Based on the ARM® Cortex®-M4 core, the low-power Kinetis K70 MCU family includes a rich suite of peripherals and a comprehensive enablement environment for superior performance and a short time-to-market.

**Kinetis® K70 Family**

**TARGET APPLICATIONS**
- Industrial control panels
- Navigational displays
- Point-of-sale terminals
- Medical monitoring equipment

Kinetis MCUs are built from innovative 90 nm thin-film storage (TFS) flash technology with unique FlexMemory (EEPROM) capability, and offer industry-leading low-power and mixed-signal analog integration.

The K70 MCU family includes an integrated graphics LCD controller, IEEE® 1588 Ethernet MAC, Full- and high-speed USB 2.0 On-The-Go with device charger detect capability, hardware encryption and tamper detection capabilities. The K70 is available with 512 KB or 1 MB of flash in 256-pin MBGA packages. Each MCU includes a rich suite of analog, communication, timing and control peripherals. All K70 MCUs include a single precision floating point unit and NAND flash controller. 256-pin versions include an on-chip DRAM controller for system expansion.

**ONE-STOP ENABLEMENT OFFERING—MCU + IDE + RTOS**
- Tower® System and Freedom development board platforms
- Integrated development environments
  - Eclipse-based CodeWarrior® V10.1 IDE and Processor Expert® software configuration tool
  - IAR Embedded Workbench®
  - ARM Keil® tool
  - Kinetis Design Studio IDE
  - SOMNIUM® DRT Cortex-M IDE
Runtime software and RTOS
- Portable embedded GUI (PEG) development tools
- Math, DSP and encryption libraries
- Motor control libraries
- Complimentary bootloaders (USB, Ethernet, RF, serial)
- MQX™ RTOS
- Cost-effective Nano™ SSL/Nano™
- Micrium® µC/OS-III
- Express Logic ThreadX™
- SEGGER embOS
- Full ARM ecosystem

KINETIS K70 FAMILY BLOCK DIAGRAM

K70 FAMILY OPTIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Memory</th>
<th>Features</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK70FN1M0Vyy12</td>
<td>120 MB</td>
<td>128 KB</td>
<td>16 bit ADC</td>
</tr>
<tr>
<td>MK70FN1M0Vyy15</td>
<td>150 MB</td>
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<td>16 bit ADC</td>
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<td>120 MB</td>
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<tr>
<td>MK70FXS12Vyy15</td>
<td>150 MB</td>
<td>512 KB</td>
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<tr>
<td>Features</td>
<td>Benefits</td>
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<td>----------</td>
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</table>
| • Cortex-M4 core with DSP instruction support and optional single precision floating point unit  
• Up to 32-channel DMA  
• Up to 16 KB cache  
• Cross bar switch | • Up to 150 MHz core supporting a broad range of processing bandwidth needs  
• Peripheral and memory servicing with reduced CPU loading  
• Optimized bus bandwidth and flash execution performance  
• Concurrent multi-master bus accesses for increased bus bandwidth |
| • Graphics LCD controller  
• Low-power capacitive touch-sensing | • Support for color QVGA displays as single chip or up to 24-bit SVGA displays using external memory  
• Supported by our proprietary Portable Embedded GUI (PEG) Library with simple WindowBuilder interface for powerful GUI development  
• Provides a modern upgrade from mechanical to touch keypad, rotary and slider user interfaces and operates in all low-power modes with minimal current added; supports up to 16 inputs |
| • Hardware encryption coprocessor  
• Hardware tamper detection  
• Memory protection unit  
• Hardware cyclic redundancy check engine  
• Independent clocked COP with external watchdog monitor | • Secure data transfer and storage  
• Faster than software implementations and with minimal CPU loading  
• Supports a wide variety of algorithms: DES, 3DES, AES, MD5, SHA-1, SHA-256  
• Secure real-time clock with independent battery supply  
• Secure key storage with internal/external tamper detect for unsecure flash, temperature/clock/supply voltage variations and physical attack  
• Provides memory protection for all cross bar switch masters, increasing software reliability  
• Validates memory contents and communication data, increasing system reliability  
• Prevents code runaway in fail-safe applications  
• Drives output pin to safe state external components if watchdog event occurs |
| • USB On-The-Go (Full- and high-speed) with device charger detect  
• IEEE® 1588 Ethernet MAC with HW time stamping  
• Up to six UARTS with IrDA support; one UART with ISO 7816 support  
• I²S interface; up to two CAN modules, up to three DSPI and up to two I²C interfaces | • Optimized charging current/time for portable USB devices, enabling longer battery life  
• USB low-voltage regulator supplies up to 120 mA off chip at 3.3 V to power external components from 5 V input  
• Precision clock synchronization for real-time, networked industrial automation and control  
• Variety of data size, format and transmission/reception settings supported for multiple industrial communication protocols  
• Multiple communication interfaces for simple and efficient data exchange, industrial network bridging and audio system interfacing |
| • FlexBus external bus interface  
• Secure digital host controller  
• NAND flash controller  
• DRAM controller | • Enables the connection of external memories and peripherals (e.g., graphics displays)  
• Connection to SD, SDIO, MMC or CE-ATA cards for in-application software upgrades, file systems or adding Wi-Fi® or Bluetooth® support  
• Supports up to 32-bit ECC current and future NAND types with minimal software overhead  
• Supports connection of DDR, DDR2 and low-power DDR memories |
| • 32 KB–1 MB flash; up to 128 KB of SRAM  
• 32 KB–512 KB FlexMemory | • High reliability, fast access program memory with four levels of security protection. Independent flash banks allow concurrent code execution and firmware updating  
• FlexMemory provides 32 bytes–16 KB of user-segmentable byte write/erase EEPROM; in addition, Flex NVM from 32 KB–512 KB for extra program code, data or EEPROM backup |