

INTRODUCTION

This user's manual is for the XR20M1170 evaluation board. Table 1 shows the different devices and packages that the evaluation board support. This user's manual will describe the hardware setup required to operate the different packages.

1.0 HARDWARE SETUP

1.1 Packages description

Since the XR20M1170 evaluation board can be used for both the XR20M1170 and XR20V2170, Table 1 shows the different packages supported by the board.

TABLE 1: PACKAGE LIST

PART NUMBER	PACKAGE	LOCATION
XR20M1170IL28	28-pin QFN	U6
XR20M1170IL24	24-pin QFN	U2
XR20M1170IL16	16-pin QFN	U5
XR20M1170IG24	24-pin TSSOP	U9
XR20M1170IG16	16-pin TSSOP	U8
XR20V2170IL40	40-pin QFN	U4

1.2 Jumper Settings

1.2.1 XR20M1170IL28

The following jumpers apply to the XR20M1170IL28:

TABLE 2: JUMPER SETTINGS FOR XR20M1170IL28

JUMPERS	FUNCTIONS	COMMENTS
J25	Selects between I ² C and SPI mode	Jumper in selects SPI mode Jumper out selects I ² C mode
J5	Power for the RS-232 Transceiver	Jumper in enables power for RS-232 Transceiver Jumper out disables power for RS-232 Transceiver
J11	Routing of modem signals to RS-232 Transceiver	Jumper not installed Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8
J7	For internal test only	
J4	For internal test only	Not installed
J29	I ² C Address Select (A0) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.

TABLE 2: JUMPER SETTINGS FOR XR20M1170IL28

JUMPERS	FUNCTIONS	COMMENTS
J30	I ² C Address Select (A1) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.
J13	Header for connection to external microcontroller board <ul style="list-style-type: none"> ■ Pin 2 = SDA signal for I²C interface ■ Pin 3 = SO signal for SPI interface ■ Pin 4 = IRQ# output signal from XR20M1170 ■ Pin 13 = A0 signal for I²C interface or CS# for SPI interface ■ Pin 14 = A1 signal for I²C interface or SI for SPI interface ■ Pin 15 = RESET# input signal ■ Pin 16 = SCL signal for I²C interface or SCK for SPI interface ■ Pin 17 = GND signal ■ Pin 18 = External power for XR20M1170 and RS-232 Transceiver 	Ground and Power connections <ul style="list-style-type: none"> ■ Pin 17 should be connected to GND ■ Pin 18 should be connected +3.3V If I ² C interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be connected to SDA ■ Pin 4 should be connected to MCU interrupt input (if using interrupts) ■ Pin 13 should be unconnected when using J29 ■ Pin 14 should be unconnected when using J30 ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCL If SPI interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be unconnected ■ Pin 3 should be connected to SO ■ Pin 4 should be connected to MCU interrupt (if using interrupts) ■ Pin 13 should be connected to CS# ■ Pin 14 should be connected to SI ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCK
J16	Power supply for the XR20M1170IL28	Jumper not installed Trace between 1&2
J17	Enable/Disable RS-485 feature	Jumper in enables RS-485 mode Jumper out disables RS-485 mode
J18	Enable/Disable IR feature	Jumper in enables IR mode Jumper out disables IR mode
J26	Enable/Disable UART side external loopback	Jumper in enables UART side external loopback Jumper out disables UART side external loopback

1.2.2 XR20M1170IL24

The following jumpers apply to the XR20M1170IL24:

TABLE 3: JUMPER SETTINGS FOR XR20M1170IL24

JUMPERS	FUNCTIONS	COMMENTS
J25	Selects between I ² C and SPI mode	Jumper in selects SPI mode Jumper out selects I ² C mode
J5	Power for the RS-232 Transceiver	Jumper in enables power for RS-232 Transceiver Jumper out disables power for RS-232 Transceiver
J11	Routing of modem signals to RS-232 Transceiver	Jumper not installed Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8
J7	For internal test only	
J4	For internal test only	Not installed
J29	I ² C Address Select (A0) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.
J30	I ² C Address Select (A1) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.

