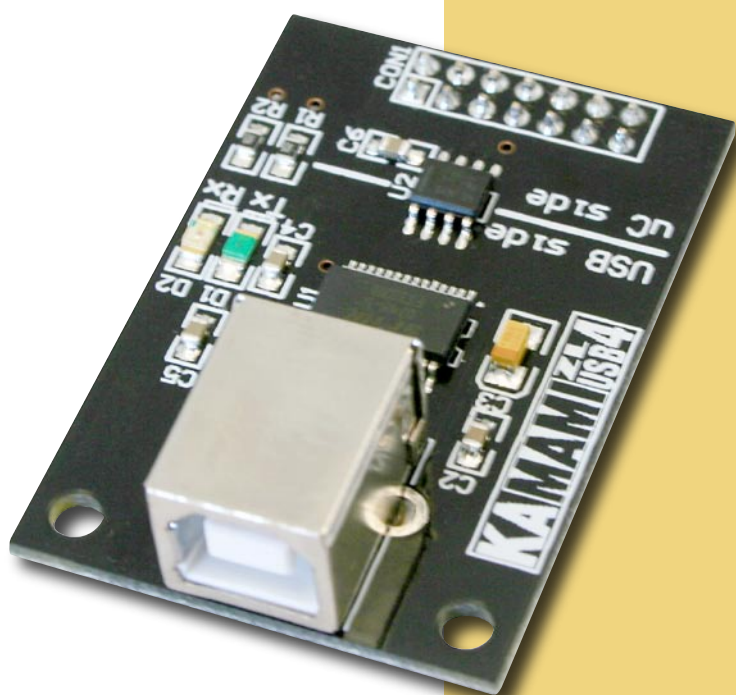


**USB<->RS232 interface  
with galvanic isolation**

*The ZL4USB module is an universal  
USB <-> RS232 interface that can be  
used for transmission of data between PC  
computer with USB and any digital system  
with USART. Unlike other interfaces the  
ZL4USB ensures galvanic separation  
between USB and RS232.*

## Basic features

- ▶ FT232R UART<->USB converter
- ▶ Galvanic separation of USB and USART (ISO7221A device)
- ▶ TTL interface compatible with standard UART (RxD and TxD lines)
- ▶ Galvanic separated I/O lines prepared to work with devices powered from 3.3V and 5V
- ▶ Built-in LEDs indicating transmission
- ▶ Transmission speed: 300bd...1Mbd
- ▶ 256 bytes of Rx buffer/128 bytes of Tx buffer
- ▶ Data frame: 7/8 databits, 1/2 stop bits, parity mark or none
- ▶ Bidirectional asynchronous transmission
- ▶ UHCI/OHCI/EHCI compliance
- ▶ Cooperation with USB 1.1 and USB 2.0 (Full Speed mode – 12Mbd)
- ▶ EEPROM memory for store VID, PID and product serial number
- ▶ Free of charge drivers for Windows 98/98SE/Me//2000/XP/CE/Vista, MacOS and Linux
- ▶ Power supply: 5V/22mA from external supply; 32mA from USB

## Standard equipment

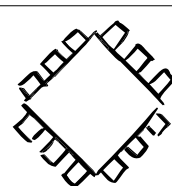
Code	Description
ZL4USB	▶ Assembled ZL4USB module

## Technical assistance

For technical assistance, please contact support@kamami.com.

Please provide the following data:

- ▶ Version of the operating system
- ▶ Microcontroller type used in your system and its oscillator frequency
- ▶ Detailed description of the problem



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### Disclaimer

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BTC Korporacja retains the right to make changes to these specifications at any time, without notice.

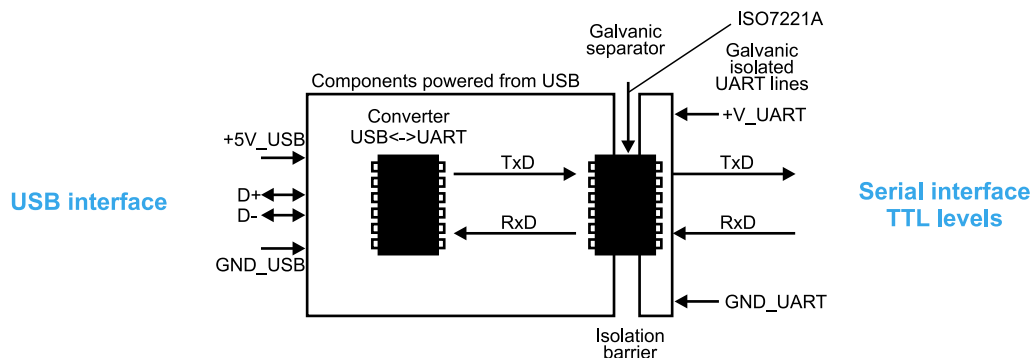
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## Preface

The ZL4USB module is an universal interface which allows to connect any device with UART to computer with USB Host interface. Thanks to using specialized bidirectional separating device USB bus is galvanic isolated from UART interface (**Fig. 1**).

