

FASTECH

Fast, Accurate, Smooth Motion Control

Ezi-SERVOII-EC 기초 사용법

< Parker 'PAC'편 >



Ezi-SERVO[®]
Closed Loop Stepping System

■ Ezi-SERVOII-EC 관련 자료 Down [Manual]

□ Manual : www.fastech.co.kr 홈페이지 [제품정보]에서 다운로드

FASTECH
Fast, Accurate, Smooth Motion

회사소개 제품정보 제품동영상 전시회안내 해외판매망 파스텍 자료실 FAQ 온라인상담

Fast, Accurate and Smooth Motion Control Technology
together with always constant mind

FASTECH products can be found driving applications such as: LCD/LED Manufacturing, Semi-conductor fabrication, Assembly machines, Packaging machines, Medical diagnostic equipment, Laboratory apparatus, Vision Inspection systems and many other applications that require precise smooth movement. Fastech drives have industry standard NEMA mounting flanges and easily adapt to most linear actuators and precision stages.

SEARCH 검색

제품정보
Product Information

- 파스텍 제품특성
- Ezi-SERVO series
- Ezi-STEP series
- Ezi-LinearStep series
- Ezi-Robo series
- S-SERVO series
- Ezi-MotionNetwork series
- Ezi-Motionlink series

Ezi-SERVO II EtherCAT
Closed Loop Stepping System

EtherCAT CE
Conformance tested

Ezi-SERVO II EtherCAT은 FASTECH의 페루프 스텝 모터제어 시스템과 Ethernet 기반의 Fieldbus인 EtherCAT을 결합한 시스템입니다. Ezi-SERVO II EtherCAT은 CiA402 Drive Profile을 지원합니다.

Click

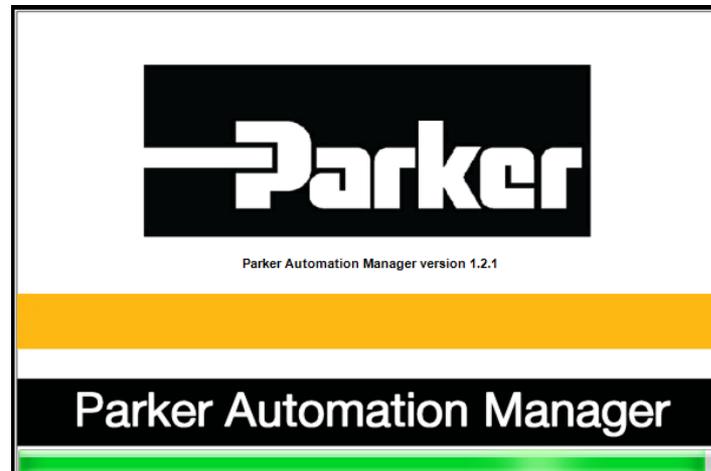
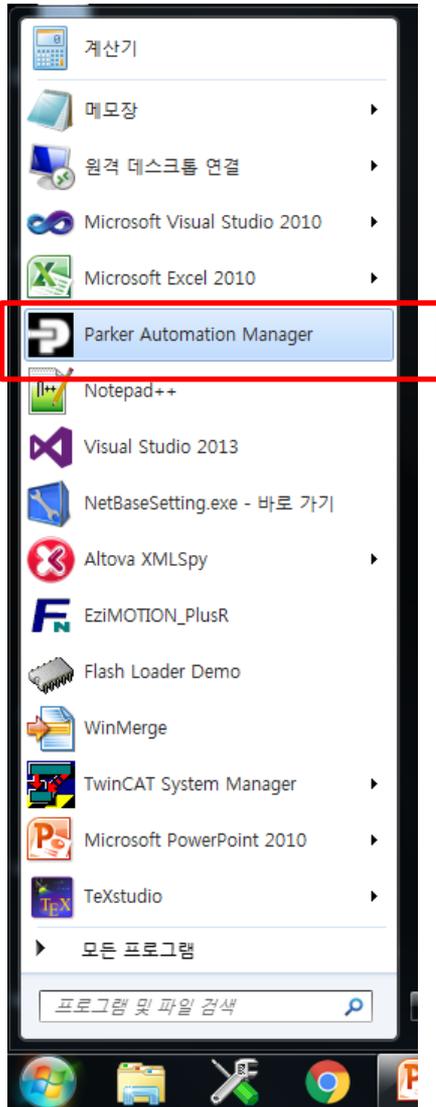
- CiA 402 Drive Profile Support
- Closed Loop Stepping System
- No Gain Tuning / No Hunting
- Torque Improvement by Boost Current Control

제품사양 제품형명 및 도면 카탈로그 메뉴얼

Closed Loop Stepping System

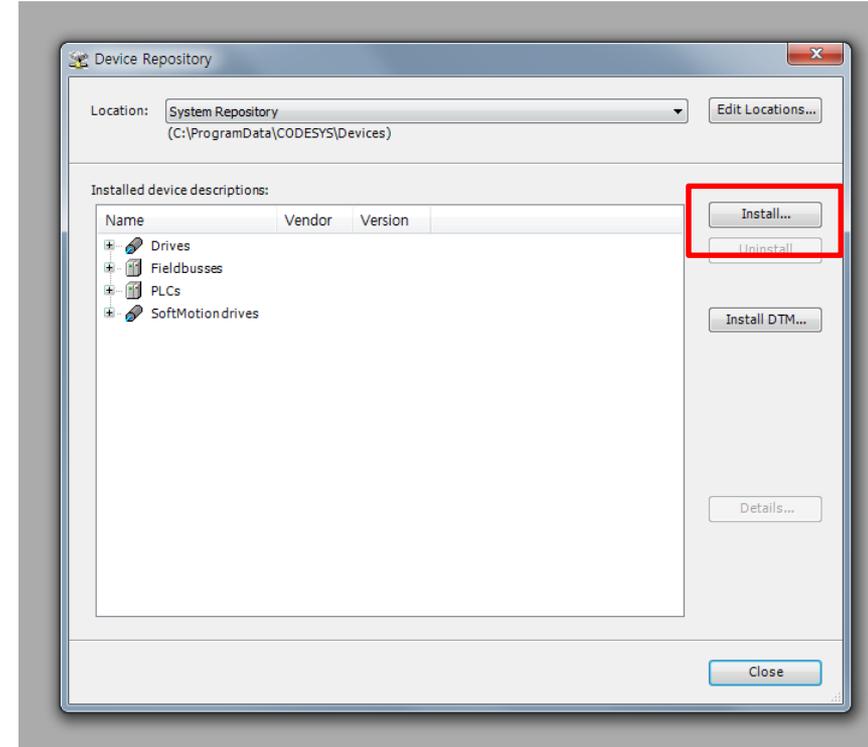
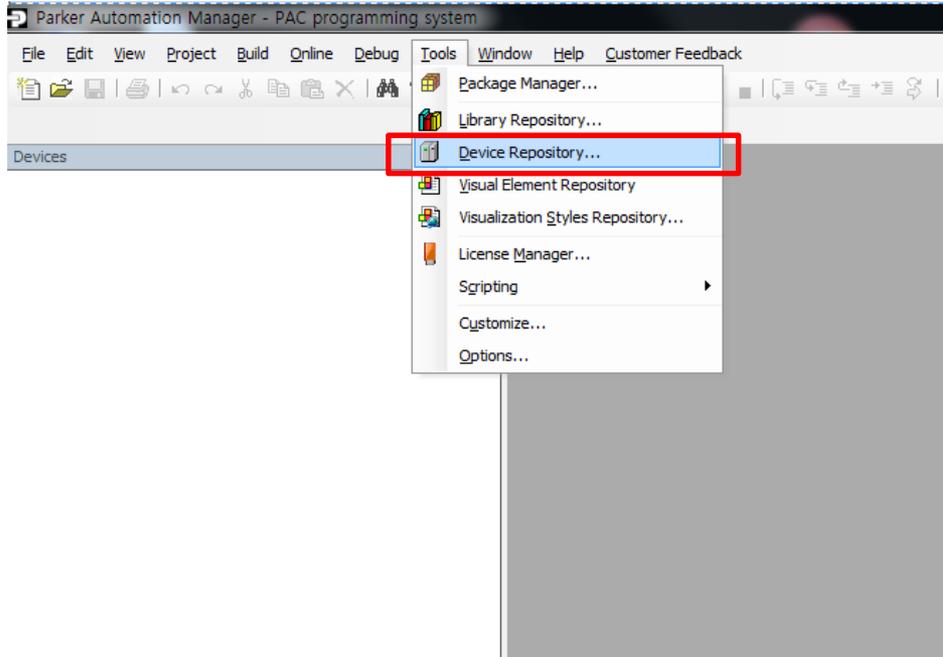
ESI(XML) 저장

