DATASHEET

RTI Connext Cert for Connext Drive

CERTIFIED CONNECTIVITY PLATFORM FOR AUTOMOTIVE SAFETY SYSTEMS

HIGHLIGHTS

- Certified by TÜV SÜD to the most stringent ISO 26262 Automotive Safety Integrity Level ASIL D
- Compliant with the concept of Safety Element out of Context (SEooC) to simplify integration
- Supports resource-constrained devices
- Supports the most widely-used Microcontroller Unit (MCU) architectures and Operating Systems
- Offers mechanisms supporting fault detection and data protection
- Based on the Data Distribution Service (DDS™) standard

RTI Connext® Cert for Connext Drive® significantly reduces the time and cost of developing automotive systems when Functional Safety is put in place. It provides an ISO 26262 ASIL D safety certified data-centric connectivity framework that can help to significantly reduce certification efforts and costs for automotive system integrators. With Connext Cert on board, applications are easier to develop, integrate, evolve and maintain than those using bespoke solutions.

OVERVIEW

To stay competitive in rapidly evolving markets, autonomous and electric vehicle designs are becoming increasingly complex. As new vehicles continue to change and evolve, the smartest way to address that complexity is through software.

Today, safety certification of software is the main mechanism to enable autonomous road vehicles. However, without the right software architecture in place at the design stage, the process of building in new functionality and obtaining vital certification for production-ready vehicles can easily become protracted and costly.

Connext Cert for Connext Drive is TÜV SÜD-certified to ASIL D to meet the Safety Life Cycle requirements set forth by ISO 26262. Connext Cert also includes all the necessary Safety artifacts and Safety Manual, which can significantly reduce Functional Safety (FuSa) Life Cycle efforts for system integrators.

In addition to providing the software framework for real-time connectivity, Connext Cert delivers a data-centric architecture that is based on the proven DDS standard. In practical terms, this design approach protects system integrators in the automotive world by reducing project risk and development costs.

DESIGNED FOR AUTOMOTIVE SAFETY APPLICATIONS

Safety certification: Connext Cert for Connext Drive is certified as a Safety Element out of Context (SEooC). RTI provides services to assist safety integration efforts including system review and support. SEooC compliance not only allows for the reuse of embedded software, but also protects a certified environment from disruption, even if individual software elements or components are discontinued. Certification evidence is licensed separately.

Deterministic behavior: The code is developed using process guidelines that ensure deterministic behavior. All memory allocation is done at startup and no memory is freed at run-time.

Low memory requirement: Connext Cert for Connext Drive provides a library that links with your application. The library size is optimized for small footprint applications and the memory allocation is kept to a minimum.

Highly compatible: Connext Cert for Connext Drive supports the most widely-used, well known, low power MCU architectures, for example, armv8 and TriCore, and OS such as QNX for Safety, Classic AUTOSAR with Elektrobit's EB tresos, or SAFERTOS.

FAULT DETECTION AND DATA PROTECTION

On-vehicle networks risk various data errors due to the non-deterministic nature of Ethernet networks. Whether the focus is on Next-Generation Electrical/Electronic (Next-Gen E/E) Zonal Architectures, ADAS or Simulation, automotive applications rely on real-time data exchange to support real-time control and automated insight. Connext Cert for Connext Drive offers mechanisms to protect against faults that could occur during exchange of information over an unsafe network as identified in the ISO 26262 standard. High diagnostic coverage for the end-to-end protection safety mechanisms, within the required fault detection and handling time interval, could be easily achieved by using a combination of Connext Cert for Connext Drive characteristics such as Quality of Service, Cyclic Redundancy Checks (CRCs), or the DDS standard properties.

For example, at the core of Connext Cert for Connext Drive is the DDS standard and the RTPS wire protocol that addresses the following common communication failure modes:

Fault Detection and Data Protection: Processing duplicate information by a data sender or data receiver can negatively impact system performance or functionality. Connext Cert can monitor network data traffic and discard duplicate information, preventing it from being presented to user applications. Quality of Service settings can be applied such that senders can minimize or eliminate the publication of redundant information.

Lost or Delayed Information: In the event that data is delayed or lost due to a network error, Connext Cert can notify the application and re-send the data as required.

Information That is Out of Order: When network traffic pushes the bounds of network capacity, it is possible for pieces of information to be received in a different order than they were sent. In these instances, Connext Cert will collect data fragments and re-assemble them in the correct order so that the information can be processed correctly.

Corrupted Information: Electrical interference can corrupt data in transit, potentially disrupting normal functions of the receiving application. Connext Cert enables users to configure CRCs to detect data corruption and notify the sender to re-transmit data.

RTI CONNEXT DRIVE

Visit www.rti.com/drive to learn more about Connext Drive, the world's first automotive-grade, data-centric communication framework for next-generation vehicles. Connext Cert is fully interoperable with the components of Connext Drive.

ABOUT RTI

Real-Time Innovations (RTI) is the largest software framework company for autonomous systems. RTI Connext® is the world's leading architecture for developing intelligent distributed systems. Uniquely, Connext shares data directly, connecting AI algorithms to real-time networks of devices to build autonomous systems.

RTI is the best in the world at ensuring our customers' success in deploying production systems. With over 2,000 designs, RTI software runs over 250 autonomous vehicle programs, controls the largest power plants in North America, coordinates combat management on U.S. Navy ships, drives a new generation of medical robotics, enables flying cars, and provides 24/7 intelligence for hospital and emergency medicine. RTI runs a smarter world.

RTI is the leading vendor of products compliant with the Object Management Group® (OMG®) Data Distribution Service (DDS™) standard. RTI is privately held and headquartered in Sunnyvale, California with regional offices in Colorado, Spain and Singapore.

Download a free 30-day trial of the latest, fully-functional Connext software today: www.rti.com/downloads.

Your systems. Working as one.

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