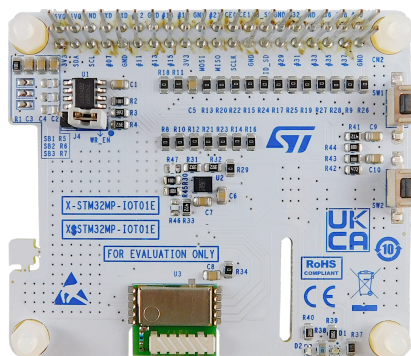


Sub-1Ghz and inertial sensor expansion board for STM32 MPU



Features

- STM32MP expansion board based on the [SPIRIT1](#) radio
- Up to +11.6 dBm programmable RF output power
- Modulation schemes: 2-FSK, GFSK, MSK, GMSK, OOK, ASK
- On-board [LSM6DSOX](#) iNEMO inertial module for accelerometer and gyroscope
- RGB and signal LEDs
- Keys for user interface
- EEPROM for automatic setup of GPIO and driver
- Compatible with [STM32MP157F-DK2](#) and Raspberry Pi GPIO connector

Description

The X-STM32MP-IOT01E is an STM32 MPU expansion board that hosts the SPSGRF-868 SPIRIT1 RF module for Sub-1 GHz RF communication with sensor for IoT applications.

The X-STM32MP-IOT01E interfaces with the STM32MP microcontroller via GPIO connector pins, using SPI, I²C, and GPIO connections for the [SPSGRF-868](#), the [LSM6DSOX](#) iNEMO inertial module, keys, and LEDs. It is compatible with the [STM32MP157F-DK2](#) and Raspberry Pi GPIO connector layout.

The SPSGRF-868 CE certified module operates in the 868 MHz ISM band. It is based on the [SPIRIT1](#) Sub-1GHz transceiver and the integrated balun ([BALF-SPI-01D3](#)).

The [LSM6DSOX](#) iNEMO inertial module is a 3-axis digital accelerometer and a 3-axis digital gyroscope with a full-scale acceleration range of $\pm 2/\pm 4/\pm 8/\pm 16$ g and an angular rate range of $\pm 125/\pm 250/\pm 500/\pm 1000/\pm 2000$ dps.

Product summary	
Sub-1Ghz and inertial sensor expansion board for STM32 MPU	X-STM32MP-IOT01E
Discovery kit with STM32MP157F MPU	STM32MP157F-DK2
Sub-GHz low-power programmable RF transceiver module	SPSGRF-868
STM32 MPU OpenSTLinux software expansion package for X-STM32MP-IOT01E	X-LINUX-IOT01E/A
Applications	Home Building Automation/Metering/Smart City

1 Block diagram

Figure 1. X-STM32MP-IOT01E block diagram

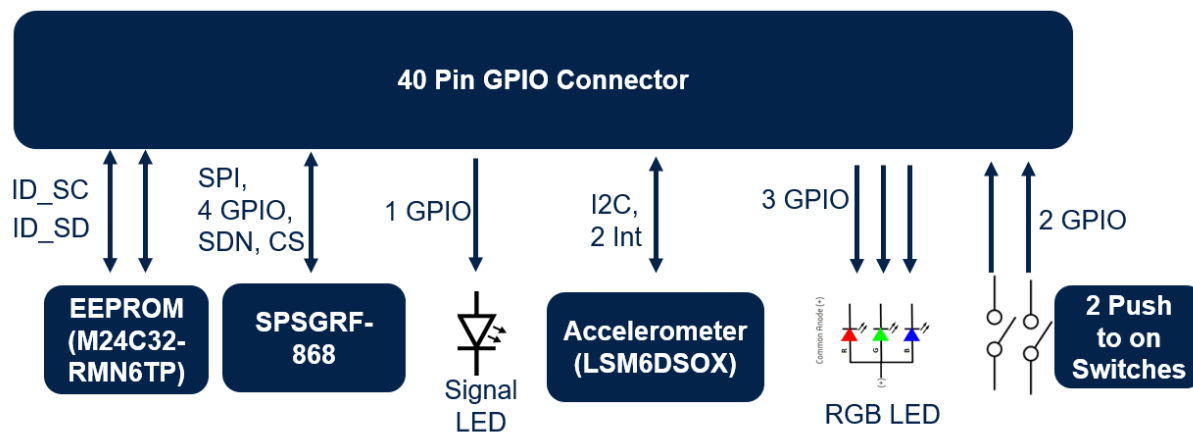


Figure 2. X-STM32MP-IOT01E schematic diagram (1 of 6)

