INTRODUCTION

This user's manual is for the XR20M1280 evaluation board. Table 1 shows the different devices and packages that the evaluation board supports. This user's manual will describe the hardware setup required to operate the different packages.

1.0 HARDWARE SETUP

1.1 Packages description

The evaluation board supports all 3 packages of the XR20M1280. The ordering part number, package and location on the board is shown below in Table 1. Table 2 lists the evaluation board ordering part numbers.

TABLE 1: PACKAGE LIST

ORDERING PART NUMBER	PACKAGE	LOCATION
XR20M1280IL24-F	24-pin QFN	U8
XR20M1280IL32-F	32-pin QFN	U9
XR20M1280IL40-F	40-pin QFN	U11

TABLE 2: EVALUATION BOARD ORDERING PART NUMBERS

PART NUMBER	DEFAULT MODE CONFIGURATION
XR20M1280L24-0A-EB	I^2C
XR20M1280L24-0B-EB	SPI
XR20M1280L32-0A-EB	I^2C
XR20M1280L32-0B-EB	SPI
XR20M1280L40-0A-EB	I^2C
XR20M1280L40-0B-EB	SPI

1.2 Jumper Settings

1.2.1 XR20M1280IL24

The following jumpers apply to the XR20M1280IL24:

TABLE 3: JUMPER SETTINGS FOR XR20M1280IL24

JUMPERS	FUNCTIONS	COMMENTS
J12	Selects the supply voltage for UART modem I/Os including GPIO3-GPIO0 (VCC_UART)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J13	Selects the supply voltage for UART core logic (VCC_CORE)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J14	Selects the supply voltage for CPU bus interface (VCC_BUS)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V

TABLE 3: JUMPER SETTINGS FOR XR20M1280IL24

JUMPERS	FUNCTIONS	COMMENTS
J15	Selects the supply voltage for GPIO15-GPIO4 (VCC_GPIO)	Not used for XR20M1280IL24 Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J52	Selects 5V source for regulator to 1.8V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J53	Selects 5V source for regulator to 2.5V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J54	Selects 5V source for regulator to 3.3V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J36	Selects between I^2C and SPI mode	Jumper in selects SPI mode (default for XR20M1280L24-0B-EB) Jumper out selects I^2C mode (default for XR20M1280L24-0A-EB)
J18	Power for the SP337 RS-232/RS-485 Transceiver	Jumper not installed Trace between 1&2
J19	Header for RS-485/422 signals	RS-485/422 signals are accessible at this header
J20	SP337 Mode Control pins	RS-232 Mode - No jumpers installed RS-485 Mode - Jumpers between 1&2, 5&6
J34	Routing of modem signals to SP337 RS-232/RS-485 Transceiver	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (jumper installed)
J37	Routing of modem signals to SP337 RS-232/RS-485 Transceiver	Trace between 1&2 Trace between 3&4 Trace between 5&6 (Pins 7-10 not used for XR20M1280IL24)
J35	Enable/Disable Auto RS-485 mode at power-up (can be enabled/disabled in software after power-up)	J35 in enables Auto RS-485 mode at power-up J35 out disables Auto RS-485 mode at power-up
J50	SLEEP/PWRDN pin	Header installed, no jumpers installed (default) Refer to the datasheet for the behavior of this pin
J51	UART Reset input	Jumper on 1&2 selects J2 as hardware reset Jumper on 2&3 selects external reset from J9 pin 32 (default)
J10	I^2C Address Select (A0) ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND	For I^2C mode, only one jumper should be selected. See XR20M1280 datasheet for I^2C addressing. For SPI mode, jumper should be out.

