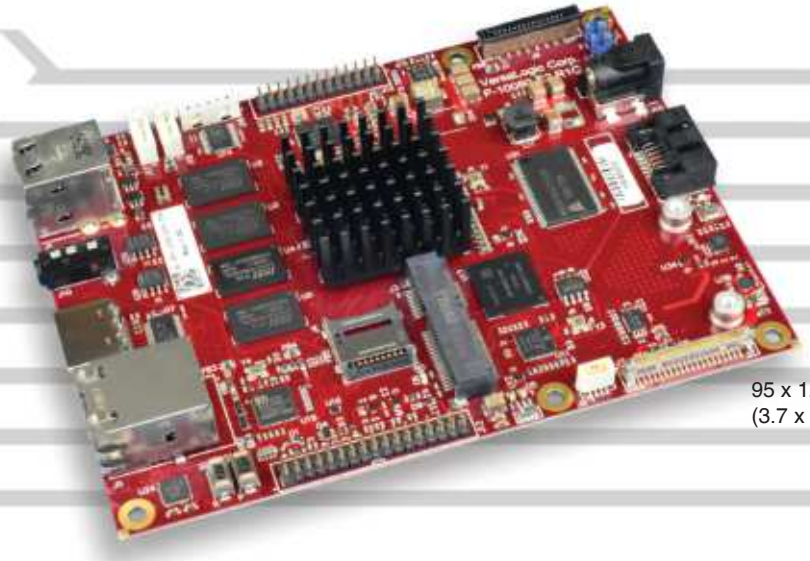
Tetra

Arm-based Single Board Computer



95 x 125 mm
(3.7 x 4.9")

Overview

The Tetra single board computer is a complete Arm®-based embedded computer which features a power-efficient quad-core i.MX6 CPU. All models are delivered tested and ready for deployment. They are ideal for demanding applications that require rugged power-efficient solutions with long-term availability.

Unlike proprietary formats, Tetra is designed around the industry standard COM-Express footprint and mounting points, which simplifies installation and future upgrades. Unlike Arm-based "modules", Tetra is complete board level computer. Additional carrier boards, connector boards, or I/O expansion are not required for operation. Tetra boards are delivered with on-board soldered-on RAM, ready to power up and run.

Like all VersaLogic products, the Tetra SBC is engineered to be rugged. It is designed and validated for operation in unforgiving environments including high temperature, mechanical shock and vibration.

The Tetra embedded computer provides connectivity via Gigabit Ethernet, USB, and CAN Bus interface, as well as HDMI and LVDS video support. It also includes a Mini PCIe socket for expandability, I2C port, MIPI camera input, audio I/O, SPI, and a 6-axis accelerometer/magnetometer.

VersaLogic delivers extremely reliable standard and customized embedded computers backed by unsurpassed service and the highest availability in the market. VersaLogic exists to exceed customers' needs—whenever or wherever they arise.

Highlights

- -40° to +85°C operating temperature
- Quad-core i.MX6 performance
- Shock and vibration per MIL-STD-202G
- 95 x 125 mm COM Basic size
- Fanless operation
- Up to 4 GB soldered-on RAM
- Wide power input (8 to 17V)
- HDMI and LVDS video
- 128 KB Magnetic RAM*
- Up to 32 GB eMMC Flash
- CAN Bus, SPI, I2C
- 6-axis, e-compass
- VersaAPI software support
- Linux and Android™ support

* Optional. Not available on all models.

VERSALOGIC CORPORATION

Features

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

2 Video Outputs
LVDS (flat panel) video output with backlight support (2a). HDMI video output (2b).

3 RAM
Up to 4 GB soldered-on memory. 2 GB standard.

4 SATA*
One SATA II port supports high-capacity storage (solid-state drives or rotating media)

5 Network Support
Gigabit Ethernet interface with network boot capability

6 USB
Two USB 2.0 ports support keyboard, mouse, and other devices

7 CAN
Two CAN bus ports

8 Serial I/O
Two serial I/O ports (UART and Debug), I2C, and SPI

9 Audio
Audio I/O

10 GPIO and PWM
Eight 3.3V GPIO and three PWM outputs

11 Camera
MIPI camera input

12 Accelerometer
Integrated 6-axis e-compass (accelerometer/magnetometer)

13 Mini PCIe*/mSATA* Socket
Supports Wi-Fi modems, Ethernet, Analog I/O, Serial ports, GPS, MIL-STD-1553, Ethernet, solid-state mSATA drives, and other plug-in devices

