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1.1 Introduction

1.1.1 Product Overview

Little Red Box and Little Blue Box are the first in a brand new line of solution-based products from DiGiCo. These boxes allow you to connect your D-Rack or MaDiRack (DiGiRack or MiNiRack) to two SD9s, or your SD9 and MADI console (SD8, SD7 or even a D-Series) with a D-Rack.

The application examples in this manual show the connections and console settings necessary for a number of common setups.

In the diagrams, the following conventions apply:

Blue arrows = CAT5e connections

Green arrows = BNC MADI connections

Double headed arrows = Bidirectional connections

Single headed arrows = One way connections

Red Text = information on console Audio Sync settings

IMPORTANT NOTE:

The overall CAT5e cable length between any console and a connected rack should not exceed 100m

Little Boxes are provided with 2m CAT5e cables for connection to consoles.

Both 75m and 2m cables should always be one of the following recommended types:

Van Damme brand "Tourcat" CAT5e Shielded Twisted Pair (STP) cable

Or

Neutrik brand EtherFLEX CAT5e Shielded Twisted Pair (STP) cable

1.1.2 Little Box Power

The Little Boxes are powered by USB and this can be derived from a number of different sources. The obvious source of power is the SD Series console rear panel USB port but any computer USB port or other standard 500milliamp USB source can be used for this purpose. USB Power should be connected to the square USB B Type port labelled **USB Power** on the Little Box.

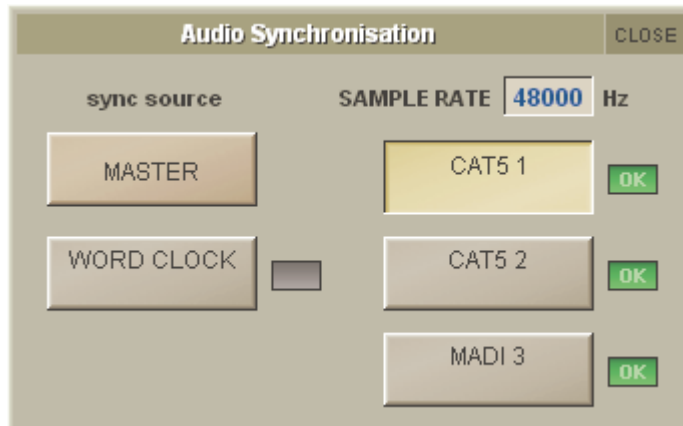
There is also a **USB THRU** port on the Little Box which allows the port that has been used for the power connection to remain available for normal use eg. A USB key can still be used on that port by connecting it to the USB THRU.

1.1.3 Digital Audio Clocking in Little Box Systems

In multiple console and rack systems, care must be taken to ensure that there is a common digital audio sync source.

All SD Series consoles have the ability to sync to an incoming MADI or CAT5 port. These settings are available in the Master Screen / Setup / Audio Sync Menu.

The SD9 Audio Sync panel looks like the image below and a green OK light indicates the presence of a valid sync source. The highlighted button indicates that the current source of sync is the device connected on the CAT5 1 port. To change the sync source, press the on screen button for the port that you wish to derive sync from.



In general terms, one console should be set to Audio Sync Master and others should normally be set to derive sync from a port that is also connected to that Master console. In each of the following application examples, please pay careful attention to the required Audio Sync Settings.

1.1.4 Little Box Modes

The Little Red Box has a switch which has 2 different modes:

- 1) **SPLIT MODE** - This allows 2 SD9s to share one D-Rack on CAT5e connections
- 2) **MADI MODE** - This allows 2 SD9s to share one DiGiCo Rack that has MADI connections (MADIRack, DiGiRack or MiNiRack) or any other MADI equipped device.

The Little Blue Box has a switch which has 2 different modes:

- 1) **SD9 MODE** - This allows an SD9 and another SD Series console to share a D-Rack with the SD9 as the controller for the analogue gain settings on the D-Rack. A second BNC MADI Out is also available as an additional split of the D-Rack signals to a third console or a Multitrack recorder.

DiGiCo Little Boxes

2) MADi MODE - This allows an SD9 and another SD Series console to share a D-Rack with the other SD Series console as the controller for the analogue gain settings on the D-Rack. A second BNC MADi Out is also available as an additional split of the D-Rack signals to a third console or a Multitrack recorder.

