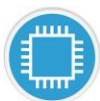
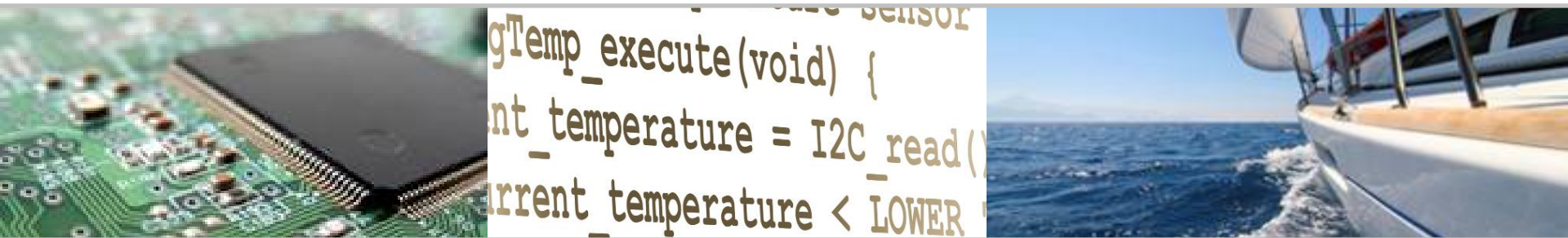


SAFETY DESIGN PACKAGES

Innovative electronics development by experts



... where ideas turn into success!

THE COMPANY



...where ideas turn into success!

MESCO is your partner for innovative software and hardware development in the field of process and factory automation.

We have a unique and comprehensive knowledge in the areas of industrial communication, functional safety and explosion protection.

Benefit from our many years of expert knowledge and our expertise in the development of customer-specific solutions from concept to approval.



OUR RANGE OF SERVICES

Factory Automation & Process Automation

Tailor-made Development Solutions

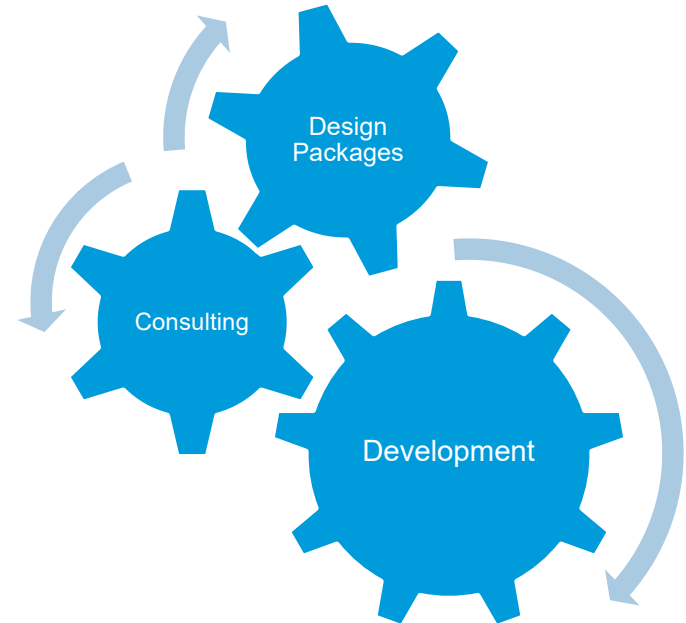
Customized hardware and software development with flexible use of design packages.

Directly applicable DESIGN PACKAGES

Proven circuits and software components for rapid implementation of your development project.

Development Consulting

Development accompanying consulting and coaching in the areas of functional safety, explosion-proof and industrial communication.



OUR OFFERING



Your success is our driving force

Consulting

- Technology Consulting
- Functional Safety Management
- Explosion-proof trainings
- Industrial Communication
- Support in the creation of Requirements

Concept – Architecture

- Creation of the Functional Safety Concept
- Creation of the Explosion-proof Concept
- System Architecture
- Quality Assurance Measures

Development – Design / Implementation / Prototyping

- Hardware Development
- Software Development
- Safety Development
- PCB Layout
- Prototyping
- Type Testing
- Integration Test
- Use of existing Safety Design Packages
- Support of product launching into production

