

# TECHNICAL NOTE

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Distributed to : As Required



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## SD9 CONSOLE

### INSTALLATION OF WAVES ® OPTION

**Important Note:** These instructions are a guide to fitting the Waves option to an SD9. This option is normally supplied factory fitted and is not considered a user installed option. This note is for the use of factory approved technicians only. The USB key included in the kit includes these install instructions and the operation manual.

Read the instructions carefully before starting as there are several different versions of SD9 over the life of the system requiring different work to be performed. Leave yourself plenty of time to perform the upgrade.

**Before proceeding, first check the version of software and computer hardware in use.**

Confirm the version of software presently running on the mixer. See master screen when the mixer is running. If the existing mixer system is V760 (or below) and it is not intended to purchase Core 2 be aware V760 does not support current versions of Waves and the option should NOT be fitted. Contact local support for advice.

Current mixer versions support Waves only on a separate external control computer. Legacy internal Waves operation using versions up to V929 only is no longer supported by either Digico or Waves.

If new drive is required (see below) this will be set up as Core 2 and external Waves only (V987+).

Older computers hardware need to be updated for use with Waves. However this should ONLY be done if required according to the following checks. If required, additional parts will require to be ordered from the factory (if not ordered alongside the Waves installation kit)

Mixers built and supplied after Mid 2018 do NOT require the update as they are fitted with a different computer processor. For confirmation, the computers used in these do not display "power off now" on the screen at shut down. If this message is seen, it is the older processor.

All the following checks are for older computers and do not apply to later systems (see above).

Older mixers can be checked in software (in Windows Explorer and under Computer system settings).

What size is the D:\ partition? If greater than 4Gb capacity and the RAM is 1Gb, the mixer has up to date hardware and the (flash) hard drive does NOT require to be changed. If either is less, then the updated hardware must be available to be installed before proceeding.

These revised components were generally used after 2012 and so only the oldest systems will require updated hardware. If required, follow the notes the regarding changing the drive and RAM in older mixers.

**Important Note:** If the Hard drive is changed, any software option passwords will require to be re-authorized and time should be allowed to obtain these before the mixer is to be used.

You will need to have the following tools to hand: Pozi-screwdriver #2.

You should also have available:

- 1) Authorisations for Waves Multitrack, Superack, Waves Studio or a PC driver for recording at least, as obtained from Waves (<http://www.waveslive.com/html/soundgrid-for-digico.aspx>) This will be required to use the installation.
- 2) To fully test Waves functionality, you will also require a compatible PC to run the Waves software required, also usually a Soundgrid Server, a Waves approved 1GB Network switch and 3 CAT5e/CAT6 network cables. Details of approved switches and appropriate Cables can be found at <http://www.waveslive.com/html/soundgrid-switches.aspx>
- 3) If the drive is changed you will also require an overview screen to be available to set this up if required.

**Ensure you have taken appropriate anti-static precautions**

The kit includes a disposable wrist strap and heel strap. Ensure you wear both. The wrist strap should be connected to the chassis of the engine whilst you work on it, in or out of the mixer. The heel strap ensures the skin of your leg is connected to the floor and not isolated by a rubber soled shoe.

Avoid working in areas with synthetic floor coverings or carpet, especially polypropylene material, as opposed to natural materials such as solid wood or wool. Ideally work at a proper workbench with ESD safe features, such as a metal frame. Before work, try to discharge yourself into a mains earth fitting, water pipe etc.

This is important as parts of this kit are static sensitive and even if any damage is not immediately obvious, so called "latent damage" can occur, where a device may be partially degraded yet continue to perform its intended function. However, the operating life of the device may be reduced dramatically, leading to premature failure.

