

# Primo! Technical Manual

for Firmware Version 1.06



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The Possum Part Number for this Technical Manual is 034-676. Issue 1.0 April 2009

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# INTRODUCTION

The Possum *Primo!* provides, for the first time, affordable, touch sensitive, dynamic screen technology in an ergonomically styled, highly portable, lightweight, yet robust case. In addition to this truly innovative design, Primo! offers a range of unique functions including simple, intuitive on board programming and rapid infrared code capture which enables fast, flexible set-up and installation, tailored to individual needs

Primo! can store over 140 captured infra red codes for TV's, DVD's, etc. as well providing embedded Possum and Gewa codes for multiple menus providing the ultimate flexibility in controlling the domestic environment for older and disabled users. A library of selectable clear icons and programmable labels further enhance user choice and the customised nature of this versatile controller.

## **Key features:**

- High definition dynamic screen
- Touch screen for direct access or use as a large switch for scanning
- Clear graphic display - 104 generic icons with text labels
- Text based status display
- Two input sockets providing single or 2 switch scanning control
- Carer mode to change telephone numbers and basic functions
- User adjustable, volume, brightness and scan speeds
- Day or night mode
- Two programmable auxiliary outputs for control of third party devices
  - communication aids, dispersed alarms, pc's etc.
- RF output to operate Possum relays & pager
- Telephone book with 30 stored numbers with fast dial option
  - Enter and dial any "one off" phone number
  - Telephone symbols for mobile, home, work numbers
  - Quick Dial telephone Numbers
- 18 'get started' device templates
  - Sky, DVD, bed, VCR, etc.
- Custom template design
- Macros (scenes) fully editable up to 20 functions per macro
  - simple or interruptible with pause and loop facility
- Build up and send any "one off" sky/teletext pages
- Up to 16 hours battery life (dependent upon usage)
- Visual and audible low battery indication
- Fast recharge time
- Full, on board programming
- PC back up software with email option and screen design "snap shot" facility
- Wall, floor, table or wheelchair mounting options

## New Features (above firmware versions 1.03, 1.04, 1.05)

- Addition of IR phone types for all HC2006 IR coding schemes
- Addition of glide modifier (press and hold to repeat signal) with individual time delays on per button basis
- Addition of Sticky modifier (press to start repeat of signal, press again to stop) with individual time delay on a per button basis
- Addition of Delay modifier with individual delays between functions on per step basis in macros
- Addition of new TV and new Box channel actions enabling individual Digital TV channel selections on per button basis
- Addition of larger TV and box capture template with more functions
- Addition of New "t.func" and "b.func" actions for assigning functions efficiently to a button using previously captured IR from the TV and box templates
- Addition New 'ctrl' action for transmission of special RF signals for operating export 3<sup>rd</sup> party RF devices
- Addition of extra symbols
- Improved re use of memory space by compacting memory on exiting program mode

## Corrections and fixes from earlier firmware versions

- Restored charging indicator (missing on firmware version 1.05)
- IR subsidiary control via input B in single switch mode corrected
- Dial delay adjustment for type 4 phone is now adjustable

## COMPATIBILITY

- Always Backup the users configuration from Primo to PC using Primo back up software v1.1.2 before upgrading the firmware on Primo to version 1.06
- Once the firmware has been upgraded on a version 1.06, perform a factory reset to clear the user data from Primo! then restore the users program from the PC onto the blank primo
- Once the user setup has been restored, enter program mode then, leave program mode to clean up the memory on primo!
- Test all functions once Upgrade is complete, some captured IR codes may need to be recaptured as these were reclaimed during "compacting memory" and clean up process during program exit
- User setups created on earlier version firmware v1.03 – v1.05 will function correctly on V1.06
- If an earlier version setup is loaded onto v1.06 then page 2 and 3 of TV and Box setup pages are not available
- Operation of RF "ctrl" actions is only possible if a hardware component change is performed. This modification must be carried out by Possum Ltd. There is a normally a small charge for upgrade
- User setups created on firmware version 1.06 **must not** be restored to Primo units running on version 1.03 – 1.05 firmware as they are unlikely to work correctly

# POWER REQUIREMENTS AND BATTERY OPERATION

## **General**

Primo!'s is as a portable device for remote control around the home. This is achieved with the use of rechargeable battery power built into Primo! itself. The battery internal to Primo! is a specialised pack (only available from Possum Controls Ltd) is NOT USER/CARER REPLACEABLE

## **Connecting the Battery**

Normally primo is despatched with the battery disconnected [legal requirement for transportation]. A label attached to Primo! will indicate this.

To connect the battery proceed as follows

- a) Disconnect the HC501 Mains adaptor from the right hand side of the primo! Unit
- b) disconnect all input switches from the right hand side of the primo unit
- c) Disconnect all auxiliary devices form the output connectors on the opposite side of the primo unit
- d) Turn the Primo! upside down so that the front face is laying on a flat horizontal surface (lay some soft material on the surface first to protect the screen)
- e) fully loosen the large screw on the Hama quick release mounting plate located in the centre of the rear of the case using a 8 mm flat bladed screw driver or small coin, then lift the mounting plate off the case assembly
- f) Fully loosen the five rear cover retaining screws and carefully remove the rear cover on Primo!,  
*Note the middle screw is located behind the Hama quick release mounting plate so this will need to be removed first*
- g) Remove USB bung protecting the Engineer USB port
- h) Connect the battery observing correct battery orientation
- i) Reassemble the unit in reverse to disassembly

## **Charging Primo!**

### **Initial charging**

A Primo! unit may not power up unless the battery is recently and fully charged. It will usually be necessary to charge initially for 10 – 30 minutes for Primo! to run for a short time on any battery power. This only happens when a battery is first connected or if the battery is exhausted and has not been charged for several days.

If Primo battery is very flat charging will take a long time as the charge current initially will be limited for safety reasons until Primo! sees the battery as a good battery During this trickle charge state primo will indicate a 'hollow' battery symbol on the top display

In some instances, if the battery threshold voltage is extremely low the unit will display the initializing screen indefinitely. In this instance reset primo after 10 minutes of mains power operation

## **Charge Time and Charging Routine**

When Charging Primo! for the first time after delivery or after battery replacement (following a service) Primo! should be charged overnight (minimum of 12hrs) to give correct operation on battery power only

If charging after normal operation then as a routine Primo! should also be charged overnight on every day.

Under normal circumstances Primo! would usually charge quickly within 2hrs and then go onto slow charge, this can be useful should a boost be required during the day particularly if there is very high number of user operations

## **Charging Indicator**

During Charging a battery symbol appears on the right hand side of the small display. This symbol fills to give indication that the battery is charging [it does not show the actual battery level whilst charging]. When Primo! is fully charged the battery indicator will disappear and the charger can be disconnected.

**Note: upon removing the charger Primo will reboot; this is a normal procedure**

## **Low Battery Warning**

### **First Warning:**

Primo! Will emit a buzz sound briefly and show a message 'Battery Low' for 1 minute, on the top display when the battery has approx. 2 hours usage remaining

### **Second Warning:**

Primo! Will emit a buzz sound briefly and show a message 'Put On Charge!' continuously on the second line of text display (except while transmitting etc.) from approx. 30 minutes battery power remaining

## **Battery Power Management**

The length of time that primo will run on battery power is dependent on a number of factors,

To optimize battery power

**Charge state of battery:** Ensure that the battery is charged daily for an overnight period, this will ensure that the battery condition and charge levels are kept high

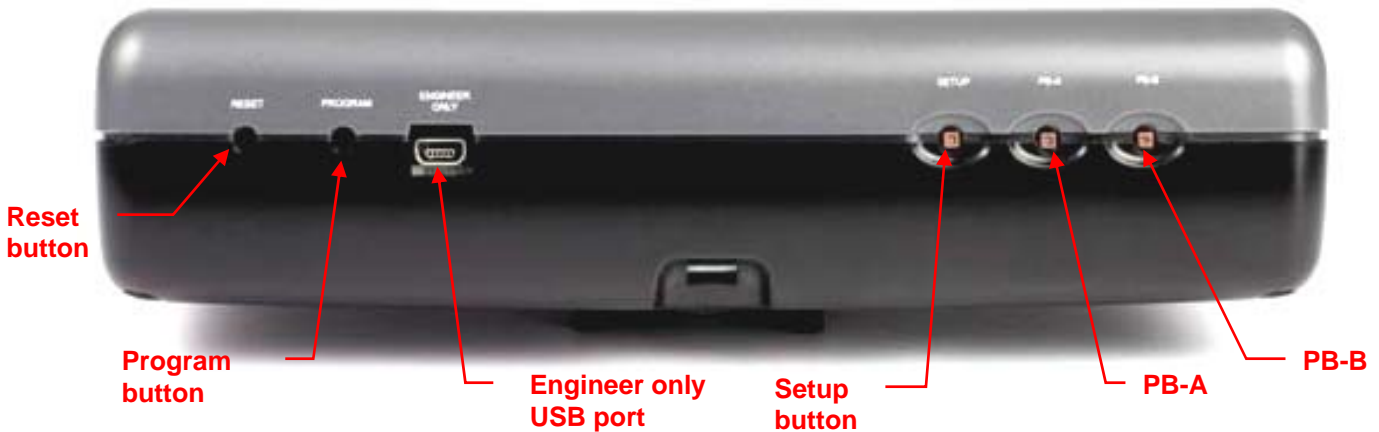
**Display Brightness:** (see 'user setup') keep this as low as possible that the user can manage, a brightness of 10 (maximum) uses 40% more power than a brightness of 9

**Sleep Time** : (see 'user setup') this is the time the display backlight will turn off after primo was last used. Keep this to a minimum; does the user need to see the screen once they have finished the operation, the screen is reactivated by any press of input or touch screen

# PROGRAMMING PRIMO!

## Controls and Buttons

The functions of the buttons below the screen are as follows (L-R), note that some buttons will have different functions depending on whether Primo! is in normal operating mode or program mode



*While in normal operating mode:*

Pressing PB-A	Mimics external input A (but without any switch conditioning)
Pressing PB-B	Mimics external Input B (but without any switch conditioning)
Pressing SETUP	Enters Carer programming mode (if button pressed for 3 seconds – PIN code may be requested at this point)
Pressing Reset	Performs a reboot

*While in program mode:*

Pressing Program	Invokes exit program mode screen then the installer touches the screen to exit program mode (primo must be in the top level to exit program mode).
Pressing Setup -	Accesses the User setup menu (this can only be done from top menu only)
Pressing PB-A	Toggles button edit on/off, when menu edit is on, press a menu button to program or edit it
Pressing PB-B	Accesses the 'engineer' setup menu (primo must be in the top level)
Pressing Reset	<b><i>This should not be Performed</i></b>

## General Information about Programming Primo!

Primo! is intended as a stand alone unit that can be programmed in the clients home without the need for any specialised equipment or computer. In fact the only equipment needed to program Primo! is an object with a pointed end such as a ball point pen or stylus.

If a backup copy of the clients Primo! configuration is required then a personal computer running Primo! backup software version 1.1.2 or higher will be needed

## **Levels Of Programming**

Primo! offers several levels of programming to cater for the individual needs of Healthcare Professionals, Engineers, Carers and Users. These levels are as follows...

### **Engineer Programming (program mode)**

This Gives full programming capabilities as follows;

- Programming the buttons, (label, symbol, function and behaviour) & creating menus/macros.
- System Setup (Engineer Setup) allows global parameters to be set, Scan, switch, timings, touch screen, display, phone type and phone book editing etc
- User Setup Menu access (scan speed, brightness etc)

***Access to program mode is PIN protected***

***Important Note:*** The charger should be connected and switched on when in program mode as a large number of operations will be performed which will drain battery power

### **Carer/Therapist Programming (setup mode)**

This gives limited access and enables editing of phone book and access to User setup menu. This mode is PIN protected to restrict access but can be made unrestricted by the engineer/installer

### **User Setup**

This allows for adjustment of display brightness, sleep time, scan speed, scan tone volume and can be optionally made user accessible

## **Accessing the Programming levels**

### **Accessing Program (Engineer) Mode**

- a) From normal operating mode, press 'Program' button for at least 3 seconds until an audible 'blip' is heard,
- b) Release the 'Program' button
- c) Then IMMEDIATELY press 'Program' button again until "enter function code" [PIN code] appears on the top display and the bottom display shows a number keypad



- d) Press the number buttons for the code **27076** on the touch screen

- e) If the **incorrect** code is typed, press  and re enter the whole number again
- f) Then Press ,

## Other PIN Options



### Caution !!

**Note when entering a function (PIN) code there are other Important Codes which will perform different tasks on Primo! These are...**

### Erasing ALL User Data files (menus macros) and restore 'factory' default settings

- a) From normal operating mode, press 'Program' button for at least 3 seconds until an audible 'blip' is heard,
- b) Release the 'Program' button
- c) Then IMMEDIATELY press 'Program' button again until "enter function code" [PIN code] appears on the top display, and the bottom display shows a number keypad



- d) Press the number buttons for the code **270666** on the touch screen
- e) If the **incorrect** code is typed, press  and re enter the whole number again
- f) Then Press , the unit will reboot and show only a blank top level



*Note: If This reset is performed then any hidden user name will be lost [see Primo! software- Naming Primo!]*

### Erasing All User Menus and Captured IR, except engineer settings, user setup and phone book

- a) From normal operating mode, press 'Program' button for at least 3 seconds until an audible 'blip' is heard,
- b) Release the 'Program' button
- c) Then IMMEDIATELY press 'Program' button again until "enter function code" [PIN code] appears on the top display, and the bottom display shows a number keypad



- d) Press the number buttons for the code **465178** on the touch screen

- e) If the **incorrect** code is typed, press  and re enter the whole number again
- f) Then Press , the unit will reboot and show only a blank top level

## Exiting Program Mode

Leaving program mode must be carried out as described below, failure to follow this procedure may result in corruption to the users configuration

- In program mode **go to the top level menu**
- Press the 'Program' button once on the bottom of Primo!
- The Display updates and shows the exit screen (an example is shown below)

```

file system scan completed.
Reclaimed file slots: 19 20
Missing file nos:
153 slots free.
Compacting...
touch the screen...

```

*Program mode exit menu*

Upon going to the exit screen primo! Scans its memory and displays reusable space, (which is made available after leaving programming mode)

**Reclaimed File slots:** these are discarded previously captured infra red signals, menus or macros no longer required. (No programmer input is required)

**Missing file no's:** These are files which are lost from configurations in earlier firmware versions when loaded onto a version 1.06 Primo!, it means that some of the functions programmed may not work and will have to be recaptured. Always test a Primo fully after upgrading the firmware

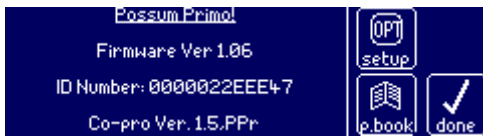
**'nnn' slots free:** This is the available memory space left in primo where 'nnn' is the number of slots, There are a total of 179 slots

**Compacting...** Firmware version 1.06 compresses files to give more available memory space for functions. This is done automatically. A '%' indicator shows on the top display to indicate the progress of compacting. Once compacting has completed, the % indicator disappears, allowing exit program exit

**touch the screen...** Touch the screen to exit Program mode. if Primo is performing the compacting process (as indicated by % symbol and value on the top screen) then touching the screen at this time has no effect. Wait until compacting has completed then touch the screen again.

## Accessing CARER Setup (setup mode)

- With Primo! in normal operating mode **Press and Hold** 'Setup' on the bottom of Primo! until the setup menu appears (about 3s)




Carer Setup Menu



b) If engineer option 'carer pin' is enabled, a keypad will show and a PIN code is required to continue




c) Enter code **45107**.


d) Then press .

e) In the Carer Setup Menu the following options are available

- o To Edit the phone book Press  button (for further details see Telephone Control – Phonebook)
- o To change User setting Press  button

f) When changes to the carer setup have been completed press  to exit to normal user operating mode

## Accessing User Setup Menu

The user setup menu is accessed from normal operating mode from carer setup menu by pressing  button on the screen, or in program mode by pressing the **SETUP** button on the bottom of Primo! (in the latter case, the top level menu must be displayed before hand). Additionally, access to the user setup menu can be given to the client as an option by assigning a button on the users menu which when selected will go to this page




User Setup Menu

User setup allows for the following adjustments to be made

- o **Display Brightness**, 1-10 levels of adjustment (10 = highest brightness)
- o **Scan Speed** (1<sup>st</sup> scan cycle) = 0.2s/0.25s/0.3s/0.4s/0.5s/0.6s/0.75s/1s/1.25s/2s/2.5s/3s/3.5s/4.5s
- o **Scan tone volume** = levels 0/1/2/3/4 0 value equals sound off
- o **Display Sleep time** = off, 0.1m/0.2m/0.3m/0.4m/0.5m/0.8m/1m/2m/3m/4m/5m/10m/20m/30m.

## Changing User Setup Menu settings





The  (Day/night) button switches between separate day and night settings. Day and night modes are not automatic (i.e. there is no light sensor in Primo!). Day and night modes though, can be assigned as button actions in a users menu or as part of a macro. Day mode is default on power-up.

The current settings are shown on the left side adjacent to the setting; these change when adjustments are made



### Changing Display Brightness,



Press buttons  to reduce brightness or  to increase brightness, repeatedly until the required level is shown



### Changing Scan Speed



Press buttons  to reduce speed or  to increase speed, repeatedly until the required level is shown [always check the user can operate Primo! at the set scan speed before leaving clients home]

### Changing scan bleep Volume,



Press buttons  to reduce volume or  to increase volume, repeatedly until the required level is shown

### Changing Display Sleep time

This is the time the display backlight will switch off after last operation of Primo!,



Press buttons  to reduce time before sleep or  to increase time before sleep, repeatedly until the desired sleep time is shown.

*Note that the "off" setting should not be used for clients as this means Primo! will not go to sleep. It intended that 'off' is used for exhibitions where the display is required to be on all day*

### Saving User settings



When settings have been checked or altered press  to save and exit this menu

## PROGRAMMING FUNCTIONS

In an empty Primo! a blank top level menu is shown. This has 14 squares (called buttons) arranged in two rows of seven **BUTTONS**.




The process of programming Primo! is by adding functions to each button, as required. It is not possible to change the size of the buttons

## **Setting up Buttons**

A function of a button has four attributes: which should be assigned in the following order

1. An action; (what the button is going to do) which may be affected by
2. An optional modifier (which adds some behavioural characteristics to the button operation)
3. A Label, shown below the symbol, (not required for quick dial phone numbers)
4. A Symbol, shown in the centre of the button, (not required for quick dial phone numbers)




In Program mode A placeholder button  (a button that is not programmed) has no attributes, and exists to space menus, or allow extra time for scanning. Placeholder buttons can be optionally hidden and skipped when scanning (engineer settings).


## **Assigning Button Attributes (using the Button Setup Menu)**

- o Enter program mode,
- o Select the menu where the button to be programmed is located
- o press key 'PB-A' once on the bottom of Primo! so that 'Button Edit' is shown on the small display.
- o Press the button to be programmed, the button setup menu appears.



