PWB Commissioning Software for Encoders

(GUI Version 1.2)

1 Introduction

Thank you for purchasing a product from PWB Encoders!

Our Mini-Encoders, Encoder Wheels, Encoder Strips and customized Motor-Encoder-Assemblies are used million fold in multiple industries and fields of application.
PWB encoders GmbH has always been very customer-oriented, and this ensures our worldwide growth. Our Marketing acts as interface between customer, development, distribution and production, and thus presents ideas for many innovations.

This user manual explain how to use the calibration tool AEM30 / MEM 16/22 BiSS/SSI/SPI. This calibration tool is needed to calibrate your encoder after mounting in your application, so that the best operating stability can be reached.

For calibration you need an encoder, interface type (see matrix 3.1) PWBxC and a USB cable, USB type A to USB type mini-B.

1.1 Description Encoder AEM30 / MEM 16/22M

The **AEM30** is an absolute magnetic multiturn encoder. It is a reliable low cost hollow shaft encoder which can be fixed quickly and easily onto different sizes of motor shafts.
The encoder is developed for absolute positioning, for brushless motors of servo motors and steppers. The AEM30 is a real time system for high speed applications and rough environments.

The **MEM 16/22** is available as an absolute multiturn encoder in the execution of a kit system. It consists a magnetic hub, a housing unit (including the PCB) and a cable unit. The MEM 16/22 is a reliable low cost hollow shaft encoder that can be fixed quickly and easily on different sizes of motor shafts.
The multiturn encoder is developed for absolute positioning applications, for brushless motors or servo motors and steppers. The MEM 16/22 is a real time system for high speed applications and rough environments. The encoder is available with two different interfaces: SSI or BiSS ®. The transmission is based by two single-ended wires.
The absolute position is detected by means of an electronic gear. The storage of the position data is done using the outsourced backup battery. The cable is thus an existential part of the encoder. Alternatively, the buffering of position data of the encoder can also be done by the customer control.

1.2 Features AEM30 / MEM 16/22

For detailed information please see our datasheets available on our website:

Datasheet AEM30

Datasheet MEM 22

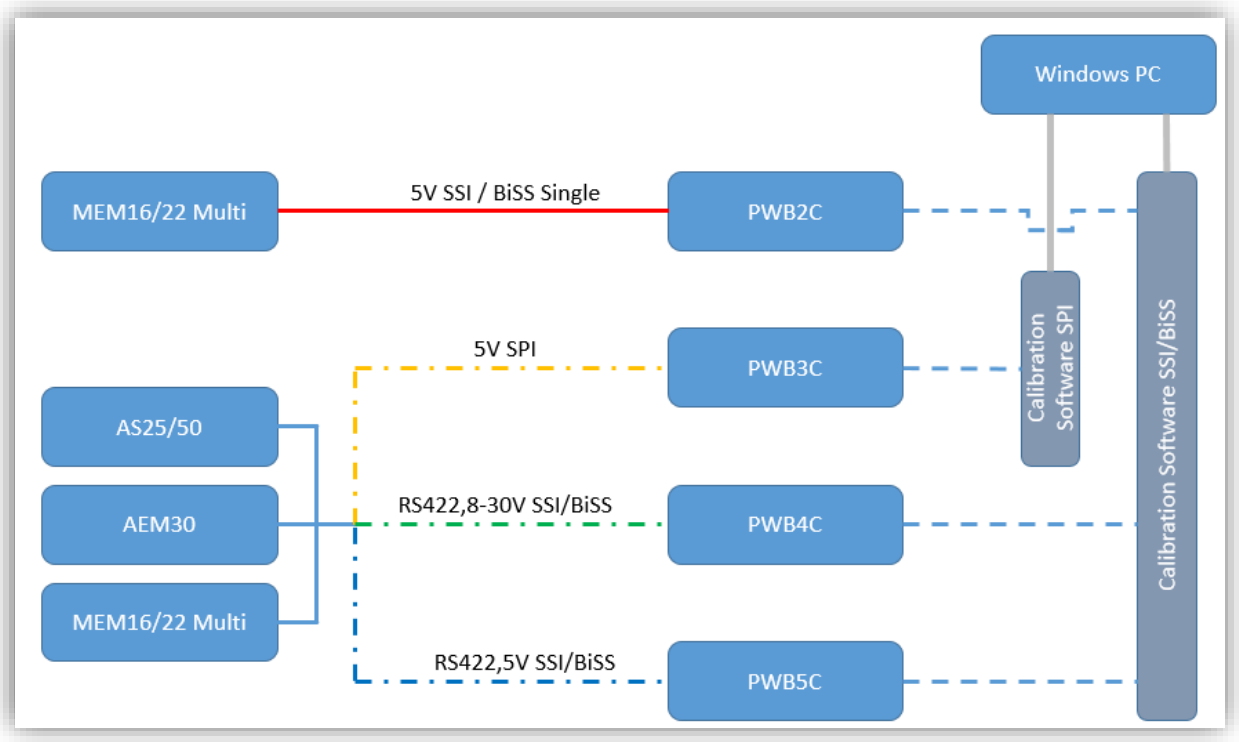
Datasheet MEM 16

2 Index

3 First Steps

3.1 Software / Encoder Matrix

For our different types of encoders different programming boxes and software are needed for a successful calibration process. Take a look at the following matrix which shows the dependencies.



3.2 Download Software

There are two software installation-packages available:

- One package including LabView runtime engine (LV RTE) 11.0 for operating systems without Lab-View runtime engine already installed. (Size 124MB)
- One package without LabView runtime engine. (Size 9MB)

Download the software here: http://www.pwb-encoders.com/en/magnetic-encoders/as-25

