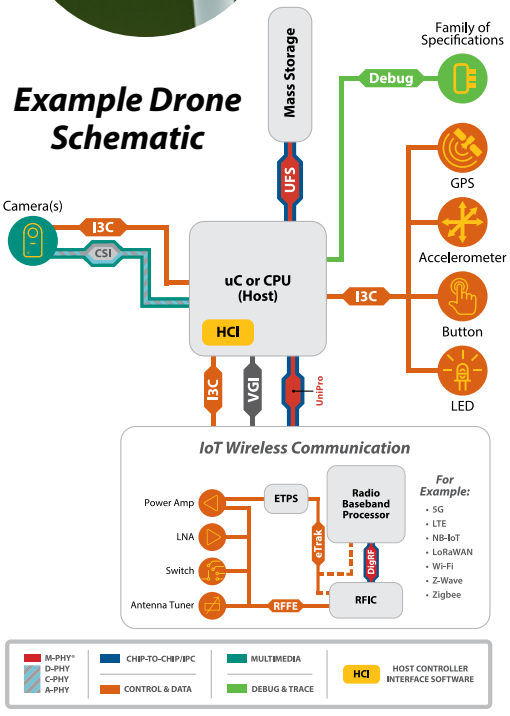
5.8 MIPI—In Drones

USE CASES

Example Drone Schematic



Associated MIPI SOFTWARE and DEBUG specifications also available to accelerate design process

Use of MIPI specifications can aid product compliance to functional safety standards such as IEC 61508

In Drone Controllers (Basestations):

- DSI-2 over C/D-PHY to drive a high-resolution display to allow the operator to see high-resolution video streamed in real time from the drone
- MIPI Touch to enable a touchscreen UI
- I3C to provide a shared, two-wire interface to connect joystick controllers and switches, and drive simple UI components, such as LEDs, haptics and buzzers
- UniPro to enable UFS for localized, high-resolution video storage

For Cellular Connectivity:

- RFFE to control RF front-end components including power amplifier, low-noise amplifier, filters, switches and antenna tuner

For Cameras:

- CSI-2 over C/D/A-PHY as a highly scalable interface to connect advanced high-resolution cameras. Enabling low-power vision inferencing and machine vision
- C/D-PHY can be used in smaller drones where line lengths are <50cm
- A-PHY can be used in large commercial drones, as an ultra-reliable, long-reach (≤15m), physical interface in noisy EMI environments
- UniPro over M-PHY to enable UFS to store high-resolution video locally on the drone

To Connect Sensors, Actuators and Simple UI Components:

- I3C to provide a shared, two-wire, low-weight, high-speed interface to connect the critical sensors, actuator and controls required to operate the drone
- I3C can be implemented over A-PHY as an ultra-reliable, long-reach (≤15m), physical interface in noisy EMI environments with minimal EMC shielding

LEGEND

- Functionally safe and secure IoT device that will benefit from MIPI's focus on safety and security
- IoT device with constrained power supply that will benefit from use of MIPI low-power interfaces
- IoT device with wide-area cellular connectivity that will benefit from MIPI's 5G preparedness
- Size-constrained, tightly packaged IoT device, benefiting from MIPI's low pin count, low wire count, low EMI interfaces