Certification

- Comprehensive Support of the Certification

MESCO SAFETY DESIGN PACKAGES



Overview



Topology & system overview for safe applications

Introduction: MESCO Safety Design Packages architecture

Example of a safety solution based on ST technology

From requirement to product

MESCO SAFETY DESIGN PACKAGES



Overview



Topology & system overview for safe applications

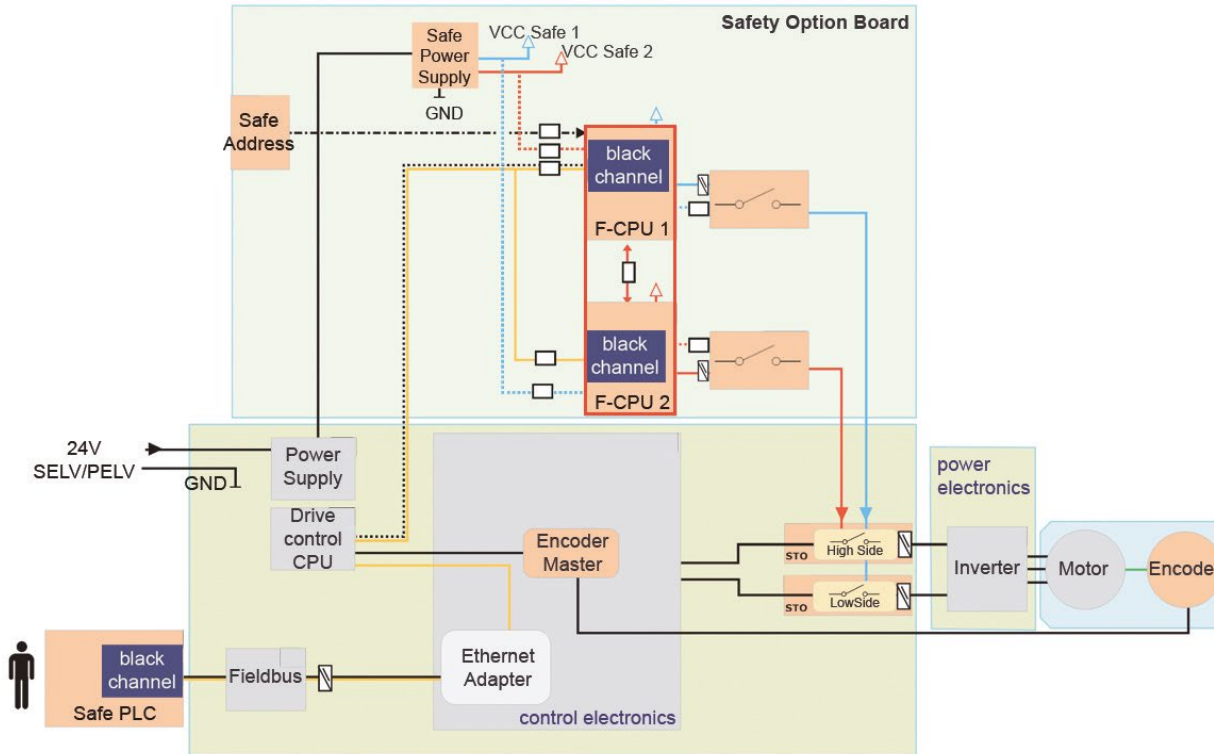
Introduction: MESCO Safety Design Packages architecture

Example of a safety solution based on ST technology

From requirement to product

TOPOLOGY & SYSTEM OVERVIEW

EXAMPLE USE CASE: SAFE DRIVE APPLICATION



TYPICAL ARCHITECTURE OF SAFETY ELECTRONICS

Communication Interface, Safe Core, Safe I/O

Safe I/O

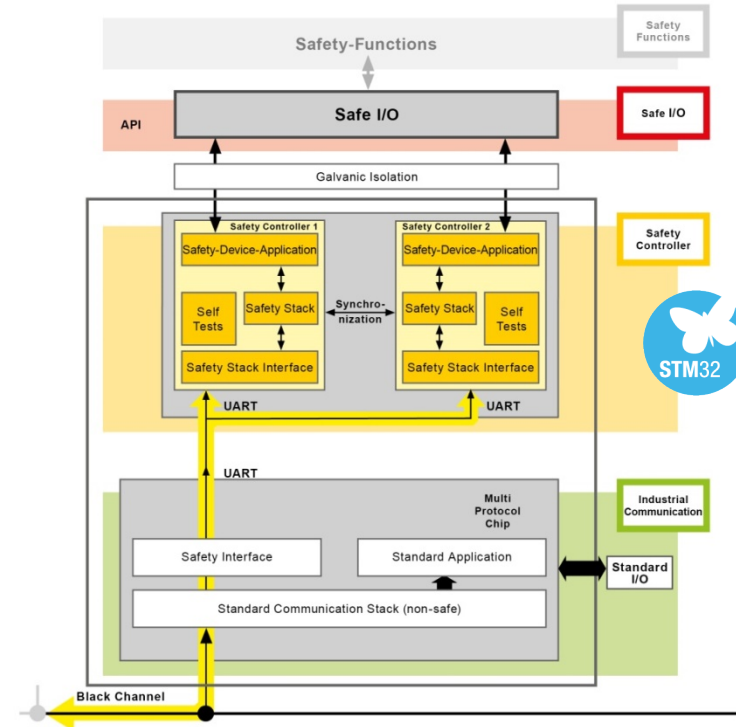
- Safe inputs and outputs
- Safe interfaces

