

EM203A and RJ203A Modules

Table of Contents

Introduction	1
Legal Information	1
EM203A Ethernet-to-Serial Module	3
I/O Pin Assignment and Pin Functions	3
Serial Port and General-Purpose I/O Lines	5
LED Lines	6
Power, Reset, and Mode Selection Lines	7
Onboard LEDs	8
Thermal considerations	9
Mechanical Dimensions	10
Specifications and Ordering Info	10
RJ203A Jack/Magnetics Module	12
Interface Pads	12
Interfacing the RJ203A to the DM9000A	13
Using the RJ203A With the EM203A Module	14
Mechanical Dimensions: RJ203A	15
Mechanical Dimensions: RJ203A+EM203A	16
Specifications and Ordering Info	17

Introduction

Last update: 05AUG2008

[Legal Information](#)

-
- [EM203A Ethernet-to-serial module](#)
 - [RJ203A Magnetics/jack module](#)

Legal Information

Please read and understand the following important legal information and disclaimer:

Tibbo Technology ("TIBBO") is a Taiwan corporation that designs and/or manufactures a number of hardware products, software products, and applications ("PRODUCTS"). TIBBO PRODUCT range includes BASIC-programmable devices ("PROGRAMMABLE DEVICES") that can run a variety of applications written in Tibbo BASIC ("BASIC APPLICATIONS").

As a precondition to your purchase and/or use of any TIBBO PRODUCT, including PROGRAMMABLE DEVICES, you acknowledge and agree to the following:

1. Tibbo does not have any branch office, affiliated company, or any other form of presence in any other jurisdiction. TIBBO customers, partners and distributors in Taiwan and other countries are independent commercial entities and TIBBO does not indemnify such customers, partners or distributors in any legal proceedings related to, nor accepts any liability for damages resulting from the creation, manufacture, importation, advertisement, resale, or use of any of its PRODUCTS.
2. TIBBO reserves the right to halt the production or availability of any of its PRODUCTS at any time and without prior notice. The availability of a particular PRODUCT in the past is not an indication of the future availability of this PRODUCT. The sale of the PRODUCT to you is solely at TIBBO's discretion and any such sale can be declined without explanation. If, for whatever reason, we are unable or unwilling to deliver the goods you have already paid for, we will offer a refund that shall not exceed original purchase price.
3. All specifications and information provided in this Manual are subject to change without prior notice. You agree that it is your responsibility to test all shipments of TIBBO PRODUCTS to determine suitability for your needs. TIBBO assumes no responsibility for any errors which may appear in this Manual, and does not make any commitment to update the information contained herein.
4. TIBBO makes no warranty for the use of its PRODUCTS, other than that expressly contained in the Standard Warranty located on the Company's website. Your use of TIBBO PRODUCTS is at your sole risk. TIBBO PRODUCTS are provided on an "as is" and "as available" basis. TIBBO expressly disclaims the warranties of merchantability, future availability, fitness for a particular purpose and non-infringement. No advice or information, whether oral or written, obtained by you from TIBBO shall create any warranty not expressly stated in the Standard Warranty.
5. Many TIBBO PRODUCTS can and are routinely combined with other hardware or software, either supplied by TIBBO or any third party, to create a combinatorial product or system ("COMBINATORIAL PRODUCT/SYSTEM") where TIBBO PRODUCT constitutes only a portion of such COMBINATORIAL PRODUCT/

SYSTEM. Combining a particular TIBBO PRODUCT with other hardware or software, either supplied by TIBBO or any third party, may potentially create a COMBINATORIAL PRODUCT/SYSTEM that violates local rules, regulations, and/or infringes an existing patent, trademark or copyright in a country where such combination has occurred or where the resulting COMBINATORIAL PRODUCT/SYSTEM is manufactured, exported, or sold. TIBBO is not capable of monitoring any activities by its customers, partners or distributors aimed at creating any COMBINATORIAL PRODUCT/SYSTEM, does not provide advice on potential legal issues arising from creating such COMBINATORIAL PRODUCT/SYSTEM, nor explicitly recommends the use of any of its PRODUCTS in combination with any other hardware or software, either supplied by TIBBO or any third party.

6. Combining a particular PROGRAMMABLE DEVICE with a specific BASIC APPLICATION, either written by TIBBO or any third party, may potentially create an end product ("END PRODUCT") that violates local rules, regulations, and/or infringes an existing patent, trademark or copyright in a country where such combination has occurred or where the resulting END PRODUCT is manufactured, exported, or sold. TIBBO is not capable of monitoring any activities by its customers, partners or distributors aimed at creating any END PRODUCT, does not provide advice on potential legal issues arising from creating such END PRODUCT, nor explicitly recommends the use of any of its PROGRAMMABLE DEVICES in combination with any BASIC APPLICATION, either written by TIBBO or any third party.
7. **Limitation of liability.** By using TIBBO PRODUCTS you expressly agree that TIBBO shall not be liable (to the fullest extent permitted by the law) to you for any direct, indirect, incidental, special, consequential or exemplary damages, including, but not limited to, damages for loss of profits, goodwill, or other intangible losses (even if TIBBO has been advised of the possibility of such damages) resulting from the use or the inability to use any TIBBO PRODUCT.
8. **Patent and copyright infringement.**
 - A. By purchasing any TIBBO PRODUCT, you agree and acknowledge that the design of all aspects of any COMBINATORIAL PRODUCT/SYSTEM or END PRODUCT is solely your responsibility. You agree that TIBBO shall have no obligation to indemnify or defend you in the event that a third party asserts that your COMBINATORIAL PRODUCT/SYSTEM or END PRODUCT violates third party patents, copyrights, or other proprietary rights.
 - B. You waive any right to cause TIBBO to defend or indemnify you or any of your customers in connection with a demand related to TIBBO PRODUCTS, including but not limited to any such right as may be imposed or implied by law, statute, or common law.
 - C. If a demand or proceeding is brought against TIBBO based on an allegation that your COMBINATORIAL PRODUCT/SYSTEM or END PRODUCT violates a patent, copyright, database right, trademark, or other intellectual property right, you shall defend such demand or proceeding and indemnify us and hold us harmless for, from and against all damages and costs awarded against us on the same basis and subject to the same conditions as were applicable to you.
9. "Tibbo" is a registered trademark of Tibbo Technology, Inc.
10. Terms and product names in this Manual may be trademarks of others.

