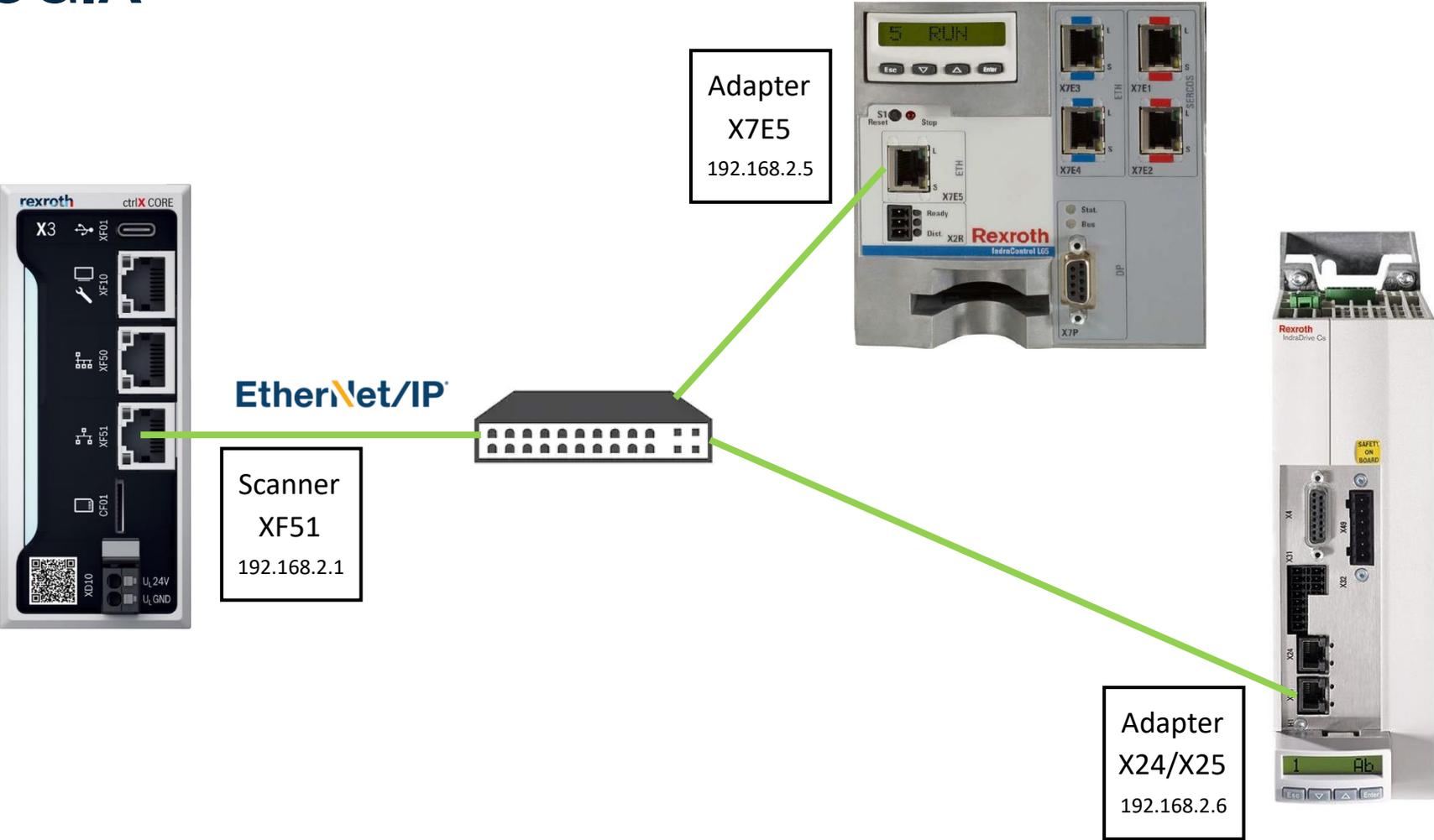


ctrlX CORE

EtherNet/IP Scanner

David Herrero DCET/SVC1-ES

TOPOLOGIA

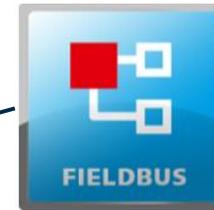
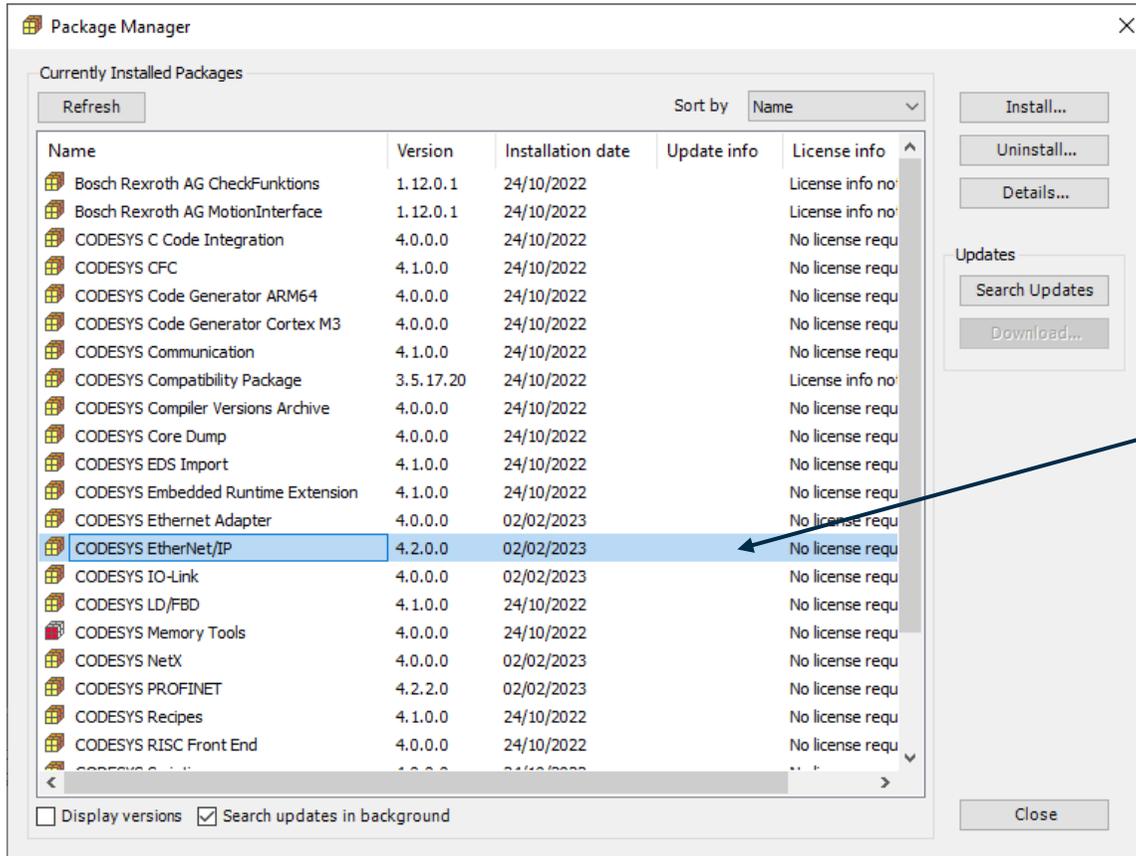


TERMINOLOGIA

Término	Descripción
Scanner	Maestro
Adapter	Esclavo
RPI (Requested Packet Interval)	Tiempo de envío/recibo de datos I/O
Originator → Target (Consumption)	Salidas
Target → Originator (Production)	Entradas

