SD4Y Programmer

Programmer Introduction
Programming Procedure for the AMS AS5xxx Series

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Revision History

Revision	Date	Owner	Description
1.0	22-5-2013	SD4Y	Initial doc
1.1	18-08-2013	SD4Y	ams AS5030 update
1.2	18-09-2013	SD4Y	ams AS5132 update
1.3	24-10-2013	SD4Y	ams AS5134; ams 5045B update
1.4	06.11.2013	SD4Y	Introduction update
1.5	06.11.2013	SD4Y	ams AS5043; ams5045; ams5140;
1.6	06.02.2014	SD4Y	Adding operation conditions

1 Introduction

The SD4Y production programmer is designed for high-speed programming for the AMS magnetic position sensors in the production.

The programmer supports all interfaces for programming the AS5x4x, AS5x3x and AS514x magnetic position sensor.

All mandatory commands e.g. Analog Read back, which are necessary and mandatory for programming the AMS magnetic position sensors, are implemented.

The SD4Y is fully ESD protected and the power supply is galvanic isolated from the internal uC.

Internal Voltage measurements are checking the supply and programming voltage to be sure, there is no internal damage.

The SD4Y production programmer is operating in standalone mode.

2 Main Features

- Supports AMS magnetic position sensors, with required programming voltage
- High speed programming
- Analog read back of AMS OTP technology supported
- Fully ESD and Over-voltage protected I/O (galvanic isolation)
- Internal diagnostics
- Supply and IO voltage adjustable
- Detection of load condition and automatic speed adaption feature
- USB Connector
- Serial Connector
- Included Programming Capacitors
- Automatically disconnecting of the programming capacitors during analog read back

3 Supported Devices:

The following list is showing the AMS magnetic position sensors, which are integrated in the programmer uC.

AS5030
AS5040
AS5145
AS5045
AS5045B
AS5043
AS5140
AS5132
AS5134

4 SD4Y Programmer operation conditions UPROG1.4

4.1 Outputs

Parameter	Min	Typ.	Max	Units	Comments
Digital outputs in 3,3V mode	3	3.3	3.6	V	2mA load
VDD in 3,3V mode	3	3.3	3.6	V	
Digital outputs in 5V mode	4.5	5	5.5	V	2mA load
VDD in 5V mode	4.5	5	5.5	V	
Prog PIN	3	n.a.	8.6	V	
Imax VDD_{usb}	50	n.a.	n.a.	mA	**USB Supply**
ImaxVDD_{RS232}	150	n.a.	n.a.	mA	**RS232 Supply external**
Imax V_{Prog}	50	n.a.	n.a.	mA	
Imax on digital IO	20	n.a.	n.a.	mA	**1 channel, short circiut**

4.2 Inputs

Parameter	Min	Typ.	Max	Units	Comments
VDD_{USB}	4.5	5	5.5	V	
VDD_{RS232}	11	12	13	V	
Digital I/O in 3.3V mode	3	3,3	3,6	V	
Digital I/O in 5V mode	4.5	5	5.5	V	
Analog input voltage on Prog	0	n.a.	3.3	V	

4.3 Absolute maximum ratings Inputs

Parameter	Min	Typ.	Max	Units	Comments
High Level Input	n.a.	n.a.	7	V	**Digital pins**
Low Level Input	-0.4	n.a.	n.a.	V	**Digital pins**
High Level Input	n.a.	n.a.	5	V	**Analoque pins**
Low Level Input	-0.4	n.a.	n.a.	V	**Analoque pins**

4.4 ESD Protection and Operating Temperature

Parameter				Units	Comments
Human Body Model	2000			V	**On any Pin (prog connector)**
Machine Model	200			V	**On any Pin (prog connector)**
Charge-Device Model	1000			V	**On any Pin (prog connector)**
Parameter	**Min**	**Typ.**	**Max**	**Units**	**Comments**
Operating Temperature	10	25	35	[degC]	

5 SD4Y Programmer Hardware Description

The SD4Y Programmer has two possible input connectors for the PC

1) USB
2) RS232 and external Power Supply **(12V max)**

USB:

The USB connector can be used for operate the SD4Y Programmer without an additional Supply.

Important: The max allowed current consumption on the VDD is 50mA. Otherwise the USB controller turns off.

A firmware upgrade is only possible with the USB connector.

RS232:

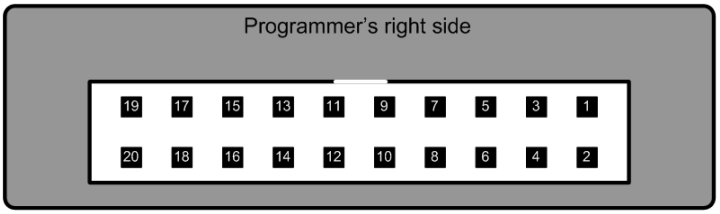
To use the RS232 an additional Supply is necessary. **The max. Voltage is 12V.**

Important: The max allowed current consumption on the VDD is 150mA. Otherwise the RS232 controller turns off.

SD4Y-Programmer Connector

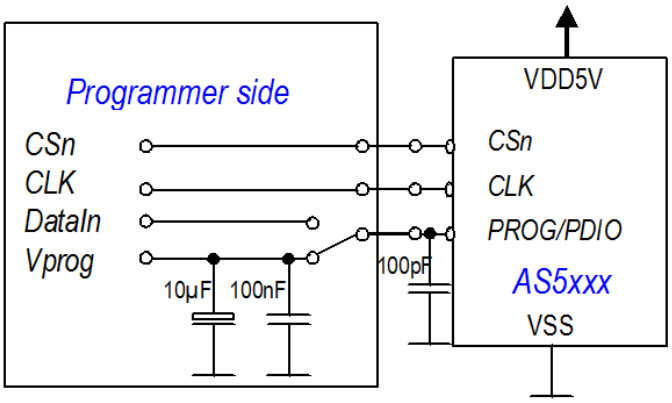
The SD4Y Programmer has a 20 pin connector for the DUT (Device under test)

This Connector has the same PIN Out like the AMS AS5000 Programmer.



Pin #	Signal	Comment
1	Vzap	Programming voltage
2	Vzap	Programming voltage
3	D10	Encoder signal
4	ADC2	Device autodetection voltage
5	D9	Encoder signal
6	ADC1	Vzap feedback
7	D8	Encoder signal
8	D11	Encoder signal
9	D7	Encoder signal
10	D6	Encoder signal
11	VDD	Encoder power supply
12	VDD	Encoder power supply
13	GND	Ground
14	GND	Ground
15	D5	Encoder signal
16	D0	Encoder & LCD display signal
17	D4	Encoder signal
18	D1	LCD signal – Do not use
19	D3	Encoder signal
20	D2	Encoder signal

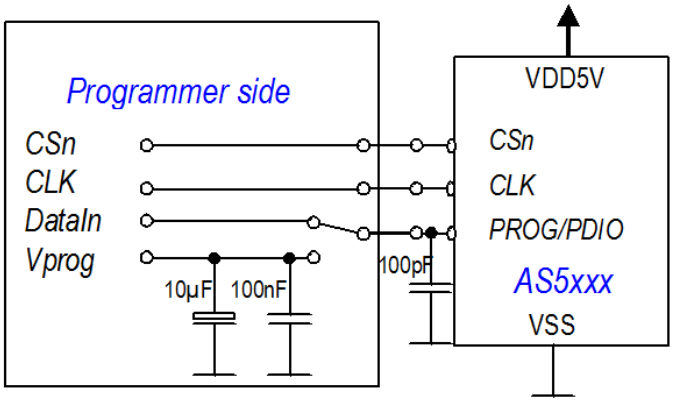
Connection of the SD4Y Programmer to an AMS Sensor during programming and analog readback mode



Programming: During programming the programmer is switching internal the programming caps to the Programming Pin.

Additional Programming Capacitors are not necessary and not allowed. The max allowed capacitor on the Programming Pin on the Application board is 100pF.

The cable length has to be as short as possible.



AnalogReadBack: During the analog read back, programmer is disconnecting automatically the internal programming capacitors

The max allowed capacitor on the Programming Pin on the Application board is 100pF during analog read back. Otherwise the not fused fuses can be destroyed.

The cable length has to be as short as possible.

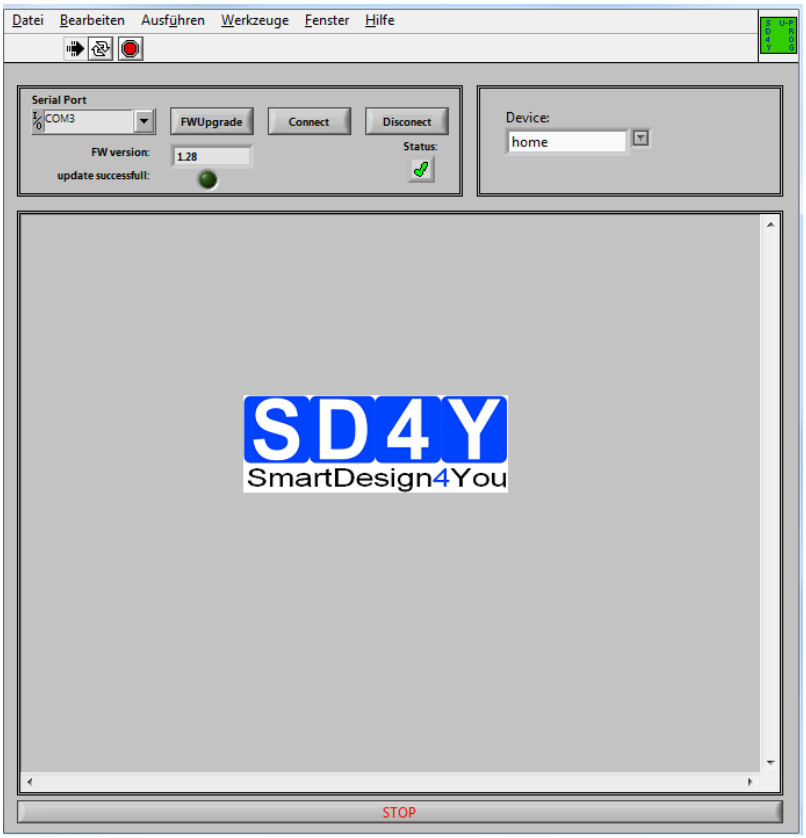
6 SD4Y Programmer GUI Installation

To use the SD4Y Programmer GUI some additional steps are necessary to run the software.

1) Download the latest Labview Runtime Engine and VISA Drivers

   The GUI is written in Labview. For this reason the latest Labview Runtime Engine (Labview Runtime Engine 2012) and the latest VISA Drivers(NI-VISA Runtime Engine) are necessary. Please find the files on the official National Instruments webpage www.ni.com

2) Install the GUI for the SD4Y Programmer
3) Connect the USB or the RS232 to the Programmer and the PC. It's not allowed to use both connections at the same time.
4) The connection to the DUT has to be open during the first GUI start up. If the GUI is running and the right device is used it's not necessary to disconnect the Programmer Connector
5) Open the GUI



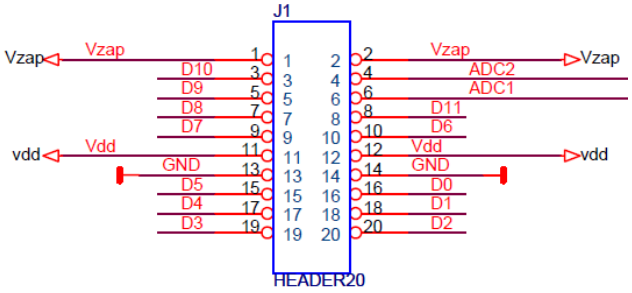
7 Programming of the ams AS5xxx series

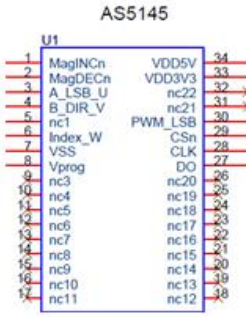
7.1 ams AS5145

7.1.1 Hardware

PINOUT : 20 PIN Connector to AS5145/AS5045

Connector on the SD4Y Programmer





Pinout AS5145

SD4Y Connector	AS5145
PinNr	PinDescription
1	Vprog
2	Vprog
13	GND
14	GND
11	Vdd
12	Vdd
15	DO
17	CSn
20	CLK

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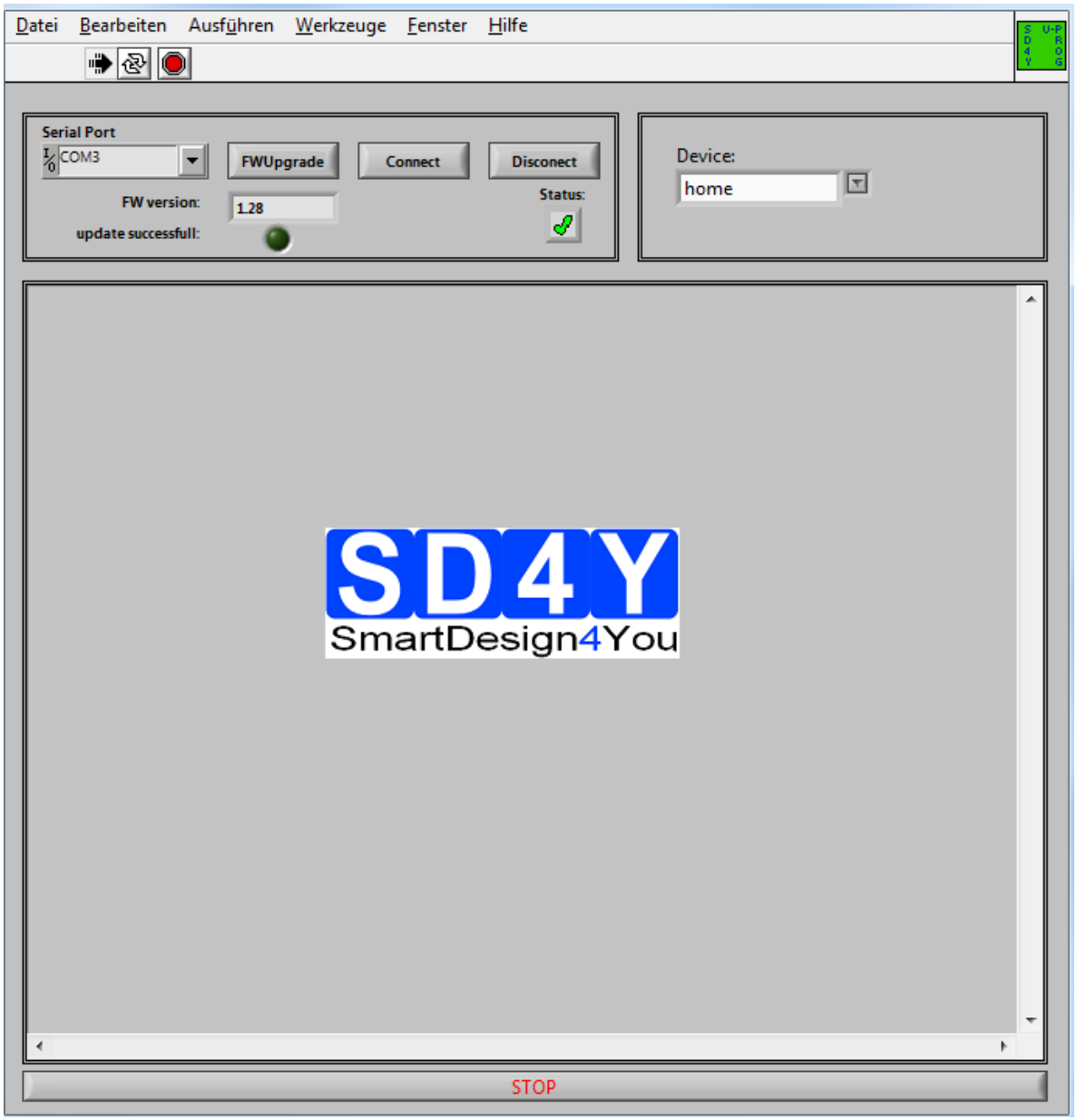
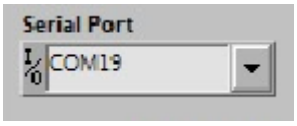
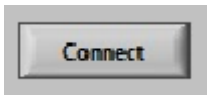
7.1.2 Programming Procedure and Function Description for the ams AS5145

1) **Start the GUI**

–



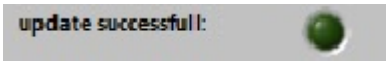
a) Choose the right COM Port 

b) Press the 

Button. The Status will change to the green checkmark.

c) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

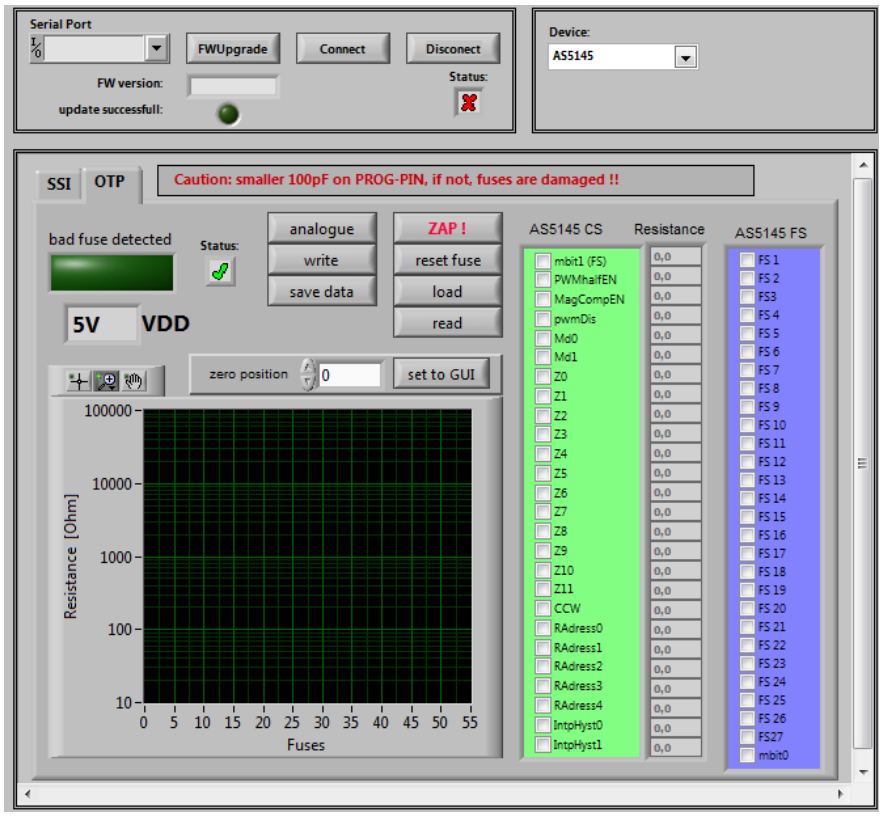
Additional the 

marker will be green.

