TMG TE

FUNCTIONAL SAFETY

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 (in Projects)
  - PROFIsafe
  - FSOE
  - and other

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

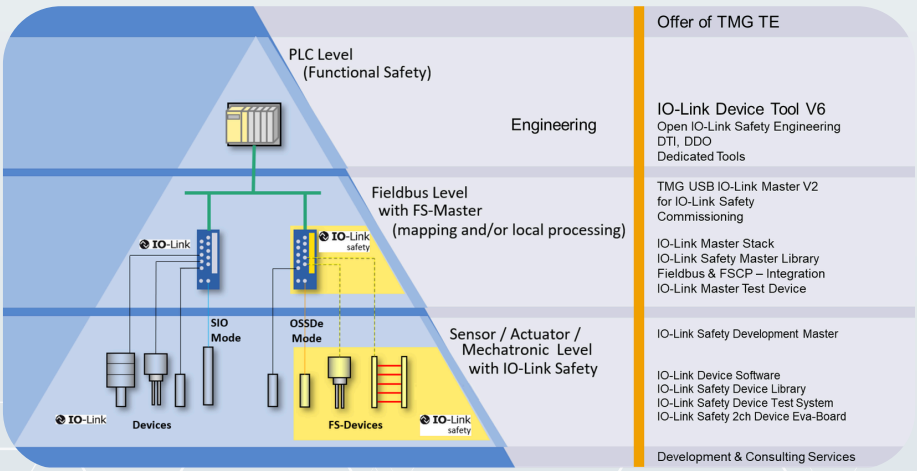
IO-Link Safety Overview

The IO-Link Safety product portfolio from TMG TE delivers a complete set of solutions for developing, commissioning, and validating safe IO-Link systems. It includes software libraries, commissioning and engineering software, protocol testing tools, and integration solutions.

A highlight of the portfolio is the USB IO-Link Master for straightforward PC-based commissioning and diagnostics. The portfolio also encompasses Dedicated Tools for safety-specific tasks, such as parameter support and interfaces (DTI) for safety commissioning workflows.

All products are built on standard IO-Link Safety principles and, where applicable, certified up to SIL 3, enabling reliable and compliant implementation of safety communication in device and master implementations.

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



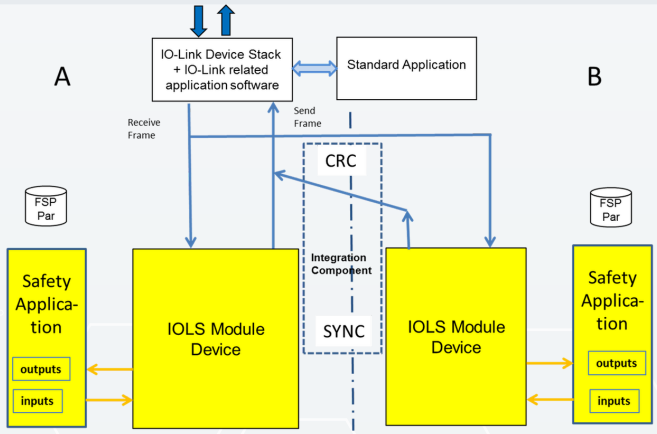
TMG IO Link Safety Device Library

With the 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.

Designed as a platform-independent software solution, the library integrates easily into various hardware environments and supports two-channel architectures, enabling applications up to Safety Integrity Level SIL 3.

Key Features

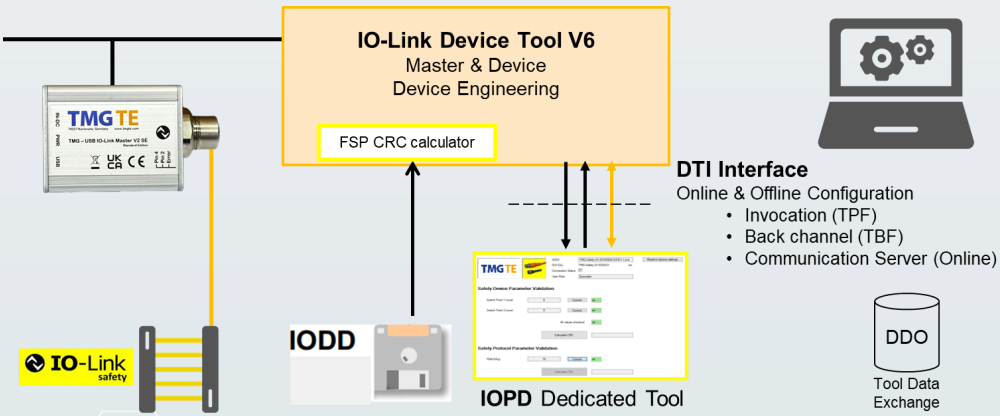
- Certified by TÜV Süd
- Supports the latest IO-Link Safety Specification
- Achieves Safety Integrity Level SIL 3
- Easily portable to different platforms
- Consistent separation of safety library (protocol stack) and integration components
- No operating system required



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 para-meters 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 V6 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".



