ASi-5 Digital I/O Modules, IP67, M12

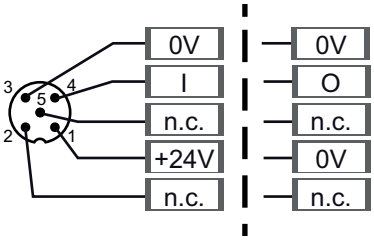
New standard ASi-5

(figure similar)

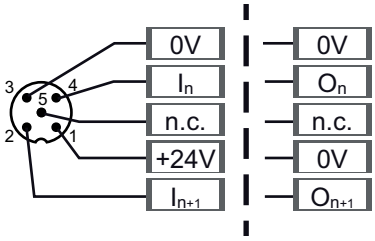
Figure	Type	Inputs digital	Outputs digital	M12 connection (1)	Input voltage (sensor supply) (2)	Output voltage (actuator supply) (3)	ASi connection (4)	ASi address (5)	Max. output current	Art. no.
	IP67, 8 x M12 ASi-5	8	–	single	out of ASi	–	ASi via M12	1 ASi-5 slave	–	**BWU4195**
	IP67, 8 x M12 ASi-5	8	8 x electronic	Y	out of ASi	out of AUX	ASi via M12	1 ASi-5 slave	1 A per output	**BWU4193**
	IP67, 8 x M12 ASi-5	16	–	Y	out of ASi	–	ASi via M12	1 ASi-5 slave	–	**BWU4194**
	IP67, 8 x M12 ASi-5	16	–	Y	out of AUX	–	ASi via M12	1 ASi-5 slave	–	**BWU4196**

(1) **M12 wiring:** either as a single–wiring, Y–wiring or mixed-wiring.

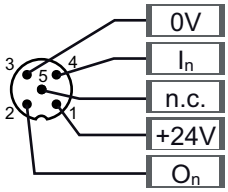
Single-wiring



Y-wiring



Mixed-wiring



(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).

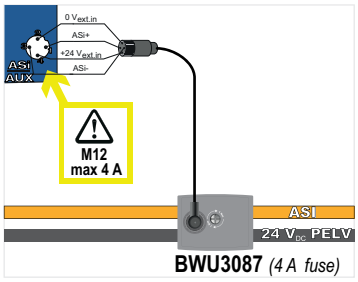
(5) **ASi address:** AB slave (max. 62 AB slaves/ASi network), 2 AB slaves (max. 31 modules with 2 AB slaves), single slaves (max. 31 single slaves/ASi network) ASi-5 slave (max. 62 ASi-5 slaves/ASi network), mixed use allowed (upon request, slaves are available with specific ASi slave profiles).

Article No.		BWU4195	BWU4194	BWU4196	BWU4193
General data					
Device type		input			input / output
Connection					
ASi/AUX connection		M12 (1)			
Periphery connection		M12, single wiring	M12, Y wiring		
Length of connector cable		unlimited (2)			
ASi					
Address		1 ASi-5 slave			
Required Master profile		M5			
As of ASi specification		5			
Operating voltage		30 V (18 … 31.6 V)			
Max. current consumption		120+70 mA			
Max. current consumption without sensor/ actuator supply		70 mA			
AUX					
Operating voltage		–		24 V (18 … 30 V)	
Max. current consumption		–		1 A	4 A
Input					
Number		8	16		8
Power supply		out of ASi		out of AUX	out of ASi
Sensor supply		short-circuit and overload protected according to EN 61131-2			
Power supply of attached sensors	up to +40 °C	120 mA (3)		1 A (6)	120 mA (7)
	at +55 °C	80 mA (3)		0,9 A (6)	70 mA (7)
	at +70 °C	50 mA (3)		0,5 A (6)	50 mA (7)
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, ∑(Out) 4 A (8)
	at +55 °C				
	at +70 °C				1 A per output, ∑(Out) 2 A (8)
Display					
LED ASI (green)		on: ASi voltage on flashing: ASi voltage on, but peripheral fault (4) or address 0 off: no ASi voltage			
LED FLT/FAULT (red)		on: slave address 0 or slave offline flashing: peripheral fault (4) off: slave 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
LEDs O1 ... On (yellow)		–			yellow: state of outputs O1 ... O8

