

ASi Safety Relay I/O Module, IP67, M12, 1SI/1SRO/1I

Safety + standard I/O in one module

Safety relay output with galvanically isolated contact sets

Additionally 1 standard input, 1 x 2 channel safe input


Applications up to category 4/PLe/SIL 3

Protection category IP67



(Figure similar)



Figure	Type	Inputs Safety, SIL 3, cat. 4	Inputs digital	Outputs digital	Safety signal inputs	Input voltage (sensor supply) ⁽¹⁾	ASi connection ⁽²⁾	ASi address ⁽³⁾	Article no.
	IP67, 4 x M12 (51 mm x 60 mm), Safety	1 x 2 channels	1	1 release circuit, 2 x relay	floating contacts	out of AUX	ASi profile cable	2 single addresses + 1 AB address	BWU4379

- (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) **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).
- (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.

Article no.	BWU4379
Connection	
Connection	profile cable and piercing technology
Periphery connection	M12
Length of connector cable	unlimited ⁽¹⁾
ASi	
Profile	diagnostic AB address: S-7.A.E (ID1=5 default), value adjustable safety input S-7.B.0 (ID1=F default)
Address	2 single addresses + 1 AB address
Required master profile	≥ M3
As of ASi specification	2.1
Operating voltage	30 V _{DC} (18 ... 31,6 V)
Max. current consumption	200 mA

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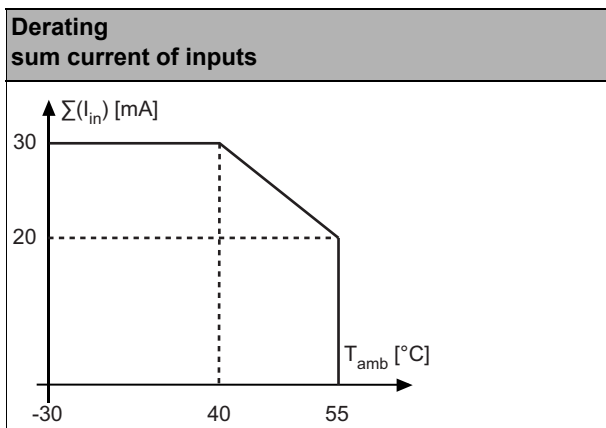
Article no.		BWU4379	
AUX			
Voltage		24 V _{DC} (19 ... 30)	
Current input out of AUX _{ext. in}		< 30 mA	
Input			
Number		1 EDM, diagnostic, 1 x 2 channel safe input (cat. 4 / SIL 3)	
Switching current		15 mA (T = 100 µs), continuously 4 mA at 24 V	
Clock outputs for floating contacts		1 test pulse per clock output per second, pulse duration approx. 1 ms	
Power supply		out of AUX	
Power supply of attached sensors	up to 40 °C	30 mA ⁽²⁾	
	at +55 °C	20 mA ⁽²⁾	
Max. resistance between S 11/ S12; S 21/S 22		150 Ω	
Output			
Number		2 relay outputs max. contact load: 6 A DC-13 at 24 V	
Relay control		out of ASi	
		without internal profile cable branch from AUX profile cable to AUX profile cable	with internal profile cable branch (max. 8 A) from AUX profile cable to AUX profile cable
Max. output current	up to 40 °C	max. 6 A out of AUX at X4 (if all pins 1-4 are used) ⁽³⁾ max. 3 A per contact at X3 (max. 3 A at contact pins 1+2 and max. 3 A at contact pins 3+4) ⁽⁴⁾	max. 6 A out of AUX at X4 (if all pins 1-4 are used) ⁽³⁾ max. 3 A per contact at X3 (max. 3 A at contact pins 1+2 and max. 3 A at contact pins 3+4) ⁽⁴⁾
	at +55 °C	max. 5 A out of AUX at X4 (if all pins 1-4 are used) ⁽³⁾ max. 2,5 A per contact at X3 (max. 2,5 A at contact pins 1+2 and max. 2,5 A at contact pins 3+4) ⁽⁴⁾	max. 3 A out of AUX at X4 (if all pins 1-4 are used) ⁽³⁾ max. 1,5 A per contact at X3 (max. 3 A at contact pins 1+2 and max. 1,5 A at contact pins 3+4) ⁽⁴⁾
Max. inrush current		20 A for 20 ms	
Number of switching operations			
Usage category (EN 60347-4-1 / EN 60947-5-1)		DC 1: 24V/6A (ca. 500 x 10 ³ cycles) DC 13: 24V/6A/0,1 Hz (ca. 50 x 10 ³ cycles)	
Display			
LED S1, S2 (yellow)		state of safety channel inputs S1, S2	
LED I1 (yellow)		state of input I1	
LED ASi (green)		on: ASi voltage on flashing: ASi voltage on, but peripheral fault ⁽⁵⁾ or address 0 off: no ASi voltage	
LED FAULT (red)		on: ASi address 0 or ASi node offline flashing: peripheral fault ⁽⁵⁾ off: ASi node online	
LED AUX (yellow)		on: 24 V _{DC} AUX (unswitched) off: no 24 V _{DC} AUX (unswitched)	
LED SO1.1 (yellow)		for definition see table "device colors"	
LED SO1.2 (yellow)		for definition see table "device colors"	

