SZIKLA

PRODIGAL DUAL CHANNEL STRIP & MONITOR STATION

User Reference Manual

V6.0

PRODIGAL SAFETY SPECIFICATIONS

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards use this product only as specified.

Only qualified personnel should perform service procedures. There are no user-adjustable components inside the unit. Unqualified persons should not remove the protective cover.

To Avoid Fire or Personal Injury:

Use proper power cord. Use only the power cord specified for this device and certified for the country of use.

Ground the product. To avoid electric shock this product is grounded through the grounding conductor of the power cord. Only use a power cord with a ground pin. Check power cord regularly to ensure that the continuity of the ground pin is maintained and conforms to the safety requirements in your region.

Use the correct voltage setting. Before turning on device, ensure that the Voltage Selector Switch is set to the correct voltage range for region of use. Attempting to operate the device using the incorrect voltage setting may cause damage to the device and/or failure of the device and/or destruction of the protective fuse.

Use the correct fuse. Use only the fuse type and rating specified for the device. Different fuses are required if the Voltage Selector Switch is changed to the opposite position. Please refer to the instructions on the rear panel of the device to determine the correct fuse required. When replacing blown fuses, only replace with a fuse of the same size, type and voltage rating.

Do not obstruct air vents. Vent slots and holes are important for cooling the unit. Do not cover or obstruct any of the vents or overheating and equipment failure may occur.

Do not operate with suspected failures. If you suspect that there is damage to this equipment, have it inspected by qualified service personnel.

Do not expose unit to rain or moisture.
For safety and reliable operation, keep product surfaces clean and dry.

Do not rest drinks on lid of unit.
You will tip one over, it will go in through the vent, smoke will come out, you will cry.

Safety Compliance:

This device is designed to meet or exceed Australian and International Safety Standards:
AS/NZS3820, Essential safety requirements for low voltage electrical equipment.
AS/NZS/IEC60065, Audio video and similar electronic apparatus safety requirements.

Safety Class: Class 1 - Grounded Product.

PRODIGAL CARE OF UNIT

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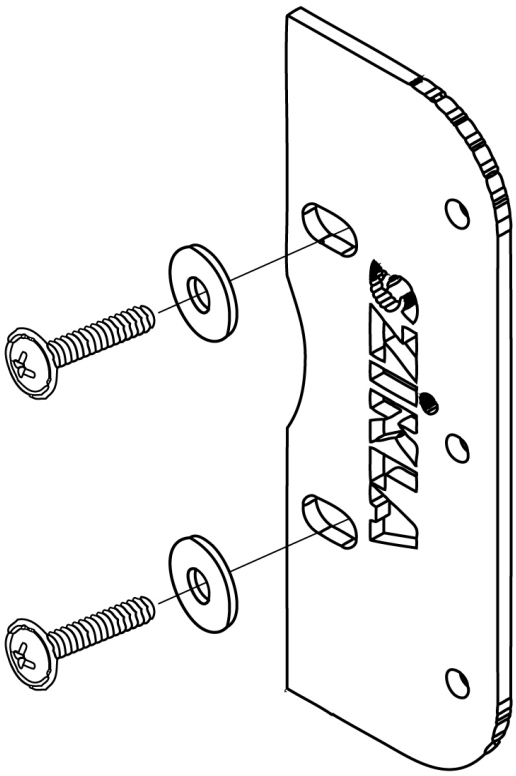
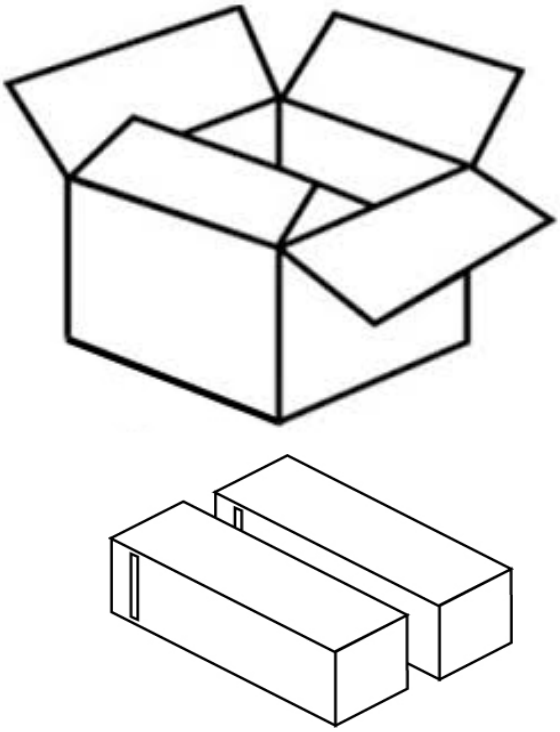
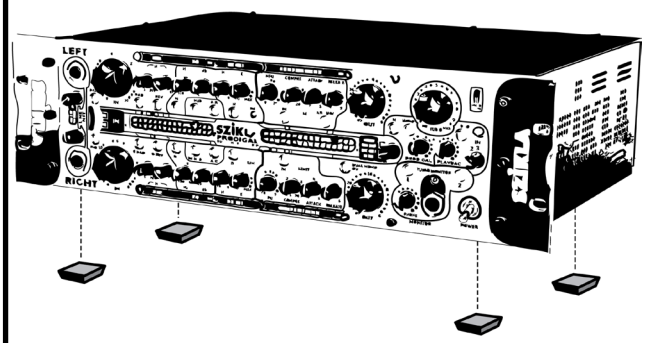
To protect and preserve the unit's metalwork and finish, always use washers when screwing unit into a rack.



Keep the Carton and Styrene Packaging in case of the need to re-ship or service the unit.



Rubber Feet are provided for when the Prodigal is used on a Table-Top.



To avoid audible thumps, always turn off monitors before turning off Prodigal.

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PRODIGAL Dual Analog Channel Strip & Monitor Station

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Input Selector
Rear panel XLR Mic or Line, Balanced/Unbalanced.
Front Panel TRS Line or Instrument D.I. Balanced/Unbalanced.
Front Jacks are also useful when you are using the Channel Strip as an insert, or printing tracks.

EQ
Single band, tight, responsive, and sweepable over 6.5 octaves.
+/-10dB Cut/Boost, 1 octave, Constant Q.

De-Mud
Simple and handy fixed band that targets the un-musical LF in a vocal, instrument or live room. Low Cut -3dB at 300Hz, 1 octave wide.

Air
Enhances the edges and air around vocals, strings, etc.
Helps bring vocals forward. Fixed Band of High Boost
Flat to 9KHz, +1dB/10KHz,+10dB/20KHz.
Accurate phase up to 20KHz and no dip below the boost band.

Compress/Limit
Transparently reduces dynamic peaks in program material.
Applies ultra fast FET soft-knee limiting with faithful harmonics and sparkling linear phase. Compress control varies compression ratio and threshold together so that more input signal results in more compression with peaks maintained at around -12dBFS. Great for airy vocals, or producing tight, level bass tracks. Loves being driven super hard.
Attack=5uS~2.5mS Release=50mS~1.3 Sec.
Limit LED glows dynamically as limiting occurs, and reaches full illumination at the maximum gain reduction of -22dB.
Left and Right channel FETs are hand-matched for seemless alignment of stereo image.

Monitor Station
Central listening control section.
Mix local audio at zero latency with DAW playback or other source and send all via separate master faders to Phones and/or Studio Monitor outputs 1 & 2.
Playback input 3 is configured to receive TRS headphone output from your smart-phone, which may also be confugured to serve as a talk-back mic.
Headphone amp is designed to drive your phones LOUD.

FRONT PANEL

Input Preamp
Processes all signals from selected inputs.
Silky smooth, mirror balanced, low current discrete transistor design.
Includes P48 for Mic XLR, 20dB Pad, Phase Reverse, 30dB Gain Control Pot, Upper and Lower +0/-3dB (12dB/octave) Bandwidth adjust.

Input Meter
Shows post-gain/pre-EQ input level.
Displays solid VU bar with Peak Level dot above it. Peak hold is 3 sec with 18dB/sec decay.
Units expressed as -dB Full Scale.

De-Ess
Reduces sibilance in Vocals, etc.
Applies natural sounding active FET limiting to the high frequency band. Hz control sets the crossover point. Ess control sets the operating threshold which is tied to and varies with a fast-averaged sample of the full-bandwidth signal. This helps keep the amount of De-Essing consistent regardless of program volume and dynamics.
Attack=0.5mS Release=40mS.
Limit LED glows dynamically as limiting occurs.
Left and Right channel FETs are hand-matched.

Output Fader
Adjusts output level of Channel Strip.

Switchable Output/Compressor/De-Esser Meter

Output Meter
Shows post-fader output level in -dB Full Scale.
Displays solid VU bar with Peak Level dot above it. Peak hold is 3 sec with 18dB/sec decay.
-18dBFS corresponds to +4dBu at XLR output.

Compressor Meter/De-Esser Meter
Direct display of gain reduction in dB.
Displays solid bar with zero LED permanently lit.

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Multi-Region, Three Transformer Power Supply
AC inlet voltage range may be switched after removal of transparent anti-tamper cover. Users should determine the appropriate voltage setting for their country. Three separate power transformers internally supply different parts of the circuitry, helping to reduce magnetic fields and increase isolation.

Stuio Monitor Outputs 1 & 2
Connects to balanced or unbalanced inputs of powered Studio Monitors and sub-woofers, loudspeaker amplifiers, headphone amplifiers, and other devices. Can also be used as a sub-mix output. Level trim pot allows easy micro-alignment of output between professional +4dBu or domestic -10dBV equipment levels, or for instance to align main speakers on output 1 with sub-woofers on output 2. Tip is Hot, Ring is Cold, Sleeve is Shield.

Playback Inputs 1 & 2
Accepts balanced or unbalanced signals from your DAW, CD player, tape player or other device. Input gain switch allows easy alignment of input to professional +4dBu or domestic -10dBV equipment levels. Tip is Hot, Ring is Cold, Sleeve is Shield.

Main XLR Outputs
Connects to your DAW or other balanced or unbalanced Line or Auxiliary level equipment. Output Meter level of -18dBFS corresponds with +4dBu at XLR between pins 2 and 3. Output pad switch reduces that level to -10dBV. Pin 2 is Hot.

Main XLR Inputs
Accepts balanced or unbalanced Microphone or Line level inputs. Pin 2 is Hot.

