Asynchronous I/O XMC

8-16 Port Configurable Async Product Family

The Technobox, Inc Convection-Cooled RS232/422/485/GPIO Asynchronous Communication Adapter product family features the XR17V358 controller and can support up to 16 UART based ports at RS232, RS422, and RS485 electrical levels. Ports may be manufactured to support Digital I/O.

As a result of the adapter's architecture, millions of unique combinations of I/O signaling levels can be quickly realized. By selecting the appropriate port configuration and termination, the specific custom configuration can be created to meet your requirements.
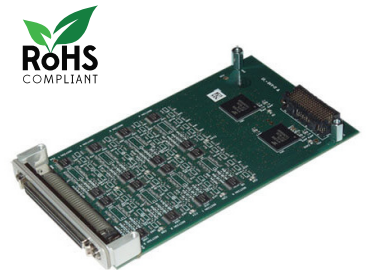
Once a custom configuration is specified, a Technobox, Inc. orderable part number will be assigned to identify the configuation and make the product easy to re-order.

For example, all ports may be 8 signal RS232 COM ports, using one XR17V358 chip. All ports may be 4 signal RS232 COM ports (RXD,RXD, CTS,RTS), with two UART chips populated. Furthermore, customer-specific applications requiring mix of various interfaces - RS232,RS422, RS485 and GPIO - is easily achieved.
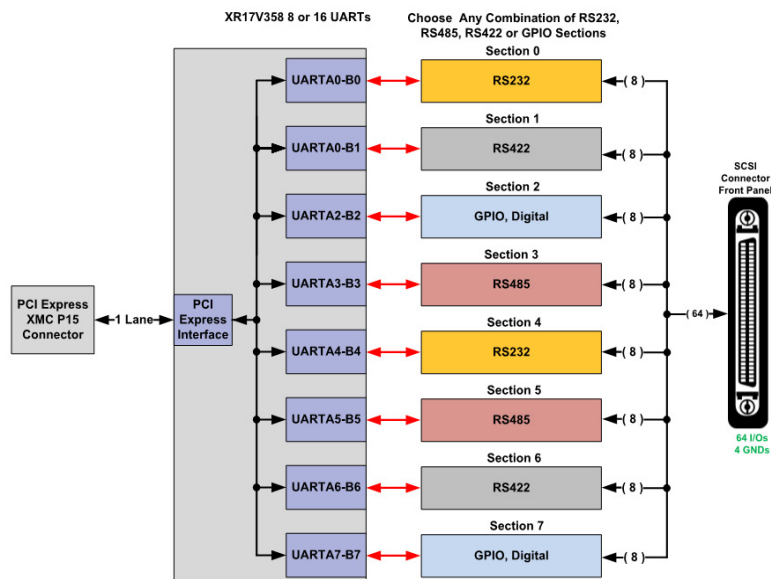
The design is exceptionally versatile and is partitioned into eight "sections," each manufactured to support any of the following:

- RS232: Standard 8 COM port signals
- RS422: Standard 4 COM port signals (RXD,TXD,RTS,CTS)
- "Split partitioning" of the section into two independent functions.

RoHS COMPLIANT

Front-Panel

- EXAR XR17V358 Octal UARTs
- Up to 16 Asynchronous ports using two UART chips
- Each port can be uniquely configured
- Standard Baud rates up to 115KBaud & Baud rates up to 31.25MBaud
- Migration path from existing PMCs to XMC
- Supports general purpose DIO
- Implemented w/o jumpers /mezzanines/FPGAs
- 1x Gen 1 (2.5 Gb/s) PCIe connection
- 68-pin front-panel connector
- PN4 configurable for VITA 46 or standard pairing
- Air-cooled front-panel
- Powered Only by XMC 3.3V Rail
- Industrial Temperature Design
- RoHS Compliant
- Carrier Cards Available

XR17V358 8 or 16 UARTs — Choose Any Combination of RS232, RS485, RS422 or GPIO Sections

Section	UART	Type
Section 0	UARTA0-B0	RS232 (8)
Section 1	UARTA0-B1	RS422 (8)
Section 2	UARTA2-B2	GPIO, Digital (8)
Section 3	UARTA3-B3	RS485 (8)
Section 4	UARTA4-B4	RS232 (8)
Section 5	UARTA5-B5	RS485 (8)
Section 6	UARTA6-B6	RS422 (8)
Section 7	UARTA7-B7	GPIO, Digital (8)

PCI Express XMC P15 Connector — 1 Lane — PCI Express Interface

SCSI Connector Front Panel — (64) — 64 I/Os 4 GNDs

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When a section is configured for "Split partitioning," each half of the section is manufactured to support any of the following:

- RS232: Standard 4 COM port signals (RXD, TXD,RTS,CTS)
- RS422: Standard 2 COM port signals (RXD,TXD)
- RS485: Bidirectional RS485 data on one differential pair (TX, RXD)
- GPIO: Two bits of General Purpose, series terminated Digital IO.

