

## AS-i Safety Input Modules, IP20,

for optoelectronic protective devices,  
floating contacts or safety mats



(Figure similar)

Figure	Type	Housing	Inputs Safety, SIL 3, Cat. 4	Outputs digital	Safety signal inputs	Input voltage (sensor supply.) <sup>(1)</sup>	Output voltage (actuator supply) <sup>(2)</sup>	AS-i address <sup>(3)</sup>	Article no.
	IP20, 22,5 mm x 50 mm, 3 x COMBICON, Safety	3 x COMBICON	1 x 2 channels	2 x electronic	floating contacts	out of AS-i	out of AUX	1 single slave	<b>BWU1939</b>
	IP20, 22,5 mm x 50 mm, 3 x COMBICON, Safety	3 x COMBICON	1 x 2 channels	2 x electronic	floating contacts	out of AS-i	out of AS-i	1 single slave	<b>BWU2724</b>
	IP20, 22,5 mm x 50 mm, 3 x COMBICON, Safety	3 x COMBICON	1 x 2 channels SIL 2, Cat. 3	2 x electronic	safety mats 1.2 kΩ or 8.2 kΩ monitoring resistor	out of AUX	out of AUX	1 single slave	<b>BWU2661</b>
	IP20, 22,5 mm x 50 mm, 3 x COMBICON, Safety	3 x COMBICON	1 x 2 channels	2 x electronic	opto-electronic protective devices	out of AUX	out of AUX	1 single slave	<b>BWU2577</b>
	IP20, 22,5 mm x 114 mm, 4 x COMBICON, Safety	4 x COMBICON	1 x 2 channels	2 x electronic	floating contacts	out of AUX	out of AUX	1 single slave	<b>BWU3013</b>
	IP20, 22,5 mm x 114 mm, 4 x COMBICON, Safety	4 x COMBICON	2 x 2 channels	4 x electronic	floating contacts	out of AUX	out of AUX	2 single slaves	<b>BWU2707</b>

(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.

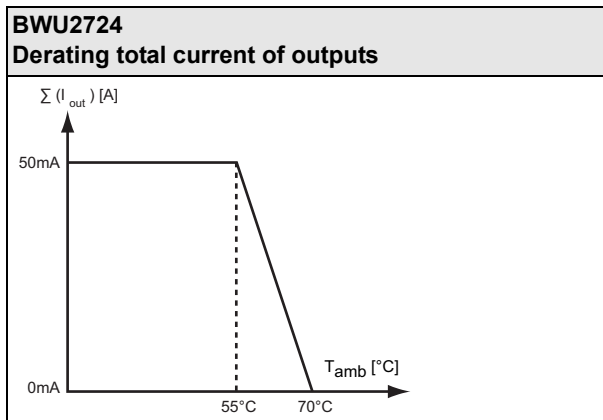
(2) **Output voltage (actuator supply):** outputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, outputs shall not be connected to earth or to external potential.

(3) **AS-i address:**  
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.

