# JBL VERTEC V4.1
# Crown I-TECH SERIES
# README FILE

Before downloading VerTec V4.1 device files, check for the latest version of HiQnet System Architect Software on: http://hiqnet.harmanpro.com/downloads.php

***Note: JBL VerTec Crown I-TECH V4.1 device files must be used with System Architect V1.8 and I-Tech Firmware V2.1.2.2 or higher.***

## *NEW FEATURES IN VERSION 4.1*

*Individual presets from VerTec V4.1 device files can be saved to a file, opened from a file and stored to a memory, facilitating the creation of mixed VerTec V4 device files.*

*VerTec V4.1 presets can be deleted within a device file as necessary and remaining presets can be recalled/stored to different memory locations within the device file to free up memory locations, create desired preset order etc.*

*V4.1 presets from other VerTec V4.1 device files can be saved to a file, opened from a file and stored to a memory to create custom mixed VT model device files as desired.*

*End user presets (unprotected) can be opened from a file and then stored to a memory in a V4.1 device file, allowing for further customization of device files to suit specific end user mixed inventory requirements.*

*I-Tech front panel is unlocked, allowing presets to be manually loaded from the front panel and manual front panel parameter adjustment (note: do not adjust polarity and fine signal delay from their standard settings)*

## *GETTING STARTED WITH VERSION 4.1*

After downloading and installing System Architect software, JBL VerTec Crown I-Tech V4.1 device files are located in the following directory:

C:\ Documents and Settings\ ”your name”
\ My Documents
\ Harman Pro
\ Device Files
\ JBL VerTec Crown I-TECH V4p1

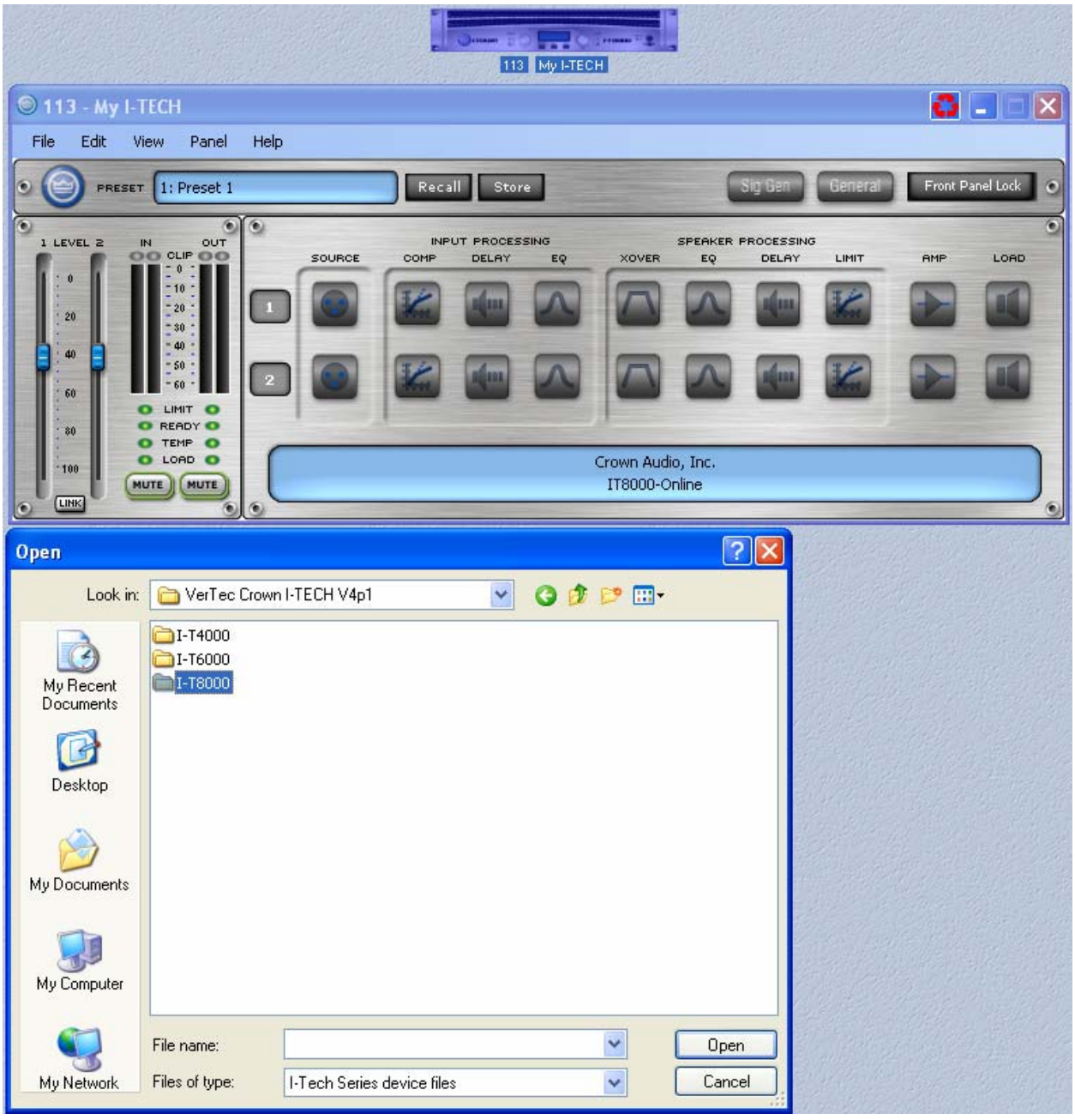
After starting System Architect and establishing network connectivity, perform the following steps:

1) Double-click on the I-Tech power amplifier to be programmed

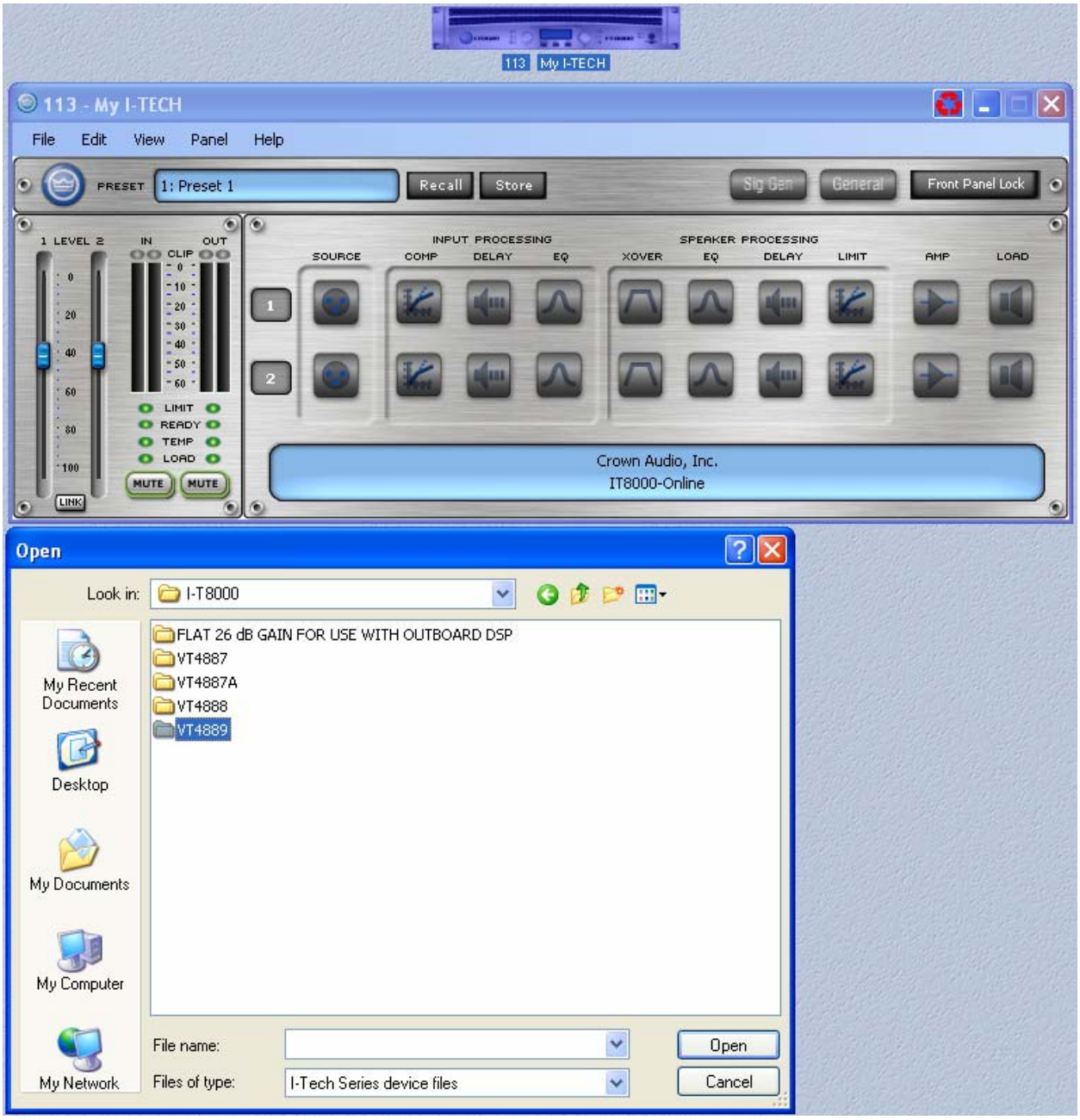
2) On the top menu bar, select: File / Open / Device File

3) Navigate to:

C:\ Documents and Settings\ ” your name ” \ My Documents\ Harman Pro\ Device Files\J BL VerTec Crown I-Tech V4p1\ ” Amplifier Model “



