

Artificial Intelligence Machine Automation Controller (Abbreviation: AI Controller) NX/NY-Series

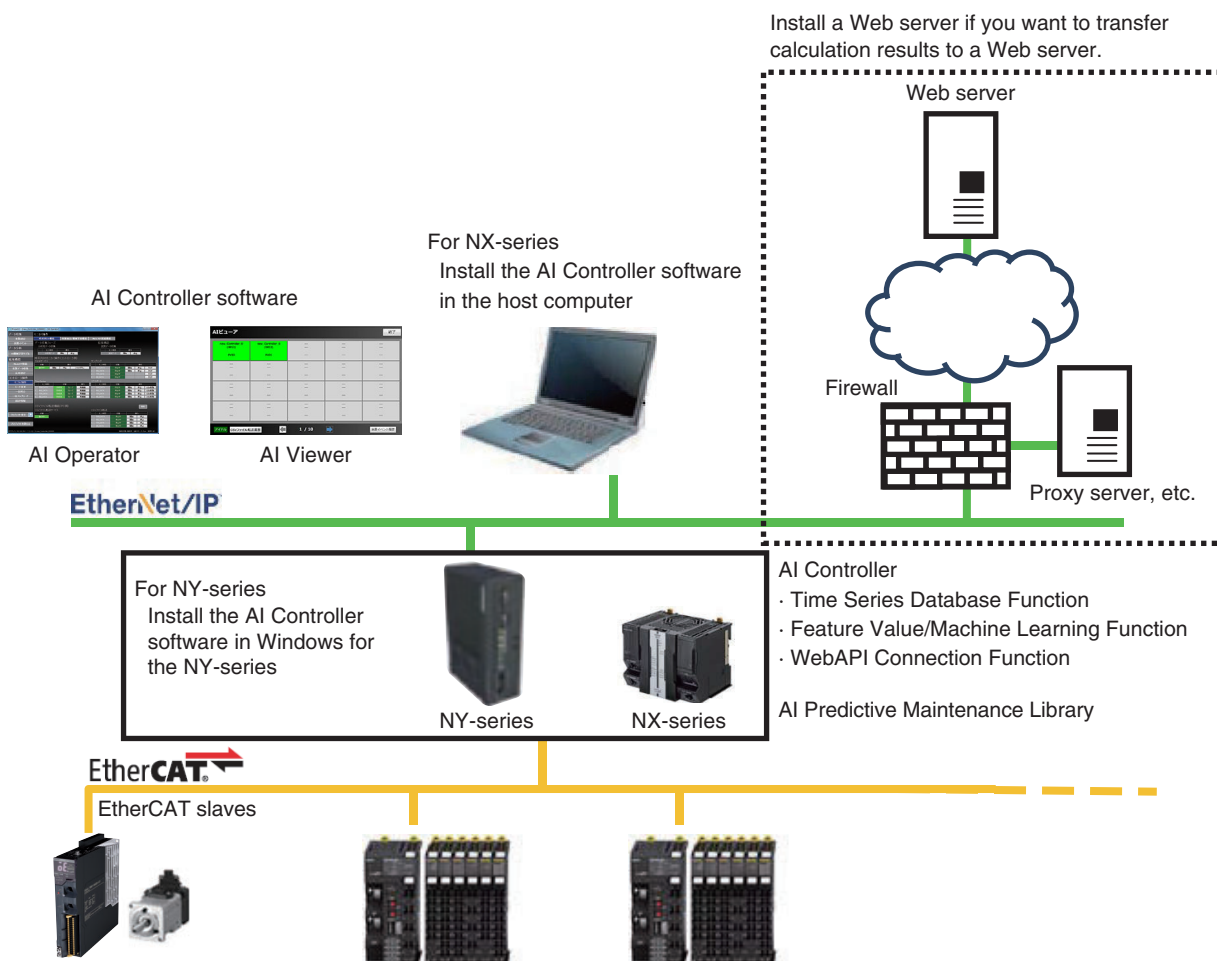
CSM_NX_NY_AI_Controller_DS_E_1_1

Ultimate AI edge controller born from the fusion of AI and control

- The AI Controllers refer to Machine Automation Controllers with AI functions.
- The AI functions are designed to improve the equipment's utilization rate as they detect equipment events including equipment errors and the end of service life, as well as behaviors that are the signs of such events.
- The AI Controller has the Time Series Database Function designed for data collection in the storage mounted to the NX and NY series Controllers. The data collection intervals are synchronized with the PLC function module's scheduling.
- The AI Controllers have a function to upload files to Web Server securely.
- The AI Predictive Maintenance Library allows you to perform predictive maintenance easily with the AI functions.



