Beckhoff TwinCAT 3 and FAULHABER MC V2.5 / V3.0 CANopen

Summary

This application note describes the necessary steps to control a FAULHABER MC V 2.5 / V3.0 CANopen version using a TwinCat based PLC. The MC is connected via CANopen to the PLC

Applies To

Faulhaber Motion Controller CO (Firmware Version C), Beckhoff SPS with NC kernel, TwinCat 3

Description

Before it is possible to use the Motion Controller in a PLC environment, following configurations have to done with the Motion Manager:

- Configure baudrate and set node number

  AT the first start-up of the MC the baudrate and the node number have to be set via LSS-protocol (Motion Manager).
  Later the baudrate of the CANopen Gateway needs to be set on the same value.

- Deactivate Heartbeat

0x1017 Producer heartbeat	:= 0;
0x1016 Consumer Heartbeat	:= 0;

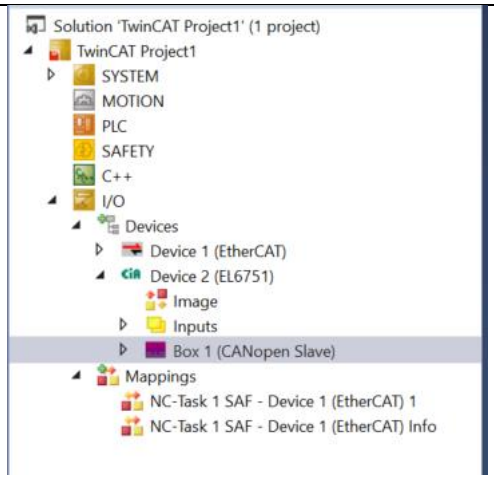
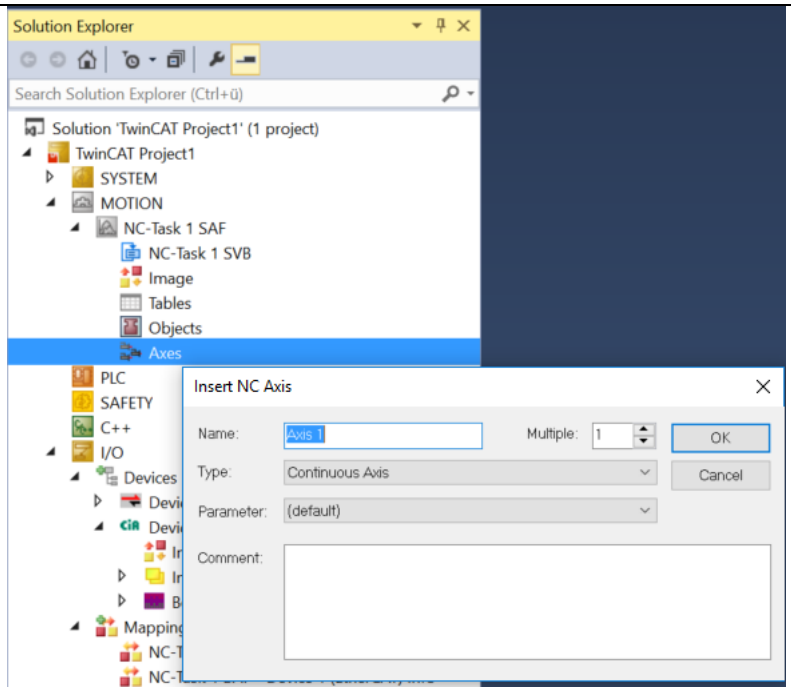
- Activate Node Guarding

