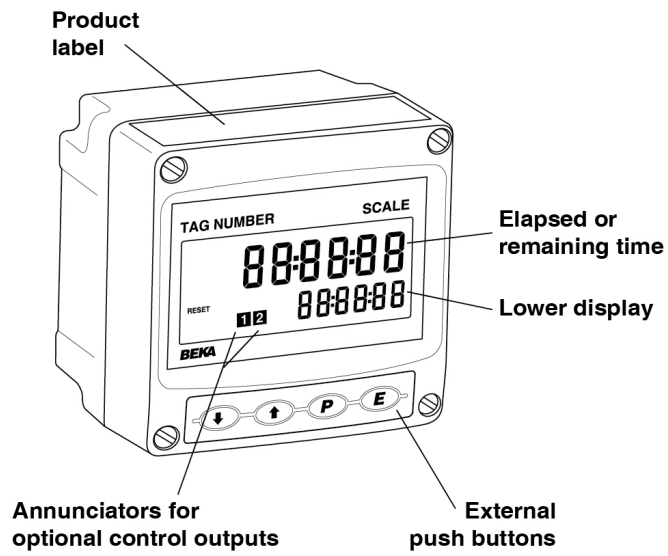


BA574G
Two input
General Purpose
Timer or Clock
Issue 2



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1. DESCRIPTION

The BA574G is a general purpose, field mounting instrument with two inputs that can be configured on-site as a Timer or as a Clock.

As a Timer the BA574G can measure and display the elapsed time between external events, or control external events via the status output or the optional control outputs.

When configured as a Clock, the BA574G can display time in a variety of formats and the optional control outputs may be configured to turn *on* and *off* at pre-set times.

This instruction manual is divided into three sections.

Common features

- 2. System design
- 3. Installations
- 4. Accessories

Timer

- 5. Operation as a timer
- 6. Timer application example
- 7. Maintenance

Clock

- 8. Operation as a clock
- 9. Clock configuration example
- 10. Maintenance

This instruction manual supplements the abbreviated instruction sheet supplied with each instrument.

2. SYSTEM DESIGN

Fig 1 illustrates the basic circuit that is used for all BA574G Timer installations. Clock installations are the same except the two inputs A and b are not used.

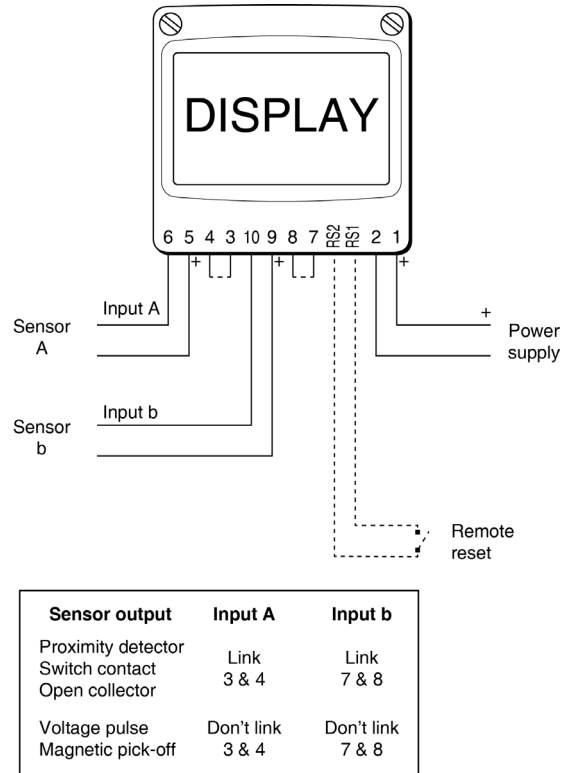


Fig 1 Basic BA574G System

When designing a BA574G Timer or Clock system it is important to remember that terminals 2, 6, 10 and RS2 are interconnected within the instrument. See Fig 8.

2.1 Power supply

The BA574G Timer or Clock requires a minimum of 10V dc between terminal 1 & 2 and consumes:

- 10mA without optional backlight
- plus 6mA when terminals 3 & 4 are linked
- plus 6mA when terminals 7 & 8 are linked
- plus 16mA with optional backlight

A 24V dc regulated, current limited supply is suitable.

2.2 Sensor inputs

When configured as a Timer both inputs may be connected to a wide variety of sensors as shown in Fig 2. The two BA574G inputs are not used when the instrument is configured as a Clock.

2.2.1 Input switching thresholds

For reliable operation as a Timer the BA574G sensor inputs must fall below the lower threshold and rise above the upper thresholds shown in the following table.

| Input transducer | Switching thresholds | |
|--------------------|----------------------|---------------|
| | Lower | Upper |
| Open collector | 2k Ω | 10k Ω |
| Voltage pulse low | 1.0V | 3.0V |
| Voltage pulse high | 3.0V | 10.0V |
| Magnetic pick-off | 0mV | 40mV peak |
| Proximity detector | 1.2mA | 2.1mA |
| Switch | 100 Ω | 1000 Ω |

Switch contact, proximity detector and open collector sensors require energising to detect their state which is achieved by linking BA574G terminals 3 and 4 for input A and terminals 7 and 8 for input b.

2.2.2 Switch contact input

Any switch contact may be directly connected to pulse input terminals 5 and 6 and to terminals 7 and 8. The BA574G contains a configurable debounce circuit to prevent contact bounce being counted. See section 5.5.6.

2.2.3 Open collector input

Sensors with an open collector output may be directly connected to input terminals 5 and 6 and to terminals 7 and 8. Sensor polarity should be observed. The BA574G contains a configurable debounce circuit to prevent false triggering. See section 5.5.6.

2.2.4 2-wire proximity detector input

Most NAMUR 2-wire proximity detectors may be directly connected to a BA574G input terminals 5 and 6 and to terminals 7 and 8 providing the minimum operating voltage of the proximator is less than 7.5V. The proximator polarity should be observed. The BA574G contains a configurable debounce circuit to prevent false triggering. See section 5.5.6.

2.2.5 Magnetic pick-off input

Sensors incorporating a magnetic pick-off will usually have a low level ac voltage output which a BA574G can sense when configured for a \square input. The BA574G contains a configurable debounce circuit to prevent false triggering. See section 5.5.6.



2.2.6 Voltage pulse input

Two voltage pulse input ranges $U_{oL\&5L}$ and $U_{oL\&5H}$ are selectable in the configuration menu for each BA574G input. Any voltage output sensor may be used. The BA574G contains a configurable debounce circuit to prevent false triggering. See section 5.5.6.

2.3 Remote reset

Connecting the external reset terminals RS1 and RS2 together will reset the BA574G when configured as a Timer and synchronise the displayed time to a preset time when configured as a Clock.

Remote resetting may be accomplished by any switch. Fig 1 illustrates how a BA574G may be remotely reset.

Note: When used as a Timer the BA574G may also be reset from the display mode by operating the  and  push buttons simultaneously for more than three seconds. See 5.5.20

2.4 Status output

The BA574G Timer or Clock has an opto-isolated open collector output which can be configured to indicate the status of the instrument, or to perform simple control functions. The output has the following electrical parameters:

| | | |
|------------------|---|------------------|
| V max | = | 30V dc |
| I _{max} | = | 10mA |
| R _{on} | = | 60 Ω + 3V |
| R _{off} | = | 1M Ω |

The status output may be connected to any dc circuit providing that the maximum supply voltage is not greater than 30V dc and the maximum current is not greater than 10mA. It can therefore be directly connected to most instruments with an open collector input.

If a voltage status output is required, Fig 2 shows how this can be produced using an external resistor R1. When the status output is activated current flows through R1 resulting in a voltage output of about 20V.

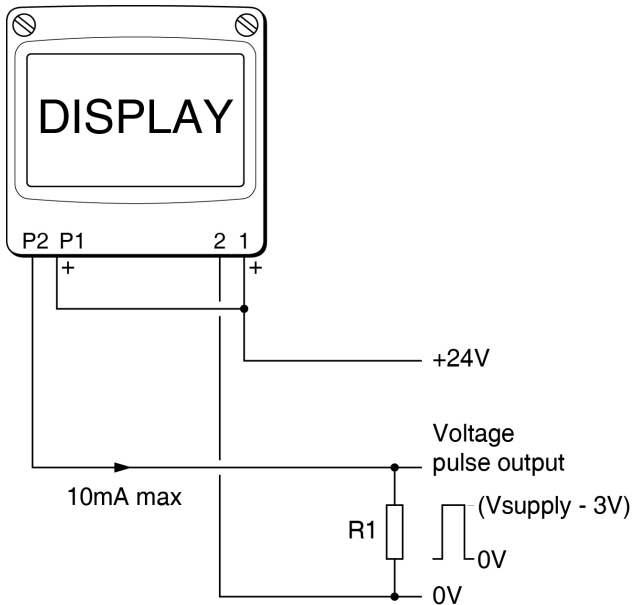


Fig 2 Producing a status output voltage .

2.5 Control outputs (optional)

Each of the two factory fitted optional control outputs is a galvanically isolated single pole solid state switch as shown in Fig 3. The outputs are polarised and current will only flow in one direction. Terminals A1 and A3 should be connected to the positive side of the supply.

$$\begin{aligned} R_{on} &= \text{less than } 5\Omega + 0.7V \\ R_{off} &= \text{greater than } 1M\Omega \end{aligned}$$

Note: Because of the series protection diode some test meters may not detect a closed alarm output.

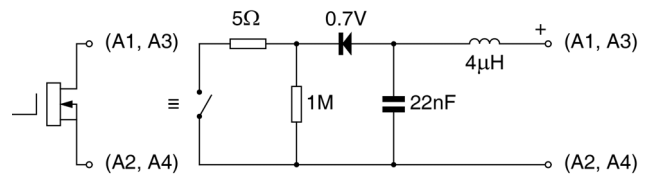


Fig 3 Equivalent circuit of each control output

Each control output is a galvanically isolated single pole solid state switch as shown in Fig 3. The outputs are polarised and current will only flow in one direction. Terminals A1 and A3 should be connected to the positive side of the supply.

$$\begin{aligned} R_{on} &= \text{less than } 5\Omega + 0.7V \\ R_{off} &= \text{greater than } 1M\Omega \end{aligned}$$

Each control output may be used to switch any dc circuit with parameters equal or less than:

$$\begin{aligned} V &= 30V \text{ dc} \\ I &= 200mA \end{aligned}$$

Note: Because of the series protection diode some test meters may not detect a closed alarm output

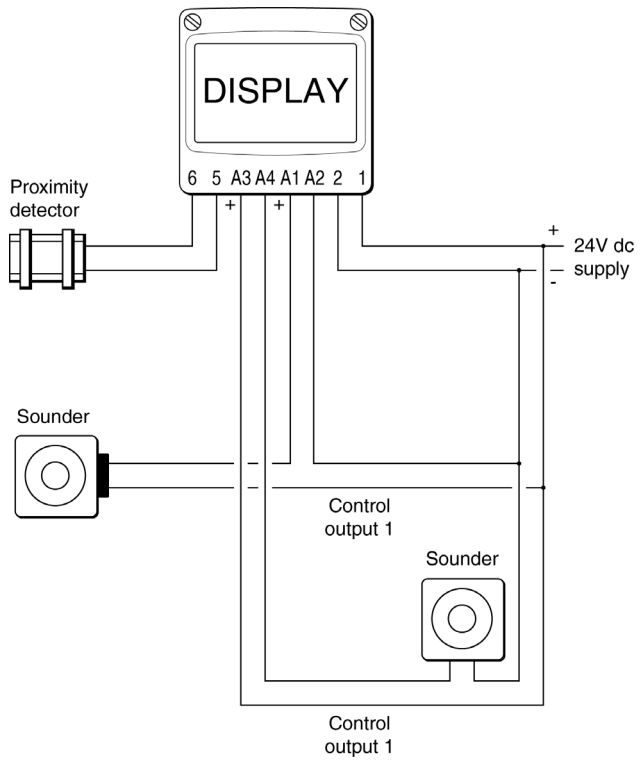


Fig 4 Typical control output application
(Shown without recommended screened cables)

3. INSTALLATION

3.1 Location

The BA574G Timer or Clock is housed in robust IP66 glass reinforced polyester (GRP) enclosure incorporating an armoured glass window and stainless steel fittings making it suitable for exterior mounting in most industrial on-shore and off-shore installations. The Timer or Clock should be positioned where the display is not in continuous direct sunlight.

Field wiring terminals are located on the rear of the Timer or Clock assembly as shown in Fig 6.

To ensure electrical continuity between the two conduit or cable entries, the enclosure back-box is fitted with a bonding plate which includes an M4 earth stud. The bonding plate may be mounted on the inside or outside of the enclosure. If the carbon loaded GRP enclosure is not bolted to an earthed post or structure, this earth stud should be connected to a local earth or the plant potential equalising conductor.

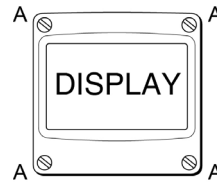
An insulated M4 stud is provided in the bottom right hand corner of the back-box for interconnecting cable screens.

The BA574G Timer or Clock may be pipe mounted using a BA393G pipe mounting kit or panel mounted using a BA394G or BA395G kit all of which are available as accessories.

3.2 Installation Procedure

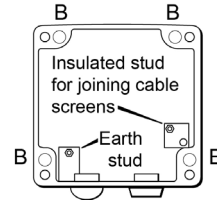
Fig 5 illustrates the instrument installation procedure.

- A. Remove the Timer or Clock assembly by unscrewing the four captive 'A' screws.
- B. Mount the enclosure back-box on a flat surface and secure with screws or bolts through the four 'B' holes. Alternatively use the pipe mounting kit which is available as an accessory.
- C. Remove the temporary hole plug and install an appropriate IP and temperature rated M20 x 1.5mm certified cable gland or conduit fitting. If two entries are required, the supplied IP66 stopping plug should be replaced with an appropriate IP and temperature rated M20 x 1.5mm certified cable gland or conduit fitting.
- D. Feed the field wiring through the cable entry in the back-box and connect it to the instrument terminals as shown in Fig 6. Replace the instrument assembly on the back-box and evenly tighten the four 'A' screws.



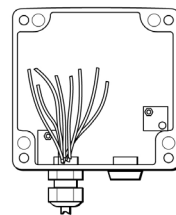
Step A

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



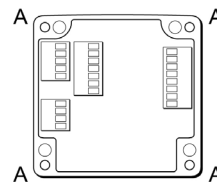
Step B

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 cable gland or conduit fitting. Feed the field wiring through the cable entry.



Step D

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

Fig 5 BA574G installation procedure

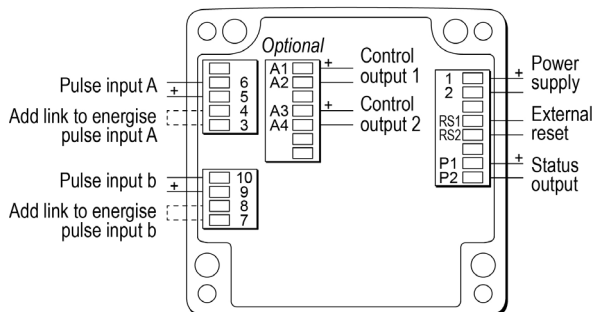
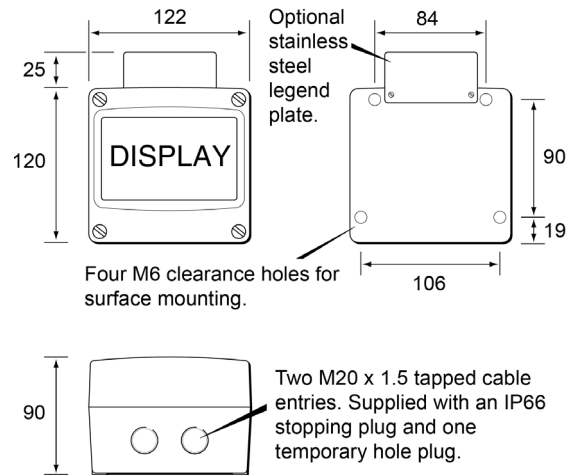


Fig 6 Dimensions and terminal connections

3.3 EMC

The BA574G complies with the requirements of the European EMC Directive 2014/30/EU. For specified immunity all wiring should be in screened twisted pairs, with the screens earthed at one point.

3.4 Units of measurement and tag marking on scale card.

The Timer or Clock's units of measurement and tag information are shown on a scale card which slides into the instrument.

New Timer or Clocks are supplied with a printed scale card showing the requested units of measurement and tag information. If this information is not supplied when the instrument is ordered, a blank scale card will be fitted which can easily be marked on-site with a dry transfer or a permanent marker. Custom printed scale cards are available from BEKA associates as an accessory.

To remove the scale card from a Timer or Clock carefully pull the transparent tab at the rear of the instrument assembly away from the assembly as shown in Fig 7a.

