

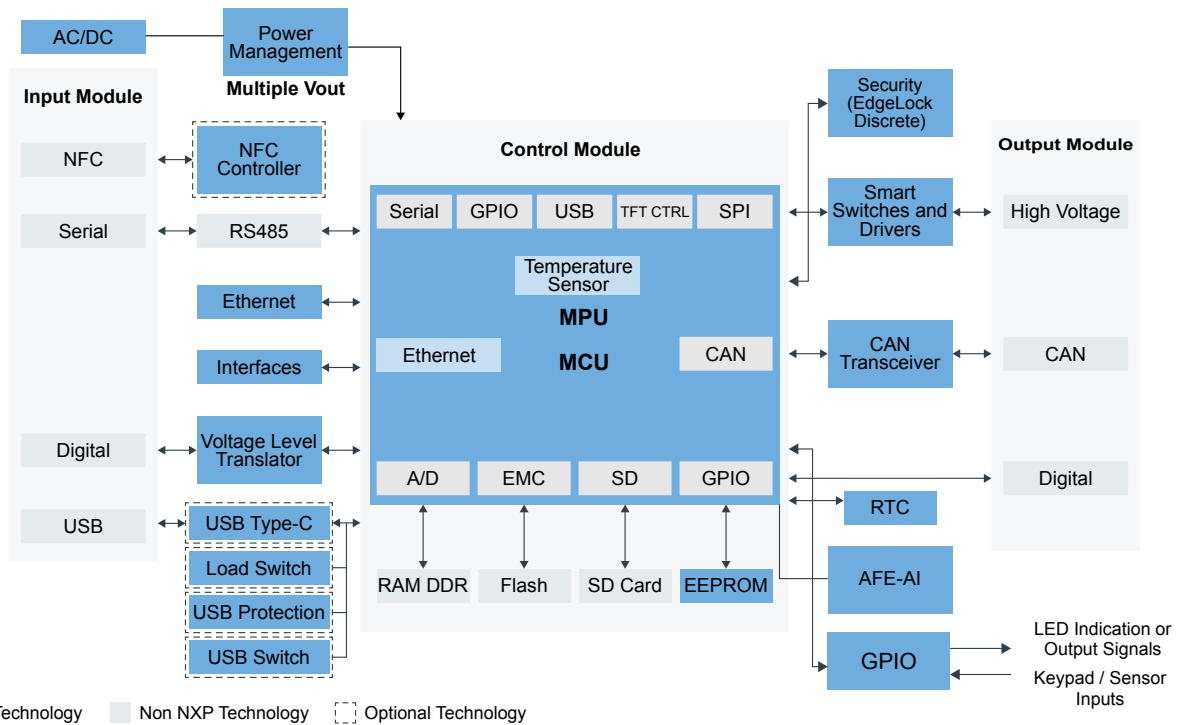


Programmable Logic Controller (PLC) and Remote I/O

Last Updated: Jan 24, 2024

Panel-mounted controllers and large distributed control systems require PLCs and remote I/Os to precisely control and manage machines and processes for synchronized operations across a factory. For the tiniest IO application up to the most powerful high performance PLC application, NXP's solutions portfolio offers key components, including low power edge microcontrollers and processors with multiple communications interfaces and TSN, high-precision and high-performance analog and digital front ends, security and functional safety.

