ASi-3 Sercos Gateways with integrated Safety Monitor

Bihl+Wiedemann

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Safety on Sercos and Safe Link in one device
- up to 456 Devices

Safely monitoring safety drives with Safety on Sercos

2 / 1 ASi master, Sercos Device
- switch integrated

Up to 64 release circuits
- up to 6 release circuits SIL 3, cat. 4 on the monitor

Safe ASi outputs are supported
- up to 64 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	Field-bus Inter-face	Safety communica-tion	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	Inputs Safe-ty, expand-able to	Safety out-puts, inde-pendent according to SIL 3, ex-pandable to	Number of ASi networks, number of ASi Master [1]	Integrated de-coupling, ASi current mea-surement in the gateway [2]	Diagnostic and configura-tion inter-face [3]	Art. no.
	Sercos	CIP Safety over Sercos + Safe Link	3 x 2 channels	6 release circuits; 6 x elec-tronic safe outputs	max. 62 x 2 channels, max. 1922 in max. configuration	max. 64, max. 1984 in max. configuration	2 ASi networks, 2 ASi-3 masters	yes, max. 4 A/ASi net-work	Ethernet diagnostic	**BWU3160**
	Sercos	Safe Link	–	4 release circuits; 2 x relay, 2 x electronic safe outputs	max. 62 x 2 channels, max. 1922 in max. configuration	max. 32, max. 992 in max. configuration	2 ASi networks, 1 ASi-3 master	yes, max. 4 A/ASi net-work	Ethernet diagnostic	**BWU2588**

[1] **Number of ASi networks, number of ASi Master**
"Double Master": 2 ASi networks, 2 ASi-3 Masters.
"Optional ASi Safety coupling circuit": 2 ASi networks, 1 ASi-3 Master.

[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 with Bihl+Wiedemann software by using the Ethernet diagnostic 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.	BWU2588	BWU3160
Fieldbus Interface		
Type	Sercos; 2 x RJ-45: 100MBaud, 2-Port-Switch, Sercos III	
Baud rates	100 MBaud	
Card slot	chip card for storage of configuration data	
Diagnostic Interface		
Type	Ethernet; RJ-45 acc. to. IEEE 802.3	
Baud rates	10/100 MBaud half/full duplex	
Safety communication	Safe Link	CIP Safety via Sercos + Safe Link
ASi		
ASi specification	3.0	
Cycle time	150 µs * (number of 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	1 A	7,2 A
Display		
LCD	indication of ASi addresses and error messages in plain text	
LED power (green)	power on	
LED Sercos (green)	Sercos 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 addresses programming enabled	
LED prj mode (yellow)	configuration mode active	
LED AUX (green)	auxiliary power	
LEDs 1.Y1, 1.Y2, 2.Y1, 2.Y2 (EDM/Start) (yellow)	state of inputs: LED off:open LED on:closed	–
LEDs K1 ... K4 (green)	state of outputs: LED off: open LED on: closed	–
LEDs SI1 ... SI6 (yellow)	–	state of inputs: LED off:open LED on:closed
LEDs SO1 ... SO6 (yellow)	–	state of inputs: 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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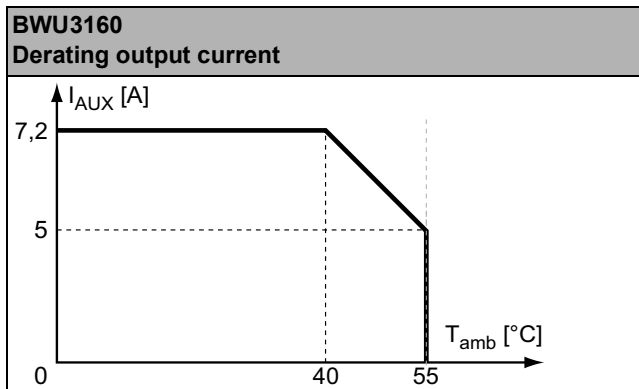| Article no.	BWU2588	BWU3160
Environment		
Applied standards	EN 60529 EN 62026-2 EN 61000-6-2 EN 61000-6-4 EN 62061, SIL 3 EN 61508. SIL 3 EN ISO 13849-1, PLe	
Operating altitude	2000 m	
Ambient temperature	0 °C … +55 °C	
Storage temperature	-25 °C … +85 °C	
Pollution degree	2	
Housing	stainless steel, for DIN rail mounting	
Protection category	IP20	
Tolerable loading referring to humidity	according to EN 61131-2	
Maximum tolerable shock and vibration stress	according to EN 61131-2	
Voltage of insulation	≥500 V	
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.	BWU2588	BWU3160
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 [2]
Speed monitors for local inputs	–	3 to 6 axes up to 400 Hz [3]
Connection		
Connection	COMBICON	
Length of connector cable	I/O: max. 15 m [4]	unlimited [4]
Input		
Inputs Safety, SIL3, cat. 4	–	3 x 2 channels [5]
Inputs digital, EDM	4	up to 6 standard inputs [5]
Switching current	30 mA (T = 100 µs), continuously 4 mA at 24 V	15 mA (T = 100 µs), continuously 4 mA at 24 V
Power supply	out of ASi	out of AUX
Output		
Number of release circuits on the monitor	4	6
Outputs	relay outputs (output circuits 1 and 2) max. contact load [1]: 3 A_{AC-15} at 30 V, 3 A_{DC-13} at 30 V	–
	semiconductor outputs (output circuits 3 and 4): max. contact load: 0,5 A_{DC-13} at 30 V	semiconductor output max. contact load: 1,2 A_{DC-13} at 30 V, $\sum$ = 7,2 A in sum [6]
Power supply (semiconductor outputs)	out of AUX	
Test pulse (semiconductor outputs)	if output is on: minimum interval between 2 test pulses: 250 ms (as from Safety Version 4.3); maximum pulse width 1,5 ms	if output is on: minimum interval between 2 test pulses: 250 ms; maximum pulse width 1 ms

