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

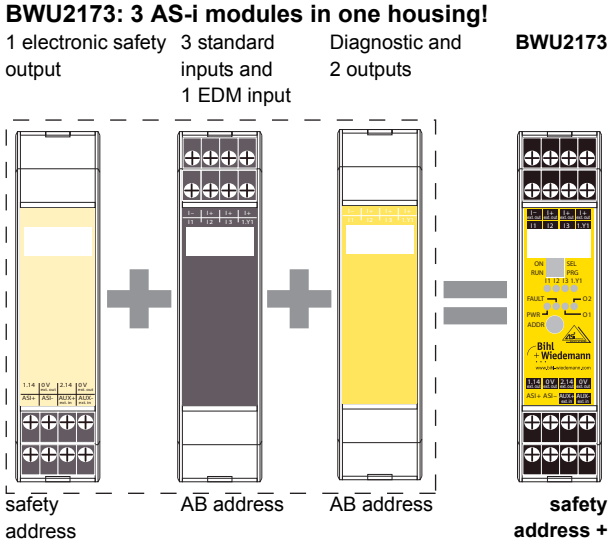
IEC 61508 SIL 3, EN ISO 13849-1 PLe Cat 4, EN 62061 SIL 3

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!



Article no.	BWU2173
Connection	
Connection	4 x COMBICON
Length of connector cable	unlimited (1)
AS-i	
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
AUX	
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

Article no.	BWU2173
Input	
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
Output	
Number	2 x output switching elements max. contact load: 0,5 A_{DC-13} 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
Display	
LED I1...In (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 (2) or address 0 off: no AS-i voltage
LED FAULT (red)	on: no data exchange (slave address 0 or slave offline) flashing: peripheral fault (2) off: slave online
LED O1, O2 (gelb)	state of outputs O1, O2
LED yellow (O2)	output 2 closed
Environment	
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
BWU2173	•	–	•

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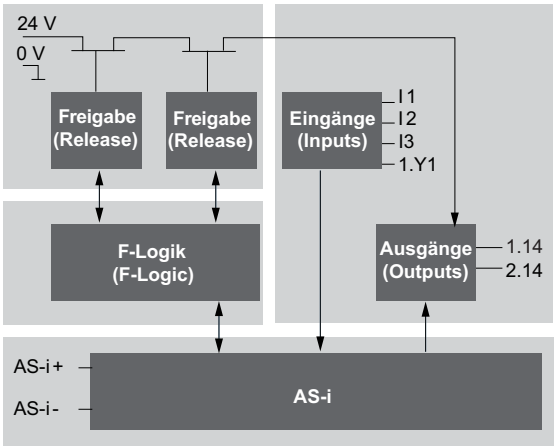

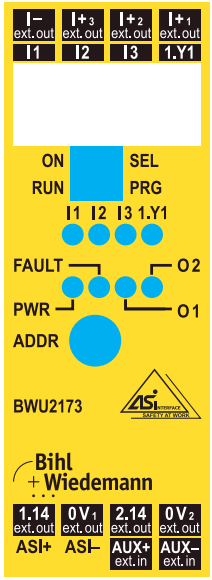

Clamps	Description
I1, I2, I3	standard inputs I1, I2 and I3
1.14	semiconductor output 1
2.14	semiconductor output 2
I-, I+	supply voltage for inputs
1.Y1	EDM 1 / input for electronic device monitoring
AS-i+, AS-i–	AS-i network connection
$AUX+_{ext.in}$, $AUX-_{ext.in}$	voltage supply input

Programming instructions (bit values of inputs/ouputs, 3I standard inputs and 1 EDM input)			
Bit	**AS-i output**	**Bit**	**AS-i input**
O0	not used	**I0**	I1
O1	not used	**I1**	I2
O2	not used	**I2**	I3
O3	inexistent	**I3**	1.Y1

Programming instructions (bit values of the diagnostic slave)					
Bit	**AS-i output**		**Bit**	**AS-i input**	
O0	**Parameter P1=1**	**Parameter P1=0**	**I0**	diagnostic (for definition see table device colors)	
	not used	1: output O 1 controlled by safety release 0: inhibits output O 1 on irrespective of safety release			
O1	**Parameter P1=1**	**Parameter P1=0**	**I1**		
	not used	1: output O 2 controlled by safety release 0: inhibits output O 2 on irrespective of safety release			
O2	not used		**I2**		
O3	inexistent		**I3**	**Parameter P2=0**	**Parameter P2=1**
				1.Y1	1: feedback for user: *safety release on* 0: feedback for user: *safety release off*

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)	
Bit P1	
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
Bit P2	
P2=1	feedback for user: release on AS-i bit I3
P2=0	input 1.Y1 at AS-i bit I3
Bits P0, P3:	
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
	 1 Hz	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
	 1 Hz	restart inhibit, waiting for the start signal, the semiconductor output switches on after the start signal
	 8 Hz	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

LEDs	State	Signal / Description
I1, I2, I3, 1.Y1 (yellow)		the corresponding input is *not* 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).

Accessories:

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