Programmable Logic Controller (PLC) Block Diagram



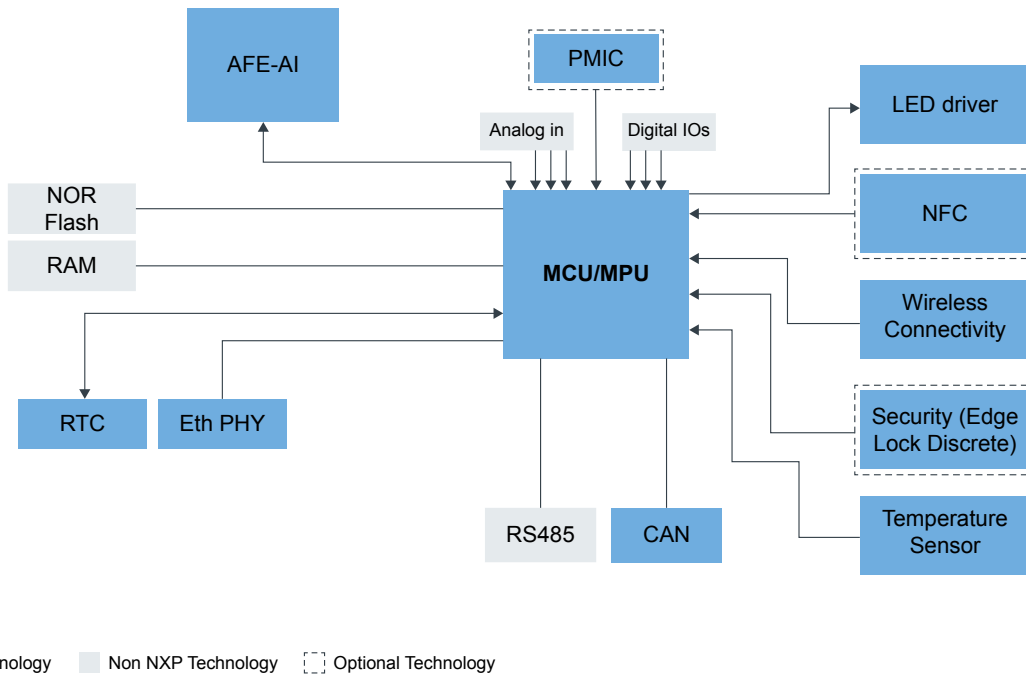
Recommended Products for Programmable Logic Controller (PLC)

MCU/MPU	<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 • General Purpose MCUs: General Purpose MCUs • i.MX RT Crossover MCUs: i.MX RT Crossover MCUs • Layerscape Processors: Layerscape® Processors • i.MX Applications Processors: i.MX Applications Processors
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
AFE-AI	<ul style="list-style-type: none"> • NAFEx1388: Highly Configurable 8 Channel ±25 V Universal Input Analog Front-End
Power Management	<ul style="list-style-type: none"> • PMICs: Power Management Integrated ICs (PMICs) • System Basis Chips: System Basis Chips • PF3000: 12-Channel Configurable PMIC for i.MX6 and i.MX7 Application Processors • MC34VR500: Multi-Output DC/DC Regulator

Interfaces	<ul style="list-style-type: none"> • CAN Transceivers: CAN Transceivers • TJA1052IT: Galvanically-Isolated High-Speed CAN Transceiver
Smart Switches and Drivers	<ul style="list-style-type: none"> • High Side Switches: High Side Switches • Pre-Drivers: Pre-Drivers • Low Side Switches: Low Side Switches • Configurable Switches: Configurable Switches
USB Type-C	<ul style="list-style-type: none"> • USB PD-PHY and CC-Logic: USB PD-PHY and CC-Logic Controllers • PTN5150: CC Logic for USB Type-C Applications • PTN5110: USB PD TCPC PHY IC
Load Switch	<ul style="list-style-type: none"> • Load Switches: Load Switches • NX5P3090UK: USB PD and Type-C Current-Limited Power Switch
USB Protection	<ul style="list-style-type: none"> • NX20P0477: USB Type-C CC Smart Protection
USB Switch	<ul style="list-style-type: none"> • High-Speed Signal Switches: High-Speed USB Signal Switches • USB Redrivers: USB Redrivers - Signal Conditioners • CBTL02043A_CBTL02043B: 3.3 V, Two Differential Channel, 2-1 Multiplexer/Demultiplexer Switch
NFC	<ul style="list-style-type: none"> • PN7160: NFC Plug and Play Controller with Integrated Firmware and NCI Interface
Non-Volatile Storage	<ul style="list-style-type: none"> • NXH5104UK: 4 Mbit Serial SPI EEPROM
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> • SE050: EdgeLock[®] SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility
AC/DC	<ul style="list-style-type: none"> • AC-DC Controllers: AC-DC Controllers
Voltage Translator	<ul style="list-style-type: none"> • Voltage Level Translators: Voltage Level Translators
Ethernet	<ul style="list-style-type: none"> • LS1028A: Layerscape[®] 1028A Applications Processor • i.MX-RT1180: i.MX RT1180: Crossover MCU with TSN Switch and EdgeLock[®] • SJA1110: Multi-Gig Safe and Secure TSN Ethernet Switch with Integrated 100BASE-T1 PHYs
Interfaces	<ul style="list-style-type: none"> • CD1030: 33-Channel Multiple Switch Detection Interface with Programmable Current • Bridges: Bridge IC Solutions • I²C, SPI, I3C Interface Devices: I²C, SPI, I3C Interface Devices
RTC	<ul style="list-style-type: none"> • PCF85053A: Bootable CPU RTC with Two I²C Buses, 128 Byte SRAM and Alarm Function • Real-Time Clocks: Real-Time Clocks
Temperature Sensors	<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 • I3C/I²C Digital Temp. Sensors: I3C/I²C Digital Temperature Sensors • PCT2075: I²C-Bus Fm+, 1 Degree C Accuracy, Digital Temperature Sensor and Thermal Watchdog

