Application Note

AN2020

FLS-C

Positioning with Dimetix distance sensor and SEW inverter

V 1.04
Please check www.dimetix.com
for the latest version

Abstract

This application shows how to display a measured distance value on a standard external numeric digital display. Description of the wiring and sensor configuration are included as well as two samples are given.

Dimetix AG • Degersheimerstr. 14 • 9100 Herisau • Switzerland • Phone +41 71 353 00 00 • Fax +41 71 353 00 01 • info@dimetix.com • www.dimetix.com

Table of content

1 Introduction

The FLS-C laser distance sensor measures absolute distances. It is suitable for positioning applications to measure the actual feedback position. 1 shows a general setup for such an application.

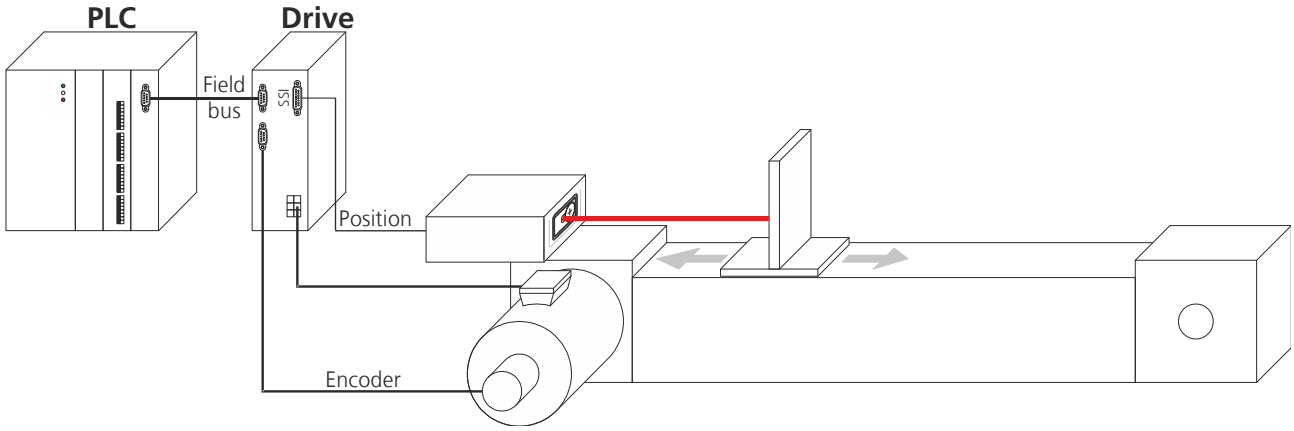


Fig 1: Positioning application

In this application note a SEW Eurodrive inverter is used to control the motor. The position is measured by a FLS-C 10 sensor of Dimetix. The setup of the FLS-C sensor, the cable connection and the configuration of two product series (MOVIDRIVE® B, MOVIAXIS®) are described.

1.1 Usable sensors

Sensor	*Part No*	*Short description*
FLS-C 10	600502	Distance sensor with an accuracy of +/-1mm, max Distance 500m, Temperature range -10..+50°C
FLS-C 30	600501	Distance sensor with an accuracy of +/-3mm, max Distance 500m, Temperature range -10..+50°C
FLS-CH 10	600504	Distance sensor with an accuracy of +/-1mm, max Distance 500m, Temperature range -40..+50°C
FLS-CH 30	600503	Distance sensor with an accuracy of +/-3mm, max Distance 500m, Temperature range -40..+50°C

1.2 SEW-System requirements

Hardware: MOVIDRIVE® B with encoder card DEU 21B
or
MOVIAXIS® with encoder card XGS

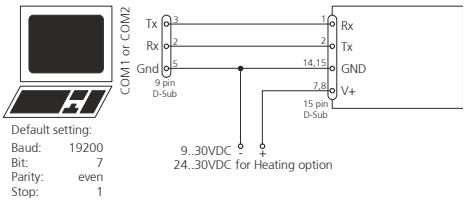
Firmware versions:	MOVIDRIVE® B:	>=	18220916.15
	MOVIAXIS®	>=	.28
	DEU21B:	>=	.11
	XGS	>=	.12
	MOVITOOLS® MOTION STUDIO	>=	5.80 SP2 (Service-Pack2)

2 FLS-C Setup

2.1 Preparation

1. The following items are needed to do the configuration of the FLS-C.
   - RS-232 Configuration cable FLS / DLS (Part no. 500200)
   - 24V DC Power supply
2. Download the UtilitySW from the website www.dimetix.com/lnk/sew and install it on a PC.
3. Download the configuration file and safe it on the PC.

2.2 Connection



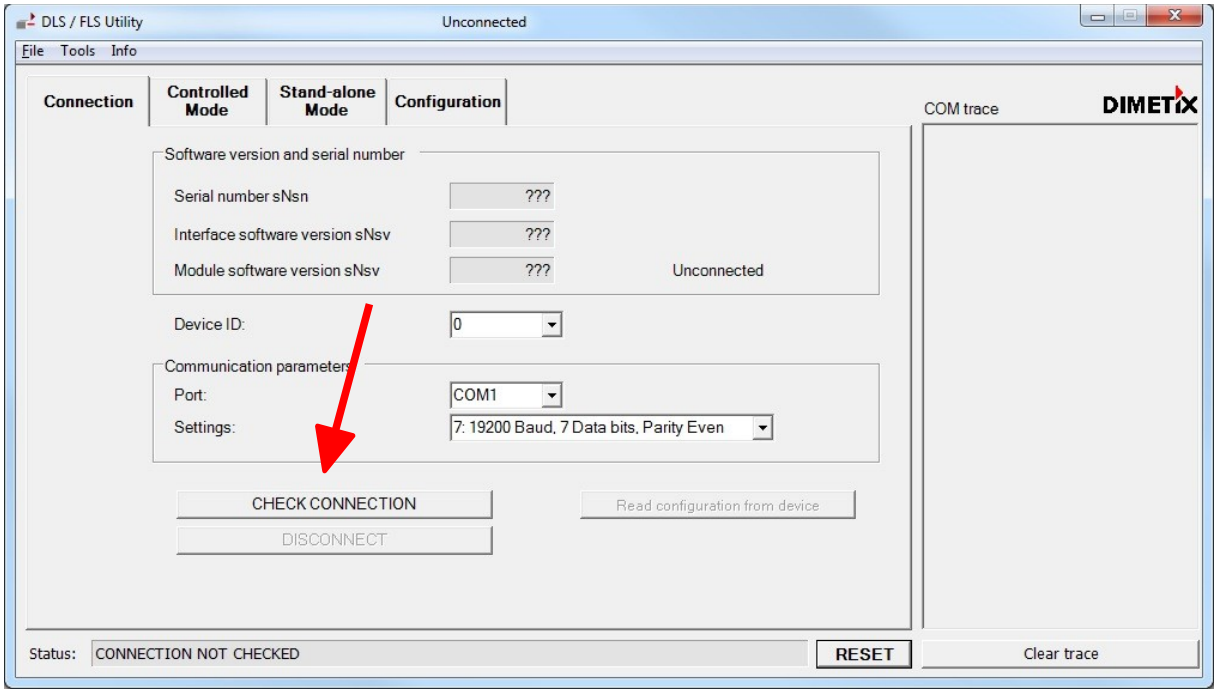
Connect the FLS-C Sensor to the PC and to the 24V DC Power supply as shown in 2.

