

The **BA328C** is an intrinsically safe 4¹/₂ digit panel mounting indicator which displays the current flowing in a 4/20mA 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 BA328C 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 easily be calibrated on-site to display any linear or square law signal represented by a 4/20mA current, such as temperature, flow or pressure. An optional 16 point lineariser enables the BA328C to display non linear variables in linear engineering units, and two optional alarms can control hazardous or safe area loads.

Control and calibration of the indicator is performed via the front panel tactile push-buttons which 'click' when operated. Using the push-buttons the operator can temporarily select the measured variable as a percentage of span, the input current in mA and the calibration at 4 & 20mA. The calibration functions are contained in easy to understand menus which are protected by a four digit user selectable security code.

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.

Optional alarms provide two galvanically isolated solid state outputs which may be independently programmed as high or low trips with normally open or closed contacts.

ATEX intrinsic safety certification allows installation throughout Europe. The two 4/20mA input terminals comply with the requirements for *simple apparatus* allowing the BA328C to be connected in series with most certified intrinsically safe 4/20mA loops. This, together with the low voltage drop, makes the BA328C very easy to apply. FM certification permits the indicator to be installed in the USA. 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 backed 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.

BA328C

2-wire 4/20mA
4¹/₂ digit indicator

*Intrinsically safe for use
in all hazardous gas areas*

- **Loop powered only 1V drop**
- **Intrinsically safe ATEX & FM certification**
- **±19999 display 20mm high**
- **Optional:
Loop powered backlight.
Separately powered backlight.
Alarms
Lineariser
Tare function**
- **IP65 front**
- **144 x 72mm DIN enclosure**
- **3 year guarantee**



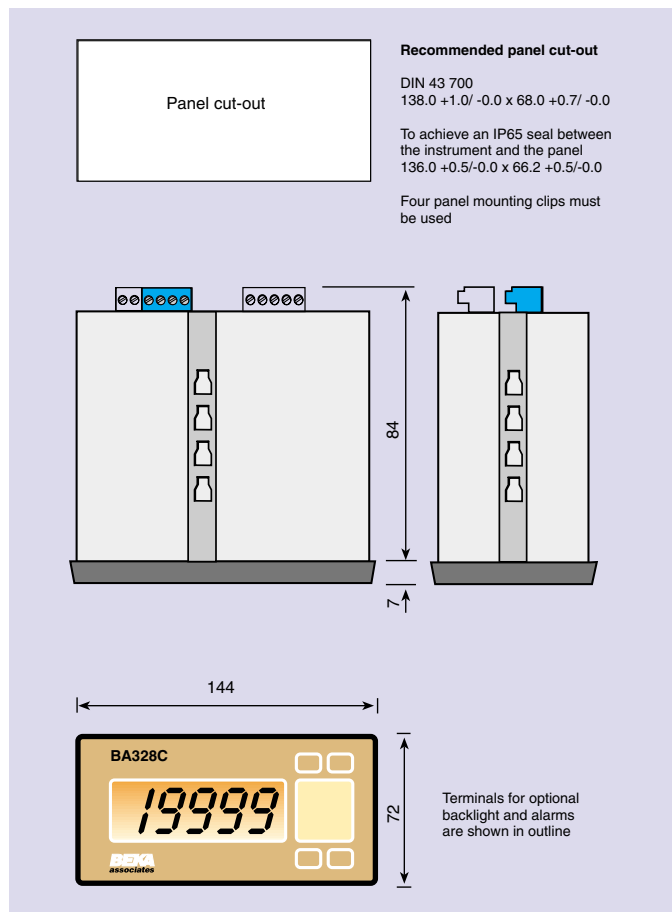
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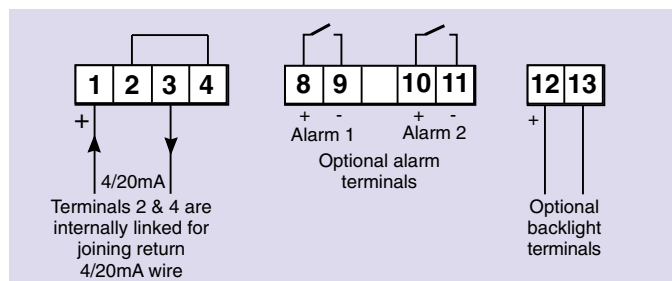
SPECIFICATION

