

# AS-i Safety Output Module with Diagnostic Slave, 1 EDM input, 3I and 2O

Safety and standard I/O in one module

Electronic safety output

Additional 3 standard inputs, 1 EDM input, 2 outputs

IEC 61508 SIL 3, EN ISO 13849-1 PLe Cat 4, EN 62061 SIL 3

Protection category IP20

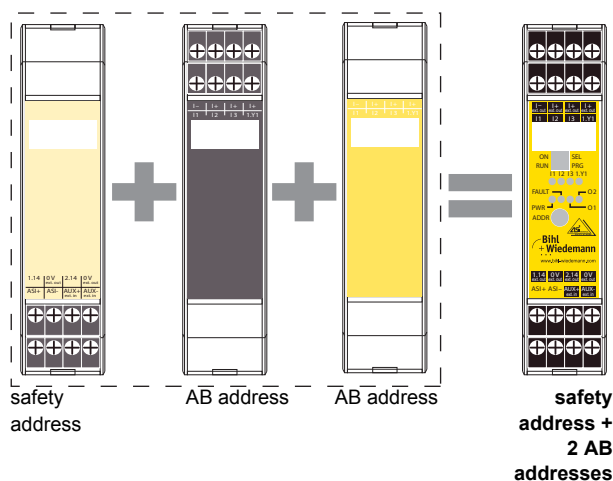


## Article no. BWU2173

The stainless steel AS-i Safety Monitor controls the outputs of the AS-i Safety Output Module by using a safety AS-i single address. To set the safety AS-i address, the dip-switch has to be in the ON/PRG position. Addressing can then be accomplished by using an AS-i addressing device, for example. Several AS-i Safety Output Modules can have the same safety address and can be controlled via this same safety address on a AS-i circuit. All AS-i Safety Output Modules with the same safety address are controlled simultaneously. In addition to the safety single address the module also supports an AB-address used to transmit the states of the standard inputs or of the electronic device monitoring (EDM). Another AB slave is available for diagnostic.

### BWU2173: 3 AS-i modules in one housing!

1 electronic safety output    3 standard inputs and 1 EDM input    Diagnostic and 2 outputs    **BWU2173**



<b>Article no.</b>	<b>BWU2173</b>
<b>Connection</b>	
Connection	4 x COMBICON
Length of connector cable	unlimited <sup>(1)</sup>
<b>AS-i</b>	
Profile	Diagnostic slave: S-7.A.E., ID1=5 AB slave: S-7.A.E., ID1=7
Address	1 single slave + 2 AB slaves
Required Master profile	≥M3
As of AS-i specification	2.1
Operating voltage	30 V (18 ... 31.6 V)
Max. current consumption	< 200 mA
<b>AUX</b>	
Operating voltage	24 V (18 ... 30 V)
Max. current consumption	1 A

# AS-i Safety Output Module with Diagnostic Slave, 1 EDM input, 3I and 2O

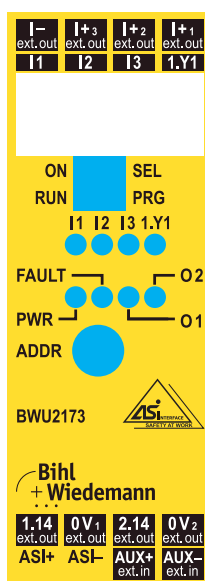
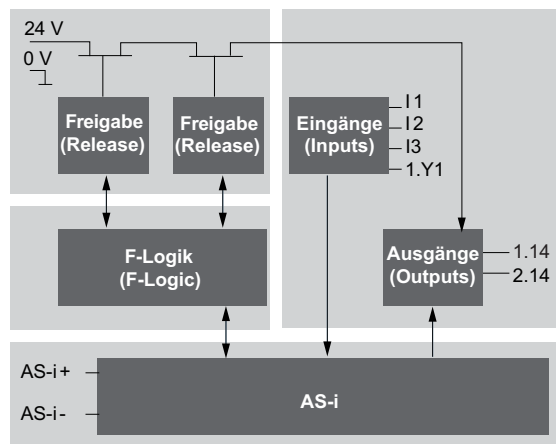
<b>Article no.</b>	<b>BWU2173</b>
<b>Input</b>	
Number	3 standard, 1 diagnostic + 1 EDM
Switching current	static 4 mA at 24 V, dynamic 15 mA at 24 V (T = 100 µs)
Power supply	out of AUX
Power supply of attached sensors	max. 100 mA
External device monitoring (EDM)	supplied out of AUX, approx. 10 mA
<b>Output</b>	
Number	2 x output switching elements max. contact load: 0,5 A <sub>DC-13</sub> at 24 V
Max output current	1 A
Test pulse	if output is on: minimum interval between 2 test pulses: 250 ms pulse width: 1 ms
<b>Display</b>	
LED I1...I3 (yellow)	state of inputs I1...I3
LED 1.Y1 (yellow)	state of EDM input 1.Y1
LED PWR (green)	on: AS-i voltage on flashing: AS-i voltage on, but peripheral fault <sup>(2)</sup> or address 0 off: no AS-i voltage
LED FAULT (red)	on: no data exchange (slave address 0 or slave offline) flashing: peripheral fault <sup>(2)</sup> off: slave online
LED O1, O2 (gelb)	state of outputs O1, O2
LED yellow (O2)	output 2 closed
<b>Environment</b>	
Applied standards	IEC 61508 SIL 3 EN 62061 SIL 3 EN ISO 13849-1 PLe Cat 4
Operating altitude	max. 2000 m
Ambient temperature	0°C ... +55 °C
Storage temperature	-25°C ... +85 °C
Housing	plastic, for DIN rail mounting
Protection category (EN 60529)	IP20
Maximum tolerable shock and vibration stress	according to EN 61131-2
Insulation voltage	≥ 500 V
Weight	150 g
Dimensions (W / H / D) in mm	25 / 105 / 114

