

NJ/NX-series Machine Automation Controller CPU Unit

NX701-1□□□/NX102-□□□□/NJ501-1□00

International standard OPC UA for directly connecting automation systems and IT systems

OPC UA functionality



- Reliable international communication protocol
- Secure communication environment using authentication and encryption technologies
- Easy setup to directly connect to host system

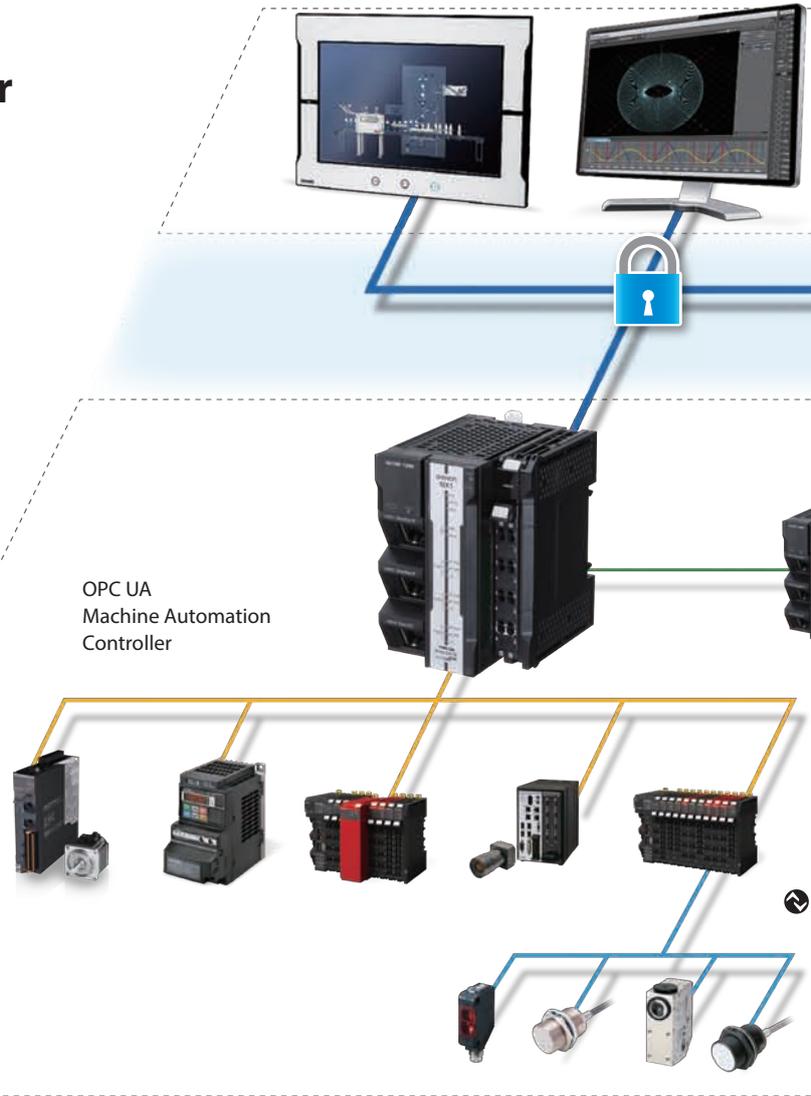


Reliable, secure, easy - International standard communication protocol

Reliable

IEC communication protocol for Industrie 4.0 and PackML

OPC UA is an industrial communication protocol that enables data exchange between products from different manufacturers and across operating systems. This international standard (IEC 62541) is integrated with the IEC 61131-3 PLC programming standard. OPC UA is listed as a recommendation for the communication technology in RAMI 4.0 (Reference Architecture Model Industrie 4.0) and also serves as a basis for the packaging standard PackML (ANSI/ISA-TR88)* and the standard for exchange of data between injection molding machines (EUROMAP 77). The adoption of this open standard for manufacturing machines is increasing worldwide. In such circumstances, Omron added an OPC UA server interface to the NX701-1□□□/NX102-□□□□/NJ501-1□□0.