EM203A Ethernet-to-Serial Module

Patent pending

The EM203A is an Ethernet module for onboard installation. Module hardware includes one 100BaseT Ethernet port (standard Ethernet magnetics are NOT integrated into the module), one CMOS-level serial port, and an internal processor, whose firmware acts as a bridge between the Ethernet and the serial port. The Ethernet "side" of the module connects to the [RJ203A jack/magnetics module](#), a standard Ethernet magnetics circuit (such as YCL-PH163112) or RJ45 connector with integrated magnetics. Serial "side" interfaces directly to the serial port pins of most microcontrollers, microprocessors, UARTs, etc. The module additionally features four status LEDs onboard.

From the hardware standpoint, the EM203A can be viewed as a universal platform suitable for running a variety of applications. It is the application firmware, not the hardware that gives the EM203A most of its functionality. The EM203A is offered with two distinctively different kinds of application firmware:

- "Serial-to-Ethernet" firmware, currently in its 3rd generation ("Release3"), turns the EM203A into a ready-to-work serial-to-Ethernet converter that can connect almost any kind of serial device to the Ethernet (TCP/IP) network. This firmware has fixed functionality; you adjust the way the EM203A behaves by specifying the values of programmable parameters (settings) defined in this firmware.
- TiOS (Tibbo Operating System) firmware turns the EM203A into a BASIC-programmable controller. When running TiOS, the EM203A has no pre-defined functionality -- it is your BASIC application that defines what the EM203A will do. TiOS and BASIC programming are covered in a separate Manual ("TAIKO Manual").

The application firmware of the EM203A can be upgraded through the module's serial port or Ethernet port. Serial upgrades are facilitated by a so-called Monitor- a fixed "service" firmware inside the EM203A. Network upgrades rely on the application firmware itself, that is, the firmware can "upgrade itself".

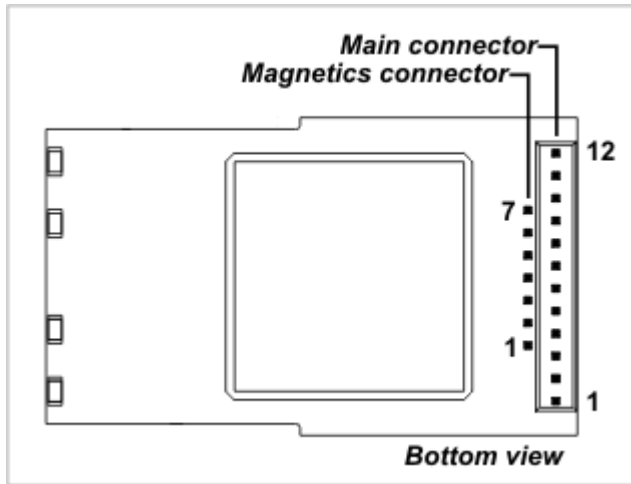
The EM203A is supplied with "serial device server" firmware pre-loaded. If you wish to receive the module with TiOS firmware, please specify [option "P" device](#) on your order. Alternatively, you can just load the TiOS firmware by yourself. Current firmware versions are posted on our website.



The EM203A module features a heat-conductive sticker. Protective paper of the sticker **MUST BE REMOVED** prior to installing the module onto the host PCB. More on this in the [Thermal Considerations](#) topic.

I/O Pin Assignment and Pin Functions

The EM203A has two connectors -- main connector and magnetics connector. Depending on the EM203A [version](#), magnetics connector can be soldered facing up or down, as described in the [Mechanical Dimensions](#) topic.



Main connector

#1	MD*	Input	Mode selection pin
#2	RST	Input	Reset, active high
#3	P3 DTR*	Input/output Output	General-purpose input/output line Data terminal ready output
#4	P2 DSR*	Input/output Input	General-purpose input/output line Data set ready input
#5**	L3 SG*	Output Output	LED output 3 Green status LED control line
#6**	L4 SR*	Output Output	LED output 4 Red status LED control line
#7**	VCC		Positive power input, 5V nominal, +/- 5%, app. 220mA
#8**	GND		Ground
#9	RX	Input	Serial receive line
#10	TX	Output	Serial transmit line
#11	P4 CTS/SEL*	Input/output Input	General-purpose input/output line Clear to send input; full-/half-duplex selection input
#12	P5 RTS/DIR*	Input/output Output	General-purpose input/output line Request to send output (full-duplex mode); data direction control output (half-duplex mode)

* Implemented in (supported through) firmware.

** For the EM203A device (without "D" option), these pins also extend upward so that they can potentially mate with the [RJ203A](#) module.

Magnetics connector

#1	RX+	Input	Ethernet port, positive line of the differential input signal pair
#2	RX-	Input	Ethernet port, negative line of the differential input signal pair
#3	AVCC	Output	"Clean" 3.3V power output for magnetics circuitry
#4	TX+	Output	Ethernet port, positive line of the differential output signal pair

#5	TX-	Output	Ethernet port, negative line of the differential output signal pair
#6	L1(EG)	Output	Green Ethernet status LED control line.
#7	L2(EY)	Output	Yellow Ethernet status LED control line.

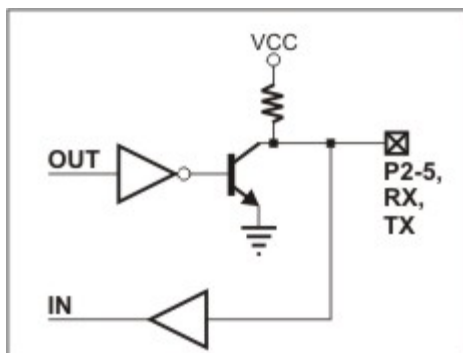
Serial Port and General-Purpose I/O Lines

Main conn., #3	P3 DTR*	Input/ output Output	General-purpose input/output line Data terminal ready output
Main conn., #4	P2 DSR*	Input/ output Input	General-purpose input/output line Data set ready input
Main conn., #9	RX		Serial receive line
Main conn., #10	TX		Serial transmit line
Main conn., #11	P4 CTS /SEL*	Input/ output Input	General-purpose input/output line Clear to send input; full-/half-duplex selection input
Main conn., #12	P5 RTS /DIR*	Input/ output Output	General-purpose input/output line Request to send output (full-duplex mode); data direction control output (half-duplex mode)

* Implemented in (supported through) firmware.

