

New standard ASi-5



(figure similar)



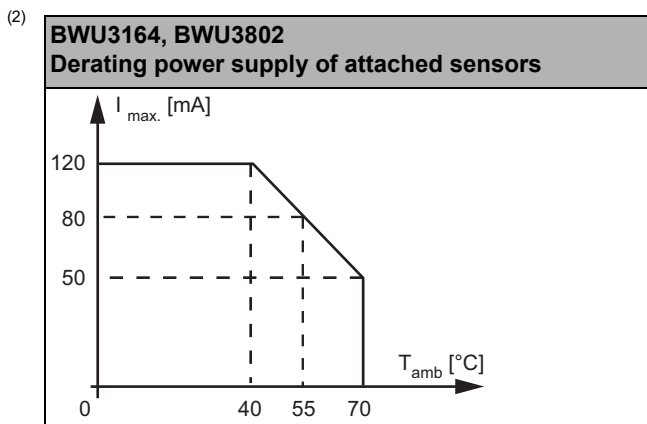
Figure	Inputs digital	Outputs digital	M12 connection (1)	Input voltage (sensor supply) (2)	Output voltage (actuator supply) (3)	ASi connection (4)	ASi address (5)	Max. output current	Art. no.
	8	–	single	out of ASi	–	ASi profile cable	1 ASi-5 address	–	BWU3802
	8	–	single	out of AUX	–	ASi profile cable	1 ASi-5 address	–	BWU3893
	8	8 x electronic	Y	out of ASi	out of AUX	ASi profile cable	1 ASi-5 address	1 A per output	BWU3163
	8	8 x electronic	Y	out of AUX	out of AUX	ASi profile cable	1 ASi-5 address	1 A per output	BWU4207
	16	–	Y	out of ASi	–	ASi profile cable	1 ASi-5 address	–	BWU3164
	16	–	Y	out of AUX	–	ASi profile cable	1 ASi-5 address	–	BWU3890

- (1) **M12 wiring:**
Single wiring: 1 input or output per connection.
Y wiring: 2 inputs or outputs per connection.
Mixed wiring: 1 input and 1 output per connection.
- (2) **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.
- (3) **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.
- (4) **ASi connection:** the connection to ASi as well to AUX (auxiliary 24 V power) is made via yellow resp. black ASi profile cable with piercing technology or via M12 socket (in IP20 via clamps).
- (5) **ASi address:** 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) ASi-5 address (max. 62 ASi-5 addresses/ASi network), mixed use allowed (upon request, ASi nodes are available with specific ASi address profiles).

Article No.	BWU3802	BWU3164	BWU3893	BWU3890	BWU3163	BWU4207	
General data							
Device type	input				input / output		
Connection							
ASi/AUX connection	profile cable and piercing						
Periphery connection	M12, single wiring	M12, Y wiring	M12, single wiring	M12, Y wiring			
Length of connector cable	unlimited ⁽¹⁾						
ASi							
Address	1 ASi-5 address						
Required Master profile	M5						
As of ASi specification	5						
ASi process data width	1 byte	2 byte	1 byte	2 byte	1 byte		
Operating voltage	30 V (18 ... 31.6 V)						
Max. current consumption	120+70 mA		70 mA		120+70 mA	70 mA	
Max. current consumption without sensor/ actuator supply	70 mA						
AUX							
Operating voltage	-		24 V (18 ... 30 V)				
Max. current consumption	-		1 A		6 A		
Input							
Number	8	16	8	16	8		
Power supply	out of ASi		out of AUX		out of ASi	out of AUX	
Sensor supply	short-circuit and overload protected according to EN 61131-2						
Power supply of attached sensors	up to +40 °C	120 mA ⁽²⁾		1 A ⁽⁶⁾		120 mA ⁽⁸⁾	
	at +55 °C	80 mA ⁽²⁾		0,9 A ⁽⁶⁾		70 mA ⁽⁸⁾	
	at +70 °C	50 mA ⁽²⁾		0,5 A ⁽⁶⁾		50 mA ⁽⁸⁾	
Switching threshold	U < 5 V (low) U > 15 V (high)						
Output							
Number	-				8		
Power supply	-				out of AUX		
Output	-				short-circuit and overload protected according to EN 61131-2		
Max. output current	up to +40 °C	-				1 A per output, $\Sigma(\text{Out}) 6 \text{ A}^{(9)}$	
	at +55 °C	-				1 A per output, $\Sigma(\text{Out}) 2 \text{ A}^{(9)}$	
	at +70 °C	-				1 A per output, $\Sigma(\text{Out}) 2 \text{ A}^{(9)}$	
Display							
LED ASi (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault ⁽³⁾ or address 0 off: no ASi voltage						
LED FLT/FAULT (red)	on: ASi address 0 or ASi node offline flashing: peripheral fault ⁽³⁾ off: ASi node online						
LED AUX (green)	-		on: 24 V _{DC} AUX off: no 24 V _{DC} AUX				
LEDs I1 ... In (yellow)	state of inputs I1 ... I8	state of inputs I1 ... I16	state of inputs I1 ... I8	state of inputs I1 ... I16	state of inputs I1 ... I8		
LEDs O1 ... On (yellow)	-				yellow: state of outputs O1 ... O8		