TABLE 3: JUMPER SETTINGS FOR XR20M1280IL24

JUMPERS	FUNCTIONS	COMMENTS
J11	I^2C Address Select (A1) ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND	For I^2C mode, only one jumper should be selected. See XR20M1280 datasheet for I^2C addressing. For SPI mode, jumper should be out.
J9	Header for connection to external micro-controller board ■ Pin 23 = SDA signal for I^2C interface ■ Pin 11 = SO signal for SPI interface ■ Pin 19 = IRQ# output signal from XR20M1170 ■ Pin 15 = A0 signal for I^2C interface or CS# for SPI interface ■ Pin 13 = A1 signal for I^2C interface or SI for SPI interface ■ Pin 32 = RESET# input signal ■ Pin 9 = SCK for SPI interface (Jumper on J8 1&2) ■ Pin 29 = SCL signal for I^2C interface or (Jumper on J9 2&3) ■ Pin 5, 6, 7, 8, 31, 35 = GND signal ■ Pin 34 & 36 = External +5V power	Ground and Power connections ■ Pin 5, 6, 7, 8, 31 or 35 should be connected to GND ■ Pin 34 or 36 should be connected +5V If I^2C interface is used (defaults for XR20M1280IL24-0A-EB): ■ Pin 23 should be connected to SDA ■ Pin 19 should be connected to MCU interrupt input (if using interrupts) ■ Pin 15 should be unconnected when using J10 ■ Pin 13 should be unconnected when using J11 ■ Pin 32 should be connected to the active low reset output from the MCU ■ Pin 29 should be connected to SCL If SPI interface is used (defaults for XR20M1280IL24-0B-EB): ■ Pin 23 should be unconnected ■ Pin 11 should be connected to SO ■ Pin 19 should be connected to MCU interrupt (if using interrupts) ■ Pin 15 should be connected to CS# ■ Pin 13 should be connected to SI ■ Pin 32 should be connected to the active low reset output fromthe MCU ■ Pin 9 should be connected to SCK
J39	Routing for GPIO9-13	Not used for XR20M1280IL24
J40	Routing for GPIO8-4	Not used for XR20M1280IL24

1.2.2   XR20M1280IL32

The following jumpers apply to the XR20M1280IL32:

TABLE 4: JUMPER SETTINGS FOR XR20M1280IL32

JUMPERS	FUNCTIONS	COMMENTS
J12	Selects the supply voltage for UART modem I/Os including GPIO3-GPIO0 (VCC_UART)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J13	Selects the supply voltage for UART core logic (VCC_CORE)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J14	Selects the supply voltage for CPU bus interface (VCC_BUS)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J15	Selects the supply voltage for GPIO15-GPIO4 (VCC_GPIO)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J52	Selects 5V source for regulator to 1.8V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J53	Selects 5V source for regulator to 2.5V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J54	Selects 5V source for regulator to 3.3V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J36	Selects between I^2C and SPI mode	Jumper in selects SPI mode (default for XR20M1280L32-0B-EB) Jumper out selects I^2C mode (default for XR20M1280L32-0A-EB)
J18	Power for the SP337 RS-232/RS-485 Transceiver	Jumper not installed Trace between 1&2
J19	Header for RS-485/422 signals	RS-485/422 signals are accessible at this header
J20	SP337 Mode Control pins	RS-232 Mode - No jumpers installed RS-485 Mode - Jumpers between 1&2, 5&6
J34	Routing of modem signals to SP337 RS-232/RS-485 Transceiver	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (jumper installed)
J37	Routing of modem signals to SP337 RS-232/RS-485 Transceiver	Trace between 1&2 Trace between 3&4 Trace between 5&6 (Pins 7-10 not used for XR20M1280IL32)
J35	Enable/Disable Auto RS-485 mode at power-up (can be enabled/disabled in software after power-up)	J35 in enables Auto RS-485 mode at power-up J35 out disables Auto RS-485 mode at power-up
J44	Enable/Disable IR mode at power-up (can be enabled/disabled in software after power-up)	J44 in enables IR mode at power-up J44 out disables IR mode at power-up

