

AC Servo System

1S Series



HIGH CAPACITY
**UP TO
15kW**

EtherCAT[®]

Optimized installation and setup
Increased machine productivity
Global availability and global conformance

State of the art technology applied to general purpose servo

Improved machine design. Increased machine productivity

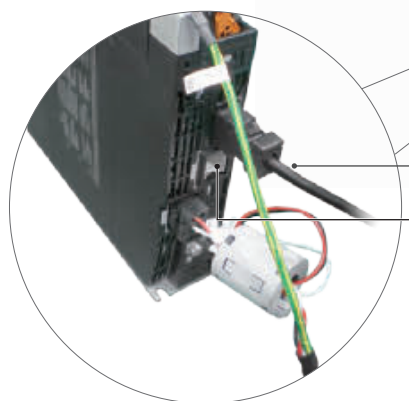
Designed to meet the machine requirements, the 1S servo technology optimizes the full cycle, through the machine design, installation and commissioning tasks and finally to the maintenance once in production. In addition to the traditional motion solution, the 1S servo offers high resolution multi-turn encoder without battery backup, safety network built-in and improved loop control allowing accurate and higher machine productivity.

Capacity range is expanded, but 1S concept can be maintained.

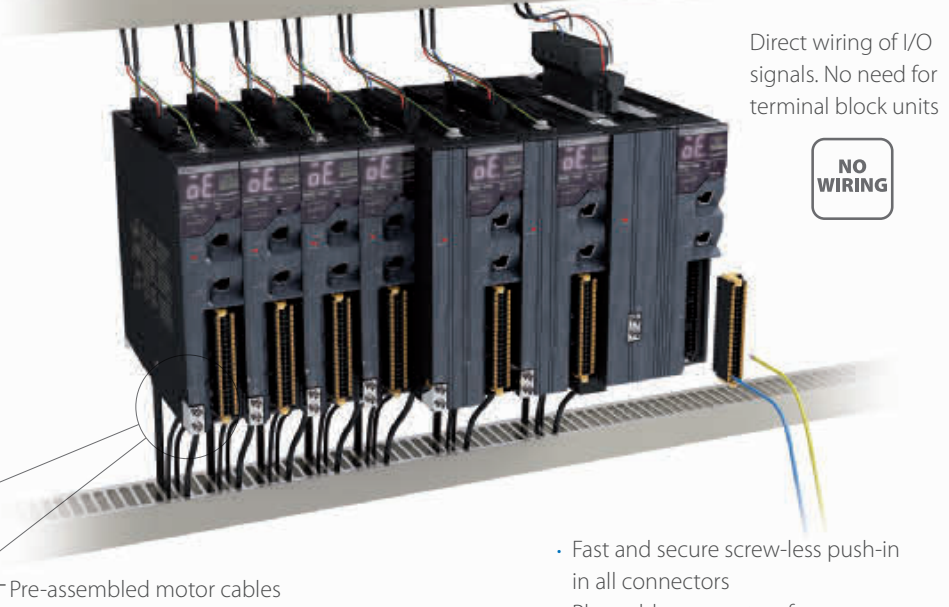
Optimized installation and commissioning tasks

Cabinet size reduction:

- Compact servo drive with same height throughout the power range from 0.1 to 7.5 kW



Pre-assembled motor cables
Embedded relay for direct motor brake control



Direct wiring of I/O signals. No need for terminal block units

NO WIRING

- Fast and secure screw-less push-in in all connectors
- Pluggable connectors for easy pre-wiring and system maintenance *1

Servo features

- Power range from 50 W to 15 kW
- 23 bit high resolution encoder
- Battery-free absolute multi-turn encoder
- Improved loop control for low overshoot and quick settling time
- Safety function built-in:
 - Hardwired Safe Torque Off :
EN ISO 13849-1(Cat.3 PLe), EN61508(SIL3), EN62061(SIL3), EN61800-5-2(STO)
 - Safety over EtherCAT(FSoE) :
EN ISO 13849-1(Cat.3 PLd), EN61508(SIL2), EN62061(SIL2), EN61800-5-2(STO)

NEW Expanded with High Capacity Range: 4 - 15 kW





Simplified machine design and maintenance

- No battery, no maintenance
- No need for homing sequence improving machine uptime
- 23 bit high resolution encoder as standard
- Absolute multi-turn encoder design without mechanics: 16 bits, 65536 turns
- Compact and smaller motor size

50% setup time reduction*2



Servo sizing

- Servo sizing tool for the entire machine
- Graphical environment of the kinematic chain
- Electronic CAM import from Sysmac Studio

Save 40% *2



System configuration

- NJ project auto-builder from servo sizing file
- Quick setup wizard for key parameters
- Parameters transfer in less than 400 ms

Save 60% *2



Gain tuning & test run

- "Best effort" feature for quick stabilization time
- Easy tuning with intelligent gain search in less than 2 minutes
- Wizard for tuning, test run & monitoring
- Advanced tuning simulation to reduce testing effort and prevent machine damage