*Button setup Menu*

- o The four settings (**label, symbol, action, options**) on this menu allow the attributes of this button to be changed. Attributes can be set or changed repeatedly. When an action is assigned, the button will also inherit the symbol and/or label if none was previously set. Any existing label/symbol is preserved.
- o Pressing  will erase all data from the button, and any menu/macro (if not being used elsewhere) or captured Infra red signal permanently from Primo! memory upon exit from program mode. If a button assigned to open a menu or run a macro is cleared, then these menus will be deleted from the template list. If the menu or IR is still required but the current button to open it needs to be cleared, then, select and save the button with an alternative action (e.g. a "no action") then clear the button
- o Pressing  will exit the button setup menu without saving any changes
- o When the attributes have been set pressing  will store all the attributes assigned to the button

- o The  button is used to change attributes to the current menu or macro. Allowing the menu/macro title to be changed and a macro type to be altered, see [Menu Attributes] or [Macro Attributes]



## Labelling a button

- With the Button Edit Menu displayed Press the  button to allow the text label to be set (or edited).
- Enter the characters for the label




Button Label edit Menu

Button	Characters
abc	a b c à á â
def	d e f ä â ç
ghi	g h i è é ê
012	0 1 2 ë ì í
345	3 4 5 î ï ñ
jkl	j k l ò ó ô
mno	m n o ö ø ß
pqr	p q r ù ú û
678	6 7 8 ü ý ÿ
stu	s t u # / *
vwx	v w x ( ) :
yz.	y z . - @ !
9_&	9 space & ' + ,


- To choose a character press the same character button repeatedly until the character required is shown on the button and also the small display.
- If no character button is pressed within 1.5 seconds of the last press the text cursor on the small display moves onto the next character position automatically
- The label is in lower case text and allows for a maximum of **six characters** (dependent on character width) **Note:** Some characters may not show correctly on the small display but will be shown correctly on the button, this is due to character design limitations of the small display
- To delete the last character (s) Press the  key repeatedly as above
- When completed Press the  key to exit the label edit menu

## Choosing a Symbol



- Press the  button to select an alternate symbol for the button.
- Symbols are generic and designed to be used with the label to represent the function of the button
- Symbols are shown in pages; there are 9 pages with 117 symbols to chose from,




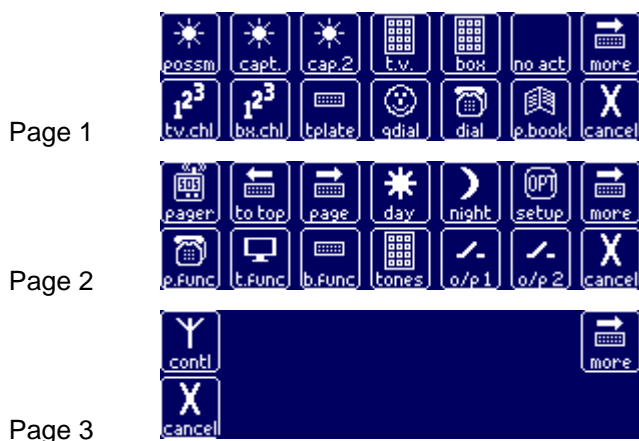
- Pressing the top left button  on each page moves through the pages.
- Pressing any other symbol button will assign the corresponding symbol to the button and exit the symbols menu and return to the button edit screen
- Note: There is no cancel.



## Assigning Button Actions

### Choosing an action



- With the button setup menu showing press the  key to reveal the first of 3 pages of the possible actions.



- b) Press  to move between pages, Press  to exit without choosing a new action to assign
- c) Pressing the required action will automatically allow its parameters to be set
- d) Note: **Actions for Macros.** When programming Macros functions a different list of actions is shown. This includes special actions and certain rules which apply [See section on Macros]

## Summary of Available Actions

### Page 1 (Standard Action List)



Select a 'Possum' or "GewaLink" IR code to transmit on this button



Capture a single IR code to transmit on this button



Capture a pair of IR codes which are sent alternately on this button



This action will assign a go to teletext page No/Freeview channel "build and send" menu from this button. **The TV setup template for this must be programmed before user operation.**



As above, but intended for a cable/satellite boxes etc. **The Box setup template for this must be programmed before user operation.**



Button does nothing – creates a blank button on a menu, even when 'skip unused' is set to yes (see Engineer setup – "setgs" options) Also allows 'previous' and 'top' menu change buttons to be created, using options "menu" modifier button.



Assigns a specific Digital TV multi digit channel (e.g. 106) to the button **The Digital TV setup template for this must be programmed before user operation.**



Assigns a specific Digital Satellite/cable set top box multi digit channel (e.g. 242) to the button **The Box setup template for this must be programmed before user operation.**



Assign a sub-menu (new from template list, or previously created menu) to be invoked on this

button or assign a new a macro or existing macro – see [Menus] or [Macro] to the button



Select a contact from the phone book to be dialled on this button

NOTE: the button label and symbol and phone number are set from the phone book.



Allows the user to go to a phone dial keypad menu where any 'one off' number can be entered then dialled, with automatic line pick up



Assigns user access to the phone book from this button

### Page 2 (standard Action List)



Select a possum pager or RF relay code (HC400 & HC401, or HC707B) to be sent on this button



Assigns an exit point to return back to the top level menu (from any other menu)



This button's function will be to step to the next page of a menu



button will activate user 'day' mode settings



button will activate user 'night' mode settings



Gives user access to night/day user setup menus directly on this button



Pulse output relay 1 (with optional subsidiary control)



Pulse output relay 2 (with optional subsidiary control)



Allows a button to be assigned a specific phone function – [from a list , see Telephone Control]



Allows a button to be assigned a specific function from a List, corresponding to a captured function from the Digital TV Setup template



Allows a button to be assigned a specific function from a List, corresponding to a captured function from the Box Digital Setup template



This button will allow the user to go to a phone tone dial keypad where the a series of phone digits numbers can be entered then sent whilst already connected on the phone line (for entering account/pin numbers, or specific extension numbers)

### Page 3 Standard Action List



Select a European RF control code for transmission on this button

# Assigning an action Modifier

## About Modifiers

Modifiers are attributes that dictate the way the chosen button behaves upon selection or after it has performed its function

## Selecting a Modifier

First set the correct action for the button, then with the button action assigned and Primo! displaying the button edit menu

- a) Press the  button for the following 'modifiers' or behaviour to be set



**Note:** Depending on the chosen action only certain modifiers are allowed, so only the available modifiers are displayed once the buttons action is set

- b) Press the appropriate modifier button
- c) Once the modifier is assigned Press  to store and return to Button Edit screen

## Summary of available Modifiers



Press to De-select all other modifier options



Subsidiary action mode for input switch emulation (for Possum IR, Captured IR, and Auxiliary relay actions only.) The 'on' and 'off' escape times are set in System Setup engineer settings



Action is repeated while switch held down. Repeat rate is configurable on per button basis or globally- (used for volume control of Televisions HiFi's etc or bed/chair control. Automatic timeout if input not released within a specified period of time [adjustable in engineer settings])



Action is repeated when user releases input after selection or lifts off from screen, repeat rate configurable on per button basis. Repeats continue until input switch is pressed again or screen is touched anywhere (Used mainly for Volume control or channel searching of TV, HiFi )




Choose whether primo returns to "top level" menu or "previous menu" after button action completed. This menu modifier can be used in conjunction with the other modifiers



## Setting a Glide Modifier





Upon pressing , a delay menu shows.


This gives a defined list of time intervals that the action is repeated while the user presses the input or continually touches the screen


Pressing  switches off the delay

Pressing  through to , sets the delay as per the buttons time

Pressing  sets the delay (repeat rate) time as per the engineer 'short global delay', set in Engineer

System setup via the  key (the range or repeat rate is 0.0s (continuous) – 1.5s)

Pressing  sets the delay (repeat rate) time as per the engineer 'long global delay' set in Engineer

System setup via the  key (the range or repeat rate is 0.2s – 5s)

**Note** All the glide modifiers have safety timeout setting as well, which are also set globally in the settings menu. The timeouts are used to cancel the selection even if the user fails to release the input.

**Any glide chosen with a delay of less than 1.0s will terminate after the time set in "glide timeout for <1s"**


**Any glide chosen with a delay of greater than 1.0s will terminate after the time set in "glide timeout for 1s+"**



## Setting Sticky Modifier





Upon pressing , a delay menu shows.


This gives a defined list of time intervals that the action is repeated once the user has released the input or lifted off the button on the screen, the action will continue to be repeated UNTIL the user operates the input switch or touches the screen to cancel


Pressing  switches off the delay

Pressing  through to , sets the delay as per the buttons label

Pressing  sets the delay (repeat rate) time as per the engineer 'short global delay', set in Engineer


System setup via the  key (the range or repeat rate is 0.0s (continuous) – 1.5s)

Pressing  sets the delay (repeat rate) time as per the engineer 'long global delay' set in Engineer

System setup via the  key (the range or repeat rate is 0.2s – 5s)

**Note: All the Sticky modifiers DO NOT have safety timeout facility, the action or signal will continue until the input is operated. The Sticky Modifier should not be used for control of appliances which change the patients posture or position**






## Setting the Menu modifier



Press the menu key  repeatedly until the desired menu option is set and shown on the button edit screen



## Setting a Subsidiary Modifier

The subsidiary modifier is used where switch emulation or transfer is required for another scanning unit such as a communication aid (lightwriter) using the current user input for Primo, Subsidiary control can be used

with actions such as    for remotely controlling devices via IR signals or  and  for directly connected devices via the Auxiliary Outputs on the side of Primo!

Press the  button to set this option. Then press .

## Setting Subsidiary escape times

When subsidiary used by the client and input is transferred there needs to be a method of escape to return to control of Primo!. It is possible to set the time that the input needs to be held/pressed to escape

“Subsidiary On Time” or for inactivity (no switch operation) to escape “subsidiary Off time”

These timings are independent off each other and are adjustable in 1 second increments from 2 seconds to

60 seconds and are adjusted via Engineer system setup in the  menu

## **Subsidiary control User interface**

For the user upon selecting a button which has been assigned with subsidiary control the screen below is displayed.



For the touch screen user a press on the “activate” button will result in IR or Auxiliary activation for as long as the “activate” button is pressed. If the activate button is continually pressed then primo will cancel the function after the “subsidiary on time” time has elapsed. This timer restarts on the start of every press of the activate button and stops when the button is released

A press of the “quit” button will result in immediate termination of subsidiary control.

If the user releases from the activate button the subsidiary off timer starts, if the activate button has not been pressed within the subsidiary off time period then primo will exit subsidiary control after the “off” time has elapsed

For switch users the press and release of the input behaves the same as a press and release of the activate button, There is no “quit” switch function. For two switch users both input A and B behave as the “activate” button. Note that during subsidiary control all Primo touch screen/switch conditioning (de-bounce, release, anti-tremble filters are ignored; input conditioning must be setup on the controlled device

## **Saving Button Edit Changes**

When button settings are complete, pressing  will update the menu, this saves changes to internal flash memory.

## **Discarding Button Edit Changes**

With the button to be programmed returned to the button edit menu Press Cancel discard *all* changes to the button.

NOTE: If you wish to change a button function – particularly if the previous function used a file – use the ‘clear’ button first. This deletes any associated file. If you don’t do this, you can leave ‘orphaned’ files which waste memory space

# **PROGRAMMING IN DETAIL**

## **Possum Infra Red Operated Accessories/Devices**

### **About Possum IR devices**

Possum Ltd provide a large range of infra red controlled accessories (e.g. sockets, relays, telephones, intercoms) with each device having a series of functions or channels. The Infra red codes are generated by

Primo! when the button is programmed. Primo! can be programmed to operate both old or existing devices and new devices produced which use Possum IR coding schemes. Its is possible for primo to operate any number of devices as they are self generated and use little or no memory space within Primo!

## Assigning Possum IR codes to button

- a) In program mode, select the menu where the button is located
- b) Press PB-A so that '\* Button Edit \*' is shown on the small display.


- c) Press the  button

- d) In the first actions page Press  button A number entry menu shows





Page 1

- e) Enter a hexadecimal number which corresponds to a Possum Infra red function for the device; using table (appendix A) to obtain the correct code


- f) Press the  button to move to the hex digits ABCDEF page for letter and to switch between the two pages





Page 2

- g) If a mistake is made during entering the number press  to delete the last digit or  to clear the whole number then repeat steps e) and f)

- h) To discard changes and exit Press 

- i) to confirm changes Press  when the correct code has been entered, Primo then exits and returns to the button edit menu

## Gewa Infra Red Operated Accessories/Devices

Primo! can operate Gewa IR devices. Gewa link channels 00-64 [Equivalent to levels 1-4 on a Gewa Prog III/Control Prog] are available in the internal memory of Primo! and are assigned to a button using the  action. If higher channels are required then these will need to be captured to buttons using the  action, using an appropriate Gewa Transmitter

## About Gewa Single Functions

To send a single press (e.g. as used by the Jupiter phone), use the IR code **E7Dxx** where **xx** is the hexadecimal function code required. Primo! automatically sends the 'press' and 'release' codes with correct timing for momentary operation.

E.G. for Jupiter phone seize line, enter code **E7D59**.

## About Gewa Glide Functions

For Gewa codes, a typical 'button press' consists of two codes; the required function code and a release code. The Gewa equivalent of a glide is handled by the device rather than the controller; the function code is sent and the glide starts, completing on receipt of the release code.

Primo! does not operate Gewa glides functions on a single button at present but it is possible to simulate a Gewa glide from Primo! by assigning two buttons; one to start the glide and one to stop it.

To send a Gewa start glide, use the IR code **E00xx** where **xx** is the required hexadecimal function code (channel). To stop the glide, use the IR code **E007D** (same code used for all functions).

## Setting up a Gewa Action

- a) In program mode, select the menu where the button is located
- b) Press PB-A so that '\* Button Edit \*' is shown on the small display.


- c) Press the  button

- d) In the first actions page Press  button. A number entry menu shows





Page 1

- e) Enter a *hexadecimal* number which corresponds to a Gewa code required using table (appendix B) to obtain the correct code


- f) Press the  button to move to the hex digits ABCDEF page for letter and to switch between the two pages



Page 2

- g) If a mistake is made during entering the number press  to delete the last digit or  to clear the whole number then repeat steps e) and f)

- h) To discard changes and exit Press 

- i) to confirm changes Press  when the correct code has been entered, Primo then exits and returns to the button edit menu

## Capturing Infra Red Signals from other Remote Handsets (TV, DVD, etc)

### About Captured Infra Devices

Control of Home entertainment devices (such as TV, DVD, VCR, SKY, Freeview, Hifi) and any 3<sup>rd</sup> Party Appliances (curtains, Window openers, blinds, Lights) with their own remote control handsets is achieved by capturing the Infra red signals from these transmitters then replaying them on customised buttons in the user menus. It is possible to capture and replay single functions or alternate functions (functions like TV on/off, where on is a channel and off is standby function) onto a single button


### Identifying the correct type of IR capture

Some remote control handset send more complex signals than others, in that when a function key is pressed for the first time it sends one signal, when the same function key is pressed again it sends a different signal do the same thing on the device. In order to operate the appliance reliably from primo the programmer needs to identify which type of signal is being transmitted form the remote handset and then use the appropriate capture method to store it into primo. Typically Philips, Ferguson, Thompson devices send different signals alternately every time a key is pressed, and this may only apply to some of the keys, normally keys that are the same on these remotes are channel and volume commands but functions like the number keys and mute, standby are different

### Testing the type of IR signal

- a) Ensure the batteries in the original remote are new or recently replaced
- b) Ensure that the device is switched on
- c) Point the original remote at the appliance and press a number key or mute key on the remote, ONCE only (the appliance should change state or display some thing on the press of the key)
- d) Point the remote away from the appliance and **completely** cover the infra red sensor on the front of the remote with your hand then press the same key on the remote ONCE only again
- e) Remove your hand from the front of the remote and point it at the appliance and press THE SAME KEY AGAIN, ONCE only. If the appliance displays or change state then the signal is NOT an

Alternate IR and needs to be captured using the single IR method 

- f) if it does Nothing Press the same key again on the remote, and if it changes state or displays something then it is likely to be an alternate IR signal and the buttons function will need to be captured using the alternate IR method 

## Techniques for Capturing Infra Red signals from remote transmitters

### How Primo Captures:

When Primo captures an IR signal it records the code that is sent to it and the length of the press; it does not sample the signal or compare it. Primo has a limited memory space for capturing each signal, and the amount of space which is used is dependent on the length of code transmitted by the remote which may vary between functions on a remote and also between manufacturers.

Primo will display the length of the signal when capturing. If the signal is too long the capture bar will fill completely and Primo will request a recapture.

In this instance the button on the remote should be pressed for a shorter period so that less IR code is recorded and the capture bar does not fill


Primo! cannot capture every type of signal and is not compatible with all types of Infra red transmitter. Sometimes when testing captured IR on Primo, the function is not being performed correctly or reliably; this may be due to how much code is recorded and subsequently replayed or the distance between the remote IR transmitter and Primo's IR detector so changing these parameters and recapturing and testing the signal could result in reliable operation

### Capturing Single Infra Red functions

- In program mode, select the menu where the button is located
- Press PB-A so that '\* Button Edit \*' is shown on the small display.

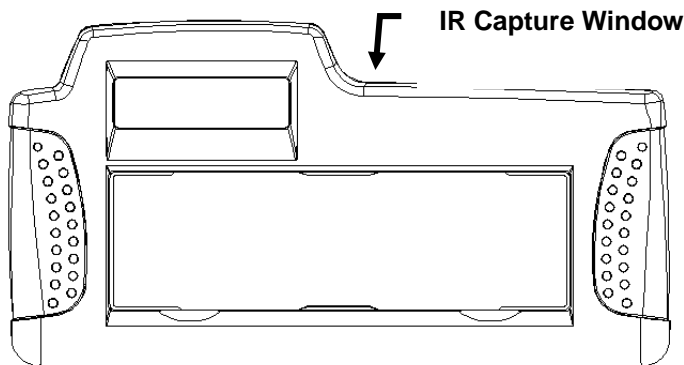


- Press the  button

- Press , a capture menu appears



- e) Point the remote control from a distance of about 20cm towards the top of Primo! (as shown below) and press the required button to be captured briefly once only





- f) A bar in the middle of the screen will fill to show a captured signal, do not press the remote for longer than a short press as the bar should not be filled completely





- g) When captured press “done” to go to the post capture menu to allow for testing of the signal



- h) Point Primo! at the IR device (TV etc) and press , the test button will light up briefly and the small screen will display “Echo Test”

- i) If the test does not operate the device as required then press , the capture screen shows again

and repeat capture of IR signal as above then repeat  function

- j) Once the test operates the device correctly press 

- k) This returns to Button edit menu, where the location of the IR file is shown as reference



- l) Assign a label and symbol as required

- m) Press  to store and exit “Button Edit”


## Capturing alternate Infra Red Functions

This is similar to the single capture, but this time the controller will request capture of two codes.

Typically these types of codes are Philips or Fergusson IR codes. In the case of Philips all codes except scrolling codes (volume+/-, channel +/-)



- a) In program mode, select the menu where the button is located
- b) Press PB-A so that '\* Button Edit \*' is shown on the small display.

c) Press the  button

d) Press , a capture menu appears






- e) Capture the first IR signal then press 'done'
- f) The second capture window is shown
- g) Capture the second IR signal then press 'done'

h) Press  and try the IR signal and recapture if necessary using the  button


i) Press the  button to switch between the first code and second IR code



j) By using the  and  buttons in sequence the pair of codes can be fully tested.

k) Press the  key to store both codes; Primo then returns to the button edit menu and displays the file numbers for both IR codes for reference



l) Assign a label and symbol as required then Press 

## Possum RF Devices (Pager and Relays)

### About Pager Codes


The Pager codes are used for controlling Possum 433MHZ HC400 and HC401 pager and HC707B radio relay units only. 4095 codes (channels) are available for the HC401 Pager. Any code from 1 up to 4095 can be used. the HC707B radio relay unit uses the same codes as the HC401 pager  
256 codes are available for the HC400 Pager. Only certain codes between 10 and 4095 [as shown in table Appendix C] are accepted by HC400 pager.

