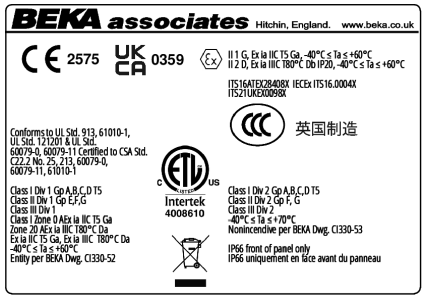
1. DESCRIPTION

The BA377E-SS is an intrinsically safe, one input instrument in a rugged 316 stainless steel enclosure that can be configured as a Timer or as a Clock. As a Timer the BA377E-SS is able to measure and display the elapsed time between external events, or control external events via two control outputs. When configured as a Clock the BA377E-SS displays local time and the control outputs can turn *on* and *off* twice in each twenty four hour period.

An optional internally powered green display backlight is available as a factory fitted option. If required this must be specified when the instrument is ordered.

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 BA377E-SS has IECEx, ATEX and UKEX intrinsic safety certification for use in flammable gas and dust atmospheres. ETL and cETL approval permits installation in the USA and Canada. The certification information label, which is located on the top of the instrument enclosure, 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

Special conditions for safe use

The IECEx, ATEX and UKEX intrinsic safety certificate numbers have an 'X' suffix indicating that for some applications special conditions apply for safe use.

a. When installed in an Ex e, Ex p or Ex t panel enclosure all connections to the BA377E-SS must be made by appropriately rated Zener barriers or galvanic isolators.

This means that when installed in an Ex e, Ex p or Ex t panel enclosure the BA377E-SS remains an intrinsically safe instrument.

b. The front of the stainless steel enclosure complies with the requirements for Ex e, Ex p & Ex t type of protection.

Therefore when correctly installed the BA377E-SS Timer or Clock will not invalidate the Ex e, Ex p or Ex t panel enclosure certification.

Use in combustible dust atmospheres

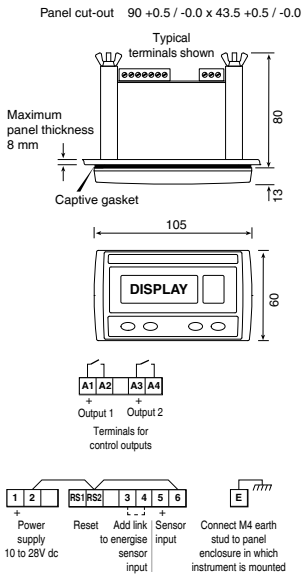
See full instruction manual for installation information requirements and special conditions for safe use in combustible dust atmospheres.

2. INSTALLATION

Although the BA377E-SS has IP66 front of panel protection it should be shielded from continuous direct sunlight and severe weather conditions. The rear of the instrument has IP20 protection.

Cut-out dimensions

Mandatory to achieve an IP66 seal between instrument and panel and to maintain certification of panel enclosure in which it is mounted.

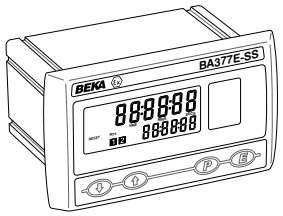


Support panel wiring to prevent vibration damage

Fig 1 Cut-out dimensions and terminals

Abbreviated instructions for

BA377E-SS Rugged one input intrinsically safe Timer or Clock



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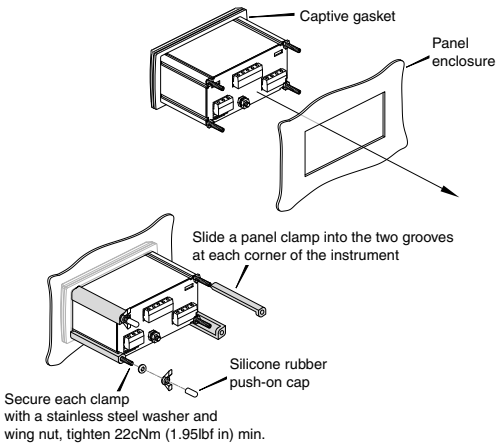