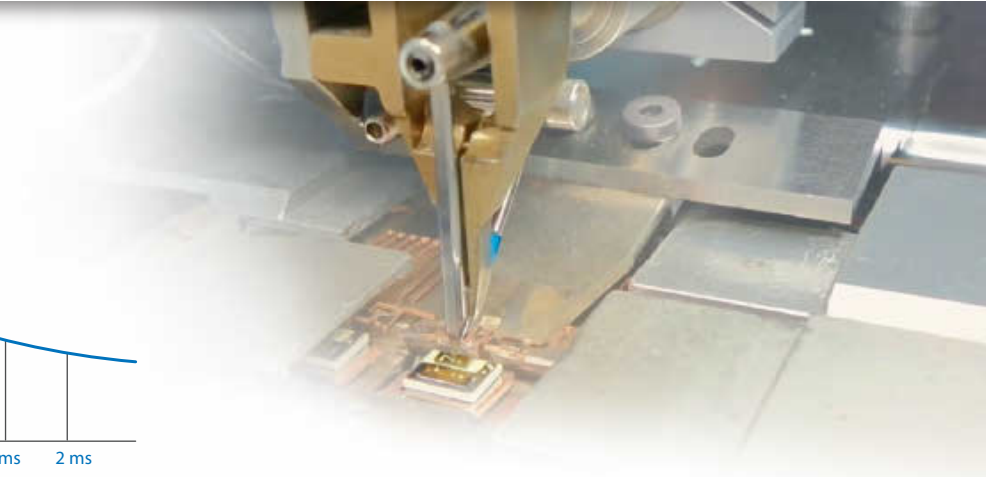
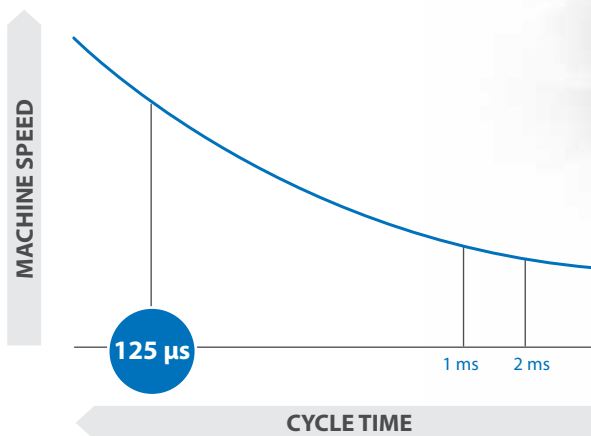
Save 50% *2

PATENT PENDING

*1. Except 15 kW (200 V)

*2. Performance comparison with previous Omron products based on Omron investigation in July 2019.

Totally integrated, totally in control



HIGHER PRODUCTIVITY

125 μs system cycle

- Faster machine speed keeping same accuracy
- Accurate profile generation in the controller
- The 23 bit high resolution encoder in combination with the improved loop control provide an accurate following profile

EtherNet/IP™



NJ/NX series Machine Controller

EtherCAT®

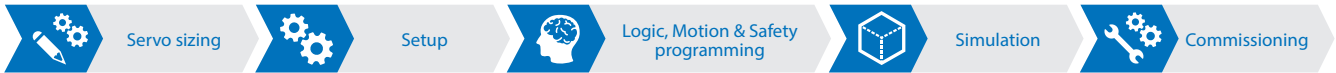


NX Safety

INTEGRATED SAFETY

Safety control via EtherCAT

- Simplified safety installation
- Reduction of safety devices
- Safety function built-in: Fail Safe over EtherCAT (FSoE) Safe Torque Off
- Safety approval: EN ISO 13849-1(Cat.3 PLd), EN61508(SIL2), EN62061(SIL2), EN61800-5-2(STO)
- Troubleshooter integrated with Sysmac Studio



TOTALLY IN CONTROL



Sysmac Studio

- Simplified servo setup: Direct use of servo sizing calculation
- 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