2) Choose the right Device

(AS5145)

3) The GUI will change to the right Device

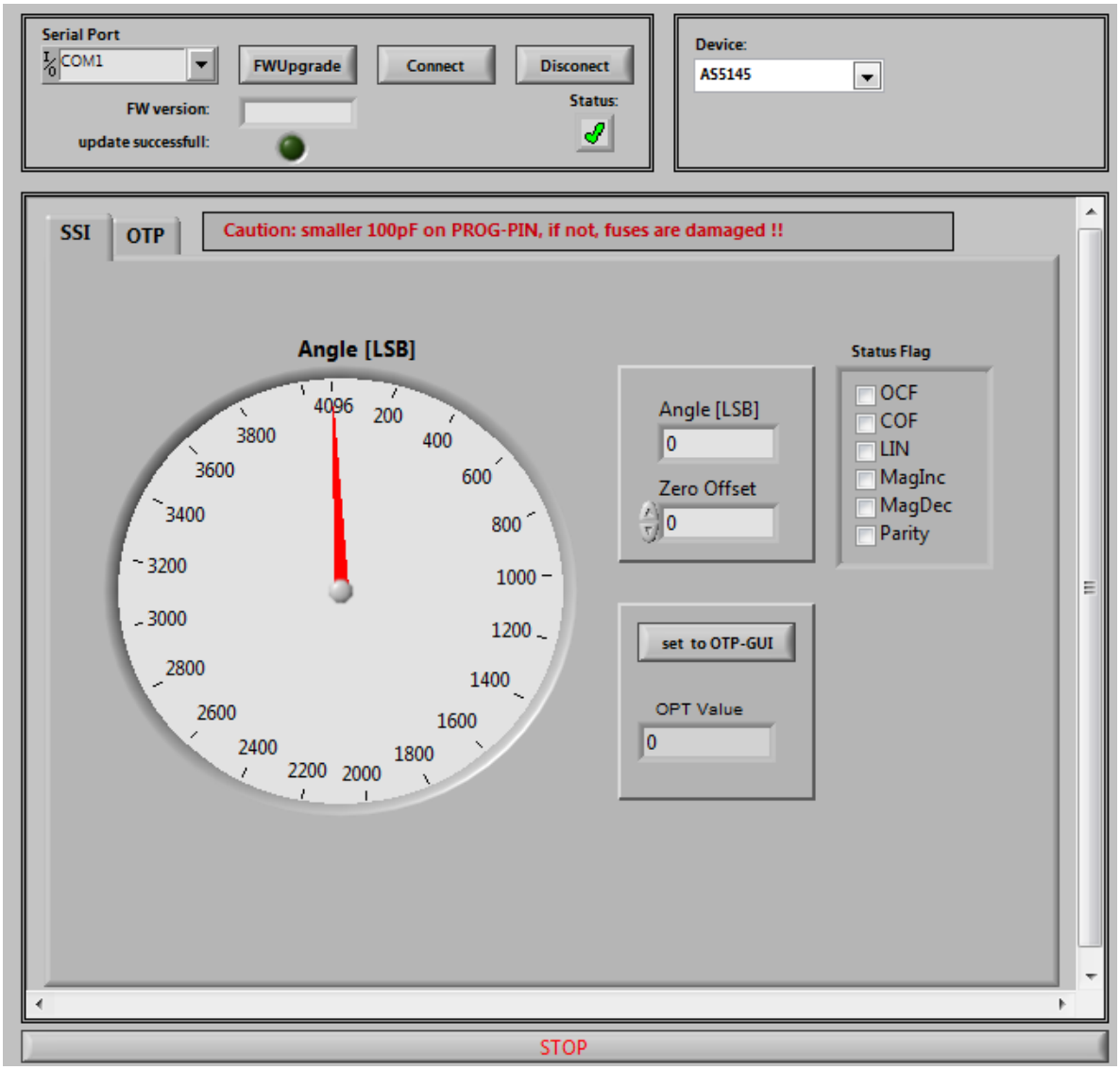


4) Set the VDD to the right Value

5) To use the **OTP TAB Area** first is important.

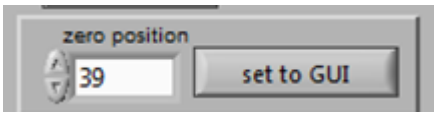
6) SSI Tab : If a zero programming is necessary.

By selecting the SSI tab, information of the angular position and the status bits appear:



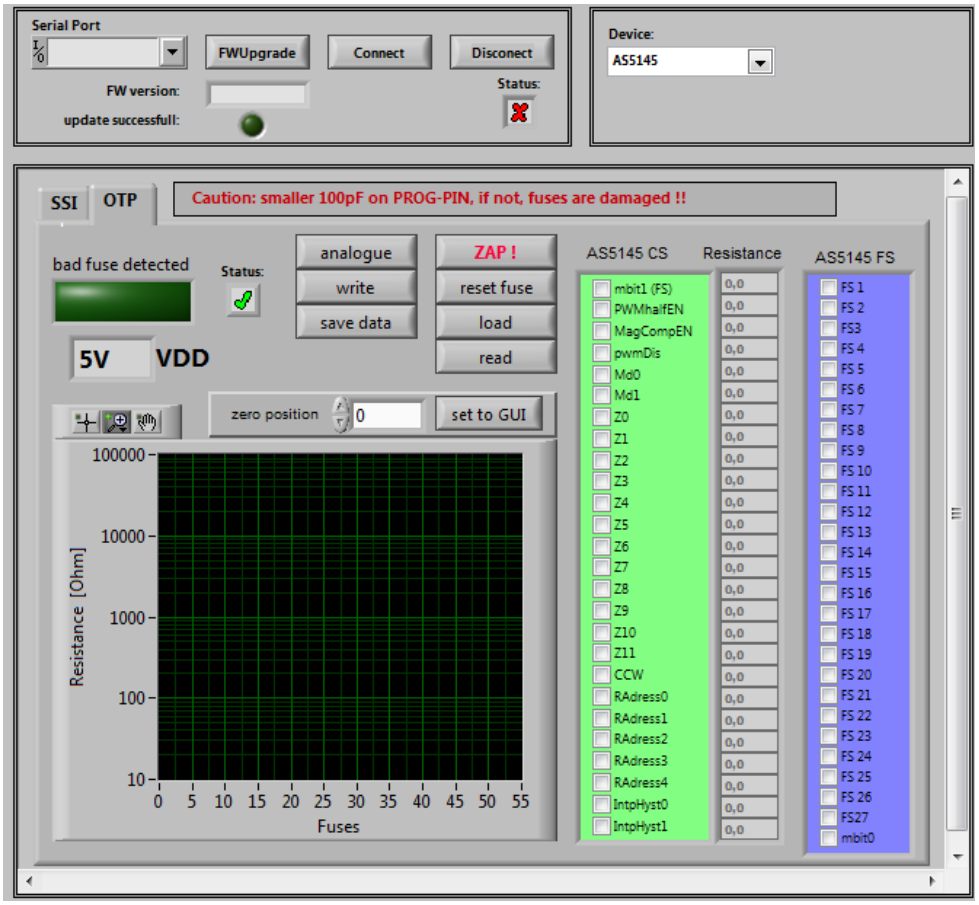
- Angle [LSB] Graphic is showing the actual position of the magnet.
- Angle [LSB] is showing the actual position of the magnet in LSB
- Zero Offset: For adding or subtracting an offset to the current Angle position
- Set to OTP-GUI: The OTP Value is showing the Angle + the zero offset. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5145CS area of the OTP Tab.

- Status flag: The Status Flag displays the status bits extracted from the SSI.

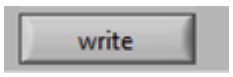
7) Push the “set to OTP-GUI” for setting the zero point or use the manual setting of the zero point in the OTP Tab area. 

8) Change to the OTP Area.

–



9) Select necessary Bits for programming in the **AS5145 CS** (Customer settings)

10) Push the write button 

11) The OTP Write was successful.

12) Several writing is possible.
13) Push the read button

if a digital reading is necessary
14) Several digital reading is possible.
15) If the values in the AS5145 CS area are right, push

Button for permanent programming.
16) **Push Analogue. The analog read back is mandatory, after programming!**

    Warning: It's not allowed to connect a capacitor to the VPRog. This can destroy all OTP Bits during the analog read back
17) In the "Resistance" area is the OTP Fuse resistance Information of all Customer Bits.

```
Programmed Fuse: 50 – 200 Ohm
Unprogrammed Fuse: >10 kOhm
Bad Fuse: 200 Ohm – 10 kOhm
```

    If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.
18) **Verification between written data and analogue data is mandatory, to be sure no bit is missing.**
19) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

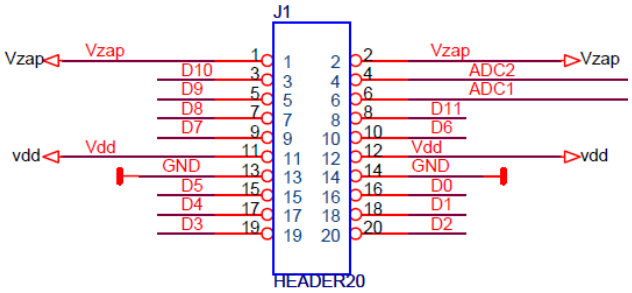
–

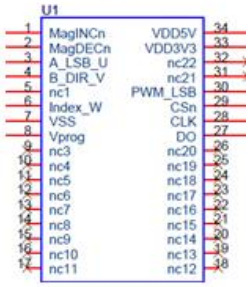
7.2 ams AS5045B

7.2.1 Hardware

PINOUT : 20 PIN Connector to AS5045B

Connector on the SD4Y Programmer





Pinout AS5045B

SD4Y Connector	AS5045B
PinNr	PinDescription
1	Vprog
2	Vprog
13	GND
14	GND
11	Vdd
12	Vdd
15	DO
17	CSn
20	CLK

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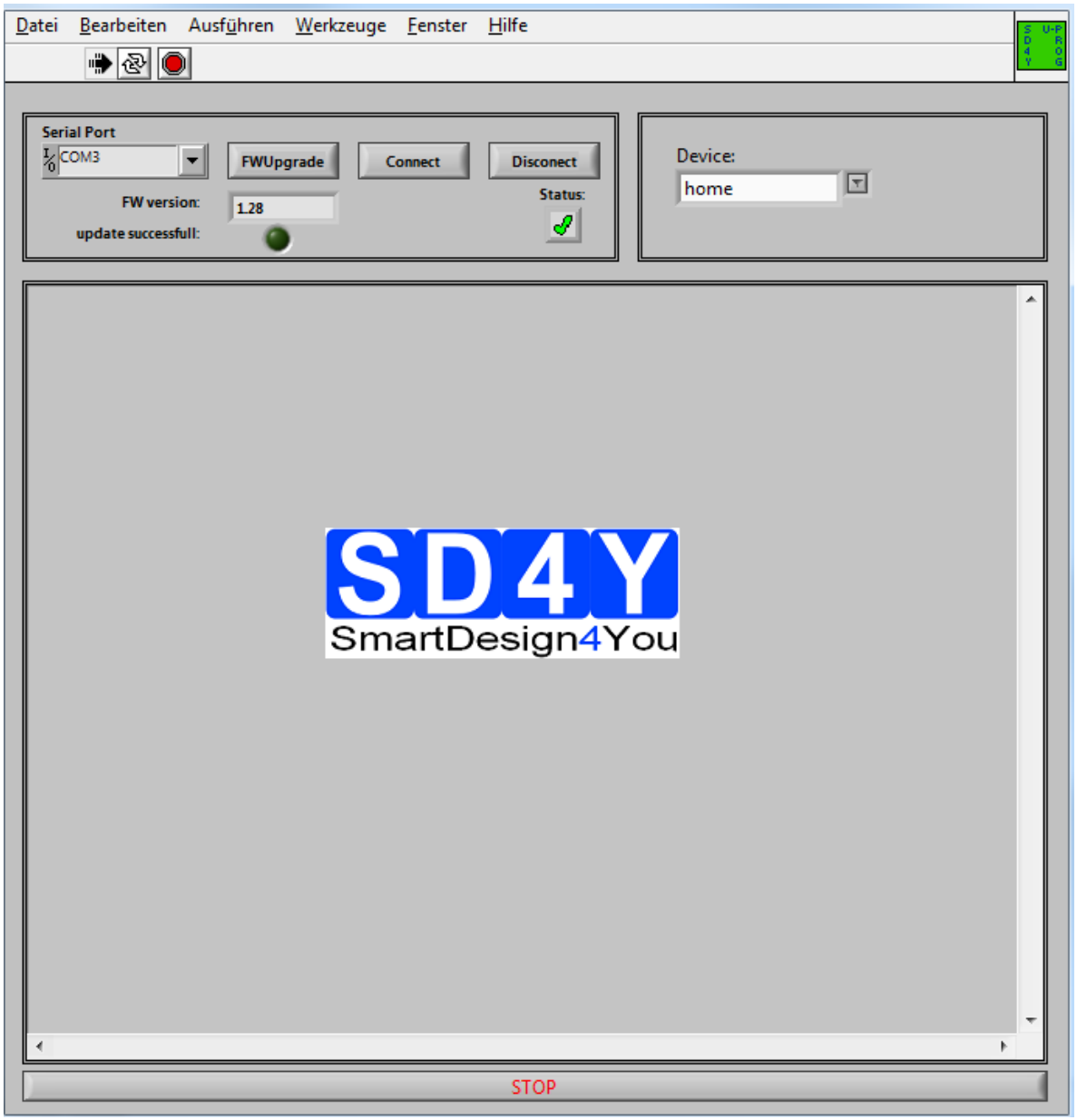
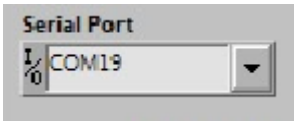
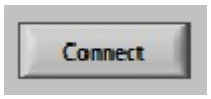
7.2.2 Programming Procedure and Function Description for the ams AS5045B

1) **Start the GUI**

–



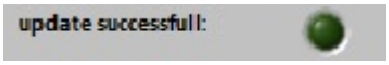
d) Choose the right COM Port 

e) Press the 

Button. The Status will change to the green checkmark.

f) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

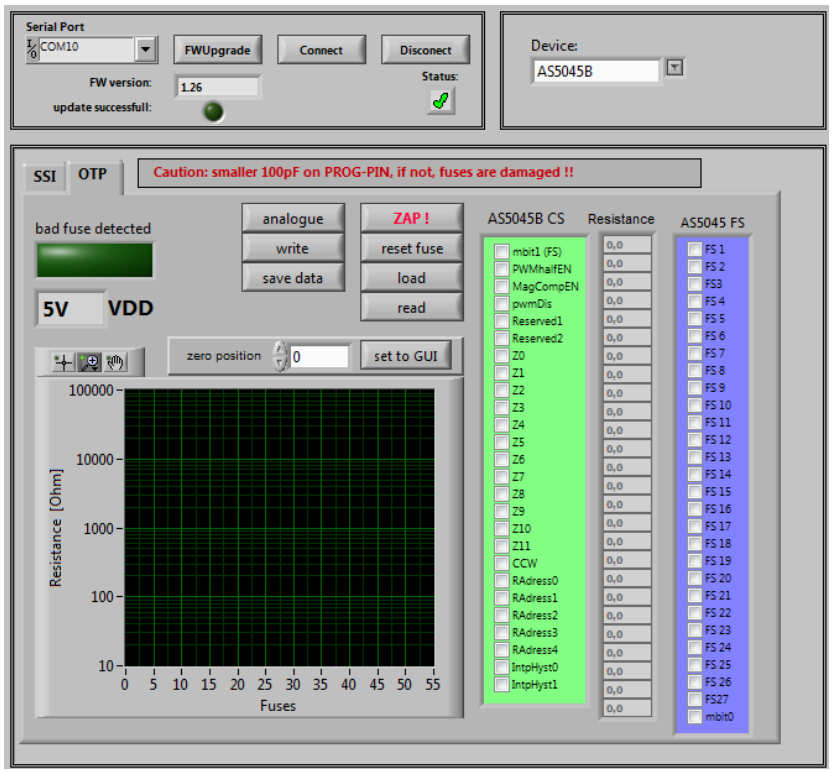
Additional the 

marker will be green.

2) Choose the right Device

(AS5045B)

3) The GUI will change to the right Device

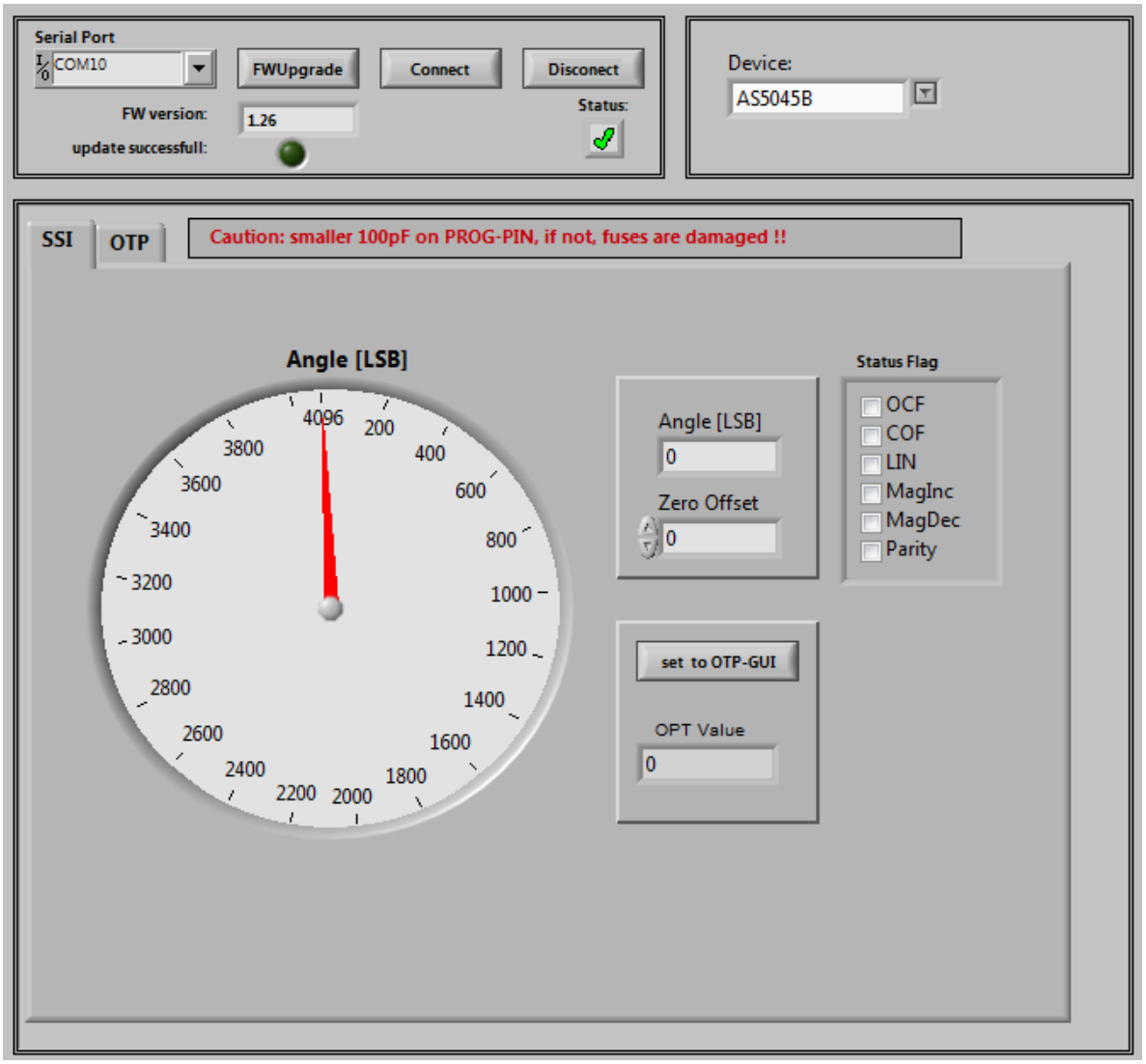


4) Set the VDD to the right Value

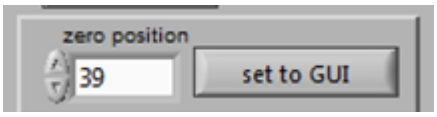
5) To use the **OTP TAB Area** first is important.

