

# AS-i 3.0 Gateways, PROFIsafe via PROFIBUS or PROFINET

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### 2 / 1 Master, PROFINET / PROFIBUS Slave

- AS-i Safety input slaves report via PROFIsafe
- AS-i Safety output slaves switch via PROFIsafe

### Up to 16 release circuits

- 4 safe output circuits CAT4, SIL 3 on the Monitor
- 2 x safe 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

### Applications up to category 4/PLe/SIL 3

### Chip card for storage of configuration data

### AS-i Power24V capable<sup>1</sup>





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



(Figure similar)



<sup>1</sup> BWU2215, BWU2383

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 <sup>1</sup>	1 power supply, 1 gateway for 2 AS-i networks, inexpensive power supplies <sup>2</sup>	Diagnostic and configuration interface <sup>3</sup>	Article No.
	PROFI safe, PROFIBUS	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	PROFIsafe (F-CPU)	2 AS-i networks, 2 AS-i Masters	yes, max. 4A/ AS-i network	RS 232	<b>BWU2215</b>
	PROFI safe, PROFIBUS	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	PROFIsafe (F-CPU)	2 AS-i networks, 2 AS-i Masters	no, max. 8A/ AS-i network, redundant supply	RS 232	<b>BWU2214</b>
	PROFI safe, PROFINET	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	PROFIsafe (F-CPU)	2 AS-i networks, 2 AS-i Masters	yes, max. 4A/ AS-i network	RS 232 + Ethernet fieldbus	<b>BWU2383</b>
	PROFI safe, PROFINET	max. 62 x 2 channels	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 16	PROFIsafe (F-CPU)	2 AS-i networks, 2 AS-i Masters	no, max. 8A/ AS-i network, redundant supply	RS 232 + Ethernet fieldbus	<b>BWU2421</b>

<sup>1</sup> **Number of AS-i networks, number of AS-i Master**  
"Double Master": 2 AS-i networks, 2 AS-i Masters.

<sup>2</sup> **1 power supply, 1 gateway for 2 AS-i networks, inexpensive power supplies**  
"yes, max. 4A/AS-i network": Cost-effective power for 2 AS-i networks with 1 power supply.  
"no, max. 8A/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.

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### <sup>3</sup> 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.

"RS 232": Access to AS-i master and safety monitor via Bihl+Wiedemann proprietary software over RS 232 interface and adapter cable.

For devices with integrated web server the specific configuration data file for the device (GSD, GSDML) is included in the web server.

Article no.	BWU2214 / BWU2215	BWU2383 / BWU2421
<b>Interface</b>		
<b>PROFIBUS</b>		
Baud rates	9,6 kBaud up to 12000 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	–
<b>PROFINET</b>		
PROFINET interface	–	2 x RJ-45, 2-Port-Switch
Conformance Class	–	B
Baud rates	–	100 MBaud
<b>AS-i</b>		
Cycle time	150 $\mu$ s * (number of slaves + 2)	
Operating voltage	AS-i voltage 30 V <sub>DC</sub>	
<b>Display</b>		
LCD	indication of slave addresses and error messages in plain text	
LED PROFINET	–	green: PROFINET communication active red: no PROFINET communication
LED PROFIBUS	PROFIBUS communication active	–
LED power	power on	
LED config error	configuration error	
LED U AS-i	AS-i voltage OK	
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: close	
LEDs K1 ... K4	state of outputs: off: open on: close	
<b>UL-specifications (UL508)</b>		
External Protection	An isolated source with a secondary open circuit voltage of $\leq$ 30 V <sub>DC</sub> 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 <sub>US</sub>	the devices • BWU2214 • BWU2215 • BWU2383 • BWU2421 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 50295 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 EN ISO 13849-2:2012	

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Article no.	BWU2214 / BWU2215	BWU2383 / BWU2421
<b>Environment</b>		
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 (B / H / T in mm)	100 / 120 / 96	109 / 120 / 96

Article no.	BWU2214 / BWU2215	BWU2383 / BWU2421
<b>Safety monitor</b>		
Start delay	< 10 s	
Max. turn-off time	< 40 s	
Card slot	Chip card for storage of configuration data	
<b>Connection</b>		
Connection	COMBICON	
Length of connector cable	I/O: max. 15 m	
<b>Input</b>		
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	
<b>Output</b>		
Number of release circuits on the monitor	4	
Outputs	relay outputs (output circuits 1 and 2) max. contact load <sup>1</sup> : 3 A <sub>AC-15</sub> at 30 V, 3 A <sub>DC-13</sub> at 30 V	
	semiconductor outputs (output circuits 3 and 4) max. contact load: 0,5 A <sub>DC-13</sub> 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 ms	

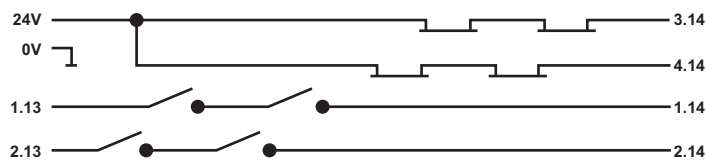
<sup>1</sup> Protection via external fuse, max. 4 A semi time-lag.

