

# iC-MSB EVAL MSB1D

## EVALUATION BOARD DESCRIPTION

### ORDERING INFORMATION

Type	Order Designation	Description and Options
Evaluation Board	iC-MSB EVAL MSB1D	iC-MSB Evaluation Board ready to operate, accessible through GUI via PC adapter
Software	iC-MSB GUI	GUI software for Windows PC stores setup to file, communication to iC-MSB and EEPROM Please see <a href="http://www.ichaus.com">www.ichaus.com</a> for download information.
PC Adapter	iC-MB3 ICSY MB3U-I2C	BiSS and I2C to PC-USB Adapter

### BOARD MSB1D

(size 100 mm x 80 mm)

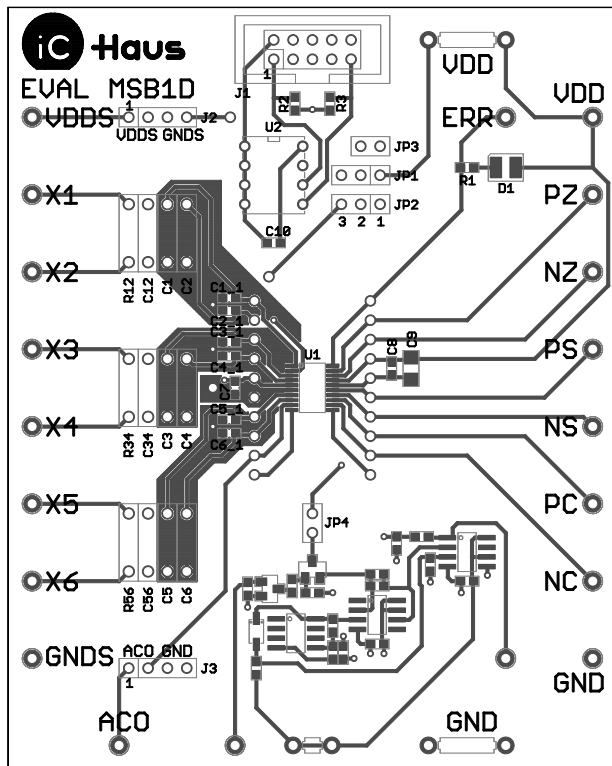


Figure 1: Component side

### TERMINAL DESCRIPTION

VDD	+5 V Supply Voltage (ca. 15mA)
GND	0 V Ground
X1	Signal Input 1 (Index +)
X2	Signal Input 2 (Index -)
X3	Signal Input 3
X4	Signal Input 4
X5	Signal Input 5
X6	Signal Input 6
PZ	Pos. Index Output
NZ	Neg. Index Output
PS	Pos. Sine Output
NS	Neg. Sine Output
PC	Pos. Cosine Output
NC	Neg. Cosine Output
ERR	Error Signal (Input/Output) Test Mode Trigger Input
ACO	Signal Level Controller Output High-side current source output
VDDS	Switched Supply Output (20 mA max.)
GNDs	Switched Ground Link (20 mA max.)
D1	Error Indicator LED Illuminates red to indicate errors Connected to ERR pin of iC-MSB

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### RELATED DOCUMENTS

- iC-MSB Data Sheet - Specification -
- iC-MSB GUI - GUI software for Windows PC -  
→ <http://www.ichaus.de/product.php?prod=iC-MSB>
- iC-MB3 iCSY MB3U-I2C - BiSS and I2C PC-USB Adapter -  
→ <http://www.ichaus.de/product.php?prod=MB3A/MB3U>

### CONNECTOR AND TERMINAL PINOUT

#### 10-pin Connector J1 (to I2C Master)

PIN	Name	Function
1	SCL	Serial Clock Line
2	GND	Ground
3	-	-
4	+5V	Supply Voltage
5	-	-
6	-	-
7	SDA	Serial Data Line
8	-	-
9	SDA	Serial Data Line
10	GND	Ground

#### 4-pin Terminal J2

PIN	Name	Function
1	VDDS	Switched Supply Output
2	VDDS	Switched Supply Output
3	GNDS	Switched Ground Link
4	GNDS	Switched Ground Link

#### 4-pin Terminal J3

PIN	Name	Function
1	ACO	Signal Level Controller Output
2	ACO	Signal Level Controller Output
3	GND	Ground
4	GND	Ground

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### CIRCUIT DESCRIPTION

The MSB1D evaluation board is equipped with the iC-MSB sine/cosine signal conditioner with 1Vpp driver IC. The board features one 10-pin connector for I2C communication. iC-MSB's software can be used to access the board from a Windows PC what needs the MB3U-I2C adapter.

