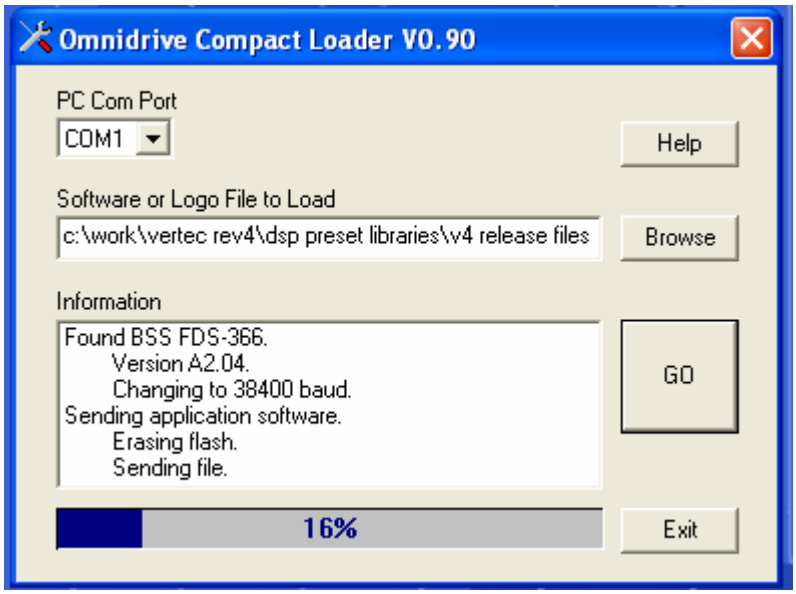
JBL VERTEC V4
BSS FDS 366T
README FILE

BSS 366 FIRMWARE UPGRADE:
Before downloading VerTec V4 preset modules, upgrade BSS 366T Omni Compact Plus firmware to the latest revision. To download the latest firmware, check on: www.bss.co.uk

Loader software and V2.06 firmware are supplied with VerTec V4 BSS 366 preset data. Cable your computer to the BSS 366 by connecting from the serial port of your PC to the RS232 input of the BSS unit using a Male/Male Null Modem Cable with 9-pin D-SUB connectors).

Run the 366Load application, enter PC Com Port parameters, browse / navigate to the directory containing 366v206.a21 then select 'Go' to initiate the firmware download.

366Load Firmware Download Software



Note: JBL VerTec V4 presets for BSS 366T must be used with V2.06 firmware (or higher)

BSS 366 USER NOTES:
AUX SUB DRIVE can be configured for all 3-way or 4-way preset since the subwoofer SOURCE is unlocked. For 3-way stereo presets, to configure your unit for AUX SUB DRIVE go to the UTILS menu and set STEREO LINK OFF. Select each subwoofer output individually (outputs 1 and 4), scroll to the SOURCE parameter and set SOURCE=C. Return to the UTILS menu and reactivate STEREO LINKING, if desired.

PHASE COMPENSATION should be defeated (OFF) at all times since subwoofer and low sections are pre-aligned for all VerTec V4 presets.

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PRESET DOWNLOAD VIA LONDON ARCHITECT

It is recommended that you delete all user memories prior to downloading VerTec V4 presets. Existing programs should be backed up using London Architect or to pcmcia card on a program-by-program basis before wiping the unit clean. To store to a pcmcia card, select STORE, use the left arrow key + data wheel to select CPrg, right arrow over and use the data wheel to select the preset to be saved and press ENTER/STORE again. Repeat these steps until all desired programs have been saved to pcmcia card.

To clear the unit:

- Hold down RECALL + MUTE Channel 1 + MUTE Channel 2.
- A menu will appear - scroll up using the arrow key until the "Del User Data" prompt appears
- Press ENTER/STORE to delete all memories.