Safe Core

- Packing and unpacking of safe data
- Implementation of safe communication profiles
- Safe Drive Monitor 1oo2 Core architecture with synchronizing
- Activation of safety functions

Communication Interface

- Separation safe / non-safe communication
- Industrial Communication + safe communication based on black channel principle



MESCO SAFETY DESIGN PACKAGES



Overview



Topology & system overview for safe applications

Introduction: MESCO Safety Design Packages architecture

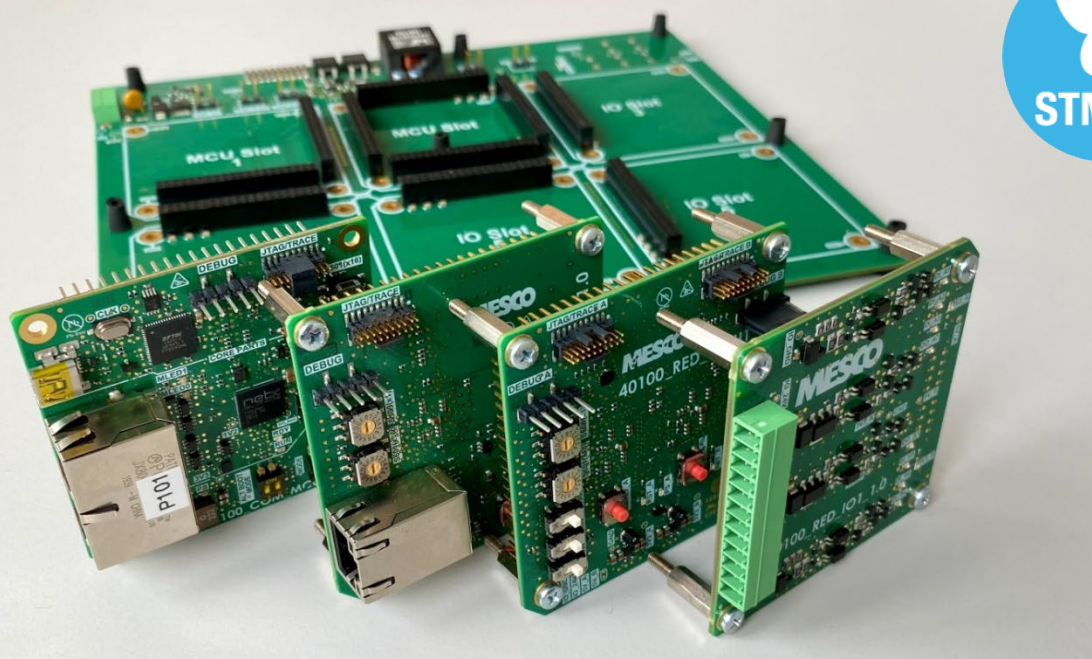
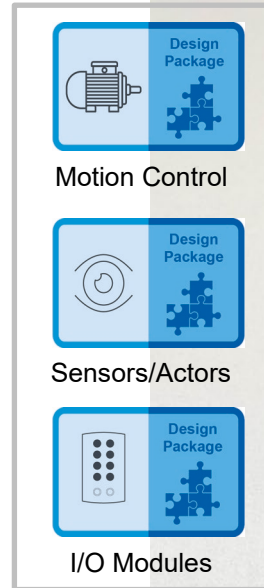
Example of a safety solution based on ST technology

