

OPERATION MANUAL



C100 SERIES CONTROLLERS

Programmer for Bells and Smith of Derby Bell Sound Systems installed between 1988 and 2000

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CONTROL SYSTEM

CLOCK SET
NIGHT SILENCER
CLOCK SILENT
MANUAL
FUNCTION SET
SPEED SET



ANGELUS
TOLLER
FUNERAL
TUNE PLAYER
AUX.1
AUX.2

SUN MON TUE WED THU FRI SAT

ANGELUS TOLL FUNERAL S. BLOW ENTER
A **B** **C** **D** **E**

1 **2** **3** **4** **5**
SET INSERT LIST PROG SPEED
6 **7** **8** **9** **0**
SILENT T.PLAYER AUX.1 AUX.2 DELETE



1 Introduction

The Smith of Derby C100 series controllers provide timed programmed control for bell ringing, clock chiming, hour striking and tune playing. It interfaces with electro-magnetic and electro-mechanical bell ringing equipment or the Smith of Derby Bell Sound System. It will also provide programmed control for other timed event features such as animated automata clocks.

C100 series controllers are normally factory set with pre-ordered programmes for the functions they control, ranging from the control of 1 bell upwards.

	C110	C120	C130	C140	C150	C170
Angelus tolling	●	●	●	●	●	
Continuous tolling	●	●	●	●	●	
Funeral tolling	●	●	●	●	●	
Single blow	●	●	●	●	●	
Hour strike		●	●	●	●	●
Automatic night silencing		●	●	●	●	●
Ding-dong quarter chimes			●	●	●	●
Westminster quarter chimes			●	●	●	●
Special chimes			●	●	●	
Automatic tune playing				●	●	
Automaton control					●	
Electrical conversion of weight driven clocks						●

FACTORY SETTINGS

This publication covers the most common functions of C100 series units manufactured from 1988 to 2000. Please note that there are slight variances in some units depending on the date of build and any custom programming ordered at the time.

C100 controllers are supplied with programming either:

Factory set and fixed

Or

Factory set and user programmable.

If you wish to add, remove or amend programmes, your C100 must be the latter. To determine which configuration you have, please try adding a programme. See chapter 3 Programming. If the system will allow you to set a programme, then you have the latter. If the system will not allow you to set a programme, please contact Smith of Derby for assistance.

On all systems, manual override is provided for non-programmed events or silencing requirements.

Please refer to the picture on page 2 if you are not reading these instructions at the location of your C100 controller.

2 Time Setting

When entering this SET UP function the Controller real time clock will stop, therefore, it is necessary to set in a time in advance of real time so that when the adjustments are finished the display clock can be started at the exact time set in. The seconds are automatically zeroed.

INITIAL TIME SETTING



- 1 Turn the **Security Key Switch** to the 'SET' position.

The CLOCK SET light shows.

- 2 Enter **correct time** plus (say) 2 minutes, in 24 hour mode, for example press keys **1 – 8 – 2 – 6** if real time is 18.24.

If you make a mistake when entering the time, continue pressing any number until the display clears, then enter the correct number.

- 3 Press **ENTER**

- 4 Press a **button from 1 to 7** to select the day number: 1 = Sunday through to 7 = Saturday.

If you make a mistake when entering the day, press the correct number twice.

- 5 Press **ENTER**

- 6 Enter **day and month** in four digit mode, for example press keys **0 – 9 – 0 – 3** if the actual date is 9th March.

- 7 Press **ENTER**

- 8 Enter **year** in four digit mode, for example press keys **2 – 0 – 1 – 1** if the actual date is 9th March 2011.

- 9 Press **ENTER**

The display will show the time and the day you have entered.

- 10 Return the **Security Key Switch** to the 'AUTO' position

- 11 When real time reaches the time shown, **press ENTER**.

The clock is now correctly set and the colon between the hour and minutes will flash at a 1-second rate.

RESETTING THE CLOCK

Turn the **Security Key Switch** to the 'SET' position.

Press **SET**.

The CLOCK SET light shows.

Follow the instructions 2 to 11 above.

3 Programming

The C100 Series Controller can be programmed to operate a range of functions throughout a 7-day period on any or all of 9 separate programmes.

