

ASi-3 CANopen-Gateway with integrated Safety Monitor



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1 ASi-3 master, CANopen Device

Up to 32 release circuits

- Up to 6 release circuits SIL 3, cat. 4 on the Monitor
- Electronic safe outputs

Safe ASi outputs are supported

- Up to 31 independent ASi outputs
Multiple safe ASi outputs possible via a single ASi address

Safe speed and standstill monitoring


Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration data



(figure similar)



Figure	Fieldbus Interface	Safety communication	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	Inputs safety, expandable to	Safety outputs, independent according to SIL 3, expandable to	Number of ASi networks, Number of ASi Masters ⁽¹⁾	Integrated decoupling, ASi current measurement in the gateway ⁽²⁾	Diagnostic and configuration interface ⁽³⁾	Article no.
	CANopen	Safe Link	3 x 2 channels	6 release circuits; 6 electronic safe output	max. 31 x 2-channels, max. 1891 in max. configuration	max. 31, max. 991 in max. configuration	1 ASi network, 1 ASi-3 Master	yes, max. 4A/ASi networks	Ethernet diagnostic	BWU2804

(1) **Number of ASi networks, number of ASi Master: Safety devices:**

"Single Master": 1 ASi network, 1 ASi Master.

(2) **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.

(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.

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Article no.	BWU2804
Fieldbus Interface	
Type	CANopen-Interface; 5-pin plug COMBICON
Baud rate	10 up to 1000 Kbaud
Card slot	chip card for storage of configuration data
Diagnostic Interface	
Type	Ethernet; RJ-45 acc. to IEEE 802.3
CANopen	
Features	extended boot-up, minimum boot-up, life guarding
COB ID Distribution	DBT, SDO, Default
Node ID Distribution	SDO, Switch
No of PDOs	up to 35 Rx, 35Tx
PDO Modes	async, cyclic, acyclic
Device Specification	CiA DS-301
ASi	
ASi specification	ASi-3
Cycle time	150 μ s * (number of ASi-3 nodes + 2)
Operating voltage	30 V _{DC} (20 ... 31,6 V) (PELV voltage)
Operating current	300 mA
ASi Power24V capability ⁽¹⁾	yes
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 power (green)	power ON
LED ser active (green)	CANopen communication active
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 ASi addressing enabled
LED prj mode (yellow)	configuration mode active
LED AUX (green)	AUX power supply on
LEDs SI1 ... SI6 (yellow)	state of inputs: LED off: open LED on: closed
LEDs SO1 ... SO6 (yellow)	state of outputs: LED off: open LED 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.

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Article no.	BWU2804
Environment	
Applied standards	EN 60529 EN 61000-6-2 EN 61000-6-4 EN 62061, SIL 3 EN 61508, SIL 3 EN ISO 13849-1, performance-level e
Operating altitude	max. 2000 m
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Housing	stainless steel, for DIN-rail mounting
Protection category	IP20
Tolerable loading referring to impacts and vibrations	according EN 61131-2
Voltage of insulation	≥ 500 V
Weight	800 g
Dimensions (W / H / D in mm)	100 / 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.	BWU2804
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⁾
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 in device	6
Outputs	semiconductor outputs max. contact load: 1,2 A _{DC-13} at 30V, Σ = 7,2 A in sum ⁽⁵⁾
Power supply (semiconductor outputs)	out of AUX

⁽¹⁾ connection at all SI or SO terminals possible.

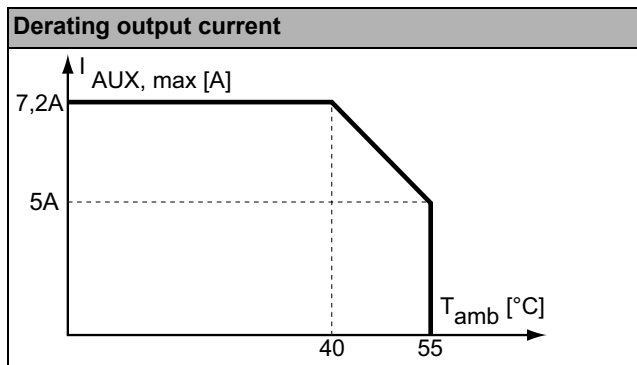
⁽²⁾ connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variation of terminal connection for BWU2804")

⁽³⁾ loop resistance ≤ 150 Ω

⁽⁴⁾ see "Variation of terminal connection for BWU2804"

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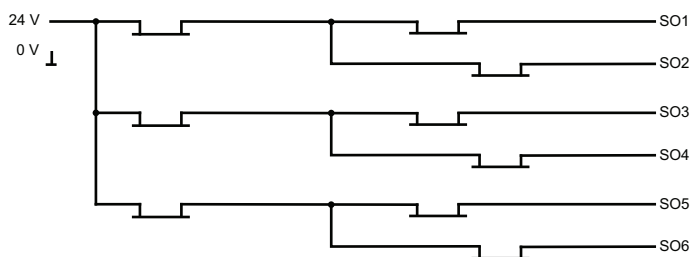
(5)



Article No.	Operating current		
	master power supply, approx 300mA out of ASi network	master power supply, max. 300mA out of ASi circuit 1 (approx. 70mA ... 300mA), max. 300mA out of ASi circuit 2 (approx. 70mA ... 300mA); in sum max. 370mA	Cost-effective power for 2 ASi networks with 1 power supply, approx. 300mA (PELV voltage)
BWU2804	-	-	•

	BWU2804
Data decoupling integrated in the gateway	•
Redundant power supply out of ASi: all fundamental functions of the device remain available even in case of power failure in one of the two ASi networks	-
Current measurement of the ASi circuits	•
self-resetting adjustable fuses	•
ASi earth fault monitor distinguishes between ASi cable an sensor cable	•
Cost-effective power for 2 ASi networks with 1 power supply	•

Block diagram of safety outputs BWU2804



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Variation of terminal connection for BWU2804

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 must be supplied from the same 24V 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 device to ≤ 100mA

Connections: Gateway + Safety Monitor

BWU2804	Terminals	Description	
	SI1, SI3, SI5	safe input terminals (T1)	
	SI2, SI4, SI6	safe input terminals (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-	connection of ASi network	
	ASI +PWR-	power supply for Gateway and ASi networks	

Connections: CANopen

Signal	Color
1 V+	red
2 CAN_H	white
3 Shield	n/a
4 CAN_L	blue
5 V-	black

Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- Bihl+Wiedemann 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)