

**NOVAsom M-line** is a family of **SBCs** specifically developed for High end multimedia markets that require heavy **Full HD** movies or multiple **4k UHD**, that need to be managed with high fluidity without compromise in performance.

Thanks to the different architectures it's possible to chose between various OS like Linux, Android or Windows 10 and IoT.

Examples of applications are: **Digital Signage, Infotainment, multimedia and advertising.**



		SBC-M7 & M7+ Boards	SBC-M8 Boards	SBC-M9 Boards	SBC-M11 Boards
<b>Processor</b>	CPU	Rockchip RK3328	Qualcomm Snapdragon 410E	RK3399 Dual A72 + Quad A53	Intel Apollo Lake X5 6th generation Dual or quad core
<b>Graphic</b>	GRAPHICS ENGINE	Mali-450MP4	ADRENO	Mali-T860MP4	Intel HD Graphics 405/505
<b>Memory</b>	RAM memory DDR3	Up to 2 GB	1 or 2 GB	LPDDR3 up to 4GB @ 64bit	SODIMM DDR3 up to 8GB
	eMMC flash memory	Up to 256 GB	8 or 16 GB in bundle with ram	up to 128 GB	Any size eMMC supported SDR and DDR mode
	µSD slot	Y	Y	Y	Y
<b>Power</b>	Power supply	12v (6.5 - 18Vcc protected) * 5V via USB (only M7+)	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected redundant)
	Power Consumption Active [W]	2.5	6	2.5	10-15
	UPS Manager	Y (battery not included)	Y (battery not included)	Y (battery not included)	Y (battery not included)
	PoE	N	N	N	Y + Relaunch
<b>Multimedia</b>	HDMI full size connector	Y * Additional FFC connector (only M7+)	Y	Y	Y
	LVDS	External adapter	n.a.	n.a.	2 ch@1920x1080
	Display Port DP 1.2 or eDP1.3	n.a.	n.a.	Y	Y
	PCAP on Connector (Dedicated I2C Channel)	1	1	1	1
	Display MIPI-DSI	n.a.	Y	Y	Y
	Camera MIPI-CSI PHY 1.1 (1)	n.a.	Y	Y	Y
	Camera MIPI-CSI PHY 1.2	n.a.	n.a.	Y	Y
	Camera parallel	Y	n.a.	n.a.	n.a.
<b>I/O</b>	Audio	Y – Analog line out	Y - Analog on jack	Y - Standard 2.5mm jack	Y – High Def Audio 5
	On Board reconfigurable GPIO (1)	22 @ 3.3V	22 @ 1.8V	26 @ 3.3V	26 @ 3.3V
	On board protected GPIO	n.a.	n.a.	n.a.	Y
<b>USB</b>	USB port Host/Device on TYPE - A	1xUSB 3.0 + 1xUSB 2.0	Y	2xUSB 3.0 + 2xUSB 2.0	3xUSB 3.0 + 2xUSB 2.0
	USB 2.0 OTG on micro for debug	Y	Y	Y / USB3	N
	USB 3.0 and 2.0 OTG repeated on strip	*Y (only M7+)	N	Y	N
	USB 2.0 on strip	N	N	N	Y-2
<b>Communication</b>	I2C	2 on strip @ 3.3 V (2)	2 on strip @ 3.3 V (2)	Y	2 on strip @3.3 (2)
	SPI	1 on strip @ 3.3 V (2)	2 on strip @ 3.3 V (2)	Y	2 on strip @ 3.3(2)
	On board SATA	n.a.	n.a.	n.a.	Y
	RS485	* Y on connector (only M7+)	N	N	N
	Console RS232	Y-TTL	Y	Y	Y
	mPCIe slot	n.a.	n.a.	n.a.	Y
	PCIe full size	n.a.	n.a.	n.a.	Y
	M2 slot	n.a.	n.a.	Y	n.a.
<b>Networking</b>	RJ 45 Ethernet connector on board	Y – 100 Mb	Y - Gb	Y-Gb	2 x Gb/s with dual MAC address
	WIFI and BT	WIFI 802.11 a/b/g/n with PCB antenna	WIFI 802.11 a/b/g/n with PCB antenna	WIFI 802.11 a/b/g/n/ac with PCB antenna , BLE 4.1	WIFI 802.11 a/b/g/n with PCB antenna
	GPS	N	Y	N	Any GPS available on mPCIe slot or USB
<b>Generic</b>	Additional user led	Y - 1	Y -5	Y - 1	Y -5
	RTC with external rechargeable battery	Y	Y	Y	Y
	User reset push-button	Y	Y	Y	Y
<b>Dimension</b>	Mechanical size	85 x 56 mm (1)	85 x 56 mm (1)	105 x 56 mm (1)	170x170 mm
	Form factor	Credit Card	Credit Card	Credit Card extended	Mini ITX
<b>Temperature</b>	Operating temperature	0 - 70 °C	-30 ÷ +60 °C	0 ÷ +80 °C / -20 ÷ +85 °C	-20 ÷ +70 °C / -40 ÷ +85 °C
<b>Operating System</b>	Distributions supported	Android, Linux, Yocto, Ubuntu Debian, Raspbian (2)	Android 5.1/6, Linux based on Debian 8.0/Ubuntu 14, Windows 10 IoT Core (2)	Android, Linux	Windows 10, Linux (2)

