VL-EPMs-U1

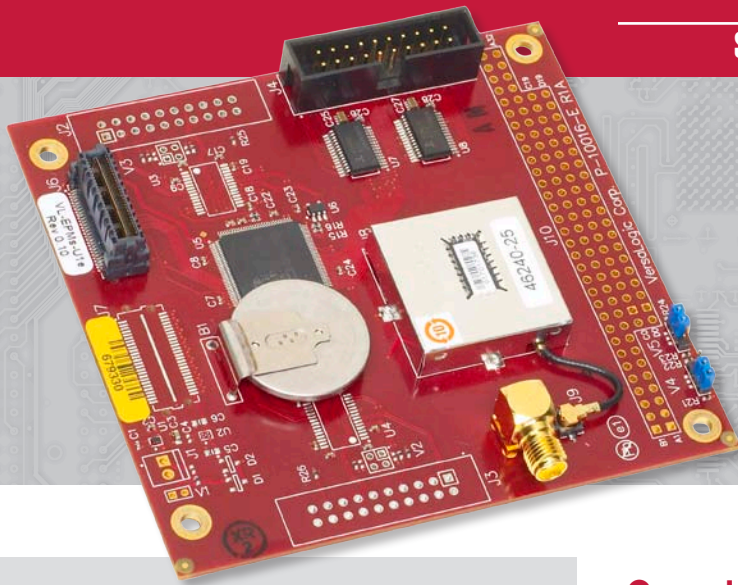## SUMIT™-104 Serial Communications + GPS Receiver

- Serial I/O (up to 6 ports)
- GPS versions
- ISA versions
- Extended temp. operation
- MIL-STD-202G shock/vibe
- RoHS compliant

Highlights

SUMIT Compatible
Highly rugged SUMIT-104 format.

Serial I/O
Up to six serial ports enable communication with multiple peripheral devices.

On-board GPS Receiver
Optional 12-channel GPS module supports NMEA 0183, TSIP, TAIP, and DGPS protocols.

Extended Temperature Operation
-40° to +85°C operation for harsh environments.

MIL-STD-202G
Qualified for high shock/vibration environments.

Overview

The VL-EPMs-U1 module provides advanced serial communications and Global Positioning System (GPS) capabilities in embedded systems. Based on the SUMIT-104 form factor, the VL-EPMs-U1 supports SUMIT and PC/104™ stackable expansion buses. With a compact rugged form factor and low power consumption (700 mW typ.), the VL-EPMs-U1 is well suited to size, weight, and power constrained applications. A full industrial temperature rating and certification to MIL-STD-202G specifications for shock and vibration ensure reliable operation in harsh, mobile, and/or remote environments.

Like all VersaLogic products, the VL-EPMs-U1 is designed to support OEM applications where high reliability and long-term availability are required. From application design-in support, to its 5+ year production life guarantee, the VL-EPMs-U1 provides a durable embedded computer solution with an excellent cost of ownership. The VL-EPMs-U1 is manufactured and tested to the highest quality standards and is fully RoHS compliant. Customization is available, even in low OEM quantities.

Details

With up to six serial ports, the VL-EPMs-U1 provides traditional hardwired serial I/O functions for legacy communications. RS-232 serial ports operate in 4-wire mode at 115 Kbps; RS-485 mode adds auto-direction control and high-speed 460 Kbps transmission.

When equipped with the optional Trimble® Lassen® iQ GPS receiver, the VL-EPMs-U1 delivers complete position, velocity, and time (PVT) data for use in host applications. The Lassen iQ provides simultaneous 12-channel operation for stable satellite tracking and aided GPS startup for fast initial signal acquisition. Dual GPS signal sensitivity modes enable reliable tracking in difficult environments with weak satellite signals. GPS data is available in popular NMEA, TSIP, TAIP, or DGPS protocols. The GPS data is accessed through two on-board serial ports. An antenna with interface cabling is available for evaluation, testing, and software development.

Designed for full industrial (-40° to +85°C) temperature operation; the VL-EPMs-U1 is built to withstand thermal extremes and meets MIL-STD-202G specifications for mechanical shock and vibration. Transient voltage suppression (TVS) devices on the serial port I/O lines provide enhanced electrostatic discharge (ESD) protection for the system. Fault protection on the GPS antenna guards against open and short circuits.

Based on an industry standard 16C550 I/O controller, the VL-EPMs-U1 is fully compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX using standard serial I/O software drivers.

