

iC-TW2 EVAL TW2_2D

EVALUATION BOARD DESCRIPTION



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ORDERING INFORMATION

Type	Order Designation	Description Options
Evaluation Board	iC-TW2 EVAL TW2_2D	iC-TW2 Evaluation Board Ready-to-operate, accessible through GUI via PC adapter
Software	iC-TW2 GUI	GUI software for Windows PC Device setup file generation, board configuration via adapter For download link check www.ichaus.com/tw2
PC Adapter	iC-MB3 iCSY MB3U-I2C	PC-USB Adapter with I2C/SPI extension cable Download documentation at www.ichaus.com/tools

BOARD TW2_2D

(size 100 mm x 80 mm)

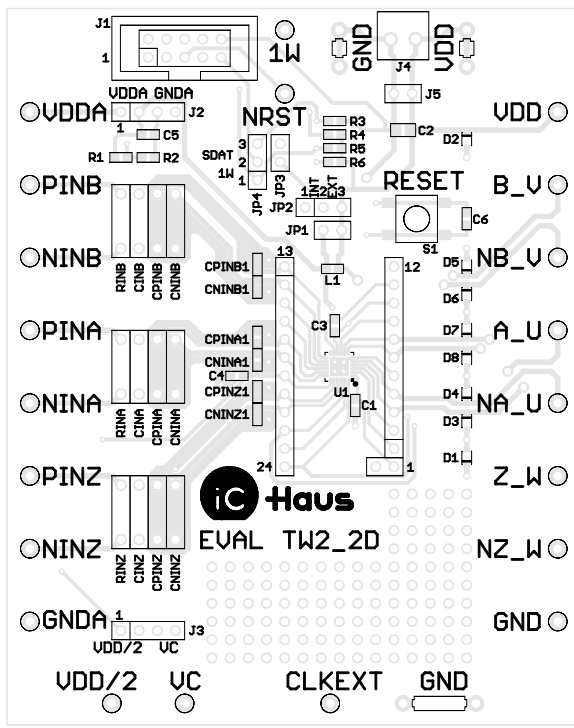


Figure 1: Component side

TERMINAL	DESCRIPTION
VDD	+3.0 V to +5.5 V Supply Voltage Input NB: Connected to PC adapter with jumper JP3 closed.
GND	0 V Ground
VDDA	Analog IC Supply Voltage NB: Connected to VDD with jumper JP1 closed.
GNDA	Analog IC Ground (NB: Connected to GND)
PINA	Signal Input SIN+
NINA	Signal Input SIN-
PINB	Signal Input COS+
NINB	Signal Input COS-
PINZ	Signal Input Z+ (Index)
NINZ	Signal Input Z- (Index)
A_U	Signal Output A_U
NA_U	Signal Output NA_U
B_V	Signal Output B_V
NB_V	Signal Output NB_V
Z_W	Signal Output Z_W
NZ_W	Signal Output NZ_W
VC	1.2 V Reference Voltage Output
NRST	External Reset Input (low active)
CLKEXT	External Clock Input
J1	2-Wire Interface Connector
1W	1-Wire Interface, signal input

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RELATED DOCUMENTS

- IC Documentation → <http://www.ichaus.de/TW2>
- PC-USB Adapter Description → http://www.ichaus.de/MB3U_MB3U-I2C_datasheet_en
- GUI software for Windows PC: check here for download links → <http://www.ichaus.de/TW2>

EVALUATION SOFTWARE

iC-TW2 software for PCs running on Windows operating systems as well as the required USB driver are available as a ZIP file. iC-Haus software built with LabVIEW™ requires the installation of the LabVIEW™ Run-Time Engine (RTE). The RTE must be installed only once, hence there are two download links available.

Software overview online: <http://www.ichaus.de/software>

Download package

iC-TW2:

without RTE (small size)

http://www.ichaus.de/TW2_gui

including RTE (big size)

http://www.ichaus.de/TW2_gui_rte

Installation

After unzipping the software package TW21SO_gui_xx resp. TW21SO_gui_xxрте, the following files are located in the selected working directory (xx is used as placeholder for revisions):

- Subfolder TW21SO_gui_xx including the executable setup.exe which starts the installation routine.
- Driver packages for USB and/or other adapter devices.

Notice: Administrator rights are required to run installations.

1. To access the iC-TW2 evaluation board, interface adapter drivers for USB and/or other adapter devices need to be installed. The driver installation must be completed successfully before connecting the adapter to your PC.
→ Execute the USB_xx.exe installation package and follow the on-screen instructions. This can take a few minutes.

1.1 To complete the driver installation procedure, the PC adapter must be connected to USB finally, after driver installation (only required if the adapter will be used).

