

### 5 LinMot Profile: Rockwell Automation Studio 5000 (Outdated)

#### 5.1 Overview



**Update July 2022: LinMot recommends -CM or -MI drives instead of -IP drives for new applications**

The most recent instruction set for LinMot CM and MI drives (CIPSync Motion) now also supports LinMot -IP drives. Please find the instruction set with included example projects and documentation here:

[http://download.linmot.com/plc\\_lib/examples/Rockwell\\_CM/](http://download.linmot.com/plc_lib/examples/Rockwell_CM/)

This chapter shows how a LinMot drive with *LinMot EtherNet/IP* interface (e.g., C1250-IP-XC-0S) can be integrated and setup in a Rockwell Automation environment to be used with the library provided by LinMot.

#### Download:

The Add-On Instructions for Rockwell Automation controllers can be downloaded from: [http://download.linmot.com/plc\\_lib/libraries/Rockwell/](http://download.linmot.com/plc_lib/libraries/Rockwell/) (named *Rockwell\_LM\_AOI\_Set\_...*)



#### Note:

More information can be found in the library documentation (part of the above-mentioned download) and in the user manual EtherNet/IP (see chapter 1.4 Documentation / User Manuals)

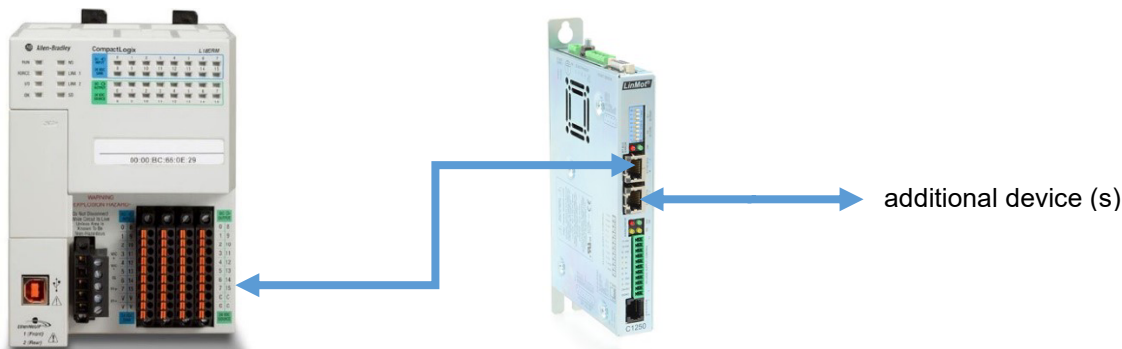


Image Source: <http://www.rockwellautomation.com/>

EtherNet/IP is an industrial Ethernet network that implements the Common Industrial Protocol (CIP).

For further information on EtherNet/IP please visit:

<http://www.odva.org>



**YouTube video series** (LinMot Integration – Rockwell Automation EtherNet/IP):

<https://youtube.com/playlist?list=PLMSLCScLnf94pEISNCovUf2-RpGJ8L6R>

#### 5.2 Minimum Requirements



#### Important:

Use only Allen-Bradley controller firmware revision 18.0 or higher!  
For EDS support Allen-Bradley controller firmware revision 20.0 or higher is required!

The AOP for C1250-IP-XC-xS and E1250-IP-UC drives are included in Studio 5000 from V31!  
For Studio 5000 versions older than V31 the AOP installation package can be downloaded from: [http://download.linmot.com/plc\\_lib/libraries/Rockwell/](http://download.linmot.com/plc_lib/libraries/Rockwell/) (LM\_DRIVE\_Rel15\_RELEASE.zip)

#### Attention:

When you have installed the AOP manually, e.g., from the link above, it is highly recommended to uninstall them before installing Studio V31. As they are part of Studio V31 errors may occur during installation.

## 5.3 Configuration and Connection of the LinMot Drive

The LinMot drive is configured using the LinMot-Talk software:  
<http://www.linmot.com/download/linmot-talk-drive-configuration/>

### 5.3.1 Motor Configuration

It is assumed that the motor connected to the drive is already configured.



Use the *Motor Wizard* inside LinMot-Talk to setup the motor (Menu -> Drive -> Motor Wizard):



See Appendix I: Basic Position Control Loop Tuning

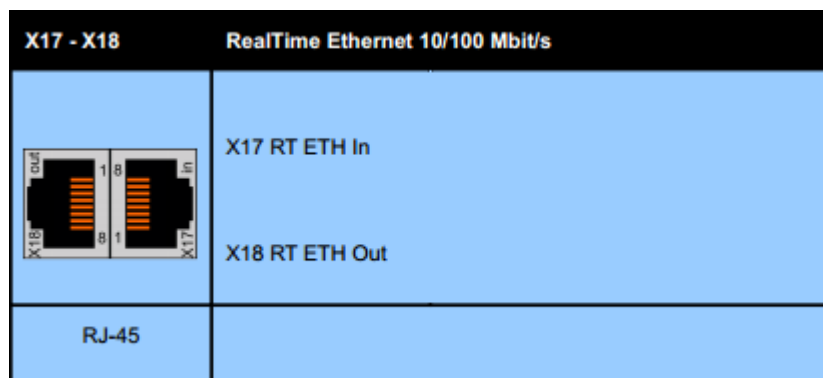
### 5.3.2 EDS Files (Requires Studio 5000 V20 or higher)

