

# NJ/NX-series Machine Automation Controller Database Connection CPU Unit

NX701-1□20/NX102-□□20/NJ501-1□20/NJ101-□□20

The perfect fusion of machine control and information control boosts manufacturing innovation

**Information  
Control**



**Machine  
Control**



- Direct access to databases
- Real-time data collection and analysis
- Reliable traceability



# Fast, reliable data collection and utilization

Easy data collection for

## Productivity Improvement

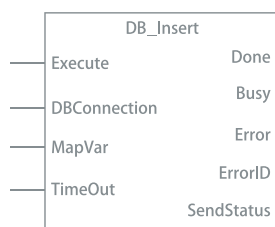
### Visualized quality and productivity

Operating status can be displayed in real time using familiar software such as Microsoft® Excel.

### No SQL knowledge required

The CPU Unit can directly access databases without a separate computer.

Function Blocks allow PLC engineers to easily use the CPU Unit.



#### ✓ Supported database

- Microsoft SQL server
- Oracle Database
- IBM DB2
- PostgreSQL
- MySQL
- Firebird



Database Connection CPU Unit

Product information

| Lot No. | Serial No.  | Worker    | Inspection Date   |
|---------|-------------|-----------|-------------------|
| 10-WM   | 85419-77963 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77964 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77965 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77966 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77967 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77968 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77969 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77970 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77971 | A. Tanaka | 6/11/2017, 10:15  |
| 10-WM   | 85419-77972 | A. Tanaka | 6/11/2017, 10:15  |
| 11-WM   | 85419-77973 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77974 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77975 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77976 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77977 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77978 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77979 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77980 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77981 | J. Kurata | 8/11/2017, 15:35  |
| 11-WM   | 85419-77982 | J. Kurata | 8/11/2017, 15:35  |
| 12-WM   | 85419-77983 | T. Oka    | 10/11/2017, 11:17 |
| 12-WM   | 85419-77984 | T. Oka    | 10/11/2017, 11:17 |
| 12-WM   | 85419-77985 | T. Oka    | 10/11/2017, 11:18 |
| 12-WM   | 85419-77986 | T. Oka    | 10/11/2017, 11:18 |
| 12-WM   | 85419-77987 | T. Oka    | 10/11/2017, 11:18 |
| 12-WM   | 85419-77988 | T. Oka    | 10/11/2017, 11:18 |

### New NX102 with database connection

The compact designed NX1 brings advanced motion and sequence control to compact machines.

#### ✓ Visualization and traceability



The NX102-□□20 with OPC UA as a standard feature provides both production data visualization and traceability. OPC UA is an industrial communication protocol with authentication and encryption, ensuring a secure connection between automation systems and IT systems. This international standard is well linked to Industrie 4.0.

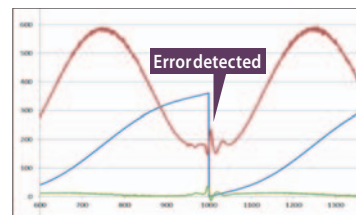
are key to manufacturing innovation

## Fast data collection for

# Predictive Maintenance

## Real-time data collection

Data is sampled every millisecond and written to the database. Machine behavior can be monitored more accurately.



Reliable data for

# Quality Traceability

## Realize quality traceability

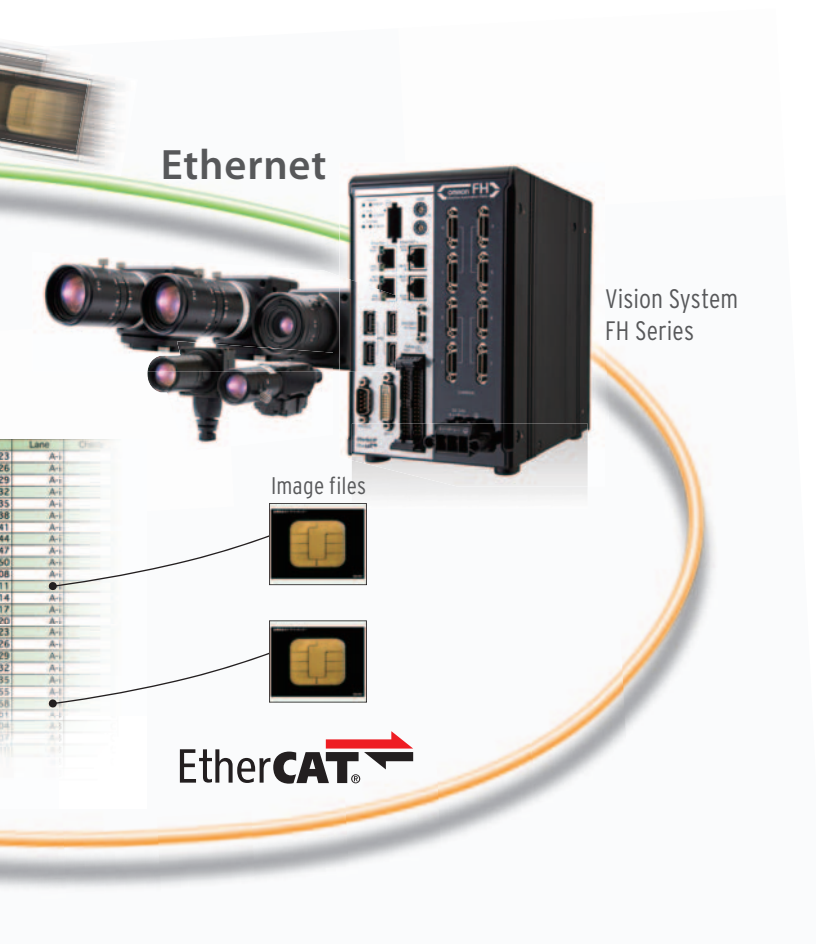
Data, such as production conditions, production results, and inspection results, can be managed at the individual product level.