ctrlX PLC

Instalar el package CODESYS EtherNet/IP Scanner



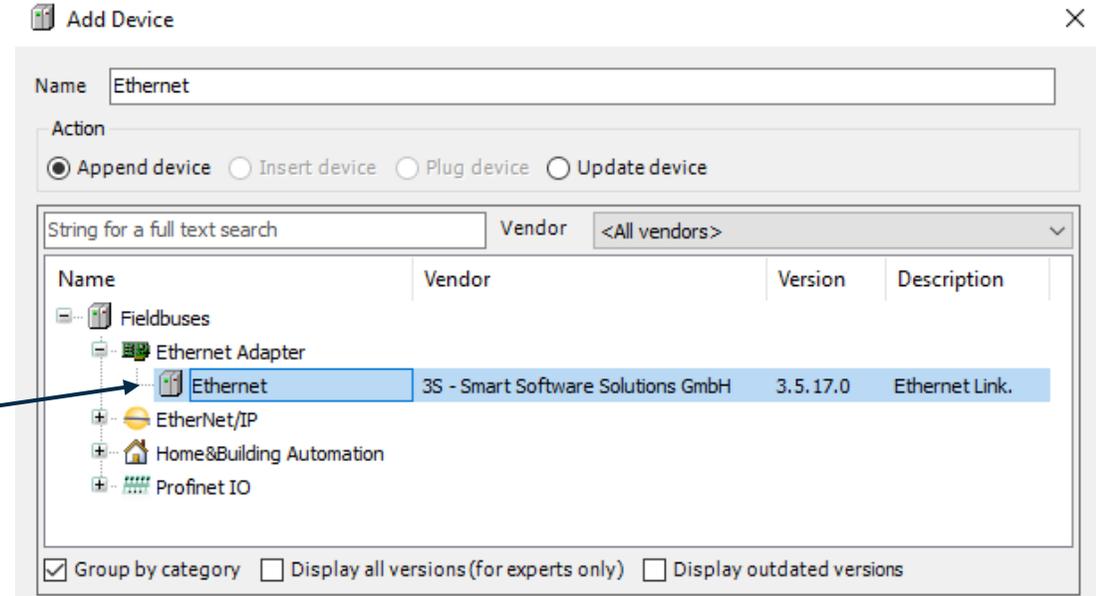
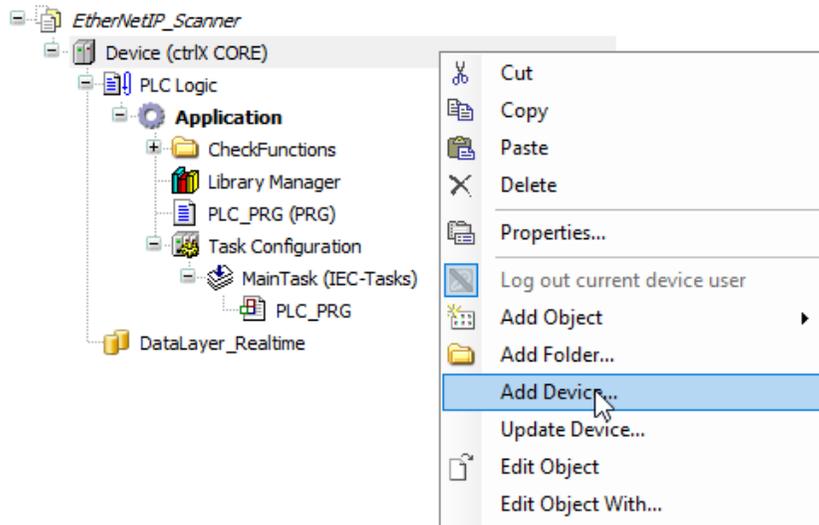
25.01.2023 | 21.3 MB | zip

Ethernet IP Scanner >

Ethernet IP Scanner 4.2.0.0

ctrlX PLC

Añadir el dispositivo Ethernet



ctrlX PLC

Asignar a Ethernet el puerto de red del conector XF51 del ctrlX CORE (eth1)

