LPC Microcontrollers

INNOVATION
MADE EASY

A broad market microcontroller portfolio
with exceptional ease of use and design flexibility

NXP

First of all…

Innovation means being *first*

Innovation means being first. And look how often *LPC microcontrollers* have done just that! With each first, we have helped our customers win time after time.

Today, we're building on this industry-leading heritage to roadmap an exciting future for you: based on a renewed focus on our key **LPC800** and **LPC54000** series portfolios.

Let's get started…

NXP	2003	2004	2005	2006	2007	2008	2009

2006 — First **ARM®-based** with dual high-speed bus

2007 — First **ARM®-based MCU** with integrated flash

2008 — First **180 MHz ARM® Cortex®-M3-based MCU**

2009 — First ARM partner to license new **Cortex-M0**

2003
- EDN HOT 100 Products **LPC213x MCUs**

2005
- EDN HOT 100 Products **LPC210x MCUs**
- Elektronik Product of the Year Active Component **LPC210x MCUs**

2007
- EDN Innovation Award **LPC24xx MCUs**

2008
- EEPW China Embedded Systems New Technology Award **LPC3200 MCUs**

2009
- EDN China Innovation Award **LPC1700 MCUs**
- 21ic China Product of the Year **LPC1100 MCUs**
- EEPW China Best Series **LPC1700 MCUs**

"Our commitment to both innovation and longevity strengthens our customer partnerships, and delivers great value across the whole microcontroller ecosystem. With a strong LPC microcontroller roadmap ahead, we're looking forward to delivering great solutions for the IoT market and extending our powerhouse position."

Geoff Lees, Senior Vice President and General Manager of the Microcontroller Business Line at NXP

Contents | *LPC Innovation made easy*

2010	2011	2012	2013	2014	2015	And Soon...
One of the first ARM partners to license **Cortex-M4**	First **204 MHz Cortex-M4-based MCU**	First **32-bit ARM-based MCUs** (2 x 2 mm) in WLCSP package	One of the first Cortex-M0+-based MCU suppliers with **LPC800** series	Complete TFT on-chip roadmap	**LPC1800** and **LPC4300 MCU** families integrate security engine	**Renewed roadmap:** LPC800 Series MCUs LPC54000 Series MCUs
First **asymmetrical dual-core MCUs (Cortex-M4/M0)**	First **Cortex-M0-based MCU** with integrated USB class drivers			Improved analog (A/D) on **LPC1500** and **LPC820 MCU** families		Turn the page to learn more!
		• Elektronik Active Components Product of the Year **LPC4300 MCUs**		**LPC54000 Series MCUs** introduced – a new low-power MCU platform		
• EDN China Innovation Award **LPC1102 MCUs**	• China ACE Award Digital Product of the Year, **LPC4000 MCUs**	• EETimes/EDN ACE Award Digital ICs Ultimate Product **LPC11U00 MCUs**				
• EEPW China Best 32-bit MCU **LPC1759/69 MCUs**	• 21ic China Product of the Year **LPC4000 MCUs**					
• Electronic Design, Best Electronic Design in Digital **LPC4000 MCUs**	• EDN Innovation Award **EM773 MCUs**					
	• CEN Best MCU Solution for Industrial Design, **LPC11C00 MCUs**					
	• EDN HOT 100 Products **LPC11U00 MCUs**					
	• EDN Leading Product Award **LPC1800 MCUs**					

Building on a legacy of innovation leadership

Since launch over 10 years ago, *LPC microcontrollers* have a long legacy of ground-breaking expertise and industry-wide success, and are now central to our business.

Fast forward to today, where with more than *400 ARM-powered MCUs* to choose from, we offer one of the broadest 32-bit ARM®-based MCU portfolios: defined by exceptional ease of use, design flexibility, and advanced integration.

By giving you the edge in quality, selection, and price, the LPC MCUs portfolio offers you the perfect platform to plan for market leadership. And there are massive opportunities on the horizon, across multiple sectors.

