

HAL CA1006 Installer Manual.

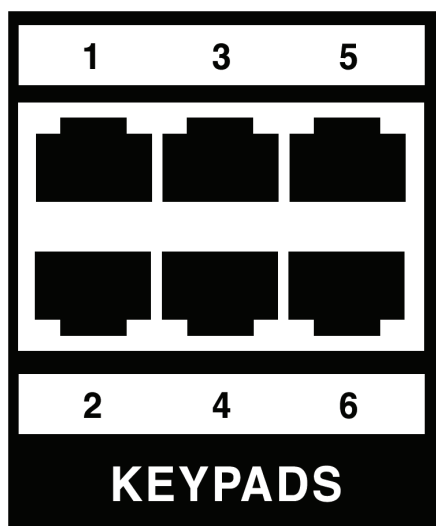


1. Connections

a) Keypads

There are six RJ45 keypad connection points on the rear of the CA1006. Each corresponds to an amplifier and is used to control that amplifier with either a HAL keypad or IRM (Infra Red Module).

The keypads are connected via a Category 5 cable wired on a straight through basis. Keypad cables should be no greater than 60m/200ft.



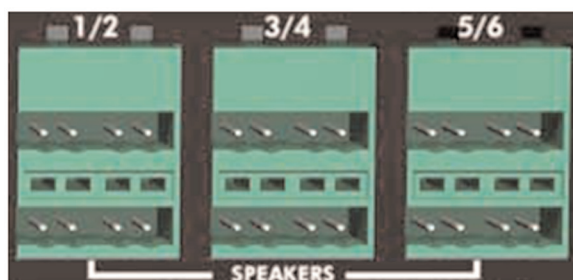
b) Speakers

There are six sets of stereo speaker outputs on the rear of the CA1006 these connect directly to speakers in remote zones.

Outputs are organised so that left speakers connect to the left two terminals and right speakers to the right two terminals. They are wired with both negative lines in the centre so across the four terminals the assignment is:

Left + - - + **Right**

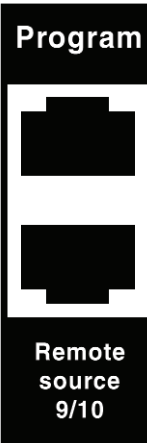
When connecting speakers be especially careful that no copper is left exposed outside the connector. Doing so could cause the speaker lines to short out either against each other or metal objects in the vicinity and damage the amplifier.



c) Program & RS232

There are two data connection points on the rear of the CA1006, a single RJ45 connector labelled 'Program' and a 9-Pin serial port labelled 'RS232'

The 'Program' RJ45 socket is for direct connection of a HAL keypad for use in programming and setting up the CA1006. Connection is via a standard Category 5 patch lead wired on a straight through basis.

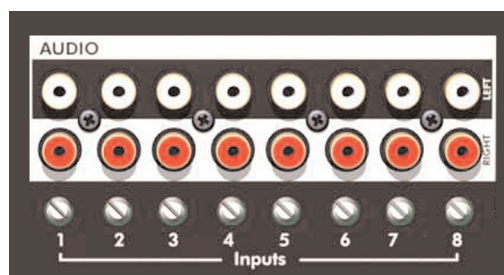


The RS232 connection is for interfacing with a third party control system, details of which are covered in section 3 of this manual, a standard serial cable can be used for connection of such a system with the cable being wired on a straight through basis with no crossover required.



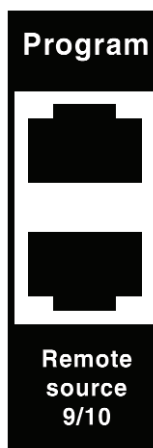
d) Sources

There are eight conventional line level stereo audio source inputs on the CA1006 plus four composite video inputs, if the optional IRIS video board is installed.



Each of the conventional audio inputs is equipped with a variable gain control. This allows you to compensate for differences in output levels of sources so that when you change sources your volume level in a listening zone remains constant. To reduce the gain you turn the control anti clockwise to increase it you turn it clockwise.

There are also 2 remote audio source inputs which connect via the RJ45 socket labelled 'Remote Sources'. To use these sources you must connect a HAL Remote Source module via a Category 5 cable wired on a straight through basis. This cable can be a maximum of 40 metres or 120 feet away from the CA1006.



e) IR Outputs

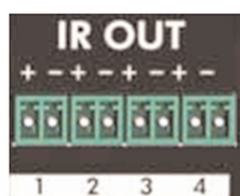
There are four IR outputs on the rear of the CA1006; each of these can drive multiple IR emitters. Either a dual IR emitter or two single IR emitters wired in parallel.

