

Safety expansion module SME41



Extension of number of safety outputs



Main features

- **Expansion relay unit.** The SME41 module can be used in combination with a master safety module to extend the number of safety relay outputs
- **Safety outputs.** Electromechanical forcibly guided safety relays with 4NO+1NC aux outputs
- **Multiple safety input types.** The input signal can be connected to master safety module with relay outputs or OSSD outputs
- **Machinery Directive compliance.** Cat. 4, PL e in accordance with EN ISO 13849-1
- **Flexible wiring.** The module is equipped with detachable screw terminals for easy wiring and product maintenance; the terminal blocks are coded so to avoid wiring mistakes
- **Diagnostic.** LED indications for power supply, state of the safety inputs and state of the safety outputs
- **Compact.** 1-DIN, W x H x D: 17,5 x 110,8 x 121,1mm
- **Approval** by TÜV. CE, cULus

Description

The SME41 safety expansion unit is designed in Category 4, Performance Level e in accordance with the Machine Directive EN ISO 13849-1 to operate as relay expansion unit controlled by a master safety module, with 4 additional safety relay outputs.

The SME41 can operate as relay expansion unit with master modules with safety relay or OSSD outputs.

Main functions

- Extend the number of safety outputs with 4 NO relay outputs
- Feedback signal to the master safety module through the NC relay output
- Double or single channel operation
- Diagnostic of the safety circuit through on-board LED indications for power supply, status of safety channels and status of safety outputs





References

Type selection

NO safety outputs	Aux NC output	Ordering code
4	1	SME41

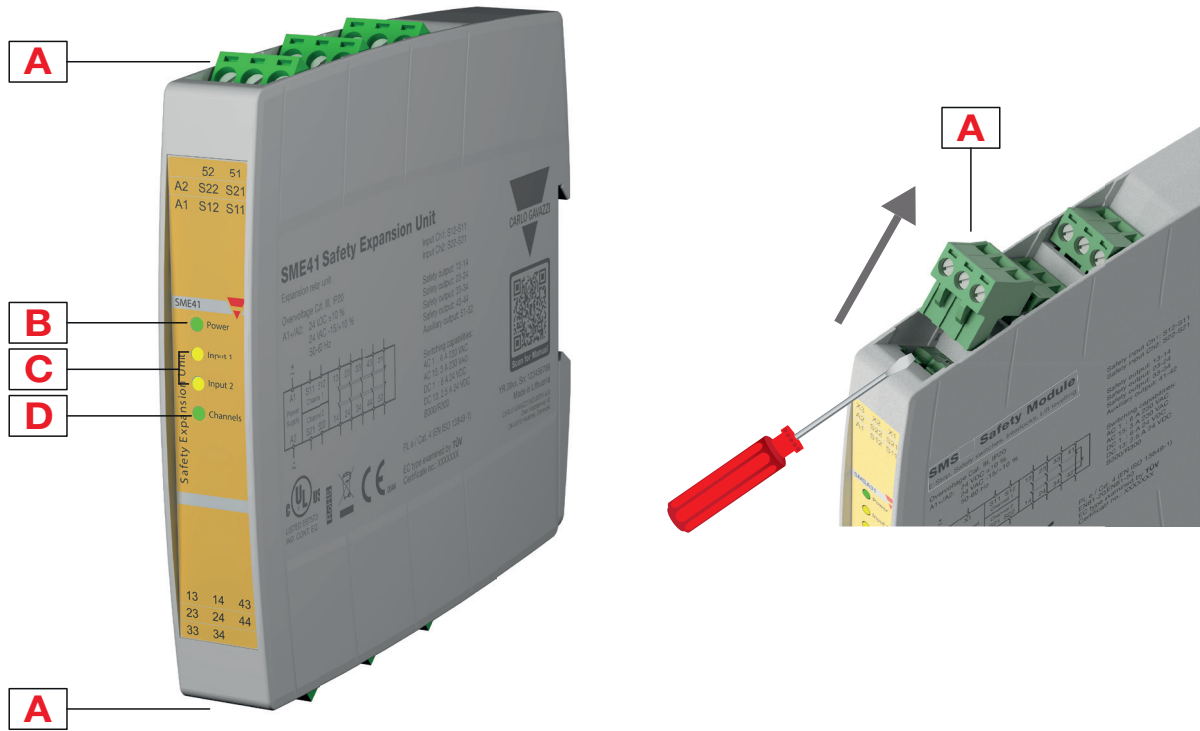
Further reading

Information	Where to find it	QR
Instruction manual	http://gavazziautomation.com/images/PIM/MANUALS/ENG/SM_IM.pdf	
Software SISTEMA	http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules	



