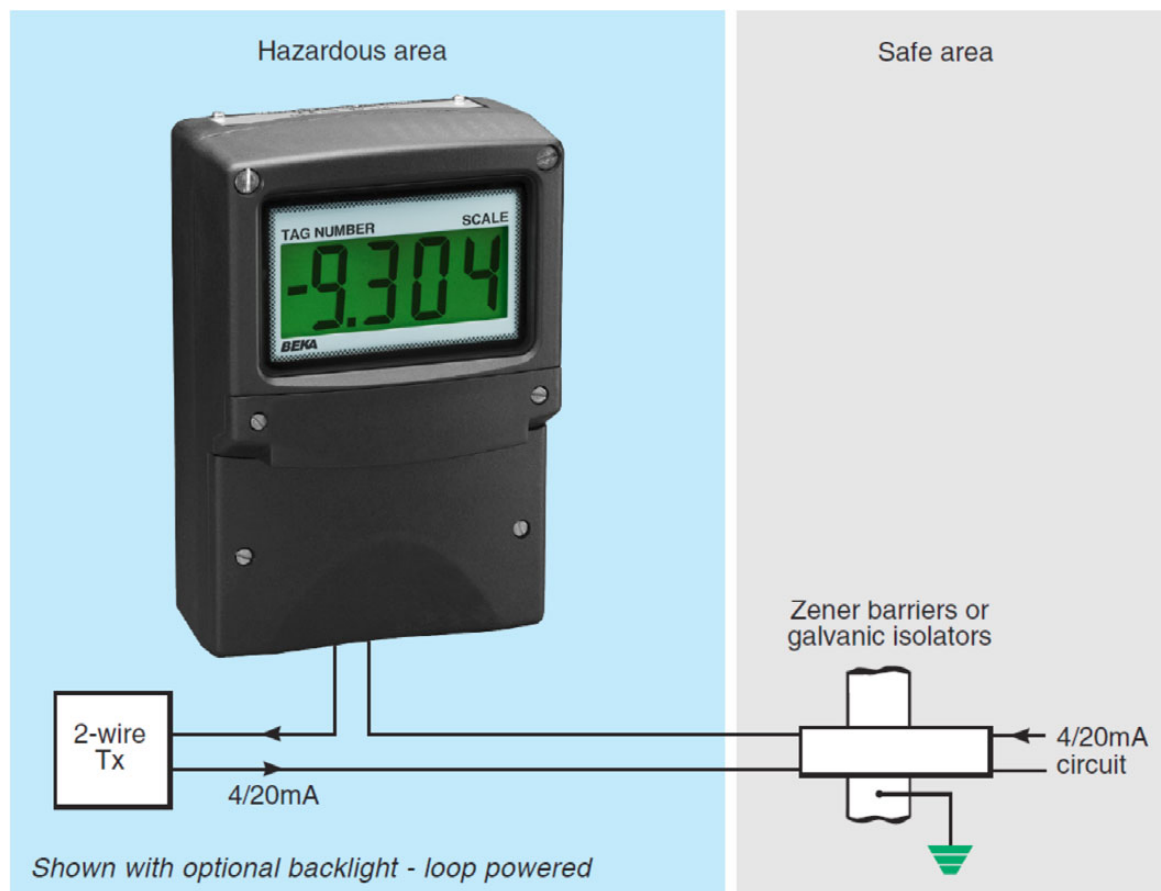


## BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator



- Intrinsically safe for use in all gas & dust hazardous areas
- Loop Powered – only 1.2V drop
- 4 digit 34mm high display
- Intrinsically safe
  - ATEX gas
  - or ATEX gas & dust
  - or FM, cFM & ATEX gas
  - All versions have IECEx certification
- IP66 GRP enclosure with separate terminal compartment
- Root extractor and 16 segment lineariser
- Optional backlight, alarms & external keypad
- 3 year guarantee

## **BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator**

The BA304E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA304D. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like its predecessor, the BA304E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA304E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA304E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for simple apparatus which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA304E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA304D, thus allowing the BA304E to safely replace the earlier model.

