EK-TM4C1294XL ARM® Cortex®-M4F-Based MCU TM4C1294 Connected LaunchPad™ Evaluation Kit

The **EK-TM4C1294XL Connected LaunchPad™ Evaluation Kit** from **Texas Instruments (TI)** is a powerful and feature-rich development platform designed for embedded system engineers, IoT developers, and students exploring advanced ARM® Cortex®-M4F microcontroller applications. Built around the **TM4C1294NCPDT MCU**, this evaluation board offers high performance, extensive connectivity options, and integrated debugging tools — all in one compact and affordable package.

Whether you're developing network-connected devices, industrial controllers, or educational projects, the EK-TM4C1294XL provides everything you need to build, test, and deploy your embedded solutions with confidence.

Powerful TM4C1294 Microcontroller

At the heart of the EK-TM4C1294XL board lies the **TM4C1294NCPDT MCU**, part of the Tiva™ C Series from Texas Instruments. This high-performance 32-bit ARM® Cortex®-M4F processor runs at **120 MHz**, offering:

- **Floating Point Unit (FPU)** for efficient mathematical computation

- **1 MB Flash memory** and **256 KB SRAM**

- **Rich set of peripherals** for industrial-grade control and communication

- **Low-power operation modes** for energy-efficient applications

This MCU is designed to meet the demands of real-time embedded applications requiring both computational performance and robust connectivity.

Built-In Ethernet and Network Connectivity

One of the defining features of the EK-TM4C1294XL LaunchPad is its **on-board 10/100 Ethernet interface** with an integrated **PHY**, enabling seamless wired network connectivity. It's ideal for IoT applications, web servers, or any project that requires stable Ethernet communication.

In addition, the board includes:

- **USB 2.0 host/device/OTG** support

- **UART, I²C, SPI, and CAN** interfaces

- **64 GPIO pins** for external expansion

This connectivity-rich design allows the TM4C1294 LaunchPad to interact effortlessly with sensors, actuators, displays, and other embedded devices.

Comprehensive On-Board Features

The EK-TM4C1294XL provides an array of hardware features that make development simple and flexible, including:

- **On-board In-Circuit Debug Interface (ICDI)** – no external debugger required

- **Two user push buttons** and **four user-configurable LEDs**

- **RGB LED** for visual feedback and status indication

- **BoosterPack™ interface headers** – compatible with TI's modular BoosterPack ecosystem

- **USB micro-B connector** for power and programming

- **Temperature sensor** and **accelerometer** (via optional BoosterPacks)

