



im232M

RS-232 Interface Module with Press-Fit Connectors

----- Part of Modtronix *Presto iMod* product range -----

1 Introduction

The following documentation is for the im232M Revision 1. The im232M is an electronic module with RS-232 interface, and press-fit connectors. It converts TTL logic levels to RS-232 interface levels, and visa versa. It has a wide operating voltage from 3.0V to 5.5V, low power consumption, and is ESD protected up to 15kV.

The im232M is part of the Modtronix *Presto iMod* product range.

Picture 1: im232M Board



2 Features

- Is part of our *Presto iMod* product range, can be used together with other Presto products. For details, see www.modtronix.com/products/presto
- High quality assembly, with brand name, quality components. No cheap, “no name brand” components are used!
- Press-Fit connectors are gold plated for best possible contact.
- Meets True EIA/TIA-232-F Standards from a +3.0V to +5.5V Power Supply
- Interoperable with EIA/TIA-232 and Adheres to EIA/TIA-562 Down to a +2.7V Power Source
- Minimum 120kbps Data Rate under Load
- Regulated Charge Pump Yields Stable RS-232 Outputs Regardless of VCC Variations
- Enhanced ESD Specifications:
 - ±15kV Human Body Model
 - ±15kV IEC1000-4-2 Air Discharge
 - ±8kV IEC1000-4-2 Contact Discharge
- Wide Operating Range: 3.0V to 5.5V, and -40°C to +85°C

3 Connectors

3.1 Press-Fit Connector

The im232M has two rows of press-fit connectors. They can be pressed into 1.00mm holes on a 1.6mm thick (standard PCB thickness) target board. No special tool is required, and they can be inserted by applying firm pressure to the connectors. Once fitted to the target board, the board is very secure, and can not be removed by hand any more. A screwdriver or similar tool can be used to remove the board if required.

If the im232M is to be soldered onto the target board, 1.10mm holes can be used. This will allow it to be inserted much easier than with 1.00mm holes. When using 1.10mm holes, the board can be removed by hand.

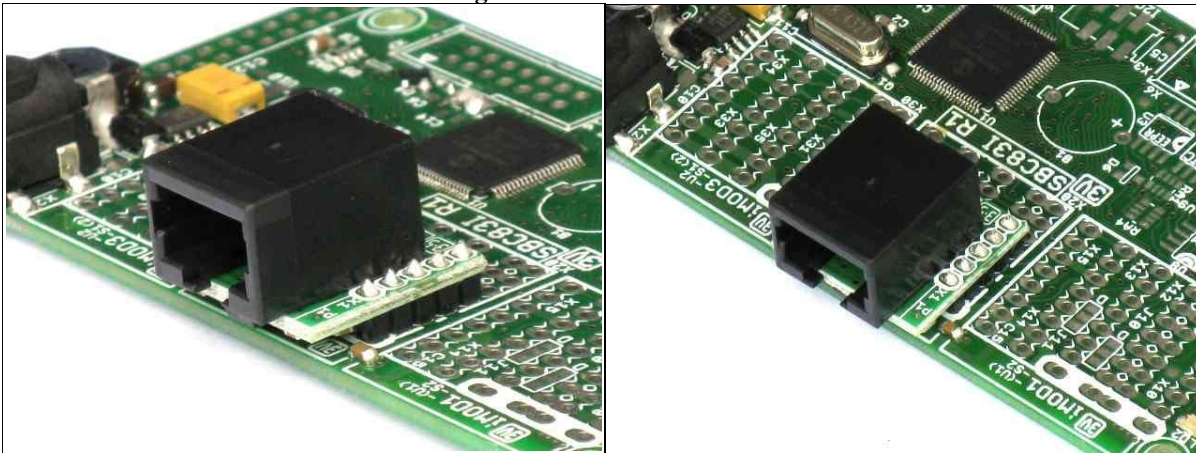
Table 2 shows the pin-outs of the X1 and X2 connectors (iMod left and right connectors). For the location of these connectors and pin-outs, see [7 Dimensions](#).

Table 1: Press-Fit Connector

<i>Left Press-Fit Connector (X1)</i>			<i>Right Press-Fit Connector (X2)</i>		
<i>Pin</i>	<i>Signal</i>	<i>Description</i>	<i>Pin</i>	<i>Signal</i>	<i>Description</i>
1	Gnd	0V Supply Voltage	1	Vaux	Auxiliary Voltage. Can be used to make the Auxiliary voltage obtained via the Press-Fit connector available on the Terminal Block connector.
2	RTS	Request To Send, output.	2	Vcc	Positive Supply Voltage. Normally 3.3V or 5.0V, depending on voltage of target board.
3	RX	Receive, output.			
4	TX	Transmit, input.			
5	CTS	Clear To Send, input.			

