STMod+ fan-out expansion board
for STM32 Discovery kits and Evaluation boards

Introduction

The STMod+ fan-out expansion board provides extension connectors for the direct use of popular third-party modules from different manufacturers. It can be used with the STM32 Discovery boards or Evaluation boards featuring an STMod+ connector to increase the demonstration scopes of their STM32 microcontrollers.

This board is also referred to as the Fanout board or MB1280 in STMicroelectronics related technical literature.

The STMod+ fan-out expansion board features:

- mikroBUS™ compatible connectors
- ESP-01 compatible connector
- Seeed Studio™ Grove compatible connectors
- Reserved standard 2.54 mm pitch pin header for breadboard
- 5 V power
- 3.3 V regulator
- I^2C level shifters (footprint only)

Figure 1. Fan-out board (MB1280) top view
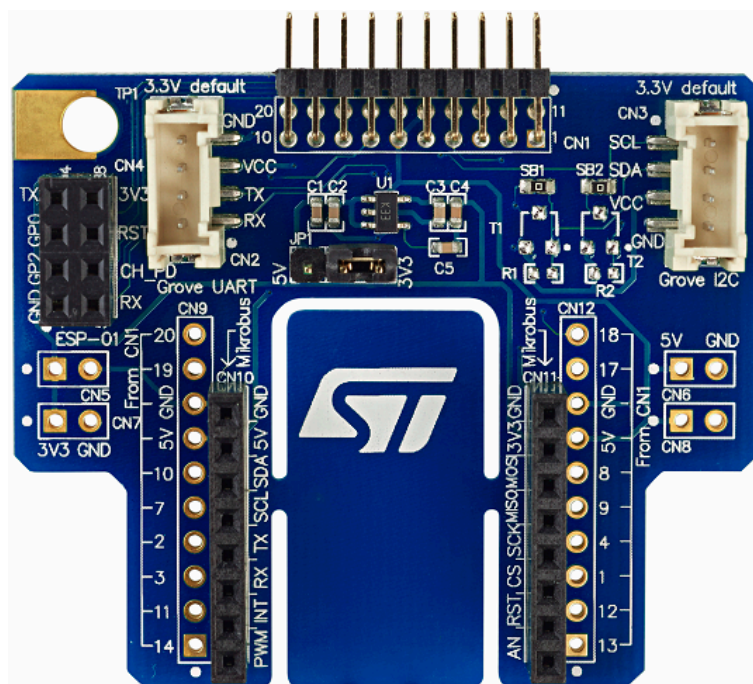
Picture is not contractual.

The board is delivered as part of the products listed in Table 1.

Table 1. Products featuring the fan-out board (MB1280)

Type	Products
STM32 Discovery kits	32F723EDISCOVERY, 32L496GDISCOVERY, 32L4R9IDISCOVERY, STM32F7308-DK, STM32H745I-DISCO, STM32H747I-DISCO, STM32H750B-DK, STM32H7B3I-DK, STM32L562E-DK.

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For further information contact your local STMicroelectronics sales office.

www.st.com

1   Hardware layout and configuration

The design of the MB1280 fan-out board is based on the STMicroelectronics STMod+ connector. Refer to technical note *STMod+ interface specification* (TN1238) for details.

Figure 2 illustrates how the fan-out board extends the Discovery boards and Evaluation boards connections to other modules. Figure 3 helps to locate the various connectors on the fan-out board.

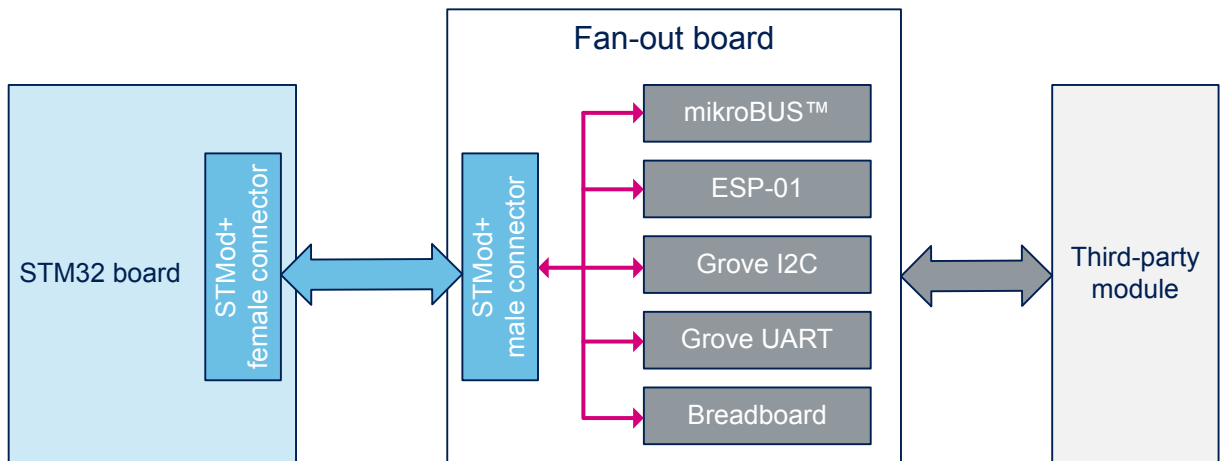**Figure 2. Fan-out board hardware block diagram**

