



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



### Introduction

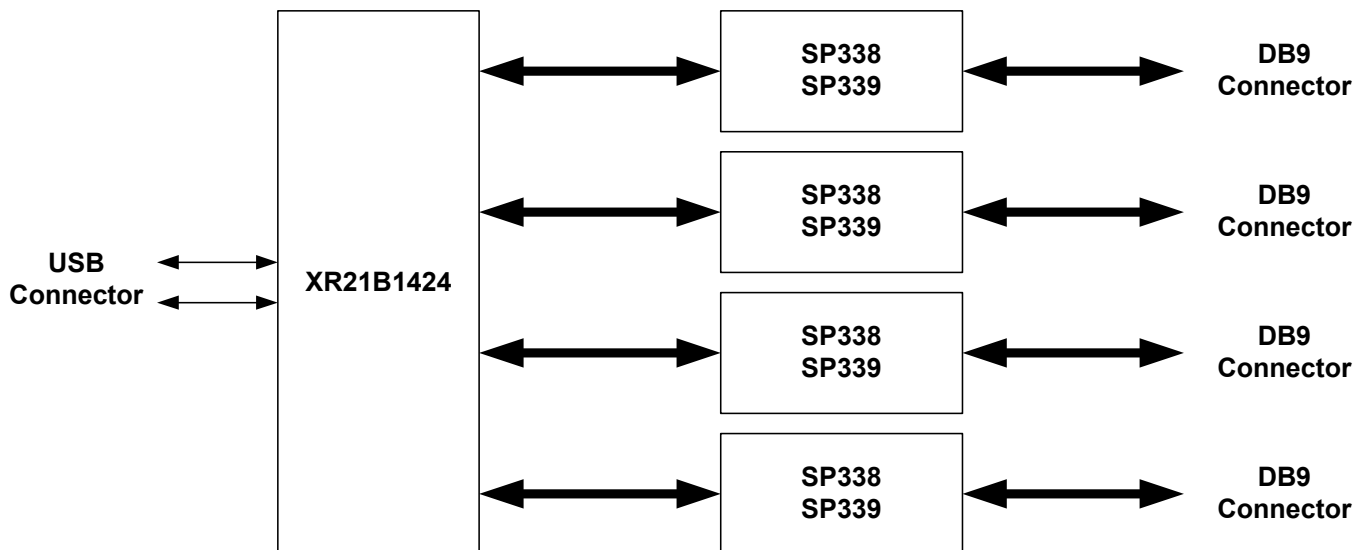
This user's manual is for the XR21B1424IV64-0A-EVB evaluation board. The XR21B1424IV64-F shares a common evaluation board with the XR21B1422IL40-F. The main difference between the XR21B1424IV64-F and the XR21B1422IL40-F is the number of UART channels. The XR21B1424IV64-F has 4 UART channels. The XR21B1422IL40-F has 2 UART channels. The only USB UART device installed on the XR21B1424IV64-0A-EVB evaluation board is the XR21B1424IV64-F.

**Table 1: Evaluation Board Ordering Part Numbers**

Device Ordering Part Number	Evaluation Board Ordering Part Number	Device Package	Device Location
XR21B1424IV64-F	XR21B1424IV64-0A-EVB	64-pin LQFP	U7
XR21B1422IL40-F	XR21B1422IL40-0A-EVB	40-pin QFN	U6

### Evaluation Board Overview

A block diagram of the evaluation board is shown in [Figure 1](#) below.



**Figure 1: Evaluation Board Block Diagram**

In addition to the XR21B1424IV64-F, there are Exar SP339 Multiprotocol transceivers on this evaluation board. The SP339 can be configured for Loopback, RS-232, Half-Duplex RS-485 or Full-Duplex RS-485/422 Modes. The default setting when shipped from the factory is RS-232 mode.

[Figure 2](#) on the next page show the top view and bottom view of the evaluation board with all of the components, connectors and headers labeled. A higher resolution PDF file for the top and bottom views are also included on the CD that is shipped with the evaluation board.