Two routes to *MCU* success

LPC800 series MCUs

Entry-level, low-cost 8-bit alternative

Expanding the ARM® Cortex®-M0+ based portfolio to address the market's migration from 8-bit architecture

- Satisfies the demand for improved power efficiency
- Portfolio scalability
- Differentiating product features offered at 8-bit MCU pricing
- Broad suite of software, solutions and tools

LPC54000 series MCUs

Mainstream MCUs for everyone

Taking the best of our ARM® Cortex®-M3-based microcontrollers, the LPC54000 MCU series addresses the market's need for a scalable, mainstream Cortex-M4 based microcontroller portfolio

- Wide range of power and performance scalability
- Unique security and protection for today's IoT, from entry level to advanced feature integration
- Rich ecosystem with broad suite of software and tools

Powering ahead in 2017

LPC800 series

LPC84x MCU Family

30 MHz ARM® Cortex®-M0+
64 KB Flash,
8-16 KB RAM
(QFN, LQFP)

LPC802 MCUs

15 MHz Cortex-M0+
16 KB Flash
2 KB RAM
(TSSOP)

LPC804 MCUs

15 MHz Cortex-M0+
32 KB Flash
4 KB RAM
(TSSO, QFN)

January 2017

December 2017

LPC54000 series

LPC546xx MCU Family

180 MHz Cortex-M4
256-512 KB Flash,
16 KB EEPROM
136-200 KB RAM
(LQFP, TFBGA)

LPC546xx Flashless MCU Family

180 MHz Cortex-M4
0 KB Flash,
360 KB RAM
(LQFP, TFBGA)

02 LPC MCUs in action

Today and tomorrow, *LPC* microcontrollers equip you to win

With a decade-long legacy of innovation, our LPC microcontrollers have won the trust of a generation of designers. We're now roadmapping ahead to ensure that this legacy of innovation continues. Our designers work hard to keep you in a winning position by developing a still more differentiated platform architecture, adding new and distinctive product features and cohesive scalability.

The LPC portfolio operates across all major sectors too: offering a comprehensive microcontroller portfolio, suitable for practically the whole universe of application.

Why *LPC MCUs?*

We believe every embedded application needs a trusted microcontroller supplier. *LPC MCUs* are ready to support your development. We understand the importance of continued product innovation, rich software suite and ecosystem, local technical support and a commitment to longevity.

Our Product Longevity program provides for at least 10 years – with an extended, minimum 15 year horizon in selected markets. Plus, you gain the reliability that comes from our global leadership in microcontroller product quality.

You also benefit from committed support, worldwide. You have the advantage of NXP's regionally-based support program, with offices in 35 countries – and an even larger support network when you include our strong distribution partners, training resource and university programs. In short: you'll always be able to find the support you need, and be able to take part in a stimulating exchange of ideas too.

Our *approach* – your advantage

Comprehensive portfolio

Longevity a priority

Expansive ecosystem

Local support model

Fast time to market
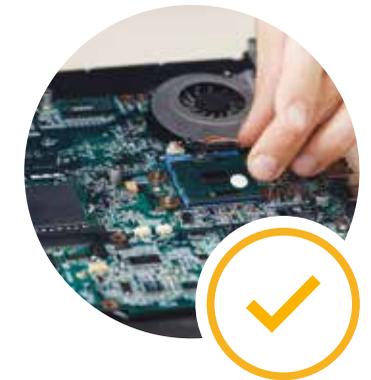
Ease of use

03 32-bit Breakthroughs

Moving to the new world *standard*

It may be possible to continue designing around 8-bit technology. But times have changed. Does it make sense – even economically – to stick to an increasingly limiting technology? *And why risk being left behind?*

The move to 32-bit is inevitable. For example, last year over half of Asian manufacturers reported upgrading to 32-bit MCUs*. And, as it happens, the same survey showed NXP solutions were among those most likely to be chosen. It's also true that most engineers working on tomorrow's great applications already love developing on the ARM Cortex-M0+ based LPC800 series of microcontrollers.