Article No.	BWU3802	BWU3164	BWU3893	BWU3890	BWU3163	BWU4207
Environment						
Applied standards	EN 61000-6-2 EN 61000-6-3 EN 61131-2 EN 60529					
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	yes ⁽⁴⁾		yes ⁽⁷⁾			
Operating altitude	max. 2000 m					
Ambient temperature	-30 °C ... +55 °C (up to max. +70 °C) ^{(2) (5) (8) (9)}					
Storage temperature	-25 °C ... +85 °C					
Housing	plastic, for screw mounting					
Pollution degree	2					
Protection category	IP67					
Tolerable loading referring to humidity	according to EN 61131-2					
Max. tolerable shock load	30g, 11 ms, acc. EN 61131-2					
Max. tolerable vibration stress	5 ... 8 Hz 50 mm _{pp} /8 ... 500 Hz 6g, acc. EN 61131-2					
Insulation voltage	≥ 500 V					
Weight	200 g					
Dimensions (W / H / D) in mm	60 / 151 / 31					

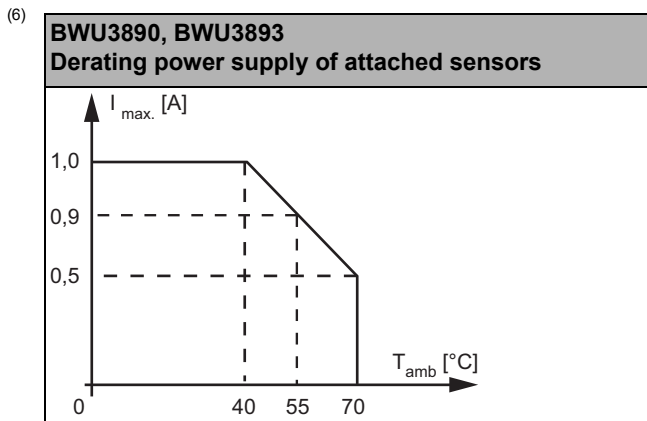
(1) Loop resistance ≤ 150 Ω



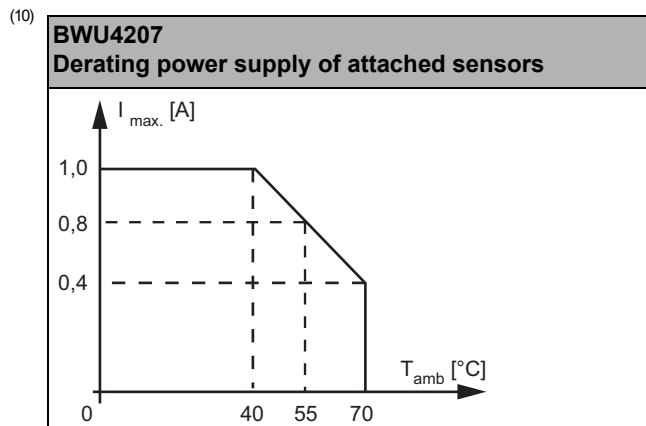
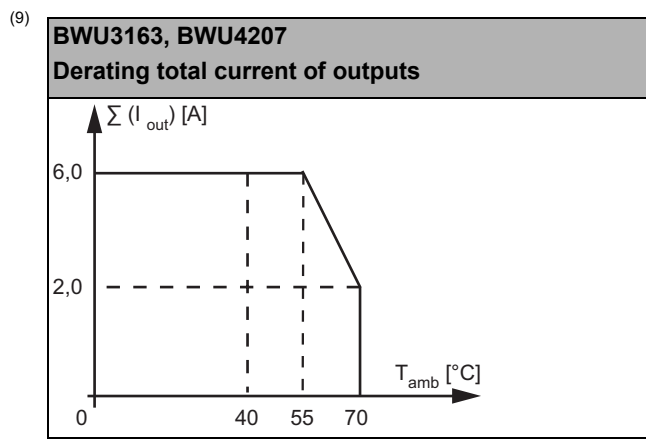
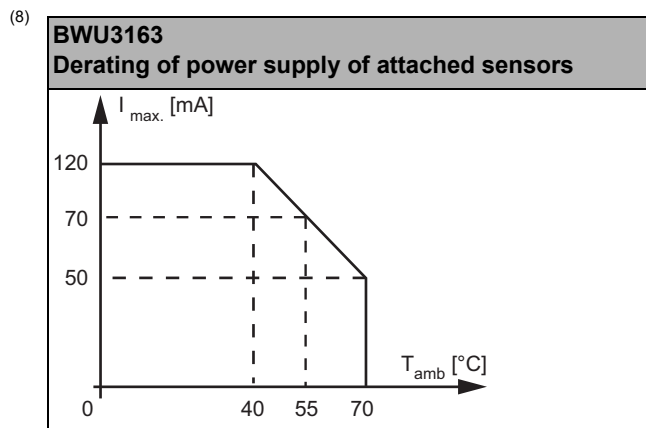
(3) See table "Peripheral fault indication"

