

# EtherNet/IP Interface User Manual

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Manual



for  
E1250-IP-UC  
C1250-IP-XC-0S  
C1250-IP-XC-1S  
E1450-IP-QN-0S  
E1450-IP-QN-1S  
C1450-IP-VS-1S

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#### Note

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## 1 System overview

The LinMot Ethernet/IP drives have the following functionalities:

Device Property	Value / Remark
Minimal EtherNet/IP cycle time	1 ms
DHCP - Support	Supported
EDS Support	Supported
IEEE1588 (CIP-Synch)	For 3 <sup>rd</sup> parties not supported from AB
DLR Support (Device Level Ring Protocol)	No

EtherNet/IP is a real time Ethernet protocol based on the standard Ethernet protocols TCP/IP and UDP/IP.

For further information on EtherNet/IP please visit: <http://www.odva.org>

### 1.1 References


All user manuals are distributed with the LinMot-Talk configuration software. The newest version can also be downloaded from the LinMot homepage in the download section.

Ref	Title	Source
1	User Manual Motion Control SW	<a href="http://www.linmot.com">www.linmot.com</a>
2	LinMot Drive Configuration over Fieldbus Interfaces SG5	<a href="http://www.linmot.com">www.linmot.com</a>

## 2 Connection to the EtherNet/IP Network

### 2.1 Pin Assignment of the Connectors X17 - X18

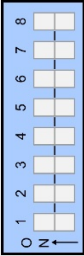
The Ethernet/IP connector is a standard RJ45 female connector with a pin assignment as defined by EIA/TIA T568B:

X17 - X18	RealTime Ethernet Connector		
	Pin	Wire color code	Assignment 100 BASE-TX
	1	WHT/ORG	Rx+
	2	ORG	Rx-
	3	WHT/GRN	Tx+
	4	BLU	-
	5	WHT/BLU	-
	6	GRN	Tx-
	7	WHT/BRN	-
	8	BRN	-
	case	-	-
RJ-45	Use standard patch cables (twisted pair, S/UTP, AWG26) for wiring. This type of cable is usually referred to as a "Cat5e-Cable".		

### 2.2 Default IP Address Settings

The default IP address is 192.168.001.xxx, where the last byte xxx is defined via the two hex switches S1 and S2. S1 sets the high and S2 the low digit.





S1, S2	IP Selectors	
	S1 (5..8)	Bus ID High (0 ... F). Bit 5 is the LSB, bit 8 the MSB.
	S2 (1..4)	Bus ID Low (0 ... F). Bit 1 is the LSB, bit 4 the MSB.
		<b>Setting the ID high &amp; low to 0xFF resets the drive to manufacturer settings!</b>

The use of these switches depends on the type of fieldbus which is used. Please see the corresponding manual for further information.



**Important:** The switch value S1 = S2 = 0 (factory default setting) is a special configuration which acquires the IP address via DHCP.

## 2.3 RT Bus LEDs

RT Bus LEDs	Function
RT BUS ERROR   OK	The RT Bus LEDs have no function. They are turned off all the time.

## 3 Setup in the PLC

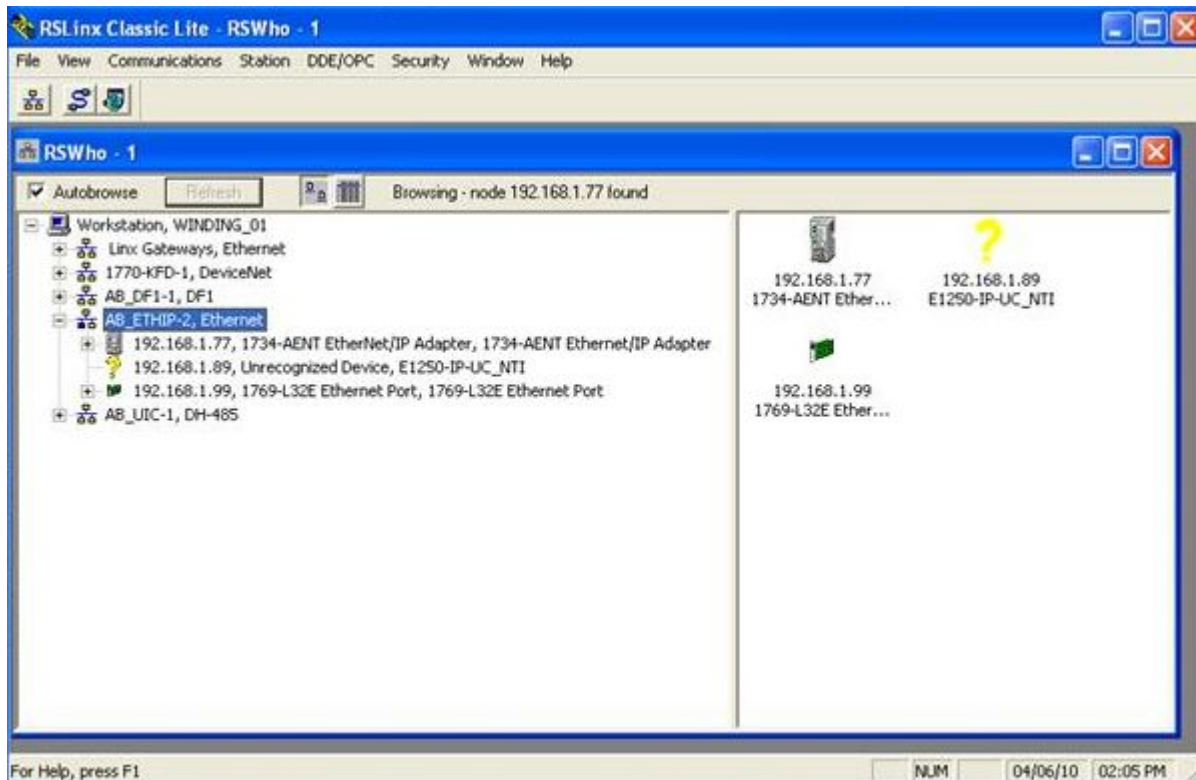


**Important:** Use only AB PLC firmware 18.0 or higher!

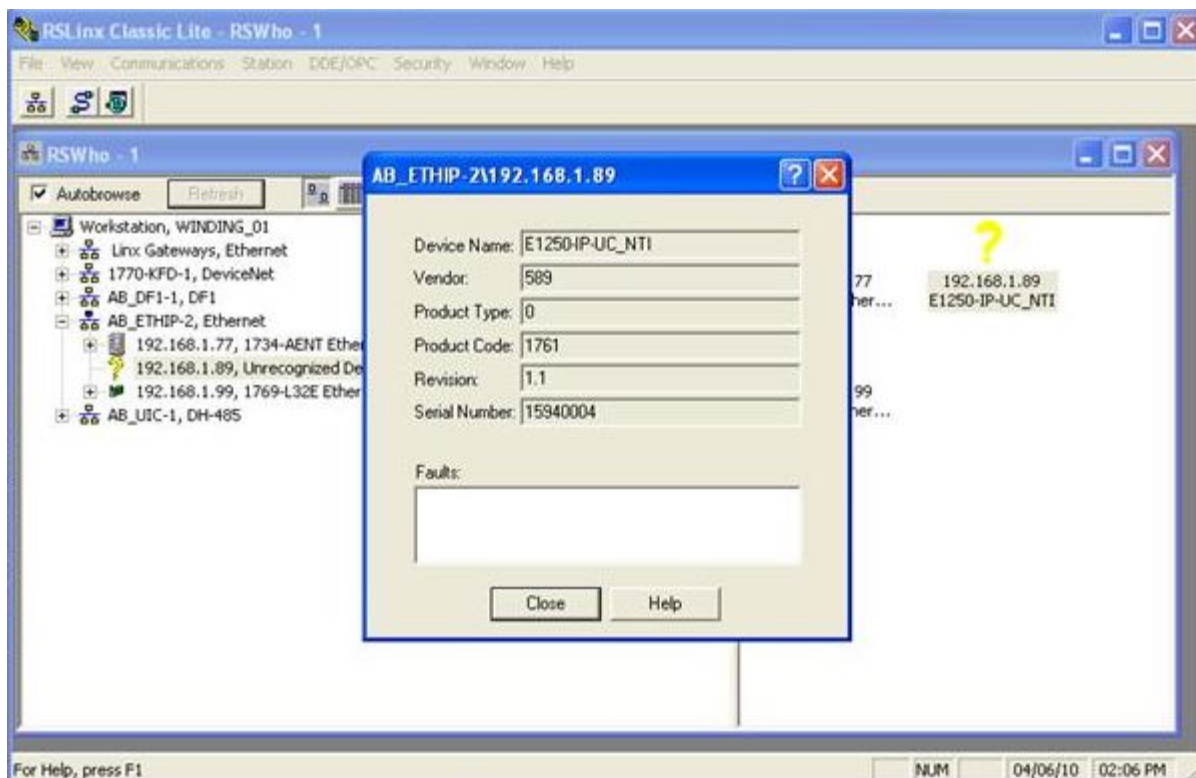
The following steps describe the integration of a LinMot Ethernet/IP drive in the PLC. In the example an Allen Bradley master PLC is used. RSLinx tool can only be used to see if the device is on the network and under which IP-address it can be accessed. The whole configuration is done in the PLC, which is described in chapter 3.2.

## 3.1 RSLinx Classic

In the RSLinx the LinMot device should occur under the defined IP address as “Unrecognized Device”



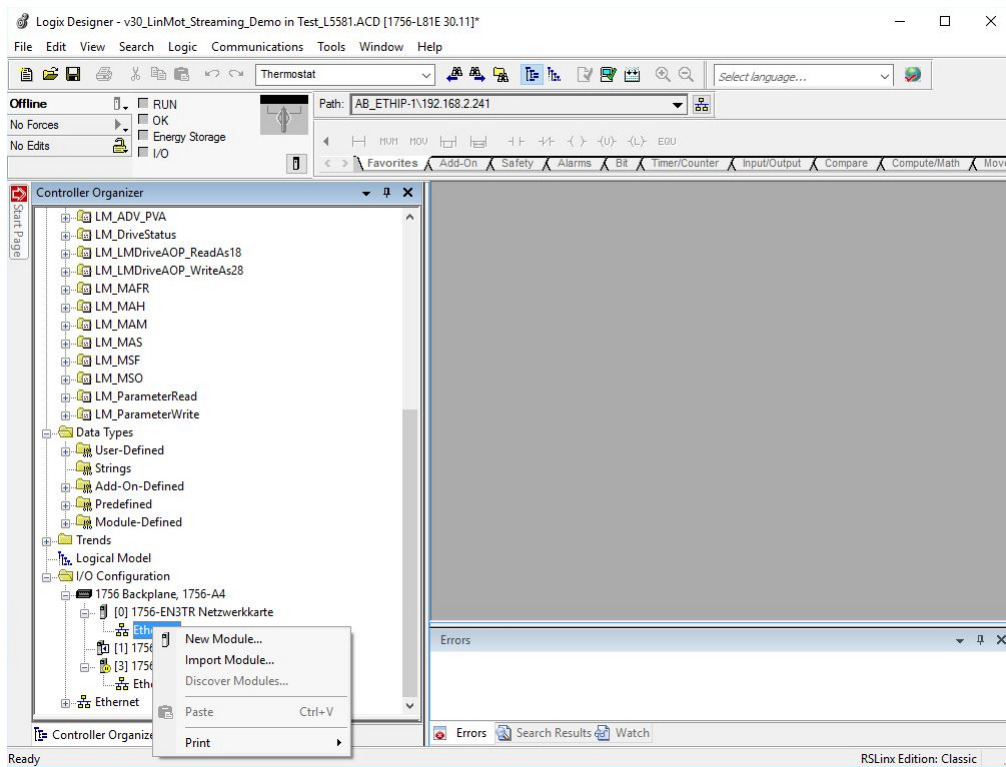
LinMot Device with the IP address 192.168.1.89. in the RSLinx tool.