*Source: 2015 UBM Embedded Markets Study

8-bit MCU losing ground

Market data shows 8-bit MCU is declining rapidly. It's time to upgrade to 32-bit – and the LPC800 MCU series makes this simple, providing an alternative to 8-bit.
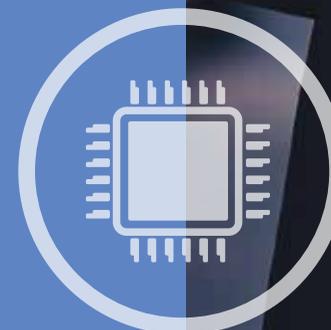
03 32-bit Breakthroughs

Immediate advantages with *32-bit*

With a clear increase in performance and improvements in power consumption and efficiency, you're likely to see significant benefits with a 32-bit microcontroller. You also get access to the broadest ecosystem of partners on the planet – the thriving *Cortex-M* community.

Building on our experience of being ARM's longest embedded partner, and as a result of our proprietary breakthroughs and technologies, we've been able to make our MCUs remarkably easy to use, giving you an express route to get to market quickly. What's more, while you'll love the code size and power efficiency benefits, you'll also find that our MCU portfolio options give you an architecture that is far easier to work with than 8-bit.

Thanks to NXP's celebrated product longevity policy, you can be sure that we have a strong commitment to future-proofing your next design.

It's easy for you to make the move to *32-bit*

Not only do we offer you some of the easiest-to-use products of their kind. On top of that, we offer you the benefit of aggressively positioned prices!

Get more with 32-bit!

Architectural simplicity and flexibility mean:

Faster code execution
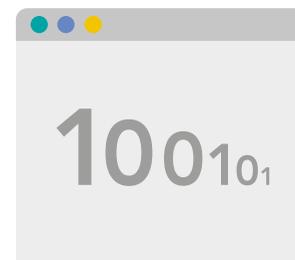
Smaller code size
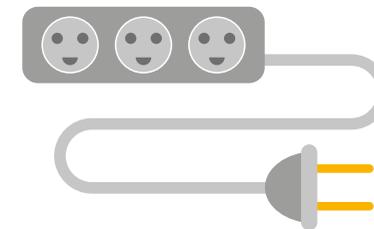
Lower energy consumption
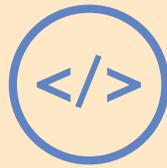
Boost *code* efficiency

- **Simple C pointer:** Unlike 8-bit architectures, the LPC800 series handles standard C pointer operations easily.

- **Easier and more efficient math operations:** 8-bit architectures can't handle math operations as efficiently as our 32-bit architectures. Compared to LPC800 series MCUs, these older architectures require additional data moves and more code space.

- **Cut Flash memory requirements by 70%:** If you write C code with pointer operations and 32-bit math, you will generally use less than a third of Flash memory to implement the same functionality as you would with 8-bit architecture.

Boost *power* efficiency

- **5:1 or even 50:1 gain:** The LPC800 series MCUs' 32-bit architecture brings a 5:1 performance gain over 8-bit devices on the market. In some cases, the gain is as much as 50:1!

- **Move down to 1 or 2 CPU clocks:** With divide-by-four architectures, 8-bit instructions generally take either 4 or 8 CPU cycles. With Cortex-M0+ instructions, however, LPC800 series MCUs take only 1 or 2 CPU cycles. So, LPC800 series MCUs can execute calculations far more quickly and efficiently at the same clock frequency. Big difference!

- **Fewer clock cycles:** Bit manipulation of I/O pins is a common requirement. For example, take the case where high-speed GPIO operation is needed to implement a proprietary communication interface. LPC800 series MCUs have GPIO ports that support word addressable registers, with access to each combination of bits on the port. Because of these enhancements, the code generated to set and clear a line of I/O is very similar between the 8-bit and Cortex-M0+ processors (except for the use of a store instruction to replace a read-modify-write bit instruction). Since the architecture of LPC800 series MCUs takes fewer clock cycles per instruction, it sets and clears the I/O lines more efficiently than the 8-bit device - and can implement faster communications through GPIO.

- **Improved recovery time:** While the LPC800 series of 32-bit Cortex-M0+ MCUs can achieve higher performance, the current consumption results are **lower**. This is because they are finely tuned to provide dramatic improvements in dynamic characteristics, with flexible options for various sleep modes, and improvements in recovery time from sleep to run. Cortex-M0+ excels at getting the work done quickly and efficiently – with an even greater power efficiency gap during computationally intensive tasks!