TABLE 3: JUMPER SETTINGS FOR XR20M1170IL24

JUMPERS	FUNCTIONS	COMMENTS
J13	Header for connection to external microcontroller board <ul style="list-style-type: none"> ■ Pin 2 = SDA signal for I²C interface ■ Pin 3 = SO signal for SPI interface ■ Pin 4 = IRQ# output signal from XR20M1170 ■ Pin 13 = A0 signal for I²C interface or CS# for SPI interface ■ Pin 14 = A1 signal for I²C interface or SI for SPI interface ■ Pin 15 = RESET# input signal ■ Pin 16 = SCL signal for I²C interface or SCK for SPI interface ■ Pin 17 = GND signal ■ Pin 18 = External power for XR20M1170 and RS-232 Transceiver 	Ground and Power connections <ul style="list-style-type: none"> ■ Pin 17 should be connected to GND ■ Pin 18 should be connected +3.3V If I ² C interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be connected to SDA ■ Pin 4 should be connected to MCU interrupt input (if using interrupts) ■ Pin 13 should be unconnected when using J29 ■ Pin 14 should be unconnected when using J30 ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCL If SPI interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be unconnected ■ Pin 3 should be connected to SO ■ Pin 4 should be connected to MCU interrupt (if using interrupts) ■ Pin 13 should be connected to CS# ■ Pin 14 should be connected to SI ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCK
J8	Power supply for the XR20M1170IL24	Jumper not installed Trace between 1&2

1.2.3 XR20M1170IG24

The following jumpers apply to the XR20M1170IG24:

TABLE 4: JUMPER SETTINGS FOR XR20M1170IG24

JUMPERS	FUNCTIONS	COMMENTS
J25	Selects between I ² C and SPI mode	Jumper in selects SPI mode Jumper out selects I ² C mode
J5	Power for the RS-232 Transceiver	Jumper in enables power for RS-232 Transceiver Jumper out disables power for RS-232 Transceiver
J11	Routing of modem signals to RS-232 Transceiver	Jumper not installed Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8
J7	For internal test only	
J4	For internal test only	Not installed
J29	I ² C Address Select (A0) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.
J30	I ² C Address Select (A1) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.

TABLE 4: JUMPER SETTINGS FOR XR20M1170IG24

JUMPERS	FUNCTIONS	COMMENTS
J13	Header for connection to external microcontroller board <ul style="list-style-type: none"> ■ Pin 2 = SDA signal for I²C interface ■ Pin 3 = SO signal for SPI interface ■ Pin 4 = IRQ# output signal from XR20M1170 ■ Pin 13 = A0 signal for I²C interface or CS# for SPI interface ■ Pin 14 = A1 signal for I²C interface or SI for SPI interface ■ Pin 15 = RESET# input signal ■ Pin 16 = SCL signal for I²C interface or SCK for SPI interface ■ Pin 17 = GND signal ■ Pin 18 = External power for XR20M1170 and RS-232 Transceiver 	Ground and Power connections <ul style="list-style-type: none"> ■ Pin 17 should be connected to GND ■ Pin 18 should be connected +3.3V If I ² C interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be connected to SDA ■ Pin 4 should be connected to MCU interrupt input (if using interrupts) ■ Pin 13 should be unconnected when using J29 ■ Pin 14 should be unconnected when using J30 ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCL If SPI interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be unconnected ■ Pin 3 should be connected to SO ■ Pin 4 should be connected to MCU interrupt (if using interrupts) ■ Pin 13 should be connected to CS# ■ Pin 14 should be connected to SI ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCK
J23	Power supply for the XR20M1170IG24	Jumper not installed Trace between 1&2

1.2.4 XR20M1170IL16

The following jumpers apply to the XR20M1170IL16:

TABLE 5: JUMPER SETTINGS FOR XR20M1170IL16 PACKAGE

JUMPERS	FUNCTIONS	COMMENTS
J25	Selects between I ² C and SPI mode	Jumper in selects SPI mode Jumper out selects I ² C mode
J5	Power for the RS-232 Transceiver	Jumper in enables power for RS-232 Transceiver Jumper out disables power for RS-232 Transceiver
J11	Routing of modem signals to RS-232 Transceiver	Jumper not installed Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8
J7	For internal test only	
J4	For internal test only	Not installed
J29	I ² C Address Select (A0) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.
J30	I ² C Address Select (A1) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.

