ASi-5 Safety Input Module, IP67, M12

(Figure similar)

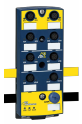
4 x 1-channel safe inputs or 2 x 2-channel safe inputs for

- **1 x floating contacts and 1 x OSSD**

up to 12 standard inputs, depending on configuration

up to 12 standard outputs, depending on configuration

protection category IP67

Figure	Type	Inputs Safety (1)	Safety signal inputs	Inputs digital	Outputs digital	Input voltage (sensor supply.) (2)	Output voltage (actuator supply.) (3)	ASi connection (4)	ASi address (5)	Article no.
	IP67, 8 x M12, ASi-5 Safety	4 x 1-channel or 2 x 2-channels	floating contacts + OSSDs	up to 12, depending on configuration	up to 12, depending on configuration	out of AUX	out of AUX	ASi via profile cable	1 ASi-5 address	**BWU4395**

(1) **Inputs Safety**
Safe inputs can be configured as 1-channel or 2-channel depending on the desired application or PL and SIL level. Suitable for applications up to category 4/PLe/SIL3.

(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 24V power) is either made via yellow resp. black ASi profile cable with piercing technology or via M12 socket (in IP20 via clamps).

(5) **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.

Article no.	BWU4395
Connection	
ASi/AUX connection	profile cable and piercing technology
Periphery connection	M12, Y or mixed wiring, freely selectable for each M12 connection (1)
Length of connector cable	I/O: max. 15 m (2)
ASi	
Addresse	1 ASi-5 address
Required ASi specification of the Master	ASi-5
Operating voltage	30 V_{DC} (18 ... 31,6 V)
Max. current consumption	100 mA
Max. current consumption without sensor/actuator supply	100 mA
AUX	
Voltage	24 V_{DC} (20 ... 30 V) (PELV) (3)
Max. current consumption	3,2 A max.
Input	
Number	up to 12, depending on configuration
Power supply	out of AUX
Sensor supply	short-circuit and overload protected, acc. to EN 61131-2
Supply of attached sensors	200 mA per power supply/pin1
Switching threshold	U<5 V (low) U>15 V (high)
Output	
Number	up to 12 x electronic, depending on configuration
Power supply	out of AUX
Output	short-circuit and overload protected, acc. to EN 61131-2
Max. output current	350 mA per output, Σ (Out)1500 mA
Safety input	
Number	4 x 1-channel safe inputs (SIL1, cat. 2, PLc) or 2 x 2-channel safe inputs (SIL3, cat. 4, PLe)
Safety signal	1 x floating contacts + 1 x OSSD
Power supply	out of AUX
Switching current	15 mA (T = 100µs), continuously 4 mA at 24 V
Max. output current for OSSD supply	Σ(In/Out)<320 mA
OSSD test pulses	0 ... 50 Hz
OSSD test pulse width	–U_{aux}≥ 21,5 V= 0 ... 1 ms test pulses possible U_{aux}≥17 V= 0 ... 0,8 ms test pulses possible U_{aux}<17 V= 0 ... 0,6 ms
Input level	for floating contacts: 10 mA, R < 150 Ω for OSSDs: Vin > 11 V for high level, input current >2,5 mA at 15 V

Article no.	BWU4395
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: ASi address 0 or ASi node offline flashing: peripheral fault (4) off: ASi node online
LED AUX (green)	on: 24 V_{DC} AUX off: no 24 V_{DC} AUX
LEDs I/O1 ... I/On (yellow)	state of inputs I1 ... I12 **or** outputs O1 ... O12, depending on configuration
LEDs S11/S12, S21/S22 (yellow)	state of safe input channels S11/S12, S21/S22 (5)
Environment	
Applied standards	EN 61000-2 EN 61000-3 EN 61131-2 EN 62061 EN ISO 13849-1 EN 60529
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	no (6)
Operating altitude	max. 2000 m
Ambient operating temperature	-30 °C ... +55 °C (up to max. +70 °C) (7)
Storage temperature	-25 °C ... +85 °C
Housing	plastic, for screw mounting
Pollution Degree	2
Protection category	IP67 (8)
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
Voltage of insulation	≥500 V
Weight	225 g
Dimension (W / H / D in mm)	60 / 152 / 34

(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) loop resistance ≤150 Ω

(3) The ground connection of the 24 V power supply, which supplies auxiliary power (AUX), must be grounded!

(4) See table “Peripheral fault indication”

(5) When the ASi communication is off (ASi LED is off), the actual state of the safe input may vary from the displayed LED status.