The EM203A features a serial port (RX, TX lines) and several general-purpose I/O lines P2-P5 (there are no lines P0 and P1; line names were selected for naming compatibility with the EM100). All of the above lines are of CMOS type. From the hardware point of view, all general-purpose I/O lines can serve as inputs or outputs. Maximum load current for each I/O line is 10mA.

Simplified structure of EM203A's I/O lines is shown on the circuit diagram below. All lines are "quasi-bidirectional" and can be viewed as open collector outputs with weak pull-up resistor. There is no explicit direction control. To "measure" an external signal applied to a pin the OUT line must first be set to HIGH. It is OK to drive the pin LOW externally, while the pin outputs HIGH internally.



The serial-to-Ethernet firmware of the EM203A maps certain serial port functions onto the general-purpose I/O pins- these functions are shown in blue in the table

above. For example, P5 is a universal input/output but the application firmware can be set to turn this line into the RTS output of the serial port. Therefore, depending on your application, you can view P5 as a general-purpose I/O line or specific control line of the serial port (RTS).

Being of CMOS type, the serial port and I/O lines of the EM203A can be connected directly to the serial port pins and I/O lines of most microcontrollers, microprocessors, etc. An interface IC, such as the MAX232, must be added to the EM203A externally if you want to connect the module to a "true" serial port (for example, COM port of the PC).

Logical signals on the serial port lines of the EM203A are active LOW. TX and RX lines are high when idle, start bit is LOW, stop bit is HIGH; LOW on CTS and RTS lines means "transmission allowed" and HIGH means "transmission not allowed". This is standard for CMOS-level serial ports and is exactly opposite to the signalling on the RS232 cables. Logical signals on the EM203A are inverted because standard RS232 ICs, such as the MAX232, invert the signals internally one more time.

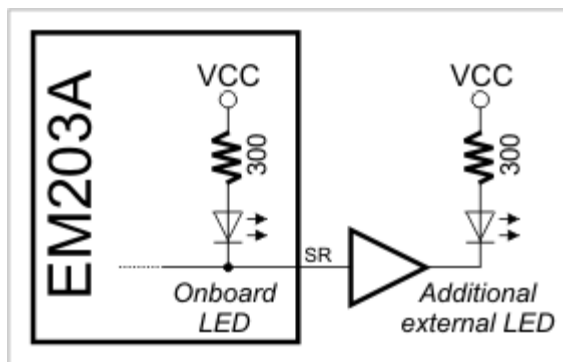
As explained earlier, actual functionality of the I/O lines is firmware-dependent.

LED Lines

Magnetics conn., #6	L1(EG)	Out put	Green Ethernet status LED control line. The LED will be turned on when the EM203A links with the hub at 100Mb. The LED will be off if the link is established at 10Mb.
Magnetics conn., #7	L2(EY)	Out put	Yellow Ethernet status LED control line. The LED will be turned on when "live" Ethernet cable is plugged into the Module. The LED will be temporarily switched off whenever an Ethernet packet is received.
Main conn., #5	L3 SG*	Out put Out put	LED output 3 Green status LED
Main conn., #6	L4 SR*	Out put Out put	LED output 4 Red status LED

* Implemented in (supported through) firmware.

The EM203A has four [onboard LEDs](#) and four control lines -- L1-L4 -- to connect external LEDs in parallel with the onboard ones. External LEDs should be connected through a TTL buffer element. This will reduce the load on the EM203A's internal circuit. Maximum load for each line without the buffer is 2mA.



The firmware of the EM203A uses L3 and L4 as "status LEDs" which display various status information depending on what firmware is running at the moment.

Power, Reset, and Mode Selection Lines

#7	VCC	Input	Positive power input, 5V nominal, +/- 5%, app. 230mA
#8	GND		Ground
#2	RST	Input	Reset, active high
#1	MD*	Input	Mode selection pin

* Implemented in (supported through) firmware

The EM203A should be powered from a stabilized DS power supply with output nominal voltage of 5V (+/- 5% tolerance). Current consumption of the EM203A is approximately 230mA (in 100BaseT mode).

Proper external reset is a must! Reset pulse should be active HIGH. We strongly advise against using low-cost RC-networks and other unreliable methods of generating reset. Reset should be applied for as long as the power supply voltage is below 4.6V. We recommend using a dedicated reset IC with brownout detection, such as the MAX810. Reset pulse length should be no less than 50ms, counting from the moment the power supply voltage exceeds 4.6V.

If the EM203A is used to serve as a communications co-processor in a larger system that has its own CPU it is also OK to control the RST line of the EM203A through a general-purpose I/O pin of the "host" microcontroller. I/O pins of many microcontrollers default to HIGH after the powerup and this means that the reset will be applied to the EM203A in parallel with the reset of the microcontroller. All the host microcontroller has to do is release the EM203A from reset at an appropriate time by switching the state of the I/O line to LOW.

