microcell granular processor

user manual + DIY build guide v1.0

For a full description of functionality, including firmware upgrades and calibration instructions, check the Supercell user manual at *grayscale.info/supercell* – most details are identical. For a delineation of the Superparasites firmware modes, check the *microcell.cc* website. For documentation of the individual Parasites and Kammerl functions, see *mqtthiqs.github.io/parasites/clouds.html* and *kammerl.de/audio/clouds* and for basic functionality questions, check the original Mutable manual for Clouds at *mutable-instruments.net/modules/clouds/manual/*

DIY Build Guide

This is a straightforward build with just a few quirks and a lot of solder joints. Please review the steps below before starting your build.

1. PARTS COUNT. It's always a good idea to take inventory before starting a build. You should have 19 jacks (with nuts), 11 pots, five tact switches (with caps), one LED switch, and a total of 16 LEDs (two red, four green, ten yellow), plus one front panel, one front panel PCB, one SMD subassembly, and one power cable. If anything is missing or damaged, please send an email to *info@microcell.cc* and we'll respond ASAP.

2. HEADERS. Attach the unsoldered headers to the rear PCB, then fit the headers to the unpopulated front PCB. This ensures good alignment between the two boards. Solder one pin on each end of each header, then separate the assembly and solder the remaining header pins. This keeps the SMD board from being accidentally damaged during soldering.

3. TACT SWITCHES. Solder the five tact switches in place. They do not have a specific orientation and can be installed either way.

4. JACKS. Fit the LEFT input and RIGHT output jacks to the PCB and solder all three pins of each jack. Fit the remaining jacks in place (some jacks have the ground pin slightly offset due to adjacent headers). Fit the panel to the jacks and hand-tighten a nut onto the L IN and R OUT jacks. This will hold the panel in place. Now solder the remaining jacks, making sure that they are flush against the PCB before being soldered. After all jacks have been soldered, remove the panel.

5. LED SWITCH. Fit the LED switch (labeled HOLD on the panel). Note that the switch has a specific orientation. On the bottom of the switch you will see + and – signs. The + side should be located closest to the top edge of the PCB. Once you ensure that the orientation is correct, solder all eight pins in place. The + pin is quite close to the adjacent header, take care not to touch the header with the soldering iron.

6.LEDS. Fit the LEDs to the PCB, noting the correct orientation (long leg goes on the + side, indicated by the PCB silkscreen) and color (which is also indicated on the silkscreen). All of the LEDs look identical, but they are bagged separately and labeled R (red), Y (yellow), and G (green) so take care not to mix them up. Reinstall the panel, hand-tightening the knurled nuts for the LEFT input, RIGHT output, and O.VCA jacks. Push each LED through its corresponding hole in panel, then solder one leg of each LED. Check your work to make sure that none of the LEDs is sitting too low with respect to the panel. If any of the LEDs are too low, reheat the solder joint (carefully) and reposition the LED. Once all the LEDs are properly positioned, solder the other leg on each LED. Trim the legs of each LED with pliers or side cutters as you work or when all LEDs have been soldered in place. Remove the panel when you're finished.

7. POTENTIOMETERS. Fit the pots to the PCB. You may need to bend the support pins (the two legs on each side of the pot) slightly towards the body for them to fit into the PCB. The pots may also be a little sticky, this

is normal. Install the tact switch caps now as well, because this is the last time you'll need to install the panel. Push them on firmly. Once the caps are on, fit the panel once more and hand-tighten the LEFT IN, MIX, and SHAPE nuts to ensure that the panel is parallel to the PCB. Now solder the support pins of each pot and check your work as you go, because if a pot is misaligned it will rub against the panel and it will be harder to turn. Once all of the pots are aligned, solder the remaining three pins on each pot. After this, you can install the remaining nuts on each jack and tighten them all the way, the panel should not have to be removed again after this point.

8. STANDOFFS. Earlier PCBs have three holes for standoffs, located between the pots. Standoffs are not required and were not included with the DIY kits, so this detail can be ignored. The holes will not be present on subsequent versions of the PCB.

9. POWER UP. Attach the included power cable (note the -12V orientation) and power up the module. The VU meters will animate on startup, so you can check those four LEDs easily. Tap the TIME and BANK switches to cycle through those LEDs as well. Check the IN and OUT switches (which mute the inputs and outputs respectively), only the red LED in each VU meter will be illuminated. Test the main I/O and all of the CV inputs, along with the pots. If something isn't working, check the solder joints for each component (and the solder joints for the board-to-board headers) and look for mistakes. In most cases, reflowing dodgy joints and/or adding just a little more solder will fix the problem.

10. CALIBRATION. The SMD subassembly is tested and calibrated at the factory, so this step is not required. Calibration will only be required if you update the firmware or decide to install the "Core" firmware. microcell ships with the "Superparasites" firmware installed by default. If you need to recalibrate, check the Supercell manual at *grayscale.info/supercell* for detailed instructions.

That’s it, you’re done. Now make something interesting! If you’re active on social media, please tag @grayscalemodular with your creations. For tech support, missing parts, etc send an email to *info@microcell.cc* and we’ll respond as soon as possible.

Open Source

Thanks to Mutable Instruments for making the original Clouds hardware and firmware available under open-source licenses (CC BY-SA 3.0 and the MIT License, respectively). The CC BY-SA 3.0 license grants a broad range of rights related to the Supercell/microcell source files but it does not grant any rights to use intellectual property such as trademarks, brand names, and logos. Grayscale, Supercell, microcell, Mutable Instruments, and Clouds are trademarks of their respective owners and should not be used on any derivative works without permission.

Grayscale Supercell: grayscale.info/supercell
Supercell source files: github.com/grayscalemodular
Clouds manual: mutable-instruments.net/modules/clouds/manual
Clouds source files: github.com/pichenettes/eurorack
Superparasites code: github.com/patrickdowling/superparasites/
CC BY-SA 3.0: creativecommons.org/licenses/by-sa/3.0/us

Firmware Credits

The Supercell “Core” firmware offers the original four DSP modes from Clouds. This code was released by Mutable Instruments under an MIT License. The “Superparasites” firmware incorporates alternative Clouds firmware code from Matthias Puech (Parasites) and Julius Kammerl (Beat Repeat) which was also released under the MIT License and used with permission. Patrick Dowling (known for his extensive work on the Ornament & Crime firmware) merged these existing alternate firmware libraries into one consolidated firmware.