Article no.	Operating current		
	Master power supply, ca. 300mA out of AS-i circuits	Master power supply, max. 300mA out of AS-i circuit 1 (approx. 70mA ... 300mA), max. 300mA out of AS-i circuit 2 (approx. 70mA ... 300mA); in sum max. 370mA	Version „1 gateway, 1 power supply, for 2 AS-i networks“, approx. 300mA (PELV voltage)
BWU2214	-	•	-
BWU2215	-	-	•
BWU2383	-	-	•
BWU2421	-	•	-

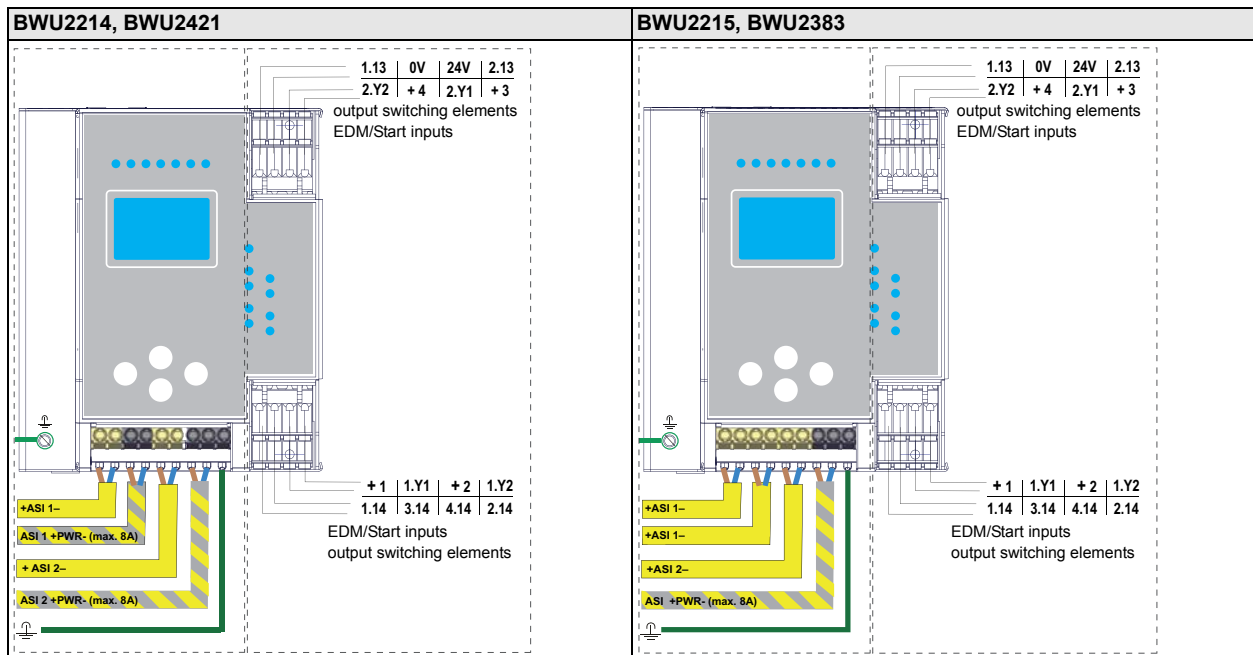
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	BWU2214 / BWU2421	BWU2215 / BWU2383
Redundant power supply out of AS-i: all fundamental functions of the device remain available even in case of power failure in one of the two AS-i networks	•	–
Current measurement of the AS-i circuits	–	•
Self-resetting 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 BWU2214, BWU2215, BWU2383, BWU2421:



## Connections: Gateway + Safety Monitor:



## 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 Master/Monitors in Stainless Steel (art. no. BW2071)
- AS-i Power Supply 4A (art. no. BW1649) / AS-i Power Supply 8A (art. no. BW1997)

## For devices with PROFIBUS interface:

- Serial PROFIBUS Master (art. no. BW1258)
- PROFIBUS-DP Master simulator (art. no. BW1257)