Ixxat®
BY HMS NETWORKS

Functional Safety

Safe2Link Remote IO
Safe2Link Pure IO
Safe T100
CIP Safety and FSoE protocol software

HMS

Why functional safety matters

Why functional safety matters is critical wherever people and machines work together. It ensures machines respond predictably to protect people, equipment, and operations

Keep people safe

When people work near moving, autonomous, or heavy machinery, safety systems must react instantly to prevent injury.

Meet strict standards

Comply with IEC 61508, ISO 13849-1, IEC 62061, and the new EU Machinery Regulation 2023/1230.

Sell in the EU

Without certification, your machines can't legally be sold in the EU market.

Be ready for tomorrow

As safety regulations evolve, our products evolve with them, keeping you compliant without the extra work.

How HMS Networks can help

With over 15 years of experience, TÜV-certified solutions, and expert support, HMS helps you achieve compliance faster and with less risk.

Why choose HMS?
Connect with ease – PROFIsafe, CIP Safety, or FSoE all supported.
Proven technology – TÜV-certified to simplify integration and shorten time to market.
Expert guidance – From concept to production, we're with you every step.
Flexible options – Plug-and-play devices, embedded hardware, or protocol stacks.

"HMS makes it easy to add functional safety — giving you proven technology and the right solution for your application."

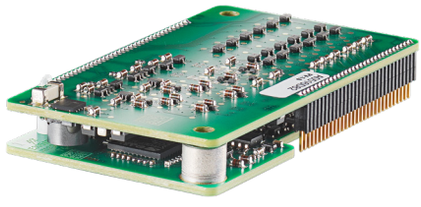
Stefan Kraus
Functional Safety Manager
HMS Networks

Four flexible ways to implement functional safety

Choose the right fit for your application.

Safe2Link Remote IO
Plug-and-play with advanced safety features
Type-approved I/O device with SafeBound™ and SS1-t, mounts directly on your machine, connects via CIP Safety over EtherNet/IP.
Choose when: You want the quickest path to add a safe remote stop or integrate multiple local/remote safety signals with zero custom hardware work.

Safe2Link Pure IO
Embedded I/O board with advanced safety features
Compact, pre-certified safety I/O board with SafeBound™ and SS1-t for OEM integration. Uses the Anybus Black Channel for safe communication via CIP Safety.
Choose when: You need advanced safety functions in an embedded form factor for mobile machines or logistics equipment.



T100 Safety Hardware
Embedded I/O board with standard safety features, multi-protocol
Compact, pre-certified safety I/O board supporting CIP Safety target, PROFIsafe F-device, and FSoE SubDevice. Uses the Anybus Black Channel for safe communication.
Choose when: You want standard safe I/Os with flexibility to match different protocols in factory or mobile automation devices.

Safety Protocol Software
Maximum design freedom for expert teams
Certified CIP Safety and FSoE stacks for integration directly into your own safety hardware.
Choose when: You have in-house expertise to design custom safety hardware and need complete flexibility in device or controller architecture.

Product	Safety Level	Protocols Supported	Certification	Integration Effort
Safe2Link Remote IO	Up to SIL3 / PLe	CIP Safety over EtherNet/IP	Type-approved, ready to use	Lowest
Safe2Link Pure IO	Up to SIL3 / PLe	CIP Safety (Black Channel UART)	Pre-certified HW, re-certification re-quired	Medium
T100 Safety HW	Up to SIL3 / PLe	PROFIsafe (F-device); CIP Safety (target); FSoE (Sub-Device)	Pre-certified HW, re-certification re-quired	Medium
Safety Protocol Software	Up to SIL3 / PLe	CIP Safety (Originator + Target); FSoE (Main + Sub)	Pre-certified soft-ware	Highest

Case Study

Meeting EU safety standards for mobile robots

Customer: Leading Chinese AMR Manufacturer
Industry: Logistics & Mobile Robotics
Region: China → Europe

The Challenge

To enter the European market, the manufacturer needed to meet Performance Level (PL) d and implement safe remote stop functionality, a requirement for AGVs and AMRs operating near people. Their existing systems weren't compliant with EU safety standards, and time-to-market was critical.

Key Results

- 10 months from project start to TÜV-certified product
- Protocol flexibility: Easy to change CIP Safety ↔ PROFIsafe without major hardware redesign
- Lower development effort—no need to master foreign safety standards
- Future-ready for upcoming EU Machinery Regulation changes in 2027

The Solution

- HMS Networks provided a complete, TÜV-certified solution:
- Anybus CompactCom for non-safe communication
- Ixxat Safe T100 for implementing CIP Safety to the drive's safe stop inputs
- Pre-certified architecture for faster approval
- Local support in China from HMS engineers

"Partnering with HMS made it easy to add the safety functions our European customers demand. The pre-certified T100 module saved us months of development and certification time."

