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# VisionSOM-STM32MP1 Datasheet and Pinout

Rev. 20211129125413

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# VisionSOM-STM32MP1 Datasheet and Pinout

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## General description



The VisionSOM-STM32MP1 family is a SODIMM-sized SoM based on the STMicroelectronics STM32MP1 application processor which features an advanced implementation of a single or dual ARM Cortex-A7 cores (at speed up to 650MHz) and ARM Cortex-M4 core (at speed up to 209MHz) as well as a 3D Graphics Processing Unit (GPU) Open GL 2.0 ES compatible.

The VisionSOM-STM32MP1 is a general-purpose highly integrated SoM (System on Module) featuring high computation power and 802.11b/g/n Wi-Fi and Bluetooth v5.1 connectivity. The option of integrated, fully certified Wi-Fi and Bluetooth module simplifies the carrier board design and is ideally suited for wireless application. The VisionSOM-STM32MP1 provides a variety memory configuration including flexible range of DDR3L, eMMC and SD memory card that meets our customers requirements.

The SoM supports connections to a variety of interfaces: two high-speed USB on-the-go with PHY, dual Ethernet, audio, display with touch panel and serial interfaces. In addition, the system supports industrial grade embedded applications.

SoMLabs also provides a complete hardware and software development board for the SoM in the form of a carrier board and

optional TFT display and touch panel.

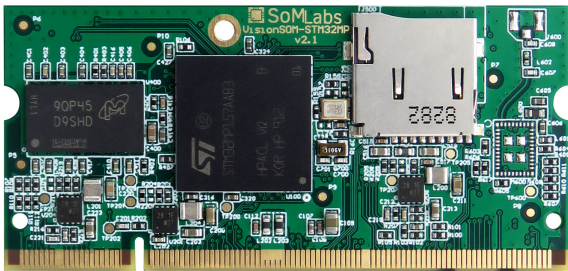
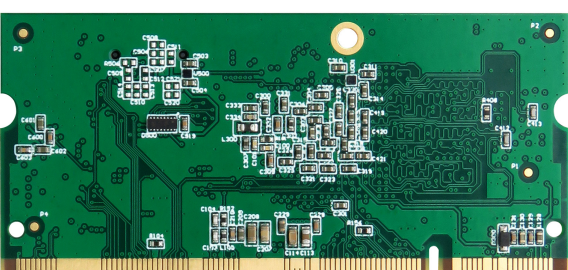
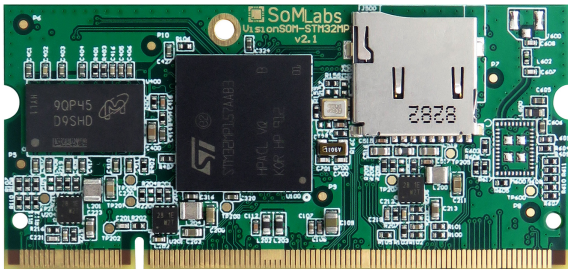
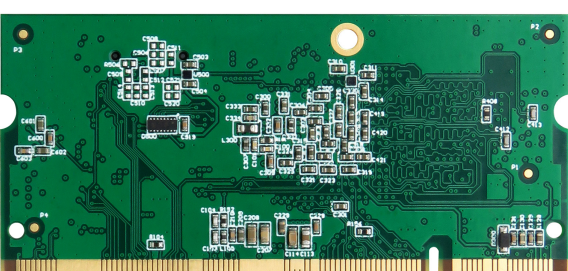
## **Applications**

- Industrial embedded Linux computer
- Home Appliances
- Home Automation - Smart Home
- Human-machine Interfaces (HMI)
- Point-of-sales (POS) terminals
- Cash Register
- 2D barcode scanners and printers
- Smart grid infrastructure
- IoT gateways
- Residential gateways
- Machine vision equipment
- Robotics
- Fitness/outdoor equipment

## Features

- Powered by STMicroelectronics STM32MP1 application processor
- Single or dual ARM Cortex-A7 cores at speed up to 800MHz
- ARM Cortex-M4 core at speed up to 209MHz
- Up to 512MB SDRAM DDR3L
- Up to 32GB eMMC memory or uSD memory card
- Optional Murata 802.11b/g/n Wi-Fi and Bluetooth v5.1+EDR module
- Power-efficient and cost-optimized solution
- Ideal for industrial IoT and embedded applications
- Integrated security features