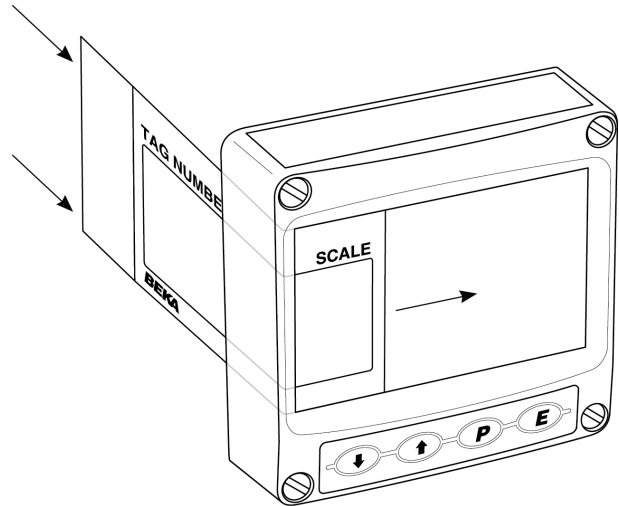


Fig 7b Inserting scale card into the instrument assembly.

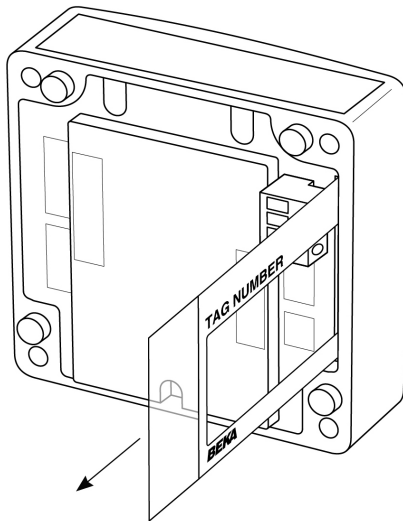


Fig 7a Removing scale card

To replace the scale card carefully insert it into the slot on the right hand side of the input terminals as shown in Fig 7b. 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.

4. ACCESSORIES

4.1 Display backlight

The BA574G Timer or Clock can be supplied with a factory fitted backlight that produces green illumination enhancing display contrast and enabling it to be read at night or in poor lighting conditions. The backlight is internally powered from the instrument power supply so no additional wiring is required, but the supply current increases as shown below.

| BA574G configured as Timer current consumption | |
|---|----------|
| BA574G Timer or Clock | 10mA |
| Additional for backlight | 16mA |
| Addition with terminals 3 & 4 linked | 6mA |
| Addition with terminals 7 & 8 linked | 6mA |
| | ----- |
| Total current | 38mA max |

| BA574G configured as Clock current consumption | |
|---|----------|
| BA574G Timer or Clock | 10mA |
| Additional for backlight | 16mA |
| | ----- |
| Total current | 26mA max |

4.2 Control outputs

Although the dual isolated control outputs are factory fitted options, they are described in the main body of this instruction manual as they will be used for the majority of applications. If control outputs are required they should be specified when the instrument is ordered.

4.3 Scale card

New BA574G Timer or Clocks are supplied with a printed scale card showing the units of measurement and tag information specified when the instrument was ordered. If this information was not supplied a blank scale card will be fitted which can easily be marked with a dry transfer or a permanent marker on-site.

Custom printed scale cards are available as accessories and may be easily fitted as shown in section 3.4 of this manual.

4.4 Legend plate

The BA574G can also be supplied with a blank or custom laser engraved stainless steel legend plate - see Fig 6. The plate, which after installation is visible from the front of the instrument, is supplied loose with two fixing screws for securing it to the rear of the instrument's back-box. This plate can typically accommodate:

1 row of 5 alphanumeric characters 10mm high

or 1 row of 6 alphanumeric characters 7mm high

or 2 rows of 10 alphanumeric characters 5mm high

4.5 BA393G pipe mounting kit

316 stainless steel pipe mounting kit, attaches a BA574G to any vertical or horizontal pipe with an outside diameter between 40 and 73mm.

4.6 BA394G panel mounting kit

The BA574G may be panel mounted using a BA394G stainless steel panel mounting kit. This secures the BA574G into a panel aperture and maintains the ingress protection of the instrument, but it does not provide an IP66 seal between the front and rear of the panel in which the BA574G Timer or Clock is mounted.

4.7 BA494G panel mounting kit

The BA574G may be panel mounted using a BA494G GRP panel mounting kit. This secures the BA574G into a panel aperture, maintains the ingress protection of the instrument and provides an IP66 seal between the front and rear of the panel.

The BA494G kit has a UKAS registered test house certificate confirming that it maintains the IP66 ingress protection of the BA574G, and provides an IP66 seal between the front and rear of the panel enclosure.

5. OPERATION AS A TIMER

When configured as a Timer the BA574G can measure and display the elapsed time between external events. The Timer can be started and stopped by remote sensors, or from the front panel push buttons.

The addition of optional factory fitted isolated control outputs allows the Timer to control external events such as opening a valve for a predetermined time. Again the Timer can be started and stopped by remote sensors, or from the front panel push buttons. Timed events can be repeated using the CYCLE function which enables the BA574G Timer to repeat the timing period up to 99 times, or continuously, with a configurable delay between timed periods of up to 100 hours.

The BA574G may be configured to time-up from zero to the set time 5E \pm E, or to time-down from the set time to zero. Times may be entered and displayed in hours, minutes or in seconds, or in a combination of units. Elapsed or remaining time is continuously displayed and a separate display may be activated to show the target set time 5E \pm E. Throughout the timing cycle the instrument can be paused and restarted without changing the cycle time. Resetting is accomplished via the front panel push buttons or a remote contact.

A grand total time is maintained by the instrument which can be viewed by operating the front panel push buttons and reset from the display mode or from within the configuration menu.

Fig 8 shows a simplified block diagram of the BA574G when configured as a Timer. The two separate inputs A and b can be individually configured to accept inputs from a wide variety of sensors. When the sensor requires energising to detect its state, such as a switch contact, open collector or a two wire proximity detector, a link connected between external terminals of the BA574G supplies power to the sensor input terminals.

The optically isolated status control output is a current sink intended for monitoring the Timer's status, but may also be used for simple control applications.

The instrument can be supplied with the following factory fitted accessories:

Internally powered Backlight

Dual isolated Control Outputs

The optional factory fitted dual isolated solid state control outputs may be independently configured to be activated in any of the timer's state allowing the BA574G Timer to perform a wide variety of tasks.

5.1 Initialisation

Each time power is applied to a BA574G initialisation is performed. After a short delay the following display sequence occurs:

All segments of the display are activated

BA574G is ready to start functioning using the configuration information stored in the instrument's permanent memory.

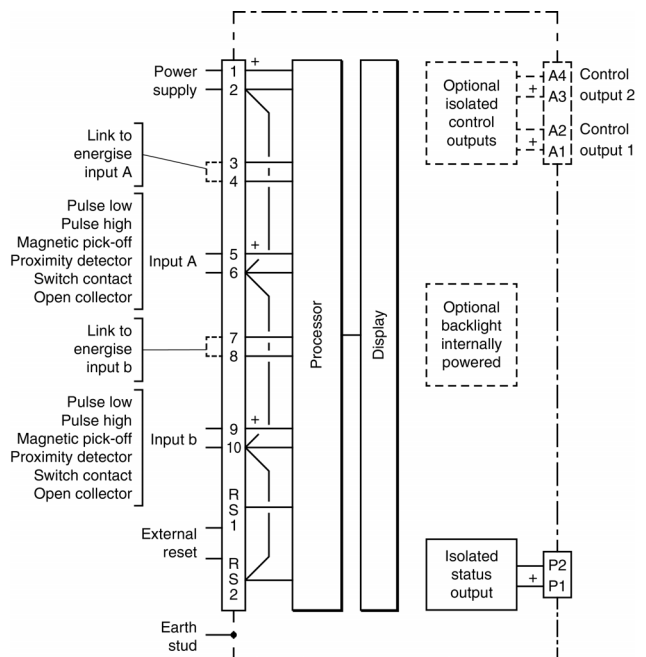


Fig 8 BA574G block diagram with Timer configuration.

5.2 Controls when configured as a Timer

The BA574G is controlled and configured via four front panel push buttons. In the display mode i.e. when the instrument is timing the push button functions are:

Push Button Functions

- ▼ When local control is enabled starts the Timer. See 5.5.9
- ▲ When local control is enables stops the Timer. See 5.5.9
- ⓔ + ▲ 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 *GRAND* is enabled in the *LOCAL* configuration function. See 5.5.21

If *GRAND* is enabled the grand total can be reset to zero from the display mode by pressing the ⓔ and ▲ buttons simultaneously for ten seconds until *GRAND* is displayed. Changing the display to *GRAND* using the ▼ or ▲ button and pressing ⓔ will then reset the grand total to zero.
- ▼ + ▲ Resets the Timer to zero or to the set time *SET* depending on whether the Timer is configured to *time-up* or *time-down* when the two buttons are operated simultaneously for more than two seconds. This is a configurable function. See 5.5.20
- ⓐ + ▲ When enabled in the configuration menu, operating these two buttons simultaneously provides direct access from the display mode to the set time *SET* and, if the repeat timing cycle is enabled, to the restart delay *RESTART*. See 5.5.16
- ⓐ + ▼ Shows in succession, firmware version number, instrument function *ELAPSE* and any output accessories that are fitted:
 - A Dual control outputs
 - P Status output (*Always fitted*)
- ⓐ + ⓔ Accesses the configuration menu

5.3 Displays when configured as a Timer

The BA574G has two digital displays and associated annunciators as shown on front cover of this manual.

Elapsed time The upper display shows the elapsed time since the Timer was started when *timing-up from zero* and the remaining time when *timing-down* from the set time. Display may be formatted as hh:mm:ss; hh:mm; mm:ss or ss.

Lower display The display options available on the lower display depend on whether the Timer repeat cycle function *CYCLES*, which can repeat the timing period up to 99 times with a configurable delay between periods, is enabled.

CYCLES disabled

The lower display shows the set time *SET* or the lower display may be disabled if not required. See 5.5.8

CYCLES enabled

The lower display shows the total number of repeat cycles requested together with the number of the current cycle. Each operation may be briefly named at it's start or periodically throughout the cycle. Alternatively the lower display may be disabled if not required. See 5.5.8

Reset annunciator

Activated while elapsed time is being reset to zero or to the set time *SET*.

Status output annunciator

RTx shown while status output is activated.

Grand total annunciator



Activated when the grand total time is being shown on the upper display.

Control output annunciators 1 and 2.

Shows status of both optional control outputs.

5.4 Timer structure

Fig 9 illustrates the Timer structure and function as a state diagram. It applies when the instrument is measuring the time between events or is controlling external events.

The circles in Fig 9 represent the five Timer states, *Reset*, *Running*, *Restart-delay*, *Paused* and *Complete*. The lines between the circles represent the event required to move the Timer between states. e.g. to initiate timing the Timer is moved from the *Reset* state to the *Running* state by a start event. This could be an input signal at input A or operation of the  button. Similarly, to pause the Timer while it is timing, the Timer must be moved from the *Running* state to the *Pause* state by a stop event which could be an input on input b or operation of the  button.

Reset

In this state the Timer is readied for operation. The Timer is stopped and loaded with zero for timing-up or 5Et t for timing-down.

Running

Entered by a start event from the *Reset* or *Paused* states. The Timer times-up to 5Et t or times-down to zero depending upon it's configuration.

Pause

Entered by a stop event from *Running* or *Restart-delay*. Timer is stopped, a start event returns the timer to it's previous state.

Restart-delay

Entered automatically from *Running*. At the end of the delay time automatically returns to *Running*.

Complete

Entered automatically from *Running* when there are no more timing cycles to perform.

When the $\square\square\square\square\square$ function is enabled the timing cycle can be specified to repeat up to 99 times, or can be configured to repeat continuously.

5.5 Configuration as a Timer

The BA574G is configured via the four front panel push buttons. All the configuration functions are contained in an easy to use intuitive menu that is shown diagrammatically in Fig 10.

Each menu function is summarised in section 6.5.2 of this manual and each summary includes a reference to more detailed information.

All new BA574G instruments are supplied configured as requested at the time of ordering. If configuration is not requested, the BA574G will be supplied with default Timer configuration as shown below, but the instrument can easily be re-configured on-site.

| Function | Display | Default |
|-------------------------------------|---|--------------------------------|
| Access code | $\square\square\square\square$ | 0000 |
| Function | $\square\square\square\square\square$ | ELAPSE |
| Input A | $\square\square\square\square-A$ | $\square\square\square\square$ |
| Input b | $\square\square\square\square-b$ | $\square\square\square\square$ |
| Debounce (each input) | $\square\square\square\square\square\square$ | default |
| Display 2 | $\square, \square\square-\square$ | 5td |
| Start stop | $\square\square\square\square\square\square$ | LOCAL |
| Units | $\square\square, \square\square$ | 12:00:00 |
| Set time | $\square\square\square\square$ | 00:00:00 |
| Enable repeat cycle | $\square\square\square\square\square$ | off |
| Access set time from display mode. | $\square\square\square\square\square$ | off |
| Direction of count | $\square\square$ or $\square\square$ | dn |
| Recovery from power supply failure. | $\square-\square\square, \square$ | idle |
| Local total reset | $\square-\square\square\square\square$ | on |
| Local grand total reset | $\square\square-\square\square\square\square$ | off |
| External reset | $\square-\square\square\square$ | 5td |
| Enable status output | EnbL | off |
| Enable control output 1* | EnbL | off |
| Enable control output 2* | EnbL | off |

* Optional output

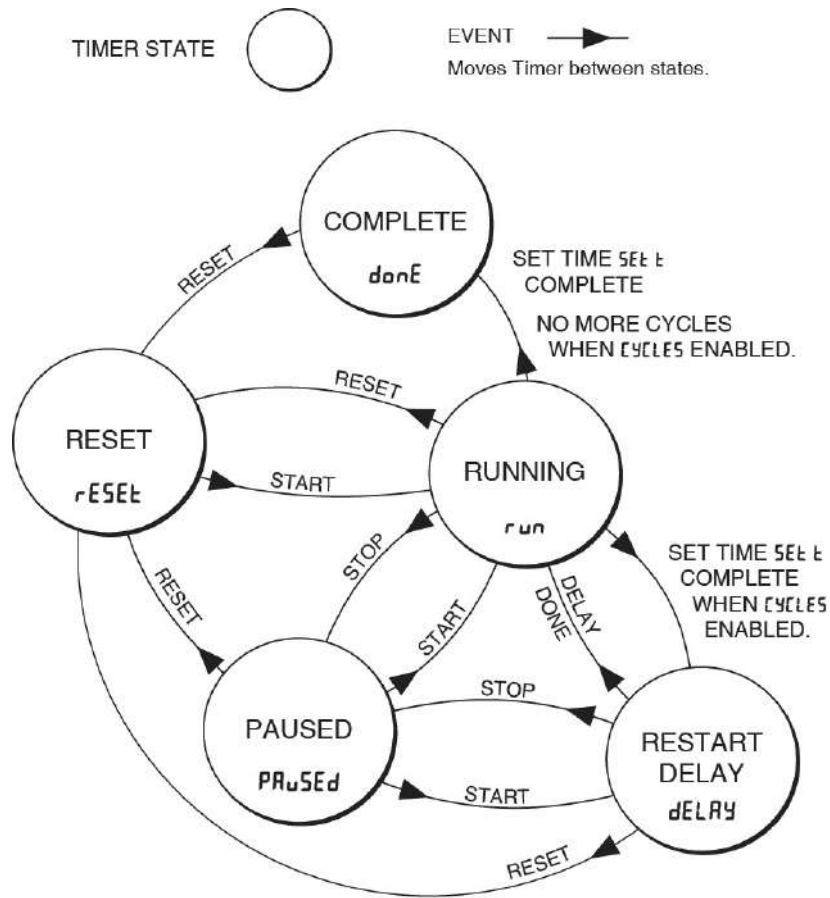
















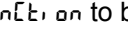


Fig 9 Timer structure showing states and events

5.5.1 Accessing configuration functions



Throughout this manual front panel push buttons are shown as , ,  and . Legends displayed by the instrument are shown in a seven segment font just as they appear on the instrument e.g.  and .



Access to the configuration menu is obtained by operating the  and  push buttons simultaneously. If the instrument is not protected by an access security code the first parameter  will be displayed.

If a security code other than the default code  has already been entered, the instrument will display . Press  to clear this prompt and enter the security code for the instrument using the  or  push button to adjust the flashing digit and the  push button to transfer control to the next digit. If the correct code has been entered pressing  will cause the first parameter  to be displayed.

If an incorrect code is entered, or a push button is not operated within ten seconds, the instrument will automatically return to the display mode.

All configuration functions and prompts are shown on the upper eight digit display.

Once within the main configuration menu the required parameter can be selected by scrolling through the menu using the  or  push buttons. The Timer configuration menu is shown diagrammatically in Fig 10.

When returning to the display mode following reconfiguration, the Timer will display  followed by  while the new information is stored in permanent memory.

