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	Field-bus In-terface (1)	Safety com-munication	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	Inputs safety, expand-able to	Safety outputs, independent according to SIL 3, expandable to	Number of ASi networks, number of ASi Master (2)	Integrated de-coupling, ASi current mea-surement in the gateway (3)	Diagnostic and config-uration interface (4)	Article No.
	PRO-FINET, OPC UA	Safe Link	3 x 2 channels	6 release circuits; 6 x electronic safe outputs	max. 62 x 2 channels, 1922 in max. confi-guration	max. 64, 1984 in max. configuration	2 ASi networks, 2 ASi-5/ASi-3 masters	yes, max. 4A/ ASi network	Ethernet fieldbus; Ethernet diagnostics	**BWU4000**

(1) **Fieldbus interface**
Communication interface between fieldbus and gateway: interfaces for standardized fieldbus systems in industrial automation.
PROFINET ASi gateway: interface for a PROFINET fieldbus
OPC UA server: interface for the OPC UA communication.

(2) **Number of ASi networks, number of ASi Master**
"Double Master": 2 ASi networks, 2 ASi-5/ASi-3 Masters.

(3) **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.

(4) **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.

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Article no.	BWU4000
Fieldbus Interface	
Type	PROFINET; 2 x RJ-45,integrated 2-Port-Switch IRT capability Conformance Class B, integrated switch complies with Conformance Class C (IRT capability)
Baud rates	10/100 MBaud
OPC UA interface	OPC UA server + web server
Safety Communication	Safe Link
Function	PROFINET IO Device Media Redundancy Protocol (MRP) Shared Device
Card slot	chip card (512 kB) for storage of configuration data
Diagnostic Interface	
Type	PROFINET; RJ-45 acc. to IEEE 802.3
Baud rate	10/100 MBaud half-duplex or full-duplex
OPC UA interface	OPC UA server + web server
Safety communication	Safe Link
Safe coupling (1)	no
ASi	
ASi specification	ASi-3 + ASi-5
Cycle time	**Cycle time ASi-3 (variable):** 150 µs * (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,
Current per ASi network	max. 4 A
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.

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

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, ∑= 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.

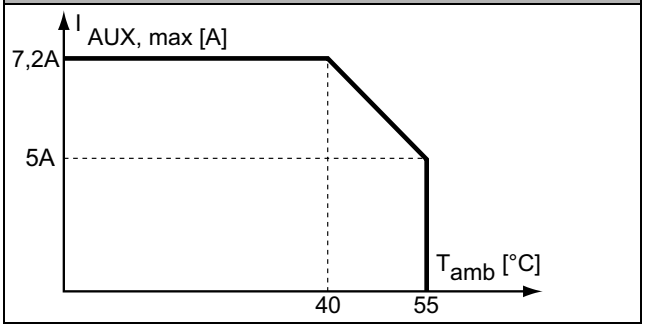
(2) connection only at terminals SO1 ... SO6 configured as standard inputs (see “Variations of terminal configuration for BWU4000”)

(3) loop resistance ≤ 150 Ω

(4) see “Variations of terminal configuration for BWU4000”

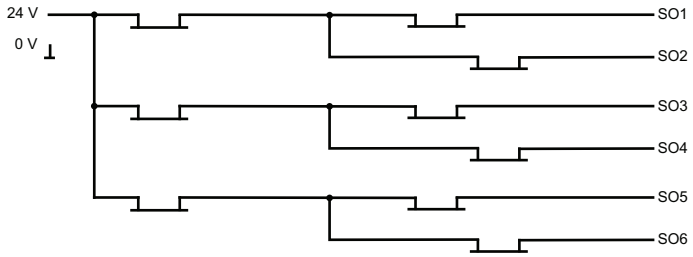
(5)

BWU4000
Derating output current



	BWU4000
Data decoupling integrated 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 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 ≤ 100mA

