

# ASi-5 Self-configuring I/O Modules, IP67, M12

## ASi-5 digital I/O modules with self-configuring connections

Sensors and actuators can be connected in any combination, 2 signals per M12 connection possible

Optional assignment of a fixed configuration of inputs and outputs possible via software

Up to 16 digital inputs, depending on configuration

Up to 16 digital outputs, depending on configuration



ASi-5 – Great data bandwidth, short cycle times

Compatible with ASi modules of all ASi generations



(figure similar)



Figure	Inputs digital	Outputs digital	M12 connection <sup>(1)</sup>	Input voltage (sensor supply) <sup>(2)</sup>	Output voltage (actuator supply) <sup>(3)</sup>	ASi connection <sup>(4)</sup>	ASi address <sup>(5)</sup>	Max. output current	Art. no.
	up to 16, depending on configuration	up to 16 x electronic, depending on configuration	Y/mixed	out of AUX	out of AUX	ASi profile cable	1 ASi-5 address	350 mA	<b>BWU4230</b>
	up to 16, depending on configuration	up to 16 x electronic, depending on configuration	Y/mixed	out of AUX	out of AUX	ASi via M12	1 ASi-5 address	350 mA	<b>BWU4231</b>

- (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) **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.
- (3) **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.
- (4) **ASi connection:** the connection to ASi as well to AUX (auxiliary 24 V power) is made via yellow resp. black ASi profile cable with piercing technology or via M12 socket (in IP20 via clamps).
- (5) **ASi address:** AB address (max. 62 ASi nodes with extended address allocation per ASi circuit), 2 AB addresses (max. 31 ASi-3 modules with 2 AB addresses), single address (max. 31 single nodes with standard address allocation per ASi circuit) ASi-5 address (max. 62 ASi-5 nodes per ASi circuit), mixed use allowed (upon request, ASi modules are available with specific ASi profiles).