Fig 2: Configuration connection

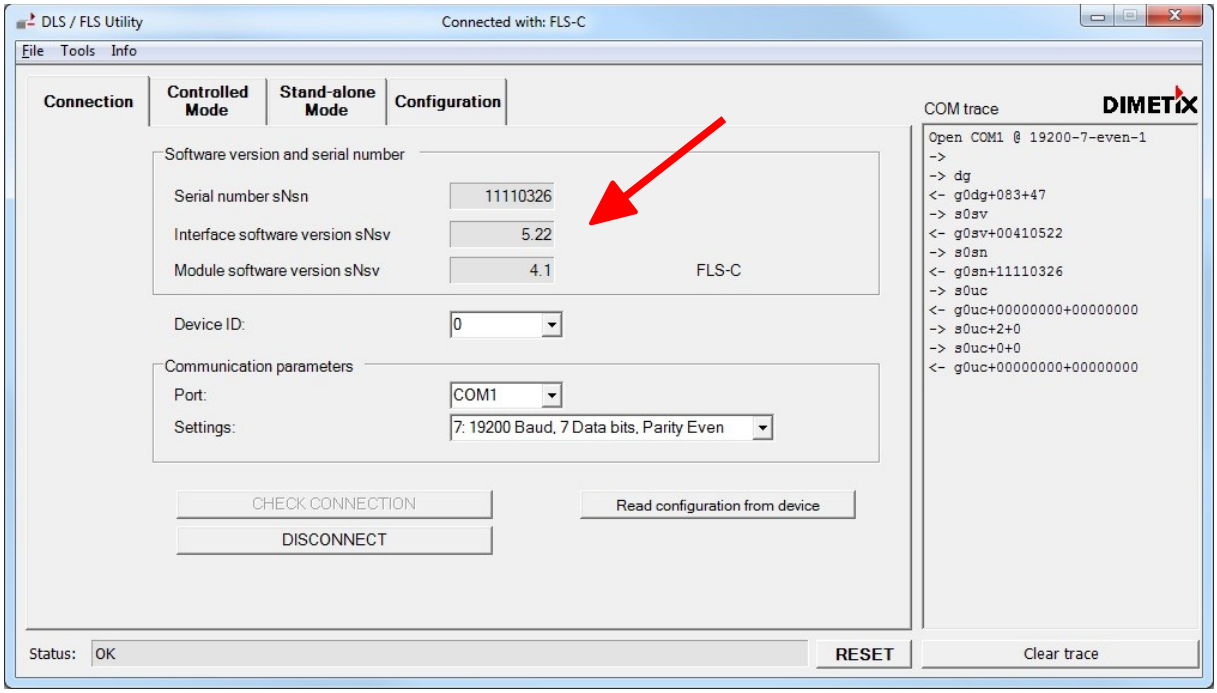
2.3 Setup of the FLS-C

To setup the FLS-C sensor, connect the sensor to a serial interface of a PC and power the sensor with 24VDC. Start the UtilitySW and follow the steps below.

