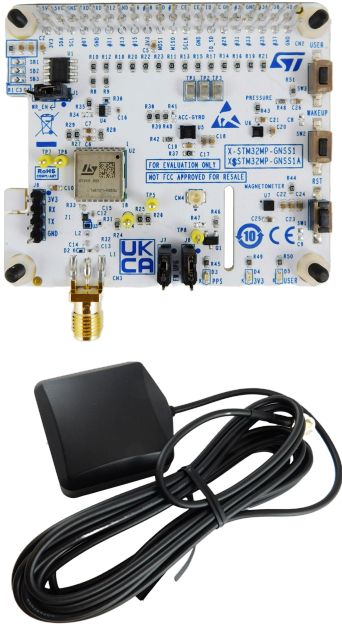


## GNSS and inertial sensors expansion board for STM32 MPU



### Features

- Teseo-LIV3FL GNSS Receiver
- On board iNEMO inertial module for accelerometer and gyroscope
- QVAR embedded pressure sensor for altitude measurement
- Magnetometer for position accuracy
- LEDs for PPS, power, user
- Keys for reset, wakeup and user
- External LNA (Low Noise Amplifier) and SAW Filter for amplification of weak signals
- EEPROM for automatic GPIO setup and driver setup
- Compatible with both STM32MP157F-DK2 and Raspberry Pi's GPIO connector

### Description

X-STM32MP-GNSS1 is an STM32 MPU expansion board with Teseo-LIV3FL module for Low Power Multi-Constellation GNSS positioning using various sensors for data accuracy.

The X-STM32MP-GNSS1 interfaces with the STM32MP microprocessor via 40 pin GPIO connector pins using I2C, UART, GPIO connections for various components. It is compatible with both STM32MP157F-DK2 and Raspberry Pi's GPIO connector layout.

Teseo-LIV3FL is a global navigation satellite system (GNSS) standalone Low power module. It embeds the Teseo III positioning receiver IC working simultaneously on multiple constellations (GPS/Galileo/Glonass/BeiDou/QZSS).

iNEMO inertial module ISM330DHCX has a full-scale acceleration range of  $\pm 2/\pm 4/\pm 8/\pm 16$  g and a wide angular rate range of  $\pm 125/\pm 250/\pm 500/\pm 1000/\pm 2000/\pm 4000$  dps.

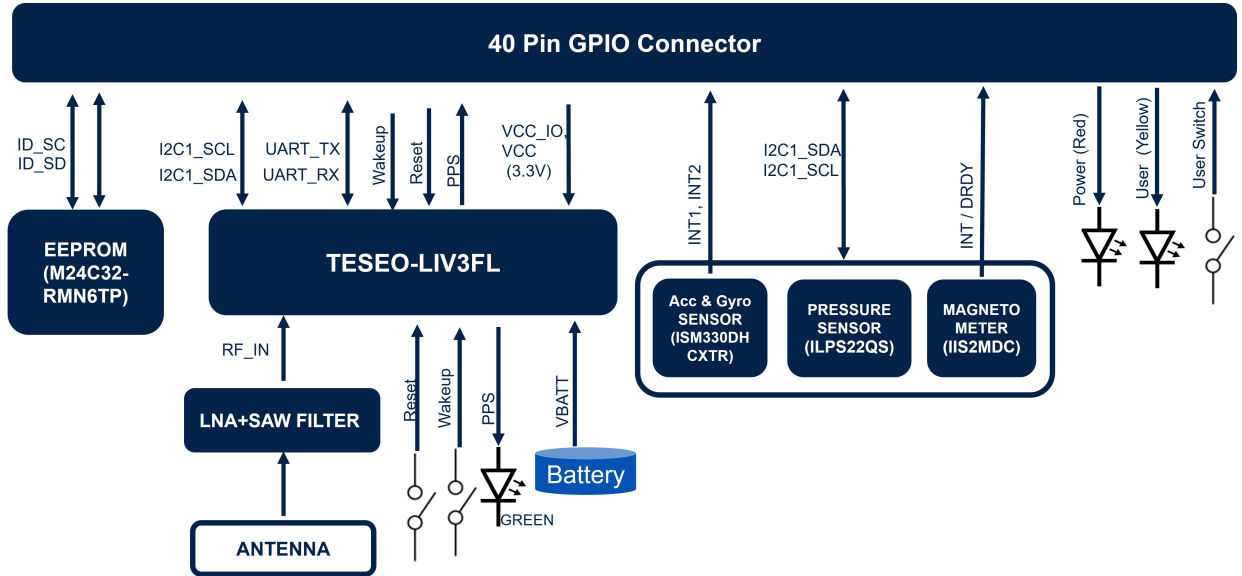
QVAR Embedded ILPS22QS functions as a digital output barometer, supporting dual full-scale up to 4060 hPa.

