

AS-i Safety 4I/2O Module

AS-i Safety Module with 4 x 2-channels safe inputs and 2 x fast electronic safe outputs

- for floating contacts
- for antivalent switches ⁽¹⁾
- for OSSDs
- augmented reliability ⁽²⁾

Optimal costs for safety in- and outputs on AS-i

Module width of 22.5 mm, for optimal use of space in the service cabinet

Universal module for as many use cases, optimized for service and commissioning

Protection category IP20



(figure similar)



(1) Ident.No. ≥15197

(2) Ident.No. ≥16797

Figure	Type	Housing	Inputs Safety, SIL 3, cat. 4	Outputs Safety, SIL 3, cat. 4	Safety signal inputs	Input voltage (sensor supply.) ⁽¹⁾	Output voltage (actuator supply.) ⁽²⁾	AS-i address ⁽³⁾	Article no.
	IP20, 22,5 mm x 114 mm, 6 x COMBICON, Safety	6 x COMBICON	4 x 2 channels	2 release circuits; 2 x fast electronic safe outputs, augmented reliability	floating contacts, optoelectronic protective devices, complementary switch	out of AUX	out of AUX	depending on configuration	BWU2314

(1) **Input voltage (sensor supply):** inputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, inputs shall not be connected to earth or to external potential.

(2) **Output voltage (actuator supply):** outputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, outputs shall not be connected to earth or to external potential

(3) **AS-i address:** 1 AB Slave (max. 62 AB Slaves/AS-i network), 2 AB Slaves (max. 31 modules with 2 AB Slaves), Single Slaves (max. 31 Single Slaves/AS-i network), mixed use allowed.

For modules with two slaves the second slave is turned off as long as the first slave is addressed to address "0".

Upon request, slaves are available with specific AS-i Slave profiles.

Technical realization:

- If the safety input I2 is not needed, the protection feedback can optionally connected on I2. The transfer occurs as usual on the diagnostic slave of the safety AS-i outputs.
- No limitation of cable length at safety inputs (the maximum loop resistance is 150 Ω).
- 8 / 4 safety inputs for floating contacts or antivalent switches, 2 / 1 safety input optionally for optical protective equipment.
- Fast preprocessing: The response time from the disconnection of the local OSSD input to the shutdown of the output is optionally less than 5 ms.
- A secure signal exchange of 2 signals between Safety Monitor and AS-i Safety Module as well as between two AS-i Safety Modules is possible.

Diagnosis and commissioning:

- LED displays according to other Safety Slaves or to the Monitor.
- Simple selection of AS-i Slaves with the help of two rotary switches. The addressing occurs, as usual, via an AS-i addressing device or the AS-i Master.
- Memory card for the simple exchange.
- Fixed Safety Code series for each AS-i address. Each module generates by same address programming same code series.

Article no.	BWU2314
Connection	
Connection	COMBICON clamp
Length of connector cable	unlimited ⁽¹⁾
AS-i	
Profile	safety input slaves: S-0.B.F.0 diagnostic slaves: S-7.A.5.E configuration slave: S-7.A.F.5
Address	depending on configuration
Voltage	18 ... 31,6 V
Max. current consumption	200 mA
Max. continuous operating current	125 mA
AUX	
Voltage	20 ... 30 V (PELV)
Max. current consumption	4 A max.
Input	
Number	4 x 2-channels safe inputs for floating contacts or antivalent switches I3 + I4 optionally for optical protective equipment
Power supply	out of 24 V auxiliary power
Sensor supply	short-circuit and overload protected per EN 61131
Switching current	15 mA (T = 100 µs), continuously 4 mA at 24 V
OSSD test pulses	0 ... 50 Hz
OSSD test pulse width	0 ... 51 ms, adjustable
Input level	10 mA, R < 150 Ω
Output	
Number	2 release circuits, 2 x fast electronic safe outputs, augmented reliability
Max. contact load:	0,7 A DC-13 at 24 V
Supply voltage outputs	out of AUX
Actuator supply	short-circuit and overload protected per EN 61131
Max. output current for OSSD supply	1,4 A
Test pulse	when output is switched on minimal distance between 2 test pulses: 250 ms, pulse length up to 1 ms
Visualization	
LEDs S1 ... Sn (yellow)	state of input S1 ... S8
LED PWR (green)	AS-i power
LED FAULT (red)	AS-i error LED
LED O1 (yellow)	output 1 has switched
LED O2 (yellow)	output 2 has switched
Environment	
Applied standards	EN 60529 EN 61131 IEC 61508 SIL 3 EN 62061 SIL 3 EN ISO 13849-1 PLe cat. 4
Ambient temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Housing	plastic, for DIN-rail mounting
Protection class	IP20
Tolerable loading referring to humidity	according to EN 6131-2
Voltage of insulation	≥ 500 V
Weight	160 g
Dimensions (W / H / D in mm)	22,5 / 99 / 114,5