System Configuration



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Ordering Information

NX-series AI Controller

| Product Name | Specifications | | | Current (Power) consumption | Model |
|----------------------------------|------------------|--|-----------------------|---|------------|
| | Program capacity | Memory capacity for variables | Number of motion axes | | |
| NX701 CPU Units with AI function | 80 MB | 4 MB: Retained during power interruption 256 MB: Not retained during power interruption | 256 | 40 W (including SD Memory Card and End Cover) | NX701-Z700 |
| | | | 128 | | NX701-Z600 |

NY-series AI Controller

| Product name | Specifications | | | | | | Model |
|--------------------------------------|-------------------------------------|------------------------|-----------------------|---------------------------|-----------------------|------------------|----------------------|
| | Operating system | CPU type | Number of motion axes | RAM memory (non-ECC type) | Storage size | Interface option | |
| Industrial Box PC with AI function | Windows Embedded Standard 7 - 64bit | Intel® Core™ i7-4700EQ | 64 | 16 GB | 128GBx2 SSD iMLC/pSLC | RS-232C | NY512-Z500-1XX214T1X |
| | | | 32 | | | | NY512-Z400-1XX214T1X |
| | | | 16 | | | | NY512-Z300-1XX214T1X |
| | | | DVI-D | | | 64 | NY512-Z500-1XX214T2X |
| | | | | | | 32 | NY512-Z400-1XX214T2X |
| | | | | | | 16 | NY512-Z300-1XX214T2X |
| Industrial Panel PC with AI function | Windows Embedded Standard 7 - 64bit | Intel® Core™ i7-4700EQ | 64 | 16 GB | 128GBx2 SSD iMLC/pSLC | RS-232C | NY532-Z500-112214T10 |
| | | | 32 | | | | NY532-Z400-112214T10 |
| | | | 16 | | | | NY532-Z300-112214T10 |
| | | | DVI-D | | | 64 | NY532-Z500-112214T20 |
| | | | | | | 32 | NY532-Z400-112214T20 |
| | | | | | | 16 | NY532-Z300-112214T20 |

Model Number Structure

The purpose of this model number structure is to provide understanding of the meaning of specifications from the model number. Models are not available for all combinations of code numbers.

NY 5 - 00 -

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

| Item | Description | Option |
|------|-------------------------------------|---|
| 1 | Series name | NY NY-series Industrial PC Platform |
| 2 | Controller specifications | 5 Large scale, high speed and high precision control application for up to 64 axes. |
| 3 | Model type | 1 Industrial Box PC |
| | | 3 Industrial Panel PC |
| 4 | Sequential number | 2 or more |
| 5 | Function module | Z AI function |
| 6 | Number of axes for motion control | 3 16 axes |
| | | 4 32 axes |
| | | 5 64 axes |
| 7 | Additional function software module | 0 --- |
| 8 | Reserved | 0 --- |
| 9 | Expansion slots | 1 1 PCIe slots |
| 10 | Frame type | 1 Aluminum frame, black, and projected capacitive touch type |
| | | X No display (Industrial Box PC) |
| 11 | Display size | 2 15.4 inch model |
| | | X No display (Industrial Box PC) |
| 12 | OS | 2 Windows Embedded Standard 7 - 64 bit |
| 13 | Processor | 1 Intel® Core™ i7-4700EQ 4th generation CPU with Fan Unit for active cooling |
| 14 | Main memory | 4 16 GB, non-ECC |
| 15 | Storage | T 128 GB, SSD iMLC/pSLC |
| 16 | Optional interface | 1 RS-232C |
| | | 2 DVI-D |
| 17 | Logo | 0 OMRON |
| | | X No display (Industrial Box PC) |

Sysmac Library for AI Controller

Download Sysmac Library for AI Controller to your PC using AI Operator. Install the library before you use it.

| Target Mechanism | Software model | Specification |
|---|--------------------------|---|
| AI Predictive Maintenance Library (Cylinder) | SYSMAC-ZPA001000W | CylinderStatus generates mechanism state variables that reflect the status of the cylinder referenced by the feature value / machine learning functions. |
| AI Predictive Maintenance Library (Ball Screw) | SYSMAC-ZPA002000W | BallScrewStatus generates mechanism state variables that reflect the status of the ball screw referenced by the feature value / machine learning functions. |
| AI Predictive Maintenance Library (Belt & Pulley) | SYSMAC-ZPA003000W | BeltPulleyStatus generates mechanism state variables that reflect the status of the belt & pulley referenced by the feature value / machine learning functions. |

| Target Mechanism | Number of licenses * | Model |
|---|----------------------|--------------------------|
| AI Predictive Maintenance Library (Cylinder) | 5 licenses | SYSMAC-ZPA001005L |
| | 10 licenses | SYSMAC-ZPA001010L |
| | 50 licenses | SYSMAC-ZPA001050L |
| AI Predictive Maintenance Library (Ball Screw) | 5 licenses | SYSMAC-ZPA002005L |
| | 10 licenses | SYSMAC-ZPA002010L |
| | 50 licenses | SYSMAC-ZPA002050L |
| AI Predictive Maintenance Library (Belt & Pulley) | 5 licenses | SYSMAC-ZPA003005L |
| | 10 licenses | SYSMAC-ZPA003010L |
| | 50 licenses | SYSMAC-ZPA003050L |

* One license is required for each mechanism to monitor.