# ASi-5 Self-configuring I/O Modules, IP67, M12

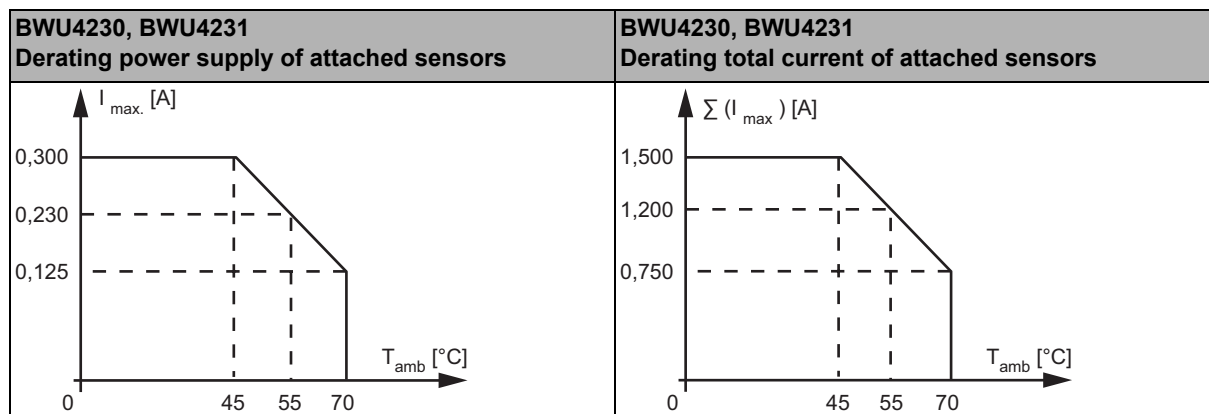
Article No.	BWU4230		BWU4231
<b>General data</b>			
Device type	input / output		
<b>Connection</b>			
ASi/AUX connection	profile cable and piercing	M12 <sup>(7)</sup>	
Periphery connection	M12, Y or mixed wiring, freely selectable for each M12 connection		
Length of connector cable	unlimited <sup>(1)</sup>		
<b>ASi</b>			
Address	1 ASi-5 address		
As of ASi specification	ASi-5		
ASi process data width	2 byte		
Operating voltage	30 V (18 ... 31.6 V)		
Max. current consumption	70 mA		
Max. current consumption without sensor/ actuator supply	70 mA		
<b>AUX</b>			
Operating voltage	24 V (18 ... 30 V)		
Max. current consumption	4.3 A	4 A <sup>(7)</sup>	
<b>Input</b>			
Number	up to 16, depending on configuration		
Power supply	out of AUX		
Sensor supply	short-circuit and overload protected according to EN 61131-2		
Power supply of attached sensors	up to +45 °C	0.3 A per sensor supply/pin 1, $\sum(\text{In}) 1.5 \text{ A}^{(2)}$ , $\sum(\text{In/Out}) 4.3 \text{ A}$	0.3 A per sensor supply/pin 1, $\sum(\text{In}) 1.5 \text{ A}^{(2)}$ , $\sum(\text{In/Out}) 4 \text{ A}^{(7)}$
	at +55 °C	0.230 A per sensor supply/pin 1, $\sum(\text{In}) 1.2 \text{ A}^{(2)}$ , $\sum(\text{In/Out}) 4.0 \text{ A}$	0.23 A per sensor supply/pin 1, $\sum(\text{In}) 1.2 \text{ A}^{(2)}$ , $\sum(\text{In/Out}) 4 \text{ A}^{(7)}$
	at +70 °C	0.125 A per sensor supply/pin 1, $\sum(\text{In}) 0.75 \text{ A}^{(2)}$ , $\sum(\text{In/Out}) 3.55 \text{ A}$	0.125 A pper sensor supply/pin 1, $\sum(\text{In}) 0.75 \text{ A}^{(2)}$ , $\sum(\text{In/Out}) 3.55 \text{ A}^{(7)}$
Switching threshold	U < 5 V (low) U > 15 V (high)		
<b>Output</b>			
Number	up to 16 x electronic, depending on configuration		
Power supply	out of AUX		
Output	short-circuit and overload protected according to EN 61131-2		
Max. output current	up to +45 °C	0,35 A per output, $\sum(\text{Out}) 2,8 \text{ A}$ , $\sum(\text{In/Out}) 4,3 \text{ A}$	0,35 A per output, $\sum(\text{Out}) 2,8 \text{ A}$ , $\sum(\text{In/Out}) 4 \text{ A}^{(7)}$
	at +55 °C	0,35 A per output, $\sum(\text{Out}) 2,8 \text{ A}$ , $\sum(\text{In/Out}) 4 \text{ A}$	0,35 A per output, $\sum(\text{Out}) 2,8 \text{ A}$ , $\sum(\text{In/Out}) 4 \text{ A}^{(7)}$
	at +70 °C	0,35 A per output, $\sum(\text{Out}) 2,8 \text{ A}$ , $\sum(\text{In/Out}) 3,55 \text{ A}$	0,35 A per output, $\sum(\text{Out}) 2,8 \text{ A}$ , $\sum(\text{In/Out}) 3,55 \text{ A}^{(7)}$

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Article No.	BWU4230	BWU4231
<b>Display</b>		
LED ASI (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault <sup>(3)</sup> or address 0 off: no ASi voltage	
LED FLT/FAULT (red)	on: ASi address 0 or ASi node offline flashing: peripheral fault <sup>(3)</sup> off: ASi node online	
LED AUX (green)	on: 24 V <sub>DC</sub> AUX off: no 24 V <sub>DC</sub> AUX	
LEDs I/O1 ... I/On (yellow)	state of inputs I1 ... I16 or outputs O1 ... O16, depending on configuration off: the corresponding input or output is turned off yellow: the corresponding input or output is turned on red flashing: output short circuit <sup>(3)</sup> at the corresponding output (display has priority over "overload sensor supply") red (both LEDs): overload sensor supply <sup>(3)</sup> on (at least) one input of the M12 connection (if there is a simultaneous "output short circuit", the indicator "red flashing" on the corresponding LED has priority)	
<b>Environment</b>		
Applied standards	EN 61000-6-2 EN 61000-6-3 EN 61131-2 EN 60529	
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	yes <sup>(4)</sup>	no <sup>(8)</sup>
Operating altitude	max. 2000 m	
Ambient temperature	-30 °C ... +55 °C (up to max. +70 °C) <sup>(2)</sup> <sup>(5)</sup>	
Storage temperature	-25 °C ... +85 °C	
Housing	plastic, for DIN rail mounting or for screw mounting <sup>(6)</sup>	plastic, for screw mounting
Pollution degree	2	
Protection category	IP67	
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 <sub>pp</sub> /8 ... 500 Hz 6g, acc. EN 61131-2	
Insulation voltage	≥ 500 V	
Weight	200 g	
Dimensions (W / H / D) in mm	60 / 152 / 34	60 / 152 / 46