## Pictures of SOM versions

Version	Photo
eMMC	 <p>Top view of the VisionSOM-STM32MP1 v2.1 SOM with eMMC. The board features a large black eMMC chip, a 90P45 D95HD connector, and various surface components. The SoMLabs logo and model number are printed on the PCB.</p>
	 <p>Bottom view of the VisionSOM-STM32MP1 v2.1 SOM with eMMC, showing the reverse side of the PCB with various components and connectors.</p>
micro-SD	 <p>Top view of the VisionSOM-STM32MP1 v2.1 SOM with micro-SD. The board features a micro-SD card slot, a 90P45 D95HD connector, and various surface components. The SoMLabs logo and model number are printed on the PCB.</p>
	 <p>Bottom view of the VisionSOM-STM32MP1 v2.1 SOM with micro-SD, showing the reverse side of the PCB with various components and connectors.</p>

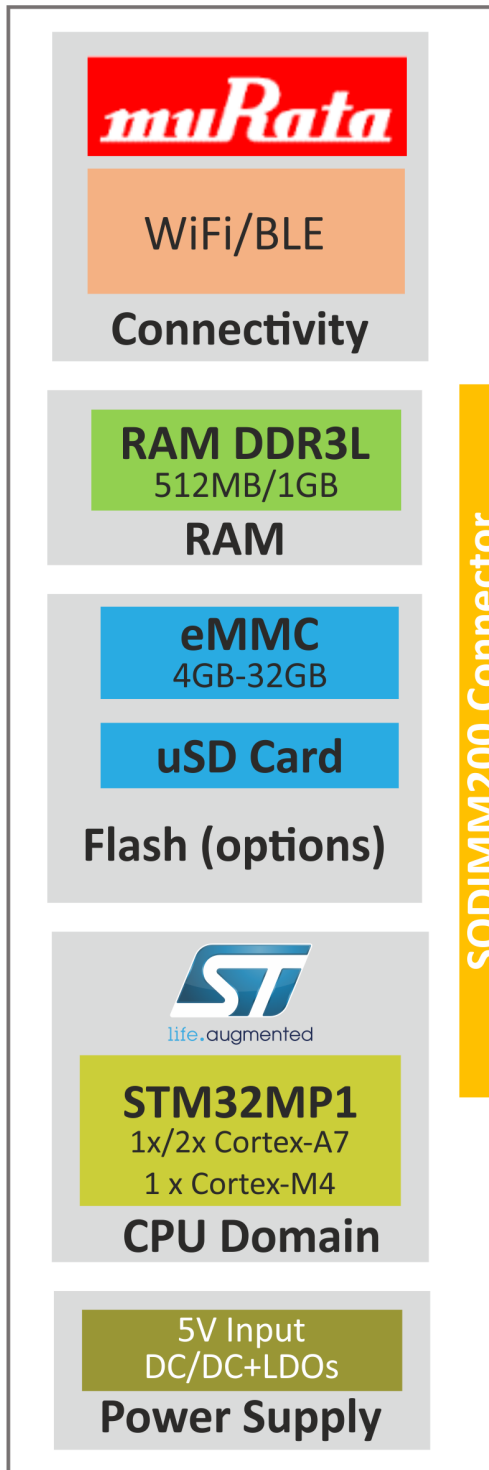
WiFi/BT module is available for all memory variants configurations.

## Ordering info

**SLS18CpuType\_Clock\_RamSize\_FlashSize\_SF\_TEMP\_V**

<b>SLS</b>	Product type SLS - System on Module
<b>1</b>	SOM Name 1 - VisionSOM SODIMM200
<b>8</b>	CPU Family 8 - STM32MP1
<b>CpuType</b>	CPU Type MP151A - STM32MP151A MP157A - STM32MP157A
<b>Clock</b>	CPU Clock Speed 650C - 650MHz
<b>RamSize</b>	DDR3 RAM Size 256R - 256MB 512R - 512MB
<b>FlashSize</b>	Flash Size Type and Density uSD - MicroSD connector 04GE - 4GB eMMC 08GE - 8GB eMMC 16GE - 16GB eMMC 32GE - 32GB eMMC
<b>SF</b>	Special Features 0SF - No Special Features 1WB - Built-in 802.11b/g/n Wi-Fi and Bluetooth v5.1 Module (Murata 1DX)
<b>TEMP</b>	Operating Temperature C - Consumer: 0 to +70 C E - Extended: -25 to +70 C I - Industrial: -40 to +85 C
<b>V</b>	SOM Version A - Version 2.1