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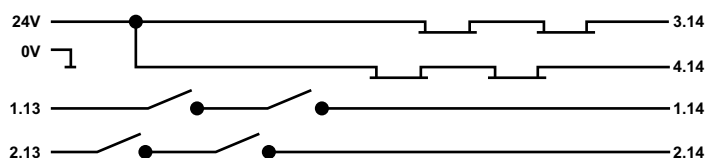www.bihl-wiedemann.de   We reserve the right to change any data   Mannheim, 24.11.21   page 3

(1) Protection via external fuse, max. 4 A semi time-lag.

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

(3) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU3160")

(4) loop resistance ≤150 Ω

(5) see "Variations of terminal configuration for BWU3160"

(6)

BWU3160
Derating output current

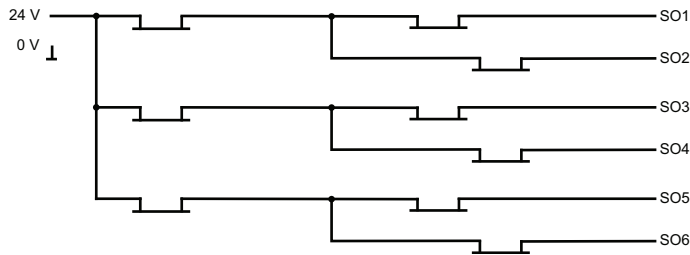|	Operating current		
Article no.	**master power supply, approx 300 mA out of ASi network**	**master power supply, max. 300 mA out of ASi circuit 1 (approx. 70 mA ... 300 mA), max. 300 mA out of ASi circuit 2 (approx. 70 mA ... 300 mA); in sum max. 370 mA**	**Cost-effective power for 2 ASi networks with 1 power supply, ca. 350 mA (PELV voltage)**
BWU2588	–	–	●
BWU3160	–	–	●

	BWU2588	**BWU3160**
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
BWU2588

