

# AS-i 3.0 PROFIBUS Gateways with integrated Safety Monitor

## AS-i 3.0 Gateways with integrated Safety Monitor

2 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 32 release circuits

- 4 CAT4, SIL 3 safe output circuits on the Monitor  
2 x safe relays and  
2 x fast electronic safe outputs

### Safe AS-i outputs are supported

- up to 32 independent AS-i outputs  
Multiple safe AS-i outputs possible via a single AS-i address

### Monitor configuration can be „arbitrarily“ large

- 256 devices  
Identical reaction time due to artificial limitation to 256 devices

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

### Chip card for storage of configuration data



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.
	Safety, PROFIBUS	max. 62 x 2 channels, max. 1922 in max. configuration	4 release circuits; 2 x relay, 2 x fast electronic safe outputs	max. 32, max. 992 in max. configuration	Safe Link	2 AS-i networks, 2 AS-i masters	yes, max. 4A/ AS-i network	Ethernet diagnostic	<b>BWU2702</b>

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

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

(2) **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 (optionally supply of multiple Single Gateways by 1 power supply).

(3) **Diagnostic and configuration interface**

"Ethernet diagnostic": Access to AS-i master and safety monitor via Bihl+Wiedemann proprietary software over Ethernet diagnostics interface.

(GSD, GSDML, ... file for the Gateway is built into the web server)

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<b>Article no.</b>	<b>BWU2702</b>
<b>Interface</b>	
PROFIBUS interface	according to IEC 61158 / IEC 61784-1
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>AS-i</b>	
AS-i specification	3.0
AS-i cycle time	150 $\mu$ s * (number of slaves + 2)
Operating voltage	AS-i voltage 30 V <sub>DC</sub>
AS-i Power24V capability <sup>(1)</sup>	yes
<b>AUX</b>	
Operating voltage	24 V <sub>DC</sub> (19,2 ... 28,8 V)
Max current consumption	1 A
<b>Display</b>	
LCD	menu, indication of slave addresses and error messages in plain text
LED power (green)	power ON
LED PROFIBUS (green)	PROFIBUS master recognized
LED config error (red)	configuration error
LED U AS-i (green)	AS-i voltage o.k.
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 (green)	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
<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.
cTÜVus	the devices • BWU2702 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
<b>Environment</b>	
Operating 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	$\geq 500$ V
Weight	800 g
Dimensions (W / H / D in mm)	100 / 120 / 106

<sup>(1)</sup> **AS-i Power24V**

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

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<b>Article no.</b>	<b>BWU2702</b>
<b>Safety monitor</b>	
Start delay	< 10 ms
Max. turn-off time	< 40 ms
Card slot	Chip card for storage of configuration data
<b>Connection</b>	
Connection	COMBICON
Length of connector cable	I/O: max. 15 m <sup>(1)</sup>
<b>Input</b>	
Inputs digital, EDM	4
Switching current	30 mA (T = 100 µs), continuously 4 mA at 24 V
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>(2)</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: 250ms (as from Safety Version 4.3); maximum pulse width 1,5ms

