EC ⬅➡ Motion

Quick Start Guide for EC-Win

05 December 2013
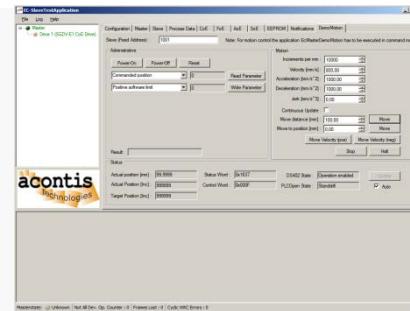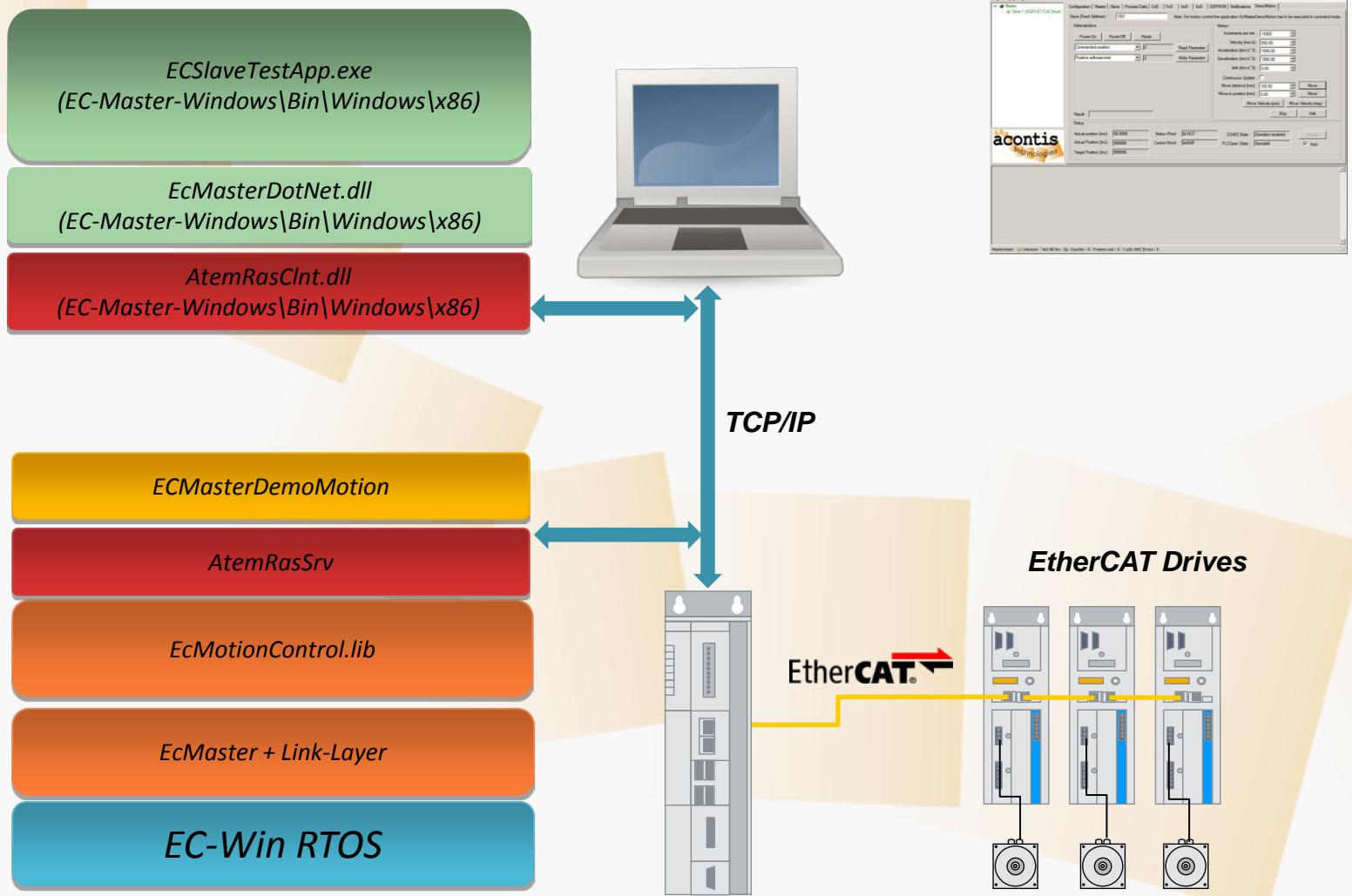
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- *Adjust DemoMotion Configuration File*
- *Start ECMasterDemoMotion*
- *Start ECSlaveTestApp*
- *Next Steps*

System Architecture

EC → Motion

- EC-SlaveTestApplication
- RAS Client (TCP)
- EcMaster DemoMotion
- RAS Server (TCP)
- EC → Motion
- EC → Master
- EC-Win RTOS

TCP/IP

EtherCAT Drives

EtherCAT →

Software Modules

EC ➡ Motion

ECSlaveTestApp.exe
(EC-Master-Windows\Bin\Windows\x86)

EcMasterDotNet.dll
(EC-Master-Windows\Bin\Windows\x86)

AtemRasClnt.dll
(EC-Master-Windows\Bin\Windows\x86)

TCP/IP

ECMasterDemoMotion

AtemRasSrv

EcMotionControl.lib

EcMaster + Link-Layer

EC-Win RTOS

EtherCAT Drives

EtherCAT

Software Packages

Required

1. EC-Win EtherCAT Windows Real-time platform
2. EC-Win System Manager Tool
3. WinPcap Windows Paket Capture Library
4. EC-Engineer EtherCAT Configuration and Diagnosis Tool

Recommended

1. Microsoft XML Notepad http://www.microsoft.com/en-us/download/details.aspx?displaylang=en&id=7973
2. WireShark Network Protocol Analyzer http://www.wireshark.org/

1.) Installation EC-Win EtherCAT Windows Real-time platform
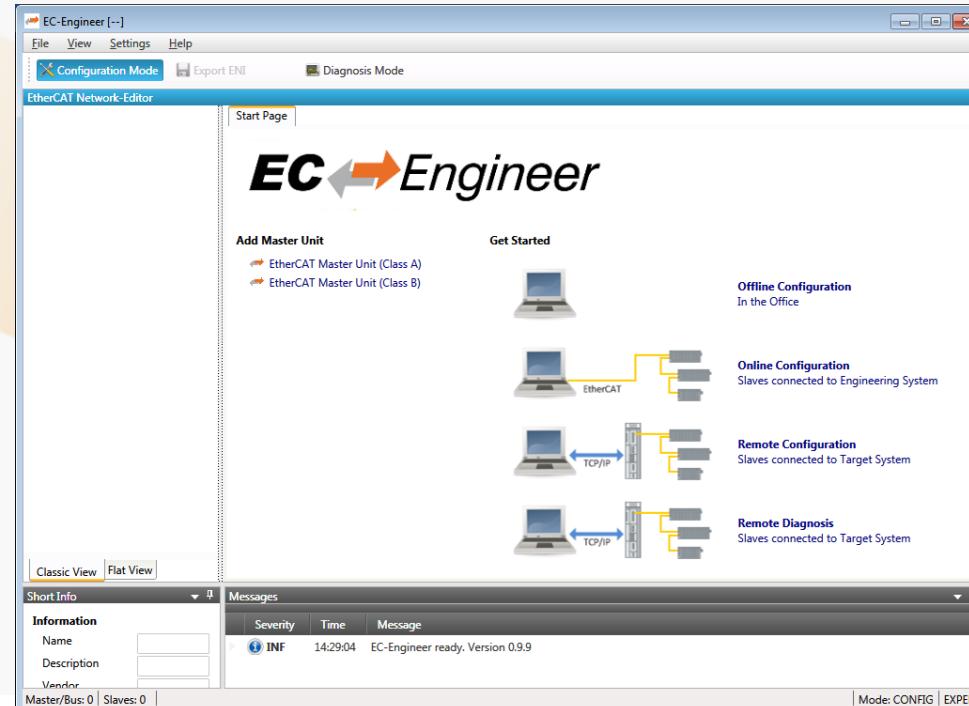
- *Execute setup.exe and follow the instructions*
- *Use default directories.*

2.) Installation EC-Win System Manager Tool

- *Extract the SystemManager_EC-Win.zip folder, and copy the "bin" folder to the installation path of your EC-Win EtherCAT Windows Real-time platform. (accept to overwrite the existing folder "bin".)*
- *Create a desktop shortcut:*

