Entone Nova 4-in-1 Universal Remote Control Basic User Guide (NA/LATAM)

Overview

Your new Entone Nova universal 4-in-1 remote operates your Entone and other set-top boxes and up to three other devices. This remote can provide additional features including support for DVR.

Support Notes:

Description:

The Nova remote requires minimum version of firmware in the Entone STB to be supported noted below:

- 2.6.33.1-mvn
- 10.5.105.1-mvn
- 3.3.8.1-mvn
- 1.6.5.1-mvn

Also, the Nova Remote is designed to support Broadcom based STB's and limited support for Sigma STB's. For Broadcom versions, the RC will support both IR and RF; however, for Sigma based Hydra and Amulet-D series, the remote will only work in IR mode. RF requirements for Sigma-based STBs should continue to use the Entone URC.

For customers that have questions regarding these supported versions or other requirements, please contact Entone Support.

Installing Batteries

This Entone remote requires 2 AAA batteries (included). Please remove battery case cover and follow installation diagram inside the battery case area.

When replacing batteries, ensure new batteries are of high quality to provide for best service. Note, the remote upon removal of batteries, will retain all settings for up to 15 minutes.

Device Control

Each device key located at the top of this remote, controls a particular device. To specify a device, review the device codes listed at end of the user guide and complete the following:

1. Press and hold the device key (TV, STB, DVD, AUX) until the LED lights up and remains on.
2. Enter the five-digit code.
3. If the remote recognizes the entered code, the user can press power to determine if the entered code is correct. If no response, then please enter next code for the device brand chosen.

Using Your Remote

Select device you wish to control by pressing one of the device keys located at the top of the remote (TV, STB, DVD, AUX). The device key will blink to acknowledge choice and key functions will work as pressed.

Operational Notes

1. This Entone remote introduces 4-new buttons supporting high-value customer usages including (DVD, LIVE TV, MEDIA, VOD) that may require mapping. Please review the following as necessary:

    - All color buttons will work similarly to the URC3.x and URC4.x.
    - For Broadcom based STB, the following INI option is required if operator desires to map these four buttons to the color buttons

HDB72_PVR_KEY_REMAP=0x4b # Map DVR/PVR key to RED, thinkstuff key code:0x40000084
HDB72_DTV_KEY_REMAP=0x49 # Map DTV/LIVE TV key to GREEN, thinkstuff key code: 0x40000085
HDB72_MEDIA_KEY_REMAP=0x4a # Map MEDIA key to YELLOW, thinkstuff key code: 0x40000086
HDB72_VOD_KEY_REMAP=0x4c # Map VOD key to BLUE, thinkstuff keycode: 0x40000087

    - For Sigma based STB, there is no action required as these four buttons will be mapped to URC3.x button below:

VOD 0x40000124 same as MOVIES in URC 3.x
DVR 0x40000002 same as RECORD-IT in URC 3.x
Live TV 0x4000009d same as DTV in URC 3.x
Media 0x4000000c same as Media in URC 3.x

2. Another important note is that the Nova RC differs from the previous URC remotes in the process of triggering the Entone boot menu. For the Nova RC, please press ".+menu" while the URC remotes required "input+menu".

3. It is also important to note that the Nova remote control has a faster repeat rate than the URC and as a result, some customers may see notice the STB receiving two keys when a key is pressed. Entone recommends resolution by either

    - Increasing the "URC Key Delay Second" for each STB, or
    - Using the following INI options

```
HDBCM_KEY_DELAY_TIMEOUT=500000          #500ms
HDBCM_KEY_SIMULATE_TIMEOUT=400000       #400ms
HDBCM_KEYUP_TIMEOUT=350000              #350ms
```

    If customer still reports multiple key presses, it is recommended to increase the timeouts as follows:

```
HDBCM_KEY_DELAY_TIMEOUT=800000          #800ms
HDBCM_KEY_SIMULATE_TIMEOUT=400000       #400ms
HDBCM_KEYUP_TIMEOUT=350000              #350ms
```

Note: This setting applies only to a deployed STB and that once this option is added, the bootmenu "URC Key Delay" setting will be ignored.

If you have any questions, please contact Entone support.

Common Usage Requests

This section provides programming sequences for common requests by the RC user. Additional details as well as other features are available in the Operational Features section of this document.

Remote Registration

Description:
Nova remote supports both IR and RF and registration allows user to set for IR or RF. By default the remote is in IR mode.

Programming Sequence:
To register the remote to the STB and use RF:

- On the Janus 300 or Amulet 550, press and hold the ""OK"" button on the front panel 5 seconds until the touch panel backlight is flashing
- Press and hold <<SETUP>> and <<STB>> keys together until the STB and AUX LEDs illuminate
- Press <1> or <2> for primary and secondary stream

To reset the Nova remote back to IR mode, here is the steps

- Press and hold <<SETUP>> and <<STB>> keys together until the STB and AUX LEDs illuminate
- Press <0>

Volume key to STB

Description:
Provides means to support volume on the STB as by default the volume -/+ and MUTE are directed to TV.

Programming Sequence:
To direct the volume and MUTE keys to the STB:

- Press and hold <<SETUP>> key until the LED blinks twice
- 2. Press <<MUTE>>

The STB LED will blink 4 times at which time VOL +, VOL – and MUTE are sent to the STB.

Learning Function

Description:
Learning capacity provides the opportunity to control devices not originally designed for the remote control creating increased support for multiple devices. The NOVA remote can receive and store codes transmitted by another device's remote control such that the other device will understand the button requests from the NOVA remote.

Notes:

- Only available in IR mode
- The Record key is excluded in the learning process

Programming Sequence:

- Press and hold <<SETUP>> key until the LED blinks twice
- Press <9>, <7>, <5>
- Press <<TV>> or <<AUX>> key [depends on the teaching remote]
- Hold the teaching remote close to the IR LED
- To learn the following keys (MENU, VOL+, VOL-, INPUT...)
- Press <<MENU>> key
- Continuously press the MENU key on the teaching remote until LED blinks twice
- Repeat step #5 and #6 with VOL+, VOL-, INPUT and some other keys
- Press and hold <<Setup>> key until the LED blinks twice

Key Operational Features

Library Search: Step N Set (Bi-Directional)

Description:
Allows the user to search for a code from the library of codes bi-directionally.

