

AS-i 3.0 PROFIBUS Gateways with integrated Safety Monitor

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2 / 1 AS-i Master, PROFIBUS Slave

1 AS-i Safety Monitor for 2 AS-i networks

- Operation using a single Monitor configuration!
Monitor processes safety slaves on two AS-i networks
Coupling between the two networks superfluous

Up to 16 release circuits

- up to 4 CAT4, SIL 3 safe output circuits on the Monitor
safe relays or fast electronic safe outputs

Safe AS-i outputs are supported

- up to 16 independent AS-i outputs
Multiple safe AS-i outputs possible via a single AS-i address

Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration data



(Figure similar)



Figure	Type	Inputs safety, expandable to	Outputs Safety, SIL 3, cat. 4	Safety outputs, independent according to SIL 3, expandable to	Safety communication	Number of AS-i networks, number of AS-i Master ¹	1 power supply, 1 gateway for 2 AS-i networks, inexpensive power supplies ²	Diagnostic and configuration interface ³	Article no.
	Safety, PROFIBUS	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	-	2 AS-i networks, 2 AS-i masters	yes, max. 4 A/ AS-i network	RS 232	BWU2002
	Safety, PROFIBUS	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	-	2 AS-i networks, 2 AS-i masters	no, max. 8 A/ AS-i network, redundant supply	RS 232	BWU2001
	Safety, PROFIBUS	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	-	2 AS-i networks, 1 AS-i master	no, max. 8 A/ AS-i network, redundant supply	RS 232	BWU2003
	Safety, PROFIBUS	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	-	2 AS-i networks, 1 AS-i master	yes, max. 4 A/ AS-i network	RS 232	BWU2004
	Safety, PROFIBUS	max. 62 x 2 channels	2 release circuits; 2 x 2 relay	max. 16	-	2 AS-i networks, 1 AS-i master	no, max. 8 A/ AS-i network, redundant supply	RS 232	BWU2187
	Safety, PROFIBUS	max. 62 x 2 channels	2 release circuits; 2 x 2 relay	max. 16	-	2 AS-i networks, 1 AS-i master	yes, max. 4 A/ AS-i network	RS 232	BWU2188

¹ Number of AS-i networks, number of AS-i Master: Safety devices:

"Double Master": 2 AS-i networks, 2 AS-i Masters.

"Optional AS-i Safety coupling circuit": 2 AS-i networks, 1 AS-i Master.

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2 1 power supply, 1 gateway for 2 AS-i networks, inexpensive power supplies:

"yes, max. 4 A/AS-i network": Cost-effective power for 2 AS-i networks with 1 power supply (optionally supply of multiple Single Gateways by 1 power supply).

"no, max. 8 A/AS-i network, redundant supply": 1 power supply per AS-i network. Gateway is powered in normal operation from one of the two AS-i power supplies. Should one AS-i power supply fail, switching to the other AS-i power supply allows all the diagnostics functions to be maintained and the unaffected AS-i network continues to operate.

3 Diagnostic and configuration interface

"RS 232": Access to AS-i master and safety monitor via Bihl+Wiedemann proprietary software over RS 232 interface and adapter cable.
GSD file for the Gateway is built into the web server.

Article no.	BWU2001 / BWU2002 / BWU2003 / BWU2004		BWU2187 / BWU2188
Interface			
PROFIBUS interface	according to IEC 61158 / IEC 61784-1		
Baud rates	9,6 KBAud up to 12 000 KBAud, automatic recognition		
DP functions	imaging of the AS-i slaves as I/O data of the PROFIBUS complete diagnosis and configuration via the PROFIBUS DP		
AS-i			
AS-i cycle time	150 µs * (number of slaves + 2)		
Operating voltage	AS-i voltage 30 V _{DC}		
Display			
LCD	menu, indication of slave addresses and error messages in plain text		
LED power	power ON		
LED PROFIBUS	PROFIBUS communication active		
LED config error	configuration error		
LED U AS-i	AS-i voltage o.k.		
LED AS-i active	AS-i normal operation active		
LED prg enable	automatic addresses programming enabled		
LED prj mode	configuration mode active		
LED AUX	auxiliary power	—	
LEDs 1.Y1, 1.Y2, 2.Y1, 2.Y2 (EDM/Start)	state of inputs: off: open on: closed	—	
LEDs K1 ... K4	state of outputs: off: open on: closed	—	
UL-specifications (UL508)			
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.		
cTÜV _{us}	the devices • BWU2001 • BWU2002 • BWU2003 • BWU2004 • BWU2187 • BWU2188 from Bihl + Wiedemann GmbH were safety certified by TÜV Rheinland of North America, Inc. according to UL-standards and meet the safety requirements for the North American market.		
Applied standards	EN 61000-6-2 EN 61000-6-4 EN 62061:2005, SIL 3 EN 61508:2010/A1:2013, SIL 3 EN ISO 13849-1:2008/AC:2009, performance-level e		

