FEATURES

MityARM-335x Development Board

MityARM-335x SoM Module

Additional Hardware Included:

- RS485/422 Expansion Kit
- RS232 Expansion Kit
- Serial & Ethernet Cables
- AC to DC 12V 1.2A Adapter

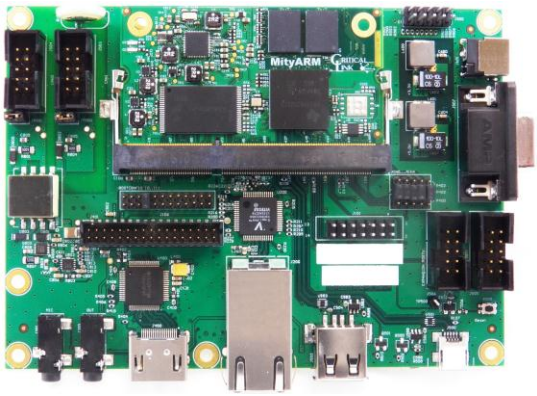
Integrated +3V/+5V Power Supplies

Digital Interfaces:

- HDMI Video Only Interface with 2048x2048 maximum resolution
- Audio Output and Microphone Input
- 10/100/1000 MBit Ethernet Interface
- 8-Channel ADC
- RS-232 Serial Interface
- USB Host Interface
- USB OTG Interface
- Dual Electrically Isolated CAN Bus Interfaces
- SD/MMC Card Socket

Expansion

- 2 UART Expansion Headers
- 41-Pin with SPI, I2C and GPIO
- LCD Interface



Software and Documentation:

- Real-Time Linux Kernel
- uBoot
- Development Environment - Virtual Machine
- Development Board Schematics
- Development Board Gerber Files
- Development Board BOM

APPLICATIONS

- MityARM-335x Evaluation
- Process Automation
- Factory Automation
- Industrial Automation
- Embedded Instrumentation
- Rich Displays
- Rapid Prototyping

DESCRIPTION

The MityARM-335x Development Kit provides all the hardware and software support for system designers and developers to evaluate the Critical Link MityARM-335x System on Module. The MityARM-335x Development Kit comes complete with the MityARM-335x module that meets your project's needs.

The MityARM-335x Development Kit includes on-board RS-232, 10/100/1000 GBit Ethernet, Universal Serial Bus (USB 2.0) Host and USB-On-The-Go (OTG) communication interfaces. Dual electrically isolated CAN and dual UART expansion ports provide a wide range of communication interfaces. Included are RS232 and RS485/422 expansion kits from Critical Link, Table 18.

The High-Definition Multimedia Interface (HDMI) supports displays up to a resolution of 2048 x 2048 through a standard HDMI connector, video only. An interface to support an XGA LCD display with SPI or ADC interfaces for resistive touch control is available via an expansion kit, Table 18. Multi Media Card (MMC) interface supporting Secure Digital (SD) cards and an I/O Expansion connector for an 802.11b/g/n Wireless with Bluetooth module from Critical Link, Table 18, or a user designed custom add-on card. All powered from a single 12VDC input with onboard +3V/+5V power supplies.

A block diagram of the MityARM-335x Development Kit is illustrated in Figure 1 on the following page. All available processor GPIO ports are used directly by the MityARM-335x Development Kit. Control of the on-board interface hardware and connected Expansion IO cards require proper configuration of the MityARM-335x Module. While not required, it is strongly recommended that the MityARM software development kit and supplied API be used to manage these interfaces.