## Programming RF “Pager” Codes on to a Button


- In program mode go to menu where button to be programmed is located
- Press key ‘PB-A’ on the bottom of Primo! so that ‘Button Edit’ is shown on the small display.
- Press the button to be programmed; this opens the button edit screen

- Press  button




- Press  to go to page 2 of button actions menu




- Press  to reveal the channel number setting menu


- Enter the channel number that you want to assign on the Number Key menu,



- if the incorrect code is entered press  to delete the whole channel number then reenter the new number

- When complete, press . Primo returns to button edit menu showing the pager channel assigned to the button



- Assign a label and symbol as required then Press 
- Program the pager as per the Pagers instruction manual and test

## 3<sup>rd</sup> Party RF “Control” Radio Devices


### About Control RF codes

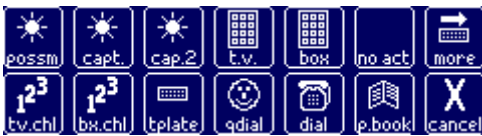
- Control Codes are used for export European RF devices and are not supported in the UK
- These devices are KlikAan KlikUit Range of Products
- 2 buttons are required for each device, one for ON and OFF
- There are 255 sets of ON and OFF Codes Representing House No's A to P, channels 1-16


- When transmitted the RF code is repeated 3 times for better performance, but this only takes a second or so
- Control Codes can be used in Macros
- Control devices operating sockets with heaters connected are NOT advisable as there is a risk that the user could accidentally turn the appliance on and cause a fire

### Programming RF “Contl” Codes on to a Button


- In program mode go to menu where button to be programmed is located
- Press key PB-A’ so that ‘\* Button Edit \*’ is shown on the small display.
- Press the button to be programmed this opens the button edit screen

- Press  button to reveal page 1 (of 3) of actions




- Press  to go to page 2 of button actions menu



- Press  again to go to page 3 of button actions menu



- Press  button to reveal the Numbers for the function required





Page 1


- Enter a hexadecimal number which corresponds to a channel function for the device; using table (appendix D) to obtain the correct code


- Press the  button to move to the hex digits ABCDEF page for letter and to switch between the two pages




Page 2

j) If a mistake is made during entering the number press  to delete the last digit or  to clear the whole number then repeat steps 5 and 6

k) To discard changes and exit Press 

l) to confirm changes Press  when the correct code has been entered, Primo then exits and returns to the button edit menu



m) Assign a label and symbol as required then Press 

n) Program the RF device as per the devices instruction manual then test operation

## TV channel Action


### About TV channel Action

The TV channel action allows for a specific multi digit TV/Teletext/Cable/Satellite channel to be assigned to a button quickly without the need for using a macro, when setting the channel it refers internally to the IR codes captured in the TV1 Setup template in Engineer system setup, once digit 0-9 have been captured it is possible to have a great number of TV channel actions without using large amounts of memory. It is also possible to view the channel number assigned to the button and change it if required


### Assigning TV channel action to a button

- In program mode, select the menu where the button is located
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.
- Press the button to be programmed; this opens the button edit screen



d) Press the  button; this reveals the first page of actions






e) Press the  button, this opens the channel number screen







Page 1



Page 2

f) Press Digits  through to  for the channel number of the TV channel required, this is shown in the top display. If an automatic teletext channel is required press the  button (text on) as the first digit of the number. For the user the TV will not have to be in teletext mode first before the channel is sent


g) if the incorrect channel is entered press  to delete the whole channel number then reenter the new number, or press  to go to the second page and press  repeatedly to delete the right most digits then  again to return to the number page then enter the new digits

h) When the correct channel number has been entered Press ,

i) Primo returns to the button edit screen and displays the channel number assigned to the button



j) Re-label the button and choose an alternative symbol if required

k) Press  to store changes, and exit button edit menu

## TV Channel /Teletext ‘Build & Send’ Keypad

### About TV keypad

The TV Send keypad is a special menu that allows a user to enter any “one off” digital TV / teletext page number then send the infra red signals to the TV in one go, the advantage of being able to send in one go is because some Televisions have a time out and if they do not receive the page numbers signals quickly enough then the page number will reset to a default or existing page after a few seconds.

With conventional transmitting on selection for scanning users the reset can be an issue as the speed in which the numbers can be transmitted is dependent on the scanning speed of the controller


In this menu the signals are not transmitted until “send” is selected so the user has as much time as they need to enter the number. Upon selecting “send” the digits are then transmitted at a predetermined rate (which is adjustable to suit the TV)

Before the TV Dial menu will work for the user it is necessary to set up this function by capturing the infrared signals for the numbers and teletext into a “TV” capture template in Engineer system Setup, this maps IR codes and gives correct operation



## Programming the TV Build & Send Keypad on to a button

- In program mode, select the menu where the button is located
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.
- Press the button to be programmed; this opens the button edit screen



- Press the  button; this reveals the first page of actions



- Press the  button
- Re-label and choose an alternative symbol if required
- Press  to store changes, and exit button edit menu

## Individual TV Functions (t.func)


### About "t.func"


The action t.func is used to assign any function from the TV setup template to an individual button on the user menu; this includes the captured IR, Symbol and Label and Modifier. Using t.func actions will reduce duplication and use less memory in Primo

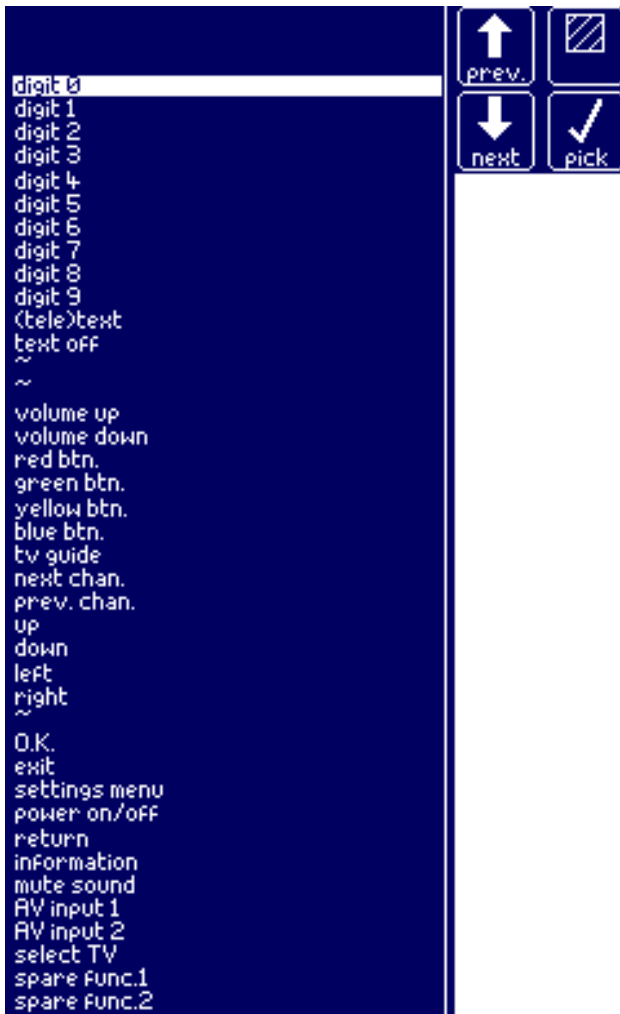
### Setting up a "t.func" action onto a button

- In program mode go to the menu where the button to be programmed is located
- Press key 'PB-A' on the bottom of Primo! so that "Button Edit" is shown on the small display.
- Press the button to be programmed, the button edit menu is shown




- Press  button

- Press  to go to the second action page




- Press  this reveals the standard list of TV functions



**t.func list expanded to show all functions**

- g) Press the  or  arrow buttons repeatedly until the function to be used is highlighted
- h) Press ; the button edit menu will return with the chosen function displayed



- i) Once the function has been picked a default symbol and label are assigned automatically, which can be changed if required
- j) If an  modifier is required for the action only  modifier can be changed on the t.func button itself, the other modifiers (glide and sticky) are set on the in the TV setup template on the original captured button
- k) Press  to store, and exit the button edit screen

## Box Channel action


### About BOX channel Action

The Box channel action allows for a specific multi digit /Teletext/Cable/Satellite channel to be assigned to a button quickly without the need for using a macro. When setting the channel it refers internally to the IR codes captured in the Box Setup template in Engineer system setup, once digit 0-9 have been captured it is possible to have a great number of Box channel actions without using large amounts of memory. It is also possible to view the channel number assigned to the button and change it if required


### Assigning BOX channel action to a button

- In program mode, select the menu where the button is located
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.
- Press the button to be programmed; this opens the button edit screen



- Press the  button; this reveals the first page of actions











- Press the  button, this opens the channel number screen




Page 1



Page 2

- Press Digits  through to  for the channel number of the TV channel required, this is shown in the top display. If an automatic teletext channel is required press the  button (text on) as the first digit of the number. For the user the TV will not have to be in teletext mode first before the channel is sent
- if the incorrect channel is entered press  to delete the whole channel number then reenter the new number, or press  to go to the second page and press  repeatedly to delete the right most digits then  again to return to the number page then enter the new digits
- When the correct channel number has been entered Press ,
- Primo returns to the button edit screen and displays the channel number assigned to the button



- j) Re-label the button and choose an alternative symbol if required
- k) Press  to store changes, and exit button edit menu

## Individual Box Functions (b.func)


### About “b.func”


The action b.func is used to assign any function from the Box/TV2 setup template to an individual button on the user menu; this includes the captured IR, Symbol and Label and Modifier. Using b.func actions will reduce duplication and use less memory in Primo

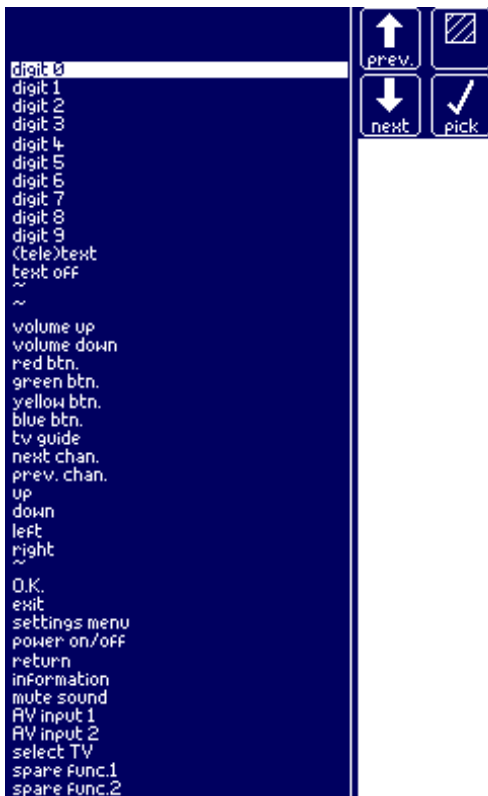
### Setting up a “b.func” action onto a button

- a) In program mode go to the menu where the button to be programmed is located
- b) Press key ‘PB-A’ on the bottom of Primo! so that “Button Edit” is shown on the small display.
- c) Press the button to be programmed, the button edit menu is shown

- d) Press  button


- e) Press  to go to the second action page

- f) Press  this reveals the standard list of Box/TV2 functions





b.func list expanded to show all functions


g) Press the  or  arrow buttons repeatedly until the function to be used is highlighted

h) Press ; the button edit menu will return with the chosen function displayed



i) Once the function has been picked a default symbol and label are assigned automatically, which can be changed if required

j) If an  modifier is required for the action only  modifier can be changed on the b.func button itself, the other modifiers (glide and sticky) are set on the in the Box/TV2 setup template on the original captured button

k) Press  to store, and exit the button edit screen

## **Box 'Build & Send' Keypad**

### **About Box Build and Send Keypad**

The Box Send keypad is a special menu that allows a user to enter any "one off" sky/cable/freeview page number then send the infra red signals to the TV in one go, the advantage of being able to send in one go is because some set top decoders have a time out if they do not receive the page numbers signals quickly enough then the page number will reset to a default or existing page after a few seconds.

With conventional transmitting on selection for scanning users the reset can be an issue as the speed in which the numbers can be transmitted is dependent on the scanning speed of the controller

In this menu the signals are not transmitted until "send" is selected so the user has as much time as they need to enter the number. Upon selecting "send" the digits are then transmitted at a predetermined rate (which is adjustable to suit the decoder)


***Before the Box Build No & Send menu will work for the user it is necessary to set up this function by capturing the infrared signals for the teletext into a "Box Send Setup" template, this maps codes and gives correct operation***

### **Assigning the Box 'Build & Send' Keypad on to a button**

- a) In program mode, select the menu where the button is located
- b) Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.

c) Press the button to be programmed; this opens the button edit screen




d) Press the  button; this reveals the first page of actions




e) Press the  button

f) Re-label and choose an alternative symbol if required

g) Press  to store changes, and exit button edit menu

## Menus & Templates

Primo! is a dynamic screen device which means the user can have multiple menus on their unit. Menus are

added using the  action. Upon selecting the button action 'templ' a list of templates menus is shown. All new menus and macros that are created are added to the template list. A single letter to the left of the description shows the template type as follows:


- T** This is a built-in **T**emplate for a menu or macro. Selecting this will create a copy in a file. This copy can be edited/filled in to suit.
- E** A previously created **mE**nu – the file number is shown to the right. Selecting offers the choice of making a reference to the original file, or making a copy in a new file, so allowing changes to be made.
- A** A previously created **mA**cro – the file number is shown to the right. As with menus, you can use either the original unchanged, or make a copy and edit it.



### **Creating a new menu from a template**


New menus are created by selecting a template from the template list There are 18 template designs to choose from [See Appendix E] some of the templates are two page menus and are already assigned with possum actions, others are blank or have labels and symbols only. Templates are selected as follows.

- a) In program mode, select the menu where the button is located
- b) Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.
- c) Press the "action" button

d) Press more to go to the second page of menu actions

e) Press  to view the list of templates

f) Press the  or  arrow buttons repeatedly until the template you wish to base the new menu on is highlighted

g) Press  to select the template


Template list expanded to show all available templates



h) A name entry menu is shown allowing the menu title to be changed (the current title is shown on the small display)



Title Edit Menu

i) Press the  key to delete the last character(s) of the existing title

j) Enter a new title name then press  key

k) The new menu is created and added to the template list

## Menu Template Designs

Once a menu has been assigned selecting the appropriate button will show the menu. The menu can be edited and changed accordingly.

### 1 page Empty Menu

This is a single menu. You can add additional menu to any of the empty buttons



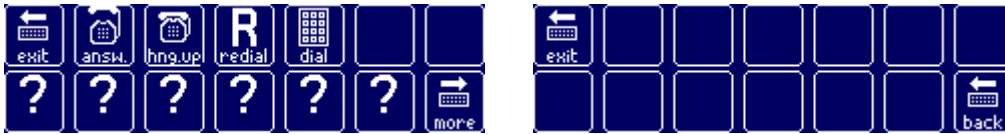
### 2 page Empty Menu

The menus are fully editable apart from “more” , “back” and “exit”



**Phone Functions – Simple**

For more information see Section Telephone control- Telephone Templates



**Phone Functions – Full**

For more information see Section Telephone control- Telephone Templates



**TV Menu Template**

This menu is linked to actions captured in the Engineer system setup - TV Setup capture template. Buttons labelled 1 – 5, are TV channel actions 101,102,103,104,105 for sky/cable TV, all other TV functions are “t.func” actions. This menu is fully editable and can be changed with captured IR or other functions if required



**Fast text template**

This menu is pre-prepared with symbols and labels, the menu is fully editable



**Digital TV Menu**

The TV functions are “t.func” actions. This menu is fully editable and can be changed with captured IR or other functions if required



**DVD Menu Template**

This menu is pre-prepared with symbols and labels, no actions are set, the menu is fully editable



**Hifi Menu Template**

This menu is pre-prepared with symbols and labels, no actions are set, the menu is fully editable



### Bed/Chair Control Template

This menu is pre-prepared with symbols and labels, The buttons actions are set with HC1823 relay actions, the menu is fully editable



### VCR Menu Template

This menu is pre-prepared with symbols and labels, no actions are set, the menu is fully editable



### VCR Timer Menu Template

This menu is two pages and is pre-prepared with symbols and labels, no actions are set, the menus are fully editable apart from "more", "back" and "exit"



### TV/DVD Combi Menu Template

This menu is pre-prepared with symbols and labels, no actions are set, the menu is fully editable



### Audio Tape Menu Template

This menu is pre-prepared with symbols and labels, no actions are set, the menu is fully editable




## Copying Menus


Primo! allows for previously created menus to be used elsewhere in the users program or copied and edited and used. If the menu is copied a new menu is created based on the original menu design (including actions and captured IR codes) The original does not change if the copy is edited. Copied menus can be copied again and again so its possible to a have may variants of the same menu design. Each time a menu is copied its copy is added to the template list. This allows Primo!'s menu structuring and navigation to be very powerful and flexible



**Note:** If the menu to be copied has sub menus attached to any of its buttons, then only the top menu is copied and the submenus in the copied menu will still be referenced to their originals so these will also require copying

To copy a menu or create a new path to an existing menu (one which is already being used) proceed as follows

- a) In program mode, select the menu where the button is located
- b) Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.

c) Press the  button, the first page of actions is shown

d) Press  to view the list of templates and Menus

e) Press the up or  or  arrow buttons repeatedly until the template you wish to copy to the button or have a path to from the button is highlighted (previously created menus are prefixed M)

f) Press 

g) This opens a window offering the choice of making a reference to the original file, or making a copy in a new file, so allowing changes to be made.



Menu copy window



- h) Press "use original" if you want the button to go an existing menu on the users Primo! or Press "Copy to Edit" if you want to create a new menu based on an existing design
- i) Pressing "Copy to edit" reveals a name entry menu allowing the menu title to be changed




Title Edit Menu

- j) Press the  key to delete the last character(s) of the current menu title,
- k) Enter a new title name for the copied menu then press  key. The new menu is created and added to the template list, and primo returns to the button edit screen displaying a default template symbol/label



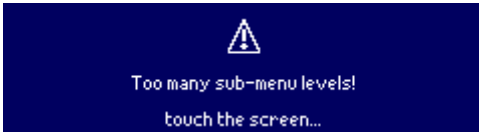
l) Re-label the button and assign an alternate symbol

m) Press  to store changes and exit button edit mode

n) Once the new menu has been created, it should be customised by setting up the buttons. Enter the new sub-menu by pressing the button it is assigned to (ensure button edit mode is off). With the sub-menu on screen, turn on button edit mode to set up the buttons by assigning their attributes.

## Sub Menu

Sub menus can have further sub-menus to a depth of four levels, though nesting menus deeply can be confusing to the user. If too many layers are created the warning below shows



## Changing an existing Menu's Title


Occasionally it is necessary to change the title of an existing menu after it has been created

This achieved as follows

- In program mode, enter the menu to be changed
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.
- Press any button in the menu you want to change, this opens the button setup page






Button setup Menu

- Press the  button, then the name edit menu is shown with current title in the small display



Title edit Menu

- Press the  key to delete the last character(s), then enter the new Title
- Press the  key to exit the edit page and return to the button setup menu
- Press  to store and exit button setup back to the menu

## Macros






### About Macros

A macro is a special type of (normally invisible) menu, and is assigned to a button using the 'templ' action. This menu is open during programming, allowing each step of the macro be programmed with the required actions. It is closed when in user operating mode

When a macro is played, the controller executes each step in turn until the last step or a stop action is reached. A delay (set by pressing the 'delay' key on the 2<sup>nd</sup> macro page) is executed between each step. Blank steps have no action other than a delay, so can be used to lengthen delay between certain steps.

Each macro has its own delay setting, set in milliseconds from 0 to 100000 (100s). Further delays can be added to the macro by using the “no action” function as a step, thus adding one additional delay period between each step multiple no actions can be used to increase delays even more.




## Creating a New Macro

- a) In program mode go to menu where the button to be programmed is located
- b) Press key 'PB-A' on the bottom of Primo! so that “Button Edit” is shown on the small display.
- c) Press the button to be programmed, the button edit menu is shown
- d) Press the  button, the first page of actions is shown
- e) Press  to view the list of templates
- f) Press the up or  or  arrow buttons repeatedly until the “Create a Macro” is highlighted
- g) Press 
- h) There are now two choices to select the type of macro required
- i) Press either “simple macro” which runs to the end without interruption or “int/loop macro” which is interruptible at any point and can be made to repeat by adding a “loop” action the last step



- j) After selecting the macro type the name edit menu is shown allowing the macro title to be changed (The macro title is shown on the small display when the macro is executed). Rename the macro with the name of what the macro is doing (eg channel change)



- k) Press the  key to delete the last character(s), then enter the name for the button
- l) Press the  key to exit and return to the button setup screen
- m) This new macro is added to the Template/Menu list allowing it to be used elsewhere in the users Primo! or copied, primo returns to button edit screen
- n) Press  to store and exit button setup back to the menu
- o) The final part is to program each step within the macro and set the delay

## Programming a Macro

Once a macro has been assigned to a button then it (the macro) will need to be programmed as follows

- a) In program mode go to menu where the button to be programmed is located
- b) Press the button which is assigned to execute the macro, this will open the macro menu  
Macro Menu open






Page 1



Page 2

c) The macro menu has two pages,

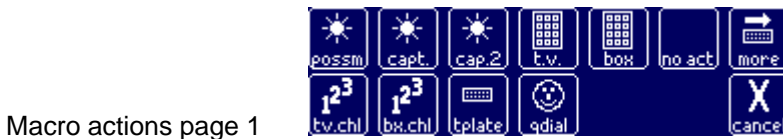
d) Pressing the button labelled  takes you to the second page and pressing the button labelled  returns to the first page

e) The button labelled  will exit the macro menu and return to the original menu

f) The buttons labelled 'step1' / 'step 20' hold the actions for the macro. These are played in numeric order when the macro is executed. Using button edit, program these 'step' actions as for any other menu, however there are a few differences: [See Macro Actions]

## Macro Actions

When programming buttons in a macro, the actions menu shows different actions which are available, some of the standard actions are not available in macros, and in addition there are three new actions which are specific to macros only



## Using Macro Actions



The macro will stop at this step and terminate the macro (otherwise the macro will run to step 20)



The macro will loop back to step 1 at this point and restart the macro, it is used for providing volume or channel control or for channel change type actions which are int/loop macros. **Caution do not use on simple macros**



This will pause the macro at this step (for upto 1 minute) waiting for any switch/Touch screen press, then resume to the next step



If another macro is selected from the template list, this macro is run as a sub-macro, returning control to the calling macro at the end. The sub macro is programmed in the same way as the calling macro (i.e. by programming each step and setting the delay). The sub macro can be a int/loop macro or a simple macro.

