

ASi-5 motor module for 2 x 24 V motorized rollers, 2M/4I

ASi-5 motor module 2M/4I

New standard ASi-5

suitable for

- 2 x 24 V motorized rollers Interroll EC5000 AI (with 20 W/35 W/50 W) ⁽¹⁾
- 2 x 24 V motorized rollers Itoh Denki (PM500XC/XK)
- 2 x 24 V motorized rollers Rulmeca (RDR BL-3)
- 2 x 24 V motorized rollers Pulseroller Senergy IDC
- 2 x 24 V motorized rollers SEW ECDriveS ECR-I

Cyclic writing of speed and ramps possible

4 x digital inputs for sensor connection

Protection category IP67



(figure similar)



⁽¹⁾ Support of Interroll EC5000 AI, 24 V 50 W from ident. no. ≥21878.

Figure	Drive ⁽¹⁾	Number of drives	Line protection fuse ⁽²⁾	Inputs digital	Input voltage (sensor supply) ⁽³⁾	Output voltage (actuator supply) ⁽⁴⁾	Connection	ASi connection ⁽⁵⁾	Article No.
	Interroll, Itoh Denki, Rulmeca, Pulseroller, SEW	2	yes, separately for each motor, 5,0 A (slow-blow fuse)	4	out of ASi	out of AUX	4 x M12 sockets, 5 poles	ASi profile cable	BWU4246

(1) Drive:

Under certain circumstances also suitable for control of motorized rollers from other manufacturers with the same technical data, e.g. MTA MRA50. Please compare the manufacturer's specifications with the current values and the pin assignment of the motor module.

(2) Line protection fuse:

In the motor module UL approved fuses are placed before each of the motor supply connections. A short circuit in the motor causes this fuse to blow, protecting the connection cable between the module and motor.

After blowing the not exchangeable fuse the module is no longer functional and the module needs to be replaced. The characteristics of the fuse must be checked against the motor data before using the module.

The protection circuit in the module allows a very simple protection of the motor cables. The fuse for the cable protection is a slow-blow one; without short circuit the robust behavior of the module remains.

(3) 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.

(4) 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.

(5) 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 M8 socket.

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Article no.		BWU4246	
General data			
Motorized rollers		2 x Interroll (EC5000 AI, 24V, 20 W/35 W/50 W) ⁽²⁾ 2 x Itoh Denki (PM500XC/XK) 2 x Rulmeca (RDR BL-3) ⁽³⁾ 2 x Pulseroller (Senergy IDC) 2 x SEW (ECDriveS ECR-I)	
Connection			
ASi/AUX connection		profile cable and piercing technology	
Periphery connection		M12	
ASi			
Address		1 ASi-5 address	
Required ASi specification of master		ASi-5	
ASi process data width		4 byte ⁽⁴⁾	
Operating voltage		30 V (18 ... 31.6 V)	
Max. current consumption		200 mA	
AUX			
Voltage		24 V _{DC} (18 ... 30 V)	
Max. current consumption		at 20 W: 2,8 A continuously, 6,0 A peak at 35 W: 4,8 A continuously, 11,0 A peak at 50 W: 6,8 A continuously, 11,0 A peak	
Input			
Number		4 x	
Power supply		out of ASi	
Power supply of attached sensors	up to +40 °C	120 mA ⁽⁵⁾	
	at +55 °C	80 mA ⁽⁵⁾	
	at +70 °C	40 mA ⁽⁵⁾	
Switching threshold		U _{in} < 5 V (low) U _{in} > 10 V (high)	
Drive			
Number of drives		2	
Power supply		out of AUX (galvanic separation)	
Overload voltage tolerated by reaction (AUX)		35 V-resistant brake chopper compatible	
Max. output current		10 mA per pin	
Supply of motors		out of AUX per motor: 1,4 A continuously at 20 W per motor: 2,4 A continuously at 35 W per motor: 3,4 A continuously at 50 W 3,4 A (continuously), 5 A (< 2 s), maximum 7,5 A (0,3 s)	
Max. current for motor supply	up to +40 °C	per motor: 3,4 A continuously ⁽⁶⁾	
	at +55 °C	per motor: 3,4 A continuously ⁽⁶⁾	
	at +70 °C	per motor: 2,0 A continuously ⁽⁶⁾	
Line protection fuse		yes, separately for each motor, 5,0 A (slow-blow fuse), at 10 A (200%) release between 1 s and 120 s, fuse UL certified ⁽⁷⁾	