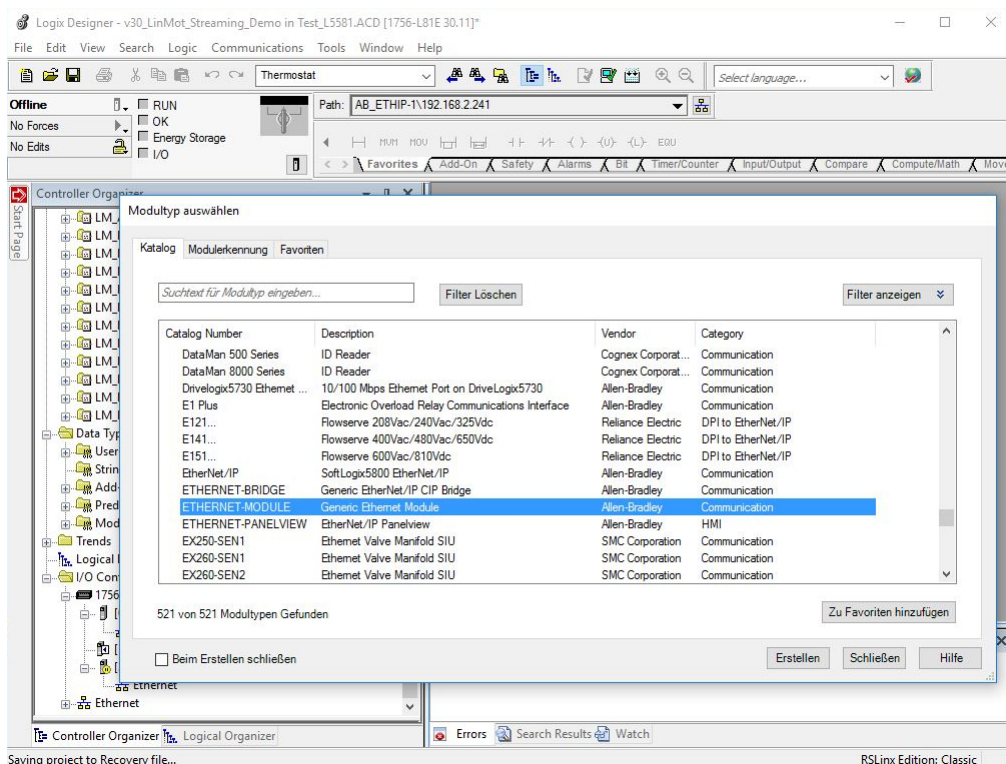
LinMot device properties

### 3.2 LinMot Configuration in the PLC

There are two possibilities to configure a LinMot in the PLC, one with the EDS-File and the other is to configure it as a Generic Ethernet Module. The LinMot can be configured in the I/O configuration section, in the Ethernet section as a new module.



Then you have to select in the Communications Module the ETHERNET-MODULE



Under the Module Properties you can define the module specific data:

- Name
- Comm Format in the example a 16 bit Format is chosen!
- IP Address
- Input Assembly instance and size
- Output Assembly Instance and size

Be careful when defining these parameters, because only a correct setting will run in the Ethernet/IP network. Only the name can be defined freely.

New Module

Type: ETHERNET-MODULE Generic Ethernet Module  
Vendor: Allen-Bradley  
Parent: Netzwerkkarte  
Name: X\_Axis  
Description:  
Comm Format: Data - INT  
Address / Host Name  
☒ IP Address: 192 . 168 . 1 . 89  
☐ Host Name:  
Connection Parameters  
Input: 16 Assembly Instance: 9 Size: (16-bit)  
Output: 32 Size: 12 (16-bit)  
Configuration: 1 Size: 0 (8-bit)  
Status Input:  
Status Output:  
☒ Open Module Properties  
OK Cancel Help

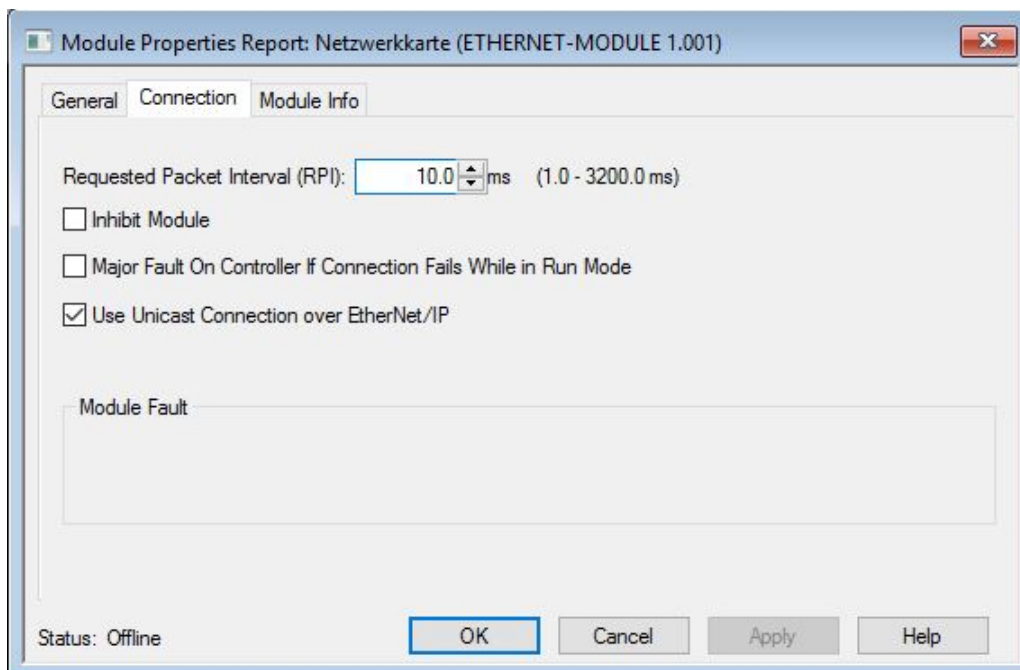
In the Connection tab of the Module Properties the desired cycle time is specified in the range between 1ms and 3200ms.

Module Properties Report: Netzwerkkarte (ETHERNET-MODULE 1.001)

General Connection\* Module Info

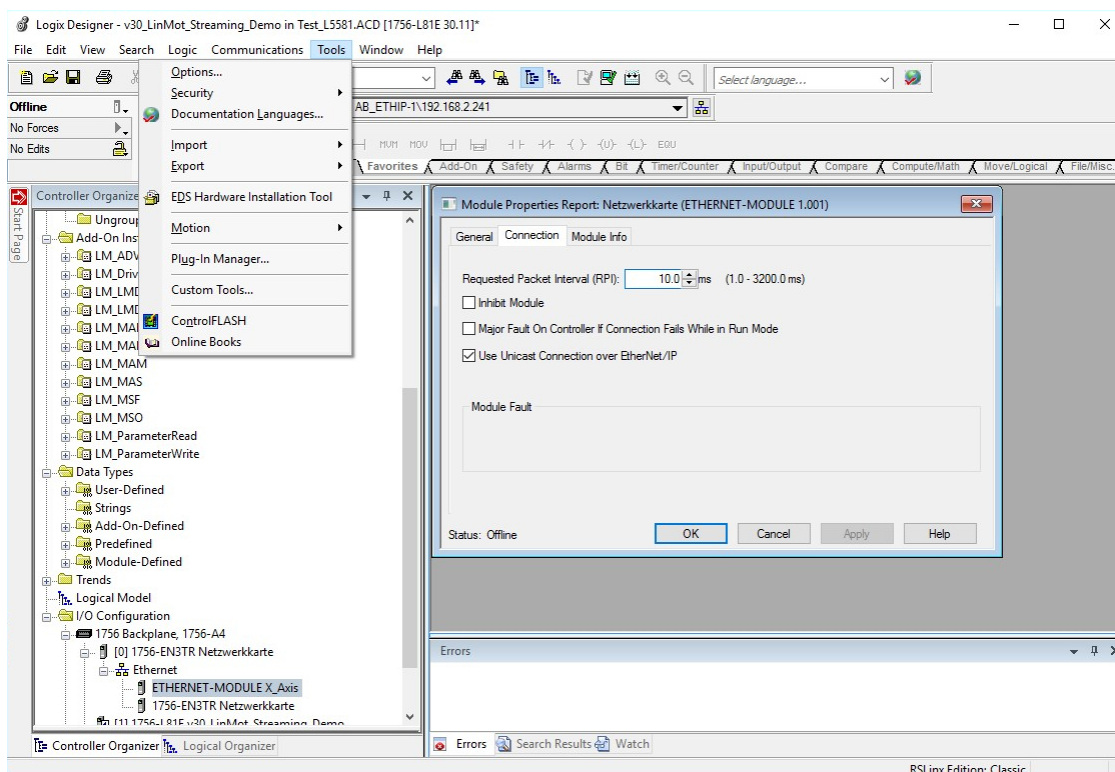
Requested Packet Interval (RPI): 10.0 ms (1.0 - 3200.0 ms)  
☐ Inhibit Module  
☐ Major Fault On Controller If Connection Fails While in Run Mode  
☐ Use Unicast Connection over EtherNet/IP  
Module Fault  
Status: Offline  
OK Cancel Apply Help

Then the configuration/program can be downloaded and you can change to the online view.



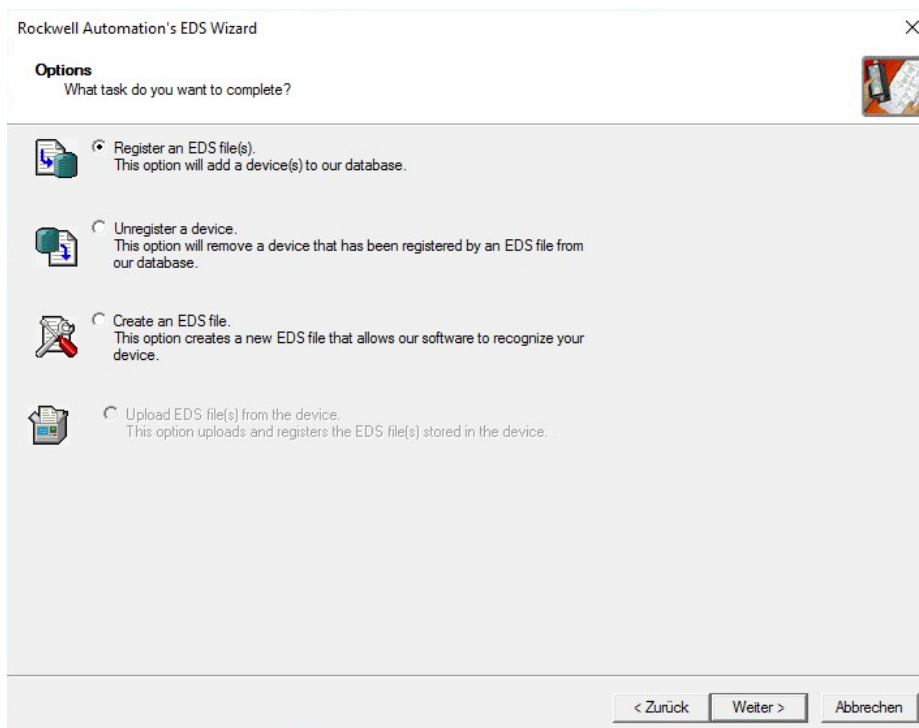
It is recommended to use Unicast Connection type, because only the unicast connection does function with the LinMot Devices.