If a menu is selected from the template list and assigned as a step in either a main macro or sub macro; when the macro is executed this menu will be loaded and the macro terminated at this point with the chosen menu displayed

## Macro Action Button Modifiers



Some actions modifiers can be used in steps in a macro, the and modifiers are not permitted to be used and are therefore are not shown when selecting the opt button in the button edit screen. As with actions in standard menus only the modifiers appropriate to the action are displayed



## Macro Action Delay

For Each step of a macro there is a new action modifier , this allows for a specific delay to be set for the step before the steps programmed action is executed, the delay can be different for each step in the macro

- In program mode select the menu where the macro is located
- Press the button that executes the macro
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.
- Press the step in the macro to be programmed, this opens the button edit screen



- Press to view the available modifiers




- Press to view the delay options



- Press the appropriate delay button to to set the delay,
- Primo then returns to the button edit screen and displays delay time period




- i) Press  to store changes and return to the macro

## Macro Global Delay

A global macro delay (a delay which is the same between each step in a macro) is set on a per macro basis. The delay occurs before the step therefore there is always a delay before step 1 is executed.

The default delay is 1000ms, but can be as long as 1000s. If the delay is used in conjunction with individual action delays then the total delay between each step is the action delay time of the next step + the global macro delay time


The delay is changed as follows.

- a) In program mode with the macro open press  to go to the second macro page  
 b) Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.

- c) Press the delay button , this opens a number menu



- d) Press  to delete the delay time (shown on the top display)

- e) Enter the new delay time in milliseconds then press 

- f) The new delay is set and the new time shows on the delay button in the macro menu



- g) To check the delay press the new delay button , the button will light up  for the delay time that is set

- h) Repeat items a) to g) if the delay time needs altering

- i) When completed press  to leave the macro

## Testing Macros

- A steps button symbol is never shown in use – it is suggested that it is not changed.
- Each steps button label is displayed in the top display while the macros step is executed. Where the steps action does not have a significant meaning for the user it is suggested that the label for that step is left blank

- Only the 'step' and delay buttons on the macro can be edited – the others are locked.
- Individual steps in a macro can be tested in programming mode by pressing its button (with button edit off), as for any other menu.
- The special actions m.stop, m.loop and m.key cannot be tested on there own
- A macro can only be tested as a whole by exiting the macro, cancelling program mode then return to normal operating mode, The button selecting the macro will execute it in its entirety


## Copying a Macro



Primo! allows for previously created macros to be used elsewhere in the users program or copied and edited and used. If the macro is copied a new macro is created based on the original macro design (including actions and captured IR codes) The original does not change if the copy is edited. Copied macros can be copied again and again so its possible to a have many variants of the same macro design. Each time a macro is copied its copy is added to the template list.

To copy a macro or create a new path to an existing macro (one which is already being used) proceed as follows

- In program mode, select the menu where the button is located
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.

c) Press the  button

d) Press  to view the list of templates and Menus and Macros

e) Press the  or  arrow buttons repeatedly until the macro you wish to copy to the button or have a path to from the button is highlighted (macros are prefixed "A")

f) Press 

g) This opens a window offering the choice of making a reference to the original file, or making a copy in a new file, so allowing changes to be made.



Menu/Macro copy window



- Press "use original" if you want the button to go an existing macro on the users Primo! or Press "Copy to Edit" if you want to create a new macro based on an existing design
- Pressing "Copy to edit" reveals a name entry menu allowing the macro title to be changed

Title Edit Menu



- j) Press the  key to delete the last character(s) of the current macro title,
- k) Enter a new title name for the copied macro then press  key. The new macro is created and added to the template list
- l) Label the button and assign a symbol
- m) Press "Save" to store changes and exit button edit mode
- n) Once the new copied macro has been created, it should be customised by setting up the buttons. Enter the new macro menu by pressing the button it is assigned to (ensure button edit mode is *off*). With the macro menu on screen, turn on button edit mode to set up the step buttons by assigning their attributes.


## Macro Examples

### Sky Favourites

When using sky satellite systems there is a function (usually the blue key) on the sky remote which when pressed repeatedly will scroll through specific (user defined) channels. When the chosen channel details are shown on the TV screen a press of the 'select' key is required to view that channel. If no 'select' button is pressed within a certain time then the TV will remain on the original channel

For some users the favourites function is particularly difficult to use because of the repeated presses required and also pressing the select key before the TV has timed out, however for EC users a macro could be used to overcome these issues

Set up the Macro as follows:

- a) Assign a new blank simple macro to a button. [see creating a new macro]
- b) Capture the required IR signal onto step 1 or choose the b.func action 'blue key' if that function had been recorded into the box capture template in the macros menu,
- c) label step 1 button as 'Fav' or something similar
- d) Assign a 'sticky' modifier to the action in step 1 and set a delay (repeat time) for the sticky command
- e) Capture an IR signal for the 'select' function onto step 2 of the macro
- f) Assign a  action to step 3, edit the label for step 3 so that no label is shown
- g) Go to page two of the macro menu and adjust the macro delay to 300 ms
- h) Exit the macro

For the user when the macro is executed primo will send The FAV signal to the sky box repeatedly until the input on primo is pressed, primo will then send the "select" command to the sky box and then the macro will terminate

### **Volume control with limited repeats**

This type of control enables a defined number of signals to be transmitted and is suitable, particularly to provide limited volume control in situations where there may be a risk that if the volume increase is not stopped by the user the loudness could be unsociable or distressing

Setup the macro as follows:

- a) Assign a new blank int/loop macro to a button.
- b) Label the button and assign a symbol
- c) Select the button to open the macro menu
- d) Capture the same required IR signal onto step 1 through to 5 in the macros menu,
- e) label each of these steps button (up, or down, etc)
- f) Assign a m.stop action to step 6 of the macro
- g) Do not set a label on step 6 (but you could label it with "stop")
- h) Go to page two of the macro menu and adjust the macro delay according to the repeat rate suitable for the client
- i) Exit the macro

When this macro is executed in normal operating mode the volume signal will transmit at the specified delay interval and can be stopped at any time. If the input is not activated to stop transmissions then a maximum of only 5 transmissions will occur before the macro stops automatically

### **Channels change control from one button**

This is used to save space on a menu, as the TV channels can be selected from just one button

Setup the macro as follows

- a) Assign a new blank int/loop macro to a button.
- b) Label the button "chanls" and assign a symbol No 135 then save the button
- c) Select this button to open the macro menu
- d) Capture the first TV channel IR signal onto step 1 in the macro's menu, or if it is a Digital TV/or satellite/cable set top box use The TV
- e) label the step's button with the name of the TV station (e.g. bbc1)
- f) Repeat capturing and labelling of further TV channels on subsequent steps in the macro
- g) Assign a "m.loop" action to next step following the last TV channel in the macro
- h) Do not set a label on the m.loop step
- i) Go to page two of the macro menu and adjust the macro delay according to the rate suitable for the client
- j) Exit the macro

When this macro is executed in normal operating mode each digit of the channel or page Number will be transmitted in turn then stop after the last digit transmission. The macro is not interruptible as the whole channel number needs to be transmitted every time the button is selected

### Additional Phone Numbers

Sometimes the number of phone entries in a phone book is insufficient for the user. Further phone numbers can be setup as variants of the simple macro described above

- a) Setup the button as a simple macro.[see create new macro]
- b) Using a “p.func” action set the first step in the macro as the seize line signal of the telephone and label it “S”
- c) Using the p.func actions set each digit of the phone number on step 2 through to “step n”. and label each step with digits character
- d) On the step following the last step with a digit, assign an m.stop action. Do not label this step
- e) Set the macro delay according to the correct dialling speed acceptable for the telephone.
- f) Exit the macro.
- g) If more numbers are required then another button can be assigned as a telephone number by copying this macro from the template list then editing the copy

### Changing an existing Macro Title & Type)

Occasionally it is necessary to change an existing macros title or type after it has been created

This achieved as follows

- a) In program mode, select the menu where the macro to be changed is located
- b) Press the button that opens the macro
- c) Press key ‘PB-A’ once on the bottom of Primo! so that ‘\* Button Edit \*’ is shown on the small display
- d) Press any pre programmed button in the macro, to open the button setup menu





Button setup Menu

- e) Press the “menu” button; the title edit menu is shown with the current title visible in the small display



Title Edit Menu

- f) Press the  key to delete the last character(s), then enter the new name
- g) Press the  key to exit the edit page, the macro type menu is shown
- h) You are now given the choice to change the type of macro

Press either “simple macro” which runs to the end without interruption or “int/loop macro” which is interruptible at any point and can be made to repeat by adding a “loop” action the last step



i) Upon choosing the macro type, Primo! returns to the button setup menu



Button setup Menu

j) Press "Save" to store and exit button setup back to the macros menu

## TELEPHONE CONTROL

### Telephone Control

Primo! can operate many types of infra telephone, when the particular telephone type has been assigned in Primo! then full user telephone operation can be provided as follows

Phone book –	Consisting of up to 30 entries
Quick Dial Numbers –	Any entry from the phone book can be assigned to a button
Dial Keypad –	To build then dial any "one off" phone number
Tone keypad –	To build then send any series of digit tones whilst on the phone
Redial –	To dial the last number dialled from Primo!
A phone function –	Any single phone function can be assigned to a button in a menu or to a step in a macro
Telephone Menus -	Consisting of any of the above actions

### Telephone Type

Primo can control a number of different infrared remote control telephones. The phone type is selected from the in the setting list which accessible from the Engineer Setup Menu. The supported phones are

- Type 0 = Possum HC2003 Infra Red Telephone
- Type 1 = Possum HC2006 Sero! Using group 6 IR signals
- Type 2 = HC516 Freedom wireless Infra red/ect telephone -or- HC2006 Sero! using "Old Possum IR signals [refer to Hc2006 Sero! Technical Manual]
- Type 3 = Gewa IR code operated telephone (Gewa Jupiter Telephone)
- Type 4 = An alternative 3<sup>rd</sup> Party Infra Red Telephone (default is set as HC2006 Sero! Group 8 IR signals [refer to Hc2006 Sero! Technical Manual]
- Type 5 = HC2006 Sero! Group 7 IR signals [refer to Hc2006 Sero! Technical Manual]

## Setting up a Gewa Jupiter phone as Type 3 telephone

Full telephone operation through Primo! is possible with a Jupiter telephone by setting the jupiter to the correct start channel, alternative and group (see Gewa Jupiter Manual)

- Start Channel = Gewa link channel 32 (equivalent to Prog III, Level 3, Key1)
- Alternative = 3
- Group = 7

## Setting up a Gewatel 200 phone as a Type 3 Telephone


Follow the table below and capture the IR codes for each function from a Gewa Prog 3 or Control Prog IR transmitter onto the Gewatel telephone

This will give you full functionality of Primo's internal phone functions, 40 phone contacts (30 phonebook contacts in Primo and an additional 10 phone contacts in Gewatel)

Gewa Prog 3 / Control Prog Level	Gewa Prog 3 / Control Prog key	GewaLink Channel	Gewatel Function	Primo "possm" Code Action
3	1	32	Digit 1	E7D41
	2	33	Digit 2	E7D43
	3	34	Digit 3	E7D45
	4	35	Digit 4	E7D47
	5	36	Digit 5	E7D49
	6	37	Digit 6	E7D4B
	7	38	Digit 7	E7D4D
	8	39	Digit 8	E7D4F
	9	40	Digit 9	E7D51
	0	41	Digit 0	E7D53
	*	42	Digit *	E7D55
	#	43	Digit #	E7D57
	A	44	Speaker on/off	E7D59
	B	45	RE (Redial)	E7D5B
C	46	—	E7D5D	
D	47	M1	E7D5F	
4	1	48	M2	E7D61
	2	49	M3	E7D63
	3	50	M4	E7D65
	4	51	M5	E7D67
	5	52	M6	E7D69
	6	53	M7	E7D6B
	7	54	M8	E7D6D
	8	55	M9	E7D6F
	9	56	M10	E7D71
	0	57	Recall	E7D73
	*	58	Volume-	E7D75
	#	59	Volume+	E7D77
	A	60		E7D79
	B	61	Pause	E7D7B

## Setting up a 3<sup>rd</sup> party Captured IR Telephone

If a telephone not listed in the telephone types is to be controlled then it is possible to operate the telephone from primo providing the telephone has an infra red remote control handset and the phone IR commands are captured in the a Special Type 4 telephone capture template. This template is programmed in Engineer

system setup – by pressing  button

## Single Telephone Functions


The phone features in Primo! (phone book, dial keypad, phone templates etc) call upon specific phone functions. These functions are also available to be used individually as actions on a button in any menu by


selecting the button action  (from 2<sup>nd</sup> page of the actions menu)

To assign a “p.func” action to a button proceed as follows:

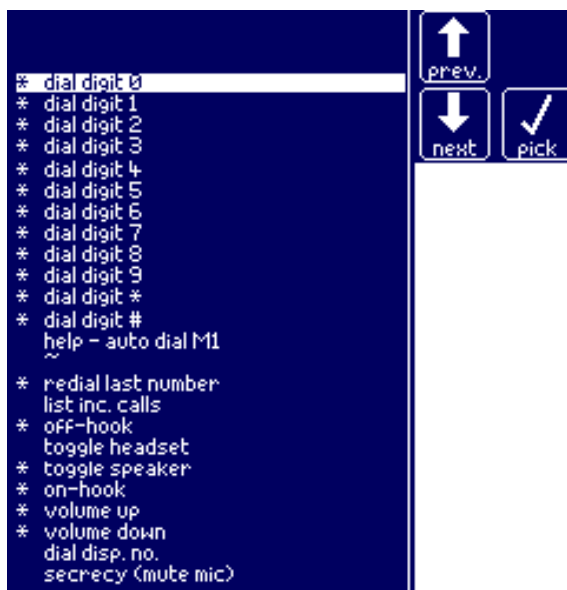
- l) In program mode go to the menu where the button to be programmed is located
- m) Press key ‘PB-A’ on the bottom of Primo! so that “Button Edit” is shown on the small display.
- n) Press the button to be programmed, the button edit menu is shown

o) Press  button


p) Press  to go to the second action page

q) Press  this reveals the standard list of telephone functions

### p.func list expanded to show all actions




r) Press the  or  arrow buttons repeatedly until the function to be used is highlighted

s) Press ; the button edit menu will return with the action assigned





t) Once the function has been picked a default symbol and label are assigned automatically, which can be changed if required

u) Press  to store, and exit the button edit screen

**Note:** The asterisk to the left of the function denotes, that the function is supported for the selected phone type, if the phone type is changed then so will the supported functions. It is not possible to show which functions are supported for third-party phones, where the IR codes must be captured. Asterisks are not shown when the phone type is set to third party phone (phone type 4).

Glide and subsidiary Modifiers are not appropriate for the button action p.func and are not supported.

## Alternative single phone functions

Occasionally the specific phone function required is not listed as a  action. In this instance the  action can be used where the possum code is entered for a particular function of a Possum or Gewa Jupiter telephone. For third party telephones (type4) the function can be learnt from the telephones infra red remote

handset using the  or  actions

## Telephone Template menus

Primo! has two pre-designed telephone template menus which can be used. They offer simple or full operation of a telephone. These menus are editable

### Phone Template Simple





Page1





Page2

This Template is a two page menu where the first page gives standard functions.

The button  sends the phone function “off hook” and the button  sends the phone function “on hook”

The button  sends the last number dialed from Primo! and button  will go to the telephone 'build and dial' menu

The buttons  are quick dials 1 – 6 and these fill automatically once the contact details have been entered into the phonebook.

Upon selecting  page 2 is selected. where additional speed dials or other phone functions can be added to this menu.

In page 2 selecting  returns to page 1

### Phone Template Full





Page1




Page2


This Template is a two page interactive menu for use with automated telephone calls/services



Button  sends the phone function "off hook" and then goes to page 2


Button  sends the last number dialed from Primo! and then goes to page 2


button  will go to the telephone 'build and dial' menu. Upon entering then dialling a number primo will go to page 2

Button  sends phone function Memory1/Help then goes to page 2

The buttons  are quick dials 1 – 6 and these fill automatically once the contact details have been entered into the phonebook. upon dialling a quick dial primo goes to page 2

Upon selecting  page 2 is selected. In page 2 selecting  returns to page 1

In Page 2, button  sends the phone function "on hook" then returns to page 1

In page 2 Pressing  goes to the DTMF tone 'build and send' Number menu, upon entering and sending a number primo returns to page 2

## The Phone Book

## About phone book

- The Phone Book is used for dialling a stored number from a list and also as a reference for dialling a quick dial telephone number from a single button on any menu
- The phone book can store up to 30 entries
- A phone entry has three attributes that will need to be entered
  - Name [up to 15 characters]
  - Number [up to 20 digits]
  - type with symbol [mobile, general, home, work, tone]. “Tone” type numbers do not send a pick up line signal only digit tones and are used for pin codes, account numbers etc which can be sent as tones while on the phone
- Phone entries can be changed or edited at any time in any order

## Accessing the Phone Book


The phone book is programmable from program mode “engineer setup” and also from Carer setup mode. It is also possible to allow user the facility to program their own numbers provided they are a touch screen user

There are six permanent quick dial entries and facility for additional 24 entries

## Adding a new entry to the phone book

New Numbers added to the book are always added to the end of the list, it is not possible to insert new contacts into a list, quick dials 1-6 need to be edited not added

- a) In Program mode return to the top level menu
- b) Enter Engineer Setup Mode by pressing the “PB-B” button on the bottom of Primo!

- c) Press the  button on the display to open the phone book




- d) In phone book press “add”, the Contact Name Entry Menu is shown




- e) Enter the Contact name using the name edit menu (the name appears on the top display) [please note that if a quick dial is being assigned for this number only the first six characters will appear on the quick dial button]



- f) Press  to go to Contact No menu




g) Press the numbers on the display to enter the phone number

h) Press  to go to symbol/type menu (the new name and number is shown in the phone list)



i) Press the symbol for the contact type, Primo! will return to phone book, showing the new entry




j) Press  to go to the second page



k) Press  to save changes or  then  to cancel changes


l) Primo! then exits phone book and returns to Setup Menu



m) Press  to exit Engineer mode to go back to program mode

## Editing an existing telephone book entry



a) From Program mode enter Engineer Setup Mode by pressing the “PB-B” button on the bottom of Primo!

b) Press the  button on the display to open the phone book




c) In phone book Press  to go to the second page



- d) Use the  and  arrows to highlight the phone entry to be changed




- e) Press  to go to the Contact name Menu




- f) Enter the name using the Contact name edit menu (the name shows on the top display)

- g) When completed press  to go to Contact No menu






- h) Press  to remove the old number, then ENTER THE NEW PHONE NUMBER (the number shows on the top display)

- i) Press  to go to Symbol/Entry type menu (the phone list shows name and number changes)



- j) Press the symbol for the type of phone number, Primo! will return to phone book showing all changes



- k) Press  to save changes or press  to go to the first phone book page and press  to clear changes

- l) Primo! then exits phone book and returns to Engineer Setup Menu



- m) Press  to exit Engineer setup to go back to program operation


## Deleting Entries from the phone book

It is possible to delete an entire entry from the phone book. If a number is deleted after quick dial 6 then all entries below the deleted number will shift up one space to fill the deleted position. This is intentional to keep the list together and not fragmented

The positions for quick dial 1-6 cannot be completely deleted, but all the contents will be cleared, this is because quick dial 1-6 are reserved for more important numbers and may have specific quick dial buttons associated to them and re entering a new contact details [name,number,symbol] to the phone book in any of these positions will automatically update any of these quick dial buttons

## Deleting an existing telephone number



- a) From Program mode enter Engineer Setup Mode by pressing the “PB-B” button on the bottom of Primo! (ensuring you are in the top level menu first)

- b) Press the  button on the display to open the phone book




- c) In phone book Press  to go to the second page






- d) Use the  and  arrows to highlight the phone entry to be deleted



- e) Press , Primo! will then display the changes



- f) Press  to store changes or press  to go to the first phone book page and press  to clear changes

- g) Primo! then exits phone book and returns to Engineer Setup Menu



- h) Press  to exit Engineer setup Menu

## “Quick Dial” Telephone Numbers


A quick dial telephone action is alternative method to the phone book for dialling stored telephone numbers. It enables any number from the phone book list to be assigned to any button in any user menu

The capacity for the phone book is 30 entries, therefore you can have 30 quick dials


### Adding a “quick dial” function to a button

- Enter the contact into the phone book **first**
- Enter Program mode, then press key ‘PB-A’ so that ‘\* Button Edit \*’ is shown on the small display.
- Select the button to program, the button edit menu appears.





