

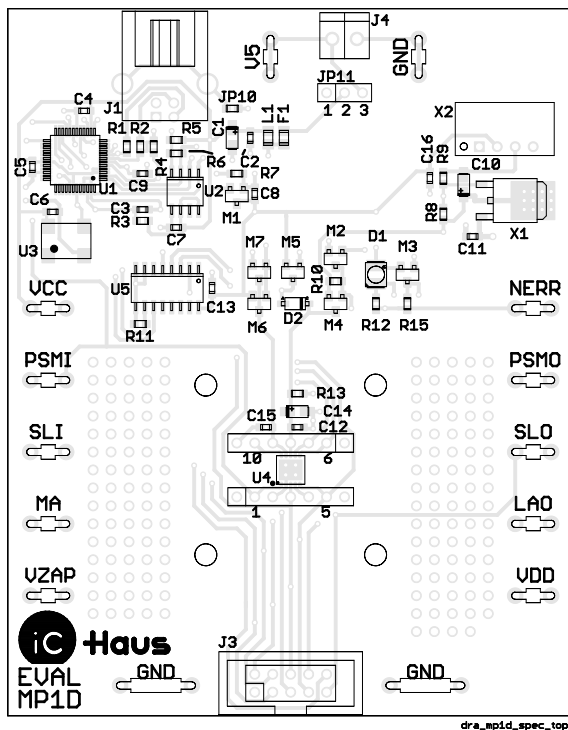
iC-MP EVAL MP1D

EVALUATION BOARD DESCRIPTION

ORDERING INFORMATION

Type	Order Designation	Description Options
Evaluation Board	iC-MP EVAL MP1D	iC-MP Evaluation Board ready to operate, accessible through GUI via USB, including USB A-B Kable
Software	iC-MP GUI	GUI software for Windows PC communication to iC-MP, program and read data please see http://www.ichaus.de/product.php?prod=iC-MP for download information

BOARD MP1D AND TERMINAL DESCRIPTION



TERMINAL DESCRIPTION

J1	USB Interface
J3	iC-MP Signals for External Devices
J4	Power Supply Terminals:
V5	+4.75 V to +5.25 V, ca. 100 mA
GND	0 V Ground
VCC	U1 Controller Supply Voltage (+5 V)
VDD	iC-MP Supply Voltage (+5 V), (Software Controlled)
VZAP	iC-MP Zapping Voltage Output (Software Controlled)
MA	Serial Clock
SLI	Serial Data Input
SLO	Serial Data Output
PSMI	Power Save Mode Input
PSMO	Power Save Mode Output
NERR	Error Indicator, Low Active Output
LAO	Linear Analog Output

