

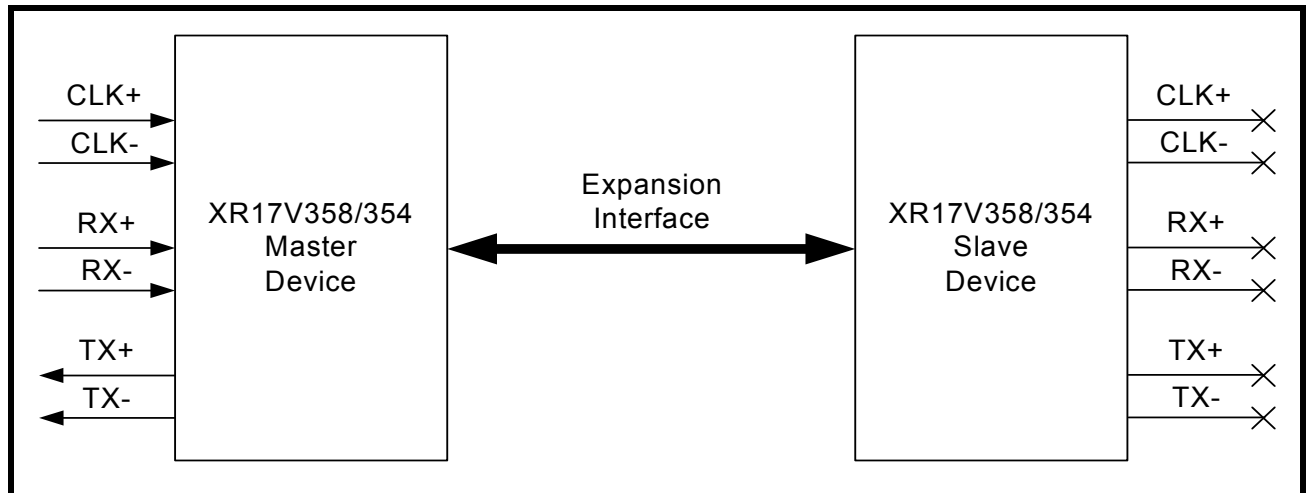
**1.0 INTRODUCTION**

This user's manual is for the XR17V358/354 evaluation board. The XR17V358 and XR17V354 are available in the same package and are pin compatible, therefore they share the same evaluation board. This user's manual gives an overview of the evaluation board and the jumper settings for testing various modes using the evaluation board.

**2.0 OVERVIEW**

This evaluation board has a x1 PCIe connector and will work in any x1, x4 or x16 PCIe slot. Up to 16 UART ports can be tested on this evaluation board when 2 XR17V358 are installed. The PCIe interface of the master device is connected directly to the PCIe connector. The master device communicates with the slave device via Exar's proprietary expansion interface. The PCIe interface on the slave device is not used.

**FIGURE 1. PCIe AND EXPANSION INTERFACE**



**2.1 Evaluation Board Components for Master Device**

The table below shows all of the components that are on the evaluation board for the master device.

**TABLE 1: COMPONENTS OF THE XR17V358 EVALUATION BOARD**

UNIT	PART	FUNCTION
U2	XR17V358IB176-F XR17V354IB176-F	XR17V358 or XR17V354 PCIe UART master device.
U16	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 0.
U11	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 1.
U25	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 2.
U24	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 3.
U28	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 4.
U27	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 5.
U17	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 6.
U22	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 7.
U6	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART RI# signals channels 0-3.

**TABLE 1: COMPONENTS OF THE XR17V358 EVALUATION BOARD**

UNIT	PART	FUNCTION
U13	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART RI# signals channels 4-7.
U9	SP3497EEN-L	Exar RS-485 Transceiver for master device UART channel 4. Not installed.
U10	SP3497EEN-L	Exar RS-485 Transceiver for master device UART channel 5. Not installed.
U21	SP336EEY-L	Exar RS-232/RS-485 Transceiver for master device UART channel 3 and 4 for RS-485 full-duplex testing. Not installed.
U3	HSDL2300	IR Transceiver. Not installed.
U29	SP6654EU-L	Exar 800mA buck regulator. Not installed.
U26	93C46 (PDIP)	External EEPROM for storing Vendor ID and Device ID. Not programmed.
U30	93C46 (TSSOP)	External EEPROM for storing Vendor ID and Device ID. Not installed.

## 2.2 Evaluation Board Components for Slave Device

The table below shows all of the components that are on the evaluation board for the slave device. If the slave device is not installed, then these components will also not be installed.