  32Bit: /bin/windows/x86/SystemManagerV2/SystemManager.exe

  64Bit: /bin/windows/x64/SystemManagerV2/SystemManager.exe
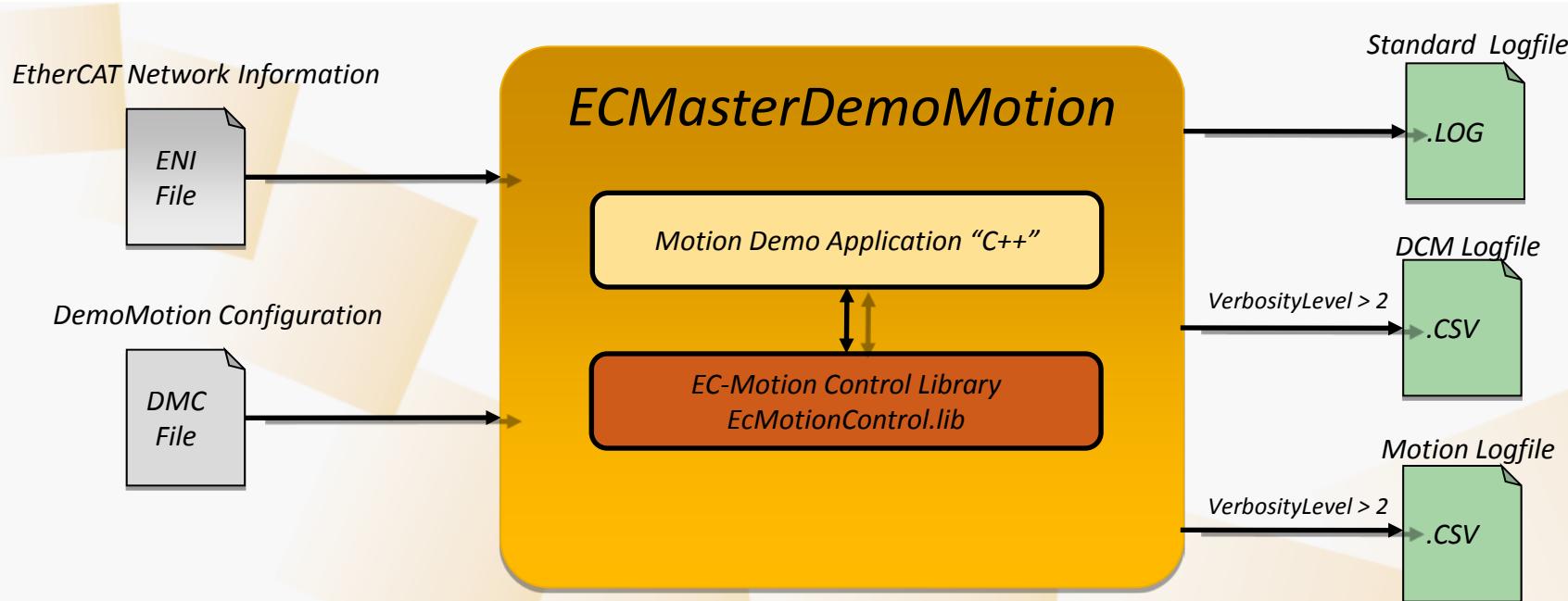
3.) *Installation EC-Engineer*

- *WinPcap Windows Paket Capture Library http://www.winpcap.org/*
- *EC-Engineer*
  - *Unpack the file EC-Engineer_Eval_V1.x.x.zip*
  - *Execute setup.exe and follow the instructions*

EC ➡ *Motion*

- *Example application shipped with complete C++ source code*
- *Distributed Clocks (DC) support*
- *By default support for 4 drives*
- *Supported drive operation modes: CSP, CSV and IP*
- *Two demo modes selected by variable S_bCmdMode*
  - *Independent mode: Drive moves forward and backward*
  - *Command mode: Communication to ECSlaveTestApp using ecatNotifyApp()*

ECMasterDemoMotion Input and Output Files
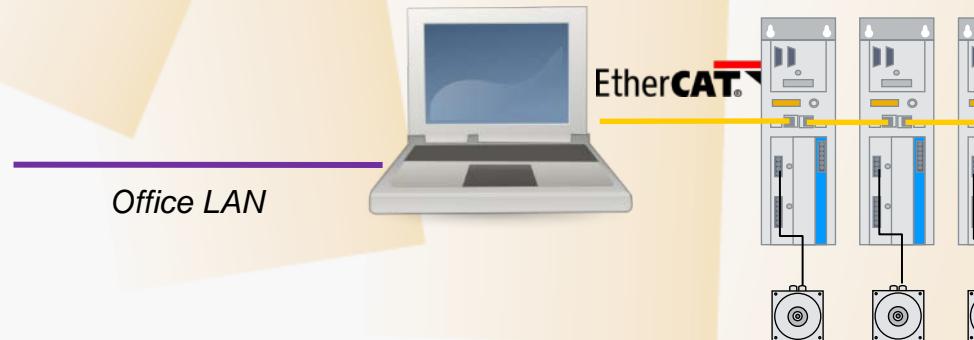
EC→Motion

- *The ENI file is located in "EC-Master-NNN\Examples\EcMasterDemoMotion\Config"*
- *The DMC file, e. g. MotionConfig.xml, is located in "EC-Master-NNN\Examples\EcMasterDemoMotion\Config" and contains all input parameters*
- *The Standard Logfile contains all messages and errors*
- *The DCM Logfile shows the quality of the DCM bus shift controller*
- *The Motion Logfile traces the actual and target position and other values*
- *All Logfiles are created in the folder of the executable*

EC ➡ Motion

- *In conjunction with EC-Win the EC-Engineer will scan the connected EtherCAT slaves*
- *For that purpose a second, dedicated network interface adapter for EtherCAT is required*
- *Prior to scanning the bus, the Ethernet network interface adapter will have to be assigned to the real-time environment (see details below in this document).*
- *Most of currently available Intel and Realtek network adapters are supported by EC-Win. Other Ethernet adapters beside Intel and Realtek cannot be used.*
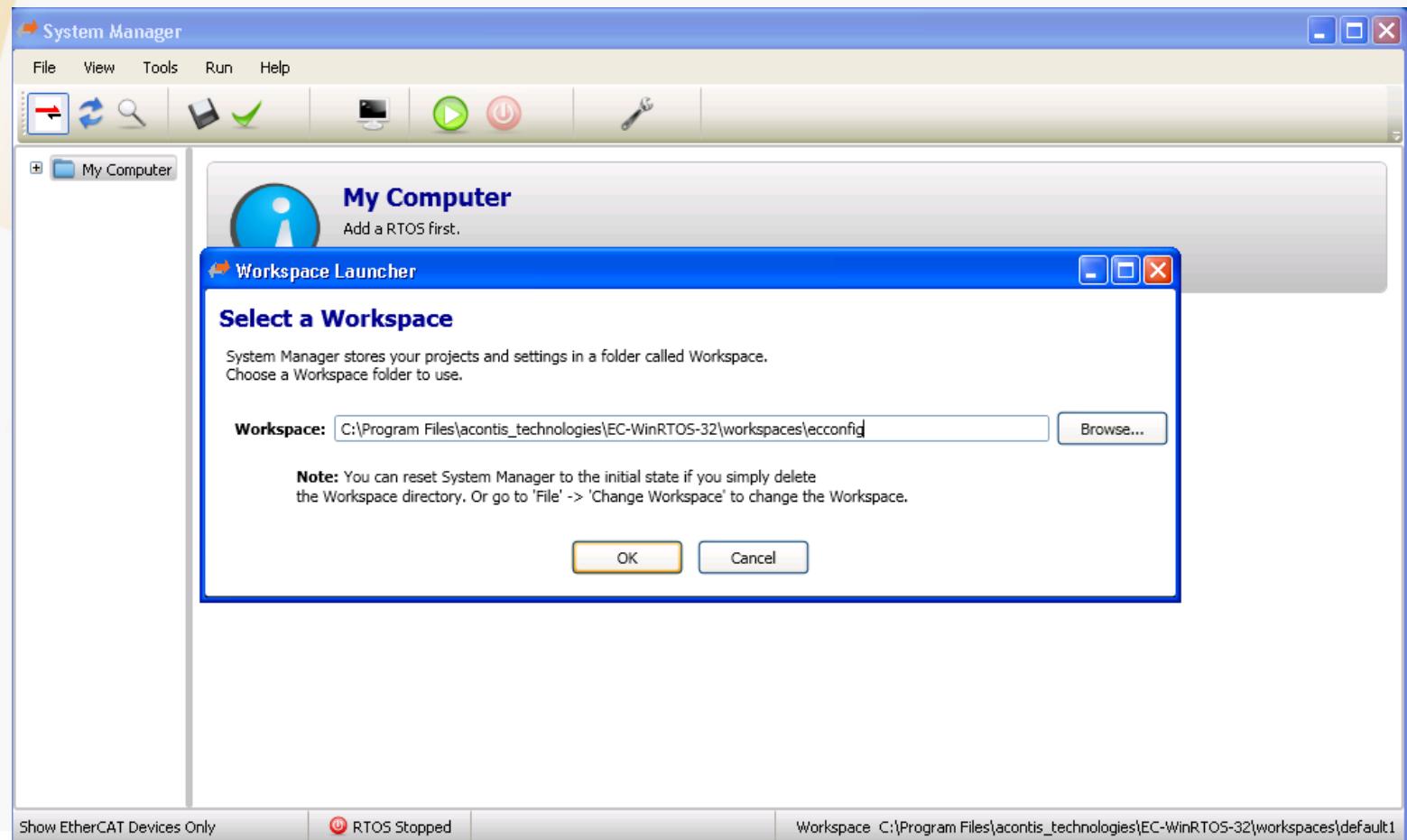
EtherCAT.

