# FEATURES OF LPC214X

**The LPC214x series are ARM7-based microcontrollers produced by NXP (formerly Philips). These microcontrollers are designed for use in a variety of embedded applications requiring high performance and low power consumption. Here are some key features of the LPC214x series:**

## Core and Performance

1. **ARM7TDMI-S Processor:**
    - **32-bit ARM7TDMI-S core with embedded ICE-RT and Embedded Trace support.**
    - **Runs at up to 60 MHz.**
2. **Thumb Instruction Set:**
    - **Supports both ARM and Thumb instruction sets, enabling high performance and code density.**

## Memory

1. **On-chip Flash Memory:**
    - **Up to 512 KB of Flash memory with In-System Programming (ISP) and In-Application Programming (IAP) capabilities.**
2. **On-chip SRAM:**
    - **Up to 40 KB of static RAM.**

## Power Management

1. **Low Power Modes:**
    - **Idle and Power-down modes for low power consumption.**
    - **Wake-up from Power-down mode through external interrupt or other external events.**
2. **Power Control:**
    - **Individual enable/disable of peripheral functions for power optimization.**

## Clock Generation

1. **Phase-Locked Loop (PLL):**
    - **Supports multiple clock sources, allowing flexible clock configuration.**
    - **Can generate a wide range of frequencies from a fixed crystal oscillator.**
2. **Real-Time Clock (RTC):**
    - **Independent power domain with dedicated power supply pins.**
    - **32 kHz crystal oscillator for accurate timekeeping.**

## Peripherals

1. **Timers/Counters:**
    - **Two 32-bit timers with capture and compare capabilities.**
    - **Watchdog timer for system reliability.**

2. **PWM:**
    - **Pulse Width Modulation (PWM) unit with up to six outputs.**
3. **Analog-to-Digital Converters (ADC):**
    - **Two 10-bit ADCs, each with up to 14 channels.**
4. **Digital-to-Analog Converter (DAC):**
    - **Single 10-bit DAC.**
5. **UARTs:**
    - **Two full-duplex UARTs with fractional baud rate generator.**
    - **Supports RS-485/9-bit mode and auto-bauding.**
6. **SPI and SSP:**
    - **SPI (Serial Peripheral Interface) and SSP (Synchronous Serial Port) for serial communication.**
7. **I2C:**
    - **Two I2C interfaces, one with Fast-mode Plus (Fm+) support.**
8. **USB:**
    - **Full-speed USB 2.0 device controller with 2 KB of endpoint RAM.**

**Connectivity**

1. **CAN:**
    - **Controller Area Network (CAN) interface for industrial networking.**
2. **GPIO:**

- **Up to 45 General Purpose Input/Output (GPIO) pins with configurable pull-up/pull-down resistors.**

**Debugging and Development**

1. **JTAG Interface:**
   - **Standard JTAG interface for debugging and boundary scan.**
2. **In-System Programming (ISP) and In-Application Programming (IAP):**
   - **Allows programming of the microcontroller while it is installed in the end application.**

**Package Options**

- **Available in a variety of package types, including LQFP and HVQFN, to suit different application requirements.**

**Applications**

**The LPC214x series is suited for a wide range of applications, including:**

- **Industrial control systems.**
- **Consumer electronics.**
- **Communication devices.**
- **Automotive applications.**
- **Medical instruments.**

## Summary

**The LPC214x series offers a versatile and powerful solution for embedded systems, combining the ARM7TDMI-S core with a comprehensive set of peripherals and flexible power management features. Its support for high-speed USB, extensive connectivity options, and efficient memory management makes it suitable for numerous applications requiring reliable performance and low power consumption.**