1.0 INTRODUCTION

This user's manual is for the XR21V1412 evaluation board rev 2.0 and describes the hardware setup required to operate the part.

2.0 OVERVIEW

The XR21V1412 evaluation board has one 32-QFN package on it. **Figure 1** shows a top view of XR21V1412 evaluation board layout.

FIGURE 1. TOP VIEW OF XR21V1412 EVALUATION BOARD LAYOUT

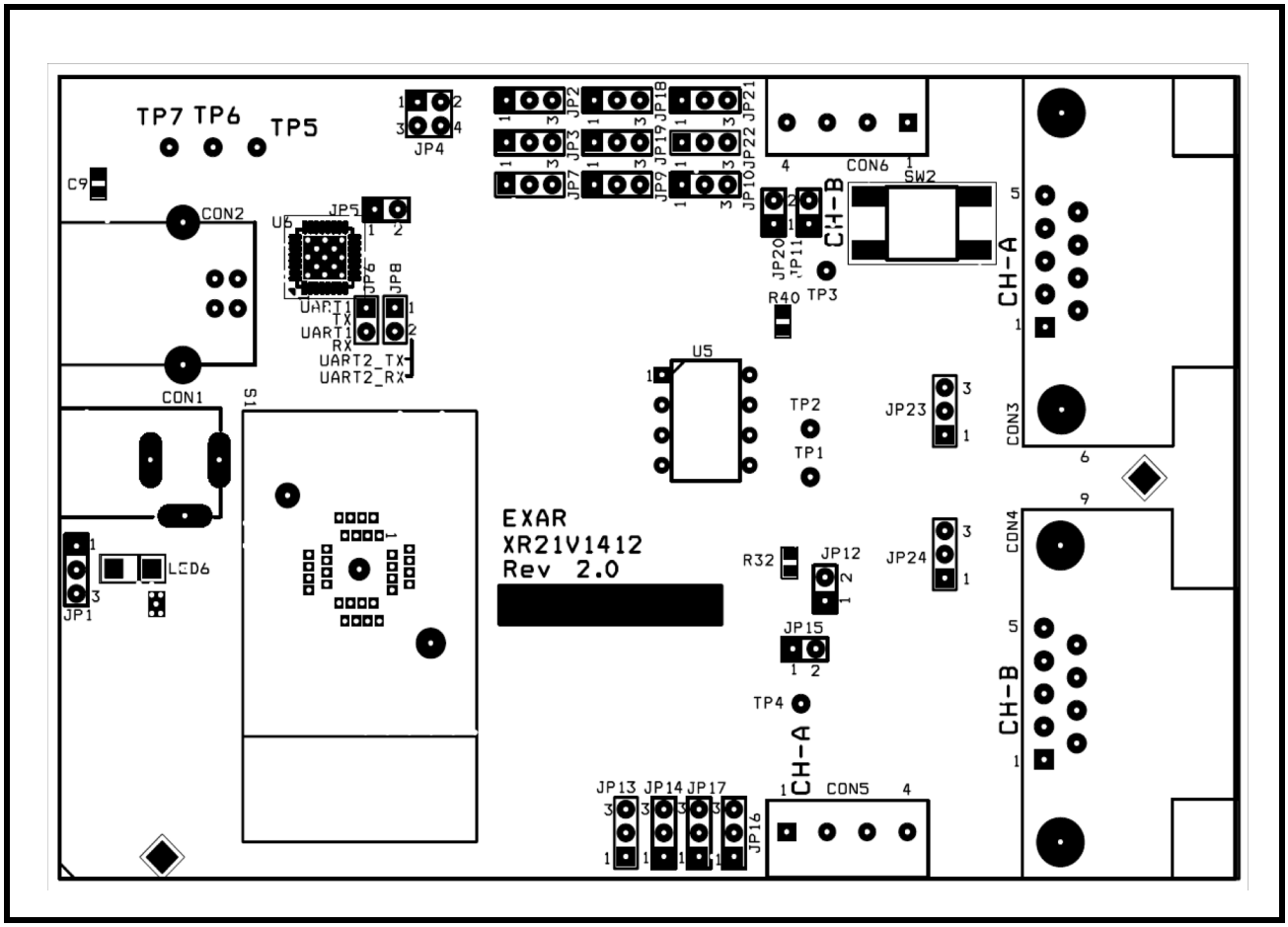
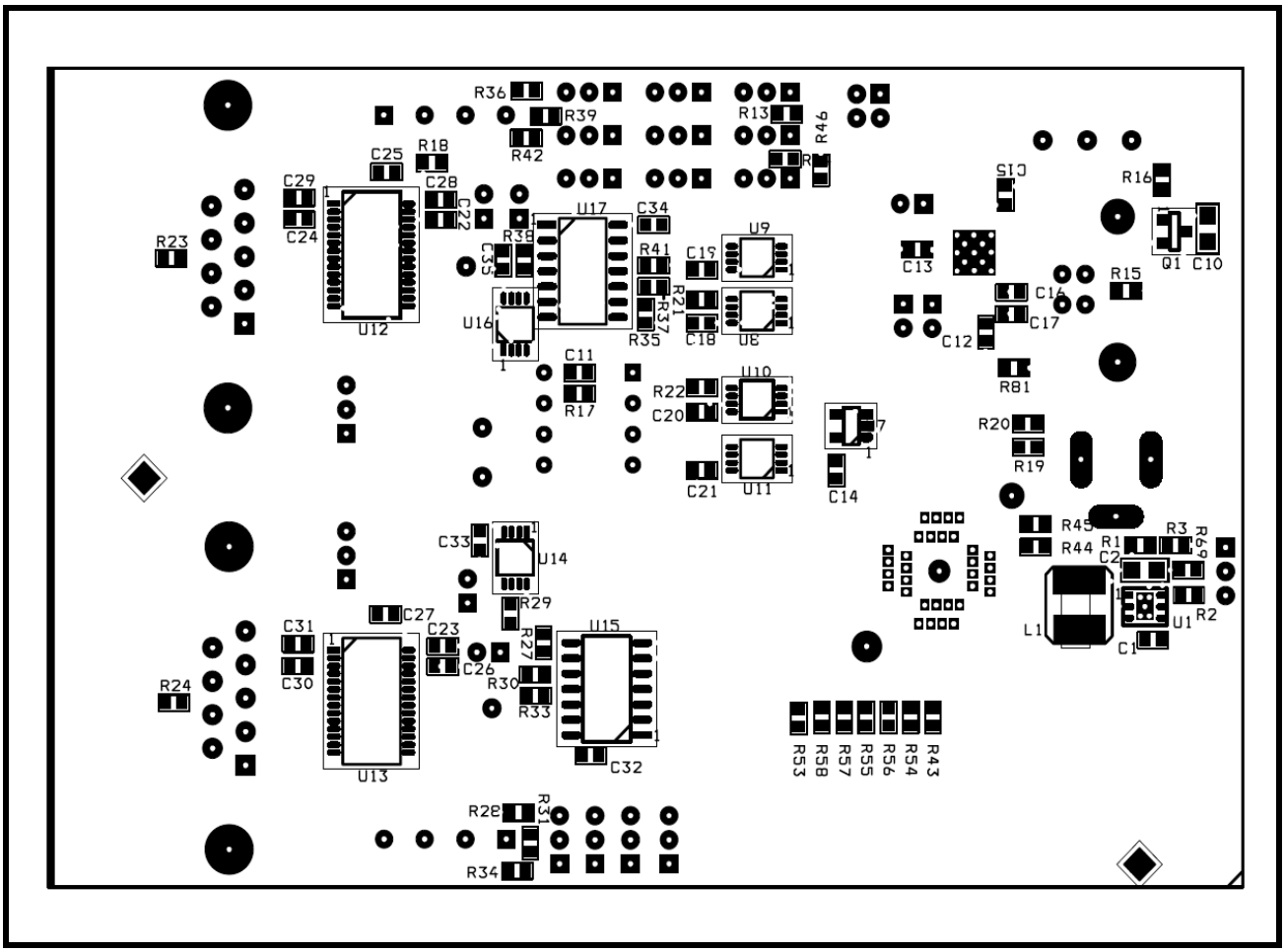


Figure 2 shows a bottom view of XR21V1412 evaluation board layout.

FIGURE 2. BOTTOM VIEW OF XR21V1412 EVALUATION BOARD LAYOUT



2.1 Evaluation Board Components

Table 1 below lists some of the components installed on the evaluation boards. The default setting is RS-232 mode.

