AS-i Safety Analog Input Module, IP20

2 safe inputs

in one module:
4 ... 20 mA or 0 ... 10 V or Pt100

or thermocouple (type J / K / N / R / S)

Applications up to category 4/PLe/SIL 3

(figure similar)

The AS-i Safety Input Module for analog inputs is monitoring 2 analog signals with 4 ... 20 mA, 0 ... 10 V, Pt100 or thermocouples.

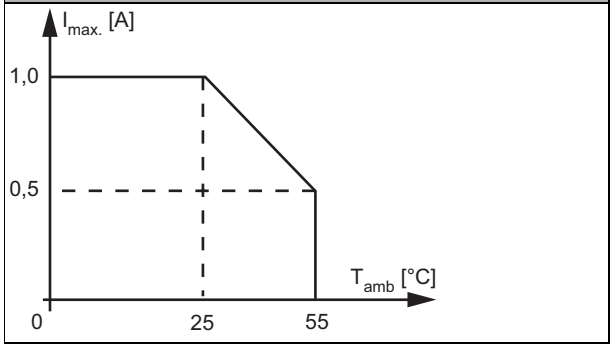
The module provides a safety SaW code sequence, if the input signal is located within the adjustable safety range.
The two inputs can be analyzed as one safe 2-channel input (up to SIL3).

Article no.	BWU2692	BWU3271
General Data		
Device type	input	
Connection		
AS-i / AUX connection	COMBICON plugs	screw terminals
Periphery connection	COMBICON plugs	screw terminals
AS-i		
Profile	safe input slave: S-0.B.E, ID1=F configuration slave: S-7.A.5, ID1=7 (default)	
Address	depending on configuration	
Required Master profile	≥ M4	
Since AS-i specification	3.0	
Operating voltage	30 V_{DC} (18 ... 31,6 V)	
Max. current consumption	≤ 110 mA	
AUX		
Operating voltage	24 V_{DC} (18 ...30 V)	–
Max. current consumption	1 A (0,5 A at 55 °C) (1)	–
Input		
Number	2 x analog standard inputs or 1 x 2 channel safe input, isolated	
Safety signal inputs	4 ... 20 mA / 0 ... 10 V / Pt100	thermocouple
Resolution	16 Bit (1 µA / 1 mV)	16 Bit (0,1 °C)
Range of value	4000 ... 20000 dec. (4 ... 20 mA) / 0 ... 10000 dec.(0 ... 0 V) / -2000 ... 8500 dec (-200 ... 850 °C)	-2700 ... 17500 dec (-270 ... 1750 °C)
Internal resistance	50 Ω / 100 kΩ	>1 MΩ
Max. input voltage	25 V	–
Max. input current	40 mA	–
Power supply of attached sensors	out of AUX	–

Article no.	BWU2692	BWU3271
Display		
LEDs I1, I2 (yellow)	state of current inputs I1, I2	–
LEDs U1, U2 (yellow)	state of voltage inputs U1, U2	–
LEDs, R1, R2 (yellow)	state of Pt100 inputs R1, R2	–
LEDs TC1, TC2 (yellow)	–	state of thermocouple inputs TC1, TC2
LEDs F1, F2 (yellow)	on: safety range, SAW sequence is running off: no safety range, 0 sequence (shut off) is running	
LED ASI (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 AUX (green)	on: 24 V_{DC} AUX	–
LED CONF (yellow)	off: normal operation mode	
Environment		
Applied standards	EN 60529 EN 61000-6-2 EN 61000-6-4 EN 62061 SIL3 (3) EN ISO 13849-1 PLe (3)	
Operating altitude	max. 2000	
Ambient operating temperature	0 °C … +55 °C	
Storage temperature	-25 °C … +85 °C	
Housing	plastic, for DIN-rail mounting	
Protection category	IP20	
Voltage of insulation	≥500 V	
Dimensions (W / H / D in mm)	22,5 / 99,6 / 114	

(1)

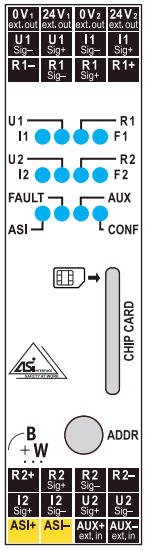
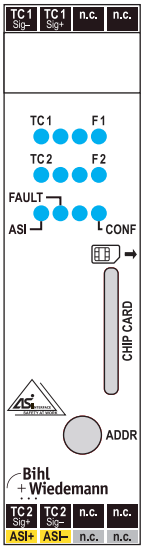
Derating max. current out of AUX



