THE MIDI GUITAR

a. ¡Wow!... Are you playing that?

As we said earlier, the MIDI guitar is simply a kind of master driver, but instead of using keys (or blowing) it uses guitar strings. The manufacturers have fitted a signal "translator" to the guitar which turns the action of touching the strings into MIDI messages. That way you can use this data any way you want: to create other sounds, to record them in a sequencer, to write a score, or all of this at once.

Every time we touch a chord on our MIDI guitar our data "translator" interprets the mechanical performance, creating a series of MIDI messages that can become very complex depending on the kind of instrument that we have. It can be useful if the sound that we want is from a family of instruments similar to ours, such as strings instruments. However, it can create gibberish almost impossible to understand if we use sounds that have nothing in common, such as wind instruments with string. Therefore we should filter the data with adjustments of our "translator", depending on what we want to do.

Does this mean that we cannot play any kind of sound with our MIDI guitar, as we thought? ... No, what it means is that with any MIDI driver with which we play very different sounds, we will have to think and play as we would usually do with the instrument that we are recreating. For example, to use a tuba or a flute or any monophonic instrument (i.e.,

that only plays one note at a time). If we play a chord with this sound it will not seem real as our ear will only expect one note.

In any case, and taking into consideration that a good guitarist can play almost anything, the effect of producing guitar sounds that the audience is not expecting is... incredible.

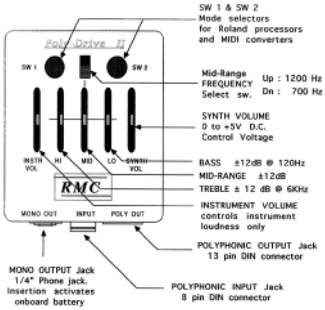
Therefore, cheer up! The possibilities that, as a guitarist, you have had so far are now dramatically increased. Congratulations and welcome to the MIDI world

b. The Ramírez MIDI guitar

One of the most important worldwide producers of Spanish classical and flamenco guitars, Ramírez Guitars, founded in 1882 by Jose Ramírez , has taken a big step forward and constructed the first classical guitar with MIDI built in. This has fused the past with the future, uniting the tradition of specialized work in the development of guitars and the choice of better quality woods with the election of the best collector of audio and MIDI data: the RMC Poly-Drive IV.

The "fused" models that are produced are: the classical studio guitar, the flamenco studio guitar and the electro-acoustic guitar with cutaway. All of them are of high quality and incorporate the sensor Electro RMC Poly-Drive IV. Your choice is up to personal taste. Any one

of them is compatible with standard synthesizers for GK guitars such as Axon, and the models Roland GR-33 and GR-20 (we will concentrate on the last model further on). We will not go into the handling of the guitar. The more one studies, the better. But we will talk about the management of sensor data which is strange for the classical guitarist.



Ramírez have adapted a small wonder called RMC Poly Drive IV to their guitars. This is a little box containing a sensor that goes on the upper part of the guitar, which sends both a standard audio signal and a digital signal. The signal is independent for each of the strings and is sent by a special DIN connector with 13-pins called GK13, designed by Roland. This connects to the guitar synthesizer to be converted into MIDI data.

The Ramírez MIDI guitar has two connections: a normal guitar jack (3 ¼) through which an audio signal is drawn (which we can send to an amplifier or a mixer in order to expand the sound of our guitar without using a microphone), and on the other side a 13-pin DIN connector. This connector is quite complex as it serves for many things. On one hand it conveys the power supply or phantom power (48V) that our captor RMC Poly Drive IV needs, and it can work with a 9V battery or by using the energy provided by our guitar synthesizer (such as GR-20) through this cable.

On the other hand it also transmits the audio signal from the guitar after going through an equalizer and an elimination circuit or feedback. Finally it also transmits data signals from each string separately in

order to transform them into MIDI data, with the guitar synthesizer.