## Block Diagram





## Operating ranges

Parameter	Value	Unit	Comment
Power Supply	5.0	V	Connected to +5VIN SODIMM pin
Input GPIO voltage	3.3	V	-
Environment temperature <sup>1</sup>	-40...+85	°C	Industrial range w/o WiFi module
	-30...+70		Industrial range with WiFi module
	0...+70		Consumer range

Note:

1. Maximum MPU junction temperature is +125°C.

## Electrical parameters

SOM signal name	Parameter	Value			Units
		Min.	Typ.	Max.	
+5VIN	Supply Voltage	4.0	5.0	5.5	V
-	Total Supply Current <sup>1</sup>	TBD	TBD	TBD	A
VGPI0	GPIO Input Voltage	0	3.3	3.9 <sup>2</sup>	V
+3.3VOUT	SOM Internal LDO Output Current	-	-	0.5	A
USB-OTGx-VBUS	USB Supply	4.40	-	5.25	V
VDD-COIN-3V	SNVS Backup Battery Supply	1.4	-	3.6	V
-	ADC Inputs Voltage	0	-	3.3	V

Notes:

1. Excluding external load connected to +3.3VOUT lines.
2. Applying the maximum voltage 3.6V results in shorten lifetime. Recommended value is smaller than 3.45V.

## SoM pinout

### Important notes

1. Detail pin configurations description you can find, edit and arrange in dedicated IOC files (with free "STM32CubeMX" configurational tool): [VisionSOM-STM32MP157](#).
2. "LCD-DATAx (GND)" pins have been retained for compatibility with the modules VisionSOM-6ULL and VisionSOM-RT and are internally connected to GND.

SODIMM PIN	GPIO name	Default function	Notes
1		GND	
2		GND	
3		PWR-LP	
4		STM32-NRST	MPU reset in + on-board SD card power rail off
5		PWR-ON	
6		VDD-3V3	MPU VDD power rail (for BOOT lines voltage reference only)
7		BOOT1	
8		VDD-COIN-3V	External 3V battery input (optionally)
9		BOOT0	
10		BOOT2	
11		USB-OTG1-VBUS	Analog USB interface line
15		GND	
17		GND	
19		USB-OTG1-DP	Analog USB interface line
20		GND	
21		USB-OTG1-DN	Analog USB interface line
22		GND	
23		GND	
25		USB-OTG2-DP	Analog USB interface line
26		GND	
27		USB-OTG2-DN	Analog USB interface line
28		GND	
29		GND	
35		GND	
38		GND	
40		GND	
41		GND	
43		JTAG-TDI	JTAG interface
45	PG10	GPIO-PG10	
46		JTAG-TMS	JTAG interface
47	PC3	GPIO-PC3-ADC1-13	
48		JTAG-nRST	JTAG interface
49	PD13	GPIO-PD13	
50		GND	
51		GND	
52		JTAG-TDO	JTAG interface
53	PC1	ENET1-MDC	

54		JTAG-TCK	JTAG interface
55	PC0	GPIO-PC0-ADC1-10	
56	PB7	GPIO-PB7	By default I2C4_SDA
57	PE1	UART8-TXD	
58	PB1	GPIO-PB1-ADC1-5	
59		GND	
60		GND	
61	PA2	ENET1-MDIO	
62	PA0	GPIO-PA0-ADC1-16	
63	PE0	UART8-RXD	
64	PF10	GPIO-PF10	
65	PD8	USART3-TXD	
66	PD14	UART8-CTS	
67	PD9	USART3-RXD	
68	PG9	USART6-RXD	
69	PA10	USART1-RXD	
70		GND	
71		GND	
72	PD11	USART3-CTS	
73	PB6	USART1-TXD	
74	PG7	UART8-RTS	
75	PG11	UART4-TXD	
76	PA11	USART1-CTS	
77	PB2	UART4-RXD	
78	PD12	USART3-RTS	
79	PG14	USART6-TXD	
80	PA12	USART1-RTS	
81		GND	
82		GND	
84		GND	
85		VOUT-3V3	3,3V out
87		VOUT-3V3	3,3V out
88		VOUT-3V3	3,3V out
89		VOUT-3V3	3,3V out
90		VOUT-3V3	3,3V out
91		VOUT-3V3	3,3V out
92		VOUT-3V3	3,3V out
93		VOUT-3V3	3,3V out
96		VDD-5V	5V input
97	PC4	ENET1-RXD0	
98		VDD-5V	5V input
99	PC5	ENET1-RXD1	
100		VDD-5V	5V input
101	PA7	ENET1-CRS-DV	
102		VDD-5V	5V input
103		GND	

