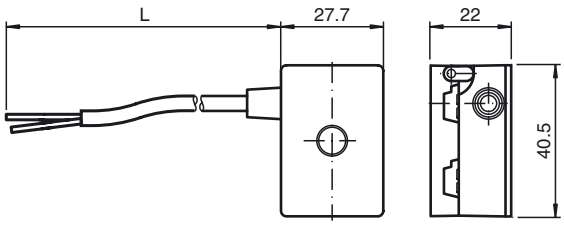
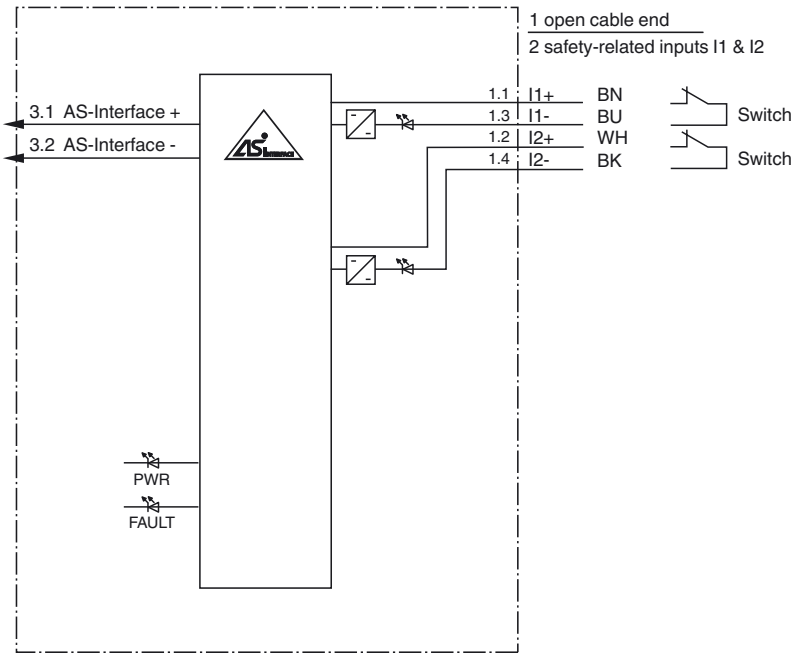
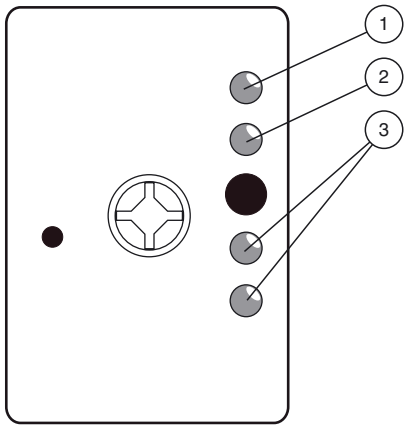
Dimensions



Electrical connection



Indicating / Operating means



1 status display AS-Interface
2 error display
3 switching state inputs

Model number

VAA-2E-G10-SAJ-1M

G10 safety module
2 safety inputs

Features

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

Function

The VAA-2E-G10-SAJ- * is an AS-Interface safety module with 2 safety-related inputs. A two-channel mechanical switch or a single channel mechanical switch each can be connected to the two safety-related inputs.
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 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 adress 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.

Release date: 2015-10-14 08:32 Date of issue: 2015-10-14 249635_eng.xml

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
Electrical specifications		
Rated operating voltage	U_e	26.5 ... 31.6 V from AS-Interface (PELV)
Rated operating current	I_e	≤ 40 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
Programming instructions		
Profile		S-0.B
IO code		0
ID code		B
ID1 code		F
ID2 code		0

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

Parameter bits (programmable via AS-i)	**function**
P0	not used
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: open conductor ends
Material		
Contacts		open conductor ends with connector sleeves
Housing		PBT
Cable		PUR
Mounting screw		Stainless steel 1.4305 / AISI 303
Cable		
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^2
Length	L	1 m
Mass		200 g
Tightening torque, fastening screws		1.65 Nm

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

Release date: 2015-10-14 08:32 Date of issue: 2015-10-14 249635_eng.xml

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
Approvals and certificates	
UL approval	cULus Listed, Type 1 enclosure

Notes

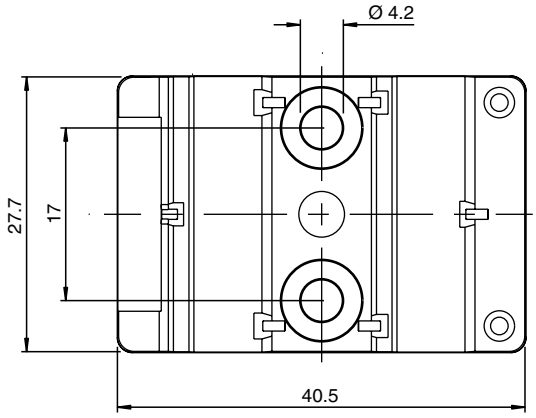
Functional safety related parameters		
Operating mode	1-channel	2-channel
Safety Integrity Level(SIL)	SIL 1	SIL 3
Performance Level (PL)	PL c	PL e
Category	Cat. 2	Kat. 4
$MTTF_d$	100 a	no significant contribution to MTTFd, PFD or PFH of the overall system
PFH_d	$2,3 \times 10^{-7}$	
PFD	$1,6 \times 10^{-13}$	
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 attachement 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.

Release date: 2015-10-14 08:32 Date of issue: 2015-10-14 249635_eng.xml