AI Controller Software

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 | Number of licenses | Model |
|-----------------------------------|-----------------------|-------------------------|
| AI Controller Standard Software * | --- (Media only: DVD) | SYSMAC-AICSTE00D |
| | 1 license | SYSMAC-AICSTE01L |
| | 10 licenses | SYSMAC-AICSTE10L |
| | 30 licenses | SYSMAC-AICSTE30L |
| | 50 licenses | SYSMAC-AICSTE50L |

* The AI Controller Standard Software and one license are bundled with the NY AI Controller.

Support Software

| Software Name | Specification |
|---------------|---|
| AI Operator | The AI Operator is a tool to configure AI function settings of the AI Controller as well as to monitor the status. It works on Windows. The AI Operator also provides a function for transferring results of calculation performed by the Feature Value/ Machine Learning Function from the AI Controller to a computer. |
| AI Viewer | The AI Viewer is a tool to visualize feature values and results of equipment events that are output by the Feature Value/Machine Learning Function. It works on Windows. The AI Operator reads out data transferred from the AI Controller and displays it on a computer for the users to view. |

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.

Before programming the AI Controller with Sysmac Studio, you must register your license number of AI Controller Standard Software. For registration procedure, see "Displaying and Registering Licenses" in "Sysmac Studio Version1 Operation Manual (Cat. No. W504)". Refer to the file below for the NY-series AI Controllers:

D:\OMRON-NY\Installers\AI_Controller_Standard_Software\README.txt

| Product name | Specifications | Number of licenses | Media | Model |
|--|---|---------------------|-------|---------------|
| | | | | |
| Sysmac Studio Standard Edition Ver.1.□□ | The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including NJ/NX-series CPU Units, NY-series Industrial PC, EtherCAT Slaves, and HMI. | --- (Media only) | DVD | SYSMAC-SE200D |
| | Sysmac Studio runs on the following OS. 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) 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). For details, refer to your OMRON website. | 1 license *1 | --- | SYSMAC-SE201L |
| Sysmac Studio Team Development Option *2 | Sysmac Studio Team Development Option is a licence to enable the project version control function. | 1 license *1 | --- | SYSMAC-TA401L |

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





*2. This product is a license only. You need the Sysmac Studio Standard Edition DVD media to install it.

This option can be used by applying the Team Development Option to Sysmac Studio version 1.20 or higher.
Project version control function is supported by CPU Unit version 1.16 or later.

Recommended EtherCAT and EtherNet/IP Communications Cables

Use a straight STP (shielded twisted-pair) cable of category 5 or higher with double shielding (aluminum tape and braiding) for EtherCAT. For EtherNet/IP, required specification for the communications cables varies depending on the baud rate. For 100BASE-TX/10BASE-T, use a straight or cross STP (shielded twisted-pair) cable of category 5 or higher. For 1000BASE-T, use a straight or cross STP cable of category 5e or higher with double shielding (aluminum tape and braiding).

