

ASi via M12

External fuse protection of the AUX supply with a suitable 4 A fuse required



(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.
	4	4 x electronic	single	out of ASi	out of AUX	ASi using M12	1 Single address	2 A per output	BWU4415

Replacement, ASi Version 2: single addresses (digital) are also working with the first generation ASi masters.

- (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 addresses (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 2nd ASi node is turned off as long as the 1st ASi node is addressed to address "0". Upon request, ASi nodes are available with specific ASi node profiles.

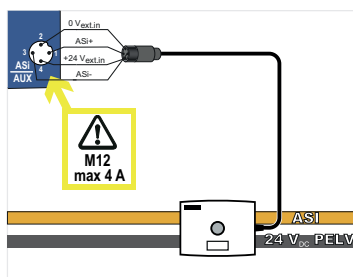
Article No.		BWU4415
General data		
Device type	input / output	
Connection		
ASi/AUX Connection	M12 ⁽¹⁾	
Periphery connection	M12, single-wiring	
Length of connector cable	unlimited ⁽²⁾	
ASi		
Profile	S-7.0.E (ID1=F default)	
Address	1 Single address	
Required Master profile	≥M0	
As of ASi specification	2.0	
Operating voltage	30 V (18 ... 31.6 V)	
Max. current consumption	165 mA	
Max. current consumption without sensor/ actuator supply	45 mA	
AUX		
Operating voltage	24 V (18 ... 30 V)	
Max. current consumption	4 A ⁽³⁾	
Input		
Number	4	
Power supply	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 ⁽⁴⁾
	at +55 °C	100 mA ⁽⁴⁾
	at +70 °C	80 mA ⁽⁴⁾
Switching threshold	U < 5 V (low) U > 15 V (high)	
Output		
Number	4	
Power supply	out of AUX	
Output	short-circuit and overload protected according to EN 61131	
Max. output current	up to +40 °C	2 A per output, $\Sigma(\text{Out})$ 4 A ^{(3) (5)}
	at +55 °C	2 A per output, $\Sigma(\text{Out})$ 4 A ^{(3) (5)}
	at +70 °C	1 A per output, $\Sigma(\text{Out})$ 2 A ^{(3) (5)}
Display		
LED ASi (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault ⁽⁶⁾ or address 0 off: no ASi voltage	
LED FLT/FAULT (red)	on: address 0 or offline flashing: peripheral fault ⁽⁶⁾ off: online	
LED AUX (green)	on: 24 V _{DC} AUX off: no 24 V _{DC} AUX	
LEDs I1 ... In (yellow)	state of inputs I1 ... I4	
LEDs O1 ... On (yellow)	state of outputs O1 ... O4	

Article No.	BWU4415
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	no ⁽⁷⁾
Operating altitude	max. 2000 m
Ambient temperature	-30 °C ... +55 °C ⁽⁴⁾ ⁽⁵⁾ ⁽⁸⁾ (up to max. +70 °C)
Storage temperature	-30 °C ... +85 °C
Housing	plastic, for screw mounting
Pollution degree	2
Protection category	IP67 ⁽⁹⁾ (circuit board is coated) ⁽¹⁰⁾
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 / 46

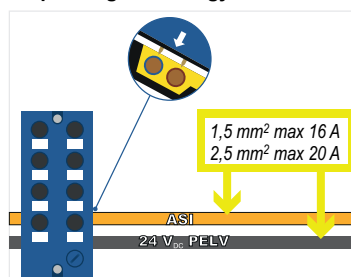
(1) Line protection:

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



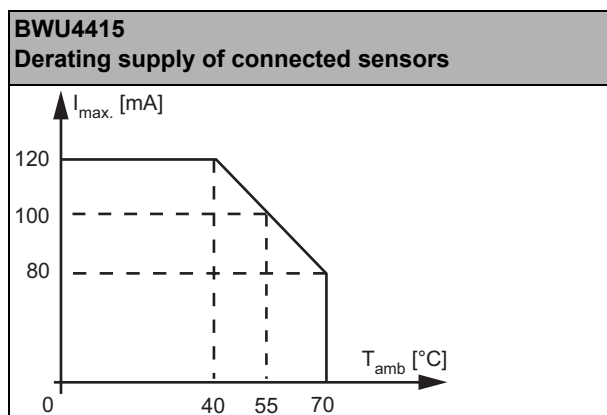
via profile cable and via piercing technology

