## 1. DESCRIPTION

The BA304SG, BA304SG-SS, BA324SG and the BA324SG-SS are field mounting increased safety Ex eb digital loop powered indicators that display the 4/20mA loop current in engineering units.

| | |
|---|---|
| **BA304SG** | 4 digits 34mm high<br>GRP enclosure. |
| **BA304SG-SS** | 4 digits 34mm high<br>316 stainless steel enclosure. |
| **BA324SG** | 5 digits 29mm high + 31 segment bargraph.<br>GRP enclosure. |
| **BA324SG-SS** | 5 digits 29mm high + 31 segment bargraph.<br>316 stainless steel enclosure. |

This abbreviated instruction sheet is intended to assist with installation and commissioning, a comprehensive instruction manual describing safety certification, system design and calibration may be downloaded from www.beka.co.uk An application guide AG320 is also available.

All models have IECEx, ATEX, UKEX and ETL certification. They may be installed in Zone 1 or 2 and connected in series with any 4/20mA hazardous area loop employing any type of certified explosion protection except intrinsic safety.

**North American AEx certification does not include dust certification for Zones 21 and 22.**

**La certification Nord Américaine AEx n'inclue pas les Zones poussières 21 et 22.**

All other certifications include dust ignition protection by enclosure Ex tb that allows the indicator to be installed in Zone 21 or 22.

BA304SG certification information label

## 2. INSTALLATION

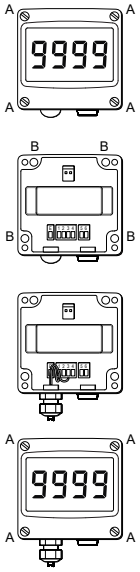
The BA304SG and BA324SG have a robust glass reinforced polyester (GRP), carbon loaded enclosure. The BA304SG-SS and the BA324SG-SS have a 316 stainless steel enclosure. Both types of enclosure are impact resistant and provide IP66 ingress protection. They are suitable for exterior surface mounting in most industrial environments, or may be pipe or panel mounted using an accessory kit.

Both back-box cable entries have M20 x 1.5 threads with an Ex e and Ex t certified stopping plug fitted in the right hand entry. The left hand entry has a temporary plug to prevent the ingress of dust and dirt during transportation and should be replaced with a an appropriate certified Ex e or Ex t cable gland or conduit entry.

**Do not connect or disconnect an indicator when energised**

**If the indicator is not mounted onto an earthed metal structure, the indicator's internal earth terminal should be earthed.**

**Si l'indicateur n'est pas monté sur une structure métallique mise à la terre, la borne de terre interne doit être reliée à la terre.**




**Step A**
Unscrew the four captive 'A' screws, lift off the indicator assembly and un-plug the wires from the back-box as shown in fig 2.

**Step B**
Secure the enclosure back-box to a flat surface with M6 screws through the four 'B' holes. Alternatively use a pipe or panel mounting kit.

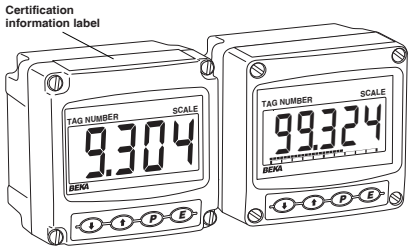
**Step C**
Remove the temporary hole plug and install an Ex e cable gland or conduit fitting. Feed the field wiring through the cable entry and connect to terminals in back-box.

**Step D**
Plug the indicator assembly wires into the back-box connector. Check sealing gasket before replacing the indicator assembly and securing by evenly tightening the four 'A' screws.

Fig 1 Installation procedure

**Abbreviated Instruction for BA304SG, BA304SG-SS, BA324SG & BA324SG-SS Ex eb and Ex tb field mounting loop powered indicators**

***For instruments with serial numbers above 094433/01/002***

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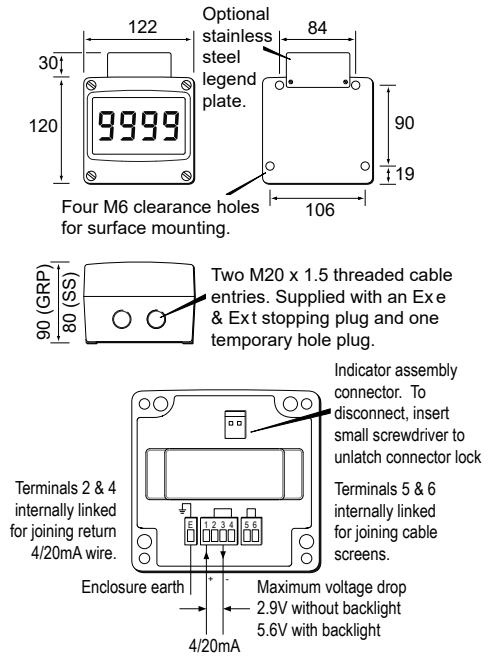


Fig 2 Dimensions and terminal connections

### EMC

For specified immunity all wiring should be in screened twisted pairs, with the screens earthed in the safe area.

