

# Low-Voltage High-Speed Operation and a Large Memory Capacity for Digital Audio and Video Equipment

## General-Purpose 16-Bit Microcomputer

# CXP973064

On-chip low-voltage high-speed processing and large capacity of ROM and RAM are now desired in the microcomputers used in audio and video equipment due to the increasing use of digital information and control in that equipment.

To respond to these needs, Sony has developed and will soon be releasing the SPC970 Series CXP973064 microcomputer.

The CXP973064 adopts the newly-developed SPC970 CPU core, and is a high-performance 16-bit microcomputer that achieves low-voltage high-speed operation, large internal ROM and RAM capacities, and high code efficiency.

Sony provides a GUI based high-performance total development environment for the CXP973064 microcomputer.

- Newly-developed SPC970 CPU core
- Low-voltage high-speed operation
- 256 KB of ROM and 11.5 KB of RAM on chip
- Peripheral functions with high generality
- High-performance total development environment

### ■ Newly-Developed SPC970 CPU Core

The CXP973064 adopts the newly-developed SPC970 Series 16-bit CPU core. At the same time as achieving an operating speed about twice that of the conventional SPC900 Series core, this CPU core provides a rich, orthogonal instruction set that provides excellent code efficiency and is designed for the C language and use with a real-time operating system. This allows the SPC970 core to achieve a ROM efficiency when the C language is used that does not exceed 1.2 times that of assembler language. Additionally, since the SPC970 is almost completely instruction compatible with the SPC900 Series, programs from the SPC900 Series can be ported easily.

### ■ Low-Voltage High-Speed Operation

The CXP973064 achieves high-speed operation with a minimum instruction execution time of 50 ns even at the low voltage of 2.7 to 3.6 V (with a 20-MHz operating frequency). This is about twice the speed of SPC900 Series. Thus this device can exhibit high performance even in systems that require low-power consumption. Furthermore, it achieves a minimum operating voltage of 2.2 V when operating at 10 MHz.

### ■ Large ROM and RAM Capacities

The CXP973064 features a 16-MB memory space, and includes 256 KB of ROM and 11.5 KB of RAM on chip. There are also plans to develop other models in the same series, including ones with 512 KB of ROM and 20 KB of RAM on chip. These models will support the larger program sizes required by the increasing functionality of digital audio and video equipment and the increasingly complex data handled in these systems.

### ■ Peripheral Functions with High Generality

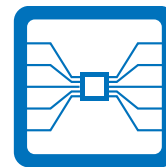
The CXP973064 provides a set of highly general peripheral functions, including a twelve 8-bit A/D converter channels, three clock-synchronous SIO channels with 128 bytes of RAM each, a single I<sup>2</sup>C channel with 64 bytes of RAM, and an external register interface. Thus the CXP973064 can respond flexibly to the requirements of a wide variety of applications, including DVD systems.

### ■ High-Performance Total Development Environment

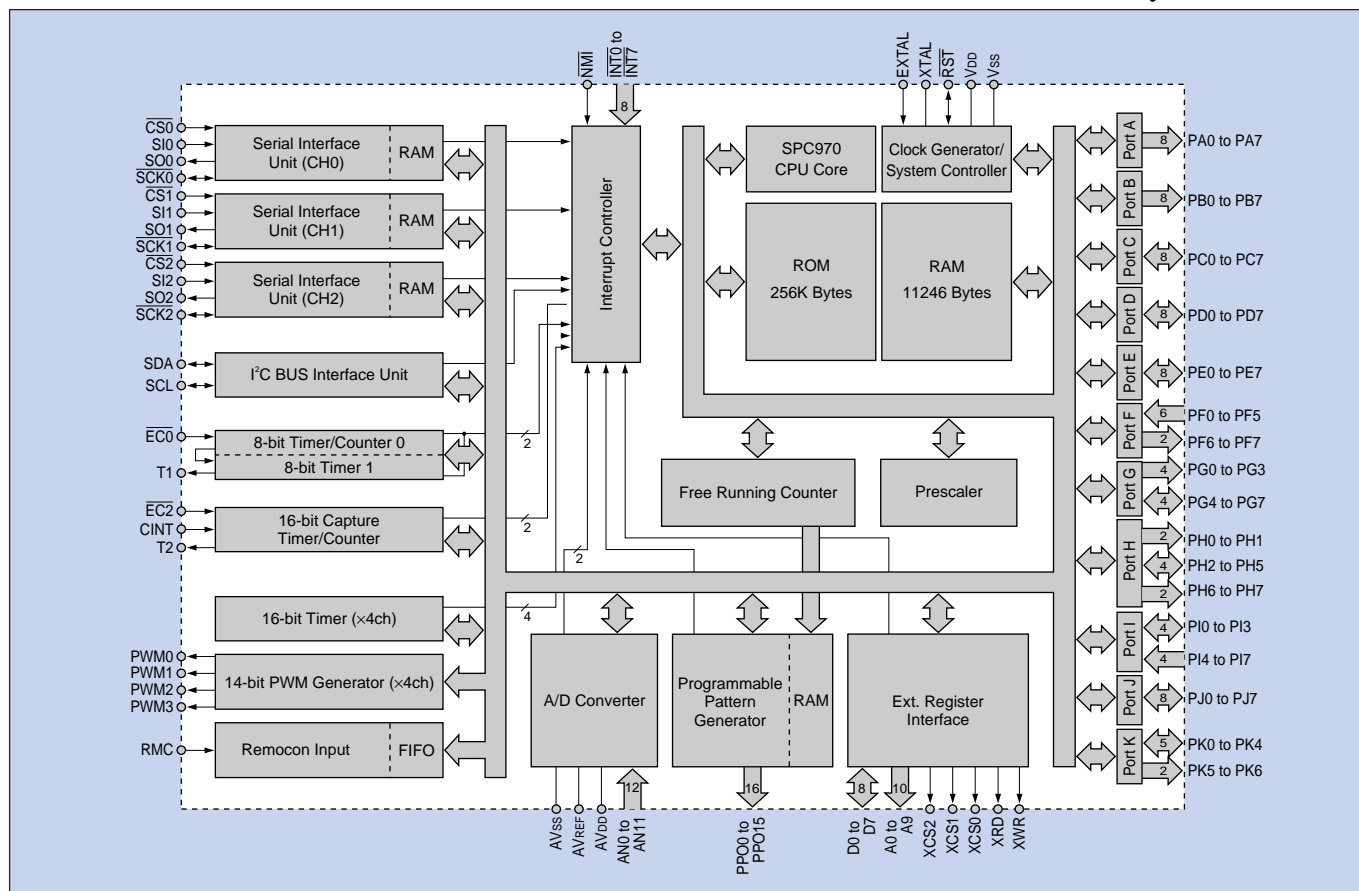
Sony provides a GUI-based high-performance total development environment for the CXP973064. This development environment supports efficient development of software using the C language and a real-time operating system. Additionally, this product line includes versions of the CXP973064 that include single-power supply operation flash memory. Since software can be reloaded using UART communication with the CXP973064 mounted in the application, the CXP973064 supports requirements for shorter turn around times associated with shorter product development periods. Sony also provides piggy/evaluation chip similar to those provided for the SPC900 Series.

