Built*SAFE*™ AVIO-2353
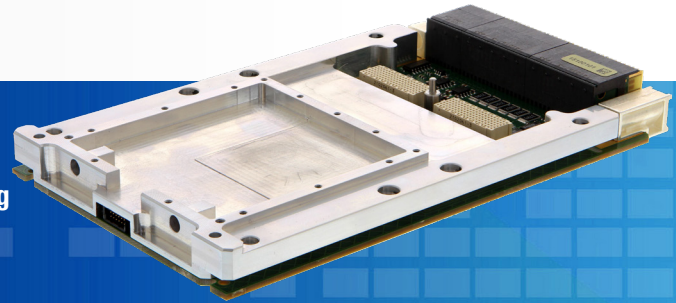
3U OpenVPX™ Conduction-cooled Avionic Communication Interface Board

- **Designed for DAL-C (DO-178C/DO-254) certification**
- **Comprehensive I/O optimized for C4ISR avionic mission computing**
- **Mercury FlexIO™ technology for I/O customization**
- **Low-SWaP and power – XMC site**
- **Safety Optimized Board Management**

HIGHEST DAL

Mercury's BuiltSAFE™ products bring the highest level of flight safety assurance to aerospace and defense applications. Our proven, reusable Design Assurance Level (DAL) certified artifacts for mission computing, avionics, networking and datalink comms processing save time and cost while decreasing risk.

The BuiltSAFE AVIO-2353 is a 3U OpenVPX module with a comprehensive I/O interfaces that are optimized for avionic mission computers. Driven through the OpenVPX PCIe bus and featuring MIL-STD-1553, ARINC-429, RS232/422/485 and GPIOs, the AVIO-2353 provides all the standard interfaces used to communicate with avionic sensors and other platform processing subsystems. Utilizing Mercury's FlexIO™ technology, the BuiltSAFE AVIO-2353 I/O pinout is easily customized to specific application requirements.[1] The BuiltSAFE AVIO-2353 is equipped with an XMC site for extended resources and design flexibility.

Low-SWaP

When pre-integrated with an BuiltSAFE MFCC-8557 processor XMC module, the AVIO-2353 turns into a powerful processing subsystem optimized for C4ISR applications - all packed in a single 3U Open-VPX slot. Engineered for interoperability, the BuiltSAFE AVIO-2353 and MFCC-8557 form a seamless pre-integrated solution that interacts with sensors, acquiring/processing data and sharing it on a
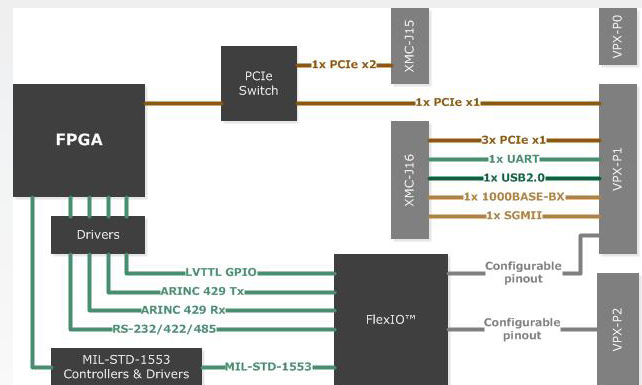

network or other standard avionic buses – all being at the core of C4ISR applications. Fitting in a single 3U OpenVPX slot, the BuiltSAFE AVIO-2353 and the MFCC-8557 form an efficient cost and SWaP solution.

Safety by design

The BuiltSAFE AVIO-2353 can be delivered with all documentation, certification evidence and supporting artifacts required to prove compliance for avionics certification. Leveraging the AVIO-2353 ensures a smooth development process supported by Mercury's safety engineering team and their deep domain expertise. The BuiltSAFE AVIO-2353 has been engineered with DAL safety certification in mind from the top down, with DO-178C/DO-254 best design practices systematically applied throughout all phases of development.

(1) For more information contact factory.

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ACQUIRE   DIGITIZE   PROCESS   STORAGE   EXPLOIT   DISSEMINATE
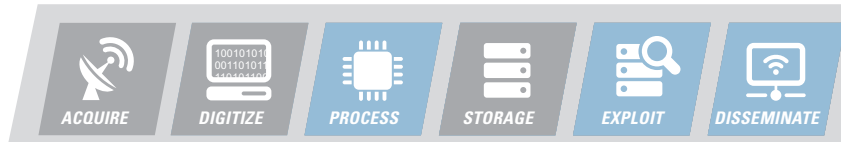
BuiltSAFE for Avionics

Mercury's expertise and experience in safety certifiable solutions has been built on successful execution of dozens of programs over three decades. This domain knowledge is the foundation of our BuiltSAFE portfolio of open architecture modules, systems and software for avionics, communications, video servers, and mission computing.