The IIS2MDC is a high-accuracy, ultra-low-power 3-axis digital magnetic sensor having dynamic range up to  $\pm 50$  gauss.

Product summary	
Discovery kit with STM32MP157F MPU	STM32MP157F-DK2
STM32 MPU OpenSTLinux software expansion package for GNSS-based applications	X-LINUX-GNSS1
Applications	Guidance and positioning Mobility services

# 1 Block diagram

Figure 1. Block diagram



## 2 Schematic diagrams

Figure 2. X-STM32MP-GNSS1 schematic diagram (1 of 9)

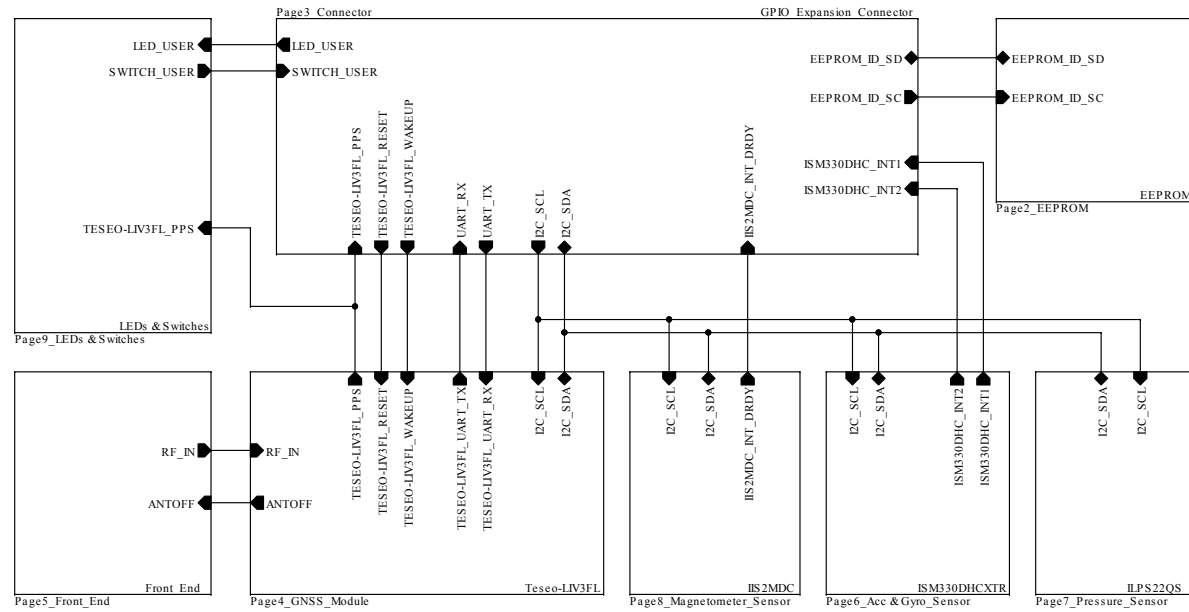


Figure 3. X-STM32MP-GNSS1 schematic diagram (2 of 9)