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Article no.	BWU4246
Display	
LED ASI (green)	on: ASi voltage on off: no ASi voltage
LED FLT/FAULT (red)	on: no data exchange flashing: peripheral fault ⁽⁸⁾ off: data exchange ok
LED AUX (green)	on: 24 V DC AUX off: no 24 V DC AUX
LEDs I1 ... I4 (yellow)	state of inputs I1 ... I4
LEDs M1, M2 (yellow)	state of motors M1, M2 on: motor on off: motor off
LEDs ERR1, ERR2 (red) ⁽¹⁾	on: motor M1, M2 is signaling fault condition ⁽⁸⁾ flashing (only Interroll): Motor M1, M2 is signaling fault condition or is not connected to the module ⁽⁸⁾
Environment	
Applied standards	EN 61000-6-2, EN 61000-6-4, EN 60529
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe	yes ⁽⁹⁾
Operating altitude	max. 2000 m
Operating temperature	-30 °C ... +55 °C (up to max. +70 °C) ⁽¹⁰⁾
Storage temperature	-25 °C ... +85 °C
Housing	plastic, for DIN rail mounting or for screw mounting ⁽¹¹⁾
Protection category	IP67 ⁽¹²⁾
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
Isolation voltage	≥ 500 V
Weight	200 g
Dimensions (W / H / D in mm)	45 / 80 / 38 (without substructure module)

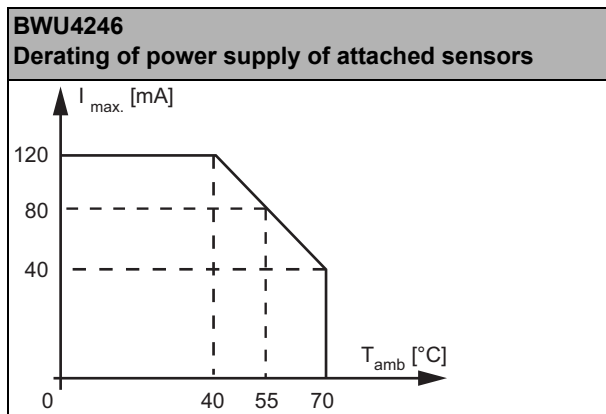
(1) The ERR LED is not controlled when the motor ports are deactivated

(2) Support of Interroll EC5000 AI, 24 V 50 W from ident. no. ≥21878.

(3) Ident. no. <21878 not suitable for transmission rates 12:1, 16:1.

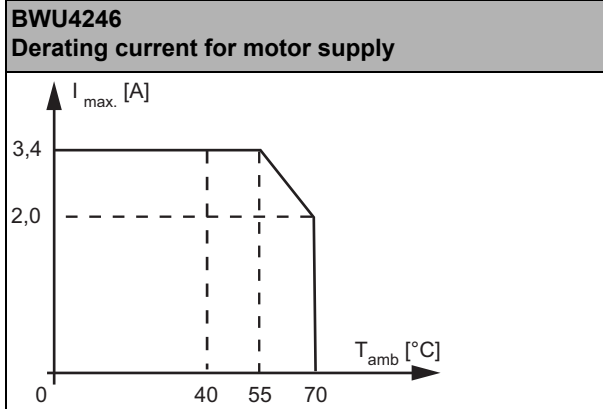
(4) The ASi-5 process data bandwidth depends on the ASi-5 profile. Further selectable profiles can be found in the hardware catalog of the Bihl+Wiedemann Suite or in the configuration manual.