Picture 2 Shows the im232M board fitted to a target board.

Picture 2: im232M Board inserted on target board

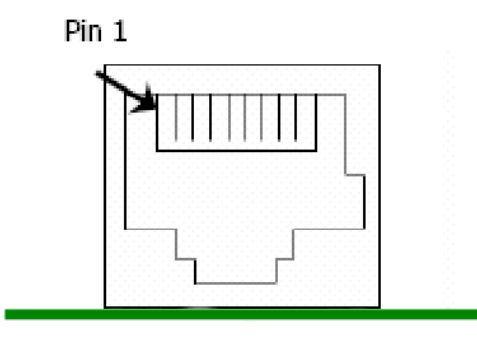


3.2 RJ45 Connector

The im232M has a 8 pin RJ45 connector.

Table 2: Terminal Block Connector

Connector Pin	Description
1	Vaux – Auxiliary Voltage obtained via press-fit connector. To enable this function, solder jumper J2 has to be made. This jumper is not made by default! This pin is connected to the Vaux pin on the press-fit connectors, via solder jumper J2. Can be used to access auxiliary voltage of target board that im232M is mounted to.
2	RTS – Request To Send, output to RS232 line.
3	0V – 0V of RS232 line.
4	TX – Transmit, output to RS232 line.
5	RX – Receive, input signal received from RS232 line.
6	V+ - Positive supply voltage of target board im232M is mounted to, obtained via press-fit connector. To enable this function, solder jumper J1 has to be made. This jumper is not made by default! This pin is connected to the Vcc pin on the press-fit connectors, via solder jumper J1.
7	CTS – Clear To Send, input signal received from RS232 line.
8	No Connection



A special cable and adapter is provided by Modtronix Engineering to enable the im232M to be connected to a RS-232 device. They are:

- The ADP45D9F cable adapter. Cable Adapter for converting RJ-45 plug (network cable) to D-Sub 9 pin female connector (serial cable). For details, see www.modtronix.com/product_info.php?products_id=313
- The CAB8M6FT cable. Serial Cable with RJ-45 plug, and D-Sub 9 pin female connector, 1.8m long. For details, see www.modtronix.com/product_info.php?products_id=312

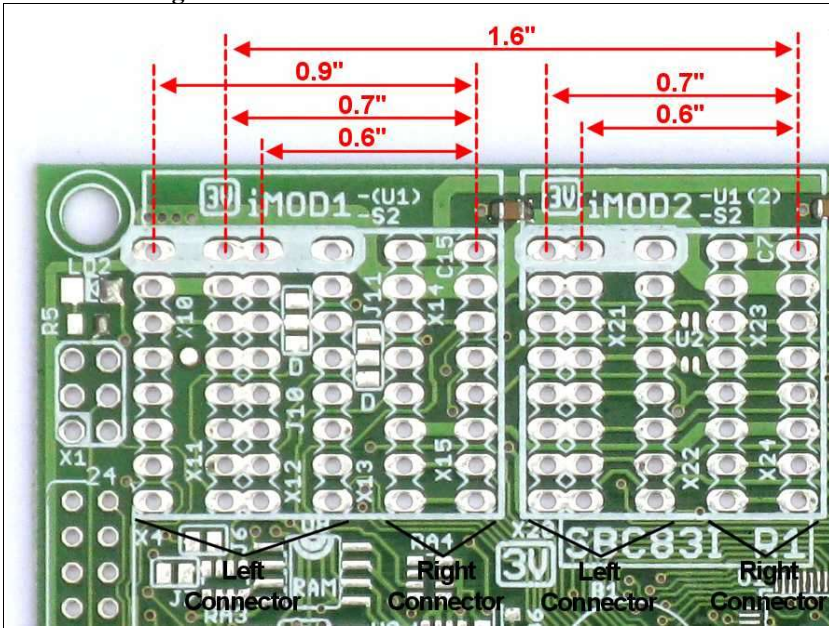
4 Presto iMod Modules

The im232M is part of the Modtronix *Presto iMod* product range. All iMod boards have two rows of press-fit connectors, a left and a right row. The signals on these connectors are pre-defined, allowing modules to be interchangeable.