2. Install the evaluation software TW21SO by executing the setup.exe located in the subfolder TW21SO_gui_xx.
→ Follow the on-screen instructions to finish the installation.

3. After installation the executable TW21SO_gui_xx.exe will be available in the selected working directory.

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CONNECTOR AND TERMINAL PINOUT

10-pin Connector J1 (to PC Adapter)

PIN	Name	Function
1	SCL	Serial Clock Line
2	GND	Ground
3	-	n.c.
4	+5V	Supply Voltage
5	NRST	NRST = ADBUS7
6	-	n.c.
7	SDA	Serial Data Line
8	-	n.c.
9	SDA	Serial Data Line
10	GND	Ground

10-pin Connector J6 (to iC-TW2 QFN24)

PIN	Name	Function
1		iC-TW2 pin 2
2		iC-TW2 pin 3
3		iC-TW2 pin 4
4		iC-TW2 pin 5
5		iC-TW2 pin 6
6		iC-TW2 pin 7
7		iC-TW2 pin 8
8		iC-TW2 pin 9
9		iC-TW2 pin 10
10		iC-TW2 pin 11
11		iC-TW2 pin 12

4-pin Terminal J2

PIN	Name	Function
1	VDDA	Analog Supply Output
2	VDDA	Analog Supply Output
3	GNDA	Analog Ground Link
4	GNDA	Analog Ground Link

10-pin Connector J7 (to iC-TW2 QFN24)

PIN	Name	Function
1		iC-TW2 pin 13
2		iC-TW2 pin 14
3		iC-TW2 pin 15
4		iC-TW2 pin 16
5		iC-TW2 pin 17
6		iC-TW2 pin 18
7		iC-TW2 pin 19
8		iC-TW2 pin 20
9		iC-TW2 pin 21
10		iC-TW2 pin 22
11		iC-TW2 pin 23
12		iC-TW2 pin 24

4-pin Connector J3

PIN	Name	Function
1	VDDA/2	VDDA / 2 divided by 1 k Ω
2	VDDA/2	VDDA / 2 divided by 1 k Ω
3	VC	1.2 V Reference Voltage Output
4	VC	1.2 V Reference Voltage Output

2-pin Terminal J4

PIN	Name	Function
1	VDD	VDD input/output
2	GND	GND input/output

10-pin Connector J8 (to iC-TW2 QFN24)

PIN	Name	Function
1		iC-TW2 pin 1
2		iC-TW2 pin TP

2-pin Connector J5

PIN	Name	Function
1	VDD	VDD input/output
2	GND	GND input/output

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CIRCUIT DESCRIPTION

The TW2_2D evaluation board is equipped with the iC-TW2 8-bit sine/cosine interpolation IC with integrated EEPROM. The board features multiple connectors for signal supply and communication. iC-TW2_2D software can be used to access the board from a Windows PC which requires a USB universal adapter MB3U-I2C.

