

# Expressor™ with Tubessence® Model 661

**APHEX**  
SYSTEMS

## Tube Compressor/Limiter Expressor®/Easyrider® with Tubessence® Model 661



### SPECIFICATIONS

|   |   |                                      |
|---|---|--------------------------------------|
| <b>NOMINAL OPERATING LEVEL</b><br>(user selectable on back) | <b>+4dBu</b>  | <b>-10dBV</b>                        |
| <b>INPUT</b>  |   |                                      |
| Connector:  | 3-pin XLR female and TRS 1/4" phone jack  | same                                 |
| Type:   | Transformerless, servo-balanced, RFI filtered   | same                                 |
| Impedance:  | Balanced 20KΩ<br>Unbalanced 10KΩ  | 20KΩ<br>10KΩ                         |
| Nominal Level:  | +4dBu   | -10dBV (-7.8dBu)                     |
| Maximum Level:  | +25dBu  | +13dBV (+15.2dBu)                    |
| CMRR (typical):   | >90dB/100Hz; >70dB/1kHz;<br>>50dB/20kHz   | same                                 |
| <b>OUTPUT</b>   |   |                                      |
| Connector:  | 3-pin XLR male and TRS 1/4" phone jack  | same                                 |
| Type:   | Transformerless, differential servo-balanced (may be used unbalanced)   | same                                 |
| Impedance:  | Balanced 65Ω<br>Unbalanced 65Ω  | same<br>same                         |
| Nominal Level:  | +4dBu   | -10dBV (-7.8dBu)                     |
| Maximum Level:  | Balanced +22dBu<br>Unbalanced +20dBu  | +8dBV (+10.2dBu)<br>+8dBV (+10.2dBu) |
| <b>AUDIO</b>  |   |                                      |
| Frequency Response:   | ± 0.5dB 2Hz- 110kHz   | same                                 |
| Dynamic Range   | 94dB  | same                                 |
| Hum and Noise (No G.R.):<br>(unweighted 10Hz-22kHz)         | -83dBu  | -95dBV                               |
| Crosstalk (10Hz-22kHz @ max output)                         | -80dB   | same                                 |
| THD @ maximum output  | .6%   | same                                 |
| THD @ nominal output +6dB                                   | .15%  | same                                 |
| IMD @ maximum output  | .5%   | same                                 |
| IMD @ nominal output +6dB                                   | .25%  | same                                 |
| <b>COMPRESSION PARAMETERS</b>                               |   |                                      |
| Threshold:  | Auto Variable: -30dB to +20dB<br>Manual same  |                                      |
| Ratio:  | Auto The Easyrider No-Knee™ Compression Curve starts at 1.1:1 and ends at 6:1   |                                      |
| Attack Time:  | Manual Starts at 1:1 and ends at 30:1<br>Auto Program (Waveform) Dependent  |                                      |
| Release Time:   | Manual .05 to 100ms<br>Auto Program (Waveform) Dependent  |                                      |
| Input Control Range:  | Manual .04 to 4s  |                                      |
| Output Control Range:                                       | 40dB<br>30dB  |                                      |
| <b>CONTROLS, FUNCTION SWITCHES AND METERING</b>             |   |                                      |
| Controls:   | Input; Threshold, Output, Ratio, Attack, Release, HFX Ratio, Frequency (HFX)  |                                      |
| Switches:   | Process In/Bypass; SPR; Slow/Fast; Auto/Manual, Soft Knee, Low Cut, Input/Output (meter select), Unlink, Link, Slave, Power                 |                                      |
| Meters:   | Audio Level (Input and Output), Gain Reduction  |                                      |
| <b>OTHER SPECIFICATIONS</b>                                 |   |                                      |
| AC Input:   | IEC standard receptacle with voltage selector, fuse and filter.   |                                      |
| Power Requirements:   | 100-120-220-240 VAC, 50-60 Hz   |                                      |
| Power Input (maximum):                                      | 20 watts  |                                      |
| Dimensions:   | 19" W x 1.75" H x 10.125" overall depth, depth behind front panel: 9.25"<br>Unit mounts in standard 19" rack, using 1 RU of vertical space. |                                      |
| Net Weights:  | 5.5 lbs.  |                                      |
| Shipping Weight:  | 9 lbs.  |                                      |

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The Model 661 is a totally new type of compressor incorporating vacuum tube technology with the latest innovations in audio compression. This single channel compressor/limiter is loaded with features, consolidating for the first time in one rack space, three ApheX patented circuits; **Tubessence®**, **Easyrider®** and **High Frequency Expander®**.

Tubessence is a true tube circuit which provides that "vintage" tube sound without, high heat, bulk, short life, fragility and sonic variability found in traditional tube designs.

