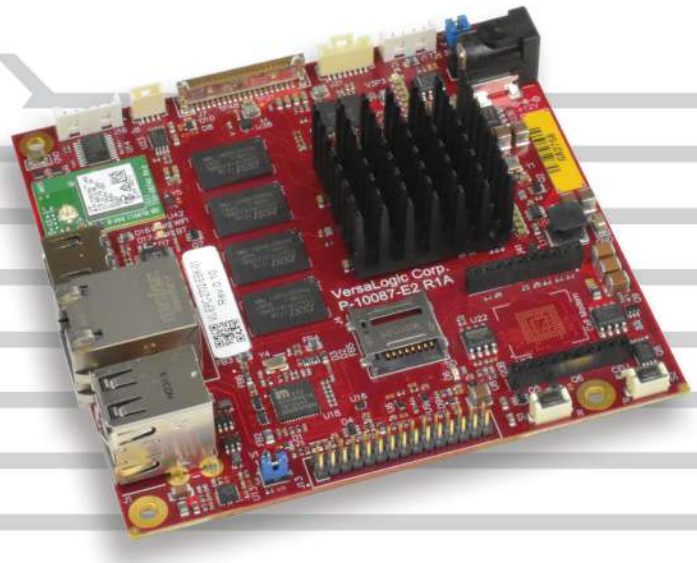
Swordtail

Arm-based Single Board Computer



95 x 95 mm
(3.7 x 3.7")

Overview

The Swordtail is a complete single board computer. It features Wi-Fi, Bluetooth®, and cellular options for applications that operate without a wired data connection. These Arm®-based computers are available with power-efficient, dual-core or quad-core i.MX6 CPUs. The Swordtail is ideal for applications that demand rugged low-power solutions such as industrial machine automation, transportation, medical, kiosks, and industrial IoT.

Unlike Arm-based "modules", Swordtail is a complete board-level computer. Additional carrier boards, connector boards, or I/O expansion boards are not required for operation. Swordtail boards are delivered with on-board soldered-down RAM, ready to plug-in and run. To simplify mounting and future upgrades, the Swordtail leverages the COM-Express standard for its footprint and mounting points.

Like all VersaLogic products, the Swordtail SBC is engineered and tested to be rugged. It is fully validated for operation in unforgiving environments with extreme temperatures, mechanical shock, and vibration.

continued ▸

Highlights

- Complete single board computer
- -40° to +85°C operation
- Dual- or quad-core i.MX6 processor
- Wi-Fi 802.11 b/g/n
- Bluetooth 4.2
- Cellular-compatible socket
- Shock and vibration per MIL-STD-202H
- Standard 95 x 95 mm size
- Low power draw
- Fanless operation
- Input power conditioning
- Up to 4 GB soldered-on RAM
- Gigabit Ethernet
- HDMI (with audio)
- LVDS (with backlight and touchscreen support)
- USB 2.0 ports
- Serial I/O (RS-232)
- MicroSD card socket
- Up to 32 GB eMMC Flash
- CAN bus and I2C
- Linux support

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Overview *...continued*

In addition to the wireless connections, the Swordtail provides connectivity via Gigabit Ethernet, USB, GPIO, and CAN bus interfaces. HDMI video, audio support, and LVDS panel / touchscreen support are also included.

Both Wi-Fi and Bluetooth radios are included on board. A NimbleLink Skywire™ socket supports a wide range of optional cellular and other wireless plug-ins.

VersaLogic's 10+ year product life support programs ensure long-term deployment in the field, free from expensive upgrades and migrations that come from short, disposable lifecycle products. ■

Features

1 NXP i.MX6 Cortex®-A9 32-bit Processor
i.MX6 Quad or i.MX6 DualLite Arm processor with integrated I/O and 2D / 3D graphics engine.

2 Video Output with touchscreen support
HDMI video output with Audio (2a); LVDS (2b).

3 RAM
1 GB to 4 GB soldered-on memory.

4 Wired Network
Gigabit Ethernet interface with network boot capability.

5 Wi-Fi
802.11 b/g/n Wi-Fi.

6 Bluetooth
Bluetooth 4.2.

7 USB
Two USB 2.0 ports.

8 CAN
CAN bus port.

9 Serial I/O
Serial I/O port (Debug) (9a) and I2C (9b).

10 GPIO
Nine 3.3V GPIO.

11 MicroSD Socket
Supports removable microSD card solid-state drives (bootable).

12 eMMC Flash
Up to 32 GB of soldered-on Flash storage.

