

Introduction.

This short Tutorial explains how I set up my dual DDRC-88A units so that I could apply Dirac Live to all 11 speakers in my Atmos 7.2.4 system. This is not the only way to set up dual units but in my opinion it is the simplest.

This document assumes that the operator has basic knowledge of how to use Dirac Live Calibration Tool (DLCT) correctly and makes no attempt to give advice on that aspect. I advise you to read through the entire document before starting: the process is straightforward but there are a lot of steps and it is useful to have a clear outline in your mind of what you will be doing. You will be making a total of 18 measurements so allow yourself plenty of time to complete the whole operation in one go.

Preliminary steps.

When you receive your second DDRC-88A, first check that the dipswitches and jumpers are set the way you want them (see user manual for DDRC-88A). This entails opening the unit so do it before rack mounting! Be sure that the dipswitches for both units are set the same. I.E. if you have them all in the 'up' position for unit 88A-1, then make sure they are all 'up' for unit 88A-2 as well.

It is also recommended that you connect the Dirac Configuration Tool to both units to check that both are using the same Firmware (the latest FW can be downloaded from your User Downloads page at minidsp.com). Greater stability will ensue if both units are using the same FW since you will be using just one copy of Dirac Live Calibration Tool. While you have the Configuration Tool open, it is also good practise to reset the unit to factory defaults.

In my system, all of my floor level speakers are connected to my original DDRC-88A unit, which I refer to in this document as 88A-1. My overhead speakers are connected to my second unit, referred to as, unsurprisingly, 88A-2.

Configuring the hardware.

I configured unit 88A-2 as follows:

Inputs (from AVR to 88A-2):

FHL/TFL – input 1
FHR/TFR – input 2
TMR/TRR – input 3
TML/TRL – input 4

Outputs (from 88A-2 to power amps):

FHL/TFL – output 1
FHR/TFR – output 2
TMR/TRR – output 3
TML/TRL – output 4

For this configuration we will not be using the subwoofer input on unit 88A-2 so remember to uncheck the subwoofer radio button for Channel 3 (it is ticked by default).

The settings above are just how I did mine – you can use any channels for any speakers – just be sure that they correspond to your AVR connections and that the inputs and outputs correspond, as above.

Next connect the supplied USB cable to the 88A-2. I marked this with a cable label to clearly identify it as the connection to the 88A-2 and marked the cable to 88A-1 correspondingly to avoid mixups in future. I leave the cables permanently attached to the rear of the units for easy access in my rack.

I labelled the rear of each unit as 88A-1 and 88A2 for ease of recognition in the rack in future:

88A-1 – Floor level speakers

88A-2 – Overhead speakers

Next you will need to connect the Dirac Configuration Tool to the new unit and click to retrieve the activation code for the unit. This code then needs to be input at miniDSP's website – see user manual for more details. This step must be carried out before you can use DLCT to calibrate. The process is identical to that which you used for your original unit.

Remote codes.

I set my second unit up to use exactly the same remote control codes as my original unit. This enables me to control both units simultaneously with a single remote and thus I can select any one of the four slots, or bypass or volume etc with a single button press and it will apply to both units. Others may prefer to set each 88A unit to use a unique set of codes, which is also fine.

Running the calibrations.

You should now be ready to run your calibrations. Below is a step-by-step guide.

Unit 88A-2.

1. Connect the laptop to unit 88A-2.
2. Position the mic at MLP. Make a careful note of its exact location as you will need this when time aligning the two units (see below).
3. Run DLCT and choose the 0° calibration file for your mic (downloadable from the miniDSP website). You need the 0° calibration file when calibrating the overhead speakers since the mic will be pointing up towards the ceiling (and speakers). I suggest you save this and the 90° file somewhere where you can easily locate them.

4. In DLCT choose the Custom Configuration and set it to EQ 4 channels. Make sure the 4 channels correspond to the inputs and outputs you used when wiring the unit.
5. Set the levels for the test tone using the Input Gain and Output Volume sliders in the usual way. **Make a note of how you set them as you will need this information later.** If you are unsure how to set the sliders, open the inline Help in DLCT and follow the steps detailed there carefully.
6. Measure the first mic position (MLP). This position is very important since it sets the levels and delays.
7. Save your measurement as something like '88A-2 Auto Curve'.
8. Close DLCT.

Unit 88A-1.

9. Reconnect the laptop to 88A-1 and open DLCT again.
10. This time choose the regular mic calibration file, which is the 90° file.
11. Choose Custom Mode, 8 channels.
12. Measure all 9 mic positions, beginning with No 1 (MLP). **The mic will already be at position No 1 since you will not have moved it since doing the first position calibration on 88A-2. This is important to note.** Mic position No 1 should be identical for both units so that you can achieve proper time alignment on both.
13. Save your measurements as something like '88A-1 Auto Curve' and then Optimize them.
14. Upload your calibration file to Slot 1 on the 88A-1.
15. This completes the work on unit 88A-1.
16. Close DLCT.

