OMRON

Sysmac Integrated Platform
Machine Controller with CNC

CNC

Complete line control and CNC in one!
Optimized engineering time
Integrated architecture providing high throughput

sysmac
always in control

Sysmac Integrated Platform
Expanded with CNC functionality

Complete line control and CNC in one

Omron brings flexibility and high productivity for today's manufacturing

The industry is constantly evolving and the market requests more complex products at higher productivity rates. The use of CAD and CAM technologies, the integration of all parts of the production line and high-performance control systems are all vital to meet market expectations.

Omron is constantly evolving and developing new products and functionalities to provide everything that is needed in a control architecture. In order to go one step further, Omron integrates CNC functionality into the Sysmac Automation Platform enabling accurate path-following motion control for standard CNC applications such as XY cutting, milling or lathe among others. This new functionality in combination with the Sysmac platform's existing motion, safety, vision and robotics capabilities allows complete production line control using G-code and the standard IEC programming languages. The complete integration of all production parts leads to a simplification in development, an increase in productivity and immediate product changeover.

LOADING　　　CNC　　　PALLETIZING

C O M P L E T E　 L I N E

All-in-one including CNC HMI

Machine Automation Controller
NJ5

Industrial Panel PC
NY53□-5

☑ **Optimized engineering time**
· G-Code and IEC 61131-3 standard programming
· Easy and Intuitive Integrated Development Environment

☑ **Integrated architecture providing high throughput**
· One machine control: Logic sequence, Motion, Safety, Vision and CNC

Fully integrated. One machine control

Omron provides a fully integrated platform for complete production line control in a single controller. This allows the use of the same standard programming languages for all processes, thus eliminating interlocks between machine operations. Choose between two types of reliable and robust machine controllers: Modular Controller and the Openness of Industrial Panel PC. This high-speed and accuracy controller solution enables the synchronization of all machine devices, maximizing the complete production line throughput.

CNC operator

- G-Code File Editor
- Execution monitor Active G/M code display
- Command terminal
- Jogging, homing
- Customizable software allows adding functionality by the users (Requires CNC operator SDK version)

Machine controller

- Logic sequence, Motion and CNC in one
- Up to 32 synchronous axes
- 4 axes interpolation per channel
- Import G-Code: SD card and FTP protocol
- Built-in Ethernet and EtherCAT ports

EtherNet/IP™

Machine Automation Controller

Industrial Panel PC

EtherCAT.

NX Safety

✓ **Sysmac CNC enables axis interpolation** for complex path-following which a conventional PLC cannot achieve

✓ **One high-speed and accuracy control** contributes to maximizing the complete production line throughput

✓ **Sysmac Studio provides a true Integrated Development Environment** which is intuitive and easy to use!

Integrated safety

- Simplified safety installation
- Reduction of safety devices
- Safety function built-in: Fail Safe over EtherCAT (FSoE)
- Troubleshooter integrated with Sysmac Studio

Sysmac Studio
Integrated Development Environment

Database connection + Motion + Robotics + Vision + Safety + **CNC**
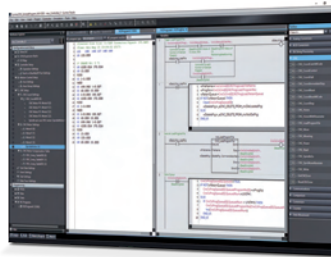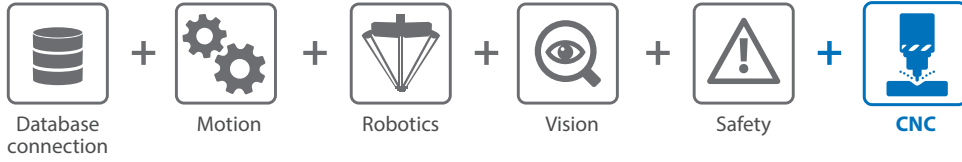
- Possible to handle CNC from PLC program by Function Block. Users can make simple program structures, even for linkage between CNC process and others.
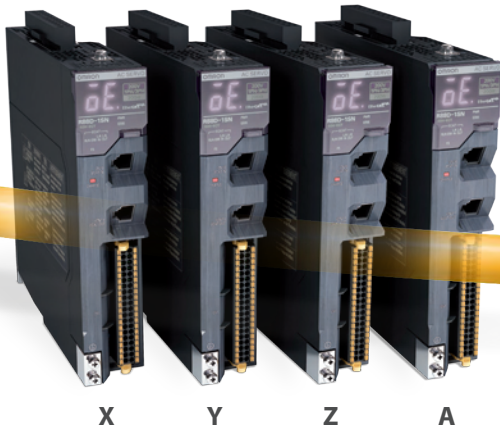
- Open standard IEC 61131-3 programming