Cable with Connectors

| Item | | Recommended manufacturer | Cable length (m) | Model |
|---|--|--------------------------|------------------|----------------------|
| Wire Gauge and Number of Pairs: AWG26, 4-pair Cable Cable Sheath material: LSZH *2 | Cable with Connectors on Both Ends (RJ45/RJ45) Standard RJ45 plug type *1 Cable color: Yellow *3  | OMRON | 0.3 | XS6W-6LSZH8SS30CM-Y |
| | | | 0.5 | XS6W-6LSZH8SS50CM-Y |
| | | | 1 | XS6W-6LSZH8SS100CM-Y |
| | | | 2 | XS6W-6LSZH8SS200CM-Y |
| | | | 3 | XS6W-6LSZH8SS300CM-Y |
| | | | 5 | XS6W-6LSZH8SS500CM-Y |
| Wire Gauge and Number of Pairs: AWG22, 2-pair cable | Cable with Connectors on Both Ends (RJ45/RJ45) Rugged RJ45 plug type *1 Cable color: Light blue  | OMRON | 0.3 | XS5W-T421-AMD-K |
| | | | 0.5 | XS5W-T421-BMD-K |
| | | | 1 | XS5W-T421-CMD-K |
| | | | 2 | XS5W-T421-DMD-K |
| | | | 5 | XS5W-T421-GMD-K |
| | | | 10 | XS5W-T421-JMD-K |
| | Cable with Connectors on Both Ends (M12 Straight/M12 Straight) Shield Strengthening Connector cable *4 M12/Smartclick Connectors Cable color: Black  | OMRON | 0.5 | XS5W-T421-BM2-SS |
| | | | 1 | XS5W-T421-CM2-SS |
| | | | 2 | XS5W-T421-DM2-SS |
| | | | 3 | XS5W-T421-EM2-SS |
| | | | 5 | XS5W-T421-GM2-SS |
| | | | 10 | XS5W-T421-JM2-SS |
| | Cable with Connectors on Both Ends (M12 Straight/RJ45) Shield Strengthening Connector cable *4 M12/Smartclick Connectors Rugged RJ45 plug type Cable color: Black  | OMRON | 0.5 | XS5W-T421-BMC-SS |
| | | | 1 | XS5W-T421-CMC-SS |
| | | | 2 | XS5W-T421-DMC-SS |
| 3 | | | XS5W-T421-EMC-SS | |
| 5 | | | XS5W-T421-GMC-SS | |
| 10 | XS5W-T421-JMC-SS | | | |

*1. Cables with standard RJ45 plugs are available in the following lengths: 0.2 m, 0.3 m, 0.5 m, 1 m, 1.5 m, 2 m, 3 m, 5 m, 7.5 m, 10 m, 15 m, 20 m. Cables with rugged RJ45 plugs are available in the following lengths: 0.3 m, 0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m, 15 m.


For details, refer to the *Industrial Ethernet Connectors Catalog* (Cat. No. G019).

*2. The lineup features Low Smoke Zero Halogen cables for in-cabinet use and PUR cables for out-of-cabinet use. Although the LSZH cable is single shielded, its communications and noise characteristics meet the standards.

*3. Cable colors are available in yellow, green, and blue.

*4. For details, contact your OMRON representative.

Cables / Connectors

| Item | | Recommended manufacturer | Model | |
|--|--|------------------------------|-----------------------------|----------------|
| Products for EtherCAT or EtherNet/IP (1000BASE-T *2/ 100BASE-TX) | Wire Gauge and Number of Pairs: AWG24, 4-pair Cable Cables | Hitachi Cable, Ltd. | NETSTAR-C5E SAB 0.5 × 4P *1 | |
| | | Kuramo Electric Co. | KETH-SB *1 | |
| | | SWCC Showa Cable Systems Co. | FAE-5004 *1 | |
| Products for EtherCAT or EtherNet/IP (100BASE-TX/10BASE-T) | Wire Gauge and Number of Pairs: AWG22, 2-pair Cable Cables | Kuramo Electric Co. | KETH-PSB-OMR *3 | |
| | | JMACS Japan Co., Ltd. | PNET/B *3 | |
| | RJ45 Assembly Connector  | OMRON | | XS6G-T421-1 *3 |
| | | | | |

*1. We recommend you to use the above Cable and RJ45 Connector together.

*2. The products can be used only with the NX701.

*3. We recommend you to use the above Cable and RJ45 Assembly Connector together.

Memory Card

| Use | Access point | Specifications | Model |
|---------------------------|--------------|------------------|---------------|
| Storage for AI Controller | NX701 | SDHC Card, 16 GB | HMC-SD1A1 *1 |
| | NY5□2 | SSD, 128 GB | NY000-AS06 *2 |

*1. This is a storage device for NX701-Z□□□. Do not use it for any other purpose.

*2. It is a dedicated storage device to be inserted into Drive A of an NY5□2-Z□□□ Controller and is used as the expanded storage. Do not use it for any other purpose.

NX701-Z□00 Accessories

The following accessories come with the CPU Unit.

| Item | CPU Unit |
|----------------------------|--|
| | NX701-Z□00 |
| Battery | CJ1W-BAT01 |
| End Cover | NX-END01 (must be attached to the right end of the CPU Rack) |
| End Plate | --- |
| Fan Unit | NX-FAN01 |
| Memory Card (Flash Memory) | HMC-SD1A1 (16 GB) |

NY5□2-Z□00 Accessories

The following accessories come with the IPC Controller.