The programme in operation is indicated by the small number to the right of the main display. Initially programme 1 will be selected.

Programmes are easily set in to the controller and individual times can be added or deleted from an existing programme by following the relevant instructions. Up to 200 entries can be accommodated.

The programming sequence is basically the same for each function.

INITIAL PROGRAMME ENTRIES

- 1 **Turn the Security Key Switch** to the 'SET' position.
- 2 **If you wish to clear the entire user programmed memory:** press keys **8 – 9 – ENTER**. Do this **ONLY** if you are starting to programme as the whole memory will be cleared and the controller will revert to factory set programmes only.
- 3 **Press INSERT – key 3**
- 4 **Press a button from 1 to 8** to select the day number of the required operation:
1 = Sunday through to 7 = Saturday. 8 = every day. (NOTE, you cannot choose some individual days, only one day of the week or every day.)
If you make a mistake when entering the day, press the correct number twice.
- 5 **Press ENTER**
- 6 **Enter the time** the function is to operate, in 24 hour mode, for example press keys **0 – 7 – 4 – 5** if you want the function to begin at 7.45am.
If you make a mistake when entering the time, continue pressing **0** until the display clears, then enter the correct time.
- 7 **Press ENTER**
- 8 **Enter the number/letter** of the required function. Some functions require a number of entries: 2-3 button presses.

ANGELUS	A
TOLLING	B
NIGHT SILENCER ON	6
NIGHT SILENCER OFF	6 then 0
TUNE PLAYER	7 then required bank and tune number 0 to 9 and A to D , refer to your tune list.
AUX O/P 1 ON	8
AUX O/P 1 OFF	8 then 0
- 9 If you have no more operations to enter, you must now **turn the Security Key Switch** to the 'AUTO' position.
- 10 **Press ENTER (twice when entering tunes).**
If the key was not turned back to AUTO, the controller will expect another operation entry and you must follow steps 4 to 10 again. This entry can then be deleted.

4 Night Silencing

The automatic silencer must be programmed with the required start and end times of the silence period. A typical silence period would be last strike at 23.00 hours, then silent until 07.15 the following morning.

The controller is therefore programmed with a start time after the last strike and an end time before the first chime, i.e. 23.05 and 07.10

INITIAL NIGHT SILENCING ENTRIES

- 1 **Turn the Security Key Switch** to the 'SET' position.
- 2 **Press INSERT – key 2**
- 3 **Press a button from 1 to 8** to select the day number of the silence start:
1 = Sunday through to 7 = Saturday. 8 = every day. (NOTE, you cannot choose some individual days, only one day of the week or every day.)
If you make a mistake when entering the day, press the correct number twice.
- 4 **Press ENTER**
- 5 **Enter the time** the night silence is to start, in 24 hour mode, for example press keys **2 – 3 – 0 – 5** if you want the silence to begin after 11.00pm.
If you make a mistake when entering the time, continue pressing any number until the display clears, then enter the correct time.
- 6 **Press ENTER**
- 7 **Press SILENT**
The night silencer light will show.
- 8 **Press ENTER**
You have input the START time of the silence period. Continue to set the END time.
- 9 **Press a button from 1 to 7** to select the day number of the silence end:
1 = Sunday through to 7 = Saturday. 8 = every day.
If you make a mistake when entering the day, press the correct number twice.
- 10 **Press ENTER**
The display will blank.
- 11 **Enter the time** the night silence is to end, in 24 hour mode, for example press keys **0 – 7 – 1 – 0** if you want the silence to end before 7.15am.
If you make a mistake when entering the time, continue pressing any number until the display clears, then enter the correct time.
- 12 **Press ENTER**
- 13 **Press keys 6 – 0**
The night silencer light will go off.
- 14 **Return the Security Key Switch** to the 'AUTO' position
- 15 **Press ENTER**
The display will revert to real time.

5 Selecting Alternative Programmes

The C100 Series Controller has the facility to retain nine individual programmes, all of which can be easily selected by the operator.

The programme currently selected is indicated by the small number to the right of the main digital display. If the number showing is not a specified programme, then the controller will not operate any automatic programmed instructions.

