



Data Sheet CODESYS EtherNet/IP Scanner SL

CODESYS EtherNet/IP Scanner is an additional option for controllers that are compatible with CODESYS. These devices are based on standard Ethernet ports to become EtherNet/IP scanners. The bus is configured from within the CODESYS Development System. Device configured in this way exchange real-time Ethernet messages with connected EtherNet/IP adapters.

Product description

A specific EtherNet/IP configurator is already integrated in the default setup of the CODESYS Development System. In order to use this, the user requires a license, which is already saved on the target system [1] or can be added later [2]. Furthermore, a protocol stack is required for establishing EtherNet/IP communication on the configured Ethernet port. This stack is supplied with the license as a CODESYS library. As an alternative, Hilscher fieldbus adapters can be equipped with an integrated protocol stack.

If CODESYS EtherNet/IP scanner is licensed on the device to be programmed, then it can communicate in real time with connected adapters, read their inputs, and write to their outputs. All parameters for communication are predefined in the configurator. These include IP addresses or network cards and adapters, the connections and their properties, the RPI (Requested Packet Interval), as well as the user parameters. The end user uses a service library to access the remote adapter in non-cyclic intervals from the IEC 61131-3 application (for example in order to read and write attributes).

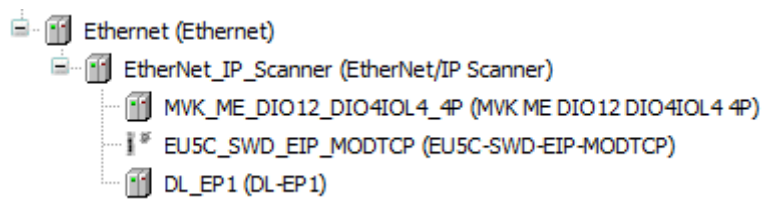
- [1] Device manufacturers can equip and pre-license their products with CODESYS EtherNet/IP Scanner. The use license is included in SoftSPS systems from 3S-Smart Software Solutions (for example, CODESYS Control Win or CODESYS Control for Raspberry Pi).
- [2] Users can extend individual, compatible devices with CODESYS EtherNet/IP Scanner SL. The license is saved on a special device dongle (CODESYS Key) or software license container (Soft Key) on the target device.

Configurator

For IEC and NetX Stack the same configurator pages are available.

| | |
|------------------------|--|
| Editors | <ul style="list-style-type: none">• Ethernet Bus Editor• EtherNet/IP Scanner Editor• EtherNet/IP Remote Adapter Editor |
| Communication Settings | <ul style="list-style-type: none">• IP Address• Electronic Keying• EtherNet/IP Connections and configuration data |

| | |
|-----------------------------|---|
| | <ul style="list-style-type: none"> • Input/Output Assembly Layout • custom specific configuration parameters • Connection timeout behaviour (not NetX) |
| Validation of configuration | supported |
| Diagnosis | <ul style="list-style-type: none"> • Display of device state in device tree • Display of connection errors on status page |
| EDS Import | supported |
| Generic Device | supported, for devices without EDS file |
| Device Scan | supported (not NetX) |



Picture 1: Device Tree

The screenshot shows the 'General' settings window for an EtherNet/IP device. On the left is a sidebar with navigation options: General, Connections, Assemblies, User-Defined Parameters, Log, EtherNet/IP I/O Mapping, EtherNet/IP IEC Objects, Status, and Information. The main area is divided into two sections: 'Address Settings' and 'Electronic Keying'. In 'Address Settings', the 'IP address' is set to '192 . 168 . 0 . 2'. The 'Electronic Keying' section includes a 'Compatibility check' checkbox (unchecked) and a list of parameters for matching: Vendor ID (794), Device type (43), Product code (226), Major revision (2), and Minor revision (1). Each parameter has a 'Check match' checkbox, which is checked for all except the Minor revision.

Picture 2: General communication settings

| Connection Name | RPI (ms) | O->T size (bytes) | T->O size (bytes) | Proxy Config size (bytes) | Target Config size (bytes) | Connection Path |
|--------------------|----------|-------------------|-------------------|---------------------------|----------------------------|-------------------------|
| 1. Exclusive Owner | 10 | 80 | 80 | | 64 | 20 04 24 66 2C 64 2C 65 |
| 2. Input Only | 10 | 0 | 80 | | 64 | 20 04 24 66 2C C1 2C 65 |

| Parameters | Value | Unit | Datatype | Minimum | Maximum | Default | Help String |
|-----------------------------|----------|------|----------|---------|---------|----------|--|
| Exclusive Owner | | | | | | | |
| Target Config data | | | | | | | |
| Channel IO-1 | 1 | | SINT | 1 | 4 | 1 | Channel selector |
| Module identifier | INACTIVE | | SINT | | | INACTIVE | Module selector |
| Data hold time | 0 | | SINT | 0 | 127 | 0 | Data hold time [x 10ms] |
| ID tag data block size | 4 Byte | | SINT | | | 4 Byte | ID tag data block size [bytes], can be obtained from the data |
| Overload detection | On | | SINT | | | On | Overload detection |
| Overcurrent detection | On | | SINT | | | On | Overcurrent detection |
| Edge controlled UID reading | Off | | SINT | | | Off | Edge controlled reading of UID |
| ID tag number of blocks | 0 | | USINT | 0 | 255 | 0 | ID tag number of blocks [bytes], can be obtained from the data |
| Channel IO-2 | 2 | | SINT | 1 | 4 | 2 | Channel selector |
| Module identifier | INACTIVE | | SINT | | | INACTIVE | Module selector |
| Data hold time | 0 | | SINT | 0 | 127 | 0 | Data hold time [x 10ms] |
| ID tag data block size | 4 Byte | | SINT | | | 4 Byte | ID tag data block size [bytes], can be obtained from the data |
| Overload detection | On | | SINT | | | On | Overload detection |
| Overcurrent detection | On | | SINT | | | On | Overcurrent detection |
| Edge controlled UID reading | Off | | SINT | | | Off | Edge controlled reading of UID |
| ID tag number of blocks | 0 | | USINT | 0 | 255 | 0 | ID tag number of blocks [bytes], can be obtained from the data |