Remote I/O Block Diagram



Recommended Products for Remote I/O

MCU/MPU

- **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
- **i.MX RT Crossover MCUs**: i.MX RT Crossover MCUs
- **KV Series Arm Cortex-M4/M0+/M7**: KV Series: Real-Time Motor Control and Power Conversion MCUs Based on Arm® Cortex®-M0+/M4/M7
- **LPC5500 Arm Cortex-M33**: LPC5500 Series: Arm® Cortex®-M33 Based Microcontroller Series for Mass Market, Leveraging 40nm Embedded Flash Technology
- **S32K Auto General-Purpose MCUs**: S32K Automotive General-Purpose Microcontrollers

AFE-AI	<ul style="list-style-type: none"> • NAFEx1388: Highly Configurable 8 Channel ± 25 V Universal Input Analog Front-End
NFC	<ul style="list-style-type: none"> • PN7160: NFC Plug and Play Controller with Integrated Firmware and NCI Interface
PMIC	<ul style="list-style-type: none"> • PMICs: Power Management Integrated ICs (PMICs)
RTC	<ul style="list-style-type: none"> • PCF85053A: Bootable CPU RTC with Two I²C Buses, 128 Byte SRAM and Alarm Function • Real-Time Clocks: Real-Time Clocks
Wireless Connectivity	<ul style="list-style-type: none"> • IW416: 2.4/5 GHz Dual-Band 1x1 Wi-Fi[®] 4 (802.11n) + Bluetooth[®] 5.2 Solution • 88W8987: 2.4/5 GHz Dual-Band 1x1 Wi-Fi[®] 5 (802.11ac) + Bluetooth[®] 5.2 Solution • 88W8997: 2.4/5 GHz Dual-Band 2x2 Wi-Fi[®] 5 (802.11ac) + Bluetooth[®] 5.3 Solution • IW620: 2.4/5 GHz Dual-Band 2x2 Wi-Fi[®] 6 (802.11ax) + Bluetooth[®] 5.1 Solution
CAN Transceivers	<ul style="list-style-type: none"> • CAN Transceivers: CAN Transceivers
Security (EdgeLock Discrete)	<ul style="list-style-type: none"> • SE050: EdgeLock[®] SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility
Temperature Sensors	<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 • I³C/I²C Digital Temp. Sensors: I³C/I²C Digital Temperature Sensors • PCT2075: I³C-Bus Fm+, 1 Degree C Accuracy, Digital Temperature Sensor and Thermal Watchdog
I2C LED Drivers	<ul style="list-style-type: none"> • LED Controllers: LED Controllers
Ethernet	<ul style="list-style-type: none"> • LS1028A: Layerscape[®] 1028A Applications Processor • i.MX-RT1180: i.MX RT1180: Crossover MCU with TSN Switch and EdgeLock[®]

View our complete solution for [Programmable Logic Controller \(PLC\) and Remote I/O](#).

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.