Tachometers

Speed and hours run indication



Intrinsically safe

Ex nA

General purpose

A tachometer for every application which can display speed and run-time on separate displays.Operates with most transducers.

> **Large high contrast displays with wide viewing angle**

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety
Ex nA non sparking
Dust certification.

> **Field mounting models have IP66 GRP enclosure**
Compact 'G' models
'E' models with separate terminal compartment
Pipe and panel mounting accessories

> **Panel mounting models**
Choice of sizes all with IP66 front panels
Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
Rear IP66 sealing kit

> **Isolated pulse output**
Synchronous with input for retransmission

> **-40 to +70˚C operating temperature range**

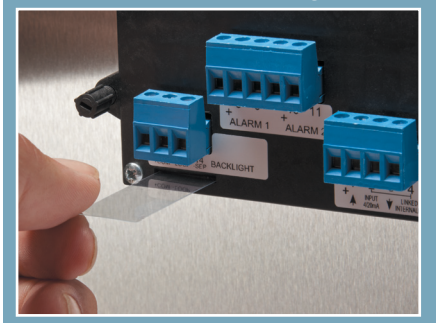
> **Accessories**
Dual isolated alarms
Isolated 4/20mA output
Backlight
Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
Laser engraved stainless steel legend plates



Scale card with printed customer specified legend.



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

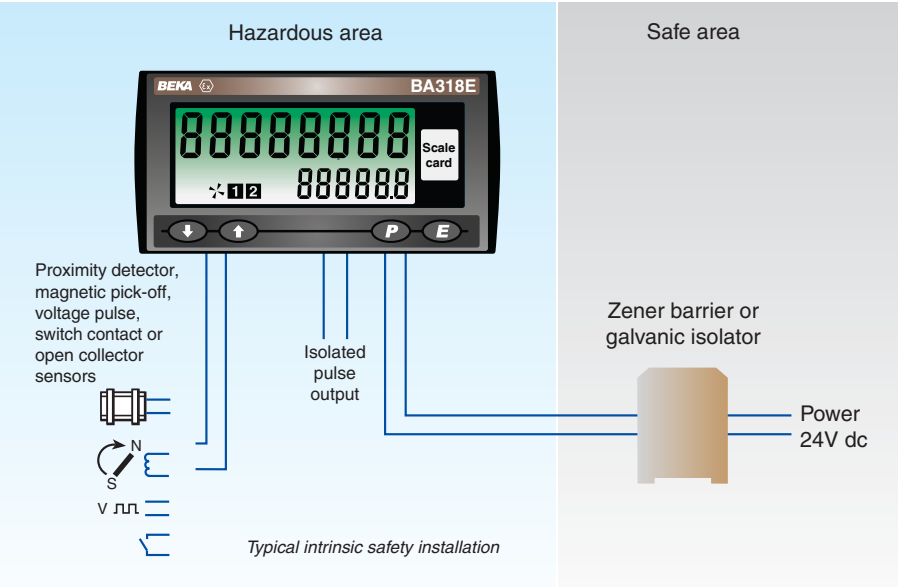


Easy scale card installation without the need to remove indicator from the panel.

Tachometers available

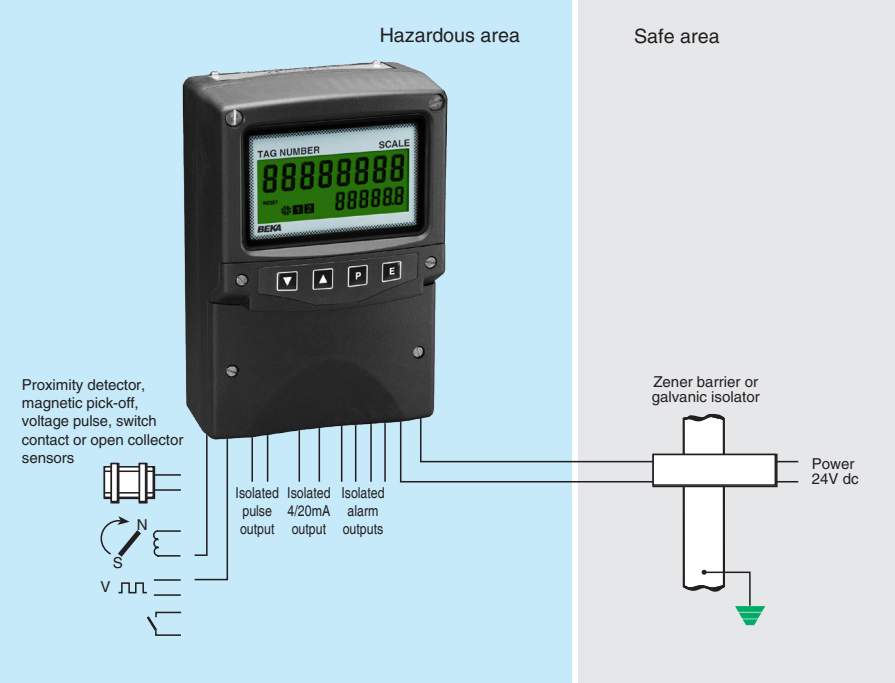
Model No.	Mounting	Input	Display digits		Certification					
					Europe ATEX		International IECEx		USA & Canada	
			SPEED No. x height	RUN-TIME No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified										
BA314G	Field compact	Pulse	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA314E	Field - separate tml. compartment	Pulse	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
BA317E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm	✔	–	✔	–	✔	✔
BA317E-SS*	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
BA318E	Panel 144 x 72	Pulse	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators										
BA314NG	Field compact	Pulse	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA317NE	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
General Purpose - for use in safe areas										
BA514G	Field compact	Pulse	8 x 18mm	6 x 12mm						
BA517E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm						
BA517E-SS	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm						
BA518E	Panel 144 x 72	Pulse	8 x 18mm	6 x 12mm						

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



Typical intrinsic safety installation

Speed measurement** for every **application** - delivered ready for **installation



BA314E

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**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Isolated dual alarms, pulse and 4/20mA outputs.**
- **3 year guarantee**

www.beka.co.uk/ba314e

The BA314E is a third generation intrinsically safe field mounting tachometer housed in a robust IP66 GRP enclosure. The BA314E supersedes the BA364D. 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. International intrinsic safety certification permits worldwide installation.

The main application of the BA314E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance, the BA314E tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International intrinsic safety certification allows the BA314E tachometer to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the tachometer's input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing and allows the instrument to be easily read at night or when installed in a poorly illuminated area. 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 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument electronics.

The isolated open collector pulse output which complies with the requirements for *simple apparatus*, synchronously retransmits the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

The isolated 4/20mA output which also complies with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the speed display.

Dual alarms can switch hazardous area loads such as a sounder or a solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms, with normally open or closed outputs. Annunciators on the tachometer display show the status of both alarm outputs.

The display escutcheon can be marked to show the BA314E tachometer's units of measurement and tag information. New instruments are supplied with a printed escutcheon showing customer specified marking, if this information is not supplied when the instrument is ordered, a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

When space is limited the compact BA314G is a smaller version of the BA314E, it has the same functions, but it does not have a separate terminal compartment.

For installation in Zone 2 or 22 without the need for Zener barriers or galvanic isolators, the BA314NG is similar to the BA314E but has Ex nA and Ex tc certification.

Panel mounting tachometers with similar specifications are available in a variety of sizes and material for use in hazardous and safe areas.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA

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*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

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 max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or divisable with defined pulse width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

4/20mA output Isolated current sink, configurable to represent any part of the speed display.