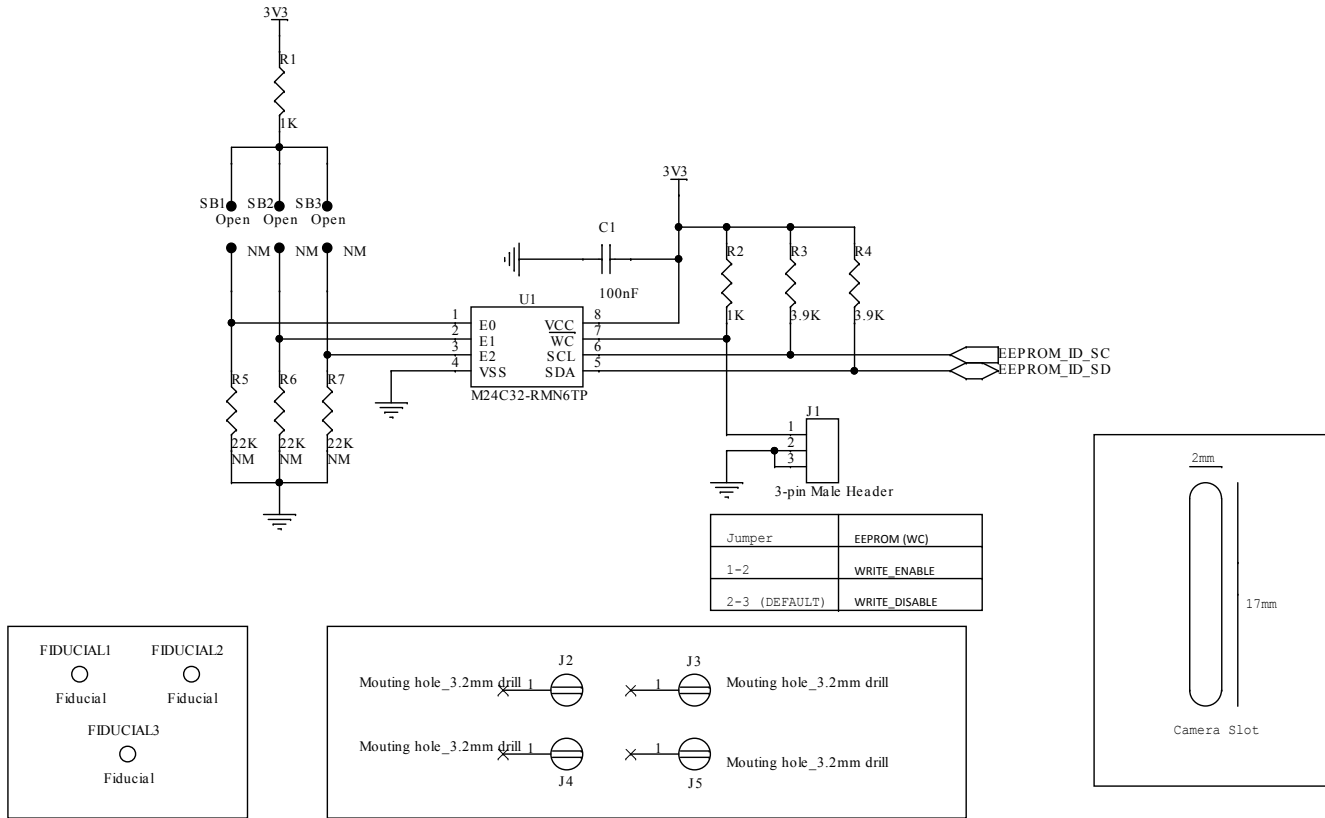


Figure 4. X-STM32MP-GNSS1 schematic diagram (3 of 9)