To configure the LinMot with the EDS File, the EDS-File must be downloaded into the configuration software for the PLC. In the RSLogix 5000 there is the EDS Hardware Installation Tool, which is used for the installation. It can be found in the Menu under Tools.

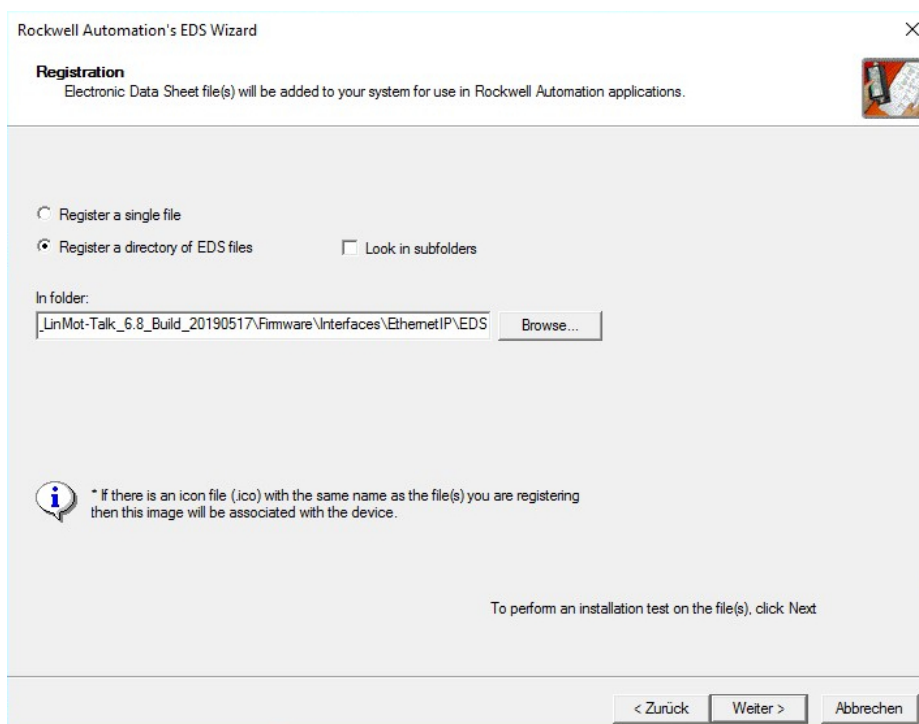


Then you can click next until the Options window is shown. In this window Register an EDS file(s) has to be selected.





In the Registration window, “Register a directory of EDS files” has to be selected. The path of the directory is `../LinMot-TalkX.X BuildX/Firmware/Interfaces/EthernetIP/EDS`. After this selection you can click next and finish the EDS Hardware Installation.



When the EDS-Files are downloaded in the PLC configuration software, the LinMot can be configured in the I/O configuration section, in the Ethernet section as a new module. In the section “Module Type Vendor Filters” there is the Vendor “NTI Limited”, where the drive can be selected.

Modultyp auswählen

Katalog   Modulerkennung   Favoriten

NTI   Filter Löschen   Filter anzeigen ▾

Catalog Number	Description	Vendor	Category
LMDrive	C1250CMXC0S	NTI Limited	Generic Device(keyable)
LMDrive	C1250CMXC1S	NTI Limited	Generic Device(keyable)
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)
LMModule	B8050-ML-IP	NTI Limited	Generic Device(keyable)

9 von 521 Modultypen Gefunden   Zu Favoriten hinzufügen

☐ Beim Erstellen schließen   Erstellen   Schließen   Hilfe

After creating a new module under Module Definition 'Change...' four communication types can be chosen.

- As\_0x28\_0x18: Realtime IO with configuration module
- As\_0x20\_0x10: Realtime IO without configuration module
- As\_0x08\_0x18: Realtime IO with configuration module, but without the control word and without the Motion Command
- As\_0x27\_0x18: Realtime IO with configuration module and with Motion Command but without the control word. This type can be used in parallel with the EasySteps application for example.

New Module

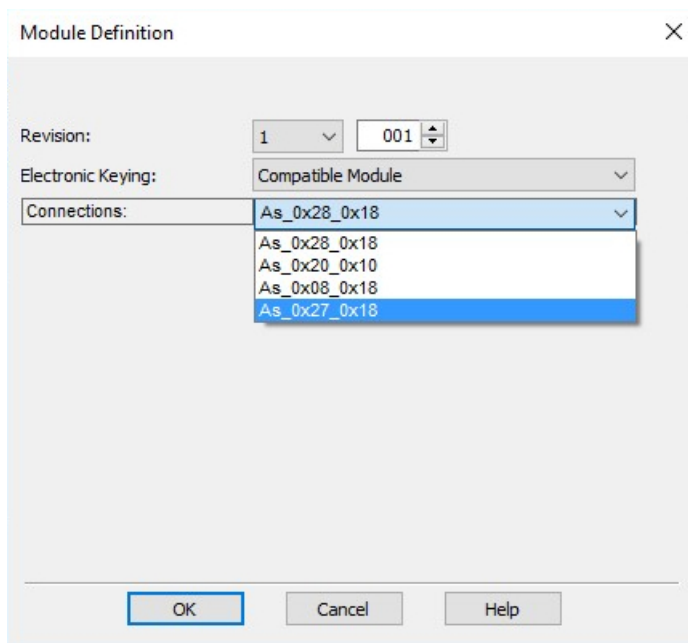
General

Type: LMDrive E1250-IP-UC Servo Drive  
Vendor: NTI Limited  
Parent: Netzwerkkarte  
Name:   
Description:

Module Definition  
Revision: 1.001   [Change ...](#)  
Electronic Keying: Compatible Module  
Connections: As\_0x28\_0x18

Ethernet Address  
☐ Private Network: 192.168.1.  
☒ IP Address: . . .  
☐ Host Name:

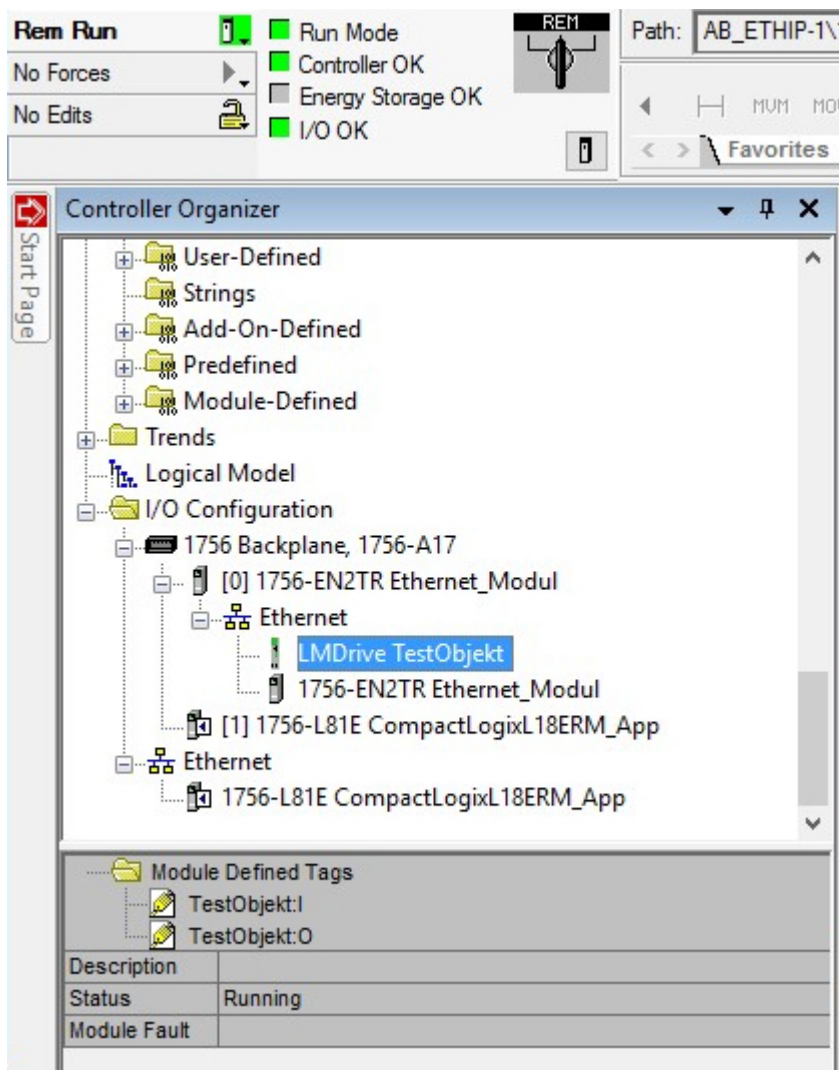
Status: Creating   OK   Cancel   Help



The other module properties are configured same the generic Ethernet Module. For an other new Module, the EDS File download is not needed once more.