⁽¹⁾ loop resistance ≤ 150 Ω

Wiring rules

Push-in terminals	
General	
Nominal cross section	2,5 mm ²
Conductor cross section	
Conductor cross section solid	0,2 ... 2,5 mm ²
Conductor cross section flexible	0,2 ... 2,5 mm ²
Conductor cross section flexible, with ferrule	without plastic sleeve: 0,2 ... 2,5 mm ²
	with plastic sleeve: 0,25 ... 2,5 mm ²
2 conductors with same cross section, stranded, with TWIN ferrules	without plastic sleeve: 0,5 ... 1,5 mm ²
AWG	24 ... 14
Stripped insulation length	10 mm

	Clamps	Description
	S22, S21, S12, S11	S22, S21, S12, S11
S42, S41, S32, S31	S42, S41, S32, S31	terminal safety 2-channels input 2
S62, S61, S52, S51	S62, S61, S52, S51	terminal safety 2-channels input 3
S71, S72, S81, S82	S71, S72, S81, S82	terminal safety 2-channels input 4
	1.14 _{ext.out}	semiconductor output 1
	2.14 _{ext.out}	semiconductor output 2
	0 V _{1 ext.out} , 0 V _{2 ext.out}	mass connection for semiconductor output
	AS-i+, AS-i-	connection to the AS-i-Bus
	ADDR	address socket
	AUX+ _{ext.in}	power supply input
	AUX- _{ext.in}	

Addressing		
SEL1	SEL2	Description
0	0	RUN
E	E	RUN with configuration slave ⁽¹⁾
1	1	addressing Safety Input 1
2	2	addressing Safety Input 2
3	3	addressing Safety Input 3, contacts
4	4	addressing Safety Input 4, contacts
5	5	addressing Safety Input 3, OSSD (see manual for details)
6	6	addressing Safety Input 4, OSSD (see manual for details)
7	7	addressing Safety Output 1
8	8	addressing Safety Output 1, diagnostic
9	9	addressing Safety Output 2
A	A	addressing Safety Output 2, diagnostic
D	D	reset to factory defaults

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Diagnostics (device colors)

Value	Color	Description	State change	LED O1/2
0	green	output on		on
1	green flashing	–		–
2	yellow	restart inhibit	auxiliary signal 2	1 Hz
3	yellow flashing	–		–
4	red	output off		off
5	red flashing	waiting for "reset of error condition" or AUX missing	auxiliary signal 1 or connect AUX	8 Hz
6	gray	internal error, such as "fatal error"	only via "Power ON" on device	all LEDs flashing
7	green/yellow	output released, but not switched on	switching-on by setting of O0	off

Diagnostic slaves

Bit	input	output
Bit0	Diagnostic color	If P1=0 and A0=0, the output is switched off independent from release
Bit1		free
Bit2		free
Bit3	P2=1: response switch S31/S32 or S41/S42 P2=0: response of the release of the state	non existent

Bit	AS-i Parameter
Bit P1	
P1=0	Safety output 1.14 or 2.14 controlled by safety release and O0=1
P1=1	Safety output 1.14 or 2.14 controlled by safety release only
P2=1	Response of the release of the state to E3
P2=0	Response switch S31 / S32 or S41 / S42 to E3

Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)
- Chip card, memory capacity 32 KB (art. no. BW2079)