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

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

(figures similar)

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 8 digital inputs, depending on configuration

Up to 8 digital outputs, depending on configuration

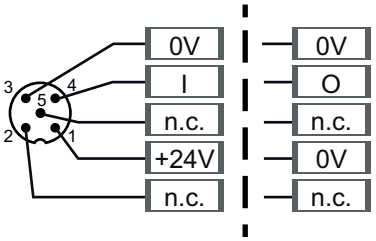
ASi-5 – Great data bandwidth, short cycle times

Compatible with ASi modules of all ASi generations

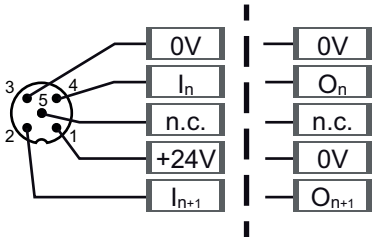
Figure	Type	Inputs digital	Outputs digital	M12 wiring (1)	Input voltage (sensor supply) (2)	Output voltage (actuator supply) (3)	ASi connection (4)	ASi address (5)	Max. output current	Art. no.
	IP67, 4 x M12 ASi-5	up to 8, depending on configuration	up to 8 x electronic, depending on configuration	Y/mixed	out of AUX	out of AUX	ASi profile cable	1 ASi-5 address	350 mA	**BWU4232**
	IP67, 4 x M12 ASi-5	up to 8, depending on configuration	up to 8 x electronic, depending on configuration	Y/mixed	out of AUX	out of AUX	ASi via M12	1 ASi-5 address	350 mA	**BWU4233**

(1) **M12 wiring:** either as Single-wiring, Y-wiring or mixed-wiring

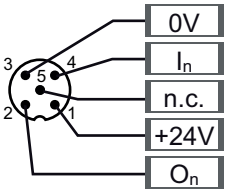
Single-wiring



Y-wiring



mixed-wiring



(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

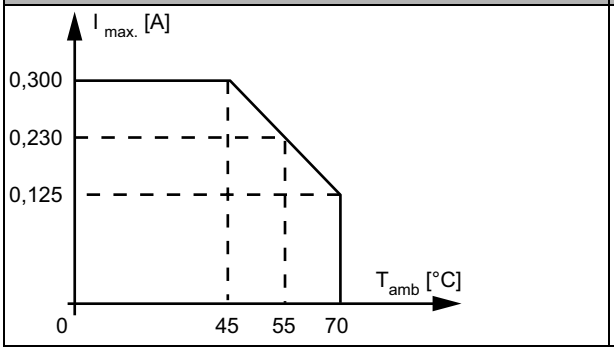
Article No.		BWU4232	BWU4233
General data			
Device type		input / output	
Connection			
ASi/AUX connection		profile cable and piercing	M12 (8)
Periphery connection		M12, Y or mixed wiring, freely selectable for each M12 connection	
Length of connector cable		unlimited (1)	
ASi			
Address		1 ASi-5 address	
As of ASi specification		ASi-5	
Operating voltage		30 V (18 … 31.6 V)	
Max. current consumption		70 mA	
Max. current consumption without sensor/ actuator supply		70 mA	
AUX			
Operating voltage		24 V (18 … 30 V)	
Max. current consumption		4.0 A	
Input			
Number		up to 8, 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, ∑(In) 1.2 A (2), ∑(In/Out) 4 A	
	at +55 °C	0.23 A per sensor supply/pin 1, ∑(In) 0.92 A (2), ∑(In/Out) 3.72 A	
	at +70 °C	0.125 A per sensor supply/pin 1, ∑(In) 0.5 A (2), ∑(In/Out) 2.1 A	
Switching threshold		U<5 V (low) U>15 V (high)	
Output			
Number		up to 8 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, ∑(Out) 2.8 A (3), ∑(In/Out) 4 A	
	at +55 °C	0,35 A per output, ∑(Out) 2.8 A (3), ∑(In/Out) 3.72 A	
	at +70 °C	0,35 A per output, ∑(Out) 1.6 A (3), ∑(In/Out) 2.1 A	