Voltage drop	5 to 28V

Dual 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
Ron	5Ω + 0.7V max
Roff	IMΩ min

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	] USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	] 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

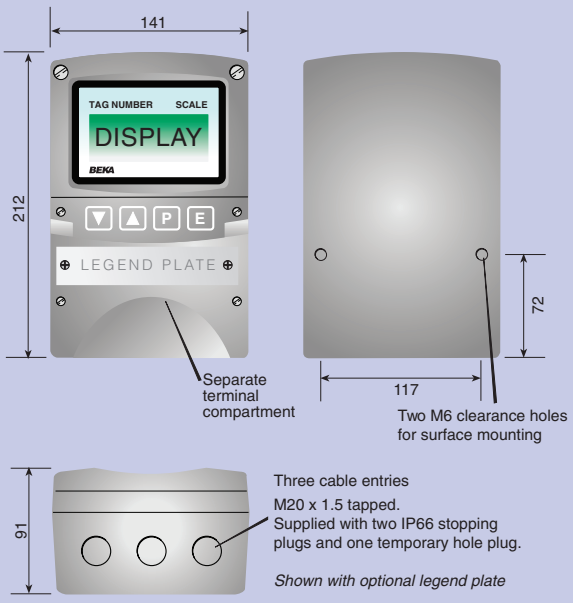
Environmental

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	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

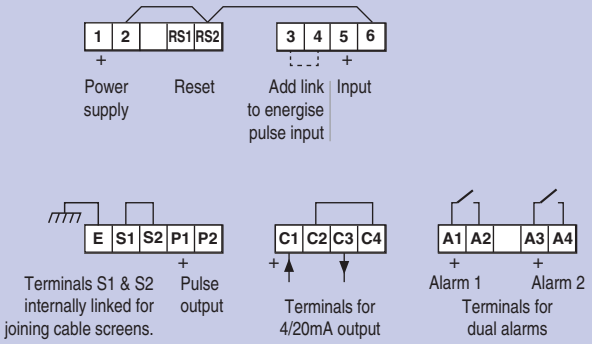
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

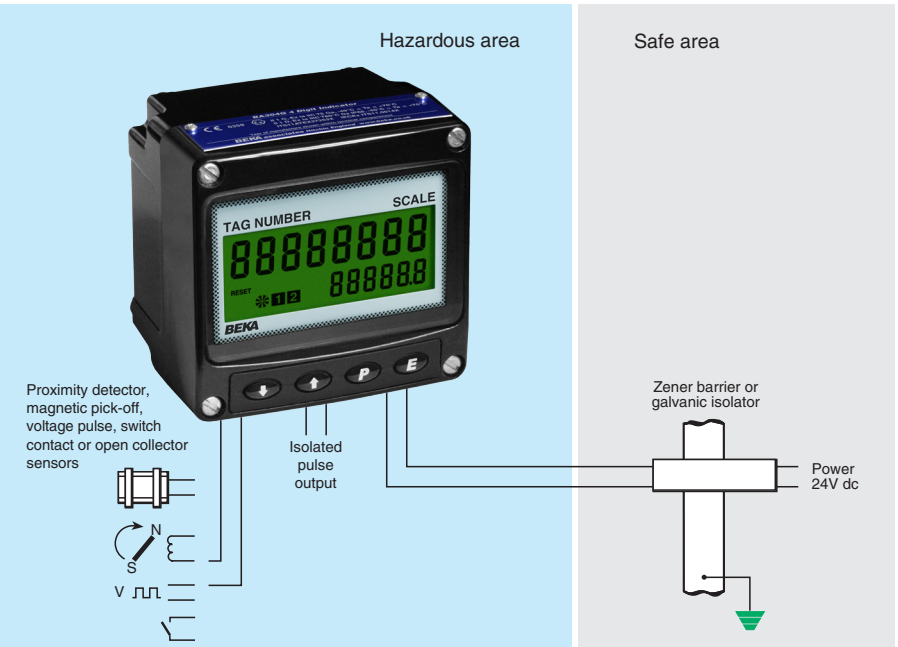
Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate secured to the front of the instrument laser engraved with tag number or application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

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA314E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

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



Shown with optional backlight

BA314G

One input tachometer

Intrinsically safe for use in all gas & dust hazardous areas

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

www.beka.co.uk/ba314g

The BA314G is a third generation intrinsically safe field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or open collector sensor. International intrinsic safety certification permits worldwide installation.

The main application of the BA314G is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA314G tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International intrinsic safety certification allows the BA314G tachometer to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the tachometer input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle, enabling the 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.

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.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

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

The isolated open collector pulse output synchronously retransmits the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the speed 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 speed or run-time alarms with normally open or closed outputs. Annunciators on the BA314G display show the status of both alarm outputs.

Other field mounting tachometers include the BA314E which has the same functions as the BA314G, but incorporates a separate terminal compartment and supersedes the BA364D.

For installation in Zone 2 or 22 the BA314NG, which has the same functions as the BA314G, has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

Panel mounting tachometers with similar specifications are available in a variety of sizes and material for use in hazardous and safe areas.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
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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

	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
- Other inputs: 100kHz max
- All inputs: 0.01Hz min

Depends upon pulse width and debounce setting.

Display
- 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 max
- Grand total run-time: 5 x 10^6 hours max

Remote reset: Contact closure with resistance less than 10kΩ

Pulse output
- Frequency: Isolated open collector; 5kHz max, synchronous with input pulse, or divisible with selectable pulse width.
- Divisible by: 1, 10, 100, 1000 or 10000
- Pulse width: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
- Ron: 51Ω + 3V max
- Roff: 1MΩ min
- I max: 10mA

Configurable functions
- Speed scale factor: Adjustable between 0.0001 and 99999 pulses / revolution.
- Speed timebase: Speed may be displayed per second, minute or hour

Intrinsic safety

Europe ATEX
- Code: Group II Category 1G Ex ia IIC T5 Ga, -40 ≤ Ta ≤ 70°C; Group II Category 1D Ex ia IIIC T80°C Da, -40 ≤ Ta ≤ 60°C
- Cert. No.: ITS16ATEX28408X

International IECEx
- Code: Ex ia IIC T5 Ga, -40 ≤ Ta ≤ 70°C; Ex ia IIIC T80°C Da, -40 ≤ Ta ≤ 60°C
- Cert. No: IECEx ITS 16.0004X

ETL & cETL
- Code:
  - Class I Div 1 Gp A, B, C, D T5; Class II Div 1 Gp E, F, G Class III — USA & Canada
  - Class I Zone 0 AEx ia IIC T5 Ga; Zone 20 AEx ia IIIC T80°C Da — USA
  - Ex ia IIC T5 Ga; Ex ia IIIC T80°C Da — Canada
  - -40°C ≤ Ta ≤ 70°C

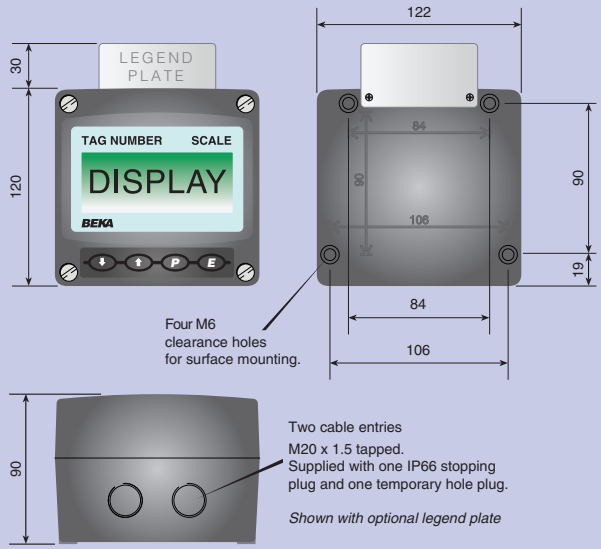
Nonincendive USA & Canada ETL & cETL
- Code: Class I Div 2 Gp A, B, C, D T5; Class II Div 2 Gp F, G; Class III Div 2; -40°C ≤ Ta ≤ 70°C
- ETL Control No.: 4008610

