

# iC384

## SPI/I2C TO USB ADAPTER

preliminary



Rev A2, Page 1/7

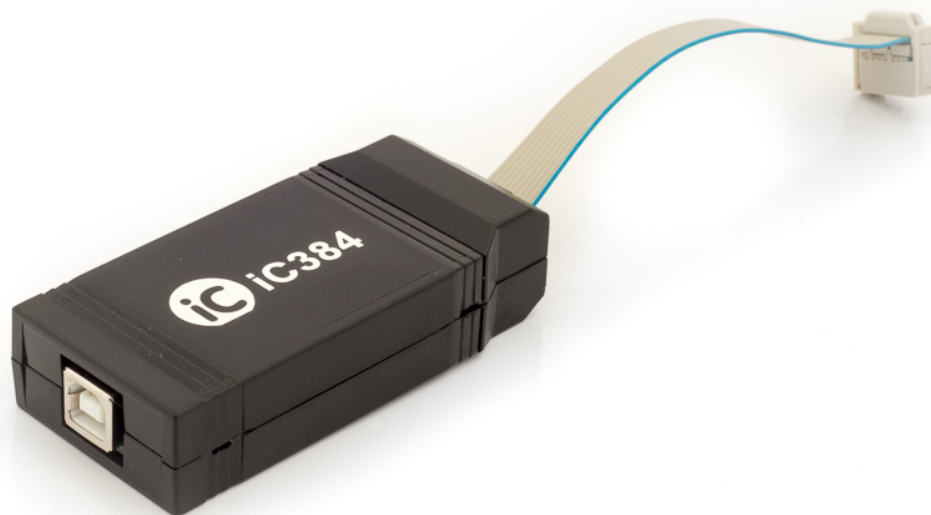
### FEATURES

- ◆ USB 2.0 compatible PC interface
- ◆ USB powered 5V supply for external applications
- ◆ Supported interfaces: SPI/I2C

### APPLICATIONS

- ◆ Interfacing iC-Haus laser driver evaluation boards with SPI or I2C

### SYSTEM VIEW



# iC384

## SPI/I2C TO USB ADAPTER

preliminary



Rev A2, Page 2/7

### DESCRIPTION

The USB port can supply connected board via the SPI/I2C plug with 5V (up to 100 mA, through Pin 4 - no galvanic isolation). If there is load applied to the I2C multi-master capability is not provided.

The SPI and I2C master are only supported by product specific APIs and software for iC-Haus product evaluation and programming.

#### **10 Pin Pigtail 5x2 Female SPI and I2C Interface Connector Functions and Features:**

- SPI or I2C capable by pin connection
- Up to 6 MBit/s maximum data transfer rate with SPI
- 100 kBit/s maximum data transfer rate with I2C
- Single master systems
- Master operation based on FTDI™ USB dual serial bridging device
- USB 2.0 compatible with up to 12 MBit/s data transfer
- USB bus provides power adapter and optionally to devices
- No galvanic isolation, supply sourced from the USB port (5V up to 200 mA)
- Available 32 and 64 bit FTDI™ drivers for Windows 10, 8, 7, Vista, XP, 2000

# iC384

## SPI/I2C TO USB ADAPTER

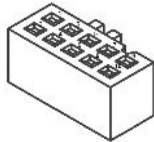
preliminary



Rev A2, Page 3/7

### CONNECTOR

#### PIN CONFIGURATION I2C (RM2.54 2x5 female)

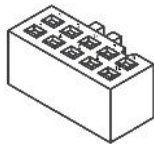


#### PIN FUNCTIONS

##### No. Name Function

1	SCL	Serial Clock Line
2	GND	Ground
3	n.a.	Reserved
4	VDD	5V logic power supply
5	n.a.	Reserved
6	n.a.	Reserved
7	SDA	Serial Data Line Output, short to pin 9
8	n.a.	Reserved
9	SDA	Serial Data Line Input
10	GND	Ground

#### PIN CONFIGURATION SPI (RM2.54 2x5 female)



#### PIN FUNCTIONS

##### No. Name Function

1	SCL	Serial Clock Line
2	GND	Ground
3	n.a.	Reserved
4	VDD	5V logic power supply
5	n.a.	Reserved
6	n.a.	Reserved
7	MOSI	Serial Data Line Output
8	NCS	Chip Select (low active)
9	MISO	Serial Data Line Input
10	GND	Ground

# iC384

## SPI/I2C TO USB ADAPTER

preliminary



Rev A2, Page 4/7

### ABSOLUTE MAXIMUM RATINGS

These ratings do not imply operating conditions; functional operation is not guaranteed. Beyond these ratings device damage may occur.