From requirement to product

MESCO SAFETY DESIGN PACKAGES



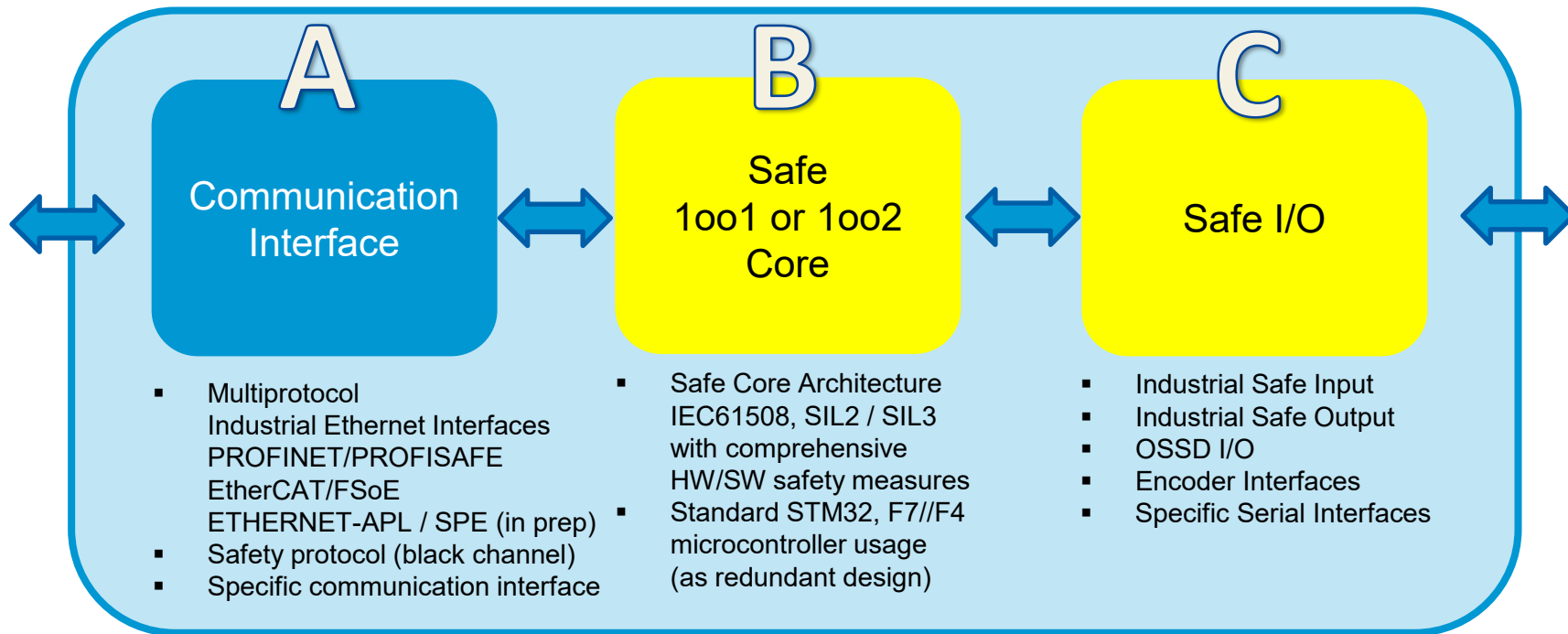
Overview



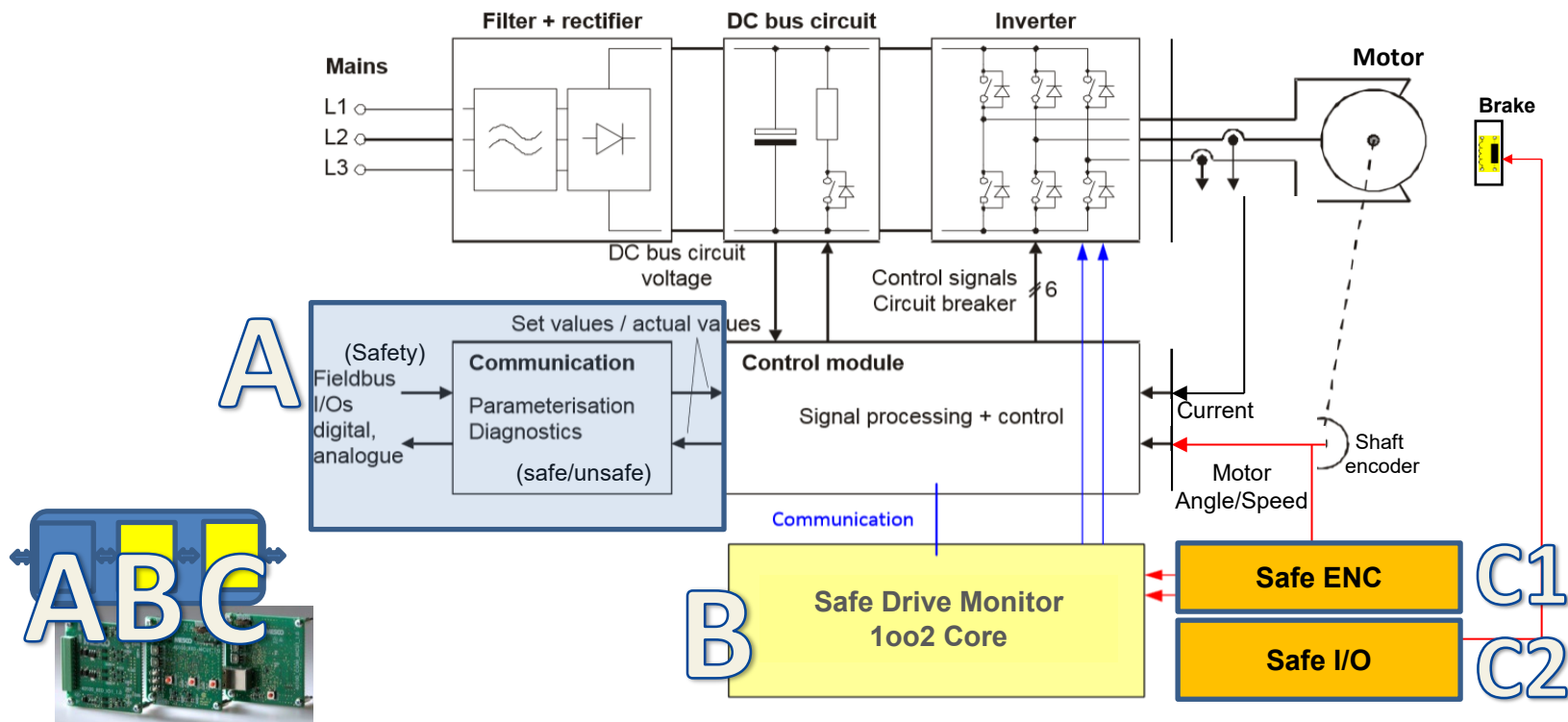
MODULAR SAFETY DESIGN with DESIGN PACKAGES