- Press , to reveal the list of possible actions




- Press “**q dial**”  button ; The phone book list will now show



- In the phone list press the  or  arrows until the phone entry to be assigned is highlighted

- Then press “**Dial**”  To return to button edit screen

- The telephone entry including the symbol/type, contact number and the first six characters of the contact name are automatically assigned to the button,

- The button edit menu will show again, Press  to store and button edit screen

### Editing a quick dial

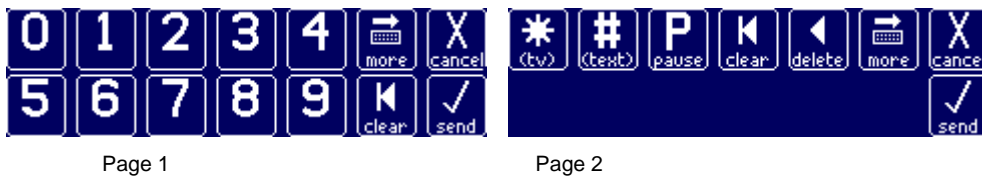
The quick dial numbers are linked directly to the phone book so all editing of the quick dial must be done by editing the entry in the phone list. Any changes made to the phone list will automatically amend any associated quick dial buttons [see editing the phone book]

## Deleting a quick dial


It is not possible for a user/carer to delete a quick dial button but the phone number and contact name can be cleared from it by editing the phone book

Although the phone book has a delete facility this should be used with care because when deleting a phone entry greater than quick dial 6 all entries will shift up the phone list which will in turn effect the order of quick dial buttons on a menu. It is not possible to insert a new entry in the list



For the programmer it is possible to delete a quickdial button entirely from any menu by pressing “clear” when “button edit” is on and the button is selected Phone “Dial” Keypad



This is a special user menu that allows a client to create a “one off” telephone number then dial it. It allows for the number to be built in the users own time as it does not actually send the number to the


telephone until the button  is selected. At this point the “pick up” command is sent followed by the digits of the number. The digits are sent at a predetermined interval which is unique to the specific telephone type (adjustable for phone type 4)

It is possible for the user to use this keypad while they are on another call (for example directory enquiries) and build a number to be dialled later. In this instance, selecting “cancel” when the number has been built

will exit this menu but the numbers entered will not be cleared. The client can re-select  keypad; then select  and the number previously entered will be dialled. This facility allows for Primo! to have simple Phone Memo capability

## Adding a “Dial Keypad” function to a button

- In program mode, select the menu where the button is located
- Press key ‘PB-A’ once on the bottom of Primo! so that ‘\* Button Edit \*’ is shown on the small display.


- Press the  button to reveal the first page of actions



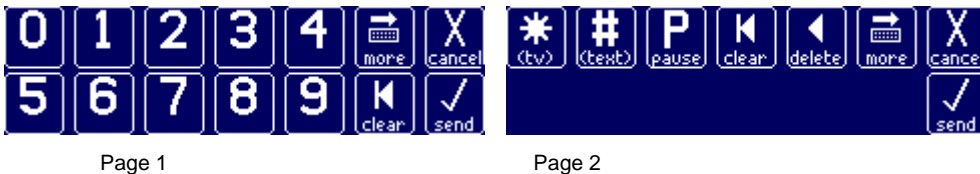
- Press  button, this will assign the dial keypad to be accessed from the programmed button



Note that on the button edit screen below *seize = 1* means a pickup line is sent when the number string is transmitted to the phone

- e) Change label or symbol if necessary then press  in the button edit menu

## Phone “Tone” Keypad




This is similar to the Dial Keypad but when a number is sent to the telephone the “pick up line” command is not transmitted, only phone only digits.

Like the telephone dial keypad this menu can be used while on another call but has a specific application for building numbers for automated banking services or if a one off extension number is required. As with the dial keypad the cancel button operates in the same manner


## Adding a “Tone keypad Menu” function to a button

This is as assigning Dial Keypad Menu but instead of “Dial” action, press “tones” action button

- In program mode, select the menu where the button is located
- Press key ‘PB-A’ once on the bottom of Primo! so that \* Button Edit \* is shown on the small display.
- Press on the PB button to be programmed, this reveals the Button Edit Options Screen

- d) Press the  button to reveal the first page of actions




- e) Select “more”  to reveal a second page of actions

- f) Select the  button; this will assign the “Tones” keypad to be accessed from the programmed button.

Note that on the button edit screen below *seize = 0* means no pickup line is sent when the number string is transmitted to the phone



g) Change label or symbol if necessary then press  in the button edit menu

**IMPORTANT NOTE ABOUT DIAL & TONE KEYPADS:** Please note that these share the same memory buffer in so entering one number will overwrite the other.

Please also note that these use the same memory buffer as the TV Teletext/Sky Box Number build menus. When a teletext number or sky number is built and sent/or cancelled then the memory buffer is cleared which will delete all telephone dial or tone numbers previously created

## **Redial function**


This Redial option is not the redial button on a telephone,

Primo!'s redial facility dials the last number sent from Primo! ("Dial" keypad, Tone Keypad, Quick Dial or Phone book) and allows for any telephone with or without a redial button to have redial capability.


***This includes Freedom wireless telephone***


## **Assigning the "Redial" function to a button**



- h) In program mode, select the menu where the button is located
- i) Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display.

j) Press the  button to reveal the first page of actions




k) Select "more"  to reveal a second page of actions

l) Press "punk"  button Primo! will now show a list of telephone functions

m) Press the  and  arrows to scroll through the list of phone functions until the "redial" function is **highlighted**

n) Press "pick" 

o) Primo! returns to button edit menu, from which both the symbol and label can be assigned, when

finished press "save" 

## Alternative Redial Function

Should the actual redial button be required for Phone Type 0,1,3,5 then these functions are listed in the possum IR code list and can be assigned to a button using a “possm” action and appropriate device code

If the phones redial function is required for a 3<sup>rd</sup> party telephone (phone type 4) then this function is treated as captured Infra red signal and captured on a button

## Auxiliary Outputs

Primo! has two auxiliary outputs which provide isolated contact closure for direct connection to 3<sup>rd</sup> Party devices. The output each output is accessible via a 3.5 mm mono Jack socket located on the Left side of Primo!



The rating of each output is 12V DC, 100mA maximum and the output is a normally open contact

These outputs (known as O/P1 & O/P2) are functions that can be individually assigned as button actions on a user menu or in a macro and can be independently programmed to give a single pulse operation. The time duration, (which is a global setting) for each o/p is independently variable from 0.5S to 20S in 0.5S increments.

Additionally the o/p can be assigned to give subsidiary control (input switch transfer) for direct control of other scanning devices such as PC switch operated software, and AAC devices and other communication aids. In this mode the o/p pulse timers are inactive and the o/p on/off response time is the same as the input/touch screen operation

# ENGINEER SYSTEM SETUP MENU

## Accessing Engineer System Setup

The Engineer Setup menu is used to adjust the system and global settings, and is selected as follows

- a) While in program mode select the top level menu
- b) Press PB-B (on the right) on the bottom of Primo!, the Engineer setup Menu is displayed showing options of settings on the right side and file status (for checking Primo! capacity) and battery status on the left side



## **Engineer Setup Option buttons (Press to select)**



Allows capture of digit codes for TV1/satellite remote control for dialling teletext pages/channel numbers.[See TV send setup]



Allows capture of digit codes for TV2/satellite remote control for dialling teletext pages/channel numbers.



Access the engineer settings list, allowing many global system options to be set.[see settings list]



Allows capture of function codes for a 3<sup>rd</sup> party IR phone - type 4 [see telephone Control]



Access to adding and editing numbers in the phone book [see telephone control – phone book]



This button is pressed to exit Engineer Setup menu

## Engineer Settings List









## **Changing Settings**

- a) Press the  button to reveal this list



Engineer setting list

- b) Press the  or  arrow repeatedly until the setting to be altered is highlighted
- c) Press the  or  buttons to change setting values
- d) When settings have been adjusted press  to store and exit this menu
- e) If you do not wish store the changes press  to exit

## List of Settings

### scan mode

Selects the scanning mode for external inputs, using Possum's numbering scheme.

Type 1 = single momentary scanning

Type 2 = single, switch maintained or held on to scan, released to selected)

Type 3 = two switch scan, switch A= Nudge/Scan, switch B = select.

### 1<sup>st</sup> step period (%pd)

Sets the scan period for the *first* step on a menu as a percentage of the standard period. Expressed as percent (e.g. 150% = 1.5x the length of a standard period.) Set in steps of 25%, with a maximum of 250%.

### 2<sup>nd</sup> cycle period (%pd)

Set the scan period for the second and any subsequent scan of a menu page as a given percentage of the standard period. Expressed as percent (e.g. 150% = 1.5x the length of a standard period.) Set in steps of 25%, with a maximum of 250%.

### scan exec. delay (%pd.)

Sets the 'change mind' delay when a button is selected during scan. Expressed as percent (e.g. 150% = 1.5x the length) of a standard period. Set in steps of 50%, with a maximum of 250%. A setting of 0% means there is no delay.

### Limit scan cycles

The number of times that a menu page is scanned if no key is selected. (The second and any subsequent scans can be made slower, using the '2<sup>nd</sup> cycle period' adjustment detailed above.)

### Hide and skip unused keys

When 'Yes', keys that are not programmed are hidden on screen (when not in set-up mode), and skipped over on scanning.

### Scan sound pitch

Allows the pitch of the scan tones to be adjusted.

### input deb. time

Sets the time for which an external contact must be closed before the press is accepted.

Range 1..6, starts at 20ms, rising in steps of 50ms.

### input release time

Sets the time for which an external contact must be open before it is accepted as a key release.

### anti-tremble filter

Applies to both touch screen and external contact inputs.

Sets the time that must elapse from screen/key release before next press is accepted. Timer is reset on press during the tremble period.

Range 0..5, in units of 200ms.

#### **T.S. as keypad**

When 'Yes' touch screen operates as a key pad for direct access. When 'No',

- a) Single input screen scanning: the whole screen acts as a single input switch
- b) Two input screen scanning: touch screen emulates the two external contact inputs for scanning; left hand screen is input 1, right hand screen is input 2.

#### **T.S. deb. time**

Selects time for which touch screen must be pressed before press is recognised.

Range 1..6, rising in steps of 100ms.

#### **T.S tremble**

Sets the time that must elapse from screen/key release before next press is accepted. Timer is reset on press during the tremble period.

Range 0..5, in units of 200ms.

#### **graph. LCD contrast**

Set the contrast level for the large (user) display

#### **text LCD contrast**

Set The contrast level for the small text (status) display


#### **O1 pulse width**

Sets the time for which the corresponding output 1 contact is closed (for non-subsiary mode).

#### **O2 pulse width**

Sets the time for which the corresponding output 2 contact is closed (for non-subsiary mode).

#### **short glide delay**

Sets the delay between repeated transmissions for an 'e.short' glide (with the  option modifier ).

#### **long glide delay**

Sets the delay between repeated transmissions for a 'e.long' glide (using the  option modifier).

#### **Glide Timeout for 1s+**

Sets the repeat limit timeout for actions set with **ALL** glides types with **Less** than 1 second repeat delay

#### **Glide Timeout for <1s**

Sets the repeat limit timeout for actions set with **ALL** glides types with **Greater** than 1 second repeat delay

#### **subsidiary 'off' timeout**

Sets the escape timeout from subsidiary actions after inactivity (i.e after button released.)

#### **subsidiary 'on' timeout**

Sets the escape timeout from subsidiary actions when button held pressed.

#### **carer pin**

When 'Yes', requires carer to enter a pin (45107) before the settings menu can be accessed.

### **phone type**

- 0 – Possum HC2003 phone, using internal IR code table (default)
- 1 – Possum HC2006 Sero! phone, using internal IR Group 6 code table
- 2 – Possum 'Freedom' phone, using internal I.R. table.
- 3 – Gewa Jupiter phone, / or HC 2006 phone using gewa codes using internal I.R. table.
- 4 – Possum HC2006 Sero! phone, using internal IR Group 8 code table set as default  
Also 3<sup>rd</sup> party phone, using engineer captured IR codes.
- 5 - Possum HC2006 Sero! phone, using internal IR Group 7 code table

### **user can edit p.book**

For Touch Screen users only, when 'yes' the phone book edit buttons are always enabled on the phone book menu, allowing the user himself to manage the phone book if he has the dexterity to use the letter entry screen (which cannot be used with scanning). When set to 'no' only carer and engineer have access to these buttons.

### **IR Compression**

When set to zero, there is no compression for captured codes.

When set to one, a simple compression scheme is used

The default setting is '1', reducing file sizes by about half. This scheme should be compatible with most common IR codes.

## **TV Setup Capture Template**

### **About the TV Setup Template**

The TV setup capture template is a special setup menu where functions from this template are used with the button actions



This action will assign a go to teletext page No/Freeview channel "build and send" menu from this button. The user can enter number then send it



Assigns a specific Digital TV multi digit channel (e.g. 106) to the button



Allows a button to be assigned a specific function from a List, corresponding to a captured function from the Digital TV Setup template


In order give correct operation when using these actions the TVs infra red signals will need to be captured into this special template, This is accessible from the Engineer setup menu. Capturing the TV's IR functions exactly as described on each button in the template will make the signals for use with the actions

### **Capturing IR into the TV setup Template**








- a) In Program Mode select the top level Menu
- b) Press PB-B on the bottom of Primo!, to open Engineer Setup Menu




Engineer Setup Menu

- c) Pressing  button in this menu, opens the 1<sup>st</sup> page (of 3) of TV1 setup template, The functions on this page need to be captured for all “TV” actions




- d) Press PB-A on the bottom of Primo!, to switch “Button Edit” on
- e) Press the first button (labelled 0) and using the  or  action, record the “digit 0” infra red signal from the televisions/set top remote control handset. Once saved, test the IR signal, pressing  key
- f) Repeat this process for the remaining buttons ensuring that the correct IR signals are captured as per the labelled buttons,
- g) Do not re-label or change symbols on any of these buttons
- h) Repeat this process for the remaining buttons  , to  ensuring that the correct IR signals are captured as per the labelled buttons,
- i) Capture the **text on** IR signal to button labelled  and the **txt off** (back to TV picture) signal to the button labelled 
- j) Test each function for correct operation
- k) Do not re-label or choose an alternative symbol for any of these buttons,

- l) Press  to go to the **second** page and capture then test the functions listed in this menu in the same way as described above



**(Note: these functions are only required if using “t.func” actions or the pre-designed TV or Digital TV user template)**

- m) Press  to go to the **third** page and capture then test the functions listed in this menu in the same way as described above





**(Note: these functions are only required if using “t.func” actions or the pre-designed TV or Digital TV user template)**

- n) When all capturing has been tested press  to leave the TV Setup template menu and return to Engineer setup screen




- a) When finished press  to return to program mode

## TV Send delay


This button function sets the delay between sending each digit of the page or channel number when using specific TV channel functions  and TV “build and send” channel keypad  and may need to be changed. Some televisions can only receive IR transmissions at a certain rate and may miss digits if the IR transmitter sends signals too quickly or slowly.


- b) With Page 1 of TV Setup template showing press key ‘PB-A’ once on the bottom of Primo! so that ‘\* Button Edit \*’ is shown on the small display





- c) Press the “**delay**”  button, this opens a number menu with the current delay shown in milliseconds in the top display (the factory default setting is 300 ms)



- d) Press  to delete the previous delay time (shown on the top display)

- e) Enter the new delay time in (which will be in milliseconds) then press  to set




- f) To check the delay Press the  button. The button will light up  for the delay time period


- g) If the delay needs readjusting repeat steps b) to e) above

- h) With the correct delay set, Press  to go to page 2 of TV template setup



- i) Press  again to go to page 3 of TV template setup




- j) Press  to return to Engineer Setup



- k) When finished press  to return to program mode

## TV function Modifiers

It is possible to assign button modifiers to the captured functions in the TV setup template

This will be necessary if using the  actions in the users menu as “**t.func**” actions do not allow ‘glide’, ‘sticky’ or ‘subsidiary’ modifiers to be used with them. However if the modifier is set on the button in the templates then the chosen “**t.func**” action will inherit the modifier set in the setup template.

The reason for this is because if programmer is using the same “**t.func**” action in many user menus, they will only need to set the modifier up for the corresponding function in the template **once** rather than setting the modifier for the function every time it is being used. The other advantage of this is, if the modifier setting needs to be altered the programmer will not have to go through every user menu and change it, they can change the modifier for the appropriate function in the setup template and this will amend the associated “**t.func**” functions in the user menus

For the functions in the first TV setup page (digits 0 – 9 #, \*) no modifiers should be assigned as these are single operation functions and setting a modifier for these will effect the operation of the TV channels or TV build and send keypad

## Box (TV2) Setup Capture Template

### About the BOX Setup Template

The Box setup capture template is a special setup menu where functions from this template are used with the button actions



This action will assign a go to teletext page No/Freeview channel “build and send” menu from this button. The user can enter number then send it



Assigns a specific Digital TV multi digit channel (e.g. 106) to the button



Allows a button to be assigned a specific function from a List, corresponding to a captured function from the Digital TV Setup template


In order give correct operation when using these actions the second TVs infra red signals will need to be captured into this special template, This is accessible from the Engineer setup menu. Capturing the second TV’s IR functions exactly as described on each button in the template will make the signals for use with the actions

### Capturing IR into the BOX (TV2) setup Template






- a) In Program Mode select the top level Menu
- b) Press PB-B on the bottom of Primo!, to open Engineer System Setup Menu





Engineer Setup Menu


- c) Pressing  button in this menu, opens the 1<sup>st</sup> page (of 3) of Box (TV2) setup template, The functions on this page need to be captured for all “Box” actions



- d) Press PB-A on the bottom of Primo!, to switch “Button Edit” on
- e) Press the first button (labelled 0) and using the  or  action, record the “digit 0” infra red signal from the televisions/set top remote control handset. Once saved, test the IR signal, pressing  key
- f) Repeat this process for the remaining buttons ensuring that the correct IR signals are captured as per the labelled buttons,
- g) Do not re-label or change symbols on any of these buttons
- h) Repeat this process for the remaining buttons , to  ensuring that the correct IR signals are captured as per the labelled buttons,


- i) Capture the **text on** IR signal to button labelled  and the **txt off** (back to TV picture) signal to the button labelled 

- j) Test each function for correct operation  
 k) Do not re-label or choose an alternative symbol for any of these buttons,

- l) Press  to go to the **second** page and capture then test the functions listed in this menu in the same way as described above



*(Note: these functions are only required if using “b..func” actions)*

- m) Press  to go to the **third** page and capture then test the functions listed in this menu in the same way as described above





*(Note: these functions are only required if using “b.func” actions)*

- n) When all capturing has been tested press  to leave the TV Setup template menu and return to Engineer setup screen




- l) When finished press  to return to program mode

## Box Send delay


This button function sets the delay between sending each digit of the page or channel number when using specific TV channel functions  and Box/TV2 “build and send” channel keypad  and may need to be changed. Some televisions can only receive IR transmissions at a certain rate and may miss digits if the IR transmitter sends signals too quickly or slowly.


- a) With Page 1 of Box Setup template showing press key ‘PB-A’ once on the bottom of Primo! so that ‘\* Button Edit \*’ is shown on the small display





- b) Press the “**delay**”  button, this opens a number menu with the current delay shown in milliseconds in the top display (the factory default setting is 300 ms)



- c) Press  to delete the previous delay time (shown on the top display)


- d) Enter the new delay time in (which will be in milliseconds) then press  to set




- e) To check the delay Press the  button. The button will light up  for the delay time period
- f) If the delay needs readjusting repeat steps b) to e) above

- g) With the correct delay set, Press  to go to page 2 of Box Setup Template



- h) Press  again to go to page 3 of Box Setup Template




- i) Press  to return to Engineer Setup



- j) When finished press  to return to program mode

## Box function Modifiers

It is possible to assign button modifiers to the captured functions in the TV setup template

This will be necessary if using the  actions in the users menu as “**b.func**” actions do not allow ‘glide’, ‘sticky’ or ‘subsidiary’ modifiers to be used with them. However if the modifier is set on the button in the templates then the chosen “**b.func**” action will inherit the modifier set in the setup template.

