Data Sheet CODESYS CANopen Device SL

Configurator, protocol stack and diagnostics for CANopen Device, fully integrated in the IEC 61131-3 development system.

Product description

The CANopen support in CODESYS is based on the standard implementation of the CAN-Interface (CAN Minidriver interface). If your target device programmable with CODESYS is equipped accordingly you can immediately use CODESYS CANopen.

CODESYS CANopen Device offers

- A CANopen Device configurator integrated in the Development System CODESYS

  ⇒ No additional tools required for the configuration of the bus system or the I/O data.

- A CANopen communication stack in form of a CODESYS CiA 301 library

  ⇒ The protocol stack is portable across different platforms and does not have to be fully implemented on the device.
  ⇒ The IEC 61131-3 Development System compiles the stack and the application code into native machine code and loads it onto the controller.

- An application interface for diagnosis and object dictionary access

  ⇒ Extensive functionality without needing any additional software tools

Configurator

Editors	Editor for CANopen Local Device including • general communication settings • PDO editor • Object Dictionary editor
Communication Settings	• Device identification • Node ID • Device profile • Easy creation of input/output ranges • Easy creation of objects readable/ writable by SDO
PDO Editor	Editor for creating/deleting/modifying PDOs; All necessary objects will be automatically created.
Object Dictionary Editor (for advanced users)	• Free configurable object dictionary • Mapping of IEC variables on object dictionary entries

	• Import object dictionary from EDS • Profile databases included • Supported CiA 301 Datatypes: ◦ BOOLEAN ◦ UNSIGNED 8/16/24/32/40/48/56/64 ◦ INTEGER 8/16/24/32/40/48/56/64 ◦ REAL 32/64 ◦ VISIBLE_STRING (Restriction: not supported for I/O mapping)
EDS Export	CiA 306 compliant EDS export
Diagnosis	• Display of device state in device tree and on status page • Display of Emergency information on status page

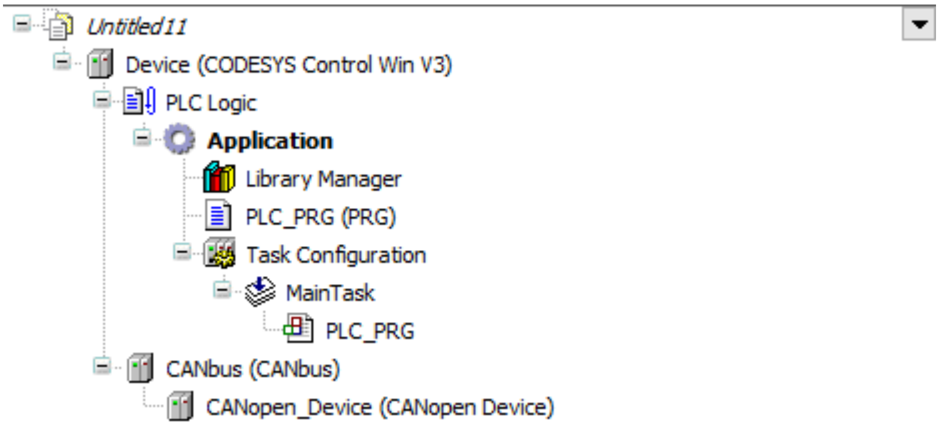
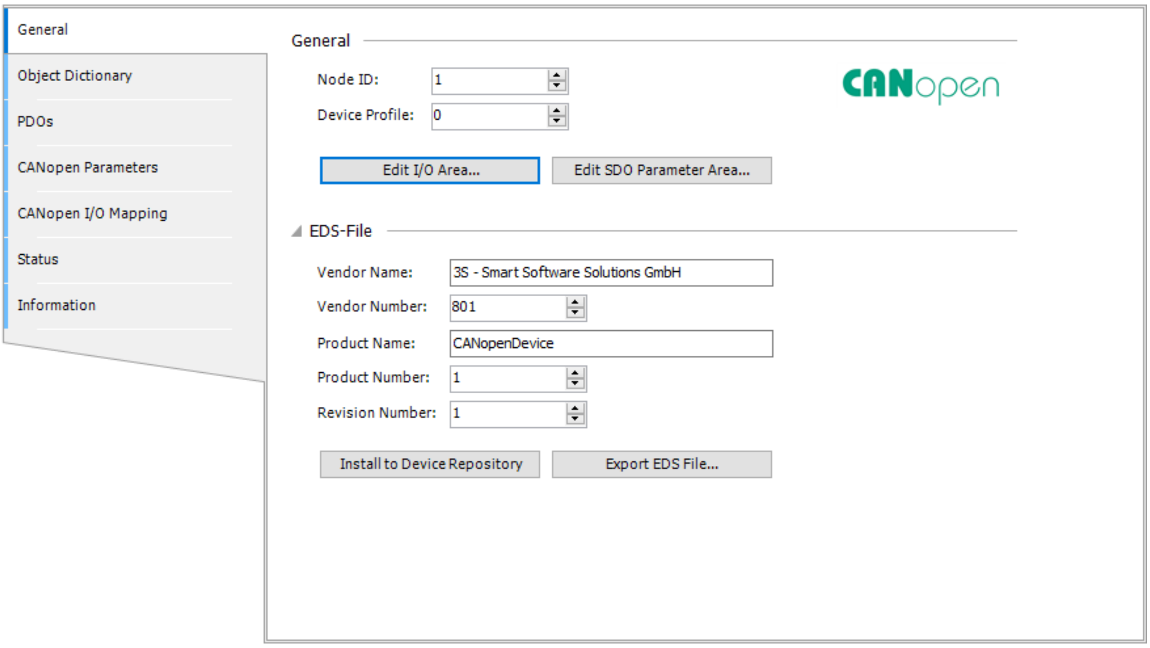


