Industrial High-Performance Real-Time DSP Product Introduction

(For M76P00, M73P00, M7600, M7300, M76E00, M73E00 Series)

Overview

The M7000 series consists of six high-performance DSP real-time processors designed for industrial applications such as industrial control (servo motor/ inverter/ PLC/ robotics), photovoltaic energy, and digital power supplies. These chips feature a domestically developed RISC-V core with high computational power, a main frequency of up to 552MHz, and built-in units such as DSP, FPU, HCL, Cordic, FFT, FIR, and IIR, delivering robust processing capabilities and efficient operation. The series offers large-capacity memory and a rich set of peripheral interfaces, enabling real-time data processing and control applications. The chips are characterized by high reliability, high security, and high openness, with a diverse product matrix and configurable performance resources to adapt to various application scenarios, making them widely applicable in industrial fields.

Features

✧ CPU Core& Performance

- RISC-V 32-bit Dual-Core/Single-Core

  Main frequency up to 552MHz.
  Double-precision floating-point (FPU) operations and powerful DSP (extended) operations.

- Large-Capacity Memory

  1MB SRAM and 2MB Flash.
  I/D-TCM configurable up to 256KB/128KB.

✧ Hardware Acceleration System

- **Ultra-High-Speed HCL** (Hardware Current Loop)
- **Cordic** (Trigonometric Functions) Hardware Accelerator
- **FFT**: Hardware acceleration for up to 4096-point complex or real FFT/IFFT.
- **PFM**: 6x FIR/IIR programmable filter hardware acceleration, with each filter capable of up to 4th-order filtering.

✧ Control System

- **PWM:** 24ch HRPWM/24ch EPWM, with resolution as high as 130ps.
- **Qout:** 2-channel Qout signal output, with arbitrary frequency division ratio pulse output.
- **SDFM:** Sigma-Delta Filter Module with 4 digital interfaces.
- **TA-IF/BIS-IF/EDAT-IF:** Compatible with Tamagawa/Nikon/EnDat protocols.
- CAP x6, QEP x10, CPM x2, **r**ich resources for flexible use and configuration.

✧ Peripherals

- **EtherCAT:** RMII/MII interfaces, 3x Port/8x FMMU/8x SyncManager.
- **ADC:** 12-bit 4Msps x2/24CH, 14-bit 2Msps x2/24CH, with ENOB up to 12-bit.
- **Other Interfaces:** 1x USB, 1x EMAC, 9x UART, 3x high-speed QSPI, 5x SPI, 2x CAN FD and 1x CAN, 2x I²C, and up to 150 I/O pins.