TABLE 4: JUMPER SETTINGS FOR XR20M1280IL32

JUMPERS	FUNCTIONS	COMMENTS
J50	SLEEP/PWRDN pin	Header installed, no jumpers installed (default) Refer to the datasheet for the behavior of this pin
J51	UART Reset input	Jumper on 1&2 selects J2 as hardware reset Jumper on 2&3 selects external reset from J9 pin 32 (default)
J10	I^2C Address Select (A0) ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND	For I^2C mode, only one jumper should be selected. See XR20M1280 datasheet for I^2C addressing. For SPI mode, jumper should be out.
J11	I^2C Address Select (A1) ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND	For I^2C mode, only one jumper should be selected. See XR20M1280 datasheet for I^2C addressing. For SPI mode, jumper should be out.
J9	Header for connection to external micro-controller board ■ Pin 23 = SDA signal for I^2C interface ■ Pin 11 = SO signal for SPI interface ■ Pin 19 = IRQ# output signal from XR20M1170 ■ Pin 15 = A0 signal for I^2C interface or CS# for SPI interface ■ Pin 13 = A1 signal for I^2C interface or SI for SPI interface ■ Pin 32 = RESET# input signal ■ Pin 9 = SCK for SPI interface (Jumper on J8 1&2) ■ Pin 29 = SCL signal for I^2C interface or (Jumper on J9 2&3) ■ Pin 5, 6, 7, 8, 31, 35 = GND signal ■ Pin 34 & 36 = External +5V power	Ground and Power connections ■ Pin 5, 6, 7, 8, 31 or 35 should be connected to GND ■ Pin 34 or 36 should be connected +5V If I^2C interface is used (defaults for XR20M1280IL32-0A-EB): ■ Pin 23 should be connected to SDA ■ Pin 19 should be connected to MCU interrupt input (if using interrupts) ■ Pin 15 should be unconnected when using J10 ■ Pin 13 should be unconnected when using J11 ■ Pin 32 should be connected to the active low reset output from the MCU ■ Pin 29 should be connected to SCL If SPI interface is used (defaults for XR20M1280IL32-0B-EB): ■ Pin 23 should be unconnected ■ Pin 11 should be connected to SO ■ Pin 19 should be connected to MCU interrupt (if using interrupts) ■ Pin 15 should be connected to CS# ■ Pin 13 should be connected to SI ■ Pin 32 should be connected to the active low reset output from the MCU ■ Pin 9 should be connected to SCK
J39	Routing for GPIO9-13	Not used for XR20M1280IL32
J40	Routing for GPIO8-4	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (not used for XR20M1280IL32)

1.2.3   XR20M1280IL40

The following jumpers apply to the XR20M1280IL40:

TABLE 5: JUMPER SETTINGS FOR XR20M1280IL40

JUMPERS	FUNCTIONS	COMMENTS
J12	Selects the supply voltage for UART modem I/Os including GPIO3-GPIO0 (VCC_UART)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J13	Selects the supply voltage for UART core logic (VCC_CORE)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J14	Selects the supply voltage for CPU bus interface (VCC_BUS)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J15	Selects the supply voltage for GPIO15-GPIO4 (VCC_GPIO)	Jumper in 1&2 selects 3.3V (default) Jumper in 3&4 selects 2.5V Jumper in 5&6 selects 1.8V
J52	Selects 5V source for regulator to 1.8V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J53	Selects 5V source for regulator to 2.5V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J54	Selects 5V source for regulator to 3.3V	Jumper in 1&2 selects 5V source from J9 pins 34 &36 (default) Jumper in 2&3 selects 5V source from +P
J36	Selects between I^2C and SPI mode	Jumper in selects SPI mode (default for XR20M1280L40-0B-EB) Jumper out selects I^2C mode (default for XR20M1280L40-0A-EB)
J18	Power for the SP337 RS-232/RS-485 Transceiver	Jumper not installed Trace between 1&2
J19	Header for RS-485/422 signals	RS-485/422 signals are accessible at this header
J20	SP337 Mode Control pins	RS-232 Mode - No jumpers installed RS-485 Mode - Jumpers between 1&2, 5&6
J34	Routing of modem signals to SP337 RS-232/RS-485 Transceiver	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (jumper installed)
J37	Routing of modem signals to SP337 RS-232/RS-485 Transceiver	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (jumper installed)
J35	Enable/Disable Auto RS-485 mode at power-up (can be enabled/disabled in software after power-up)	J35 in enables Auto RS-485 mode at power-up J35 out disables Auto RS-485 mode at power-up