**TABLE 2: COMPONENTS OF THE XR17V358 EVALUATION BOARD**

UNIT	PART	FUNCTION
U1	XR17V358IB176-F XR17V354IB176-F	XR17V358 or XR17V354 PCIe UART slave device.
U5	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 0.
U4	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 1.
U8	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 2.
U7	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 3.
U15	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 4.
U14	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 5.
U19	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 6.
U20	SP3245EEA-L	Exar RS-232 Transceiver for slave device UART channel 7.
U12	SP3497EEN-L	Exar RS-485 Transceiver for slave device UART channel 4.
U18	SP3497EEN-L	Exar RS-485 Transceiver for slave device UART channel 5.
U23	SP336EEY-L	Exar RS-232/RS-485 Transceiver for slave device UART channel 3 and 4 for RS-485 full-duplex testing. Not installed.

**2.3 Jumper Settings for Power Sources for Master Device**

The following table shows the jumper settings for selecting/enabling the power source for the master device.

**TABLE 3: JUMPER SETTINGS FOR POWER SOURCES FOR MASTER DEVICE**

JUMPER	FUNCTIONS	COMMENTS
J45	3.3V supply voltage for the 3.3V Core	Jumper between 1&2
J42	Enables/Disables Internal Buck Regulator	Jumper is not in - Internal buck regulator is enabled
J66	3.3V supply voltage for the output stage of buck regulator	Jumper between 1&2
J63	3.3V supply voltage for analog blocks of buck regulator	Jumper between 1&2
J62	1.2V regulated voltage from internal buck	Jumper between 1&2
J67	1.2V supply voltage for 1.2V PHY	Jumper between 2&3 to use internal buck regulator
J56	1.2V supply voltage for 1.2V Core	Jumper between 2&3 to use internal buck regulator

**2.4 Jumper Settings for Power Sources for Slave Device**

The following table shows the jumper settings for selecting/enabling the power source for the slave device.

**TABLE 4: JUMPER SETTINGS FOR POWER SOURCES FOR SLAVE DEVICE**

JUMPER	FUNCTIONS	COMMENTS
J32	3.3V supply voltage for the 3.3V Core	Jumper between 1&2
J31	Enables/Disables Internal Buck Regulator	Jumper is not in - Internal buck regulator is enabled
J68	3.3V supply voltage for the output stage of buck regulator	Jumper between 1&2
J65	3.3V supply voltage for analog blocks of buck regulator	Jumper between 1&2
J64	1.2V regulated voltage from internal buck	Jumper between 1&2
J70	1.2V supply voltage for 1.2V PHY	Jumper between 2&3 to use internal buck regulator
J34	1.2V supply voltage for 1.2V Core	Jumper between 2&3 to use internal buck regulator

**2.5 Jumper/Switch Settings for RS-232 or RS-485 for Master Device**

The following table shows the setting for selecting between the RS-232 or RS-485 modes for the master device:

**TABLE 5: SETTINGS FOR RS-232 OR RS-485 MODE FOR MASTER DEVICE**

JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
J13	3.3V Supply voltage pin for transceivers	Not installed. Trace between 1&2.
J41	Enable Auto RS-485 Half-Duplex Direction Control upon power-up	Jumper between 1&2 enables this feature for all 8 channels. This feature can be disabled in the software after power-up.
J54	Enable IR mode upon power-up	Jumper between 1&2 enables this feature for all 8 channels. This feature can be disabled in the software after power-up.

**TABLE 5: SETTINGS FOR RS-232 OR RS-485 MODE FOR MASTER DEVICE**

JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
SW1	Selects between RS-232 and half-duplex RS-485 mode for UART channels 0 and 1	UART channel 0 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Open</li> <li>■ 3&amp;14 Closed</li> <li>■ 4 &amp; 13 Closed</li> </ul> UART channel 0 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Closed</li> <li>■ 3&amp;14 Open</li> <li>■ 4&amp;13 Closed</li> </ul> UART channel 1 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Closed</li> <li>■ 7&amp;10 Open</li> <li>■ 8&amp;9 Open</li> </ul> UART channel 1 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Open</li> <li>■ 7&amp;10 Closed</li> <li>■ 8&amp;9 Open</li> </ul>
SW4	Selects between RS-232 and half-duplex RS-485 mode for UART channels 2 and 3	UART channel 2 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Open</li> <li>■ 3&amp;14 Closed</li> <li>■ 4 &amp; 13 Closed</li> </ul> UART channel 2 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Closed</li> <li>■ 3&amp;14 Open</li> <li>■ 4&amp;13 Closed</li> </ul> UART channel 3 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Closed</li> <li>■ 7&amp;10 Open</li> <li>■ 8&amp;9 Open</li> </ul> UART channel 3 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Open</li> <li>■ 7&amp;10 Closed</li> <li>■ 8&amp;9 Open</li> </ul>

