



Operating manual

June 2009

Overview

This system was originally conceived to be an aid for visually challenged organists on a practise organ. It recites any stop or combination change, piston pressed or channel number displayed.

Samples can be recorded using the supplied microphone. There are some default sounds supplied with each system using my voice (although you'll quickly want to replace these with *your* voice samples!!!)

It is something of an art to record voice samples so they appear to "butt up" to each other, with no obvious glitches or robot type sequences! This art will be dealt with in greater detail later.

The system is designed to be as easy to use as possible, with only two buttons and the volume control to deal with, unless you intend to use the more advanced *set-up* features (that's why there are five buttons in total).

The system (in the case of St. Giles', Cripplegate) is controlled from a custom made oak unit, stained and polished to match the rest of the organ. It plugs in to a socket located on the bass end of the console, below the key-bench. It is desirable to plug or unplug the unit with the organ turned off to avoid potential damage to the system.

The control unit has a speaker on its under-side, from where the audible information emanates. There is provision for headphones, with a 3.5mm socket at the bottom of the unit, for more private interaction with the system. This cuts off the speaker.

There is an *alphanumeric* display on the control unit to aid the input of data. It's also used to set the system up in some of the more technical functions.

The system is supplied with a microphone for recording speech patterns with, also a set of headphones to use for personal listening.

A slightly more technical bit

The present system uses two digital sampling devices to capture the sounds. The devices used have an absolute maximum time of 16 minutes each (potentially 32 minutes for both). The samples are stored digitally; this means there are no mechanical moving parts involved. It can, at its most basic level be looked on as a digital *tape recorder*.

In this particular setup, with the current sampling rate, a time of 16 minutes is achievable from the two devices used. This is apportioned into a maximum of 2 second periods for each sample (although the samples don't necessarily have to be that long, the system allocates that time anyway). This allows a total of 434 samples to be recorded. The makers of the sound recording devices state that they can retain

recorded samples for around 100 years! Although this may seem a rather unsupported claim, the theory must hold true.

The physical components (for the organ builder)

At its most basic level, there are two component parts for this system. The first part is the card(s) to *grab* all the inputs. The second part is the processor board, which connects to all the other boards, and controls the system as a whole.

Each input card can accept 64 inputs, then passes its data to the processor card. The current design limit is for 384 inputs, but the potential is there to increase it to 1024 inputs, and beyond if necessary in the future.

In its current format, the system's maximum capability is achieved by having three pairs of 64 input cards. In any future developments, these features may be expanded accordingly.

Recording samples

There is a more comprehensive description of how to record samples later, but the following is a general "walk through" on the topic.

Using this equipment, you'll soon get fed up with the default samples. The good news here, is that these samples can be readily changed. The procedure for doing this might seem a bit complicated at first, but it's organised to be as easy as possible with the interface at hand (the stops, pistons etc.) There's no computer keyboard here to do this task!

The most basic sample recording is for each stop. This is simple to do, and just relies on the particular stop to be sampled being drawn. A single stop sample will only be recorded if there is only one stop out, else the recording operation will not happen, and there will be a "more than one stop drawn" prompt.

With the appropriate stop drawn, press the record button and keep it held while speaking into the microphone. Every time that stop is drawn, the recorded sample will be played. If you're not happy with the sample for a certain stop, you can re-record the sample in the manner described above. The following text describes the more awkward task of recording several samples that need to be played together.

Recording *compound* samples (ie. those that have several different samples stitched together) can be quite an art to make the total of all the samples "seamless". A typical example using this equipment would be to say something like "Great Open Diapason on". The "on" component is a separately recorded sample, but is "butted up" to the "Great Open Diapason" sample. The original "Great Open Diapason" sample would need to be recorded with the voice intonation going up at the end. The "on" sample

would have to finish with a downward inflection of the recorded sample to indicate the end of the phrase.

For the most effective *compound* samples to be recorded there are a few basic rules to bear in mind. These will be dealt with in greater detail later.

British people reading this may remember the early days of the automated “directory enquiries” facility provided by BT. Some of the assembled samples needed a bit of concentration to understand the full message!