Office LAN

EC ⬌ Motion

- *After Starting the SystemManager create a new Workspace "ecmotion" in the default directory.*
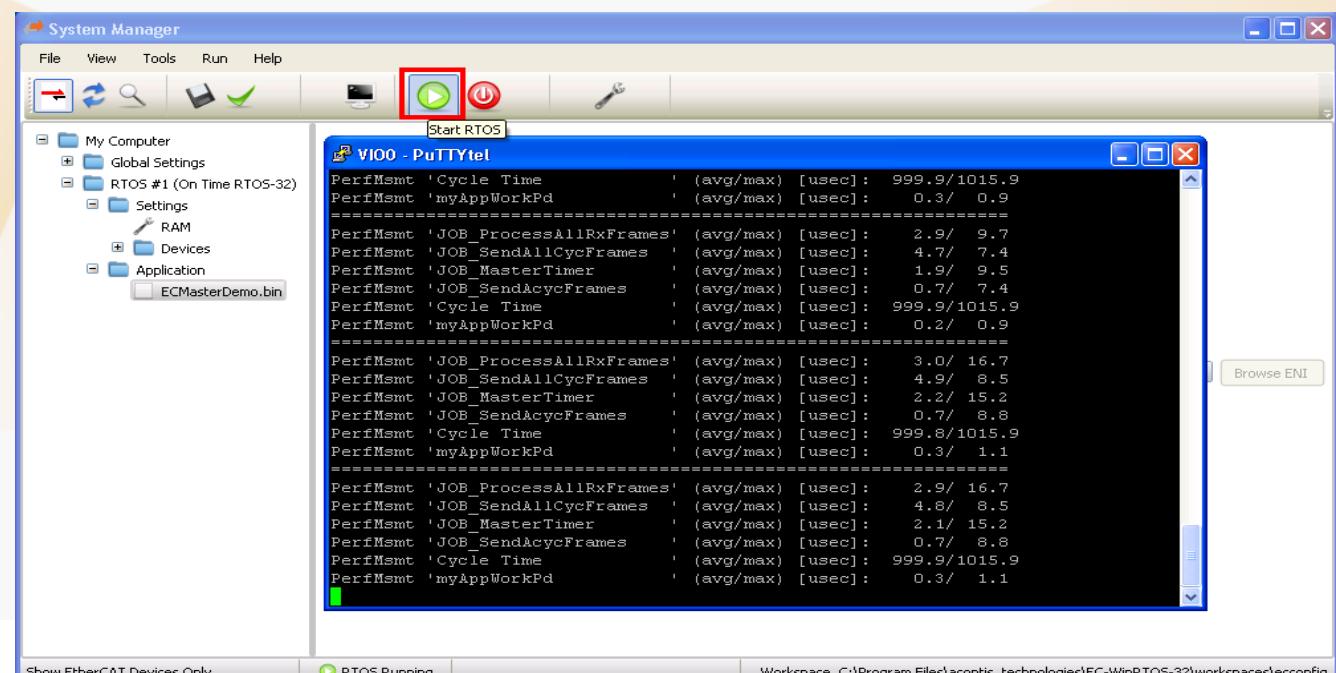
- *After Adding an RTOS, you have to assign your Network Card (In this example an Intel Pro/100 Network Adapter) to the RTOS.*
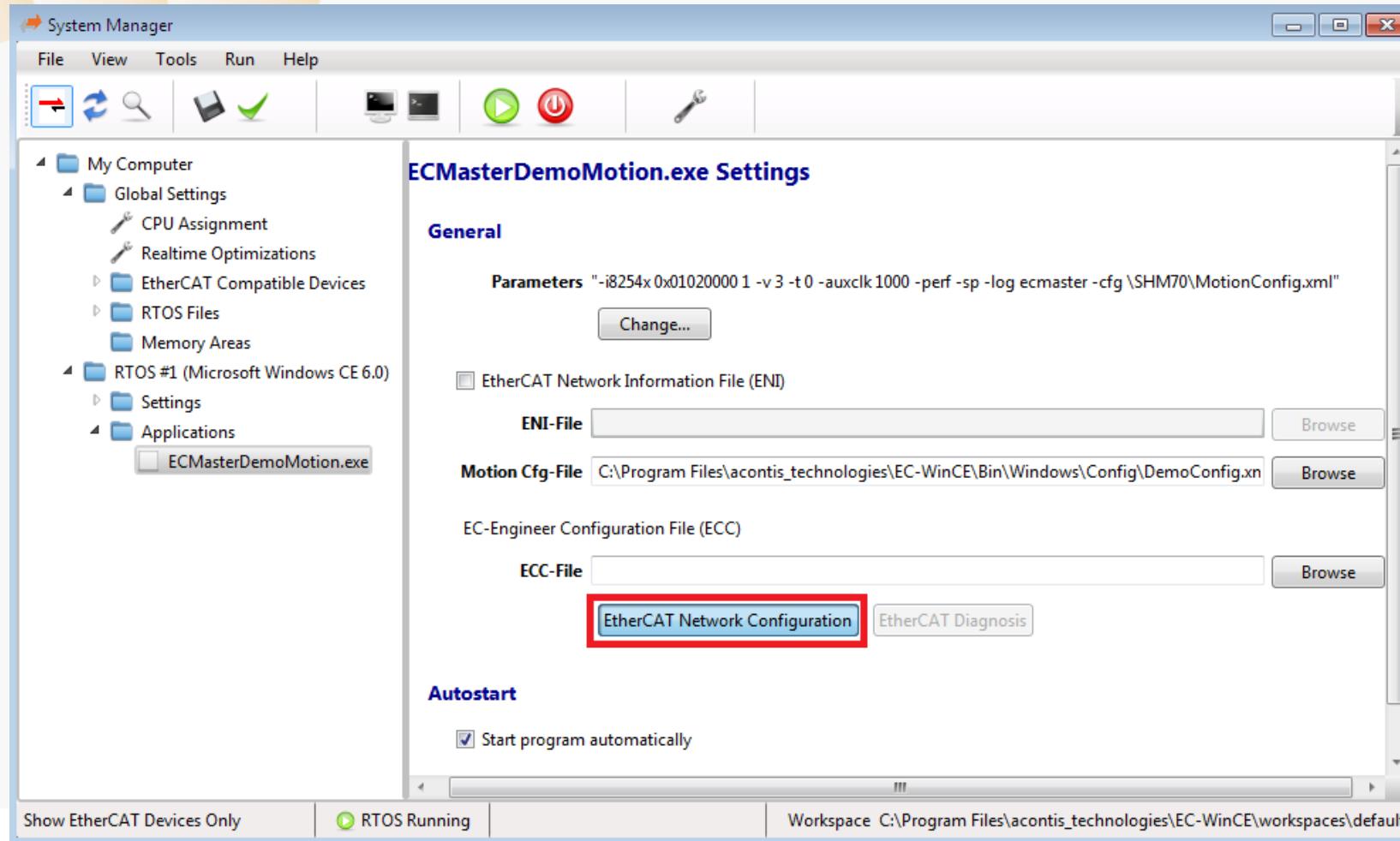
EC ⟷ Motion