Unit 88A-2.

17. Connect the laptop once again to 88A-2.
18. Run DLCT, this time selecting the 0° calibration file, as before.
19. Load the file '88A-2 Auto Curve' which you saved earlier.
20. Set the levels for the test tone to the values for Input Gain and Output Volume which you used when making the first measurement and the measurements for 88A-1. It is important that the levels used for the initial test tones are the same for both unit 88A-1 and 88A-2, even if this level means that your overhead speakers do not reach exactly -12dB on the scale. In my system, I set the Input Gain and Output Volume the same for both units and the levels for my floor level speakers and my overhead speakers both read very close to -12db for all channels. This may not be the case in your system. If the amplifiers you use for your overhead speakers have gain controls, then it may be possible to adjust the amp gain in order to get all the levels reading -12dB. Small discrepancies of a couple of dB don't matter, but you do not want large differences between any channels, on both units. If this proves to be impossible in your system, seek advice of the AVS Forum DDRC-88A thread.
21. Continue with measurements 2-9 in the normal way. There is no need to perfectly replicate the mic positions for measurements 2-9 so that they

- are identical to those you used for calibration of unit 88A-1, but it is good practice to get them as close as you can.
22. Optimise and resave as '88A-2 Auto Curve'.
 23. Upload the calibration to Slot 1 on unit 88A-2.
 24. This completes the work on unit 88A-2.

If you wish to create a Custom or 'house' curve, now would be a good time to do so, or you can leave it until later. You will need to connect 88A-1 to your laptop, load your previously saved curve and then adjust to your preference. I used the house curve target curve file for my surround speakers as they have a similar frequency response to my overhead speakers. If creating the house curve for 88A-2 from scratch, ensure that the breakpoints match the file for the 88A-1 unit – matching them for one octave above and below your chosen crossover frequency. See AVS member AustinJerry's excellent 'How To' guide for this procedure.

After optimization, save the curve calling it something like '88A-1 Custom Curve' and then upload it to Slot 2 on 88A-1. Repeat the procedure for 88A-2. Be sure that your laptop is connected to the appropriate unit when you load the filters!

Run Audyssey (or whatever automated REQ system your AVR has).

This step is to ensure that delays are measured and set correctly so that both your 88A units are time aligned.

25. Putting the Audyssey mic in the exact same spot as was used for the Dirac mic, run a single point Audyssey calibration at MLP. **Dirac Live must be engaged on both units when you run this step.** The purpose of this step is to establish the delays for both units, taking account of the Dirac Live filters and any internal delay inherent in the 88A units themselves (latency).
26. **After Audyssey completes, turn OFF Audyssey, Dynamic EQ and Dynamic Volume** (or their equivalents, if any, for your own REQ system if not Audyssey).
27. Check the crossovers in the AVR and ensure they are set to where you want them as your REQ system will likely have changed them.
28. Check the delays which Audyssey set for all speakers. They should be more or less the same for each speaker for the floor level set and more or less the same for each speaker for the overhead set, but the two sets may differ if the latency of the two units is different or if a more or less 'complex' set of filters has been calculated for each unit. In my system, all my floor level speakers came in at exactly 21.0 ft and all the overhead speakers came in at exactly 20.5 ft. The difference of 0.5 ft would be unlikely to be audible, but it is there.
29. Do NOT change the delays Audyssey has set. They have been arrived at after Audyssey has taken account of the Dirac filters and 88A latencies.
30. Check the levels of the individual channels with your SPL meter. If there are any significant discrepancies, adjust the trims accordingly.

You should now have an Atmos system with full Dirac Live calibration, with time alignment set correctly to ensure both units are 'in sync'.

If you have any queries about this procedure, please ask questions on the AVS thread '**miniDSP DDRC-88A Official Thread**8-channel AI/AO Dirac Live in a box' found by clicking that link. The thread has considerable helpful advice on its first page too.

Acknowledgements.

My thanks go to miniDSP Support (Dev Team) who have responded quickly and helpfully to all my various requests for assistance. miniDSP support is second to none and is much appreciated.

My thanks also go to AVS Member *AustinJerry* for proof-reading this document and making numerous helpful suggestions, as well as for his past and present support and advice and his untiring devotion to testing, measuring and cataloguing his results for the benefit of us all.

Further Reading.

Jerry has written the following extremely useful guides to getting the most out of our wonderful DDRC-88A units with Dirac Live. They are well worth downloading and studying (links in Jerry's AVS signature block and also on the first page of the AVS DDRC-88A thread for his two Dirac/88A-related guides):

A Brief Guide To Creating Custom Target Curves In Dirac Live.

Using The miniDSP 2x4 To Time-Align Multiple Subs On A Single Channel.

Jerry is also the author of the outstanding guide to using REW:

Getting Started With REW: A Step-by-Step Guide.

Readers may also find my guide to optimising the splice between the subwoofer(s) and main speakers useful:

Sub Distance Tweak Procedure Guide.