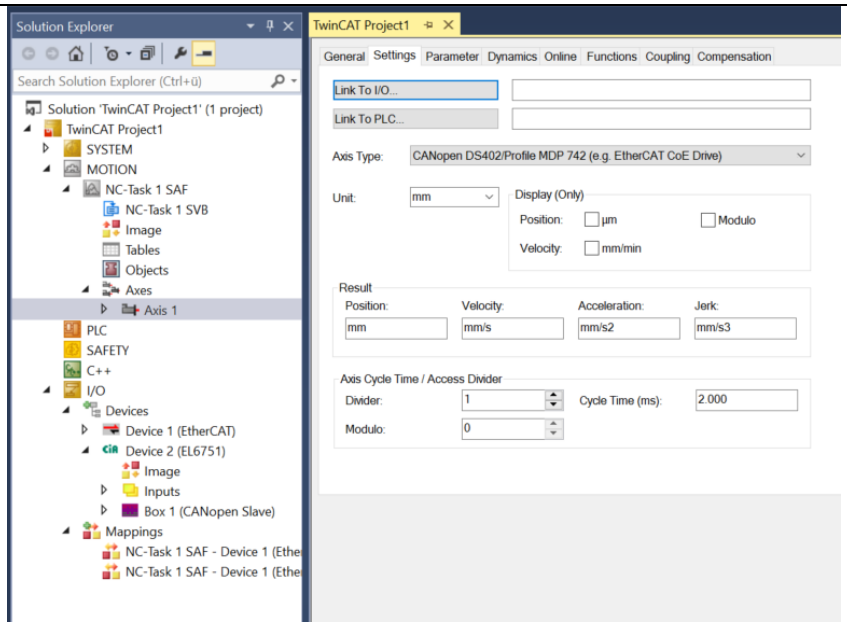
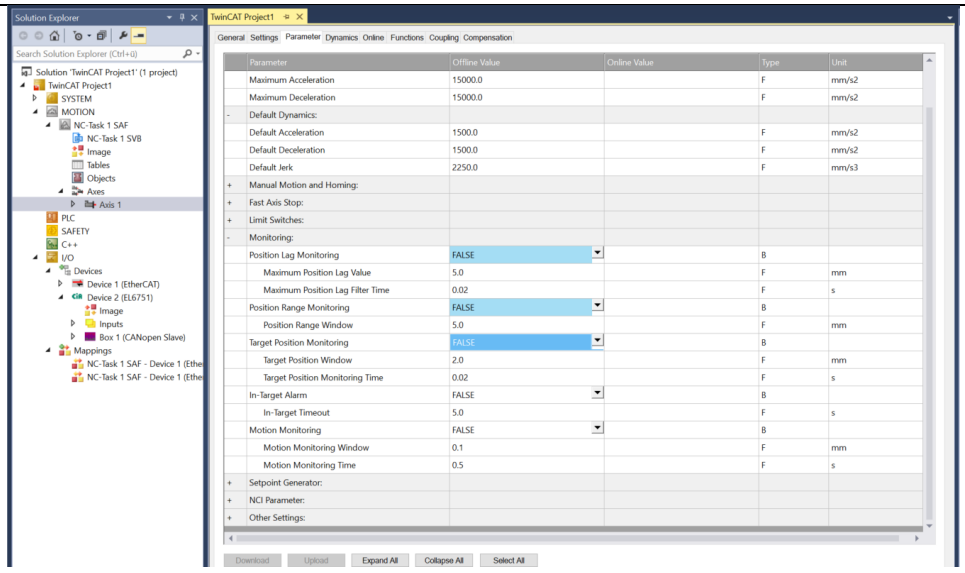
0x100C Guard Time	z.B.	:= 100;
0x100D Life Tim Factor	z.B.	:= 3;

