

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



ASi-5 – Great data bandwidth, short cycle times

Compatible with all ASi generations

Safety Monitor supports ASi-5 Safety and ASi-3 Safety

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 interface and REST API for IIoT applications

Integrated web server for simple diagnostics and maintenance

Safe speed and standstill monitoring

Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration and additional data



(Figure similar)



Figure	Fieldbus Interface	Safety communication	Inputs Safety ⁽¹⁾	Outputs Safety, SIL 3, cat. 4	ASi-5/ASi-3	ASi Safety	Number of ASi networks, number of ASi Master ⁽²⁾	Integrated decoupling, ASi current measurement in the gateway ⁽³⁾	Article No.
	PROFINET, OPC UA	Safe Link	6 x 1 channel or 3 x 2 channels	6 release circuits; 6 x electronic safe outputs	ASi-5 + ASi-3 compatible	ASi-5 Safety + ASi-3 Safety compatible	2 ASi networks, 2 ASi-5/ASi-3 masters	yes, max. 4A/ ASi network	BWU3952

(1) Inputs Safety

Safe inputs can be configured as 1-channel or 2-channel depending on the desired application or PL and SIL level. Suitable for applications up to category 4/PLe/SIL3.

(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.

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Article no.	BWU3952
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
IT interface	OPC UA server, web server, REST API
Safety Communication	Safe Link
Function	PROFINET IO Device Media Redundancy Protocol (MRP) Shared Device
Card slot	chip card (BW4785) for storage of configuration and additional data
Diagnostic Interface	
Type	PROFINET; RJ-45 acc. to IEEE 802.3
Baud rate	10/100 MBaud half-duplex or full-duplex
IT interface	OPC UA server, web server, REST API
Safety communication	Safe Link
ASi	
ASi specification	ASi-5 + ASi-3
Cycle time	Cycle time ASi-5 (constant): 1,27 ms for 384 bits input data + 384 bits output data Cycle time ASi-3 (variable): 150 µs * (number of ASi-3 nodes + 2)
ASi Safety	ASi-5 Safety + ASi-3 Safety compatible
Operating voltage	30 V _{DC} (20 ... 31,6 V) (PELV voltage)
Operating current	max. 300 mA
Current per ASi network	max. 4 A
ASi Power24V capability ⁽¹⁾	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 voltage source with a PELV/SELV voltage ≤30 V _{DC} 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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Article no.	BWU3952
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) ASi Power24V

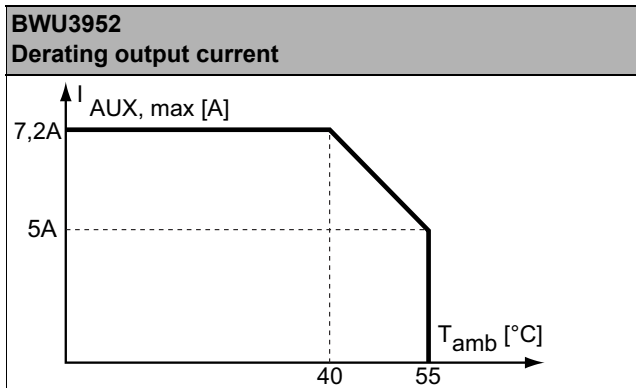
The device can be operated directly on a 24 V (PELV) power supply. The gateway has been optimized with integrated data coupling coils and adjustable self-resetting fuses for safe use of powerful 24 V power supplies.

Article no.	BWU3952
Safety monitor	
ASi Safety	ASi-5 Safety + ASi-3 Safety compatible
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	Push-in terminals
Length of connector cable	unlimited ⁽³⁾
Input	
Inputs Safety	up to 6 x 1-channel safe inputs (SIL1, cat. 2, PLc) or up to 3 x 2-channel safe inputs (SIL3, cat. 4, PLe) ⁽⁴⁾
Inputs digital, EDM	up to 12 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 release circuits; 6 x electronic safe outputs ⁽⁴⁾
Outputs	semiconductor output max. contact load: 1,2 A _{DC-13} at 30 V, Σ = 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.

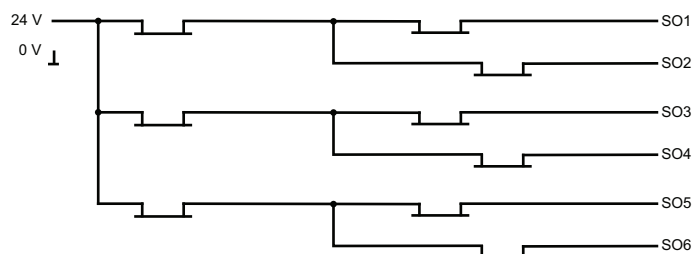
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- (2) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU3952")
 (3) loop resistance $\leq 150 \Omega$
 (4) see "Variations of terminal configuration for BWU3952"
 (5)



	BWU3952
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 BWU3952



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

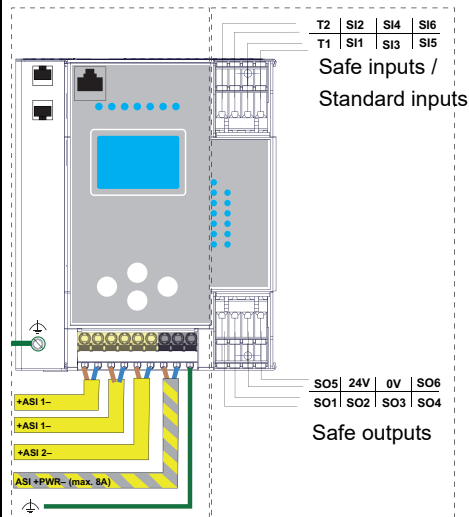
Variations of terminal configuration for BWU3952

Terminal	up to 6 safe outputs	up to 6 safe 2 channel inputs for floating contacts in combination with T1, T2 ⁽¹⁾	up to 6 safe 2 channel inputs for antivalent switches ⁽¹⁾	up to 3 safe 2 channel inputs for OSSDs	up to 12 safe 1 channel inputs ⁽¹⁾	up to 12 standard inputs ⁽¹⁾
SI1	–	•	•	•	•	•
SI2	–	•	•	•	•	•
SI3	–	•	•	•	•	•
SI4	–	•	•	•	•	•
SI5	–	•	•	•	•	•
SI6	–	•	•	•	•	•
SO1 ⁽²⁾	•	•	•	–	•	•
SO2 ⁽²⁾	•	•	•	–	•	•
SO3 ⁽²⁾	•	•	•	–	•	•
SO4 ⁽²⁾	•	•	•	–	•	•
SO5 ⁽²⁾	•	•	•	–	•	•
SO6 ⁽²⁾	•	•	•	–	•	•

⁽¹⁾ 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.

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

Connections: Gateway + Safety Monitor:

BWU3952	Connection	Description
 The diagram shows a terminal block with two main sections. The top section is labeled 'Safe inputs / Standard inputs' and includes terminals T1, T2, SI1, SI2, SI3, SI4, SI5, and SI6. The bottom section is labeled 'Safe outputs' and includes terminals SO1, SO2, SO3, and SO4. Power supply connections are shown at the bottom, including +ASI 1-, +ASI 1-, +ASI 2-, and ASI +PWR- (max. 8A). A 24V and 0V supply is also indicated.	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 for storage of configuration and additional data, memory capacity $\geq 16\text{ GB}$ (art. no. BW4785)
- 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)