DRUM STATION

ASM
ANALOGUE SOUND MODELLING

novation

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* TR808 & TR909 are trademarks of Roland Corporation, Japan

Thank you for buying the Novation DrumStation Rack drum synthesizer. The module you have purchased is ideal for producing the kind of classic synthesized drum sounds which have returned to popularity in recent years in various styles of dance music.

The two most popular drum machines which originally produced these sounds - Roland's TR808 & TR909* - are no longer manufactured and as a result, second-hand units are now changing hands for far more than their original selling prices (and indeed the selling price of the DrumStation). The DrumStation will allow you to produce these sounds with stunning realism and 'tweak' their parameters using the original analogue synthesis techniques, unlike sampling or PCM playback which 'freezes' the sound and makes it extremely difficult to edit. Additionally the DrumStation is programmable so once you have adjusted the sounds to your taste you can store them in complete 'kits'. You have the recall of digital memories but with the life and warmth that only original analogue sounds have. To get you started 25 Factory kits have been provided and there are 15 User Programs which you can use to store your own kits, once you become familiar with the editing parameters. The DrumStation features stereo left/right and 6 individual assignable audio outputs so you can process your drum sounds individually through your mixer EQ and external effects.

The DrumStation is triggered via MIDI, allowing you to program your drums on your favourite MIDI sequencer (hardware or software). The TR808 and TR909 kits can be accessed simultaneously allowing any combination of drum sounds to be played as a 'Kit'. MIDI Controllers are transmitted when any drumsound editing knob is adjusted in real-time and these too can be recorded on a MIDI sequencer and reproduced from sequencer playback. For those who have vintage equipment supporting Roland DIN Sync the DrumStation uses the incoming MIDI Clock to generate the original Roland DIN Sync 5v output trigger for external devices. Welcome to a percussive "Analogue for the 90s".

*TR808 & TR909 are trademarks of Roland Corporation, Japan

Front Panel
Controls
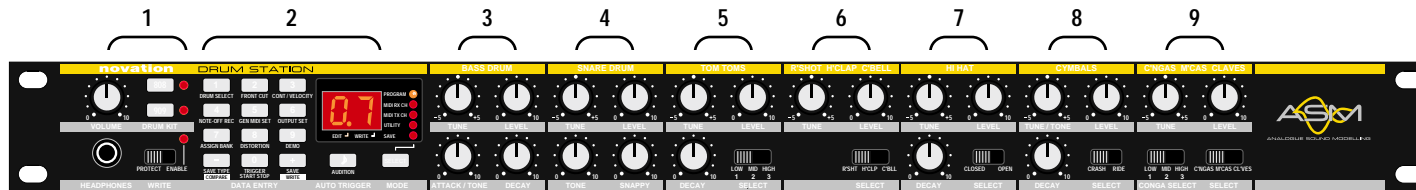
1 Master Volume Section

This section contains the Master Volume control, Drum Kit select buttons, Headphone output socket and the Program write switch.

2 Data Entry/Program Section

This section contains the 12 Data Entry buttons, Display and Menu LED's, Audition/AutoTrigger and Mode select buttons.

3 Bass Drum Section

This section contains the Bass Drum Level, Tune, Attack/Tone, and Decay controls.

4 Snare Drum Section

This section contains the Snare Drum Level, Tune, Tone, and Snappy controls.

5 Tom Toms Section

This section contains the Tom Toms Drum Level, Tune, Decay and Select controls.

6 Rim Shot /HandClap Section

This section contains the Rim Shot and HandClap Level, Tune and Select controls.

7 Hi Hat Section

This section contains the Hi Hat Level, Tune, Decay and Select controls.

8 Cymbals Section

This section contains the Cymbals Level, Tune/Tone, Decay and Select controls.

9 Congas/Maracas/Claves Section

This section contains the TR808's Congas/Maracas/Claves Level, Tune, Select and Conga Select controls.

2

1   2   3   4   5
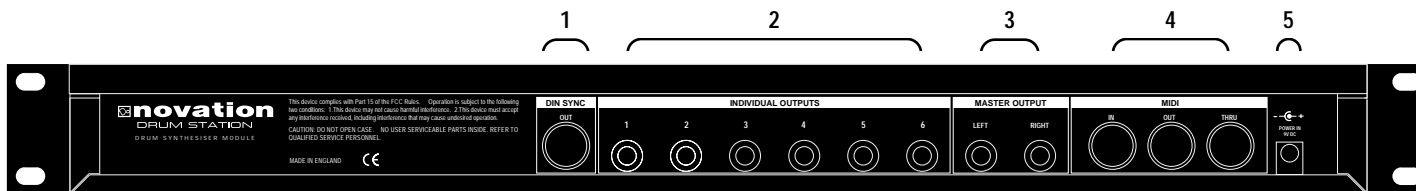
1 DIN Sync. Out
This connector is used to control the Tempo/Start-Stop of classic analogue drum machines or synthesisers from the MIDI Clock.

2 Individual Outputs
The six connectors in this section are used to separate a drum sound(s) from the main stereo left/Right outputs. The sounds(s) can then be equalised or processed individually.

3 Master Output
The two connectors deliver a stereo line level output signal for connection to a mixing desk or amplifier.

4 MIDI
IN - This connector is used to receive MIDI Data from an external device.
OUT - This connector is used to Transmit MIDI Data to an external device.
THRU - This connector re-transmits MIDI Data received by the MIDI IN socket to an external device.

5 9V DC INPUT
Connect the output plug of the AC Adapter supplied (PSU-4) with the DrumStation to this socket.

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BASIC SETUP

DIN SYNC | INDIVIDUAL OUTPUTS | MASTER OUTPUT | MIDI

OUT | 1 2 3 4 5 6 | LEFT RIGHT | IN OUT THRU | POWER IN 9VDC

Novation
PSU-4
Power Supply

Mixer/Amplifier Audio Inputs   MIDI OUT MIDI IN   MIDI OUT MIDI IN

Mixer/Amplifier   Computer/Sequencer   Master Keyboard/Module
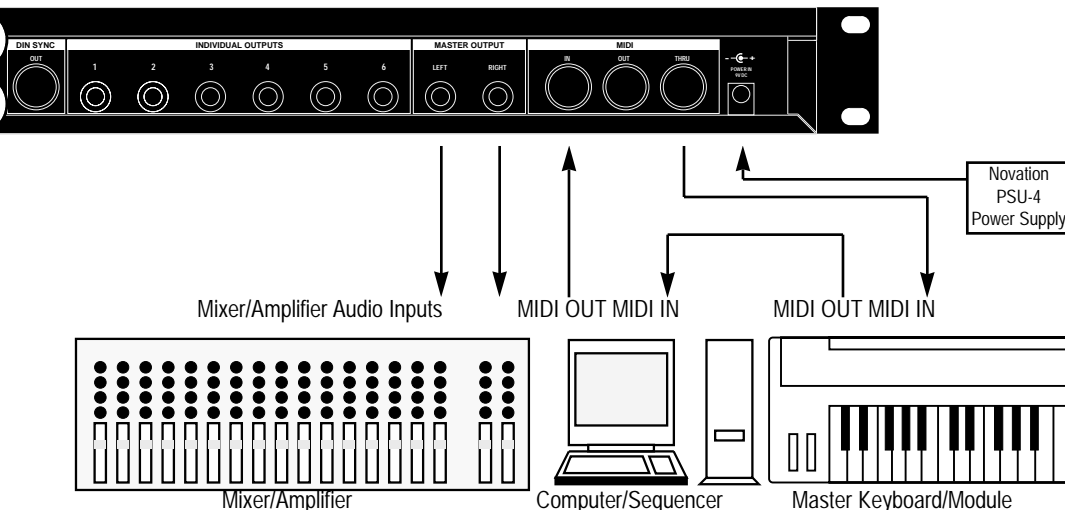
Connect the 'Master output' sockets of the DrumStation Rack to a suitable amplifier or mixing desk's stereo inputs and set the 'Volume' control on the front panel to a reasonably high output level (9-10). This will maintain a good signal to noise ratio. Make sure that the input volume setting on your amplifier or mixer is initially set to zero. Connect the MIDI Out from your master keyboard or sequencer to the MIDI In on the DrumStation Rack and check that the 'Write' switch is in the 'Protect' position. Now, connect the power supply (Novation PSU-4) to the socket marked 'Power In 9VDC' and plug into a suitable AC power outlet. Switch on the power to the DrumStation and the display should now illuminate showing the last selected program number. Now switch on your amplifier and adjust the volume accordingly. You can now use your master keyboard or sequencer to play the drum sounds of the currently selected program (the DrumStation Rack is initially set at the factory to receive on MIDI channel 10). To listen to all 25 factory presets, first make sure the 'Program' LED is on (if not, use the 'Mode' button to re-select) and then use the 'Data Entry' keypad to call up sounds '00' to '24'. See page 44 for factory program information. You can also use the 'Audition' button on the front panel to trigger the sounds.