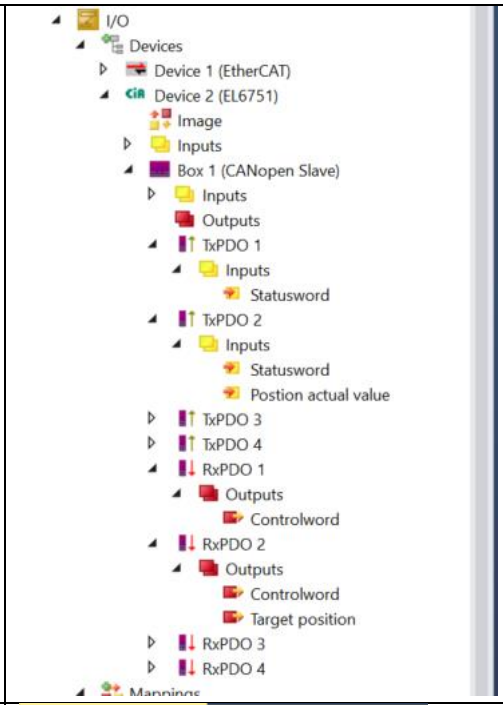
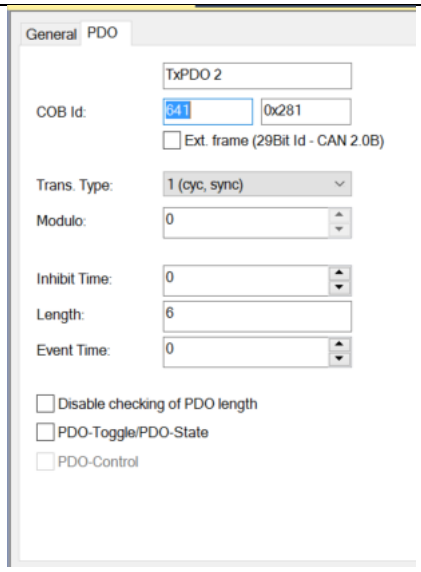
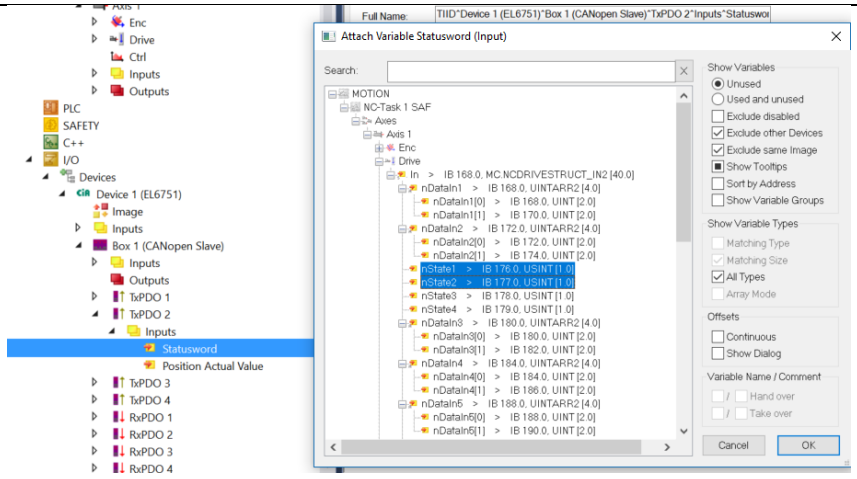
It is possible to configure the heartbeat and node guarding with the object dictionary of the Motion Manager or the CoE Object dictionary of the TwinCat System.