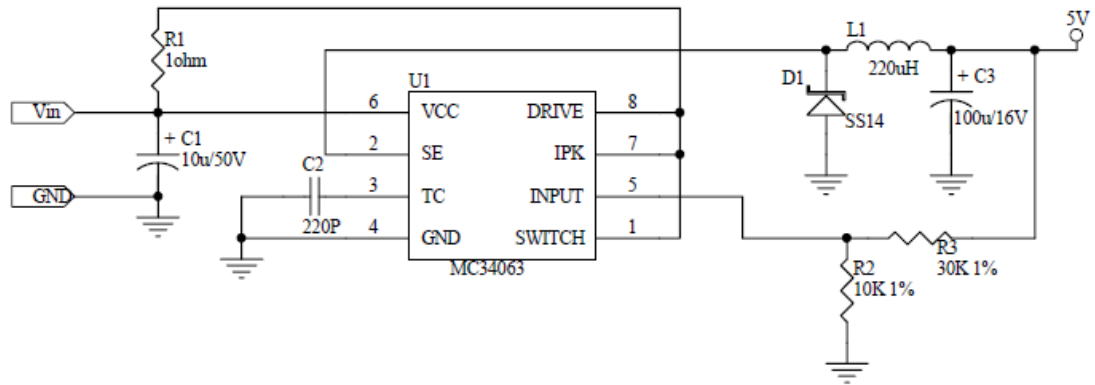
The MD line of the EM203A is used to select the operating mode of the EM203A and/or its application firmware. This pin has the following functionality:

- When the EM203A powers up it verifies the state of the MD input. If the MD input is at HIGH the EM203A proceeds to verifying and running the application firmware loaded into its internal FLASH memory. If the MD input is at LOW the EM203A enters the serial upgrade mode.
- When the serial-to-Ethernet firmware is already running the MD line is used to make the EM203A enter the serial programming mode.

When the EM203A is used as a co-processor in a host system the MD line can be also controlled by the host microcontroller. Ability to control both the RST and the MD lines will allow the host microcontroller to switch between the operating modes of the EM203A.

Power supply circuit

Many power supply circuits will work well. The one below is being used by Tibbo. The circuit can handle input voltages in the 9-24V range.



Notes:

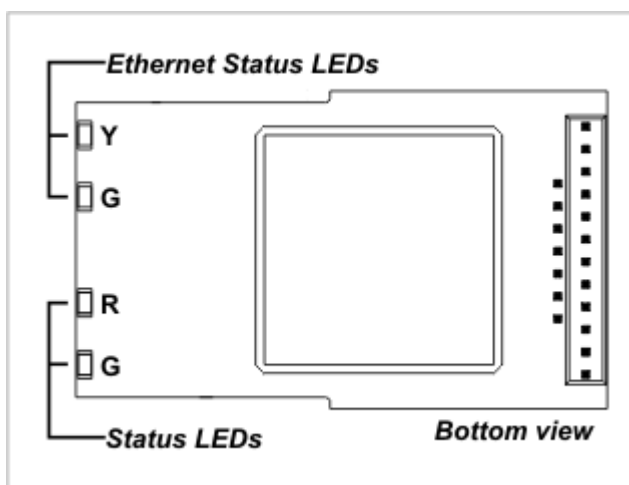
- U1 is a popular power IC manufactured by ON SEMICONDUCTOR.
- C1 and C2 capacitors: Do not use SMD capacitors -- use regular through-hole aluminum capacitors. This really helps reduce noise produced by the power supply.
- This is an analog circuit, so layout matters. Apply reasonable "good layout" effort.



Ideally, one should use an oscilloscope to see what sort of "square wave" the power supply generates, both at low and high input voltages, as well as light and heavy loads. There are no recipes here -- just try and see what works for your circuit.

Onboard LEDs

The EM203A features four onboard status LEDs. The LEDs are strategically positioned on the edge of the module's board. Your product can have a small window or opening on its cover to make the LEDs of the EM203A visible from the outside. When the EM203A is used in combination with the [RJ203A](#) module, the status LEDs are [visible](#) through a transparent portion of the RJ203A's housing.



Onboard LEDs have the following function:

- Yellow Ethernet status LED is turned on when the EM203A links with the hub at

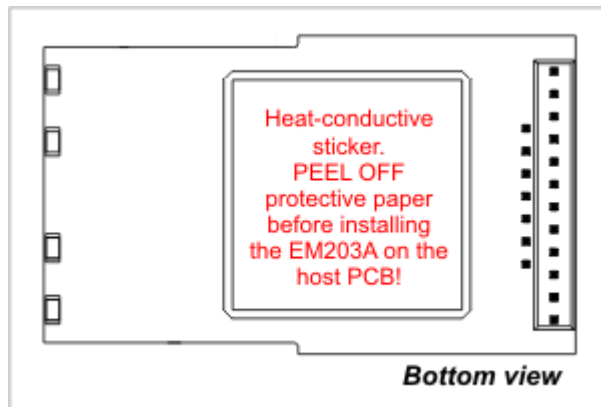
100Mb. The LED is off when the link is established at 10Mb.

- Green Ethernet status LED is turned on when "live" Ethernet cable is plugged into the Module. The LED is temporarily switched off whenever an Ethernet packet is received.
- Red and green status LEDs are under the control of EM203A's firmware.

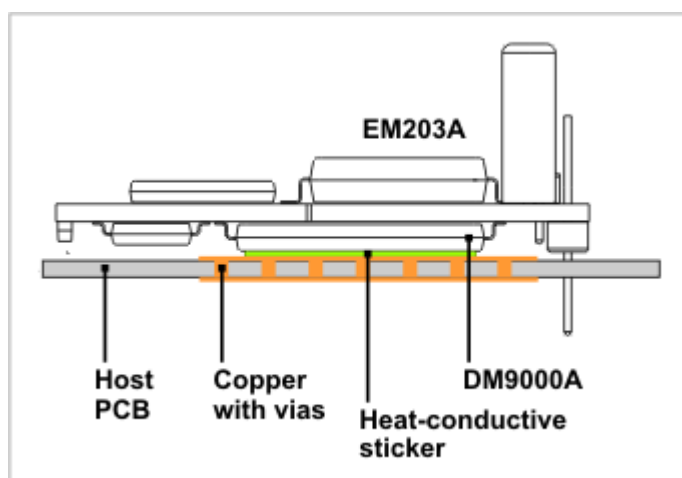
The EM203A also has four [LED control lines](#) that allow you to add external LEDs in parallel with the onboard ones.

