

The **BA324C** is an intrinsically safe field mounting indicator which displays the current flowing in a 4/20mA loop in meaningful engineering units. The indicator has a 20mm high, easy to read liquid crystal display, and is housed in a robust IP66 enclosure. Modular accessories enable only the required features to be incorporated thus reducing cost while retaining interchangeability between instruments.

Main application of the BA324C 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 to display any linear or square law signal represented by a 4/20mA current, such as temperature, pressure or flow. An optional 16 point lineariser enables the BA324C to display non-linear variables in linear engineering units, and two optional alarms can control hazardous or safe area loads.

Calibration and programming of the indicator is performed via four sealed push-buttons located behind the instrument front cover where they are protected from damage and tampering. The calibration functions are contained in easy to understand menus which are accessed by entering 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.

An **internal calibrator** simulates 4 and 20mA input currents so that the indicator may 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.

ATEX intrinsic safety certification allows installation throughout Europe. The two 4/20mA input terminals comply with the requirements for *simple apparatus* allowing the BA324C to be connected in series with most certified intrinsically safe 4/20mA loops. This, together with the low voltage drop, makes the BA324C 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.

Two types of enclosure are available, each has stainless steel fittings and a toughened glass window and is sealed with a neoprene gasket. The sturdy glass reinforced polyester (GRP) enclosure is suitable for most industrial applications including offshore and water treatment. For installations where solvents may be encountered, the epoxy painted aluminium enclosure provides maximum protection. Both the GRP and aluminium enclosures, which have been tested by ERA, provide IP66 protection as specified in BS5490. To simplify installation, the BA324C is fitted with additional terminals which may be used to link the return 4/20mA conductor and the cable screen. The indicator assembly may be removed from the enclosure without disconnecting the field wiring or disturbing the 4/20mA loop, continuity being maintained by a diode within the terminal assembly.

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.

BA324C

2-wire 4/20mA 4½ digit indicator

*Intrinsically safe for use
in all gas hazardous areas*

- ◆ Loop powered only
1V drop.
- ◆ Intrinsically safe
ATEX & FM
certification.
- ◆ ±19999 display
20mm high.
- ◆ Internal calibrator
& root extractor.
- ◆ Optional:
 - Loop powered
backlight
 - Separately
powered backlight
 - Alarms
 - Lineariser
 - Tare function
- ◆ IP66 & NEMA 4 GRP
or aluminium
enclosure.
- ◆ 3 year guarantee

www.beka.co.uk/ba324c



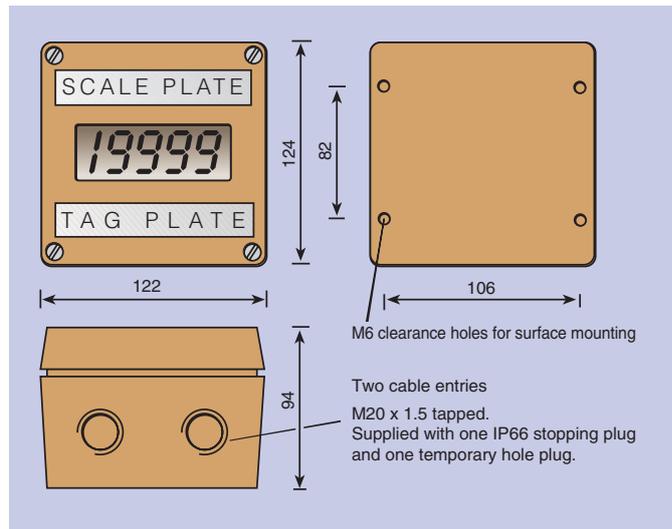
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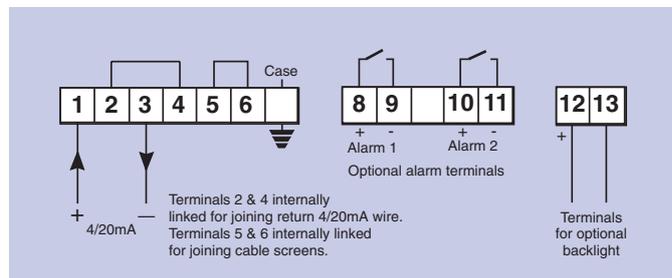
SPECIFICATION

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	4½ 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. Factory set option.
Reading rate	2 per second
Overrange	4 least significant digits are blanked
Push-buttons	(In operating mode, front cover removed)
▼ 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. Optional external push-button allows 'P' button to be operated without removing front cover.
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/°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	
Code	Group II, Category 1G Ex ia IIC T5 ITS02ATEX2028
Cert No	
Output parameters	
U _o	1.1V dc
I _o	70mA dc
W _o	23mW
Ce _q	20nF
Le _q	10µH
Location	Zone 0, 1 or 2
Installation	The BA324C may be connected to any certified intrinsically safe circuit whose output parameters do not exceed:
	U _o 30V dc
	I _o 200mA dc
	W _o 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)
Storage temp	-40 to 85°C
Humidity	To 95% at 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC, full report available.
Immunity	Less than 2% of span error for 10V/m field strength between 27MHz & 1 GHz.
Emissions	Undetectable above background noise. Class B equipment
Mechanical	
Terminals	Screw clamp for 0.5 to 2.5mm ² cables.
Weight	GRP enclosure 1.1kg Aluminium enclosure 1.4kg
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 alarms each of which may be programmed as a high or low trip with NC or NO output.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Outputs	Isolated solid state single pole switch Ron less than 5Ω + 0.6V Roff greater than 180k
Certification	Output complies with Clause 5.4 of EN50 020:1994 'Simple Apparatus'.
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.
External push-button	Enables 'P' button to be operated without removing front cover.
Etched scale plate	Removable blank stainless steel plate fitted to each indicator, can be supplied etched with units of measurement.#
Etched tag plate	Removable blank stainless steel plate fitted to each indicator, can be supplied etched with tagging information.#
Pipe mounting kit	2 kits are available BA392C and BA393.#
Panel mounting kit	BA394 mounts BA324C into a panel aperture.#

#See accessory datasheet for details.

HOW TO ORDER

Please specify:	
Model number	BA324C
Enclosure	GRP or aluminium
Display mode	Linear or root extracting*
Display at 4mA	XXXX
Display at 20mA	XXXX
Display resolution	1, 2, 5 or 10 digits*
Accessories	
Display backlight	
Alarms	
Tare function	
Lineariser	
External push-button	
Scale card	
Tag strip	
Pipe mounting kit	
Panel mounting kit	
Please specify if required:	
Loop powered backlight or Separately powered backlight	
Alarms#	
Tare	
Lineariser#	
Push-button	
Legend	
Legend	
BA392C or BA393	
BA394	

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with linear display mode and resolution of 1 digit if calibration information is not supplied.

Contact BEKA if calibration of accessories is required.