(5)



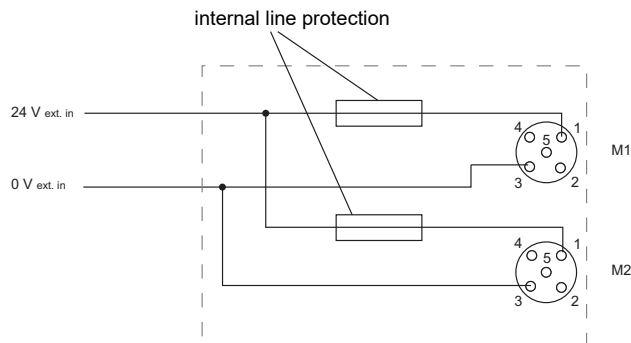
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(6)



(7) In the motor module UL approved fuses are placed before each of the motor supply connections. A short circuit in the motor causes this fuse to blow, protecting the connection cable between the module and motor. After blowing the not exchangeable fuse the module is no longer functional and the module needs to be replaced. The characteristics of the fuse must be checked against the motor data before using the module.

The protection circuit in the module allows a very simple protection of the motor cables. The fuse for the cable protection is a slow-blow one; without short circuit the robust behavior of the module remains.



(8) **see table "Peripheral fault indication".**

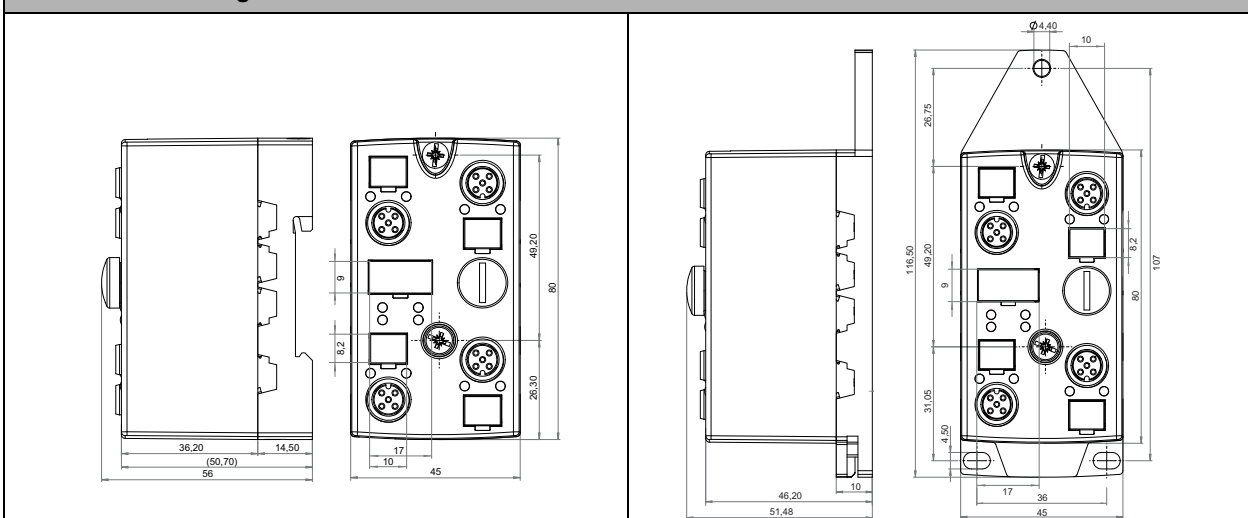
(9) The module is suitable for use in paths with a passively safe-switched AUX cable, since an exclusion of errors can be assumed for the connection of the two ASi and AUX potentials.

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

(11) Depending on substructure module (see accessories). The substructure module is not included in the scope of delivery.