VERSALOGIC CORPORATION

VL-EPMs-U1
SUMIT-104 Serial Communications + GPS Module

VL-EPMs-U1D (Top)

Ordering Information

Model	Serial Channels	GPS	Stackable Bus
VL-EPMs-U1A	4	–	SUMIT-A
VL-EPMs-U1B	6	–	SUMIT-A
VL-EPMs-U1C	4	–	SUMIT-AB + ISA[b]
VL-EPMs-U1D*	6	–	SUMIT-AB + ISA[b]
VL-EPMs-U1E	2	Y	SUMIT-A
VL-EPMs-U1F*	4	Y	SUMIT-A
VL-EPMs-U1G*	2	Y	SUMIT-AB + ISA[b]
VL-EPMs-U1H*	4	Y	SUMIT-AB + ISA[b]

* Special order

Accessories

Optional Accessories	
VL-CBR-2001	12" 20-pin socket / (2) DB-9M cable
VL-CBR-ANT02	GPS antenna
VL-HDW-105	0.6" standoff package (metric thread)
VL-HDW-106	0.6" standoff package (English thread)
VL-HDW-201	Extractor tool

SUMIT Resources		
Form Factor: SUMIT-104 (Legacy Type 1)		
	SUMIT-A	SUMIT-B[a]
PCIe x1	–	–
PCIe x4		–
USB	–	
ExpressCard	–	
LPC	1	
SPI/µWire	–	
SMBus/I²C	–	
+12V	–	
+5V	✓	✓
+5Vsb	–	–
+3.3V	–	–

SPECIFICATIONS

General	Board Size	PC/104 standard: 90 mm x 96 mm (3.55" x 3.78")
	Power Requirements	+5V @ 140 mA (700 mW)
	Stackable Bus	SUMIT-104: SUMIT-A, SUMIT-B[a], ISA[a/b]
	RoHS	RoHS (2002/95/CE) compliant
Environmental	Operating Temperature	-40° to +85°C
	Storage Temperature	-40° to +85°C
	Airflow Requirements	Free air from -40° to +85°C
	Thermal Shock	5°C/min. over operating temperature
	Humidity	Less than 95%, noncondensing
	Vibration, Sinusoidal Sweep	MIL-STD-202G, Method 204, Modified Condition A: 2g constant acceleration from 5 to 500 Hz, 20 minutes per axis
	Vibration, Random	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 minutes per axis
	Mechanical Shock	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis
Device I/O	COM 1/2 Interface[c]	RS-232. 16C550 compatible. 115 Kbps.
	COM 3/4 Interface[c/d]	RS-232/422/485 selectable. 16C550 compatible. 460 Kbps.
	COM 5/6 Interface[c]	RS-232/422/485 selectable. 16C550 compatible. 460 Kbps.
GPS[a]	Module	Trimble Lassen iQ GPS module: L1 (1575.42 MHz) frequency, C/A code, 12-channel, continuous tracking receiver
	Update Rate	TSIP @ 1 Hz; NMEA @ 1 Hz; TAIP @ 1 Hz
	Accuracy	Horizontal: < 5 meters (50%), < 8 meters (90%) Altitude: < 10 meters (50%), < 16 meters (90%) Velocity: 0.06 m/s PPS (static): ±50 ns
	Acquisition	Reacquisition: < 2 sec (90%) Hot Start[e]: < 10 sec (50%), < 13 sec (90%)
	Protocols	NMEA 0183 v3.0, TSIP, TAIP, and DGPS (RTCM SC-104)
	Antenna[f]	Supports active antennas with HFL, MCX, or SMA connectors
Software	Operating Systems	Compatible with most x86 operating systems, including Windows, Windows Embedded, Linux, VxWorks, and QNX

[a] Optional. [b] Pass-through only. [c] TVS protected port (enhanced ESD protection). [d] Serial ports 3 and 4 are optionally utilized by the GPS receiver. [e] Hot start implies last position, time, almanac, and ephemeris are saved by backup power. [f] Fault protected (open and short circuit).

Data represents standard operation at +25°C with +5V supply unless otherwise noted. Specifications are subject to change without notification. PC/104 is a trademark of the PC/104 Consortium. SUMIT is a trademark of the SFF-SIG. Trimble and Lassen are registered trademarks of Trimble Navigation Ltd. All other trademarks are the property of their respective owners.

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