

DE70321

Marine AIS Class-B Demonstrator

For the CMX7032 Marine AIS Processor IC

Brief Description

The DE70321 is a complete AIS Class B (IEC 62287) technology demonstrator aimed at speeding up manufacturers' design and development of AIS Class B and AIS receiver products using the CMX7032 AIS Class B Baseband Processor with RF Synthesiser IC. The design is a flexible platform to allow users to configure and evaluate with two build options:

- Class B Transceiver (using CMX7032 FI-1.x)
- Dual Channel Rx-only (using CMX7032 FI-2.x)

The default board configuration is for dual channel receive on 161.975MHz (AIS channel 1) and 162.025MHz (AIS channel 2) with 25kHz channel spacing and 9600bps over-air data rate. An EEPROM is included which can automatically load the Function Image™ FI-2.x into the CMX7032 at power-up. Received data is automatically provided as NMEA 0183-HS sentences at 38,400bps from the DB9 RS232 port.

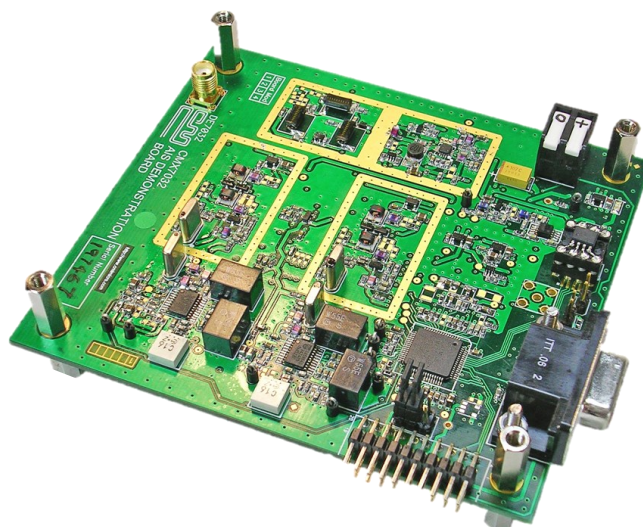
Function Image™ FI-1.x allows full host control over all CMX7032 functions whereas Function Image™ FI-2.x automatically programs the CMX7032 RF synthesisers to the correct frequencies.

All necessary RF circuits, such as VCOs, a 2 watt PA, harmonic filter, antenna switching and LNA, are provided on the DE70321 to facilitate easy evaluation and demonstration of the design as a Class B unit. A C-BUS interface is provided for control of the CMX7032 by a host microcontroller (required to perform the higher level protocol functions on a Class B implementation).

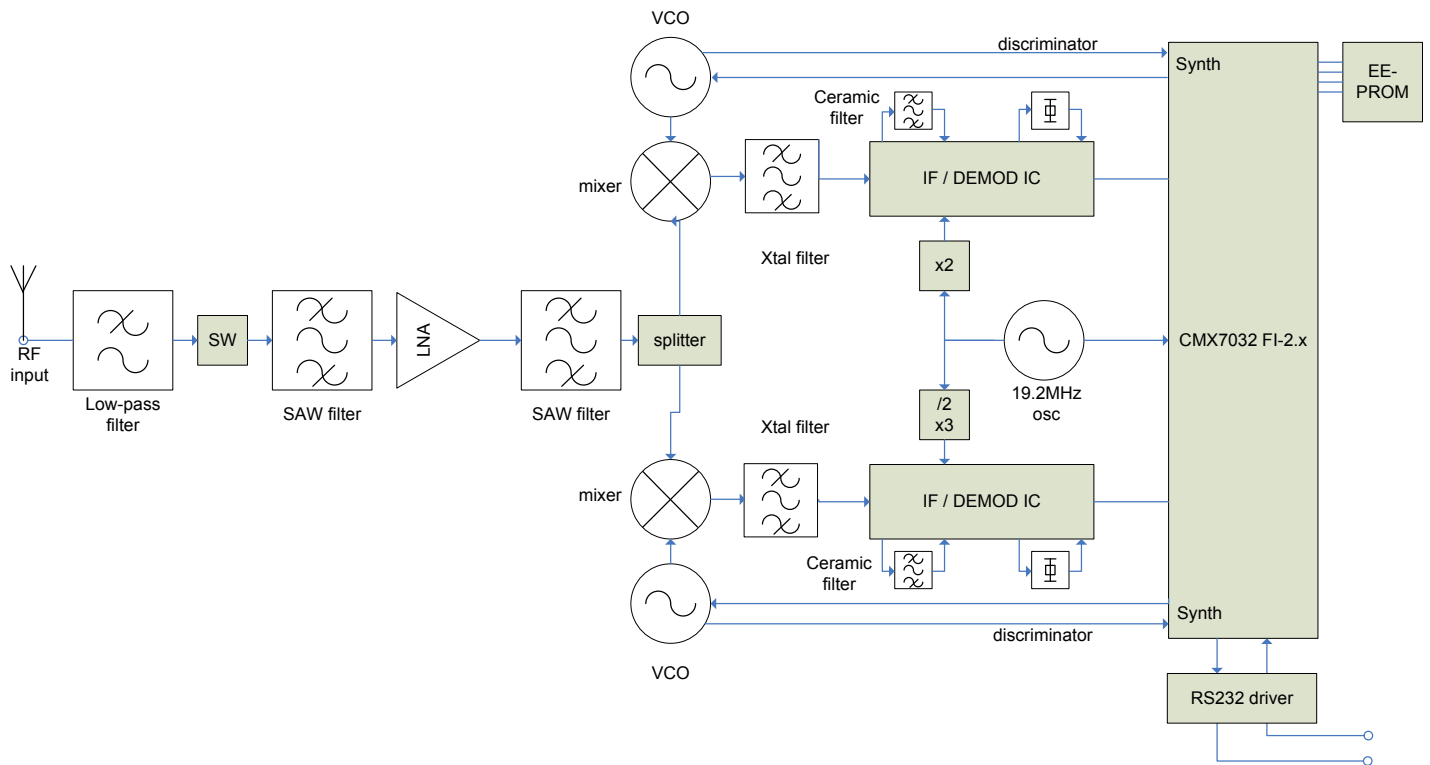
The design is production engineered for low cost, with minimum number of component types and values and uses only low-cost off-the-shelf components.