13 Cellular Expansion
Expansion socket for cellular or other wireless technologies.

14 Power Conditioning
8 to 17V DC input (12V nominal) power input.

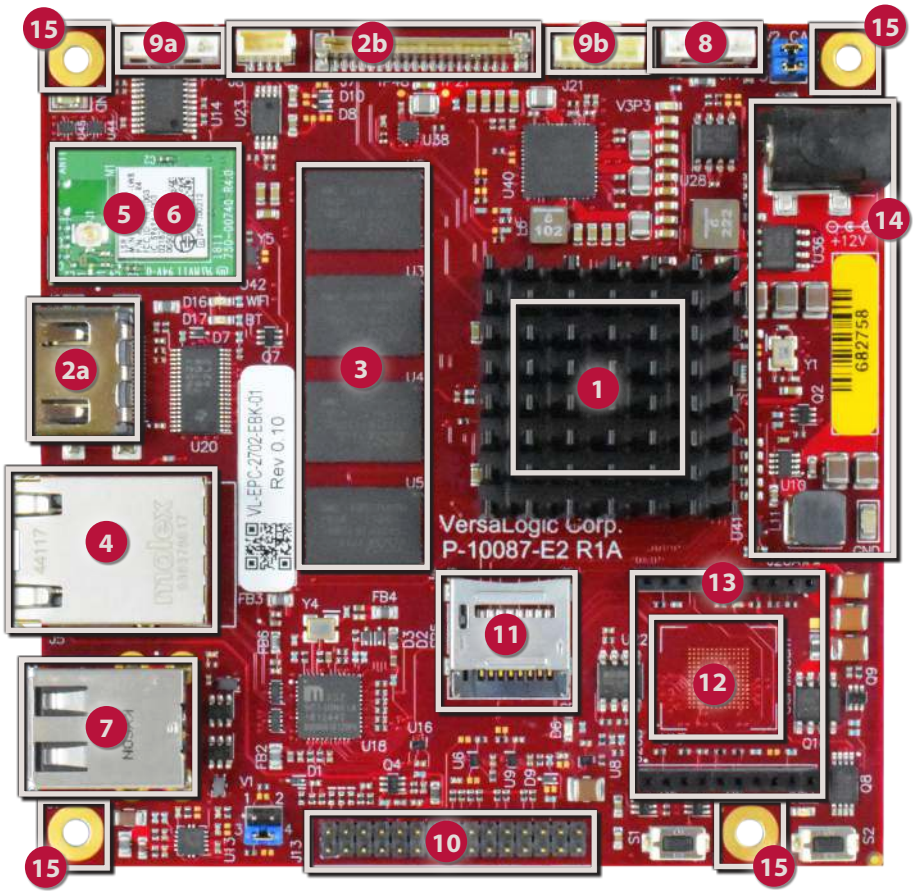
15 Standard Mounting
Same mounting holes as COM Express Compact products.

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

MIL-STD-202H
Qualified for high shock and vibration environments.

Software Support
Compatible with a variety of popular Arm operating systems including Linux and Android.

Support includes VersaAPI software for onboard I/O devices.



Modify Swordtail to Your Exact Requirements

COTS modifications are available in quantities as low as 100 pieces.

- On-board RAM Size
- On-board Flash Storage Size
- Standard Temperature Version
- Conformal Coating
- Connector & I/O Changes
- Custom Testing
- Custom Labeling
- BGA Underfill
- U-Boot Modifications
- Revision Locks
- Custom Screening
- Application-Specific Testing
- Etc.

Specifications

General				
Board Size	95 x 95 x 21.4 mm (3.7 x 3.7 x 0.85")			
Weight	68 grams (2.4 oz.)			
Processor	NXP i.MX6 Quad or i.MX6 DualLite			
Input Voltage	8V to 17V DC (12 V DC nominal)			
Power Requirements §	*Model*	*Standby*	*Idle*	*Busy*
	VL-EPC-2702-EBK-01	1.08 W	1.72 W	2.73 W
	VL-EPC-2702-EDK-02	1.15 W	1.95 W	3.84 W
System Reset and Hardware Monitors	Major voltage rails monitored. Watchdog timer with programmable timeout. CPU temperature monitoring. Push-button reset.			
Regulatory Compliance	RoHS (2011/65/EU), Conflict Minerals compliant.			

Environmental		
Operating Temperature ◊	-40° to +85°C	
Storage Temperature	-40° to +85°C	
Altitude	Operating*	To 4,570 m (15,000 ft.)
	Storage	To 12,000 m (40,000 ft.)
Airflow Requirements	0.5 Linear Meters per Second (100 Linear Feet per Minute)	
Thermal Shock	5°C/min. over operating temperature	
Humidity	Less than 95%, noncondensing	
Vibration, Sinusoidal Sweep ¤	MIL-STD-202H method MIL-STD-202-204, Condition A: 2g	
Vibration, Random ¤	MIL-STD-202H method MIL-STD-202-214, Condition A: 5.35g rms	
Mechanical Shock ¤	MIL-STD-202H method MIL-STD-202-213, Condition G: 20g half-sine	

Memory	
System RAM	Up to 4 GB DDR3L soldered-on memory.***

Video	
General	Integrated video controller. Supported video decoders: DivX 3/4/5/6, H.263, H.264, MJPEG, MPEG-1/2, MPEG-4, VC1. Video encoders: H.263, H.264, MJPEG, MPEG-4.
Desktop Display Interface ‡	HDMI V1.4 port (with sound)
OEM Flat Panel Interface #	LVDS interface. 24-bit panels support up to 1366 x 768 resolution. Support for FPD power control, backlight control, and touchscreen I2C with interrupt interface.