The reason for this is because if programmer is using the same “**b.func**” action in many user menus, they will only need to set the modifier up for the corresponding function in the template **once** rather than setting

the modifier for the function every time it is being used. The other advantage of this is, if the modifier setting needs to be altered the programmer will not have to go through every user menu and change it, they can change the modifier for the appropriate function in the setup template and this will amend the associated “t.func” functions in the user menus

For the functions in the first Box setup page (digits 0 – 9 #, \*) no modifiers should be assigned as these are single operation functions and setting a modifier for these will effect the operation of the Box channels or Box build and send keypad


## Type 4 Telephone Setup

In order to give full user phone operation utilising Primo!’s phone control features, the 3<sup>rd</sup> party phones infra red signals will need to be captured into a special template. This is accessible from the **Engineer System Setup** menu. Capturing the phone IR functions exactly as described on each button in the template will map phone control to Primo! and give correct operation of its internal functions

- In Program Mode select the top level Menu
- Press PB-B on the bottom of Primo!, to open Engineer Setup Menu



Engineer Setup Menu

- Pressing Phone  button in this menu, opens the type 4 phone capture/test template






### Type 4 Capture template




Page 1



Page 2

- Press PB-A on the bottom of Primo!, to switch “Button Edit” on
- Press the first button (labelled digit 0) and using the  or  action record the digit 0 infra red signal from the telephones remote control handset. Once saved, test the IR signal, pressing  key
- Repeat this process for the remaining buttons ensuring that the correct IR signals are captured as per the labelled buttons, use  and  to switch between the two pages
- Test each function for correct operation
- Do not re-label or change symbols on any of these buttons



- i) When finished, press  to leave the phone setup template and return to the Engineer System Setup Screen



- j) When finished press  to return to program mode

## Type 4 Dial Strings

When a type 4 telephone number is dialled from Primo the commands that are sent to the phone in a dial string are made up as follows in sequence (which are shown on the small display)

- S** (which is mapped to the “off hook”  command in the type 4 template)
- 0 – 9** (up to any 20 digits from 0 through to 9 mapped to the digits in the type 4 template)
- D** (which is mapped to “dial”  command in type 4 template)


Some types of phone do not have separate “off hook” or “dial” command so it is important to understand what functions need to be captured in these locations

### **Phones with pre-dial facility**

If the telephone has a display that allows the user to enter the number first before going off hook to dial the displayed number then you will not need to have a function captured into the off hook button (S) but instead

capture the “off hook” command into the  (D) position in the type 4 template.



If the phone does not have an “off hook” command but only has a single pickup/hang up function then this

should be captured into the  (D) button in the type 4 template, with nothing captured in the off hook (S) button,

When dialling Primo! will send ‘S’ (which will be nothing) then the digits (which appear on the phones display, followed by the ‘D’ (captured pickup/hang up command from the dial button)



### **Phones without pre-dial facility**

If the phone does not have the facility to enter a number on the display then pick up to dial the number and only has a single pick up/hang up function then the pick up hang up function will need to be captured into the

 button, with nothing captured into the  button.

Upon dialling primo! will send ‘S’ = off hook’ (captured as Pick up / hang up ), followed by the ‘0-9’ digits, followed by ‘D = Dial’ (which will be nothing)




**IMPORTANT NOTE !!!** Do not capture 'pick up/hang up' single commands into both the  and  buttons in a type 4 phone setup template otherwise upon dialling Primo will pick up the line then dial the number then hang up Immediately

## Setting Type 4 phone Dial Delay


This function sets the delay between dialling of the phone digits and may need to be changed. Some third party telephones can only receive IR transmissions at a certain rate and may miss digits if the IR transmitter sends signals too quickly or slowly.

- If not already in the type 4 phone setup template but In Program mode, return to the top level menu
- Enter Engineer Setup Mode by pressing the "PB-B" (right hand button) on the bottom of Primo!





- Press the  template button; to reveal the first page of the setup template



- press  to go to the second page
- Press key 'PB-A' once on the bottom of Primo! so that '\* Button Edit \*' is shown on the small display

- Press the "delay"  button, this opens a number menu




- Press  to delete the previous delay time (shown on the top display)
- Enter the new delay time in (which will be in milliseconds) then press  to set

- The template will update and show the delay button with the time set (as shown below)



- To check the delay press the new delay time  button. The button will light up  for the delay time period

k) Press  to return to Engineer Setup



l) When finished press  to return to program mode

## PROGRAMMING LIMITS AND CAPACITY

### Menus, Captures and Macros

The Primo! is programmed with a structure holding the menus and functions required. The controller imposes very little restriction on the structure and layout of the menus subject to these overall limits:

- There is a limit of 180 files.
- There is 2M byte of file space\*, organised as 4096 'blocks'. Each file will use a variable number of blocks, depending on the contents of the file.
- Menus can be nested 6 levels deep.

### **Estimating Capacity**

To estimate the capacity for a practical situation, bear in mind the following:

- 24 blocks are reserved for the settings, phone book and root menu files.
- Each sub menu (e.g, created from a template) uses one file, and up to four blocks.
- The size of a menu file depends on the number of button positions, not what each button does.
- Each captured IR code (on a menu, or in a macro) uses one file, and up to 78 blocks.
- Each 'capt.2' function uses two files, each of up to 78 blocks.
- A macro counts as a sub-menu; 1 file, up to four blocks.
- All other button action, including 'Possum' IR codes, RF Codes, TV Dial, Box Dial, Phone Dial, and Tone Dial take no additional file space; the function data is held within the menu file.
- Captured codes in, TV Setup/Box setup/ Type 4 3<sup>rd</sup> party phone control each take a file as a captured code above.

### **Viewing File Status**

Selecting the engineer menu by pressing button 'B' while in program mode shows the current file status, including the number of files and blocks free for use. This information is also available from the Backup software.

## Viewing Battery Status

Selecting the engineer menu by pressing button 'B' while in program mode shows the battery terminal voltage (subject to an upper limit of 6.6 Volts), together with the internal temperature (this is not the battery cell temperature as measured by the thermistor in the cell pack, but is close enough for an assembled, cased unit). The temperature is refreshed by pressing a button, and may be shown as zero for a second or two after entering set-up mode.



Battery Status

# TROUBLESHOOTING

Occasionally during programming an error message may appear on the large screen

These are not bugs but are there to inform that you have tried to program something which could not be implemented for a particular reason

A list of error message codes, their meaning and solutions are listed below

<b>Code</b>	<b>Description</b>	<b>Recovery action</b>
.4	Internal error (stack underflow)	Primo auto-restarts to clear error
.5	Internal error (stack overflow)	Primo auto-restarts to clear error
.50	Internal error (button action changes stack depth)	Primo auto-restarts to clear error
1000	Flash memory has no recognisable file system	Format flash
1002	Flash memory full (insufficient blocks in free pool)	Delete files
1009	Flash memory full (file partially saved)	Delete files
1010	File not found <ul style="list-style-type: none"><li>• on pressing a button</li><li>• On dial etc. using box/tv/phone type 4 with no captured codes</li></ul>	Delete button and re-create Capture codes for the device
1011	File empty	Delete button and re-create
1012	Cannot create a file – directory is full	Delete files
1020	The file has the wrong type (usually due to an error in restoring files)	Replace incorrect file with one of the correct type
1030	The menu file has an invalid header (usually due to incorrect file restored / menu file version mis-match)	Replace with correct file.

## **Resetting Display contrast to default**

If during adjustment of Engineers Setting the contrast is set so low that it is not readable and cannot be selected to readjust, Don't Panic! Just proceed as follows

While holding down the 'Program' button, briefly press the 'Reset' button. Release the program button. The display should now be legible (if not, there may be a hardware problem) – the default contrast setting is locked. Enter the engineer settings, and set the contrast to mid point (5) – note that the display contrast will not change. *Save the settings* before pressing reset. The contrast is now controlled by the engineer settings, and may be fine tuned if necessary

## PRODUCT CARE

Switch off and disconnect the external HC501 power supply to the HC1400 Primo! unit before attempting to clean the product.

The Possum HC1400 should be cleaned only with a soft, lint-free cloth slightly moistened with clean water. Do not use abrasive or solvent-based cleaning products. Do not allow moisture to enter the HC1400 unit. **DO NOT SPRAY THE SCREEN DIRECTLY AND DO NOT SOAK THE CLOTH.**

Ensure that the product is dry before reconnecting the external HC501 mains supply.

The HC1400 is intended for indoor use only and is not drip proof, splash proof or water proof. The Possum HC1400 is not anaesthetic proof and cannot be sterilised.

## MAINTENANCE

The HC1400 System shall be subject to the following programme of annual maintenance:-

- Check that the user is happy with the set up of the system, change any settings if necessary.
- Disconnect the HC1400 unit from the HC501 power supply.  
Check and clean all HC501 power supply units. Ensure that the case fixings are secure and that the case is free from cracks. Check that the plug pins are not bent, corroded or burned. Check the output cable for damage paying special attention to the areas around the strain relief grommet and the connector. Test the HC501 units with a Portable Appliance Tester (PAT) in accordance with the instructions in the manual supplied with the tester. Do not attempt to repair any faulty HC501 units. Do not dispose of faulty units on site.
- Inspect all cases. Replace if broken or if severe deterioration is evident. Agree any arising charges.
- Check and if necessary adjust mounting of the HC1400 Primo!.
- Check that the HC1400 Primo! is securely mounted.
- Check all cabling for signs of damage and replace any damaged cables.

- Visually inspect interior of HC1400 Primo! unit for signs of abnormal operation (e.g. battery leakage, component overheating, etc.). Investigate and correct any problems.
- Visually check position of internal cabling and connections.
- Routinely replace internal Nickel Metal Hydride battery packs every two years as a preventative measure. Mark the battery pack label with the date of replacement (the date is a 4 digit format, the first 2 digits are the year, last 2 digit are the week).
- Clean the HC1400 System unit as required (refer to Product Care above).
- Inspect the case, ensure it has been assembled properly, (the front panel should be flat to the touch screen all the way round).
- Test the system.

# SPECIFICATIONS

## **Power Requirements**

The Possum HC1400 Primo! uses an HC501 power supply. This provides 12v unregulated, 1A DC maximum.

## **Operating Environment**

Operating Temperature Range:	5°C to 40°C (41°F to 104°F)
Operating Humidity Range:	30% to 75% (non-condensing)
Operating Altitude Range:	0 to 2,000 metres

## **Storage Environment**

Storage Temperature Range:	0°C to 40°C (32°F to 104°F)
Storage Humidity Range:	30% to 75% (non-condensing)
Storage Altitude Range:	0 to 2,000 metres

## **Physical Characteristics**

### **HC1400 Primo!**

Width:	190mm
Height:	100mm
Depth:	45mm
Weight:	539 grammes

# APPENDICES

## Appendix A: Possum IR Codes

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC516 Freedom	End Call (Issue 6 Firmware Onwards)	2000A
Telephone	HC516 Freedom	Digit #	2000E
Telephone	HC516 Freedom	Digit *	2000F
Telephone	HC516 Freedom	Seize Line	20010
Telephone	HC516 Freedom	Digit 1	20011
Telephone	HC516 Freedom	Digit 2	20012
Telephone	HC516 Freedom	Digit 3	20013
Telephone	HC516 Freedom	Digit 4	20014
Telephone	HC516 Freedom	Digit 5	20015
Telephone	HC516 Freedom	Digit 6	20016
Telephone	HC516 Freedom	Digit 7	20017
Telephone	HC516 Freedom	Digit 8	20018
Telephone	HC516 Freedom	Digit 9	20019
Telephone	HC516 Freedom	Digit 0	2001A
Telephone	HC516 Freedom	Vol Down	2001B
Telephone	HC516 Freedom	Vol Up	2001C
Telephone	HC516 Freedom	Toggle Line on/off	2001F
Telephone	HC1810 (LST9B)	Seize Line (Take Call)	20010
Telephone	HC1810 (LST9B)	Digit 1	20011
Telephone	HC1810 (LST9B)	Digit 2	20012
Telephone	HC1810 (LST9B)	Digit 3	20013
Telephone	HC1810 (LST9B)	Digit 4	20014
Telephone	HC1810 (LST9B)	Digit 5	20015
Telephone	HC1810 (LST9B)	Digit 6	20016
Telephone	HC1810 (LST9B)	Digit 7	20017
Telephone	HC1810 (LST9B)	Digit 8	20018
Telephone	HC1810 (LST9B)	Digit 9	20019
Telephone	HC1810 (LST9B)	Digit 0	2001A
Telephone	HC1810 (LST9B)	Vol Med	2001B
Telephone	HC1810 (LST9B)	Vol High	2001C
Telephone	HC1810 (LST9B)	Select Main	2001D
Telephone	HC1810 (LST9B)	Select Ext	2001E
Telephone	HC1810 (LST9B)	Toggle Line	2001F
Telephone	HC1811	Advance Digit	2000B
Telephone	HC1811	Mic On/Off	2000C
Telephone	HC1811	Recall	2000D
Telephone	HC1811	Digit #	2000E
Telephone	HC1811	Digit *	2000F
Telephone	HC1811	Seize Line	20010
Telephone	HC1811	Digit 1	20011
Telephone	HC1811	Digit 2	20012
Telephone	HC1811	Digit 3	20013
Telephone	HC1811	Digit 4	20014
Telephone	HC1811	Digit 5	20015
Telephone	HC1811	Digit 6	20016
Telephone	HC1811	Digit 7	20017

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC1811	Digit 8	20018
Telephone	HC1811	Digit 9	20019
Telephone	HC1811	Digit 0	2001A
Telephone	HC1811	Vol Med	2001B
Telephone	HC1811	Vol High	2001C
Telephone	HC1811	Clear No	2001D
Telephone	HC1811	Toggle Line on/off	2001F
Telephone	HC2003	Dial Displayed No	20008
Telephone	HC2003	Directory Button	20009
Telephone	HC2003	Calls Button	2000A
Telephone	HC2003	Pick Up hang up in handsfree	20010
Telephone	HC2003	Digit 1	20011
Telephone	HC2003	Digit 2	20012
Telephone	HC2003	Digit 3	20013
Telephone	HC2003	Digit 4	20014
Telephone	HC2003	Digit 5	20015
Telephone	HC2003	Digit 6	20016
Telephone	HC2003	Digit 7	20017
Telephone	HC2003	Digit 8	20018
Telephone	HC2003	Digit 9	20019
Telephone	HC2003	Digit 0	2001A
Telephone	HC2003	Help	2001B
Telephone	HC2003	Redial	2001C
Telephone	HC2003	*	2001D
Telephone	HC2003	#	2001E
Telephone	HC2003	Answer/ hang up in headset mode	2001F
Telephone	HC2006 (old codes)	On Hook	2000A
Telephone	HC2006 (old codes)	Off Hook	20010
Telephone	HC2006 (old codes)	Handsfree Toggle	2001F
Telephone	HC2006 (old codes)	Headset Toggle	2001E
Telephone	HC2006 (old codes)	Digit 0	2001A
Telephone	HC2006 (old codes)	Digit 1	20011
Telephone	HC2006 (old codes)	Digit 2	20012
Telephone	HC2006 (old codes)	Digit 3	20013
Telephone	HC2006 (old codes)	Digit 4	20014
Telephone	HC2006 (old codes)	Digit 5	20015
Telephone	HC2006 (old codes)	Digit 6	20016
Telephone	HC2006 (old codes)	Digit 7	20017
Telephone	HC2006 (old codes)	Digit 8	20018
Telephone	HC2006 (old codes)	Digit 9	20019
Telephone	HC2006 (old codes)	Digit *	2000F
Telephone	HC2006 (old codes)	Digit #	2000E
Telephone	HC2006 (old codes)	Vol/Sel -	2001B
Telephone	HC2006 (old codes)	Vol/Sel +	2001C
Telephone	HC2006 (old codes)	Mic On/Off- Privacy	2000C
Telephone	HC2006 (old codes)	Recall	2000D
Telephone	HC2006 (old codes)	Phonebook	20009
Telephone	HC2006 (old codes)	Calls List Button	20008
Telephone	HC2006 (old codes)	Cancel	2001D
Telephone	HC2006 (old codes)	Store/enter	2000B

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC2006 (Group 6 IR)	On Hook	633
Telephone	HC2006 (Group 6 IR)	Off Hook	632
Telephone	HC2006 (Group 6 IR)	Handsfree Toggle	63A
Telephone	HC2006 (Group 6 IR)	Headset Toggle	639
Telephone	HC2006 (Group 6 IR)	Digit 0	620
Telephone	HC2006 (Group 6 IR)	Digit 1	621
Telephone	HC2006 (Group 6 IR)	Digit 2	622
Telephone	HC2006 (Group 6 IR)	Digit 3	623
Telephone	HC2006 (Group 6 IR)	Digit 4	624
Telephone	HC2006 (Group 6 IR)	Digit 5	625
Telephone	HC2006 (Group 6 IR)	Digit 6	626
Telephone	HC2006 (Group 6 IR)	Digit 7	627
Telephone	HC2006 (Group 6 IR)	Digit 8	628
Telephone	HC2006 (Group 6 IR)	Digit 9	629
Telephone	HC2006 (Group 6 IR)	Digit *	62A
Telephone	HC2006 (Group 6 IR)	Digit #	62B
Telephone	HC2006 (Group 6 IR)	Vol/Sel -	637
Telephone	HC2006 (Group 6 IR)	Vol/Sel +	638
Telephone	HC2006 (Group 6 IR)	Mic On/Off- Privacy	630
Telephone	HC2006 (Group 6 IR)	Recall	63B
Telephone	HC2006 (Group 6 IR)	Phonebook	62E
Telephone	HC2006 (Group 6 IR)	Calls List Button	62C
Telephone	HC2006 (Group 6 IR)	Cancel	62D
Telephone	HC2006 (Group 6 IR)	Store/enter	62F
Telephone	HC2006 (Group 6 IR)	Setup Button	64E
Telephone	HC2006 (Group 6 IR)	Help (SOS emergency Dial)	631
Telephone	HC2006 (Group 6 IR)	Redial List Button	63E
Telephone	HC2006 (Group 6 IR)	Last Number Redial (LNR)	636
Telephone	HC2006 (Group 6 IR)	Answerphone On/Off	64B
Telephone	HC2006 (Group 6 IR)	O.G.M (play selected OGM)	63C
Telephone	HC2006 (Group 6 IR)	Play	64C
Telephone	HC2006 (Group 6 IR)	Phrase	64D
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 0	64A
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 1	641
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 2	642
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 3	643
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 4	644
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 5	645
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 6	646
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 7	647
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 8	648
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 9	649
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 10	634
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 11	635
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 12	650
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 13	651
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 14	652
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 15	653
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 16	654
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 17	655
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 18	656

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 19	657
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 20	658
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 21	659
Telephone	HC2006 (Group 6 IR)	Auto Dial Memory 22	65A
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 2	660
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 3	661
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 4	662
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 5	663
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 6	664
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 7	665
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 8	666
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 9	667
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 10	668
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 11	669
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 12	66A
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 13	66B
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 14	66C
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 15	66D
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 16	66E
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 17	66F
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 18	670
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 19	671
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 20	672
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 21	673
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 22	674
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 23	675
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 24	676
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 25	677
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 26	678
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 27	679
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 28	67A
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 29	67B
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 30	67C
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 31	67D
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 32	67E
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 33	67F
Telephone	HC2006 (Group 6 IR)	Auto Play Phrase 49	680
Telephone	HC2006 (Group 7 IR)	On Hook	733
Telephone	HC2006 (Group 7 IR)	Off Hook	732
Telephone	HC2006 (Group 7 IR)	Handsfree Toggle	73A
Telephone	HC2006 (Group 7 IR)	Headset Toggle	739
Telephone	HC2006 (Group 7 IR)	Digit 0	720
Telephone	HC2006 (Group 7 IR)	Digit 1	721
Telephone	HC2006 (Group 7 IR)	Digit 2	722
Telephone	HC2006 (Group 7 IR)	Digit 3	723
Telephone	HC2006 (Group 7 IR)	Digit 4	724
Telephone	HC2006 (Group 7 IR)	Digit 5	725
Telephone	HC2006 (Group 7 IR)	Digit 6	726
Telephone	HC2006 (Group 7 IR)	Digit 7	727
Telephone	HC2006 (Group 7 IR)	Digit 8	728
Telephone	HC2006 (Group 7 IR)	Digit 9	729