When only one programme is requested, this will always be stored in programme 1.

This function is useful when the controller automatic programme needs to be silenced, as selecting a BLANK programme number will result in no automatic functions.

PROGRAMME SELECTION

- 1 Turn the **Security Key Switch** to the 'SET' position.
- 2 **press key 4 (PROG)**
- 3 **press key 4 (PROG)** and observe the small number on the display which will advance each time the button is pressed.
- 4 When the required programme number is reached **return the Security Key Switch** to the 'AUTO' position.
The display will revert to real time.
The controller will then follow the preset instructions for that programme number.

6 Deleting Programme Entries

- 1 Turn the **Security Key Switch** to the 'SET' position.
- 2 **press key 3 (LIST)**
The display will show the details of the first programmed operation in the programme table.
- 3 If this entry is to be deleted, go to step 5
- 4 **press key 3 (LIST)**
The display will show the details of the second programmed operation in the programme table.
Repeat step 4 until the entry you wish to delete is shown.
- 5 **press key 0 (DELETE)**
The selected entry will disappear and the next entry in the table will show.
If more deletions are to be made, **repeat step 4** as required.
If no more deletions are to be made, **press ENTER.**
- 6 **Return the Security Key Switch** to the 'AUTO' position

CLEARING THE MEMORY

If you wish to clear the entire user programmed memory:

- 1 Turn the **Security Key Switch** to the 'SET' position
- 2 **press keys 8 – 9 – ENTER.** Do this ONLY if you require the whole memory to be cleared as the controller will revert to factory set programmes only.

7 Checking the Programme Entry Table

- 1 Turn the **Security Key Switch** to the 'SET' position.
- 2 **press key 3 (LIST)**
The display will show the details of the first programmed operation in the programme table.
- 3 **press key 3 (LIST)**
The display will show the details of the second programmed operation in the programme table.
- 4 **Repeat step 3** until the check is completed
OR
Press ENTER to terminate the listing.
- 5 **Return the Security Key Switch** to the 'AUTO' position

8 Adjusting Hour Strike/Quarter Chime Speeds

All bell function speeds on the C100 Series Controller are represented by a single number using a scale of 0 (fastest) to 9 (slowest).

- 1 **Turn the Security Key Switch** to the 'SET' position.

The Function Set light shows.

- 2 **press key 5 (SPEED)**

The Speed Set light shows.

- 3 **press key 9 (AUX)**

The display will now show the quarter chime speed currently set into the memory.

If alteration of chimes speed is required, **press a lower number** to speed up the chimes **or a higher number** to slow them down.

If the chimes speed is correct or chimes are not incorporated in your system, **go to step 4.**

- 4 **press ENTER**

The display will now show the hour strike speed currently set into the memory.

If alteration of strike speed is required, **press a lower number** to speed up the strikes **or a higher number** to slow them down.

If the strike speed is correct, **go to step 5.**

- 5 **press ENTER**

The C100 controller will now automatically demonstrate the chimes and strike speed.

NOTE: on some early models, this automatic demonstration is not included. If you cannot hear the bell strike speed being demonstrated, please turn the key switch to **MANUAL** and press key **9 (AUX)**. The C100 controller will now demonstrate the chimes and 3 strikes at the speed currently set into the memory.

- 6 **Turn the key switch to AUTO** if you are finished or **SET** if you wish to make further adjustments.

- 7 **If further adjustments are required, follow steps 2 to 5 again.**

- 8 **Return the Security Key Switch** to the 'AUTO' position

9 Adjusting Tolling and Angelus Speeds

All bell function speeds on the C100 Series Controller are represented by a single number using a scale of 0 (fastest) to 9 (slowest).

- 1 Turn the **Security Key Switch** to the 'SET' position.

The Function Set light shows.

- 2 **press key 5 (SPEED)**

The Speed Set light shows.

- 3 **press key for the function to be altered:**

A ANGELUS

B TOLLING

C FUNERAL TOLLING

The display will now speed currently set into the memory for the selected function.

If alteration of speed is required, **press a lower number** to speed up the blows on the bell **or a higher number** to slow them down.

