

The **BA308C** is an intrinsically safe panel mounting indicator which displays the current flowing in a 4/20mA process loop in meaningful engineering units. The instrument is loop powered but only introduces a 1V drop allowing it to be installed in series with almost any 4/20mA loop.

**Main application** of the BA308C is to display a measured variable or control signal in a hazardous process area. The zero and span of the display are independently adjustable so that the indicator can be calibrated to display any linear variable represented by a 4/20mA signal, such as temperature, pressure, level or actuator position. For flow applications an optional square root extractor enables the output from a differential flow transmitter to be displayed in linear engineering units.

**Two backlight** options are available. The loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. No additional power supply, IS interface or field wiring are required, but the indicator voltage drop is increased. Alternatively, the separately powered backlight has a bright orange output which enhances daylight viewing, but an additional IS interface and field wiring are required.

**An optional internal calibrator** simulates 4 and 20mA input currents and enables the indicator to be calibrated without the need for test equipment or disconnection from the

4/20mA loop. Although not providing independent verification, it is an effective way to quickly check performance or to recalibrate.

**International intrinsic safety certification** allows the BA308C to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* enabling the indicator to be connected in series with most certified intrinsically safe circuits which, together with the low voltage drop, make the instrument very easy to apply. ATEX and FM approvals permit installation in Europe and the USA and the IECEx certification allows installation in a growing number of countries including Australia and New Zealand. Selection of Zener barriers and galvanic isolators is described in Application Guide AG300.

**The front panel** is a robust, easy to clean Noryl moulding sealed with a non-reflective, scratch resistant polyester membrane. A captive neoprene gasket provides an IP65 seal between the enclosure and the panel.

**Reliability is ensured** by an ISO9001 approved quality control system supported by a three year guarantee. The indicator is protected from reverse connection and overrange input current, and incorporates extensive radio frequency filtering to comply with the European EMC Directive.

**Complementary indicators** for use in safe areas are available, see datasheet for BA508C.

# BA308C

## 2-wire 4/20mA 3 1/2 digit indicator

*Intrinsically safe for use  
in all gas hazardous areas*

- ◆ Loop powered only 1V drop
- ◆ Intrinsically safe ATEX, FM & IECEx certification
- ◆ ±1999 display 25.4mm high
- ◆ Optional:
  - Loop powered backlight
  - Separately powered backlight
  - Root extractor
  - Calibrator
- ◆ IP65 front
- ◆ 144 x 72mm DIN enclosure
- ◆ 3 year guarantee



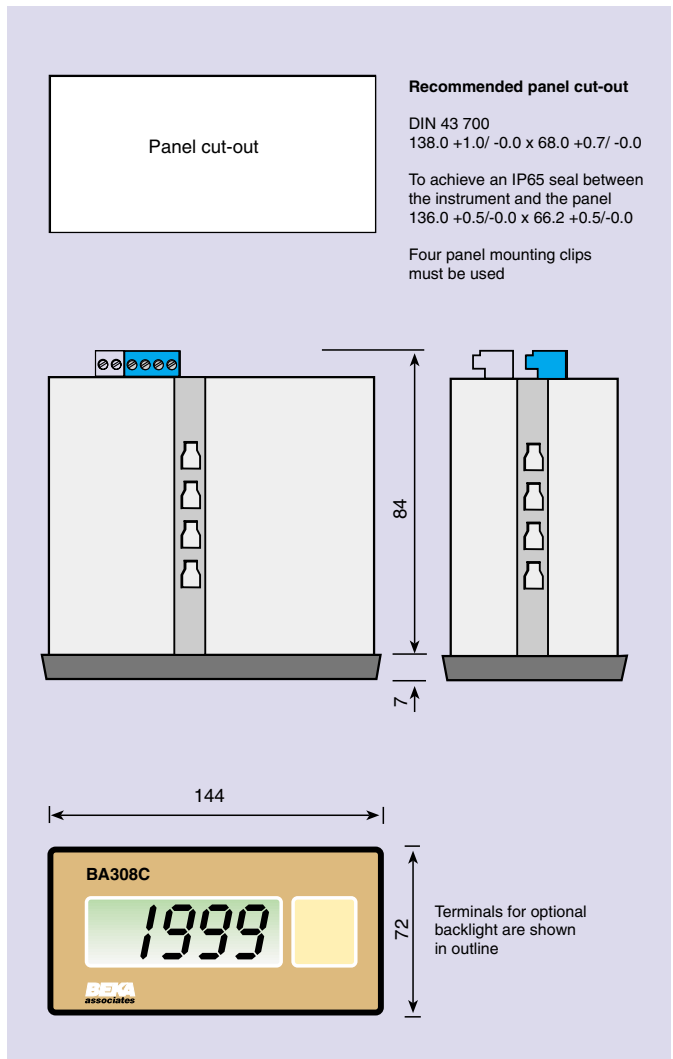
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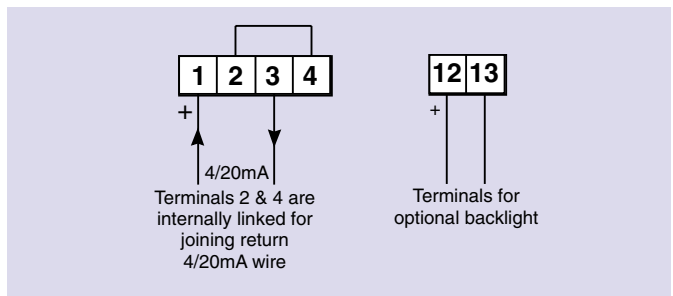
## SPECIFICATION

