M.2 serial memory pack for Nucleo-144 boards

Introduction

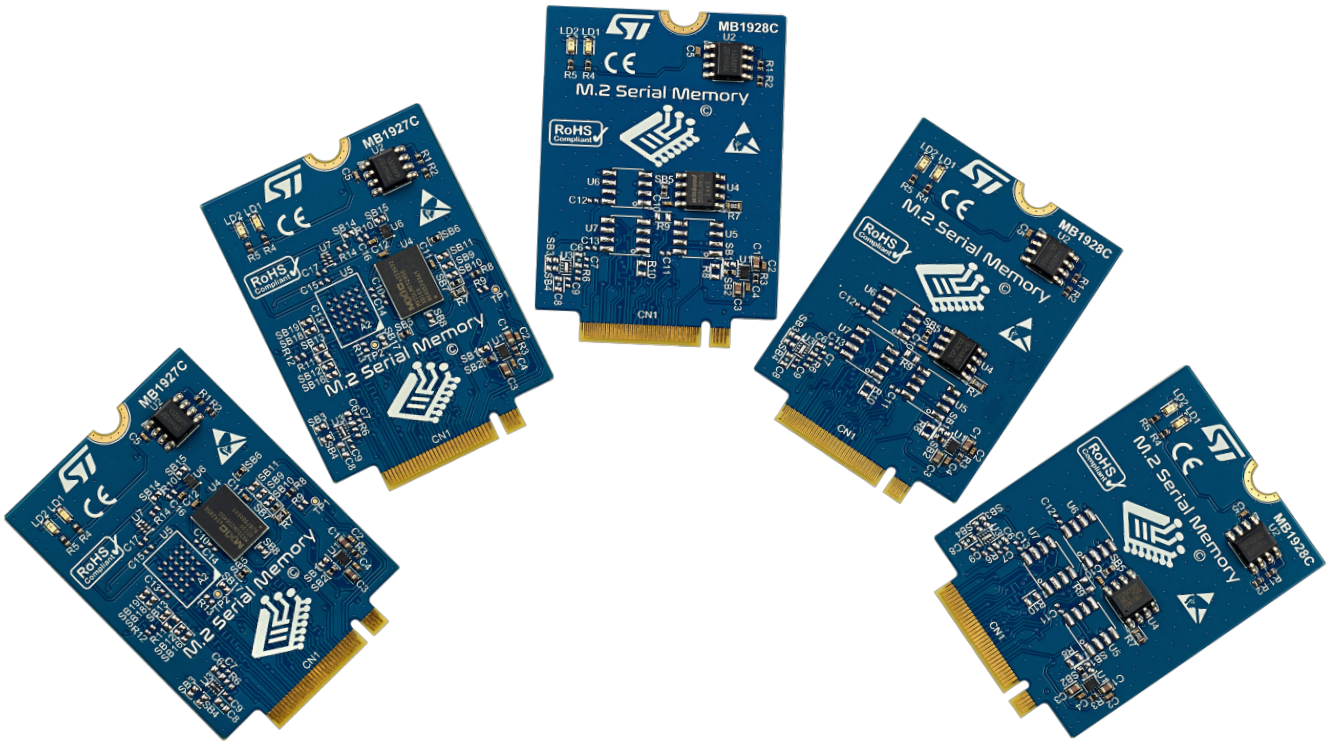
B-M2MEM-PACK1 is a serial memory pack containing five different nonvolatile serial memory add-on boards. These boards can be connected to specific Nucleo-144 boards using the M.2 Key A serial memory connector and allow the development of applications requiring an external flash memory.

The boards contain serial flash memories from different memory vendors, covering a wide range of operating voltages and maximum clock frequencies. They offer multiple serial bus schemes and memory interfaces.

Each board offers a red and green LED light, an I^2C identification EEPROM for software detection, and one serial flash memory IC. The latter is powered by an LDO, controlled by the MCU of the connected Nucleo-144 board.

All boards contain empty sockets for customization in 8-pin SOP or 24-pin BGA device footprints.

Figure 1. B-M2MEM-PACK1 global view



Pictures are not contractual.

1 Features

- Five different add-on boards
- Multiple memory vendors
- Different operating voltages and clock frequencies
- Multiple serial bus schemes and memory interfaces
- Each board offers:
  - One serial memory IC powered by a host MCU-controlled LDO
  - I^2C identification EEPROM
  - One red and one green LED
  - Empty sockets for customization in 8-pin SOP or 24-pin BGA device footprints
  - M.2 Key A serial memory connector

2 Ordering information

To order the B-M2MEM-PACK1 M.2 serial memory pack, refer to Table 1.

Table 1. Ordering information

Order code	Board references	Compatible STM32 boards
B-M2MEM-PACK1	• MB1927(1) • MB1928(2)	All boards containing an M.2 Key A serial memory connector

1. *Serial memory board for BGA24 memory device packages*
2. *Serial memory board for SO8 memory device packages*

2.1 Codification

The meaning of the codification is explained in Table 2.