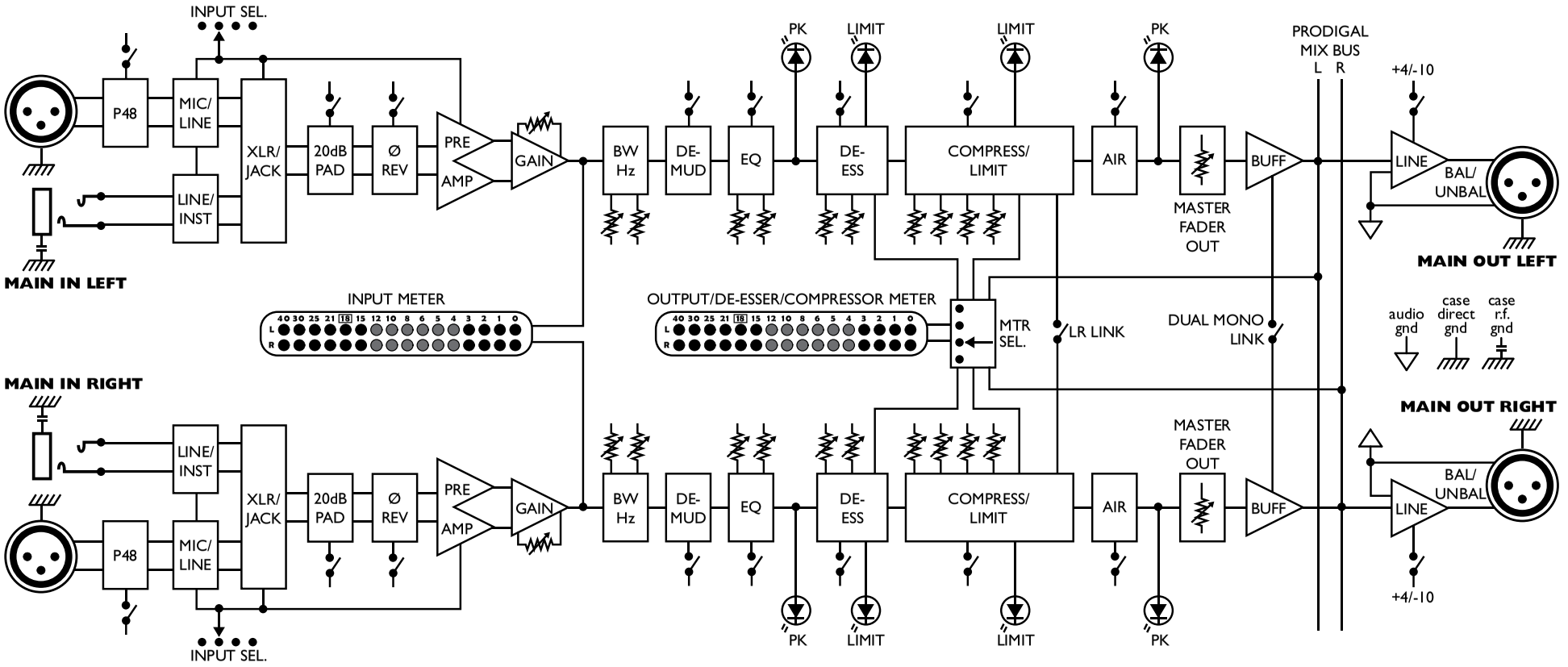
REAR PANEL

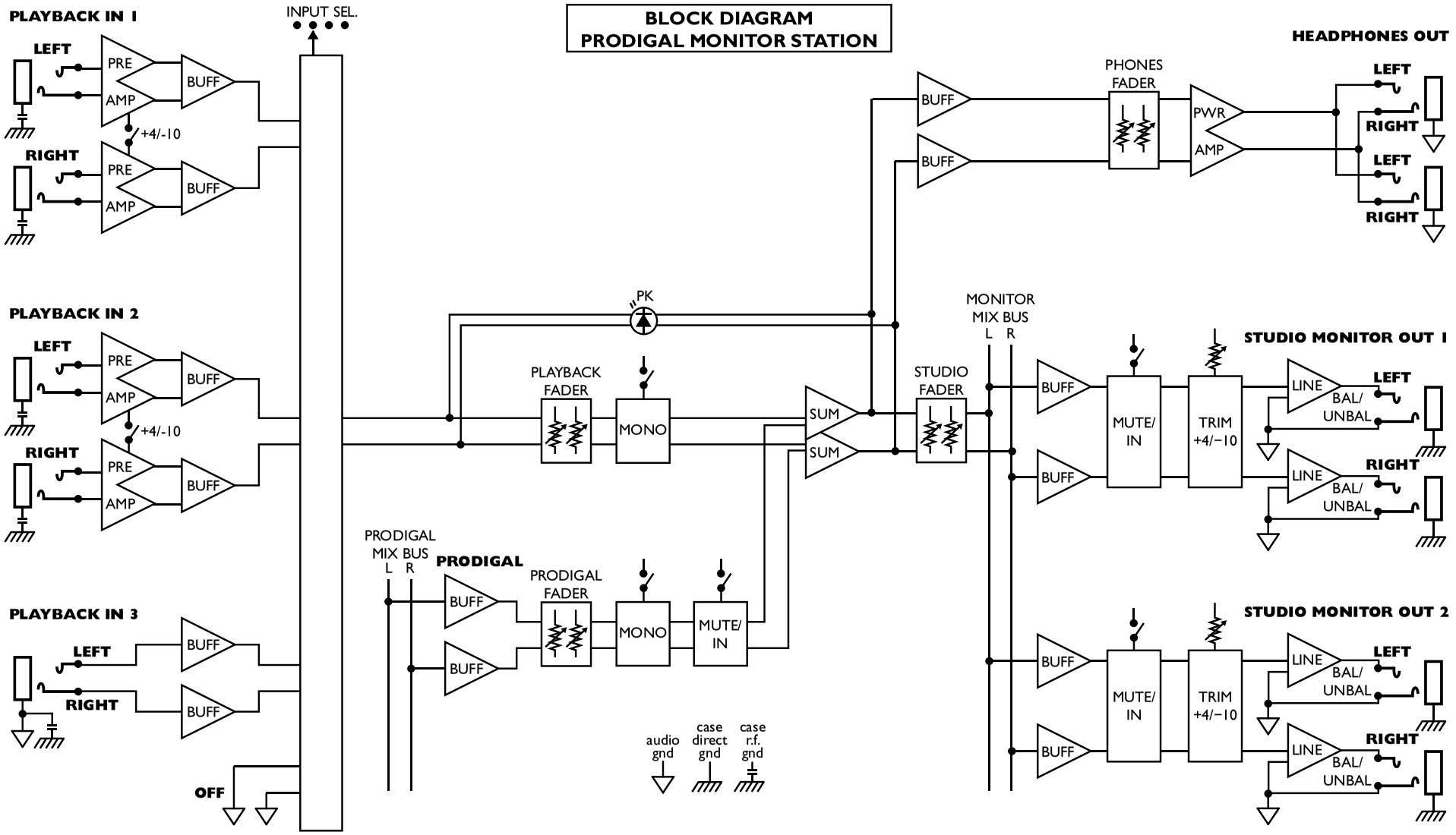
300mm Deep, 3 Rack Unit Metal Enclosure
Users may choose to bolt the Prodigal into a rack, or by incorporating the optional jumbo rubber feet, use it as a table-top unit with room on top for a notebook computer or monitor.
With the further addition of powered speakers, ADC and a good microphone the Prodigal has all it needs to function as the hub of a compact, or even portable, high quality professional recording setup.

Dimensions HxWxD:
Overall: 132mm x 482mm x 339mm
Brushed Aluminium Front Panel: 132mm x 482mm x 3mm
Brass Plated Rack Ears: 132mm x 47mm x 3mm
Powdercoated Zinc Enclosure: 126mm x 430mm x 300mm

AC Power:
Power consumption: 40W max
AC Voltage Required: 110-120VAC or 220-240VAC
Designed to meet or exceed necessary Australian and International Safety Standards: AS/NZS3820, AS/NZS60065, IEC60065

BLOCK DIAGRAM
PRODIGAL CHANNEL STRIP




BLOCK DIAGRAM
PRODIGAL MONITOR STATION
PLAYBACK IN 1
LEFT
RIGHT
PRE
AMP
BUFF
+4/-10
INPUT SEL.
PLAYBACK IN 2
PLAYBACK IN 3
OFF
PK
PLAYBACK FADER
MONO
SUM
PRODIGAL MIX BUS L R
PRODIGAL
PRODIGAL FADER
MUTE/ IN
audio gnd
case direct gnd
case r.f. gnd
MONITOR MIX BUS L R
STUDIO FADER
HEADPHONES OUT
PHONES FADER
PWR AMP
STUDIO MONITOR OUT 1
STUDIO MONITOR OUT 2
TRIM +4/-10
LINE
BAL/ UNBAL

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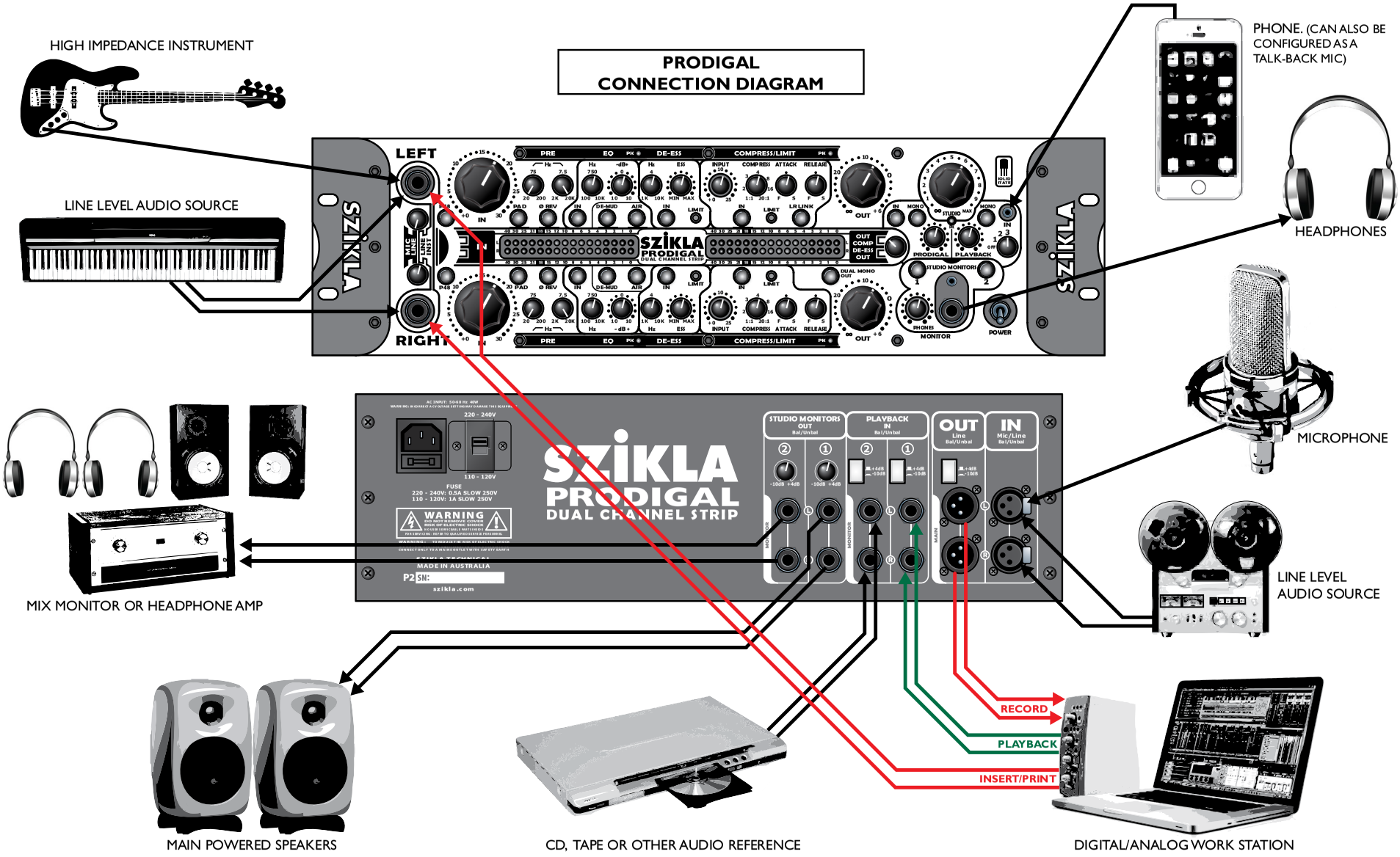
PRODIGAL CONNECTION DIAGRAM



PRODIGAL MAIN INPUTS

QUICK START:

Main Inputs for the Prodigal:

- Rear XLR at Microphone or Line level
- Front TRS Jack for Line device or Instrument. - A Front TRS Jack is also a useful place to run a channel of playback from your work-station for processing and printing back into your mix.

All inputs accept balanced or unbalanced connections, according to the following standard

XLR pin 2 Hot, 3 Cold, 1 Shield

TRS JACK Tip Hot, Ring Cold, Shield

Inputs are selected via front panel Left and Right Rotary Input Selector Switches.

MORE DETAIL:

See MAIN INPUT SELECTORS section.

PRODIGAL MAIN OUTPUT

QUICK START:

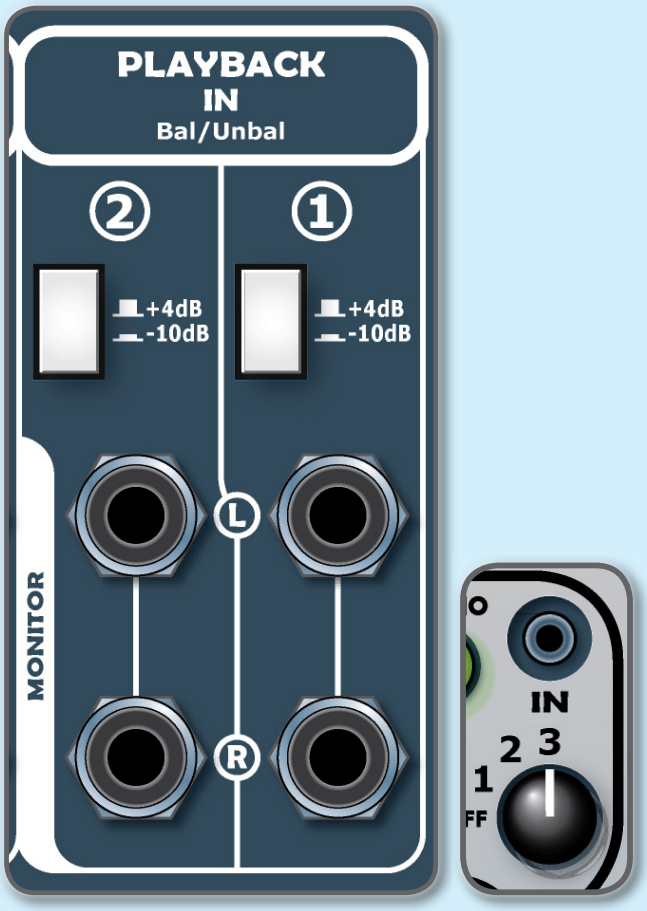
The Main XLR Output connects to your DAW or other Line or Auxiliary level equipment.

