

ASi-5 Safety Input Module, IP67, M12

2 x 2 channel safe inputs for

- 2 x floating contacts or
- 2 x OSSDs

up to 12 standard inputs, depending on configuration


up to 12 standard outputs, depending on configuration

protection category IP67



(Figure similar)



Figure	Type	Inputs Safety, SIL 3, cat. 4	Safety signal inputs	Inputs digital	Outputs digital	Input voltage (sensor supply) (1)	Output voltage (actuator supply) (2)	ASi connection (3)	ASi address (4)	Article no.
	IP67, 8 x M12, ASi-5 Safety	2 x 2 channels	floating contacts	up to 12, depending on configuration	up to 12 x electronic, depending on configuration	out of AUX	out of AUX	ASi via profile cable	1 ASi-5 address	BWU4209
	IP67, 8 x M12, ASi-5 Safety	2 x 2 channels	OSSDs	up to 12, depending on configuration	up to 12 x electronic, depending on configuration	out of AUX	out of AUX	ASi via profile cable	1 ASi-5 address	BWU4210

- (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 connection:** the connection to ASi as well to AUX (auxiliary 24V power) is either made via yellow resp. black ASi profile cable with piercing technology or via M12 socket (in IP20 via clamps).
- (4) **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.

Article no.	BWU4209		BWU4210	
Connection				
ASi/AUX connection	profile cable and piercing technology			
Periphery connection	M12, Y or mixed wiring, freely selectable for each M12 connection ⁽¹⁾			
Length of connector cable	I/O: max. 15 m ⁽²⁾			
ASi				
Adresse	1 ASi-5 address			
Required ASi specification of the Master	ASi-5			
ASi process data width	3 byte			
Operating voltage	30 V _{DC} (18 ... 31,6 V)			
Max. current consumption	100 mA			
Max. current consumption without sensor/actuator supply	100 mA			
AUX				
Voltage	24 V _{DC} (20 ... 30 V) (PELV) ⁽³⁾			
Max. current consumption	3 A max.		3,5 A max.	
Input				
Number	up to 12, depending on configuration			
Power supply	out of AUX			
Sensor supply	short-circuit and overload protected, acc. to EN 61131-2			
Supply of attached sensors	up to +40 °C	200 mA per sensor supply/pin1		
	at +55 °C			
	at +70 °C			
Switching threshold	U < 5 V (low) U > 15 V (high)			
Output				
Number	up to 12 x electronic, depending on configuration			
Power supply	out of AUX			
Output	short-circuit and overload protected, acc. to EN 61131-2			
Max. output current	up to +40 °C	350 mA per output, Σ (Out) 1500 mA		
	at +55 °C			
	at +70 °C			
Safety input, SIL 3, Kat. 4				
Number	2 x 2 channel safe inputs			
Safety signal	2 x floating contacts		2 x OSSDs	
Power supply	out of AUX			
Switching current	15 mA (T = 100µs), continuously 4 mA at 24 V		-	
Max. output current for OSSD supply	-		Σ(In/Out) < 320 mA	
OSSD test pulses	-			
OSSD test pulse width	-		U _{aux} ≥ 21,5 V = 0 ... 1 ms test pulses possible U _{aux} ≥ 17 V = 0 ... 0,8 ms test pulses possible U _{aux} < 17 V = 0 ... 0,6 ms	
Input level	10 mA, R < 150 Ω		V _{in} > 11 V for High-Level, input current > 2 mA at 15 V	

Article no.	BWU4209	BWU4210
Display		
LED ASi (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault ⁽⁴⁾ or address 0 off: no ASi voltage	
LED FLT/FAULT (red)	on: ASi address 0 or ASi node offline flashing: peripheral fault ⁽⁴⁾ off: ASi node online	
LED AUX (green)	on: 24 V _{DC} AUX off: no 24 V _{DC} AUX	
LEDs I/O1 ... I/On (yellow)	state of inputs I1 ... I12 or outputs O1 ... O12, depending on configuration	
LEDs S11/S12, S21/S22 (yellow)	state of safe input channels S11/S12, S21/S22	
Environment		
Applied standards	EN 61000-2 EN 61000-3 EN 61131-2 EN 62061 EN ISO 13849-1 EN 60529	
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	no ⁽⁵⁾	
Operating altitude	max. 2000 m	
Ambient operating temperature	-30 °C ... +55 °C (up to max. +70 °C) ⁽⁶⁾	
Storage temperature	-25 °C ... +85 °C	
Housing	plastic, for screw mounting	
Pollution Degree	2	
Protection category	IP67 ⁽⁷⁾	
Tolerable loading referring to humidity	according to EN 61131-2	
Max. tolerable shock load	30g, 11 ms, acc. EN 61131-2	
Max. tolerable vibration stress	5 ... 8 Hz 50 mm _{pp} /8 ... 500 Hz 6g, acc. EN 61131-2	
Voltage of insulation	≥500 V	
Weight	225 g	
Dimension (W / H / D in mm)	60 / 152 / 34	