Product Manager, Chinese AMR manufacturer

Case Study

Customer success: Easy PROFIsafe integration into safety interlocks

Customer: Fortress Interlocks
Industry: Industrial Safety Systems
Region: UK & Germany

The Challenge

Fortress needed to add PROFIsafe communication to its amGardpro safety interlock series to meet growing demand from automotive manufacturers in Germany. Building a certified solution in-house would have required significant time and resources.

Key Results

- Quick time-to-market with minimal engineering effort
- Streamlined certification process
- Flexible architecture enabled seamless addition of CIP Safety and FSoE — with CIP Safety overtaking PROFIsafe as the most adopted protocol
- Competitive edge in markets demanding integrated safety

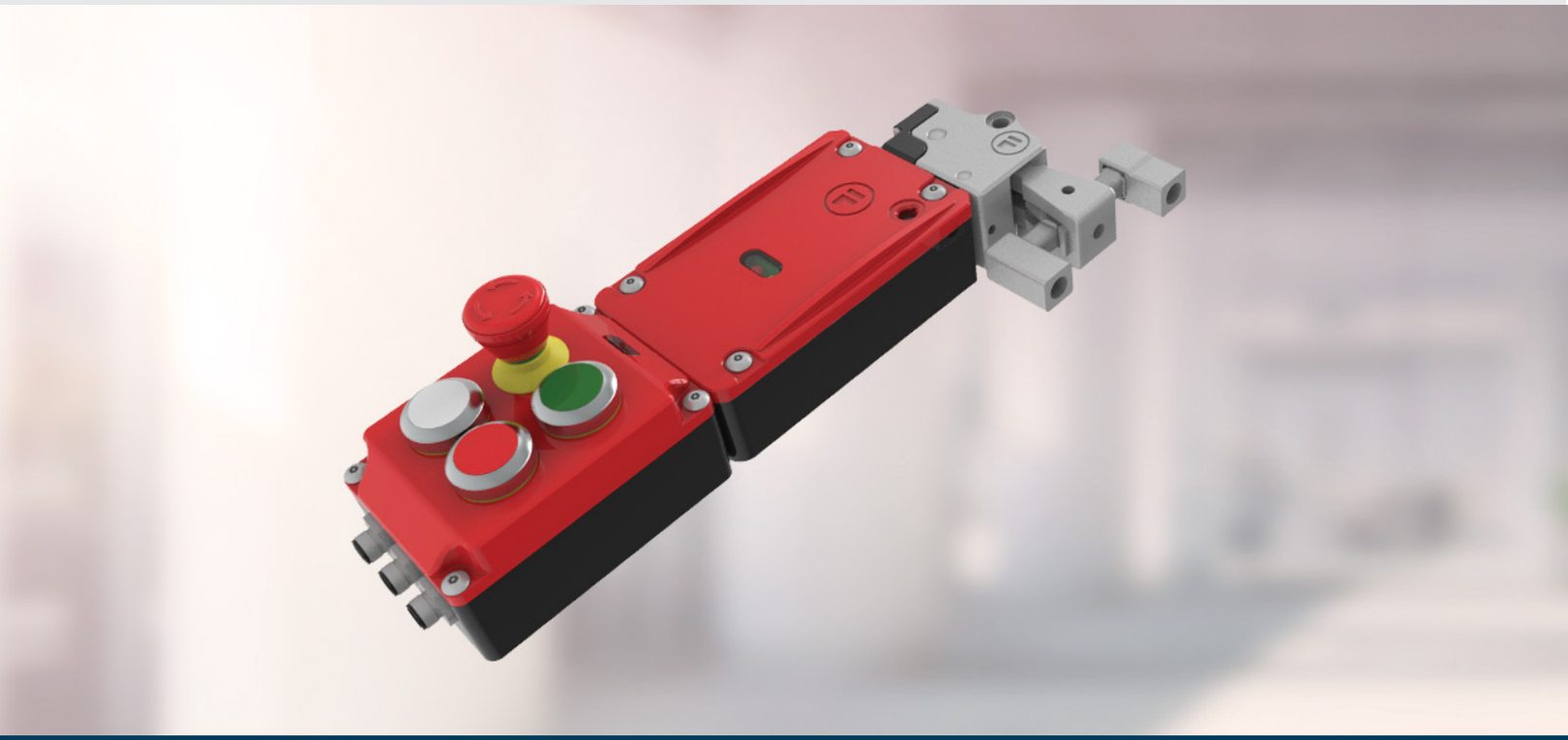
The Solution

HMS Networks enabled fast integration with:

- Ixxat Safe T100 for PROFIsafe I/O signal management
- Anybus CompactCom for PROFINET communication
- Black channel principle to route safety data securely alongside non-safe communication
- TÜV-pre-certified modules to simplify certification

"The TÜV pre-certification has certainly been a big help for us. We could focus on building best-in-class interlocks, while HMS handled the communication with industrial networks."