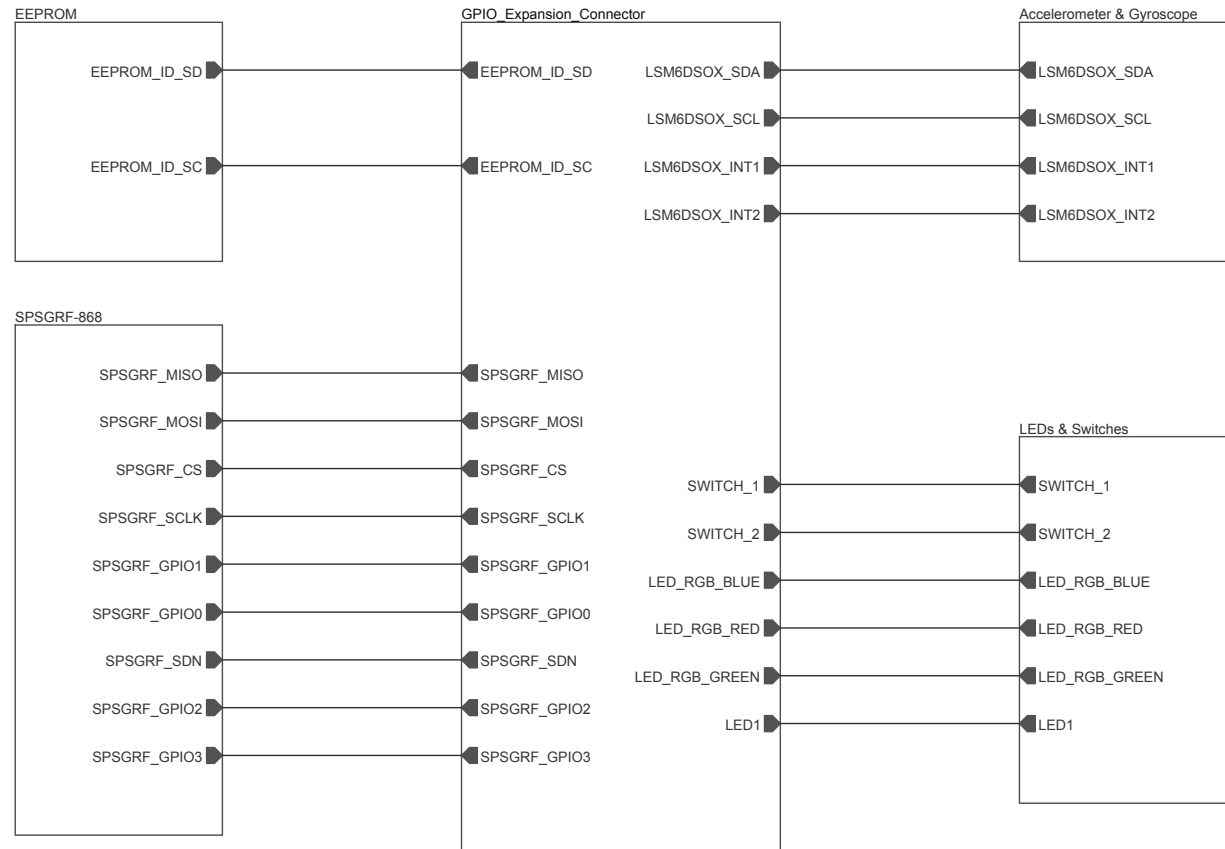


Figure 3. X-STM32MP-IOT01E schematic diagram (2 of 6)

