

## ACS PLC and FAULHABER MC V3.0 EtherCAT

### Summary

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This application note describes the commissioning of an ACS PLC in combination with a FAULHABER Motion Controller MC V3.0 with EtherCAT-interface.

### Applies To

All FAULHABER Motion Controller V3.0, FW version M or later.

### Licensing

EtherCAT is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

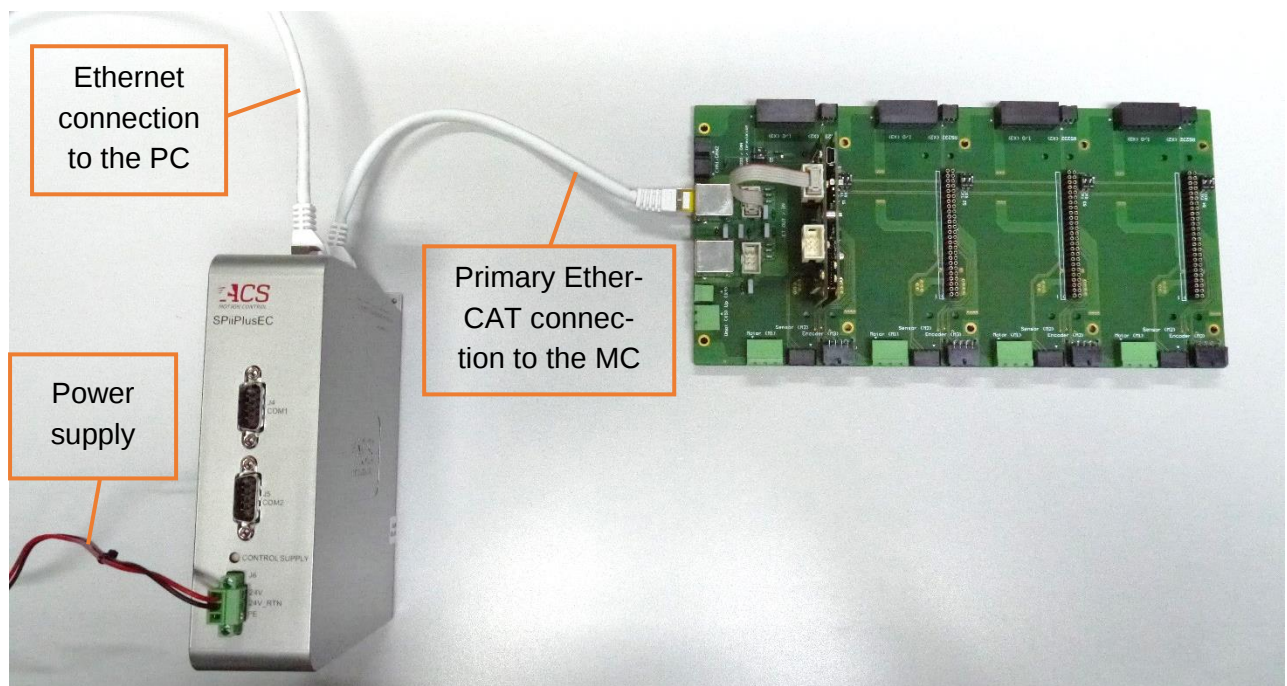
### Description

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#### Test setup

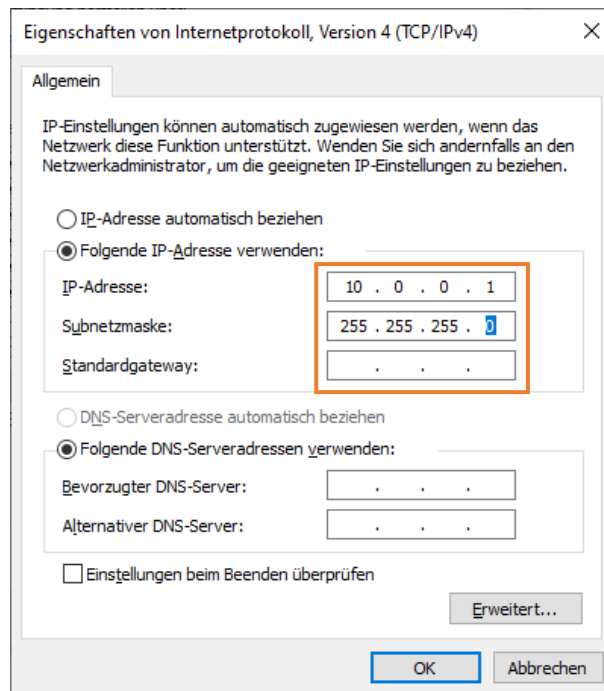
The test setup consisted of the following elements:

- ACS PLC: SPiiPlusEC
- FAULHABER Motion Controller: MC 5004 P ET



## General preparation

The ACS PLC is delivered with an IP-address of 10.0.0.100. To establish a connection to the PLC, the PCs' IP-address must be adapted. Therefore open the network connections of the PC, right click on the used Ethernet-port and select "properties". Subsequently, open the properties of the internet protocol. Change the settings according to the following screenshot:



## Preparation of the Motion Controller

In systems with EtherCAT interface, the PLC requires additional information to the Motion Controller in form of an ESI-file (EtherCAT Slave Information).

For FAULHABER Motion Controller with firmware version L or earlier the ESI-file was complemented by the file "Faulhaber\_Module\_Sync.xml", which described the different synchronization types (DC = Distributed Clock; SM = SyncManager).

On the state of creation of this application note, it was not possible to install both files using the SPiiPlus MMI Application Studio.

**For a system consisting of an ACS PLC and FAULHABER Motion Controller, this means: It is necessary to use Motion Controller with firmware version M or later.**

With firmware version M, the synchronization type is defined to "DC" by default, making the additional file "Faulhaber\_Module\_Sync.xml" obsolete.

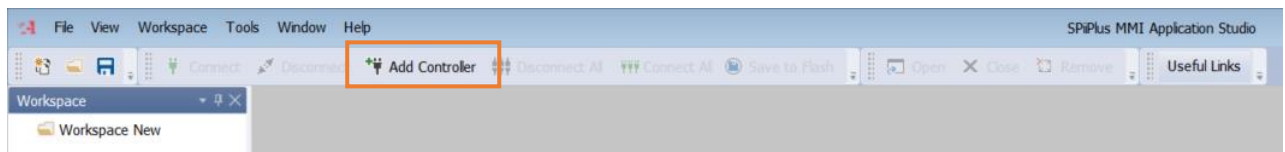
Additional information: The EtherCAT EEPROM version of a FAULHABER Motion Controller doesn't have to match the firmware version. However, the EtherCAT EEPROM version also must be at least M.

## Commissioning of the ACS PLC

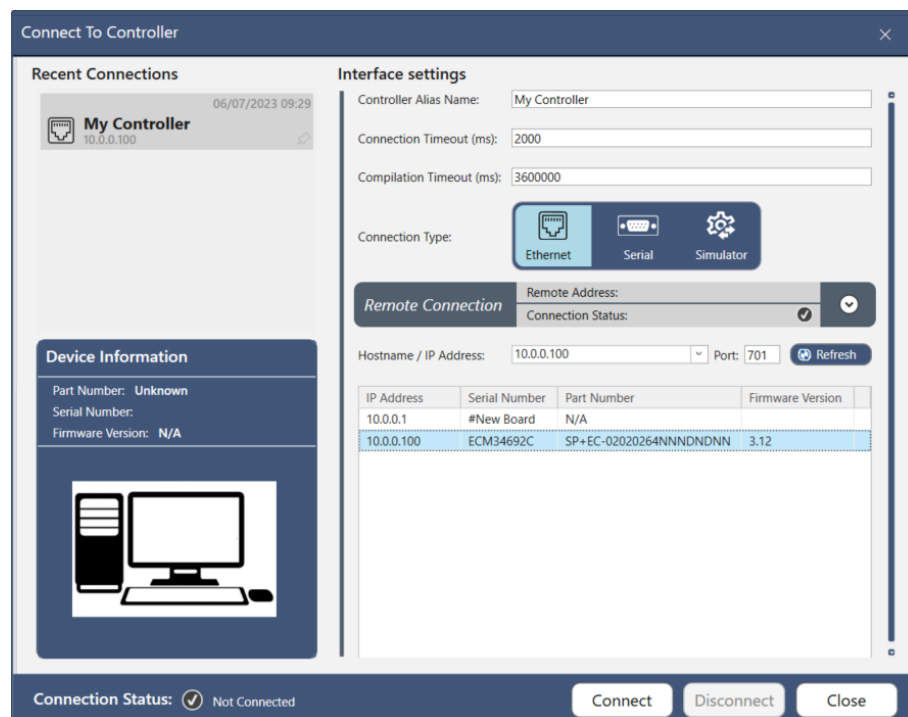
For commissioning of the ACS PLC, the installation of the SPiiPlus ADK Suite is necessary. After the installation, the SPiiPlus MMI Application Studio can be started.

