

Sysmac Integrated Platform

Machine Controller with CNC



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



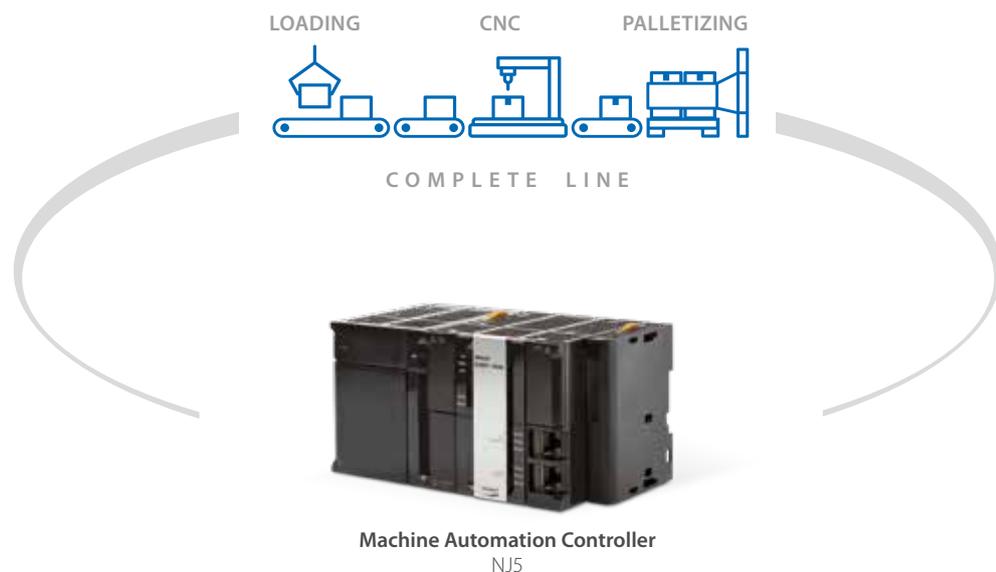
Sysmac Integrated Platform
**Expanded with
CNC functionality**

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.



✓ 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

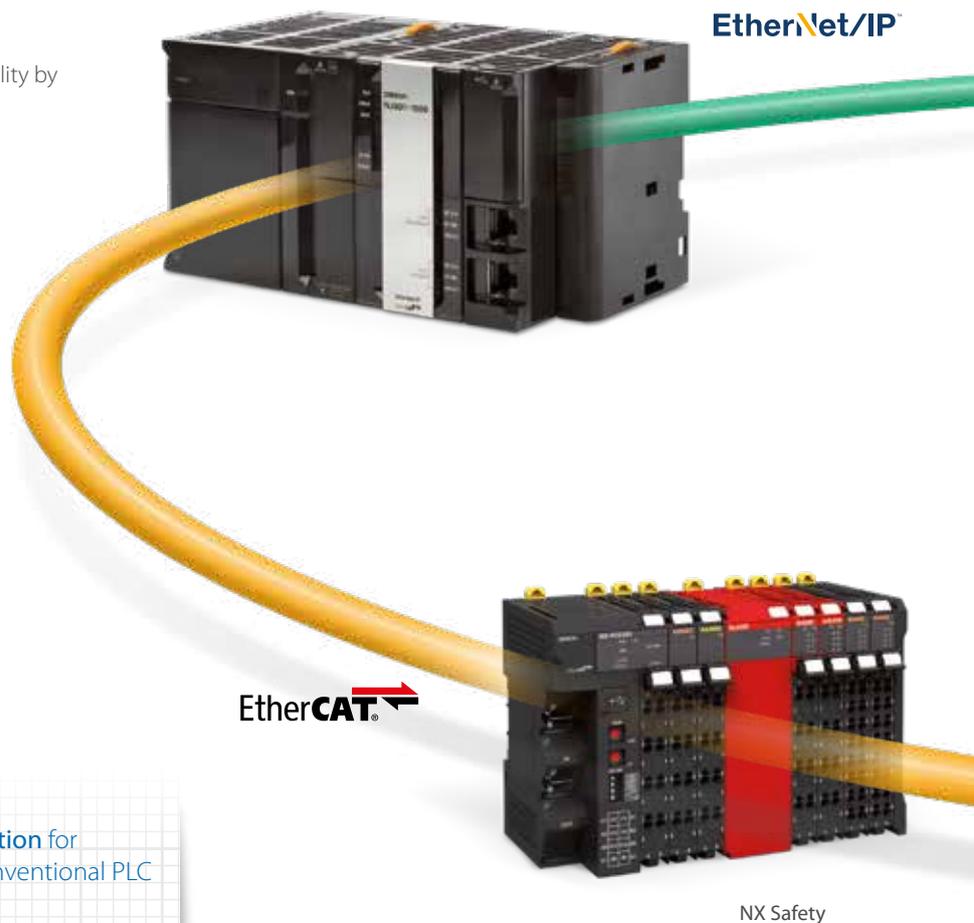
- G-Code File Editor
- Execution monitor Active G/M code display
- Command terminal
- Jogging, homing
- Customizable software allows adding functionality by the users (Requires CNC operator SDK version)

