1. DESCRIPTION

The BA374E is a field mounting intrinsically safe, instrument with a separate terminal compartment which can be configured as a Timer or as a Clock. As a Timer the BA374E can measure and display the elapsed time between external events, or control external events via two control outputs. When configured as a Clock the BA374E displays local time and the control outputs can turn on and off twice in each 24 hour period.

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 BA374E Timer or Clock has IECEx, ATEX and UKEX intrinsic safety certification for use in flammable gas atmospheres, plus ETL and cETL gas and dust certification. 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

2. INSTALLATION

The BA374E Timer or Clock has has a robust IP66 GRP enclosure with a separate terminal compartment 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.

If the enclosure is not bolted to an earthed post or structure, the earth terminal should be connected to local earthed metalwork or to the plant's potential equalising conductor.
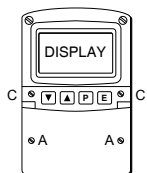
Step A
Remove the terminal cover by unscrewing the two 'A' screws
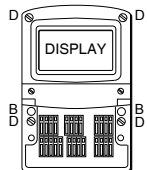
Step B
Secure the instrument to a flat surface with M6 screws through the two 'B' holes. Alternatively use a pipe mounting kit.
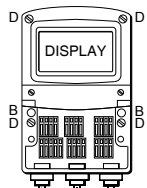
Step C and D
Remove the temporary hole plug and install an appropriate IP rated cable gland or conduit fitting and terminate field wiring. Finally replace the terminal cover and tighten the two 'A' screws.
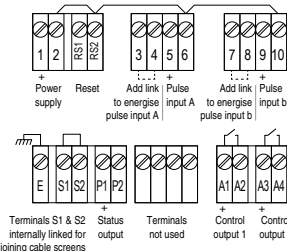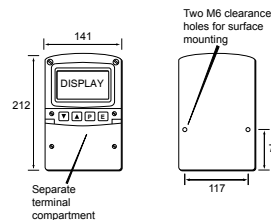
Fig 1 BA374E installation procedure

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 Timer system

Units of measurement and tag number

The BA374E is fitted with a blank escutcheon around the liquid crystal display. This can be supplied printed with any units of measurement and tag information specified at the time of ordering. Alternatively, the information may be added on-site via an embossed strip, dry transfer or a permanent marker.

To gain access to the escutcheon remove the terminal cover by unscrewing the two 'A' screws which will reveal two concealed 'D' screws. Remove the push buttons by unscrewing the two 'C' screws and un-plug the five way connector. Finally, unscrew all four 'D' screws and carefully lift off the front of the instrument. The location of all the screws is shown in Fig 1.

3. OPERATION

The BA374E is controlled and configured via four front panel push buttons. When configured as a Timer the push button functions are:

▼   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 ㎈ㄷㄷㅜ Ꮟㅌㅗㅌ is enabled in the ㄴㅁㄷ ㅜ5ㅌㅌ configuration function.

To reset the grand total to zero from the display mode press the E + ▲ buttons for ten seconds until ㄷㄴㅜ ㄲㅁ is displayed. Using the ▼ or ▲ button change the display to ㄷㄴㅜ.ㄥㄥ5 and press E.

▼ + ▲   Resets the Timer to zero or to the set time 5ㅌㅌ ㅌ 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 from the display mode to the set time 5ㅌㅌ ㅌ and, if the repeat timing cycle is enabled, to the restart delay ㅜ5ㅌ ㅤㅌㄥㅁ.

P + ▼   Shows in succession, firmware version number, instrument function ㅌㄥㅁㅁ5ㅌ or ㄷㄥㅁㄷ and output accessories which are always fitted.
-ㅁ   Control outputs
-ㄖ   Pulse output

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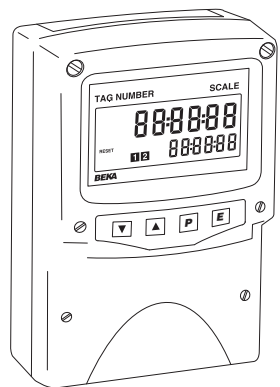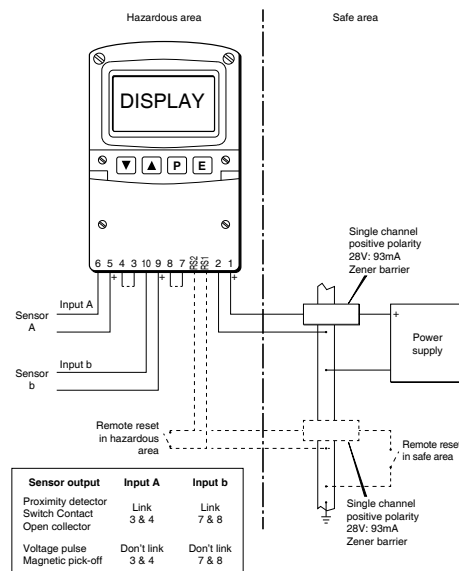
4. CONFIGURATION

BA374E 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 4 shows the location of each function within the Timer configuration menu with a brief summary of the function. Please refer to the full instruction manual for detailed configuration information. 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 FunCtion 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.