Programming Sequence:

[Mode] → <<SETUP>> (2 blinks) → <9> (1 blink) → <9> (1 blink) → <1> (2 blinks or Blink Error)→ [Test Functions]→ <Channel Up or Channel Down> (1 blink)→ <SETUP> (2 blinks or Blink Error)

LED User Feedback:

- One blink if valid mode key (same as Current Mode) is pressed.
- Three blinks upon completion of searching one complete revolution in either direction.
- Two blinks after last <SETUP> indicates programming success, return back to normal operation.
- The unit shall exit programming state and return to the last preprogrammed code if programming timeout has elapsed.
- Blink error after 991 if Dedicated Mode and ID Locked Mode.

Additional Information

- Library Search is not available for STB mode

-If no key is pressed before **Ch up/Ch down** then the default function is to be power.

-User can sample all Functions (0, 1, 2, 3, Power, Volume up, Play, Stop, Mute), the last function that was sampled before the Ch up/Ch down key was pressed will be the designated function to send for each Ch up/Ch down key press.

-After each Ch up/Ch down key press, the user can sample FUNCTIONS again to setup designated functions for Ch up/Ch down key presses.

-In the event that the device code for a particular target unit is unknown, the user shall be able to cycle the remote through the available codes for that device mode and sample functions from each code in order to find the code which properly operates the desired target device. The keys which are available to be sampled (also called FUNCTION here below), provided they are appliSTB to that mode are: 0, 1, 2, 3, Power, Volume Up, Play, Stop and Mute.

-The available FUNCTIONS within a code may be sampled as many times as desired until advancing to the next code by pressing the CH UP key or returning to the previous code by pressing the CH DOWN key. After sampling FUNCTIONS (0, 1, 2, 3, Power, Volume Up, Play, Stop and Mute), the user can continue the search with the previous (CH DOWN) or next (CH UP) code which will send the FUNCTION that was pressed originally after 991.

-The search functions initial "cold start" (when no code is programmed) begins with the most popular brand of equipment to the least popular for the TOP 25 ID's. The IR will illuminate each time a function is sent (when picked with IR). For the remaining ID's it goes sequentially. If the search function is activated after a code has been programmed in, the search cycle begins with the current programmed ID. Pressing either the CH UP or CH DOWN key, will increment or decrement to the next table entry and transmit the power (or other) FUNCTION associated with the currently selected table entry and wait for another

CH UP or CH DOWN key. The Mode LED will blink twice after successful completion of the programming sequence.

-The key function that will be sent out upon pressing <CH UP> or <CH DOWN> is dependent on the FUNCTION selected in the programming sequence above. Repeat pressing <CH UP> <CH UP> <CH UP> (to increment) or <CH DOWN> <CH DOWN> <CH DOWN> (to decrement) until the device responds. The scanning of manufacturer's codes will be circular and completes one revolution. The CH UP key will increment through the database and the CH DOWN key will decrement through the database.

-Scanning of the database will be circular, making one complete revolution in both directions. Once it reaches back to the original ID, it first transmits IR, the mode LED shall blink 3 times and will remain in the Step-N-Set mode.

-Pressing Setup listed at the end of the sequence will store the device code which was last sampled. The remote control exits library search mode with the current device code. The mode LED blinks twice in confirmation. The remote returns to normal operation.

-During the library search process, if 10 seconds has elapsed and no key presses are made the remote will exit library search. The remote control shall be defaulted to the previously programmed valid ID under one of the following conditions:

1. No code selected during the library search process. Any new scans will begin from the last valid stored manufacturer's code.

Note: The user should check before selecting one of the FUNCTION keys (0, 1, 2, 3, Power, Volume Up, Play, Stop and Mute) if the target device has such a key on the original remote control.

Example:

To search for a TV code using Volume Up as the function key, advancing forward in the database:

[TV] → <<SETUP>> (2 blinks) → <9> (1 blink) → <9> (1 blink) → <1> (2 blinks or Blink Error)→ [Volume Up]→ <Channel Up> (1 blink)→ <Channel Up> <SETUP> (2 blinks or Blink Error)

To search for a DVD code using Play as the function key, advancing in reverse:

[DVD] → <<SETUP>> (2 blinks) → <9> (1 blink) → <9> (1 blink) → <1> (2 blinks or Blink Error)→ [PLAY]→ <Channel Down> (1 blink)→ <Channel Down> <SETUP> (2 blinks or Blink Error)

Quick Swap – STB only

Description:
This feature will allow the remote control to be predefined (default setting) or programmed by user Favorite ID code list for specific mode. Each mode can have its own Favorite ID code list. Quick Swap programing (using 985 sequence) is allowed all devices for storing STB IDs only.

Default Setting:
STB default setting: C4437

Action Keys

Action Key	Brand	Default STB ID
A/Yellow	Entone	C4437
B/Blue	Amino	C1898
C/Red	ADB	C2254
D/Green	WNC	C3118

Programming Sequence:
a. Setup Favorite ID list of [Mode]
[Mode] (1 blink) → <<SETUP>> (2 blinks) → <9> (1 blink) → <8> (1 blink) → <5> (2 blinks)
→ <A/Yellow> (1 blink) → <ID Code> (2 blinks or Blink Error)
→ <B/Blue> (1 blink) → <ID Code> (2 blinks or Blink Error)
→ <C/Red> (1 blink) → <ID Code> (2 blinks or Blink Error)
→ <D/Green> (1 blink) → <ID Code> (2 blinks or Blink Error)
→ <<SETUP>> (2 blinks)

Note: if Blink Error occurs then the programming will exit immediately.

b. Clear Favorite ID list of [Mode]
[Mode] (1 blink)→ <<SETUP>> (2 blinks) → <9> (1 blink) → <8> (1 blink) → <5> (2 blinks)→ <<SETUP>> (2 blinks)

LED User Feedback:

- One blink after valid key press
- Blink error, exit Quick Swap programming state if:
  - After invalid action keys.
  - Any key is pressed besides a digit keys during entering ID Code.
  - Invalid ID Code (after last digit) assigned into action key.
  - Memory in Data Retention is full after last <<SETUP>>
- The unit shall exit Quick Swap programming state and return to the last preprogrammed code if programming timeout has elapsed.

- Two blinks after successful entry of a valid ID and after last <<SETUP>> indicates programming success, return back to normal operation.