The controls

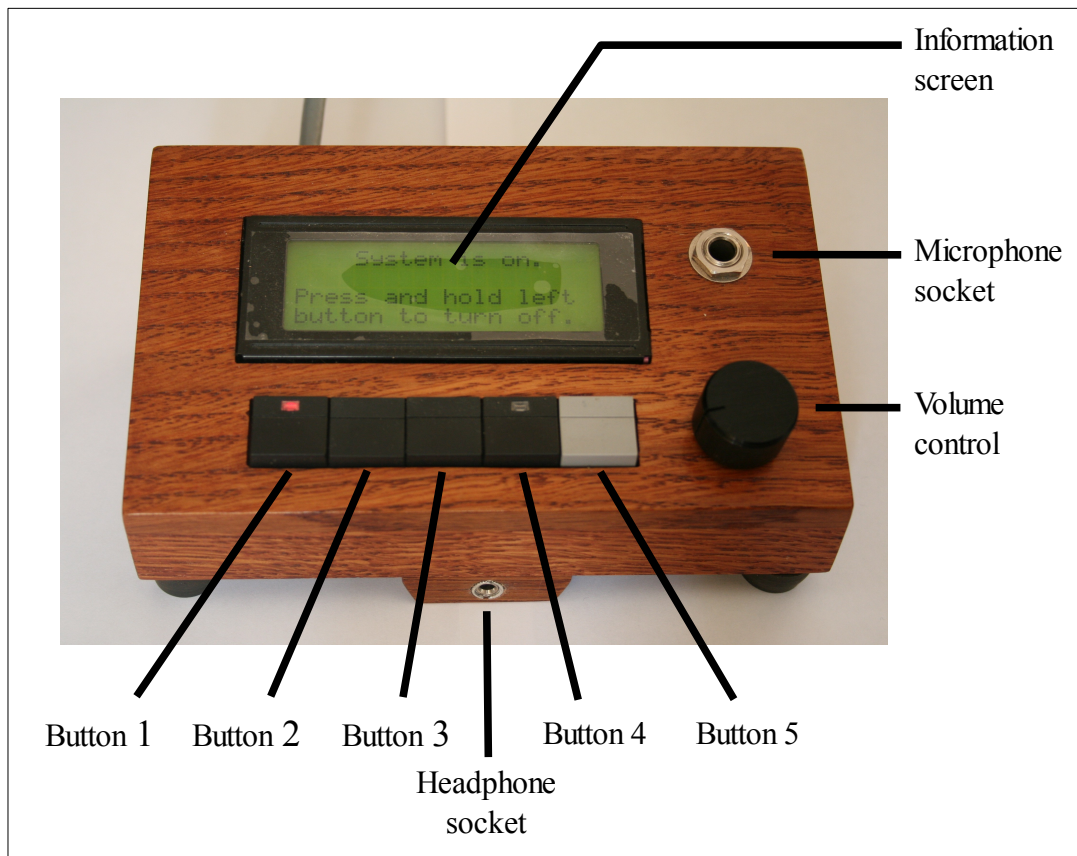


Fig 1 – The controls.

The talking system uses five buttons to control all its features, although as previously stated, only two buttons will be needed in normal use. Anyway, these buttons are arranged in a line to make them easy to identify. Moving from left to right, here is a brief description of the function of each of the buttons. Some of the functions of each button will be explained in more detail later.

Button 1 (the left button)

This is a triple-function control (sounds complicated, but not really)! The most important function it fulfils is to turn the talking system on or off. It has to be pressed and held for a couple of seconds to do this. When the system is first powered up (it comes on with the blower), it is in a *passive* state, and needs button 1 to be pressed and held to “wake it up”.

The second duty of this button is to recite all the currently drawn stops on the organ. To do this, the button is just pressed for a short while once the system is on. It can be pressed any time during the period the system is talking you through the drawn stops to stop the recitation!

This button is also used in the setting up of some aspects of the system. More on this later.

Button 2

Recites the current stepper channel number and general.

This control also complements button 1 in setting up of the system. Once again, this is dealt with in greater detail later.

Button 3

Plays back a sample that is currently being worked on. While someone is sampling their voice for use with the talking system at a later time, the sample can be auditioned using this control to make sure it is satisfactory before moving on.

Button 4

Initiates the setup facility. Any samples recorded on the system can be changed in the *setup* mode. The system is provided with the maker's voice recorded for all its speech patterns. You'll almost certainly want to change this at the earliest opportunity! More on setup later.

Button 5 (the right button)

This is the button to press and hold during any sampling. It is equivalent to pressing the record button (record & play on old tape recorder type systems!) If the button is held longer than two seconds or so, the sample being recorded will be truncated to be about two seconds in length. Using this button will overwrite the particular sample currently in the system. As such, its importance is denoted by it being grey, rather than the black colour of the other buttons.