This output can operate balanced or unbalanced: pin 2 Hot, 3 Cold, 1 Shield.

+4dB/–10dB button sets the nominal output level which should be selected to match the input sensitivity of the downstream device. Output Meter level of –18dBFS corresponds to a level between XLR pins 2 and 3 of +4dBu, or –10dBV when button is depressed.

These XLRs are always connected downstream of the main Output Faders, and can be muted by rotating the respective Left or Right OUT knob fully anticlockwise. It is usually more convenient to mute Prodigal audio at the channel input of the downstream device.

PLAYBACK MONITOR INPUTS



QUICK START:

The Playback Monitor Inputs allow you to monitor playback from your DAW and other devices.

PLAYBACK IN 1 and 2 TRS Jack inputs accept Line or Auxiliary level balanced or unbalanced connections: Tip Hot, Ring Cold, Shield. Plug your DAW into one of these.

+4dB/-10dB button sets the nominal input level which should be selected to match the output level of the DAW or other input device.

PLAYBACK IN 3 Mini-Jack input is configured to receive the stereo headphone signal from a mobile phone or personal music player, Tip Left, Ring Right, Shield Common.

Inputs are selected via front panel PLAYBACK Rotary Input Selector Switch.

MORE DETAIL:

See PLAYBACK MONITOR INPUT in MONITOR section.

STUDIO MONITOR OUTPUTS

QUICK START:

The Studio Monitor Outputs allow your Monitor Mix to be sent to external speakers, subwoofers, headphone amplifiers, submix recorders and any other Line or Aux level device.

STUDIO MONITORS OUT 1 and 2 TRS Jack outputs can operate balanced or unbalanced: Tip Hot, Ring Cold, Shield.

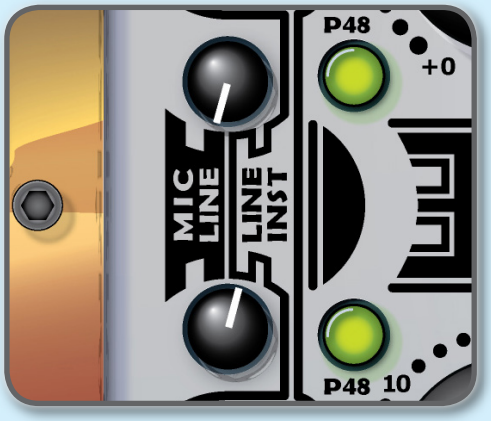
+4dB/-10dB knob sets the nominal output level and should be trimmed to match the input sensitivity of the downstream device, normally +4dBu or -10dBV. Variable potentiometers are provided rather than switches to make it easier to match levels between two different downstream devices, such as say a pair of powered speakers on Output 1 and a subwoofer on Output 2.

Outputs are selected via front panel STUDIO MONITORS 1 & 2 buttons.

MORE DETAIL:

See STUDIO MONITOR OUTPUTS in MONITOR section.

MAIN INPUT SELECTORS



QUICK START:

The Main Input Selectors are rotary switches that select:

- Rear XLR at Microphone or Line level
- Front TRS Jack for Line device or Instrument

All inputs can accept balanced or unbalanced connections.

MIC position selects Rear XLR at high gain for microphones.

LINE position selects Rear XLR at low gain for line level devices.

LINE position 2 selects Front TRS Jack at low gain for line level devices.

INST position selects Front TRS Jack at low gain for direct inject of high impedance instruments.

MORE DETAIL:

The Main Input Selectors are rotary switches that select:

- Rear XLR at Microphone or Line level
- Front TRS Jack for Line device or Instrument

All inputs can accept balanced or unbalanced connections.

Input switching is done via relays to reduce the signal path and maintain high quality. No audio passes through the Input Selector Switch.

MIC position selects Rear XLR at high gain for microphones. Input impedance is set for 1.3kΩ, and Pin 2 is Hot.

LINE position selects Rear XLR at low gain for line level devices. Input impedance is set for 11kΩ, and Pin 2 is Hot.

LINE position 2 selects Front TRS Jack at low gain for line level devices. Input impedance is set for 10kΩ. Tip is Hot, Ring is Cold. The Rear XLR is the preferred input for line level devices, as it can cope with input signals of up to +42dBu, compared with a maximum of +22dBu here due to differences in input buffering. But the accessibility of the Front TRS Jack makes it somewhat more convenient and useful for plugging in a line level instrument such as a keyboard. It is also a handy place to run a channel of playback from your workstation for processing and printing back into your mix.

INST position selects Front TRS Jack at low gain for instruments with high impedance pickups. Input impedance is set for 1MΩ to suit bass guitars, mandolins etc.

PHANTOM POWER

QUICK START:

48V Phantom Power is available for microphones.

P48 button activates Phantom Power after a 10 second soft ramp-up time. Phantom Power is only available from the XLR MIC input.

MORE DETAIL:

The Prodigal is capable of supplying 48V Phantom Power to microphones or other microphone-level devices.

P48 button activates the Phantom Power circuit which, after a 10 second soft ramp-up time, makes +48 Volts DC available on pins 2 and 3 of the Rear Main XLR Input, via a DC supply network with an impedance of 6.8kΩ per pin.

Whenever the P48 button is switched on, its LED will glow, indicating that P48 is ready to be supplied to the XLR. However, Phantom Power will only be supplied to the XLR when the input is switched to MIC, and is not available when the input is switched to LINE. Phantom Power is never available from the Front Jack inputs.

The activation of Phantom Power does not affect the impedance of the microphone input.

PREAMPLIFIER

QUICK START:

All input signals pass through the Preamplifier.

IN knob provides 30dB of variable gain. Adjust so the Input Meters show as much signal level as possible without danger of clipping.

PAD button cuts input signal by 20dB. Use when the IN knob is all the way down but you still have too much level.

Ø REV Phase Reverse swaps the hot and cold pins of your input source. Not used a lot, but helps correct phase errors between microphones etc that do not agree.

Hz knobs control bandwidth at the Preamplifier's output. Normally left at 20Hz-20kHz unless you want to cut some highs or lows.

MORE DETAIL:

After input switching, all signals pass through the Preamplifier and receive various levels of amplification depending on the input selected. A signal of suitable amplitude can then be passed to the following circuitry.

IN knob provides an additional 30dB of variable gain. A good start is to adjust the signal so the Input Meters show as much level as possible without danger of clipping. A generous signal level at this point will give you the best signal to noise performance, and also more flexibility with dynamics processing in the De-Esser and Compressor sections downstream.

PAD button lowers the level of the input signal by 20dB before it hits the Preamplifier, which helps deal with loud sources. Use when the IN knob is all the way down but you still have too much level.

Ø REV Phase Reverse also resides before the Preamplifier input. This button swaps the hot and cold pins of your input source (pins 2 and 3 of the XLR, Tip and Ring of the Jack), which turns the waveform upside down. Helps correct phase errors between microphones etc that do not agree, such as the top and bottom mic on a snare drum.

Hz knobs control bandwidth at the Preamplifier's output. Normally 20Hz-20kHz, lower cut-off is sweepable up to 200 Hz and upper cut-off down to 2kHz to help eliminate any undesirable out-band audio prior to EQ and dynamics processing. No more thumpy mandolins and tinkly tubas. Physics tells us that less bandwidth also means less noise, and usually you get a tighter sound to boot.

TECH:

The Preamplifier is an extremely low current, low noise, balanced transistor design. Transistors are hand matched for best performance, and the overall sound is silky and smooth.

Inputs to the Prodigal are electronically balanced and no audio transformers are used. Input impedance and overall Preamplifier gain are different for each Input Selector position, and switching is done via relays to reduce the signal path and maintain high quality. No audio passes through the Input Selector Switch.

IN control provides 30dB of user adjustable gain. A linear potentiometer controls specially designed logarithmic circuitry to give accurate and even adjustment throughout the whole 30dB range.

PAD button cuts the input signal by 20dB before it hits the Preamplifier.

Ø REV Phase Reverse also resides before the Preamplifier input. This button swaps pins 2 and 3 of the XLR, and Tip and Ring of the Jack.

Hz control sets bandwidth at the Preamplifier's output, and are marked according to the -3dB down point. Lower cut-off is adjustable from 20Hz to 200 Hz, and upper cut-off is adjustable from 2kHz to 20kHz. Roll off is 12dB per octave, bessel, under-damped by 1dB at the upper and lower knee.

EQUALISATION SECTION

QUICK START:

Frequency response can be tailored using the EQ, DE-MUD and AIR filters.

- **EQ:**

Hz knob selects any frequency between 100Hz and 10kHz.

-dB+ knob cuts or boosts the selected frequency by up to 10dB.

IN button activates the EQ. When button is out, this section is bypassed. IN button does not affect DE-MUD or AIR sections.

- **DE-MUD and AIR:**

DE-MUD filter produces a cleaner sounding take, especially on microphones in a live room. Cuts muddy yuck at 300Hz by 3dB. When button is out, this section is bypassed.

AIR filter accentuates the edges of a sound by boosting the airy high frequencies, adding definition, clarity and presence. When button is out, this section is bypassed.

MORE DETAIL:

Following preamplification, frequency response can be tailored using the EQ, DE-MUD and AIR filters.

EQ consists of a single band of sweepable cut and boost, for accentuating or suppressing important frequencies in a performance.

Hz knob selects any frequency between 100Hz and 10kHz.

-dB+ knob cuts or boosts the selected frequency by up to 10dB, with a roll-off of 12dB per octave above and below. Q=0.33 is constant, so at plus or minus 3dB the bandwidth is 3.5 octaves. The roll-off slope remains constant with additional boost or cut.

IN button activates the EQ. When button is out, this section is bypassed. The IN button does not affect DE-MUD or AIR sections.

DE-MUD button activates the DE-MUD filter, which produces a cleaner sounding take, especially on microphones in a live room. Response is a fixed Q=1, or 1.4 octaves wide 3dB cut, centred at 300Hz. Not a lot of music happens at 300Hz, but some rooms are very peaky at that frequency and can make recordings sound a little muddy. Such tracks can also sum together unfavourably in a mix. Cutting 300Hz on a vocal take is a popular move for many engineers. When button is out, this section is bypassed.

AIR button activates the AIR filter, which accentuates the edges of a sound, adding definition, clarity and presence. Helps push a vocal performance forward in the stereo image. Response is flat below 9kHz, up 1dB at 10kHz, and up 10dB at 20kHz. In the signal chain, the AIR section is positioned after the DE-ESSER and COMPRESSOR so that their dynamics are not in danger of being triggered by the boosted highs. When button is out, this section is bypassed.

TECH:

The EQ section allows 10dB of cut or boost across 6.5 octaves from 100Hz to 10kHz. The filter type is constant Q=0.33, and the roll-off is 12dB per octave above and below the selected frequency. Constant Q of 0.33 means at plus or minus 3dB the bandwidth is 3.5 octaves, and at plus or minus 10dB the bandwidth is slightly under 5 octaves.

DE-MUD filter produces a 1.4 octave wide 3dB cut, centred at 300Hz.

AIR filter produces a response which is flat below 9kHz, up 1dB at 10kHz, and up 10dB at 20kHz.

DE-ESSER

QUICK START:

The De-Esser applies fast limiting to sibilant "essy" content in the audio signal.

Hz knob. Set from 1kHz to 10kHz. During De-Essing, frequencies above this setting are limited, and frequencies below are not. Start around 7kHz.

ESS knob. Clockwise sounds more "essy", and anticlockwise less. Start around the half-way mark and go for what sounds natural.

IN button activates the De-Esser. When button is out, this section is bypassed. Use it to compare.

LIMIT LED shows when the De-Esser is working, and gets brighter with increased limiting. For a detailed look, switch the Output Meter to DE-ESS position.

MORE DETAIL:

Following the Equalisation Section is the Dynamics Section, at the head of which is the De-Esser.

Microphones can have issues processing sibilant content from the human voice, flutes and other wind instruments, and this "essy" content can frequently sound harsh and over-emphasised. The De-Esser applies fast dynamic limiting to such material to help reduce its level in comparison to the main body of the performance, resulting in a more natural sound.

Hz knob selects the frequency band in which the De-Esser operates, and may be set anywhere between 1kHz and 10kHz. When De-Essing occurs, frequencies above this setting will be affected, and lower frequencies will not. Try to set this control to just underneath the "essy" frequency, so as to limit sibilance while leaving as much of the main signal as possible unaffected. A suitable starting point might be about 7kHz, as most "essy" sounds occur above that point. From there you can rotate anticlockwise as required.