**Note :** Please install the latest USB driver before you attach the BiSS PC-USB Adapter to the PC.

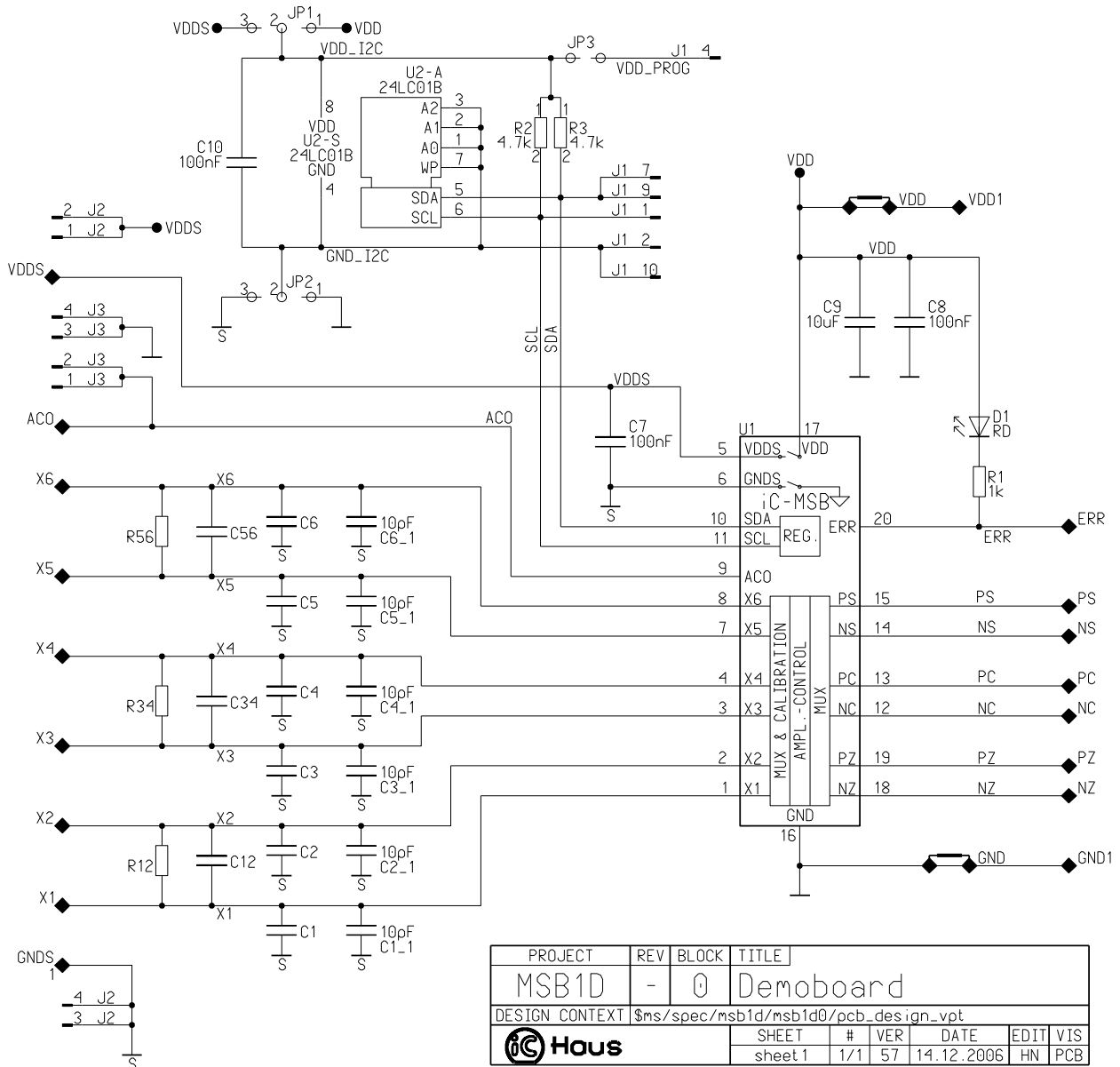


Figure 2: Circuit diagram including optional components

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### JUMPER DESCRIPTION

Voltage Supply		Component Supply		Jumper Configuration			Comments
via board terminals*	via J1 plug**	iC-MSB	EEPROM	JP1	JP2	JP3	
-	X	via J1 plug	via J1 plug	1-2	1-2	bridged	shipment setup
X	-	VDD/GND	VDD/GND	1-2	1-2	open	
X	-	VDD/GND	VDDS/GNDS of iC-MSB	2-3	2-3	open	
X	X	VDD/GND	J1 plug	open	1-2	bridged	
X	X	VDD/GND	J1 plug	open	2-3	bridged	
-	X	not supplied	J1 plug	open	don't care	bridged	EEPROM programming only
X	X	(shortens VDD to J1)		1-2	1-2	bridged	don't use
X	X	(shortens VDD to J1)		2-3	2-3	bridged	don't use

Notes \*) Supply of + 5 V required to board terminals VDD and GND.

\*\*\*) Supply voltage sourced from J1 plug out of I2C adapter.

### ASSEMBLY PART LIST

Device	Value (typical)	Comment
U1	iC-MSB	Sine/cosine signal conditioner IC
U2	24C01	Serial EEPROM (AT24C01B, ST24C02WP recommended)
R1	1 k $\Omega$	LED series resistor
R2, R3	4.7 k $\Omega$	I2C pull-up resistor
D1	LS-T670-HK	Indicator LED for alarm message
C1, C2, C3, C4, C5, C6	10 pF	Capacitors for input filter
C7, C8	100 nF	Supply backup capacitors
C9	10 $\mu$ F	Supply backup capacitor
C10	100 nF	EEPROM backup capacitor
