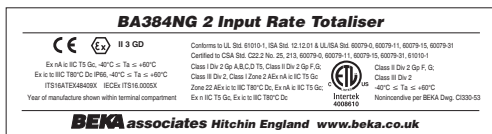


1. DESCRIPTION

The BA384NG is a field mounting Ex nA and Ex tc certified, two input Rate Totaliser which will function with a wide variety of sensors. The instrument can display rate of flow and total flow of the two inputs and their sum or difference.

This abbreviated instruction sheet is intended to assist with installation, a comprehensive instruction manual describing safety certification, system design and configuration may be downloaded from the BEKA website or may be requested from the BEKA sales office.

The BA384NG Rate Totaliser has IECEx, ATEX, ETL and cETL certification permitting installation in Zone 2 and Zone 22 without Zener barriers or galvanic isolators. The certification information label, which is located on the top of the instrument assembly, shows the certification numbers and codes. Other certifications may be shown. Copies of certificates may be downloaded from the BEKA website.



Typical certification information label

2. INSTALLATION

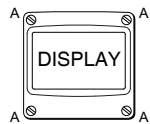
The BA384NG Rate Totaliser has a robust IP66 glass reinforced polyester (GRP) carbon loaded enclosure incorporating an armoured glass window & stainless steel fittings. It is suitable for exterior surface mounting in most industrial environments, or pipe mounting using an accessory kit.

The BA384NG should be powered from a limited energy circuit with output parameters in normal operation equal to, or less than the instrument's input parameters.

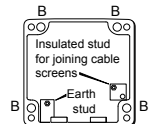
If the enclosure is not bolted to an earthed post or structure, the earth terminal on the cable entry bonding plate, which may be assembled on the inside or outside of the enclosure, should be connected to local earthed metalwork or to the plant's potential equalising conductor.

Terminals A1, A2, A3 and A4 are only fitted when the Rate Totaliser includes optional alarms. Similarly terminals C1, C2, C3 and C4 are only fitted when the instrument has an optional 4/20mA output. See full manual for details.

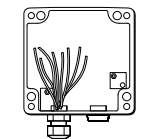
See the full instruction manual for installation information requirements for safe use in combustible dust atmospheres.



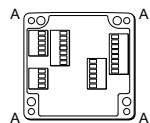
Step A
Unscrew the four captive 'A' screws and separate the indicator assembly and the back-box.



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



Step C
Remove the temporary hole plug and install an appropriate IP rated Ex e cable gland or conduit fitting. Feed the field wiring through the cable entry.



Step D
Terminate field wiring on the instrument assembly. Replace the assembly on the enclosure back-box and tighten the four 'A' screws.

Fig 1 BA384NG installation procedure

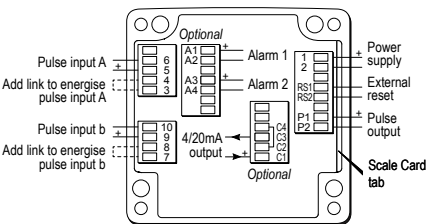
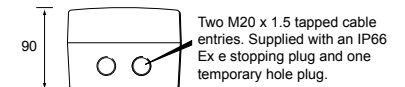
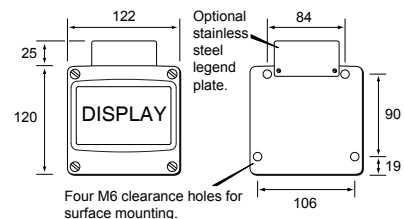


Fig 2 Dimensions and terminal connections

EMC

For specified immunity all wiring should be in screened twisted pairs with screens earthed at one point within the safe area.

