www.tmgte.com

TMG TE

Industrial Communication without borders

IO-Link
EtherNet/IP
EtherCAT
PROFINET
PROFIBUS

TMG TE GmbH
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Your contact for Sales:
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Management:
Klaus-Peter Willems and Dirk Brauner

About us

TMG TE (TMG TECHNOLOGIE MANAGEMENT GRUPPE Technologie und Engineering GmbH) was founded in Karlsruhe in 1987 with the aim of supporting the manufacturing and processing industry in sustainably exploiting the value-adding potential of industrial communication technology. As a recognized technology expert, the company can now draw on almost forty years of experience.

TMG TE, former TMG i-tec, was one of the pioneers for the successful application of PROFIBUS technology in manufacturing and process automation.

With the trend towards end-to-end networked processes in companies and the use of Ethernet also at the field level, we have expanded our focus to PROFINET, EtherNet/IP and EtherCAT. The biggest challenge so far is the digitalization of the lowest process level with sensors and actuators with a globally accepted standard. TMG TE is the global leader in IO-Link as a technology provider.

As future challenges we see Industry 4.0 with the continuous integration with the IT world and the Internet of Things (IoT) as well as the emerging standards for this. New technologies such as 2-wire Ethernet physics (APL, SPE) bring Ethernet-based fieldbus systems closer to the production floor level.

We have also successfully taken on the task of offering our products and services internationally, and today we have predominantly international business worldwide.

The Team

Our team consists of young dynamic as well as longtime experienced engineers. In addition to many years of experience in industrial communication technology and embedded software development, the team is characterized by a strong identification with our customers and our technologies.

Your contacts

Klaus-Peter Willems	Managing Partner
Dirk Brauner	Managing Partner
Kevin Wiktor	Sales

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37 Years Enabling Technology

Consulting

Products

Development

PROFIBUS & PROFINET Competence Center

IO-Link Competence & Test Center

Functional Safety

Device Engineering, IoT and Edge Gateways

Device Engineering Tools

Communication Drivers

IT Integration

TMG MQTT

TOOL CALLING INTERFACE

TMG-UDP

SMI-TCP™

Communication Stacks

PROFINET IO Device

EtherNet/IP Adapter

PROFIBUS Mst/ Slv

IO-Link Mst/ Dev

IO-Link In-Design Solution

IO-Link Gateway App.

Functional Safety

IO-Link Safety Libraries

FSOE (EtherCat)

Memberships

IO-Link Safety Device Tester

Including TMG IO-Link Device Tool

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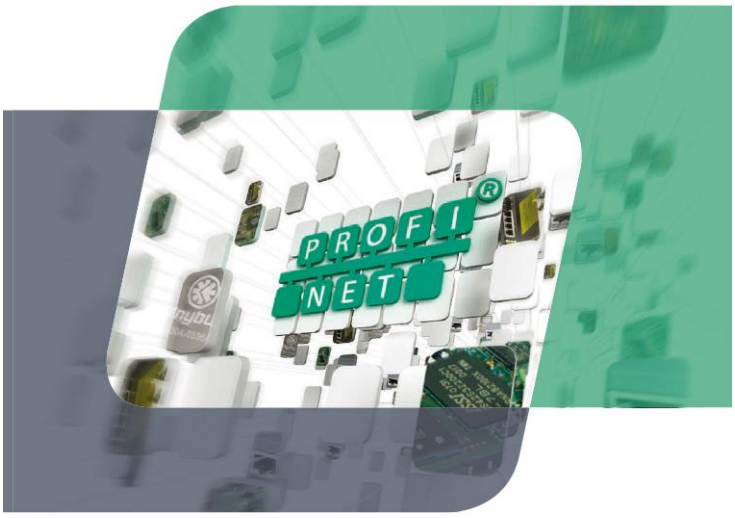
PROFINET Device

- **PROFINET Device Stack**
- **Integration Services**
- **Respectively for factory and process automation**
- **Conformance Test Services**



Our PROFINET Device Stack can be used to realize simple devices like IO modules up to high performance devices like drives. The stack is highly portable and can therefore be used on a wide variety of platforms. Option packages such as IRT (Conformance Class C), system redundancy, security and IO-Link integration make the solution scalable.

- Compliant with the latest PROFINET specification
- Certified with conformance class A, B, B (PA) and C
- Easily portable to many platforms
- Includes LLDP and MRP client
- Hardware: Compatible with many 32-bit microprocessors
  - such as Rx, RZ/N , STM32, Sitara AM2x,3x,4x,6x
- Portable to many real-time operating systems
  - such as Free RTOS, embOS, TI-RTOS, Linux (with real-time patch)
- Supports PROFINET over APL (Advanced Physical Layer)
- Option packages available for:
  - IRT (Conformance Class C)
  - System redundancy (S2) and dynamic reconfiguration
  - Security Class 1
  - IO-Link integration

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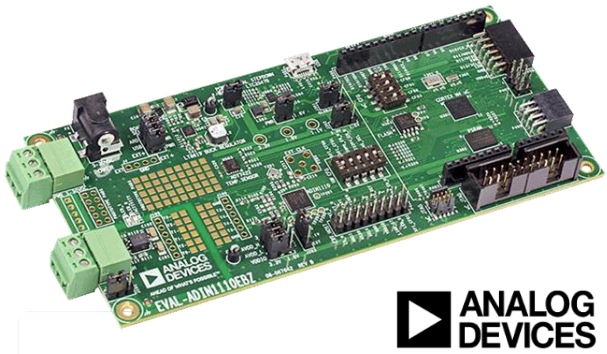
PROFINET over APL – Reference Integration

- **On Analog Devices EVAL-ADIN1110**
- **On Analog Devices Round board**
- **Compliant with the latest PROFINET specification**
- **Conformance Class B (PA)**
- **System redundancy S2**
- **Dynamic reconfiguration**
- **Security Class 1**



For PROFINET over APL a reference integration for the APL (Advanced Physical Layer) with the ADIN1110 (10BASE-T1L MAC-PHY) from Analog Devices is available to simplify the start of the development and to save time to market.

- Is compliant according to the latest PROFINET specification
- with the STM32L4S5QII3P or MAX 32690 and ADIN1110 on evaluation boards from Analog Devices
- with Example application of TMG TE with GSD and GSDX
- FreeRTOS is used as operating system
- LwIP is used as TCP/IP and SNMP stack

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EtherNet/IP Adapter

- **EtherNet/IP Stack Stack**
- **Integration Services**
- **Respectively for factory and process automation**
- **Conformance Test Services**

Our EtherNet/IP Adapter Stack is universal and can be used for most field devices. The core of the EtherNet/IP Adapter Stack is completely hardware independent and supports 32-bit microcontrollers. A real-time operating system and TCP/IP stack are required for execution.