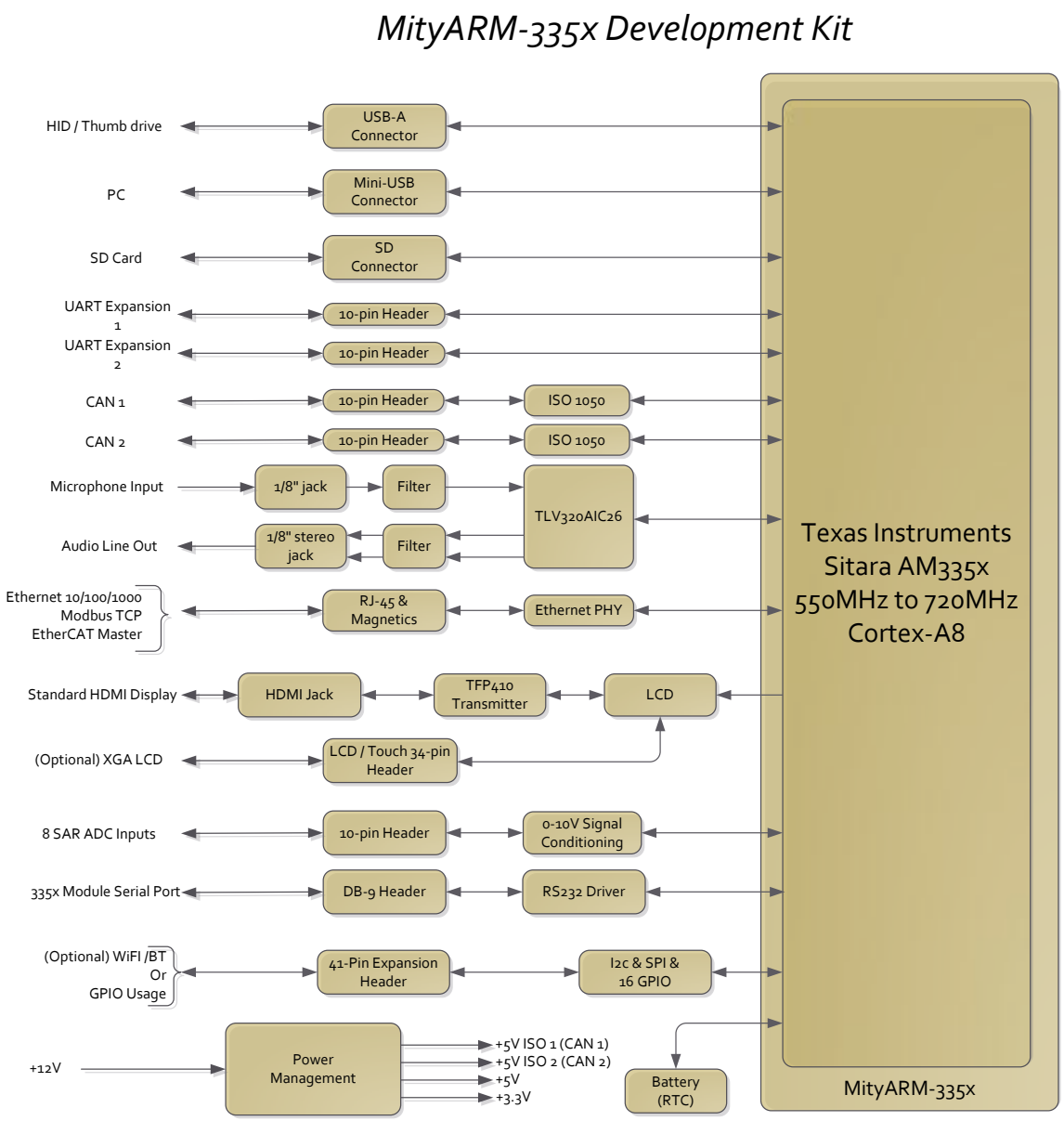


Figure 1: MityARM-335x Development Kit Block Diagram

Additional details about the AM335x Sitara ARM MPU, available peripherals and their features are provided in the data sheet at the TI website (www.ti.com/am335x).

Feature Descriptions

Electrical Interface Descriptions

RS-232 Interface Description

The on-board RS-232 level driver provides a standard serial interface at data rates up to 115,200 baud. The serial interface, J507, is routed to the primary MityARM serial bootloading port, UART0, in order to allow remote code download and FLASH upgrades on an attached MityARM from this connector.

Dual UART Expansion Port Description

The dual UART expansion ports each contain a set of TX and RX connections as well as an enable GPIO from the MityARM-335x module. A custom user designed driver board can be designed to provide any desired signaling or you can select an off-the-shelf solution available from Critical Link for RS232 and RS485/422 drivers. Each MityARM-335x Development includes both a RS232 and RS485/422 driver expansion kits, Table 18.

The electrical interfaces are provided via J505 and J506, 10-pin shrouded headers. HW flow control is not supported on these interfaces.

Linux Driver and API examples are available to support the UART functionality.

Audio Input/Output Description

Standard 3.5mm / 1/8th inch audio jacks are provided for both stereo audio output and a microphone audio input from/to a TLV320AIC26 16-bit audio CODEC connected to the MityARM-335x module.

The electrical interfaces are provided via 1/8th inch jacks J300, Audio Out, and J301, Microphone In.

Linux Driver and API examples are available to support the audio functionality.

USB 2.0 Interface Description

The on-board USB interface utilizes dedicated HOST, A type connector J502, and OTG, mini B type connector J500, controllers inside Sitara processor. Linux drivers are available.

MultiMedia Card (SD) Interface Description

The on-board MultiMedia Card (MMC) slot uses a Secure Digital connector J501 which supports standard (3.3V) and SDHC (1.8V) cards up to 32GB. U-Boot configuration information and Linux drivers are available.

Gigabit Ethernet Interface Description

The on-board Ethernet interface features a network PHY capable of running at 10/100/1000Mbit including link auto-negotiation and MII/MDIO capability. An industry standard RJ-45 connector is provided for external connection. This Ethernet interface may be used to perform remote code download via U-Boot and FLASH upgrades on an attached MityARM-335x module.

LCD with Touch Interface Description

The MityARM-335x Development Kit provides a flat-ribbon cable low profile Digital Video Interface (DVI). In addition to custom user interfacing, the signals may be used to interface to either a XGA (1024x768) or VGA (640x480) LCD screen using the MityARM hardware and software development kit LCD interface libraries and an appropriate daughterboard interface. Off-the-shelf display solutions for XGA or VGA interfaces are provided by Critical Link.

Combining five of the interface pins with P400, P401 and P402 jumper settings allow for SPI or up to 5-channel Analog based touch screen controls.

Note: ADC Channels 1 through 5 are shared with the Analog to Digital Converter interface connections and are enabled or disabled depending on P402 and P401 jumpers.

The interface can also be customized to support 20 GPIO lines at +3.3V CMOS/LVTTL signaling levels based on the AM335x configuration.

HDMI (Video Only) Interface Description

The MityARM-335x Development Kit provides a standard HDMI interface for external monitor connection. With a maximum resolution of 2048 x 2048 the MityARM-335x development kit can drive the display you need.

8-Channel Analog to Digital Converter Description

The on-board 8-channel analog to digital converter (ADC) accepts 0 to 10V input levels through the 10-pin header, J900.

Note: Channels 1 through 5 are shared with the LCD analog touch interface connections and are enabled or disabled depending on P402 and P401 jumpers.

Dual CAN Interface Description

The on-board CAN provides a set of CAN V2.0B compliant interfaces. These interfaces are managed by the MityARM-335x module directly.

The galvanic isolation is provided by a dedicated TI ISO1050 transceiver for each interface. The ISO1050 is powered by an isolated power supply with 1000V* isolation from the primary supply.

Jumpers JP500 (CAN 1) and JP501 (CAN 0) can provide dedicated bus termination of 120Ohm. To enable termination, place shorting jumper across JP504.

The electrical interfaces are provided via J503 and J504, 10-pin shrouded headers.

Linux Driver and API examples are available to support CAN functionality.

Expansion Port Interface Description

This 41-pin port can be used for a multitude of expansion functions. Both SPI and I2C connections are available as well as 16 Address/Data pins with control logic. Both 1.8V from the MityARM-335x module and 3.3V power supply connections are available on the connector.