IEC

- Standard PLCopen Function Blocks for Motion and Safety

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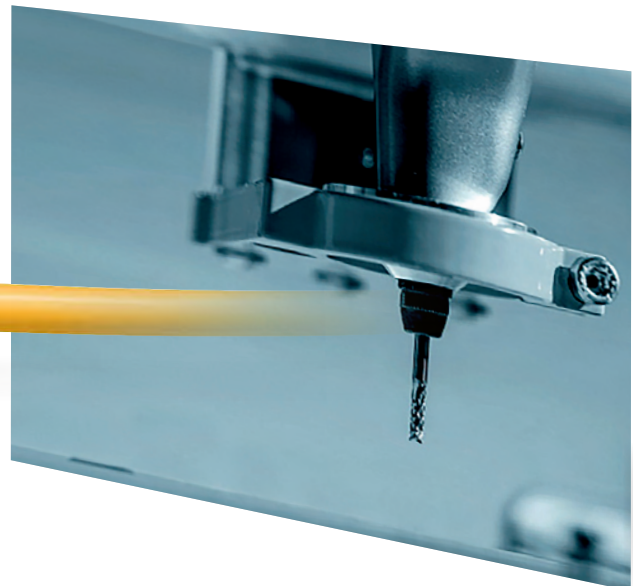Datatypes supported: 17 of 26

- Sysmac Library for fast engineering and optimized machine availability
  - Application libraries
  - Optimized productivity
  - Predictive maintenance
  - Reduced downtime

Sysmac Library

Safety over
EtherCAT.

X Y Z A

1S Servo System

XY cutting

Ideal for the metal, glass, marble, wood and leather markets

Milling

Using CNC functionality, the Sysmac machine controller is ideal for XY cutting, milling, lathe and any other path-following application such as dispensing, bending, grinding and forming machines. In addition to the CNC applications, the Sysmac integrated platform offers solutions for multi-purpose machines, integrating all machine operations: loader/unloader and standard machine control including CNC functions.

Leveraging features for accurate CNC path-following application

G-Code

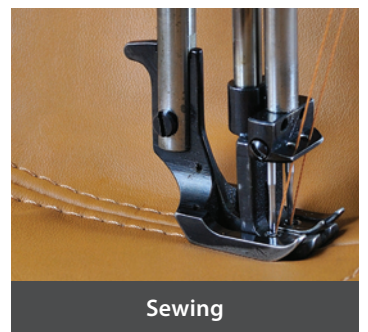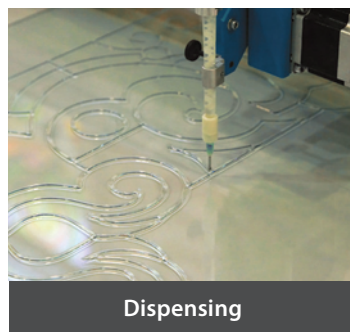· Standard RS-274 G-Code interpreter. Syntax compatibility with major CAD/CAM software

Compensation table

· High-precision processing by compensating axis position

Fits most diverse CNC applications

Simplicity and versatility

Lathe

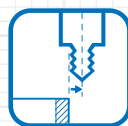
Grinding

Dispensing

Sewing

☑ Sysmac high-end motion control with CNC functionality provides a cost-effective solution for a diverse range of applications

High Performance!