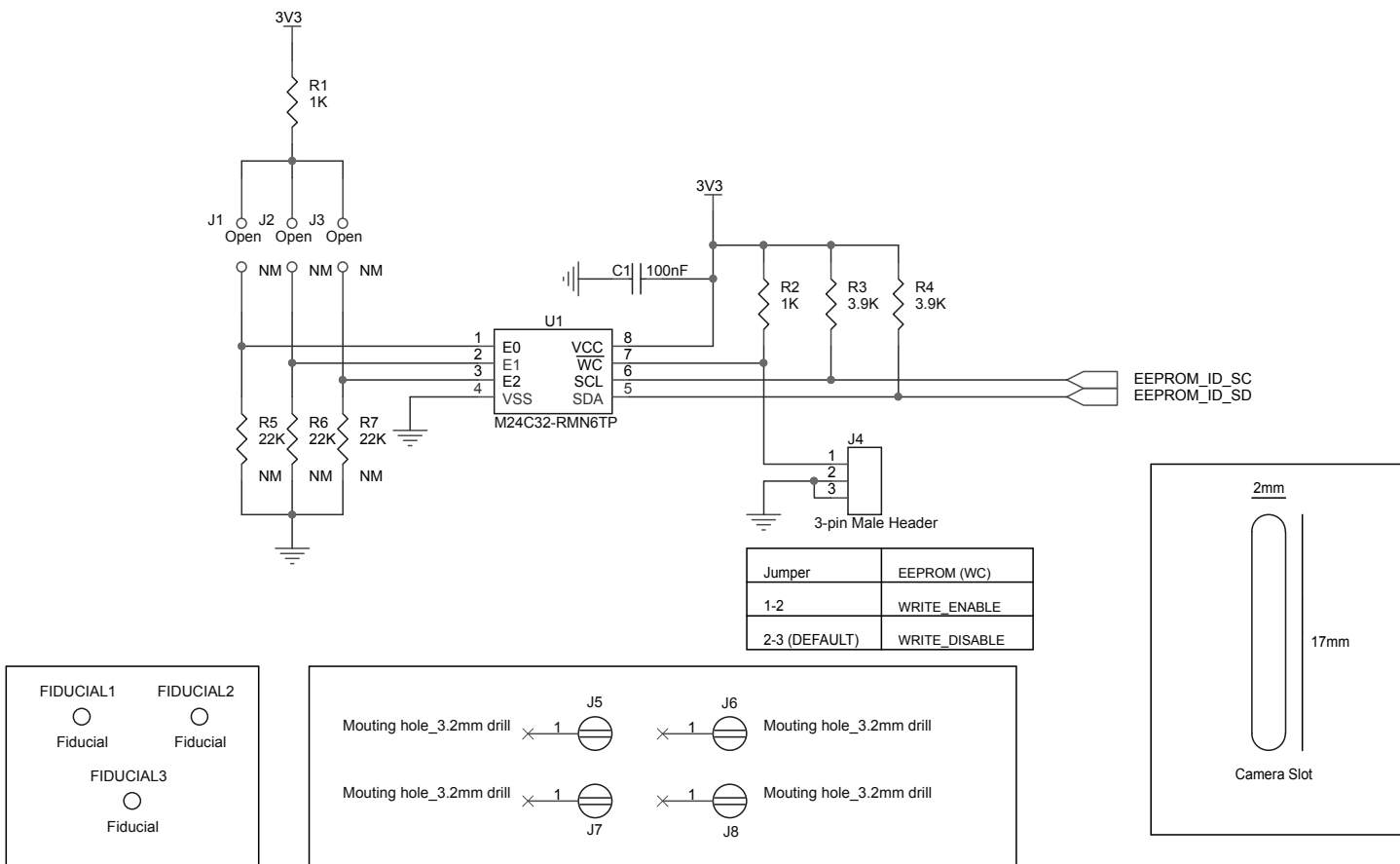


Figure 4. X-STM32MP-IOT01E schematic diagram (3 of 6)