Positive and negative terminals are marked on the CA1006 and generally the white trace on an IR emitter cable is the positive lead. If you are using the supplied emitter cables this will be their configuration.

If you are starting with an emitter fitted with a mono 3.5mm plug the tip will generally be positive so you can trace back from the tip with a multimeter which cable connects to the tip.

If you connect the emitter in backwards it will not damage the emitter but it will not work so if you do not have IR transmission you may need to reverse the polarity as part of your troubleshooting

The IR outputs transmit both stored codes in the CA1006 and also codes received in remote zones via keypads or IRM modules. The outputs are steered in the following configuration:



Output One: Controls sources one, five and nine
Output two: Controls sources two, six and ten
Output three: Controls sources three and seven
Output four: Controls sources four and eight

f) Intercom Interface

The intercom interface section is provided to allow an intercom system to integrate with the HAL system.

Essentially it provides a stereo audio input and where IRIS is fitted a composite video input to allow you to interface with whatever audio and video feed can be provided from the intercom via the two audio RCA connections and single video RCA connection.

The audio feed from the intercom is selected when the CA1006 sees a 9 volt trigger voltage via the 3.5mm stereo trigger input. The trigger is wired tip positive.



g) RS232 Input

The CA1006 is equipped with an RS232 input for interfacing with third party control systems.

To connect to the RS232 input you simply need a standard serial communications cable.

The input is setup on a straight through basis with transmit data (TX) being on Pin 3 and receive data (RX) being on Pin 4.



2. Setting up the CA1006

a) Gain Controls

i) Audio

Each of the conventional source inputs is equipped with a gain control.

This allows you to trim or increase the level of the input signals, typically you will be more likely to need to decrease these gain levels than increase them although it will be necessary to customise these settings with all source components.

To decrease the gain you turn the pot in a counter-clockwise direction with a small flat edge screwdriver, to increase the gain you turn the pot in a clockwise direction.



When adjusting these levels it is advisable to do so with an amplifier operating and to check that the levels you set, do not cause the input stage of the amplifier to clip, as evidenced by a distorted sound

Bear in mind that different CD's are recorded at different volume levels and if your gain setting is too high the customer may find they get audible levels of distortion with certain CD's playing. Ensure when setting this feature up you test with a known CD and give the customer some margin for error.

ii) Video - optional

Each video output has two corresponding switches in the video gain section. When shipped, both these switches will be set to the 'OFF' position which reflects zero gain for that output.



The gain circuits should only be activated in situations where cable runs to remote zones are in excess of 50m/150ft and/or there are appreciable drops in picture quality generally recognisable as diminished brightness and colour levels.

If you encounter diminished picture quality there are three effective levels of gain for each output, activated by switching on one or two of the dip switches that relate to each output.

The gain circuits have been designed with the following installations in mind -

- a) Activating the first switch implements a gain circuit designed to compensate for typical losses encountered in cable runs over 50 metres
- b) Activating the second switch on its own implements a gain circuit designed for cable runs over 100 metres
- c) Activating both switches implements both gain circuits effectively compensating for losses typically incurred in cable runs over 150 metres.

Please note that the requirement for activating the gain circuits will vary between every installation depending on cable quality and localised interference, the gain circuits should only be used where appreciable quality loss can be detected.

3. Programming the CA1006

a) Connections

To enter the CA1006 setup mode you must first connect a HAL keypad to the RJ45 socket on the rear of the CA1006 labelled 'Program'.

You then press and hold the 'Mute' and 'Power' keys until they flash, this automatically puts you into the first setup mode.

You exit the setup mode in the same manner and upon exiting the CA1006 automatically stores all changes to its configuration.

Please note that whilst in setup mode all other CA1006 functions to do with the central CPU are disabled and RS232 commands and some amplifier functions will not operate as per normal.

a) Selecting Sources

To learn codes for sources one to four you simply select these sources in the first menu causing the source key that you are learning codes for, to be

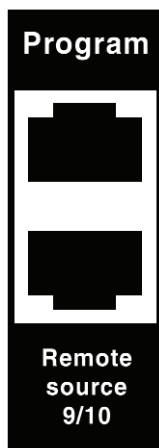


FIG 1

illuminated in red. FIG 1.

To learn codes for source five to eight you must move to the next menu by pressing the volume up key once. The power key should still be illuminated in green but now the sources will illuminate in orange indicating you are selecting sources five through eight. FIG 2.