4) Select the appropriate I-Tech amplifier model and the appropriate VerTec enclosure model directory (\VT4887, \VT4887A, \VT4888 or \VT4889)




***Note: Flat 26 dB gain device files (including AES/EBU trim adjustments) are included for all I-TECH amplifier models for use with outboard DSP processors.***

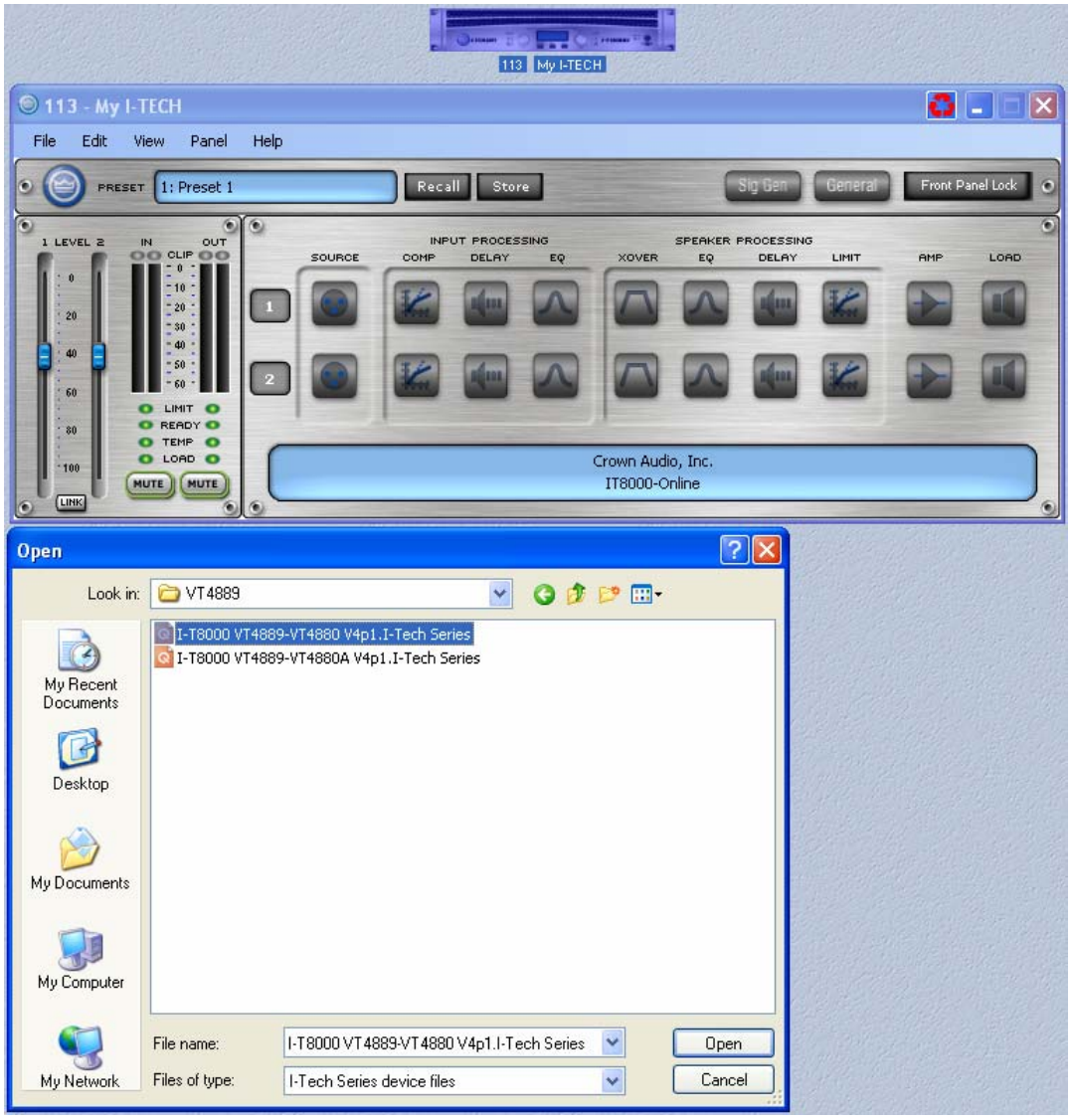
5) Select the device file suitable for your VerTec model and subwoofer combination:

VT4887 2W V4p1.I-Tech Series

VT4887A 2W V4p1.I-Tech Series
VT4887A-VT4881A V4p1.I-Tech Series
VT4887A-VT4882 V4p1.I-Tech Series
VT4887A-VT4880 V4p1.I-Tech Series
VT4887A-VT4880A V4p1.I-Tech Series

VT4888-VT4882 V4p1.I-Tech Series
VT4888-VT4880 V4p1.I-Tech Series
VT4888-VT4880A V4p1.I-Tech Series