03 32-bit Breakthroughs
Migrate to innovate

LPC800 series MCUs will be your first and easiest choice. And when you're ready to make the move up to *32-bit architecture,* we have the expertise and resources to make everything as simple as possible.

Concerns about complexities such as the toolchain and linker files, startup code, software libraries, debug or demo code? No problem. We can show you an efficient and professional approach. We do the heavy lifting, leaving you free to concentrate on creativity.

Just follow our easy *4-step* process:

04

Go!
Plug in the board, update device drivers, compile and run the demo. *You're done!*

03

Download code bundles
Get our *LPC800 Series MCUs Code Bundles* at **nxp.com/CodeBundle/LPC824**

02

Download toolchain
Get our *LPCXpresso IDE toolchain* (available soon) at **nxp.com/LPCXpressoIDE**

01

Set up development board
Begin with an *LPCXpresso824-MAX* development board at **nxp.com/LPCXpresso824-MAX**

Migration in practice – *what you need*

When you're ready to migrate, here's an idea of what's involved.

Power Supply

- Although LPC MCUs support GPIOs which are 5V tolerant, the device cannot be powered from 5V. So, assuming your 8-bit MCU is 5V, move it to a 3.3V power supply.

- You may only need a simple LDO. Because of the typically low current draw, no special provisions are generally needed on the PCB.

Pin functions and PCB

- Migrate the functions of your 8-bit microcontroller to the new pins on the LPC800 series MCU.

- You will usually need to make a change to the pinouts. Reconfigure the MCU portion of your PCB.

Software migration

- First, choose your development tool suite. Many of our LPC800 series MCU developers have chosen LPCXpresso, our low-cost, fully integrated development tool platform for the LPC MCU portfolio. This family has evolved into MCUXpresso, the upgraded version of the tool. This has an even lower entry point, as it's free for all code sizes. Learn more about MCUxpresso at **nxp.com/MCUXpresso**.

- To start porting code, you can use our free libraries. These are supplied both as an example bundle with simple examples targeting each peripheral (using a peripheral library), and as an on-chip ROM:

  - o   On-chip ROM libraries are free and they work with all of the tool chains available.

  - o   ROM libraries also save flash code space - so you can use a smaller part and save money.

Contact the *32-bit* professionals

Need help porting code from 8-bit to 32-bit? The NXP Professional Services Team is here to help. Contact them by vising:

nxp.com/support/
nxp-professional-services:
PROFESSIONAL-SERVICE

04 LPC800 Series MCUs – entry-level 32-bit with 8-bit simplicity

The low cost alternative to *8-bit*

Our next-generation *LCP800 Series MCUs* are a 32-bit solution that make it easy to move up from 8-bit with minimum disruption and cost. This series also has longevity built in, giving you a clear pathway into 32-bit design along with the ability to plan ahead with confidence. At the same time, you benefit from our optimal balance between power, performance and price.

The LPC800 series also brings you a wide and robust ecosystem and local NXP support. So if you're just beginning the move into 32-bit design, you can choose this easy alternative to 8-bit that lets you future-proof your next-gen products.

Designed with these *key features*

Simplicity
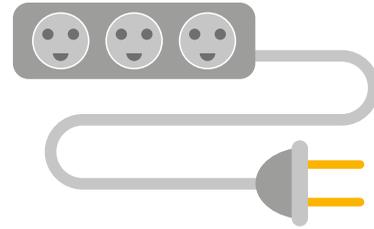
2-3x power saving compared to 8/16-bit MCUs
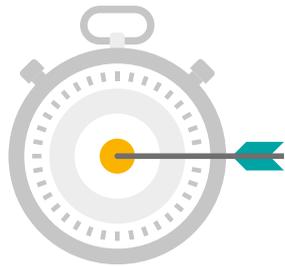
High performance at a low price point
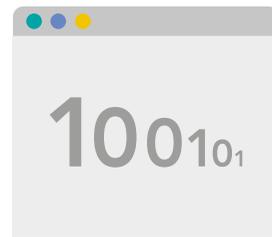
40-50% smaller code size than 8/16-bit MCUs

2-10x higher performance than 8/16-bit MCUs

Single cycle IO access

Flexible, easy-to-use *peripherals*

- ADC
- Analog Comparator
- Code Read Protection
- Flexible IO Ports
- GPIO Pin Manipulation
- I2C
- Multi Rate Timer

- Pattern Match Engine
- Power Modes
- ROM Drivers
- SPI
- State Configurable Timer/PWM
- Switch Matrix
- USART

Ultra-low-power 30 MHz ARM Cortex-M0+ core delivers deterministic, real-time performance.