ESS knob controls how much sibilance gets through to the output. Turning clockwise the program will be more "essy", and anticlockwise less "essy". A suitable starting point might be around the half-way mark. In the background, the threshold circuitry is constantly sampling, comparing, and adjusting itself to the overall full-bandwidth signal. The result is that once the ESS knob is set, a comparatively proportional amount of de-essing can be expected regardless of program volume or dynamics. The goal is a result that sounds natural, so beware of setting this control too low and punching a hole in your highs.

IN button activates the De-Esser. When button is out, this section is bypassed. Using this button can also be a handy way of comparing the original sound with the processed result.

LIMIT LED provides quick and handy feedback of De-Esser operation. It activates after 1dB of gain reduction, and gets brighter as more limiting occurs. If detailed monitoring is required, the Output Meter may be switched to DE-ESS position. (See also OUT/COMP/DE-ESS Meter)

TECH:

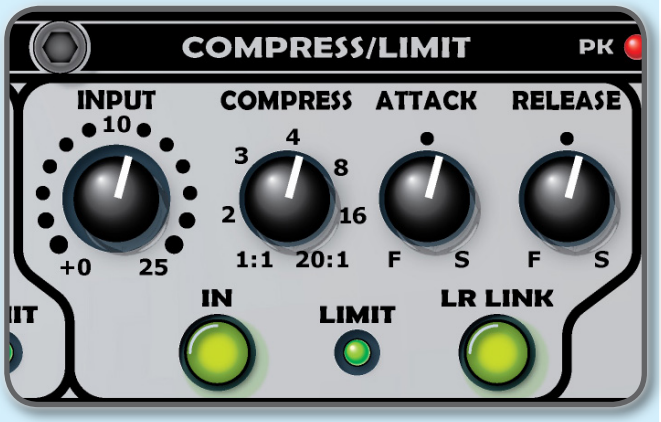
The Prodigal De-Esser consists of a bandwidth restricted FET limiter, with user controlled crossover point and threshold adjustment. In each Prodigal the FET transistors are hand matched so that Left and Right channels operate identically. The limiter action is soft knee, 20:1 ratio, 0.5mS attack and 40mS release. Maximum "ess" reduction is 22dB.

Hz control is a 12dB/octave crossover, sweepable from 1kHz to 10kHz. The low band is bypassed and the high band is sent to the limiter.

ESS control defines the threshold above which limiting occurs. The range is all the way from ground (MIN) to the power rails (MAX). A portion of the full bandwidth signal is rectified and added to the threshold voltage, so that the threshold will be higher during louder passages. This helps keep processing proportional during passages of varying level.

Monitoring is available via LIMIT LED and Output DE-ESS meter.

COMPRESSOR/LIMITER



QUICK START:

The Compressor/Limiter reduces dynamic peaks in program material.

INPUT knob. More input results in more compression. Start at around +10, and keep your Prodigal input levels up.

COMPRESS knob controls both compression ratio and threshold level. Choose a ratio and rotate the INPUT knob to push more signal into compression. Threshold levels are arranged so that peaks are maintained around -12dBFS. Try 3:1 for guitars, 4:1 for vocals, 8:1 for bass, 16:1 for snare drum, 20:1 for drum room.

ATTACK knob controls how quickly audio is compressed. F=Fast and S=Slow. Fast is good for bus limiting. Slower is less abrupt, and lets leading edges through. It can be hard to hear the difference so start at half rotation.

RELEASE knob controls how quickly the Compressor restores itself. F=Fast and S=Slow. Try setting RELEASE so the Compressor recovers from one event just before it gets to the next. ie the next vocal phrase, or the next bass guitar note. Start with this knob at half rotation.

LIMIT LED shows when the Compressor/Limiter is working, and gets brighter with increased limiting. For a detailed look, switch the Output Meter to COMP position.

LR LINK button links both the Left and Right channel Compressors so that they operate in unison, which is useful for stereo. Try to match the settings on each channel, as there is no master, and one side affects the other. Normally the LR LINK button is not used.

IN button activates the Compressor/Limiter. When button is out, this section is bypassed. Use it to compare.

MORE DETAIL:

The Compressor/Limiter reduces dynamic peaks in program material. It is very fast and uses a FET transistor as its active element. Unlike some other FET compressors the Prodigal does not sound squashed or crunchy when driven hard, but maintains a crystal clear transparency and warmth regardless of the level of gain reduction.

The purpose of compression is to get a big fat sound that can sit prominently in a mix. The purpose of limiting is to prevent a sound you already like from running out of headroom. They are really both the same thing, but when a small amount is used to prevent bus clipping it is typically referred to as 'Limiting', and when a lot is applied so that it changes the sound it is generally regarded as 'Compression'.

INPUT knob controls how much signal is driven into the Compressor/Limiter to be available for gain reduction. More input results in more compression, and turning this knob clockwise provides up to 25dB of additional level beyond what is available from the channel bus.

COMPRESS knob simultaneously controls both the compression ratio and the threshold level. When a signal's level exceeds the threshold, gain reduction is applied to the whole signal according to the ratio which has been selected, and the amount by which the signal exceeds the threshold. For instance, when the COMPRESS knob is set to 20:1 a signal which exceeds the threshold by 20dB would be reduced to a level which exceeds the threshold by only 1dB. At 1:1 there is no compression action, and the output will equal the input. The set thresholds vary with ratio and have been carefully chosen so that comfortably high levels are maintained throughout the signal chain. Once a suitable ratio has been chosen, the INPUT knob is used to manage how much of the input signal is driven over the threshold and into compression. In normal usage peaks are maintained at around -12dBFS on the Output Meter when the Output Fader is at '0'. Try 3:1 for guitars, 4:1 for vocals, 8:1 for bass, 16:1 for snare drum, 20:1 for drum room limiting.

ATTACK knob controls how quickly the Compressor snaps into action after a signal crosses the threshold. F=Fast and S=Slow. Fast is 5uS, which means a 20kHz sine wave will trigger less than half way up its leading edge, which is great for limiting of content with fast transients. Slower attack times can make the compression action less abrupt, and allow the first percussive edge of a sound to pass through before compression takes

place, which may be desirable for drums, guitar, piano, etc. Slow is 2.5mS. It can be hard to hear the difference so start at half rotation.

RELEASE knob controls how quickly the Compressor restores itself after a gain reduction event. F=Fast and S=Slow. (50mS to 1.35 Sec). If set too fast the program can sound like it is pumping. If set too slow the Compressor will not be ready for the next event, and the program can sound tired and squashed. In common usage the RELEASE time would be set so the Compressor recovers from one event just before it attends to the next. For a vocal this might be the next phrase, and for a bass guitar this might be the next note. Start with this knob at half rotation.

LIMIT LED activates after 1dB of gain reduction, and gets brighter as more limiting occurs, providing quick and handy feedback. If more detailed monitoring is required, the Output Meter may be switched to COMP position.

COMP Meter. Switch the Output Meter to COMP to get quantifiable feedback of the limiting action. When using the COMP Meter the -0dBFS LED is always lit, and the amount of gain reduction is displayed as a reverse solid bar.

LR LINK button is located in the Left COMPRESS/ LIMIT section, and its purpose is to link both the Left and Right channel Compressors so they operate in unison which can be useful for stereo signals. When used in this mode, care should be taken to match the settings on each channel as there is no master channel and one side will influence the other. The ATTACK and COMPRESS knobs remain independent, but once triggered both Left and Right gain reduction elements and RELEASE controls are linked and will compress and release in unison. RELEASE time will be determined by the faster of the two controls.

Another use of the LR LINK button is to use one channel of the Prodigal as a side chain to trigger gain reduction on the other channel. An example would be running a music track through the Left channel, with COMPRESS set to 1:1, and ATTACK and RELEASE both full clockwise to Slow. All gain reduction action would then be dictated by the Right channel control settings. If the Right channel carries a speech signal, with say 6dB of gain reduction, this would also reduce the Left channel by 6dB so the music would automatically duck during speech and return to normal thereafter.

IN button activates the Compressor/Limiter. When button is out, this section is bypassed. Using this button can also be a handy way of comparing the original sound with the processed result.

TECH:

The Prodigal Compressor/Limiter is very fast and uses a FET transistor as its active control element. In each Prodigal the FET transistors are hand matched so that Left and Right channels operate identically. The limiter action is soft knee, and maximum gain reduction is 22dB.

INPUT control provides up to 25dB of additional level beyond what is available from the channel bus.

COMPRESS control simultaneously adjusts both the compression ratio and the threshold level. For each compression ratio the corresponding threshold level is outlined in the table below. Levels are expressed in -dB Full Scale and correspond to the Output Meter when the Output Fader is positioned at '0'.

Threshold Levels in -dB Full Scale:

1:1 = N/A
2:1 = -34dBFS
3:1 = -26dBFS
4:1 = -22dBFS
8:1 = -17dBFS
16:1 = -15dBFS
20:1 = -14dBFS

With regard to the above thresholds and the soft knee action of the limiter; in normal usage and for any ratio between 3:1 and 20:1 an input signal of around -2dBFS could be expected to produce an output signal of around -12dBFS (ie, 10dB of gain reduction).

ATTACK control range is from 5 microseconds to 2.5 milliseconds.

RELEASE control Range is from 50 milliseconds to 1.35 seconds.

Monitoring is available via LIMIT LED and Output COMP Meter.

OUTPUT FADER

QUICK START:

The Output Fader is the final level control to the XLR Output and the Monitor Input.

OUT knob default position is '0'. When channel is not in use set to '∞' to mute output.

DUAL MONO OUT button turns Left and Right signals into a Mono mix on both outputs.

MORE DETAIL:

The Output Fader is the final level control in the Prodigal Channel Strip, and determines the bus level to the Main XLR Output and the Prodigal Monitor Station Input.

OUT knob is the Output Fader which provides between +6dB of gain all the way down to a full channel mute. Normal operating position is '0' to provide unity gain from channel bus to mix bus. Can be adjusted up or down when using the Compressor/Limiter if 'make-up' gain is needed. When channel is not in use set to '∞' to mute the output.

DUAL MONO OUT button turns stereo Left and Right into a Mono mix on both outputs. The mix is monoed *after* the OUT knob, so each fader can be used to control its own Mono level.

TECH:

The Prodigal employs the standard that when two signals are monoed they are first cut by 6dB and then added together, which more often than not raises their combined level by the same 6dB. So when switching between stereo and mono there is generally no discernible change in level, nor decrease in available headroom due to the summing of the two busses.

INPUT METER

OUT/COMP/DE-ESS METER

QUICK START:

The Input Meter displays the level after the Input Gain (IN knob) in -dBFS.

A solid bar of VU indicates the average level on the bus, and Peak Dot above it indicates available headroom.

Adjust IN knob so the Input Meter shows as much signal level as possible without danger of clipping.

MORE DETAIL:

The Input Meter is a 16 stage LED level meter marked in -dB Full Scale (-dBFS). It displays the signal level on the channel bus after the Input Gain control (IN knob) and before the Bandwidth, EQ and Dynamics stages (see block diagram elsewhere in this document). It is recommended that the IN knob be adjusted so the Input Meter shows as much level as possible without danger of clipping. A generous signal level at this point will give you the best signal to noise performance, and also more flexibility with dynamics processing in the De-Esser and Compressor sections later.

The Input Meter displays a solid bar of VU with a Peak Dot floating above it. VU indicates the average signal level on the bus, and ballistics reflect the VU standard of 300mS Full Scale attack and 300mS decay. Peak Dot indicates the amount of headroom available. Attack is instantaneous, with 3 second hold and 18dB/sec decay.

Nominal channel bus level is -18dBFS. When the Output Fader is set to '0' this corresponds to a mix bus level on the Output Meter of -18dBFS, which in turn corresponds to an output between pins 2 & 3 of the Main XLR Out of +4dBu (-10dBV, switchable).

QUICK START:

The Output/Compressor/De-Esser Meter is a rotary switch enabled, tri-purpose level meter marked in -dBFS.

OUT Meter displays the signal level after the Output Fader (OUT knob).

A solid bar of VU indicates the average level on the bus, and Peak Dot above it indicates available headroom.

COMP Meter directly displays Compressor/Limiter gain reduction as a reverse solid bar. -0dBFS LED is always lit.

DE-ESS Meter directly displays De-Esser gain reduction as a reverse solid bar. -0dBFS LED is always lit.

MORE DETAIL:

The Output/Compressor/De-Esser Meter is a tri-purpose 16 stage LED level meter marked in -dB Full Scale (-dBFS). A rotary switch enables selection of the various sources.