14 MicroSD Socket
Supports removable microSD card solid-state drives

15 128 KB Magnetic RAM*
Fast memory that retains data during power-off

16 eMMC Flash*
Up to 32 GB

17 Input Power Conditioning
8 to 17V power input range (12V automotive compatible)

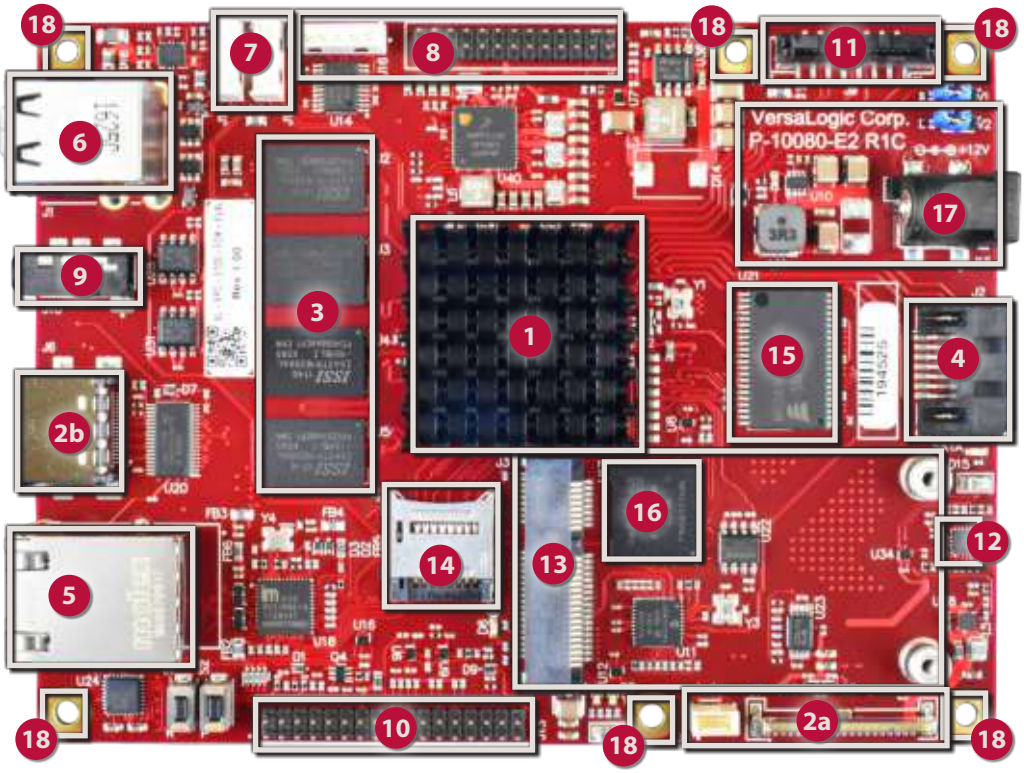
18 Standardized Mounting
COM Express Basic size mounting holes

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

MIL-STD-202G
Qualified for high shock and vibration environments

Software Support
Linux and Android operating system support.

VersaAPI support software provided for onboard I/O devices.



Modify Tetra to Your Exact Requirements

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

- 4 GB RAM
- 128 KB Magnetic RAM
- 32 GB eMMC
- Standard Temperature Version
- Conformal Coating
- Connector & I/O Changes
- Custom Testing
- Custom Labeling
- BGA Underfill
- U-Boot Modification
- Software/Drivers
- Revision Locks
- Custom Screening
- Application-Specific Testing
- Etc.

*Feature optional or available on some models only

Specifications

General	
Board Size	95 x 125 x 21 mm (3.7 x 4.9 x .82")
Weight	90 grams (3.2 oz.)
Processor	NXP i.MX6
Input Voltage	8 to 17VDC (compatible with 12V automotive systems)

Power Requirements §	*Model*	*Standby*	*Idle*	*Busy*
	VL-EPC-2700-EDK-02x	0.98W	2.8W	4.8W
	VL-EPC-2700-EDK-EVAL	0.98W	2.8W	4.8W

System Reset and Hardware Monitors	Major voltage rails monitored. Watchdog timer with programmable timeout. CPU temperature monitoring. Push-button reset.
Manufacturing Standards	IPC-A-610 Class 2
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-202G, Method 204, Modified Condition A: 2g constant acceleration from 5 to 500 Hz, 20 min. per axis	
Vibration, Random ¤	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 min. per axis	
Mechanical Shock ¤	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis	

Memory	
System RAM	Up to 4 GB DDR3L soldered-on memory. 2 GB standard***
	128 KB Magnetic RAM***

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
OEM Flat Panel Interface #	LVDS interface. 18- and 24-bit panels support up to 1366 x 768 resolution. Support for FPD power control.

‡ TVS protected port (enhanced ESD protection)

Power pins are overcurrent protected

◊ 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. The power consumed is primarily a result of the peripherals plugged into the processor 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.

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

Mass Storage	
Rotating Drive / Flash / Solid-State Drives	Bootable SATA II port, latching connector***
	mSATA socket, bootable***
	MicroSD socket , bootable
	eMMC MLC Flash drive. 0 to 32 GB, bootable***

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

Device I/O	
USB # ‡	Two USB 2.0 host ports
Serial I/O	One UART (3.3V) port One RS232 debug port ‡
Audio	Microphone and headphones in/out on single 3.5 mm audio jack. Line inputs/outputs on 34-pin I/O header.
Digital I/O	Eight CMOS level TTL I/O lines (3.3V)
PWM	0 to 3 PWM outputs. Use of PWM outputs reduces GPIO pin count.
I2C	Two I2C interfaces
CAN Bus	Two channels (3.3V CAN signaling, 5V tolerant)
Camera Input	MIPI CSI – Low-cost camera port (CSI-2, 2-lane mode)
Accelerometer/ Magnetometer	6-axis sensor with integrated linear accelerometer and magnetometer.