A single iMod module is defined to have a maximum row spacing of 0.7", referred to as one module width. Modules can however be wider than one module width, other common module widths are 0.9", 1.1" and 1.6". Target boards can provide iMod Ports for fitting iMod modules. An iMod port is very simple and cheap to implement, and just two rows of 1.00mm holes 0.7" apart. Modules wider than 0.7" will normally take up two iMod Ports on the target board. It is recommended that multiple iMod Ports be spaced 0.2" apart. To help inserting the iMod module correctly into the iMod Port, pin 1 of the left connector is marked (white band around pad) on the iMod Module and iMod Port, and should always be aligned!

Picture 3 shows a target board with two iMod Ports. The left iMod Port is 0.9" wide, which is wider than a standard iMod module. This is so that a 0.9" iMod module can also be fitted to it (like the im28J60 Ethernet Module). Also note that the iMod Ports are spaced 0.2" apart, and that iMod modules wider than one module width can be fitted using both iMod Ports. Provision is also made for possible narrower iMod modules of 0.6" wide.

Picture 3: Target board with two iMod Ports.



5 RS-232-E

This section provided information on the RS-232-E standard. It might not be relevant for many applications!

RS-232-E was defined in 1991, and defines RTS as “Request To Send”, and CTS as “Ready To Receive”, allowing bidirectional communication.

Some older equipment require hardware handshaking signals on the DTR, DSR and DCD signals of the RS-232 communications port. Modtronix devices with 5 signal RS-232 Communication Ports do not have these signals, seeing that they are hardly ever used any more. To allow these Modtronix devices to be able to connect with RS-232 devices that require DTR, DSR and DCD signals, these pins are looped back on the Modtronix [ADP45D9F](#) and [CAB8M6FT](#) adapter and cable.