1.1.5 Full Connect and Receive Only for Rack Sharing

Whenever racks are being shared on MADi or CAT5 connections it is necessary to declare this in each console's Setup / Audio IO panel. Decide which console will control the analogue gains (Full Control Mode) and which console(s) will only Receive the signals (Receive Only Mode) and then use the following procedure.

PLEASE NOTE: The console Network panel setting for AUDIO MASTER will determine which modes are available to the shared ports - see below.

1) On the console(s) that are to be in **Receive Only** Mode for a rack, open the **Setup>Audio I/O** panel, select the shared rack port from the port's list (eg Port 3) and then press the **Shared** button for the rack. The rack control functions **Isolate/Receive Only/Full Control** will become available. Set this Port to **Receive Only**.

NOTE: This console's **Network / Audio Master** button should be off (Grey) to allow Receive Only to be set.

2) If there is a console in the system that is to be in **Full Control** of **ALL** racks then ensure that this has no **Shared** buttons pressed for any racks - this will then automatically be in **Full Control** without changing any further settings.

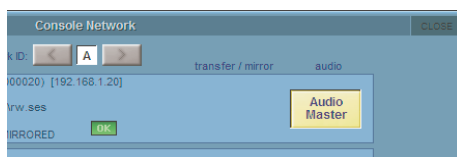
3) If there is a console in the system that is to be in **Full Control** of one rack but in **Receive Only** for another, then that console's **Network / Audio Master** button should be off (Grey).

4) The operators should agree on and set a level of analogue gain that provides enough headroom for the required application.

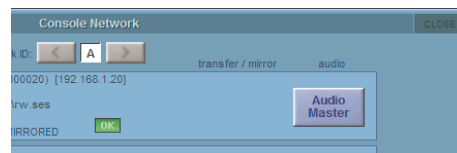
5) Gain Tracking (the **Track** buttons at the top of the Input channel screen) should be switched on for the console that has any racks in **Receive Only** mode. All the channels where the inputs are being shared but are in Receive Only should have Gain Tracking switched On.

6) If Gain Tracking is enabled, when an analogue gain control is changed on the "Master" console, the "Slave" console's analogue gain should reflect the changes and the digital trim control should compensate for this change by moving by the same amount in the opposite direction.

Network Panel



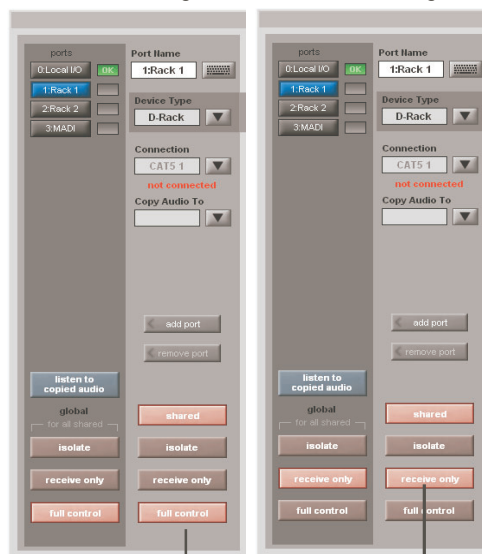
When highlighted in orange the Audio Master button indicates that this audio engine is master for shared racks and their gain controls



If the console is to have ANY connected rack set as Shared and Receive Only, the Audio Master button must be Inactive (Grey). If the Audio Master button is Active (orange) a Shared rack cannot be set to Receive Only

Setup > Audio IO Panel

Console Controlling Gain Console Receiving Gain



Full Control of Shared rack Receive Only For Shared rack

2.1 Application Examples

2.1.1 Two SD9s Sharing One D-Rack

In this example, either one of the SD9s can act as analogue gain controller of the D-Rack according to which one is connected to the **Full Connect** port on the Little Red Box. The other SD9 which is connected to the **Receive Only** port on the Little Red Box will receive all the D-Rack input signals but have no control of the analogue gains. This Receive Only console can have Gain Tracking switched on for each shared input signal's channel and then any analogue gain change made by the master console will be automatically compensated by the digital trim on the Receive Only console's channels.

The SD9 with Full Control should be Audio Sync Master and the other SD9 should be set to external Audio Sync from the incoming CAT5 port from the Little Red Box.