OUT displays the signal level on the mix bus after the Output Fader (OUT knob) and before the Main XLR Output and the Prodigal Monitor Input (see block diagram elsewhere in this document).

The Output Meter displays a solid bar of VU with a Peak Dot floating above it. VU indicates the average signal level on the bus, and ballistics reflect the VU standard of 300mS Full Scale attack and 300mS decay. Peak Dot indicates the amount of headroom available. Attack is instantaneous, with 3 second hold and 18dB/sec decay.

Nominal mix bus level is -18dBFS, which corresponds to an output between pins 2 and 3 of the Main XLR Out of +4dBu (-10dBV, switchable).

COMP displays a direct representation of Compressor/Limiter gain reduction activity, with no artificial ballistics applied. In this setting the -0dBFS LED is always lit, and the amount of limiting is displayed as a reverse solid bar.

DE-ESS displays a direct representation of De-Esser gain reduction activity, with no artificial bal-

listics applied. In this setting the -0dBFS LED is always lit, and the amount of limiting is displayed as a reverse solid bar.

Before tracking is commenced it is recommended that the Main XLR Output of the Prodigal and the Line or Aux level (*NOT* MIC) Input Stage of your DAW or other recording device be aligned so that the Prodigal Output Meter and the recording channel input meter both agree. When they are thus aligned, your gain structure will be optimised and the Prodigal Output Meter will be semi-redundant, as it is now just as useful to use the recording channel meter to monitor overall level. That means that during tracking it is possible to make COMP or DE-ESS the view of choice, switching to look at the Output Meter only when necessary.

PEAK LED INDICATORS

QUICK START:

There are two Peak LEDs per channel to indicate clipping. If either LED glows, lower the signal level upstream.

MORE DETAIL:

There are two Peak LED Indicators on each Prodigal channel bus which independently warn when the audio signal has run out of headroom, and turn on 4dB before clipping either the positive or negative rail. They respond to levels immediately after the EQ section, and Compressor/Limiter and AIR filter sections (see block diagram elsewhere in this document). The Peak LEDs respond directly to the audio signal level, and no ballistics are applied. If either LED glows it is advisable to lower the signal level somewhere upstream of that LED to avoid channel bus clipping.

MONITOR STATION

INTRODUCTION:

The Monitor Station provides fully independent central control of your listening environment.

Your local performance can be monitored in real time with zero latency, and mixed in studio monitors and/or headphones with audio from your DAW or other playback source.

There is even a special Mini-Jack input for playback from your smart phone headphone output, which may also be used for talk-back if a mic-to-speaker app is installed in your phone.

The various sections of the Monitor Station are discussed individually below. It is recommended that you also look at the Prodigal Connection Diagram, and Prodigal Monitor Station Block Diagram elsewhere in this document.

PRODIGAL MONITOR INPUT

QUICK START:

The Prodigal Monitor Input allows your local performance to be heard in real time with zero latency.

PRODIGAL knob adjusts the monitor level of Prodigal audio. Set around 1~3 o'clock, and use the STUDIO and PHONES knobs to control the listening level.

MONO button centres Prodigal audio in the monitor mix. Try the Prodigal Monitor Input in Mono, with DAW playback in Stereo.

PK LED tells you if the Monitor station is clipping from too much Prodigal or too much Playback. See TECH section below.

IN button activates this section. When the button is out, signal is mute.

MORE DETAIL:

The Prodigal Monitor Input allows your local performance to be monitored in real time with zero latency.

PRODIGAL knob adjusts the input level of buffered audio from the Prodigal mix bus. Full anticlockwise rotation will mute the input. Go for a generous input level around 1~3 o'clock rotation (unity is about 2:30), balance that against audio from the PLAYBACK Input, and use the STUDIO and PHONES knobs to control the overall output level to your listening devices.

MONO button turns Left and Right Prodigal audio into Mono, which puts it in the centre of the monitor mix and the centre of your headphones. When the button is out, the Left performance will be in your left ear, and the Right performance will be in your right ear. When tracking try using this button to centre the performance, with DAW playback in Stereo around it.

PK LED tells you if the Monitor station is clipping from too much Prodigal or too much Playback level. See TECH section below.

IN button activates this section. When the button is out, this section is mute.

TECH:

PRODIGAL control knob unity gain occurs at 220 degrees rotation which is about the 2:30 o'clock mark.

MONO button. The Prodigal employs the standard that when two signals are monoed they are first cut by 6dB and then added together, which more often than not raises their combined level by the same 6dB. So when switching between stereo and mono there is generally no discernible change in level, nor decrease in available headroom due to the summing of the two busses.

PK LED tells you if the Monitor station is overloading from too much PRODIGAL or too much PLAYBACK level. There is 18dB of headroom throughout the Monitor section and the PK LED turns on 4dB before clipping. Sensors are located at the output of the Playback Selector Switch, and the input to the STUDIO Master Fader, which is the node where the Prodigal and Playback inputs are summed together (see block diagram elsewhere in this document). If PK LED glows, full anticlockwise rotation of each input knob should reveal the culprit. If both knobs are wound full anticlockwise and the Peak LED is still glowing, then there is too much pre-fade input level coming into the selected PLAYBACK input. This will be because either a +4 signal is coming into Playback 1 or 2 with the input trim set to -10, in which case the input should be switched to +4; or the output from the source is simply too loud, in which case it should be turned down at the source. Adjustment of the STUDIO or PHONES faders will not affect the PK LED status.

PLAYBACK MONITOR INPUT

QUICK START:

The Playback Monitor Input allows you to monitor playback from your DAW and other devices.

PLAYBACK knob adjusts the input level from the selected playback source. Set around 1~3 o'clock, and use the STUDIO and PHONES knobs to control the listening level.

MONO button. Start with button out (Stereo).

PK LED tells you if the Monitor station is clipping from too much Prodigal or too much Playback. See TECH section below.

IN rotary selector switch selects Playback Inputs 1, 2 or Mini-Jack Input 3. When the switch is OFF, this section is mute.

MORE DETAIL:

The Playback Monitor Input allows you to monitor playback from your DAW and other devices.

PLAYBACK knob adjusts the input level of audio from the selected playback source. Full anticlockwise rotation will mute the input. Go for a generous input level around 1~3 o'clock rotation (unity is about 2:30), balance that against audio from the PRODIGAL Monitor Input, and use the STUDIO and PHONES knobs to control the overall output level to your listening devices.

MONO button changes Playback audio to Mono, which puts it in the centre of the monitor mix. Start with button out (Stereo).

PK LED tells you if the Monitor station is clipping from too much Prodigal or too much Playback level. See TECH section below.

IN (OFF, 1, 2, 3) rotary selector switch allows you to monitor input from Playback Inputs 1 or 2 on the rear panel, and Playback MIni-Jack Input 3 on the front panel. When the switch is rotated to OFF, this section is mute.

Playback Inputs 1 and 2 are configured to receive audio from your DAW or any other Line or Aux level audio device.

Playback Input 3 is a Stereo Mini-Jack designed to receive audio from the headphone socket of a mobile phone or personal music player. Input 3 is terminated in 68Ω which approximates the impedance of most ear-bud headphones.

In situations where engineer and performer are physically isolated, Playback Input 3 may also be used as a talk-back input simply by connecting a smart-phone with a mic-to-speaker app installed.

TECH:

PLAYBACK control knob unity gain occurs at 220 degrees rotation which is about the 2:30 o'clock mark.

MONO button. The Prodigal employs the standard that when two signals are monoed they are first cut by 6dB and then added together, which more often than not raises their combined level by the same 6dB. So when switching between stereo and mono there is generally no discernible change in level, nor decrease in available headroom due to the summing of the two busses.

PK LED tells you if the Monitor station is overloading from too much PRODIGAL or too much PLAYBACK level. There is 18dB of headroom throughout the Monitor section and the PK LED turns on 4dB before clipping. Sensors are located at the output of the Playback Selector Switch, and the input to the STUDIO Master Fader, which is the node where the Prodigal and Playback inputs are summed together (see block diagram elsewhere in this document). If PK LED glows, full anticlockwise rotation of each input knob should reveal the culprit. If both knobs are wound full anticlockwise and the Peak LED is still glowing, then there is too much pre-fade input level coming into the selected PLAYBACK input. This will be because either a +4 signal is coming into Playback 1 or 2 with the input trim set to -10, in which case the input should be switched to +4; or the output from the source is simply too loud, in which case it should be turned down at the source. Adjustment of the STUDIO or PHONES faders will not affect the PK LED status.

STUDIO MONITOR OUTPUTS

QUICK START:

The Studio Monitor Outputs allow your Monitor Mix to be sent to external speakers, submix recorders, etc.

STUDIO knob adjusts the Mix level sent to Studio Monitor Outputs, and is the main listening level control. Start full anticlockwise, which will mute the signal. Slowly rotate clockwise until suitable listening level is reached. Adjust rear panel output trim and downstream devices for comfortably loud level around 1~3 o'clock. The STUDIO knob and the PHONES knob do not affect each other.

PK LED tells you if the Monitor station is clipping from too much Prodigal or too much Playback. See TECH section below.

STUDIO MONITORS 1 & 2 buttons activate the respective Studio Monitor Outputs on the rear panel. When the button is out, signal is mute in that Output.

MORE DETAIL:

The Studio Monitor Outputs allow your Monitor Mix to be sent to external speakers, subwoofers, headphone amplifiers, submix recorders and any other Line or Aux level device.

STUDIO knob is the final Master Fader which adjusts the level of Monitor Mix audio sent to both Studio Monitor Outputs, and is intended to be used as the main listening level control. Start at full anticlockwise rotation, which will mute the signal. Slowly rotate clockwise until a suitable listening level is reached. Adjust the rear panel output trim so that it matches the input standard for the downstream device, and then adjust the downstream device so that a comfortably loud level occurs when the STUDIO, PRODIGAL and PLAYBACK knobs are all at 1~3 o'clock rotation. This will result in the best headroom and signal to noise behaviour throughout the entire system, and provide the operator with maximum flexibility over playback levels. Both the STUDIO knob and the PHONES knob operate independently, and adjustment of either control will not affect the other.

PK LED tells you if the Monitor station is clipping from too much Prodigal or too much Playback level. See TECH section below.

STUDIO MONITORS 1 & 2 buttons activate output to the respective Studio Monitor Output on the rear panel. When the button is out, signal is mute in that Output.

TECH:

STUDIO fader knob unity gain occurs at 220 degrees rotation which is about the 2:30 o'clock mark.

PK LED tells you if the Monitor station is overloading from too much PRODIGAL or too much PLAYBACK level. There is 18dB of headroom throughout the Monitor section and the PK LED turns on 4dB before clipping. Sensors are located at the output of the Playback Selector Switch, and the input to the STUDIO Master Fader, which is the node where the Prodigal and Playback inputs are summed together (see block diagram elsewhere in this document). If PK LED glows, full anticlockwise rotation of each input knob should reveal the culprit. If both knobs are wound full anticlockwise and the Peak LED is still glowing, then there is too much pre-fade input level coming into the selected PLAYBACK input. This will be because either a +4 signal is coming into Playback 1 or 2 with the input trim set to -10, in which case the input should be switched to +4; or the output from the source is simply too loud, in which case it should be turned down at the source. Adjustment of the STUDIO or PHONES faders will not affect the PK LED status.

HEADPHONES OUTPUT

QUICK START:

The Headphones Output allows your Monitor Mix to be sent to one or two pairs of headphones via the front panel Jack and/or Mini-Jack output connectors.

PHONES knob is the final Master Fader which adjusts the level of Monitor audio sent to the Headphone Jack Outputs. Start at full anticlockwise rotation, which will mute the signal. Slowly rotate clockwise until a suitable listening level is reached.

WARNING:
PRODIGAL HEADPHONE AMPLIFIER OUTPUT LEVELS CAN DAMAGE HEARING !
TURN HEADPHONE VOLUME UP SLOWLY WHEN MAKING ADJUSTMENTS.

The STUDIO knob and the PHONES knob do not affect each other.

JACK & MINI-JACK outputs provide a convenient choice of headphone connector types, as well as the opportunity to drive two sets of headphones at the same time.

TECH:

JACK & MINI-JACK outputs are parallel outputs of the same amplifier and are not separately adjustable. If more than two sets of headphones need to be employed, consider using an additional headphone amplifier via one of the rear Studio Monitor Outputs.

SYSTEM ALIGNMENT

INTRODUCTION:

Before tracking is commenced, the Main XLR Output of the Prodigal and the Line or Aux level (*NOT* MIC) Input Stage of your DAW or other recording device should be aligned so that the Prodigal Output Meter and the recording channel Input Meter both agree. When they are thus aligned, signal ceilings will be matched across the system, and maximum signal to noise ratios may be enjoyed.