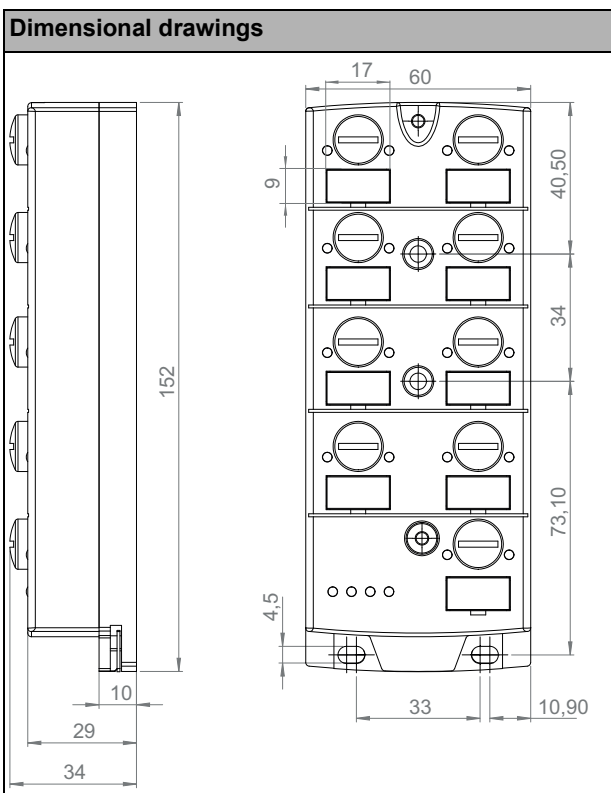
(4) The module is suitable for use in passively safe paths as it has no connection to an AUX potential.

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



(7) BWU3163 from ID no. 17674; The module is suitable for use in paths with a passively safe-switched AUX cable, since an exclusion of errors can be assumed for the connection of the two ASi and AUX potentials.





Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BWU3163	•	•	•
BWU3164	•	-	-
BWU3802	•	-	-
BWU3890	•	-	•
BWU3893	•	-	•
BWU4207	•	•	•

UL-specifications (UL508)	
BWU3163, BWU3164, BWU3802, BWU3890, BWU3893, BWU4207	
External protection	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.

Programming: ASi bit assignment

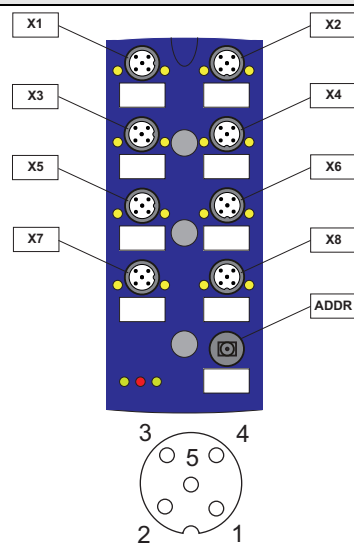
Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		input							
BWU3163, BWU3164, BWU3802, BWU3890, BWU3893, BWU4207	0	I8	I7	I6	I5	I4	I3	I2	I1
BWU3164, BWU3890	1	I16	I15	I14	I13	I12	I11	I10	I9

