

Rate Totalisers

Field Mounting



This extensive range includes one and two pulse input instruments and loop powered 4/20mA rate totalisers. All models can display rate of flow and total flow on separate displays in the same or different engineering units. The pulse input instruments will operate with most types of sensor and all models include square root extraction and an adjustable lineariser enabling flow to be displayed in linear engineering units.

- > **Large high contrast separate rate and total displays with wide viewing angle**
- > **General purpose and certified hazardous area models**
 - International Ex ia intrinsic safety
 - Ex nA non sparking
 - Dust certification
- > **Robust impact resistant IP66 GRP enclosures**
 - Compact 'G' models
 - 'E' models with separate terminal compartment
- > **Isolated pulse output**
- > **-40 to +70°C operating temperature range**
- > **Accessories**
 - Dual isolated alarms
 - Isolated 4/20mA output
 - Backlight
 - Pipe & panel mounting kits
 - Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
 - Laser engraved stainless steel legend plates

Intrinsically safe

Ex nA

General purpose



Slide-in scale card can be supplied printed with customer specified information for no extra charge.



'G' instrument panel mounted using BA494G panel mounting kit.



'G' instrument attached to pipe using BA393G panel mounted kit.

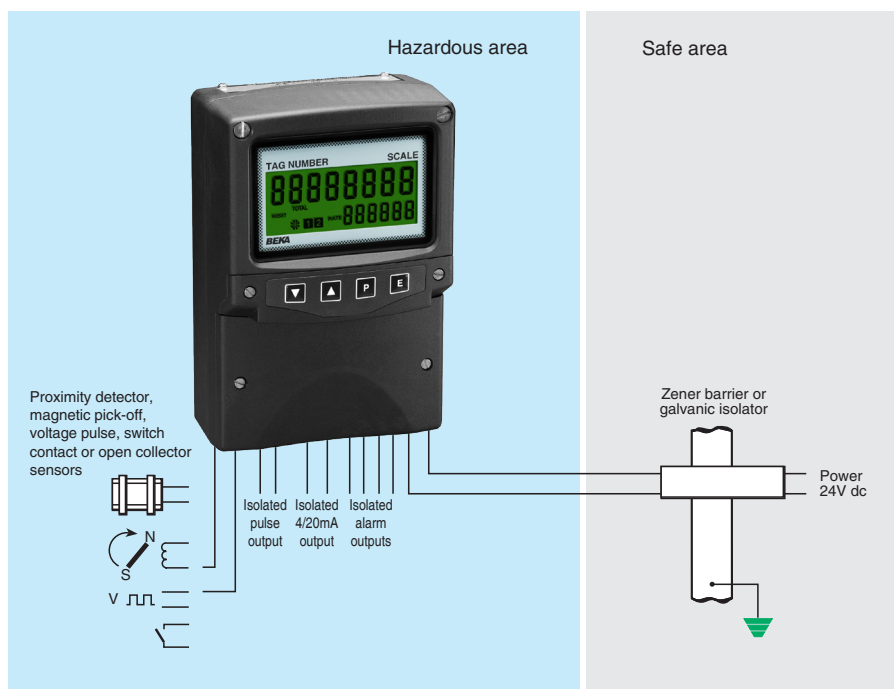


Rate Totalisers. **Field mounting models available:**

Model No.	Enclosure	Input	Powered	Display digits		Certification					
				TOTAL No. x height	RATE No. x height	Europe ATEX		International IECEX		USA & Canada	
						Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified											
BA334G	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm	✓	✓	✓	✓	✓	✓
BA334E	GRP- separate tml. compartment	Pulse	External	8 x 18mm	6 x 12mm	✓	–	✓	–	✓	✓
BA354E	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	5 x 12mm	✓	✓	✓	✓	✓	✓
BA384G	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm	✓	✓	✓	✓	✓	✓
BA384E	GRP - separate tml. compartment	2 x Pulse	External	8 x 18mm	6 x 12mm	✓	–	✓	–	✓	✓
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators											
BA334NG	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm	✓	✓	✓	✓	✓	✓
BA384NG	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm	✓	✓	✓	✓	✓	✓
BA354NE	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	6 x 12mm	✓	✓	✓	✓	–	–
General Purpose - for use in safe areas											
BA534G	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm						
BA554E	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	5 x 12mm						
BA584G	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm						

A **Rate Totaliser**

*for every **application**. . . delivered ready for **installation***



The **BA334E** is a third generation intrinsically safe field mounting rate totaliser housed in a robust IP66 GRP enclosure with a separate terminal compartment. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International intrinsic safety certification permits worldwide installation.

The **main application** of the BA334E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA334E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International intrinsic safety certification allows the BA334E 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 **display** has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing and allows the instrument to be easily read at night or when installed in a poorly illuminated area. Rate 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 display may be reset using the front panel push buttons or an external contact closure.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument electronics.

Isolated pulse and 4/20mA outputs which comply with the requirements for *simple apparatus* are included. The pulse output can synchronously retransmit the rate totaliser's pulse input, or a scaled pulse when the least significant digit of the total display is incremented. The 4/20mA output may be configured to produce an output proportional to any part of the rate or total display.

Dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. The two isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334E display show the status of both alarm outputs.

The **escutcheon** which shows the Rate Totaliser's units of measurement and tag information can be changed on-site. New instruments are supplied with a printed escutcheon showing customer specified marking, if this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

The **compact BA334G** has the same functions as the BA334E without a separate terminal compartment.

BA334E

one 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.**
- ◆ **Lineariser**
- ◆ **Isolated dual alarms, pulse and 4/20mA outputs.**
- ◆ **3 year guarantee**

www.beka.co.uk/ba334e



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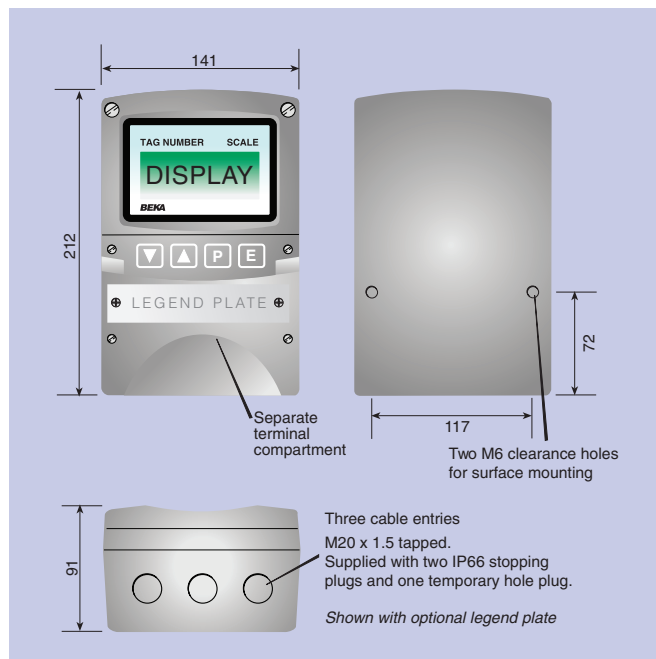
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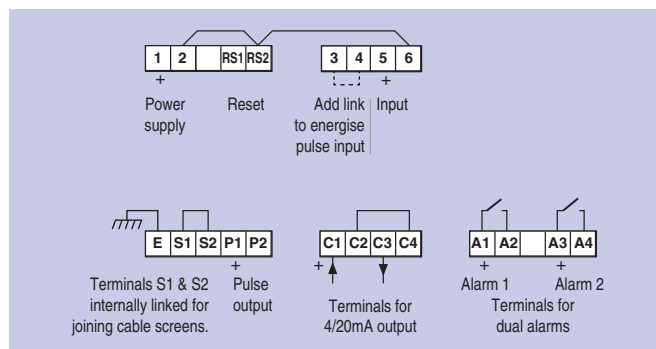
SPECIFICATION

Power supply	
Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA
Input	
Switch contact	Lower 100Ω Upper 1kΩ switching thresholds
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
Display	
Type	Liquid crystal
Backlight	Green LED internally powered
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
<i># Rate & Total can be shown on either 6 or 8 digit display</i>	
Grand total	Maximum count 10 ¹⁶
Remote reset	
	Contact closure with resistance less than 10kΩ
Configurable functions	
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.
Flowmeter K-factor	
Lineariser	16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999
Pulse output	
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
4/20mA output	
Voltage drop	Isolated current sink, configurable to represent any part of the rate or total display. 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.
Outputs	
Ron	Isolated single pole, voltage free solid state switch 5Ω + 0.7V max
Roff	1MΩ min
Intrinsic safety	
Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
Cert. No.	IECEx ITS 16.0004X
ETL & cETL	
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
	-40°C ≤ Ta ≤ 70°C
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	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ²
Weight	1.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

