

ASi Safety I/O Module, IP20



ASi Safety I/O Module

Up to 8 x 2 channels safe inputs for:

- floating contacts
- antivalent switches
- OSSDs
- adjustable test puls width

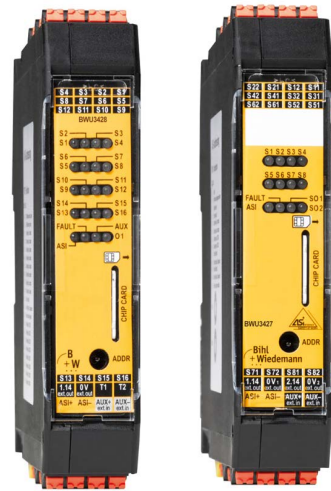
Up to 2 release circuits (2 x electronic safe outputs)

- augmented reliability

Optimal costs for safety in- and outputs on ASi

Module width of 22.5 mm, for optimal use of space in the service cabinet

Universal module for as many use cases, optimized for service and commissioning



(figure similar)

Protection category IP20



Figure	Type	Housing	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	Safety signal inputs	Input voltage (sensor supply) (1)	Output voltage (actuator supply) (2)	ASi address (3)	Article no.
	IP20, 22,5 mm x 114 mm, 6 x COMBICON, Safety	6 x COMBICON	8 x 2 channels	1 release circuit; 1 x electronic safe outputs augmented reliability	floating contacts, optoelectronic protective devices, complementary switch	out of AUX	out of AUX	depending on configuration, optimized for ASIMON360	BWU3428
	IP20, 22,5 mm x 114 mm, 6 x COMBICON, Safety	6 x COMBICON	4 x 2 channels	2 release circuit; 2 x electronic safe outputs augmented reliability	floating contacts, optoelectronic protective devices, complementary switch	out of AUX	out of AUX	depending on configuration, optimized for ASIMON360	BWU3427

- (1) **Input voltage (sensor supply):** inputs are supplied by ASi or by AUX (auxiliary 24 V power). If supplied by ASi, inputs shall not be connected to earth or to external potential.
- (2) **Output voltage (actuator supply):** outputs are supplied by ASi or by AUX (auxiliary 24 V power). If supplied by ASi, outputs shall not be connected to earth or to external potential
- (3) **ASi address:** 1 AB address (max. 62 AB addresses/ASi network), 2 AB addresses (max. 31 modules with 2 AB addresses), Single addresses (max. 31 Single addresses/ASi network), mixed use allowed.
For modules with two ASi nodes the second ASi node is turned off as long as the first ASi node is addressed to address "0". Upon request, ASi nodes are available with specific ASi address profiles.

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Article no.	BWU3427	BW3428
Connection		
Connection	6 x COMBICON clamp	
Length of connector cable	unlimited ⁽¹⁾	
ASi		
Profile	safety ASi input nodes: S-0.B.F.0 ASi diagnostic nodes: S-7.A.5.E ASi configuration node: S-7.A.F.5	
Address	depending on configuration	
Required Master profile	≥M3	
Since ASi specification	2.1	
Voltage	30 V _{DC} (18 ... 31,6 V)	
Max. current consumption	200 mA	
Max. continuous operating current	125 mA	
AUX		
Voltage	24 V _{DC} (20 ... 30 V)	
Max. current consumption	4 A	4 A
Input		
Number	4 x 2 channels safe inputs	8 x 2 channels safe inputs
Supply voltage inputs	out of AUX	
Sensor supply	short-circuit and overload protected per EN 61131	
Max. current for sensor supply	1,4 A	0,7 A
Safety Signal	floating contacts or antivalent switches, SI3 + SI4 optional for optical protective equipment	floating contacts or antivalent switches, or optical protective equipment
Switching current	15 mA (T = 100 μs), continuously 4 mA at 24 V	
Switching threshold	<5 V (low) >15 V (high)	
OSSD test pulses	0 ... 50 Hz	
OSSD test pulse width	0 ... 51 ms, adjustable	
Output		
Number	2 release circuits, 2 x fast electronic safe outputs	1 release circuit, 1 x fast electronic safe output
Max. contact load:	0,7 A DC-13 at 24 V	
Supply voltage outputs	out of AUX	
Output	short-circuit and overload protected per EN 61131	
Test pulse	when output is switched on minimal distance between 2 test pulses: 250 ms, pulse length up to 1 ms	
Visualization		
LED ASI (green)	ASi power supply on	
LED FAULT (red)	on: no data exchange or adress 0 flashing: peripheral error	
LED AUX (green)	–	on: 24 V _{DC} AUX off: no 24 V _{DC} AUX
LEDs S1 ... Sn (yellow)	state of input S1 ... S8	state of input S1 ... S16
LED SO1 (yellow)	output 1 has switched	
LED SO2 (yellow)	output 2 has switched	–

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Article no.	BWU3427	BW3428
Environment		
Applied standards	EN 60529 IEC 61508 SIL 3 EN 62061 SIL 3 EN ISO 13849-1 PLe cat. 4	
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	no ⁽²⁾	yes ⁽³⁾
Ambient temperature	0 °C ... +55 °C	
Storage temperature	-25 °C ... +85 °C	
Housing	plastic, for DIN-rail mounting	
Protection class	IP20	
Tolerable loading referring to humidity	according to EN 6131-2	
Voltage of insulation	≥ 500 V	
Weight	160 g	
Dimensions (W / H / D in mm)	22,5 / 99 / 114,5	

(1) loop resistance ≤ 150 Ω

(2) The module is not suitable for use in paths with a passively safe-switched AUX cable, since an exclusion of errors cannot be assumed for the connection of the two ASi and AUX potentials.

