

Active Distributors AS-i Safety, Active Distributors AS-i

2 x connectors for profile cable

Periphery connection
via connecting wires, M12 cable sockets or
push in terminals








(Figure similar)

Figure	Type	Inputs Safety, SIL 3, Cat. 4	Inputs digital	Outputs digital	Safety signal inputs	Input voltage (sensor supply) (1)	Output voltage (actuator supply) (2)	AS-i connection (3)	Connection (4)	AS-i address (5)	Art. no.
	IP67, depth 19 mm, Safety	1 x 2-channels	–	1 x electronic	floating contacts	out of AS-i	out of AS-i	AS-i profile cable	2 x round cables/ connecting wires	1 single slave	BW3249
	IP67, depth 19 mm, Safety	1 x 2-channels	–	1 x electronic	floating contacts	out of AS-i	out of AS-i	AS-i profile cable	1 x round cable/ connecting wires	1 single slave	BW3248
	IP67, depth 19 mm, Safety	1 x 2-channels	–	–	floating contacts	out of AS-i	–	AS-i profile cable	1 x M12 cable socket, angled, 5 poles	1 single slave	BW3413
	IP67, depth 19 mm, Safety	1 x 2-channels	–	1 x electronic	OSSDs	out of AUX	out of AUX	AS-i profile cable	1 x M12 cable socket, angled, 5 poles	1 single slave	BW3299
	IP67, depth 19 mm Safety	1 x 2 channels	–	1 x electronic	OSSDs	out of AUX	out of AUX	AS-i profile cable	1 x M12 cable socket, straight, 5 poles	1 single slave	BW3376
	IP67, depth 35 mm	–	4	4 x electronic	–	out of AS-i	out of AUX	AS-i profile cable	2 x round cables/ connecting wires	1 AB slave	BW3317
	IP67, depth 35 mm	–	4	4 x electronic	–	out of AS-i	out of AUX	AS-i profile cable	2 x M12 cable sockets, straight, 5 poles	1 AB slave	BW3507
	IP67, depth 35 mm	–	4	4 x electronic	–	out of AS-i	out of AS-i	AS-i profile cable	2 x round cables/ connecting wires	1 AB slave	BW3326
	IP67, depth 35 mm	–	4	4 x electronic	–	out of AUX	out of AUX	AS-i profile cable	1 x M12 cable socket, straight, 8 poles	1 AB slave	BW3377
	IP67, depth 19 mm	–	2	1 x electronic	–	out of AUX	out of AUX	AS-i profile cable	2 x M12 cable sockets, angled, 5 poles: 1 x Y-wiring + 1 x Mixed-wiring	1 AB slave	BW3250
	IP67, depth 19 mm	–	2	2 x electronic	–	out of AS-i	out of AS-i	AS-i profile cable	1 x M12 cable sockets, straight, 8 poles	1 AB slave	BW3400
	IP67, depth 19 mm	–	–	4 x electronic	–	–	out of AUX	AS-i profile cable	1 x round cable/ connecting wires	1 AB slave	BW3300
	IP67, depth 19 mm	–	4	–	–	out of AUX	–	AS-i profile cable	8 x push in terminals	1 AB slave	BW3349
	IP20, depth 19 mm	–	3	1 x electronic	–	out of AUX	out of AUX	AS-i profile cable	8 x push in terminals	1 AB slave	BW3414
	IP20, depth 19 mm	–	–	4 x electronic	–	–	out of AUX	AS-i profile cable	8 x push in terminals	1 AB slave	BW3342

(1) **Input voltage (sensor supply):** inputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, inputs shall not be connected to earth or to external potential.

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- (2) **Output voltage (actuator supply):** outputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, outputs shall not be connected to earth or to external potential
- (3) **AS-i connection:** the connection to AS-i as well to AUX (auxiliary 24 V power) is made via yellow resp. black AS-i profile cable with piercing technology or via M12 socket (in IP20 via clamps).
- (4) **Connection:** further connection options are available on request.

M12 cable socket, angled	M12 cable socket, straight	M8 cable socket, straight	round cable / connecting wires	Push in terminals
PUR line: oil and abrasion resistant, appropriate for conveyor chains				
				

- (5) **AS-i address:** 1 AB Slave (max. 62 AB Slaves/AS-i network), 2 AB Slaves (max. 31 modules with 2 AB Slaves), Single Slaves (max. 31 Single Slaves/AS-i network), mixed use allowed.
For modules with two slaves the second slave is turned off as long as the first slave is addressed to address "0".
Upon request, slaves are available with specific AS-i Slave profiles.