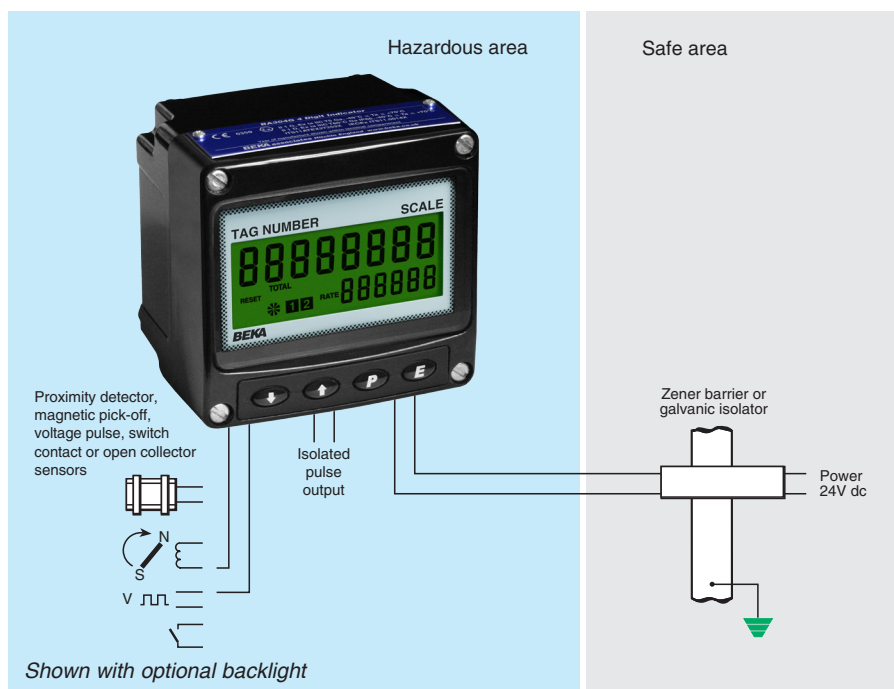
Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 Stainless steel plate secured to the front of the instrument laser engraved with tag number or application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

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify BA334E
Input	Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Accessories	
Escutcheon marking	Please specify if required
Units	Legend required
Tag	Legend required
	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 open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The **BA334G** is a third generation intrinsically safe field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International intrinsic safety certification permits worldwide installation.

The **main application** of the BA334G is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA334G will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International intrinsic safety certification allows the BA334G rate totaliser to be installed in gas and dust 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 **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. Rate 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 display 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.

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.

The **scale card** which shows the Rate Totaliser's units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

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

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 can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. The two isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334G display show the status of both alarm outputs.

Other field mounting rate totalisers include the BA334E which has the same functions as the BA334G, but incorporates a separate terminal compartment and supersedes the BA334D.

BA334G

one input rate totaliser

Intrinsically safe for use in all 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**
- ◆ **Lineariser**
- ◆ **Isolated pulse output**
- ◆ **Simple on-site scale card installation.**
- ◆ **Optional:**
Backlight
Dual alarms
4/20mA output
- ◆ **3 year guarantee**

www.beka.co.uk/ba334g



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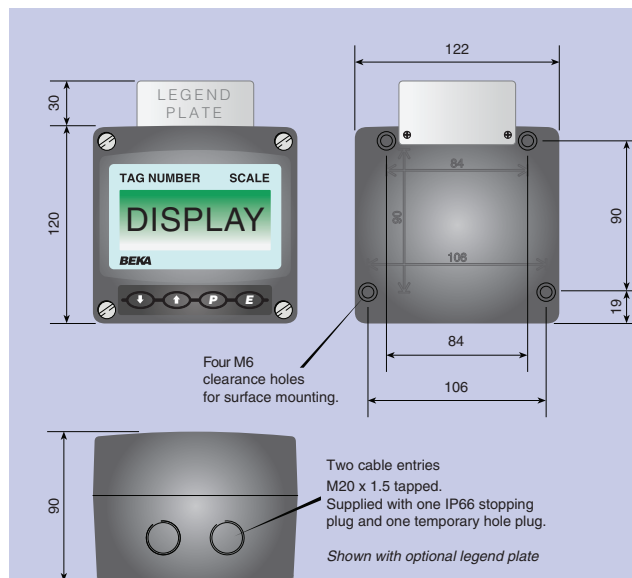
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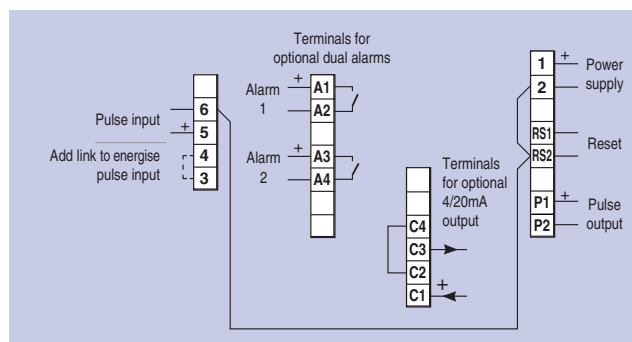
SPECIFICATION

Power supply	
Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight
Input	
Switch contact	Lower 100Ω Upper 1kΩ switching thresholds
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 } <i>Depends upon pulse width and debounce setting.</i>
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 5 positions or absent
<i># Rate & Total can be shown on either 6 or 8 digit display</i>	
Grand total	Maximum count 10 ¹⁶
Remote reset	
Contact closure with resistance less than 10kΩ	
Pulse output	
Isolated open collector	
Frequency	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	
Configurable functions	
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.
Flowmeter K-factor	
Lineariser	16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999
Intrinsic safety	
Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
	Group II Category 1D Ex ia IIIC T80°C Da
	-40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
	Ex ia IIIC T80°C Da
	-40 ≤ Ta ≤ 60°C
Cert. No.	IECEx ITS 16.0004X
ETL & cETL	
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
	USA & Canada
	USA
	Canada
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	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg
Accessories	
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.
Outputs	Isolated single pole, voltage free solid state switch
Ron	50 + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



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

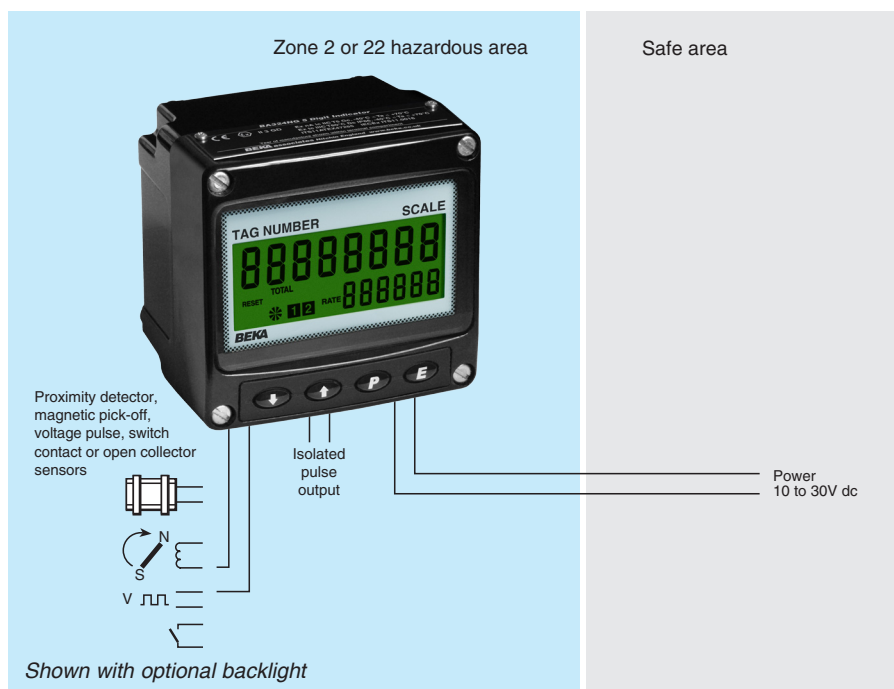
BA394G 316 stainless steel not sealing #
BA494G GRP sealing #

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify BA334G
Input	Type *
Rate scale factor	XXXXX * <i>If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.</i>
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Accessories	
Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	Legend required
Units	Legend required
Tag	<i>No charge if ordered with totaliser</i>
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 open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The **BA334NG** is a third generation field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation cost.

The main application of the BA334NG is to process the pulse output from a hazardous area flowmeter, such as a turbine meter, and simultaneously display the rate and total flow in engineering units within a Zone 2 or 22 hazardous area. The BA334NG can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International Ex nA and Ex tc certification allows the BA334NG rate totaliser to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The 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. Rate 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 display 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.

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.

The scale card which shows the Rate Totaliser's units of measurement and tag information, slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this information is not specified a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

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

An isolated 4/20mA current sink output is available as a factory fitted option. It may be configured to represent any part of the rate or total display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334NG display show the status of both alarm outputs.

Other field mounting rate totalisers include the two input BA384NG which also has Ex nA and Ex tc certification and can display the sum or difference of two flowmeter outputs. Intrinsically safe and general purpose field and panel mounting models are also available.

