

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 1/10

ORDERING INFORMATION

Type	Order Designation	Description Options
Evaluation Kit	iC-MU200 EVAL MU6M	Evaluation kit with PCB, kit includes board MU6M equipped with iC-MU200 QFN48-7x7 (pole pitch 2.0mm) and an EEPROM; There are no magnetic discs included!

Suitable magnetic targets (rotary or linear) should be ordered from a third party (magnetic vendor). For more information please contact the technical support of iC-Haus (support@ichaus.com).

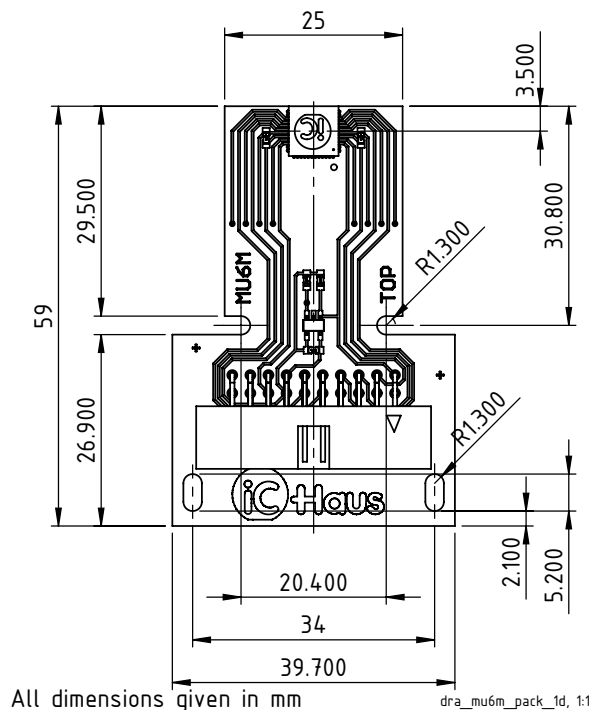
As an alternative solution a complete evaluation kit including magnetic targets is available for sensor chip iC-MU (pole pitch 1.28mm) which has nearly the same functionality with the exception of the pole pitch.

<http://www.ichaus.de/iC-MU>

BOARD MU6M

TERMINAL DESCRIPTION

J1	Signal output connector (pin configuration suitable to connector J1 of board MU1D)
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All dimensions given in mm