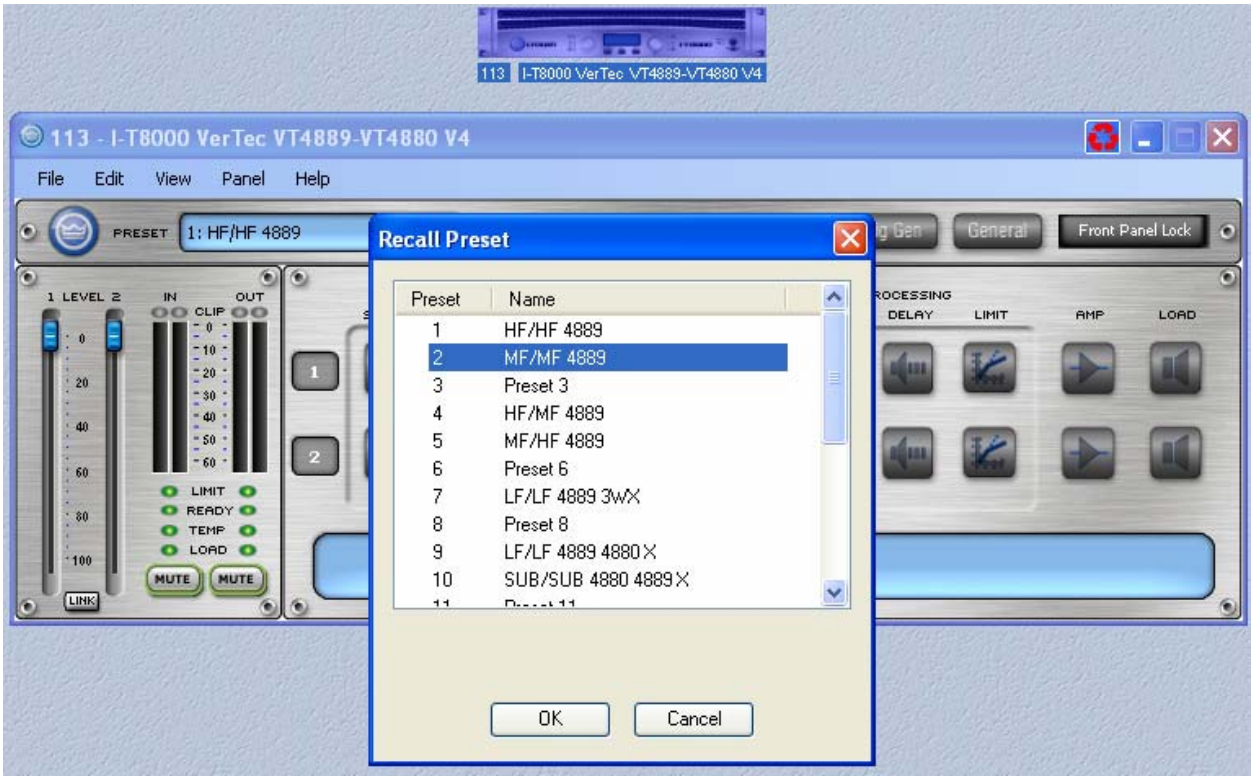
VT4889-VT4880 V4p1.I-Tech Series
VT4889-VT4880A V4p1.I-Tech Series



6) Keep or rename, as desired


7) When the Load Device File window opens, select: “Send to Network”

8) After device settings have been downloaded, use the RECALL function to load the desired preset (refer to the appropriate “JBL VerTec Crown I-TECH V4 PRESET SUMMARY” setup sheet for details on presets and channel assignments)




***Please refer to the appropriate “JBL VerTec Crown I-TECH V4 PRESET SUMMARY” sheet to determine the correct preset for your configuration.***

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**JBL VerTec Crown I-TECH V4.1 gain structure and limiting have been designed for amplifiers set to 26 dB gain.**

**Separate I-TECH V4 device files are provided for individual I-TECH amplifier models to account for differences in output power. Please be sure to load the device file that is suitable for your specific I-TECH amplifier model.**

**Disclaimer: VerTec V4 limiter settings are intended to provide a starting point for optimum system performance while ensuring reliable system protection. However, the end user is ultimately responsible for system operation in the field and standard warranty conditions apply in the event of component damage.**

**To provide identical gain performance for analog input versus AES/EBU digital input signal, AES/EBU trims have been calibrated as follows:**

AES/EBU trims:

- I-T8000 = +2.5 dB
- I-T6000 = +4 dB
- I-T4000 = +5 dB

**<u>Flat 26 dB Gain Device Files</u> are provided for I-T4000, I-T6000 and I-T8000 amplifier models for use with outboard DSP processors running VerTec V4 presets. These device files also include AES/EBU trim compensation as described above.**