5.5.2 Summary of Timer configuration functions

This section summarises all the Timer configuration functions. When read in conjunction with Fig 10 it provides a quick aid for configuring the Timer. If more detail is required, each section of this summary contains a reference to a full description of the function.

| Display | Summary of function |
|---------|---------------------|
|---------|---------------------|

| | |
|-----------------|---|
| Function | Instrument function |
| | Defines the function of the instrument. May be set to: |

| | |
|--------|---------------------|
| ELAPSE | Timer configuration |
| CLC | Clock configuration |

All the entries in this Timer summary assume that the BA574G is configured as a Timer by selecting ELAPSE.
See section 5.5.3

| | |
|----------------|---|
| Input-A | Configuration of Input A |
| | Contains a sub-menu with two sub-functions: |

| | |
|----------|---------------------------|
| INPUTYPE | Selects input sensor type |
| DEBOUNCE | Defines input debounce |

See section 5.5.4

| | |
|-----------------|--|
| INPUTYPE | Configures the Timer sensor Input A to accept one of six types of input: |
|-----------------|--|

| | |
|---------|-----------------------|
| VOLT5 L | Voltage pulse <1 >3V |
| VOLT5 H | Voltage pulse <3 >10V |
| CM L | Magnetic pick-off |
| PRDET | Proximity detector * |
| CONTACT | Switch contact * |
| OPCOL | Open collector * |

* Energise input by linking terminals 3 & 4 for Input A.

See section 5.5.5

| | |
|-----------------|---|
| DEBOUNCE | Defines the level of input debounce applied to the input A to prevent false counting: |
|-----------------|---|

| | |
|---------|--|
| DEFAULT | |
| HEAVY | |
| LIGHT | |

See section 5.5.6

| Display | Summary of function |
|---------|---------------------|
|---------|---------------------|

| | |
|----------------|--|
| Input-b | Configuration of input-b |
| | As configuration of Input A |
| | * Energise input by linking terminals 7 & 8 for Input b. |
| | See section 5.5.7 |

| | |
|-------------|---|
| SP-2 | Lower display |
| | Configures the lower display to show set time SEt or, when the CYCLE5 repeat function is activated, the restart delay count-down plus the cycle count number. |

With CYCLE5 not enabled:

| Select | Lower display shows |
|--------|---------------------|
| SEt | Set time SEt |

| | |
|-----|-------------------------|
| OFF | Disables lower display. |
|-----|-------------------------|

See section 5.5.8

With CYCLE5 enabled:

| Select | Lower display shows |
|--------|---|
| SEt | Cycle counts requested and counts performed with time-down shown during requested delay period. Brief notification of timer status i.e. CYCLE or DELAY at start of each period. |

| | |
|-------|--|
| LRBEL | Exactly as SEt but with periodic notification of timer status i.e. CYCLE or DELAY. |
|-------|--|

| | |
|-----|-------------------------|
| OFF | Disables lower display. |
|-----|-------------------------|

See section 5.5.8

| | |
|------------------|---|
| STARTSTOP | Starting and stopping the timer |
| | Defines how the Timer is started and stopped. |

| | Start | Stop |
|-----------|--------------|--------------|
| CONTROL 1 | A input high | b input high |
| CONTROL 2 | A input low | b input low |
| CONTROL 3 | A input high | A input low |
| CONTROL 4 | A input low | A input high |
| LCRL | ▼ button | ▲ button |

High and low inputs are specified for a voltage input. For other types of sensor input, **see section 5.5.9**

| Display | Summary of function | Display | Summary of function |
|---------|---|-----------|--|
| unr t5 | <p>Units of display Enables the format of the displayed time to be selected.</p> <p>12:00:00 Hours, minutes & seconds 12:00 Hours & minutes 30:00 Minutes & seconds 30 Seconds</p> <p>Excludes delay of optional control outputs which is always shown in seconds and the grand total which is always shown in hours. See section 5.5.10</p> | uP or dn | <p>Direction of count Defines whether the Timer times-up from zero to the set time 5E t, or times-down from 5E t to zero. See section 5.5.17</p> |
| 5E t | <p>Set time This is the BA574G Timer's setpoint. When controlling an external event via the optional control outputs the BA574G will time-down from the set time to zero or time-up from zero to the set time. Note: Timer will only start if a non zero value is entered for set time 5E t. See section 5.5.11</p> | P-FR, L | <p>Power Failure Defines how the Timer functions when power is restored after a power failure. Contains three alternative options, dLE, PRu5E and Cont, nuE.</p> <p>Idle dLE Timer returns in stopped state as if having completed single timing cycle displaying Timer value when power was lost. Timing resumes when reset followed by start instructions are received.</p> <p>Pause PRu5E Timer returns in paused state displaying Timer value when power was lost. Timing resumes when start instruction is received.</p> |
| CYCLE5 | <p>Repeat timing cycle Contains a sub-menu with three sub-functions, EnbL, CYCL Cnt and r5t dELR. See section 5.5.12</p> <p>Cycle function enable EnbL Enables or disables the cycles function without changing the parameters. See section 5.5.13</p> <p>Cycle count CYCL Cnt Defines the number of times that the timer cycle is repeated. See section 5.5.14</p> <p>Restart delay r5t dELR Defines the time delay between timer cycles. See section 5.5.15</p> | | <p>Continue Cont, nuE Timer will continue without any manual intervention. See section 5.5.18</p> |
| RC5E t | <p>Adjusting 5E t from display mode Contains two sub-functions, EnbL which when activated allows the set time 5E t and restart delay r5t dELR to be adjusted from the display mode. The second sub-function RCLd defines a separate access code to protect access to 5E t from the display mode. See section 5.5.16</p> | LoC r5E t | <p>Local reset Contains two sub-functions which when enabled allow the Timer and the grand total, which represents total Timer run-time, to be reset to zero via the front panel push buttons while the Timer is in the display mode. See section 5.5.19</p> <p>Local total reset r5E t.EnbL When on is selected, Timer is reset to zero, or 5E t if timing-down, when the ▼ and ▲ buttons are operated simultaneously for more than 2 seconds in the display mode. See section 5.5.20</p> <p>Local grand total reset CLR Gtnt When on is selected the grand total, which represents total run-time, may be reset to zero by operating the E and ▲ buttons simultaneously for more than 10 seconds in the display mode. See section 5.5.21</p> |

| Display | Summary of function | Display | Summary of function |
|----------------|---|-----------------|---|
| E-r5Et | <p>External reset Defines the time taken for closure of external contacts connected to terminals RS1 & RS2 to reset the Timer.</p> <p>Std 1s FRSt 2ms</p> <p>See section 5.5.22</p> | | |
| 5tRt oP | <p>Status output Contains sub-menu with four sub-functions, EnbL, 5tRt on, 5tRt oFF and 5tRtdELR</p> <p>Note: Output is a passive open collector.</p> <p>See section 5.5.23</p> <p>Status output enable EnbL Enables or disables the status output without changing any of the parameters. See section 5.5.24</p> <p>Status output on 5tRt on Status output turns on when the Timer enters the state selected in this function. Output phase can be reversed. See section 5.5.25</p> <p>Status output off 5tRt oFF Status output turns off when the Timer enters the state selected in this function. Output phase can be reversed. See section 5.5.26</p> <p>Status on delay 5tRtdELR Introduces a specified delay between the on condition occurring and the status output being activated. See section 5.5.27</p> | | |
| oP1 | <p>Control output 1 (Optional) Contains sub-menu with four sub-functions, EnbL, oP1 on, oP1 oFF and oP1 dELR.</p> <p>See section 5.5.28</p> <p>Control output 1 enable EnbL Enables or disables control output 1 without changing the parameters. See section 5.5.29</p> | | |
| | | | <p>Control output 1 on oP1 on Control output 1 turns on when the Timer enters the state selected in this function. Output phase can be reversed. See section 5.5.30</p> <p>Control output 1 off oP1 oFF Control output 1 turns off when the Timer enters the state selected in this function. Output phase can be reversed. See section 5.5.31</p> <p>Control output on delay oP1 dELR Introduces a specified delay between the on condition occurring and control output 1 closing. See section 5.5.32</p> |
| | | oP2 | <p>Control output 2 (Optional) oP2 Functions as control output 1. See section 5.5.28 to 5.5.32</p> |
| | | [Lr Gtot | <p>Resets grand total from within configuration menu. This function resets the grand total, which represents the total Timer runtime, from within the configuration menu when [Lr YE5 is selected and SurE is entered to confirm the instruction. Note: Once reset, the grand total can not be recovered. See section 5.5.34</p> |
| | | [codE | <p>Security code Defines a four digit alphanumeric code that must be entered to gain access to the instrument's configuration menu. Default code 0000 disables the security function and allows unrestricted access to all configuration functions when the [P] and [E] buttons are operated simultaneously in the display mode. See section 5.5.35</p> |
| | | r5Et dEF | <p>Reset to factory defaults Resets the BA574G to the Timer factory default configuration shown in section 5.4. Instruction confirmed by entering SurE. See section 5.5.36</p> |

5.5.3 Instrument function: Funtion

The BA574G may be configured as a Timer or as a Clock. This section of the instruction manual describes the Timer, for details of Clock configuration see section 8.

To reveal the existing function of the instrument select Funtion from the configuration menu and press **[P]**. If ELAPSE is displayed, the instrument is already configured as a Timer therefore press **[E]** to return to the Funtion prompt in the configuration menu. If CLACK is displayed, press the **[▲]** or **[▼]** button to change the setting to ELAPSE followed by the **[P]** button which will result in a 0000 prompt being displayed with the first digit flashing. This is a request for the instruction to be confirmed by entering 5urE using the **[▼]** or **[▲]** button to adjust the flashing digit and the **[P]** button to move control to the next digit. When 5urE has been entered, pressing **[E]** will change the instrument to a Timer and return the instrument to the display mode. To configure the Timer enter the configuration menu by pressing the **[P]** and **[E]** buttons simultaneously until Funtion is displayed.

5.5.4 Input A: Input-R

The Input-R function contains two sub-functions InputTYPE which defines the type of sensor that may be connected to the input and DEBOUNCE which adjust the amount of input noise rejection.

5.5.5 Input type: InputTYPE

InputTYPE is a sub-menu in the Input-R function which defines the type of input sensor that may be connected to input A. To check or change the type of input, select Input-R in the configuration menu and press **[P]** which will reveal the InputTYPE prompt, pressing **[P]** again will show the existing input. If set as required press **[E]** twice to return to the configuration menu, or repeatedly press the **[▲]** or **[▼]** button until the required type of input is displayed, then press **[E]** twice to return to the configuration menu.

One of following six types of input may be selected:

| Display | Input type | Switching thresholds | |
|---------|---------------------------------|----------------------|-------|
| | | Low | High |
| OPCOL | Open collector ² | 2 | 10kΩ |
| VOLT5L | Voltage pulse low ¹ | 1 | 3V |
| VOLT5H | Voltage pulse high ¹ | 3 | 10V |
| MAGL | Magnetic pick-off | 0 | 40mV |
| PRDET | Proximity detector ² | 1.2 | 2.1mA |
| SWCNT | Switch contact ² | 100 | 1000Ω |

Notes:

1. Maximum voltage input +30V.
2. For sensors connected to input A that require energising i.e. a proximity detector, a switch contact or an open collector, terminals 3 & 4 of the BA574G Timer should be linked together.
3. To function correctly, the input signal must fall below the lower switching threshold and rise above the higher switching threshold.

5.5.6 De-bounce: DEBOUNCE

DEBOUNCE is an adjustable sub-menu in the Input-R function which prevents the Timer mis-functioning when the input has noisy edges, such as those resulting from a mechanical contact closing and bouncing. Three levels of protection may be selected and the amount of debounce applied depends upon the type of Timer input that has been selected in the InputTYPE function.

The following table shows the minimum time that the input signal must be continuously above the upper input switching threshold and continuously below the lower switching threshold to ensure that the Timer processes the input signal. Input switching thresholds are shown in section 5.5.5.

| De-bounce level | Min input pulse width | |
|-----------------|-----------------------|------------|
| | Contact | All others |
| DEFAULT | 1600µs | 40µs |
| HEAVY | 3200µs | 350µs |
| LIGHT | 400µs | 5µs |

5.5.7 Input b: Input-b

The Input-b function and sub-functions are identical to the Input-R function & sub-functions described in sections 5.5.4, 5.5.5 and 5.5.6.

Notes:

1. Maximum voltage input +30V.
2. For sensors connected to input b that require energising i.e. a proximity detector, a switch contact or an open collector, terminals 7 & 8 of the BA574G Timer should be linked together.
3. To function correctly, the input signal must fall below the lower switching threshold and rise above the higher switching threshold.

5.5.8 Lower display: $d, 5P-2$

The configuration options for the lower display vary depending upon whether the repeat timer function CYCLE5 is enabled.

CYCLE5 disabled

When the lower display is enabled it shows the set time $5Et t$

CYCLE5 enabled

When the lower display is enabled it shows the total number of repeat cycles requested together with the number of cycles performed. During the delay time between cycles the display shows the time until the next cycle starts.

Menu options allow each part of the cycle to be briefly identified at the start of each part, or periodically throughout the cycle.

To check or change the configuration of the lower display select $d, 5P-2$ from the configuration menu and press P which will reveal the existing setting which can be changed by pressing the \blacktriangle or \blacktriangledown button followed by the E button to enter the selection and return to the configuration menu.

If the CYCLE5 function is not enabled the following two options are available:

$5td$ Lower display shows the Timer's set time $5Et t$, to which the BA574G will time-up to, or time-down from, depending upon the direction of count selected in the uP or dn function.

oFF Lower display disabled

If the CYCLE5 function is enabled the following three options are available:

$5td$ Lower display shows the number of cycles requested together with the current cycle number. During the configurable delay period between cycles the display times-down from the requested delay to zero. A brief notification of timer status i.e. CYCLE or $dELRY$ is shown at the start of each period.

02 - 11

Current
cycle number.

Number of cycles
requested, not
shown when cycle is
continuously repeated.

$LABEL$ Exactly the same as $5td$, but timer status i.e. CYCLE or $dELRY$ is shown periodically.

oFF Lower display disabled.

5.5.9 Starting & stopping the Timer: $5tRr5tOP$

The Timer may be started and stopped by signals on Input A and Input b, or by operation of the front panel \blacktriangle or \blacktriangledown push buttons.

To check or change the control of the Timer, select $5tRr5tOP$ from the configuration menu and press P which will reveal the existing setting which can be changed by pressing the \blacktriangle or \blacktriangledown button followed by the E button to enter the selection and return to the configuration menu. The options available are shown in the following tables.

Voltage inputs and control from front panel

| Display | Start | Stop |
|---------------------|-----------------------------|-------------------------|
| $\text{Control } 1$ | A input high | b input high |
| $\text{Control } 2$ | A input low | b input low |
| $\text{Control } 3$ | A input high | A input low |
| $\text{Control } 4$ | A input low | A input high |
| LoCAL | \blacktriangledown button | \blacktriangle button |

Contact and open collector inputs

| Display | Start | Stop |
|---------------------|----------|----------|
| $\text{Control } 1$ | A open | b open |
| $\text{Control } 2$ | A closed | b closed |
| $\text{Control } 3$ | A open | A closed |
| $\text{Control } 4$ | A closed | A open |

Proximity detector input

| Display | Start | Stop |
|---------------------|----------------|----------------|
| $\text{Control } 1$ | A low current | b low current |
| $\text{Control } 2$ | A high current | b high current |
| $\text{Control } 3$ | A low current | A high current |
| $\text{Control } 4$ | A high current | A low current |

5.5.10 Units of display: $\mu n, t5$

Defines the format of all displayed times, except the delay time of the status output and optional control outputs which are always shown in seconds. The grand total is always shown in hours and tenths of an hour.

To check or change the units of display, select $\mu n, t5$ from the configuration menu and press P which will reveal the existing setting which can be changed by pressing the \blacktriangle or \blacktriangledown button followed by the E button to enter the selection and return to the configuration menu. The options available are shown in the following tables:

Display

| | |
|------------|--------------------------|
| $t2:00:00$ | Hours, minutes & seconds |
| $t2:00$ | Hours & minutes* |
| $30:00$ | Minutes & seconds |
| 30 | Seconds |

* Only available when time specified in seconds for $5Et t$ and $r5t dELR$ are zero or exactly divisible by 60.

The Timer's maximum elapsed time in any format is equivalent to 99hours, 59 minutes & 59 seconds.