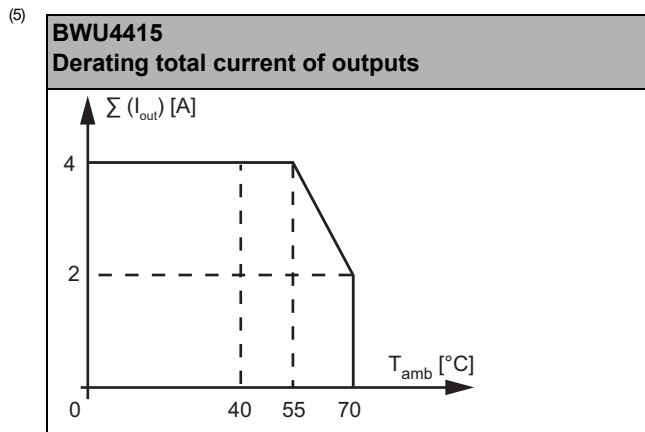


(2) Loop resistance ≤150 Ω

(3) External fuse protection of the AUX supply with a suitable 4 A fuse is required.

(4)





(6) See table "Peripheral fault indication"

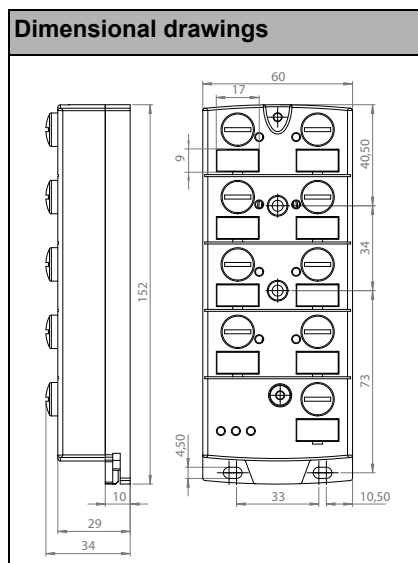
(7) The module is not suitable for use in paths with a passively safe-switched AUX cable, since an exclusion of errors cannot be assumed for the connection of the two ASi and AUX potentials.

If the module is supplied from an unswitched AUX cable, this has no influence on the safety consideration for the paths with passively safe-switched AUX cable. In an ASi circuit, paths supplied from a passively safe-switched AUX cable and paths supplied from unswitched AUX potential can be used together.

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

(9) Protection category IP67 can only be achieved if all open connections are sealed with suitable end caps fulfilling the same protection category.

(10) From Ident. Nr. ≥21452



UL-specifications (UL508)	
BWU4415	
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.

Article no.	Peripheral fault indication		
	Overload sensor supply	Output short circuited	AUX voltage missing
BWU4415	•	-	-

Programming	ASi bit assignment			
Bit	D3	D2	D1	D0
	input			
BWU4415	I4	I3	I2	I1
	output			
BWU4415	O4	O3	O2	O1

Programming	Parameter bits			
Bit	P3	P2	P1	P0
BWU4415	not used	0= on / 1= off (synchronous I/O mode)	0= on / 1= off (data input filter 128µs)	0= off / 1= on (Watchdog)

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	
BWU4415	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	O1	0 V _{ext out}	n.c.	0 V _{ext out}	O1	n.c.	
	X6	O2	0 V _{ext out}	n.c.	0 V _{ext out}	O2	n.c.	
	X7	O3	0 V _{ext out}	n.c.	0 V _{ext out}	O3	n.c.	
	X8	O4	0 V _{ext out}	n.c.	0 V _{ext out}	O4	n.c.	
	X9	ASi/AUX	ASi+	0 V _{ext in}	ASi-	24 V _{ext in}	-	

Accessories:

- Universal protection cap ASi-5/ASi-3 for M12 sockets, IP67 (art. no. BW4056)
- Passive Distributor ASi/AUX to 1 x M12 cable socket, straight, 5 poles, depth 19 mm, IP67 (art. no. BW3911)
- Passive Distributor ASi/AUX to 1 x M12 cable socket, angled, 5 poles, depth 19 mm, IP67 (art. no. BWU3408)
- ASi-5/ASi-3 Address Programming Device (art. no. BW4925)
- It is recommended to use pre-assembled cables to connect the power source with the module.