

AS-Interface safety module

VAA-2E2A-KE1P-S/E2

- 2 safe inputs for mechanical contacts such as EMERGENCY-STOP switch
- Housing with removable terminals
- Communication monitoring
- Power supply of outputs from the external auxiliary voltage
- Power supply of inputs from the module
- Function display for bus, ext. auxiliary voltage, inputs and outputs
- Output overload monitoring
- Switchable internal logic operation of the inputs and outputs via parameter bit
- Addressing jack

KE1-Safety module for the control cabinet 2 safety-related inputs and 2 conventional electronic outputs



Function

The VAA-2E2A-KE1-S/E2 is an AS-Interface safety module with 2 safety-related inputs and 2 conventional outputs. A dual channel mechanical switch or in each case a single channel mechanical switch can be connected to the two safety-related inputs. The outputs are conventional electronic outputs, which may be loaded in total with 1 A (max. 0,5 A per output).

The housing, only 22.5 mm in width and 48.5 mm in height, takes up little place in the switch cabinet. The module features an integrated addressing jack is mounted by snapping onto the 35 mm DIN rail in accordance with EN 50022. Plug-in terminals are used for connection. A 4-way terminal block (black) is used for the inputs. The AS-Interface is connected via a double terminal block (yellow).

The current switching state of each channel is indicated by an LED, located on the module's top side. Similarly, an LED is provided to monitor the AS-Interface communication and to indicate that the module has the address 0. If a communication error occurs, the outputs are de-energized (only P0=1).

When single channel force-directed mechanical switches are connected, up to Performance level c in accordance with EN ISO 13849-1 can be achieved, given the appropriate wiring and selection of switch.

When a two-channel force-directed mechanical switch is connected, up to Performance level e in accordance with EN ISO 13849-1 can be achieved, given the appropriate wiring and selection of switch.

As per approval in accordance with IEC 61508 and IEC 62061 up to SIL 3 can be achieved.

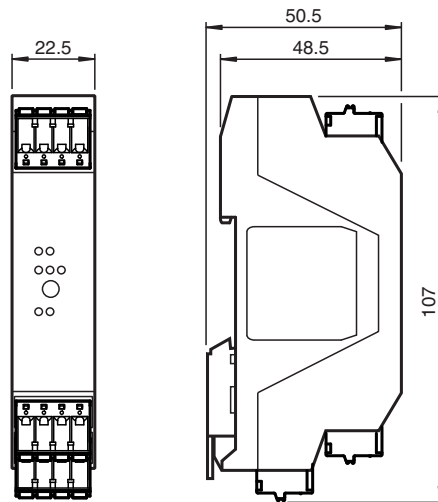
Both inputs of the module are assigned. The two channels of the mechanical switch are monitored for a cross circuit. LEDs are also provided to indicate AS-Interface voltage and external power supply.

Application

The cables and the laying of the cables have to meet the standards which apply to the particular application, e.g. IEC 60204. The instructions for the intended use, the selection and the correct connection of the sensors/actuators or the selection and the attainment of the corresponding safety category are given in the manual.

The outputs may not be used for safety-related functions!

Dimensions



Technical Data

General specifications

Node type	Safety-Slave
AS-Interface specification	V2.1
Required gateway specification	≥ V2.1
UL File Number	E223772

Functional safety related parameters

Safety Integrity Level (SIL)	SIL 3
Performance level (PL)	PL e
MTTF _d	200 a
PFH _d	0
PFD	0

Indicators/operating means

LED FAULT	error display; LED red red: communication error or address is 0 red flashing: Output supply overload
LED PWR	AS-Interface voltage; LED green
LED AUX	ext. auxiliary voltage U_{AUX} ; LED green
LED IN	switching state (input); 2 LED yellow
LED OUT	Switching state (output); 2 LED yellow

Electrical specifications

Auxiliary voltage (output)	U_{AUX}	20 ... 30 V DC PELV
Rated operating voltage	U_e	26.5 ... 31.6 V from AS-Interface
Rated operating current	I_e	≤ 70 mA
Protection class		III
Surge protection		U_{AUX} , U_e : overvoltage category II, safe isolated power supplies (PELV)