dra_mu6m_pack_1d, 1:1

Figure 1: Component side

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 2/10

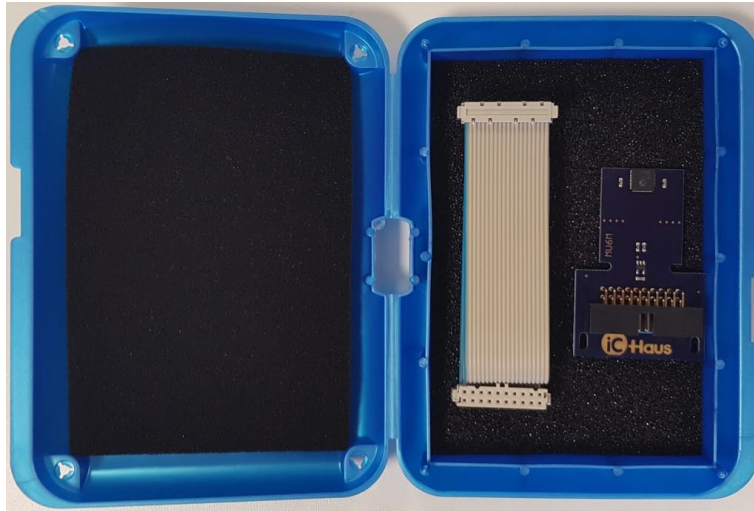


Figure 2: Evaluation kit - Scope of delivery

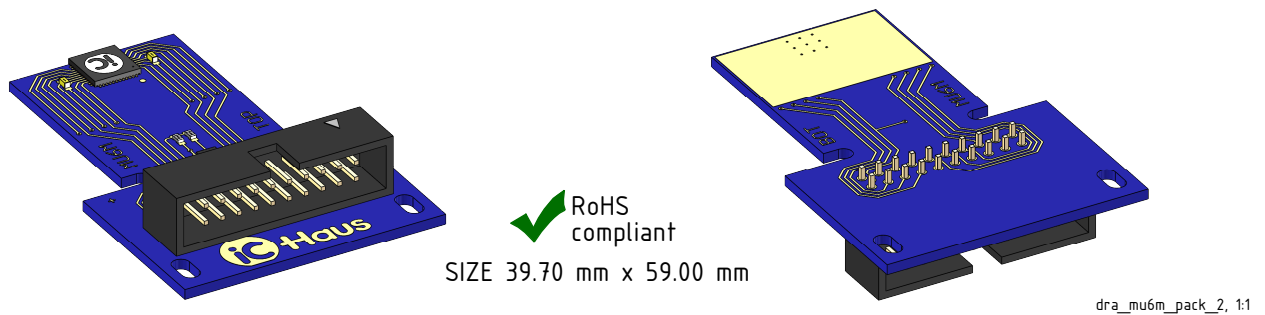


Figure 3: Board MU6M 3D view

CONNECTOR AND TERMINAL PINOUT

J1: Signal output, pin configuration
suitable to connector J1 of board MU1D

PIN	Name	Function
1	SCL	EEPROM interface, clock line
2	SDA	EEPROM interface, data line
3	VPA	Analog supply voltage
4	GND	Ground
5	PB0	Port B, Pin 0: Digital I/O, analog output configurable
6	PB1	Port B, Pin 1: Digital I/O, analog output configurable
7	PB2	Port B, Pin 2: Digital I/O, analog output configurable
8	PB3	Port B, Pin 3: Digital I/O, analog output configurable
9	PA3	Port A, Pin 3: Digital I/O, configurable
10	PA2	Port A, Pin 2: Digital I/O, configurable
11	PA1	Port A, Pin 1: Digital I/O, configurable
12	PA0	Port A, Pin 0: Digital I/O, configurable
13	GND	Ground
14	VPD	Digital supply voltage
15	MTD	Multiturn interface, data line
16	MTC	Multiturn interface, clock line
17-20	n.c.	

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 4/10

CIRCUIT DESCRIPTION

The iC-MU200 evaluation board MU6M features a 20-pin connector. A ribbon cable could be connected to the evaluation board MU1D