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Article No.	BW3249	BW3248	BW3413	BW3299	BW3376
General data					
Device type	safe input				
Connection					
AS-i/AUX connection	profile cable and piercing				
Periphery connection	2 x round cables/ connecting wires	1 x round cable/ connecting wires	1 x cable socket M12, angled, 5-poles	1 x M12 cable socket, straight, 8 poles	
Round cable	1 m, max. allowed tensile strain 10 N				
AS-i					
Profile	S-7.B.0, ID1=F		S-0.B.F, ID1=F	S-7.B.1, ID1=F	
Address	1 single slave				
Required Master profile	≥M3				
As of AS-i specification	2.1				
Operating voltage	30 V (21,6 ... 31.6 V)				
Max. current consumption	100 mA			60 mA	
Max. current consumption without sensor/ actuator supply	40 mA			60 mA	
AUX					
Operating voltage	–			24 V (20 ... 30 V _{DC}) (PELV)	
Max. current consumption	–			max. 1 A	
Input					
Number	1 x 2-channels safe input				
Safety signal	floating contacts			OSSDs	
Switching current	35 mA (T = 40 µs), continuously 5 mA at 24 V			–	
Power supply	out of AS-i			out of AUX	
Power supply of attached sensors	up to +50 °C	–			750 mA, ∑(In/Out) 1 A ⁽⁴⁾
	at +60 °C				750 mA, ∑(In/Out) 750 mA ⁽⁴⁾
	at +70 °C				500 mA, ∑(In/Out) 500 mA ⁽⁴⁾
Switching threshold	2 mA, R ≤ 150 Ω			V _{in} > 11 V for High-Level, V _{in} < 5 V for Low-Level, input current > 2,5 mA at 15 V	
OSSD test pulses	–			0 ... 50 Hz	
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	
Start delay	–			< 22 ms	
Output					
Number	1		–	1	
Power supply	out of AS-i			out of AUX	
Max. output cur- rent	up to +50 °C	25 mA			750 mA, ∑(In/Out) 1 A ⁽⁴⁾
	at +60 °C				750 mA, ∑(In/Out) 750 mA ⁽⁴⁾
	at +70 °C				500 mA, ∑(In/Out) 500 mA ⁽⁴⁾
Display					
LED ASI/FLT (red/green)	green: AS-i voltage on, slave online red: AS-i voltage on, but slave offline yellow/red flashing: address 0 red/green flashing: peripheral fault ⁽¹⁾ off: no AS-i voltage				
LED AUX (green)	–			on: 24 V _{DC} AUX off: no 24 V _{DC} AUX	
LEDs S1, S2 (yellow)	state of inputs S1, S2				
LED O1 (yellow)	state of output O1				

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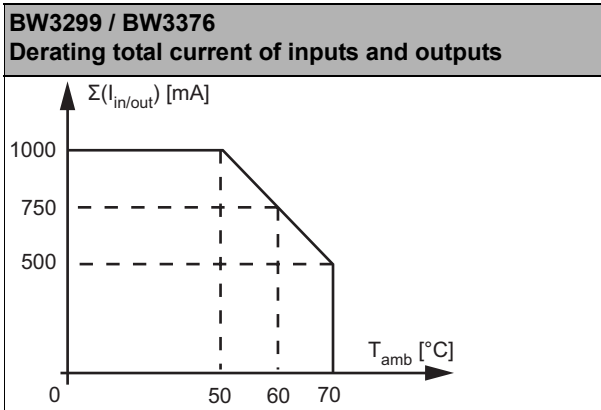
Article No.	BW3249	BW3248	BW3413	BW3299	BW3376
Environment					
Applied standards	EN ISO 13849-1 PLe cat4 EN ISO 13849-2 EN 62061 SIL3 EN 62026-2 EN 61000-6-2 EN 61000-6-4 EN 60529				
Operating altitude	max. 2000 m				
Ambient temperature	-30 °C ... +60 °C ⁽²⁾ (no condensation permitted)			-30 °C ... +60 °C (up to max. +70 °C) ⁽⁴⁾ (no condensation permitted)	
Storage temperature	-25 °C ... +85 °C				
Housing	plastic, for screw mounting, suitable for cable ducts (installation depth ≥19 mm)				
Protection category	IP67 ⁽³⁾				
Maximum tolerable shock and vibration stress	≤15g, T≤11 ms 10 ... 55 Hz, 0,5 mm amplitude				
Insulation voltage	≥500 V				
Weight	100 g				
Dimensions (W / H / D) in mm	60 / 45 / 19				

(1) see table "Peripheral fault indication"

(2) temperature range up to -30°C from Ident.No. ≥16305 (BW3249); Ident.No. ≥16306 (BW3248).