6) SSI Tab : If a zero programming is necessary.

By selecting the SSI tab, information of the angular position and the status bits appear:

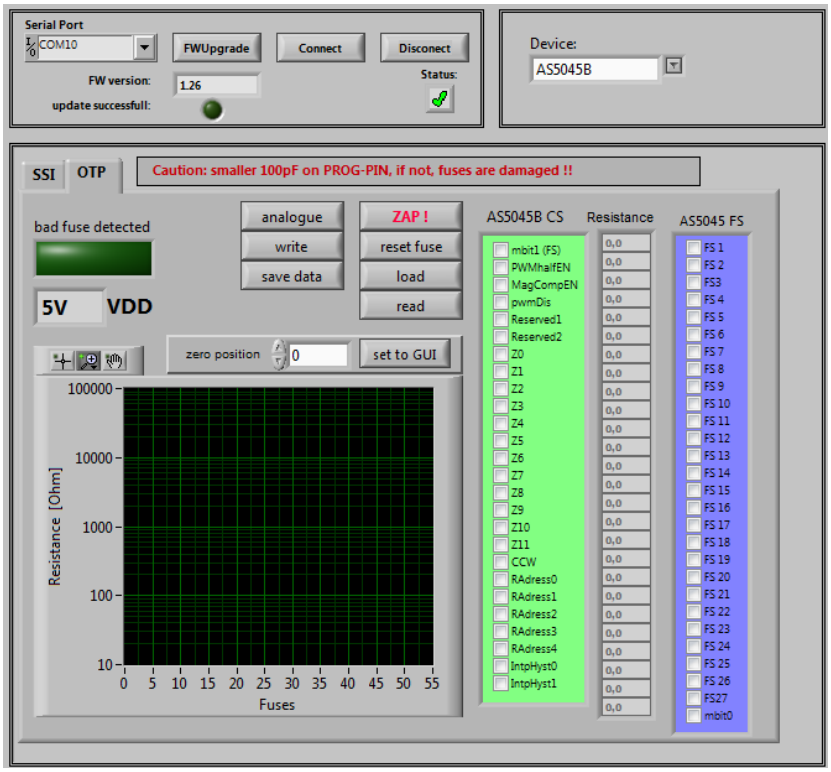


- Angle [LSB] Graphic is showing the actual position of the magnet.
- Angle [LSB] is showing the actual position of the magnet in LSB
- Zero Offset: For adding or subtracting an offset to the current Angle position
- Set to OTP-GUI: The OTP Value is showing the Angle + the zero offset. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5145CS area of the OTP Tab.
- Status flag: The Status Flag displays the status bits extracted from the SSI.

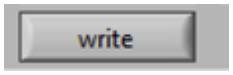
7) Push the “set to OTP-GUI” for setting the zero point or use the manual setting of the zero point in the OTP Tab area. 

8) Change to the OTP Area.

–



9) Select necessary Bits for programming in the **AS5045B CS** (Customer settings)

10) Push the write button 

11) The OTP Write was successful.

12) Several writing is possible.

13) Push the read button

if a digital reading is necessary

14) Several digital reading is possible.

15) If the values in the AS5045B CS area are right, push

Button for permanent programming.

16) **Push Analogue. The analog read back is mandatory, after programming!**

Warning: It's not allowed to connect a capacitor to the VPRog. This can destroy all OTP Bits during the analog read back

17) In the "Resistance" area is the OTP Fuse resistance Information of all Customer Bits.

```
Programmed Fuse: 50 – 200 Ohm
Unprogrammed Fuse: >10 kOhm
Bad Fuse: 200 Ohm – 10 kOhm
```

If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

18) Verification between written data and analogue data is mandatory, to be sure no bit is missing.

19) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

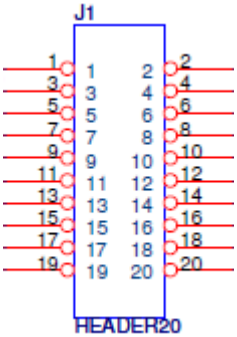
–

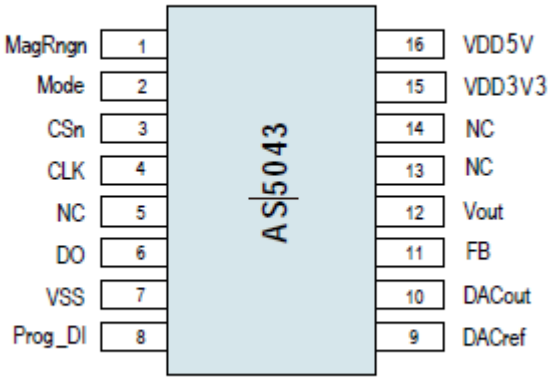
7.3 ams AS5043

7.3.1 Hardware

PINOUT : 20 PIN Connector to AS5043

Connector on the SD4Y Programmer





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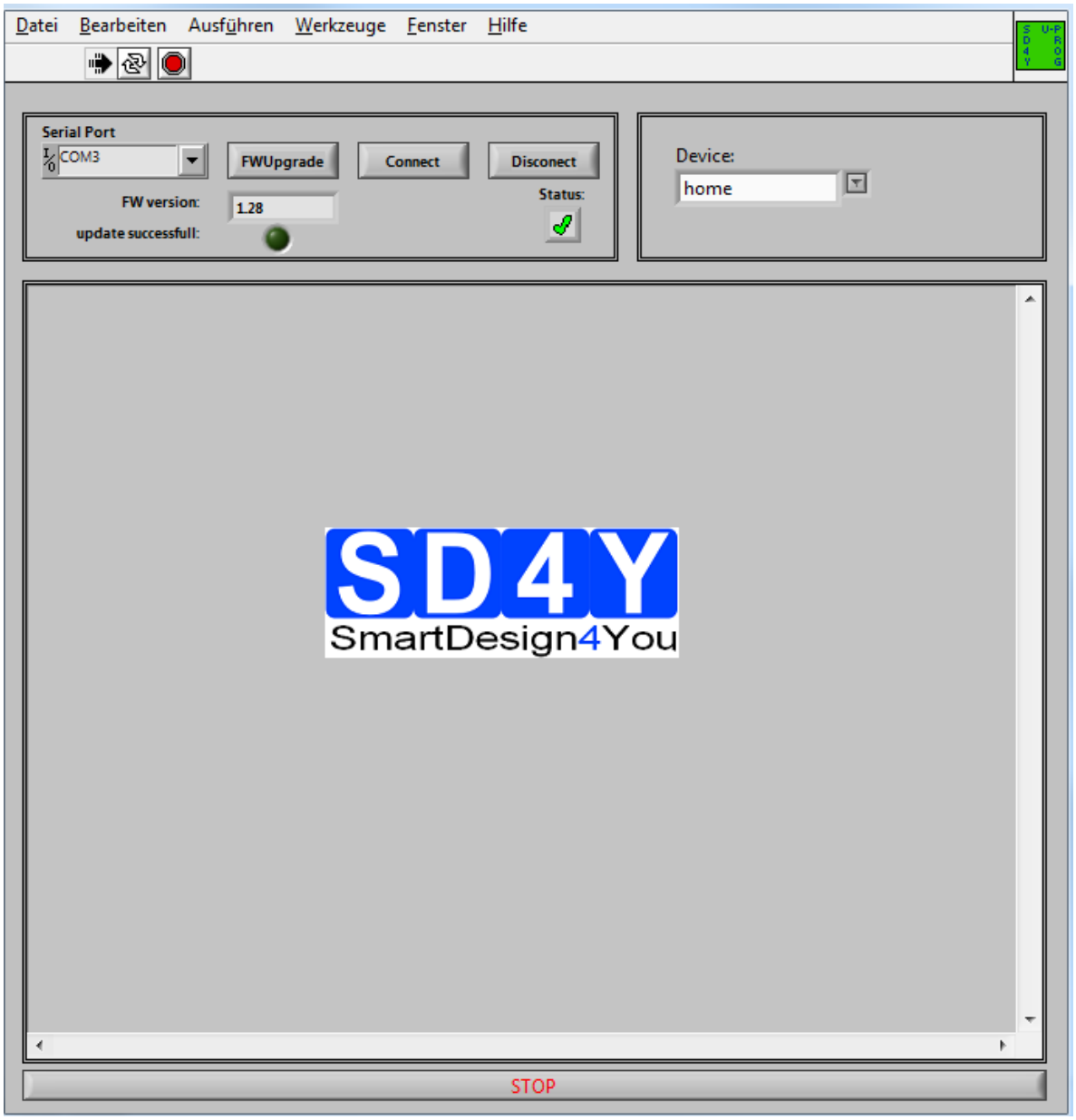
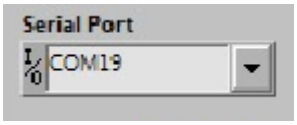
SD4Y Connector	AS5043
PinNr	**PinDescription**
1	Prog_DI
2	Prog_DI
13	VSS
14	VSS
11	VDD5V
12	VDD5V
15	DO
17	CSn
20	CLK

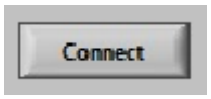
7.3.2 Programming Procedure and Function Description for the ams AS5043

1) **Start the GUI**

–



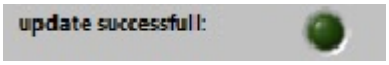
g) Choose the right COM Port 

h) Press the 

Button. The Status will change to the green checkmark.

i) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

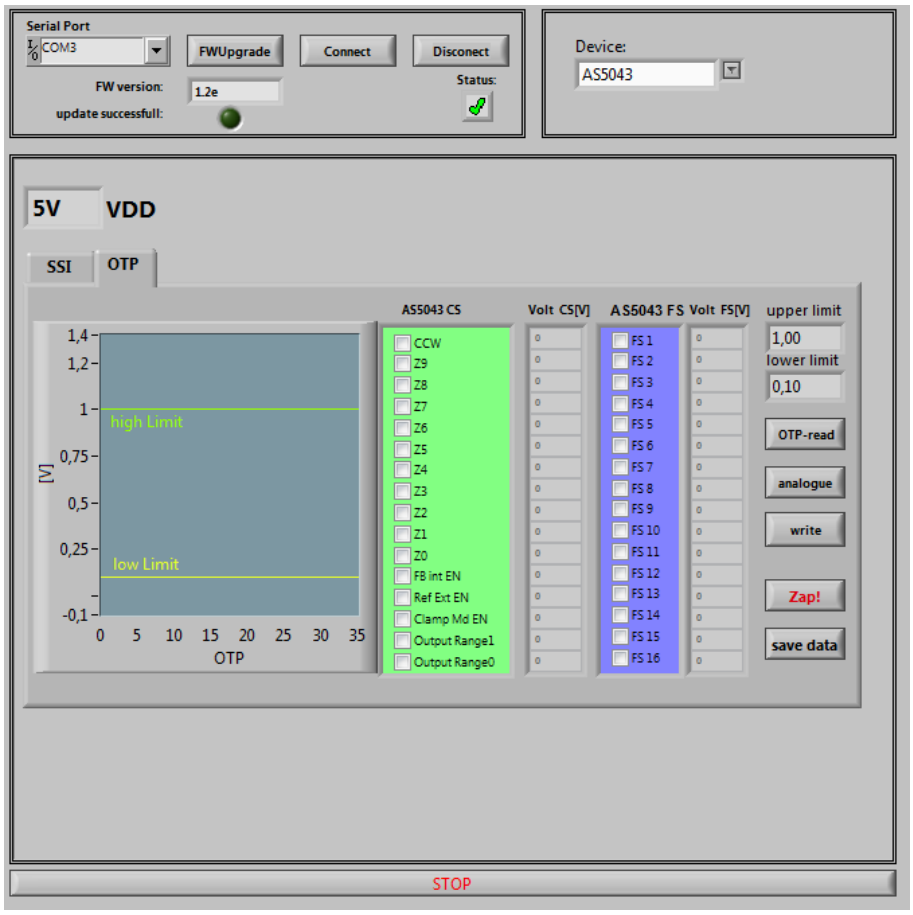
Additional the 

marker will be green.

2) Choose the right Device

(AS5043)

3) The GUI will change to the right Device

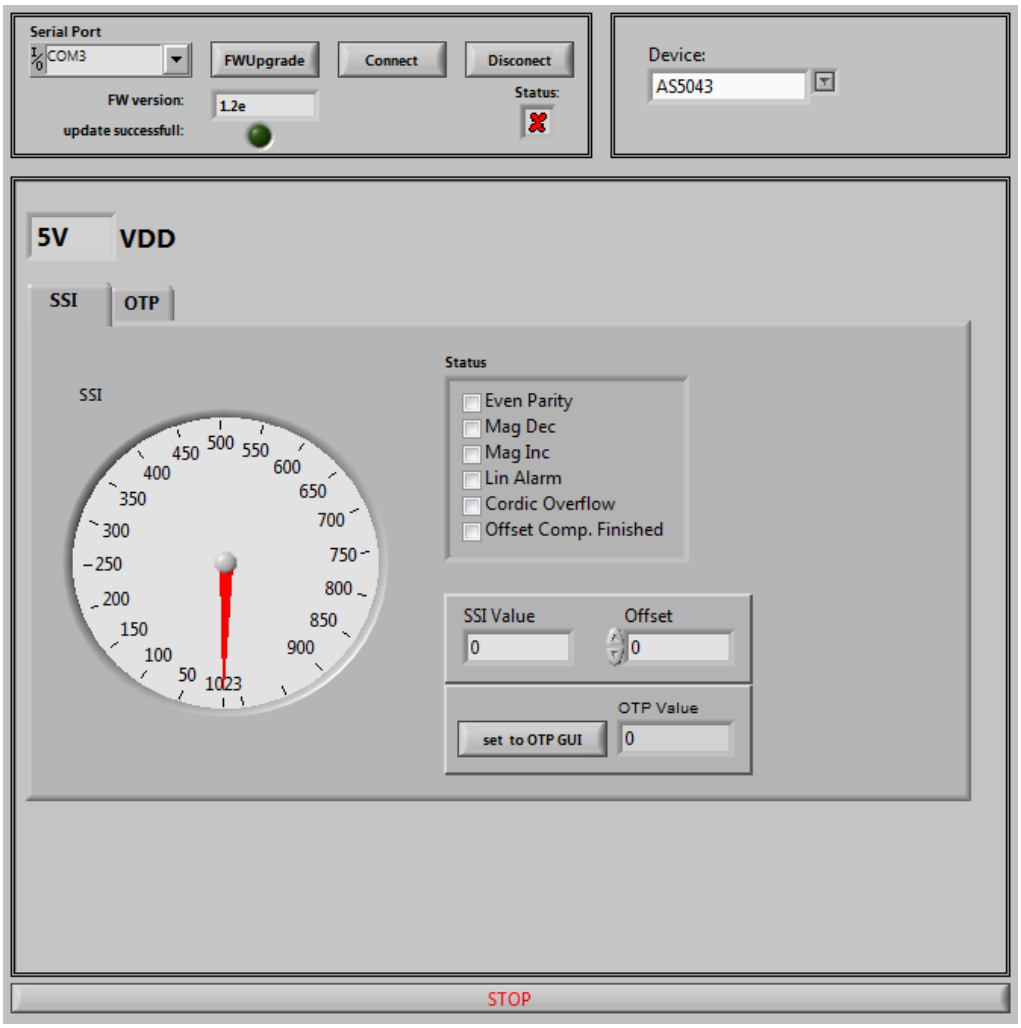


4) Set the VDD to the right Value

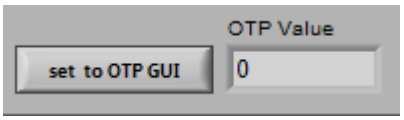
5) To use the **OTP TAB Area** first is important

6) SSI Tab : If a zero programming is necessary.

By selecting the SSI tab, information of the angular position and the status bits appear:

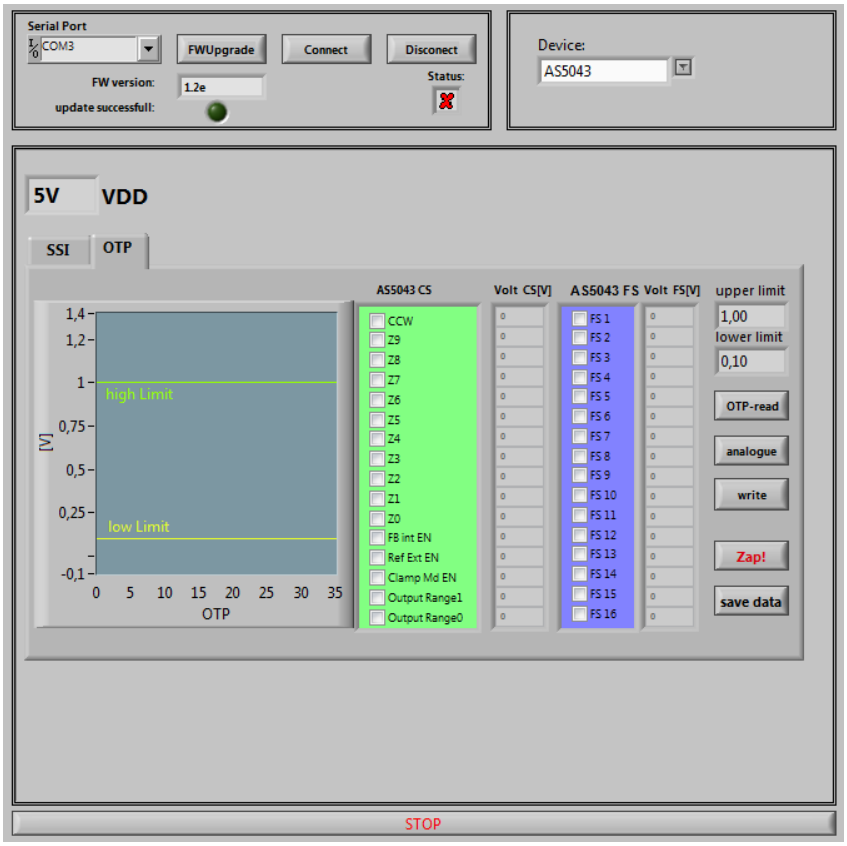


- Angle [LSB] Graphic is showing the actual position of the magnet.
- Angle [LSB] is showing the actual position of the magnet in LSB
- Zero Offset: For adding or subtracting an offset to the current Angle position
- Set to OTP-GUI: The OTP Value is showing the Angle + the zero offset. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5145CS area of the OTP Tab.
- Status flag: The Status Flag displays the status bits extracted from the SSI.

