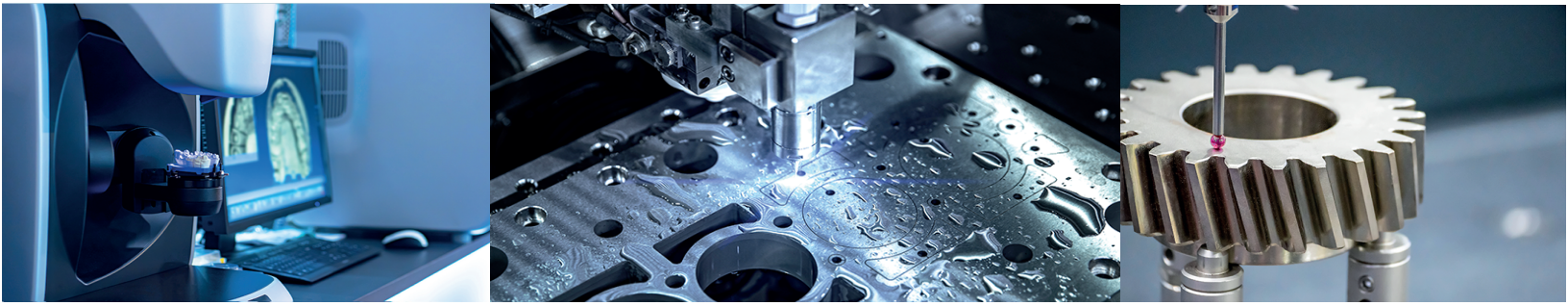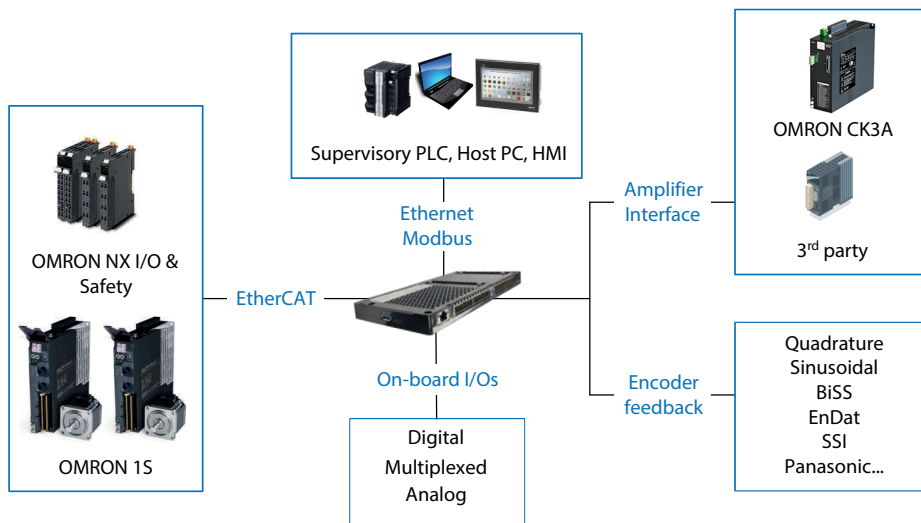**OMRON**

Compact Stackable Motion Controller

The CK3C is a compact industrial motion and automation controller encompassing the full capabilities of Omron's Power PMAC (Programmable Multi-Axis Controller) platform. Inherently, the CK3C is a 4-axis card expandable to 8- local and another 8- EtherCAT axes. The optional extended pins provide maximum flexibility for OEM embedded design, high-speed interface to third-party devices, and custom connectorization.

Achieve high-precision, speed, and throughput utilizing the flexibility and intelligence of the most compact packaged PMAC with direct connectivity

Sample Configuration

OMRON NX I/O & Safety

OMRON 1S

EtherCAT

Supervisory PLC, Host PC, HMI

Ethernet Modbus

On-board I/Os

Digital Multiplexed Analog

Amplifier Interface

OMRON CK3A

3rd party

Encoder feedback

Quadrature
Sinusoidal
BiSS
EnDat
SSI
Panasonic...

CK3C

- **OEM Embedded design**
  - ◊ Extended (long) pins option
- **50 µsec servo update (local)**
- **Wide selection of encoder feedback**
- **Various amplifier interface**
- **On-board digital & analog I/Os**
- **EtherCAT master**
  - ◊ Additional 8 servo axes
  - ◊ Additional I/Os
- **High-speed position compare**
  - ◊ EQU outputs (4 MHz)
- **Full library of PMAC motion control**