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

## **BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator**

apparatus. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

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

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

Other field mounting models in this range include the BA324E which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

### **Specification**

#### **Input**

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight
Overrange	±200mA or ±30V will not damage the indicator

#### **Display**

Type	Liquid Crystal, non-multiplexed 4 digits 34mm high
Span	Adjustable between 0 & ±9999 for a 4-20mA input
Zero	Adjustable between 0 & ±9999 with 4mA input
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4-20mA input
Reading rate	2 per second
Overrange	9999 or -9999 with all decimal points flashing

## BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator

### Push buttons

▼	(Function in display mode) Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays unit in mA or % of span, has a modified function when alarms are fitted
'E'	Used for tare function

### Accuracy at 20°C

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

### Intrinsic Safety

#### Europe ATEX

Code	Group II Category 1 GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 – [ <i>dust option, see how to order</i> Ta = -40 to 70°C
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#### Input parameters

Ui	30V dc
Ii	200mA
Pi	0.84W

#### Output parameters

Cert. No.	Complies with requirements for <i>simple apparatus</i> ITS11ATEX27253X (Special conditions only apply for installations in Zone 0)
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### USA FM

Standard	3610 Entity
Code	CL I, II, III: Div 1 Gp A, B, C, D, E, F & G T5 @ 70°C

Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T5 @ 70°C

File	3041487
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### Canada cFM

File	3041487C
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## BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator

### Intrinsic Safety (cont.)

#### International IECEx

Code

Ex ia IIC T5 Ga

Ex ia IIIC T80°C Da IP66 – [ *dust option, see how to order*

Tamb = -40 to 70°C

Cert. No.

IECEx ITS11.0014X

(Special conditions only apply for installations in Zone 0)

### Environmental

Operating Temperature

-40 to 70°C

Storage Temperature

-40 to 85°C

Humidity

to 95% at 40°C noncondensing

Vibration

Report available

Enclosure

IP66

EMC

Complies with EMC Directive 2014/30/EU

### Mechanical

Terminals

Screw clamp for 0.5 to 1mm<sup>2</sup> cable

Weight

1.7kg

### Accessories

Backlight

Green, may be loop or separately powered

Loop powered

Indicator input voltage 5V

Separately powered

11V at 35mA from IS interface

Alarms

Two alarm outputs, each of which may be independently configured as a high or low alarm contact with a NO or NC output

