

Appendix

Contents

Parameters, Units and Ranges	A-2
------------------------------------	-----

Parameters, Units and Ranges

Approximately following the VP-8's signal path, these are the values and ranges appropriate to each type of processing.

System Level

Headroom:	20dB
Nominal Operating Level:	-20dBFS digital

Analog Line Input

Type:	Electronic Differential
Input Impedance:	> 10Kohm (bridging)
Optimum Source Impedance:	< 1Kohm

Digital Line Input

Data Standard:	AES3 (AES/EBU)
Data Amplitude:	Per AES3-2003 assuming minimum allowable output signal amplitude of 2V and minimum allowable input signal amplitude of 200mV

Input Gain Adjustment Ranges

Gain Adjustment:	+/- 24dB
Gain Adjustment Increments:	0.5dB
Gain Calibration:	A gain control setting of 0.0 aligns an external 0dBFS signal with the VP-8's 0dBFS internal reference

Input Failsafe

Type:	Automatic
Analog Fail Cause:	Audio level below -48dBFS.
Response Time:	30 seconds
Digital Fail Cause 1:	Audio level below -48dBFS
Response Time:	30 seconds
Digital Fail Cause 2:	Corrupted or invalid AES data
Response Time:	Immediate

Audio Level Balance

Type:	Common to Analog and Digital inputs
Analog/Digital L/R Balance Range:	+/-12dB
Analog/Digital L/R Balance Increments:	0.5dB

Voice Symmetry Phase Rotation

Operating Modes:	In/Out
Filter Type:	4 th Order Allpass

High-Pass Filter

HPF Filter Class:	24dB/octave Butterworth
Frequency range:	20Hz – 300Hz
HPF Insert Modes:	Off / Stereo L/R / Sum/Difference

Equalization - Two sections of four-band Parametric Equalization

EQ Set 1 – routable to pre or post-five-band AGC.

EQ Set 2 – post-multiband limiter.

Frequency:	20Hz – 20 kHz
Bandwidth:	0.2 – 3.0 octaves
Lift / Cut:	+/- 14.0dB pre/post four band AGC +/- 3.0dB post FM multiband limiter

Four-Band AGC/Compressor

Operates in sum/difference, or ‘matrix,’ mode with the gain linked at AGC time constants.

Drive Gain:	-79.0dB to +6.0dB in 0.5dB steps, plus OFF
Makeup Gain Range:	-20.0dB to +48.0dB, 0.5dB steps
AGC/Compressor Thresholds:	- 50dBFS to -80dBFS
AGC Threshold Backoff:	0dB to -12dB
AGC Attack:	50mS – 1500ms (1.5 sec)
AGC Release:	100mS – 7.0 seconds
AGC Band Coupling:	0dB to -30.0dB, 0.5dB steps
Compressor Attack:	3.0mS – 1000mS (1Sec)
Compressor Release:	20mS – 1000mS (1Sec)
Ratio:	1:1 – 20:1
AGC Threshold:	-20.0dB to -79dBFS, plus OFF
Gate Thresh Trim:	+/- 6dB per band
Gated Modes:	Ooze/Hold
Gate Delay:	50mS to 500mS

Crossover Frequencies

Low to Low Mid Band:	50 Hz to 198 Hz
Low Mid Band to High Mid Band:	250 Hz to 1.5 kHz
High Mid Band to High Band:	3.0 kHz to 8.0 kHz
Band Output Trims, Sum:	+/- 6dB
Band Output Trims, Difference:	+/- 6dB

Eight Band FM Output Peak Limiter

A four band parametric EQ follows the eight band limiter and feeds the VBMS with multiple operating styles, then an oversampled, zero overshoot lookahead limiter or main clipper with multiple operating styles, and then an FM diversity delay.

Overall Controls

Multiband/Drive:	0 – 100%
VBMS Drive:	+/- 10.0dB
VBMS Style:	Off/ Soft/ Hard
VBMS Output:	+/- 10.0dB
VBMS Frequency:	60 - 300Hz
Multiband Knee:	Soft/ Hard
Multiband Threshold:	+/-10dB relative to Drive
Multiband Attack:	0.1ms – 1000ms (1Sec)
Multiband Release:	30ms – 1000ms (1Sec)
Pre-emphasis Modes:	Off/50uS/75uS
Pre-emphasis insert points:	Pre-MB Limiter
	Pre-look ahead limiter
	Post-look ahead limiter (pre-clipper)
Lookahead Limiter (Threshold) Trim:	+/- 6.0dB
Lookahead Limiter Attack:	0.2ms – 100ms
Lookahead Limiter Release:	33ms – 330ms
Lookahead Limiter Delayed Release:	100ms – 1000ms (1Sec)
Main FM Clipper Styles:	Off/Hard/Firm/Round
De-emphasis:	Complementary as applied in pre-emphasis.