Article No.	BWU4232	BWU4233
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: slave address 0 or slave offline flashing: peripheral fault (4) off: slave 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 ... I8 **or** outputs O1 ... O8, 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 (4) at the corresponding output (display has priority over "over-load sensor supply") red (both LEDs): overload sensor supply (4) 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)	
Environment		
Applied standards	EN 61000-6-2 EN 61000-6-3 EN 61131-2 EN 60529	
Can be used in passively safe paths up to SIL3/PLe	yes (5)	no (9)
Operating altitude	max. 2000 m	
Ambient temperature	-30 °C … +55 °C (up to max. +70 °C) (2) (3) (6)	
Storage temperature	-25 °C … +85 °C	
Housing	plastic, for DIN rail mounting or for screw mounting (7)	plastic, for screw mounting
Pollution degree	2	
Protection category	IP67	
Tolerable loading referring to humidity	according to EN 61131-2	
Max. tolerable shock load	30*g*, 11 ms, acc. EN 61131-2	
Max. tolerable vibration stress	5 ... 8 Hz 50 mm_{pp}/8 ... 500 Hz 6*g*, acc. EN 61131-2	
Insulation voltage	≥ 500 V	
Weight	200 g	
Dimensions (W / H / D) in mm	45 / 80 / 56	45 / 80 / 67

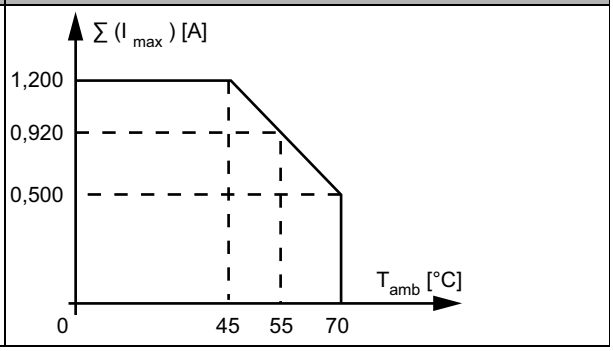
(1) Loop resistance ≤150 Ω

(2)i

BWU4232, BWU4233
Derating power supply of attached sensors

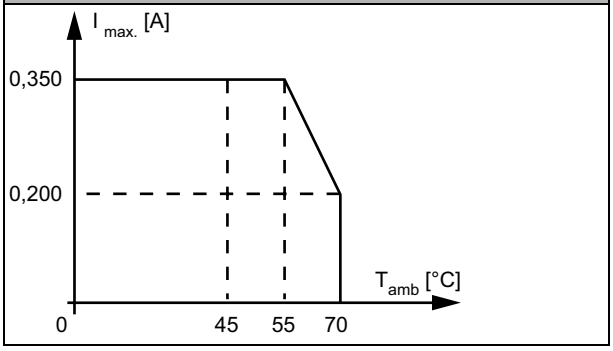


BWU4232, BWU4233
Derating total current of attached sensors



(3)

BWU4232, BWU4233
Derating output current per output



(4) **See table "Peripheral fault indication"**

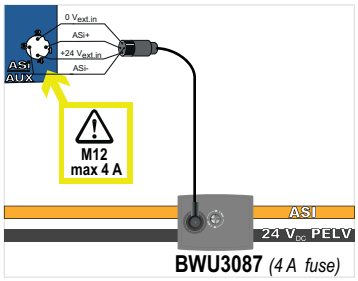
(5) The module is suitable for use in passively safe paths because an exclusion of errors can be assumed for the connection of the two potentials, ASi and AUX.

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

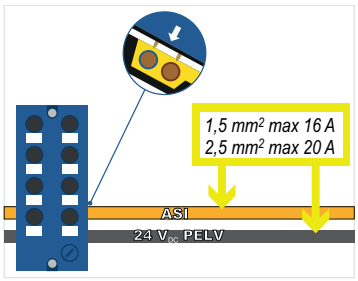
(7) Depending on substructure module (see accessories). The substructure module is not included in the scope of delivery.