| Product Name | Specifications | Model |
|------------------------|---|------------|
| SSD (Expanded storage) | It is designed for the Machine Automation Control Software. It cannot be accessed from the Windows operating systems. Drive Bay A is a bay for a connector. | NY000-AS06 |
| SSD (Main storage) | It is designed for the Windows operating systems. It cannot be accessed from the Machine Automation Control Software. Drive Bay B is a bay for a display panel. | NY000-AS04 |
| Battery | One battery is supplied with the Industrial PC. The battery supplies power to the real-time clock. The battery is located inside the Industrial PC. Service life: 5 years at 25°C | CJ1W-BAT01 |
| Fan Unit | The Fan Unit is available for the Industrial PC that has active cooling. Service life: 70,000 hours of continuous operation at 40°C with 15% to 65% relative humidity. Shelf life: 6 months This is the storage limitation with no power supplied. | NY000-AF00 |
| Accessory Kit | Replacement kit containing all accessories supplied with Industrial PC. <ul style="list-style-type: none"> • Power connector • I/O connector • Drive bracket for drive installation • 4 mounting screws for drive installation • PCIe Card support for PCIe Card installation • PCIe Card clip for PCIe Card installation | NY000-AK00 |

NY5□2-Z□00 Optional Hardware

| Product name | Specifications | Model |
|---------------------------------|---|---------------|
| Mounting Brackets *1 | Book mount | NY000-AB00 |
| | Wall mount | NY000-AB01 |
| SD Memory Cards | Card type: SD Card Capacity: 2 GB Format: FAT16 | HMC-SD291 |
| | Card type: SDHC Card Capacity: 4 GB Format: FAT32 | HMC-SD491 |
| USB Flash Drives | Capacity: 2 GB | FZ-MEM2G |
| | Capacity: 8 GB | FZ-MEM8G |
| Storage Devices | Storage type: iMLC Capacity: 128 GB | NY000-AS04 |
| | Storage type: pSLC Capacity: 128 GB | NY000-AS06 |
| USB Type-A to USB Type-B Cables | Cable length: 2 m USB 2.0 Minimum bend radius: 25 mm | FH-VUAB 2M |
| | Cable length: 5 m USB 2.0 Minimum bend radius: 25 mm | FH-VUAB 5M |
| DVI Cables | Cable length: 2 m Supports DVI-D Minimum bend radius: 36 mm | NY000-AC00 2M |
| | Cable length: 5 m Supports DVI-D Minimum bend radius: 36 mm | NY000-AC00 5M |
| Industrial Monitor | LCD touchscreen Multi-touch functionality Supply voltage: 24 VDC Up to 1,280 x 800 pixels at 60 Hz 2 USB Type-A Connectors Programmable brightness control | NYM1□W-C10□□ |
| Power Supply | Output voltage: 24 VDC Push-In Plus terminal blocks | S8VK-S□□□24 |
| UPS *2 | Output voltage during backup operation: 24 VDC ± 5% | S8BA |
| UPS Communication Cable | Cable length: 2 m Signals for Signal output (BL, TR, BU, WB) Remote ON/OFF input UPS Stop Signal input (BS) | S8BW-C02 |

*1. Select the required type. Industrial Box PC type only.

*2. Revision number 04 or higher.

The revision number of the UPS can be retrieved from the serial number label on the product and the product packaging.

A3□ □□□□□□□□ □□ □
 1 2 3 4

| Item | Description |
|------|--------------------------------------|
| 1 | Product code |
| 2 | Product period and sequential number |
| 3 | Revision number |
| 4 | RoHS status |

NY5□2-Z□00 Install Support Software

| Item | Specifications |
|---------------------------------------|--|
| Industrial PC Support Utility | The Industrial PC Support Utility is a software utility to assist in diagnosing and resolving problems of the Industrial PC. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| Industrial PC Tray Utility | The Industrial PC Tray Utility is a software utility that provides information about the current state of the Industrial PC, its related devices, and associated software. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| Industrial PC System API | The Industrial PC System API allows programmers to create programs that can retrieve information or set an indicator status of the Industrial PC. The API makes use of the included IPC System Service to manage the hardware. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| Industrial Monitor Utility | The Industrial Monitor Utility provides a user interface to control settings and display details of connected Industrial Monitors. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| Industrial Monitor Brightness Utility | The Industrial Monitor Brightness Utility is a small software utility that allows you to control the brightness of the screen backlight of all connected Industrial Monitors. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| Industrial Monitor API | The Industrial Monitor API allows programmers to create applications that can control the hardware features and retrieve information from connected Industrial Monitors. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| Industrial PC Rescue Disk Creator | The Industrial PC Rescue Disk Creator creates a USB Rescue Disk which can be used to back-up and restore the Omron IPC Operating System. It is pre-installed on the Industrial Box PC and the Industrial Panel PC. |
| AI Controller Software | An installer used to install the AI Controller Software that is called the AI Viewer and the AI Operator into Windows is saved in the NY-series AI Controllers. |

Specifications Unique to the AI Controllers

Function Specifications of AI Functions

This section describes the AI Controller specifications that are unique to the AI Controllers.