Converter need to be powered from two sources: from USB interface (+5V\_USB/GND\_USB) and from device connected to isolated TxD and RxD lines.

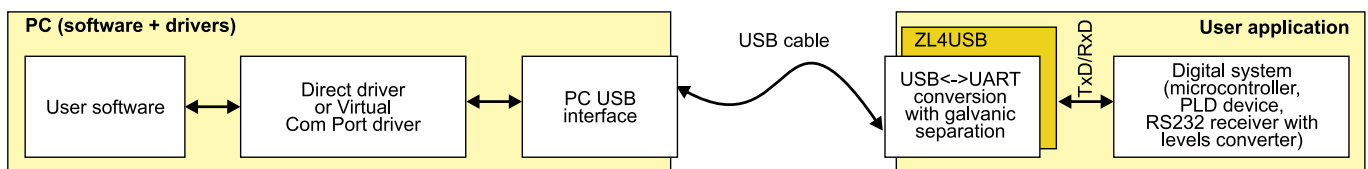
The ZL4PLD is mechanically compatible with ZL1USB.



**Fig. 1. ZL4USB block diagram with galvanic separation line**

## Module functions

Function of ZL4USB is shown on block diagram on **Fig. 2**. From digital system side software is the same as for standard serial transmission. From the side of PC should be used drivers supplied by FTDI company (FT232R device manufacturer). Virtual COM port (VCP) driver is easy to use. With this driver in PC application can be used typical functions for handling serial transmission via RS232 interface. Other way is using direct drivers (D2xx) with the functions included in DLL.



**Fig. 2. Block diagram of typical ZL4USB application**



USB drivers for ZL4USB module are available at: <http://www.ftdichip.com/Drivers>.

## Signalization components

ZL4USB module is equipped with two LEDs indicating:

- The transfer of data TxD line (D1),
- The transfer of data RxD line (D2).

LED module's features are marked on the module board.

# Connections

All signals on ZL4USB module connector are described in **Tab. 1**. Signals arrangement is presented on **Fig. 3**. **Fig. 4** demonstrates how to attach the USB module to a digital system. The line +V\_UART and GND\_UART (UART side, power lines isolated from the USB) must be connected to supply voltage within the range 3...5V. Galvanic separation between USB and UART will be provided only when the power lines USB and UART are independent.

Tab. 1. ZL4USB pin functions

Pin number	Mark	Direction	Description
1	+V_UART	Power	UART side power supply input for galvanic separator (3...5V)
2	GND_UART	Power	UART side power ground
3	-	-	Not connected
4	RxD	We	Galvanic separated asynchronous data input (RxD)
5	TxD	Wy	Galvanic separated asynchronous data output (TxD)
6	-	-	Not connected
7	-	-	Not connected
8	-	-	Not connected
9	-	-	Not connected
10	-	-	Not connected
11	-	-	Not connected
12	-	-	Not connected
13	-	-	Not connected
14	-	-	Not connected

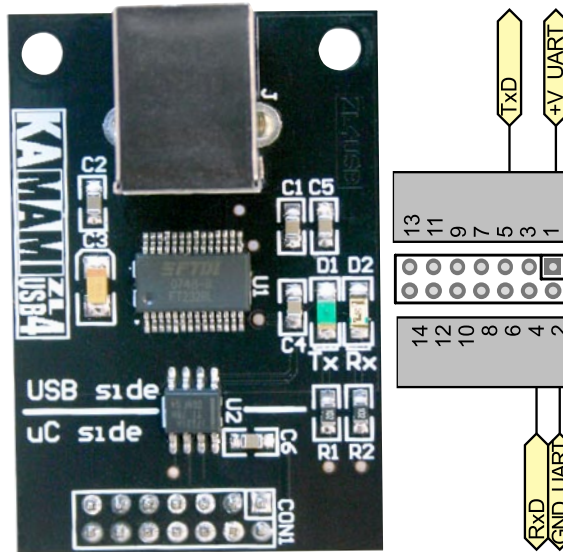


Fig. 3. Signals arrangement on ZL4USB connector

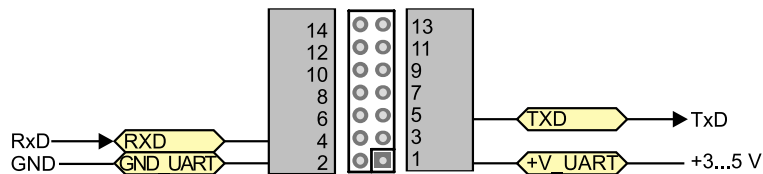


Fig. 4. Recommended connection of ZL4USB to digital system