NOTE: for more information please refer to Hardware User Manual.

		SBC-M7/M7+ Boards					
		SBC Board code	SBC-M7A/ SBC-M7+A	SBC-M7B/ SBC-M7+B	SBC-M7C/ SBC-M7+C	SBC-M7D/ SBC-M7+D	SBC-M7FT/ SBC-M7+FT
	<b>Processor</b>	CPU	Rockchip RK3328	Rockchip RK3328	Rockchip RK3328	Rockchip RK3328	Rockchip RK3328
	<b>Graphic</b>	GRAPHICS ENGINE	Mali-450MP4	Mali-450MP4	Mali-450MP4	Mali-450MP4	Mali-450MP4
	<b>Memory</b>	RAM memory DDR3	Y – 1 GB@32bit	Y – 1 GB@32bit	Y – 1 GB@32bit	Y – 2 GB@32bit	Y – 2 GB@32bit
		eMMC flash memory	N	N	N	N	16 GB
		µSD slot ( card not included)	Y	Y	Y	Y	Y
	<b>Power</b>	Power supply	* 5V via USB (only M7+)	* 5V via USB (only M7+)	* 5V via USB (only M7+)	* 5V via USB (only M7+)	12v (6.5 - 18Vcc protected)
		Power Consumption [W]	2.5	2.5	2.5	2.5	2.5
		UPS MANAGER	Y - battery not included	Y - battery not included	Y - battery not included	Y - battery not included	Y - battery not included
	<b>Multimedia</b>	HDMI full size connector	* Additional FFC connector (only M7+)	* Additional FFC connector (only M7+)	* Additional FFC connector (only M7+)	* Additional FFC connector (only M7+)	* Additional FFC connector (only M7+)
		LVDS	External adapter	External adapter	External adapter	External adapter	External adapter
		Display Port DP 1.2 OR eDP 1.3	n.a.	n.a.	n.a.	n.a.	n.a.
		PCAP on Connector ( Dedicated I2C Channel)	1	1	1	1	1
		Display MIPI-DSI	n.a.	n.a.	n.a.	n.a.	n.a.
		Camera MIPI-CSI PHY 1.1 (1)	n.a.	n.a.	n.a.	n.a.	n.a.
		Camera MIPI-CSI PHY 1.2	n.a.	n.a.	n.a.	n.a.	n.a.
		Camera parallel	Y	Y	Y	Y	Y
	<b>I/O</b>	Audio	Y – Analog line out	Y – Analog line out	Y – Analog line out	Y – Analog line out	Y – Analog line out
		On Board reconfigurable GPIO (1)	22 @3,3V	22 @3,3V	22 @3,3V	22 @3,3V	22 @3,3V
		OnBoard Protected GPIO	n.a.	n.a.	n.a.	n.a.	n.a.
	<b>USB</b>	USB port Host/Device on TYPE - A	1xUSB 3.0 + 1xUSB 2.0	1xUSB 3.0 + 1xUSB 2.0	1xUSB 3.0 + 1xUSB 2.0	1xUSB 3.0 + 1xUSB 2.0	1xUSB 3.0 + 1xUSB 2.0
		USB 2.0 OTG on micro for debug	Y	Y	Y	Y	Y
		USB 3.0 and 2.0 OTG repeated on strip	* Y (only M7+)	* Y (only M7+)	* Y (only M7+)	* Y (only M7+)	* Y (only M7+)