| Item | Description |
|--------------|--|
| AI Functions | Time Series Database Function The Time Series Database Function collects values of user-specified variables and calculation results of the Feature Value/Machine Learning Function into the storage for each sampling interval. This function allows you to collect data such as variable values to the storage without program. The collected data can be checked on the AI Viewer. In addition, the data can be transferred to a web server by the WebAPI Connection Function. |
| | Feature Value/Machine Learning Function The Feature Value/Machine Learning Function determines whether equipment events occur from the collected data and AI machine learning model. It consists of the Feature Extraction Function and the Machine Learning Function. The Feature Extraction Function calculates feature values from data. The Machine Learning Function on the other hand is designed to determine whether equipment events occur from feature values and AI machine learning model. |
| | WebAPI Connection Function The WebAPI Connection Function transmits data (CSV files) that is collected by the Time Series Database Function in the AI Controller to a web server periodically. This function can be used to transfer files that is collected by the Time Series Database Function to a web server and to save and analyze data. Considering that data will be transmitted via Internet, data is encrypted in the transmission path to the web server. |

Time Series Database Function - General specifications

| TimeSeries | Item | Specifications |
|--------------------------|---|--|
| TimeSeries common | Method | Time-series database (It uses a circular queue where the oldest data is deleted if it reaches the maximum number of data.) |
| | Number of TimeSeries | 4 |
| | Sampling start/stop method | It can be executed in any of the following methods: <ul style="list-style-type: none"> AI Operator System-defined variables Instructions |
| | Export start/stop method | It can be executed in any of the following methods: <ul style="list-style-type: none"> AI Operator System-defined variables Instructions |
| | Number of used variables with a Retain attribute | 2 *1 |
| Variable data (RAW_DATA) | Size of the TimeSeries | NX-series: 900 MB NY-series: 41 GB |
| | Number of variables [variables/record] *2 | 1024 |
| | Category of variable | Global variable |
| | Variable type | The following variables can be specified: <ul style="list-style-type: none"> Basic data types Specifying array elements: Specifying members of a structure or a union |
| Analysis data (ANL_DATA) | Size of the TimeSeries database | NX-series: 1 GB NY-series: 30 GB |
| | Number of variables [variables/record] *2 | 2048 (including variable data, frame variables, subframe variables, and label variables) |
| | Category of variable | Global variable |
| | Variable type | The following variables can be specified: <ul style="list-style-type: none"> Basic data types Specifying array elements: Specifying members of a structure or a union |

*1. The Time Series Database Function uses two variables with a Retain attribute in the system. The maximum number of available variables with a Retain attribute is 39,998.

*2. A record refers to a set of data saved in the TimeSeries in a sampling task. It corresponds to a row in the exported CSV file.

Feature Value/Machine Learning Function - General specifications

| Item | | | Specifications | |
|--|---|--|--|-------------|
| Number of equipment events | | | 128 max. | |
| In each equipment event | Frame variables | Number of variables that can be registered | 1 | |
| | | Supported data type | SINT, INT, DINT, LINT, USINT, UINT, UDINT, ULINT | |
| | Feature extraction output frame variables | Number of variables that can be registered | 1 | |
| | | Supported data type | Same types as the frame variables | |
| | Feature value | | Number of variables that can be registered | 16 max. |
| | Per feature value | Variable data | Number of variables that can be registered | 1 |
| | | | Supported data type | LREAL, BOOL |
| | | Subframe variables | Number of variables that can be registered | 1 * |
| | | | Supported data type | BOOL |
| | Machine learning output frame variables | | Number of variables that can be registered | 1 |
| Supported data type | | | Same types as the frame variables | |
| Number of classifications for equipment event monitoring | | | 3 (Normal, Alarm Level 1, Alarm Level 2) | |
| Equipment event detection algorithm | | | isolation forest | |

* Up to six subframe variables can be registered to an equipment event.