Image 1: Device Tree



Node ID: 1

Device Profile: 0

Vendor Name: 3S - Smart Software Solutions GmbH

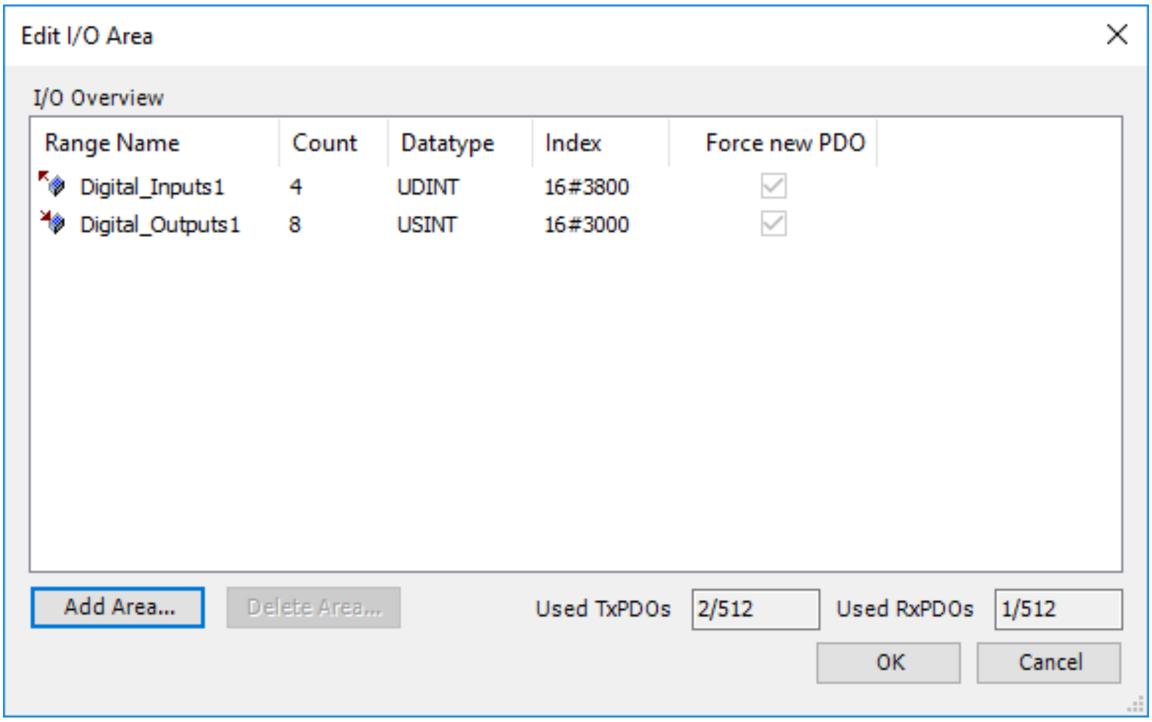
Vendor Number: 801

Product Name: CANopenDevice

Product Number: 1

Revision Number: 1

Image 2: General Settings

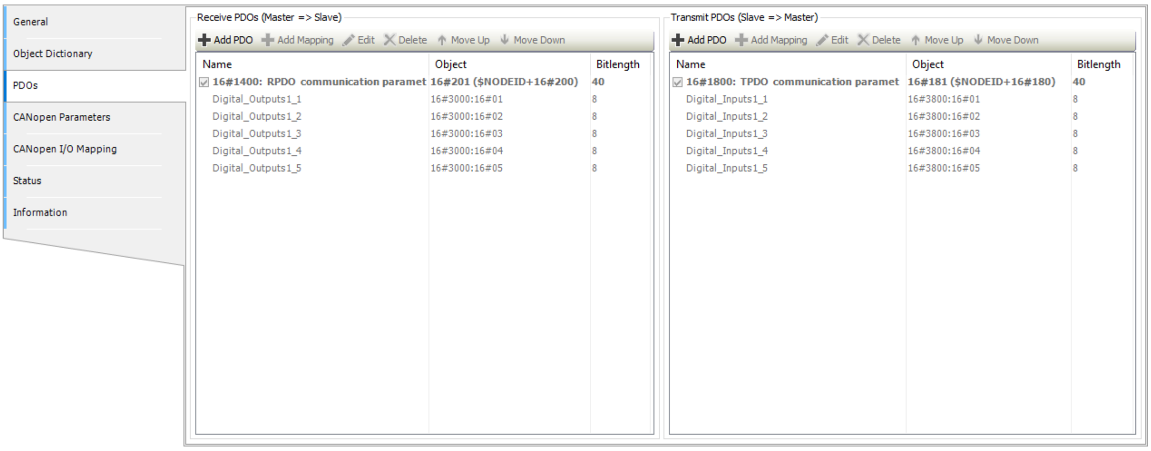


Range Name	Count	Datatype	Index	Force new PDO
Digital_Inputs1	4	UDINT	16#3800	☑
Digital_Outputs1	8	USINT	16#3000	☑

