

Rate Totalisers

Panel Mounting



Includes one and two pulse input instruments and loop powered 4/20mA rate totalisers which can display rate and total flow separately. The pulse input instruments will operate with most types of sensor and all models include square root extraction and an adjustable lineariser. The rugged stainless steel totalisers can be safely mounted in a certified Ex e, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification.

- > **Large high contrast displays with wide viewing angle**
- > **General purpose and certified hazardous area models**
International Ex ia intrinsic safety and Ex nA non sparking certification.
- > **Rugged stainless steel Ex ia models**
May be installed in a certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
- > **Isolated pulse output**
- > **IP66 front panels**
- > **-40 to +70°C operating temperature range**
- > **Accessories**
Dual isolated alarms
Isolated 4/20mA output
Backlight
Scale cards - can be supplied printed with units of measurement and tag information for no additional charge.
IP66 rear sealing kit.

Intrinsically safe

Ex nA

General purpose



Gasket provides IP66 seal to panel



Sturdy panel clamps supplied with unit



Easy scale card installation without the need to remove indicator from the panel.



Rate Totalisers. Panel 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											
BA337E	96 x 48	Pulse	External	8 x 9mm	6 x 6mm	✓	–	✓	–	✓	✓
BA337E-SS*	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm	✓	✓	✓	✓	✓	✓
BA338E	144 x 72	Pulse	External	8 x 18mm	6 x 12mm	✓	–	✓	–	✓	✓
BA358E	144 x 72	4/20mA	Loop	8 x 18mm	5 x 12mm	✓	✓	✓	✓	✓	–
BA388E	144 x 72	2 x Pulse	External	8 x 18mm	6 x 12mm	✓	–	✓	–	✓	✓

* Certification allows installation in an Ex e, or Ex p or Ex t panel enclosure without invalidating enclosure certification

Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators

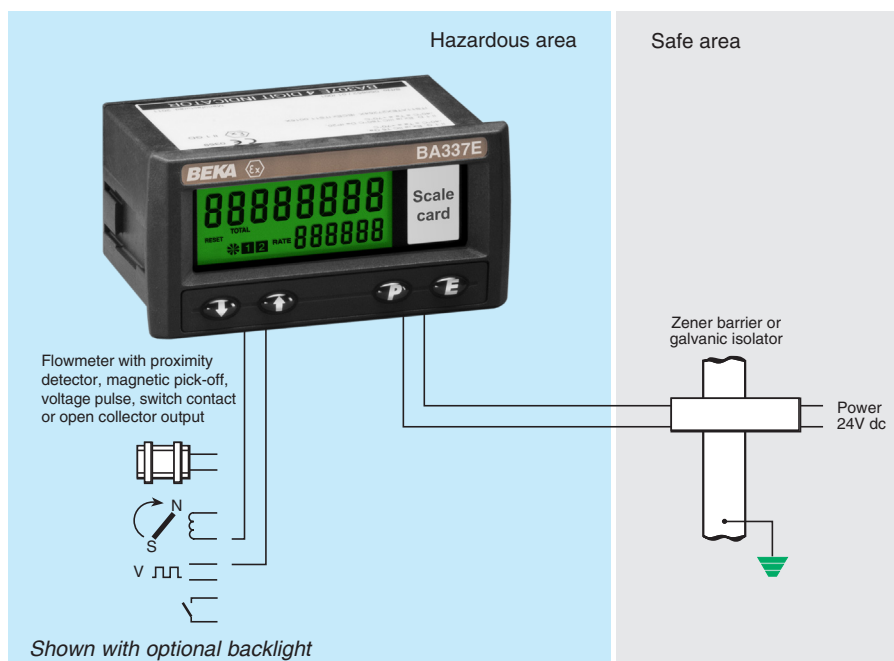
BA337NE	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm	✓	✓	✓	✓	✓	✓
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General Purpose - for use in safe areas

BA537E	96 x 48	Pulse	External	8 x 9mm	6 x 6mm						
BA537E-SS	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm						
BA538E	144 x 72	Pulse	External	8 x 18mm	6 x 12mm						
BA558E	144 x 72	4/20mA	Loop	8 x 18mm	5 x 12mm						
BA588E	144 x 72	2 x Pulse	External	8 x 18mm	6 x 12mm						

A **Rate Totaliser**

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



The BA337E is a third generation intrinsically safe rate totaliser that has similar functions as the BA338E, but is housed in a smaller 96 x 48mm DIN 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. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

The main application of the BA337E 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 BA337E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

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.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allows the BA337E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA337E rate totaliser to be installed 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.

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.

One of the following three optional outputs may be factory fitted to the BA337E rate totaliser. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

An optional isolated 4/20mA output may be configured to produce an analogue 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 isolator. 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 BA337E display show the status of both alarm outputs.

Rugged versions and a larger display are available in other models within the range. The BA337E-SS is identical to the BA337E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e or Ex p panel enclosure without invalidating the enclosure's certification. The BA337NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA338E offers similar features as the BA337E in a 144 x 72mm enclosure.

BA337E

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 rate and total displays.**
- ◆ **Intrinsically safe**
- ◆ **96 x 48mm DIN enclosure with IP66 front protection.**
- ◆ **Lineariser**
- ◆ **Optional:**
Backlight
dual alarms
or 4/20mA output
or pulse output
- ◆ **3 year guarantee**

www.beka.co.uk/ba337e



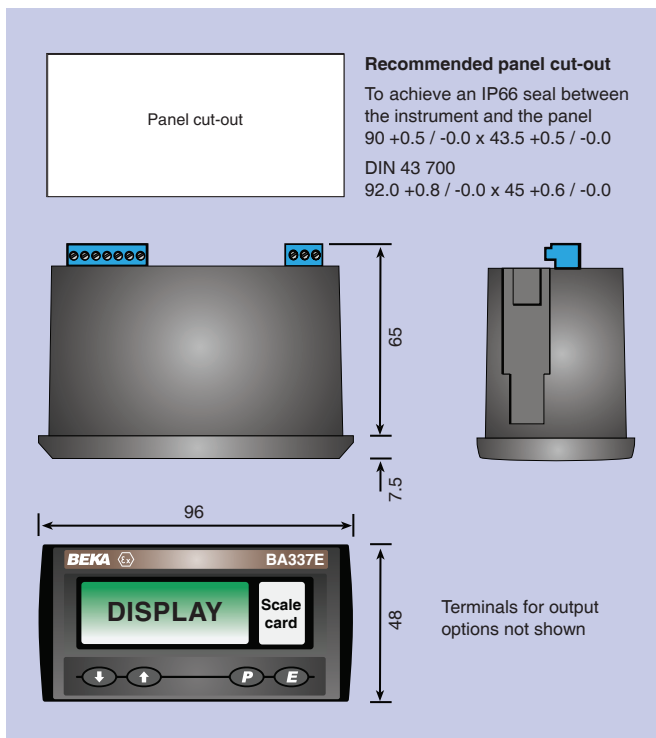
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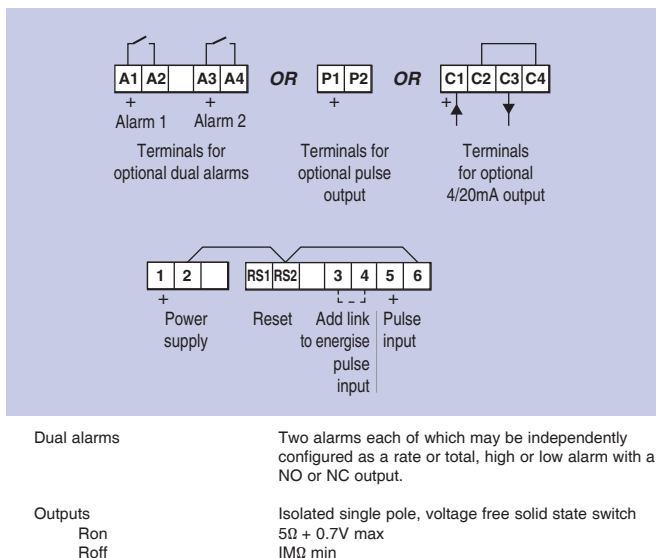
SPECIFICATION

Power supply		
Voltage	10 to 28V from a Zener barrier or galvanic isolator	
Current	16mA max plus 22.5mA for optional backlight	
Input	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max
Frequency		
Switch contact	150Hz typical	} <i>Depends upon pulse width and debounce setting.</i>
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 9mm high	
Decimal point	1 of 7 positions or absent	
Rate #	6 digits 6mm high	
Decimal point	1 of 4 positions or absent	
# Rate & Total can be shown on either 6 or 8 digit display		
Grand total	Maximum count 10 ¹⁶	
Remote reset	Contact closure with resistance less than 10kΩ	
Configurable functions		
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.	
Flowmeter K-factor	Up to 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		
Intrinsic safety		
Europe ATEX		
Code	Group II Category 1G Ex ia IIC T5 Ga	
Cert. No.	-40°C ≤ Ta ≤ 70°C ITS16ATEX28408X	
International IECEx		
Code	Ex ia IIC T5 Ga	
Cert. No.	-40°C ≤ Ta ≤ 70°C IECEx ITS 16.0004X	
ETL & cETL		
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G, Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C	
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 4008610	
ETL Control No.		
Environmental		
Operating temp	-40 to +70°C display -20 to +70°C	
Storage temp	-40 to +85°C	
Humidity	to 95% at 40°C non condensing	
Vibration	Report available	
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20	
EMC	Complies with EMC Directive 2014/30/EU	
Mechanical		
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.	
Weight	0.15kg	
Accessories		
Backlight	Green LED internally powered	
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #	
Tag legend	Specified tag number or application printed onto rear of instrument. #	
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #	
One of the following three output accessories may be factory fitted to each rate totaliser. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for <i>simple apparatus</i> .		
Pulse output	Isolated open collector	
Source	Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms. 51Ω + 3V max 1MΩ min 10mA	
Ron		
Roff		
I max		
4/20mA output	Isolated current sink	
Voltage drop	5 to 28V	

DIMENSIONS (mm)



