

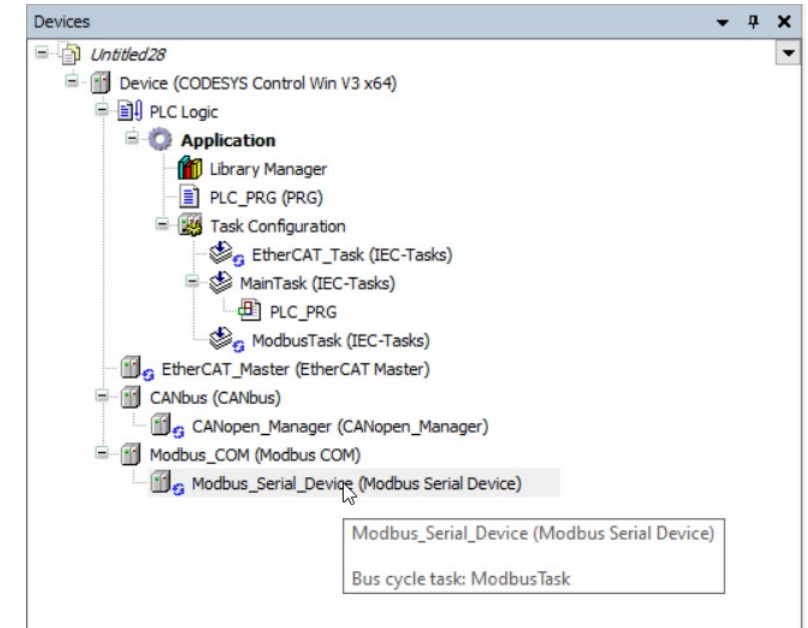


CODESYS FIELDBUS

CODESYS Feature Briefing, October 2024
Hilmar Panzer, CTO & Managing Director

General

- **Device tree shows bus cycle task (SP21)**



- **Support of online change for modifications of the device configuration (SP22, Q1/2026)**
 - General concept for I/O drivers
 - Allows for implementation in local I/O drivers
 - PROFINET

CAN

- **CAN FD for CAN communication (SP21, Q1/2025)**
 - Support of CAN FD for CODESYS communication protocol (engineering system ↔ runtime)
 - Layer2 application library
 - Not for CANopen!

EDS import V4.2.0.0 (03/24)

- **Maintenance version**

SAE J1939 (4.2.0.0 08/24)

- Graphical signal and data layout editor

The screenshot displays the 'Data Layout Editor' for the TCO1_TCO signal. The interface includes a menu bar with options like 'Add PG', 'Add Signal', 'Delete', and 'Data Layout Editor'. A table lists several signals with their PGN/SPN, names, bit positions, lengths, and types. Below this, a detailed bit-level layout shows the mapping of signal fields to specific bit positions (Bit 7 to Bit 0).

Signal Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DriveRecognize	7	6	5	4	3	2	1	0
Driver2WorkingState			5	4	3	2	1	0
Overspeed	15	14	13	12	11	10	9	8
DriverCardDriver1			13	12	11	10	9	8
DriverCardDriver2			21	20	19	18	17	16
DirectionIndicator	31	30	29	28	27	26	25	24
TachographPerformance			29	28	27	26	25	24
HandlingInformation					27	26	25	24
SystemEvent							25	24
TachographOutputShaftSpeed	47	46	45	44	43	42	41	40
TachographVehicleSpeed	63	62	61	60	59	58	57	56

Additional details from the interface:

- Signal List Table:**

Enable	PGN/SPN	Name	Bit Position	Length	Type
<input checked="" type="checkbox"/>	61440 (16#F000)	ERC1_RD		8 Bytes	Broadcast
<input checked="" type="checkbox"/>	61441 (16#F001)	EBC1_EBS		8 Bytes	Broadcast
<input checked="" type="checkbox"/>	61444 (16#F004)	ECC1_EMS		8 Bytes	Broadcast
<input checked="" type="checkbox"/>	64953 (16#FDB9)	TPRL_TPMS		8 Bytes	Broadcast
<input checked="" type="checkbox"/>	65132 (16#FE6C)	TCO1_TCO		8 Bytes	Broadcast
- General Properties:**
 - PGN: 65132
 - Name: TCO1_TCO
 - Description: Tachograph
 - Length (Bytes): 8
- Field Name:** Name of Parameter Group

IO-Link 4.3.0.0 (04/24)

- **Gateway functionality for external tools that enables the reading and writing of IO-Link parameters**

Modbus 4.4.0.0 (05/24), 4.5.0.0 (Q4 24)

- **Maintenance versions**

EtherNet/IP 4.6.0.0 (06/24)

- **Support of Conformance Test 20**
- **Maintenance version**

EtherNet/IP 4.7.0.0 (10/24)

- **Connection API**
- **Improved runtime performance**
 - Depending on I/O layout
 - Highest gain with I/O data in series
 - Up to twice as fast

EtherNet/IP – new features (Q2 2025)

- **Network overview (Scanner)**
 - Connections to all adapters in the network shown as a list
 - IP addresses
 - Data size
 - Transmission interval
 - ...
 - Editable, incl. bulk changes
- **Support asynchronous services (Adapter)**
 - Services are currently implemented with a synchronous interface.
 - Hence, the data must be provided by the application as soon as it is called.
 - The interface will become asynchronous.
 - The implementation in the application is given a few cycles to collect the data.