Figure 1: Evaluation board MP1D

iC-MP EVAL MP1D

EVALUATION BOARD DESCRIPTION

CIRCUIT DESCRIPTION

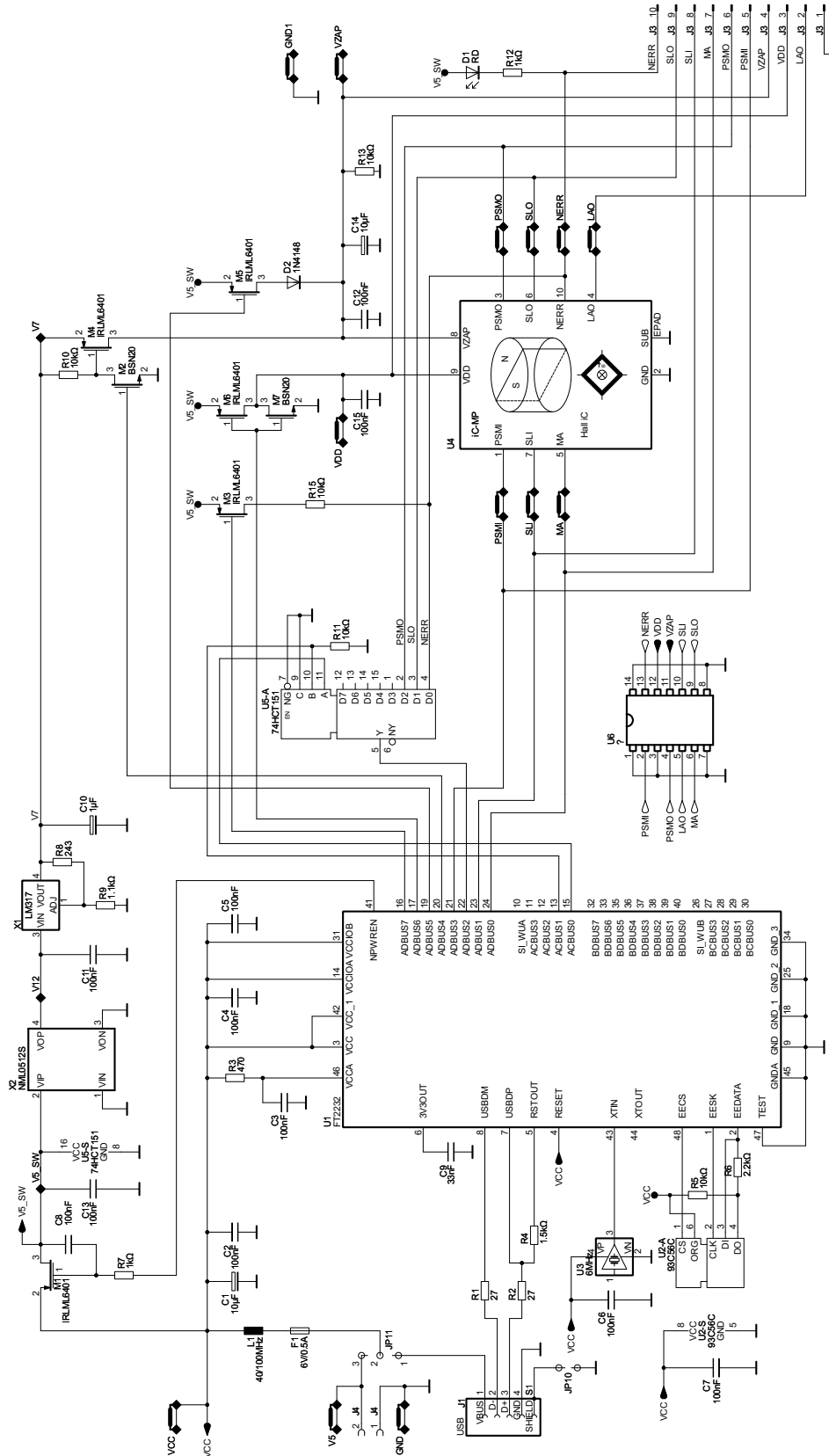


Figure 2: Circuit diagram

iC-MP EVAL MP1D

EVALUATION BOARD DESCRIPTION

ASSEMBLY PART LIST

Device	Value (typical)	Comment
C1, C14	10 μ F	Tantal 10 V, tolerance 20 %
C10	1 μ F	Tantal 10 V, tolerance 20 %
C9	33 nF	X7R 10 V, tolerance 10 %
C2 - C8, C11-C13, C15, C16	100 nF	X7R 10 V, tolerance 10 %
D1	LS-T670	Indicator LED (red) for NERR pin
D2	1N4148	
F1	500 mA / 6 V	Fuse
J1	USB B	USB input connector
J3	WSL10	
J4	AKL059-2	
JP11	SLLP10973G	Jumper
L1	40 Ω /100 MHz	Ferrit bead
M1, M3 - M6	IRLML6401	
M2, M7	BSN20	
R1, R2	27 Ω	tolerance 5 %
R3	470 k Ω	tolerance 5 %
R4	1.5 k Ω	tolerance 5 %
R6	2.2 k Ω	tolerance 5 %
R7, R12	1 k Ω	tolerance 5 %
R8	243 Ω	tolerance 1 %
R9	1.1 k Ω	tolerance 1 %
R5, R10, R11, R13, R15	10 k Ω	tolerance 5 %
S1, S2	MK017G	
U1	FT2232	
U2	AT93C56	
U3	6 MHz	Crystal oscillator
U5	74HCT151	
X1	LM317	
X2	NML0512SC	