In addition to custom user interfacing Critical Link provides off-the-shelf add-on modules for this port that include an 802.11 b/g/n with Bluetooth module.

Boot Configuration Header Description

The 335x Development Kit features a 12 bit, [0] to [11] series of boot configuration jumpers, based off the LCD_DATA pins, to determine the search order of peripherals for a valid boot image.

By default the MityARM-335x Development Kits is required to boot initially from the MMC/SD card. Note that there are a total of 16 bits for the boot configuration with pins [12] to [15] already pulled high/low on the MityARM-335x module.

TI JTAG Interface Description

The 14-pin JTAG header J101 is available onboard for debugging of the MityARM AM335x module with a TI Emulator.

ABSOLUTE MAXIMUM RATINGS

If Military/Aerospace specified cards are required, please contact the Critical Link Sales Office or unit Distributors for availability and specifications.

Maximum Supply Voltage	13.2 V
Storage Temperature Range	0 to 80C

OPERATING CONDITIONS

Ambient Temperature Range	0 to 70C
Humidity	0 to 95% Non-condensing

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Typical	Limit	Units (Limits)
Maximum Power Supply Output					
I_{Max}	12V Supply (AC Adapter)[1] all components			1.2	A
I_{Max}	5.0V Supply[2] for external components			1.0	A
I_{Max}	3.3V Supply[2] for external components			1.0	A
Power Dissipation					
V_S	Supply Voltage		12±5%		V
I_S	Supply Current[3]		330[1]		mA

Notes:

1. An alternative higher amperage AC/DC 12V adapter is available upon request. Contact Critical Link for details and ordering information.
2. The maximum current supplied to external components should be limited to the specified maximum for both the 5.0V and 3.3V supplies.
3. Expansion card not attached, 100% ARM utilization, RS-232 and Ethernet are enabled and active.

ELECTRICAL INTERFACE DESCRIPTIONS

Input Power – J601

The MityARM-335x Development Kit power interface, J601, requires a single +12Volt power supply.

Table 1: Input Power Interface Pin Description

Signal	J601 Position
+12V	1
GND	2

Analog to Digital Converter Interface – J900

The MityARM-335x Development Kit provides an 8-channel Analog to Digital converter (ADC). This 10-pin header, J900, has 8 ADC input pins and 2 ground pins, Figure 2 below and Table 2. It can accept voltage levels from 0 to 10V.

Note: Inputs 0 to 4 are shared with the LCD Interface and may not be used for both functions simultaneously, see Table 4.

Table 2: J900 Connector Pin Assignments

Pin	Signal	SoM Pin Post Conversion[1]	Type	Standard	Notes
1	A_INP_7	198	I	Analog 0V to 10V	
2	+12V	-	Power	200mA Max	Total external draw on 12V supply should not exceed 800mA
3	A_INP_5	194	I	Analog 0V to 10V	
4	A_INP_6	196	I	Analog 0V to 10V	
5	A_INP_3	190	I	Analog 0V to 10V	
6	A_INP_4	192	I	Analog 0V to 10V	
7	A_INP_1	186	I	Analog 0V to 10V	
8	A_INP_2	188	I	Analog 0V to 10V	
9	GND	-	Power		
10	A_INP_0	184	I	Analog 0V to 10V	

Note 1: Each analog input pin passes through a series of OPAMPs to convert the 0V to 10V levels to 0V to 1.8V levels so that the MityARM-335x module can process them. The "SoM Pin Post Scaling" is the pin after the OPAMPs and also after the headers of Table 4 in the cases of inputs 0 to 4.

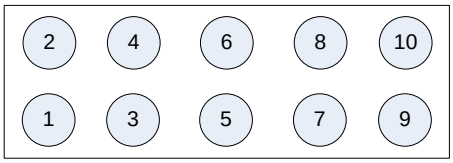


Figure 2: J900 Pin-out (Top View)

MultiMedia Card (SD) Interface – J501

The MityARM-335x Development Kit provides a MMC interface that uses a standard Secure Digital (SD) card slot for the physical interface. Through the use of SD card adapters MicroSD and MiniSD cards can be used in this slot. By default the slot is supplied with 3.3V for use with standard SD cards and the R140 resistor can be de-populated while R139 is populated to provide a 1.8V supply for SDHC cards.

Auxiliary / LCD Interface – J401

The Auxiliary / LCD interface connector provides the necessary connections to connect either an XGA or VGA display as well as pins to support touch screen controls. The interface uses a standard 2mm 34 position male header. Table 3 defines the LCD connector, J401, pin out which contains DVI signals that are routed directly from the MityARM-335x to this connector.

There are also 5 interface pins that are used for the touch screen controls which can support either SPI or Analog to Digital based interfaces depending on P400, P401 and P402 jumper settings as defined in Table 3.

A ribbon cable using Molex 87568-3463 connector (or equivalent) can be used. There are a variety of 2mm mating connectors that can be utilized.