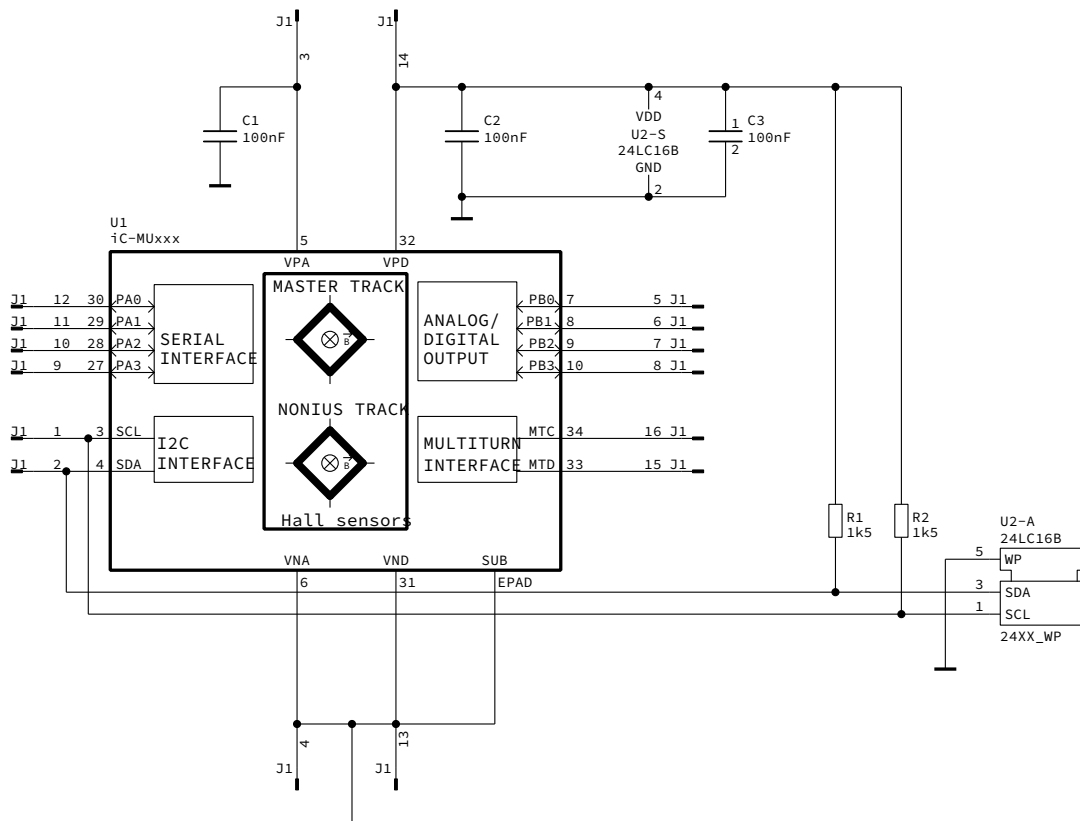


Figure 4: Circuit diagram MU6M

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION

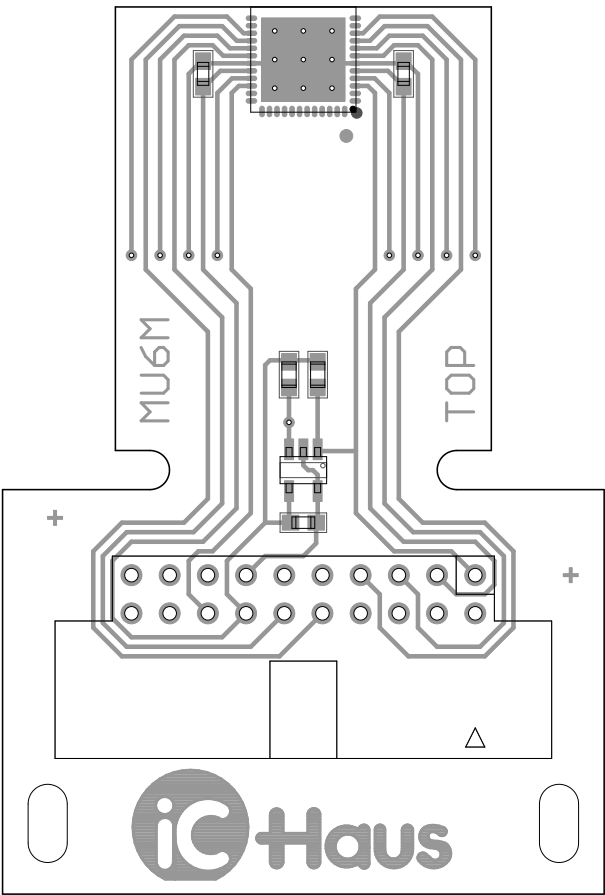


Rev A1, Page 5/10

ASSEMBLY PART LISTS

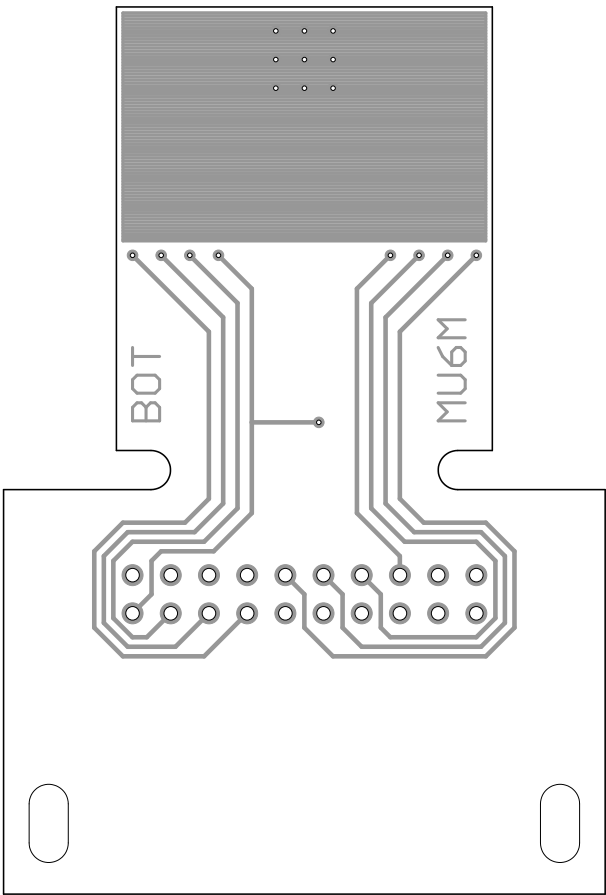
Device	Value (typical)	Comment
C1, C2, C3	100 nF	Capacitors
R1, R2	1.5 k Ω	I ² C pull-up resistors
U1	iC-MU200 QFN48-7x7	Magnetic off-axis absolute position encoder IC, pole pitch 2.0mm