Install the EDS file that is part of the LinMot-Talk software/firmware you are using.  
 The most recent device files are always part of the newest LinMot-Talk software. They are located by default:

- EtherNet/IP: \\LinMot-Talk X.X Build XXXXXXXX\Firmware\Interfaces\EtherNetIP\EDS

### 5.3.3 EtherNet/IP Connection

The drive is connected to the EtherNet/IP network using the X17 & X18 connectors.

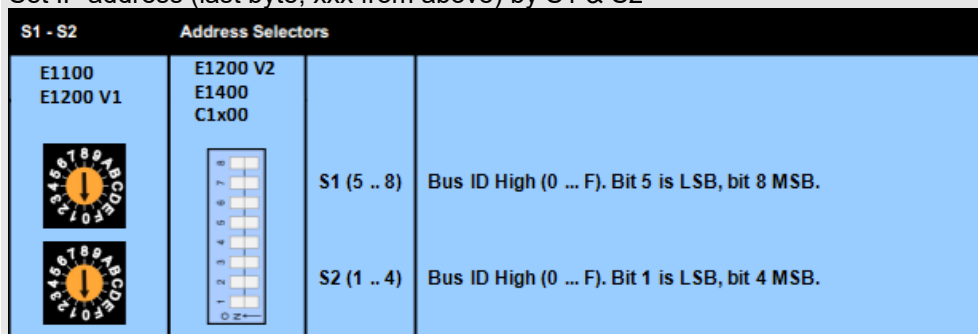


### 5.3.4 IP Address

The default IP address is 192.168.001.xxx, where the last byte xxx is defined via the two address selectors S1 & S2. S1 sets the high and S2 the low digit. E.g., S1 = 5, S2 = A -> 5A (hex) = 90 (dec) -> IP = 192.168.1.90



Set IP address (last byte, xxx from above) by S1 & S2



#### Attention:

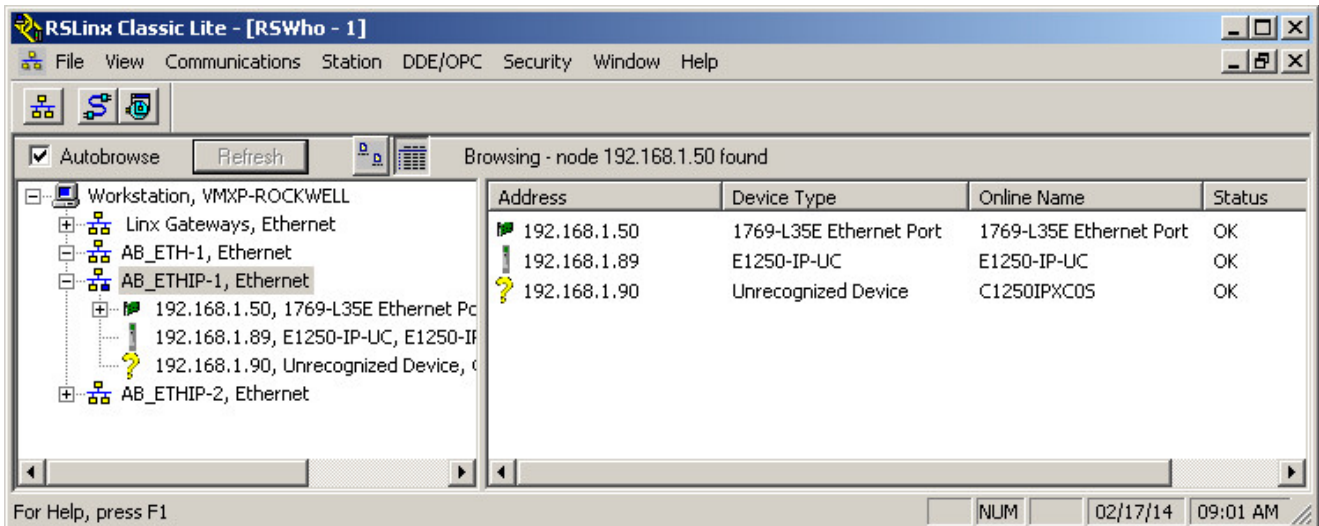
The switch value **S1 = S2 = 0 (factory default setting)** is a special configuration which acquires the IP address via DHCP (e.g., for use with the BOOTP-DHCP Tool from Rockwell Automation)!

### 5.4 PLC Setup EtherNet/IP

#### 5.4.1 RSLinx Classic

After setting the IP address the new LinMot device should appear in RSLinx Classic as “Unrecognized Device” (e.g., IP 192.168.1.90 see below).