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Article no.	BWU2001 / BWU2002 / BWU2003 / BWU2004	BWU2187 / BWU2188
Environment		
Operating altitude	max. 2000 m	
Ambient temperature	0 °C ... +55 °C	
Storage temperature	-25 °C ... +85 °C	
Housing	stainless steel, for DIN rail mounting	
Protection category (EN 60529)	IP20	
Maximum tolerable shock and vibration stress	according EN 61131-2	
Voltage of insulation	≥ 500 V	
Weight	800 g	
Dimensions (W / H / D in mm)	100 / 120 / 96	

Article no.	BWU2001 / BWU2002 / BWU2003 / BWU2004	BWU2187 / BWU2188
Safety monitor		
Start delay	< 10 ms	
Max. turn-off time	< 40 ms	
Card slot	Chip card for storage of configuration data	
Connection		
Connection	COMBICON	
Length of connector cable	I/O: max. 15 m	
Input		
Inputs digital, EDM	4	
Switching current	statical 4 mA at 24 V, dynamic 30 mA at 24 V (T=100 µs)	
Power supply	out of AS-i	
Output		
Number of release circuits on the monitor	4	2
Outputs	relay outputs (output circuits 1 and 2) max. contact load ¹ : 3 A _{AC-15} at 30 V, 3 A _{DC-13} at 30 V	relay outputs (output circuits 1 and 2), each 2 current paths max. contact load ¹ : 3 A _{AC-15} at 30 V, 3 A _{DC-13} at 30 V
	semiconductor outputs (output circuits 3 and 4) max. contact load: 0,5 A _{DC-13} at 30 V	
Power supply (semiconductor outputs)	out of AUX	–
Test pulse (semiconductor outputs)	if output is on: minimum interval between 2 test pulses: 250 ms (as from Safety Version 4.3); maximum pulse width 1,5 ms	–

¹ Protection via external fuse, max. 4 A semi time-lag.

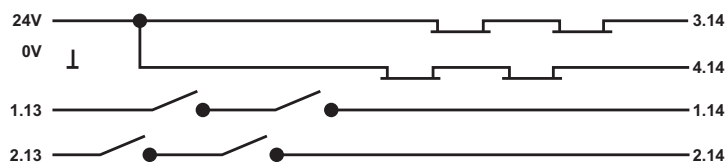
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Article No.	Operating current		
	master power supply, approx 300 mA out of AS-i network	master power supply, max. 300 mA out of AS-i circuit 1 (approx. 70 mA ... 300 mA), max. 300 mA out of AS-i circuit 2 (approx. 70 mA ... 300 mA); in sum max. 370 mA	Version „1 gateway, 1 power supply, for 2 AS-i networks“, approx. 300 mA (PELV voltage)
BWU2001	–	•	–
BWU2002	–	–	•
BWU2003	•	–	–
BWU2004	–	•	–
BWU2187	•	–	–
BWU2188	–	•	–

	BWU2001 / BWU2003 / BWU2187	BWU2002 / BWU2004 / BWU2188
Redundant power supply out of AS-i: all fundamental functions of the device remain available even in case of power failure in one of the two AS-i networks	•	–
Current measurement of the AS-i circuits	–	–
Self-resetting adjustable fuses	–	–
AS-i earth fault monitor distinguishes between AS-i cable and sensor cable	–	–
In version „1 gateway, 1 power supply for 2 AS-i circuits“: only 1 gateway + 1 AS-i power supply is needed for both 2 AS-i circuits	–	•

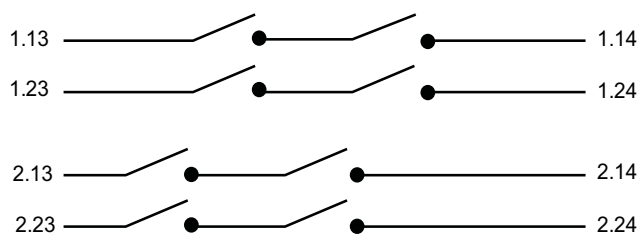
Safety outputs block diagram

BWU2001, BWU2002, BWU2003, BWU2004



Safety outputs block diagram

BWU2187, BWU2188



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Connections: Gateway + Safety Monitor



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Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- ASIMON 3 G2 and AS-i Control Tools with serial cable for AS-i Masters/Monitors in stainless steel (art. no. BW2071)
- PROFIBUS DP Master Simulator (art. no. BW1257)
- AS-i Power Supply 4 A (art. no. BW1649) / AS-i Power Supply 8 A (art. no. BW1997)