Unless otherwise specified menu functions are shown on the upper display

Fig 4 Configuration menu

Timer repeat cycle function

Control Output 1 configuration

Security Code
Enter code by pressing ▲ or ▼ & P to move to next digit. Code 0000 allows direct access to the menu

Function
▲ or ▼ to select
Function of instrument
ELAPSE Timer interval measurement
CLoC Clock time display
Confirm selection by entering SurE by pressing ▲ or ▼ and P to move to next digit

Input-A
▲ or ▼ to select
Input type
oP.CoL Open Collector.
VoLtS L Pulse <1V >3V
VoLtS H Pulse <3V >10V
Coi L Magnetic pick-off.
Pr.dEt Proximity detector.
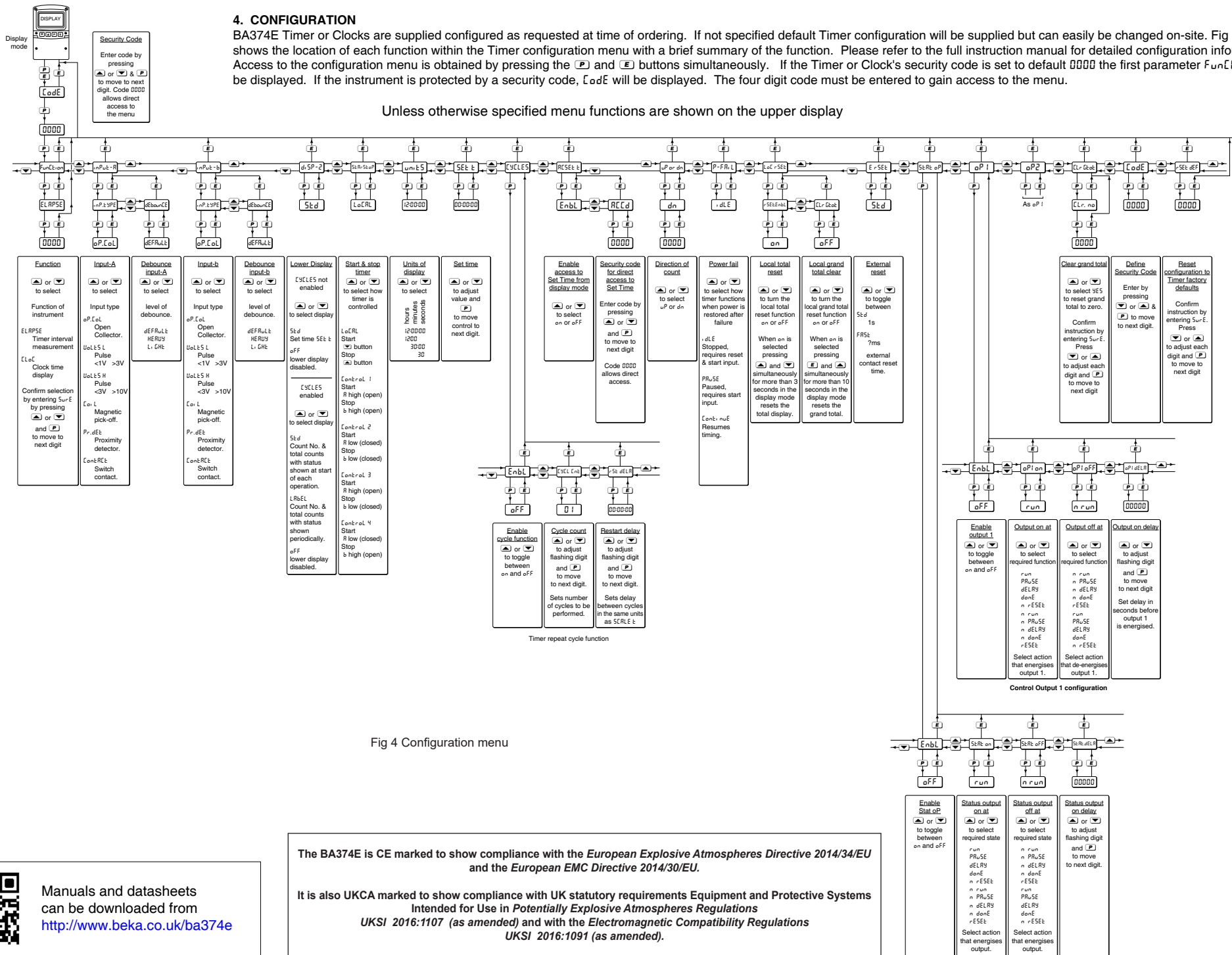ContRCt Switch contact.