JP1, JP2	SL LP1 097 3 G	Jumper
JP3	SL LP1 097 2 G	Jumper
JP1, JP2, JP3		Jumper cap
J1	WSL10G	Connector for I2C-TO-PC adapter
J2, J3	MK 01 4 G	4-pin socket
J4, J5, J6, U2		8-pin DIL socket

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### APPLICATION SOFTWARE

iC-MSB software for PCs running on Windows operating systems, as well as the required USB driver are available as a ZIP file. Download from <http://www.ichaus.de/product.php?prod=iC-MSB>

#### Installation

After unzipping the "iC-MSB\_xx.zip", the following files are located in the selected directory.  
(xx is a placeholder for revisions)

- iC-MSB\_xx.msi
- mb3u\_usb\_driver.exe
- Msb1d\_qig\_xx.pdf
- readme.txt

**Note:** Administrator rights are required to run installation.

1. The installation of the software starts by executing the iC-MSB\_xx.msi installation package. Follow the on-screen instructions to finish the installation procedure.
2. USB driver need to be installed to access the MSB1D evaluation board via the BiSS PC-USB Adapter. Execute the mb3u\_usb\_driver.exe installation package and follow the on-screen instructions. This process can take a few minutes.
3. Installation will make the software "iC-MSB\_xx.exe" available in the selected working directory. The execution of this file will start the software. Figure 3 shows a screenshot of the start up window.

