

# ASi-3 Gateways, PROFIsafe via PROFIBUS or PROFINET

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### PROFIsafe and Safe Link in one device

- up to 450 devices

### 2 / 1 ASi-3 Master(s), PROFINET / PROFIBUS device

- ASi Safety input nodes report via PROFIsafe
- ASi Safety output nodes switch via PROFIsafe

### Up to 64 release circuits

- up to 6 safe output circuits CAT4, SIL 3 on the Monitor safe relays or electronic safe outputs

(Figure similar)

### Safe ASi outputs are supported

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

### 1 Safety Monitor for 2 ASi networks




- Operation using a single Monitor configuration!  
Monitor processes safety nodes on two ASi networks  
Coupling between the two networks superfluous

### Safe speed and standstill monitoring

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

### Chip card for storage of configuration data



Figure	Fieldbus Interface	Safety communication	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	Inputs safety, expandable to	Safety outputs, independent according to SIL 3, expandable to	Number of ASi networks, number of ASi Master <sup>(1)</sup>	Integrated de-coupling, ASi current measurement in the gateway <sup>(2)</sup>	Diagnostic and configuration interface <sup>(3)</sup>	Article No.
	PROFIBUS	PROFIsafe (F-CPU)	3 x 2 channels	6 release circuits; 6 x electronic safe outputs	max. 31 x 2-kanalig,	max. 31	1 ASi network, 1 ASi-3 Masters	yes, max. 4A/ ASi network	Ethernet diagnostics	<b>BWU2819</b>
	PROFINET	PROFIsafe (F-CPU) + Safe Link	3 x 2 channels	6 release circuits; 6 x electronic safe outputs	max. 62 x 2 channels, 1922 in max. configuration	max. 64, 1984 in max. configuration	2 ASi networks, 2 ASi-3 Masters	yes, max. 4A/ ASi network	Ethernet fieldbus; Ethernet diagnostics	<b>BWU3367</b>
	PROFINET	PROFIsafe (F-CPU)	3 x 2 channels	6 release circuits; 6 x electronic safe outputs	max. 31 x 2 channels	max. 31	1 ASi network, 1 ASi-3 Masters	yes, max. 4A/ ASi network	Ethernet fieldbus; Ethernet diagnostics	<b>BWU2794</b>
	PROFINET	PROFIsafe (F-CPU)	—	—	max. 62 x 2 channels	max. 16	2 ASi networks, 2 ASi-3 Masters	yes, max. 4A/ ASi network	Ethernet fieldbus; Ethernet diagnostics	<b>BWU2805</b>

<sup>(1)</sup> **Number of ASi networks, number of ASi Master**

"Single Master": 1 ASi network, 1 ASi-3 Master.

"Double Master": 2 ASi networks, 2 ASi-3 Masters.

"Optional ASi Safety coupling circuit": 2 ASi networks, 1 ASi-3 Master.

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- (2) **Integrated decoupling, ASi current measurement in the gateway**  
**"yes, max. 4A/ASi network"**: Data decoupling integrated in the gateway. Cost-effective power for 2 ASi networks with 1 power supply (optionally supply of multiple Single Gateways by 1 power supply). Operation with short cable lengths with standard 24 V power supply possible.
- (3) **Diagnostic and configuration interface**  
**"Ethernet fieldbus + Ethernet diagnostic"**: Access to ASi master and safety monitor via Bihl+Wiedemann proprietary software over Ethernet diagnostics interface or Ethernet fieldbus interface.  
**"Ethernet diagnostic"**: Access to ASi master and safety monitor via Bihl+Wiedemann proprietary software over Ethernet diagnostics interface.  
**"Ethernet fieldbus + RS 232"**: Access to ASi master and safety monitor via Bihl+Wiedemann proprietary software over Ethernet fieldbus interface or RS 232 interface and adapter cable.  
**"RS 232"**: Access to ASi master and safety monitor via Bihl+Wiedemann proprietary software over RS 232 interface and adapter cable.  
**The latest version of the device description file of the gateway with integrated safety monitor is available in the "Downloads" section of the respective device.**

