

The **BA384G** 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 BA384G is easy to use and each input can be individually configured on-site to operate with flowmeters having a variety of pulse outputs. A slide-in scale card simplifies identification and international certification permits worldwide installation.

**The main application** of the BA384G is to process the pulse output from two hazardous area flowmeters, and to calculate and display the sum or difference of the two within a hazardous area. Rate and total can be simultaneously displayed in the same or different engineering units. The BA384G 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.

**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 flows 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 is available as a factory fitted option. It 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 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

**International intrinsic safety certification** allows the BA384G rate totaliser to be installed in gas and dust hazardous area 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.

**An optional 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.

**Optional dual alarms** with galvanically isolated solid state outputs 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. Annunciators on the BA384G display show the status of both alarm outputs.

# BA384G

## two input rate totaliser

*Intrinsically safe for use in gas & dust hazardous areas*

- ◆ **Configurable input:** magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ **Separate displays**
- ◆ **Intrinsically safe**
- ◆ **IP66 GRP enclosure**
- ◆ **Linearisers**
- ◆ **Isolated pulse output**
- ◆ **Simple on-site scale card installation.**
- ◆ **Optional:**  
Backlight  
Dual alarms  
4/20mA output
- ◆ **3 year guarantee**

[www.beka.co.uk/ba384g](http://www.beka.co.uk/ba384g)



# BEKA

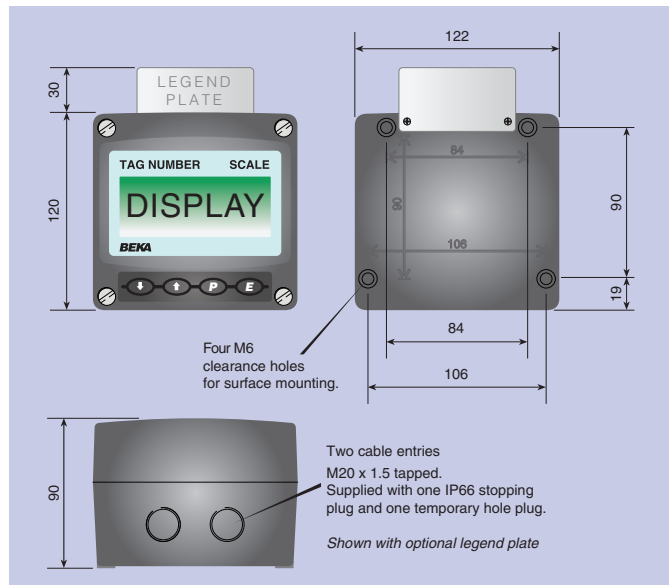
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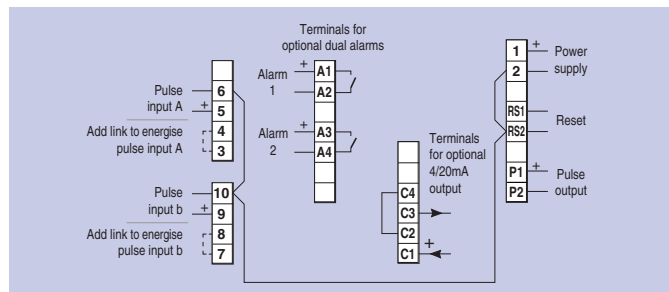
## SPECIFICATION

|  |   |   |
|--|---|---|
| <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>  | <b>Upper</b> switching thresholds                   |
| Proximity detector (NAMUR)                                 | 100Ω  | 1kΩ   |
| Open collector   | 1.2mA   | 2.1mA   |
| Magnetic pick-off  | 2kΩ   | 10kΩ  |
| Voltage pulse (low)  | 0   | +40mV   |
| Voltage pulse (high)                                       | 1V  | 3V 28V max  |
|  | 3V  | 10V 28V max   |
| <b>Frequency</b>   |   |   |
| Switch contact   | 150Hz typical   | ] Depends upon pulse width<br>and debounce setting. |
| 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>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. |   |
|  | 1, 10, 100, 1000 or 10000   |   |
| Divisible by   | 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms  |   |
| Pulse width  | 51Ω + 3V max  |   |
| Ron  | 1MΩ min   |   |
| Roff   | 10mA  |   |
| I max  |   |   |
| <b>Configurable functions</b>                              |   |   |
| Each input individually configurable                       |   |   |
| Input function   | Input A + b or Input A – 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>Intrinsic safety</b>                                    |   |   |
| <b>International IECEx</b>                                 |   |   |
| Code   | Ex ia IIC T5 Ga   |   |
|  | -40 ≤ Ta ≤ 70°C   |   |
|  | Ex ia IIIC T80°C Db   |   |
|  | -40 ≤ Ta ≤ 60°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   |   |
|  | Group II Category 2D Ex ia IIIC T80°C Db  |   |
|  | -40 ≤ Ta ≤ 60°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  |   |
|  | Class II Div 1 Gp E, F, G Class III   |   |
|  | Class I Zone 0 AEx ia IIC T5 Ga   |   |
|  | Zone 20 AEx ia IIIC T80°C Da  |   |
|  | Ex ia IIC T5 Ga   |   |
|  | Ex ia IIIC T80°C Da   |   |
|  | -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   | 1.1kg   |   |
| <b>Accessories</b>   |   |   |
| Backlight  | Green LED internally powered  |   |
| 4/20mA output  | Isolated current sink.  |   |
| Voltage drop   | 5 to 28V  |   |
| Dual 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.                    |   |

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



|                                       |   |
|---------------------------------------|---|
| Outputs                               | Isolated single pole, voltage free solid state switch   |
| Ron                                   | 5Ω + 0.7V max   |
| Roff                                  | 1MΩ min   |
| Scale card                            | 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 laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #                     |
| Pipe mounting kit                     | BA393G 316 stainless steel #  |
| Panel mounting kits                   | BA394G 316 stainless steel not sealing #<br>BA494G GRP sealing #  |
| # See accessory datasheet for details |   |

## HOW TO ORDER

|                        |   |
|------------------------|---|
| Model number           | BA384G  |
| Input function         | Input A + b or Input A – b *  |
| Input                  | Type *  |
| Flowmeter K-factor     | XXXXX for both inputs *<br>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>     |   |
| Display backlight      | Backlight   |
| 4/20mA output          | 4/20mA output   |
| Dual alarms            | Alarms  |
| Scale card marking     | Legend required<br>Legend required<br>No charge if ordered with totaliser   |
| Units                  |   |
| Tag                    |   |
| Stainless legend plate | Legend required   |
| Pipe mounting kit      | BA393G  |
| Panel mounting kit     | BA394G or BA494G  |

\* 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 with direct pulse retransmission. Can easily be reconfigured on-site.