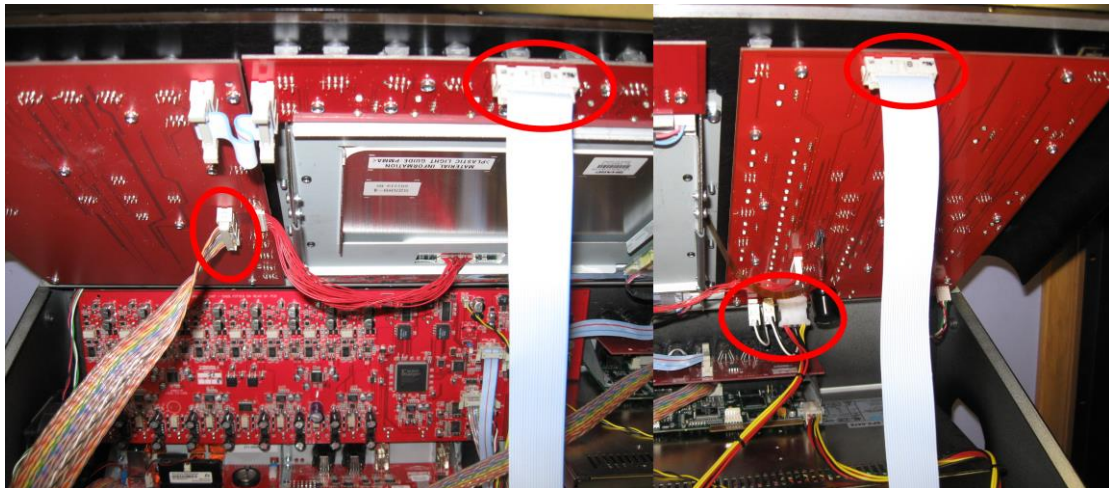
If you are unsure about any part of the upgrade procedure, seek advice before proceeding.

**Before you start:**

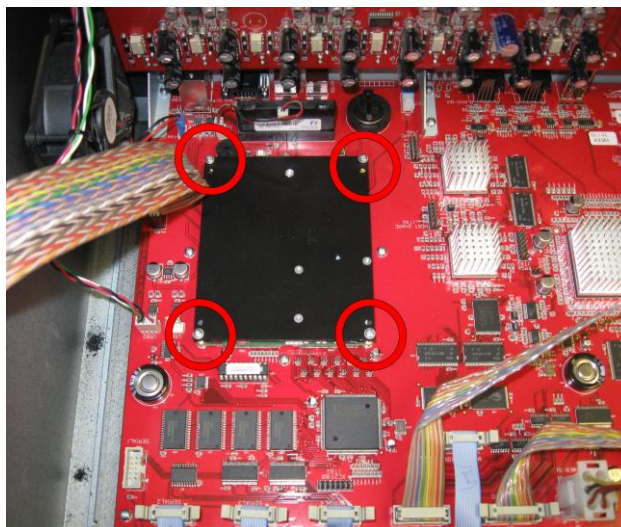
Shut the SD9 down, switch off, and remove power leads. Remove all connections [MADI, MIDI, Audio, Keyboard and Mouse, VGA etc]

**Note:** These instructions are illustrated with a Mk 1 engine PCB, built up to 2013. Later mixers use the Mk 2 PCB which has small differences, notably a different colour main PCB which will be white or black, not red.

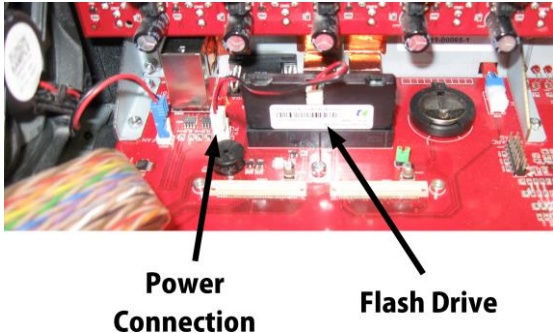
**Remove the upper surface section** by first removing the end cheeks; these are secured by 4 hex drive (4mm AF) bolts. Note the bolts are not all the same length and should go back in their original positions. Next remove the six hex drive (2mm AF) screws that hold the upper surface panel in place. Lift the panel carefully and unplug the six cables indicated in the picture and remove the panel.