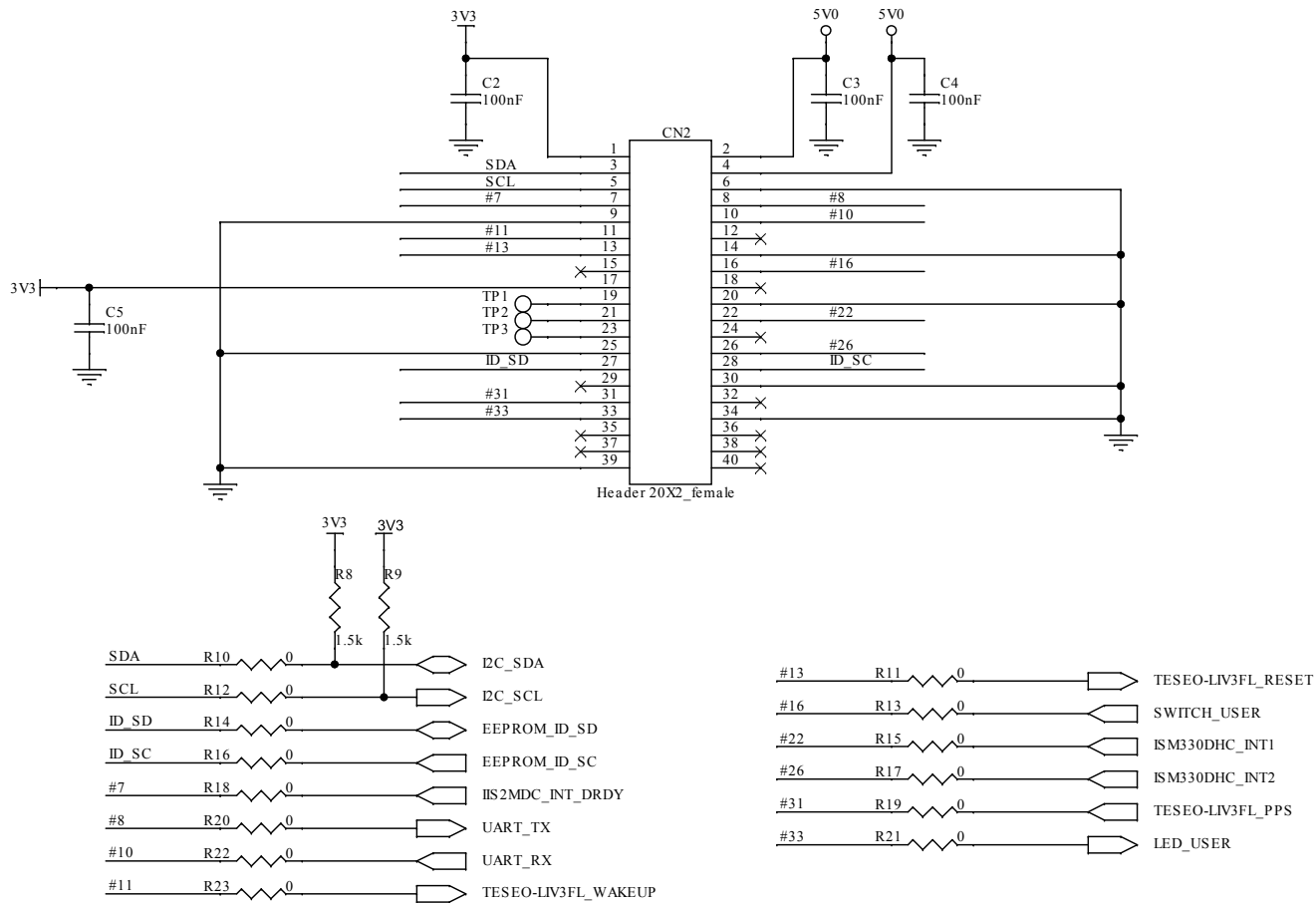


Figure 5. X-STM32MP-GNSS1 schematic diagram (4 of 9)