## Saving data and images together

The process data is linked to inspection images and saved together with the images.  
This improves the level of quality management.

## Reliable data transfer

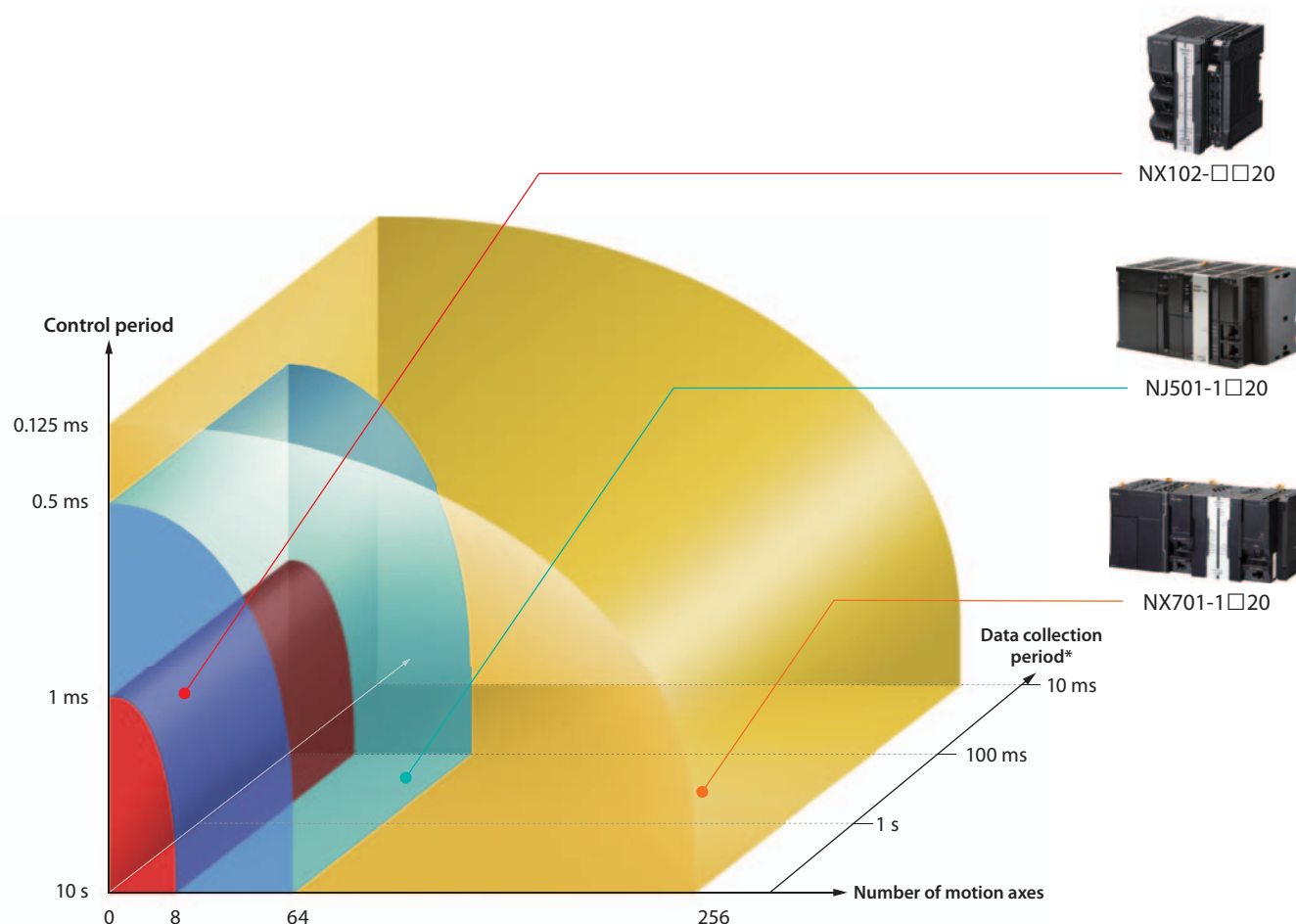
Direct access and spooling enable the CPU Unit to efficiently and reliably transfer all collected data to databases.