Input	
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.
Display	
Type	4 1/2 digit (-19999 to 19999) Liquid crystal 20mm high
Span	Adjustable between 0 & ±19999 for a 4 to 20mA input.
Zero	Adjustable between -19999 & 19999 with 4mA input.
Decimal point	1 of 4 positions or absent
Zero blanking	Only one leading zero is displayed
Polarity	Automatic minus sign
Direction	Display may increase or decrease with increasing current.
Reading rate	2 per second
Overrange	4 least significant digits are blanked
Push-buttons	(Function in operating mode)
▼ button	Shows display with 4mA input
▲ button	Shows display with 20mA input
'P' button	Displays input current in mA, or as a percentage of span. When tare or alarms are fitted has modified function.
Accuracy	
At 20°C	Linear: ±0.02% ±1 digit Root extracting: ±16µA at input ±1digit
Temperature effect on:	
Zero	Less than 25ppm/°C
Span	Less than 50ppm/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50Hz or 60Hz signal
Intrinsic safety	
Europe ATEX	
Standard	EN50 020:1994
Code	Group II, Category 1G EEx ia IIC T5 ITS02ATEX2028
Cert No	
Output parameters	
Uo	1.1V dc
Io	70mA dc
Wo	23mW
Ceq	20nF
Leq	10µH
Location	Zone 0, 1 or 2
Installation	The BA328C may be connected to any certified intrinsically safe circuit whose output parameters do not exceed:
	Uo 30V dc
	Io 200mA dc
	Wo 0.8W
USA FM	
Standard	3610 Entity
Code	CL.I, II, III, Div 1, GP A, B, C, D, E, F & G
Temperature code	T4 at 60°C
File No	4B3A7.AX
Standard	3611 Nonincendive
Code	CL.I, Div 2, GP A, B, C & D CL.II, III, Div 2, GP F & G
File No	4B3A7.AX
Environmental	
Operating temp	-20 to +60°C (certified for use at -40°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.
Mechanical	
Terminals	Blue screw clamp for 0.5 to 1.5mm cables. Terminal block removable.
Weight	0.5kg
Accessories	
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.
Alarms	Two independent outputs each of which may be programmed as a high or low trip with NC or NO output.
Outputs	Isolated solid state switch Ron less than 5Ω + 0.6V Roff greater than 180k
Certification	Output complies with Clause 5.4 of EN50 020:1994 'Simple Apparatus'.

DIMENSIONS(mm)



TERMINAL CONNECTIONS



Tare function	Primarily intended for weighing applications, sets indicator display to zero when the 'P' push-button is operated.
Lineariser	Provides 16 fully adjustable straight lines which may be adjusted to compensate for almost any non-linear variable.
Typeset scale card	Blank scale card fitted to each indicator can be supplied typeset with units of measurement.
Tag number	Thermally printed number on the rear of the instrument.
Front cover	BA398 provides additional mechanical protection: front panel switches can not be operated.

HOW TO ORDER

Model number	BA328C
Display mode	Linear or root extracting*
Display at 4mA	XXXX
at 20mA	XXXX
	Include position of decimal point & sign if negative*
Accessories	Please specify if required:
Display backlight	Loop powered backlight or Separately powered backlight
Alarms	Alarms#
Lineariser	Lineariser#
Tare function	Tare
Scale card	Legend
Tag number	Legend
Front cover	BA398

*Will be set to display 0.00 at 4mA and 100.00 at 20mA with linear display if calibration information is not supplied.
#Contact BEKA if calibration of accessories is required.