Additional Information
- If user clears the favorite ID list, it will return to the 4 default codes.
-If product is in RF mode, using Quick Swap will switch to IR mode (Switch to programed ID)

Invalid Action Keys	
	Power
	Mode Keys: TV, STB, DVD, AUX
	Setup

Example:
a. Setup Favorite ID list of SAT mode:
[STB] (1 blink)→<<SETUP>>(2 blinks)→<9> (1 blink)→<8> (1 blink)→<5> (2 blinks) → <A> → <10000> (2 blinks, 10000 is a valid STB ID) → <B> → <10010> (2 blinks, 10010 is a valid STB ID) → <C> → <11376> (2 blinks, 11376 is a valid STB ID) → <D> → <11306> (2 blinks, 11306 is a valid STB ID) → <<SETUP>> (2 blinks)

b. Clear Favorite ID list of STB mode
[STB](1blink)→<<SETUP>>(2blinks)→<9>(1blink)→<8>(1blink)→<5>(2blinks)→<< SETUP>>(2 blinks)

1) *Quick Swap ID change – STB mode only*

Description:
Allows user to change pre-programmed ID's. This feature is not affected by ID lock Status and is available for execution whether the ID is Locked or Un-Locked. Quick Swap ID Change is allowed only for Physical STB.

Action Keys

Action Key
A/Yellow
B/Blue
C/Red
D/Green

Programming Sequence:
Pre-programmed ID 1
[Mode] (1 Blink)→ <<SETUP + A>> (2blinks)

Pre-programmed ID 2
[Mode] (1 blink)→ <<SETUP + B>> (2 blinks)

LED User Feedback:

- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and the remote control will return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.
- Two blinks after last <<SETUP>> indicates programming success, return back to normal operation.

Example:
To change pre-programmed STB ID's on the A, B and C keys.
[STB] (1 blink) → <<SETUP + A >>(2 blinks)
[STB] (1 blink) → <<SETUP + B>> (2 blinks)
[STB] (1 blink) → <<SETUP + C>> (2 blinks)

Simple Set

Description:
Simple Set is a new style of brand set for quick setup without reference to a code list. Each of the supported device types will have a list of top 10 manufacturers (or broadcasters for the Set Top Box mode). Each manufacturer will be assigned to a digit key, for example for TV: Samsung on digit 1, Sony on Digit 2, Panasonic on Digit 3 etc. For each manufacturer, there will be up to 12 IDs for the device selected, which will be searched through to find the correct match. The IDs will also be sorted by popularity in descending order – i.e. most popular first. The list will be supplied by the UEI Cypress Database team as an appendix to the spec.

Simple set is not available for STB mode.

Programming Sequence:
<<SETUP->>(LED or current physical mode LED will blink twice) → <MODE KEY>(LED or current physical mode LED will switch on) →<DIGIT KEY>(LED or current physical mode LED will switch off) →send Power for ID 1) > (LED will turn ON for the duration of tx) → (Send Power for ID 2) LED..) …(Release Digit Key)

LED User Feedback:

- After pressing a MODE key, any key-press besides a digit key or a digit key not associated in the brand list will cause the unit to display one long blink and exit programming mode.
- The unit shall exit programming state if 10 seconds has elapsed between key presses, remain in the current mode and return to normal operation.
- Once the digit key is pressed LED will go OFF and will blink (ON-OFF) during every code transmitted.
- LED will switch ON once Device key is pressed and remains ON till the digit key press.
- 260ms transmission of power code will be transmitted. Delay between power code transmissions is 3sec. The LED will be OFF during this delay.
- Stuck key timeout is set to 30 sec and is appliSTB to Mode and SETUP keys only.
- During programming if any new key/two key press is found the programming will be aborted with long blink.
- LVW check will happen only during programming entry and while storing the code. If LVW is detected programming will be aborted with error condition.
- The unit will blink twice upon release of the digit key.
- Refer to Programming Sequence section above for more information.

Additional Information:

- Simple Set is not available for STB mode in this Product.
- ID lock on any of the modes will disable UEI SIMPLE SET for that mode. Programming will be aborted after MODE key press if ID lock is detected.
- As the top 10 brand list is hard-coded, it is not possible to upgrade IDs into the lists via 6 Pin.
- If the currently programmed ID is part of brand list, the search will be circular and will begin from (current ID+1) in the brand table, and will end at (current ID – 1). Otherwise the search will start from the first ID to the last ID of the brand table. Please refer the example below. Programming will be aborted once end of table is reached.
- The feature has to scan all the codes present in brand table except the currently programmed code set.
- Only power code will be transmitted during search. The search ID will be skipped if power code is not present in that particular ID
- For device mode where any device type can be programmed, the currently programmed device type will be searched.
- The current device mode of the remote will be changed to new device based on the MODE key press during programming (as per the Nebula Elements project)
- If there is any mode movement, the device mode which is moved will be searched.

See next page for tables

	TV	1	2	3	4	5	6	7	8	9	10	11	12
1	Insignia	T2049	T1641	T1326	T1564	T2184	T2002	T1892	T2416	T0171	T1517	T1660	
2	LG	T2731	T1423	T1859	T2358	T2424	T3397	T3941	T4017	T0178	T0017	T1265	T2612
3	Panasonic	T1480	T1291	T0250	T0650	T2264	T1636	T1927	T1924	T1947	T0051	T1941	T1271
4	Philips, Magnavox	T1867	T1454	T2372	T1744	T1455	T2374	T2597	T1866	T0690	T1944	T1365	
5	Samsung	T2051	T0812	T1632	T0702	T0766	T3993						
6	Sanyo	T1142	T1362	T0154	T3488	T0799	T3861						
7	Sharp	T2360	T0818	T2951	T3394	T1602	T2402	T3867	T0093				
8	Sony	T0810	T1300	T1685									
9	Toshiba	T1524	T1656	T2724	T0156	T1156	T1256	T3134	T2006	T1935	T1945	T2684	T1743
0	VIZIO	T1758	T3758	T2707	T2757	T3415	T2512	T1756	T0864	T0885			

DVD/Blu-ray

1	Insignia	Y2596	Y2095	Y2428	Y0675	Y0741	Y1013						
2	LG	Y0741	Y1602	Y2135	Y0869								
3	Panasonic	Y1641	Y3641	Y0490	Y1579	Y0703	Y0503						
4	Philips, Magnavox	Y2056	Y2434	Y0539	Y0646	Y2084	Y0675	Y1354	Y1506	Y3488	Y0503	Y1158	
5	Pioneer	Y2442	Y2854	Y1571	Y0142	Y0631							
6	RCA	Y0522	Y2213	Y2919	Y2587	Y1013	Y0717	Y2871	Y1769	Y3464	Y0790		
7	Samsung	Y0199	Y0573	Y2069	Y1075	Y1573	Y1470	Y2113	Y2269	Y2369	Y2329	Y2489	Y1044
8	Sharp	Y2250	Y0630	Y0675									
9	Sony	Y1516	Y1633	Y1033	Y1070	Y0864	Y0772						
0	Toshiba	Y3157	Y2705	Y0503	Y3857	Y2277	Y2006	Y1510	Y1769	Y1608	Y2364		