# Boost data utilization by integrating production

The database connection CPU units can control up to 256 axes.

IoT implementation by starting small in your existing system, high-speed control and quality traceability for your large machine ... you can choose a CPU unit to suit the size of your application.

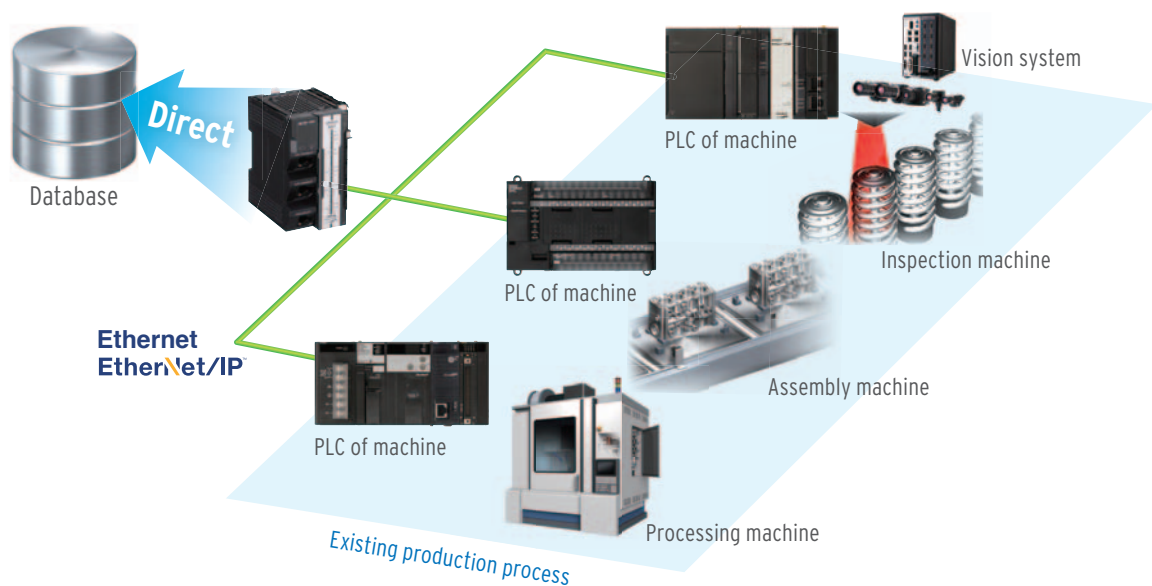


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# control and information control

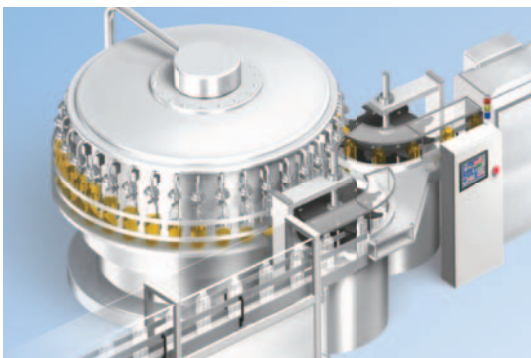
## Applications

### NX102-□□20 Leveraging data in existing system



Just add a database connection CPU unit to collect data from existing PLCs of machines, which brings IoT to the system. With two built-in EtherNet/IP™ ports, Modbus/TCP connectivity, and Function Blocks for SLMP communications in Sysmac Library, the NX102 can be easily connected to other vendors' PLCs. Consult your Omron representative for further information.

### NX701-1□20 Full traceability for pharmaceutical products



The NX701 can collect all production data from a high-speed machine every 10 ms\* while providing real-time synchronous control. Quality traceability is also possible.

\* The data collection period varies depending on the server environment, running status of applications, and system configuration.

## Ordering Information

### International Standards

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and 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.