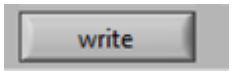
7) Push the “set to OTP-GUI” for setting the zero point or use the manual setting of the zero point in the OTP Tab area. 

8) Change to the OTP Area.

–



9) Select necessary Bits for programming in the **AS5043 CS** (Customer settings)

10) Push the write button 

11) The OTP Write was successful.

12) Several writing is possible.

13) Push the read button

if a digital reading is necessary

14) Several digital reading is possible.

15) If the values in the AS5043 CS area are right, push

Button for permanent programming.

16) **Push Analogue. The analog read back is mandatory, after programming!**

Warning: It's not allowed to connect a capacitor to the VPRog. This can destroy all OTP Bits during the analog read back

17) In the "Volt CS[V]" area is the OTP Fuse voltage Information of all Customer Bits.

```
Programmed Fuse: > 0,1 V
Unprogrammed Fuse: >1V
Bad Fuse: 0,1V – 1 V
```

If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

18) Verification between written data and analogue data is mandatory; to be sure no bit is missing.

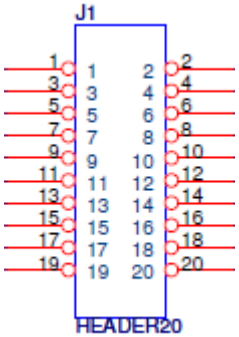
19) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

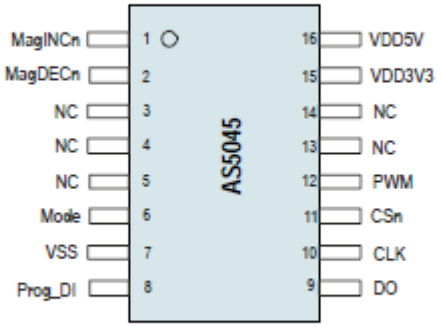
7.4 ams AS5045

7.4.1 Hardware

PINOUT : 20 PIN Connector to AS5045

Connector on the SD4Y Programmer





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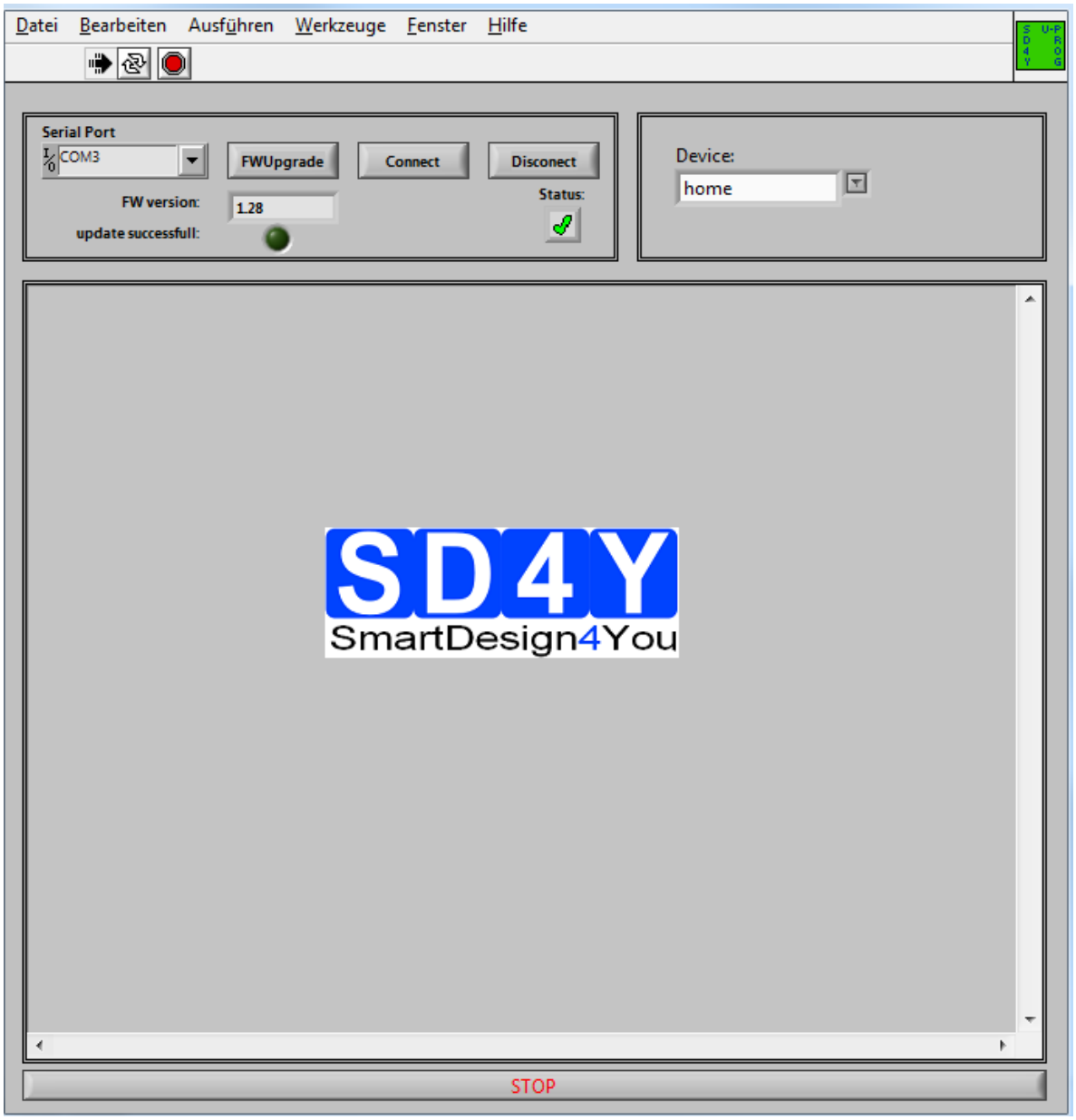
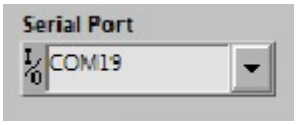
SD4Y Connector	AS5045
PinNr	PinDescription
1	Prog_DI
2	Prog_DI
13	GND
14	GND
11	Vdd
12	Vdd
15	DO
17	CSn
20	CLK

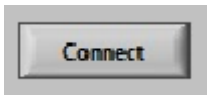
7.4.2 Programming Procedure and Function Description for the ams AS5045

1) **Start the GUI**

–



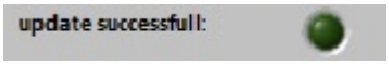
j) Choose the right COM Port 

k) Press the 

Button. The Status will change to the green checkmark.

l) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

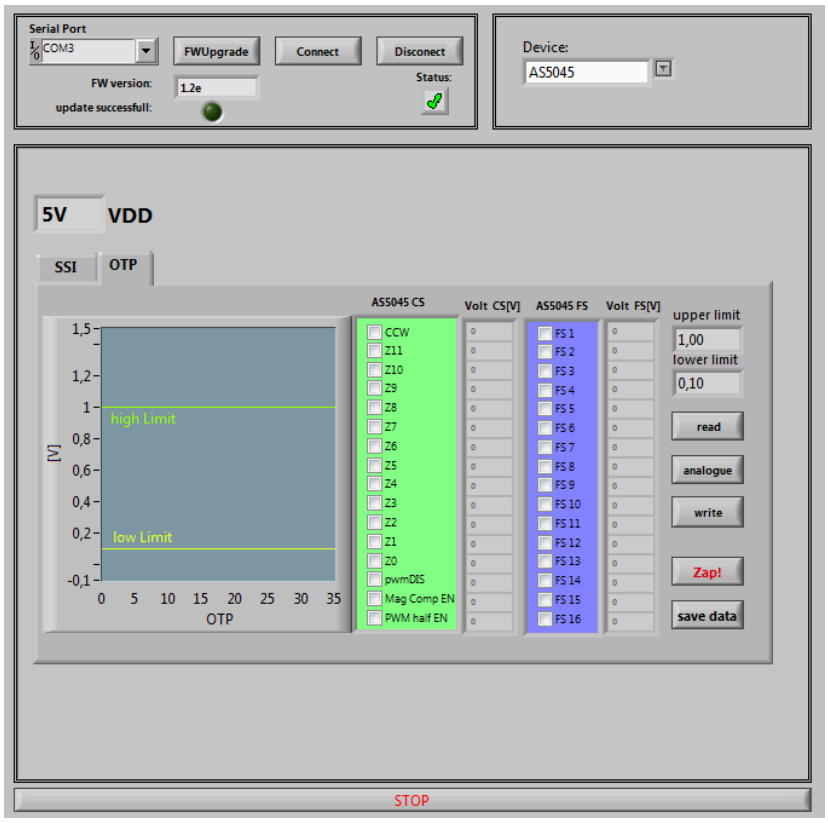
Additional the 

marker will be green.

2) Choose the right Device

(AS5045)

3) The GUI will change to the right Device

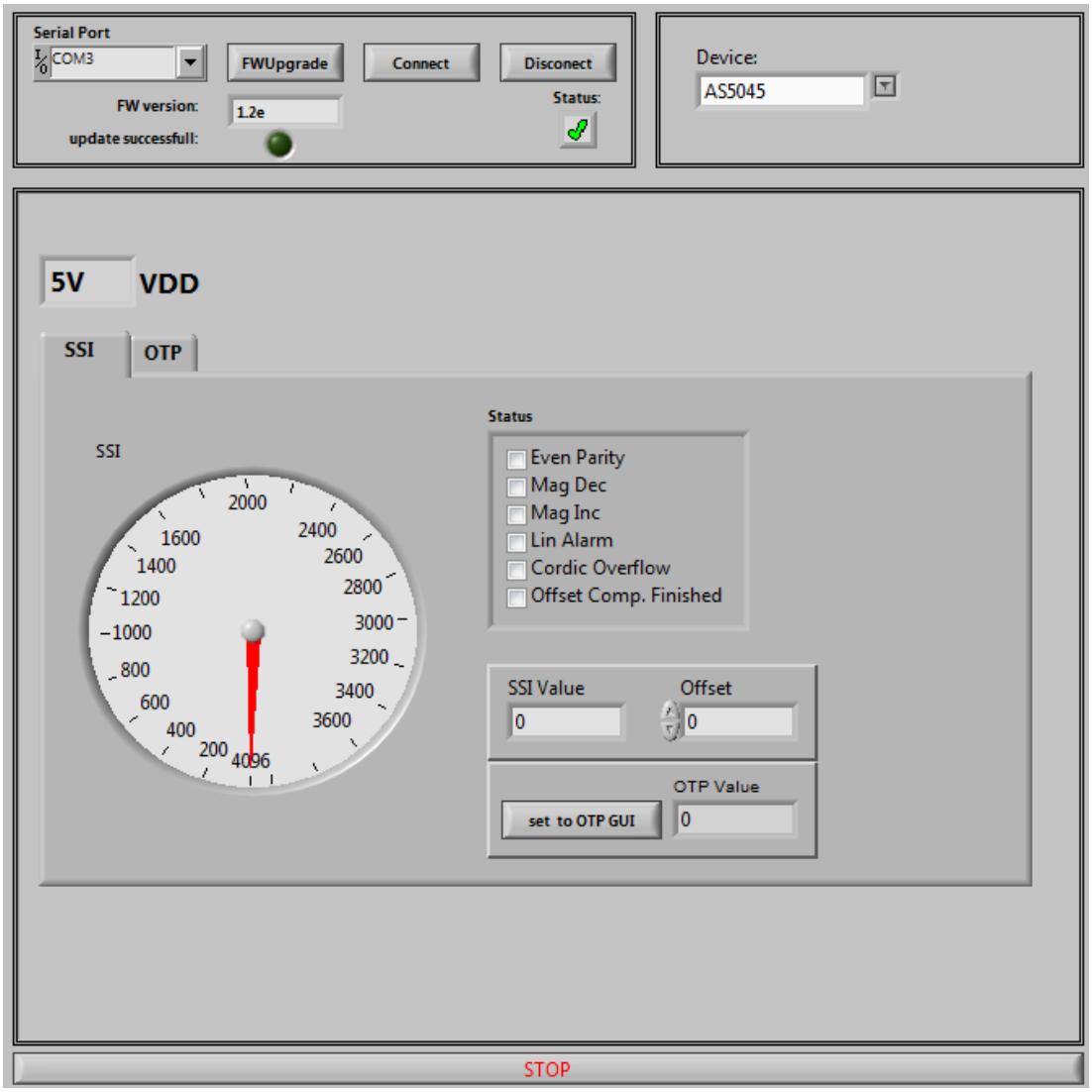


4) Set the VDD to the right Value

5) To use the **OTP TAB Area** first is important.

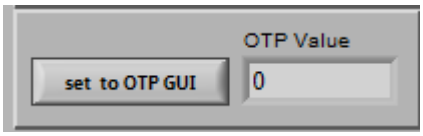
6) SSI Tab : If a zero programming is necessary.

By selecting the SSI tab, information of the angular position and the status bits appear:



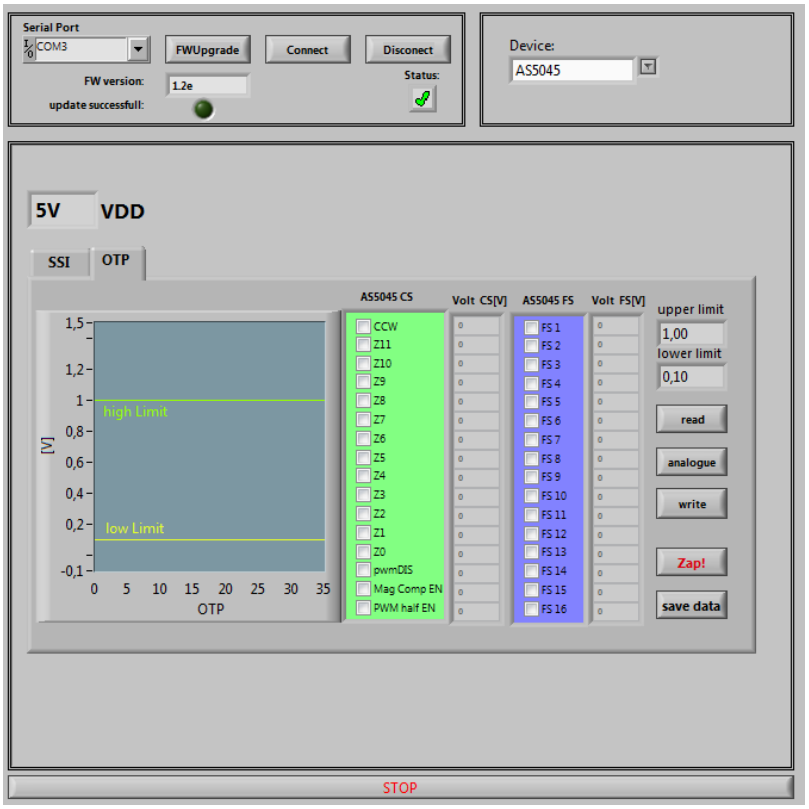
- Angle [LSB] Graphic is showing the actual position of the magnet.
- Angle [LSB] is showing the actual position of the magnet in LSB
- Zero Offset: For adding or subtracting an offset to the current Angle position
- Set to OTP-GUI: The OTP Value is showing the Angle + the zero offset. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5145CS area of the OTP Tab.
- Status flag: The Status Flag displays the status bits extracted from the SSI.

7) Push the “set to OTP-GUI” for setting the zero point or use the manual setting of the zero point in the OTP Tab area.

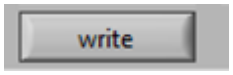


8) Change to the OTP Area.

–



9) Select necessary Bits for programming in the **AS5045 CS** (Customer settings)

10) Push the write button 

11) The OTP Write was successful.

12) Several writing is possible.

13) Push the read button

if a digital reading is necessary

14) Several digital reading is possible.

15) If the values in the AS5045 CS area are right, push

Button for permanent programming.

16) **Push Analogue. The analog read back is mandatory, after programming!**

Warning: It's not allowed to connect a capacitor to the VPRog. This can destroy all OTP Bits during the analog read back

17) In the "Volt CS[V]" area is the OTP Fuse voltage Information of all Customer Bits.

```
Programmed Fuse: > 0,1 V
Unprogrammed Fuse: >1V
Bad Fuse: 0,1V – 1 V
```

If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

18) Verification between written data and analogue data is mandatory, to be sure no bit is missing.