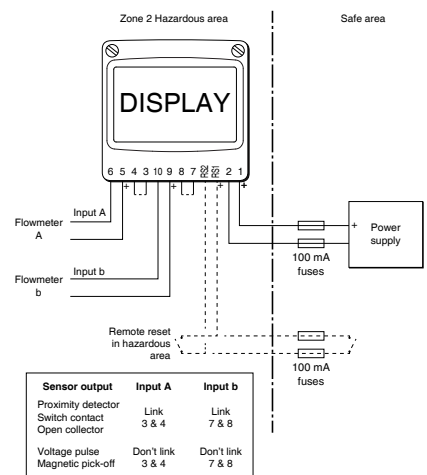


Fig 3 Typical measurement loop

Scale card

The instrument'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 specified when the instrument was ordered, if this was 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 instrument assembly. See Fig 2 for the location of the scale card tab.

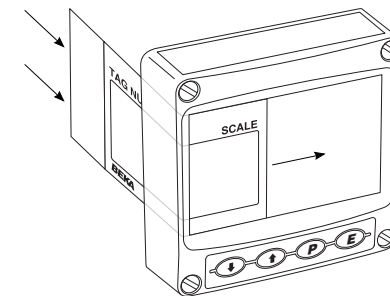


Fig 4 Inserting scale card into instrument assembly

To replace the scale card carefully insert it into the slot shown in Fig 2. 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.

3. OPERATION

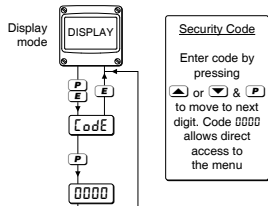
The BA384NG is controlled and configured via four front panel push buttons. In the display mode i.e. when the instrument is displaying flow the push button functions are:

- ☑ or ☒ Scrolls both displays between:
 - Input R
 - Input b
 - Input R + b or Input R - b which is configurable
- ☒ + ☑ Grand total - shows L₀ followed by the least significant 8 digits of a 16 grand total.
- ☒ + ☒ Grand total - shows H₀ followed by the most significant 8 digits of a 16 digit grand total. If buttons are pressed for longer than 10 seconds the grand total will be reset to zero if the grand total reset function CLR Tot is enabled.
- To reset the grand total to zero from the operating mode press the ☒ and ☒ buttons for ten seconds until CLR_{no} is displayed. Using the ☑ or ☒ button change the display to CLR_{YE5} and press ☒ which will reset the grand total and restore the original display.
- ☑ + ☒ If the local total reset function CLR Tot is enabled in the configuration menu, simultaneously pressing the ☑ and ☒ buttons for more than three seconds allows total R, total b or both totals to be selected by operating the ☑ or ☒ button. Operating the ☒ button will then reset the selected total to zero and clear any stored output pulses.
- ☒ + ☑ Shows each for 2 seconds:
 - Firmware and version numbers
 - Function of instrument: CLR_{oE}RL
 - Options fitted
 - R Alarm outputs
 - P Pulse output (always fitted)
 - E 4/20mA output
- ☒ + ☑ Provides direct access to the alarm setpoints when the Rate Totaliser is fitted with optional alarms and the RCL5P setpoints function has been enabled.
- ☒ + ☒ Access to configuration menu