Debounce input-A
▲ or ▼ to select
level of debounce.
dEFAULt HEAVY LiGHt

Input-b
▲ or ▼ to select
Input type
oP.CoL Open Collector.
VoLtS L Pulse <1V >3V
VoLtS H Pulse <3V >10V
Coi L Magnetic pick-off.
Pr.dEt Proximity detector.
ContRCt Switch contact.

Debounce input-b
▲ or ▼ to select
level of debounce.
dEFAULt HEAVY LiGHt

Lower Display
CYCLES not enabled
▲ or ▼ to select display
Std Set time SEt t
oFF lower display disabled.
___
CYCLES enabled
▲ or ▼ to select display
Std Count No. & total counts with status shown at start of each operation.
LAbEL Count No. & total counts with status shown periodically.
oFF lower display disabled.

Start & stop timer
▲ or ▼ to select how timer is controlled
LoCAL Start ▲ button Stop ▼ button
Control 1 Start A high (open) Stop b high (open)
Control 2 Start A low (closed) Stop b low (closed)
Control 3 Start A high (open) Stop b low (closed)
Control 4 Start A low (closed) Stop b high (open)

Units of display
▲ or ▼ to select
hours minutes seconds
12:00:00
12:00
30

Set time
▲ or ▼ to adjust value and P to move control to next digit.

Enable access to Set Time from display mode
▲ or ▼ to select on or oFF

Security code for direct access to Set Time
Enter code by pressing ▲ or ▼ and P to move to next digit
Code 0000 allows direct access.

Direction of count
▲ or ▼ to select uP or dn

Power fail
▲ or ▼ to select how timer functions when power is restored after failure
idLE Stopped, requires reset & start input.
PAuSE Paused, requires start input.
Conti nuE Resumes timing.

Local total reset
▲ or ▼ to turn the local total reset function on or oFF
When on is selected pressing ▲ and ▼ simultaneously for more than 3 seconds in the display mode resets the total display.

Local grand total clear
▲ or ▼ to turn the local grand total reset function on or oFF
When on is selected pressing ▲ and ▼ simultaneously for more than 10 seconds in the display mode resets the grand total.

External reset
▲ or ▼ to toggle between Std 1s FASt ?ms external contact reset time.

Enable cycle function
▲ or ▼ to toggle between on and oFF

Cycle count
▲ or ▼ to adjust flashing digit and P to move to next digit.
Sets number of cycles to be performed.

Restart delay
▲ or ▼ to adjust flashing digit and P to move to next digit.
Sets delay between cycles in the same units as SCALE t

Clear grand total
▲ or ▼ to select YES to reset grand total to zero.
Confirm instruction by entering SurE. Press ▲ or ▼ to adjust each digit and P to move to next digit

Define Security Code
Enter by pressing ▼ or ▲ & P to move to next digit.

Reset configuration to Timer factory defaults
Confirm instruction by entering SurE. Press ▼ or ▲ to adjust each digit and P to move to next digit

Enable output 1
▲ or ▼ to toggle between on and oFF

Output on at
▲ or ▼ to select required function
run
PAuSE
donE
n rESEt
n run
n PAuSE
n dELAY
n donE
rESEt
Select action that energises output 1.

Output off at
▲ or ▼ to select required function
n run
n PAuSE
n donE
rESEt
run
PAuSE
dELAY
donE
n rESEt
Select action that de-energises output 1.

Output on delay
▲ or ▼ to adjust flashing digit and P to move to next digit
Set delay in seconds before output 1 is energised.

Enable Stat oP
▲ or ▼ to toggle between on and oFF

Status output on at
▲ or ▼ to select required state
run
PAuSE
dELAY
donE
n rESEt
n run
n PAuSE
n dELAY
n donE
rESEt
Select action that energises output.

Status output off at
▲ or ▼ to select required state
n run
n PAuSE
n donE
rESEt
run
PAuSE
dELAY
donE
n rESEt
Select action that energises output.

Status output on delay
▲ or ▼ to adjust flashing digit and P to move to next digit.

Manuals and datasheets can be downloaded from http://www.beka.co.uk/ba374e