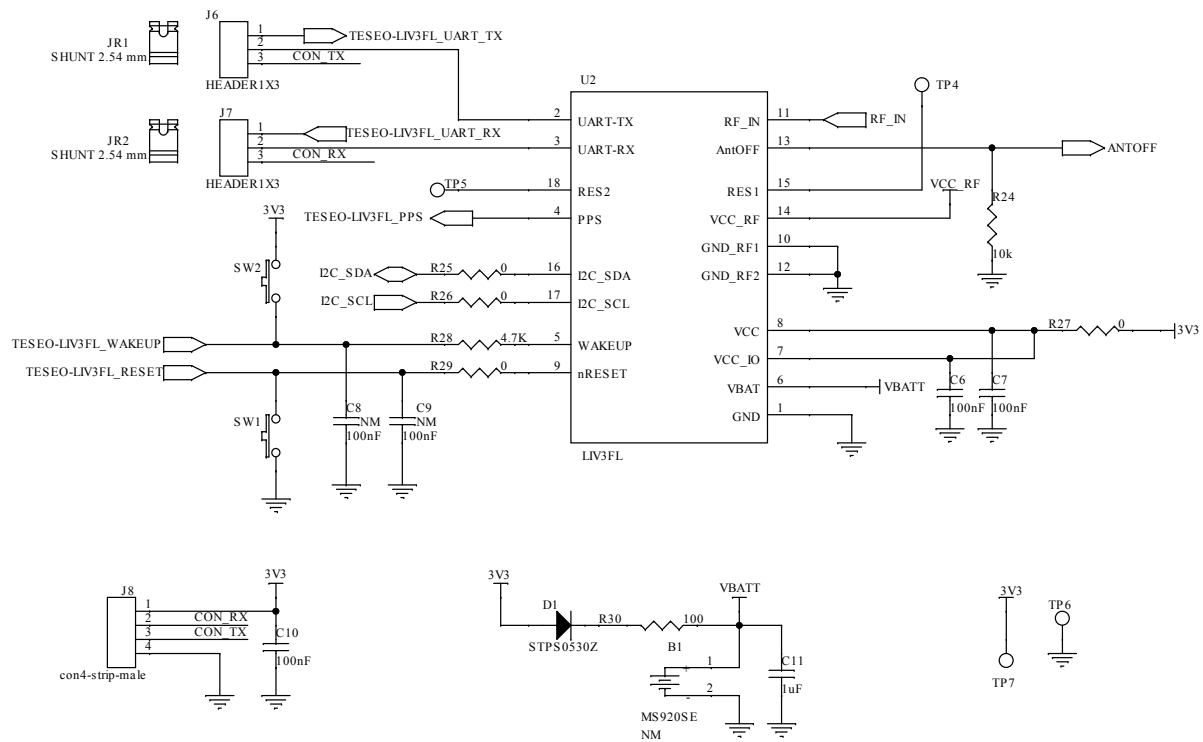


Figure 6. X-STM32MP-GNSS1 schematic diagram (5 of 9)

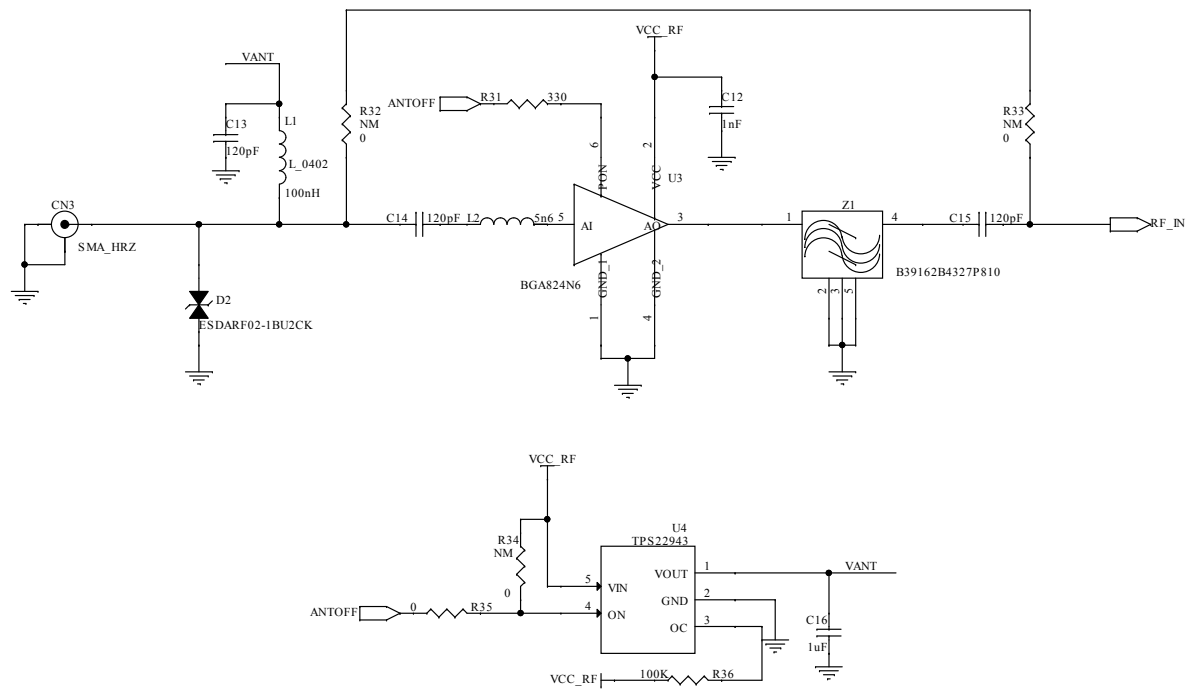
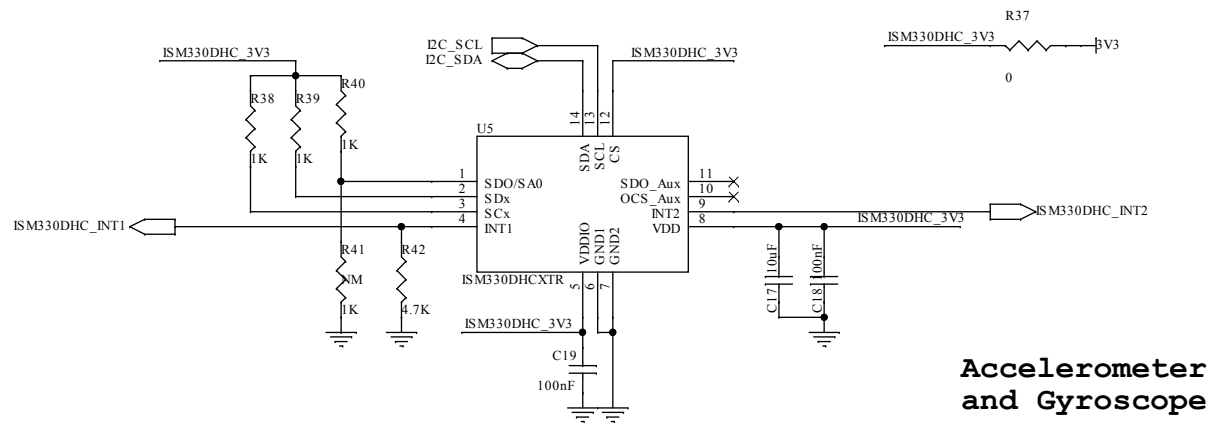


