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1.0 INTRODUCTION

This user's manual is for the XR17V358/354 evaluation board revision 3.x. 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. The ordering information for the XR17V358/354 evaluation board is as following:

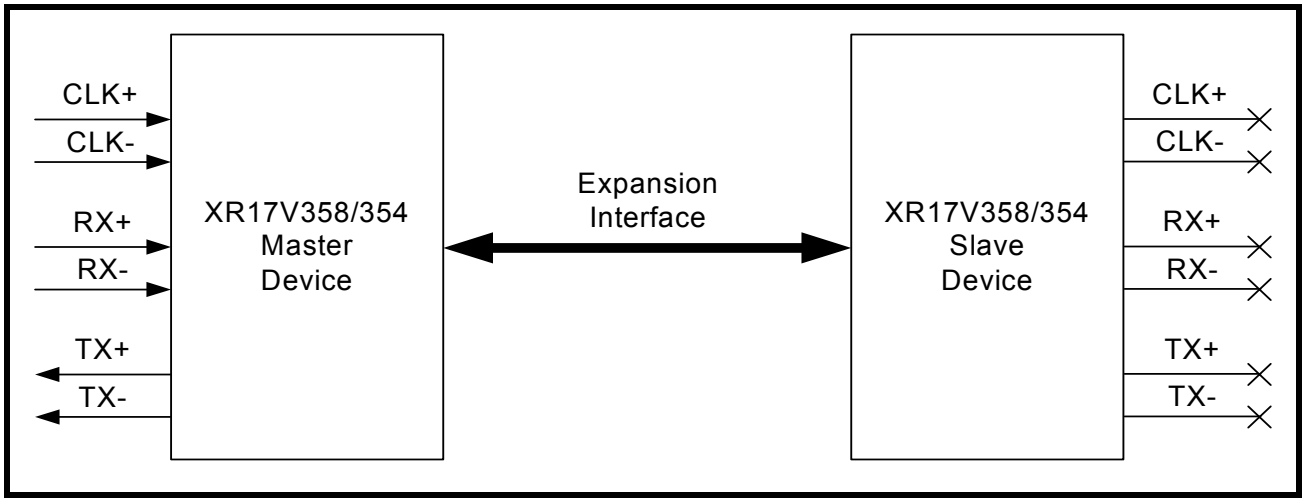
ORDERING INFORMATION

PART NUMBER	DESCRIPTION
XR17V354IB-0A-EVB	Single device XR17V354 is installed on the board.
XR17V354IB-E4-EVB	Two devices are installed on the board. The master device is XR17V354. The slave device on expansion interface is a XR17V354.
XR17V354IB-E8-EVB	Two devices are installed on the board. The master device is XR17V354. The slave device on expansion interface is a XR17V358.
XR17V358IB-0A-EVB	Single device XR17V358 is installed on the board.
XR17V358IB-E4-EVB	Two devices are installed on the board. The master device is XR17V358. The slave device on expansion interface is a XR17V354.
XR17V358IB-E8-EVB	Two devices are installed on the board. The master device is XR17V358. The slave device on expansion interface is a XR17V358.

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 FOR MASTER DEVICE

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.
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.
U26	93C46 (PDIP)	External EEPROM for storing Vendor ID and Device ID. Not installed.
U30	93C46 (TSSOP)	External EEPROM for storing Vendor ID and Device ID. Installed, not programmed.

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 FOR SLAVE DEVICE

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.

TABLE 2: COMPONENTS OF THE XR17V358 EVALUATION BOARD FOR SLAVE DEVICE

UNIT	PART	FUNCTION
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	Not installed. Trace between 1&2.
J42	Enables/Disables Internal Buck Regulator	Jumper is not in - Internal buck regulator is enabled (default).
J66	3.3V supply voltage for the output stage of buck regulator	Not installed. Trace between 1&2.
J63	3.3V supply voltage for analog blocks of buck regulator	Not installed. Trace between 1&2.
J62	1.2V regulated voltage from internal buck	Not installed. Trace between 1&2.
J67	1.2V supply voltage for 1.2V PHY	Not installed. Trace between 1&2.
J56	1.2V supply voltage for 1.2V Core	Not installed. Trace between 1&2.

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	Not installed. Trace between 1&2.
J31	Enables/Disables Internal Buck Regulator	Jumper is not in - Internal buck regulator is enabled (default).
J68	3.3V supply voltage for the output stage of buck regulator	Not installed. Trace between 1&2.
J65	3.3V supply voltage for analog blocks of buck regulator	Not installed. Trace between 1&2.
J64	1.2V regulated voltage from internal buck	Not installed. Trace between 1&2.
J70	1.2V supply voltage for 1.2V PHY	Not installed. Trace between 1&2.
J34	1.2V supply voltage for 1.2V Core	Not installed. Trace between 1&2.