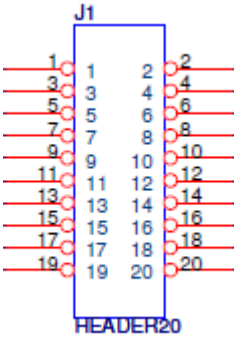
19) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

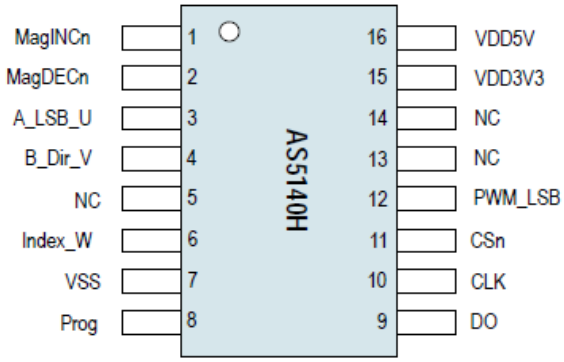
7.5 ams AS5140

7.5.1 Hardware

PINOUT : 20 PIN Connector to AS5140

Connector on the SD4Y Programmer





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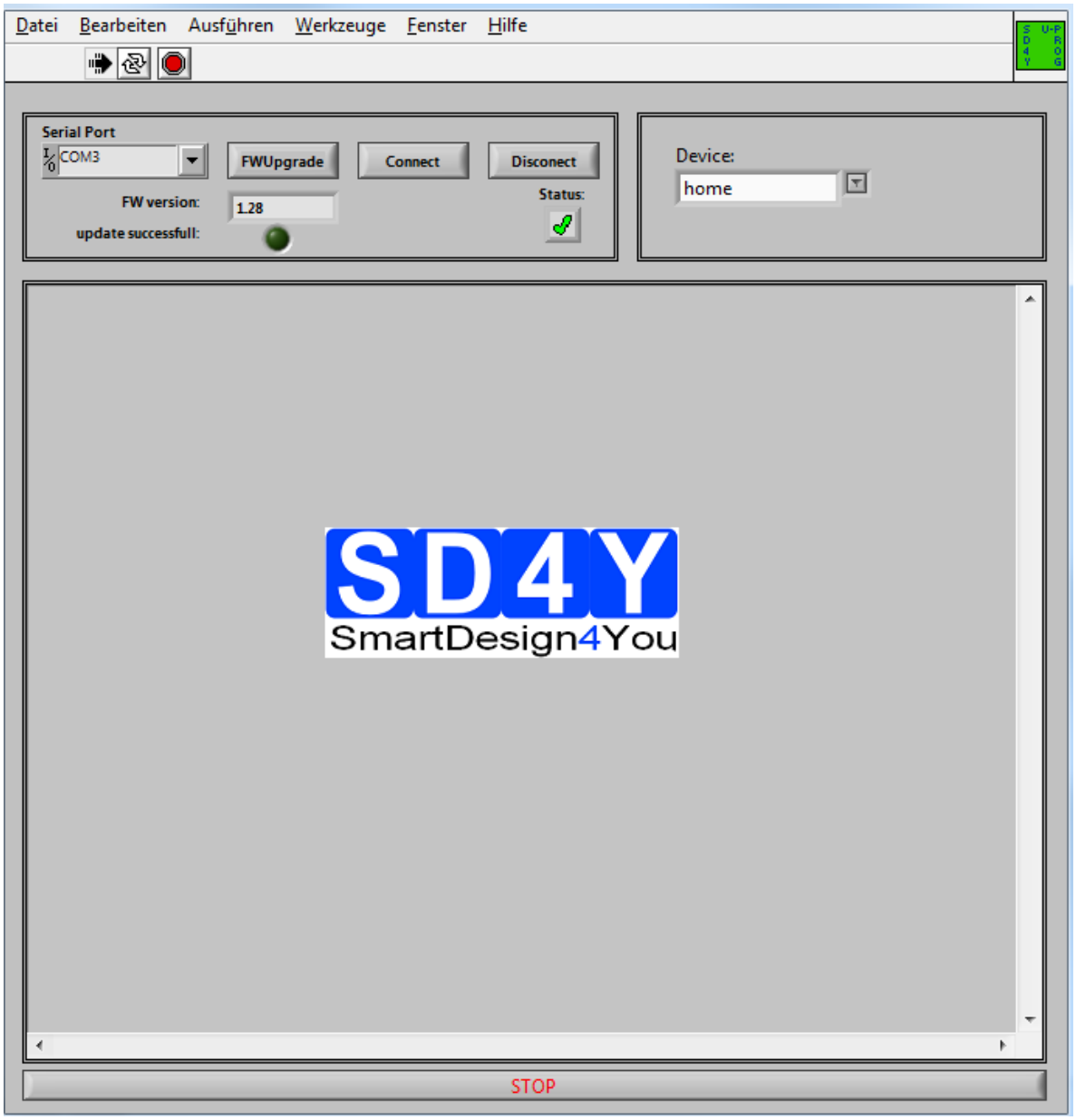
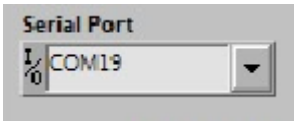
SD4Y Connector	AS5140
PinNr	**PinDescription**
1	Vprog
2	Vprog
13	GND
14	GND
11	Vdd
12	Vdd
15	DO
17	CSn
20	CLK

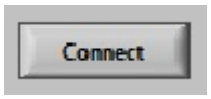
7.5.2 Programming Procedure and Function Description for the ams AS5140

1) **Start the GUI**

–



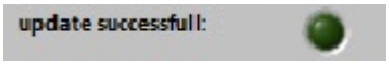
a) Choose the right COM Port 

b) Press the 

Button. The Status will change to the green checkmark.

c) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

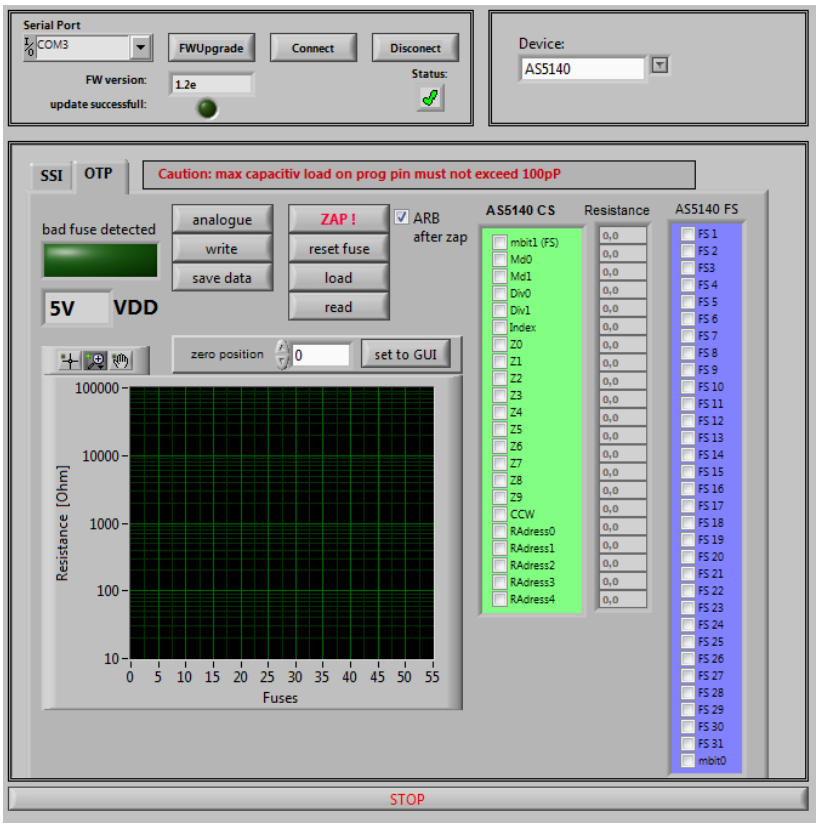
Additional the 

marker will be green.

3) Choose the right Device

(AS5140)

4) The GUI will change to the right Device

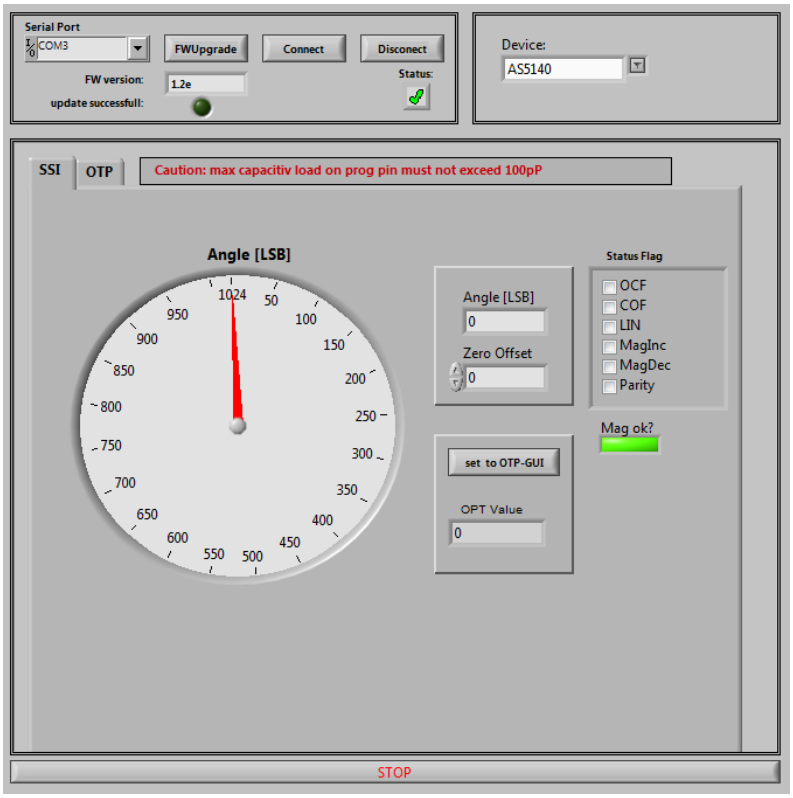


5) Set the VDD to the right Value

6) To use the **OTP TAB Area** first is important.

7) **SSI Tab : If a zero programming is necessary.**

By selecting the SSI tab, information of the angular position and the status bits appear:

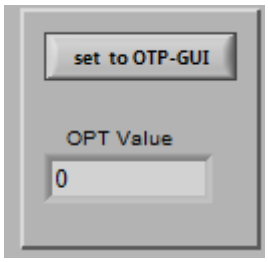


- Angle [LSB] Graphic is showing the actual position of the magnet.
- Angle [LSB] is showing the actual position of the magnet in LSB
- Zero Offset: For adding or subtracting an offset to the current Angle position
- Set to OTP-GUI: The OTP Value is showing the Angle + the zero offset. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5145CS area of the OTP Tab.
- Status flag: The Status Flag displays the status bits extracted from the SSI.
- Mag ok? : The Status Flag displays the position of the magnet in z-distance.

  Green = AGC is ok

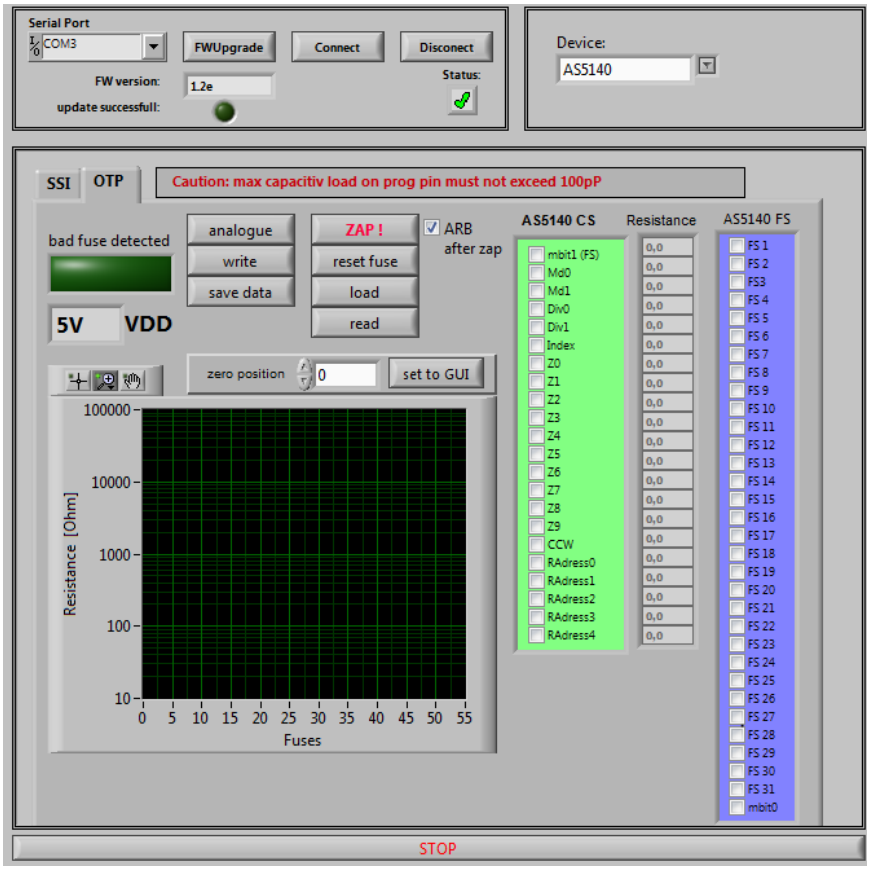
  Red = AGC is not ok

8) Push the "set to OTP-GUI" for setting the zero point or use the manual setting of the zero point in the OTP Tab area.

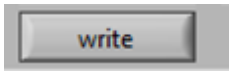


9) **Change to the OTP Area.**

–



10) Select necessary Bits for programming in the **AS5140 CS** (Customer settings)

11) Push the write button 

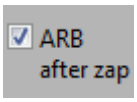
12) The OTP Write was successful.

13) Several writing is possible.

14) Push the read button

if a digital reading is necessary
15) Several digital reading is possible.
16) If the values in the AS5140 CS area are right, push

Button for permanent programming.
17) **Push Analogue. The analog read back is mandatory, after programming!**

    The automatically analog read back is by default on 

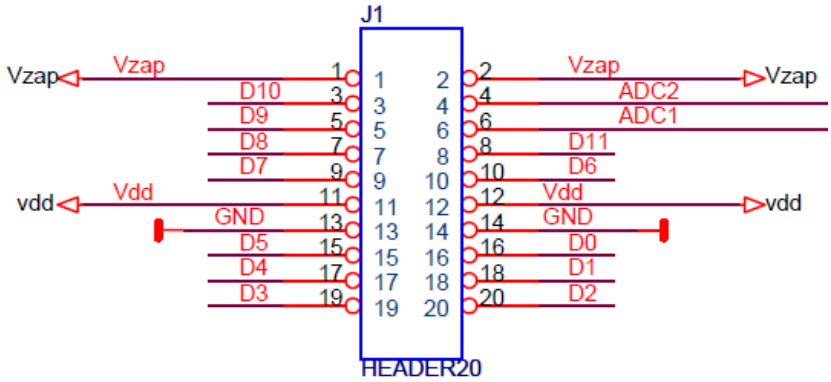
    Warning: It's not allowed to connect a capacitor to the VPRog. This can destroy all OTP Bits during the analog read back
18) In the "Resistance" area is the OTP Fuse resistance Information of all Customer Bits.

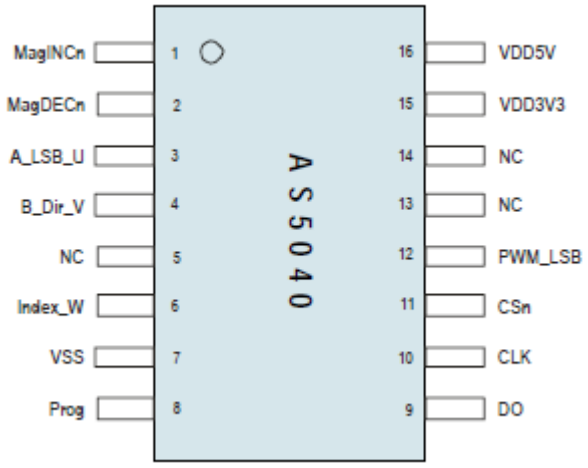
```
Programmed Fuse: 50 – 200 Ohm
Unprogrammed Fuse: >10 kOhm
Bad Fuse: 200 Ohm – 10 kOhm
```

    If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.
19) **Verification between written data and analogue data is mandatory, to be sure no bit is missing.**
20) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

7.6 ams AS5040

7.6.1 Hardware





SD4Y Connector	AS5040
PinNr	PinDescription
1	Prog
2	Prog
13	VSS
14	VSS
11	VDD
12	VDD
15	DO
17	CSn
20	CLK

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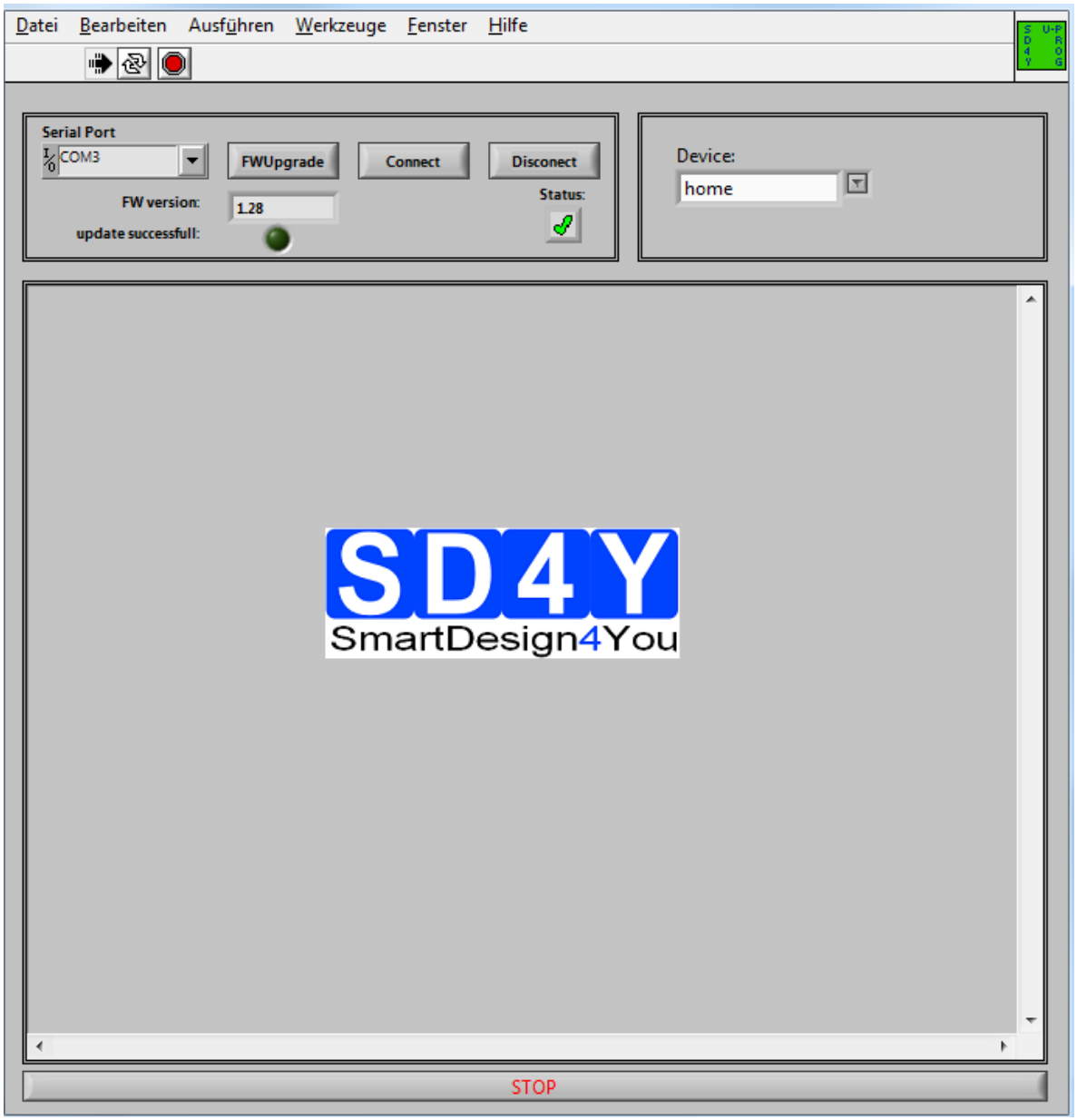
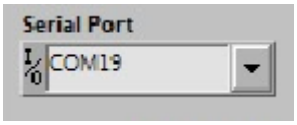
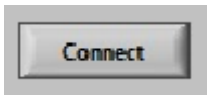
7.6.2 Programming Procedure and Function Description for the ams AS5040

21) **Start the GUI**

–



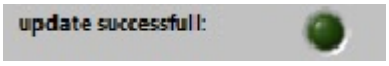
22) Choose the right COM Port 

23) Press the 

Button. The Status will change to the green checkmark.

24) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

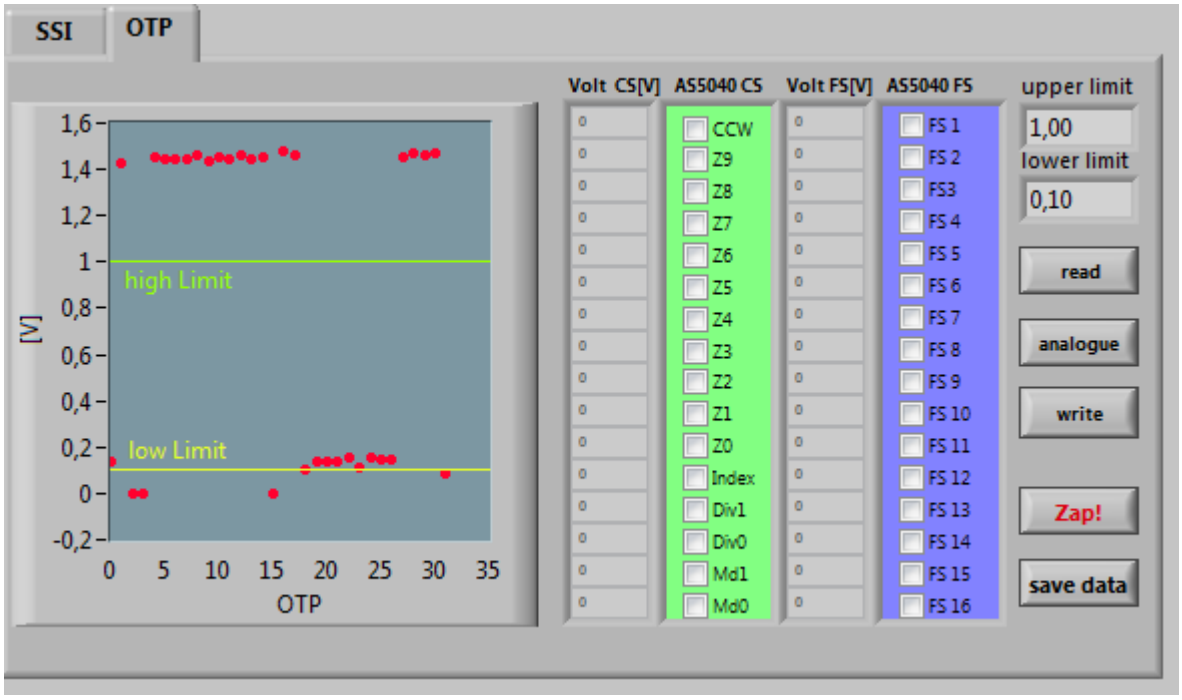
Additional the 

marker will be green.

25) Choose the right Device

(AS5040)

26) The GUI will change to the right Device

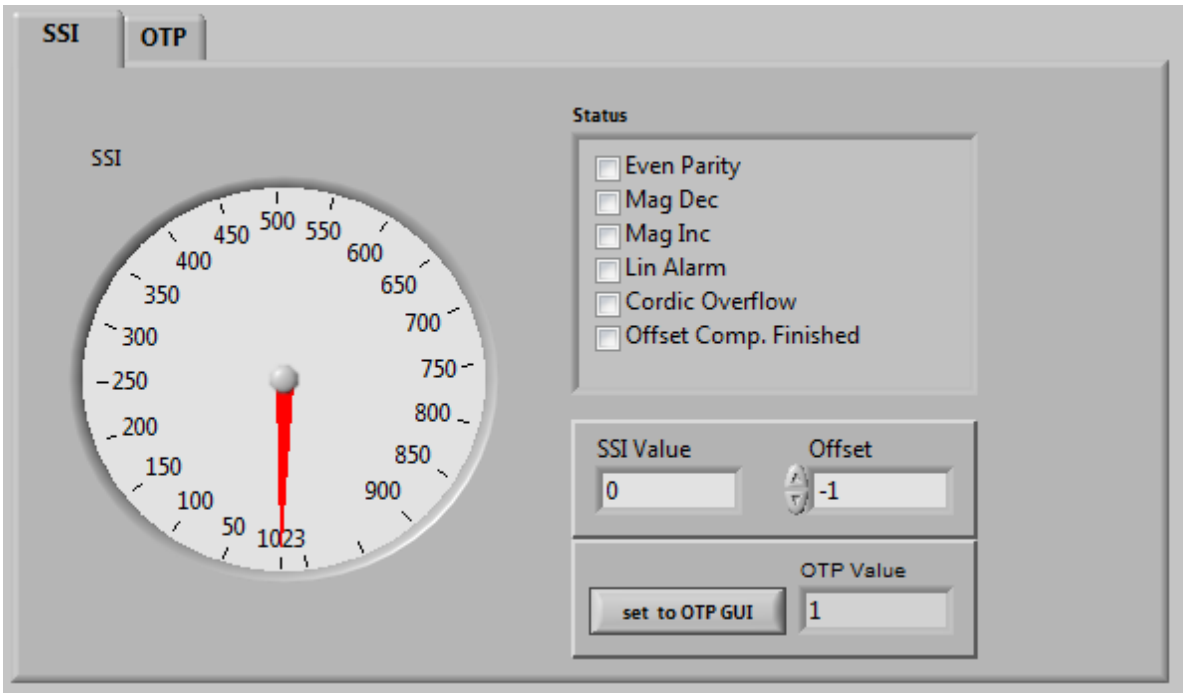


27) Set the VDD to the right Value

28) To use the **OTP TAB Area** first is important

29) **SSI Tab : If a zero programming is necessary.**

By selecting the SSI tab, information of the angular position and the status bits appear:

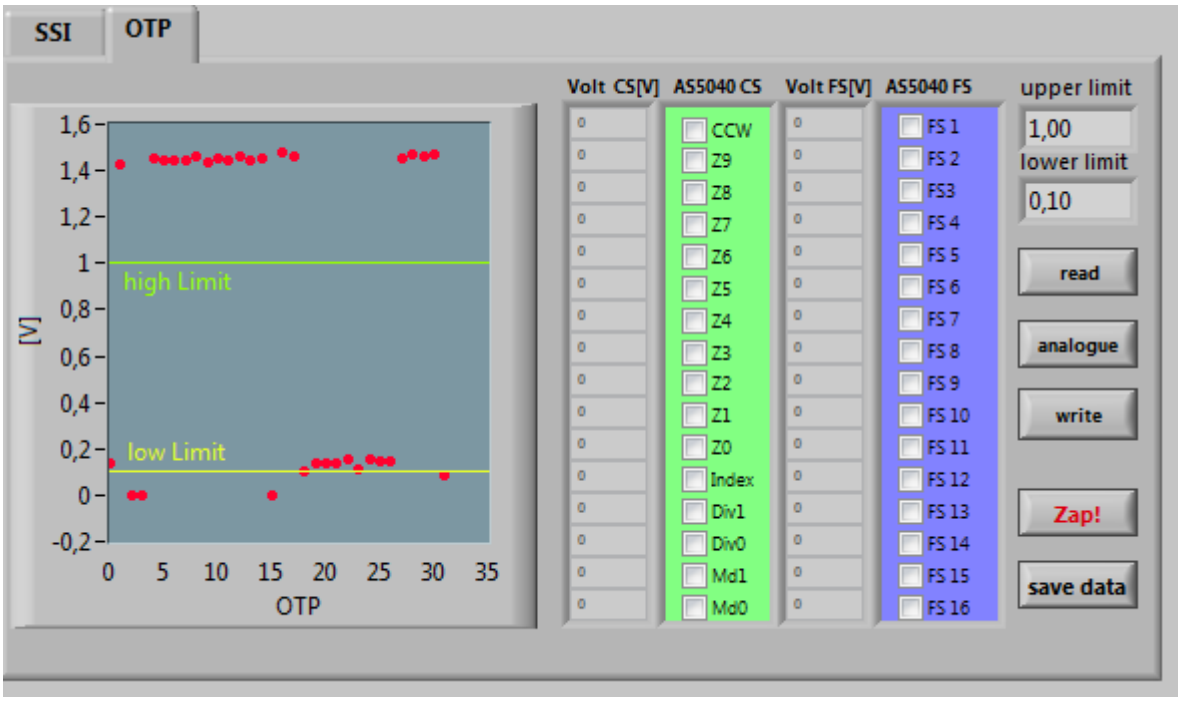


- SSI Graphic is showing the actual position of the magnet.
- SSI Value is showing the actual position of the magnet in LSB
- Offset : For adding or subtracting an offset to the current Angle position
- Set to OTP-GUI: The OTP Value is showing the Angle + the zero offset. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5145CS area of the OTP Tab.
- Status flag: The Status Flag displays the status bits extracted from the SSI.

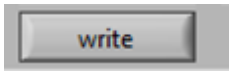
30) Push the "set to OTP-GUI" for setting the zero point .

31) **Change to the OTP Area.**

–

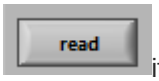


32) Select necessary Bits for programming in the **AS5040 CS** (Customer settings)

33) Push the write button 

34) The OTP Write was successful.

35) Several writing is possible.

36) Push the read button 

if a digital reading is necessary.

37) Several reading is possible

38) If the values in the AS5040 CS area are right, push

Button for permanent programming.

39) **Push Analogue. The analog read back is mandatory, after programming!**

40) In the “Volt CS[V]” area is the OTP Fuse voltage Information of all Customer Bits.

```
Programmed Fuse: > 0,1 V
Unprogrammed Fuse: >1V
Bad Fuse: 0,1V – 1 V
```

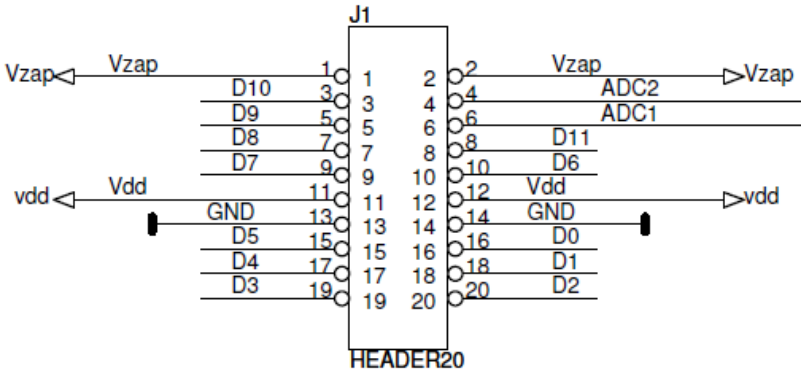
If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

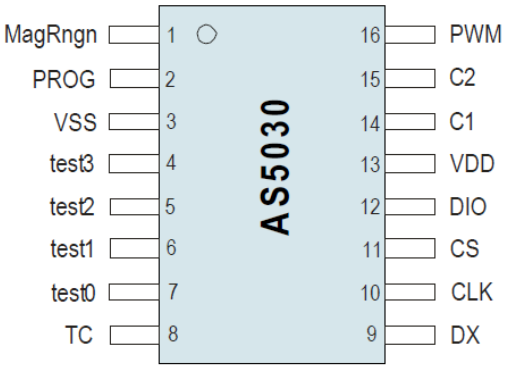
41) **Verification between written data and analogue data is mandatory, to be sure no bit is missing.**

42) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

7.7 ams AS5030

5.3.1Hardware





SD4Y Connector	AS5030
PinNr	PinDescription
1	Prog
2	Prog
13	VSS
14	VSS
11	VDD
12	VDD
7	DO
17	CSn
20	CLK

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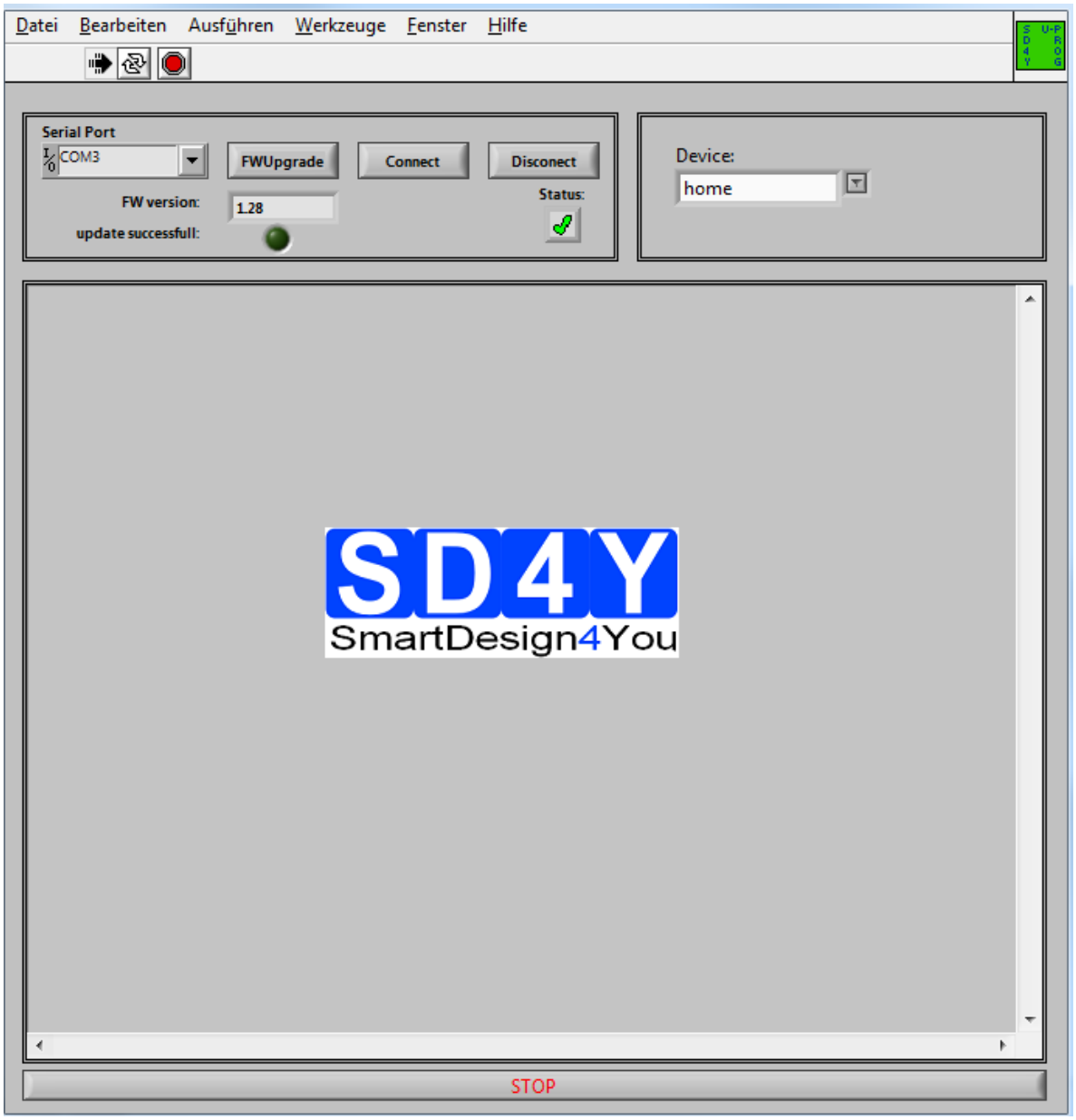
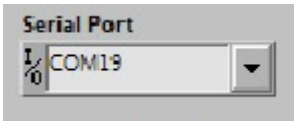
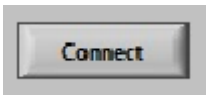
7.7.2 Programming Procedure and Function Description for the ams AS5030

1) **Start the GUI**

–



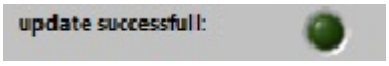
2) Choose the right COM Port 

3) Press the 

Button. The Status will change to the green checkmark.

4) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

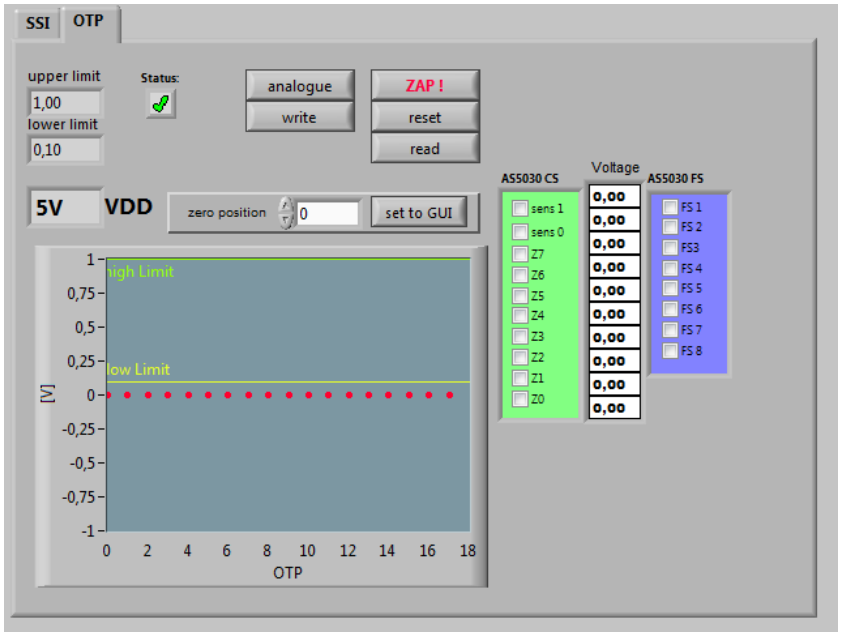
Additional the 

marker will be green.

43) Choose the right Device

(AS5030)

44) The GUI will change to the right Device

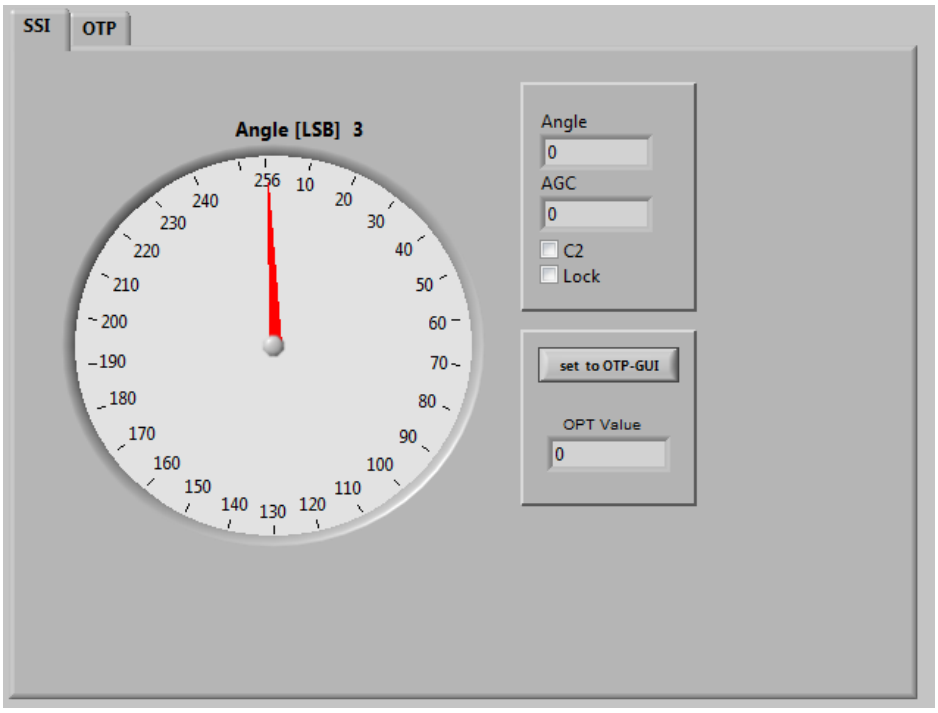


45) Set the VDD to the right Value

46) To use the **OTP TAB Area** first is important.

