








Module Comparison Chart








Generation	1st: The Beginning			2nd: Mature serial-over-IP platform, support for simple Tibbo BASIC applications			3rd: Full power of Tibbo BASIC programmability, support for serial-over-IP via available Tibbo BASIC application	
Device	EM100 	EM120 	EM200 	EM203 	EM1000 	EM1202 	EM1206 	

Capabilities	Feature Highlight	Tibbo's original orange module that helped put us on the map.	An improvement over the original EM100.	Like the EM120, but with 100/10BaseT Ethernet.	Member of x20x family, mates with the RJ203 jack/magnetics. Combined footprint only 31x19mm.	2.54mm (0.1") pin pitch – ideal for prototyping. New to Tibbo BASIC? Start your quest with this module!	Stacked design minimizes footprint, device width close to that of a standard RJ45 jack.	Member of x20x family, mates with the RJ203 jack/magnetics. Combined footprint only 34.5x19mm.	
	Can work as a serial-to-IP device?	YES				YES, through the use of available serial-over IP Tibbo BASIC application			
	Tibbo-BASIC programmable?	NO		YES, but with limited features		YES, with full power of Tibbo BASIC, its objects, and libraries			

Connectivity	Ethernet port	YES, 10BaseT			YES, 100/10BaseT				
	Built-in magnetics	YES			NO				
	Wi-Fi port	NO				EXTERNAL, requires the GA1000 Wi-Fi add-on module			
	Serial port(s)	1				4			
	I/O lines	Up to 5	Up to 7	Up to 9	Up to 4	Up to 53	Up to 32	Up to 17	

Memory	Flash memory	64KB, used to store Serial-over-IP (Sol) firmware		128KB, for Sol or Tibbo OS (TiOS) firmware, compiled T-Basic app.		512KB or 1024KB, for TiOS firmware, compiled Tibbo BASIC application and its data			
	Flash disk	NO						YES, can take all free space in the flash memory (space not already occupied by TiOS firmware and Tibbo BASIC application)	
	EEPROM	256 bytes, used by Sol firmware to store settings		2048 bytes, used by Sol firmware to store settings, 2042 bytes available to store T-BASIC app. data		2048 bytes, 2042 bytes available to store Tibbo BASIC application data			
	Firmware upgrades	YES, through a serial port or network							

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Peripherals	RTC	NO			YES, with internal or external backup power source	NO	YES, with external backup power source
	Supports LCD	YES			YES, supports several models of displays, the list will be expanded in the future		
	Supports keypad	YES			YES, up to 64 keys depending on the availability of I/O lines and keypad configuration		
	Buzzer control output	YES			YES, programmable square wave output		
	System (MD) button line	YES					
	Status LED control lines	2, for green and red status LEDs					
	Ethernet LED control lines	2, for link and speed mode indication					
	PLL (speed) control	NO			YES, through hardware (jumper) or software	YES, through software only	
	Reliable onboard reset	NO, proper external reset circuit is required for correct device operation			YES, onboard power-up, brown-out detection, and watchdog circuit		

Power and Size	Supply voltage (nominal)	5V			3.3V, I/O lines are 5V-tolerant			
	Current consumption (max.)	40mA	50mA	220mA, with 100BaseT link	230mA, with PLL on and 100BaseT link			
	Dimensions	46x28x13mm	35x27x9.1mm	32.1x18.5x7.3mm	30.1x18.1x5.5mm	38.4x28.4x5.5mm	19.1x17.1x14.6mm	33.2x18.1x5.5mm
	Potted (sealed) enclosure	YES			NO			