Used TxPDOs 2/512

Used RxPDOs 1/512

Image 3: I/O Areas



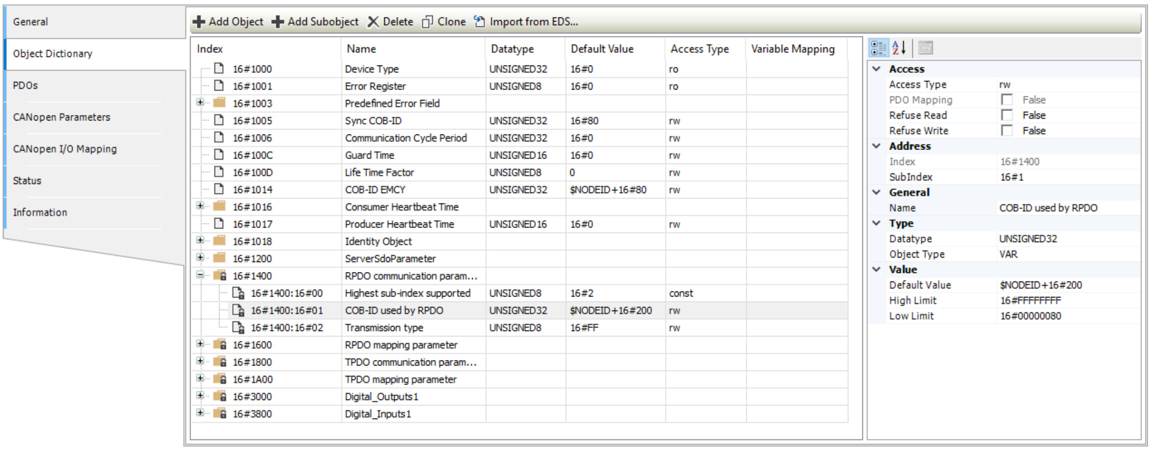
Receive PDOs (Master => Slave)

Name	Object	Bitlength
☑ 16#1400: RPDO communication paramet	16#201 ($NODEID+16#200)	40
Digital_Outputs1_1	16#3000:16#01	8
Digital_Outputs1_2	16#3000:16#02	8
Digital_Outputs1_3	16#3000:16#03	8
Digital_Outputs1_4	16#3000:16#04	8
Digital_Outputs1_5	16#3000:16#05	8

Transmit PDOs (Slave => Master)

