# "TRITON"

# USER MANUAL

# Triton Owners Manual

## CONTENTS:

Dear client,

Thank you for selecting the D&R Triton series.

The Triton was created using the latest in computer aided design and assembling technology and incorporates the most advanced circuit components which results in the Triton being another D&R product unsurpassed in the electronics industry.

We are confident that you will be using the Triton for many years to come and wish you much success.

We always value suggestions from our clients and we would be grateful if you could complete and return the questionaire included at the back of this manual once you become familiar with your Triton. We learn from your comments and appreciate your time.

With kind regards,

D. de Rijk
President, D&R Electronica b.v.

# Triton Series

# Recording Console

The D&R Triton series is a balanced, 16-buss (with Floating Subgroups), in-line format recording and mixing console designed to take the central role in a recording facility.

The Triton is completely modular and can be configured to precisely suit your particular system requirements. Due to the fact that the Triton patchbay is entirely optional, all inputs and outputs can be connected by using the individual module and master section connectors. When the patchbay is installed, the Triton offers you the opportunity to wire-up using multipins and individual input/output connectors. If you ordered your Triton short loaded and without the patchbay, you may install the patchbay at a later date.

To become completely familiar with your Triton and gain the maximum benefit from its use, we recommend that you read this manual thoroughly. It will provide important information about all aspects of the Triton including; installation, operation, and servicing.


**Head Office/Factory**

D&R Electronica B.V.
Rijnkade 15B
1382 GS Weesp
The Netherlands

Tel: (·) 31 2940 18014
Fax: (·) 31 2940 16987

**U.S.A. Office**

D&R U.S.A.
Rt. 3, Box 184-A
Montgomery, TX 77356
U.S.A.

Tel: (409) 588-3411
Fax: (409) 588-3299

# THE CHASSIS SYSTEM

## 1.0 The Chassis System

The Triton is available in four frame sizes; 30 position, 38 position, 51 position and 74 position. The basic frame has four blank modules, two are located on the extreme left and right of the frame and two more are on the left and right of the master section. The extreme left and right blanks cannot be used for input modules as they conceal mechanical constructions, wiring, and power distribution, however the blanks on either side of the master can be replaced with input modules. It is important to understand the term "position" as described below means actual module or patchbay positions and do not count the standard blanks and master modules. A down-loaded frame can be ordered.

The **30** position frame will fit 30 input (in-line or stereo) modules and 4 master modules. The standard configuation has (from left to right) 24 in-line modules, 4 master modules, and 6 duel stereo return modules. Custom configuations are available at no extra charge. A down-loaded frame can be ordered.

The **38** position frame will fit 38 input (in-line or stereo) modules and 4 master modules. The standard configuation has (from left to right) 32 in-line modules, 4 master modules, and 6 duel stereo return modules. Custom configuations are available at no extra charge. A down-loaded frame can be ordered.

The **51** position frame will fit 38 input (in-line or stereo) modules, 4 master modules, and patchbay. The standard configuation has (from left to right) 24 in-line modules, 4 master modules, 8 in-line modules, 6 duel stereo return modules, and patchbay (which is equivalent to 13 module positions). Custom configuations are available at no extra charge. The 51 position frame can accept up to 58 input modules if the patchbay is not utilised. A down-loaded frame can be ordered.

The **74** position frame can accept up to 54 input (in-line or stereo) modules, 4 master modules, and patchbay. The standard configuation has (from left to right) 24 in-line modules, 4 master modules, 24 in-line modules, 6 dual stereo modules, and patchbay (which is equivalent to 20 module positions). Custom configuations are available at no extra charge. The 74 position frame can accept up to 74 input modules if the patchbay is not utilized. A down-loaded frame can be ordered.

Both the master section and patchbay can be installed wherever most suitable, but the request must be made at the time of ordering. If your requirements are for your patchbay to be remotely mounted, ask D&R for a custom quote.

The Triton legs are assembled for shipping.

# THE MASTER MODULES

The Triton has four master modules which are completely modular. All inputs and outputs are located on the back of each module. The paragraphs below give a description of each module section.

## 2.1 CRM section

The CRM (control room module) module contains the electronics for monitoring all the signal paths in the Triton.

**CRM Source switching**

From top to bottom there are the five CRM signal sources. With all these switches in the up position, the CRM will monitor the stereo main outputs which is the sum of all the monitor sections and L/R routing switches in the input/output modules.

The Triton has four dedicated balanced +4 dBv or -10 dBu tape return inputs which can be wired to the outputs of stereo master machines, cassette machines, CD players, or DAT recorders. Utilizing any of these switches enables playback or post tape monitoring of a master mix.

**Aux 1-2** can be monitored in stereo to allow the building-up of a stereo cue mix for the headphone system through the control room monitors.

**CRM level**

The **CRM** level controls the total outgoing level to the CRM 1 - 2 - 3 monitors. When in the full clockwise position, a balanced signal of +4 dBv is given out to the CRM monitor amps. It is important to have the monitor amps correctly adjusted. You should adjust the CRM monitor amps (input level controls) to an undistorted level with the CRM level control fully clockwise.

*NOTE: This alignment is imperative in order to avoid damage to the tweeters, or in some cases, damage to the ears of the listener.*

**Three Monitor Systems**

The Triton has three CRM systems intended for use with large monitors, small monitors, and nearfield monitors. We advise that nearfield monitors be wired to the CRM 2 output, as the studio communication takes place over this monitor while dimming the main monitor. CRM 3 is designed for connection to small monitors or other alternative monitoring purposes. Switches are used for selecting the desired CRM system.

**DIM**

A Dim switch drops the level of the CRM by 20 dB while leaving the level control at the desired position. An LED indicator is fitted next to the Dim switch to show activation of the Dim switch.

**MONO**

The Mono switch allows the user to check for any out-of-phase signals or simply used for monitoring your mix in mono.

**Faders**

Located in the bottom of the left two master modules are two mono faders which control the main stereo mix busses.

# The Master Modules.....continued

## 2.2 Solo section

The Solo section has a master volume control with a center detent for nominal levels and a channel to PFL (pre-fade listen) switch with an LED indicator mounted. An LED indicator is also fitted next to the solo level control to show when a solo circuit is activated.

## 2.3 The Studio section

The Studio section performs in a similar way to the CRM module sending signals to the studio amp from the **CRM** or **Aux 1 - 2**. This section has a mute switch and level control with level ranges up to a balanced +4 dB nominal level (+26 dB maximum). The mute switch is used to mute the output of the studio module.

## 2.4 Talkback switching

There are two switches fitted in this section; the **T.B.** (talkback) and **remote** switch. The talkback switch is a momentary type which allows you to talk to the headphones (via Aux 1&2), **STUDIO** speakers, and **GROUPS** (16 output busses). A **SLATE** switch is fitted to allow you to feed a 30 Hz tone 10 dB below the talkback mic for slating the tape.

## 2.5 Mute group switching

Fitted in this section are three mute group switches. Each switch (A, B, & C) is the master switch for the mute group busses. Also fitted next to each switch is an LED indicator.

## 2.6 Communications section

The communications section allows all routing and communication functions between the control room, studio, slate, and any other rooms linked into the circuit. This section is activated by the talkback switch.