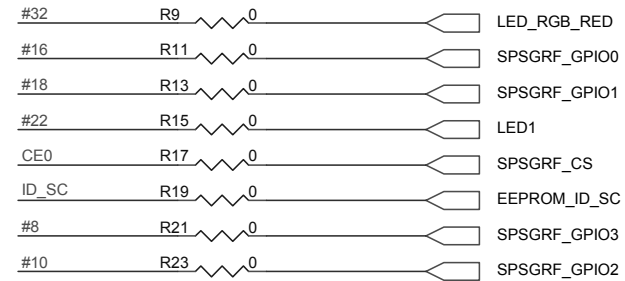
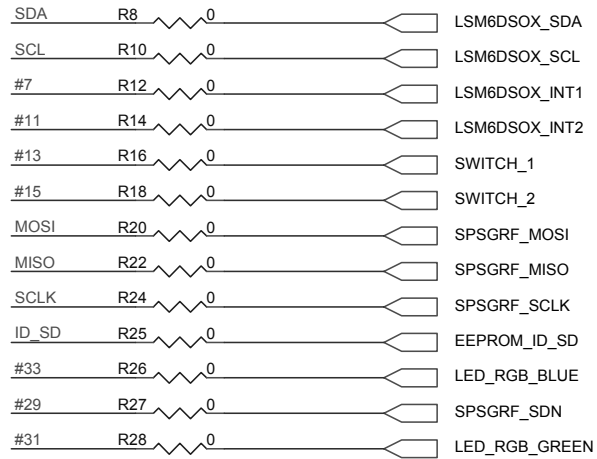
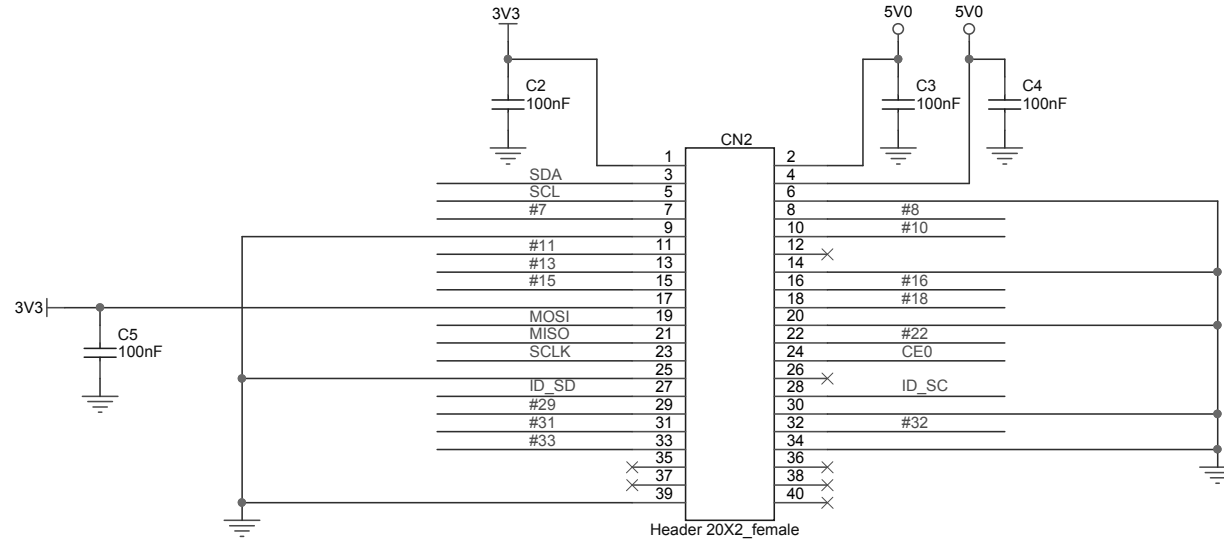


Figure 5. X-STM32MP-IOT01E schematic diagram (4 of 6)

