

# ASi-5/ASi-3 openSAFETY over POWERLINK Gateway with integrated Safety Monitor



**ASi-5 – Great data bandwidth, short cycle times**

**Compatible with all ASi generations**

**2 ASi-5/ASi-3 Master, POWERLINK-Device**

- integrated hub

**openSAFETY over POWERLINK**

**Up to 64 release circuits**

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

**Safe ASi outputs are supported**

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

**OPC UA server and integrated web server for simplified diagnostics**

**Selection of Mode of Safe Operation**

**Safe speed and standstill monitoring**


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

**Chip card for storage of configuration data**



(Figure similar)



Figure	Interface, fieldbus	Inputs Safety, SIL 3, Kat. 4	Outputs Safety, SIL 3, cat. 4	ASi-5/ASi-3	ASi Safety	Safety communication	Number of ASi networks, number of ASi Master <sup>(1)</sup>	Integrated decoupling, ASi current measurement in the gateway <sup>(2)</sup>	Diagnostic and configuration interface <sup>(3)</sup>	Article No.
	POWERLINK, OPC UA	3 x 2-channels	6 release circuits; 6 x electronic safe outputs	ASi-5 + ASi-3 compatible	ASi-3 Safety compatible	openSafety over POWERLINK + Safe Link	2 ASi networks, 2 ASi-5/ASi-3 Masters	yes, max. 4 A/ASi network	Ethernet diagnostics	<b>BWU3865</b>

(1) **Number of ASi networks, number of ASi Master**

"Single Master": 1 ASi network, 1 ASi-5/ASi-3 Master.

"Doppel Master": 2 ASi networks, 2 ASi-5/ASi-3 Masters.

(2) **Integrated decoupling, ASi current measurement in the gateway**

"yes, max. 4 A/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 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>BWU3865</b>
<b>Fieldbus Interface</b>	
Type	POWERLINK; 2 x RJ45, integrated 2-Port-Hub
Baud rates	10/100 MBaud
Safety communication	openSAFETY
OPC UA interface	–
Card slot	chip card (BW4055) for storage of configuration data
<b>Diagnostics Interface</b>	
Type	Ethernet, RJ-45 acc. to IEEE 802.3
Baud rates	10/100 MBaud half-duplex or full-duplex
Safety communication	Safe Link
OPC UA interface	OPC UA server + web server
Safe Coupling <sup>(1)</sup>	no
<b>ASi</b>	
ASi specification	ASi-5 + ASi-3
Cycle time	<b>Cycle time ASi-5 (constant):</b> 1,27 ms for 384 bits input data + 384 bits output data <b>Cycle time ASi-3 (variable):</b> 150 µs * (number of ASi-3 nodes + 2)
ASi Safety	ASi-3 Safety compatible
Operating voltage	30 V (20 ... 31.6 V)
Operating current	ca. 300 mA
Current per ASi network	max. 4 A
ASi Power24V capability <sup>(2)</sup>	yes
Length of ASi cable	with 24 V power supply: max. 50 m with 30 V power supply: max. 100 m with ASi-3 / max. 200 m with ASi-5
<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)	POWERLINK 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 outputs: LED off: open LED on: closed
<b>UL-specifications (UL508)</b>	
External protection	An isolated voltage source with a PELV/SELV voltage ≤30 V <sub>DC</sub> must have internal or external current limiting.
In general	UL mark does not provide UL certification for any functional safety rating or aspects of the above devices.

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<b>Article no.</b>	<b>BWU3865</b>
<b>Ambient</b>	
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
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	≥ 500V
Weight	800 g
Dimensions (W / H / D in mm)	109 / 120 / 106

(1) Safe data exchange between safe protocols (e.g. CIP Safety, PROFIsafe etc.).

(2) **ASi Power24V**

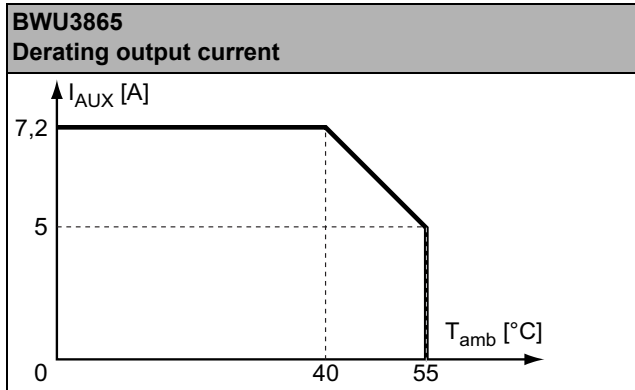
The device can be operated directly on a 24 V (PELV) power supply. The gateway has been optimized with integrated data coupling coils and adjustable self-resetting fuses for safe use of powerful 24 V power supplies.

<b>Article no.</b>	<b>BWU3865</b>
<b>Safety Monitor</b>	
ASi Safety	ASi-3 Safety compatible
Start delay	< 10 ms
Max. turn-off time	< 40 ms
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>
Selection of Mode of Safe Operation	yes
<b>Connection</b>	
Connection	Push-in terminals
Length of connector cable	unlimited <sup>(3)</sup>
<b>Input</b>	
Inputs Safety, SIL3, cat. 4	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.

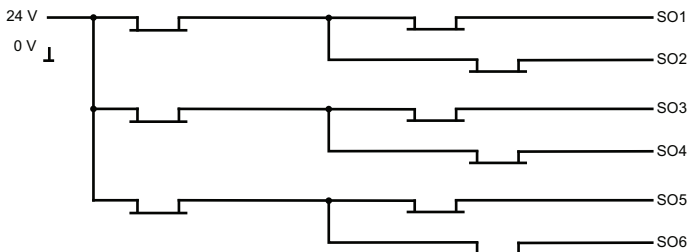
# ASi-5/ASi-3 openSAFETY over POWERLINK Gateway with integrated Safety Monitor

- (2) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU3865")
- (3) Loop resistance  $\leq 150 \Omega$
- (4) see "Variations of terminal configuration for BWU3865"
- (5)



	BWU3865
Integrated decoupling in the Gateway	•
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 BWU3865:



## Variations of terminal configuration for BWU3865

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

- (1) Inputs must be supplied from the same 24V voltage source connected to the supply terminals of the local safe I/Os of the device.
- (2) 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:

BWU3865	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	

## Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- Chip card, memory capacity 512 kB (art. no. BW4055)
- Bihl+Wiedemann Safety 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))