ROM
Conserving Flash is critical in small packages. Putting drivers and special functions in ROM makes the LPC800 exceptionally easy to use and leaves more Flash for application code.

Flash
A Flash sector size of 64 bytes simplifies code management by enabling developers to program Flash in smaller page size and use Flash like an EEPROM.

Power profiles give developers fine-grained, real-time control over power consumption. Together with four power modes, they reduce power consumption to uA/MHz in active mode.

The patent-pending SCTimer/PWM peripheral implements virtually any timing or PWM function found on popular 8-bit MCUs, without loading a CPU.

An integrated analog comparator reduces BOM and footprint.

Widespread LPC800 *applications*

The LCP800 series provides an entry-level backbone across consumer, industrial, wearable, and gaming markets.

Environmental sensor gateway for building automation

- Low-power solution for broad range of applications
- Range of analog sensors
- Range of digital sensors

Power monitoring & battery management

- Low power solution for data center power monitoring or battery management
- Digital temperature and humidity monitors

Remote control

- Low-power solution for remote control
- ADC for analog battery monitor functionality
- GPIO for interface

Lighting control

- ADC and/or ACMP
- SCTimer/PWM
- GPIO to handle switch inputs

LPC800 Series MCU Options

	LPC811 M001JDH16	LPC812 M101JDH16	LPC812 M101JD20	LPC812 M101JDH20	LPC832 M101JDH20	LPC822 M101JDH20	LPC822 M101JHI33	LPC834 M201JHI33	LPC824 M201JDH20	LPC824 M201JHI33
Core	ARM® Cortex®-M0+									
Max Frequency	30-MHz									
Flash (KB)	8	16	16	16	16	16	16	32	32	32
SRAM (KB)	2	4	4	4	4	4	4	4	8	8
I2C	1	1	1	1	1	4	4	1	4	4
SPI	1	2	1	2	2	2	2	2	2	2
UART	2	3	2	3	1	3	3	1	3	3
SCT/PWM	1	1	1	1	1	1	1	1	1	1
Multi-Rate Timer	4-ch	4-ch	4-ch	4-ch	4-ch	4-ch	4-ch	4-ch	4-ch	4-ch
ADC					5-ch, 12-bit	5-ch, 12-bit	12-ch,12-bit	12-ch,12-bit	5-ch, 12-bit	12-ch,12-bit
Comparator	1	1	1	1	0	1	1	0	1	1
Comp Vref	√	√	√	√		√	√		√	√
GPIO	14	14	18	18	16	16	29	29	16	29
Input voltage (V)	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6	1.8 – 3.6
Ambient Temp	105℃	105℃	105℃	105℃	85℃	105℃	105℃	85℃	105℃	105℃
Package Options	TSSOP16	TSSOP16	SO20	TSSOP20	TSSOP20	TSSOP20	HVQFN33	HVQFN33	TSSOP20	HVQFN33

05 LPC54000 - mainstream integration for everyone

Unique performance, scalability and power efficiency

Based on the world's most popular LPC1700 MCU series, the LPC54000 series has been fully updated for today's developers. We've refined the features and the user experience to bring you a platform widely chosen for its unique performance scalability and power efficiency.

This series is based on the Cortex-M4 core, so you benefit from advanced integration, and the ultimate in flexible connectivity options.

You have all you need to design new products. You also have a range of possibilities that can stimulate your own creativity, with the security of knowing that you're working with an actively future-proofed MCU portfolio.

Design with these *major advantages*

Flash accelerator

Near zero wait-state performance, one register setting and API.

Expandable memory architecture

Tailor memory type, cost and footprint – future-proof memory requirements – easy interface connection.

