Industrial HMI

Powered by an industrial grade i.MX microprocessor, NXP provides HMI solutions for harsh industrial environments. These devices are power-on tested to emulate years of 24/7 operation for critical applications where accuracy, performance, and operational longevity are important factors. When coupled with industrial grade microcontrollers and interface peripherals, NXP HMI solutions offer industrial temperature grades compliance and noisy environment resiliency. This allows for HMI interfaces that are robust and proven to work in suboptimal conditions.

HMI High Tier Block Diagram
Recommended Products for HMI High Tier

**MPU**
- **iMX8MPLUS**: i.MX 8M Plus – Arm® Cortex®-A53, Machine Learning, Vision, Multimedia and Industrial IoT
- **Layerscape Processors**: Layerscape® Processors
  - **LX2160A**: Layerscape® LX2160A, LX2120A, LX2080A Processors
  - **LX2162A**: Layerscape® LX2162A, LX2122A, LX2082A Processors

**MCU**
- **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-RT1170**: i.MX RT1170: 1 GHz Crossover MCU with Arm® Cortex® Cores
| Power Management | • **PF1550**: PMIC with 1A Li+ Linear Battery Charger for Low Power Processor Systems |
| USB Power switch | • **NXSP2090UK**: Logic-Controlled High-Side Power Switch  
• **SE050**: EdgeLock® SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility |
| Security (EdgeLock Discrete) | • **SE050**: EdgeLock® SE050: Plug and Trust Secure Element Family – Enhanced IoT security with high flexibility |
| Wireless Connectivity | • **88MW32X 802.11n Wi-Fi® Microcontroller SoC**  
• **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  
• **QN9090-30**: QN9090/30: Bluetooth Low-Energy MCU with Arm® Cortex®-M4 CPU, Energy Efficiency, Analog and Digital Peripherals and NFC Tag Option  
• **KW39-38-37**: KW39/38/37: 32-Bit Bluetooth 5.0 Long-Range MCUs with CAN FD and LIN Bus Options, Arm® Cortex®, M0+ Core  
• **Ultra-Wideband (UWB)**: Ultra wideband (UWB) |
| CAN | • **CAN with Flexible Data Rate**: High Speed CAN with Flexible Data Rate (CAN FD)  
• **CAN Signal Improvement**: CAN Signal Improvement Capability (SIC)  
• **Secure CAN Transceivers**: Secure TJA115x CAN Transceiver Family |
| RTC | • **PCF85053A**: Bootable CPU RTC with Two I²C Buses, 128 Byte SRAM and Alarm Function |
| Air Conditioning GPIO | • **PCAL9714**: 14-Bit SPI I/O Expander with Agile I/O Features  
• **PCAL9722**: 22-Bit SPI I/O Expander with Agile I/O Features |
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**Air Conditioning GPIO**

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**HMI Entry Tier Block Diagram**
## Recommended Products for HMI Entry Tier

### 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-RT1050**: i.MX RT1050 Crossover MCU with Arm® Cortex®-M7 Core
- **i.MX-RT1060**: i.MX RT1060: Crossover MCU with Arm® Cortex®-M7
- **i.MX-RT1170**: i.MX RT1170: 1 GHz Crossover MCU with Arm® Cortex® Cores
- **i.MX8MMINI**: i.MX 8M Mini - Arm® Cortex®-A53, Cortex-M4, Audio, Voice, Video
  - **i.MX93**: i.MX 93 Applications Processor Family – Arm® Cortex®-A55, ML Acceleration, Power Efficient MPU

### RTC
- **PCA8565**: Real-Time Clock/Calendar
| Power Management | • PF1550: PMIC with 1A Li+ Linear Battery Charger for Low Power Processor Systems  
| | • PCA9460: 13-Channel Power Management Integrated Circuit (PMIC) for Ultra Low Power Application |
| USB Power Switch | • NXSP2090UK: Logic-Controlled High-Side Power Switch |
| Wireless Connectivity | • 88MW32X 802.11n Wi-Fi® Microcontroller SoC  
| | • IW416: 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 4 (802.11n) + Bluetooth® 5.2 Solution  
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| | • QN9090-30: QN9090/30: Bluetooth Low-Energy MCU with Arm® Cortex®-M4 CPU, Energy Efficiency, Analog and Digital Peripherals and NFC Tag Option  
| | • KW39-38-37: KW39/38/37: 32-Bit Bluetooth 5.0 Long-Range MCUs with CAN FD and LIN Bus Options, Arm® Cortex®-M0+ Core  
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View our complete solution for Industrial HMI.

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