Parker Automation Manager 실행



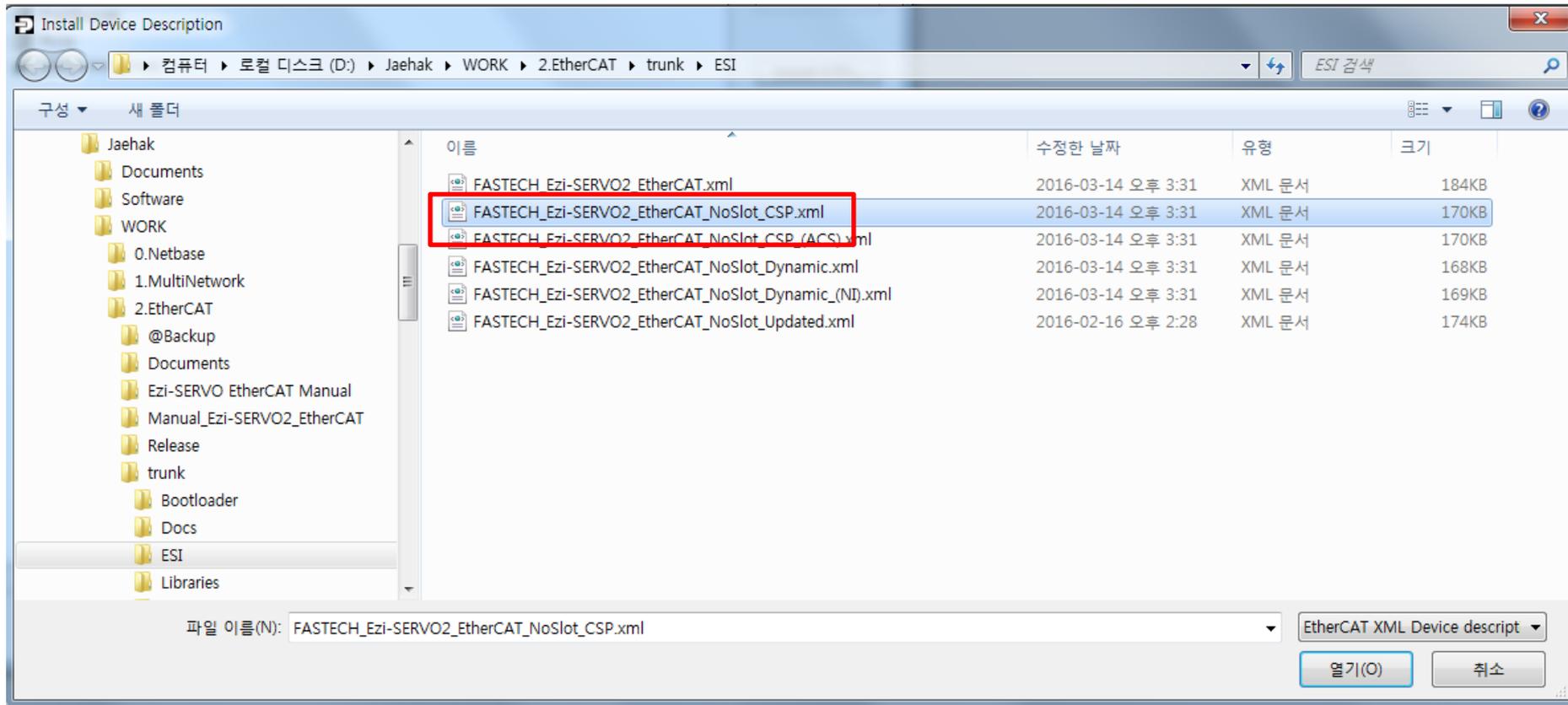
ESI(XML) 저장

Tools 의 Device Repository 클릭 후 Install 클릭



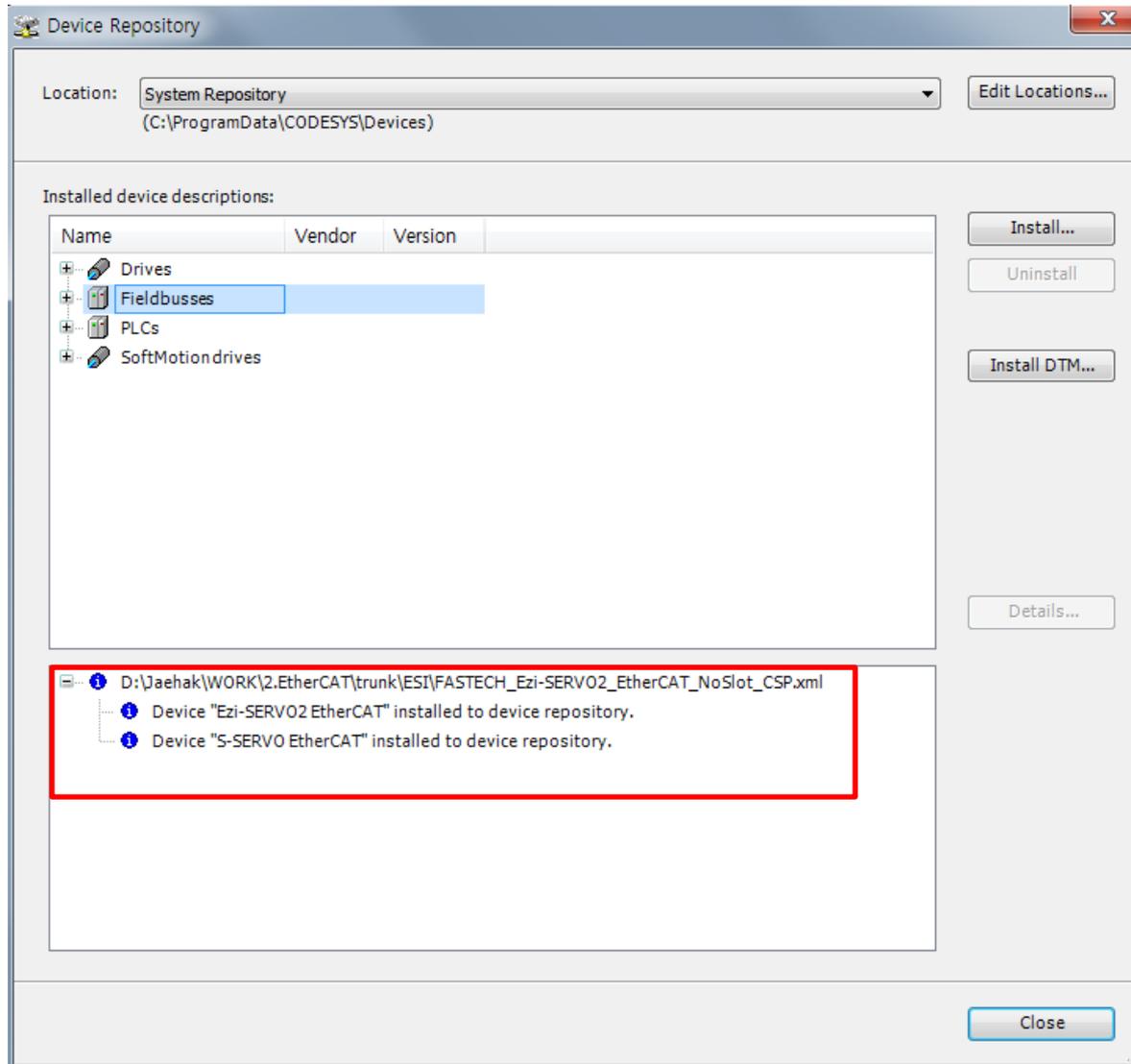
ESI(XML) 저장

FASTECH_Ezi-SERVO2_EtherCAT_NoSlot_CSP.xml 파일 클릭 후 열기



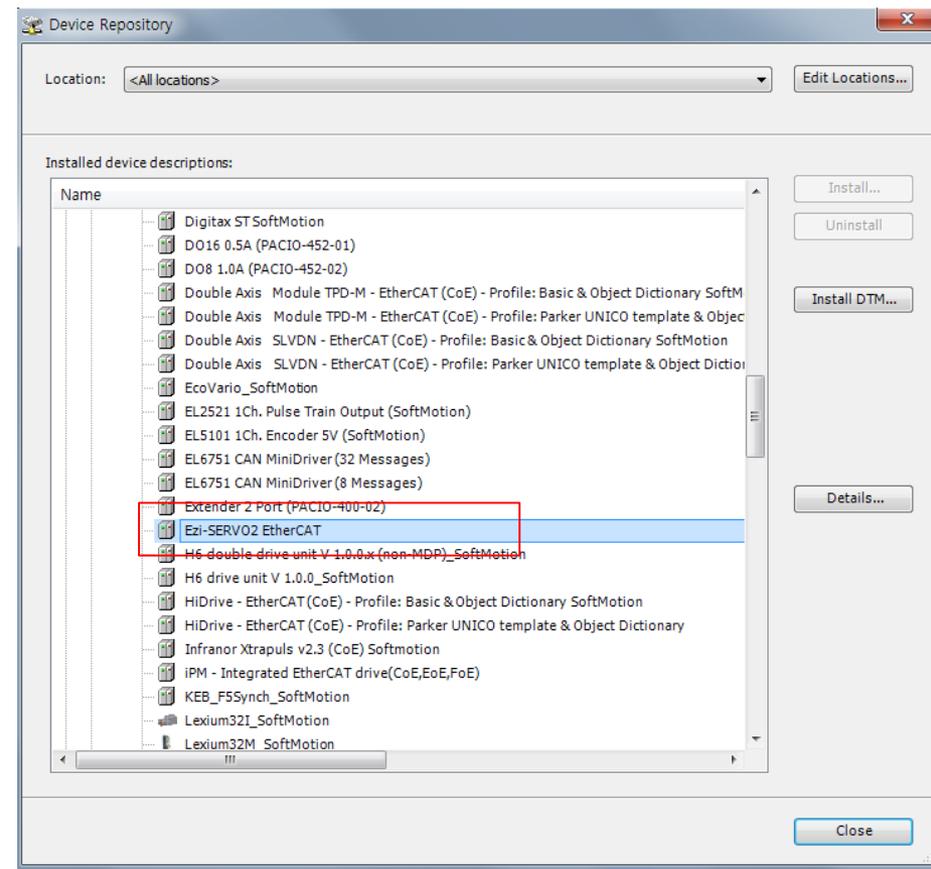
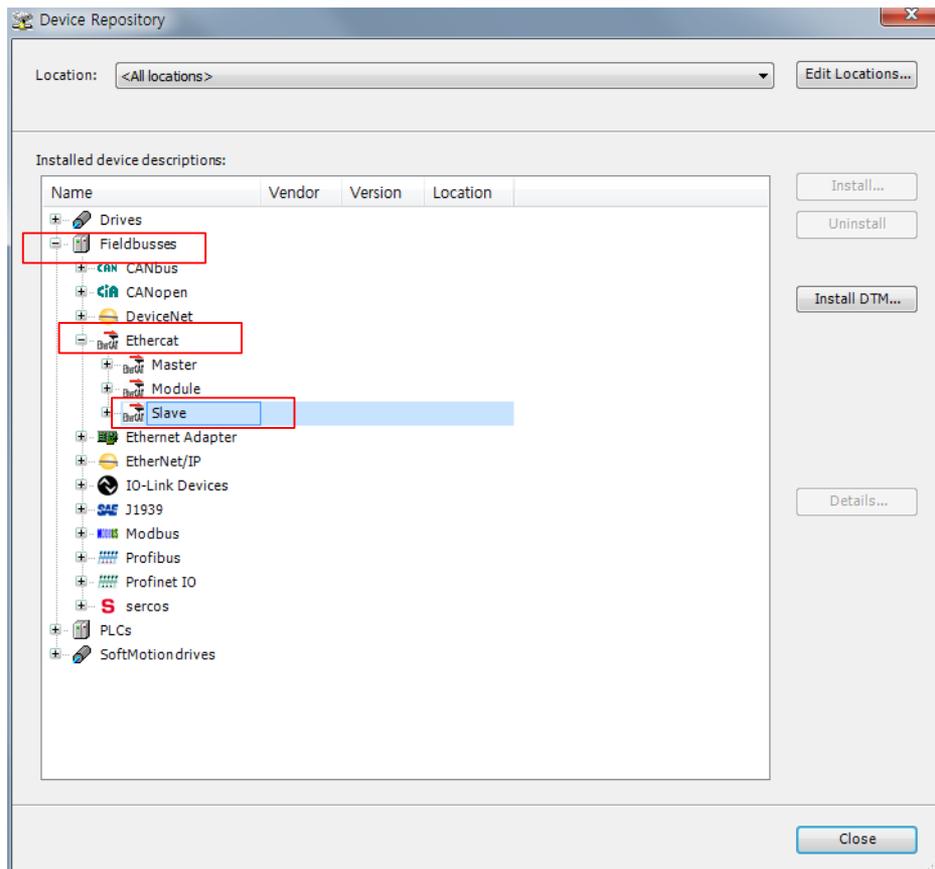
ESI(XML) 저장

- 다음과 같이 xml 파일이 저장됨을 확인



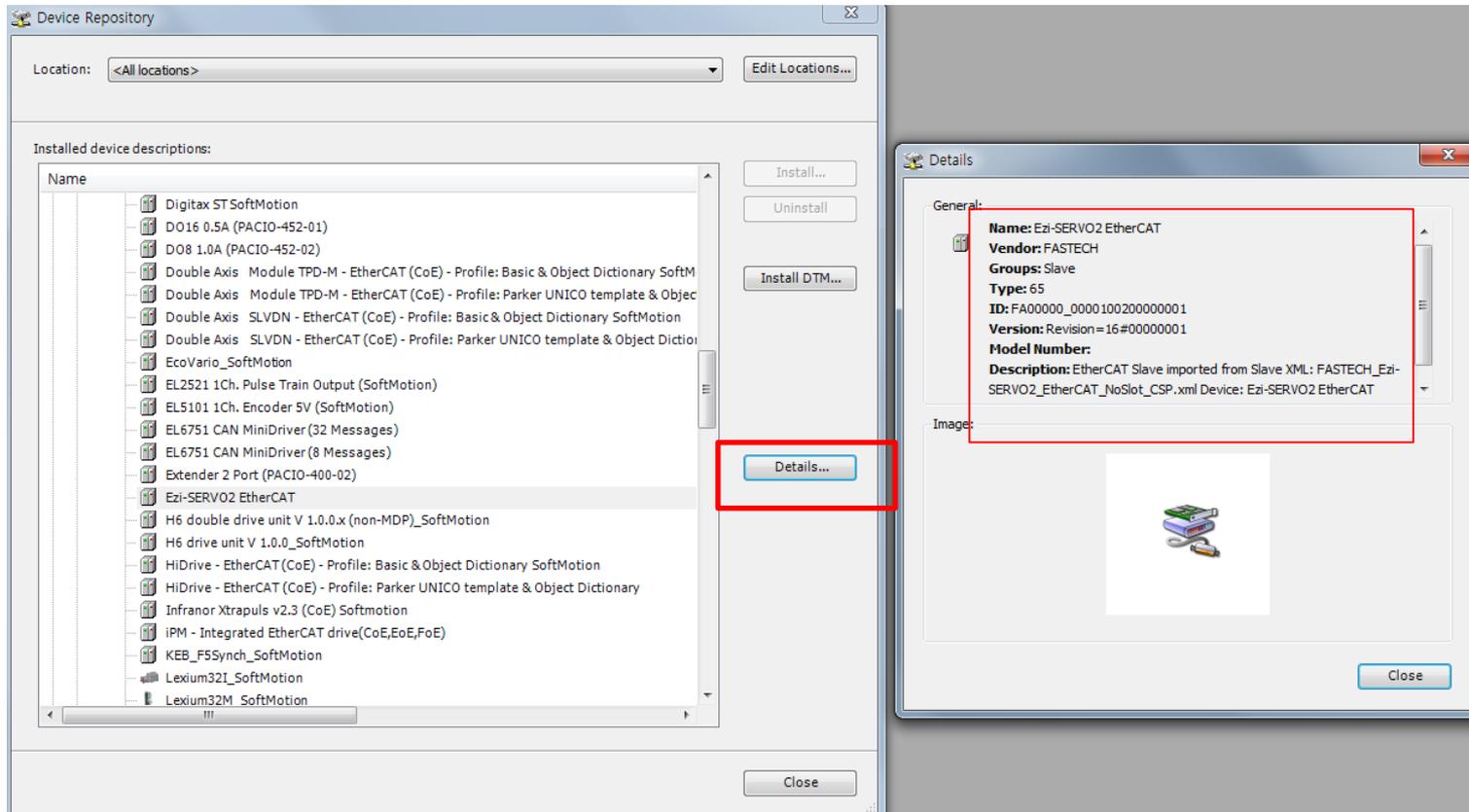
ESI(XML) 저장

- Xml 파일 경로는 아래와 같이 확인 가능
Fieldbusses – EtherCAT – Slave – Ezi-SERVO II EtherCAT



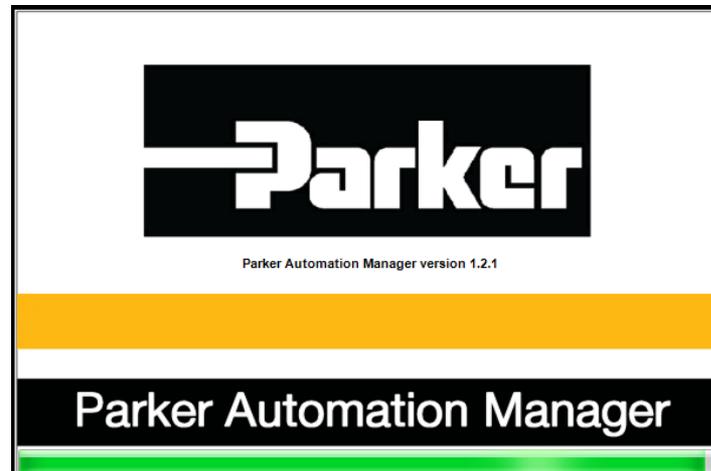
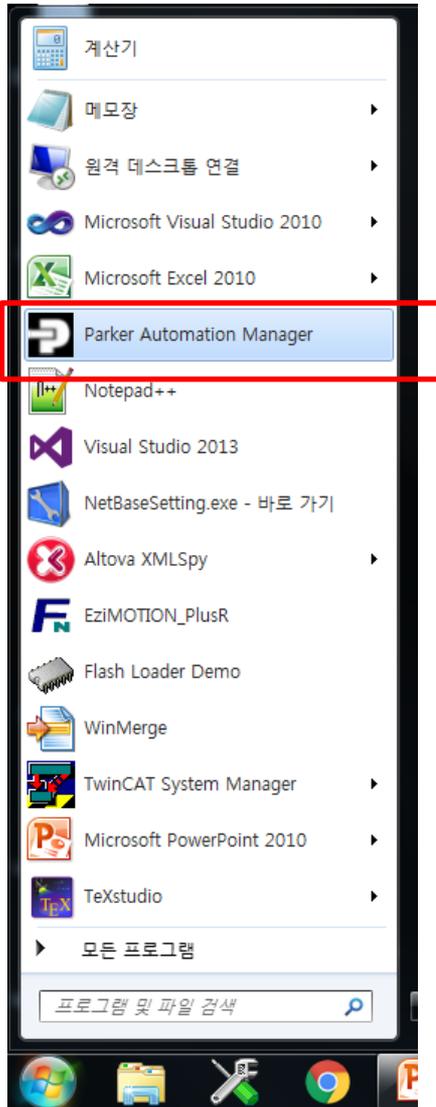
ESI(XML) 저장