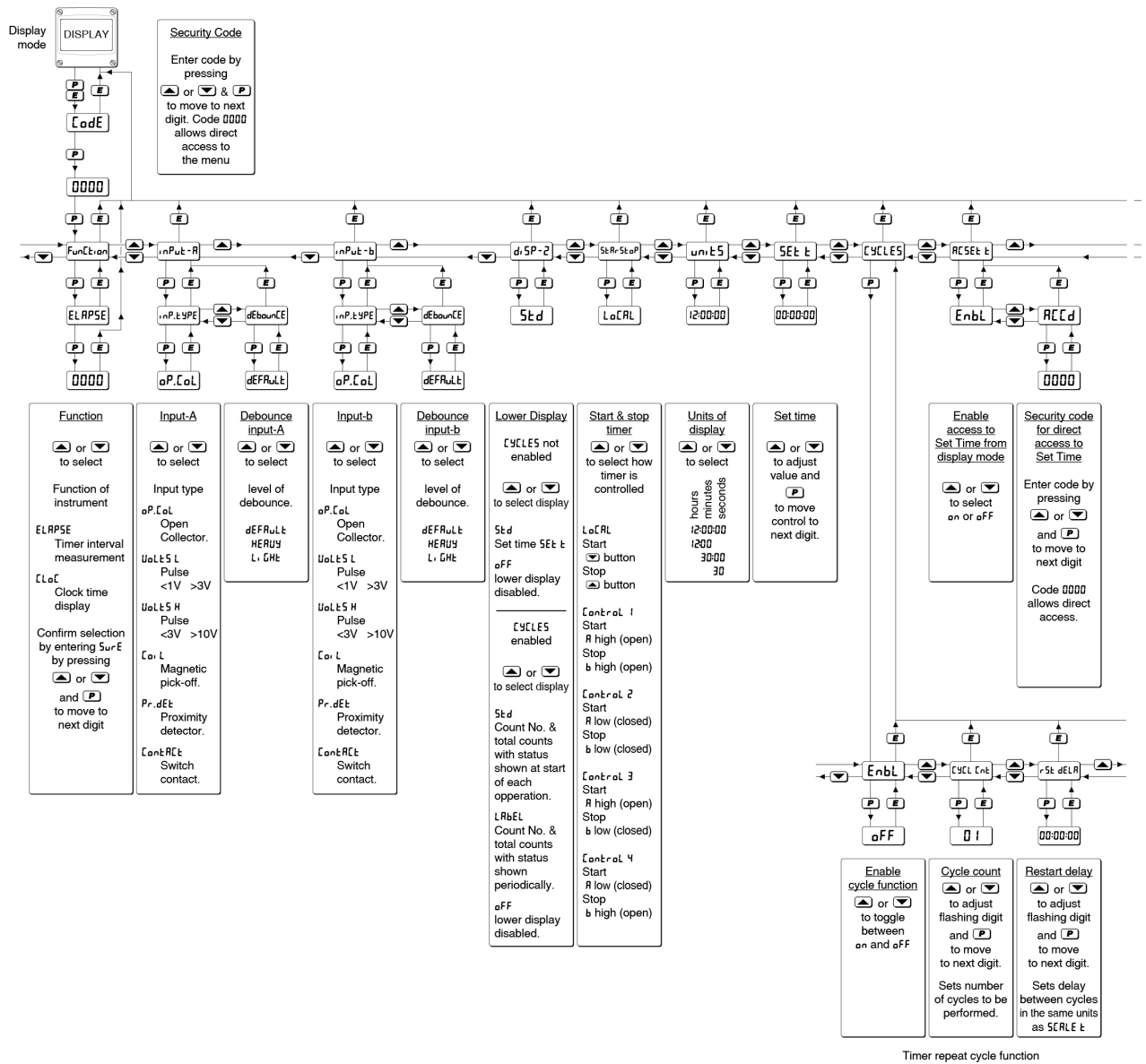
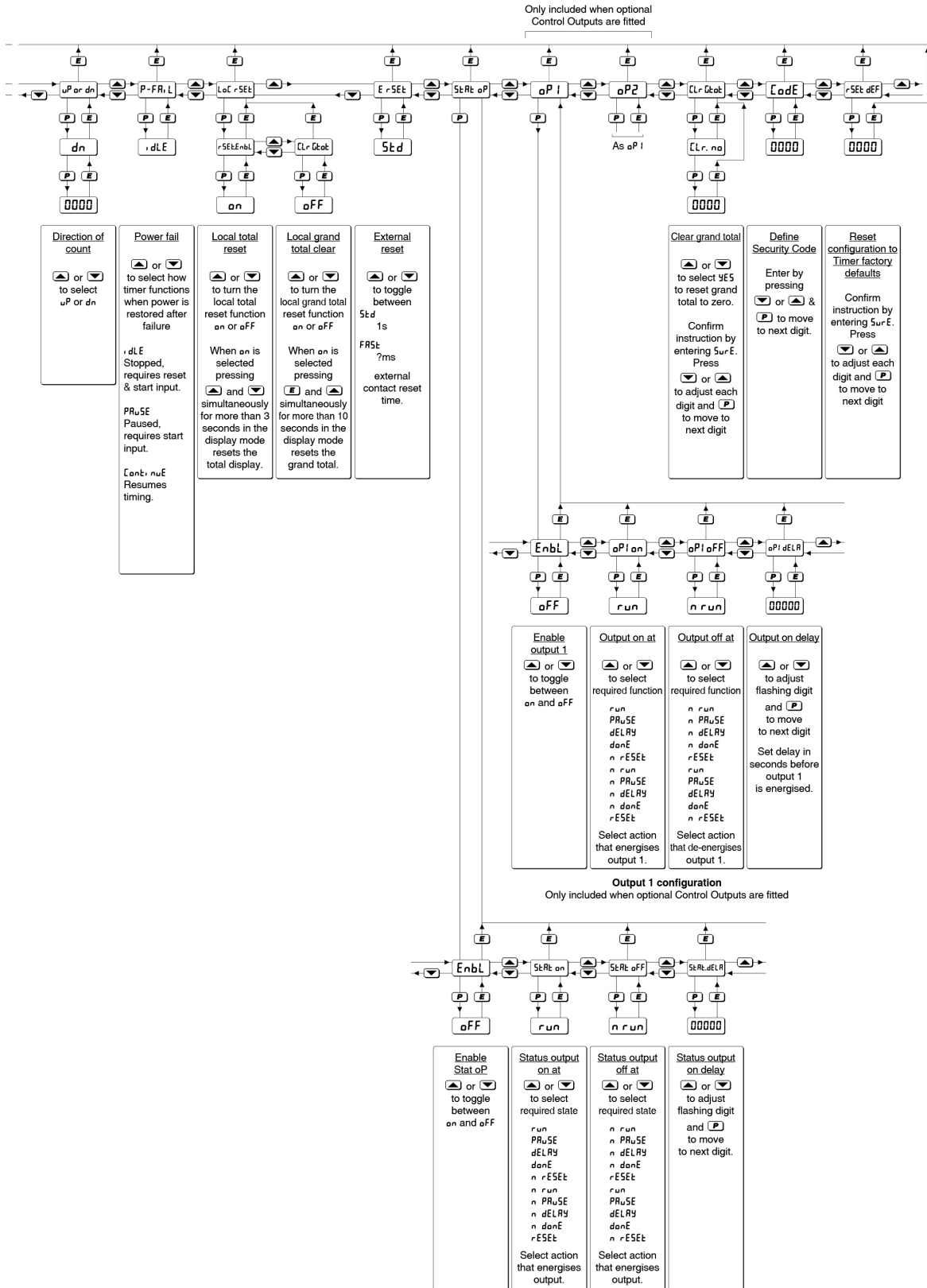


Fig 10 Timer Configuration menu



5.5.11 Set time: 5E_t t

Set time is the Timer's setpoint. When controlling an external event via the optional control outputs the BA574G will time-down from the set time to zero or time-up from zero to the set time.

To check or change the set time, select 5E_t t from the configuration menu and press **[P]** which will reveal the existing setting displayed in the units defined by the u_n t₅ function with the most significant digit flashing. The flashing digit may be adjusted by pressing the **[▲]** or **[▼]** button followed by the **[P]** button to transfer control to the next digit. When set as required, enter the selection and return to the 5E_t t prompt in the configuration menu by operating the **[E]** button.

Can also be adjusted from Timer display mode, see 5.5.16.

Note: If 5E_t t is zero the Timer will not function when an external start input is received or the **[▼]** button is operated.

5.5.12 Repeat timing cycle: C_YC_LE₅

This a powerful function which allows the BA574G timing cycle to be repeated up to 99 times or continuously with a configurable delay between cycles of up to 99hours, 59 minutes & 59 seconds.

To check or adjust the repeat timing cycle, select C_YC_LE₅ from the configuration menu and press **[P]** which will enter a sub-menu containing three sub-functions, E_nb_L, C_YC_L C_nt and r₅t d_EL_R which are described in the following sections.

5.5.13 Cycle function enable: E_nb_L

This sub-function allows the repeat timing cycle to be enabled or disabled without altering any of the repeat timing cycle parameters. To check or change the function select E_nb_L from the repeat timing cycle sub-menu C_YC_LE₅ and press **[P]** which will reveal if the repeat cycle function is on or off. The setting can be changed by pressing the **[▼]** or **[▲]** button followed by the **[E]** button to return to the repeat timing cycle sub-menu.

5.5.14 Cycle count: C_YC_L C_nt

This sub-function defines the number of times the timer cycle is repeated. It may be set to any number between 1 and 99, or to 00 for continuous repetition. To check or change the function select C_YC_L C_nt from the repeat timing cycle sub-menu C_YC_LE₅ and press **[P]** which will reveal the number of times the timer cycle is to be repeated with the most significant flashing. The flashing digit may be adjusted by pressing the **[▲]** or **[▼]** button followed by the **[P]** button to transfer control to the next digit.

When set as required, enter the selection and return to the C_YC_L C_nt prompt in the sub-menu by operating the **[E]** button.

5.5.15 Restart delay: r₅t d_EL_R

This sub-function defines the time delay between repeat timing periods. It is shown in the format selected in the units function and may be set to any time between zero and the maximum time allowed in the selected format.

| Time format selected in u _n t ₅ | Maximum delay |
|---|---------------|
| 12:00:00 | 99:59:59 |
| 12:00 | 99:59 |
| 30:00 | 5999:59 |
| 30 | 359999 |

To check or change the restart delay time select r₅t d_EL_R from the repeat timing cycle sub-menu C_YC_LE₅ and press **[P]** which will reveal the delay time in the selected format with the most significant digit flashing. The flashing digit may be adjusted by pressing the **[▲]** or **[▼]** button followed by the **[P]** button to transfer control to the next digit. When set as required, enter the selection and return to the r₅t d_EL_R prompt in the sub-menu by operating the **[E]** button.

Can also be adjusted from Timer display mode, see 5.5.16.

Note: When the repeat timing cycle C_YC_LE₅ is used, there is no restart delay after the final cycle.

5.5.16 Adjusting the set time 5E_t t and restart delay r₅t d_EL_R from the display mode: R_C5E_t t

When this function is enabled the Timer's set time 5E_t t and restart delay r₅t d_EL_R can be adjusted from the display mode by simultaneously operating the **[P]** and **[▲]** push buttons. Thus allowing an operator to adjust these parameters without having access to the instrument's configuration menu. The function contains two sub-functions, E_nb_L which activates the function and R_CC_d which defines a separate code for access to 5E_t t with the Timer in the display mode.

To check or change the function, select R_C5E_t t in the configuration menu and press **[P]** which will reveal the E_nb_L prompt, pressing **[P]** again will show if the function is on or off. If adjustment of the set time from the display mode is not required press the **[▲]** or **[▼]** button to select no and then press **[E]** twice to return to the configuration menu. If the function is required, select 5E_t and press **[E]** to return to the E_nb_L prompt from which R_CC_d, which allows a separate access code to be entered, can be selected by pressing the **[▲]** or **[▼]** button.

Access to 5E \bar{t} \bar{t} from the display mode may be protected by a four digit alphanumeric security code which must be entered to gain access. Default security code 0000 allows unrestricted access. With RCLd displayed, press **[P]** to enter a new access code. The Timer will display 0000 with one digit flashing. The flashing digit may be adjusted using the **[▲]** or **[▼]** push button, when set as required operating the **[P]** button will transfer control to the next digit. When all the digits have been entered press **[E]** twice to return to the RCL5E \bar{t} \bar{t} prompt in the configuration menu. The revised access code will be activated when the BA574G is returned to the display mode.

Please contact BEKA associates sales department if the access code is lost.

5.5.17 Direction of count: uP or dn

The Timer may be configured to time-up from zero to the set time 5E \bar{t} \bar{t} while displaying elapsed time, or to time-down from the set time 5E \bar{t} \bar{t} to zero while displaying the remaining time.

When the repeat timing cycle function CYCLE5 is enabled, it is recommended that a down count is selected so that the progress of the timer can be observed with a known completion time i.e. zero. If set as an up Timer, elapsed time will be displayed, but the set time 5E \bar{t} \bar{t} at which the timer will stop is not shown.

To check the direction of count, select uP or dn from the configuration menu and press **[P]** which will reveal the existing setting. This can be changed by pressing the **[▲]** or **[▼]** button followed by the **[E]** button to enter the selection and return to the configuration menu.

5.5.18 Power Fail: P-FR, L

Defines how the Timer powers-up and functions when power is restored after a power supply interruption. Three options are available, dLE, PRu5E and CLnE, nuE.

dLE The Timer is stopped in the state it achieves when it has timed-up to 5E \bar{t} \bar{t} or timed-down to zero, with the elapsed or remaining time when power was lost shown on the upper display. The Timer must be reset before it can be restarted. If the repeat timing cycle is in use the number of cycles completed will be lost when the Timer is reset.

PRu5E The Timer is stopped in the state it achieves following receipt of a stop input to pause timing – see Fig 9. The elapsed or remaining time when power was lost is shown on the upper display. Timing resumes when a start instruction is received. If a start input exists when power is restored timing will start immediately.

CLnE, nuE When power is restored the Timer will continue from where it stopped without any manual intervention.

To check or change the function, select P-FR, L from the configuration menu and press **[P]** which will reveal the existing setting which can be changed by pressing the **[▲]** or **[▼]** button followed by the **[E]** button to enter the selection and return to the configuration menu.

5.5.19 Local reset: LoC r5E \bar{t}

The Local reset function contains two separate sub-functions r5E \bar{t} .EnbL and CLr CLt \bar{t} which when enabled allow the Timer and the grand total to be reset via the instrument's front panel push buttons while the Timer is in the display mode.

5.5.20 Local total reset: r5E \bar{t} .EnbL

r5E \bar{t} .EnbL is a sub-function in the LoC r5E \bar{t} function which when activated allows an operator to reset the Timer from the display mode by operating the **[▲]** and **[▼]** push buttons simultaneously for more than three seconds.

To check or change the local total reset select LoC r5E \bar{t} in the configuration menu and press **[P]** which will reveal the r5E \bar{t} .EnbL prompt, press **[P]** again to show if the local total reset is on or off. If set as required operate the **[E]** button twice to return to the configuration menu, or the **[▲]** or **[▼]** button to change the setting followed by the **[E]** button twice to enter the change and return to the LoC.r5E \bar{t} prompt in the configuration menu.

Note:

The Timer may also be reset remotely by connecting terminals RS1 and RS2 together. See section 2.3

5.5.21 Local grand total reset: CLr CLt \bar{t}

The grand total is the total run-time of the Timer that may be viewed by operating the **[E]** and **[▲]** push buttons simultaneously in the display mode. When activated CLr CLt \bar{t} allows an operator to reset the grand total display to zero from the display mode by operating the **[E]** and **[▲]** push buttons simultaneously for more than ten seconds.

CLr CLt \bar{t} is a sub-function in the LoC r5E \bar{t} menu. To check or change the setting select LoC r5E \bar{t} in the configuration menu and press **[P]** which will reveal r5E \bar{t} .EnbL. Using the **[▼]** or **[▲]** button select CLr CLt \bar{t} and press **[P]** to show if local grand total reset is on or off. If set as required operate the **[E]** button twice to return to the configuration menu, or the **[▼]** or **[▲]** button to change the setting followed by the **[E]** button twice to enter the change and return to the LoC r5E \bar{t} prompt in the configuration menu.

5.5.22 External reset

The Timer may be reset by connecting terminals RS1 and RS2 together – see 2.3. This function defines how long the connection must exist before resetting occurs. When resetting is performed by a manually operated external push button switch, 5td should be chosen. This requires the contact to be closed for one second before resetting occurs which prevents false resetting.

If the Timer is being reset by a control output or similar apparatus FR5t should be selected.

| Select | Resetting time |
|--------|----------------|
| 5td | 1s |
| FR5t | 2ms |

5.5.23 Status output: 5tRt oP

The status output of the Timer is an opto isolated open collector that can be used for transmitting the status of the Timer to other instruments. It may also be used for simple control applications. When the Status output is on the RTx annunciator on the Timer display is activated.

The status output function contains four sub-functions, EnbL, 5tRt on, 5tRt oFF and 5tRt dELd. To gain access to the sub-menu select 5tRt oP in the configuration menu and press **P** which will show the EnbL prompt from which the other sub-functions can be accessed using the **▼** or **▲** button.

The status output may be configured to turn on when the Timer enters a selected Timer state and to turn off when the Timer enters another specified Timer state. e.g. if run is selected in the 5tRt on sub-function and donE is selected the 5tRt oFF function. The status output will turn on when the Timer enters the run state and will stay on until the Timer enters the donE state. Alternatively, the status output phase may be reversed by selecting the n states such as n rESEt.

If the status output is required to be on in only one Timer state, this can be achieved with the following configuration.

| | | |
|----------|------------------|------------|
| 5tRt on | state required | e.g. run |
| 5tRt oFF | n state required | e.g. n run |

In this example when the Timer enters the run state the status output turns on. When the Timer moves from the run to any other state, the status output turns off.

5.5.24 Status output enable: EnbL

This function allows the status output to be enabled or disabled without altering any other status output parameters. To check or change the function select EnbL from the status output sub-menu and press **P** to reveal if the status output is on or oFF. The setting can be changed by pressing the **▼** or **▲** button followed by the **E** button to return to the status output sub-menu.

5.5.25 Status output on : 5tRt on

The status output may be configured to turn on when the Timer enters any one of the five Timer states. Alternatively, the status output phase may be reversed by selecting an n state. This will cause the status output to turn on when the Timer enters any other than the specified Timer state. Timer states are shown in Fig 9.