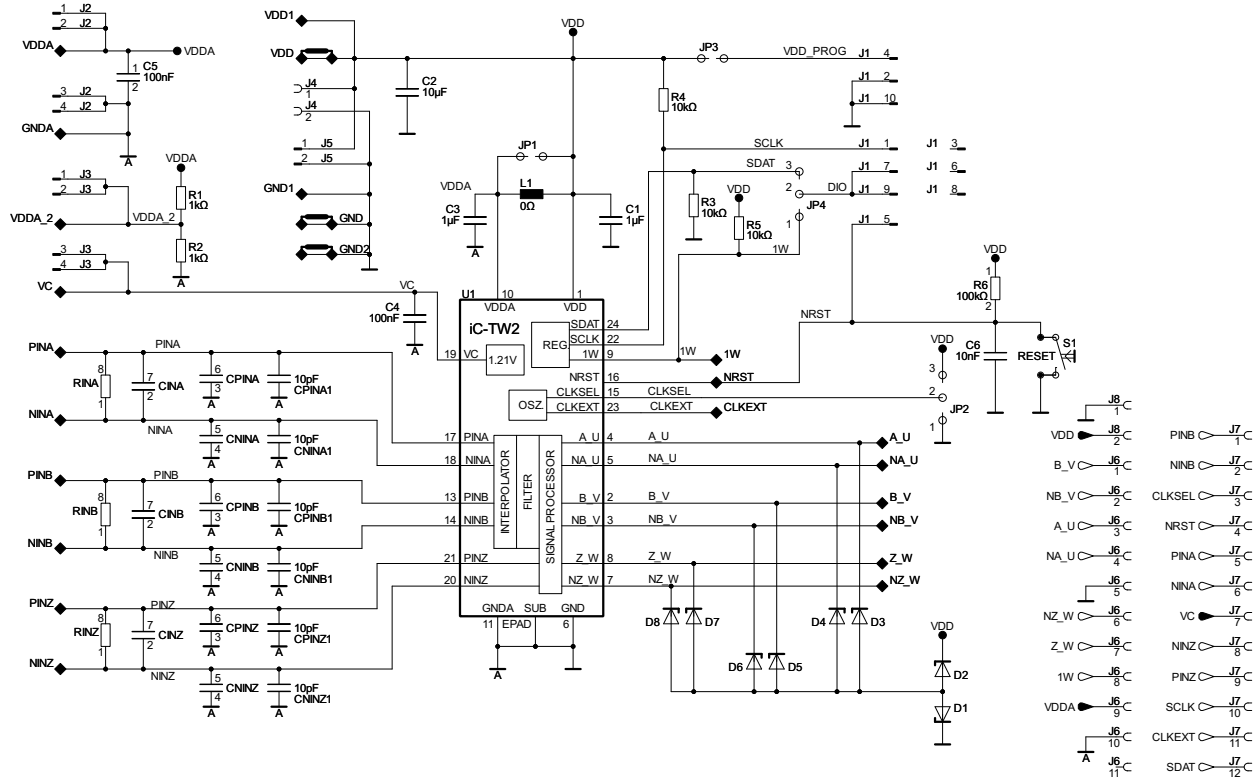


Figure 2: Circuit diagram including optional components

Notice: The above given circuit diagram and the PCB top printing reverses inputs PINA and NINA. The correct wiring would be: iC-TW2 pin 18 is PINA, and pin 17 is NINA.

Notice: The above given circuit diagram connects pin SCLK via 10 kΩ to VDD. The recommended wiring would be: 1 kΩ to ground (refer to iC-TW2's datasheet for details).

JUMPER DESCRIPTION

Jumper JP1	Function
Closed	VDDA connected to VDD (default)
Open	VDDA decoupled by L1

Jumper JP3	Function
Closed	VDD sourced from PC adapter
Open	External VDD supply (default) Connect power supply to VDD (3.3 V or 5 V).

Jumper JP2	Function
Pos. 1-2	Internal clock oscillator (default)
Pos. 2-3	External clock source Connect clock signal to CLKEXT.

Jumper JP4	Function
Pos. 1-2	1-Wire communication
Pos. 2-3	2-Wire communication (default)

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ASSEMBLY PART LIST

Device	Value (typical)	Comment
U1	iC-TW2 QFN24 4x4mm	Sine/cosine interpolation IC
L1	(optional: inductor/ferrit bead)	Inductor for VDDA filter
S1		RESET switch
D1 ... D8	(optional)	Protective diodes (not assembled)
R1, R2	1 k Ω	Resistor
R3, R4, R5	10 k Ω	Resistor
R6	100 k Ω	Resistor
RINA	(optional)	Resistor for input filter
RINB	(optional)	Resistor for input filter
RINZ	(optional)	Resistor for input filter
C1, C3	1.0 μ F	Capacitors for VDDA supply
C2	10 μ F	Capacitors for input filter
C4	100 nF	Capacitors for VC
C5	100 nF	Capacitors for input filter
C6	10 nF	Capacitors for VDD supply
CINA	(optional)	Capacitors for input filter
CPINA	(optional)	Capacitors for input filter
CNINA	(optional)	Capacitors for input filter
CPINA1	10 pF	Capacitors for input filter
CNINA1	10 pF	Capacitors for input filter
CINB	(optional)	Capacitors for input filter
CPINB	(optional)	Capacitors for input filter
CNINB	(optional)	Capacitors for input filter
CNINB1	10 pF	Capacitors for input filter
CPINB1	10 pF	Capacitors for input filter
CINZ	(optional)	Capacitors for input filter
CPINZ	(optional)	Capacitors for input filter
CNINZ	(optional)	Capacitors for input filter
CNINZ1	10 pF	Capacitors for input filter
CPINZ1	10 pF	Capacitors for input filter
J1	WSL10G	Connector to I2C-TO-PC adapter
J2, J3	4x 0.1 in tin	Generic conn header 4 pos 0.1 in tin
J4	2x 0.2 in tin	Generic conn header 2 pos 0.2 in tin
J5	2x 0.1 in tin	Generic conn header 4 pos 0.1 in tin
JP1, JP3	2x 0.1 in tin	Generic conn header 2 pos 0.1 in tin
JP2, JP4	3x 0.1 in tin	Generic conn header 3 pos 0.1 in tin
X1, X2, X3		8-pin DIL socket

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