TABLE 1: COMPONENTS OF THE XR21V1412 EVALUATION BOARD

UNIT	LOCATION	PART	FUNCTION
U1	Bottom	XRP6657-DFN6	Exar's voltage converter to step down voltage from 5V to 3.3V.
U5	Top	AT24C02B-PU-DIP8	I2C EEPROM.
U6	Top	XR21V1412IL32	Exar's 2 channel USB UART.
U7	Bottom	NC7SZ14M5X-SOT-23-5	Invert LowPower (suspend) signal.
U8	Bottom	SN74LVC2G53DCTR-SM8	Switch UART TXA signal into either RS-232 or RS-485 transceiver.
U9	Bottom	SN74LVC2G53DCTR-SM8	Switch RXA signal from either RS-232 or RS-485 transceiver.
U10	Bottom	SN74LVC2G53DCTR-SM8	Switch UART TXB signal into either RS-232 or RS-485 transceiver.
U11	Bottom	SN74LVC2G53DCTR-SM8	Switch RXB signal from either RS-232 or RS-485 transceiver.
U12	Bottom	SP3245EEY-L-TSSOP-28	Exar's RS-232 transceiver for channel A.
U13	Bottom	SP3245EEY-L-TSSOP-28	Exar's RS-232 transceiver for channel B.
U14	Bottom	SN74LVC2G66DCT-SM8	Mutiplexer to select RS-485 direction control signal (RTSA# or DTRA#).
U15	Bottom	SP3497EEN-L-NSOIC14	Exar's RS-485 transceiver for channel A.
U16	Bottom	SN74LVC2G66DCT-SM8	Mutiplexer to select RS-485 direction control signal (RTSB# or DTRB#).
U17	Bottom	SP3497EEN-L-NSOIC14	Exar's RS-485 transceiver for channel B.
CON1	Top	PJ-002A	Not installed. External power input.
CON2	Top	690-004-621-023	USB B-Type connector. Communication with USB host (USBD+, USBD-) and power source for evaluation board (V_{Bus}).
CON3	Top	182-009-113R161	RS-232 mode DB9 male connector for channel A.
CON4	Top	182-009-113R161	RS-232 mode DB9 male connector for channel B.
CON5	Top	ED555/4DS	RS-485 mode 4X1 terminal block for channel A.
CON6	Top	ED555/4DS	RS-485 mode 4X1 terminal block for channel B.
S1	Top	XR21V1412 QFN-32 Socket	Not installed. For internal test only.

2.2 Jumper Settings

2.2.1 Common jumpers

Common jumpers are those jumpers which should be set the same for both RS-232 and RS-485 mode. The Table 2 shows the common jumpers setting on the evaluation board:

TABLE 2: COMMON JUMPERS SETTINGS

JUMPERS	LOCATION	FUNCTIONS	COMMENTS
JP1	Top	Power source select	Not installed. Trace between pin 2&3. ■ Jumper in 1&2 selects power from external power supply of 5V ■ Jumper in 2&3 selects power from USB V_{BUS} power
JP2	Top	SCL pull-up/pull-down resistor select	Jumper in 1&2 selects pull-up for SCL Jumper in 2&3 selects pull-down for SCL
JP3	Top	SDA pull-up/pull-down resistor select	Jumper in 1&2 selects pull-up for SDA Jumper in 2&3 selects pull-down for SDA
JP4	Top	I2C EEPROM header	Jumper in 1&2 connects SCL to I2C EEPROM Jumper in 3&4 connects SDA to I2C EEPROM ***NOTE:*** *I2C EEPROM has not been programmed*
JP5	Top	Power supply for XR21V1412	Not installed. Trace between pin 1&2
JP6	Top	UART side Channel A external loop-back header	Jumper in enables external loopback for channel A in the UART side ***NOTE:*** *External loopback via this jumper can only be performed when the transceiver has been disabled.*
JP8	Top	UART side Channel B external loop-back header	Jumper in enables external loopback for channel B in the UART side ***NOTE:*** *External loopback via this jumper can only be performed when the transceiver has been disabled.*
JP9	Top	Selects RS-232 or RS-485 mode for Channel A	Jumper in 1&2 selects RS-485 mode Jumper in 2&3 selects RS-232 mode (default)
JP10	Top	Selects RS-232 or RS-485 mode for Channel B	Jumper in 1&2 selects RS-485 mode Jumper in 2&3 selects RS-232 mode (default)

2.2.2 Remote wakeup and jumper

The SDA and SCL are used to specify whether Remote Wakeup and/or Bus Powered configurations are to be supported. These pins are sampled at power-up. The following Table 3 describes how Remote Wakeup and Bus Powered support.