104		VDD-5V	5V input
106		VDD-5V	5V input
107		GND	
108		VDD-5V	5V input
109	PG12	GPIO-PG12	
110		VDD-5V	5V input
111	PD15	GPIO-PD15	
112		VDD-5V	5V input
113	PA13	GPIO-PA13	
114	PB11	ENET1-TXD-EN	
115		GND	
116		GND	
117	PA14	GPIO-PA14	
118	PB5	ENET1-CLK	RC LPF built-in series (10R)
119	PC2	GPIO-PC2	
120		GND	
121	PE2	GPIO-PE2	By default I2C4_SCL
122	PG13	ENET1-TXD0	
124	PB13	ENET1-TXD1	
125		GND	
127		GND	
128		GND	
129	PA9	LCD-R5	
130		GND	
131	PA8	LCD-R6	
132		GND	
133		LCD-DATA17 (GND)	Internally connected to GND
134	PE15	LCD-R7	
135		GND	
136		GND	
137	PC10	LCD-R2	
138	PB0	LCD-R3	
139	PF11	LCD-G5	
140	PA5	LCD-R4	
141	PC7	LCD-G6	
142	PG8	LCD-G7	
143		LCD-DATA8 (GND)	Internally connected to GND
144		LCD-DATA16 (GND)	Internally connected to GND
145		LCD-DATA9 (GND)	Internally connected to GND
146		GND	
147		GND	
148	PE11	LCD-G3	
149	PA3	LCD-B5	
150	PB10	LCD-G4	
151	PB8	LCD-B6	
152	PA6	LCD-G2	

153		LCD-DATA0 (GND)	Internally connected to GND
154	PD10	LCD-B3	
155		LCD-DATA1 (GND)	Internally connected to GND
156		GND	
157	PA1	GPIO-PA1	
158	PE12	LCD-B4	
159		GND	
160	PC6	LCD-HSYNC	
161	PE14	LCD-CLK	
162	PA4	LCD-VSYNC	
163	PE13	LCD-DE	
164	PD6	LCD-B2	
165		GND	
166	PB9	LCD-B7	
167	PB14	SD2-DATA0	
168		GND	
169	PB4	SD2-DATA3	
170		GND	
171	PB15	SD2-DATA1	
172		GND	
173	PG6	SD2-CMD	
174		GND	
175	PB3	SD2-DATA2	
176		GND	
177		GND	
178		GND	
179	PE3	SD2-CLK	
180		GND	
181		GND	
182		GND	
184		GND	
185		GND	
186		DSI-D0N	Dedicated MIPI-DSI line
188		DSI-D0P	Dedicated MIPI-DSI line
189		GND	
192		DSI-D1N	Dedicated MIPI-DSI line
193		DSI-CK-N	Dedicated MIPI-DSI line
194		DSI-D1P	Dedicated MIPI-DSI line
195		DSI-CK-P	Dedicated MIPI-DSI line
199		GND	
200		GND	
-	PA15	SD1-DATA5	Internal Flash/SD
-	PB12	WLAN-HWAKE	
-	PC8	SD1-DATA0	Internal Flash/SD
-	PC9	SD1-DATA1	Internal Flash/SD
-	PC11	SD1-DATA3	Internal Flash/SD

-	PC12	SD1-CLK	Internal Flash/SD
-	PC13	32kHz-OUT	1DX WiFi module line
-	PC14	OSCI	
-	PC15	OSCO	
-	PD0	SD3-CMD	1DX WiFi module line
-	PD1	SD3-DATA0	1DX WiFi module line
-	PD4	SD3-DATA1	1DX WiFi module line
-	PD5	SD3-DATA2	1DX WiFi module line
-	PD7	SD3-DATA3	1DX WiFi module line
-	PE4	SD1-DATA4	Internal Flash/SD
-	PE5	SD1-DATA6	Internal Flash/SD
-	PE6	SD1-DATA2	Internal Flash/SD
-	PE9	BT-ENABLE	1DX Bluetooth module line
-	PE10	UART7-CTS	1DX Bluetooth module line
-	PF6	BT-HWAKE	1DX Bluetooth module line
-	PF7	BT-WAKE	1DX Bluetooth module line
-	PF8	UART7-RTS	1DX Bluetooth module line
-	PF9	WLAN-ENABLE	1DX WiFi module line
-	PG15	SD3-CLK	1DX WiFi module line
	PD2	SD1-CMD	Internal Flash/SD
	PD3	SD1-DATA7	Internal Flash/SD
	PE7	UART7-RXD	1DX Bluetooth module line
	PE8	UART7-TXD	1DX Bluetooth module line

## Dimensions

