Better. Smarter. Safer.

The SFX programmable safety controller is available in two models, allowing users to select the right product for the right application:

SFX12m
6 inputs, 6 outputs

SFX20m
10 inputs, 10 outputs

Regulatory bodies, owners, operators and even ordinary citizens are demanding safe products, and manufacturers are answering the call. In the mobile off-highway equipment industry, compliance with functional safety standards is not universally required, but OEMs have recognized it as a best practice—and Eaton is partnering with them to cost effectively design and develop safety-certifiable systems with its SFX programmable safety controller.

Similar to its HFX controller, Eaton's SFX programmable safety controller excels in durability, reliability and configurability, and features best-in-class temperature and environmental ratings. Unlike other embedded controllers, the SFX controller partitions safety control application functions through a dual-processor architecture, enabling changes to control applications without impacting safety function certifications. Physical separation of the pre-certified safety and control application domains minimizes the effort to design and integrate new features as well as the time and expense associated with

safety certification. As an IEC 61508 SIL 2 pre-certified controller, the SFX programmable safety controller is an ideal solution for safety-certified applications such as off-highway steering, work and propel functions, including steer-by-wire and autoguidance systems.

With the SFX programmable safety controller, you can build a better, smarter—and now safer—machine.

Advanced steering solutions

Looking to develop a functionally safe electrohydraulic steering system or advanced steer-by-wire system? Pair the SFX programmable safety controller with Eaton's SBX advanced steering valve plus secondary valve or orbitrol for a complete solution.

To learn more about the SFX controller, SIL certification process or how to start your project, please contact your Eaton sales manager or distributor, or visit:
Eaton.com/SFX

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SFX programmable safety controller benefits

- IEC 61508 pre-certified SIL 2 to help simplify certification of work, steering and propel safety functions

- Through a dual-processor architecture, safety and non-safety functions are separated to facilitate changes to control application functions without the need for time-consuming and costly recertification

- Market-leading environmental and temperature ratings enable more machine installation options and reliable performance in a wide range of operating environments

- Configurable I/O enables maximum machine-application flexibility

- Provides white space for custom safety functions that can be independently certified

- Can be paired with the Eaton SBX advanced steering valve in steer-by-wire and electrohydraulic steering systems

- Plug-and-play compatibility with Eaton's HFX controllers enables a simple changeout for equipment upgrades

Features

- 12 I/O (SFX12m) or 20 I/O (SFX20m)
- 3 CAN ports
- Compact, fully sealed and potted cast aluminum construction
- IP67 and IP69K ingress protection
- Deutsch connectors
- Programmable LED status indicators
- Pre-certified fault detection features (>95% hardware fault coverage)
- Intelligent, programmable fault detection for all I/O
- Independent, pre-certified computer environment for safety functions
- Protected outputs (thermal and overcurrent)
- Reverse polarity protection

Applications

- Agriculture
- Material handling
- Construction

Specifications	Main CPU	Safety CPU
Processor Floating point unit	32 bit, 200 MHz, Renasas Super H 72546	Pre-certified, 32 bit, 160 MHz, Renasas RH850/P1M
MRAM Additional to CPU	32 KB approx. 1 trillion writes	NA
Flash ROM program & data memory	3.75 MB	2.0 MB
SRAM	256 KB	128 KB
EEPROM	128 KB (system use only)	64 KB
CAN	CAN RAW, J1939	CAN RAW, J1939
Inter-processor SPI*	Master – transmits Main Domain state info and user-defined data	Slave – transmits Safety Domain state info and user-defined data
Run-time scheduler	Fixed rate, pre-emptive scheduler or embedded CODESYS run-time	Pre-certified SafeRTOS with fixed rate, pre-emptive, non-blocking scheduler

*128 byte, 1000 Hz deterministic message format

Eaton's SFX programmable safety controllers serve as a supervisory controller over a variety of hydraulic system control functions and CAN-based devices such as displays, keypads and other user interfaces.

Eaton VFX display

Eaton SBX steering valve and steering control unit

Eaton SFX programmable safety controller

Eaton E31 electronic switch module

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