FIG 2

For sources nine and ten you press the volume up key once more and now source buttons one and two will go blank when selected. FIG 3.



FIG 3

b) Learning Source IR Controls

Throughout the IR learning process the power key on the keypad will be illuminated in green.

If you are programming a CA1006 that has not previously been setup you will see that the key for source number 1 is illuminated in red and each of the source control keys are also illuminated in red. FIG 4.



FIG 4

If the CA1006 has previously had IR codes stored then some of the source control keys may be illuminated in green or orange indicating there is already a stored IR code in memory. FIG 5.



FIG 5

To clear the memory you simply hold down the volume minus key and press any of the source control keys which you wish to clear. After being erased they will be illuminated in red. FIG 6. There are two methods of storing IR codes we recommend you always try method 1 first as it is a more robust storage method.



FIG 6

i) Method 1

This method relies upon the pre learnt code types stored within the CA1006 processor.

Essentially the HAL controllers recognise a pre-programmed code type and simply regenerates it

when required. As such codes learnt this way are more robust as they are not susceptible to interference generated by local conditions.

To learn a code in this method you press the source control key for which you wish to store the code causing it to go blank. You then direct the command you wish to store at the IR receiver on the keypad.



FIG 7

If the code is successfully stored the key will be illuminated in green and you can immediately test the code if you have IR emitters connected by pressing the appropriate source key. FIG 7.

If the CA1006 did not receive a code of any description it will simply stay blank to exit this learning stage simply press the volume minus key.

If the code was not recognised the key will flash red before illuminating in red again and you can try and re-send it, however not every IR code can be successfully stored via this method. If you do not have a recognised IR code please try Method 2.

Method 2

This method memorises all IR information sent to the CC-40 IR receiver within a maximum time frame of 100ms and stores this as the source component control code.

To store an IR code in this manner you hold down the mute key as well as the source control key where you want the code to be stored, release both and this causes the control key to go blank.

You then fire the required code at the IR Receiver on the keypad.

If a code is successfully stored then the key will illuminate in orange instead of green, you can as above immediately test the control key assuming you have emitters connected correctly. FIG 8.



FIG 8

It is quite possible that you will need to attempt to store a code several times with this method as when a key is pressed you sometimes get more information than is required for source component control.

Where possible you should try and press a source control key as quickly as possible to ensure you only get a single code being stored and not multiple codes or repeat code information.

c) Learning IR Macro's

The CA1006 can store 3 sets of Macro IR commands each containing up to 8 IR codes.

To access this setup mode you press the volume plus key until the power key is illuminated in orange and the first source key and all source command keys are illuminated in red. FIG 9.



FIG 9

You select which Macro you wish to store by pressing one of the first three source keys, if you try and select the fourth source key nothing will happen.

Macro 1 is stored under Source 1 on the keypad, Macro 2 = Source 2 and Macro 3 = Source 3 .

You learn the IR commands that make up the macro in the same manner as with IR source control either by Method 1 or Method 2.

Method 1 involves pressing one of the eight source control keys and then firing the IR command at the IR receiver on the keypad, if the code is recognised the key will change to a green colour if it is not recognised it will flash red then remain illuminated in red.

Method 2 requires you to hold down the 'Mute' key before pressing the source key that you wish to learn, then repeating the steps in Method 1, if successfully learnt the key will illuminate in orange.

You do not have to store a code in each of the eight locations for a macro to work, it can be anywhere from 1 to 8 codes long.

If you find that the commands are being transmitted too quickly for your source components to respond you can space the codes out by storing in every second location, effectively leaving a gap between the codes for the source components to process the command.

To transmit the macro commands once learnt you can use the Macro keys on the HAL remote control or the RS232 command 'IM' (See the RS232 section for further explanation).

d) Learning Source Power Codes

The third setup mode is also accessed by pressing the volume plus key and causes the power key to be illuminated in red. FIG 10 (See over).

In this mode you can store the power on and off codes for your source components.

The CA1006 will automatically issue power on codes when the first amplifier is switched on, it will also

issue power off codes when the last amplifier is switched off.

You will see that the first source key is illuminated in red and the play and stop buttons are illuminated in red unless IR codes have previously been stored in which case they are illuminated in green or orange. You can clear individual keys in this menu as with setup mode 1 by pressing the volume minus key.



FIG 10

You change sources in the same manner as with IR learning, using the volume plus key once to move to sources 5 through 8 indicated by the source keys illuminating in orange and once again to access sources 9 and 10 where the source keys are blank upon selection.