(1) **M12 wiring:**

Single wiring: 1 input or output per connection.

Y wiring: 2 inputs or outputs per connection.

Mixed wiring: 1 input and 1 output per connection.

(2) loop resistance ≤150 Ω

(3) The ground connection of the 24 V power supply, which supplies auxiliary power (AUX), must be grounded!

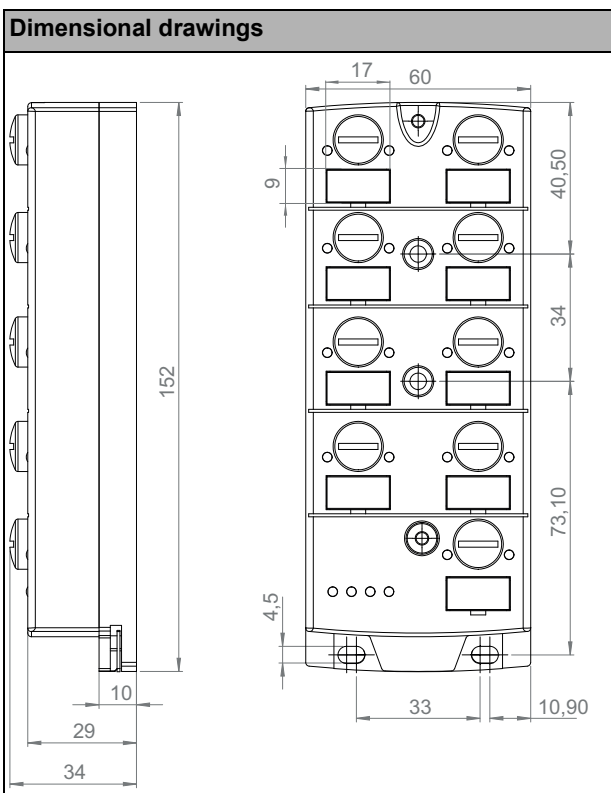
(4) See table "Peripheral fault indication"

(5) 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.

(6) Maximum ambient operating temperature +55 °C according UL certificate for the use in the USA and Canada.

(7) IP67 can only be achieved if all open M12 sockets are sealed with suitable protection caps (see accessories).



Article no.	Peripheral fault indication				
	Overload sensor supply	Output short circuited	Cross connection	Output overload	AUX voltage missing
BWU4209	•	•	•	•	•
BWU4210	•	•	-	•	•

Programming: ASi bit assingment

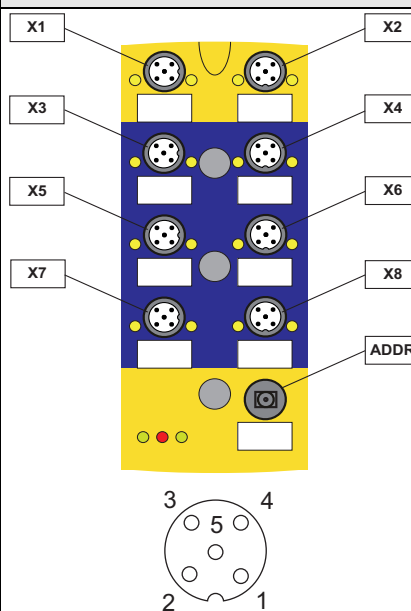
Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		Input							
BWU4209	0	reserved				S22	S21	S12	S11
	1	I8	I7	I6	I5	I4	I3	I2	I1
	2	reserved				I12	I11	I10	I9
BWU4210	0	reserved				OSSD4 (S22)	OSSD3 (S21)	OSSD2 (S12)	OSSD1 (S11)
	1	I8	I7	I6	I5	I4	I3	I2	I1
	2	reserved				I12	I11	I10	I9