Audio

1	Bose	R1933	R3959	M3708	R1629								
2	Denon	R2857	R1360	R2516	R3347	R2820	M2502	R2279	A2706	A2134			

3	LG	R2197	M3217	R2676	M3996	R2284	R3285	R1293					
4	Onkyo	R1805	R1320	R2730	M3984	R2503	M3992	R0135	R1298				
5	Panasonic	R2967	R1633	M3409	R2452	R3055	R1275	R3309	M3323	R1288	R1763	R2745	R2105
6	Philips	R2459	R0189	R1831	M3962	M2675	R2289	M3282	M4012	R1266	R2311	R1189	A0892
7	Pioneer	R1935	R2432	R1023	M3956	R2612	R1123	R1384	A0823				
8	Samsung	R1868	M2660	R2137	R2809	M2609	R3154	R1500	R1304				
9	Sony	R1622	R1759	M2610	R0158	R2172	M3700	R1758	R1822	R2475	R1058	R2522	R2860
0	Yamaha	R2061	R2467	R3030	R0176	M2458	M2021	M3153	M3917	R1276	R0376	R3580	R1815

Example:

Ex:
Brand Table
DW 0001
DW 0002
DW 0003
DW 0004

Scenario 1: Programmed codeset 0005
Search → 0001-> 3sec →0002→ 3sec →0003→ 3sec →0004→3sec →End with long blink
Scenario 2: Programmed codeset 0002
Search→ 0003→3sec →0004→ 3sec →0001→3sec→ End with long blink

Code Lock/Unlock for TV and STB (982)

Modes:

- TV
- STB

Description:
Allows creator to lock a specific ID in a specific mode so that ID cannot be accidentally re-programmed by user. This ID will be locked to the physical mode key.

Default Setting:

- ID locked to STB physical key

Programming Sequence:
After a valid code has been set, the code for a specific mode shall be locked and unlocked as follows:

[Mode] →<<SETUP>> →<9> →<8> →<2>

LED User Feedback:

- The unit shall blink 2 times upon being locked and blink 4 times when unlocked.
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Note:
Direct Code Setup and all types of code search will not be allowed when the code has been locked or Dedicated Mode. The QuickSwap feature overrides code lock.

Example:
To lock the STB ID:
[STB] →<<SETUP>> →<9> →<8> →<2> (2 blinks)

To unlock the STB ID:
[STB] →<<SETUP>> →<9> →<8> →<2> (4 blinks)

Simple Volume Lock

Description:
Alternative options for setting the volume lock and unlock status for available devices without requiring a 9-X-X sequence.

Programming Sequence:

Global Volume Lock:
<<SETUP>>→LED will blink twice<VOLUME UP> →LED will blink once <Target Device (e.g. TV)> LED will flash 2 times

Device Specific Un-Lock:
<<SETUP>>→ LED will blink twice <VOLUME DOWN>→ LED will blink once <Device to be Unlocked> LED will blink 4 times

Global Volume Unlock:
<<SETUP>>→ LED will blink twice <MUTE> LED will flash 4 times

LED User Feedback:

- Stuck key timeout is set to 30 sec if any key is held down.
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.
- LVD check will happen only during programming entry and while storing the code. Programming will be aborted with error condition.
- Refer to Programming Sequence section above for more information.

Additional Information:

- Even though any new code set is programmed, the volume settings for that device will remain intact.
- If any other device mode is moved using Mode Mover feature, the PT will be in default condition. Volume Lock settings for that device remains unchanged.
- If data is not present for the PT key under destination mode, there will be no IR transmission.
- The current device mode of the remote will revert back to the mode before entering Simple Volume Lock.

Examples:

Global Volume Lock:
<<SETUP>>→ <VOLUME UP> →<TV>

Device Specific Un-Lock:
<<SETUP>>→ <VOLUME DOWN >→ <AUX>

Global Volume Unlock:
<<SETUP →<MUTE>

Global Channel Lock

Description:
Allows user to lock channel control to specific device modes. Keys affected: Channel Up/Down, Digits 0-9, Dot\Delimiter\Dash, and Previous Channel. Channel Control will reset back to default by either 981 or 977 sequence.

Programming Sequence
To lock channel control to STB mode (TV channel control disabled):

<<SETUP>>→<9>→<7>→<3>→<Channel Up>→<Source>

LED User Feedback:

- The unit shall blink 2 times upon being locked.
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Additional Information:

- Modes affected and default setting will vary according to the customer's requirements.
- Returns to default by 980 reset

Example:
<<SETUP>>→<9>→<7>→<3>→<Channel Up>

Global Channel Unlock

Description:
To unlock channel control

Programming Sequence:
<<SETUP>>→<9>→<7>→<3>→<Channel Down>

LED User Feedback:

- The unit shall blink 4 times upon being unlocked.
- One blink if valid key is pressed

- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Additional Information:
- Modes affected and default setting will vary according to the customer's requirements.

Simple Input Lock

Description:
This is a simplified way to lock Input to a specific mode. This feature will affect the input key.

Default Setting:
Input Locked to TV.

Programming Sequence:

To Lock:
<<SETUP>> LED will blink twice →<INPUT> LED will blink once→<TARGET DEVICE> LED will blink 2 times

To UnLock
<<SETUP>> LED will blink twice →<INPUT> LED will blink once → <EXIT> LED will flash 4 times

LED User Feedback:
- One blink when a valid key is pressed.
- Two blinks after <Target Device> is pressed denoting Input Lock is successfully activated.
- Four blinks after <Exit> is pressed denoting Input Lock is successfully de-activated.
- Blink Error upon entry of an invalid key sequence and return to normal operation.

Additional Information:

- If any new codeset is programmed, the Input key settings for that device will remain intact.
- Stuck key timeout is set to 30 sec if any key is held down.
- The unit shall exit programming state if 10 seconds has elapsed between key presses.
- If data is not present for the PT key under destination mode, there will be no IR transmission.
- LVD check will happen only during programming entry and while storing the code. Programming will be aborted with error condition when LVW is detected.