Thermal considerations

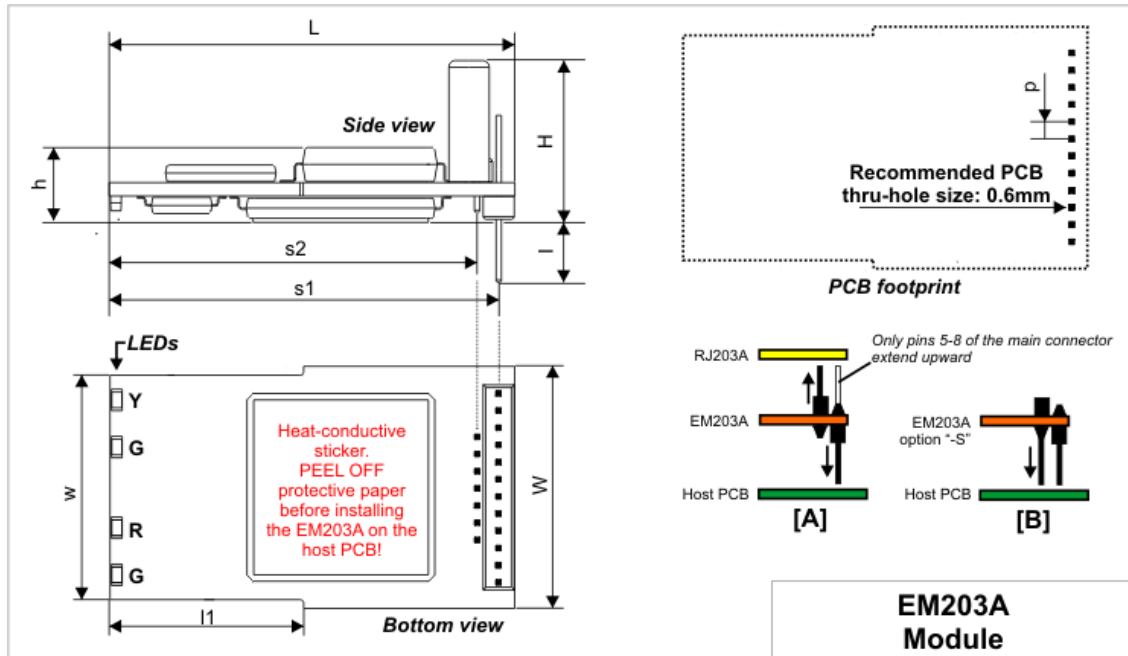
The DM9000A Ethernet controller of the EM203A can become very hot during normal module operation. To aid the module in dissipating excess heat, a special heat-conductive sticker is applied to the top of the DM9000A. Protective paper of the sticker **MUST BE REMOVED** prior to installing the module on the host PCB.



To further lower the operating temperature of the EM203A we advise you to arrange a copper area on the host PCB and in contact with the heat-conductive sticker. Best results are achieved when the copper area is larger, and also when two copper areas are provided on both sides of the host PCB and interconnected by a number of large vias.



Mechanical Dimensions

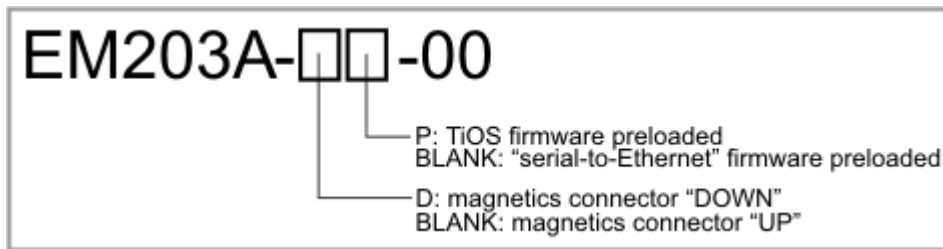


L	Max.	30.1	Length
W	Max.	18.1	Width
H	Max.	12.5	Height
l1	Aver.	14.4	Length of the narrower part of the board
w	Max.	16.7	Width at the narrower part of the board
h	Max.	5.5	Height excluding crystal oscillators
p	Aver.	1.27	Pin pitch
s1	Aver.	28.9	Distance from the edge of the board to the pins of the main connector
s2	Aver.	27.3	Distance from the edge of the board to the pins of the magnetic connector
l	Min.	4.0	Connector pin length

All dimensions are in millimeters

Specifications and Ordering Info

The EM203A has several versions available. Device numbering scheme is as follows:



Examples of valid model numbers

Model number	Description
EM203A-00	Connector configured to mate with the EM203A jack/magnetics module, the module will be supplied with the "serial-to-Ethernet" firmware
EM203A-D-00	Connectors configured to mate with the host PCB, the module will be supplied with the "serial-to-Ethernet" firmware
EM203A-DP-00	Connectors configured to mate with the host PCB, the module will be supplied with the TiOS firmware

Ordering the EM203A and RJ203A module combination

The EM203A can also be ordered in combination with the [RJ203A](#) module. To receive these two modules [pre-assembled](#) together, please specify "RJ203A+EM203A" on your order if you wish to receive the EM203A with the "serial-to-Ethernet" firmware preloaded, or "RJ203A+EM203A-P" if you wish to receive the EM203A with the TiOS firmware preloaded.

Specifications

Ethernet interface	10/100BaseT Ethernet, magnetics not built-in
Serial ports	1 port, CMOS-level
UART capabilities	Baudrates up to 115'200bps; none/even/odd/mark/space parity and 7/8 bits/character; full-duplex UART mode with optional flow control * and half-duplex UART mode with automatic direction control *; RX, TX, RTS *, CTS *, DTR *, and DSR * lines.
LEDs	x4 : red and green status LEDs *, yellow and green Ethernet status LEDs
Max. load current for each I/O line	10mA
Supported network protocols *	UDP *, TCP *, ICMP (ping) *, and DHCP *.
Nominal power supply voltage (VCC pin)	DC 5.0V, +/- 5%
Device reset	Proper reset must be provided externally, RST pin has active HIGH polarity
Operating current ⁽³⁾	230m (in 100BaseT mode)

Operating temperature	-20 to +70 degrees C
Operating relative humidity	10-90%
Mechanical dimensions (excl. leads)	30.1x18.1x12.5 mm
Packaging	EM203A devices: tray, 30 modules/tray RJ203A+RJ203A module combination: tube, 10 modules/tube

* Implemented in (supported through) firmware.