To define when the status output turns on select 5tRt on from the sub-menu and press **P** to show the existing setting. Pressing the **▼** or **▲** button will scroll through the options:

| Display | Status output turns on when Timer enters selected state |
|--|---|
| rESEt | Reset state |
| run | Running state |
| PRuSEd | Paused state |
| dELdY | Restart delay state |
| donE | Complete state |
| Status output turns on when Timer enters any other than the selected state | |
| n rESEt | Reset state |
| n run | Running state |
| n PRuSEd | Paused state |
| n dELdY | Restart delay state |
| n donE | Complete state |

When the required setting has been selected press **E** to enter the selection and return to the status output sub-menu.

5.5.26 Status output off: 5tRt oFF

The status output may be configured to turn *off* when the Timer enters any one of the five Timer states. Alternatively, the status output phase may be reversed by selecting an *n* state. This will cause the status output to turn *off* when the Timer enters any other than the specified Timer state. Timer states are shown in Fig 9.

To define when the status output is *off* select 5tRtoFF from the sub-menu and press **P** to show the existing setting. Pressing the **▼** or **▲** button will scroll through the options:

| Display | Status output turns off when Timer enters selected state |
|----------|--|
| rE5Et | Reset state |
| rUn | Running state |
| PRu5Ed | Paused state |
| dELRY | Restart delay state |
| donE | Complete state |
| | Status output turns off when Timer enters any other than the selected state |
| n rE5Et | Reset state |
| n rUn | Running state |
| n PRu5Ed | Paused state |
| n dELRY | Restart delay state |
| n donE | Complete state |

When the required setting has been selected press **E** to enter the selection and return to the status output sub-menu.

6.5.27 Status output on delay time: 5tRtdELR

The status output may be delayed from turning *on* for a fixed time following the selected condition occurring. e.g. when the timer enters the *Run* state. This delay is useful for many control applications, for example when the status output is connected to the reset terminals RS1 and RS2 to automatically reset the BA574G Timer.

This delay can be adjusted in 1 second increments up to 32,400 seconds, which is 9 hours. If a delay is not required zero should be entered. To adjust the delay select 5tRtdELR from the status output sub-menu and press **P** which will reveal the existing delay time with one digit flashing. The flashing digit can be adjusted using the **▼** or **▲** button and the **P** button to move to the next digit. When the required delay has been entered, press **E** to return to the status output sub-menu.

5.5.28 Control output 1 (optional): oP I

Control output 1 is an optional factory fitted, galvanically isolated solid state switch contact which can be configured to turn *on* and *off* when the Timer enters a specified states. When control output 1 is *on* the '1' annunciator on the Timer display is activated.

The function contains four sub-functions, ENbL, oP Ion, oP I oFF and oP IdELR. To gain access to the sub-menu select oP I in the configuration menu and press **P** which will show the ENbL prompt from which the other sub-functions can be accessed using the **▼** or **▲** button.

Control output 1 may be configured to turn *on* when the Timer enters a selected Timer state and to turn *off* when the Timer enters another specified Timer state. e.g. if *rUn* is selected in the oP Ion sub-function and *donE* is selected the oP I oFF function. Control output 1 will turn *on* when the Timer enters the *rUn* state and will stay *on* until the Timer enters the *donE* state. Alternatively, the control output phase may be reversed by selecting the *n* states such as *n rE5Et*.

If control output 1 is required to be *on* in only one Timer state, this can be achieved with the following configuration.

| | | |
|----------|------------------|------------|
| oP Ion | state required | e.g. rUn |
| oP I oFF | n state required | e.g. n rUn |

In this example when the Timer enters the *rUn* state control output 1 turns *on*. When the Timer moves from the *rUn* to any other state, control output 1 turns *off*.

Timer configuration examples in section 6.2. and 6.3 of this manual illustrate the use of the control outputs. Further examples can be found in Application Guide AG374 which is available on the BEKA website.

5.5.29 Control output 1 enable: ENbL

This function allows control output 1 to be enabled or disabled without altering any other control output parameters. To check or change the function select ENbL from the control output 1 sub-menu and press **P** to reveal if control output 1 is *on* or *oFF*. The setting can be changed by pressing the **▼** or **▲** button followed by the **E** button to return to the control output 1 output sub-menu.

5.5.30 Control output 1 on at: $\alpha P I \alpha n$

Control output 1 may be configured to turn *on* when the Timer enters in any one of the five Timer states. Alternatively, the control output 1 phase may be reversed, by selecting an *n* state which will cause the control output to turn *on* when the Timer enters any other than the specified Timer state. Timer states are shown in Fig 9.

To define when control output 1 turns *on* select $\alpha P I \alpha n$ from the sub-menu and press P to show the existing setting. Pressing the \blacktriangledown or \blacktriangle button will scroll through the options:

| Display | Control output 1 turns <i>on</i> when Timer enters selected state |
|----------|--|
| $rE5Et$ | Reset state |
| rUn | Running state |
| $PRu5Ed$ | Paused state |
| $dELRY$ | Restart delay state |
| $dOnE$ | Complete state |

| | Control output 1 turns <i>on</i> when Timer enters any other than the selected state |
|------------|--|
| $n rE5Et$ | Reset state |
| $n rUn$ | Running state |
| $n PRu5Ed$ | Paused state |
| $n dELRY$ | Restart delay state |
| $n dOnE$ | Complete state |

When the required setting has been selected press E to enter the selection and return to the status output sub-menu.

5.5.31 Control output 1 off at: $\alpha P I \alpha FF$

Control output 1 may be configured to turn *off* when the Timer enters any one of the five Timer states. Alternatively, the phase of control output 1 may be reversed, by selecting an *n* state which will cause the control output to turn *off* when the Timer enters any other than the specified Timer state. Timer states are shown in Fig 9.

To define when control output 1 turns *off* select $\alpha P I \alpha FF$ from the sub-menu and press P to show the existing setting. Pressing the \blacktriangledown or \blacktriangle button will scroll through the options:

| Display | Control output 1 turns <i>off</i> when Timer enters selected state |
|----------|---|
| $rE5Et$ | Reset state |
| rUn | Running state |
| $PRu5Ed$ | Paused state |
| $dELRY$ | Restart delay state |
| $dOnE$ | Complete state |

| | Control output 1 turns <i>off</i> when Timer enters any other than the selected state |
|------------|---|
| $n rE5Et$ | Reset state |
| $n rUn$ | Running state |
| $n PRu5Ed$ | Paused state |
| $n dELRY$ | Restart delay state |
| $n dOnE$ | Complete state |

When the required setting has been selected press E to enter the selection and return to the control output 1 sub-menu.

5.5.32 Control output 1 on delay time: $\alpha P I dELR$

Control output 1 may be delayed from turning *on* (output closed) for a fixed time following the selected condition occurring. e.g. when the Timer enters the *rUn* state. This delay is useful for many control applications, for example when the control output is connected to the reset terminals RS1 and RS2 to automatically reset the BA574G Timer.

The delay can be adjusted in 1 second increments up to 32,400 seconds, which is 9 hours. If a delay is not required zero should be entered. To adjust the delay select $\alpha P I dELR$ from the control output 1 sub-menu and press P which will reveal the existing delay time with one digit flashing. The flashing digit can be adjusted using the \blacktriangledown or \blacktriangle button and the P button to move to the next digit. When the required delay has been entered, press E to return to the control output 1 output sub-menu.

5.5.33 Control output 2 (optional): $\alpha P2$

Control output 2 is an optional, galvanically isolated solid state switch contact which can be independently configured to turn *on* and *off* when the Timer is any of its five states. Its functions and configuration are identical to control output 1 described in sections 5.5.28 to 5.5.32

The control output status is shown by the '2' control output display annunciator.

5.5.34 Reset grand total from within the configuration menu: $\llcorner \ulcorner \ulcorner$

The grand total is the total run-time of the Timer that may be viewed by operating the \ulcorner and \ulcorner push buttons simultaneously in the display mode.

The grand total can be reset to zero from within the configuration menu using this $\llcorner \ulcorner \ulcorner$ function, or from the display mode if $\llcorner \ulcorner \ulcorner$ is activated in the local grand total clear function - see 5.5.21

To zero the Timer grand total from within the configuration menu select $\llcorner \ulcorner \ulcorner$ and press \ulcorner which will cause the instrument to display $\llcorner. n0$ with *n0* flashing. Operate the \ulcorner or \ulcorner push button until $\llcorner.9E5$ is displayed and then press \ulcorner which will result in a $\ulcorner \ulcorner \ulcorner \ulcorner$ prompt being displayed with the first digit flashing. This is a request for the instruction to be confirmed by entering $5urE$ using the \ulcorner or \ulcorner button to adjust the flashing digit and the \ulcorner button to move control to the next digit. Pressing \ulcorner will then reset the grand total to zero and return the Timer to the configuration menu.

Note:

Once reset, the grand total can not be recovered.

5.5.35 Security code: $\llcorner \ulcorner E$

Access to the instrument configuration menu may be protected by a four digit alphanumeric security code which must be entered to gain access. New instruments are configured with the default security code $\ulcorner \ulcorner \ulcorner \ulcorner$ which allows unrestricted access to all configuration functions.

To enter a new security code select $\llcorner \ulcorner E$ from the configuration menu and press \ulcorner which will cause the Timer to display $\ulcorner \ulcorner \ulcorner \ulcorner$ with one digit flashing. The flashing digit may be adjusted using the \ulcorner or \ulcorner push button, when set as required operating the \ulcorner button will transfer control to the next digit. When the new security code has been entered press \ulcorner to return to the $\llcorner \ulcorner E$ prompt. The revised security code will be activated when the Timer is returned to the display mode.

Please contact BEKA associates sales department if the security code is lost.

5.5.36 Reset configuration to factory defaults $r5E\ulcorner dEF$

When the BA574G is configured as a Timer this function resets the instrument to the Timer factory defaults shown in sections 5.5.

To reset the configuration select $r5E\ulcorner dEF$ from the configuration menu and press \ulcorner . The BA574G will display $\ulcorner \ulcorner \ulcorner \ulcorner$ with the first digit flashing which is a request to confirm the instruction by entering $5urE$. Using the \ulcorner or \ulcorner button set the first flashing digit to 5 and press \ulcorner to transfer control to the second digit which should be set to *u*. When $5urE$ has been entered pressing the \ulcorner button will reset all the configuration functions and return the instrument to the display mode.

Note:

$r5E\ulcorner dEF$ does not reset the grand total to zero.

6. TIMER APPLICATION EXAMPLES

This section illustrates three applications for the BA574G when configured as a Timer.

6.1 Measuring the time that a contact is closed.

In this example a BA574G is required to display the time that a process area contact is closed. The display is required in hours and minutes within a process area and is to be reset to zero by a remote push button, not by the instrument front panel push buttons. The operator is required to zero the grand total by operating the **E** and **▲** buttons simultaneously. No security codes are required to protect access to the configuration menu.

Figure 11 shows the wiring for the BA574G. This example illustrates how the Timer may be started and stopped by one input, the second input is not used in this application.

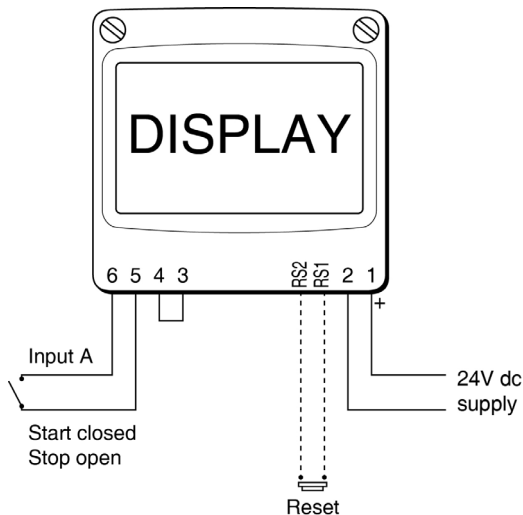


Fig 11 Starting & stopping timer with one input

The required instrument configurations for this example are shown below.

| Function | Display | Setting |
|-------------------------|------------|-----------|
| Access code | [odE | 0000 |
| Function | Funct, on | ELAPSE |
| Input A | Input-A | CountRate |
| De-bounce Input A | dEbounEE | default |
| Display 2 | di SP-2 | off |
| Start stop | Start-Stop | Control 4 |
| Units | units | 12:00 |
| Set time | Set t | 99:59 |
| Direction of count | up or dn | up |
| Local total reset | reset Enbl | off |
| Local grand total reset | Gr Tot | on |

6.2 Controlling a solenoid valve

This example illustrates how a BA574G Timer can open a solenoid valve for 5 minutes each time the start button is operated. The operator needs to pause the process without affecting the total time that the valve is open. At the end of the process the Timer is required to automatically reset within 10 seconds ready for the next timing cycle to be started.

For this application the BA574G Timer requires dual control outputs which are a factory fitted option and should be specified when the instrument is ordered.

Control output 1 is used to switch the solenoid valve, and control output 2 is wired to the Timer's reset terminals to perform the automatic resetting at the end of the timing cycle, see Fig 12.

The Timer is configured to perform one timing cycle [YLL [nt with a restart delay rSt dELR of 5s and Set time SEt t of 5 minutes, the time that the valve is to be open.

Control outputs are configured so that control output one is only closed when the timer is in the run state. Control output 2 is configured to only close when the Timer is in the done state with a 5 second on delay. The sequence of events is shown in Fig 12 and the Timer's configuration is listed at the end of this section.

This valve opening process is to be linked to other processes on the plant, therefore the status output is required to indicate when the 5 minute valve open period has been completed and when the Timer has been reset and is ready for the next cycle.

When the start button is operated the Timer enters the run state and control output 1 closes for 5 minutes which opens the solenoid valve. At the end of the 5 minute period, the Timer automatically moves from the run to the done states and control output 1 opens which closes the solenoid valve. Control output 2 is externally wired to the Timer's reset terminals. It is configured to close when the Timer enters the done state and has been configured with a 5 second on delay. Therefore 5 seconds after the Timer enters the done state, control output 2 closes and resets the Timer ready to start another cycle when the start button is operated.

If at any time during the cycle the stop button is operated, the Timer will enter the paused state which will stop the process until the start button is operated when it will resume from the place at which it was paused.

In this example Local total reset rESEt. Enbl is on. This enables the Timer to be reset when power is first connected by operating the **▲** and **▼** push buttons simultaneously for more than three seconds.

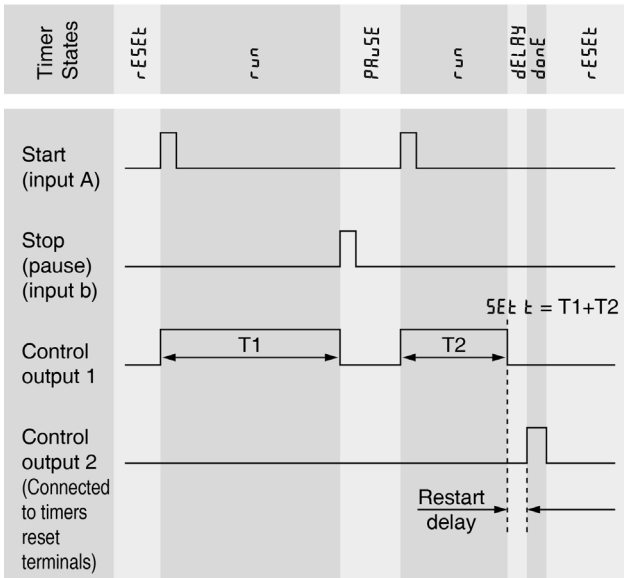
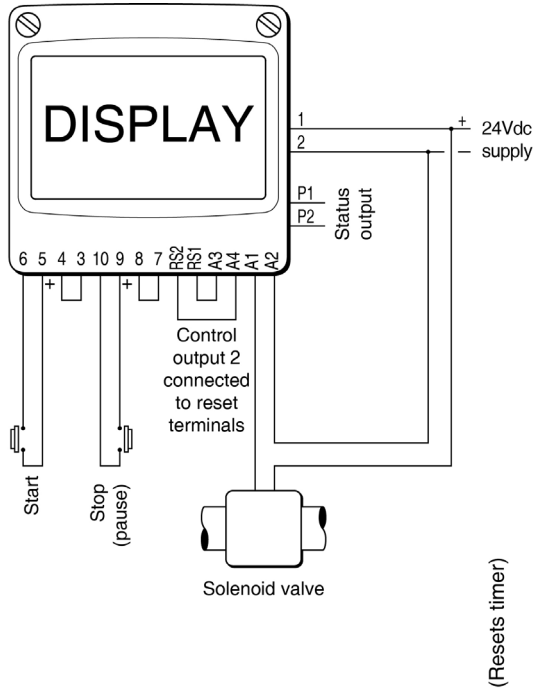


Fig 12 Controlling a process area valve

The required instrument configurations for this example are shown below.

| Function | Display | Setting |
|-------------------------|------------|-----------|
| Access code | Code | 0000 |
| Function | Function | ELAPSE |
| Input A | Input-A | Contact |
| Input b | Input-b | Contact |
| De-bounce (both inputs) | debounce | default |
| Display 2 | di SP-2 | Std |
| Start stop | StartStop | Control 2 |
| Units | units | 12:00:00 |
| Set time | Set t | 00:05:00 |
| Timer repeat cycle | CYCLES | |
| Enable repeat cycle | Enbl | off |
| Power failure | P-FAIL | idle |
| Local total reset | reset.Enbl | on |
| Local grand total reset | CtrlStat | off |
| External reset | Reset | Fast |
| Enable status output | Enbl | on |
| Status output on at | Stat on | reset |
| Status output off at | Stat off | reset |
| Status output delay | Stat delay | 00000 |
| Enable control output 1 | Enbl | on |
| Control output 1 on at | OP1 on | run |
| Control output 1 off at | OP1 off | run |
| Control output 1 delay | OP1 delay | 00000 |
| Enable control output 2 | Enbl | on |
| Control output 2 on at | OP2 on | done |
| Control output 2 off at | OP2 off | done |
| Control output 2 delay | OP2 delay | 00005 |

6.3 Cycling a solenoid valve

In this example a BA574G is required to cycle a solenoid valve such that it opens 4 times for 10 minutes at 15 minutes intervals. Once all 4 solenoid valve cycles have been completed a remote “sequence complete” lamp is illuminated until the reset push button is operated.