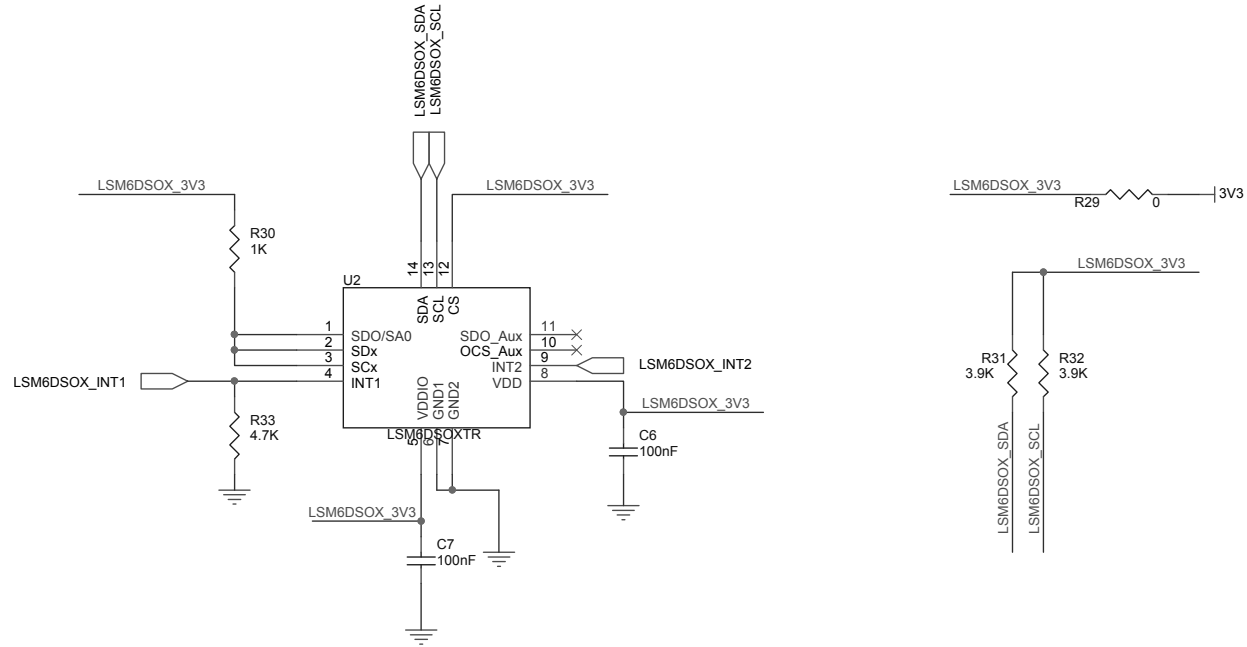


Figure 6. X-STM32MP-IOT01E schematic diagram (5 of 6)

