AS-i 3.0 CANopen-Gateway with integrated Safety Monitor

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(figure similar)

1 AS-i master, CANopen slave

Up to 32 release circuits

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

Safe AS-i outputs are supported

- **Up to 31 independent AS-i outputs**
  Multiple safe AS-i outputs possible via a single AS-i address

Safe speed and standstill monitoring

Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration data

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 AS-i networks, Number of AS-i Masters (1)	1 power supply, 1 gateway for 2 AS-i 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 fast electronic safe output	max. 31, max. 991 in max. configuration	Safe Link	1 AS-i network, 1 AS-i Master	yes, max. 4A/AS-i networks	Ethernet diagnostic	**BWU2804**

(1) **Number of AS-i networks, number of AS-i Master: Safety devices:**
"Single Master": 1 AS-i network, 1 AS-i Master.

(2) **1 power supply, 1 gateway for 2 AS-i networks, inexpensive power supplies:**
"yes, max. 4A/AS-i network": Cost-effective power for 2 AS-i networks with 1 power supply (optionally supply of multiple Single Gateways by 1 power supply).

(3) **Diagnostic and configuration interface**
"Ethernet diagnostic": Access to AS-i 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.

AS-i 3.0 CANopen-Gateway with integrated Safety Monitor

Article no.	BWU2804
Interface	
CANopen-Interface	5-pin plug COMBICON
Baud rate	10 up to1000 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
AS-i	
AS-i specification	3.0
Cycle time	150 µs * (number of slaves + 2)
Operating voltage	30 V_{DC} (20 ... 31,6 V) (PELV voltage)
AS-i 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 AS-i (green)	AS-i voltage o.k.
LED AS-i active (green)	AS-i 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 (B / H / T in mm)	100 / 120 / 106

(1) **AS-i 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
Tolerated test pulse	adjustable
Output	
Number of release circuits in device	6
Outputs	semiconductor outputs max. contact load: 1,2 A_{DC-13} at 30V, ∑= 7,2 A in sum (5)
Power supply (semiconductor outputs)	out of AUX

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

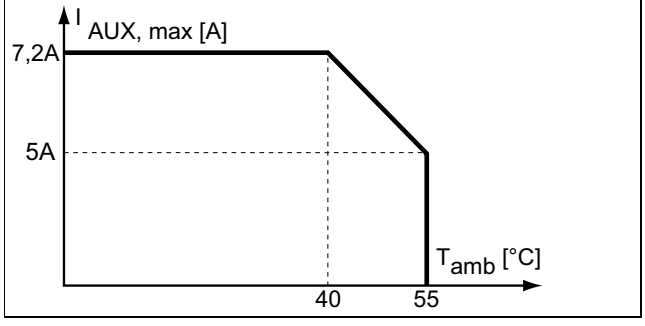
(2) connection only at terminals SO1 ... SO6 configured as standard inputs (see “Variation of terminal connection for BWU2804”)

(3) loop resistance ≤ 150 Ω

(4) see “Variation of terminal connection for BWU2804”

(5)

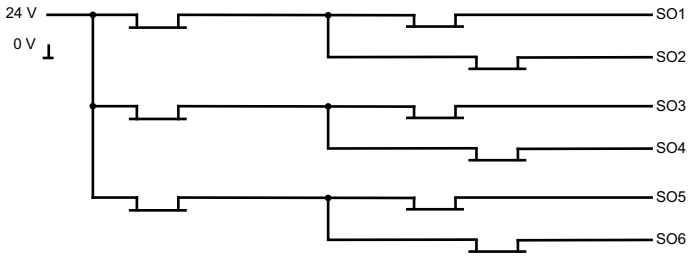
Derating output current



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

	BWU2804
Redundant power supply out of AS-i: all fundamental functions of the device remain available even in case of power failure in one of the two AS-i networks	–
Current measurement of the AS-i circuits	●
self-resetting adjustable fuses	●
AS-i earth fault monitor distinguishes between AS-i cable an sensor cable	●
In Version „1 Gateway, 1 Power supply, for 2 AS-i Networks“: only 1 Gateway + 1 AS-i power supply required for 2 AS-i networks	●

Block diagram of safety outputs BWU2804



Variation of terminal connection for BWU2804

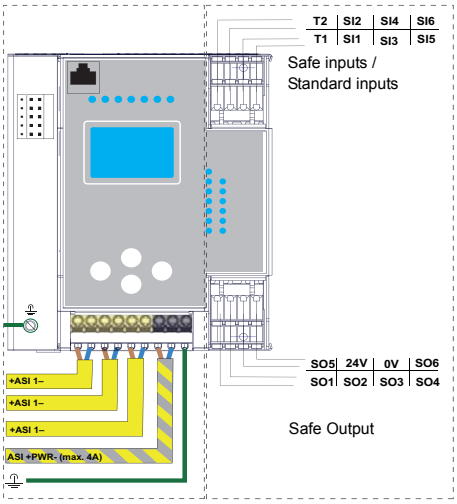
Terminal	Safe output	Safe input for mechanical contacts in combination with T1, T2 (1)	Safe antivalent input (1)	Safe electronic input (1)	Standard input (1)
SI1,2	–	●	●	●	●
SI3,4	–	●	●	●	●
SI5,6	–	●	●	●	●
SO1,2 (2)	●	●	●	–	●
SO3,4 (2)	●	●	●	–	●
SO5,6 (2)	●	●	●	–	●

(1) Inputs may only be supplied by the same 24 V source as the device itself.

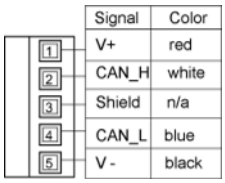
(2) If outputs are configured as inputs, the input current has to be limited by an external device to ≤ 100mA

AS-i 3.0 CANopen-Gateway with integrated Safety Monitor

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 outputs1 ... 6
	24V, 0V	power supply for local I/Os
	+ASI 1-	connection of AS-i network
	ASI +PWR-	power supply for Gateway and AS-i networks

Connections: CANopen



Signal	Color
V+	red
CAN_H	white
Shield	n/a
CAN_L	blue
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.: AS-i power supply, 4 A (art. no. BW1649), AS-i power supply, 8 A (art. no. BW1997) (further power supply units can be found at *www.bihl-wiedemann.de/en/products/accessories/power-supplies*)**