The software is delivered as ANSI-C source code incl. user manual and implementation examples.

- Compliant with the latest EtherNet/IP specification
- Includes LLDP Stack
- Easily portable to many platforms
- Hardware: Compatible with many 32-bit microprocessors
    - such as Rx, RZ/N, STM32, Sitara AM2x,3x,4x and 6x
- Portable to any real-time operating system
    - such as Free RTOS, embOS, TI-RTOS, Linux (with real-time patch)
- Option packages available for:
    - DLR (announce based) on all platforms
    - DLR (Beacon based) on Renesas RZx and Texas Instruments Sitara
    - IO-Link Integration

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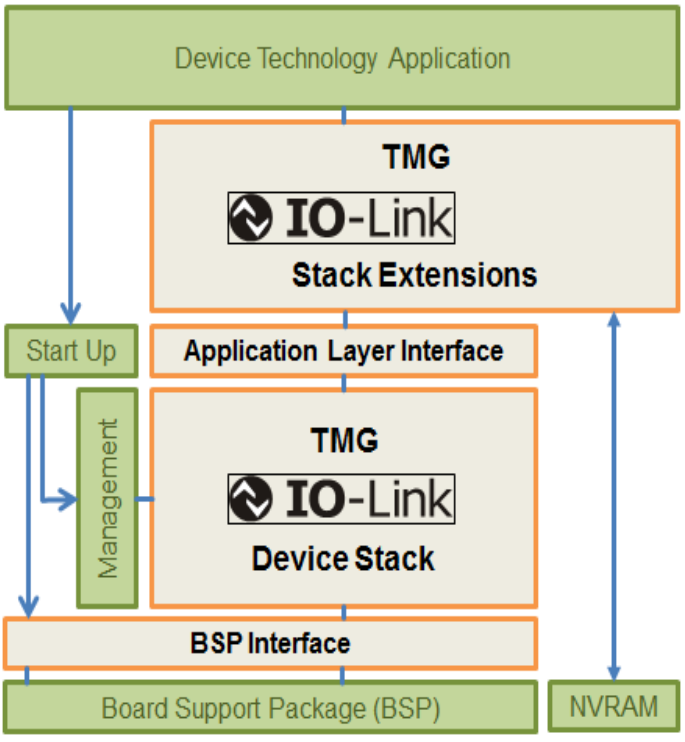
IO-Link Device Software

With the very comfortable TMG TE IO-Link Device Software, simple to complex IO-Link devices can be realized on all platforms in a very short time.

- IO-Link Device Software conformant to the latest IO-Link Specification (V1.1.4)
- Supports all telegram types and bit rates
- Backward compatibility to IO-Link V1.0
- Easy integration on all microcontrollers (8/16/32 Bit)
- Works with all IO-Link transceivers
- Very small footprint
- Application framework available
- IO-Link Device Firmware Update available



IO-Link Device Stack

The Stack implements the IO-Link communication interface and provides the entire IO-Link functionality for this purpose.

IO-Link Device Stack Extensions

The Stack Extensions implement the IO-Link related Device application with:

- Parameter Manager, Data Storage, Block Parameterization, Event Dispatcher, Device Status and Detailed Device Status, Parameter Consistency Check, Application-Reset and Back-to-Box commands

IO-Link Device Firmware Update

- according to the current IO-Link Profile BLOB Transfer & Firmware Update

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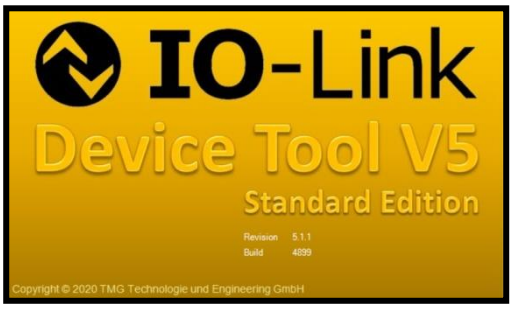
TMG IO-Link Device Tool V5 - SE

Standard Edition

- includes TMG USB IO-Link Master V2 SE



The TMG USB Master V2 SE is done for all use cases where a fieldbus IO-Link master is to complicated and need to much additional staff.

This version is foreseen for demonstration or pre parameterization.

Protocol implementation and tooling is according to the newest IO-Link specification.

The software used for fieldbus masters and IO-Link master modules of remote IO systems has the same basis. By using the tool with its IODD interpreter for certification testing it is the best known tool for IO-Link.

Gladly we offer brand label agreements for the USB IO-Link master V2 including software.

- Intended for service and sales
- Parameterization, observation and diagnosis of IO-Link devices
- IODD interpreter for IODD V1.0.1, V1.1 and V1.1.4
- Free published interface for graphical user interfaces for IO-Link Devices
- Support of IODDFinder, Firmware Update
- IO-Link Safety Extension available
- Can be used without external power supply (USB -> 24V / 80mA)
- External power supply with international adapters if more current is needed

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TMG USB IO-Link Master V2 – DLL

Library for using the TMG USB IO-Link Master V2 SE with own software on Windows PCs.

The most important applications are

- End-of-line testing, configuration and calibration in the production
- System testing
- Applications in laboratory operations where PLCs are not often used

Technical data

- Can be used with C, C# and Visual Basic (.NET)
- Compatible to TMG USB IO-Link Master V2 SE and TS
- Windows 10 and 11 (32Bit and 64Bit applications)

Note 1: The TMG USB IO-Link Master V2 SE is not part of the delivery.

Note 2: The device should not be used for general automation tasks, as the USB interface is not suitable for this.

TMG USB IO-Link Master V2 - IOLS – DLL

Library with IO-Link Safety Extension for using the TMG USB IO-Link Master V2 SE for system test and end-of-line testing, configuration and calibration in the production.

- Technical data like standard DLL
- Workstation license with security functions to prevent misuse for functional safety applications

Important: The software and the TMG USB IO-Link Master V2 SE/TS are fully compliant to the IO-Link Safety communication but not compliant with IEC 61508. It is not allowed to use the software and the device in functional safety applications!