FM

Stereo Encoder (FM Mode Only)

Reference grade stereo encoder with embedded composite processing, test oscillator, SCA digitizer, and balanced and unbalanced composite outputs.

Overall Controls

Stereo Width Limiter:	10% to 100% in 10%. steps, plus OFF
Stereo Pilot Injection:	0 – 20%, 0.1% steps
Stereo Pilot Phase:	+/- 22.5 degrees reference to 38kHz.
SCA 1 Input:	Analog, 10kohm input impedance, +24dBu max. input level
SCA Input 1 Gain:	-79.95dB to +10.00dB, or OFF
SCA 2 Input:	Analog, 10kohm input impedance, +24dBu max. input level

SCA Input 2 Gain:	-79.95dB to +10.00dB, or OFF
TX 1 Output Level:	-79.95dB to +6.0dB, 0.05dB steps, or OFF
TX 2 Output Level:	-79.95dB to +6.0dB, 0.05dB steps, or OFF
Composite Processor Modes:	May be selected to provide pilot tone only Oversampled look ahead limiter Soft Clipper Hard Clipper
Stereo Encoder Output Operating Modes:	Analog L/R Analog L/R De-emphasized Unbalanced and Balanced Multiplex
Output signals available as:	
Digital:	AES 3-pin XLR (digital), and Stereo, pre or post Diversity Delay
Analog:	Analog Left/Right Analog Left/Right, De-emphasized Composite Multiplex, TX1 and TX2
Test Oscillator:	
Waveform:	Sine Wave
Frequencies:	50Hz to 80kHz plus 31.25kHz Bessel
Output Level:	0 to 100% in 1.0% steps
Digital Output Level:	-35.90dB to 0.0dB, or OFF

FM

Eight Band AM Output Peak Limiter

A four band parametric EQ follows the eight band limiter and feeds the VBMS with multiple operating styles, then an oversampled, zero overshoot lookahead limiter or main clipper with multiple operating styles, and then an AM diversity delay.

Overall Controls	
Multiband/Drive:	0 – 100%
VBMS Drive:	+/- 10.0dB
VBMS Style:	Off/ Soft/ Hard
VBMS Output:	+/- 10.0dB
VBMS Frequency:	60 - 300Hz
Multiband Knee:	Soft/ Hard
Multiband Threshold:	+/-10dB relative to Drive
Multiband Attack:	0.1ms – 1000ms (1Sec)
Multiband Release:	30ms – 1000ms (1Sec)

AM

Pre-emphasis Modes:	Off/NRSC
Pre-emphasis insert points:	Pre-MB Limiter Pre-look ahead limiter Post-look ahead limiter (pre-clipper)
Lookahead Limiter (Threshold) Trim:	+/- 6.0dB
Lookahead Limiter Attack:	0.2ms – 100ms
Lookahead Limiter Release:	33ms – 330ms
Lookahead Limiter Delayed Release:	100ms – 1000ms (1Sec)
Main FM Clipper Styles:	Off/Hard/Firm/Round
De-emphasis:	Complementary as applied in pre-emphasis.

AM Transmission

This screen permits access to the controls unique to the VP-8's AM operating mode. Functionally it follows the eight band AM limiter.

Overall Controls

Bandwidth:	Full (20kHz), 10kHz NRSC, 7.5kHz, 6kHz CCIR, 5kHz, and 4.5kHz
Output Mode:	Mono, Stereo, Stereo M/S
Positive Modulation:	100% to 150% in 1% steps
Digital Output:	AES 3-pin XLR (digital), and Stereo, pre or post Diversity Delay, pre or post DeEmphasis

AM

Test Oscillator:

Waveform:	Sine Wave/Clipped Sine Wave
Frequencies:	25Hz to 12kHz
Level:	0% to 100% in 1.0% steps
Tilt Test:	Provides clipped sine wave at 50% of the "Level" amplitude

LF Tilt Equalizer:

Equalizer Type:	Parametric Bandpass
Frequency (F):	5.0Hz to 100Hz
Bandwidth (Q):	0.25 to 3.00
Level (L):	0.0dB to 6.00dB, in 0.5 steps

(MONO mode has LF Tilt Equalizers available for both transmitter outputs)

Outputs:

Analog 1:	-79.95dB to +0.0dB, 0.05dB steps, or OFF
Phase	0 or 180 degrees
Analog 2:	-79.95dB to +0.0dB, 0.05dB steps, or OFF
Phase	0 or 180 degrees

(Analog 2 is only available in MONO mode)

Eight Band FM-HD Peak Limiter

A four band parametric EQ follows the eight band limiter and feeds the VBMS with multiple operating styles, then an oversampled, zero overshoot lookahead limiter or main clipper with multiple operating styles, and then an FM diversity delay.