## 2.7 Oscillator section

A three frequency, low distortion, phase shift type ocillator is fitted. The three frequencies are; 100Hz, 1kHz, and 10kHz. Each ferquency has its own front panel alignment trimmer and overall level (LVL) control with which to precisely align the oscillator for precise alignment of the console and tape machines. The level ranges from -35 dB to +20 dB with a detented mid-position of +4 dBv. The oscillator is routed to the stereo mix busses and switchable to the **GROUPS**.
**NOTE:** The CRM dim is activated when the oscillator is active.

The meters on the Triton are peak reading meters and therefore read -6 dB when a sine wave with a +4 dB output level is sent to the meter. Measuring the +4 dB output level of the channel or master with a AC voltmeter would give a 1.22 volt reading. The LED meter would actually be reading -6 dB on the scale. When monitoring "program" material, you will see higher levels on the peak reading meters.

## 2.8 Auxilliary master modules

The auxilliary master modules are identical in function. The first module controls the Aux send busses 1, 3, 5, 7, & 9 and the second module controls Aux send busses 2, 4, 6, 8, & 10. Each Aux master controls the busses from the channels. The mute switch completely mutes the balanced output, however, the solo switch continues its signal to the control room monitors which is a post-fader signal. The associated LED lights indicating the activated solo switch.

## 2.9 Master Inputs/Outputs and meters

The Triton has two methods of interfacing with external equipment such as two track master machines, signal processors, headphone amps, and power amps. Interfacing is possible using the connectors on the master back panels, through 25 pole sub D male connectors (with optional patchbay), or a mixture of both. Listed below are all inputs and outputs for the four master modules.

**Master module # 1** (CRM, Solo, & Studio). This backpanel houses (from top to bottom) the left master insert send & return, CRM 1, 2, & 3 outputs, a -10 dBv left output, and a +4 dB balanced left output. Also fitted are two ground post (GRN & PATCH).

**Master module # 2** (Mutes, Comm., & Oscillator). This backpanel houses (from top to bottom) the right master insert send & return, studio left & right outputs, two track "D" left and right inputs, -10dBv right output, and a +4dB balanced right output. Also fitted on this backpanel is the power supply connector.

**Master module # 3** (Aux masters 1, 3, 5, 7, & 9). This backpanel houses the balanced Aux outputs for 1, 3, 5, 7, & 9. Also located here are balanced two track right inputs (from two track machine A, B, & C).

**Master module # 4** (Aux masters 2, 4, 6, 8, & 10). This backpanel houses the balanced Aux outputs for 2, 4, 6, 8, & 10. Also located here are balanced two track left inputs (from two track machine A, B, & C).

## Master Metering

The Triton is fitted with peak reading, 37 segment, high resolution, ledbar meters with attack and release times which conform to world standards. The attack is 10msec. for a 20 dB range and the release is 1.5msec.

**NOTE:** Peak reading meters give a reading 6 dB below the actual level when using a sine wave. For example, +4 dBu at the output connectors would give a reading of -6 dB on the console peak meter using the oscillator.

If U.K. reading ledbars are ordered, they will have attack and release times of 300msec. and a +4 dBu level on the output connectors will give a 0 dB reading on the meter.

If analog meters are mounted, when reading "0" on the VU meter you should have a +4 dBu or 1.22 volts on a volt/ohm meter.

# THE IN-LINE MODULE

## 3.0 The In-line module - description

The Triton in-line module is a basic input/output design whereby all signal flow takes place from the microphone to the multitrack. Each in-line channel is shipped with a 11 segment LED bargraph meter which is a peak reading device with attack and release times in conformance with world standards. It reads the level travelling to or from the mutitrack, depending upon the monitor sections "tape" switch setting. The first LED in the bargraph is a power supply indicator. See page 8 of this manual for a more detailed description. The following sections explain the many functions and features of the in-line channel.

## 3.1 Input section

The input section controls all incoming signals from microphone, line, and tape.

A **+48V** phantom power switch for condenser microphones or direct boxes can be silently switched in or out of the circuit.

The **GAIN** control is the single most important control on the console. With this control accurately set, it is possible to achieve the very best signal to noise ratio and maximum headroom required for high quality recordings. The GAIN control is for adjusting the **line/mic** input. Although one knob is fitted, there are two pots under the frontplate, each one for adjusting the seperate electronics for the mic and line inputs.

**Line** switches the mike input to line input on the channel. The line has its own balanced input amp and is controlled by the active (dual) gain control.

**Mix**, (the record-mix status switch) selects the basic signal path in the module. When in the record mode ("up" position) the mike/line input signal is routed through the channel path with or without equalization and/or aux sends and then to the long fader and channel panpot. It can then be sent to the main L/R bus and/or be assigned to the multitrack busses.

With the **mix** switch in the "up" position, the multitrack inputs or outputs are heard through the monitor section.

When in the mix mode ("down" position) the channel signal flow is rerouted; mike/line inputs are assigned to the monitor section (light colored), and the tape input is rerouted to the channel path. This can be regarded as an input flip switch, mike/line and tape input are reversed.

The **TAPE** switch allows you to choose from where the monitor gets its signal. In the up position (source), the channel control feeds the monitor through summing amps 1-24. For channel selections above 16 the channel fader will feed the monitor directly. In the down position (tape), the tape return (monitor in) feeds the monitor signal path.

**Phase** is used to reverse the phase of any mike/line input coming from a mike or signal that may be out of phase with other mikes or signals. A successful method of checking for "out of phase" signals is to depress the mono switch on the master section and listen closely to the mix. If an unexpected sound is heard or if something appears to be missing from the mix, depress the phase switches for those channels suspected to be in error. If the sound improves, then that channel was out of phase with the others.

If using multiple mikes on the same signal, such as drums, vocals, horns, strings etc., it is possible to create an acoustical phase cancellation. In most cases, physically moving the mike's a few inches will correct this phase cancellation.

# The In-line Module.....continued

## 3.2 Equalizer Section

This four-band parametric equalizer is unique in its design. There are four bands, each sweepable with a boost or cut of 16 dB. The HMF (High/Mid Frequency) and LMF (Low/Mid Frequency) can be switched into the monitor path.

The 100 Hz **Highpass** filter is a fixed 12 dB per octave Butterworth model which reduces low frequency noise effectively and musically.

The **HF** (high frequency) section is sweepable and has shelving characteristics. The high frequency section ranges from 4,000 Hz to 20,000 Hz with a maximum boost or cut of 16 dB.

The **LF** (low frequency) section is sweepable and has shelving charactistics. The low frequency section ranges from 20 Hz to 500 Hz with a maximum boost or cut of 16 dB.

The **HMF** (High/Mid Freq.) section has level and frequency controls and is a constant Q type, therefore the bandwidth setting will match that of the level control. The frequency ranges from 1,000 Hz to 20,000 Hz and has a maximum boost or cut of 16 dB. The bandwidth has a Q factor of 1.5.

The **LMF** (Low/Mid Freq.) section has level and frequency controls and is also a constant Q type, therefore the bandwidth setting will match that of the level control. The frequency ranges from 50 Hz to 1,000 Hz and has a maximum boost or cut of 16 dB. The bandwidth has a Q factor of 1.5.

The **HMF** and **LMF** bands can be switched in or out of the channel and/or monitor circuit paths. If the equalizer is only partly inserted in a signal path, the equlizer on/off switch has priority over the monitor switches. All level controls are center detented making neutral positions easy to establish.

All frequency ranges have been carefully selected following extensive examination of all types of music (and noise) which makes this equalizer a pleasure to work with. Noise and distortion are kept to an absolute minimum.

