Overview

The Swordtail single board computer is a complete Wi-Fi and Bluetooth® enabled, Arm®-based embedded computer. Models are available with power-efficient, dual-core or quad-core i.MX6 CPUs. These boards are designed for applications that demand rugged, power-efficient solutions such as industrial machine automation, transportation, medical, kiosk, and industrial IoT applications. Swordtail boards have been designed to enable transactions and transmission of maintenance or diagnostic information without the presence of a wired data connection. Both Wi-Fi and Bluetooth radios are included on board, and a NimbleLink Skywire™ socket supports a wide range of optional cellular and other wireless plug-ins.

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 where extreme temperatures and mechanical shock and vibration occur. Each component has been carefully sourced,

continued ▶

Highlights

- Complete single board computer
- -40°C to +85°C operation
- Dual- or quad-core i.MX6 processor
- 802.11 b/g/n Wi-Fi on-board
- Bluetooth 4.2 on-board
- Cellular compatible on-board socket
- Shock and vibration per MIL-STD-202G
- 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. I2C
- Linux support

* Optional. Not available on all models.
Overview ...continued

and the design optimized and validated, to ensure reliable operation in the field.
Swordtail embedded computer boards provide connectivity via Wi-Fi, Bluetooth, Gigabit Ethernet, USB, and CAN bus interfaces, as well as HDMI video and audio support and LVDS panel support with backlight and touchscreen signals. Additional on-board I/O includes I2C with interrupt input support, and GPIO lines.

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 PRELIMINARY

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. **Network Support**
   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 support keyboard, mouse, and other devices.

8. **CAN**
   CAN bus port.

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

10. **GPIO**
    Eight 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-202G**
  Qualified for high shock and vibration environments.

- **Software Support**
  Compatible with a variety of popular Arm operating systems including Linux.
  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 PRELIMINARY

### General

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board Size</td>
<td>95 x 95 x 21.4 mm (3.7 x 3.7 x 0.85&quot;)</td>
</tr>
<tr>
<td>Weight</td>
<td>68 grams (2.4 oz.)</td>
</tr>
<tr>
<td>Processor</td>
<td>NXP i.MX6 Quad and i.MX6 DualLite</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>8V to 17V DC (12 V DC nominal)</td>
</tr>
</tbody>
</table>

### Power Requirements

<table>
<thead>
<tr>
<th>Model</th>
<th>Standby</th>
<th>Idle</th>
<th>Busy</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL-EPC-2702-EBK-01</td>
<td>0.53 W</td>
<td>2.2 W</td>
<td>3.0 W</td>
</tr>
<tr>
<td>VL-EPC-2702-EDK-02</td>
<td>0.98 W</td>
<td>2.8 W</td>
<td>4.8 W</td>
</tr>
</tbody>
</table>

### 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 Mineral Free.

### Environmental

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40° to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40° to +85°C</td>
</tr>
<tr>
<td>Altitude</td>
<td>Operating: To 4,570 m (15,000 ft.) Storage: To 12,000 m (40,000 ft.)</td>
</tr>
<tr>
<td>Airflow Requirements</td>
<td>0.5 Linear Meters per Second (100 Linear Feet per Minute)</td>
</tr>
<tr>
<td>Thermal Shock</td>
<td>5°C/min. over operating temperature</td>
</tr>
<tr>
<td>Humidity</td>
<td>Less than 95%, noncondensing</td>
</tr>
<tr>
<td>Vibration, Sinusoidal Sweep</td>
<td>MIL-STD-202G, Method 204, Modified Condition A: 2g constant acceleration from 5 to 500 Hz, 20 min. per axis</td>
</tr>
<tr>
<td>Vibration, Random</td>
<td>MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 min. per axis</td>
</tr>
<tr>
<td>Mechanical Shock</td>
<td>MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis</td>
</tr>
</tbody>
</table>

### Memory

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

### Video

- 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.

### 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: Eight 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 NimbeLink Skywire socket.

### Software

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

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† TVS protected port (enhanced ESD protection).
‡ Power pins are overcurrent protected.
# Power pins are overcurrent protected.
## Please contact VersaLogic Sales for a list of modules that have been tested.
◊ 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 2.1 with HDMI display, SATA, and USB keyboard/mouse. Busy power measured with "./bmt" Himeno Max Power. Power consumed is primarily due to the peripherals plugged into the board.
¤ MIL-STD-202G shock and vibration levels were used to illustrate the overall ruggedness of this product. Certification at higher levels or different types of shock or vibration methods per the specific requirements of the application 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.
### Ordering Information PRELIMINARY

<table>
<thead>
<tr>
<th>Model</th>
<th>CPU Model</th>
<th>Cores</th>
<th>Nominal CPU Speed</th>
<th>RAM Memory</th>
<th>eMMC Flash</th>
<th>Operating Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL-EP-2702-EBK-01</td>
<td>i.MX6 DualLite</td>
<td>Dual</td>
<td>800 MHz</td>
<td>1 GB</td>
<td>–</td>
<td>-40° to +85°C</td>
</tr>
<tr>
<td>VL-EP-2702-EDK-02</td>
<td>i.MX6 Quad</td>
<td>Quad</td>
<td>800 MHz</td>
<td>2 GB</td>
<td>–</td>
<td>-40° to +85°C</td>
</tr>
</tbody>
</table>

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

### Accessories PRELIMINARY

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

### Take the Risk out of Embedded Computing

Whether it's selecting the optimum solution for your application, providing expert support during development, or on-time delivery of defect-free products, VersaLogic is here to make sure your project goes smoothly from initial concept through the extended life of your program. Contact VersaLogic today to learn more.

[ISO 9001:2015 Certified](#)

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