BA334NG

Ex nA one input rate totaliser

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators

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

www.beka.co.uk/ba334ng



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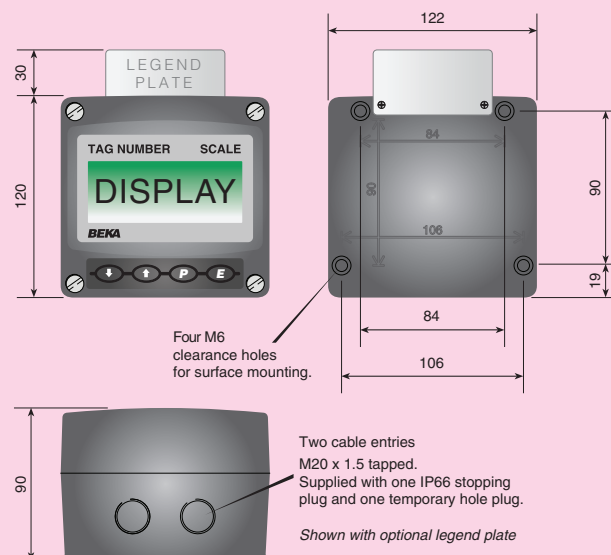
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e-mail sales@beka.co.uk www.beka.co.uk

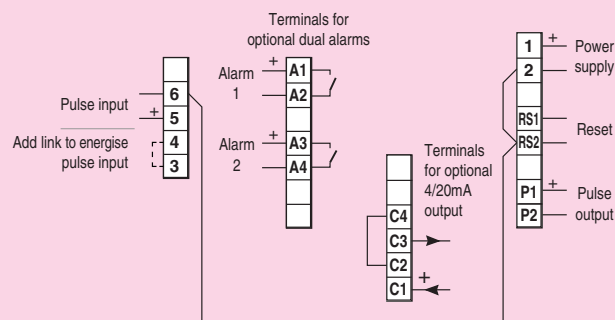
SPECIFICATION

Power supply	
Voltage	10 to 30V
Current	16mA max plus 16mA for optional backlight
Input	
Switch contact	Lower 100Ω Upper 1kΩ switching thresholds
Proximity detector (NAMUR)	1.2mA 2.1mA
Open collector	2kΩ 10kΩ
Magnetic pick-off	0 +40mV
Voltage pulse (low)	1V 3V 30V max
Voltage pulse (high)	3V 10V 30V max
Frequency	
Switch contact	150Hz typical
Other inputs	100kHz max } <i>Depends upon pulse width and debounce setting.</i>
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 5 positions or absent
<i># Rate & Total can be shown on either 6 or 8 digit display</i>	
Grand total	Maximum count 10 ¹⁶
Remote reset	
Contact closure with resistance less than 10kΩ	
Pulse output	
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
Ui	30Vdc
I max	10mA
Configurable functions	
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.
Flowmeter K-factor	16 K-factors may be entered
Lineariser	Rate may be displayed per second, minute or hour
Rate timebase	Adjustable digital filter
Rate display filter	Adjustable between 0.0001 and 99999
Total scale factor	
Certification	
Europe ATEX	
Code	Group II Category 3G Ex nA ic IIC T5 Gc 99999 pulses/unit vol. 16 K-factors may be entered Rate may be displayed per second, minute or hour Adjustable digital filter Adjustable between 0.0001 and 99999
Cert. No.	Note: Ex ic codes refer to instrument push button contacts which are nonincendive.
International IECEx	
Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40 < Ta < 60°C ITS16ATEX48409X
Cert. No.	
ETL & cETL	
Code	Class I Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C 4008610
ETL Control No.	
Environmental	
Operating temp	-40 to +70°C display -20 to +70°C
Certification temp	-40 to +60°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 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ²
Weight	1.1kg
Accessories	
Backlight	Green LED internally powered
4/20mA output	Isolated current sink. 5 to 30V
Voltage drop	
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. Isolated single pole, voltage free solid state switch 5Ω + 0.7V max 1MΩ min 30Vdc 10mA
Outputs	
Ron	
Roff	
Ui	
I max	
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. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



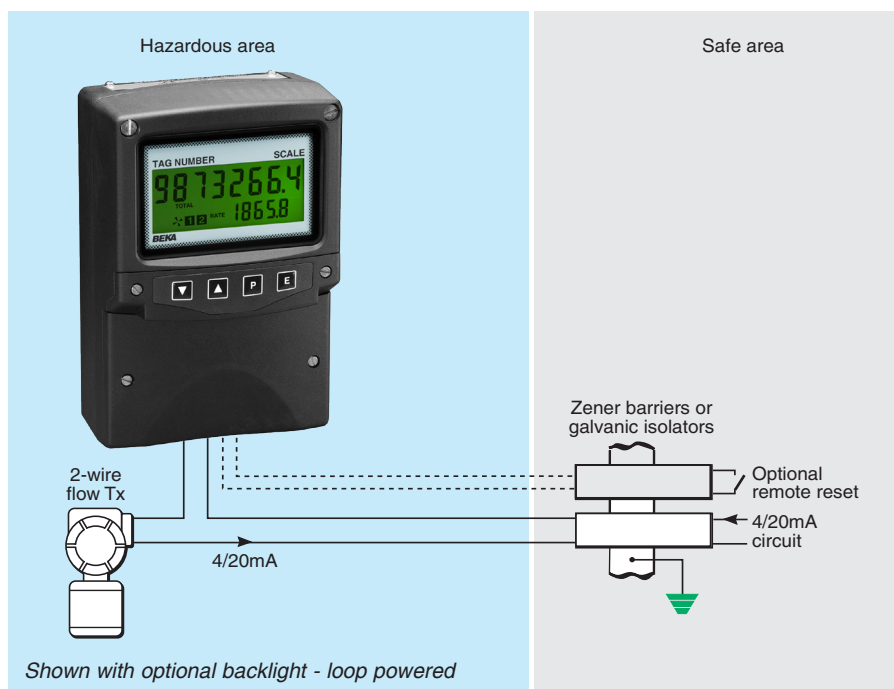
Legend plate	316 Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify BA334NG
Input	Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Total scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Accessories	
Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required No charge if ordered with totaliser
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

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



The **BA354E loop powered 4/20mA rate totaliser** is a third generation field mounting instrument that is electrically and mechanically compatible with the earlier BA354D, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA354E is housed in a robust IP66 GRP enclosure with a separate terminal compartment.

Main application of the BA354E is to integrate the 4/20mA output from a hazardous area flow transmitter and display the rate and total flow in engineering units within the hazardous area. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA354E can detect high and low rates of flow and may be used for simple batching applications.

The **large display** provides maximum contrast and has a very wide viewing angle, allowing the BA354E totaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The **robust GRP enclosure** has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are

forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA354E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the totaliser to be connected in series with most intrinsically safe 4/20mA loops. The BA354E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA354D, thus allowing the BA354E to safely replace the earlier model.

A **backlight** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarms which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to extensive vibration testing and is supported by a three year guarantee.

For panel mounting applications the BA358E has a similar specification but is housed in a 144 x 72 DIN panel mounting enclosure with an IP66 front panel.

BA354E

2-wire 4/20mA rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- ◆ **Loop powered only**
1.2V drop.
- ◆ **Total display**
8 digit 18mm high
Rate display
5 digit 12mm high
- ◆ **Intrinsically safe**
ATEX gas
or ATEX gas & dust
or FM, cFM & ATEX gas
All versions have
IECEx certification.
- ◆ **IP66 GRP enclosure**
with separate terminal
compartment.
- ◆ **Uni-directional &
bi-directional operation.**
- ◆ **Root extractor and
16 segment lineariser.**
- ◆ **Optional backlight &
alarms.**
- ◆ **3 year guarantee**

www.beka.co.uk/ba354e



BEKA

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SPECIFICATION

Input	
Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C
Overrange	Less than 5V with optional loop powered backlight ±200mA or ±30V will not damage the instrument
Display	
Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point
Rate~	5 digits 12mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	8 digits 18mm high
Scaling factor	Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10 ¹⁶

~ Rate & Total can be shown on either display

Push buttons	(Function in display mode)
▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Time since total display was reset

Accuracy	
Rate display at 20°C	
Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error
Total display	Updated every second

Remote total reset Contact closure with resistance less than 1kΩ

Intrinsic safety	
Europe ATEX	
Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Ta = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	
Cert. No.	Complies with requirements for <i>simple apparatus</i> . ITS11ATEX27253X (Special conditions only apply for installations in Zone 0)

[Dust option, see
How to order]

USA FM	
Standard	3610 Entity
Code	CL I, II, III: Div 1 GP A, B, C, D, E, F & G T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM	
File	3041487C

International IECEx	
Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Tamb = -40 to 70°C
Cert. No.	IECEx ITS11.0014X (Special conditions only apply for installations in Zone 0)

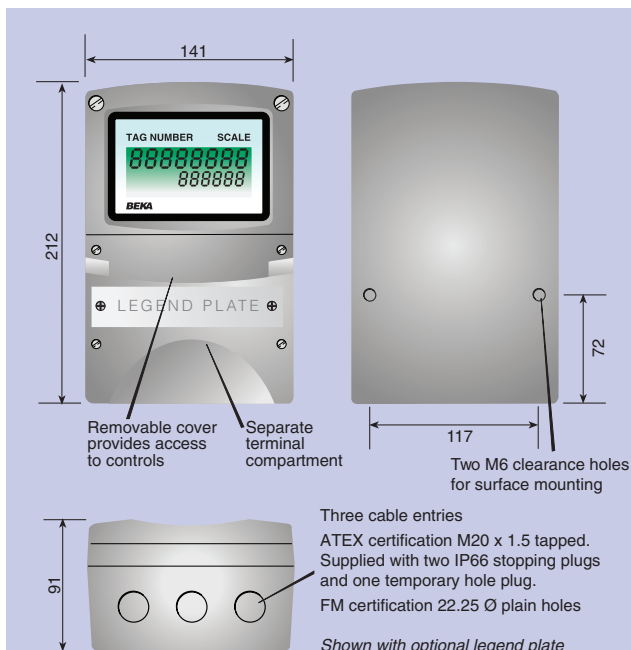
[Dust option, see
How to order]