Figure 3. Fan-out board layout
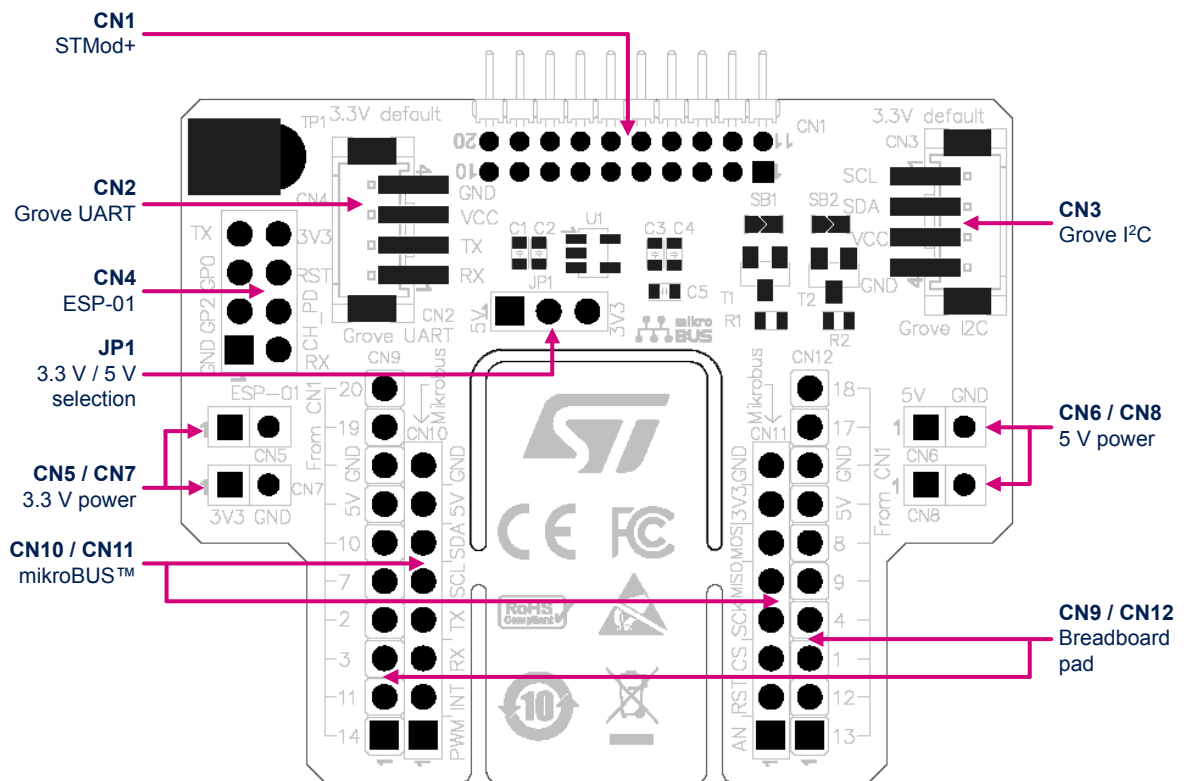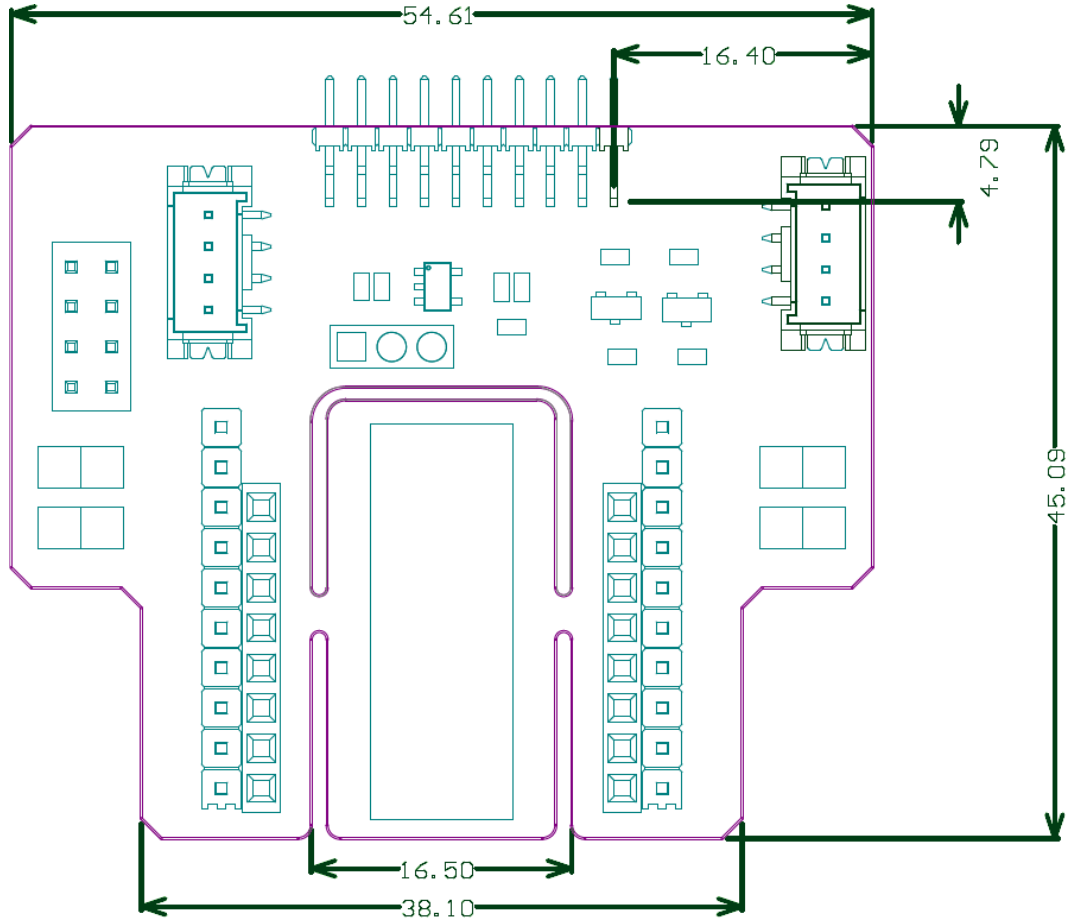
Figure 4 provides the mechanical dimensions of the MB1280 fan-out board.