TABLE 5: JUMPER SETTINGS FOR XR20M1170IL16 PACKAGE

JUMPERS	FUNCTIONS	COMMENTS
J13	Header for connection to external microcontroller board <ul style="list-style-type: none"> ■ Pin 2 = SDA signal for I²C interface ■ Pin 3 = SO signal for SPI interface ■ Pin 4 = IRQ# output signal from XR20M1170 ■ Pin 13 = A0 signal for I²C interface or CS# for SPI interface ■ Pin 14 = A1 signal for I²C interface or SI for SPI interface ■ Pin 15 = RESET# input signal ■ Pin 16 = SCL signal for I²C interface or SCK for SPI interface ■ Pin 17 = GND signal ■ Pin 18 = External power for XR20M1170 and RS-232 Transceiver 	Ground and Power connections <ul style="list-style-type: none"> ■ Pin 17 should be connected to GND ■ Pin 18 should be connected +3.3V If I ² C interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be connected to SDA ■ Pin 4 should be connected to MCU interrupt input (if using interrupts) ■ Pin 13 should be unconnected when using J29 ■ Pin 14 should be unconnected when using J30 ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCL If SPI interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be unconnected ■ Pin 3 should be connected to SO ■ Pin 4 should be connected to MCU interrupt (if using interrupts) ■ Pin 13 should be connected to CS# ■ Pin 14 should be connected to SI ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCK
J15	Power supply for the XR20M1170IL16	Jumper not installed Trace between 1&2

**1.2.5 XR20M1170IG16**

The following jumpers apply to the XR20M1170IG16:

TABLE 6: JUMPER SETTINGS FOR XR20M1170IG16

JUMPERS	FUNCTIONS	COMMENTS
J25	Selects between I ² C and SPI mode	Jumper in selects SPI mode Jumper out selects I ² C mode
J5	Power for the RS-232 Transceiver	Jumper in enables power for RS-232 Transceiver Jumper out disables power for RS-232 Transceiver
J11	Routing of modem signals to RS-232 Transceiver	Jumper not installed Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8
J7	For internal test only	
J4	For internal test only	Not installed
J29	I ² C Address Select (A0) <ul style="list-style-type: none">■ 1&2 = VCC■ 3&4 = SCL■ 5&6 = SDA■ 7&8 = GND	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.
J30	I ² C Address Select (A1) <ul style="list-style-type: none">■ 1&2 = VCC■ 3&4 = SCL■ 5&6 = SDA■ 7&8 = GND	For I ² C mode, only one jumper should be selected. See XR20M1170 datasheet for I ² C addressing. For SPI mode, jumper should be out.

TABLE 6: JUMPER SETTINGS FOR XR20M1170IG16

JUMPERS	FUNCTIONS	COMMENTS
J13	<p>Header for connection to external microcontroller board</p> <ul style="list-style-type: none"> ■ Pin 2 = SDA signal for I²C interface ■ Pin 3 = SO signal for SPI interface ■ Pin 4 = IRQ# output signal from XR20M1170 ■ Pin 13 = A0 signal for I²C interface or CS# for SPI interface ■ Pin 14 = A1 signal for I²C interface or SI for SPI interface ■ Pin 15 = RESET# input signal ■ Pin 16 = SCL signal for I²C interface or SCK for SPI interface ■ Pin 17 = GND signal ■ Pin 18 = External power for XR20M1170 and RS-232 Transceiver 	<p>Ground and Power connections</p> <ul style="list-style-type: none"> ■ Pin 17 should be connected to GND ■ Pin 18 should be connected +3.3V <p>If I²C interface is used:</p> <ul style="list-style-type: none"> ■ Pin 2 should be connected to SDA ■ Pin 4 should be connected to MCU interrupt input (if using interrupts) ■ Pin 13 should be unconnected when using J29 ■ Pin 14 should be unconnected when using J30 ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCL <p>If SPI interface is used:</p> <ul style="list-style-type: none"> ■ Pin 2 should be unconnected ■ Pin 3 should be connected to SO ■ Pin 4 should be connected to MCU interrupt (if using interrupts) ■ Pin 13 should be connected to CS# ■ Pin 14 should be connected to SI ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCK
J22	Power supply for the XR20M1170IG16	<p>Jumper not installed</p> <p>Trace between 1&2</p>