## 3.3 Auxilliary Send Section

The Triton has ten auxilliary send busses. **Aux**illiary sends **1-2** are on dual concentric controls. The top control is the send volume and the bottom control is a panpot. When you pan this control to the left, the signal would feed the left or Aux 1 and when you pan the signal to the right, the signal would feed the right or Aux 2. These Aux busses are normally used for stereo headphone sends. **Aux 3-4** are on dual concentric controls as well, however, the top control is Aux 3 and the bottom control is Aux 4. All four can be fed (switchable) from either the channel path or monitor and are pre/post switchable.

**Aux**illiary **5-8** are simular to auxilliaries 1-4 having channel/monitor and pre/post switching but with one exception; Aux sends 7-8 are switchable to Aux send 9-10 busses.

## 3.4 Floating Subgroup System

The "Floating Subgroup System" is one of D&Rs most unique features. Although the Triton has 16 conventional busses, the FSS allows the user to buss any input or amount of inputs to those tracks above 16 without having to use the patchbay. As an example, if you have a 32 track tape machine and want to buss some inputs in stereo to tracks 31 & 32, you would use busses 1/2 (or 3/4) on all desired inputs and go to modules 31 & 32 and press FROM SUB 1-2 on each. Now a stereo mix of all assigned channels will feed tracks 31 & 32.

The "Floating Subgroup System" can be used for 48 and 64 tracks as well. The Triton series is only limited by the amount of input / output channels in any given frame. The FSS is one of the most misunderstood features, however, once understood, it can be one of the most used and appreciated features in the Triton.

## 3.5 Monitor Section

The monitor is the second signal path in the Triton in-line channel. It has its own volume control, panpot, and mute & solo switches.

In record mode (the mix switch in the up position), the monitor section is fed by either the tape return or group output (tape return or tape send). In mix mode (mix switch depressed), the monitor section is fed by the mic/line input and the tape return now moves to the channel and is controlled by the long fader.

Two bands of the equaliser (as earlier stated) can be inserted into the monitor section making the monitor path a fully functioning input usable in the mix mode for other signals different from the signal present in the channel. Both channel and monitor paths can have mic/line or tape inputs chosen with a two band equalizer (on each) at the same time.

The **GRP** (group) switch inserts the monitor fader into the multitrack summing amps of that particular channel. All relevant functions of the monitor section are also inserted. The stereo solo-in-place or pfl system and mute can be used on this group control as well as auxilliary sends and equalizer, but the monitor signal path is obviously lost. The mix channel status switch has no influence on the group switch.

The monitor and channel fader can be reversed (**REV**) when use of the large fader for monitoring during recording is preferable. All functions such as assigned Aux sends, solo, and mute functions stay in their actual signal path. Only the faders are electronically reversed.

The **SOLO** switch has two modes, pfl (pre fade listen) or a "destructive" stereo solo-in-place system. Master status switching (located in the master section) selects the "solo in-place" or "PFL" mode for the entire console.

Activating the solo switch in the pfl mode will send the prefader signal of the monitor section to the CRM speakers. In the solo in-place mode, the post monitor panpot signal is heard, and all other channels are muted within the stereo mix buss. A solo indicator LED is fitted next to the solo switch.

The **MUTE** system is a special soft-muting integrated circuit, completely click-free. A mute indicator LED is fitted next to the mute switch.

*NOTE: Always make sure that unused monitor sections are muted as the unterminated inputs will degrade the excellent low noise performance of the mixing amps.*

## 3.6 Channel assign / Mute groups / Fader section

The **Channel assign** section allows the user to assign to any of the 16 busses as well as the "Floating Subgroup System". The routing gives selection to the 16 multitrack output busses using five pushbuttons. The bounce (bnc) switch alternates between 1 - 8 or 9 - 16. With each pair of summing amps, you have the choice of assigning to the odd or even amp using the channel panpot.

The **MIX** switch (in the assign section) assigns the channel panpot to the stereo mix buss while the channel pan control pans the signal between the main stereo mix L/R busses and/or the odd and even multitrack summing busses if assigned.

# The In-line Module.....continued

Because the Triton's summing amp and internal structure is extremely quiet and distortion free, a direct button to bypass the amps is not necessary. Every channel is individually assigned to the multitrack input which allows for mixing to be simple and consistant.

### Mute groups

The Triton has three MUTE groups, a feature normally seen on more expensive consoles. This feature allows you to set up (in advance) group "A" "B" or "C" and activate them from the master status switching. Any channels with group "A" pressed would then mute when you press the mute group master "A" located in the master section. Group "B" and "C" work the same.

The local mute and solo systems are identical to the monitor system, refer to section 3.5 in the monitor section portion of this manual.

A **PEAK** LED is fitted to allow for proper input level adjustment of the mic or line input.

### Fader section

The Triton has a high quality 100mm fader. Alps or P&G faders are optionally available. You can order the JMS C-Mix Automation System which uses the faders and mute system in the Triton.

### Channel meters

The Triton is shipped with 11 step, (21 segment) LEDbar meters in the standard configuation. The first LED in the bargraph is a power supply indicator. Silk-screened on the face of the meter panel is the word "cal" which indicates the proper reading (-6) while using the oscillator to align the outputs of the Triton for proper alignment of your tape machines. Optional meters include 25 segment and 37 segment high resolution bargraph meters. The 37 segment meters are switchable from VU balistics to peak balistics.

## 3.7 In-line Module Input and Output connectors.

In addition to the optional patchbay, every channel also has the following connectors at the back of the housing.

The balanced **LINE** input is a stereo 1/4" jack socket:

Tip = hot
Ring = cold
Sleeve = ground

The **tape input** is a 1/4" stereo jack socket which has a level adjustment on the front panel adjustable +/- 20 dB. The tape machine outputs must be wired to these tape inputs in order to monitor the multitrack tape channels.

The balanced **TAPE input** is a stereo 1/4" jack socket:

Tip = hot
Ring = cold
Sleeve = ground

The **CHANnel INSert** is on a stereo jack socket. The ring is send and the tip is the return.

The **CHANnel INSert** is a 1/4" stereo jack socket:

Tip = return
Ring = send
Sleeve = ground

The **MONitor INSert** is on a stereo jack socket. The ring is send and the tip is the return.

The **MONitor INSert** is a 1/4" stereo jack socket:

Tip = return
Ring = send
Sleeve = ground

The **GROUP output** is on a balanced stereo jack socket:

Tip = hot
Ring = cold
Sleeve = ground

The default setting on these outputs are +4 dBu. A setting of -10 dBV can be chosen on the channel board using jumper settings.

The group output will be connected to the multitrack input from this socket or via the multipins on the optional patchbay, whichever best suits your requirements.

A balanced XLR connector is for the **MIC**rophone input.

Pin 1 = ground
Pin 2 = hot (in phase)
Pin 3 = cold (out of phase)

# THE DUAL STEREO RETURN MODULE

## 4.0 The Dual Stereo return module - description

This stereo return module is one of the most flexible stereo modules ever designed. It actually has two stereo returns (four inputs). Although designed for effects returns, this module can be used for stereo keyboards, drum machines, or any device needing two inputs on one fader. The paragraphs below describe in full each section of this module.

## 4.1 Input section

The input section consist of a stereo GAIN control and MONO switch. The gain control is a dual pot used to adjust the gain of two line amps (stereo input). The adjustment range is from - 20dB to + 20 dB. The mono switch actively mixes the two inputs into a mono signal and is used when you need to feed the output of a mono device to both inputs.