Experienced users may wish to use their own specialised equipment and house techniques to perform this alignment, but that should be unnecessary if the simple but detailed procedure below is followed.

QUICK START:

1. Download the Prodigal Test Tone file from szikla.com downloads page.

2. Play back the stereo file from within your audio session, via your DAW, to the Front or Rear Line Inputs on your Prodigal.

3. Adjust Prodigal IN and OUT knobs so that the level displayed on both the Prodigal Input and Output Meters matches the level displayed on the Audio Software Output Meter.

4. Return the signal to the DAW via the Prodigal XLR Outputs.

5. On the Prodigal, select XLR output level of +4dB or -10dB to match the operating level of the DAW.

6. On the DAW, select Line input level (*NOT* MIC).

7. Now record the returned signal onto a spare stereo track.

8. Adjust the DAW Input Trimmers so that the level displayed on the Audio Software Input Track Meter matches the Prodigal Input and Output Meters, which in turn matches the Audio Software Output Track meter.

9. Your system is now aligned.

10. Mark or fix the position of your DAW Input Trimmers, and note the output level of your Prodigal XLRs, as these settings will be standard for all of your sessions.

MORE DETAIL:

1. Download and prepare Test Tone

Download the Prodigal Test Tone file from szikla.com downloads page.

Open an audio session and create 2 new stereo tracks. Label the first one ‘TEST TONE’ and the second one ‘RETURN’.

Import the Prodigal Test Tone .wav file into the ‘TEST TONE’ track, and configure that track to output to your DAW. Press the SOLO button so that it is the only track to output.

Configure the ‘RETURN’ track to receive audio from L/R Inputs on your DAW, and then enable record for that track only.

Make sure your ‘TEST TONE’, ‘RETURN’, and MASTER faders are all set to 0dB.

Our Test Tone is now prepared, and once we sort out our cabling we can send it through the Prodigal and then record it back onto our ‘RETURN’ track, adjusting and matching levels as we go.

2. Set up DAW Output to Prodigal Input

Connect the Left and Right Line Outputs from your DAW to either the front or rear Prodigal Channel Strip Inputs, and switch those inputs to Line. (Normally the DAW Output would be connected to Playback Input 1 or 2 of the Monitor Station, and should only be connected to the

Channel Strip Inputs when processing or mastering tracks.)

Note: Always use Line Levels when passing signals between audio devices, as they are typically 40 to 60dB louder than Microphone Levels and therefore have 100 to 1,000 times greater noise immunity. Microphone preamplifiers are designed to increase the level of a microphone signal to Line Level, so that it can more easily be processed and distributed without sonic degradation. Avoid using Microphone Level when patching between devices – *always use Line Level*.

On the Prodigal front panel, disengage all switches, set Bandwidth to maximum, IN knob full anticlockwise, OUT knob to '0'. Set Out/Comp/De-Ess Meter to OUT. The Prodigal Monitor switch may be engaged if you wish to hear the Test Tone while you are making adjustments.

Adjust your DAW Output monitor level to maximum, and ensure there is no input signal in the monitor mix – only audio from the computer.

3. Set up Prodigal Output to DAW Input

Connect the Main XLR Outputs to the DAW Line Inputs, and switch the DAW to accept a Line Level signal. (Note: some less expensive DAW interfaces have Pad switches instead of Line Input switches.)

On the Prodigal, switch the XLR Output Pad switch to +4dBu Pro Line Level, or -10dBV Domestic Auxiliary Level, whichever matches the operating level of the DAW. (If you don't know, use -10dBV as your starting point.)

We are now ready to make a noise and perform our alignment.

4. Adjust Prodigal Levels

In your audio session, press PLAY to play back the Test Tone. You should observe the 'TEST TONE' and MASTER fader tracks are both metering at -6dB Full Scale.

Now go to the Prodigal, and observe the Input Meter is showing some signal. Adjust the IN knob for each channel until the Input Meter displays -6dBFS for both Left and Right.

Adjust the OUT knob for each channel until the Output Meter displays -6dBFS for both Left and Right, same as the Input Meter.

Now press the DUAL MONO OUT switch, in order to negate any minor channel imbalance and ensure precisely matched levels at each XLR output.

The Prodigal levels are now set. Go to your audio session and press STOP.

5. Adjust DAW Input Level

Re-cue the 'TEST TONE' track, and this time arm your session to record onto the 'RETURN' track.

Press REC/PLAY. You should see the Prodigal meters all display -6dBFS, as before.

Now adjust the DAW Input Trimmers until the 'RETURN' track is metering at -6dBFS. Check that there is no difference between LEFT and RIGHT.

(Note: If your DAW Trim is wound up full and your 'RETURN' track still shows less than -6dBFS, then switch the Prodigal XLR Output Pad to +4dB and repeat the DAW Trim adjustment.)

When LEFT matches RIGHT, return to the Prodigal and un-press the DUAL MONO OUT switch to resume stereo operation. Check again for minor channel imbalance, and finely re-adjust the OUT knobs if necessary.

When the level displayed on the 'RETURN' track Meter matches the Prodigal Input and Output Meters, which in turn match the 'TEST TONE' and MASTER fader Meters, your system is now aligned.

6. Now that your system is aligned, mark or fix the position of your DAW Input Trimmers, and note the Output Pad position of your Prodigal XLRs, as these settings will be standard for all of your sessions

7. Afterwards...

The Prodigal may now be used freely and adjusted for desired amplification, EQ and dynamics, with the final record level being determined by the OUT knobs. *Any further alteration to the DAW Input Trim should be avoided.*

Also, when recording, processing or mastering a STEREO signal, the final track balance can be centred and maximised by careful adjustment of the Left and Right OUT knobs.

AUDIO CABLE GUIDE

QUICK START:

Go to the headings:

MISCELLANEOUS INPUTS
BALANCED-BALANCED LINE
BALANCED-UNBALANCED LINE

and choose the most applicable cable diagram from the Yellow sections.

MORE DETAIL:

THE IDEAL AUDIO CABLE

The ideal audio cable would deliver untarnished audio from device to device, with no additional distortion or colouration, whilst offering maximum protection against induced noise from electro magnetic radiation and other parasitic effects. In practice, using the right cable can get us reasonably close to that ideal, and the wrong one can wreck our work.

TO BALANCE OR NOT TO BALANCE

Analog audio uses two different systems; “Unbalanced”, which is mostly found in domestic systems, and “Balanced”, which is mostly found in professional systems. Put very simply, in Unbalanced systems Earth or Ground is used to carry part of the audio signal. In Balanced systems there is a third wire for that purpose, and the earth is kept separate to provide shielding for the other two wires. But there’s more on that later...

Most of the PRODIGAL inputs and outputs are capable of being treated as Balanced or Unbalanced. Unbalanced cables may be used for convenience and in most cases will yield acceptable results, but for best performance it is recommended that the PRODIGAL inputs and outputs be treated as Balanced (except the Musical Instrument Input, and Stereo Mini Jack Playback Input 3).

MISCELLANEOUS INPUTS

Diagrams for the Microphone, Musical Instrument and Phone/iDevice Playback cables should be followed exactly.

BALANCED-BALANCED

In the case of Balanced to Balanced line connections, the standard fully earthed cables are preferred, but I have also shown recipes for Earth Lift cables which are characterised by the opening of the shield at the downstream end. These cables are useful when equipment interconnections have caused an earth loop, creating an audible hum in the program. Breaking the shield at the downstream end also breaks the earth loop, and generally fixes the problem. An earth connection is maintained at the upstream end to zero any noise in the shield at the closest point to where the audio ground originates.

BALANCED-UNBALANCED

In the case of Balanced to and from Unbalanced line connections, things get a bit more varied. The two different grounding topologies were invented at different times by different people who both claim to be right. Unfortunately each system is not designed to mate with the other, though they do get interconnected on a fairly frequent basis. Typical mating problems are a high susceptibility to hum from earth loops, and induced distortion on Balanced outputs that wind up with their cold pin connected to ground. Helpfully, the Prodigal inputs and outputs are designed to reduce the effects of earth loops, and the Balanced outputs are designed to accept grounding of the cold pin with no increase in distortion.

But which leads to use? If both devices are plugged into the same power board, then the “Unbalanced Mode” cables should yield acceptable results. The “Balanced Mode” cables however provide better noise rejection, and are theoretically the proper way to do things, though neither of the above will protect you from earth loops. If an Unbalanced and a Balanced device are powered from different circuits then connecting one to the other will quite often produce hum, and you’ll hear it in the downstream device where it gets amplified. So a lot of the time, the “Balanced Mode with Earth Lift” cables will likely be your best option. They are not as good at RF rejection as the “Balanced Mode” cables without earth lift, but unless you are under a radio tower or close to arc welding you probably won’t notice any difference, and the “Earth Lift” cables will be your best bet in most circumstances when connecting the PRODIGAL to Unbalanced devices.

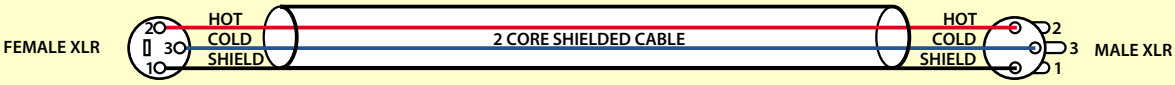
EXTREME HUM

But there are situations that “Earth Lift” cables cannot solve. Switchmode power supplies for instance are good at infecting device earths with switching noise that downstream devices cannot remove. If you have an issue with hum and have tried all the options in this guide, then you may need to consider employing an isolation transformer.

MISCELLANEOUS INPUTS

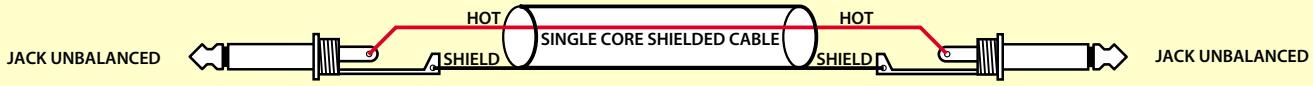
MICROPHONES

FROM MICROPHONE **TO PRODIGAL MAIN INPUT**



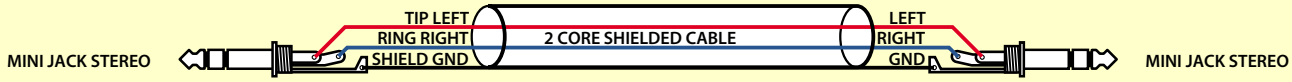
MUSICAL INSTRUMENTS

FROM INSTRUMENT **TO PRODIGAL INSTRUMENT INPUT**



PHONE OR iDEVICE STEREO PLAYBACK

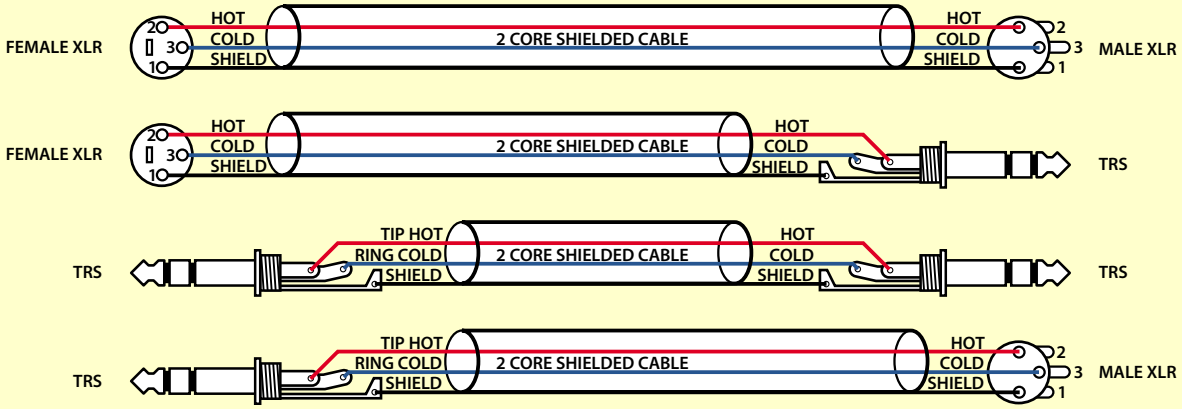
FROM DEVICE HEADPHONE SOCKET **TO PRODIGAL PLAYBACK INPUT 3**



BALANCED-BALANCED LINE

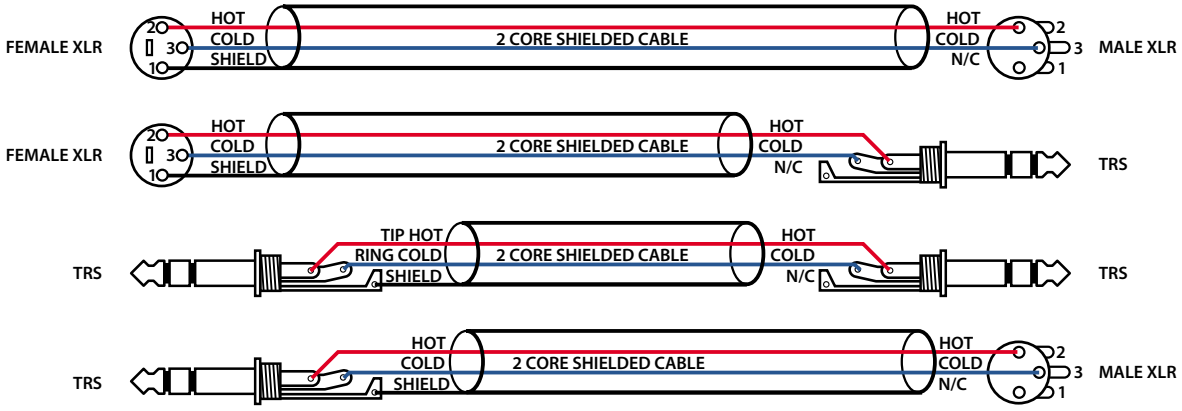
TO & FROM- BALANCED LINE DEVICES

ANY BALANCED OUTPUT — ANY BALANCED INPUT



THE ABOVE BALANCED CABLES ARE THE PREFERRED WAY OF CONNECTING TO AND FROM OTHER BALANCED DEVICES, AND OFFER EXCELLENT RF NOISE REJECTION. IF YOU ARE EXPERIENCING HUM FROM EARTH LOOPS, THE FOLLOWING EARTH LIFT CABLES CAN BE EMPLOYED.

