

# ASi-3 POWERLINK Gateways with integrated Safety Monitor

## ASi-3 POWERLINK-Gateways with integrated Safety Monitor

### 2 / 1 Master, POWERLINK device

- integrated Hub

### Up to 32 release circuits

- up to 6 release circuits SIL 3, Cat. 4 on the Monitor
- up to 6 x electronic safe outputs

### Safe ASi outputs are supported

- up to 64 independent ASi outputs  
Multiple safe ASi outputs possible via single ASi address




(Figure similar)

### 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 ASi networks, number of ASi Master <sup>(1)</sup>	1 power supply, 1 gateway for 2 ASi networks, inexpensive power supplies <sup>(2)</sup>	Diagnostic and configuration interface <sup>(3)</sup>	Article No.
	Safety, POWERLINK	max. 62 x 2 channels, max. 1922 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 32, max. 992 in max. configuration	Safe Link	2 ASi networks, 2 ASi Masters	yes, max. 4 A/ ASi network	Ethernet diagnostics	<b>BWU3176</b>
	Safety, POWERLINK	max. 31 x 2 channels, max. 1891 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 31, max. 991 in max. configuration	Safe Link	1 ASi network, 1 ASi Master	yes, max. 4 A/ ASi network	Ethernet diagnostics	<b>BWU3177</b>

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

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

"Doppel Master": 2 ASi networks, 2 ASi Masters.

<sup>(2)</sup> **1 power supply, 1 gateway for 2 ASi networks, inexpensive power supplies**

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

<sup>(3)</sup> **Diagnostic and configuration interface**

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

The latest version of the device description file of the gateway is available in the "Downloads" section of the respective device.

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<b>Article no.</b>	<b>BWU3176 / BWU3177</b>
<b>Interface</b>	
Ethernet interface	RJ45
Baud rates	100 MBaud
<b>ASi</b>	
ASi specification	3.0
Cycle time	150 $\mu$ s * (number of nodes + 2)
Operating voltage	30 V (20 ... 31.6 V)
ASi Power24V capability <sup>(1)</sup>	yes
<b>AUX</b>	
Operating voltage	24 V <sub>DC</sub> (19,2 ... 28,8 V)
Max current consumption	7,2 A
<b>Display</b>	
LCD	indication of ASi addresses and error messages in plain text
LED power (green)	power on
LED POWERLINK (green)	Ethernet communication active
LED config error (red)	configuration error
LED U ASi (green)	ASi voltage OK
LED ASi active (green)	ASi normal operation
LED prg enable (green)	automatic addresses programming enabled
LED prj mode (yellow)	configuration mode active
LED AUX (green)	auxiliary power
LEDs SI1 ... SI6 (yellow)	state of inputs: LED off: open LED on: closed
LEDs SO1 ... SO6 (yellow)	state of inputs: LED off: offen LED 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.
Applied standards	EN 61000-6-2 EN 61000-6-4 EN 62061, SIL 3 EN 61508, SIL 3 EN ISO 13849-1, PLe EN 60529
<b>Ambient</b>	
Operating altitude	max. 2000 m
Ambient temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Pollution degree	2
Housing	stainless steel, for DIN-rail mounting
Protection category	IP20
Tolerable loading referring to humidity	according to EN 61131-2
Tolerable loading referring to impacts and vibrations	according EN 61131-2
Voltage of insulation	$\geq 500$ V
Weight	800 g
Dimensions (W / H / D in mm)	109 / 120 / 106

<sup>(1)</sup> **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.