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
  - Material: GRP
  - Ingress: IP66
- EMC: Complies with 2014/30/EU

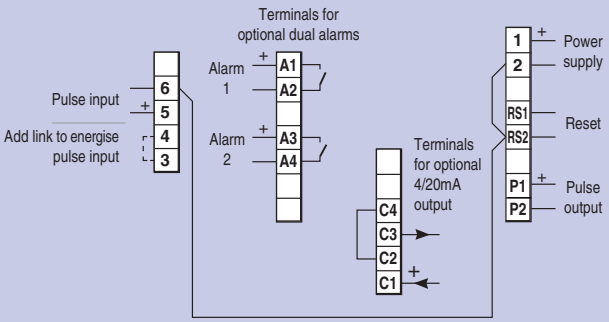
Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm²
- Weight: 1.1kg

Accessories
- Backlight: Green LED internally powered
- 4/20mA output: Isolated current sink
  - Voltage drop: 5 to 28V
- Dual alarms: Two alarms each of which may be independently configured as a speed or run-time, 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: IMΩ min
- Scale card: Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



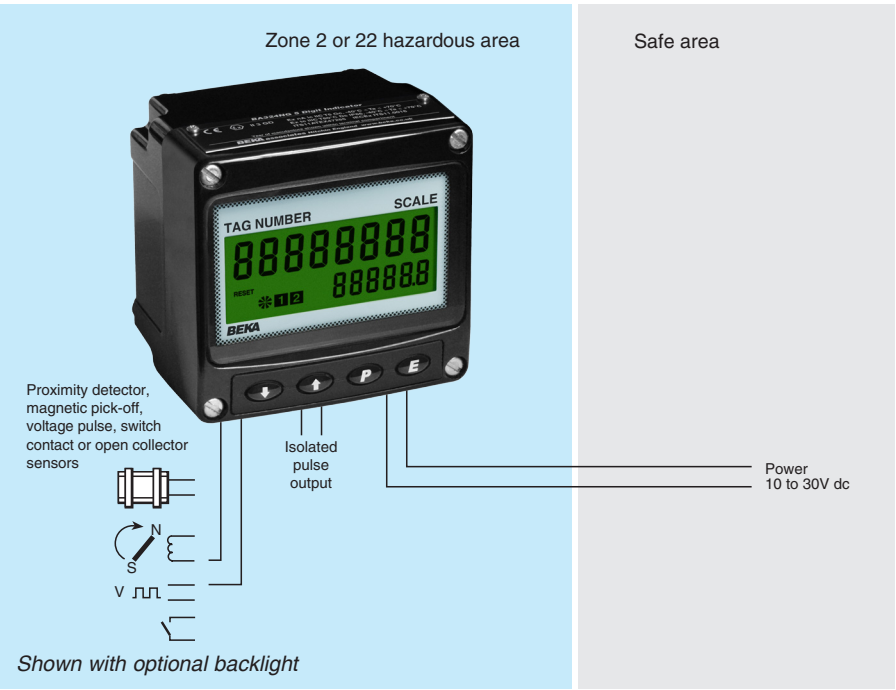
Legend plate	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA314G
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

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



Shown with optional backlight

BA314NG

Ex nA one input tachometer

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 speed and run-time displays.**
- **Ex nA & Ex tc certified**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba314ng

The BA314NG is a third generation field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or open collector sensor. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation costs.

The main application of the BA314NG is to measure and display rotational speed within a Zone 2 or 22 hazardous area. To assist with routine maintenance the BA314NG tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International Ex nA and Ex tc certification allows the BA314NG tachometer to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The display has high contrast and a wide viewing angle, enabling the 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.

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 tachometer to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

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

The isolated open collector pulse output can synchronously retransmit the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

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

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA314NG display show the status of both alarm outputs.

Other field mounting tachometers include the intrinsically safe BA314E and BA314G, and the general purpose BA514G, all of which have the same functions as the BA314NG.

Panel mounting tachometers with similar specifications are available in a variety of sizes and material for hazardous and general purpose applications.

BEKA associates

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SPECIFICATION

Power supply
- Voltage: 10 to 30V dc
- Current: 16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency
- Switch contact: 150Hz typical
- Other inputs: 100kHz max
- All inputs: 0.01Hz min

Depends upon pulse width and debounce setting.

Display
- 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 max
- Grand total run-time: 5 x 10^6 hours max

Remote reset: Contact closure with resistance less than 10k Ω

Pulse output: Isolated open collector
- Frequency: 5kHz max, synchronous with input pulse, or divisible with selectable pulse width.
- Divisible by: 1, 10, 100, 1000 or 10000
- Pulse width: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
- Ron: 51Ω + 3V max
- Roff: 1MΩ min
- Ui: 30Vdc
- I max: 10mA

Configurable functions
- Speed scale factor: Adjustable between 0.0001 and 99999pulses/revolution
- Speed timebase: Speed may be displayed per second, minute or hour

Certification

Note: Ex ic codes refer 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 ≤ Ta ≤ 60°C
- Cert. No.: ITS16ATEX28409X

International IECEx
- Code: Ex nA ic IIC T5 Gc
  Ex ic tc IIIC T80°C Dc
  -40 ≤ Ta ≤ 60°C
- Cert. No: IECEx ITS 16.0005X

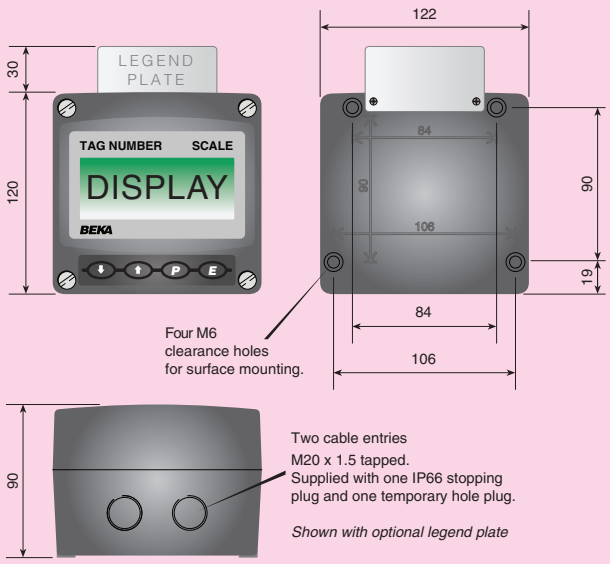
ETL & cETL
- Code: Class I Zone 2 AEx nA ic IIC T5 Gc
  Zone 22 AEx ic tc IIIC T80°C Dc — USA
  Ex nA ic IIC T5 Gc
  Ex n IIC T5 Gc
  Ex ic tc IIIC T80°C Dc
  Class III Div 2, Class II Div 2, Gp F, G — Canada
  -40°C ≤ Ta ≤ 60°C
- ETL Control No.: 4008610

Environmental
- Operating temp: -40 to +70°C display -20 to +70°C
- Certification temp: -40 to +60°C
- Storage temp: -40 to +85°C
- Humidity: to 95% at 40°C non condensing
- Vibration: Report available
- Enclosure
  - Material: GRP
  - Ingress: IP66
- EMC: Complies with 2014/30/EU

Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm²
- Weight: 1.1kg

Accessories
- Backlight: Green LED internally powered
- 4/20mA output: Isolated current sink
- Voltage drop: 5 to 30V
- Dual alarms: Two alarms each of which may be independently configured as a speed or run-time, 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: IMΩ min
  - Ui: 30V dc
  - Ii: 200mA
- Scale card: Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

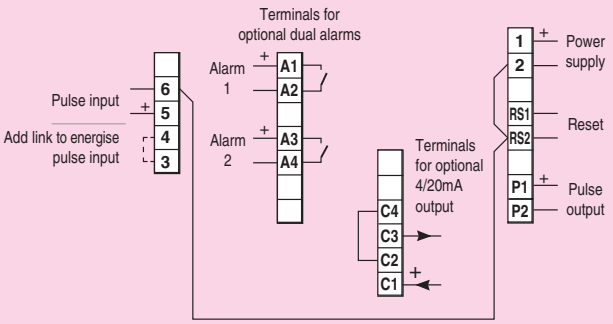
DIMENSIONS (mm)



Two cable entries
M20 x 1.5 tapped.
Supplied with one IP66 stopping plug and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS



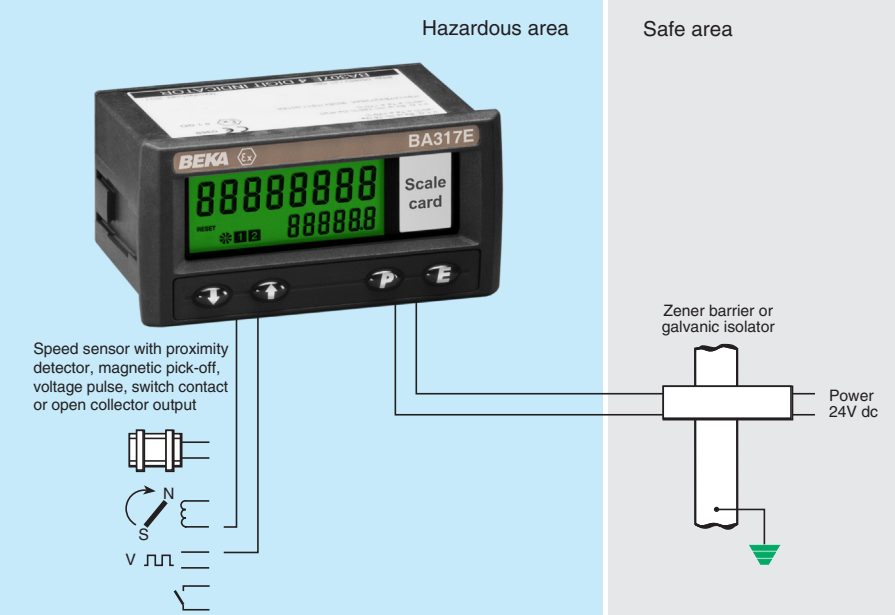
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA314NG
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

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



Shown with optional backlight

The BA317E is a third generation intrinsically safe tachometer that has similar functions as the BA318E, but is housed in a smaller 96 x 48mm DIN enclosure. 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 voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA317E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA317E 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, allowing 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 neoprene gasket to seal the joint between the tachometer and the instrument panel allows the BA317E 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 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 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 display show the status of both alarm outputs.

Rugged versions and a larger display are available in other models within the range. The BA317E-SS is identical to the BA317E 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 BA317NE has Ex nA certification 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 144 x 72mm enclosure.

BA317E

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**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba317e

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

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	*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
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 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°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) 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 1.5mm² cable, removable terminal blocks.
Weight	0.15kg

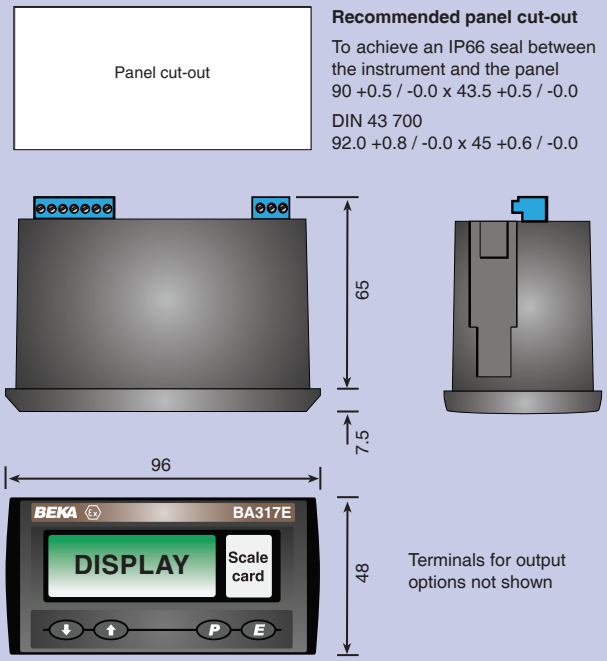
Accessories

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 tachometer purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

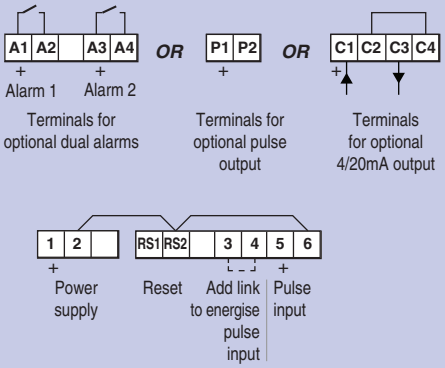
One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

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
Ron	5Ω + 0.7V max
Roff	IMΩ min

~ See accessory datasheet for details

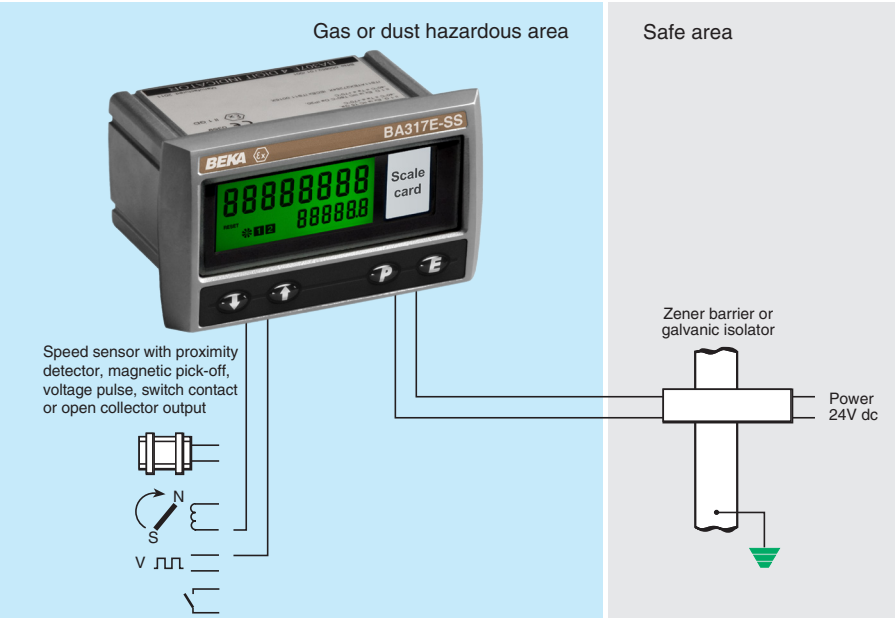
HOW TO ORDER

	Please specify
Model number	BA317E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer.*
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.*



Shown with optional backlight

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

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.

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from 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] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

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 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second,minute or hour.

