



## Commercial, CC, CBT, & AWC Core Tunings - HPF & Limiter Settings

Ver. 2023-04-18

### CEILING SPEAKERS

		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>Control 12C/T</b> (&12C-VA)	Low-Z (8Ω)	70 Hz	12V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	15W Tap	80 Hz	
	7.5W Tap	60 Hz	
	Lower Taps	50 Hz	
<b>Control 14C/T</b> (&14C-VA)	Low-Z (8Ω)	75 Hz	15V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	25W Tap	75 Hz	
	12.5W Tap	55 Hz	
	Lower Taps	45 Hz	
<b>Control 16C/T</b> (&16C-VA)	Low-Z (8Ω)	65 Hz	20V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	70 Hz	
	15W Tap	55 Hz	
	Lower Taps	40 Hz	
<b>Control 18C/T</b>	Low-Z (8Ω)	45 Hz	30V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	60W Tap	60 Hz	
	30W Tap	50 Hz	
	Lower Taps	50 Hz	
<b>Control 19CS</b>	Low-Z (8Ω)	70 Hz	23V RMS
<b>Control 19CST</b>	75W Tap	80 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	70 Hz	
	Lower Taps	50 Hz	
<b>Control 24C Micro</b>	Low-Z (8Ω)	85 Hz	9.5V RMS
<b>Control 24CT Micro</b>	9W Tap	85 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	4W Tap	70 Hz	
	Lower Taps	65 Hz	
<b>C24CT MicroPlus</b>	25W Tap	85 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	12W Tap	70 Hz	
	6W Tap	65 Hz	
<b>Control 24C</b>	Low-Z (16Ω)	85 Hz	24V RMS
<b>Control 24CT</b>	30W Tap	100 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	15W Tap	85 Hz	
	Lower Taps	80 Hz	

Ceiling Speakers Continued →

CEILING SPEAKERS (Cont.)			
		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>Control 26C</b>	Low-Z (16 $\Omega$ )	75 Hz	32V RMS
<b>Control 26CT&amp; 26CT-LS</b>	60W Tap	95 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	75 Hz	
	Lower Taps	70 Hz	
<b>Control 26-DT</b>	30W Tap	100 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	15W Tap	85 Hz	
	Lower Taps	80 Hz	
<b>Control 40CS/T</b>	Low-Z (8 $\Omega$ )	35 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	80W Tap	55 Hz	
	40W Tap	40 Hz	
	Lower Taps	30 Hz	
<b>Control 42C</b>	(16 $\Omega$ )	150 Hz	16V RMS
<b>Control 40CS/T + Control 42C (2 or 4 pcs)</b> <i>(Using C40CS/T's built-in crossover)</i>	Low-Z (8 $\Omega$ )	35 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	80W Tap	55 Hz	
	40W Tap	40 Hz	
	Lower Taps	30 Hz	
<b>Control 45C/T</b>	Low-Z (8 $\Omega$ )	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	60W Tap	85 Hz	
	30W Tap	60 Hz	
	Lower Taps	50 Hz	
<b>Control 47C/T, 47LP, 47HC</b>	Low-Z (8 $\Omega$ )	55 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	60W Tap	85 Hz	
	30W Tap	60 Hz	
	Lower Taps	50 Hz	
<b>Control 226C/T</b>	Low-Z (8 $\Omega$ )	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	68W Tap	50 Hz	
	Lower Taps	40 Hz	
<b>Control 227C</b>	Low-Z (8 $\Omega$ )	45 Hz	23V RMS
<b>Control 227CT</b>	68W Tap	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	34W Tap	45 Hz	
	Lower Taps	40 Hz	
<b>Control 312C</b>	Low-Z (8 $\Omega$ )	40 Hz	46V RMS
<b>Control 321C</b>	Low-Z (8 $\Omega$ )	40 Hz	30V RMS
<b>Control 321CT</b>	68W Tap	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	34W Tap	45 Hz	
	Lower Taps	40 Hz	