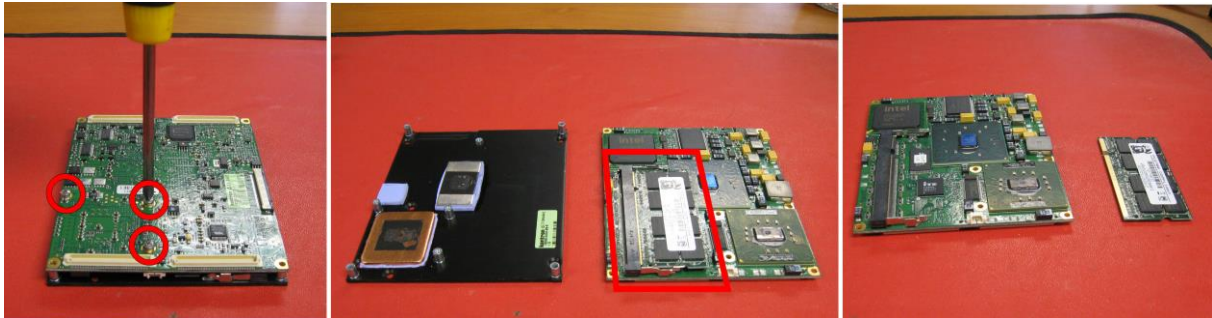
**ONLY** if required to update the computer hardware, locate the CPU assembly and remove the four securing screws, take care not to drop any washers from the screws into the console. Remove the CPU assembly.



Remove the Flash drive and replace with the Flash drive supplied in the kit. The new Flash drive is supplied with a power cable. Check connector orientation when unplugging and replugging.



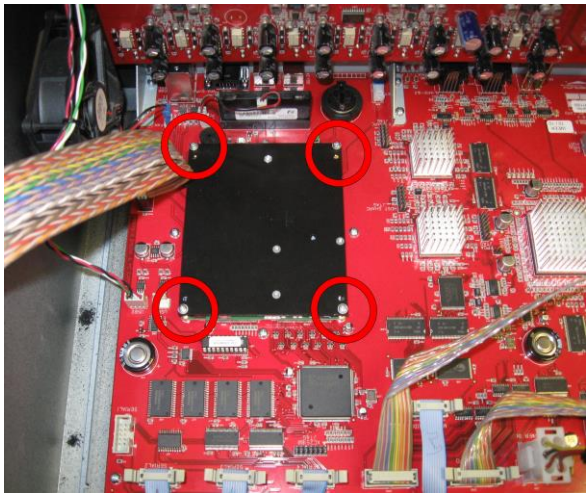
Place the CPU assembly on a suitable surface PCB side up and remove the three screws securing the heatsink. Lift off the PCB and place it down with the component side up. Release the clips securing the RAM module and remove the RAM module.



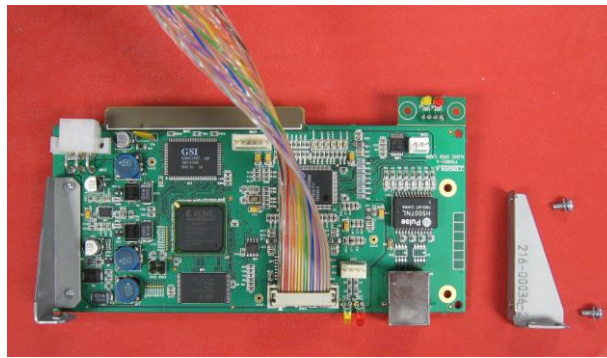
Fit the RAM module included in the Waves kit; clip it down securely under the retaining clips at each end. Re fit the heatsink and three securing screws.