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		output							
BWU3163, BWU4207	0	O8	O7	O6	O5	O4	O3	O2	O1

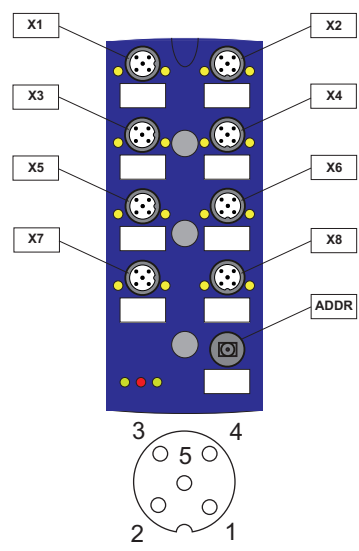
Pin assignment

Signal name	Explanation
Ix	digital input x
Ox	digital output x
24V _{ext out}	power supply, out of external voltage, positive pole (AUX, actuator supply)
0V _{ext out}	power supply, out of external voltage, negative pole (AUX, actuator supply)
24V _{out of ASi}	power supply, out of ASi, positive pole (sensor supply)
0V _{out of ASi}	power supply, out of ASi, negative pole (sensor supply)
ASi +, ASi -	connection to ASi bus
n.c. (not connected)	not connected

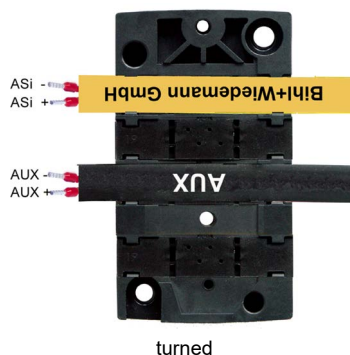
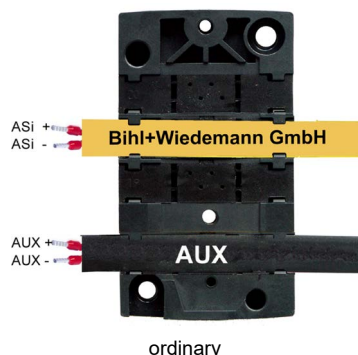
Connections							
Article no.	M12 connection	Marking	Pin1	Pin2	Pin3	Pin4	Pin5
BWU3164	X1	I1/I2	24 V _{out of ASi}	I2	0 V _{out of ASi}	I1	n.c.
	X2	I3/I4	24 V _{out of ASi}	I4	0 V _{out of ASi}	I3	n.c.
	X3	I5/I6	24 V _{out of ASi}	I6	0 V _{out of ASi}	I5	n.c.
	X4	I7/I8	24 V _{out of ASi}	I8	0 V _{out of ASi}	I7	n.c.
	X5	I9/I10	24 V _{out of ASi}	I10	0 V _{out of ASi}	I9	n.c.
	X6	I11/I12	24 V _{out of ASi}	I12	0 V _{out of ASi}	I11	n.c.
	X7	I13/I14	24 V _{out of ASi}	I14	0 V _{out of ASi}	I13	n.c.
	X8	I15/I16	24 V _{out of ASi}	I16	0 V _{out of ASi}	I15	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					
BWU3890	X1	I1/I2	24 V _{ext out}	I2	0 V _{ext out}	I1	n.c.
	X2	I3/I4	24 V _{ext out}	I4	0 V _{ext out}	I3	n.c.
	X3	I5/I6	24 V _{ext out}	I6	0 V _{ext out}	I5	n.c.
	X4	I7/I8	24 V _{ext out}	I8	0 V _{ext out}	I7	n.c.
	X5	I9/I10	24 V _{ext out}	I10	0 V _{ext out}	I9	n.c.
	X6	I11/I12	24 V _{ext out}	I12	0 V _{ext out}	I11	n.c.
	X7	I13/I14	24 V _{ext out}	I14	0 V _{ext out}	I13	n.c.
	X8	I15/I16	24 V _{ext out}	I16	0 V _{ext out}	I15	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					
BWU3163	X1	I1/I2	24 V _{out of ASi}	I2	0 V _{out of ASi}	I1	n.c.
	X2	I3/I4	24 V _{out of ASi}	I4	0 V _{out of ASi}	I3	n.c.
	X3	I5/I6	24 V _{out of ASi}	I6	0 V _{out of ASi}	I5	n.c.
	X4	I7/I8	24 V _{out of ASi}	I8	0 V _{out of ASi}	I7	n.c.
	X5	O1/O2	0 V _{ext out}	O2	0 V _{ext out}	O1	n.c.
	X6	O3/O4	0 V _{ext out}	O4	0 V _{ext out}	O3	n.c.
	X7	O5/O6	0 V _{ext out}	O6	0 V _{ext out}	O5	n.c.
	X8	O7/O8	0 V _{ext out}	O8	0 V _{ext out}	O7	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					
BWU3802	X1	I1	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I1	n.c.
	X2	I2	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I2	n.c.
	X3	I3	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I3	n.c.
	X4	I4	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I4	n.c.
	X5	I5	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I5	n.c.
	X6	I6	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I6	n.c.
	X7	I7	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I7	n.c.
	X8	I8	24 V _{out of ASi}	n.c.	0 V _{out of ASi}	I8	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					