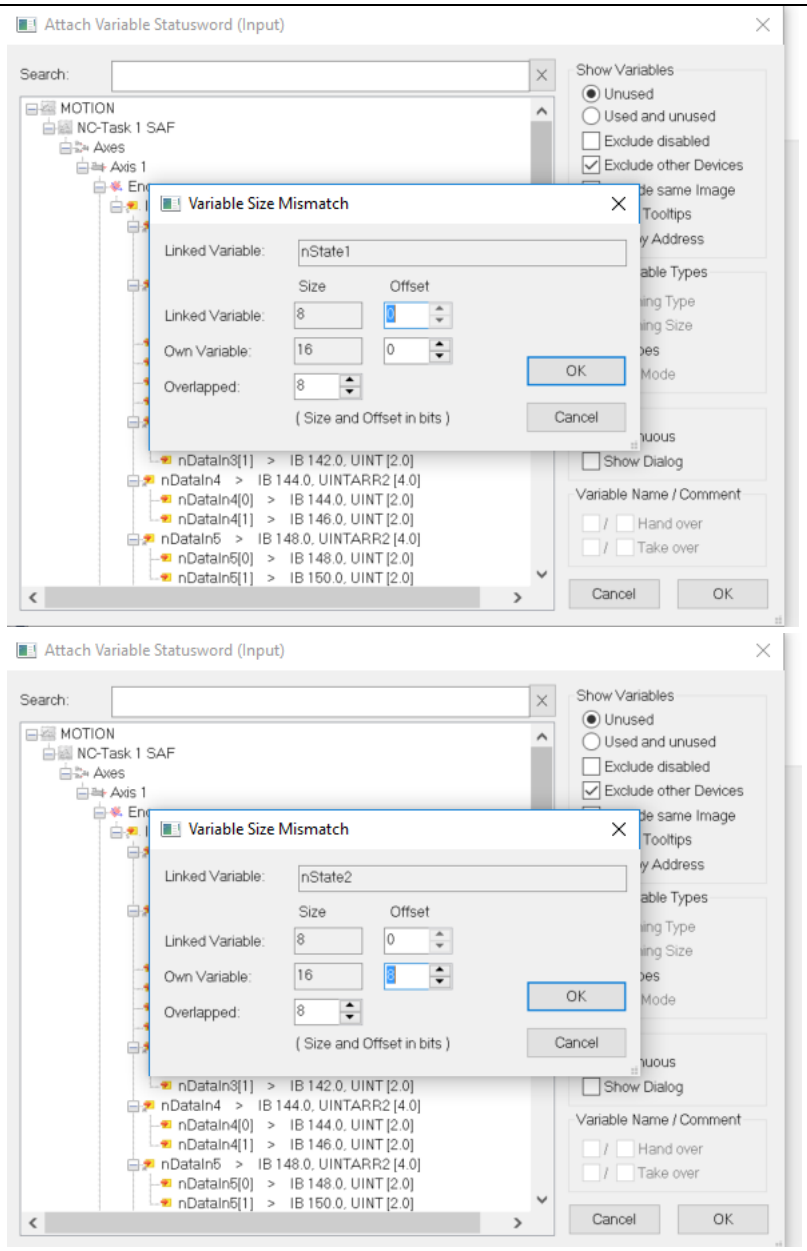
Importaint:
In case that a homing sequence is necessary for the application, it has to be executed by the PLC Master.
In this constellation we don’t recommend to use the Faulhaber homing methods.

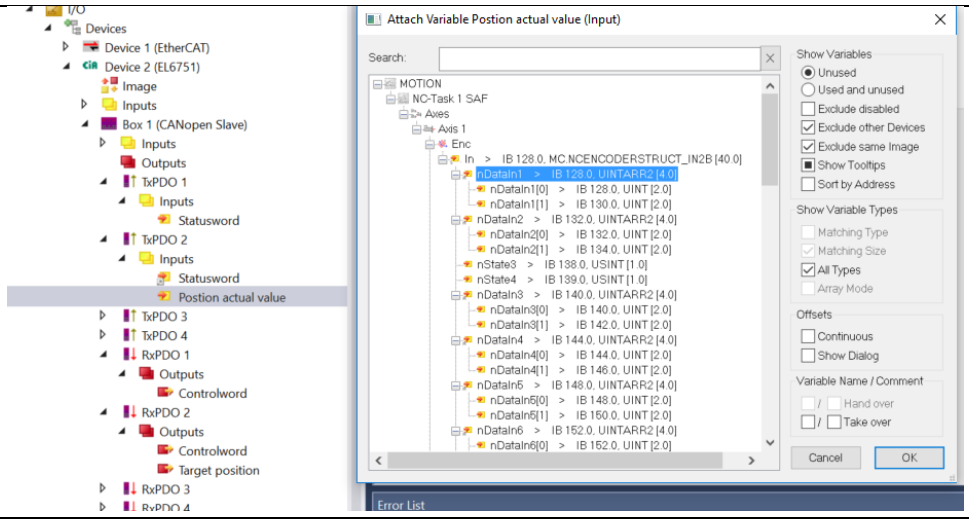
After the pre-configuration of the MC is done, you can continue with the configuration of the plc master.