Article no.	BWU2724		BWU1939		BWU2707		BWU3013	
<b>Connection</b>								
Connection	3 x COMBICON				4 x COMBICON			
Length of connector cable	I/O: max. 15 m				unlimited <sup>(5)</sup>			
<b>AS-i</b>								
Profile	S-7.B.0, ID1=F				SL 1: S-7.B.0, ID1=F SL 2: S-7.B.0, ID1=E		S-7.B.0, ID1=F	
Address	1 single slave				2 single slaves		1 single slave	
Operating voltage	30 V <sub>DC</sub> (22 ... 31,6 V)							
Required Master profile	≥M3							
Since AS-i specification	2.1							
Max. current input	100 mA		80 mA		60 mA		35 mA	
<b>AUX</b>								
Voltage	–		24 V <sub>DC</sub> (20 ... 30 V)					
Max. current input	–		1,5 A at output short-circuit		4 A max.			
<b>Input</b>								
Number	1 x 2-channels safe input				2 x 2-channels safe inputs		1 x 2-channels safe input	
Safety signal inputs	floating contacts							
Switching current	static 4 mA at 24 V, dynamic 15 mA at 24 V (T = 100 μs)							
Power supply	out of AS-i				out of AUX			
Switching threshold	10 mA, R < 150 Ω							
<b>Output</b>								
Number	2, electronic, short circuit protected				4, electronic, short circuit protected		2, electronic, short circuit protected	
Power Supply	out of AS-i				out of AUX			
Max. output current	up to 40 °C	Σ(Out) 50 mA <sup>(1)</sup>		200 mA per output		1 A per output, Σ(Out) 3 A <sup>(6) (7)</sup>		1 A per output <sup>(7)</sup>
	at 45 °C					0,5 A per output, Σ(Out) 1,5 A <sup>(6) (7)</sup>		0,5 A per output <sup>(7)</sup>
	at 55 °C					–		–
	at 70 °C	Σ(Out) 0 mA <sup>(1)</sup>						–
<b>Display</b>								
LED ASI (green)	on: AS-i power supply on							
LED FLT/FAULT (red)	on: no data exchange flashing: peripheral error <sup>(2)</sup>							
LED ASI/FLT (red/green)	–				green: slave online red: no data exchange yellow/red flashing: address 0 red/green flashing: peripheral fault <sup>(2)</sup>			
LED ASI/FLT2 (red/green)	–				green: slave online red: no data exchange yellow/red flashing: address 0 red/green flashing: peripheral fault <sup>(2)</sup> red flashing: slave 2 is switched off, because slave 1 is offline		–	
LED AUX (green)	–		on: 24 V <sub>DC</sub> AUX off: no 24 V <sub>DC</sub> AUX					
LED CC (red)	peripheral fault <sup>(2)</sup>							
LEDs O1 ... On (yellow)	state of outputs O1, O2				state of outputs O1 ... O4		state of outputs O1, O2	
LED S1 ... Sn (yellow)	state of inputs S1, S2				state of inputs S1 ... S4		state of inputs S1, S2	

Article no.	BWU2724	BWU1939	BWU2707	BWU3013
<b>Environment</b>				
Applied standards	EN 60529 EN ISO 13849-2 EN 61000-6-2 EN 61000-6-4 EN 61131-2 EN 62026-2			
	EN 62061 SIL3 EN ISO 13849-1 PLe cat 4			
Operating altitude	max. 2000 m			
Ambient temperature	-30 °C ... +55 °C (up to max. +70 °C) <sup>(1)</sup> <sup>(3)</sup> <sup>(4)</sup> <sup>(6)</sup> <sup>(7)</sup>			
	no condensation permitted			
Storage temperature	-25 °C ... +85 °C			
Housing	plastic, for DIN rail mounting			
Pollution Degree	2			
Protection category	IP20			
Tolerable loading referring to humidity	according to EN 61131-2			
Allowable shock and vibration stress	≤ 15 g, T ≤ 11 ms 10 ... 55 Hz, 0,5 mm amplitude			
Weight	60 g		160 g	
Dimensions (W / H / D in mm)	22,5 / 99,6 / 50,5		22,5 / 99,6 / 114	

(1)



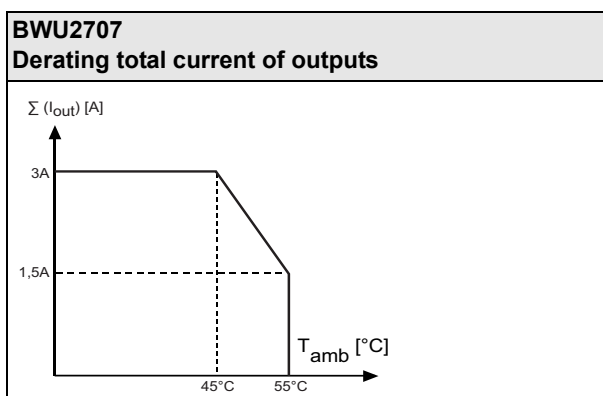
(2) see table „Peripheral fault indication“

(3) temperature range up to -30°C from Ident.No. ≥16285 (BWU2724); Ident.No. ≥16284 (BWU1939).