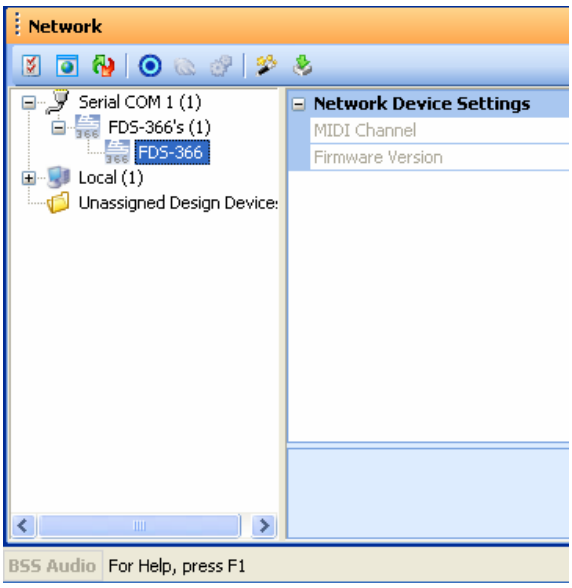
To download the desired VerTec V4 .architect file, cable your computer and BSS 366 unit as described in the BSS users manual, i.e., connect from the serial port of your PC to the RS232 input of the BSS unit using a Female/Female Null Modem Cable with 9 pin D-SUB connectors.

From the UTILS menu, configure the BSS 366 unit as follows:

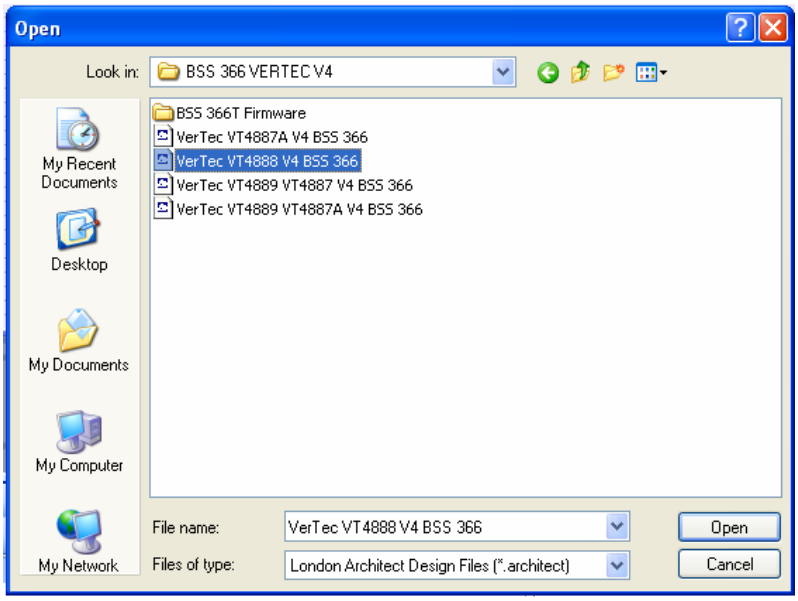
Serial Port = RS232
Midi Mode = PC Port

Start London Architect software

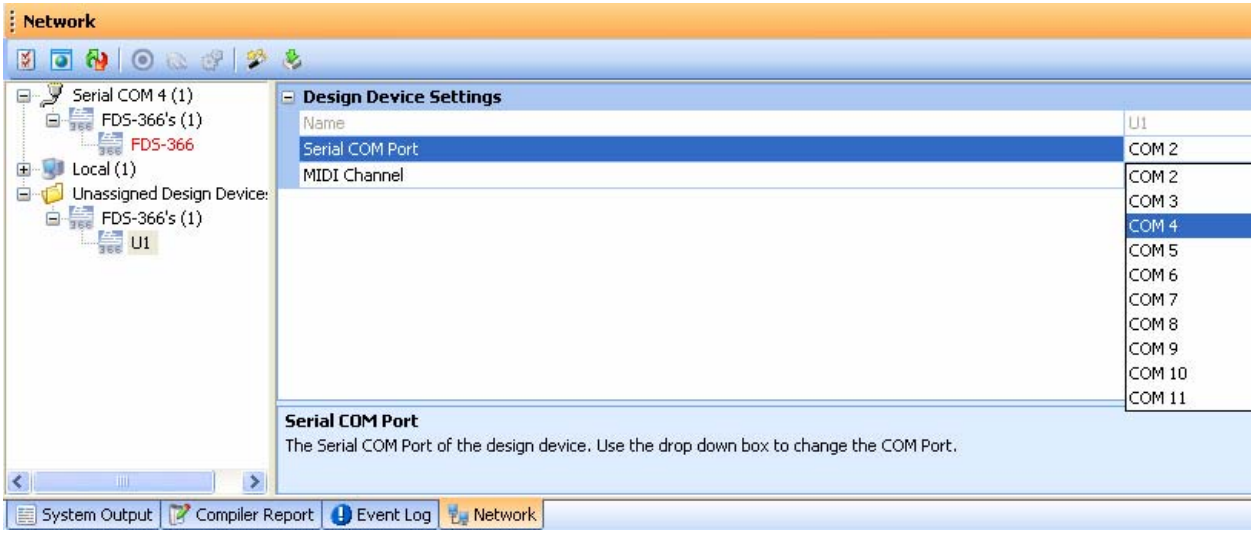
Select the network window and verify that SERIAL COM1 / FDS 366 / U1 is present:



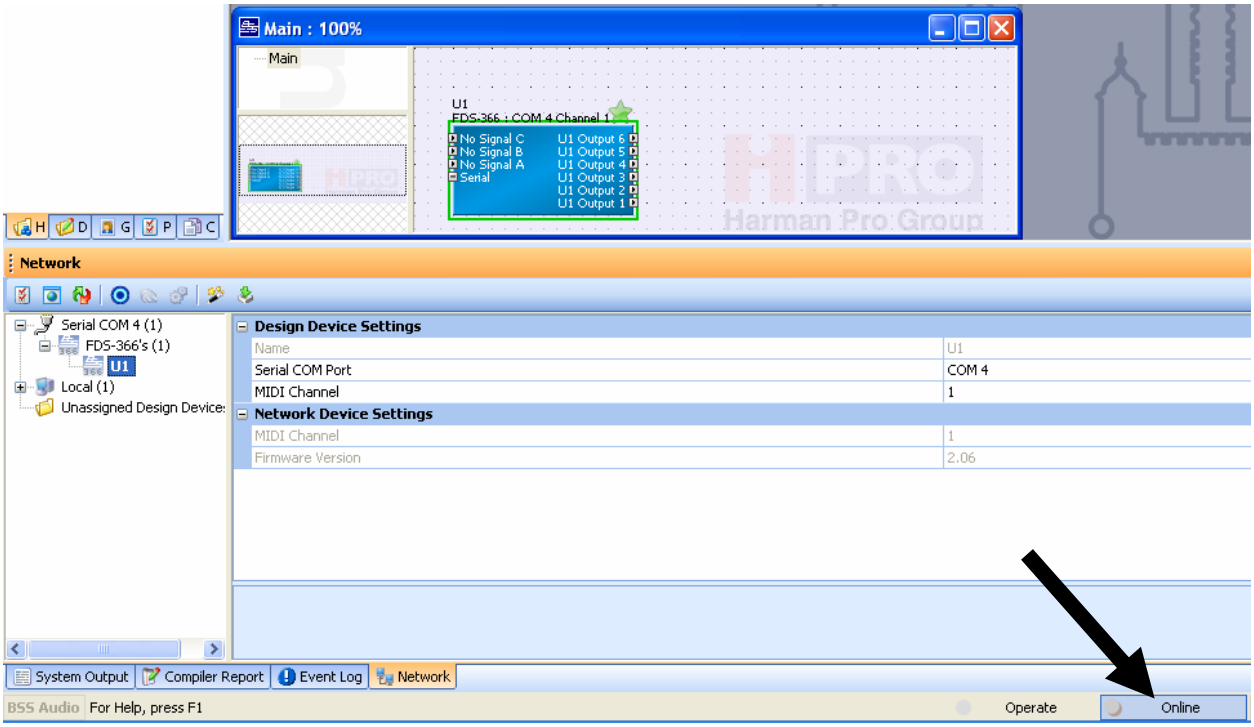
Select “File, Open” then browse / navigate to the appropriate directory and select the desired VerTec V4 London Architect Design File (*.architect) :



