

ASi-5/ASi-3 EtherNet/IP + Modbus TCP Gateway with integrated Safety Monitor



ASi-5 – Great data bandwidth, short cycle times

Compatible with all ASi generations

2 ASi-5/ASi-3 masters, EtherNet/IP + Modbus TCP slave

- 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



(figure similar)

Safe Link


OPC UA server and integrated web server for simplified diagnostics

Safe speed and standstill monitoring

Applications up to category 4/PLe/SIL 3

Chip card for storage of configuration data



Figure	Type	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	Safety communication	Number of ASi networks, number of ASi Master (1)	Current supply of ASi networks	Power supply (2)	Diagnostic and configuration interface (3)	Art. no.
	Safety, EtherNET/IP + Modbus TCP, ASi-5/ASi-3	3 x 2 channels	max. 62 x 2 channels, max. 1922 in max. configuration	6 release circuits; 6 x electronic safe outputs	max. 64, max. 1984 in max. configuration	Safe Link	2 ASi networks, 2 ASi-5/ASi-3 Masters	max. 4 A/ ASi network	30 V power supply	Ethernet fieldbus, Ethernet diagnostic	BWU3825

(1) **Number of ASi networks, number of ASi Master**

"Single Master": 1 ASi network, 1 ASi Master.

"Double Master": 2 ASi networks, 2 ASi Masters.

(2) **ASi power supply**

The gateway has to be supplied via a special ASi capable power supply. For each ASi network a separate ASi power supply is needed. Suitable for all ASi Gateways and Safety Monitors from Bihl + Wiedemann.

30 V power supply

It is recommended to supply the gateway via a 30 V power supply. Cost-effective power supply for 2 ASi networks with one 30 V power supply (optionally supply of multiple Single Gateways by one 30 V power supply). Operation with short cable lengths (< 50 m) with standard 24 V power supply possible. No special ASi capable power supply is needed because of decoupling coils are integrated in the gateway.

(3) **Diagnostic and configuration interface**

"Ethernet fieldbus + Ethernet diagnostic": Access to ASi Master and Safety Monitor with Bihl+Wiedemann software by using the Ethernet diagnostic interface or Ethernet fieldbus 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.	BWU3825
Fieldbus interface	
Ethernet interface ⁽¹⁾	2 x RJ-45, integrated 2-Port-Switch, Ethernet + Modbus TCP acc. to IEEE 802.3
Variably configurable Assembly Objects	yes
OPC UA interface	OPC UA server + web server
Baud rate	10/100 MBaud
Function	Device Level Ring (DLR) (Ethernet/IP only)
Card slot	chip card (512 KB) for storage of configuration data
Ethernet interface ⁽¹⁾	
Baud rate	10/100 MBaud half-duplex or full-duplex
Safety communication	Safe Link
Safe coupling ⁽²⁾	no
ASi	
ASi specification	ASi-3 + ASi-5
Cycle time	Cycle time ASi-3 (variable): 150 μ s * (number of ASi-3 slaves + 2)
	Cycle time ASi-5 (constant): 1,27 ms for 384 bits input data + 384 bits output data
Operating voltage	30 V _{DC} (20 ... 31,6 V) (PELV voltage)
Operating current	max. 350 mA master power supply
Current per ASi network	max 4 A
ASi Power24V capability ⁽³⁾	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 net (green)	Ethernet network 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)	ASi power on and auxiliary power 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	The power infeed of the device has to be protected by an overcurrent protection suitable for the application.
In general	UL mark does not provide UL certification for any functional safety rating or aspects of the above devices.
Standards	EN 60529 EN 61000-6-2 EN 61000-6-4 EN 62061, SIL 3 EN 61508, SIL 3 EN ISO 13849-1, PLe

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Article no.	BWU3825
Environment	
Operating altitude	2000 m
Ambient temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Housing	stainless steel, for DIN rail mounting
Pollution Degree	2
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) **GE Digital Achilles® Robustness Test (Level 1 and 2, Version No. 3.18)**

Ethernet fieldbus interface and Ethernet diagnostic interface are submitted to strict robustness testing via the Achilles Test Software to ensure robustness against vulnerabilities to cyber attacks.

The field update capabilities of the gateway enable continuous firmware and security updates to continuously improve the functionality and robustness of the device.

(2) Safe data exchange between safe protocols (e.g. CIP Safety, PROFIsafe etc.).

(3) **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.	BWU3825
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	yes
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
Sensor supply	short-circuit and overload protected according to EN 61131-2
Output	
Number of release circuits on the monitor	6
Outputs	semiconductor output max. contact load: 1,2 A _{DC-13} at 30 V, Σ = 7,2 A in sum ⁽⁵⁾
Power supply (semiconductor outputs)	out of AUX
Output	short-circuit and overload protected according to EN 61131-2
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.