With these features, developers can immediately start creating, testing, and optimizing their firmware designs.
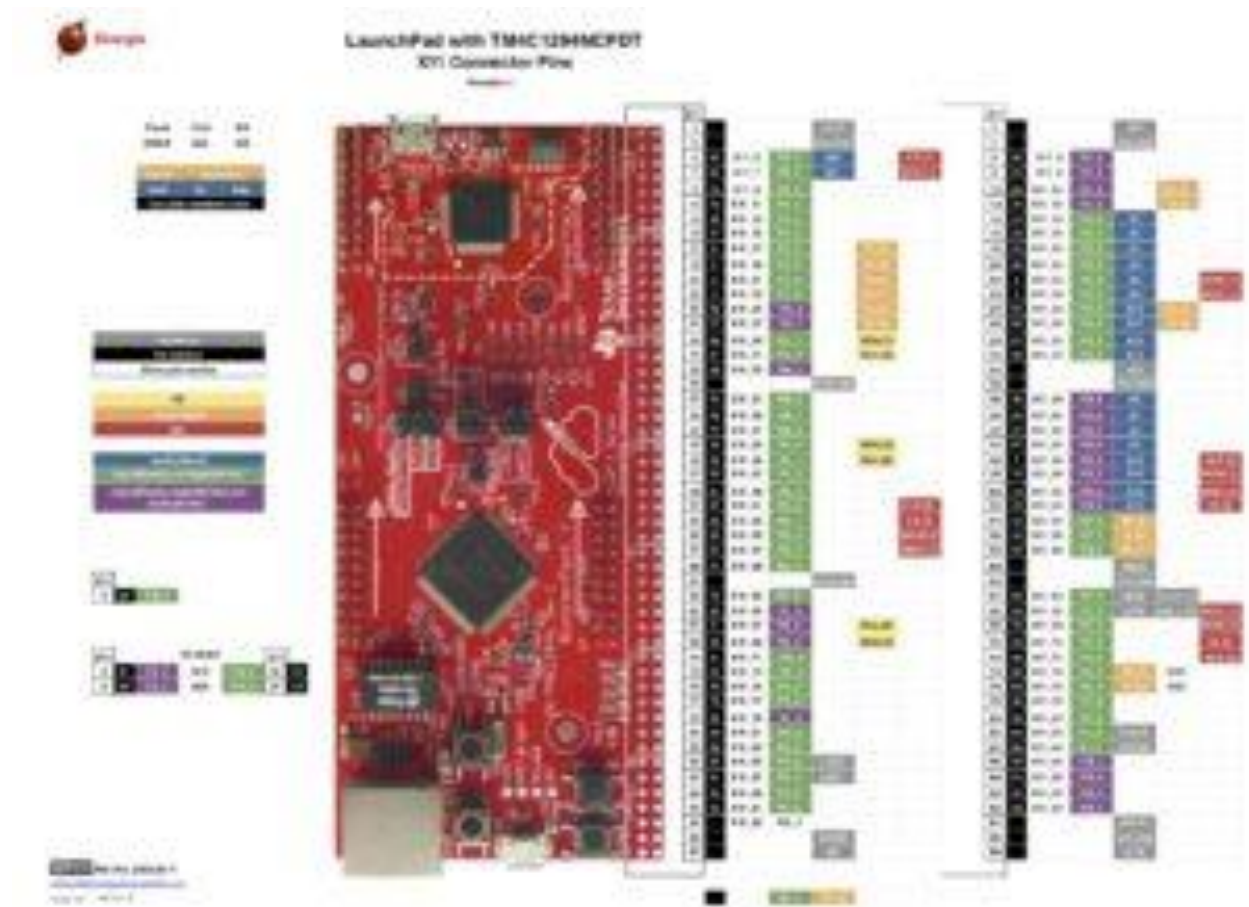
Software Development and Support

Texas Instruments provides a complete ecosystem of software tools and resources for the EK-TM4C1294XL. Developers can use:

- **TI Code Composer Studio™ (CCS)** – a professional IDE for C/C++ development

- **Energia IDE** – an Arduino-style environment for rapid prototyping

- **TivaWare™ Peripheral Driver Library** – providing easy access to the MCU's hardware

- **Example code projects** – for Ethernet, USB, GPIO, ADC, PWM, and more

These resources significantly reduce development time, allowing engineers to focus on innovation rather than setup and configuration.

Ideal for IoT and Networking Applications

The TM4C1294 Connected LaunchPad is purpose-built for **Internet of Things (IoT)** and **connected embedded applications**. With native Ethernet support, USB functionality, and a fast ARM Cortex-M4F core, it's perfect for projects such as:

- **Embedded web servers and network gateways**

- **Remote data monitoring and control systems**

- **Industrial and home automation**

- **Educational and research projects**

- **Smart energy and power management systems**

The board also supports **secure communication** through hardware encryption acceleration, ensuring data integrity and privacy in connected environments.

Key Technical Specifications

Feature	Specification
Microcontroller	TM4C1294NCPDT (ARM® Cortex®-M4F, 120 MHz)
Flash Memory	1 MB
SRAM	256 KB
Ethernet	10/100 Mbps with integrated PHY
USB	Host, Device, and OTG support
GPIO Pins	Up to 64
Interfaces	UART, I²C, SPI, CAN
Debug Interface	On-board ICDI (USB)
Expansion	Dual BoosterPack™ headers
Power Supply	USB-powered or external 5V
Dimensions	Approx. 3.5" x 2.2"

Why Choose the EK-TM4C1294XL LaunchPad?

The **EK-TM4C1294XL** is not just another development board — it's a complete platform for professional and academic embedded projects. With a high-performance processor, integrated Ethernet, multiple communication interfaces, and comprehensive software support, it provides all the tools required for developing modern connected systems.

Whether you are an **embedded engineer**, **IoT developer**, or **university student**, this kit delivers flexibility, scalability, and robust performance for both learning and production use.