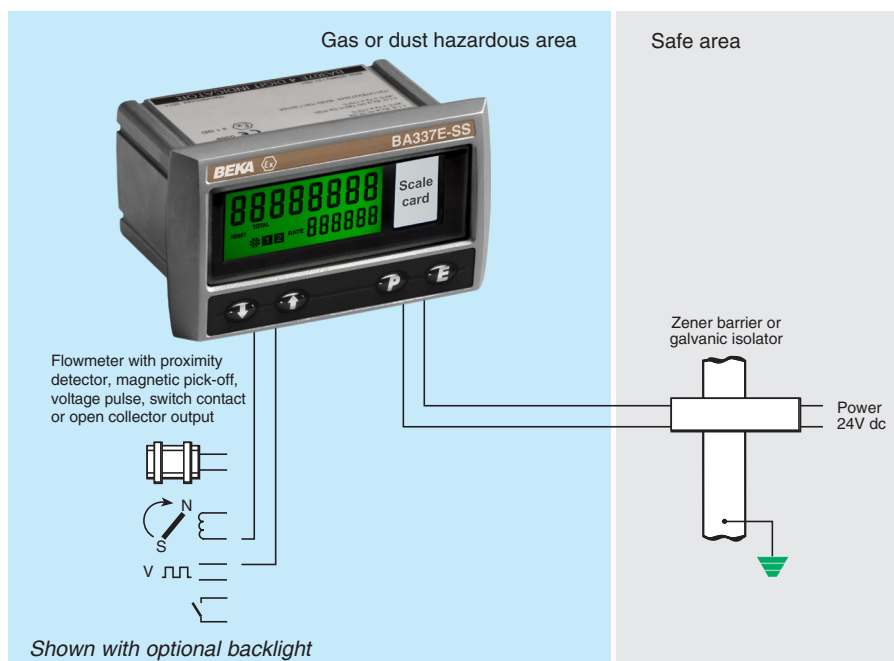
TERMINAL CONNECTIONS



See accessory datasheet for details

HOW TO ORDER

Model number	Please specify
Input	BA337E
	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	
Display backlight	Please specify if required
Scale card	Backlight
	Legend required
	No charge if ordered with totaliser.
Tag	Legend required
Rear cover and sealing kit	BA495
One of following three output options:	
Pulse output	Direct retransmission or scaled*
or 4/20mA output	4/20mA output
or Dual alarms	Alarms
* 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. Can easily be reconfigured on-site.	



The BA337E-SS is an intrinsically safe rate totaliser housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA337E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the panel enclosures certification. The intrinsically safe totaliser may also be installed in any uncertified panel enclosure located in Zone 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card simplifies identification.

The main application of the BA337E-SS 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 BA337E-SS will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

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.

International intrinsic safety certification allows the BA337E-SS rate totaliser to be installed 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.

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.

One of the following three optional outputs may be factory fitted to the BA337E-SS rate totaliser. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional isolated 4/20mA output may be configured to produce an analogue 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 isolator. 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 BA337E-SS display show the status of both alarm outputs.

Zone 2 certification and a larger display are available in other models within the range. The BA337NE has the same features as the BA337E-SS, but is Ex nA and Ex tC certified allowing installation in Zones 2 or 22 without Zener barriers or galvanic isolators.

The BA338E offers similar features as the BA337E-SS in a 144 x 72mm Noryl enclosure with a larger display.

BA337E-SS

Rugged one input rate totaliser

Intrinsically safe gas and dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- ◆ Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ Separate rate and total displays.
- ◆ Intrinsically safe
- ◆ 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- ◆ Optional: Backlight dual alarms or 4/20mA output or pulse output
- ◆ 3 year guarantee

www.beka.co.uk/ba337e-ss



BEKA associates

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SPECIFICATION

Power supply		10 to 28V from a Zener barrier or galvanic isolator
Voltage		16mA max plus 22.5mA for optional backlight
Current		
Input	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max
Frequency		
Switch contact	150Hz typical	} Depends upon pulse width and debounce setting.
Other inputs	100kHz max	
All inputs	0.01Hz min	
Display		
Type	Liquid crystal	
Zero blanking	Blanked apart from 0 in front of decimal point	
Total 0	8 digits 9mm high	
Decimal point	1 of 7 positions or absent	
Rate 0	6 digits 6mm high	
Decimal point	1 of 4 positions or absent	
0 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		
Configurable functions		
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.	
Flowmeter K-factor	Up to 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		
Intrinsic safety		
Europe ATEX		
Code	Group II Category 1G	Ex ia IIC T5 Ga
	Group II Category 1D	Ex ia IIC T80°C Da
	-40°C ≤ Ta ≤ +60°C ≠	
Cert. No.	ITS16ATEX28408X	
International IECEx		
Code	Ex ia IIC T5 Ga	
	Ex ia IIC T80°C Da	
	-40°C ≤ Ta ≤ +60°C ≠	
Cert. No.	IECEX ITS 16.0004X	
ETL & cETL		
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada)	
	Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada)	
	Class I Zone 0 AEx ia IIC T5 Ga (USA)	
	Zone 20 AEx ia IIC T80°C Da (USA)	
	Ex ia IIC T5 Ga (Canada)	
	Ex ia IIC T80°C Da (Canada)	
	-40°C ≤ Ta ≤ 60°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	
# +70°C when not relying upon the certified impact and ingress protection provided by the front of the BA337E-SS enclosure to maintain the certification of the panel enclosure in which the BA337E-SS is mounted.		
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		
Ingress	Front IP66, rear IP20	
Material	BS 3146-2:1977 ANC4B (316)	
EMC	Complies with 2014/30/EU	

≠ +70°C when **not** relying upon the certified impact and ingress protection provided by the front of the BA337E-SS enclosure to maintain the certification of the panel enclosure in which the BA337E-SS is mounted.

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	Front IP66, rear IP20
Ingress	BS 3146-2:1977 ANC4B (316)
Material	Complies with 2014/30/EU
EMC	

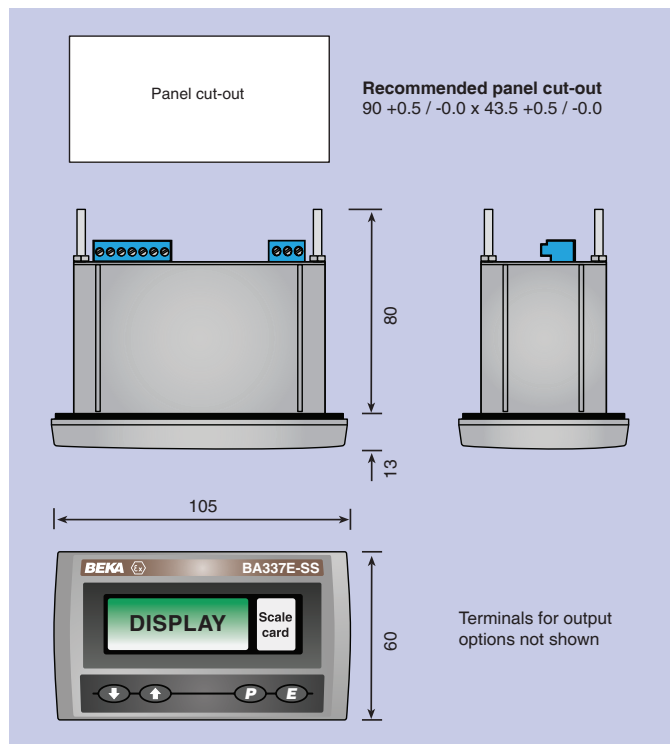
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.
Weight	0.85kg

Accessories	
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

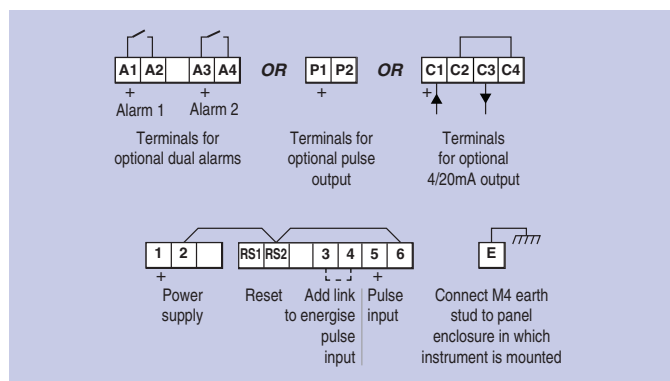
One of the following three output accessories may be factory fitted to each rate totaliser. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Source	Totaliser input: synchronous pulse output, 5kHz max or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



4/20mA output
Voltage drop

Isolated current sink
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
Roff

Isolated single pole, voltage free solid state switch
5Ω + 0.7V max
1MΩ min

See accessory datasheet for details

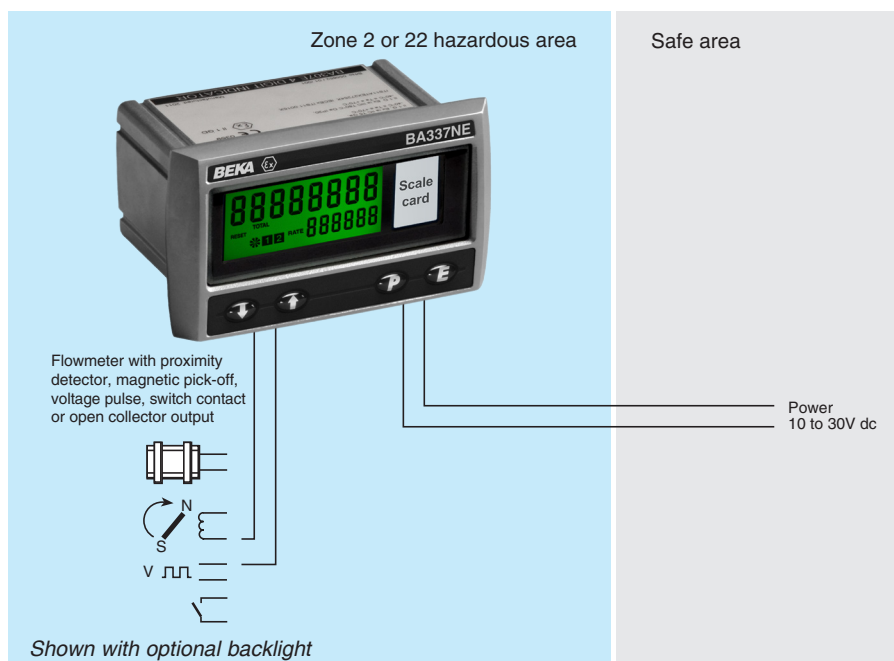
HOW TO ORDER

Model number	Please specify BA337E-SS
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	
Display backlight	Please specify if required Backlight
Scale card	Legend required
	No charge if ordered with totaliser.
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Direct retransmission or scaled
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

* 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. Can easily be reconfigured on-site.



The **BA337NE** rate totaliser has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22 without the need for Zener barriers or galvanic isolators. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card simplifies identification.

The **main application** of the BA337NE 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 in a Zone 2 or 22 hazardous area. The BA337NE can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

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.

International Ex nA certification permits the BA337NE rate totaliser to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and rate totaliser may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly, the BA337NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations.

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.

One of the following three optional outputs may be factory fitted to the BA337NE rate totaliser.

Optional isolated pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional isolated 4/20mA output may be configured to produce an analogue 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 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 BA337NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA337E-SS has the same features as the BA337NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA337E offers similar features in a Noryl 96 x 48mm enclosure and the BA338E has similar features in a 144 x 72mm Noryl enclosure with a larger display.

