

Analog Modules ASi, IP65, M12



(Figure similar)

Figure	Type	Inputs analog	Outputs analog	Input voltage (sensor supply) ¹	Output voltage (actuator supply) ²	ASi address ³	Art. no.
	IP65, M12, width 45 mm	2 x 4 ... 20 mA	–	out of ASi	–	1 AB slave	BWU1893
	IP65, M12, width 45 mm	2 x 4 ... 20 mA	–	out of ASi	–	1 single slave	BWU1894
	IP65, M12, width 45 mm	2 x 0 ... 10 V	–	out of ASi	–	1 AB slave	BWU1963
	IP65, M12, width 45 mm	2 x 0 ... 10 V	–	out of ASi	–	1 single slave	BWU1964
	IP65, M12, width 45 mm	2 x Pt100	–	out of ASi	–	1 AB slave	BWU1895
	IP65, M12, width 90 mm	1 x 4 ... 20 mA/0 ... 10 V	1 x 0 ... 20 mA/0 ... 10 V	out of ASi	out of ASi	2-4 single slaves	BWU1917
	IP65, M12, width 90 mm	1 x 4 ... 20 mA/0 ... 10 V	1 x 0 ... 20 mA/0 ... 10 V	out of AUX	out of AUX	2-4 single slaves	BWU1853
	IP65, M12, width 90 mm	4 x 4 ... 20 mA	–	out of ASi or out of AUX, auto switching	–	1 single slave	BWU1359
	IP65, M12, width 90 mm	4 x 0 ... 10 V	–	out of ASi or out of AUX, auto switching	–	1 single slave	BWU1360
	IP65, M12, width 90 mm	4x Pt100, 2/4 wire mode	–	out of ASi	–	1 single slave	BWU1363
	IP65, M12, width 90 mm	4x Pt100, 2/3 wire mode	–	out of ASi	–	1 single slave	BWU2532
	IP65, M12, width 90 mm	–	4 x 0 ... 20 mA	–	out of AUX	1 single slave	BWU1722
	IP65, M12, width 90 mm	–	4 x 0 ... 20 mA	–	out of ASi or out of AUX, auto switching	1 single slave	BWU1361
	IP65, M12, width 90 mm	–	4 x 0 ... 10 V	–	out of ASi or out of AUX, auto switching	1 single slave	BWU1362
	IP65, M12, width 90 mm	–	4 x 0 ... 10 V 24 V, 0 V via M12	–	out of ASi or out of AUX, auto switching	1 single slave	BWU2857

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

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

³ **ASi address**
AB slave (max. 62 AB slaves/ASi network), 2 AB slaves (max. 31 modules with 2 AB slaves), single slaves (max. 31 single slaves/ASi network), mixed use allowed (upon request, slaves are available with specific AS- slave profiles).

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Article no.	BWU1893	BWU1894	BWU1895	BWU1963	BWU1964	BWU1359	BWU1360	BWU1363 BWU2532
General data								
Device type	input							
Connection								
ASi/AUX connection	profile cable and piercing							
Periphery connection	M12							
ASi								
Profile	S-7.A.9	S-7.3.D	S-7.A.9	S-7.3.D	S-7.3.E			
Address	1 AB slave	1 single slave	1 AB slave	1 single slave	1 single slave			
Required Master profile	≥ M4	≥ M3	≥ M4	≥ M3				
Since ASi specification	3.0	2.1	3.0	2.1				
Operating voltage	30 V _{DC} (18 ... 31,6 V)							
Max. current consumption	< 200 mA		< 80 mA	< 200 mA			< 100 mA	< 80 mA
AUX								
Voltage	-					24 V _{DC} (18 .. 30 V)		-
Max. current consumption	-					500 mA		-
Input								
Number	2				4			
Resolution	normal: 14 Bit, fast: 11 Bit		14 Bit	11 or 14 Bit		16 Bit (1 µA)	16 Bit (1 mV)	16 Bit (0,1 °C)
Range of value	4000 ... 20000 dec. / 0 ... 27648 dec. ¹		-2000 ... +8500 dec. -12000 ... 13000 dec.	0 ... 10000 dec. / 0 ... 27648 dec. ¹		4000 ... 20000 dec.	0 ... 10000 dec.	-2000 ... +8500 dec.
Internal resistance	82 Ω		-	130 kΩ		50 Ω	100 kΩ	-
Max. input voltage	-		25 V			-	25 V	-
Max. input current	40 mA		-			40 mA	-	
Power supply	out of ASi					out of ASi or out of AUX		out of ASi
Power supply of attached sensors	max. 70 mA		-		max. 70 mA	max. 500 mA out of AUX, max. 100 mA out of ASi		-
Display								
LED PWR (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault ² or address 0 off: no ASi voltage							
LED FLT/FLAUT (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 off: no 24 V _{DC} AUX		-
LED I1 ...In (yellow)	state of channel I1, I2 on: analog signal within range of value flashing: analog signal outside range of values off: channel switched off					state of channel I1 ... I4 on: analog signal within range of value flashing: analog signal outside range of values off: channel switched off		
Environment								
Applied standards	EN 61000-6-2 EN 61000-6-4 EN 60529							
Operating altitude	max. 2000 m							
Ambient temperature	0 °C ... +70 °C					-20 °C ... +70 °C		0 °C ... +70 °C
Storage temperature	-20 °C ... +85 °C							
Housing	plastic, for DIN rail mounting							
Pollution degree	2							
Protection category	IP65							
Insulation voltage	≥ 500 V							
Dimensions (W / H / D in mm)	45 / 80 / 45					90 / 80 / 45		