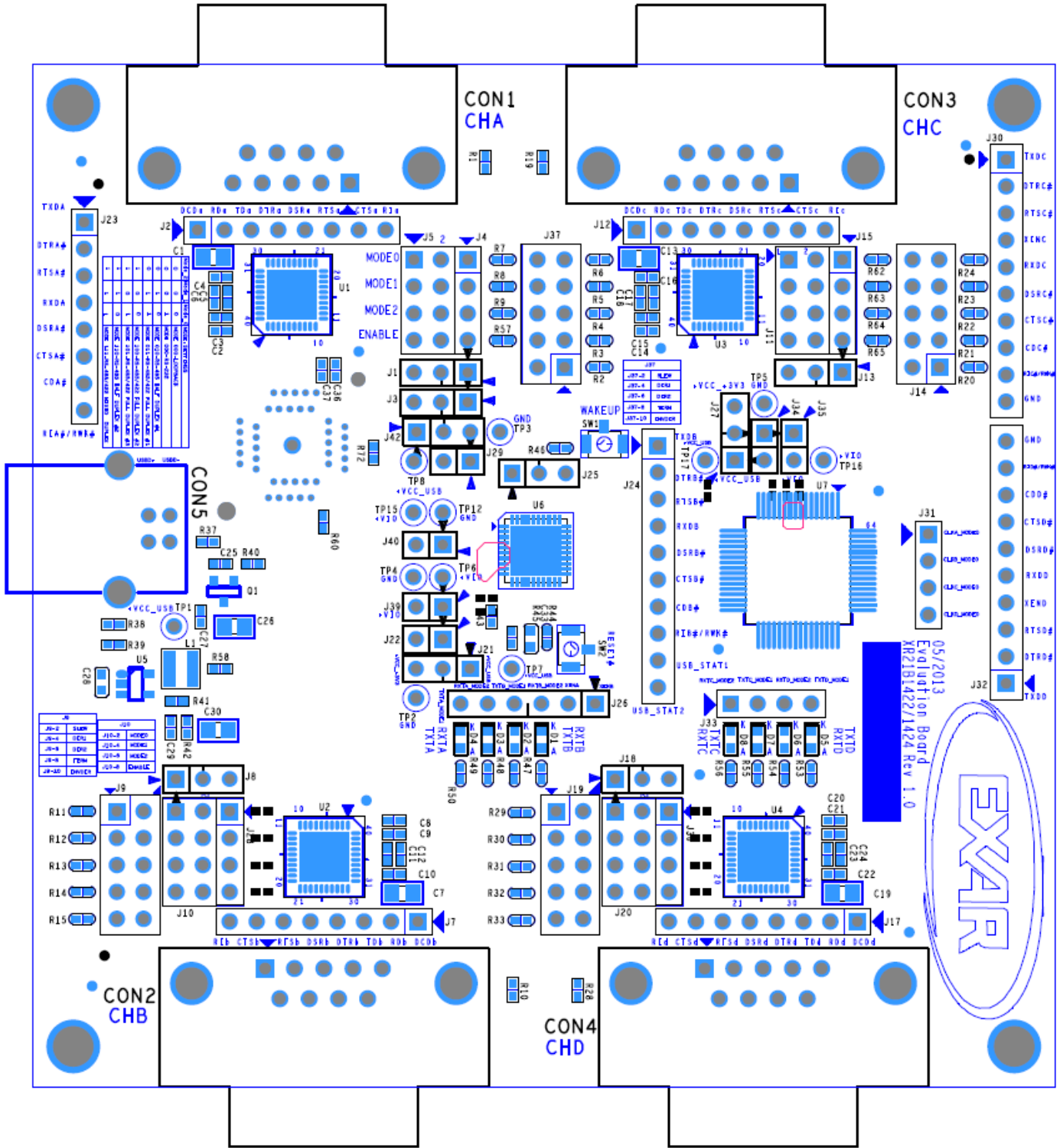


Figure 2: Top View of Evaluation Board

## Hardware Configurations

This sections describes the default settings when shipped from the factory and the requirements for changing modes.

### XR21B1424 Power Configurations

When shipped from the factory, the XR21B1424 is configured for bus-powered mode and uses the 5V from the USB VBUS pin. The default jumper settings are shown in Table 2.

**Table 2: Default Jumper Settings**

Jumper Setting	Description
J27 - 1 & 2	Connects 5V from VBUS to VCC_REG (pin 13). A regulated 3.3V output will be available on the VCC pin (pin 12).
J35 - 1 & 2	Connects regulated 3.3V from VCC pin to VIO. The output voltage of the UART/GPIO pins will be 3.3V.