(8) **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



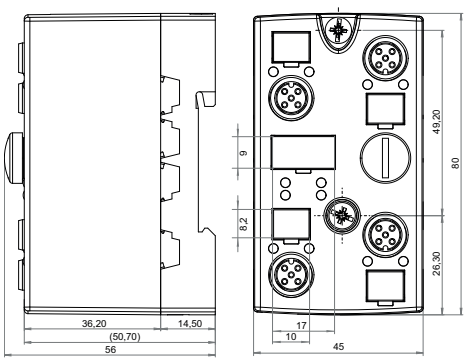
via piercing contacts



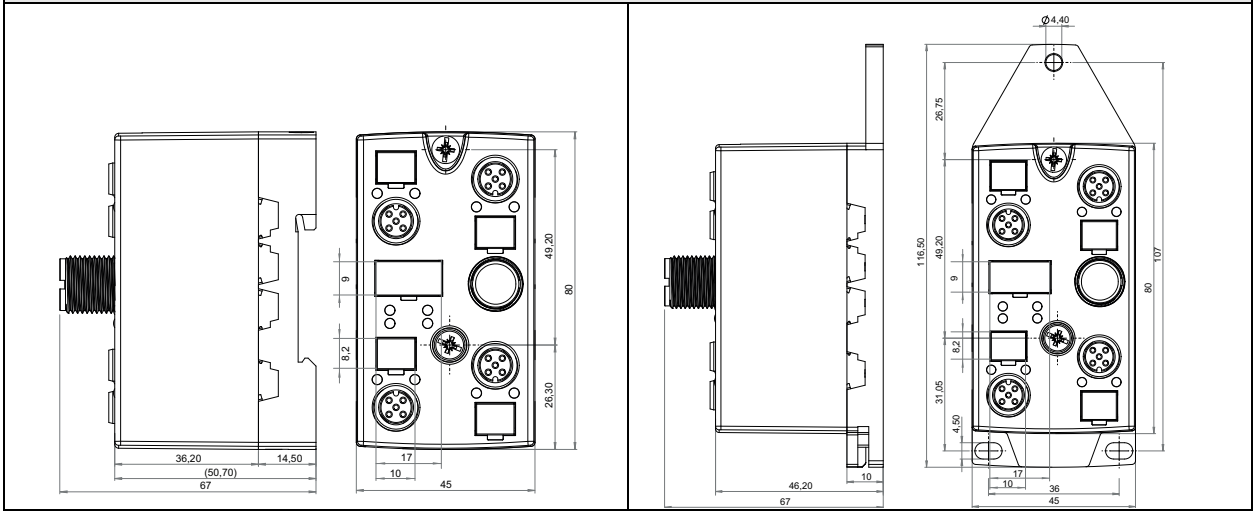
(9) The module is not suitable for use in passively safe paths because an exclusion of errors cannot be assumed for the connection of the two potentials, ASi and AUX.

Dimensional drawings

BWU4232



Dimensional drawings
BWU4233



UL-specifications (UL508) BWU4232, BWU4233	
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.

Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BWU4232	•	•	•
BWU4233	•	•	•

Programming: ASi bit assignment

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		input							
BWU4232, BWU4233	0	I8	I7	I6	I5	I4	I3	I2	I1

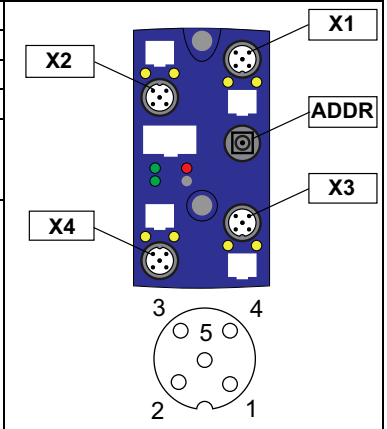
Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		output							
BWU4232, BWU4233	0	O8	O7	O6	O5	O4	O3	O2	O1

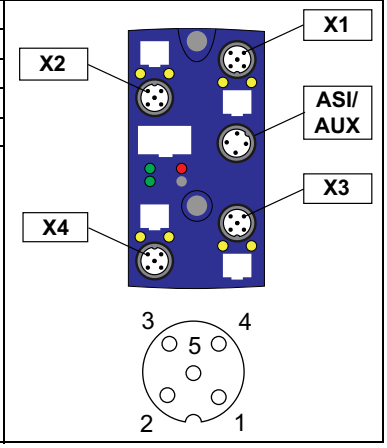
Pin assignment

Signal name	Explanation
I/Ox	either digital input x **or** digital output x, freely configurable
24 $V_{ext\ out}$	power supply, out of external voltage, positive pole (AUX)
0 $V_{ext\ out}$	power supply, out of external voltage, negative pole (AUX)
ASi +, ASi -	connection to ASi bus
n.c. (not connected)	not connected