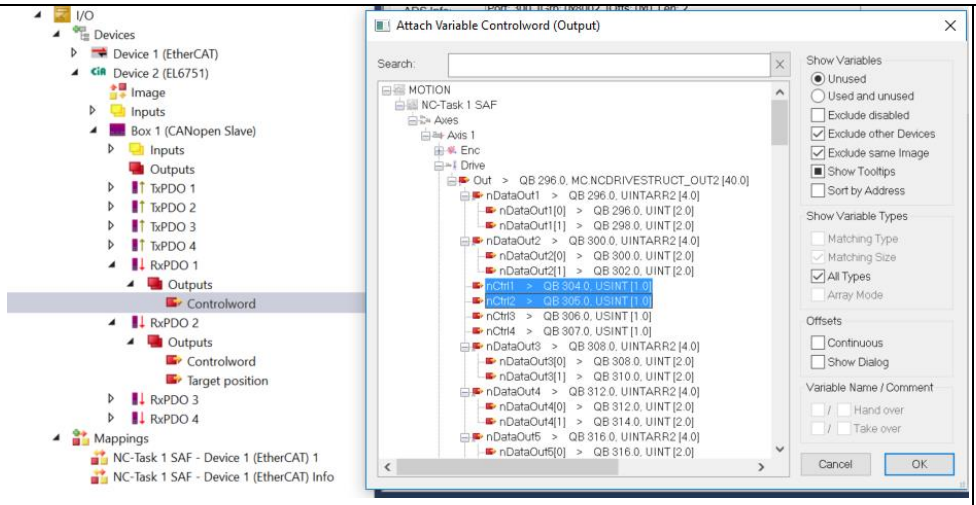
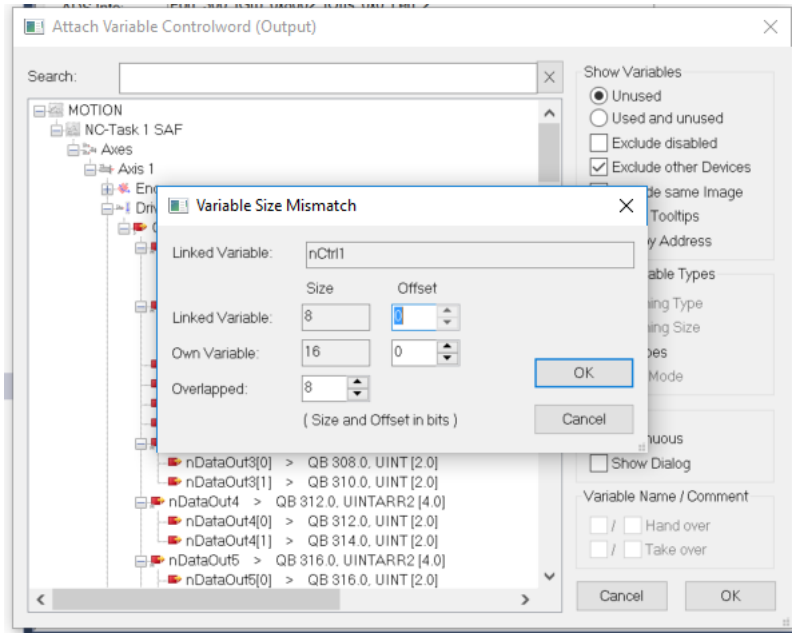
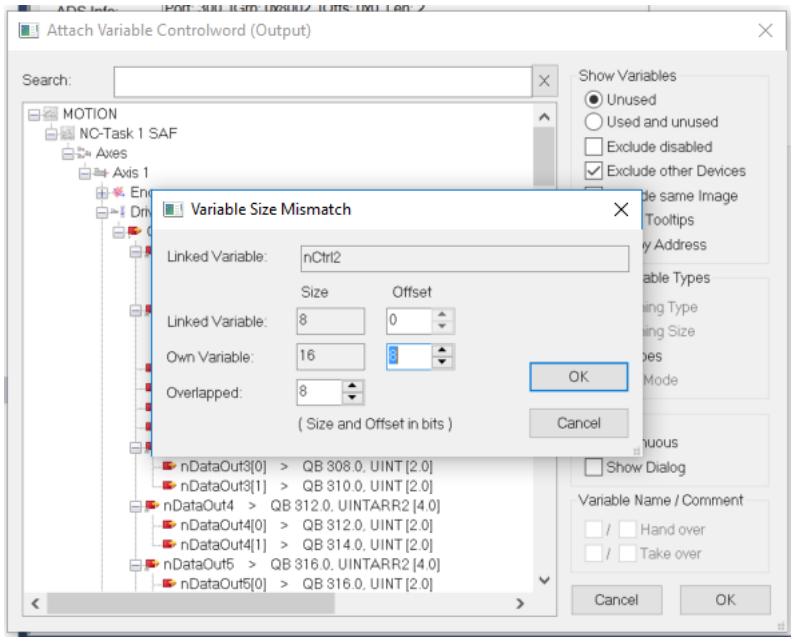
Nr	Screenshot	Description
1		- Create new Twin-Cat solution - Add BUS slaves with „Scan“ func-tion or manually
2		- Create NC Motion Task as „NC/PTP NCI Configura-tion“) - Add „Continous Axis“