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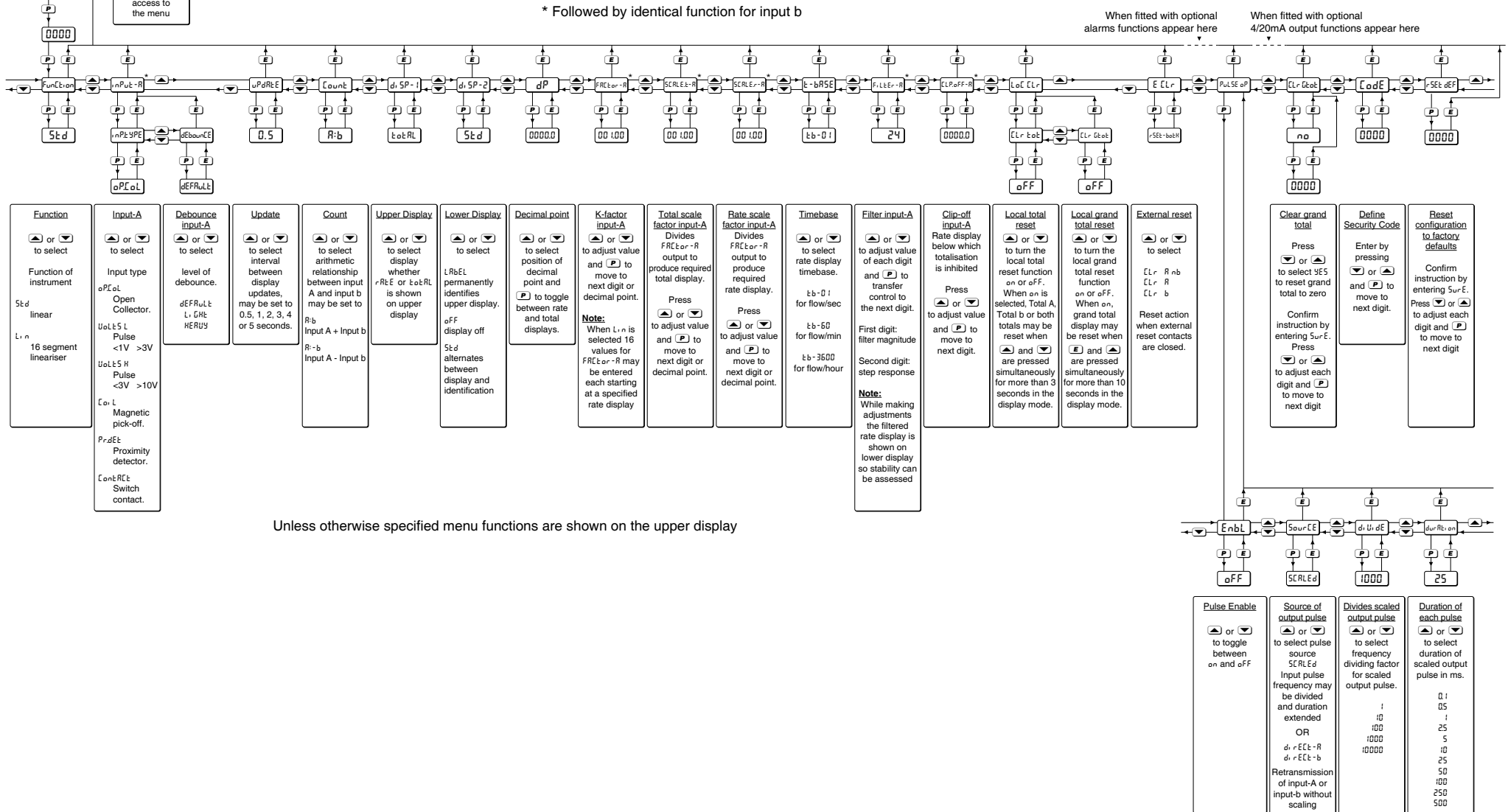
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The BA384NG is CE marked to show compliance with the ATEX Directive 2014/34/EU and the EMC Directive 2014/30/EU.



4. CONFIGURATION

Rate Totalisers are supplied configured as requested at time of ordering, 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 description of optional outputs. Access to the configuration menu is obtained by pressing the **P** and **E** buttons simultaneously. If the Rate Totaliser's security code is set to default 0000 the first parameter **Funct on** will be displayed. If the instrument is protected by a security code, **Lo dE** will be displayed. The four digit code must be entered to gain access to the menu.



SCRL e d is not available when R: b is selected in the Count function.

These functions only appear in sub-menu when pulse source is conditioned as SCRL e d.

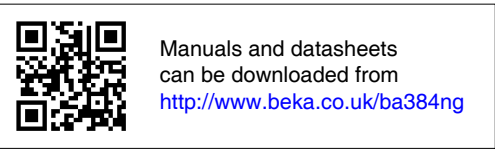


Fig 5 Configuration menu