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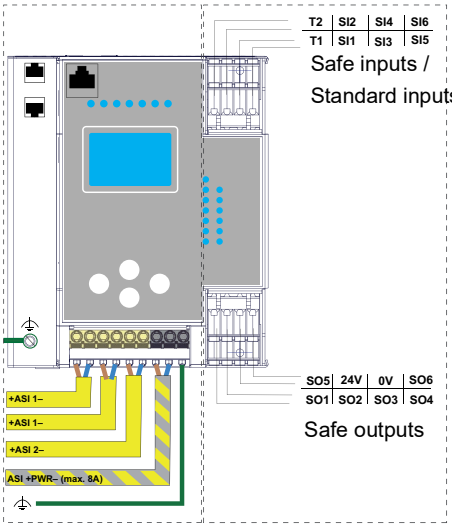
Connections: Gateway + Safety Monitor:

BWU4000	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-, +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 Simulators Licenses (art. no. BW4754, BW4755)**

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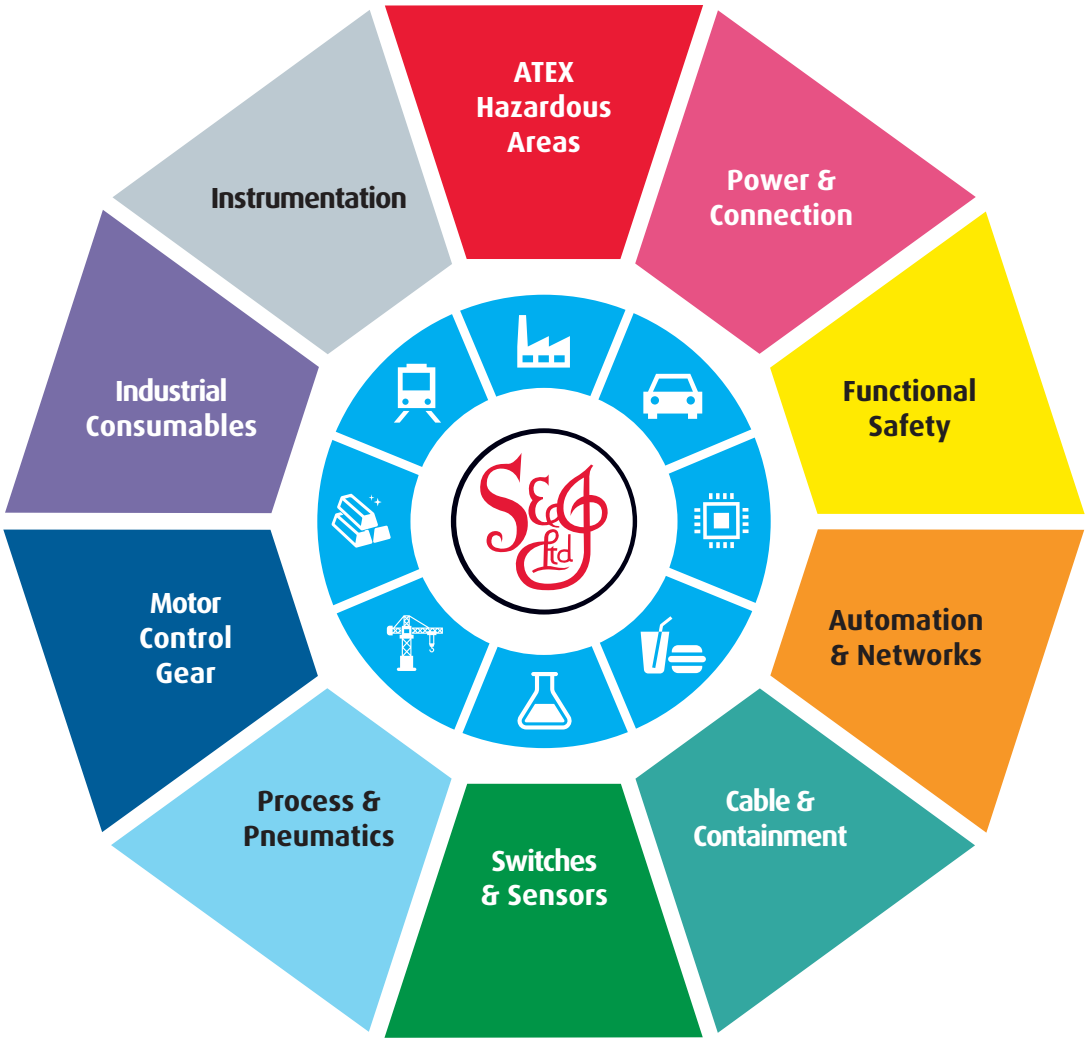

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