The RMC Poly Drive IV controls incorporated in our Ramírez are very intuitive and easy to handle. On one side are the SW1 and SW2 buttons, which are used to send program change messages to the guitar synthesizer, and also in some cases to increase or decrease data. This means that by pressing the SW1 we will increase the programs or sounds of our guitar synthesizer one by one. By pressing the SW2 we will achieve exactly the opposite, choosing the sound that we had previously.

Between these buttons there is a selector switch for middle-frequency (above 1,200 Hz and below 700 Hz). This switch has five fader type potentiometers which from left to right are: the first is the guitar´s audio signal volume control. This is used to send more or less signal to the amplifier or to external mixing desk, or to produce (with the last fader) a mixture of the sound of our Ramírez with the sound of our guitar synthesizer. It also serves to mute completely and, so that only our audio team can hear the sound produced by the synthesizer. The second potentiometer is the first of three that make up the equalizer and which regulate the range of the treble. The next one is for mediums, and the following for the bass. The last of the potentiometers is for the volume of our guitar synthesizer and with it we can control the volume of our equipment, and also the blend that we make with the first fader (the sound of our Ramírez).

c. MIDI guitar synthesizers. The Roland GR20

Out of all the various specific synthesizers for our MIDI guitar (which take the GK13 entrance and have their own sounds), the one we liked most was the Roland GR-20. This perfect companion for our MIDI Ramírez guitar has a pedal board guitar form, and takes the signals from each string that the Poly-Drive IV sensor (installed in our guitar) captures to convert them into MIDI language. In this way, we can control any external source of sound or take it to a computer for use in a program

sequencer or score writer , or we can use the sounds that are incorporated in the Roland GR-20 (either on their own or mixed with the sound of the guitar itself).

It is important to note that the next section of this book is not intended to replace the instructions of the GR20, and is only a summary of what to do in order to quickly learn to use it and to start playing with our new Ramírez.

The first thing we have to do is to connect our MIDI Ramírez guitar to the Roland GR-20 with a 13-pin DIN cable (GK13). On one end, you connect this to the guitar output and on the other it must connect to the synthesizer´s GK IN entrance. After that we can choose to use or not to use the GUITAR OUT exit in order to get a clean signal from the guitar sound. (This helps you to be able to process and to experiment if you want the clean sound of the guitar with some external effects and to take it back to the Roland GR - 20 through the MIX IN entry in order to mix it with the sound of the synthesizer's internal Roland GR-20, and take it out through the OUTPUT exit).

If you do not want to process the guitar sound externally, simply do not connect anything to the GUITAR OUT output or to MIX IN entrances. That way the clean guitar sound will be aimed directly without further action to the OUTPUT exit, where it will mix with the synthesizer sounds selected (the mixture depends on the settings we make on our Poly-Drive IV).

The OUTPUT exit can be used in stereo or mono, according to our needs. The L output can also be used as a headphone output if we want to use our equipment to study without disturbing anyone, but in this case it cannot be used simultaneously with the R output. The first thing to do is adjust the volume level of the Roland GR-20´s output, adjusting the OUTPUT LEVEL´s rotating knob, which is located at the rear of the device between the MIDI OUT output and the L output (phones). This can be turned to the MAX or MIN signal, depending on whether we need more or less signal.

Then we have to adjust the sensitivity input y (SENS GK).

This is certainly the most important adjustment that we need to accomplish, because with this we shall adjust the input sensitivity of each string in relation to the pressing force that we use on them. After doing this, the setting is saved in the GR-20 and we will not have to do it again every time we use the guitar, unless we have changed a guitar string or if we use a different guitar with our Roland GR-20. To make this adjustment we must first press the GK SENS button and play only the 6th string. On the left side of the screen the number 6 should show, indicating that we have touched the 6th string. The number on the right shows the GK SENS adjustment. While we are making this adjustment, the BANK meters gauge the level of the signal from the guitar.