ANY BALANCED OUTPUT — ANY BALANCED INPUT (WITH EARTH LIFT)



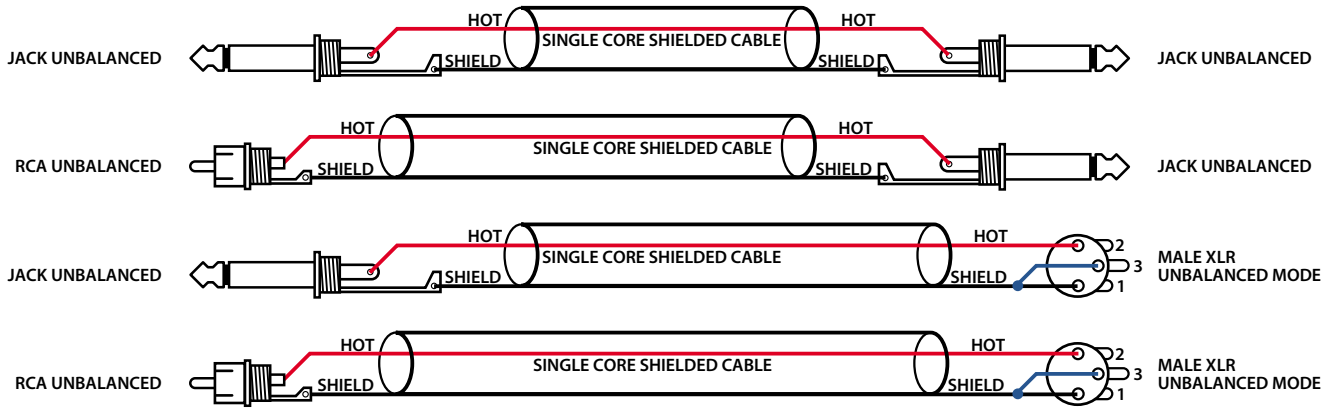
****THE ABOVE EARTH LIFT CABLES MUST ALWAYS HAVE SHIELD GROUNDED AT UPSTREAM END, WITH SHIELD DISCONNECTED *ONLY* AT DOWNSTREAM END.**

IF YOU ARE HEARING HUM FROM AN EARTH LOOP AND THESE CABLES FAIL TO REMOVE IT, THEN YOU MAY NEED AN ISOLATION TRANSFORMER.

BALANCED-UNBALANCED LINE

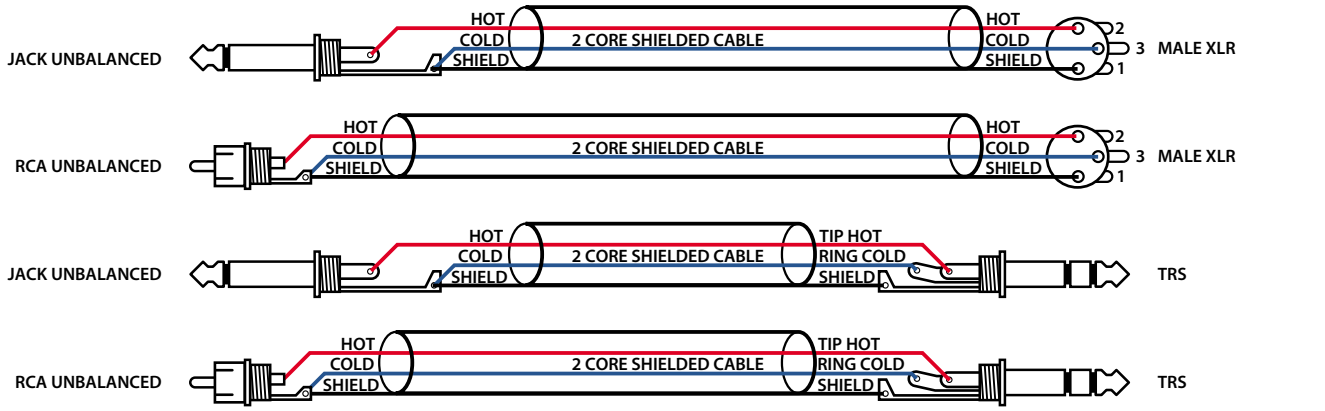
FROM UNBALANCED LINE DEVICES - *TO* PRODIGAL INPUTS

FROM UNBALANCED DEVICE OUTPUT — TO PRODIGAL INPUT (UNBALANCED MODE)



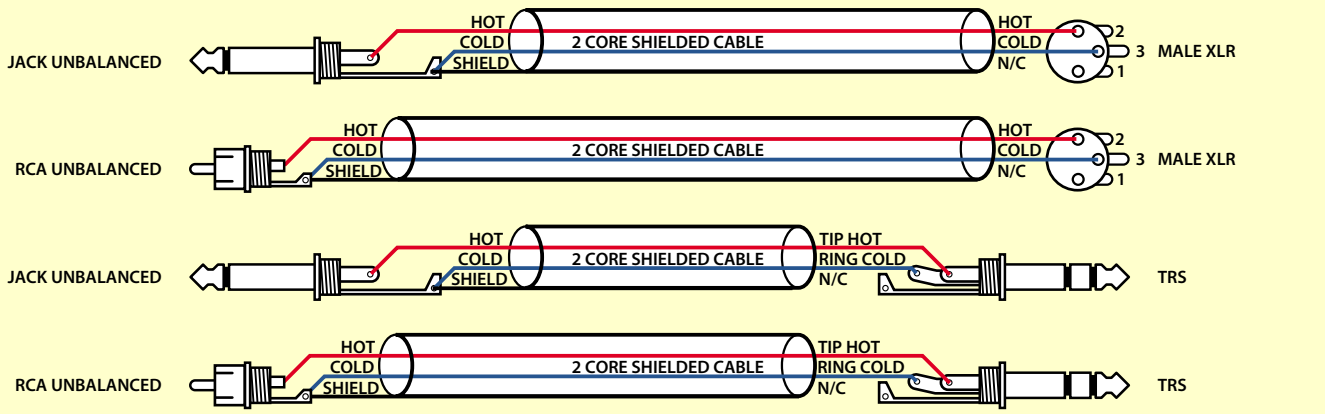
THE ABOVE UNBALANCED CABLES BASICALLY WORK OK BUT OFFER INFERIOR RF NOISE REJECTION AND NO EARTH LOOP PROTECTION.
THE FOLLOWING CABLES ARE BETTER.

FROM UNBALANCED DEVICE OUTPUT — TO PRODIGAL INPUT (BALANCED MODE)



THE ABOVE CABLES PROVIDE BEST AUDIO AND BEST RF SHIELDING, BUT WILL NOT HELP IN THE EVENT OF AN EARTH LOOP.
TO MINIMISE HUM FROM EARTH LOOPS AND STILL PROVIDE ADEQUATE RF SHIELDING, THE FOLLOWING EARTH LIFT CABLES ARE PREFERRED.

FROM UNBALANCED DEVICE OUTPUT — TO PRODIGAL INPUT (BALANCED MODE WITH EARTH LIFT)

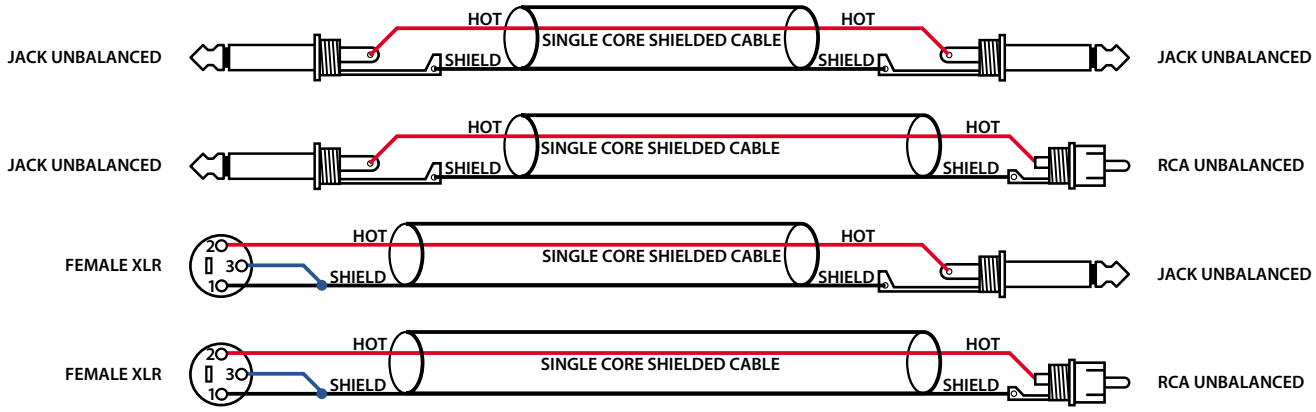


THE ABOVE CABLES ARE PREFERRED. THEY PROVIDE BEST AUDIO, ADEQUATE RF SHIELDING, AND BEST EARTH LOOP HUM PREVENTION.
****THEY MUST ALWAYS HAVE SHIELD GROUNDED AT UPSTREAM END, WITH SHIELD DISCONNECTED *ONLY* AT DOWNSTREAM END.**
IF YOU ARE HEARING HUM FROM AN EARTH LOOP AND THESE CABLES FAIL TO REMOVE IT, THEN YOU MAY NEED AN ISOLATION TRANSFORMER.

