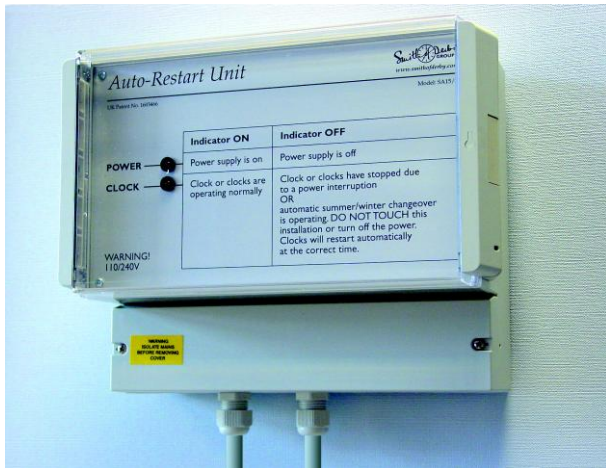


INSTALLATION & OPERATING INSTRUCTIONS



PATENTED

UK patent no. 1603466

SA15/8 AUTO RESTART UNIT

110-120V 50/60Hz

200-240V 50/60Hz

Issue date: 26 September 2008

GENERAL DESCRIPTION OF OPERATION

The Automatic Restart Unit (ARU) is specifically designed to control up to four small synchronous clock motors. No other electrical device or equipment should ever be connected to the clock output connectors. Power supply requirements are 110-120 or 200-240 volts, 50/60Hz at 5 amps.

CLOCK OPERATION

The unit will monitor and control the mains power to any suitable synchronous clock having a power consumption of less than 10 watts. If a power failure occurs for longer than 10 seconds then the clock(s) will automatically be stopped for exactly 12 hours, re-starting later at the correct time. If the mains power is still off then the unit will continue timing further periods until the mains power is reinstated, whereupon the clock(s) will restart at the correct time.

TIME AND DATE

The clock time and date are pre-programmed at the factory and under normal circumstances should not need resetting. However, if the need arises, please follow the instructions on page 3 to reset the time and date

DAYLIGHT SAVING TIME

The Auto Restart Unit is programmed to adjust the clock(s) automatically for each summer/winter (or daylight saving) alteration.

The unit is set to the correct summer/winter or daylight saving time formula for the location, and no attention to the unit or clock(s) should be necessary. If the time formula is amended in the future, follow the instructions on page 3 to re-set the changeover dates.

COLOURED INDICATORS

There are no customer controls on the unit as all operations are automatically controlled. There are two coloured indicators on the front panel to show the current status of the

unit and the meaning of these lights is described below and on the front panel.

The red "Power Indicator" will light to show that mains power is connected to the unit.

The green "Clock Indicator" lights only when power is actually being supplied to the clock(s).

When the clock(s) are operating normally both indicators will be on.

If the green indicator is off then the clocks will not be operating. This will be because of either a mains power failure or automatic summer/winter (daylight saving) correction. **DO NOT TOUCH THE AUTO RESTART UNIT AS THE CLOCK(S) WILL AUTOMATICALLY RESTART AT THE CORRECT TIME.**

INSTALLATION

The unit must be installed by competent personnel in order that guarantees are not invalidated. The unit is for internal use only and must not be installed where it will be subjected to great temperature variation or dampness, such as exposed walls, window openings etc; or direct sunlight.

WALL FIXING HOLES

The case has three mounting holes and should be fixed with three No: 8 round head screws. The top fixing hole is a "keyhole" and the screw for this hole should be fitted first to enable the unit to be correctly positioned. The two lower fixing holes are accessed by removing the lower panel.

ELECTRICAL REQUIREMENTS AND WIRING

The unit must be connected to the mains power supply via a fused spur unit conforming to current electrical regulations and should be fused at a maximum of 5 amps. The wiring must be exactly as shown in the wiring diagram on page 4.

INITIAL CONNECTION

- 1 Connect the incoming Mains power supply to the left hand connectors, ensuring a good earth connection to the earth/ground block.
- 2 Connect the clock motor(s) to the outlet connectors and the earth/ground block.
- 3 Ensure that the corrector switch F (see picture below) for each clock connected is in the "on" position and then replace the lower panel.
- 4 Turn on the external Mains power switch.
- 5 The red indicator will light if power is reaching the unit. If the clock(s) hands have been pre-set to 12 o'clock then no further action is necessary as the Auto Restart will start the clock(s) at either 12 noon or 12 midnight, whichever is the closest to the actual time.
- 6 If the clock(s) have not been set to 12 o'clock and/or testing of the system is required then follow the Complete Test Sequence which follows.