Example:

Locking Input to TV mode:
<<SETUP>> LED will blink twice →<INPUT> LED will blink once→<TV> LED will blink 2 times

To Unlock:
<<SETUP>> LED will blink twice →<INPUT> LED will blink once → <EXIT> LED will flash 4 times

General IR Key Punch Through (978)

Description:
This feature is to allow the operator/programmer to configure the punch through of general IR keys assigned in one dedicated mode into any and all other modes.

Programming Sequence:
<<Setup >> → <9> → <7> → <8> (LED or current physical mode LED will blink twice) → <Source Mode/Key> → <IR Key> → <IR Key> → …. <Destination Mode/Key> → <Destination Mode/Key>→ …..<<Setup>> (LED or current physical mode LED will blink twice)

Now, when the destination modes are selected during programming, the selected IR keys will punch through to the selected source mode.

Notes:
Source mode/key refers to initial key that user will choose to send IR data to destination mode/key, i.e. STB key.
Destination mode/key refers to key chosen to receive source key IR data, i.e. TV key

To clear:
<<Setup >> → <9> → <7> → <8> (LED or current physical mode LED will blink twice) → <<Setup >> (LED or current physical mode LED will blink four times)

LED User feedback:

- One blink if valid mode key is pressed.
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Additional Information:
- General IR key punch through will send the original assigned IR data of the source mode the keys selected to the destination mode/key.
- If General IR punch though is setup a second time, it will override the first one.
- The remote control will remain in the current mode upon exit

Example:
To punch STB CH+ and CH- to TV and AUX modes:
<<Setup >> → <9> → <7> → <8>→ <STB>→ <CH+>→ <CH-> →<TV> → <AUX>→<<Setup>>

To clear:
<<Setup >> → <9> → <7> → <8>→ <<Setup >>

Mode Independent Single Level Macro (995)

Description:
This feature allows a sequence of commands (called a Macro sequence) to be programmed onto a designated macro key (called <Macro Key>).

- <Macro Key> must be defined in the product specification.
- <Macro Key> can be a primary key only
- Mode Independent single level macro has one command sequence programmed by the user with up to 15 keystrokes in the sequence.

To program a command sequence onto a macro key, one command at a time:
<<SETUP>> → <9> → <9> → <5> → <Macro Key> → <Macro Sequence> → <<SETUP>>

To clear macro set up on a specific key :
<<SETUP>> → <9> → <9> → <5> → <Macro Key> → <<SETUP>>

The mode independent macro feature is not mode specific. The macro will end in the last mode specified in the macro sequence. All keys except setup, power, TV, STB, AUX, and DVD key are available for a macro to be programmed on.

- Upon entry of an invalid key sequence, the remote control shall display one long blink and return to normal operation.
- The unit shall exit programming state and return to normal operation if 10 seconds has elapsed between key presses.

LED User Feedback:

- The remote shall exit programming state (without blinking) and return to normal operation if programming timeout has elapsed between key presses.
- One Blink after each valid key press.
- Two Blinks
    - After 1st <SETUP>>
    - After <995>
    - After last <<SETUP> and exit programming mode if success.
- Blink Error and exit programming mode if:
    - Invalid key is pressed.

- Length of <Macro Sequence> is over the limit (15 keys).
- Failure to store into Data Retention Area due to memory full or Low Voltage.

Macro Playback Operation:

- If a "mode key" is a part of macro sequence, the remote will switch to that mode and all subsequent keys will be in this mode thereafter. The mode can be switched back and forth within macro sequence.
- After the macro sequence completes, the remote remains in the mode last selected by the macro sequence and all shifted states and synthesizer will be cleared.
- Nesting macro is not allowed during macro playback.
- Delay between two keys.
  - 300ms approximately for regular keys.
  - 800ms approximately for Power key.
- Key interrupt will be disabled during macro sequence playback.
- Each IR function of the macro sequence will be transmitted for 260ms (minimum) for most protocols except product specific protocols (e.g. one shot).
- Stuck key timeout will not be applied during macro sequence playback.

Simple Power Macro

Description:
This feature is a simplified way to allow a sequence of commands (called a Macro sequence) to be programmed onto a Power key. Length of <Macro Sequence> is 4.

Programming Sequence:
<<SETUP>> LED will blink twice → **<POWER >** LED will blink once → **<DEVICE 1>** LED will blink once →**<DEVICE 2>** LED will blink once **… <<SETUP>>** LED will blink twice

To delete macro from power key:
<<SETUP>> LED will blink twice → **<POWER>** LED will blink once → **<<SETUP>>** LED will blink two times

LED User Feedback:

- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Macro Playback Operation:

- To execute Power Macro sequence, user must press and hold Power key for 1.5s.
- Each mode key in macro sequence will be treated as a pair of keys (Mode key & Power key) except mode which is the same mode.
- If a "mode key" is a part of macro sequence, the remote will switch to that mode and all subsequent keys will be in this mode thereafter. The mode can be switched back and forth within macro sequence.

- After the macro sequence completes, the remote reverts back to the mode where before macro sequence start and all shifted state and synthesize will be cleared.
- Nesting macro is not allowed during macro playback.
- Only device key are a valid macro sequence during Power Macro Programing. If same device key s pressed again during Power Macro programing sequence, the 2nd time key press will be ignored.
- Delay between two keys.
    - 300ms approximately for regular keys.
    - 800ms approximately for Power key.
- Key interrupt will be disabled during macro sequence playback.
- Each IR function of the macro sequence will be transmitted for 260ms (minimum) for most protocols except product specific protocols (e.g. one shot).

- Stuck key timeout will not be applied during macro sequence playback.

Example:
To program a macro that will power the TV, then DVD, then STB:
<<SETUP>>→<POWER >→ <TV>→<DVD> →<STB>→<<SETUP>>

To delete the macro:
<<SETUP>>→ <POWER → <<SETUP>>

Learning

Description:
Learning capacity provides the opportunity to control devices not originally designed for the remote control creating increased support for multiple devices. The NOVA remote can receive and store codes transmitted by another device's remote control such that the other device will understand the button requests from the NOVA remote.