Figure 4. Fan-out board mechanical dimensions in millimeters (top view)

2 Connectors

2.1 STMod+ male connector CN1

The standard 20-pin STMod+ male connector is available on the fan-out board for connection to the STMod+ female connector on the STM32 board featuring an STM32 microcontroller based on the Arm® Cortex®-M processor. Table 2 shows the definition of the pins.

Table 2. Description of the STMod+ connector pins

STMod+ connector	Pin number	Pin number	STMod+ connector
STMod+#1-NSS/CTS	1	11	STMod+#11-INT
STMod+#2-MOSIp/TX	2	12	STMod+#12-RST
STMod+#3-MISOp/ RX	3	13	STMod+#13-ADC
STMod+#4-SCK/RTS	4	14	STMod+#14-PWM
GND	5	15	5 V
5 V	6	16	GND
STMod+#7-SCL	7	17	STMod+#17
STMod+#8-MOSIs	8	18	STMod+#18
STMod+#9-MISOs	9	19	STMod+#19
STMod+#10-SDA	10	20	STMod+#20

Note: *Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.*

arm

2.2 Compatible connectors for the Grove boards

Both Grove board connectors described in this section are 2.54 mm pitch 1×4-pin male connectors. Their Seeed Studio™ part number is A2006LF-04A.

2.2.1 Compatible connector for UART Grove boards CN2

The CN2 connector is compatible with Grove-NFC boards using cable connection. Table 3 shows the definition of the pins.