Environmental	
Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC

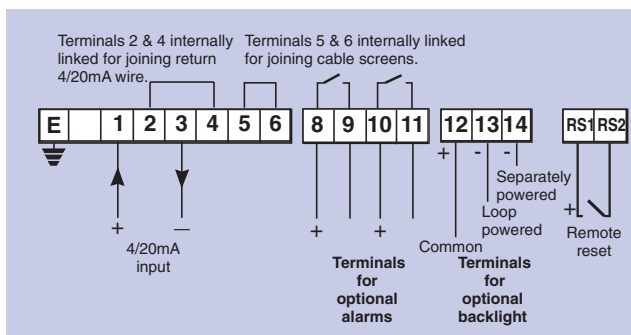
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable
Weight	1.7kg

Accessories	
Backlight	Green, may be loop or separately powered
Loop powered	Totaliser voltage 5V
Separately powered.	10.5V at 35mA from IS interface
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.
Output	Isolated solid state switch complying with requirements for <i>Simple apparatus</i> .
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



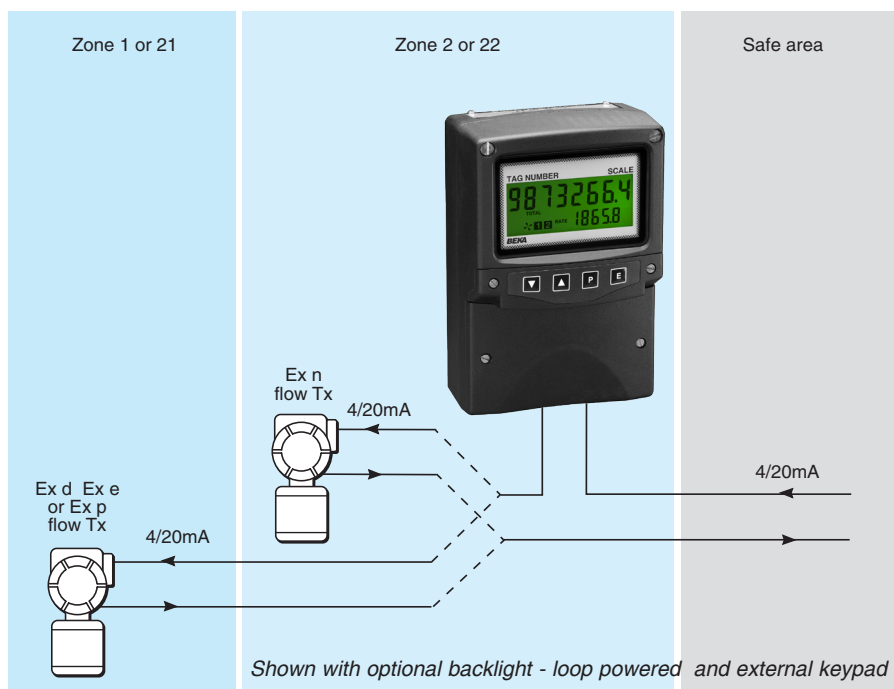
External keypad	Membrane keypad enables totaliser to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless steel legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument. # BA392D or BA393 #
Pipe mounting kit	

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify BA354E
Certification	ATEX gas ATEX gas & dust FM, cFM & ATEX gas
Display mode	Linear, root or lineariser*
Rate display at: 4.000mA 20.000mA	XXXXX XXXXX
Rate timebase	Seconds, minutes or hours*
Total scale factor	(Units of rate display)÷(Units of total display)*
Accessories	Please specify if required
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

* If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.



The **BA354NE loop powered 4/20mA rate totaliser** is a third generation field mounting instrument that is electrically and mechanically compatible with the earlier BA354ND, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA354NE is housed in a robust IP66 GRP enclosure with a separate terminal compartment.

Main application of the BA354NE is to integrate the 4/20mA output from a hazardous area flow transmitter and display the flow rate and total flow in the same or different engineering units within Zone 2 or 22. When mounted in Zone 2 the BA354NE may be connected in series with the 4/20mA output from a flow transmitter installed in Zone 1 or 2 without the need for additional protection. Application Guide AG310, which may be downloaded from the BEKA website, describes how the BA354NE Ex nA rate totaliser may be directly connected to an Ex n, Ex e, Ex d or Ex p flow transmitter

The **large display** provides maximum contrast and has a very wide viewing angle, allowing the BA354NE totaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The **robust GRP** enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display

electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

ATEX and IECEx non sparking Ex nA certification allows the BA354NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA354NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA354NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A **backlight** which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

BA354NE

2-wire 4/20mA rate totaliser

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- ◆ Loop powered only 1.2V drop.
- ◆ Total display 8 digit 18mm high
Rate display 5 digit 12mm high
- ◆ Ex nA gas and Ex tc dust ATEX & IECEx certification.
- ◆ IP66 GRP enclosure with separate terminal compartment.
- ◆ Uni-directional & bi-directional operation.
- ◆ Root extractor and 16 segment lineariser.
- ◆ Optional backlight, alarms & external keypad.
- ◆ 3 year guarantee

www.beka.co.uk/ba324ne



BEKA

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SPECIFICATION

Input	
Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the instrument.
Display	
Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point.
Rate~	
Span	5 digits 12mm high. Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	
Scaling factor	8 digits 18mm high Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10 ¹⁶

~ Rate & Total can be shown on either display

Push buttons

▼	(Function in display mode)
▲	Shows rate display with 4mA input
'P'	Shows rate display with 20mA input
	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Time since total display was reset

Accuracy

Rate display at 20°C	Linear ±0.02% of span ±1digit Root extracting ±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Total display	Updated every second
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Certification

Europe ATEX	
Code	Group II Category 3GD Ex nA ic IIC T5 Gc Ex tc IIIC 80°C Dc IP66 Ta = -40 to 70°C
Input parameters	100mA
Cert. No.	ITS11ATEX47255
International IECEx	
Code	Ex nA ic IIC T5 Gc Ex tc IIIC 80°C Dc IP66 Tamb = -40 to 70°C
Cert. No.	IECEx ITS 11.0016

Environmental

Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC

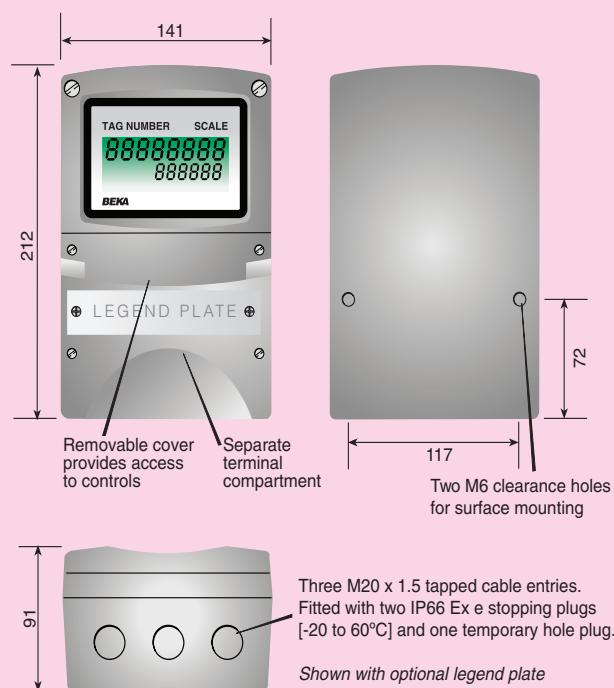
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm ² cable
Weight	1.7kg

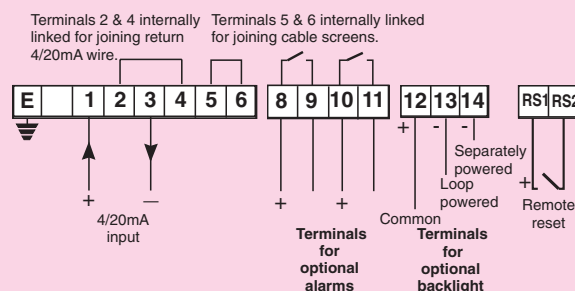
Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Input voltage increased to 5V
Separately powered.	10.5V min at 35mA
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.
Output	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables totaliser to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