Table 2. Codification explanation

B-XXYYY-ZZZZZ	Description	Example: B-M2MEM-PACK1
B	Expansion board	Serial memory add-on board bundle
XX	Type of connector	M.2
YYY	Type of board	Memory
ZZZZZ	Type of product	PACK1: first pack of serial memory add-on boards

3 Development environment

The add-on boards in the B-M2MEM-PACK1 M.2 serial memory pack can be used with select Nucleo-144 boards, which run on STM32 microcontrollers based on Arm® Cortex® processors.

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3.1 EDA resources

All board design resources, including schematics, EDA databases, manufacturing files, and the bill of materials, are available from the B-M2MEM-PACK1 product page at *www.st.com*.

4 Conventions

Table 3. **Conventions for solder bridges**

Convention	Definition
Solder bridge SBx ON	SBx connections closed by 0 Ω resistor
Solder bridge SBx OFF	SBx connections left open

5 Safety recommendations

5.1 Targeted audience

This product targets users with at least basic electronics or embedded software development knowledge like engineers, technicians, or students.

This board is not a toy and is not suited for use by children.

5.2 Handling the board

This product contains a bare printed circuit board and like all products of this type, the user must be careful about the following points:

- The connection pins on the board might be sharp. Be careful when handling the board to avoid injury.
- This board contains static sensitive devices. To avoid damaging it, handle the board in an ESD-proof environment.
- While powered, do not touch the electric connections on the board with your fingers or anything conductive. The board operates at a voltage level that is not dangerous, but components might be damaged when shorted.
- Do not put any liquid on the board and avoid operating it close to water or at a high humidity level.
- Do not operate the board if it is dirty or dusty.
- The pins of the board are exposed and must not come into contact with a metal surface, as this can produce a short circuit and damage the board.

5.3 Delivery recommendations

Before the first use, inspect the board for any damage that may have occurred during shipment. Ensure that all socketed components are securely fixed in their sockets and that nothing is loose in the plastic bag.

6 Quick start

Before installing and using the product, accept the evaluation product license agreement from the *www.st.com/epla* webpage.

These boards can be used with any STM32 Nucleo-144 board or ST product supporting the M.2 Key A serial memory interface.

The B-M2MEM-PACK1 serial memory boards do not contain jumpers, and all solder bridges are pre-configured by default for quick setup.

The reference voltage of the microcontroller embedded in the Nucleo-144 board must be compatible with the selected memory board (1.8 or 3.3 V). A memory board that includes memory devices powered by a specific voltage must be compatible with the VDD power supply connected to the STM32 MCU.

7 Hardware layout and configuration

7.1 Hardware board layout

The B-M2MEM-PACK1 consists of five serial memory boards, divided into two board references: MB1927 and MB1928. The board reference depends on the memory package, either BGA24 or SO8. The hardware block diagrams in Figure 2 and Figure 3 demonstrate the connection between the M.2 Key A serial memory connector and the devices on the board for different Octo-SPI or Quad-SPI memories. MB1927 boards implement Octo-SPI memories, while MB1928 boards implement Quad-SPI memories. Figure 4 and Figure 5 show the locations of these features on the boards.

