

AS-i 3.0 PROFINET Gateways with integrated Safety Monitor

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2 / 1 Master, PROFINET Slave

Up to 16 release circuits

- 4 safe output circuits on the Monitor
2 x relays + 2 x 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

1 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



(Figure similar)

Applications up to category 4/PLe/SIL 3


Chip card for storage of configuration data

AS-i Power24V capable¹

- The device can be operated directly on a 24 V (PELV) power supply
- with integrated data coupling coils and adjustable self-resetting fuses for safe use also of powerful 24 V power supplies



¹ BWU2237

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, PROFINET	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	Ethernet fieldbus + RS 232	BWU2237
	Safety, PROFINET	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	Ethernet fieldbus + RS 232	BWU2330
	Safety, PROFINET	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	Ethernet fieldbus + RS 232	BWU2307

¹ **Number of AS-i networks, number of AS-i Master**

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

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

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**

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

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Article no.	BWU2237 / BWU2307 / BWU2330
Interfaces	
PROFINET interface	2 x RJ-45, 2-port-switch
Conformance Class	B
Baud rates	100 MBaud
AS-i	
Cycle time	150 μ s * (number of slaves + 2)
Operating voltage	AS-i voltage 30 V _{DC}
Display	
LCD	indication of slave addresses and error messages in plain text
LED power (green)	power on
LED PROFINET (green/red)	green: PROFINET communication active red: no PROFINET communication
LED config error (red)	configuration error
LED U AS-i (green)	AS-i voltage OK
LED AS-i active (green)	AS-i normal operation active
LED prg enable (green)	automatic addresses programming enabled
LED prj mode (yellow)	configuration mode active
LED AUX (yellow)	auxiliary power
LEDs 1.Y1, 1.Y2, 2.Y1, 2.Y2 (EDM/Start) (yellow)	state of inputs: off: open on: closed
LEDs K1 ... K4 (yellow)	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 • BWU2237 • BWU2307 • BWU2330 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 61000-6-2:2005/AC:2005 EN 61000-6-4:2007/A1:2011 EN 62061:2005/A1:2013, SIL 3 EN 61508:2010, SIL 3 EN ISO 13849-1:2008/AC:2009, Performance-Level e
Ambient	
Ambient temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Operating altitude	max. 2000 m
Housing	stainless steel, for DIN-rail mounting
Protection category (EN 60529)	IP20
Tolerable loading referring to impacts and vibrations	according EN 61131-2
Voltage of insulation	≥ 500 V
Weight	800 g
Dimensions (W / H / D in mm)	109 / 120 / 96

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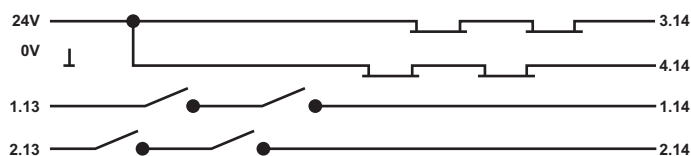
Article no.	BWU2237 / BWU2307 / BWU2330	
Safety Monitor		
Start delay	< 10 ms	
Max. turn-off time	< 40 ms	
Card slot	chip card for storage of configuration data	
Connection		
Connection	COMBICON	
Length of connector cable	I/O: max. 15 m	
Input		
Inputs digital, EDM	4	
Switching current	statical 4 mA 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	
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	
	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.

Article no.	Operating current		
	Master power supply, ca. 300 mA out of AS-i circuits	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)
BWU2237	-	-	•
BWU2307	•	-	-
BWU2330	-	•	-