Article no.	BWU2819	BWU2805	BWU2794 / BWU3367
<b>Fieldbus Interface</b>			
Type	<b>PROFIBUS</b> (RS 485)	<b>PROFINET</b> (RJ-45)	
	acc. to IEC 61158 / IEC 61784-1	<ul style="list-style-type: none"> <li>• 2 x RJ-45, integrated 2-Port-Switch IRT capability</li> <li>• Conformance Class B</li> <li>• integrated switch complies with Conformance Class C (IRT capability)</li> </ul>	
Baud rates	9,6 KBAud ... 12000 KBAud, automatic recognition	10/100 MBAud	
Function	DP function: <ul style="list-style-type: none"> <li>• imaging of the ASi nodes as I/O of the PROFIBUS</li> <li>• complete diagnosis and configuration via the DP Master</li> </ul>	<ul style="list-style-type: none"> <li>• PROFINET IO Device</li> <li>• Media Redundancy Protocol (MRP)</li> <li>• Shared Device</li> </ul>	
Card slot	chip card for storage of configuration data		
<b>Diagnostic Interface</b>			
Type	Ethernet	Ethernet; RJ-45 acc. to IEEE 802.3	
Safety communication	PROFIsafe (F-CPU)		
Safe coupling	–	yes, up to 16 byte <sup>(2)</sup>	
<b>ASi</b>			
ASi specification	3.0		
Cycle time	150 µs * (number of ASi-3 nodes + 2)		
Operating voltage	30 V <sub>DC</sub> (20 ... 31,6 V) (PELV voltage)		
ASi Power24V capability <sup>(1)</sup>	yes		
<b>AUX</b>			
Operating voltage	24 V <sub>DC</sub> (19,2 ... 28,8 V)	–	24 V <sub>DC</sub> (19,2 ... 28,8 V)
Max current consumption	7,2 A	–	7,2 A

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Article no.	BWU2819	BWU2805	BWU2794 / BWU3367
<b>Display</b>			
LCD	indication of ASi addresses and error messages in plain text		
LED PROFINET (green / red)	–	green: PROFINET communication active red: no PROFINET communication	
LED PROFIBUS (green)	PROFIBUS communication active	–	
LED power (green)	power on		
LED config error (red)	configuration error		
LED U ASi (green)	ASi voltage OK		
LED ASi active (green)	ASi normal operation active		
LED prg enable (green)	automatic addresses programming enabled		
LED prj mode (yellow)	configuration mode active		
LED AUX (green)	auxiliary power	–	auxiliary power
LEDs 1.Y1, 1.Y2, 2.Y1, 2.Y2 (EDM/Start) (yellow)	–	–	
LEDs K1 ... K4 (green)	–	–	
LEDs SI1 ... SI6 (yellow)	state of inputs: off: open on: close	–	state of inputs: off: open on: close
LEDs SO1 ... SO6 (yellow)	state of outputs: off: open on: close	–	state of outputs: off: open on: close
<b>UL-specifications (UL508)</b>			
External protection	An isolated source with a secondary open circuit voltage of $\leq 30 V_{DC}$ 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.		
<b>Environment</b>			
Applied standards	EN 60529 EN 62026-2 EN 61000-6-2 EN 61000-6-4 EN 62061, SIL 3 EN 61508, SIL 3 EN ISO 13849-1, Performance-Level e EN ISO 13849-2		
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	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	85 / 120 / 106	109 / 120 / 106

**(1) ASi 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.

**(2)** 16 Byte not supported by all PLCs. In this case only up to 12 Byte can be exchanged.

# ASi-3 Gateways, PROFIsafe via PROFIBUS or PROFINET

Article no.	BWU2805	BWU2794 / BWU2819 / BWU3367
<b>Safety monitor</b>		
Start delay	–	< 10 s
Max. turn-off time	–	< 40 s
Antivalent switches for local inputs	–	yes
Standstill monitors for local inputs	–	6 axes up to 50 Hz <sup>(1)</sup>
Speed monitors for local inputs	–	3 to 6 axes up to 400 Hz <sup>(2)</sup>
<b>Connection</b>		
Connection	–	COMBICON
Length of connector cable	–	unlimited <sup>(3)</sup>
<b>Input</b>		
Inputs Safety	–	3 x 2 channels <sup>(4)</sup>
Inputs digital, EDM	–	up to 6 standard inputs <sup>(4)</sup>
Switching current	–	15 mA (T = 100 µs), continuously 4 mA at 24 V
Power supply	–	out of AUX
<b>Output</b>		
Number of release circuits on the monitor	–	6
Outputs	–	semiconductor output max. contact load: 1,2 A <sub>DC-13</sub> at 30 V, Σ = 7,2 A in sum <sup>(5)</sup>
	–	
Power supply (semiconductor outputs)	–	out of AUX
Test pulse (semiconductor outputs)	–	if output is on: minimum interval between 2 test pulses: 250 ms; maximum pulse width 1 ms