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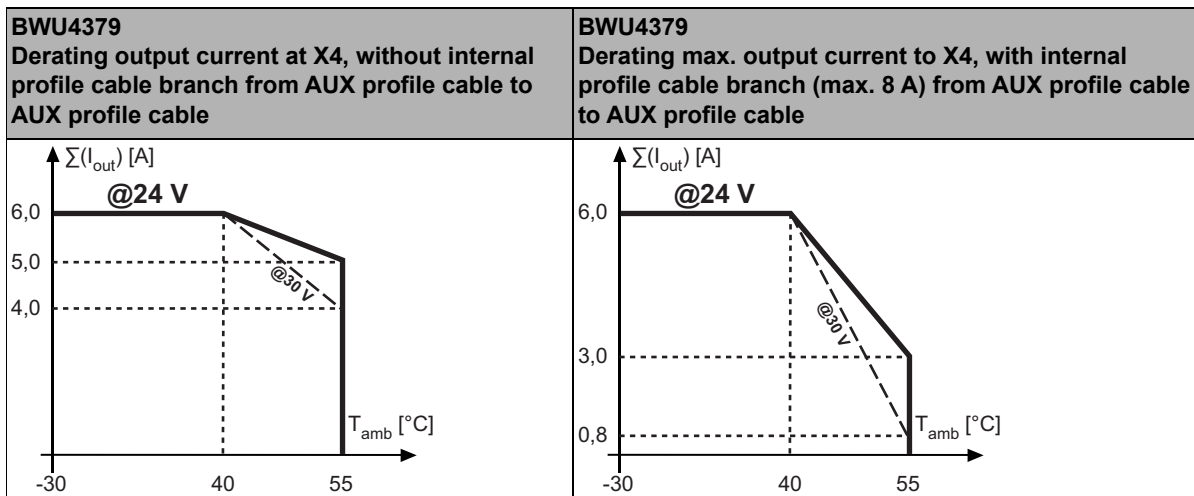
Article no.	BWU4379
Environment	
Applied standards	EN 61508 EN ISO 13849-1 EN 62061 EN 60947-5-1 EN 60529
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	yes ⁽⁶⁾
Operating height max.	2000 m
Ambient temperature	-30 °C ... +55 °C ^{(2) (3) (4) (7)}
Storage temperature	-25 °C ... +85 °C
Housing	Plastic, screw mounting or DIN rail mounting ⁽⁸⁾
Pollution Degree	2
Protection category	IP67
Tolerable loading referring to humidity	according to EN 61131-2
Voltage of insulation ASi to AUX _{ext. in}	≥500 V
Weight	265 g
Dimensions (L / W / H in mm)	152 / 60 / 60