‡ TVS protected port (enhanced ESD protection).

Power pins are overcurrent protected.

Please contact VersaLogic Sales for a list of compatible modules.

◊ Derate -1.1°C per 305 m (1,000 ft.) above 2,300 m (7,500 ft.).

* For extended altitude information contact VersaLogic Sales.

§ Represents operation at +25°C and +12V running Yocto Linux with HDMI display, Micro SD boot card, and USB keyboard/mouse. Idle and Busy power measured with Wireless LAN connected and Ethernet disabled. Busy power measured with Himeno benchmark test. Power consumed is primarily due to the peripherals plugged into the board.

¤ MIL-STD-202H shock and vibration levels are used to illustrate the overall ruggedness of this product. Certification at different levels or types of shock and vibration is available. Contact VersaLogic Sales for further information.

*** Optional. Not available on all models. Contact VersaLogic Sales for more information.

Specifications are subject to change without notification. Arm and Cortex are trademarks of Arm Ltd. Bluetooth is a trademark of Bluetooth SIG, Inc. All other trademarks are the property of their respective owners.

Mass Storage	
Flash / Solid-State Drives	microSD socket, bootable
	Optional bootable eMMC MLC Flash drive (chip). Up to 32 GB

Network Interface	
Ethernet ‡	One autodetect 10BaseT/100BaseTX/1000BaseT port. Latching connector.
Network Boot Option	Supported

Device I/O	
USB	Two USB 2.0 host ports # ‡
Serial I/O	One RS232 debug port ‡
Digital I/O	Nine CMOS level I/O lines (3.3V)
PWM	0 to 3 PWM outputs. Use of PWM outputs reduces GPIO pin count.
I2C	One I2C interface, with interrupt input support.
CAN Bus	One channel CAN 2.0B, ISO 11898-2 compliant

Other I/O	
Wi-Fi	Wi-Fi 802.11b/g/n, one band, b@11Mbps, g/n@54Mbps data rate via SDIO.
Bluetooth	Bluetooth 4.2.
Cellular socket	20-pin NimbleLink Skywire socket.##

Software	
Power Mode	i.MX6 Power Modes: - Run - Wait - Stop - Dormant
Operating Systems	Compatible with most Arm operating systems including Linux and Android.

Ordering Information

Model	CPU Model	Cores	Nominal CPU Speed	RAM Memory	eMMC Flash	Operating Temp.
VL-EPC-2702-EBK-01	i.MX6 DualLite	Dual	800 MHz	1 GB	–	-40° to +85°C
VL-EPC-2702-EDK-02	i.MX6 Quad	Quad	800 MHz	2 GB	–	-40° to +85°C

Other configurations are possible. Please contact VersaLogic Sales at (503) 747-2261 to discuss requirements!

Accessories

Part Number	Description
Cable / Development Kit	
VL-CKR-SWORDTAIL	Swordtail development / evaluation kit. Includes VL-F41-8SBN-LINUX3, CBR-3004, CBR-0504, PS-WALL12-24, CBR-ANT04, CBR-0205.
VL-F41-8SBN-LINUX3	Linux Operating System, 8 GB MLC microSD card with bootable Linux, standard temperature.
VL-CBR-3004	0.5m 30-pin 2mm IDC to Ribbon Cable
VL-CBR-0504	0.3m 2mm 5-pin to DB-9M
VL-PS-WALL12-24	Wall Mount 12V 24W Power Supply
VL-CBR-ANT04	2.4 GHz Dipole Antenna
VL-CBR-0205	Antenna Interface Cable (U.FL to RP-SMA) 105 mm
VL-CBR-0405	CAN bus cable, 2 mm 4-pin to 2 mm 4-pin MicroClasp, 1m
VL-CBR-0406	CAN bus cable, 2 mm 4-pin MicroClasp to DB9 connector
VL-CBR-2014	LVDS to VGA adapter
VL-CBR-2015	20" 24-bit LVDS 20-pin 1mm Hirose to 1mm Hirose
VL-CBR-0404	LED Back Light, 4-pin Pico-Clasp / 4-pin IDE Power to 6-pin 12V, 500mm
VL-CBR-0811	20" 8-pin Pico-Clasp to Pico-Clasp cable
Solid-State Storage (flash memory)	
VL-F41-xxxx	microSD card (SDIO), SLC, industrial temperature

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