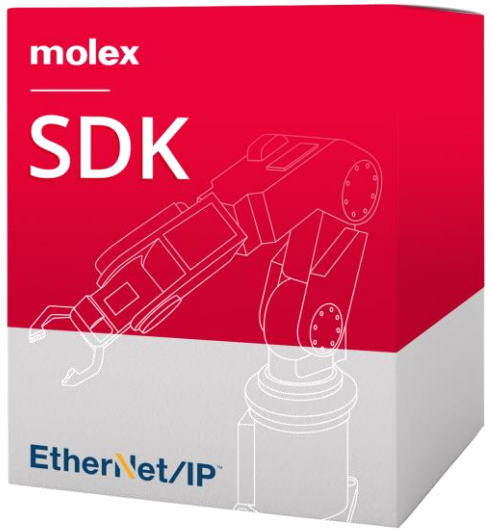


Customer Presentation

EtherNet/IP SDKs

PRODUCT NOTICE

MAY 2024

creating connections for life

molex

EtherNet/IP SDKs

Using EtherNet/IP SDKs (Software Development Kits), industrial device manufacturers can quickly and efficiently embed the EtherNet/IP protocol in scanners or adapters. For scanner device manufacturers, the SDK's customizable product configuration tool (PCT) provides the ability to supply end users with fully integrated EtherNet/IP functionality conforming to ODVA standards.

Key Product Information

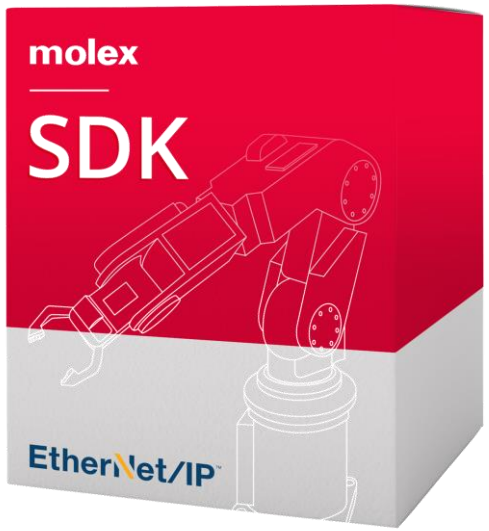
Category: Industrial Automation

Protocol: EtherNet/IP

Hardware Compatibility: 32- or 64-bit microprocessors

Operating System (OS): Any OS, real-time or not

Code Footprint (Approx.): 200 kB (adapter) or 400 kB (scanner)



View Product Landing Page

Download Datasheet

Series

112106 **EtherNet/IP SDKs and Developer Licenses**

creating connections for life

molex

VITAL PRODUCT INFORMATION

What makes this product different from the competition?

EtherNet/IP SDKs, or toolkits, provide software solutions customers can integrate into their products. The SDK does not require application-specific integrated circuit (ASIC) hardware, reducing supply chain risks and improving flexibility, and the SDK works for both scanner and adapter devices.

How does this solution create value for our customers?

The SDK enables customers to put Molex's vast expertise in ODVA technologies to work, integrating the protocol into a full software implementation and lowering costs by eliminating application-specific interfaces.

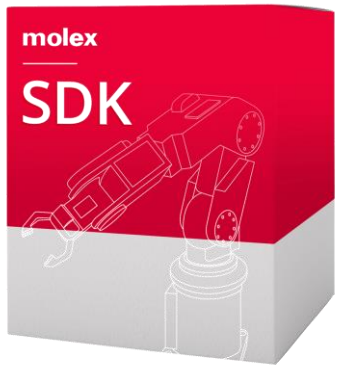
What is the Molex Advantage?

Molex offers a varied suite of industrial automation hardware and software products that provides end-to-end solutions for industrial customers. This expertise with all aspects of industrial automation, together with the robust engineering support and training available to customers, makes Molex a uniquely valuable resource.

PRODUCT OVERVIEW

Industrial SDKs

Molex SDKs (Software Development Kits) deliver a range of software tools and resources that enable customers to integrate industrial protocols into scanner and adapter industrial devices with short time to market, a high degree of customization to customer needs and certification to industry standards. These resources include ANSI C source code, a user reference guide and implementation samples, among other tools, as well as specialized engineering support and training available for customers.



EtherNet/IP SDKs

For industrial devices supporting the EtherNet/IP protocol, Molex SDKs enable fast integration on a wide range of platforms and are independent of the operating system, real time or not. Scalability permits the manufacturer to select embedded features and performance levels, while the configuration tool enables the manufacturer to efficiently incorporate the EtherNet/IP protocol into scanner products.