Machine controller

- Logic sequence, Motion and CNC in one
- Up to 16 synchronous axes
- 4 axes interpolation per channel
- Import G-Code: SD card and FTP protocol
- Built-in Ethernet and EtherCAT ports



Machine Automation Controller

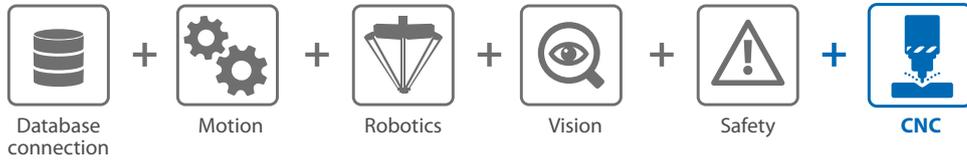


- ✓ **Sysmac CNC enables axis interpolation** for complex path-following which a conventional PLC cannot achieve
- ✓ **One high-speed and accuracy control** contributes to maximizing the complete production line throughput
- ✓ **Sysmac Studio provides a true Integrated Development Environment** which 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



- 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



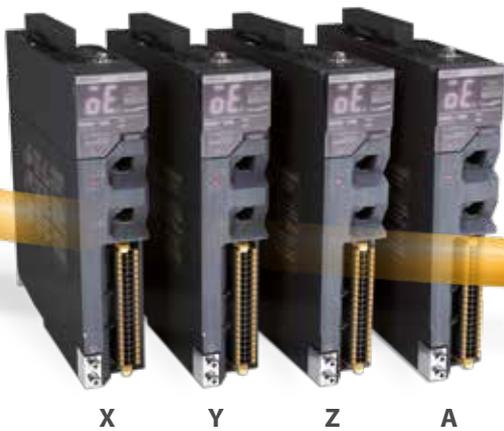
- Standard PLCopen Function Blocks for Motion and Safety



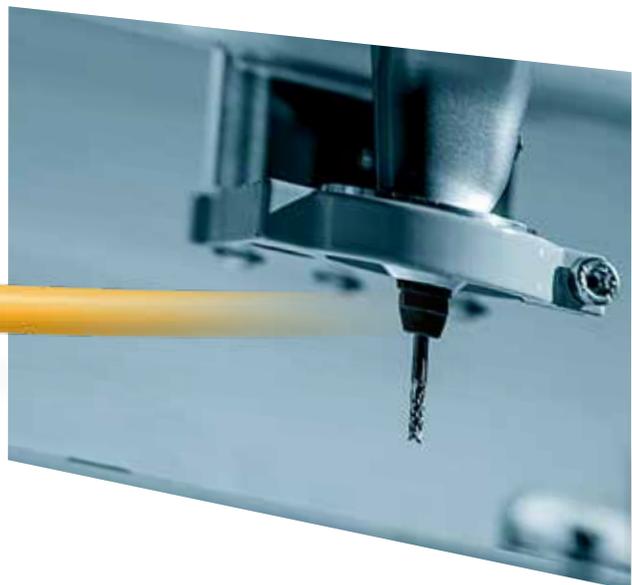
- Sysmac Library for fast engineering and optimized machine availability
 - Application libraries
 - Optimized productivity
 - Predictive maintenance
 - Reduced downtime