Rob Johnson, Senior Electronics Engineer, Fortress Interlocks



Anybus Safe2Link Remote IO-CS

The fastest and easiest way to add functional safe I/Os

A compact, plug-and-play I/O device that mounts directly on AGVs, AMRs, and other mobile machines. Connects to factory safety systems via CIP Safety over EtherNet/IP, offering SIL 3 / PLe type-approved safety with advanced features like SafeBound™ and SS1-t.

Best for: System integrators or mobile machine builders needing a fast, reliable way to add functional safety and safe communication of critical signals.

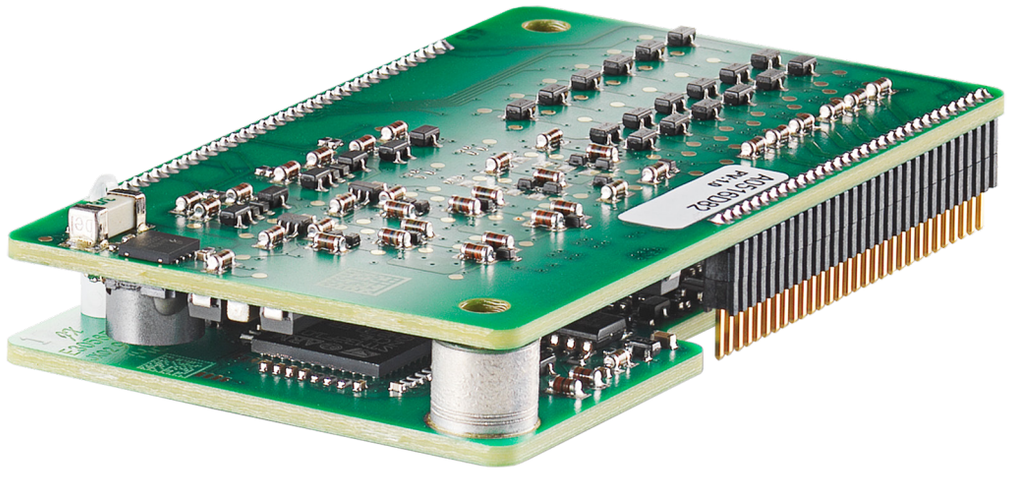
Feature	Details
Safety level	SIL 3 (IEC 61508), PLe / Cat. 4 (ISO 13849-1)
Protocols	CIP Safety over EtherNet/IP
I/Os	3× dual-channel safe inputs, 1× dual-channel safe output, 2× non-safe outputs
Advanced functions	SafeBound™, Configurable SS1-t
Enclosure rating	IP54
Connectors	2× M12 Ethernet, 1× D-Sub25 (power + I/Os)
Dimensions	145.0 x 106.5 x 46.0 mm
Certification	Type-approved, TÜV certified

Anybus Safe2Link Pure IO/ CS

Advanced embedded Safety I/O for Mobile Machines

A compact, pre-certified safety I/O board with SafeBound™ and SS1-t for OEM integration. Uses the Anybus Black Channel for safe communication via CIP Safety and simplifies integration inside mobile machines and logistics equipment.

Best for: OEMs building mobile machines or logistics equipment that require advanced safety functions in a compact, embedded format.