When the speed is correct **go to step 4**

- 4 **press ENTER**

To hear the bell speed you have just set, please turn the key switch to **MANUAL** and press the relevant key for the function. The C100 controller will now demonstrate the tolling at the speed currently set into the memory. Turn the key switch to AUTO to end.

- 6 Turn the **key switch to AUTO** if you are finished or leave in **SET** if you wish to make further adjustments.

10 Adjusting Tune Playing Speeds

For C100 series controllers with tune playing programming, each tune has a two digit number. To select an individual tune you need to choose the first (tens) digit first, which will take you to that set of 10 tunes. You then select the second (units) digit which will take you to the individual tune.

If you require a tune list compatible with your system, please contact Smith of Derby.

All bell tune playing speeds on the C100 Series Controller are represented by a single number using a scale of 0 (fastest) to 9 (slowest). All tunes can be individually speed adjusted.

- 1 Turn the Security Key Switch** to the 'SET' position.

The Function Set light shows.

- 2 press key 5 (SPEED)**

The Speed Set light shows.

- 3 press key 7 (TUNE PLAYER)**

- 4 Press the first digit of the tune number.** Refer to your printed list of tunes to select the tune you wish to adjust.

The small number to the right of the display will show the digit. For tunes numbered 00 to 09, press 0, for tunes numbered 10 to 19, press 1, etc.

- 5 Press the second digit of the tune number.**

The display now shows the second digit of the tune number to the LEFT, and the speed (on a scale of 0, fastest, to 9, slowest) on the right.

- 6 To adjust the speed, press the number key relevant to the speed you require:** lower number for faster, higher number for slower.

The display will now show the tune speed now set into the memory.

- 7 press ENTER**

The display now shows the next tune number. For example, if you were adjusting tune 12, the display will now show 3, meaning 13. You now have the option of adjusting tune 13, or continue to press ENTER to scroll up through the tunes until the display blanks out after 9 (meaning 19).

- 8 Turn the key switch to AUTO** if you are finished.

To hear the tune speed you have just set, please turn the key switch to **MANUAL** and follow the instructions under MANUAL TUNE PLAYING in chapter 11.

- 9 If you wish to adjust other tunes** turn the Security Key Switch to the 'SET' position again and follow the same instructions 2 to 8 above.

11 Manual Override Operation

Manual override enables you to take complete control of your C100 series controller. You can select any of the tolling, chiming or tune functions and run the programme. You can also temporarily silence the system manually.

Turn the **Security Key Switch** to the 'MANUAL' position.

MANUAL ANGELUS & TOLLING

1 **press the key for the action you require:**

Key	Will play	To end
A ANGELUS	Standard Angelus sequence (3 – 3 – 3 – 9)	Turn key to AUTO
B TOLLING	Tolling set at the programmed speed, i.e. 20 per minute	
C FUNERAL TOLLING	Slow tolling at the programmed speed, i.e. 1 per 7 – 10 seconds	
D SINGLE BLOW	Each press will play one single blow	

Where a number of bells are incorporated in a system, any of the five lowest note (largest) bells can be selected to operate on the above bell functions as follows:

- 1 First, press a key from 1 to 5.
- 2 Key 5 represents the LOWEST of the 5 lowest bell notes and 1 the HIGHEST.
- 3 Press the bell function key.

NOTE: The bell note you have selected will now be the default note for that manual operation, until you select another in the range.

MANUAL TUNE PLAYING

1 **press key 7 (TUNE PLAYER)**

2 Press the first digit of the tune number. Refer to your printed list of tunes to select the tune you require.

The small number to the right of the display will show the digit. For tunes numbered 00 to 09, press 0, for tunes numbered 10 to 19, press 1, etc.

3 Press the second digit of the tune number.

The display now shows the second digit of the tune number and the tune will play.

4 **press key 0** to end playing the tune.

SILENCING

1 **press key 6 (CLOCK SILENT ON/OFF)**

Press once for ON and once for OFF. The CLOCK SILENCE light will show.

When hour striking, quarter chiming or other timed bell functions are included in the system, pressing the clock silence button will completely silence the system.

AUXILIARY OUTPUT

1 **press key 8 (AUX 1) or key 9 (AUX 2)**

Press once for ON and once for OFF. The relevant AUX 1 or AUX 2 light will show.