47) **SSI Tab : If a zero programming is necessary.**

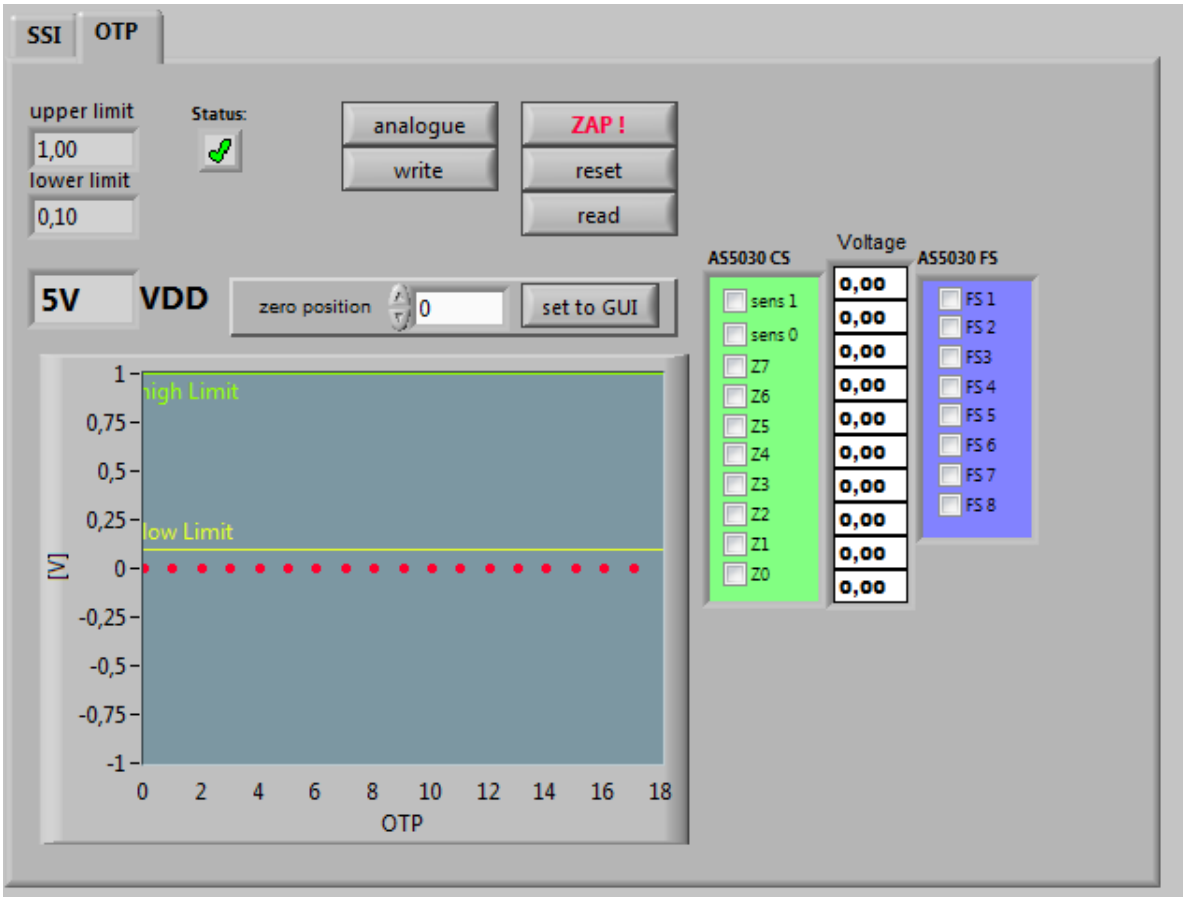
By selecting the SSI tab, information of the angular position and the status bits appear:



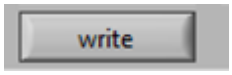
- SSI Graphic is showing the actual position of the magnet.
- Angle is showing the actual position of the magnet in LSB
- AGC is showing the actual AGC Value.
- C2 is showing the status of the hardware pin C2
- Lock is showing that AGC is locked
- Set to OTP-GUI: The OTP Value is showing the Angle. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5030CS area of the OTP Tab.

48) Push the "set to OTP-GUI" for setting the zero point .

49) **Switch to the OTP Area.**

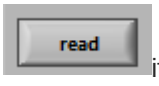


50) Select necessary Bits for programming in the **AS5030 CS** (Customer settings)

51) Push the write button 

52) The OTP Write was successful.

53) Several writing is possible.

54) Push the read button 

if a digital reading is necessary.

55) Several reading is possible

56) If the values in the AS5040 CS area are right, push

Button for permanent programming.

57) **Push Analogue. The analog read back is mandatory, after programming! Important: Analog Read Back for AS5030 is working with Hardware Revision 1.4 or higher**

58) In the “Volt CS[V]” area is the OTP Fuse voltage Information of all Customer Bits.

```
Programmed Fuse: > 0,1 V
Unprogrammed Fuse: >1V
Bad Fuse: 0,1V – 1 V
```

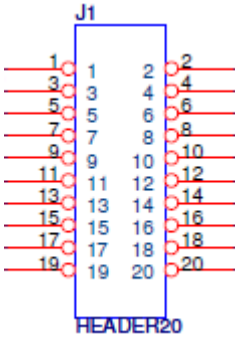
If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

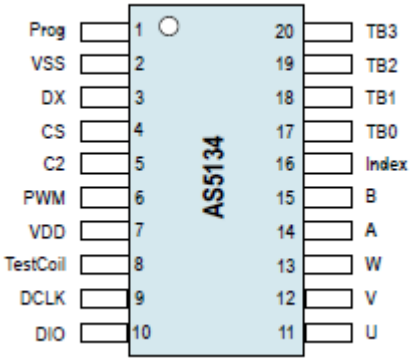
59) **Verification between written data and analogue data is mandatory; to be sure no bit is missing.**

60) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

7.8 ams AS5134

5.4.1 Hardware





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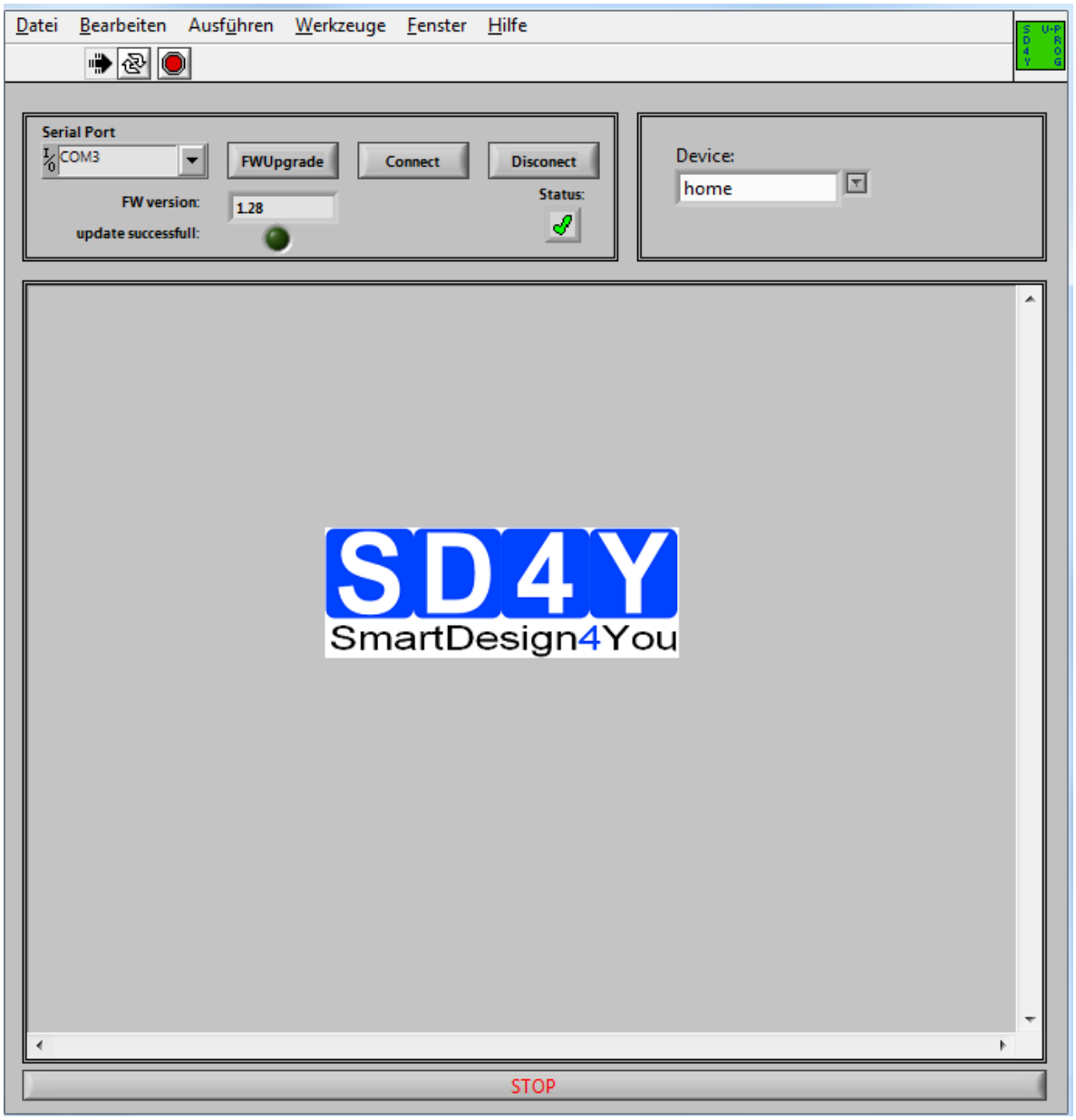
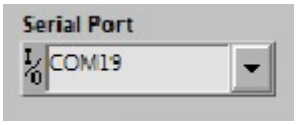
SD4Y Connector	AS5134
PinNr	PinDescription
1	Prog
2	Prog
13	VSS
14	VSS
11	VDD
12	VDD
7	DO
17	CSn
20	CLK

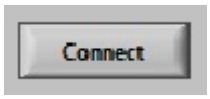
7.8.2 Programming Procedure and Function Description for the ams AS5134

1) **Start the GUI**

–



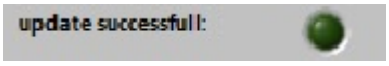
2) Choose the right COM Port 

3) Press the 

Button. The Status will change to the green checkmark.

4) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

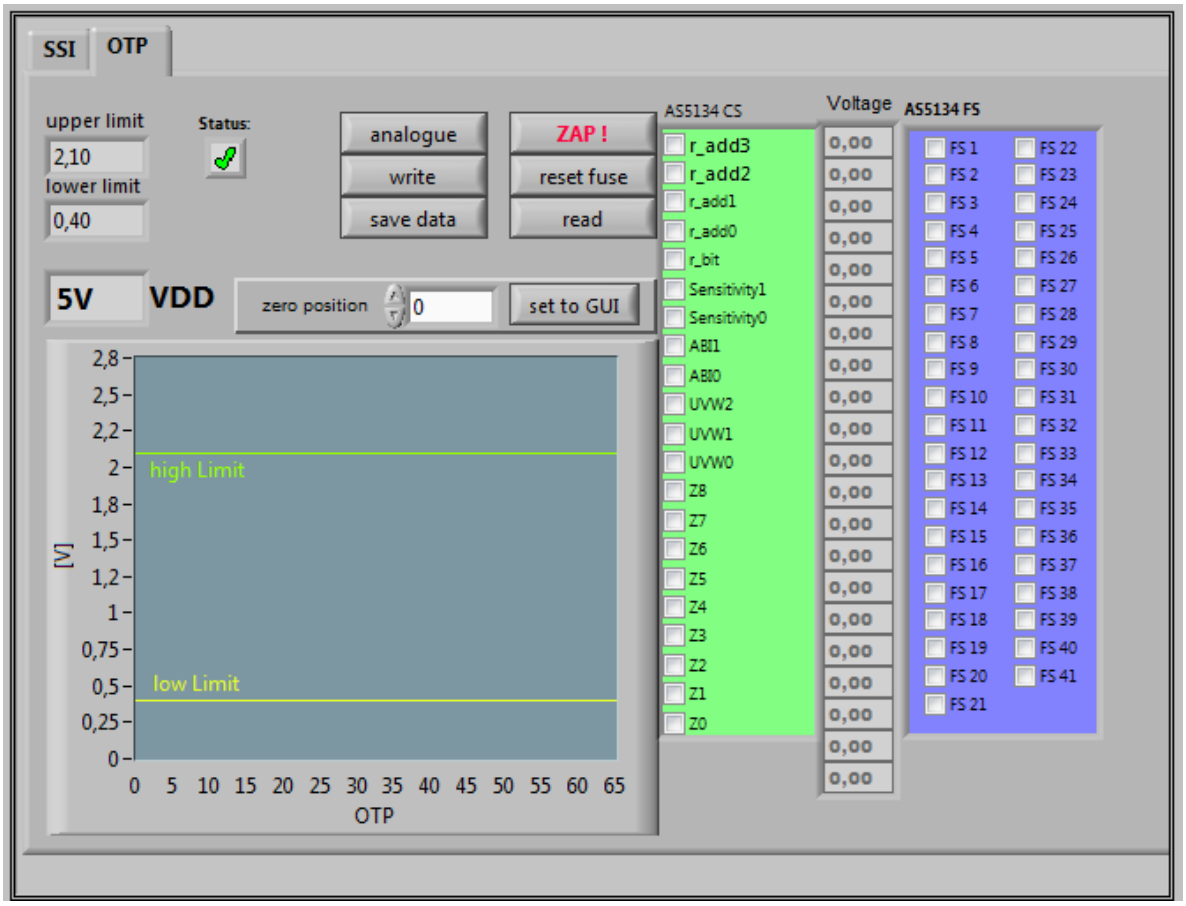
Additional the 

marker will be green.

5) Choose the right Device

(AS5132)

6) The GUI will change to the right Device

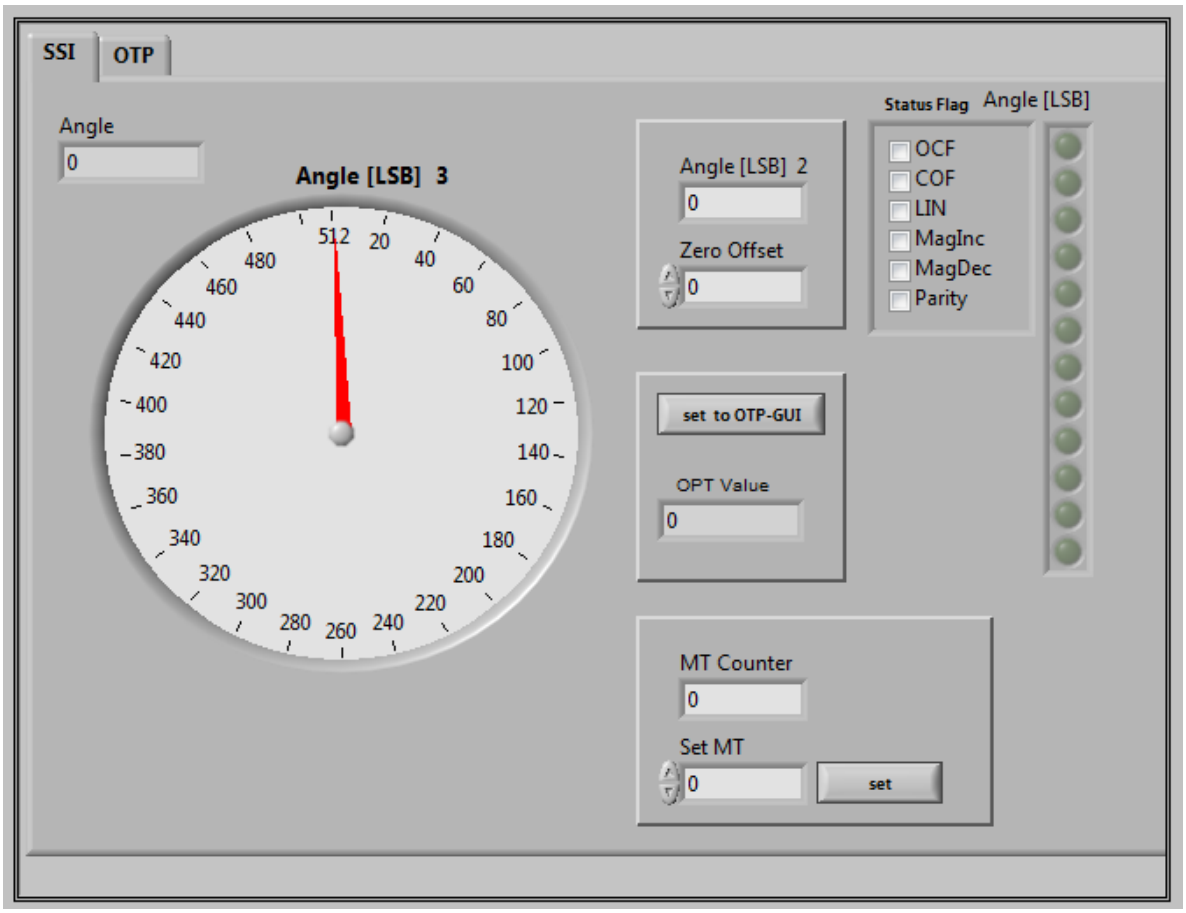


7) Set the VDD to the right Value

8) To use the **OTP TAB Area** first is important.