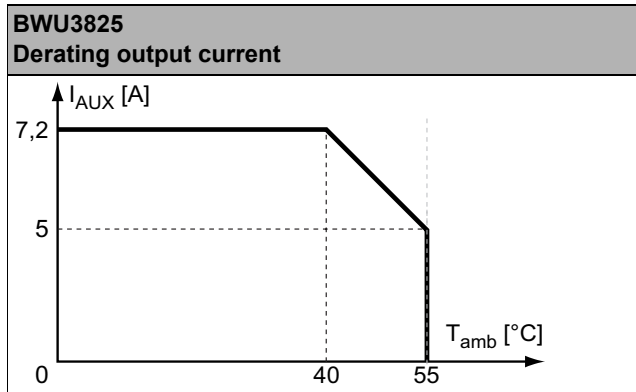
(2) connection only at terminals SO1 ... SO6 configured as standard inputs (see "Variations of terminal configuration for BWU3825")

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(3) loop resistance $\leq 150 \Omega$

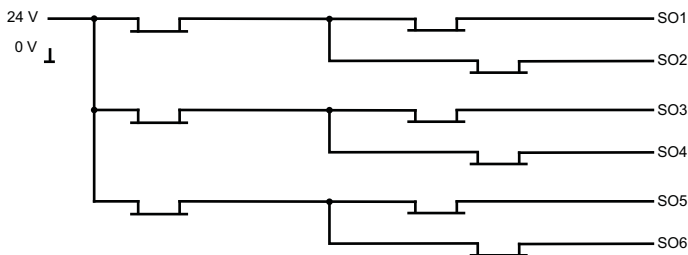
(4) see "Variations of terminal configuration for BWU3825"

(5)



	BWU3825
Current measurement of the ASi circuits	•
Self-resetting adjustable fuses	•
ASi earth fault monitor distinguishes between ASi cable and sensor cable	•
In version „1 gateway, 1 power supply for 2 ASi circuits“: only 1 gateway + 1 ASi power supply is needed for 2 ASi circuits	•

Safety outputs block diagram BWU3825:



Variations of terminal configuration for BWU3825

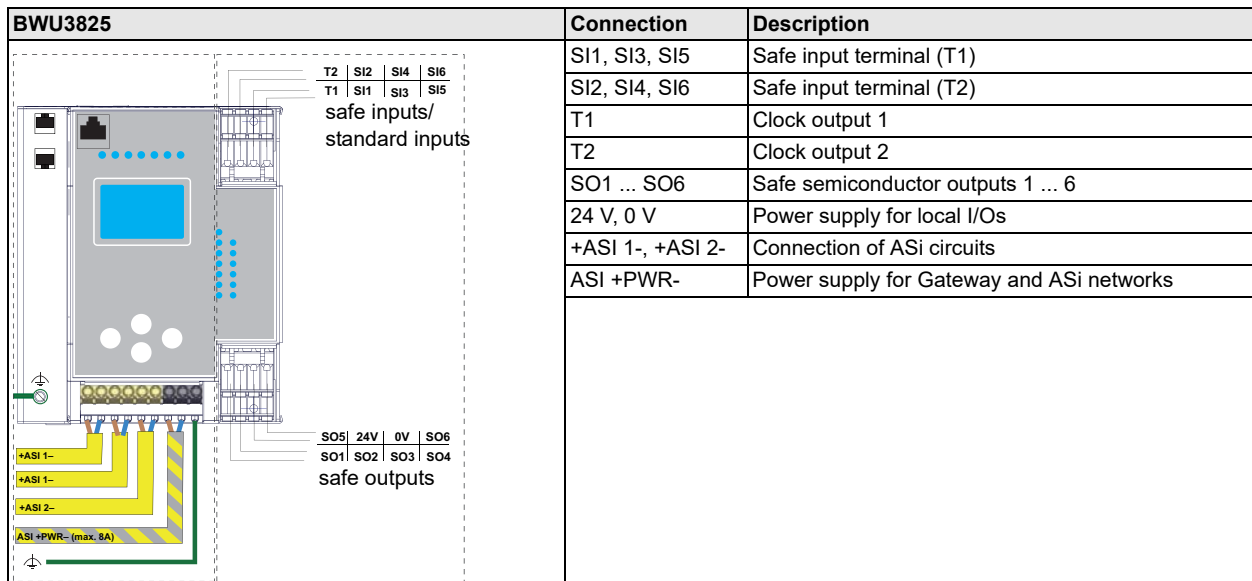
Terminal	Safe output	Safe input for mechanical contacts in combination with T1, T2 ⁽¹⁾	Safe antivalent input ⁽¹⁾	Safe electronic input ⁽¹⁾	Standard input ⁽¹⁾
SI1,2	–	•	•	•	•
SI3,4	–	•	•	•	•
SI5,6	–	•	•	•	•
SO1,2 ⁽²⁾	•	•	•	–	•
SO3,4 ⁽²⁾	•	•	•	–	•
SO5,6 ⁽²⁾	•	•	•	–	•

⁽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 $\leq 100 \text{ mA}$.

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Connections: Gateway + Safety Monitor:



Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- Chip card, memory capacity 512 kB (art. no. BW4055)
- Bihl+Wiedemann Safety Suite - Safety Software for Configuration, Diagnostics and Commissioning (art. no. BW2916)
- Power supplies, e.g.: 30 V power supply, 4 A, 3 phases (art. no. BW1927), 30 V power supply, 8 A, 3 phases (art. no. BW1676) (for further power supply units visit www.bihl-wiedemann.de/en/products/accessories/power-supplies)