Built**SAFE**[™] RSL-5222

Conduction-cooled Serial I/O PMC Module

- Reprogrammable FPGA with independent embedded serial controllers
- 4/8 configurable high-performance synchronous/asynchronous serial interface channels
- RS-232/422/485 Synchronous/asynchronous UART, HDLC, SDLC, 9-bit protocol
- User-specific I/O lines on PMC-P4
- Reprogrammable FPGAs and FlexIO[™] flexability

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 RSL-5222 is a serial I/O PMC module for ground/ airborne applications requiring conduction or air-cooled processing. The RSL-5222 is a high-performance, low-SWaP solution that is optimized to meet the most demanding communication applications with up to 8 high-speed asynchronous/synchronous serial channels.

Configured by hardware, each port is fully programmable and supports most serial I/O protocols. Mercury's FlexIO[™] technology enables the PMC-P4 I/O to be matched to specific applications.

The RSL-5222 supports a wide variety of physical interfaces, which can be individually selected as RS-232 or RS-422/485 without hardware configuration.

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.



Mercury Systems is a leading commercial provider of secure sensor and mission processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.







Technical Specifications

Compliance

PMC (VITA 20) IEEE 1386.1

Power Consumption

Typ. 4W

User defined I/O

User-specific I/O lines on PMC-P4 FlexIO module for flexible pin-out connectivity of serial channels/GPIO

High-Speed Links / Connections

4x or 8x software selectable channels:

Maximum data rate of 2 Mb/s (asynchronous) or 10 Mb/s (synchronous)

RS-232: RxD, RxC, TxD, TxC

RS-422/485: RxD_H/L, TxD_H/L, TxC_H/L

Synchronous/asynchronous UART, HDLC, SDLC, 9-bit protocol

Up to 16x GPIO (3V3TTL)

FIFOs:

Receive: 1KB, each channel

Transmit: 1KB, each channel

Oscillator:

14.7456 MHz to support standard asynchronous baud rates

User-supplied oscillator location is available for custom baud rate generation

Bus

One 32-bit PCI 3.0 bus at 33MHz on PMC-P1/P2 (5V tolerant)

Ruggedization Levels

Level	Description	Cooling Type	Operating Temperature	Vibration (1 hour per axis)	Operating Shocks
A1	Commercial AC	Forced air*	0°C to 55°C [AC1]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.04 $g^2/\text{Hz},$ 1000-2000Hz: decrease at 6 dB/octave [V2]	20g, 11ms saw-tooth, three axes [OS1]
C4	Extended range CC	Conduction	-40°C to 85°C [CC4]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 $g^2/\text{Hz},$ 1000-2000Hz: decrease at 6 dB/octave	40g, 11ms saw-tooth, three axes

* The required air-flow is defined separately for each product

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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-160 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

RSL-5222GD	Conduction-cooled serial I/O PMC	
RSL-5222GE	Air-cooled serial I/O PMC	
	(8 programmable synchronous/asynchronous channels) with mechanicals ⁽¹⁾	
SWW-39220B	VxWorks® driver license for RSL-5222G	
(4)		

⁽¹⁾ I/O signals only available on connector PMC-P4