TMG IO-Link Safety Master Library

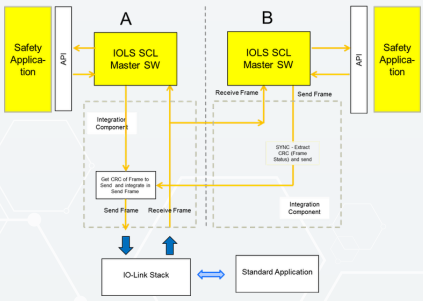
The IO-Link Safety Master Library is a certified software solution for implementing the IO-Link Safety communication protocol on an IO-Link Safety Master. It enables manufacturers to develop safety capable masters that communicate reliably with IO-Link Safety Devices using the standardized IO-Link Safety protocol.

Designed to be platform-independent and highly portable, the library separates the safety communication stack from application integration to simplify adoption into diverse hardware environments. It supports two-channel safety architectures and can achieve Safety Integrity Level SIL 3. The library is TÜV Süd certified, ensuring compliance with safety standards and accelerating development of safety-ready IO-Link masters.

- Certified by TÜV Süd
- Supports the latest IO-Link Safety Specification
- Achieves Safety Integrity Level SIL 3
- Easily portable to different platforms
- Platform and architecture independent approach
  - e.g. 2 or 3 microcontrollers, safe operation system or dual core
- Consistent separation of safety library (protocol stack) and integration components
- No operating system required

Includes 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



TMG IO-Link Safety Test Device

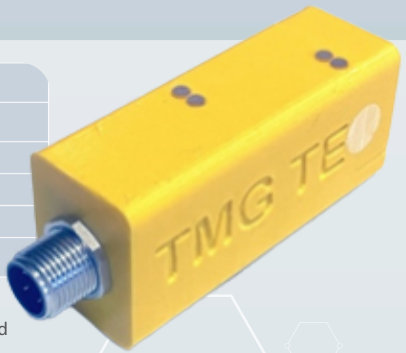
The TMG IO-Link Safety Test Device is a powerful and flexible solution designed specifically for comprehensive system testing of IO-Link Safety Masters and engineering tools. It enables efficient validation by providing predefined IO-Link Safety configurations, helping users achieve high test coverage with minimal setup effort.

While the device is ideal for system-level testing, it is not a substitute for the dedicated IO-Link Safety Master Test System used for protocol compliance testing. For best results, it is recommended to first perform protocol validation using the specified test system, followed by comprehensive system testing with the TMG IO-Link Safety Test Device.

For thorough system validation, IO-Link Safety Masters should be tested across all ports simultaneously, each configured with varying response times, protocol modes, and process data lengths. To achieve this, multiple test devices can be deployed—matching the number of master ports. Built-in error injection capabilities allow users to simulate critical fault scenarios and verify system robustness.

With support for the IO-Link Firmware Update Profile, the device is future-ready—allowing new configurations and enhanced test functions to be added as they become available. This ensures long-term usability and adaptability to evolving testing requirements.

IO-Link	V1.1.4 V.1.1.5	**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		



Important Note

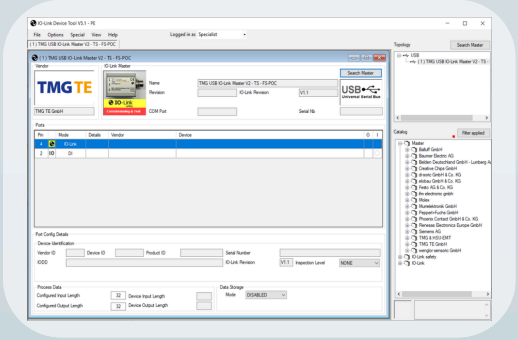
The TMG IO-Link Safety Test Device is intended for evaluation and testing purposes only. It must not be used in functional safety applications.

IO-Link Device Tool V6 - Option IOLS

The TMG IO-Link Device Tool V6 fully supports IO-Link Safety through the optional IO-Link Safety Engineering Package. Combined with the TMG USB IO-Link Master V2 SE (included in the Standard Edition), it provides a convenient solution for pre-parameterization and commissioning of IO-Link Safety Devices.

All safety functions of the devices are fully accessible in commissioning mode. With the Professional Edition (PE), the tool also supports configuration of IO-Link Safety Masters across PROFINET, EtherNet/IP or EtherCAT - even from different manufacturers.

Connected IO-Link Safety Devices can then be parameterized and commissioned seamlessly. For integration of your own IO-Link Safety Master into our tool, please contact us for support and options



TMG IO-Link Device Tool V6 – 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 V6 - 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 V6 - 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.

Get in touch with us!

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