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		Output							
BWU4209	0	reserved							
	1	O8	O7	O6	O5	O4	O3	O2	O1
	2	reserved				O12	O11	O10	O9
BWU4210	0	reserved					Reset 2	reserved	Reset 1
	1	O8	O7	O6	O5	O4	O3	O2	O1
	2	reserved				O12	O11	O10	O9

Pin assignment

Signal name	Explanation
Sx1/Sx2	safe input channel x
I/Ox	standard input x or standard output x, freely configurable
24 V _{ext out}	output, power supply out of external 24 V, positive pole
0 V _{ext out}	output, power supply out of external 24 V, negative pole
Reset	reset signal
ASi+, ASi-	connection to ASi bus
n.c. (not connected)	not connected

Connections							
Article no.	M12 conn.	Denom.	Pin1	Pin2	Pin3	Pin4	Pin5
BWU4209	X1	S11/S12	S11+	S11-	S12+	S12-	n.c.
	X2	S21/S22	S21+	S21-	S22+	S22-	n.c.
	X3	I/O1, I/O2	24 V _{ext out}	I/O2	0 V _{ext out}	I/O1	n.c.
	X4	I/O3, I/O4	24 V _{ext out}	I/O4	0 V _{ext out}	I/O3	n.c.
	X5	I/O5, I/O6	24 V _{ext out}	I/O6	0 V _{ext out}	I/O5	n.c.
	X6	I/O7, I/O8	24 V _{ext out}	I/O8	0 V _{ext out}	I/O7	n.c.
	X7	I/O9, I/O10	24 V _{ext out}	I/O10	0 V _{ext out}	I/O9	n.c.
	X8	I/O11, I/O12	24 V _{ext out}	I/O12	0 V _{ext out}	I/O11	n.c.
	ADDR (protecti-on cap)	connection for ASi-5 addressing plug					
BWU4210	X1	S11/S12	24 V _{ext out}	OSSD 2 (S12)	0 V _{ext out}	OSSD1 (S11)	Reset 1
	X2	S21/S22	24 V _{ext out}	OSSD 4 (S22)	0 V _{ext out}	OSSD3 (S21)	Reset 2
	X3	I/O1, I/O2	24 V _{ext out}	I/O2	0 V _{ext out}	I/O1	n.c.
	X4	I/O3, I/O4	24 V _{ext out}	I/O4	0 V _{ext out}	I/O3	n.c.
	X5	I/O5, I/O6	24 V _{ext out}	I/O6	0 V _{ext out}	I/O5	n.c.
	X6	I/O7, I/O8	24 V _{ext out}	I/O8	0 V _{ext out}	I/O7	n.c.
	X7	I/O9, I/O10	24 V _{ext out}	I/O10	0 V _{ext out}	I/O9	n.c.
	X8	I/O11, I/O12	24 V _{ext out}	I/O12	0 V _{ext out}	I/O11	n.c.
	ADDR (protecti-on cap)	connection for ASi-5 addressing plug					



LED status display

LED	State	Signal / Description
AUX (green)		no 24 V _{DC} AUX
		24 V _{DC} AUX present
ASi (green)		no ASi voltage
		ASi voltage present, but at least one ASi node is addressed „0“ or peripheral fault
		ASi voltage present
FLT (red)		ASi communication OK (at least one ASi node on line)
		at least one ASi node with peripheral fault
		no data exchange (with at least one correctly addressed ASi node)
S11/S12 ... S21/S22 (yellow)		safety input channel is switched off
		cross-connection
		internal error or double address
		safety input channel is switched on
LED on LED flashing LED off		

	In case all LEDs are blinking simultaneously in fast rhythm a fatal error has been detected. This message is reset by a short disconnection of the power supply (Power ON Reset).
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Accessories:

- Bihl-Wiedemann Suite - Safety Software for Configuration, Diagnostics and Programming (art. no. BW2916)
- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing (art. no. BW2351)
- Universal protection cap ASi-5/ASi-3 for M12 sockets, IP67 (art. no. BW4056)
- Sealing profile IP67 (IDC plug), 60 mm (art. no. BW3282)
- ASi-5/ASi-3 Address Programming Device (art. no. BW4925)