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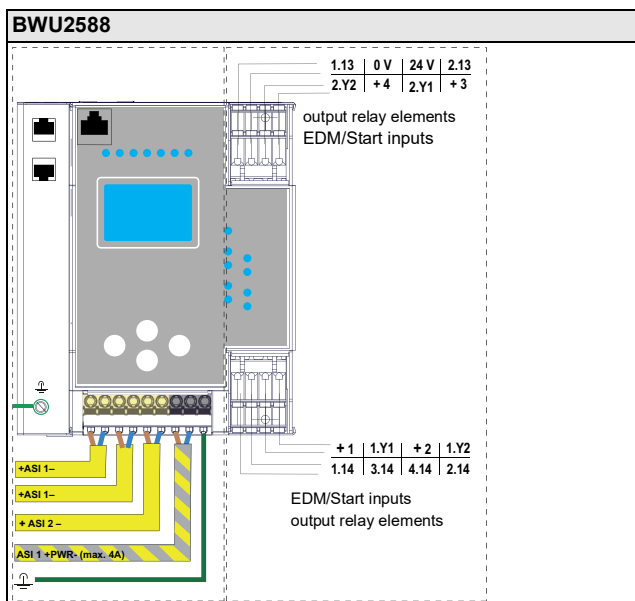+ Wiedemann

Safety outputs block diagram
BWU3160

slavVariations of terminal configuration for
BWU3160

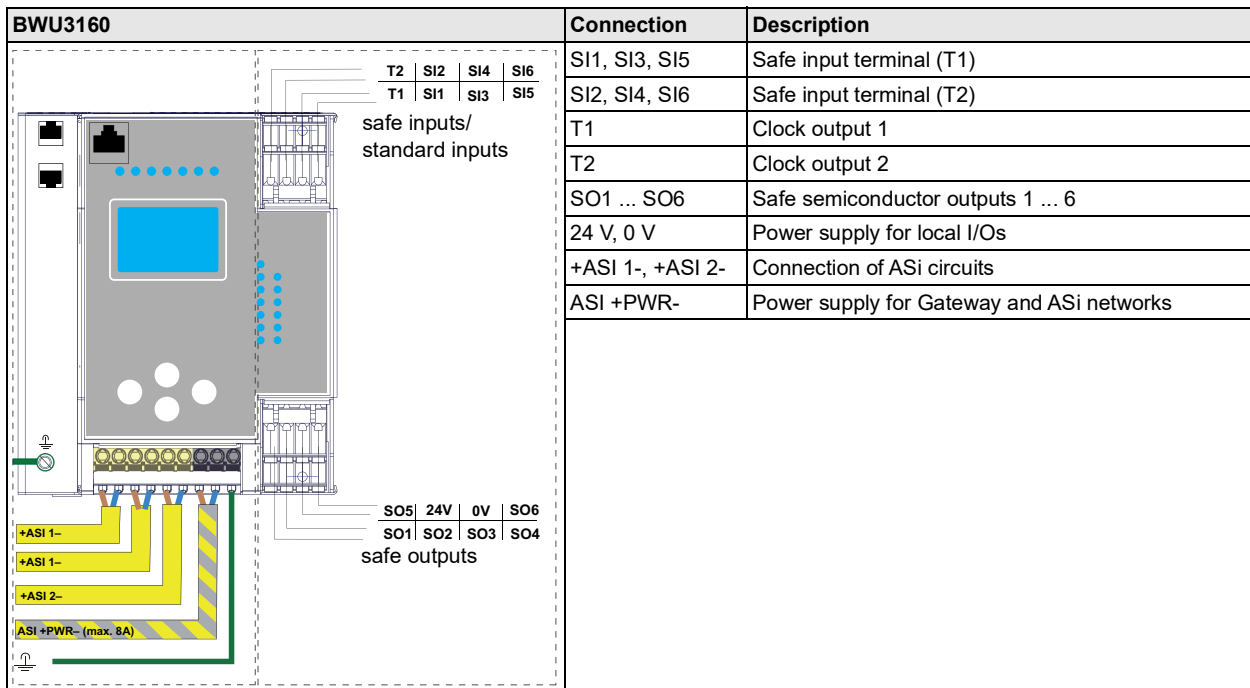| Terminal	Safe output	Safe input for mechanical contacts in combination with T1, T2 [1]	Safe antivalent input [1]	Safe electronic input [1]	Standard input [1]
SI1,2	–	●	●	●	●
SI3,4	–	●	●	●	●
SI5,6	–	●	●	●	●
SO1,2 [2]	●	●	●	–	●
SO3,4 [2]	●	●	●	–	●
SO5,6 [2]	●	●	●	–	●

[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 element at ≤ 100mA (slow-blow fuse).

Connections: Gateway + Safety Monitor:

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BWU3160	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 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.: 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)