BA337NE

Rugged Ex nA & Ex tc 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 rate and total displays.**
- ◆ **Ex nA & Ex tc certified**
- ◆ **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- ◆ **Optional:**
Backlight
dual alarms
or 4/20mA output
or pulse output
- ◆ **3 year guarantee**

www.beka.co.uk/ba337ne



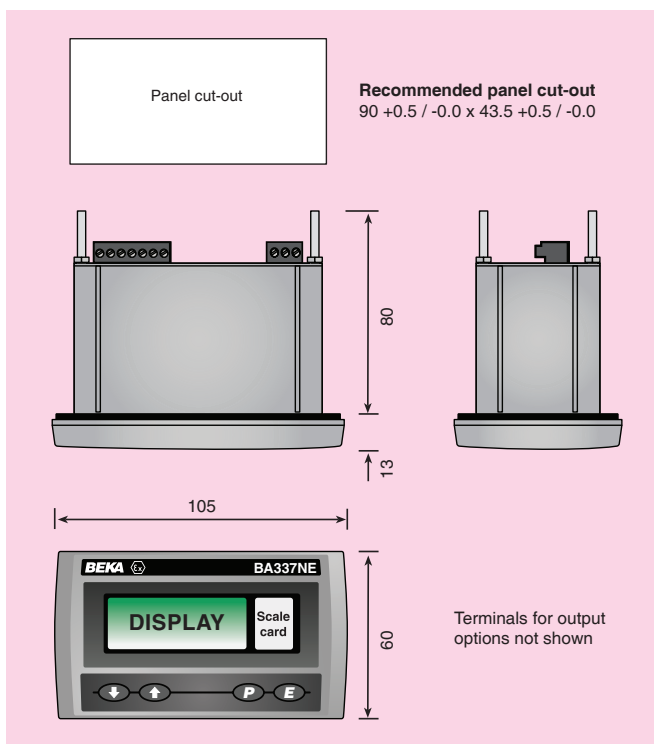
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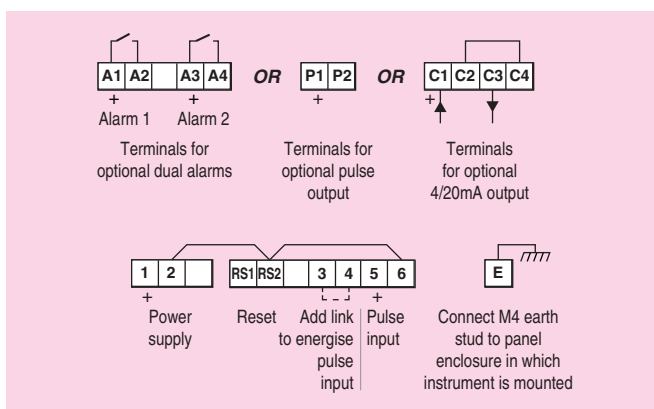
SPECIFICATION

Power supply	
Voltage	10 to 30V dc
Current	16mA max plus 22.5mA 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 9mm high
Decimal point	1 of 7 positions or absent
Rate #	6 digits 6mm high
Decimal point	1 of 4 positions or absent
* Rate & Total can be shown on either 6 or 8 digit display	
Grand total	Maximum count 10 ¹⁶
Remote reset	
	Contact closure with resistance less than 10kΩ
Configurable functions	
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit volume.
Flowmeter K-factor	Up to 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	
Note: Ex ic in codes refers to instrument push button contacts which are nonincendive	
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°C ≤ Ta ≤ +60°C ITS16ATEX48409X
Cert. No.	
International IECEx Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C IECEx ITS 16.0005X
Cert. No.	
ETL & cETL Code	Class I Zone 2 AEx nA ic IIC T5 Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA) Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada) Ex ic tc IIIC T80°C Dc (Canada) -40°C ≤ Ta ≤ +60°C 4008610
ETL Control No.	
Environmental	
Operating temp	-40 to +60°C display -20 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.
Weight	0.85kg
Accessories	
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #
One of the following three output accessories may be factory fitted to each rate totaliser.	
Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms 51Ω + 3V max 1MΩ min 10mA
Ron	
Roff	
I max	
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V

DIMENSIONS (mm)



TERMINAL CONNECTIONS



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.

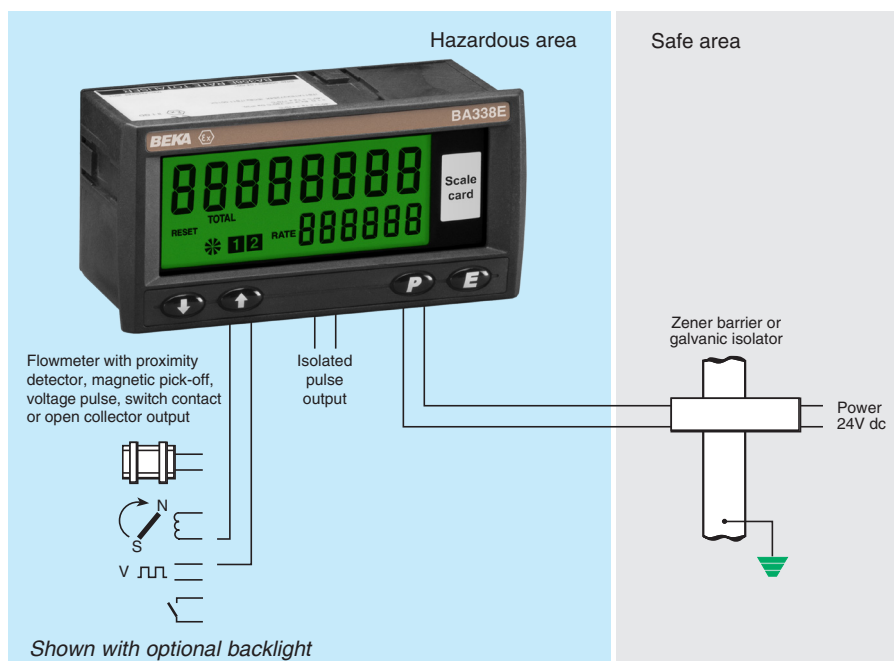
Outputs
Ron
Roff

Isolated single pole, voltage free solid state switch
5Ω + 0.7V max
1MΩ min

See accessory datasheet for details

HOW TO ORDER

Model number	BA337NE
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	
Display backlight	Please specify if required
Scale card	Backlight
	Legend required
	No charge if ordered with totaliser.
Tag	Legend required
Rear cover and sealing kit	BA495
One of following three output options:	
Pulse output	Direct retransmission or scaled *
or 4/20mA output	4/20mA output
or Dual alarms	Alarms
* 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. Can easily be reconfigured on-site.	



The **BA338E** is a third generation intrinsically safe rate totaliser that is compatible with the earlier BA338C, but has a much larger display, a lineariser and an isolated synchronous pulse output. 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. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA338E 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 BA338E 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 very 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.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA338E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

Open collector pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

International intrinsic safety certification allows the BA338E rate totaliser to be installed 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. All input safety parameters are the same or greater than those for the preceding BA338C, thus allowing the BA338E to safely replace the earlier model.

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 the totaliser is installed in a poorly illuminated area.

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

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA338E display show the status of both alarm outputs.

When panel space is limited the BA337E provides similar features in a smaller 94 x 48mm enclosure.

BA338E

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 rate and total displays.**
- ◆ **Intrinsically safe**
- ◆ **144 x 72mm DIN enclosure with IP66 front protection.**
- ◆ **Lineariser**
- ◆ **Isolated pulse output**
- ◆ **Optional:**
Backlight
Dual alarms
4/20mA output
- ◆ **3 year guarantee**

www.beka.co.uk/ba338e



BEKA

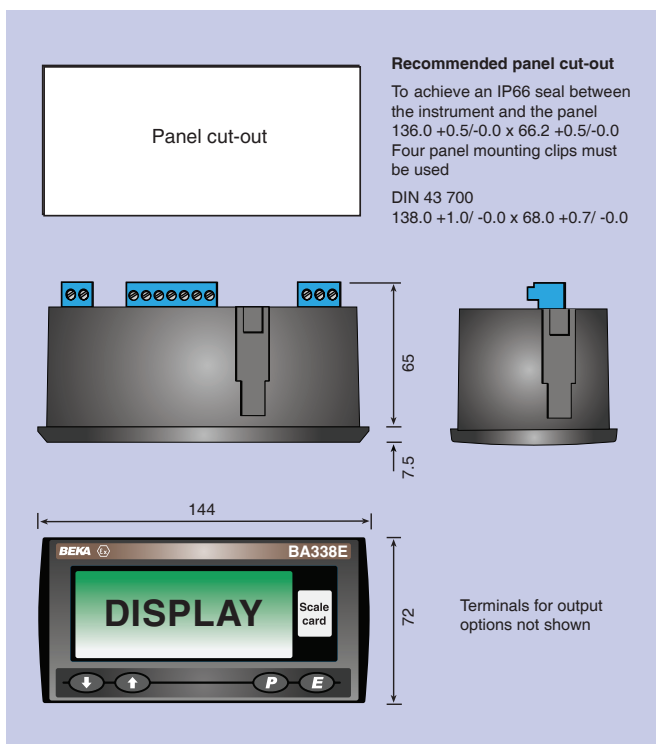
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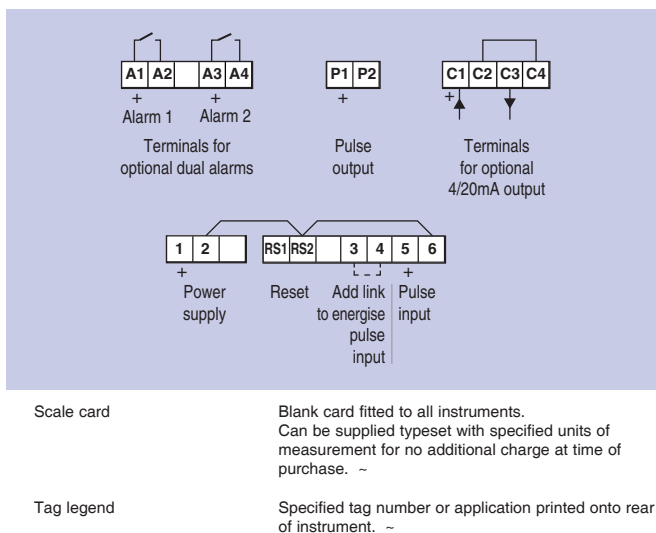
SPECIFICATION