Programming Sequence and Notes:
To optimize success, the learning process should be conducted in an area where there is a low level of IR emission. High levels of "natural light" or energy efficient fluorescent lights could interfere with a learning event. The source and target (learner) remotes should be no more than 1 to 2 inches apart during a learning event and the IR LED of the two units should be aligned with each other. The learning operation is initiated as follows:

1. <<SETUP>> → <9>→ <7>→ <5> initiates learning mode. (Double blink confirmation)
2. Press <mode> → <key to be learned> (appliSTB timeout & backlight, if appliSTB, must be OFF)
3. Visible LED flashes rapidly (time out and revert to step 2 if no received signal detected in 5 sec)
4. Hold teaching remote close to IR LED and press key to be taught.
5. Visible LED goes out. Continue to press teaching key until double blink from visible LED.
6. Repeat steps 2 through 5 as often as desired (up to limit of memory)

7. Exit learning mode by pressing <<SETUP>>, or by time out.

At step 5, one long blink indicates learning failure, which could be:
Bad capture (try again)
Memory full (delete some other function)
Unlearn-able code

At step 1, one long blink indicates low battery or faulty Flash Partition (i.e. the unit will not go into learn mode if either of these conditions exist).

Additional Information:
Target key types for learning:

- Data is stored on Primary Key.
- Learned keys are mode specific.
- Can learn onto any primary or dedicated key. Cannot learn onto programming or device key types. (can't program on Setup, TV mode, STB mode, DVD mode, and AUX mode keys)
- Learned keys can be used in macros, etc., like any other key.
- If the remote is in RF mode, there won't be learning on any keys is STB mode.

Learning capacity:
Approximately 16 to 25 keys, depending on code being learned and the FDRA or E^2 size.
Learning operation:
To optimize success, the learning process should be conducted in an area where there is a low level of IR emission. High levels of "nature light" or energy efficient fluorescent lights could interfere with a learning event. The source and target (learner) remotes should be no more that 1 to 2 inches apart during a learning event and the IR LED's of the two units should be aligned with each other.

Limitations on learning:

- There are certain device codes which are not learnable. These include multi-frequency codes (e.g. Telefunken), some high frequency codes, and other unusual formats.
- The learner will support IR codes with carrier frequency up to 135 Khz. Some higher frequency codes can be supported by a special software feature.
- The unit can learn only one code per key. It can't be taught a sequence of several keystrokes on one key. In order to perform a sequence, learn each function onto its own key and then program a macro to use them.
- The maximum code gap is 131,070 micro seconds.
- The placement of the IR LED in the source or target unit may make it difficult to correctly align these units. In some cases it may require the user to re-learn a code if it is not correctly learned.
- Source units which include a lens may require the user to re-learn a code if not correctly learned. When proper alignment is established, the target remote will correctly learn the source data.
- In general, it is not recommended to learn a function to the Record Key.

- Upon entry of an invalid key sequence, the remote control shall display one long blink and return to normal operation.
- The unit shall exit programming state and return to normal operation if 10 seconds has elapsed between key presses.

Example:
To learn the TV input function to the input key.
<<SETUP>> → <9>→ <7>→ <5>→<TV>→<INPUT>→<<SETUP>>

Deleting a learned code (976)

Description:
To delete a learned code.

Programming Sequence:

1. **<<SETUP>>** → **<9>** → **<7>** → **<6>** → initiates delete learning mode.(Double blink confirmation)
2. Press **<mode>** → **<key to be deleted>** → **<key to be deleted>** (2 blinks)

LED User Feedback:
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Additional Information:
- Sending a key's original (preprogrammed) function:

If a function is learned onto a key, then <**SETUP**> → <**key**> will send the key's original function (as long as nothing else has been learned or key moved onto the "shifted" key as well.)

Use of learned keys in macros:
- There are no particular restrictions on use of learned keys in macro sequences. However, functions which are unusually long (e.g. "record" on some Zenith VCRs) may not work because the learner is limited in the number of repeats it sends.
- If a learned function used in a macro is subsequently deleted, the macro will revert to sending the key's original function.

Example:
To delete the learned function on the input key
<<SETUP>> → <9> → <7> → <6> →<TV >→<INPUT>→<INPUT>

Deleting All Learned Codes within a Given Mode

Description:
Deleting all learned functions within a given mode.

Programming Sequence:
<<Setup>>→ <9>→<7>→<6>→<Mode>→<Mode> **(2 blinks)**

LED User Feedback:
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Example:
To delete all learned functions under the TV mode:
<<SETUP>> → <9> → <7> → <6> →<TV >→<TV>

Low Voltage

Description:
When batteries are below warning level, the unit will blink 5 times after all keys are released. The remote will stop operating when the batteries need replacement. Once the batteries in the remote are replaced with good condition batteries the remote shall return to normal operation. The permanent memory retention ensures that your settings are stored permanently even during battery replacement.

Warning Levels:
IR and RF LVD: 2.2 ±100mV (2.1<2.2<2.3V).

NOTE: The Remote allows a key interrupt (Stop 5 blinks) and processes a new key press during 5 blinks of Low Voltage

Low battery voltage detector is set at a nominal voltage based upon the design of the selected IC with a tolerance of 100mV after a diode drop, on the main board.

Normal Mode:
In normal mode, the voltage level is checked at each key-up event. If low voltage is seen, the unit enters the Voltage Warning Mode.

Voltage Warning Mode:
On entering the Voltage Warning Mode, the remote programming function is disabled.
User shall be able to press any key to interrupt the 5 times flashing during low voltage warning and allow the remote to transmit the IR command.

- If the batteries are replaced and the voltage is above the low voltage threshold, the remote will return to Normal-mode and the warning counter is reset to zero.

- If after the batteries were removed and the remote was completely discharged (either by pressing any key, or after the holding charged capacitor has completely been discharged over time), a replacement of either new or old or the same batteries, the remote will enter a cold power on reset. The remote will then return to normal operation mode afterward.
- During the Voltage Warning Mode, software will NOT allow writing to the E^2 or FDRA. The indication of programming failure will be a long blink and then 5 blinks after release of the key.
- If entering programming mode at Low Voltage Warning level, the unit will blink error and exit programming state.
- If Low Voltage occurs during Programming Mode the unit will blink 5 times and exit Programming Mode.
- When a key is pressed and the software detects a low voltage condition the following occurs:
  1.) IR is transmitted
  2.) LED Blinks five times
  3.) All programming operations are disabled

LED User Feedback during Voltage Warning Mode ($V_{dd} < V_{LVW}$):

- At POR with valid Data Retention, 2 blinks, ~500ms delay, 5 blinks (without key interrupt).
- At POR with invalid Data Retention, continues to blink 5 times with ~500ms delay between each set of 5 blinks.
- At normal operation, blink 5 times after all keys released. User shall be able to press any key to interrupt 5 blinks and process a new key press. The remote will blink error if attempting to enter programming at Voltage Warning Mode.
- If low voltage warning occurs while in programming mode, the remote will blink 5 times & return back to normal operation after all keys release.