**Note: I-Tech Peak Voltage and RMS Power limiters are disabled for all Flat 26 dB Gain device files since it is assumed that outboard DSP limiting will be used for system protection. All outboard DSP limiting has been calibrated for optimum performance as part of the VerTec V4 development program. Please refer to the VerTec V4 Readme File for your outboard DSP unit for further details concerning limiter calibration.**

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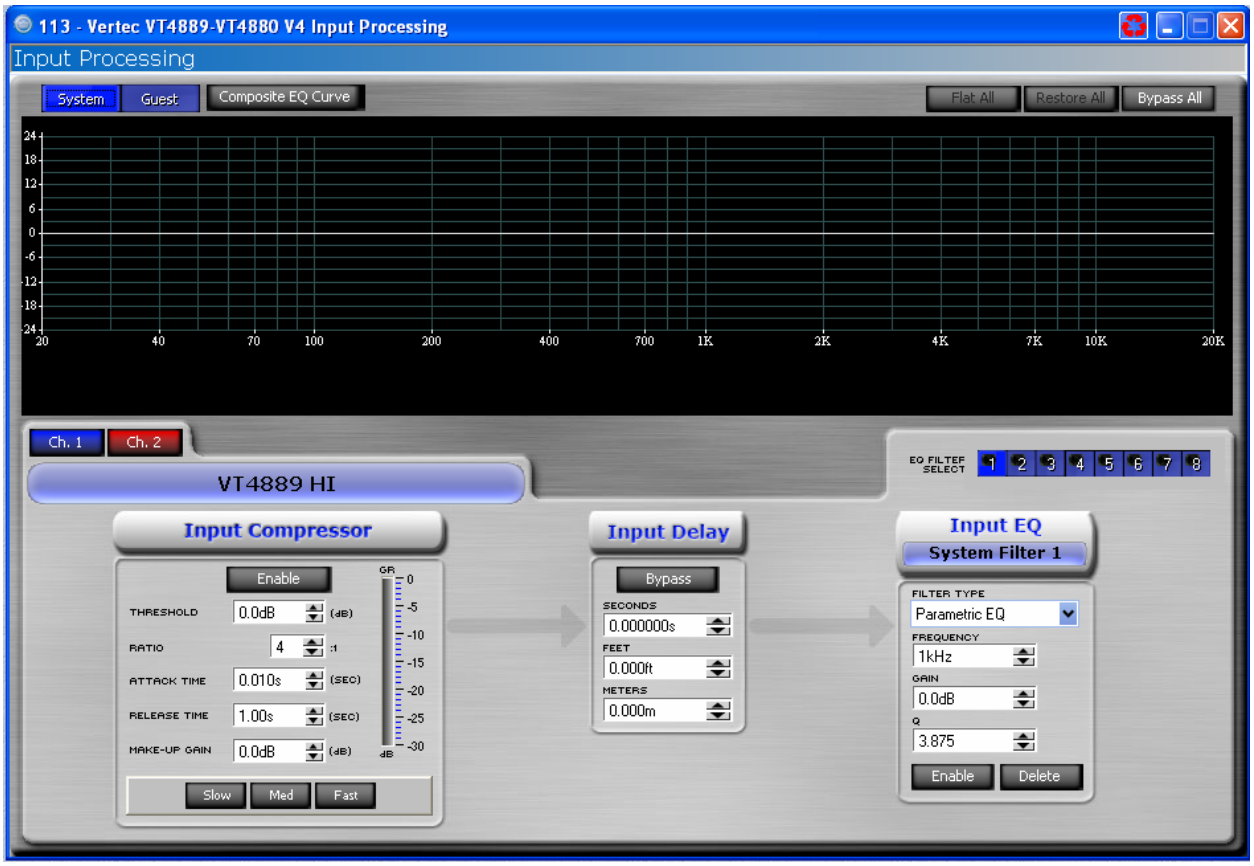
**<u>Input Processing</u> is unlocked and available for system tuning:**
(8 System Filters; 8 Guest Filters; Input Compressor, Input Delay)


***Note: Subwoofer sections for X, 60 and 80 presets are pre-time aligned with delays accessible in the Input Delay section. Pre-alignment allows for proper summation of VT4889, VT4888 or VT4887A systems when ground stacked with subwoofers. For flown VT4889, VT4888 or VT4887A and ground stacked VT4881A, VT4882, VT4880 or VT4880A subwoofer configurations, simply add the measured geometric path length difference between flown versus ground stacked subs (at your reference location of choice) to the pre-aligned time delay as a starting point for time alignment measurements and further adjustment.***