INITIAL START UP AND TESTING

This sequence can be used to check the operation of the Auto Restart Unit (ARU) and the clock hands during the installation, or if the clock hands are set to a time other than 12 o'clock, or if a problem has arisen.

When power is first applied to the ARU, the red light will show on the front panel indicating mains power is reaching the unit. If the red light is off, check all connections and using a proper electrical test meter check the power input terminals to prove that incoming power is present. If power is present, remove the four screws from the metal front panel and place the panel on top of the case. The wires are long enough to reach without disconnecting.

If the internal Liquid Crystal Display (LCD) is showing information, then it is most likely that the plug connecting the front panel to the printed circuit board is loose. Check by pressing the connector on the board.

If the LCD (E) is blank then check the left hand 160ma fuse (B) and the 160ma DC fuse (C), replace if necessary. If both fuses are intact, contact the electronics service department.

INITIAL START SEQUENCE FOR THE CLOCK HANDS

The top line of the LCD should be showing the current time of day and the lower line should say 'stopped @ 12:00'. This indicates that the ARU internal clock was stopped at 12 o'clock and will if left unattended with mains power connected start the clock hands at the next occurrence of 12:00 real time. i.e. at 12:00 or 00:00hrs.

If the ARU is running a clock which requires a 24 hour cycle (i.e. with night silencing), then switch 3 (D) should be put in the down position. "24 hr" is then displayed in the lower right of the liquid crystal display (instead of "12hr").

If it is required to prove the operation of the clock movement before leaving, press the blue push button marked 'START' (H). This will immediately start the clock hands and the green indicator on the front panel will light. The LCD will change to show the time and date, and the word 'running' will appear. If the clock hands are currently showing the correct time then the front panel may be replaced. The electrical installation is complete.

If the hands are not showing the correct time it may be possible to make manual adjustments. See data sheet provided with the clock movement before attempting this. Alternatively, the ARU may be programmed to start the clock hands at the

time currently showing on the dial.

STARTING THE CLOCK HANDS AT A PRE-DETERMINED TIME

This allows the restarting of a stopped clock, or the resetting of a clock that is currently running but showing the wrong time.

NOTE: it is important that the internal digital clock is at the correct time before using this function. See SETTING THE DISPLAY TIME AND DATE.

Note the exact time showing on the clock hands, and then use the following procedure:

- 1 Remove the four screws from the metal front panel. Place the panel on the top of the case.
- 2 The LCD will be showing either 'running' or 'stopped @'
- 3 Press the blue 'START' button.
- 4 Press the 'STOP' button. The LCD will show the current time and date, and 'stopped' on the lower line.
- 5 Press the 'START @' button. The LCD changes to 'stopped @' with the left hand hour digit flashing.
- 6 Press the 'ADVANCE' button to increment the hour digits to match the hours showing on the clock hands. Each press will advance the display by one hour.
NOTE: on 12-24 hour mode: The difference between 12 and 24 hour mode when using a start time is best illustrated by example:
12 hour mode: if a START AT time of 3 o'clock is entered, the clock being controlled will start at 03:00 or 15:00, whichever occurs first.
24 hour mode: if a START AT time of 3 o'clock is entered, the clock being controlled will start at 03:00 even if 15:00 occurs first.
- 7 Press the 'NEXT' button. The left hand minute digit will now flash.
- 8 Press the 'ADVANCE' button to increment the minute digits to the exact minutes showing on the clock hands; again each press will increment the display by one minute.
- 9 Press the 'NEXT' button. The display should now show the same time as the clock hands.
- 10 The front panel can now be refitted. Check that the clock corrector switches are turned on and replace the lower case panel.

SETTING THE DISPLAY TIME AND DATE

The unit is supplied with the date and time preset at the factory. If it needs to be reset for any reason, please use the following instructions:

The top line of the Auto Restart Unit Display shows from the left the current time, then a letter to show whether the automatic daylight correction system is in (s)ummer, (w)inter or (o)ff mode and then the date (day, month and year). The time and date can be adjusted with either the clocks running or manually stopped. To carry out adjustment firstly remove the four screws from the front panel. Place the front panel on top of the case.

- 1 Press the Clock button. The display shows a flashing block over the hour digit. If the hours do not require adjustment, go straight to no. 3. To adjust the hours, go to no. 2.
- 2 Press the Advance button repeatedly to advance the hours until the correct hour digits are displayed.