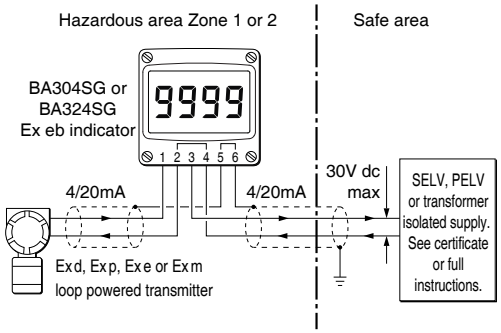


Fig 3 Typical measurement loop

### Scale card

The indicator's units of measurement and tag information are shown above the display on a slide-in scale card. New instruments are fitted with a scale card showing the information requested when the instrument was ordered, if this is not provided a blank scale card will be fitted which can easily be marked on-site. Custom printed scale cards are available from BEKA associates.

To remove the scale card, carefully pull the tab perpendicularly away from the rear of the indicator assembly. See Fig 4 for the location of the scale card tab.

To replace the scale card carefully insert it into the slot on the right hand side of the indicator assembly which is shown in Fig 4. Force should be applied evenly to both sides of the scale card to prevent it twisting. The card should be inserted until about 2mm of the transparent tab remains protruding.

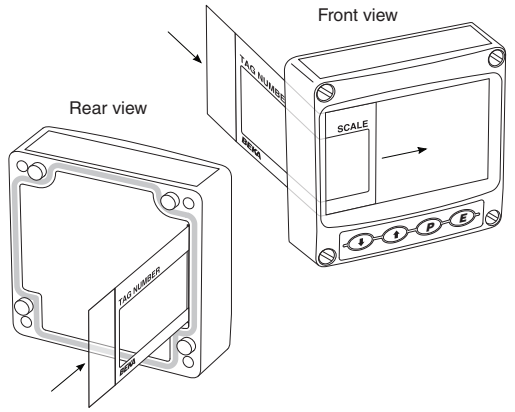


Fig 4 Inserting scale card into the instrument assembly.

## 3. OPERATION

Both models are controlled and calibrated via four front panel push buttons. In the display mode i.e. when the indicator is displaying a process variable, these push buttons have the following functions:

| | |
|---|---|
| P | While this button is pushed the indicator will display the input current in mA, or as a percentage of the instrument span depending upon how the indicator has been configured. When the button is released the normal display in engineering units will return. |
| ▼ | While this button is pushed the indicator will display the numerical value and analogue bargraph[1] the indicator has been calibrated to display with a 4mA[2] input. When released the normal display in engineering units will return. |
| ▲ | While this button is pushed the indicator will display the numerical value and analogue bargraph[1] the indicator has been calibrated to display with a 20mA[2] input. When released the normal display in engineering units will return. |
| E | No function in the display mode unless the tare function is being used. |
| P + ▼ | Indicator displays firmware number followed by version. |
| P + E | Provides access to the configuration menu via optional security code. |

**Note**
[1] Only BA324SG & BA324SG-SS have a bargraph
[2] If the indicator has been calibrated using the CAL function, calibration points may not be 4 and 20mA.

## 4. CONFIGURATION

Indicators are supplied calibrated as requested when ordered, if not specified default configuration will be supplied but can easily be changed on-site.

Fig 5 shows the location of each function within the configuration menu with a brief summary of the function. Please refer to the full instruction manual for detailed configuration information and for a description of the linearisers.

Access to the configuration menu is obtained by pressing the P and E buttons simultaneously. If the indicator security code is set to the default 0000 the first parameter FunC will be displayed. If the indicator is protected by a security code, CodE will be displayed and the code must be entered to obtain access to the menu.