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¹ Siemens format

² see table „Peripheral fault indication“

Article no.	BWU1853	BWU1917	BWU1361	BWU1362	BWU2857	BWU1722
General data						
Device type	input/output		output			
Connection						
ASi/AUX connection	profile cable and piercing					
Periphery connection	M12					
ASi						
Profile	S-6.0.x		S-7.3.6			
Address	2-4 single slaves		1 single slave			
Required Master profile	≥ M4		≥ M3			
Since ASi specification	3.0		2.1			
Operating voltage	30 V _{DC} (18 ... 31,6 V)					
Max. current consumption	< 200 mA					< 100 mA
AUX						
Voltage	24 V _{DC} (18 ... 30 V)	–	24 V _{DC} (18 ... 30 V)			
Max. current consumption	1 A	–	500 mA			
Input						
Number	1		–			
Resolution	16 Bit (1 µA) or 16 Bit (1 mV)		–			
Range of value	4000 ... 20000 dec. / 0 ... 10000 dec.		–			
Internal resistance	4 ... 20 mA: 50 Ω 0 ... 10 V: 100 kΩ		–			
Max. input voltage	25 V		–			
Max. input current	40 mA		–			
Power supply	out of AUX	out of ASi	–			
Power supply of attached sensors	∑ (sensors and actuators) max. 1 A	∑ (sensors and actuators) max. 200 mA	–			
Output						
Number	1		4			
Resolution	16 Bit (1 µA) or 16 Bit (1 mV)		16 Bit (1 µA)	16 Bit (1 mV)	16 Bit (1 µA)	
Range of value	0 ... 20000 dec. / 0 ... 10000 dec.		0 ... 20000 dec.	0 ... 10000 dec.	0 ... 20000 dec.	
Actuator resistance	0 ... 20 mA: max. 600 Ω 0 ... 10 V: min. 3,3 kΩ		max. 600 Ω	min. 3,3 kΩ	max. 600 Ω	
Max. output voltage	11,5 V		–	11,5 V	–	
Max. output current	23 mA		–	–	23 mA	
Power supply	out of AUX	out of ASi	out of ASi or out of AUX			out of AUX
Power supply of attached actors	∑ (sensors and actuators) max. 1 A	∑ (sensors and actuators) max. 200 mA	max. 500 mA out of AUX, max. 100 mA out of ASi			∑ max. 1,1 A

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Article no.	BWU1853	BWU1917	BWU1361	BWU1362	BWU2857	BWU1722
Display						
LED PWR (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault ¹ or address 0 off: no ASi voltage					
LED FLT/FLAUT (red)	on: no data exchange, slave address 0 or slave offline flashing: peripheral fault ¹ off: slave online					
LED AUX (green)	an: 24 V _{DC} AUX aus: keine 24 V _{DC} AUX					
LED O1 ...On (yellow)	–	state of channel O1 ... O4 on: analog signal within range of value flashing: analog signal outside range of values				
LED InI, InU (yellow)	state of channel InI or InU on: analog signal within range of value flashing: analog signal outside range of values			–		
LED OutI, OutU (yellow)	state of channel OutI or OutU on: analog signal within range of value flashing: analog signal outside range of values			–		
Environment						
Applied standards	EN 61000-6-2 EN 61000-6-4 EN 60529					
Operating altitude	max. 2000 m					
Ambient temperature	0 °C ... +70 °C					
Storage temperature	-20 °C ... +85 °C					
Housing	plastic, for DIN rail mounting					
Pollution degree	2					
Protection category	IP65					
Insulation voltage	≥ 500 V					
Dimensions (W / H / D in mm)	90 / 80 / 45					

¹ see table „Peripheral fault indication“

UL-specifications (UL508)	
BWU1359, BWU1360, BWU1361, BWU1362, BWU1363, BWU1722, BWU1853, BWU1917, BWU2532, BWU2857	
External protection	An isolated source with a secondary open circuit voltage of ≤30 V _{DC} with a 3 A maximum over current protection. Over current protection is not required when a Class 2 source is employed.
In general	UL mark does not provide UL certification for any functional safety rating or aspects of the above devices.