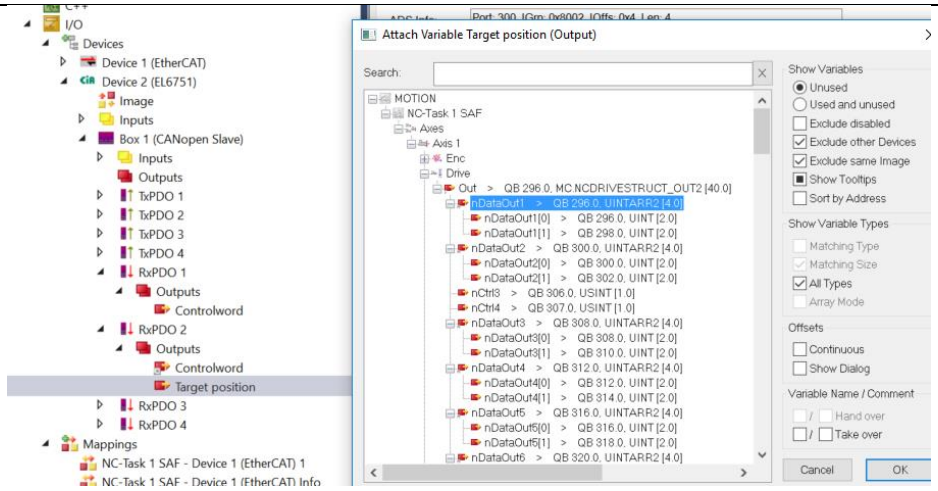
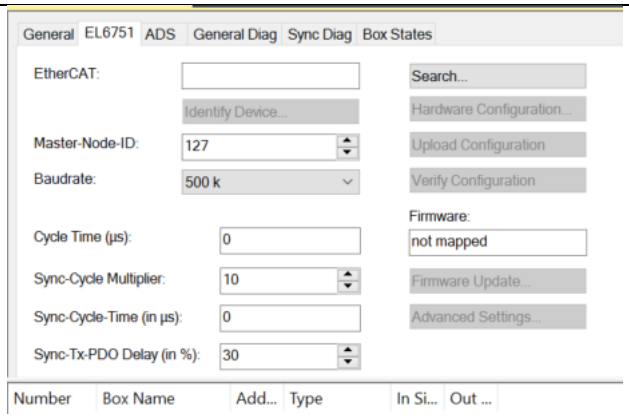
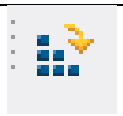
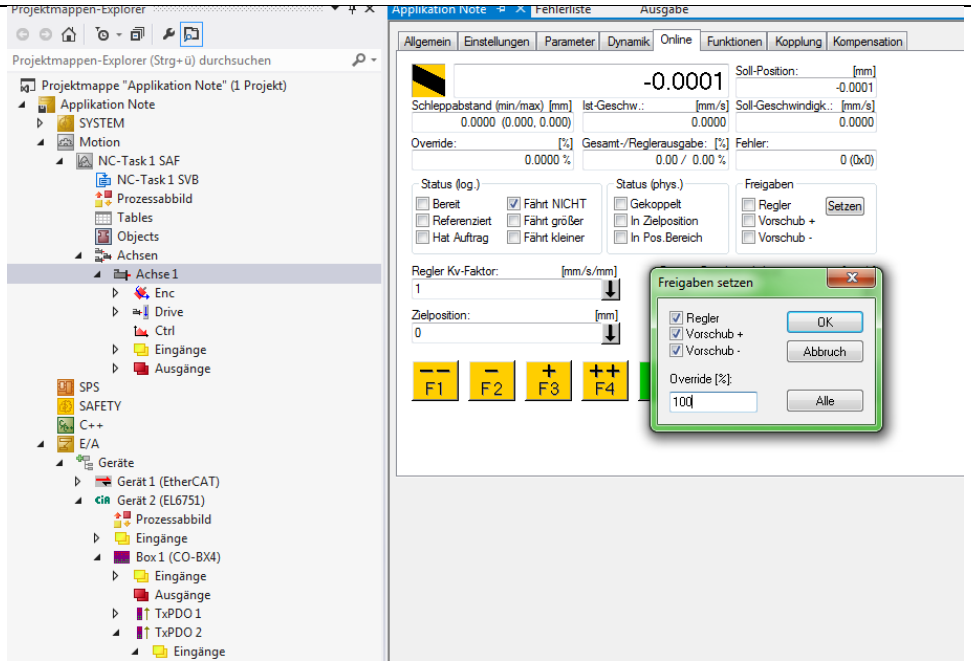
3		- Define NC Axis as DSP402 type
4		- Deactivate position lag monitoring functions

