

The new BA324D is a third generation intrinsically safe field mounting indicator housed in a robust IP66 GRP enclosure incorporating a separate terminal compartment and dedicated access to the instrument controls. Retaining all the features of the popular BA324C, this new indicator provides improved display visibility, plus simplified installation, calibration and routine inspection facilities.

Like its predecessor, the BA324D displays the current flowing in a 4/20mA loop in accurate 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 BA324D 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 may be calibrated to display any variable represented by a 4/20mA current, such as temperature, pressure, or level. When used with a differential flow transmitter a square root extractor enables the BA324D to display flow in linear engineering units.

**The enclosure**, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by ITS - report available. 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 the clamping screws are both forward facing. Additional terminals are provided which may be used to link the return 4/20mA conductor and the cable screen.

**Calibration** and programming of the instrument is performed via four push-buttons protected from damage and tampering behind a sealed cover. For applications requiring frequent adjustment, the indicator can be supplied with external membrane push-buttons. All the calibration functions are contained in easy to understand menus which may be protected by a user definable security code.

An internal calibrator simulates 4 and 20mA input currents so that the instrument 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.

**International intrinsic safety certification** allows the BA324D 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; together with the low voltage drop, this makes the instrument very easy to apply. ATEX, FM and cFM approvals permit installation in Europe, USA and Canada and the IECEx certification allows installation in a growing number of countries including Australia and New Zealand.

**Two alternative 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. It does not require an additional power supply, IS interface or field wiring, but the indicator voltage drop is increased. The separately powered backlight provides a bright orange output to enhance daylight viewing, but it requires an additional IS interface and field wiring.

**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.

**Units of measurement** and the instrument application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer an etched stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

**Reliability is ensured** by an ISO9001 approved quality control system supported by a three year guarantee. The BA324D is protected from reverse connection and over-range input currents and incorporates extensive radio frequency filtering to comply with the European EMC Directive. The indicator assembly can 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.

# BA324D

## 2-wire 4/20mA 4½ digit indicator

*Intrinsically safe for use  
in gas and dust  
hazardous areas*

◆ Loop powered only  
1V drop

◆ Intrinsically safe  
ATEX gas  
or ATEX gas & dust  
or FM, cFM &  
ATEX gas

All models have IECEx  
certification

◆ ±19999 display  
20mm high

◆ IP66 GRP enclosure  
with separate terminal  
compartment

◆ Optional:  
Backlight:  
loop or separately  
powered  
Alarms  
Lineariser  
Tare function  
External push-  
buttons