Article no.	Peripheral fault indication	
	analog signal outside range of value	at least 1 parameterized channel not connected
BWU1359	•	•
BWU1360	•	•
BWU1361	•	•
BWU1362	•	•
BWU1363	•	•
BWU1722	•	•
BWU1853	•	•
BWU1917	•	•
BWU2532	•	•
BWU2857	•	•

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Programming

Bit	Bit setting			
	input			
	P3	P2	P1	P0
BWU1893	–	1: normal 0: fast	1: 4000 ... 20000 dec. 0: 0 ... 27648 dec. ¹	1: Peripheral fault is indicated 0: Peripheral fault is not indicated
BWU1894	1: channel 2 on 0: channel 2 off			
BWU1895	–	1: -200 °C ... +850 °C 0: -120 °C ... +130 °C	1: 2 wire-mode 0: 4 wire-mode	
BWU1963 / BWU1964		1: normal 0: fast	1: 0 ... 10000 dec. 0: 0 ... 27648 dec. ¹	
BWU1359	1: Peripheral fault is indicated 0: Peripheral fault is not indicated	–	–	1: Bridge between Pin 3 and 4 active 0: Bridge between Pin 3 and 4 not active ²
BWU1360				– ²
BWU1363	1: 2 wire-mode 0: 4 wire-mode			1: 50 Hz filter in A/D converter active 0: 60 Hz filter in A/D converter active ²
BWU2532	1: 2 wire-mode 0: 3 wire-mode			

¹ Siemens format

² For peripheral fault setting see the table "Bit combinations P1 and P2"

Bit combinations P1 and P2					
BWU1359, BWU1360, BWU1363, BWU2532					
Peripheral fault can be released through channel					
P1	P2	1	2	3	4
0	0	on	off	off	off
0	1	on	on	off	off
1	0	on	on	on	off
1	1	on	on	on	on

Programming

Bit	Bit setting			
	Input / Output			
	Parameter (first address)			
	P3	P2	P1	P0
BWU1853 / BWU1917	If P0= 0 1: InI active 0: InU active, otherwise not used	1: Peripheral fault is indicated 0: Peripheral fault is not indicated	If P0= 0 1: OutI active 0: OutU active, otherwise not used	1: Automatic switching between current and voltage 0: Current / voltage specified by P1 and P3
	Parameter (second address)			
	1: Pin 3 and Pin 4 bridged 0: Pin 3 and Pin 4 not bridged	1: 10 V = 10000 dec., 20 mA = 20000 dec. 0: 10 V = 27648 dec. ¹ , 20 mA = 27648 dec. ¹	Transformation speed InI, InU 11: fastest: 1 ms/8 Bit 01: medium speed/precise: 5 ms/12 Bit 10: highest precision: 20 ms/16 Bit 00: not used	
	Output			
BWU1361 / BWU1362 BWU1722 / BWU2857	not used	1: Peripheral fault is indicated 0: Peripheral fault is not indicated	not used	

¹ Siemens format

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Programming notes						
Article no.	ID-Code	ID1-Code			ID2-Code	IO-Code
BWU1893, BWU1895, BWU1963 ¹	A	Code definition			9	7
		ID1	14 Bit	11 Bit		
		Channel 1	0; 2; 3	1		
		Channel 1 and 2	4; 5; 7 (Default value ID1=7)	6		
BWU1853, BWU1917	0	<ul style="list-style-type: none"> the ID code 1 can be written for all slaves, but only the slave with the lowest address defines the code for the remaining slaves. ID1 is the same code for all slaves. the code ID2 for all slaves (different for each according to his profile) is specified by the code ID1. 			X	6
		number of connected ASi slaves ID1= A: 2 ASi slaves corresponding to 8 Bit ID1= B: 3 ASi slaves corresponding to 12 Bit else: 4 ASi slaves corresponding to 16 Bit				
BWU1894, BWU1964	3	(Default value ID1=F)			D	7
BWU1359, BWU1363, BWU2532, BWU2049, BWU1360	3	(Default value ID1=F)			E	7
BWU1361, BWU1362, BWU1722, BWU2857	3	(Default value ID1=F)			6	7

¹ BWU1893, BWU1895, BWU1963 can transfer either 11 or 14 Bit values.
Via ID1 the data capacity and the channel number can be defined.

M12 Connections:									
Pin	BWU1359 BWU1360 BWU1893 BWU1894 BWU1963 BWU1964	BWU1853 BWU1917		BWU1895 BWU1363	BWU2532	BWU1361 BWU1362	BWU2857	BWU1722	
		InI, InU	OutI, OutU						
1	24 V	24 V	Sig+	CH+	CH+	Sig+	Sig+	Sig+	
2	Sig+	Sig+	n.c.	CHS+	CHS-	n.c.	24 V	24 V	
3	0 V	0 V	Sig-	CH-	CH-	Sig-	Sig-	Sig-/0 V	
4	Sig-	Sig-	n.c.	CHS-	¹	n.c.	0 V	n.c.	
5	Shield	Shield	Shield	Shield	Shield	Shield	Shield	Shield	

¹ Pin 4 bridged internally to Pin 3

Accessories:

- ASi substructure module to connect 2 ASi profile cables (article no. BW1180)
- ASi substructure module to connect 1 ASi profile cable, 1 profile cable for additional supply (article no. BW1181)
- ASi substructure module to connect 2 ASi round cable (article no. BW1182)
- ASi substructure module to connect 1 ASi round cable, 1 round cable for additional supply (article no. BW1183)
- ASi substructure module to connect 2 ASi profile cables with addressing socket (article no. BW1438)



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