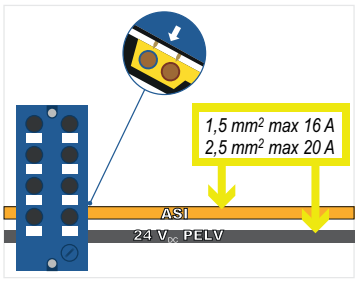
Article No.	BWU4195	BWU4194	BWU4196	BWU4193
Environment				
Applied standards	EN 61000-6-2 EN 61000-6-3 EN 61131-2 EN 60529			
Operating altitude	max. 2000 m			
Ambient temperature	-30 °C … +55 °C (up to max. +70 °C) (3) (5) (7) (8)			
Storage temperature	-25 °C … +85 °C			
Housing	plastic, for screw mounting			
Pollution degree	2			
Protection category	IP67			
Tolerable loading referring to humidity	according to EN 61131-2			
Max. tolerable shock load	30*g*, 11 ms, acc. EN 61131-2			
Max. tolerable vibration stress	5 ... 8 Hz 50 mm_{pp}/8 ... 500 Hz 6*g*, acc. EN 61131-2			
Insulation voltage	≥ 500 V			
Weight	200 g			
Dimensions (W / H / D) in mm	60 / 151 / 31			

(1) **Line protection:**
If the module is supplied via a M12 connection with A or B coding, it may only be used with a current load of max. 4 A per pin in acc. with IEC 61076-2-101 and IEC 61076-2-109. A fused tap is recommended. There is no such limitation for modules supplied via piercing contacts.

Connection to ASi and AUX via M12



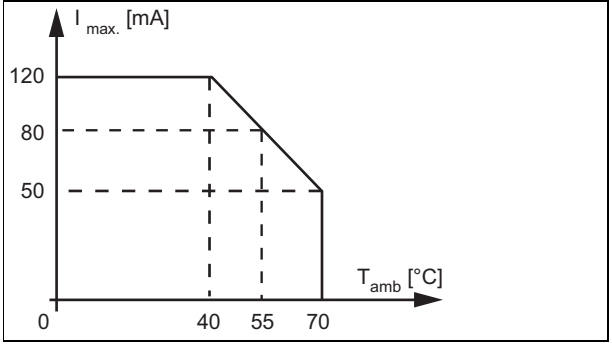
via piercing contacts



(2) Loop resistance ≤150 Ω

(3)

BWU4194, BWU4195
Derating power supply of attached sensors

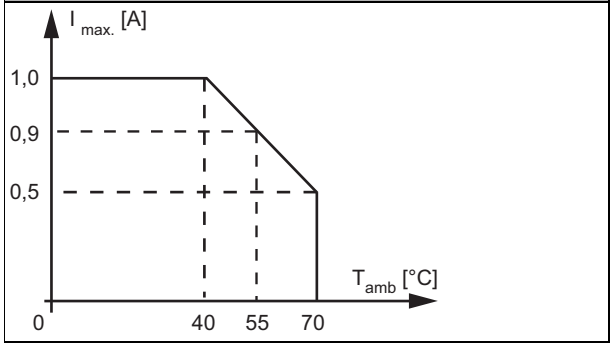


(4) **See table "Peripheral fault indication"**

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

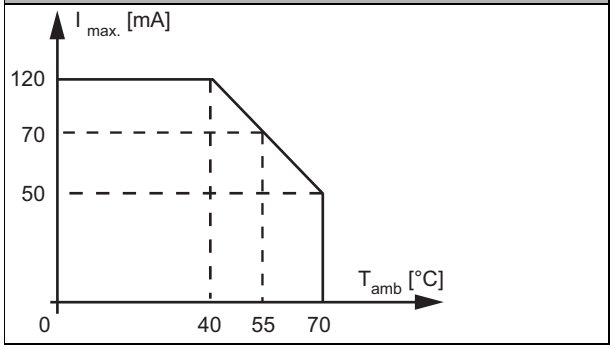
(6)

BWU4196
Derating power supply of attached sensors



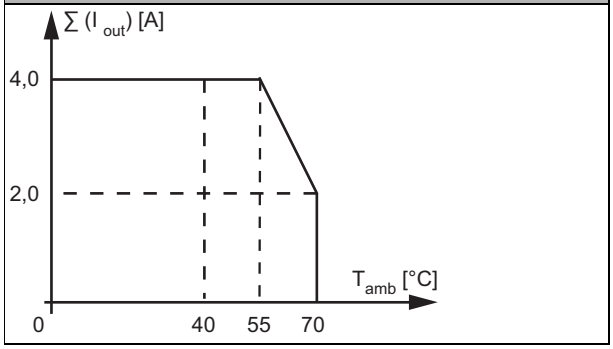
(7)