◆ 3 year guarantee



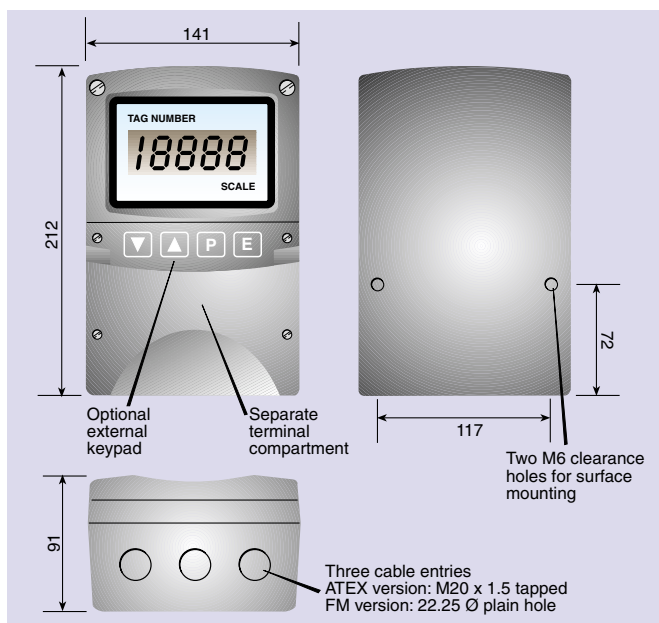
# BEKA associates

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

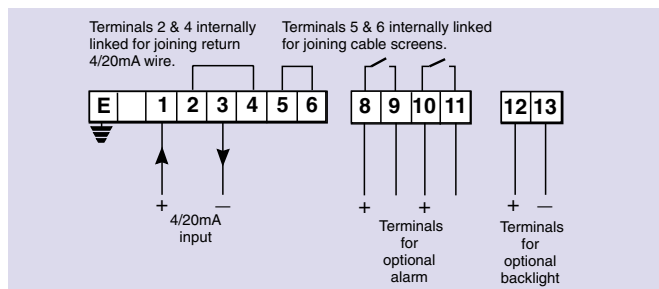
## SPECIFICATION

<b>Input</b>	
Current	4 to 20mA
Voltage	Less than 1V at 20°C Less than 1.1V at -20°C
Overrange	±200mA will not cause damage
<b>Display</b>	
Type	Liquid crystal 20mm high 4 1/2 digit (-19999 to 19999)
Zero	Adjustable between ±19999 with 4mA input.
Span	Adjustable between ±19999 for a 4 to 20mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Direction	Display may increase or decrease with increasing current. Factory set option.
Reading rate	2 per second
Over & underrange	4 least significant digits are blanked
<b>Push-buttons</b>	(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. Has modified function when optional alarms or tare function are fitted.
<b>Accuracy</b>	
At 20°C	Linear: ±0.02% of span ±1 digit Root extracting: ±16µA at input ±1 digit
Temp. effect	
Zero	Less than 25ppm/°C
Span	Less than 50ppm/°C
Series mode	Less than 0.05% of span error for 1mA pk to pk 50Hz or 60Hz signal.
<b>Intrinsic safety</b>	
<b>Europe ATEX</b>	
Code	Group II Category 1G, Ex ia IIC T5 (Tamb = -40 to 60°C)
or	Group II Category 1GD, T80°C IP66 <i>Dust option, see How to order</i>
Cert. No	EEx ia IIC T5 (Tamb = -20 to 60°C) ITS99ATEX2002
Output parameters	
Uo	1.1V dc
Io	70mA dc
Po	23mW
Ceq	20nF
Leq	10µH
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22
Installation	The BA324D may be connected to any certified intrinsically safe circuit whose output parameters do not exceed:
	Uo 30V
	Io 200mA
	Po 0.85W
<b>USA FM</b>	<i>Option, see How to order</i>
Standard	3610 Entity
Code	CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C
File	3008809
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP F & G, T4 @ 60°C
File	3008809
<b>Canada cFM</b>	
File	3032631C
<b>International IECEx</b>	
Standard	IEC60079-11:1999
Code	Ex ia IIC T5 Ta = -40 to 60°C or Ex ia IIC T5 DIP A21 TA 80°C IP66 Ta = -20 to 60°C <i>Dust option, see How to order</i>
Cert. No	IECEx ITS 05.0005
<b>Environmental</b>	
Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C
Enclosure	IP66 (see ITS test report C87IV0383)
EMC	In accordance with EU Directive 2004/108/EC, full report available.
Immunity	Less than 1% of span error for 10V/m field strength between 27MHz and 1GHz.
Emissions	Undetectable above background noise Class B equipment
<b>Mechanical</b>	
Terminals	Screw clamps for 0.5 to 1.5mm <sup>2</sup> cables
Weight	1.6kg
<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.

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



Alarms	Two independent alarms each of which may be programmed for high or low operation with NC or NO output.
Outputs	Isolated single pole solid state switch certified as <i>Simple Apparatus</i> . Ron less than 5Ω + 0.6V Roff greater than 180k
Lineariser	Provides 16 fully adjustable straight lines which may be positioned to compensate for almost any non-linear variable.
Tare function	Primarily intended for weighing applications. Sets indicator display to zero when 'P' push-button is operated.
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 applicational information marked onto display escutcheon.
Stainless legend plate	Stainless steel plate secured to front of enclosure, etched with tagging or applicational information. #
Pipe mounting kit	2 kits are available BA392D and BA393#

#See accessory datasheet for details

## HOW TO ORDER

<b>Please specify</b>	
Model number	BA324D
Certification	ATEX gas
or	ATEX gas & dust
or	FM, cFM & ATEX gas
Display at 4mA	XXXX <i>Include position of decimal</i>
Display at 20mA	XXXX <i>point &amp; sign if negative *</i>
<b>Accessories</b>	<b>Please specify if required</b>
Display backlight	Loop powered backlight or Separately powered backlight
Alarms	Alarms
Tare function	Tare
Lineariser	Lineariser
External push-buttons	External push-buttons
Escutcheon marking	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393

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