







Figure	Туре	Inputs analog	Outputs analog	Input voltage (sensor supply) ⁽¹⁾	Output voltage (actuator supply) ⁽²⁾	ASi address ⁽³⁾	Art. no.
	IP20, 22,5 mm x 92 mm 4 x COMBICON	2 x 4 20 mA / 0 10 V	-	selectable, from ASi or AUX, default ASi	-	1 AB address	BWU1897
	IP20, 22,5 mm x 92 mm 4 x COMBICON	2 x 4 20 mA / 0 10 V	-	selectable, from ASi or AUX, default ASi	-	1 single address	BWU1345
	IP20, 22,5 mm x 92 mm 4 x COMBICON	-	2 x 0 20 mA / 0 10 V	-	selectable, from ASi or AUX, default ASi	1 single address	BWU1412
	IP20, 22,5 mm x 92 mm 4 x COMBICON	-	2 x 0 20 mA / 0 10 V	-	selectable, from ASi or AUX, default AUX	1 single address	BWU1727
	IP20, 22,5 mm x 92 mm 4 x COMBICON	-	2 x -10 V +10 V	-	out of AUX	1 single address	BWU2224
	IP20, 22,5 mm x 105 mm 6 x COMBICON	4 x 4 20 mA	-	from ASi or AUX, auto switching	-	1 single address	BWU1364
	IP20, 22,5 mm x 105 mm 6 x COMBICON	4 x 0 10 V	-	from ASi or AUX, auto switching	-	1 single address	BWU1365
	IP20, 22,5 mm x 105 mm 6 x COMBICON	4 x Pt100	-	out of ASi	-	1 single address	BWU1368
nn Pris	IP20, 22,5 mm x 105 mm 6 x COMBICON	4 x thermocouple type J	-	out of ASi	-	1 single address	BWU1933
	IP20, 22,5 mm x 105 mm 6 x COMBICON	4 x thermocouple type K	-	out of ASi	-	1 single address	BWU2243
	IP20, 22,5 mm x 105 mm 6 x COMBICON	-	4 x 0 20 mA	-	from ASi or AUX, auto switching	1 single address	BWU1366
	IP20, 22,5 mm x 105 mm 6 x COMBICON	_	4 x 0 10 V	-	from ASi or AUX, auto switching	1 single address	BWU1367

(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: 1 AB address (max. 62 AB addresses/ASi network), 2 AB addresses (max. 31 modules with 2 AB addresses), Single addresses (max. 31 Single addresses/ASi network), mixed use allowed. For modules with two ASi nodes the second ASi node is turned off as long as the first ASi node is addressed to address "0". Upon request, ASi nodes are available with specific ASi address profiles.



Article No.	BWU1897	BWU1345	BWU1364	BWU1365	BWU1368	BWU1933	BWU2243	
General Data								
Device type				Input				
Connection				•				
ASi/AUX connection			C	OMBICON clar	np			
Periphery connection				OMBICON clar				
ASi					•			
Profile	S-7.A.9	S-7.A.9 S-7.3						
Address	1 AB address			1 single	address			
Required Master profile	≥M4			≥N	//3			
Since ASi specification	3.0			2	.1			
Operating voltage	30 V	30 V	30 V		30	V		
	(1831,6 V)	(1931,6 V)	(2431,6 V)		(183	31,6 V)		
Max. current consumption			< 80 mA			< 10	0 mA	
AUX	-							
Voltage			3 30 V)			_		
Max. current consumption		500) mA					
Input	1		1					
Number		2 20 mA/	4 (4 20 mA)	4 (0 10 V)	4 (Pt100)	4 (thermo-	4 (thermo-	
	0		(4 20 MA)	(0 10 V)	(F1100)	couple	couple	
	0	10 V)				type J)	type K)	
Resolution	14 Bit	16 Bit	16 Bit (1 μA)	16 Bit	16 Bit		Bit	
	(1 µA / 1mV)	(1 µA / 1 mV)		(1 mV)	(0,1 °C)	(0,1	°C)	
Range of value)000 dec. /	4000	0	-200 °C	-200 °C	. +760 °C	
	0 100		20000 dec.	10000 dec.	+850 °C			
Internal resistance			100 kΩ		_	11	MΩ	
Max. input voltage			5 V		-			
Max. input current			mA		-			
Power supply			or out of AUX		out of ASi			
Power supply of attached sensors			out of AUX out of ASi			50 mA		
Output		50 MA (
Resolution				_				
Range of value								
Resistance of the actuators								
Max. output current								
Power supply								
Power supply of								
attached actuators								
Environment								
Applied standards				EN 61000-6-2				
				EN 61000-6-4				
				EN 60529				
Can be used in passively safe		nc	o ⁽¹⁾			yes ⁽²⁾		
paths up to SIL3/PLe								
Operating altitude				max. 2000 m	<u></u>			
Operating temperature				0 °C +70 °C				
Storage temperature	-25 °C +85 °C							
Housing	plastic, for DIN rail mounting							
Pollution degree	2							
Protection category				IP20				
Voltage of insulation		0 ~		≥ 500 V	4 4 5			
Weight		0 g			145 g			
Dimension (W / H / D in mm)	22,5/	22,5 / 99 / 92 25 / 105 / 114						

(1) The module is not suitable for use in passively safe paths because an exclusion of errors cannot be assumed for the connection of the two potentials, ASi and AUX.

