Optional backlight power supply

Optional alarm outputs

4/20mA circuit

2-wire Tx

4/20mA

Shown with display backlight

BA524C

Loop powered 4/20mA 4½ digit indicator

- **± 19999 display 20mm high**

- **No additional power supply required**

- **Internal calibrator & root extractor**

- **Optional:**
  Backlight
  Alarms
  Lineariser
  Tare function

- **IP66 GRP or aluminium enclosure**

- **3 year guarantee**

The BA524C is a general purpose 4¹/2 digit field 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 used in series with almost any 4/20mA loop. 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 BA524C is to display a measured variable or control signal in a 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 BA524C to display non-linear variables in linear engineering units, and two optional alarms will switch loads such as annunciators and relays.

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.

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

Backlighting is available as an option to improve readability when the BA524C is installed in a poorly illuminated area. High efficiency LED's provide an even glow to enhance the display contrast.

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. The display shows when an alarm is activated, and each alarm output will switch a dc load such as an annunciator, solenoid valve or relay.

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 off-shore 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 BA524C 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.

If flammable atmospheres are present either the BA324C or the BA324NC indicators should be used. They have the same features as the BA524C, but have been certified for use in hazardous areas.
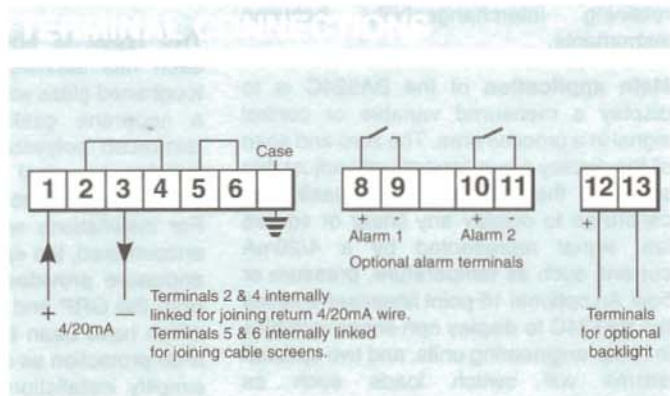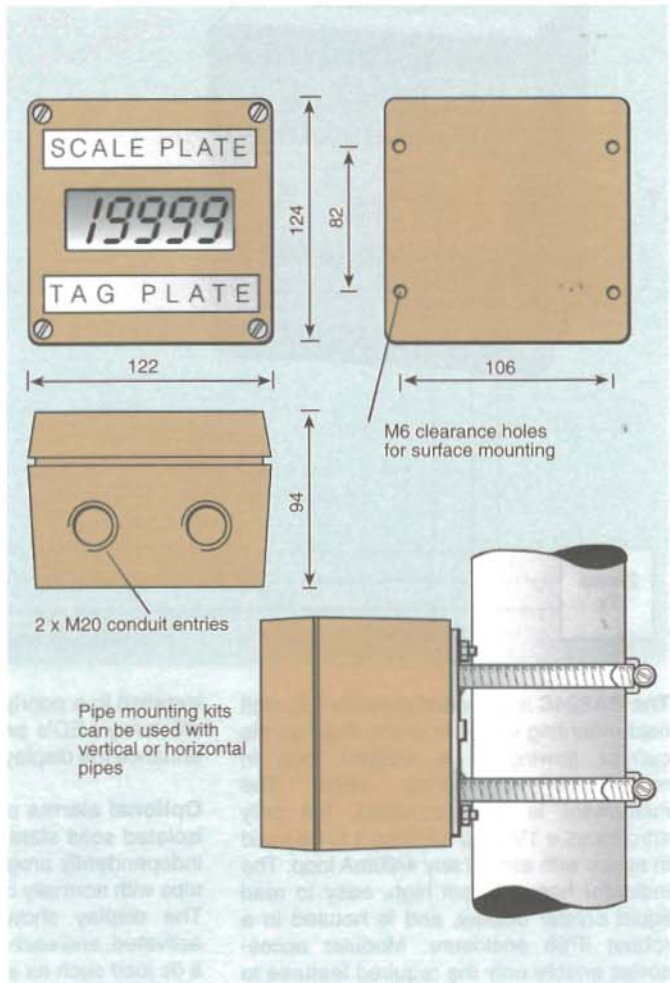
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Input

Current	4 to 20mA
Voltage	Less than 1V at 20°C
	Less than 1.1V at -20°C
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.
Reading rate	2 per second
Overrange	4 least significant digits are blanked

Push-buttons

▼ button	(In operating mode, front cover removed)
	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 affect 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.

Environmental

Operating temp	-20 to +60°C
Humidity	To 95% at 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 89/336/EEC, 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 2.5mm² cables.
Weight	GRP enclosure 1.1kg
	Aluminium enclosure 1.4kg

Accessories

Display backlight	LED backlight
Vin	18 to 30V dc, may be dimmed by reducing voltage below 18V.
Iin	40mA typical
Alarms	Two independent alarms each of which may be programmed as a high or low trip with NC or NO output.
Output	Isolated solid state single pole switch
Ron	Less than 5Ω + 0.6V
Roff	Greater than 180k
Rating	30V, 250mA
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.
Engraved scale plate	Removable blank stainless steel plate fitted to each indicator, can be supplied engraved with units of measurement. See accessory datasheet for details of legend size.
Engraved tag plate	Removable blank stainless steel plate fitted to each indicator, can be supplied engraved with tagging information. See accessory datasheet for details of legend size.
Pipe mounting kit	3 kits are available BA391, BA392 and BA393, see accessory datasheet for details.
Panel mounting kit	BA394 mounts BA524C into a panel aperture, see accessory datasheet for details.

SCALE PLATE

19999

TAG PLATE

124
82
122
106

M6 clearance holes for surface mounting

94

2 x M20 conduit entries

Pipe mounting kits can be used with vertical or horizontal pipes

1 2 3 4 5 6   Case   8 9 10 11   12 13

+   + − + −   + −
4/20mA   Alarm 1 Alarm 2

Optional alarm terminals

Terminals 2 & 4 internally linked for joining return 4/20mA wire.
Terminals 5 & 6 internally linked for joining cable screens.

Terminals for optional backlight

How to order

Model number	BA524C
Enclosure	GRP or aluminium
Display mode	Linear or root extracting*
Display at 4mA	XXXX Include position of decimal point
at 20mA	XXXX & sign if display is negative*
Display resolution	1, 2, 5 or 10 digits*

Please specify:

Accessories — **Please specify if required:**

Display backlight	Backlight
Alarms	Alarms#
Tare function	Tare
Lineariser	Lineariser#
External push-button	Push-button
Scale plate	Legend
Tag plate	Legend
Pipe mounting kit	BA391, BA392 or BA393
Panel mounting kit	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.