Fig 2 Installation procedure

EMC

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

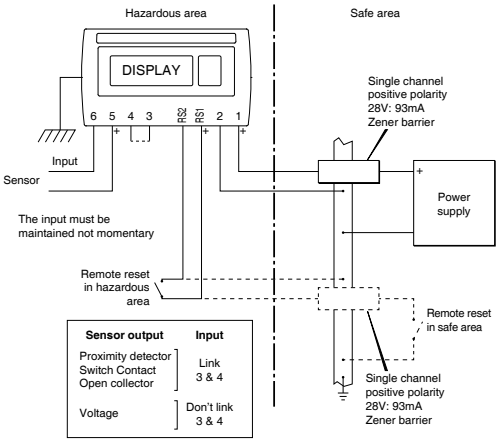


Fig 3 Use with Zener barriers

Scale card

The Timer or Clocks units of measurement are shown on a printed scale card visible through a window at the right hand side of the display. The scale card is mounted on a flexible strip that is inserted into a slot at the rear of the instrument as shown below

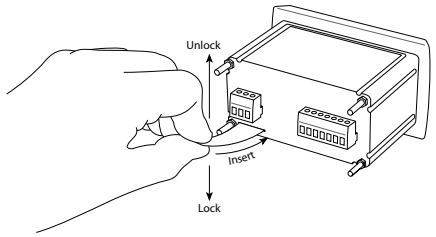
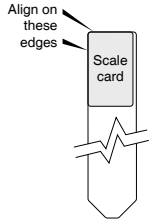


Fig 4 Inserting flexible strip carrying scale card into slot at the rear of Timer or Clock.

Thus the scale card can easily be changed without removing the Timer or Clock from the panel or opening the instrument enclosure.

New Timer or Clocks are supplied with a printed scale card showing the requested units of measurement, if this information is not supplied when the Timer or Clock is ordered a blank card will be fitted.
A pack of self-adhesive scale cards printed with common units of measurement is available as an accessory from BEKA associates. Custom printed scale cards can also be supplied.

To change a scale card, unclip the protruding end of the flexible strip by gently pushing it upwards and pulling it out of the enclosure. Peel the existing scale card from the flexible strip and replace it with a new printed card, which should be aligned as shown below. Do not fit a new scale card on top of an existing card.



Align the self-adhesive printed scale card onto the flexible strip and insert the strip into the Timer or Clock as shown.

Fig 5 Fitting scale card to flexible strip

3. OPERATION

The Timer or Clock is controlled by four front panel push buttons. When in the Timer operating mode they have the following functions:

[P] + [E] Access to configuration menu.

[▼] When local control is enabled starts the Timer

[▲] When local control is enabled stops the Timer.

[E] + [▲] Shows the grand total (run time) in hours and tenths of an hour irrespective of Timer configuration. If buttons are held for longer than ten seconds the grand total may be reset to zero if the grand total reset sub-function `CLr GtoL` is enabled in the `LoC rSEt` configuration function.

To reset the grand total to zero from the display mode press the [E] + [▲] buttons for ten seconds until `CLr.no` is displayed, using the [▼] or [▲] button change the display to `CLr.YES` and press [E].

[▼] + [▲] Resets the Timer to zero or to the set time `SEt t` depending on whether the Timer is configured to *time-up* or *time-down* when the two buttons are operated simultaneously for more than three seconds. This is a configurable function.

[P] + [▲] When enabled in the configuration menu, operating these two buttons simultaneously provides direct access to the set time `SEt t` and allows adjustment when the timer is in the display mode.

[P] + [▼] Shows in succession, firmware version number, instrument function `ELAPSE` or `CLoC`, and confirms control outputs are fitted:
- `A` Dual Control Outputs

See full instruction manual for description of use when configured as a Clock

4. CONFIGURATION

Timer or Clocks are supplied configured as requested at time of ordering, if not specified default Timer configuration will be supplied but can easily be changed on-site.

Fig 6 shows the location of each function within the menu when configured as a Timer with a brief summary of the function. Please refer to the full instruction manual for detailed configuration information, description of the optional outputs and the menu when configured as a Clock.

Access to the configuration menu is obtained by pressing the P and E buttons simultaneously. If the Timer or Clock's security code is set to default 0000 the first parameter FunCti on will be displayed. If the instrument is protected by a security code, CodE will be displayed. The four digit code must be entered to gain access to the menu.