- Details 를 클릭하면 오른쪽과 같이 정보 확인 가능



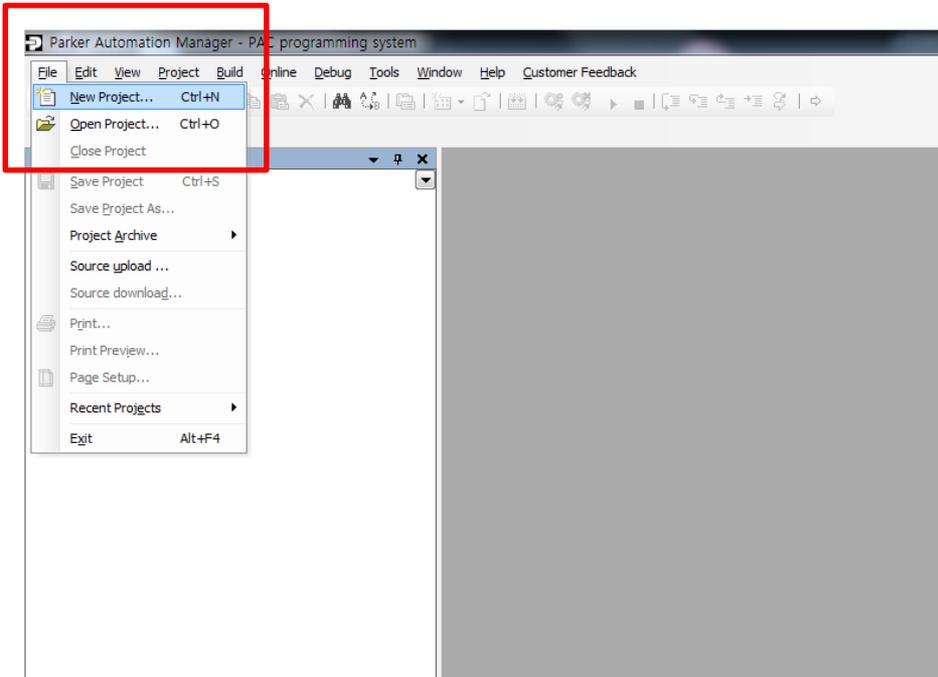
마스터와의 연결

Parker Automation Manager 실행

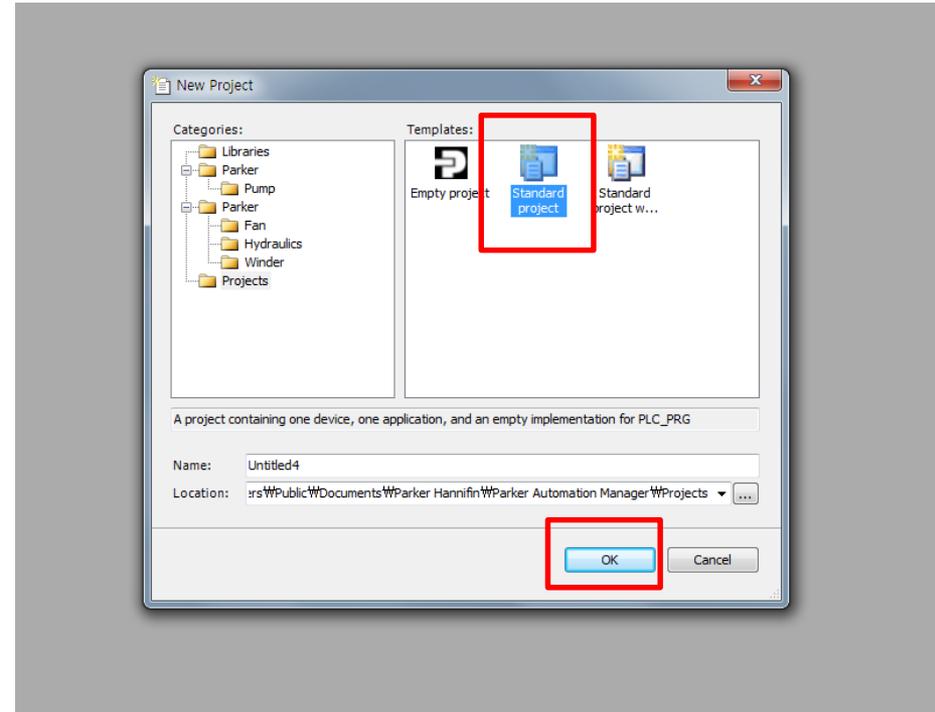


마스터와의 연결

File - New Project 클릭

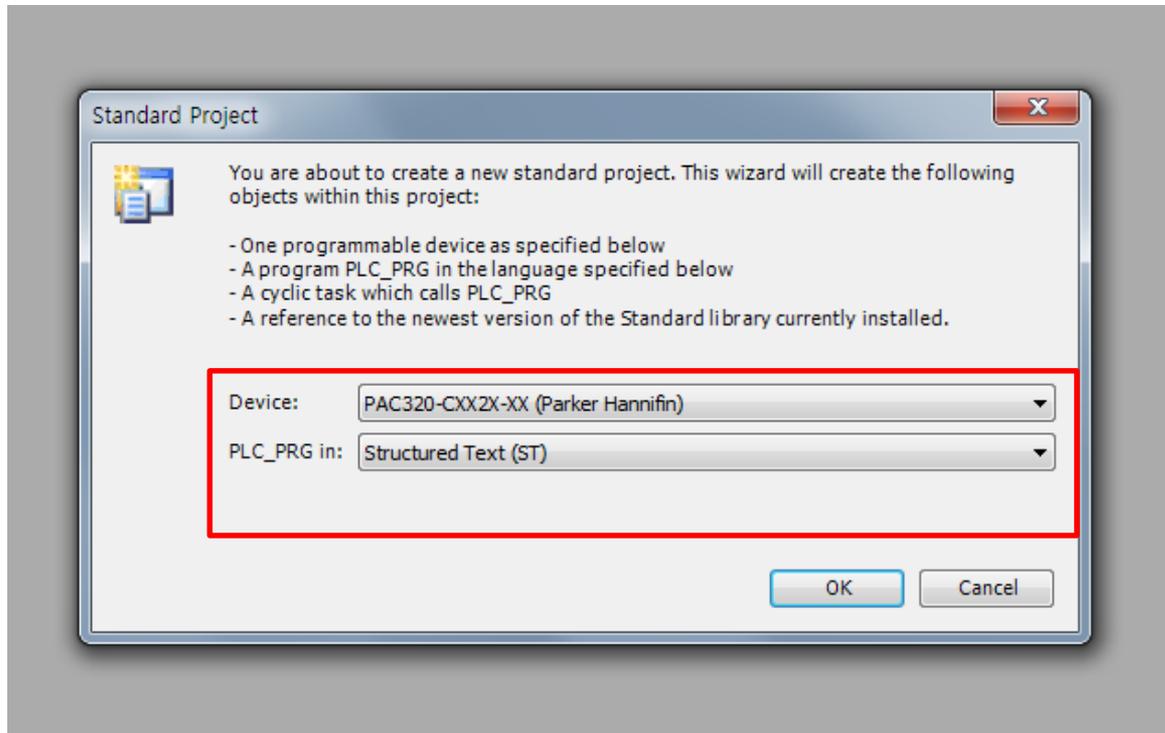


Standard project 클릭,
파일명 지정 후 OK 클릭
(파일명은 임의대로 작성)



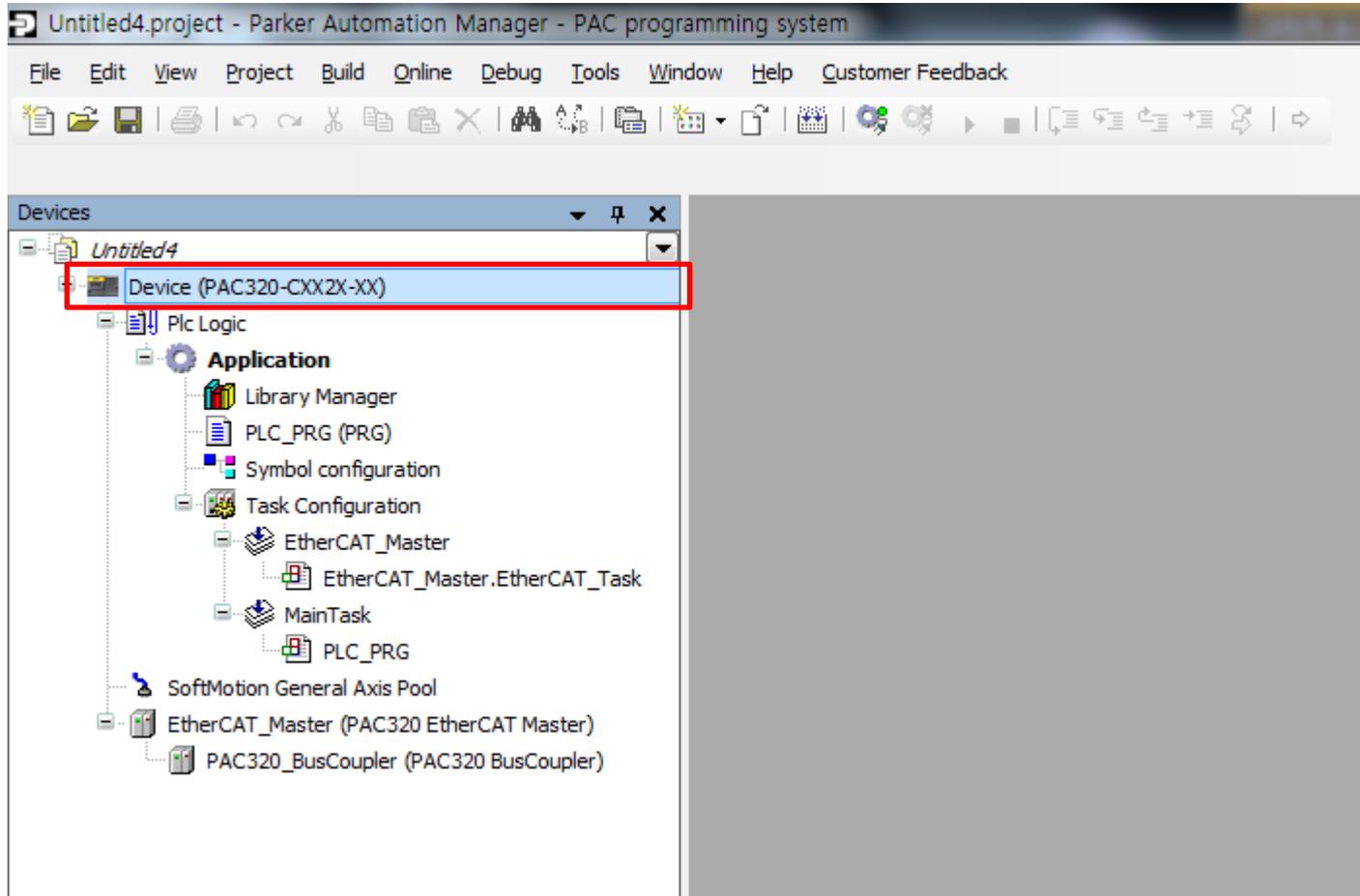
마스터와의 연결

하기와 같이 Device와 PLC_PRG in 선택 후 OK 클릭



마스터와의 연결

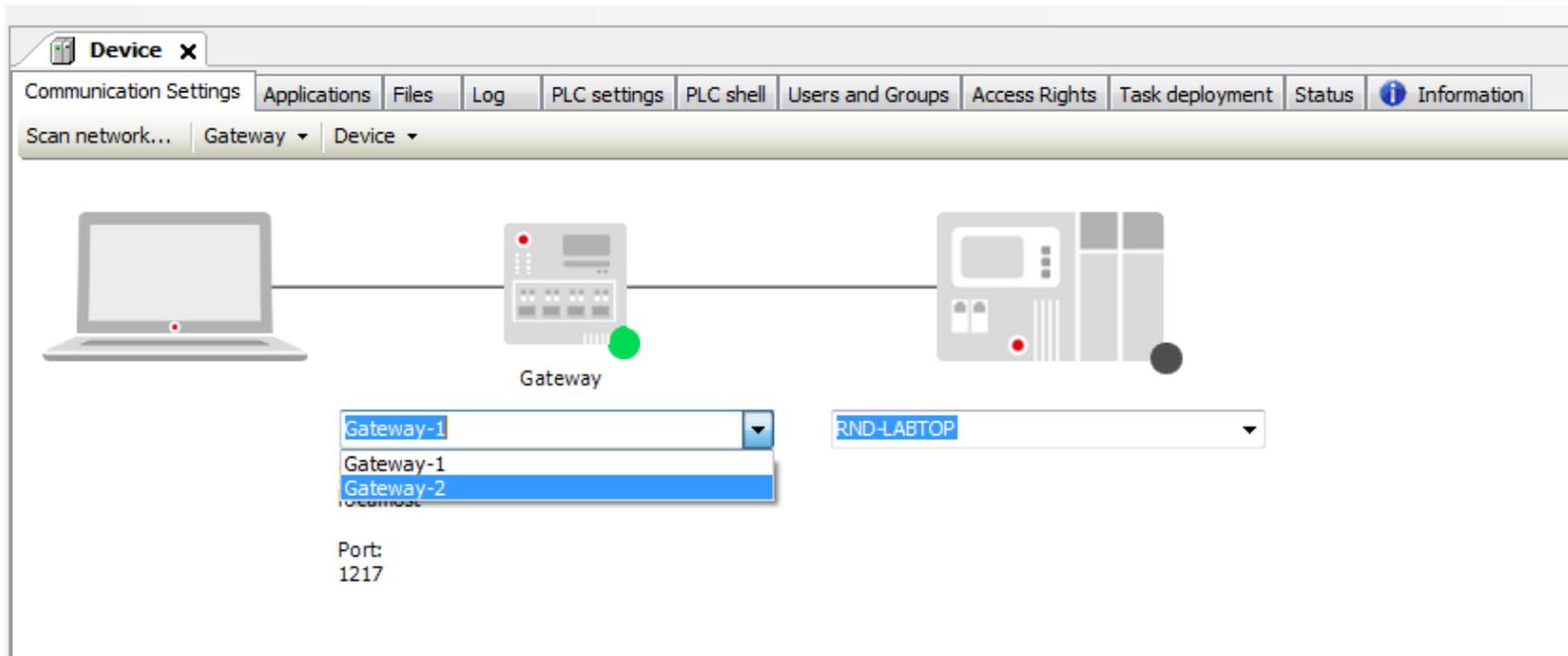
Device (PAC320-CXX2X-XX) 더블 클릭



마스터와의 연결

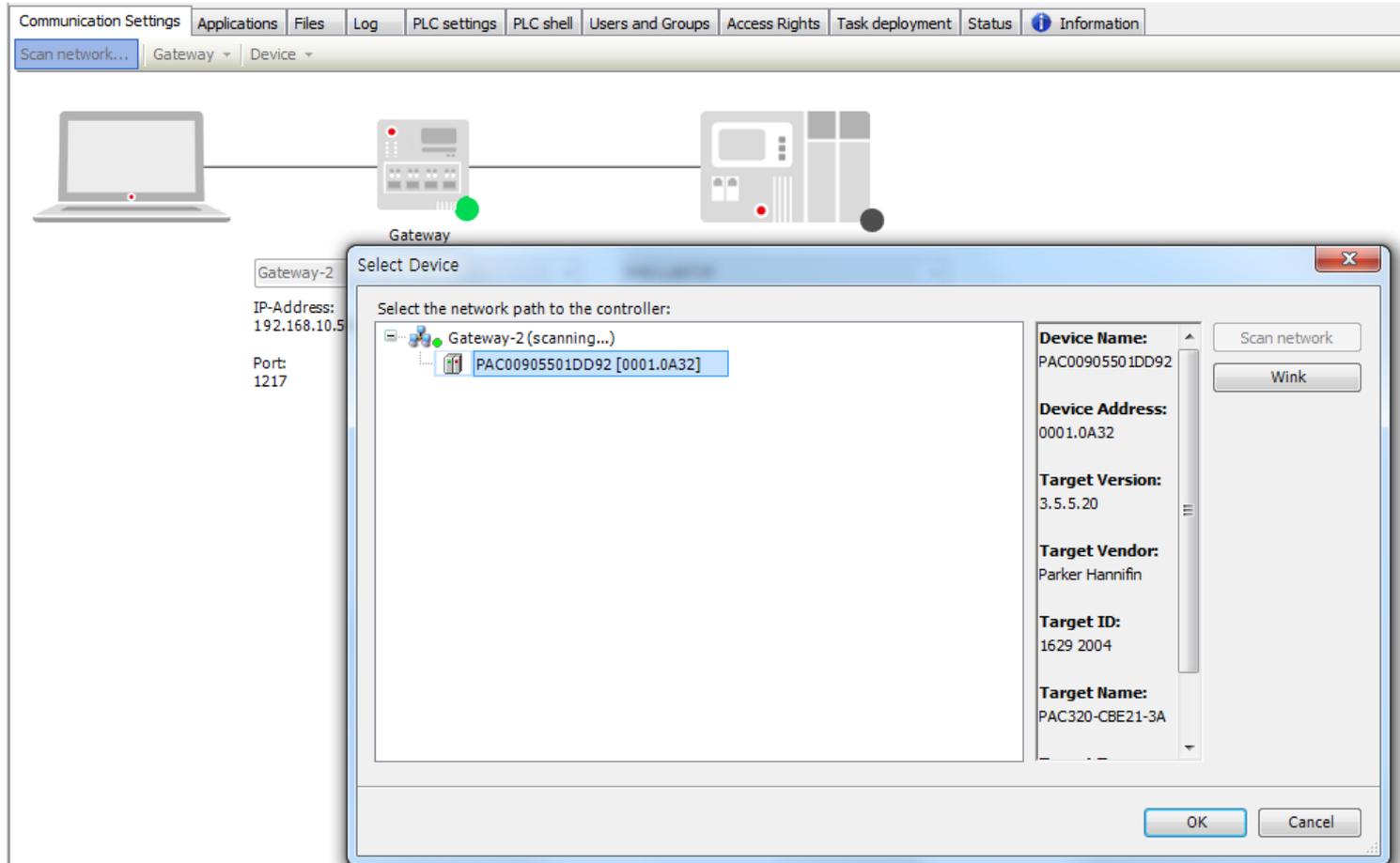
Device 연결을 위해 하기와 같이 Gateway-2 선택

(연두색 동그라미가 표시되어야 정상, 검정색 동그라미일 경우 케이블 쪽 체크)