Easyrider is an Auto mode that actually works, consisting of the Wave Dependent Compressor™ (WDC) circuit which takes the guess work out of compressing individual instruments and vocals especially in live mixes. WDC automatically adjusts attack and release times according to the complexity of the program material. It's No-Knee™ compression curve makes the transition into compression virtually invisible.

In the Manual mode, the Model 661 provides the full compliment of compressor adjustments, such as Ratio, Attack and Release, for maximum flexibility. Express yourself and get those "punch", "slap", "fat", "pump", and "squeeze" sounds fast and clean.

The 661 includes the patented High Frequency Expander® (HFX) which decompresses high frequencies, with user-adjustable ratio and corner frequency. Add "life" and "air" to your compressed signals without fear of background noise pumping.

The Spectral Phase Refractor™ (SPR) restores clarity and punch to your tracks. Bass frequencies are more defined with more apparent power. Higher frequencies also seem to gain more detail and presence.

Use the Model 661 to control dynamics for mixdowns, protect your sound system's loudspeakers from transients and distortion or shape the sound of individual instruments and vocals. Compress dynamic levels without fear of reducing frequency response. What ever type of dynamics control you're looking for, it can be done with the Model 661 Tube Compressor/Limiter Expressor®.

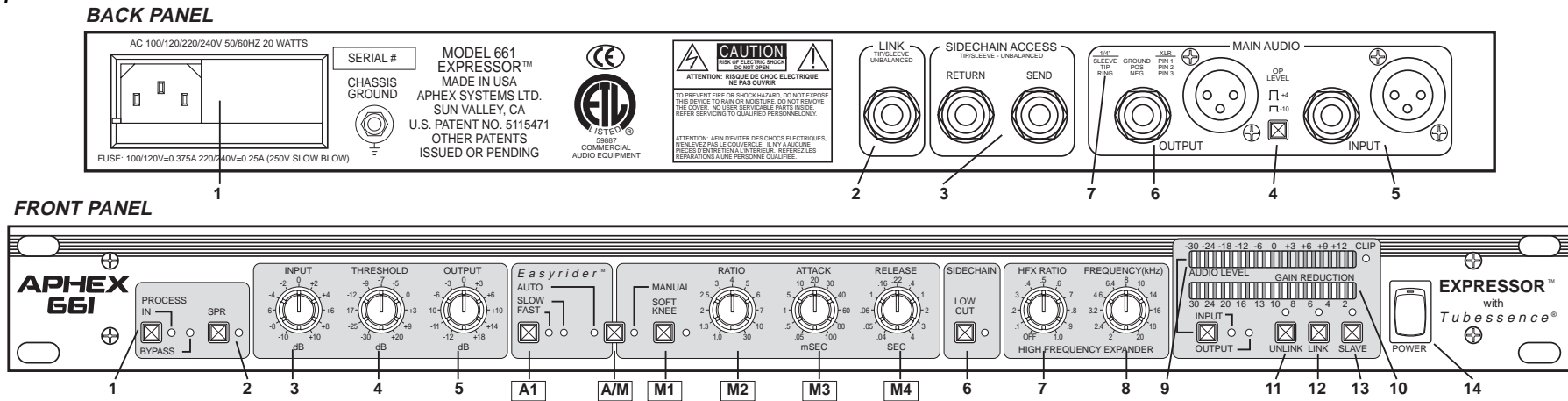
### FEATURES

- Auto or full Manual operation. In Auto mode, compression parameters constantly change for best sound.
- A true tube circuit (Tubessence) in the output stage for a "warm", "live" and "full" sound.
- HFX allows the use of high compression ratios without the loss of high frequencies.
- SPR increases apparent bass energy level, without amplitude equalization or bass boost.
- Use Sidechain Access jacks for creative processing (de-essing and ducking).
- Stereo, dual mono or master/slave operation for total flexibility

### APPLICATIONS

Music Production - Improve the sound on individual instruments, vocals and mixes.  
Sound Reinforcement - A roadable tube compressor/limiter in only one rack space.  
Broadcast & Post Production - A great vocal processor and a powerful studio tool.  
Project Studios - Improve the sound of digital recorders and workstations.  
Musicians - The ultimate compressor for the professional guitar, bass, keyboard instrument rig.

# Tube Compressor/Limiter Expressor®/Easyrider® with Tubessence® Model 661



## BACK PANEL

### 1. VOLTAGE SELECTION AND FUSE

AC line power is supplied to the unit via an integral receptacle/fuse holder on the rear panel which meets all of the international safety certification requirements and also doubles as a radio frequency line filter.

2. **LINK** provides two different methods of linking the VCA control between two 661's: Stereo Link and Master/Slave. To link two 661's, insert a 1/4" TS cable into the LINK jack on both units.