<b>Input</b>	
Current	4 to 20mA
Voltage	Less than 1V at 20°C Less than 1.1V at -20°C Less than 5V when loop-powered backlight is fitted
Overrange	±200mA will not cause damage
<b>Display</b>	
Type	3½ digit (-1999 to 1999) Liquid crystal 25.4mm high
Span	Adjustable between 000 & 1999 for a 4 to 20mA input.
Zero	Adjustable between ±1000 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Direction	Display may increase or decrease with increasing current. Factory set option.
Reading rate	2.5 per second
Overrange	3 least significant digits are blanked
<b>Accuracy</b>	
At 20°C	±1 digit
Temperature effect on:	
Zero	Typ ±0.05 digit ±100ppm/°C Max ±0.1 digit ±200ppm/°C
Span	Typ ±50ppm; max ±100ppm/°C
Series mode rejection	Typ 1 digit error for 1mA pk to pk 50Hz signal
<b>Intrinsic safety</b>	
<b>Europe ATEX</b>	
Standard	EN50 020:1994
Code	Group II, Category 1G EEx ia IIC T5 ITS02ATEX2027
Certificate No.	
Output parameters	
Uo	1.1V dc
Io	70mA dc
Wo	23mV
Ceq	20nF
Leq	10µH
Location	Zone 0, 1 or 2
Installation	The BA308C may be connected to any certified intrinsically safe circuit whose output parameters do not exceed: Uo 30V dc Io 200mA dc Wo 0.85W
<b>USA FM</b>	
Standard	3610 Entity
Code	CL I: Div 1: GP A, B, C, D
Temperature code	T4 at 60°C
File No	4B3A7.AX
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D
File No	4B3A7.AX
<b>International IECEx</b>	
Standard	IEC60079-11:1999
Code	Ex ia IIC T5 Ta = -40 to 60°C
Cert. No.	IECEx ITS 05.0002
<b>Environmental</b>	
Operating temp	-20 to +60°C (certified for use at -40°C)
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non-condensing
Enclosure	Front IP65; Rear IP20
EMC	In accordance with EU Directive 89/336/EEC, full report available.
Immunity	Less than 1% of span error for 10V/m field strength between 27MHz & 1GHz.
Emissions	Undetectable above background noise. Class B equipment.
<b>Mechanical</b>	
Terminals	Screw clamp for 0.5 to 1.5mm <sup>2</sup> cables in blue removable terminal block.
Weight	0.5kg
<b>Accessories</b>	
Loop powered backlight	Green; powered from 4/20mA current. Voltage drop of indicator plus backlight less than 5V.
Separately powered backlight	Orange; powered from 28V 300Ω Zener barrier or galvanic isolator.
Root extractor	<i>Not available with calibrator</i>
Accuracy	±16µA at input ±1 digit for inputs between 4.16 and 20mA (10 to 100% of flow)
Clip-off	Selectable by internal plug-in link, operates at 4.04mA input (5% of flow)
Calibrator	Simulates 4 and 20mA input, selected by plug-in link accessible through rear panel. <i>Not available with root extractor</i>

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



Typeset scale card	Blank scale card fitted to each indicator can be supplied typeset with units of measurement.
Tag strip	Thermally printed number on rear of the instrument.
Front cover	BA398 provides additional mechanical protection

## HOW TO ORDER

Model number	BA308C
Display at 4mA	XXXX   Include position of decimal
at 20mA	XXXX   point & sign if negative*
<b>Accessories</b>	
Display backlight	
Root extractor	] only one can be fitted
Calibrator	
Scale card	
Tag number	
Front cover	
<b>Please specify if required:</b>	
Loop powered backlight or Separately powered backlight	
Root extractor	
Calibrator	
Legend	
Legend	
BA398	

\*Will be set to display 00.0 at 4mA and 100.0 at 20mA with linear display if calibration information is not supplied.