RJ203A Jack/Magnetics Module

Patent pending

The RJ203A is an "Ethernet front-end" module that contains 10/100BaseT Ethernet magnetics and a standard RJ45 jack. Module's magnetics are designed to work with Davicom's DM9000A Ethernet controller.

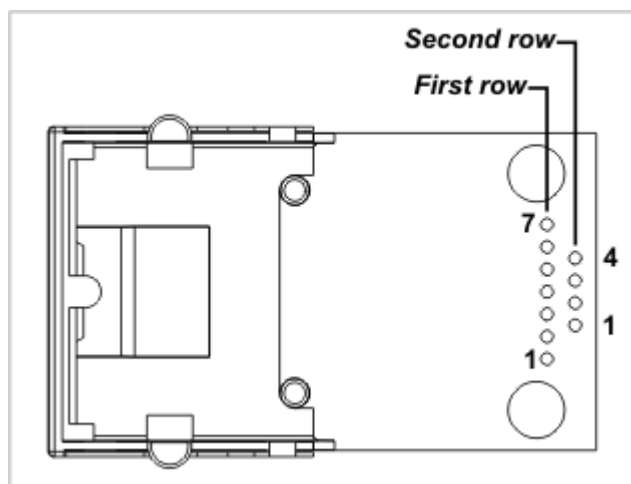
Unique mechanical design of the module minimizes module's footprint and allows you to put other components required on your host board under the RJ203A, thus saving host board space. Moreover, translucent housing of the RJ203A's face enables you to place status LEDs directly on the host board and have these LEDs visible through the front face of the RJ203A.

There are two ways in which you can utilize the RJ203A in your design:

- You can [interface](#) the RJ203A to the DM9000A IC located, together with the CPU and other necessary components, directly on your host PCB.
- Alternatively, you can use the RJ203A [in combination](#) with the [EM203A](#) Ethernet-to-serial module. The EM203A fits right "under" the RJ203A, thus taking no additional space on the host PCB.

Interface Pads

The RJ203A has two rows of interface pads.



First pad row

#1	RX+	Output	Ethernet port, positive line of the differential input signal pair
#2	RX-	Output	Ethernet port, negative line of the differential input signal pair
#3	AVCC	Input	"Clean" 3.3V power output for magnetics circuitry
#4	TX+	Input	Ethernet port, positive line of the differential output signal pair
#5	TX-	Input	Ethernet port, negative line of the differential output signal pair
#6	---		<unused>
#7	---		<unused>

Second pad row

#1	---		<unused>
#2	---		<unused>
#3	---		<unused>
#4	GND		Ground

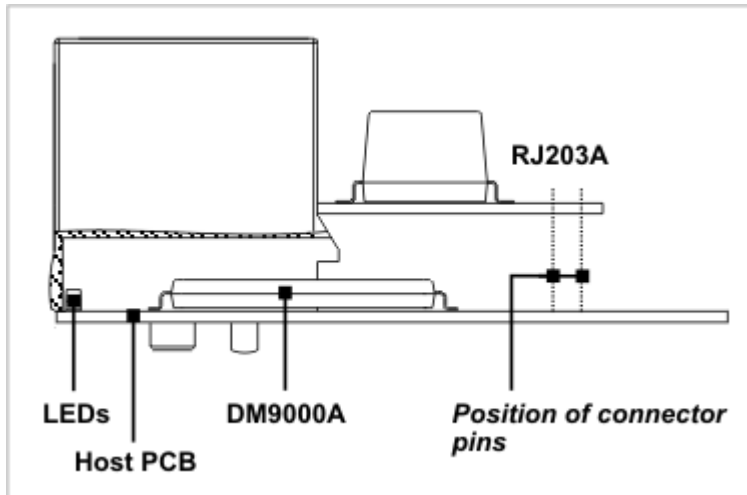
Interfacing the RJ203A to the DM9000A

The RJ203A module interfaces directly to the DAVICOM's DM9000A Ethernet controller. The following table details the interconnection between the DM9000A and the [interface pads](#) of the RJ203A:

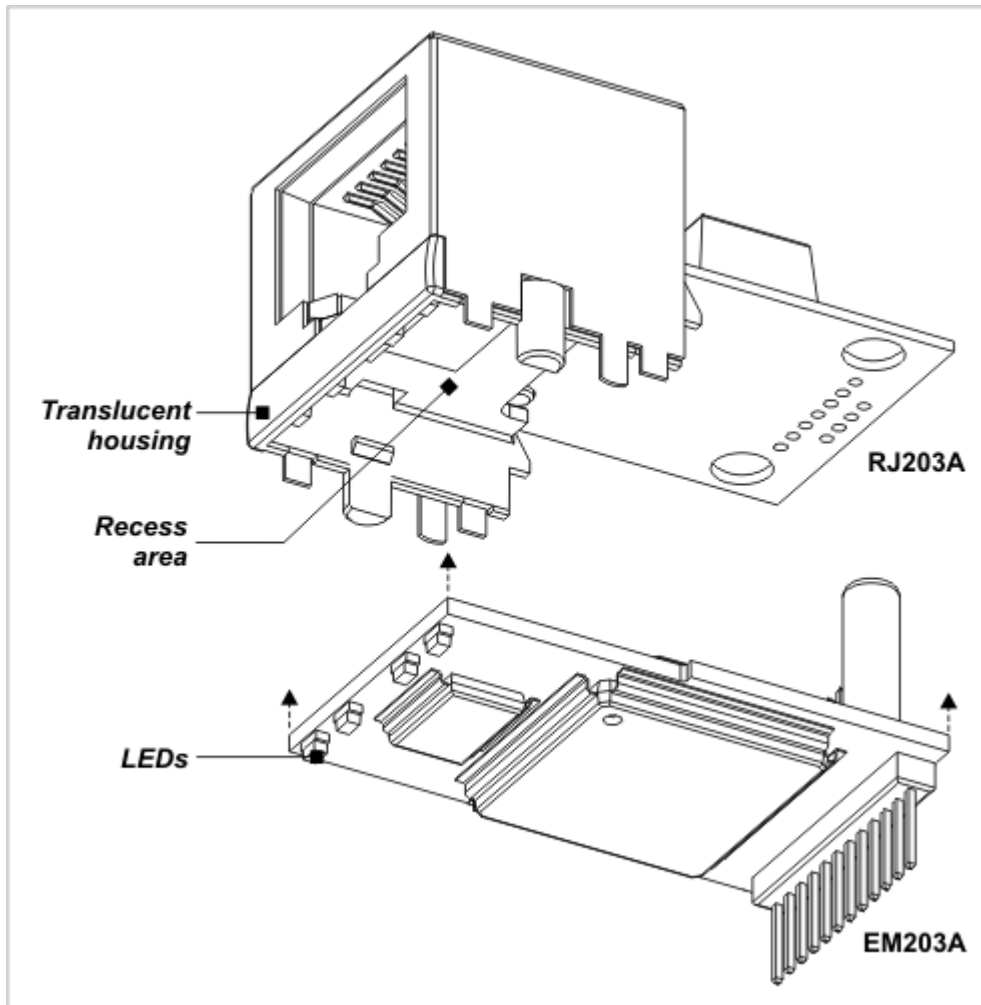
DM9000A	RJ203A
RXI- (#30)	RX- (first row, #2)
RXI+ (#29)	RX+ (first row, #1)
TX0- (#33)	TX- (first row, #5)
TX0+ (#34)	TX+ (first row, #4)
AVDD (#28)	AVCC (first row, #3)