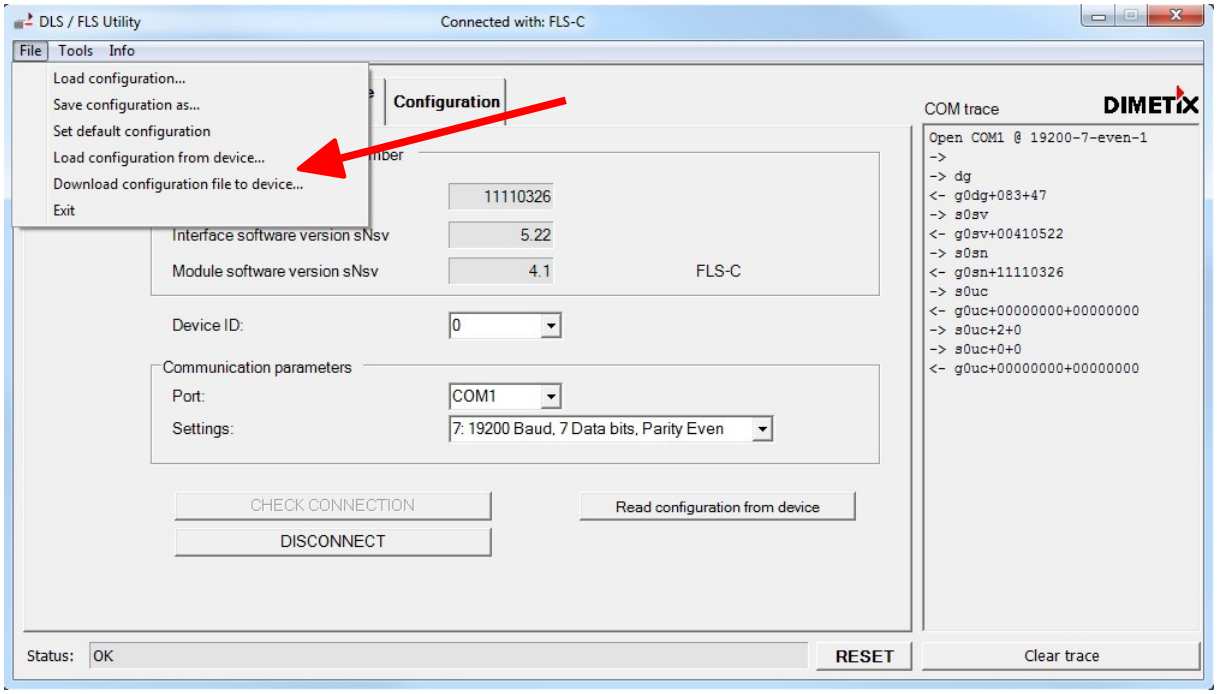
Check the connection to the sensor



The UtilitySW shows information about the sensor

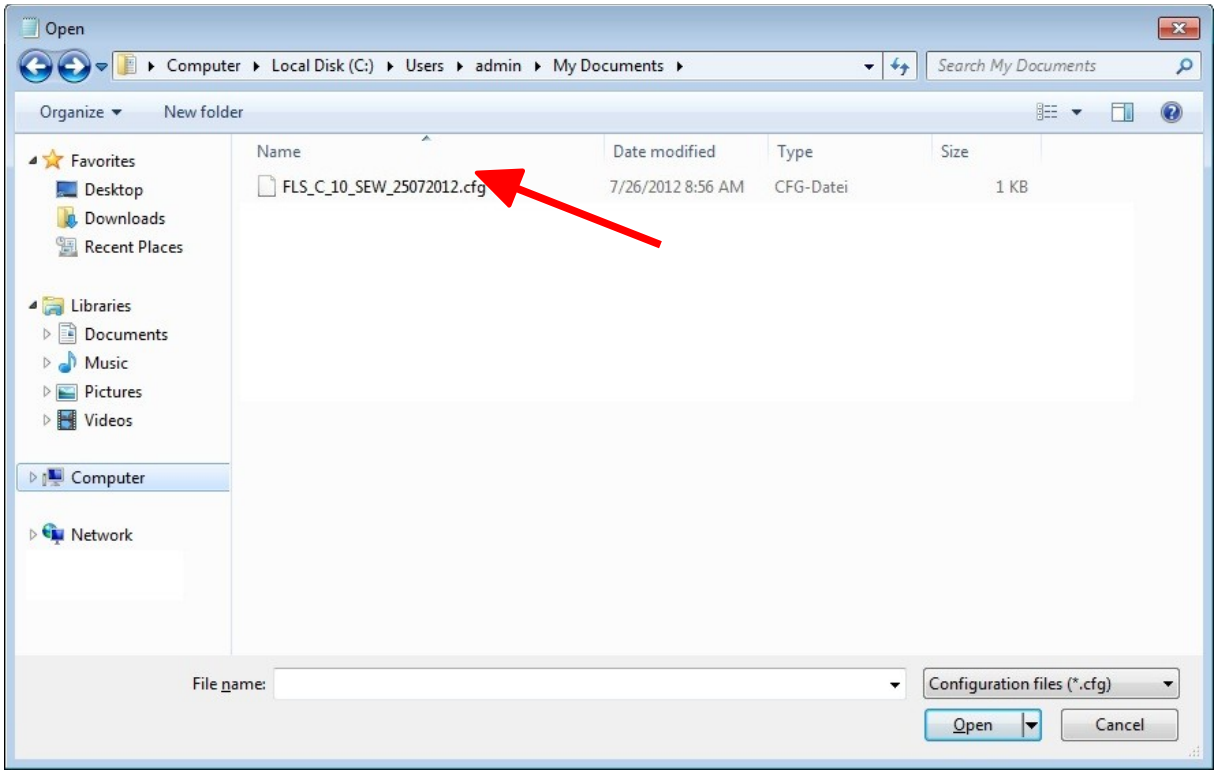


Select File/Download configuration file to device



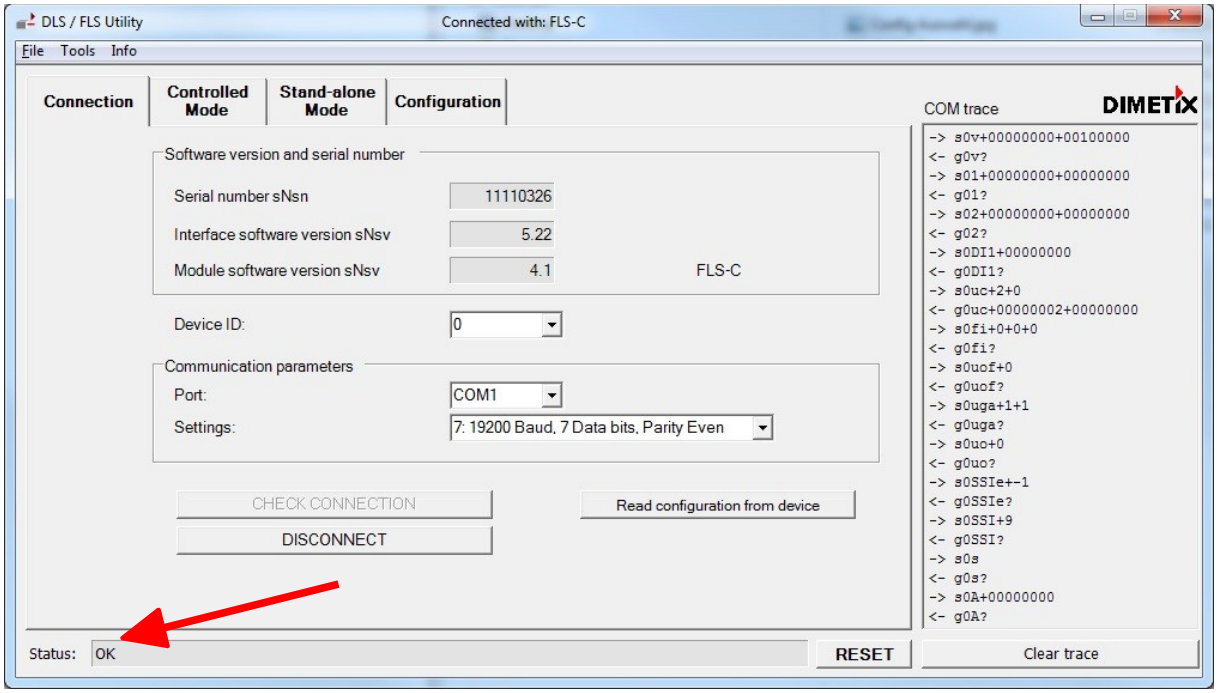
Select the file FLS_C_10_SEW_25072012.cfg.

This is the file you downloaded in 2.1 Preparation on page 4



An OK in the status line of the UtilitySW indicates a successful transfer of the configuration.

The FLS-C 10 is now ready to be connected to the SEW inverter.



3 Cable connection

The FLS-C sensor must be connected to the DEU21B/XGS of the MOVIDRIVE® B or the MOVIAXIS®. Following different possibilities are documented. Connect the FLS-C sensor with a 15 pin D-sub connector or an internal screw terminal.