· Up to 500 µs cycle time including logic sequence, advanced motion and CNC

Advanced Block Lookahead

· Future instructions are analyzed in advance, movements are blended and optimized for speed and acceleration, providing improved performance

Cutter compensation 2D/3D

· Tool diameter and shape compensation, matching the cutting point exactly as specified in G-Code

Block Retrace for reversing the path

· Path can be reversed in order to remove the tool from the cutting area
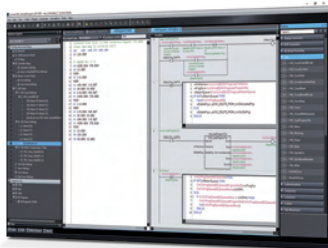
Product family

	MACHINE CONTROLLER				
	15.4 inch		**12.1 inch**		
Model	**NY532-5400-11[]213[]10**				**NJ501-5300**
Hardware	Industrial Panel PC - Intel® Core™ i7-4700EQ processor				Modular controller
Display	15.4 inch		12.1inch		-
Storage	128 GB	64 GB	128 GB	64 GB	-
Operating system	Windows Embedded Standard 7 – 64 bit				-
Task	Multi-tasking program				
Functions	• Logic sequence • Motion • G-Code				
Number of axes — Max. synchronous axis	32				16
Synchronous axes per channel	4				
Number of channels	8				4
Fastest cycle time	500 µs				
Software tool — Integrated Development Environment	Sysmac Studio: • Ladder, Structured Text, In-Line ST • IEC61131-3 • PLCopen for Motion Control and Safety				
Graphic user interface	CNC operator: • G, M code				
Interpolation functions — Compensation	Tool Radius/Length, Cross, LeadScrew				
Interpolation	Linear, Circular, Helical, Conical, Spiral				
Coordinate system	MCS, WCS, LCS, Mirror, Scaling, Rotation, Plane Selection…				
Others	FeedRate Control, Accel/Decel Control, Dry Run, Back Trace…				
Memory card	SD and SDHC				
Built-in port	Ethernet, EtherNet/IP, EtherCAT, USB 3.0/2.0, DVI				EtherNet/IP, EtherCAT, USB
EtherCAT slaves	192				
Mounting	On panel				DIN rail
Global standards	CE, cULus				CE, cULus, NK, LR

SOFTWARE	
INTEGRATED DEVELOPMENT ENVIRONMENT	**GRAPHIC USER INTERFACE**

Model	**Sysmac Studio**	**CNC Operator**
Functions	• Sysmac Studio is the Integrated Development Environment to configure, program and maintain all Sysmac Controllers and devices. • One single project file for the entire machine. • Intuitive IDE for logic, motion, safety, robotics, drives, vision, HMI, networks and CNC. • Reduce engineering and maintenance costs by using Omron libraries and IAGs. Develop your own libraries. • IEC-61131-3 compliant. • PLCopen FBs for motion and safety. • G-Code available • Advanced functions for CAM editing, Drive tuning, 3D simulation, libraries and namespaces, vision algorithms, HMI design and complete machine maintenance. • Full Digital Machine development enviromnent including: EtherNet/IP, EtherCAT, IO-Link, SQL and FTP. • Offline Simulation for logic, motion, robotics, safety and vision. • Advanced security function with 32 digit security password.	• G-Code File Editor • Execution monitor Active G/M code display • Command terminal • Jogging, homing • Customizable software allows adding functionality by the users (Requires CNC operator SDK version)

Omron at a glance

200,000 products ranging Input, Logic, Output & Safety

Sensing, Control Systems, Visualisation, Drives, Robots, Safety, Quality Control & Inspection, Control and Switching Components

6%

Annual investment in Research & Development

Innovation track record of 80 years

1,200 employees dedicated to R&D
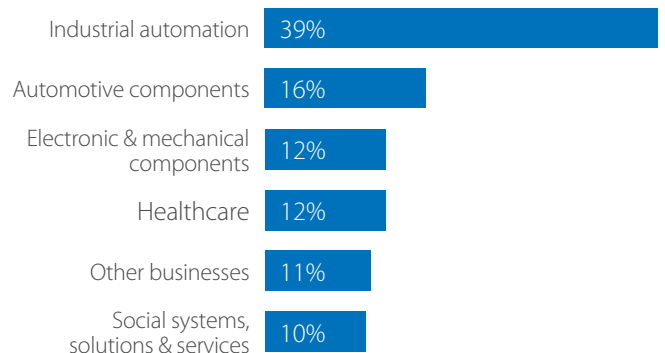12,500 + issued and pending patents

37,500
Employees worldwide

200
Locations worldwide

22
Countries in EMEA

Working for the benefit of society

Industrial automation	39%
Automotive components	16%
Electronic & mechanical components	12%
Healthcare	12%
Other businesses	11%
Social systems, solutions & services	10%

Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

"To the machine the work of the machine, to man the thrill of further creation."

Kazuma Tateisi, founder of Omron

OMRON

Would you like to know more?

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