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 4 positions or absent
# Rate & Total can be shown on either 6 or 8 digit display	
Grand total	Maximum count 10 ¹⁶
Remote reset	
	Contact closure with resistance less than 10kΩ
Pulse output	
Source	Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .
	Totaliser input: synchronous pulse output, 5kHz max.
	or
	Lease significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
Configurable functions	
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.
Flowmeter K-factor	Up to 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	
Intrinsic safety	
Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga
Cert. No.	-40°C ≤ Ta ≤ 70°C ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga
Cert. No.	-40°C ≤ Ta ≤ 70°C IECEX ITS 16.0004X
ETL & cETL	
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G, Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C
Nonincendive USA & Canada ETL & cETL	
Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G, Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610
Environmental	
Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable terminal blocks.
Weight	0.35kg
Accessories	
Backlight	Green LED internally powered
4/20mA output	Isolated current sink, certified as a separate intrinsically safe circuit complying with requirements for <i>simple apparatus</i> .
Voltage drop	5 to 28V
Alarms	
	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	
	Isolated single pole, voltage free solid state switch, each certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)

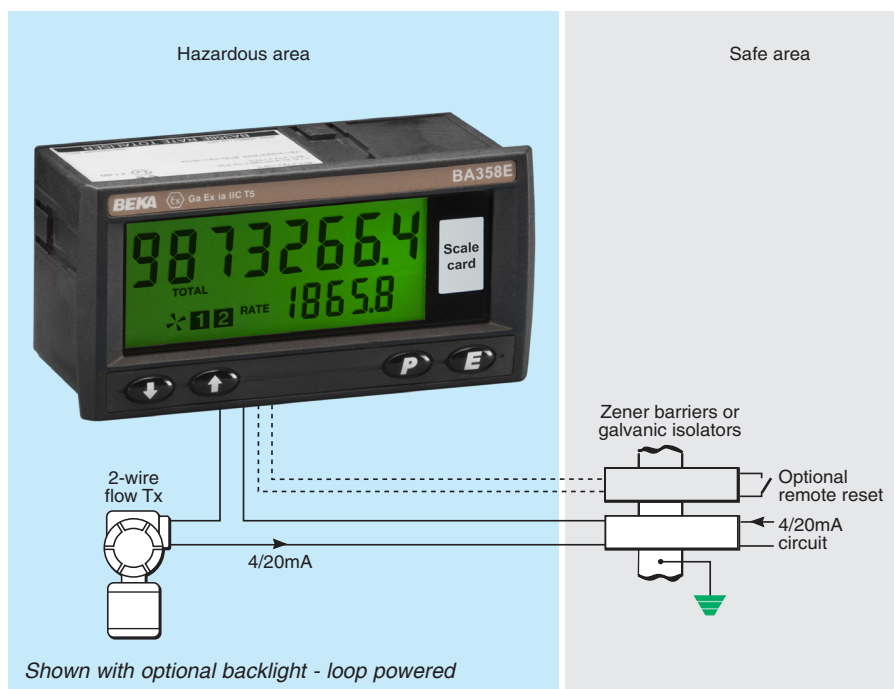


TERMINAL CONNECTIONS



HOW TO ORDER

Model number	Please specify BA338E
Input	Type *
Rate scale factor	XXXXX * <i>If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow rate.</i>
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Accessories	
Display backlight	Please specify if required Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required
Tag	No charge if ordered with totaliser. Legend required
* 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 minutes with direct pulse retransmission. Can easily be reconfigured on-site.	



The BA358E loop powered 4/20mA rate totaliser is a third generation instrument that is electrically and mechanically compatible with the earlier BA358C, but has a much larger display with a wider viewing angle providing maximum visibility from a 144 x 72mm instrument. The new model has an extended operating temperature range, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing it from the panel.

The main application of the BA358E 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 BA358E 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 BA358E 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.

IP66 front panel protection and a neoprene gasket sealing the joint between the totaliser and the panel making the instrument suitable for use in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the BA358E is installed.

International intrinsic safety certification permits the BA358E 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 BA358E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA358C, thus allowing the BA358E to safely replace the earlier model.

A backlight that 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 vibration testing and is supported by a three year guarantee.

For field mounting applications the BA354E has a similar specification as the BA358E, but is housed in a robust IP66 GRP enclosure suitable for external mounting. For safe area applications the BA554E and BA558E are equivalent uncertified field and panel mounting models.

BA358E

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, FM, cFM & IECEx.
- ◆ Uni-directional & bi-directional operation.
- ◆ Root extractor and 16 segment lineariser.
- ◆ Optional backlight & alarms.
- ◆ Easy on-site scale card installation.
- ◆ IP66 front
- ◆ 144 x 72mm DIN enclosure.
- ◆ 3 year guarantee

www.beka.co.uk/ba358e



BEKA

associates

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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~	
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 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 for 1mA pk to pk 50 or 60Hz interference.
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 IP20 Tamb = -40 to 70°C

Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W

Output parameters	Complies with requirements for simple apparatus.
Cert. No.	ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)

USA FM	
Standard	3610 Entity
Code	CL I: Div 1 Gp A, B, C, & D 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

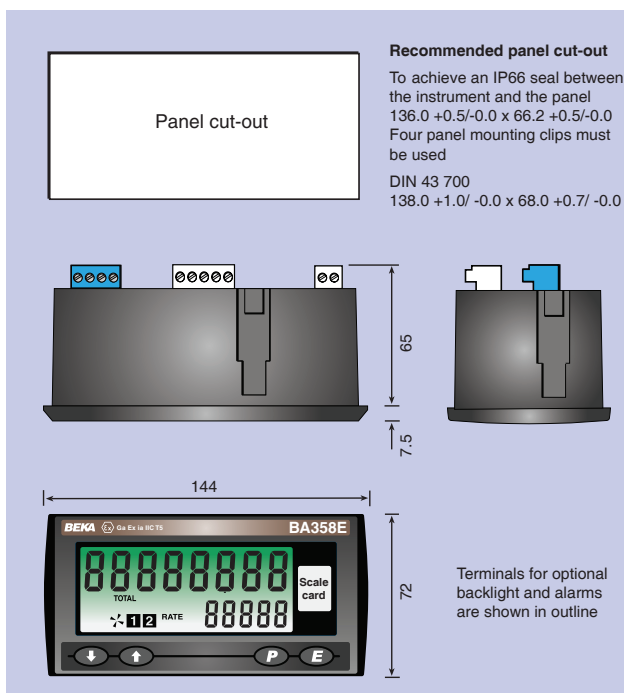
Canada cFM	
File	3041487C

International IECEx	
Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)
Cert. No	

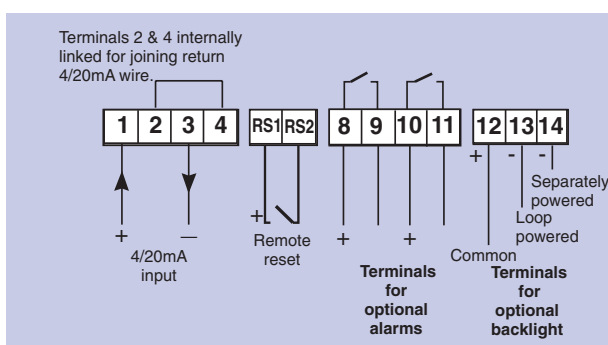
Environmental	
Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable.
Weight	0.35kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Backlight	
Loop powered	
Separately powered.	
Alarms	

Output	
Ron	
Roff	

Printed scale card

Pack of printed scale cards

Tag legend

Green, may be loop or separately powered.
Totaliser voltage 5V
10.5V at 35mA from IS interface
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 complying with requirements for Simple apparatus.
5Ω + 0.7V max
1MΩ min

Blank card fitted to each totaliser can be supplied printed with specified units of measurement.

Contains 26 common units of measurement and four blanks.

Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

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

Rate timebase	
Total scale factor	

Accessories	
Display backlight	
Dual alarms	
Scale card	
Tag	

Please specify
BA358E
Linear, root or lineariser*

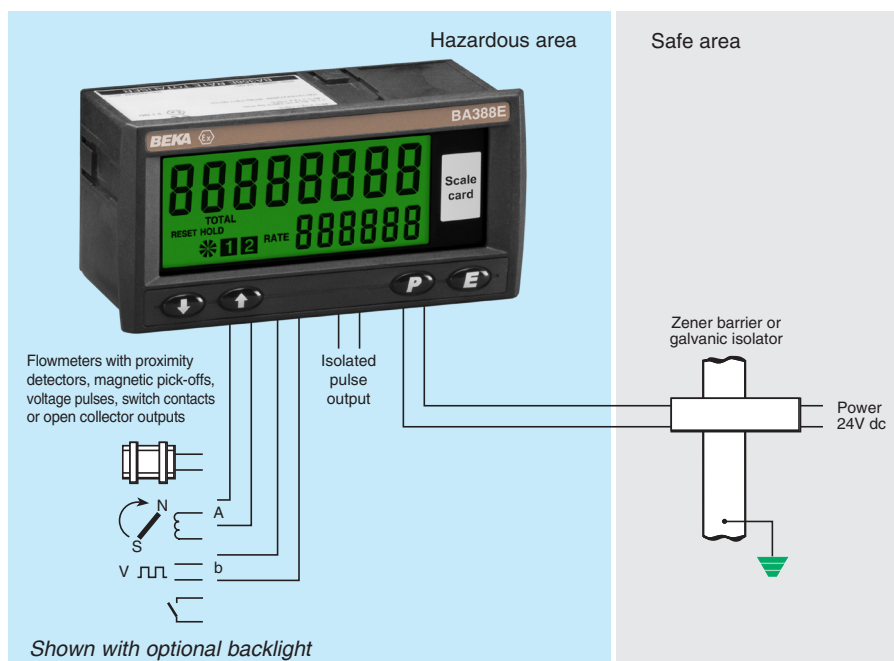
XXXXX } Include position of decimal point &
XXXXX } sign if negative, plus intermediate
points if linearisation is required.*

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

Please specify if required

Backlight	
Alarms	
Legends required	
Legend required	

* If calibration information is not supplied 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 **BA388E** is a two input intrinsically safe rate totaliser that can simultaneously display the total flow and the rate of flow of either flowmeter, or the sum or difference of the two inputs. Rate and total displays may have the same or different engineering units. The BA388E is easy to use and each input can be independently configured on-site to operate with a flowmeter having various pulse outputs. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA388E is to process the pulse output from two hazardous area flowmeters and calculate and display the sum or difference of the two within a hazardous area. Rate and total flow can be simultaneously displayed in the same or different engineering units and the output from each meter can also be shown. The BA388E will compensate for nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can be entered for each meter on-site.

The large display has high contrast and a very 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.

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

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA388E to be installed in areas that will be washed down.

To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA388E rate totaliser to be installed 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.

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 the totaliser is installed in a poorly illuminated area.

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

Dual alarms with galvanically isolated solid state outputs which can switch hazardous or safe area loads, such as sounders or solenoid valves, are available as a factory fitted option. Both may be independently configured as rate or total alarms operating on either flowmeter input, or on the sum or difference of the two inputs. Annunciators on the BA388E display show the status of both alarm outputs.