(3) Protection category IP67 can only be achieved, if also the cable connector fulfills IP67.

(4)



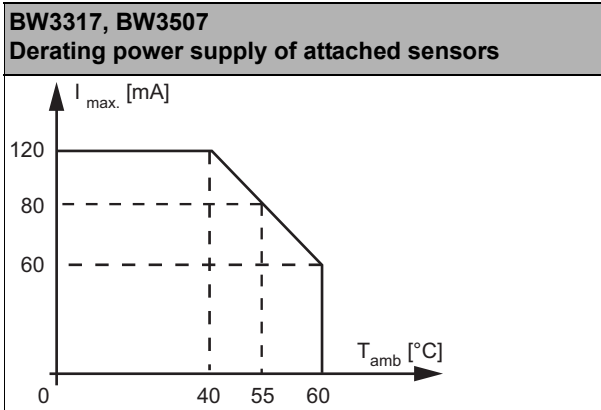
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Article No.	BW3507	BW3317	BW3326	BW3400	BW3377
General data					
Device type	input / output				
Connection					
AS-i/AUX connection	profile cable and piercing				
Periphery connection	2 x M12 cable sockets, straight, 5 poles	2 x round cables/connecting wires	1 x M12 cable socket, straight, 8 poles		
Length of connector cable	1 m; max. allowed tensile strain 10 N	1 m (including 0,30 m connecting wires); max. allowed tensile strain 10 N		1 m; max. allowed tensile strain 10 N	
AS-i					
Profile	S-7.A.7 (ID1=7 fixed)		S-7.A.E (ID1=7 default)	S-7.A.7 (ID1=7 fixed)	
Adresse	1 AB slave				
Required Master profile	≥M4		≥M3	≥M4	
As of AS-i specification	3.0		2.1	3.0	
Operating voltage	30 V (18 ... 31.6 V)				
Max. current consumption	165 mA		90 mA	45 mA	
Max. current consumption without sensor/ actuator supply	45 mA		40 mA	45 mA	
AUX					
Operating voltage	24 V (18 ... 30 V _{DC})		–	24 V (18 ... 30 V _{DC})	
Max. current consumption	3 A		–	3 A	
Input					
Number	4		2	4	
Power supply	out of AS-i				out of AUX
Power supply of attached sensors	up to +40 °C	120 mA ⁽¹⁾	120 mA, \sum (In/Out) ≤120 mA ⁽⁵⁾	50 mA \sum (In/Out) ≤50 mA	–
	at +55 °C	80 mA ⁽¹⁾	80 mA, \sum (In/Out) ≤80 mA ⁽⁵⁾		
	at +60 °C	60 mA ⁽¹⁾	60 mA, \sum (In/Out) ≤60 mA ⁽⁵⁾	–	
Switching threshold	U<5 V (low) U>15 V (high)				
Output					
Number	4		2	4	
Power supply	out of AUX		out of AS-i		out of AUX
Max. output current	up to +40 °C	1 A per output, \sum (Out) ≤3 A ⁽²⁾	120 mA, \sum (In/Out) ≤120 mA ⁽⁵⁾	50 mA \sum (In/Out) ≤50 mA	1 A per output, \sum (Out) ≤3 A ⁽⁶⁾
	at +55 °C	1 A per output, \sum (Out) ≤2 A ⁽²⁾	80 mA, \sum (In/Out) ≤80 mA ⁽⁵⁾		1 A per output, \sum (Out) ≤2 A ⁽⁶⁾
	at +60 °C	1 A per output, \sum (Out) ≤1,5 A ⁽²⁾	60 mA, \sum (In/Out) ≤60 mA ⁽⁵⁾	–	1 A per output, \sum (Out) ≤1,5 A ⁽⁶⁾
Display					
LED ASI/FLT (red/green)	green: AS-i voltage on, slave online red: AS-i voltage on, but slave offline yellow/red flashing: address 0 red/green flashing: peripheral fault ⁽³⁾ off: no AS-i voltage				
LED AUX (green)	on: 24 V _{DC} AUX off: no 24 V _{DC} AUX		–	on: 24 V _{DC} AUX off: no 24 V _{DC} AUX	
LEDs I1 ... In (yellow)	state of inputs I1 ... I4		state of inputs I1, I2	state of inputs I1 ... I4	
LED O1 ... On (yellow)	state of outputs O1 ... O4		state of outputs O1, O2	state of outputs O1 ... O4	