The play key is used to store the 'On' command the stop key is used to store the 'Off' command often these will be the same commands. The method of storing codes is exactly the same as with other sections with successful storing indicated by a key changing colour to green or orange depending on what storage method you use.

It is worth noting that when the 'On' and 'Off' commands are the same it is possible for the source components to get out of sync with the HAL system if someone turns off a source component directly bypassing the HAL source control.

4. Amplifier Setup Features

a) Getting Started

To configure the setup features of an amplifier you must have a keypad directly connected to the keypad input that corresponds with the amplifier you wish to configure.

You then press and hold the 'Mute' and 'OK' keys until they both flash.

The amplifier will then be in setup mode and will immediately progress to the first setup feature which is Startup Volume as indicated by one green light on the second row of keypad buttons.

To move between setup features you use the left and right arrows. Left to move backwards, right to move forwards. You can always tell what setup feature you are adjusting by referring to the second row of buttons explained as follows -



1. Startup Volume



2. Maximum Volume



3. Balance



4. Bass



5. Treble



6. Loudness



7. Intercom Interrupt



8. Priority



9. Video

To adjust a feature you use the up and down arrows, all adjustments are indicated by the colours of the arrow keys as explained below.

b)Startup Volume

This is the volume the amplifier will automatically default to every time it is turned on. It is factory set at one third.

To adjust the startup volume you simply use the up and down arrow keys.

Provided you have the correct source selected and playing you can hear the volume level as you make your adjustments.

You also get a visual representation of what level you are setting via the arrow keys, as you increase the volume these will illuminate first in green, then orange then red.

The default startup volume setting is one third, indicated by four green lights which is what you will see when you first access the mode. FIG 11.

If you choose to increase the level these will change to orange (FIG 12) and then red (FIG 13). If you choose to decrease the level you will see less buttons being illuminated until eventually all are blank.



One third vol.

FIG 11

Two thirds vol.

FIG 12

Full vol.

FIG 13

c) Maximum Volume

This setting is used to limit the output of an amplifier so as not to overdrive speakers and also to accommodate the clients needs in ensuring that particular zones are not so loud as to interfere with other areas.

When you first access this feature the amplifier is automatically muted, as indicated by the mute flashing red.

This is a built in safety precaution as all amplifiers ship with maximum volume set to full and this is potentially loud enough to damage speakers.

If you want to hear how loud the maximum volume level is you should turn off the mute by pressing the mute key once but suggest pressing the down arrow key several times to reduce the max volume

before taking off the mute. You can adjust this setting with the mute still on if you know what setting you wish to achieve, simply check the setting via the colour of the arrow keys as explained previously.

You adjust the maximum volume setting in the same way as the startup volume with the same visual representation.



One third vol.

Two thirds vol.

Full vol.

d) Balance

The balance setting adjusts the level between the two speakers. It does so by decreasing the gain on one of the channels

When adjusting the balance the source selection and volume keys are active and it is best to check your setting at a variety of volume levels and with different sources to ensure it works in all situations.

Balance is adjusted using the up and down keys. Up moves the balance right, down moves the balance left. The factory default setting is neutral indicated by four blank keys. FIG 14.

If you move the balance right, the right and up arrow keys will illuminate in green moving from left to right indicating the direction of the shift, they will progress from green (FIG 16) to orange to red till both are illuminated in red indicating a maximum shift right. FIG 17.

If you choose to move the balance left the keys will illuminate in the same manner but starting on the right hand side and moving left indicating the shift in balance you are carrying out. FIG 15.



Factory Setting-Neutral

FIG 14

One Third Left

FIG 15



One Third Right

FIG 16



Full Right

FIG 17

e) Bass

This allows you to increase or decrease the bass level. Factory set is neutral.

There are six steps up and six steps down in this adjustment as indicated by the arrow keys.

When the bass setting is neutral none of the keys are illuminated (FIG 18), as you increase the bass setting the right and up arrow illuminate, first in green (FIG 19) then in orange (FIG 20) and finally in red (FIG 21).

If you choose to decrease the bass setting the left and down arrow illuminate first in green then in orange and finally in red.



Bass Flat

FIG 18



Reduced 1/3

FIG 19



Increased 2/3

FIG 20



Full Bass Boost

FIG 21

f) Treble

This works in exactly the same way as the bass setting.

g) Loudness

Each amplifier is equipped with a loudness feature that automatically increases the bass levels at low volumes.

This feature can either be on or off. Its default setting is off indicated by the down and left arrow keys being illuminated in red. FIG 22.