3.1 Connection of FLS-C (without heating)

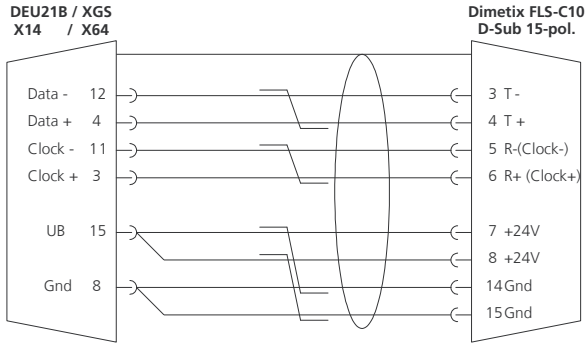


Fig 3: Connection from D-Sub to D-Sub

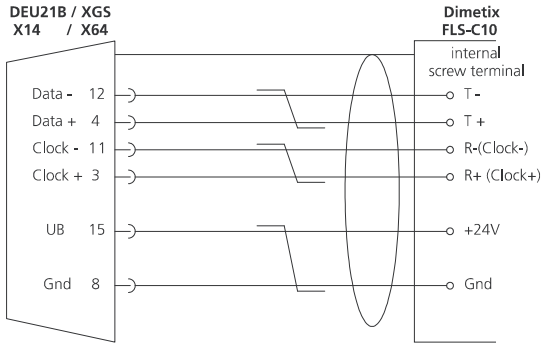


Fig 4: Connection from D-Sub to screw terminal

3.2 Connection of the FLS-CH (with heating)

If using a FLS-CH device with integrated heater, an external power supply must be used. Please do the wiring as shown in the following diagram.

The FLS-CH includes a heater and therefore the current consumption is up to 2.5A. As a result, the supply of power from the DEU21B/XGS is not possible.

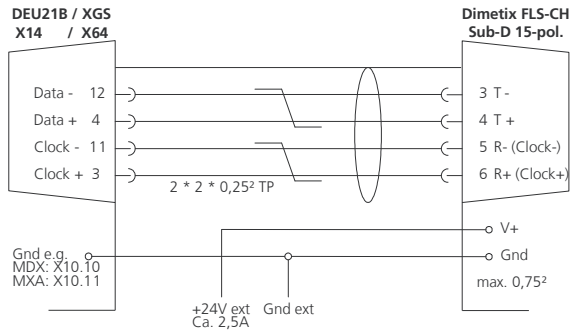


Fig 5: Connection from D-Sub to D-Sub

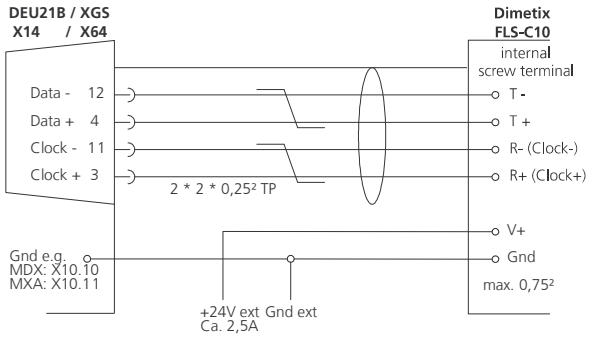
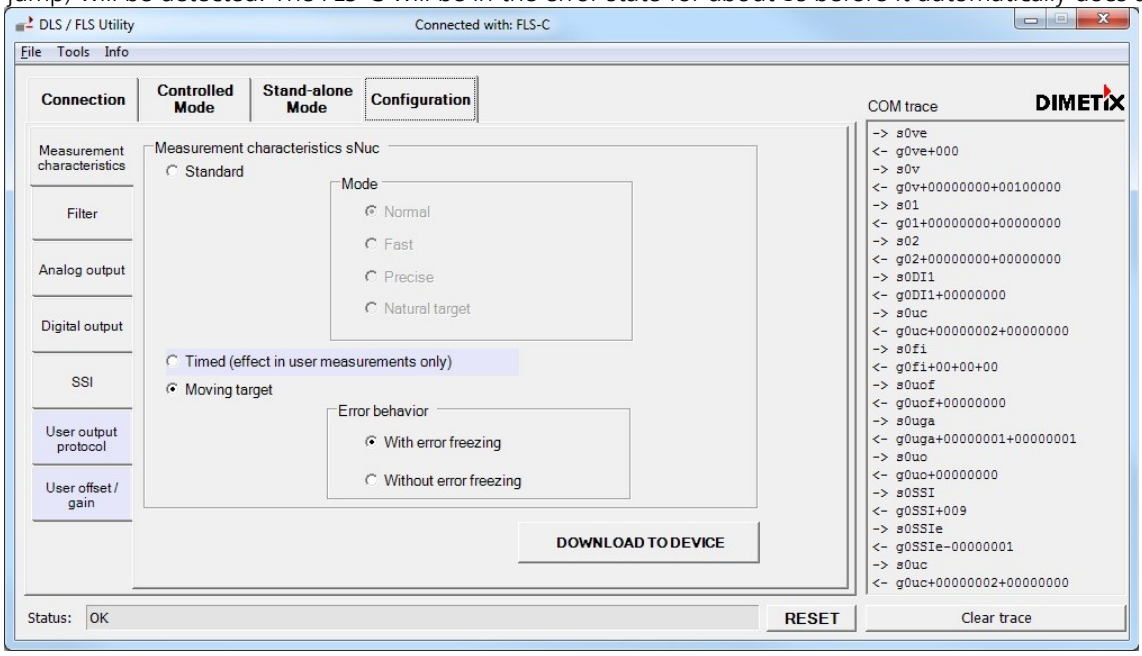


Fig 6: Connection from D-Sub to screw terminal

Install a proper ground connection between the ground of the FLS-C and the MOVIDRIVE® B / MOVIAXIS®.

4 Error Handling

In the configuration for the FLS-C Distance Sensor “With error freezing” is selected. Therefore an error (e.g. a position jump) will be detected. The FLS-C will be in the error state for about 5s before it automatically does a reset.

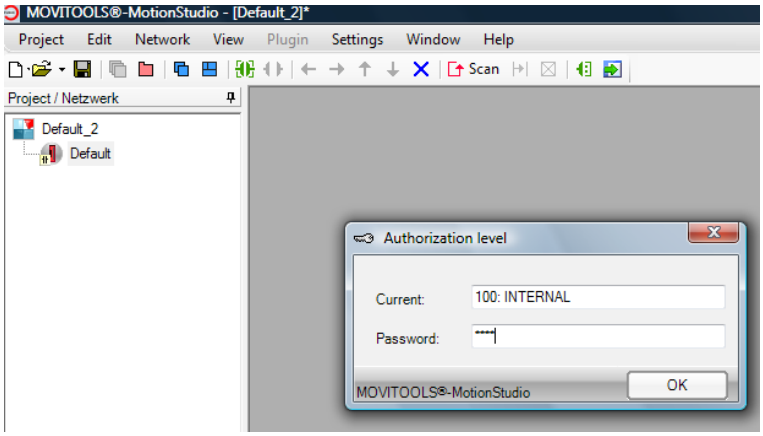


4.1 MOVITOOLS® MOTION STUDIO

The MOVIDRIVE® B-inverter registers errors of the FLS-C Distance Sensor. Examine them in the Fault History of the inverter.