Architecture / Functional Modules



DESIGN USECASE: SAFE DRIVE MONITOR



MESCO SAFETY DESIGN PACKAGES



Overview



Topology & system overview for safe applications

Introduction: MESCO Safety Design Packages architecture

Example of a safety solution based on ST technology

From requirement to product

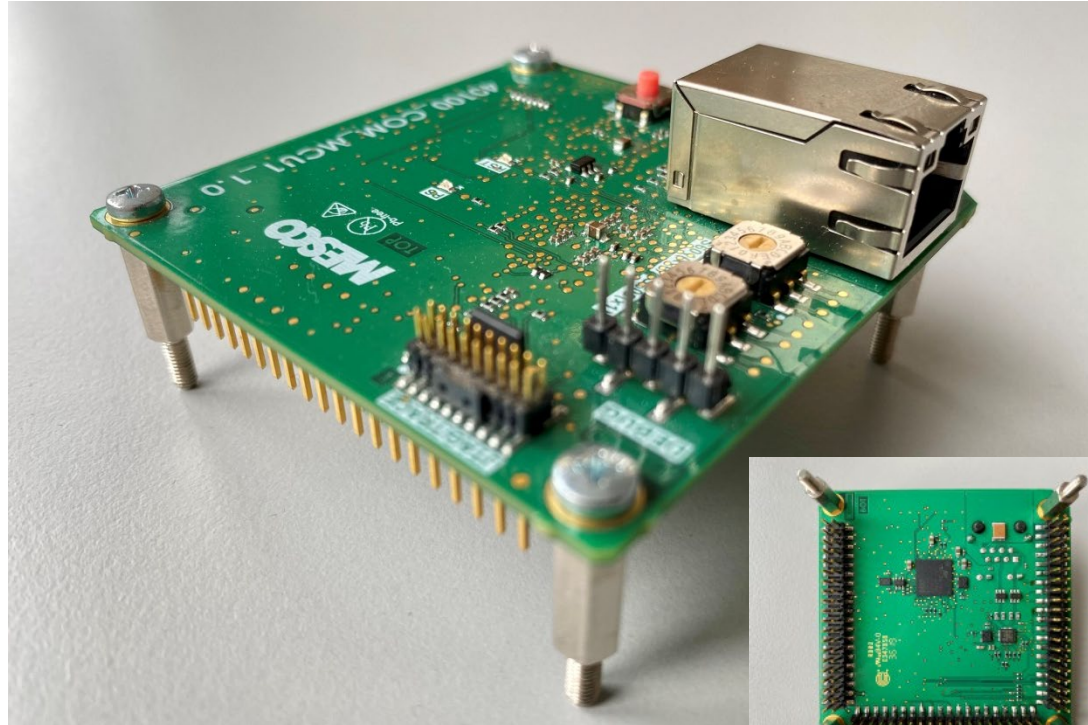
DESIGN PACKAGES MODULES

In Detail



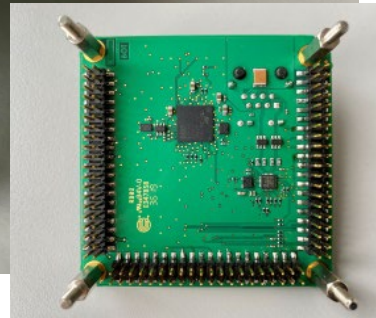
COMMUNICATION MODULE A1

INDUSTRIAL ETHERNET MODULE



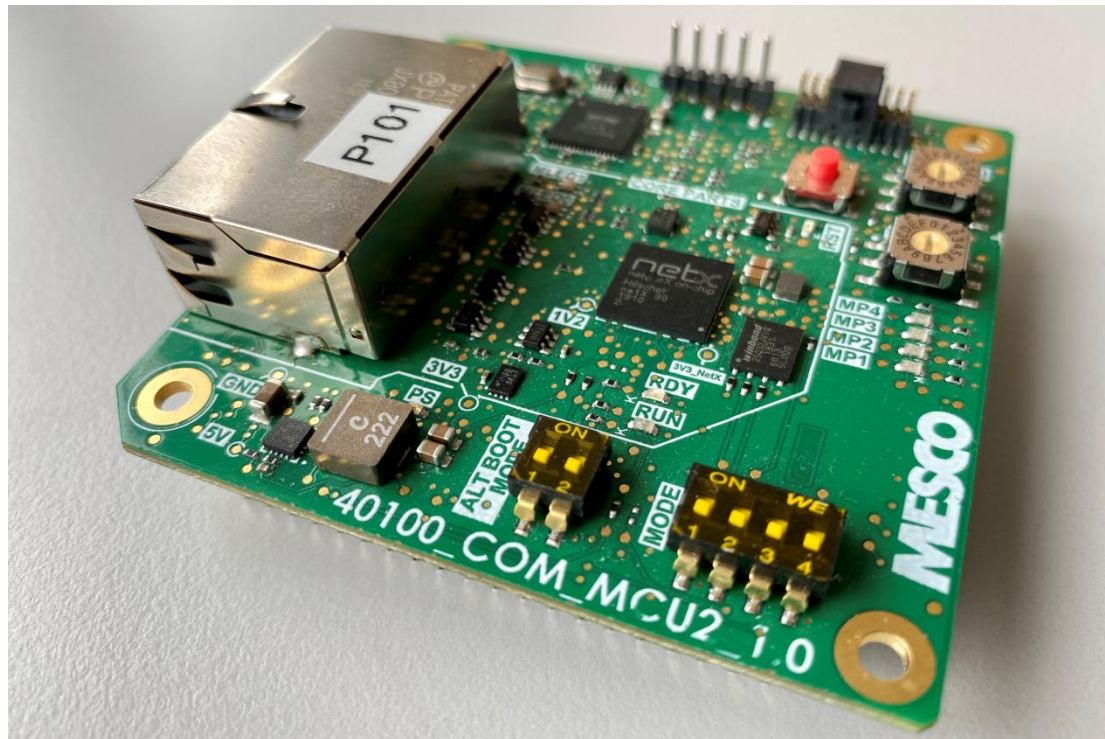
Overview

- Industrial Ethernet, e.g. PROFINET CC-A, CC-B, CC-LINK IE TSN