1.2.6 XR20V2170IL40

The following jumpers apply to the XR20V2170IL40:

TABLE 7: JUMPER SETTINGS FOR XR20V2170IL40

JUMPERS	FUNCTIONS	COMMENTS
J25	Selects between I ² C and SPI mode	Jumper in selects SPI mode Jumper out selects I ² C mode
J5	Power for the RS-232 Transceiver	Jumper in enables power for RS-232 Transceiver Jumper out disables power for RS-232 Transceiver
J11	Routing of modem signals to RS-232 Transceiver	Jumper not installed Trace between 1&2 Trace between 3&4 Trace between 5&6 Trace between 7&8
J7	For internal test only	
J4	For internal test only	Not installed
J29	I ² C Address Select (A0) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20V2170 datasheet for I ² C addressing. For SPI mode, jumper should be out.
J30	I ² C Address Select (A1) <ul style="list-style-type: none"> ■ 1&2 = VCC ■ 3&4 = SCL ■ 5&6 = SDA ■ 7&8 = GND 	For I ² C mode, only one jumper should be selected. See XR20V2170 datasheet for I ² C addressing. For SPI mode, jumper should be out.

TABLE 7: JUMPER SETTINGS FOR XR20V2170IL40

JUMPERS	FUNCTIONS	COMMENTS
J13	Header for connection to external microcontroller board <ul style="list-style-type: none"> ■ Pin 2 = SDA signal for I²C interface ■ Pin 3 = SO signal for SPI interface ■ Pin 4 = IRQ# output signal from XR20M1170 ■ Pin 13 = A0 signal for I²C interface or CS# for SPI interface ■ Pin 14 = A1 signal for I²C interface or SI for SPI interface ■ Pin 15 = RESET# input signal ■ Pin 16 = SCL signal for I²C interface or SCK for SPI interface ■ Pin 17 = GND signal ■ Pin 18 = External power for XR20M1170 and RS-232 Transceiver 	Ground and Power connections <ul style="list-style-type: none"> ■ Pin 17 should be connected to GND ■ Pin 18 should be connected +3.3V If I ² C interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be connected to SDA ■ Pin 4 should be connected to MCU interrupt input (if using interrupts) ■ Pin 13 should be unconnected when using J29 ■ Pin 14 should be unconnected when using J30 ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCL If SPI interface is used: <ul style="list-style-type: none"> ■ Pin 2 should be unconnected ■ Pin 3 should be connected to SO ■ Pin 4 should be connected to MCU interrupt (if using interrupts) ■ Pin 13 should be connected to CS# ■ Pin 14 should be connected to SI ■ Pin 15 should be connected to reset output from MCU ■ Pin 16 should be connected to SCK
J6	Power supply for the XR20V2170IL40	Jumper not installed Trace between 1&2
J9	Enable/Disable autosleep for charge pump	Jumper in enables autosleep for charge pump Jumper out disables autosleep for charge pump
J14	Enable/Disable UART side external loopback	Jumper in enables UART side external loopback Jumper out disables UART side external loopback

2.0 DRIVERS

For the I²C/SPI UART driver, it is recommended that you contact your microcontroller vendor first for sample code to access devices on the I²C or SPI bus. Once you can access devices on the I²C or SPI bus, you can use the sample code from EXAR for initializing the I²C/SPI UART as a reference for developing 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.



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