Table 3. Description of the UART Grove connector pins

STMod+ connector	CN2 Grove function	Pin number
STMod+#3-RX	RX (Grove TX)	1
STMod+#2-TX	TX (Grove RX)	2
-	VCC	3
-	GND	4

2.2.2 Compatible connector for I²C Grove boards CN3

The CN3 connector is compatible with Grove-Barometer sensor (BMP180) or Grove-LCD RGB backlight boards using cable connection. Table 4 shows the definition of the pins.

Table 4. Description of the I²C Grove connector pins

STMod+ connector	CN3 Grove function	Pin number
STMod+#7-SCL[1]	SCL	1
STMod+#10-SDA[1]	SDA	2
-	VCC	3
-	GND	4

1. The following limitations apply:
   - For fan-out board versions MB1280A and MB1280B, the Grove connector does not support the 5 V I²C interface.
   - The fan-out board version MB1280C can support the 5 V I²C interface for the Grove connector, but users must solder the MOSFETs and related matched resistors by themselves.

2.3 ESP-01 Wi-Fi® board compatible connector CN4

The ESP-01 Wi-Fi® board connector is composed of 2×4-pin female connectors with a 2.54 mm pitch. Table 5 shows the definition of the pins.

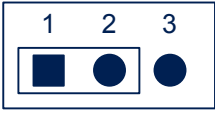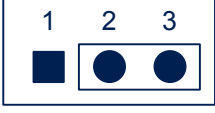**Table 5. Description of the ESP-01 Wi-Fi® board connector pins**

STMod+ connector CN11	ESP-01 function	Pin number	Pin number	ESP-01 function	STMod+ connector CN10
-	GND	1	2	RXD (ESP-01 TXD)	STMod+#3-RX
STMod+#14	GPIO2	3	4	CH_PD	STMod+#13
STMod+#11	GPIO0	5	6	RST	STMod+#12-RST
STMod+#2-TX	TXD (ESP-01 RXD)	7	8	3V3	-

2.4 Breadboard connectors CN9 and CN12

Both breadboard connectors are 2.54 mm pitch 1×10-pin connectors. Only the footprint pad is available on the fan-out board for user development. Table 6 shows the definition of the pins.

Table 6. Description of the breadboard connector pins

Breadboard connector CN12	Pin number	Pin number	Breadboard connector CN9
STMod+#13-ADC	1	1	STMod+#14-PWM
STMod+#12-RST	2	2	STMod+#11-INT
STMod+#1-NSS/CTS	3	3	STMod+#3-MISOp/RX
STMod+#4-SCK/RTS	4	4	STMod+#2-MOSIp/TX
STMod+#9-MISOs	5	5	STMod+#7-SCL
STMod+#8-MOSIs	6	6	STMod+#10-SDA
5 V	7	7	5 V
GND	8	8	GND
STMod+#17	9	9	STMod+#19
STMod+#18	10	10	STMod+#20

2.5 mikroBUS™ compatible connectors CN10 and CN11

mikroBUS™ compatible connectors CN10 and CN11 are a pair of 1×8-pin female connectors with a 2.54 mm pitch. Table 7 shows the definition of the pins.

Table 7. Description of the mikroBUS™ connector pins

STMod+ connector CN11	mikroBUS™ function	Pin number	Pin number	mikroBUS™ function	STMod+ connector CN10
STMod+#13-ADC	AN	1	1	PWM	STMod+#14-PWM
STMod+#12-RST	RST	2	2	INT	STMod+#11-INT
STMod+#1-CS	CS	3	3	RX	STMod+#3-RX
STMod+#4-SCK	SCK	4	4	TX	STMod+#2-TX
STMod+#9-MISOs	MISO	5	5	SCL	STMod+#7-SCL
STMod+#8-MOSIs	MOSI	6	6	SDA	STMod+#10-SDA
-	+3.3 V	7	7	+5 V	-
-	GND	8	8	GND	-

The mikroBUS™ pinout assignment is available at the mikroe.com website.

2.6 Power selection jumper JP1

JP1 is a 3-pin jumper selector for 5 V or 3.3 V power switch. Table 8 shows the definition of the power selection.

Table 8. Description of the power selection

JP1 position	VCC selection
1 2 3 ■ ● ●	VCC is connected to 5 V.
1 2 3 ■ ● ●	VCC is connected to 3.3 V.

Revision history

Table 9. Document revision history

Date	Version	Changes
20-Mar-2020	1	Initial release.

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