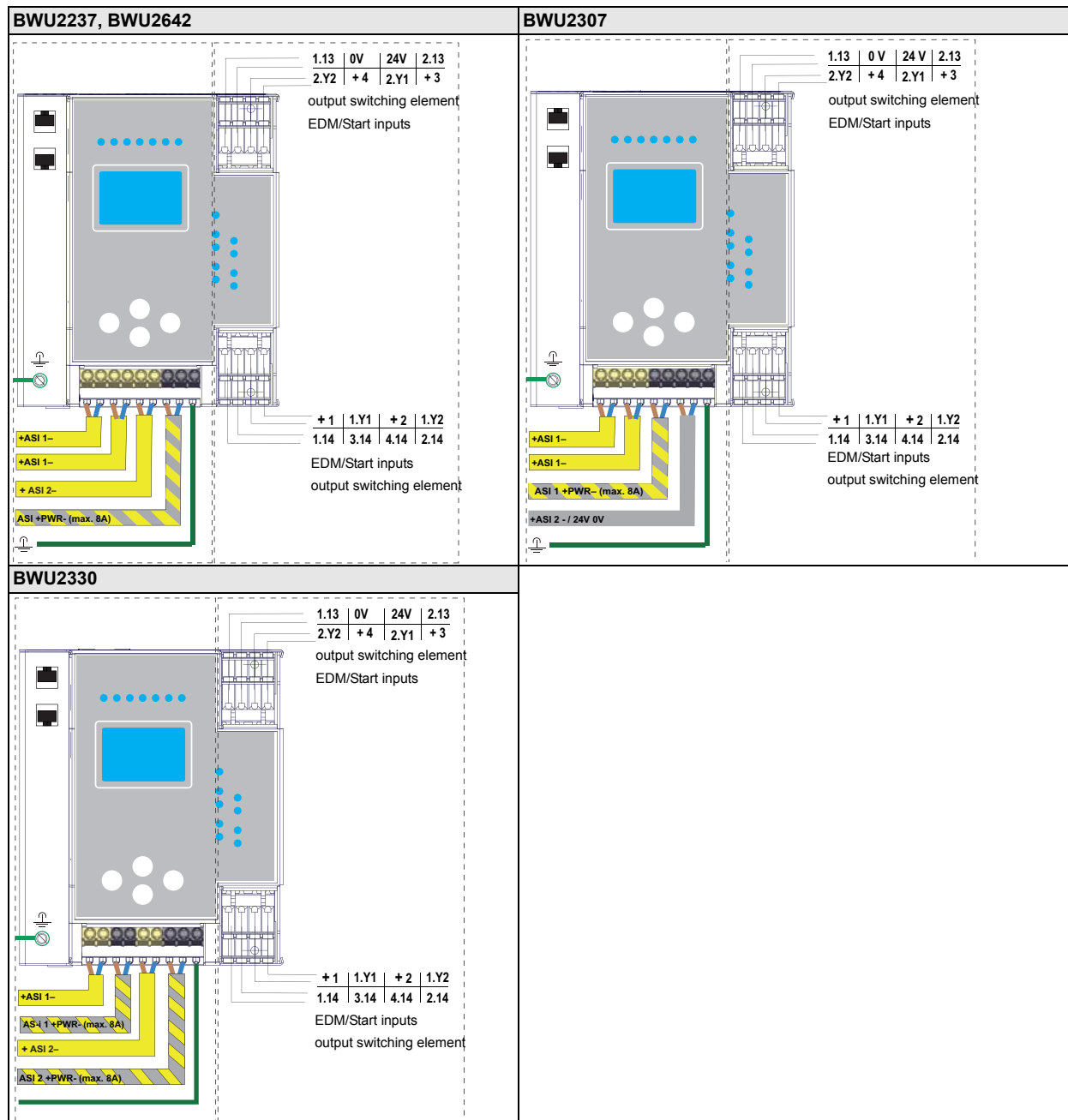
	BWU2330 / BWU2307	BWU2237
Redundant power supply out of AS-i: all fundamental functions of the device remain available even in case of power failure in one of the two AS-i networks	•	-
Current measurement of the AS-i circuits	-	•
Self-resetting adjustable fuses	-	•
AS-i earth fault monitor distinguishes 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 BWU2237, BWU2307, BWU2330:



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Connections: Gateway + Safety Monitor:



Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- PROFINET Master Simulator (art. no. BW3057)
- ASIMON 3 G2 and AS-i Control Tools with serial cable for AS-i Masters/Monitors in stainless steel (art. no. BW2071)
- AS-i Power Supply 4 A (art. no. BW1649) / AS-i Power Supply 8 A (art. no. BW1997)