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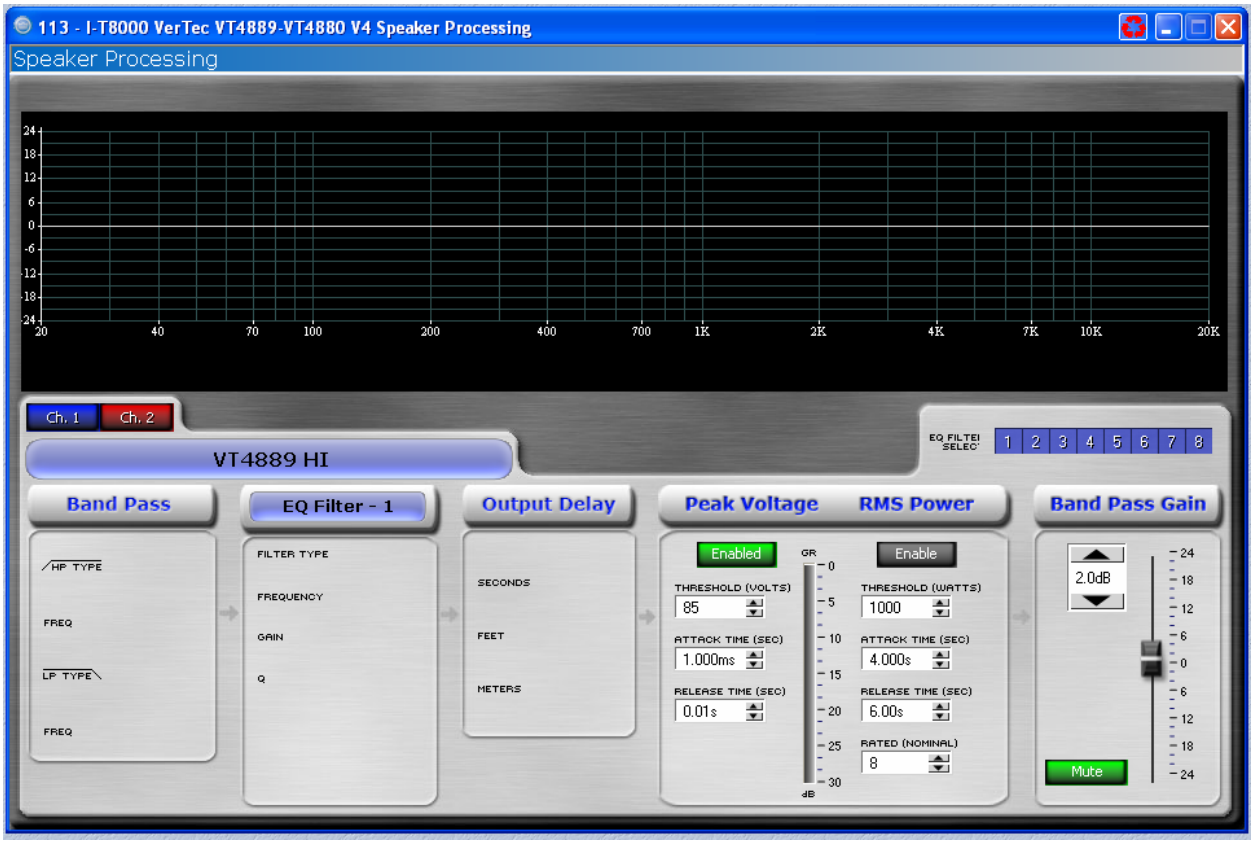
**<u>Speaker Processing</u> is locked except for the following parameters:**

**Limiter Thresholds, Band Pass Gain and Mute**
**(Note: Peak Voltage Limiters are calibrated to provide rms and peak protection)**

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## VerTec Crown I-Tech V4 Known Issues:

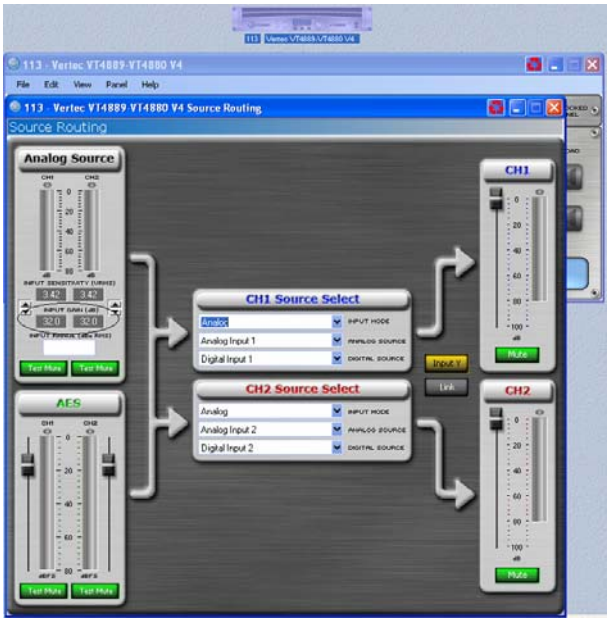
### 1) Offline versus Online Amplifier Gain