Name	Object	Bitlength
☑ 16#1800: TPDO communication paramet	16#181 ($NODEID+16#180)	40
Digital_Inputs1_1	16#3800:16#01	8
Digital_Inputs1_2	16#3800:16#02	8
Digital_Inputs1_3	16#3800:16#03	8
Digital_Inputs1_4	16#3800:16#04	8
Digital_Inputs1_5	16#3800:16#05	8

Image 4: PDO Editor



Index	Name	Datatype	Default Value	Access Type	Variable Mapping
16#1000	Device Type	UNSIGNED32	16#0	ro	
16#1001	Error Register	UNSIGNED8	16#0	ro	
16#1003	Predefined Error Field				
16#1005	Sync COB-ID	UNSIGNED32	16#80	rw	
16#1006	Communication Cycle Period	UNSIGNED32	16#0	rw	
16#100C	Guard Time	UNSIGNED16	16#0	rw	
16#100D	Life Time Factor	UNSIGNED8	0	rw	
16#1014	COB-ID EMCY	UNSIGNED32	$NODEID+16#80	rw	
16#1016	Consumer Heartbeat Time				
16#1017	Producer Heartbeat Time	UNSIGNED16	16#0	rw	
16#1018	Identity Object				
16#1200	ServerSdoParameter				
16#1400	RPDO communication param...				
16#1400:16#00	Highest sub-index supported	UNSIGNED8	16#2	const	
16#1400:16#01	COB-ID used by RPDO	UNSIGNED32	$NODEID+16#200	rw	
16#1400:16#02	Transmission type	UNSIGNED8	16#FF	rw	
16#1600	RPDO mapping parameter				
16#1800	TPDO communication param...				
16#1A00	TPDO mapping parameter				
16#3000	Digital_Outputs1				
16#3800	Digital_Inputs1				

Access	
Access Type	rw
PDO Mapping	□ False
Refuse Read	□ False
Refuse Write	□ False
Address	
Index	16#1400
SubIndex	16#1
General	
Name	COB-ID used by RPDO
Type	
Datatype	UNSIGNED32
Object Type	VAR
Value	
Default Value	$NODEID+16#200
High Limit	16#FFFFFFFF
Low Limit	16#00000080

Image 5: Object Dictionary Editor

IEC Stack

Supported Platforms	• 32/64 bit • Little/Big Endian
State machine	• CiA 306 compliant • NMT server
CAN ID Length	11 bit (29 bit not supported for CANopen)
Guarding	• Nodeguarding • Heartbeat Producing/Consuming
SDO client	Not supported by CANopen Local Device. Supported by CANopenManager which can be used in parallel to the CANopen Local device on the same network.
SDO server	supported
SDO channels	only one supported
SDO protocols	• Expedited

	• Segmented • Block (CRC supported)
SYNC	• Producing • Consuming
TIME	Not Supported
Number of PDOs	• 512 TPDOs • 512 RPDOs
PDO mapping	static (changeable by configurator)
PDO Transmission Types	• TPDOs (Slave to Master) ◦ acyclic/cyclic synchronous ◦ asynchronous/synchronous RTR only ◦ asynchronous manufacturer/ device profile specific • RPDOs (Master to Slave) ◦ acyclic/cyclic synchronous ◦ asynchronous manufacturer/ device profile specific
PDO Event Time	supported for TPDOs (Slave to Master)
PDO Inhibit Time	supported for TPDOs (Slave to Master)
MPDO	not supported
EMCY	• Producing supported • Error Register • Predefined Error Field object
Conformance	no current data available

API

RAW CAN	Access to CAN chip via CANL2 library (also in parallel to CANopen Stack)
Object Dictionary API	• Reading/Writing local objects • Object Dictionary callbacks with possibility for custom abort codes
NMT API	all CANopen state transitions possible by API
Dynamic Node ID	Node ID changeable at runtime by API
Reconfigure	• Dynamic changing of Baudrate and Network ID via Reconfigure (Device Diagnosis library); • Enabling/Disabling of stack

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 CANopen Device SL

Item number:

2303000234

Sales / Source of supply:

CODESYS Store
https://store.codesys.com

Included in delivery:

- License key

System requirements and restrictions

Programming System	CODESYS Development System V3.5.4.0 or higher
Runtime System	CODESYS Control V3.5.4.0 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	Target device needs CAN Minidriver implementation.
Restrictions	-
Licensing	DEVICE

	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.

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