Omron Robot Control Library

**SYSMAC-XR009**

**Omron Robot Control Library**

- **Install and manage robots easily.**
  - **Issue 1:** There is no time to learn a new robot programming language.
  - **Issue 2:** Controller data and robot data are backed up and managed separately.

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**Omron Robot Control Library offers solution!**

The Omron Robot Control Library allows parallel, SCARA, and articulated robots manufactured by Omron Robotics and Safety Technologies, Inc. to be controlled directly from the NJ/NX/NY Controller by using the same instructions and programming method as the controller.

Function Blocks in this library enable robot control using Ladder and ST that are the programming languages used for the NJ/NX CPU Unit and the NY Industrial PC Platform, eliminating the need to learn a new robot programming language.

The NJ/NX CPU Unit and the NY Industrial PC Platform integrates robot system control and data management.

"Simplicity" that only industrial automation manufacturer Omron can achieve

You can easily connect robots, controller, and other devices and control robots directly from the NJ/NX/NY Controller.

Data collected from devices can be visualized.
Example of combination of controller and robot

From

Programming requires knowledge of controller and robot.

- Knowledge of both controller and robot
- I/O connection to network used for robot controller
- Separate programming and data backup

To

The same programming language is used for controller and robot control.

- Programming only for NJ/NX/NY Controller
- Integrated programming and data management for easy troubleshooting
**Compatible Models**

<table>
<thead>
<tr>
<th>Name</th>
<th>Model</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Automation Controller NJ/NX CPU Unit</td>
<td>NX701-1/102/NJ101-102</td>
<td>Version 1.10 or later</td>
</tr>
<tr>
<td></td>
<td>NX501-2/102/NJ301-102</td>
<td>Version 1.01 or later</td>
</tr>
<tr>
<td></td>
<td>NX1P2-1/102/NJ1301-102</td>
<td>Version 1.13 or later</td>
</tr>
<tr>
<td></td>
<td>NX102-2/102/NJ1302-102</td>
<td>Version 1.30 or later</td>
</tr>
<tr>
<td>Industrial PC Platform NY IPC Machine Controller</td>
<td>NYS5-1</td>
<td>Version 1.12 or later</td>
</tr>
<tr>
<td></td>
<td>NYS5-5</td>
<td>Version 1.18 or later</td>
</tr>
<tr>
<td>Automation Software Symsac Studio</td>
<td>SYMAC-SE2</td>
<td>Version 1.15 or higher</td>
</tr>
<tr>
<td>Parallel Robot</td>
<td>Hornet 565</td>
<td>Version 2.3.C or later</td>
</tr>
<tr>
<td></td>
<td>Quattro 650H/HS, 800H</td>
<td>Version 2.3.C or later</td>
</tr>
<tr>
<td>SCARA Robot</td>
<td>eCobra 600/800</td>
<td>Version 2.3.C or later</td>
</tr>
<tr>
<td></td>
<td>Cobra 450/500/650</td>
<td>-</td>
</tr>
<tr>
<td>Articulated Robot</td>
<td>Viper 650/850</td>
<td>Version 2.3.C or later</td>
</tr>
</tbody>
</table>

**Function Block (FB) Specifications**

<table>
<thead>
<tr>
<th>Name</th>
<th>FB name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Tool Trans</td>
<td>ARB_SetToolTransform</td>
<td>Sets a tool system transformation to the robot.</td>
</tr>
<tr>
<td>Reset Tool Transform</td>
<td>ARB_ResetToolTransform</td>
<td>Resets the robot tool which is set to the robot.</td>
</tr>
<tr>
<td>Define Location</td>
<td>ARB_DefineLocation</td>
<td>Defines a position in the robot.</td>
</tr>
<tr>
<td>Define Pallet</td>
<td>ARB_DefinePallet</td>
<td>Defines all pallet information in the robot.</td>
</tr>
<tr>
<td>Reset Error</td>
<td>ARB_ResetRobotError</td>
<td>Resets any existing error in the robot.</td>
</tr>
<tr>
<td>Robot Control</td>
<td>ARB_RobotControl</td>
<td>Controls the main robot settings and monitors the robot status.</td>
</tr>
<tr>
<td>Teach Position</td>
<td>ARB_TeachPosition</td>
<td>Teaches the current robot position and configuration.</td>
</tr>
<tr>
<td>Input Output Signals</td>
<td>ARB_InputOutputSignals</td>
<td>Communicates with the robot through its digital inputs and outputs.</td>
</tr>
<tr>
<td>Teach Pendant Control</td>
<td>ARB_TeachPendantControl</td>
<td>Sends and receives information from the manual control pendant attached to the robot.</td>
</tr>
<tr>
<td>Read Latch</td>
<td>ARB_ReadLatch</td>
<td>Outputs the current robot position when an external trigger is input.</td>
</tr>
<tr>
<td>Move</td>
<td>ARB_MoveCommand</td>
<td>Moves the robot to a target position using a linear interpolation or PTP operation.</td>
</tr>
<tr>
<td>Pick And Place</td>
<td>ARB_PickAndPlaceCommand</td>
<td>Moves the robot to a target position in a three-part motion.</td>
</tr>
<tr>
<td>Jog</td>
<td>ARB_Jog</td>
<td>Moves the specified joint or axis of the robot.</td>
</tr>
<tr>
<td>Align Tool Command*</td>
<td>ARB_AlignToolCommand</td>
<td>Rotates the tool to be aligned with the world coordinate system.</td>
</tr>
<tr>
<td>Move Arc Command*</td>
<td>ARB_MoveArcCommand</td>
<td>Moves the robot to the specified target position along arc trajectory.</td>
</tr>
<tr>
<td>Move Circular Command*</td>
<td>ARB_MoveCircularCommand</td>
<td>Moves the robot along a circular trajectory, passing specified two positions.</td>
</tr>
<tr>
<td>Define Belt*</td>
<td>ARB_DefineBelt</td>
<td>Defines a conveyor belt.</td>
</tr>
<tr>
<td>Belt Read Latch*</td>
<td>ARB_BeltReadLatch</td>
<td>Outputs the belt encoder value of the conveyor when an external trigger is input.</td>
</tr>
<tr>
<td>Track Belt*</td>
<td>ARB_TrackBelt</td>
<td>Enables tracking a workpiece.</td>
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</tbody>
</table>

*Supported only by the Adept Robot Control Library version 2.00 or higher.

**Note:** Do not use this document to operate the Unit.
Controllers & I/O
- Machine Automation Controllers (MAC) • Motion Controllers • Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Robotics
- Industrial Robots • Mobile Robots

Operator Interfaces
- Human Machine Interface (HMI)

Motion & Drives
- Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems • Frequency Inverters

Vision, Measurement & Identification
- Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing
- Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors • Rotary Encoders • Ultrasonic Sensors

Safety
- Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems • Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices • Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components
- Power Supplies • Timers • Counters • Programmable Relays • Digital Panel Meters • Monitoring Products

Switches & Relays
- Limit Switches • Pushbutton Switches • Electromechanical Relays • Solid State Relays

Software
- Programming & Configuration • Runtime