- Safety protocol support
- Single CPU solution (STM32F4)
- RJ45, 100base TX, 100Mbit PHY
- Address switches
- Debug interface
- NV mem
- Temperature monitoring
- Power supply
- GPIO
- Comprehensive design documentation



COMMUNICATION MODULE A2

INDUSTRIAL ETHERNET MULTIPROTOCOL MODULE

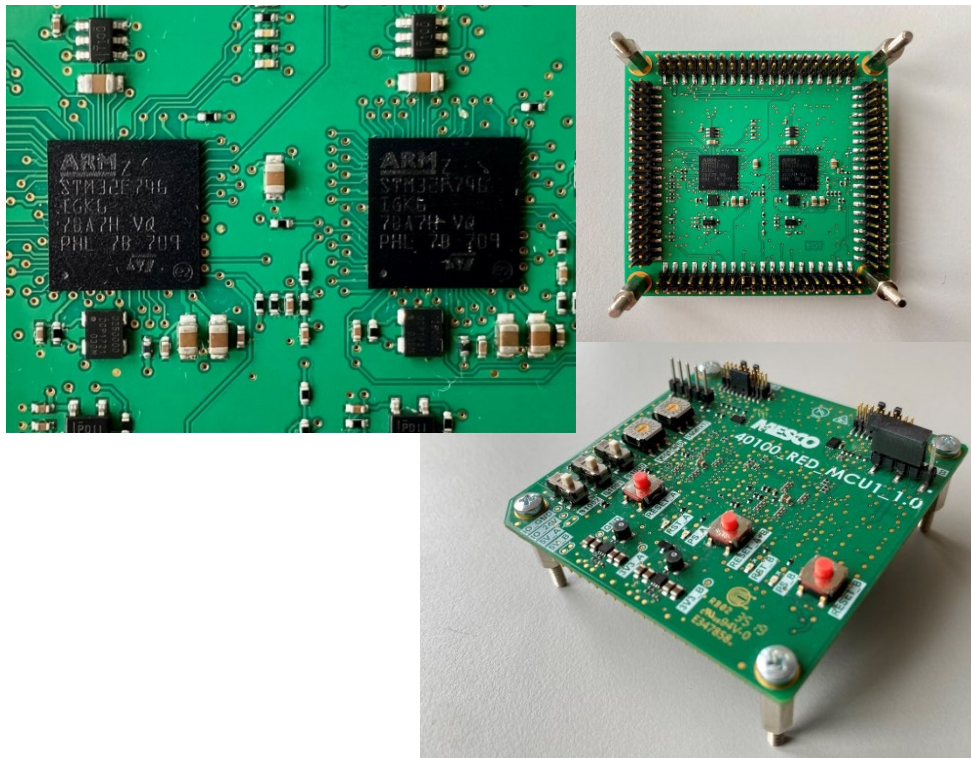


Overview

- Multiprotocol SoC netX90
PROFINET/ PROFISAFE
(CC-A, CC-B, CC-C)
EtherCAT/FSoE
- Safety protocols (black channel)
- 2x RJ45 , Status LEDs
- Address switches
- Debug interface
- NV mem
- Temperature monitoring
- Power supply
- Comprehensive design documentation

