

DATASHEET

# RTI Connex DDS Micro

FIRST CONNECTIVITY SOFTWARE DESIGNED FOR ARCHITECTING RESOURCE-CONSTRAINED IIOT SYSTEMS

## HIGHLIGHTS

Supports resource-constrained devices

User-configurable feature set through build options

Scalability from embedded 16-bit microcontrollers to multi-core 64-bit CPUs

Bundled source code

Ability to run on Linux (x86), Windows, FreeRTOS (ARM), VxWorks (PowerPC) and devices without OS (ARM)

Supports the OMG® DDS Security™ specification and is inter-operable with other implementations of DDS Security

## OVERVIEW

Embedded systems and devices are in cars, production-line environments and medical equipment – and they increasingly connect to a network or even the Internet. With the emergent IIoT, system developers are faced with the challenge of distributing the increasing variety and volume of data produced by these systems and devices. It is critical that the data can be acted upon in real-time for enhanced automation, analytics and business intelligence.

Connex DDS Micro provides a small-footprint modular messaging solution for resource-limited devices that have minimal memory, flash or CPU power, or even no operating system at all.

By abstracting out low-level networking and communication details and providing a flexible integration framework, Connex DDS Micro minimizes the amount of device or application specific code that needs to be created.

Built on the Connex databus – a data-centric framework for distributing and managing real-time data in the IIoT – Connex DDS Micro provides a high-level and standards-compliant

Connex® DDS Micro distributed Industrial Internet of Things (IIoT) systems meet stringent Size, Weight and Power (SWaP) requirements well beyond the reach of traditional messaging frameworks. Connex DDS Micro is a small-footprint connectivity framework for IIoT systems where size and efficiency matter. It is standards-compliant and fully interoperable with other Connex DDS products.

alternative to in-house development. It significantly reduces the development costs as well as system communications risks.

## COMPREHENSIVE MESSAGING SOLUTION

### Peer-to-peer communication

Connex DDS Micro uses an innovative, completely decentralized architecture. Applications directly exchange data in a true peer-to-peer manner – no servers, message brokers or daemon processes act as bottlenecks or single points of failure. As a result, Connex DDS Micro delivers the consistent low-latency, high throughput and scalability required for big data in motion.

### Plug-and-play communication

Devices and applications are automatically discovered and connected at run-time. No system administration or directory service is required, allowing use in autonomous, dynamic and ad hoc intelligent systems.

### Real-time Quality of Service (QoS)

Applications have comprehensive control over and visibility into real-time behavior, including timing, deadlines, resource

utilization and system state. QoS can be specified per-topic and per-subscriber.

**Optimized publish/subscribe**

Data can be reliably multicast to multiple applications and devices for extremely efficient streaming data distribution. With multicast, messages can be routed and filtered by the network switch instead of by the middleware or application software.

**Wire efficiency**

The Real-Time Publish-Subscribe (RTPS) protocol is extremely wire efficient. Data is sent in a compact binary representation. Most metadata is only exchanged once, at discovery time.

**OPTIMIZED FOR SMALL-FOOTPRINT APPLICATIONS**

**Low memory requirement**

Connex DDS Micro is a library that links with your application. The library size is optimized for small footprint applications and memory allocation is kept to a minimum.

**Highly portable**

Bundled source code enables developers to port Connex DDS Micro to new operating systems, compilers or processor

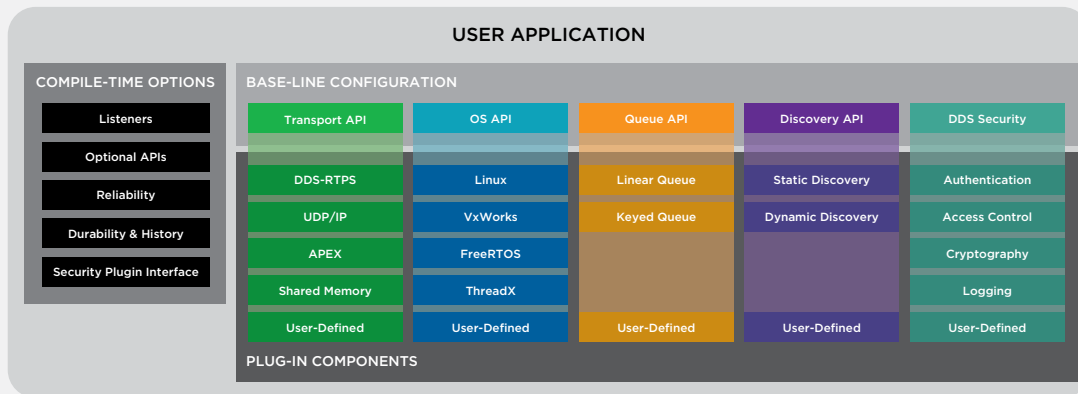
architectures. It has no built-in dependency on operating system services. Applications can be implemented on platforms with minimal operating system capabilities or no operating system at all. Processor support ranges from 16-bit microcontrollers with 32-bit integer support to multicore Intel and PowerPC CPUs. Leading enterprise operating systems, including Linux and Windows, are supported as well to ease application development and testing.

**Modular and user-configurable architecture**

A small kernel provides the baseline capabilities for publish/subscribe messaging. By rebuilding the kernel from source code, additional features such as asynchronous notification, reliable communication and filtering can be compiled in, allowing application-specific trade offs between available features and footprint. A modular user-configurable architecture enables developers to trade off available features and footprint.

**COMPLEMENTARY PRODUCTS**

Connex DDS Micro is fully interoperable with Connex DDS Secure, the trusted connectivity framework for developing and integrating secure Industrial IoT systems, from edge to cloud.



Connex DDS Micro

**ABOUT RTI**

Real-Time Innovations (RTI) is the largest software framework provider for smart machines and real-world systems. The company's RTI Connex<sup>®</sup> product enables intelligent architecture by sharing information in real time, making large applications work together as one.

With over 1,500 deployments, RTI software runs the largest power plants in North America, connects perception to control in vehicles, coordinates combat management on US Navy ships, drives a new generation of medical robotics, controls hyperloop and flying cars, and provides 24/7 medical intelligence for hospital patients and emergency victims.

RTI is the best in the world at connecting intelligent, distributed systems. These systems improve medical care, make our roads safer, improve energy use, and protect our freedom.

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

Download a free 30-day trial of the latest, fully-functional Connex DDS software today: <https://www.rti.com/downloads>.

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