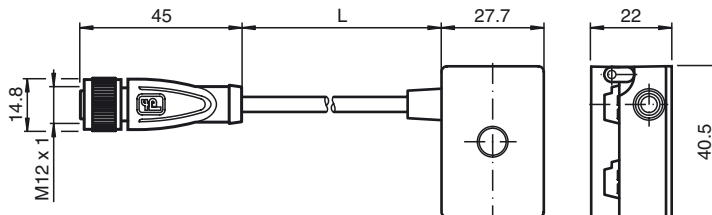
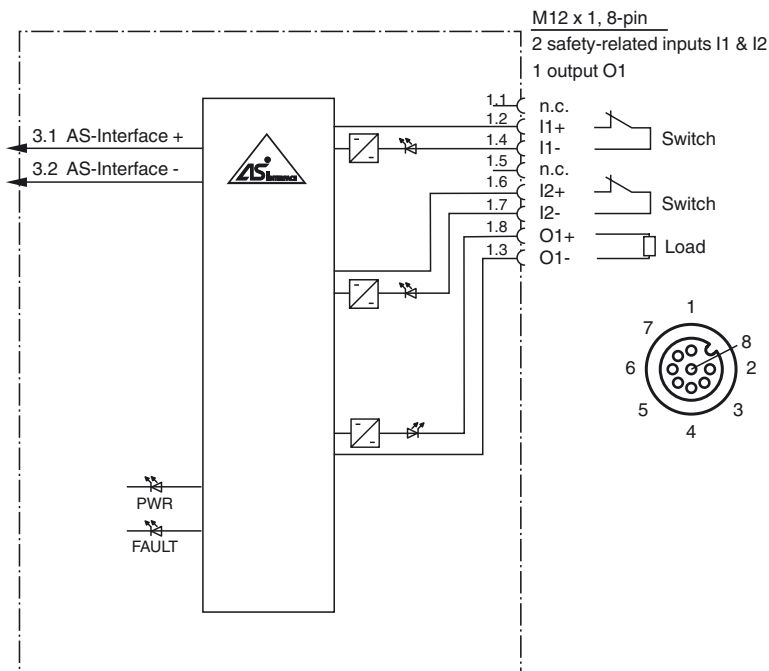




**Dimensions**



**Electrical connection**



**Model number**

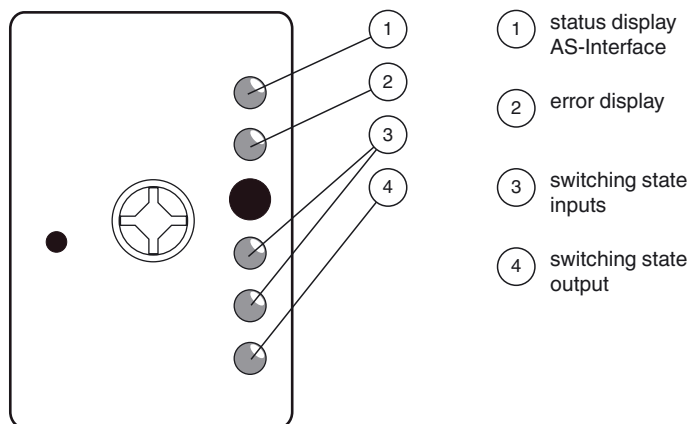
**VAA-2E1A-G10-SAJ/EA2J-2M-V1-G**

G10 safety module  
2 safety inputs and  
1 standard electronic output

**Features**

- Connection of contact safety switches, e.g. EMERGENCY STOP button
- Applications up to PL<sub>e</sub>
- Modular safety solution
- Ultra-compact enclosure
- Degree of protection IP67

**Indicating / Operating means**



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**Technical data****General specifications**

Slave type	Safety-Slave
AS-Interface specification	V3.0
Required master specification	≥ V2.1
UL File Number	E223772 "For use in NFPA 79 Applications only"