Figure 2. B-M2MEM-PACK1 hardware block diagram for BGA24 memory devices

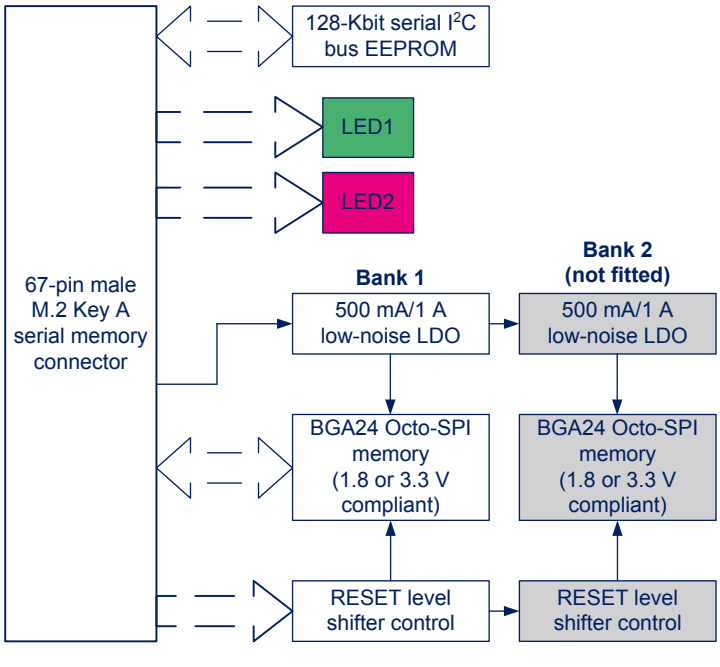


Figure 3. B-M2MEM-PACK1 hardware block diagram for SO8 memory devices

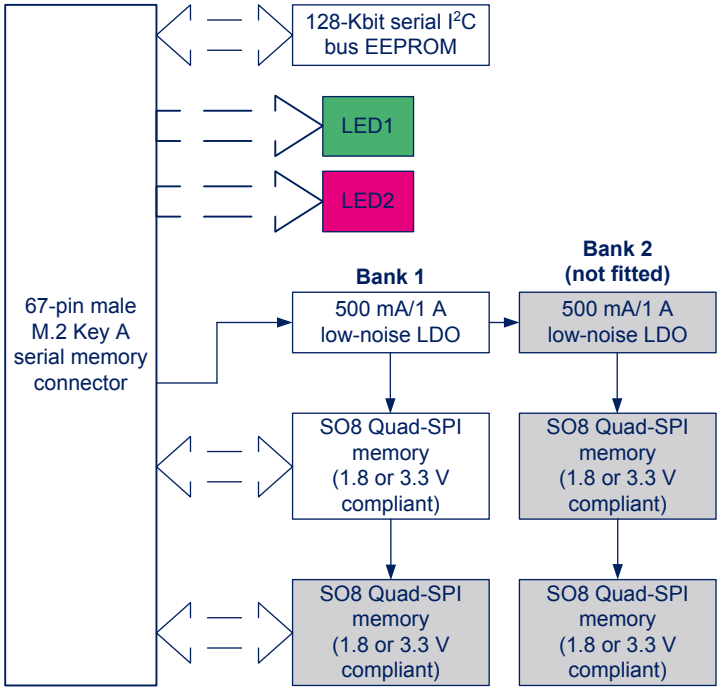


Figure 4. MB1927 board layout - top view

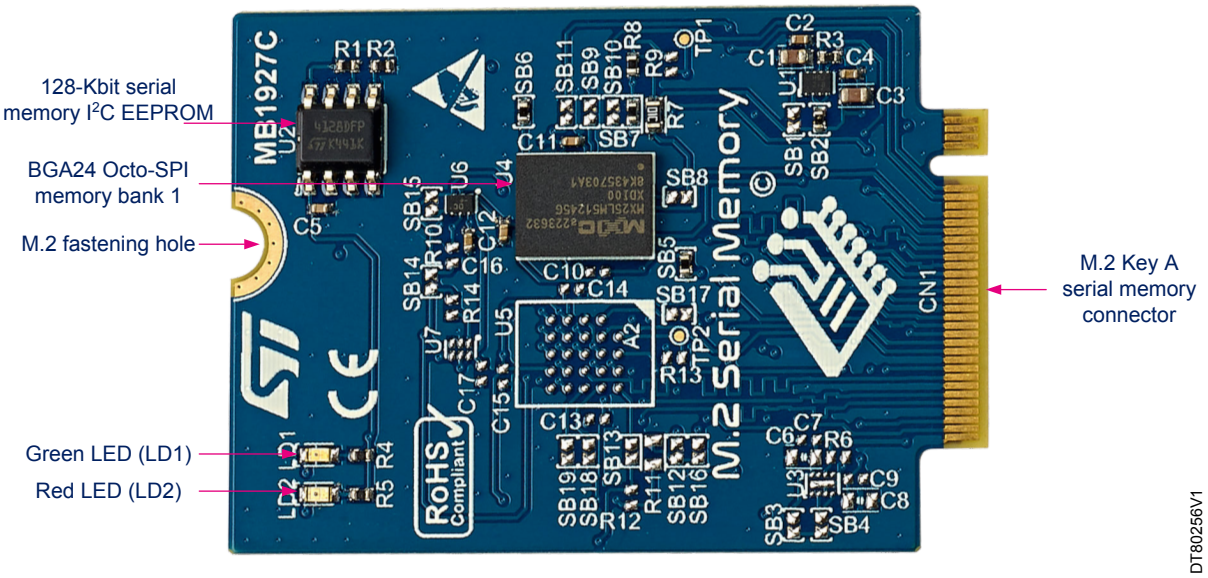


Figure 5. MB1928 board layout - top view

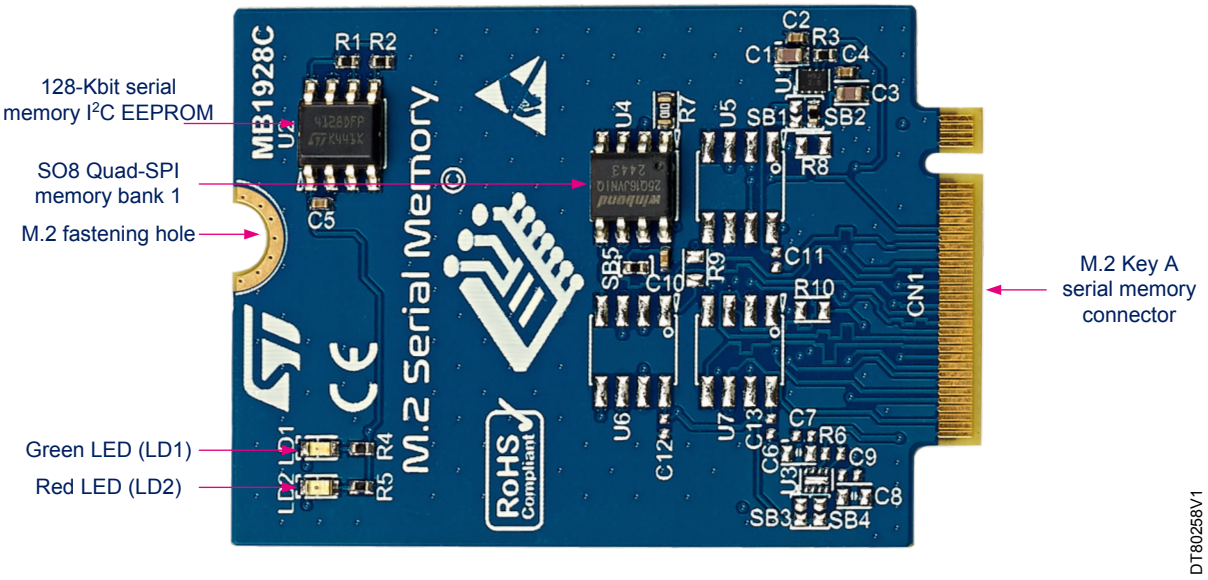
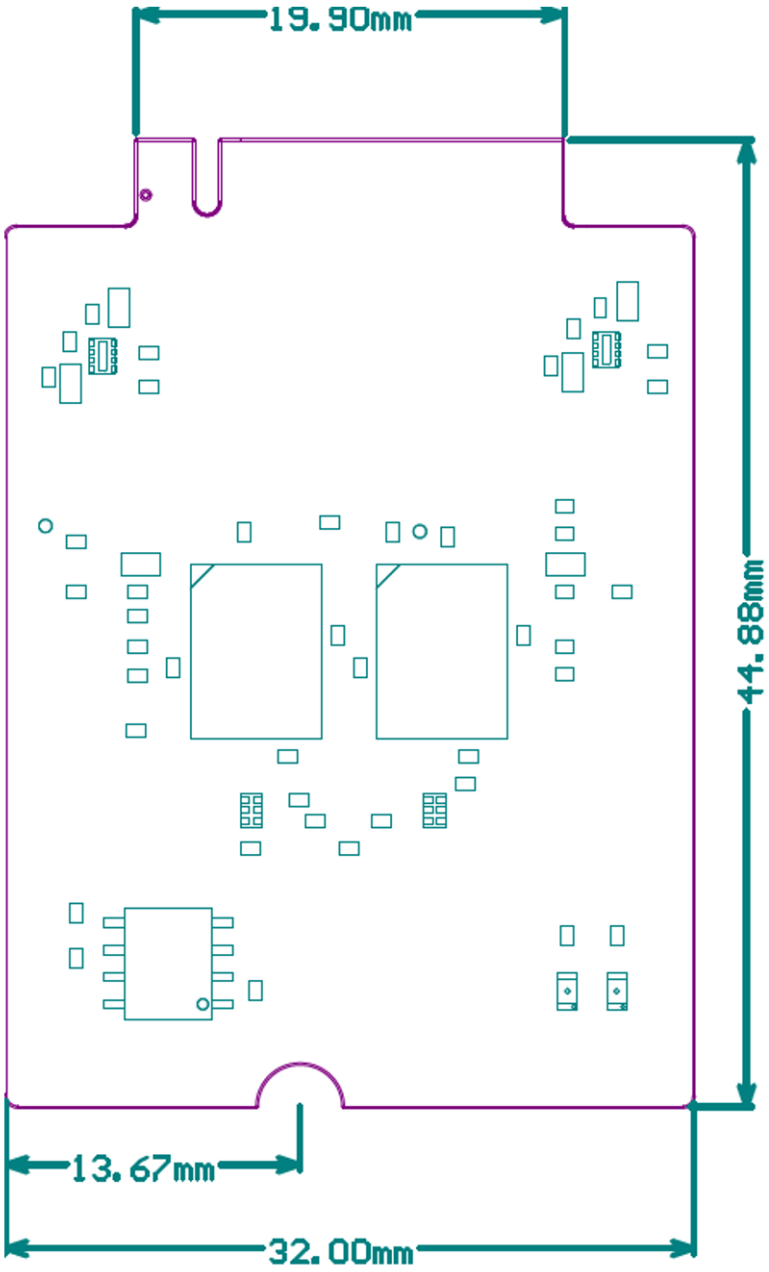


Figure 6. Serial memory board layout - bottom view

Pictures are not contractual.

7.2 Mechanical drawing

Figure 7. **Serial memory board mechanical drawing (in millimeters)**



7.3 B-M2MEM-PACK1 serial memory pack configuration

Table 4 describes the memory references available on the five boards included in the B-M2MEM-PACK1. These memories operate at different voltage levels. The B-M2MEM-PACK1 boards support either 1.8 or 3.3 V.

The board name indicates the supported voltage. For example, MB1927-33BA contains memories that operate at 3.3 V, and MB1928-18LA contains memories that operate at 1.8 V. To ensure compliance, the STM32 MCU (included in the Nucleo-144 board or other STM32-based product) connected to these boards must operate at the same voltage level.

Warning: *For empty sockets and customization, always use a memory device with the same operating voltage as the corresponding board. For example, all MBxxxx-18xx boards must be equipped with devices that operate at 1.8 V, and all MBxxxx-33xx boards with devices operating at 3.3 V.*

The different boards can be identified through the board identification sticker, located on the bottom side of the board, as shown in Figure 6.