Item No.	Symbol	Parameter	Conditions	Min.   Max.		Unit
				Min.	Max.	
G001	P(VDD)	Load at VDD			1	W
G002	V()	Input Voltage	SDA (according to FT2232)	-0.5	V_USB +0.5	V
G003	I()	Output Current	SCL, SCLK, SDA, NCS (according to FT2232D or compatible)		24	mA

### THERMAL DATA

Item No.	Symbol	Parameter	Conditions	Min.   Typ.   Max.			Unit
				Min.	Typ.	Max.	
T01	Ta	Operating Temperature		0		30	°C
T02	RH	Relative Humidity	Non condensing	5		95	%

All voltages are referenced to ground unless otherwise stated.

All currents flowing into the device pins are positive; all currents flowing out of the device pins are negative.

# iC384

## SPI/I2C TO USB ADAPTER

preliminary



Rev A2, Page 5/7

### ELECTRICAL CHARACTERISTICS

Operating conditions: USB 2.0, port maximum 500 mA, Ta = 0..30 °C

Item No.	Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>Supply</b>							
001	Vusb	Supply Voltage	By USB port	4.5	5.0	5.5	V
002	Iusb	Current Consumption	From USB port			500	mA
003	VDD	VDD Supply Output		4.5	5	5.5	V
004	I(VDD)	Permissible VDD Load Current	load at VDD, no other load at MOSI, SCL, NCS			200	mA
<b>SPI / I2C</b>							
101	Vin()	Input Switching Threshold Voltage at SDA (MISO)	Standard level (according to FT2232)	1.2	1.3	1.5	V
102	Vhyst()	Input Switching Hysteresis Voltage at SDA	Standard level (according to FT2232)	50	30	25	mV
103	Vo()hi	Output Voltage high at SCL, SCLK, SDA	I(source) = -2 mA, standard level (according to FT2232)	3.2	4.1	4.9	V
104	Vo()lo	Output Voltage high at SCL, SCLK, SDA	I(sink) = 2 mA, standard level (according to FT2232)	0.3	0.4	0.6	V

