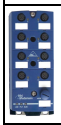
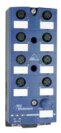
Digital Modules ASi, IP67, M12

2 x 2 connectors for profile cable

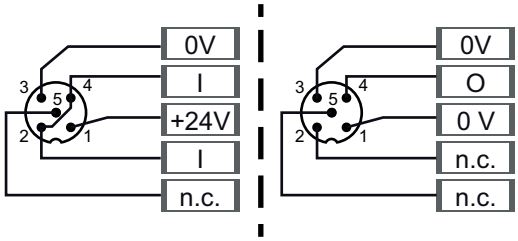
2 color LEDs per output,
state (yellow), overload (red) (optional)

(figure similar)

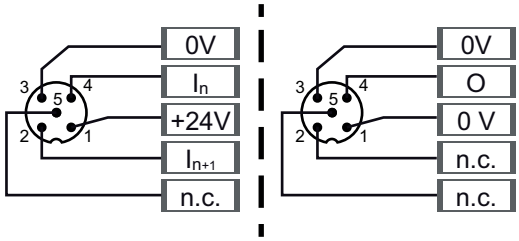
Figure	Type	Inputs digital	Outputs digital	M12 connection (1)	Input voltage (sensor supply) (2)	Output voltage (actuator supply) (3)	ASi connection (4)	ASi address (5)	Max. output current	Art. no.
	IP67, 4 x M12	4	–	standard	out of ASi	–	ASi profile cable	1 single address	–	**BWU3682**
	IP67, 8 x M12	4	3 x electronic	standard	out of ASi	out of AUX	ASi profile cable	1 AB address	2 A	**BWU3701**
	IP67, 8 x M12	4	4 x electronic	standard	out of ASi	out of AUX	ASi profile cable	1 single address	2 A	**BWU3686**
	IP67, 8 x M12	8	–	dual (Y)	out of ASi	–	ASi profile cable	2 AB addresses	–	**BWU3523**

(1) **M12 wiring:** either as a standard wiring or dual (Y) wiring.

standard wiring



dual (Y) 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:** 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.

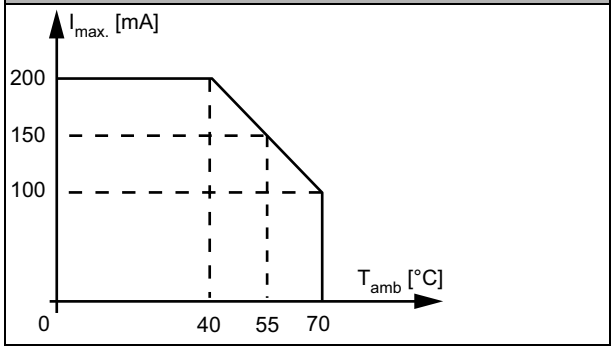
Article No.		BWU3523	BWU3682	BWU3686	BWU3701
General data					
Device type		input		input / output	
Connection					
ASi/AUX connection		profile cable and piercing			
Periphery connection		M12, dual (Y) wiring	M12, standard wiring		
Length of connector cable		unlimited (1)			
ASi					
Profile		ASi node 1: S-0.A.2 (ID1=7 default) ASi node 2: S-0.A.2 (ID1=7 default)	S-0.0.E (ID1=F fixed)	S-7.0.E (ID1=F default)	S-7.A.0 (ID1=7 default)
Address		2 AB addresses	1 single address		1 AB address
Required Master profile		≥M3	≥M0		≥M3
As of ASi specification		2.1	2.0		2.1
Operating voltage		30 V (18 … 31.6 V)			
Max. current consumption		270 mA	165 mA		
Max. current consumption without sensor/ actuator supply		70 mA	45 mA		
AUX					
Operating voltage		–		24 V (18 … 30 V)	
Max. current consumption		–		8 A	6 A
Input					
Number		8	4		
Power supply		out of ASi			
Sensor supply		short-circuit and overload protected according to EN 61131-2			
Power supply of attached sensors	up to +40 °C	200 mA (2)	120 mA (6)		
	at +55 °C	150 mA (2)	100 mA (6)		
	at +70 °C	100 mA (2)	80 mA (6)		
Switching threshold		U<5 V (low) U>15 V (high)			
Output					
Number		–		4	3
Power supply		–		out of AUX	
Output		–		short-circuit and overload protected according to EN 61131	
Max. output current	up to +40 °C	–		2 A per output, ∑ (Out) 8 A (7)	2 A per output, ∑ (Out) 6 A (7)
	at +55 °C	–		1,5 A per output, ∑ (Out) 6 A (7)	1,5 A per output, ∑ (Out) 4,5 A (7)
	at +70 °C	–		1 A per output, ∑ (Out) 4 A (7)	1 A per output, ∑ (Out) 3 A (7)