To display the error with the MOVITOOLS® MOTION STUDIO, change the settings of the MOVITOOLS® MOTION STUDIO to ‘Internal mode’.

Activate this mode under Settings / Authorization level: Password = ****[1] -> OK.

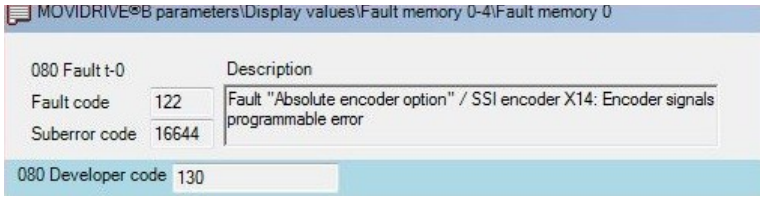


The encoder diagnostics via MOVITOOLS® MOTION STUDIO or PLC is only available with MOVIDRIVE® B. MOVIAXIS® does not support this function.

[1)] To get the code, you may ask Dimetix (sales@dimetix.com).

The field 080 Developer code shows the error code. Add 200_{dec} to the displayed value to get the error code corresponding to the FLS-C Distance Sensor reference Manual.

In this example, the fault memory 0 (last fault) is shown in the picture.



The field 080 Developer code is 130. Add 200 to it to get error 330, which corresponds to the Dimetix Error 330 Distance jump.

4.2 PLC

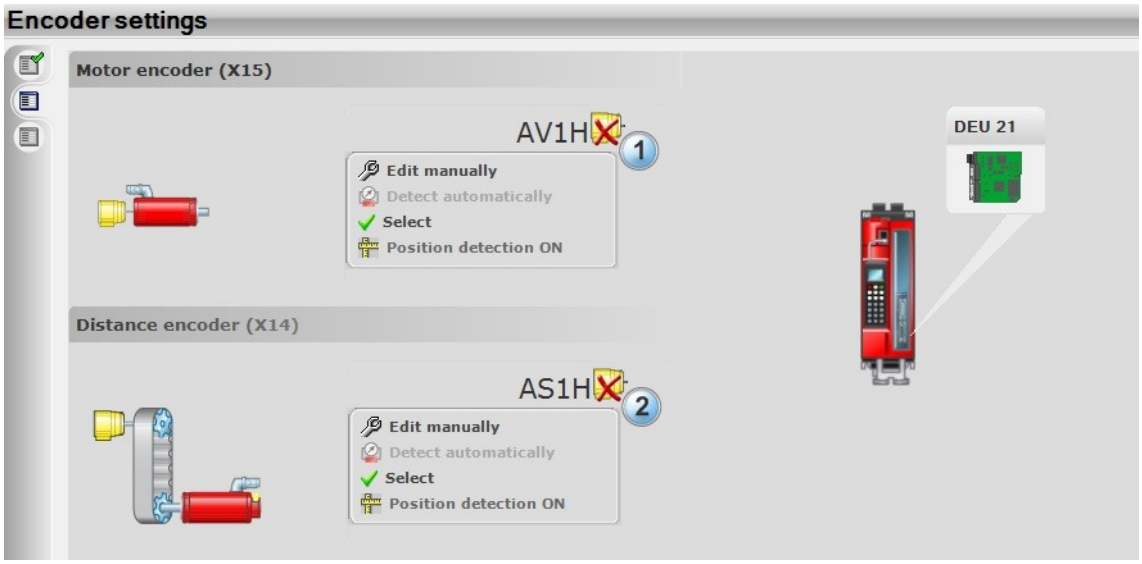
Read out the error code with the parameter service of the PLC:

– Read the index 8883.0 of the MOVIDRIVE® B for remote diagnosis.
  Add 200_{dec} to get the error code corresponding to the Dimetix error list.