Don't forget to connect grounds too!

To take full advantage of the unique space-saving design of the RJ203A, place the DM9000A (and/or other components as you see fit) under the module. The housing of the module has a substantial recess area under the RJ45 jack. This area can be utilized to accommodate various board components. Moreover, the housing of the RJ203A is made of a translucent material, so you can also place necessary status LEDs within the recess area and in the proximity to the front wall of the RJ203A. This way, your status LEDs will be visible through the translucent front face of the RJ203A. Four to six LEDs can easily fit along that front wall.



Using the RJ203A With the EM203A Module

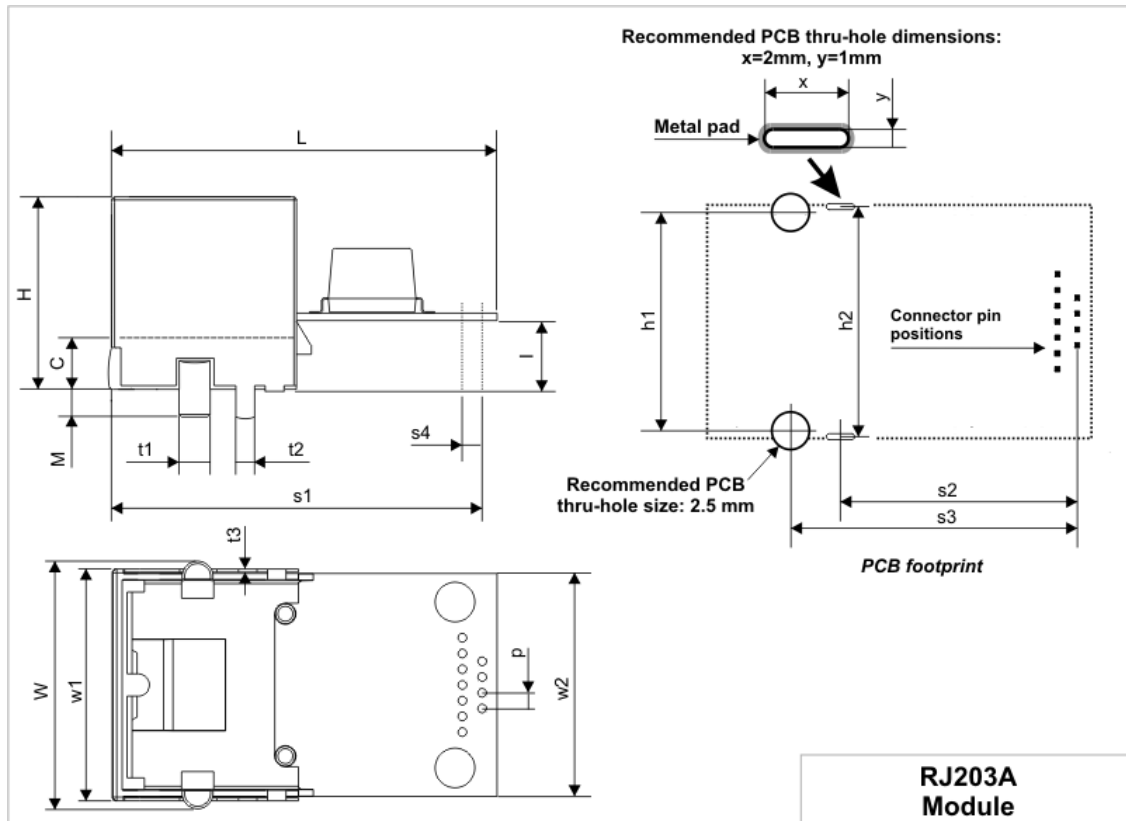


The RJ203A can also be used in combination with the [EM203A](#) module. [Connector pins](#) of the EM203A are designed to mate with [interface pads](#) of the RJ203A. The EM203A module itself fits "under" the RJ203A and partially within the recess area provided by the RJ203A. This recess area is formed by a translucent housing of the RJ203A. When the EM203A is combined with the RJ203A, the [status LEDs](#) of the EM203A become positioned close to the translucent front wall of the RJ203As and

remain visible through the front face of the RJ203A.

Additional information can be found in the [Mechanical Dimensions: RJ203A +EM203A](#) topic.