Table 3: J401 Aux / LCD Interface Pin Description

Pin	Schematic Signal	SoM Pin	Type	Standard	Notes
1	DVI R4	63	I/O	3.3V LVCMOS	Software configurable AM335x IO
2	DVI R3	61	I/O	3.3V LVCMOS	Software configurable AM335x IO
3	DVI R2	59	I/O	3.3V LVCMOS	Software configurable AM335x IO
4	DVI R1	57	I/O	3.3V LVCMOS	Software configurable AM335x IO
5	DVI R0	53	I/O	3.3V LVCMOS	Software configurable AM335x IO
6	DVI G5	51	I/O	3.3V LVCMOS	Software configurable AM335x IO
7	DVI G4	49	I/O	3.3V LVCMOS	Software configurable AM335x IO
8	DVI G3	47	I/O	3.3V LVCMOS	Software configurable AM335x IO
9	DVI G2	45	I/O	3.3V LVCMOS	Software configurable AM335x IO
10	DVI G1	43	I/O	3.3V LVCMOS	Software configurable AM335x IO
11	DVI G0	41	I/O	3.3V LVCMOS	Software configurable AM335x IO
12	DVI B4	39	I/O	3.3V LVCMOS	Software configurable AM335x IO
13	DVI B3	35	I/O	3.3V LVCMOS	Software configurable AM335x IO
14	DVI B2	33	I/O	3.3V LVCMOS	Software configurable AM335x IO
15	DVI B1	31	I/O	3.3V LVCMOS	Software configurable AM335x IO
16	DVI B0	29	I/O	3.3V LVCMOS	Software configurable AM335x IO
17	GND	-	Power	-	
18	GND	-	Power	-	
19	DVI_CLK	65	I/O	3.3V LVCMOS	Software configurable AM335x IO
20	DVI DE	71	I/O	3.3V LVCMOS	Software configurable AM335x IO
21	DVI HSYNC	69	I/O	3.3V LVCMOS	Software configurable AM335x IO
22	DVI VSYNC	67	I/O	3.3V LVCMOS	Software configurable AM335x IO
23	GND	-	Power	-	
24	GND	-	Power	-	
25	+12V	-	Power	200mA max	Total external draw on 12V supply should not exceed 800mA
26	+5.0V	-	Power	200mA max	Total external draw on 5V supply should not exceed 1000mA
27	+3.3V	-	Power	200mA max	Total external draw on 3.3V supply should not exceed 1000mA
28	BACKLIGHT_PWM	152	I/O	3.3V LVCMOS	Software configurable AM335x IO
29	SPI0 D1/A2D 0	185/184	I/O	3.3V or 0 to 10V ADC	Touch Screen SPI or ADC - Table 4
30	SPI0 D0/A2D 1	183/186	I/O	3.3V or 0 to 10V ADC	Touch Screen SPI or ADC - Table 4
31	SPI0 SCLK/A2D 2	187/188	I/O	3.3V or 0 to 10V ADC	Touch Screen SPI or ADC - Table 4
32	SPI0 CS0/A2D 3	191/190	I/O	3.3V or 0 to 10V ADC	Touch Screen SPI or ADC - Table 4
33	TS IRQ N/A2D 4	201/192	I/O	3.3V or 0 to 10V AD	Touch Screen SPI or ADC - Table 4
34	TS BUSY	203	I/O	3.3V LVCMOS	Software configurable AM335x IO

Note: These signals are pin-muxed in the CPU and may be available for a variety of functions.

Table 4: J104 Aux / LCD Interface Touch Screen Pin Description

Pin	P400	P401	P402	Notes
SPI Touch Only	Jumpered	-	-	Figure 3
ADC Touch Only	-	Jumpered	-	Figure 4
ADC J900 Only	-	-	Jumpered	Figure 5
ADC J900 and SPI Touch	Jumpered	-	Jumpered	Figure 6

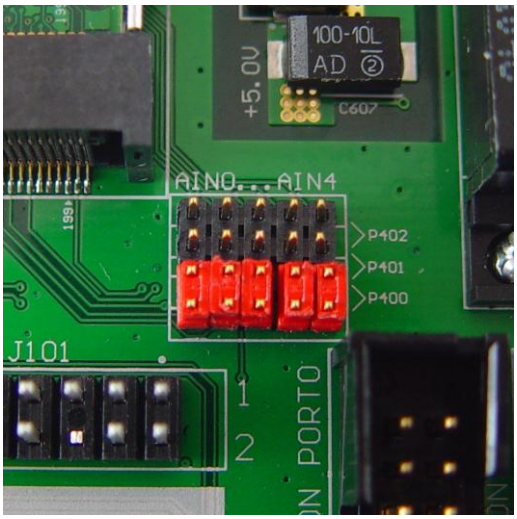


Figure 3: P400 - SPI Touch Only

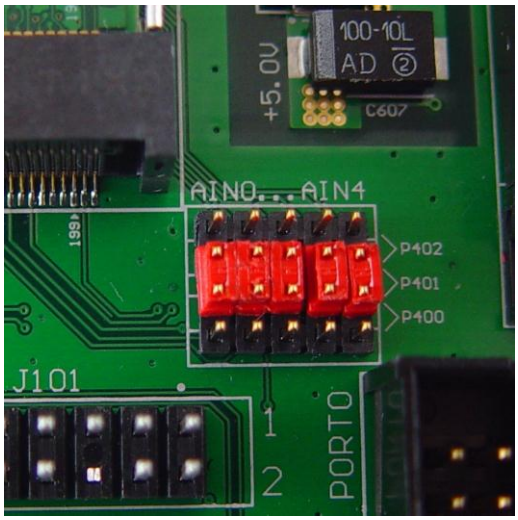


Figure 4: P401 - ADC Touch Only

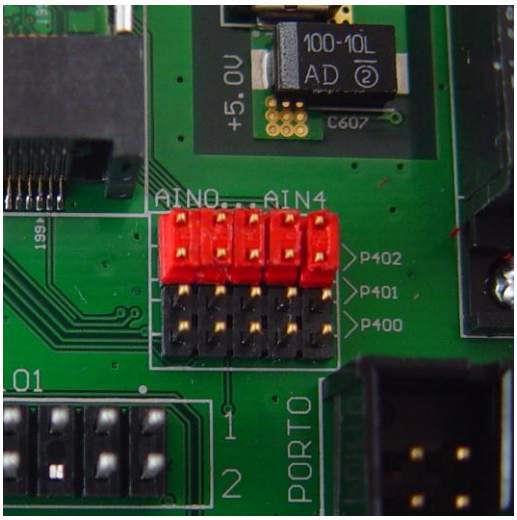


Figure 5: P402 – ADC J900 Only

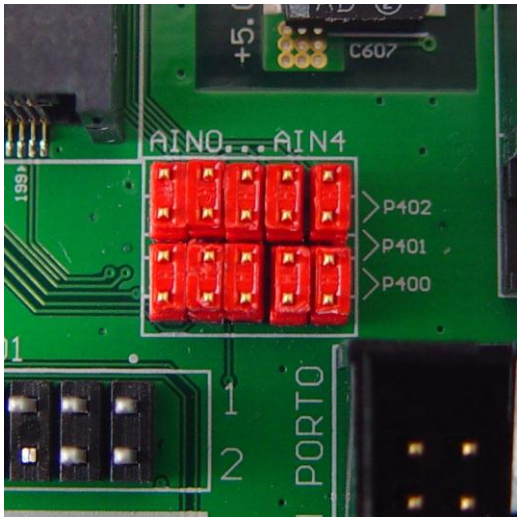


Figure 6: P400 and P402 - ADC J900 and SPI Touch

HDMI Interface – J400

The MityARM-335x Development Kit provides a 19-pin standard HDMI connector with video only, J400. Supporting HDMI 1.3, the MityARM-335x can output up to a resolution of 2048 x 2048 pixels.

