

5.5 MIPI—In the Smart City

USE CASES



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

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

In Smart Lighting:

- I3C to provide a shared, two-wire low-power interface to connect sensors to the application processor and supporting in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required
- RFFE within cellular communications module

In Environmental Monitoring

- I3C to provide a shared, two-wire low-power interface to connect sensors and actuators to the application processor and supporting in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required (critical for devices powered from constrained power supplies)
- RFFE within cellular communications module

In Public Safety Surveillance Cameras:

- CSI-2 as a highly scalable interface to connect high-resolution cameras, using CCI for camera command and control over single MIPI C/D/A-PHY interface using USL
- SoundWire to drive high-quality audio components such as multiple microphones and speakers. Enabling advanced noise cancellation
- RFFE within cellular communications module

In Smart Trams:

- CSI-2 over A-PHY to connect high-resolution cameras, DSI-2 over A-PHY to drive high-resolution displays, and MIPI Touch to enable touchscreen user interfaces
- A-PHY as a ultra-reliable, long reach ($\leq 15m$), EMI hardened physical interface to connect cameras, displays and sensors within the tram to a central control unit
- RFFE within cellular communications module

In Smart Parking Sensors:

- I3C to provide a shared, two-wire low-power interface to connect sensors to the application processor; in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required (critical for devices powered from solar power)
- RFFE within cellular communications module

In Smart Waste Bins:

- I3C to provide a shared, two-wire, low-power interface to connect an ultrasonic sensor to the application processor; in-band interrupts to enable active sleep mode, with sensors waking the application processor only when required (critical for devices powered from a constrained power supply such as solar)
- CSI-2 over C/D-PHY to connect a camera to sense waste type and sort into the appropriate receptacle
- RFFE within cellular communications module