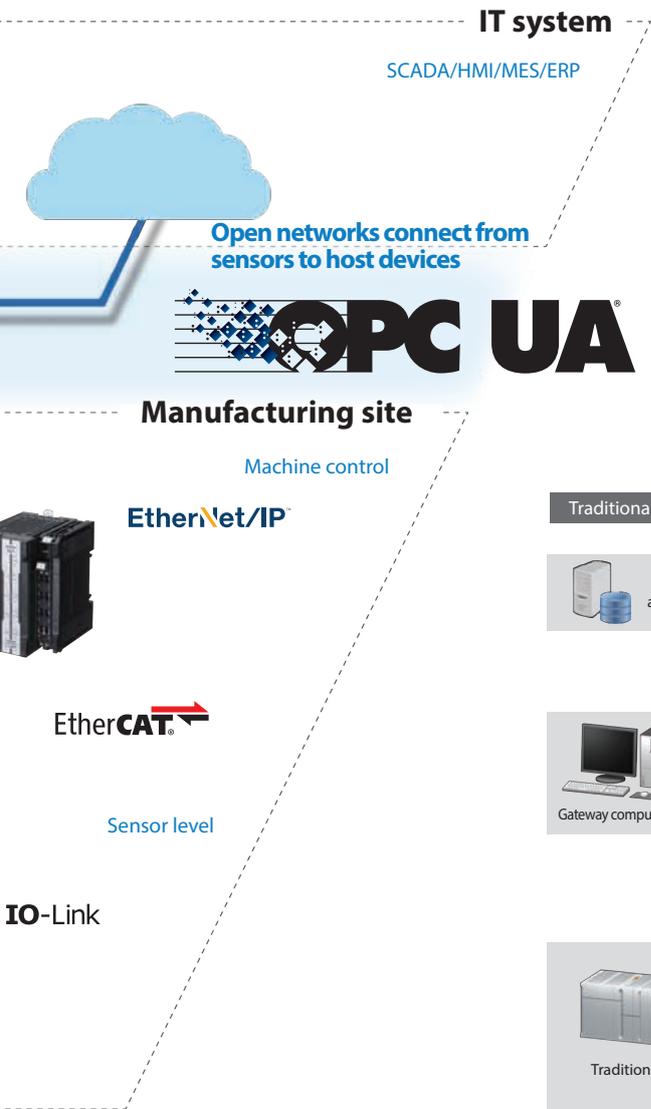
Secure

Authentication and encryption technologies

Security is a crucial issue for connection between industrial automation systems and the host IT system, remote access maintenance, and use of the internet. OPC UA security is based on recognized standards that are also used for secure communication in the internet and satisfies the three security requirements: confidentiality, integrity, and availability. Integrity by digitally signing the messages and confidentiality by encrypting the messages ensure secure connection between automation systems and IT systems.



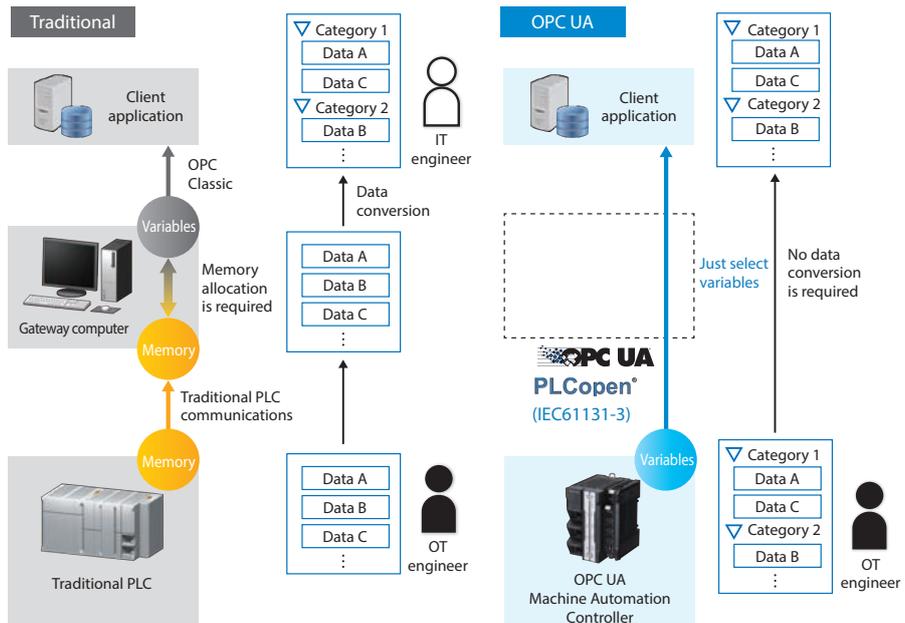
OPC UA directly connects automation and IT