Output

Isolated solid state switch complying with requirements for simple apparatus

R<sub>on</sub>

5Ω + 0.7V max

R<sub>off</sub>

1MΩ min

External keypad

Membrane keypad enables indicator to be controlled without removing cover

Scale legend

Units of measurement marked onto display escutcheon

Tag legend

Tag number or application marked onto display escutcheon

Stainless steel legend plate

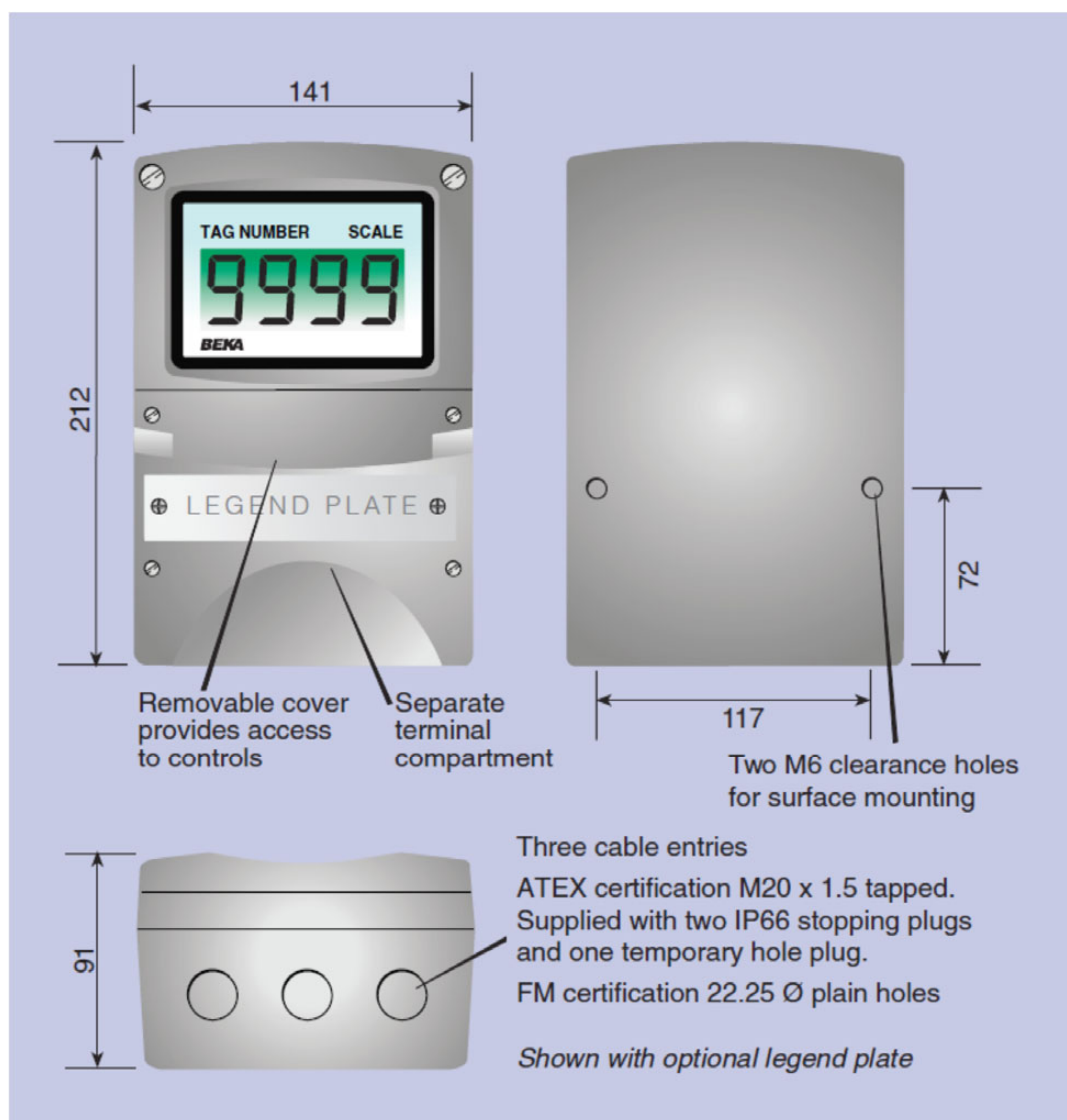
Etched legend plate with tag number or application attached to front of instrument

Pipe mounting kit

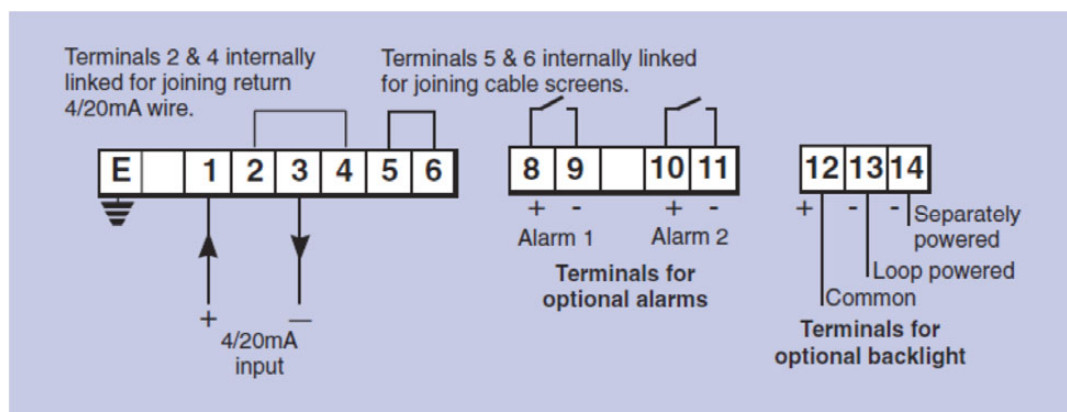
BA392D or BA393

## BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator

### Dimensions



### Terminal Connections



## BA304E Intrinsically Safe 2-wire 4-20mA 4 digit Indicator

### Ordering Information

	<b>Please specify</b>
Model Number	BA304E
Certification	ATEX gas or ATEX gas & dust or FM, cFM & ATEX gas <i>All versions have IECEx certification</i>
Display mode	Linear, root or lineariser <i>Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.</i>
Display at:	
4.000mA	<i>Include position of decimal point &amp; sign if negative, plus intermediate points if linearization is required</i>
20.000mA	
<b>Accessories</b>	<b>Please specify if required</b>
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393