

The **BA368E** is a two input intrinsically safe counter which can display the sum or difference between the two pulse inputs, or the count direction of Input A may be controlled by input b. The output from a quadrature sensor can also be counted. The BA368E is electrically compatible with the earlier BA368C but has a larger display and an isolated pulse output. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Any application requiring the sum or difference of pulse outputs from two sensors, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume pumped in engineering units, can be performed by the BA368E. The counter's quadrature input also enables the position of a shaft or cable to be displayed together with its speed and direction of movement.

The large display has high contrast and a very wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

IP66 front panel protection with a neoprene gasket to seal the joint between the counter and the instrument panel allow the BA368E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

The **isolated open collector pulse output** can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

International intrinsic safety certification allows the BA368E counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. All input safety parameters are the same or greater than those for the preceding BA368C, thus allowing the BA368E to safely replace the earlier model.

Display backlighting, which is internally powered from the counter, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing allowing the display to be easily read at night or when the counter is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the BA368E display show the status of both alarm outputs.

When panel space is limited the BA367E provides similar one input counting features in a smaller 94 x 48mm enclosure.

BA368E

Two input counter

Intrinsically safe for use in all gas hazardous areas

- ◆ **Configurable inputs:** magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ **Separate rate and total displays.**
- ◆ **Intrinsically safe**
- ◆ **144 x 72mm DIN enclosure with IP66 front protection.**
- ◆ **Isolated pulse output**
- ◆ **Optional:** Backlight
Dual alarms
4/20mA output
- ◆ **3 year guarantee**

www.beka.co.uk/ba368e



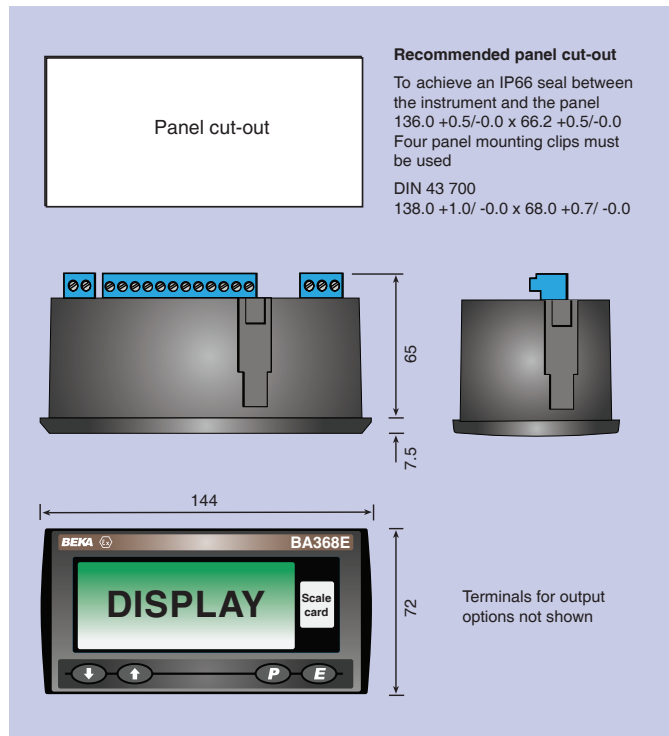
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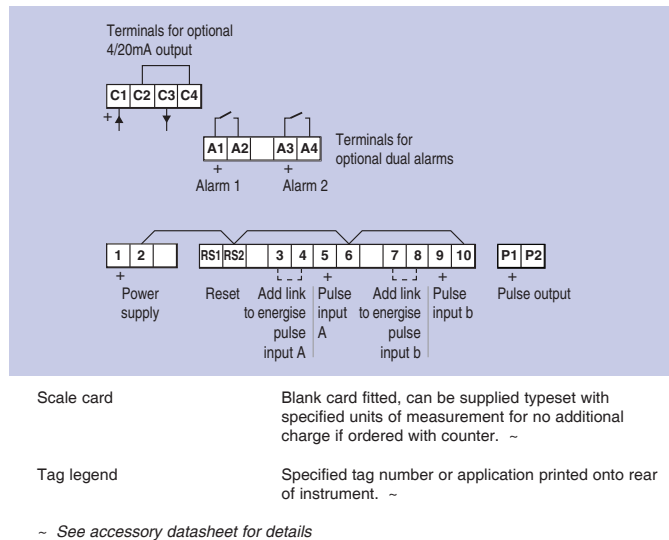
SPECIFICATION

Power supply		
Voltage	10 to 28V from a Zener barrier or galvanic isolator	
Current	16mA max plus 16mA for optional backlight	
Input	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max
Frequency		
Switch contact	150Hz typical] Depends upon pulse width & debounce setting.
Other inputs	100kHz max	
All inputs	0.01Hz min	
Display		
Type	Liquid crystal	
Zero blanking	Blanked apart from 0 in front of decimal point	
Total ‡	8 digits 18mm high	
Decimal point	1 of 7 positions or absent	
Rate ‡	6 digits 12mm high	
Decimal point	1 of 4 positions or absent	
‡ Rate & Total can be shown on either 6 or 8 digit display		
Grand total	Maximum count 10 ¹⁶	
Remote reset	Contact closure with resistance less than 10kΩ	
Pulse output	Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .	
Source & output	Either input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.	
Ron	51Ω + 3V max	
Roff	1MΩ min	
I max	10mA	
Configurable functions		
Input function	Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase). Adjustable between 0.0001 and 99999 Rate may be displayed per second, minute or hour Adjustable digital filter	
Total scale factor	Adjustable between 0.0001 and 99999	
Rate scale factor	Adjustable between 0.0001 and 99999	
Rate timebase	Rate may be displayed per second, minute or hour	
Rate display filter	Adjustable digital filter	
Intrinsic safety		
International IECEx		
Code	Ex ia IIC T5 Ga	
	-40°C ≤ Ta ≤ 70°C	
Cert. No.	IECEx ITS 16.0004X	
Europe ATEX and UKEX		
Code	Group II Category 1G Ex ia IIC T5 Ga	
	-40°C ≤ Ta ≤ 70°C	
Cert. No.s	ITS16ATEX28408X & ITS21UKEX0098X	
ETL & cETL		
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada)	
	-40°C ≤ Ta ≤ 70°C	
ETL Control No.	4008610	
China CCC	As IECEx - see certificate	
India CCOE/PESO	As ATEX - see certificate	
Nonincendive USA & Canada ETL & cETL		
Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2	
	-40°C ≤ Ta ≤ 70°C	
ETL Control No.	4008610	
Environmental		
Operating temp	-40 to +70°C display -20 to +70°C	
Storage temp	-40 to +85°C	
Humidity	to 95% at 40°C non condensing	
Vibration	Report available	
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20	
EMC	Complies with EU and UK Directives	
Mechanical		
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.	
Weight	0.35kg	
Accessories		
Backlight	Green LED internally powered	
4/20mA output	Isolated current sink, certified as a separate intrinsically safe circuit complying with requirements for <i>simple apparatus</i> . 5 to 28V	
Voltage		
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.	
Outputs	Isolated single pole, voltage free solid state switch, each certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .	
Ron	5Ω + 0.7V max	
Roff	1MΩ min	

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

Model number	Please specify BA368E
Inputs	Type *
Function	Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase).*
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Accessories	Please specify if required
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required No charge if ordered with counter.
Tag	Legend required

* counter can be supplied configured as required for no additional charge.
If configuration information is not supplied, instrument will be configured for open collector inputs, Input A + Input b with total and rate scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission.
Can easily be reconfigured on-site.