⁽²⁾ The module is suitable for use in passively safe paths as it has no connection to an AUX potential.

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Article No.	BWU1366	BWU1367	BWU1412	BWU1727	BWU2224			
General Data								
Device type			output					
Connection								
ASi/AUX connection			COMBICON clamps	3				
Periphery connection		COMBICON clamps						
ASi			•					
Profile		S-	.7.3		S-7.3.5			
Address			1 single address					
Required Master profile			≥ M3					
Since ASi specification			2.1					
Operating voltage	30 V 30 V							
	(24 31,6 V)			31,6 V)				
Max. current consumption		<80) mA		<100 mA			
AUX					•			
Voltage			24 V (18 30 V)					
Max. current consumption			500 mA					
Input								
Resolution			_					
Range of value			_					
Internal resistance			-					
Max. input voltage			_					
Max. input current			_					
Power supply			_					
Power supply of			_					
attached sensors								
Output								
Number	4	4		2	2			
	(0 20 mA)	(0 10 V)		A/0 10 V)	(-10 V +10 V)			
Resolution	16 Bit (1 µA)	16 Bit (1 mV)		µA / 1 mV)	16 Bit			
Range of value	0 20000 dec.	0 10000 dec.	0 20000 dec.	/ 0 10000 dec.	-10000 +10000 dec.			
Resistance of the actuators			_		≥1 kΩ			
Max. output current			_		10 mA			
Power supply			or out of AUX		out of AUX			
Power supply of attached actuators			out of AUX out of ASi		500 mA			
Environment								
Applied standards	EN 61000-6-2							
			EN 61000-6-4					
			EN 60529					
Can be used in passively safe			no ⁽¹⁾					
paths up to SIL3/PLe								
Operating altitude		~ ^ ~	max. 2000 m		0.00 0000			
Operating temperature	0 °C +70 °C 0 °C +60°C							
Storage temperature	-25 °C +85 °C							
Housing	plastic, for DIN rail mounting							
Pollution degree	2							
Protection category			IP20					
Voltage of insulation			≥ 500 V					
Weight		5 g		120 g				
Dimension (W / H / D in mm)	22,5 / 1	05 / 114		22,5 / 99 / 92				

⁽¹⁾ The module is not suitable for use in passively safe paths because an exclusion of errors cannot be assumed for the connection of the two potentials, ASi and AUX.



Wiring rules

	Push-in terminals
General	
Nominal cross section	2.5 mm ²
Conductor cross section	
Conductor cross section solid	0.2 2.5 mm ²
Conductor cross section flexible	0.2 2.5 mm ²
Conductor cross section	without plastic sleeve: 0.2 2.5 mm ²
flexible, with ferrule	with plastic sleeve: 0.25 2.5 mm ²
2 conductors with same cross section, stranded, with TWIN ferrules	without plastic sleeve: 0.5 1.5 mm ²
AWG	24 14
Stripped insulation length	10 mm

Programming

		Bit setting				
		in	put			
Bit	P3	P2	P1	P0		
BWU1345	0: both channels in current mode and without broken wire recognition 1: normal operation	1: peripheral fault is indicated 0: peripheral fault is not indicated	0: channel 2 is not projected 1: channel 2 is projected			
BWU1364 / BWU1365	0: peripheral fault is not indicated 1: peripheral fault is indicated	Analog module i (bit combinat	0: 60 H filter in A/D			
BWU1368	0: 4 wire-mode 1: 2 wire-mode		n be released through bination P1 and P2)	converter active 1: 50 H filter in A/D		
BWU1897	_	1: peripheral fault is indicated 0: peripheral fault is not indicated	indicated ipheral fault is not			
BWU1933 / BWU2243	0: external cold-junction compensation 1: internal cold-junction compensation	Analog module is switched on-/off (bit combination P1 and P2	A peripheral fault can be released through channel X (bit combina- tion P1 and P2)			