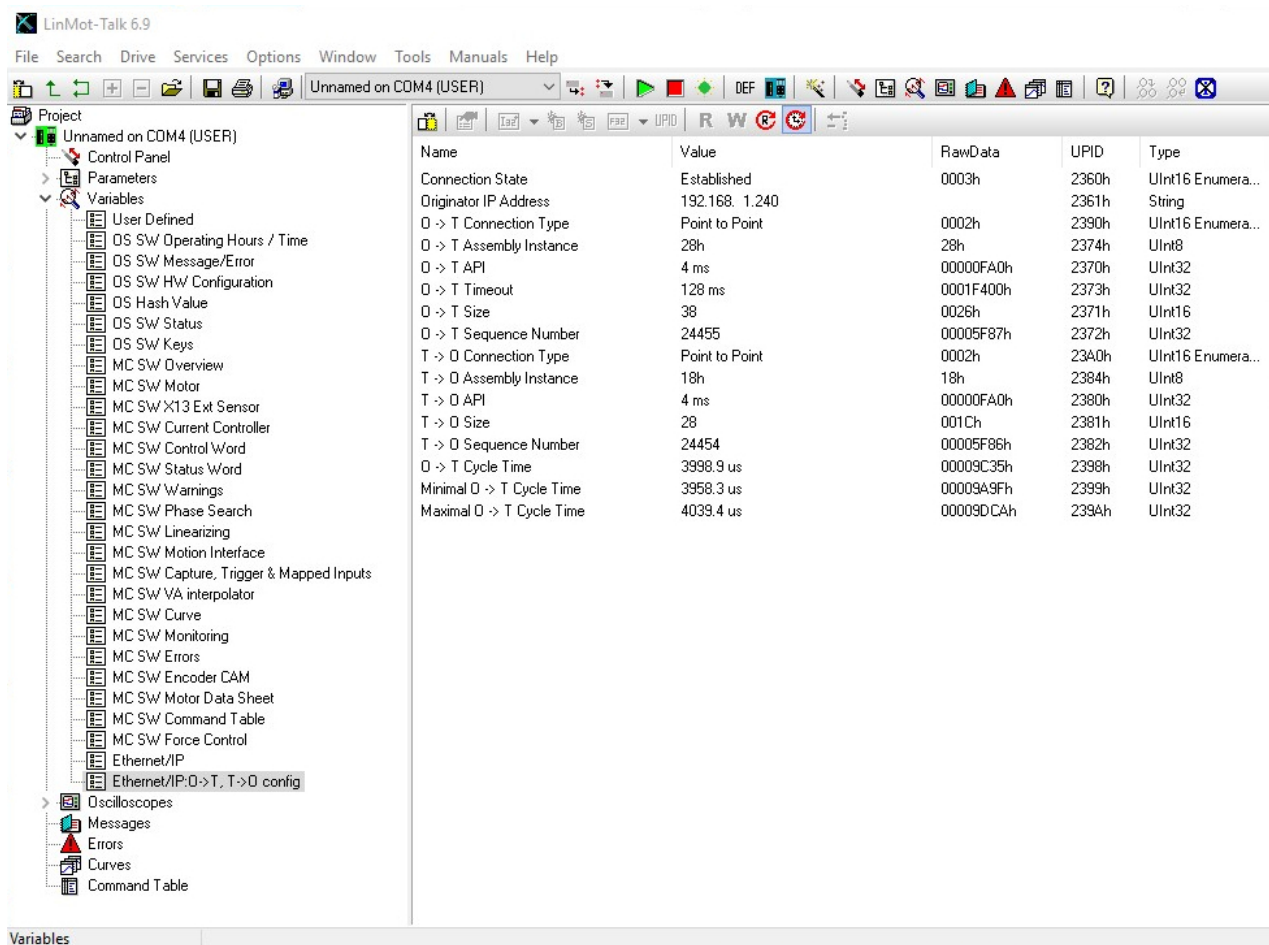
If all is set up correctly the LinMot module status should be running





The table below shows which EDS-File is for which Drive. If the full EDS folder is load in the configuration tool, in it the names of the Drives are visualized.

EDS-File	Part.-Nr.	Drive
024D002B06E10100.eds	0150-1761	E1250-IP-UC
024D002B06F60100.eds	0150-1782	E1450-IP-QN-0S
024D002B075E0100.eds	0150-1886	C1250-IP-XC-0S-000
024D002B092A0100.eds	0150-2346	C1250-IP-XC-1S-000
024D002B07570100.eds	0150-1879	B8050-ML-IP
024D002B09320100.eds	0150-2354	E1450-IP-QN-1S



Name	Value	RawData	UPID	Type
Connection State	Established	0003h	2360h	UInt16 Enumera...
Originator IP Address	192.168. 1.240		2361h	String
O -> T Connection Type	Point to Point	0002h	2390h	UInt16 Enumera...
O -> T Assembly Instance	28h	28h	2374h	UInt8
O -> T API	4 ms	0000FA0h	2370h	UInt32
O -> T Timeout	128 ms	0001F400h	2373h	UInt32
O -> T Size	38	0026h	2371h	UInt16
O -> T Sequence Number	24455	00005F87h	2372h	UInt32
T -> O Connection Type	Point to Point	0002h	23A0h	UInt16 Enumera...
T -> O Assembly Instance	18h	18h	2384h	UInt8
T -> O API	4 ms	0000FA0h	2380h	UInt32
T -> O Size	28	001Ch	2381h	UInt16
T -> O Sequence Number	24454	00005F86h	2382h	UInt32
O -> T Cycle Time	3998.9 us	00009C35h	2398h	UInt32
Minimal O -> T Cycle Time	3958.3 us	00009A9Fh	2399h	UInt32
Maximal O -> T Cycle Time	4039.4 us	00009DCAh	239Ah	UInt32

In the LinMot-Talk configuration software the Ethernet/IP connection state can be watched under variables\Ethernet/IP:O ->T, T-> O config. If everything is set up correctly, the connection state should change to Established when powered on after a certain time. In this state both counters O → T and T → O should count up depending on the configured period time.

### 3.3 Getting started with the Watch Window

In this section the basics of the LinMot device handling are explained. Instead of programming the LinMot, data can be directly influenced with the watch window. So, for the next steps, map the modules input data and output data in the quick watch window as below.

In the following examples it is assumed, that a motor has been configured, the power supply is on, and the drive is correctly embedded in the Ethernet/IP network.

The screenshot shows the Logix Designer interface for a CompactLogix 1800 system. The Controller Organizer on the left shows a project structure with a MainTask and various sub-tasks. The main window displays a table of variable declarations for the 'TestObject' and 'TestObject.O' objects.

Name	Value	Force Mask	Style	Data Type
TestObject.I	[...]	[...]		LM:Drive_As181:0
TestObject.I.ConnectionFaulted	0		Decimal	BOOL
TestObject.I.MCSW_ActualPosition_HighWord	16#0000		Hex	INT
TestObject.I.MCSW_ActualPosition_LowWord	16#0000		Hex	INT
TestObject.I.MCSW_DemandCurrent_HighWord	16#0000		Hex	INT
TestObject.I.MCSW_DemandCurrent_LowWord	16#0000		Hex	INT
TestObject.I.MCSW_DemandPosition_HighWord	16#0000		Hex	INT
TestObject.I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
TestObject.I.MCSW_StateVar	16#0464		Hex	INT
TestObject.I.MCSW_StatusWord	16#502F		Hex	INT
TestObject.I.MCSW_WarnWord	16#0080		Hex	INT
TestObject.I.RX_Cfg_Module_Index	16#0000		Hex	INT
TestObject.I.RX_Cfg_Module_Status	16#0000		Hex	INT
TestObject.I.RX_Cfg_Module_Value_HighWord	16#0000		Hex	INT
TestObject.I.RX_Cfg_Module_Value_LowWord	16#0000		Hex	INT
TestObject.O	[...]	[...]		LM:Drive_As28:0:0
TestObject.O.MCSW_ControlWord	16#003e		Hex	INT
TestObject.O.MCSW_MotionCommandByte_00_01	16#4b40		Hex	INT
TestObject.O.MCSW_MotionCommandByte_02_03	16#004c		Hex	INT
TestObject.O.MCSW_MotionCommandByte_04_05	16#2710		Hex	INT
TestObject.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_08_09	16#2710		Hex	INT
TestObject.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_12_13	16#2710		Hex	INT
TestObject.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandHeader	16#000f		Hex	INT
TestObject.O.TX_Cfg_Module_Control	16#0000		Hex	INT
TestObject.O.TX_Cfg_Module_Index	16#0002		Hex	INT
TestObject.O.TX_Cfg_Module_Value_HighWord	16#0000		Hex	INT
TestObject.O.TX_Cfg_Module_Value_LowWord	16#0000		Hex	INT

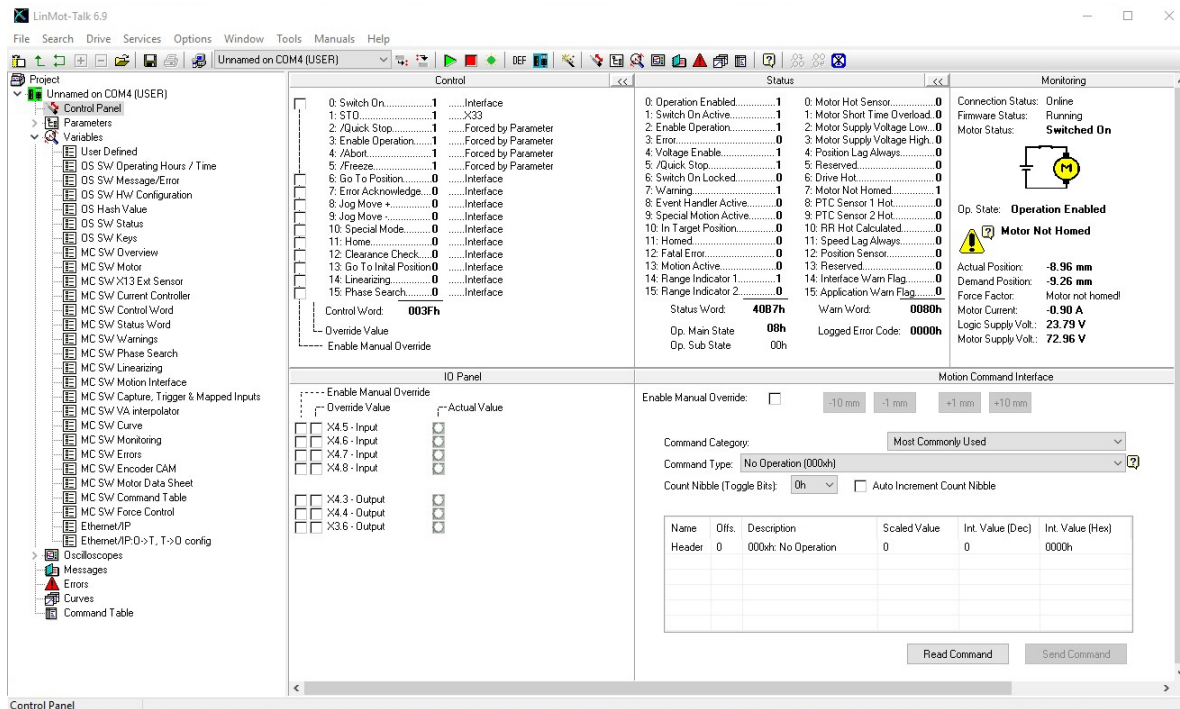
### 3.3.1 Control Word

The Control Word is mapped to the output data word 0. If setting this value to 1 the “Switch On” bit (bit 0) of the control word is set

This screenshot shows a zoomed-in view of the variable declaration table, specifically focusing on the 'TestObject.O.MCSW\_ControlWord' entry. The table lists various motion control parameters and their current values.