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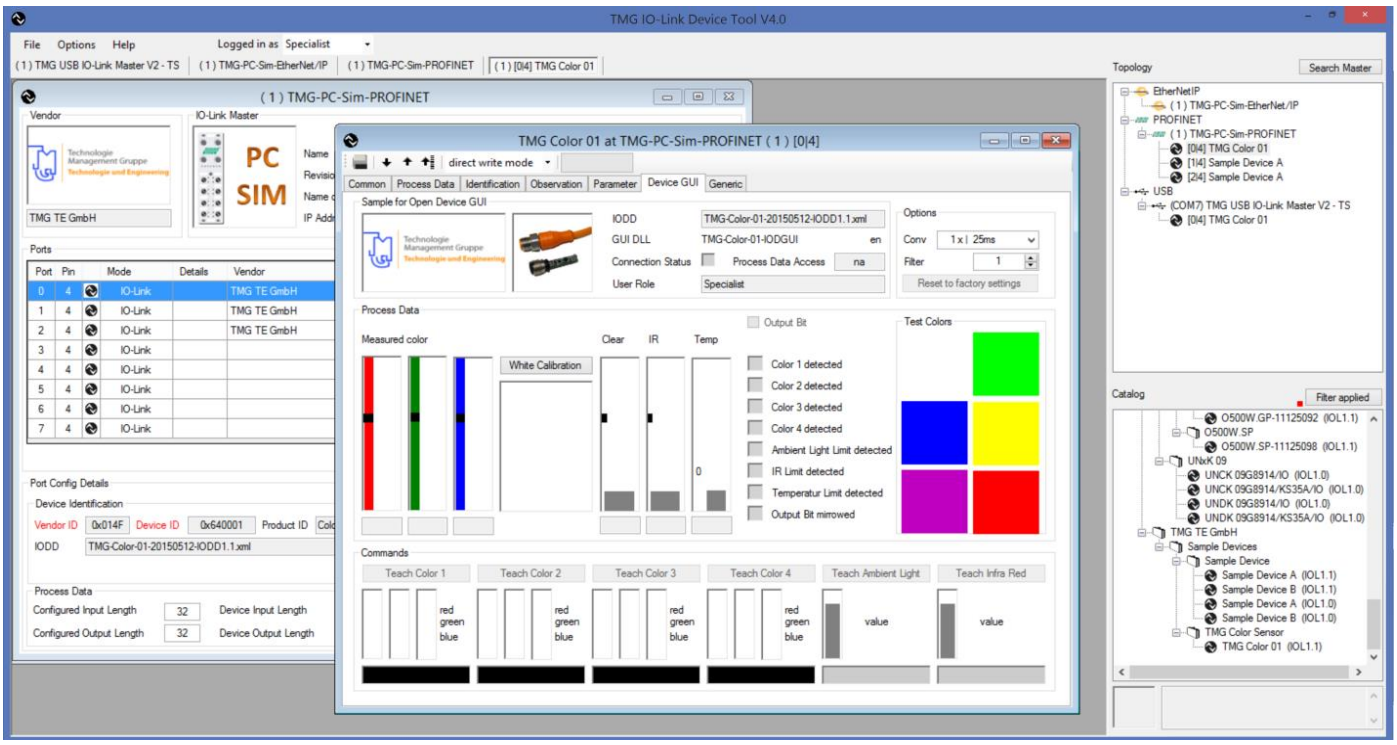
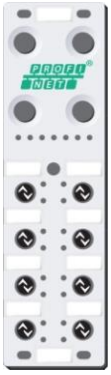
TMG IO-Link Device Tool V5.1

IO-Link

- IO-Link Engineering Tool
- Configuration of IO-Link Masters across manufacturers
- Parameterization of IO-Link Devices via IODD V1.0.1, V1.1 and V1.1.4
- Open IO Device GUI (graphical user interface)
- IO-Link Safety supported
- Stand alone PC Tool or integrated in TIA Portal from Siemens

TOOL CALLING INTERFACE





- Customizing available

  Special features of masters and devices can be added by master and device GUIs which can be imported into the tool
- The Open IO Device GUI is open and published by TMG
- For Master Integration we offer our cooperation
- License Models:
  - Single license (PC based or on dongle)
  - Flat rates available for OEM versions

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TMG IO-Link Device Tool V5 - PE - Professional Edition

- For IO-Link masters of several manufacturers and for all IO-Link devices.
- Today we support more than 100 different Masters from about 20 manufacturers
- The cross-manufacturer, cross-device and cross-fieldbus version follows the requirements of large IO-Link users.

Master manufacturer and fieldbus crossing operation

- Executable as independently Windows application
- Integration into PLC engineering tools like TIA Portal

IO-Link master / port configuration

- Operation of IO-Link master without PLC possible
- Master Plug-In for customizing
- Data Storage content transfer and storage
- Multiple Communication interfaces available

OEM Version available!

IO-Link device operation and observation

- IODD V1.0.1 / V1.1 / V1.1.4 interpreter
- All IO-Link devices world-wide without restriction
- Open IO Device GUI (Extension for graphical user interface)
- IODD Viewer
- IO-Link Device Firmware Update Support
- IO-Link Safety (parameterization and commissioning)
- IODDfinder Support

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TMG IO-Link Device Tool V5 - TS - Test System - incl. TMG USB IO-Link Master V2 TS

IO-Link

This version is foreseen for conformance testing and prescribed from the IO-Link Community for manufacturer declaration.

- Device Test System
  - Additional features to the Standard Edition:
    - Trace of IO-Link communication
    - Execution of test cases according to the IO-Link Test Specification V1.1.4
    - Test of IO-Link devices V1.1.4 and V1.1.2
    - Common Profile test
    - Test configuration from IODD
    - Creates test report for manufacturer declaration
    - Easy to use, also for system integrators
    - Option packages available:
      - IO-Link Safety Device Test System
      - FW-Update Profile

  - **The Test System is based on the IO-Link Engineering Tool for masters and devices, which is the most widespread. It includes the full blown IODD interpreter and an interface for graphical user interfaces for IO-Link Devices.**

TMG USB IO-Link Master V2 - EMC Test Master

This version is foreseen for testing the IO-Link specific EMC robustness tests.