**Indicators/operating means**

LED FLT	error display; LED red red: communication error or address is 0
LED AS-i	AS-Interface voltage; green LED green: voltage OK flashing green: address 0
LED IN	switching state (input); 2 LED yellow
LED OUT	Switching state (output); LED yellow

**Electrical specifications**

Rated operating voltage	$U_e$	26.5 ... 31.6 V from AS-Interface (PELV)
Rated operating current	$I_e$	≤ 90 mA
Protection class		III
Surge protection		overvoltage category III
Rated insulation voltage		32 V
Pulse withstand voltage		0.8 kV

**Input**

Number/Type	2 safety-related inputs for mechanical contacts, crossed-circuit monitored: 2 single-channel contacts: up to category 2/PL c to ISO 13849-1 or 1 2-channel contact: up to category 4/PL e to ISO 13849-1
Supply	from AS-Interface
Voltage	20 ... 30 V DC pulsed
Current	input current limited ≤ 15 mA, short-circuit protected

**Output**

Number/Type	1 conventional electronic output, PNP
Supply	from AS-Interface
Current	50 mA , short-circuit/overload protected
Voltage	$(U_{ASi} - 7.0 V) \leq U_{OUT} \leq U_{ASi}$

**Directive conformity**

Electromagnetic compatibility	
Directive 2014/30/EU	EN 62026-2:2013 EN 61000-6-2:2005 EN 61000-6-4:2007
Machinery Directive	
Directive 2006/42/EC	EN ISO 13849-1:2008 + AC:2009 EN ISO 13849-2:2012 EN 62061:2005

**Standard conformity**

Degree of protection	EN 60529:2000
Fieldbus standard	EN 62026-2:2013
Electrical safety	IEC 61140:2009
Emitted interference	EN 61000-6-4:2007
AS-Interface	EN 62026-2:2013
Noise immunity	IEC 62026-2:2008 EN 62061:2005 EN 61000-6-2:2005
Functional safety	EN ISO 13849-1:2008 + AC:2009 EN ISO 13849-2:2012 EN 62061:2005

**Programming instructions**

Profile	S-7.B
IO code	7
ID code	B
ID1 code	F
ID2 code	0

Data bits (function via AS-Interface)	input	output
D0	dyn. safety code 1	OUT 1
D1	dyn. safety code 1	-
D2	dyn. safety code 2	-
D3	dyn. safety code 2	-

**Parameter bits (programmable via AS-i)**

Parameter	function
P0	communication monitoring P0 = 1 (default settings), monitoring = ON, i.e. if communication fails, the outputs are de-energised P0 = 0, monitoring = OFF, if communication fails, the outputs maintain their condition
P1	not used
P2	not used
P3	not used

**Ambient conditions**

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Storage temperature	-25 ... 80 °C (-13 ... 176 °F)
Relative humidity	< 95 %
Altitude	≤ 2000 m above MSL

**Function**

The VAA-2E1A-G10-SAJ/EA2J-\*M-V1-G is an AS-Interface safety module with 2 safety-related inputs and one conventional output. A two-channel mechanical switch or a single channel mechanical switch each can be connected to the two safety-related inputs. The output is a conventional electronic non-safety-related output, which can be loaded with 50 mA.

The module is suitable for remote connection of switches in very limited space. The one-piece housing provides a degree of protection of IP67 .

The connection to the AS-Interface cable is achieved by means of insulation piercing method of the inserted flat cables. The inputs and the output are connected via an 8-pin M12 socket.

To display the current switching state, there is a LED for each channel mounted on top of the module. A LED indicating the AS-Interface communication and the address 0 of the module is also available. If a communication error occurs, the outputs are switched off (only at P0 = 1).

The module can be used up to Category 4/PL e according to ISO 13849-1, SIL 3 according to EN 62061.

If two single-channel switches are connected, the module can be used up to Category 2/PL c according to ISO 13849-1, SIL 1 according to EN 62061.