(1) loop resistance ≤ 150 Ω

(2) See table "Peripheral fault indication"

Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
<b>BWU2173</b>	•	-	•

# AS-i Safety Output Module with Diagnostic Slave, 1 EDM input, 3I and 2O



Clamps	Description
I1, I2, I3	standard inputs I1, I2 and I3
1.14	semiconductor output 1
2.14	semiconductor output 2
I-, I+	supply voltage for inputs
1.Y1	EDM 1 / input for electronic device monitoring
AS-i+, AS-i-	AS-i network connection
AUX+ <sub>ext.in</sub> , AUX- <sub>ext.in</sub>	voltage supply input

## Programming instructions (bit values of inputs/outputs, 3I standard inputs and 1 EDM input)

Bit	AS-i output	Bit	AS-i input
00	not used	I0	I1
01	not used	I1	I2
02	not used	I2	I3
03	inexistent	I3	1.Y1

## Programming instructions (bit values of the diagnostic slave)

Bit	AS-i output	Bit	AS-i input
00	Parameter P1=1 not used	I0	diagnostic (for definition see table device colors)
	Parameter P1=0 1: output O 1 controlled by safety release 0: inhibits output O 1 on irrespective of safety release		
01	Parameter P1=1 not used	I1	
	Parameter P1=0 1: output O 2 controlled by safety release 0: inhibits output O 2 on irrespective of safety release		
02	not used	I2	
03	inexistent	I3	Parameter P2=0 1.Y1
			Parameter P2=1 1: feedback for user: <i>safety release on</i> 0: feedback for user: <i>safety release off</i>

Peripheral fault indicates unavailable 24 V ext.











## Diagnostic (device colors)

Value	Color	Description	State change	LED "Out"
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"	auxiliary signal 1	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 O1	off







# AS-i Safety Output Module with Diagnostic Slave, 1 EDM input, 3I and 2O


Programming instructions (bit values of the AS-i parameter, diagnostic slave)	
<b>Bit P1</b>	
P1=1	safe output controlled by safety release only
P1=0	safe output controlled by output O0=1 and O1=1 in addition to safety release
<b>Bit P2</b>	
P2=1	feedback for user: release on AS-i bit I3
P2=0	input 1.Y1 at AS-i bit I3
<b>Bits P0, P3:</b>	
not used	

Release	AS-i Parameter	AS-i Safety Output Module, safety release from the AS-i safety monitor	
		... not received	... received
AS-i parameter (AB slave) changes the function of output bit O0 and O1	P1=1 (default) O0=0	semiconductor output 1 open	semiconductor output 1 closed
	P1=1 O0=1	semiconductor output 1 open	semiconductor output 1 closed
	P1=0 O0=0	semiconductor output 1 open	semiconductor output 1 open
	P1=0 O0=1	semiconductor output 1 open	semiconductor output 1 closed
	P1=1 (default) O1=0	semiconductor output 2 open	semiconductor output 2 closed
	P1=1 O1=1	semiconductor output 2 open	semiconductor output 2 closed
	P1=0 O1=0	semiconductor output 2 open	semiconductor output 2 open
	P1=0 O1=1	semiconductor output 2 open	semiconductor output 2 closed

LEDs	State	Signal / Description
PWR (green)		no operating voltage
		operating voltage present, safety-related AS-i address and/or AS-i AB address is „0“ or no 24V ext. in (auxiliary power) or overload sensor supply
		operating voltage present
FAULT (red)		AS-i communication OK
		no data exchange with at least one AB slave
		no 24V ext. in (auxiliary power) or overload sensor supply
O1, O2 (yellow)		semiconductor output open
		restart inhibit, waiting for the start signal, the semiconductor output switches on after the start signal
		device is in unlockable error state; waiting for "reset of error condition signal"; after receiving this signal the device follows up with normal operation
		semiconductor output closed

# AS-i Safety Output Module with Diagnostic Slave, 1 EDM input, 3I and 2O

LEDs	State	Signal / Description
I1, I2, I3, 1.Y1 (yellow)		the corresponding input is <i>not</i> connected
		the corresponding input is connected
	 (running light)	switch is adjust to ON/PRG position
 LED on  LED flashing  LED off		

	In case all LEDs are blinking simultaneously in fast rhythm a fatal error has been detected. This message is reset by a short-run disconnection of the power supply (Power On Reset).
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### Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)