ASi-3 DeviceNet-Gateway with integrated Safety Monitor

ASi-3 DeviceNet-Gateway with integrated Safety Monitor

(figure similar)

1 ASi-3 master, DeviceNet Device

Up to 32 release circuits

- **Up to 6 release circuits SIL 3, cat. 4 on the Monitor**
- **Up to 6 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	Fieldbus Interface (1)	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 (2)	Integrated decoupling, ASi current measurement in the gateway (3)	Diagnostic and configuration interface (4)	Article no.
	DeviceNet	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	**BWU2972**

(1) **Fieldbus interface**
Communication interface between fieldbus and gateway: interfaces for standardized fieldbus systems in industrial automation.
DeviceNet ASi gateway: interface for a DeviceNet fieldbus

(2) **Number of ASi networks, number of ASi Master: Safety devices:**
"Single Master": 1 ASi network, 1 ASi-3 Master.

(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.

(4) **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-3 DeviceNet-Gateway with integrated Safety Monitor

Article no.	BWU2972
Fieldbus Interface	
Type	DeviceNet interface (5-pin plug)
Baudrate	125 kBaud, 250 kBaud, 500 kBaud
Card slot	chip card for storage of configuration data
Diagnostic Interface	
Type	Ethernet; RJ-45 acc. to IEEE 802.3
ASi	
ASi specification	3.0
Cycle time	150 µs * (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)	module/network-status (MNS)
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 node 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.
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.

ASi-3 DeviceNet-Gateway with integrated Safety Monitor

Article no.	BWU2972
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, ∑= 7,2 A in sum (5)
Power supply (semiconductor outputs)	out of AUX

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

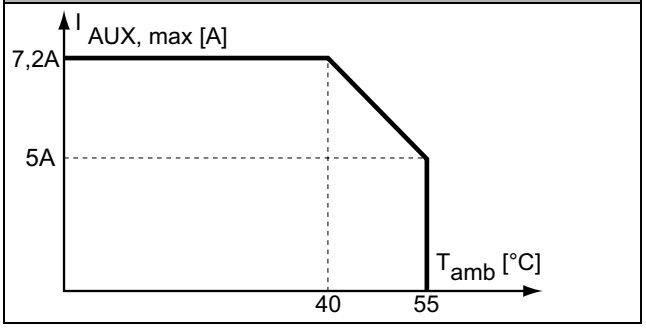
(2) connection only at terminals SO1 ... SO6 configured as standard inputs (see “Variation of terminal connection for BWU2972”)

(3) loop resistance ≤ 150 Ω

(4) see “Variation of terminal connection for BWU2972”

(5)

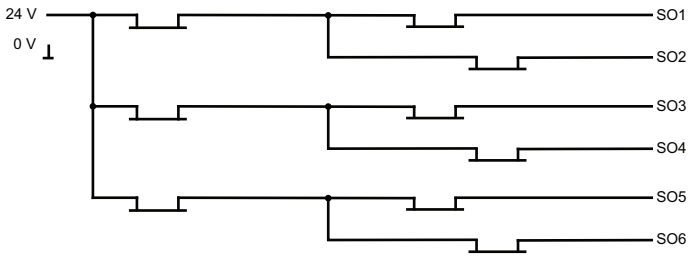
Derating output current



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)
BWU2972	–	–	•

	BWU2972
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 BWU2972



Variation of terminal connection for BWU2972

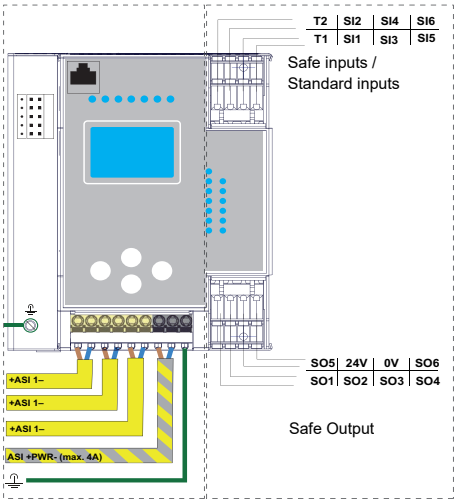
Terminal	Safe output	Safe input for mechanical contacts in combination with T1, T2 (1)	Safe antivalent input (1)	Safe electronic input (1)	Standard input (1)
SI1,2	–	●	●	●	●
SI3,4	–	●	●	●	●
SI5,6	–	●	●	●	●
SO1,2 (2)	●	●	●	–	●
SO3,4 (2)	●	●	●	–	●
SO5,6 (2)	●	●	●	–	●

(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.

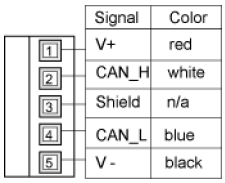
(2) If outputs are configured as inputs, the input current has to be limited by an external device to ≤ 100mA

ASi-3 DeviceNet-Gateway with integrated Safety Monitor

Connections: Gateway + Safety Monitor

BWU2972	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 ASi network
	ASI +PWR-	power supply for Gateway and ASi networks

Connections: DeviceNet



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 Programming (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*)**