Set COM PORT parameters for the Design Device (U1) to correspond to the COM PORT of the physically-connected 366:



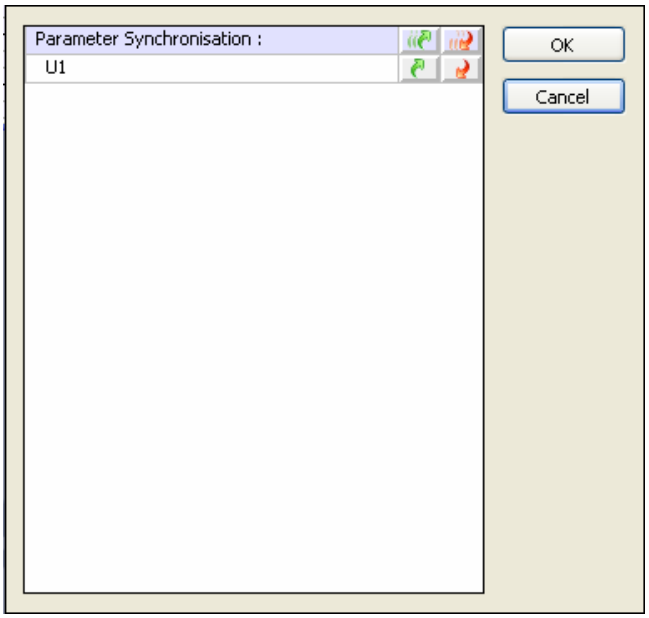
Select ONLINE :



A Warning window will open up:

Select “OK”

A Parameter Synchronisation window will open up:



Select: PARAMETER SYNC “SEND ALL CONTROL VALUES”, “OK”

JBL VerTec V4 Preset Data is sent to the FDS366 and “WARNING – INCOMING DUMP” is displayed on the unit.

Refer to the appropriate “JBL VerTec V4 BSS 366 PRESET SUMMARY” sheet to determine the correct preset to use for your configuration.

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Gain structure and limiting have been designed for amplifiers with 26 dB gain

Amplifiers driving <u>all</u> sections (sub, low, mid, high) should be set for 26 dB gain

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.

1) <u>For I-Tech 4000 and 6000 models it is necessary to change the maximum analog input level from +15 dBu to +21 dBu in order to be able to select 26 dB gain</u>. Using the amplifier's front panel interface, go to the I-Tech Advanced Menu and select +21 dBu as maximum analog input level. This will then allow you to select 26 dB gain using the I-Tech's top level front panel menu.

2) 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 channel output gains (sub,low,mid,hi) 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 channel output gains (sub,low,mid,hi) 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 → dsp → amplifiers is checked with loudspeakers disconnected prior to use.

3) For use with amplifiers having gain not equal to 26 dB, individual channel output levels and limiter thresholds should be adjusted by the difference in amplifier gain for their respective channels.

Example: for amplifiers with 32 dB gain, channel output levels should be lowered by 6 dB; rms and peak thresholds for all channels should also be lowered by 6 dB.