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC2006 (Group 7 IR)	Digit *	72A
Telephone	HC2006 (Group 7 IR)	Digit #	72B
Telephone	HC2006 (Group 7 IR)	Vol/Sel -	737
Telephone	HC2006 (Group 7 IR)	Vol/Sel +	738
Telephone	HC2006 (Group 7 IR)	Mic On/Off- Privacy	730
Telephone	HC2006 (Group 7 IR)	Recall	73B
Telephone	HC2006 (Group 7 IR)	Phonebook	72E
Telephone	HC2006 (Group 7 IR)	Calls List Button	72C
Telephone	HC2006 (Group 7 IR)	Cancel	72D
Telephone	HC2006 (Group 7 IR)	Store/enter	72F
Telephone	HC2006 (Group 7 IR)	Setup Button	74E
Telephone	HC2006 (Group 7 IR)	Help (SOS emergency Dial)	731
Telephone	HC2006 (Group 7 IR)	Redial List Button	73E
Telephone	HC2006 (Group 7 IR)	Last Number Redial (LNR)	736
Telephone	HC2006 (Group 7 IR)	Answerphone On/Off	74B
Telephone	HC2006 (Group 7 IR)	O.G.M (play selected OGM)	73C
Telephone	HC2006 (Group 7 IR)	Play	74C
Telephone	HC2006 (Group 7 IR)	Phrase	64D
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 0	74A
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 1	741
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 2	742
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 3	743
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 4	744
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 5	745
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 6	746
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 7	747
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 8	748
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 9	749
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 10	734
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 11	735
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 12	750
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 13	751
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 14	752
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 15	753
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 16	754
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 17	755
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 18	756
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 19	757
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 20	758
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 21	759
Telephone	HC2006 (Group 7 IR)	Auto Dial Memory 22	75A
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 2	760
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 3	761
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 4	762
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 5	763
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 6	764
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 7	765
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 8	766
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 9	767
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 10	768
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 11	769

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 12	76A
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 13	76B
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 14	76C
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 15	76D
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 16	76E
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 17	76F
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 18	770
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 19	771
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 20	772
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 21	773
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 22	774
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 23	775
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 24	776
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 25	777
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 26	778
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 27	779
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 28	77A
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 29	77B
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 30	77C
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 31	77D
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 32	77E
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 33	77F
Telephone	HC2006 (Group 7 IR)	Auto Play Phrase 49	780
Telephone	HC2006 (Group 8 IR)	On Hook	833
Telephone	HC2006 (Group 8 IR)	Off Hook	832
Telephone	HC2006 (Group 8 IR)	Handsfree Toggle	83A
Telephone	HC2006 (Group 8 IR)	Headset Toggle	839
Telephone	HC2006 (Group 8 IR)	Digit 0	820
Telephone	HC2006 (Group 8 IR)	Digit 1	821
Telephone	HC2006 (Group 8 IR)	Digit 2	822
Telephone	HC2006 (Group 8 IR)	Digit 3	823
Telephone	HC2006 (Group 8 IR)	Digit 4	824
Telephone	HC2006 (Group 8 IR)	Digit 5	825
Telephone	HC2006 (Group 8 IR)	Digit 6	826
Telephone	HC2006 (Group 8 IR)	Digit 7	827
Telephone	HC2006 (Group 8 IR)	Digit 8	828
Telephone	HC2006 (Group 8 IR)	Digit 9	829
Telephone	HC2006 (Group 8 IR)	Digit *	82A
Telephone	HC2006 (Group 8 IR)	Digit #	82B
Telephone	HC2006 (Group 8 IR)	Vol/Sel -	837
Telephone	HC2006 (Group 8 IR)	Vol/Sel +	838
Telephone	HC2006 (Group 8 IR)	Mic On/Off- Privacy	830
Telephone	HC2006 (Group 8 IR)	Recall	83B
Telephone	HC2006 (Group 8 IR)	Phonebook	82E
Telephone	HC2006 (Group 8 IR)	Calls List Button	82C
Telephone	HC2006 (Group 8 IR)	Cancel	82D
Telephone	HC2006 (Group 8 IR)	Store/enter	82F
Telephone	HC2006 (Group 8 IR)	Setup Button	84E
Telephone	HC2006 (Group 8 IR)	Help (SOS emergency Dial)	831
Telephone	HC2006 (Group 8 IR)	Redial List Button	83E
Telephone	HC2006 (Group 8 IR)	Last Number Redial (LNR)	836

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC2006 (Group 8 IR)	Answerphone On/Off	84B
Telephone	HC2006 (Group 8 IR)	O.G.M (play selected OGM)	83C
Telephone	HC2006 (Group 8 IR)	Play	84C
Telephone	HC2006 (Group 8 IR)	Phrase	84D
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 0	84A
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 1	841
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 2	842
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 3	843
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 4	844
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 5	845
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 6	846
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 7	847
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 8	848
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 9	849
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 10	834
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 11	835
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 12	850
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 13	851
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 14	852
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 15	853
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 16	854
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 17	855
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 18	856
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 19	857
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 20	858
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 21	859
Telephone	HC2006 (Group 8 IR)	Auto Dial Memory 22	85A
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 2	860
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 3	861
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 4	862
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 5	863
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 6	864
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 7	865
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 8	866
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 9	867
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 10	868
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 11	869
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 12	86A
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 13	86B
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 14	86C
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 15	86D
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 16	86E
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 17	86F
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 18	870
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 19	871
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 20	872
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 21	873
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 22	874
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 23	875
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 24	876
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 25	877

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 26	878
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 27	879
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 28	87A
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 29	87B
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 30	87C
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 31	87D
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 32	87E
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 33	87F
Telephone	HC2006 (Group 8 IR)	Auto Play Phrase 49	880
Socket	HC603	Jumper in position 5	20004
Socket	HC603	Jumper in position 6	20005
Socket	HC603	Jumper in position 7	20006
Socket	HC603	Jumper in position 8	20007
Socket	HC603A	Hex 0	0452
Socket	HC603A	Hex 1	20004
Socket	HC603A	Hex 2	20005
Socket	HC603A	Hex 3	20006
Socket	HC603A	Hex 4	20007
Socket	HC603A	Hex 5	0401
Socket	HC603A	Hex 6	0402
Socket	HC603A	Hex 7	0411
Socket	HC603A	Hex 8	0412
Socket	HC603A	Hex 9	0421
Socket	HC603A	Hex A	0422
Socket	HC603A	Hex B	0431
Socket	HC603A	Hex C	0432
Socket	HC603A	Hex D	0441
Socket	HC603A	Hex E	0442
Socket	HC603A	Hex F	0451
Socket	HC603C	Hex 1	20000
Socket	HC603C	Hex 2	20001
Socket	HC603C	Hex 3	20002
Socket	HC603C	Hex 4	20003
Socket	HC603C	Hex 5	20004
Socket	HC603C	Hex 6	20005
Socket	HC603C	Hex 7	20006
Socket	HC603C	Hex 8	20007
Socket	HC603C	Hex 9	0401
Intercom	HC500	Alarm	20000
Intercom	HC500	Door	20001
Intercom	HC500	Intercom	20002
Intercom	HC500	Nurse Call	20003
Intercom	HC500	Channel 9	20008
Intercom	HC500	Channel 10	20009
Intercom	HC500	Channel 11	2000A
Intercom	HC500	Channel 12	2000B
Intercom	HC500	Channel 13	2000C
Intercom	HC500	Channel 14	2000D
Intercom	HC500	Channel 15	2000E
Intercom	HC500	Channel 16	2000F
Relay Unit	HC1820	Hex 0 Aux 1 O/P Momentary	0404

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Relay Unit	HC1820	Hex 0 Aux 2 O/P Momentary	0405
Relay Unit	HC1820	Hex 0 Aux 3 O/P Momentary	0406
Relay Unit	HC1820	Hex 0 Aux 4 O/P Momentary	0407
Relay Unit	HC1820	Hex 0 Aux 5 O/P Momentary	0408
Relay Unit	HC1820	Hex 0 Aux 6 O/P Momentary	0409
Relay Unit	HC1821	Hex 0 Aux 1 O/P Toggled	040A
Relay Unit	HC1820	Hex 1 Aux 1 O/P Momentary	0414
Relay Unit	HC1820	Hex 1 Aux 2 O/P Momentary	0415
Relay Unit	HC1820	Hex 1 Aux 3 O/P Momentary	0416
Relay Unit	HC1820	Hex 1 Aux 4 O/P Momentary	0417
Relay Unit	HC1820	Hex 1 Aux 5 O/P Momentary	0418
Relay Unit	HC1820	Hex 1 Aux 6 O/P Momentary	0419
Relay Unit	HC1820	Hex 1 Aux 1 O/P Toggled	041A
Relay Unit	HC1820	Hex 2 Aux 1 O/P Momentary	0424
Relay Unit	HC1820	Hex 2 Aux 2 O/P Momentary	0425
Relay Unit	HC1820	Hex 3 Aux 1 O/P Momentary	0434
Relay Unit	HC1820	Hex 3 Aux 2 O/P Momentary	0435
Relay Unit	HC1820	Hex 0 toggle socket 1	0401
Relay Unit	HC1820	Hex 0 toggle socket 2	0402
Relay Unit	HC1820	Hex 1 toggle socket 1	0411
Relay Unit	HC1820	Hex 1 toggle socket 2	0412
Relay Unit	HC1820	Hex 2 toggle socket 1	0421
Relay Unit	HC1820	Hex 2 toggle socket 2	0422
Relay Unit	HC1820	Hex 3 toggle socket 1	0431
Relay Unit	HC1820	Hex 3 toggle socket 2	0432
Relay Unit	HC1820	Hex 4 toggle socket 1	0441
Relay Unit	HC1820	Hex 4 toggle socket 2	0442
Relay Unit	HC1820	Hex 5 toggle socket 1	0451
Relay Unit	HC1820	Hex 5 toggle socket 2	0452
Relay Unit	HC1820	Hex 6 toggle socket 1	0461
Relay Unit	HC1820	Hex 6 toggle socket 2	0462
Relay Unit	HC1820	Hex 7 toggle socket 1	0471
Relay Unit	HC1820	Hex 7 toggle socket 2	0472
Relay Unit	HC1820	Hex 8 toggle socket 1	0481
Relay Unit	HC1820	Hex 8 toggle socket 2	0482
Relay Unit	HC1820	Hex 9 toggle socket 1	0491
Relay Unit	HC1820	Hex 9 toggle socket 2	0492
Relay Unit	HC1820	Hex A toggle socket 1	04A1
Relay Unit	HC1820	Hex A toggle socket 2	04A2
Relay Unit	HC1820	Hex B toggle socket 1	04B1
Relay Unit	HC1820	Hex B toggle socket 2	04B2
Relay Unit	HC1820	Hex C toggle socket 1	04C1
Relay Unit	HC1820	Hex C toggle socket 2	04C2
Relay Unit	HC1820	Hex D toggle socket 1	04D1
Relay Unit	HC1820	Hex D toggle socket 2	04D2
Relay Unit	HC1820	Hex E toggle socket 1	04E1
Relay Unit	HC1820	Hex E toggle socket 2	04E2
Relay Unit	HC1820	Hex F toggle socket 1	04F1
Relay Unit	HC1820	Hex F toggle socket 2	04F2
Relay Unit	HC1821/HC1822	Sw 1-0 Channel A	0404
Relay Unit	HC1821/HC1822	Sw 1-0 Channel B	0405

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
Relay Unit	HC1821/HC1822	Sw 1-0 Channel C	0406
Relay Unit	HC1821/HC1822	Sw 1-0 Channel D	0407
Relay Unit	HC1821/HC1822	Sw 1-0 Channel E	0408
Relay Unit	HC1821/HC1822	Sw 1-0 Channel F	0409
Relay Unit	HC1821/HC1822	Sw 1-0 Channel G	0424
Relay Unit	HC1821/HC1822	Sw 1-0 Channel H	0425
Relay Unit	HC1821/HC1822	Sw 1-0 Cancel Safety Buzzer/mains socket	0401
Relay Unit	HC1821/HC1822	Sw 1-1 Channel A	0414
Relay Unit	HC1821/HC1822	Sw 1-1 Channel B	0415
Relay Unit	HC1821/HC1822	Sw 1-1 Channel C	0416
Relay Unit	HC1821/HC1822	Sw 1-1 Channel D	0417
Relay Unit	HC1821/HC1822	Sw 1-1 Channel E	0418
Relay Unit	HC1821/HC1822	Sw 1-1 Channel F	0419
Relay Unit	HC1821/HC1822	Sw 1-1 Channel G	0434
Relay Unit	HC1821/HC1822	Sw 1-1 Channel H	0435
Relay Unit	HC1821/HC1823	Sw 1-1Cancel Safety/mains socket	0411
Relay Unit	HC1823	Relay 1 Channel O	20003
Relay Unit	HC1823	Relay 2 Channel A	0404
Relay Unit	HC1823	Relay 3 Channel B	0405
Relay Unit	HC1823	Relay 4 Channel C	0406
Relay Unit	HC1823	Relay 5 Channel D	0407
Relay Unit	HC1823	Relay 6 Channel E	0408
Relay Unit	HC1823	Relay 7 Channel F	0409
Relay Unit	HC1823	Relay 8 Channel G	0425
Relay Unit	HC1823	Relay 9 Channel H	0414
Relay Unit	HC1823	Relay 10 Channel I	0415
Relay Unit	HC1823	Relay 11 Channel J	0416
Relay Unit	HC1823	Relay 12 Channel K	0417
Relay Unit	HC1823	Relay 13 Channel L	0418
Relay Unit	HC1823	Relay 14 Channel M	0419
Relay Unit	HC706B	Relay 1 Channel O	20003
Relay Unit	HC706B	Relay 13 Channel L	0418
Relay Unit	HC706B	Relay 14 Channel M	0419
Relay Unit	HC706	Sw 0000 [o/p channel A in HC1820 mode]	0404
Relay Unit	HC706	Sw 0000 [o/p channel B in HC1820 mode]	0405
Relay Unit	HC706	Sw 0001 [o/p channel A in HC1820 mode]	0414
Relay Unit	HC706	Sw 0001 [o/p channel B in HC1820 mode]	0415
Relay Unit	HC706	Sw 0010 [o/p channel A in HC1820 mode]	0424
Relay Unit	HC706	Sw 0010 [o/p channel B in HC1820 mode]	0425
Relay Unit	HC706	Sw 0011 [o/p channel A in HC1820 mode]	0434
Relay Unit	HC706	Sw 0011 [o/p channel B in HC1820 mode]	0435
Relay Unit	HC706	Sw 000 in HC 705 operating mode	20000
Relay Unit	HC706	Sw 001 in HC 705 operating mode	20001
Relay Unit	HC706	Sw 010 in HC 705 operating mode	20002
Relay Unit	HC706	Sw 011 in HC 705 operating mode	20003
Relay Unit	HC706	Sw 100 in HC 705 operating mode	20004
Relay Unit	HC706	Sw 101 in HC 705 operating mode	20005
Relay Unit	HC706	Sw 110 in HC 705 operating mode	20006
Relay Unit	HC706	Sw 111 in HC 705 operating mode	20007
PIRL	HC708	Channel A (HC1820 mode Hex 0)	0404
PIRL	HC708	Channel B (HC1820 mode Hex 0)	0405

<b>Device</b>	<b>Equipment</b>	<b>Function</b>	<b>Primo Code</b>
PIRL	HC708	Channel A (HC1820 mode Hex 1)	0414
PIRL	HC708	Channel B (HC1820 mode Hex 1)	0415
PIRL	HC708	Channel A (HC1820 mode Hex 2)	0424
PIRL	HC708	Channel B (HC1820 mode Hex 2)	0425
PIRL	HC708	Channel A (HC1820 mode Hex 3)	0434
PIRL	HC708	Channel B (HC1820 mode Hex 3)	0435
PIRL	HC708 B	Channel A	0434
PIRL	HC708 B	Channel B	0435
Relay Unit	HC705	Hex Position 1 (toggle) or 9 (timed)	20000
Relay Unit	HC705	Hex Position 2 (toggle) or A (timed)	20001
Relay Unit	HC705	Hex Position 3 (toggle) or B (timed)	20002
Relay Unit	HC705	Hex Position 4 (toggle) or C (timed)	20003
Relay Unit	HC705	Hex Position 5 (toggle) or D (timed)	20004
Relay Unit	HC705	Hex Position 6 (toggle) or E (timed)	20005
Relay Unit	HC705	Hex Position 7 (toggle) or F (timed)	20006
Relay Unit	HC705	Hex Position 8 (toggle) or 0 (timed)	20007
IR Transmitter	HC704	Button 1	20000
IR Transmitter	HC704	Button 2	20001
IR Transmitter	HC704	Button 3	20002
IR Transmitter	HC704	Button 4	20003
IR Transmitter	HC704	Button 5	20004
IR Transmitter	HC704	Button 6	20005
IR Transmitter	HC704	Button 7	20006
IR Transmitter	HC704	Button 8	20007

## Appendix B: GewaLink On/Off Codes: Press/Release Actions

<b>Gewa Prog 3 Level</b>	<b>Gewa Prog 3 key</b>	<b>GewaLink Channel</b>	<b>Primo IR Possum Code</b>	<b>Gewa Prog 3 Level</b>	<b>Gewa Prog 3 key</b>	<b>GewaLink Channel</b>	<b>Primo IR Possum Code</b>
<b>1</b>	1	00	<b>E7D01</b>	<b>3</b>	1	32	<b>E7D41</b>
	2	01	<b>E7D03</b>		2	33	<b>E7D43</b>
	3	02	<b>E7D05</b>		3	34	<b>E7D45</b>
	4	03	<b>E7D07</b>		4	35	<b>E7D47</b>
	5	04	<b>E7D09</b>		5	36	<b>E7D49</b>
	6	05	<b>E7D0B</b>		6	37	<b>E7D4B</b>
	7	06	<b>E7D0D</b>		7	38	<b>E7D4D</b>
	8	07	<b>E7D0F</b>		8	39	<b>E7D4F</b>
	9	08	<b>E7D11</b>		9	40	<b>E7D51</b>
	*	09	<b>E7D13</b>		*	41	<b>E7D53</b>
	0	10	<b>E7D15</b>		0	42	<b>E7D55</b>
	#	11	<b>E7D17</b>		#	43	<b>E7D57</b>
	A	12	<b>E7D19</b>		A	44	<b>E7D59</b>
	B	13	<b>E7D1B</b>		B	45	<b>E7D5B</b>
	C	14	<b>E7D1D</b>		C	46	<b>E7D5D</b>
D	15	<b>E7D1F</b>	D	47	<b>E7D5F</b>		
<b>2</b>	1	16	<b>E7D21</b>	<b>4</b>	1	48	<b>E7D61</b>
	2	17	<b>E7D23</b>		2	49	<b>E7D63</b>
	3	18	<b>E7D25</b>		3	50	<b>E7D65</b>
	4	19	<b>E7D27</b>		4	51	<b>E7D67</b>
	5	20	<b>E7D29</b>		5	52	<b>E7D69</b>
	6	21	<b>E7D2B</b>		6	53	<b>E7D6B</b>
	7	22	<b>E7D2D</b>		7	54	<b>E7D6D</b>
	8	23	<b>E7D2F</b>		8	55	<b>E7D6F</b>
	9	24	<b>E7D31</b>		9	56	<b>E7D71</b>
	*	25	<b>E7D33</b>		*	57	<b>E7D73</b>
	0	26	<b>E7D35</b>		0	58	<b>E7D75</b>
	#	27	<b>E7D37</b>		#	59	<b>E7D77</b>
	A	28	<b>E7D39</b>		A	60	<b>E7D79</b>
	B	29	<b>E7D3B</b>		B	61	<b>E7D7B</b>
	C	30	<b>E7D3D</b>		C	62	<b>E7D7D</b>
D	31	<b>E7D3F</b>	D	63	<b>E7D7F</b>		