CIP Safety SDKs

Thanks to their ODVA/TÜV precertification, the Molex CIP Safety SDK helps shorten the time to market for functional safety devices such as sensors, cameras and robots. The CIP Safety scanner SDK includes a configuration tool that enables end users to quickly and easily configure their safety networks.

PRODUCT OVERVIEW (CONT'D)

PROFINET SDKs

For industrial devices supporting the PROFINET protocol, Molex SDKs enable fast integration with a wide range of controllers and devices and work with any operating system, real-time or not, while the included customizable configuration tool permits the manufacturer to incorporate the PROFINET protocol into scanner products.

creating connections for life

molex

MARKETS AND APPLICATIONS

Robot Monitoring Systems

Warehouse and Logistics Systems

Industrial Automation

- Complex machinery (packaging, textile, etc.)
- Electronic manufacturing equipment
- Industrial automation device manufacturers
- Network interfaces (PC cards, gateways)
- PC manufacturing equipment
- Process control systems
- Process instruments
- Robot manufacturing tooling and controllers
- Robot monitoring systems
- Warehouse and logistics systems

Agricultural Equipment

Commercial Vehicles

- Agricultural equipment
- Cranes
- Railway and subway infrastructure

creating connections for life

molex

FREQUENTLY ASKED QUESTIONS

What technical support is available from Molex?

Molex can provide SDK training, technical support and engineering development for both hardware and software design. Contact Molex for more information regarding engineering support and training.

What is included in the EtherNet/IP SDK?

The SDK comprises two distinct packages, the manufacturer SDK and the product configuration tool (PCT), which enables customers to configure devices.

- The SDK package includes ANSI C source code, a user reference guide, EDS sample, STC configuration file for the ODVA conformance tool, samples of implementation for various operating systems and an EtherNet/IP tool to access CIP objects.
- The PCT package contains configuration files, EDS device library management, adapter commissioning, integrated diagnostic capability, manufacturer customization functionality and software protection.

How do I configure my EtherNet/IP scanner?

Included in the EtherNet/IP scanner SDK, Molex provides customizable configuration software that can be personalized with the customer’s branding and graphic standards and integrated into the customer’s tool suite.

How is the EtherNet/IP SDK to be used?

The EtherNet/IP SDK, also called a software toolkit, offers a development license for both scanner and adapter applications, enabling the implementation of the EtherNet/IP protocol inside a product. For adapter devices, there are no royalties, while for scanner devices, royalties are associated with each customer product embedding the EtherNet/IP software.

SOLVING INDUSTRY CHALLENGES

Industry Need	Industry Challenge	Industry Solution	Anticipated Results
Streamline plant-wide, fully integrated automation	End users want to quickly and easily expand automation of manufacturing and logistics processes, and industrial device manufacturers want to support this.	These SDKs permit device manufacturers to embed the EtherNet/IP protocol into scanner and adapter devices efficiently and provide support for end users to configure devices for specific applications.	By streamlining the embedding of a standard protocol into industrial devices, manufacturers can support easier automation of manufacturing and logistics processes and facilities.
Upgrade or design industrial devices to support EtherNet/IP quickly and easily	Customers want to embed automation protocols into a variety of scanner and adapter devices in the most efficient way possible.	EtherNet/IP SDKs are hardware-independent and support any operating system, allowing customers to easily integrate existing systems into an EtherNet/IP automated network.	With timelines and specialized training reduced, customers can minimize costs and production delays when upgrading or designing industrial devices.
EtherNet/IP expertise access	Customers want to expand their markets by connecting to overseas technological systems.	Molex SDKs provide the capability to integrate the protocol with the customer product. Molex also provides access to technical support and training services to support customers in optimizing the use of the SDK.	Customers can place products featuring EtherNet/IP support on the market with confidence that they can provide support for the software integrated into the overall system.

PRODUCT ADVANTAGES AND FEATURES

Enables various EtherNet/IP features and performance levels

The SDK includes a configuration tool with customizable ODVA-compliant EtherNet/IP scanner features including quick connect, device-level ring (DLR) and rack optimization.

Streamlines implementation with a wide range of hardware platforms and operating systems

The SDK works with any hardware with a 32- or 64-bit microprocessor and any operating system, real time or not.

Eases development and integration work

The SDK provides sample applications with source codes and a Windows-based simulator to help developers.

Accelerates configuration and diagnostic processes

A product configuration tool (PCT) is included to quickly create configuration files and perform commissioning and diagnostics for connected devices.