**TABLE 5: SETTINGS FOR RS-232 OR RS-485 MODE FOR MASTER DEVICE**

JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
SW6	Selects between RS-232 and half-duplex RS-485 mode for UART channels 4 and 5	UART channel 4 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Open</li> <li>■ 3&amp;14 Closed</li> <li>■ 4 &amp; 13 Closed</li> </ul> UART channel 4 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Closed</li> <li>■ 3&amp;14 Open</li> <li>■ 4&amp;13 Closed</li> </ul> UART channel 5 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Closed</li> <li>■ 7&amp;10 Open</li> <li>■ 8&amp;9 Open</li> </ul> UART channel 5 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Open</li> <li>■ 7&amp;10 Closed</li> <li>■ 8&amp;9 Open</li> </ul>
SW3	Selects between RS-232 and half-duplex RS-485 mode for UART channels 6 and 7	UART channel 6 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Open</li> <li>■ 3&amp;14 Closed</li> <li>■ 4 &amp; 13 Closed</li> </ul> UART channel 6 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Closed</li> <li>■ 3&amp;14 Open</li> <li>■ 4&amp;13 Closed</li> </ul> UART channel 7 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Closed</li> <li>■ 7&amp;10 Open</li> <li>■ 8&amp;9 Open</li> </ul> UART channel 7 half-duplex RS-485 Mode <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Open</li> <li>■ 7&amp;10 Closed</li> <li>■ 8&amp;9 Open</li> </ul>

**TABLE 5: SETTINGS FOR RS-232 OR RS-485 MODE FOR MASTER DEVICE**

<b>JUMPERS/ SWITCH</b>	<b>FUNCTIONS</b>	<b>COMMENTS</b>
SW2	Enables the RI# signals in RS-232 mode for UART channels 0-7	UART channel 0 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 1&amp;16 Open</li> <li>■ 2&amp;15 Open</li> <li>■ 3&amp;14 Closed</li> <li>■ 4 &amp; 13 Closed</li> </ul> UART channel 1 RS-232 Mode (default) <ul style="list-style-type: none"> <li>■ 5&amp;12 Closed</li> <li>■ 6&amp;11 Closed</li> <li>■ 7&amp;10 Open</li> <li>■ 8&amp;9 Open</li> </ul>
J14	Half-Duplex RS-485 control select for DE for UART channel 3  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed enables RS-485 driver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> <li>■ Jumper between 1&amp;2 disables the RS-485 driver</li> </ul>
J17	Half-Duplex RS-485 control select for RE# for UART channel 3  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed disables RS-485 receiver</li> <li>■ Jumper between 1&amp;2 enables the RS-485 receiver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> </ul>
J16	Half-Duplex RS-485 control select for DE for UART channel 4  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed enables RS-485 driver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> <li>■ Jumper between 1&amp;2 disables the RS-485 driver</li> </ul>
J19	Half-Duplex RS-485 control select for RE# for UART channel 4  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed disables RS-485 receiver</li> <li>■ Jumper between 1&amp;2 enables the RS-485 receiver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> </ul>

**2.6 Jumper Settings for RS-232 or RS-485 for Slave Device**

The following table shows the setting for selecting between the RS-232 or RS-485 modes for the slave device:

**TABLE 6: SETTINGS FOR RS-232 OR RS-485 MODE FOR SLAVE DEVICE**

JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
J23	3.3V supply voltage for RS-232 and RS-485 Transceivers for the slave device	Jumper between 1&2
J29	Enable Auto RS-485 Half-Duplex Direction Control upon power-up	Jumper between 1&2 enables this feature for all 8 channels. This feature can be disabled in the software after power-up.
J37	Enable IR mode upon power-up	Jumper between 1&2 enables this feature for all 8 channels. This feature can be disabled in the software after power-up.
J15	Half-Duplex RS-485 control select for DE for UART channel 3  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed enables RS-485 driver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> <li>■ Jumper between 1&amp;2 disables the RS-485 driver</li> </ul>
J18	Half-Duplex RS-485 control select for RE# for UART channel 3  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed disables RS-485 receiver</li> <li>■ Jumper between 1&amp;2 enables the RS-485 receiver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> </ul>
J24	Half-Duplex RS-485 control select for DE for UART channel 4  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed enables RS-485 driver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> <li>■ Jumper between 1&amp;2 disables the RS-485 driver</li> </ul>
J28	Half-Duplex RS-485 control select for RE# for UART channel 4  Note: SP3497E is not installed.	<ul style="list-style-type: none"> <li>■ No jumper installed disables RS-485 receiver</li> <li>■ Jumper between 1&amp;2 enables the RS-485 receiver</li> <li>■ Jumper between 2&amp;3 selects RTS# as the half-duplex control output</li> </ul>

**2.7 MPIO pins**

The MPIO pins of the both the master and slave devices are connected to LEDs or test points on the evaluation board. Refer to page 6 of the evaluation board schematic for details.

### 3.0 DRIVERS

Software drivers for Windows and Linux are available from Exar. Send an e-mail with your driver request to [uarttechsupport@exar.com](mailto:uarttechsupport@exar.com).

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