If the module is supplied from an unswitched AUX cable, this has no influence on the safety consideration for the paths with passively safe-switched AUX cable. In an ASi circuit, paths supplied from a passively safe-switched AUX cable and paths supplied from unswitched AUX potential can be used together.

(3) The module is suitable for use in paths with a passively safe-switched AUX cable, since an exclusion of errors can be assumed for the connection of the two ASi and AUX potentials.

UL-specifications (UL508) BWU3427, BWU3428	
External protection	An isolated source with a secondary open circuit voltage of ≤30 V _{DC} with a 3 A maximum over current protection. Over current protection is not required when a Class 2 source is employed.
In general	UL mark does not provide UL certification for any functional safety rating or aspects of the above devices.

Wiring rules

Push-in terminals, 2 poles/4 poles (pitch 5 mm)	
General	
Nominal cross section	2.5 mm ²
Conductor cross section	
Conductor cross section solid	0.2 ... 2.5 mm ²
Conductor cross section flexible	0.2 ... 2.5 mm ²
Conductor cross section flexible, with ferrule	without plastic sleeve: 0.25 ... 2.5 mm ² with plastic sleeve: 0.25 ... 2.5 mm ²
2 conductors with same cross section, stranded, with TWIN ferrules	without plastic sleeve: 0.5 ... 1.5 mm ²
AWG	24 ... 14
Stripped insulation length	10 mm

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BWU3427	Clamps	Description	
	S22, S21, S12, S11	terminal safety 2-channels input 1 (SI1)	
	S42, S41, S32, S31	terminal safety 2-channels input 2 (SI2)	
	S62, S61, S52, S51	terminal safety 2-channels input 3 (SI3)	
	S71, S72, S81, S82	terminal safety 2-channels input 4 (SI4)	
	1.14 _{ext.out}	semiconductor output 1	
	2.14 _{ext.out}	semiconductor output 2	
	0 V _{1 ext.out} , 0 V _{2 ext.out}	mass connection for semiconductor output	
	ASI +, ASI -	Connection to the ASi Bus	
	ADDR	connection for ASi-3 addressing plug	
	AUX + _{ext.in} , AUX - _{ext.in}	power supply input	

BWU3428	Clamps	Description
	S1, S2, S3, S4	safe input terminal input 1-4
	S5, S6, S7, S8	safe input terminal input 5-8
	S9, S10, S11, S12	safe input terminal input 9-12
	S13, S14, S15, S16	safe input terminal input 13-16
	1.14 _{ext.out}	semiconductor output 1
	0 V _{ext.out}	mass connection for semiconductor output
	T1	pulse 1 (S1, S3, S5, S7, S9, S11, S13, S15)
	T2	pulse 2 (S2, S4, S6, S8, S10, S12, S14, S16)
	ASI +, ASI -	Connection to the ASi Bus
	ADDR	addressing socket
	AUX + _{ext.in} , AUX - _{ext.in}	power supply input

Diagnostics (device colors)

Value	Color	Description	State change	LED O1/2
0	green	output on		on
1	green flashing	–		–
2	yellow	restart inhibit	auxiliary signal 2	1 Hz
3	yellow flashing	–		–
4	red	output off		off
5	red flashing	waiting for "reset of error condition" or AUX missing	auxiliary signal 1 or connect AUX	8 Hz
6	gray	internal error, such as "fatal error"	only via "Power ON" on device	all LEDs flashing
7	green/yellow	output released, but not switched on	switching-on by setting of O0	off

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Assignment code half sequence - terminals

	Code half sequence	Terminals
BWU3427	Bit0	Input terminals: SI 21 / SI 41 / SI 61 / SI 72
	Bit1	
	Bit2	Input terminals: SI 12 / SI 32 / SI 52 / SI 81
	Bit3	
BWU3428	Bit0	Input terminals: SI 2 / SI 4 / SI 6 / SI 8 / SI 10 / SI 12 / SI 14 / SI 16
	Bit1	
	Bit2	Input terminals: SI 1 / SI 3 / SI 5 / SI 7 / SI 9 / SI 11 / SI 13 / SI 15
	Bit3	

ASi diagnostic nodes

Bit	input	output
Bit0	Diagnostic color	If P1=0 and A0=0, the output is switched off independent from release
Bit1		free
Bit2		free
Bit3	P2=1: response switch S31/S32 or S41/S42 P2=0: response of the release of the state	non existent

Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- ASi-5/ASi-3 Address Programming Device (art. no. BW4708)



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