

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](http://www.beka.co.uk/ba368e)



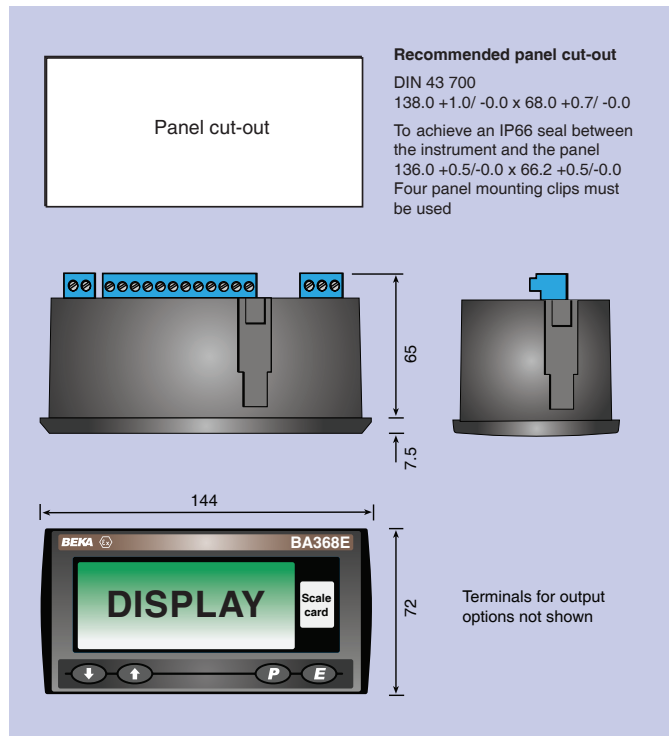
# BEKA associates

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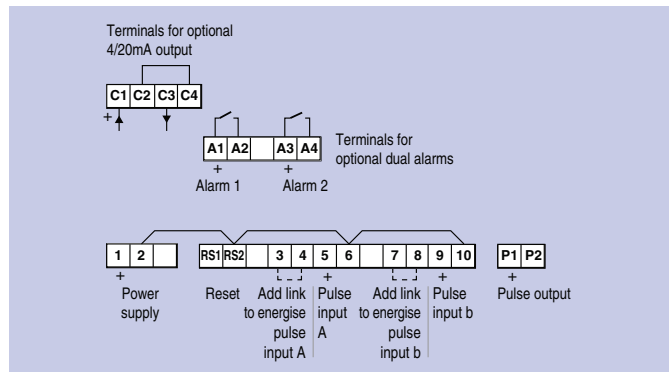
## SPECIFICATION

<b>Power supply</b>	
Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight
<b>Input</b>	
Switch contact	<b>Lower</b> 100Ω <b>Upper</b> 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
<b>Frequency</b>	
Switch contact	150Hz typical
Other inputs	100kHz max
All inputs	0.01Hz min
	<i>Depends upon pulse width and debounce setting.</i>
<b>Display</b>	
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
	<i># Rate &amp; Total can be shown on either 6 or 8 digit display</i>
Grand total	Maximum count 10 <sup>16</sup>
<b>Remote reset</b>	Contact closure with resistance less than 10kΩ
<b>Pulse output</b>	
Source & output	Either input: synchronous pulse output, 5kHz max. or Lease 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
<b>Configurable functions</b>	
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
Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Rate may be displayed per second, minute or hour
Rate timebase	Adjustable digital filter
Rate display filter	
<b>Intrinsic safety</b>	
Europe ATEX Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C ITS16ATEX28408X
Cert. No. International IECEx Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C IECEx ITS 16.0004X
Cert. No.	
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
<b>Nonincendive USA &amp; Canada</b>	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
<b>Environmental</b>	
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 2014/30/EU
<b>Mechanical</b>	
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup> cable, removable terminal blocks.
Weight	0.35kg
<b>Accessories</b>	
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> .
Voltage	5 to 28V
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



Scale card

Blank card fitted, can be supplied typeset with specified units of measurement for no additional charge if ordered with counter. ~

Tag legend

Specified tag number or application printed onto rear of instrument. ~

~ See accessory datasheet for details

## HOW TO ORDER

Model number	<b>Please specify</b> 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.*
<b>Accessories</b>	<b>Please specify if required</b>
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required <i>No charge if ordered with counter.</i>
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.