Feature Summary

- Class B AIS Transceiver Technology Demonstrator
- Designed to meet IEC62287
- 2 Watt Tx operation
- Dual, independent GMSK receivers
- C-BUS Interface to host µC
- User-defined host controller interface
- Controlled by scripts running via PC
- 19.2MHz Reference for 9600bps data rate
- On-board EEPROM
- Dual Channel Rx-only operation
- RS232 NMEA-0183 Interface for hostless operation
- Flexibility built on FirmASIC® technology



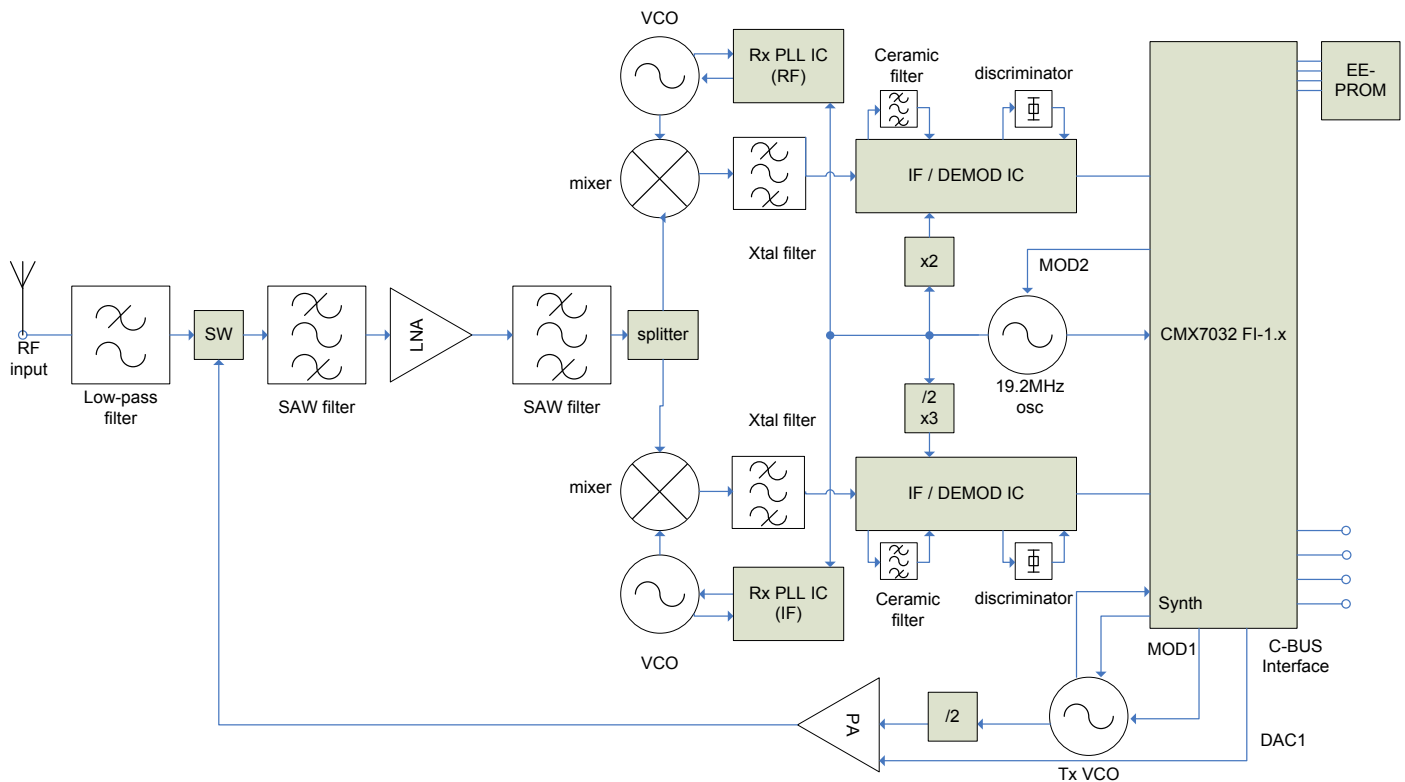
Rx-only Block Diagram



To get the demo kit up and running as an AIS Rx-only Demonstrator, the following additional items are required:

- Power Supply
- 162MHz antenna and cord with an SMA connector
- PC with RS232 port
- PC program such as 'Ship Plotter' [www.coaa.co.uk/shipplotter.htm] to display received data
- RS232 connection cable
- Optionally, a GPS receiver can be connected via an RS232 splitter if you wish to display your actual location.

Tx/Rx Block Diagram



To get the demo kit up and running as an AIS Class B Transceiver Reference-Design Demonstrator, the following additional items are required:

- Power Supply
- 162MHz antenna and cord with an SMA connector
- Host Microcontroller
- Customer application program
- Connection to a GPS receiver
- Connection to a chart display (optional)
- RS232 port to chart plotter/PC

Preliminary Information

The DE70321 provides a platform for the evaluation and demonstration of the CMX7032 using either FI-1.x (Class B transceiver) or FI-2.x (Rx-only).

To use the DE70321 in Class B transceiver mode, a separate microcontroller is required to provide control and perform the higher levels of the Class B protocol and user interfaces. The microcontroller can also be used to load the Function Image™ (FI) into the CMX7032 via its C-BUS interface. The PE0003 (see www.cmlmicro.com for more information) is available to provide the basic controller functionality from a PC interface when using FI-1.x.

The DE70321 can also be used in Rx-only mode with FI-2.x. In this mode, typical operation is to use the EEPROM on the DE70321 which will automatically load the FI at power-on. NMEA-083HS data is then automatically output on the RS-232 port as soon as valid data has been detected. A simple terminal application running at 38,400baud, 8 bits, no parity, no handshake will display the information received.

If a suitable antenna for the AIS frequencies (162MHz) is connected, the received data can be used with chart plotting software in order to display local AIS activity. This assumes that the test location is within reasonable range of AIS equipped vessels. The choice of EEPROM or Host mode is available for FI-1.x using the 'BOOTEN' pins. For FI-2x both EEPROM and RS232 modes are available.

Resources

Products

- DE70321 Demonstration Kit
- CMX7032 IC with FI-1.x and/or FI-2.x
- CMX7032 package styles:
- CMX7032L9 64-pin LQFP
- CMX7032Q1 64-pin VQFN



CML website www.cmlmicro.com

- Product overview
- User manual
- Application notes
- FAQs

CML Technical Portal (authorisation required)

- Evaluation kit design support files
 - Full schematic diagrams
 - Bill-of-materials (BOM)
 - Gerber files



CML's proprietary *FirmASIC*® component technology reduces cost, time to market and development risk, with increased flexibility for the designer and end application. *FirmASIC*® combines Analogue, Digital, Firmware and Memory technologies in a single silicon platform that can be focused to deliver the right feature mix, performance and price for a target application family. Specific functions of a *FirmASIC*® device are determined by uploading its Function Image™ during device initialization. New Function Images™ may be later provided to supplement and enhance device

functions, expanding or modifying end-product features without the need for expensive and time-consuming design changes. *FirmASIC*® devices provide significant time to market and commercial benefits over Custom ASIC, Structured ASIC, FPGA and DSP solutions. They may also be exclusively customised where security or intellectual property issues prevent the use of Application Specific Standard Products (ASSP's).

FirmASIC , *FirmCODEC* , RALCWI, Function Image and *DuraTALK* are trademarks of CML Microsystems Plc.
TWELP is a trademark of DSP Innovations, Inc.

	 CML Microcircuits (UK) Ltd COMMUNICATION SEMICONDUCTORS	 CML Microcircuits (USA) Inc. COMMUNICATION SEMICONDUCTORS	 CML Microcircuits (Singapore) Pte Ltd COMMUNICATION SEMICONDUCTORS
Phone:	+44 (0) 1621 875500	+1 336 744 5050 800 638 5577	+65 62 888129
Fax:	+44 (0) 1621 875600	+1 336 638 5577	+65 62 888230
Email Sales:	sales@cmlmicro.com	us.sales@cmlmicro.com	sg.sales@cmlmicro.com
Email Tech Support:	techsupport@cmlmicro.com	us.techsupport@cmlmicro.com	sg.techsupport@cmlmicro.com
www.cmlmicro.com Search for: cmlmicro			