		USB 2.0 on strip	N	N	N	N	N
	<b>Communication</b>	I2C	2 on strip @ 3.3 V (2)	2 on strip @ 3.3 V (2)	2 on strip @ 3.3 V (2)	2 on strip @ 3.3 V (2)	2 on strip @ 3.3 V (2)
		SPI	1 on strip @ 3.3 V (2)	1 on strip @ 3.3 V (2)	1 on strip @ 3.3 V (2)	1 on strip @ 3.3 V (2)	1 on strip @ 3.3 V (2)
		On board SATA	n.a.	n.a.	n.a.	n.a.	n.a.
		RS485	N	N	N	N	* Y on connector (only M7+)
		Console RS232	Y-TTL	Y-TTL	Y-TTL	Y-TTL	Y-TTL
		mPCIe slot	n.a.	n.a.	n.a.	n.a.	n.a.
		PCIe full size	n.a.	n.a.	n.a.	n.a.	n.a.
	<b>Networking</b>	RJ 45 Ethernet	1 x 100 Mb/s	1 x 100 Mb/s	1 x 100 Mb/s	1 x 100 Mb/s	1 x 100 Mb/s
		WiFi and BT	N	WiFi 802.11 a/b/g/n with PCB antenna	WiFi 802.11 a/b/g/n with PCB antenna	WiFi 802.11 a/b/g/n with PCB antenna	WiFi 802.11 a/b/g/n with PCB antenna
		GPS	N	N	N	N	N
	<b>Generic</b>	Additional user led	Y-1	Y-1	Y-1	Y-1	Y-1
		RTC with external rechargeable battery	Y	Y	Y	Y	Y
		User reset push-button	Y	Y	Y	Y	Y
	<b>Dimension</b>	Mechanical size	85 x 56 mm (1)	85 x 56 mm (1)	85 x 56 mm (1)	85 x 56 mm (1)	85 x 56 mm (1)
		Form factor	Credit Card	Credit Card	Credit Card	Credit Card	Credit Card
	<b>Temperature</b>	Operating temperature	0- ÷ 70 °C	0- ÷ 70 °C	0- ÷ 70 °C	0- ÷ 70 °C	0- ÷ 70 °C / -20 ÷ +85 °C
	<b>Operating System</b>	Distributions supported	Android, Linux, Yocto, Ubuntu, Debian, Raspbian (3)	Android, Linux, Yocto, Ubuntu, Debian, Raspbian (3)	Android, Linux, Yocto, Ubuntu, Debian, Raspbian (3)	Android, Linux, Yocto, Ubuntu, Debian, Raspbian (3)	Android, Linux, Yocto, Ubuntu, Debian, Raspbian (3)



(1) RASPMOOD : form factor , mechanical holes , expansion pin on strip , connector kind and position same of famous Pi Family  
 (2) Strip NOT mounted (2.54), to leave customer free for any choice  
 (3) Detailed info on SW and SW versions are in the Software menu of [www.novasomindustries.com/](http://www.novasomindustries.com/)  
 \* This means only on M7 Plus



NOTE: OPTIONS are related to the Tailor Made solutions. You choose the CPU than the options you need and you have your Tailor Made board.