- The test runs independent from a PC
- Powered from 5V USB + 24V external Power Supply
- Test configuration by Application Specific Tag

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Edition	TMG IO-Link Device Tool			TMG USB IO-Link Master V2 - EMC
	Standard	Professional	Test-System	
Software included				
TMG IO-Link Device Tool V5.1 - SE	●	-	-	●
IO-Link Device Tool V5.1 - PE	-	●	-	-
TMG IO-Link Device Tool V5.1 - TS	-	-	●	-
Unique Software functionality				
Support of IO-Link Masters from different manufacturers	-	●	-	-
Test Engine to perform the IO-Link Protocol Test	-	-	●	-
IO-Link specific EMC Test Firmware	-	-	-	●
Basic Software functionality				
According to O-Link and IODD specification V1.1.4	●	●	●	●
IODD standard V1.0.1, V1.1 fully supported	●	●	●	●
TMG IO-Link Master Support	●	●	●	●
IODD Viewer	●	●	●	●
IODD Finder	●	●	●	●
IODD Interpreter	●	●	●	●
IO-Link Device Firmware Update	●	●	●	●
Process data Scope	●	●	●	●
Generic Dialog	●	●	●	●
Scope function	●	●	●	●
Online and offline project engineering	●	●	●	●
Open IO Device GUI	●	●	●	●
Hardware included				
TMG USB IO-Link Master V2 - SE	●	-	-	-
TMG USB IO-Link Master V2 - TS	-	-	●	-
TMG USB IO-Link Master V2 - EMC	-	-	-	●

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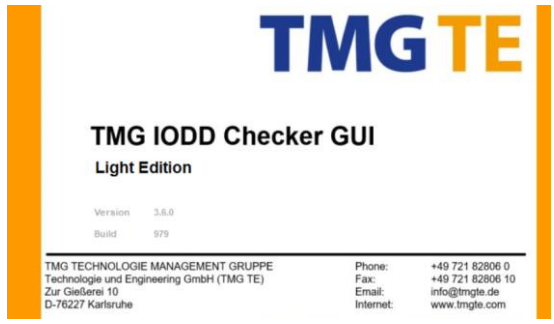
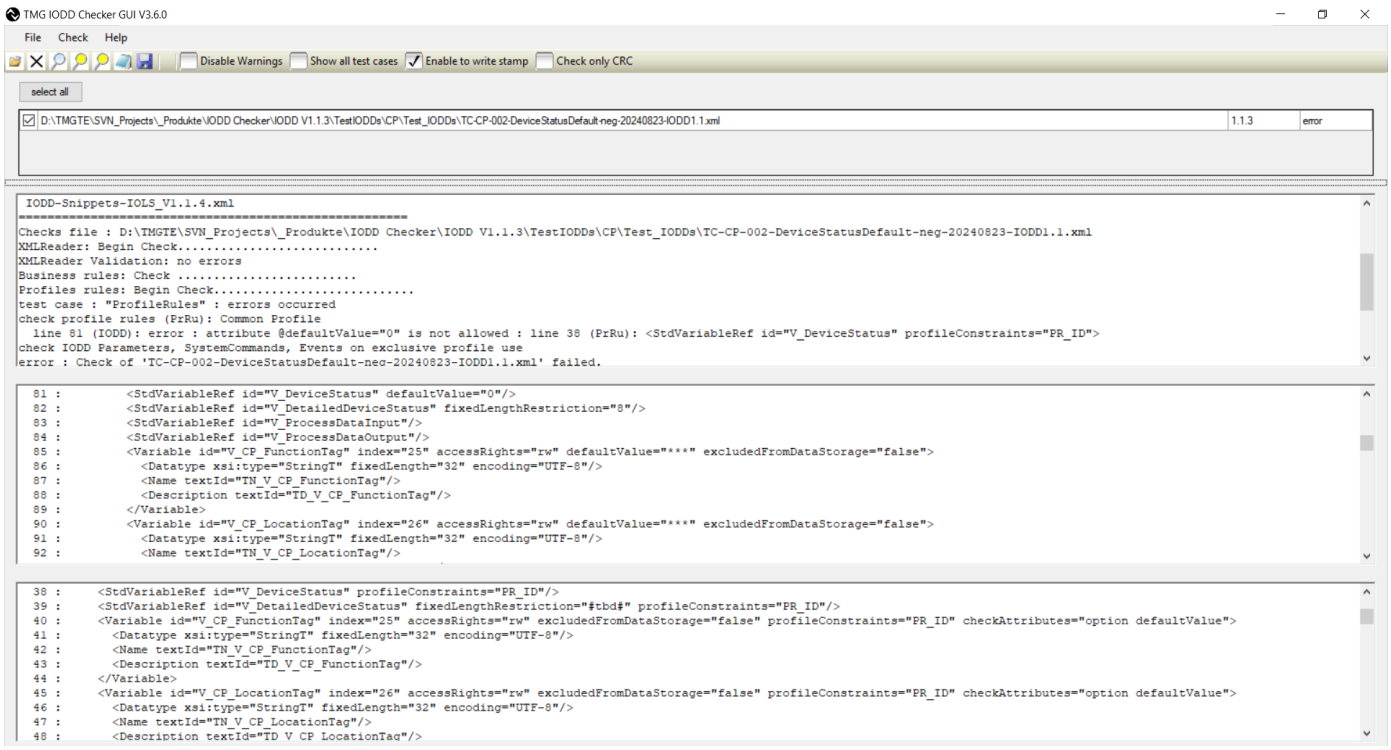
TMG IODD Checker GUI

The TMG IODD Checker GUI is a Windows interface for the IODD checkers of the IO-Link community.





- Contains all valid IODD Checkers
- Automatically selects the correct IODD Checker
- If you double-click on the error line, the Checker GUI automatically opens the IODD and, from IODD-V1.1.3-Checker-V1.1.12 on, also the corresponding IODD snippets at the specified line
- The IODD window is not an XML editor but easy changes like deleting superfluous texts can be made here
- The Light Edition is available for free for our customers
- The Development Edition which supports additional test and code generation (like Profile IODDs) is in preparation and will have work station licenses

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IO-Link Master Software

- **Support of all IO-Link functionality**
- **According to IO-Link specification 1.1.4**
- **Data storage functionality included**

- All bit rates: 230.4, 38.4, 4.8 Kbit
- All telegram types 0, 1 and 2
- ISDU with 8/16 Bit index and 8 Bit subindex
- Events with and without details
- No restriction in number of ports or performance

- Modular design following the specification
- Strictly separation of protocol stack, application and hardware abstraction
- API follows the IO-Link Standardized Master Interface (SMI)
- Includes SMI-TCP protocol stack for engineering, IT and test
- Written in ANSI-C

Ported to (samples)

- Rx, V850, 78K0R
- ARM9, STM32, Sitara AM2,3,4,6 / AMIC, NetX
- CORTEX M0/M3/M4/H7
- XC 167, PIC32
- Microblaze

Deliveries:

- ANSI-C source code
- SMI-TCP
- Test Adapter
- IOLM-Checker
- Documentation
- Sample application

We also assist in integrating the test interface for conformance testing, fieldbus mapping and integration with the IO-Link Device Tool.