Safety over
EtherCAT



1S Servo System





XY cutting



Milling

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

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 μ s cycle time including logic sequence, advanced motion and CNC



Cutter compensation 2D/3D

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



Advanced Block Lookahead

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



Block Retrace for reversing the path

- Path can be reversed in order to remove the tool from the cutting area

Product family

MACHINE CONTROLLER



Model			NJ501-5300
Hardware		Modular controller	
Display		-	
Storage		-	
Task		Multi-tasking program	
Functions		<ul style="list-style-type: none"> Logic sequence Motion G-Code 	
Number of axes	Max. synchronous axis	16	
	Synchronous axes per channel		
	Number of channels	4	
Fastest cycle time		500 μ s	
Software tool	Integrated Development Environment	Sysmac Studio: <ul style="list-style-type: none"> Ladder, Structured Text, In-Line ST IEC61131-3 PLCopen for Motion Control and Safety 	
	Graphic user interface	CNC operator: <ul style="list-style-type: none"> 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/IP, EtherCAT, USB	
EtherCAT slaves		192	
Mounting		DIN rail	
Global standards		CE, cULus, NK, LR	

SOFTWARE		
INTEGRATED DEVELOPMENT ENVIRONMENT	GRAPHIC USER INTERFACE	
	 	
Model	Sysmac Studio	CNC Operator
Functions	<ul style="list-style-type: none"> • 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 environment 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. 	<ul style="list-style-type: none"> • 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

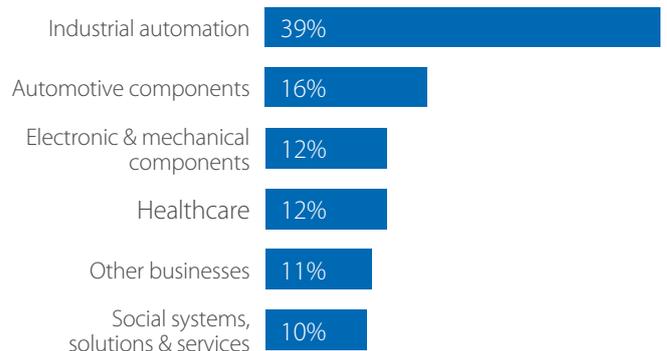
200

Locations worldwide

22

Countries in EMEA

Working for the benefit of society



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

Would you like to know more?

OMRON EUROPE

 +31 (0) 23 568 13 00

 industrial.omron.eu

Sales & Support Offices

Austria

Tel: +43 (0) 2236 377 800
industrial.omron.at

Belgium

Tel: +32 (0) 2 466 24 80
industrial.omron.be

Czech Republic

Tel: +420 234 602 602
industrial.omron.cz

Denmark

Tel: +45 43 44 00 11
industrial.omron.dk

Finland

Tel: +358 (0) 207 464 200
industrial.omron.fi

France

Tel: +33 (0) 1 56 63 70 00
industrial.omron.fr

Germany

Tel: +49 (0) 2173 680 00
industrial.omron.de

Hungary

Tel: +36 1 399 30 50
industrial.omron.hu

Italy

Tel: +39 02 326 81
industrial.omron.it

Netherlands

Tel: +31 (0) 23 568 11 00
industrial.omron.nl

Norway

Tel: +47 22 65 75 00
industrial.omron.no

Poland

Tel: +48 22 458 66 66
industrial.omron.pl

Portugal

Tel: +351 21 942 94 00
industrial.omron.pt

Russia

Tel: +7 495 648 94 50
industrial.omron.ru

South Africa

Tel: +27 (0)11 579 2600
industrial.omron.co.za

Spain

Tel: +34 902 100 221
industrial.omron.es

Sweden

Tel: +46 (0) 8 632 35 00
industrial.omron.se

Switzerland

Tel: +41 (0) 41 748 13 13
industrial.omron.ch

Turkey

Tel: +90 (216) 556 51 30
industrial.omron.com.tr

United Kingdom

Tel: +44 (0) 1908 258 258
industrial.omron.co.uk

More Omron representatives

industrial.omron.eu