be adopted in terms of product future proofing; we have addressed this through careful and thorough design and implementation of a bespoke Software Defined Radio (SDR) platform.

## VDES Commercial Opportunities

The transition to VDES means that all SOLAS vessels and craft currently carrying an AIS Class-A transceiver are destined to be upgraded to VDES during a refit. The number of SOLAS and other vessels is in excess of 100,000. It is anticipated, however, that this number will increase as other smaller vessels and craft seek to enhance their safety and overall operation by installing a VDES unit.

## VDES1000 - Module

The VDES1000 is the fast time-to-market VDES solution, based on a bespoke flexible SDR platform running a multi-channel VDES implementation and is designed to be future proof. The VDES1000 solution delivers a module for the Original Equipment Manufacturer (OEM) with the option of an Original Design Manufacture (ODM) package based on a licence/royalty model.

The product is a complete VDES solution providing all the necessary high performance multi-channel VDES functionality that fully supports AIS Class-A, ASM and VDE communication requirements.

The VDES1000 transceiver module is a certification ready solution that implements the complete VDES function: AIS Class-A, ASM and DVDE signalling and data formatting in accordance with the VDES standard. The module is supplied as a fully functioning VDES solution that interfaces directly to the host system communication interfaces with an API to aid system integration.

### VDES1000 is a Ready-to-Go VDES Solution

- Complete VDES solution
- AIS + ASM + VDE + GPS
- High performance VDES solution
- Designed and verified for certification
- Module and Reference design package available under licence

### Key Benefits

- Out of the box full VDES operation
- Fast time to a proven VDES solution
- Suited to field trials and production runs
- SDR based system with embedded evolution capability
- Dedicated technical support team

### SDR Platform

The VDES1000 is an optimised SDR based solution implementing a complete high performance VDES solution, whilst retaining the flexibility to support specific OEM/ODM needs and future evolution of the standard.



VDES1000 - Module

### Certification Ready

Designed to fully meet all the required VDES standards, VDES1000 will be tested by accredited test houses and supplied with a suite of test reports.

It will remain the manufacturer's responsibility to seek final certification of end equipment.

### Customisation

Due to the highly flexible nature of this implementation the VDES1000 reference design provides outstanding customisation capability, enabling an ODM to implement their specific functionality and messaging.

## Frequently Asked Questions

### When will the VDES1000 modules be available?

Now, orders can be placed through CML's Distribution network.

### What is the exact form factor of the VDES1000 module?

The VDES1000 module comprises two PCBs separated by an aluminium heat sink / RFI shield. The overall dimensions are 165mm x 100mm x 30mm.

### What is the cost of the VDES1000 module?

Please contact your local CML Distributor.

### What is the cost of the VDES1000 reference design licence /royalty fee ?

Detailed commercial information and technical detail can be disclosed under NDA. If the reference design is of interest, we can forward an NDA for your approval/signature, to allow detailed discussions to commence.

### Is there an MOQ for the VDES1000 modules or the VDES1000 reference design package?

VDES1000 module - No, there is not a minimum order quantity.

VDES1000 reference design package - Yes, there is an MOQ of 100 licence keys.

### Will CML provide support to an OEM taking the VDES1000 reference design through the approval process?

CML will provide the necessary technical assistance if required.

### What is the cost of customisation?

The VDES1000 VDES solution is supplied with a comprehensive API that is designed to manage a high level of customisation. Customisation outside this will require detailed discussion and may involve NRE costs.

## WHAT TO DO NEXT

Visit: [www.cmlmicro.com](http://www.cmlmicro.com)

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## CML Microcircuits Benefits

### Faster time to market

Developing proven high performance and field tested ASSP ICs, CML is helping engineers to cope with increasing pressure in delivering shorter project design cycles.

### Design flexibility

CML's *FirmASIC*® reconfigurable technology with the use of a Function Image upload enables a single hardware platform to be used for multiple communications systems.

### High Quality

With 100% of products being tested before shipping, customers are assured of the highest reliability.

### Product Longevity

Designing with CML products, manufacturers are rewarded with longer product life cycles and a stable BOM, ensuring minimum engineering costs and maximum profit.

### Low Power

Being at the forefront of low power chip technology, manufacturers can develop smaller equipment with extended battery life.

### Superior Support

Internal and field based applications teams worldwide provide focused customer support to ease the development process.

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