3. **SIDECHAIN ACCESS** provides a 1/4" TS jack to send the output of the 661 into an external processing device and a return 1/4" TS jack for returning the output of an external processing device into the 661.

4. The **OPERATING LEVEL** Switch on the rear panel selects the nominal operating level to either +4dBu or -10dBV. This switch sets the dynamic range of the 661's circuitry to best match your standard operating level, and also sets the 0dB calibration of the front panel AUDIO LEVEL Meter to equal the reference level selected.

5. Two servo balanced **INPUT** Connectors are provided, choose either a 3-pin XLR female connector or a 1/4" TRS phone jack.

6. Two servo balanced **OUTPUT** Connectors are provided, choose either a 3-pin XLR male connector or a 1/4" TRS phone jack.

7. A **WIRING TABLE** is printed on the back panel for assistance in the proper wiring of connectors.

## FRONT PANEL

(1-14 Active in Auto and Manual Modes)

1. The **PROCESS IN / BYPASS** Switch operates a bypass relay (indicated by a yellow LED) that connects the Main Audio input directly to the Output, completely bypassing the 661. **PROCESS IN** (indicated by a red LED) engages the 661 circuitry.

2. The **SPR** Switch controls the Spectral Phase Refractor circuit. SPR can reverse the effect of accumulated low frequency time delays caused by audio passing through too many electronic stages.

3. The **INPUT** Control sets the amount of gain in the 661's input stage.

4. The **THRESHOLD** Control sets the level above which input signals will be processed by the 661's gain control circuitry in a manner defined by the settings of the various AUTO or MANUAL controls.

5. The **OUTPUT** Control sets the amount of gain in the 661's output stage, restoring level lost by compression (make-up gain).

6. The **LOW CUT** Switch inserts a 6dB per octave low cut filter with an 80Hz corner frequency into the sidechain. This is most useful when using the 661 (two in stereo link mode) to process a stereo mix-down of base predominate material.

7. **HIGH FREQUENCY EXPANDER (HFX)** is a form of dynamic equalization that boosts high frequencies when gain reduction occurs. The HFX RATIO Control sets the amount of equalization (6 dB per octave shelving) for the amount of Gain Reduction. At 1:1 there is 1 dB of High Frequency Expansion (or boost) for every 1dB of Gain Reduction.

8. The **FREQUENCY** Control lets you set the (HFX) corner frequency of the shelving EQ anywhere between 2 kHz to 20 kHz.

9. The **AUDIO LEVEL** Meter monitors the Input and Output level depending on the position of the switch below the meters. A red CLIP LED at the right of the meter indicates clipping.

10. The **GAIN REDUCTION** Meter shows the amount of compression in 2dB steps with a maximum of 30dB.

11. **UNLINK** must be engaged for normal operation of one 661. Depressing LINK or SLAVE when using only one 661 will cause the unit to malfunction.

12. **LINK** is engaged when two 661's are used in stereo. Both 661's must have the LINK switch engaged.

13. **SLAVE** is used when two 661's are being configured for a master/slave operation. Only the unit acting as a SLAVE should have the SLAVE switch engaged. The master unit needs to be in LINK.

14. The LED at the top of the POWER SWITCH illuminates when the unit is powered.

**[A/M]** The **AUTO / MANUAL** Mode switch determines if the 661's primary control parameters will be manually adjusted by the user or automatically adjusted by the 661. In the AUTO (Easyrider) Mode the Fast / Slow switch is active while Soft Knee, Ratio, Attack and Release are defeated. In the MANUAL Mode, Soft Knee, Ratio, Attack and Release are active, while the Fast / Slow switch is defeated

### AUTO MODE

**[A1]** When in the **AUTO** Mode the attack and release characteristics of the Easyrider circuit are automatically adjusted based upon the waveform of the input. The **SLOW/ FAST** switch selects between two ranges of the automatic release circuit.

### MANUAL MODE

**[M1]** The **SOFT KNEE** Switch in the OFF position results in a transition at threshold that is of the abrupt Hard Knee type. In the ON position (indicated by red LED), signals are processed more gradually and the transition is less noticeable

**[M2]** The **RATIO** Control determines the amount of change in output level for a given change in input level above threshold. This is expressed as a ratio: relative input versus output. The range of this control is 1:1 to 30:1.

**[M3]** The **ATTACK** Control adjusts the time in which the 661 will reduce the gain after an increase in input over threshold. The range of the control is .05 to 100 ms.

**[M4]** The **RELEASE** Control adjusts how long it takes the 661 to release gain reduction after a decrease in input level. The range of this control is .04 to 4 seconds.

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