### SCHEMATIC

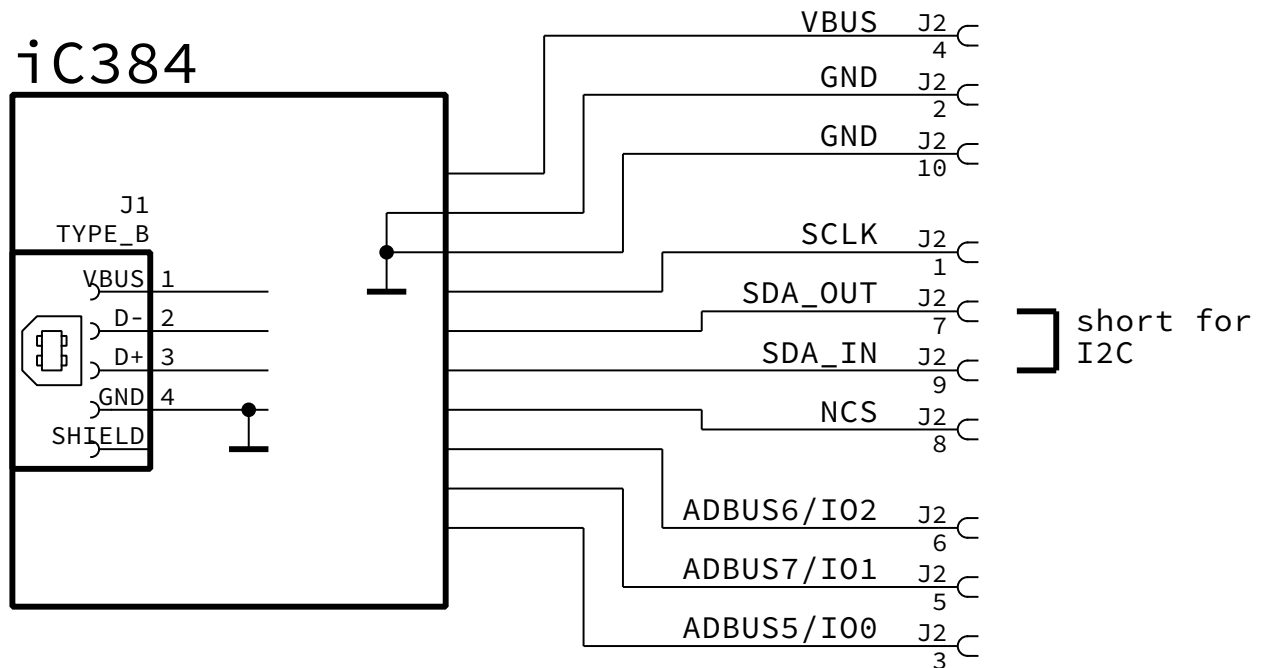


Figure 1: Block diagram

iC-Haus expressly reserves the right to change its products, specifications and related supplements (together the Documents). A Datasheet Update Notification (DUN) gives details as to any amendments and additions made to the relevant Documents on our internet website [www.ichaus.com/DUN](http://www.ichaus.com/DUN) and is automatically generated and shall be sent to registered users by email. Copying – even as an excerpt – is only permitted with iC-Haus' approval in writing and precise reference to source.

The data and predicted functionality is intended solely for the purpose of product description and shall represent the usual quality and behaviour of the product. In case the Documents contain obvious mistakes e.g. in writing or calculation, iC-Haus reserves the right to correct the Documents and no liability arises insofar that the Documents were from a third party view obviously not reliable. There shall be no claims based on defects as to quality and behaviour in cases of insignificant deviations from the Documents or in case of only minor impairment of usability.

No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information/specification resp. Documents or the products to which information refers and no guarantee with respect to compliance to the intended use is given. In particular, this also applies to the stated possible applications or areas of applications of the product.

iC-Haus products are not designed for and must not be used in connection with any applications where the failure of such products would reasonably be expected to result in significant personal injury or death (*Safety-Critical Applications*) without iC-Haus' specific written consent. Safety-Critical Applications include, without limitation, life support devices and systems. iC-Haus products are not designed nor intended for use in military or aerospace applications or environments or in automotive applications unless specifically designated for such use by iC-Haus.

iC-Haus conveys no patent, copyright, mask work right or other trade mark right to this product. iC-Haus assumes no liability for any patent and/or other trade mark rights of a third party resulting from processing or handling of the product and/or any other use of the product.

Software and its documentation is provided by iC-Haus GmbH or contributors "AS IS" and is subject to the ZVEI General Conditions for the Supply of Products and Services with iC-Haus amendments and the ZVEI Software clause with iC-Haus amendments ([www.ichaus.com/EULA](http://www.ichaus.com/EULA)).

# iC384

## SPI/I2C TO USB ADAPTER

preliminary



Rev A2, Page 7/7

### ORDERING INFORMATION

Type	Order Designation
iC384	iC384 iCSY iC384

Please send your purchase orders to our order handling team:

**Fax: +49 (0) 61 35 - 92 92 - 692**

**E-Mail: [dispo@ichaus.com](mailto:dispo@ichaus.com)**

For technical support, information about prices and terms of delivery please contact:

**iC-Haus GmbH**  
**Am Kuemmerling 18**  
**D-55294 Bodenheim**  
**GERMANY**

**Tel.: +49 (0) 61 35 - 92 92 - 0**  
**Fax: +49 (0) 61 35 - 92 92 - 192**  
**Web: <https://www.ichaus.com>**  
**E-Mail: [sales@ichaus.com](mailto:sales@ichaus.com)**

**Appointed local distributors: [https://www.ichaus.com/sales\\_partners](https://www.ichaus.com/sales_partners)**