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

The following table (Table 5) shows the setting for selecting between the RS-232 or RS-485 modes for the master device. The Half-duplex RS-485 mode can be enabled by either setting the FCTR bit-5 to 1 or connecting the EN485# pin to GND.

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

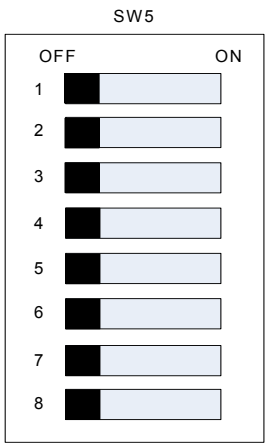
JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
J13	3.3V Supply voltage pin for transceivers	Not installed. Trace between 1&2.
J41	Enable Auto RS-485 Half-Duplex Direction Control upon power-up	Jumper between 1&2 enables this feature for all 8 channels. This feature can be disabled in the software after power-up.
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.
SW5	Indicate whether slave device is presented or not.  Default for "0A-EVB"	Slave is not present (default for "0A-EVB" board). ■ Position 1 = OFF Slave is present (default for "Ex-EVB" board). ■ Position 1 = ON Position 2, Position 3, Position 4, Position 5, Position 6, Position 7, and Position 8 are for internal use only. They should be set as OFF status (default).

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

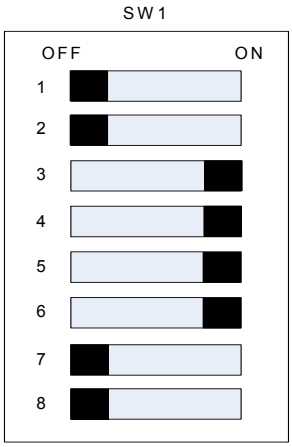
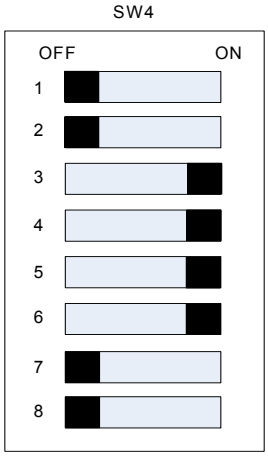
JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
SW1	Selects between RS-232 and half-duplex RS-485 mode for UART channels 0 and 1  RS-232 Mode (Default)	UART channel 0 RS-232 Mode (default) ■ Position 1 = OFF ■ Position 2 = OFF ■ Position 3 = ON ■ Position 4 = ON UART channel 0 half-duplex RS-485 Mode ■ Position 1 = OFF ■ Position 2 = ON ■ Position 3 = OFF ■ Position 4 = ON UART channel 1 RS-232 Mode (default) ■ Position 5 = ON ■ Position 6 = ON ■ Position 7 = OFF ■ Position 8 = OFF UART channel 1 half-duplex RS-485 Mode ■ Position 5 = ON ■ Position 6 = OFF ■ Position 7 = ON ■ Position 8 = OFF
SW4	Selects between RS-232 and half-duplex RS-485 mode for UART channels 2 and 3  RS-232 Mode (Default)	UART channel 2 RS-232 Mode (default) ■ Position 1 = OFF ■ Position 2 = OFF ■ Position 3 = ON ■ Position 4 = ON UART channel 2 half-duplex RS-485 Mode ■ Position 1 = OFF ■ Position 2 = ON ■ Position 3 = OFF ■ Position 4 = ON UART channel 3 RS-232 Mode (default) ■ Position 5 = ON ■ Position 6 = ON ■ Position 7 = OFF ■ Position 8 = OFF UART channel 3 half-duplex RS-485 Mode ■ Position 5 = ON ■ Position 6 = OFF ■ Position 7 = ON ■ Position 8 = OFF