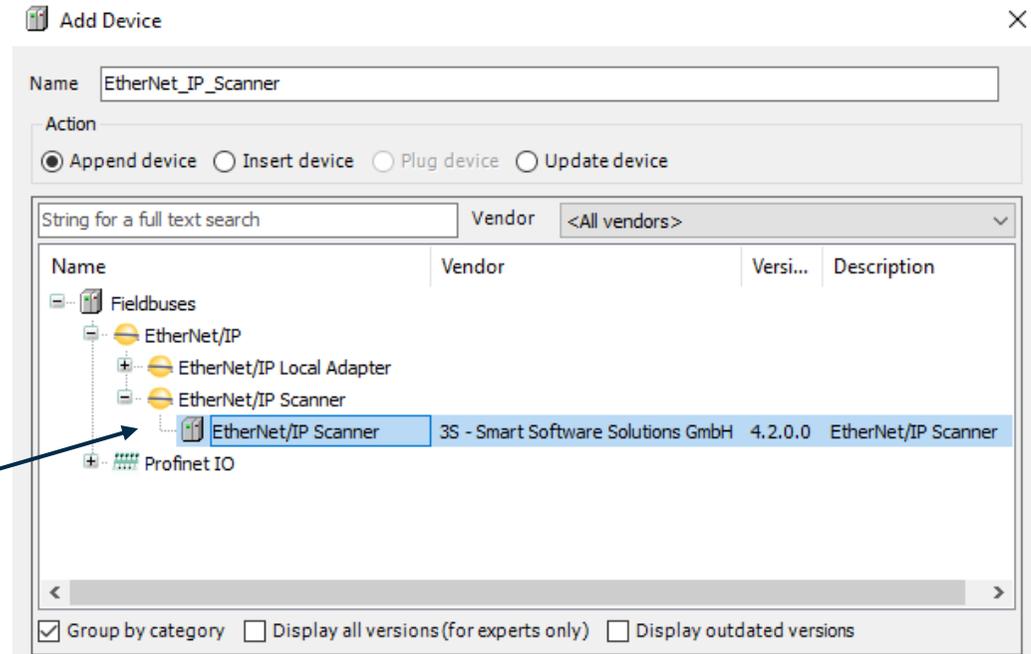
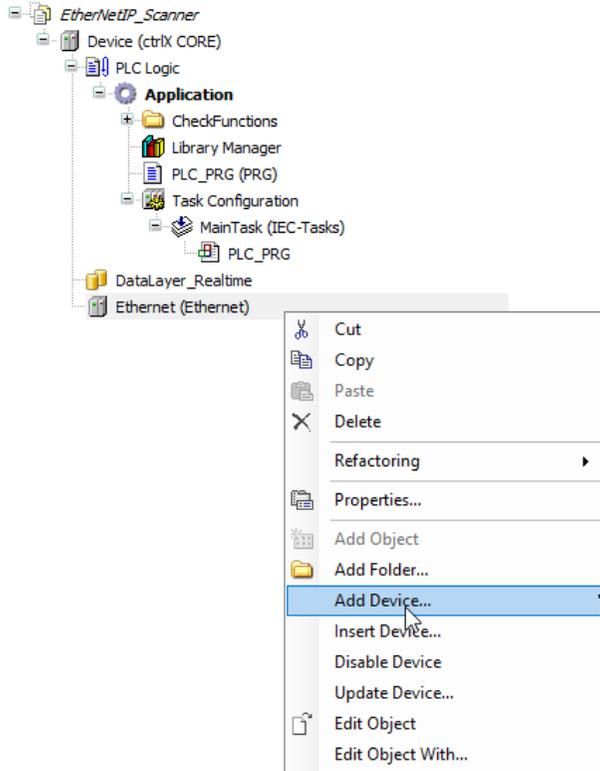
The screenshot displays the configuration environment for a ctrlX PLC. On the left, a tree view shows the project structure under 'EtherNetIP_Scanner', including 'Device (ctrlX CORE)' and 'PLC Logic'. The main area shows the 'Ethernet' configuration window with fields for 'Network interface' (eth1), 'IP address' (192.168.2.1), 'Subnet mask' (255.255.255.0), and 'Default gateway' (0.0.0.0). A 'Browse...' button is next to the network interface field. Below this, the 'Network Adapters' dialog is open, showing a table of interfaces:

Name	Description	IP address
lo		127.0.0.1
eth1		192.168.2.1
eth0		192.168.1.10

The 'eth1' interface is selected. Below the table, fields for 'IP address' (192.168.2.1), 'Subnet mask' (255.255.255.0), 'Default gateway' (0.0.0.0), and 'MAC address' (00:60:34:85:DD:8D) are visible. An arrow points from the 'eth1' entry in the table to the 'Browse...' button in the 'Ethernet' window. Another arrow points from the 'eth1' entry to the 'Overview' tab of the 'ctrlX CORE' configuration window. In this window, the 'IP addresses' field is highlighted in red, showing '192.168.2.1/24 (static)'. Other fields include 'Interface type: Ethernet', 'MAC address: 00:60:34:85:dd:8d', 'Connection state: n/a', and 'IP forwarding: disabled'. 'Save' and 'Cancel' buttons are at the bottom.

ctrlX PLC

Añadir el dispositivo EtherNet/IP Scanner



ctrlX PLC

La prioridad de la tarea ENIPScannerIOTask tiene que estar entre 20 y 39 y ser inferior a la tarea ENIPScannerServiceTask. Por defecto está en 0 y da error. Esta tarea está asociada al EtherNet/IP Scanner.

The image displays two screenshots from the ctrlX PLC configuration software. The top screenshot shows the 'ENIPScannerIOTask' configuration window. The 'Priority (20..39)' field is set to 25, and the 'Task group' is 'IEC-Tasks'. The 'Type' is 'Cyclic' with an interval of 10. The 'Watchdog' section has 'Enable' unchecked. The 'POU' table lists 'EtherNet_IP_Scanner.IOCycle'. The bottom screenshot shows the 'EtherNet/IP Scanner I/O Mapping' window, where the 'Bus cycle task' is set to 'ENIPScannerIOTask' and there is a 'Recreate required tasks' button. Arrows indicate the relationship between the task in the configuration window and its assignment in the I/O mapping window.

ctrlX PLC

Añadir o escanear los esclavos. Es necesario tener instalados los .eds correspondientes.

The image shows a screenshot of the ctrlX PLC software interface. On the left, a tree view shows a folder named 'Ethernet (Ethernet)' containing an object named 'EtherNet_IP_Scanner (EtherNet/IP Scanner)'. A context menu is open over this object, with the 'Scan for Devices...' option highlighted. An arrow points from this menu item to the 'Scan Devices' dialog box on the right.

The 'Scan Devices' dialog box has a title bar with standard window controls. Below the title bar is a section labeled 'Scanned Devices' containing a table with the following data:

Device name	Device type	IP Address	Serial Number
IndraControl_L45	IndraControl L45(Major Revision=16#3, Minor Revision = 16#...	192.168.2.5	34961859 (16#21579C3)
IndraDrive	IndraDrive(Major Revision=16#1, Minor Revision = 16#b)	192.168.2.6	884095937 (16#34B23BC1)

At the bottom of the dialog box, there is a checkbox labeled 'Show differences to project' which is unchecked. Below this are three buttons: 'Scan Devices', 'Copy All Devices to Project' (which is highlighted with a red rectangle), and 'Close'.

ctrlX PLC

Comprobar la IP de los esclavos

The screenshot shows the 'IndraControl_L45' software window with the 'EtherNet/IP I/O Mapping' tab selected. Under 'Address Settings', the IP address is set to 192.168.2.5. Under 'Electronic Keying', the 'Compatibility check' is unchecked. The following parameters are checked for a match:

Parameter	Value	Check match
Vendor ID	287	<input checked="" type="checkbox"/>
Device type	0	<input checked="" type="checkbox"/>
Product code	13	<input checked="" type="checkbox"/>
Major revision	3	<input checked="" type="checkbox"/>
Minor revision	1	<input type="checkbox"/>