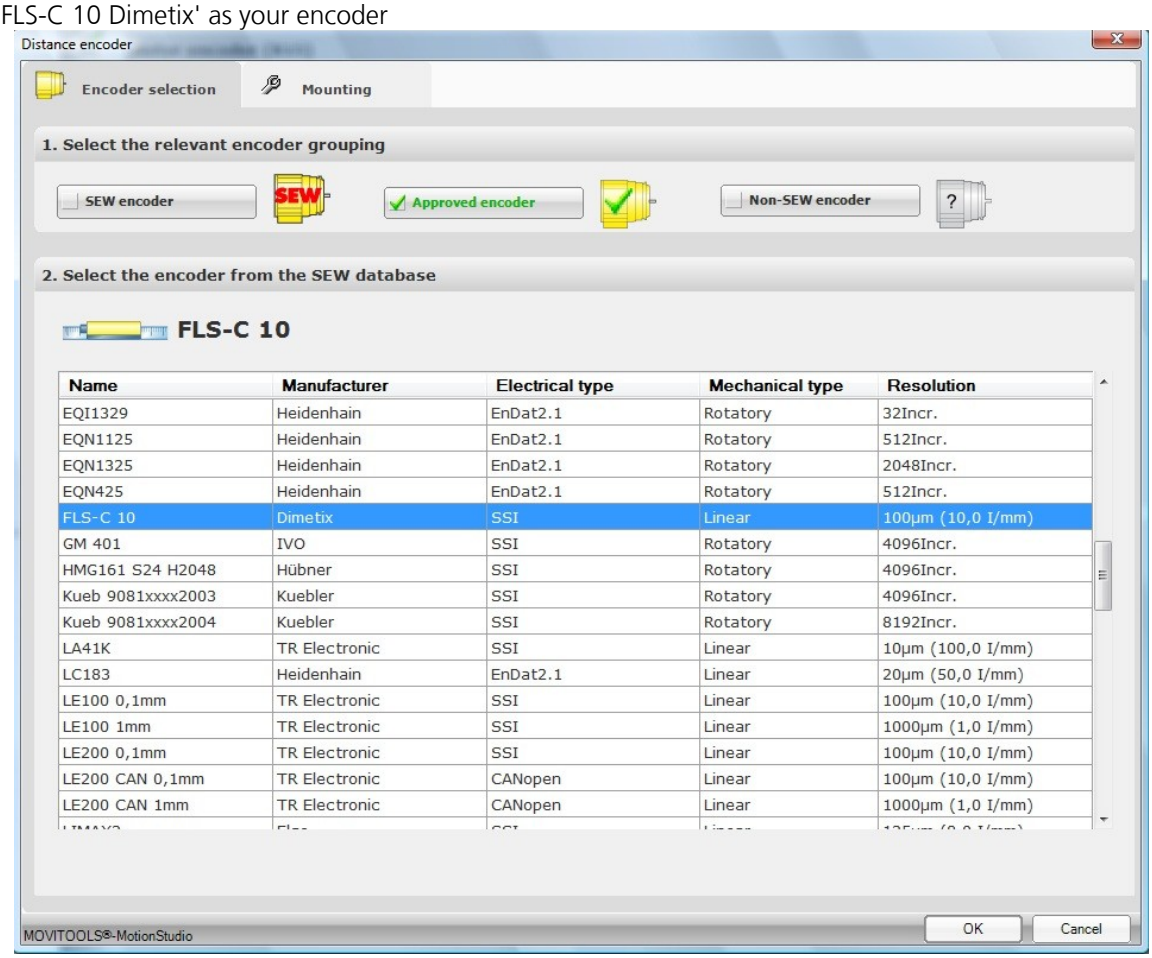
5 MOVIDRIVE® B Setup

GUI: encoder start-up

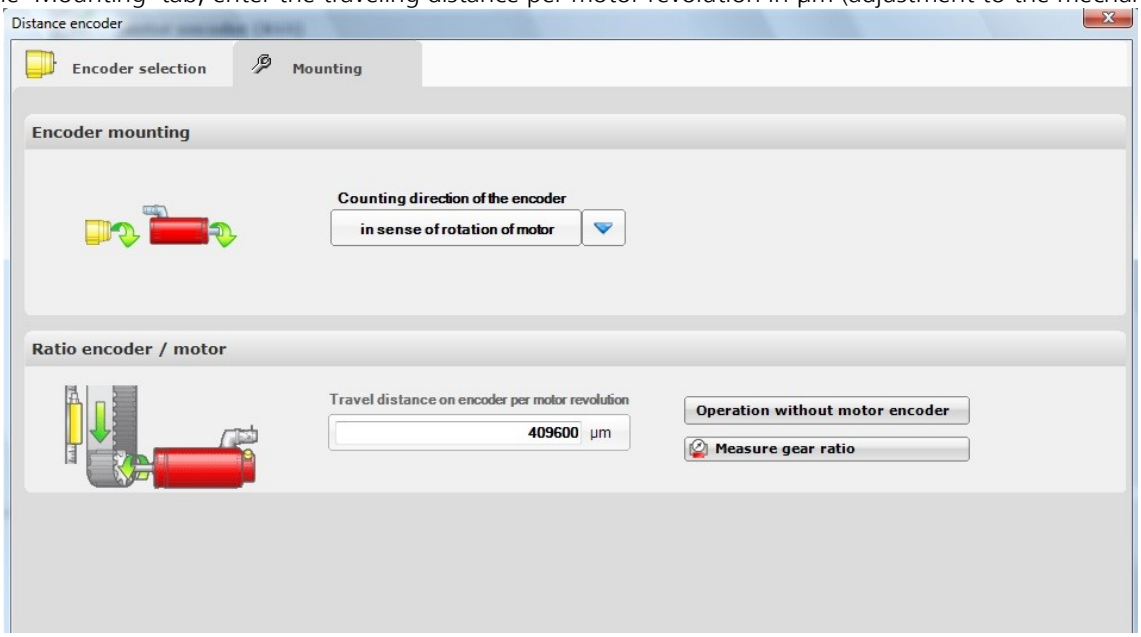
Select distance measurement device



Select 'FLS-C 10 Dimetix' as your encoder

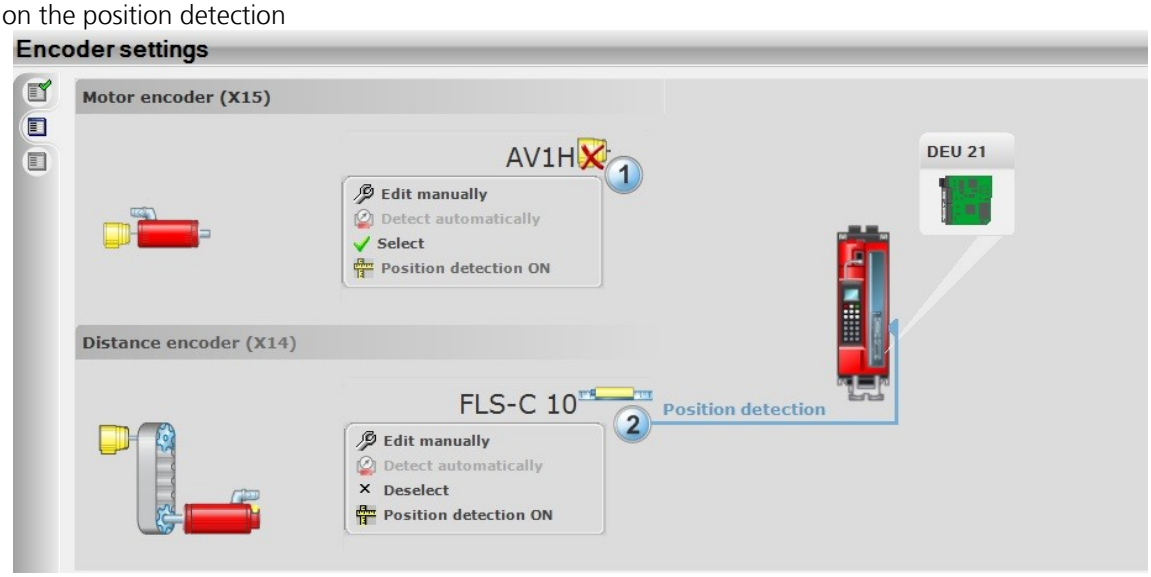


Select the 'Mounting' tab, enter the traveling distance per motor revolution in µm (adjustment to the mechanic)