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

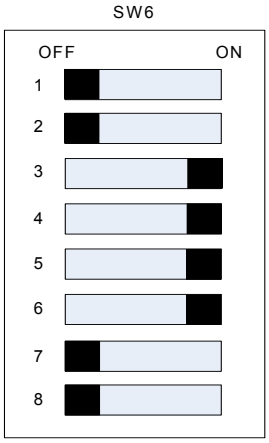
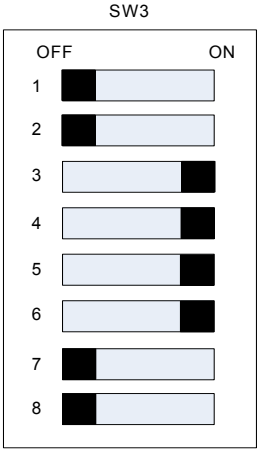
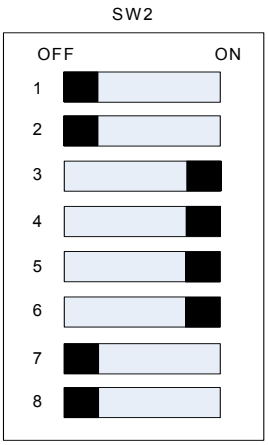
JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
SW6	Selects between RS-232 and half-duplex RS-485 mode for UART channels 4 and 5  RS-232 Mode (Default)	UART channel 4 RS-232 Mode (default) ■ Position 1 = OFF ■ Position 2 = OFF ■ Position 3 = ON ■ Position 4 = ON UART channel 4 half-duplex RS-485 Mode ■ Position 1 = OFF ■ Position 2 = ON ■ Position 3 = OFF ■ Position 4 = ON UART channel 5 RS-232 Mode (default) ■ Position 5 = ON ■ Position 6 = ON ■ Position 7 = OFF ■ Position 8 = OFF UART channel 5 half-duplex RS-485 Mode ■ Position 5 = ON ■ Position 6 = OFF ■ Position 7 = ON ■ Position 8 = OFF
SW3	Selects between RS-232 and half-duplex RS-485 mode for UART channels 6 and 7  RS-232 Mode (Default)	UART channel 6 RS-232 Mode (default) ■ Position 1 = OFF ■ Position 2 = OFF ■ Position 3 = ON ■ Position 4 = ON UART channel 6 half-duplex RS-485 Mode ■ Position 1 = OFF ■ Position 2 = ON ■ Position 3 = OFF ■ Position 4 = ON UART channel 7 RS-232 Mode (default) ■ Position 5 = ON ■ Position 6 = ON ■ Position 7 = OFF ■ Position 8 = OFF UART channel 7 half-duplex RS-485 Mode ■ Position 5 = ON ■ Position 6 = OFF ■ Position 7 = ON ■ Position 8 = OFF

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

JUMPERS/ SWITCH	FUNCTIONS	COMMENTS
SW2	Enables the RI# signals in RS-232 mode for UART channels 0-7  RS-232 Mode (Default)	UART channel 0 RS-232 Mode (default) ■ Position 1 = OFF ■ Position 2 = OFF ■ Position 3 = ON ■ Position 4 = ON UART channel 1 RS-232 Mode (default) ■ Position 5 = ON ■ Position 6 = ON ■ Position 7 = OFF ■ Position 8 = OFF
J14	Half-Duplex RS-485 control select for DE for UART channel 3 Note: SP3497E is not installed.	■ No jumper installed enables RS-485 driver ■ Jumper between 2&3 selects RTS# as the half-duplex control output ■ Jumper between 1&2 disables the RS-485 driver
J17	Half-Duplex RS-485 control select for RE# for UART channel 3 Note: SP3497E is not installed.	■ No jumper installed disables RS-485 receiver ■ Jumper between 1&2 enables the RS-485 receiver ■ Jumper between 2&3 selects RTS# as the half-duplex control output
J10	Half-Duplex RS-485 control for transmitter and receiver for UART channel 3 Note: SP3497E is not installed.	■ Not installed
J16	Half-Duplex RS-485 control select for DE for UART channel 4 Note: SP3497E is not installed.	■ No jumper installed enables RS-485 driver ■ Jumper between 2&3 selects RTS# as the half-duplex control output ■ Jumper between 1&2 disables the RS-485 driver
J19	Half-Duplex RS-485 control select for RE# for UART channel 4 Note: SP3497E is not installed.	■ No jumper installed disables RS-485 receiver ■ Jumper between 1&2 enables the RS-485 receiver ■ Jumper between 2&3 selects RTS# as the half-duplex control output
J8	Half-Duplex RS-485 control for transmitter and receiver for UART channel 4 Note: SP3497E is not installed.	■ Not installed