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

Dimensional drawings



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UL-specifications (UL508)

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 output	AUX voltage missing	Overload sensor supply	at least 1 motor fuse is blown or 1 motor in fault condition or is not connected to the module ⁽¹⁾
BWU4246	•	•	•	•

⁽¹⁾ only Interroll

Programming (ASi bit assignment)

Article no.	Byte	bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		input							
BWU4246	0	Fuse M2	Fuse M1	Error M2 ⁽¹⁾	Error M1 ⁽¹⁾	I4	I3	I2	I1
	1	reserved	Temperature Error	Voltage Error	reserved			Error M2 (alternative) ^{(1) (2)}	Error M1 (alternative) ^{(1) (2)}
	2	AUX- voltage (mV), high byte, UINT16							
	3	AUX- voltage (mV), low byte, UINT16							

⁽¹⁾ The motor ports can be deactivated individually using the software ASIMON360 (BW2916) or ASi Control Tools360 (BW2902).

⁽²⁾ Alternative to byte 0 bit D5 + D4. Functionally and contentwise the same.

Article no.	Byte	bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		output							
BWU4246	0	Speed M1 ⁽¹⁾ (speed motor 1) (- 100 ... 0 ... 100 percent), INT8							
	1	Speed M2 ⁽¹⁾ (speed motor 2) (- 100 ... 0 ... 100 percent), INT8							
	2	ramp M1 (0 ... 25,5 s), UINT8 ⁽²⁾							
	3	ramp M2 (0 ... 25,5 s), UINT8 ⁽²⁾							

⁽¹⁾ The motor ports can be deactivated individually using the software ASIMON360 (BW2916) or ASi Control Tools360 (BW2902).

⁽²⁾ Time for setpoint step by $\pm 100\%$ (acceleration, deceleration)

Pin assignment

Signal name	Explanation
Ix	digital input x
CW Mx (clockwise)	Direction of rotation of motor x (CW = 15 V, CCW = 0V)
Error Mx	Indicating error at motor x (error = high impedance; no error = 0 V)
Speed Mx	Speed of motor x
24 V _{ext out}	Power supply, out of external voltage, positive pole (AUX, actuator supply)
0 V _{ext out}	Power supply, out of external voltage, negative pole (AUX, actuator supply)
ASi+, ASi-	connection to ASi bus
24 V _{out of ASi}	Power supply, out of ASi, positive pole (sensor supply)
0 V _{out of ASi}	Power supply, out of ASi, negative pole (sensor supply)
n.c.	not connected

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Connections								
Article no.	M12 connection	Name	Function	Pin1	Pin2	Pin3	Pin4	Pin5
BWU4246	X1	I1/I2	input 1, 2	24 V _{out} of ASi	I2	0 V _{out} of ASi	I1	n.c.
	X2	I3/I4	input 3, 4	24 V _{out} of ASi	I4	0 V _{out} of ASi	I3	n.c.
	X3	M1/ERR1	motor 1	24 V _{ext} out	CW M1	0 V _{ext} out	Error M1	Speed M1
	X4	M2/ERR2	motor 2	24 V _{ext} out	CW M2	0 V _{ext} out	Error M2	Speed M2
	ADDR (protection cap)	connection for ASi-5 addressing plug						

Accessories:

- Connection cable for Itoh Denki Motor Rollers, M12 cable plug, straight, 5 poles to M8 snap-in cable socket, straight, 5 poles, cable length 2 m (art. no. BW2755)
- Connection cable for Itoh Denki Motor Rollers, M12 cable plug, straight, 5 poles to M8 snap-in cable socket, straight, 5 poles, cable length 1,2 m (art. no. BW3030)
- ASi substructure module for 4-channel module in 45 mm-housing (article no. BW2349)
- ASi substructure module (CNOMO) for 4-channel module in 45 mm-housing (article no. BW2350)
- Universal protection cap ASi-5/ASi-3 for M12 sockets, IP67 (art. no. BW4056)
- Sealing profile IP67 (IDC plug), 45 mm (art. no. BW3283)
- ASi-5/ASi-3 Address Programming Device (art. no. BW4925)
- It is recommended to use pre-assembled cables to connect the motors to the module.