ASi-3 POWERLINK Gateways with integrated Safety Monitor

ASi-3 POWERLINK-Gateways with integrated Safety Monitor

(Figure similar)

2 / 1 ASi-3 Master, POWERLINK device
- **integrated Hub**

Up to 32 release circuits
- **up to 6 release circuits SIL 3, Cat. 4 on the Monitor**
- **up to 6 x electronic safe outputs**

Safe ASi outputs are supported
- **up to 64 independent ASi outputs**
  Multiple safe ASi outputs possible via 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	Safety communication	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	Number of ASi networks, number of ASi Master (1)	Integrated decoupling, ASi current measurement in the gateway (2)	Diagnostic and configuration interface (3)	Article No.
	Safety, POWERLINK	Safe Link	3 x 2 channels	max. 62 x 2 channels, max. 1922 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 32, max. 992 in max. configuration	2 ASi networks, 2 ASi-3 Masters	yes, max. 4 A/ ASi network	Ethernet diagnostics	**BWU3176**
	Safety, POWERLINK	Safe Link	3 x 2 channels	max. 31 x 2 channels, max. 1891 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 31, max. 991 in max. configuration	1 ASi network, 1 ASi-3 Master	yes, max. 4 A/ ASi network	Ethernet diagnostics	**BWU3177**

(1) **Number of ASi networks, number of ASi Master**
"Single Master": 1 ASi network, 1 ASi Master.
"Doppel Master": 2 ASi networks, 2 ASi Masters.

(2) **Integrated decoupling, ASi current measurement in the gateway**
"yes, max. 4 A/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.

Article no.	BWU3176 / BWU3177
Fieldbus Interface	
Type	POWERLINK, 2 x RJ-45
Baud rates	100 MBaud
Diagnostic Interface	
Type	Ethernet, RJ-45 acc. to IEEE 802.3
Baud rates	100 MBaud
Safety communication	Safe Link
ASi	
ASi specification	ASi-3
Cycle time	150 µs * (number of ASi-3 nodes + 2)
Operating voltage	30 V (20 … 31.6 V)
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	indication of ASi addresses and error messages in plain text
LED power (green)	power on
LED POWERLINK (green)	Ethernet communication active
LED config error (red)	configuration error
LED U ASi (green)	ASi voltage OK
LED ASi active (green)	ASi normal operation
LED prg enable (green)	automatic addresses programming enabled
LED prj mode (yellow)	configuration mode active
LED AUX (green)	auxiliary power
LEDs SI1 ... SI6 (yellow)	state of inputs: LED off: open LED on: closed
LEDs SO1 ... SO6 (yellow)	state of inputs: LED off: offen 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.

Article no.	BWU3176 / BWU3177
Ambient	
Applied standards	EN 61000-6-2 EN 61000-6-4 EN 62061, SIL 3 EN 61508, SIL 3 EN ISO 13849-1, PLe EN 60529
Operating altitude	max. 2000 m
Ambient temperature	0 °C … +55 °C
Storage temperature	-25 °C … +85 °C
Pollution degree	2
Housing	stainless steel, for DIN-rail mounting
Protection category	IP20
Tolerable loading referring to humidity	according to EN 61131-2
Tolerable loading referring to impacts and vibrations	according EN 61131-2
Voltage of insulation	≥ 500V
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.	BWU3176 / BWU3177
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	no
Card slot	Chip card for storage of configuration data
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.

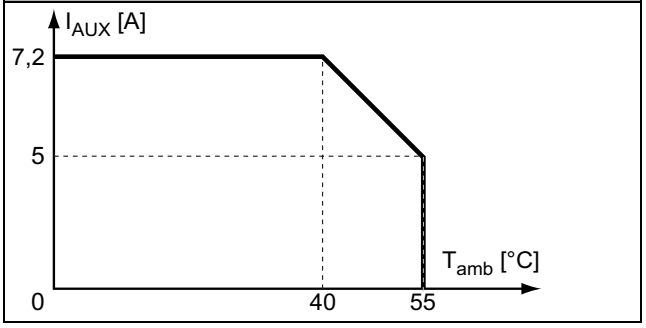
(2) connection only at terminals SO1 ... SO6 configured as standard inputs see “Variations of terminal configuration for BWU3176, BWU3177”