By default, there is a connection to a Simulator-Controller. In order to create a new workspace, select File-> New-> New Workspace.

In the newly created workspace, first of all the connection to the PLC must be established. Therefore select “Add Controller”.



By changing the connection type to Ethernet the connected PLC should be displayed. Hit the button “Connect” to establish the connection.



The next step is to detect the devices in the EtherCAT-network. For this purpose, the SPiiPlus MMI Application Studio offers an automatic system setup. Right-click on the PLC and select Add Component-> Setup-> System Setup. Now the automatic setup can be executed.

Since most of the FAULHABER Motion Controller are not familiar to ACS in form of an ESI-file, the setup will at first prompt an error message, that “Devices that are not defined in the database were detected”. To define the device, the ESI file matching the EtherCAT EEPROM version must be imported.

ESI-files of FAULHABER Motion Controller can be found in the following directory:

Motion Manager 6:

C:\Program Files (x86)\Faulhaber\Motion Manager 6\ESI

Motion Manager 7:

C:\Users\Public\Documents\Faulhaber\Motion Manager 7\Device description\ESI

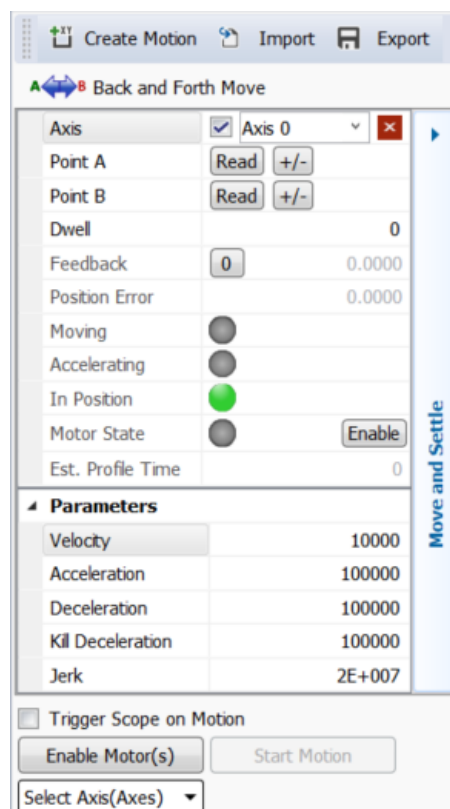
Once the file has been successfully imported, it is saved in the following directory:

C:\ProgramData\ACS Motion Control\SPiiPlus MMI Application Studio\<Version>\Repository Data

After the setup process has been completed, the FAULHABER Drive system can be operated by the ACS PLC.

By using the Add component option, many functions like a scope, or a variable manager and watch can be added to the workspace.

For a first commissioning, the Motion Manager might be of interest. Select Add component-> Diagnostics and Monitoring-> Motion Manager. Here, e.g. a back and forth move can be selected. After defining a Point A and B and enabling the motor, the movement is started by clicking on "Start Motion".



For all subsequent steps like the development of an application, ACS Motion Control offers many guides and application notes (ACS homepage-> Resources-> Downloads). E.g. the programming language for an ACS PLC (ACSPL+) is explained by help of a commands & variables reference guide and a programmer's guide.

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