## 4.2 Equalizer section

The two band stereo equalizer was designed for the type of equalization needed for stereo returns. The high frequency band is a shelving type at 8,000 Hz. The low frequency band is a shelving type at 100 Hz.

## 4.3 Aux send section

The Aux send section has a dual pot to feed Aux busses 1-2 which is used for feeding stereo effects returns to the stereo phone system as well as sends to other devices. Aux sends 3-4 are pre/post switchable and can be switched to Aux busses 5-6.

## 4.4 Floating Subgroup System

The stereo return can be bussed to any pair of outputs on in-line modules which allows for routing to any multitrack inputs.

## 5.0 The Optional Patchbay - description

The recessed patchbay section is built around Bantam type TT jack sockets. This optional patchbay is completely modular and designed to allow the user or installation person to hook-up the cables between the channel modules and patchbay modules. It can be expanded as your budget allows or ordered complete. All master inputs/outputs and 120 tie lines (for signal processing) are standard when you order the patchbay.

The whole patchbay is "balanced" and internally "starground" wired. Each four rows of channel patch points are followed by four channels of multitrack inputs and outputs. The multitrack patch points are also optional. The 74 position frame (48 frame) patchbay can accept a maximum of 48 channel sections, 48 channels of multitrack inputs and outputs, master inputs and outputs, and 200 tie lines.

All patchbay interfacing is via 25 pin sub "D" connectors which accept eight balanced pairs of signals per connector.

# Optional Patchbay.....continued

## 5.1 Optional Patchbay - points

**Channel patch points** from left to right are:

Line input - channel insert send & return - monitor input - monitor insert send & return - group output.

The tape inputs and outputs (if ordered) are normalled to group outputs and monitor inputs.

The **master section** contains six rows of Bantam type jacks.

**First Row:** Left master insert send & return, right master insert send & return, +4 outputs left & right, -10 outputs left & right.

**Second Row:** Tape or mastering machines A, B, C, & D inputs left & right.

**Third Row:** Tape or mastering machines A, B, C, & D outputs left & right.

**Fourth Row:** Tape, DAT, CD, and two track machine playback inputs to CRM.

**Fifth Row:** Aux send outputs 1 thru 8.

**Sixth Row:** Two sets of four mults (parallels) and Aux send outputs 9 & 10.

**Tie Lines:** The tie lines (120 in total) (200 in 48 patchbay) are in rows of eight. The tie lines are for any signal processing equipment. For ease of use, all outputs are on blue sockets, and all inputs are on black sockets.

## 5.2 Patchbay Wiring

All interfacing with external machines, effects, or amplifiers, can be done via the connector panels on the backplates of the console or via the multipins on the patchbay connector panel.

If the optional patchbay is installed, the connector system is 25 pole D-type. The cabling must be wired to male 25 pole sub-D type connectors. All the connectors are able to handle eight balanced signals and are wired identically. The installation section of this manual gives wiring schemes for all connectors in the Triton.

## 6.0 Instructions for operation

The Triton is designed to be the perfect answer for multitrack and MIDI studios. In order to get more familiar with the Triton, we shall discuss the entire recording process and divide it into five basic sequences. Sequence 1 through 4 are for the more conventional recording studios, and sequence 5 is for the MIDI studio.

**1. The session** - Recording from microphone or line input onto the multitrack machine. This could be from one or more channels at a time.

**2. The playback** - In this mode you would listen to what has been recorded on the multitrack machine.

**3. The overdub** - Overdubbing is listening to already recorded tracks and recording on empty tracks until all tracks are filled.

**4. The remix** - Playing of all recorded tracks together with signal processing equipment and all that is necessary to create the final mixdown.

# Instructions for operation.....continued

**5. The MIDI or Virtual Tracking** - Programmed keyboards, drum machines, reverbs, effects, tape tracks with your favorite singer singing and who knows what else, all at the same time direct to your Dat Machine, two track master machine, or cassette deck.

## Sequence 1 - The Session

**Record** - This is the beginning of a session. All input channels are placed in the mike mode by leaving the line switch in the up position if the microphone input is to be used in this channel. Phantom powering is applied if necessary. The EQ switch should be in the up position unless you require EQ on that mike. The signal flows through the fader and is available postfader to be routed by way of the assignment switches which can feed the input to your multitrack recorder. The LED bargraph reads the outgoing signal.

### Microphone / Line Gain

The amount of gain required may depend on the type of microphone being used, the sound pressure level, and the distance between the sound source and microphone. When the line switch is activated, the same gain control varies the gain of the separate electronics for the balanced line input. The "phase" switch affects both the mike and line inputs.

After plugging in a mike or line signal, depress the channel solo switch above the channel fader you are setting, set the solo status switch to pfl in the master section, then turn the gain control clockwise until a "0" output level is reached on the master meters. Now slide up the channel fader to "0". Now switch the solo out. If the signal source gets louder or softer, it may be necessary to re-check this setting. The volume will also fluctuate if you boost or cut the equalizer section.

### Monitoring

With the Triton series, you are able to monitor your multitrack by way of the separate monitor section. The monitor section of the in-line module allows you to have two usable inputs, both with EQ, both being able to send to the aux. busses, both with their own volume control, panpots, mutes and solos, and all routed at the same time.

### Multiple Modules Assigned to One or Two Tracks

When more than one microphone or line signal has to be recorded on a single track or in stereo on two tracks, a submix facility is required. This can be done easily on the Triton by way of the the internal subgroup amplifiers located on every channel module or the four "Floating Subgroups". Simply route to one of the 16 subgroups by activating a channel routing switch on as many input modules as required. Decide on which track you wish to record these signals and activate the related number. The channel metering will show the subgroup level which can be changed overall by the monitor group fader (Grp switch has to be depressed). In order to monitor these tracks on the modules the tape switch in the monitor section should be in the up position for monitoring pre-tape (console out) and in the down position for monitoring post-tape (tape switch down). If you wish to route several inputs to a track higher than 16, you would need to use the "Floating Subgroup System". For a more comprehensive description of how to use the "FSS", see section 3.4 of this manual.

### Insert Channel / Group

For high dynamic range types of inputs, a signal processor such as a compressor / limiter can be inserted in the channel or even in the monitor insert if an entire group signal needs to be processed. To do this, it is necessary to activate the GRP switch in the summing channel to use the monitor insert.

# Operation instructions.....continued

### Headphone (Cue)

During recording it is essential that the talent hear an independent mix of what the engineer and producer are hearing. Headphone mixes are usually derived from pre-fader auxilliaries. In the Triton aux 1 & 2 are ideal for this purpose. The best way to build a mix for the headphones is to have the monitor section of the in-line module feed aux busses 1 & 2. When there is limited time to set up a headphone mix, give the talent the CRM mix and build up an independent headphone mix on aux 1 & 2.

### Effect Sends

All unused aux sends can be used to send signals to signal processors such as the D&R "Qverb" 16 bit digital reverb, effects processors, and digital delays. The aux sends are usually post-fader in order that the right balance between untreated and treated signals is maintained however, it is possible to switch to pre-fader.

### Effects Returns

In the modern recording or MIDI studios of today, there is a demand for many effect returns and inputs for MIDI related gear. For that reason D&R has designed the Triton with dual stereo effects return modules. See section 4.0 of this manual for a complete description of this module. Any unused channel or monitor input can also be used for returning effects. Every channel can accept two returns with equalization and aux send capabilities.

