

ASi-5/ASi-3 EtherCAT Gateway with integrated Safety Monitor

ASi-5 – Great data bandwidth, short cycle times

Compatible with all ASi generations

Safety over EtherCAT (configurable as node or master)

Safety over EtherCAT (FSoE) and Safe Link in one device

Safely monitoring safety drives with Safety over EtherCAT (FSoE)

2 ASi-5/ASi-3 Masters, EtherCAT-Device

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 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 similar)

Safety over

EtherCAT®



safe link



Figure	Fieldbus Interface (1)	Safety communication	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	ASi-5/ASi-3	ASi Safety	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.
	EtherCAT, OPC UA	FSoE + Safe Link	3 x 2 channels	6 release circuits; 6 x electronic safe outputs	ASi-5 + ASi-3 compatible	ASi-3 Safety compatible	2 ASi networks, 2 ASi-5/ASi-3 Masters	yes, max. 4 A/ASi network	Ethernet diagnostic	BWU3858

(1) Fieldbus interface

Communication interface between fieldbus and gateway: interfaces for standardized fieldbus systems in industrial automation.

EtherCat ASi gateway: interface for an EtherCat fieldbus

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.

(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 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-5/ASi-3 EtherCAT Gateway with integrated Safety Monitor

Article no.	BWU3858
Fieldbus interface	
Type	EtherCAT; RJ-45 acc. IEEE 802.3
Baud rates	100 MBd
OPC UA interface	OPC UA server + web server
Card slot	chip card (BW4055) for storage of configuration data
Diagnostic interface	
Type	Ethernet; RJ-45 acc. IEEE 802.3
Baud rate	10/100 MBaud half-duplex or full-duplex
Safety communication	FSoE + Safe Link
Safe coupling ⁽¹⁾	no
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 μ s * (number of ASi-3 nodes + 2)
ASi Safety	ASi-3 Safety compatible
Operating voltage	30 V _{DC} (20 ... 31,6 V) (PELV voltage)
Operating current	300 mA
ASi Power24V capability ⁽²⁾	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 ect run (green)	EtherCAT communication activ
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	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.

ASi-5/ASi-3 EtherCAT Gateway with integrated Safety Monitor

Article no.	BWU3858
Environment	
Standards	EN 62026-2 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 EN ISO 13849-2
Operating altitude	2000 m
Ambient temperature	-25 °C ... +55 °C (no condensation permitted)
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) Safe data exchange between safe protocols (e.g. CIP Safety, PROFIsafe etc.).

(2) **ASi Power24V**

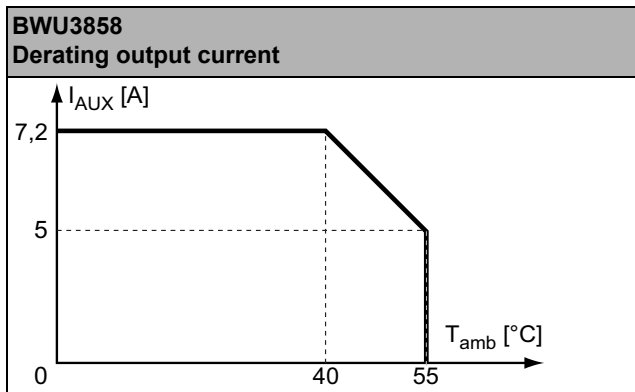
The device can be operated directly on a 24 V (PELV) power supply. The gateway has been optimized with integrated data coupling coils and adjustable self-resetting fuses for safe use of powerful 24 V power supplies.

Article no.	BWU3858
Safety monitor	
ASi Safety	ASi-3 Safety compatible
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	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
Sensor supply	short-circuit and overload protected according to EN 61131-2

ASi-5/ASi-3 EtherCAT Gateway with integrated Safety Monitor

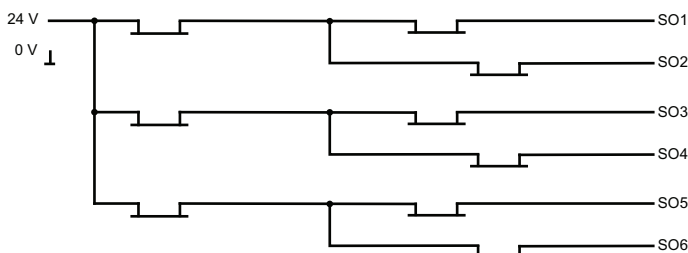
Article no.	BWU3858
Output	
Number of release circuits on the monitor	6
Outputs	semiconductor output max. contact load: 1,2 A _{DC-13} at 30 V, $\Sigma = 7,2$ A in sum ⁽⁵⁾
Power supply (semiconductor outputs)	out of AUX
Output	short-circuit and overload protected according to EN 61131-2
Test pulse (semiconductor 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 BWU3858")
 (3) loop resistance $\leq 150 \Omega$
 (4) see "Variations of terminal configuration for BWU3858"
 (5)



	BWU3858
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 BWU3858:



ASi-5/ASi-3 EtherCAT Gateway with integrated Safety Monitor

Variations of terminal configuration for BWU3858

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 ≤ 100 mA.

Connections: Gateway + Safety Monitor:

BWU3858	Connection	Description
<p>The diagram shows the terminal block layout for the BWU3858. It is divided into two main sections: 'safe inputs/standard inputs' and 'safe outputs'. The top section contains terminals T1, T2, SI1, SI2, SI3, SI4, SI5, and SI6. The bottom section contains terminals SO1, SO2, SO3, SO4, SO5, SO6, 24V, and 0V. On the left side, there are terminals for +ASI 1-, +ASI 1+, +ASI 2-, and +ASI 2+. A power supply terminal is labeled ASI +PWR- (max. 8A).</p>	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. 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, 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)