(1) Loop resistance ≤ 150 Ω

(2)



(3) See table "Peripheral fault indication"

(4) BWU4230 from Ident. No. 18442; 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.

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

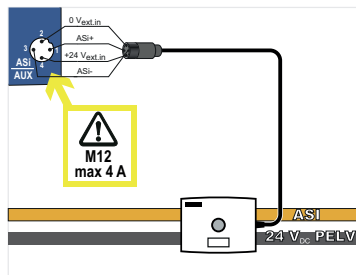
# ASi-5 Self-configuring I/O Modules, IP67, M12

(6) Depending on substructure module (see accessories). The substructure module is not included in the scope of delivery.

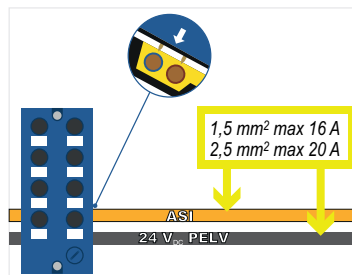
(7) **Line protection:**

If the module is supplied via a M12 connection with A or B coding, it may only be used with a current load of max. 4 A per pin in acc. with IEC 61076-2-101 and IEC 61076-2-109. A fused tap is recommended. There is no such limitation for modules supplied via piercing contacts.

**Connection to ASi and AUX via M12**



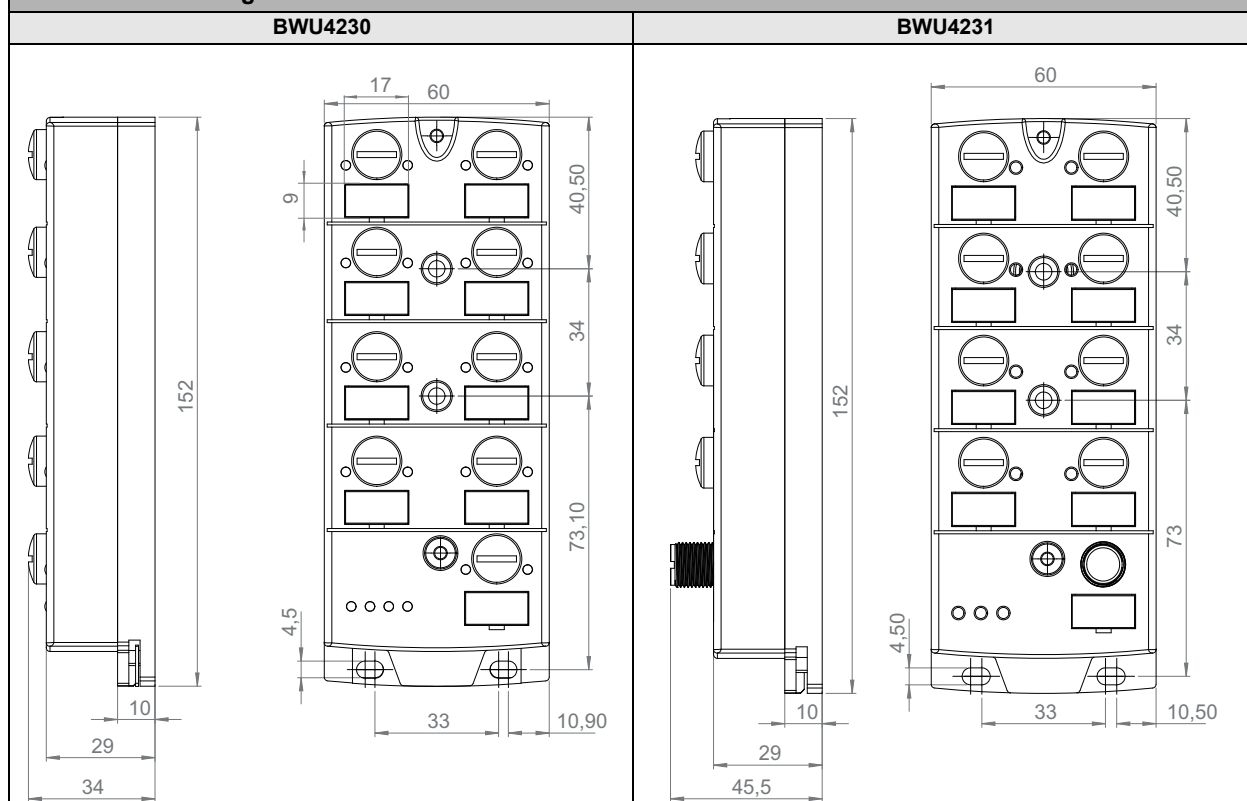
**via piercing contacts**



(8) 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.

**Dimensional drawings**



**UL-specifications (UL508)**

**BWU41230, BWU4231**

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.

# ASi-5 Self-configuring I/O Modules, IP67, M12

Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BWU4230	•	•	•
BWU4231	•	•	•

## Programming: ASi bit assignment

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		input							
BWU4230, BWU4231	0	I8	I7	I6	I5	I4	I3	I2	I1