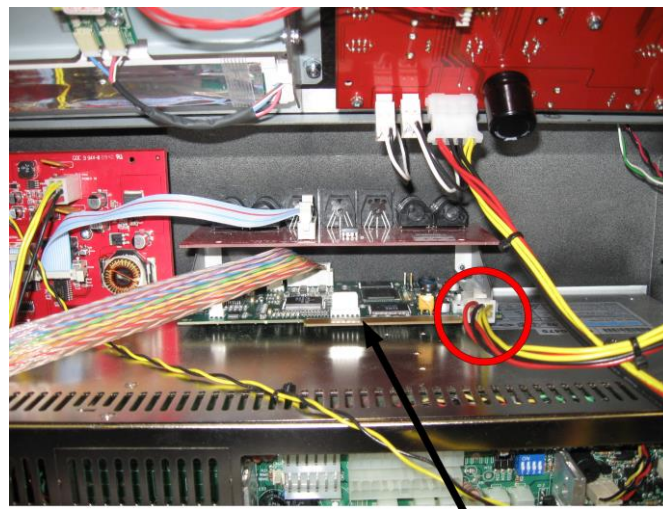
Re-fit the CPU assembly, making sure all four connectors click home; only after fitting the CPU replace the securing screws tightening them down evenly. DO NOT use the screws to draw the CPU to the base PCB



Attach the brackets to the Waves PCB assembly (Waves IO Card) and connect the multi coloured ribbon cable provided in the kit to the PCB.

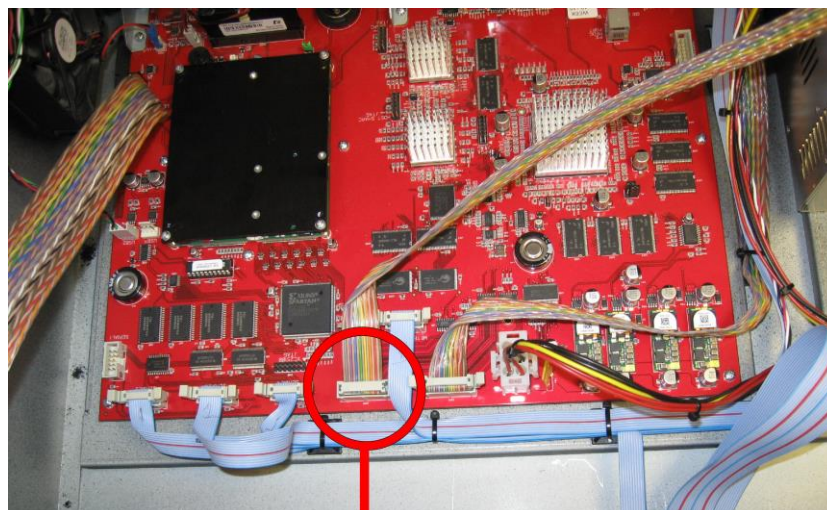


Install the Waves PCB into the rear of the SD9 chassis as shown. Retrieve the spare power cable tied in the base of the console and connect to the Waves PCB



**Waves PCB**

Connect the multi coloured ribbon cable from the Waves PCB to the SD9 engine board. The picture shows the older red PCB. Later mixers use the mark 2 white (or black) PCB. Use the same connector (marked CN5 Aux I/O).



**Connection from Waves IO PCB**

Reassemble the upper surface section to the console, referring to the disassembly instructions at the beginning of this document as necessary.

## THE FOLLOWING SOFTWARE ADJUSTMENTS ARE REQUIRED ONLY IF THE DRIVE HAS BEEN CHANGED

### Set Date and Time

Connect an Overview VGA monitor and the console keyboard and switch on the console. It will boot from the new Flash Drive and will stop in Windows.

Double click the time (clock) in the Windows Task Bar to open the **Date and Time** Control Panel. Set the correct Date and Time. Check that Internet Time Synchronisation is disabled. Close the Panel.

### Disable Write Caching

Right Click on the Start Button and choose Explore.

Right Click on the C Drive **OS(C:)** and choose Properties.

Select the Hardware Tab, and press the Properties Button

In the window that opens, select the Policies Tab, and ensure that the “Enable write caching on the disk” option is **not** ticked. If the option is greyed out (even if ticked) then leave it as it is.