CEILING SPEAKERS (Cont.)			
		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>Control 322C</b>	Low-Z (8Ω)	35 Hz	38V RMS
<b>Control 322CT</b>	100W Tap	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	50W Tap	40 Hz	
	Lower Taps	30 Hz	
<b>Control 328C</b>	Low-Z (8Ω)	50 Hz	29V RMS
<b>Control 328CT</b>	68W Tap	60 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	34W Tap	50 Hz	
	Lower Taps	40 Hz	
<b>CSS8004</b>	Any 70V or 100V tap	130 Hz	<i>Amp's 70V or 100V clipping limiter</i>
<b>CSS8008</b>	Any 70V or 100V tap	100 Hz	<i>Amp's 70V or 100V clipping limiter</i>
<b>CSS8018</b>	Any 70V or 100V tap	90 Hz	<i>Amp's 70V or 100V clipping limiter</i>
<b>CSS-15C-VA</b>	6W Tap	220 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	180 Hz	
<b>8124</b>	Any 70V or 100V tap	60 Hz	<i>Amp's 70V or 100V clipping limiter</i>
<b>8128</b>	6W Tap	60 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	50 Hz	
<b>8138</b>	6W Tap	60 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	50 Hz	

**SURFACE-MOUNT SPEAKERS**

		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>Control 23-1</b>	Low-Z (8Ω)	80 Hz	16V RMS
	15W Tap	70 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	60 Hz	
<b>Control 23-1L</b>	(8Ω)	80 Hz	16V RMS
<b>Control 25-1</b>	Low-Z (8Ω)	60 Hz	24V RMS
	30W Tap	60 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	50 Hz	
<b>Control 25AV &amp; 25AV-LS</b>	Low-Z (8Ω)	70 Hz	26V RMS
	60W Tap	85 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	70 Hz	
	Lower Taps	65 Hz	
<b>Control 25-1L</b>	(8Ω)	60 Hz	24V RMS
<b>Control 28-1</b>	Low-Z (8Ω)	45 Hz	26V RMS
	60W Tap	75 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	50 Hz	
	Lower Taps	40 Hz	
<b>Control 28-1L</b>	(8Ω)	45 Hz	26V RMS
<b>Control 29AV-1</b>	Low-Z (8Ω)	50 Hz	30V RMS
	110W Tap	70 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	55W Tap	50 Hz	
	Lower Taps	50 Hz	
<b>Control 30</b>	Low-Z (8Ω)	45 Hz	32V RMS
	150W Tap	80 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	75W Tap	60 Hz	
	Lower Taps	35 Hz	
<b>Control 31</b>	Low-Z (8Ω)	45 Hz	42V RMS
	150W Tap	45 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	75W Tap	40 Hz	
	Lower Taps	35 Hz	
<i>Updated</i> <b>SLP12/T</b>	Low-Z (8Ω)	70 Hz	15V RMS
	15W Tap	70 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	7.5W Tap	70 Hz	
	Lower Taps	70 Hz	
<i>Updated</i> <b>SLP14/T</b>	Low-Z (8Ω)	70 Hz	18V RMS
	25W Tap	70 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	12.5W Tap	70 Hz	
	Lower Taps	70 Hz	