If, during the sequence, power is lost the control outputs are to remain de-energised when power is restored. The timer is to recommence operating from the last known point when the start push button is pressed.

When the start button is operated control output 1 closes which opens the solenoid valve and the BA574G Timer times-down for 10 minutes. When the elapsed time equals zero, control output 1 opens thus closing the solenoid valve. The timer then counts down the 15 minute delay which is shown on the lower display (display 2). When the delay equals zero, control output 1 closes again for a second 10 minutes, the whole cycle being repeated such that the solenoid valve opens and closes 4 times. After the solenoid valve has closed for a fourth time control output 2 closes which illuminates a “Sequence Complete” lamp indicating that the control sequence is finished.

The lamp remains illuminated until the reset push button is closed for 3 seconds (Reset annunciator on the instrument display is activated) at which point control output 2 is de-energised which turns the lamp off.

Note:

Both the timer (display 1) and delay (display 2) will count down – but the cycle display counts *up* towards its target.

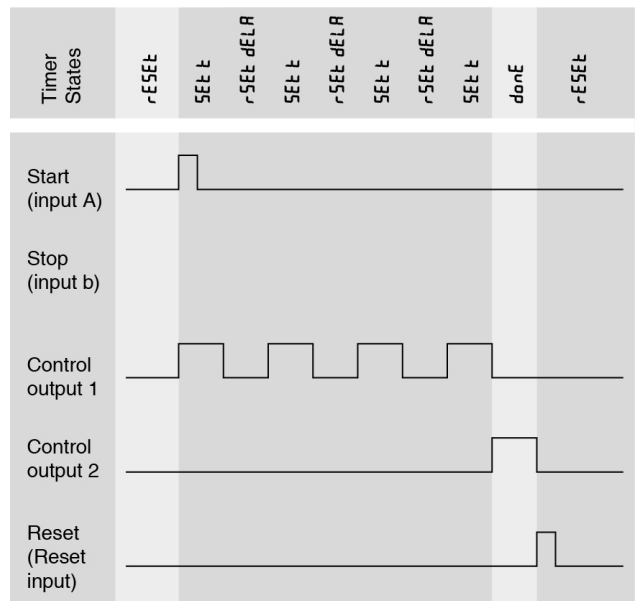
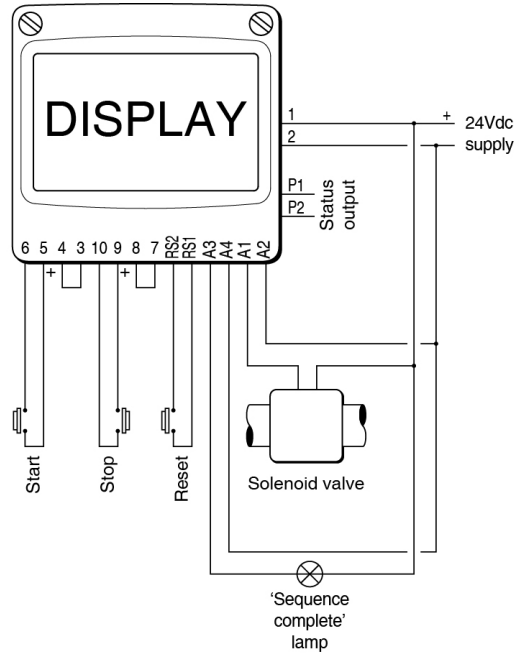


Fig 13 Repeating a valve timing cycle four times

The required instrument configuration for this example is shown below:



| Function | Display | Setting |
|---|---|--------------------------------|
| Function | Function | ELAPSE |
| Input A Debounce | Input-A dEBounce | ContAct dEFault |
| Input b Debounce | Input-b dEBounce | ContAct dEFault |
| Display 2 | diSP-2 | StEd |
| Start stop | StArStoP | ControL 2 |
| Units | units | 120000 |
| Set time | SEt t | 00:1000 |
| Timer repeat cycle Enable Repeat Cycle Cycle Count Restart delay | CYCLES EnbL CYCL Cnt rSt dELR | on 04 00:1500 |
| Access set time from display mode | ACSEt-t | oFF |
| Direction of count | uP or dn | dn |
| Control output after power restoration | P-FR, L | PRuSE |
| Local total reset | LoC rSEt | oFF |
| External Reset Contact Closure Time | ErSEt | StEd |
| Status Output | StAt oP | dEFault |
| Output 1 Enable control output 1 Control output 1 on at Control output 1 off at Control output 1 delay | oP 1 EnbL oP 1 on oP 1 oFF oP 1 dELR | on run n run 000000 |
| Output 2 Enable control output 2 Control output 2 on at Control output 2 off at Control output 2 delay | oP 2 EnbL oP 2 on oP 2 oFF oP 2 dELR | on donE n donE 000000 |
| Local grand total reset | GLr Gtob | oFF |
| Access code | Code | 0000 |

Note: Functions in bold are first level menu items.

7. MAINTENANCE when configured as a Timer

7.1 Fault finding during commissioning



If a BA574G fails to function as a Timer during commissioning the following procedure should be followed:

| Symptom | Cause | Check: |
|--|---|--|
| No display | No power supply, or incorrect wiring. Note: Terminals 2, 6, 10 & RS2 are interconnected within the instrument. | That there is between 10 and 30V on terminals 1 & 2 with terminal 1 positive. |
| Instrument configuration menu does not correspond with Timer section of this manual. | BA574G may be configured as a clock. | That <code>Function</code> in configuration menu is set to <code>ELAPSE</code> not to <code>CLCK</code> . |
| Timer will not start. | Timer not reset | Reset timer via external contact or by operating  and  buttons simultaneously if the local total reset <code>RESET.EnbL</code> has been activated. |
| | Set time <code>SEt t</code> has not been entered. | Enter time other than zero for <code>SEt t</code> . |
| Timer will not respond to sensor inputs. | Input A and/or Input b incorrectly configured, or sensor incorrectly connected. | <code>Input A</code> and <code>Input B</code> configuration and that input energising link is correctly fitted for selected sensor. |
| Control output(s) do not function. | Control outputs have not been enabled. | Enable Control Output(s) in the configuration menu. |
| Unable to enter configuration menu. | Incorrect security code | That the correct security code is being used. Contact BEKA if the code is lost. |

7.2 Fault finding after commissioning

ENSURE PLANT SAFETY BEFORE STARTING MAINTENANCE

If a BA574G Timer fails after it has been functioning correctly, the following table may help to identify the cause of the failure.

| Symptom | Cause | Check: |
|-------------------------------------|--|--|
| No display | No power supply | That there is between 10 and 30V on terminals 1 & 2 with terminal 1 positive. |
| Timer will not start. | Timer not reset | Reset timer via external contact or by operating  and  buttons simultaneously if local total reset <code>RESET.EnbL</code> has been activated. |
| Control output(s) do not function. | Control Outputs have not been enabled. | Enable Control Output(s) in the configuration menu. |
| Unable to enter configuration menu. | Incorrect security code | That the correct security code is being used. Contact BEKA if code is lost. |

If this procedure does not reveal the cause of the fault, it is recommended that the instrument is replaced.

Note:

If configuration changes are made to any of the following functions the Timer will be forced into a fail safe idle condition. This stops the Timer in the state it achieves when it has timed-up to `SEt t` or timed-down to `0000`. The Timer must be reset before it can be restarted.

`Input A`, `Input B`, `StartStop`, `CLCKES`, `up or dn`, `oP 1` and `oP 2`.

7.3 Servicing

We recommend that faulty BA574G Timers are returned to BEKA associates or to your local BEKA agent for repair. It is helpful if a brief description of the fault symptoms is provided.

7.4 Routine maintenance

The mechanical and electrical condition of the instrument should be regularly checked. Inspection frequency should be chosen to suit the environmental conditions.

7.5 Guarantee

Instruments which fail within the guarantee period should be returned to BEKA associates or our local agent. It is helpful if a brief description of the fault symptoms is provided.

7.6 Customer comments

BEKA is always pleased to receive comments from customers about our products and services. All communications are acknowledged and whenever possible, suggestions are implemented.

8. OPERATION AS A CLOCK

When configured as a clock the BA574G can display local time in a variety of twelve or twenty four hour formats. The displayed time can be adjusted via the front panel push buttons which may be protected by a user definable four digit security code to prevent unauthorised or accidental adjustment.

The clock may be synchronised to an external time standard via the instrument's reset terminals. When these two terminals are connected together by an external switch contact, the clock display will be reset to a preconfigured time and will resume running from this time when the contacts are opened.

The optically isolated status open collector output can be used to monitor the clock or to perform simple control functions.

When fitted with the optional galvanically isolated control outputs the clock can be configured to turn each solid state output *on* and *off* twice during each twenty four hour period.

Fig 14 shows a simplified block diagram of the BA574G configured as a clock.

The instrument can be supplied with the following factory fitted accessories:

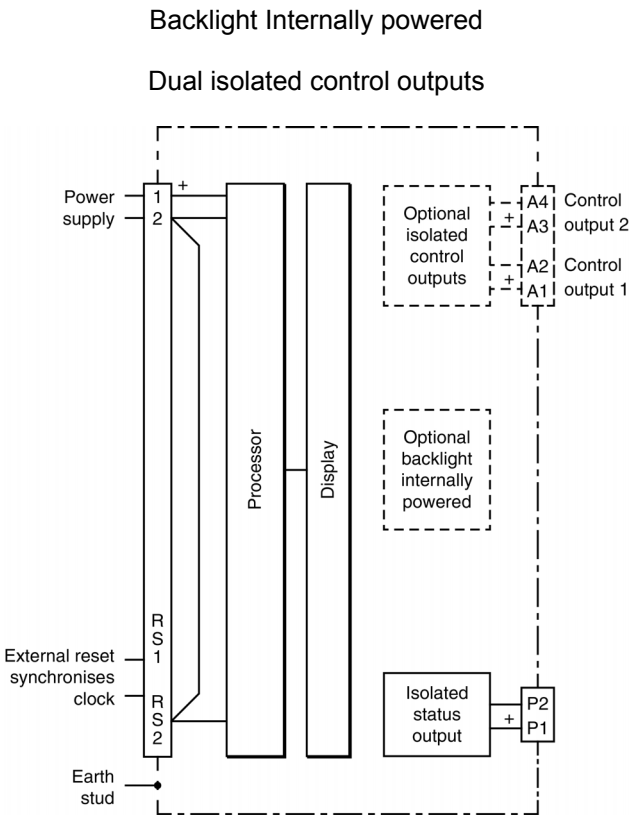


Fig 14 BA574G block diagram with clock configuration.

8.1 Initialisation and loss of power

Each time power is applied to a BA574G initialisation is performed. After a short delay the following display sequence occurs:

All segments of the display are activated

Instrument starts functioning, using the configuration information stored in the instrument's permanent memory.

Following initialisation, the instrument will display a flashing display which is a request for the local time to be entered. The clock will not start to function until a display time has been entered, or the remote reset contacts are closed and opened to synchronise the clock to a preconfigured time.

If during normal operation the power supply is interrupted for more than 30ms, the display will return to the flashing condition and the display time will have to be re-entered. This time may be increased by powering the Clock from an instrument supply with a large output capacitance.

8.2 Controls when configured as a clock

The BA574G clock is configured and adjusted via four front panel push buttons. In the display mode i.e. when the instrument is displaying time, the push button functions are:

Push Button Functions

P + **▼** Shows in succession, firmware version number, instrument function [L_oL] and any output accessories that are fitted:
 - A Dual control outputs
 - P Status output (always fitted)

P + **E** Access to configuration menu

Note: When optional control outputs are fitted, the BA574G clock may be configured to provide direct access to the control outputs from the display mode when the **P** + **▲** push buttons are operated. - see section 8.4.16

8.3 Displays when configured as a clock

The BA574G clock has a single digital display plus annunciators.

| | |
|------------------------------------|---|
| Time display | Shows time in selected 12 or 24 hour format. |
| Reset annunciator | Activated while clock is being synchronised and external reset contacts are closed. |
| Status output annunciator | RTx shown while status output is activated. |
| Control output annunciators | Shows status of both optional control outputs. |

8.4 Configuration as a Clock

The BA574G is configured and calibrated via four front panel push buttons. All the configuration functions are contained in an easy to use intuitive menu that is shown diagrammatically in Fig 15.

Each menu function is summarised in section 8.4.2 of this manual and each includes a reference to more detailed information.





All new BA574G instruments are supplied configured as requested at the time of ordering. If configuration is not requested, the BA574G will be supplied with default Timer configuration as shown in section 5.5.








If a BA574G Clock is requested without detailed configuration information, the instrument will be supplied with default Clock configuration as shown below, but can easily be re-configured on-site.

| Function | Display | Default |
|--------------------------|-----------|------------|
| Access code | [odE | 0000 |
| Function | Functi on | [LoC |
| Display | d, SP LRY | 12:00 |
| Set display time | SEt | R 12:00:00 |
| Synchronise time | SYnE t | R 12:00:00 |
| Enable status output | EnbL | oFF |
| Enable control output 1* | EnbL | oFF |
| Enable control output 2* | EnbL | oFF |
| Enable access alarm | ALSP | oFF |
| times from display mode. | | |
| Access code for alarm | ALCd | 0000 |
| times from display mode. | | |



Note: * Control outputs are a factory fitted option.

8.4.1 Accessing configuration functions

Throughout this manual push buttons are shown as , ,  and  and legends displayed by the Clock are shown in a seven segment font just as they appear on the instrument e.g. d, SP LRY and [odE.

Access to the configuration menu is obtained by operating the  and  push buttons simultaneously. If the instrument is not protected by an access security code the first parameter Functi on will be displayed. If a security code other than the default code 0000 has already been entered, the instrument will display [odE. Press  to clear this prompt and enter the security code for the instrument using the  or  push button to adjust the flashing digit, and the  push button to transfer control to the next digit. If the correct code has been entered pressing  will cause the first parameter Functi on to be displayed. If an incorrect code is entered, or a push button is not operated within ten seconds, the instrument will automatically return to the display mode.

All configuration functions and prompts are shown on the upper eight digit display.

Once within the main configuration menu the required parameter can be selected by scrolling through the menu using the  or  push button. The Clock configuration menu is shown diagrammatically in Fig 15.

When returning to the display mode following reconfiguration, the Clock will display dRtR followed by SRYE while the new information is stored in permanent memory.

