

USSM xE / xD

Ultra Slim Safety Module



The new Safety Dimension as of 2017

These utmost compact safety logic module with a width of just 6 mm have one common object:

To provide a modular and cost efficient safety solution, which has been reduced to the essential:

- Wearless, safe semiconductor outputs
- High diagnostic by means of Status and Error LED's
- Extremely high modularity & cost efficiency
- Variants for several applications
- Up to PL e / Kat. 4 / SIL 3

USSM xE:

Variant for max. requirements up to PL e / SILCL 3. Test pulses at the safe output enable error detection during operation.

USSM xD:

Variant for requirements up to PL d / SILCL 2. No test pulses at the safe output. Specially suitable for controlling sensitive actuators.

USSM xE / xD are safety emergency stop modules for monitoring emergency stop buttons, safety doors and light curtains, as well as contact reinforcement of safe outputs (e.g. safe PLC outputs) to machines and plants. The modules are also certified for continuous operation in furnaces according to EN 50156- 1 / EN 746-2.

- Use up to PL e, Cat. 4, SILCL3 (depending on variant)
- Stop Category 0 according to EN 60204-1
- 1 two-channel safe input
- 1 safe solid-state output (PNP)
- 1 auxiliary output (PNP)
- Automatic or monitored manual start
- 6.2 mm width
- Extensive monitoring via front LED's

Standards	Technical data
Meets the following standards	EN ISO 13849-1; IEC 62061; IEC 61508; EN 50156-1; EN 746-2/IEC 61511-1; EN 60204-1
Electrical data	
Operating voltage	U _B : DC 24 V ± 10 %
Power consumption at U _B = 24 V (Module enabled via S11. No load.)	SLxD: 1.8 W; SLxE: 2.4 W
Fusing the operating voltage	See chapter "Electrical connection"
Safe dual-channel input I1 / I2	
Input current at high level	max. 7 mA
Galvanic isolation	no
Low level / high level	0 to 5 V / 18 V to U _B
Pulse suppression - Signal to 0V (Variants SL2D and SL2E)	6 ms
Max signal width till system locks	> 50 ms
Start input / feedback circuit S21	
Input current at high level	max. 9 mA
Galvanic isolation	no
Low level / high level	0 to 5 V / 18 V to U _B
Safe solid-state output O1	
Structure	PNP output; redundant; diverse
Maximum switching capacity at U _B :	2.5 A
Safe solid-state output O1	
Maximum capacitive load at O1:	
- SLxE - Variants	C _{max} = 4.7 nF + I _{O1} * 6000 nF/A
- SLxD - Variants	any
Test pulses - Cycle / signal length (SLxE - variant)	20 hours / 2 ms; Accuracy: ± 5 %
Galvanic isolation	no
Short-circuit-proof	yes
Output voltage at "1" (max. load) / "0"	U _B - 1 V / 0,1 V
Auxiliary output C1	
Structure	PNP output, single channel
Maximum switching capacity	100 mA
Galvanic isolation	no
Short-circuit-proof	yes
Output voltage at "1" (max. load) / "0"	U _B - 2 V / 0 V
Timings	
Time till module is ready for operation after power-on	50 ms
Max. switch-on delay	10 ms
Off-delay	
- if requested via the safety circuit	< 13 ms
- in case of Pwr-Off	0 s (Supply for O1 is U _B)
Recovery time after shutdown via request through the safety circuit or Pwr-Off	50 ms

Safety circuit I1 / I2:

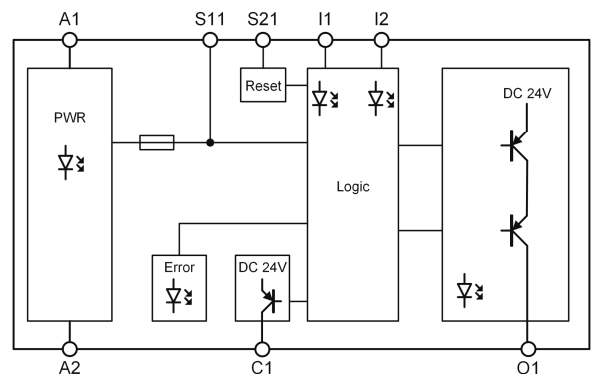
The safety circuit is designed to be used as single or dual channel via I1 and I2 depending on the variant and wiring

Start input S21:

A monitored manual start or an automatic start is provided via the terminal S21 depend-ing on the variant

Behaviour in case of a fault:

It is ensured that one single fault does not lead to loss of the safety function and that every fault is detected latest when the system is switched off and switched on again through cyclic self-monitoring.



Auxiliary output C1:

The PNP-semiconductor output switches invertedly to the safe output.

Safe output O1:

Considering the start-up behaviour, the safe solid-state output switches on at the time the safety circuit closes. Opening the safety circuit results in an immediate shutdown (safe condition).