If the EDS file is installed, the LinMot drive will appear in RSLinx with its Device Type (e.g., IP 192.168.1.89).



**Important:**

If no AOP or EDS file is used the LinMot must be setup as Generic Ethernet Module. See chapter 5.4.4

## 5.4.2 Add a LinMot drive using AOP (E1250-IP-xx, C1250-IP-xx)



**Important:**

The AOP for C1250-IP-XC-xS and E1250-IP-UC drives are included in Studio 5000 from V31!

For Studio 5000 version <V31 the AOP installation package for manual installation can be downloaded from:

[http://download.linmot.com/plc\\_lib/libraries/Rockwell/](http://download.linmot.com/plc_lib/libraries/Rockwell/) (LM\_DRIVE\_Rel15\_RELEASE.zip)



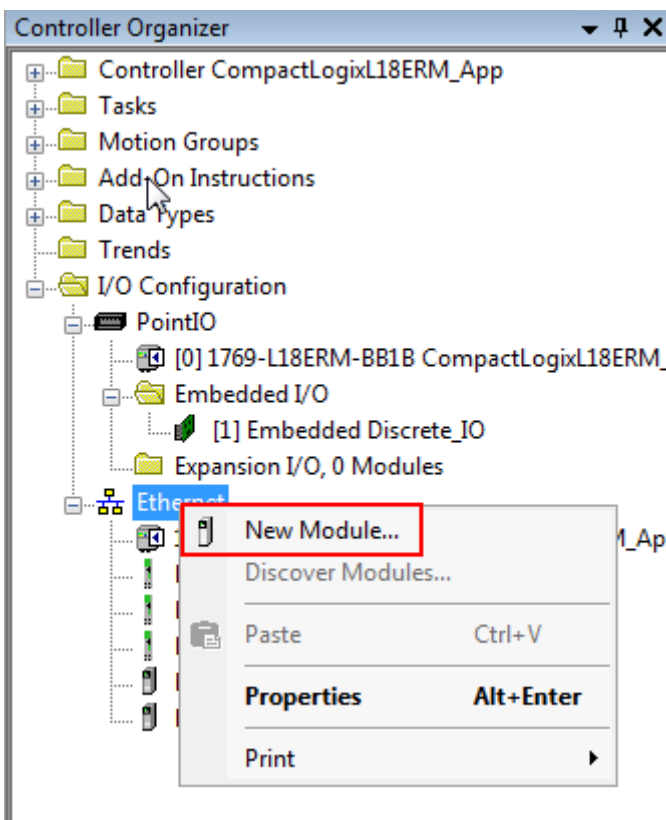
**Attention:**

When you have installed the AOP manually it is highly recommended to uninstall them before installing Studio V31.

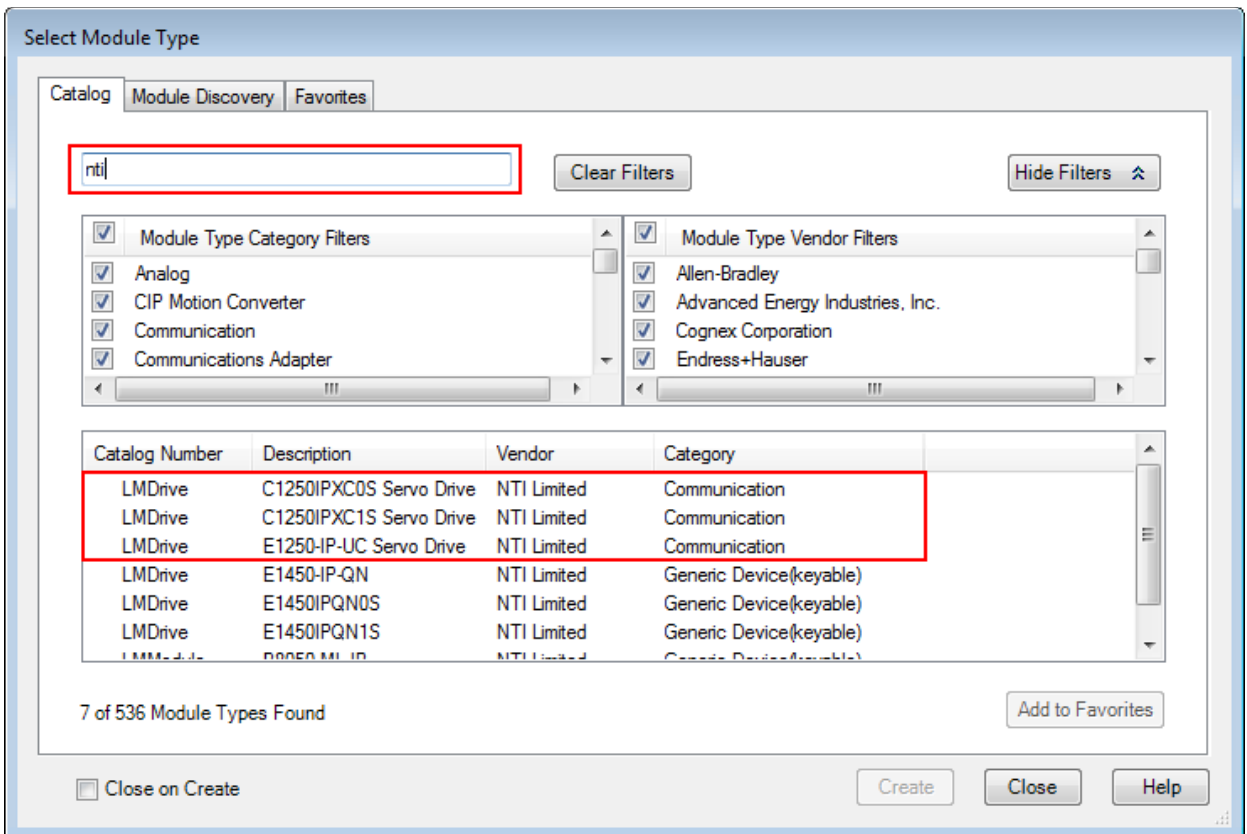
How to uninstall AOP:

- 1) You need to have the installation files for the version of the AOP you are currently running unzipped and available.
- 2) Go to a DOS (command) window. Then navigate to the folder where you have the installation files for the version of the AOP you wish to uninstall.
- 3) Execute this command: MPSETUP/CU
- 4) Follow the prompts and make sure that you check the UNINSTALL checkbox.
- 5) Click "Next". Expand the tree in the left pane to see choices for which AOP(s) you wish to uninstall. Select which AOPs to uninstall.
- 6) Follow the prompt to finish the uninstall

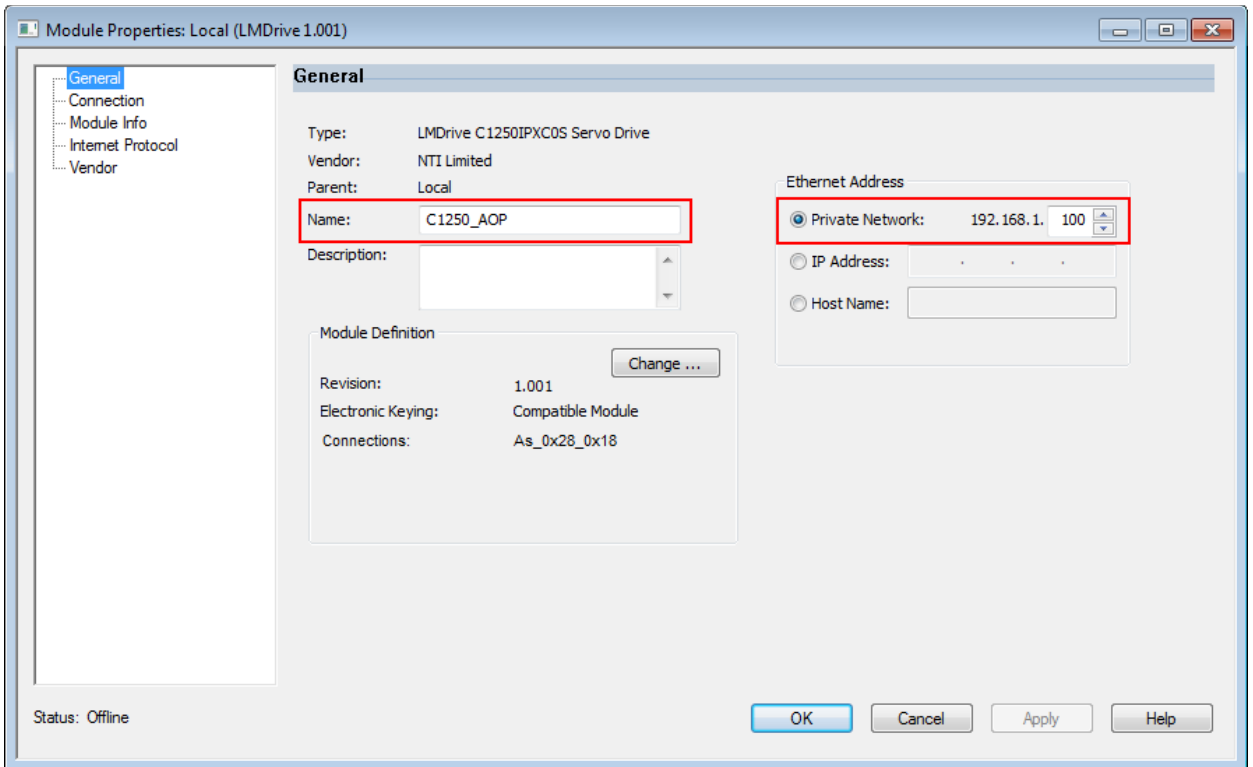
1. Add a new module by right-clicking on Ethernet in the I/O configuration:



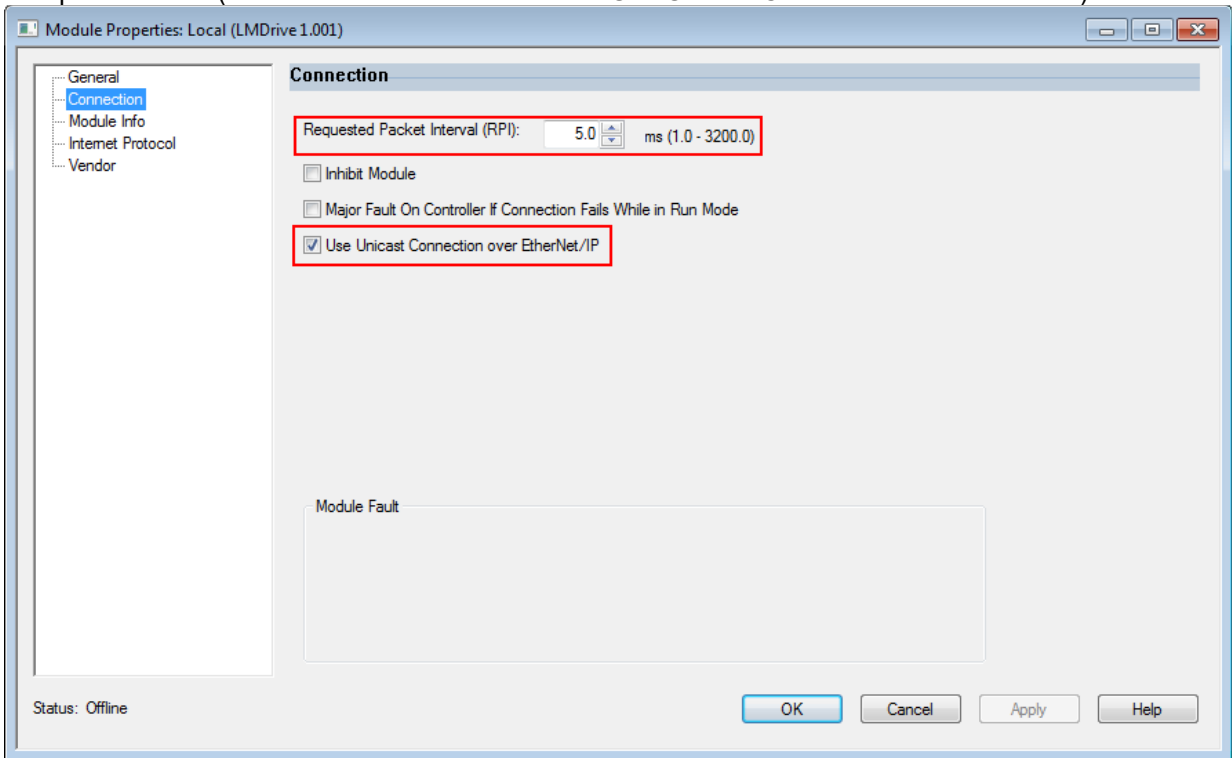
2. Select module type (LMDrive):



3. Set name and IP address:



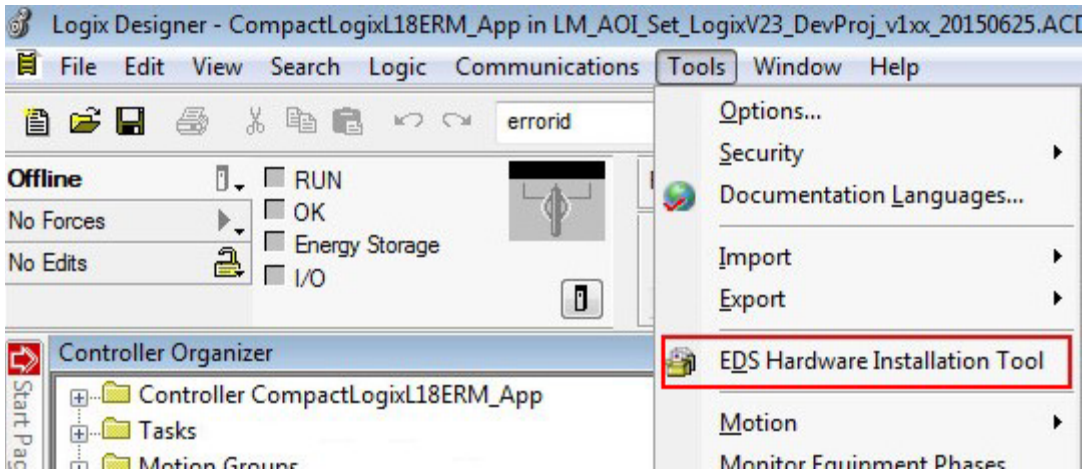
4. Setup connection (Set desired RPI and check that “Use Unicast Connection ... “ is selected)



Now you can download your project to the controller and check if the connection is running, as described in chapter 5.5.