WebAPI Connection Function - General specifications

| Item | | | Specifications | |
|---------------------------------------|--|---|---|--|
| Function specifications | Execution trigger | | File transfer can be executed in the period specified by a user on the AI Operator. | |
| | Destination specification | | Specify a URL of the server to which files are transferred. Specify a URL starting with http:// or https://.When you specify https://, SSL/TLS communications are established. | |
| | File deletion after transfer | | Once the file has been transferred to the Web server successfully, the WebAPI Connection Function deletes the file in the AI Controller. | |
| | Connection check function | | To check the connection with the Web server, a file transfer can be triggered by the AI Operator at a given timing. Refer to <i>NX/NY-series Artificial Intelligence Machine Automation Controller User's Manual (Cat. No. W594)</i> for details. | |
| | Transfer specifications | | If there is more than one file to transfer at the transfer timing, all the files are transferred. If the last file transfer is in progress and the next file transfer timing arrives, the execution of the last file transfer continues. | |
| | Transfer protocol | | The file transfer executes in accordance with the RFC1867 procedures. The multipart/form-data in the form is used. The tag name "datafile" is used for the transfer. | |
| Communication specifications | HTTP/HTTPS client | Supported versions | 1.1 | |
| | | DNS | Supported | |
| | | Proxy | Supported | |
| | | Basic authentication | Supported (Basic authentication for the proxy server and Web server connection is supported.) | |
| | Number of files that can be transferred simultaneously | | 3 | |
| | Security (when https:// is specified for the address) | TLS version | | 1.0, 1.1, 1.2 |
| | | Server certificates | | Import the certificates to the AI Controller with the AI Operator. Up to 32 certificates can be set. |
| Revocation check for the certificates | | Revocation is checked by OSCP stapling. | | |

Common Specifications with Standard Models

The specifications of the AI Controller other than the specifications described in *Specifications Unique to the AI Controllers* on page 8 are in common with those of standard CPU Units or IPC Machine Controllers. Refer to the corresponding specifications for each AI Controller model according to the table below.

| AI Controller model | Corresponding standard model |
|---------------------|------------------------------|
| NX701-Z700 | NX701-1700 |
| NX701-Z600 | NX701-1600 |
| NY532-Z500 | NY532-1500 |
| NY532-Z400 | NY532-1400 |
| NY532-Z300 | NY532-1300 |
| NY512-Z500 | NY512-1500 |
| NY512-Z400 | NY512-1400 |
| NY512-Z300 | NY512-1300 |

General Specifications

Refer to the hardware user's manual for general specifications.

- NX-series AI Controller:
NX-series CPU Unit Hardware User's Manual (Cat. No. W535)
- NY-series AI Controller (NY532-Z□□□):
NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W557)
- NY-series AI Controller (NY512-Z□□□):
NY-series Industrial Box PC Hardware User's Manual (Cat. No. W556)

Performance Specifications

Refer to the following manual for the performance specifications.

- NX-series AI Controller:
NJ/NX-series CPU Unit Software User's Manual (Cat. No. W501)
- NY-series AI Controller:
NY-series Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)

Function Specifications

Specifications of non-AI functions are same as those for the standard CPU Units or for the IPC Machine Controllers without the AI functions. Refer to the following manual.

- NX-series AI Controller:
NJ/NX-series CPU Unit Software User's Manual (Cat. No. W501)
- NY-series AI Controller:
NY-series Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)

Related Manuals

| Manual name | Cat. No. | Model numbers | Application | Description |
|--|----------|--|---|--|
| NX-series CPU Unit Hardware User's Manual | W535 | NX701-□□□□ | Learning the basic specifications of the NX701 CPU Units, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided. | An introduction to the entire NX701 system is provided along with the following information on the CPU Unit. <ul style="list-style-type: none"> • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection |
| NJ/NX-series CPU Unit Software User's Manual | W501 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Learning how to program and set up an NJ/NX-series CPU Unit. Mainly software information is provided. | The following information is provided on a Controller built with an NJ/NX-series CPU Unit. <ul style="list-style-type: none"> • CPU Unit operation • CPU Unit features • Initial settings • Programming based on IEC 61131-3 language specifications |
| NJ/NX-series Instructions Reference Manual | W502 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Learning detailed specifications on the basic instructions of an NJ/NX-series CPU Unit. | The instructions in the instruction set (IEC 61131-3 specifications) are described. |
| NJ/NX-series CPU Unit Motion Control User's Manual | W507 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Learning about motion control settings and programming concepts. | The settings and operation of the CPU Unit and programming concepts for motion control are described. |
| NJ/NX-series Motion Control Instructions Reference Manual | W508 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Learning about the specifications of the motion control instructions. | The motion control instructions are described. |
| NJ/NX-series CPU Unit Built-in EtherCAT® Port User's Manual | W505 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Using the built-in EtherCAT port on an NJ/NX-series CPU Unit. | Information on the built-in EtherCAT port is provided. This manual provides an introduction and provides information on the configuration, features, and setup. |
| NJ/NX-series CPU Unit Built-in EtherNet/IP™ Port User's Manual | W506 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Using the built-in EtherNet/IP port on an NJ/NX-series CPU Unit. | Information on the built-in EtherNet/IP port is provided. Information is provided on the basic setup, tag data links, and other features. |
| NX-series CPU Unit FINS Function User's Manual | W596 | NX701-□□□20 NX102-□□□□ | Using the FINS function of an NX-series CPU Unit. | Describes the FINS function of an NX-series CPU Unit. |
| NX/NY-series Artificial Intelligence Machine Automation Controller User's Manual | W594 | NX701-Z□□□ NY532-Z□□□ NY512-Z□□□ | Learning about the NX/NY-series Artificial Intelligence Equipped Machine Automation Controller. | Describes the NX/NY-series Artificial Intelligence Equipped Machine Automation Controller overview, AI function specifications, system start-up, maintenance, and error details. |
| AI Controller Standard Software Operation Manual | W611 | SYSMAC-AIC-STE□□L | Learning an introduction of the AI Controller standard software and how to use it. | An introduction of the AI Controller standard software (AI Operator, AI Viewer), installation procedures, basic operations, connection operations, and operating procedures for main functions are described. |
| Sysmac Library AI Predictive Maintenance Library User's Manual | W610 | SYSMAC-ZPA00□000W | Learning about AI predictive maintenance library and FB specifications. | Information necessary to use AI predictive maintenance library is provided. |
| NJ/NX-series Troubleshooting Manual | W503 | NX701-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□ | Learning about the errors that may be detected in an NJ/NX-series Controller. | Concepts on managing errors that may be detected in an NJ/NX-series Controller and information on individual errors are described. |
| Sysmac Studio Version 1 Operation Manual | W504 | SYSMAC-SE2□□□ | Learning about the operating procedures and functions of the Sysmac Studio. | Describes the operating procedures of the Sysmac Studio. |
| NY-series IPC Machine Controller Industrial Panel PC Hardware User's Manual | W557 | NY532-1□□□ | Learning the basic specifications of the NY-series Industrial Panel PCs, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided. | An introduction to the entire NY-series system is provided along with the following information on the Industrial Panel PC. <ul style="list-style-type: none"> • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection |

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| NY-series IPC Machine Controller Industrial Box PC Hardware User's Manual | W556 | NY512-1□□□ | Learning the basic specifications of the NY-series Industrial Box PCs, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided. | An introduction to the entire NY-series system is provided along with the following information on the Industrial Box PC. <ul style="list-style-type: none"> • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection |
| NY-series IPC Machine Controller Industrial Panel PC/ Industrial Box PC Setup User's Manual | W568 | NY532-1□□□ NY512-1□□□ | Learning about initial setting of the NY-series Industrial PCs and preparations to use Controllers. | The following information is provided on an introduction to the entire NY-series system. <ul style="list-style-type: none"> • Two OS systems • Initial settings • Industrial PC Support Utility • NYCompolet • Industrial PC API • Backup and recovery |
| NY-series IPC Machine Controller Industrial Panel PC/ Industrial Box PC Software User's Manual | W558 | NY532-1□□□ NY512-1□□□ | Learning how to program and set up the Controller functions of an NY-series Industrial PC. | The following information is provided on the NY-series Controller functions. <ul style="list-style-type: none"> • Controller operation • Controller features • Controller settings • Programming based on IEC 61131-3 language specifications |
| NY-series Instructions Reference Manual | W560 | NY532-1□□□ NY512-1□□□ | Learning detailed specifications on the basic instructions of an NY-series Industrial PC. | The instructions in the instruction set (IEC 61131-3 specifications) are described. |
| NY-series IPC Machine Controller Industrial Panel PC/ Industrial Box PC Motion Control User's Manual | W559 | NY532-1□□□ NY512-1□□□ | Learning about motion control settings and programming concepts of an NY-series Industrial PC. | The settings and operation of the Controller and programming concepts for motion control are described. |
| NY-series Motion Control Instructions Reference Manual | W561 | NY532-1□□□ NY512-1□□□ | Learning about the specifications of the motion control instructions of an NY-series Industrial PC. | The motion control instructions are described. |
| NY-series IPC Machine Controller Industrial Panel PC/ Industrial Box PC Built-in EtherCAT® Port User's Manual | W562 | NY532-1□□□ NY512-1□□□ | Using the built-in EtherCAT port in an NY-series Industrial PC. | Information on the built-in EtherCAT port is provided. This manual provides an introduction and provides information on the configuration, features, and setup. |
| NY-series IPC Machine Controller Industrial Panel PC/ Industrial Box PC Built-in EtherNet/IP™ Port User's Manual | W563 | NY532-1□□□ NY512-1□□□ | Using the built-in EtherNet/IP port in an NY-series Industrial PC. | Information on the built-in EtherNet/IP port is provided. Information is provided on the basic setup, tag data links, and other features. |
| NY-series Troubleshooting Manual | W564 | NY532-1□□□ NY512-1□□□ | Learning about the errors that may be detected in an NY-series Industrial PC. | Concepts on managing errors that may be detected in an NY-series Controller and information on individual errors are described. |

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