TABLE 3: REMOTE WAKEUP AND POWER MODES

SDA	SCL	REMOTE WAKE-UP SUPPORT	POWER MODE	COMMENTS
1	1	No	Self-Powered	Default, if no EEPROM is present
1	0	No	Bus-Powered	
0	1	Yes	Self-Powered	
0	0	Yes	Bus-Powered	

The following Table 4 shows jumpers related to remote wakeup.

TABLE 4: REMOTE WAKEUP JUMPERS SETTINGS

JUMPERS	LOCATION	FUNCTIONS	COMMENTS
JP7	Top	Select remote control wakeup signal for Channel A	Jumper in 1&2 selects UART RS-232 transceiver (RI#) signal Jumper in 2&3 selects push-button (default)
SW2	Top	Generate remote wakeup signal	Push once to generate one remote wakeup signal

2.2.3 RS-232 mode jumpers (Default setting is RS-232 mode)

The XR21V1412 evaluation board is set in RS-232 mode by default. The following Table 5 jumper settings apply to the RS-232 mode:

TABLE 5: JUMPER SETTINGS FOR RS-232 MODE

JUMPERS	LOCATION	FUNCTIONS	COMMENTS
JP11	Top	Power supply for RS-232 transceiver of Channel A	Not installed. Trace between pin 1&2
JP12	Top	Power supply for RS-232 transceiver of Channel B	Not installed. Trace between pin 1&2

2.2.4 RS-485 mode jumpers

The following Table 6 jumper setting applies to the RS-485 mode:

TABLE 6: JUMPER SETTINGS FOR RS-485 MODE

JUMPERS	LOCATION	FUNCTIONS	COMMENTS
JP15	Top	Power supply for RS-485 transceiver of Channel A	Not installed. Trace between pin 1&2
JP13	Top	Select Channel A RTS or DTR direction control for TX	■ Jumper in 1&2 selects RTS based direction control for TX ■ Jumper in 2&3 selects DTR based direction control for TX
JP14	Top	Select Channel A direction control for RX and TX or always for RX	■ Jumper in 1&2 selects common direction control for RX and TX (half-duplex) ■ Jumper in 2&3 enables RX always (full-duplex)
JP16	Top	Channel A select for half duplex or full duplex mode	■ Jumper in 1&2 selects for half duplex mode (CON5 pins 1-2) ■ Jumper in 2&3 selects for full duplex mode (CON5 pins 1-4)
JP17	Top	Channel A select for half duplex or full duplex mode	■ Jumper in 1&2 selects for half duplex mode (CON5 pins 1-2) ■ Jumper in 2&3 selects for full duplex mode (CON5 pins 1-4)
JP20	Top	Power supply for RS-485 transceiver of Channel B	Not installed. Trace between pin 1&2
JP18	Top	Select Channel B RTS or DTR direction control for TX	■ Jumper in 1&2 selects RTS based direction control for TX ■ Jumper in 2&3 selects DTR based direction control for TX
JP19	Top	Select Channel B direction control for RX and TX or always for RX	■ Jumper in 1&2 selects common direction control for RX and TX (half-duplex) ■ Jumper in 2&3 enables RX always (full-duplex)

TABLE 6: JUMPER SETTINGS FOR RS-485 MODE

JUMPERS	LOCATION	FUNCTIONS	COMMENTS
JP21	Top	Channel B select for half duplex or full duplex mode	■ Jumper in 1&2 selects for half duplex mode (CON6 pins 1-2) ■ Jumper in 2&3 selects for full duplex mode (CON6 pins 1-4)
JP22	Top	Channel B select for half duplex or full duplex mode	■ Jumper in 1&2 selects for half duplex mode (CON6 pins 1-2) ■ Jumper in 2&3 selects for full duplex mode (CON6 pins 1-4)

3.0 DRIVERS AND SUPPORT

For any questions about this evaluation board, software drivers or technical support, send an e-mail to uarttechsupport@exar.com.

Datasheet October 2009.

Send your UART technical inquiry with technical details to hotline: uarttechsupport@exar.com.