If panel space is limited the BA337E offers similar one input functions in a 96 x 48mm enclosure.

BA388E

Two input rate totaliser

Intrinsically safe for use in all gas hazardous areas

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

www.beka.co.uk/ba388e



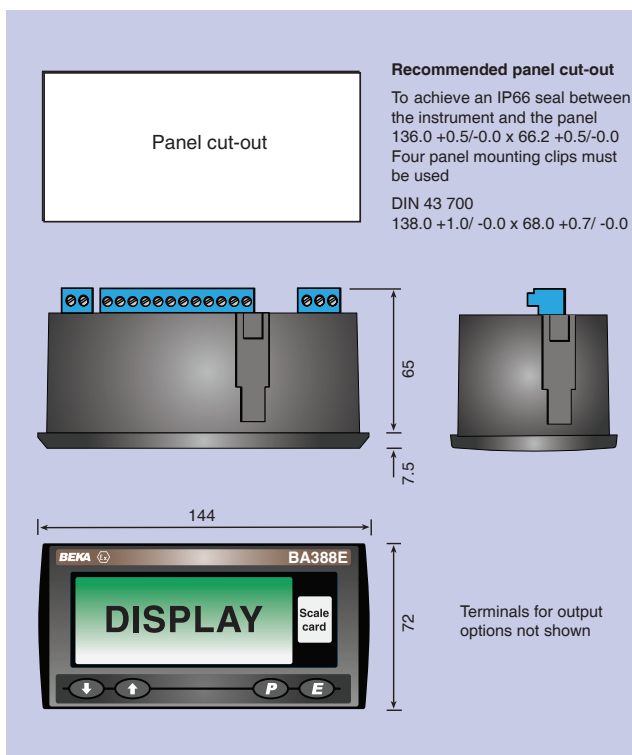
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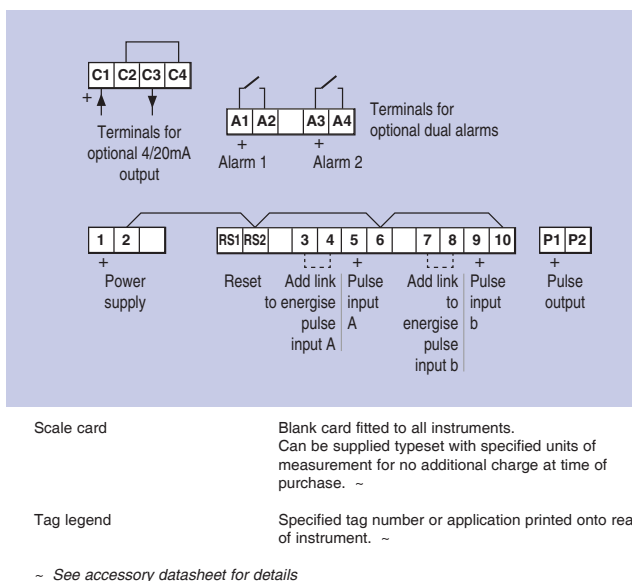
SPECIFICATION

Power supply		
Voltage	10 to 28V from a Zener barrier or galvanic isolator	
Current	22mA max plus 16mA for optional backlight	
Input	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max
Frequency		
Switch contact	150Hz typical	} <i>Depends upon pulse width and debounce setting.</i>
Other inputs	100kHz max	
All inputs	0.01Hz min	
Display		
Type	Liquid crystal	
Zero blanking	Blanked apart from 0 in front of decimal point	
Rate ‡	6 digits 12mm high	
Decimal point	1 of 4 positions or absent	
Total ‡	8 digits 18mm high	
Decimal point	1 of 7 positions or absent	
‡ Rate or Total of either input can be shown on 6 or 8 digit display		
Grand total	Maximum count 10 ¹⁶	
Remote reset	Contact closure with resistance less than 10kΩ	
Pulse output	Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .	
Source	Either input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms	
Ron	51Ω + 3V max	
Roff	1MΩ min	
I max	10mA	
Configurable functions		
Each input individually configurable		
Input function	Input A + Input b: Input A - Input b:	
Flowmeter K-factor	Adjustable between 0.0001 and 99999	
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol	
Lineariser	Up to 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	
Cert. No.	-40°C ≤ Ta ≤ 70°C ITS16ATEX28408X	
International IECEx		
Code	Ex ia IIC T5 Ga	
Cert. No.	-40°C ≤ Ta ≤ 70°C IECEx ITS 16.0004X	
ETL & cETL		
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C	
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 4008610	
ETL Control No.		
Environmental		
Operating temp	-40 to +70°C display -20 to +70°C	
Storage temp	-40 to +85°C	
Humidity	to 95% at 40°C non condensing	
Vibration	Report available	
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20	
EMC	Complies with EMC Directive 2014/30/EU	
Mechanical		
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.	
Weight	0.35kg	
Accessories		
Backlight	Green LED internally powered	
4/20mA output	Isolated current sink representing any part of the sum or difference of the two inputs, certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .	
Voltage drop	5 to 28V	
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output operating on either input.	
Outputs	Isolated single pole, voltage free solid state switch certified as a separate intrinsically safe circuit complying with the requirements for <i>simple apparatus</i> .	
Ron	5Ω + 0.7V max	
Roff	1MΩ min	

DIMENSIONS (mm)



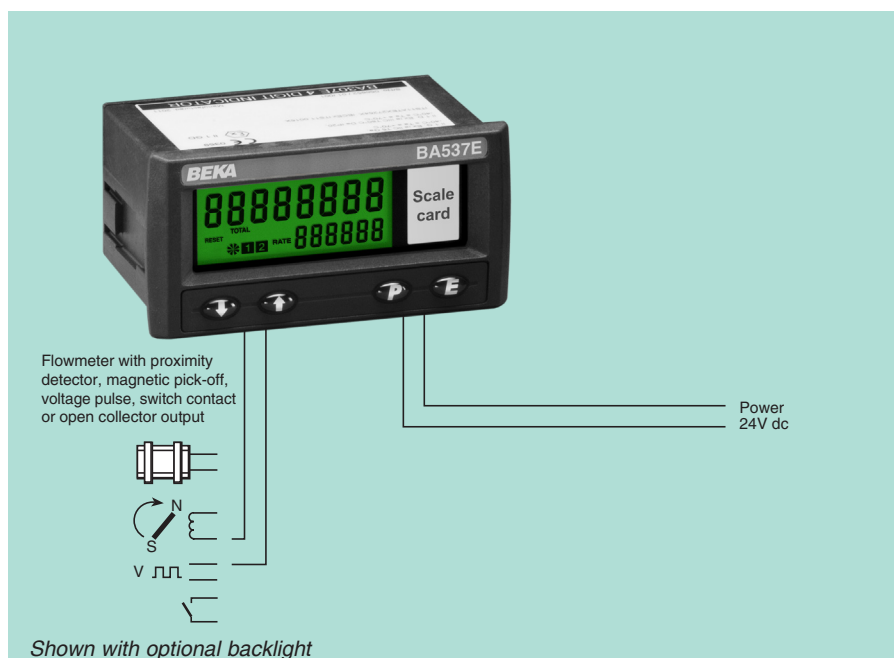
TERMINAL CONNECTIONS



HOW TO ORDER

Model number	BA388E
Input	Type *
Flowmeter K-factor	If linearisation is required, up to 16 K-factors may be entered each at a specified flow rate.
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission of either input or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Accessories	Please specify if required
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required
Tag	No charge if ordered with totaliser.
	Legend required

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



The **BA537E** is a third generation general purpose rate totaliser that has similar functions as the BA538E, but is housed in a smaller 96 x 48mm DIN 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. A slide-in scale card shows the units of measurement and simplifies identification.

The main application of the BA537E 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 BA537E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can easily be entered on-site.

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 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA537E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser

has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

One of the following three isolated outputs may be fitted to a BA537E rate totaliser. All are factory fitted options.

Optional open collector pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display,

Optional dual alarms can switch loads such as a sounder or 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 BA537E display show the status of both alarm outputs.

Rugged version and a larger display are available in other models within the range. The BA537E-SS is identical to the BA537E but is housed in a rugged stainless steel enclosure with a 10mm thick window that is ideal for applications in hostile environments where the front of the instrument may be impacted. If a larger display is required, the BA538E offers similar features as the BA537E in a 144 x 72mm enclosure.

For applications in flammable atmospheres the BA337E, which is identical to the BA537E, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BA537E

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.**
- ◆ **96 x 48mm DIN enclosure with IP66 front protection.**
- ◆ **Lineariser**
- ◆ **Simple on-site scale card installation.**
- ◆ **Optional:**
Backlight
dual alarms
or 4/20mA output
or pulse output
- ◆ **3 year guarantee**

www.beka.co.uk/ba537e

BEKA
associates

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SPECIFICATION

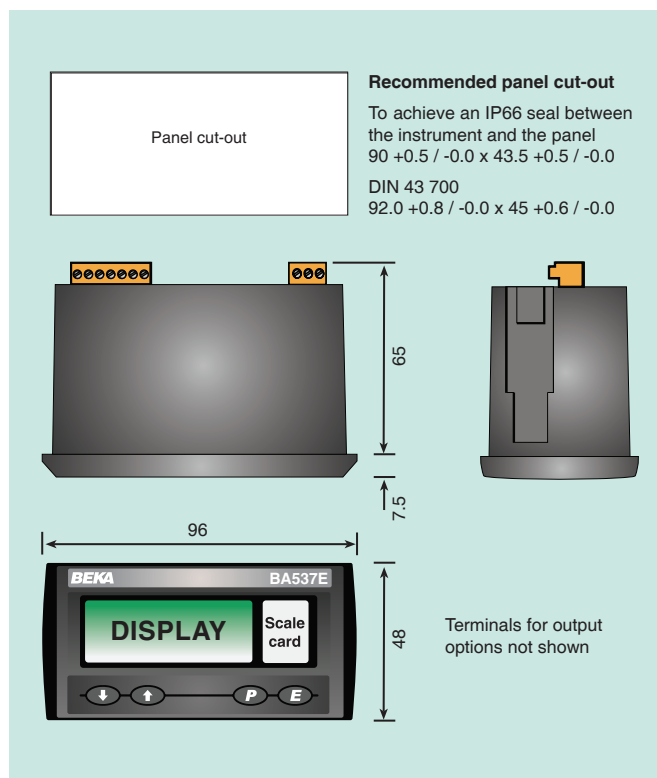
Power supply			
Voltage	10 to 30V dc		
Current	16mA max plus 22.5mA for optional backlight		
Input			
Switch contact	Lower	Upper	switching thresholds
Proximity detector (NAMUR)	100Ω	1kΩ	
Open collector	1.2mA	2.1mA	
Magnetic pick-off	2kΩ	10kΩ	
Voltage pulse (low)	0mV	+40mV	
Voltage pulse (high)	1V	3V	30V max
	3V	10V	30V max
Frequency			
Switch contact	150Hz typical	} <i>Depends upon pulse width and debounce setting.</i>	
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 #			
Decimal point	8 digits 9mm high		
	1 of 7 positions or absent		
Rate #			
Decimal point	6 digits 6mm high		
	1 of 4 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 (<i>K-factor</i>)	Adjustable between 0.0001 and 99999 pulses/unit volume		
Lineariser	Up to 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.		
Environmental			
Operating temp	-40 to +70°C display -20 to +70°C		
Storage temp	-40 to +85°C		
Humidity	To 95% at 40°C non condensing		
Vibration	Report available		
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20		
EMC	Complies with EMC Directive 2014/30/EU		
Mechanical			
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable		
Weight	0.15kg		
Accessories			
Backlight	Green LED internally powered		
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #		
Tag legend	Specified tag number or application printed onto rear of instrument. #		
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #		

One of the following three isolated output accessories may be factory fitted to each rate totaliser.

