Multi–Protocol Encoder Master Interface for Functional Safety
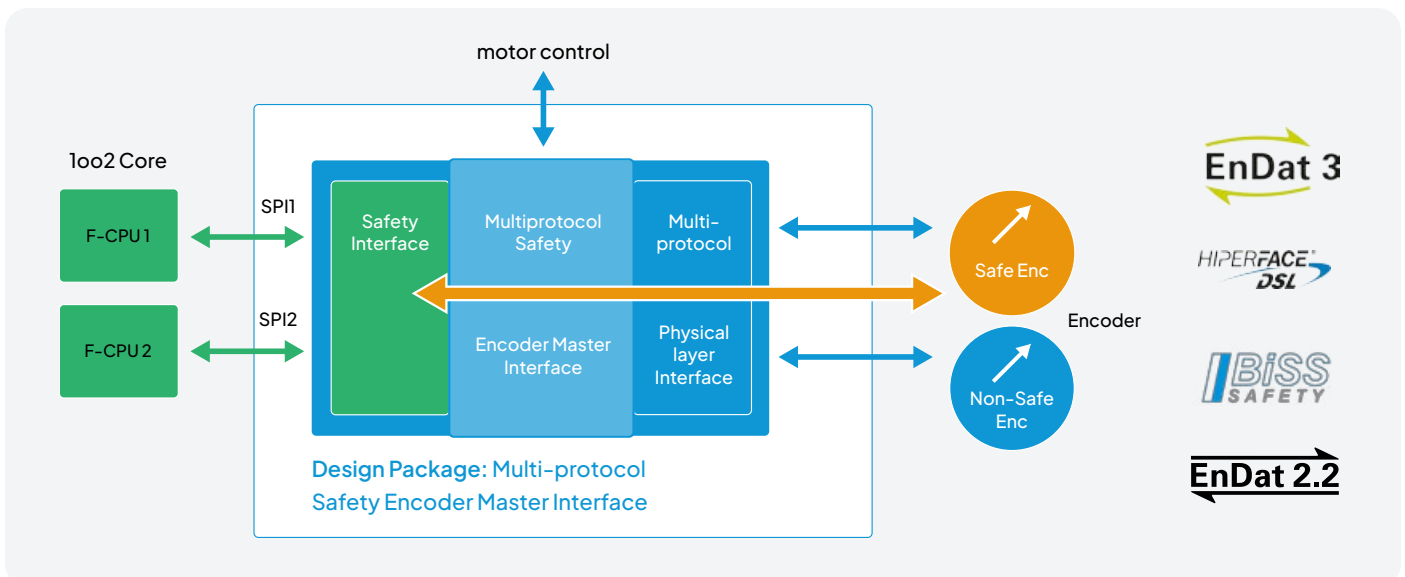
Overview

Integrated safety drives, safe servo drives and remote position safety encoder master devices require several interfaces to support different external encoder devices.

This Safety Design Package describes the integrated multiprotocol digital position safety encoder master interface for EnDat 2.2, EnDat 3, Hiperface DSL® and BiSS Safety. It supports multiple encoder physical inter-faces and safety protocols. Therefore it saves cost and reduces board space.

Functional description

This package combines multiple interfaces for connec-ting encoders to drives. It allows transfer of non-safe encoder data to the motor control unit and safe encoder data through the black channel (SPI) to an external safety board. It seamlessly integrates with the MESCO Design Package Safe Drive Monitor based on a redundant STM32 CPU architecture (1oo2). The compact design includes SIL3/PL-e capable hardware and safety-related software functionalities. It reduces development time for integrated safety drives. Full documentation according to IEC61508 standards and software libraries for customized designs are included.

Design Package: Multi–protocol Safety Encoder Master Interface

Technical Description

- Supports EnDat 2.2, EnDat 3, Hiperface DSL and BiSS Safety encoder interfaces (physical layer and software protocol)
- Handles non-safe and safe encoder data
- Fast SPI interfaces to handle functional safe black channel communication from encoder module to external safe 1oo2 architecture
- Provides fast SPI interfaces for non-safe encoder feedback data to the motor control unit
- Compatible with safety option cards for integrated safety drives, safe servo drives, and remote position safety encoder master devices.

Delivery Content

- Fully documented hardware design, compliant with the requirements of IEC61508.
- Detailed schematics documentation.
- Multiprotocol Software Encoder Library with support for Endat 2.2, EnDat 3, Hiperface DSL and BiSS Safety.
- Software Library for safe SPI black channel communication, enabling the transfer of safe encoder data to 1oo2 safety architecture.
- Software Library for motor control interface handling (non-safe encoder data).
- Interface and library description.
- Evaluation Boards available: showcasing the Multiprotocol Safety Encoder Master Interface as sample implementation
- Safe Drive Monitor board for 1oo2 architecture
- FPGA board

Your Benefits

- ✓ Support for multiple encoder protocols, eliminating the need for protocol-specific designs.
- ✓ Design Package is directly applicable to safety projects up to SIL3/PL-e (Cat.3)
- ✓ Seamless integration of non-safe encoder data into the drive. Efficient transfer of safe encoder data via the black channel for evaluation on an external safety card.
- ✓ FPGA-based architecture ensuring flexibility and adaptability for future encoder protocols.
- ✓ Cost-effective solution for integrating various encoder interfaces
- ✓ Facilitates product certification through IEC61508 / ISO13849 compliant documentation.
- ✓ Reduces development costs, effort and risk by utilizing proven architectures.

Fast and safe to market?

We are looking forward to your inquiry.

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