

ASi-3 CANopen-Gateway with integrated Safety Monitor



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1 ASi master, CANopen slave

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	Type	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 Masters ⁽¹⁾	1 power supply, 1 gateway for 2 ASi networks, inexpensive power supplies ⁽²⁾	Diagnostic and configuration interface ⁽³⁾	Article no.
	Safety, CANopen	max. 31 x 2-channels, max. 1891 in max. configuration	6 release circuits; 6 electronic safe output	max. 31, max. 991 in max. configuration	Safe Link	1 ASi network, 1 ASi 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⁾ **1 power supply, 1 gateway for 2 ASi networks, inexpensive power supplies:**

"yes, max. 4A/ASi network": Cost-effective power for 2 ASi networks with 1 power supply (optionally supply of multiple Single Gateways by 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.

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Article no.	BWU2804
Interface	
CANopen-Interface	5-pin plug COMBICON
Baud rate	10 up to 1000 Kbaud
Card slot	chip card for storage of configuration data
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	3.0
Cycle time	150 μ s * (number of slaves + 2)
Operating voltage	30 V _{DC} (20 ... 31,6 V) (PELV voltage)
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 slave 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 slave 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.
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
Environment	
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

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(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, $\Sigma = 7,2$ A in sum ⁽⁵⁾
Power supply (semiconductor outputs)	out of AUX

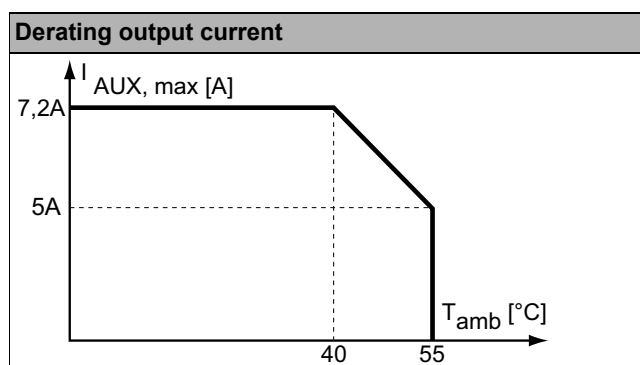
(1) connection at all SI or SO terminals possible.

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

(3) loop resistance $\leq 150 \Omega$

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

(5)

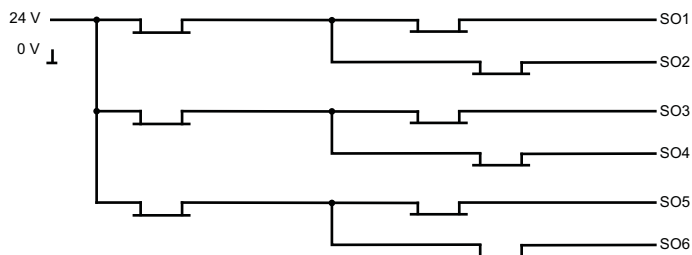


Article No.	Operating current		
	master power supply, approx 300mA out of ASi network	master power supply, max. 300mA out of ASi circuit 1 (approx. 70mA ... 300mA), max. 300mA out of ASi circuit 2 (approx. 70mA ... 300mA); in sum max. 370mA	Version „1 Gateway, 1 Power supply, for 2 ASi Networks“, approx. 300mA (PELV voltage)
BWU2804	-	-	•

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	BWU2804
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	•
In Version „1 Gateway, 1 Power supply, for 2 ASi Networks“: only 1 Gateway + 1 ASi power supply required for 2 ASi networks	•

Block diagram of safety outputs BWU2804



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 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 device to ≤ 100mA

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Connections: Gateway + Safety Monitor

BWU2804	Terminals	Description	
<p>The diagram shows a terminal block with two rows of terminals. The top row is labeled 'Safe inputs / Standard inputs' and includes terminals T1, T2, SI1, SI2, SI3, SI4, SI5, and SI6. The bottom row is labeled 'Safe Output' and includes terminals SO1, SO2, SO3, SO4, SO5, SO6, 24V, and 0V. On the left side, there are connections for '+ASI 1-' (three terminals) and '+ASI +PWR- (max. 4A)'. A ground symbol is also present.</p>	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 outputs1 ... 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.: ASi power supply, 4 A (art. no. BW1649), ASi power supply, 8 A (art. no. BW1997) (further power supply units can be found at www.bihl-wiedemann.de/en/products/accessories/power-supplies)



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