- *Add the ECMasterDemoMotion application*
- *Now you can start the existing application ECMasterDemoMotion.bin which will automatically select the Network Adapter you assigned to the RTOS.*
- *Select a cycle time of 1000us.*
- *Now you have to select the Motion-Cfg-File, which will you find under /bin/windows/config/MotionConfig.xml*
- *After opening a Target Console Window, start RTOS.*

EC ⬅➡ Motion
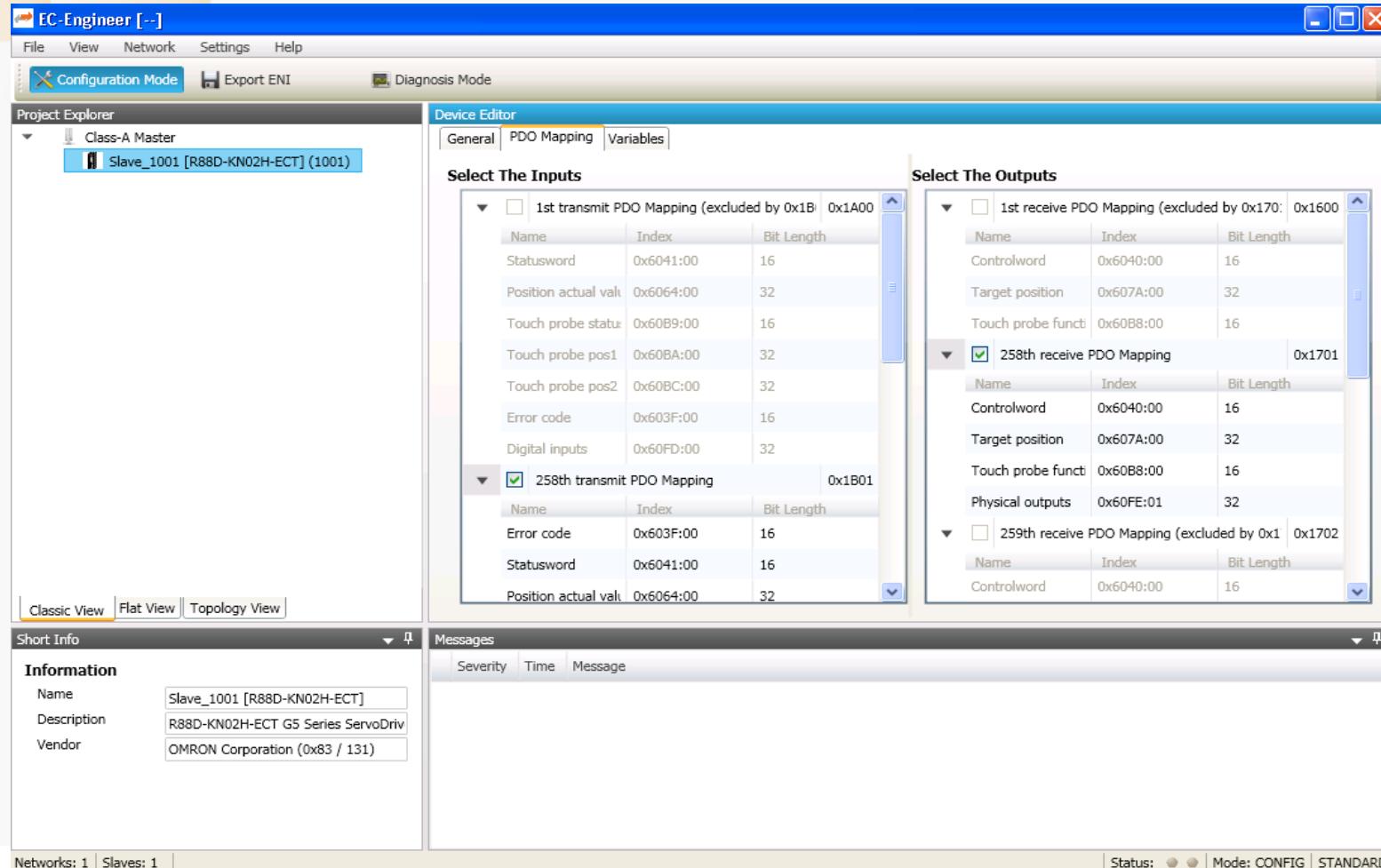
- *Go back to the System Manager and click on „EtherCAT Network Configuration"*

EC-Engineer will start and scan the devices.
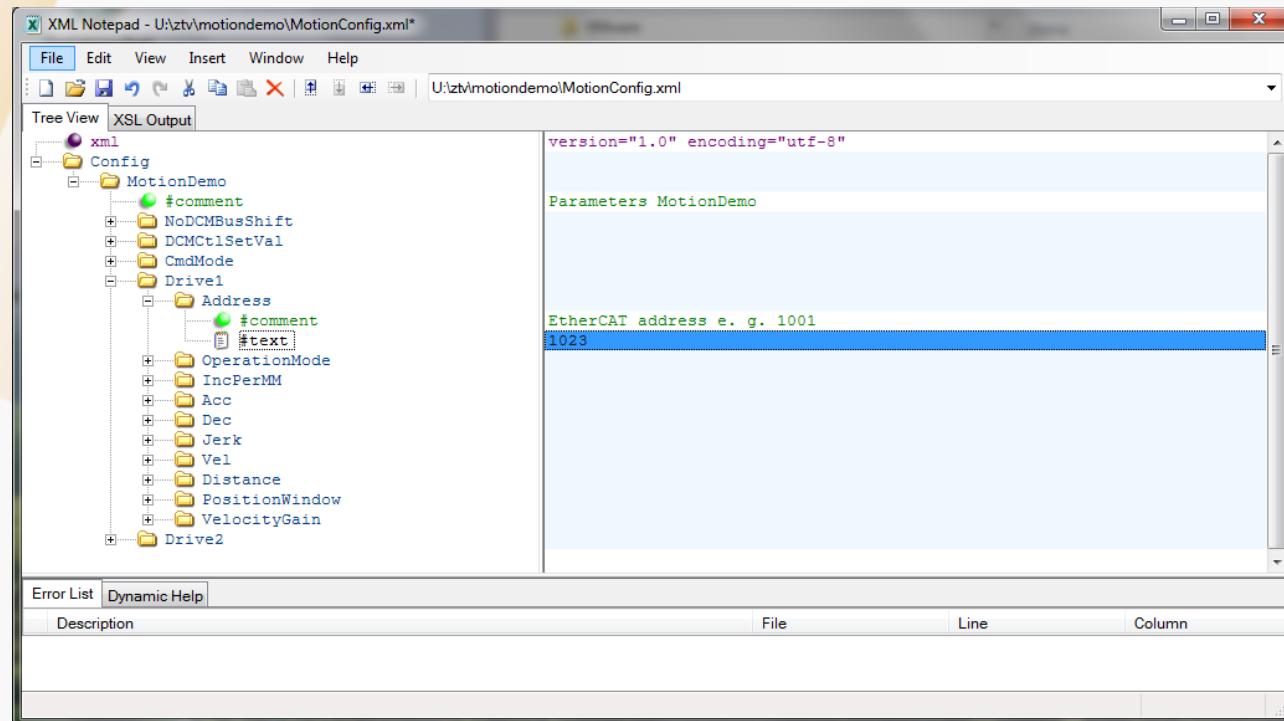
| 0x6060=7 Interpolated Position Mode (IP)		0x6060=8 Cyclic Synchronous Position Mode (CSP)		0x6060=9 Cyclic Synchronous Velocity Mode (CSV)	
Inputs	**Outputs**	**Inputs**	**Outputs**	**Inputs**	**Outputs**
0x6041 Statusword	0x6040 Controlword	0x6041 Statusword	0x6040 Controlword	0x6041 Statusword	0x6040 Controlword
0x6064 Position Actual Value	0x6062 Position Demand Value or 0x60C1 Interpolation data record	0x6064 Position Actual Value	0x607A Target Position	0x6064 Position Actual Value	0x60FF Target Velocity
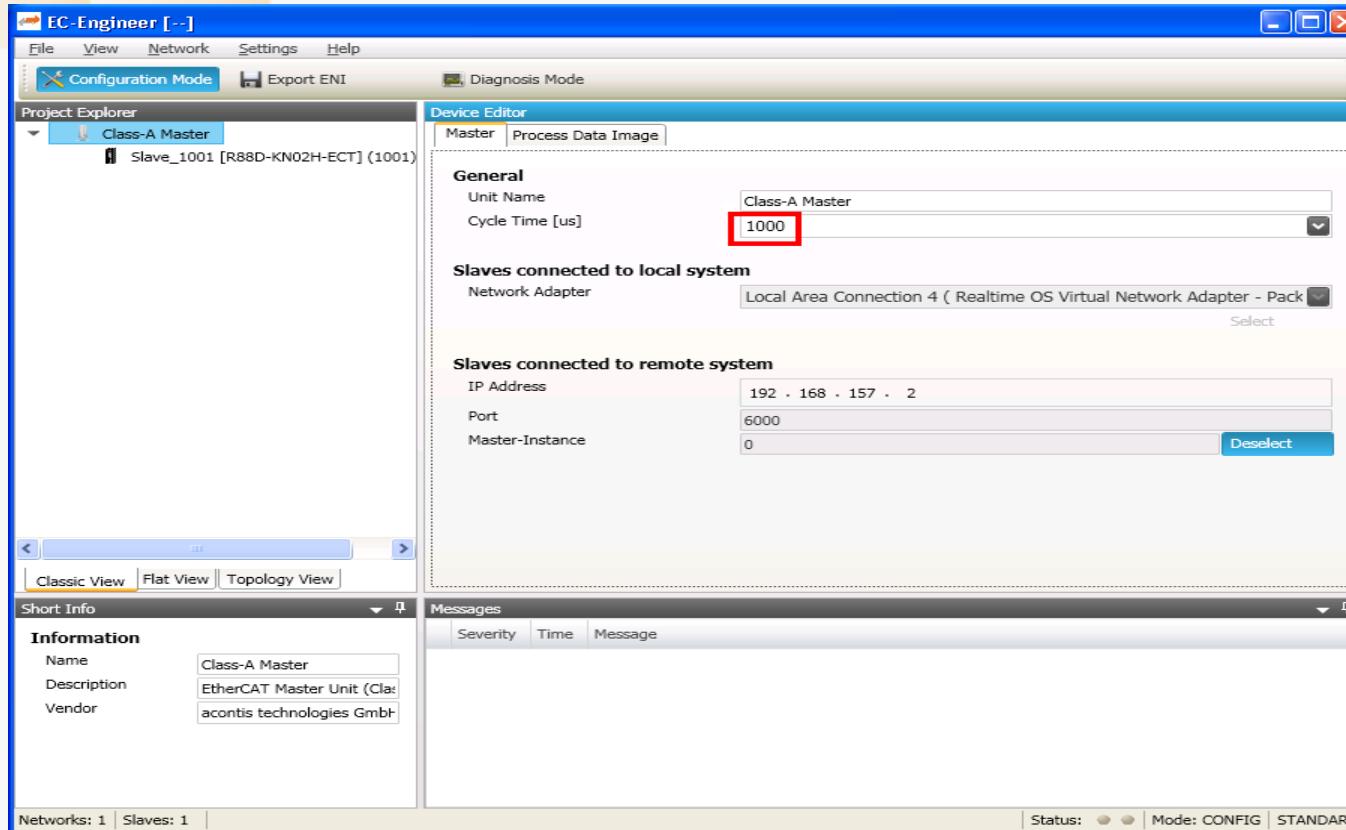
- *Select the Drive1 entry in node "MotionDemo"*
- *Select the Address entry sub-node*
- *Set the value to the desired EtherCAT address. In this example 1023.*