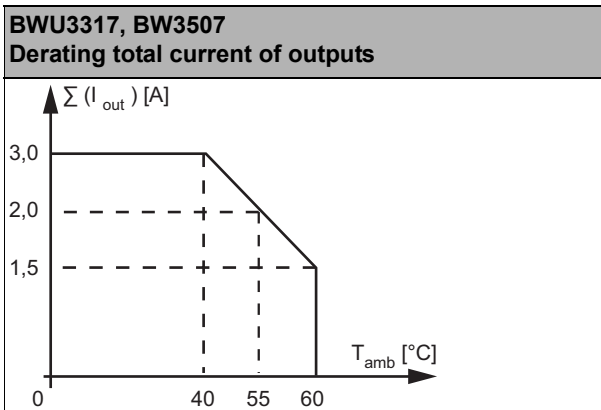
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Article No.	BW3507	BW3317	BW3326	BW3400	BW3377	
Environment						
Applied standards	EN 61000-2 EN 61000-3 EN 61131-2 EN 60529					
Operating altitude	max. 2000 m					
Ambient temperature	-30 °C ... +60 °C ⁽¹⁾ ⁽²⁾ (no condensation permitted)	-30 °C ... +60 °C ⁽⁵⁾ (no condensation permitted)	-30 °C ... +55 °C (no condensation permitted)	-30 °C ... +60 °C ⁽⁶⁾ (no condensation permitted)		
Storage temperature	-25 °C ... +85 °C					
Housing		plastic, for screw mounting, suitable for cable ducts (≥35 mm installation depth)	plastic, for screw mounting, suitable for cable ducts (≥19 mm installation depth)	plastic, for screw mounting, suitable for cable ducts (≥35 mm installation depth)		
Protection category	IP67 ⁽⁴⁾			IP67		
Maximum tolerable shock and vibration stress	≤15g, T≤11 ms 10 ... 55 Hz, 0,5 mm amplitude					
Insulation voltage	≥500 V					
Weight	100 g					
Dimensions (W / H / D) in mm	60 / 45 / 35			60 / 45 / 19	60 / 45 / 35	

(1)



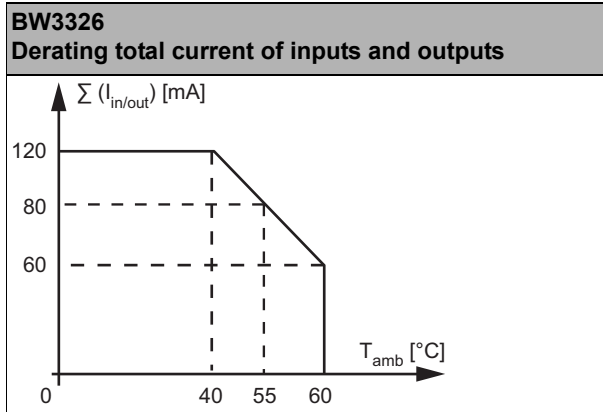
(2)



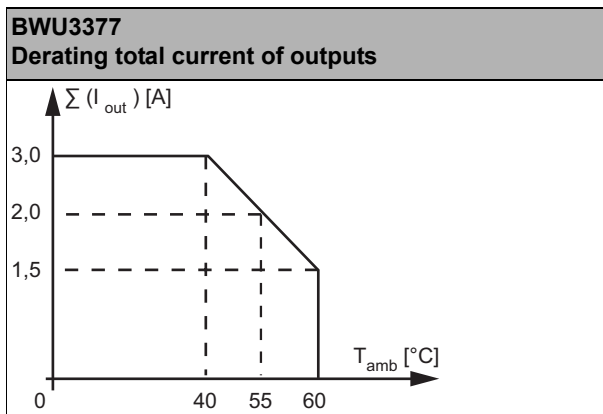
(3) see table "Peripheral fault indication"