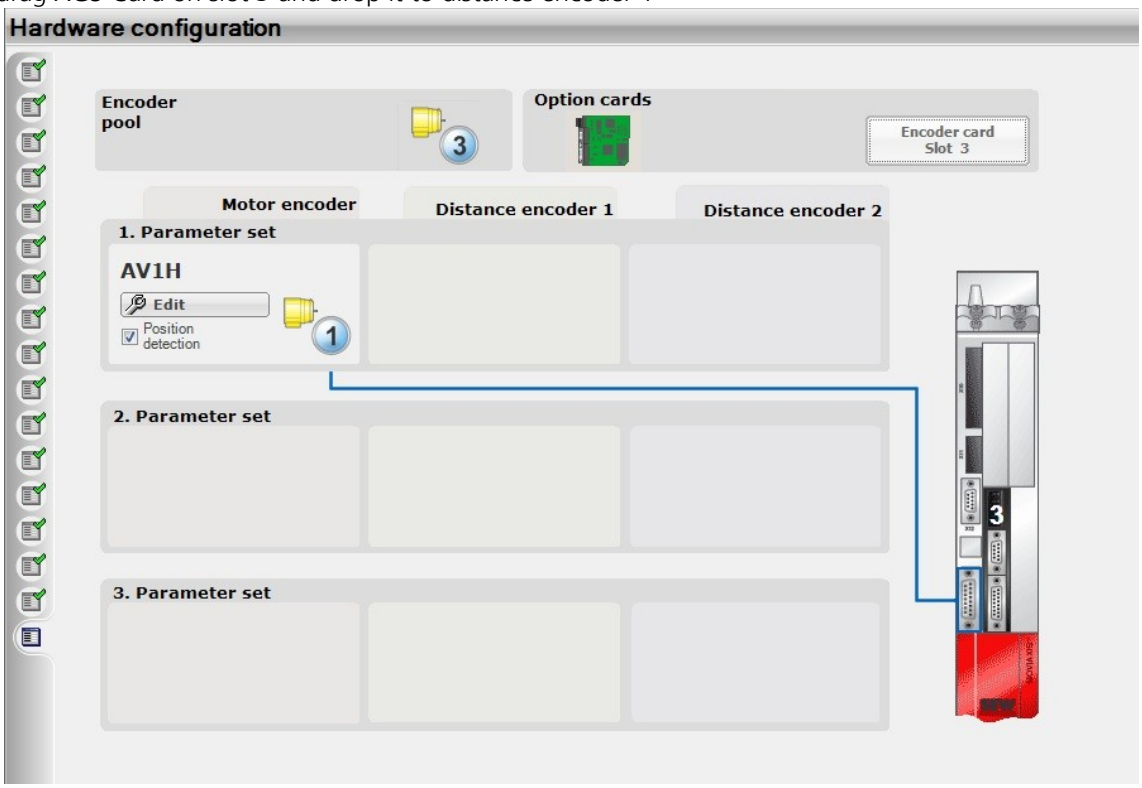
Start-up the motor-encoder

Switch on the position detection

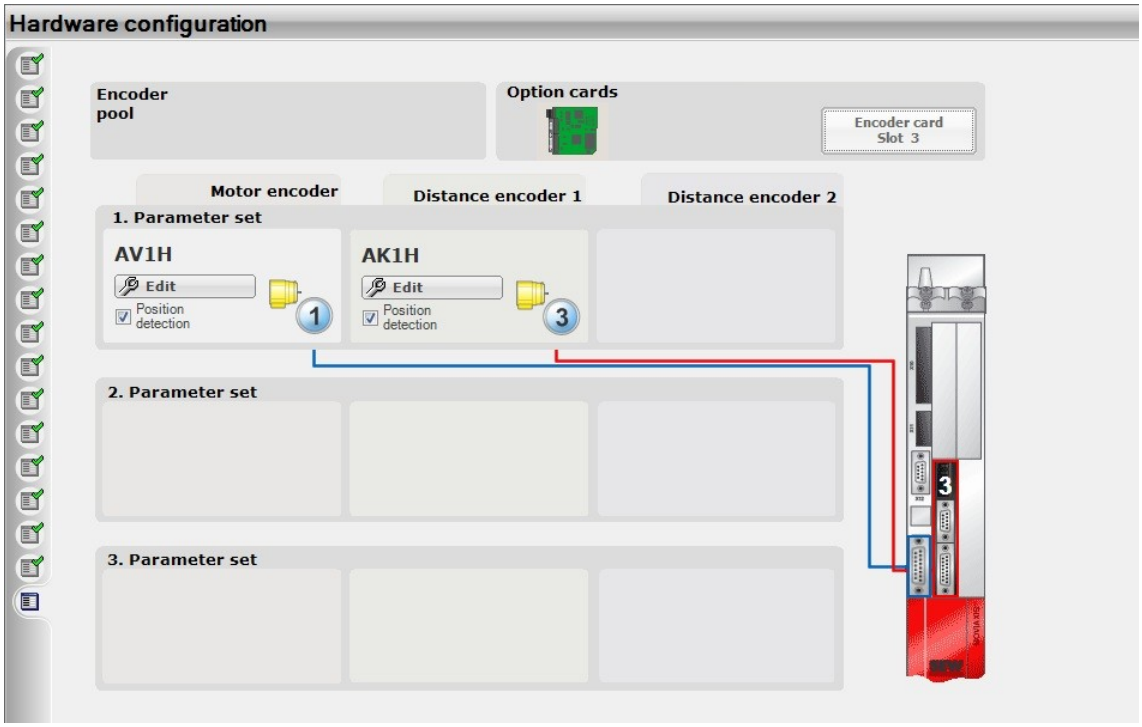


6 MOVIAXIS® Setup

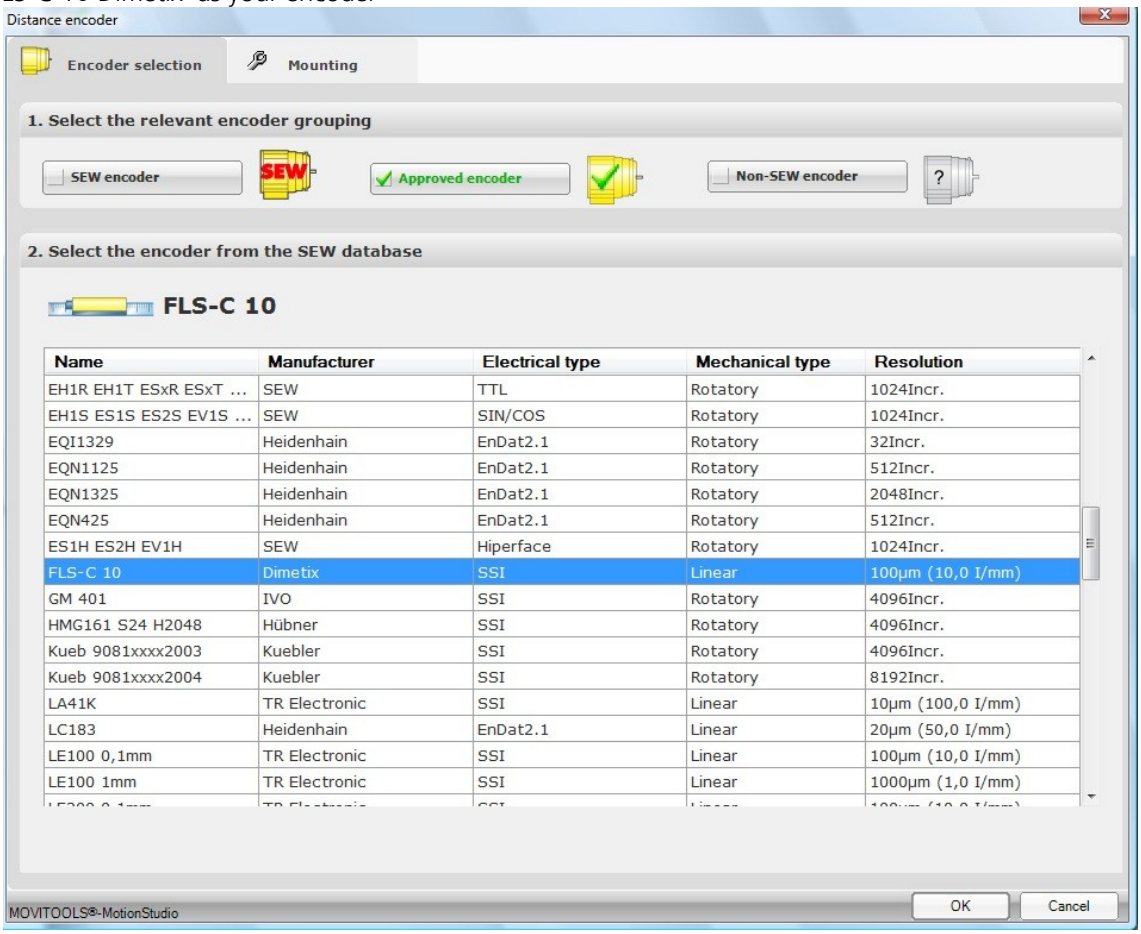
In GUI: drag XGS Card on slot 3 and drop it to distance encoder 1



