Real-Time Vehicle Management Unit (VMU)
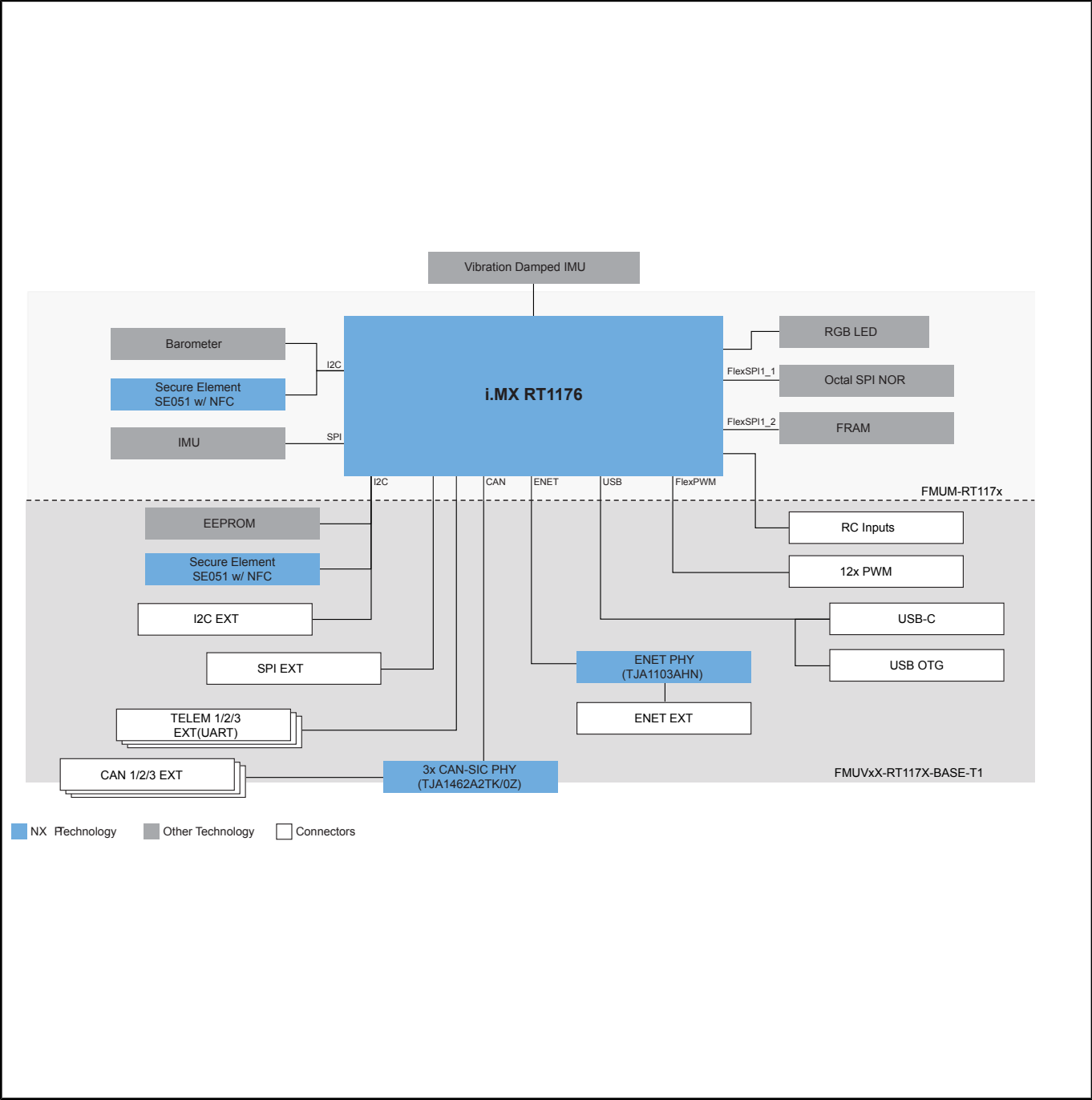
VEHICLE-MANAGEMENT-UNIT
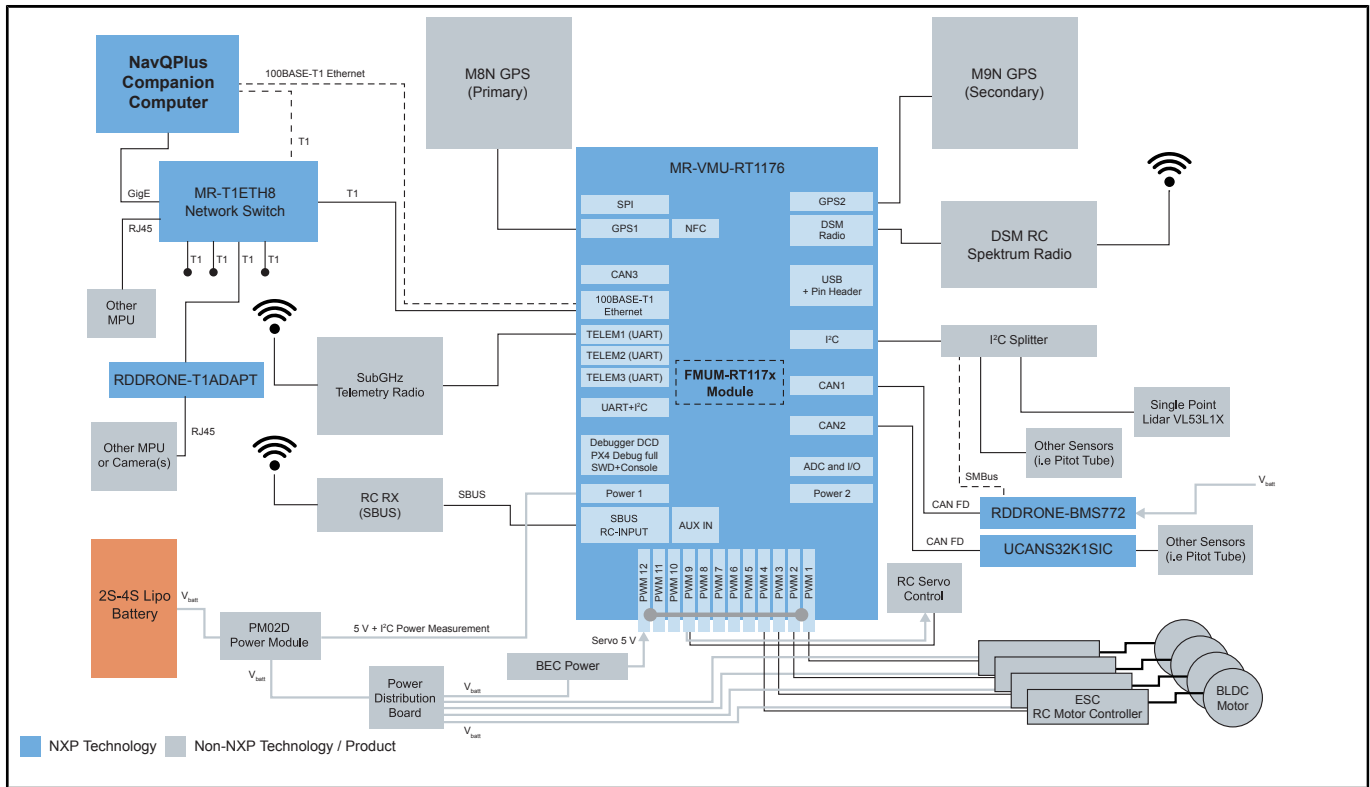
Active

