

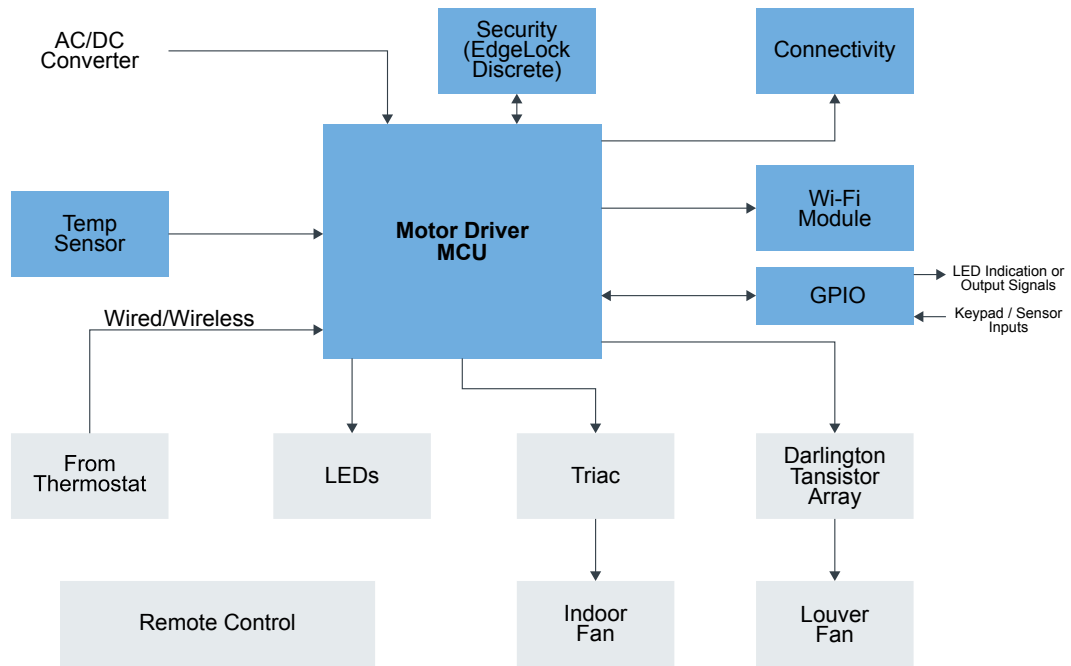


Air Conditioning (AC)

Last Updated: Feb 20, 2024

Air conditioning (AC) systems usually consist of an external unit, an internal unit and a remote control. These systems are based on inputs from a variety of sensors, controlling different types of motors such as stepper motors for flaps and DC/BLDC blower fan motors – and even an air purifying filter control. NXP offers semiconductor solutions for modern air conditioning systems that provide advanced motor control, increased power efficiency, quieter operation, a range of user interfaces and both IR and RF-based remote control.