Connections

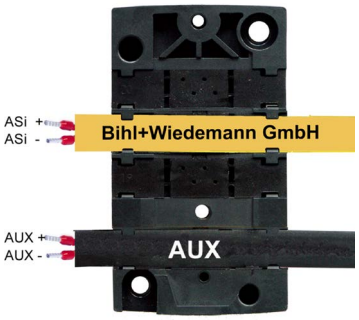
Article no.	M12 conn.	Marking	Pin1	Pin2	Pin3	Pin4	Pin5
BWU4232	**X1**	I/O1, I/O2	24 $V_{ext\ out}$	I/O2	0 $V_{ext\ out}$	I/O1	n.c.
	X2	I/O3, I/O4	24 $V_{ext\ out}$	I/O4	0 $V_{ext\ out}$	I/O3	n.c.
	X3	I/O5, I/O6	24 $V_{ext\ out}$	I/O6	0 $V_{ext\ out}$	I/O5	n.c.
	X4	I/O7, I/O8	24 $V_{ext\ out}$	I/O8	0 $V_{ext\ out}$	I/O7	n.c.
	ADDR (dummy plug)	connection for ASi addressing device					
BWU4233	**X1**	I/O1, I/O2	24 $V_{ext\ out}$	I/O2	0 $V_{ext\ out}$	I/O1	n.c.
	X2	I/O3, I/O4	24 $V_{ext\ out}$	I/O4	0 $V_{ext\ out}$	I/O3	n.c.
	X3	I/O5, I/O6	24 $V_{ext\ out}$	I/O6	0 $V_{ext\ out}$	I/O5	n.c.
	X4	I/O7, I/O8	24 $V_{ext\ out}$	I/O8	0 $V_{ext\ out}$	I/O7	n.c.
	ASi/AUX	ASI/AUX	ASi+	0 $V_{ext\ in}$	ASi-	24 $V_{ext\ in}$	-



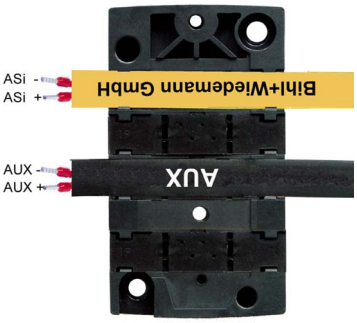


Mounting according to cable direction

IP67



ordinary

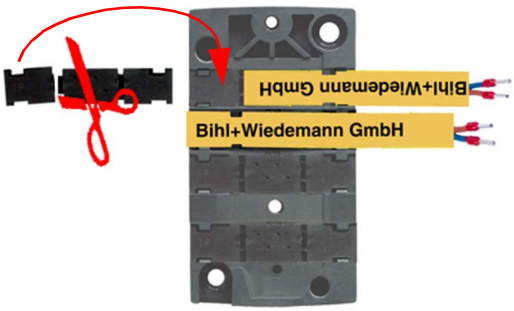


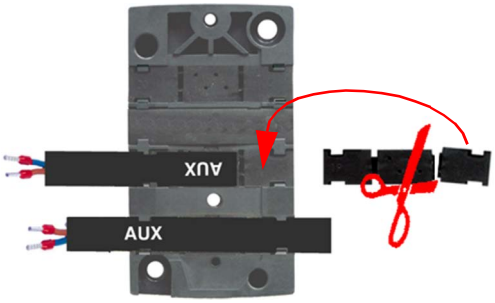
turned

Line termination with sealing profiles / as junction

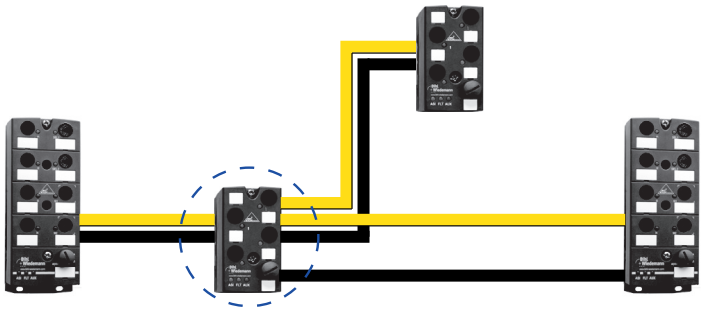
IP54

max. 8A





Use as profile cable branch



Accessories:

- **ASi substructure module (CNOMO) for 4 channel module in 45 mm housing, screw mounting (art. no. BW2350)**
- **ASi substructure module (CNOMO) for 4 channel module in 45 mm housing, DIN rail mounting (art. no. BW2349)**
- **Protection caps for unused M12 sockets (art. no. BW2368)**
- **Protection caps for ASi-5 addressing socket (art. no. BW4056)**
- **Sealing profile IP67 (IDC plug), 45 mm (art. no. BW3283)**