SAFE CORE MODULE B1

SAFE 1oo2 CORE

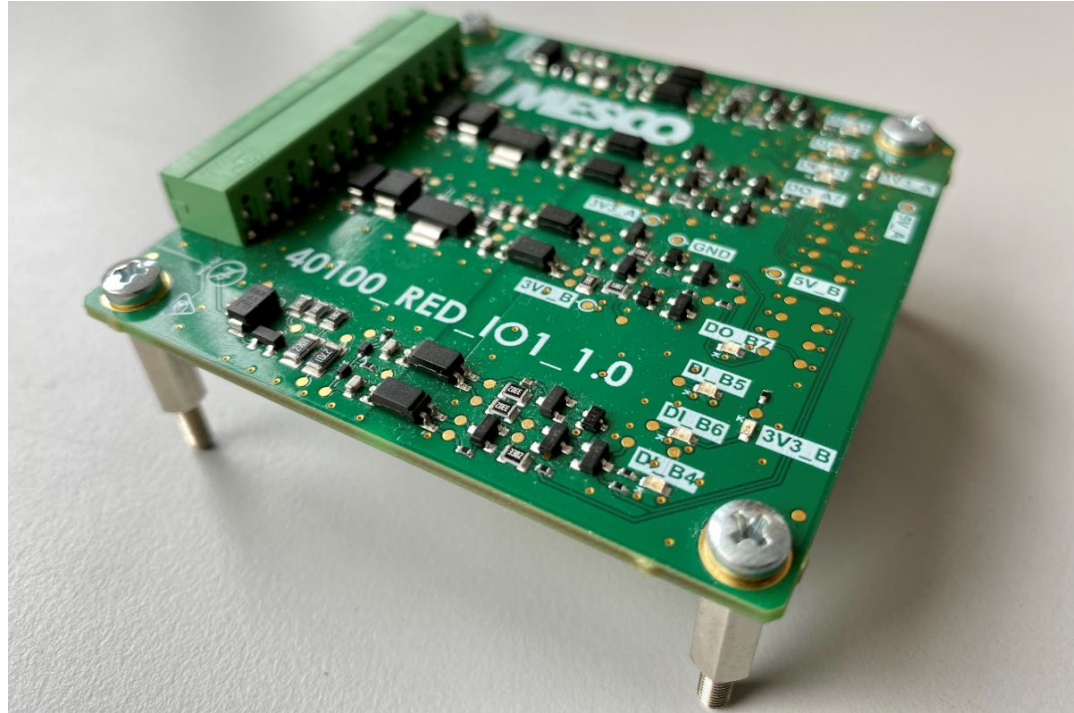


Overview

- Redundant Safety Core
SIL2/SIL3 2x STM32F746
- Safe fieldbus protocol support
- Safe I/O monitoring
- Safe I/O handler
- Safe drive functions
- Decoupling measures
- Cross communication
- Address switches Safe Fieldbus
- 2x Debug interfaces
- Temp sensors
- Dual channel power supply
- Comprehensive design documentation

F-I/O MODULE C1

Safe I/O 3x F-DI/ 1x F-DO



Overview

- 3x F-DI (redundant)
- 1x F-DO (redundant)
- Galvanic Isolation
- OSSD functions
- Dual channel power supply
- Comprehensive design documentation

MESCO SAFETY DESIGN PACKAGES



Overview



Topology & system overview for safe applications

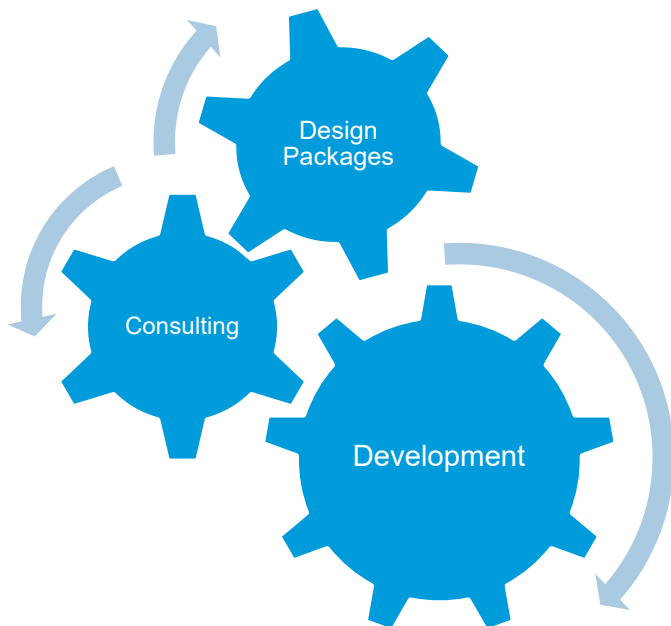
Introduction: MESCO Safety Design Packages architecture

Example of a safety solution based on ST technology

From requirement to product

FROM REQUIREMENT TO PRODUCT

MESCO range of services



GAP Analysis to Customer Requirements Spec

Adjustment CRS to existing Design Package to evaluate customer specific hardware and software development

Tailor-made Development Solutions

Customized hardware and software development with flexible use of Design Packages.