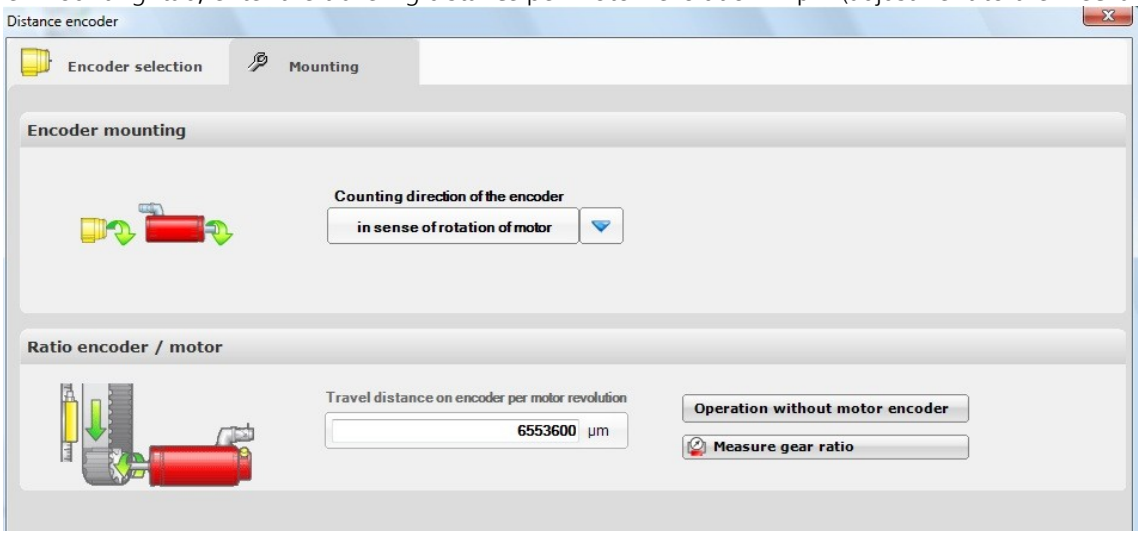
Edit the encoder



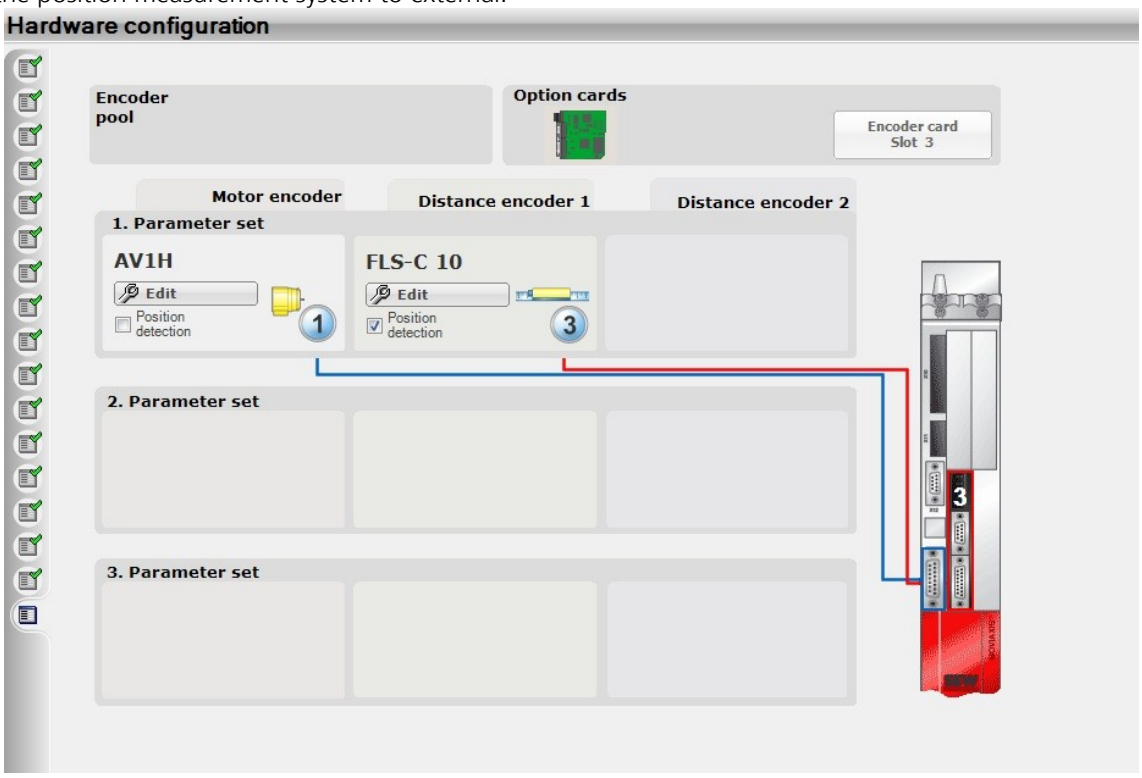
Select 'FLS-C 10 Dimetix' as your encoder



Select the 'Mounting' tab, enter the traveling distance per motor revolution in µm (adjustment to the mechanic)



Switch the position measurement system to external.



Start-up the motor encoder.