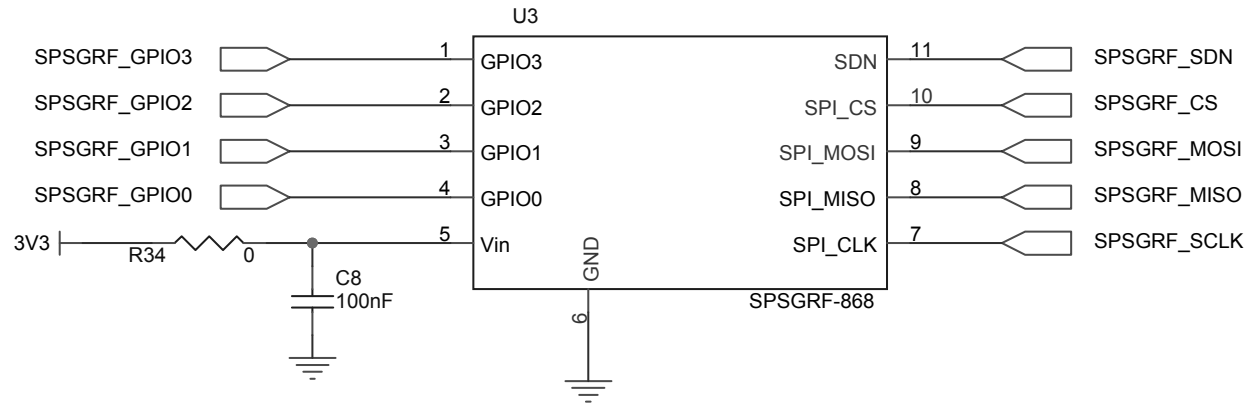
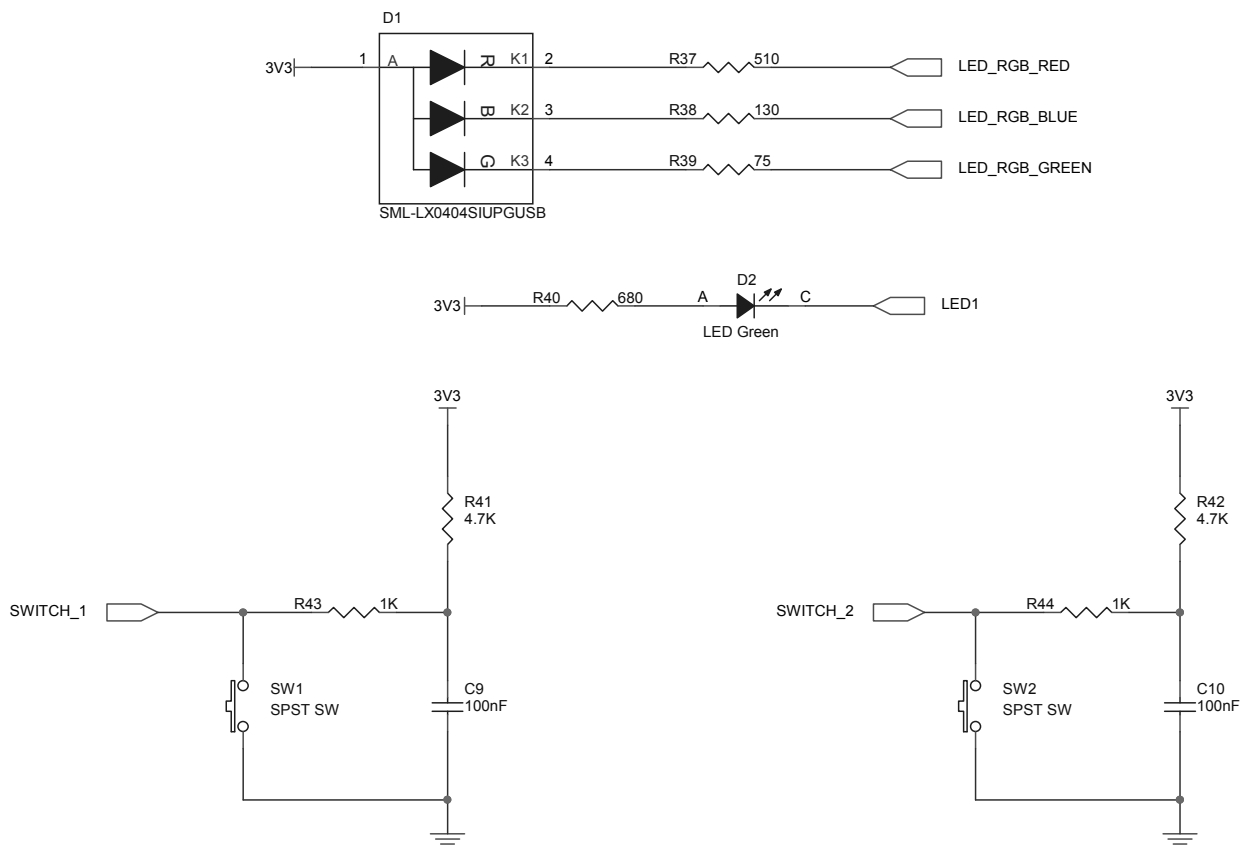


Figure 7. X-STM32MP-IOT01E schematic diagram (6 of 6)



3 X-STM32MP-IOT01E versions

Table 1. X-STM32MP-IOT01E versions

PCB version	Schematic diagrams	Bill of materials
X\$STM32MP-IOT01E ⁽¹⁾	X\$STM32MP-IOT01E schematic diagrams	X\$STM32MP-IOT01E bill of materials

1. This code identifies the X-STM32MP-IOT01E evaluation board first version. It is printed on the board PCB.

Revision history

Table 2. Document revision history

Date	Revision	Changes
11-Oct-2022	1	Initial release.

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