BWU4230, BWU4231	1	I16	I15	I14	I13	I12	I11	I10	I9

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		output							
BWU4230, BWU4231	0	O8	O7	O6	O5	O4	O3	O2	O1
BWU4230, BWU4231	1	O16	O15	O14	O13	O12	O11	O10	O9

## Pin assignment

Signal name	Explanation
I/Ox	either digital input x <b>or</b> digital output x
24 V <sub>ext out</sub>	power supply, out of external voltage, positive pole (AUX)
0 V <sub>ext out</sub>	power supply, out of external voltage, negative pole (AUX)
ASi +, ASi -	connection to ASi bus
n.c. (not connected)	not connected

## Connections

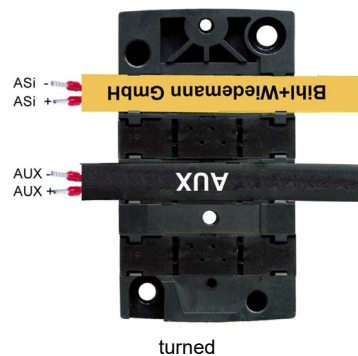
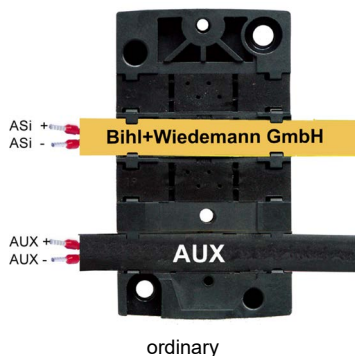
Article no.	M12 conn.	Marking	Pin1	Pin2	Pin3	Pin4	Pin5	
BWU4230	X1	I/O1, I/O2	24 V <sub>ext out</sub>	I/O2	0 V <sub>ext out</sub>	I/O1	n.c.	
	X2	I/O3, I/O4	24 V <sub>ext out</sub>	I/O4	0 V <sub>ext out</sub>	I/O3	n.c.	
	X3	I/O5, I/O6	24 V <sub>ext out</sub>	I/O6	0 V <sub>ext out</sub>	I/O5	n.c.	
	X4	I/O7, I/O8	24 V <sub>ext out</sub>	I/O8	0 V <sub>ext out</sub>	I/O7	n.c.	
	X5	I/O9, I/O10	24 V <sub>ext out</sub>	I/O10	0 V <sub>ext out</sub>	I/O9	n.c.	
	X6	I/O11, I/O12	24 V <sub>ext out</sub>	I/O12	0 V <sub>ext out</sub>	I/O11	n.c.	
	X7	I/O13, I/O14	24 V <sub>ext out</sub>	I/O14	0 V <sub>ext out</sub>	I/O13	n.c.	
	X8	I/O15, I/O16	24 V <sub>ext out</sub>	I/O16	0 V <sub>ext out</sub>	I/O15	n.c.	
	ADDR (protection cap)	connection for ASi-5 addressing plug						