On page 4 is a diagram of the basic way to set up the DrumStation Rack. Normally the setup should be as follows: If the Master Keyboard is a "Workstation" i.e. it has a Synthesiser built in, turn "Local Off" or the equivalent in its MIDI setup. (Refer to the manufacturers Owners Manual for details on how to do this.) Turn the Computer Software/Sequencer's "Soft Thru" (or sometimes called "Echo Back") to the "ON" or "Enabled" position. Now when selecting a "Track" in the Computer Software/Sequencer that is assigned to the MIDI RX channel of the Drumstation, (Refer: Page 11) playing the keyboard should play the Drumstation through the Headphones/Monitors. Similarly "Tracks" in the Computer Software/Sequencer that are assigned to the MIDI channel(s) of the "Workstation" should make it produce sound. If not please refer to the Keyboard & Computer Software/Sequencer manufacturers Owners Manuals for details on how to do this.

Note: This setup does not allow the recording of knob movements on the Computer Software/Sequencer. This is because the MIDI output of the DrumStation is not connected to the input of the Sequencer/Computer. To record Knob movements in realtime refer Advanced Setup on page 6.

Note: If there are additional Keyboards/Modules connected via MIDI as shown, this diagram does not include audio for the Keyboard/Module. The audio outputs of these devices must also be connected to the mixer.

DIN SYNC | INDIVIDUAL OUTPUTS | MASTER OUTPUT | MIDI

OUT | 1 2 3 4 5 6 | LEFT RIGHT | IN OUT THRU

ADVANCED SETUP

Novation
PSU-4
Power Supply

MERGE

Vintage Equipment DIN Sync Input   Mixer/Amplifier Audio Inputs   MIDI OUT MIDI IN   MIDI OUT MIDI IN

Mixer/Amplifier   Computer/Sequencer   Master Keyboard/Module
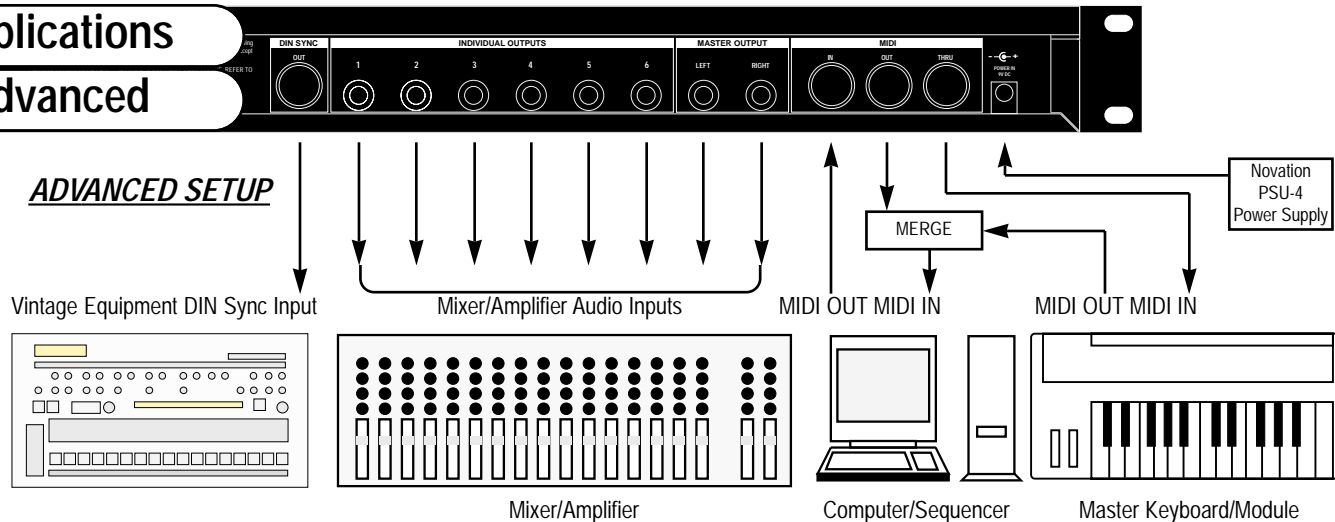
This is the advanced way to setup the DrumStation and utilises all of the rear panel features. This setup allows realtime recording of knob movements onto the Computer Software/Sequencer as both the MIDI output of the keyboard and the MIDI output of the DrumStation are merged with an external (not supplied) MIDI Merge box. If the Master Keyboard is a "Workstation" i.e. it has a Synthesiser built in, turn "Local Off" or the equivalent in its MIDI setup. (Refer to the manufacturers Owners Manual for details on how to do this.) Turn the Computer Software/Sequencer's "Soft Thru" (or sometimes called "Echo Back") to the "ON" or "Enabled" position. Now when selecting a "Track" in the Computer Software/Sequencer that is assigned to the MIDI RX channel of the Drumstation, (Refer: Page 11) playing the keyboard should play the Drumstation through the Headphones/Monitors. Similarly "Tracks" in the Computer Software/Sequencer that are assigned to the MIDI channel(s) of the "Workstation" should make it produce sound. If not please refer to the Keyboard & Computer Software/Sequencer manufacturers Owners Manuals for details on how to do this. When using the DIN Sync feature ensure that your sequencer is transmitting MIDI Clock. If is is not this function will not work.

Volume - Rotary

This knob adjusts the overall output volume of the DrumStation on both the Main L/R and Headphone outputs. The volume of a drum sound can be set individually using the 'Level' controls in each section.

NOTE: This control can be overidden by MIDI Volume data. If a MIDI Volume of '0' has been received by the DrumStation, no output will be heard regardless of the position of this knob. To reset the volume either transmit the relevant MIDI Volume level or move the Volume knob - this automatically overides the MIDI setting.

Drum Kit - Buttons

Here you select which drum kit (TR808 or TR909) will be edited when using the front panel controls or any of the Utility functions. Each 'Progam' has TR808 & TR909 sounds - see 'Function 5 - General MIDI Setup' on page 36.

Write - Switch

This switch protects your programs from accidental erasure. During normal operation it should be left in it's 'Protect' position however, when you have edited or created a new program that you want to save, moving it to the 'Enable' position will allow you to "write" over an existing program - see "Writing a Program Into Memory" on page 13.

Headphone - Socket

Use this 1/4 jack socket to monitor the output of your DrumStation Rack via headphones. This output will drive any type of headphones.

Master Volume
Section
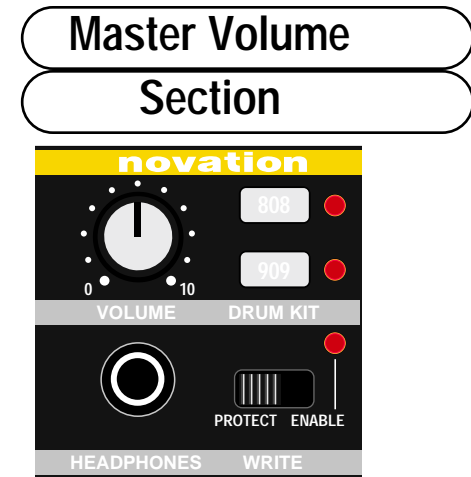
Data Entry/Program Keypad

This is where you select the programs on the DrumStation Rack, set the MIDI transmit and receive channels, set the various utility functions and store newly edited programs.
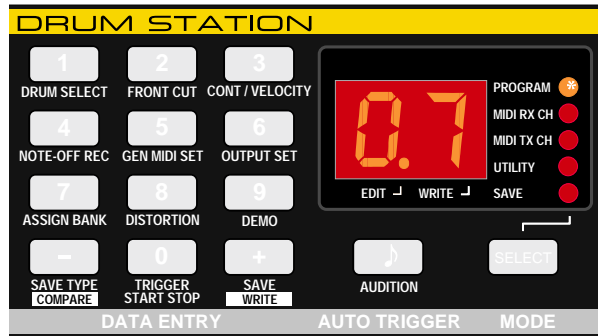
NOTE: When editing a program, the current position of a knob or switch will probably be totally different to that of the program selected, so when you turn a rotary control more than a few degrees or move a switch expect the sound parameter to "jump" to the new value.

Data Entry Keypad - Buttons

The 12 buttons of the calculator style 'Data Entry' keypad are used to call up and set the various operating parameters of each 'Mode'. You can use two methods to enter a number :

1. DIGIT INPUT - using the buttons 0 to 9.
NOTE: this must always be a two digit entry, for example :
Selecting program sound 8 —— press the '0' and '8' buttons - display reads '08'.
Selecting program sound 17 —- press the '1' and '7' buttons - display reads '17'.

2. INCREMENT/DECREMENT - using the '-' and '+' buttons.
Press the '+' button to move up to the next program or value.
Press the '-' button to move down to the next program or value.
These buttons can also be used to 'scroll' through values by pressing and holding down until the desired value is reached.

