

ASi-5/ASi-3 CIP Safety over Sercos Gateway with integrated Safety Monitor



ASi-5 – Great data bandwidth, short cycle times

Compatible with all ASi generations

ASi-5/ASi-3 CIP Safety over Sercos Gateway with integrated Safety Monitor

ASi-5 master and ASi-3 master in one device

CIP Safety over Sercos and Safe Link in one device

- up to 450 Devices

CIP Safety originator integrated

2 ASi-5/ASi-3 masters, Sercos device

- switch integrated

Up to 64 release circuits

- up to 6 release circuits SIL 3, cat. 4 on the monitor electronic safe outputs

Safe ASi outputs are supported

- up to 64 independent ASi outputs
Multiple safe ASi outputs possible via a single ASi address

OPC UA interface and REST API for IIoT applications

Integrated web server for simple diagnostics and maintenance

Selection of Mode of Safe Operation

Significantly improved reaction times

Safe speed and standstill monitoring

Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration data



(figure similar)



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 Master ⁽²⁾	Integrated decoupling, ASi current measurement in the gateway ⁽³⁾	Diagnostic and configuration interface ⁽⁴⁾	Art. no.
	Sercos, OPC UA	CIP Safety over Sercos + Safe Link	3 x 2 channels	6 release circuits; 6 x electronic safe outputs	max. 62 x 2 channels, max. 1922 in max. configuration	max. 64, max. 1984 in max. configuration	2 ASi networks, 2 ASi-5/ASi-3 masters	yes, max. 4 A/ASi network	Ethernet diagnostic	BWU3860

(1) Fieldbus interface

Communication interface between fieldbus and gateway: interfaces for standardized fieldbus systems in industrial automation.
OPC UA server: interface for the OPC UA communication.

(2) Number of ASi networks, number of ASi Master

"Double Master": 2 ASi networks, 2 ASi-5/ASi-3 Masters.

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- (3) **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.
- (4) **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.

Article no.	BWU3860
Fieldbus Interface	
Type	Sercos; 2 x RJ-45: 100MBaud, 2-Port-Switch, Sercos III
Transmission rate	10/100 MBit/s
IT interface	OPC UA server, webserver, REST API
CIP Safety originator	up to 32 instances
Card slot	chip card (BW4055) for storage of configuration data
Diagnostic Interface	
Type	Ethernet; RJ-45 acc. to IEEE 802.3
Transmission rate	10/100 MBit/s
IT interface	OPC UA server, webserver, REST API
Safety communication	CIP Safety via Sercos + Safe Link
Programming in C	
Control III	optional
ASi	
ASi specification	ASi-5 + ASi-3
Cycle time	Cycle time ASi-5 (constant): 1,27 ms for 384 bits input data + 384 bits output data
	Cycle time ASi-3 (variable): 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 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 address programming enabled
LED prj mode (yellow)	configuration mode active
LED AUX (green)	auxiliary power and ASi voltage applied
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 voltage source with a PELV/SELV voltage ≤30 V _{DC} must have internal or external current limiting.
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.	BWU3860
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	max. 2000 m
Ambient temperature	-25 °C ... +55 °C (no condensation permitted)
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.

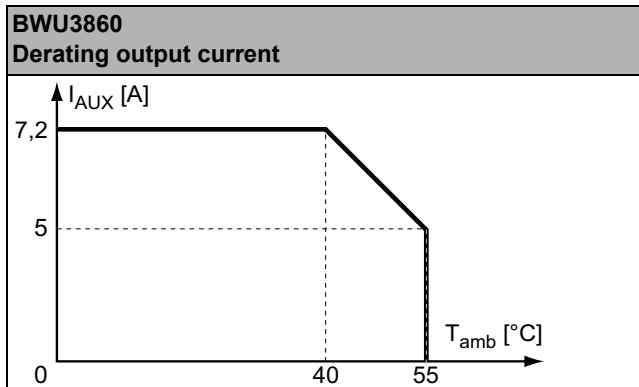
Article no.	BWU3860
Safety monitor	
Start delay	<10 ms
Max. turn-off time	<40 ms
Antivalent switches for local inputs	yes
Standstill monitors for local inputs	6 axes up to 50 Hz ⁽¹⁾
Speed monitors for local inputs	3 to 6 axes up to 400 Hz ⁽²⁾
Connection	
Connection	Push-in terminals
Length of connector 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, $\Sigma = 7,2$ 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 BWU3860")

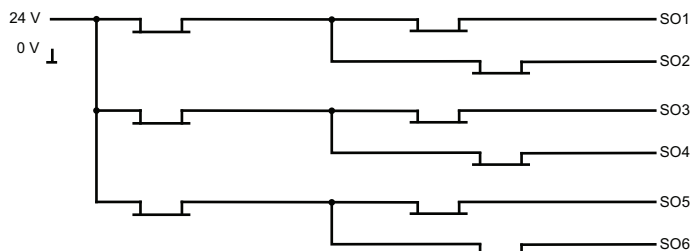
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- (3) loop resistance $\leq 150 \Omega$
 (4) see "Variations of terminal configuration for BWU3860"
 (5)



	BWU3860
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 BWU3860



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Variations of terminal configuration for BWU3860

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 element at ≤ 100mA (slow-blow fuse).

Connections: Gateway + Safety Monitor:

BWU3860	Connection	Description
safe inputs/ standard inputs safe outputs +ASI 1- +ASI 1- +ASI 2- ASI +PWR- (max. 8A)	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)
- Chip card, memory capacity 512 kB (art. no. BW5183)
- Bihl+Wiedemann Safety 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)