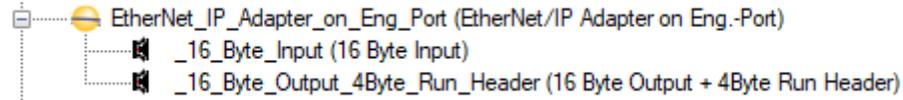
The screenshot shows the 'IndraDrive' software window with the 'EtherNet/IP I/O Mapping' tab selected. Under 'Address Settings', the IP address is set to 192.168.2.6. Under 'Electronic Keying', the 'Compatibility check' is unchecked. The following parameters are checked for a match:

Parameter	Value	Check match
Vendor ID	287	<input checked="" type="checkbox"/>
Device type	43	<input checked="" type="checkbox"/>
Product code	8	<input checked="" type="checkbox"/>
Major revision	1	<input checked="" type="checkbox"/>
Minor revision	11	<input type="checkbox"/>

ctrlX PLC

Vincular las palabras de entrada y salida del esclavo L45

Configuración en el esclavo



Configuración en el maestro

El RPI tiene que ser múltiplo del tiempo configurado en la tarea ENIPScannerIOTask

Connection Name	RPI (ms)	O-->T Size (Bytes)	T-->O Size (Bytes)	Proxy Config Size (Bytes)	Target Config Size (Bytes)	Connection Path
1. Exclusive Owner Connection	10	16	16			20 04 24 66 2C 64 2C 65

Edit Connection

General Parameters

Connection Path: 20 04 24 66 2C 64 2C 65

Trigger type: Cyclic

Transport type: Exclusive owner

RPI (ms): 10

Timeout multiplier: 4

Scanner to Target (Output)

O-->T size (bytes): 16

Proxy config size (bytes): 0

Target config size (bytes): 0

Connection type: Point to Point

Connection priority: Scheduled

Fixed/Variable: Fixed

Transfer format: 32-bit run/idle

Inhibit time (ms): 0

Heartbeat multiplier: 1

Target to Scanner (Input)

T-->O size (bytes): 16

Connection type: Point to Point

Connection priority: Scheduled

Fixed/Variable: Fixed

Transfer format: 32-bit run/idle

Inhibit time (ms): 0

ctrlX PLC

Vincular las palabras de entrada y salida del esclavo Indradrive

Configuración en el esclavo

The screenshot shows the configuration interface for an IndraDrive. On the left is a tree view with the following structure:

- IndraDrive [2] default
 - Overview
 - Master communication
 - Power supply
 - Axis [2] default
 - Master communication - axis
 - Settings
 - Multiplex channel
 - Signal control word
 - Signal status word
 - Motor, drive mechanics, measur
 - Limit values
 - Drive control
 - Operation modes / Drive Halt
 - Error reaction
 - Parameter set switching
 - Probe
 - Optimization / commissioning
 - Virt. master axis generator
 - Measuring encoder
 - Position switch
 - Local I/Os
 - Remote I/O

The main configuration area on the right is titled "EtherNet/IP™" and includes the following settings:

- Axis mode: Operating mode
- Field bus diagnostics: TIMEOUT : Master-Slave timed out
- Profile type: Freely configurable mode (with an "i" icon) and "Activate profile type" button
- Data channel: Real-time input (AT) | Real-time output (MDT)
- Length of cyclic real-time channel: 14 Byte
- Length of cyclic command channel: 14 Byte
- Target operating mode after run-up (booting): Automatic run-up to OM (operating mode)
- Reaction to failure of cyclic communication: As error (F4xx) and config. error reaction of the drive

Configuración en el maestro

The screenshot shows two configuration panels for EtherNet/IP communication:

- Scanner to Target (Output):**
 - O-->T size (bytes): 14
 - Proxy config size (bytes): 0
 - Target config size (bytes): 0
 - Connection type: Point to Point
 - Connection Priority: Scheduled
 - Fixed/Variable: Fixed
 - Transfer format: 32-bit run/Idle
 - Inhibit time (ms): 0
 - Heartbeat multiplier: 1
- Target to Scanner (Input):**
 - T-->O size (bytes): 14
 - Connection type: Point to Point
 - Connection priority: Scheduled
 - Fixed/Variable: Fixed
 - Transfer format: Pure data
 - Inhibit time (ms): 0

ctrlX PLC

El tamaño de las palabras se puede customizar con el fin de facilitar la asignación de las mismas.