Technical Specifications

Compliance

3U OpenVPX (VITA 65)/VPX REDI (VITA 48)
XMC 2.0 (VITA 61), XMC PCIe (VITA 42.3)
Certifiable up to DAL-C (DO-178C/DO-254)
Peripheral slot profile SLT3-PER-1U-14.3.3

Power Consumption

minimum	typical	maximum	units
-	11	18	Watts

I/O default configuration

2 dual redundant MIL-STD-1553 channel controllers/terminals (BC, RT and MT)
16 receiving and 8 transmitting ARINC-429 channels for high and low speed
10 configurable RS232/RS422/RS485 serial channels
5 LVTTL compatible 5V tolerant GPIOs

High-Speed Links/Connections

1x PCIe Gen2 x1 from PCIe switch to OpenVPX-P1
1x XMC 2.0 (VITA 61) site to interface an BuiltSAFE MFCC-8557

    3x PCIe Gen2 x1 on XMC-J16

    1x PCIe Gen2 x4 on XMC-J15

    1x SGMII interface on XMC-J16

    1x 1000BASE-BX interface on XMC-J16

    1x USB 2.0 OTG on XMC-J16

    1x USB for serial link on XMC-J16

Built-in Test

On all interfaces

Safety Optimized Board Management

Voltage monitoring
Temperature monitoring (thermal sensors on critical positions)
Elapsed time and event counter
Error reporting
Reset management
Environmental Specification

Ruggedization Levels

Level	Description	Cooling Type	Operating Temperature	Vibration (1 hour per axis)	Operating Shocks
C4	Extended range CC	Conduction	-40°C to 85°C [CC4]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 g^2/Hz, 1000-2000Hz: decrease at 6 dB/octave	40g, 11ms saw-tooth, three axes

Environmental Specifications

Condition	Limits, standards	Comments
Non-operating temperature	-55°C to 105°C [C4]	
Humidity	95%	
Altitude	-1,500 to 60,000 feet	May require conformal coating
Fungus resistance	No nutrient materials	
Workmanship	IPC-A-610 class 3	
Soldering	IPC J-STD-001 class 3	
PCB Manufacturing	IPC-A-600 class 3	
Conformal coating	IPC-CC-830	Optional
Materials	REACH compliant	ROHS variants as an option
Flammability	UL 94 Class V-0	
Quality	EN 9100:2008	

Product Ordering

AVIO-2353   3U OpenVPX avionic communication interface board

I/O [1]

☐ 1 channel dual redundant MIL-STD-1553
☐ 2 channel dual redundant MIL-STD-1553

Environmental

☐ A1 : 0°C to 55°C   ☐ C4 : -40°C to 85°C

Software

☐ Green Hills INTEGRITY-178 tuMP   ☐ Linux [2]
☐ WindRiver VxWorks® 6.x and 653 3.x   ☐ SYSGO PikeOS
☐ DDC-I Deos

Safety Artifacts

☐ D0-178C [2]   ☐ D0-254 [2]

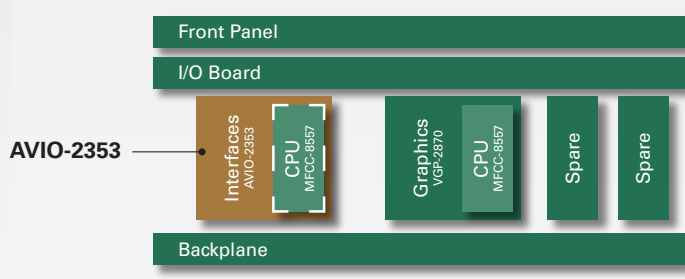(1) For other configurations contact factory
(2) Contact factory for more information

Related Hardware Products

MFCC-8557 Freescale QorIQ™ P3041 XMC safety critical Single Board Computer
VGP-2870   3U OpenVPX video I/O and graphic processor
ROCK-2   3U OpenVPX low-SWaP optimized, rugged, modular, pre-qualified subsystems

Less space for more functions

Mission computer featuring stacked XMCs for low-SWaP

Front Panel

I/O Board

AVIO-2353 —

Interfaces AVIO-2353

CPU MFCC-8557

Graphics VGP-2870

CPU MFCC-8557

Spare

Spare

Backplane

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