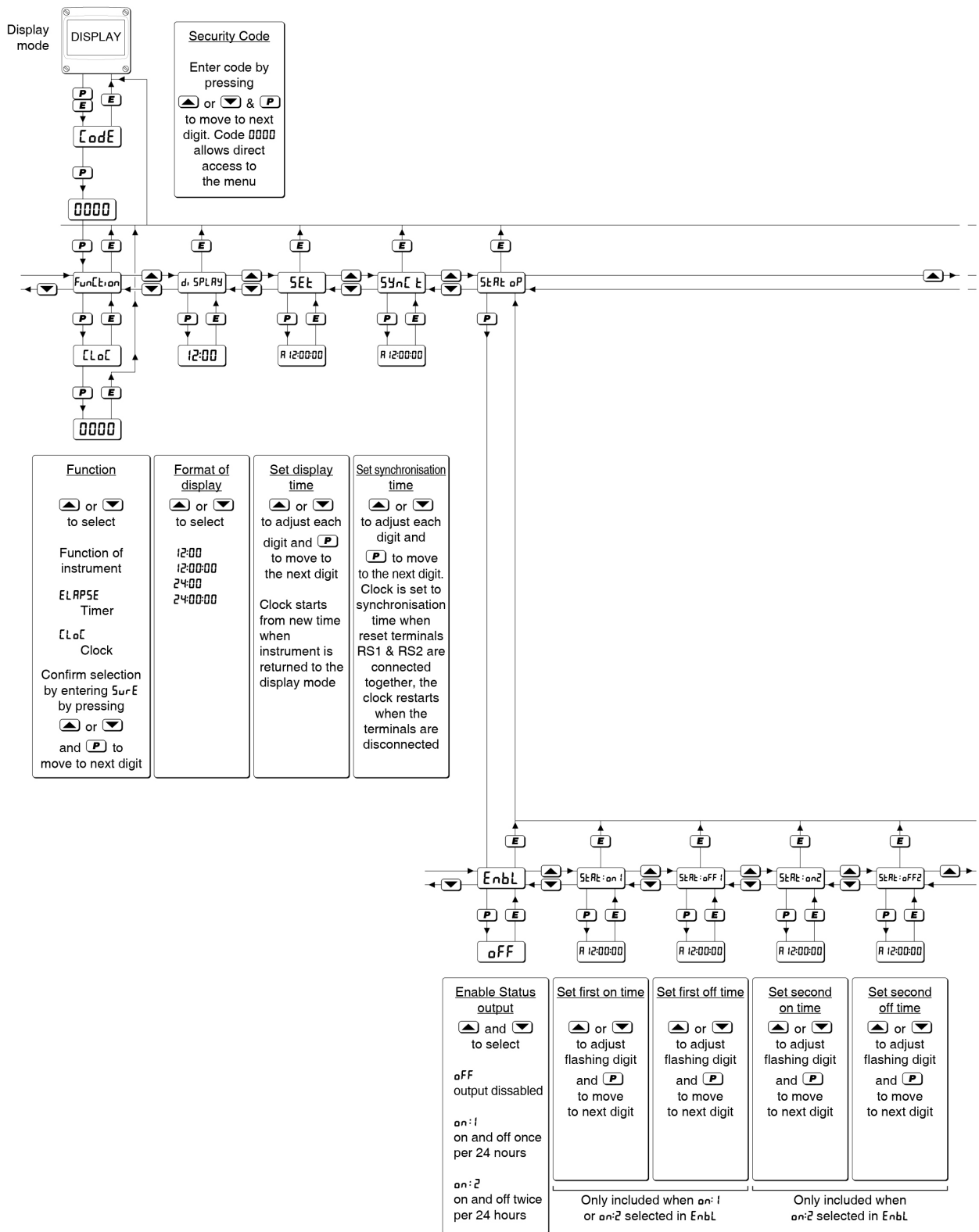
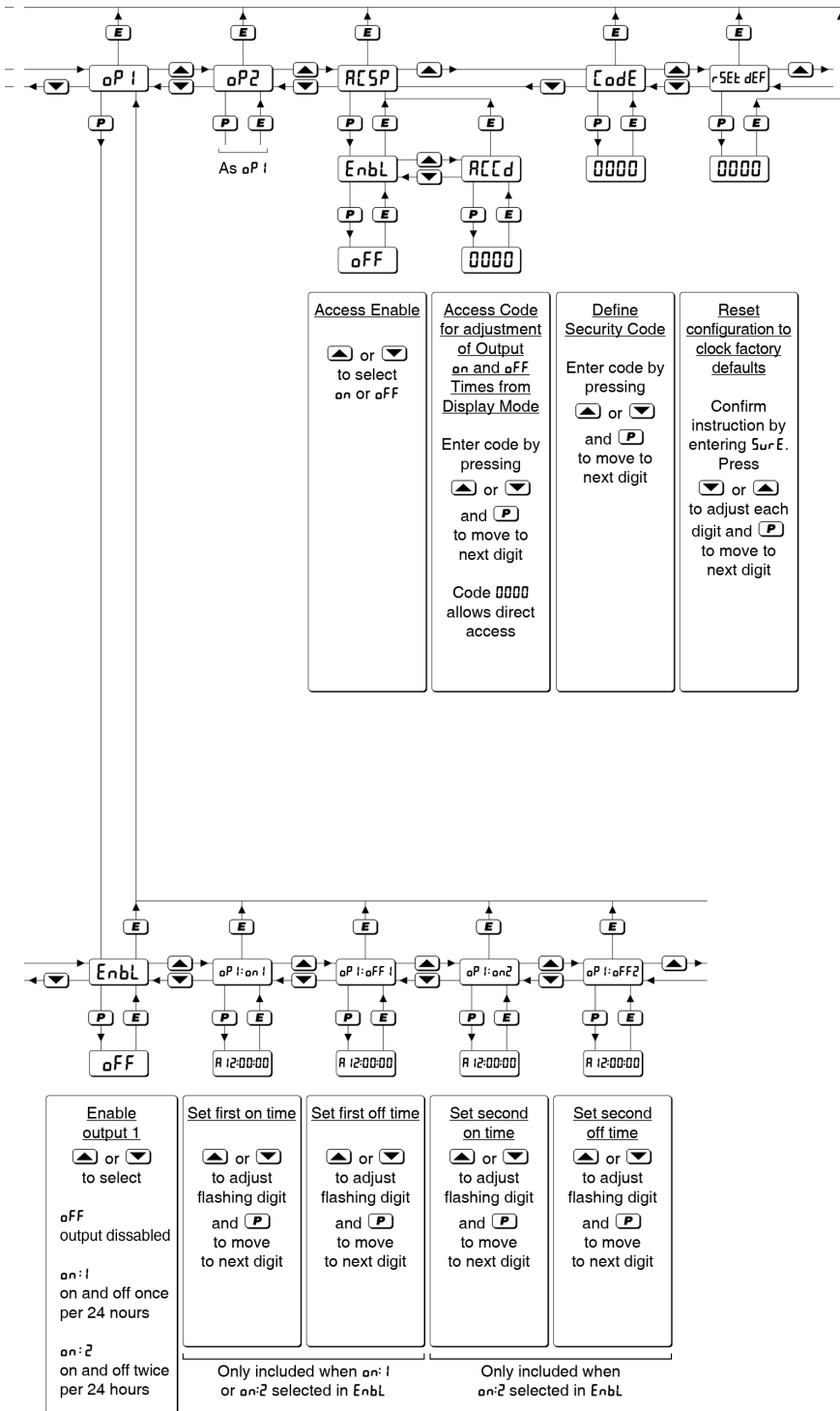


Fig 15 Clock Configuration menu

Only included when optional Control Outputs are fitted



8.4.2 Summary of Clock configuration functions.

This section summarises all the Clock configuration functions. When read in conjunction with Fig 15 it provides a quick aid for configuring the Clock. If more detail is required, each section of this summary contains a reference to a full description of the function.

| Display | Summary of function |
|-----------------|---|
| Funct on | <p>Instrument function Defines the function of the instrument. May be set to:</p> <p>ELAPSE Timer CLoC Clock</p> <p>All the entries in this Clock configuration summary assume that the BA574G is configured as a Clock by selecting CLoC. See section 8.4.3</p> |
| diSPLAY | <p>Display format Defines the clock display format, four alternatives are available. Select:</p> <p>12:00 Twelve hours without seconds 12:00:00 Twelve hours with seconds 24:00 Twenty four hours without seconds 24:00:00 Twenty four hours with seconds See section 8.4.4</p> |
| SEt | <p>Set clock display time Enables the clock displayed time to be adjusted, the clock resumes operation when the instrument is returned to the display mode. See section 8.4.5</p> |
| SynC t | <p>Synchronising time Defines the time to which the clock display is set when the reset terminals RS1 and RS2 are connected together. The Clock restarts from the synchronising time when terminals RS1 and RS2 are disconnected. See section 8.4.6</p> |
| Stat oP | <p>Status output Status output can turn <i>on</i> (open collector on) and <i>off</i> (open collector off) once or twice in each twenty-four hour period. This function contains five sub-function:</p> <p>EnbL Enables Status output and defines if it turns <i>on</i> and <i>off</i> once or twice in each 24 hours.</p> <p>Stat: on 1 Time when oP 1 turns <i>on</i> 1st time Stat: off 1 Time when oP 1 turns <i>off</i> 1st time Stat: on 2 Time when oP 1 turns <i>on</i> 2nd time Stat: off 2 Time when oP 1 turns <i>off</i> 2nd time</p> <p>Note: Output is a open collector See sections 8.4.7 to 8.4.9</p> |
| oP 1 | <p>Control output 1 (Optional) Control output 1 can turn <i>on</i> (output closed) and <i>off</i> (output open) once or twice in each twenty-four hour period. This function contains five sub-function:</p> <p>EnbL Enables output 1 and defines if it turns on and off once or twice in each 24 hours.</p> <p>oP 1: on 1 Time when oP 1 turns <i>on</i> 1st time oP 1: off 1 Time when oP 1 turns <i>off</i> 1st time oP 1: on 2 Time when oP 1 turns <i>on</i> 2nd time oP 1: off 2 Time when oP 1 turns <i>off</i> 2nd time See sections 8.4.10 to 8.4.12</p> |
| oP 2 | <p>Control output 2 (Optional) As control output 1 described above. See section 8.4.13 to 8.4.15</p> |
| ALCP | <p>Access control output alarm-times from display mode. Contains two sub-functions, EnbL which when activated allows the control output times to be adjusted from the display mode (displaying time). The second sub-function ALCP defines a four digit alphanumeric access code which may be used to protect access to the control output times from the display mode. Default code 0000 disables this security feature and allows unrestricted access. See section 8.4.16</p> |

| Display | Summary of function |
|---------|---------------------|
|---------|---------------------|

[0dE

Security code

Defines a four digit alphanumeric code that may be used to protect access to the Clock configuration menu. Default code 0000 disables this security function and allows unrestricted access to all configuration functions when the **[P]** and **[E]** buttons are operated simultaneously in the display mode.

See section 8.4.17

r5Et dEF

Reset to factory defaults

Resets the BA574G to the Clock factory default configuration shown in section 8.4 Instruction confirmed by entering 5urE.

See section 8.4.18

8.4.3 Instrument function: Fun[E, on

The BA574G may be configured as a Timer or as a Clock. This section of the instruction manual describes the Clock, for details of Timer configuration see section 5.4.

To reveal the existing function of the instrument select **Fun[E, on** from the configuration menu and press **[P]**. If **[LoE]** is displayed, the instrument is already configured as a Clock therefore press **[E]** to return to the **Fun[E, on** prompt in the configuration menu. If **ELAPSE** is displayed, press the **[▲]** or **[▼]** button to change the setting to **[LoE]** followed by the **[P]** button which will result in a **0000** prompt being displayed with the first digit flashing. This is a request for the instruction to be confirmed by entering **5urE** using the **[▲]** or **[▼]** button to adjust the flashing digit and the **[P]** button to move control to the next digit. When **5urE** has been entered, pressing **[E]** will change the instrument to a Clock and return the instrument to the display mode. To configure the Clock enter the configuration menu by pressing the **[P]** and **[E]** buttons simultaneously until **Fun[E, on** is displayed.

8.4.4 Display format: d, SP[RY

The BA574G Clock may be configured to display time in a 12 or 24 hour format with or without seconds. When a 12 hour format is selected, AM is denoted by an **A** prefix at the left hand side of the display, similarly a **P** is displayed to denote PM.

To check or change the display format of the Clock, select **d, SP[RY** from the configuration menu and press **[P]** which will reveal the existing setting which can be changed by pressing the **[▲]** or **[▼]** button followed by the **[E]** button to enter the selection and return to the configuration menu. The options available are shown below:

| | |
|----------|---|
| 12:00 | Twelve hour format without seconds |
| 12:00:00 | Twelve hour format with seconds |
| 24:00 | Twenty four hour format without seconds |
| 24:00:00 | Twenty four hour format with seconds |

8.4.5 Set clock display time: 5Et

This function sets the time displayed by the Clock which must be entered each time the BA574G Clock is powered. Until a set time is entered the Clock will display a flashing **00:00:00** or **00:00** depending upon how it has been configured.

To adjust the clock set time, select **5Et** from the configuration menu and press **[P]** that will show **00:00:00** or the existing set time with the hours flashing. When setting the clock display time seconds are always shown. Using the **[▲]** or **[▼]** button adjust the flashing hours and then press **[P]** to transfer control to the minutes display, pressing **[P]** again will transfer control to the seconds display. When adjustment is complete press **[E]** to start the Clock and return to the **5Et** prompt.

8.4.6 Enter synchronising time: 5YnŁ Ł

When the external reset terminals RS1 and RS2 are connected together the clock is stopped and the displayed time is set to the synchronising time. When the connection between the reset terminals is removed, the clock restarts from the synchronising time.

To enter the synchronising time, select 5YnŁ Ł from the configuration menu and press **[P]** which will reveal the existing synchronising time with the hours flashing. Using the **[▲]** or **[▼]** button adjust the hours and then press **[P]** to transfer control to the minutes display, pressing **[P]** again will transfer control to the seconds display. When the synchronising time has been set as required, press **[E]** to return to the configuration menu.

8.4.7 Status output: 5ŁRŁ oP

The status output is an optically isolated open collector that can be used for transmitting the status of the Clock to other instruments. It may also be used for simple control applications. Status *on* is indicated by the RTX display annunciator.

The function contains five sub-functions allowing the Status output open collector to be turned *on* and *off* once or twice in each twenty-four hour period.

| | |
|------------|---|
| EnbL | Disabled or number of times status output turns <i>on</i> & <i>off</i> in 24 hours. |
| 5ŁRŁ:oN 1 | First time Status oP turns <i>on</i> |
| 5ŁRŁ:oFF 1 | First time Status oP turns <i>off</i> |
| 5ŁRŁ:oN 2 | Second time Status oP turns <i>on</i> |
| 5ŁRŁ:oFF 2 | Second time Status oP turns <i>off</i> |

To check or change the function of the status output select 5ŁRŁ oP from the configuration menu and press **[P]** which will reveal the first sub-function EnbL.

8.4.8 Enable Status output: EnbL

This is a sub-function in the Status output function 5ŁRŁ which allows the status output open collector to be enabled or disabled without changing any of the *on* or *off* times and also determines whether the status output turns *on* and *off* once or twice in each twenty four hour period.

Select 5ŁRŁ in the configuration menu and press **[P]** which will result in the EnbL prompt being displayed. Pressing **[P]** again will enter the sub-function from which one of the three options may be selected using the **[▲]** or **[▼]** button:

| Display | Status output |
|---------|---|
| oFF | Status output disabled |
| oN: 1 | Turns <i>on</i> & <i>off</i> once per 24 hours |
| oN: 2 | Turns <i>on</i> & <i>off</i> twice per 24 hours |

When the required option is displayed operating **[E]** will enter the selection and return to the EnbL prompt from which another sub-function may be selected.

8.4.9 Status output

**On and off times: 5ŁRŁ:oN 1; 5ŁRŁ:oFF 1
5ŁRŁ:oN 2; 5ŁRŁ:oFF 2**

The status output will have one or two *on* and *off* times depending upon whether it has been configured to turn *on* and *off* once or twice in each 24 hour period. - see 8.4.8.

All of the times are adjusted in the same way. To adjust any of them select 5ŁRŁ from the configuration menu and press **[P]** which will result in the EnbL prompt being displayed. The **[▲]** or **[▼]** button will scroll through the sub-functions. Only 5ŁRŁ:oN 1 and 5ŁRŁ:oFF 1 will be present if the status output has been configured to switch *on* and *off* once in a 24 hour period in the EnbL sub-function.

Select the required sub-function

| | |
|------------|---|
| 5ŁRŁ:oN 1 | Time status output turns <i>on</i> first time |
| 5ŁRŁ:oFF 1 | Time status output turns <i>off</i> first time |
| 5ŁRŁ:oN 2 | Time status output turns <i>on</i> second time |
| 5ŁRŁ:oFF 2 | Time status output turns <i>off</i> second time |

When selected, pressing **[P]** will show the existing time with the hours flashing. Using the **[▲]** or **[▼]** button adjust the hours and then press **[P]** to transfer control to the minutes display, pressing **[P]** again will transfer control to the seconds display. When the time has been set as required press **[E]** to return to the sub-menu from which another *on* / *off* time may be selected for adjustment. When all the *on* / *off* times have been entered, return to the configuration menu by pressing the **[E]** button twice.

8.4.10 Control output 1 (optional): oP1

Control output 1 is an optional factory fitted galvanically isolated solid state switch contact output which can be configured to turn *on* (output closed) and *off* (output open) twice in each twenty-four hour period. The control output status is shown by the 1 control output display annunciator.

Function oP 1 contains a sub-menu with five sub-functions:

| | |
|------------|--|
| EnbL | Disabled or number of times output 1 turns <i>on</i> & <i>off</i> in 24 hours. |
| oP 1:oN 1 | First time oP 1 turns <i>on</i> (closes) |
| oP 1:oFF 1 | First time oP 1 turns <i>off</i> (opens) |
| oP 1:oN 2 | Second time oP 1 turns <i>on</i> (closes) |
| oP 1:oFF 2 | Second time oP 1 turns <i>off</i> (opens) |

To check or change the function of Control output 1 select oP 1 from the configuration menu and press **[P]** which will reveal the first sub-function EnbL.

8.4.11 Enable Control output 1: *EnbL*

This is a sub-function in the Control output 1 function *oP 1* which allows control output 1 to be enabled or disabled without changing any of the *on* or *off* times and also determines whether control output 1 turns *on* and *off* once or twice in each twenty four hour period.