Intrinsic safety

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 ‡
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC 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 IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC 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 BA317E-SS enclosure to maintain the certification of the panel enclosure in which the BA317E-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

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

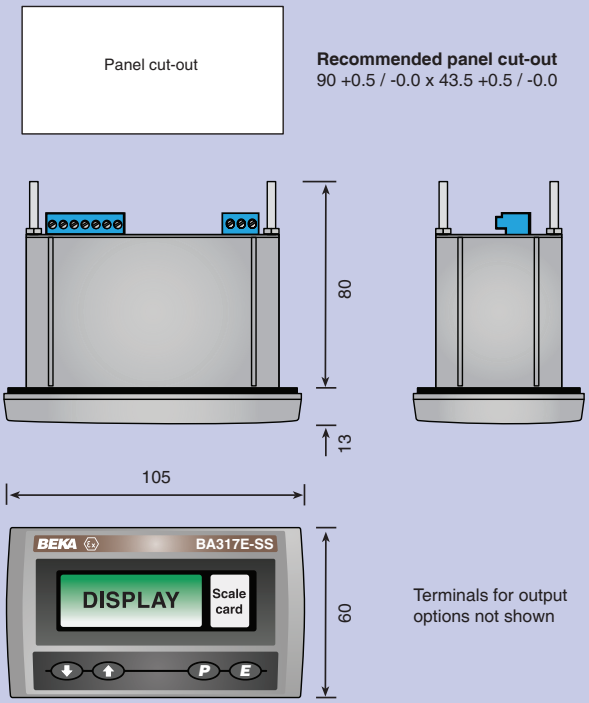
Accessories

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 tachometer purchase. ~
Tag legend	Specified tag number or application laser etched onto rear of instrument. ~

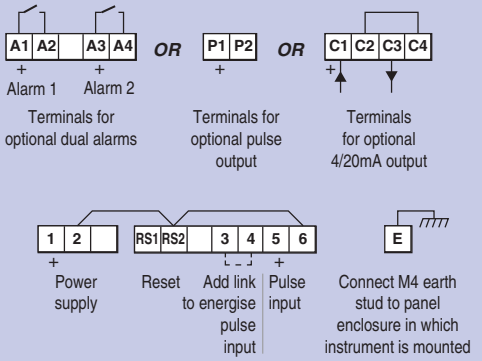
One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

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
Ron	5Ω + 0.7V max
Roff	IMΩ min

~ See accessory datasheet for details

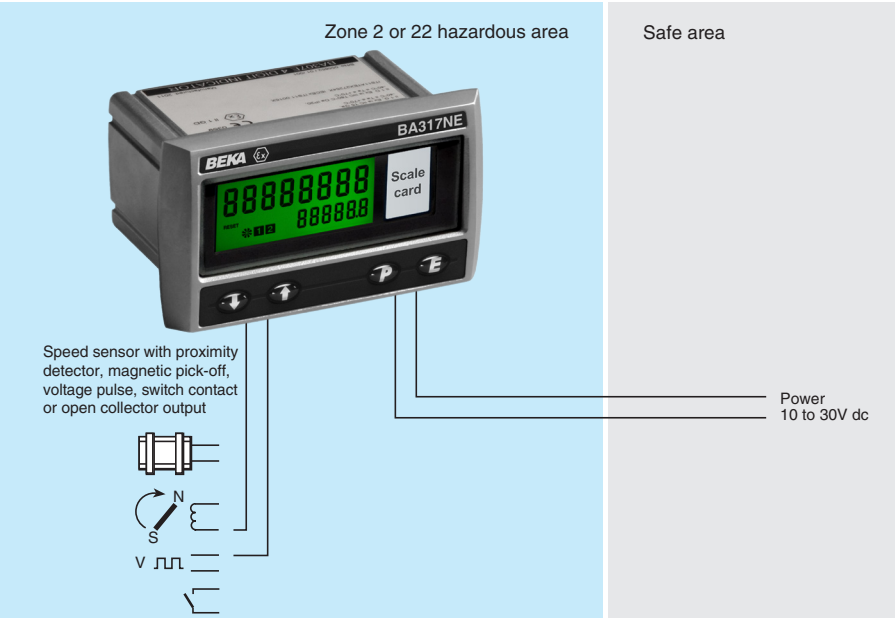
HOW TO ORDER

	Please specify
Model number	BA317E-SS
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer.*
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.*



Shown with optional backlight

The BA317NE has a rugged stainless steel enclosure with Ex nA and Ex tc certification 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 tachometer is easy to use and can be configured on-site to operate with a wide variety of speed sensors. A slide-in scale card simplifies identification.

Main application of the BA317NE is to measure and display rotational speed within a Zone 2 or 22 hazardous area. To assist with routine maintenance the BA317NE 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, allowing 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 BA317NE to be installed in areas that will be washed down.

International Ex nA certification permits the BA317NE tachometer to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and tachometer 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 BA317NE 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 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 BA317NE tachometer. All are isolated and have defined output parameters.

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 suitably protected hazardous area loads such as an Ex e sounder or solenoid valve, or safe area loads. 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 BA317NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA317E-SS has the same features as the BA317NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA317E offers similar features in a Noryl enclosure and the BA318E has similar features in a 144 x 72mm Noryl enclosure with a larger display.

BA317NE

Rugged Ex nA & Ex tc one input tachometer

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 speed and run-time 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/ba317ne

BEKA associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

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	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

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

Display

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 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

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
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	IECEx ITS 16.0005X

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
ETL Control No.	4008610

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 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

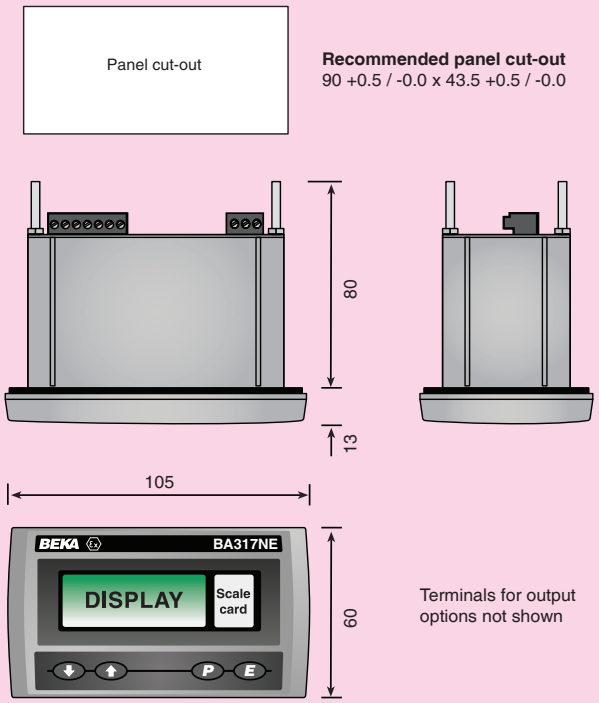
Accessories

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 tachometer purchase. ~
Tag legend	Specified tag number or application laser etched onto rear of instrument. ~

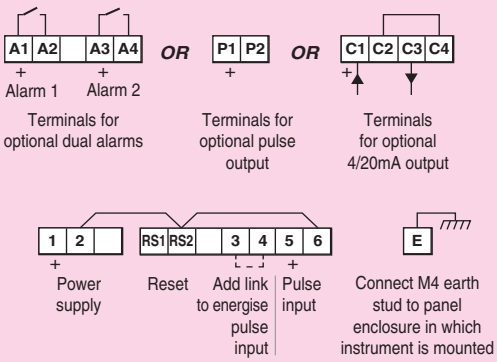
One of the following three output accessories may be factory fitted to each tachometer.