Indoor Unit Block Diagram



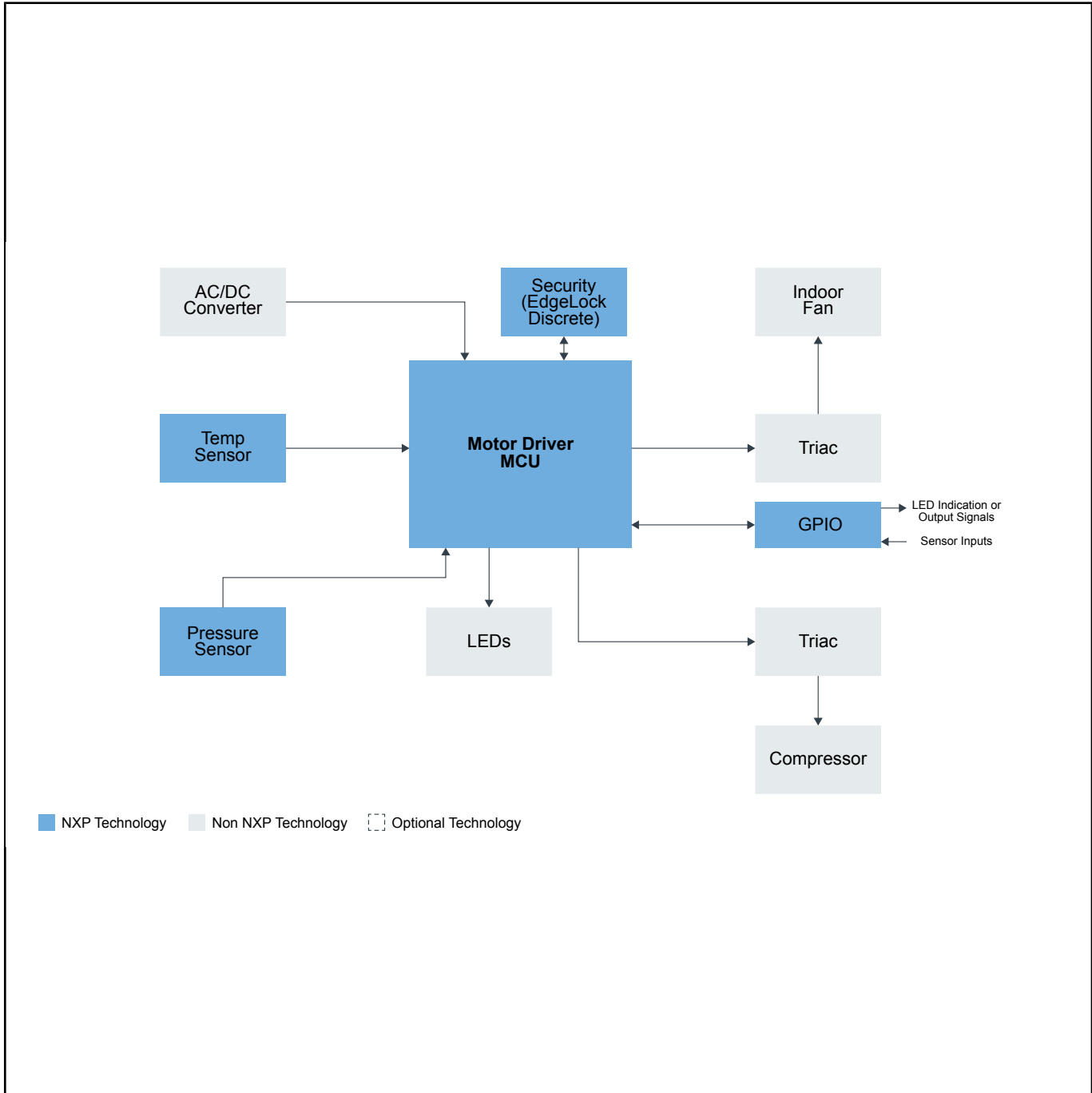
■ NXP Technology
 ■ Non NXP Technology
 Optional Technology

Recommended Products for Indoor Unit

MCU Driver	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • KV3x: Kinetis® KV3x-100–120 MHz, Advanced 3ph FOC / Sensorless Motor Control MCUs based on Arm® Cortex®-M4 • KE04: Kinetis® KE04-48 MHz, Mainstream Microcontrollers (MCUs) based on Arm® Cortex®-M0+ Core • i.MX-RT1050: i.MX RT1050 Crossover MCU with Arm® Cortex®-M7 Core
Connectivity	<ul style="list-style-type: none"> • JN5169: ZigBee and IEEE802.15.4 Wireless Microcontroller with 512 KB Flash, 32 KB RAM

Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features

Outdoor (Compressor) Unit Block Diagram

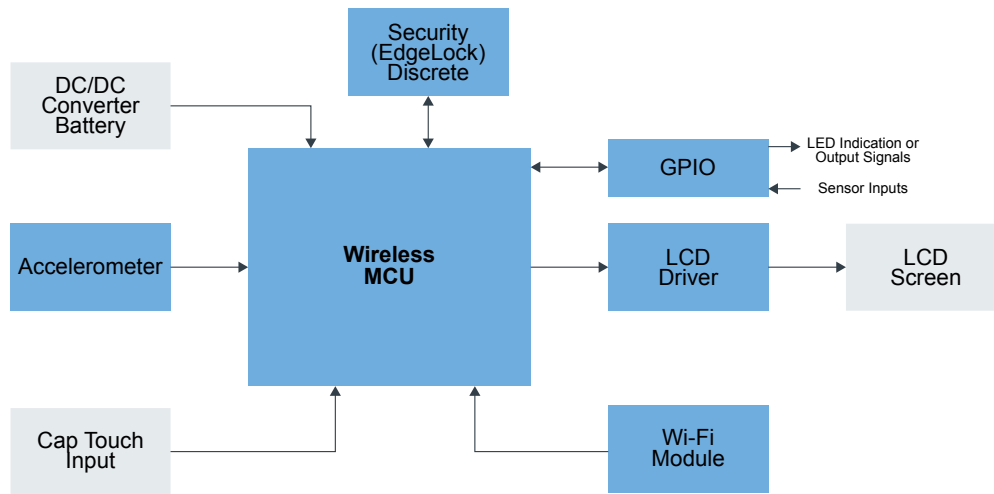


Recommended Products for Outdoor (Compressor) Unit

MCU Motor Driver	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals
------------------	--

Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features

Remote Control Block Diagram



■ NXP Technology
 ■ Non NXP Technology
 Optional Technology

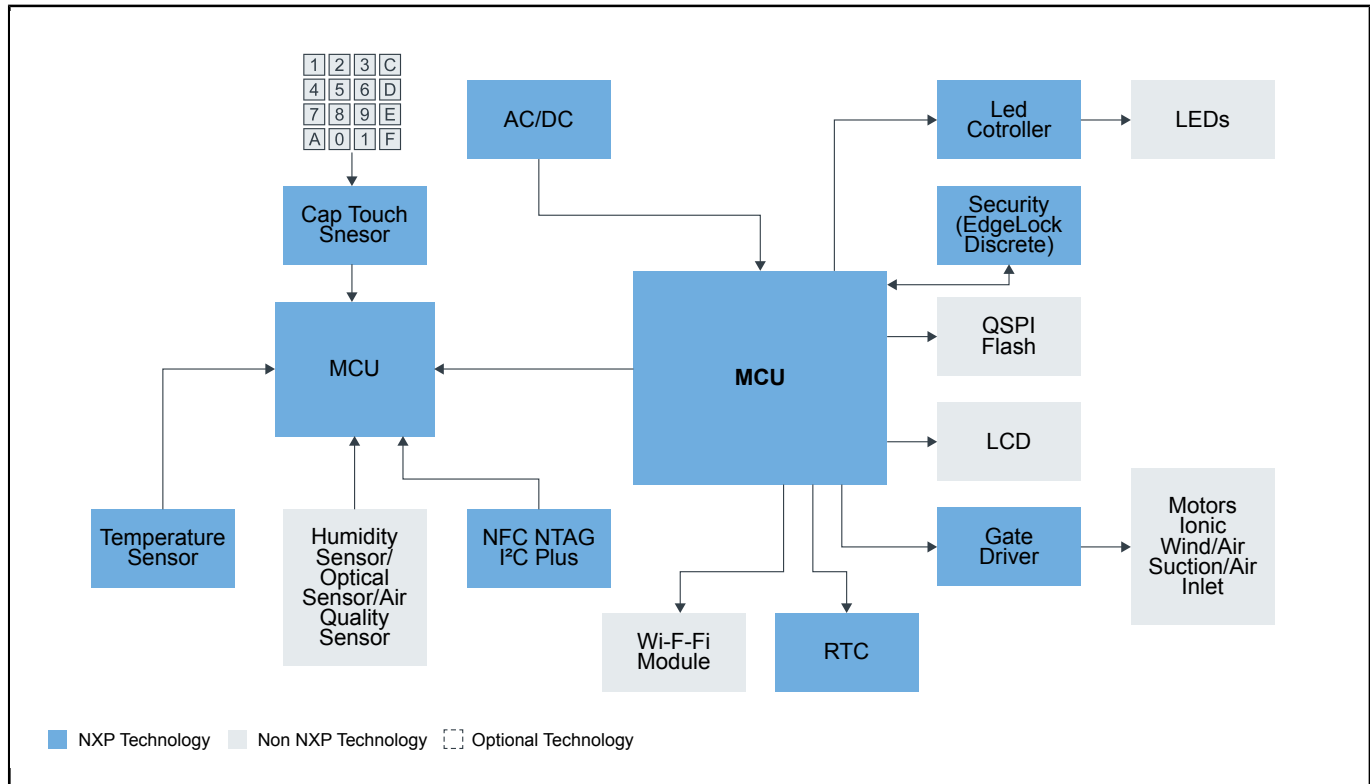
Recommended Products for Remote Control

Wireless MCUs	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • JN5169: ZigBee and IEEE802.15.4 Wireless Microcontroller with 512 KB Flash, 32 KB RAM
Wi-Fi	<ul style="list-style-type: none"> • 88W8977: 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 4 (802.11n) + Bluetooth® 5.2 Solution
Accelerometer	<ul style="list-style-type: none"> • FXLS8967AF: ±2g/±4g/±8g/±16g, Low Power 12-bit Digital Accelerometer

LCD Driver	<ul style="list-style-type: none"> • PCA85132U: LCD Driver for Low Multiplex Rates
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> • SE050: EdgeLock® SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility • SE051: EdgeLock® SE051: Proven, Easy-to-Use IoT Security Solution with Support for Updatability and Custom Applets • EDGELOCK-A5000: EdgeLock® A5000 Plug and Trust Secure Authenticator: Authentication Made Secure, Scalable and Easy
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • PCAL9714: 14-Bit SPI I/O Expander with Agile I/O Features • PCAL9722: 22-Bit SPI I/O Expander with Agile I/O Features
Air Conditioning GPIO	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm® Cortex® M33, Scalable Device Options, Low Power and Intelligent Peripherals

- [MCX-N94X-N54X](#): MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security
- [PCAL9714](#): 14-Bit SPI I/O Expander with Agile I/O Features
- [PCAL9722](#): 22-Bit SPI I/O Expander with Agile I/O Features

Air Purifier Block Diagram



Recommended Products for Air Purifier

MCU	<ul style="list-style-type: none"> • MCX-A14X-A15X: MCX A14x/15x MCUs with Arm[®] Cortex[®] M33, Scalable Device Options, Low Power and Intelligent Peripherals • MCX-N94X-N54X: MCX N94x/54x Highly Integrated Multicore MCUs with On-Chip Accelerators, Intelligent Peripherals and Advanced Security • LPC84X: LPC840: 32-Bit Arm[®] Cortex[®]-M0+-Based Low-Cost MCU • i.MX-RT1050: i.MX RT1050 Crossover MCU with Arm[®] Cortex[®]-M7 Core
AC/DC	<ul style="list-style-type: none"> • TEA19361T: GreenChip SMPS Primary Side Control IC with QR/DCM Operation
Temperature Sensor	<ul style="list-style-type: none"> • P3T1035xUK: I3C, I²C-Bus, ±0.5 °C Accuracy, Digital Temperature Sensor • P3T2030xUK: I3C, I²C-Bus, 2.0 °C Accuracy, Digital Temperature Sensor • PCT2075: I²C-Bus Fm+, 1 Degree C Accuracy, Digital Temperature Sensor and Thermal Watchdog
LED Controller	<ul style="list-style-type: none"> • PCA9952_PCA9955: 16-Channel Fm+ I²C-Bus 57 MA Constant-Current LED Driver
RTC	<ul style="list-style-type: none"> • PCF85263A: Tiny Real-Time Clock/Calendar with Alarm Function, Battery Switch-Over, Time Stamp Input and I²C-Bus
Gate Driver	<ul style="list-style-type: none"> • GD3100: Advanced High Voltage Isolated Gate Driver for IGBT and SiC MOSFETs

NFC	<ul style="list-style-type: none">• NTAG5-LINK: NTAG® 5 Link: NFC Forum-Compliant I²C Bridge for IoT on Demand
Security (EdgeLock Discrete)	<ul style="list-style-type: none">• SE050: EdgeLock® SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility
Cap Touch Sensor	<ul style="list-style-type: none">• Touch Software

View our complete solution for [Air Conditioning \(AC\)](#).

Note: The information on this document is subject to change without notice.

www.nxp.com

NXP and the NXP logo are trademarks of NXP B.V. All other product or service names are the property of their respective owners. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. © 2024 NXP B.V.