Com	Combination of input bits P1 and P2										
BWU	BWU1364, BWU1365					BWU136	8, BWU19	33, BWU2	243		
Chan	Channel c.X is				Peripheral fault can be released through channel						
P1	P2	c.1	c.2	c.3	c.4	P1	P2	1	2	3	4
0	0	on	off	off	off	0	0	yes	no	no	no
0	1	on	on	off	off	0	1	yes	yes	no	no
1	0	on	on	on	off	1	0	yes	yes	yes	no
1	1	on	on	on	on	1	1	yes	yes	yes	yes

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		Bit se	etting				
		out	put				
Bit	P3	P2	P1	P0			
BWU1366 / BWU1367	-		_	0: profile is not monitored 1: profile is monitored:			
BWU1412 / BWU1727 0: channel 2 is in mode		0: peripheral fault is not indicated 1: peripheral fault is indicated	0: channel 1 is in mode voltage module 1: channel 1 is in mode current module	0: mode of channel 1 and 2 (bit combination P1 and P3) 1: automatic mode recognition			
BWU2224	-		-	- -			

Programming notes						
Article no.	ID Code	Code ID1 Code		ID2 Code	IO Code	
BWU1345	3 _{hex}	ID	1 = F (default)		D _{hex}	7 _{hex}
BWU1364, BWU1365, BWU1368, BWU1933, BWU2243	3 _{hex}	ID	1 = F (default)		E _{hex}	7 _{hex}
BWU1366, BWU1367	3 _{hex}	ID1 = F (default)		6 _{hex}	7 _{hex}	
BWU1412, BWU1727	3 _{hex}	ID1 = F (default)		5 _{hex}	7 _{hex}	
BWU1897 ⁽¹⁾	A _{hex}	Co	de-Definition		9 _{hex}	7 _{hex}
		ID1	14 bit	12 Bit		
		channel 1	0; 2; 3	1		
		channel 1 and	4; 5; 7 (default)	6		
		2				
BWU2224	3 _{hex}	F	- _{hex} (default)		5 _{hex}	7 _{hex}

⁽¹⁾ BWU1897 can transfer either 12 or 14 bit-values. Via ID1 the data capacity and the channel number can be defined.

UL-specifications (UL508) BWU1345, BWU1364, BWU1365, BWU1366, BWU1367, BWU1368, BWU1412, BWU172,7 BWU1933, BWU1897, BWU2243		
	An isolated source with a secondary open circuit voltage of \leq 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.	

Connections BWU1345, BWU1897	LEDs BWU1345	, BWU1897
I1 I1 24V 0V Sig+ Sig− EXT EXT	PWR (green)	ASi voltage
12 12 24V 0V Sig+ Sig- EXT EXT	FAULT (red)	ASi communication error, peripheral fault
	AUX (green)	Voltage supply 24 V for the analog part
	INT (green)	Voltage supply for the analog part out of ASi
Input Status Input Mode = ○ 1 2 1 2 ≪ ● / 0 0	Analog 1 (green)	State of channel 1
	Analog 2 (green)	State of channel 2
	Analog 1 (green)	On: current measurement; off: voltage measurement
	Analog 2 (green)	On: current measurement; off: voltage measurement
U1 U1 U2 U2 Sig+ Sig- Sig- ASI+ ASI- AUX+ ext. in		

Current or voltage modules can be attached over different clamps. The current supply of the sensors can take place depending upon position of a slide switch from ASi or from external voltage (after PELV). With the help of a 2. slide switch the 2. channel in favor of faster data communication can be switched off. The position of the slide switches is indicated over LEDs. Supplying external loads:

• by supply out of ASi: 50 mA max.

• y external supply: 500 mA max. (750 mA fuse)

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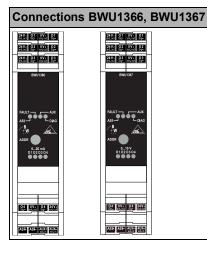


Connections	BWU1364, BWU13
24V1 11 0V1 11 00.00 89* 0000 89- 24V2 12 0V2 92- 00.00 97* 0000 97-	24Yy, 11 0Vy, 11 mton 99- mton 91
24V: 13 0V: 13 24V: 13 0V: 13	24Va 32 0Va 32 24Va 32 0Va 32
BWU1384	BWU1385
420 mA 1 12 3 4 ● ● ● ●	010 V 11 12 13 14 ● ● ● ● ●
14 0V. 14 24V. 29: est.cod	
ASI+ ASI- AUX+ AUX-	

LEDs BWU1364, BWU1365

LED'S BW01364, BW01365		
PWR (green)	ASi voltage	
FAULT (red) ASi communication error, peripheral fault		
AUX (green)	Voltage supply 24 V for the analog part	
DIAG (green)	Diagnosis	
I1 I4 (yellow)	State of channel I1, I2, I3, I4	

The current supply of the sensors can be made out of ASi or an external voltage supply (according to PELV). The current supply switches automatically to the supply out of external voltage supply, as soon as an external voltage is connected. The analog sensors and ASi are galvanically separated.



