

# 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)

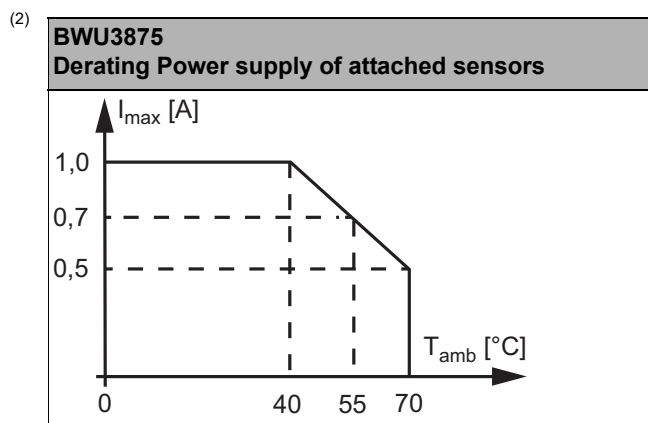
Figure	Type	Housing	Inputs digital	Range of values	Counting rate	Input voltage (sensor supply) <sup>(1)</sup>	ASi connection <sup>(2)</sup>	ASi address <sup>(3)</sup>	Article no.
	IP20, 22,5 mm x 114 mm, 6 x COMBICON ASi-5	6 x COMBICON	4 x counter inputs	impulse: -32768 ... 32767 dec.	max. 250 kHz	out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

- (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:** 1 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. For modules with two slaves the second slave is turned off as long as the first slave is addressed to address "0".  
Upon request, slaves are available with specific ASi Slave profiles.

Article no.	<b>BWU3875</b>
<b>General data</b>	
Device type	counter input
<b>Connection</b>	
ASi/AUX connection	COMBICON plugs
Periphery connection	COMBICON plugs
Primary application	decentralized control cabinet
Length of connector cable	I/O: 20 m <sup>(1)</sup>
<b>ASi</b>	
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	60 mA
Max. current consumption without sensor/ actuator supply	60 mA
<b>AUX</b>	
Operating voltage	24 V (18 ... 30 V)
Max. current consumption	1 A

<b>Article no.</b>		<b>BWU3875</b>
<b>Input</b>		
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 <sup>(2)</sup>
	at +55 °C	0,7 A <sup>(2)</sup>
	at +70 °C	0,5 A <sup>(2)</sup>
Switching threshold	U < 5 V (low) U > 15 V (high)	
<b>Display</b>		
LED ASi (green)	on: ASi voltage on flashing: ASi voltage on, but peripheral fault <sup>(3)</sup> or address 0 off: no ASi voltage	
LED FAULT (red)	on: slave address 0 or slave offline flashing: peripheral fault <sup>(3)</sup> off: slave online	
LED AUX (green)	on: 24 VDC AUX off: no 24 VDC AUX	
LED C1A ... CnA (yellow)	<b>1-channel mode</b> on: signal at pulse counter input 1 ... 4 (clamp C1A ... C4A) off: no signal	
	<b>2-channel mode with 4-times evaluation</b> on: rising/falling edge at channel A of counter input 1 ... 4 (clamp C1A ... C4A)	
	<b>2-channel mode without 4-times evaluation</b> on: period recognized	
LED C1B ... CnB (yellow)	<b>1-channel mode</b> on: status input 1 ... 4 (clamp C1B ... C4B) active if bit USE CHx = 1 <sup>(3)</sup> off: status input 1 ... 4 (clamp C1B ... C4B) not active if bit USE CHx = 1 <sup>(3)</sup> or bit USE CHx = 0	
	<b>2-channel mode with 4-times evaluation</b> on: rising/falling edge at channel B of counter input 1 ... 4 (clamp C1B ... C4B)	
	<b>2-channel mode without 4-times evaluation</b> no function	
<b>Environment</b>		
Applied standards	EN 61000-6-2 EN 61000-6-3 EN 61131 EN 60529	
Passive safety (up to PLe/SIL 3)	yes <sup>(4)</sup>	
Operating altitude	max. 2000 m	
Ambient temperature	-25 °C ... +55 °C (up to max. +70 °C) <sup>(2)</sup> <sup>(5)</sup>	
	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	

<sup>(1)</sup> Loop resistance ≤ 150 Ω



(3) See table "Peripheral fault indication"

(4) Exclusion of errors for the connection of the two ASi and AUX potentials can be assumed in the module. Passive safety for the application can only be achieved if this is ensured for all components used.