Power efficiency

High performance with low power consumption. Meets your need to be environmentally friendly.
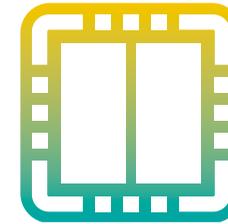
Dual-core architecture

Benefits include advanced high performance matrix, low power always-on, second core for specific tasks, independent software development for each core – allowing faster time to market.

Embedded Wizard from TARA Systems – 100 million devices

"TARA Systems is an ISV providing components and services for embedded systems, including products focused on reliable solutions for graphical user interface development. More than 25 years of experience in various domains enable us to offer our customers high quality, innovative products. Embedded Wizard is our fourth generation of GUI development tools, driven by the idea to provide a comfortable work-flow for price/performance optimized MCU platforms such as LPC546xx MCUs. GUIs created with Embedded Wizard have been deployed on more than 100 million devices worldwide."

Manuel Melic,
Product Manager, Embedded Wizard

Key applications across *major* sectors

The LPC54000 series provides advanced integration, and the ultimate in flexible connectivity options for the broad market.

Industrial, control & general embedded

- Industrial gateway
- HVAC control
- Building control & automation
- Diagnostic equipment
- Electronic instruments
- Multi-node comms hubs
- Multi-protocol bridge
- Various HMI/GUI apps
- Scanners
- Mini printers

Smart home & general consumer

- White Goods HMI
- Smart Small Appliance
- Thermostat
- Diagnostic equipment
- Security monitoring & alarm
- Fitness equipment
- Audio accessories/ Musical instruments

Automotive aftermarket

- On-board diagnostics
- Data collectors
- Infotainment/navigation
- Telematics
- Tachograph
- Fleet Management

Smart energy

- Smart Electric Meter
- In Home Display (IHD)
- Data Aggregator
- Communications Hub
- PLC, inverters, circuit breakers

LPC546xx MCU Family Options

	Non-Security Enabled Devices						Security Enabled Devices			
	LPC54605	LPC54606	LPC54607	LPC54608	LPC54616	LPC54618	LPC54S606	LPC54S608	LPC54S616	LPC54S618
Core	ARM® Cortex®-M4									
Max Frequency	180 MHZ									
Flash (KB)	Up to 512	Up to 512	Up to 512	512	Up to 512	512	512	512	512	512
EEPROM (KB)	16	16	16	16	16	16	16	16	16	16
SRAM (KB)	Up to 200	Up to 200	Up to 200	200	Up to 200	200	200	200	200	200
Flexible Serial Comm. Interfaces	Up to 10	Up to 10	Up to 10	Up to 10	Up to 10	Up to 10	Up to 10	Up to 10	Up to 10	Up to 10
Secure Digital I/O Card Interface	√	√	√	√	√	√	√	√	√	√
External Memory Controller	√	√	√	√	√	√	√	√	√	√
Quad SPI Flash Interface	√	√	√	√	√	√	√	√	√	√
FS USB with PHY	√	√	√	√	√	√	√	√	√	√
HS USB with PHY	√	√	√	√	√	√	√	√	√	√
Ethernet		√		√	√	√	√	√	√	√
CAN		Dual CAN 2.0		Dual CAN 2.0	Dual CAN FD	Dual CAN FD	Dual CAN 2.0	Dual CAN 2.0	Dual CAN FD	Dual CAN FD
LCD Controller			√	√			√	√		√
ADC (5 Msps)	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch	12-bit, 12-ch
GPIO	Up to 145	Up to 171	Up to 171	Up to 171	Up to 171	Up to 171	Up to 171	Up to 171	Up to 171	Up to 171
Input Voltage (V)	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6	1.8 - 3.6
Ambient Temperature	105℃	105℃	105℃	105℃	105℃	105℃	105℃	105℃	105℃	105℃
Package Options	BGA180	BGA180 LQFP208 BGA100 LQFP100	BGA180 LQFP208	BGA180 LQFP208	BGA180 LQFP208 BGA100 LQFP100	BGA180 LQFP208	BGA180 LQFP208	BGA180 LQFP208	BGA180 LQFP208	BGA180 LQFP208

Comprehensive hardware and software support from *NXP*

As well as designing and supplying *LPC microcontrollers,* we are committed to helping our customers throughout the entire go-to-market life cycle. Everything is designed to be as simple as possible, to help you get to market faster. Rest assure, we're here to help you make it happen, with advanced solutions in both hardware and software.

