

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.

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

| | |
|--|---|
| 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 μ s * (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. |

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

| 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

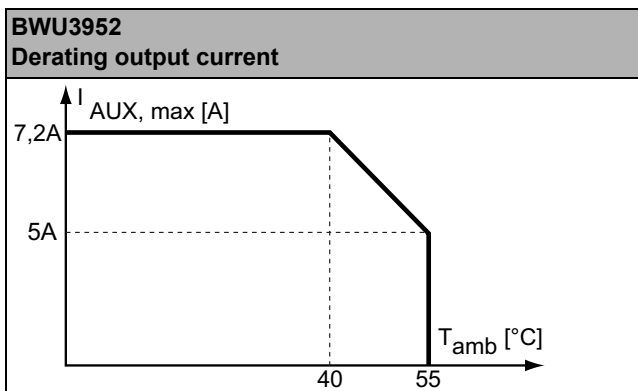
The device can be operated directly on a 24 V (PELV) power supply. The gateway has been optimized with integrated data coupling coils and adjustable self-resetting fuses for safe use of powerful 24 V power supplies.

| 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.

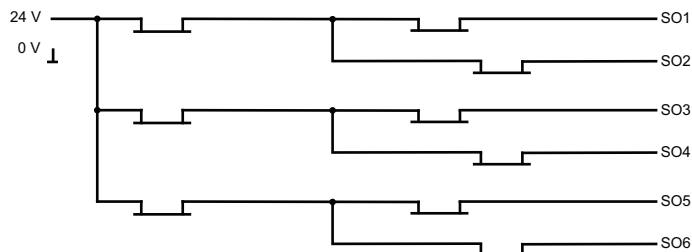
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- (2) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU3952")
- (3) loop resistance $\leq 150 \Omega$
- (4) see "Variations of terminal configuration for BWU3952"
- (5)



| | 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 |
|--|------------------|---|
| <p>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-SI6, and SO1-SO6. The bottom section is labeled 'Safe outputs' and includes terminals SO1-SO6. Power connections are shown for +ASI 1-, +ASI 1+, +ASI 2-, +ASI 2+, and ASI +PWR- (max. 8A). A 24V and 0V power supply is also indicated.</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 |
| | 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)