Table 4. Default B-M2MEM-PACK1 M.2 serial memory pack configuration

Board name	Memory vendor	Serial memory	Size (in Mbits)	Operating voltage range	Onboard voltage regulator	Max clock frequency	Serial bus schemes
MB1927-33BA	MACRONIX	MX25LM51245GXDI00	512	2.7 - 3.6 V	3.3 V	133 MHz	1 & 8 bit STR, DTR
MB1927-18BA	MACRONIX	MX25UW25645GXDI00	256	1.65 - 2.0 V	1.8 V	133 MHz (1 bit) 200 MHz (8 bit)	1 & 8 bit STR, DTR
MB1928-33LA	ISSI	IS25LP032DJNLE-TR	32	2.30 - 3.60 V	3.3 V	133 MHz	1, 2, 4 bit STR, DTR
MB1928-33LB	WINBOND	W25Q16JVSNIQ	16	2.7 - 3.6 V	3.3 V	133 MHz	1, 2, 4 bit STR
MB1928-18LA	STMICRO	M95P32-IXMNT/E	32	1.6 - 3.6 V	1.8 V	80 MHz	1, 2, 4 bit STR

8 Board functions

This section details the functions, peripherals, and interfaces of the B-M2MEM-PACK1 serial memory boards. Refer to Section 7.1: Hardware board layout for top and bottom layout views of the boards.

8.1 Memory banks

Each board in the B-M2MEM-PACK1 M.2 serial memory pack can contain up to two memory banks, driving one to four devices, depending on the memory type. MB1927 can support up to two memories, while MB1928 can support up to four. Both boards provide two memory banks, here named *Bank1* and *Bank2*. In this product version, MB1927 contains one BGA24 memory device (1/2) and MB1928 includes one SO8 memory device (1/4).

Table 5 shows the different memory banks and controls for each board type. Grey cells indicate memory devices that are not fitted by default.

Table 5. MB1927 and MB1928 memory banks and controls

Board type	Memory bank	Memory type	Voltage name	Memory voltages	Memory RESET signal	Memory device status (default)
MB1927	Bank1	Octo-SPI_1 device	VDDIO1	Controlled by U1 (1.8 or 3.3 V)	RST1	Fitted
	Bank2	Octo-SPI_2 device	VDDIO2	Controlled by U3 (1.8 or 3.3 V)	RST2	Not Fitted
MB1928	Bank1	Quad-SPI_1 device	VDDIO1	Controlled by U1 (1.8 or 3.3 V)	N/A(1)	Fitted
		Quad-SPI_2 device	VDDIO1	Controlled by U1 (1.8 or 3.3 V)	N/A	Not Fitted
	Bank2	Quad-SPI_3 device	VDDIO2	Controlled by U3 (1.8 or 3.3 V)	N/A	Not Fitted
		Quad-SPI_4 device	VDDIO2	Controlled by U3 (1.8 or 3.3 V)	N/A	Not Fitted

1. *RESET only available through power-on reset.*

8.2 M.2 Key A serial memory connector

The B-M2MEM-PACK1 serial memory boards use the 67-pin STMicroelectronics M.2 Key A serial memory connector. This connector is edge-printed on the board layout, and the connections are available on gold fingers located on the top and bottom sides. The connector is the main interface that connects to external devices, especially M.2 sockets.

Warning: *The pinout of the M.2 Key A serial memory connector is proprietary to ST and is not compatible with M.2 Key A connectors from other manufacturers. Do not use these boards with an M.2 Key A connector that is not supplied by ST, even if it is mechanically compatible, as it may damage the memory boards, the receptacle hardware, or both.*

Table 6 describes all connections available on the M.2 Key A serial memory connector pins for both MB1927 and MB1928.

Table 6. M.2 Key A serial memory connector pinout

Signal name	MB1928 pin name (CN1)	MB1927 pin name (CN1)	M.2 connector pin	M.2 connector pin	MB1927 pin name (CN1)	MB1928 pin name (CN1)	Signal name
GND	GND	GND	1	2	3V3	3V3	3V3
NC(1)	NC(1)	NC(1)	3	4	3V3	3V3	3V3
NC(1)	NC(1)	NC(1)	5	6	VDDIO1	VDDIO1	VDDIO1
GND	GND	GND	7	8	Key A		
Key A			9	10			
			11	12			
			13	14			