Mechanical Dimensions: RJ203A

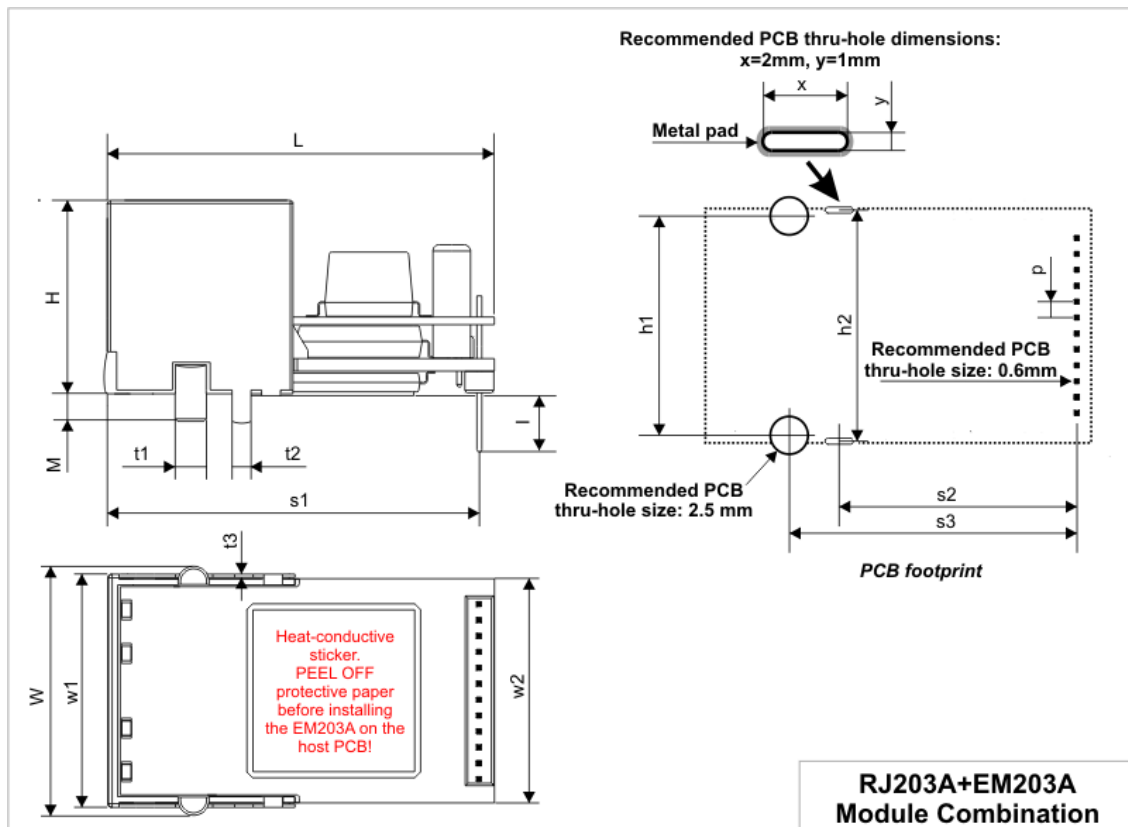


L	Max	31.0	Length
W	Max	20.0	Width
H	Max	15.5	Height
I	Ave r.	5.5	Clearance between the installation surface and the bottom of the RJ203A's board
w 1	Max	19.0	Width at the face excluding mounting stands
w 2	Max	18.1	Board width
M	Min.	1.9	Mounting stand and tail height
t1	Ave r.	2.5	Mounting stand diameter
t2	Ave r.	1.5	Solder tail width
t3	Ave r.	0.25	Solder tail thickness
p	Ave r.	1.27	Connector pad pitch

s1	Ave r.	29.7	Distance from device face to the second pad row
s2	Ave r.	19.0	Distance from the second pad row to the vertical centerline of solder tails
s3	Ave r.	23.0	Distance from the second pad row to the vertical centerline of mounting stands
s4	Ave r.	1.6	Distance between pad rows
h1	Ave r.	17.5	Distance between the horizontal centerlines of mounting stands
h2	Ave r.	18.5	Distance between the horizontal centerlines of solder tails
C	Min.	4.4	Clearance from the installation surface to the top wall of the recess area of the housing

All dimensions are in millimeters

Mechanical Dimensions: RJ203A+EM203A



L	Max.	31.0	Length
W	Max.	20.0	Width
H	Max.	15.5	Height
I	Min.	4.0	Connector pin length
w1	Max.	19.0	Width at the face excluding mounting stands
w2	Max.	18.1	Board width

M	Min.	1.9	Mounting stand and tail height
t1	Aver	2.5	Mounting stand diameter
t2	Aver	1.5	Solder tail width
t3	Aver	0.25	Solder tail thickness
p	Aver	1.27	Connector pin pitch
s1	Aver	29.7	Distance from the face to the connector pins
s2	Aver	19.0	Distance from connector pins to the vertical centerline of solder tails
s3	Aver	23.0	Distance from connector pins to the vertical centerline of mounting stands
h1	Aver	17.5	Distance between the horizontal centerlines of mounting stands
h2	Aver	18.5	Distance between the horizontal centerlines of solder tails

All dimensions are in millimeters

Specifications and Ordering Info

The RJ203A has a single model available -- the RJ203A-00.

Ordering the EM203A and RJ203A module combination

The EM203A can also be ordered in combination with the [RJ203A](#) module. To receive these two modules [pre-assembled](#) together, please specify "RJ203A+EM203A" on your order if you wish to receive the EM203A with the "serial-to-Ethernet" firmware preloaded, or "RJ203A+EM203A-P" if you wish to receive the EM203A with the TIOS firmware preloaded.

Specifications

Jack type	Standard RJ45 Ethernet jack
Magnetics type	10/100BaseT, designed to work with DAVICOM DM9000A Ethernet controller
Operating temperature	-20 to +70 degrees C
Operating relative humidity	10-90%
Mechanical dimensions (excl. leads)	31.0x20.0x15.5 mm
Packaging	RJ203A devices: tray, 30 modules/tray RJ203A+RJ203A module combination: tube, 10 modules/tube

Index

- E -

EM202 3