9) **SSI Tab : If a zero programming is necessary.**

By selecting the SSI tab, information of the angular position and the status bits appear:

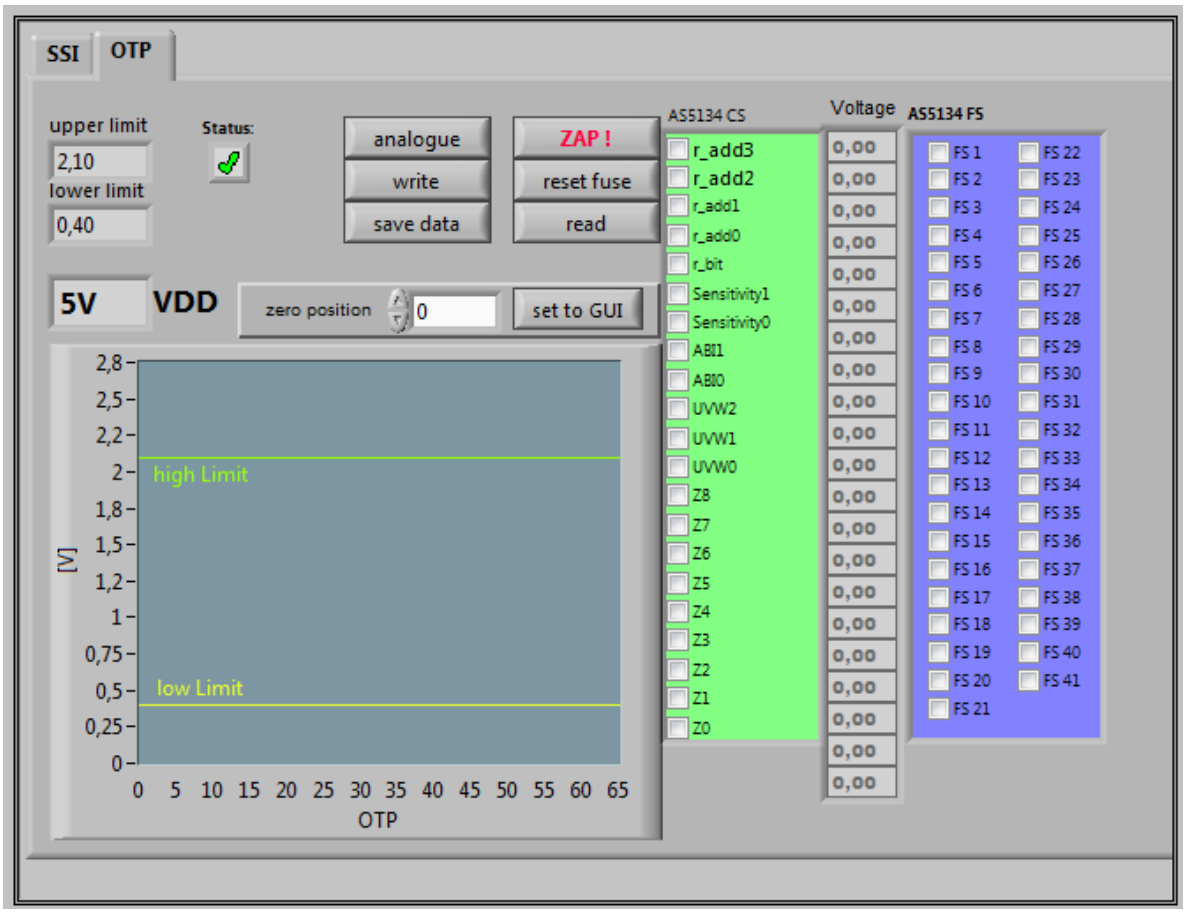


- SSI Graphic is showing the actual position of the magnet.
- Angle is showing the actual position of the magnet in LSB
- Status flag: The Status Flag displays the status bits extracted from the SSI.
- Set to OTP-GUI: The OTP Value is showing the Angle. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5134CS area of the OTP Tab.
- zero offset can be add to the actual zero position
- MT Counter = digital multi counter . more information in the AMS AS5134 Datasheet

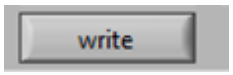
10) Push the “set to OTP-GUI” for setting the zero point .

11) **Switch to the OTP Area.**

–

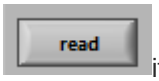


12) Select necessary Bits for programming in the **AS5134 CS** (Customer settings)

13) Push the write button 

14) The OTP Write was successful.

15) Several writing is possible.

16) Push the read button 

if a digital reading is necessary and for verification.

17) Several reading is possible

18) If the values in the AS5134 CS area are right, push

Button for permanent programming.

19) **Push Analogue. The analog read back is mandatory, after programming! Important: Analog Read Back for AS5134is working with Hardware Revision 1.4 or higher**

20) In the “Volt CS[V]” area is the OTP Fuse voltage Information of all Customer Bits.

```
Programmed Fuse: > 0,4 V
Unprogrammed Fuse: >2,1V
Bad Fuse: 0,4V – 2,1 V
```

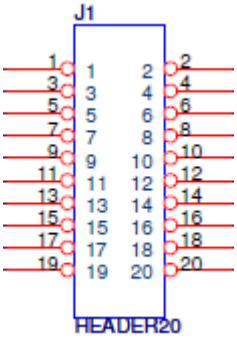
If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

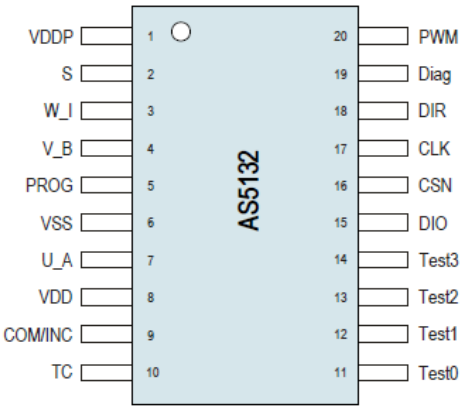
21) **Verification between written data and analogue data is mandatory; to be sure no bit is missing.**

22) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

7.9 ams AS5132

5.5.1 Hardware





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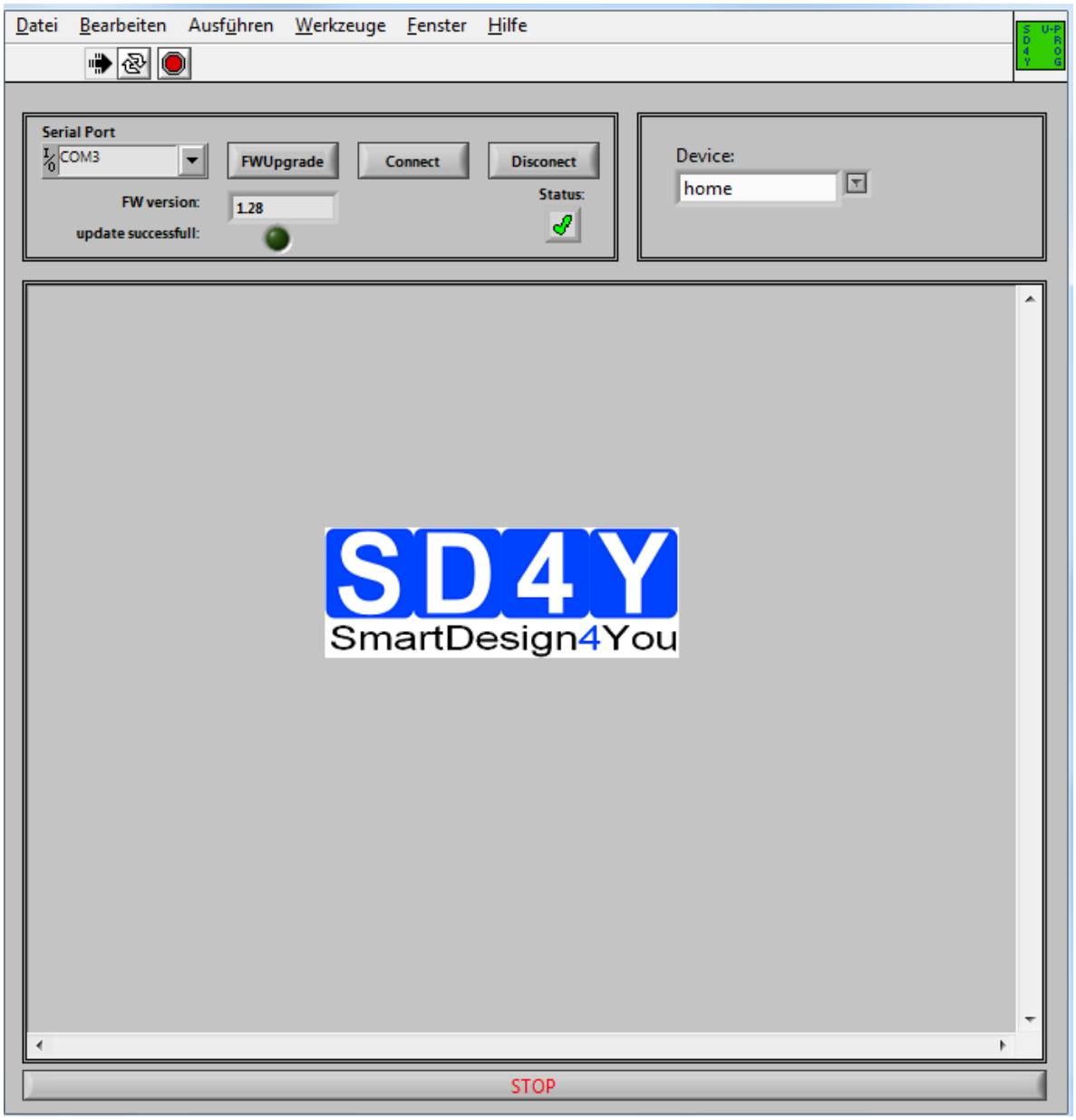
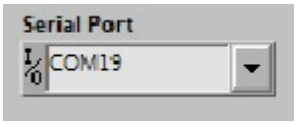
SD4Y Connector	AS5132
PinNr	**PinDescription**
1	Prog
2	Prog
13	VSS
14	VSS
11	VDD
12	VDD
7	DO
17	CSn
20	CLK

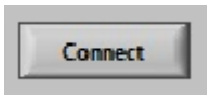
7.9.2 Programming Procedure and Function Description for the ams AS5030

1) Start the GUI

–



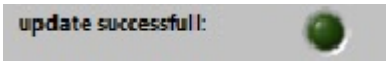
23) Choose the right COM Port 

24) Press the 

Button. The Status will change to the green checkmark.

25) Please check if the latest firmware is used. For a firmware update, please connect the programmer to the USB , choose the right COM and press the FW upgrade Button

If the update was successful, the FW- Version will change.

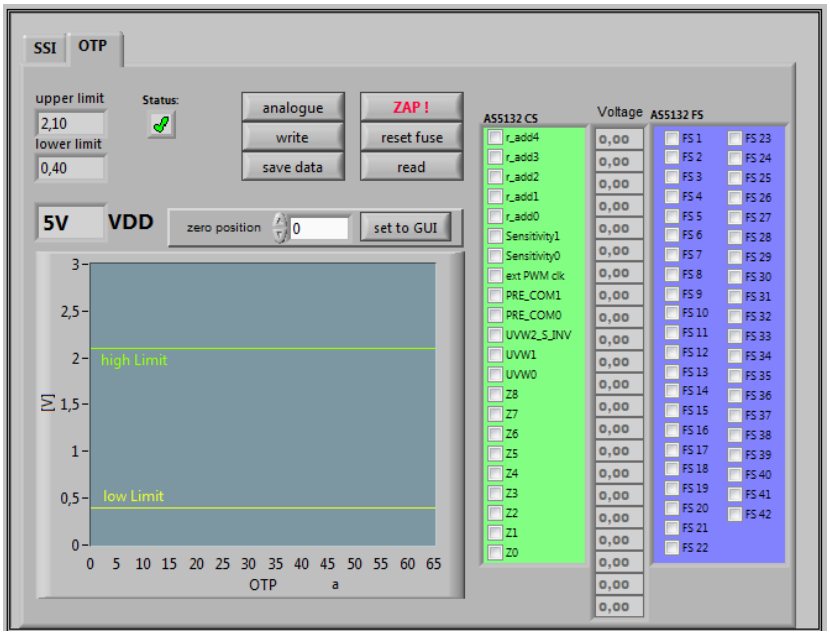
Additional the 

marker will be green.

2) Choose the right Device

(AS5132)

3) The GUI will change to the right Device

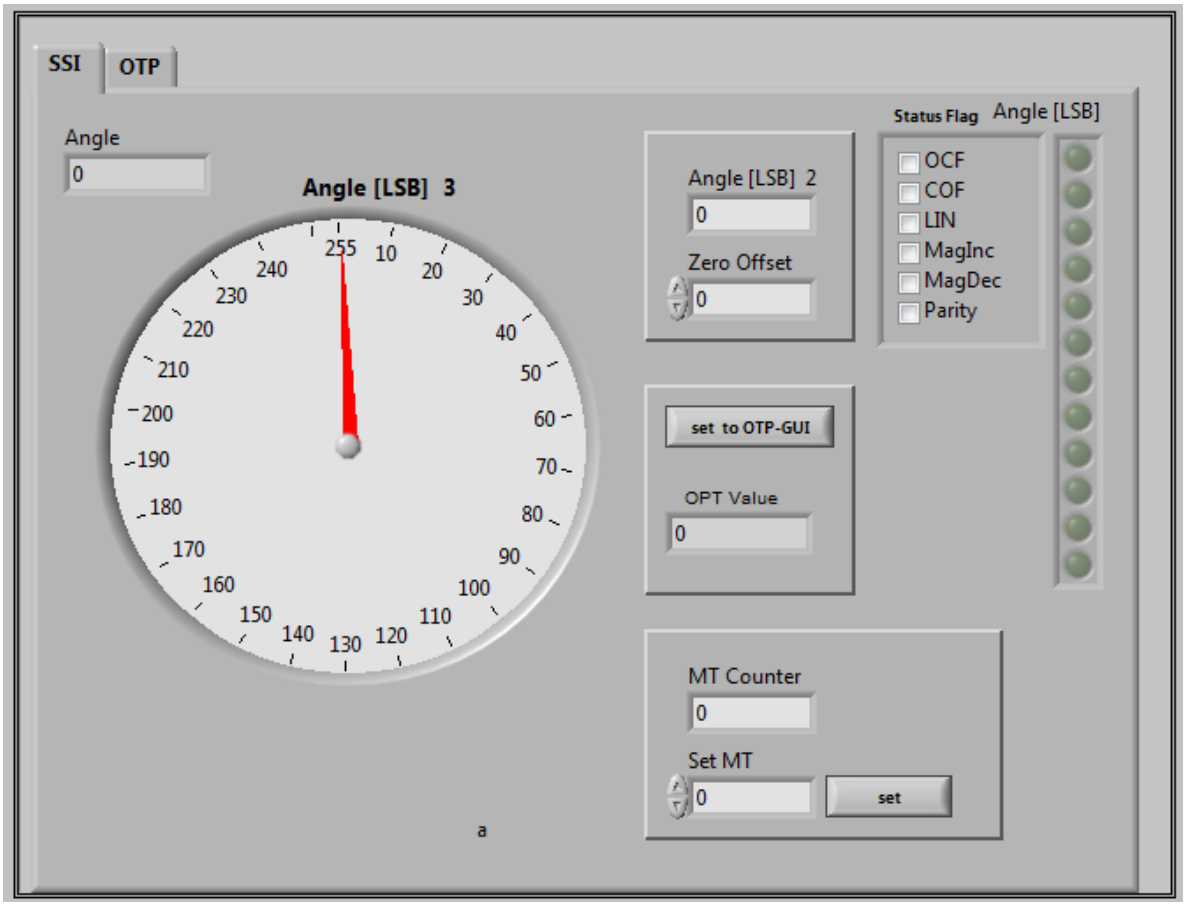


4) Set the VDD to the right Value

5) To use the **OTP TAB Area** first is important.

6) SSI Tab : If a zero programming is necessary.

By selecting the SSI tab, information of the angular position and the status bits appear:

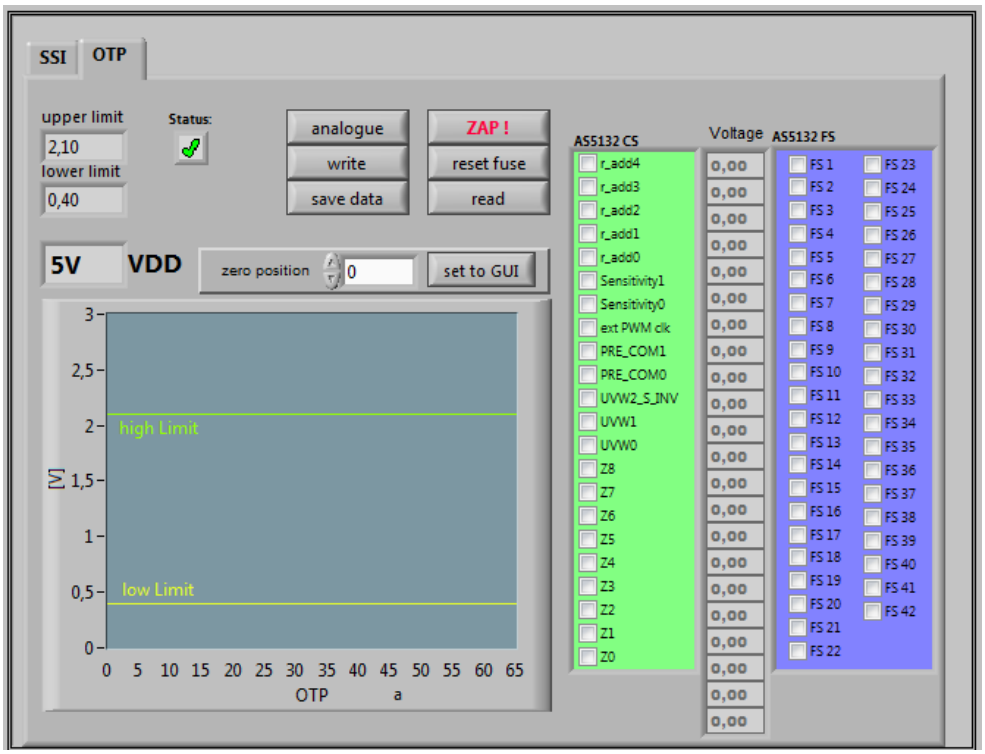


- SSI Graphic is showing the actual position of the magnet.
- Angle is showing the actual position of the magnet in LSB
- Status flag: The Status Flag displays the status bits extracted from the SSI.
- Set to OTP-GUI: The OTP Value is showing the Angle. With pushing the "Set to OTP-GUI" button the information of the OTP Value is stored in the AS5132CS area of the OTP Tab.
- zero offset can be add to the actual zero position
- MT Counter = digital multi counter . more information in the AMS AS5132 Datasheet

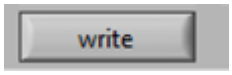
7) Push the “set to OTP-GUI” for setting the zero point

8) Switch to the OTP Area.

–

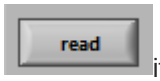


9) Select necessary Bits for programming in the **AS5132 CS** (Customer settings)

10) Push the write button 

11) The OTP Write was successful.

12) Several writing is possible.

13) Push the read button 

if a digital reading is necessary.

14) Several reading is possible

15) If the values in the AS5132 CS area are right, push

Button for permanent programming.

16) **Push Analogue. The analog read back is mandatory, after programming! Important: Analog Read Back for AS5132 is working with Hardware Revision 1.4 or higher**

17) In the “Volt CS[V]” area is the OTP Fuse voltage Information of all Customer Bits.

```
Programmed Fuse: > 0,4 V
Unprogrammed Fuse: >2,1V
Bad Fuse: 0,4V – 2,1 V
```

If a bad fuse is detected the GUI will show an alert. A reprogramming of this bad fuse is not allowed.

18) Verification between written data and analogue data is mandatory; to be sure no bit is missing.

19) With Save Date , the Resistance values of the OTP will be stored in a TXT-file

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Disclaimer

Whilest every effort has been made to ensure that programming algorithms are correct at the time of their release, it is always possible that programming problems may be encountered, especially when new devices and their associated algorithms are initially released.

It’s recommended that all users are doing the programmer check (hardware internal check and check for the analog read back) and always that a sample of a devices has been programmed correctly, before programming a large batch. Additional it’s recommended to do the programmer check several times in the production.

SD4Y Ltd. can not be held responsible for any third party claims which arise out of the use of this programmer including ‘consequential loss’ and ‘loss of profit’.

Additional SD4Y Ltd. cannot be held for any programming problems which are ‘out of our control’

Contact Information

SD4Y