# Sequence 2 - The Playback

### Multitrack playback

The Triton gives you a convenient way of monitoring your multitrack recorder. Put all the tape switches in their down position. Now the tape outputs are feeding the monitor path and you can adjust the amount of signal you desire and pan it within the stereo image.

Auxilliary sends and equalisation can be inserted in both signal paths whenever needed. Control over this processing is carried out by independant solo/mute systems in both signal paths.

# Sequence 3 - The Overdub

### Multitrack synchronizing

Overdubbing is the process of building up a recording track by track while listening to previously recorded tracks.

The Triton has an in-line monitor for each track of the recorder making it easy to overdub. In the monitor section of the in-line module, you push all tape switches down and do all your sync switching from the tape machine or remote. The headphone mix is on the aux send 1 & 2 busses. Aux 1 & 2 should get their signal from the monitor section. It is best to activate aux 1 - 2 pre-fader switches when using Aux 1 & 2 for a headphone mix.

# Operational instructions.....continued

## Sequence 4 - The Remix

### Multitrack mixing

Remix is the process of combining all recorded tracks with (keyboards and drum machines for MIDI) signal processing and sending the mix to a two track master machine, DAT machine, or cassette recorder. On the in-line module you must push the "mix" switch down. This routes the tape return to the channel input and routes the mike / line inputs to the monitor section of the module.

At this point you can use either a mike or line input in the monitor section and it will feed the stereo mix buss. This will give you two inputs per module in the final mix. You can activate the EQ to "mon" switches and have the high and low, and / or HMF and LMF sections of the equalizer on the monitor.

You must activate the EQ switch if you desire EQ on the channel or monitor. The incoming signals can be routed to the stereo mix buss via the "MIX" switch in the channel assign section. The monitor section normally feeds the stereo mix buss. Sub groups can be made up (as required) in the same way as during recording. You can have aux sends 1 - 10 getting their signal from the monitor section or channel path in sections of four.

## Sequence 5 - The MIDI or Virtual Tracking

### Virtual Tracks: The MIDI Set-Up

In most MIDI studios there will be an eight-track rather than a sixteen or twenty four track tape machine. The majority of music production is programmed on a sequencer using MIDI keyboards, sound modules, drum machines, or other MIDI related equipment.

Therefore, you will only require tape tracks for vocals and those instruments not adequately reproduced on today's keyboards. If there is a multitrack recorder in the MIDI studio, one of the tracks would be used to record a time code (SMPTE or MIDI code). This will allow your sequencer to keep keyboards, drum machines, and other MIDI equipment synchronized.

The Triton was designed with the multi-track and MIDI studio in mind. In today's medium to large MIDI studio, there is a need for 100 inputs or more to be used for everything from tape tracks to keyboards and drum machines. For this reason, the Triton, when fitted with both in-line modules and stereo return modules can net over 100 inputs in the virtual track session or mix down.

The in-line module is designed to net two inputs per module, each with level control, panpot, solo, and mute switch. The stereo return module has four inputs (two sets of stereo inputs), each with equalizers Aux sends, mute groups, FSS, as well as solo and mute switches.

# 7.0 Installation - Electrical

### Local Electrical Voltage

Before connecting the Triton, check the AC supply voltage setting by looking at the sticker on the back of the rack mount power supply. This sould be 110V for use in areas with an AC supply between 100V and 120V, and 220V for use in areas with an AC supply between 220V and 240V.

The main fuse should be 6.3 amp, 20mm (fast blow) for 110V service, and 3.15 amp, 20mm (fast blow) for 220V service. The phantom power supply fuse should be a 2 amp fast blow and the +/- 18V supply fuses should be 6.3 amp, 20mm fast blow. If one or more of the power supply LED indicators should go out, turn off the power supply and check the fuses on the front panel of the rack-mount power supply. After replacing a blown fuse with the correct size and rating, turn the power supplies on and check the three LED indicators. If you are still missing one or more of the power rails, turn off the power supply and call the D&R Technical Support Department. DO NOT REPLACE THE FUSE WITH ANY OTHER TYPE AS THIS CAN BECOME A SAFETY HAZARD AND WILL VOID THE WARANTY.

### Electrical Wiring

To take full advantage of the excellent signal to noise ratio of the Triton, it is necessary to read this part of the manual carefully.

Hum, radio frequency interference, buzzes and instability are often caused by improper wiring and poor grounding. Sometimes the incoming electrical ground is inadequate and a dedicated ground would need to be installed for the audio equipment.

Your local electric power company will provide you with all local electrical codes and safety regulations. There are some grounding rules to follow. All signals in a recording studio are referenced to ground. This ground must be clean and free of noise. A central point should be selected as the main grounding point and all grounds should originate from this point. This is commonly referred to as a "star ground system".

In some instances electrical contractors will daisy chain ground connections. This is unsuitable for a studio. Ideally, run a separate ground wire from each outlet and a separate ground wire for each piece of equipment. A separate wire from each equipment rack to the dedicated ground point is useful in cases where AC outlet grounds are not satisfactory. The dedicated ground point should be located at the rear of the console or equipment rack. Separate and identify "clean" and "dirty" AC outlets. Use clean outlets for audio equipment and the dirty ones for lighting, air conditioning, freezers etc. Do not intermix these two types of outlets. AC interferance can be greatly reduced by using an isolation transformer (Juice Goose) to power clean outlets. Ground this transformer directly to the dedicated ground point or as close as possible to the incoming ground.

All equipment should be physically located as far as possible from the main breaker panel. Unbalanced equipment may require isolation from the equipment rack so that ground loops are avoided.

# 8.0 Installation - audio

## 8.1 Interface CRM Levels

The Triton in its standard configuration can interface with all available equipment.

Attention concerning CRM output must be noted. This output delivers a nominal +4 dBu level which is sometimes too high for power amps rated at 300mV sensitivity for full output. In some instances an input attenuator at the power amp's input is required to reduce this +4 dBu level by up to 12 dB. Contact the D&R Technical Support Department for details.

## 8.2 The Initial Hook-Up

First connect the rack-mounted power supply (two supplies are provided with larger frames) to the console. All faders, monitors, and effect returns must be in the "down" or "off" position. In order to ensure the best signal to noise ratio for your system, the next steps should be performed in the order they are printed.

a. Connect the CRM outputs (located on the master module backplate) to the inputs of your control room speaker power amps. Now turn on the console power supply and then turn the power amp on and check for any hum, buzz, or interferance. Slowly turn the CRM control clockwise until it is wide open while listening for excessive noise. You should only hear a faint "hiss". If everything is O.K., continue. If any hum or excess noise is present, stop and try different ground and shielding arrangements until the system is clean. After checking the main power amp and speakers, check CRM 2 & 3.

b. Before making any other connections move each monitor fader to the 0 dB position with the tape switch depressed on each monitor section. Connect the multitrack outputs to the tape return connectors on the backplate of each in-line module (or via the 25 pole sub-D connector if the optional patchbay is installed), then connect each connector on the tape output of your multitrack. Check for hum or noise after each track has been hooked up. "Hiss" will normally increase slightly with each track. Connect the tape send output jacks to the inputs of the multitrack. Carefully listen for excessive noise or hum. If after hooking up an input or output excessive noise or hum is detected, stop and take corrective action before proceeding. **Do not hook up all 16, 24, 32, or 48 tracks and then listen.** You may need to rewire the entire cable harness to make the system clean.

c. Connect stereo tape recorders (inputs and outputs), stereo headphone amp, and all signal processors.