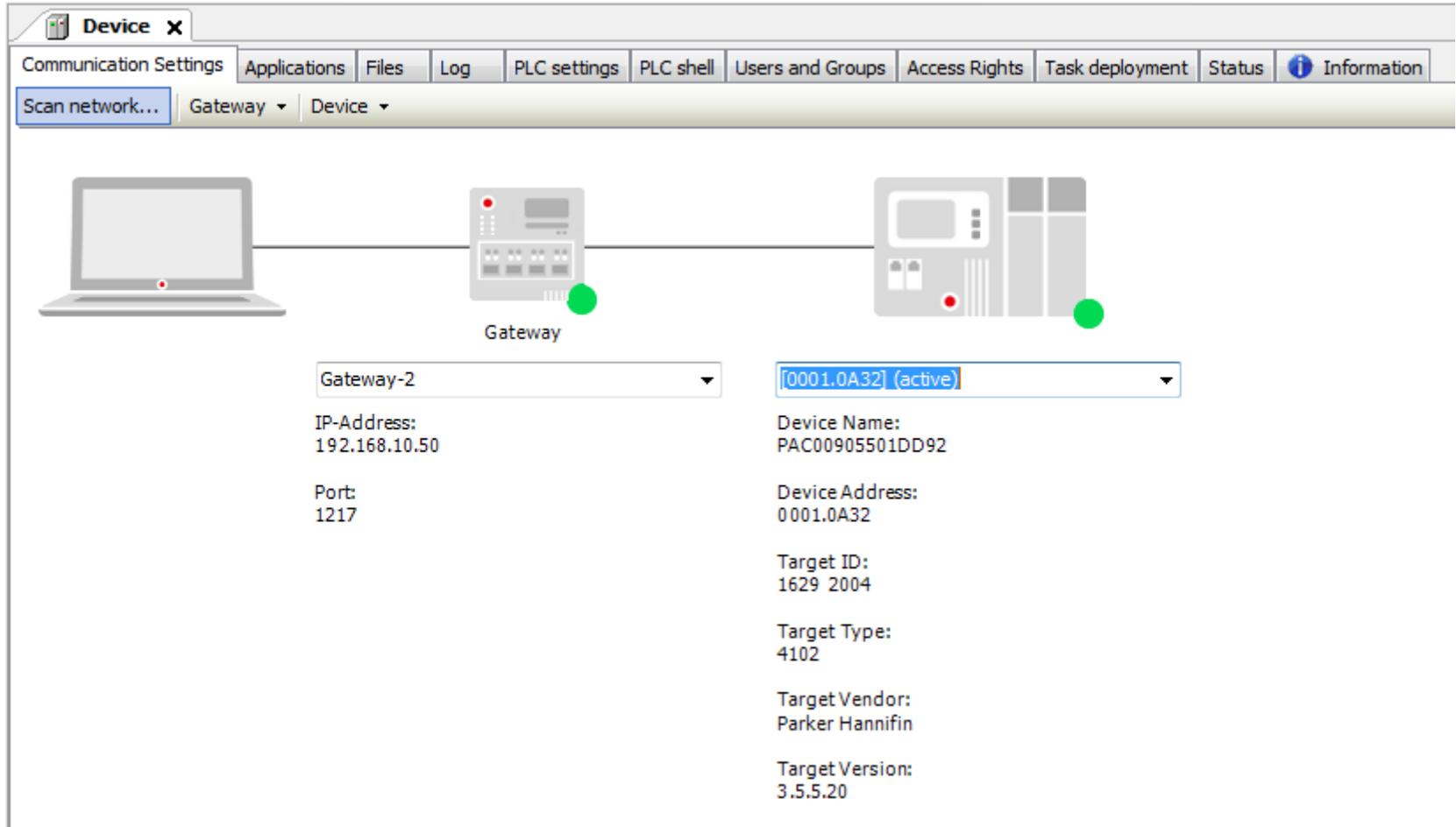
마스터와의 연결

Scan network 클릭 후 Select Device 창이 나오면
아래와 같이 PAC00905501DD92 를 더블 클릭



마스터와의 연결

- 다음과 같이 연두색 동그라미가 두개가 표시되면 연결이 정상적으로 된 것임



The screenshot shows the EZI-SERVO software interface. At the top, there is a menu bar with options: Communication Settings, Applications, Files, Log, PLC settings, PLC shell, Users and Groups, Access Rights, Task deployment, Status, and Information. Below the menu bar, there is a toolbar with a 'Scan network...' button and dropdown menus for 'Gateway' and 'Device'. The main area displays a network diagram with a laptop on the left, a 'Gateway' in the middle, and a servo motor on the right. Green circles are shown next to the Gateway and Servo motor icons, indicating a successful connection. Below the diagram, the selected device details are shown:

Gateway-2	[0001.0A32] (active)
IP-Address: 192.168.10.50	Device Name: PAC00905501DD92
Port: 1217	Device Address: 0001.0A32
	Target ID: 1629 2004
	Target Type: 4102
	Target Vendor: Parker Hannifin
	Target Version: 3.5.5.20

마스터와의 연결

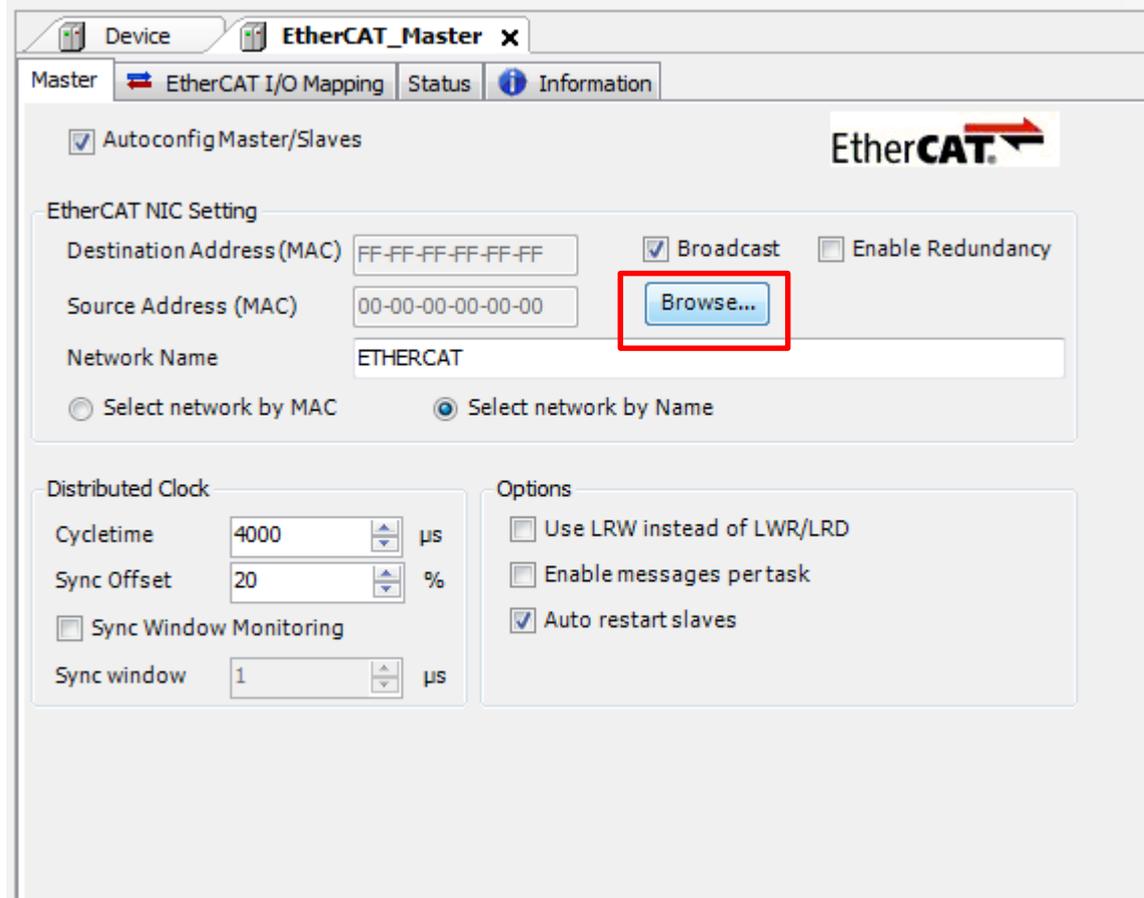
EtherCAT_Master (PAC320 EtherCAT Master) 더블 클릭

The screenshot displays the software interface for configuring an EtherCAT Master. On the left, a tree view under 'Devices' shows the project structure. The 'EtherCAT_Master (PAC320 EtherCAT Master)' item is highlighted with a red box. On the right, the 'Device' configuration window is open, showing a network diagram with a laptop, a 'Gateway' device, and a PLC. Below the diagram, the configuration details for the selected device are shown:

Gateway-2	[0001.0A32] (active)
IP-Address: 192.168.10.50	Device Name: PAC00905501DD92
Port: 1217	Device Address: 0001.0A32
	Target ID: 1629 2004
	Target Type: 4102
	Target Vendor: Parker Hannifin
	Target Version: 3.5.5.20

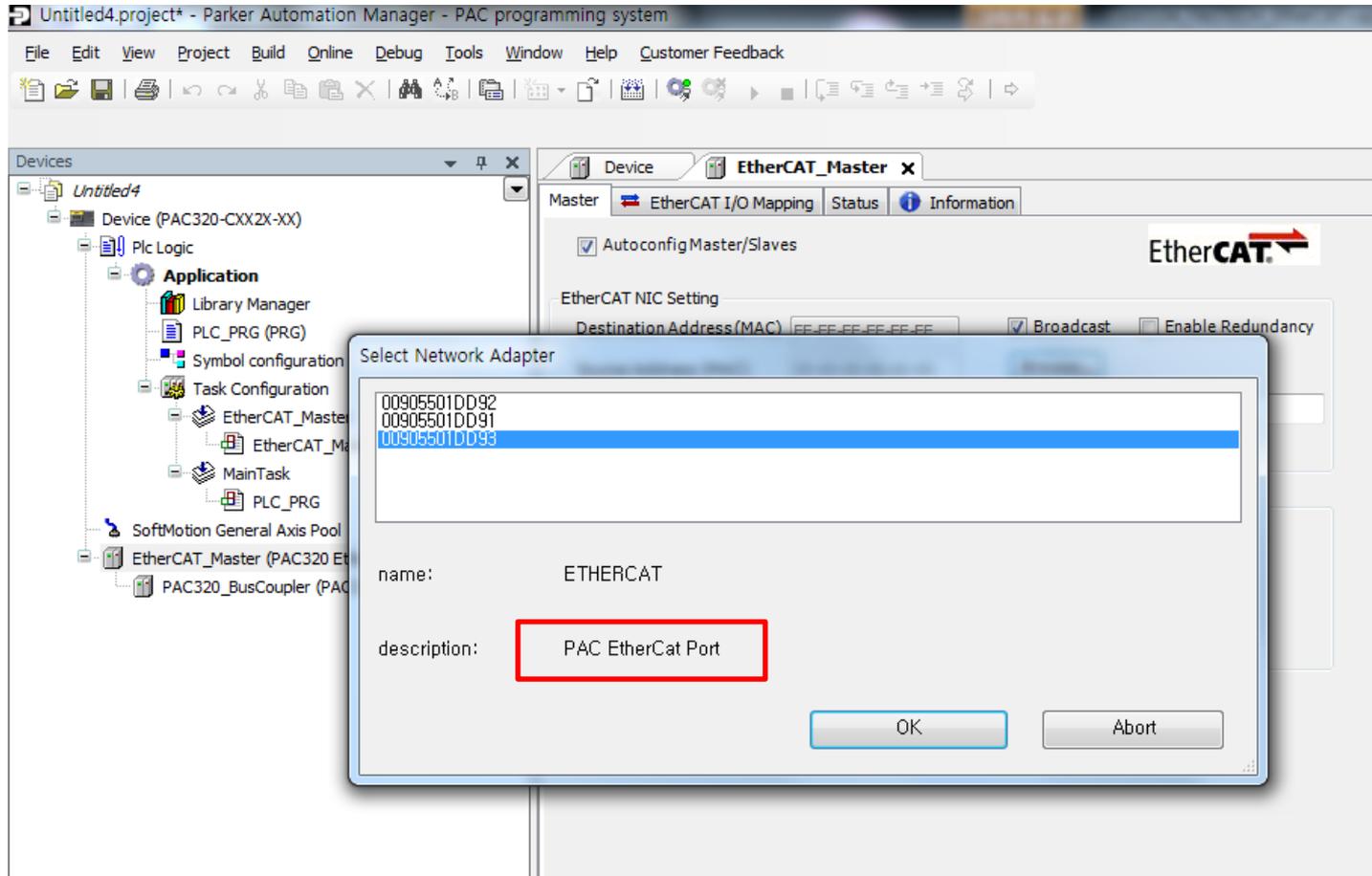
마스터와의 연결

Browser 클릭



마스터와의 연결

- 세번째의 EtherCAT Port, 00905501DD93 선택 후 OK



마스터와의 연결

- Cycletime 4000을 1000으로 변경 (옵션)

The screenshot shows the 'EtherCAT_Master' configuration window. The 'Distributed Clock' section has 'Cycletime' set to 4000 μs . The 'Options' section has 'Auto restart slaves' checked. The 'EtherCAT NIC Setting' section has 'Broadcast' checked and 'Network Name' set to 'ETHERCAT'.

The screenshot shows the 'EtherCAT_Master' configuration window with the 'Cycletime' value in the 'Distributed Clock' section changed to 1000 μs . This value is highlighted with a red box. The 'Options' section has 'Auto restart slaves' checked. The 'EtherCAT NIC Setting' section has 'Broadcast' checked and 'Network Name' set to 'ETHERCAT'.

마스터와의 연결

EtherCAT_Master 더블 클릭

The screenshot displays the Parker Automation Manager software interface. The title bar reads "Untitled4.project* - Parker Automation Manager - PAC programming system". The menu bar includes "File", "Edit", "View", "Project", "Build", "Online", "Debug", "Tools", "Window", "Help", and "Customer Feedback". The toolbar contains various icons for file operations and system functions.

The left pane, titled "Devices", shows a project tree for "Untitled4". Under "Device (PAC320-CXX2X-XX)", there is a folder "Plc Logic" containing an "Application" folder. Inside "Application", there is a folder "Task Configuration" which contains the "EtherCAT_Master" item, highlighted with a red rectangle. Other items in the tree include "EtherCAT_Master.EtherCAT_Task", "MainTask", "PLC_PRG", "SoftMotion General Axis Pool", "EtherCAT_Master (PAC320 EtherCAT Master)", and "PAC320_BusCoupler (PAC320 BusCoupler)".

The right pane shows the configuration for the selected "EtherCAT_Master" device. The "EtherCAT I/O Mapping" tab is active. The "Master" section includes a checked "AutoconfigMaster/Slaves" option and the "EtherCAT" logo. The "EtherCAT NIC Setting" section contains the following fields and options:

- Destination Address (MAC): FF-FF-FF-FF-FF-FF
- Source Address (MAC): 00-90-55-01-DD-93
- Network Name: ETHERCAT
- Options: Broadcast, Enable Redundancy
- Selection: Select network by MAC, Select network by Name

The "Distributed Clock" section includes:

- Cycletime: 1000 μ s
- Sync Offset: 20 %
- Sync Window Monitoring:
- Sync window: 1 μ s

The "Options" section includes:

- Use LRW instead of LWR/LRD
- Enable messages per task
- Auto restart slaves

마스터와의 연결

Type 을 External로 변경

The screenshot shows the Parker Automation Manager interface. On the left, a tree view displays the project structure under 'Untitled4', including 'Device (PAC320-CXX2X-XX)', 'Plc Logic', 'Application', 'Library Manager', 'PLC_PRG (PRG)', 'Symbol configuration', 'Task Configuration', 'EtherCAT_Master', 'EtherCAT_Master.EtherCAT_Task', 'MainTask', 'PLC_PRG', 'SoftMotion General Axis Pool', 'EtherCAT_Master (PAC320 EtherCAT Master)', and 'PAC320_BusCoupler (PAC320 BusCoupler)'. The main window shows the configuration for 'EtherCAT_Master'. The 'Configuration' tab is active, displaying the following settings:

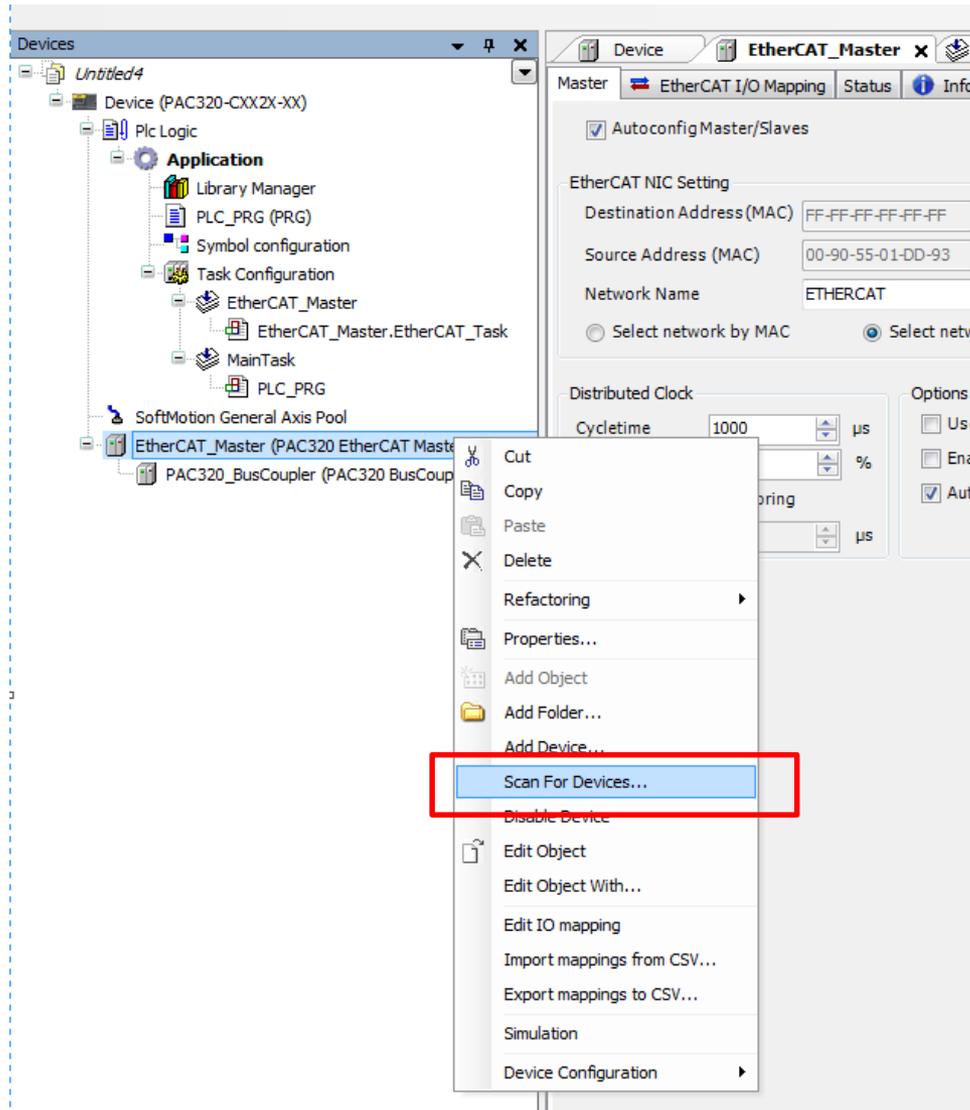
- Priority (0..31): 0
- Type: **Cyclic** (dropdown menu is open, showing options: Cyclic, Event, **External**, Freewheeling, Status)
- Interval (e.g. t#200ms): 1000
- Time (e.g. t#200ms):
- Sensitivity:

At the bottom, there are controls for 'Add Call', 'Remove Call', 'Change Call', 'Move Up', 'Move Down', and 'Open POU'. Below these controls is a table with the following data:

POU	Comment
EtherCAT_Master.EtherCAT_Task	EtherCAT_Master.EtherCAT_Task

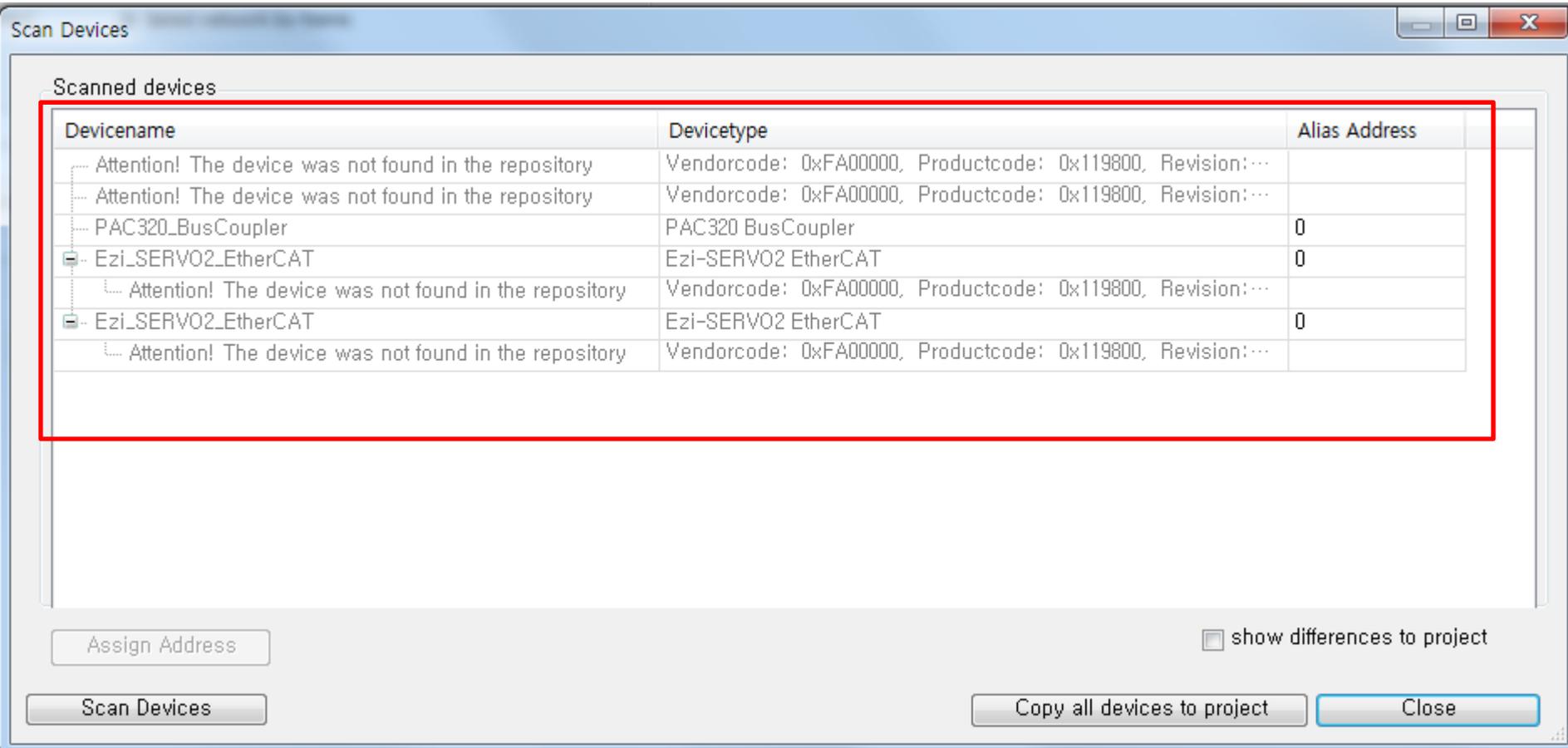
마스터와의 연결

- Ethercat_Master 우클릭 후 Scan for Devices 클릭



마스터와의 연결

다음과 같이 뜨는 지 확인 후 Copy all devices to project 클릭



Scan Devices

Scanned devices

Devicename	Devicetype	Alias Address
Attention! The device was not found in the repository	Vendorcode: 0xFA00000, Productcode: 0x119800, Revision: ...	
Attention! The device was not found in the repository	Vendorcode: 0xFA00000, Productcode: 0x119800, Revision: ...	
PAC320_BusCoupler	PAC320 BusCoupler	0
Ezi_SERVO2_EtherCAT	Ezi-SERVO2 EtherCAT	0
Attention! The device was not found in the repository	Vendorcode: 0xFA00000, Productcode: 0x119800, Revision: ...	
Ezi_SERVO2_EtherCAT	Ezi-SERVO2 EtherCAT	0
Attention! The device was not found in the repository	Vendorcode: 0xFA00000, Productcode: 0x119800, Revision: ...	

Assign Address

show differences to project

Scan Devices

Copy all devices to project

Close

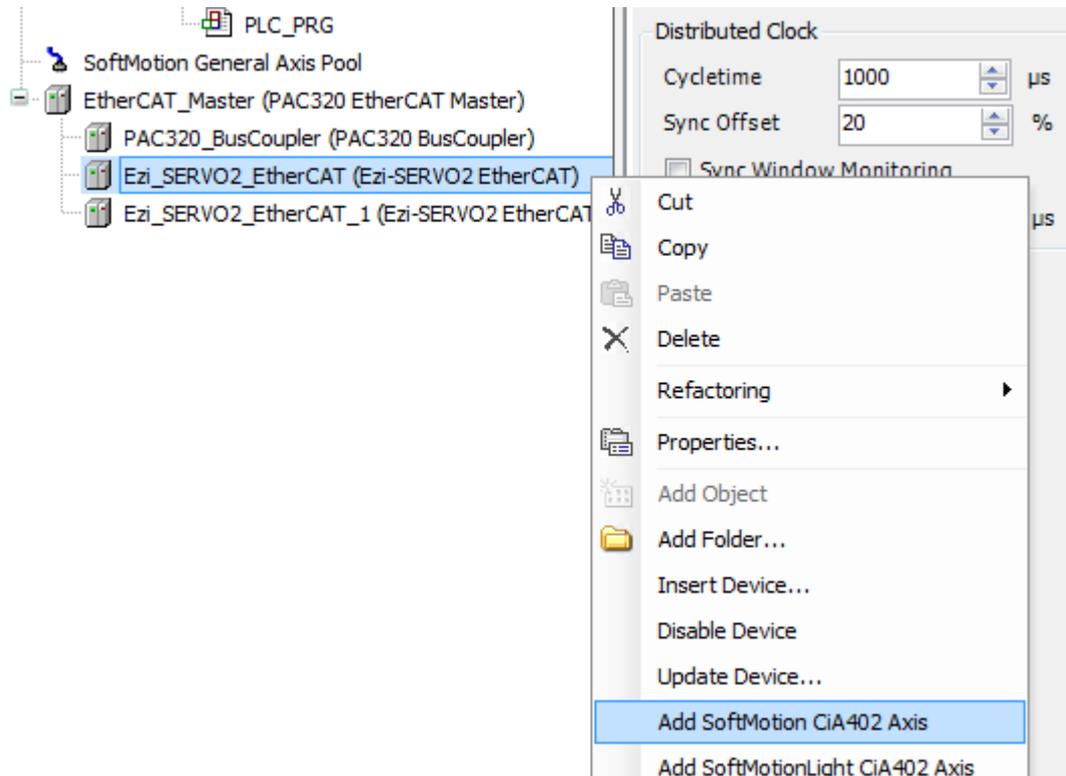
마스터와의 연결

- 같은 이름의 두번째 PAC320을 마우스 우클릭 후 delete

The screenshot displays the Parker Automation Manager interface for a PAC programming system. The main window shows a project tree with a 'Device (PAC320-CXX2X-XX)' containing 'Plc Logic' and an 'Application' folder. The 'Application' folder includes 'Library Manager', 'PLC_PRG (PRG)', 'Symbol configuration', 'Task Configuration', 'EtherCAT_Master', 'EtherCAT_Master.EtherCAT_Task', 'MainTask', and 'PLC_PRG'. Below this, there is a 'SoftMotion General Axis Pool' and an 'EtherCAT_Master (PAC320 EtherCAT Master)'. Under the EtherCAT Master, there are two 'PAC320_BusCoupler' objects: 'PAC320_BusCoupler (PAC320 BusCoupler)' and 'PAC320_BusCoupler_1 (PAC320 BusCoupler)'. The second object is highlighted with a red box. A context menu is open over this object, with the 'Delete' option also highlighted by a red box. The properties panel on the right shows settings for the selected device, including 'EtherCAT I/O Mapping', 'Autoconfig Master/Slaves', 'EtherCAT NIC Setting' (Destination Address: FF-FF-FF-FF, Source Address: 00-90-55-01, Network Name: ETHERCAT), and 'Distributed Clock' (Cycletime: 1000 μs, Sync Offset: 20 %).

마스터와의 연결

Ezi_SERVO2_EtherCAT을 마우스 우클릭 후 Add Softmotion CiA 402 Axis 를 클릭



Distributed Clock

Cycletime	1000	μs
Sync Offset	20	%

Sync Window Monitoring

- Cut
- Copy
- Paste
- Delete
- Refactoring
- Properties...
- Add Object
- Add Folder...
- Insert Device...
- Disable Device
- Update Device...
- Add SoftMotion CiA402 Axis**
- Add SoftMotionLight CiA402 Axis

마스터와의 연결

하기와 같이 SM_Drive_Generic이 생성 되었는지 확인

The screenshot displays the Parker Automation Manager software interface for configuring an EtherCAT Master. The left-hand pane shows a project tree for 'Untitled4', with the 'EtherCAT_Master' folder expanded to show 'SM_Drive_GenericDSP402' (SM_Drive_Generic) highlighted in red. The right-hand pane shows the 'EtherCAT_Master' configuration window, which includes the following settings:

- AutoconfigMaster/Slaves:**
- EtherCAT NIC Setting:**
 - Destination Address (MAC): FF-FF-FF-FF-FF-FF
 - Source Address (MAC): 00-90-55-01-DD-93
 - Network Name: ETHERCAT
 - Options: Broadcast, Enable Redundancy
 - Selection: Select network by MAC, Select network by Name
- Distributed Clock:**
 - Cycletime: 1000 μ s
 - Sync Offset: 20 %
 - Sync Window Monitoring:
 - Sync window: 1 μ s
- Options:**
 - Use LRW instead of LWR/LRD
 - Enable messages per task
 - Auto restart slaves

마스터와의 연결

두번째 Ezi-SERVO2_EtherCAT_1도 같은 방법으로 Add Softmotion CiA 402 Axis 를 클릭 후 SM_Drive 생성 확인

The screenshot displays the Parker Automation Manager interface. On the left, the 'Devices' tree shows a project named 'Untitled4'. Under 'Application', there is an 'EtherCAT_Master' folder containing 'EtherCAT_Master.EtherCAT_Task' and 'MainTask'. Below this, a 'SoftMotion General Axis Pool' is visible, containing an 'EtherCAT_Master (PAC320 EtherCAT Master)' folder. This folder includes 'PAC320_BusCoupler (PAC320 BusCoupler)', 'Ezi_SERVO2_EtherCAT (Ezi-SERVO2 EtherCAT)', and 'Ezi_SERVO2_EtherCAT_1 (Ezi-SERVO2 EtherCAT)'. The 'Ezi_SERVO2_EtherCAT_1' folder is highlighted with a red box, and it contains an 'SM_Drive_GenericDSP402_1 (SM_Drive_Gen...' drive.