Easy

Simple connection to host system

A gateway computer is required to connect the traditional PLC to the host system. The user must register variables and allocate memory to them. Omron's OPC UA CPU Unit eliminates the need for a computer. Just select variables to directly connect the controller to the host system. In addition, since its OPC UA Server function allows variables to be structured, a data structure can be created tailored to the manufacturing site's needs and additional complex data conversion in the host system is no longer required. This facilitates preparing a data utilization environment and sharing it with other machines without any error.



What is OPC UA (OPC Unified Architecture)?

- An interoperability standard for the secure and reliable exchange of data in the industrial automation space and in other industries
- An OS and hardware independent service-oriented architecture
- Secure connection between higher-level systems like MES or ERP and automation systems at production floor

Omron is contributing to the distribution of the OPC technology since OPC Foundation was established.
 OPC Foundation <https://opcfoundation.org/>



* What is PackML (ANSI/ISA-TR88)?

PackML (Packaging Machine Language) developed by OMAC (Organization for Machine Automation and Control) is a standard for packaging machines that defines mode and state of devices and interface with host devices. In September 2016, it was announced that OMAC, PLCopen and OPC Foundation would work together to promote this standard. Omron offers OPC UA CPU units, Function Blocks for PackML in the Packaging Machine Library (SYSMAC-XR012), and sample programs to use the Function Blocks, helping you comply with PackML.

Ordering Information

International Standards

- The standards are abbreviated as follows: UC1: cULus(Class I Division 2 Products for Hazardous Locations), N: NK, L: Lloyd, CE: EU Directives, RCM: Regulatory Compliance Mark, KC: KC Registration, and EAC: EAC mark.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Product name	Specifications			Power consumption	Model	Standards
	Program capacity	Memory capacity for variables	Number of motion axes			
NX701 CPU Units 	80 MB	4 MB: Retained during power interruption	256	40 W (including SD Memory Card and End Cover)	NX701-1700	UC1, N, L, CE, RCM, KC
		256 MB: Not retained during power interruption	128		NX701-1600	
NX701 Database Connection CPU Units 	80 MB	4 MB: Retained during power interruption	256		NX701-1720	UC1, CE, RCM, KC
		256 MB: Not retained during power interruption (including Memory for CJ-series Units)	128		NX701-1620	

Product name	Program capacity	Memory capacity for variables	Maximum number of used real axes			Model	Standards
			Motion control axes	Single-axis position control axes			
NX102 CPU Units 	5MB	1.5 MB: Retained during power interruption	12	8	4	NX102-1200	UC1, N, L, CE, RCM, KC, EAC
			8	4	4	NX102-1100	
			6	2	4	NX102-1000	
			4	0	4	NX102-9000	
NX102 Database Connection CPU Units 	5MB	32 MB: Not retained during power interruption	12	8	4	NX102-1220	
			8	4	4	NX102-1120	
			6	2	4	NX102-1020	
			4	0	4	NX102-9020	

Product name	Specifications				Current consumption (A)		Model	Standards
	I/O capacity / Maximum number of configuration Units (Expansion Racks)	Program capacity	Memory capacity for variables	Number of motion axes	5 VDC	24 VDC		
NJ501 CPU Units 	2,560 points / 40 Units (3 Expansion Racks)	20MB	2 MB: Retained during power interruption	64	1.90	—	NJ501-1500	UC1, N,L, CE, RCM, KC
			4 MB: Not retained during power interruption	32			NJ501-1400	
				16			NJ501-1300	

Specifications

For details, refer to the data sheet of the Machine Automation Controller NX7 (Cat.No.P141), the data sheet of the Machine Automation Controller NX1 (Cat.No.P130) and the data sheet of the Machine Automation Controller NJ-Series (Cat.No.P140).

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OMRON Corporation Industrial Automation Company
Kyoto, JAPAN

Contact: www.ia.omron.com

Regional Headquarters

OMRON EUROPE B.V.

Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC

2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.

438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.

Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

Authorized Distributor:

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