6 Specifications

6.1 Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	Top	-40		85	°C

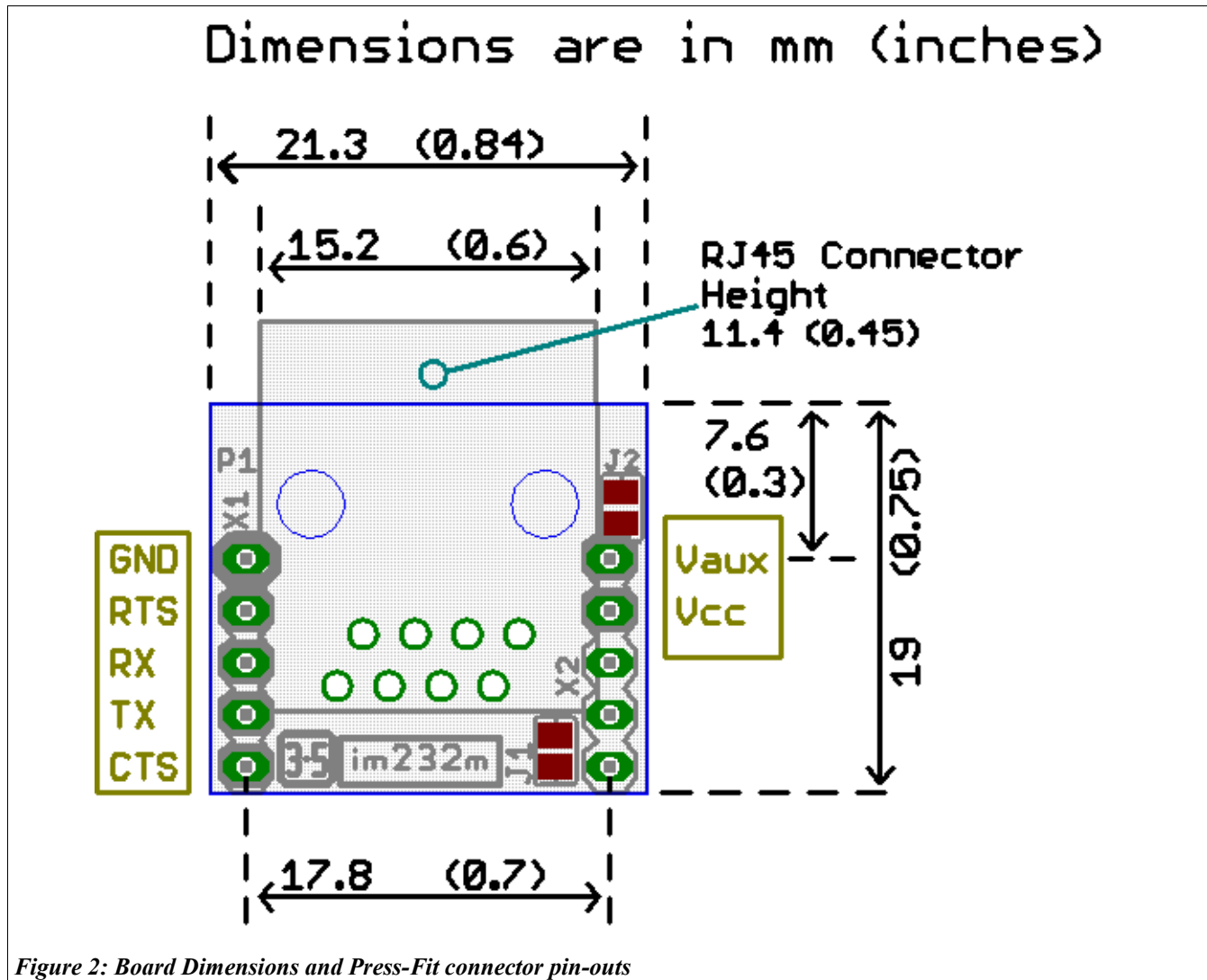
6.2 Electrical Characteristics

For more detailed Electrical Characteristics, see SP3232EEN datasheet. It can be downloaded from www.exar.com.

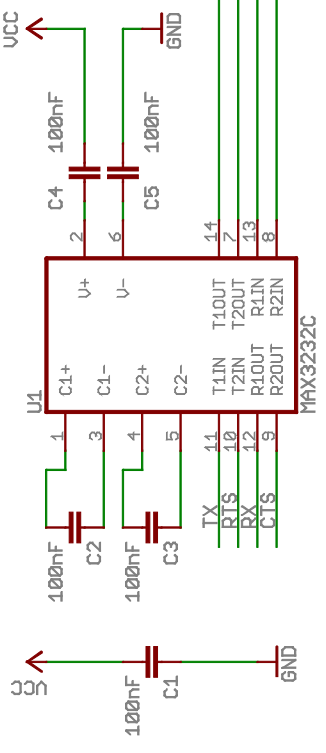
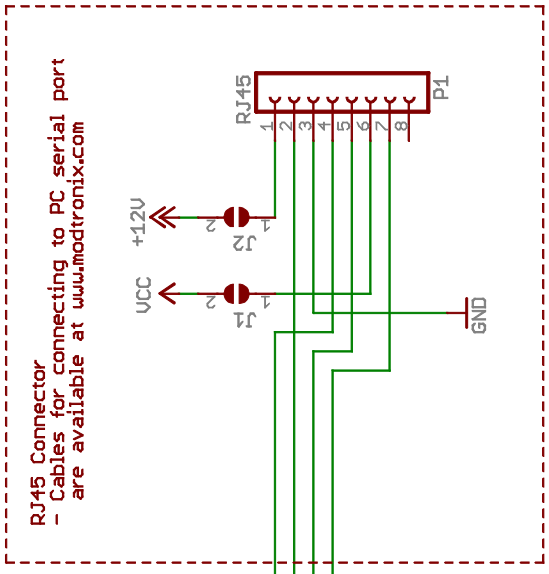
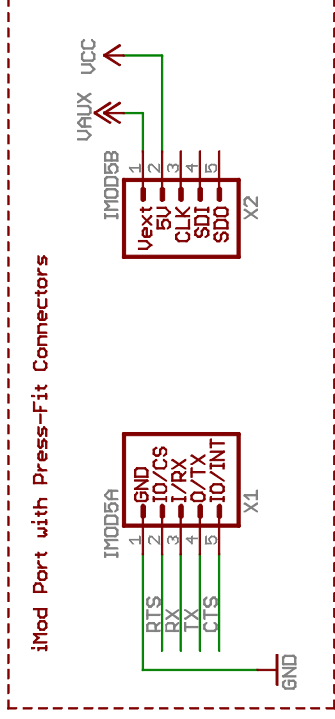
Item	Symbol	Condition	Min	Typ	Max	Unit
DC Supply Voltage	Vdd	5V	4.5	5.0	5.5	V
		3.3V	3.0	3.3	3.6	V
Supply Current	Icc	No Load, T _{amb} = +25°C, V _{cc} =3.3V		0.3	1.0	mA

7 Dimensions

The im232M Dimensions are shown in Figure 2.



8 Schematics



im232M RS232 Interface Module
 Modtronix Engineering

TITLE: im232m_doc

Document Number:

REV: 1

Date: 3/10/2008 11:41:30a

Sheet: 1/1