PROFINET 4.5.0.0-4.5.2.0 (05/24 – 07/24)

- **TCI support**
 - External manufacturer-specific configuration tools can be executed from CODESYS to enable the configuration of special security settings.
- **Support of GSDML schema V2.44**
- **Allows 2-port devices to pass the conformance test**
- **Preparations for PROFISAFE V2.6 support**
- **Bug fixes and improvements**

PROFINET 4.6.0.0 (11/2024)

- **Pass new version V2.45 of PROFINET test specification**
- **PROFISAFE diagnosis**
- **Certification for virtual controls**

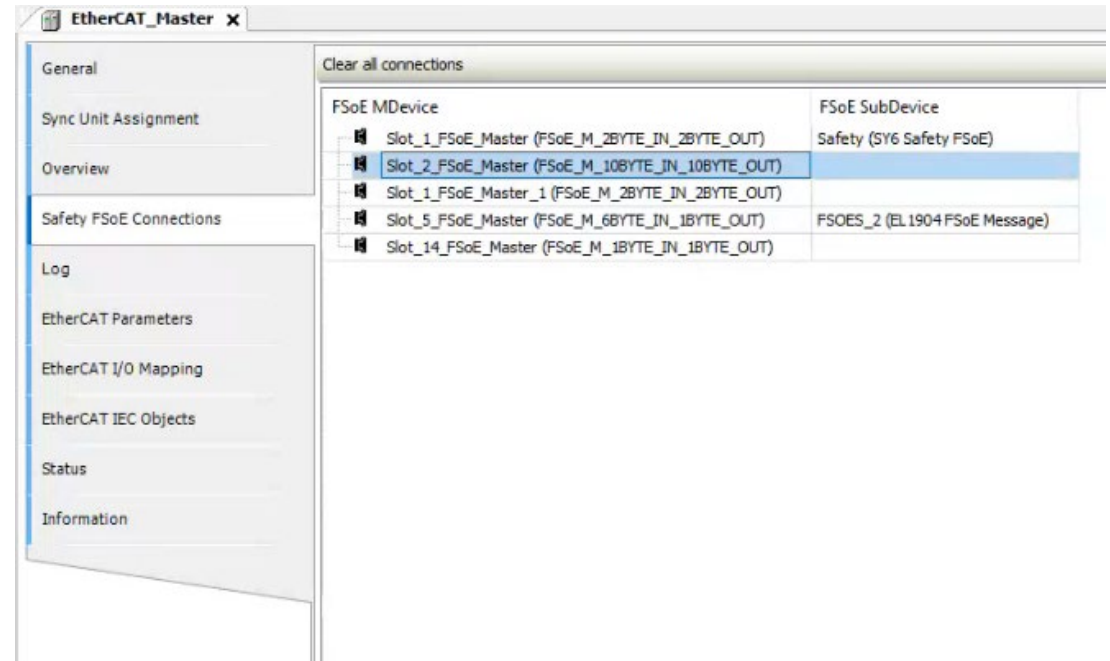
PROFINET – future features

- **Topology editor (2025)**
 - Graphical overview of all devices that are part of the network
 - I/O devices with modules
 - Infrastructural devices (switches)
 - Ethernet connections
 - Visu generation

- **Dynamic reconfiguration (2025)**
 - Allows for a bumpless reconfiguration of a device
- **Online change support for modifications of the device tree (2026)**

EtherCAT 4.7.0.0 (04/24)

- Support of SCI import files
- Support by CODESYS Control Embedded
- New configuration editor “Safety FSoE Connections”
 - For non-CODESYS FSoE MainDevice
 - Copies safe data between FSoE MainDevice and FSoE SubDevices



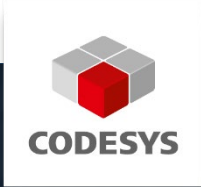
EtherCAT 4.8.0.0 (09/24)

- **ETC mailbox gateway implementation**
 - Allows other tools to access data of SubDevices by offering a routing channel.
- **Diagnosis page for DistributedClocks**

Reset values to zero				
Deviation (µs)	Count (neg)	Percent (neg)	Count (pos)	Percent (pos)
<1	10154	3	10112	2.9
<2	10140	3	10205	3
<5	29454	8.6	28372	8.3
<10	40027	11.7	38806	11.3
<20	47771	13.9	47714	13.9
<50	30020	8.7	33157	9.7
<100	3096	0.9	3955	1.2
<200	199	0.1	134	0
<500	2	0	1	0
>=500	0	0	1	0
Sum	170863	49.8	172457	50.2

EtherCAT 4.9.0.0 (Q1/2025)

- **Maintenance version**



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