Industries

Life Sciences & Medical Machine

Tool Semiconductor

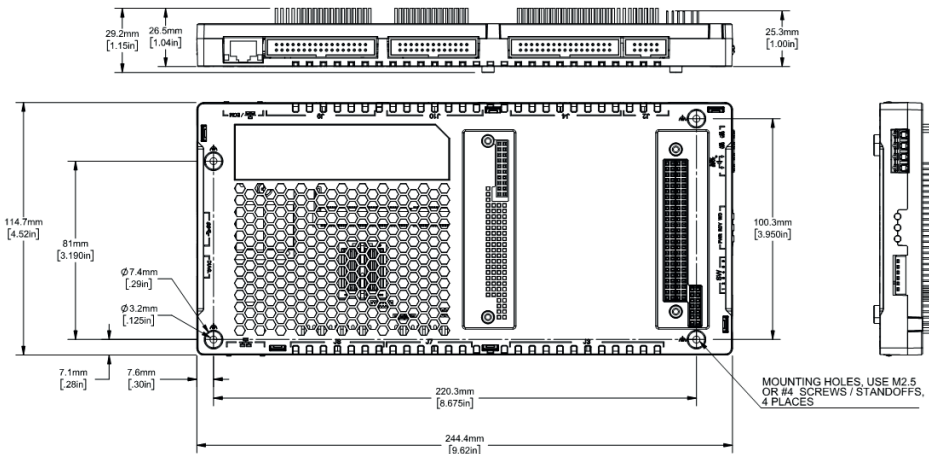Digital Electronics & Robotics

Applications

Table-top medical equipment, X-rays, MRI beds, milling centers, inspection systems, CMM custom robotics, micro-machining, laser/ waterjet, cutting EDM, metrology, and many others.

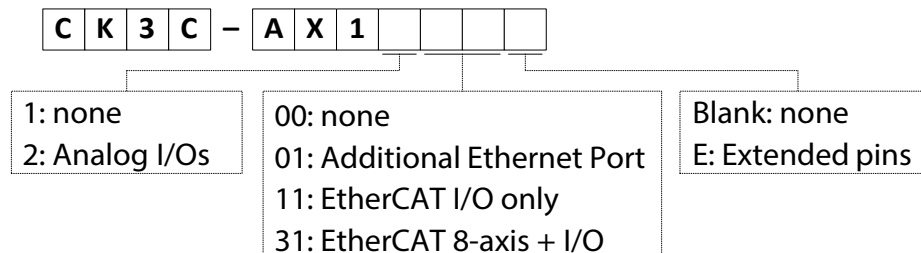**Compactness. Precision. Flexibility.**

OMRON

Core Specifications

CPU	ARM dual core 1GHz, hard realtime Linux OS
Memory	1GB RAM, 1 GB Flash
Communication	Standard 1x Ethernet port 1000 base-T
Control topology	♦ Local or direct (amplifier interface) ♦ EtherCAT, free run or DC sync
Encoder Protocols	♦ AquadB with hall effect sensors ♦ Analog Sine/Cosine ♦ Serial SSI, BiSS, EnDat, Panasonic, Yaskawa and more
On-board I/Os	♦ 32x digital configurable for input, output or mux ♦ 4x 16-bit analog inputs, 1x 14-bit analog output
Software	Power PMAC IDE

Physical Dimensions

Models & Stackable Accessories*

| C | K | 3 | C | – | A | X | 1 | | | | |

1: none
2: Analog I/Os

00: none
01: Additional Ethernet Port
11: EtherCAT I/O only
31: EtherCAT 8-axis + I/O

Blank: none
E: Extended pins

Accessory	Description
ACC-24S3	Axis expansion for four additional local axes
ACC-51S	Sine/Cosine encoder (x4096) interpolator interface
ACC-84S	Serial encoder interface for BiSS, EnDat (contact OMRON for other)
ACC-8AS	True 16-bit DAC analog output amplifier interface
ACC-8FS	Digital Direct PWM output amplifier interface (OMRON CK3A)

*Can stack up to a maximum of 3 accessories

Control Features

Flexible Development Environment

Can be programmed with original script and or ANSI C languages, executes G-code (customizable) natively offering maximum flexibility for user-written algorithms and proprietary functions

High-Speed Execution

Servo frequencies of up to 50KHz for opti-mal servo control and axes synchronization, high-speed execution of motion programs, master slave functions, CAM and or com-pensation tables 1D, 2D, or 3D (up to 256, 65K data points each), synchronous (realtime), asynchronous PLC programs and user-written algorithms all at once

Tooltip Trajectory Generation

Seamless grouping of motors into coordi-nate systems CS (up to 128) axes (up to 32 per CS). Built-in standard move profiles; linear, and circular with separate accel, decel rate or time, Spline, PVT, PVTA, dual notch or low pass pre-filter for highly effec-tive vibration suppression

Multi-Block Lookahead & Retrace

Dynamically evaluates tooltip planned tra-jectory ahead of time against each motor speed and acceleration limits (specified by the user) and automatically adjust speeds for fastest possible trajectory without ex-ceeding mechanical capabilities

Open Kinematics Buffers

Open-architecture forward and inverse Kinematics for special mechanics and ro-botics, can be called from subroutines (CfromScript) for maximum efficiency and fastest execution

Cross-Coupled Gantry Control

Tightest synchronization of mechanically-coupled gantry motors, with automatic skew removal or theta angle control

And many more...

Compactness. Precision. Flexibility.