Should the number on the left not display the number of the string we're touching, step once or several times on the HOLD pedal or on the GLIDE pedal until the correct string number appears. Now we must adjust the sensitivity and this is done by turning the NUMBER / VALUE knob, increasing the value to the right and decreasing it by turning to the left. When we make this adjustment all the measuring indicators should briefly illuminate when we play a note with strength. We can also use the sensor controls SW1 and SW2 Poly-Drive IV installed in our Ramírez guitar to make this setting.

Perform the same steps for each string and then press the GK SENS button or the EXIT button and the adjustments made will be saved in

the memory bank. Bingo! It has not been so complicated, huh? ... In any case, it is possible (and in our experience, very likely) that this adjustment does not even have to be carried out the first time. The settings of any MIDI Ramírez guitar already come so perfectly organised that normally you can just plug the guitar into the Roland GR20 and immediately play without problems, enjoying it from the very first moment.

Another of the (very useful) features of the Roland GR-20 is the tuner, as the guitar must always be perfectly tuned because the synthesizer determines the sound produced by the guitar in order to produce the MIDI messages. If the instrument is not properly tuned, the system will not work as correctly as it should.

To tune the guitar, press the TUNER button, and the first thing that appears will the last two digits of the reference note. Here, usually, it will show 40, which means that the reference note is 440Hz (the standard pitch). If for some reason you want to change this reference, use the command NUMBER / VALUE or the SW1 and SW2 controls on your guitar.

When these dials are moved, the reference note will be displayed for a few moments, with a range of values between 427Hz to 452Hz, although initially, in the factory, this setting is 440Hz.

Pluck a string and the note (approximately) that we are playing will light up on the central display. LEDs will show how close to fine tuning we have that note. We must fine-tune each string on our guitar so that only the central green indicator is lit. Repeat these steps for each string and then click TUNER or EXIT to get out of this function.

In our guitar synthesizer Roland GR-20 we have a lot of sounds or Patches that we can use to play. To select them we must first use the command BANK in order to choose the type of sound we want, and then, use the command NUMBER / VALUE or the SW1 and SW2 buttons on our guitar to choose (by moving up or down) a sound from the sound bank. If we use the buttons on the guitar, the sound chosen in one bank will pass directly to the next bank when we arrive to the highest sound of the first.

The Roland GR-20 has two pulsation pedals and one expression pedal.

The pulsation pedals are GLIDE, which, depending on the sound that we have allocated, are used to pass from one note to another with a glissando effect. The HOLD pedal is used to continue playing the sound produced while we keep it pressed down. The expression pedal, EXP PEDAL, serves to vary the volume or the timbre of the sound depending on the patch that we are using.

These three pedals can vary their function, if we so desire, by making certain adjustments when we press the buttons: The GLIDE TYPE button determines the type of glissando that will occur when we push the pedal; the TYPE HOLD button determines the form of this pedal´s behaviour; and the EXP TYPE button determines what we are going to control with this expression pedal, and that could be the volume, the frequency filter cut of a sound, the different types of pitch bend adjustment or adjustment of the effect used in each patch or sound.

The sounds of our Roland GR-20 can be edited to have them more to our liking or to adapt them to our way of playing. This is done with the ATTACK button, which adjusts the attack time of the sound (if we increase this value we will make the sound begin more or less quickly) and, with the RELEASE button, which adjusts the time that exists between when the string has ceased to vibrate and the time it takes for the sound to stop being reproduced (at the centre position you can hear the original sound). Keep in mind that with some types of sound it is possible that this setting has no effect.

If we turn this knob completely to the right it activates the E FLW or Envelope Followed function, where the guitar synthesizer identifies the vibration of the note played and also when the note stops sounding, below a certain level. This means that with some sounds, the result is unnatural or not very nice. When we adjust the button in this position what we do is to make the synthesizer always follow the string´s vibration. The effect that this adjustment produces always depends on the type of sound that we are using. Some sounds may be more natural and other sounds less. Experiment and mould the sounds to suit your playing!