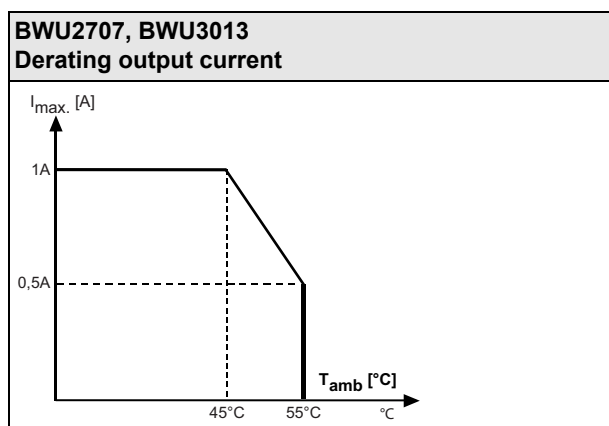
(4) Maximum ambient operating temperature +55 °C according UL certificate for the use in the USA and Canada.

(5) loop resistance ≤ 150 Ω

(6)



(7)

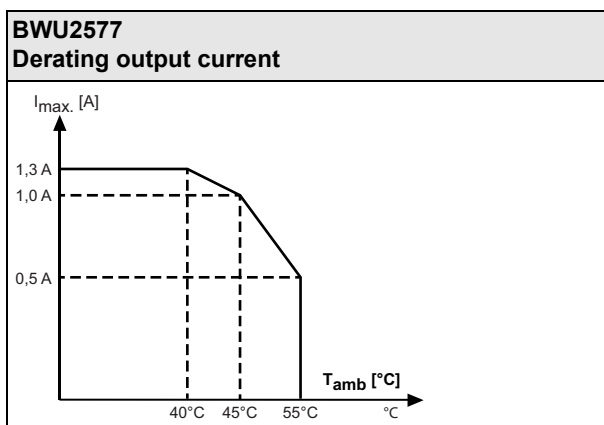


Article no.	BWU2577		BWU2661
<b>Connection</b>			
Connection	3 x COMBICON		
Length of connector cable	unlimited <sup>(1)</sup>	I/O: max. 15 m	
<b>AS-i</b>			
Profile	S-7.B.1, ID1=F		
Address	1 single slave		
Operating voltage	30 V <sub>DC</sub> (22 ... 31,6 V)		
Required Master profile	≥M3		
Since AS-i specification	2.1		
Max. current input	35 mA		
<b>AUX</b>			
Voltage	24 V <sub>DC</sub> (20 ... 30 V)		
Max. current input	4 A max.		
<b>Input</b>			
Number	1 x 2-channels safe input		
Safety signal inputs	OSSDs	safety mat with 1,2 kΩ or 8,2 kΩ monitoring resistor	
Power supply	out of AUX		
Power supply for external sensors	1,8 A out of AUX	-	
Switching threshold	V <sub>in</sub> > 11 V for high level, input current ≥ 2,5 mA at 15 V	-	
OSSD input test pulses	0 ... 50 Hz	-	
OSSD input test pulse width	U <sub>aux</sub> ≥ 21,5 V = 0 ... 1 ms, test pulses possible U <sub>aux</sub> ≥ 17 V = 0 ... 0,8 ms, test pulses possible U <sub>aux</sub> < 17 V = 0 ... 0,6 ms	-	
<b>Output</b>			
Number	2, electronic, short circuit protected		
Power Supply	out of AUX		
Max. output current	up to 40 °C	1,3 A per output <sup>(2)</sup>	1 A per output <sup>(5)</sup>
	at 45 °C	1,0 A per output <sup>(2)</sup>	0,5 A per output <sup>(5)</sup>
	at 55 °C	0,5 A per output <sup>(2)</sup>	