After checking the Cycle Time (1000us) close the Engineer and click on Yes.
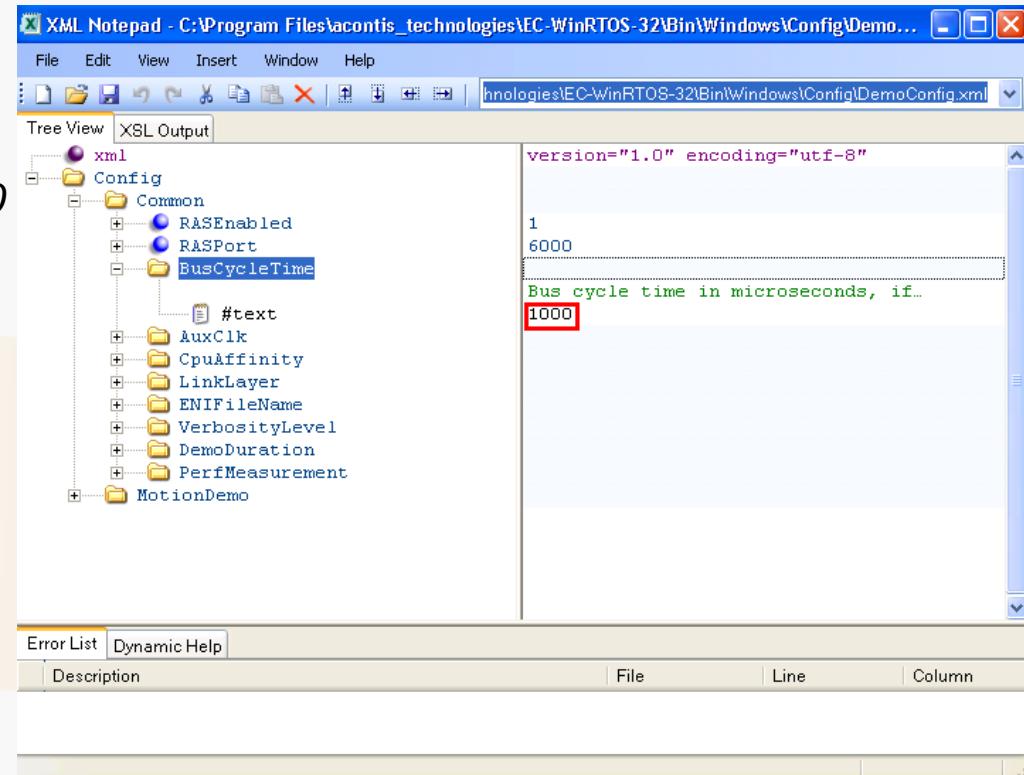
Go back to the System Manager and you will see the generated File is automatically selected as Eni-File.
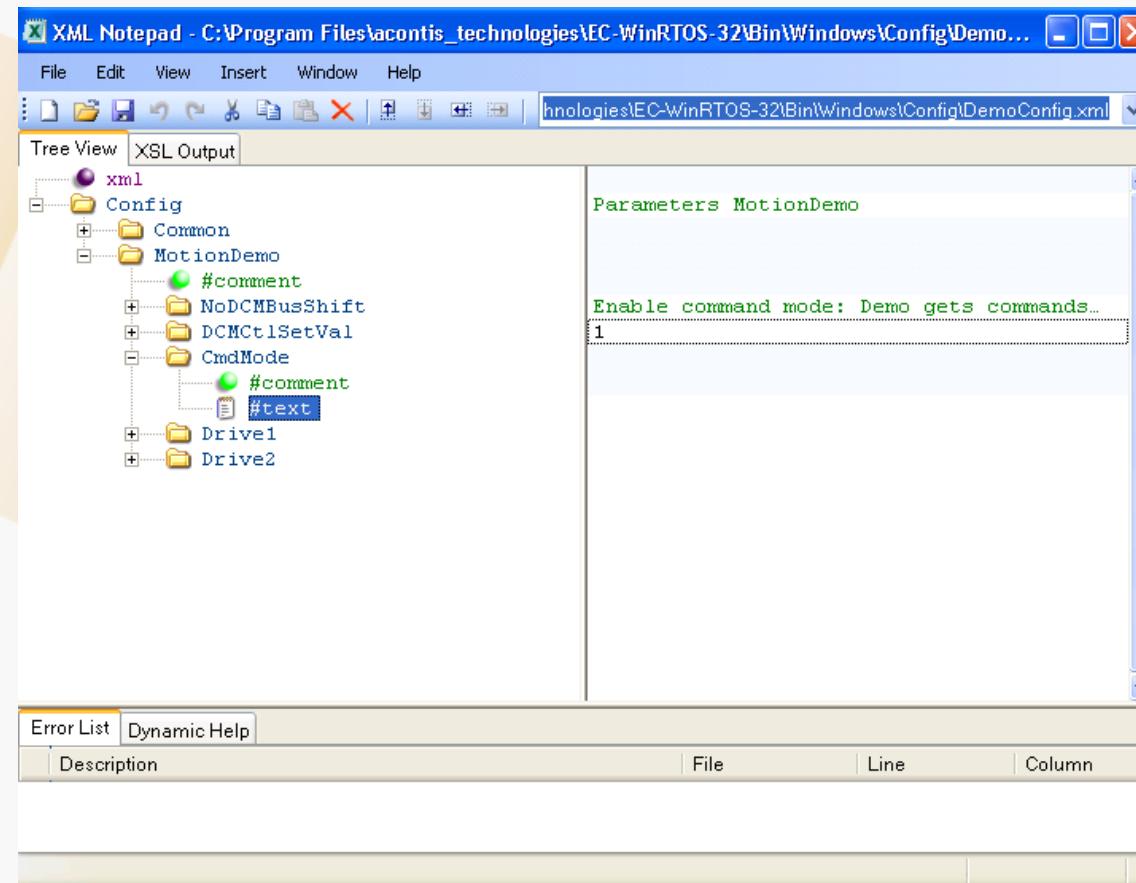
- *The DMC file, e. g. MotionConfig.xml is located in the folder "….\bin\Windows\Config"*

