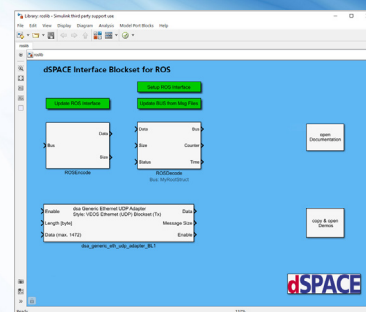


dSPACE Interface Blockset for ROS

Connecting dSPACE real-time systems to the Robot Operating System (ROS)

Highlights

- Simulink® blockset for easy communication between dSPACE platforms and ROS
- Support of both ROS 1 and ROS 2
- Creation of ROS messages from within Simulink
- Import of existing ROS message files



Application Areas

Functions for advanced driving assistance systems and autonomous driving (ADAS/AD) require multiple heterogeneous data streams such as cameras, radar, and lidar. The Robot Operating System (ROS) is an open source framework that is widely used for prototyping these ADAS/AD functions. Through the dSPACE Interface Blockset for ROS, the power of prototyping and testing offered by the dSPACE PC-based simulation platform VEOS and real-time hardware (MicroAutoBox and SCALEXIO) is combined with the ROS benefits for prototyping perception and sensor fusion algorithms.

Key Benefits

The dSPACE Interface Blockset for ROS provides an easy-to-use method to exchange data between dSPACE real-time systems and ROS. The blockset contains a collection of blocks to manage diverse tasks. It allows for setting up basic parameters, updating the ROS Interface and importing ROS messages, in addition to the core functionality of publishing ROS topics by encoding Simulink® buses to TCP (Transmission Control Protocol) or UDP¹⁾ (User Datagram Protocol) packages, and subscribing to ROS topics by decoding TCP/UDP¹⁾ packages into Simulink buses.

¹⁾ Because UDP/TCP is used for communication, an additional Ethernet blockset for the desired platform is required.

Functionality Overview

Functionality	Description
General	<ul style="list-style-type: none"> ■ Easy-to-use interface between dSPACE platforms and ROS ■ Use of existing ROS messages or creation of ROS messages in Simulink ■ Automatic creation of ROS gateway nodes ■ Support of ROS built-in data types, standard and custom messages ■ Support for TCP/IP and UDP/IP based communication ■ Full dSPACE platform support
Supported ROS versions	<ul style="list-style-type: none"> ■ ROS 1: Noetic Ninjemys, Melodic Morenia, Kinetic Kame ■ ROS 2: Humble Hawksbill, Galactic Geochelone, Foxy Fitzroy, Eloquent Elusor, Dashing Diademata, Crystal Clemmys
Limitations	<ul style="list-style-type: none"> ■ Variable Vector Size requires specification of maximum size

Order Information

Product	Order Number
dSPACE Interface Blockset for ROS	<ul style="list-style-type: none"> ■ ROS_INTERFACE_SOL

Relevant Software and Hardware

Software	Order Number
Optional	<ul style="list-style-type: none"> ■ RTMaps ■ VEOS
	<ul style="list-style-type: none"> ■ See relevant product information ■ See relevant product information

Hardware	Order Number
Optional	<ul style="list-style-type: none"> ■ MicroAutoBox II ■ MicroAutoBox III ■ SCALEXIO
	<ul style="list-style-type: none"> ■ See relevant product information ■ See relevant product information ■ See relevant product information