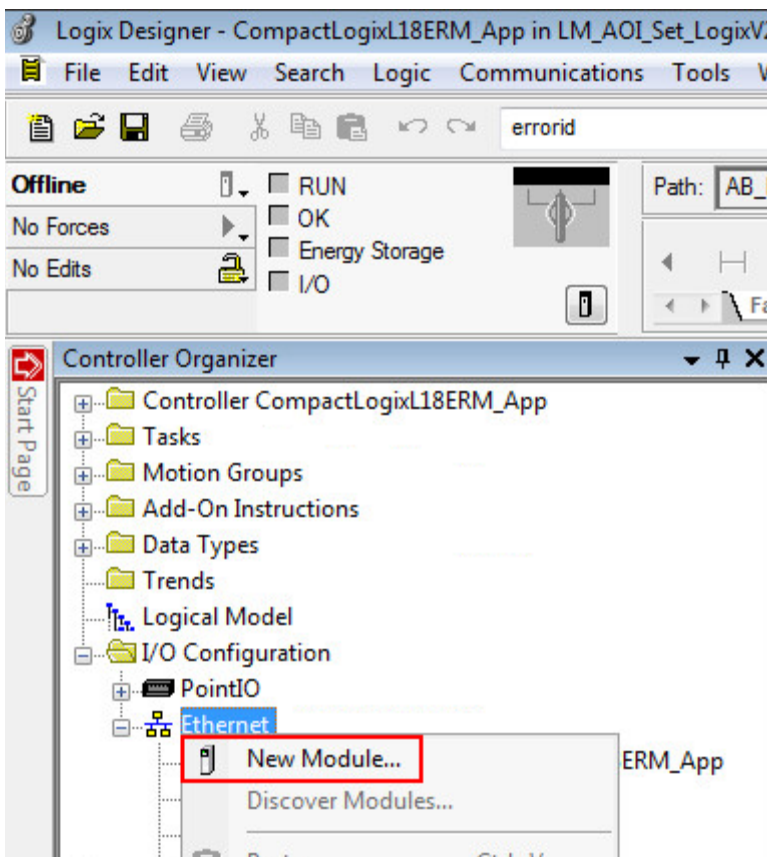
## 5.4.3 Add a LinMot drive using the EDS file (recommended for Studio <V31)

1. The EDS files can be installed using the EDS Hardware Installation Tool:



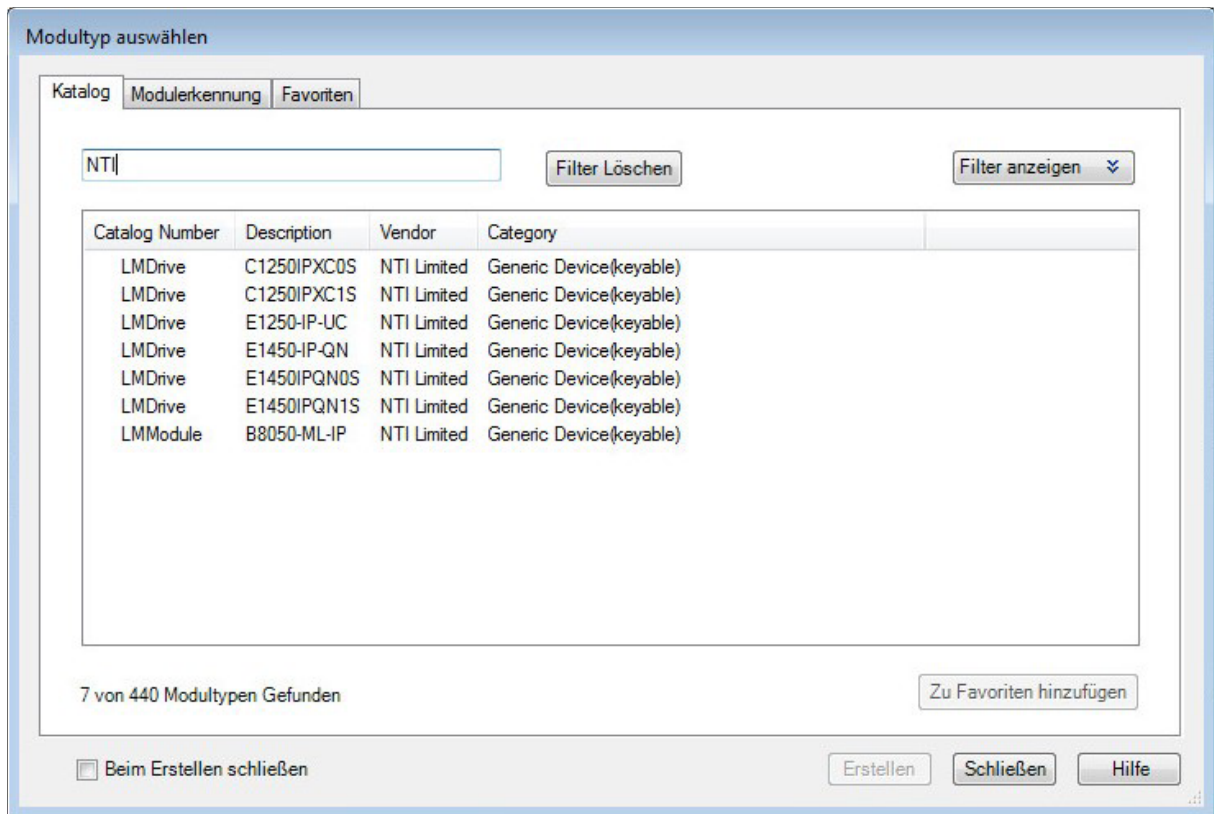
Follow the wizard and install the EDS files from the location mentioned in chapter 5.3.2.