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IO-Link Master In Design Solution

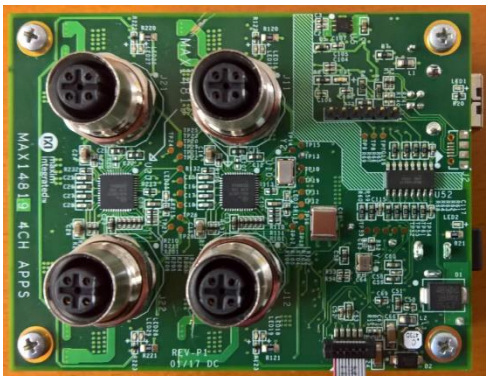
IO-Link

- **Ready to use solution**
- **Reduces your time to market**
- **Proved quality**
- **Pre certified firmware for fixed hardware schematics**
- **4 Port and 8 Port design available**

The concept is to offer pre certified solutions which can be easily integrated. The schematics contains all necessary elements for a full usable IO Link V1.1.4 Master. The IO-Link Master controller is connected to its host controller via a serial interface (SPI). All software is delivered as binary code. ANSI-C source code is available as an optional package. The firmware (binary code) can be used as it is.

Characteristics:

- Flash handling for data storage
- TMG IO-Link Master Stack V1.1.4
  - Data storage functionality included
  - IO-Link cycle time 400 µs
  - All bit rates (230,4k / 38,4k / 4,8K).
- IO Ports for Pin2 (I/O or diagnostic)
- Firmware download over SPI
- TMG SPIAPI interface
- Host Library as ANSI-C source code
- Test report for binary code is available
- Available with STM32F411, STM32G4
- Can be evaluated with
  - MAXIM MAXREFDEF165#
  - Board with STM32G4 available soon



Maxim Reference Design
4 Port Demonstrator

maxim integrated | NOW PART OF ANALOG DEVICES

The interface is based on a SPI sum telegram. Because of this technology only one SPI interface with one chip select for up to 8 SIP chips is necessary. Optional a daisy chain addressing can be implemented for modular systems. The host library is delivered as ANSI-C source code and can be ported easily to different host controllers. Host controller requirements:

- SPI interface (4 pins)
- DMA for send and receive
- Up to 8 SIP modules addressable (16 IO-Link Ports)

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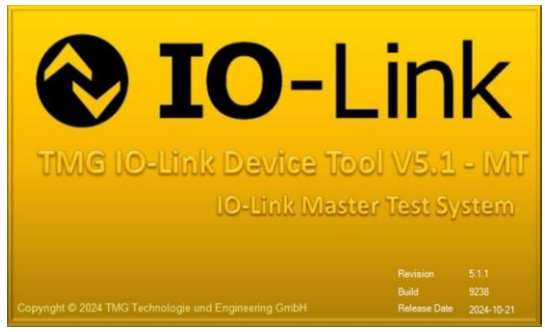
TMG IO-Link Device Tool V5.1 - MT
IO-Link Master Test System



This edition is foreseen for conformance testing of IO-Link Masters and approved from the IO-Link Community for manufacturer declaration.

- Execution of test cases according to the IO-Link Test Specification V1.1.4
- Test of IO-Link Masters V1.1.4
- Creates test report for manufacturer declaration
- Easy to use

- Supports multiple communication interfaces for test
  - STCS as test protocol from the test specification
  - SMI-TCP for much more comfortable testing
  - Others like PROFINET are in preparation
- Includes TMG USB IO-Link Master Tester Unit

The Master Test System is based on the IO-Link Device Tool V5.1 for masters and devices, which is the most widespread.

Any of the protocols used for testing except STCS can also be used with the IO-Link Device Tool V5.1 as an IO-Link engineering tool. STCS is designed for testing only and does not have the necessary functions for engineering.

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TMG IO-Link Master Test Device

The TMG IO-Link Master Test Device is intended for the system test of IO-Link masters. Especially for borderline cases there are no, only few or sometimes expensive IO-Link devices. Therefore TMG TE has developed the IO-Link Master Test Device. This provides a selection of different IO-Link configurations, which should simplify the system test and realize a good test depth. We always recommend to perform the protocol test first with the specified test system and after passing the test to perform the system test with TMG IO-Link Master Test Devices on all ports.

Set test configurations

Test Device realizes the different test configurations by device compatibility or by parameterization. So there is no need to load a new firmware to set a new test configuration.

Test Configurations

First of all, there are 36 test configurations to choose from. If you add the compatibility with IO-Link V1.0, then there are almost twice as many.

IO-Link	V1.1 compatible with V1.0 V1.1 not compatible with V1.0 V1.0	**Pre Operate– On-Request Data**	1, 2, 8, 32
ISDU	with and without	**Operate – On-Request Data**	1, 2 ,8, 32
Bitrate	COM1, COM2, COM3	**Events**	enable/disable
MinCycleTime	400 µs to 132.8 ms	**Parameter**	
Process Inputdata	0 to 32 Bytes	**DirectParameters_2**	DirectParameterOverlay
Process Outputdata	0 to 32 Bytes	**ISDU**	Commands Simple Data Types RecordT ArrayT
Process data simulation	cyclic or static		

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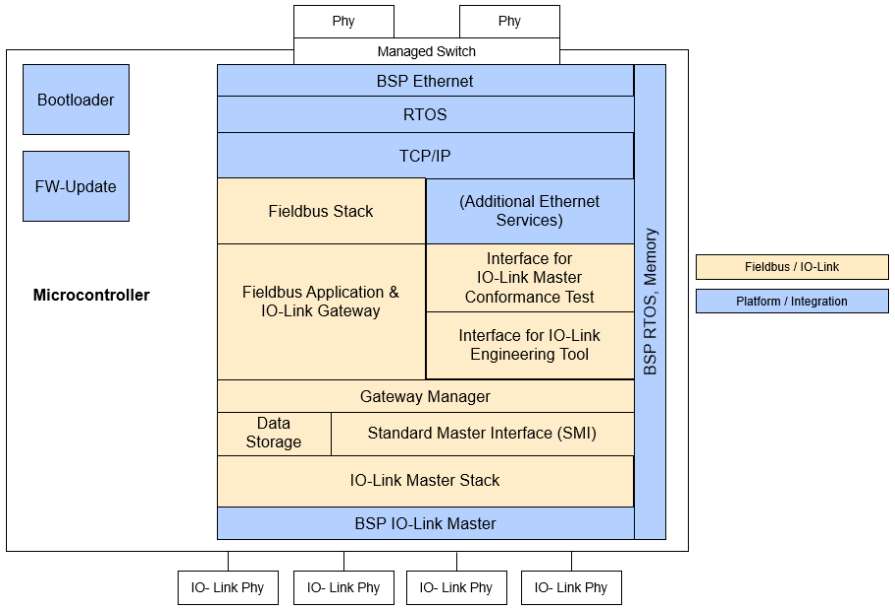
IO-Link Gateway Solutions

When developing IO-Link masters, not only the respective fieldbus stacks and the IO-Link master stack are required, but also the gateway application that maps the fieldbus to IO-Link.