Code Verification (990)

Description:
Blink Back is used to get feedback via LED on the device code selected, primarily when the user has programmed their device to the remote via "Library Search". The user counts the number of LED blinks to determine the device code.

Programming Sequence:
<Mode> →- <<Setup>> →- <9> → <9> → <0> → <1> (count blinks) → <2> (count blinks) →- <3> (count blinks) →<4> (count blinks) →<5> (count blinks).

The number of blinks after pressing each 1, 2, 3, 4 and 5 keys is the 5 digit ID code set up for that mode. There is a ~500ms second delay between each blink and after each key press. Upon entry of an invalid key sequence, the remote control shall display one long blink and return to normal operation.

LED User feedback:

- Blink Error if digits 1 – 5 are not pressed in numerical order, any other keys or key sequence are pressed, the sequence will be invalid and the remote control shall return to normal operation
- The unit shall exit programming state and return to normal operation if 10 seconds has elapsed between key presses.

Example:
To verify the TV code is 01345:
<TV> → <<Setup>> →<9> → <9> → <0>
<1> - 0 blinks
<2> - 1 blinks
<3> - 3 blinks
<4> - 4 blinks
<5> - 5 blink

Software Blink Back (983)

Also known as: FLASH Software Serial Code Verification

Description:
This is used to get feedback on the software serial code programmed into the FLASH. The number of blinks after pressing each 1, 2, 3, 4 and 5 keys is the 5-digit software version code. There is an approximate of 500ms delay between each blink and after each key press.

Programming Sequence:
<<Setup>>→<9>→<8>→<3> (LED will blink twice) →<1> (count blinks) →<2> (count blinks) → <3> (count blinks) →<4> (count blinks) →<5> (count blink).

LED User Feedback:

- If Digits 1-5 are pressed out of order, the LED shall error blink; the unit shall exit the setup mode and return to the previous code.
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.
- There shall be an approximate of 500ms delay between each blink and after each key press.

Example:
To verify the software serial code programmed into the flash is 3544-X1:

<<Setup>>→<9>→<8>→<3>

<1>→3 blinks
<2>→5 blinks
<3>→4 blinks
<4>→4 blinks
<5>→1 blink for X1 release

Reset Operations (980, 981, 977)

2) Operational Features Reset (980)

Description:
Resets all features not related to ID setup back to default settings or back to SIO retention (if existed)

Features reset:
Macro, Learned function, Volume Lock, Channel Lock, General IR Punch Through, Favorite ID Table (Quick Swap).

Features not reset:
ID Code Setup, ID Lock and SIO Retention, Upgraded codes and Anti-Piracy.

Programming Sequence:

<<SETUP>> →<9> →<8> →<0>

LED User Feedback:

- The LED shall respond as outlined in this document: section 3.6 Visible LED - for User Feedback.
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

3) Manufacturing Reset (981)

Description:
Clears all **SETUP** features including those related to ID code **SETUP.**
The remote resets to the default Id and clears all E_2 or FDRA Prom data including all upgrade codes and SIO retention.

Programming Sequence:
<<SETUP>> →< 9> →<8> →<1>

LED User Feedback:

- The LED shall respond as outlined in this document: section 3.6 Visible LED - for User Feedback.
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

4) Basic User Reset (977)

Description:
Resets all setup features back to default setting or back to SIO Retention (if existed).

Features reset:
Current Mode, ID Code Setup, ID Lock and all features reset by Operation reset.

Features not reset:
Upgrade Code, Anti-Piracy.

Programming Sequence:
<<SETUP>> →<9> →<7> →<7>

LED User Feedback:

- The LED shall respond as outlined in this document: section 3.6 Visible LED - for User Feedback.
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

SIO Registration / Retention

Description:
SIO LOADFILE REGISTRATION allows creator assign a 4 digit code to each unique product SIO to track created SIO files, and is used in conjunction with SIO LOADFILE BLINKOUT.
The SIO creator will download the appropriate codes, make the appropriate customizations and assign the appropriate SIO number to the remote.

Programming Sequence:
<<Setup>> → <9> → <6> → <8> (2 blinks) → <Digit > → <Digit> → <Digit> → <Digit> (2 blinks)
Digits will equal the digits of the 4-digit SIO file assigned. SIO creator would then blink back SIO to ensure it matches his/her file

Additional Information:

- User settings are stored in segment of FDRA for life of remote or until user implements 981 sequence. Consequently, the FDRA can now be "read" and stored as a ".bin" file via UEI software, UEI Loader Board (4433-KIT) or EZ-Updater.
- Following this sequence, if the operator/programmer attempts to override the FDRA settings via the same sequence, it will be considered invalid.
- User cannot program 968 sequence again unless 981 sequence is executed.

LED User Feedback:

- Once 968 programming sequence is executed, user cannot program the sequence again. If attempted the remote will issue an error blink after <8> and return to normal operation.
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.

Example:
Programming SIO registration 1234:

<<Setup>> → <9> → <6> → <8>→ <1 > → <2> → <3> → <4>

SIO Blink Out

Description:
Allows SIO creator to "blink back" the assigned 4 digit SIO, created via SIO LOADFILE REGISTRATION.

Programming Sequence:
<<Setup>>→<9>→<8>→<9> (2 blinks) →<Digit 1>(count blinks) →<Digit 2> (count blinks) →<Digit 3> (count blinks) →<Digit 4>(count blinks).

Additional Information:

- If 968 is not programmed into a unit, the 989 blink back will be 0000 (no blinks), indicating that a SIO number has not been programmed (but doesn't mean a SIO file has not been created).

LED User Feedback:

- Error blink will be indicated when bad FDRA or no FDRA is installed while the SIO registration sequence 968 or recall sequence 989 is programmed.
- One blink if valid key is pressed
- Blink Error upon entry of an invalid key sequence and return to normal operation.
- The unit shall exit programming state, remain in the current mode and return to normal operation if 10 seconds has elapsed between key presses.
- There shall be an approximate of 500ms delay between each blink and after each key press.

Example:

To verify 1234 is the SIO version:
<<Setup>>→<9>→<8>→<9> (2 blinks) →<Digit 1>(1 blink) →<Digit 2> (2 blinks) →<Digit 3> (3 blinks) →<Digit 4>(4 blinks).