Using the system

The control box should preferably be connected before turning the organ on, although there shouldn't be any serious damage to the system if it's plugged in while the organ is on. The power for the system does however loop through the plug and socket, so there may be a certain amount of arcing across the plug pins with the organ on. This arrangement ensures that the power to the system is off whenever the control unit is not present. Once again, it *is* good practise however, to have the organ off while plugging the unit in, or unplugging it.

The control box has to be plugged in to a socket, just under the key-bench on the left side. It's important to emphasize that the plug needs to be entered carefully without forcing it in. It will only go in one way (with the widest part of the D upwards, and the cable coming out of the right side). Also, please don't pull the plug out by the cable; always grip the metal part of the plug to disconnect the control box.

From now on, the only controls you will probably need are the left two buttons and the volume control!

To activate the talking system, press and hold the left button until the audible prompt “talking system is on” is heard. There is a light on this button which illuminates when the system is active. This is handy for partially sighted people, as it's easier to see this than what the display says. From now on any stop changes, piston presses or channel changes are announced from the speaker within the control box.

To hear a recitation of all the stops currently drawn, press button 1 and let go after a short while (you will turn the system off if you hold the button too long!). If you need to cancel the recitation of stops at any time (it can take a long time to recite all the stops if there are many drawn), press button 1 during it and hold until the speech ceases. The drawn stops are recited in the order in which they appear, in the *input listing* on page 13.

To hear the currently displayed channel and general number on the stepper, press and release button 2.

The supplied headphones can be plugged into the small (3.5mm) socket on the bottom of the control box. This will cut the internal speaker off for personal listening, so that no one apart from the organist can hear any announcements.

That really is all there is to it! The main things to consider now, are if you need to alter the way the system works. There are various changes that can be made in the set-up mode.

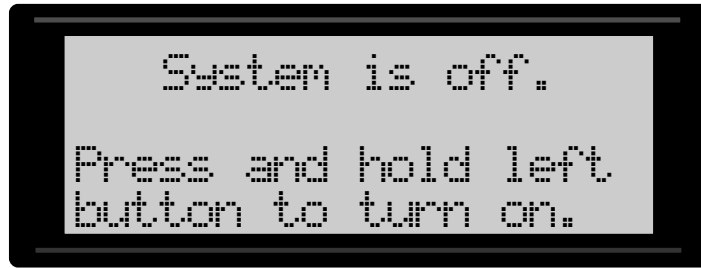


Fig 2 – The display on starting up, after the “splash screen”.

Details for setting the system options follow on the next page.

Setting the talking system's options

The set-up sequences are invoked by pressing and holding the fourth button. As with the left button, a light on it is illuminated when the set-up function is active.