If not using the 5V from VBUS, an external 3.3V can be supplied to VCC\_REG via J27 pin 2.

### GPIO Configurations

#### GPIOA0/RIA#/RWKA#

When shipped from the factory, the GPIOA0/RIA#/RWKA# pin is connected to the push-button switch (SW1). SW1 can be used to test the remote wake-up functionality. The default jumper settings are shown in Table 3.

**Table 3: Default Jumper Setting for GPIOA0/RIA#/RWKA#**

Jumper Setting	Description
J25 - 2 & 3	GPIO0/RI#/RWK# connected to SW1. Can be used for remote wake-up.

Changing the header to J25 1&2 will connect the GPIOA0/RIA#/RWKA# pin to the SP338/SP339 transceiver.

#### GPIO0-GPIO5

Besides GPIO0 of channel A, GPIO0-GPIO5 of all UART channels are connected directly to the SP339 transceiver. There are headers installed for easy access to these signals. If testing with these pins without the SP339 transceiver, the SP339 should be disabled by removing the jumpers listed in Table 4.

**Table 4: Default setting for SP339 Transceiver**

Jumper Setting	Description
J5 - 7 & 8	USB_STAT2 enables/disables the SP339 transceiver for channel A. When this jumper is removed, the internal pull-down resistor for the ENABLE pin disables the SP339.
J10 - 7 & 8	USB_STAT2 enables/disables the SP339 transceiver for channel B. When this jumper is removed, the internal pull-down resistor for the ENABLE pin disables the SP339.
J11 - 7 & 8	USB_STAT2 enables/disables the SP339 transceiver for channel C. When this jumper is removed, the internal pull-down resistor for the ENABLE pin disables the SP339.
J20 - 7 & 8	USB_STAT2 enables/disables the SP339 transceiver for channel D. When this jumper is removed, the internal pull-down resistor for the ENABLE pin disables the SP339.

## GPIO6/CLK

When shipped from the factory, the GPIO6/CLK pin is floating. If using this pin as a CLK function, the signal can be captured via the J31 header. If using this pin to control the MODE0 pin of the SP339, install jumpers for the appropriate channels listed in Table 5. The software driver/application will need to control the state of this pin.

**Table 5: Default Jumper Setting for GPIO6/CLK**

Jumper Setting	Description
J5 - 1 & 2	Not installed. GPIOA6/CLKA is not connected to the MODE0 pin of the SP339.
J10 - 1 & 2	Not installed. GPIOB6/CLKB is not connected to the MODE0 pin of the SP339.
J11 - 1 & 2	Not installed. GPIOC6/CLKC is not connected to the MODE0 pin of the SP339.
J20 - 1 & 2	Not installed. GPIOD6/CLKD is not connected to the MODE0 pin of the SP339.

## GPIO7/RS485

When shipped from the factory, the GPIO7/RS485 pin is floating. This pin can be used to control the DIR1 pin of the SP339 when the SP339 is configured for half-duplex RS-485 mode. If using this pin to control the DIR1 pin of the SP339, install jumpers for the appropriate channels listed in Table 6. The software driver/application will need to enable the half-duplex direction control feature for this pin.

**Table 6: Default Jumper Setting for GPIO7/RS485**

Jumper Setting	Description
J3 - 1 & 2	Not installed. GPIOA7/RS485A is not connected to the DIR1 pin of the SP339.
J10 - 1 & 2	Not installed. GPIOB7/RS485B is not connected to the DIR1 pin of the SP339.
J11 - 1 & 2	Not installed. GPIOC7/RS485C is not connected to the DIR1 pin of the SP339.
J20 - 1 & 2	Not installed. GPIOD7/RS485D is not connected to the DIR1 pin of the SP339.

## GPIO8/TXT

When shipped from the factory, the GPIO8/TXT pin is floating. This pin can be used to control the MODE1 pin of the SP339. If using this pin to control the MODE1 pin of the SP339, install jumpers for the appropriate channels listed in Table 7. The software driver/application will need to control the state of this pin.