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

## Wiring rules

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

UL-specifications (UL508)	
<b>BWU3875</b>	
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		
	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
<b>BWU3875</b>	•	•	•

## 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 <sup>(1)</sup>	RO Ch1	USE Ch1	4TE Ch1	2C Ch1	CW Ch1	SV Ch1	RS Ch1
	1	Prescaler Index Ch1 (decimal) <sup>(2)</sup>							
	2	reserved <sup>(1)</sup>	RO Ch2	USE Ch2	4TE Ch2	2C Ch2	CW Ch2	SV Ch2	RS Ch2
	3	Prescaler Index Ch2 (decimal) <sup>(2)</sup>							
	4	reserved <sup>(1)</sup>	RO Ch3	USE Ch3	4TE Ch3	2C Ch3	CW Ch3	SV Ch3	RS Ch3
	5	Prescaler Index Ch3 (decimal) <sup>(2)</sup>							
	6	reserved <sup>(1)</sup>	RO Ch4	USE Ch4	4TE Ch4	2C Ch4	CW Ch4	SV Ch4	RS Ch4
7	Prescaler Index Ch4 (decimal) <sup>(2)</sup>								

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

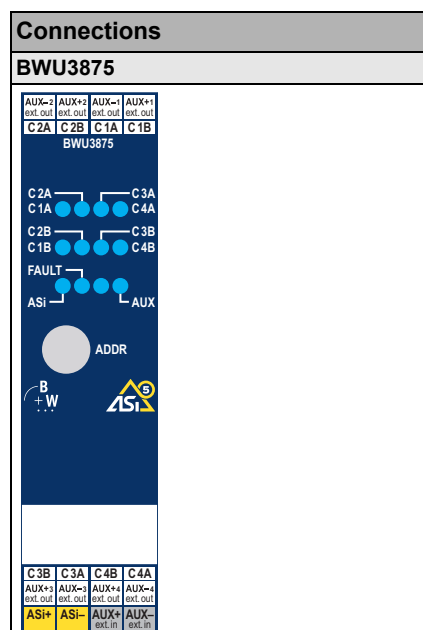
<sup>(2)</sup> see table "Prescaler Index"

Name	Explanation
RO Chx	<b>Rollover:</b> 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	<b>use CxB channel x</b> 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	<b>4-times evaluation:</b> 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	<b>counter mode channel x</b> 0 = 1-channel input counter (pulse counter) 1 = 2-channel input counter (encoder)
CW Chx	<b>direction of rotation channel x</b> 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	<b>start value channel x</b> 0 = start value 0 (default = 0) 1 = start value 1 (default = -32768)
RS Chx	<b>reset channel x</b> 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	<ul style="list-style-type: none"> <li>2-channel mode: input signal x channel A</li> <li>1-channel mode: pulse counter input x, high rise</li> </ul>
CxB	<ul style="list-style-type: none"> <li>2-channel mode: input signal x channel B</li> <li>1-channel mode: status input x</li> </ul>
AUX+ <sub>x ext.out</sub> , AUX- <sub>x ext.out</sub>	power supply, out of external voltage (AUX, sensor supply)
ASi+, ASi-	connection to ASi bus
AUX + <sub>ext.in</sub>	power supply, out of external voltage, positive pole (AUX)
AUX - <sub>ext.in</sub>	power supply, out of external voltage, negative pole (AUX)
ADDR	connection for ASi addressing device
n.c. (not connected)	not connected



## Accessories:

- Bihl+Wiedemann Suite, Set consisting of ASi Control Tools360 and diagnostics software (Article no. BW2902)