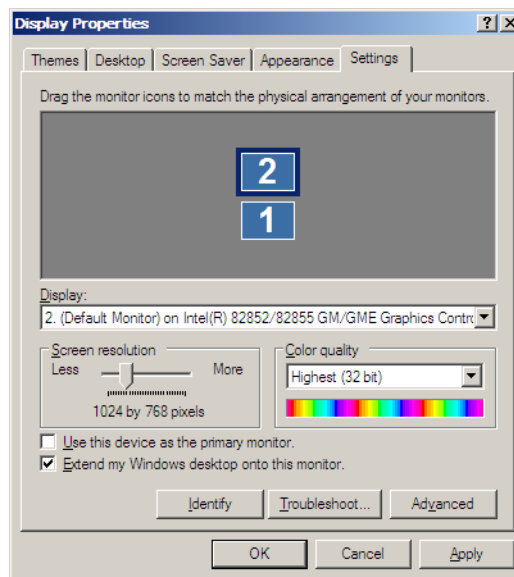
Press OK to close the window and confirm the changes.

### Set Display Properties

You will now have to restart the console. When it restarts, it will stop in Windows.

To check and adjust the arrangement of the Overview screen, right-click on the desktop and select Properties (the last menu item).

In the window that opens, select the Settings tab. You should then ensure that the two screens are arranged vertically, as shown below. To adjust the positioning, pick up the 2<sup>nd</sup> screen box, and drag into position above screen 1.



Click Apply, then OK to close this Display Properties Window.

### Update Console Firmware

If the new drive runs a version newer than that which was installed be the associated firmware may require to be updated to match.

Please note that in the unlikely event that any of the serial devices (worksurfaces and local I/O) fail to update correctly, you may be required to reprogram them using an ICD2 programmer. Please consult your local DiGiCo distributor for more information.

Right-Click on the Start Menu, and choose “Explore”.

In Explorer, navigate to D:\SD8\UpdateHardware.exe and run the UpdateHardware.exe application.

For each device, you will see the current running version in the “running” column, with the new version in the “available” column.

Perform each update in the following order, and wait for the green tick to disappear indicating that each update has finished before continuing with the next one:

Host  
FPGA  
Effects  
Device 0 (Right surface)  
Device 1 (Left surface)  
Device 2 (Local IO)

**Do not update any codes not listed in the update hardware program above.  
Do not attempt to update Rack code.**

Close UpdateHardware.

### **Enable Ready On**

Shut down and power cycle the console – it will stop at the Windows desktop.

Right-Click on the Start Menu, and choose “Explore”.

Navigate to C:\Program Files\Ardence\ReadyOn, and then run ReadyOn.exe

Close any Explorer windows that are open behind the ReadyOn window, so that the only window open on the screen is the ReadyOn window.

Press the Flush Button.

In the “Command or Application to run at ReadyOn Boot” box, type the following **D:\SD9\SD9.exe**

Press the Image Button. The screen should show the System Hibernating.

**NOTE: If there is an error message at this point, OK the error, close the Ready On program and restart the console using the Windows Start button menu. The console will restart and then halt at the Windows desktop. Now repeat the above procedure.**

Once complete, power the console off.

You can now power the console back on. Ensure that you read the following notes.

### **SOFTWARE SETUP NOTES FOR WAVES**

Enable Waves in the Console options page and restart.

The Waves IO port will appear as an option and can be added in the audio IO page.

The option will also activate external Waves control integration features allowing the Waves system to synchronize features such as snapshot firing and the session load and save, via Ethernet.

Connect both the Waves port and the console network port to the Waves compatible network switch.

Ensure the Waves computer is on the current version compatible with the mixer version installed on the mixer. Refer to your Waves Central account to download and install this, following instructions included from Waves.

The Waves port will appear as “Digico IO” in the Waves inventory. Refer to Waves instructions for the relevant Waves software for operation of the integration features.

If required the PC waves audio only driver can be downloaded from Wave Central once an account has been created. This can be created at no initial cost by using the serial number on the Waves licence card included in the kit.

For all further information on the operation of the Waves software please refer to Waves Support