Article No.	BWU3523	BWU3682	BWU3686	BWU3701
Display				
LED ASI (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault (3) or address 0 off: no ASi voltage			
LED ASI/FLT 1 (red/green)	green: ASi node online red: ASi node offline yellow/red flashing: address 0 red/green flashing: peripheral fault (3)	–		
LED ASI/FLT 2 (red/green)	green: ASi node online red: ASi node offline yellow/red flashing: address 0 red/green flashing: peripheral fault (3) red flashing: ASi node 2 is switched off, because ASi node 1 is offline	–		
LED FLT/FAULT (red)	on: ASi address 0 or ASi node offline flashing: peripheral fault (3) off: ASi node online			
LED AUX (green)	–		on: 24 V_{DC} AUX off: no 24 V_{DC} AUX	
LEDs I1 ... In (yellow)	state of inputs I1 ... I8	state of inputs I1 ... I4		
LEDs O1 ... On (yellow)	–		state of outputs O1 ... O4	state of outputs O1 ... O3
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 (4)		yes (8)	yes (9)
Operating altitude	max. 2000 m			
Ambient temperature	-30 °C … +55 °C (up to max. +70 °C) (2) (5) (6) (7)			
Storage temperature	-25 °C … +85 °C			
Housing	plastic, for screw mounting	plastic, for DIN rail mounting	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	100 g	200 g	
Dimensions (W / H / D) in mm	60 / 151 / 31	45 / 80 / 42	60 / 151 / 31	

(1) Loop resistance ≤150 Ω

(2)

BWU3523
Derating power supply of attached sensors



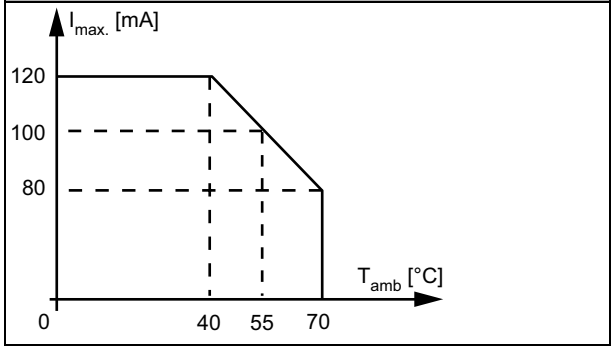
(3) **See table "Peripheral fault indication"**

(4) The module is suitable for use in passively safe paths as it has no connection to an AUX potential.

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

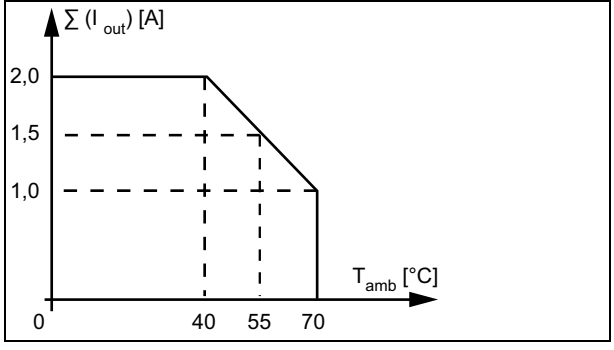
(6)

BWU3682, BWU3686, BWU3701
Derating power supply of attached sensors



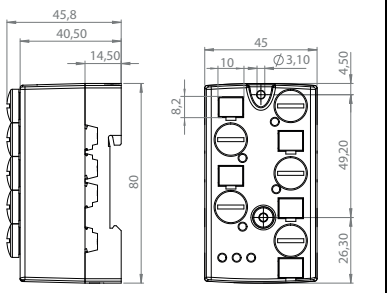
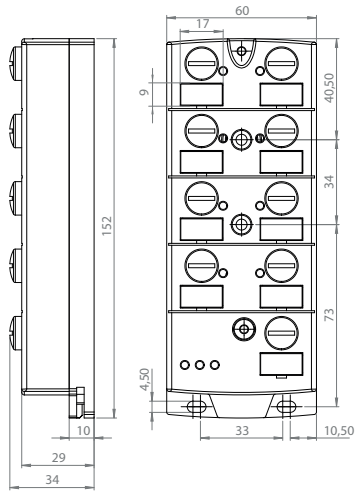
(7)

BWU3686, BWU3701
Derating output current per output



(8) BWU3686 from ID no. 17088; 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.

(9) BWU3701 from ID no. 17129; 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.