4) Subwoofer sections for all X, 60, 80 presets are pre-time aligned. For flown 4889, 4888 or 4887A/4881A and ground stacked 4881A, 4882, 4880 or 4880A 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 (dBu equivalent calculated based on 26 dB gain amplification):

2 HOUR POWER HANDLING

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 2 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV * (2 x RMS)
VT4887a MID/HI	8	225	900	**450**	**11.8 dBu**
VT4887a LOW	8	750	3000	**1500**	**17.0 dBu**

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 2 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV (2 x RMS)
VT4888 HI	16	70	280	**280**	**9.7 dBu**
VT4888 MID	8	400	1600	**800**	**14.3 dBu**
VT4888 LOW	2 x 8 ohms	2 x 750 W	2 x 3000 W	**2 x 1500 W**	**17.0 dBu**

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 2 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV (2 x RMS)
VT4889 HI	16	165	660	**660**	**13.4 dBu**
VT4889 MID	8	1800	7200	**3600**	**20.8 dBu**
VT4889 LOW	2 x 8 ohms	2 x 690 W	2 x 2760 W	**2 x 1380 W**	**16.6 dBu**

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 2 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV (2 x RMS)
VT4881A	8	1500	6000	**3000**	**20.0 dBu**
VT4882	4	1550	6200	**3100**	**17.1 dBu**
VT4880	4	1550	6200	**3100**	**17.1 dBu**
VT4880A	4	3000	12000	**6000**	**20.0 dBu**

* dBu Equivalent calculated based on 26 dB amplifier gain (20x voltage gain)

In some cases (for example: VT4881A, VT4880A subwoofers and VT4889 mid section), the recommended amplification (= 2x 2 Hour RMS section power handling) exceeds amplifier output capability and limiters are calibrated to prevent RMS / Peak amplifier clip. VT4889 mid section limiter thresholds have been adjusted for optimum headroom relative to the low section. Under hard sub/low/high section limit conditions, the VT4889 mid section threshold may need to be further reduced in order to maintain spectral balance.

In other cases (for example: VT4887A, VT4888, VT4889 HF sections), limiter thresholds are calibrated to 2x 2 Hour RMS power handling. For more dynamic program material with low RMS signal content (for example, classical music) HF section limiter thresholds can be increased by 3 dB (or up to rms or peak amplifier clip - whichever value is lower) to match peak power handling. Conversely, for more demanding applications, limiter thresholds can be lowered by 3 dB to match RMS power handling.

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Default JBL VerTec V4 dbx DriveRack 4800 Limiter Thresholds are calibrated for Crown I-Tech 8000 amplification at 26 dB gain:

BSS FDS 366 LIMITER SETTINGS (2 HOUR POWER HANDLING)

CROWN I-TECH 8000 (26 dB GAIN = 18.5 dBU)

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4887a MID/HI	7.0 dBu	6 dB	FAST	MEDIUM
VT4887a LOW	15.2 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4888 HI	5.5 dBu	6 dB	FAST	MEDIUM
VT4888 MID	11.5 dBu	6 dB	FAST	MEDIUM
VT4888 LOW	15.0 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4889 HI	10.0 dBu	6 dB	FAST	MEDIUM
VT4889 MID	13.5 dBu	6 dB	FAST	MEDIUM
VT4889 LOW	14.8 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4881A	17.5 dBu	12 dB	FAST	SLOW
VT4882	15.1 dBu	12 dB	FAST	SLOW
VT4880	15.0 dBu	12 dB	FAST	SLOW
VT4880A	17.8 dBu	12 dB	FAST	SLOW

* BSS 366 Limiter Parameters have been calibrated to agree with other Vertec V4 - Supported Digital Signal Proces based on Audio Precision measurements of rms and peak voltages using pink noise and sine wave stimuli

For I-T8000 amplifier gain not equal to 26 dB, channel output levels and limiter thresholds should be further adjusted by the difference in selected amplifier gain versus 26 dB. For example: for 32 dB amplifier gain, channel output levels should be lowered by 6 dB; limiter thresholds for all channels should be lowered by an additional 6 dB.