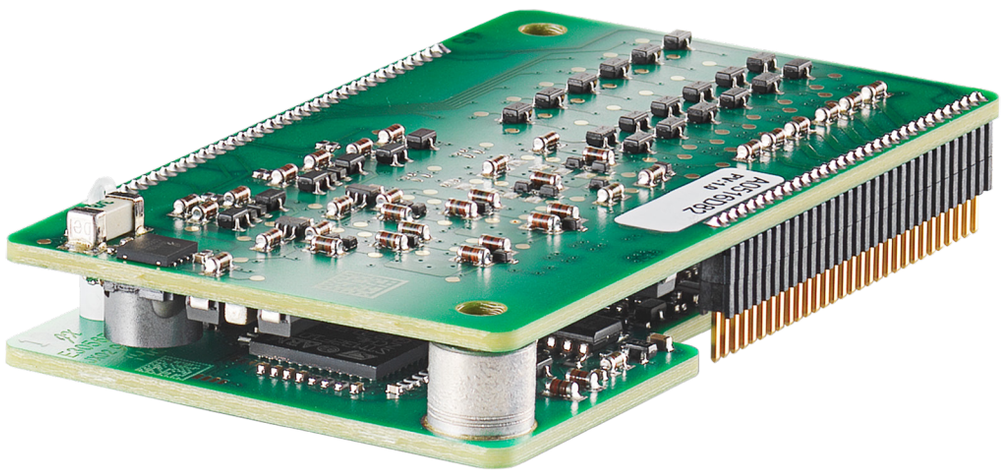
Feature	Details
Safety level	SIL 3 (IEC 61508), PLe / Cat. 4 (ISO 13849-1)
Protocols	CIP Safety over EtherNet/IP
I/Os	3× dual-channel safe inputs, 1× dual-channel safe output, virtual SS1-t output
Advanced functions	SafeBound™, Configurable SS1-t
Form factor	Embedded module, 30-pin male connector
Dimensions	Approx. 70 × 40 × 13 mm
Operating temperature	–30 °C to +68 °C
Certification	Pre-certified hardware, TÜV documentation for re-certification
Integration	Direct connection to Anybus CompactCom via black channel principle

Ixxat Safe T100

Embedded hardware with standard safety features

A compact, pre-certified safety I/O board supporting CIP Safety target, PROFIsafe F-Device, and FSoE SubDevice. Works seamlessly with Anybus CompactCom via the Black Channel principle, enabling flexible integration across factory and mobile automation devices.

Best for: Device manufacturers in factory automation wanting a head start with hardware already built for safety.



Feature	Details
Safety level	SIL 3 (IEC 61508), PLe / Cat. 4 (ISO 13849-1)
Protocols	CIP Safety over EtherNet/IP, FSoE, PROFIsafe
I/Os	3× dual-channel safe inputs, 1× dual-channel safe output
Form factor	Compact module for embedded installation
Dimensions	Approx. 70 × 40 × 13 mm
Operating temperature	–30 °C to +68 °C
Certification	Pre-certified hardware, TÜV approved, easy re-certification for end product
Integration	Direct connection to Anybus CompactCom via black channel principle

Safety Protocol Software

Flexible Safety Communication in Your Own Hardware

Enables direct implementation of CIP Safety and FSoE in your hardware. Supplied as TÜV-approved source code with unit tests and a safety manual, it supports both Target/SubDevice and Originator/MainDevice roles up to SIL 3 / PLe.

Best for: Teams with in-house expertise looking to integrate safety protocols directly into custom hardware designs.

Feature	CIP Safety Protocol SW	FSoE Protocol SW
Safety level	Up to SIL 3 (IEC 61508)	Up to SIL 3 (IEC 61508)
Standards	CIP Safety Specification (current version)	FSoE Spec ETG.5100
Platforms supported	PC demo, pre-tested with ODVA Testlab	PC demo, conformance pre-tested
Integration	Designed for flexible integration on top of existing non-safe EtherNet/IP communication interfaces or software	Designed for flexible integration on top of existing non-safe EtherCAT communication interfaces or software
Key features	Platform-independent, supports multiple CIP Safety connections as Originator or Target, easy porting to different HW/SW platforms, supplied as source code	Platform-independent, supports MainDevice & SubDevice roles in parallel, supplied as source code
Certification support	TÜV-approved, supplied with unit tests & safety manual	TÜV-approved, supplied with unit tests & safety manual

Focus on your area of expertise, leave the networking to HMS Networks!

Did you know?

Network specifications and conformance tests change regularly. With HMS Networks, you don't need to worry about keeping up with these changes, as HMS ensures your safety solutions stay up to date and test-ready.

CIP Safety™

PROFIsafe

Safety over EtherCAT®

Services – development & consulting

Your partner in safety integration

To ensure a smooth installation, we'll support you every step of the way. From providing minimal assistance with the Safe2Link Remote IO (it's plug-and-play — you've got this!) to offering more hands-on help to integrate Safe2Link Pure IO, Ixxat Safe T100, or customize the Safety Protocol Software for your application. Whatever your choice, we've got your back.

Here's how we work with you:

Customer-specific safety engineering process:

Work with HMS.
The number one choice for Industrial ICT - Information and Communication Technology.

HMS Networks - Contact

HMS is represented all over the world.
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