Dimensional drawings	
BWU3682	**BWU3523, BWU3686, BWU3701**
	

UL-specifications (UL508) BWU3523, BWU3682, BWU3686, BWU3701	
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
BWU3523	•	–	–
BWU3682	•	–	–
BWU3686	•	–	–
BWU3701	•	–	–

Programming	ASi bit assignment			
Bit	**D3**	**D2**	**D1**	**D0**
	input			
BWU3682, BWU3686, BWU3701	I4	I3	I2	I1
BWU3523	ASi node 1: I4	ASi node 1: I3	ASi node 1: I2	ASi node 1: I1
	ASi node 2: I8	ASi node 2: I7	ASi node 2: I6	ASi node 2: I5
	output			
BWU3701	–	O3	O2	O1
BWU3686	O4	O3	O2	O1

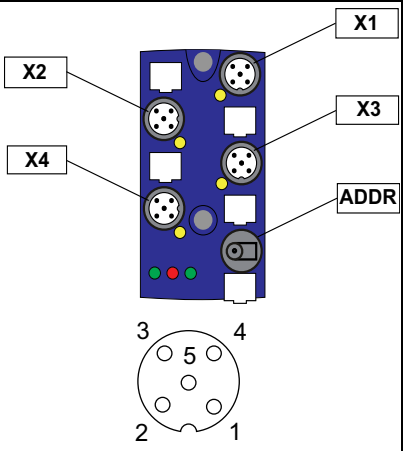
Programming	Parameter bits			
Bit	**P3**	**P2**	**P1**	**P0**
BWU3523, BWU3682, BWU3686, BWU3701	not used	0= on / 1= off (synchronous I/O mode)	0= on / 1= off (data input filter 128µs)	0= off / 1= on (peripheral fault)

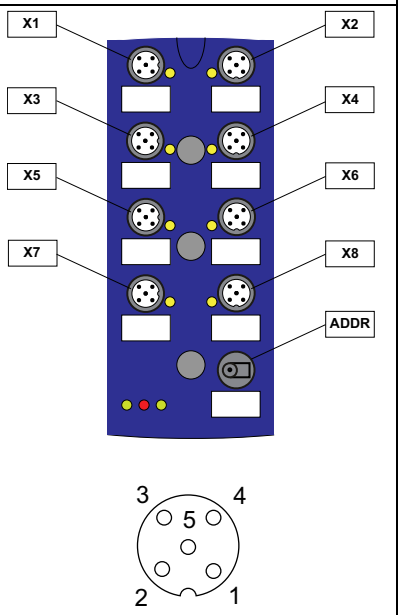
Pin assignment

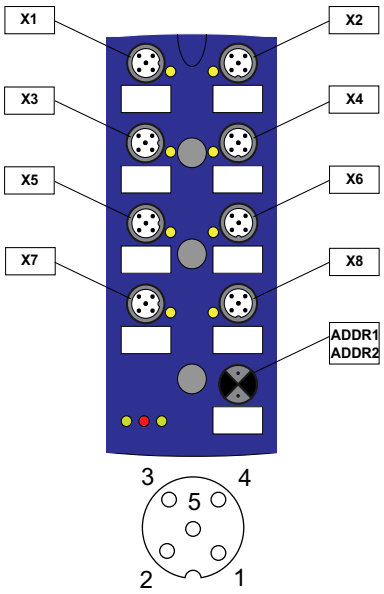
Signal name	Explanation
Ix	digital input x
Ox	digital output x
$24V_{ext\ out}$	power supply, out of external voltage, positive pole (AUX, actuator supply)
$0V_{ext\ out}$	power supply, out of external voltage, negative pole (AUX, actuator supply)
$24V_{out\ of\ ASi}$	power supply, out of ASi, positive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

Connections

Article no.	M12 connection	Marking	Pin1	Pin2	Pin3	Pin4	Pin5
BWU3682	**X1**	I1	24 V out of ASi	I1 (1)	0 V out of ASi	I1 (1)	n.c.
	X2	I2	24 V out of ASi	I2 (1)	0 V out of ASi	I2 (1)	n.c.
	X3	I3	24 V out of ASi	I3 (1)	0 V out of ASi	I3 (1)	n.c.
	X4	I4	24 V out of ASi	I4 (1)	0 V out of ASi	I4 (1)	n.c.
	ADDR (protection cap)	connection for ASi-3 addressing plug					
BWU3686	**X1**	I1	24 V out of ASi	I1 (1)	0 V out of ASi	I1 (1)	n.c.
	X2	I2	24 V out of ASi	I2 (1)	0 V out of ASi	I2 (1)	n.c.
	X3	I3	24 V out of ASi	I3 (1)	0 V out of ASi	I3 (1)	n.c.
	X4	I4	24 V out of ASi	I4 (1)	0 V out of ASi	I4 (1)	n.c.
	X5	O1	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O1	n.c.
	X6	O2	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O2	n.c.
	X7	O3	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O3	n.c.
	X8	O4	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O4	n.c.
	ADDR (protection cap)	connection for ASi-3 addressing plug					
BWU3701	**X1**	I1	24 V out of ASi	I1 (1)	0 V out of ASi	I1 (1)	n.c.
	X2	I2	24 V out of ASi	I2 (1)	0 V out of ASi	I2 (1)	n.c.
	X3	I3	24 V out of ASi	I3 (1)	0 V out of ASi	I3 (1)	n.c.
	X4	I4	24 V out of ASi	I4 (1)	0 V out of ASi	I4 (1)	n.c.
	X5	O1	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O1	n.c.
	X6	O2	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O2	n.c.
	X7	O3	0 $V_{ext\ out}$	n.c.	0 $V_{ext\ out}$	O3	n.c.
	X8	not used					
	ADDR (protection cap)	connection for ASi-3 addressing plug					