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For use of VerTec V4 presets with Crown amplifiers other than I-T8000, RMS and Peak limiter thresholds should be scaled to account for differences in amplifier input sensitivity:

	26 dB GAIN INPUT SENSITIVITY		
CROWN MODEL	VOLTS (rms)	dBu (rms)	dBu (peak)
MA-3600VZ	4.80 Vrms	15.8 dBu	18.8 dBu
MA-5002VZ	4.80 Vrms	15.8 dBu	18.8 dBu
I-T4000	5.01 Vrms	16.2 dBu	19.2 dBu
I-T6000	5.49 Vrms	17.0 dBu	20.0 dBu
I-T8000	6.52 Vrms	18.5 dBu	21.5 dBu

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BSS FDS 366 LIMITER SETTINGS
(2 HOUR POWER HANDLING)

CROWN I-TECH 6000
(26 dB GAIN = 17.0 dBU)

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4887a MID/HI	7.0 dBu	6 dB	FAST	MEDIUM
VT4887a LOW	15.2 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4888 HI	5.5 dBu	6 dB	FAST	MEDIUM
VT4888 MID	11.5 dBu	6 dB	FAST	MEDIUM
VT4888 LOW	15.0 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4889 HI	10.0 dBu	6 dB	FAST	MEDIUM
VT4889 MID	13.5 dBu	6 dB	FAST	MEDIUM
VT4889 LOW	14.8 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4881A	16.0 dBu	12 dB	FAST	SLOW
VT4882	15.1 dBu	12 dB	FAST	SLOW
VT4880	15.0 dBu	12 dB	FAST	SLOW
VT4880A	16.3 dBu	12 dB	FAST	SLOW

* BSS 366 Limiter Parameters have been calibrated to agree with other Vertec V4 - Supported Digital Signal Proces
based on Audio Precision measurements of rms and peak voltages using pink noise and sine wave stimuli

For I-T6000 amplifier gain not equal to 26 dB, channel output levels and limiter thresholds should be further adjusted by the difference in selected amplifier gain versus 26 dB. For example: for 32 dB amplifier gain, channel output levels should be lowered by 6 dB; limiter thresholds for all channels should be lowered by an additional 6 dB.

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BSS FDS 366 LIMITER SETTINGS
(2 HOUR POWER HANDLING)

CROWN I-TECH 4000
(26 dB GAIN = 16.2 dBU)

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4887a MID/HI	7.0 dBu	6 dB	FAST	MEDIUM
VT4887a LOW	14.2 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4888 HI	5.5 dBu	6 dB	FAST	MEDIUM
VT4888 MID	11.5 dBu	6 dB	FAST	MEDIUM
VT4888 LOW	14.2 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4889 HI	10.0 dBu	6 dB	FAST	MEDIUM
VT4889 MID	13.2 dBu	6 dB	FAST	MEDIUM
VT4889 LOW	14.5 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4881A	15.2 dBu	12 dB	FAST	SLOW
VT4882	14.3 dBu	12 dB	FAST	SLOW
VT4880	14.2 dBu	12 dB	FAST	SLOW
VT4880A	15.5 dBu	12 dB	FAST	SLOW

* BSS 366 Limiter Parameters have been calibrated to agree with other Vertec V4 - Supported Digital Signal Proces based on Audio Precision measurements of rms and peak voltages using pink noise and sine wave stimuli

For I-T4000 amplifier gain not equal to 26 dB, channel output levels and limiter thresholds should be further adjusted by the difference in selected amplifier gain versus 26 dB. For example: for 32 dB amplifier gain, channel output levels should be lowered by 6 dB; limiter thresholds for all channels should be lowered by an additional 6 dB.

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BSS FDS 366 LIMITER SETTINGS
(2 HOUR POWER HANDLING)

CROWN MA-5002VZ
(26 dB GAIN = 15.8 dBU)

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4887a MID/HI	7.0 dBu	6 dB	FAST	MEDIUM
VT4887a LOW	14.2 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4888 HI	5.5 dBu	6 dB	FAST	MEDIUM
VT4888 MID	11.5 dBu	6 dB	FAST	MEDIUM
VT4888 LOW	13.8 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4889 HI	10.0 dBu	6 dB	FAST	MEDIUM
VT4889 MID	12.8 dBu	6 dB	FAST	MEDIUM
VT4889 LOW	14.1 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4881A	14.8 dBu	12 dB	FAST	SLOW
VT4882	13.9 dBu	12 dB	FAST	SLOW
VT4880	13.8 dBu	12 dB	FAST	SLOW
VT4880A	15.1 dBu	12 dB	FAST	SLOW