Article no.	BWU2577	BWU2661
<b>Display</b>		
LED ASI (green)	on: AS-i power supply on	
	–	flashing: peripheral fault <sup>(3)</sup>
LED FLT/FAULT (red)	on: no data exchange flashing: peripheral error <sup>(3)</sup>	
LED AUX (green)	–	on: 24 V <sub>DC</sub> AUX off: no 24 V <sub>DC</sub> AUX
LED CC (red)	–	sensor cable break <sup>(3)</sup>
LEDs O1 ... On (yellow)	state of outputs O1, O2	
LED S1 ... Sn (yellow)	state of inputs S1, S2	state of input S1
<b>Environment</b>		
Applied standards	EN 60529 EN ISO 13849-2 EN 61000-6-2 EN 61000-6-4 EN 61131-2 EN 62026-2	
	EN 62061 SIL3 EN ISO 13849-1 PLe cat 4	EN 62061 SIL2, EN ISO 13849-1 PLd cat 3
Operating altitude	max. 2000 m	
Ambient temperature	-30°C ... +55 °C <sup>(2)</sup> <sup>(4)</sup> <sup>(5)</sup>	
	no condensation permitted	
Storage temperature	-25 °C ... +85 °C	
Housing	plastic, for DIN rail mounting	
Pollution Degree	2	
Protection category	IP20	
Tolerable loading referring to humidity	according EN 61131-2	
Allowable shock and vibration stress	≤ 15 g, T ≤ 11 ms	
	10 ... 55 Hz, 0,5 mm amplitude	
Weight	60 g	
Dimensions (W / H / D in mm)	22,5 / 99,6 / 50,5	

(1) loop resistance ≤ 150 Ω

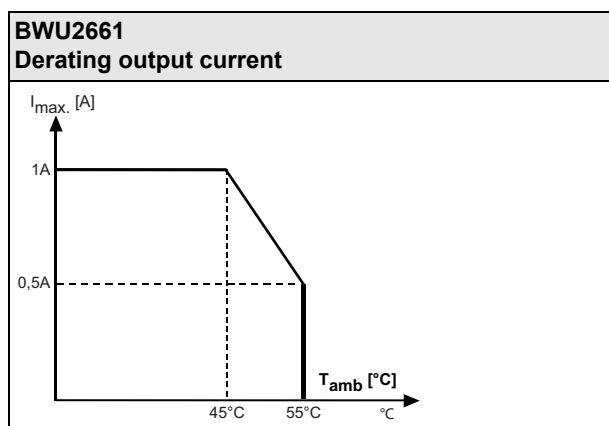
(2)



(3) see table „Peripheral fault indication“

(4) Temperature range up to -30°C from Ident.No. ≥16282 (BWU2577).

(5)



## Wiring rules

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

Article no.	Peripheral fault indication			
	Cross connection	Overload output	AUX voltage missing	Sensor cable break
BWU1939	•	-	-	-
BWU2577	-	•	•	-
BWU2661	-	•	•	•
BWU2707	•	-	•	-
BWU2724	•	•	-	-
BWU3013	•	-	•	-
BWU2770	•	-	•	-
BWU2810	•	•	-	-
BWU3032	•	-	-	-

Programming:	AS-i Bit-setting			
	D0	D1	D2	D3
<b>Safe input</b>				
BWU1939 / BWU2724 / BWU3013	S11 / S12		S21 / S22	
BWU2577	S1		S2	
BWU2661	Sensor			
BWU2707 Slave 1	S11 / S12		S21 / S22	
BWU2707 Slave 2	S31 / S32		S41 / S42	
<b>Output</b>				
BWU1939 / BWU2577 / BWU2661 / BWU3013	O1	O2	not used	not used
BWU2707 Slave 1	O1	O2	not used	not used
BWU2707 Slave 2	O3	O4	not used	not used
<b>Parameter bit</b>				
	P0	P1	P2	P3
BWU1939 / BWU2577 / BWU2661 / BWU2707 / BWU2724 / BWU3013	0: off/ 1: on (Watchdog)	not used	not used	not used