(1) loop resistance ≤ 150 Ω

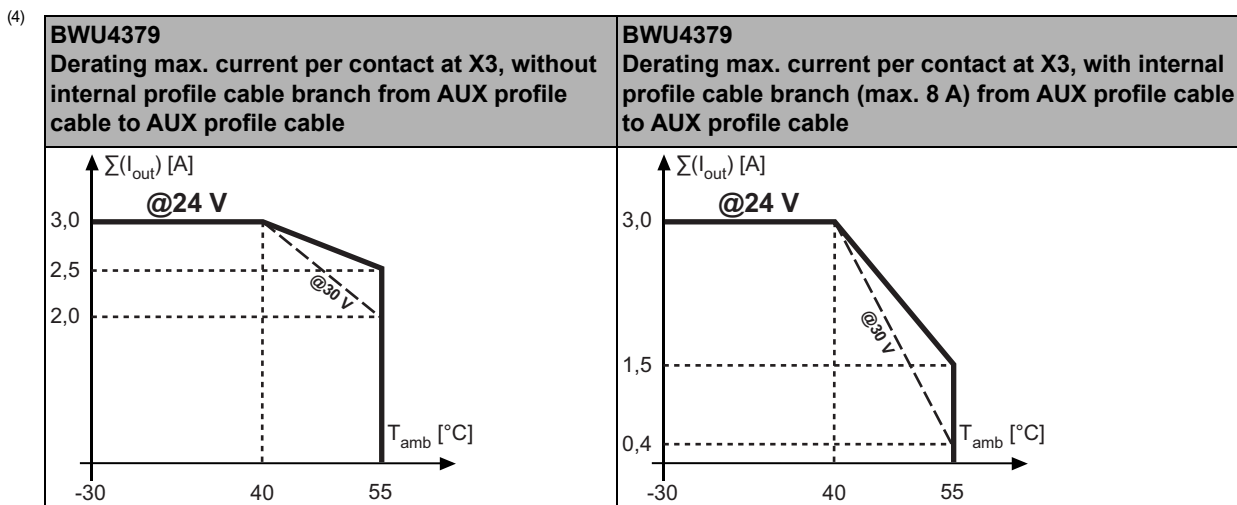
(2)



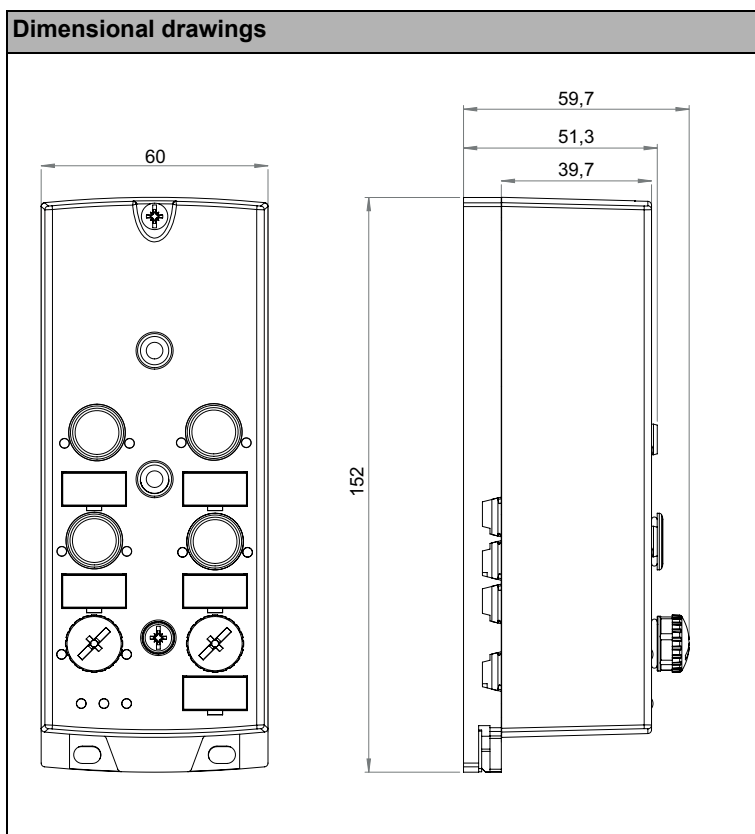
(3)