The CHORUS button allows us to adjust the spaciousness of sound. The DELAY / REVERB button controls delay effects which are like a kind of echo and/or reverberation that imitates a sound depending on its acoustic space (for example as if it were in a small room or on a big stage). The LEVEL button adjusts the volume of the patch. We can also adjust other parameters by pressing PATCH EDIT, which will give us access to adjust FREQ or the sound´s brightness. RESO adjustment controls the resonance of the sound filter. The TRANSPOSE adjustment allows us to alter the synthesizer sound in relation to the sound produced by the guitar at intervals of one octave (up to two up or down). This means that when you play a note on the guitar the same note will sound, but it will be an octave or two higher or lower. The PLAY FEEL adjustment will tell us how the sound of the synthesizer will respond to the dynamics of attack that we use to press the guitar strings.

Any of the changes we make can (and should, if you want to preserve it) be stored in a memory bank USER. To carry out a writing process in this memory we must (after first having made all the changes that we want in the sound) press the WRITE button. Then, with the command NUMBER / VALUE, select the destination number wherein we want to save our new sound, and press WRITE again. In the event that we

repent at some point in the process and do not want to continue, one need only press EXIT and we will return to the previous screen.

If we want we can connect our MIDI Ramírez guitar to an external sound module or to a computer using the Roland GR-20 as a translator of the data taken by our Poly-Drive IV pickup. To do this you need to connect the MIDI IN entrance of the module or of the computer to the MIDI OUT of our Roland GR-20, and adjust the transmission mode, which can be either of these two ways: MONO mode, in which the data for each string is sent through a different MIDI channel, starting with the MIDI channel selected in the Roland GR-20 and then automatically, the following five will be selected.

Or you can select the POLY mode, in which all data is sent through a single MIDI channel. This is the way that is routinely used. To change this setting the GR-20 should be shut down and turned back on while holding down the EXIT button. Then, by moving the NUMBER / VALUE switch, we can change from one setting to another. Press EXIT and the adjustment will be saved.

It is also important to adjust the channel for our general MIDI Roland GR-20 (BASIC CHANNEL). We can only choose between channels 1 to 11 as of 12-16 are not available. The reason is logical, as we previously mentioned, because if we use the MONO system it will automatically pick the five channels following the BASIC CHANNEL. Therefore the highest can only be 11 (remember that there are only 16 channels). To make this adjustment you have to press SYSTEM EDIT several times until the indicator MIDICH / PLAY FEEL lights up. Then, with the command NUMBER / VALUE you can modify the channel, and afterwards press EXIT.

We can also use our Roland GR-20 simultaneously as a translator of our guitar sound to MIDI language, and, as a sound module. To do this we need to adjust the GR-20, the LOCAL CONTROL OFF, which “separates” the two apparatus, the translator and the module, which

make up our Roland GR-20. To make this adjustment shut down the GR-20 and re-ignite holding down the button EDIT SYSTEM while start up again.

The screen will display “Lo” for a moment and then return to play mode. This adjustment cannot be saved. Therefore to go back to how it was originally, you only have to shut down and re-start the Roland GR-20.

With this adjustment we can make the following connection: from the MIDI OUT exit of the Roland GR-20 we will connect a MIDI cable to the computer’s MIDI IN take. From the computer´s MIDI OUT exit we will install another cable to the MIDI IN GR-20 take. During these steps we should have the MIDI Thru turned on, in the sequencer. In this way the data that we send to the computer, which we can burn in on our program sequencer, will be sent back to our Roland GR-20 synthesizer so we can hear the sounds that we play.

It is very important to make this adjustment because if failing to do so could cause a MIDI loop and note upon note would accumulate, creating a tremendous mess and preventing us from working correctly.

Briefly, with these instructions and a short time with your new instruments, you should be playing and discovering new sounds and sources of inspiration. There are many more features to discover, but that I leave to you ... Above all, experiment and have fun!