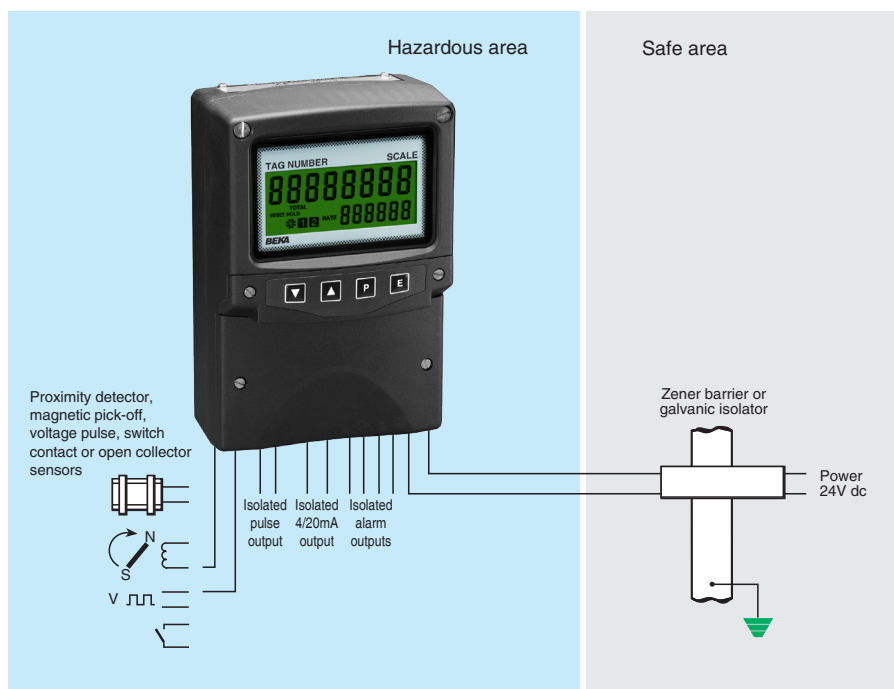
Tag legend	Tag number or application marked onto display escutcheon.
Stainless steel legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify BA354NE
Display mode	Linear, root or lineariser*
Rate display at:	XXXXX XXXXX Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. *
Rate timebase	Seconds, minutes or hours*
Total scale factor	(Units of rate display)÷(Units of total display)*
Accessories	Please specify if required
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	Legend required
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

* If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.



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



BEKA

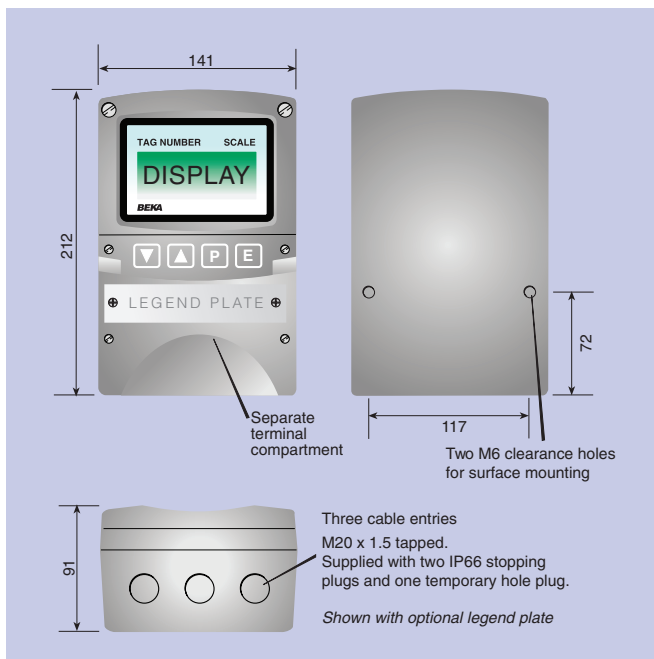
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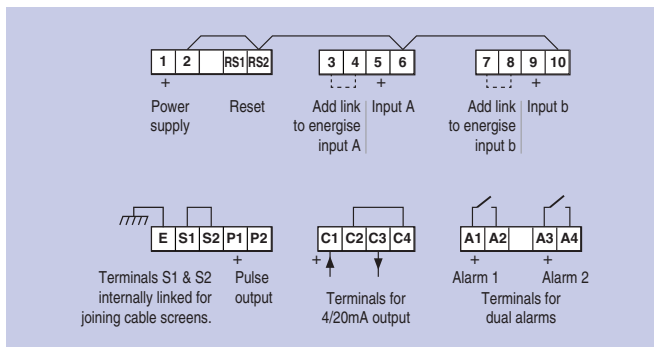
SPECIFICATION

Power supply	
Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA
Input	
Switch contact	Lower 100Ω Upper 1kΩ switching thresholds
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
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 5 positions or absent
<i>‡ Rate & Total can be shown on either 6 or 8 digit display</i>	
Grand total	Maximum count 10 ¹⁶
Remote reset	
	Contact closure with resistance less than 10kΩ
Configurable functions	
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
Pulse output	
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	
4/20mA output	
	Isolated current sink, configurable to represent any part of the rate or total display.
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.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
Intrinsic safety	
Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
Cert. No.	IECEx ITS 16.0004X
ETL & cETL	
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
	-40°C ≤ Ta ≤ 70°C
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
	Ex ia IIC T5 Ga
	-40 ≤ 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	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ²
Weight	1.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



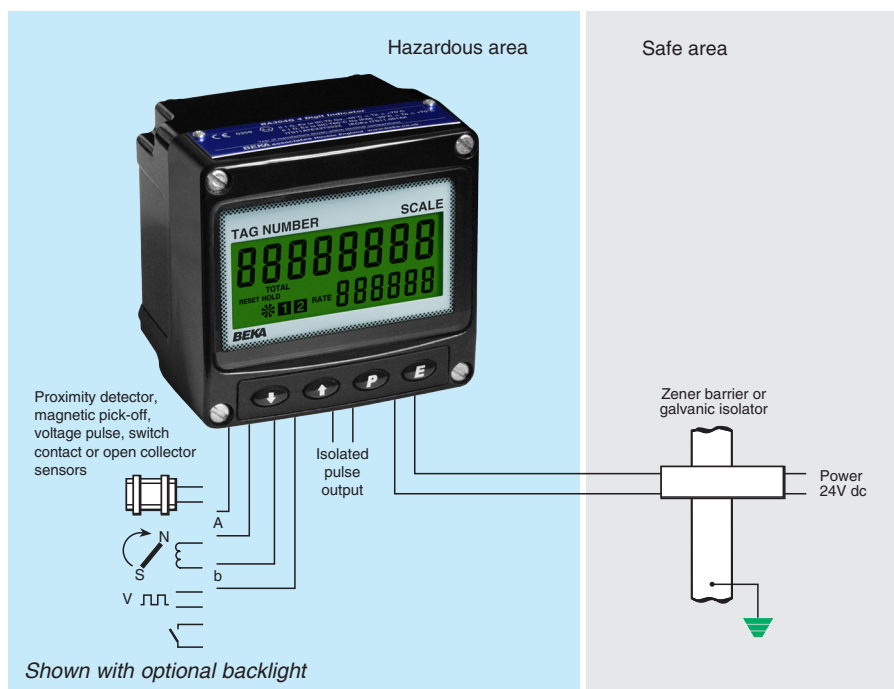
Accessories

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



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.

Other field mounting rate totalisers include the BA384E which has the same functions as the BA384G, but incorporates a separate terminal compartment.

BA384G

two input rate totaliser

Intrinsically safe for use in all 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



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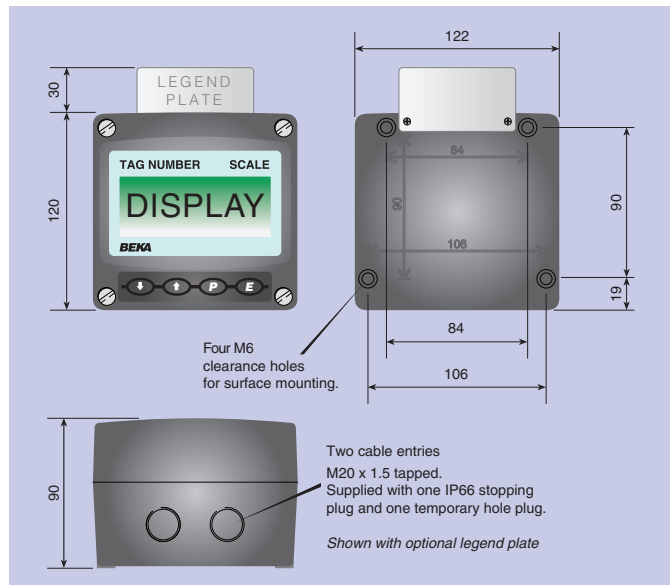
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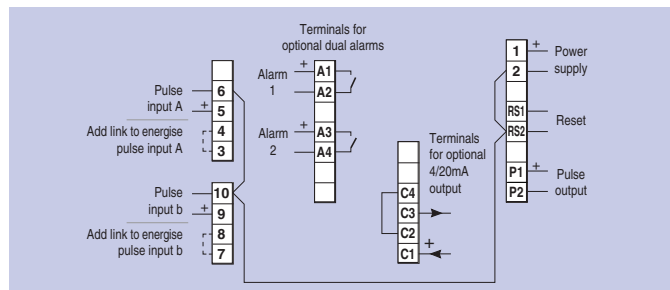
SPECIFICATION