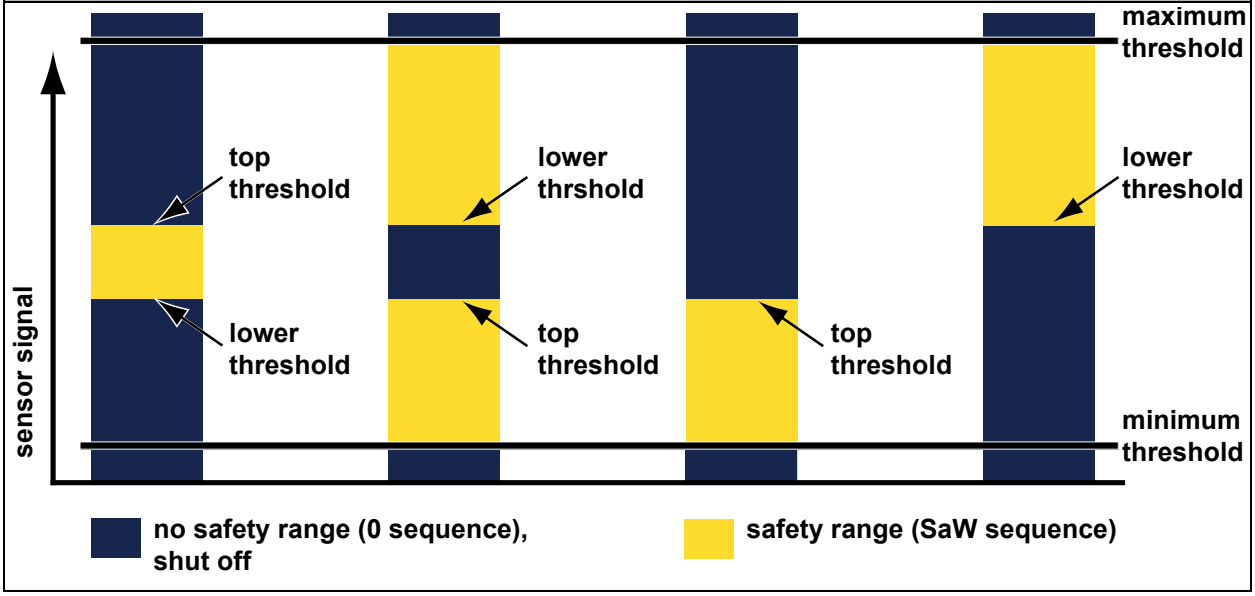
(2) **See table "Peripheral fault indication"**

(3) In accordance with EN 746-2, Par. 5.7.2.b, components which meet a defined SIL / PL Level according to EN 62061 and EN ISO 13849-1 are approved for use in thermoprocessing equipment.

Article No.	Peripheral fault indication		
	analog signal outside range of values	difference between channels is outside of preset margin	AUX voltage missing
BWU2692	•	•	•
BWU3271	•	•	–

BWU2692	BWU3271	Clamps	Description
		0 $V_{1\ ext.out}$, 24 $V_{1\ ext.out}$, 0 $V_{2\ ext.out}$, 24 $V_{2\ ext.out}$	connection for power supply of sensors
		U1 Sig-, U1 Sig+	connection 0...10 V safety input 1
		I1 Sig-, I1 Sig+	connection 4...20 mA safety input 1
		R1-, R1 Sig-, R1 Sig+, R1+	connection PT100 safety temperature 1
		R2+, R2 Sig+, R2 Sig-, R2-	connection PT100 safety temperature 2
		TC1 Sig-, TC1 Sig+	connection thermocouple safe temperature 1
		TC2 Sig+, TC2 Sig-	connection thermocouple safe temperature 2
		I2 Sig+, I2 Sig-	connection 4...20 mA safety input 2
		U2 Sig+, U2 Sig-	connection 0...10 V safety input 2
		ASI+, ASI-	connection to AS-i bus
		AUX+ $_{ext.\ in}$, AUX- $_{ext.\ in}$	connection for external 24 V_{DC} (AUX)
		n.c.	not connected

Setting the threshold values



Programming

Configuration Slave			
analog inputs			
AI1: analog value sensor 1	AI2: analog value sensor 2	–	–
digital input			
DI0: input 1: safety range, SaW sequence is running	DI1: input 2: safety range, SaW sequence is running	DI2: S-7.5 data	DI3: S-7.5 data
digital output			
DO0: S-7.5 data	DO0: S.7.5 data	DO2: 0 sequence is running (shut off)	DO3: –

LED status display

LED	State	Signal / Description
ASI (green)		no AS-i voltage
	1 Hz	AS-i voltage present, but at least one AS-i slave is addressed „0“ or peripheral fault
		AS-i voltage present
AUX (green)		no 24 V_{DC} AUX
		24 V_{DC} AUX present
FLT (red)		AS-i communication OK (at least one AS-i slave on line)
	1 Hz	at least one AS-i slave with peripheral fault
		no data exchange (with at least one correctly addressed AS-i slave)
CONF (yellow)		normal operation mode
	2 x 1 Hz	chip card is written
U1, U2 (yellow)		no voltage input
		voltage input selected
	1 Hz	error message
I1, I2 (yellow)		no current input
		current input selected
	1 Hz	error message
R1, R2 (yellow)		no Pt100 input
		Pt100 input selected
	1 Hz	error message
TC1, TC2 (yellow)		no thermocouple input
		thermocouple input selected
	1 Hz	error message
F1, F2 (yellow)		no safety range (0 sequence), shut off is running
		safety range (SaW sequence), at least one code sequence is running
	1 Hz	error message

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 disconnection of the power supply (Power ON Reset).