Signal name	MB1928 pin name (CN1)	MB1927 pin name (CN1)	M.2 connector pin	M.2 connector pin	MB1927 pin name (CN1)	MB1928 pin name (CN1)	Signal name
Key A			15	16	SPARE2	NC(1)	GPIO_SPI_SCK
GPIO_SPI_MOSI	NC(1)	SPARE3	17	18	LDO_EN	LDO_EN	GPIO-LDO_EN
GPIO_SPI_MISO	NC(1)	SPARE4	19	20	NC(1)	QSPI2_NCS	QSPI2_NCS/NC/NC(1)
GPIO_SPI_NSS	NC(1)	NC(1)	21	22	OSPI1_NCS	QSPI1_NCS	QSPI1_NCS/ OSPI1_NCS/ HSPI_NCS
GND	GND	GND	23	24	GND	GND	GND
NC(1)/OSPI1_DQS/ HSPI_DQS0	NC(1)	OSPI1_DQS	25	26	OSPI1_D6	QSPI2_D2	QSPI2_D2/OSPI1_D6/ HSPI_D6
QSPI2_D3/OSPI1_D7/ HSPI_D7	QSPI2_D3	OSPI1_D7	27	28	OSPI1_D5	QSPI2_D1	QSPI2_D1/OSPI1_D5/ HSPI_D5
GND	GND	GND	29	30	GND	GND	GND
QSPI2_D0/OSPI1_D4/ HSPI_D4	QSPI2_D0	OSPI1_D4	31	32	OSPI1_D3	QSPI1_D3	QSPI1_D3/OSPI1_D3/ HSPI_D3
GND	GND	GND	33	34	OSPI1_D2	QSPI1_D2	QSPI1_D2/OSPI1_D2/ HSPI_D2
QSPI1_D1/OSPI1_D1/ HSPI_D1	QSPI1_D1	OSPI1_D1	35	36	GND	GND	GND
QSPI1_D0/OSPI1_D0/ HSPI_D0	QSPI1_D0	OSPI1_D0	37	38	LED2	LED2	GPIO-LED2
GND	GND	GND	39	40	SPARE1	NC(1)	GPIO
QSPI1/2_CLK/ OSPI1_CLK/HSPI_CLK	QSPI1/2_CLK	OSPI1_CLK	41	42	LED1	LED1	GPIO-LED1
NC(1)/OSPI1_NCLK/ HSPI_NCLK	NC(1)	OSPI1_NCLK	43	44	GND	GND	GND
GND	GND	GND	45	46	NC(1)	NC(1)	RESERVED
QSPI4_D3/OSPI2_D7/ HSPI_D15	QSPI4_D3	OSPI2_D7	47	48	NC(1)	NC(1)	RESERVED
QSPI4_D2/OSPI2_D6/ HSPI_D14	QSPI4_D2	OSPI2_D6	49	50	GND	GND	GND
GND	GND	GND	51	52	NC(1)	QSPI4_NCS	QSPI4_NCS/NC/NC(1)
QSPI4_D1/OSPI2_D5/ HSPI_D13	QSPI4_D1	OSPI2_D5	53	54	OSPI2_NCS	QSPI3_NCS	QSPI3_NCS/ OSPI2_NCS/NC(1)
QSPI4_D0/OSPI2_D4/ HSPI_D12	QSPI4_D0	OSPI2_D4	55	56	OSPI2_DQS	NC(1)	NC(1)/OSPI2_DQS/ HSPI_DQS1
GND	GND	GND	57	58	SDA	SDA	I2C_SDA
QSPI3_D3/OSPI2_D3/ HSPI_D11	QSPI3_D3	OSPI2_D3	59	60	SCL	SCL	I2C_SCL
QSPI3_D2/OSPI2_D2/ HSPI_D10	QSPI3_D2	OSPI2_D2	61	62	INT	NC(1)	INT
GND	GND	GND	63	64	VDDI2C	VDDI2C	VDDIO_SPI_I2C
QSPI3_D1/OSPI2_D1/ HSPI_D9	QSPI3_D1	OSPI2_D1	65	66	NRST	NC(1)	NRST
QSPI3_D0/OSPI2_D0/ HSPI_D8	QSPI3_D0	OSPI2_D0	67	68	VDDIO2	VDDIO2	VDDIO2
GND	GND	GND	69	70	GND	GND	GND

Signal name	MB1928 pin name (CN1)	MB1927 pin name (CN1)	M.2 connector pin	M.2 connector pin	MB1927 pin name (CN1)	MB1928 pin name (CN1)	Signal name
QSPI3/4_CLK/ OSPI2_CLK/NC[1]	QSPI3/4_CLK	OSPI2_CLK	71	72	3V3	3V3	3V3
NC[1]/OSPI2_NCLK/NC	NC[1]	OSPI2_NCLK	73	74	3V3	3V3	3V3
GND	GND	GND	75	-			

1. *Not connected*

8.3 I²C identification EEPROM

The MB1927 and MB1928 boards include a 128-Kbit serial I²C identification EEPROM. Programmers can use this memory to store data related to the application. An area of the EEPROM stores information about the board reference and characteristics, memory JEDEC information, and other electrical parameters. For more information, refer to the technical note *M.2/SerialMemory interface specification* (TN1618), available from www.st.com.

8.4 3.3 and 1.8 V onboard LDO regulators

The MB1927 and MB1928 boards all have a 3.3 or 1.8 V onboard low dropout (LDO) regulator, depending on the memory devices present on the memory boards. These regulators are controlled externally by the same LDO_EN signal, which connects to the Nucleo-144 MCU GPIO through the M.2 Key A connector. Check the Nucleo-144 board or any other M.2 Key A-compatible hardware to determine which resource connects to the LDO_EN signal to enable the LDO regulator.

Drive the LDO_EN pin either high or low; do not leave it floating. Driving this pin high enables the regulator, while pulling it low puts the regulator into shutdown mode. This pin can also reset memory devices, especially on MB1928 boards, where memory devices may not have a hardware reset pin due to the limited number of pins in the SO8 package. In this case, the reset is performed as a power-on reset.

The LDO regulators can drive two different VDDIO1 and VDDIO2 voltages independently (for example, VDDIO1 = 3.3 V and VDDIO2 = 1.8 V). If only one voltage is required, use a single LDO to supply the memory devices (up to 500 mA). If both Bank1 and Bank2 memory devices are used, a second LDO can be mounted to support a total current of up to 1 A. By default, only one LDO with a single voltage is provided on each board in this memory pack. However, it is possible to mix voltages and LDO as required.