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BOARD AND CONNECTOR PINOUT

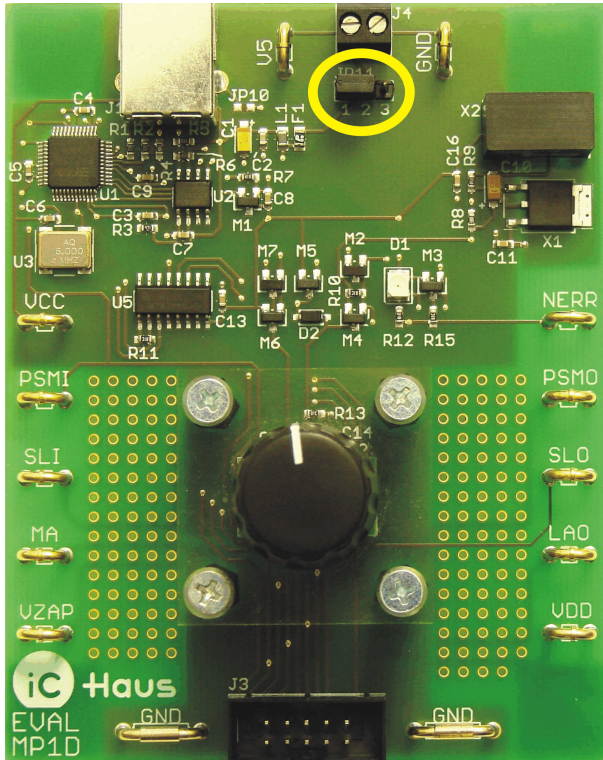


Figure 3: Top view evaluation board MP1D

Setup (MP1D connected via USB)

The MP1D evaluation board is equipped with the iC-MP 8-bit Hall Angle Encoder. The board features a USB connector (J1) for Windows PC communication and a 10-pin (J3) connector for communication with external sensors. Figure 3 shows the evaluation board MP1D.

iC-MP software can be used to access the board from a Windows PC (see section "APPLICATION SOFTWARE" for more details).

Note: Please install the latest USB driver before you attach the evaluation to the PC.

Refer to "JUMPER DESCRIPTION" for the required jumper configuration marked by yellow circle.

J3: iC-MP signals

10-pin Connector - male

PIN	Name	Function
1	GND	0 V ground
2	LAO	Linear analog output
3	VDD	+5 V supply voltage
4	VZAP	Zapping voltage
5	PSMI	Power save mode input
6	PSMO	Power save mode output
7	MA	Serial clock
8	SLI	Serial data input
9	SLO	Serial data output
10	NERR	Error Indicator

JUMPER DESCRIPTION

Jumper	Pin 1	Pin 2	Pin 3
JP11	<VBUS> USB voltage (+5 V)	<VCC> Board voltage input	<V5> Terminal ¹

Notes ¹) Supply voltage of +5 V (from 4.75 V to 5.25 V) required to board terminal V5 and GND

APPLICATION SOFTWARE

iC-MP's GUI software for PCs running on Windows operating systems, as well as the required USB driver are available as a ZIP file.

There are two versions downloadable from <http://www.ichaus.de/product.php?prod=iC-MP>.

- **iC-MP_xx.zip** (without Runtime Engine, smaller archive)
- **iC-MP_xxrt.zip** (including Runtime Engine8.6, bigger archive)

To run iC-Haus GUI software, make sure that you have installed the latest Runtime Engine.

Installation

Both ZIP folders have the same structure. After unzipping the ZIP folder, the following files/folders are located in the selected directory (xx is a placeholder for revisions).

- **iC-Mp_xx\setup.exe**
- **iC_USB_driver_ftdi_20204.exe**
- **Mp1d_xxes.pdf**

Note : Administrator rights are required to run installation.

1. The installation of the software starts by executing the <setup.exe> in the subfolder <iC-Mp_xx>.
→ Follow the on-screen instructions to finish the installation procedure. With <iC-MP_xxrt.zip>-package the Runtime Engine will be installed automatically.
2. USB driver need to be installed to access the evaluation board via USB. Please install the USB driver before you connect the evaluation board to the PC.
→ Execute the <iC_USB_driver_ftdi_20204.exe> installation package and follow the on-screen instructions. This process can take a few minutes.
3. Installation will make the software <iC-MP_xx.exe> available in the selected working directory. The execution of this file will start the GUI software. Figure 4 shows a screenshot of the startup window.