Power supply	
Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight
Input	
Switch contact	Lower 100Ω Upper 1kΩ switching thresholds
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 } <i>Depends upon pulse width and debounce setting.</i>
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 5 positions or absent
<i># Rate & Total can be shown on either 6 or 8 digit display</i>	
Grand total	Maximum count 10 ¹⁶
Remote reset	
Contact closure with resistance less than 10kΩ	
Pulse output	
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	
Configurable functions	
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
Intrinsic safety	
Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
	Group II Category 1D Ex ia IIIC T80°C Da
	-40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga
	-40 ≤ Ta ≤ 70°C
	Ex ia IIIC T80°C Da
	-40 ≤ Ta ≤ 60°C
Cert. No.	IECEx ITS 16.0004X
ETL & cETL	
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
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
	Ex ia IIC T5 Ga
	-40 ≤ 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	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ²
Weight	1.1kg
Accessories	
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

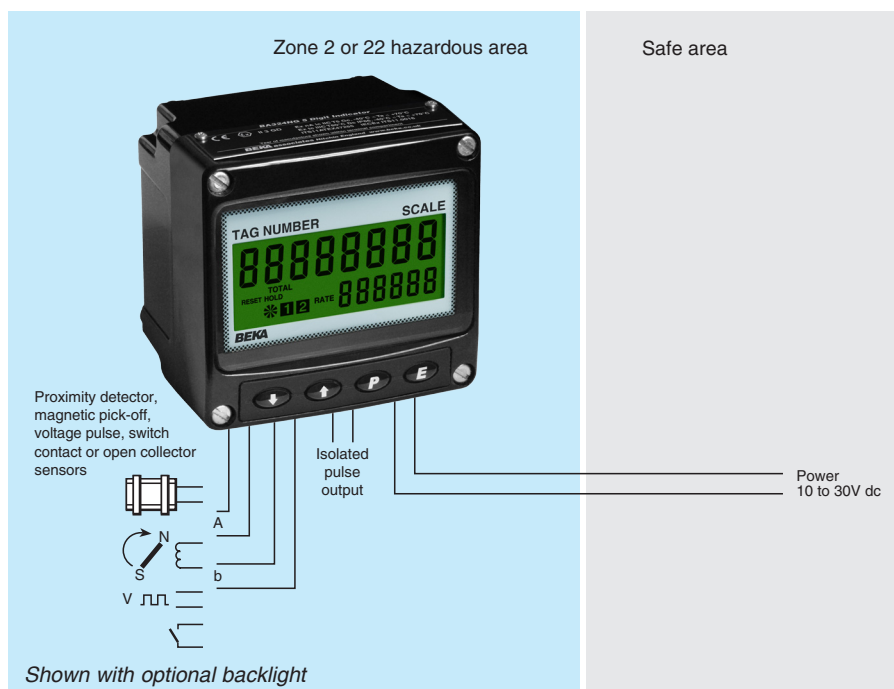


Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel 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 # BA494G GRP sealing #
# See accessory datasheet for details	

HOW TO ORDER

Model number	Please specify for each input BA384G
Input function	Input A + b or Input A – b *
Input	Type *
Flowmeter K-factor	XXXXX for both 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 *
Accessories	
Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	Legend required Legend required 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.



The **BA384NG** is a two input, field mounting, Ex nA and Ex tc certified 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 BA384NG 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.

International Ex nA and Ex tc certification allows the BA384NG rate totaliser to be installed in Zone 2 gas and Zone 22 dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The main application of the BA384NG is to process the pulse output from two flowmeters and to calculate and display the sum or difference of the two within a Zone 2 or 22 hazardous area. Using the front panel push buttons, the display can be scrolled to show the rate and total output of either flowmeter separately. The BA384NG 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.

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.

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.

Anisolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA384NG display show the status of both alarm outputs.

Other rate totalisers in this range include the single input BA334NG plus intrinsically safe, Ex n certified and general purpose models for field and panel mounting.

BA384NG

two input rate totaliser

Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators

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

www.beka.co.uk/ba384ng



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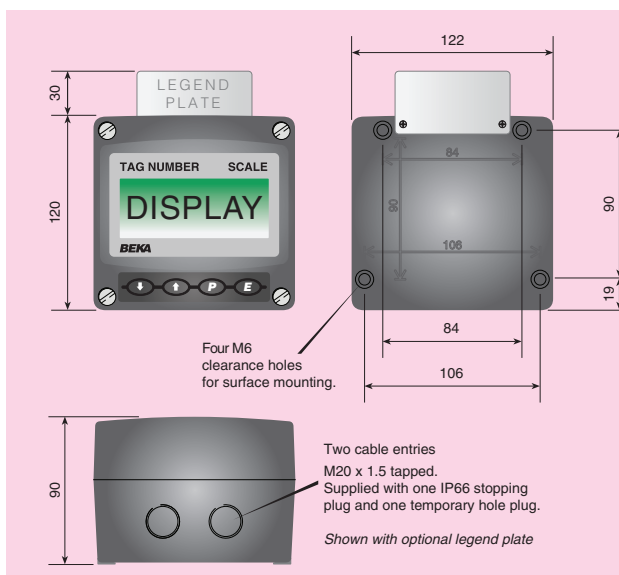
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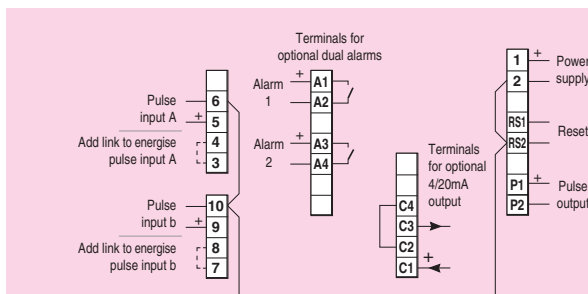
SPECIFICATION

Power supply	
Voltage	10 to 30V
Current	16mA max plus 16mA for optional backlight
Input	
Switch contact	Lower 100Ω Upper 1kΩ switching thresholds
Proximity detector (NAMUR)	1.2mA 2.1mA
Open collector	2kΩ 10kΩ
Magnetic pick-off	0 +40mV
Voltage pulse (low)	1V 3V 30V max
Voltage pulse (high)	3V 10V 30V max
Frequency	
Switch contact	150Hz typical
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 5 positions or absent
<i># Rate & Total can be shown on either 6 or 8 digit display</i>	
Grand total	Maximum count 10 ¹⁶
Remote reset	
	Contact closure with resistance less than 10kΩ
Pulse output	
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	30V dc
Ui	10mA
I max	
Configurable functions	
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 for each input
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
Certification	
Europe ATEX	
Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C ITS16ATEX48409X
Cert. No.	
International IECEx	
Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C IECEx ITS 16.0005X
Cert. No.	
ETL & cETL	
Code	Class I Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C 4008610
ETL Control No.	
Environmental	
Operating temp	-40 to +70°C display -20 to +70°C
Certification temp	-40 to +60°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 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ²
Weight	1.1kg
Accessories	
Backlight	Green LED internally powered
4/20mA output	Isolated current sink. 5 to 30V
Voltage drop	
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. Isolated single pole, voltage free solid state switch 5Ω + 0.7V max 1MΩ min 30V dc 10mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



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

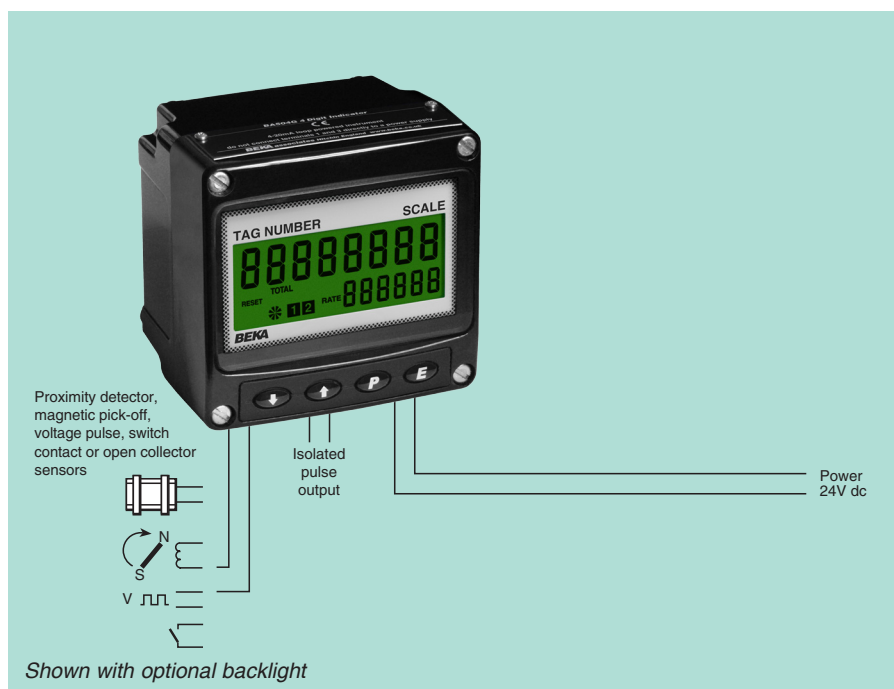
BA394G 316 stainless steel not sealing #

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify for each input BA384NG
Input function	Input A + b or Input A – b *
Input	Type *
Flowmeter K-factor	XXXXX for both inputs * If linearisation is required, up to 16 K-factors may be specified at different flow rates. XXXXX *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Accessories	
Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	Legend required Legend required No charge if ordered with totaliser
Units	
Tag	
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

* 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.



