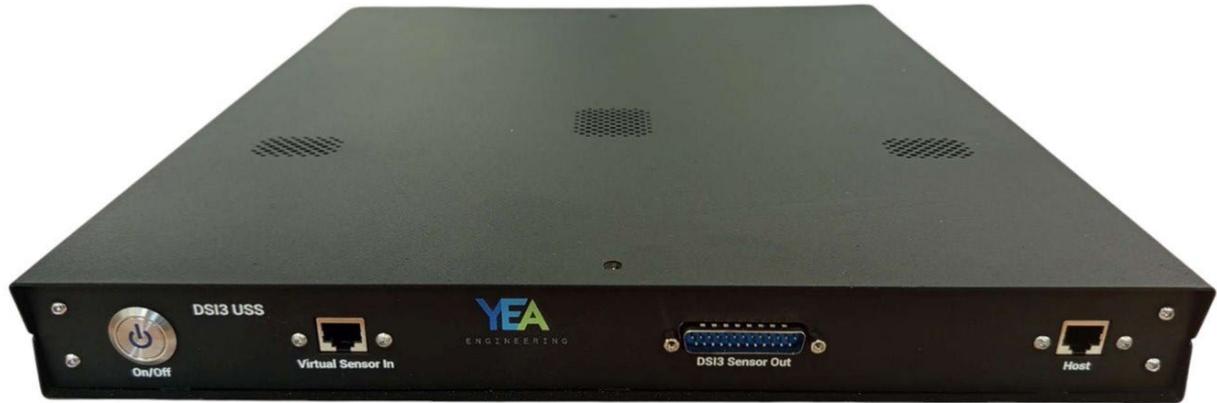


YEAE DSI3 Ultrasonic Sensor Simulator

Introduction and Functional Overview

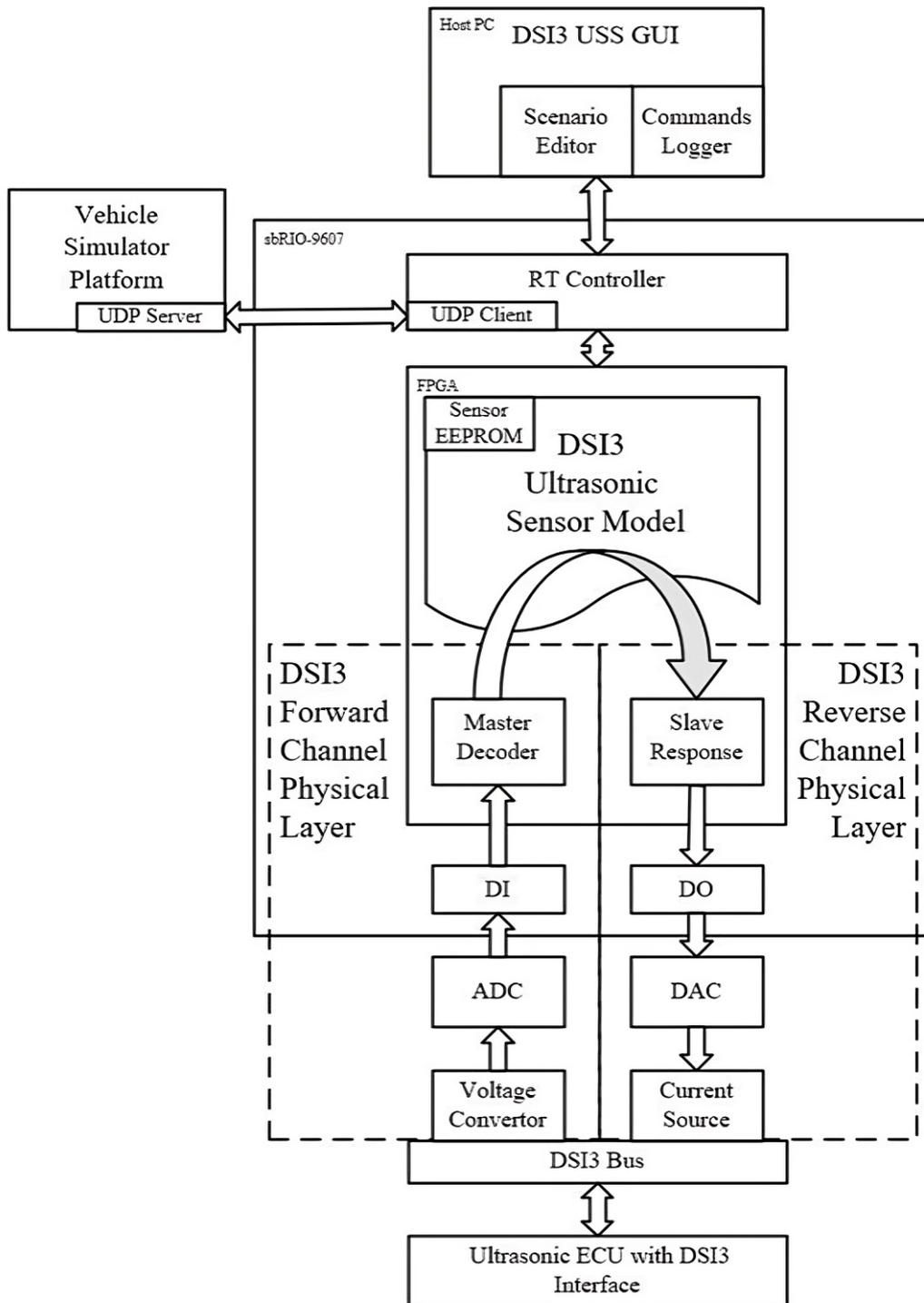


Modern vehicles are equipped with multiple features for driving assistance. One such feature is the Park Assist System (Parktronic), which helps drivers easily locate free parking spaces and perform accurate and safe parking. This system utilizes multiple ultrasonic sensors installed on the front and rear bumpers, along with an advanced, high-technology parking control module (Ultrasonic ECU) that enables these capabilities. The YEAE DSI3 USS Ultrasonic Sensor Simulator can emulate up to 16 ultrasonic sensors using the 3rd Distributed Systems Interface (DSI3) to test the functionality of the parking control module.

Key Features

- Ability to receive the input scene and object information of the parking scenario through an Ethernet port from the virtual vehicle simulation platform to convert the received UDP packets into proper DSI3 slave response commands by using three discrete current-level signal structures according to the **DSI3 Reverse Communication Channel Physical Layer** requirements.
- Customizable readable DSI3 master request commands to send appropriate DSI3 slave responses.