Surface-Mount Speakers Continued →

**SURFACE-MOUNT SPEAKERS (Cont.)**

		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>Control 50S/T</b>	Low-Z (8Ω)	35 Hz	22V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	80W Tap	60 Hz	
	40W Tap	40 Hz	
	Lower Taps	30 Hz	
<b>Control 52</b>	(16Ω)	150 Hz	16V RMS
<b>Control 50S/T + Control 52 (2 or 4 pcs)</b> <i>(Using C50S/T's built-in crossover)</i>	Low-Z (8Ω)	35 Hz	16V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	80W Tap	60 Hz	
	40W Tap	40 Hz	
	Lower Taps	30 Hz	
<b>Control CRV</b>	Low-Z (8Ω)	90 Hz	15V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	100 Hz	
	15W Tap	80 Hz	
	Lower Taps	60 Hz	
<b>Control SB2</b>	Low-Z (8Ω), per input	40 Hz	22V RMS
<b>Control SB2210</b>	Low-Z (8Ω)	45 Hz	60V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	Top 2 Taps <i>(with optional MTC-SBT300)</i>	45 Hz	
	Smaller Taps <i>(with optional MTC-SBT300)</i>	35 Hz	
<b>Control HST</b>	Low-Z (8Ω)	50 Hz	25V RMS  <i>Amp's 70V or 100V clipping limiter</i>
	60W Tap	80 Hz	
	Lower Taps	50 Hz	
<b>CSS-1S/T</b>	10W Tap	100 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	80 Hz	
<b>CSS-H15</b>	Any 70V or 100V tap	400 Hz	<i>Amp's 70V or 100V clipping limiter</i>
<b>CSS-H30</b>	Any 70V or 100V tap	380 Hz	<i>Amp's 70V or 100V clipping limiter</i>

OUTDOOR SPEAKERS		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>AWC62</b>	Low-Z (8Ω)	60 Hz	<b>28V RMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	120W Tap	60 Hz	
	60W Tap	50 Hz	
	Lower Taps	40 Hz	
<b>AWC82</b>	Low-Z (8Ω)	65 Hz	<b>34V RMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	200W Tap	65 Hz	
	100W Tap	45 Hz	
	Lower Taps	40 Hz	
<b>AWC129</b>	Low-Z (8Ω)	50 Hz	<b>43 VRMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	200W Tap	55 Hz	
	100W Tap	45 Hz	
	Lower Taps	40 Hz	
<b>AWC159</b>	Low-Z (8Ω)	50 Hz	<b>52 VRMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	300W Tap	45 Hz	
	150W Tap	45 Hz	
	Lower Taps	40 Hz	
<b>AWC15LF</b>	Low-Z (8Ω)	40 Hz	<b>52 VRMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	300W Tap	40 Hz	
	150W Tap	40 Hz	
	Lower Taps	35 Hz	

LANDSCAPE SPEAKERS		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<b>Control 85M</b>	Low-Z (8Ω)	65 Hz	<b>22V RMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	60 Hz	
	Lower Taps	50 Hz	
<b>Control 88M</b>	Low-Z (8Ω)	45 Hz	<b>26V RMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	60W Tap	80 Hz	
	Lower Taps	50 Hz	
<i>Updated</i> <b>Control 89MS</b>	Low-Z (8Ω)	40 Hz	<b>31V RMS</b> <i>Amp's 70V or 100V clipping limiter</i>
	80W Tap	40 Hz	
	Lower Taps	40 Hz	

Landscape Speakers Continued →

### LANDSCAPE SPEAKERS (Cont.)

		Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
<i>Updated</i> GSF3	Low-Z (8Ω)	80 Hz	13.5V RMS
	15W Tap	80 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	80 Hz	
<i>Updated</i> GSF6	Low-Z (8Ω)	65 Hz	18V RMS
	30W Tap	65 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	65 Hz	
<i>Updated</i> GSB8	Low-Z (6Ω)	35 Hz	35V RMS
	120W Tap	55 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	43 Hz	
<i>Updated</i> GSB12	Low-Z (6Ω)	27 Hz	45V RMS
	200W Tap	55 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	Lower Taps	39 Hz	