**Accessories****VAZ-V1-B3**

Blind plug for M12 sockets

**VBP-HH1-V3.0-KIT**

AS-Interface Handheld with accessory

**VAZ-PK-FK-0,2M-V1-W**

Adapter cable G10 module/hand-held programming device

Shock and impact resistance	30 g, 11 ms in 6 spatial directions 3 shocks 10 g, 16 ms in 6 spatial directions 1000 shocks
Vibration resistance	0.75 mm 10 ... 57 Hz, 5 g 57 ... 150 Hz, 20 cycles
Pollution degree	3
<b>Mechanical specifications</b>	
Contact elements	spring-loaded contact socket
Degree of protection	IP67 This protection class is achieved by using the AS-Interface flat cable VAZ-FK-S-YE
Connection	AS-Interface: AS-Interface flat cable Inputs/outputs: M12 x 1 socket, 8-pin
<b>Material</b>	
Contacts	CuSn / Au
Contact surface	Au
Housing	PBT
Body	TPU, black
Cable	PUR
Slotted nut	Diecast zinc
Mounting screw	Stainless steel 1.4305 / AISI 303
<b>Cable</b>	
Sheath diameter	Ø4.8 mm
Bending radius	> 8 x cable diameter, fixed > 10 x cable diameter, moving not appropriate for conveyor chains
Color	black
Cores	6 x 0.25 mm <sup>2</sup>
Length	L 2 m
Mass	200 g
Tightening torque, fastening screws	1.65 Nm
Tightening torque, cable gland	0.4 Nm
<b>Approvals and certificates</b>	
UL approval	cULus Listed, Type 1 enclosure

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## Notes

### Functional safety related parameters

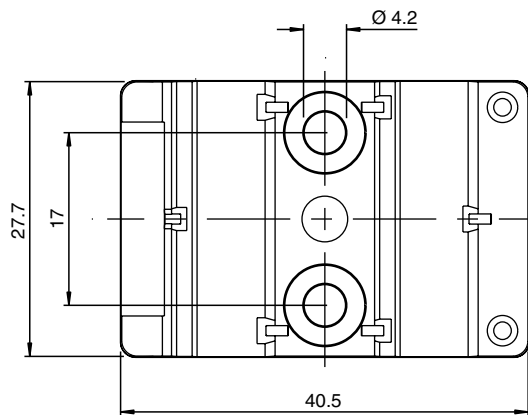
Operating mode	1-channel	2-channel
Safety Integrity Level(SIL)	SIL 1	SIL 3
Performance Level (PL)	PL c	PL e
Category	Cat. 2	Kat. 4
MTTF <sub>d</sub>	100 a	no significant contribution to
PFH <sub>d</sub>	$2,3 \times 10^{-7}$	MTTF <sub>d</sub> , PFD or PFH of the
PFD	$1,6 \times 10^{-13}$	overall system
Safe reaction time	< 300 μs	< 300 μs
Diagnostic coverage	80 %	-
Design Lifetime	20 a	20 a

### Safety Instructions

If a single-channel switch is used, the module is suitable for use up to category 2/PL c in accordance with ISO 13849-1, or SIL 1 in accordance with EN/IEC 62061. Only tested and certified power supplies with safe isolation may be used to supply power. These power supplies must have PELV voltage in accordance with EN 50295 / IEC 62026-2, and a minimum MTBF of 50 years. The power supplies are designed to exclude a short circuit between the primary and secondary sides.

### Mounting Instructions

You may screw the device onto a level mounting surface using two M4 attachment screws. The attachment screws are not included.



Lay all cables in accordance with EN/IEC 60204.

Do not use the outputs for safety-related functions.

Do not connect inputs and outputs, which are supplied via the module from AS-interface or via auxiliary power, with power supply and signal circuits with external potentials.

See the manual for a guide to the intended use.