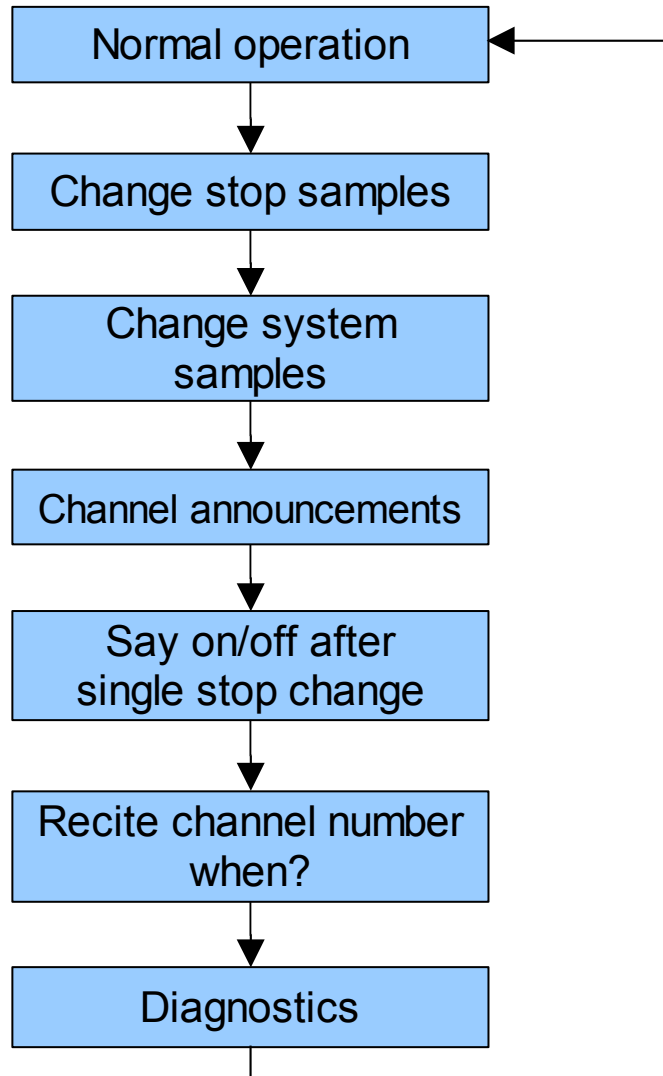


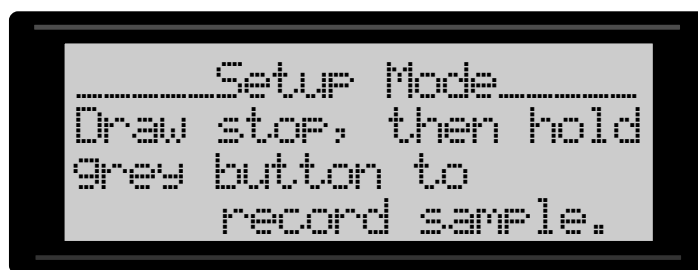
Fig 3 – The set-up loop.

In order to record any voice samples, the provided microphone needs to be used. The microphone is supplied with a pod which houses an amplifier. This needs an AAA battery to supply its power. It had a fresh battery when supplied, but if the microphone fails to work, the battery needs to be checked and replaced. It's best to talk close to the microphone, else the sample may sound a bit distant or muffled.

This pod needs to be plugged into the large (6.3mm) microphone socket on the top of the control box. The smaller (3.5mm) microphone plug needs to be inserted into the top end of this pod.

The set-up features are dealt with in order.

Set-up level 1 – Record the stop-name/piston samples.



To sample a stop or piston, it must obviously be the only one drawn or pressed! If there are more than one stops out, a “more than one stop drawn” prompt will be issued. Conversely, there will be a “no stops drawn” prompt if there are no stops out or pistons being pressed.

With the desired stop drawn or piston pressed, press and hold the grey button while speaking into the microphone. The maximum time allotted for each sample is about 2 seconds. This *is* actually a lot longer than it sounds, and there should be no issues with shortage of time. If the button is held for a longer time than 2 seconds, the sample recorded will be truncated to the 2 second limit.

In the case of St. Giles', the *multi-function toe-piston* selector must be in the Swell to Pedal position (pointing to the left) to do any recording. This is due to the way the unique multi-function piston works. You will get a “more than one stop drawn” prompt (even without any stops drawn) if it's in any other position!

Recording a piston sample needs a bit more dexterity than a stop sample, as you must first hold the desired piston then press the record button, all while you are holding the microphone! It may be handy to contrive some way of physically holding the microphone to make life easier. You could also find a way of temporarily holding the piston in using a piece of sticky tape, leaving one hand to hold the microphone and the other to press the record button.

The recording of a sample for pistons can be a bit of a minefield, as there needs to be no stops drawn while the piston is pressed (the pistons will cause some stops to come out, sometimes confusing the system). The best way over this is to set all the stops off, on the pistons to record the sample. This may prove a bit more awkward for step/sequence pistons, but if you set all the stops off on a range of generals, that's the best way to go. You will probably only need to do this once anyway.

One hint I can offer here, is to keep the microphone away from the control box, as it is possible to record the click on releasing the record button! This appears to be a clicking noise at the end of the sample on listening to it.

To audition the sample for the stop or piston being recorded, button 3 (the middle button) can be used.

Set-up level 2 – Record system announcements.



Using this option, the system announcements (“Channel number is”, “Stops out are” etc...). Buttons 1 and 2 scroll through the different announcements.



As with the individual stop samples, the grey button is pressed while speaking into the microphone. The phrase to be recited is displayed with capital letters.

There are two different samples that need to be recorded for “twenty”, “thirty”, “forty”, “fifty” and “sixty”. The second set has an asterisk after the prompt on the display. The reason for this is there are two different possibilities for each case. Let's take 20 for instance. The number 20 needs to be announced with a downward inflection in the voice for the first set to indicate the end of the phrase. If the 20 is to be followed with another number, (“twenty” and “one” say, for 21,) the twenty needs to be said with either a slight upward inflection to the voice, or the intonation may even be level. Just see what sounds best.

The channel up and down buttons on the console can be pressed while sampling the numbers, to see if they sound credible.

As with the sampling of the individual stops, button 3 can be pressed to audition the sample for any *system announcement*.

Set-up level 3 – Channel announcements.