	SBC Board code	SBC-M8 Boards		SBC-M9 Boards			SBC-M11 Boards
		SBC-M8A	SBC-M8FT	SBC-M9D	SBC-M9E	SBC-M9FT	SBC-M11FT
<b>Processor</b>	CPU	Qualcomm Snapdragon 410E	Qualcomm Snapdragon 410E	RK3399 Dual A72 + Quad A53	RK3399 Dual A72 + Quad A53	RK3399 Dual A72 + Quad A53	Intel Apollo Lake N42
<b>Graphic</b>	GRAPHICS ENGINE	ADRENO 405	ADRENO 405	Mali-T860MP4	Mali-T860MP4	Mali-T860MP4	Intel HD 405 / 505
<b>Memory</b>	RAM memory DDR3	Y – 1 GB@16bit	Y – 1 GB@16bit	Y – 2 GB@64 bit	Y – 2 GB@64 bit	Y – 4 GB@64 bit	SODIMM x2 slot up to 8GB @64bit
	eMMC flash memory	8 GB	8 GB	N	64 GB	64 GB	16 GB
	µSD slot (card not included)	Y	Y	Y	Y	Y	Y
<b>Power</b>	Power supply	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected)	12v (6.5 - 18Vcc protected redundant)
	Power Consumption [W]	6	6	2.5	2.5	2.5	10-15W
	UPS MANAGER	Y - battery not included	Y - battery not included	Y (battery not included)	Y (battery not included)	Y (battery not included)	Y - battery not included
	PoE	N	N	N	N	N	Y + Relaunch
<b>Multimedia</b>	HDMI full size connector	n.a.	Y	Y	Y	Y	Y – 4k
	LVDS	n.a.	n.a.	n.a.	n.a.	n.a.	LVDS 2ch@1920x1080
	Display Port DP 1.2 OR eDP 1.3	n.a.	n.a.	Y	Y	Y	Y - 4k with audio
	PCAP on Connector (Dedicated I2C Channel)	1	1	1	1	1	1
	Display MIPI-DSI	1ch 1920x1080 (x4 lane) 1920x1080 @ 60 Hz	1ch 1920x1080 (x4 lane) 1920x1080 @ 60 Hz	Y	Y	Y	1 ch 1920x1080 @ 60 Hz (x4 lane) <b>OR</b> 1 ch 2560x1600 @ 60 Hz (2x4 lane)
	Camera MIPI-CSI PHY 1.1 (¹)	2 ch 1920x1080 (x4 lane)	2 ch 1920x1080 (x4 lane)	Y	Y	Y	1 ch 1920x1080 (x4 lane) <b>OR</b> 1 ch @4k (2x4 lane)
	Camera MIPI-CSI PHY 1.2	n.a.	n.a.	Y	Y	Y	1 ch 1920x1080 (x4 lane) <b>OR</b> 1 ch @4k (2x4 lane)
	Camera parallel	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>I/O</b>	Audio	Y - PCM on strip @ 1.8 V (²)	Y - PCM on strip @ 1.8 V (²)	Y - Standard 2.5mm jack	Y - Standard 2.5mm jack	Y - Standard 2.5mm jack	High Definition Audio 5+1 Spdif
	On Board reconfigurable GPIO (¹)	22 @1,8V	22 @1,8V	26 @3,3V	26 @3,3V	26 @3,3V	26 @3,3V
	OnBoard Protected GPIO	n.a.	n.a.	n.a.	n.a.	n.a.	2 O.C. out up to 30V, 2 in up to 30V
<b>USB</b>	USB 2.0 port Host/Device on TYPE A	N	1 USB	2xUSB 3.0 + 2xUSB 2.0	2xUSB 3.0 + 2xUSB 2.0	2xUSB 3.0 + 2xUSB 2.0	3X USB 3.0; 2 x USB2.0