Table 5: J400 Connector Pin Assignments

Pin	Signal	Type	Standard	Notes
1	TMDS Data2+	O		
2	Shield	Power		
3	TMDS Data2-	O		
4	TMDS Data1+	O		
5	Shield	Power		
6	TMDS Data1-	O		
7	TMDS Data0+	O		
8	Shield	Power		
9	TMDS Data0-	O		
10	TMDS Clock+	O		
11	Shield	Power		
12	TMDS Clock-	O		
13	Reserved (CEC)	-		
14	Reserved	-		
15	Reserved (DDC Data/SDA)	-		
16	Reserved (DDC Clock/SCL)	-		
17	GND	Power		
18	+5.0V	Power		
19	Hot Plug Detect	O		

Expansion Port Interface – J700

The MityARM-335x Development Kit provides a single 41-pin general expansion connector on the bottom of the board. A Hirose DF9-41P-1V(32) connector is used and mates with a Hirose DF9A-41S-1V(22) (or equivalent) connector.

This expansion interface can be used for many different add-on cards due to it having I2C, SPI and 16 General Purpose Memory Controller (GPMC) Address/Data pins with control signals directly from the MityARM-335x module. Two 3.3V Supply pins are provided on the connector as well as a 1.8V connection from the MityARM-335x module itself.

In addition to custom user interfacing Critical Link provides off-the-shelf add-on modules for this port that include an 802.11 b/g/n with Bluetooth module.

Table 6 provides signal descriptions for each pin.

Table 6: J700 Connector Pin Assignments

Pin	Schematic Signal	SoM Pin	Type	Standard	Notes
1	GPMC_AD15	107	I/O	3.3V LVCMOS	Software configurable GPIO
2	+3.3V	-	Power	-	250mA Max (Per pin)
3	GPMC_AD14	105	I/O	3.3V LVCMOS	Software configurable GPIO
4	+3.3V	-	Power	-	250mA Max (Per pin)
5	GPMC_AD13	103	I/O	3.3V LVCMOS	Software configurable GPIO
6	GND	-	Power	-	
7	GPMC_AD12	101	I/O	3.3V LVCMOS	Software configurable GPIO
8	GPMC_CS1_N	113	I/O	3.3V LVCMOS	Software configurable GPIO
9	GPMC_AD11	99	I/O	3.3V LVCMOS	Software configurable GPIO
10	GPMC_CS2_N	111	I/O	3.3V LVCMOS	Software configurable GPIO
11	GPMC_AD10	97	I/O	3.3V LVCMOS	Software configurable GPIO
12	GPMC_WP_N	104	I/O	3.3V LVCMOS	Software configurable GPIO
13	GPMC_AD9	95	I/O	3.3V LVCMOS	Software configurable GPIO
14	GPMC_BEN1	102	I/O	3.3V LVCMOS	Software configurable GPIO
15	GPMC_AD8	93	I/O	3.3V LVCMOS	Software configurable GPIO
16	GPMC_WAIT0	100	I	3.3V LVCMOS	Software configurable GPIO
17	GPMC_AD7	89	I/O	3.3V LVCMOS	Software configurable GPIO
18	GND	-	Power	-	
19	GPMC_AD6	87	I/O	3.3V LVCMOS	Software configurable GPIO
20	GPMC_WE_N	98	I/O	3.3V LVCMOS	Software configurable GPIO
21	GPMC_AD5	85	I/O	3.3V LVCMOS	Software configurable GPIO
22	GPMC_CS3_N	94	I/O	3.3V LVCMOS	Software configurable GPIO
23	GPMC_AD4	83	I/O	3.3V LVCMOS	Software configurable GPIO
24	GPMC_OEN_RE_N	90	I/O	3.3V LVCMOS	Software configurable GPIO
25	GPMC_AD3	81	I/O	3.3V LVCMOS	Software configurable GPIO
26	GPMC_ADVN_ALE	88	I/O	3.3V LVCMOS	Software configurable GPIO
27	GPMC_AD2	79	I/O	3.3V LVCMOS	Software configurable GPIO
28	GPMC_BEN0_CLE	86	I/O	3.3V LVCMOS	Software configurable GPIO
29	GPMC_AD1	77	I/O	3.3V LVCMOS	Software configurable GPIO
30	GPMC_CLK	84	O	3.3V LVCMOS	Software configurable GPIO
31	GPMC_AD0	75	I/O	3.3V LVCMOS	Software configurable GPIO
32	GND	-	Power	-	
33	GND	-	Power	-	
34	VIO_1P8	-	Power	-	1.8V direct from MityARM-335x module
35	Reserved	-	-	-	
36	SPI1_D1_MISO	197	I	3.3V LVCMOS	Software configurable GPIO
37	GPIO3_14	122	I/O	3.3V LVCMOS	Software configurable GPIO
38	SPI1_D0_MOSI	195	O	3.3V LVCMOS	Software configurable GPIO
39	I2C0_SDA	177	I/O	3.3V LVCMOS	Software configurable GPIO
40	SPI1_SCLK	193	O	3.3V LVCMOS	Software configurable GPIO
41	I2C0_SCL	179	I/O	3.3V LVCMOS	Software configurable GPIO

Note that these signals are pin-muxed in the CPU and may be available for a variety of functions.