**Table 7: Default Jumper Setting for GPIO8/TXT**

Jumper Setting	Description
J5 - 3 & 4	Not installed. GPIOA8/TXTA is not connected to the MODE1 pin of the SP339.
J10 - 3 & 4	Not installed. GPIOB8/TXTB is not connected to the MODE1 pin of the SP339.
J11 - 3 & 4	Not installed. GPIOC8/TXTC is not connected to the MODE1 pin of the SP339.
J20 - 3 & 4	Not installed. GPIOD8/TXTD is not connected to the MODE1 pin of the SP339.

## GPIO9/RXT

When shipped from the factory, the GPIO9/RXT pin is floating. This pin can be used to control the MODE2 pin of the SP339. If using this pin to control the MODE2 pin of the SP339, install jumpers for the appropriate channels listed in Table 8. The software driver/application will need to control the state of this pin.

**Table 8: Default Jumper Setting for GPIO9/RXT**

Jumper Setting	Description
J5 - 5 & 6	Not installed. GPIOA9/RXTA is not connected to the MODE2 pin of the SP339.
J10 - 5 & 6	Not installed. GPIOB9/RXTB is not connected to the MODE2 pin of the SP339.
J11 - 5 & 6	Not installed. GPIOC9/RXTC is not connected to the MODE2 pin of the SP339.
J20 - 5 & 6	Not installed. GPIOD9/RXTD is not connected to the MODE2 pin of the SP339.

## SP338/SP339 Mode Selection

When shipped from the factory, the SP338/SP339 transceivers are configured in the RS-232 mode. Table 9 shows the RS-232 settings for the SP339.

**Table 9: SP339 RS-232 Mode Pin Configurations**

Mode	Configuration
MODE0	1
MODE1	0
MODE2	0

There are 2 sets of headers for each UART channel for configuring the mode of the SP339 transceiver. For example, channel A uses J5 and J4. For the RS-232 mode, there is a jumper from J5 pin 2 to J4 pin 1. Refer to the table in the schematic or the SP339 datasheet for the different configurations.

By default, the ENABLE of the SP339 transceiver is controlled by the USB\_STAT2 pin of the XR21B1424.

## Half-duplex, Full-Duplex and Mixed Duplex RS-485/422 modes

In the RS-485 half-duplex, full-duplex and mixed duplex modes, the DIR1 pin of the SP338/SP339 enables or disables the RS-485/422 line drivers. The DIR1 pin can be controlled by the XR21B1424 using the GPIO7/RS485 or GPIO5/RTS#/RS485 output pins. The GPIO7/RS485 or GPIO5/RTS#/RS485 pin can be selected via J21. Refer to the datasheet for details for selecting and enabling the Automatic Transceiver Enable feature for the GPIO7/RS485 or GPIO5/RTS#/RS485 pins.

## Software and Technical Support

Software drivers and test applications should be included in the CD that accompanies the evaluation board. Send any questions that you may have to [UARTtechsupport@exar.com](mailto:UARTtechsupport@exar.com).

## Revision History

Revision	Date	Description
1A	April 2014	Initial release.

For Further Assistance:

**Email:** [UARTtechsupport@exar.com](mailto:UARTtechsupport@exar.com)

**Exar Technical Documentation:** <http://www.exar.com/techdoc/>

**Exar Corporation Headquarters and Sales Offices**

48720 Kato Road                      Tel: +1 (510) 668-7000  
Fremont, CA 95438 - USA              Fax: +1 (510) 668-7001



A New Direction in Mixed-Signal

### NOTICE

EXAR Corporation reserves the right to make changes to the products contained in this publication in order to improve design, performance or reliability. EXAR Corporation assumes no responsibility for the use of any circuits described herein, conveys no license under any patent or other right, and makes no representation that the circuits are free of patent infringement. Charts and schedules contained herein are only for illustration purposes and may vary depending upon a user's specific application. While the information in this publication has been carefully checked; no responsibility, however, is assumed for inaccuracies.

EXAR Corporation does not recommend the use of any of its products in life support applications where the failure or malfunction of the product can reasonably be expected to cause failure of the life support system or to significantly affect its safety or effectiveness. Products are not authorized for use in such applications unless EXAR Corporation receives, in writing, assurances to its satisfaction that: (a) the risk of injury or damage has been minimized; (b) the user assumes all such risks; (c) potential liability of EXAR Corporation is adequately protected under the circumstances.

Reproduction, in part or whole, without the prior written consent of EXAR Corporation is prohibited.