Hardware enablement:

Our *LPCXpresso development platform* includes low-cost LPCXpresso development solutions, with everything you need to get you up and running quickly. Designed for simple, rapid prototyping and evaluation, LPCXpresso boards work with the LPCXpresso IDE, the new MCUXpresso IDE and industry leading partner toolchains.

Featured *LPCXpresso* Development Boards

Board

OM13092:	OM13089:	OM13077:	OM13071:	OM13088:	OM11043:
LPCXpresso54608 Development Board	LPCXpresso54114 Development Board	LPCXpresso54102 Development Board	LPCXpresso824-MAX Development Board	LPCXpresso4367 Development Board	ARM mbed™ LPC1768 Development Board
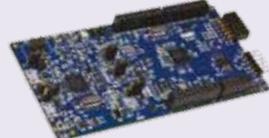
Features

• Based on LPC54608 MCU	• Based on LPC54114 dual-core MCU	• Based on LPC54102 MCU	• Based on LPC824 MCU	• Based on LPC4367 dual-core MCU	• Original mbed board with more than 175,000 users
• 180 MHz Cortex-M4 core	• Up to 100 MHz Cortex-M4 with Cortex-M0+ co-processor	• Up to 100 MHz Cortex-M4 core	• Up to 30 MHz Cortex-M0+ core	• Up to 204 MHz Cortex-M4 with Cortex-M0+ co-processor	• Based on LPC1768 MCU
• Up to 512 KB Flash	• High-speed USB based debug probe with CMSIS-DAP and J-Link protocol support, can debug the on-board LPC54114 or an external target	• High-speed USB based debug probe with CMSIS-DAP and Redlink protocol support, can debug the on-board LPC54102 or an external target	• Fully supported by LPCXpresso Eclipse-based IDE and GNU C/C++ toolchain, available in free and Pro versions	• USB, UART and QSPI flash boot option configuration options	• 32-bit 96 MHz, ARM® Cortex®-M3 core
• Up to 200 KB SRAM	• External debug probe option	• External debug probe option	• Compatible with development tools and probes from NXP® ecosystem partners	• Expansion options based on Arduino UNO R3 and Pmod™, plus additional expansion port pins	• 512KB FLASH, 32KB RAM
• FS and HS USB	• Tri-color LED, target reset, ISP and interrupt/user buttons for easy testing of software functionality	• Tri-color LED, target Reset, ISP & WAKE buttons for easy testing of software functionality	• Integrated SWD debugger probe for target MCU	• On-board 1.8/3.3 V or external power supply options	• Built-in Ethernet PHY
• Ethernet	• Expansion options based on Arduino UNO and Pmod™, plus additional expansion port pins	• Expansion options based on Arduino UNO and Pmod™, plus additional expansion port pins	• LPCXpresso / mbed, PMOD and Arduino UNO expansion connectors give simple access to a wide range of available expansion boards	• On-board Ethernet PHY (output available at expansion connectors)	• USB Host and Device
• Classic CAN	• 1.8 V and 3.3 V regulators plus external power supply option	• On-board 1.8 V and 3.3 V regulators plus external power supply option	• Tri-color LED, ISP and WAKE buttons for easy testing of software functionality	• High speed USB A/B connector for host or slave operation	• CAN
• 272 x 480 color LCD with capacitive touch screen	• 8 Mb Macronix MX25R SPI flash	• Built-in MCU power consumption and supply voltage measurement		• 8 Mb Macronix quad SPI flash	• SPI
• 8MB Micron MT48LC8M16A2B4 SDRAM	• Built-in MCU power consumption and supply voltage measurement	• UART, I²C and SPI port bridging from LPC54102 target to USB via the on-board debug probe		• UART, I²C and SPI port bridging from LPC4367 target to USB via the on-board debug probe	• I²C
• 128Mb Micron MT25QL128 Quad-SPI Flash	• UART, I²C and SPI port bridging from LPC54114 target to USB via the on-board debug probe	• FTDI UART connector		• FTDI UART connector	• ADC, DAC, PWM and other I/O interfaces
• Full size SD/MMC card slot	• FTDI UART connector	• Fully supported by LPCXpresso Eclipse-based IDE and GNU C/C++ toolchain, available in free and Pro versions		• Compatible with LPCXpresso4337 mbed SDK	
	• Fully supported by free LPCXpresso Eclipse-based IDE and GNU C/C++ toolchain				