The ready-made gateway applications from TMG TE implement the available integration specifications. Where they are not complete or up-to-date, we have supplemented them accordingly.

Manufacturer-specific extensions have been taken into account so that they can be easily supplemented.



- For PROFINET and EtherNet/IP the stacks from TMG TE are used
- For EtherCAT we use the EtherCAT stack of the ETG / Beckhoff
- We also support the development of IO-Link Safety Masters
  - Certified IO-Link Safety Libraries available

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IO-Link Virtual Device Concept

IO-Link virtual

Decentralization helps to structure systems better and improves performance. However, the available solutions are very manufacturer and fieldbus specific.

The IO-Link Virtual Device concept from TMG TE offers an approach that uses the standardized integration of IO-Link into higher-level systems and thus also the user's know-how in dealing with IO-Link and the IODD.

The pre-processing function is represented as a virtual IO-Link device. The "function blocks" look like additional ports and are described by IODDs.

- Standardized pre processing
- Integration via IODD
- Applicable for local technology functions
- New catalog category in the tool
- New communication profile to
  - configure the ports to be preprocessed
  - describe the runtime environment

Use Cases:

- Machine technology functions that are to be implemented independently of the higher-level system
- IO-Link for numeric control and motion control
  - Together with time and clock synchronization, applications can be realized here that were previously reserved for EtherCAT or PROFINET CC-C (IRT)
  - Simpler, more cost-effective, open and powerful
- Fieldbus devices (PROFINET, EtherNet/IP, EtherCAT, ….) with a common device engineering based on IODD

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Functional Safety

TMG offers a wide range of safety solutions for different communication protocols.

IO-Link Safety

- The next big step for IO-Link
- TMG TE offers
  - Master and Device Stacks
  - Engineering Tool
  - Offsite Engineering Master
  - Safety Device Test System
  - Safe Gateways to
    - PROFIsafe
    - FSOE
    - and others

In projects

PROFIsafe

- TMG TE offers
  - Black Channel Device Stack
  - Development services
  - based on Siemens PROFIsafe stack

Safety over EtherCAT (FSOE)

- FSOE Master and Device Stack
- Development services

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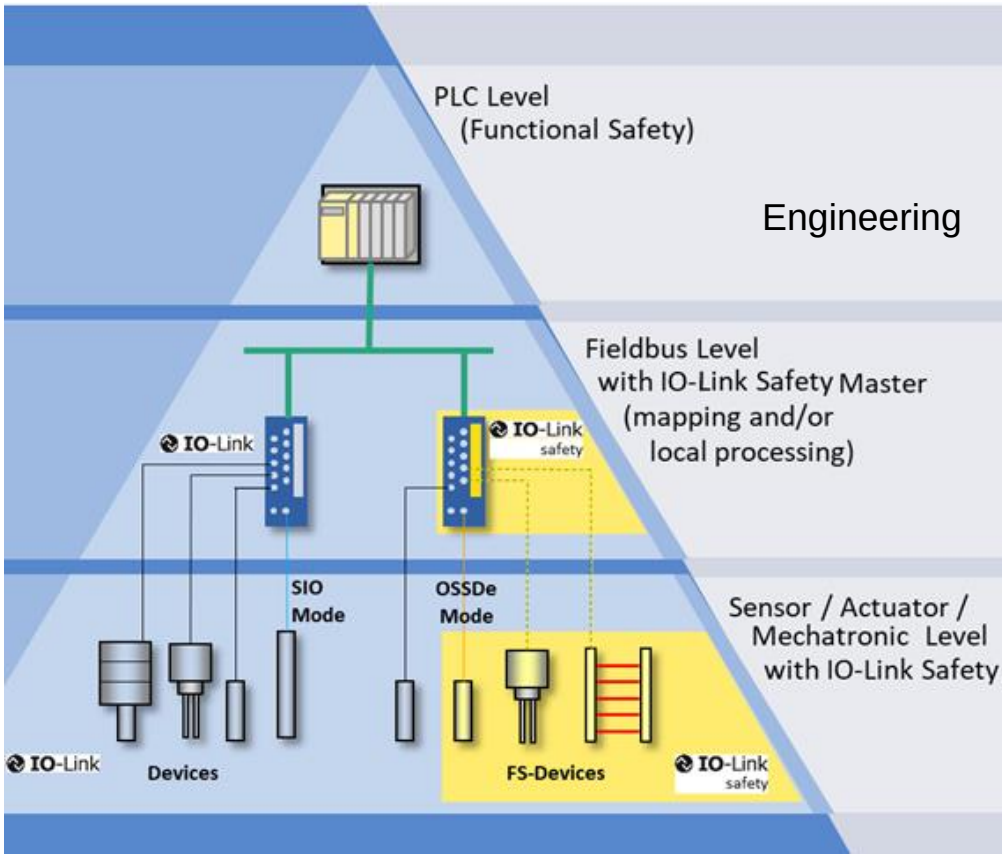
IO-Link Safety Overview

With the new IO-Link Safety Library, IO-Link safety applications can be implemented more easily than ever before. You don't have to do without any of the advantages of the universal and standardized IO-Link interface. On the contrary, you not only use the full scope of all functions of Black Channel communication, but also have a completely safe system in one at the same time.