### PENDANT SPEAKERS

Control 64P/T	Low-Z (8Ω)	80 Hz	18V RMS
	30W Tap	80 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	15W Tap	70 Hz	
	Lower Taps	60 Hz	
Control 65P/T	Low-Z (8Ω)	55 Hz	20V RMS
	60W Tap	90 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	65 Hz	
	Lower Taps	50 Hz	
Control 67P/T, 67HC/T	Low-Z (8Ω)	65 Hz	20V RMS
	60W Tap	85 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	30W Tap	65 Hz	
	Lower Taps	50 Hz	
<i>New!</i> Control 68HP	Low-Z (8Ω)	60 Hz	41V RMS
	68W Tap	60 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	34W Tap	60 Hz	
	Lower Taps	50 Hz	
Control 60PS/T	Low-Z (8Ω)	50 Hz	31V RMS
	110W Tap	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	55W Tap	40 Hz	
	Lower Taps	40 Hz	
Control 62P	(16Ω)	150 Hz	14V RMS
Control 60PS/T + Control 62P (2 or 4 pcs) <i>(Using C60's built-in crossover)</i>	Low-Z (8Ω)	50 Hz	14V RMS
	110W Tap	50 Hz	<i>Amp's 70V or 100V clipping limiter</i>
	55W Tap	40 Hz	
	Lower Taps	40 Hz	

IN-WALL SPEAKERS			Protective High-Pass Frequency (Slope 24 dB/oct)	Limiter Voltage (Ave/RMS -- not "peak")
Control 126W	Low-Z (8Ω)		45 Hz	14V RMS
Control 126WT	30W		70 Hz	Amp's 70V or 100V clipping limiter
	Lower Taps		60 Hz	
Control 128W	Low-Z (8Ω)		40 Hz	15V RMS
Control 128WT	50W Tap		70 Hz	Amp's 70V or 100V clipping limiter
	Lower Taps		60 Hz	

CBT COLUMN SPEAKERS				
CBT 1000	(4Ω)		35 Hz	63V RMS
CBT 1000 +1000E (in parallel with CBT 1000)	(4Ω)		35 Hz	63V RMS
CBT 1000E (driven separately)	(8Ω)		35 Hz	96V RMS
<i>(See separate guide for recommended CBT1000 EQ settings)</i>				
CBT 70J-1	(8Ω)		55 Hz	48V RMS in Speech Mode, 53V RMS in Music Mode
CBT 70J-1w MTC-CBT-70T x-former	120W Tap		60 Hz	Amp's 70V or 100V clipping limiter
	60W Tap		45 Hz	
	Lower Taps		35 Hz	
CBT 70J-1 + 70JE-1	(4Ω)		45 Hz	48V RMS in Speech Mode, 53V RMS in Music Mode
CBT 70J-1+JE-1 with MTC-CBT-70T x-former	120W Tap		60 Hz	Amp's 70V or 100V clipping limiter
	60W Tap		45 Hz	
	Lower Taps		35 Hz	
CBT 200LA-1	Low-Z (4Ω)		70 Hz	40V RMS in either Speech or Music Mode
	120W Tap (per module)		70 Hz	Amp's 70V or 100V clipping limiter
	60W Tap (per module)		50 Hz	
	Lower Taps		40 Hz	

CBT Column Speakers Continued →



CBT COLUMN SPEAKERS (cont.)			
<b>CBT 100LA-1</b>	Low-Z (4Ω)	70 Hz	40V RMS in either Speech or Music Mode
	120W Tap	70 Hz	Amp's 70V or 100V clipping limiter
	60W Tap	50 Hz	
	Lower Taps	40 Hz	
<b>CBT 100LA-LS</b>	Low-Z (4Ω)	90 Hz	40V RMS in either Speech or Music Mode
	120W Tap	80 Hz	Amp's 70V or 100V clipping limiter
	60W Tap	60 Hz	
	Lower Taps	50 Hz	
<b>CBT 50LA-1</b>	Low-Z (4Ω)	70 Hz	32V RMS in either Speech or Music Mode
	60W Tap	85 Hz	Amp's 70V or 100V clipping limiter
	30W Tap	80 Hz	
	Lower Taps	75 Hz	
<b>CBT 50LA-LS</b>	Low-Z (4Ω)	90 Hz	32V RMS in either Speech or Music Mode
	60W Tap	90 Hz	Amp's 70V or 100V clipping limiter
	30W Tap	80 Hz	
	Lower Taps	75 Hz	