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Audition / Auto Trigger - Button

This button is used to trigger a drum sound from the currently selected program. It provides a convenient way of monitoring a sound whilst working at the control panel. The Auto-Trigger function will play the currently edited sound automatically at a pre-determined tempo.

Data Entry/Program
Audition/AutoTrig

Audition

Press the Audition button to trigger the currently edited drum sound. When a control or switch in another section is moved, the Audition button will automatically change over to trigger that sound.

Example: Move any control in the 'Hi-Hat' section - Audition button triggers the Hi-Hat, then move any control in the 'Snare Drum' section - Audition button triggers the Snare Drum etc.

NOTE: In the 'Tom Toms', 'Rimshot/Handclap/Cowbell', 'Hi Hat', 'Cymbals' and 'Conga/Maracas/Claves' sections the physical position of the 'Select' switch always determines which drum sound is triggered.

Auto Trigger

The Auto-Trigger plays a basic 4 beats / bar sequence, accenting beat one.

To **start** the 'Auto-Trigger' running, press and hold the 'Audition' button and press the - 'Trigger Start/Stop' ('0') button on the data entry keypad. The currently edited sound will auto-trigger at the set tempo. When the control of a different drum sound is moved, the auto-trigger will 'jump' over to playing that sound.

Example: If the last control moved was in the Snare Drum section, the auto-trigger will play the Snare Drum sound. Move any control in the Hi-Hat section - auto-trigger plays the Hi-Hat sound. Move any control in the Bass Drum section - auto-trigger plays the Bass Drum etc.

To **stop** the Auto-Trigger , press and hold the 'Audition' button and press the '0' - 'Trigger Start/Stop' button.

To adjust the **tempo**, start the autotrigger playing as above, press and hold the 'Audition' button and use the '+' or '- '

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Data Entry/Program

Program Change

buttons on the data entry keypad to speed up or slow down the auto-trigger sequence. Auto-Trigger tempo is a global setting and is not saved with each program.

The Audition and Auto-Trigger features can also be used when editing sounds in the various Utility functions - see Utility Mode on page 30.

MODE - Button

This button is used to select which of the five main parameter 'Modes' are accessed by the 'Data Entry' keypad. The current mode is indicated by one of five LED's on the right hand side of the display panel.

NOTE: When the DrumStation Rack is switched on, 'Program' mode is automatically selected. Each time the Mode button is pressed the next 'Mode' in the menu will be selected i.e. MIDI RX Channel, MIDI TX Channel, Utility and Save. From 'Save', the next press will loop the menu back to the Program mode.

MODE 1 - Program Change.

This is where you select one of the DrumStation's 40 programs. The program number displayed will be the one selected prior to power being turned off. To select a different program, first check that the 'Program' LED is on. Using the 'Data Entry' keypad as described above, you can quickly call up any of the DrumStation's 40 programs. The recognised numbers in this mode are from '00' to '39'. You can also use MIDI Program Change commands from a sequencer or other external MIDI device to call up programs.

NOTE 1: Because the DrumStation Rack's program numbers begin at '00', the next higher number must always be used to call up the correct sound. i.e. to select program 18, transmit a MIDI Program Change 19.

NOTE 2: The 25 factory sounds are stored in programs '00' to '24' whilst the 15 user locations from '25' to '39' are all initially set up with a basic drum kit - see page 44 for Factory Program listings.

MODE 2 - MIDI Receive Channel

This is where you set the MIDI receive channel for the DrumStation Rack. Use the 'Mode' button to select the 'MIDI RX Ch.' mode - LED on, and then the 'Data Entry' keypad to enter your selection. The recognised numbers in this mode are from '01' to '16'.
NOTE: the 'MIDI RX CH.' LED will flash when MIDI data is received on this channel.

MODE 3 - MIDI Transmit Channel

This is where you set the MIDI transmit channel for the DrumStation Rack. Use the 'Mode' button to select the 'MIDI TX Ch.' mode - LED on, and then the 'Data Entry' keypad to enter your selection. The recognised numbers in this mode are from '01' to '16'.
NOTE: The MIDI Tx and Rx channel settings are memorized when the power is turned off.

MODE 4 - Utility

This is where you access the various Utility functions of the DrumStation Rack. See page 30 for full details on the operation and features of the Utility mode.

MODE 5 - Save System Exclusive Data Dumps

This is where you 'Save' the DrumStation Rack programs onto a computer or other data storage device using MIDI sysex dumps. There are two types of 'Save' as follows:

Type	Function	Display Ident.
1	Save single program	SS
2	Save all programs	SA

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Data Entry/Program

Loading Sysex

Ensure that your data storage device is ready to accept the data. Use the 'Mode' button to select 'SAVE' mode - LED on, the display shows:

NOTE: The program 'Saved' will be the program currently selected in the 'Program' mode. If you were editing a program, the modified version will be saved. Press the 'SAVE' ('+') button to transmit the single program.

To save all the programs in the DrumStation Rack press the 'SAVE TYPE' ('-') button once, the display changes to:

Ensure that your computer or data storage device is ready to accept the sysex bulk dump. Press the 'SAVE' ('+') button to transmit the 'All programs' dump. The Global settings (MIDI Tx and Rx channels) will also be saved.

NOTE: The display will briefly go blank as the data is transmitted.

Loading System Exclusive Data Dumps

Single Programs

1 If you want to overwrite an existing program, select the 'Program' mode and call up the program number you want to use. Now, move the 'Write' switch to the 'Enable' position and transmit the sysex dump from your computer. The 'Write' LED on the display will flash to confirm reception. Return the 'Write' switch to the 'Protect' position.

NOTE: This operation will erase the existing program and replace it with the program from the computer.

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2 If you want to listen to a program before committing it to memory, select the 'Program' mode (don't worry about which program number comes up). Ensure that the 'Write' switch is in the 'Protect' position and then transmit the sysex dump from your computer. The 'Edit' LED on the display will come on to show that the program available is different to the one displayed i.e. an 'edited' program. Now you can use the 'Compare' procedure to select a suitable location to store the imported program - see the 'COMPARE' section on page 14.

All Programs

 If you want to overwrite all the existing programs, move the 'Write' switch to the 'Enable' position and transmit the sysex dump from your computer. The 'Write' LED on the display will flash to confirm reception. Return the 'Write' switch to the 'Protect' position.

NOTE: if the 'Write' switch is in the 'Protect' position when the sysex dump is transmitted from your computer the display will flash to indicate that the data cannot be loaded.

Editing a Program

To change or 'Edit' a program, simply adjust the parameters you wish to alter. The Edit LED on the display will flash to show that you are no longer listening to the stored program. If you do not store this new edit before calling up another program it will be lost.

NOTE: Certain sounds are only available on each Kit.**Example:** The TR909 does not include a Cowbell (C'BLL)

If, whilst editing a Program, a sound is selected that does not appear on that particular kit, the DrumStation will automatically switch over to the relevant kit. The selected kit is always indicated by the 'Drum Kit' LED's in the Master Volume section.

Writing a Program into memory

The program memory on the DrumStation Rack is divided up as below. If you edit a factory program, you can only save it in one of the 15 user program locations - just think of the 25 factory programs as a 'Reference Library' to take drum kits from.

Data Entry/Program

Compare

If you want to start creating a drum kit of your own from scratch, use one of the 'Blank' kits initially stored in the user program locations.

To store a new or edited program, move the 'Write' switch to the 'Enable' position - LED flashes. Now, using the 'Data Entry' buttons ('0' to '9' only) select the program number where you want to store the program. To store the program in the same location (25 to 39 only) simply press the 'WRITE' button. If you want to listen to a program before overwriting it use the Compare function as follows:

COMPARE: When you have edited a program, move the 'Write' switch to the 'Enable' position and the Enable LED flashes. Press the 'COMPARE' button once and the 'Edit' LED will flash at a faster rate to indicate 'Compare' mode is active. You can now listen to the original program before deciding whether you want to overwrite it or not. Check the program using an external keyboard/computer or the 'Audition' button on the front panel. Pressing the 'COMPARE' button again will bring back the edited program. If you do want to save the program in this location, press the 'WRITE' button and the 'Write' LED on display panel flashes momentarily. If you don't want to save the program in this location you can choose another by simply entering any program number from '25' to '39' using the 'Data Entry' keypad (buttons '0' to '9' only / the '-' and '+' cannot be used). Once again, you can check the programs using the 'COMPARE' feature and then, when you have found a suitable location, press the 'WRITE' button. The program is now saved.

NOTE 1: Always return the 'WRITE' switch to the 'Protect' position after completing a save operation. This will avoid any accidental erasure of programs. The 'Write' LED will flash to warn you of the 'Enabled' state.

NOTE 2: Programs can only be saved in the User locations ('25' to '39'). If you attempt to save a program into any of the Factory locations ('00' to '24') the display digits will flash rapidly to warn that this operation cannot be competed.