	USB 2.0 OTG on micro for debug	Y	Y	Y / USB3	Y / USB3	Y / USB3	N
	USB 3.0 and 2.0 OTG rep. on strip	N	N	Y	Y	Y	N
	USB 2.0 on strip	N	N	N	N	N	Y – 2
<b>Communication</b>	I2C	2 on strip @ 3.3 V (²)	2 on strip @ 3.3 V (²)	Y	Y	Y	2 on strip @ 3.3V (²)
	SPI	2 on strip @ 3.3 V (²)	2 on strip @ 3.3 V (²)	Y	Y	Y	1 on strip @ 3.3V (²)
	On board SATA	n.a.	n.a.	n.a.	n.a.	n.a.	Y - 2 x SATA III
	RS485	N	N	N	N	N	N
	Console RS232	Y	Y	Y	Y	Y	Y
	mPCIe slot	n.a.	n.a.	n.a.	n.a.	n.a.	3 (2 full + 1 only usb and sim)
	PCIe full size	n.a.	n.a.	n.a.	n.a.	n.a.	1 (full 2 lane)
	M2 slot	n.a.	n.a.	Y	Y	Y	n.a.
<b>Networking</b>	RJ 45 Ethernet	N	1 x Gb/s	Y	Y	Y	2 x Gb/s with dual MAC address
	WIFI and BT	N	WIFI 802.11 a/b/g/n with PCB antenna	WIFI 802.11 a/b/g/n/ac with PCB antenna , BLE 4.1	WIFI 802.11 a/b/g/n/ac with PCB antenna , BLE 4.1	WIFI 802.11 a/b/g/n/ac with PCB antenna , BLE 4.1	WIFI 802.11 a/b/g/n with PCB antenna
	GPS	N	N	N	N	N	On mPCIe slot or USB
<b>Generic</b>	Additional user led	Y - 5	Y - 5	1	1	1	Y – 5
	RTC with external recharg. battery	N	Y	Y	Y	Y	Y
	User reset push-button	Y	Y	Y	Y	Y	Y
<b>Dimension</b>	Mechanical size	85 x 56 mm (¹)	85 x 56 mm (¹)	105 x 56 mm (¹)	105 x 56 mm (¹)	105 x 56 mm (¹)	170 x 170 mm
	Form factor	Credit Card	Credit Card	Credit Card	Credit Card	Credit Card	Mini ITX
<b>Temperature</b>	Operating temperature (ext.temp. range includes conformal coating)	-30 ÷ +60 °C	-30 ÷ +60 °C	0 ÷ +80 °C / -20 ÷ +85 °C	0 ÷ +80 °C / -20 ÷ +85 °C	0 ÷ +80 °C / -20 ÷ +85 °C	-20 ÷ +70 °C / -40 ÷ +85 °C
<b>Operating System</b>	Distributions supported	Android 5.1/6, Linux based on Debian 8.0/Ubuntu 14, Windows 10 IoT Core (³)	Android 5.1/6, Linux based on Debian 8.0/Ubuntu 14, Win 10 IoT Core (³)	Android, Linux	Android, Linux	Android, Linux	Windows 10, Linux (³)

(¹) RASPMOOD : form factor , mechanical holes , expansion pin on strip , connector kind and position same of famous Pi Family

(²) Strip NOT mounted (2,54), to leave customer free for any choice

(³) Detailed info on SW and SW versions are in the Software menu of [www.novasomindustries.com/](http://www.novasomindustries.com/)

NOTE: OPTIONS are related to the Tailor Made solutions. You choose the CPU than the options you need and you have your Tailor Made board.