3.3 Direct Links

Configuration-Software for AEM30 BISS-SSI no RTE Size: 9MB

Configuration-Software for AEM30 BiSS-SSI **with** RTE Size: 177MB

3.4 System Requirements

- Operation System Microsoft Windows 7 or higher
- Processor 1 GHz or higher and 32-Bit (x86)- or 64-Bit (x64)-Architecture
- At least 2 GB RAM, if using 32-Bit-Version, 2 GB for 64-Bit-Version
- Minimum 500 MB free Disk Space
- One free USB Port

3.5 Installation of Software

1. Install the software by starting „Setup.exe“. Follow installation routine. Older versions will be over-written.

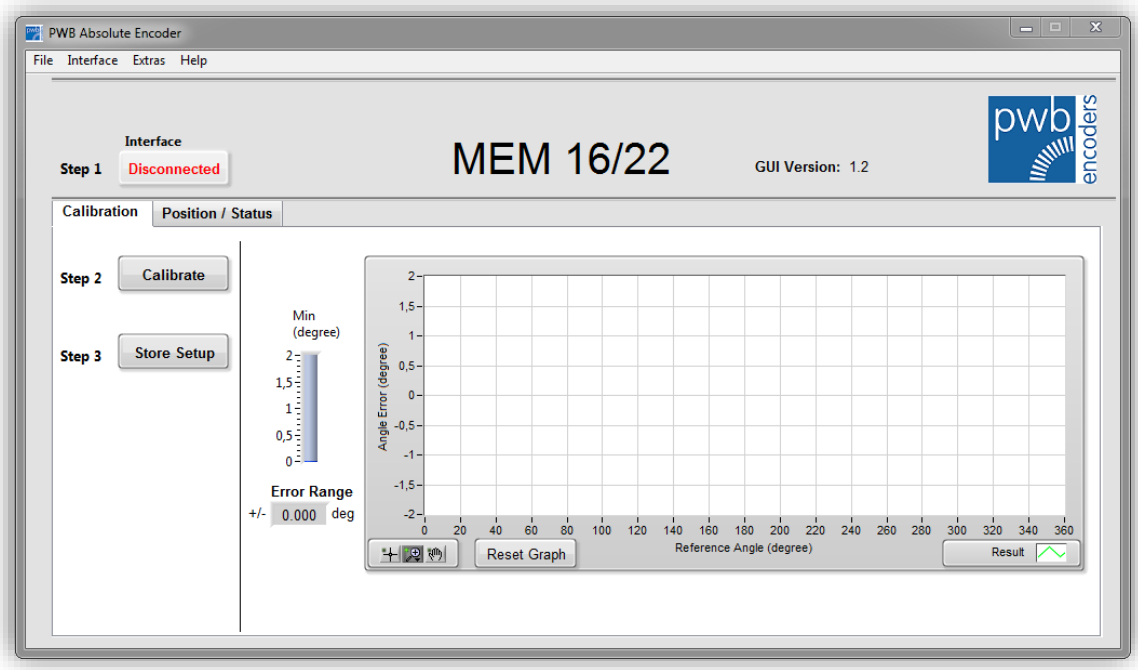
2. Install USB Driver you´ll find in the extracted folder.