(3) Loop resistance ≤ 150 Ω

(4) see “Variations of terminal configuration for BWU3176, BWU3177”

(5)

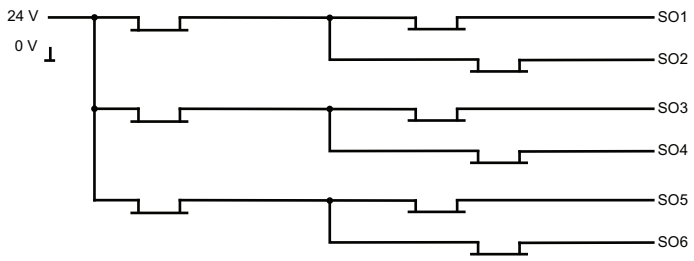
BWU3176, BWU3177
Derating output current



Article no.	Operating current		
	Master power supply, ca. 300 mA out of ASi circuits	Master power supply, max. 300 mA out of ASi circuit 1 (approx. 70 mA ... 300 mA), max. 300 mA out of ASi circuit 2 (approx. 70 mA ... 300 mA); in sum max. 370 mA	Cost-effective power for 2 ASi networks with 1 power supply, approx. 300 mA (PELV voltage)
BWU3176	–	–	•
BWU3177	–	–	•

	BWU3176 / BWU3177
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 and sensor cable	•
Cost-effective power for 2 ASi networks with 1 power supply	•

Safety outputs block diagram BWU3176, BWU3177:



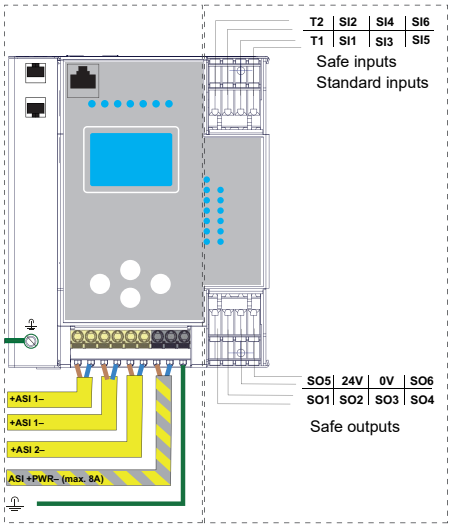
Variations of terminal configuration for BWU3176, BWU3177

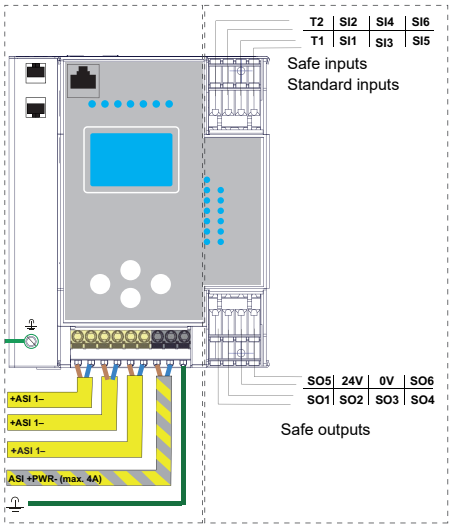
Terminal	Safe output	Safe input for mechanical contacts in combination with T1, T2 (1)	Safe antivalent input (1)	Safe electronic input (1)	Standard input (1)
SI1,2	–	●	●	●	●
SI3,4	–	●	●	●	●
SI5,6	–	●	●	●	●
SO1,2 (2)	●	●	●	–	●
SO3,4 (2)	●	●	●	–	●
SO5,6 (2)	●	●	●	–	●

(1) Inputs must be supplied from the same 24 V 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 element at ≤ 100mA (slow-blow fuse).

Connections: Gateway + Safety Monitor:

BWU3176	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 circuit
	ASI +PWR-	Power supply for Gateway and ASi networks

BWU3177	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-	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)**
- **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*)**