

ASi-5/ASi-3 PROFINET Gateway with integrated Safety Monitor



ASi-5 – Great data bandwidth, short cycle times

Compatible with all ASi generations

2 ASi-5/ASi-3 Master, PROFINET device

Up to 64 release circuits

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

Safe speed and standstill monitoring


Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration data



(Figure similar)



Figure	Type	Inputs Safety, SIL 3, cat. 4	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 ⁽¹⁾	1 power supply, 1 gateway for 2 ASi networks, inexpensive power supplies ⁽²⁾	Diagnostic and configuration interface ⁽³⁾	Article No.
	PRO-FINET, ASi-5 / ASi-3	3 x 2 channels	max. 62 x 2 channels, 1922 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 64, 1984 in max. configuration	Safe Link	2 ASi networks, 2 ASi-5/ASi-3 masters	yes, max. 4A/ ASi network	Ethernet fieldbus; Ethernet diagnostics	BWU4000

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

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

⁽²⁾ **1 power supply, 1 gateway for 2 ASi networks, inexpensive power supplies**

"yes, max. 4A/ASi network": Cost-effective power for 2 ASi networks with 1 power supply.

⁽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.

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.

ASi-5/ASi-3 PROFINET Gateway with integrated Safety Monitor

Article no.	BWU4000
Interface	
PROFINET interface	2 x RJ-45, integrated 2-Port-Switch IRT capability Conformance Class B integrated switch complies with Conformance Class C (IRT capability)
OPC UA interface	OPC UA server + web server
Baud rates	10/100 MBaud
Function	PROFINET IO Device Media Redundancy Protocol (MRP) Shared Device
Card slot	chip card (512 kB) for storage of configuration data
Ethernet interface	
Baud rate	10/100 MBaud half-duplex or full-duplex
Safety communication	Safe Link
Safe coupling ⁽¹⁾	no
ASi	
ASi specification	ASi-3 + ASi-5
Cycle time	Cycle time ASi-3 (variable): 150 μ s * (number of ASi-3 nodes + 2)
	Cycle time ASi-5 (constant): 1,27 ms for 384 bits input data + 384 bits output data
Operating voltage	30 V _{DC} (20 ... 31,6 V) (PELV voltage)
Operating current	max. 300 mA master power supply, max. 4 A per ASi network
ASi Power24V capability ⁽²⁾	yes
AUX	
Operating voltage	24 V _{DC} (19,2 ... 28,8 V)
Max current consumption	7,2 A
Display	
LCD	indication of ASi addresses and error messages in plain text
LED PROFINET (green / red)	green: PROFINET communication active red: no PROFINET communication
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)	ASi power on and auxiliary power on
LEDs SI1 ... SI6 (yellow)	state of inputs: off: open on: close
LEDs SO1 ... SO6 (yellow)	state of outputs: off: open on: close
UL-specifications (UL508)	
External protection	An isolated source with a secondary open circuit voltage of ≤ 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.

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Article no.	BWU4000
Environment	
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	-25 °C ... +55 °C (no condensation permitted)
Storage temperature	-25 °C ... +85 °C
Housing	stainless steel, for DIN rail mounting
Pollution degree	2
Protection category	IP20
Maximum tolerable shock and vibration stress	according EN 61131-2
Voltage of insulation	≥ 500 V
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**

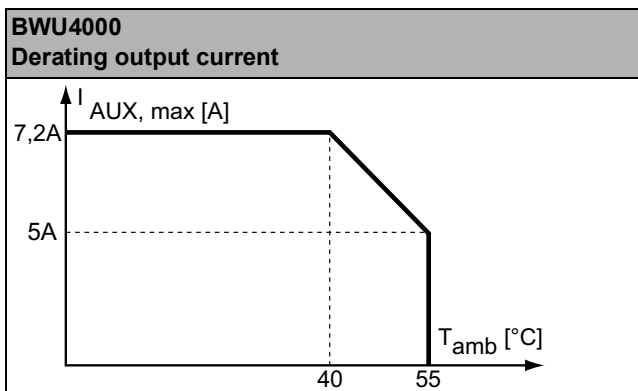
The device can be operated directly on a 24 V (PELV) power supply. The gateway has been optimized with integrated data coupling coils and adjustable self-resetting fuses for safe use of powerful 24 V power supplies.

Article no.	BWU4000
Safety monitor	
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 ⁽¹⁾
Speed monitors for local inputs	3 to 6 axes up to 400 Hz ⁽²⁾
Selection of Mode of Safe Operation	yes
Connection	
Connection	COMBICON
Length of connector cable	unlimited ⁽³⁾
Input	
Inputs Safety	3 x 2 channels ⁽⁴⁾
Inputs digital, EDM	up to 6 standard inputs ⁽⁴⁾
Switching current	15 mA (T = 100 µs), continuously 4 mA at 24 V
Power supply	out of AUX
Output	
Number of release circuits on the monitor	6
Outputs	semiconductor output max. contact load: 1,2 A _{DC-13} at 30 V, $\Sigma = 7,2$ A in sum ⁽⁵⁾
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.

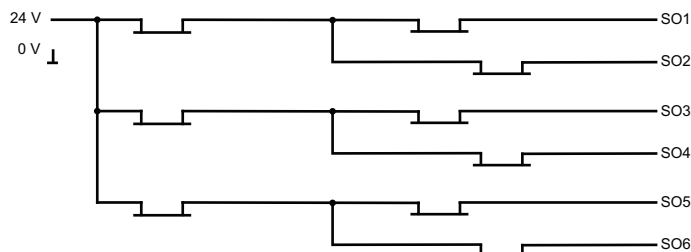
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- (2) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU4000")
- (3) loop resistance $\leq 150 \Omega$
- (4) see "Variations of terminal configuration for BWU4000"
- (5)



	BWU4000
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 BWU4000



Variations of terminal configuration for BWU4000

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

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

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Connections: Gateway + Safety Monitor:

BWU4000	Connection	Description	
<p>The diagram shows a terminal block with the following connections:</p> <ul style="list-style-type: none"> Safe inputs / Standard inputs: T1, T2, SI1, SI2, SI3, SI4, SI5, SI6. Safe outputs: SO1, SO2, SO3, SO4, SO5, SO6. Power supply: 24V, 0V. ASi connections: +ASI 1-, +ASI 1-, +ASI 2-, ASI +PWR- (max. 8A). 	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 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)
- PROFINET Master Simulator (art. no. BW4754, BW4755)