The main window shows the configuration for the selected 'EtherCAT_Master'. The 'EtherCAT I/O Mapping' tab is active. The 'Autoconfig Master/Slaves' checkbox is checked. The 'EtherCAT NIC Setting' section includes:

- Destination Address (MAC): FF-FF-FF-FF-FF-FF
- Source Address (MAC): 00-90-55-01-DD-93
- Network Name: ETHERCAT
- Options: Broadcast, Enable Redundancy
- Selection: Select network by MAC, Select network by Name

The 'Distributed Clock' section includes:

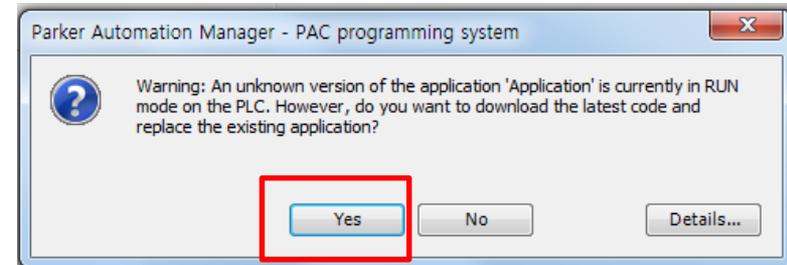
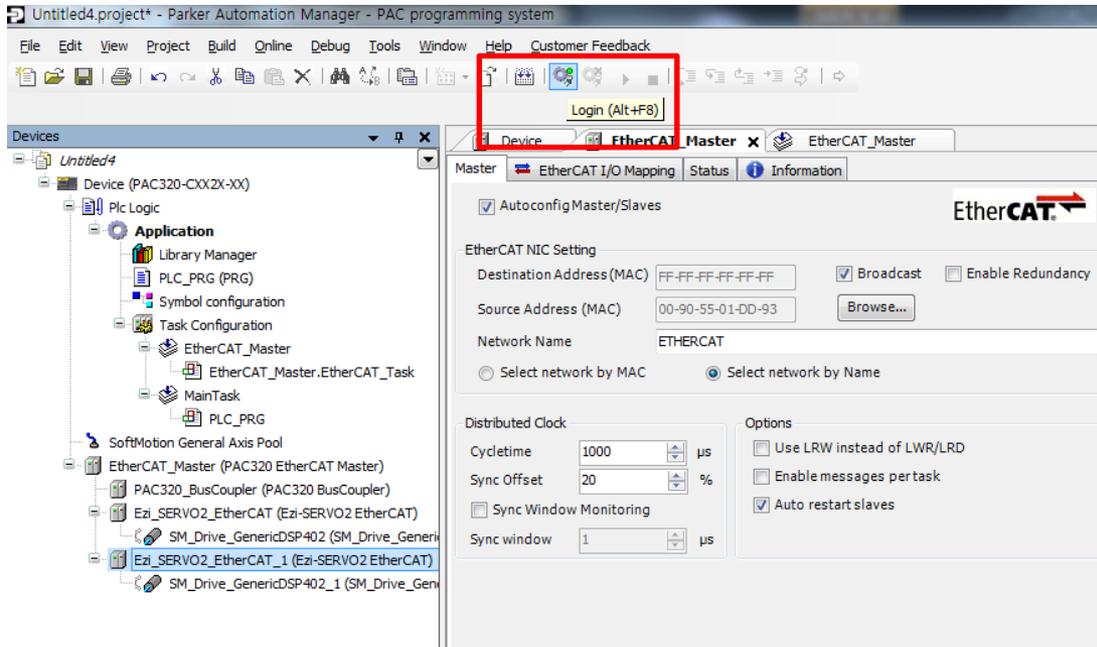
- Cycletime: 1000 μ s
- Sync Offset: 20 %
- Sync Window Monitoring
- Sync window: 1 μ s

The 'Options' section includes:

- Use LRW instead of LWR/LRD
- Enable messages per task
- Auto restart slaves

마스터와의 연결

로그인 아이콘 클릭 -> Yes 클릭



마스터와의 연결

- 다음과 같이 나오는지 확인

The screenshot displays the Parker Automation Manager software interface. The main window is titled "EtherCAT_Master" and shows the configuration for an EtherCAT master. The left sidebar shows a project tree with a red box highlighting the "EtherCAT_Master" node. The main panel shows the "EtherCAT I/O Mapping" tab with the following settings:

- EtherCAT NIC Setting:**
 - Destination Address (MAC): FF-FF-FF-FF-FF-FF
 - Source Address (MAC): 00-90-55-01-DD-93
 - Network Name: ETHERCAT
- Distributed Clock:**
 - Cyclotime: 1000 μ s
 - Sync Offset: 20 %
 - Sync window: 1 μ s
- Options:**
 - Use LRW instead of LWR/LRD
 - Enable messages per task
 - Auto restart slaves
- Diagnostics Message:**
 - Bus load: 0 %

The bottom status bar shows the build process results:

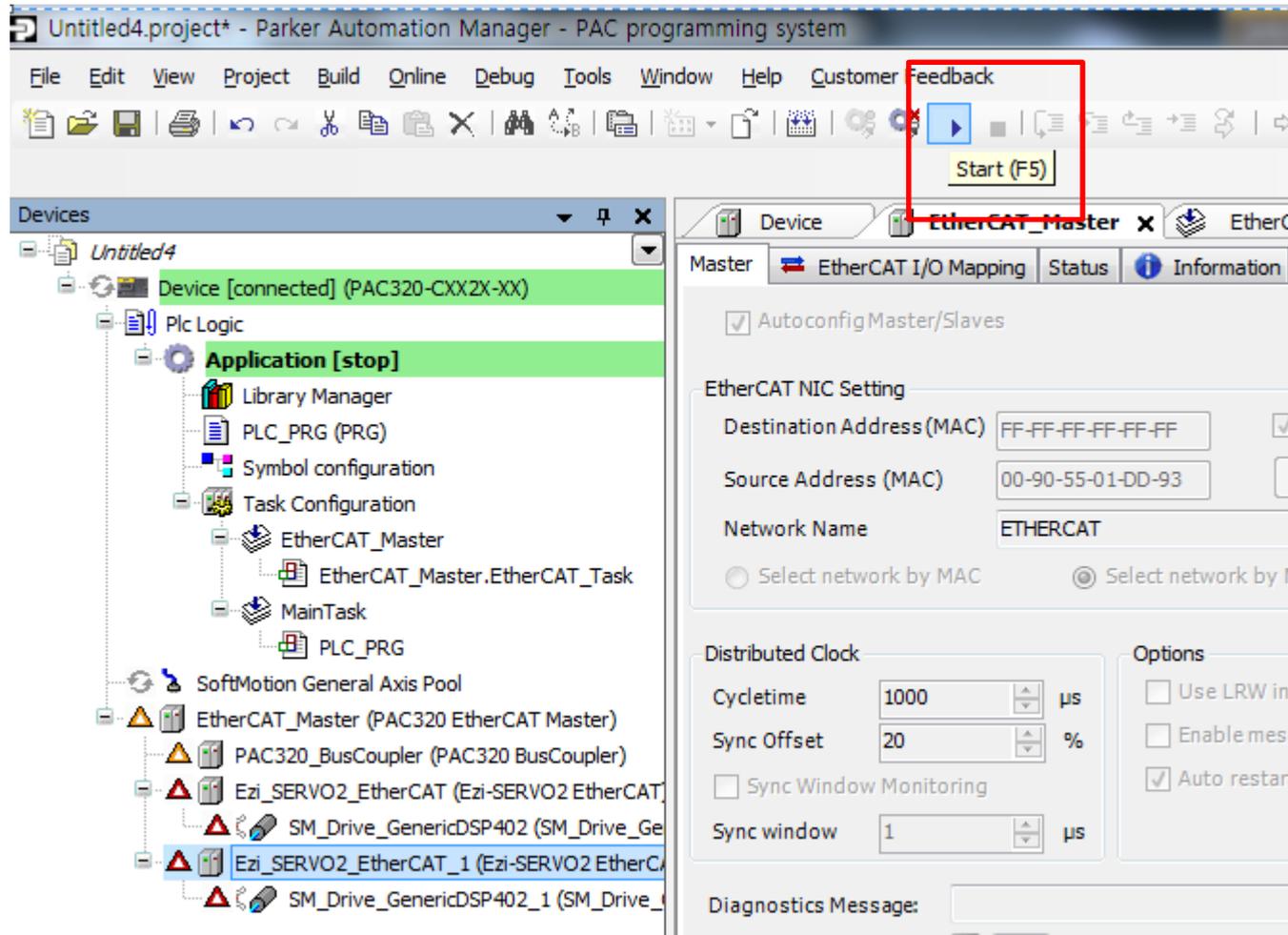
Build: 0 error(s), 0 warning(s), 5 message(s)

Description	Project	Object	Position
generate code...			
generate global initializations ...			
generate code initialization ...			
generate relocations ...			
Size of generated code: 558710 bytes			
Size of global data: 177890 bytes			
Total allocated memory size for code and data: 721536 bytes			
Memory area 0 contains Data, Input, Output, Memory and Code...			
Memory area 1 contains Retain Data and Persistent Data: largest...			
Build complete -- 0 errors, 0 warnings : ready for download!			

The status bar also indicates: Last build: 0 error(s), 0 warning(s), 0 precompile; Precompile: ; STOP; Program loaded; Program unchanged; Current user: (nobody)

마스터와의 연결

- Start 아이콘 클릭



마스터와의 연결

- 다음과 같이 연두색 마크가 보이면 기본 연결 완료

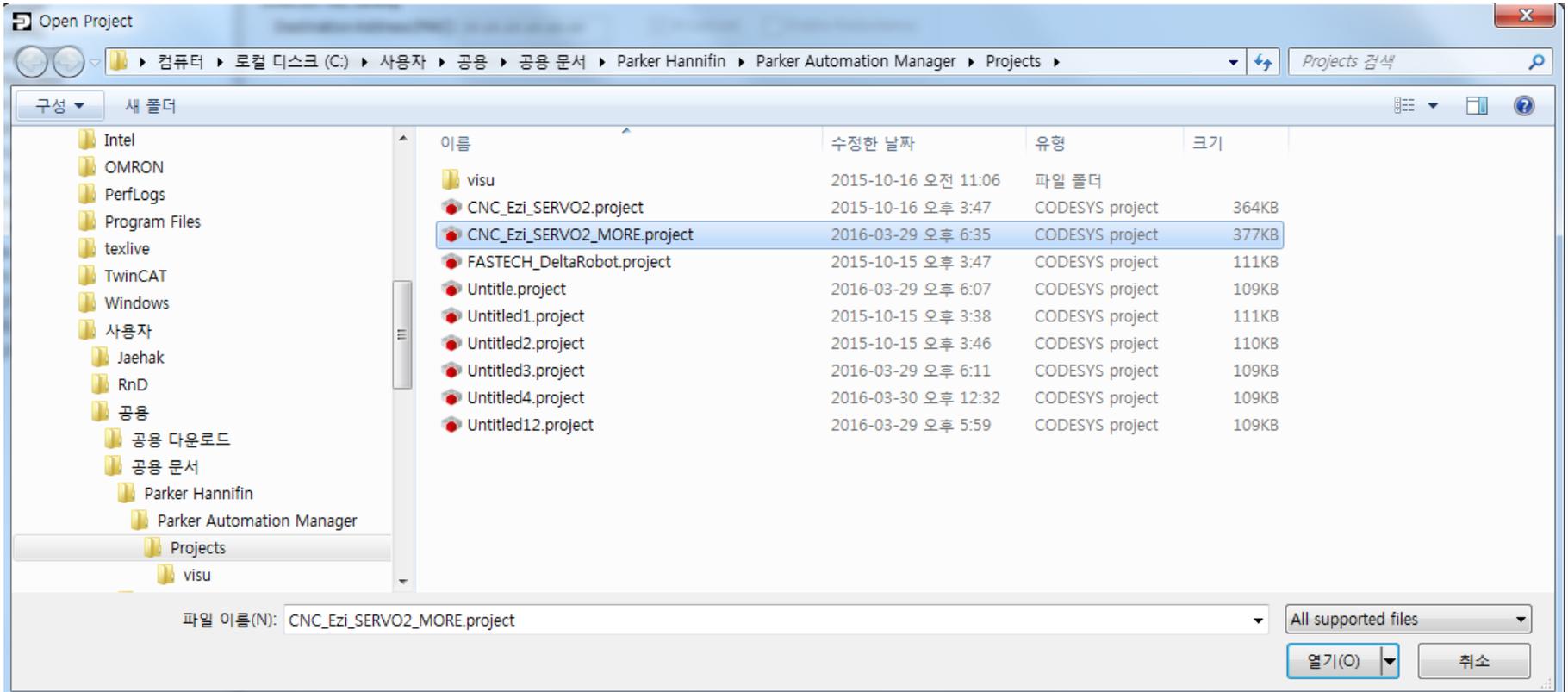
The screenshot displays the Parker Automation Manager interface. On the left, the 'Devices' tree shows a project named 'Untitled4' with a 'Device [connected] (PAC320-CXX2X-XX)'. Underneath, the 'Application [run]' is expanded, showing components like 'Library Manager', 'PLC_PRG (PRG)', 'Symbol configuration', 'Task Configuration', 'EtherCAT_Master', 'EtherCAT_Master.EtherCAT_Task', 'MainTask', and 'PLC_PRG'. A red box highlights the 'EtherCAT_Master' and 'EtherCAT_Task' components. On the right, the 'EtherCAT_Master' configuration window is open, showing the 'EtherCAT I/O Mapping' tab. The 'AutoconfigMaster/Slaves' checkbox is checked. The 'EtherCAT NIC Setting' section includes fields for 'Destination Address (MAC)' (FF-FF-FF-FF-FF-FF), 'Source Address (MAC)' (00-90-55-01-DD-93), and 'Network Name' (ETHERCAT). The 'Distributed Clock' section shows 'Cycletime' (1000 µs), 'Sync Offset' (20 %), and 'Sync window' (1 µs). The 'Options' section has 'Auto restart slaves' checked. The 'Diagnostics Message' field shows 'All slaves done !' and the 'Bus load' is at 1 %.

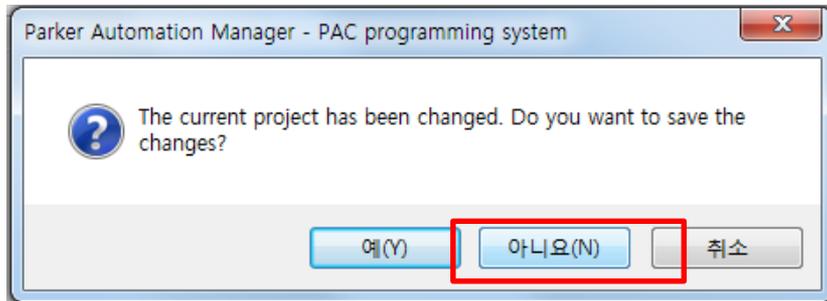
File -> Open Project 클릭

The screenshot displays the Parker Automation Manager interface. The 'File' menu is open, with 'Open Project...' selected. The main workspace shows a project tree on the left and a configuration panel on the right. The configuration panel is titled 'EtherCAT_Master' and includes the following settings:

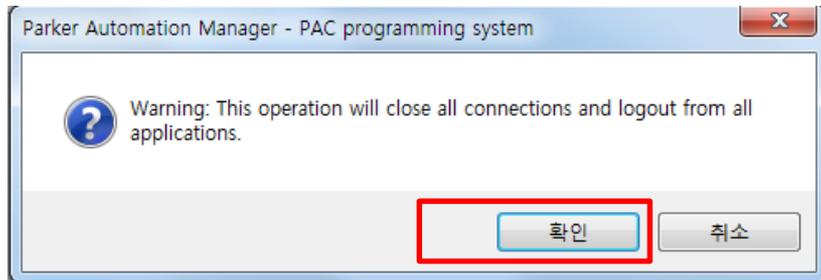
- Autoconfig Master/Slaves
- EtherCAT NIC Setting**
 - Destination Address (MAC): FF-FF-FF-FF-FF-FF Broadcast Enable Redundancy
 - Source Address (MAC): 00-90-55-01-DD-93
 - Network Name: ETHERCAT
 - Select network by MAC Select network by Name
- Distributed Clock**
 - Cycletime: 1000 μs
 - Sync Offset: 20 %
 - Sync Window Monitoring
 - Sync window: 1 μs
- Options**
 - Use LRW instead of LWR/LRD
 - Enable messages per task
 - Auto restart slaves
- Diagnostics Message: All slaves done !
- Bus load: 1 %