2. Add a new module by right-click on Ethernet in the I/O configuration:





### 3. Select Module Type:

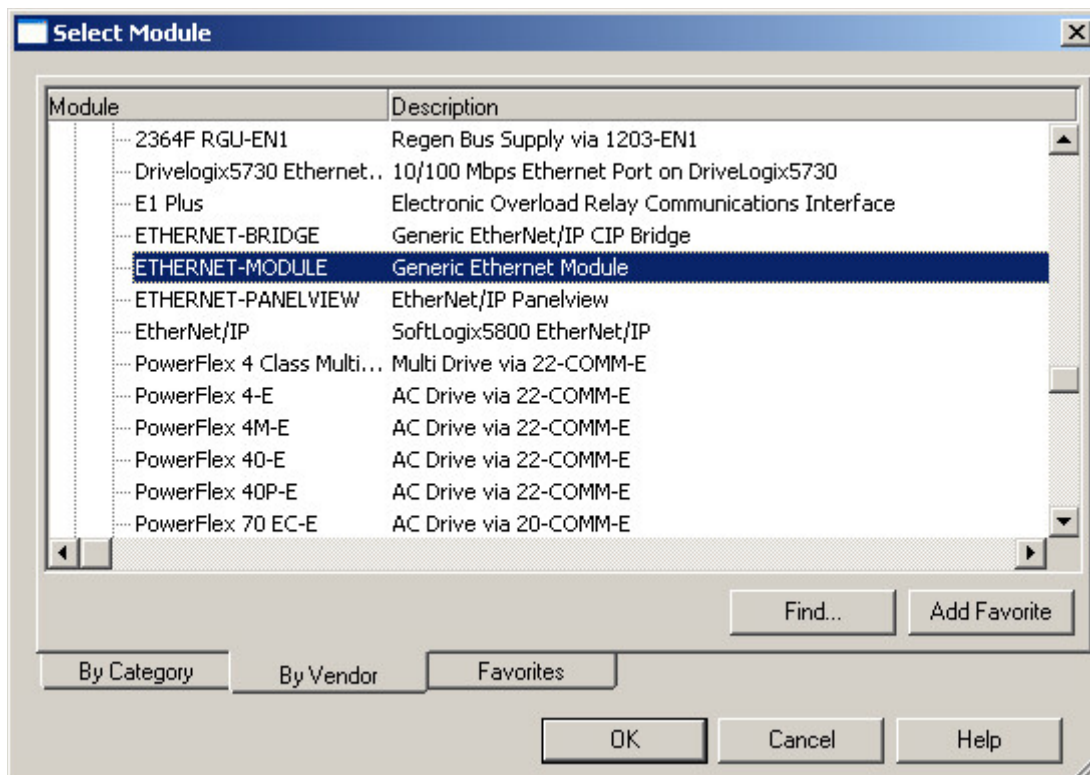
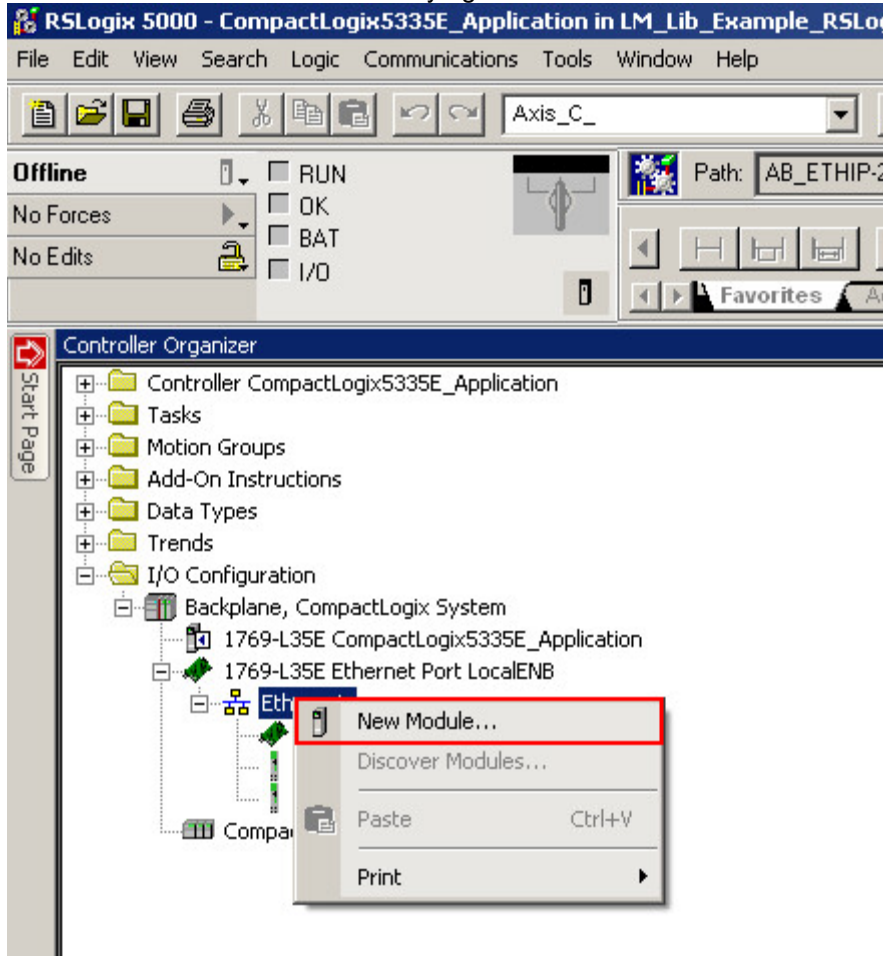