*NOTE: MAKE SURE THAT YOU CHECK FOR HUM OR NOISE AS EACH INPUT OR OUTPUT IS CONNECTED.*

## 8.3 Shielding and Grounding of Audio Equipment

The shield of any audio cable connection should be connected at one end only. If not, ground loops and high frequency cross-talk could result. Connect the shield as a general rule to the signal source (output) of anything. In high RF areas it is wise to ground the other end of the shield through a 0.01 microFarad capacitor. This will ground the RF but will not affect audio frequencies.

## 8.4 Typical Interface Situation Table

| Output | Input | Connect shield at: |
|---|---|---|
| Unbalanced | Unbalanced | Output |
| Unbalanced | Balanced | Output |
| Unbalanced | Differential | Output |
| Balanced | Unbalanced | Input |
| Balanced | Balanced | Output |
| Balanced | Differential | Input |
| Differential | Unbalanced | Output |
| Differential | Balanced | Output |
| Differential | Differential | Output |

Use the above table to interface your Triton to any external equipment such as multi-track machines, signal processing, and power amps. Balanced (in the above illustration) means transformer balanced while differential means electronically balanced. There are some cases which net better results in practice. Connect one circuit at a time and check for hum or noise. When connecting balanced microphones, use two conductor shielded audio cable and connect both conductors and the shield at both ends.

When connecting line level cables, use two conductor shielded cable and follow the instructions in the interface table. The only exception to these rules is with patch cords. These grounds are tied together in the console. We realize that the correct interfacing of all different equipment is difficult, but once properly installed the system will be clean and noise free.

It is important to understand the term balanced. Balanced does not mean the input or output is professional, the single factor that normally determines whether something is professional is the level of the input or the output. +4 dBu is considered professional. -10 dBv is considered semi-professional. Because many semi-professional tape machines are built to professional specifications, D&R builds into the Triton console the ability to interface with both levels.

## 8.5. Master section modules connectors

## Master module # 1 (CRM, Solo, & Studio)

| | |
|---|---|
| **Master insert left** | Tip = return<br>Ring = send<br>Sleeve = ground |
| **CRM 1, 2, & 3** | Tip = left<br>Ring = right<br>Sleeve = ground |
| **-10 dBv left output** | Tip = hot<br>Ring = n/c<br>Sleeve = ground |
| **+4 dB left balanced output** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Ground terminals** | GRN = To Starground<br>Patch = From patchbay |

## Master module # 2 (Mutes, Comm., & Oscillator)

| | |
|---|---|
| **Master insert right** | Tip = return<br>Ring = send<br>Sleeve = ground |
| **Studio out** | Tip = left<br>Ring = right<br>Sleeve = ground |
| **2 Track D left** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **2 track D right** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **-10 dBv out right** | Tip = hot<br>Ring = n/c<br>Sleeve = ground |
| **+4 dB out right** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Power supply** | Pin 1 =<br>Pin 2 =<br>Pin 3 =<br>Pin 4 =<br>Pin 5 = |

# Installation - audio.....continued

## Master module # 3 (Aux 1, 3, 5, 7, & 9)

| | |
|---|---|
| **Aux 1 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 3 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 5 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 7 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 9 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Two Track A right input** | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |
| **Two Track B right input** | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |
| **Two Track C right input** | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |

## Master module # 4 (Aux 2, 4, 6, 8, & 10)

| | |
|---|---|
| **Aux 2 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 4 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 6 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Aux 8 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |

## Module # 4 .....continued

| | |
|---|---|
| **Aux 10 output (balanced)** | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Two Track A left input** | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |
| **Two Track B left input** | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |
| **Two Track C left input** | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |

This concludes the master section module connections. Refer to section 7.0 of this manual for usefull ideas and wiring techniques.

## 8.6 Connecting the In-Line Module

| **Description:** | **Connector:** | **Connect:** |
|---|---|---|
| **Line** (input) balanced | 1/4" Stereo plug | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Tape** (tape return) balanced | 1/4" Stereo plug | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Channel INSert** send & return | 1/4" Stereo plug | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **MONitor INSert** send & return | 1/4" Stereo plug | Tip = hot +<br>Ring = cold<br>Sleeve = ground |
| **Group** (buss out) balanced | 1/4" Stereo plug | Tip = hot +<br>Ring = cold -<br>Sleeve = ground |
| **Mic** input (balanced) | Female XLR | Pin 1 = shield<br>Pin 2 = hot +<br>Pin 3 = cold - |

# Installation - audio.....continued

Use -10 dBv jumper settings on the PCB's for Fostex type equipment and +4 dBu connections for Studer and Sony type's.

The **LINE INPUT** is used for plugging in the outputs of digital reverbs, digital delays, drum machines, samplers, keyboards, CD players, cassette machines and any machines with line level outputs.

**Tape** input is used for connecting the output of your multitrack tape machine or the outputs of any effects (such as digital delays, digital reverbs, aural exciters, etc). This track or effect will now appear in the monitor section if the tape switch is depressed. If the mix switch is depressed, this track or effect will appear in the channel and be controlled by the channel fader. The microphone input or line input will now appear in the monitor section of the same module. It will be controlled by the monitor fader, and panned onto the stereo mix buss. This allows you to mix two completely independant signals on the same module.

**CHANNEL INSERT** and **MONITOR INSERT** sends and returns are used to patch (pre-fade) into the channel or monitor any signal processing equipment such as compressors, limiters, equalisers etc.

The **GROUP** output (tape outs) is used as a summed output of any channel. It will appear as a direct output of the channel when you push the color-coded assign switch and the BNC switch in the routing section. In using the "Floating Subgroup System", its output would appear here.

The **MIC INPUT** is used for plugging in all types of microphones or direct boxes. This is an active balanced input using the latest circuit technology available today. Each channel module has 48 volt phantom powering indivually switchable.

*NOTE: DO NOT USE EXTERNAL PHAMTOM POWER AND THE POWERING IN THE CONSOLE AT THE SAME TIME!*

# Troubleshooting and servicing

## 9.0 Troubleshooting

It is essential to study the signal flow chart carefully, only then can you hope to isolate problems. By tracing the signal from input to output jacks, it is possible to locate a problem. If for any reason you are unable to isolate a problem, contact the D&R Technical Support Department for advice. If the problem cannot be corrected over the phone, D&R will dispatch a replacement module (ground freight prepaid) the same day. Most problems can be found using logical thinking and simply replacing socketed integrated circuits.

## 9.1 Removing a Module

The Triton is a complex piece of equipment and some understanding of its internal layout is necessary before removing a module.

An input module has wiring to the LEDbar, bussing cables, backplates, and star ground system. All of these wires must be removed before with drawing a module from the console. Each module has computer grade connectors for ease of the disconnect.

Turn off the power supply. It is now possible to remove the two module retaining screws and carefully lift the module until the meter wiring and internal cable harnessing can be unplugged. At this point extender cables (if ordered) can be connected.

The master sections can be removed from the frame in the same way.

### Patchbay

The patchbay is fully modular and can be serviced after first removing the backplates, then removing the cables attached to the card that needs servicing. The card can be removed after unscrewing two screws that push the patchpanel card downwards. The card will still be connected to the star ground system, which will need unplugging before the card comes free of the console wiring.