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 30V

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.
Ron	5Ω + 0.7V max
Roff	IMΩ min

~ See accessory datasheet for details

HOW TO ORDER

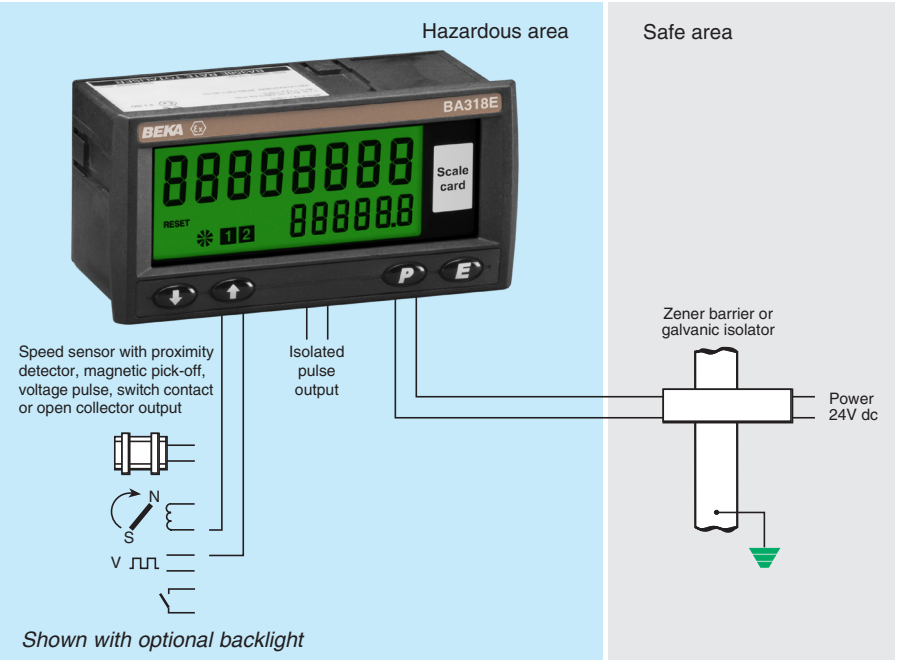
	Please specify
Model number	BA317NE
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer.*
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.*



Shown with optional backlight

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

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.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 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
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 10^6 hours

Remote reset Contact closure with resistance less than 10kΩ

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

Configurable functions

Rate scale factor	Adjustable between 0.0001 and 99999 pulses / revolution
Speed timebase	Speed may be displayed per second, minute or hour.

Intrinsic safety

Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°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) 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

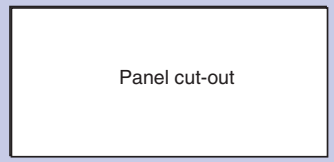
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² 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 *simple apparatus*.
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 *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	IMΩ min

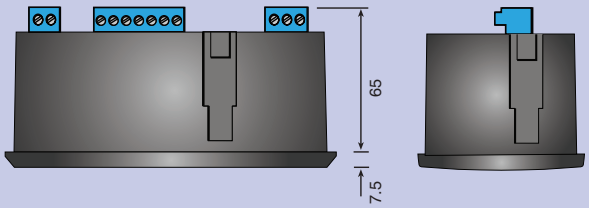
DIMENSIONS (mm)



Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must be used

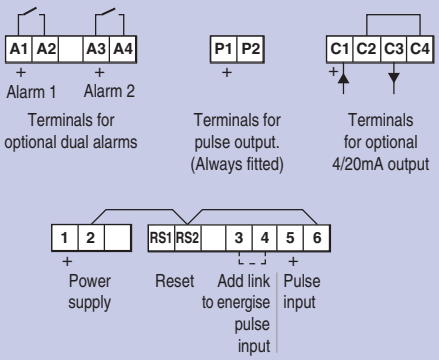
DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0





Terminals for output options not shown

TERMINAL CONNECTIONS



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

HOW TO ORDER

	Please specify
Model number	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

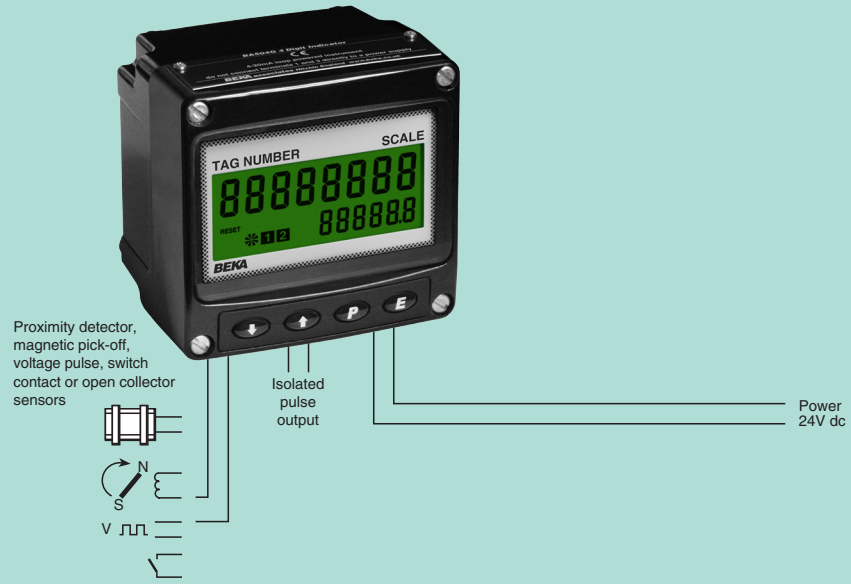
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with tachometer.*
Tag	Legend required

* *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.*

BA514G

one input tachometer

General purpose



Shown with optional backlight

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

www.beka.co.uk/ba514g

The BA514G is a third generation, general purpose field mounting tachometer housed in a compact IP66 GRP enclosure. 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.

Main application of the BA514G is to measure and display rotational speed within a process area. To assist with routine maintenance the BA514G 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 with 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 can be disabled.

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 tachometer to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

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

The isolated open collector pulse output can synchronously retransmit the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

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

Optional dual alarms can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA514G display show the status of both alarm outputs.

Panel mounting tachometers with a variety of display and enclosure sizes are also available, see BA517E, BA517E-SS and BA518E. Certified field and panel mounting models are also available for hazardous area applications

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz 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
Speed	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 12mm high, 99999.9 hours max.
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or divisible with selectable pulse width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
Vmax	30V dc
I max	10mA

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

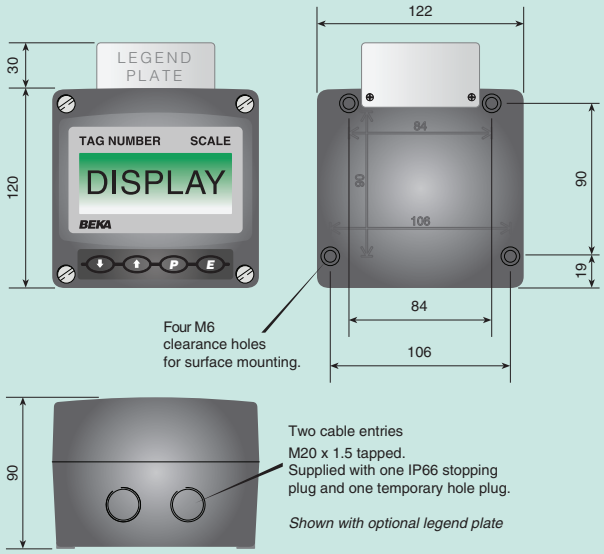
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