## Appendix C: HC400 Pager Codes for Primo!

A12	A11	A10	A9	A8	A7	A6	A5	A4	A3
2048	1024	512	256	128	64	32	16	8	4

Notes: A12, A10, A8 are linked together

On = 1 = No connection

Off = 0 = connected to 0V

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
	0	0	0	0	0	0	0	0	10
	0	0	0	0	0	0	0	1	138
	0	0	0	0	0	0	1	0	74
	0	0	0	0	0	0	1	1	202
	0	0	0	0	0	1	0	0	42
	0	0	0	0	0	1	0	1	170
	0	0	0	0	0	1	1	0	106
	0	0	0	0	0	1	1	1	234
	0	0	0	0	1	0	0	0	26
	0	0	0	0	1	0	0	1	154
	0	0	0	0	1	0	1	0	90
	0	0	0	0	1	0	1	1	218
	0	0	0	0	1	1	0	0	58
	0	0	0	0	1	1	0	1	186
	0	0	0	0	1	1	1	0	122
	0	0	0	0	1	1	1	1	250
	0	0	0	1	0	0	0	0	14
	0	0	0	1	0	0	0	1	142
	0	0	0	1	0	0	1	0	78
	0	0	0	1	0	0	1	1	206
	0	0	0	1	0	1	0	0	46
	0	0	0	1	0	1	0	1	174
	0	0	0	1	0	1	1	0	110
	0	0	0	1	0	1	1	1	238

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
0	0	0	1	1	0	0	0	0	30
0	0	0	1	1	0	0	1	0	158
0	0	0	1	1	0	1	0	0	94
0	0	0	1	1	0	1	1	0	222
0	0	0	1	1	1	0	0	0	62
0	0	0	1	1	1	1	0	1	190
0	0	0	1	1	1	1	1	0	126
0	0	0	1	1	1	1	1	1	254
0	0	1	0	0	0	0	0	0	11
0	0	1	0	0	0	0	0	1	139
0	0	1	0	0	0	0	1	0	75
0	0	1	0	0	0	0	1	1	203
0	0	1	0	0	1	0	0	0	43
0	0	1	0	0	1	0	0	1	171
0	0	1	0	0	1	1	1	0	107
0	0	1	0	0	1	1	1	1	235
0	0	1	0	1	0	0	0	0	27
0	0	1	0	1	0	0	0	1	155
0	0	1	0	1	0	1	0	0	91
0	0	1	0	1	0	1	1	1	219
0	0	1	0	1	1	0	0	0	59
0	0	1	0	1	1	0	0	1	187
0	0	1	0	1	1	1	1	0	123
0	0	1	0	1	1	1	1	1	251
0	0	1	1	0	0	0	0	0	15
0	0	1	1	0	0	0	0	1	143
0	0	1	1	0	0	1	0	0	79
0	0	1	1	0	0	1	1	1	207
0	0	1	1	0	1	0	0	0	47
0	0	1	1	0	1	0	0	1	175
0	0	1	1	0	1	1	1	0	111
0	0	1	1	0	1	1	1	1	239
0	0	1	1	1	0	0	0	0	31

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
0	0	1	1	1	0	0	1	159	
0	0	1	1	1	0	1	0	95	
0	0	1	1	1	0	1	1	223	
0	0	1	1	1	1	0	0	63	
0	0	1	1	1	1	0	1	191	
0	0	1	1	1	1	1	0	127	
0	0	1	1	1	1	1	1	255	
0	1	0	0	0	0	0	0	266	
0	1	0	0	0	0	0	1	394	
0	1	0	0	0	0	1	0	330	
0	1	0	0	0	0	1	1	458	
0	1	0	0	0	1	0	0	298	
0	1	0	0	0	1	0	1	426	
0	1	0	0	0	1	1	0	362	
0	1	0	0	0	1	1	1	490	
0	1	0	0	1	0	0	0	282	
0	1	0	0	1	0	0	1	410	
0	1	0	0	1	0	1	0	346	
0	1	0	0	1	0	1	1	474	
0	1	0	0	1	1	0	0	314	
0	1	0	0	1	1	0	1	442	
0	1	0	0	1	1	1	0	378	
0	1	0	0	1	1	1	1	506	
0	1	0	1	0	0	0	0	270	
0	1	0	1	0	0	0	1	398	
0	1	0	1	0	0	1	0	334	
0	1	0	1	0	0	1	1	462	
0	1	0	1	0	1	0	0	302	
0	1	0	1	0	1	0	1	430	
0	1	0	1	0	1	1	0	366	
0	1	0	1	0	1	1	1	494	
0	1	0	1	1	0	0	0	286	
0	1	0	1	1	0	0	1	414	
0	1	0	1	1	0	1	0	350	

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
0	1	0	1	1	0	1	1	478	
0	1	0	1	1	1	0	0	318	
0	1	0	1	1	1	0	1	446	
0	1	0	1	1	1	1	0	382	
0	1	0	1	1	1	1	1	510	
0	1	1	0	0	0	0	0	267	
0	1	1	0	0	0	0	1	395	
0	1	1	0	0	0	1	0	331	
0	1	1	0	0	0	1	1	459	
0	1	1	0	0	1	0	0	299	
0	1	1	0	0	1	0	1	427	
0	1	1	0	0	1	1	0	363	
0	1	1	0	0	1	1	1	491	
0	1	1	0	1	0	0	0	283	
0	1	1	0	1	0	0	1	411	
0	1	1	0	1	0	1	0	347	
0	1	1	0	1	0	1	1	475	
0	1	1	0	1	1	0	0	315	
0	1	1	0	1	1	0	1	443	
0	1	1	0	1	1	1	0	379	
0	1	1	0	1	1	1	1	507	
0	1	1	1	0	0	0	0	271	
0	1	1	1	0	0	0	1	399	
0	1	1	1	0	0	1	0	335	
0	1	1	1	0	0	1	1	463	
0	1	1	1	0	1	0	0	303	
0	1	1	1	0	1	0	1	431	
0	1	1	1	0	1	1	0	367	
0	1	1	1	0	1	1	1	495	
0	1	1	1	1	0	0	0	287	
0	1	1	1	1	0	0	1	415	
0	1	1	1	1	0	1	0	351	
0	1	1	1	1	0	1	1	479	
0	1	1	1	1	1	0	0	319	

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
0	1	1	1	1	1	1	0	1	447
0	1	1	1	1	1	1	1	0	383
0	1	1	1	1	1	1	1	1	511
1	0	0	0	0	0	0	0	0	3594
1	0	0	0	0	0	0	0	1	3722
1	0	0	0	0	0	0	1	0	3658
1	0	0	0	0	0	0	1	1	3786
1	0	0	0	0	0	1	0	0	3626
1	0	0	0	0	0	1	0	1	3754
1	0	0	0	0	0	1	1	0	3690
1	0	0	0	0	0	1	1	1	3818
1	0	0	0	0	1	0	0	0	3610
1	0	0	0	0	1	0	0	1	3738
1	0	0	0	0	1	0	1	0	3674
1	0	0	0	0	1	0	1	1	3802
1	0	0	0	0	1	1	0	0	3642
1	0	0	0	0	1	1	0	1	3770
1	0	0	0	0	1	1	1	0	3706
1	0	0	0	0	1	1	1	1	3834
1	0	0	1	0	0	0	0	0	3598
1	0	0	1	0	0	0	0	1	3726
1	0	0	1	0	0	0	1	0	3662
1	0	0	1	0	0	0	1	1	3790
1	0	0	1	0	1	0	0	0	3630
1	0	0	1	0	1	0	0	1	3758
1	0	0	1	0	1	1	1	0	3694
1	0	0	1	0	1	1	1	1	3822
1	0	0	1	1	0	0	0	0	3614
1	0	0	1	1	1	0	0	1	3742
1	0	0	1	1	1	0	1	0	3678
1	0	0	1	1	1	0	1	1	3806
1	0	0	1	1	1	1	0	0	3646
1	0	0	1	1	1	1	0	1	3774
1	0	0	1	1	1	1	1	0	3710

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
1	0	0	1	1	1	1	1	1	3838
1	0	1	0	0	0	0	0	0	3595
1	0	1	0	0	0	0	0	1	3723
1	0	1	0	0	0	0	1	0	3659
1	0	1	0	0	0	0	1	1	3787
1	0	1	0	0	0	1	0	0	3627
1	0	1	0	0	0	1	0	1	3755
1	0	1	0	0	0	1	1	0	3691
1	0	1	0	0	0	1	1	1	3819
1	0	1	0	1	0	0	0	0	3611
1	0	1	0	1	0	0	0	1	3739
1	0	1	0	1	0	0	1	0	3675
1	0	1	0	1	0	0	1	1	3803
1	0	1	0	1	1	0	0	0	3643
1	0	1	0	1	1	1	0	1	3771
1	0	1	0	1	1	1	1	0	3707
1	0	1	0	1	1	1	1	1	3835
1	0	1	1	0	0	0	0	0	3599
1	0	1	1	0	0	0	0	1	3727
1	0	1	1	0	0	0	1	0	3663
1	0	1	1	0	0	0	1	1	3791
1	0	1	1	0	1	0	0	0	3631
1	0	1	1	0	1	0	0	1	3759
1	0	1	1	0	1	1	1	0	3695
1	0	1	1	0	1	1	1	1	3823
1	0	1	1	1	0	0	0	0	3615
1	0	1	1	1	1	0	0	1	3743
1	0	1	1	1	1	0	1	0	3679
1	0	1	1	1	1	0	1	1	3807
1	0	1	1	1	1	1	0	0	3647
1	0	1	1	1	1	1	0	1	3775
1	0	1	1	1	1	1	1	0	3711
1	0	1	1	1	1	1	1	1	3839
1	1	0	0	0	0	0	0	0	3850

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
1	1	0	0	0	0	0	0	1	3978
1	1	0	0	0	0	0	1	0	3914
1	1	0	0	0	0	0	1	1	4042
1	1	0	0	0	1	0	0	0	3882
1	1	0	0	0	0	1	0	1	4010
1	1	0	0	0	0	1	1	0	3946
1	1	0	0	0	1	1	1	1	4074
1	1	0	0	1	0	0	0	0	3866
1	1	0	0	1	0	0	0	1	3994
1	1	0	0	1	0	1	1	0	3930
1	1	0	0	1	0	1	1	1	4058
1	1	0	0	1	1	0	0	0	3898
1	1	0	0	1	1	0	1	1	4026
1	1	0	0	1	1	1	1	0	3962
1	1	0	0	1	1	1	1	1	4090
1	1	0	1	0	0	0	0	0	3854
1	1	0	1	0	0	0	0	1	3982
1	1	0	1	0	0	0	1	0	3918
1	1	0	1	0	0	0	1	1	4046
1	1	0	1	0	1	0	0	0	3886
1	1	0	1	0	1	0	0	1	4014
1	1	0	1	0	1	1	1	0	3950
1	1	0	1	0	1	1	1	1	4078
1	1	0	1	1	0	0	0	0	3870
1	1	0	1	1	0	0	0	1	3998
1	1	0	1	1	0	1	0	0	3934
1	1	0	1	1	0	1	1	1	4062
1	1	0	1	1	1	0	0	0	3902
1	1	0	1	1	1	1	0	1	4030
1	1	0	1	1	1	1	1	0	3966
1	1	0	1	1	1	1	1	1	4094
1	1	1	0	0	0	0	0	0	3851
1	1	1	0	0	0	0	0	1	3979
1	1	1	0	0	0	0	1	0	3915

Address	A12,A11, A10	A9	A1	A3	A5	A6	A7	A8	Primo Pager Code
Decimal Value	3584	256	1	4	16	32	64	128	
SW1 SETTING	1 = towards Battery, 0 = away from Battery								
	1	2	3	4	5	6	7	8	
1	1	1	0	0	0	1	1	4043	
1	1	1	0	0	1	0	0	3883	
1	1	1	0	0	1	0	1	4011	
1	1	1	0	0	1	1	0	3947	
1	1	1	0	0	1	1	1	4075	
1	1	1	0	1	0	0	0	3867	
1	1	1	0	1	0	0	1	3995	
1	1	1	0	1	0	1	0	3931	
1	1	1	0	1	0	1	1	4059	
1	1	1	0	1	1	0	0	3899	
1	1	1	0	1	1	0	1	4027	
1	1	1	0	1	1	1	0	3963	
1	1	1	0	1	1	1	1	4091	
1	1	1	1	0	0	0	0	3855	
1	1	1	1	0	0	0	1	3983	
1	1	1	1	0	0	1	0	3919	
1	1	1	1	0	0	1	1	4047	
1	1	1	1	0	1	0	0	3887	
1	1	1	1	0	1	0	1	4015	
1	1	1	1	0	1	1	0	3951	
1	1	1	1	0	1	1	1	4079	
1	1	1	1	1	0	0	0	3871	
1	1	1	1	1	0	0	1	3999	
1	1	1	1	1	0	1	0	3935	
1	1	1	1	1	0	1	1	4063	
1	1	1	1	1	1	0	0	3903	
1	1	1	1	1	1	0	1	4031	
1	1	1	1	1	1	1	0	3967	
1	1	1	1	1	1	1	1	4095	

## Appendix D: KlikAan / KlikUit RF Socket Codes

Room	Channel	ON	OFF
A	1	10E00	10600
A	2	10E10	10610
A	3	10E20	10620
A	4	10E30	10630
A	5	10E40	10640
A	6	10E50	10650
A	7	10E60	10660
A	8	10E70	10670
A	9	10E80	10680
A	10	10E90	10690
A	11	10EA0	106A0
A	12	10EB0	106B0
A	13	10EC0	106C0
A	14	10ED0	106D0
A	15	10EE0	106E0
A	16	10EF0	106F0
B	1	10E01	10601
B	2	10E11	10611
B	3	10E21	10621
B	4	10E31	10631
B	5	10E41	10641
B	6	10E51	10651
B	7	10E61	10661
B	8	10E71	10671
B	9	10E81	10681
B	10	10E91	10691
B	11	10EA1	106A1
B	12	10EB1	106B1
B	13	10EC1	106C1
B	14	10ED1	106D1
B	15	10EE1	106E1
B	16	10EF1	106F1
C	1	10E02	10602
C	2	10E12	10612
C	3	10E22	10622
C	4	10E32	10632
C	5	10E42	10642
C	6	10E52	10652
C	7	10E62	10662
C	8	10E72	10672
C	9	10E82	10682
C	10	10E92	10692
C	11	10EA2	106A2
C	12	10EB2	106B2
C	13	10EC2	106C2
C	14	10ED2	106D2
C	15	10EE2	106E2
C	16	10EF2	106F2
D	1	10E03	10603
D	2	10E13	10613

Room	Channel	ON	OFF
E	1	10E04	10604
E	2	10E14	10614
E	3	10E24	10624
E	4	10E34	10634
E	5	10E44	10644
E	6	10E54	10654
E	7	10E64	10664
E	8	10E74	10674
E	9	10E84	10684
E	10	10E94	10694
E	11	10EA4	106A4
E	12	10EB4	106B4
E	13	10EC4	106C4
E	14	10ED4	106D4
E	15	10EE4	106E4
E	16	10EF4	106F4
F	1	10E05	10605
F	2	10E15	10615
F	3	10E25	10625
F	4	10E35	10635
F	5	10E45	10645
F	6	10E55	10655
F	7	10E65	10665
F	8	10E75	10675
F	9	10E85	10685
F	10	10E95	10695
F	11	10EA5	106A5
F	12	10EB5	106B5
F	13	10EC5	106C5
F	14	10ED5	106D5
F	15	10EE5	106E5
F	16	10EF5	106F5
G	1	10E06	10606
G	2	10E16	10616
G	3	10E26	10626
G	4	10E36	10636
G	5	10E426	10646
G	6	10E56	10656
G	7	10E66	10666
G	8	10E76	10676
G	9	10E86	10686
G	10	10E96	10696
G	11	10EA6	106A6
G	12	10EB6	106B6
G	13	10EC6	106C6
G	14	10ED6	106D6
G	15	10EE6	106E6
G	16	10EF6	106F6
H	1	10E07	10607
H	2	10E17	10617

Room	Channel	ON	OFF
D	3	10E23	10623
D	4	10E33	10633
D	5	10E43	10643
D	6	10E53	10653
D	7	10E63	10663
D	8	10E73	10673
D	9	10E83	10683
D	10	10E93	10693
D	11	10EA3	106A3
D	12	10EB3	106B3
D	13	10EC3	106C3
D	14	10ED3	106D3
D	15	10EE3	106E3
D	16	10EF3	106F3
I	1	10E08	10608
I	2	10E18	10618
I	3	10E28	10628
I	4	10E38	10638
I	5	10E48	10648
I	6	10E58	10658
I	7	10E68	10668
I	8	10E78	10678
I	9	10E88	10688
I	10	10E98	10698
I	11	10EA8	106A8
I	12	10EB8	106B8
I	13	10EC8	106C8
I	14	10ED8	106D8
I	15	10EE8	106E8
I	16	10EF8	106F8
J	1	10E09	10609
J	2	10E19	10619
J	3	10E29	10629
J	4	10E39	10639
J	5	10E49	10649
J	6	10E59	10659
J	7	10E69	10669
J	8	10E79	10679
J	9	10E89	10689
J	10	10E99	10699
J	11	10EA9	106A9
J	12	10EB9	106B9
J	13	10EC9	106C9
J	14	10ED9	106D9
J	15	10EE9	106E9
J	16	10EF9	106F9
K	1	10E0A	1060A
K	2	10E1A	1061A
K	3	10E2A	1062A
K	4	10E3A	1063A
K	5	10E4A	1064A
K	6	10E5A	1065A

Room	Channel	ON	OFF
H	3	10E27	10627
H	4	10E37	10637
H	5	10E47	10647
H	6	10E57	10657
H	7	10E67	10667
H	8	10E77	10677
H	9	10E87	10687
H	10	10E97	10697
H	11	10EA7	106A7
H	12	10EB7	106B7
H	13	10EC7	106C7
H	14	10ED7	106D7
H	15	10EE7	106E7
H	16	10EF7	106F7
M	1	10E0C	1060C
M	2	10E1C	1061C
M	3	10E2C	1062C
M	4	10E3C	1063C
M	5	10E4C	1064C
M	6	10E5C	1065C
M	7	10E6C	1066C
M	8	10E7C	1067C
M	9	10E8C	1068C
M	10	10E9C	1069C
M	11	10EAC	106AC
M	12	10EBC	106BC
M	13	10ECC	106CC
M	14	10EDC	106DC
M	15	10EEC	106EC
M	16	10EFC	106FC
N	1	10E0D	1060D
N	2	10E1D	1061D
N	3	10E2D	1062D
N	4	10E3D	1063D
N	5	10E4D	1064D
N	6	10E5D	1065D
N	7	10E6D	1066D
N	8	10E7D	1067D
N	9	10E8D	1068D
N	10	10E9D	1069D
N	11	10EAD	106AD
N	12	10EBD	106BD
N	13	10ECD	106CD
N	14	10EDD	106DD
N	15	10EED	106ED
N	16	10EFD	106FD
O	1	10E0E	1060E
O	2	10E1E	1061E
O	3	10E2E	1062E
O	4	10E3E	1063E
O	5	10E4E	1064E
O	6	10E5E	1065E

Room	Channel	ON	OFF
K	7	10E6A	1066A
K	8	10E7A	1067A
K	9	10E8A	1068A
K	10	10E9A	1069A
K	11	10EAA	106AA
K	12	10EBA	106BA
K	13	10ECA	106CA
K	14	10EDA	106DA
K	15	10EEA	106EA
K	16	10EFA	106FA
L	1	10E0B	1060B
L	2	10E1B	1061B
L	3	10E2B	1062B
L	4	10E3B	1063B
L	5	10E4B	1064B
L	6	10E5B	1065B
L	7	10E6B	1066B
L	8	10E7B	1067B
L	9	10E8B	1068B
L	10	10E9B	1069B
L	11	10EAB	106AB
L	12	10EBB	106BB
L	13	10ECB	106CB
L	14	10EDB	106DB
L	15	10EEB	106EB
L	16	10EFB	106FB

Room	Channel	ON	OFF
O	7	10E6E	1066E
O	8	10E7E	1067E
O	9	10E8E	1068E
O	10	10E9E	1069E
O	11	10EAE	106AE
O	12	10EBE	106BE
O	13	10ECE	106CE
O	14	10EDE	106DE
O	15	10EEE	106EE
O	16	10EFE	106FE
P	1	10E0F	1060F
P	2	10E1F	1061F
P	3	10E2F	1062F
P	4	10E3F	1063F
P	5	10E4F	1064F
P	6	10E5F	1065F
P	7	10E6F	1066F
P	8	10E7F	1067F
P	9	10E8F	1068F
P	10	10E9F	1069F
P	11	10EAF	106AF
P	12	10EBF	106BF
P	13	10ECF	106CF
P	14	10EDF	106DF
P	15	10EEF	106EF
P	16	10EFF	106FF