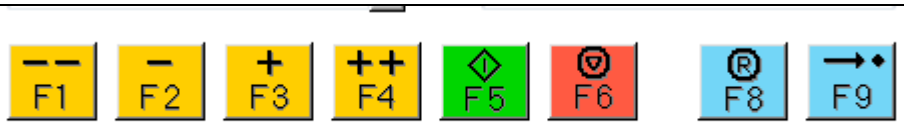
5		- Load PDO's from esi File, if necessary - C:\Program Files (x86)\Faulhaber\Motion Manager 6\EDS
6		- Change Transmission Type of TxPDO2 to 1
7		- Link Statusword (TxPDO2) with Axis1_Drive nStatus1 & nStatus2 - Offset of 8 Bit is necessary



8		- Link Position actual value (TxPDO2) to Achse 1_Enc nInData1

9	  	- Link Controlword (RxPDO2) to Achse1_Drive nCtrl1 & nCtrl2 - Offset of 8 Bit is necessary

10		- Link Target Position (RxPOD2) to Achse 1_Drive nOutData1
11		- Set Synch-Cycle Multiplier to 10
12		- Activate configuration and run the PLC
13		- Enable the NC Drive

14		- After the drive is enabled reset the NC axis with F(, then activate the NC axis with F5 - From that point on it is possible to run the motor with F1 – F4

Rechtliche Hinweise

Urheberrechte. Alle Rechte vorbehalten. Ohne vorherige ausdrückliche schriftliche Genehmigung der Dr. Fritz Faulhaber & Co. KG darf insbesondere kein Teil dieser Application Note vervielfältigt, reproduziert, in einem Informationssystem gespeichert oder be- oder verarbeitet werden.
Gewerbliche Schutzrechte. Mit der Veröffentlichung der Application Note werden weder ausdrücklich noch konkludent Rechte an gewerblichen Schutzrechten, die mittelbar oder unmittelbar den beschriebenen Anwendungen und Funktionen der Application Note zugrunde liegen, übertragen noch Nutzungsrechte daran eingeräumt.
Kein Vertragsbestandteil; Unverbindlichkeit der Application Note. Die Application Note ist nicht Vertragsbestandteil von Verträgen, die die Dr. Fritz Faulhaber GmbH & Co. KG abschließt, soweit sich aus solchen Verträgen nicht etwas anderes ergibt. Die Application Note beschreibt unverbindlich ein mögliches Anwendungsbeispiel. Die Dr. Fritz Faulhaber GmbH & Co. KG übernimmt insbesondere keine Garantie dafür und steht insbesondere nicht dafür ein, dass die in der Application Note illustrierten Abläufe und Funktionen stets wie beschrieben aus- und durchgeführt werden können und dass die in der Application Note beschriebenen Abläufe und Funktionen in anderen Zusammenhängen und Umgebungen ohne zusätzliche Tests oder Modifikationen mit demselben Ergebnis umgesetzt werden können.
Keine Haftung. Die Dr. Fritz Faulhaber GmbH & Co. KG weist darauf hin, dass aufgrund der Unverbindlichkeit der Application Note keine Haftung für Schäden übernommen wird, die auf die Application Note zurückgehen.
Änderungen der Application Note. Änderungen der Application Note sind vorbehalten. Die jeweils aktuelle Version dieser Application Note erhalten Sie von Dr. Fritz Faulhaber GmbH & Co. KG unter der Telefonnummer +49 7031 638 688 oder per Mail von mcsupport@faulhaber.de.

Legal notices

Copyrights. All rights reserved. No part of this Application Note may be copied, reproduced, saved in an information system, altered or processed in any way without the express prior written consent of Dr. Fritz Faulhaber & Co. KG.
Industrial property rights. In publishing the Application Note Dr. Fritz Faulhaber & Co. KG does not expressly or implicitly grant any rights in industrial property rights on which the applications and functions of the Application Note described are directly or indirectly based nor does it transfer rights of use in such industrial property rights.
No part of contract; non-binding character of the Application Note. Unless otherwise stated the Application Note is not a constituent part of contracts concluded by Dr. Fritz Faulhaber & Co. KG. The Application Note is a non-binding description of a possible application. In particular Dr. Fritz Faulhaber & Co. KG does not guarantee and makes no representation that the processes and functions illustrated in the Application Note can always be executed and implemented as described and that they can be used in other contexts and environments with the same result without additional tests or modifications.
No liability. Owing to the non-binding character of the Application Note Dr. Fritz Faulhaber & Co. KG will not accept any liability for losses arising in connection with it.
Amendments to the Application Note. Dr. Fritz Faulhaber & Co. KG reserves the right to amend Application Notes. The current version of this Application Note may be obtained from Dr. Fritz Faulhaber & Co. KG by calling +49 7031 638 688 or sending an e-mail to mcsupport@faulhaber.de.