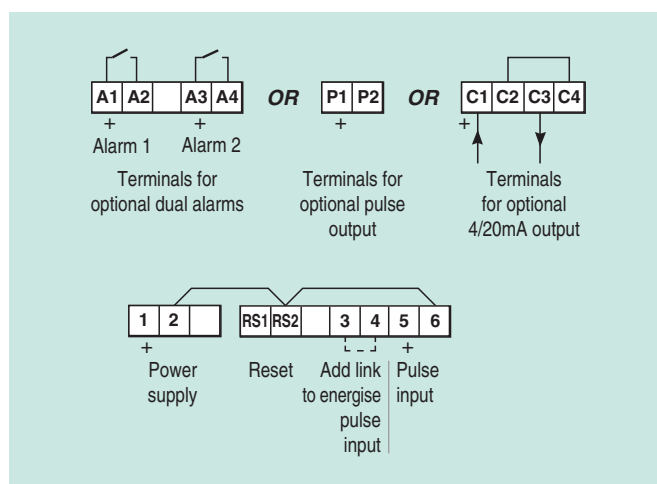
Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max.
	or
	Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
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
V max	30V dc
I max	200mA

See accessory datasheet for details

DIMENSIONS (mm)



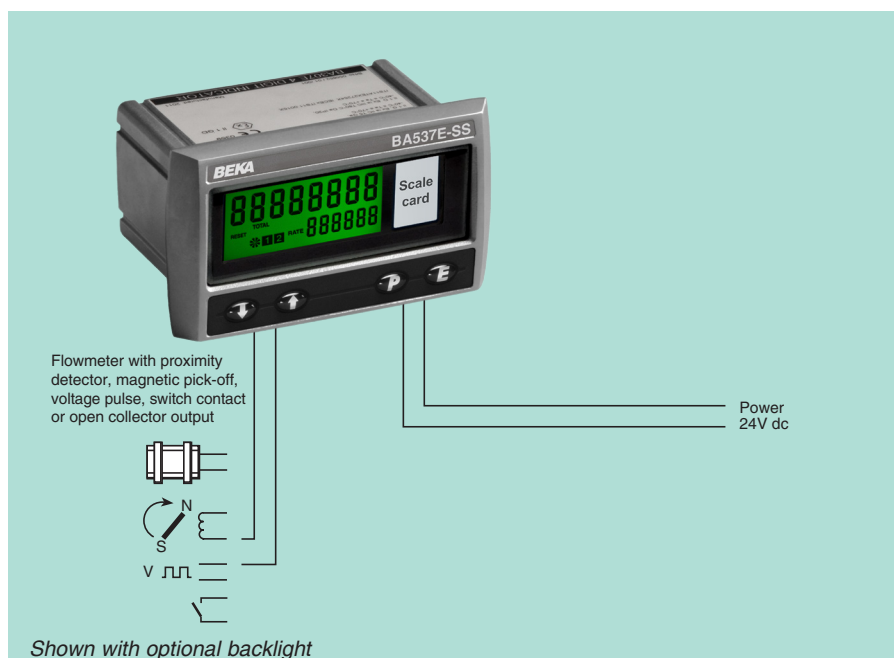
TERMINAL CONNECTIONS



HOW TO ORDER

Model number	Please specify BA537E
Input	Type *
Rate scale factor	XXXXX *
Rate timebase	If linearisation is required, up to 16 rate scale factors may be entered for different flow rates. Seconds, minutes or hours*
Total scale factor	XXXXX *
Accessories	
Display backlight	Please specify if required Backlight
Scale card	Legend required
Tag	No charge if ordered with totaliser
Rear cover and sealing kit	Legend required BA495
One of following three output options:	
Pulse output	Direct retransmission or scaled *
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

* 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 **BA537E-SS** is a rugged general purpose rate totaliser housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is particularly suitable for use in hostile and marine environments or where the front of the instrument is likely to be impacted. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card shows the units of measurement and simplifies identification.

The **main application** of the BA537E-SS 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 BA537E-SS can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

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.

One of the following three **isolated outputs** may be fitted to a BA537E-SS rate totaliser. All are factory fitted options.

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

Optional 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display,

Optional dual alarms can switch loads such as a sounder or 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 BA537E-SS display show the status of both alarm outputs.

For **less hostile applications** the BA537E is identical to the BA537E-SS but is housed in a Noryl enclosure also providing IP66 front of panel protection. If a larger display is required, the BA538E offers similar features in a 144 x 72mm Noryl enclosure.

For **applications in flammable atmospheres** the BA337E-SS, which is identical to the BA537E-SS, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BA537E-SS

Rugged one input rate totaliser

General purpose

- ◆ 105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.
- ◆ Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ Separate rate and total displays.
- ◆ Lineariser
- ◆ Optional: Backlight dual alarms or 4/20mA output or pulse output
- ◆ 3 year guarantee

www.beka.co.uk/ba537e-ss

BEKA
associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA 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	0mV	+40mV	
Voltage pulse (low)	1V	3V	30V max
Voltage pulse (high)	3V	10V	30V max

Frequency

Switch contact	150Hz typical	] Depends upon pulse width and debounce setting.
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total #	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate #	6 digits 6mm high
Decimal point	1 of 4 positions or absent

Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10 ¹⁶
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Remote reset

Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor (K-factor)	Adjustable between 0.0001 and 99999 pulses/unit volume.
Lineariser	Up to 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

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	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable
Weight	0.85kg

Accessories

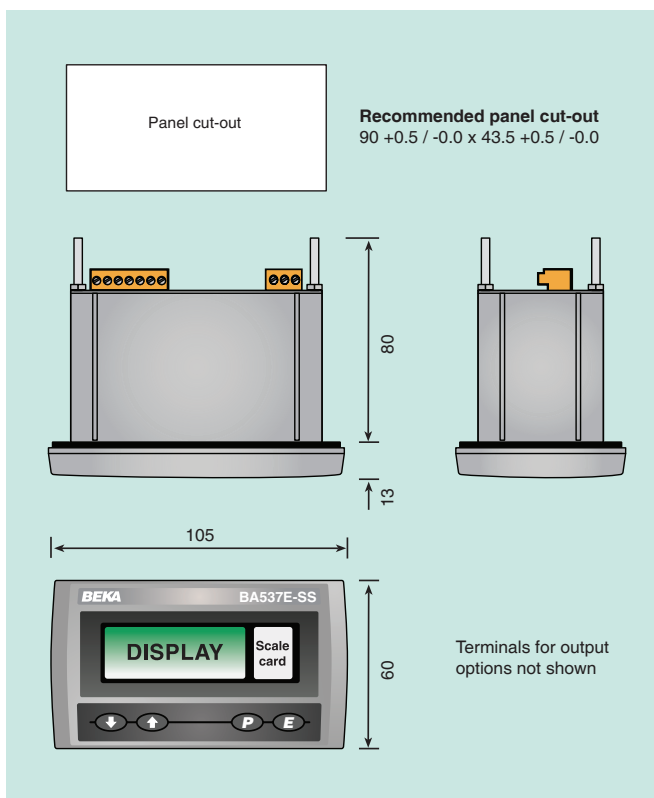
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each rate totaliser. All have isolated outputs.

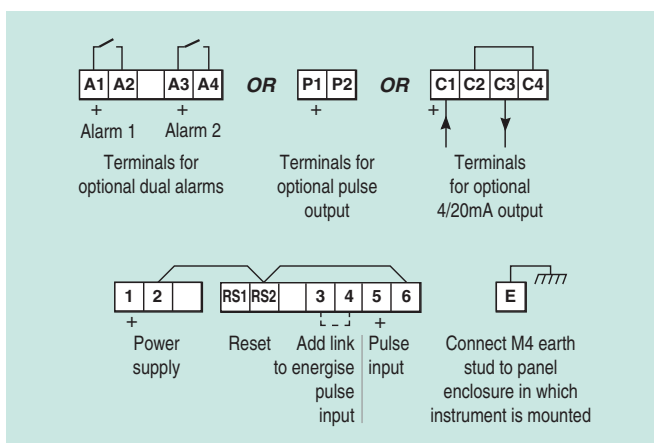
Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max.
	or
	Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
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
V max	30V dc
I max	200mA

See accessory datasheet for details

DIMENSIONS (mm)



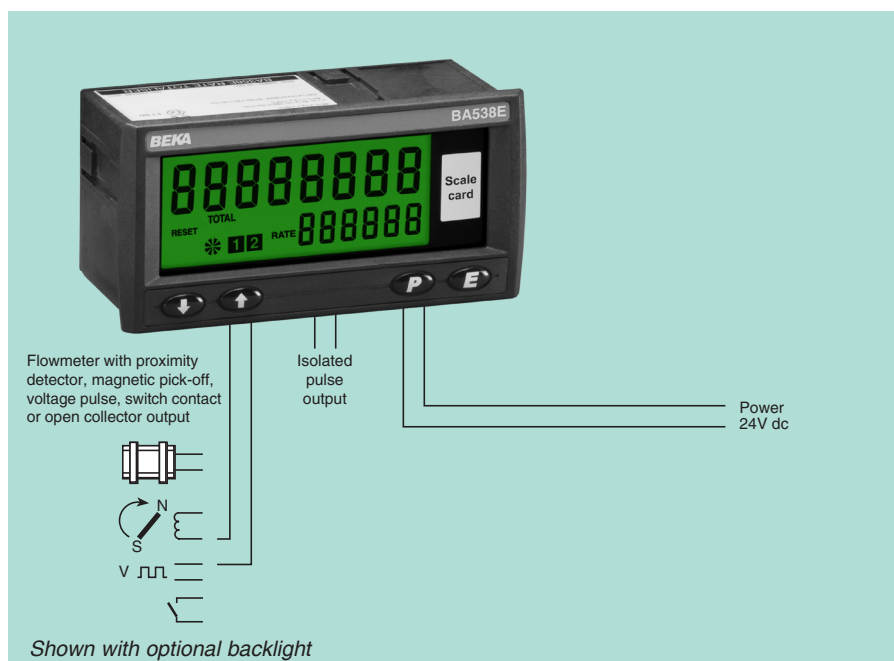
TERMINAL CONNECTIONS



HOW TO ORDER

Model number	Please specify
Input	BA537E-SS
Rate scale factor	Type * 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	Please specify if required
Display backlight	Backlight
Scale card	Legend required
	No charge if ordered with totaliser
Tag	Legend required
Rear cover and sealing kit	BA495
One of following three output options:	
Pulse output	Direct retransmission or scaled *
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

* 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 **BA538E** is a third generation general purpose rate totaliser that is compatible with the earlier BA538C, but has a much larger display, a lineariser and an isolated synchronous pulse output. 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. A slide-in scale card shows the units of measurement and simplifies identification.