Mode LED

Mode LED option allows the customer to have separate LED indicators for each Mode Key. This is useful to show the user what Mode they are in when pressing a key. With each key press, the appropriate Mode Light will blink, indicating for which Mode IR is currently active. While in programming mode, the mode LED of the current mode will blink.

RF Support

Description:

The Nova Remote is designed to support Broadcom based STB's and limited support for Sigma STB's. For Broadcom versions, the RC will support both IR and RF; however, for Sigma based Hydra and Amulet-D series, the remote will only work in IR mode. RF requirements for Sigma-based STBs should continue to use the Entone URC.

Remote Registration

Description:
Nova remote supports both IR and RF and registration allows user to set for IR or RF. By default the remote is in IR mode.

Programming Sequence:
To register the remote to the STB and use RF:

- On the Janus 300 or Amulet 550, press and hold the ""OK"" button on the front panel 5 seconds until the touch panel backlight is flashing
- Press and hold <<SETUP>> and <<STB>> keys together until the STB and AUX LEDs illuminate
- Press <1> or <2> for primary and secondary stream

To reset the Nova remote back to IR mode, here is the steps

- Press and hold <<SETUP>> and <<STB>> keys together until the STB and AUX LEDs illuminate
- Press <0>

Device Codes

AUDIO - AMPLIFIER

Denon	32706, 32134
Durabrand	31568
Halcro	31934
Harman/Kardon	30892, 33045
Left Coast	30892
Marantz	32138, 30892, 31892
Memorex	31568
Optimus	30823
Parasound	31934
Philips	30892
Pioneer	30823
Polk Audio	30892
RCA	30823
Regent	31568
Sony	33903

AUDIO - ACCESSORY

Apple	31115
AudioSource	33721
B & W	33943
Bose	33708
Boston Acoustics	33698
Bowers & Wilkins	33943
Curtis	33942
Definitive Technology	33645
Denon	32502
Dynavox	33231
Haier	33516
Harman/Kardon	33517
iLive	33175
Insignia	33951
JBL	33756, 33535
JVC	33049
Klipsch	33915
LG	33217, 33996
Martin Logan	33526
Onkyo	33984, 33992
Panasonic	33323, 33409
Philips	33962, 32675, 33282, 34012
Pinnacle Speakers	33774, 33728
Pioneer	33956
Polk Audio	33429
Proficient	33661
RCA	33969
Samsung	32660, 32609
Sharp	33736, 33097
Sonos	33919
Sony	33700, 32610
SpeakerCraft	33661
Toshiba	33627
VIZIO	32454
Yamaha	32458, 32021, 33153, 33917
ZVOX	32332, 33913, 32334

AUDIO - RECEIVER

Aiwa	30121, 31641, 30158, 30189
Alco	31390
AMC	31077
Anthem	33294
Anthem Statement	33294
Arcam	31189, 30189
Audiotronic	31189
Audiovox	31390
Bose	31933, 31629, 33959
Carver	30189, 30121, 31189
Coby	31389, 32748, 33218
Curtis	31389
Denon	32857, 31360, 32516, 33347, 32820, 32279
Dynex	32971
Epworth	30121, 31641, 30158, 30189
Gateway	31517
GE	33297
General Electric	33297
Harman/Kardon	32241, 31304, 32443, 33418, 30189, 32670
Insignia	32175, 31030, 32169, 32472, 32929, 32966, 33210, 31077
Integra	31805, 32730, 31320, 32503, 30135, 31298
JBL	32241
Jensen	31389
JVC	31676, 32040, 31374, 32331, 32239, 31871, 33115, 33274
Kenwood	31570, 31313, 30186, 31293
KLH	31390
LG	32197, 32676, 32284, 33285, 31293
Linn	30189

	31831
Marantz	31289, 32114, 30189, 31189
McIntosh	31289
Micromega	31189
Myryad	31189
Nakamichi	31313
Norcent	31389
Nova	31389
Onkyo	31805, 31320, 32730, 32503, 30135, 31298
Optimus	31023, 30186
Panasonic	32967, 31275, 31288, 31633, 32452, 33055, 33309, 31763, 32745, 32105, 31308, 31676
Philco	31390, 31831
Philips	30189, 32459, 31831, 32289, 31266, 32311, 31189
Pioneer	31123, 31935, 31384, 32432, 31023, 32612
Polk Audio	31289, 30189
Proscan	31254
RCA	31254, 32041, 32611, 32426, 33297, 32655, 31123, 31390, 32719, 33281, 31023
Samsung	31868, 32809, 33154, 32137, 31500, 31304
Sansui	30189
Sharp	30186
Sherwood	31077, 31905, 31517, 32169, 33120
Sherwood Newcastle	32169
Sony	31622, 31759, 30158, 32172, 31758, 31822, 32475, 31058, 32522, 32860, 33257, 33372, 33456
Stereophonics	31023
Sunfire	31313
Teac	31390
Technics	31308, 31633
Toshiba	31788, 31123
Venturer	31390
Vtrek	32426
Wards	30158, 30189
Yamaha	32061, 32467, 33030, 30176, 31276, 30376, 33580, 31815, 31376, 30186
Zenith	31293, 32197

TELEVISION

888	04159
Acer	01339, 04143
Admiral	04030, 03485, 04111, 00093, 00463
Advent	00761, 01570
Affinity	03717, 03716, 03870, 03577
Aiwa	01362
Akai	00702, 01675, 00812, 01385, 00672, 01935, 00765
Alfide	00672
America	04179
America Action	00180
Anam	00180
AOC	01589, 03720, 01365, 02014, 04170, 02087, 02402, 01590, 02479, 02621, 04184, 04185, 03707, 04101, 04169, 04173
Aomni	01623
Apex Digital	00765, 02397, 00748, 01217, 00890
Ario	02397
Astar	01738, 01531
Asus	03340
Atvio	03638, 03636, 03653
Audinac	00180
Audiovox	02413, 00875, 01865, 00180, 01564, 01868, 01276, 01766, 01769, 02121, 03065, 00451, 00623
Auria	02087, 02014, 02277
Baysonic	00180
Bell & Howell	00154
BGH	04029, 00898, 04070, 02414, 00876, 03485, 04028, 04030
Blue Sky	02153, 03997
Bradford	00180
Britânia	02414
Broksonic	00463, 01935, 01938, 01892
CCE	03782, 04091, 00623, 04092
Celera	00765
Champion	01362
Changhong	03814, 00765
Cineral	00451
Citizen	01935
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