This function is used if your C100 series controller is programmed to operate other installations such as lighting or heating, etc.

When you have finished with manual operation, **turn the Security Key Switch** to the 'AUTO' position.

12 Fault Finding

Before contacting Smith of Derby for assistance, please carry out the following checks.

SAFETY NOTE: turn OFF power supplies before checking electrical connections. TAKE CARE when testing the system with cabinet doors open whilst “live”.

No audible sound

- 1 Check that there is power to C100 controller and other equipment such as bell/amplifier cabinet, electro-magnetic or electro-mechanical hammers or other tolling machinery. If necessary, remove and test the fuses in the switched fused spurs. If any have “blown”, there may be a serious electrical fault. Please contact Smith of Derby before proceeding further.
- 2 Check the display on the C100 controller. It should be lit, showing the correct time of day and should change when the keyswitch is turned to MANUAL or SET. Try performing a manual “single blow” (see chapter 10 Manual Override Operation). If the C100 controller appears to be functioning correctly but there is no bell sound or operation, suspect the bell/amplifier cabinet, wiring connections or other equipment.
- 3 If your system is an electronic bell sound system, open the door of the bell/amplifier cabinet and have an assistant turn the keyswitch on the C100 controller to MANUAL. There should be an audible click from a relay in the bell amplifier. If not, suspect the C100 controller.
- 3 Check all wiring connections in C100 controller, bell/amplifier cabinet and junctions boxes, also all cable runs for possible damage due to water ingress, vandalism, decay, infestation or vermin attack.
- 4 Check that speakers and/or all other pieces of equipment are secure, connected and free from any obvious damage as above.

Sound volume level low: Bell Sound System

- 1 Check that the volume control on the circuit board in the bell/amplifier cabinet has not been turned down.
- 2 Check that all speakers are functioning correctly. Turn off the power supply to the bell/amplifier and disconnect all speakers except one in turn, testing the system each time using the bell test pushbutton (see chapter 9 Set-up and Commissioning). If the system gives no sound on just one particular speaker, suspect that speaker or its wiring connections.
- 3 Check that all speakers are secure, have not moved, have no obstructions or infestations, and that no alterations to the building or sound outlet louvres are causing the problem.

One or some bell notes not sounding: Bell Sound System

- 1 Follow the instructions in the chapter Manual Override Operation and check if possible that the same note/s are not sounding regardless of the tune or notes being played. If the same bell fails to sound regardless of the tune or sequence, suspect the bell/amplifier cabinet. If all the bells seem to be working but not necessarily at the correct times, suspect the C100 series controller and contact Smith of Derby.
- 2 Turn off the power supply to the bell/amplifier cabinet and check that all the individual PCBs are secure. Your system has one separate PCB for each bell note, all slotted into vertical connector slots on the main PCB. Carefully remove and re-seat any or all if you suspect that they have become loose. If this does not rectify the problem, suspect the bell PCB components and contact Smith of Derby

NOTE: on most C100 series installations, pressing ENTER will test all the bells in sequence, high to low.

Sound level low or incorrect, or some bells not sounding: bell hammers

- 1 Check that the relevant pieces of equipment, including units fitted within the bells, are secure.
- 2 Check that bell hammers can move freely, strike the bell on the sound bow, and that the “check” springs (on which the hammer arms rest) are holding the hammer clear of the bell after striking.
- 4 Check that all bell pull wires where fitted are in place, are not damaged or corroded and are able to operate freely through all right angle levers, etc.
- 5 Check that there are no obstructions or infestations which might affect the installation, and that no alterations to the building or sound outlet louvres are causing the problem.

13 Maintenance

Your Smith of Derby Bell sound system is designed for a long and trouble free life. The only maintenance required is to ensure that all units are kept clean and dry, and that all fixings of speakers and equipment boxes remain secure.

If any malfunctioning of the electrical equipment arises, please contact Smith of Derby. Please have your site name details to hand.

Repair of any damage to equipment or loss of items such as a remote control unit must also be through Smith of Derby.

Regardless of the likelihood of access by unauthorised persons, please DO NOT leave keys in the C100 controller or bell/amplifier cabinet door.



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