(1) loop resistance ≤ 150 Ω

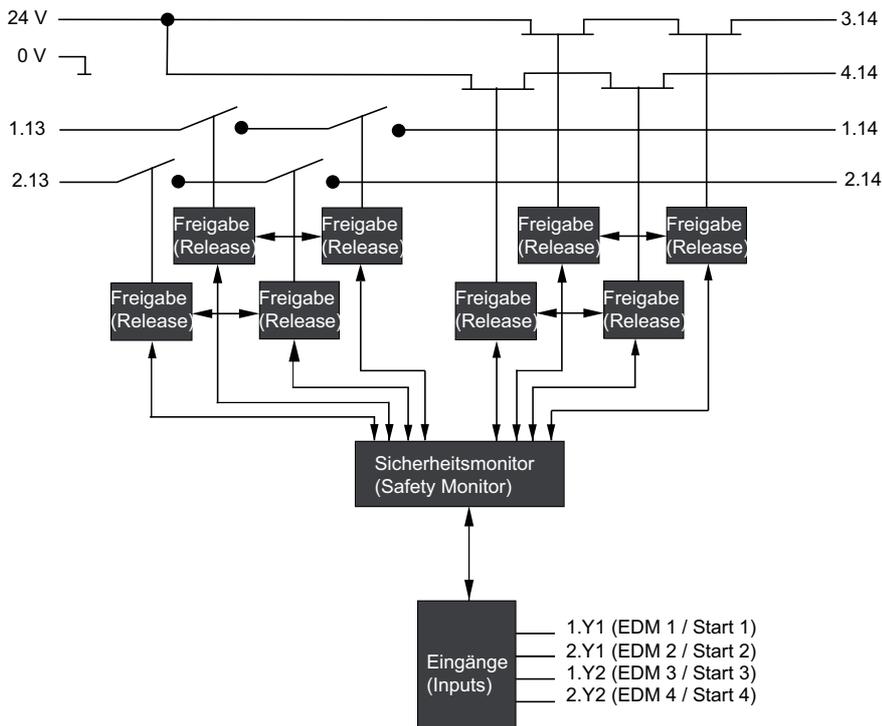
(2) Protection via external fuse, max. 4 A semi time-lag.

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)
<b>BWU2702</b>	–	–	•

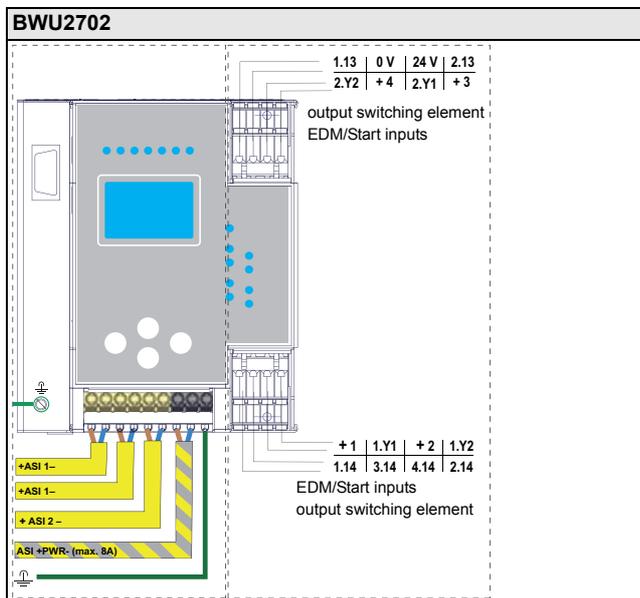
	<b>BWU2702</b>
<b>Redundant power supply out of AS-i: all fundamental functions of the device remain available even in case of power failure in one of the two AS-i networks</b>	–
<b>Current measurement of the AS-i circuits</b>	•
<b>Self-resetting adjustable fuses</b>	•
<b>AS-i earth fault monitor distinguishes between AS-i cable and sensor cable</b>	•
<b>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</b>	•

# AS-i 3.0 PROFIBUS Gateways with integrated Safety Monitor

## Safety outputs block diagram BWU2702



## Connections: Gateway + Safety Monitor



### Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- PROFIBUS DP Master Simulator (art. no. BW1257)
- Power supplies, e.g.: AS-i power supply, 4 A (art. no. BW1649), AS-i power supply, 8 A (art. no. BW1997) (further power supply units can be found at [www.bihl-wiedemann.de/en/products/accessories/power-supplies](http://www.bihl-wiedemann.de/en/products/accessories/power-supplies))

### For devices with Ethernet diagnostic interface:

- Bihl+Wiedemann Suite - Safety Software for Configuration, Diagnostics and Programming (art. no. BW2916)