Additional Add-ons

	OM13090: LPC54114 Audio and Voice Recognition Kit	**OM13078:** LPC54102 Sensor Processing/Motion Solution	**OM13081:** LPC82x Touch Solution Kit	• **OM13082:** General Purpose Shield • **OM13086:** LPC43S67-A70CM Cloud Connectivity Kit

Software enablement:
MCUXpresso software and tools

We created *MCUXpresso* as a cohesive set of software development tools for Kinetis and LPC microcontrollers. By combining the very best of our software enablement onto one platform, we can now give you a shared software experience, and broader portfolio support, across a broader set of ARM Cortex-M MCUs.

You also benefit from easy migration and scalability.
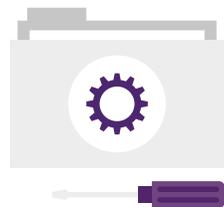
**Common toolkit across Kinetis and LPC microcontrollers**

Easy to use

**High quality**
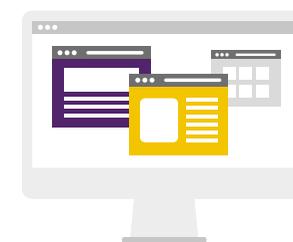
Shared software experience and broader portfolio support
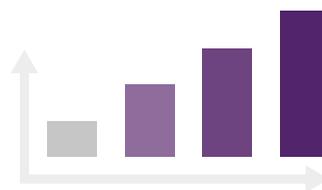
Offers easy migration and scalability

Supports large ARM® Cortex®-M ecosystem
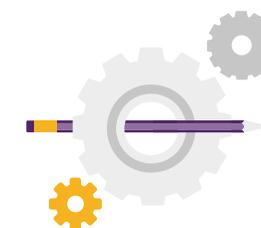
Built on the 'best of' Kinetis SDK, LPCXpresso and Kinetis Design Studio IDEs

For *NXP Cortex-M controllers*

- Kinetis MCUs
- LPC Microcontrollers
- i.MX Application Processors
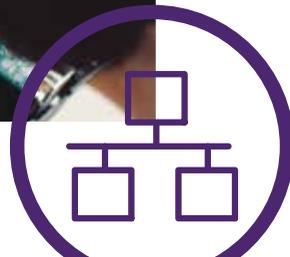
MCUXpresso SDK

An open-source software development kit (SDK) built specifically for your processor and evaluation board selections.

MCUXpresso IDE

An easy-to-use integrated development environment (IDE) for creating, building, debugging, and optimizing your application.

MCUXpresso Config Tools

A comprehensive suite of system configuration tools including pins, clocks, SDK builder and more.

07 Creation & contact

Design the future

Whatever applications you're designing for, our *LPC microcontroller portfolio* gives you a swift and efficient set of solutions. From simple, entry-level solutions, to the most demanding applications, you'll enjoy the benefits of easy adoption and integration, flexibility, and speed to market.

You also have the major advantages of working with a scrupulously future-proofed product, and the support of a wide global ecosystem and strong local technical support.

What are you waiting for? We look forward to seeing *what you'll create.*

Take the next step now…

Find out more

For more information on LPC Microcontrollers:

nxp.com/LPC

Contact our dedicated LPC Team

LPCmcus@nxp.com

Rely on the NXP Professional Services Team

Here to help with all your migration/transition issues

nxp.com/support/nxp-professional-services: PROFESSIONAL-SERVICE

Connect with the LPC community

Your experience and views are of great interest to us. And we're also very interested to hear about your present and future requirements.

LPCmcu.org

www.nxp.com/LPC