Name	Value	Force Mask	Style	Data Type
TestObject.I	[...]	[...]		LM:Drive_As101:0
TestObject.I.ConnectionFaulted	0		Decimal	BOOL
TestObject.I.MCSW_ActualPosition_HighWord	16#ffff		Hex	INT
TestObject.I.MCSW_ActualPosition_LowWord	16#8904		Hex	INT
TestObject.I.MCSW_DemandCurrent_HighWord	16#ffff		Hex	INT
TestObject.I.MCSW_DemandCurrent_LowWord	16#fc63		Hex	INT
TestObject.I.MCSW_DemandPosition_HighWord	16#ffff		Hex	INT
TestObject.I.MCSW_DemandPosition_LowWord	16#7d4f		Hex	INT
TestObject.I.MCSW_StateVar	16#0800		Hex	INT
TestObject.I.MCSW_StatusWord	16#40b7		Hex	INT
TestObject.I.MCSW_WarnWord	16#0080		Hex	INT
TestObject.O	[...]	[...]		LM:Drive_As20:0:0
TestObject.O.MCSW_ControlWord	16#0001		Hex	INT
TestObject.O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_02_03	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_04_05	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_08_09	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_12_13	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
TestObject.O.MCSW_MotionCommandHeader	16#0000		Hex	INT

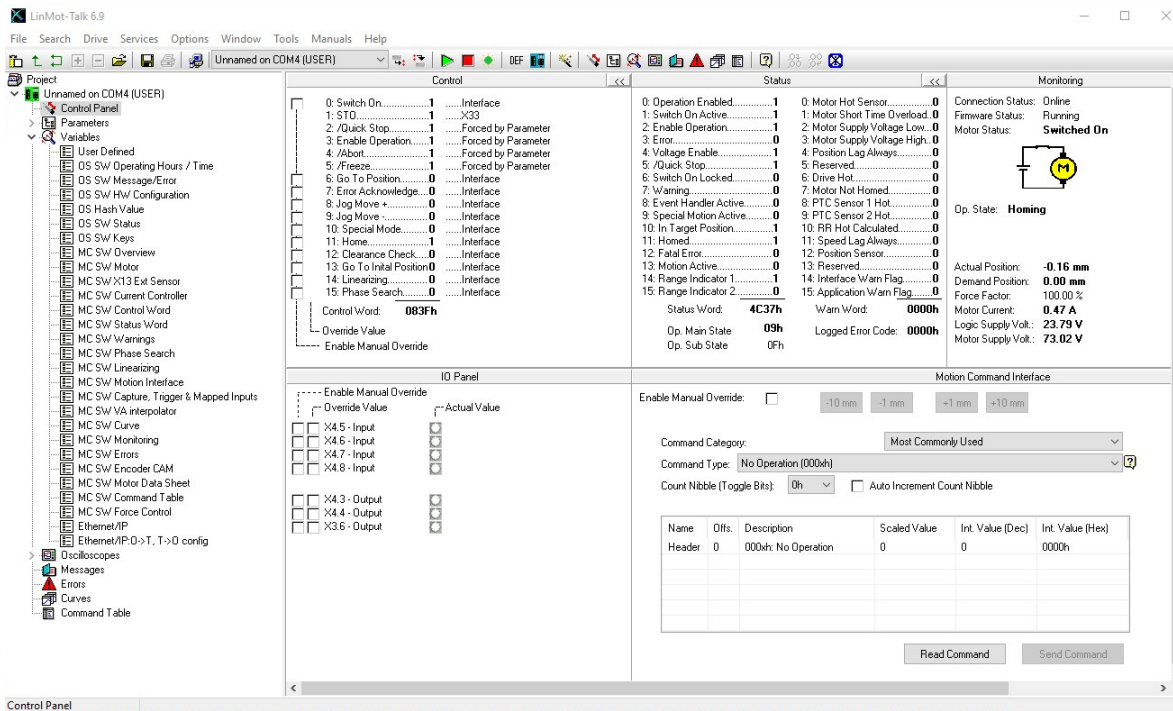
This can also be monitored with the LinMot-Talk software.



Setting the control word to 2049 (0x0801) sets also the “Home” bit (Bit 11) in the Control Word. Wait until the input word 0 “State Var” has the value 2319 (0x090F) Main State 9 (Homing) Sub State 0x0F (Homing finished).

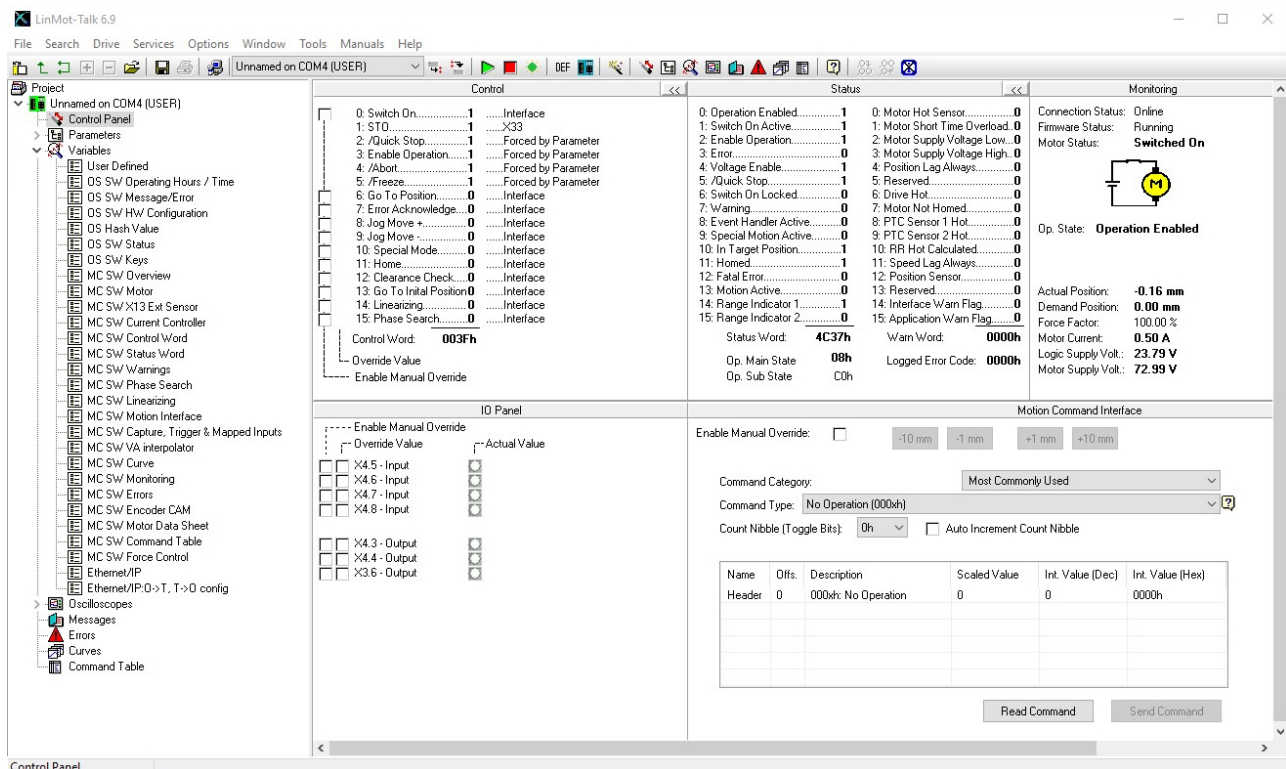
Name	Value	Force Mask	Style	Data Type
TestObjekt.I	{...}	{...}		LM:Drive_As10:0
TestObjekt.I.ConnectionFaulted	0		Decimal	BOOL
TestObjekt.I.MCSW_ActualPosition_HighWord	16#ffff		Hex	INT
TestObjekt.I.MCSW_ActualPosition_LowWord	16#fa29		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_HighWord	16#0000		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_LowWord	16#01d4		Hex	INT
TestObjekt.I.MCSW_DemandPosition_HighWord	16#0000		Hex	INT
TestObjekt.I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
TestObjekt.I.MCSW_StateVar	16#090f		Hex	INT
TestObjekt.I.MCSW_StatusWord	16#4c37		Hex	INT
TestObjekt.I.MCSW_WarnWord	16#0000		Hex	INT
TestObjekt.O	{...}	{...}		LM:Drive_As20:0
TestObjekt.O.MCSW_ControlWord	16#0801		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_02_03	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_04_05	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_08_09	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_12_13	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandHeader	16#0000		Hex	INT





Then the Control Word can be set to 1 again, the drive will change to Main State 8 (Operation Enabled) Sub State 0xC0 (Homed and In Target Position), the corresponding input word 0 has the value 2240.

Scope:	CompactLogix1	Show:	All Tags	Enter Name Filter...
Name	Value	Force Mask	Style	Data Type
TestObjekt.I	{...}	{...}		LM:Drive_As10:0
TestObjekt.I.ConnectionFaulted	0		Decimal	BOOL
TestObjekt.I.MCSW_ActualPosition_HighWord	16#ffff		Hex	INT
TestObjekt.I.MCSW_ActualPosition_LowWord	16#fa5a		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_HighWord	16#0000		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_LowWord	16#01ae		Hex	INT
TestObjekt.I.MCSW_DemandPosition_HighWord	16#0000		Hex	INT
TestObjekt.I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
TestObjekt.I.MCSW_StateVar	16#08c0		Hex	INT
TestObjekt.I.MCSW_StatusWord	16#4c37		Hex	INT
TestObjekt.I.MCSW_WarnWord	16#0000		Hex	INT
TestObjekt.O	{...}	{...}		LM:Drive_As20:0
TestObjekt.O.MCSW_ControlWord	16#0001		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_02_03	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_04_05	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_08_09	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_12_13	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandHeader	16#0000		Hex	INT



### 3.3.2 Motion Command Interface

The rest of the output data (O.data[1]..O.data[11]) is mapped to the “Motion Command Interface”. The first word (O.data[1]) is the motion command header, the rest (O.data[1]..O.data[11]) is the command specific motion parameter set. In the next example we will set up a “Predef VAI Go To Pos (020xh)” Motion Command. First we set the target position low word (O.data[2]) to 0 then the target position high word (O.data[3]) to 2 and the motion command header (O.data[1]) to 513 (0x0201).

Scope:	CompactLogixL1	Show:	All Tags	Enter Name Filter...
Name	Value	Force Mask	Style	Data Type
TestObjekt.I	{...}	{...}		LM:Drive_As10:I:0
TestObjekt.I.ConnectionFaulted	0		Decimal	BOOL
TestObjekt.I.MCSW_ActualPosition_HighWord	16#0002		Hex	INT
TestObjekt.I.MCSW_ActualPosition_LowWord	16#01b9		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_HighWord	16#ffff		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_LowWord	16#ff80		Hex	INT
TestObjekt.I.MCSW_DemandPosition_HighWord	16#0002		Hex	INT
TestObjekt.I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
TestObjekt.I.MCSW_StateVar	16#08c1		Hex	INT
TestObjekt.I.MCSW_StatusWord	16#0c37		Hex	INT
TestObjekt.I.MCSW_WarnWord	16#0000		Hex	INT
TestObjekt.O	{...}	{...}		LM:Drive_As20:O:0
TestObjekt.O.MCSW_ControlWord	16#0001		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_02_03	16#0002		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_04_05	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_08_09	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_12_13	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandHeader	16#0201		Hex	INT

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Unnamed on COM4 (USER)

Project: Unnamed on COM4 (USER)

