



**Model number**

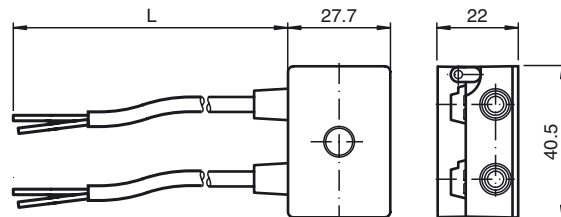
**VAA-2E1A-G10-SAJ/EA2J-2X1M**

G10 safety module  
2 safety inputs and  
1 standard electronic output

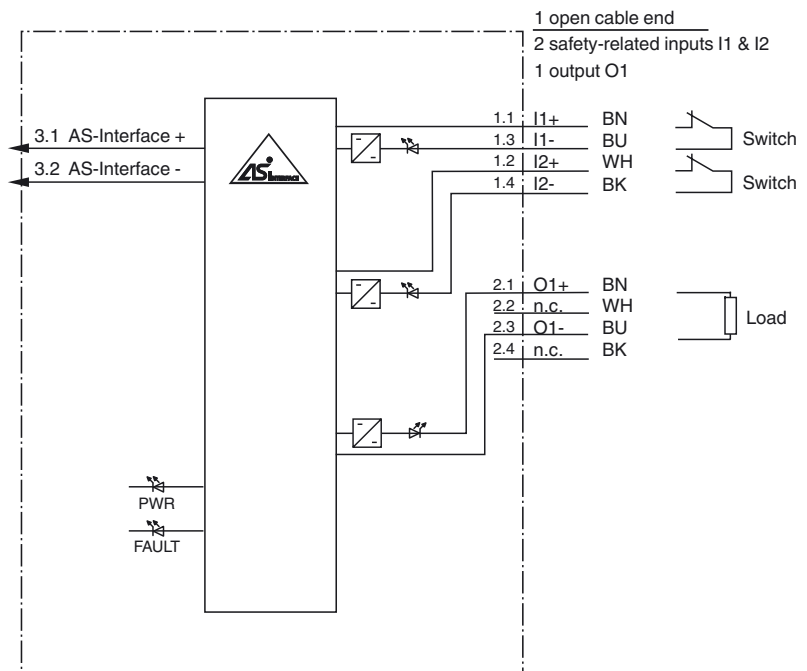
**Features**

- 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

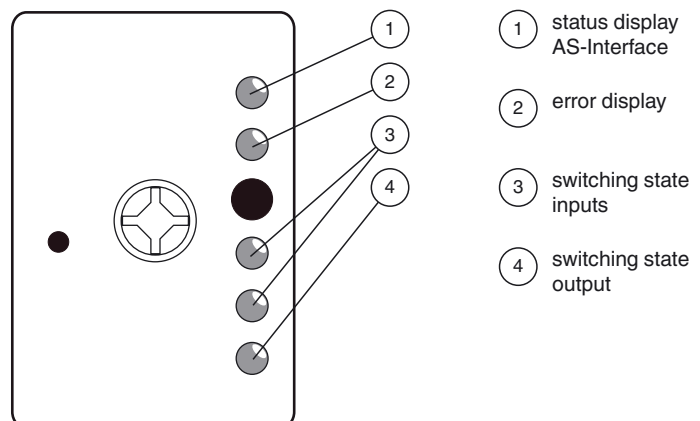
**Dimensions**



**Electrical connection**



**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

**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	$(U_{ASI} - 7.0 V) \leq U_{OUT} \leq U_{ASI}$

**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) function**

P0	communication monitoring P0 = 1 (basic setting), 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
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

**Mechanical specifications**

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: open conductor ends
Material	
Contacts	open conductor ends with connector sleeves
Housing	PBT
Cable	PUR
Mounting screw	Stainless steel 1.4305 / AISI 303
Cable	

**Function**

The VAA-2E1A-G10-SAJ/EA2J- \* 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 open cable ends.

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****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

**Matching system components****VAZ-2E1A-F85A-S**

Emergency stop button

Sheath diameter	Ø4,3 mm
Bending radius	> 5 x cable diameter, fixed > 10 x cable diameter, moving not appropriate for conveyor chains
Color	black
Cores	4 x 0.34 mm <sup>2</sup>
Length	L 1 m
Mass	200 g
Tightening torque, fastening screws	1.65 Nm

#### Compliance with standards and directives

Directive conformity	
Machinery Directive 2006/42/EC	EN ISO 13849-1:2008 + AC:2009 , EN ISO 13849-2:2012 , EN 62061:2005
EMC Directive 2004/108/EC	EN 50295:1999 , EN 61000-6-2:2005 , EN 61000-6-4:2007
Standard conformity	
Noise immunity	EN 50295:1999 , IEC 62026-2:2008 , EN 62061:2005 , EN 61000-6-2:2005
Emitted interference	EN 61000-6-4:2007
Functional safety	EN ISO 13849-1:2008 + AC:2009 , EN ISO 13849-2:2012 , EN 62061:2005
Degree of protection	EN 60529:2000
Fieldbus standard	EN 50295:1999, IEC 62026-2:2008
Electrical safety	IEC 61140:2009

#### Notes

#### Functional safety related parameters

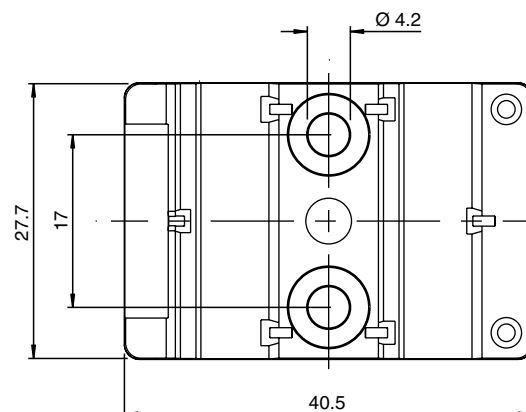
	1-channel	2-channel
Operating mode	1-channel	2-channel
Safety Integrity Level(SIL)	SIL 1	SIL 3
Performance Level (PL)	PL c	PL e
Category	Cat. 2	Kat. 4
MTTF <sub>d</sub>	100 a	no significant contribution to
PFH <sub>d</sub>	2,3 x 10 <sup>-7</sup>	MTTF <sub>d</sub> , PFD or PFH of the
PFD	1,6 x 10 <sup>-13</sup>	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.