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Voice Architecture

In the original TR808 and TR909 , many analogue circuits were used to produce the imitations of the various drum sounds. The essential sounds produced by skins (Bass Drum and TomToms) rely mainly on a pitched element, those produced by struck metal (HiHat & Cymbals) are based on multiple noise sources. Sounds like Snare and Rimshot use a combination of the two, one for the skins and one for the snare chain. As a result, there are different parameters for each drum sound, enabling you to make interesting variations within the sound category. Some parameters are only available on one or two sounds (eg. Attack on the TR909 Bass Drum) because those parameters are not so useful on the other sounds. Each of the parameters is covered in the appropriate section where you need to understand how it relates to that particular sound.

Other parameters feature on most or all sounds (eg. Decay, Tune & Level). Decay governs how quickly the sound dies away, Tune the pitch of the sound and Level the maximum volume it is played in the respective mix.

Analogue Sound Modelling

The DrumStation faithfully re-creates the original analogue sounds of the TR808 & TR909 using a new digital system specially developed by Novation - Analogue Sound Modelling (ASM).

A typical drum sound has a very complex structure made up of many simple waveforms all occuring at the same moment in time. To re-model an original drum sound, first it must be broken down and analysed so as to identify the various simple waveforms in it's structure as these can be synthesised more easily. When all these waveforms are regenerated and added back together the original sound is faithfully re-created in every detail and realtime 'fluid' changes to the character of the drum sound can still be made using any of the front panel controls, just like the original TR808 and TR909.

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TR808 / TR909

Notes

Drum Sounds

The TR808 and TR909's range of drum sounds were not identical. For your reference, the full set of sounds from the original units and the method used to re-create them in the DrumStation are listed below.

Drum Sound	ID	TR808	TR909	ASM	SAMPLE
Bass Drum	BD	●	●	✔	
Snare Drum	SN	●	●	✔	
Rim Shot	RS	●	●		✔
Handclap	HC	●	●		✔
Closed Hi Hat	CH	● **	● +	✔	✔
Open Hi Hat	OH	● **	● +	✔	✔
Ride Cymbal	RC		●		✔
Crash Cymbal	CY	● **	● +	✔	✔
Low Tom	LT	●	●	✔	
Mid Tom	MT	●	●	✔	
High Tom	HT	●	●	✔	
Cowbell	CB	●			✔
Low Conga	LC	●		✔	
Mid Conga	MC	●		✔	
Hi Conga	HC	●		✔	
Maracas	MA	●			✔
Claves	CL	●			✔

** Recreated using ASM on 808 only
+Sample with ASM envelopes etc

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Drum Sound Controls

The TR808 and TR909 also had differences in their sound editing controls. To give the DrumStation enhanced sonic capabilities, the controls in each section will affect both drum kits. For your reference, the controls of the original units and the DrumStation's are as follows:

808 KIT   ●

DrumStation   ● + ○

808 KIT	BD	SN	RS	HC	CH	OH	CY	LT	MT	HT	CB	LC	MC	HC	MA	CL
LEVEL	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
TUNE	○	○	○	○	○	○		●	●	●	○	●	●	●	○	○
TONE	●	●					●									
ATTACK																
DECAY	●				○	●	●	○	○	○						
SNAPPY		●														

909 KIT   ●

DrumStation   ● + ○

909 KIT	BD	SN	RS	HC	CH	OH	CY	LT	MT	HT	RC
LEVEL	●	●	●	●	●	●	●	●	●	●	●
TUNE	●	●	○	○	○	○	●	●	●	●	●
TONE		●									
ATTACK	●										
DECAY	●				●	●	○	●	●	●	○
SNAPPY		●									

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Bass Drum

Section

This section controls the timbre of the Bass (or kick) drum, the lowest pitched instrument in both the conventional or electronic drum kit. This is one of the most crucial sounds for dance and many other styles of music. The classic analogue Bass drum's are the TR909 and TR808 Bass drums. All the character of the original TR909 & TR808 Bass drums are faithfully reproduced using ASM Technology.

Level - Rotary

This knob controls the volume of the Bass drum on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of the bass drum in the "mix".

Tune - Rotary

This knob controls the pitch of the Bass drum. Turn anti-clockwise and the pitch will be lowered resulting in a 'looser' sound, clockwise and the pitch is raised, as if the skin on a real drum had been tightened.

NOTE: This control was not featured on the TR808. To re-produce the original pitch setting of the TR808 Bass drum always set this knob to the 12 o'clock position.

Attack/Tone - Rotary

The TR909 and TR808 different controls for this sound so this knob has two functions depending on which 'Drum Kit' is currently selected.

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Attack - When the TR909 kit is selected this knob will affect the percussive character of the Bass drum by changing the level of a shaped pulse or 'thump' at the beginning of the sound.
At '0' it is completely removed. As the knob is moved in a clockwise direction the 'thump' element will become increasingly louder.

808 ●

909 ●
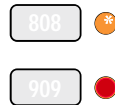
Tone - When the TR808 kit is selected this knob will affect the tonal character of the Bass drum by changing the frequency content of the sound. At '0' all of the higher frequencies in the sound are removed making the sound more rounded and 'plummy'. As the knob is moved in a clockwise direction the higher frequencies are introduced giving a brighter, cleaner affect to the sound

Decay - Rotary
This knob controls the time it takes for the sound to die away once it has reached full volume. At '0', the sound falls off immediately producing a very 'tight' sound. As the knob is moved in a clockwise direction the longer it takes for the level to drop to zero. A very long ring on the Bass drum is often used as a feature of dance grooves.

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Snare Drum
Section

The classic Analogue snare drums have to be the TR909 and TR808 snares. They are a combination sound and comprise of two basic elements. Firstly there is the pitched element which simulates the vibration of skins on a snare shell and a noise element simulates the 'snare' chains. Although not totally convincing as the 'real' thing, the original TR909 & TR808 snares have a unique sound and have become 'The' Dance and Soul music snares. All the character of the original TR909 & TR808 snare drums are faithfully reproduced using ASM Technology. Four parameters are provided for adjusting the timbre of the snare sound on each drum kit.

Level - Rotary
This knob controls the volume of the Snare drum on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of the Snare drum in the "mix".

Tune - Rotary
This knob controls the pitch of the Snare drum. Turn anti-clockwise and the pitch will be lowered resulting in a 'looser' sound, clockwise and the pitch is raised, as if the skin on a real drum had been tightened.
NOTE: This control was not featured on the TR808. To re-produce the original pitch setting of the TR808 Snare drum always set this knob to the 12 o'clock position.

Snappy - Rotary
This knob controls the amount of noise in the snare sound. The snare drum is unique in the fact that it is composed of two parts, a pitched element from the skin and a noise element from the metal snare. This parameter decides the proportional

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level of that noise element. At '0' it is completely removed. At '1' the noise element is introduced and, as the knob is moved in a clockwise direction it will become increasingly louder relative to the pitched element.

Tone - Rotary
This knob alters the 'character' of the TR808 and TR909 Snare drums in different ways.
TR808 - On this sound it changes the overall tone. At '0', the sound is at it's fullest. As the knob is moved in a clockwise direction the pitched element loses it's lower frequencies and, if an amount of 'Snappy' is applied to the sound the noise element will become more 'sharp'.
TR909 - On this sound it changes the duration of the noise element introduced by the 'Snappy' control. At '0' the noise element is at it's shortest, producing a 'tight' effect. As the knob is moved in a clockwise direction the duration increases giving the Snare drum a broader, 'looser' sound.

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Tom Toms

Section

Both the TR909 & TR808 feature three Analogue Tom - Toms, Low Tom, Mid Tom & High Tom. Using ASM the Drumstation recreates these sounds faithfully and adds more control. A 'Decay' parameter not originally found on the TR808 is added giving you even more flexibility. Each of the Toms has three parameters to adjust its timbre.

Level - Rotary

This knob controls the volume of the Tom Toms on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of the Tom Toms in the "mix".

Tune - Rotary

This knob allows you to change the pitch of the Tom Toms. The pitching of toms is particularly important as they are often use to create rising or falling patterns. Having selected the Tom-Tom whose pitch you wish to alter with the select switch, turn anti-clockwise and the pitch will be lowered resulting in a 'looser' sound, clockwise and the pitch is raised, as if the skin on a real drum had been tightened.

Decay - Rotary

This knob controls the time it takes for a tom sound to die away once it has reached full volume. At '0', the sound falls off immediately producing a very 'tight' sound. As the knob is moved in a clockwise direction the longer it takes for the level to drop to zero. A long ring is often used for fills, whereas if a tom is used repeatedly in a pattern you may want to reduce its decay time.

NOTE: This control was not featured on the TR808. To re-produce the original decay setting of the TR808 Tom Toms,

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always set this knob to the 12 o'clock position.