Control Panel

Parameters

Variables

User Defined

OS SW Operating Hours / Time

OS SW Message/Error

OS SW HW Configuration

OS SW Hash Value

OS SW Status

OS SW Keys

MC SW Overview

MC SW Motor

MC SW X13 Ext Sensor

MC SW Current Controller

MC SW Control Word

MC SW Status Word

MC SW Warnings

MC SW Phase Search

MC SW Linearizing

MC SW Motion Interface

MC SW Capture, Trigger & Mapped Inputs

MC SW VA interpolator

MC SW Curve

MC SW Monitoring

MC SW Errors

MC SW Encoder CAM

MC SW Motor Data Sheet

MC SW Command Table

MC SW Force Control

Ethernet/IP

Ethernet/IP:O>T, T>O config

Oscilloscopes

Messages

Errors

Curves

Command Table

Control

0: Switch On.....1.....Interface

1: ST0.....1.....X33

2: /Quick Stop.....1.....Forced by Parameter

3: Enable Operation.....1.....Forced by Parameter

4: Abort.....1.....Forced by Parameter

5: Freeze.....1.....Forced by Parameter

6: Go To Position.....0.....Interface

7: Error Acknowledge.....0.....Interface

8: Jog Move +.....0.....Interface

9: Jog Move -.....0.....Interface

10: Special Mode.....0.....Interface

11: Home.....0.....Interface

12: Clearance Check.....0.....Interface

13: Go To Initial Position.....0.....Interface

14: Linearizing.....0.....Interface

15: Phase Search.....0.....Interface

Control Word: 003Fh

Override Value

Enable Manual Override

IO Panel

Enable Manual Override

Override Value

Actual Value

X4.5 - Input

X4.6 - Input

X4.7 - Input

X4.8 - Input

X4.3 - Output

X4.4 - Output

X3.6 - Output

Status

0: Operation Enabled.....1

1: Switch On Active.....1

2: Enable Operation.....1

3: Error.....0

4: Voltage Enable.....1

5: /Quick Stop.....1

6: Switch On Locked.....0

7: Warning.....0

8: Event Handler Active.....0

9: Special Motion Active.....0

10: In Target Position.....1

11: Homed.....0

12: Fatal Error.....0

13: Motion Active.....0

14: Range Indicator 1.....0

15: Range Indicator 2.....0

Status Word: 0C37h

Op. Main State: 08h

Op. Sub State: C1h

0: Motor Hot Sensor.....0

1: Motor Short Time Overload.....0

2: Motor Supply Voltage Low.....0

3: Motor Supply Voltage High.....0

4: Position Lag Always.....0

5: Reserved.....0

6: Drive Hot.....0

7: Motor Not Homed.....0

8: PTC Sensor 1 Hot.....0

9: PTC Sensor 2 Hot.....0

10: RFR Hot Calculated.....0

11: Speed Lag Always.....0

12: Position Sensor.....0

13: Reserved.....0

14: Interface Warn Flag.....0

15: Application Warn Flag.....0

Warn Word: 0000h

Logged Error Code: 0000h

Monitoring

Connection Status: Online

Firmware Status: Running

Motor Status: Switched On

Op. State: Operation Enabled

Actual Position: 13.15 mm

Demand Position: 13.11 mm

Force Factor: 100.00 %

Motor Current: -0.14 A

Logic Supply Volt.: 23.79 V

Motor Supply Volt.: 73.02 V

Motion Command Interface

Enable Manual Override: ☐

-10 mm -1 mm +1 mm +10 mm

Command Category: Most Commonly Used

Command Type: Prefel VAI Go To Pos (020xh)

Count Nibble (Toggle Bits): 1h ☐ Auto Increment Count Nibble

Name	Offs.	Description	Scaled Value	Int. Value (Dec)	Int. Value (Hex)
Header	0	020xh: Prefel VAI Go To...	513	0201h	
1. Par	2	Target Position	13.1072 mm	131072	00020000h

Read Command Send Command

Press the "Read Command" button and you see the sent command.  
We will use the same command to move back to 0mm. Change the target position high word to 0. Then change the count nibble in the motion command header to 0.



Name	Value	Force Mask	Style	Data Type
TestObjekt.I	{...}	{...}		LM:Drive_As10:I:0
TestObjekt.I.ConnectionFaulted	0		Decimal	BOOL
TestObjekt.I.MCSW_ActualPosition_HighWord	16#ffff		Hex	INT
TestObjekt.I.MCSW_ActualPosition_LowWord	16#ff49		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_HighWord	16#0000		Hex	INT
TestObjekt.I.MCSW_DemandCurrent_LowWord	16#003a		Hex	INT
TestObjekt.I.MCSW_DemandPosition_HighWord	16#0000		Hex	INT
TestObjekt.I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
TestObjekt.I.MCSW_StateVar	16#08c0		Hex	INT
TestObjekt.I.MCSW_StatusWord	16#4c37		Hex	INT
TestObjekt.I.MCSW_WarnWord	16#0000		Hex	INT
TestObjekt.O	{...}	{...}		LM:Drive_As20:O:0
TestObjekt.O.MCSW_ControlWord	16#0001		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_02_03	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_04_05	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_08_09	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_12_13	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
TestObjekt.O.MCSW_MotionCommandHeader	16#0200		Hex	INT

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Unnamed on COM4 (USER)

Project: Unnamed on COM4 (USER)

Control Panel

Variables

OS SW Operating Hours / Time

OS SW Message/Error

OS SW HW Configuration

OS SW Hash Value

OS SW Status

OS SW Keys

MC SW Overview

MC SW Motor

MC SW X13 Ext Sensor

MC SW Current Controller

MC SW Control Word

MC SW Status Word

MC SW Warnings

MC SW Phase Search

MC SW Linearizing

MC SW Motion Interface

MC SW Capture, Trigger & Mapped Inputs

MC SW VA interpolator

MC SW Curve

MC SW Monitoring

MC SW Errors

MC SW Encoder CAM

MC SW Motor Data Sheet

MC SW Command Table

MC SW Force Control

Ethernet/IP

Ethernet/IP-D>T, T>D config

Oscilloscopes

Messages

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Curves

Command Table

Control

0: Switch On.....1.....Interface

1: ST0.....1.....X33

2: /Quick Stop.....1.....Forced by Parameter

3: Enable Operation.....1.....Forced by Parameter

4: /Abort.....1.....Forced by Parameter

5: /Freeze.....1.....Forced by Parameter

6: Go To Position.....0.....Interface

7: Error Acknowledge.....0.....Interface

8: Jog Move +.....0.....Interface

9: Jog Move -.....0.....Interface

10: Special Mode.....0.....Interface

11: Home.....0.....Interface

12: Clearance Check.....0.....Interface

13: Go To Initial Position.....0.....Interface

14: Linearizing.....0.....Interface

15: Phase Search.....0.....Interface

Control Word: 003Fh

Override Value

Enable Manual Override

IO Panel

Enable Manual Override

Override Value

Actual Value

X4.5 - Input

X4.6 - Input

X4.7 - Input

X4.8 - Input

X4.3 - Output

X4.4 - Output

X3.6 - Output

Status

0: Operation Enabled.....1

1: Switch On Active.....1

2: Enable Operation.....1

3: Error.....0

4: Voltage Enable.....1

5: /Quick Stop.....1

6: Switch On Locked.....0

7: Warning.....0

8: Event Handler Active.....0

9: Special Motion Active.....0

10: In Target Position.....1

11: Homed.....1

12: Fatal Error.....0

13: Motion Active.....0

14: Range Indicator 1.....1

15: Range Indicator 2.....0

Status Word: 4C37h

Op. Main State: 08h

Op. Sub State: 00h

0: Motor Hot Sensor.....0

1: Motor Short Time Overload.....0

2: Motor Supply Voltage Low.....0

3: Motor Supply Voltage High.....0

4: Position Lag Always.....0

5: Reserved.....0

6: Drive Hot.....0

7: Motor Not Homed.....0

8: PTC Sensor 1 Hot.....0

9: PTC Sensor 2 Hot.....0

10: RR Hot Calculated.....0

11: Speed Lag Always.....0

12: Position Sensor.....0

13: Reserved.....0

14: Interface Warn Flag.....0

15: Application Warn Flag.....0

Warn Word: 0000h

Logged Error Code: 0000h

Monitoring

Connection Status: Online

Firmware Status: Running

Motor Status: Switched On

Op. State: Operation Enabled

Actual Position: -0.02 mm

Demand Position: 0.00 mm

Force Factor: 100.00 %

Motor Current: 0.06 A

Logic Supply Volt: 23.79 V

Motor Supply Volt: 73.02 V

Motion Command Interface

Enable Manual Override: ☐

-10 mm -1 mm +1 mm +10 mm

Command Category: Most Commonly Used

Command Type: Prefdef VAI Go To Pos (020xh)

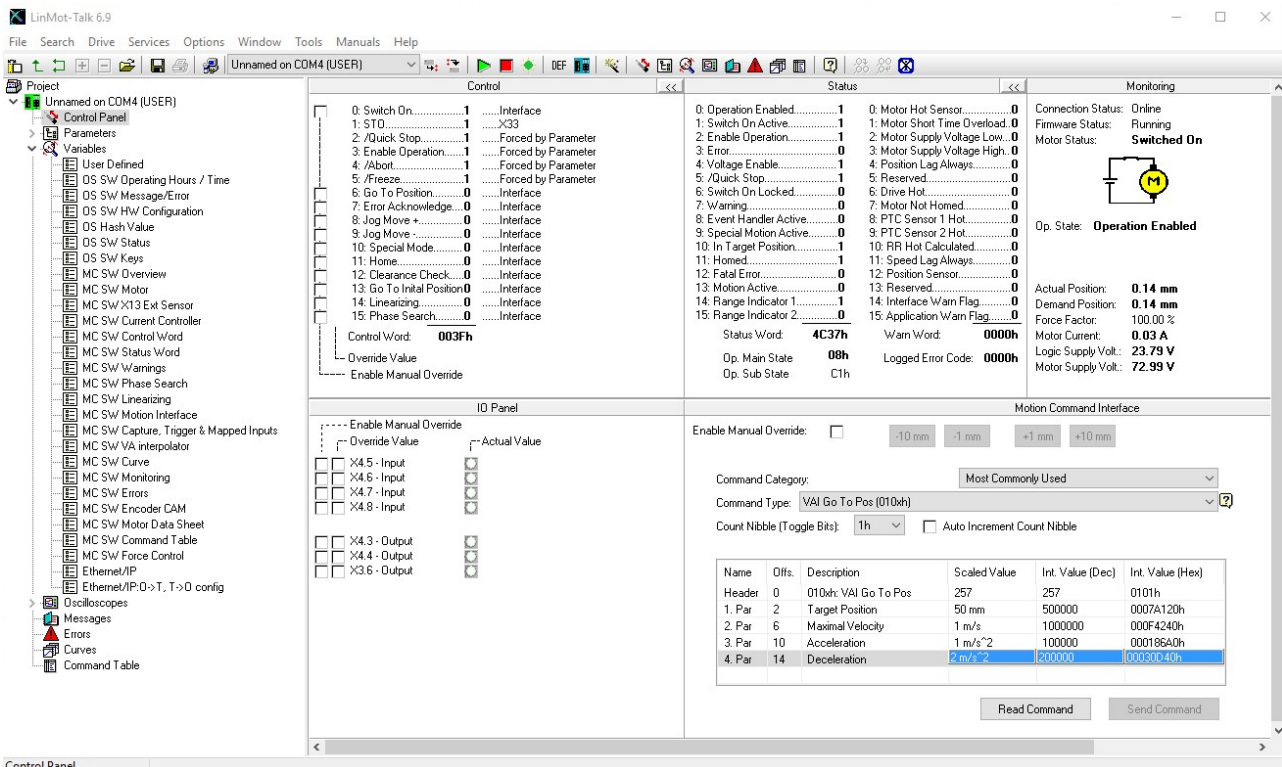
Count Nibble (Toggle Bits): 0h ☐ Auto Increment Count Nibble