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Structure

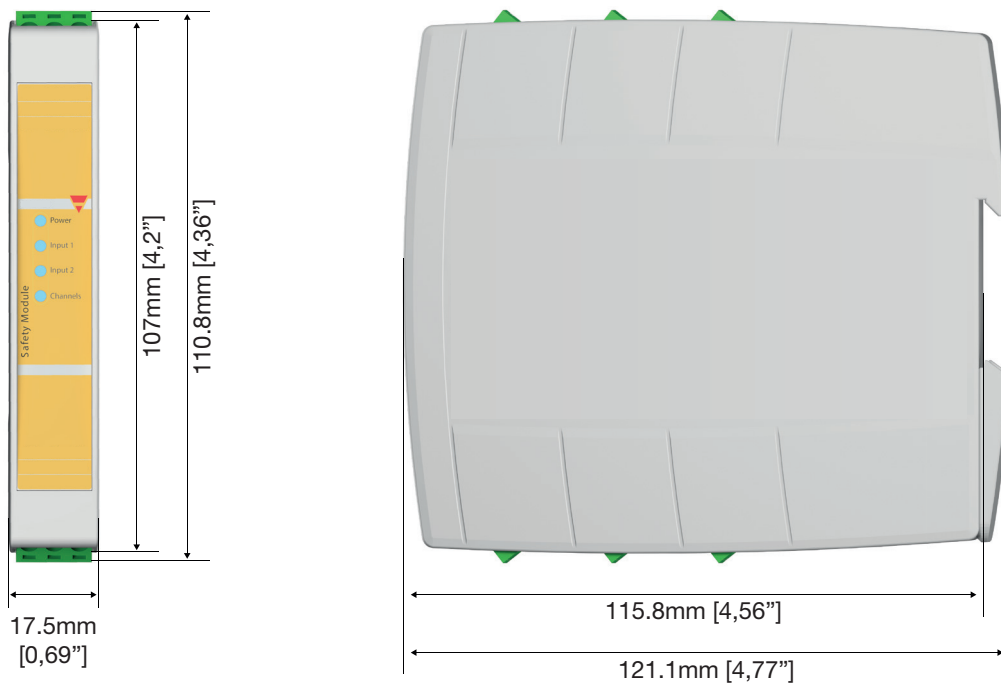


Element	Component	Function
A	Pluggable terminal blocks	Power supply, safety inputs and outputs
B	LED	Power supply status
C	LED	Safety inputs status
D	LED	Safety outputs status

Features

General

Material	PA-GF, self-extinguishing: UL 94 V-0
Weight	239g
Assembly	DIN rail mounting (According to EN 50022)



Power Supply

Power supply	24Vdc \pm 10%; 24Vac -15%/+10%, 50÷60 Hz, Class 2
	Overvoltage category III
	Short circuit protection internal PTC
	Rated insulation voltage 4 kV

Inputs

Number of safety channels	2
Safety inputs (contact inputs)	S11-S12 and S21-S22
Loop resistance	Max. 1 k Ω
Input voltage	0 - 35 VDC
Input current	Typical 5 mA

Outputs


NO safety outputs	4
NC auxiliary output	1
Type	Voltage free contact output, relays with forcibly guided contacts
Max current rating - single output	@ 60°C (140°F) operating temperature: AC 1: 250V / 6A / 2000 VA - AC 15: 230V / 3A DC 1: 24V / 6A - DC 13: 24V / 2.5A / 0.1 Hz UL508, pilot duty: B300 / R300
Max quadratic current	Spacing between modules $\geq 100\text{mm}$: 72A^2 @40°C (104°F) ambient temperature Modules mounted stacked: 26A^2 @25°C (77°F) ambient temperature Please refer to the derating curves in installation manual
Mechanical life	$> 10^7$ operations
Electrical life AC1 (360 s/h)	$\sim 10^5$ operations

Safety parameters

ISO 13849-1 Safety Category	Cat. 4
ISO 13849-1 Performance Level	PL e
MTTF_d [a]	363,4
PFH_d [1/h]	1,59 E-10
DCavg	99%
β	5,00 E-02
β_d	2,00 E-02

To attain Cat 4, PL e according to EN ISO 13849-1, the SME41 must be used with a Cat 4, PL e master module and the NC feedback output of SME41 (contacts 51-52) must be connected in series with the start signal of the master module.

Compatibility and conformity

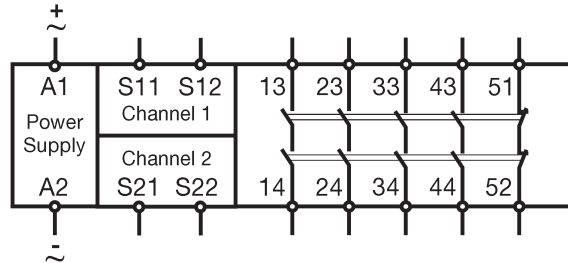
Low Voltage Directive 2014/35/EU	EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices
EMC Directive 2014/30/EU	EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices
Machinery Directive 2006/42/EC EC type examined by TÜV Cert. no. 44 205 15058307	EN ISO 13849-1 Safety of machinery - safety related parts of control systems - General principles for design EN 60204-1 Safety of machinery - Electrical equipment of machines - General requirements EN 61326-3-1 Electrical equipment for measurement, control and laboratory use. EMC requirements. Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications
Approvals	



▶ Environmental

Protection grade	IP40 on frontal part of the housing, IP20 on the terminals. The device has to be installed in a cabinet with protection degree of IP54.
Pollution degree	2
Operating Temperature	-25 ÷ +60°C (-13 ÷ 140°F), UL: +40°C (104°F)
Storage Temperature	-30 ÷ +70°C (-22 ÷ 158°F)
Ambient humidity range	R.H. ≤95% non condensing

Connection Diagrams



Terminal	Function
A1	power supply 24 Vdc (+)/Vac(~)
A2	power supply 24 Vdc (-)/Vac(~)
S11-S12	channel 1 NO input
S21-S22	channel 2 NO input
13-14	NO safety output
23-24	NO safety output
33-34	NO safety output
43-44	NO safety output
51-52	NC auxiliary output

Double channel mode