(4) Protection category IP67 can only be achieved, if also the cable connector fulfills IP67

(5)



(6)



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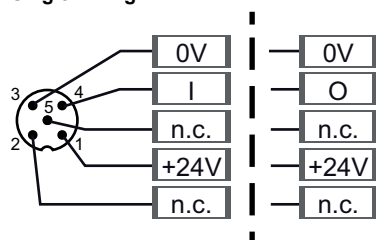
Article No.	BW3250	BW3349	BW3414	BW3342	BW3300
General data					
Device type	input / output	input	input / output	output	
Connection					
AS-i/AUX connection	profile cable and piercing				
Periphery connection	2 x cable socket M12, angled: 1 x Y-wiring + 1 x Mixed-wiring ⁽¹⁾	8 x push in terminals; wire section max. 0,5 mm ² /AWG20			1 x round cable/ connecting wires
Round cable	1 m, max. allowed tensile strain 10 N	-			1 m, max. allowed tensile strain 10 N
AS-i					
Profile	S-7.A.E (ID1=7 default)	S-0.A.E	S-7.A.E (ID1=7default)	S-7.A.7, (ID1=7 fixed)	
Address	1 AB slave				
Required Master profile	≥M3			≥M4	
As of AS-i specification	2.1			3.0	
Operating voltage	30 V (18 ... 31.6 V)				
Max. current consumption	35 mA				
Max. current consumption without sensor/ actuator supply	35 mA				
AUX					
Operating voltage	24 V (18 ... 30 V _{DC})				
Max. current consumption	2 A	1 A			
Input					
Number	2	4	3	-	
Power supply	out of AUX				
Power supply of attached sensors	up to +50 °C	1 A ⁽²⁾	1 A	∑ (In/Out) 1 A	-
	at +60 °C				
	at +70 °C	0,5 A ⁽²⁾		-	
Switching threshold	U<5 V (low) U>15 V (high)				-
Output					
Number	1	-	1	4	
Power supply	out of AUX				
Max. output current	up to +50 °C	1 A ⁽³⁾	1 A	250 mA per output ∑ (In/Out) 1 A	250 mA per output ∑ (Out) 1 A
	at +60 °C				
	at +70 °C	0,5 A ⁽³⁾		-	
Display					
LED ASI/FLT (red/green)	green: AS-i voltage on, slave online red: AS-i voltage on, but slave offline yellow/red flashing: address 0 red/green flashing: peripheral fault ⁽⁴⁾ off: no AS-i voltage				
LED AUX (green)	on: 24 V _{DC} AUX off: no 24 V _{DC} AUX				
LEDs I1 ... In (yellow)	state of inputs I1, I2	state of inputs I1 ... I4	state of inputs I1 ... I3	-	
LED O1 (yellow)	state of output O1	-	state of output O1	state of outputs O1 ... O4	

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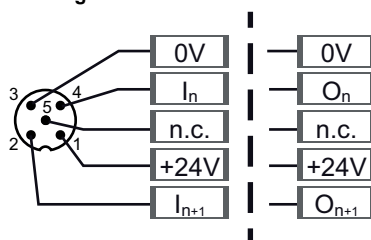
Article No.	BW3250	BW3349	BW3414	BW3342	BW3300
Environment					
Applied standards	EN 61000-2 EN 61000-3 EN 61131-2 EN 60529				
Operating altitude	max. 2000 m				
Ambient temperature	-30 °C ... +60 °C (2) (3) (up to max. +70 °C) (no condensation permitted)	-30 °C ... +60 °C (no condensation permitted)		-30 °C ... +60 °C (no condensation permitted) (up to max. +70 °C)	
Storage temperature	-25 °C ... +85 °C				
Housing	plastic, for screw mounting, suitable for cable ducts (≥19 mm installation depth)				
Protection category	IP67	IP20			IP67
Maximum tolerable shock and vibration stress	≤15g, T≤11 ms 10 ... 55 Hz, 0,5 mm amplitude				
Insulation voltage	≥500 V				
Weight	100 g	50 g			100 g
Dimensions (W / H / D) in mm	60 / 45 / 19				

(1) **M12 wiring:** either as a single-wiring, Y-wiring or mixed-wiring.