Loudness Off

FIG 22



Loudness On

FIG 23

To change this simply use the up arrow which will cause the up and right arrow to be illuminated in green and indicate that the loudness feature has been activated. FIG 23.

You should be able to hear the effect assuming you have a source playing. Although the loudness effect decreases as you increase the volume it is still advisable to check the performance of the speakers at higher volume levels so as not to overload them especially with program material that is especially bass heavy.

h) Intercom Interrupt

This feature once activated causes an amplifier to be switched on from its standby mode whenever the intercom trigger is activated.

Hence if someone rings the doorbell and you are asleep the amplifier will activate and will relay audio from the intercom input to your room at the startup volume level.

To end a page interrupt cycle you press the power key on the HAL keypad or remote control which returns the whole house and all active zones to their previous state.

This means that previously inactive zones will turn off and previously active zones will return to the source first selected when the zone was last powered up.

This feature is activated in exactly the same way as the loudness setting, turn on with the up arrow and

off with the down arrow. it is indicated by the same backlit keys as well, two red (FIG 24) or two green (FIG 25).



Intercom Interrupt Off
FIG 24



Intercom Interrupt On
FIG 25

i) Priority

This feature once activated blocks all other amplifiers from operating the source component selected by a 'priority' amplifier via the stored infra red commands.

It will only function if the RA-1 which is being operated is the first 'Priority' amplifier to select a given source, the feature works on a first come first serve basis.

An amplifier will continue to have priority until switched off, either by the power key on the directly connected keypad or via the whole house power off command which is performed by holding the mute and power keys down simultaneously.



Priority Off



Priority On

j) Assigning Video Output

In installations where an amplifier is feeding a zone that is also a HAL video zone fed from the HAL IRIS module it will be necessary to tell that amplifier what video output is being fed to that zone. This allows the amplifier to simultaneously switch video and audio in that zone when source selection changes are made.

Each amplifier is shipped without being assigned to any video output. This is indicated when you first go into the Video menu by all arrow keys being illuminated in red.

After checking which video feed is connected to

the zone you are setting up (which you do simply by tracing the video feed from an output on IRIS) you select the appropriate feed by using the up and down arrows. You can determine what video output you are assigning to this amplifier by the colours of the arrow keys. For example -



Video Output 1



Video Output 3



Video Output 5



Video Output 8

Once you have assigned a video output the amplifier will instruct IRIS to switch the video feed to that zone whenever a change in source is made.

PLEASE NOTE: Changes to this mode will not take effect until you have exited the setup process.

5. Operating an Amplifier

Amplifiers can be operated via the keypad, keypad with remote control IRM with remote control or RS232.. When using the remote control with either a keypad or an IRM please note that the first button press will simply illuminate the keypad or IRM indicator and then further commands will cause the amplifier to respond.

a) Power

To turn on and off a single RA-1 unit you simply press the power key at the top of the keypad or remote control.

When powering on the keypad it will illuminate with the last selected source highlighted in red. When powering off all keys on the keypad it will flash red once.

You can also use a global power off feature that will turn off all zones in a HAL system. By pressing and holding the mute key and then whilst still holding the mute key pressing the power key all zones will be turned off.

b) Source Selection

Sources 1 to 4 are selected by pressing one of the four icons on the top row of the keypad once causing them to turn red.

Sources 5 to 8 are selected by double pressing one of the four icons on the top row of the keypad causing them to turn orange. Button 1 selects source 5, button 2 source 6 and so on.

Sources 9 and 10 are selected by pressing and holding either of the first two buttons till they turn blank. Button 1 selects 9 and button 2 selects 10.

All sources can be directly selected by dedicated source keys on the HAL remote. When selected the colours will change on the keypad as indicated above.

c) Source Control

There are eight source control keys on the keypad and remote control. These can be assigned whatever functions you wish via the IR learning feature of the CA1006.

Once assigned you simply select the source you want via the four source selection keys and then press the source function key that suits your purpose.

d) Ending Page Interrupt Event

If you have an intercom system connected to the ca-1006 whenever this is triggered all active amplifiers and all amplifiers with interrupt enabled will switch from the usual sources to the intercom input. This will be obvious to the end user as all source keys will be illuminated in orange.

Once the intercom event is over you exit this cycle by pressing the power key on the keypad or remote control on any active amplifier.

In exiting the cycle each amplifier will revert to the last source selected on power up which may not necessarily be the last source that was being listened to.

e) Ending priority control

If priority control is enabled on an amplifier you should appreciate that no other user can operate the source control features of the HAL system until the priority unit is switched off or selects another source.

