

### 5 LinMot Profile: Rockwell Automation Studio 5000 (Outdated)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

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: <a href="http://download.linmot.com/plc\_lib/libraries/Rockwell/">http://download.linmot.com/plc\_lib/libraries/Rockwell/</a> (named Rockwell\_LM\_AOI\_Set\_...)

#### Note:

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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: <a href="http://www.odva.org">http://www.odva.org</a>

YouTube video series (LinMot Integration – Rockwell Automation EtherNet/IP): <u>https://youtube.com/playlist?list=PLMSLCScLnf94pEISNCorvUf2-RpGJ8L6R</u>

#### 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/ (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.





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 XXXXXXX\Firmware\Interfaces\EtherNetIP\EDS

#### 5.3.3 EtherNet/IP Connection

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

X17 - X18	RealTime Ethernet 10/100 Mbit/s
X18 Control of the second seco	X17 RT ETH In X18 RT ETH Out
RJ-45	

#### 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





#### 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).

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😤 File View Communications Station DDE/OPC	Security Window Hel	lp .		_ 8 ×
* \$0				
Autobrowse Refresh	owsing - node 192.168.1.5	0 found		
⊡… 🖳 Workstation, VMXP-ROCKWELL	Address	Device Type	Online Name	Status
	192.168.1.50 192.168.1.89 192.168.1.90	1769-L35E Ethernet Port E1250-IP-UC Unrecognized Device	1769-L35E Ethernet Port E1250-IP-UC C1250IPXC05	ок ок ок
	<u></u>			<b>_</b>
For Help, press F1			NUM 02/17/14	09:01 AM //



## 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/ (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.

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):

tij		Clear	Filters	Hide Filters 🛸
Module Type	e Category Filters		Module Type Vendor Filters	-
Analog			Allen-Bradley	
CIP Motion C	onverter		Advanced Energy Industries, Inc.	
Communicatio	on		Cognex Corporation	
Communicatio	ons Adapter	-	Endress+Hauser	
•	III	•	< III	•
Catalog Number	Description	Vendor	Category	-
LMDrive	C1250IPXC0S Servo Drive	NTI Limited	Communication	
LMDrive	C1250IPXC1S Servo Drive	NTI Limited	Communication	
LMDrive	E1250-IP-UC Servo Drive	NTI Limited	Communication	
LMDrive	E1450-IP-QN	NTI Limited	Generic Device(keyable)	
LMDrive	E1450IPQN0S	NTI Limited	Generic Device(keyable)	
LMDrive	E1450IPQN1S	NTI Limited	Generic Device(keyable)	
L NAME AND A	DODED MILLID	NITE CLASSES	Caracter Davids Annual (a)	



3. Set name and IP address:

Module Properties: Local (LMD	Drive 1.001) General	
Connection Module Info Internet Protocol Vendor	Type: LMDrive C1250IPXC0S Servo Drive Vendor: NTI Limited Parent: Local Name: C1250_AOP Description: Module Definition Module Definition Revision: 1.001 Electronic Keying: Compatible Module Connections: As_0x28_0x18	Ethernet Address   Private Network: 192.168.1,     IP Address: .     Host Name:
Status: Offline		OK Cancel Apply Help



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

III Module Properties: Local (LMD)	ive 1.001) 🗖 🗖 🖉
General Connection	Connection
···· Module Info ···· Internet Protocol	Requested Packet Interval (RPI): 5.0 ms (1.0 - 3200.0)
Vindor	Inhibit Module
	☑ Use Unicast Connection over EtherNet/IP
	Module Fault
Status: Offline	OK Cancel Apply Help

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:

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Start Page		Col Tas Mo Dat Dat Log	ntrolle iks ition G d-On I a Type nds gical M Confi Point Ether	r Compact iroups instructions es fodel guration to New Modu Discover M	ule		_App E	RM_App
			<b>C</b>	Deste		0	1.1/	



#### 3. Select Module Type:

NTI			Filter Löschen	Filter anzeigen     ¥
Catalog Number	Description	Vendor	Category	
LMDrive	C1250IPXC0S	NTI Limited	Generic Device(keyable)	
LMDrive	C1250IPXC1S	NTI Limited	Generic Device(keyable)	
LMDrive	E1250-IP-UC	NTI Limited	Generic Device(keyable)	
LMDrive	E1450-IP-QN	NILLimited	Generic Device(keyable)	
LMDrive	E1450IPQNUS	NTILimited	Generic Device(keyable)	
LMModule	B8050-ML-IP	NTI Limited	Generic Device(keyable)	
7 von 440 Medultu	non Gofundon			Zu Favoriten hinzufügen