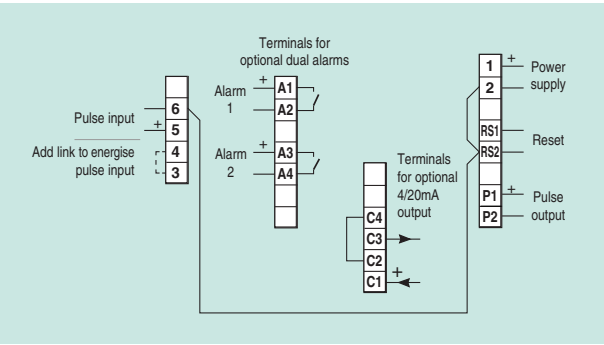
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual 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.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



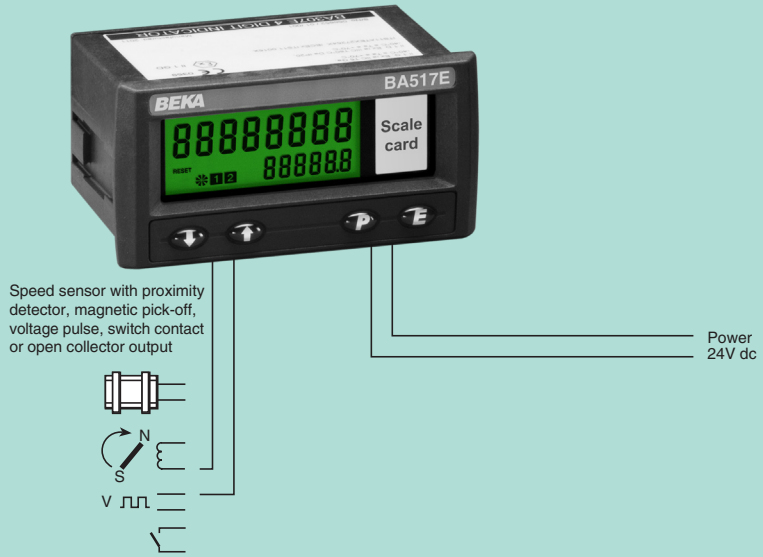
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA514G
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

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



Shown with optional backlight

BA517E

One input tachometer

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Simple on-site scale card installation.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba517e

The BA517E is a third generation general purpose tachometer that has similar functions as the BA518E, but is housed in a smaller 96 x 48mm DIN enclosure. 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 voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

Main application of the BA517E is to measure and display rotational speed within a process area. To assist with routine maintenance the BA517E 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, allowing 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.

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.

IP66 front panel protection with a neoprene gasket to seal the joint between the tachometer and the instrument panel allow the BA517E 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.

One of the following three optional outputs may be factory fitted to the BA517E tachometer. All are isolated.

Optional 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.

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

Optional dual alarms which can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA517E display show the status of both alarm outputs.

A larger display and rugged version are available in other models within the range. The BA518E has the same functions as the BA517E with a larger display in a 144 x 72mm enclosure. For application in marine and hostile environments the rugged BA517E-SS, which has the same functions as the BA517E, is housed in a rugged stainless steel enclosure with a 10mm thick window.

For applications in flammable atmospheres the BA317E, which is identical to the BA517E, has international intrinsic safety certification. For lower risk installations in Zone 2 and Zone 22, the rugged BA317NE has Ex nA and Ex tc approval allowing use without Zener barriers or galvanic isolators.

BEKA associates

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

SPECIFICATION

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	0	+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
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high 99999.9hours max
Grand total run-time	5 x 10^6 hours max

Remote reset — Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.15kg

Accessories

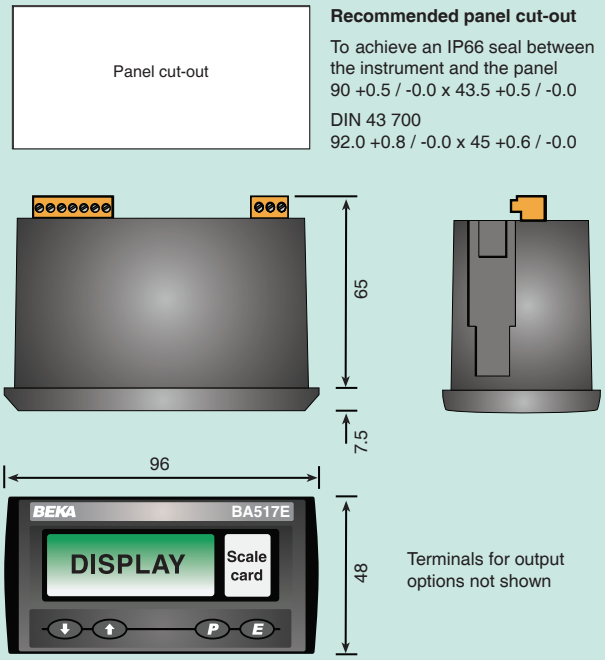
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of tachometer purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover 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 tachometer, all have isolated outputs.

Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or
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 30V
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.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



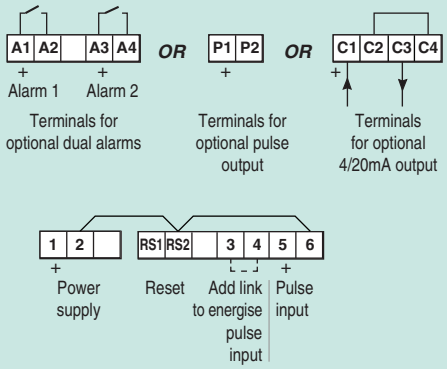
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700
92.0 +0.8 / -0.0 x 45 +0.6 / -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



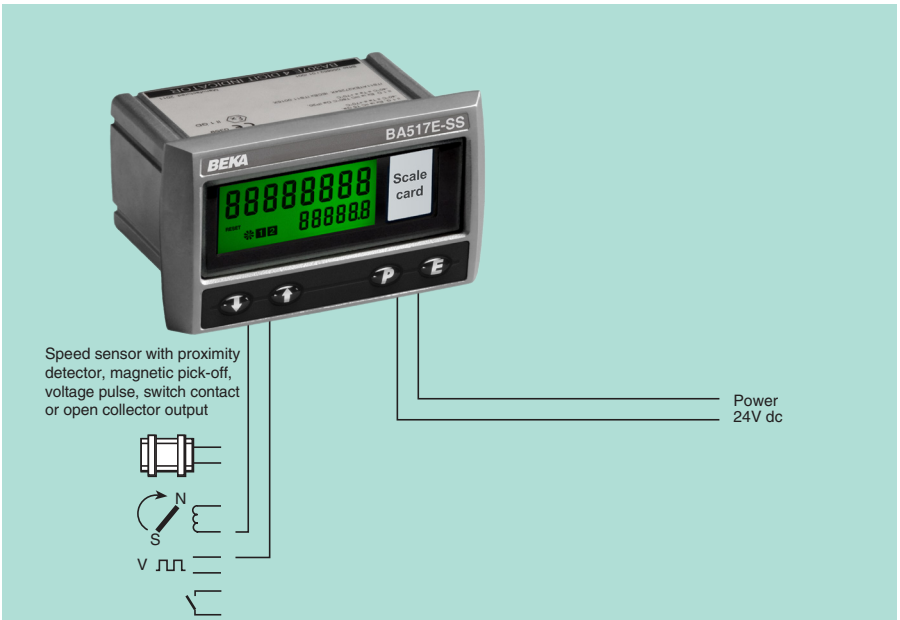
HOW TO ORDER

	Please specify
Model number	BA517E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	Please specify if required
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer*
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
Rear cover and sealing kit		BA495

** 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.*



Shown with optional backlight

BA517E-SS

Rugged one input tachometer

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 speed and run-time displays.**
- **Simple on-site scale card installation.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba517e-ss

The BA517E-SS is a rugged third generation general purpose tachometer housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is suitable for use in hostile and marine environments or where the front of the instrument is likely to be impacted. 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 voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

Main application of the BA517E-SS is to measure and display rotational speed within a hostile process area. To assist with routine maintenance the BA517E-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, allowing 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 BA517E-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.