BALANCED-UNBALANCED LINE CONTINUED

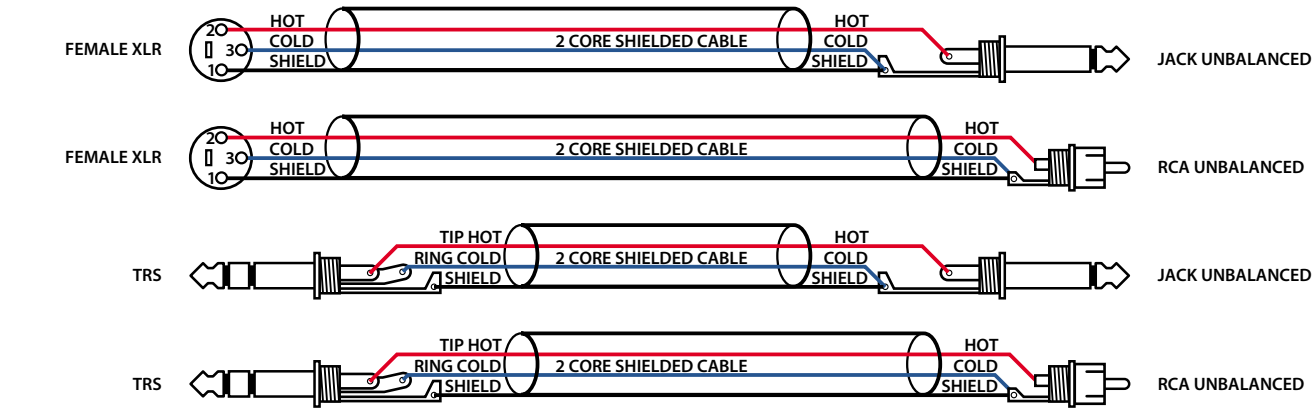
FROM PRODIGAL OUTPUTS - *TO* UNBALANCED LINE DEVICES

FROM PRODIGAL OUTPUT (UNBALANCED MODE) — TO UNBALANCED DEVICE INPUT



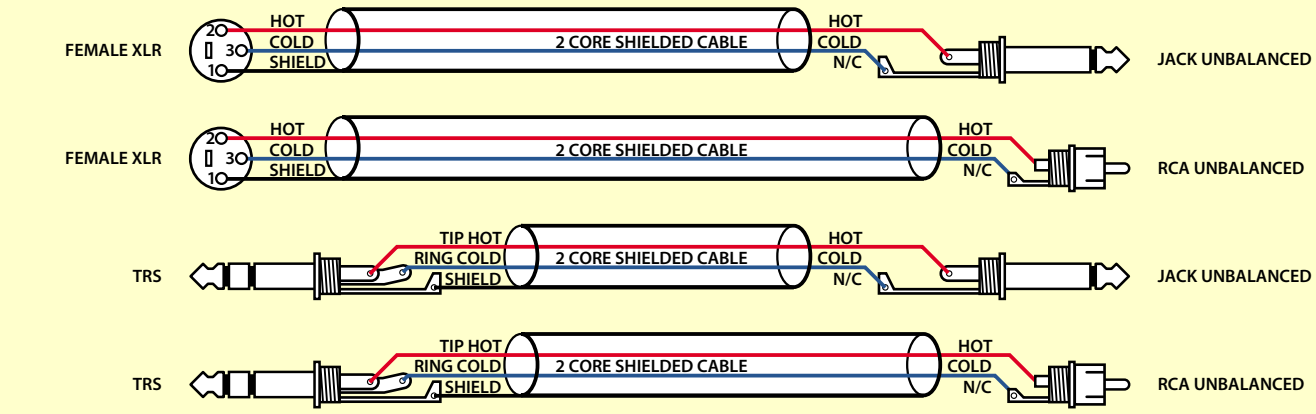
THE ABOVE UNBALANCED CABLES BASICALLY WORK OK BUT OFFER INFERIOR RF NOISE REJECTION AND NO EARTH LOOP PROTECTION.
THE FOLLOWING CABLES ARE BETTER.

FROM PRODIGAL OUTPUT (BALANCED MODE) — TO UNBALANCED DEVICE INPUT



THE ABOVE CABLES PROVIDE BEST AUDIO AND BEST RF SHIELDING, BUT WILL NOT HELP IN THE EVENT OF AN EARTH LOOP.
TO MINIMISE HUM FROM EARTH LOOPS AND STILL PROVIDE ADEQUATE RF SHIELDING, THE FOLLOWING EARTH LIFT CABLES ARE PREFERRED.

FROM PRODIGAL OUTPUT (BALANCED MODE) — TO UNBALANCED DEVICE INPUT (WITH EARTH LIFT)



THE ABOVE CABLES ARE PREFERRED. THEY PROVIDE BEST AUDIO, ADEQUATE RF SHIELDING, AND BEST EARTH LOOP HUM PREVENTION.
****THEY MUST ALWAYS HAVE SHIELD GROUNDED AT UPSTREAM END, WITH SHIELD DISCONNECTED *ONLY* AT DOWNSTREAM END.**
IF YOU ARE HEARING HUM FROM AN EARTH LOOP AND THESE CABLES FAIL TO REMOVE IT, THEN YOU MAY NEED AN ISOLATION TRANSFORMER.

PRODIGAL TECHNICAL SPECIFICATIONS

Unless otherwise stated, all input and output levels listed in these specifications refer to RMS levels for a 1kHz sinewave. To obtain Peak level values, simply add +3dB.

DUAL CHANNEL STRIP

MICROPHONE AMPLIFIER TOPOLOGY:	Analog. Balanced low current discrete transistor design. Stereo/Dual Mono switchable.
FREQUENCY RESPONSE:	20Hz-20KHz, +0/-3dB.
INPUT TYPE AND IMPEDANCE:	Microphone XLR: Balanced/Unbalanced, 1.37 Kilohms. Line XLR: Balanced/Unbalanced, 10.9 Kilohms. Line Jack: Balanced/Unbalanced, 10.2 Kilohms. Instrument Jack: Balanced/Unbalanced, 1.0 Megohm.
OUTPUT TYPE AND IMPEDANCE:	XLR +4dBu/-10dBu switchable, Balanced, 150 Ohms.
MAXIMUM GAIN:	Microphone XLR: 76dB. Line XLR: 36dB. Line Jack: 42dB. Instrument Jack: 42dB.
ADDITIONAL GAIN TO MONITORS:	Studio Monitor Outputs 1&2: 18dB. Headphones: 19.5dB.
MAXIMUM UNCLIPPED INPUT SIGNAL:	Microphone XLR: +2dBu, Balanced, 20dB Pad. Line XLR: +42dBu, Balanced, 20dB Pad. Line Jack: +22dBu, Balanced, 20dB Pad. Instrument Jack: +22dBu, Balanced, 20dB Pad.
MAXIMUM UNCLIPPED OUTPUT SIGNAL:	+22dBu, Balanced, into 10 Kilohms.
MICROPHONE EQUIVALENT INPUT NOISE:	-118dBu, 20Hz-20KHz, 150 Ohm source.
LINE EQUIVALENT INPUT NOISE:	-90dBu, 20Hz-20KHz, 150 Ohm source.
LINE LEVEL SIGNAL TO NOISE RATIO:	94dB, +4dBu IN/OUT, 20Hz-20KHz, 150 Ohm source.
INSTRUMENT EQUIVALENT INPUT NOISE:	-96dBu, 20Hz-20KHz, 150 Ohm source. -96dBu, 20Hz-20KHz, 100 Kilohm source.
PHANTOM POWER:	+48VDC +/-1V.
SOFT RAMP-UP TIME:	10 Seconds.
TOTAL HARMONIC DISTORTION:	Mic better than 0.1% Line better than 0.02% Instrument better than 0.02%
COMMON MODE REJECTION RATIO:	Better than 100dB, 1KHz.
CROSSTALK BETWEEN CHANNELS:	-72dB worst case.
"PRE" HIGH AND LOW PASS FILTERS:	12dB/Octave, underdamped 1dB at knee, frequency variable. Low Cut 20Hz~200Hz, High Cut 2KHz~20KHz.

"EQ" MID CUT/BOOST FILTER:	+/- 10dB, 3.5 octave bandwidth, Constant Q, frequency variable 100Hz~10KHz.
"DE-MUD" FILTER:	300Hz/-3dB cut, 1.4 octave bandwidth.
"AIR" FILTER:	Flat 20Hz-9KHz, +1dB at 10KHz, +10dB at 20KHz, constant phase.
PEAK LED INDICATORS:	Pos & Neg Sensors post EQ and post Compressor. LEDs turn on 4dB before clipping.

DE-ESSER TYPE:	Voltage controlled FET, soft knee, 20:1 limiting to all frequencies above crossover point and over threshold.
THD & NOISE:	Better than 0.5%
CROSSOVER FREQUENCY RANGE:	1KHz~10KHz sweepable, 12dB/octave slope.
ESS CONTROL THRESHOLD RANGE:	Any level between 0v and saturation may be selected. It is then referenced to a fast-averaged sample of the full bandwidth signal to create a floating, self-adjusting threshold point. This helps to prevent over-processing due to dynamic inconsistencies in the program material.
MAXIMUM ESS REDUCTION:	22dB.
ATTACK TIME:	500 Microseconds.
RELEASE TIME:	40 Milliseconds.
LIMIT LED:	Normally off, this LED glows in varying intensity to indicate the amount of limiting occurring at any moment. Glows brightest during moments of maximum Ess Reduction.

COMPRESSOR TYPE:	Voltage controlled FET, soft knee, Stereo Link switchable.
THD & NOISE:	Better than 0.5%
INPUT GAIN:	0~25dB variable.
MAXIMUM GAIN REDUCTION:	22dB.
COMPRESSION RATIO:	1:1~20:1 variable.
KNEE THRESHOLD:	Set as a function of Ratio Control: -33dBFS at 2:1 to -14dBFS at 20:1 to encourage Output to remain constant at around -12dB Full Scale.
ATTACK TIME:	5 Microseconds~2.5 Milliseconds variable.
RELEASE TIME:	50 Milliseconds~1.35 Seconds variable.
LIMIT LED:	Normally off, this LED glows in varying intensity to indicate the amount of limiting occurring at any moment. Glows brightest during moments of maximum Gain Reduction.

METER TYPE:	16 Step LED Meter marked in -dB Full Scale. Input and Output Meters simultaneously display Peak Dot and VU Bar. Output Meter switchable to display Gain Reduction for Compressor or De-Esser.

PEAK BALLISTICS:	Moving Dot display. Instantaneous attack, 3 second hold, 18dB/sec decay.
VU BALLISTICS:	Bar display. Averaging, 300mS Full Scale attack, 300mS decay.
GAIN REDUCTION BALLISTICS:	Reverse Bar display. Direct representation of Compressor or De-Esser Gain Reduction activity with no ballistics applied. -0dBFS LED is always illuminated when Gain Reduction mode is selected.
CALIBRATION:	-18dBFS on Output Meter corresponds to +4dBu Balanced at XLR Output. A 1KHz sine wave input that produces 1.228VRMS (+4dBu) between pin 2 & 3 at XLR Output will cause the Output Meter to display a VU Bar and Peak Dot both aligned at -18dBFS. Available headroom of 18dB is indicated in both cases. -0dBFS corresponds to the maximum output signal of +22dBu (RMS sine wave) or +25dBu (Peak headroom limit). -18dBFS on Input Meter corresponds to -18dB on Output Meter when all intermediate stages are bypassed and Out put Fader is positioned at zero.

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MONITOR STATION

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FREQUENCY RESPONSE:	Playback 1, 2 & 3 to Headphones: 7Hz-50KHz, +0/-3dB. Playback 1, 2 & 3 to Monitor Out 1 & 2: 5Hz-90KHz, +0/-3dB.
THD & NOISE:	Better than 0.01%
EQUIVALENT INPUT NOISE:	-100dBu, 20Hz-20KHz, 150 Ohm source.
LINE LEVEL SIGNAL TO NOISE RATIO:	104dB, +4dBu IN/OUT, 20Hz-20KHz, 150 Ohm source.
COMMON MODE REJECTION RATIO:	Better than 80dB, 1KHz.
CROSSTALK BETWEEN CHANNELS:	-72dB worst case.
MAXIMUM GAIN:	Playback 1, 2 & 3 to Headphones: 25dB. Playback 1, 2 & 3 to Studio Monitor Out 1 & 2: 24dB.
PEAK LED INDICATOR:	Sensors located at Playback Selector Switch output and Studio Mix Fader input. LED turns on 4dB before clipping.

PLAYBACK LR INPUTS 1 & 2:	Jack Balanced/Unbalanced +4dB Input Setting: 14 Kilohms input impedance. -10dB Input Setting: 47 Kilohms input impedance. Tip=Hot, Ring=Cold, Sleeve=Shield. Maximum Input Signal +22dBu.
PLAYBACK LR INPUT 3:	Mini-Jack Unbalanced Stereo 68 Ohms input impedance. Tip=Left, Ring=Right, Sleeve=Ground. Maximum Input Signal +16dBu.
STUDIO MONITOR LR OUTPUTS 1 & 2:	Jack Balanced/Unbalanced 150 Ohms output impedance. Tip=Hot, Ring=Cold, Sleeve=Case Ground. Maximum Output Signal +22dBu.

HEADPHONE AMPLIFIER:	Direct Coupled Transistor Output.
OUTPUT LEVEL BEFORE CLIPPING:	118dB SPL typical into 8 Ohms, +4dBu @ 192mW. 129dB SPL typical into 63 Ohms, +13.5dBu @ 200mW.

WARNING: PRODIGAL HEADPHONE AMPLIFIER OUTPUT LEVELS CAN DAMAGE HEARING !
TURN HEADPHONE VOLUME UP SLOWLY WHEN MAKING ADJUSTMENTS.

HEADPHONE OUTPUTS:	1x 6.5mm and 1x 3.5mm Jack, 10 Ohms output impedance.

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GENERAL

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POWER SUPPLY REQUIREMENTS:	110-120VAC/220-240VAC switchable, 50-60Hz
TOTAL POWER CONSUMPTION:	40W
DIMENSIONS:	19 inch Rack-Mountable. 3 Rack Units. Width - 482mm Height - 132mm Depth - 339mm
WEIGHT:	8.75kg

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