TABLE 5: JUMPER SETTINGS FOR XR20M1280IL40

JUMPERS	FUNCTIONS	COMMENTS
J44	Enable/Disable IR mode at power-up (can be enabled/disabled in software after power-up)	J44 in enables IR mode at power-up J44 out disables IR mode at power-up
J50	SLEEP/PWRDN pin	Header installed, no jumpers installed (default) Refer to the datasheet for the behavior of this pin
J51	UART Reset input	Jumper on 1&2 selects J2 as hardware reset Jumper on 2&3 selects external reset from J9 pin 32 (default)
J10	I^2C Address Select (A0) ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND	For I^2C mode, only one jumper should be selected. See XR20M1280 datasheet for I^2C addressing. For SPI mode, jumper should be out.
J11	I^2C Address Select (A1) ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND	For I^2C mode, only one jumper should be selected. See XR20M1280 datasheet for I^2C addressing. For SPI mode, jumper should be out.
J9	Header for connection to external micro-controller board ■ Pin 23 = SDA signal for I^2C interface ■ Pin 11 = SO signal for SPI interface ■ Pin 19 = IRQ# output signal from XR20M1170 ■ Pin 15 = A0 signal for I^2C interface or CS# for SPI interface ■ Pin 13 = A1 signal for I^2C interface or SI for SPI interface ■ Pin 32 = RESET# input signal ■ Pin 9 = SCK for SPI interface (Jumper on J8 1&2) ■ Pin 29 = SCL signal for I^2C interface or (Jumper on J9 2&3) ■ Pin 5, 6, 7, 8, 31, 35 = GND signal ■ Pin 34 & 36 = External +5V power	Ground and Power connections ■ Pin 5, 6, 7, 8, 31 or 35 should be connected to GND ■ Pin 34 or 36 should be connected +5V If I^2C interface is used (defaults for XR20M1280IL40-0A-EB): ■ Pin 23 should be connected to SDA ■ Pin 19 should be connected to MCU interrupt input (if using interrupts) ■ Pin 15 should be unconnected when using J10 ■ Pin 13 should be unconnected when using J11 ■ Pin 32 should be connected to the active low reset output from the MCU ■ Pin 29 should be connected to SCL If SPI interface is used (defaults for XR20M1280IL40-0B-EB): ■ Pin 23 should be unconnected ■ Pin 11 should be connected to SO ■ Pin 19 should be connected to MCU interrupt (if using interrupts) ■ Pin 15 should be connected to CS# ■ Pin 13 should be connected to SI ■ Pin 32 should be connected to the active low reset output from the MCU ■ Pin 9 should be connected to SCK

TABLE 5: JUMPER SETTINGS FOR XR20M1280IL40

JUMPERS	FUNCTIONS	COMMENTS
J39	Routing for GPIO9-13	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (jumper installed)
J40	Routing for GPIO8-4	Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8 No trace between 9&10 (jumper installed)

2.0   DRIVERS

For the I^2C/SPI UART driver, it is recommended that you contact your microcontroller vendor first for sample code to access devices on the I^2C or SPI bus. Once you can access devices on the I^2C or SPI bus, you can use the sample code from EXAR for initializing the I^2C/SPI UART as a reference for devoloping your driver.

3.0   SAMPLE INITIALIZATION ROUTINE AND SUPPORT

For a sample initialization routine or if there are any questions, send an e-mail to uarttechsupport@exar.com.

NOTICE