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 BA517E-SS tachometer. All are isolated and factory fitted options

Optional 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.

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

Optional dual alarms which can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA517E-SS display show the status of both alarm outputs.

For less hostile environments the BA517E is identical to the BA517E-SS except that it is housed in a Noryl enclosure also providing IP66 front of panel protection.

For applications in flammable atmospheres the BA317E-SS, which is identical to the BA517E-SS, has international intrinsic safety certification. For lower risk installations in Zone 2 and Zone 22, the rugged BA317NE has Ex nA and Ex tc approval allowing use without Zener barriers or galvanic isolators.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
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SPECIFICATION

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	0	+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
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high 99999.9hours max
Grand total run-time	5 x 10^6 hours max

Remote reset — Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	BS 3146-2:1977 ANC4B (316)
Protection	Front IP66, rear IP20
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.85kg

Accessories

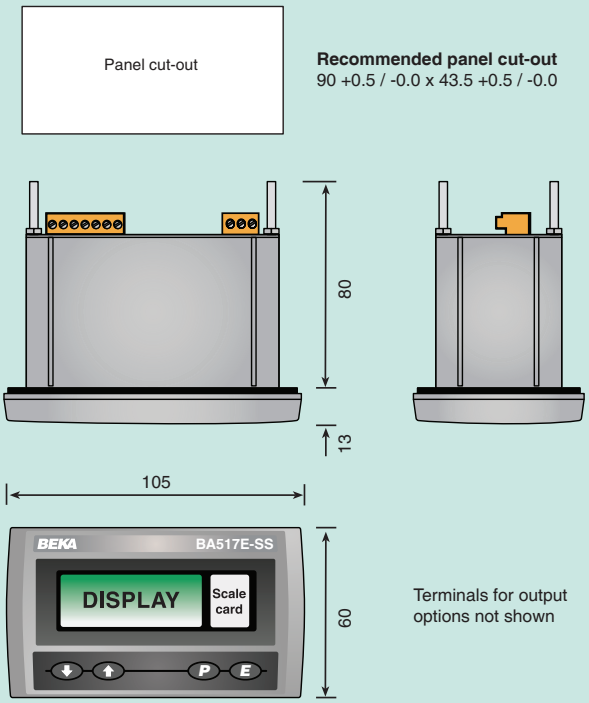
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover 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 tachometer. All have isolated outputs.

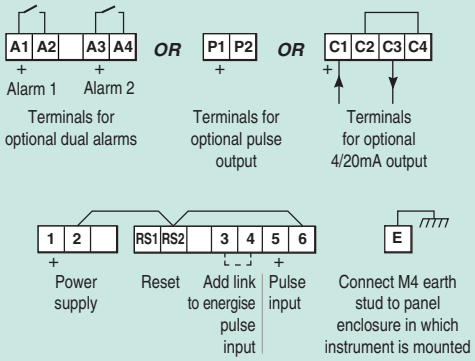
Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
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.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

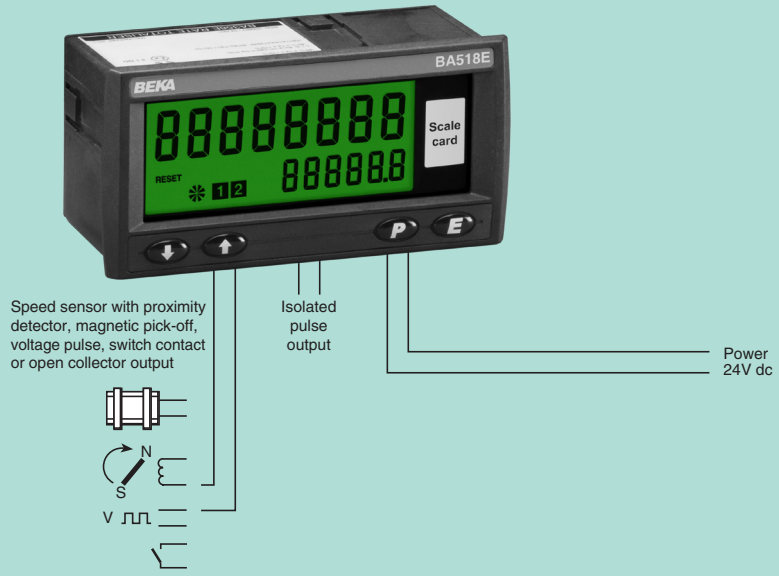
	Please specify
Model number	BA517E-SS
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer*
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

** 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.*



Shown with optional backlight

BA518E

One input tachometer

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional:**
  Backlight
  Dual alarms
  4/20mA output
- **3 year guarantee**

www.beka.co.uk/ba518e

The BA518E is a third generation general purpose tachometer that has similar functions as the BA517E, with a larger display housed in a 144 x 72mm DIN enclosure. 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 voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site without removing the tachometer from the panel or opening the instrument enclosure.

Main application of the BA518E is to measure and display rotational speed within a process area. To assist with routine maintenance the BA518E 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, allowing 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 neoprene gasket to seal the joint between the tachometer and the instrument panel allow the BA518E 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.

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.

The isolated 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.

A factory fitted optional 4/20mA current sink may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarm outputs which can switch loads such as a sounder or solenoid valve are available as a factory fitted option. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA518E display show the status of both alarm outputs.

If panel space is limited the BA517E has similar functions but is housed in a smaller 96 x 48mm enclosure. Alternatively, for installation in marine or severe environments, or where the front of the instrument may be impacted, the BA517E-SS is housed in a rugged 316 stainless steel enclosure.

For applications in flammable atmospheres the BA318E, which is identical to the BA518E, has international intrinsic safety certification. For Zone 2 or 22 applications the rugged stainless steel BA317NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz 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
Speed	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 12mm high 99999.9hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Source & output	Synchronous pulse output, 5kHz max. 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

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

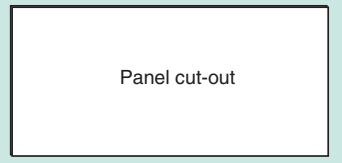
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of tachometer purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
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.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

~ See accessory datasheet for details

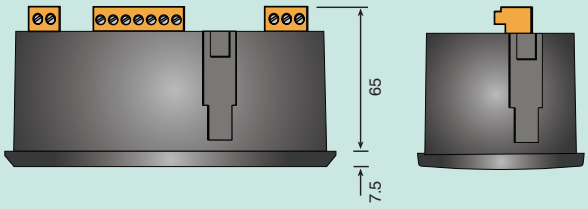
DIMENSIONS (mm)



Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

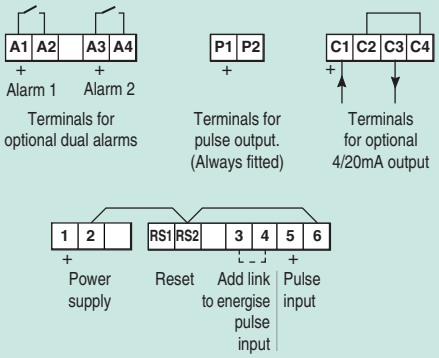
DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0





Terminals for output options not shown

TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA518E
Input Type *	
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	Please specify if required
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer*
Tag	Legend required
4/20mA output	4/20mA output
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.*