CANopen® industrial protocol stack

CANopen is a CAN-based industrial communication protocol designed for embedded automation systems. It enables standardized communication between devices and simplifies the development of interoperable industrial networks. Within the OSI model, CANopen implements the network layer and higher communication layers.

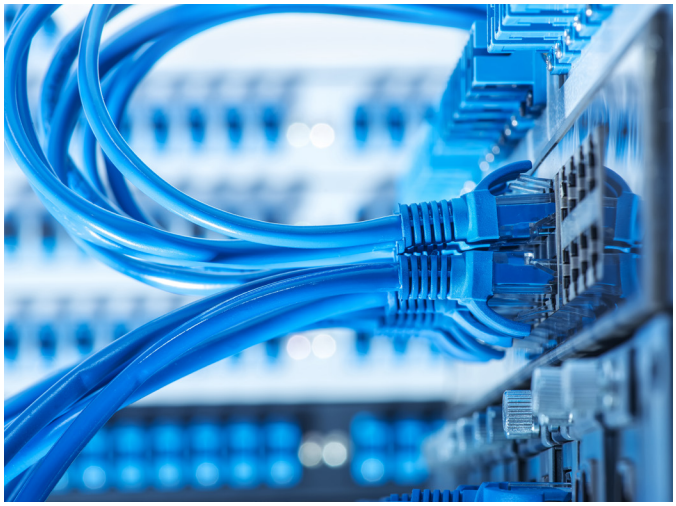
NXP provides a CANopen protocol library that includes a hardware-independent stack and hardware-dependent drivers for multiple platforms, helping accelerate the development and commissioning of CANopen-enabled devices.

The CANopen Library from NXP is a complete ANSI C source library that provides CANopen protocols conforming to CiA standards.

The library supports both NMT controllers and NMT devices and allows the development of CANopen devices connected to a single CANopen network or multiple CANopen networks.

Features

- Hardware-independent CANopen stack and hardware-dependent drivers that simplify migration across hardware platforms
- Industrial communication creator (ICC) tool for designing CANopen devices and generating electronic data sheets (EDS) and object documentation
- CANopen bootloader support for firmware updates and program downloads
- Support for multiple CAN controllers



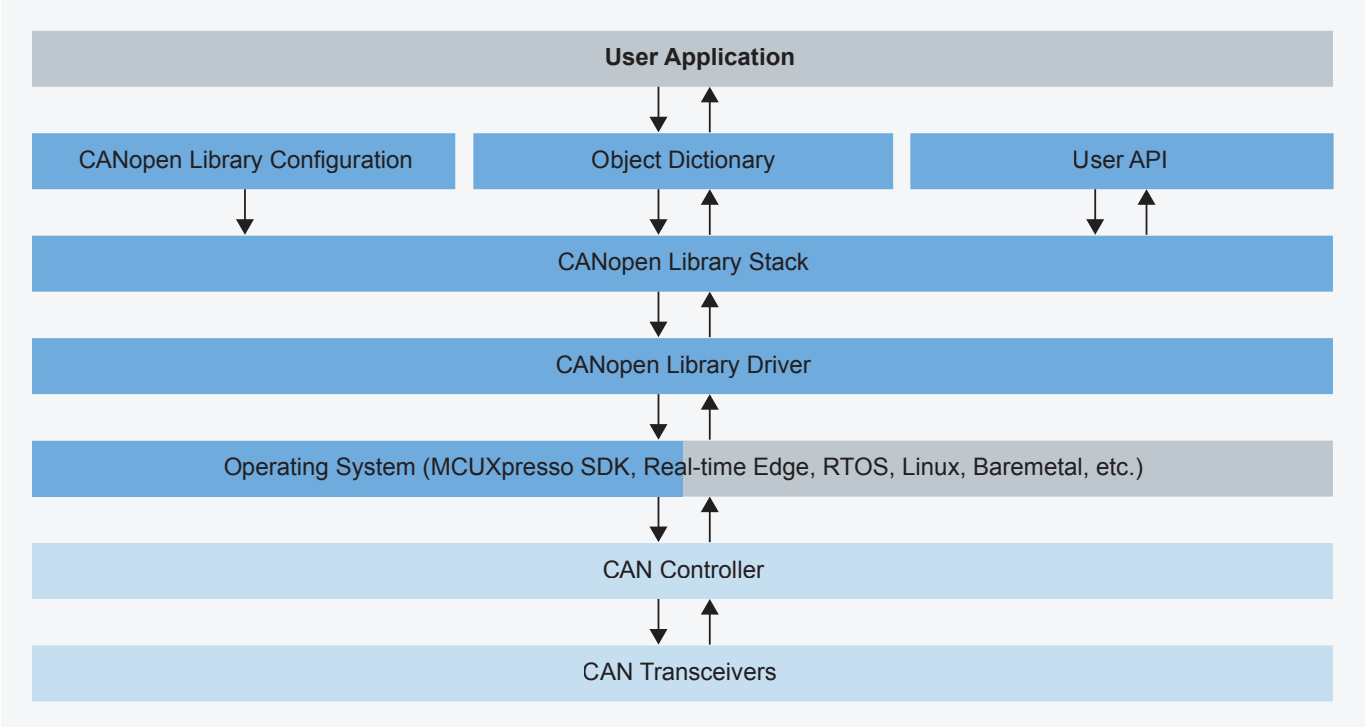
NXP supported devices

- i.MX RT1180 crossover MCUs
- For the latest list of supported NXP devices, please visit nxp.com/Port or contact ProSupport@nxp.com

Supported profiles/frameworks defined by CiA

- CiA-301 (EN 50325-4) communication profile
- CiA-302-2 network management
- CiA-302-3 configuration manager
- CiA-302-5 SDO manager (only SRD)
- CiA-303-3 indicator specification (CANopen LEDs)
- CiA-304 (EN 50325-5) framework for safety-relevant communication
- CiA-305 layer setting services (LSS)
- CiA-401 profile for I/O devices, generic I/O modules

CANopen industrial protocol block diagram



NXP enhancements

- Validates incoming communications before data reaches the application layer, helping improve reliability and system integrity
- Provides callback-based event handling to simplify application integration and improve responsiveness
- Enables direct integration of existing application variables into the object dictionary without requiring software modifications
- Supports a modular and scalable architecture optimized for resource-constrained embedded systems
- Allows developers to enable only the required CANopen services, helping reduce memory usage and optimize code size
- Supports multiple CAN controllers across a broad range of industrial applications and hardware platforms

Getting started with CANopen protocol library

Visit nxp.com/CANopen or contact NXP pro support for CANopen libraries and documentation

Additional resources

1. NXP port industrial networking suite
2. NXP support and technical community

nxp.com/CANopen

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