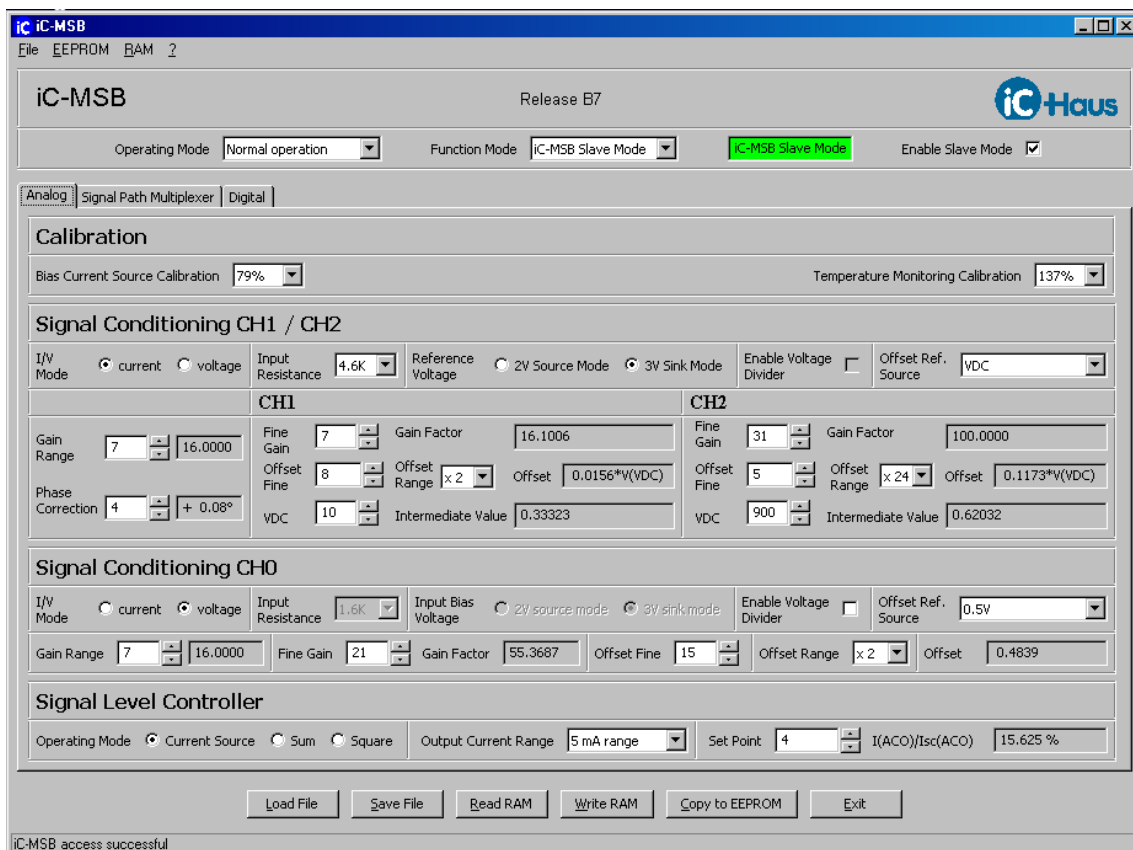


Figure 3: Screenshot

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### Instructions

The software features two major modes.

- **Software Mode**
- **iC-MSB Slave Mode**

The software will start up in "iC-MSB Slave Mode" as long as the communication to the evaluation board was successful. Several errors, like wire connection problems for example, will force the software to switch to the "Software Mode". Not only errors but the need of configuring the iC-MSB parameters without communicating directly with the IC makes the Software Mode a useful tool. Therefore this mode should be used for setting up configuration profiles.

### Menu Section

	<b>Button</b>	<b>Description</b>
<File>	Load File	Chip configuration I/O, Intel hex file format (*.hex)
	Save File	Intel hex file format, suits most EEPROM programmers
	Load XML-File	XML-Profile masks the usage of GUI elements
	Exit	Quit software
<EEPROM>	Copy to EEPROM	Transfers the iC-MSB RAM content to EEPROM
	Read EEPROM	Loads EEPROM content to software GUI
	Hex Editor EEPROM	Starts a content-viewer window (hexadecimal)
	Test Com. to EEPROM	Checks the communication to EEPROM
<RAM>	Write RAM	Transfers the displayed setup to iC-MSB RAM
	Read RAM	Loads iC-MSB RAM content to software GUI
	iC-MSB Safety	Switch to the "Safety" version of the iC-MSB
	iC-MSB Non Safety	Switch to the "Non Safety" version of the iC-MSB
	Hex Editor RAM	Starts a content-viewer window (hexadecimal)

### Bottom Section

<b>Button</b>	<b>Description</b>
Load File	See description of Menu section
Save File	See description of Menu section
Read RAM	See description of Menu section
Write RAM	See description of Menu section
Copy to EEPROM	See description of Menu section
Exit	See description of Menu section

For a detailed description of the parameter settings please refer to iC-MSB's Data Sheet. When moving the mouse cursor to a parameter input box, a tool tip is displayed identifying the corresponding parameter name as described in the specification.

### REVISION HISTORY

<b>Rev</b>	<b>Notes</b>	<b>Pages affected</b>
A1	Initial version	
A2	Document layout revised	all pages

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