Picture 3: EtherNet/IP Connections

| Connection Name | O->T size (bytes) | T->O size (bytes) | Proxy Config size (bytes) | Target Config size (bytes) |
|----------------------------|-------------------|-------------------|---------------------------|----------------------------|
| 1. E01 - Digital In/Output | 2 | 10 | | 146 |

| Name | Data Type | Bitlength | Help String |
|---------------------|-----------|-----------|-------------|
| Digital Output Data | WORD | 16 | |

| Name | Data Type | Bitlength | Help String |
|--------------------|-----------|-----------|-------------|
| Digital Input Data | WORD | 16 | |
| DI Qualifier | WORD | 16 | |
| DO Qualifier | WORD | 16 | |
| System State | DWORD | 32 | |

Picture 4: Assembly Layout

IEC Stack

The following table describes the functionality of the CODESYS IEC stack.

Supported Platforms

- 32/64 bit
- Little/Big Endian

Specification

CIP Networks Library Volume 1 and 2

max. Number of Slaves

no restriction

| | |
|----------------------------|---|
| max. Number of Connections | no restriction |
| Connection Types | <ul style="list-style-type: none"> • Class 1 (I/O Messaging) • Class 3 (Explicit Messaging) • UCMM |
| I/O Connection Types | <ul style="list-style-type: none"> • Point to Point and Multicast • Cyclic Transmission • Exclusive Owner, Listen Only, Input Only • Tag based connections (one Tag per connection) |
| minimal RPI | 1 ms |
| Supported Objects | <ul style="list-style-type: none"> • Identity Object (16#1) • Message Router Object (16#2) • Connection Manager Object (16#6) • TCP/IP Interface Object (16#F5) • EtherNet Link Object (16#F6) |
| Vendor Specific Objects | <ul style="list-style-type: none"> • Consuming Assembly Manager Object (O->T) (16#300) • Producing Assembly Manager Object (T->O) (16#301) |
| Large ForwardOpen | supported |
| CIP Motion | not supported |
| CIP Sync | not supported |
| Device Level Ring (DLR) | not supported |
| Conformity | only certifiable in combination with CODESYS EtherNet/IP Adapter |

NetX Stack

For Hilscher NetX Stack functionalities please refer to the Hilscher data sheet.

| | |
|---------------------|---|
| Supported Platforms | <ul style="list-style-type: none"> • 32 bit • Little Endian |
|---------------------|---|

API

EtherNet/IP Services IEC Library

Following functionblocks are available:

- Get_Attributes_All,
Get_Attribute_Single
- Set_Attributes_All,
Set_Attribute_Single
- Start/Stop/Reset
- Apply_Attributes
- NOP
- Generic_Service
- Visualization-Templates

| | |
|--|--|
| The library is also supported by NetX Library! | |
| API IEC Stack | <ul style="list-style-type: none">• State and Diagnosis variables for scanner and adapters• Ethernet Status Information• Reset of scanner and adapter• Generic Device Diagnosis• Reconfigure |
| API NetX Stack | <ul style="list-style-type: none">• Generic Device Diagnosis• Reconfigure |
| No additional API functions available. | |

General information

Supplier:

CODESYS GmbH
 Memminger Strasse 151
 87439 Kempten
 Germany

Support:

Technical support is not included with this product. To receive technical support, please purchase a CODESYS Support Ticket.

<https://support.codesys.com>

Item:

CODESYS EtherNet/IP Scanner SL

Item number:

2303000007

Sales / Source of supply:

CODESYS Store
<https://store.codesys.com>

Included in delivery:

- License key

System requirements and restrictions

| | |
|-------------------------------------|--|
| Programming System | CODESYS Development System V3.5.17.0 or higher |
| Runtime System | CODESYS Control V3.5.12.0 or higher |
| Supported Platforms/ Devices | Note: Use the project "Device Reader" to find out the supported features of your device. "Device Reader" is available for free in the CODESYS Store. |
| Additional Requirements | <ul style="list-style-type: none"> • CODESYS Control runtime system on the device with SysSocket and SysEthernet component • Available Ethernet port on the device • WIBU Codemeter support |
| Restrictions | - |
| Licensing | |



Single Device License: The license can be used on the target device/PLC on which the CODESYS Runtime System is installed.

Licenses are activated on a software-based license container (soft container), which is permanently connected to the controller. Alternatively the license can be stored on a CODESYS Key (USB-Dongle). By replugging the CODESYS Key, the license can be used on any other controller.

Required Accessories

Optional: CODESYS Key

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.

Creation date: 2023-04-17