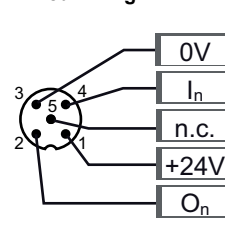
Single-wiring



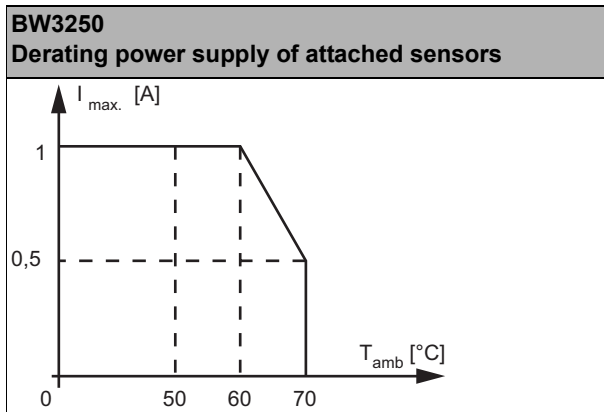
Y-wiring



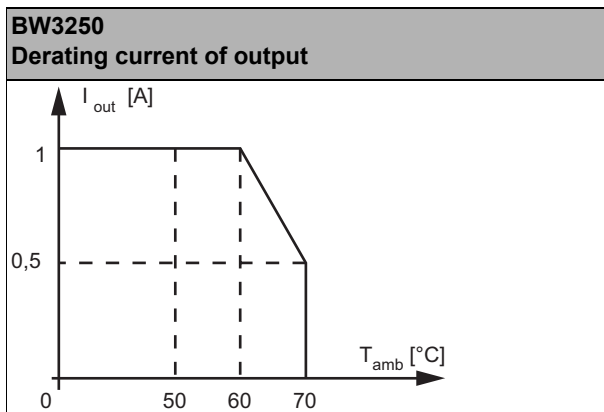
Mixed-wiring



(2)



(3)



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(4) see table "Peripheral fault indication"

Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BW3248	-	•	-
BW3249	-	•	-
BW3250	•	•	•
BW3299	-	•	•
BW3300	-	•	•
BW3317	•	-	•
BW3326	•	-	-
BW3342	-	•	•
BW3349	•	-	•
BW3376	-	•	•
BW3377	-	-	•
BW3400	•	•	-
BW3413	-	-	-
BW3414	•	•	•
BW3507	•	-	•

Programming	AS-i bit assignment			
	D0	D1	D2	D3
	safe input			
BW3248, BW3249, BW3413	S1	S1	S2	S2
BW3299, BW3376	OSSD1	OSSD1	OSSD2	OSSD2
	standard input			
BW3250, BW3400	I1	I2	-	-
BW3414	I1	I2	I3	I4
BW3349, BW3317, BW3326, BW3377, BW3507	I1	I2	I3	I4
	output			
BW3248, BW3249, BW3250, BW3299, BW3414, BW3376	O1	-	-	-
BW3342, BW3300, BW3317, BW3326, BW3377, BW3507	O1	O2	O3	O4
BW3400	O1	O2	-	-
	parameter bit			
	P0	P1	P2	P3
BW3248, BW3249, BW3299, BW3376	0= off / 1= on (Watchdog)	not used		
BW3250, BW3317, BW3414, BW3377, BW3507		0= off / 1= on (peripheral fault, if AUX missing)	0= on / 1= off (synchronous I/O mode)	not used
BW3342, BW3300, BW3326		not used		
BW3400		0= on / 1= off (data input filter 128 µs)		
BW3349	0= off / 1= on (peripheral fault)			
BW3413	not used			

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Pin assignment

Signal name	Explanation
Sx+, Sx-	safe input x
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 AS-i}	power supply, out of AS-i, positive pole (sensor supply)
0V _{out of AS-i}	power supply, out of AS-i, negative pole (sensor supply)
AS-i+, AS-i-	connection to AS-i bus
n.c. (not connected)	not connected

Connections: round cable/connecting wires								
Article no.	connection	BN (brown)	WH (white)	BU (blue)	BK (black)	PK (pink)	GY (gray)	
BW3249	X1	S1+	S2+	S1-	S2-	-	-	
	X2	O1	n.c.	0 V _{out of AS-i}	n.c.	-	-	
BW3248	X1	S1+	S2+	S1-	S2-	0 V _{out of AS-i}	O1	
BW3300	X1	O1	0 V _{1 ext.out}	O2	O3	0 V _{2 ext.out}	O4	
BW3317	X1	I1	I2	I3	I4	0 V _{1 out of AS-i}	24 V _{out of AS-i}	
	X2	O1	0 V _{2 ext out}	O2	O3	0 V _{3 ext out}	O4	
BW3326	X1	I1	I2	I3	I4	0 V _{1 out of AS-i}	24 V _{out of AS-i}	
	X2	O1	0 V _{2 out of AS-i}	O2	O3	0 V _{3 out of AS-i}	O4	