Directly applicable Design Packages

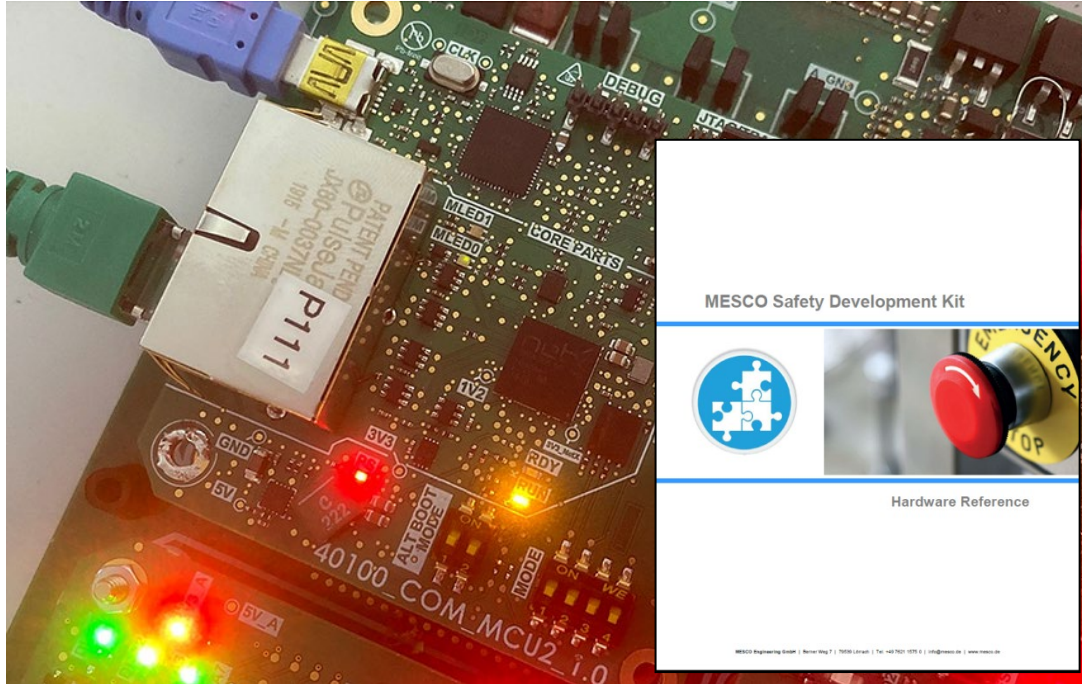
Proven circuits and software libraries for rapid implementation of your development project.

Development Consulting

Consulting and coaching for specification, Design Packages integration, product certification

Getting started ...

First steps for effective Functional Safety projects



GAP Analysis

- MESCO support Customer Requirement Specification phase
- Common workshop to align CRS to existing Design Packages
- Common project setup and work breakdown structure
- Estimation of required customer specific hardware and software design parts
- Proof of concept with MESCO Evaluation boards
- Align CRS and SRS
- Start-up development phase

BENEFIT OF USING DESIGN PACKAGES



- Reduced specification phase
relying on base functions of the Safety Design Packages
- Reduced development risk
- Reduced development time and effort
- Project cost reduction
- Shorter time to market
- Lower effort in documentation
- Easy protocol certification
- Lower risk *through MESCO's TUV certification support*

CONTACT

MESCO worldwide



MESCO Engineering GmbH

Berner Weg 7
79539 Loerrach
Germany
Phone +49 7621 1575 0
Fax +49 7621 1575 175

info@mesco.de

PETER BERNHARDT
Peter.Bernhardt@mesco.de



MESCO Engineering Inc.

2125 Center Avenue, Suite 507
Fort Lee, New Jersey 07024
USA
Phone +1 201 302 6002

info@mesco.us



MESCO Engineering GmbH

Wentzingerstraße 21
79106 Freiburg
Germany
Phone +49 761 214 436 30
Fax +49 761 214 436 31

info@mesco.de



MESCO Engineering AG

Klosterzelgstrasse 1a
5210 Windisch
Switzerland
Phone +41 56 560 37 00
Fax +41 61 641 6728

info@mesco.ch