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.	■ No jumper installed enables RS-485 driver ■ Jumper between 2&3 selects RTS# as the half-duplex control output ■ Jumper between 1&2 disables the RS-485 driver
J18	Half-Duplex RS-485 control select for RE# for UART channel 3 Note: SP3497E is not installed.	■ No jumper installed disables RS-485 receiver ■ Jumper between 1&2 enables the RS-485 receiver ■ Jumper between 2&3 selects RTS# as the half-duplex control output
J12	Half-Duplex RS-485 control for transmitter and receiver for UART channel 3 Note: SP3497E is not installed.	■ Not installed
J24	Half-Duplex RS-485 control select for DE for UART channel 4 Note: SP3497E is not installed.	■ No jumper installed enables RS-485 driver ■ Jumper between 2&3 selects RTS# as the half-duplex control output ■ Jumper between 1&2 disables the RS-485 driver
J28	Half-Duplex RS-485 control select for RE# for UART channel 4 Note: SP3497E is not installed.	■ No jumper installed disables RS-485 receiver ■ Jumper between 1&2 enables the RS-485 receiver ■ Jumper between 2&3 selects RTS# as the half-duplex control output
J25	Half-Duplex RS-485 control for transmitter and receiver for UART channel 4 Note: SP3497E is not installed.	■ Not installed

2.7 Pinout for connectors

The RS232 signals on the evaluation board goes to the SCSI type ultra micro DB68 connector. Figure 2 shows the DB68 connector on the board. Table 7 shows the pinout.

FIGURE 2. DB68 CONNECTOR

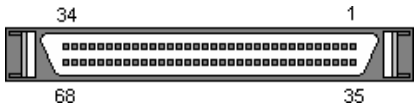


TABLE 7: PINOUT FOR THE DB68

PIN NUMBER	SIGNAL NAME	PIN NUMBER	SIGNAL NAME	PIN NUMBER	SIGNAL NAME	PIN NUMBER	SIGNAL NAME
1	RXD7	18	RXD3	35	RXD8	52	RXD4
2	CT7	19	CT3	36	CT8	53	CT4
3	RIN7	20	RIN3	37	RIN8	54	RIN4
4	RT7	21	RT3	38	RT8	55	RT4
5	DCD7	22	DCD3	39	DCD8	56	DCD4
6	DT7	23	DT3	40	DT8	57	DT4
7	DS7	24	DS3	41	DS8	58	DS4
8	TXD7	25	TXD3	42	TXD8	59	TXD4
9	GND	26	GND	43	GND	60	GND
10	TXD5	27	TXD1	44	TXD6	61	TXD2
11	DS5	28	DS1	45	DS6	62	DS2
12	DT5	29	DT1	46	DT6	63	DT2
13	DCD5	30	DCD1	47	DCD6	64	DCD2
14	RT5	31	RT1	48	RT6	65	RT2
15	RIN5	32	RIN1	49	RIN6	66	RIN2
16	CT5	33	CT1	50	CT6	67	CT2
17	RXD5	34	RXD1	51	RXD6	68	RXD2

Figure 3 shows the DB9 cnnector. Table 8 shows the DB9 connector pinout.

FIGURE 3. DB9 CONNECTOR

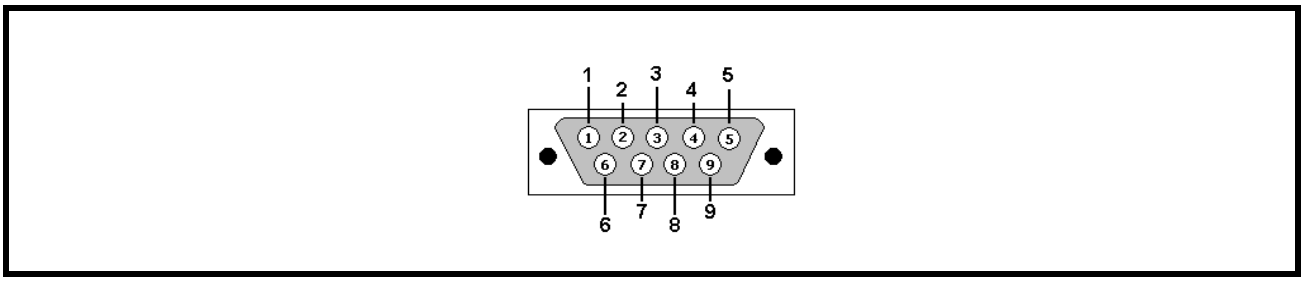


TABLE 8: DB9 CONNECTOR PINOUT

PIN NUMBER	1	2	3	4	5	6	7	8	9
SIGNAL	DCDx	RXDx	TXDx	DTx	GND	DSx	RTx	CTx	RINx

2.8 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.

NOTICE

Datasheet June 2011.

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