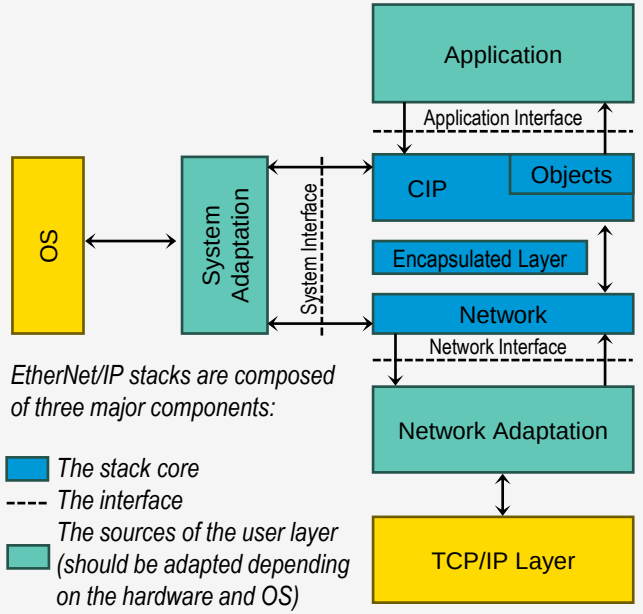
Reduces time to market

Available engineering and technical support and in-depth training options enable customers to leverage Molex's vast expertise in industrial communication.

Enables sensor and remote I/Os

There is also an adapter-only SDK variant enabling sensor and remote I/O manufacturers to support ODVA CT20-compliant EtherNet/IP protocol in their products.

Key Specifications	
Protocol	EtherNet/IP
Hardware Compatibility	32- or 64-bit microprocessors
Operating System	Any OS, real-time or not
Code Footprint (approx.)	200 kB (adapter) or 400 kB (scanner)



creating connections for life

molex

SPECIFICATIONS AND SUPPORTING INFORMATION

Basic Information

CIP Features: Implicit messaging (I/O process data), explicit messaging (configuration and diagnostic)

EtherNet/IP: Fully compatible (test suite CT20)

Stack Resolution: Timing resolution in microseconds

Supported Objects (CIP Standard):
Identity object, message router object, assembly object, connection manager object, TCP/IP interface object, Ethernet link object, QoS object, LLDP object, DLR object and any user objects

Reference Information

Compliance: CT20

Specifications: ODVA EtherNet/IP (vol. 1-3.33, vol. 2-1.31)

Hardware Compatibility: 32- or 64-bit processors

Supported Operating System: Any OS, real-time or not

Stack Implementation: Single- or multi-task, socket-based or UDP optimization

Code Footprint (estimated/customizable): 200 kB (adapter), 400 kB (scanner)

SDK Contents

ANSI C source code

Electronic documentation

Implementation examples on Windows, Linux, FreeRTOS

EDS sample

STC sample for ODVA conformance tool

EIP_Trace to log messages from target platform on a Windows host

EIP_Tool to access CIP objects

EtherNet/IP configuration tool

EtherNet/IP Product Configuration Tool (PCT)

OS: Windows 11

Generate scanner stack configuration files

EDS device library management

Adapter commissioning (automatic device detection, online actions, etc.)

Support of modular devices like Rockwell FlexIO and PointIO devices with chassis and module management

Integrated diagnostic

OEM customization

Software protection

Used by ODVA during PlugFest interoperability tests

Additional Resources	
Web Overview Page	**www.molex.com/en-us/products/industrial-automation/industrial-sdk**
Datasheet	987652-6911.pdf (molex.com)
Engineering Support Contact	North America: ic.support.na@molex.com Europe: ic.support.eu@molex.com Asia-Pacific: ic.support.as@molex.com
Global Product Manager	Martial Maneche, ISBU, DSS

creating connections for life

molex

UNIQUE AND USEFUL DIFFERENTIATION VS. COMPETITORS' PRODUCTS

	Molex EtherNet/IP SDK (Software Development Kit)	Competing SDK
Originator	Yes	-
Target	Yes	Yes
DLR	Node0	No
Quick Connect	Yes	No
Configuration Tool	Yes, customizable	N/A
Conformance	CT20	CT17

WHAT IS THE MOLEX ADVANTAGE?

Molex is a longtime technology driver in the ODVA, providing tools for the PlugFest event that are downloadable on molex.com. Molex expertise enables customers to integrate technology with confidence and reduce time to market with an extended set of features. Customers are enabled to create their own EtherNet/IP originator (scanner) product using a configuration tool that is dedicated to their product and showing their company name, integrated in their toolchain.

creating connections for life

molex