The capture system installed on the east organ at St. Giles' uses a stepper system. This uses the same channels as the generals, and cycles up all the 8 generals before advancing the channel number up one. This means it doesn't make sense to say, for arguments sake, "One hundred and four" if the channel number is displaying 10 and the general pressed is 4. It makes more sense to say "Channel number is 10 – Last general (or just general maybe) 4"

Button 1 toggles whether the system recites the "channel number is..." or not. Button 2 toggles whether the system says "last general..." or not.

The bottom line of the display shows the currently selected options.

Set-up level 4 – Say on/off after single stop changes.



There are two possible options which can be used for single stop changes. The first comments on all movements, whether on or off, and appends the appropriate "on" or "off" after the changes. The second option just announces when a stop is drawn (not cancelled). In the second option just the stop-name alone is mentioned on drawing, without the "on" after.

Button 1 toggles between the two options, with confirmation on the bottom line of the display as to the current option.

Set-up level 5 – Recite channel information along with stops out.



The current channel and general can be recited along with the currently drawn stops. There are three option for this...

- 1 – Recite before stops.
- 2 – Recite after stops.
- 3 – Don't mention at all.

These options can be sequenced through using button 1, with the current option displayed on the bottom line of the display.

Set-up level 6 – Various diagnostics.

This option is used to help with some programming aspects of the system.

Input listing

<u>Great</u>	<u>ID Number</u>		<u>ID Number</u>
Open Diapason 8	1	Great thumb piston 1	28
Stopped Diapason 8	2	Great thumb piston 2	29
Principal 4	3	Great thumb piston 3	30
Fifteenth 2	4	Great thumb piston 4	31
Mixture IV	5	Great thumb piston 5	32
Trumpet 8	6	Great thumb piston 6	33
Swell to Great	7	General thumb piston 1	34
		General thumb piston 2	35
<u>Swell</u>		General thumb piston 3	36
Gedackt 8	8	General thumb piston 4	37
Principal 4	9	General thumb piston 5	38
Chimney Flute 4	10	General thumb piston 6	39
Recorder 2	11	General thumb piston 7	40
Sesquialtera II	12	General thumb piston 8	41
Oboe 8	13		
Tremulant	14	Swell to Great thumb piston	42
		Swell to Pedal thumb piston	43
		Great to Pedal thumb piston	44
<u>Pedal</u>			
Bourdon 16	15	Stepper up thumb piston	45
Principal 8	16	Stepper down thumb piston	46
Trumpet 8	17		
Swell to Pedal	18	Pedal toe piston 1	47
Great to Pedal	19	Pedal toe piston 2	48
		Pedal toe piston 3	49
Great + Pedal piston coupler	20	Pedal toe piston 4	50
Gens. on Swell Toe Pistons	21	Pedal toe piston 5	51
		Pedal toe piston 6	52
Swell thumb piston 1	22	Swell toe piston 1	53
Swell thumb piston 2	23	Swell toe piston 2	54
Swell thumb piston 3	24	Swell toe piston 3	55
Swell thumb piston 4	25	Swell toe piston 4	56
Swell thumb piston 5	26	Swell toe piston 5	57
Swell thumb piston 6	27	Swell toe piston 6	58
		Great to Pedal toe piston	59

<u>Control</u>	<u>ID Number</u>
Multi-function toe piston	60
Multi-function toe piston - Input from rotary switch.	
(Toe piston = Swell to Pedal	61)
Toe piston = step down	62
Toe piston = step up	63
Stepper up toe piston	64
Stepper down toe piston	65 (1) [Second card number in brackets]
General cancel	66 (2)
Set piston	67 (3)
Spare	68-102 (4-38)
Memory level up button	103(39)
Memory level down button	104(40)
Tens led segment A	105 (41)
Tens led segment B	106 (42)
Tens led segment C	107 (43)
Tens led segment D	108 (44)
Tens led segment E	109 (45)
Tens led segment F	110 (46)
Tens led segment G	111 (47)
NC	112 (48)
Units led segment A	113 (49)
Units led segment B	114 (50)
Units led segment C	115 (51)
Units led segment D	116 (52)
Units led segment E	117 (53)
Units led segment F	118 (54)
Units led segment G	119 (55)
NC	120 (56)
Last Gen. led segment A	121 (57)
Last Gen. led segment B	122 (58)
Last Gen. led segment C	123 (59)
Last Gen. led segment D	124 (60)
Last Gen. led segment E	125 (61)
Last Gen. led segment F	126 (62)
Last Gen. led segment G	127 (63)
NC	128 (64)

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