ASi-5 Counter Module, IP20, 22,5 mm

New standard ASi-5

Counter Input Module configurable via ASIMON360 as:

- **4 x 2-channel input**

or

- **4 x 1-channel input**

A/B inputs

Impulse counter

Protection category IP20

(figure similar)

Figure	Type	Housing	Inputs digital	Range of values	Counting rate	Input voltage (sensor supply) (1)	ASi connection (2)	ASi address (3)	Article no.
	IP20, 22,5 mm x 114 mm, 6 x COMBICON ASi-5	6 x COMBICON	4 x counter inputs	impulse: -32768 ... 32767 dec.	max. 250 kHz	out of AUX	clamps	1 ASi-5 address	**BWU3875**

(1) **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.

(2) **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).

(3) **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), ASi-5 address (max. 62 ASi-5 addresses/ASi network), mixed use allowed.
Upon request, ASi-3 nodes are available with specific ASi node profiles.
For modules with two ASi-3 nodes the 2nd ASi-3 node is turned off as long as the 1st ASi-3 node is addressed to address "0".

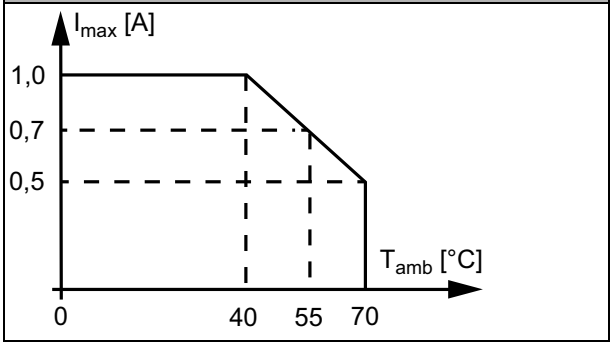
Article no.	BWU3875
General data	
Device type	counter input
Connection	
ASi/AUX connection	COMBICON plugs
Periphery connection	COMBICON plugs
Primary application	decentralized control cabinet
Length of connector cable	I/O: 20 m (1)
ASi	
Address	1 ASi-5 address
Required Master profile	M5
As of ASi specification	5
Operating voltage	30 V (18 … 31,6 V)
Max. current consumption	60 mA
Max. current consumption without sensor/ actuator supply	60 mA
AUX	
Operating voltage	24 V (18 ... 30 V)
Max. current consumption	1 A

Article no.		BWU3875
Input		
Number		depending on configuration in ASIMON360: • 4 x 1-channel • 4 x 2-channel
Range of values		-32768 … +32767 dec. (start value: -30768)
Counting rate		max. 250 kHz
Power supply		out of AUX
Sensor supply		short-circuit and overload protected according to EN 61131-2
Power supply of attached sensors	up to +40 °C	1 A (2)
	at +55 °C	0,7 A (2)
	at +70 °C	0,5 A (2)
Switching threshold		U<5 V (low) U>15 V (high)
Display		
LED ASi (green)		on: ASi voltage on flashing: ASi voltage on, but peripheral fault (3) or address 0 off: no ASi voltage
LED FAULT (red)		on: ASi address 0 or ASi participant offline flashing: peripheral fault (3) off: ASi participant online
LED AUX (green)		on: 24 VDC AUX off: no 24 VDC AUX
LED C1A ... CnA (yellow)		**1-channel mode** on: signal at pulse counter input 1 ... 4 (clamp C1A ... C4A) off: no signal
		2-channel mode with 4-times evaluation on: rising/falling edge at channel A of counter input 1 ... 4 (clamp C1A ... C4A)
		2-channel mode without 4-times evaluation on: period recognized
LED C1B ... CnB (yellow)		**1-channel mode** on: status input 1 ... 4 (clamp C1B ... C4B) active if bit USE CHx = 1 (3) off: status input 1 ... 4 (clamp C1B ... C4B) not active if bit USE CHx = 1 (3) or bit USE CHx = 0
		2-channel mode with 4-times evaluation on: rising/falling edge at channel B of counter input 1 ... 4 (clamp C1B ... C4B)
		2-channel mode without 4-times evaluation no function
Environment		
Applied standards		EN 61000-6-2 EN 61000-6-3 EN 61131 EN 60529
It can be used with a switched AUX cable, which is passively safe up to SIL3/PLe		yes (4)
Operating altitude		max. 2000 m
Ambient temperature		-25 °C … +55 °C (up to max. +70 °C) (2) (5)
		no condensation permitted
Storage temperature		-25°C … +85°C
Housing		plastic, for DIN rail mounting
Pollution degree		2
Protection category		IP20
Tolerable loading referring to humidity		according to EN 61131-2
Insulation voltage		≥500 V
Weight		120 g
Dimensions (W / H / D) in mm		22,5 / 99,6 / 114

(1) Loop resistance ≤150 Ω

(2)

BWU3875
Derating Power supply of attached sensors



(3) See table "Peripheral fault indication"

(4) 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.