Name	Offs.	Description	Scaled Value	Int. Value (Dec)	Int. Value (Hex)
Header	0	020xh: Prefdef VAI Go To ...	512	512	0200h
1. Par	2	Target Position	0 mm	0	00000000h

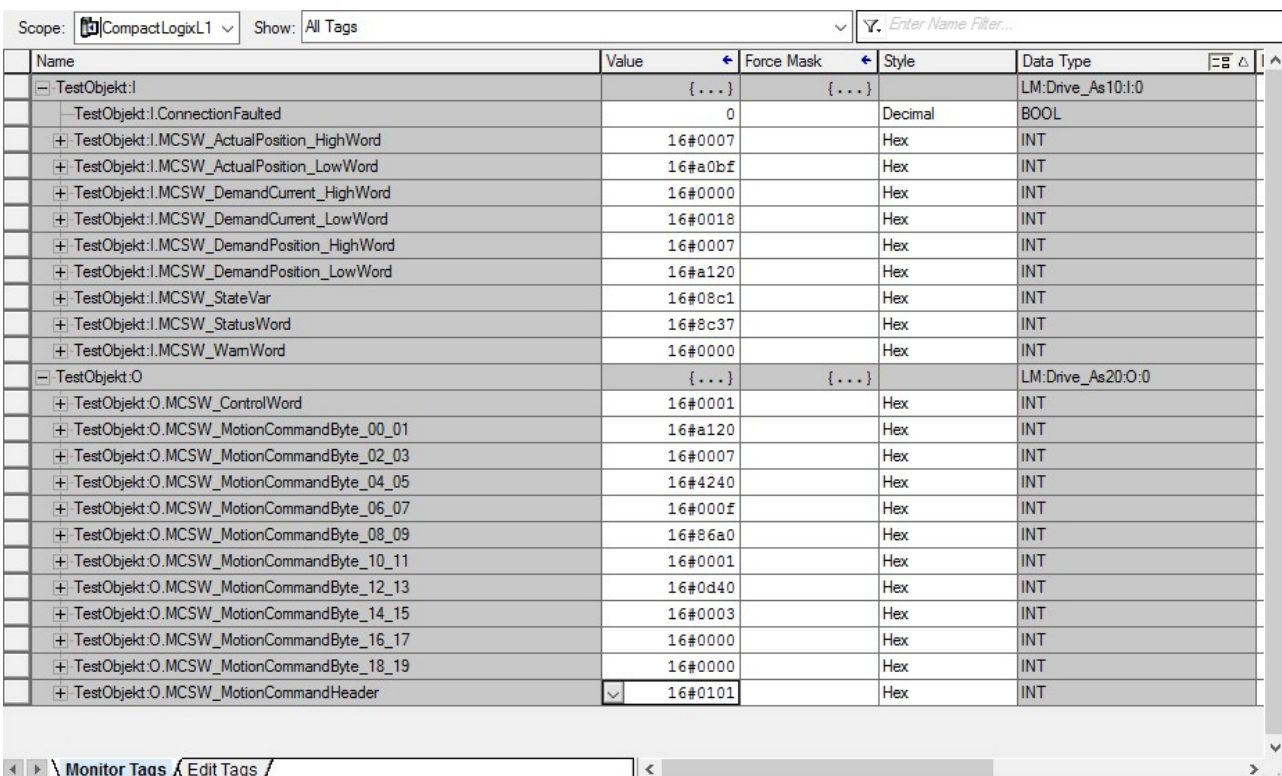
Read Command Send Command

In the next example we are going to use the most common motion command “VAI Go To Pos (010xh)”. In this example we define the motion command in the control panel first.





Then we put the same values in the watch window. First the motion parameters, then the motion header!



For moving back to 0mm with the same motion command and the same parameters, just set the target position to 0 (O.Data[2] and O.Data[3]) then change the count nibble in the motion command header to 2 for example.

Scope:  CompactLogix L1		Show: All Tags		Enter Name Filter...	
	Name	Value	Force Mask	Style	Data Type
	TestObjekt:I	{ ... }	{ ... }		LM:Drive_As10:I:0
	TestObjekt:I.ConnectionFaulted	0		Decimal	BOOL
	TestObjekt:I.MCSW_ActualPosition_HighWord	16#0000		Hex	INT
	TestObjekt:I.MCSW_ActualPosition_LowWord	16#0193		Hex	INT
	TestObjekt:I.MCSW_DemandCurrent_HighWord	16#ffff		Hex	INT
	TestObjekt:I.MCSW_DemandCurrent_LowWord	16#ff78		Hex	INT
	TestObjekt:I.MCSW_DemandPosition_HighWord	16#0000		Hex	INT
	TestObjekt:I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
	TestObjekt:I.MCSW_StateVar	16#08c2		Hex	INT
	TestObjekt:I.MCSW_StatusWord	16#4c37		Hex	INT
	TestObjekt:I.MCSW_WarnWord	16#0000		Hex	INT
	TestObjekt:O	{ ... }	{ ... }		LM:Drive_As20:O:0
	TestObjekt:O.MCSW_ControlWord	16#0001		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_02_03	16#0000		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_04_05	16#4240		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_06_07	16#000f		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_08_09	16#86a0		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_10_11	16#0001		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_12_13	16#0d40		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_14_15	16#0003		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
	TestObjekt:O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
	TestObjekt:O.MCSW_MotionCommandHeader	16#0102		Hex	INT

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Unnamed on COM4 (USER)

Project

- Unnamed on COM4 (USER)
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  - Variables
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      - OS SW Operating Hours / Time
      - OS SW Message/Error
      - OS SW HW Configuration
      - OS SW Value
      - OS SW Status
      - OS SW Keys
      - MC SW Overview
      - MC SW Motor
      - MC SW X13 Ext Sensor
      - MC SW Current Controller
      - MC SW Control Word
      - MC SW Status Word
      - MC SW Warnings
      - MC SW Phase Search
      - MC SW Linearizing
      - MC SW Motion Interface
      - MC SW Capture, Trigger & Mapped Inputs
      - MC SW VA interpolator
      - MC SW Curve
      - MC SW Monitoring
      - MC SW Errors
      - MC SW Encoder CAM
      - MC SW Motor Data Sheet
      - MC SW Command Table
      - MC SW Force Control
      - Ethernet/IP
      - Ethernet/IP-O>T, T->O config
    - Oscilloscopes
    - Messages
    - Errors
    - Curves
    - Command Table

Control

0: Switch On.....1 Interface  
1: ST0.....1 X33  
2: /Quick Stop.....1 Forced by Parameter  
3: Enable Operation.....1 Forced by Parameter  
4: /Abort.....1 Forced by Parameter  
5: Freeze.....1 Forced by Parameter  
6: Go To Position.....0 Interface  
7: Error Acknowledge.....0 Interface  
8: Jog Move.....0 Interface  
9: Jog Move.....0 Interface  
10: Special Mode.....0 Interface  
11: Home.....0 Interface  
12: Clearance Check.....0 Interface  
13: Go To Initial Position.....0 Interface  
14: Linearizing.....0 Interface  
15: Phase Search.....0 Interface

Control Word: 003Fh

Override Value

Enable Manual Override

IO Panel

Enable Manual Override

Override Value

Actual Value

X4.5 - Input

X4.6 - Input

X4.7 - Input

X4.8 - Input

X4.3 - Output

X4.4 - Output

X3.6 - Output

Status

0: Operation Enabled.....1  
1: Switch On Active.....1  
2: Enable Operation.....1  
3: Error.....0  
4: Voltage Enable.....1  
5: /Quick Stop.....1  
6: Switch On Locked.....0  
7: Warning.....0  
8: Event Handler Active.....0  
9: Special Motion Active.....0  
10: In Target Position.....1  
11: Homed.....1  
12: Fatal Error.....0  
13: Motion Active.....0  
14: Range Indicator 1.....1  
15: Range Indicator 2.....0

Status Word: 4C37h

Op. Main State 08h

Op. Sub State C2h

0: Motor Hot Sensor.....0  
1: Motor Short Time Overload.....0  
2: Motor Supply Voltage Low.....0  
3: Motor Supply Voltage High.....0  
4: Position Lag Always.....0  
5: Reserved.....0  
6: Drive Hot.....0  
7: Motor Not Homed.....0  
8: PTC Sensor 1 Hot.....0  
9: PTC Sensor 2 Hot.....0  
10: RR Hot Calculated.....0  
11: Speed Lag Always.....0  
12: Position Sensor.....0  
13: Reserved.....0  
14: Interface Warn Flag.....0  
15: Application Warn Flag.....0

Warn Word: 0000h

Logged Error Code: 0000h

Monitoring

Connection Status: Online  
Firmware Status: Running  
Motor Status: Switched On

Op. State: Operation Enabled

Actual Position: 0.04 mm  
Demand Position: 0.00 mm  
Force Factor: 100.00 %  
Motor Current: -0.11 A  
Logic Supply Volt: 23.79 V  
Motor Supply Volt: 72.98 V

Motion Command Interface

Enable Manual Override: ☐

-10 mm -1 mm +1 mm +10 mm

Command Category: Most Commonly Used

Command Type: VAI Go To Pos (010th)

Count Nibble (Toggle Bits): 2h ☐ Auto Increment Count Nibble

Name	Offs.	Description	Scaled Value	Int. Value (Dec)	Int. Value (Hex)
Header	0	010th: VAI Go To Pos	258	258	0102h
1. Par	2	Target Position	0 mm	0	00000000h
2. Par	6	Maximal Velocity	1 m/s	1000000	000F4240h
3. Par	10	Acceleration	1 m/s <sup>2</sup>	100000	00018640h
4. Par	14	Deceleration	2 m/s <sup>2</sup>	200000	00030040h

Read Command Send Command

## 4 EtherNet/IP Parameters

The Ethernet/IP interface has an additional parameter tree branch (Parameters à Ethernet/IP Intf), which can be configured with the distributed LinMot-Talk software.  
With these parameters, the Ethernet/IP communication parameters can be configured.

The LinMot-Talk software can be downloaded from <http://www.linmot.com> under the section download, software & manuals.

#### 4.1 EtherNet/IP Intf Dis-/Enable

With the Dis-/Enable parameter the LinMot drive can be run without the Ethernet Ethernet/IP interface going online. So in a first step the system can be configured and run without any bus connection.

##### EtherNet/IP Disable/Enable

Disable	The drive runs without EtherNet/IP
Enable	The drive runs with EtherNet/IP connection.



**Important:** If the Ethernet/IP interface is disabled, the integrated Ethernet/IP switch is not powered! No messages will be sent to other devices connected to the Ethernet-Network via the LinMot drive.

#### 4.2 EtherNet/IP Intf\Ethernet Configuration\IP Configuration Mode

This parameter defines how the IP address is assigned.

##### EtherNet/IP Intf\Ethernet Configuration\IP configuration Mode

DHCP	IP address is acquired via DHCP mechanism.
Static by IP Configuration	IP address is defined with parameters only.
Static with switches S1 and S2 (DHCP)	IP address is defined with parameters and the last byte is defined with the value of the switches S1 and S2. The default IP address setting is 192.168.001.xxx ( xxx stands for the value of the switches S1 and S2)



**Important:** The switch value S1 = 0 and S2 = 0 (factory default setting) defines acquiring the IP address via DHCP.

#### 4.3 EtherNet/IP Intf\Ethernet Configuration\IP Configuration

In this section the parameters for the IP address netmask, default gateway and multicast IP address are located.

