

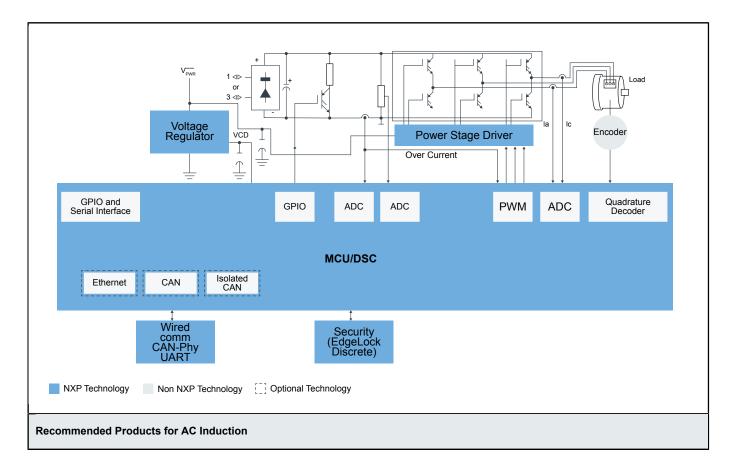
## 3-Phase AC Induction Motor

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AC induction machines are popular due to their simplicity, reliability, and direct operation from an AC line voltage. ACIMs are asynchronous machines and always have a lower mechanical rotor speed than the power line frequency.

The principle of operation for an ACIM is based on the voltage induction from the stator to the rotor. When the stator winding is fed by a three-phase supply voltage, the current flows in the winding and the stator rotating magnetic field is generated. Induced voltage in the rotor windings will create the rotor current and the rotor magnetic field. The interaction between two magnetic fields creates the mechanical torque needed to turn the rotor.

## **AC Induction Block Diagram**



Controllers (MCU)	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     KE Series Arm Cortex-M4/M0+: Kinetis® E Series: 5V, Robust Microcontrollers (MCUs) based on Arm® Cortex®-M0+/M4 Core     LPC553x/S3x: Advanced Analog Arm®Cortex®-M33-Based MCU Family     MCX Arm Cortex-M: MCX General-Purpose MCUs     S32K General-Purpose MCUs: S32K General-Purpose Microcontrollers     Digital Signal Controllers: Digital Signal Controllers
Voltage Regulator	Power Management: Power Management  PF5020: Multi-Channel (5) PMIC for Automotive Applications – 4 High Power and 1 Low Power, Fit for ASIL B Safety Level  PF1550: PMIC with 1A Li+ Linear Battery Charger for Low Power Processor Systems
Power Stage Driver	GD3000: 3-Phase Brushless Motor Pre-Driver     MC34937: Three Phase Field Effect Transistor Pre-driver     GD3100: Advanced High Voltage Isolated Gate Driver for IGBT and SiC MOSFETs     GD3160: Advanced High Voltage Isolated Gate Driver with Segmented Drive for SiC MOSFETs
Drivers	GD3000: 3-Phase Brushless Motor Pre-Driver
Wired Interfaces	CAN Transceivers: CAN Transceivers  Ethernet: Ethernet  UARTs: UARTs  12C, SPI, I3C Interface Devices: I2C, SPI, I3C Interface Devices
Security (EdgeLock Discrete)	EdgeLock® SE050: Plug & Trust Secure Element Family – Enhanced IoT security with high flexibility
Wired comm CAN-Phy UART	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

View our complete solution for 3-Phase AC Induction Motor.

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

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