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

Wiring rules

	Push-in terminals
General	
Nominal cross section	2.5 mm^2
Conductor cross section	
Conductor cross section solid	0.2 ... 2.5 mm^2
Conductor cross section flexible	0.2 ... 2.5 mm^2
Conductor cross section flexible, with ferrule	without plastic sleeve: 0.2 ... 2.5 mm^2
	with plastic sleeve: 0.25 ... 2.5 mm^2
2 conductors with same cross section, stranded, with TWIN ferrules	without plastic sleeve: 0.5 ... 1.5 mm^2
AWG	24 ... 14
Stripped insulation length	10 mm

UL-specifications (UL508) **BWU3875**	
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.

Article no.	**Peripheral fault indication**		
	counter overflow/underflow and RO CHx = 0	**input short circuited**	**status input (clamp C1B ... C4B) in 1-channel mode is not active but bit USE CHx = 1**
BWU3875	•	•	•

Programming (ASi Bit setting)

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		Input							
BWU3875	0	Channel 1 counter value, low byte							
	1	Channel 1 counter value, high byte							
	2	Channel 2 counter value, low byte							
	3	Channel 2 counter value, high byte							
	4	Channel 3 counter value, low byte							
	5	Channel 3 counter value, high byte							
	6	Channel 4 counter value, low byte							
	7	Channel 4 counter value, high byte							

Article no.	Byte	Bit							
		D7	D6	D5	D4	D3	D2	D1	D0
		Output							
BWU3875	0	reserved (1)	RO Ch1	USE Ch1	4TE Ch1	2C Ch1	CW Ch1	SV Ch1	RS Ch1
	1	Prescaler Index Ch1 (decimal) (2)							
	2	reserved (1)	RO Ch2	USE Ch2	4TE Ch2	2C Ch2	CW Ch2	SV Ch2	RS Ch2
	3	Prescaler Index Ch2 (decimal) (2)							
	4	reserved (1)	RO Ch3	USE Ch3	4TE Ch3	2C Ch3	CW Ch3	SV Ch3	RS Ch3
	5	Prescaler Index Ch3 (decimal) (2)							
	6	reserved (1)	RO Ch4	USE Ch4	4TE Ch4	2C Ch4	CW Ch4	SV Ch4	RS Ch4
	7	Prescaler Index Ch4 (decimal) (2)							

(1) Reserved bits have to be set to zero, otherwise an timer error can occur.

(2) see table “Prescaler Index”

Name	Explanation	
RO Chx	**Rollover:** 0 = Counter stops at highest/lowest value in case of overflow/underflow 1 = Counter counts with lowest/highest value in case of overflow/underflow	
USE Chx	**use CxB channel x** 0 = in 1-channel mode (pulse counter) CxB is ignored 1 = in 1-channel mode (pulse counter) CxB is used as status input	
4TE Chx	**4-times evaluation:** 0 = no 4-times evaluation 1 = in the 2-channel counting mode (bit 2C CHx =1) rising and falling edges on both channels are counted separately.	
2C Chx	**counter mode channel x** 0 = 1-channel input counter (pulse counter) 1 = 2-channel input counter (encoder)	
CW Chx	**direction of rotation channel x**	
	1-channel input counter (bit 2C Chx = 0) 0 = counting upwards 1 = counting downwards	2-channel input counter (bit 2C Chx = 1) 0: CxB before CxA = counting upwards 1: CxA before CxB = counting downwards
SV Chx	**start value channel x** 0 = start value 0 (default = 0) 1 = start value 1 (default = -32768)	
RS Chx	**reset channel x** RS changes from 0 to 1: counter starts with start value 0 resp. start value 1 RS changes from 1 to 0: counter stops and keeps last value	

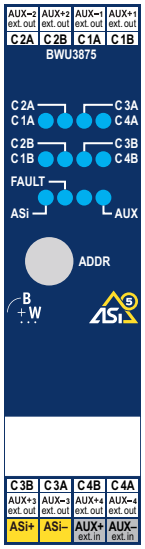
Article no.	Prescaler Index												
BWU3875	Index (dec)	255	...	8	7	6	5	4	3	2	1	0	
	Prescale value	reserved			128	64	32	16	8	4	2	1	

Connections

Signal name	Explanation
CxA	• 2-channel mode: input signal x channel A • 1-channel mode: pulse counter input x, high rise
CxB	• 2-channel mode: input signal x channel B • 1-channel mode: status input x
AUX+$_{x\ ext.out}$, AUX-$_{x\ ext.out}$,	power supply, out of external voltage (AUX, sensor supply)
ASi+, ASi-	connection to ASi bus
AUX +$_{ext.in}$	power supply, out of external voltage, positive pole (AUX)
AUX -$_{ext.in}$	power supply, out of external voltage, negative pole (AUX)
ADDR	connection for ASi addressing device
n.c. (not connected)	not connected

Connections

BWU3875



Accessories:

- **Bihl+Wiedemann Suite, Set consisting of ASi Control Tools360 and diagnostics software (Article no. BW2902)**
- **ASi-5/ASi-3 Address Programming Device (art. no. BW4708)**