

The **BA318E** is a third generation intrinsically safe tachometer that is compatible with the earlier BA368C, but has a much larger display and an isolated synchronous pulse output. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

**Main application** of the BA318E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

**The large display** has high contrast and a very wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. An optional backlight is available. 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.

**Open collector 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.

**IP66 front panel protection** with a neoprene gasket to seal the joint between the tachometer and the instrument panel allows the BA318E 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 BA318E 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. All input safety parameters are the same or greater than those for the preceding BA368C, thus allowing the BA318E to safely replace the earlier model.

**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 the tachometer 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 speed 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** which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator, are available as a factory fitted option. 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 BA318E display show the status of both alarm outputs.

When panel space is limited the BA317E provides similar features in a smaller 94 x 48mm enclosure.

# BA318E

## One input tachometer

*Intrinsically safe for use in all gas hazardous areas*

- ◆ **Configurable input:**  
magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.
- ◆ **Separate speed and run-time 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/ba318e](http://www.beka.co.uk/ba318e)



# BEKA

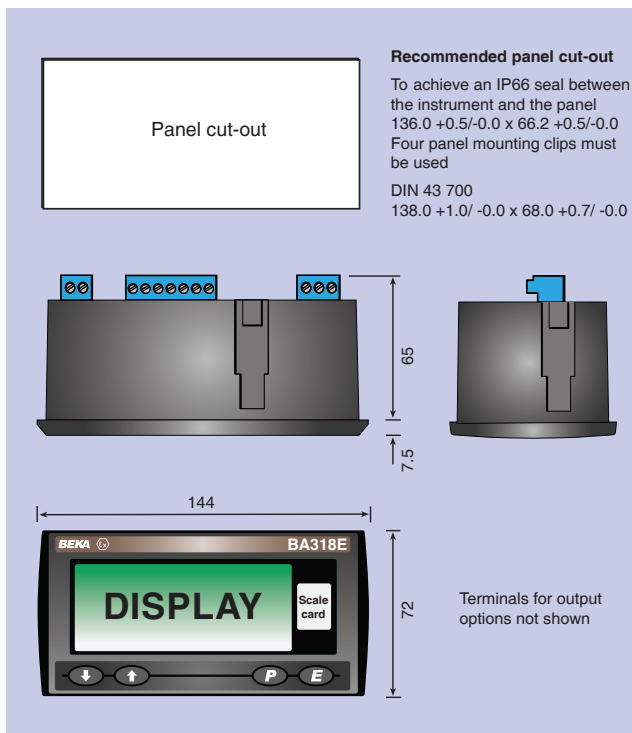
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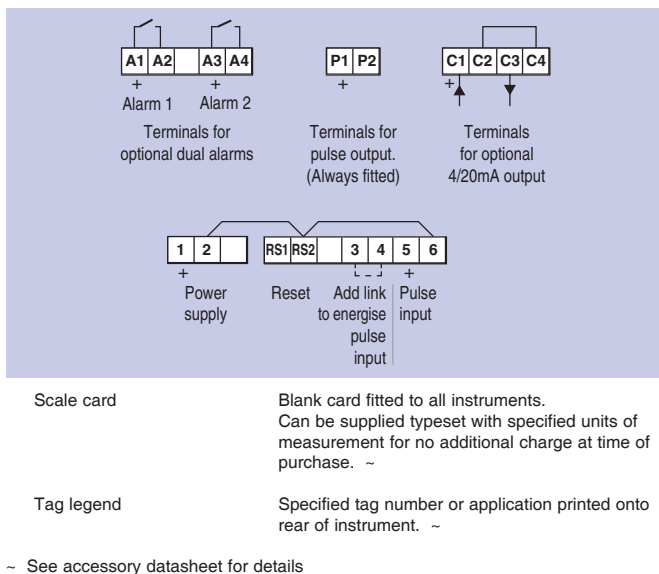
## SPECIFICATION

<b>Power supply</b>			
Voltage	10 to 28V from a Zener barrier or galvanic isolator		
Current	16mA max plus 16mA for optional backlight		
<b>Input</b>	<b>Lower</b>	<b>Upper</b>	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
<b>Frequency</b>			
Switch contact	150Hz typical	<i>Depends upon pulse width and debounce setting.</i>	
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 18mm high		
Decimal point	1 of 7 positions or absent		
Run-time	6 digits 12mm high, 99999.9 hours		
Grand total run-time	5 x 10 <sup>6</sup> hours		
<b>Remote reset</b>	Contact closure with resistance less than 10kΩ		
<b>Pulse output</b>	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		
<b>Configurable functions</b>			
Rate scale factor	Adjustable between 0.0001 and 99999 pulses / revolution		
Speed timebase	Speed may be displayed per second, minute or hour.		
<b>Intrinsic safety</b>			
<b>Europe ATEX and UK UKCA</b>			
Code	Group II Category 1G Ex ia IIC T5 Ga		
Cert. No.s	<a href="#">-40°C ≤ Ta ≤ 70°C</a> <a href="#">ITS16ATEX28408X</a> & <a href="#">ITS21UKEX0098X</a>		
<b>International IECEx</b>			
Code	Ex ia IIC T5 Ga		
Cert. No.	<a href="#">-40°C ≤ Ta ≤ 70°C</a> <a href="#">IECEx ITS 16.0004X</a>		
<b>ETL &amp; cETL</b>			
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III 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		
ETL Control No.	<a href="#">4008610</a>		
<b>China CCC</b>	As IECEx - <a href="#">see certificate</a>		
<b>India CCOE/PESO</b>	As ATEX - <a href="#">see certificate</a>		
<b>Nonincendive USA &amp; Canada ETL &amp; cETL</b>			
Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C		
ETL Control No.	<a href="#">4008610</a>		
<b>Environmental</b>			
Operating temp	-40 to +70°C display -20 to +70°C		
Storage temp	-40 to +85°C		
Humidity	to 95% at 40°C non condensing		
Vibration	Report available		
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20		
EMC	Complies with EU and UK Directives		
<b>Mechanical</b>			
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup> cable, removable terminal blocks.		
Weight	0.35kg		
<b>Accessories</b>			
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 speed or run-time, high or low alarm with a NO or NC output.		
Outputs	Isolated, single pole, voltage free solid state switch certified as a separate intrinsically safe circuit complying with requirements for <i>simple apparatus</i> .		
Ron	5Ω + 0.7V max		
Roff	1MΩ min		

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



## HOW TO ORDER

Model number	<b>Please specify</b> BA318E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Pulse output	Direct retransmission or scaled*
If scaled:	
Dividing factor	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
<b>Accessories</b>	
Display backlight	<b>Please specify if required</b> Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required
Tag	No charge if ordered with tachometer. Legend required

\* 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.