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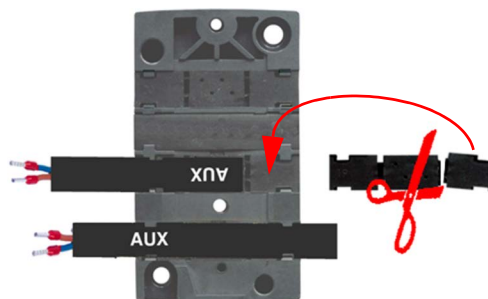
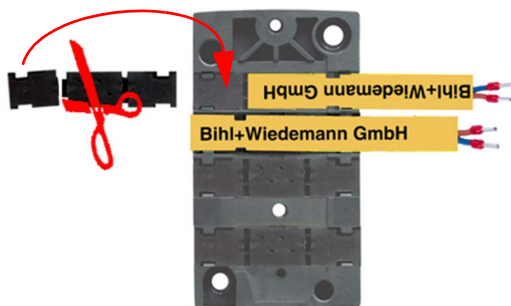
## Connections

Article no.	M12 conn.	Marking	Pin1	Pin2	Pin3	Pin4	Pin5	
BWU4231	X1	I/O1, I/O2	24 V <sub>ext out</sub>	I/O2	0 V <sub>ext out</sub>	I/O1	n.c.	
	X2	I/O3, I/O4	24 V <sub>ext out</sub>	I/O4	0 V <sub>ext out</sub>	I/O3	n.c.	
	X3	I/O5, I/O6	24 V <sub>ext out</sub>	I/O6	0 V <sub>ext out</sub>	I/O5	n.c.	
	X4	I/O7, I/O8	24 V <sub>ext out</sub>	I/O8	0 V <sub>ext out</sub>	I/O7	n.c.	
	X5	I/O9, I/O10	24 V <sub>ext out</sub>	I/O10	0 V <sub>ext out</sub>	I/O9	n.c.	
	X6	I/O11, I/O12	24 V <sub>ext out</sub>	I/O12	0 V <sub>ext out</sub>	I/O11	n.c.	
	X7	I/O13, I/O14	24 V <sub>ext out</sub>	I/O14	0 V <sub>ext out</sub>	I/O13	n.c.	
	X8	I/O15, I/O16	24 V <sub>ext out</sub>	I/O16	0 V <sub>ext out</sub>	I/O15	n.c.	
	ASI/AUX	ASI/AUX	ASI+	0 V <sub>ext in</sub>	ASI-	24 V <sub>ext in</sub>	-	

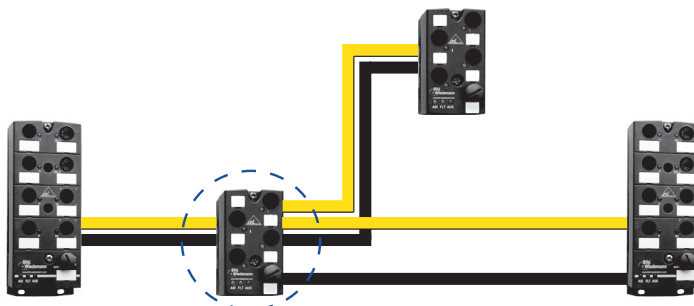
## Mounting according to cable direction



## Line termination with sealing profiles / as junction



## Use as profile cable branch



## ASi-5 Self-configuring I/O Modules, IP67, M12



### Accessories:

- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing, screw mounting (art. no. BWU2351)
- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing, DIN rail mounting (art. no. BWU3516)
- 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)