- *Use Notepad or XML Notepad for editing*

- *In the "Common" section all general parameters are defined, e. g. "BusCycleTime"*

- *The BusCycleTime has to be set to 1000*

- *In the "MotionDemo" section all specific parameters for this application are defined*

- *All drive relevant parameters are defined in "Drive1" etc.*

- *ECMasterDemoMotion supports by default 4 drives*
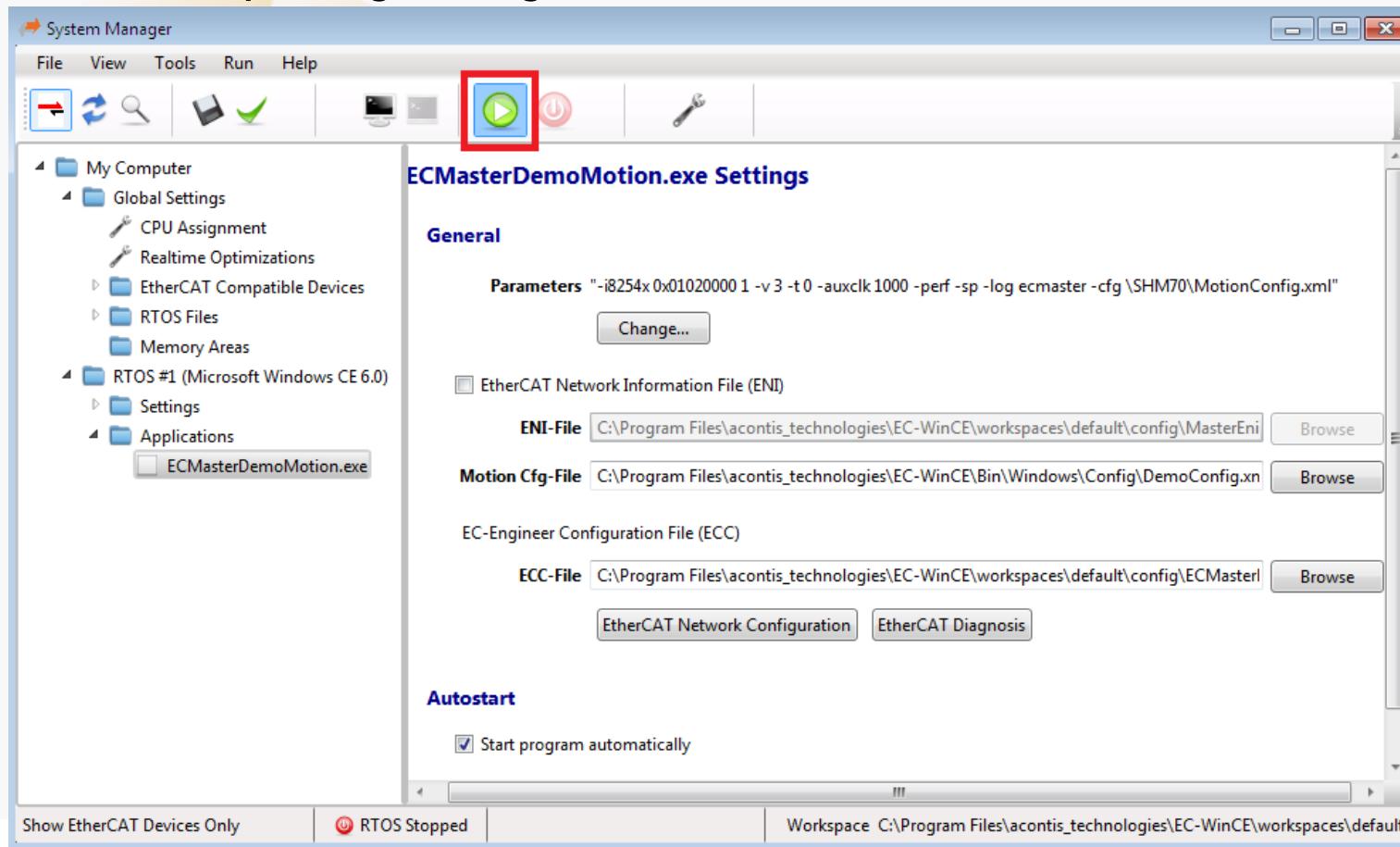
- Select the CmdMode entry in node "MotionDemo"
- Set the value to "1", to enable command mode.