- Ability to receive master commands according to the **DSI3 Forward Channel Physical Layer** requirements and decode the Manchester-1 format signals.
- Support for the DSI3 ultrasonic sensor model EEPROM data structure.
- Available in bench top and rack mount form factors.
- User-friendly GUI (it can be installed on any Windows PC) that allows the user to set specific object distance values to be simulated for each ultrasonic sensor (for self-testing purposes), as well as numeric indicators displaying the object information received from the virtual vehicle simulation platform.
- DSI3 Reverse and Forward channel data logging to perform DSI3 bus messaging analysis between the DSI3 Master (Ultrasonic ECU) and DSI3 Slave (Sensor).

High Level Architecture



Technical Specifications

Parameter	Value
Modes	CRM PDCM BDM (on demand)
Bus Topologies	Point-to-Point (1x16) Parallel (3x4ch, 4x4ch, 2x6ch,)
Connection to Virtual Environments Systems	UDP
UDP Instream for Targets	SlaveID & Time Stamp, Time of Flight, Sound/Echo Amplitude
DSI3 output latency in accordance to the UDP input	YES
Simulated ultrasonic sensor model	Any DSI3 ultrasonic sensor model can be simulated upon requirements
Supply Power	12VDC 1A
Operating Temperature Range	-15 °C to +50°C degrees