HIWIN® MIKROSYSTEM
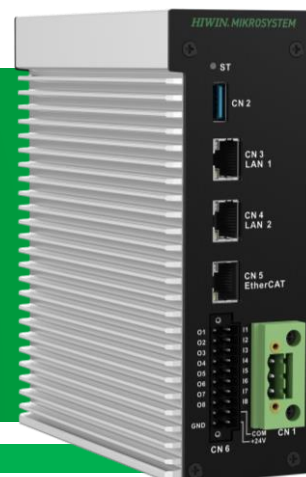
HIMC3

Multi-Axis Motion Controller

Real-time, high-response multi-axis motion controller
for demanding industrial applications

Product Features

- Control up to 16-axis synchronous motion or up to 32 SubDevices
- Minimal control cycle time within 250 µs
- 10/100/1000 Mbps TCP/IP client-server communication
- Support CANopen over EtherCAT (CoE) protocol
- Multi-task HMPL programming with 64 user tasks
- Provide API library for C, C++, C#, Python, and LabVIEW programming environment
- Support Modbus TCP and ASCII TCP
- Certified with CE/UL approvals

Product Introduction

HIMC3, HIWIN MIKROSYSTEM Motion Controller 3, is a real-time multi-axis motion controller, which meets the requirements of industrial automation such as PCB and wafer inspection industries. Through EtherCAT protocol, HIMC3 can control up to 16-axis synchronous motion or up to 32 SubDevices. Distributed clocks are adopted in EtherCAT network, enabling servo drives and I/O devices to reach 250 µs updating command cycles minimum. It meets the demands for high-response and high-efficiency applications.

Users can write user tasks for motion control via HMPL (HIWIN Motion Programming Language of HIMC3) or control HIMC3 with host PC via API library, Modbus TCP or ASCII TCP. To realize high precision motion control, HIMC3 provides path-planning for multi-axis synchronous motion, including point-to-point, JOG motion, and 2D/3D linear and circular interpolation. Additionally, the built-in dynamic geometric compensation algorithm largely enhances precision positioning for machines.

HIMC3 is complemented by the iA Studio software package. It provides a simple and intuitive interface for parameter setting and test run, which supports external third-party EtherCAT devices. With the features of HMPL programming, status monitoring, data collection, offline simulation, etc., HIMC3 is user-friendly and simplifies the preparation for device development.

Specifications

Number of Axes

- Support 16-axis synchronous motion

Number of SubDevices

- Support 32 SubDevices (servo drives and I/O devices)

Motion Types

- Single-axis motion: point-to-point and JOG motion
- Group interpolation: multi-axis linear and circular interpolation
- Trapezoidal motion profile: with 0 ~ 500 ms smooth time

Dynamic Error Mapping

- 1D/2D/3D geometric compensation for higher positioning precision

Motion Program

- Perform multi-task control with HMPL, HIWIN Motion Programming Language
- Up to 64 user tasks running in parallel
- Support 512,000 double-precision floating-point variables
- Source code size: 10 MB

Software Library

- Support C, C++, C#, Python, and LabVIEW

Communication Protocol

- 10/100/1000 Base-T Ethernet with TCP/IP x 2
- Communication cycle: 250μs/500μs/1000μs/2000μs/4000μs
- Support CiA 401/CiA 402/ETG.5001

Supported SubDevice Modules

- Support servo drives and I/O devices compatible with CoE protocol

Compute Capability

- Processor: Intel® Atom® Elkhart Lake x6425RE
- Memory: 4GB LPDDR4 3200 MHz RAM
- Storage: eMMC 32GB

Built-in I/O

- General-purpose inputs: 8 channels (optical couplers, 24V of each pin, delay time within 1 ms, PNP/NPN switch)
- General-purpose outputs: 8 channels (optical couplers, 24V of each pin, delay time within 1 ms, PNP/NPN switch)
- GPIO current: 100mA (Max. 0.8A current in total)

Power

- Main power input: DC 24V/1.5A
- Power consumption: Max. 36W
- LED status indicator

Mechanical Properties

- Dimensions (W x H x D): 55 x 158 x 133 mm
- Weight: approx. 1,000 g
- Mounting: DIN Rail, Wall mount

Machine Housing

- Extruded aluminum alloy for fan-less support

Environment

- Protection level: IP30
- Ambient temperature: 0 °C ~ 50 °C
- Storage temperature: -20 °C ~ 85 °C
- Altitude: Max. 2,000 m
- Cooling method: fan-less convection cooling
- Humidity: 5% ~ 95% (non-condensing)
- Vibration: Random: 5 ~ 500 Hz, 2G
            Sine: 10 ~ 500 Hz, 5G
- Shock: 5G for a duration of 11 ms

Approvals

- EMC: EN61000-6-2, EN61000-6-4
- Safety approvals: UL61010-1, UL61010-2-201, EN61010-1, EN61010-2-201

Ordering Information

Model: MC - <u>16</u> - <u>03</u> - <u>01</u> - <u>00</u>

      1. *2.* *3.* *4.*

Descriptions:

1. Max. Number of Axes

16: 16-axis synchronous motion

2. Hardware Options

03: Intel® Atom® Elkhart Lake x6425RE

3. Communication

01: CoE protocol

4. Additional Features

00: General function

Feb. 25th, 2025