Other I/O	
Mini PCIe Socket	Full-size Mini PCIe socket.*** Supports Wi-Fi modems, GPS receivers, and other plug-in modules.
SPI Interface	One channel with three device chip selects

Software	
VersaAPI	VersaLogic Application Programming Interface to support on-board I/O devices.
Sleep Modes	i.MX6 Power Modes: - Run - Wait - Stop - Dormant
Operating Systems	Compatible with most Arm operating systems including Linux and Android.

Ordering Information

Call VersaLogic Sales at (503) 747-2261 for more information!

Model	CPU Model	Cores	Nominal CPU Speed	Memory	Mini PCIe Socket and SATA Port	mSATA Socket	Operating Temperature	MRAM	eMMC	Cooling
VL-EPC-2700-EDK-02A	i.MX6 Quad	Quad	800 MHz	2 GB	-	Yes	-40° to +85°C	–	–	Heat Sink
VL-EPC-2700-EDK-02B	i.MX6 Quad	Quad	800 MHz	2 GB	Yes	-	-40° to +85°C	–	–	Heat Sink
VL-EPC-2700-EDK-EVAL	i.MX6 Quad	Quad	800 MHz	2 GB	Yes	-	-40° to +85°C	128 KB	8 GB	Heat Sink

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

Android Evaluation Kit

Part Number	Tetra (included)	Display (included)	OS (included)	Power Supply (included)
VL-EVK-ARM-AND1	VL-EPC-2700-EDK-EVAL	7" HDMI LCD 1024 x 600 Touch-screen	Android 8.0	12V Power Supply (90-260VAC input)

Includes a Tetra SBC, touch-screen, cables, and software to demonstrate Tetra running the Android OS.

Accessories

Part Number	Description
Cable Kit	
VL-CKR-TETRA	Development Cable Kit for Tetra. Includes: VL-F41-8SBN-LINUX1, CBR-0504, 2603, 3407, PS-WALL12-24, HDW-108.
VL-F41-8SBN-LINUX1	Linux Operating System, 8 GB microSD card with bootable Linux, standard temperature
VL-CBR-0504	UART Cable, 2mm 5-pin to DB-9M, 0.3m
VL-CBR-2603	Serial I/O (I2C, UART, SPI). 26-pin 2 mm IDC to Ribbon Cable, 0.5m
VL-CBR-3407	Debug port cable (RS-232), 34-pin 2 mm IDC to Ribbon Cable, 0.5m
VL-PS-WALL12-24	Power Adapter, 90 ~ 264 VAC to 12VDC @ 2A, 2.1 mm ID Plug, International plug kit
VL-HDW-108	Mini PCIe/mSATA hold down screws, M2.5 x 6 mm Metric Nylon Screw kit (10ea) RoHS
Cables	
VL-CBR-0404	LED Back Light cable, 3-pin Pico-Clasp / 4-pin IDE Power to 6-pin 12V, 500mm
VL-CBR-0405	CAN bus cable, 2mm 4-pin to 2mm 4-pin MicroClasp, 1m
VL-CBR-0406	CAN bus cable, 2mm 4-pin MicroClasp to DB9 connector, 0.5m
VL-CBR-2014	LVDS to VGA adapter
VL-CBR-2015	LVDS cable, 24-bit 20-pin 1 mm Hirose to 1 mm Hirose, 20"
VL-CBR-2016	LVDS cable, 18-bit 20-pin 1 mm Hirose to 1.25 mm JAE, 20"
VL-CBR-2017	LVDS cable, 24-bit 20-pin 1 mm Hirose to 1.25 mm Hirose, 20"
Solid-State Storage (flash memory)	
VL-F41-xxxx	microSD card (SDIO), SLC, industrial temperature
Hardware	
VL-HDW-111	Half- to Full-Size Mini PCIe Adapter Kit. Metal adapter and screws (2)

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ISO 9001:2015 Certified

Expansion Modules

Part Number	Description	Expansion Interface
Network		
VL-MPEe-E3E	Gigabit Ethernet adapter	Mini PCIe
VL-MPEe-E4E	Gigabit Ethernet over Fiber adapter	Mini PCIe
VL-MPEe-E5E	Two Channel Ethernet adapter	Mini PCIe
VL-MPEe-FW1E	1394 FireWire Module	Mini PCIe
Analog & Digital I/O		
VL-MPEe-A1E	Analog input (12-bit resolution)	Mini PCIe
VL-MPEe-A2E	Analog input (16-bit resolution)	Mini PCIe
GPS		
VL-MPEu-G2E	GPS receiver	Mini PCIe or mSATA
VL-MPEu-G3E	Advanced GPS receiver	Mini PCIe or mSATA
Solid-State Storage (flash memory)		
VL-MPEs-F1Exx	mSATA module (4/16/32 GB) (SATA)	mSATA
Adapters		
VL-MPEs-S3E	SATA adapter	mSATA



Mini PCIe Modules

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05/08/19