Select - Switch
This switch selects which of the three Tom Toms will be edited by the Level, Tune and Decay knobs.
NOTE: Each Tom Tom sound has it's own individual MIDI Controller information so when recording via MIDI always check that this switch is pointing to the tom you want to change. When playing back via MIDI, the position of this switch is irrelevant. i.e. all controls for the 3 toms on each 'Kit' can be manipulated simultaneously via MIDI - see the 'Controller Map' section on page 42.

Tom Toms

Section

Rimshot/Handclap
Cowbell Section

The three specific percussion sounds in this section are easily recognisable from their names. As the original TR808 and TR909 only had a Level control for these sounds no dynamic sound changes could be made. As the DrumStation uses samples for these sounds a Tune control has been added into this section to give the sounds greater dynamic scope.

Level - Rotary

This knob controls the volume of the Rim Shot, Handclap and Cowbell on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of these sounds in the "mix".

Tune - Rotary

This knob allows you to change the pitch of each of the sounds in this section. Turn anti-clockwise and the pitch will be lowered, clockwise and the pitch is raised.

NOTE: This control was not featured on the TR808/909. To re-produce the original pitch setting of the TR808/909 sounds, always set this knob to the 12 o'clock position.

Select - Switch

This switch selects which of the three sounds will be edited by the Level and Tune knobs.

NOTE: Each of the three sounds has it's own individual MIDI Controller information so when recording via MIDI always check that this switch is pointing to the sound you want to change. When playing back via MIDI, the position of this switch is irrelevant. i.e all the controls can be manipulated simultaneously via MIDI - see the 'Controller Map' section on page 42.

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In the Drumstation ASM is used to faithfully recreate the TR808's Open and Closed High Hat sounds and Samples are used to recreate the TR909's Open and Closed High Hat sounds.

Level - Rotary

This knob controls the volume of the Hi-Hat on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of the Hi-Hat in the "mix".

Tune - Rotary

This knob controls the pitch of the Hi-Hat. Turn anti-clockwise and the pitch will be lowered resulting in a 'looser' sound, clockwise and the pitch is raised, resulting in a 'tighter' sound.
NOTE: This control was not featured on the TR808/909. To re-produce the original pitch setting of the TR808/909 sounds, always set this knob to the 12 o'clock position.

Decay - Rotary

This knob controls the time it takes for the Hi-Hat sound to die away. At '0', the sound falls off immediately producing a very 'tight' sound. As the knob is moved in a clockwise direction the longer it takes for the level to drop to zero, producing a longer 'tail-off' to the sound.

Select - Switch

This switch selects whether the Open or Closed Hi-Hat sound will be edited by the Level, Tune and Decay knobs.
NOTE: The Open and Closed Hi-Hats have their own individual MIDI Controller information so when recording via MIDI always check that this switch is pointing to the sound you want to change. When playing back via MIDI the position of this switch is irrelevant .i.e all the controls for these sounds can be manipulated simultaneously via MIDI - see the 'Controller Map' section on page 42.

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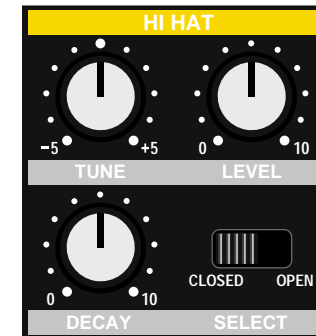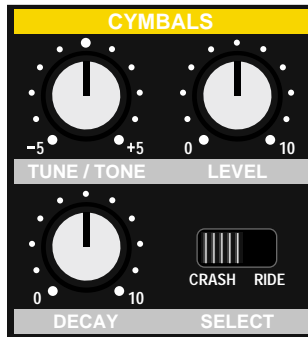
Cymbals
Section

In the Drumstation ASM is used to faithfully recreate the TR808's Crash Cymbal sound and a Sample is used to recreate the TR909's Crash and Ride Cymbal sounds. The TR909 has Level and Tune parameters only. With the Drumstation a 'Decay' parameter has been added to the Crash and Ride Cymbals for even greater control.

Level - Rotary

This knob controls the volume of the Cymbals on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of the Crash and Ride Cymbals in the "mix".

Tune/Tone - Rotary

The TR909 and TR808 different controls for this sound so this knob has two functions depending on which 'Drum Kit' is currently selected.

Tune - When the TR909 kit is selected this knob will change the pitch of the Crash and Ride cymbals. Turn anti-clockwise and the pitch will be lowered resulting in a 'larger' cymbal, clockwise and the pitch is raised, as if a smaller cymbal has been struck.

Tone - When the TR808 kit is selected this knob will affect the 'character' of the TR808 Crash cymbal by changing the fre-

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quency content of the sound. Fully clockwise, all the frequencies in the sound are present, giving you the brightest sound possible. The further anti-clockwise you move the knob, the more high frequencies are removed, making the sound less harsh and intrusive.

Decay - Rotary

This knob controls the time it takes for the cymbal to die away. At '0', the sounds falls off rapidly. As the knob is moved in a clockwise direction the longer it takes for the level to drop to zero. The decay time of cymbals is quite critical especially if they are triggered repeatedly in the bar. Only set the longest decay time if you are using the cymbals sparingly in your songs.
NOTE: This control was not featured on the TR909. To re-produce the original decay setting of the TR909 Cymbals, always set this knob to the fully clockwise position.

Select - Switch

This switch selects which TR909 Cymbal will be edited by the Level, Tune and Decay knobs.
NOTE: The TR808 has one Cymbal sound. This switch has no effect on the TR808 Cymbal. It is used to switch between the two TR909 Cymbals.
NOTE: Each Cymbal sound has it's own individual MIDI Controller information so when recording via MIDI always check that this switch is pointing to the Cymbal you want to change. When playing back via MIDI the position of this switch is irrelevant.i.e all the controls for these sounds can be manipulated simultaneously via MIDI - see the 'Controller Map' section on page 42.

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Congas/Maracas/ Claves Section

C'NGAS M'CAS CLAVES

−5   +5   0   10

TUNE   LEVEL

LOW MID HIGH   C'NGAS M'CAS CL'VES
 1   2   3

CONGA SELECT   SELECT

The sounds in this section were only featured on the TR808. They are however the classic selection for ballads and the like. The three Congas are recreated using ASM Technology and the Maracas and Claves are samples. As the original TR808 only had a Level control for the Maracas and Clave sounds no dynamic sound changes could be made. As the DrumStation uses samples for these sounds a Tune control has been added to give the sounds greater dynamic scope.

Level - Rotary

This knob controls the volume of each sound on both the stereo and individual outputs. When assigned to the stereo outputs this knob allows you to set the relative level of the Congas, Maracas and Claves in the "mix".

Tune - Rotary

This knob allows you to change the pitch of each of the sounds in this section. Turn anti-clockwise and the pitch will be lowered, clockwise and the pitch is raised.

NOTE: This Tune control was not featured in the TR808's Maracas and Claves sections. To re-produce the original pitch setting of these sounds, always set this knob to the 12 o'clock position.

Conga Select - Switch

This switch selects which of the three Congas will be edited by the Level and Tune knobs when the 'Select' switch is set to 'Congas'.

NOTE: Each Conga sound has it's own individual MIDI Controller information so when recording via MIDI always check that this switch is pointing to the Conga you want to change. When playing back via MIDI, the position of this switch is irrelevant. i.e. all controls for the 3 Congas can be manipulated simultaneously via MIDI - see the 'Controller Map' section on page 42.

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Select - Switch

This switch selects which of the three sounds will be edited by the Level and Tune knobs.

NOTE: Each of the three sounds has it's own individual MIDI Controller information so when recording via MIDI always check that this switch is pointing to the sound you want to change. When playing back via MIDI, the position of this switch is irrelevant. i.e all the controls for these sounds can be manipulated simultaneously via MIDI - see the 'Controller Map' section on page 42.

Congas/Maracas/

Claves Section

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Utility Mode

Operation

IMPORTANT NOTE: The operating system of the 'Data Entry' keypad is different in this mode (all of the functions in the Utility mode are visually indicated in small text under the data entry buttons- see panel diagram on page 8). The '0' to '9' buttons are now used to call up 'sub-directories' of the Utility mode and the '-' and '+' buttons used to change their values whilst the display may flash alternatately between a value and a letter reference code. The nine sub-directories are as follows:

Button	Function	Display Ident.
1	Drum Select	Selected Drum
2	Front Cut	'FC'
3	Controller / Velocity	'tu'-'to'-'At'-'dE'-'Sn'-'VL'
4	Note Off Recognition	'nO'
5	General MIDI	'Gn'
6	Output Set	'01' to 'r4'
7	Assign Banks	'AA'-'Ab'-'AC'-'Ad'
8	Distortion	'dS'
9	Demo	'dE'

Each drum has a display code which, in connection with the 'Drum Kit' select LED's identifies which drum sound is currently selected or edited. The codes are as follows:

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TR808 Bass Drum	bd	TR808 Maracas	Ar
TR808 Snare Drum	Sd	TR808 Claves	CL
TR808 Low Tom	t1		
TR808 Mid Tom	t2	TR909 Bass Drum	bd
TR808 High Tom	t3	TR909 Snare Drum	Sd
TR808 Rim Shot	rS	TR909 Low Tom	t1
TR808 Hand Clap	CP	TR909 Mid Tom	t2
TR808 Cowbell	Cb	TR909 High Tom	t3
TR808 Closed HiHat	CH	TR909 Rim Shot	rS
TR808 Open HiHat	OH	TR909 Hand Clap	CP
TR808 Crash Cymbal	cC	TR909 Closed HiHat	CH
TR808 Low Conga	C1	TR909 Open HiHat	OH
TR808 Mid Conga	C2	TR909 Crash Cymbal	cC
TR808 High Conga	C3	TR909 Ride Cymbal	rC

Use the 'Mode' button to select the 'UTILITY' mode - LED on.