##### EtherNet/IP Intf\Ethernet Configuration\IP Configuration

IP address 1st Byte	Highest byte of IP address
IP address 2nd Byte	Mid high byte of IP address
IP address 3rd Byte	Mid low byte of IP address
IP address 4th Byte	Lowest byte of IP address
Netmask 1st Byte	Highest byte of Netmask
Netmask 2nd Byte	Mid high byte of Netmask
Netmask 3rd Byte	Mid low byte of Netmask
Netmask 4th Byte	Lowest byte of Netmask
Default Gateway 1st Byte	Highest byte of Default Gateway
Default Gateway 2nd Byte	Mid high byte of Default Gateway

Default Gateway 3rd Byte	Mid low byte of Default Gateway
Default Gateway 4th Byte	Lowest byte of Default Gateway

## 5 Realtime IO Data Mapping

If you want to control the LinMot device just over the **Control Word** and the **Motion Command** Interface it is sufficient to use the mapping described in chapter 5. The different mappings over different instances are selected in the assembly class.

### 5.1 Default O→T & T→O Mapping

#### 5.1.1 Default O→T Mapping Assembly Instance 32

In this real time IO mapping the 16 bit control word, the 16 bit motion command header and the motion command parameters are exchanged. The size of this mapping is 24 bytes or **12 words**. The AB generic Ethernet module adds another 6 bytes (status and counts) so the real exchanged size is 30 bytes.

##### Assembly Class Instance 32

Byte Offset	Description	Size / Type
00h	MC SW_ControlWord	UInt16 / Bit coded
02h	MC SW_MotionCommandHeader	UInt16 / 12Bit Command 4Bit count nibble
04h	MC SW_MotinoCommandPar Bytes 00..03	UInt32 / Command specific
08h	MC SW_MotionCommandPar Bytes 04..07	UInt32 / Command specific
0Ch	MC SW_MotionCommandPar Bytes 08..11	UInt32 / Command specific
10h	MC SW_MotionCommandPar Bytes 12..15	UInt32 / Command specific
14h	MC SW_MotionCommandPar Bytes 16..19	UInt32 / Command specific

#### 5.1.2 Default T→O Mapping Assembly Instance 16

In this real time IO Mapping the StateVar for the main state machine and several other helpful data is exchanged. The size of this mapping is 18 bytes or 9 words. For the AB generic Ethernet module another 2 bytes (Status and counts) are added, so the real exchanged size is 20 bytes.

##### Assembly Class Instance 16

Byte Offset	Description	Size / Type
00h	MC SW StateVaar	UInt16 / coded state depending
02h	MC SW StatusWord	UInt16 / Bit coded
04h	MC SW WarnWord	UInt16 / Bit coded
06h	MC SW DemandPosition	Int32 / Position [100nm]
0Ah	MC SW ActualPosition	Int32 / Position [100nm]
0Eh	MC SW DemandCurrent	Int32 / Current [1mA]

For the configuration on PLC of this data refer to chapter 3.2 of this manual.

### 5.2 O→T & T→O Mapping with Configuration Module

With this real time IO configuration, an additional configuration module is mapped into the IO data communication. The functionality of this module is the same for all different fieldbus interfaces. For this reason, the functionality is described in the document [2] "Drive Configuration over Fieldbus".

### 5.2.1 Default O→T Mapping Assembly Instance 40

In this real time IO Mapping the 16 bit control word, the 16 bit motion command header and the motion command parameters are exchanged. The size of this mapping is 32 bytes or **16 words**. The AB generic Ethernet module adds another 6 bytes (Status and counts) so the real exchanged size is 38 bytes.

Assembly Class Instance 40		
Byte Offset	Description	Size / Type
00h	MC SW_ControlWord	UInt16 / Bit coded
02h	MC SW_MotionCommandHeader	UInt16 / 12Bit Command 4Bit count nibble
04h	MC SW_MotionCommandPar Bytes 00..03	UInt32 / Command specific
08h	MC SW_MotionCommandPar Bytes 04..07	UInt32 / Command specific
0Ch	MC SW_MotionCommandPar Bytes 08..11	UInt32 / Command specific
10h	MC SW_MotionCommandPar Bytes 12..15	UInt32 / Command specific
14h	MC SW_MotionCommandPar Bytes 16..19	UInt32 / Command specific
18h	Cfg Module Control Word	UInt16
1Ah	Cfg Module Index / ..	UInt16
1Ch	Cfg Module Value / ..	UInt32 / SInt32

### 5.2.2 Default T→O Mapping Assembly Instance 24

In this real time IO mapping the StateVar for the main state machine and several other helpful data is exchanged. The size of this mapping is 26 bytes or **13 words**. For the AB generic Ethernet module another 2 bytes (Status and counts) are added, so the real exchanged size is 28 bytes.

Assembly Class Instance 24		
Byte Offset	Description	Size / Type
00h	MC SW StateVar	UInt16 / coded state depending
02h	MC SW StatusWord	UInt16 / Bit coded
04h	MC SW WarnWord	UInt16 / Bit coded
06h	MC SW DemandPosition	Int32 / Position [100nm]
0Ah	MC SW ActualPosition	Int32 / Position [100nm]
0Eh	MC SW DemandCurrent	Int32 / Current [1mA]
12h	Cfg Module Status Word	UInt16
14h	Cfg Module Index / ..	UInt16
16h	Cfg Module Value / ..	UInt32 / SInt32



### 5.2.3 PLC Setup of Mapping with Configuration Module

In the PLC this is configured as followed:

New Module

Type: ETHERNET-MODULE Generic Ethernet Module  
Vendor: Allen-Bradley  
Parent: Ethernet\_Modul  
Name: X\_Axis1  
Description:  
Comm Format: Data - INT  
Address / Host Name  
☒ IP Address: 192 . 168 . 1 . 89  
☐ Host Name:  
☒ Open Module Properties  
OK Cancel Help

Connection Parameters

	Assembly Instance:	Size:
Input:	24	13 (16-bit)
Output:	40	16 (16-bit)
Configuration:	1	0 (8-bit)
Status Input:		
Status Output:		

Configuration of LinMot axis with additional Configuration Module (4 word input and 4 word output direction).

### 5.2.4 Example of reading Parameter RAM value with Configuration Module

Reading RAM value (0x1101 = 4353; X\_Axis1:O.Data[12]) P Gain Position Control Parameter Set A (UPID5026; X\_Axis1:O.Data[13]) the result in this example is 15 (X\_Axis1:I.Data[11] and X\_Axis1:I.Data[12]). The data in the response is valid as soon the count nibble value in the response state (X\_Axis1:I.Data[9]) changes to the same value as in the control Word (X\_Axis1:O.Data[12]).

Scope: CompactLogixL1 Show: All Tags Enter Name Filter...

Name	Value	Force Mask	Style	Data Type
[-] TestObjekt.I	{...}	{...}		LM:Drive_As18:0
[-] TestObjekt.I.ConnectionFaulted	0		Decimal	BOOL
+ TestObjekt.I.MCSW_ActualPosition_HighWord	16#0000		Hex	INT
+ TestObjekt.I.MCSW_ActualPosition_LowWord	16#01c4		Hex	INT
+ TestObjekt.I.MCSW_DemandCurrent_HighWord	16#0000		Hex	INT
+ TestObjekt.I.MCSW_DemandCurrent_LowWord	16#0000		Hex	INT
+ TestObjekt.I.MCSW_DemandPosition_HighWord	16#0000		Hex	INT
+ TestObjekt.I.MCSW_DemandPosition_LowWord	16#0000		Hex	INT
+ TestObjekt.I.MCSW_StateVar	16#0200		Hex	INT
+ TestObjekt.I.MCSW_StatusWord	16#4830		Hex	INT
+ TestObjekt.I.MCSW_WarnWord	16#0000		Hex	INT
+ TestObjekt.I.RX_Cfg_Module_Index	16#13a2		Hex	INT
+ TestObjekt.I.RX_Cfg_Module_Status	16#0001		Hex	INT
+ TestObjekt.I.RX_Cfg_Module_Value_HighWord	16#0000		Hex	INT
+ TestObjekt.I.RX_Cfg_Module_Value_LowWord	16#000f		Hex	INT
[-] TestObjekt.O	{...}	{...}		LM:Drive_As28:0
+ TestObjekt.O.MCSW_ControlWord	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_00_01	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_02_03	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_04_05	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_06_07	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_08_09	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_10_11	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_12_13	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_14_15	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_16_17	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandByte_18_19	16#0000		Hex	INT
+ TestObjekt.O.MCSW_MotionCommandHeader	16#0000		Hex	INT
+ TestObjekt.O.TX_Cfg_Module_Control	16#1101		Hex	INT
+ TestObjekt.O.TX_Cfg_Module_Index	16#13a2		Hex	INT
+ TestObjekt.O.TX_Cfg_Module_Value_HighWord	16#0000		Hex	INT
+ TestObjekt.O.TX_Cfg_Module_Value_LowWord	16#0000		Hex	INT

Monitor Tags / Edit Tags

### 5.3 O→T & T→O Mapping without Controlword and Motion Command

With this Realtime IO configuration, it is possible to configure the Drive over the Fieldbus. This is described in the document [2] "Drive Configuration over Fieldbus". But the Controlword and the MotionCommand would not mapped in this configuration.

#### 5.3.1 Default O→ Mapping Assembly Instance 8

In this real time IO Mapping the Config Module is exchanged. The size of this mapping is 8 bytes or **4 words**. The AB generic Ethernet module adds another 6 bytes (Status and counts) so the real exchanged size is 14 bytes.

##### Assembly Class Instance 8

Byte Offset	Description	Size / Type
00h	Cfg Module Control Word	UInt16
02h	Cfg Module Index / ..	UInt16
04h	Cfg Module Value / ..	UInt32 / SInt32

#### 5.3.2 Default T→O Mapping Assembly Instance 24

This Mapping is the same like it is described in [Chapter 5.2.2](#).

### 5.4 O→T & T→O Mapping with Configuration Module and Motion Command but without Controlword

This Realtime IO configuration is like the configuration described in Chapter 5.3 but the Motion Command is mapped also.

#### 5.4.1 Default O→T Mapping Assembly Instance 27

The size of this mapping is 27 bytes. The AB generic Ethernet module adds another 6 bytes so the real exchanged size is 33 bytes.

Assembly Class instance 27		
Byte Offset	Description	Size / Type
00h	MC SW_MotionCommandHeader	UInt16 / 12Bit Command 4Bit count nibble
02h	MC SW_MotionCommandPar Bytes 00..03	UInt32 / Command specific
06h	MC SW_MotionCommandPar Bytes 04..07	UInt32 / Command specific
0Ah	MC SW_MotionCommandPar Bytes 08..11	UInt32 / Command specific
0Eh	MC SW_MotionCommandPar Bytes 12..15	UInt32 / Command specific
12h	MC SW_MotionCommandPar Bytes 16..19	UInt32 / Command specific
16h	Cfg Module Control Word	UInt16
18h	Cfg Module Index / ..	UInt16
1Ah	Cfg Module Value / ..	UInt32 / SInt32

#### 5.4.2 Default T→O Mapping Assembly Instance 24

This Mapping is the same like it is described in [Chapter 5.2.2](#).



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