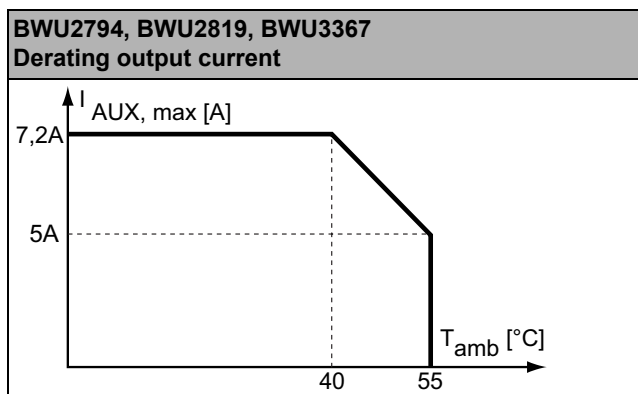
(1) connection at all SI or SO terminals possible.

(2) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU2794, BWU2819, BWU3367")

(3) loop resistance ≤ 150 Ω

(4) see "Variations of terminal configuration for BWU2794, BWU2819, BWU3367"

(5)

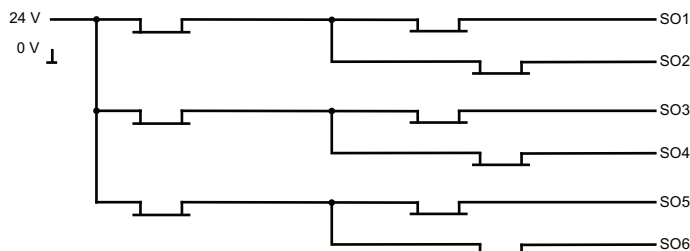


# ASi-3 Gateways, PROFIsafe via PROFIBUS or PROFINET

Article no.	Operating current		
	Master power supply, ca. 300 mA out of ASi circuits	Master power supply, max. 300 mA out of ASi circuit 1 (approx. 70 mA ... 300 mA), max. 300 mA out of ASi circuit 2 (approx. 70 mA ... 300 mA); in sum max. 370 mA	Cost-effective power for 2 ASi networks with 1 power supply, approx. 300 mA (PELV voltage)
BWU2794	-	-	•
BWU2805	-	-	•
BWU2819	-	-	•
BWU3367	-	-	•

	BWU2794 / BWU2805 / BWU2819 / BWU3367
Data decoupling integrated in the gateway	•
Redundant power supply out of ASi: all fundamental functions of the device remain available even in case of power failure in one of the two ASi networks	-
Current measurement of the ASi circuits	•
Self-resetting adjustable fuses	•
ASi earth fault monitor distinguishes between ASi cable and sensor cable	•
Cost-effective power for 2 ASi networks with 1 power supply	•

## Safety outputs block diagram BWU2794, BWU2819, BWU3367



## Variations of terminal configuration for BWU2794, BWU2819, BWU3367

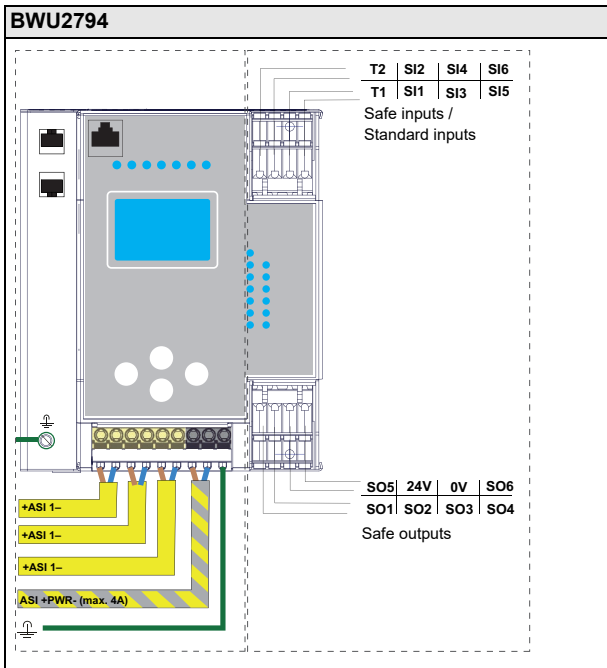
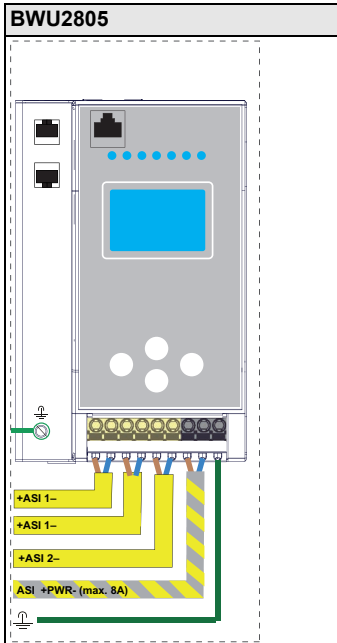
Terminal	Safe output	Safe input for mechanical contacts in combination with T1, T2 <sup>(1)</sup>	Safe antivalent input <sup>(1)</sup>	Safe electronic input <sup>(1)</sup>	Standard input <sup>(1)</sup>
SI1,2	-	•	•	•	•
SI3,4	-	•	•	•	•
SI5,6	-	•	•	•	•
SO1,2 <sup>(2)</sup>	•	•	•	-	•
SO3,4 <sup>(2)</sup>	•	•	•	-	•
SO5,6 <sup>(2)</sup>	•	•	•	-	•

