



Model number

VAA-2E1A-CB10-SJ/E2J-FL

CB10 safety module
2 safety-related inputs and
1 conventional electronic output

Features

- Connection of contact safety switches, e.g. EMERGENCY STOP button
- Applications up to Cat. 4, PL_e / SIL3
- Modular safety solution
- Ultra-compact enclosure

Function

The VAA-2E1A-CB10-SJ/E2J-* 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 100 mA.

The module is suitable for remote connection of switches in very limited space. The one-piece housing provides a degree of protection of IP20.

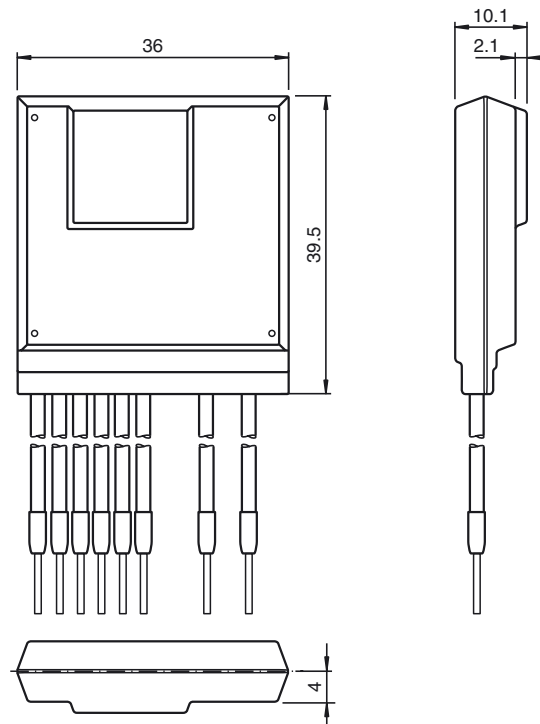
The connection to the AS-Interface cable as well as to the inputs and output takes place via strands with open cable ends.

To indicate the current switching state, an LED is available for each channel, mounted on top of the module. Two status LEDs are used to monitor the AS-Interface communication and indicate whether the module has the address 0.

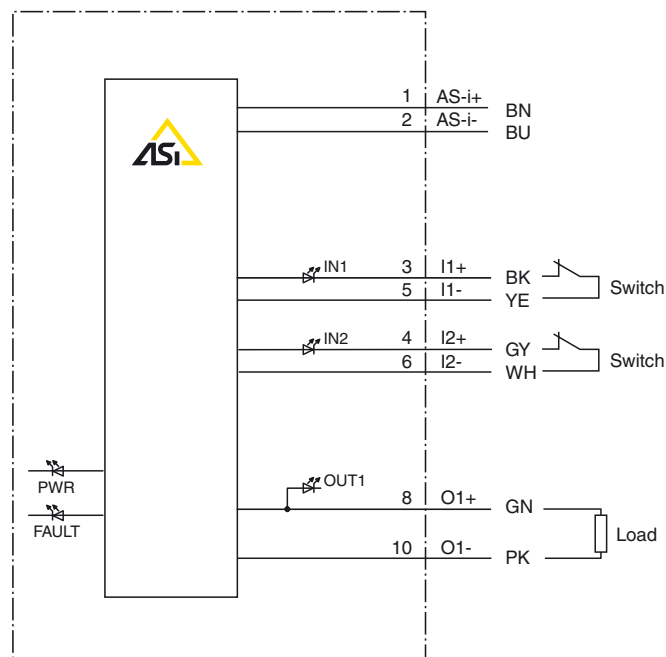
The module can be used up to Category 4/PL_e according to ISO 13849-1, SIL 3 according to EN 62061.

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.

Dimensions



Electrical connection



Indicating / Operating means

AS-Interface:

BN = AS-i+

BU = AS-i-

IN:

BK = I1+

GY = I2+

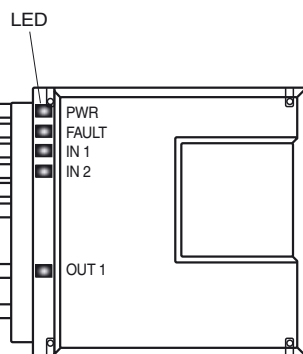
YE = I1-

WH = I2-

OUT:

GN = O1+

PK = O1-



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

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 FAULT	error display; LED red red: communication error or address is 0
LED PWR	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	≤ 40 mA (without inputs/outputs)/max. 160 mA
Protection class	III	
Surge protection		U_e : Over voltage category III, safe isolated power supplies (PELV)
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/PLc in accordance with ISO 13849-1 or SIL 1 in accordance with IEC 62061 1 two-channel contact: Up to category 4/PLe in accordance with ISO 13849-1 or SIL 3 in accordance with IEC 62061
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, overload and short-circuit resistant
Supply	from AS-Interface
Voltage	$(U_{ASi} - 7.0 \text{ V}) \leq U_{OUT} \leq U_{ASi}$
Current	≤ 100 mA

Directive conformity

Electromagnetic compatibility	
Directive 2014/30/EU	IEC 62026-2:2013 EN 61000-6-2:2005 EN 61000-6-4:2007 EN 61326-1:2013
Machinery Directive	
Directive 2006/42/EC	EN ISO 13849-1:2015 EN ISO 13849-2:2012 EN 62061:2005 + AC:2010 + A1:2013 + A2:2015

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 62026-2:2013 EN 61326-3-1:2017 EN 61000-6-2:2005
Functional safety	EN ISO 13849-1:2015 EN ISO 13849-2:2012 EN 62061:2005 + AC:2010 + A1:2013 + A2:2015

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	not used	
P1	not used	
P2	not used	
P3	not used	
Ambient conditions		
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)	
Storage temperature	-25 ... 85 °C (-13 ... 185 °F)	
Relative humidity	85 % , noncondensing	
Climatic conditions	For indoor use only	
Altitude	≤ 5000 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	0.35 mm 10 ... 57 Hz , 5 g 57 ... 2000 Hz, 10 cycles	
Pollution degree	2	
Mechanical specifications		
Degree of protection	IP20 according to EN 60529	
Connection	200 mm, PVC cable 0.5 mm ²	
Material		
Contacts	open conductor ends with connector sleeves	
Housing	Polyamide hot-melt adhesive	
Mass	28 g	
Note	This device is maintenance-free. If the device is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.	
Approvals and certificates		
UL approval	Protection class IP20 is not included in the UL approval. The protection class is tested by Pepperl+Fuchs.	
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
PFH _d	2,3 x 10 ⁻⁷	MTTF _d or PFH _d of the 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 attach the device to a level mounting surface using the enclosed double-sided adhesive pad.		