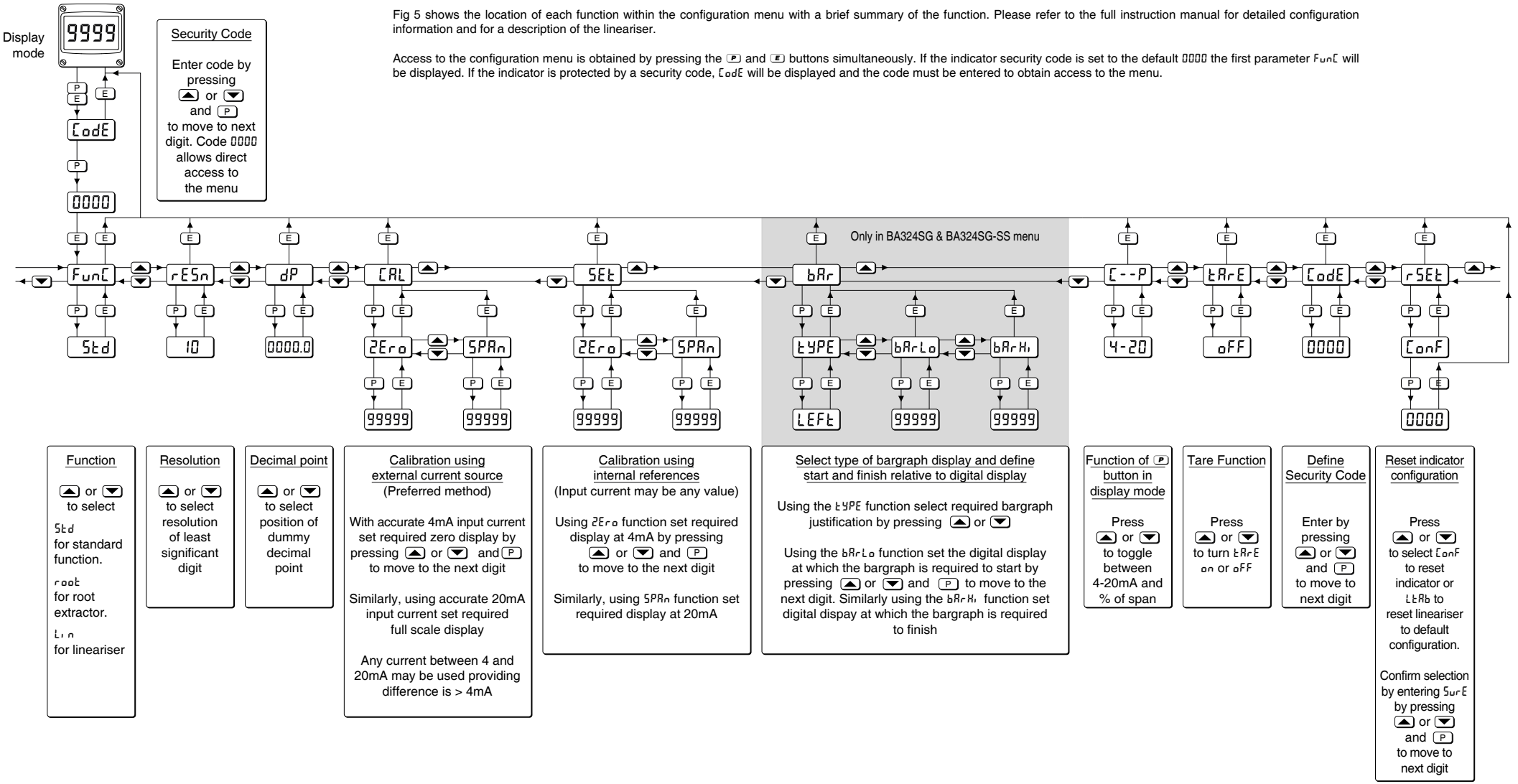


Fig 5 Configuration menu

Manuals, certificates and data-sheets can be downloaded from http://www.beka.co.uk/ex-eb

**The BA304SG, BA304SG-SS, BA324SG and BA324SG-SS are CE marked to show compliance with the *European Explosive Atmospheres Directive 2014/34/EU* and the *European EMC Directive 2014/30/EU.***

**They are also UKCA marked to show compliance with UK statutory requirements Equipment and Protective Systems Intended for Use in *Potentially Explosive Atmospheres Regulations UKSI 2016:1107 (as amended)* and with the *Electromagnetic Compatibility Regulations UKSI 2016:1091 (as amended).***