### NX701 CPU Units

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

### NX102 CPU Units

| Product name                                                                                                              | Specifications   |                                                                                             |                                  |                                   |   | Model      | Standards             |
|---------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------|---|------------|-----------------------|
|                                                                                                                           | Program capacity | Memory capacity for variables                                                               | Maximum number of used real axes |                                   |   |            |                       |
|                                                                                                                           |                  |                                                                                             | Number of motion axes            | Single-axis position control axes |   |            |                       |
| <div>NX102 CPU Units</div> <div></div> | 5 MB             | 1.5 MB: Retained during power interruption<br>32 MB: Not retained during power interruption | 12                               | 8                                 | 4 | NX102-1220 | UC1, CE, RCM, KC, EAC |
|                                                                                                                           |                  |                                                                                             | 8                                | 4                                 | 4 | NX102-1120 |                       |
|                                                                                                                           |                  |                                                                                             | 6                                | 2                                 | 4 | NX102-1020 |                       |
|                                                                                                                           |                  |                                                                                             | 4                                | 0                                 | 4 | NX102-9020 |                       |

### NJ-series CPU Units

| Product Name                                                                                               | Specifications                                                                         |                  |                                              |                       | Current consumption (A) |        | Model      | Standards              |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------|----------------------------------------------|-----------------------|-------------------------|--------|------------|------------------------|
|                                                                                                            | I/O capacity / maximum Model Standards number of configuration Units (Expansion Racks) | Program capacity | Memory capacity for variables                | Number of motion axes | 5 VDC                   | 24 VDC |            |                        |
| <br>NJ-series CPU Units | 2,560 points / 40 Units (3 Expansion Racks)                                            | 20 MB            | 2 MB: Retained during power interruption     | 64                    | 1.90                    | —      | NJ501-1520 | UC1, N, L, CE, RCM, KC |
|                                                                                                            |                                                                                        |                  | 4 MB: Not retained during power interruption | 32                    |                         |        | NJ501-1420 |                        |
|                                                                                                            |                                                                                        |                  |                                              | 16                    |                         |        | NJ501-1320 |                        |
|                                                                                                            |                                                                                        | 3 MB             | 0.5 MB: Retained during power interruption   | 2                     |                         |        | NJ101-1020 |                        |
|                                                                                                            |                                                                                        |                  | 2 MB: Not retained during power interruption | 0                     |                         |        | NJ101-9020 |                        |

## Automation Software Sysmac Studio

Please purchase a DVD and required number of licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. Each model of licenses does not include any DVD.

| Product name                                  | Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Number of licenses | Media | Model                | Standards |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------|----------------------|-----------|
|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |       |                      |           |
| Sysmac Studio<br>Standard Edition<br>Ver.1.□□ | The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slave, and the HMI.<br><br>Sysmac Studio runs on the following OS.<br>Windows 7(32-bit/64-bit version)/Windows 8(32-bit/64-bit version)/Windows 8.1(32-bit/64-bit version)/Windows 10(32-bit/64-bit version)<br><br>The Sysmac Studio Standard Edition DVD includes Support Software to set up EtherNet/IP Units, DeviceNet slaves, Serial Communications Units, and Support Software for creating screens on HMIs (CX-Designer).<br>For details, refer to your OMRON website. | —<br>(Media only)  | DVD   | <b>SYSMAC-SE200D</b> | —         |
|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 license *        | —     | <b>SYSMAC-SE201L</b> | —         |

\* Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).

## Accessories

The following accessories come with the CPU Unit.

| Item                             | model | NX701-1□20 | NX102-□□20 | NJ□01-□□20                                     |
|----------------------------------|-------|------------|------------|------------------------------------------------|
| Battery                          |       | CJ1W-BAT01 | —          | CJ1W-BAT01                                     |
| End Cover *                      |       | NX-END01   | NX-END02   | CJ1W-TER01                                     |
| End Plate                        |       | —          | —          | PFP-M (2 pcs)                                  |
| SD Memory Card<br>(Flash Memory) |       | HMC-SD491  | HMC-SD291  | NJ501-1□20: HMC-SD491<br>NJ101-□□20: HMC-SD291 |

\* Necessary to be connected to the right end of the CPU Rack.

For details, refer to the data sheet of the Machine Automation Controller NJ/NX-Series and the data sheet of the Machine Automation Controller NX1.

Note: Do not use this document to operate the Unit.

**OMRON Corporation**      **Industrial Automation Company**  
Kyoto, JAPAN

**Contact: [www.ia.omron.com](http://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.**

No. 438A Alexandra Road # 05-05/08 (Lobby 2),  
Alexandra Technopark,  
Singapore 119967  
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

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**CSM\_10\_2\_0718**

**Cat. No. P088-E1-12**

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