CNC_Ezi-SERVO2_MORE_project 선택 후 열기

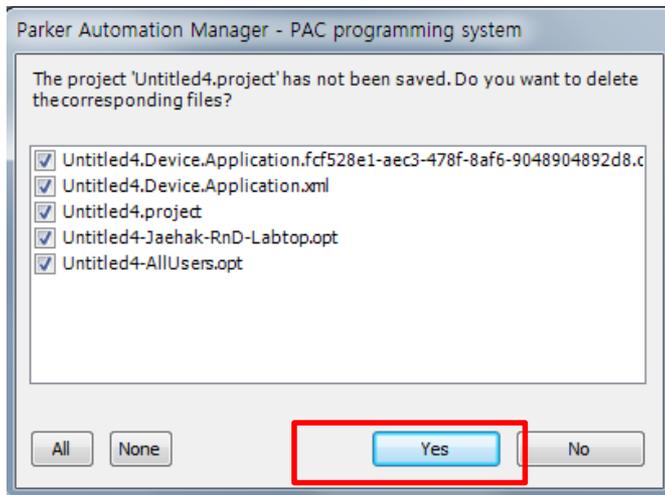




1. 아니요 선택



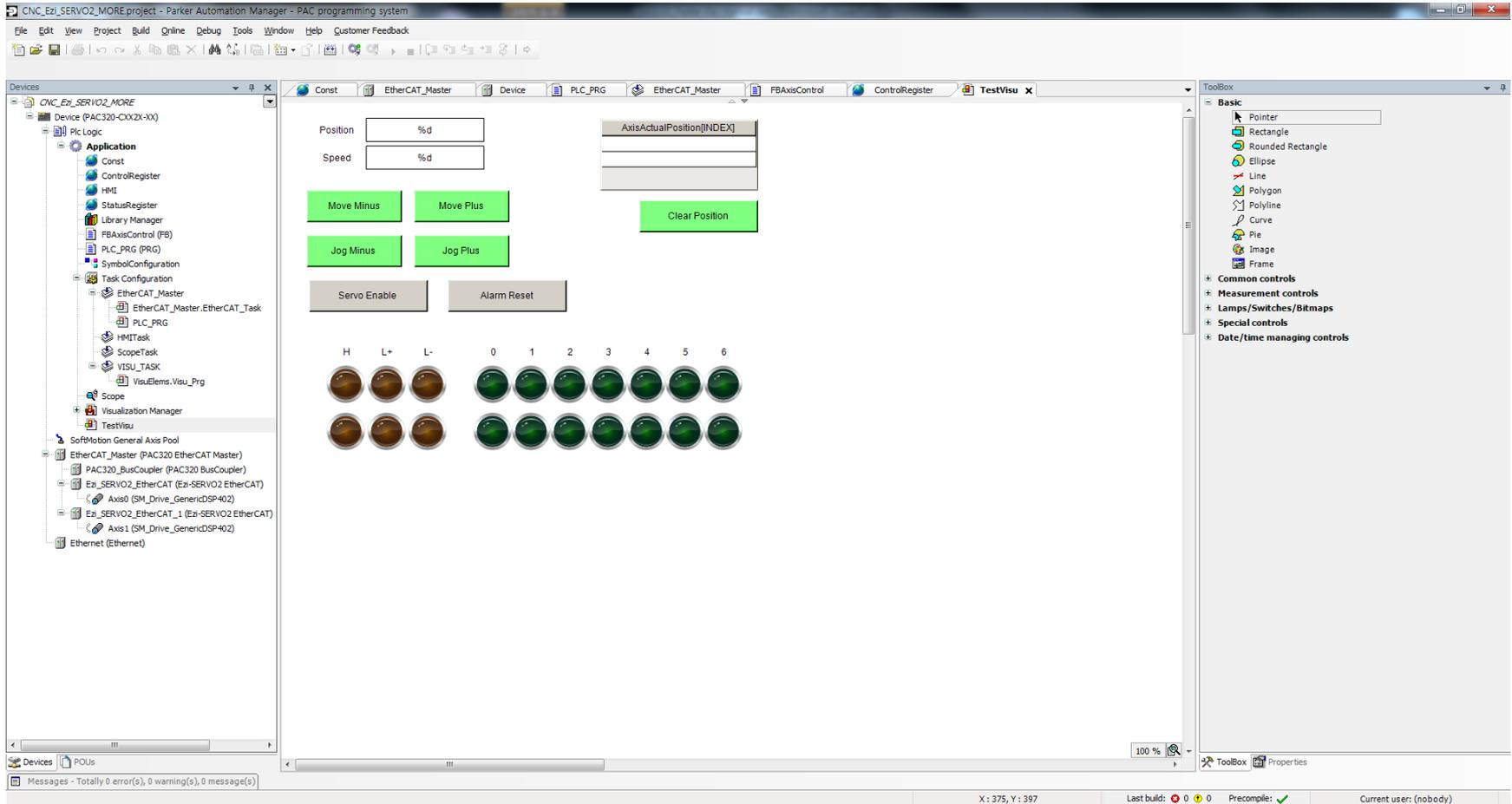
2. 확인 클릭



3. YES 클릭

구동

TestVisu 더블 클릭 후 다음과 같은 Visualization 프로그램 구동 프로그램 확인



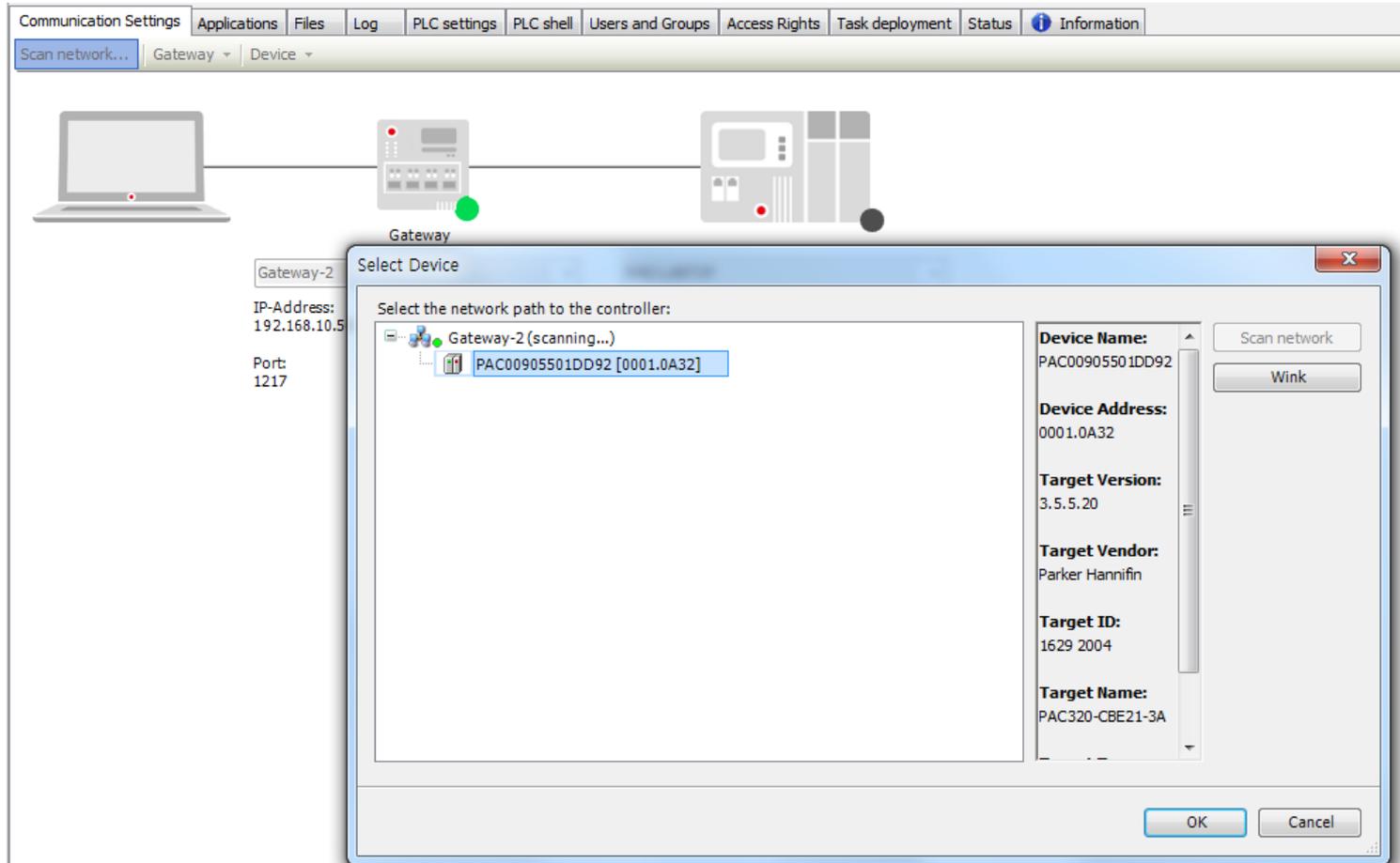
구동

기존 방식과 동일하게 Device 더블 클릭 -> Gateway-2(연두색 동그라미 확인)

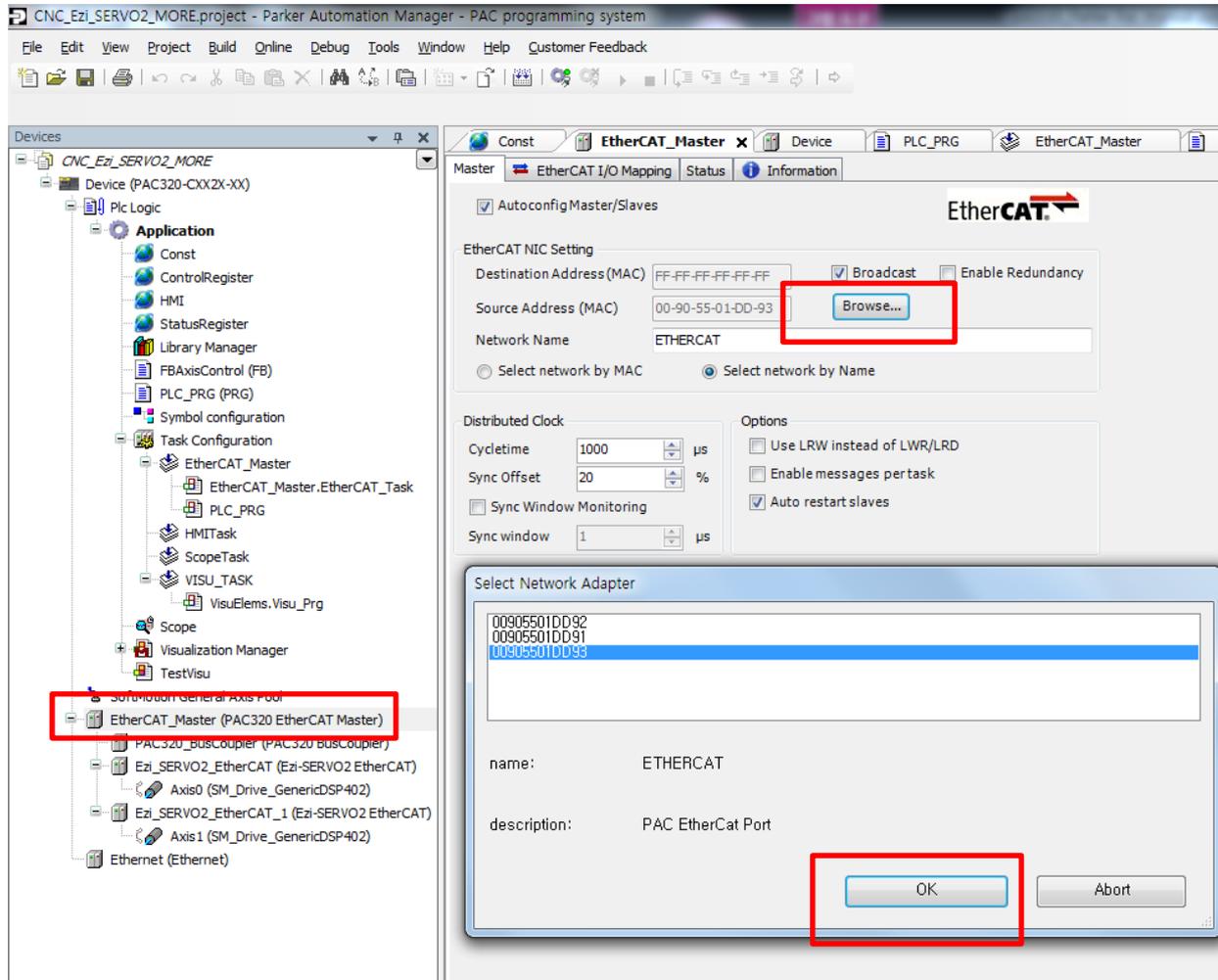
The screenshot displays the Parker Automation Manager software interface. The left pane shows a project tree for 'CNC_Ezi_SERVO2_MORE'. The right pane shows the configuration for a selected 'Gateway' device. The configuration includes the following details:

- IP-Address: 192.168.10.50
- Port: 1217
- Device Name: PAC00905501DD92
- Device Address: 0001.0A32
- Target ID: 1629 2004
- Target Type: 4102
- Target Vendor: Parker Hannifin
- Target Version: 3.5.5.20

Scan network 클릭 후 Select Device 창이 나오면
아래와 같이 PAC00905501DD92 를 더블 클릭



- EtherCAT_Master 더블 클릭 – Browse... – PAC EtherCAT Port 선택 후 OK

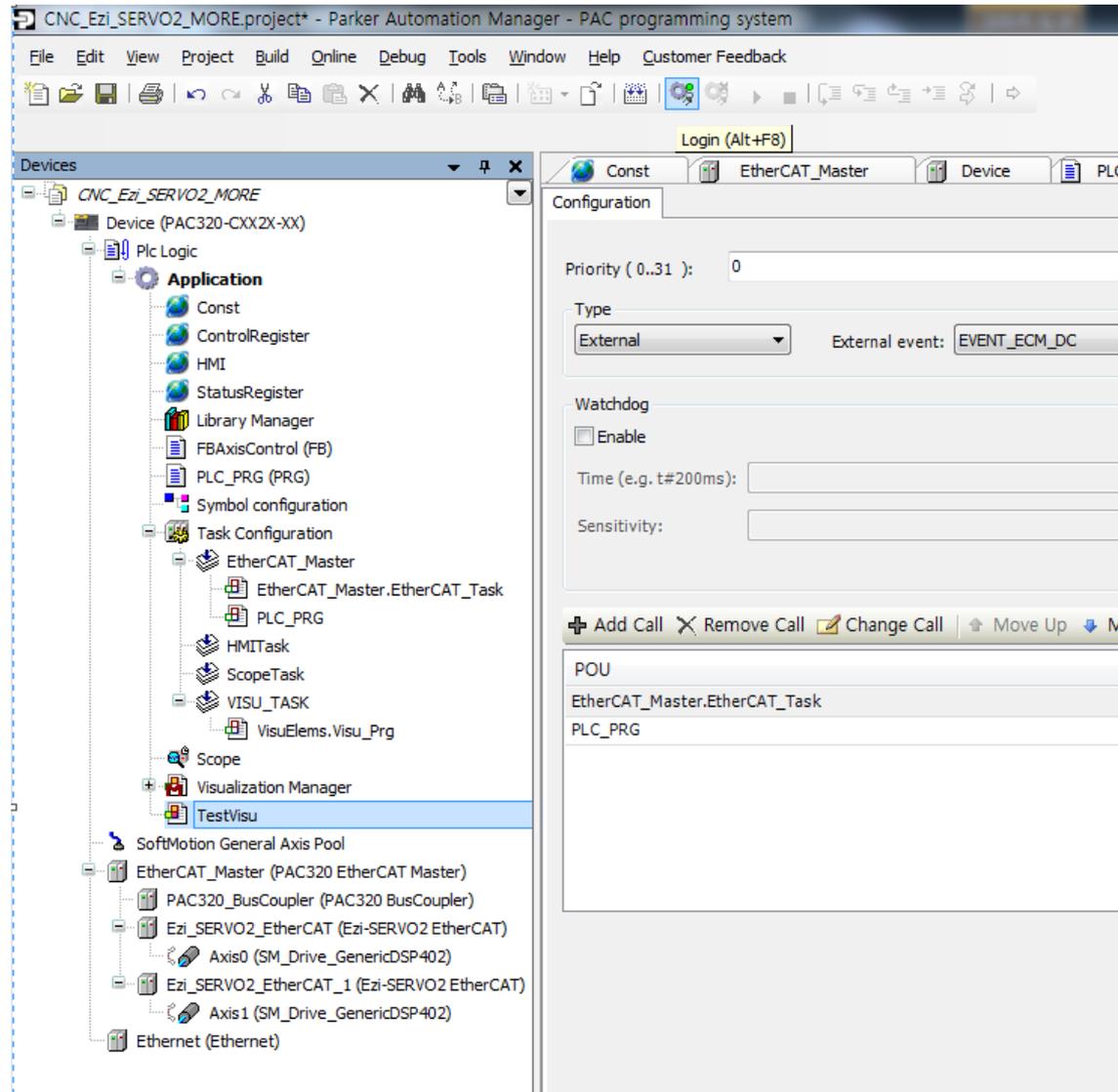


- External 인지 재확인

The screenshot displays the Parker Automation Manager interface for a PAC programming system. The left-hand 'Devices' tree shows a project structure with 'EtherCAT_Master' selected under 'Task Configuration'. The main configuration area shows the 'EtherCAT_Master' task settings. The 'Type' dropdown menu is highlighted with a red box and is set to 'External'. The 'External event' is set to 'EVENT_ECM_DC'. Below the configuration, a table lists the POU and Comment for the task.