## V O I C E

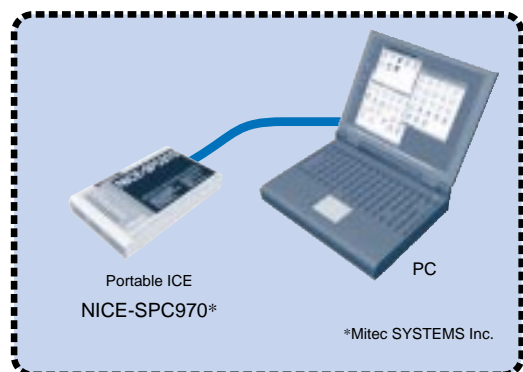
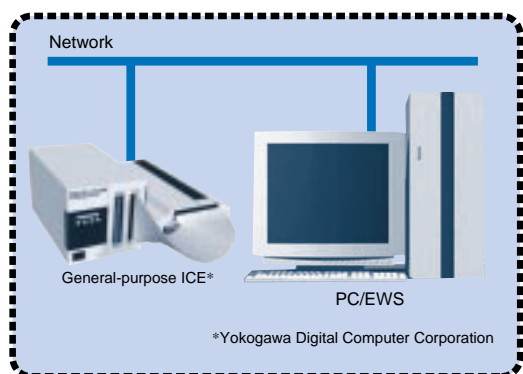
The SPC970 microcomputer was designed for efficient ROM usage. It goes without saying that Sony provides full C language and real-time OS support so that large-scale applications can be developed efficiently. This microcomputer excels at detailed control, allowing applications to exactly what they need to do. Thus this is truly an optimal 16-bit microcomputer for controlling digital audio and video equipment.



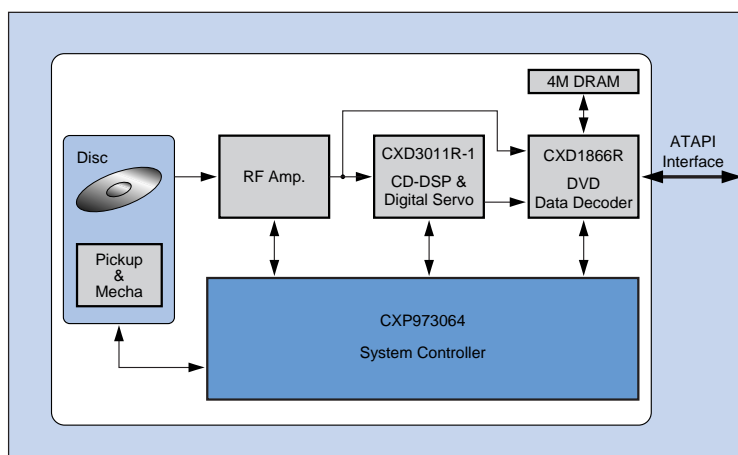
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■ Figure 1 Block Diagram



■ Figure 2 Program Development Environment



■ Figure 3 DVD-ROM Sample Application System Structure