8.5 NRST single bidirectional low-level shifter (MB1927 only)

On MB1927, the NRST signal from the Nucleo-144 RESET signal is connected to a single bidirectional low-level shifter that allows operations down to 1.1 V. Unlike SO8 memory packages, BGA24 packages include the memory RST pin. Therefore, only MB1927 includes this level shifter, and MB1928 does not.

8.6 LEDs

Two user LEDs are available on the B-M2MEM-PACK1 serial memory boards:

- LD1 is a green LED connected to the LED1 signal (pin 42 of the M.2 Key A serial memory connector (CN1)).
- LD2 is a red LED connected to the LED2 signal (pin 38 of the M.2 Key A serial memory connector (CN1)).

The LEDs are controlled by the GPIOs attached to the MCU resources, depending on the STM32 Nucleo-144 or other board used as a mother board. Check on the M.2 host board which resources are connected to the LED1 and LED2 signals.

8.7 Solder bridge configuration settings

Table 7 and Table 8 show the solder bridge configuration settings for MB1927 and MB1928, respectively.

Table 7. MB1927 solder bridge configuration

Solder bridge	State[1]	Description
SB1	ON	3V3 input is directly connected to VDDIO1 (when U1 is not fitted)
	OFF	LDO fitted
SB2	**ON**	LDO is connected to VDDIO1
	OFF	LDO is not connected to VDDIO1
SB3	ON	3V3 input is directly connected to VDDIO2 (when U3 is not fitted)
	OFF	LDO fitted
SB4	ON	LDO is connected to VDDIO2
	OFF	LDO is not connected to VDDIO2
SB5	**ON**	VDDIO1 is connected to VDDIO2 (only one LDO fitted)
	OFF	VDDIO1 is disconnected to VDDIO2 (two LDO fitted)
SB6	**ON**	OSPI1_NCS signal is connected to pad C2 of U5 (/CS)
	OFF	OSPI1_NCS signal is disconnected to pad C2 of U5 (/CS)
SB9	**ON**	INT signal is connected to pad A5 of U5 (/ECS)
	OFF	INT signal is disconnected to pad A5 of U5 (/ECS)
SB10	**OFF**	Reserved for future use
SB11	**OFF**	Reserved for future use
SB12	**OFF**	Reserved for future use
SB13	**OFF**	Reserved for future use
SB14	**ON**	OSPI2_NCS signal is connected to pad C2 of U6 (/CS)
	OFF	OSPI2_NCS signal is disconnected to pad C2 of U6 (/CS)
SB17	**ON**	INT signal is connected to pad A5 of U6 (/ECS)
	OFF	INT signal is disconnected to pad A5 of U6 (/ECS)
SB20	**OFF**	Reserved for future use
SB21	**OFF**	Reserved for future use
SB22	**OFF**	Reserved for future use
SB23	**OFF**	Reserved for future use
SB18	ON	RST1 is connected with RST2 (only one level shifter fitted and VDDIO1 = VDDIO2)
	OFF	RST1 is disconnected with RST2 (two level shifters fitted with VDDIO1 <> from VDDIO2, or only one memory bank used)
SB19	ON	NRST is directly connected to RST1 (level shifter not fitted)
	OFF	NRST is disconnected from RST1 (at least one level shifter is fitted)

1. *The default configuration is shown in bold.*

Table 8. MB1928 solder bridge configuration

Bridge	State[1]	Description
SB1	ON	3V3 input is directly connected to VDDIO1 (when U1 is not fitted)
	OFF	LDO fitted
SB2	**ON**	LDO is connected to VDDIO1
	OFF	LDO is not connected to VDDIO1
SB3	ON	3V3 input is directly connected to VDDIO2 (when U3 is not fitted)
	OFF	LDO fitted
SB4	ON	LDO is connected to VDDIO2
	OFF	LDO is not connected to VDDIO2
SB5	**ON**	VDDIO1 is connected to VDDIO2 (only one LDO fitted)
	OFF	VDDIO1 is disconnected to VDDIO2 (two LDOs fitted)

1. *The default configuration is shown in bold.*

9 B-M2MEM-PACK1 product information

9.1 Product marking

The product and each board composing the product are identified with one or several stickers. The stickers, located on the top or bottom side of each PCB, provide product information:

- Main board featuring the target device: product order code, product identification, serial number, and board reference with revision.

  Single-sticker example:

  Product order code
  Product identification
  syywwxxxxx
  MBxxxx-Variant-yzz

  Dual-sticker example:

  Product order code
  Product identification

  and

  MBxxxx-Variant-yzz
  syywwxxxxx

- Other boards if any: board reference with revision and serial number.

  Examples:

  syywwxxxxx
  MBxxxx-Variant-yzz

  or

  MBxxxx-Variant-yzz
  syywwxxxxx

  or

  or

On the main board sticker, the first line provides the product order code, and the second line the product identification.