BWU4193
Derating of power supply of attached sensors

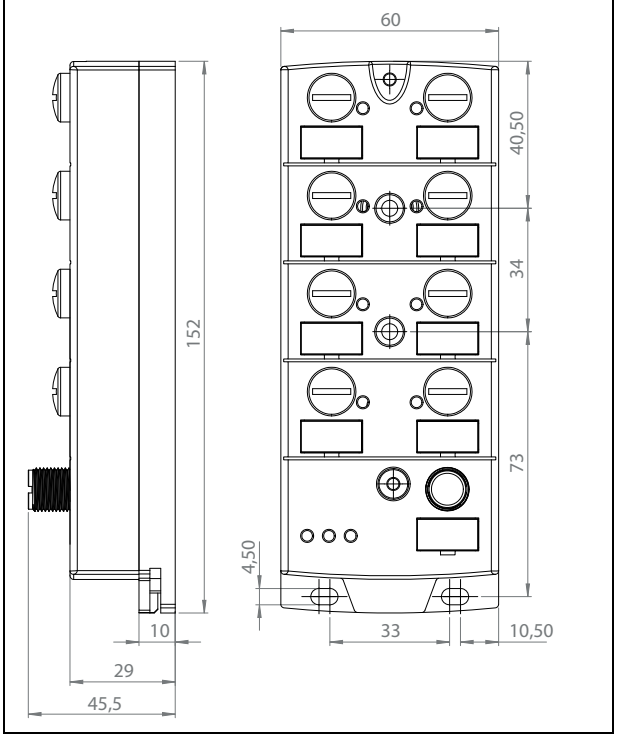


(8)

BWU4193
Derating total current of outputs



Dimensional drawings



Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BWU4193	•	•	•
BWU4194	•	–	–
BWU4195	•	–	–
BWU4196	•	–	•

UL-specifications (UL508) BWU4193, BWU4194, BWU4195, BWU4196	
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.

Programming: ASi bit assignment

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		input							
BWU4193, BWU4194, BWU4195, BWU4196	0	I8	I7	I6	I5	I4	I3	I2	I1
BWU4194, BWU4196	1	I16	I15	I14	I13	I12	I11	I10	I9

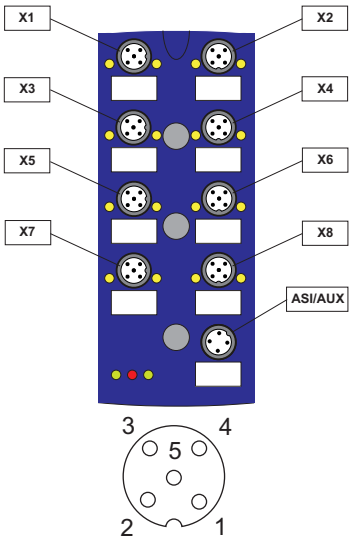
Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		output							
BWU4193	0	O8	O7	O6	O5	O4	O3	O2	O1

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

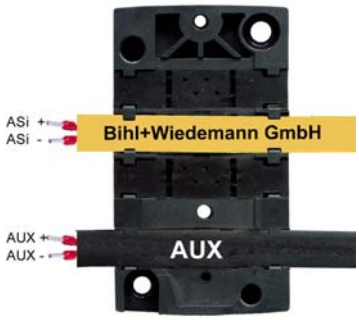
Connections

Article no.	M12 connection	Marking	Pin1	Pin2	Pin3	Pin4	Pin5
BWU4194	**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.
	ASI	ASi	ASi+	n.c.	ASi-	n.c.	–
BWU4196	**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.
	ASI/AUX	ASi/AUX	ASi+	0 $V_{ext\ in}$	ASi-	24 $V_{ext\ in}$	–
BWU4193	**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.
	ASI/AUX	ASi/AUX	ASi+	0 $V_{ext\ in}$	ASi-	24 $V_{ext\ in}$	–
BWU4195	**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.
	ASI	ASi	ASi+	n.c.	ASi-	n.c.	–

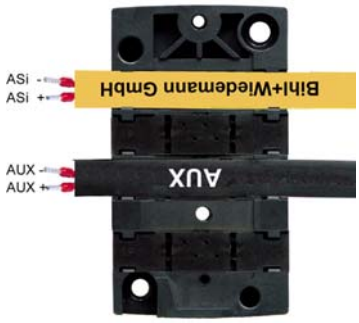


Mounting according to cable direction

IP67



ordinary

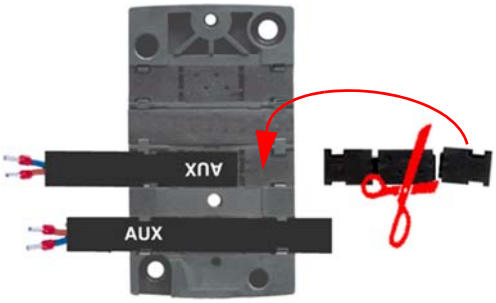


turned

Line termination with sealing profiles / as junction

IP54

max. 8A



Accessories:

- **Protection caps for unused M12 sockets (art. no. BW2368)**
- **Passive Distributor ASi/AUX to 2 x M12 socket, internal protection via changeable 4 A slow-blow fuses (art. no. BWU3087)**
- **It is recommended to use pre-assembled cables to connect the power source with the module.**