#### 4. Set Name and IP Address

Vendor:	NTI Limited					
Parent:	Local			Ethernet Address		
Name: Description:	LIM/XUS_1			Private Network:	192.168.1. 90 🚔	
			<u>^</u>	IP Address:		
				Host Name:		
			-			
Module Defin	ition					
Revision:	1.001					
Electronic Ke	eying: Compatibl	e Module				
Connections	: As_0x28	_0x18				
			Change			



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

1.	Add	a ne\	v ET	HERN	VET-	MOD	UL	<i>E</i> by ri	ght-cl	ick on	Etherne	et in th	ie I/O C	onfigura	ition:
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	File	Edit	View	) Sear	rch	Logic	Co	mmunica	ations	Tools	Window	Help			
	8	2		9	*		3	5	A	xis_C_			-		
	Offli	ne			<b>,</b>	RUN						Path:	AB_ETH	IIP-2	
	No F	orces				OK				9					
	No E	dits		2		BAT						HH			
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		Contr	oller C	rganize	er										
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			-	17	769-L	.35E C	omp	actLogi×	5335E	_Applica	ation				
			÷	# 17	769-L	.35E Et	herr	net Port	LocalE	NB					
				<u> </u>	Eth	1	Nev	w Modul	e						
					-1		Dis	cover M	odules						
					1	R	Pas	ste		Ctrl	I+V				
					ompa			-0.00		120000					
							Prir	nt			•				

Modu	ule	Description
	- 2364F RGU-EN1	Regen Bus Supply via 1203-EN1
	- Drivelogix5730 Ethernet.	. 10/100 Mbps Ethernet Port on DriveLogix5730
	-E1 Plus	Electronic Overload Relay Communications Interface
	ETHERNET-BRIDGE	Generic EtherNet/IP CIP Bridge
	ETHERNET-MODULE	Generic Ethernet Module
	ETHERNET-PANELVIEW	EtherNet/IP Panelview
	EtherNet/IP	SoftLogix5800 EtherNet/IP
1	- PowerFlex 4 Class Multi	. Multi Drive via 22-COMM-E
1	- PowerFlex 4-E	AC Drive via 22-COMM-E
	- PowerFlex 4M-E	AC Drive via 22-COMM-E
1	- PowerFlex 40-E	AC Drive via 22-COMM-E
-	- PowerFlex 40P-E	AC Drive via 22-COMM-E
	- PowerFlex 70 EC-E	AC Drive via 20-COMM-E
•		<u>ا</u>
		Level Level and
		Find Add Favorite
By	y Category By Vendor	Favorites

## PLC Commissioning



- 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 Etherne       Vendor:     Allen-Bradley       Parent:     LocalENB       Name:     LinMot_Drive       Description:	t Module Connection Parameters Assembly Instance: Size: Input: 24 13	
Comm Format Data - INT Address / Host Name IP Address: 192 . 168 . 1 . 90 Host Name:	Output:     40     16     (16-bit)       Configuration     11     0     (8-bit)       Status Input:	
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	
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.

File Search Drive Services Options V	Vindow Tools Manuals	Help
10 t 🕽 🗄 🖃 🖨 🖉 🎒 🍔	C1250IPXC0S, IP: 192.168.1.9	10 (US 🚽 ⊳ 📕 🔅   🌆   🕺
C1250IPXC0S, IP: 192.168.1.90 (USER) Control Panel Parameters Variables User Defined CS SW Operating Hours / Time CS SW Message/Error CS SW Monitoring CS SW Monitoring CS SW HW Configuration CS Hash Value CS SW Status CS W Status MC SW Overview MC SW Overview MC SW Control Word MC SW Control Word MC SW Control Word MC SW Varnings MC SW Varnings MC SW Varnings MC SW Varnings MC SW Varnings MC SW Derview MC SW Control Word MC SW Varnings MC SW Varnings MC SW Varnings MC SW Capture, Trigger & Mappe MC SW Capture, Trigger & Mappe MC SW Capture, Trigger & Mappe MC SW Control at Sheet MC SW Motor Data Sheet MC SW Corree Control MC SW Force Control MC SW Force Control Ethernet/IP Ethernet/IP Ethernet/IP	Name         Connection State         Originator IP Address         0 -> T Connection Type         0 -> T Assembly Instance         0 -> T Aimeout         0 -> T Size         0 -> T Sequence Number         T -> O Connection Type         T -> O Assembly Instance         T -> O API         T -> O Size         T -> O Sequence Number         O -> T Cycle Time         Minimal O -> T Cycle Time         Maximal O -> T Cycle Time	Image: Second system       Image: Second system       Image: Second system       Image: Second system         Image: Second system       Image: Second sy

#### 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.