Para el IndraDrive:

No.	Config list cyclic command data channel
1	P-0-4077 : Field bus: Control word
2	S-0-0282 : Positioning command value
3	S-0-0259 : Positioning velocity
4	S-0-0000 : < empty >
5	S-0-0000 : < empty >
6	--

No.	Config list cyclic actual data channel
1	P-0-4078 : Field bus: Status word
2	S-0-0386 : Active position feedback value
3	S-0-0040 : Velocity feedback value of encoder 1
4	S-0-0390 : Diagnostic message number
5	--

The screenshot shows the IndraDrive software interface with the 'Assemblies' tab selected. It displays connection details and data channel configurations for both consuming and producing assemblies.

Connection Name	O-->T Size (Bytes)	T-->O Size (Bytes)	Proxy Config Size (Bytes)	Target Config Size (Bytes)
1. Exclusive Owner Connection	14	14		

Consuming Assembly "IndraDrive_InputData" (O-->T)				
Name	Data Type	Bit Length	Unit	Help String
Field bus: Control word	WORD	16		
Position command value	DWORD	32		
Positioning velocity	DWORD	32		
Dummy (not used)	WORD	16		
Dummy (not used)	WORD	16		

Producing Assembly "IndraDrive_OutputData" (T-->O)				
Name	Data Type	Bit Length	Unit	Help String
Field bus: Status word	WORD	16		
Active position feedback value	DWORD	32		
Velocity feedback value	DWORD	32		
Diagnostic message number	DWORD	32		

ctrlX PLC

Monitorización de variables I/O

The screenshot displays the ctrlX PLC software interface. On the left, the 'Devices' tree shows the 'EtherNet_IP_Scanner' configuration, including the 'Application [run]' and 'IndraDrive (IndraDrive)' components. On the right, the 'IndraDrive' window is open to the 'EtherNet/IP I/O Mapping' tab, showing a table of variables and their mappings.

Variable	Mapping	Channel	Address	Type	Default Value	Current Value	Pr
Exclusive Owner Conne...							
		Field bus: Status word	%IW16	WORD		43150	
		Active position feedback value	%ID20	DWORD		1582498	
		Velocity feedback value	%ID24	DWORD		27466	
		Diagnostic message number	%ID28	DWORD		2048009	
		Field bus: Control word	%QW16	WORD		0	
		Position command value	%QD20	DWORD		0	
		Positioning velocity	%QD24	DWORD		0	
		Dummy (not used)	%QW28	WORD		0	
		Dummy (not used)	%QW30	WORD		0	

ctrlX PLC

Ejemplo de diagnóstico de maestro y esclavos

PLC_PRG x

Device.Application.PLC_PRG

Expression	Type	Value
IPAddress_IndraDrive	ARRAY [0..3] OF BYTE	
IPAddress_IndraDrive[0]	BYTE	192
IPAddress_IndraDrive[1]	BYTE	168
IPAddress_IndraDrive[2]	BYTE	2
IPAddress_IndraDrive[3]	BYTE	6

```
1
2 //Diagnóstico maestro
3 ● EtherNet_IP_Scanner.eError: NO_ERROR ; //Maestro en error
4 ● EtherNet_IP_Scanner.eState: RUNNING ; //Estado actual
5 ● EtherNet_IP_Scanner.xReset: FALSE ; //Ejecutar reset
6
7 //Diagnóstico esclavo IndraDrive
8 ● IndraDrive.eState: RUNNING ; //Estado (RUNNING, ERROR, RESET...)
9 ● IndraDrive.xDiagnosticAvailable: FALSE ; //Diagnostico disponible
10 ● IndraDrive.sDiagString: 'Connection > ; //Diagnóstico
11 ● IPAddress_IndraDrive := IndraDrive.IPAddress; //IP address
12 ● IndraDrive.xReset: FALSE ; //Ejecutar reset
13 ● IndraDrive.xAcknowledge: FALSE ; //Ejectutar ack
14 ● RETURN
```