This is especially important to remember for instances where as an end user you move about the house from zone to zone. It may be better for your client if this feature is not activated depending on how they use the system.

Priority control is activated where a Priority amplifier is first to select a source.

Upon doing so it blocks out all other amplifiers from operating this source. It is important to note that simply turning on an amplifier will not activate priority control you must select a source to gain control of it.

When a priority amplifier is switched off control is up for grabs by the next priority amplifier that selects that source. It will not automatically revert to another priority amplifier that is listening to a given source.

If you forget to turn off a priority amplifier before leaving a zone you can end its priority control via the global power off command but bear in mind this will switch off all zones.

6. RS232 Operation

a) Communications Settings

The RS232 port on the rear of the CA1006 is setup to work at a baud rate of 4800 with hardware flow control switched off.

The CA1006 simply sits and waits for RS232 commands to be sent to it with no feedback provided to third party control systems.

The full listing of RS232 controls is provided in Appendix 1

b) Accessing CA1006 IR Memory

The RS232 protocol allows you to access the CA1006 bank of stored IR commands and issue them as required.

All stored source control codes are categorised by source number and code number, there are eight sources and eight codes per source.

The code numbers are assigned as they appear on the keypad working from left to right, top to bottom so Code 1 is Pause, Code 8 is the Up arrow.

To output a code you simply begin the ASCII Text string with the letters IR you then follow this with a single space, the source number, another space and then the IR code number.

Hence to output the second stored command for source 3 you would send the string - **'IR 3 2'**

You can also send the three macro IR commands by simply sending the string **'IM 1'**, **'IM 2'** or **'IM 3'**

c) Accessing CA1006 Features

i) Intercom

You can trigger the intercom mode of the CA1006 by sending the string **'IE'** standing for Intercom Enable.

To disable the intercom feature you simply send the string **'ID'** intercom disable.

Otherwise the simple act of turning off any active zone or zone activated by the intercom will disable the intercom interrupt returning the system to its power on state.

ii) Global Power Down

- You can power down the entire HAL system by simply issuing the string **'TO'** standing for Turn Off

d) Checking System Status

i) System wide Status check

If you wish to check the status of all zones within a HAL installation this is done with the command **'ST'**.

Sending this command causes the CA1006 to generate a table of 64 possible addresses with the status of each address, this table can be best viewed in windows hyper terminal where it is formatted automatically.

This function is useful during installations as it allows the installer to check which amplifier address corresponds to which zone.

The amplifiers are addressed as follows:

Master Zone 1	52	Slave Zone 1	58
Master Zone 2	53	Slave Zone 2	59
Master Zone 3	54	Slave Zone 3	60
Master Zone 4	55	Slave Zone 4	61
Master Zone 5	56	Slave Zone 5	62
Master Zone 6	57	Slave Zone 6	63

There are three listed states for an amplifier:

'No Data' which means that address is not being used

'Power Save' which means the address is active and a RA-1 is present but in a standby state.

'Normal' which means the address is active and a RA-1 is present and is currently powered up.

ii) Individual Amplifier Status Check

You can also check the status of an individual amplifier unit i.e. whether it is on or off, what volume it is set to, what source is selected and whether it is

muted by sending the string

'NO <ADDRESS>'

This will cause the CA1006 to output an ASCII string with the relevant information in the same format as the complete ASCII string but with the prefix **'ST'** so the status string for an amplifier with address 55 would be

'ST 55 1 1 10 0'

This tells us that this amplifier

is currently active (**'ST 55 1 1 10 0'**)
has selected source 1 (**'ST 55 1 1 10 0'**)
is set to volume level 10 (**'ST 55 1 1 10 0'**)
and is not muted. (**'ST 55 1 1 10 0'**)

e) Communicating with amplifiers

It is possible to communicate with any amplifier in a CA1006 system in exactly the same manner as if you were in the remote zone using a keypad.

To access a particular remote zone you simply need to know the address of the amplifier unit you wish to control.

There are individual RS232 strings for each amplifier function, such as source selection, volume up or down, mute or power on / off.

There are also complete RS232 strings that allow you to simultaneously set all amplifier features with one 8 Bit ASCII string

i) Individual RS232 Strings

Each function capable of operation by the keypad can be individually carried out by a single RS232 ASCII string, all you need to know is the address of the amplifier unit you wish to control.

Hence if you wish to mute a particular amplifier you simply send the string **'MU <ADDRESS> 1'** which mutes the specific amplifier unit, if you wish to un-mute it you send **'MU <ADDRESS> 0'**.