U2	24LC16B (SOT23)	Microchip EEPROM 16k
J1	20 pol.	Connector WSL 2x10 90 deg

Table 1: Board MU6M



dra_mu6m_spec_top

Figure 5: Board MU6M - top side



dra_mu6m_spec_bot

Figure 6: Board MU6M - bottom side

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 6/10

APPLICATION EXAMPLE

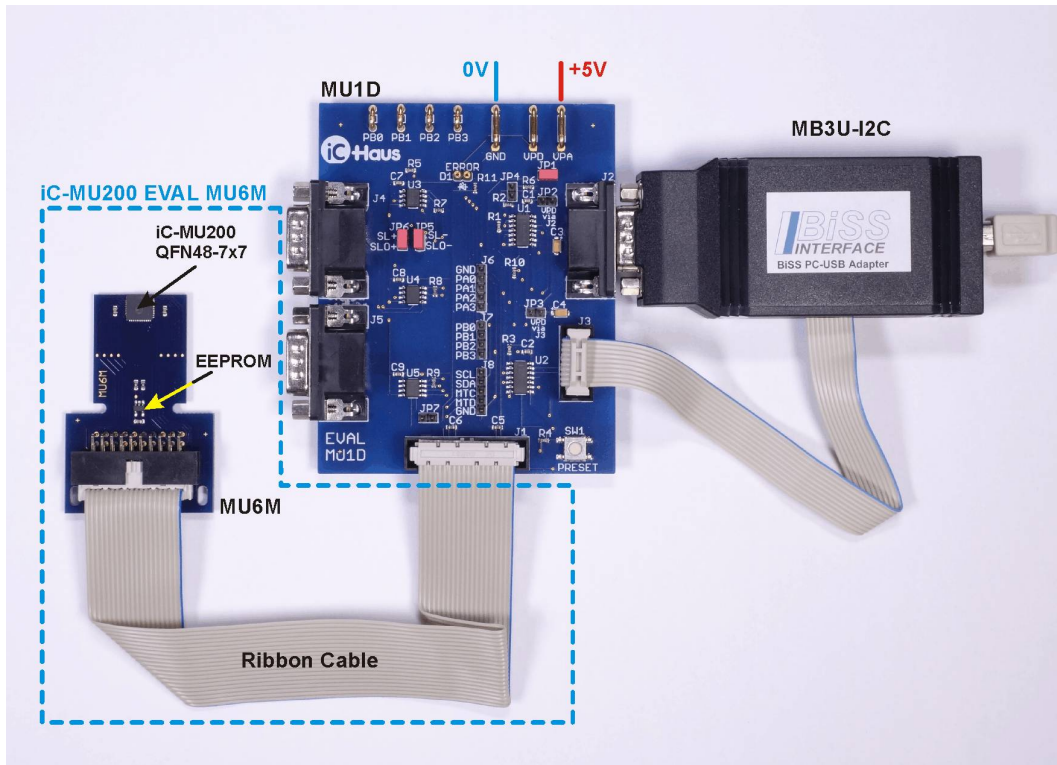


Figure 7: iC-MU200 eval kit parts

Required eval kit parts:

1. iC-MU200 EVAL MU6M
2. iC-MU EVAL MU1D
(suitable for iC-MU, iC-MU150 and iC-MU200)
3. iC-MB3 iCSY MB3U-I2C

Alternative there are the high performance BiSS-to-PC USB adapters iC-MB4 iCSY MB4U or iC-MB5 iCSY MB5U available. Please refer to table 2 to see which USB interface adapter provides which functionality.

Interface adapter	Parameter read/write	Automatic calibration via SPI	Automatic calibration via BiSS
iC-MB3 iCSY MB3U-I2C	Yes	Yes	No
iC-MB4 iCSY MB4U	Yes	No	Yes
iC-MB5 iCSY MB5U	Yes	No	Yes

Table 2: Adapter overview

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 7/10

EVAL BOARD CONFIGURATION

The MU6M eval board is configured with a default configuration. In this configuration the SPI interface is selected. The eval kit MU6M + MU1D can be used with the interface adapter MB3U-I2C. Furthermore an axial magnetized magnetic target with 32/31 pole pairs can be used with the default configuration. In order for the system to work correctly, a calibration procedure is required. Please refer to the corresponding documents and app notes listed on the product web page of iC-MU200 <http://www.ichaus.de/product/iC-MU200>

Switch MU6M to BiSS Interface

In case the interface adapter MB4U or MB5U is used for programming and calibration, the eval board MU6M must be set to BiSS interface mode. If there is no MB3U-I2C adapter available, please execute the following steps.

1. Step - Apply a cable

I2C Communication in between iC-MU200 and the EEPROM must be inhibited during power up. To achieve this connect the I2C SDA pin at J8 on the board MU1D to GND.