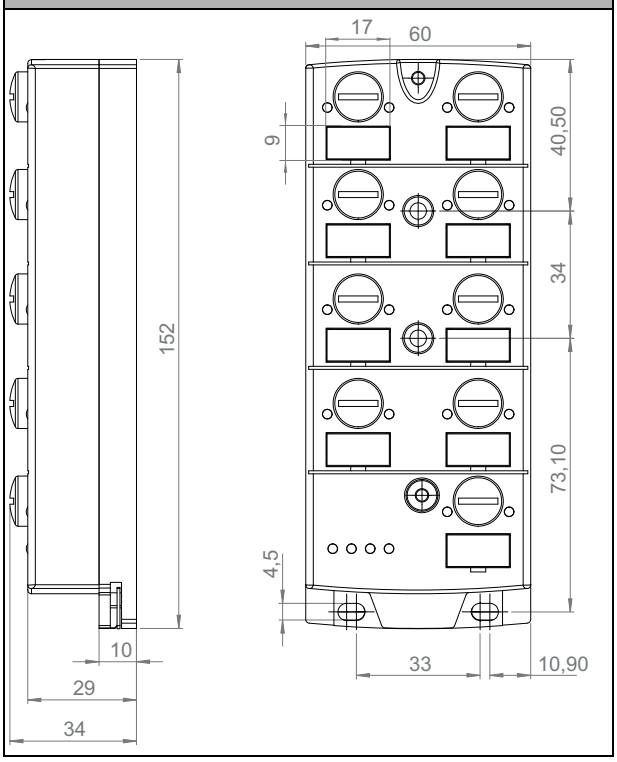
(6) The module is not suitable for use in paths with a passively safe-switched AUX cable, since an exclusion of errors cannot be assumed for the connection of the two ASi and AUX potentials.
If the module is supplied from an unswitched AUX cable, this has no influence on the safety consideration for 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

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

(8) IP67 can only be achieved if all open M12 sockets are sealed with suitable protection caps (see accessories).

UL-specifications (UL 61010) **BWU4395**	
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.

Dimensional drawings



Article no.	Peripheral fault indication				
	Overload sensor supply	Output short circuited	Cross connection	Output overload	AUX voltage missing
BWU4395	●	●	●	●	●

Programming: ASi bit assingment

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		Input							
BWU4395	0	reserved				OSSD2 (S22)	OSSD1 (S21)	S12	S11
	1	I8	I7	I6	I5	I4	I3	I2	I1
	2	reserved				I12	I11	I10	I9
	3	Diagnostics S21/S22 (1)				Diagnostics S11/S12 (3)			
	4	Diagnostics S22 (2)				Diagnostics S12 (2)			

(1) S21only if configured as a 1-channel safe input

(2) Only if configured as a 1-channel safe input

(3) S11 only if configured as a 1-channel safe input

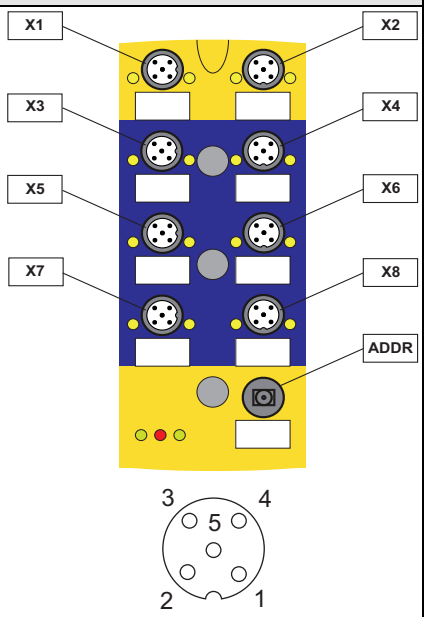
Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		Output							
BWU4395	0	reserved					Reset 2	reserved	
	1	O8	O7	O6	O5	O4	O3	O2	O1
	2	reserved				O12	O11	O10	O9

Pin assignment

Signal name	Explanation
Sx1/Sx2	safe input channel x
I/Ox	standard input x **or** standard output x, freely configurable
24 $V_{ext\ out}$	output, power supply out of external 24 V, positive pole
0 $V_{ext\ out}$	output, power supply out of external 24 V, negative pole
Reset	reset signal
ASi+, ASi-	connection to ASi bus
n.c. (not connected)	not connected

Connections

Article no.	M12 conn.	Denom.	Pin1	Pin2	Pin3	Pin4	Pin5
BWU4395	**X1**	S11/S12	S11+	S11-	S12+	S12-	n.c.
	X2	S21/S22	24 $V_{ext\ out}$	OSSD 2 (S22)	0 $V_{ext\ out}$	OSSD1 (S21)	Reset 2
	X3	I/O1, I/O2	24 $V_{ext\ out}$	I/O2	0 $V_{ext\ out}$	I/O1	n.c.
	X4	I/O3, I/O4	24 $V_{ext\ out}$	I/O4	0 $V_{ext\ out}$	I/O3	n.c.
	X5	I/O5, I/O6	24 $V_{ext\ out}$	I/O6	0 $V_{ext\ out}$	I/O5	n.c.
	X6	I/O7, I/O8	24 $V_{ext\ out}$	I/O8	0 $V_{ext\ out}$	I/O7	n.c.
	X7	I/O9, I/O10	24 $V_{ext\ out}$	I/O10	0 $V_{ext\ out}$	I/O9	n.c.
	X8	I/O11, I/O12	24 $V_{ext\ out}$	I/O12	0 $V_{ext\ out}$	I/O11	n.c.
	ADDR (protection cap)	connection for ASi-5 addressing plug					



Accessories:

- **Bihl-Wiedemann Suite - Safety Software for Configuration, Diagnostics and Programming (art. no. BW2916)**
- **ASi substructure module (CNOMO) for 8 channel module in 60 mm housing (art. no. BW2351)**
- **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)**