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- (5) See table "Peripheral fault indication"
- (6) The exclusion of errors for the connection of the two potentials ASi and AUX can be assumed in the module. Passive safety for the application can only be achieved if this is fulfilled for all components used.
- (7) Maximum ambient operating temperature +55 °C according UL certificate for the use in the USA and Canada.
- (8) Depending on substructure module (see accessories). The substructure module is not included in the scope of delivery.



UL-specifications (UL508) BWU4379	
External protection	An isolated source with a secondary open circuit voltage of $\leq 30 V_{DC}$ 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.

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Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BWU4379	-	-	•

Diagnostic address

Programming instructions (Bit values of the inputs/outputs, AB address)					
Bit	ASi output		Bit	ASi input	
O0	not used		I0	Diagnostic (for definition see table "device colors")	
O1	Parameter P1=1	Parameter P1=0	I1		
	not used	1: switches output off when release is given 0: switches output off although release is given			
O2	not used		I2		
O3	inexistent		I3	Parameter P2=0	Parameter P2=1
				1: feedback for user: <i>release on</i> 0: feedback for user: <i>release off</i>	I1

Peripheral fault indicates unavailable 24 V ext.

Diagnostic (device colors)				
Value	Color	Description	State change	LED "Out"
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"	auxiliary signal 1	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 O1	off

Programming instructions Diagnostic node (bit values of the ASi parameter)	
Bit P1	
P1=1	Safe output switches when released
P1=0	Safe output switches when released and O1=1
Bit P2	
P2=1	input I1 at ASi bit I 3
P2=0	feedback for user: <i>release on</i>
Bits P0, P3:	
not used	

Release		ASi Safety Relay Output Module, safety release from the ASi safety monitor...	
		... not received	... received
ASi parameter (AB address) changes the function of output bit O1	ASi Parameter P1=1 (default) O1=0	safety output contact set closed	safety output contact set open
	ASi Parameter P1=1 O1=1	safety output contact set closed	safety output contact set open
	ASi Parameter P1=0 O1=0	safety output contact set closed	safety output contact set closed
	ASi Parameter P1=0 O1=1	safety output contact set closed	safety output contact set open