   Install USB_PWB2C_driver_ftdi21200 for use with PWB2C Interface
   Install USB_PWB3C_driver_ftdi21200 for use with PWB3C Interface
   Install USB_PWB4C_driver_25000 for use with PWB4C Interface
   Install USB_PWB5C_driver_27600 for use with PWB5C Interface

3.6 Connect Box to PC

Connect the Encoder to the Interface PWBxC and the box to your PC (USB3.0 cable required) maximum USB cable length 2 meters. For longer distances increase the length of the SUB-D cable (maximum 10 meters).

4 Automatic Calibration



4.1 Automatic calibration Step 1

After clicking the button **„Disconnected**“(Step 1) the software will connect with the interface and the encoder. The button switch to **“Connected”** when all components successfully connected.

4.2 Automatic calibration Step 2

Start calibration of the encoder with magnetic wheel. Use button **“Calibrate”**
The magnetic wheel has to rotate continuous min. **685 rpm.** If it moves to fast (higher than 3000 rpm) , to slow or stops, an error will be displayed. In that case restart calibration.

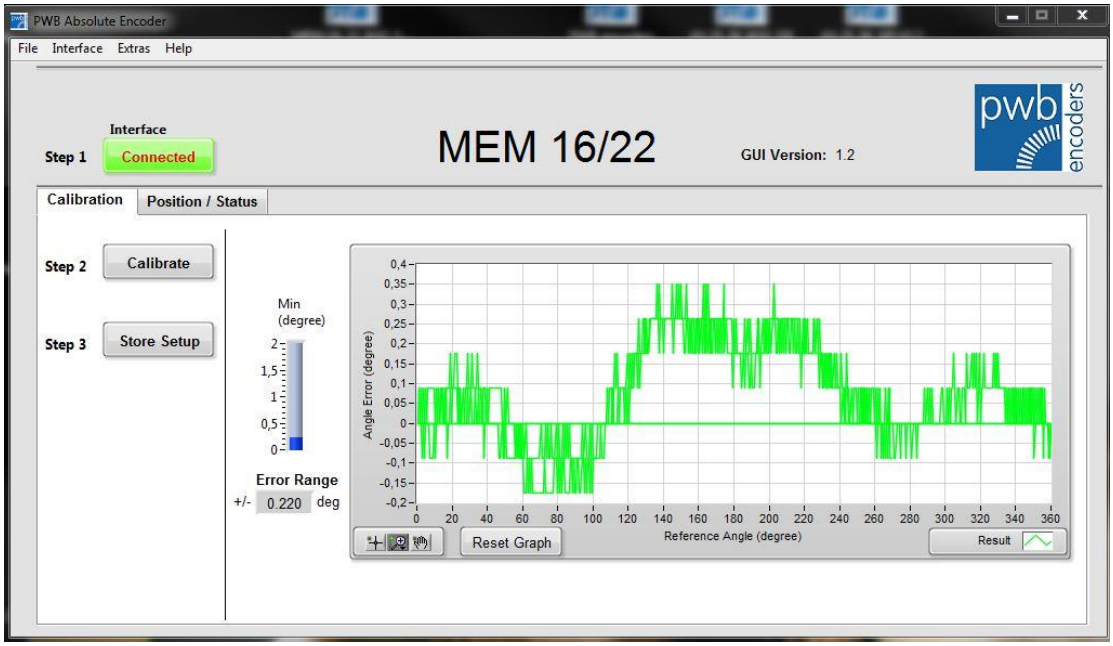
4.3 Automatic calibration Step 3

Click on **“Store Setup”** to save calibration results to encoder. (Without saving calibration results will be lost.)

5 Graphic Interface Description

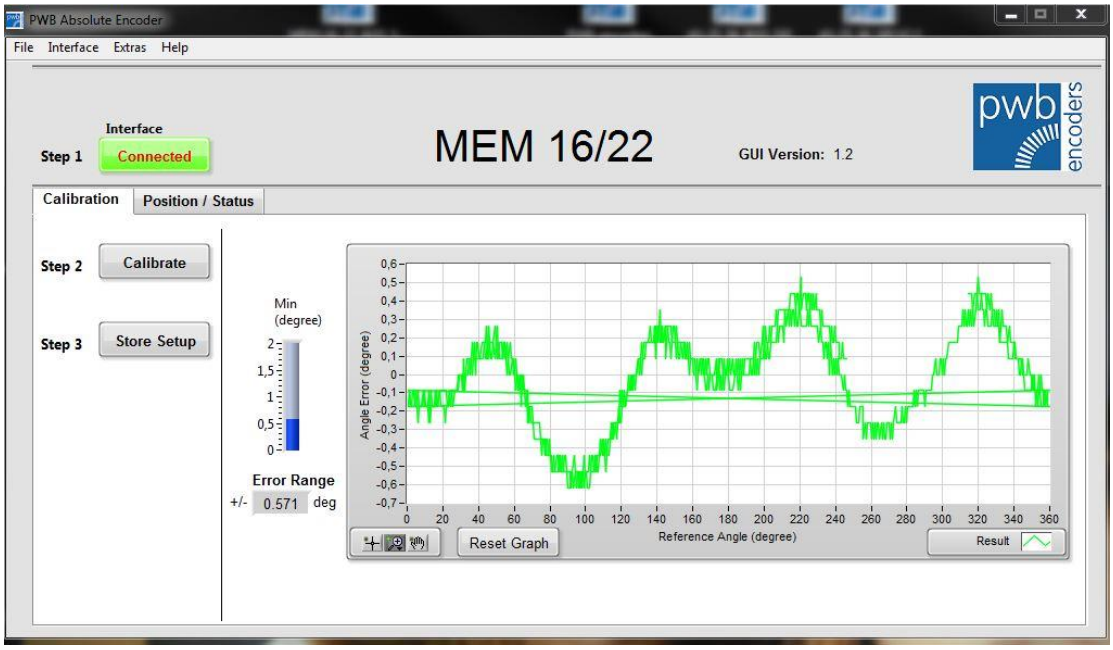
5.1 Optimal Setting

Optimal Settings of the magnetic sensor-wheel with mounting gauge. The values have to be as small as possible (+/- 0,220°).