[1] The I2C bus controlled by MityARM hardware. Slave address 0x90 reserved for Power Management Controller IC, I2C1. User should not attempt to write any data to this address as it will result in module damage.

Expansion Port Naming Description

Table 7: J700 Expansion Port Signal Description

Signal	Type	Standard	Notes
GPMC_CS#_N	I/O	3.3V CMOS	Chip select signals to MityARM
GPMC_AD##	I/O	3.3V CMOS	GPMC Address/Data Direct Interface to MityARM-335x Module
GPMC_CLK	O	3.3V CMOS	GPMC Clock output maximum 100Mhz
GPMC_Wait0	I	3.3V CMOS	GPMC Wait0 signal to MityARM-335x Module
GPMC_XXXX_XXX	I/O	3.3V CMOS	Other GPMC control I/O signals to MityARM-335x Module
SPI1_D1_MISO	I	3.3V CMOS	SPI input signal
SPI1_SCLK & SPI1_DO_MOSI	O	3.3V CMOS	SPI output signals
I2C0_XXX	I/O	3.3V CMOS	I2C bus signals

Debug/Boot RS232 Interface – J507

Table 8: J507 DB9 Connector Pin Assignments

Pin	Signal	Type	Standard	Notes
1	RESERVED	-	-	
2	BOOT_RS232_RX	O	RS232	RS232 RX to MityARM Debug Port
3	BOOT_RS232_TX	I	RS232	RS232 TX from MityARM Debug Port
4	RESERVED	-	-	
5	GND	Power	-	RS232 Ground
6	RESERVED	-	-	
7	RESERVED	-	-	
8	RESERVED	-	-	
9	RESERVED	-	-	

Dual CAN Interface – J503 & J504

Table 9: J503 CAN1 & J504 CAN0 Connector[1] Pin Assignments

Pin	Signal	Type	Standard	Notes
1	RESERVED	-	-	
2	CANL	I/O		CAN Bus Signal L
3	GND_ISOCANx[2]	Power	-	CAN Bus Isolated Ground
4	RESERVED	-	-	
5	RESERVED	-	-	
6	RESERVED	-	-	
7	CANH	I/O		CAN Bus Signal H
8	RESERVED	-	-	
9	+5V_CANx[2]	Power	-	Isolated +5V Output, 20mA Max
10	RESERVED	-	-	

Note 1: Please see Figure 7 for physical pin-out of connector
Note 2: The ‘x’ at the end of the signal names is either a 1 or a 0 depending on which CAN interface you are using.

UART Expansion Interface Port0 - J506 (Use with 80-000450 and 80-000358)

Table 10: J506 Connector Pin Assignments

Pin	Schematic Signal	SoM Pin	Type	Standard	Notes
1	EXPANSION0_TX_ENB	114	I/O		Software configurable MityARM-335x GPIO
2	EXPANSION0_RX	165	O		Software configurable MityARM-335x GPIO
3	+3.3V	-	Power	200mA Max	Total external draw on 3.3V supply should not exceed 1000mA
4	RESERVED	-	-		
5	RESERVED	-	-		
6	EXPANSION0_TX	167	I		Software configurable MityARM-335x GPIO
7	RESERVED	-	-		
8	GND	-	Power		
9	RESERVED	-	-		
10	RESERVED	-	-		

Notes: Please see Figure 7 for physical pin-out of connector

UART Expansion Interface Port1 - J505 (Use with 80-000450 and 80-000358)

Table 11: J506 Connector Pin Assignments

Pin	Schematic Signal	SoM Pin	Type	Standard	Notes
1	EXPANSION1_TX_ENB	126	I/O		Software configurable MityARM-335x GPIO
2	EXPANSION1_RX	118	O		Software configurable MityARM-335x GPIO
3	+3.3V	-	Power	200mA Max	Total external draw on 3.3V supply should not exceed 1000mA
4	RESERVED	-	-		
5	RESERVED	-	-		
6	EXPANSION1_TX	116	I		Software configurable MityARM-335x GPIO
7	RESERVED	-	-		
8	GND	-	Power		
9	RESERVED	-	-		
10	RESERVED	-	-		

Notes: Please see Figure 7 for physical pin-out of connector

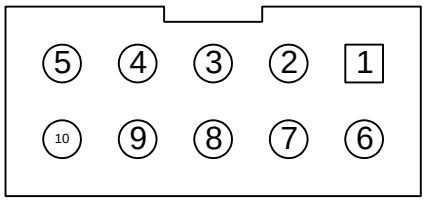


Figure 7: J503, J504, J505 and J506 Pin-out (Top View)

10/100/1000 Ethernet Interface – J200

The MityARM-335x Development Kit provides a RJ-45 connection for a Gigabit 10/100/1000 Ethernet connection. This connection follows standard TIA/EIA-568B pin-out as shown in Table 12 below. The Ethernet PHY will auto negotiate to the speed of the device it is connected to.

Table 12: J200 Ethernet RJ45 Pin Assignments

Pin	Signal	Type	Standard	Notes
1	TXVA_P	I/O		
2	TXVA_N	I/O		
3	TXVB_P	I/O		
4	TXVB_N	I/O		
5	TXVC_P	I/O		
6	TXVC_N	I/O		
7	TXVD_P	I/O		
8	TXVD_N	I/O		

Audio Input/Output Interface – J300 and J301

The MityARM-335x Development Kit provides both an Input, biased microphone, and Output, L/R stereo speaker connections. The 3.5mm/1/8” connections are through J300 for output and J301 for input with the pin-outs shown below.