LEDs BWU1366, BWU1367		
PWR (green)	ASi voltage	
FAULT (red)	ASi communication error, peripheral fault	
AUX (green)	Voltage supply 24 V for the analog part	
DIAG (green)	Diagnosis	
O1 O4 (yellow)	State of channel O1, O2, O3, O4	

The current supply of the actuators can made out of ASi or an external voltage supply (according to PELV). The current supply switches automatically to the supply out of external voltage supply, as soon as an external voltage is connected. The actuators and ASi are galvanically separated.

Connections BWU1368		

LEDs BWU1368		
PWR (green)	ASi voltage	
FAULT (red)	ASi communication error, peripheral fault	
11 I4 (yellow)	State of channel I1, I2, I3, I4	

The measuring sensors and ASi are galvanically separated.



Connections BWU1412, BWU1727	LEDS BWU1412, BWU1727			
11 11 24V 0V Sio+ Sio- ext.out ext.out	PWR (green)	ASi voltage		
I2 I2 24V 0V Sig+ Sig- ext.out ext.out	FAULT (red)	ASi communication error, peripheral fault		
	AUX (green)	Voltage supply 24 V for the analog part		
	INT (green)	Voltage supply for the analog part out of ASi		
Output Status Output Mode	Analog 1 (green)	State of channel 1		
$= \bigcirc_{er, C} 1 2 1 2 \bigcirc_{or} 0$	Analog 2 (green)	State of channel 2		
	Analog 1 (green)	Channel 1: on: current measurement; off: voltage measurement		
Addr	Analog 2 (green)	Channel 2: on: current measurement; off: voltage measurement		
C Binl 				

Current or voltage modules can be attached over different clamps. The current supply of the actuators can take place depending upon position of a slide switch from ASi or from external voltage (after PELV). The position of the slide switch is indicated over LEDs. BWU1897: With the help of a 2. slide switch the 2. channel in favor of faster data communication can be switched off.

Connections BWU1933, BWU2243	Terminal connections BWU1933, BWU2243			
FE FE FE FE	FE	Functional earth		
TC1+ PT1+ PT1- TC1- TC2+ PT2+ PT2- TC2-	TCx±	Thermo element +/- (inputs 1 - 4)		
	PTx±	PT100 +/- (External cold junction compensation)		
low#	ASi±	ASinterface +/-		
Input - 0 1 2 3 4 0K●	n.c.	Not connected		
- O <u>1 2 3 4</u>	rc1+ PT1 TC2+ PT2 compe couple eral fat elemen Note: Precise	The inputs ch. 2, ch. 3 and ch 4 are connected with a bridge and a resistor (in default state) to become a valid input value and to avoid peripheral faults. This can also be obtained by setting the paramater P1 and P2. The temperature is measured using cold junction temperature instation. The analog sensors are galvanical separated to ASi. For internal instation the peripheral fault can be caused by a broken wire of the thermo- . For the external compensation (Pt100 in connectors 2 and 3) the periph- ult can also be caused by a broken wire or a short circuit of the Pt100 int. A short circuit of the TC cannot be recognized as an error. the cold junction compensation requires vertical mounting and natural air cir- n. A clearance of at least 5 cm each side is required!		

LEDs BWU1933, BWU2243		
PWR (green)	ASi voltage	
FAULT (red)	ASi communication error, peripheral fault	
In1 In4 (yellow)	State of channel I1, I2, I3, I4	



nc	nc	24V ext.out	OV ext.out		
nc	nc	24V ext.out	OV ext.out		
		Statu	5		
ER.Q:	1 2)			
ok ● Ч FAULT			- AUX		
- (
PWR -					
ADDR					
n:		<u>/1</u> 5	umunar		
(+)	ihl Nie	dem	ann		
		viedema			
U1	U1	U2	U2		
Sig+	Sig-	Sig+	Sig-		
ASI+	AS⊢	AUX+	AUX-		

LEDs BWU2224	
PWR (green)	ASi voltage
FAULT (red)	On: ASi communication error; flashing: peripheral fault
AUX (green)	Voltage supply 24 V for the analog part
1 (yellow)	State of channel 1
2 (yellow)	State of channel 2

U1 $_{Sig.-}$ and U2 $_{Sig.-}$ connected.

The outputs are short circuit. The output channels have a common reference potential. The actuators are controlled from separate 24 V and they are galvanically isolated from ASi and AUX.

Accessories:

• ASi-5/ASi-3 Address Programming Device (art. no. BW4708)