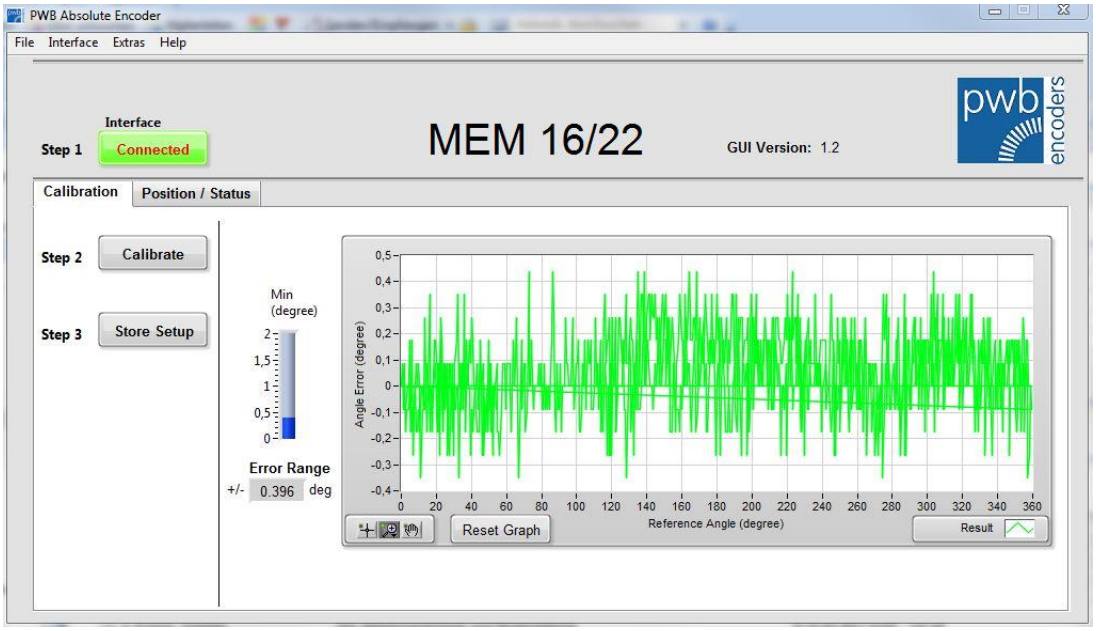
5.2 Smallest Distance

Smallest distance between magnetic wheel and sensor (0,08mm).
Values are very high, spread is very low.



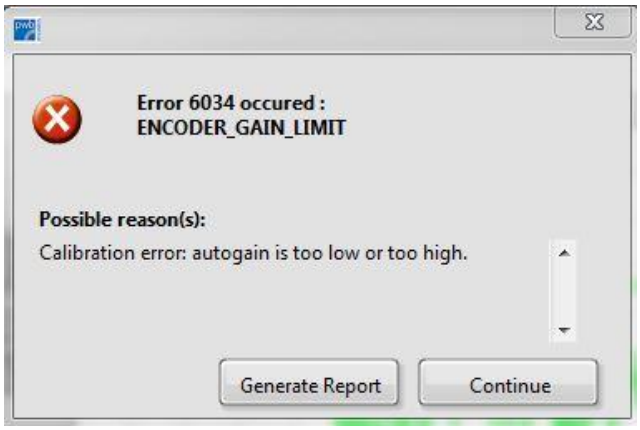
5.3 Biggest Distance

Biggest Distance between magnetic wheel and Sensor (5,09mm)
Values are very high and the spread too.



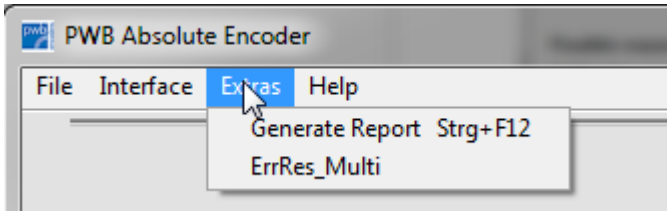
5.4 Error Display

When the Distance is too high (>5,09mm) an error message will appear:

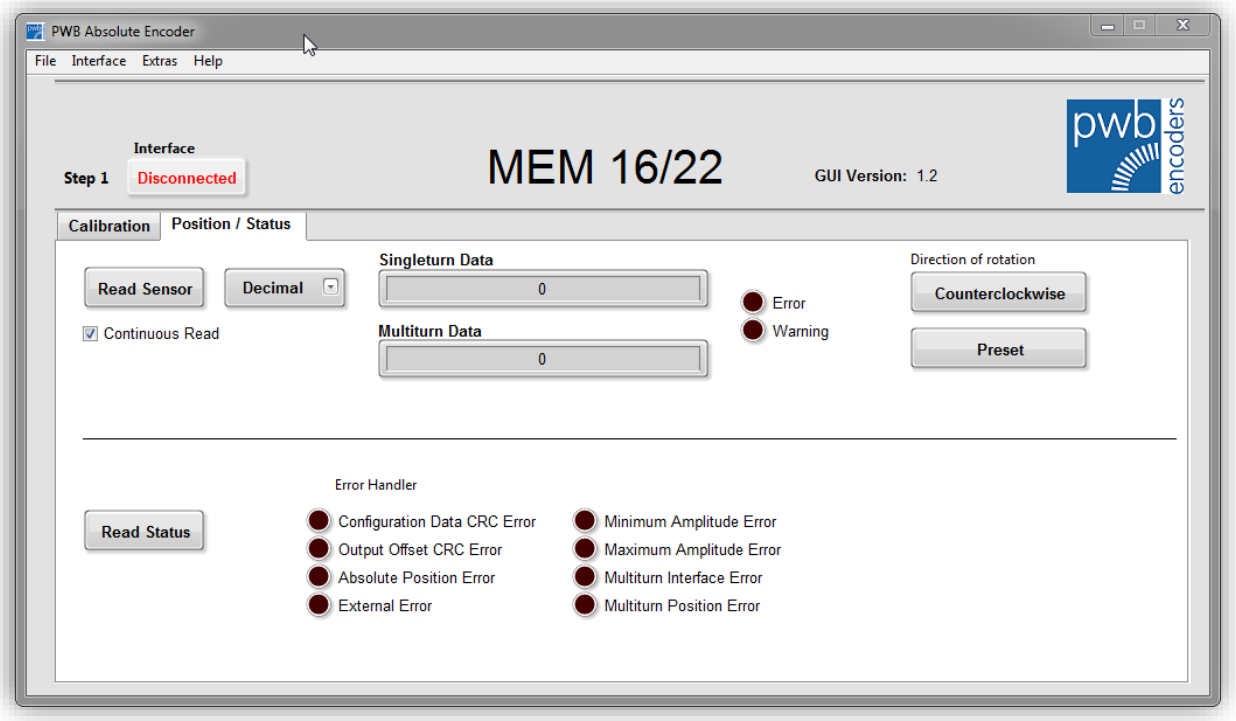


5.5 Reset Errors

Select Extras -> ErrRes_Multi



6 Position / Status Tab



- By clicking „**Read Sensor** „actual values can be displayed.
- To display the “Singleturn” value in different number systems, selectable by the dropdown **“Decimal”** button on the left
- By selecting **“Continuous read”** you can switch between permanent refreshing and one time updating of the singleturn value.
- With the button **„Direction of Rotation**“ you can select **Clockwise (CW)** or **Counterclockwise (CCW).**

- **CW:** Increasing value when turning clockwise
- **CCW:** Increasing value when turning counterclockwise

- When changing the direction of rotation, the displayed position value changes to its complementary value.
- With **„Set to Zero“** the singleturn value set to 0 at the actual position. You have to save this modification via Calibration Step 3.
- Click **„Read Status“** to display all actual errors occurred. Click **“Continuous Read”** to update errors permanent.

7 Backup

By clicking Extras –> **“Generate Report”** or press CTRL.+ F12 you can save all actual values into a file. For problems with the calibration, you can send this file to PWB for analysis

8 Save settings to Encoder – Store Setup

If all values modified, save them to the encoders EEPROM via Step 3 **“Store Setup”** after that the program will close connection to the encoder and the interface.

9 Contact – Customer Service

For any questions or support please feel free to contact us!

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10 IMPORTANT NOTICE

The guarantee will be voided by misuse, accident, modification, unsuitable physical or operating environment, operation in other than the specified operating environment, or failure caused by a product for which PWB encoders GmbH is not responsible.

PWB encoders GmbH reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services also datasheets at any time.