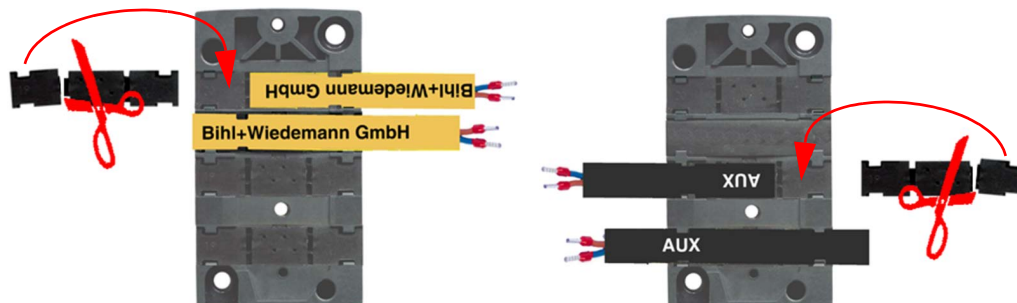
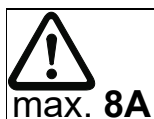
Connections							
Article no.	M12 connection	Marking	Pin1	Pin2	Pin3	Pin4	Pin5
BWU3893	X1	I1	24 V _{ext out}	n.c.	0 V _{ext out}	I1	n.c.
	X2	I2	24 V _{ext out}	n.c.	0 V _{ext out}	I2	n.c.
	X3	I3	24 V _{ext out}	n.c.	0 V _{ext out}	I3	n.c.
	X4	I4	24 V _{ext out}	n.c.	0 V _{ext out}	I4	n.c.
	X5	I5	24 V _{ext out}	n.c.	0 V _{ext out}	I5	n.c.
	X6	I6	24 V _{ext out}	n.c.	0 V _{ext out}	I6	n.c.
	X7	I7	24 V _{ext out}	n.c.	0 V _{ext out}	I7	n.c.
	X8	I8	24 V _{ext out}	n.c.	0 V _{ext out}	I8	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					
BWU4207	X1	I1/I2	24 V _{ext out}	I2	0 V _{ext out}	I1	n.c.
	X2	I3/I4	24 V _{ext out}	I4	0 V _{ext out}	I3	n.c.
	X3	I5/I6	24 V _{ext out}	I6	0 V _{ext out}	I5	n.c.
	X4	I7/I8	24 V _{ext out}	I8	0 V _{ext out}	I7	n.c.
	X5	O1/O2	24 V _{ext out}	O2	0 V _{ext out}	O1	n.c.
	X6	O3/O4	24 V _{ext out}	O4	0 V _{ext out}	O3	n.c.
	X7	O5/O6	24 V _{ext out}	O6	0 V _{ext out}	O5	n.c.
	X8	O7/O8	24 V _{ext out}	O8	0 V _{ext out}	O7	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					



Mounting according to cable direction



Line termination with sealing profiles / as junction



Accessories:

- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing, screw mounting (art. no. BWU2351)
- ASi substructure module (CNOMO) for 8 channel module in 60 mm housing, DIN rail mounting (art. no. BWU3516)
- Universal protection cap ASi-5/ASi-3 for M12 sockets, IP67 (art. no. BW4056)
- Sealing profile IP67 (IDC plug), 60 mm (art. no. BW3282)
- ASi-5/ASi-3 Address Programming Device (art. no. BW4925)