POU	Comment
EtherCAT_Master.EtherCAT_Task	EtherCAT_Master.EtherCAT_Task
PLC_PRG	

다 완료되었으면 Login 아이콘 클릭



구동

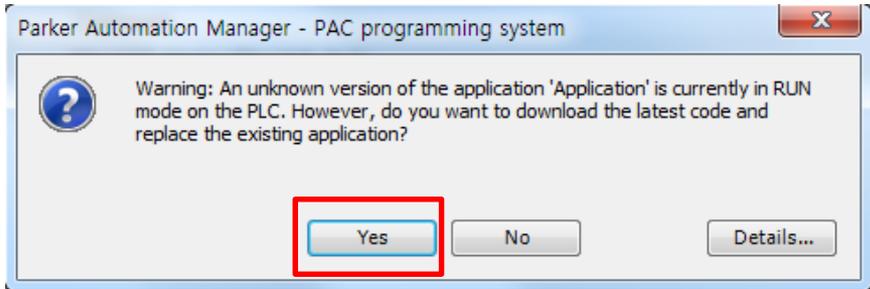
로그인 아이콘 클릭

The screenshot displays the Parker Automation Manager software interface for a PAC programming system. The title bar reads "CNC_Ezi_SERVO2_MORE.project* - Parker Automation Manager - PAC programming system". The menu bar includes File, Edit, View, Project, Visualization, Build, Online, Debug, Tools, Window, Help, and Customer Feedback. The toolbar contains various icons, with the login icon (a gear with a person) highlighted by a red box. The left sidebar shows a project tree for "CNC_Ezi_SERVO2_MORE", with "Application [run]" selected. The main workspace shows a control panel with the following elements:

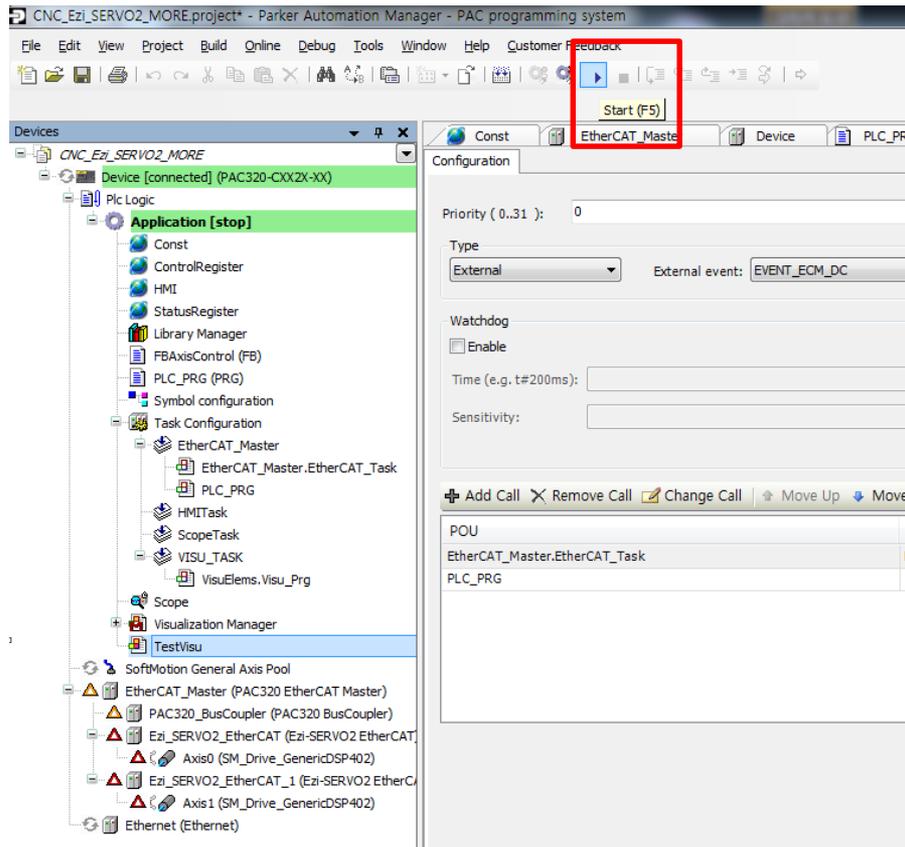
- Position: 10000
- Speed: 100000
- AxisActualPosition[INDEX] table:

AxisActualPosition[INDEX]
0.0
0.0
- Buttons: Move Minus, Move Plus, Jog Minus, Jog Plus, Clear Position, Servo Enable, Alarm Reset
- Visual indicators: 10 circular lights (3 brown, 7 green) labeled H, L+, L-, 0, 1, 2, 3, 4, 5, 6.

구동



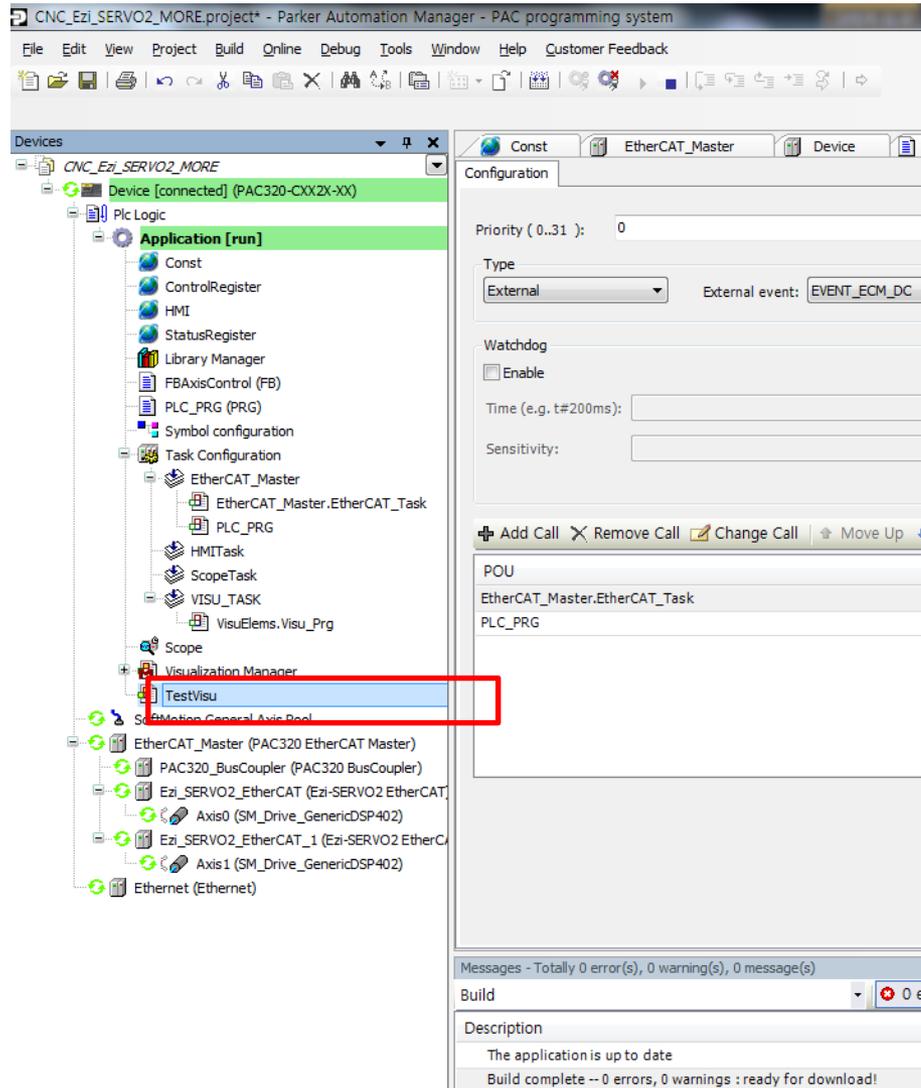
YES 클릭



스타트 아이콘 클릭

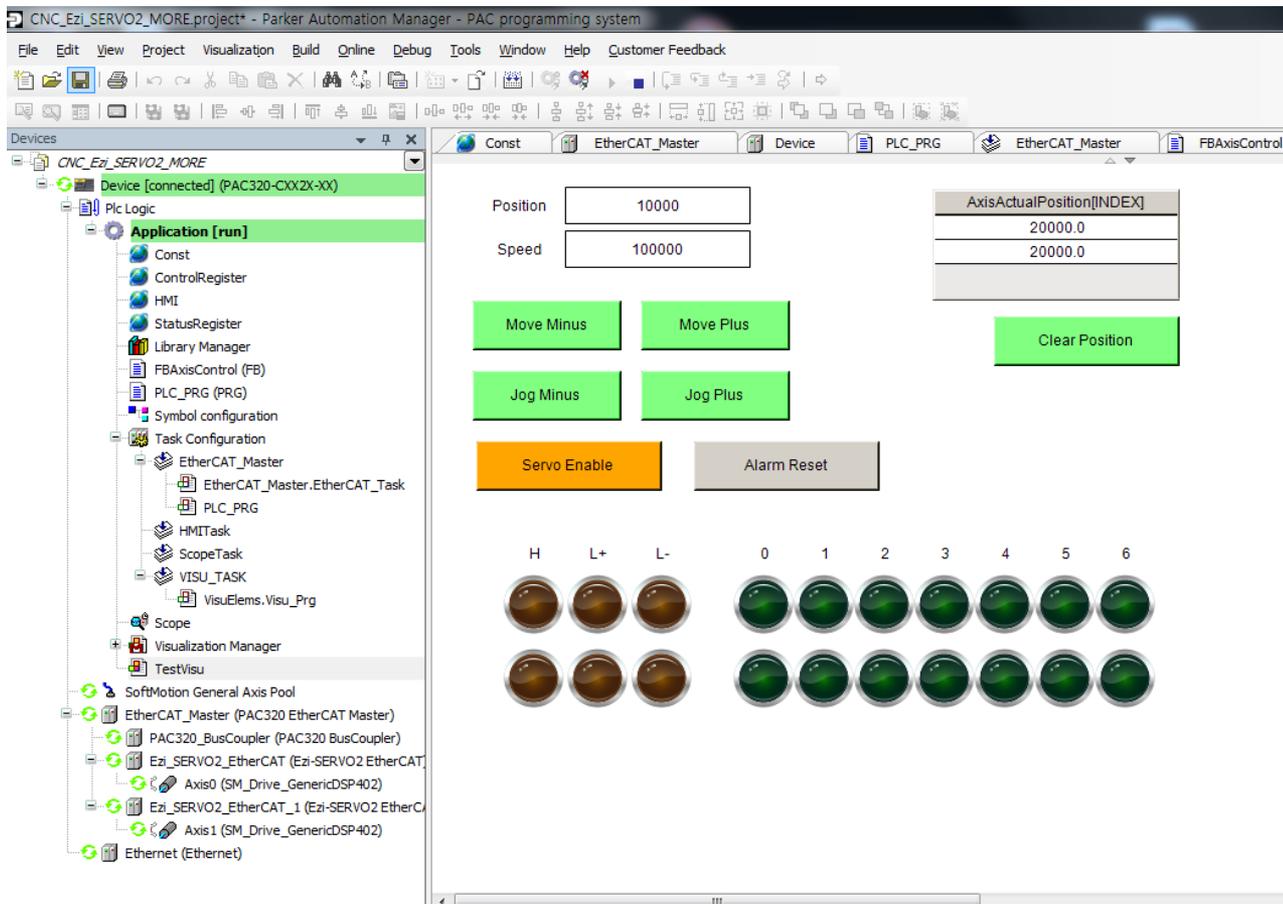
구동

- 연두색 마크 확인 후 TestVisu 더블 클릭



구동

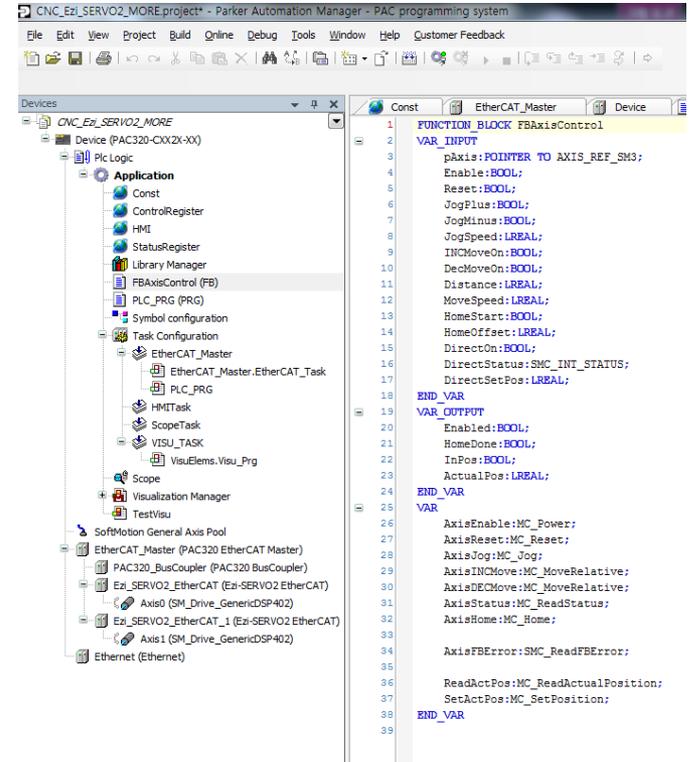
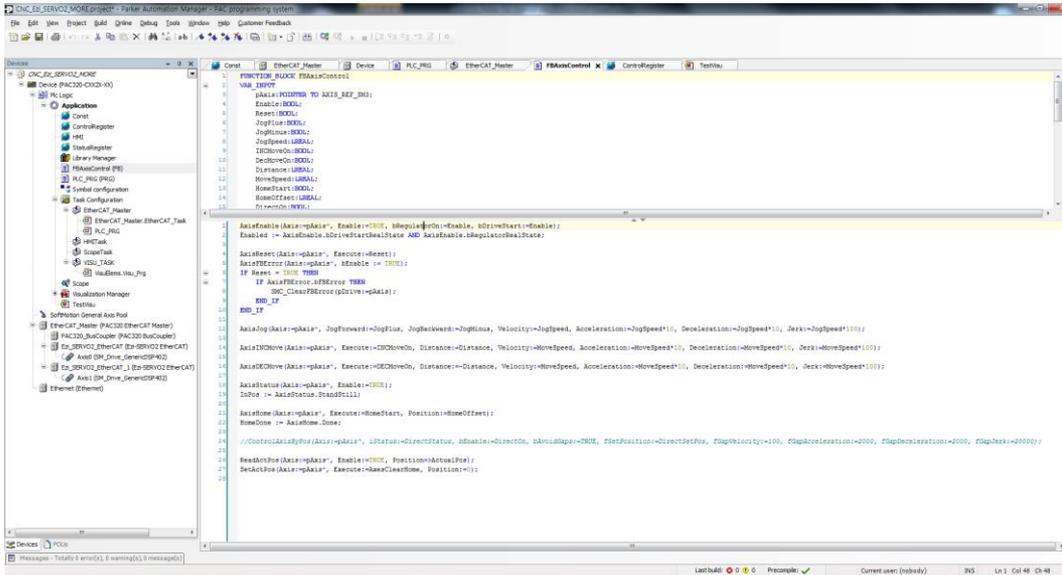
Servo Enable 버튼을 클릭하면 서보온이 되며 구동을 해볼 수 있음
(기본적인 Jog 운전, 위치 이동 등 구동 가능)



* PAC 제어기는 따로 UI가 없으며 구동을 위해서는 프로그램을 짜야 하며
상기의 Visualizaion 된 이미지는 임의로 짠 프로그램임

기타

이 TestVisu를 실행하기 위해서는 application 쪽에서 하기와 같이 곳곳에 프로그램을 연계하여 만들어야 함



우리는 40년 Stepping Motor의 역사를 바꾸는 주인공입니다!!



세계로!!
세계로!!



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