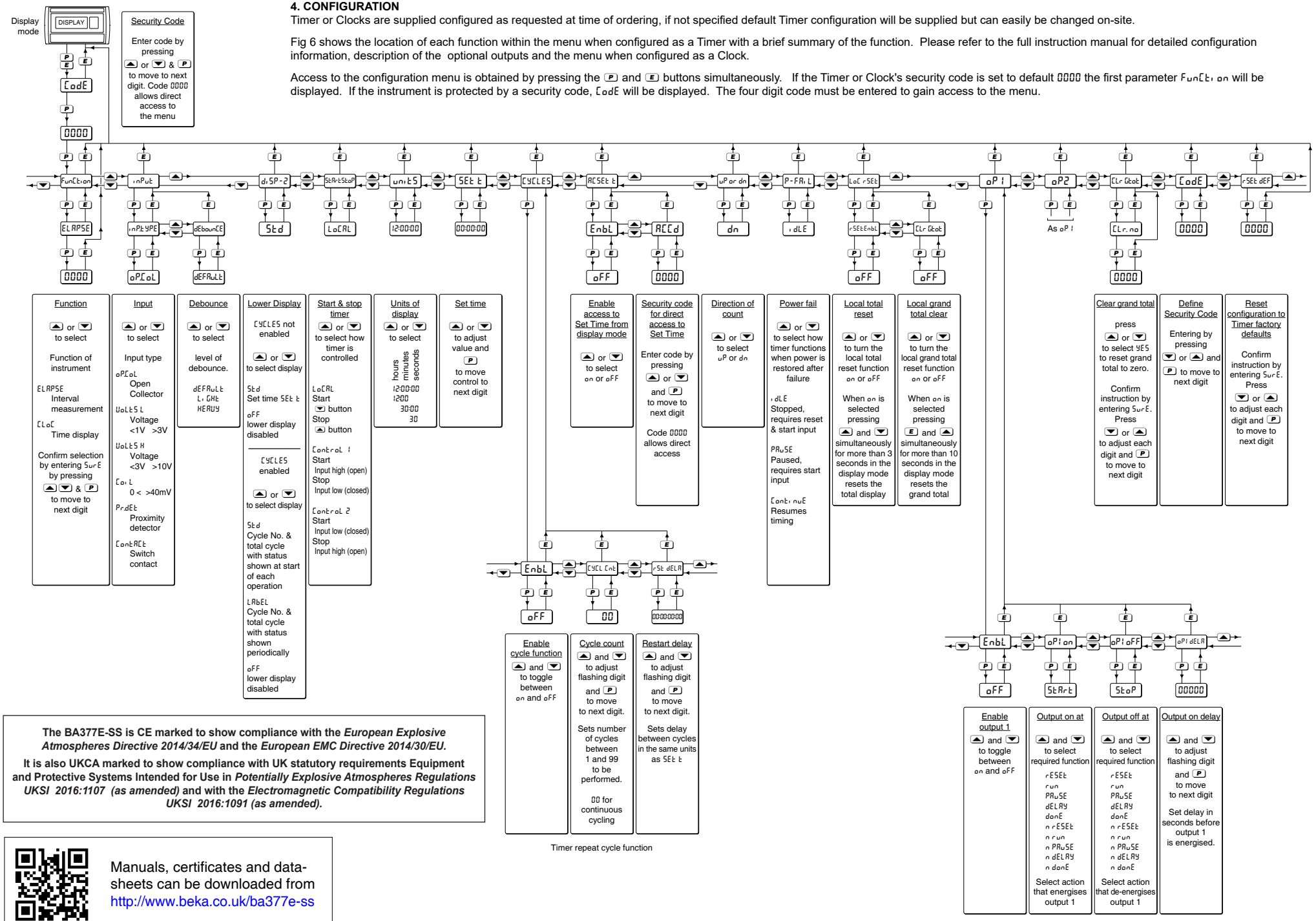


Fig 6 Timer Configuration menu

The BA377E-SS is CE marked to show compliance with the *European Explosive Atmospheres Directive 2014/34/EU* and the *European EMC Directive 2014/30/EU.*

It is 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).*

Manuals, certificates and data-sheets can be downloaded from http://www.beka.co.uk/ba377e-ss