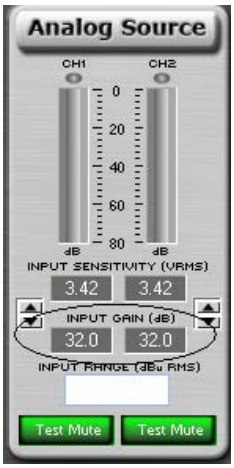
When I-T4000, I-T6000 or I-T8000 amplifiers are offline, the following gains are displayed :

- I-T8000: 3.42 Vrms / 32 dB gain
- I-T6000: 3.01 Vrms / 33.5 dB gain
- I-T4000: 2.79 Vrms / 34.3 dB gain

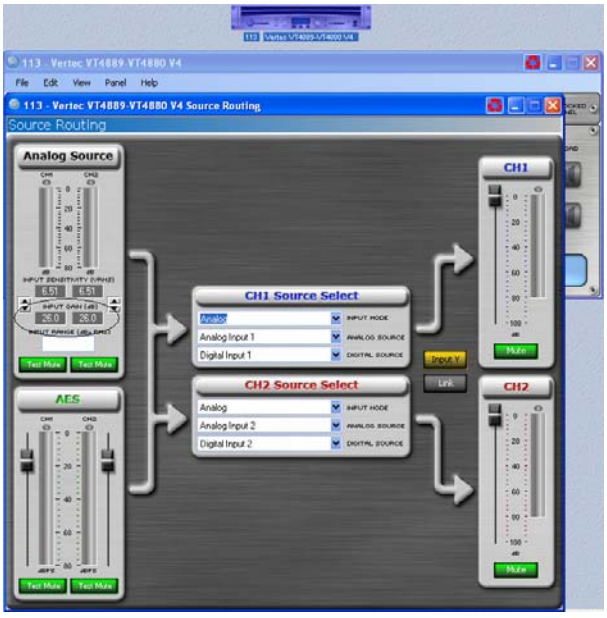
When I-T4000, I-T6000 or I-T8000 amplifiers are online, amplifier gain is correctly displayed as 26 dB.

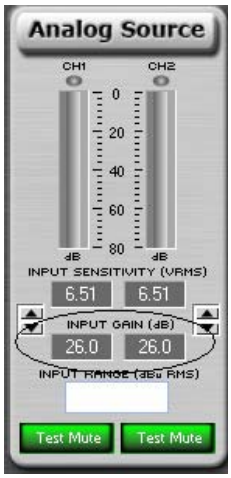
**EXAMPLE: I-T8000 OFFLINE**




**EXAMPLE: I-T8000 ONLINE**



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**FURTHER NOTES:**

**Crown I-Tech Amplifiers driving <u>all</u> sections (sub, low, mid, high) should have identical amplifier gain regardless of amplifier model.**

**Default amplifier gain for JBL VerTec Crown I-TECH V4 Presets is 26 dB.**

1) With amplifier gain set to 26 dB, gain structure should provide the following behavior:

Console level 9 dBu (no sub/low limiting)
12 dBu (approx 3 dB sub/low limiting, program dependent)
15 dBu (approx 6-9 dB sub/low limiting, program dependent)

*If you prefer to run your console hotter, scale all Speaker Processing Band Pass Gains (sub,low,mid and high sections) down by 3 to 6 dB and leave limiter thresholds as is.*

*If you prefer to run your console at a lower level, scale all Speaker Processing Band Pass Gains (sub,low,mid and high sections) up by 3 to 6 dB and leave limiter thresholds as is.*

To verify gain structure and limiter functionality, it is recommended that signal flow from console → amplifiers is checked with loudspeakers disconnected prior to use.

2) For use with amplifiers having gain not equal to 26 dB, Speaker Processing Band Pass Gains should be adjusted by the difference in amplifier gain.

*Example: For amplifiers set to 32 dB gain, all Speaker Processing Band Pass Gains should be lowered by 6 dB, i.e., Sub, Low, Mid and High Section Band Pass Gains should be changed from: +10, +10, +2, +2 to: +4, +4, -4, -4*

<u>Note: Since limiter thresholds are calibrated in terms of voltage, no change is necessary when changing amplifier gain</u>.

3) Subwoofer sections for all X, 60, 80 presets are pre-time aligned. For flown VT4889, VT4888 or VT4887A and ground stacked VT4881A, VT4882, VT4880 or VT4880A sub configurations, simply add the measured geometric path length difference between flown versus ground stacked (at your reference location of choice) to the pre-aligned delay as a starting point for time alignment measurements and further adjustment.