Figure 7. X-STM32MP-GNSS1 schematic diagram (6 of 9)



Accelerometer and Gyroscope



Figure 8. X-STM32MP-GNSS1 schematic diagram (7 of 9)

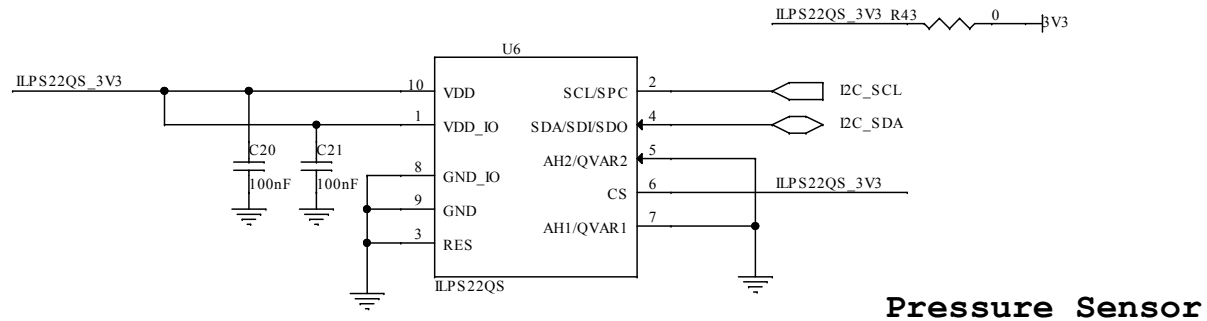


Figure 9. X-STM32MP-GNSS1 schematic diagram (8 of 9)

