

The **BA384E** is a two input, field mounting, intrinsically safe rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384E is easy to use and each input can be individually configured on-site to operate with a flowmeter having a variety of pulse outputs. International intrinsic safety certification permits worldwide installation.

The **main application** of the BA384E is to process the pulse output from two hazardous area flowmeters, and to calculate and display the sum or difference of the flowmeters within a hazardous area. Rate and total can be simultaneously displayed in the same or different engineering units. The BA384E will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

**International intrinsic safety certification** allows the BA384E rate totaliser to be installed in gas hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

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

**Display backlighting** which is internally powered from the totaliser, provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

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

**IP66 protection** is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The **isolated 4/20mA current sink output**, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

**Dual alarms** have galvanically isolated solid state outputs which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. Both may be independently configured as a rate or a total alarm monitoring either flowmeter, or the sum or difference of the two flowmeters. Annunciators on the BA384E display show the status of both alarm outputs.

**Other field mounting rate totalisers** include the BA384G which has the same functions as the BA384E, without a separate terminal compartment.

# BA384E

## two input rate totaliser

*Intrinsically safe for use in all gas hazardous areas*

- ◆ **Configurable input:** magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ **Separate displays with backlight**
- ◆ **Intrinsically safe**
- ◆ **IP66 GRP enclosure with separate terminal compartment**
- ◆ **Linearisers**
- ◆ **Isolated dual alarms, pulse and 4/20mA outputs.**
- ◆ **3 year guarantee**

[www.beka.co.uk/ba384e](http://www.beka.co.uk/ba384e)



# BEKA

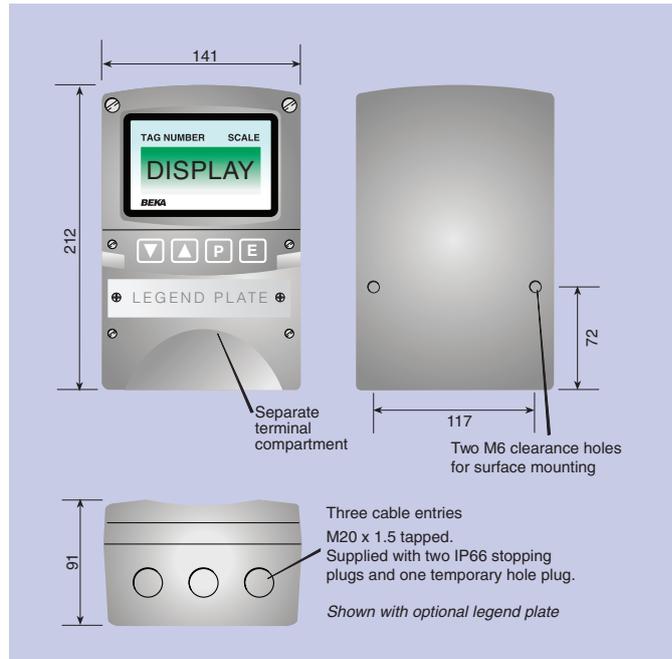
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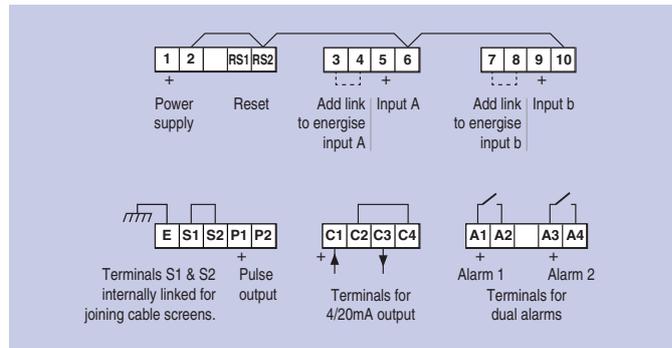
## SPECIFICATION

<b>Power supply</b>	
Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA
<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
Frequency	
Switch contact	150Hz typical
Other inputs	100kHz max
All inputs	0.01Hz min
<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 5 positions or absent
# Rate & Total can be shown on either 6 or 8 digit display	
Grand total	Maximum count 10 <sup>16</sup>
<b>Remote reset</b>	
	Contact closure with resistance less than 10kΩ
<b>Configurable functions</b>	
Each input individually configurable	
Input function	Input A + input b or Input A – input b
Flowmeter K-factor	Adjustable between 0.0001 and 99999 pulses/unit vol
Lineariser	16 K-factors may be entered
Total scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate scale factor	Adjustable between 0.0001 and 99999
Rate display filter	Adjustable digital filter
<b>Pulse output</b>	
Frequency	Isolated open collector
	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	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>4/20mA output</b>	
Voltage drop	Isolated current sink, configurable to represent any part of the rate or total display.
	5 to 28V
<b>Dual alarms</b>	
	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
Ron	5Ω + 0.7V max
Roff	1MΩ min
<b>Intrinsic safety</b>	
<b>International IECEx</b>	
Code	Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
Cert. No.	<a href="#">IECEx ITS 16.0004X</a>
<b>Europe ATEX and UKEX</b>	
Code	Group II Category 1G Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
Cert. No.s	<a href="#">ITS16ATEX28408X</a> & <a href="#">ITS21UKEX0098X</a>
<b>ETL &amp; cETL</b>	
Code	Class I Div 1 Gp A, B, C, D T5 } USA & Canada
	Class II Div 1 Gp E, F, G Class III } USA
	Class I Zone 0 AEx ia IIC T5 Ga } Canada
	Zone 20 AEx ia IIC T80°C Da } Canada
	Ex ia IIC T5 Ga
	-40°C ≤ Ta ≤ 70°C
ETL Control No.	<a href="#">4008610</a>
<b>China CCC</b>	
	As IECEx - <a href="#">see certificate</a>
<b>India CCOE/PESO</b>	
	As ATEX - <a href="#">see certificate</a>
<b>Nonincendive USA &amp; Canada ETL &amp; cETL</b>	
Code	Class I Div 2 Gp A, B, C & D T5
	Class II Div 2 Gp F, G.
	Class III Div 2
	Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
ETL Control No.	<a href="#">4008610</a>
<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	
Material	GRP
Ingress	IP66
EMC	Complies with EU and UK Directives
<b>Mechanical</b>	
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup>
Weight	1.7kg

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



## Accessories

Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate secured to the front of the instrument, laser engraved with tag number or application information. #
Pipe mounting kit	BA392D or BA393 #
# See accessory datasheet for details	

## HOW TO ORDER

Model number	BA384E
Input function	Input A + b or Input A – b *
Input	Type *
Flowmeter K-factor	XXXXX for each inputs *
	If linearisation is required, up to 16 K-factors may be specified at different flow rates.
Total scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Rate scale factor	XXXXX *
<b>Accessories</b>	
Escutcheon marking	Legend required
Units	Legend required
Tag	No charge if ordered with totaliser
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

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