<sup>(1)</sup> Inputs must be supplied from the same 24 V voltage source connected to the supply terminals of the local safe I/Os of the device.

<sup>(2)</sup> If outputs are configured as inputs, the input current has to be limited by an external element at  $\leq 100\text{mA}$

# ASi-3 Gateways, PROFIsafe via PROFIBUS or PROFINET

## Connections: Gateway + Safety Monitor:



Connection	Description
SI1, SI3, SI5	Safe input terminal (T1)
SI2, SI4, SI6	Safe input terminal (T2)
T1	Clock output 1
T2	Clock output 2
SO1 ... SO6	Safe semiconductor outputs 1 ... 6
24V, 0V	Power supply for local I/Os
+ASI 1-	Connection of ASi circuit
ASI +PWR-	Power supply for Gateway and ASi networks

# ASi-3 Gateways, PROFIsafe via PROFIBUS or PROFINET

BWU2819		Connection	Description
<p>Safe inputs / Standard inputs</p> <p>Safe outputs</p> <p>+ASI 1- +ASI 1- +ASI 1- +ASI +PWR- (max. 4A)</p>	T2   SI2   SI4   SI6 T1   SI1   SI3   SI5	SI1, SI3, SI5	Safe input terminal (T1)
		SI2, SI4, SI6	Safe input terminal (T2)
		T1	Clock output 1
		T2	Clock output 2
		SO1 ... SO6	Safe semiconductor outputs 1 ... 6
		24V, 0V	Power supply for local I/Os
		+ASI 1-	Connection of ASi circuit
		ASI +PWR-	Power supply for Gateway and ASi networks

BWU3367		Connection	Description
<p>Safe inputs / Standard inputs</p> <p>Safe outputs</p> <p>+ASI 1- +ASI 1- +ASI 2- +ASI +PWR- (max. 8A)</p>	T2   SI2   SI4   SI6 T1   SI1   SI3   SI5	SI1, SI3, SI5	Safe input terminal (T1)
		SI2, SI4, SI6	Safe input terminal (T2)
		T1	Clock output 1
		T2	Clock output 2
		SO1 ... SO6	Safe semiconductor outputs 1 ... 6
		24V, 0V	Power supply for local I/Os
		+ASI 1-, +ASI 2-	Connection of ASi circuits
		ASI +PWR-	Power supply for Gateway and ASi networks

## Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- Chip card, memory capacity 128 KB (art. no. BW2222)
- Bihl+Wiedemann Suite - Safety Software for Configuration, Diagnostics and Commissioning (art. no. BW2916)
- Power supplies, e.g.: 30 V power supply, 4 A, 1 phase (art. no. BW4218), 30 V power supply, 8 A, 1 phase (art. no. BW4219), 30 V power supply, 8 A, 3 phases (art. no. BW4220), 30 V Power Supply, 16 A, 1 phase (art. no. BW4221), 30 V Power Supply, 16 A, 3 phases (art. no. BW4222) (for further power supply units visit [www.bihl-wiedemann.de/en/products/accessories/power-supplies](http://www.bihl-wiedemann.de/en/products/accessories/power-supplies))

## For devices with PROFIBUS interface:

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

## For devices with PROFINET interface:

- PROFINET Master simulator Plus (art. no. BW3057)