## 4. Set Name and IP Address

The screenshot shows the 'Connection' tab of the LinMot configuration window. The 'Name' field is highlighted with a red box and contains the text 'LMAxis\_1'. The 'Ethernet Address' section is also highlighted with a red box and shows 'Private Network: 192.168.1. 90' selected. The 'Module Definition' section is visible at the bottom left, showing 'Revision: 1.001', 'Electronic Keying: Compatible Module', and 'Connections: As\_0x28\_0x18'. The status bar at the bottom indicates 'Status: Offline' and includes buttons for 'OK', 'Cancel', 'Apply', and 'Help'.

### 5.4.4 Add a LinMot drive as Generic Ethernet Module (ETHERNET-MODULE)

1. Add a new *ETHERNET-MODULE* by right-click on Ethernet in the I/O Configuration:



2. Setup of the Module Properties:
  - Name
  - Comm Format
  - IP Address
  - Input and output assembly size



**Attention:**

Be careful when defining these parameters, because only a correct setting will run in the EtherNet/IP network. Only the name and the RPI (Requested Packet Interval) can be defined freely.

The IP must be set according to the IP settings of the LinMot drive or vice-versa.

**New Module**

Type: ETHERNET-MODULE Generic Ethernet Module  
 Vendor: Allen-Bradley  
 Parent: LocalENB  
 Name: LinMot\_Drive  
 Description:   
 Comm Format: Data - INT  
 Address / Host Name:  
 IP Address: 192 . 168 . 1 . 90  
 Host Name:   
 Connection Parameters:  
 Input: 24 13 (16-bit)  
 Output: 40 16 (16-bit)  
 Configuration: 1| 0 (8-bit)  
 Status Input:   
 Status Output:   
 Open Module Properties  
 [OK] [Cancel] [Help]

**Module Properties: LocalENB (ETHERNET-MODULE 1.1)**

General | Connection | Module Info

Requested Packet Interval (RPI): 10.0 ms (1.0 - 3200.0 ms) **Desired Cycle Time**  
 Inhibit Module  
 Major Fault On Controller If Connection Fails While in Run Mode  
 Use Unicast Connection over EtherNet/IP  
 Module Fault:   
 Status: Offline  
 [OK] [Cancel] [Apply] [Help]

### 5.5 Check with LinMot-Talk if the Fieldbus is running

LinMot-Talk shows the status of the fieldbus. Open the variables *Ethernet/IP* for actual IP address, Net Mask or *Ethernet/IP:O->T, T->O config* to check the connection.



Check fieldbus status:

Name	Value
Connection State	Established
Originator IP Address	192.168. 1. 51
O -> T Connection Type	Point to Point
O -> T Assembly Instance	28h
O -> T API	5 ms
O -> T Timeout	160 ms
O -> T Size	38
O -> T Sequence Number	16222230
T -> O Connection Type	Point to Point
T -> O Assembly Instance	18h
T -> O API	5 ms
T -> O Size	28
T -> O Sequence Number	16220483
O -> T Cycle Time	5039.8 us
Minimal O -> T Cycle Time	680.4 us
Maximal O -> T Cycle Time	6345 us

### 5.6 Next Steps

Now you can start implementing your application using the function blocks and documentation from the download link in chapter 5.1 Overview.