

NO: PC-332 **PRODUCT:** NJ/NX Series CPU Firmware
DATE: July 2016 **TYPE:** Modification Notice

NJ/NX Series CPU Firmware Version 1.12 Supports I/O-Link, Function Blocks in Sysmac Studio Version 1.16 or Later

Effective date: July 2016 CPU production

Reason for modification: Add support for IO-Link Master Units GX-ILM08C and NX-ILM400, new data combination functions for built-in EtherNet/IP capability, and improve TCP communications. This upgrade is intended to improve the performance and usability of the controllers.



Affected Parts

Series	Type	Model	Firmware Version
NX701	Standard	NX701-1600//1700	1.12.00
NJ501	Standard	NJ501-1300/1400/1500	1.12.00
	Database	NJ501-1320/-1420/1520	1.12.00
	SECS	NJ501-1340	1.12.00
	Robot	NJ501-4300/4400/4500/4310	1.12.00
	Robot & DB	NJ501-4320	1.12.00
NJ301	Standard	NJ301-1100/1200	1.12.00
NJ101	Standard	NJ101-1000/9000	1.12.00
	Database	NJ101-1020/9020	1.12.00

Functions Supported by Firmware Version 1.12

The following IO-Link Master Units are now supported by Sysmac Platform NX/NJ CPUs.

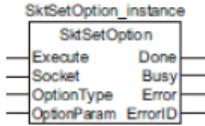
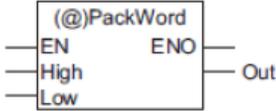
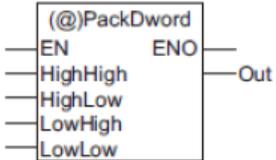
- NX-ILM400 (IP20)
- GX-ILM08C (IP67)

New Instructions

Function	Value we can provide	Remarks
Read and Write IO-Link Device Object instructions	Enables reading and writing configurations of IO-Link devices from the user program, and realizes easy setup for sensors and other devices.	See details of IO-Link on the MyDashboard IO-Link launch landing page.
2- or 4-byte Join instruction	Joins byte data. Convenient when dealing with large data which require multiple bytes from IO-Link devices (such as light receiving amount on the color mark sensor).	This function will be explained when IO-Link system products are introduced.
Set TCP Socket Option instruction	Realizes TCP communications which require real-time performance, by switching enable or disable of Nagle algorithm with this instruction.	--

Before the change	After the change																																
<p>Functional enhancement The version of the firmware is upgraded to enhance the functions as described on the right.</p>	<p>< New functions > The instructions for the IO-Link Master Units are added. When the following instructions are used, the data of objects for the IO-Link Devices can be read and written. *</p> <p>IOL_ReadObj IOL_WriteObj</p> <div style="text-align: center;"> <p>IOL_ReadObj_instance</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="2" style="text-align: center;">IOL_ReadObj</td></tr> <tr><td>Execute</td><td>Done</td></tr> <tr><td>DevicePort</td><td>Busy</td></tr> <tr><td>DeviceObj</td><td>Error</td></tr> <tr><td>RetryCfg</td><td>ErrorID</td></tr> <tr><td>ReadDat</td><td></td></tr> <tr><td colspan="2" style="text-align: center;">-----</td></tr> <tr><td></td><td>ErrorType</td></tr> <tr><td></td><td>ReadSize</td></tr> </table> <p>IOL_WriteObj_instance</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="2" style="text-align: center;">IOL_WriteObj</td></tr> <tr><td>Execute</td><td>Done</td></tr> <tr><td>DevicePort</td><td>Busy</td></tr> <tr><td>DeviceObj</td><td>Error</td></tr> <tr><td>RetryCfg</td><td>ErrorID</td></tr> <tr><td>WriteDat</td><td>ErrorType</td></tr> <tr><td>WriteSize</td><td></td></tr> </table> </div>	IOL_ReadObj		Execute	Done	DevicePort	Busy	DeviceObj	Error	RetryCfg	ErrorID	ReadDat		-----			ErrorType		ReadSize	IOL_WriteObj		Execute	Done	DevicePort	Busy	DeviceObj	Error	RetryCfg	ErrorID	WriteDat	ErrorType	WriteSize	
IOL_ReadObj																																	
Execute	Done																																
DevicePort	Busy																																
DeviceObj	Error																																
RetryCfg	ErrorID																																
ReadDat																																	

	ErrorType																																
	ReadSize																																
IOL_WriteObj																																	
Execute	Done																																
DevicePort	Busy																																
DeviceObj	Error																																
RetryCfg	ErrorID																																
WriteDat	ErrorType																																
WriteSize																																	

Before the change	After the change
	<p>< New functions ></p> <p>The instruction for the built-in EtherNet/IP is added.</p> <p>When the following instructions are used, the TCP_NODELAY option can be set. *</p> <p>SktSetOption</p>  <p>The instructions for the data conversion are added.</p> <p>The PackWord instruction joins two 1-byte data into a 2-byte data. And the PackDword instruction joins four 1-byte data into a 4-byte data. *</p> <p>PackWord PackDword</p>   <p>* The above can be used in combination with Ver.1.16 or later of Sysmac Studio.</p>
<p>Change in display of unit version on the label Ver.1.11</p>  <p>(Example: NJ501-1500)</p>	<p>Ver.1.12</p>  <p>(Example: NJ501-1500)</p>
<p>Change in display of unit version on the packaging Ver.1.11</p>	<p>Ver.1.12</p>