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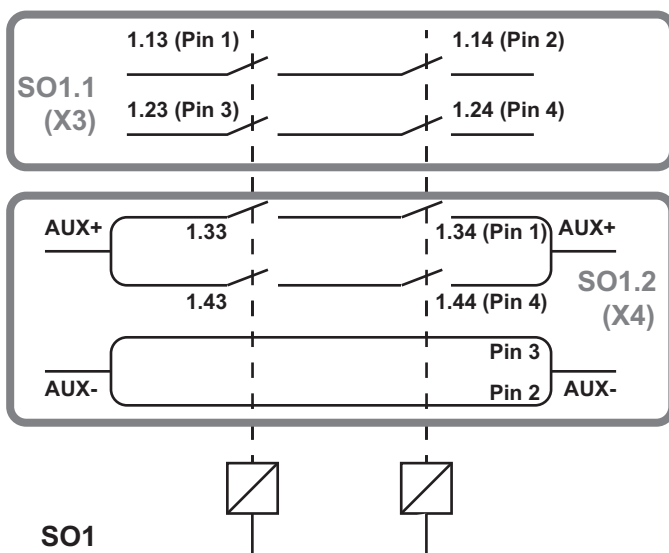
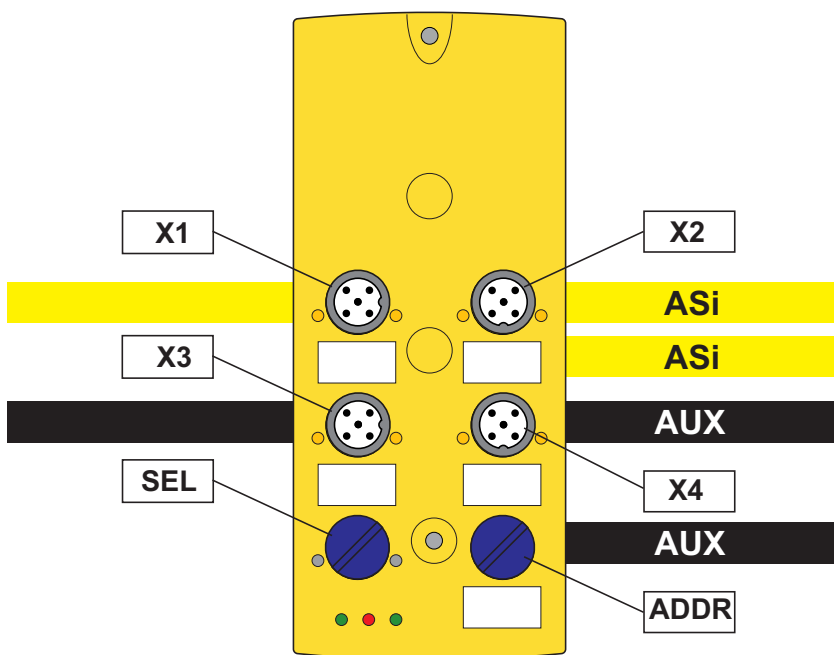
Safety input (Programming instructions (bit values of the safety input address))			
Bit	ASi output	Bit	ASi input
	outputs not used	I0, I1	safety input S 1
		I2, I3	safety input S 2

Peripheral fault indicates cross-connection between the safety inputs.

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Connections

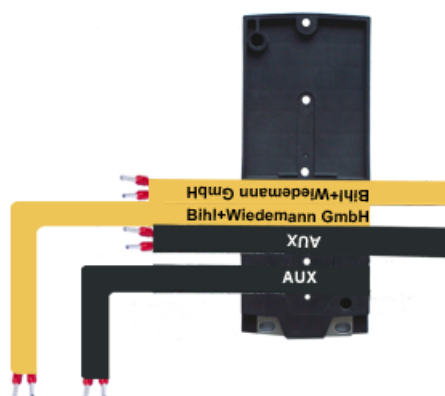
Article no.	M12 conn.	Denom.	Config.	Pin1	Pin2	Pin3	Pin4	Pin5
BWU4379	X1	S1/S2	safe input (floating contact)	S11	S12	S21	S22	n.c.
	X2	I1	standard input	24 V _{ext out}	n.c.	0 V _{ext out}	I1	n.c.
	X3	SO1.1	safe coupling	1.13	1.14	1.23	1.24	n.c.
	X4	SO1.2	AUX safety-switched	1.34	0 V _{ext out}	0 V _{ext out}	1.44	n.c.
	SEL	SEL	rotary switch (protection cap)					
ADDR	ADDR	connection for ASi-3 addressing plug						



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Rotary switch position (address assignment)	
SEL	Description
0	reserved
1	addressing standard input / Safety output diagnostic
2	addressing Safety output
3	addressing Safety input
4	RUN
5	RUN without Safety input
6-F	reserved

Line termination with sealing profiles / junction



Accessories:

- Passive Distributor AUX, 1 x M12 cable plug, straight, 4 poles, to 1 x AUX profile cable, depth 19 mm, IP67 (art. no. BW4922)
- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing (art. no. BW2351)
- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing (art. no. BW3516)
- 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)