Safety drive controller | Speed monitoring for 2 axes | Safety-MS2

Compact safety control with integrated drive monitoring for one axis and extended encoder interface. This device is freely programmable for the safe processing of drive-related safety functions as well as of EMERGENCY STOP switches, two-hand operator controls, light barriers, operating mode selectors, etc. Complex movement monitoring tasks are also possible when both axes are combined.

The basic version allows achieving 2 safe encoder connections. 14 safe inputs and 3 shut-off channels are available.

1-encoder solutions (Incr-TTL/HTL, Resolver, SinCos, Proxi-SW.) and to a limited extent also 2-encoder solutions (e.g. Incr-TTL or SSI and Incr-HTL) are supported for the safe speed and/or position detection.

- Extensive bibliotheca of pre-configured safe sensors and command device
- Complete range of speed- and position-related safe drive monitoring functions as per EN 61800 already integrated
- Encoder interface with many parameters and configuration options for 2 x Incr-TTL / SinCos / SSI on front side and 2 x HTL or Proxi-SW by terminals
- Graphical programming interface by SafePLC-SW
- Basic unit comes with 14 safe input lines, 3 cut off channels, hereof 1 safe relay output and 2 standard outputs
- Cross-short-cut monitoring functionality
- Output contact multiplication or increase of power capability by external contactors in connection with the device-internal monitoring function for external contacts
- Extensive diagnostic functionality integrated in FW
- Status monitoring by coded 7-segment-display and status LED's
- Quit- / Start- / Reset button on the front display
- Extendable up to max. 65 safe I/O lines by means of an integrated backplane bus (connector for top hat rail mount)
- Interface modules for all major fieldbus systems available (Profibus, ProfiNet, CANopen, EtherCAT)

Order-No.

Safety-MS2	Speed monitoring for 2 axes	**8.MS2.000**

The programming software SafePLC and the programming cable are required for programming. The T-BUS connector is required for connecting a BUS module or an extension module.

Accessories	T-bus connector	**05.TBMS.000**
	Programming cable	**8.0010.9000.0020**
	Programming software Safe PLC	**05.SPLC.001**
	Parameterising software - Free	**05.SPMT.000**

General data

Max. number of extension modules	2
Interface for extension modules	T-bus connector for top hat rail mount
Safe digital input lines	14 incl. 8 OSSD
Safe digital output lines	2
Safe relay outputs	1
Standard output lines	2
Pulse output lines	2
Type of connection	pluggable terminals
Drive monitoring - number of axis	1 axis / 2 axes
Encoder interface front side	2 x SSI; SinCos; Incr-TTL
Max. frequency SinCos; Incr-TTL	200 kHz
Clock frequency / mode SSI	Master Mode 150 kHz / Slave Mode max. 250 kHz
Type of connection	D-SUB 9 pol
Encoder interface terminals	2 x Proxi-Sw.; Incr-HTL
Max. frequency HTL	10 kHz
Type of connection	pluggable terminals

Electrical characteristics

Supply voltage	24 V DC / 2 A
Tolerance	-15%, +20%
Power consumption	2,4 W
Rated data digital inputs	24 V DC / 20 mA, Typ 1 to EN 61131-2
Rated data digital outputs	24 V DC / 250 mA
Rated data relay outputs	24 V DC / 2 A and 230 V AC / 2 A
Pulse output lines	max. 250 mA
Max. fuse on supply voltage	max. 2 A

Environmental data

Operating temperature	0°C ... +50°C
Storage temperature	-10°C ... +70°C
Type of protection	IP52
Climate class	3 acc. to DIN 50178
EMI	acc. to EN 55011 and EN 61000-6-2

Safety characteristics

PL acc. to EN 13849	PLe
PFH / Architecture	6,2 x 10^{-9} / Architecture Class 4
SIL acc. to EN 61508	SIL 3
Proof-test-interval	20 years = max. period of application

Mechanical characteristics

Size h x d x w [mm]	100 x 115 x 67,5
Weight	390 g
Mounting	snap-on mounting on standard head rail
Max. terminal cross section	1,5 mm^2

Safety drive controller | Speed monitoring for 2 axes | Safety-MS2

Terminal assignment

X11

1	Power supply module +24 V DC	U24 external
2	Power supply module +24 V DC	U24 external
3	Power supply module 0 V DC	GND external
4	Power supply module 0 V DC	GND external

X12

1	Digital IN 13	DI 13
2	Digital IN 14	DI 14
3	Pulse output P1	P1
4	Pulse output P2	P2

X13

1	Power supply encoder interface X31	U_ENC_1
2	Power supply encoder interface X31	GND_ENC_1
3	Messaging and auxiliary output DO 0.1	DO 0.1
4	Messaging and auxiliary output DO 0.2	DO 0.2

X14

1	Digital IN 01 OSSD compatible	DI 01
2	Digital IN 02 OSSD compatible	DI 02
3	Digital IN 03 OSSD compatible	DI 03
4	Digital IN 04 OSSD compatible	DI 04

X21

1	HISIDE output 0	DO 0-HI
2	LOSIDE output 0	DO 0-LO
3	HISIDE output 1	DO 1-HI
4	LOSIDE output 1	DO 1-LO

X22

1	Relay output 1	K1.1
2	Relay output 1	K1.2
3	Relay output 2	K2.1
4	Relay output 2	K2.2

X23

1	Digital IN 05	DI 05
2	Digital IN 06	DI 06
3	Digital IN 07	DI 07
4	Digital IN 08	DI 08

X24

1	Digital IN 09 OSSD compatible	DI 09
2	Digital IN 10 OSSD compatible	DI 10
3	Digital IN 11 OSSD compatible	DI 11
4	Digital IN 12 OSSD compatible	DI 12

X15

1	Power supply encoder interface X32	U_ENC_2
2	Power supply encoder interface X32	GND_ENC_2
3	NC	NC
4	NC	NC

X16

1	NC	NC
2	NC	NC
3	NC	NC
4	NC	NC

X25

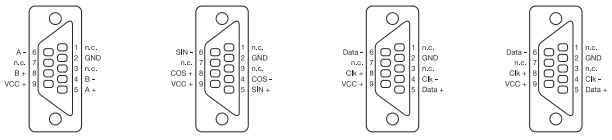
1	NC	NC
2	NC	NC
3	NC	NC
4	NC	NC

X26

1	NC	NC
2	NC	NC
3	NC	NC
4	NC	NC

The variable encoder supply has to be provided external. It will be internal monitored.

Sensor pin assignment



Incremental encoder | SinCos | Absolute encoder | SSI-Listener

Overview inputs / outputs

14 x	digital inputs
2 x	pulse outputs
2 x	digital outputs relays
2 x	digital outputs LOSIDE
2 x	digital outputs HISIDE
2 x	messaging outputs

Connection example