

The BA317E-SS is an intrinsically safe tachometer housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA317E-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 tachometer 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. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA317E-SS is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA317E-SS tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

**The display** has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

**IP66 front panel protection** with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA317E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

**International intrinsic safety certification** permits the BA317E-SS tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

**Display backlighting** which is internally powered from the tachometer 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 BA317E-SS tachometer. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

**Optional isolated pulse output** synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

**Optional isolated 4/20mA output** may be configured to produce an analogue output proportional to any part of the speed display.

**Optional dual alarms** which 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 speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317E-SS display show the status of both alarm outputs.

**Zone 2 certification and a larger display** are available in other models within the range including the BA317E which is functionally identical to the BA317E-SS in a Noryl enclosure.

The BA317NE has the same features as the BA317E-SS, but is Ex nA and Ex tc certified allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA318E offers similar features in a Noryl 144 x 72mm enclosure.

# BA317E-SS

## Rugged one input tachometer

*Intrinsically safe gas & 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 speed and run-time 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/ba317e-ss](http://www.beka.co.uk/ba317e-ss)



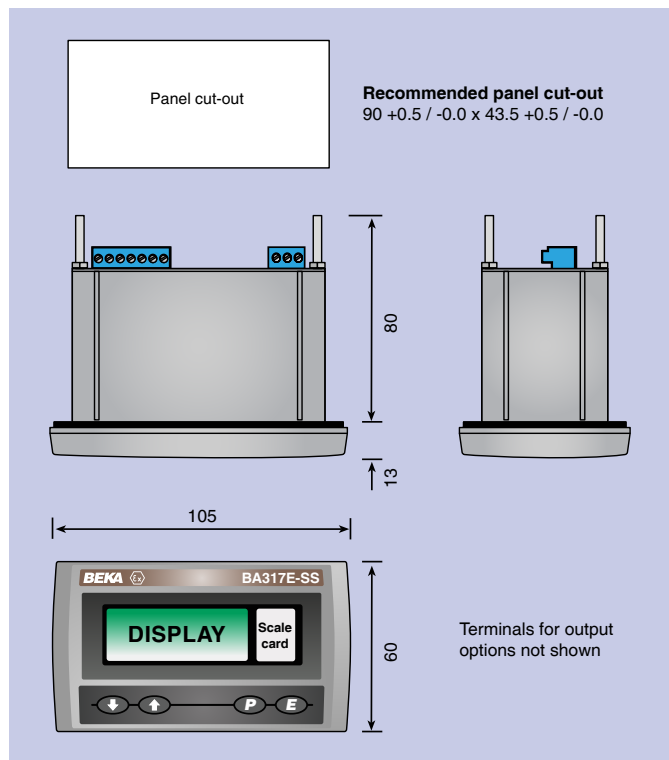
# BEKA associates

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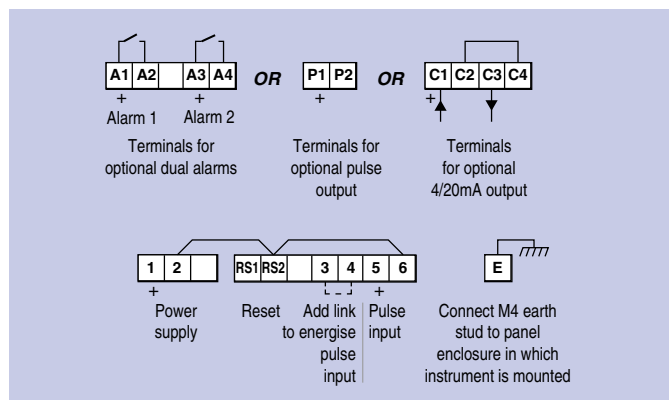
## SPECIFICATION

<b>Power supply</b>	
Voltage	10 to 28V from Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight
<b>Input</b>	
Switch contact	<b>Lower</b> 100Ω <b>Upper</b> 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
<b>Frequency</b>	
Switch contact	150Hz typical
Other inputs	100kHz max
All inputs	0.01Hz min
<b>Display</b>	
Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high, 99999.9 hours max
Grand total run-time	5 x 10 <sup>6</sup> hours max
<b>Remote reset</b>	
	Contact closure with resistance less than 10kΩ
<b>Configurable functions</b>	
Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.
<b>Intrinsic safety</b>	
Europe ATEX Code	Group II Category 1G    Ex ia IIC T5 Ga Group II Category 1D    Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡ ITS16ATEX28408X
Cert. No.	
International IECEx Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡ IECEx ITS 16.0004X
Cert. No.	
ETL & cETL Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C ≤ Ta ≤ 60°C ‡
<b>Nonincendive USA &amp; Canada ETL &amp; cETL</b>	
Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -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 BA317E-SS enclosure to maintain the certification of the panel enclosure in which the BA317E-SS is mounted.	
<b>Environmental</b>	
Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU
<b>Mechanical</b>	
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup> cable, removable terminal blocks.
Weight	0.85kg
<b>Accessories</b>	
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 tachometer purchase. ~
Tag legend	Specified tag number or application laser etched onto rear of instrument. ~
One of the following three output accessories may be factory fitted to each tachometer. 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
Frequency	5kHz max, synchronous with input pulse or divisible
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 28V

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch 5Ω + 0.7V max 1MΩ min
~	See accessory datasheet for details

## HOW TO ORDER

Model number	<b>Please specify</b> BA317E-SS
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
<b>Accessories</b>	<b>Please specify if required</b>
Display backlight	Backlight
Scale card	Legend required
	No charge if ordered with tachometer.
	Legend required
Tag	Legend required
One of following three output options:	
Pulse output	Direct retransmission or scaled*
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

\* Tachometer 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 speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.