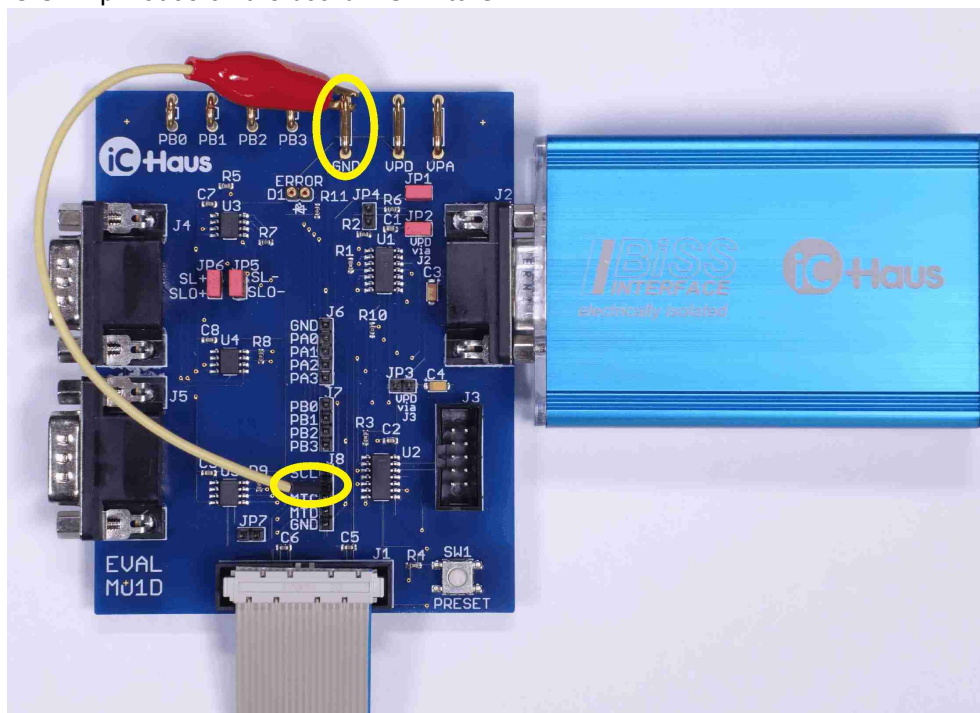


Figure 8: Apply a cable

2. Step - Press SW1 <PRESET> during power up

The button SW1 is connected to iC-MU200 pin PA0. With iC-MU200 not being able to read the EEPROM, the level at this pin will decide if iC-MU200 operates in SPI or BiSS mode. In order to connect PA0 to GND Press SW1 during power up. This will set the communication mode to BiSS interface.