Function 1 - Drum Select
This is where you select the drum sound that will be edited. Each time you go into Utility mode, the selected drum sound will automatically be the one last edited on the front panel. The range, in connection with the front panel 808 and 909 'Drum Kit' select LED's is as follows:

▶ TR808-bd-Sd-t1-t2-t3-rS-CP-Cb-CH-OH-cC-C1-C2-C3-Ar-CL-TR909-bd-Sd-t1-t2-t3-rS-CP-CH-OH-cC-rC

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Utility Mode
Front Cut

Typical Display ident. (TR808 Snare Drum)

Use the '+' and '-' buttons to "page" through the different drum sounds.

Function 2 - Front Cut

This function allows you to remove up to 99 milleseconds of the start or 'front end' of a drum sound to create a similar effect to sample editing. To hear the effect this has on a drum sound, listen to the demo whilst making reference to the Factory Demo Guide on page 45.

Range = '00' (off) to '99' (max) Each increment = 1mS

First, use the 'Drum Select' utility function to select the drum sound to be edited. Press the 'FRONT CUT' button once - the display alternates between:
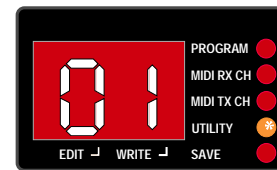
Display ident.

Value

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Use the '-' and '+' buttons to change the value. Use the 'Drum Select' function again to change these settings on another drum sound. This setting can be saved with the program. See 'Writing a program into memory, on page 13.

Utility Mode

Controller / Velo

NOTE: The Front Cut setting can also be accessed via MIDI. This feature allows real-time, dynamic changes to be made during a performance. See the 'Controller Map' section on page 42.

Function 3 - Controller / Velocity

NOTE: All of the sound editing front panel rotary controls on the DrumStation can be set to transmit and receive MIDI data allowing record and playback of any 'live' changes made during a performance. For more information see the 'Controller Map' section on page 42.

This function allows you to choose whether a front panel control responds to MIDI Controller data or MIDI Velocity data. This setting does not affect the transmitted data i.e. the front panel controls will always transmit MIDI Controller data.

Example 1: Snare Drum - If a control, say the snare drum's 'Snappy' is set to receive MIDI Velocity, the harder a note is played the more 'snap' will be applied. Any number of controls in a section can be set-up in this way. In this example the 'Tune', 'Tone' and 'Snappy' controls could all be set to respond to Velocity data giving a wide character change to the Snare Drum between minimum and maximum velocities.

Example 2: Closed HiHat - With the HiHat's 'Decay' control set to respond to Velocity data an extremely realistic 'Accent' can be created as the decay time increases with velocity, much like the real instrument.

The actual velocity (or volume) of the sound can be fixed at a predetermined level so that only the edit controls are affected

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by the velocity data. To hear the effect this can have on a drum sound(s), listen to the demo whilst making reference to page 45.

Control	Display Ident.
Tune	'tu'
Tone	'to'
Attack	'At'
Decay	'dE'
Snappy	'Sn'
Velocity	'VL'

Only the controls relevant to a particular drum sound are available for selection with the exception of Velocity 'VL', which can be applied to every drum. Here are some typical examples:

Drum	Rotary Controls	Display Idents.
TR808 Bass Drum	Tune - Tone - Decay	tu - to - dE - VL
TR909 Bass Drum	Tune - Attack - Decay	tu - At - dE - VL
TR808 Tom 2 Mid	Tune - Decay	tu -dE - VL
TR909 Crash Cymbal	Tune - Tone	tu - to - VL
TR808 Crash Cymbal	Decay - Tone	dE - to - VL
TR909 Snare Drum	Tune - Tone - Snappy	tu - to - Sn - VL

First, use the 'Drum Select' utility function to select the drum sound to be edited. Range = 'OF' & 'On'

Response for **tu** - **to** - **At** - **dE** - **Sn** parameters:
'OF' - will respond to MIDI Controller data
'On' - will respond to MIDI Velocity data
Response for **VL** parameter:
'OF' - has a fixed MIDI Velocity level (100)
'On' - will respond to MIDI Velocity data

Press the 'CONT./VELOCITY' button once and the display alternates between:
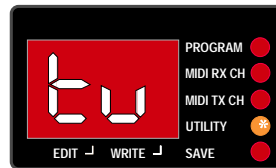
Typical Display Ident.   Value

Use the '-' and '+' buttons to change the value. Press the 'CONT./VELOCITY' button again to select 'to' (Tone) 'At' (Attack) etc. The display will loop back to 'Tu' (tune) after 'VL' (Velocity). Use the 'Drum Select' function again to change these settings on another drum sound. This setting can be saved with the program.
NOTE: the '**VL**' display ident. appears as a '**UL**' on screen due to limitations of the 7 segment display.

Function 4 - Note-Off Recognition
This function is used to setup a drum sounds response to MIDI Note-Off messages. Normally, when a MIDI Note-On message is received a drum sound will play in full (long decay on a bass drum, cymbal etc.) thus ignoring any Note-Off message. When set to recognised ('rE'), the duration of the drum sound will be determined by the length of time a note is held

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down. When set to ignored ('IG') the drum sound will play in full regardless of the note duration.

First, use the 'Drum Select' utility function to select the drum sound to be edited.
Range = 'rE' (recognised) & 'IG' (ignored).Press the 'NOTE-OFF REC.' button once - the display alternates between:
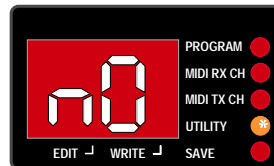
Display Ident.   Value

Use the '-' and '+' buttons to change the value. Use the 'Drum Select' function again to change settings on another drum sound. This setting can be saved with the program.

Function 5 - General MIDI Setup
This function is used to select which drum kit (TR808 or TR909) is placed in the General MIDI drum map area.
Range = '80' (TR808) & '90' (TR909). Press the 'GEN.MIDI SET' button once - the display alternates between:

Display Ident.   Value

Use the '-' and '+' buttons to change the value. As a secondary visual indication, the relevant 'Drum Kit' LED will flash. This setting can be saved with the program. See 'Writing a program into memory, on page 13.

NOTE: Because the TR909 has fewer drum sounds than the TR808 (Conga's - Maracas - Cowbell etc.) only the drum sounds common to both units will be moved in this operation. - see the 'MIDI Percussion Maps' on page 47.

Function 6 - Output Set

The DrumStation's output section consists of a Stereo left/right pair and six Individual outputs which enable a drum sound(s) to be processed separately.

This function is used to select either a drum sound's position in the 'stereo field' or one of the six individual mono outputs.

OUTPUT	DISPLAY IDENT	OUTPUT	DISPLAY IDENT
Individual O/P 1	01	Stereo O/P Left 3	L3
Individual O/P 2	02	Stereo O/P Left 2	L2
Individual O/P 3	03	Stereo O/P Left 1	L1
Individual O/P 4	04	Stereo O/P Centre	Ct
Individual O/P 5	05	Stereo O/P Right 1	R1
Individual O/P 6	06	Stereo O/P Right 2	R2
Individual O/P 4	04	Stereo O/P Right 3	R3
Stereo O/P Left 4	L4	Stereo O/P Right 4	R4

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First, use the 'Drum Select' function to select the drum sound to be edited. Press the 'OUT-PUT SET' button once - the display alternates between:
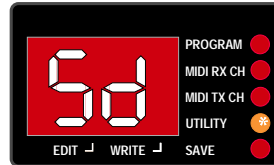
Display Ident.(Selected drum)

Value (Individual output 1)

Use the '-' and '+' buttons to change the value. Use the 'Drum Select' function again to change settings on another drum sound. This setting can be saved with the program. See 'Writing a program into memory, on page 13.

Any number of drum sounds can be routed to an Individual output enabling a 'stack' of sounds to be processed in a similar manner.

Example: TR808 Snare - TR909 Snare - TR909 Handclap all routed to output 1 - all treated with the same effect i.e. Reverb/Compression/Eq etc.

NOTE 1: When a drum sound is routed to an Individual output it will be removed from the Stereo left/right mix and Headphone outputs.