# Connectors

## 10.0 Connectors

# Specifications

## 11.0 Specifications

| | | |
|---|---|---|
| INPUTS: | **Mic input:** Balanced,<br>(R.F. suppressed), 2kOhms.<br>C.M.M.R. at 50Hz -70dB.<br>Sensitivity: -60 dBu max. for<br>+4 dBu output.<br>Noise mic EIN: -129.5 dBu, (A-weighted)<br>150 Ohm source. | **Line inputs:** Bal. 10k Ohms -20 dB to +20 dB.<br>**Tape inputs:** +4 dBu bal./-10 dBu unbal.<br>**Chan./Mon. inserts:** 10k Ohm/47 Ohm bal. 0dBu<br>**Stereo machines:** +4dBu balanced,<br>-10 dBv unbalanced |
| OUTPUTS: | **Channel/Group and Main outputs:**<br>Balanced +4 dBu/-10dBv unbalanced.<br>All other outputs: semi-balanced,<br>+4 dBu, (ground compensated). | **CRM 2 & 3:** semibalanced<br>(ground compensated)<br>**Noise:** (master fader down) -88 dBr (A-weighted).<br>**Noise:** (32 chan. routed) -84 dBr (A-weighted). |
| EQUALIZATION: | **High pass filter:** -3dB at 100 Hz.<br><br>HMF & LMF EQ bands are switchable<br>between channel and monitor.<br><br>Master EQ in/out switch per channel. | **HF:** +/- 16dB from 4,000Hz to 20,000Hz<br>shelving characteristics.<br><br>**LF:** +/- 16dB from 20Hz to 500Hz<br>shelving characteristics.<br><br>**HMF:** +/- 16dB from 1,000Hz to 20,000Hz<br>Bell characteristics Q factor 1.5<br><br>**LMF:** +/- 16dB from 50Hz to 1,000Hz<br>Bell characteristics Q factor 1.5. |
| OVERALL: | **Nominal operating level:** 0 dBu (0.775 mV)<br>**Frequency response:** any input to any<br>output: 20Hz-20kHz -0.5dB (10Hz - 200kHz -3dB)<br>**Total harmonic distortion:** microphone input to<br>group output: 1kHz: < 0.007%, 10kHz: < 0.009%. | **Maximum output:** +26dBu into 600 ohms.<br>**Maximum headroom:** not less than +22dB<br>anywhere in the console.<br>**S/N ratio:** -84 dBr (32 channels routed)<br>-96 dBr master fader down. |
| CROSSTALK: | **Mic to line:** <-90 dB at 1kHz.<br>Channel mute: <-90 dB at 1KHz.<br>Pan-pot isolation: < 76 dB at 1kHz. | Channel routing: <-90 dB at 1kHz.<br>Channel fader: <-97 dB at 1kHz.<br>Aux send kill: <-85 dB at 1kHz. |
| SIZE: | 30 chassis: 1282 mm (50.47 inches) wide.<br>38 chassis: 1561 mm (61.46 inches) wide.<br>51 chassis: 1995 mm (78.54 inches)wide.<br>74 chassis: 2706 mm (106.61 inches) wide. | Height: 1022.91 mm (40.27 inches)<br>Depth: 1052.74 mm (41.44 inches) |
| WEIGHT: | 30 frame: 80 kg (176 lbs.)<br>38 frame: 100 kg (220 lbs.)<br>51 frame: 110 kg (242lbs.)<br>74 frame: 150 kg (330 lbs.) | |
| OPTIONS: | 37 segment meters (switchable peak/VU)<br>Analog VU meters<br>Phase meter. | Penny and Giles faders<br>C-Mix automation<br>Installation cabling w/sub D connectors |

TRITON FRAME CONFIGUATIONS:

Frame 30 accepts: 30 modules (24 in-line + 6 returns).
Frame 38 accepts: 38 modules (32 in-line + 6 returns).
Frame 51 accepts: 51 modules (32 in-line + 6 returns + patchbay).
Frame 74 accepts: 74 modules (48 in-line + 6 returns + patchbay).

Patchbay 32 width equivalent to 13 module positions.
Patchbay 48 width equivalent to 20 module positions.

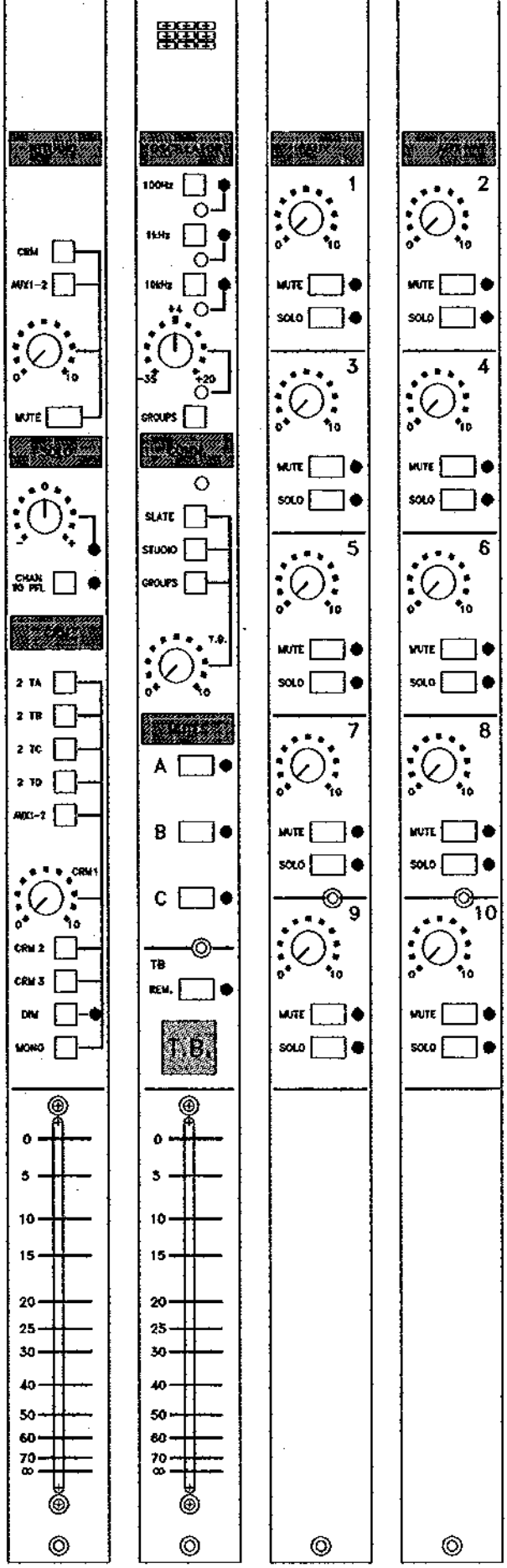
Dear Triton owner,

In this manual we have tried to give you an overview of all that the Triton has to offer. If you have any questions, do not hesitate to contact us or the D&R USA customer support department. With the Triton series there is no limit to your creativity. We wish you many years of enjoyable mixing.