Table 13: J300 Audio Output Pin Assignments

Pin	Signal	Type	Standard	Notes
Tip	Audio Out Left	O		Unbalanced audio output
Ring	Audio Out Right	O		Unbalanced audio output
Sleeve	GND	Power		Audio Ground

Table 14: J301 Audio Output Pin Assignments

Pin	Signal	Type	Standard	Notes
Tip	Mic Bias	O		2.2V bias from TLV320AIC26
Ring	Mic Input	I		
Sleeve	GND	Power		Audio Ground

Boot Configuration header – J106

The boot mode, as determined by the 12 BOOTCONFIG pins, is selected on the rising edge of the PWRONRSTn Reset Input Pin of the AM335x processor which is controlled by the PMIC of the MityARM-335x module. Each boot configuration pin on the development kit is connected to a weak pull up, '1', unless a jumper is placed across the header pins which pulls that configuration pin down to ground, '0'.

The MityARM-335x Development Kits default boot configuration header mode is shown in Figure 8 below. As seen this equates to a boot configuration setting of [0] to [11], `111011111111`. Please reference the AM335x Technical Reference Manual for complete details on how the vast array of boot mode options.

There are a total of 16 boot configuration pins that are registered by the AM335x processor however [12] to [15] are fixed, `0010`, on the MityARM-335x module.

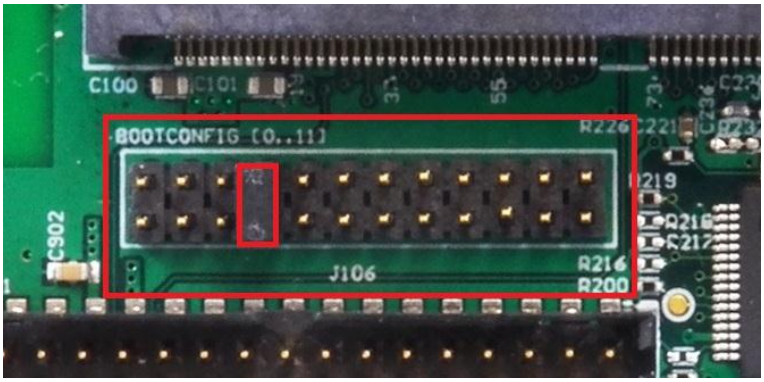


Figure 8: Default Development Kit Boot Jumper Mode

TI JTAG Interface – J101

Table 15: J101 JTAG Pin Assignments

Pin	Schematic Signal	SoM Pin	Type	Standard	Notes
1	TMS	172			
2	TRST_N	174			
3	TDI	168			
4	GND	-	Power		
5	+3.3V	-	Power		
6	Key	-	-	-	
7	TDO	170			
8	GND	-	Power		
9	TCK_RET	166			
10	GND	-	Power		
11	TCK	166			
12	GND	-	Power		
13	EMU0	160			
14	EMU1	162			

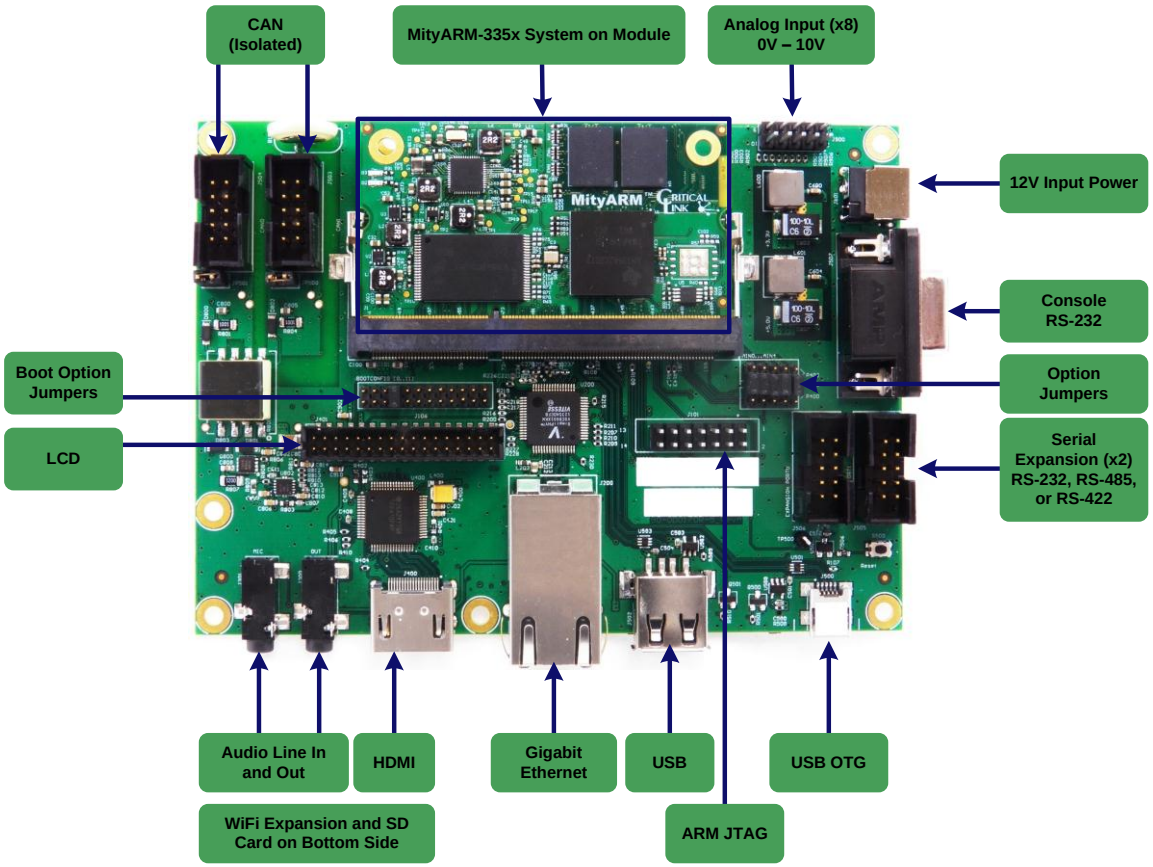
Included Components

The following table lists the components that are included with a MityARM-335x Development Kit. See Table 17 for specific development kit ordering information and Table 18 for expansion kit ordering information.