Main application of the BA538E 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 BA538E 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 very 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 the totaliser is installed in a poorly illuminated area.

An open collector pulse output will synchronously retransmit the rate totaliser's input pulse to another instrument, or a pulse when the least significant digit of the total display is incremented.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA538E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or 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 BA538E display show the status of both alarm outputs.

When panel space is limited the BA537E provides similar features in a smaller 96 x 48mm enclosure. A rugged version, the BA537E-SS, housed in a stainless steel enclosure is also available

For applications in flammable atmospheres the BA338E, which is identical to the BA538E, and the smaller BA337E have international intrinsic safety certification. For Zone 2 or 22 applications, the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BA538E

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.**
- ◆ **144 x 72mm DIN enclosure with IP66 front protection.**
- ◆ **Lineariser**
- ◆ **Simple on-site scale card installation.**
- ◆ **Optional:**
Backlight
Dual alarms
4/20mA output
- ◆ **3 year guarantee**

www.beka.co.uk/ba538e

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associates

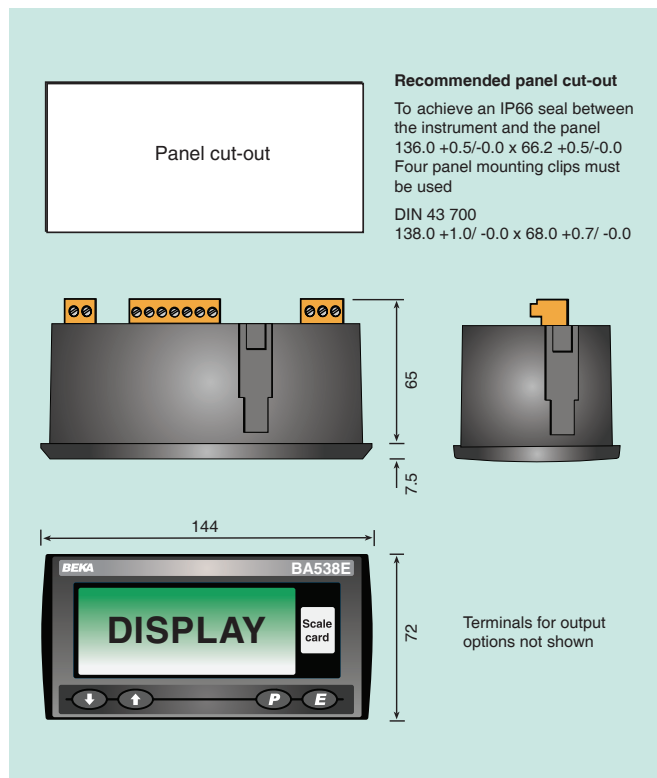
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SPECIFICATION

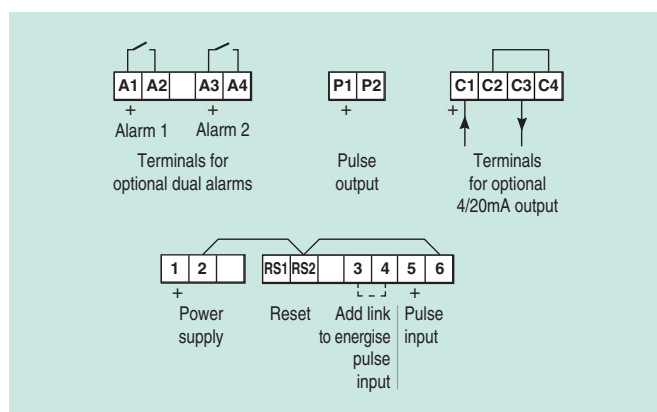
Power supply			
Voltage	10 to 30V dc		
Current	16mA max plus 22.5mA for optional backlight		
Input	Lower	Upper	switching thresholds
Switch contact	100Ω	1kΩ	
Proximity detector (NAMUR)	1.2mA	2.1mA	
Open collector	2kΩ	10kΩ	
Magnetic pick-off	0mV	+40mV	
Voltage pulse (low)	1V	3V	30V max
Voltage pulse (high)	3V	10V	30V max
Frequency			
Switch contact	150Hz typical	} <i>Depends upon pulse width and debounce setting.</i>	
Other inputs	100kHz max		
All inputs	0.01Hz min		
Display			
Type	Liquid crystal		
Zero blanking	Blanked apart from 0 in front of decimal point		
Total#	8 digits 18mm high		
Decimal point	1 of 7 positions or absent		
Rate#	6 digits 12mm high		
Decimal point	1 of 4 positions or absent		
# Rate & Total can be shown on either 6 or 8 digit display			
Grand total	Maximum count 10 ¹⁶		
Remote reset			
Contact closure with resistance less than 10kΩ			
Pulse output			
Source & output	Isolated open collector Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms 51Ω + 3V max 1MΩ min 10mA		
Ron			
Roff			
I max			
Configurable functions			
Rate scale factor (<i>K-factor</i>)	Adjustable between 0.0001 and 99999 pulses/unit volume.		
Lineariser	Up to 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		
Environmental			
Operating temp	-40 to +70°C display -20 to +70°C		
Storage temp	-40 to +85°C		
Humidity	To 95% at 40°C non condensing		
Vibration	Report available		
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20		
EMC	Complies with EMC Directive 2014/30/EU		
Mechanical			
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable		
Weight	0.35kg		
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		
V max	30V dc		
I max	200mA		
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~		
Tag legend	Specified tag number or application printed onto rear of instrument. ~		

~ See accessory datasheet for details

DIMENSIONS (mm)



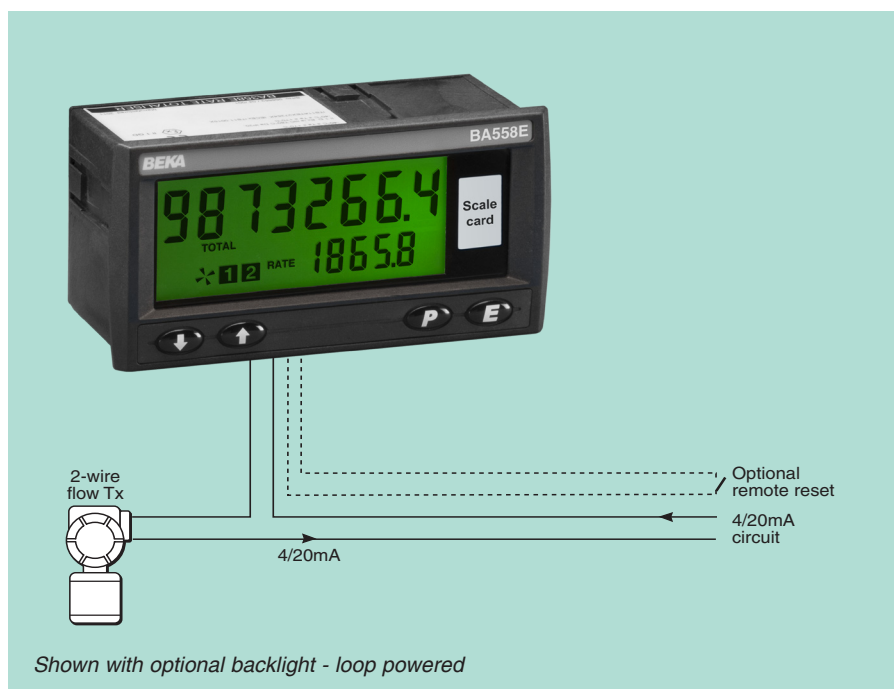
TERMINAL CONNECTIONS



HOW TO ORDER

Model number	Please specify BA538E
Input	Type *
Rate scale factor	XXXXX * <i>If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow rate.</i>
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Accessories	Please specify if required
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required
	No charge if ordered with totaliser
	Legend required
Tag	

* 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 **BA558E loop powered 4/20mA rate totaliser** is a third generation, general purpose, panel mounting instrument that is electrically and mechanically compatible with the earlier BA558C, but it has a larger display, extended operating temperature, and an even shorter enclosure depth than its predecessor. The new model has additional features such as a lineariser, bi-directional flow capabilities and a scale card that can easily be marked to show rate and total units of measurement and can be installed on-site without dismantling the totaliser enclosure, or removing it from the panel.

The **main application** of the BA558E 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 BA558E 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 BA558E 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.

IP66 front panel protection and a neoprene gasket sealing the joint between the totaliser and the panel make the instrument suitable for use in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the BA558E is installed.

A **backlight** that 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 and 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 vibration testing and is supported by a three year guarantee.

For field mounting applications the BA554E has a similar specification as the BA558E, but is housed in a robust IP66 enclosure suitable for external mounting.

If flammable atmospheres are present the BA358E should be used. This has the same features as the BA558E but has been certified for use in hazardous areas.

