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

ASi-5 – Great data bandwidth, short cycle times

(figure similar)

Compatible with all ASi generations

2 ASi-5/ASi-3 Masters, 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	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)	Integrated decoupling, ASi current measurement in the gateway (2)	Diagnostic and configuration interface (3)	Power boost	Art. no.
	Safety POWERLINK, ASi-5 / ASi-3	3 x 2 channels	max. 62 x 2 channels, max. 1922 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 64, max. 1984 in max. configuration	openSAFETY over POWERLINK + Safe Link	2 ASi networks, 2 ASi-5/ASi-3 Masters	yes, max. 4 A/ASi network	Ethernet diagnostic	yes	**BWU3996**

(1) **Number of ASi networks, number of ASi Master**
"Double 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": Cost-effective power for 2 ASi networks with 1 power supply.

(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.

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

Article no.	BWU3996
Fieldbus interface	
Type	POWERLINK 2 x RJ-45, 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
Diagnostic interface	
Type	Ethernet RJ-45 according to IEEE 802.3
Baud rate	10/100 MBaud half-duplex or full-duplex
Safety communication	Safe Link
OPC UA interface	OPC UA server + web server
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)
Operating voltage	30 V_{DC} (20 ... 31,6 V) (PELV voltage)
Operating current	ca. 300 mA
Current per ASi network	max. 4 A
ASi Power24V capability (1)	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
AUX	
Operating voltage	24 V_{DC} (19,2 ... 28,8 V)
Max current consumption	7,2 A
Display	
LCD	menu, indication of ASi addresses and error messages in plain text
LED POWERLINK (green)	POWERLINK communication activ
LED power (green)	power on
LED config error (red)	configuration error
LED U ASi (green)	ASi voltage o.k.
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: closed
LEDs SO1 ... SO6 (yellow)	state of outputs: off: open on: closed
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.

Article no.	BWU3996
Environment	
Angewandte Normen	EN 62026-2 EN 60529 EN 61000-6-2 EN 61000-6-4 EN 61131-2 EN 62061, SIL 3 EN 61508, SIL 3 EN ISO 13849-1, Performance-Level e EN ISO 13849-2
Operating altitude	max. 5000 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 to 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.	BWU3996
Safety monitor	
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 (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, SIL3, cat. 4	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.

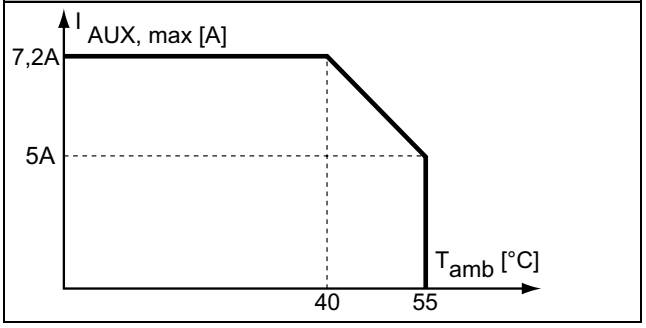
(2) connection only at terminals SO1 ... SO6 configured as standard inputs (see “Variations of terminal configuration for BWU3996”)

(3) loop resistance ≤150 Ω

(4) see “Variations of terminal configuration for BWU3996”

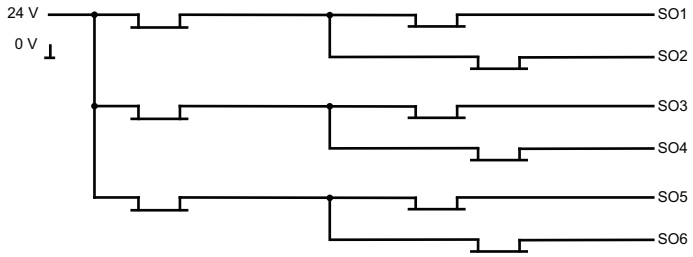
(5)

BWU3996
Derating output current



	BWU3996
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 BWU3996:



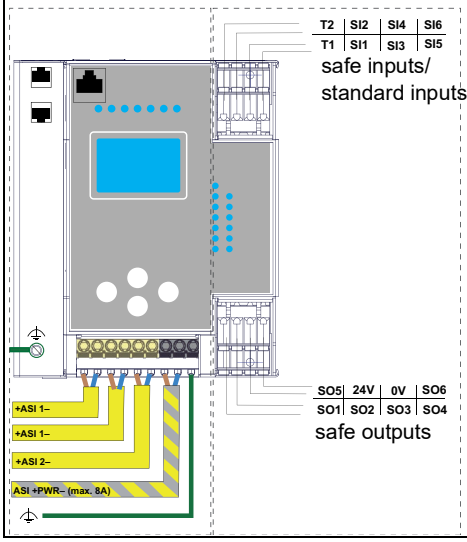
Variations of terminal configuration for BWU3996

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 ≤ 100 mA.

Connections: Gateway + Safety Monitor:

BWU3996	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
	24 V, 0 V	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*)**