

SensInject



Description

SensInject is a data injection device for camera, radar and lidar sensor applications. Based on a powerful SoM (FPGA), the system is able to cover current and future test cases for data injection applications in the field of ADAS and AV.

Use cases

SensInject is designed for closed-loop and open-loop testing with simulated sensor data as well as replaying of recorded data.

This allows to perform deterministic and reproducible functionality tests to validate safety-critical systems.

Benefits

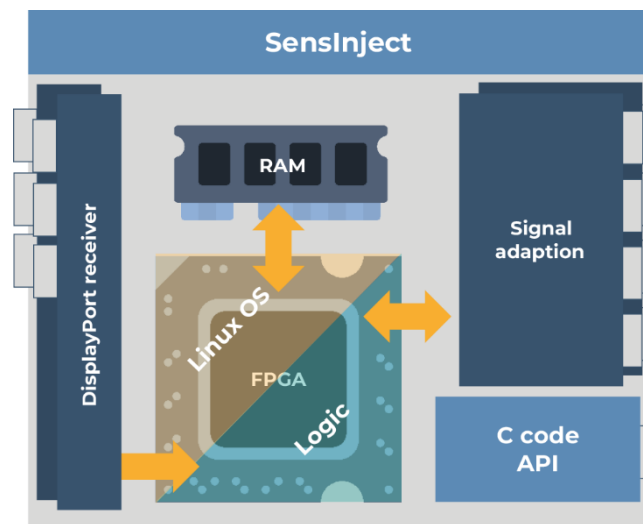
- Direct data injection in real time
- Perfectly tailored to work in the CarMaker environment, but also suitable for use with other data emulation sources
- Flexible design; all input and output interfaces are designed as modules, which allows to increase functionality by replacing or adding modules to the system
- Future proof; easily expand and adapt the modular system
- Designed for use in a laboratory environment, but also for in-vehicle use
- Standardized interfaces (e.g. FPD-Link, GMSL, 1G/10G Ethernet and Automotive Ethernet) guarantee an easy integration into the test system

Configuration

Four module slots are available for input and output of sensor data. A commonly used configuration consists of a DisplayPort input module (three Mini-DisplayPort connections) and the output module appropriate to the project, e.g. GMSL2. GMSL2 and FPD-Link III modules come with four universal FAKRA Coax connectors each. For replay applications, an Ethernet interface based on the SFP+ standard with up to six channels is available. Because of the flexible concept it is possible to use these interfaces in various combinations.

Technical data

Applications	Injection of simulated or recorded sensor data
Concept	Flexible and future proof, based on exchangeable interface modules
Inputs	DisplayPort 1.4 (up to 25 Gbps) 3 channels per module; plug: Mini DisplayPort
Outputs	FPDL, GMSL 4 uncoded FAKRA connectors
In&Out (bidirectional)	Ethernet (100 Mbit/s, 1 Gbit/s 10 Gbit/s) Automotive Ethernet (100 Mbit/s, 1 Gbit/s) Based on SFP+, 6 channels available
Camera data	4K, 12 bpp @30 fps and similar combinations
Form factor	377x316x88 mm 19" rack mount possible
Power supply	100-240 V AC, 12/24 V DC



The flexibility also extends to the software application. An API with extensive access to the existing hardware resources is available. It allows adjusting the parameters and functionality of the data processing, the post-processing of the imager or the serializer device for example.

Another possibility that improves the configuration of the setup is the option of using predefined configuration files.

This enables users to completely change the behavior of the emulation to a different sensor, using mostly configuration files and not requiring any FPGA programming skills.