BA558E

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
- ◆ Uni-directional &
bi-directional operation.
- ◆ Root extractor and
16 segment lineariser.
- ◆ Optional backlight &
alarms.
- ◆ Easy on-site scale
card installation.
- ◆ IP66 front
- ◆ 144 x 72mm
DIN enclosure.
- ◆ 3 year guarantee

www.beka.co.uk/ba558e

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
'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

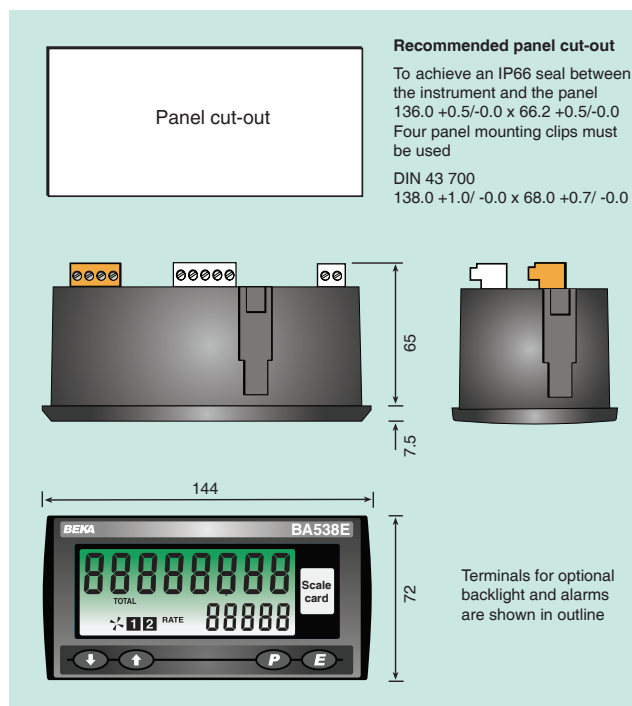
Remote total reset	Contact closure with resistance less than 1kΩ.
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Environmental	
Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

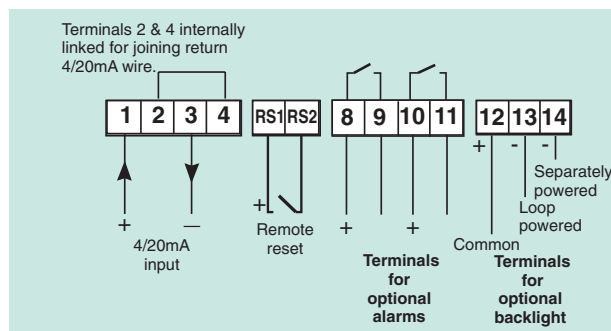
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable.
Weight	0.35kg

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.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each totaliser can be

DIMENSIONS (mm)



TERMINAL CONNECTIONS



supplied printed with specified units of measurement.

Pack of printed scale cards

Contains 26 common units of measurement and four blanks.

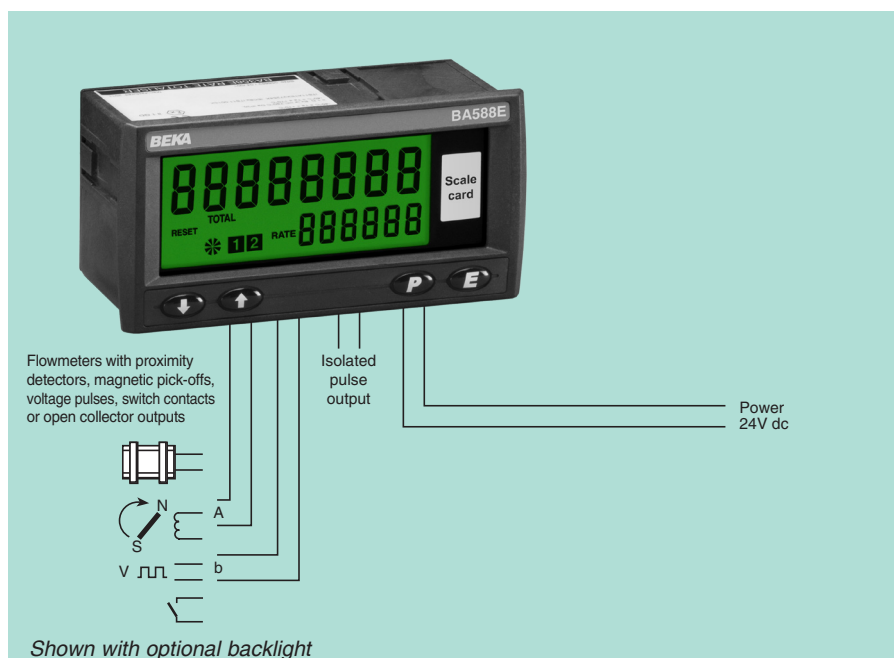
Tag legend

Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

Model number	BA558E
Display mode	Linear, root or lineariser*
Rate display at:	
4.000mA	XXXXX Include position of decimal point
20.000mA	XXXXX & 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
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legends required
Tag	Legend required

* 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 BA588E is a two input general purpose rate totaliser that can simultaneously display the total flow and the rate of flow of either flowmeter, or the sum or difference of the two inputs. Rate and total displays may have the same or different engineering units. The BA588E is easy to use and each input can be independently configured on-site to operate with a flowmeter having various pulse outputs. A slide-in scale card simplifies identification.

Main application of the BA588E is to process the pulse output from two process area flowmeters and calculate and display the sum or difference of the two. Rate and total flow can be simultaneously displayed in the same or different engineering units and the output from each flowmeter can also be shown. The BA588E will compensate for nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can be entered for each meter on-site.

The large display has high contrast and a very 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 the totaliser is installed in a poorly illuminated area.

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

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA588E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

An **optional isolated 4/20mA current sink output** may be configured to produce an analogue output proportional to any part of the sum or difference of the two flowmeter rate or total displays. The output is galvanically isolated allowing direct connection to other instruments.

Dual alarms with galvanically isolated solid state outputs which can switch loads such as sounders or solenoid valves, are available as a factory fitted option. Both may be independently configured as rate or total alarms operating on either flowmeter input, or on the sum or difference of the two inputs. Annunciators on the BA588E display show the status of both alarm outputs.

If **only one input is required** the BA538E has the same functions and display but only one input. When panel space is limited the BA537E is a single input rate totaliser in a 96 x 48mm enclosure.

For applications in flammable atmospheres the BA388E is identical to the BA588E but has international intrinsic safety certification. For one input applications the intrinsically safe BA338E and the smaller BA337E are also available.

BA588E

Two input rate totaliser

General purpose

- ◆ Each input independently configurable: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ Separate rate and total displays.
- ◆ 144 x 72mm DIN enclosure with IP66 front protection.
- ◆ Separate lineariser for each input.
- ◆ Simple on-site scale card installation.
- ◆ Isolated pulse output
- ◆ Optional:
Backlight
Dual alarms
4/20mA output
- ◆ 3 year guarantee

www.beka.co.uk/ba588e

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associates

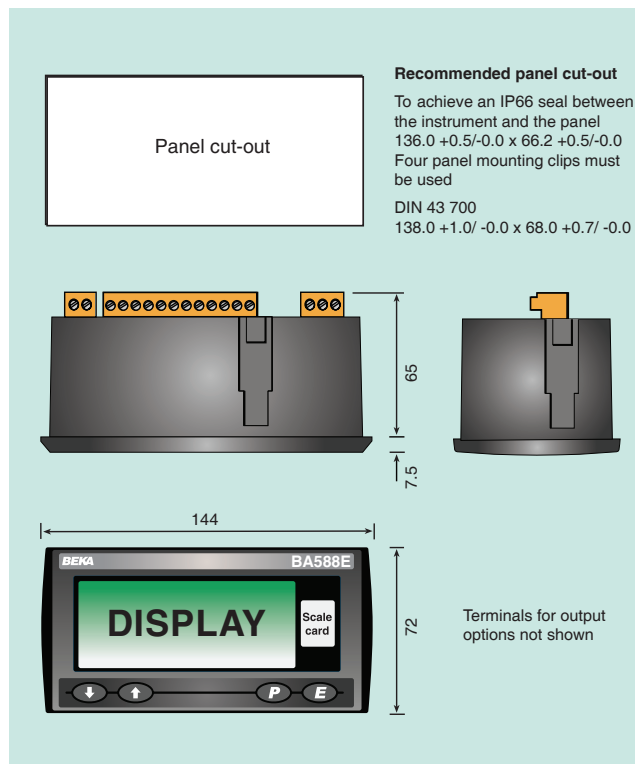
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SPECIFICATION

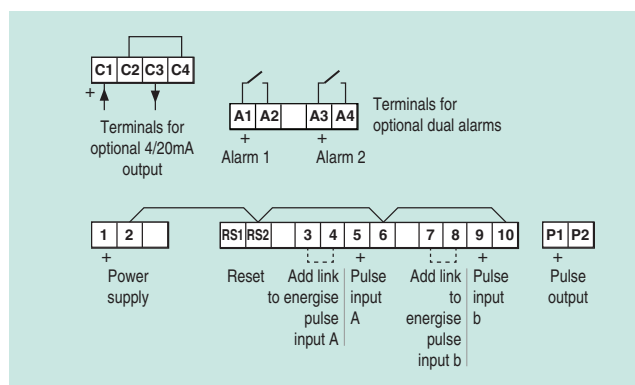
Power supply			
Voltage	10 to 30V dc		
Current	22mA max plus 16mA for optional backlight		
Input			
Switch contact	Lower 100Ω	Upper 1kΩ	switching thresholds
Proximity detector (NAMUR)	1.2mA	2.1mA	
Open collector	2kΩ	10kΩ	
Magnetic pick-off	0mV	+40mV	
Voltage pulse (low)	1V	3V	30V max
Voltage pulse (high)	3V	10V	30V max
Frequency			
Switch contact	150Hz typical	} <i>Depends upon pulse width and debounce setting.</i>	
Other inputs	100kHz max		
All inputs	0.01Hz min		
Display			
Type	Liquid crystal		
Zero blanking	Blanked apart from 0 in front of decimal point		
Rate‡	6 digits 12mm high		
Decimal point	1 of 4 positions or absent		
Total‡	8 digits 18mm high		
Decimal point	1 of 7 positions or absent		
‡ Rate or Total of either input can be shown on 6 or 8 digit display.			
Grand total	Maximum count 10 ¹⁶		
Remote reset			
Contact closure with resistance less than 10kΩ			
Pulse output			
Source & output	Isolated open collector		
	Either input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms		
Ron	51Ω + 3V max		
Roff	1MΩ min		
I max	10mA		
Configurable functions			
Each input individually configurable			
Rate scale factor (<i>K-factor</i>)	Adjustable between 0.0001 and 99999 pulses/unit volume. Up to 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	Noryl SE1GFN3. Front IP66, rear IP20		
EMC	Complies with EMC Directive 2014/30/EU		
Mechanical			
Terminals	Screw clamp for 0.5 to 1.5mm ² cable, removable		
Weight	0.35kg		
Accessories			
Backlight	Green LED internally powered		
4/20mA output	Isolated current sink representing any part of the sum or difference of the two inputs.		
Voltage drop	5 to 30V dc		
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 operating on either input.		
Outputs	Isolated solid state switch		
Ron	5Ω + 0.7V max		
Roff	1MΩ min		
V max	30V dc		
I max	200mA		
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~		
Tag legend	Specified tag number or application printed onto rear of instrument. ~		

~ See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

Model number	BA588E
Input	Type *
Rate scale factor	XXXXX *
	If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow rate for each input.
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission of either input or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*
Accessories	
Display backlight	Please specify if required
4/20mA output	Backlight
Dual alarms	4/20mA output
Scale card	Alarms
	Legend required
	No charge if ordered with totaliser
Tag	Legend required

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