NOTE 2: The stereo output 'Pan' setting can also be accessed via MIDI. This feature allows real-time, dynamic changes to be made during a performance. See the 'Controller Map' section on page 42.

Function 7 - Assign Bank

This function is used to setup the Pitch Play Assign Banks. There are four Assign banks, A, B, C, & D. Range = 'AA' to 'Ad'. This feature places a drum sound in the centre of a one octave range of undefined MIDI note numbers allowing the drums pitch to follow a musical scale.

Assign Bank	Display Ident.	MIDI Note Range		
Bank A	'AA'	12 (C-1)	-	23 (B-1)
Bank B	'Ab'	84 (C5)	-	95 (B5)
Bank C	'AC'	96 (C6)	-	107 (B6)
Bank D	'Ad'	108 (C7)	-	120 (C8)

Press the 'ASSIGN BANK' and the display alternates between:

Display Ident.   Value (Bass Drum)

Use the '-' and '+' buttons to change the value (drum code). This setting can be saved with a program. See 'Writing a program into memory' on page 13. Press the 'ASSIGN BANK' button again to select banks B, C and D. The display will loop back to 'AA' after 'Ad '

Function 8 - Distortion

This function is used to add 'Soft-knee' distortion in varying amounts to a drum sound.

To hear the effect this has on a drum sound listen to the demo whilst making reference to Page 45. Range = 0F (Off) to 15 (Maximum). First, use the 'Drum Select' utility to select the drum sound. Press the 'DISTORTION' button once and the display will alternate between:

| PROGRAM ● |
| MIDI RX CH ● |
| **d5** MIDI TX CH ● |
| UTILITY ● |
| EDIT ⌐ WRITE ⌐ SAVE ● |

Display Ident

| PROGRAM ● |
| MIDI RX CH ● |
| **03** MIDI TX CH ● |
| UTILITY ● |
| EDIT ⌐ WRITE ⌐ SAVE ● |
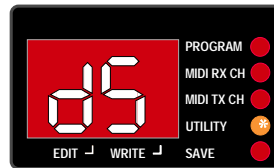
Value (level 3)

Use the '-' and '+' buttons to change the value. This setting can be saved with a program. See 'Writing a program into memory' on page 13.

NOTE: The Distortion setting can also be accessed via MIDI. This feature allows real-time, dynamic changes to be made during a performance. See the 'Controller Map' section on page 42.

Function 9 - Demo

This function demonstrates the full potential of the DrumStation Rack. If a Novation BassStation is connected to the MIDI Out socket and set to receive on MIDI channel 1 an accompaniment to the rhythm track can be heard.

To start the demo running, press the 'DEMO' button once - the display alternates between:
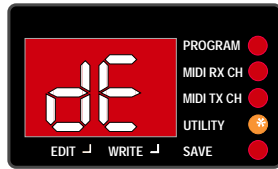
Display Ident

Value (Program Number)

As the demo plays, the value changes to show the currently used program. The demo will 'loop' continuously with a few seconds break between the end and beginning. To stop the demonstration at any time simply press the 'DEMO' button again.

NOTE 1: The demo function does NOT operate if the 'Autotrigger' is running.

NOTE 2: The changing program numbers can be used to 'track' the demo as it plays through which will help identify the various functions and effects detailed previously in this chapter and as summarised in the 'Factory Demo Guide' on page 45.

DIN Sync.

DIN Sync. was a standard developed by Roland for synchronising drum machines and basslines before the advent of MIDI. This feature on the DrumStation converts the incoming MIDI clock from your sequencer or sync box into the DIN Sync. format allowing you to control the tempo of a unit like the original TB303 etc. with your MIDI equipment. It sends a 5v pulse at a rate of 24ppqn (pulses per quarter note) to keep a slaved machine at the same tempo as your master clock.

To use this feature, simply connect a suitable lead between the DrumStation's output and the slave units DIN Sync input. When the MIDI clock is running the slave unit will play it's current pattern or song at the same tempo.

Controller
Map

TR808 Kit

Bass Drum	Front cut	20
	Pan	21
	Distortion	22
	Tune	23
	Tone	24
	Decay	25
Snare Drum	Front cut	26
	Pan	27
	Distortion	28
	Tune	29
	Tone	30
	Snappy	31
Low Tom (1)	Front cut	32
	Pan	33
	Distortion	34
	Tune	35
	Decay	36
Mid Tom (2)	Front cut	37
	Pan	38
	Distortion	39
	Tune	40
	Decay	41
High Tom (3)	Front cut	42
	Pan	43
	Distortion	44
	Tune	45
	Decay	46
Rim Shot	Pan	47
	Tune	48
Hand Clap	Pan	49
	Tune	50
Cowbell	Pan	51
	Distortion	52
	Tune	53
Closed HiHat	Pan	54
	Tune	55
	Decay	56
Open HiHat	Pan	57
	Tune	58
	Decay	59
Crash Cymbal	Pan	60
	Tone	61
	Decay	62
Low Conga (1)	Pan	63
	Distortion	64
	Tune	65
Mid Conga (2)	Pan	66
	Distortion	67
	Tune	68
High Conga (3)	Pan	69
	Distortion	70
	Tune	71
Maracas	Pan	72
	Tune	73
Claves	Pan	74
	Tune	75

TR909 Kit

Bass Drum	Front cut	105
	Pan	106
	Distortion	107
	Tune	76
	Attack	77
	Decay	78

Snare Drum	Front cut	108
	Pan	109
	Distortion	110
	Tune	79
	Tone	80
	Snappy	81

Low Tom (1)	Front cut	82
	Pan	83
	Distortion	84
	Tune	85
	Decay	86

Mid Tom (2)	Front cut	87
	Pan	88
	Distortion	89
	Tune	90
	Decay	91

High Tom (3)	Front cut	92
	Pan	93
	Distortion	94
	Tune	95
	Decay	96

Rim Shot	Pan	97
	Tune	98

Hand Clap	Pan	99

		Tune	100

Closed HiHat	Pan	111
	Distortion	101
	Tune	102
	Decay	103

Open HiHat	Pan	112
	Tune	104
	Decay	113

Crash Cymbal	Pan	114
	Tune	115
	Decay	116

Ride Cymbal	Pan	117
	Tune	118
	Decay	119

Equivalent Controllers found on the BassStation Keyboard & BassStation Rack Module.
Note: Controllers marked with * are only available on the BassStation Rack Module.

BassStation	Controller	DrumStation
Filter Frequency	105	TR909 Bass drum - Front Cut
Filter Resonance	106	TR909 Bass drum - Pan
Filter Mod Depth	107	TR909 Bass drum - Distortion
Env 1 Attack	108	TR909 Snare drum - Front Cut
Env 1 Decay	109	TR909 Snare drum - Pan
Env 1 Sustain*	110	TR909 Snare drum - Distortion
Env 1 Release*	111	TR909 Closed HiHat - Pan
Env 1 Velocity*	112	TR909 Open HiHat - Pan

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Factory Program List

Prog No	Kit Name	Description
1	Classic TR909 V1	A typical setup of this instantly recognisable classic.
2	'FX' TR909/TR808	Key velocity Mod - 909 Snare. Note off recognised - 808 Bass/909 Crash
3	'Garage' 909/808	808/909 kits setup in the 'Garage' style.
4	Classic TR909 V2	Another setup of this timeless classic.
5	'Hardcore' TR909	Distortion effect on 808/909 Bass drums.
6	'Rave/Jungle' TR808	808 kit setup in the real 'Rave/Jungle' style.
7	Classic TR808 V1	Familiar setup of the classic TR808. Ballad City.
8	'Tune Me Up'	Key velocity Mod - Tuning on all 808/909 drums.
9	'Cut' TR909	Front Cut effect - Bass/Snare drums.
10	'Dynamic' TR909	Key velocity Mod - Decay, Attack etc. Bass, Snare, Toms, Hats & Cymbals.
11	'Cut' TR808	Front Cut effect - Bass/Snare drums.
12	'Grunge' TR909	Distortion - Bass, Snare & Toms.
13	'Dynamic' TR808	Key velocity Mod - Decay, Attack etc. Bass, Snare, Toms, Hats & Cymbals.
14	'Grunge' TR808	Distortion - Bass, Snare & Toms.
15	Classic TR909 V3	Another setup of this timeless classic.
16	'Power' TR909	Distortion - Bass, Snare & HiHats.
17	'Power' TR808	Distortion - Bass, Snare & HiHats.
18	'A Bit Off' TR909	Note off recognised - TR909 kit.
19	'A Bit Off' TR808	Note off recognised - TR909 kit.
20	'Velo' TR909	Key velocity Mod - Tuning HiHats & Cymbals.
21	'VeloDis' TR909	Key velocity Mod - Tuning on Bass drum with distortion.
22	'VeloTom' TR909	Key velocity Mod - Tuning on Tom Toms.
23	'VeloTom' TR808	Key velocity Mod - Tuning on Tom Toms.
24	Classic TR909 Ind.	Individual Outputs - 1= Bass 2= Snare 3= HiHats. Other sounds on Stereo
25	Classic TR808 Ind.	Individual Outputs - 1= Bass 2= Snare 3= HiHats. Other sounds on Stereo.