Table 16: Included Items

Description	Interface Port	Qty. Included
MityARM-335x Development Kit Board	n/a	Qty. 1
MityARM-335x Module	n/a	Qty. 1
Serial cable M/F	J507	Qty. 1
RS485/422 Expansion Kit	J505 and J506	Qty. 1
RS232 Expansion Kit	J505 and J506	Qty. 1
12V 1.2A AC to DC Supply	J601	Qty. 1
Ethernet cable – 7 foot	J200	Qty. 1
USB Drive with Development Environment	n/a	Qty. 1
Development Kit Schematic Files	n/a	
Development Kit Gerber Drawings	n/a	
Development Kit Bill Of Materials	n/a	

MityARM-335x Development Kit Board with MityARM-335x Module



ORDERING INFORMATION

Development Kits

The following table lists the standard MityARM-335x Development Kit configurations. For shipping status, availability, and lead time of these or other configurations please contact your Critical Link representative.

Table 17: Standard Model Numbers

Development Kit Model	Module Included	Operating Temp
80-000512	3359-GX-226-RC	0°C to 70° C
80-000587	3354-GX-X38-RC	0°C to 70° C

Expansions Kits

The following table lists the standard expansion kits for the above development kits. For shipping status, availability, and lead time of these or other configurations please contact your Critical Link representative.

Table 18: Standard Expansion Kit Numbers

Expansion Kit Model	Type	Interface Port
80-000541	RS232	J505 and J506
80-000540	RS485/422	J505 and J506
80-000535	WiFi 802.11b/g/n w/ Bluetooth	J700
Contact Us	XGA LCD w/Resistive Touch Screen and Driver Board	J401
Contact Us	VGA LCD w/Resistive Touch Screen and Driver Board	J401

MECHANICAL INTERFACE DESCRIPTION

Main Board Interface / Mounting

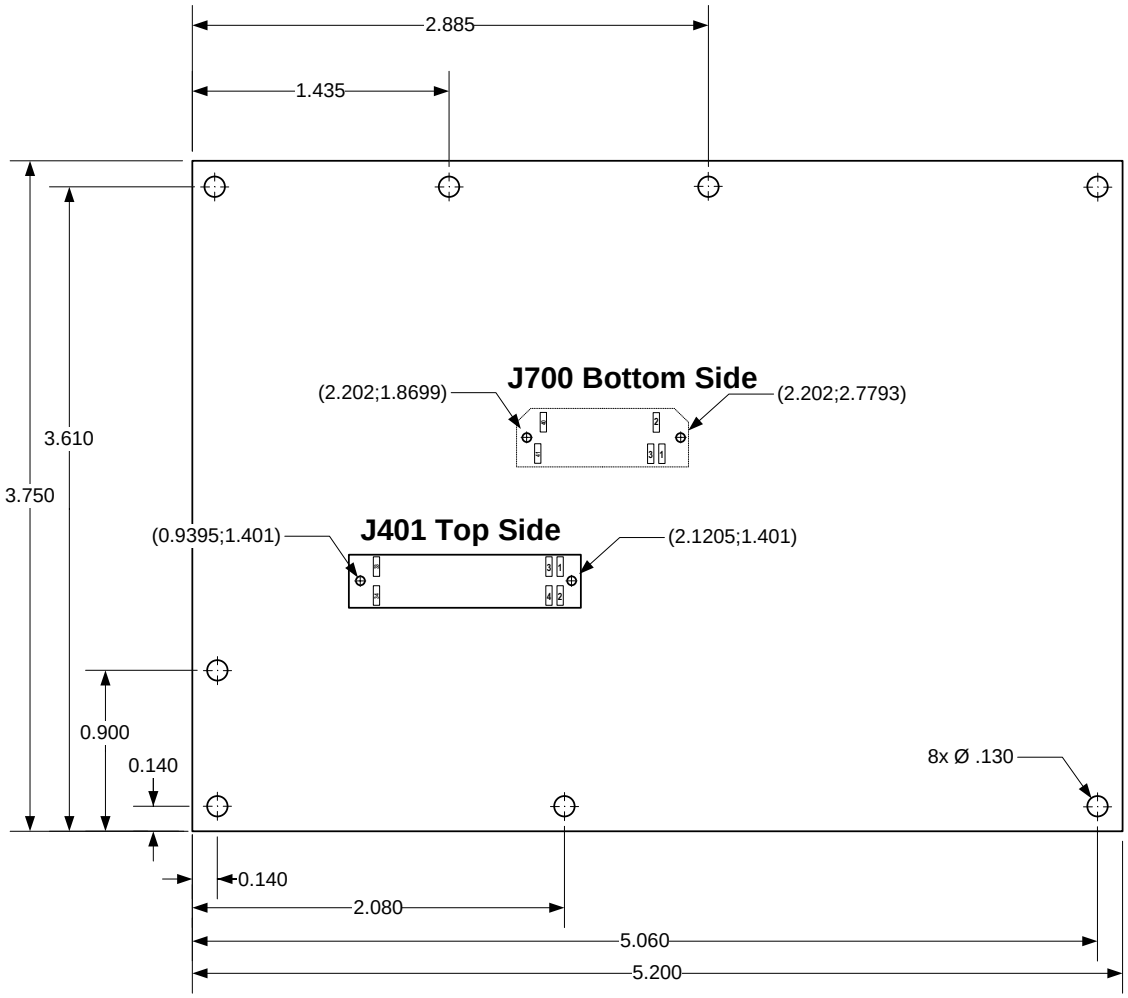


Figure 9: MityARM-335x Development Kit Outline, Mounting Hole Locations, Hirose DF9-41P-1V(32) expansion header J700 and Molex 87832-3420 LCD header J401 (Top View, inches)

REVISION HISTORY

Date	Change Description
29-FEB-2012	Initial revision.
15-MAR-2012	Updates and changes from review.
12-APR-2013	Added boot jumper information and revised available development kit part numbers.

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