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 8/10

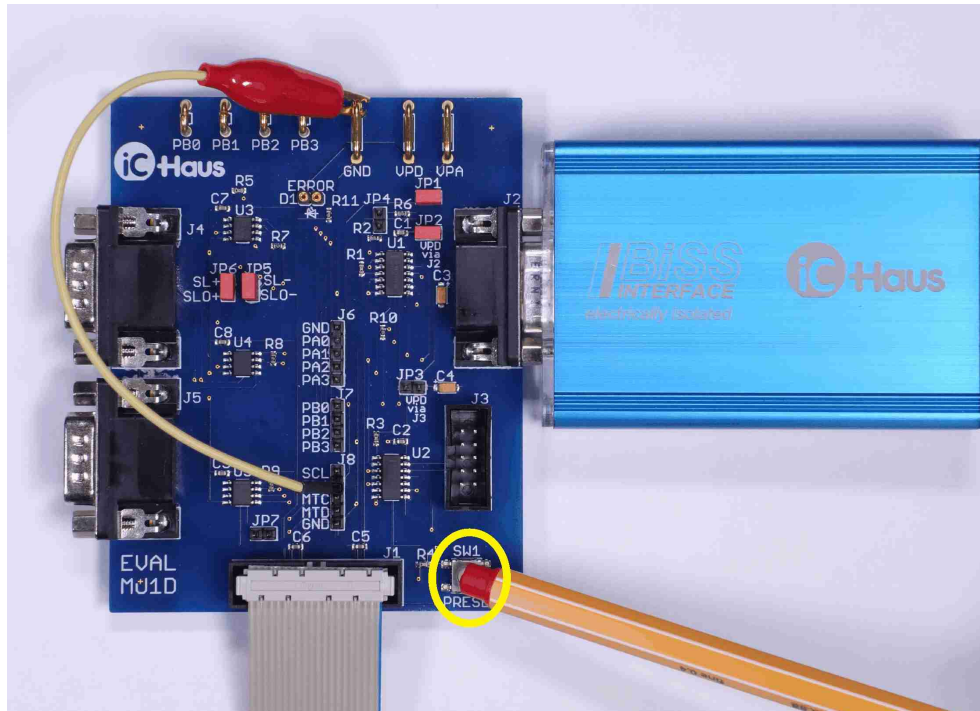


Figure 9: Press SW1 <PRESET> during power up

3. Step - Connect iC-MU200's GUI software

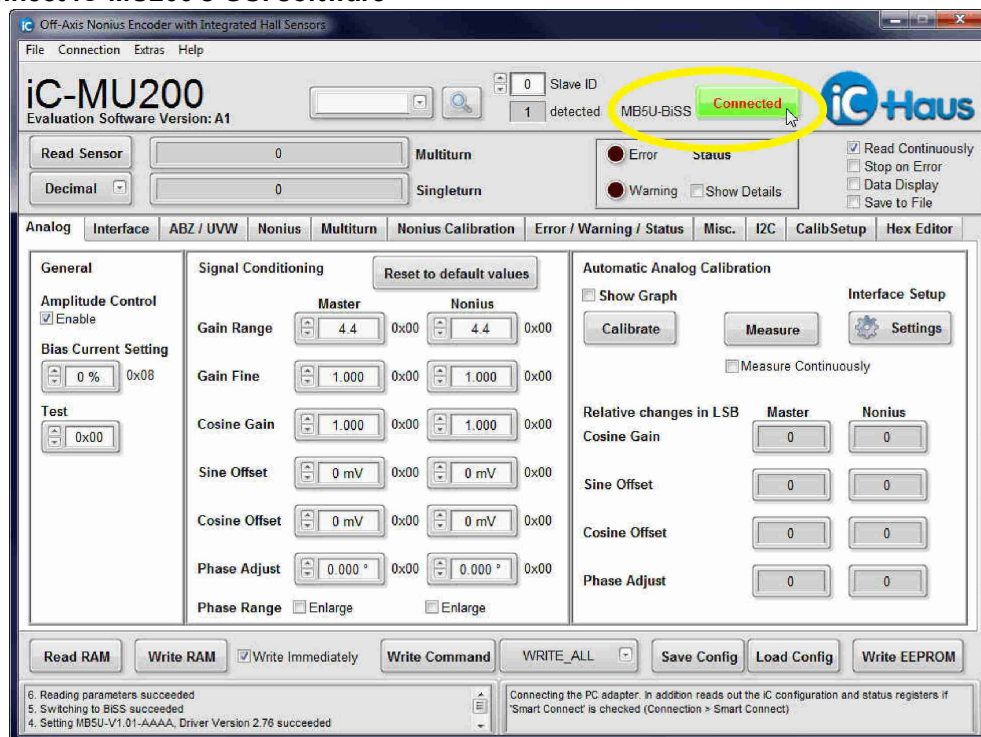


Figure 10: Connect iC-MU200's GUI software

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 9/10

4. Step - Release button, remove the cable

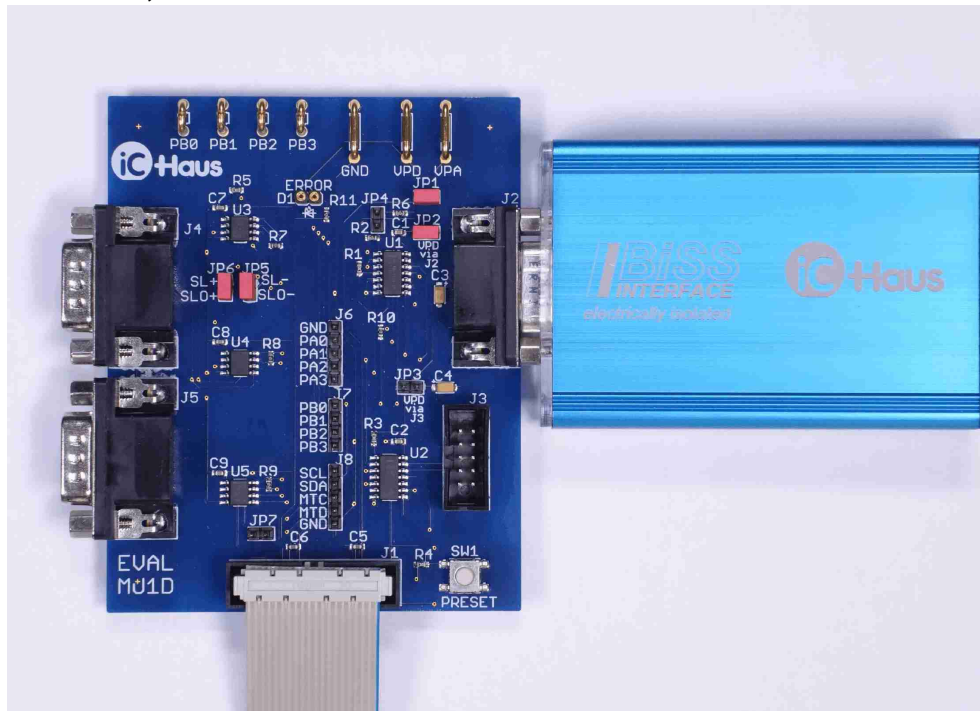


Figure 11: Release button, remove the cable

5. Step - Write new Configuration to the EEPROM

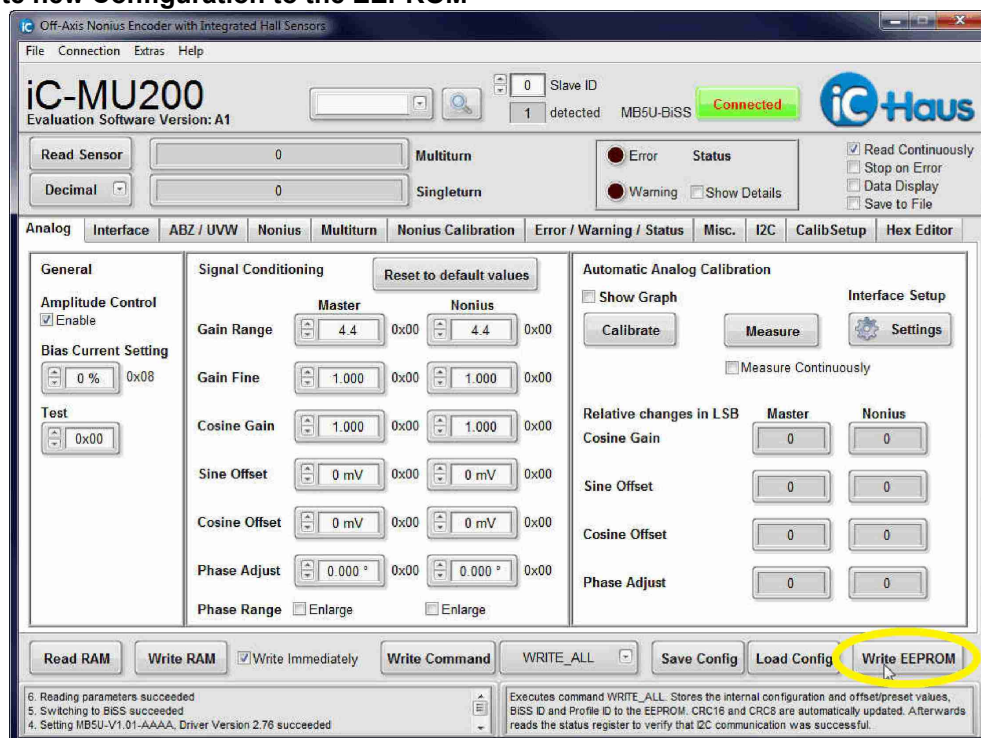


Figure 12: Write new Config. to EEPROM

After this procedure iC-MU200 is set to BiSS interface and the initial configuration of iC-MU200 is stored in the EEPROM (see iC-MU200 data sheet, chapter I2C INTERFACE AND STARTUP BEHAVIOR).

iC-MU200 EVAL MU6M

EVALUATION KIT DESCRIPTION



Rev A1, Page 10/10

RELATED PRODUCTS AND DOCUMENTATION

Item	Description	Documentation and Information
iC-MU200	Magnetic off-axis absolute position encoder, pole pitch 2.0mm	http://www.ichaus.de/product/iC-MU200
iC-MU150	Magnetic off-axis absolute position encoder, pole pitch 1.5mm	http://www.ichaus.de/product/iC-MU150
iC-MU	Magnetic off-axis absolute position encoder, pole pitch 1.28mm	http://www.ichaus.de/product/iC-MU
iC-MU EVAL MU1D	Evaluation board suitable for MU1M, MU2M and MU6M	
iC-MB3 iCSY MB3U-I2C	BiSS/SSI and I ² C-to-PC adapter (USB)	http://www.ichaus.de/product/MB3U-I2C
iC-MB4 iCSY MB4U	High Performance BiSS-to-PC Adapter (USB)	http://www.ichaus.de/product/MB4U
iC-MB5 iCSY MB5U	High Performance Galvanic Isolated BiSS-to-PC Adapter (USB)	http://www.ichaus.de/product/MB5U

REVISION HISTORY

Rel.	Rel. Date*	Chapter	Modification	Page
A1	2018-09-27		Initial Release	

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* Release Date format: YYYY-MM-DD