IO-Link Safety – Complete Technology and Tools from TMG TE



Offer of TMG TE

IO-Link Device Tool V5.1
Open IO-Link Safety Engineering
DTI, DDO
Dedicated Tools

TMG USB IO-Link Master V2 for IO-Link Safety Commissioning

IO-Link Master Stack
IO-Link Safety Master Library
Fieldbus & FSCP – Integration
IO-Link Safety Test Device

IO-Link Safety Development Master

IO-Link Device Software
IO-Link Safety Device Library
IO-Link Safety Device Test System
IO-Link Safety Test Device

Development & Consulting Services

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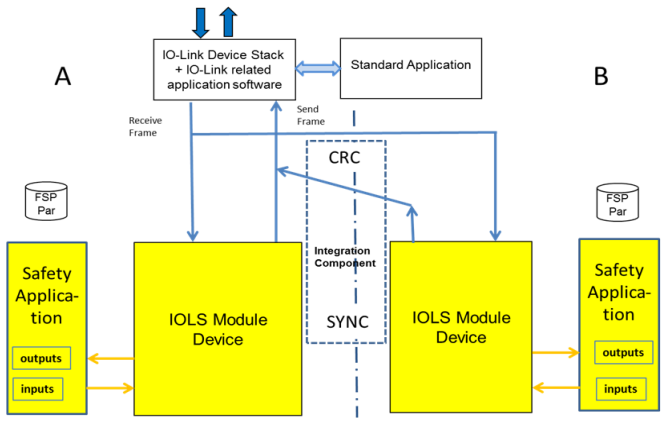
TMG IO-Link Safety Device Library

The library is developed platform-independent and with interfaces that do not place any special requirements on the hardware platform and in particular on the internal communication between the safety controllers. The software is designed for two-channel operation. The safety integrity level SIL 3 can be achieved with the software.

Technical Data

- Supports the IO-Link Safety Specification V1.1.4.
- Easily portable to different platforms
- Consistent separation of safety library (protocol stack) and integration components
- Does not require an operating system
- To check the function together with the development environment and target platform, we supply module test software in addition to the Safety Library, which can be compiled and executed for the target platform. Although this is not mandatory, it is a useful additional measure from our point of view.



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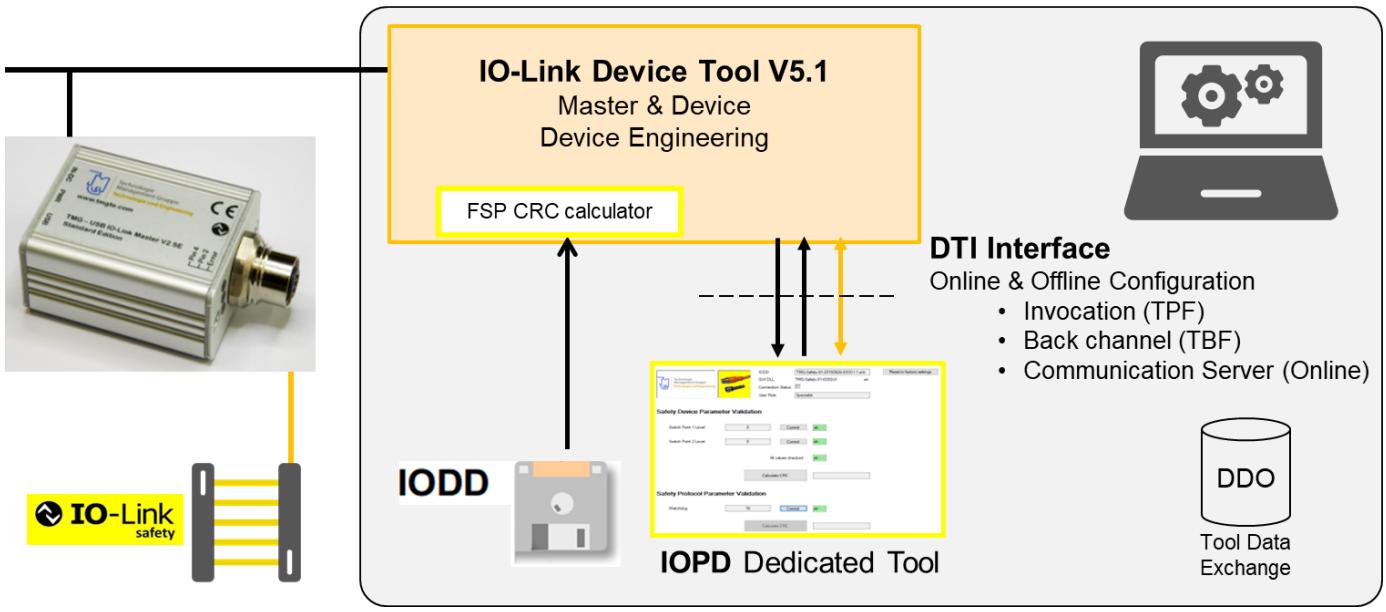
IO-Link Safety - Dedicated Tool

A CRC (Cyclic Redundancy Check) is calculated to protect the safety parameters. A special Dedicated Tool is required for this purpose, with that the safety parameters can be checked, and the CRC can be calculated.

A dedicated tool can communicate with an Engineering Tool via DTI interface. TMG TE has already implemented the DTI interface in the IO-Link Device Tool V5.1 and has also created prototype Dedicated Tools that can be used as the basis for a customer-specific Dedicated Tool. The solution we provide has been certified by TÜV SÜD with a "technical report".



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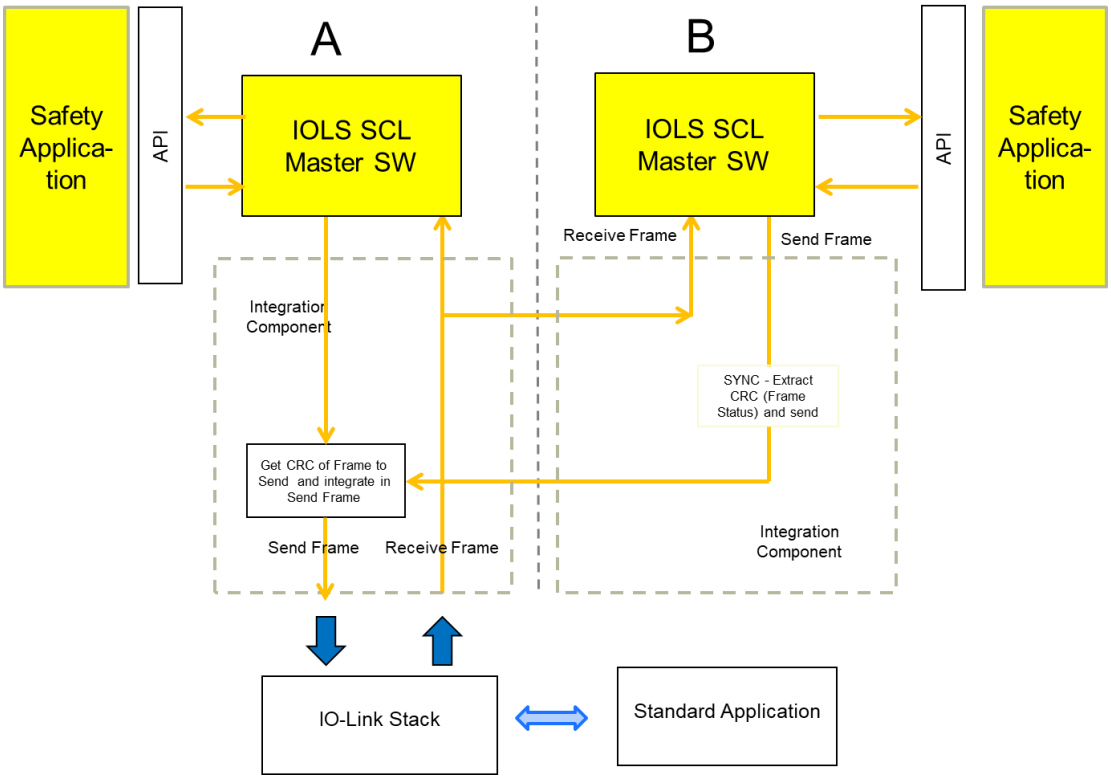
TMG IO-Link Safety Master Library