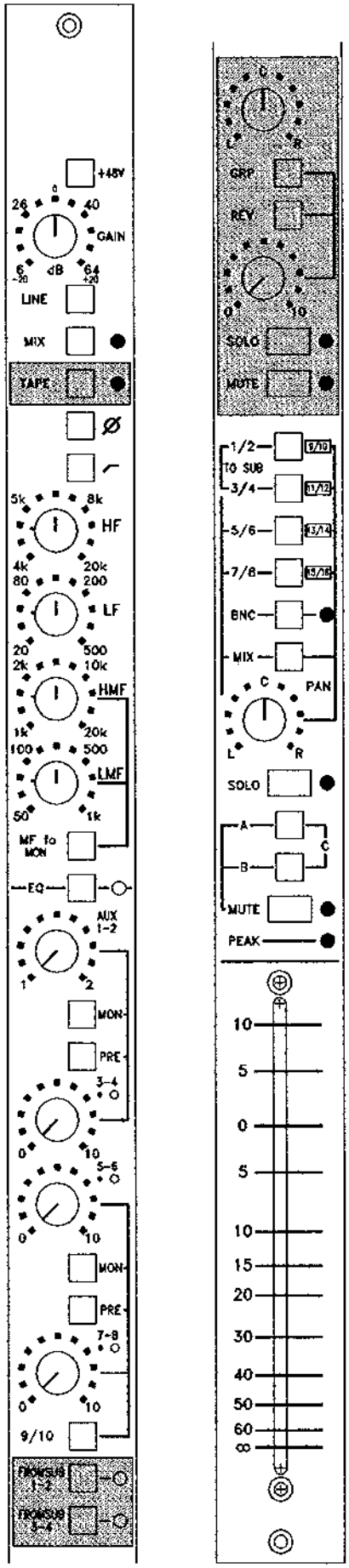
Best regards,

Duco de Rijk
PRESIDENT D&R, HOLLAND

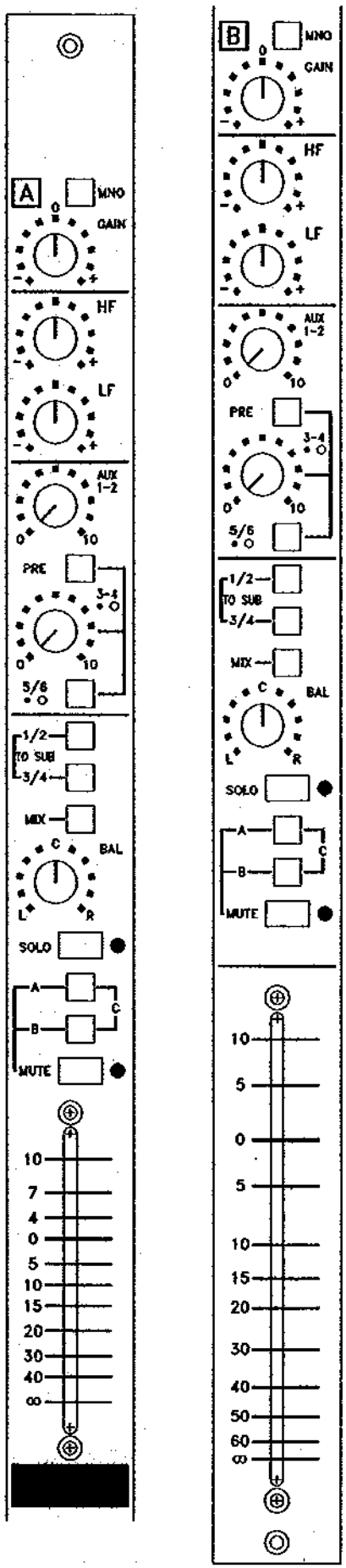
This manual was written by Duco de Rijk (D&R Holland) and Paul Westbrook (D&R USA). We hope you will find it to be useful and easy to understand. As ever, we are open to any suggestions about this manual or any D&R product.



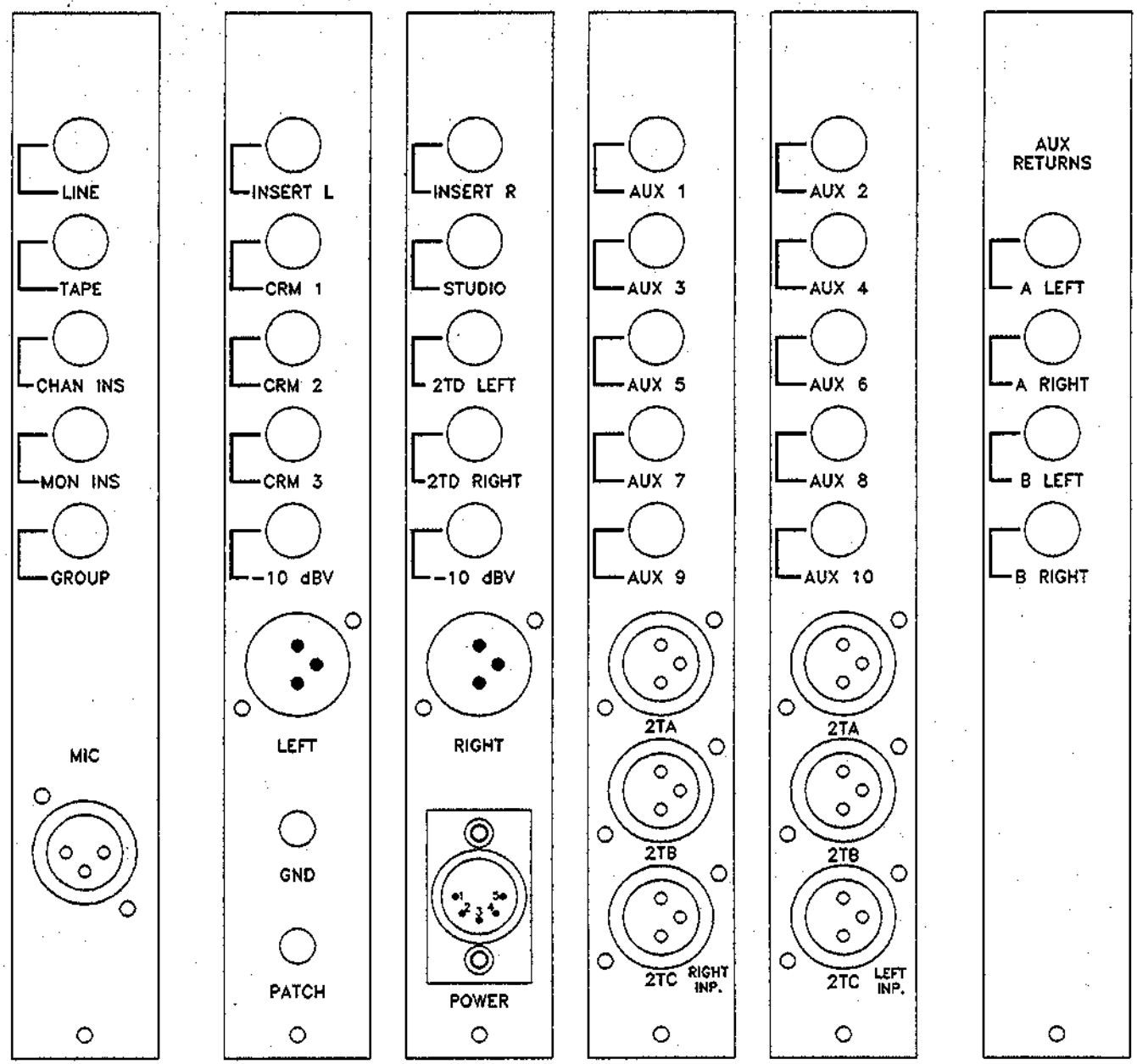

TRITON MASTER




TRITON IN-LINE CHANNEL




TRITON DUAL
STEREO RETURN CHANNEL




CHANNEL MASTER DUAL STEREO