Note that when at least one section is split, a second XR17V358 UART is populated on the board.

To facilitate quick turn delivery to customers, a ready inventory of partially assembled boards is kept in stock. The secondary side is populated the same way for all configurations, consisting of mostly bypass capacitors and common elements.

When a customer order is received, the primary side is then populated appropriately, resulting in the customer required configuration. Changes in termination resistances, XMC connector (VITA 42 or VITA 61), which are variations on the primary side population, are easily and quickly accomplished.

Employing this unique method of selective population results in highly reliable, highly configurable Async boards without using any jumpers, plug-on mezzanines, or complex FPGAs.

The XR17V358 has exceptional features providing advanced high-performance Asynchronous communications. The standard 16550 UART is implemented. But additional operational modes allow deep FIFOs (256 bytes), automatic flow control (CTS/RTS or XON/XOFF), RS485 direction control, and baud rates to 31.25 Mbaud based on an internally generated 125 MHz clock, or 15.625 Mbaud for the second XR17V385 chip (see datasheet).

This single design covers the functionality of various existing Technobox, Inc. Async PMCs and permits a migration to XMC/PCIe:

Standard Configurations

Function	Stocked Configurations	XMC P/N	Notes
8-Port RS232	Front-Panel	8512/8515	8515 supports VITA 61 connector
8-Port RS422	Front-Panel	8518	Termination on RX side only
4-Port RS232/422	Front-Panel	8509	
16-Port RS232	Front-Panel	8494	
16-Port 485	Front-Panel	8500/8503	8503 has parallel term
32-Channel GP DIO	Front-Panel	8506	With pullup and series term
16-Port RS422	Front-Panel	8497	With parallel term

* Refer to individual data sheets for specific details.

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This product family contains both air-cooled front-panel I/O and conduction-cooled rear I/O XMC. For rear I/O the part signals are routed to P16 and (possibly) PN4, and PN4 can be configured for VITA46 or standard pairing.

This product is built with industrial temperature range parts (-40 to +85 C) and is RoHS compliant.

Various breakout panels and cable accessories are available to convert the 68-pin front-panel connector into something more user-friendly. For example, PN 4988 connects from 68-pin to eight DB9 connectors. Many other conversion accessories are available.

SPECIFICATIONS

Temperature (Operating): -40 to +85 degrees C

Temperature (Storage): -40 to +105 degrees C

Altitude: Not specified or characterized - similar at 15,000 ft.

Humidity (Operating/Storage): 5% to 95% non-condensing.

Vibration: Not specified or characterized

Shock: Not specified or characterized

MTBF: Can be calculated upon request

Weight: 45 grams TBD

Power: TBD dependent on configuration type

PCI Express: 1 lane, 2.5GHz Gen 1

Voltages Required: +3.3V only

Dimensions: 74mm x 143.7mm

PCB Thickness: 1.57mm / 0.062" +/-10% as per standard PCBs

ORDERING INFORMATION

8518: 8-Port RS422 - 121 ohms Parallel Termination on Receive Side Only (V42)

8515: 8-Port RS232 w/ TXD, RXD, CTS, RTS, DTR, DSR, RI, DCD per port (V61)

8512: 8-Port RS232 w/ TXD, RXD, CTS, RTS, DTR, DSR, RI, DCD per port (V42)

8509: 4-Port RS232; 4-Port RS422 - 121 ohms Parallel Termination on Receive Side of RS422 Ports (V42)

8506: 32-Channel General Purpose I/O - 49.9 ohms Series Termination (V42)

8503: 16-Port RS485 - 121 ohms Parallel Termination (V42)

8500: 16-Port RS485 - No Termination (V42)

8497: 16-Port RS422 - 121 ohms Parallel Termination on Receive Side Only; TXD, RXD (V42)

8494: 16-Port RS232 - TXD,RXD,CTS,RTS per Port (V42)

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