On all board stickers, the line formatted as *"MBxxxx-Variant-yzz"* shows the board reference *"MBxxxx"*, the mounting variant *"Variant"* when several exist (optional), the PCB revision *"y"*, and the assembly revision *"zz"*, for example B01. The other line shows the board serial number used for traceability.

Products and parts labeled as *"ES"* or *"E"* are not yet qualified or feature devices that are not yet qualified. STMicroelectronics disclaims any responsibility for consequences arising from their use. Under no circumstances will STMicroelectronics be liable for the customer's use of these engineering samples. Before deciding to use these engineering samples for qualification activities, contact STMicroelectronics' quality department.

"ES" or *"E"* marking examples of location:

- On the targeted STM32 that is soldered on the board (for an illustration of STM32 marking, refer to the STM32 datasheet *Package information* paragraph at the *www.st.com* website).
- Next to the ordering part number of the evaluation tool that is stuck, or silk-screen printed on the board.

Some boards feature a specific STM32 device version, which allows the operation of any bundled commercial stack/library available. This STM32 device shows a *"U"* marking option at the end of the standard part number and is not available for sales.

To use the same commercial stack in their applications, the developers might need to purchase a part number specific to this stack/library. The price of those part numbers includes the stack/library royalties.

9.2 B-M2MEM-PACK1 product history

Table 9. Product history

Order code	Product identification	Product details	Product change description	Product limitations
B-M2MEM-PACK1	BM2MEMPACK1$CZ1	Boards: • MB1927-33BA-C01 • MB1927-18BA-C01 • MB1928-33LA-C01 • MB1928-33LB-C01 • MB1928-18LA-C01 Refer to Table 4 for further details.	Initial revision	No limitation

9.3 Board revision history

Table 10. Board revision history

Board reference	Board variants and revision	Board change description	Board limitations
MB1927 (Serial memory board for BGA24 memory device packages)	• MB1927-33BA-C01 • MB1927-18BA-C01	Initial revision	No limitation
MB1928 (Serial memory board for SO8 memory device packages)	• MB1928-33LA-C01 • MB1928-33LB-C01 • MB1928-18LA-C01	Initial revision	No limitation

10 Compliance statements and conformity declarations

10.1 Federal Communications Commission (FCC) compliance statement

Part 15.19

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Part 15.21

Any changes or modifications to this equipment not expressly approved by STMicroelectronics may cause harmful interference and void the user's authority to operate this equipment.

Part 15.105

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: Use only shielded cables.

Responsible Party - U.S. Contact Information:

Francesco Doddo
STMicroelectronics, Inc.
200 Summit Drive | Suite 405 | Burlington, MA 01803
USA
Telephone: +1 781-472-9634

10.2 Innovation, Science and Economic Development Canada (ISED) compliance statement

This product complies with the ICES-003 standard class B of the ISED regulation.

ISED Canada ICES-003 Compliance Label: CAN ICES (B)/NMB (B).

Note: Use only shielded cables.

Ce produit est conforme à la norme NMB-003 classe B de la ISDE.

Étiquette de conformité à la NMB-003 d'ISDE Canada : CAN ICES (B) / NMB (B).

Note: Utiliser uniquement des câbles blindés.

10.3 UKCA conformity

Simplified UK declaration of conformity

Hereby, the manufacturer STMicroelectronics, declares that the equipment type B-M2MEM-PACK1 is in compliance with the UK Electromagnetic Compatibility Regulations 2016 (UK SI 2016 No. 1091) and with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (UK SI 2012 No. 3032).

Note: Use only shielded cables.

10.4 CE conformity

10.4.1 Simplified EU declaration of conformity

Hereby, STMicroelectronics declares that the equipment type B-M2MEM-PACK1 is in compliance with directives 2011/53/EU and 2015/863/EU (RoHS), and 2014/30/EU (EMC).

Note:
- *RoHS: Restriction of hazardous substances*
- *EMC: Electromagnetic compatibility*

Note: Use only shielded cables.

10.4.2 Déclaration de conformité UE simplifiée

STMicroelectronics déclare que l'équipement électrique du type B-M2MEM-PACK1 est conforme aux directives 2011/53/UE et 2015/863/UE (LdSD), et à la directive 2014/30/UE (CEM).

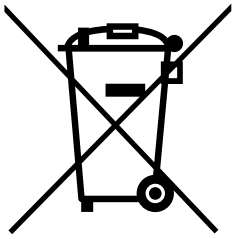
Note:
- *LdSD : directive sur la limitation de l'utilisation des substances dangereuses*
- *CEM : compatibilité électromagnétique*

Note: Utiliser uniquement des câbles blindés.

11 Product disposal

Disposal of this product: WEEE (Waste Electrical and Electronic Equipment)

(Applicable in Europe)



This symbol on the product, accessories, or accompanying documents indicates that the product and its electronic accessories must not be disposed of with household waste at the end of their working life.

To prevent possible harm to the environment and human health from uncontrolled waste disposal, separate these items from other types of waste and recycle them responsibly at a designated collection point to promote the sustainable reuse of material resources.

Household users:

Contact the retailer that you purchased the product from or your local authority for details of your nearest designated collection point.

Business users:

Contact your dealer or supplier for further information.

Revision history

Table 11. **Document revision history**

Date	Revision	Changes
26-Jan-2026	1	Initial release.

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