Safety Library with configuration, verification and SCL layer

- Delivered as certified component
- Portable source code, secured against unintentional change
- Platform and architecture independent approach
  - e.g. 2 or 3 microcontrollers, safe operation system or dual core

User and integration manual with sample integration code

- For synchronization of the safety controllers for SIL 3 design
- Watchdog, Black channel and application interface
- For IO-Link Safety Masters:
  - Standardized Master Interfaces (SMI) for configuration
  - master safety application: FSCP Mapping, Master Test Interface, Safety Application like F-PLC



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TMG IO-Link Safety Test Device

The TMG IO-Link Safety Test Device is intended for the system test of IO-Link Safety Masters and IO-Link safety Engineering Tools. It does not replace the IO-Link Safety Master Test System for the IO-Link safety protocol test, which tests the correctness of the protocol processing on only one port. The cycle time used for this is very long. For the system test, however, the IO-Link safety Master should be tested on all its ports simultaneously, each with different time behavior, protocol modes and process data lengths.

For IO-Link Safety there are no devices available yet and only a few will be available in the foreseeable future. The TMG IO-Link Safety Test Device does not replace the IO-Link Safety Master Test System and accordingly the protocol tests are not performed according to the test specifications. But there is Error-Injection to run through the most important error scenarios. The TMG IO-Link Safety Test Device provides a selection of different IO-Link Safety configurations to simplify the system test and to realize a good test depth.

IO-Link	V1.1.4	**Pre Operate– On-Request Data**	8
ISDU	Standard and FS parameters	**Operate – On-Request Data**	2
Bitrate	COM3	**SIO Mode (OSSDe)**	With and without
MinCycleTime	900, 1600 ms		
Process Inputdata	6, 10 Bytes		
Process Outputdata	6, 10 Bytes		

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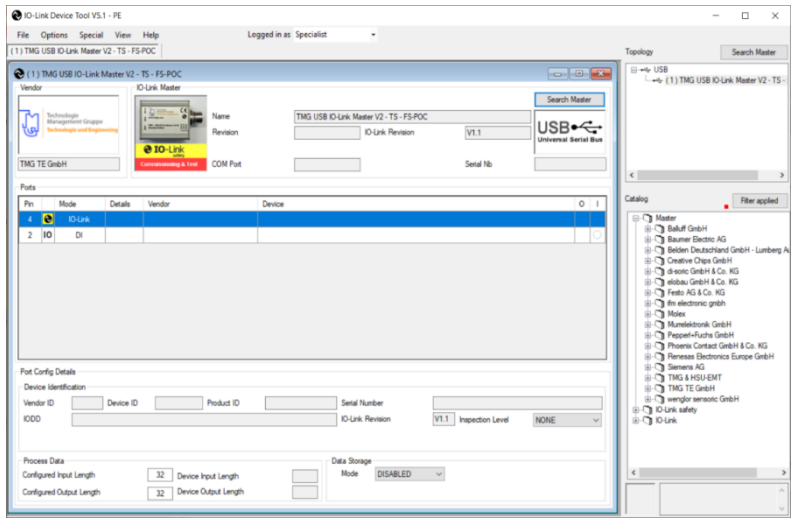
IO-Link Device Tool V5.1 – Option IOLS

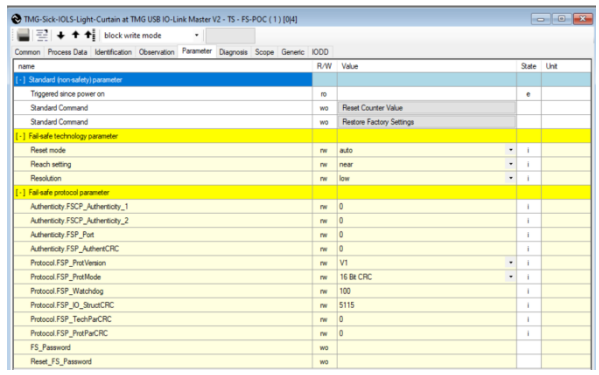
The IO-Link Device Tool V5.1 already supports IO-Link Safety. Our IO-Link Safety Engineering is available as an option package. Our TMG IO-Link Device Tool V5.1 - SE with the IO-Link Safety Engineering Option (IO-Link Device Tool V5.1 - Option IOLS) and the TMG USB IO-Link Master V2 SE (included in the Standard Edition) is a comfortable Tool for pre-parameterization of IO-Link Safety Devices. The safety functions of the IO-Link Safety Devices are fully available in commissioning mode.



With the Professional Edition of the IO-Link Device Tool V5.1 - PE, IO-Link Safety Masters for PROFINET, EtherNet/IP, EtherCAT or others as well as from different manufacturers can then also be configured and the connected IO-Link Safety Devices parameterized and commissioned. Please ask us if you are interested in integrating your IO-Link Safety Master with our tool.

TMG IO-Link Device Tool V5.1 – TS – Option IOLS

For the development and conformance testing of IO-Link Safety devices we offer our IO-Link device test system (TMG IO-Link Device Tool V5.1 - TS), which is already the most widely used for IO-Link devices and is now extended by the IO-Link Safety test option (TMG IO-Link Device Tool V5.1 - TS - Option IOLS).



While the Standard and Professional Editions only support IO-Link safety communication in commissioning mode, the IO-Link safety device can also be operated with the IO-Link safety device test system in so-called "armed mode" for development purposes.

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