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 Cable length must not exceed 300 m per input.
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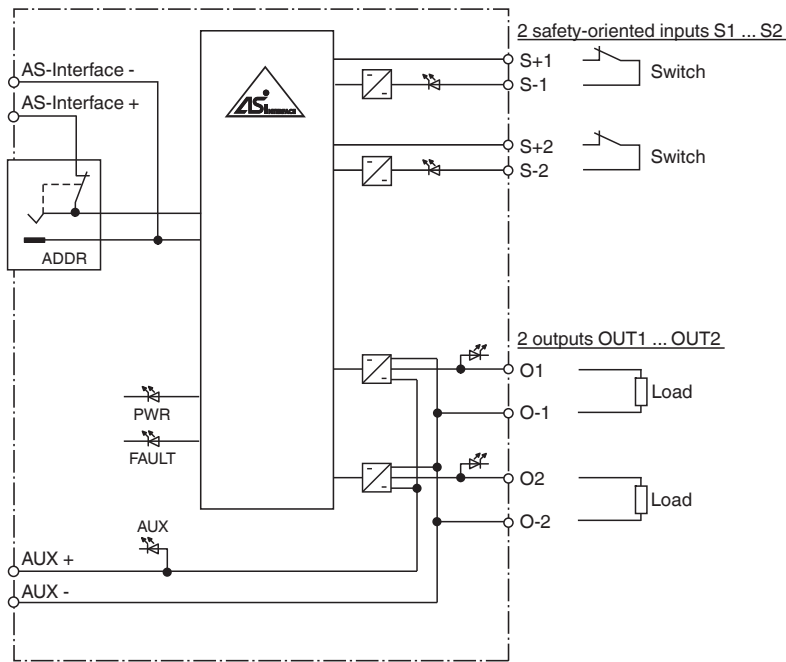
Technical Data

Supply	from AS-Interface
Voltage	20 ... 30 V DC pulsed
Current loading capacity	input current limited ≤ 15 mA, overload and short-circuit resistant
Output	
Number/Type	2 conventional electronic outputs, PNP
Supply	from external auxiliary voltage U_{AUX}
Voltage	$\geq (U_{AUX} - 0.5 \text{ V})$
Current	0.5 A per output
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 62026-2:2013 EN 61496-1:2004
Standard conformity	
Insulation coordination	EN 50178:1998
Electromagnetic compatibility	EN 61000-6-2:2005, EN 61000-4-5:2005 1 kV asymmetric, criterion B, EN 61000-6-4:2007
Degree of protection	EN 60529:2000
Fieldbus standard	EN 62026-2:2013
Electrical safety	EN 50178:1998 IEC 60204-1:2007
Emitted interference	EN 61000-6-4:2007
AS-Interface	EN 62026-2:2013
Functional safety	EN ISO 13849-1:2015 up to PL e, IEC 61508:2010 and IEC 62061:2005/A2:2015 up to SIL 3
Standards	NFPA 79:2002
Programming instructions	
Profile	S-7.B
IO code	7
ID code	B
ID1 code	F
ID2 code	0
Data bits (function via AS-Interface)	InputOutput
D0	dyn. safety code 1 OUT 1
D1	dyn. safety code 1 OUT 2
D2	dyn. safety code 2 -
D3	dyn. safety code 2 -
Parameter bits (programmable via AS-i)	function
P0	Logic operation: P0 = 1 (default settings): The outputs are controlled via AS-Interface. P0 = 0: The outputs are controlled via AS-Interface or the inputs. The corresponding output is activated on opening the contacts of an input.
P1	not used
P2	not used
P3	not used
Ambient conditions	
Ambient temperature	-25 ... 50 °C (-13 ... 122 °F)
Storage temperature	-25 ... 85 °C (-13 ... 185 °F)
Relative humidity	85 % , noncondensing
Climatic conditions	For indoor use only
Altitude	≤ 2000 m above MSL
Shock and impact resistance	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	2
Mechanical specifications	
Degree of protection	IP20
Connection	removable spring terminals Conductor cross-section 0,25 ... 2,5 mm ²

Technical Data

Material	
Housing	PA 66-FR
Mass	80 g
Mounting	DIN mounting rail
Tightening torque of clamping screws	0.5 Nm ... 0.6 Nm

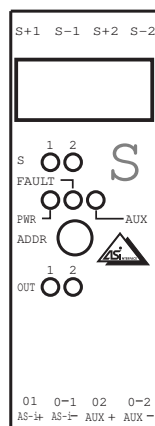
Connection






Connection

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.

Assembly



Accessories

	VBP-HH1-V3.0-KIT	AS-Interface Handheld with accessory
	VAZ-CHAIN-BU/BN70MM/1,0-25	25-point wiring link for control cabinet modules with screw terminals
	VAZ-PK-1,5M-V1-G	Adapter cable module/hand-held programming device