- 3 Press Next. The flashing block moves over the minute digit. If the minutes do not require adjustment, go straight to no. 5. To adjust the minutes, go to no. 4.
- 4 Press the Advance button repeatedly to advance the minutes until the correct digits are displayed. (Remember to add a couple of minutes).
- 5 Press Next. The flashing block moves over the year digit. If the years do not require adjustment, go straight to no. 7. To adjust the years, go to no. 6.
- 6 Press the Advance button repeatedly to advance the years until the correct digits are displayed.
- 7 Press Next. The flashing block moves over the month digit. If the months do not require adjustment, go straight to no. 9. To adjust the months, go to no. 8.
- 8 Press the Advance button repeatedly to advance the months until the correct digits are displayed.
- 9 Press Next. The flashing block moves over the date digit. If this does not require adjustment, go straight to no. 11. To adjust the date, go to no. 10.
- 10 Press the Advance button repeatedly to advance the date until the correct digits are displayed.
- 11 The display should now show a time in advance of real time (by the couple of minutes added). When real time reaches the time displayed press the Next button. This starts the display timing.
- 12 Refit the front panel.

RESETTING THE DAYLIGHT SAVING TIME CHANGEOVER DATES

- 1 Power-up the ARU.
- 2 Remove the upper panel and either rest the panel with the LEDs connected or unclip the plug on the circuit board.
- 3 On the bottom left of the display the word 'Running' or 'Stopped' must be showing (if 'Stopped @' is showing, press the START button followed by STOP if the clock is required to be stopped).
- 4 Press the push button AUX. For a short while display shows:



Display then shows last data entered with the S flashing. (FOR = forward)



- 5 Press ADVANCE to select which Sunday of the month the change is to take place, i.e. 1st, 2nd, 3rd, 4th or last (this will include the 5th Sunday).
- 6 Press NEXT the M will then flash.
- 7 Press ADVANCE to select the month of the first change of the year: Jan Feb Mar etc.
- 8 Press NEXT the / will then flash.
- 9 Press ADVANCE to select FORward or BAK (backward) (this will be FORward in the Northern Hemisphere).
- 10 Press NEXT.

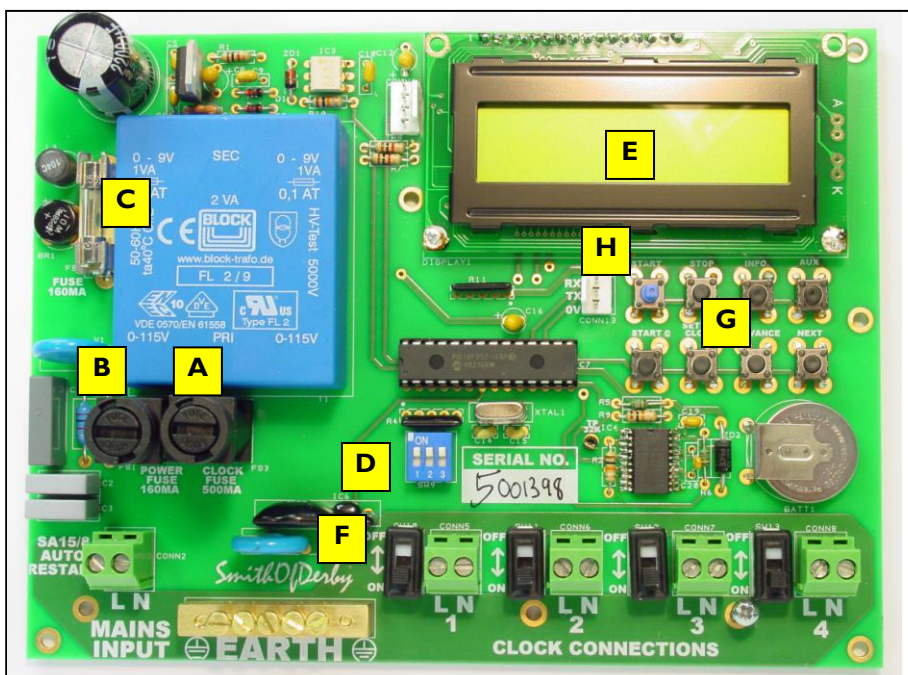
Display will read:



Then change to



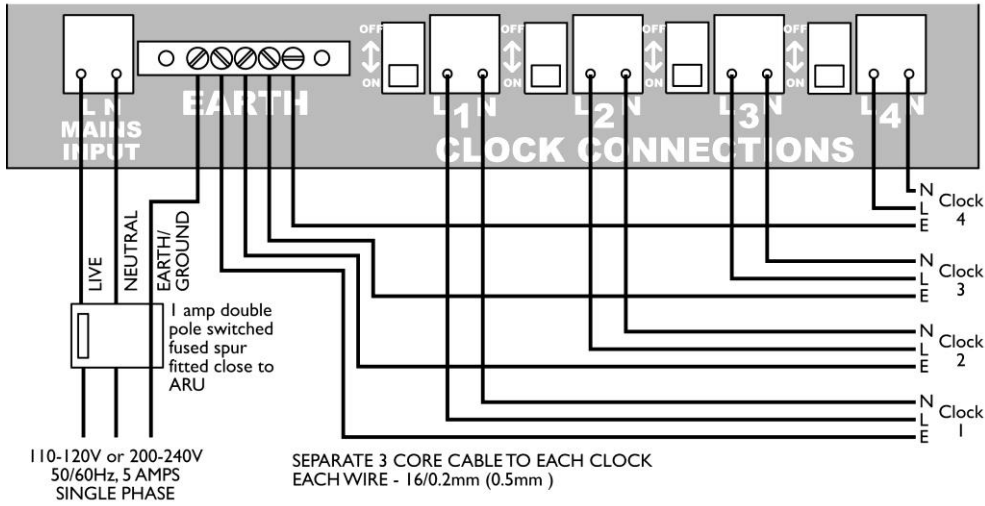
- 11 Use ADVANCE to select the Sunday as before.
 - 12 Press NEXT.
 - 13 Press ADVANCE to go to the correct month.
 - 14 If FORward was selected on the previous screen the BAK will now be selected and will be un-changeable.
 - 15 Once NEXT has been pressed for the month, the ARU is set to operate as intended.
- In certain circumstances when there is a conflict between the previous clock change date and the new clock change date, the time on the display could automatically become an hour fast or slow to the current time. Therefore check the digital clock is still correct.
- 16 Replace the front panel and the unit should need no more attention.



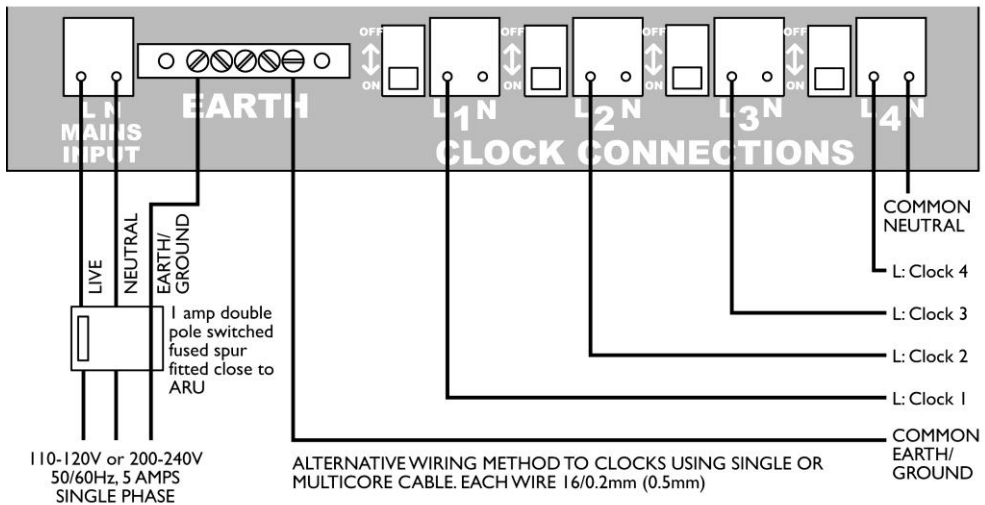
Key to picture

- A 500ma clock fuse
- B 160ma electronics fuse
- C 160ma 5V DC fuse
- D Function switches (factory set):

ON	OFF
1 Daylight saving on	Daylight saving off
2 RUN	TEST
3 12 hour	24 hour
- E Liquid crystal display (LCD)
- F Clock corrector switches
- G Push buttons
- H Start dials button



NOTE: DO NOT COMMON CLOCK WIRING WITH OTHER CIRCUITS



NOTE: DO NOT COMMON CLOCK WIRING WITH OTHER CIRCUITS

SA15/7 AUTO RESTART WIRING DETAILS

DN234: August 2008

CONTACT DETAILS

For your own records, please complete the following and keep these instructions on file or adjacent to the clock.

Person on-site in charge of this clock:

Name:

Position:

Address/location:

Tel. no:

Mobile:

Email:



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