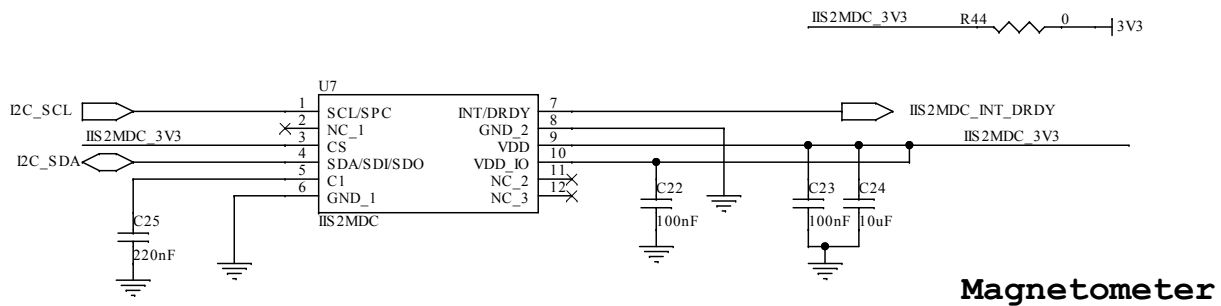
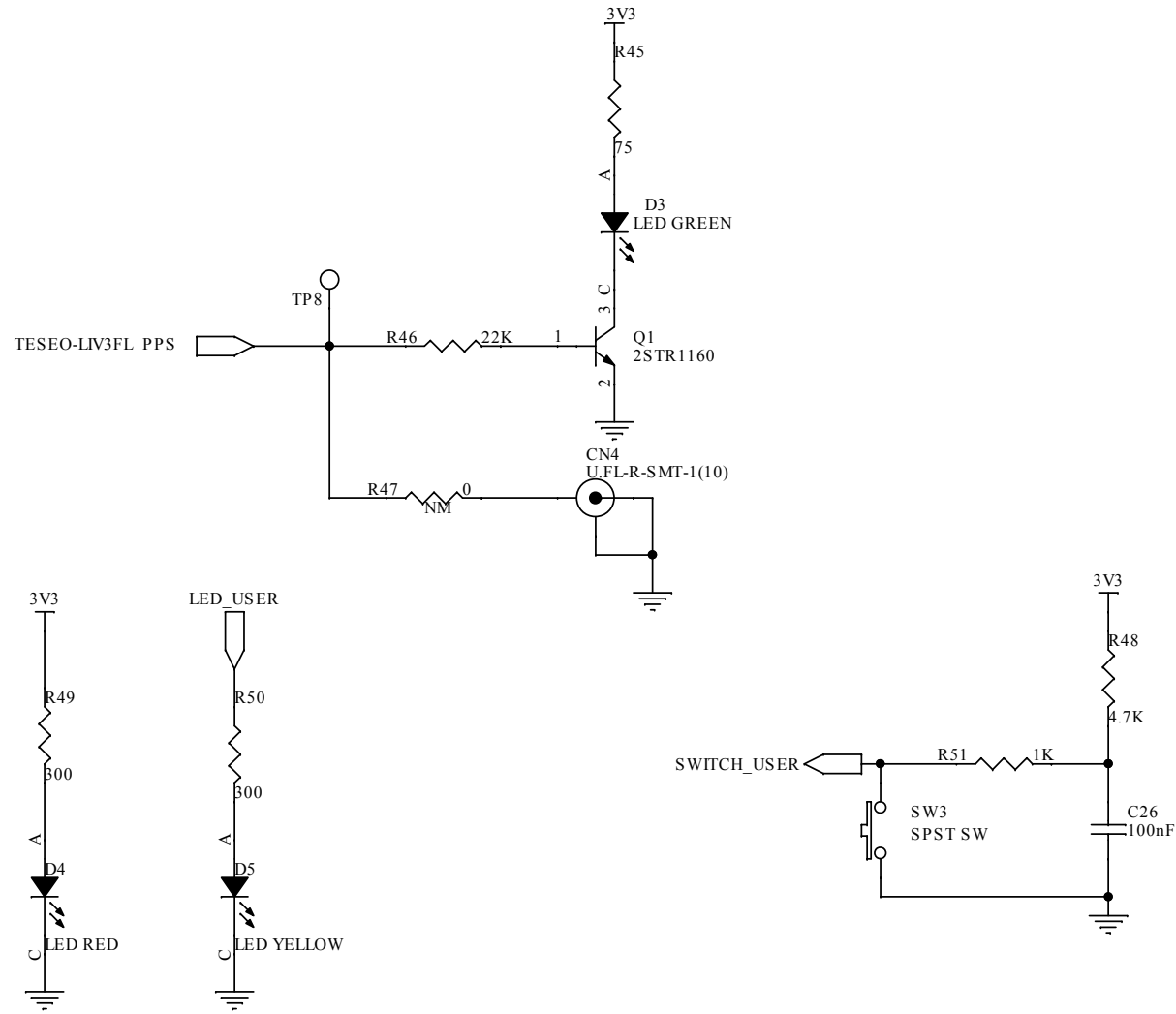




Figure 10. X-STM32MP-GNSS1 schematic diagram (9 of 9)



### 3 X-STM32MP-GNSS1 versions

**Table 1. X-STM32MP-GNSS1 versions**

PCB version	Schematic diagrams	Bill of materials
X\$STM32MP-GNSS1A <sup>(1)</sup>	X\$STM32MP-GNSS1A schematic diagrams	X\$STM32MP-GNSS1A bill of materials

1. This code identifies the X-STM32MP-GNSS1 evaluation board first version. It is printed on the board PCB.

## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
31-Oct-2023	1	Initial release.

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