Last Updated: Jun 17, 2025

The MR-VMU-RT1176 is a compact, lightweight vehicle management controller solution designed for mobile robotics. It features an integrated inertial measurement unit (IMU), control and networking interfaces and a PX4 V6X standard-compliant form factor. The controller is extensible through the NXP mobile robotics ecosystem, offering robust compatibility.

- Open-source support via Zephyr RTOS, Cognipilot, NuttX, and PX4
- Modular architecture with a compute module and carrier board
- High-performance dual-core 1-GHz Cortex-M7/M4 processor (i.MX RT1176 crossover MCU)

Real-Time Vehicle Management Unit Block Diagram Block Diagram

Vibration Damped IMU

Barometer

Secure Element
SE051 w/ NFC

I2C

IMU

SPI

i.MX RT1176

RGB LED

FlexSPI1_1

Octal SPI NOR

FlexSPI1_2

FRAM

I2C   CAN   ENET   USB   FlexPWM

FMUM-RT117x

EEPROM

Secure Element
SE051 w/ NFC

I2C EXT

SPI EXT

TELEM 1/2/3
EXT(UART)

CAN 1/2/3 EXT

3x CAN-SIC PHY
(TJA1462A2TK/0Z)

RC Inputs

12x PWM

USB-C

USB OTG

ENET PHY
(TJA1103AHN)

ENET EXT

FMUVxX-RT117X-BASE-T1

NX Technology   Other Technology   Connectors

Drone System Block Diagram Block Diagram

View additional information for Real-Time Vehicle Management Unit (VMU).

Note: The information on this document is subject to change without notice.