The **BA534G** is a third generation, general purpose, field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output.

Main application of the BA534G is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA534G will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered 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. Rate 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 display 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.

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.

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

The scale card which shows the Rate Totaliser's units of measurement and tag information, slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this information is not specified a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available, which can be supplied with custom specified engraving.

An isolated 4/20mA current sink output is available as a factory fitted option. It may be configured to represent any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA534G display show the status of both alarm outputs.

The BA584G is a two input version which enables the sum or difference of two flowmeters to be displayed. Other rate totalisers in this range include field and panel mounting models with intrinsic safety and Ex n certification, plus other general purpose models.

BA534G

one input rate totaliser

General purpose

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

www.beka.co.uk/ba534g

BEKA

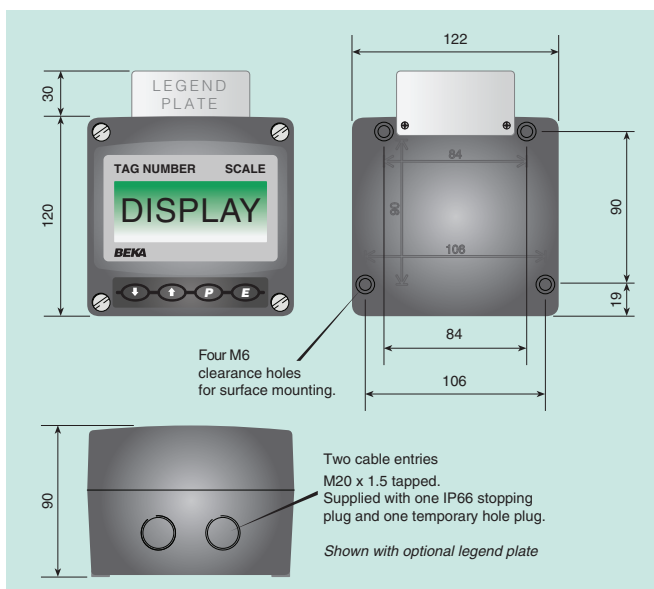
associates

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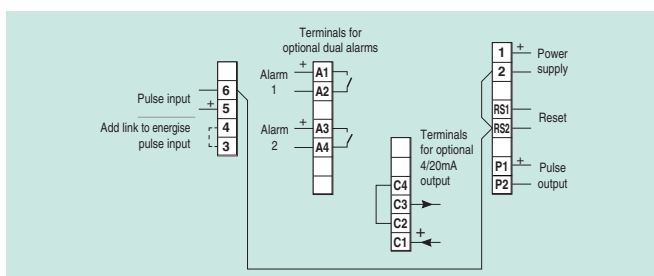
SPECIFICATION

Power supply		
Voltage	10 to 30V dc	
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 30V max
Voltage pulse (high)	3V	10V 30V max
Frequency		
Switch contact	150Hz typ.	] <i>Depends upon pulse width & totaliser debounce setting.</i>
Other inputs	100kHz max.	
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 5 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		
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 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms. 51Ω + 3V max 1MΩ min 30Vdc 10mA	
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	
Vmax	30Vdc	
I max	10mA	
Configurable functions		
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.	
Flowmeter K-factor	16 K-factors may be entered	
Lineariser	Rate may be displayed per second, minute or hour.	
Rate timebase	Adjustable digital filter	
Rate display filter	Adjustable between 0.0001 and 99999	
Total scale factor		
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		
Material	GRP	
Ingress	IP66	
EMC	Complies with 2014/30/EU	
Mechanical		
Terminals	Screw clamp for 0.5 to 1.5mm ²	
Weight	1.1kg	
Accessories		
Backlight	Green LED internally powered	
4/20mA output	Isolated current sink	
Voltage drop	5 to 30V	
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.	
Outputs	Isolated single pole, voltage free solid state switch.	
Ron	5Ω + 0.7V max	
Roff	1MΩ min	
Vmax	30Vdc	
I max	200mA	
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. #	

DIMENSIONS (mm)



TERMINAL CONNECTIONS



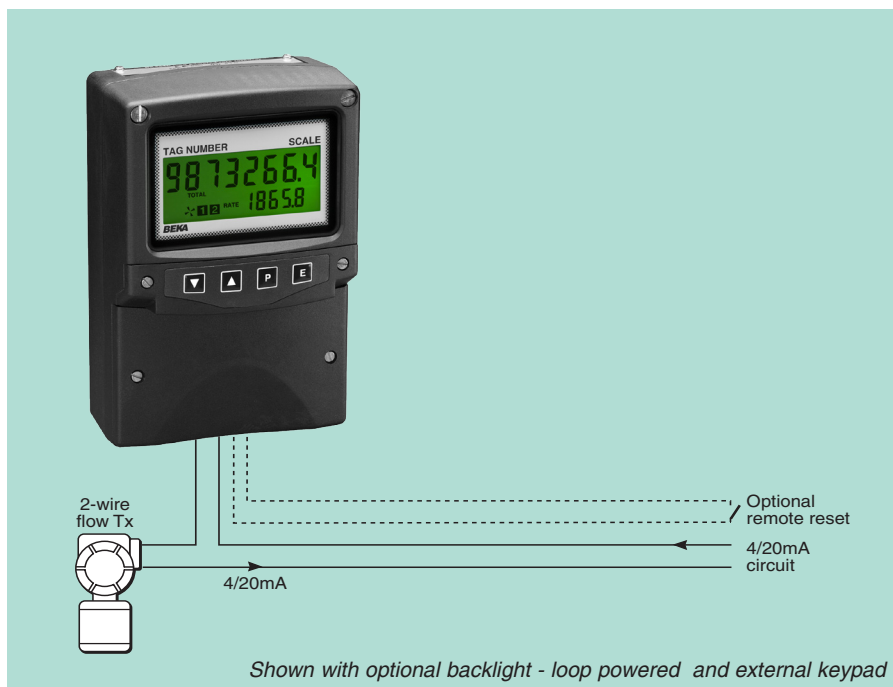
Legend plate	316 Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify BA534G
Input Type *	
Rate scale factor	XXXXX * <i>If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.</i>
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Accessories	Please specify if required
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required <i>No charge if ordered with totaliser</i>
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 open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



The BA554E loop powered 4/20mA rate totaliser is a third generation, general purpose, field mounting instrument that is electrically and mechanically compatible with the earlier BA554D, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA554E is housed in a robust IP66 GRP enclosure with a separate terminal compartment

Main application of the BA554E is to integrate the 4/20mA output from a flow transmitter and display the rate and total flow in engineering units. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA554E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA554E totaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment

allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the totaliser's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarms which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to extensive vibration testing and is supported by a three year guarantee.

For panel mounting applications the BA558E has a similar specification but is housed in a 144 x 72 DIN panel mounting enclosure with an IP66 front panel.

If flammable atmospheres are present either the BA354E or the BA354NE should be used. Both have the same features as the BA554E but have been certified for use in hazardous areas.

BA554E

2-wire 4/20mA rate totaliser

General purpose

- ◆ **Loop powered only**
1.2V drop.
- ◆ **Total display**
8 digit 18mm high
Rate display
5 digit 12mm high
- ◆ **IP66 GRP enclosure**
with separate terminal
compartment.
- ◆ **Uni-directional &
bi-directional operation.**
- ◆ **Root extractor and
16 segment lineariser.**
- ◆ **Optional backlight,
alarms & external
keypad.**
- ◆ **3 year guarantee**

www.beka.co.uk/ba554e

BEKA

associates

BEKA associates Ltd. Old Charlton Rd.
Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
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SPECIFICATION

Input	
Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the instrument.
Display	
Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point.
Rate~	
Span	5 digits 12mm high. Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	
Scaling factor	8 digits 18mm high Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10 ¹⁶

~ Rate & Total can be shown on either display

Push buttons	(Function in display mode)
▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of when alarms are fitted.
'E'	Time since total display was reset

Accuracy	
Rate display at 20°C	
Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Total display	Updated every second

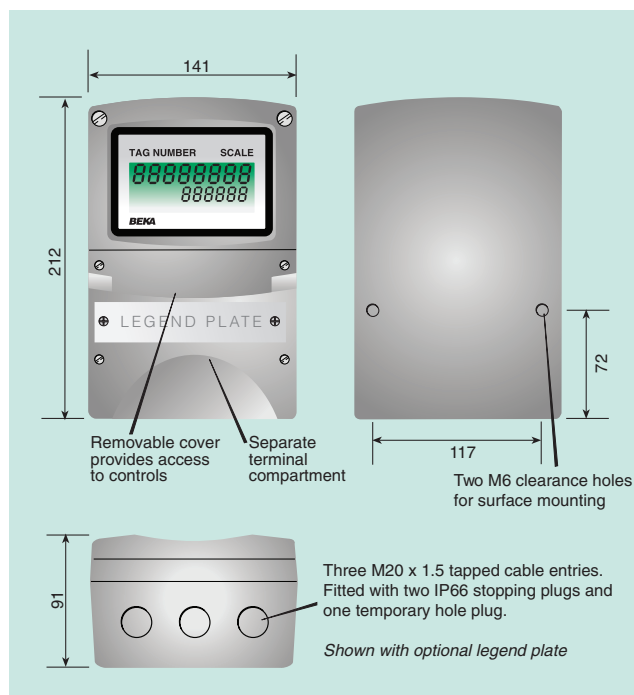
Remote total reset	Contact closure with resistance less than 1kΩ.
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Environmental	
Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive

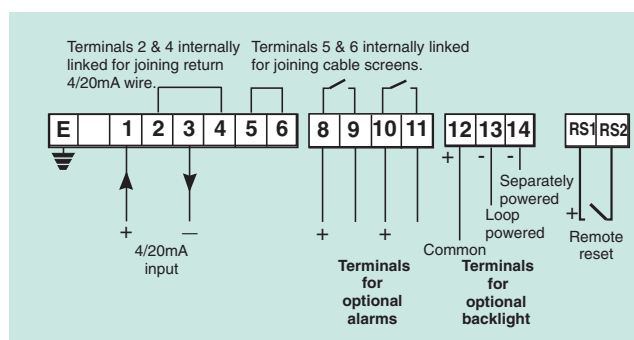
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable
Weight	1.7kg

Accessories	
Backlight	Green, may be loop or separately powered
Loop powered	Totaliser voltage 5V
Separately powered.	10.5V at 35mA
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. Isolated solid state switch
Output	40V dc
Vmax	200mA
Imax	5Ω + 0.7V max
Ron	1MΩ min
Roff	
External keypad	Membrane keypad enables totaliser to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Stainless steel legend plate

stainless steel plate etched with tag number or application attached to front of the instrument. #

Pipe mounting kit

BA392D or BA393 #

See accessory datasheet for details

HOW TO ORDER

Model number
Display mode
Rate display at:
4.000mA
20.000mA

Please specify

BA554E

Linear, root or lineariser*

XXXXX } Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.*
XXXXX }

Rate timebase
Total scale factor display)*

Seconds, minutes or hours*
(Units of rate display)÷(Units of total display)*

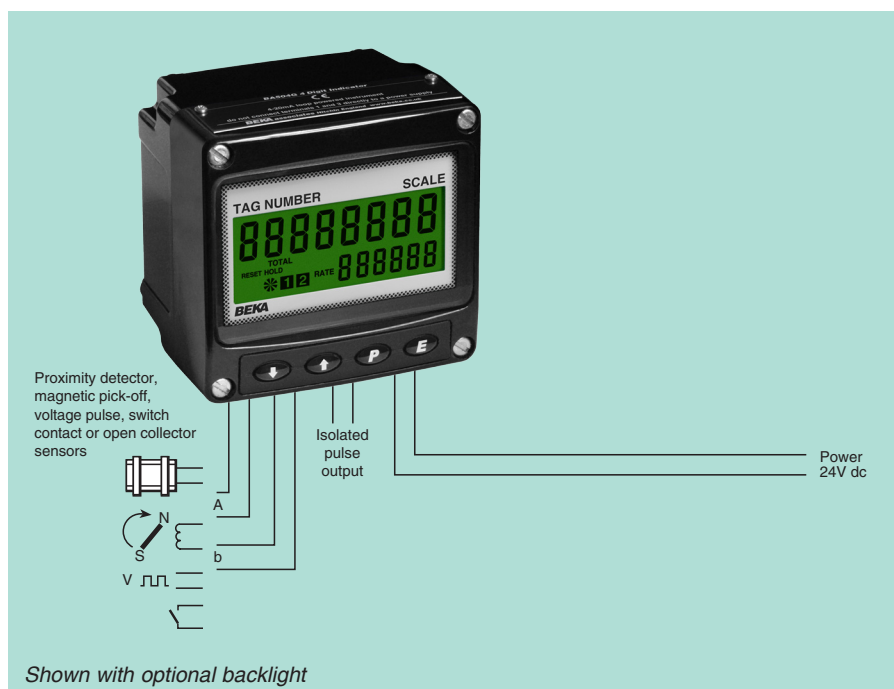
Accessories

External keypad
Display backlight
Dual alarms
Escutcheon marking
Scale
Tag
Stainless legend plate
Pipe mounting kit

Please specify if required

External keypad
Backlight
Alarms
Legend required
Legend required
Legend required
BA393D or BA393

* If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.



The **BA584G** is a two input, general purpose field mounting 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 BA584G is easy to use and each input can be individually configured on-site to operate with a flowmeter having a variety of pulse outputs. A slide-in scale card simplifies identification.

Main application of the BA584G is to process the pulse output from two flowmeters and to calculate and display the sum or difference of the two within a process area. Using the front panel push buttons, the display can be scrolled to show the rate and total output of either flowmeter separately, or their sum or difference. The BA584G 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.

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.

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.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA584G display show the status of both alarm outputs.

Panel mounting rate totalisers with one or two inputs and a variety of display and enclosure sizes are available, see BA537E, BA537E-SS, BA538E and BA588E. For hazardous area applications certified field and panel mounting models are also available.

BA584G

two input rate totaliser

General purpose

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

www.beka.co.uk/ba584g

BEKA

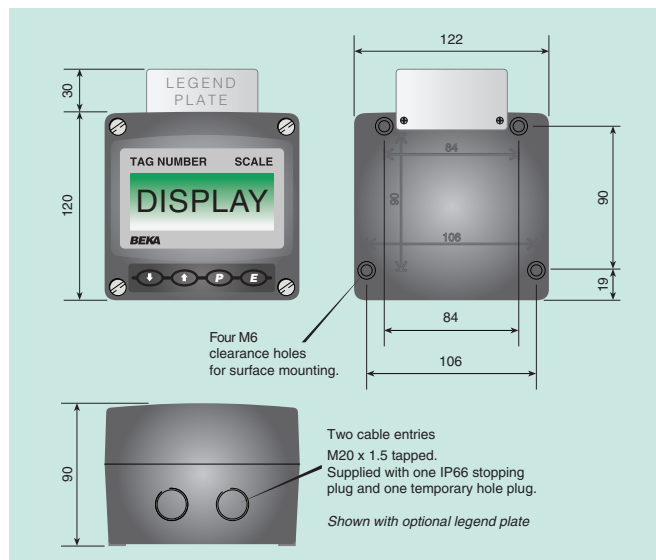
associates

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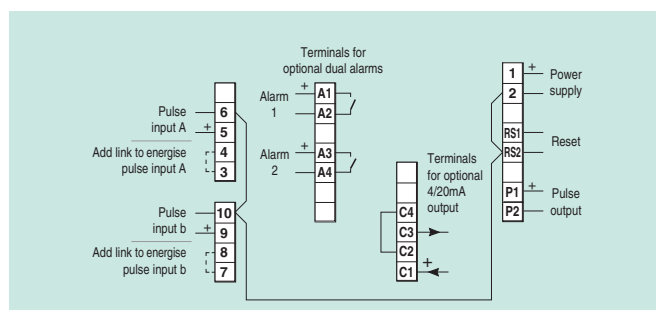
SPECIFICATION

Power supply			
Voltage	10 to 30V dc		
Current	16mA max plus 16mA for optional backlight		
Input			
Switch contact	Lower	Upper	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	30V max
	3V	10V	30V max
Frequency			
Switch contact	150Hz typ.	] Depends upon pulse width & totaliser debounce setting.	
Other inputs	100kHz max.		
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 5 positions or absent		
<i>∇ Rate & Total can be shown on either 6 or 8 digit display</i>			
Grand total	Maximum count 10 ¹⁶		
Remote reset			
Contact closure with resistance less than 10kΩ			
Pulse output			
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		
Pulse width	or 500ms.		
Ron	51Ω + 3V max		
Roff	1MΩ min		
Vmax	30V dc		
I max	10mA		
Configurable functions			
Each input individually configurable			
Input function	Input A + b or Input A – b		
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.		
Flowmeter K-factor	16 K-factors may be entered for each input		
Lineariser	Rate may be displayed per second, minute or hour.		
Rate timebase	Adjustable digital filter		
Rate display filter	Adjustable between 0.0001 and 99999		
Total scale factor			
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			
Material	GRP		
Ingress	IP66		
EMC	Complies with 2014/30/EU		
Mechanical			
Terminals	Screw clamp for 0.5 to 1.5mm ²		
Weight	1.1kg		
Accessories			
Backlight	Green LED internally powered		
4/20mA output	Isolated current sink		
Voltage drop	5 to 30V		
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. Isolated single pole, voltage free solid state switch.		
Outputs			
Ron	5Ω + 0.7V max		
Roff	1MΩ min		
Vmax	30V dc		
I max	200mA		
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. #		

DIMENSIONS (mm)



TERMINAL CONNECTIONS



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 #
BA494G GRP sealing #

See accessory datasheet for details

HOW TO ORDER

Model number	Please specify for each input
Input function	BA584G
Input	Input A + b or Input A – b *
	Type *
Rate scale factor	XXXXX for both inputs *
flowmeter K-factor	If linearisation is required, up to 16 K-factors may be specified at different flow rates.
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Accessories	Please specify if required
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required
	No charge if ordered with totaliser
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.