Select *oP 1* in the configuration menu and press **[P]** which will result in the *EnbL* prompt being displayed. Pressing **[P]** again will enter the sub-function from which one of the three options may be selected using the **[▲]** or **[▼]** button:

| Display | Control output 1 |
|--------------|---|
| <i>oFF</i> | Control output 1 disabled |
| <i>on: 1</i> | Turns <i>on</i> & <i>off</i> once per 24 hours |
| <i>on: 2</i> | Turns <i>on</i> & <i>off</i> twice per 24 hours |

When the required option is displayed operating **[E]** will enter the selection and return to the *EnbL* prompt from which another sub-function may be selected if control output 1 has not been disabled.

8.4.12 Control output 1

On and off times: *oP 1: on 1*; *oP 1: oFF 1*
oP 1: on 2; *oP 1: oFF 2*

The control output will have one or two *on* and *off* times depending upon whether control output 1 has been configured to turn *on* and *off* once or twice in each 24 hour period. - see 8.4.11.

All of the times are adjusted in the same way. To adjust any of them select *oP 1* from the configuration menu and press **[P]** which will result in the *EnbL* prompt being displayed. The **[▲]** or **[▼]** button will scroll through the sub-functions. Only *oP 1: on 1* and *oP 1: oFF 1* will be present if control output 1 has been configured to switch *on* and *off* once in a 24 hour period in the *EnbL* sub-function.

Select the required sub-function

| | |
|--------------------|--|
| <i>oP 1: on 1</i> | Time <i>oP1</i> turns <i>on</i> first time |
| <i>oP 1: oFF 1</i> | Time <i>oP1</i> turns <i>off</i> first time |
| <i>oP 1: on 2</i> | Time <i>oP1</i> turns <i>on</i> second time |
| <i>oP 1: oFF 2</i> | Time <i>oP1</i> turns <i>off</i> second time |

When selected, pressing **[P]** will show the existing time with the hours flashing. Using the **[▲]** or **[▼]** button adjust the hours and then press **[P]** to transfer control to the minutes display, pressing **[P]** again will transfer control to the seconds display. When the time has been set as required press **[E]** to return to the sub-menu from which another *on / off* time may be selected for adjustment. When all the *on / off* times have been entered, return to the configuration menu by pressing the **[E]** button twice.

8.4.13 Control output 2 (optional): *oP2*

Control output 2 is an optional factory fitted output which can be configured to turn *on* (output closed) and *off* (output open) twice in each twenty-four hour period. The control output status is shown by the 2 control output display annunciator.

Function *oP2* contains a sub-menu with five sub-functions:

| | |
|--------------------|--|
| <i>EnbL</i> | Disabled or number of times output 2 turns <i>on</i> & <i>off</i> in 24 hours. |
| <i>oP 2: on 1</i> | First time when <i>oP 2</i> turns <i>on</i> (closes) |
| <i>oP 2: oFF 1</i> | First time when <i>oP 2</i> turns <i>off</i> (opens) |
| <i>oP 2: on 2</i> | Second time when <i>oP 2</i> turns <i>on</i> (closes) |
| <i>oP 2: oFF 2</i> | Second time when <i>oP 2</i> turns <i>off</i> (opens) |

To check or change the function of Control output 2 select *oP2* from the configuration menu and press **[P]** which will reveal the first sub-function *EnbL*.

8.4.14 Enable control output 2: *EnbL*

This is a sub-function in the Control output 2 function *oP2* which allows control output 2 to be enabled or disabled without changing any of the *on* or *off* times and also determines whether control output 2 turns *on* and *off* once or twice in each twenty four hour period. Select *oP2* in the configuration menu and press **[P]** which will result in the *EnbL* prompt being displayed. Pressing **[P]** again will enter the sub-function from which one of the three options may be selected using the **[▲]** or **[▼]** button:

| Display | Control output 2 |
|--------------|---|
| <i>oFF</i> | Control output 2 disabled |
| <i>on: 1</i> | Turns <i>on</i> & <i>off</i> once per 24 hours |
| <i>on: 2</i> | Turns <i>on</i> & <i>off</i> twice per 24 hours |

When the required option is displayed operating **[E]** will enter the selection and return to the *EnbL* prompt from which another sub-function may be selected if control output 2 has not been disabled.

8.4.15 Control output 2

On and off times: *oP2: on 1*; *oP2: oFF 1*
oP2: on 2; *oP2: oFF 2*

The control output will have one or two *on* and *off* times depending upon whether control output 2 has been configured to turn *on* and *off* once or twice in each 24 hour period. - see 8.4.14.

All of the times are adjusted in the same way. To adjust any of them select *oP2* from the configuration menu and press **[P]** which will result in the *EnbL* prompt being displayed. The **[▲]** or **[▼]** button will scroll through the sub-functions. Only *oP2: on 1* and *oP2: oFF 1* will be present if control output 2 has been configured to switch *on* and *off* once in a 24 hour period in the *EnbL* sub-function.

Select the required sub-function

| | |
|-----------|---------------------------------------|
| oP2:on 1 | Time oP2 turns <i>on</i> first time |
| oP2:off 1 | Time oP2 turns <i>off</i> first time |
| oP2:on 2 | Time oP2 turns <i>on</i> second time |
| oP2:off 2 | Time oP2 turns <i>off</i> second time |

When selected pressing **P** will show the existing time with the hours flashing. Using the **▲** or **▼** button adjust the hours and then press **P** to transfer control to the minutes display, pressing **P** again will transfer control to the seconds display. When the time has been set as required press **E** to return to the sub-menu from which another *on / off* time may be selected for adjustment. When all the *on / off* times have been entered, return to the configuration menu by pressing the **E** button twice.

8.4.16 Access control output *on* and *off* times from display mode: R[5P

This function activates a separate menu that provides direct access to the control output's *on* and *off* times when the Clock is in the display mode (displaying time). An operator may therefore adjust the *on* and *off* times without having access to the instrument configuration menu. Further protection is provided by a separate security code. When this function is enabled the *on* and *off* times of the two control outputs may be adjusted from the display mode by simultaneously operating the **P** and **▲** push buttons. The function contains two sub-functions, *EnbL* which activates the function and *R[[d* which defines a separate access code that may be used to prevent the *on* and *off* times being accidentally adjusted from the display mode.

To check or change the function, select *R[5P* in the configuration menu and press **P** which will reveal the *EnbL* prompt, pressing **P** again will show if the function is *on* or *off*. If adjustment of the control output times from the display mode is not required press the **▲** or **▼** button to select *off* and then press **E** twice to return to the configuration menu. If the function is required, select *on* and press **E** to return to the *EnbL* prompt from which *R[[d*, which allows a separate access code to be entered, can be selected by pressing the **▲** or **▼** button.

Access to the control output times from the display mode may be protected by a four digit alphanumeric security code which must be entered to gain access. Default security code 0000 allows unrestricted access. With *R[[d* displayed, press **P** to enter a new access code. The BA574G Clock will display 0000 with one digit flashing. The flashing digit may be adjusted using the **▲** or **▼** push button, when set as required operating the **P** button will transfer control to the next digit. When all the digits have been adjusted press **E** twice to return to the *R[5P* prompt in the configuration menu. The revised security code will be activated when the BA574G is returned to the display mode.

8.4.17 Security code: [odE

Access to the instrument's configuration menu may be protected by a four digit alphanumeric security code which must be entered to gain access. New instruments are configured with the default security code 0000 which allows unrestricted access to all configuration functions.

To enter a new security code select *[odE* from the configuration menu and press **P** which will cause the Clock to display 0000 with one digit flashing. The flashing digit may be adjusted using the **▲** or **▼** push button, when set as required operating the **P** button will transfer control to the next digit. When all the digits have been adjusted press **E** to return to the *[odE* prompt. The revised security code will be activated when the Clock is returned to the display mode.

Please contact BEKA associates sales department if the security code is lost.

8.4.18 Reset configuration to factory defaults: r5E[dEF

When the BA574G is configured as a Clock, this function resets the configuration to the Clock factory defaults shown in sections 8.4 of this manual.

To reset the instrument configuration select *r5E[dEF* from the configuration menu and press **P**. The Clock will display 0000 with the first digit flashing which is a request to confirm the instruction by entering 5urE. Using the **▲** or **▼** button set the first flashing digit to 5 and press **P** to transfer control to the second digit which should be set to u. When 5urE has been entered pressing the **E** button will reset all the configuration functions to the factory defaults and return the instrument to the display mode as a Clock with default configuration.

9. CLOCK CONFIGURATION EXAMPLE

In this example a BA574G is required to function as a Clock displaying time in a 24 hour format including seconds. For external synchronisation the displayed time is required to change to 12:00:00 when the external reset terminals are connected together.

Both control outputs are required to close and open once in each 24 hour period. Control output 1 (OP1) is to turn *on* (close) at 07:30:00 and *off* (open) at 09:30:00, control output 2 (OP2) is to turn *on* (close) at 18:00:00 and *off* (open) at 22:30:00.

For this application the operator needs to adjust the control output *on* and *off* times from the display mode via an access code of 1111. To prevent tampering the instrument configuration menu is to be protected by security code of 1209

9.1 Configuration procedure

The BA574G may be configured as a Clock on-site without disconnection from external wiring.

Step 1 Enter the configuration menu

Enter the configuration menu by simultaneously pressing **[P]** and **[E]**. Assuming a security code has not already been entered the instrument will respond by displaying *FUNCTION ON* which is the first item in the configuration menu.
See Fig 15.

Step 2 Configure instrument as a Clock

With *FUNCTION ON* displayed press **[P]** to reveal the existing function of the instrument. If *CLK* is displayed no change is required, therefore return to the *FUNCTION ON* prompt by pressing the **[E]** button.

If *ELAPSE* is displayed, press the **[▲]** or **[▼]** button to change the setting to *CLK* followed by the **[P]** button which will result in a *0000* prompt being displayed with the first digit flashing. This is a request for the instruction to be confirmed by entering *SURE* using the **[▼]** or **[▲]** button to adjust the flashing digit and the **[P]** button to move control to the next digit. Pressing **[E]** will then change the instrument to a Clock and return the display to *FUNCTION ON* in the configuration menu.
See 8.4.3

Step 3 Select display format

Using the **[▲]** or **[▼]** button select *d, 5PLRY* in the configuration menu and press **[P]** which will reveal the current display format. Using the **[▲]** or **[▼]** button select *24:00:00* which is the required 24 hour format with seconds and press **[E]** to enter the selection and return to the configuration menu.
See 8.4.4

Step 4 Enter the synchronisation time

Using the **[▲]** or **[▼]** button select *SYNCL T* in the configuration menu and press **[P]** to reveal the current synchronisation time with the hours flashing. Using the **[▲]** or **[▼]** push button adjust the hours to 12 and press **[P]** to transfer control to the minutes. Using the **[▲]** or **[▼]** push button adjust the minutes to 00 and press **[P]** to transfer control to the seconds which should be adjusted to 00, in the same way. When the seconds are set enter the selection and return to the *r5Et* prompt in the configuration menu by pressing the **[E]** button.
See 8.4.6

Step 5 Enable control output 1 and enter the *on* and *off* times.

Using the **[▲]** or **[▼]** button select *OP1* in the configuration menu and press **[P]** to reveal the *ENBL* prompt in the control output 1 sub-menu.

In this application control output 1 is required to turn *on* and *off* once every 24 hours. With *ENBL* displayed press **[P]** and using the **[▲]** or **[▼]** button select *ON I* followed by the **[E]** button to return to the *ENBL* prompt.

The control outputs *on* time should now be entered by selecting *OP1:ON I* in the control output 1 sub-menu using the **[▲]** or **[▼]** button. Pressing **[P]** will reveal the existing *on* time which should be adjusted to 07:30:00 using the **[▲]** or **[▼]** button and the **[P]** button to transfer control to the following digits. When entered return to the *OP1:ON I* prompt by pressing the **[E]** button.

The *off* time should now be entered by selecting *OP1:OFF I* from the sub-menu and adjusting the time to 09:30:00. Finally press **[E]** to return to the *OP1:OFF I* prompt in the sub-menu and press **[E]** again to return to *OP1* in the configuration menu.

Step 6 Enable control output 2 and enter the on and off times.

Using the \blacktriangle or \blacktriangledown button select $\alpha P2$ in the configuration menu and press P to reveal the E_{nbL} prompt in the control output 2 sub-menu. Follow the procedure described in step 5 above, but set control output 2 to turn on at 18:00:00 and off at 22:30:00.

Step 7 Allow control outputs times to be adjusted from the display mode & enter separate security code.

Using the \blacktriangle or \blacktriangledown button select $RESP$ in the configuration menu and press P to reveal the E_{nbL} prompt, pressing P again will show if this function is on or off. Using the \blacktriangle or \blacktriangledown button select on followed by E to return to the E_{nbL} prompt. A separate security code which must be entered to gain access to the alarm times in the display mode, is entered in the $REEd$ function which may be selected by operating the \blacktriangle or \blacktriangledown button once. Pressing E will reveal the existing access code with one digit flashing. This should be changed to the required code of 1111 by adjusting the flashing digit using using the \blacktriangle or \blacktriangledown button and the P button to transfer control to the next digit. When 1111 has been entered press E twice to return to the configuration menu. See 8.4.16

Step 8 Define the configuration menu security code.

Defining a security code prevents unauthorised access to the configuration menu. Using the \blacktriangledown and \blacktriangle buttons select $Code$ from the configuration menu and press P which will reveal 0000 with the first digit flashing. This example requires the security code to be 1209, using the \blacktriangledown and \blacktriangle buttons set the flashing digit to 1 and press P to transfer control to the second digit. When all have been entered press E to return to the main configuration menu. See 8.4.17.

Step 9 Return to the display mode

The BA574G is now configured as required for this example. Pressing the E button will save the configuration and return the BA574G to the display mode with all the digits flashing indicating that the set time has to be entered.

Step 10 Enter the set time

Finally the current time to be displayed by the Clock should be entered. Re-enter the configuration menu by pressing the P and E buttons simultaneously which will result in $Code$ being displayed. Pressing P will allow the access code 1209 to be entered using the \blacktriangledown or \blacktriangle button to adjust the flashing digit and the P button to transfer control to the next digit. When all four digits have been adjusted, press P to enter the configuration menu and using the \blacktriangledown or \blacktriangle button select SEt and press E which will reveal 00:00:00 with the hours flashing. Using the \blacktriangledown or \blacktriangle button adjust the flashing hours digit and press P to transfer control to the minutes and then to the seconds. When all have been set as required, press E to start the clock from the entered time and return to the display mode.

See 8.4.5

10. MAINTENANCE when configured as a clock

10.1 Fault finding during commissioning

If a BA574G fails to function as a Clock during commissioning the following procedure should be followed:

| Symptom | Cause | Check: |
|---|--|---|
| No display | No power supply, or incorrect wiring. Note: Terminals 2 & RS2 are interconnected within the instrument. | That there is between 10 and 30V on terminals 1 & 2 with terminal 1 positive. That there are no connections to terminals 3, 4, 5, 6, 7, 8, 9 & 10. |
| Configuration menu does not correspond with the Clock section of this manual. | BA574G is configured as a Timer. | That $F_{un}E_t$ on in configuration menu is set to $EL_{o}E$ not to EL_{RP5E} . |
| Clock display flashes $00:00:00$ | Local time has not been entered. | Enter the local time in the $5E_t$ function of the instrument configuration menu. |
| Control output(s) do not function. | Control outputs have not been enabled. | Enable Control Output(s) in the configuration menu. |
| Clock will not start | Reset terminals RS1 and RS2 are connected together and the Clock is continuously synchronising. | If reset annunciator on display is activated, disconnect connection between RS1 and RS2. |
| Unable to enter configuration menu. | Incorrect security code | That the correct security code is being used. Contact BEKA if the code is lost. |

10.2 Fault finding after commissioning

ENSURE PLANT SAFETY BEFORE STARTING MAINTENANCE

If a BA574G fails after it has been functioning correctly as a Clock, the following table may help to identify the cause of the failure.

| Symptom | Cause | Check: |
|-------------------------------------|---|---|
| No display | No power supply | That there is between 10 and 30V on terminals 1 & 2 with terminal 1 positive. |
| Clock display flashes $00:00:00$ | Instrument power supply has been interrupted and local time has been lost. | Enter the local time in the $5E_t$ function of the instrument configuration menu. |
| Control output(s) do not function. | Control outputs have not been enabled. | Enable Control Output(s) in the configuration menu. |
| Clock will not start | Reset terminals RS1 and RS2 are connected together and the Clock is continuously synchronising. | If reset annunciator on display is activated, if it is disconnect connection between RS1 and RS2. |
| Unable to enter configuration menu. | Incorrect security code | That the correct security code is being used. Contact BEKA if the code is lost. |

If this procedure does not reveal the cause of the fault, it is recommended that the instrument is replaced.

10.3 Servicing

We recommend that faulty BA574G Clocks are returned to BEKA associates or to your local BEKA agent for repair. It is helpful if a brief description of the fault symptoms is provided.

10.4 Routine maintenance

The mechanical and electrical condition of the instrument should be regularly checked. Inspection frequency should be chosen to suit the environmental conditions.

10.5 Guarantee

Instruments which fail within the guarantee period should be returned to BEKA associates or our local agent. It is helpful if a brief description of the fault symptoms is provided.

10.6 Customer comments

BEKA is always pleased to receive comments from customers about our products and services. All communications are acknowledged and whenever possible, suggestions are implemented.