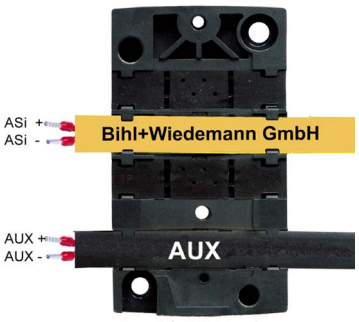




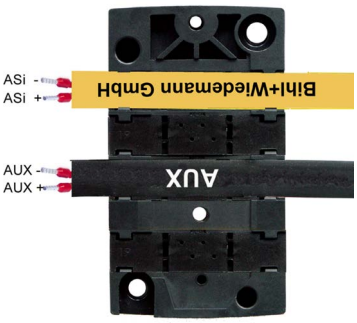
Connections								
Article no.	**M12 connection**	**Marking**	**Pin1**	**Pin2**	**Pin3**	**Pin4**	**Pin5**	
BWU3523	**X1**	I1	24 V out of ASi	I2	0 V out of ASi	I1	n.c.	
	X2	I2	24 V out of ASi	n.c.	0 V out of ASi	I2	n.c.	
	X3	I3	24 V out of ASi	I4	0 V out of ASi	I3	n.c.	
	X4	I4	24 V out of ASi	n.c.	0 V out of ASi	I4	n.c.	
	X5	I5	24 V out of ASi	I6	0 V out of ASi	I5	n.c.	
	X6	I6	24 V out of ASi	n.c.	0 V out of ASi	I6	n.c.	
	X7	I7	24 V out of ASi	I8	0 V out of ASi	I7	n.c.	
	X8	I8	24 V out of ASi	n.c.	0 V out of ASi	I8	n.c.	
	ADDR (protection cap)	connection for ASi-3 addressing plug						

(1) Pin2 and Pin 4 are bridged internally.

Mounting according to cable direction

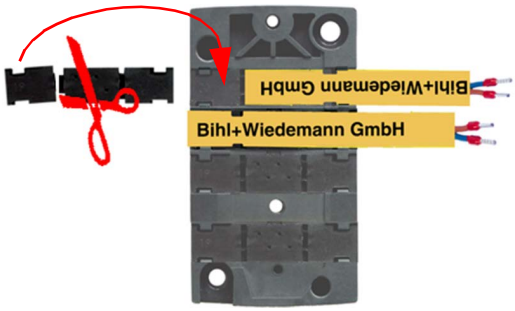


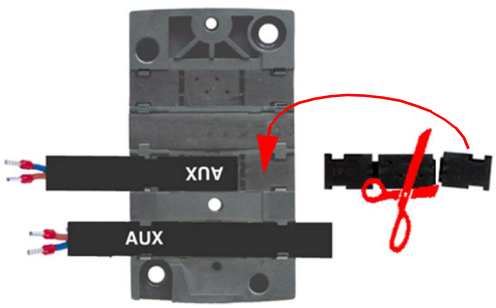
ordinary



turned

Line termination with sealing profiles / as junction





Accessories:

- **ASi substructure module for 4 channel module in 45 mm housing, for DIN rail mounting (art. no. BWU2349)**
- **ASi substructure module (CNOMO) for 4 channel module in 45 mm housing, for screw mounting (art. no. BWU2350)**
- **ASi substructure module (CNOMO) for 8 channel module in 60 mm housing, for DIN rail mounting (art. no. BWU3516)**
- **ASi substructure module (CNOMO) for 8 channel module in 60 mm housing, for screw mounting (art. no. BWU2351)**
- **Universal protection cap ASi-5/ASi-3 for M12 sockets, IP67 (art. no. BW4056)**
- **Sealing profile IP67 (IDC plug), 45 mm (art. no. BW3283)**
- **Sealing profile IP67 (IDC plug), 60 mm (art. no. BW3282)**
- **ASi-5/ASi-3 Address Programming Device (art. no. BW4708)**