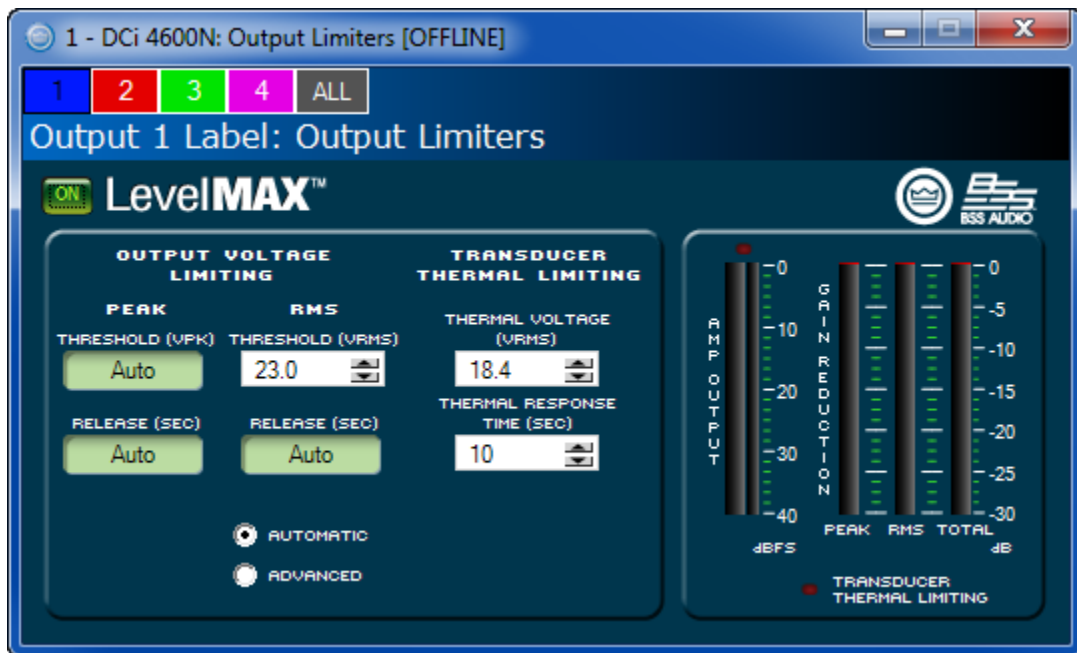
NOTES:

- High-Pass Frequencies apply to stated tap setting figure, regardless whether driven by 70V or 100V distributed line.

## Setting the LevelMAX™ Limiter on HARMAN Crown DCi and CDI DriveCore Power Amplifiers

- Set the RMS THRESHOLD (VRMS) to the RMS Voltage figure from the chart
- Set the THERMAL VOLTAGE (VRMS) to 80% of RMS THRESHOLD (VRMS) value.
- Check the bubble for AUTOMATIC, which will set PEAK THRESHOLD (VPK), PEAK RELEASE (SEC), and RELEASE (SEC) to Auto.

**Important Note:** At the very end of the process, after inputting the tuning data, it is important to double-check that the high-pass filter (HPF) is still engaged. For example, even if you set and engaged the HPF earlier in the process, it may become disabled by changing the output mode (low-impedance, 70V, 100V) setting (or under some circumstances, when the mode setting is reviewed).



*Shown as set for Control 47C/T at Low-Z (8Ω), listed for a Limiter Voltage of 23V RMS*

The dynamics of limiters incorporated into various brands of power amplifiers vary. For other brands of power amplifier, contact the manufacturer to adapt the RMS Output Voltage Limiting figure listed in this chart to determine the various other settings for which they may allow the selection.