If you wish to change the source selection on a particular amplifier you send the string **'SS <ADDRESS> <SOURCE>'** where source 1 - 8 are the global sources and source 9 and 10 are the two remote sources.

You can also power down individual amplifier units by sending the command **'PW <ADDRESS> 0'** to turn off and **'PW <ADDRESS> 1'** to turn on.

It is also possible to simply turn up the volume of a particular amplifier unit by sending the command **'VR <ADDRESS> 1'**. Similarly to turn the volume down you send the command **'VR <ADDRESS> 0'**.

ii) Complete ASCII Strings

You start a complete control string with the command 'SE' followed by these bits of data -

[Address] 52 through 63

[State] 0 for standby, 1 for Active

[Source] 1 through 8 for global sources, 9 and 10 for remote sources

[Volume] 0 through 31 for the full volume range

[Mute] 0 for Un-Muted, 1 for Muted

So to tell amplifier 1 with address 52 to power up, select source 1 and go to half volume we would send the following string -

'SE 52 0 1 1 15 0'

ii) Setting Master/Slave Status

The HAL CA1006 can be expanded from six zones to twelve zones with the connection of another CA1006 via the expansion bus. The second CA1006, or slave communicates with the master on the expansion bus therefore alleviating additional connections and programming. Apart from the keypad and amplifier connections to the additional zones, only the audio sources need to be connected to the slave CA1006. To change a CA1006 from a master to a slave you issue the RS232 command

SL 1

You will recognise a slave CA1006 immediately by the red light in the status indicator on the front panel. To change back to a master:

SL 0

7. Problem Solving

a) Must Have Equipment

Before you attempt any problem solving of a HAL installation there are some items that you should have with you that will prove invaluable.

As the key to all problem solving is first to isolate the problem it is essential that you have with you key components that you know work without fail, these include

- LAN Network tester for testing all category 5 cables and terminations.
- A reliable source component that you know works with the CA1006 IR learning, a remote

control discman or similar is good as it is easy to carry.

- An known good IR emitter equipped with blinker and fitted correctly to a 2-way terminal block for direct connection to the HAL system.
- A variety of Category 5 patch leads in different lengths.
- A known good HAL Keypad for connection directly to the CA1006.
- A copy of this installers manual.

By combining these items it should be possible to isolate and fix any problem you encounter

b) IR Learning Problems

The most important thing to remember when it comes to IR learning is to setup the system in your shop or office prior to taking it to the customers house and well prior to having to fit off the job.

We can solve any IR Learning problems given the time to do so but it is too late if you arrive at a customers house and the system is not working properly.

Having said that there are some basic safeguards to minimise the problems you might experience

- Make sure you are learning IR codes in an IR friendly environment; that is away from likely interference sources such as halogen down lights, fluorescent lights or direct sunlight. All these will reduce the quality of the IR signal you feed into the CA1006 and increase the likelihood of storage difficulties.
- Make sure your remote controls are fitted with new full strength batteries. Batteries that are running flat will produce strange IR codes that are incomplete and whilst they may learn will not necessarily control your source equipment.
- Also remember that you need to transmit the IR code into the IR receiver on the HAL keypad not the CA1006 unit itself. The code will however be stored in the CA1006 from the keypad.

There are always new categories of IR codes being introduced to the marketplace on a regular basis. The vast majority of these can be learnt by our method 2 storage however should you encounter a new code that refuses to store please advise us as soon as possible as we are committed to updating our system to being compatible with the as many products on the market as possible. A firmware update can be emailed for quick upgrades.

c) Fixing IR transmission problems

Provided your IR codes have been stored correctly

there are three potential sources of IR transmission problems

IR Emitters
IR Emitter Placement
Fault with CA1006 IR transmission circuitry

This is where your test equipment comes in handy as you have a known good IR emitter with you that you can substitute for those being installed and it is equipped with a blinker so you can see if the CA1006 is outputting an IR command. This is the easiest way to rule out a fault with the IR transmission circuitry.

Provided the above is not the problem you should next check the IR emitter placement on the source component with your known good emitter, sometimes you can see the IR receiver module, sometimes you will have to check the source component manual, sometimes it is just trial and error till you find a location that works.

If you are successful with this step using your test emitter then you have a faulty IR emitter which you should replace.

If you still can't get the source component to respond try your test component which you know works, if this functions correctly it is either a fault with the source component or incorrect emitter placement.

If even your test source does not function there may be a source of IR in the room that is flooding the components and preventing them from functioning. Try shielding the IR receiver area from room lighting and test it again, if this works then you have found your problem.