Overall Controls

Multiband/Drive:	0 – 100%
VBMS Drive:	+/- 10.0dB
VBMS Style:	Off/ Soft/ Hard
VBMS Output:	+/- 10.0dB
VBMS Frequency:	60 - 300Hz
Multiband Knee:	Soft/ Hard
Multiband Threshold:	+/-10dB relative to Drive
Multiband Attack:	0.1ms – 1000ms (1Sec)
Multiband Release:	30ms – 1000ms (1Sec)
Lookahead Limiter (Threshold) Trim:	+/- 6.0dB
Lookahead Limiter Attack:	0.2ms – 100ms
Lookahead Limiter Release:	33ms – 330ms
Lookahead Limiter Delayed Release:	100ms – 1000ms (1Sec)
Main FM Clipper Styles:	Round/Deep



FM-HD Output Screen Controls

Phase	0 or 180 degrees
Left/Right Reverse checkbox	
Analog Out:	-79.9dB to 0.0dB, 0.1dB steps, or OFF
Digital Out:	-35.95dB to 0.0dB, 0.05dB steps, or OFF
PreDelay checkbox	

Eight Band AM-HD Peak Limiter

A four band parametric EQ follows the eight band limiter and feeds the VBMS with multiple operating styles, then an oversampled, zero overshoot lookahead limiter or main clipper with multiple operating styles, and then an AM diversity delay.

Overall Controls

Multiband/Drive:	0 – 100%
VBMS Drive:	+/- 10.0dB
VBMS Style:	Off/ Soft/ Hard
VBMS Output:	+/- 10.0dB
VBMS Frequency:	60 - 300Hz
Multiband Knee:	Soft/ Hard
Multiband Threshold:	+/-10dB relative to Drive
Multiband Attack:	0.1ms – 1000ms (1Sec)
Multiband Release:	30ms – 1000ms (1Sec)
Lookahead Limiter (Threshold) Trim:	+/- 6.0dB
Lookahead Limiter Attack:	0.2ms – 100ms
Lookahead Limiter Release:	33ms – 330ms
Lookahead Limiter Delayed Release:	100ms – 1000ms (1Sec)
Main FM Clipper Styles:	Round/Deep



AM-HD Output Screen Controls

Bandwidth:	Off, and 16kHz to 4kHz in 1kHz steps
HF Protect:	16kHz to 3kHz in 1kHz steps
Ceiling:	0dB to -48dB in 0.5dB steps
HF Protect checkbox	
Hyper Mono checkbox	
Recovery 33mS to 330mS	
Phase	0 or 180 degrees
Left/Right Reverse checkbox	
Analog Out:	-79.9dB to 0.0dB, 0.1dB steps, or OFF
Digital Out:	-35.95dB to 0.0dB, 0.05dB steps, or OFF
PreDelay checkbox	

Presets

An advanced preset management system allows the creation, storing, and recall of 80 presets within the VP-8 itself and an unlimited number on a host PC. All signal-processing parameters are contained in these presets, allowing the preservation of the complete processing ‘environment.’ Optionally, Input and Output settings may be stored and recalled with presets.

Note that VP-8 presets are mode-based. That is, presets are stored along with data that remembers what operating mode was running at the time they were created.

Preset Encryption

Presets are encrypted using the VP-8 internal 128 bit serial number as the encryption key.

Onboard Real-time clock

A highly accurate internal real-time clock allows the automatic recall of presets at pre-determined times. This clock may be set to ‘free-run’ or be synchronized to an external on- or off-site SNTP server, or it may be synchronized to the GUI PC.

Day-Parting and Long-term Scheduling

A ‘weekly’ preset scheduling establishes a weekly cycle of preset changes, allowing for automatic programmed day-by-day exclusions or additions.

Additionally, a separate long-term scheduling table permits the establishment of ‘one-off’ preset changes for *any* future time and date.

General Purpose Input (GPI)

Eight optically isolated inputs are slaved to the first eight preset slots.

Presets may be recalled by providing the appropriate voltage to the associated GPI port to create a “Logic High” and may be either momentary or latching as desired. Voltages are applied between the appropriate GPI pin and Common with the GPI pin being the most positive voltage. Please see manual text for the required current limiting resistor for voltages above 3.3VDC.

Ethernet Interface

The VP-8 contains a five-port, auto-sensing 10/100BaseT Ethernet switch with one port available on the outside of the unit for field use. Because the switch is auto-sensing it is not necessary to utilize a crossover cable when connecting a PC directly to the VP-8.

Software Remote Control

Supplied Windows® Vorsi GUI software affords control of all system and processing parameters via a 10/100BaseT Ethernet interface.