# X-STM32MP-GNSS1

Data brief

## GNSS and inertial sensors expansion board for STM32 MPU

| 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<br>Mobility services |

## 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 ±2/±4/±8/±16 g and a wide angular rate range of ±125/±250/±500/±1000/±2000/±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 ±50 gauss.

The GNSS antenna is included in the package.

# 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$STM32MP-GNSS1A[1] | X$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. |
| 30-Jul-2024 | 2 | Updated Description. |

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