It may also be flooding of an IR receiver in a keypad in another room that is stopping the IR transmission from working, it is always wise to disconnect remote keypads and make sure you have the CA1006 controlling the sources on its own and then test it with remote zones connected.

d) Gain Control Issues

If you are hearing distorted audio at moderate volume levels not attributable to speaker distortion which occurs at high volume levels then it is most likely a gain control that is set too high.

This is easily fixed through reducing the gain by turning the gain control on the source where you heard the distortion counter clockwise with a small flathead screwdriver.

If you encounter such distortion on one source it is possible it will occur on other sources as well so it is worth checking all your source input gain levels again.

e) Data light on CA1006 front panel permanently on

This light should only illuminate when an IR code is received via a KP-1 or IRM in a remote zone or a KP-1 key is pressed in a remote zone.

If it is permanently on, there are three main possibilities :

- A KP-1 being bombarded with IR either from direct sunlight or a light source such as downlights or fluorescent lights.
- A faulty KP-1 or IR receiver module.
- Faulty wiring on a Category 5 cable connecting a KP-1 or IRM to the CA1006 in the system.

If a KP-1 is being bombarded with IR then the keypad lights should be permanently illuminated. Check for any keypad that without a key being pressed or IR command being shot at it is permanently illuminated. Try covering over the IR receiver dome in the bottom right hand corner of the keypad. If this causes the illumination to end disconnect this keypad and check the data light.

If a KP-1 IR receiver module is faulty or has been damaged then removing it from the system will fix the problem so try disconnecting each keypad in turn and checking the effect on the data light.

Shorts on a Cat 5 keypad connecting cable would have been identified by use of the HAL cable tester and any LAN cable tester at the time of termination and if so you can be fairly confident that it is not a fault with your installation.

It is more likely damage to the cabling after installation, in that case the damage might be obvious to the naked eye depending on where the cable runs, at any rate another test with your LAN tester will show whether this is the problem.

f) Fan keeps coming on

The fan activates when the internal temperature of the unit reaches a point that it needs cooling. This is normal.

If however the fan is on constantly or amplifiers are cutting out and then coming back on it is likely that the unit is overheating.

This is probably due to it being in a poorly ventilated area it needs to draw cool air in through the front fascia and side panel to cool the internal circuitry. If these paths are blocked or there is no cool air available then it will not be able to cool itself.

Ensure that the unit is not completely shut away in a

non ventilated cupboard and is not buried under a stack of heat generating equipment. Leave space above and below it for the chassis to dissipate heat.

HOST PC TO CA1006 COMMANDS

CMD	PARAMETERS	VALUES	DESCRIPTION
E0	NONE		TURN ECHO ON
E1	NONE		TURN ECHO OFF
HE	NONE		HELP
?	NONE		HELP
IE	NONE		INTERCOM ENABLE
IM	<MACRO>		XMIT IR MACRO
	<MACRO>	[1..3]	
IR	<SRC> <KEY>		XMIT IR
	<SRC>	[1..10]	
	<KEY>	[1..8]	
MU†	<ADDR> <MUTE>		SET NODE MUTE
	<ADDR>	[52..63]	
	<MUTE>	0 - NORMAL	
1 - MUTE			
NO	<ADDR>		GET NODE STATUS
	<ADDR>	[52..63]	
PW†	<ADDR> <STATE>		SET NODE STATE
	<ADDR>	[52..63]	
	<STATE>	0 - POWERSAVE	
1 - NORMAL			
SC	NONE		SCAN 485 NODES
SE	<ADDR> <STATE> <SRC> <VOL> <MUTE>		SET NODE STATUS
	<ADDR>	[52..63]	
	<STATE>	0 - POWERSAVE	
1 - NORMAL			
	<SRC>	[1..6]	
	<VOL>	[0..31]	
	<MUTE>	0 - NORMAL	
1 - MUTE			
SS†	<ADDR> <SRC>		SET NODE SOURCE
	<ADDR>	[52..63]	
	<SRC>	[1..10]	
ST	NONE		DISPLAY INTERNAL STATUS
TO	NONE		
VA†	<ADDR> <VOL>		VOLUME ABSOLUTE
	<ADDR>	[52..63]	
	<VOL>	[0..31]	
VE	NONE		VERSION
VR†	<ADDR> <INC/DEC>		VOLUME RELATIVE
	<ADDR>	[52..63]	
	<INC/DEC>	0 - VOL DOWN	
1 - VOL UP			
SL	<STATE>	0 - MASTER	
		1 - SLAVE	



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