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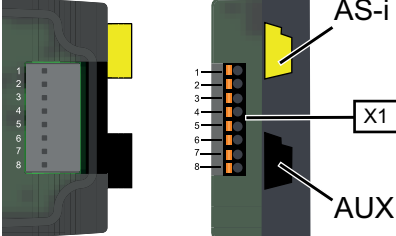
Connections: M12 cable sockets, straight/angled, 5 poles							
Article no.	M12 connection	Pin1	Pin2	Pin3	Pin4	Pin5	
BW3250	X1	24 V _{ext out}	I2	0 V _{ext out}	I1	n.c.	
	X2	24 V _{ext out}	O1	0 V _{ext out}	I1	n.c.	
BW3299 / BW3376	X1	24 V _{ext out}	OSSD2	0 V _{ext out}	OSSD1	O1	
BW3413	X1	S1+	S1-	S2+	S2-	n.c.	
BW3507	X1	I1	I2	I3	I4	24 V out of AS-i	
	X2	O1	0 V ext out	O2	O3	O4	

Connections: M12 cable sockets, straight, 8 poles										
Article no.	connection	Pin1 (---)	Pin2 (BN)	Pin3 (WH)	Pin4 (BK)	Pin5 (GY)	Pin6 (PK)	Pin7 (BU)	Pin8 (---)	
BW3400	X1	n.c.	24 V out of AS-i	0 V out of AS-i	I1	I2	O1	O2	n.c.	

Connections: M12 cable sockets, straight, 8 poles										
Article no.	connection	Pin1 (WH)	Pin2 (BN)	Pin3 (GR)	Pin4 (YE)	Pin5 (GY)	Pin6 (PK)	Pin7 (BU)	Pin8 (RD)	
BW3377	X1	I1	I2	I3	I4	O1	O2	O3	O4	
	The reference potential of sensors/actors has to be connected with the reference potential of the active distributor (AUX).									

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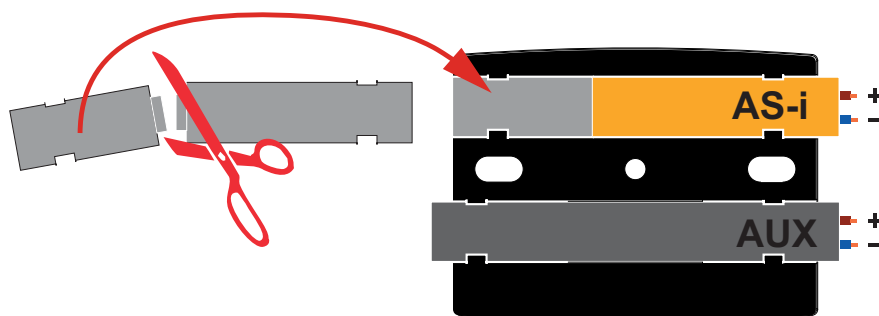
Connections: push in terminals								
Article no.	X1.1	X1.2	X1.3	X1.4	X1.5	X1.6	X1.7	X1.8
BW3349	I1	I2	I3	I4	24 V ₁ ext.out	0 V ₁ ext.out	24 V ₂ ext.out	0 V ₂ ext.out
BW3342	O1	0 V ₁ ext.out	O2	0 V ₂ ext.out	O3	0 V ₃ ext.out	O4	0 V ₄ ext.out
BW3414	I1	I2	I3	O1	24 V ₁ ext.out	0 V ₁ ext.out	24 V ₂ ext.out	0 V ₂ ext.out



Line termination with sealing profile



max. IP54



Accessories:

- Sealing profile IP67 (IDC plug), 60 mm (art. no. BW3282)
- AS-i addressing cable with M12 connector, connecting cable for handheld AS-i address programming devices for the addressing of active distributors (art. no. BW3304)
- AS-i addressing cable with COMBICON connector, connecting cable for AS-i Master/Gateways for the addressing of active distributors (art. no. BW3305)