* BSS 366 Limiter Parameters have been calibrated to agree with other Vertec V4 - Supported Digital Signal Proces based on Audio Precision measurements of rms and peak voltages using pink noise and sine wave stimuli

For Crown MA-5002VZ amplifier gain equal to 36 dB (1.4 Vrms setting), channel output levels should be lowered by 10 dB; limiter thresholds for all channels should be lowered by an additional 10 dB.

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For more conservative protection and, as a result, more conservative system performance, limiter thresholds can be set to 2x 100 Hour RMS Power handling:

100 HOUR POWER HANDLING

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 100 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV * (2 x RMS)
VT4887a MID/HI	8	160	640	**320**	**10.3 dBu**
VT4887a LOW	8	520	2080	**1040**	**15.4 dBu**

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 100 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV (2 x RMS)
VT4888 HI	16	50	200	**200**	**8.3 dBu**
VT4888 MID	8	260	1040	**520**	**12.4 dBu**
VT4888 LOW	2 x 8 ohms	2 x 530 W	2 x 2120 W	**2 x 1060 W**	**15.5 dBu**

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 100 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV (2 x RMS)
VT4889 HI	16	105	420	**420**	**11.5 dBu**
VT4889 MID	8	1260	5040	**2520**	**19.3 dBu**
VT4889 LOW	2 x 8 ohms	2 x 450 W	2 x 1800 W	**2 x 900 W**	**14.8 dBu**

ENCLOSURE MODEL	NOM LOAD (ohms)	RMS 100 HR (W)	PEAK POWER (W)	REC'D POWER (W)	dBu EQUIV (2 x RMS)
VT4881A	8	900	3600	**1800**	**17.8 dBu**
VT4882	4	1090	4360	**2180**	**15.6 dBu**
VT4880	4	1230	4920	**2460**	**16.1 dBu**
VT4880A	4	1800	7200	**3600**	**17.8 dBu**

* dBu Equivalent calculated based on 26 dB amplifier gain (20x voltage gain)

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Limiter thresholds can be adjusted to correspond to 100 Hour ratings as follows:

BSS FDS 366 LIMITER SETTINGS
(2 HOUR POWER HANDLING)

CROWN I-TECH 8000
(26 dB GAIN = 18.5 dBU)

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4887a MID/HI	5.0 dBu	6 dB	FAST	MEDIUM
VT4887a LOW	13.2 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4888 HI	4.5 dBu	6 dB	FAST	MEDIUM
VT4888 MID	9.5 dBu	6 dB	FAST	MEDIUM
VT4888 LOW	13.5 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4889 HI	8.0 dBu	6 dB	FAST	MEDIUM
VT4889 MID	12.0 dBu	6 dB	FAST	MEDIUM
VT4889 LOW	13.3 dBu	6 dB	FAST	SLOW

ENCLOSURE MODEL	THRESHOLD* (dBu)	OVER SHOOT	ATTACK TIME	RELEASE TIME
VT4881A	17.0 dBu	12 dB	FAST	SLOW
VT4882	13.6 dBu	12 dB	FAST	SLOW
VT4880	14.0 dBu	12 dB	FAST	SLOW
VT4880A	17.3 dBu	12 dB	FAST	SLOW

* BSS 366 Limiter Parameters have been calibrated to agree with other Vertec V4 - Supported Digital Signal Proces
based on Audio Precision measurements of rms and peak voltages using pink noise and sine wave stimuli

For other amplifier models (I-T6000, I-T4000, MA-5002VZ):
To re-calibrate thresholds to correspond to 100 Hour ratings, select whichever value is lower from the table above or the table corresponding to the amplifier in use given in the preceding pages.