Start ECMasterDemoMotion

EC→Motion

*For Starting the ECMasterDemoMotion use the SystemManager*
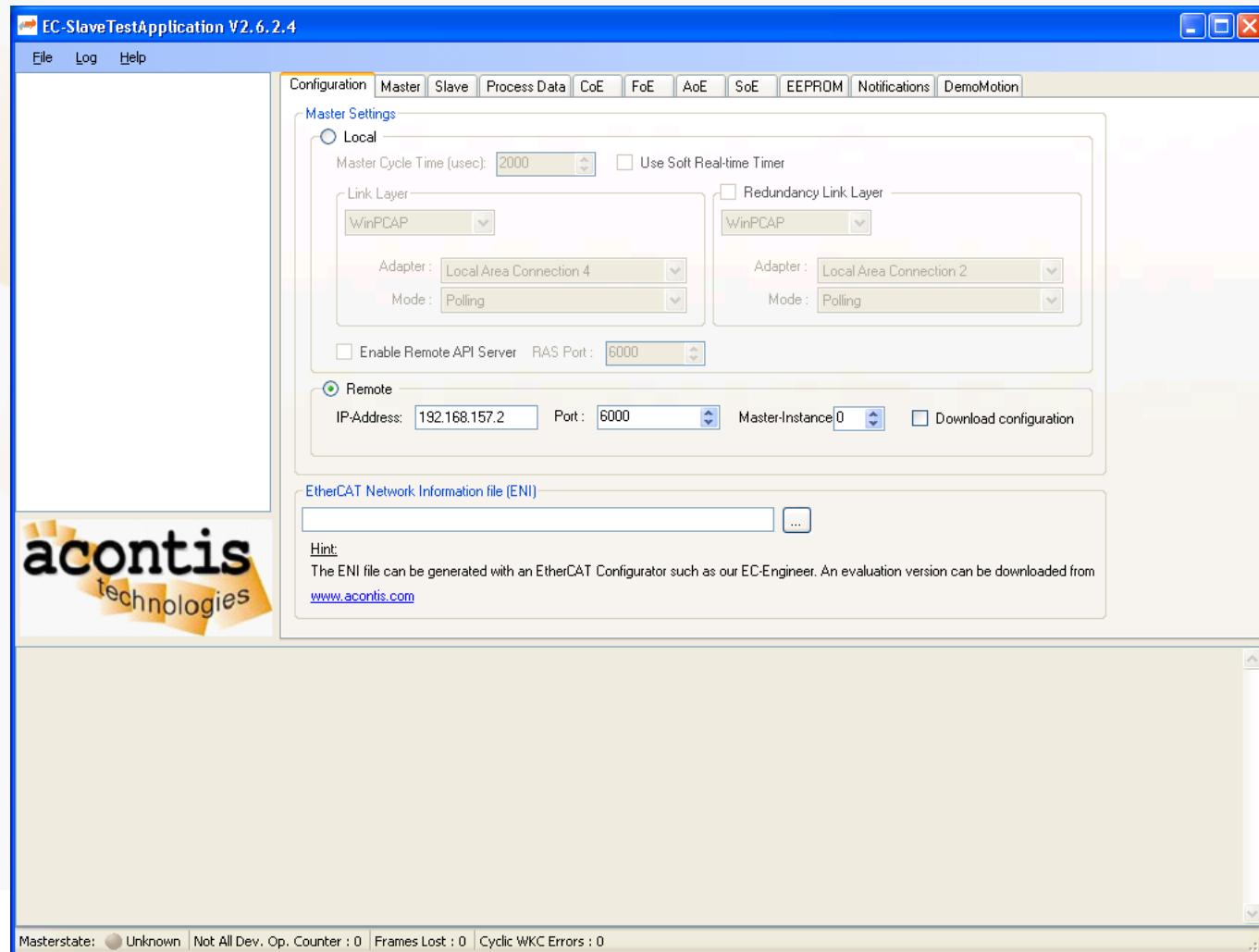
- *After opening a Target Console Windows, Start RTOS.*
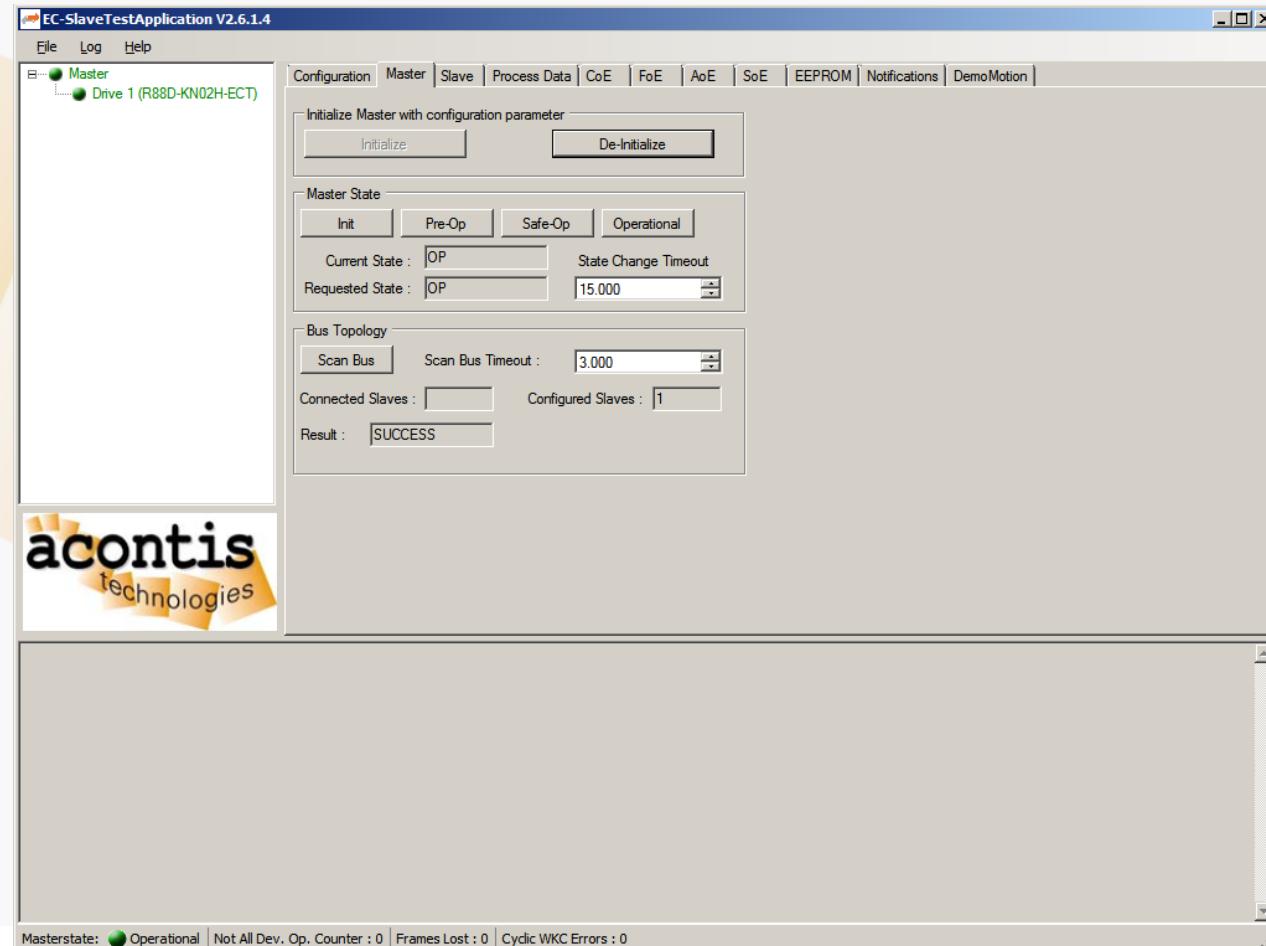
- *Select "Remote" and set the IP-Address of the Realtime OS into IP-Address*

Establish connection to ECMasterDemoMotion
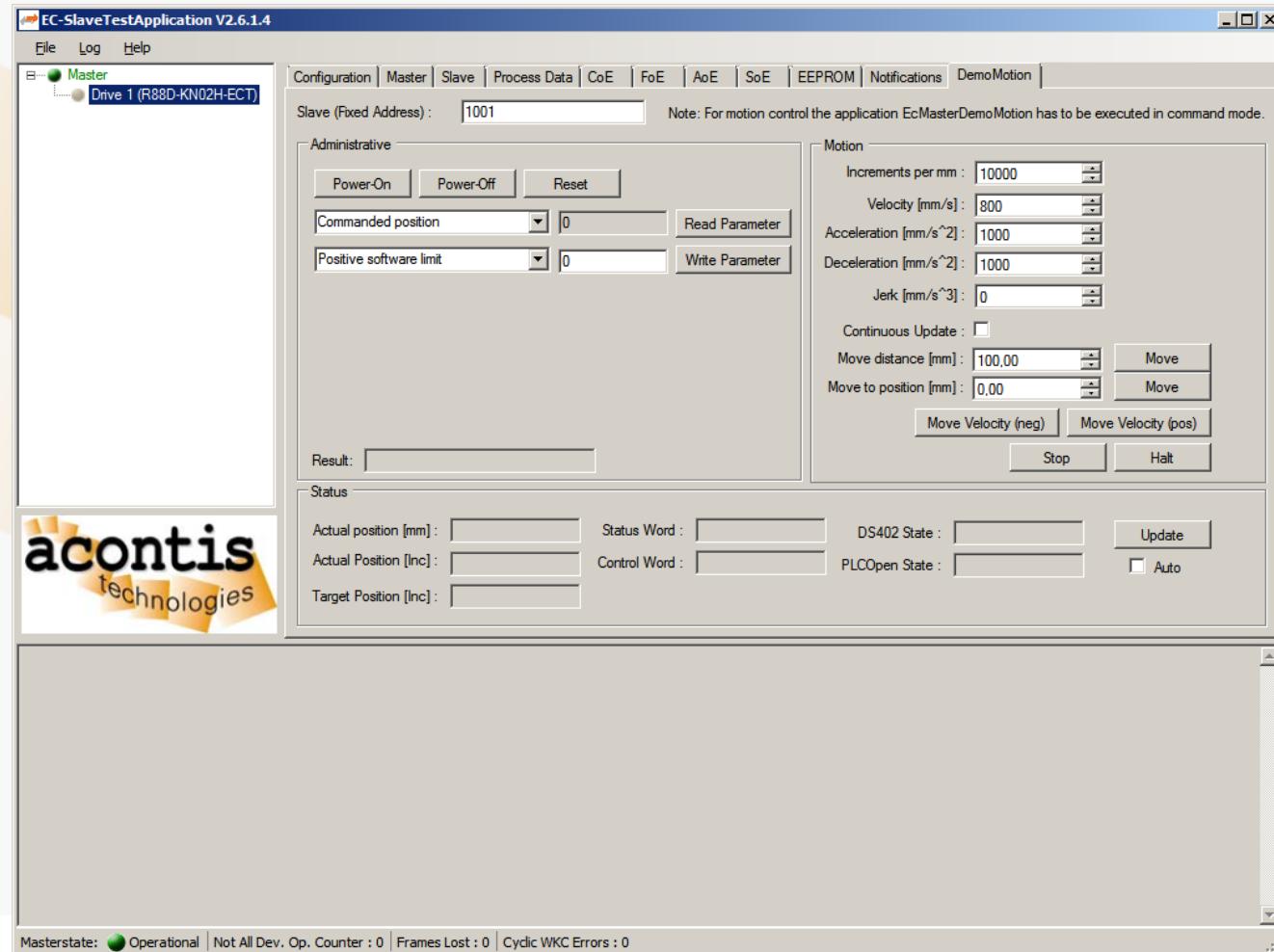
- *On tab "Master" select the button "Initialize"*
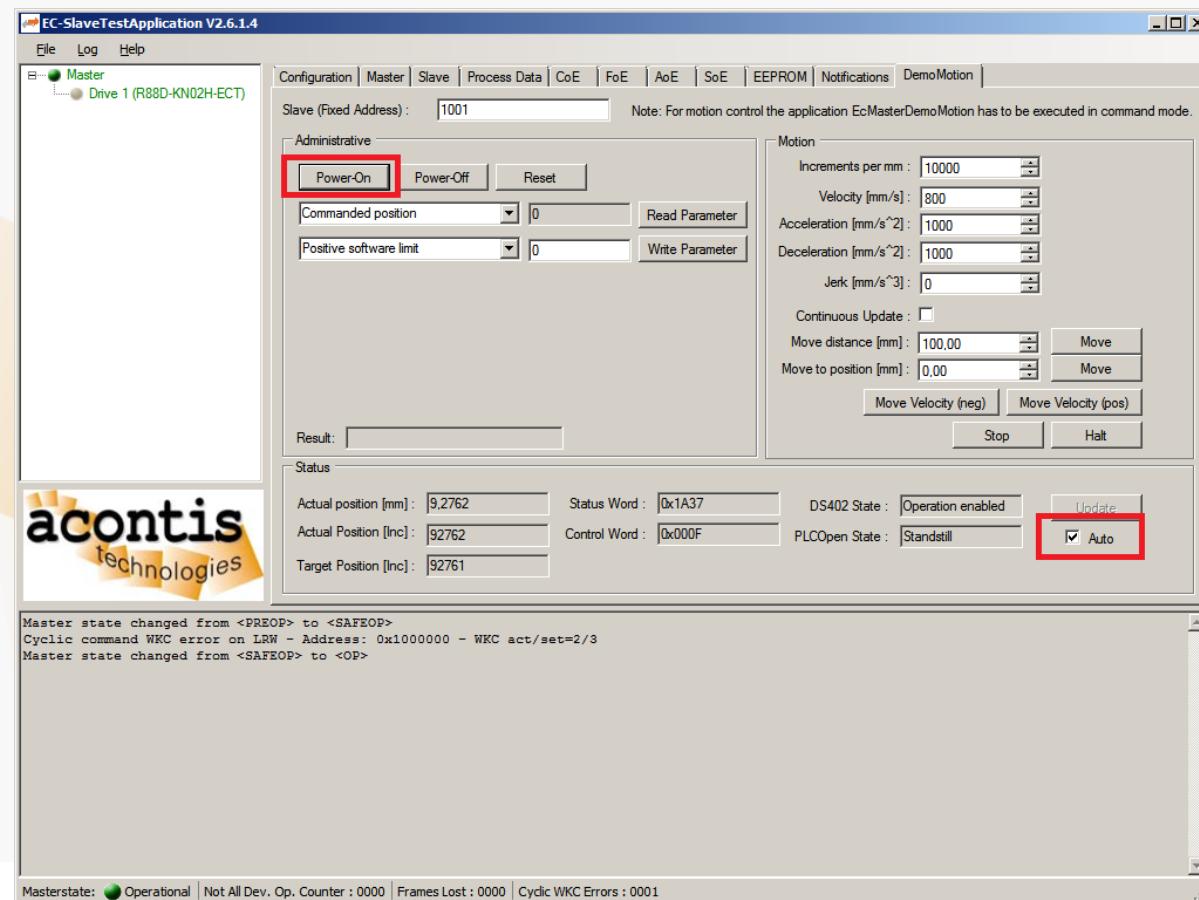
Select the first drive