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## Limiter thresholds are based on 2x 2 Hour RMS power handling specifications:

### 2 HOUR POWER HANDLING

| ENCLOSURE MODEL | NOM LOAD (ohms) | RMS 2 HR (W) | PEAK POWER (W) | REC'D POWER (W) | LIM THRESHOLD (2x 2 HR RMS) |
|---|---|---|---|---|---|
| VT4887a MID/HI | 8 | 225 | 900 | **450** | **60 Volts** |
| VT4887a LOW | 8 | 750 | 3000 | **1500** | **110 Volts** |

| ENCLOSURE MODEL | NOM LOAD (ohms) | RMS 2 HR (W) | PEAK POWER (W) | REC'D POWER (W) | LIM THRESHOLD (2x 2 HR RMS) |
|---|---|---|---|---|---|
| VT4888 HI | 16 | 70 | 280 | **280** | **47 Volts** |
| VT4888 MID | 8 | 400 | 1600 | **800** | **80 Volts** |
| VT4888 LOW | 2 x 8 ohms | 2 x 750 W | 2 x 3000 W | **2 x 1500 W** | **2 x 110 Volts** |

| ENCLOSURE MODEL | NOM LOAD (ohms) | RMS 2 HR (W) | PEAK POWER (W) | REC'D POWER (W) | LIM THRESHOLD (2x 2 HR RMS) |
|---|---|---|---|---|---|
| VT4889 HI | 16 | 165 | 660 | **660** | **73 Volts** |
| VT4889 MID | 8 | 1800 | 7200 | **3600** | **170 Volts** |
| VT4889 LOW | 2 x 8 ohms | 2 x 690 W | 2 x 2760 W | **2 x 1380 W** | **2 x 105 Volts** |

| ENCLOSURE MODEL | NOM LOAD (ohms) | RMS 2 HR (W) | PEAK POWER (W) | REC'D POWER (W) | LIM THRESHOLD (2x 2 HR RMS) |
|---|---|---|---|---|---|
| VT4881A | 8 | 1500 | 6000 | **3000** | **155 Volts** |
| VT4882 | 4 | 1550 | 6200 | **3100** | **111 Volts** |
| VT4880 | 4 | 1550 | 6200 | **3100** | **111 Volts** |
| VT4880A | 4 | 3000 | 12000 | **6000** | **155 Volts** |

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## Actual Crown I-TECH Limiter Parameters are calibrated to agree with other JBL Vertec V4 - Supported Digital Signal Processors (based on Audio Precision measurements of rms and peak voltage using pink noise and sine wave stimuli):

| ENCLOSURE MODEL | PEAK VOLTAGE LIMITER THRESHOLD | ATTACK | RELEASE | RMS POWER LIMITER (NOT ENABLED) THRESHOLD | ATTACK | RELEASE |
|---|---|---|---|---|---|---|
| VT4887a MID/HI | 34 Volts | 8 msec | 0.02 sec | 1000 Watts | 4 sec | 6 sec |
| VT4887a LOW | 105 Volts | 1 msec | 0.11 sec | 1000 Watts | 4 sec | 6 sec |

| ENCLOSURE MODEL | PEAK VOLTAGE LIMITER THRESHOLD | ATTACK | RELEASE | RMS POWER LIMITER (NOT ENABLED) THRESHOLD | ATTACK | RELEASE |
|---|---|---|---|---|---|---|
| VT4888 HI | 52 Volts | 1 msec | 0.01 sec | 1000 Watts | 4 sec | 6 sec |
| VT4888 MID | 100 Volts | 1 msec | 0.05 sec | 1000 Watts | 4 sec | 6 sec |
| VT4888 LOW | 107 Volts | 1 msec | 0.12 sec | 1000 Watts | 4 sec | 6 sec |

| ENCLOSURE MODEL | PEAK VOLTAGE LIMITER THRESHOLD | ATTACK | RELEASE | RMS POWER LIMITER (NOT ENABLED) THRESHOLD | ATTACK | RELEASE |
|---|---|---|---|---|---|---|
| VT4889 HI | 85 Volts | 1 msec | 0.01 sec | 1000 Watts | 4 sec | 6 sec |
| VT4889 MID | 130 Volts | 1 msec | 0.05 sec | 1000 Watts | 4 sec | 6 sec |
| VT4889 LOW | 120 Volts | 1 msec | 0.12 sec | 1000 Watts | 4 sec | 6 sec |

| ENCLOSURE MODEL | PEAK VOLTAGE LIMITER THRESHOLD | ATTACK | RELEASE | RMS POWER LIMITER (NOT ENABLED) THRESHOLD | ATTACK | RELEASE |
|---|---|---|---|---|---|---|
| VT4881A | 165 Volts | 1 msec | 0.12 sec | 1000 Watts | 4 sec | 6 sec |
| VT4882 | 120 Volts | 1 msec | 0.12 sec | 1000 Watts | 4 sec | 6 sec |
| VT4880 | 125 Volts | 1 msec | 0.12 sec | 1000 Watts | 4 sec | 6 sec |
| VT4880A | 200 Volts | 1 msec | 0.12 sec | 1000 Watts | 4 sec | 6 sec |

***Note: Peak voltage limiters are used to provide both RMS and Peak limiting protection (RMS Power limiters are not enabled)***