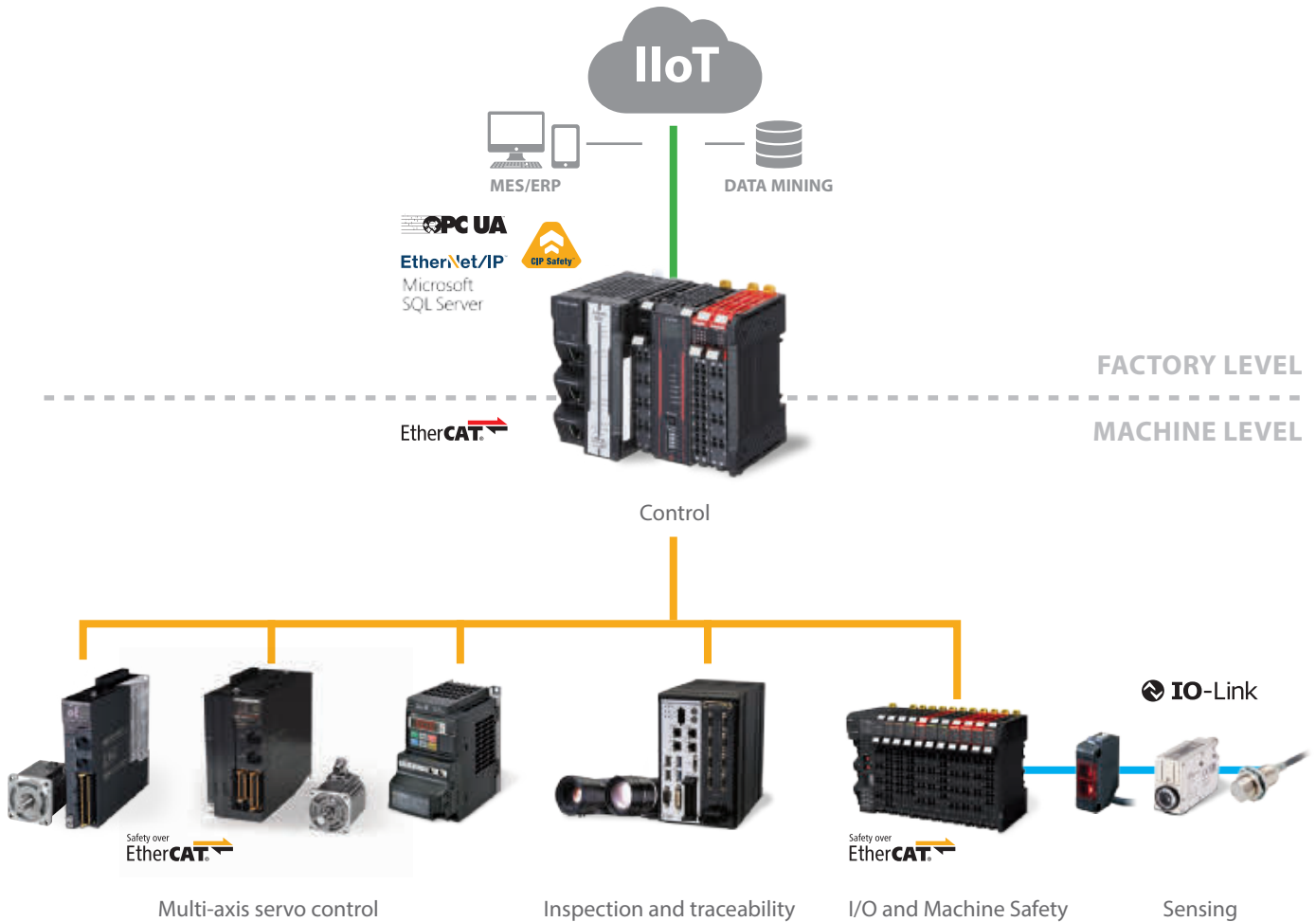


Safety over
EtherCAT®

1S Servo



Sysmac Automation Platform



Software



Sysmac Studio, the integrated software

- One single tool for logic sequence, motion, safety, robotics, vision and HMI
- Fully compliant with open standard IEC 61131-3
- PLCopen Function Blocks for Motion and Safety
- Supports Ladder, Structured Text and In-Line ST programming with a rich instruction set
- CAM editor for easy programming of complex motion profiles
- Database Connectivity Function Block library

Sysmac Library

- The Sysmac Library is a collection of software functional components that can be used in programs for the NJ/NX Machine Automation Controllers. Sample programs and HMI screen samples are also available.



Please download it from following URL and install to Sysmac Studio. http://www.ia.omron.com/sysmac_library/

Sysmac servo family

Machine Controller



The NX-series Safety Network Controller connected with the NX1 Machine Controller enables the use of both EtherNet/IP + CIP Safety and EtherCAT + FSoE at the same time.

NJ/NX series

- Logic sequence, Motion, Safety, Robotics and Database connection functionality
- Scalable motion control: CPUs from 2 up to 256 axes
- IEC 61131-3 controller
- PLCopen Function Blocks for Motion Control and Safety
- Advanced motion with Robotics functionality
- Built-in EtherCAT and EtherNet/IP ports

Motion



1S Motion Safety servo Available soon

- Servo drive for rotary motors
- Up to 3kW
- Battery-free absolute multi-turn encoder
- Advanced safety functions: STO/SS1/SS2/SOS/SLS/SLP/SDI/SBC
- Servo drive for rotary motors with one cable connection



1S Servo System - General purpose servo

- Servo drive for rotary motors
- Up to 15kW
- Battery-free absolute multi-turn encoder
- Safety function: STO



G5 Servo System

- Servo drive for rotary or linear motors
- Rotary motor: Up to 15 kW
- Iron-core and Ironless linear motor models: Up to 2100 N peak force
- Safety function: STO (Hardwired Safe Torque Off only)
- Full closed loop control

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

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