- *Select on tab "DemoMotion" the first drive in the tree*
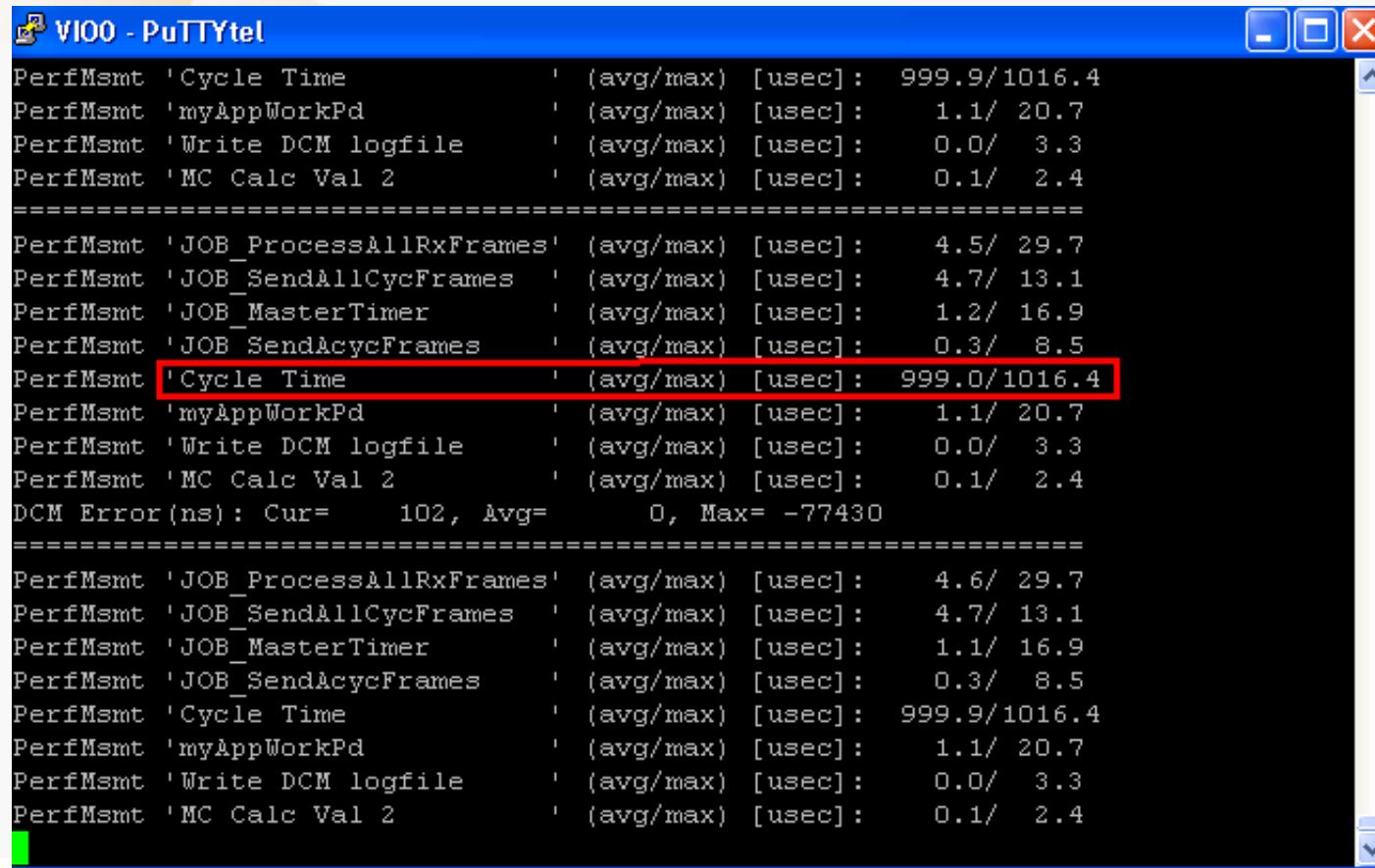
Power-On drive and move it

- Select the checkbox "Auto" and the values in the status area should be updated. If possible manually turn at the motor
- Select button "Power-On"

- **Check the cycle time. A stable cycle time is required.**
  PerfMsmt 'Cycle Time ' (avg/max) [usec]: 999.0/1016.4 → o.k.

- *Check PDO mapping in case of error messages like:*
  `ERROR: Invalid PDO mapping: Target Position Object=0x607A not found`

- *Contact acontis technical support* *ecsupport@acontis.com*
  - *Required information: Drive manufacturer and model*
  - *Required files: ESI (EtherCAT Slave Information), ENI (EtherCAT Network Information), ECC (EC-Engineer project file), all logfiles*

EC➡️*Motion*

- *Learn more about EcMasterDemo and the application framework → EC-Master Class B User Manual Chapter 3.3 "Application Framework"*

- *Take at closer look into the source code of ECMasterDemoMotion Compile and debug the source code with Visual Studio*

- *Take at closer look at the EcMotionLibrary*