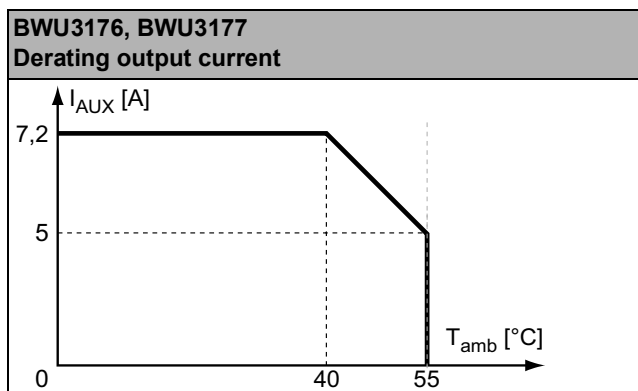
# ASi-3 POWERLINK Gateways with integrated Safety Monitor

<b>Article no.</b>	<b>BWU3176 / BWU3177</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	unlimited <sup>(1)</sup>
<b>Input</b>	
Inputs Safety, SIL3, cat. 4	3 x 2 channels <sup>(2)</sup>
Inputs digital, EDM	up to 6 standard inputs <sup>(2)</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>(3)</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) Loop resistance ≤ 150 Ω

(2) see "Variations of terminal configuration for BWU3176, BWU3177"

(3)

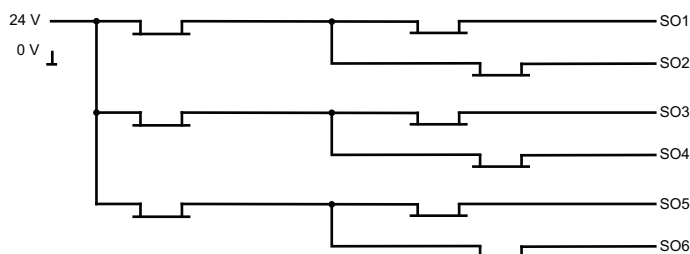


Article no.	Operating current		
	Master power supply, ca. 300 mA out of ASi circuits	Master power supply, max. 300 mA out of ASi circuit 1 (approx. 70 mA ... 300 mA), max. 300 mA out of ASi circuit 2 (approx. 70 mA ... 300 mA); in sum max. 370 mA	Version „1 gateway, 1 power supply, for 2 ASi networks“, approx. 300 mA (PELV voltage)
BWU3176	-	-	•
BWU3177	-	-	•

# ASi-3 POWERLINK Gateways with integrated Safety Monitor

	BWU3176 / BWU3177
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	•
In version „1 gateway, 1 power supply for 2 ASi circuits“: only 1 gateway + 1 ASi power supply is needed for both 2 ASi circuits	•

## Safety outputs block diagram BWU3176, BWU3177:



## Variations of terminal configuration for BWU3176, BWU3177

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 may only be supplied by the same 24 V source as the device itself.

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

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## Connections: Gateway + Safety Monitor:

BWU3176	Connection	Description
<p>                     T2   SI2   SI4   SI6                      T1   SI1   SI3   SI5                      Safe inputs                      Standard inputs                 </p> <p>                     SO5   24V   0V   SO6                      SO1   SO2   SO3   SO4                      Safe outputs                 </p> <p>                     +ASI 1-                      +ASI 1-                      +ASI 2-                      ASI +PWR- (max. 8A)                 </p>	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
	24 V, 0 V	Power supply for local I/Os
	+ASI 1-, +ASI 2-	Connection of ASi circuit
	ASI +PWR-	Power supply for Gateway and ASi networks

BWU3177	Connection	Description
<p>                     T2   SI2   SI4   SI6                      T1   SI1   SI3   SI5                      Safe inputs                      Standard inputs                 </p> <p>                     SO5   24V   0V   SO6                      SO1   SO2   SO3   SO4                      Safe outputs                 </p> <p>                     +ASI 1-                      +ASI 1-                      +ASI 1-                      ASI +PWR- (max. 4A)                 </p>	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
	24 V, 0 V	Power supply for local I/Os
	+ASI 1-	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)
- Bihl+Wiedemann Suite - Safety Software for Configuration, Diagnostics and Commissioning (art. no. BW2916)
- Power supplies, e.g.: ASi power supply, 4 A (art. no. BW1649), ASi 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))