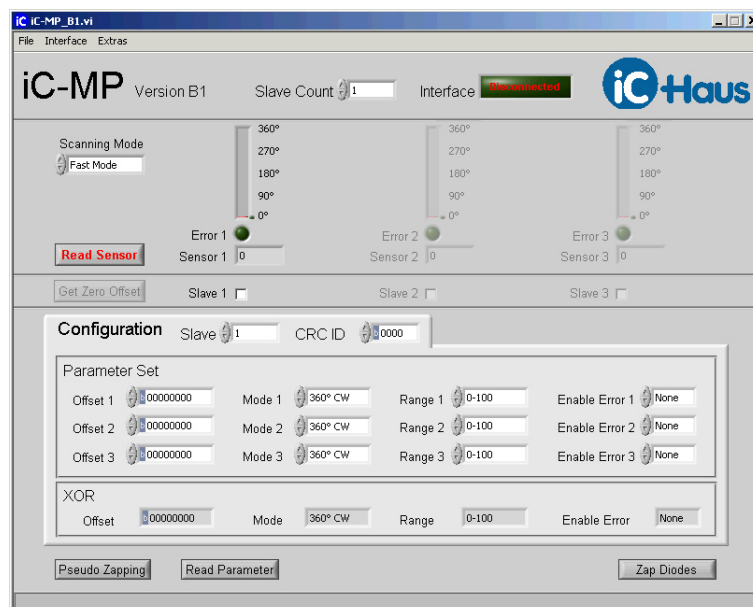


Figure 4: GUI screenshot following startup

iC-MP EVAL MP1D

EVALUATION BOARD DESCRIPTION

Instructions

The iC-MP GUI software features:

- **Manual setup of iC-MP's configuration parameters**
- **Set configuration parameters temporary.**
- **Burn configuration parameters into Zapping Diodes.**
- **Automatic zero position calculation**
- **Position data readout and display.**
- **Connecting multiple sensors**

The iC-MP GUI software will start up with a "Disconnected" interface.

Connecting to iC-MP: Choose <Interface> <iC-Interface - USB> mode (Shortcut <Ctrl+U>).



Figure 5: iC-MP's GUI Software

Menu Section **1**

	Button	Description
<File>	Exit	Quit program
<Interface>	No Hardware iC-Interface < - > USB	Operation without connected board Connection to evaluation board MP1D via USB
<Extra>	About	About iC-MP DLL version

Upper Section **2**

Button	Description
Slave Count	Select the number of slaves in a daisy chain

Field	Description
Interface	Shows hardware connection

Middle Section **3**

Button	Description
Read sensor Get Zero Offset	Starts cyclic readout sequences Read Zapping Diodes contents (overwrites RAM) and calculate an offset value to get zero position (function set the required offset parameter) Note: Run <Pseudo Zapping> to set zero position temporary Run <Zap Diodes> to burn zero position

Bottom Section **4**

Button	Description
Slave CRC ID Pseudo Zapping Read Parameter Zap Diodes	Select slave in a daisy chain Set parameter <CRCID> Set parameters temporary (RAM) Read Zapping Diodes contents (overwrites RAM) Burn Zapping Diodes

Field	Description
Parameter Set XOR	Set parameters bit 0 to bit 41 Result of iC-MP's xor operation (not a parameter)

For all parameter settings, please refer to iC-MP data sheet for a detailed description.

Status bar **5**

This area shows the status of an operation.

iC-MP EVAL MP1D

EVALUATION BOARD DESCRIPTION



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RELATED DOCUMENTS

- iC-MP Data Sheet - Specification -
 - iC-MP GUI - GUI software for Windows PC -
- <http://www.ichaus.de/product.php?prod=iC-MP>

REVISION HISTORY

Rev	Notes	Pages affected
A1	Initial version	

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We understand suitable application of our published designs to be state-of-the-art technology which can no longer be classed as inventive under the stipulations of patent law. Our explicit application notes are to be treated only as mere examples of the many possible and extremely advantageous uses our products can be put to.