Part No	Prog	Bars	Features
1	01	1 to 4	Velocity Mod of TR909 Snare - Tuning and Snappy controls. Note-off recognised on TR808 Bass drum/ TR909 Crash Cymbal.
2	02	4 to 12	'Garage' style demo of the classic TR808 & TR909 sounds.
3	03	12 to 18	Classic TR909 kit demo with dynamic tuning of Ride Cymbal and dynamic mod on Bass drum Front Cut/Tuning. TR808 Snare Panning.
4	04	18 to 26	'Hardcore' style demo with dynamic mod of Crash Cymbal Tune/Pan, Bass Distortion/Pan, Open HiHat Tuning/Pan opposite channels & Handclap Pan.
5	05	26 to 31	'Rave/Jungle' style demo using the classic TR808.
6	06	31 to Out	Classic Ballad style demo using the classic TR808.

MIDI
Implementation

Function	Transmitted	Recognised	Remarks
Basic Default Channel Changed	1 - 16	1 - 16	Memorised
Mode Default Messages Altered	x ***********	4 x	
Note True Voice Number	*********** ***********	12 - 120 12 - 120	
Velocity Note ON Note OFF	x x	o v=1-127 o	
After Keys Touch Ch's	x x	x x	
Pitch Bender	x	x	
Control 1 Change	x	x	Modulation Wheel
7	o	o	Volume
20 to 119 inclusive	o	o	Parameter Control
Program change True *	o 0 - 39 ***********	o 0 - 39	
System exclusive	o	o	Voice parameters
System :Clock Real Time	x	o	Start,Stop, Continue
Aux messages :Local ON/OFF :All Notes OFF :Active Sense :Reset	x x x x	x x x x	

Mode 1 : OMNI ON,POLY   Mode 3 : OMNI ON,MONO   o = Yes

Mode 2 : OMNI OFF, POLY   Mode 4 : OMNI OFF,MONO   x = No

Version : 1.0   Date : 10th - May - 1996

MIDI Key Number	MIDI Note (Normal)	Gn = 808 Drum Sound	Gn = 909 Drum Sound
24	C0	TR909 Bass Drum	TR808 Bass Drum
25	C#0	TR909 Rim Shot	TR808 Rim Shot
26	D0	TR909 Snare Drum	TR808 Snare Drum
27	D#0	TR909 Hand Clap	TR808 Hand Clap
28	E0	TR909 Low Tom	TR808 Low Tom
29	F0	TR909 Mid Tom	TR808 Mid Tom
30	F#0	TR909 Closed HiHat	TR808 Closed HiHat
31	G0	TR909 High Tom	TR808 High Tom
32	G#0	TR909 Crash Cymbal	TR808 Crash Cymbal
33	A0	TR909 Ride Cymbal	TR909 Ride Cymbal
34	A#0	TR909 Open HiHat	TR909 Open HiHat
36	C1	TR808 Bass Drum	TR909 Bass Drum
37	C#1	TR808 Rim Shot	TR909 Rim Shot
38	D1	TR808 Snare Drum	TR909 Snare Drum
39	D#1	TR808 Hand Clap	TR909 Hand Clap
40	E1	TR808 Snare Drum	TR909 Snare Drum
41	F1	TR808 Low Tom	TR909 Low Tom
42	F#1	TR808 Closed HiHat	TR909 Closed HiHat
43	G1	TR808 Low Tom	TR909 Low Tom
44	G#1	TR808 Closed HiHat	TR909 Closed HiHat
45	A1	TR808 Mid Tom	TR909 Mid Tom
46	A#1	TR808 Open HiHat	TR909 Open HiHat
47	B1	TR808 Mid Tom	TR909 Mid Tom
48	C2	TR808 High Tom	TR909 High Tom
49	C#2	TR808 Crash Cymbal	TR909 Crash Cymbal
50	D2	TR808 High Tom	TR909 High Tom
51	D#2	TR909 Ride Cymbal	TR909 Ride Cymbal
56	G#2	TR808 Cowbell	TR808 Cowbell
62	D3	TR808 High Conga	TR808 High Conga
63	D#3	TR808 Mid Conga	TR808 Mid Conga
64	E3	TR808 Low Conga	TR808 Low Conga
70	A#3	TR808 Maracas	TR808 Maracas
75	D#4	TR808 Claves	TR808 Claves

MIDI

Percussion Maps

Note: When using a KORG or Yamaha instrument the note values differ by one octave from those in this table. i.e. C3 on a Korg / Yamaha equals C2 on everything else.
Note: There is no TR808 Ride Cymbal

Note: There is no TR808 Ride Cymbal

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Troubleshooting Guide

If the DrumStation Rack does not operate as expected, make reference to the troubleshooting guide below. Remember in most cases, problems that appear to be caused by equipment malfunction can often be traced to human error.

No power

Check that the Power supply not connected correctly or you are using an A/C adaptor of the incorrect polarity. Check polarity of 9v DC output plug (center pin +.)

No sound

Check that the Volume′ knob is not set at '0′

Check that the current Program is not saved with 'Level′ knob(s) set to '0′ Check you are not sending a MIDI volume message (Controller 7) set to zero - this will also affect the headphone output

No Individual Output

Check that the sound is not assigned to different output check settings on all outputs

Check that the drum sound level knob is not set (or saved) in the '0′ position

Knob movements cannot be recorded on my sequencer

Some sequencers feature the ability to 'Remap′ the MIDI Channel. .Check that the playback channel of the track on your sequencer corresponds to the RX channel of the Drumstation. Some sequencers feature the ability to 'Filter′ out Controller data. Check this feature is not active on your sequencer. Some sequencers feature the ability to 'Remap′ Controllers.Check this feature is not active on your sequencer. Refer to your sequencer′s owners manual for details.

Changes to the Level knobs are not recorded on my sequencer

This is because no controller is generated by the DrumStation′s individual Level knob′s for this purpose. The DrumStation will respond to Controller 7 (Volume) but this will alter the total level of all drumsounds simultaneously. The way to do it is to adjust the velocities of the individual notes themselves in your sequencer. For this reason it is popular to have one drumsound per track on the sequencer as it make velocity adjustments easy.

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Sounds

Featured Sounds :   TR808, TR909
Modelled :   Bass, Snare, Tom Toms, Hi Hat, Cymbals (TR808), Congas
Samples :   Rimshot,   HandClap, Cowbell, Cymbals (TR909), Maracas, Claves
Polyphony :   8 note

MIDI

Programs :   40 Total - 25 Factory/15 User
Controllers :   All front panel rotary controls except Individual drum "Level" rotary controls.
                        Via MIDI - Front Cut, Pan and Distortion on most sounds. Refer Controller Map on page 42.
Note-Off Recognition : Selective Note-Off recognition for each drum sound.
General MIDI :   Selective Drum Kit (TR808/TR909) for placement within the GM map.

Connections

MIDI :   IN/OUT/THRU
Outputs :   Stereo Left/Right + 6 Individual Outputs & Headphone
DIN Sync :   Output - 24 ppqn
Power :   9VDC 500mA input. Use Novation PSU-4

Dimensions / Weight

Case Style :   1U 19″ Rackmount
Width :   483mm
Depth :   110mm
Height :   44mm
Weight :   1.9kg

         NOTE: Specification and design subject to change without prior notice, due to improvements.

FCC Information (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT! This product, when installed as indicated in the instructions contained in this Manual, meets FCC requirements. Modifications not expressly approved by Novation may void your authority, granted by the FCC, to use the product.

2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorisation to use this product in the USA.

3 NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilise power outlets that are on different branch (Circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/re orient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorised

to distribute this type of product.

The statements above apply ONLY to products distributed in the USA.

CANADA

The digital section of this apparatus does not exceed the "Class B" limits for radio noise emissions from digital apparatus set out in the radio interference regulation of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la "Classe B" prescrites dans le reglement sur le brouillage radioelectrique edicte par le Ministere Des Communications du Canada.

This only applies to products distributed in Canada.
Ceci ne s'applique qu'aux produits distribues dans Canada.

Other Standards (Rest of World)

This product complies with the radio frequency interference requirements of the Council Directive 89/336/EC.

Dette apparat overholder det gaeldenda EF-direktiv vedr¨rendareadiost¨j.

Cet appareil est conforme aux prescriptions de la directivecommunautaire 89/336/EC

Diese Ger‰te entsprechen der EG-Richtlinie 89/336/EC.

Specifications subject to change:
The information contained in this manual is believed to be correct at the time of going to press. However, Novation reserves the right to change or modify the specification without notice or obligation to update existing units.

CE