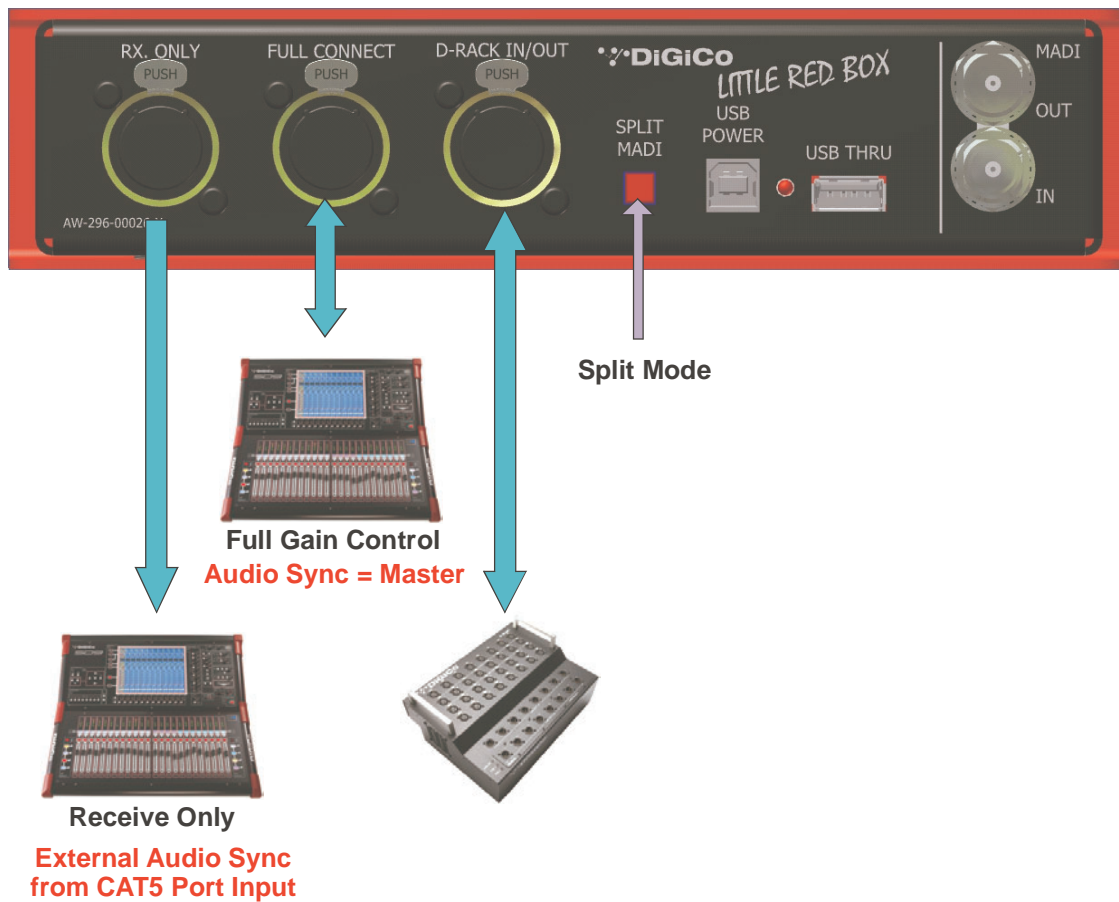
Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD9 with Full Gain Control - Audio Master Active (Orange) and no rack sharing

SD9 in Receive Only - Audio Master Off (Grey) - Rack Sharing ON for D-Rack Port - Sharing mode is Receive Only.

Two SD9s Sharing One D-Rack - 32 Inputs

Little Red Box - SPLIT MODE



2.1.2 Two SD9s Sharing One MADi Connected Rack

In this example, either one of the SD9s can act as analogue gain controller of the MADi connected rack according to which one is connected to the **Full Connect** port on the Little Red Box. The other SD9 which is connected to the **Receive Only** port on the Little Red Box will receive all the D-Rack input signals but have no control of the analogue gains. This Receive Only console can have Gain Tracking switched on for each shared input signal's channel and then any analogue gain change made by the master console will be automatically compensated by the digital trim on the Receive Only console's channels.

The SD9 with Full Control should be Audio Sync Master and the other SD9 should be set to external Audio Sync from the incoming CAT5 port from the Little Red Box.

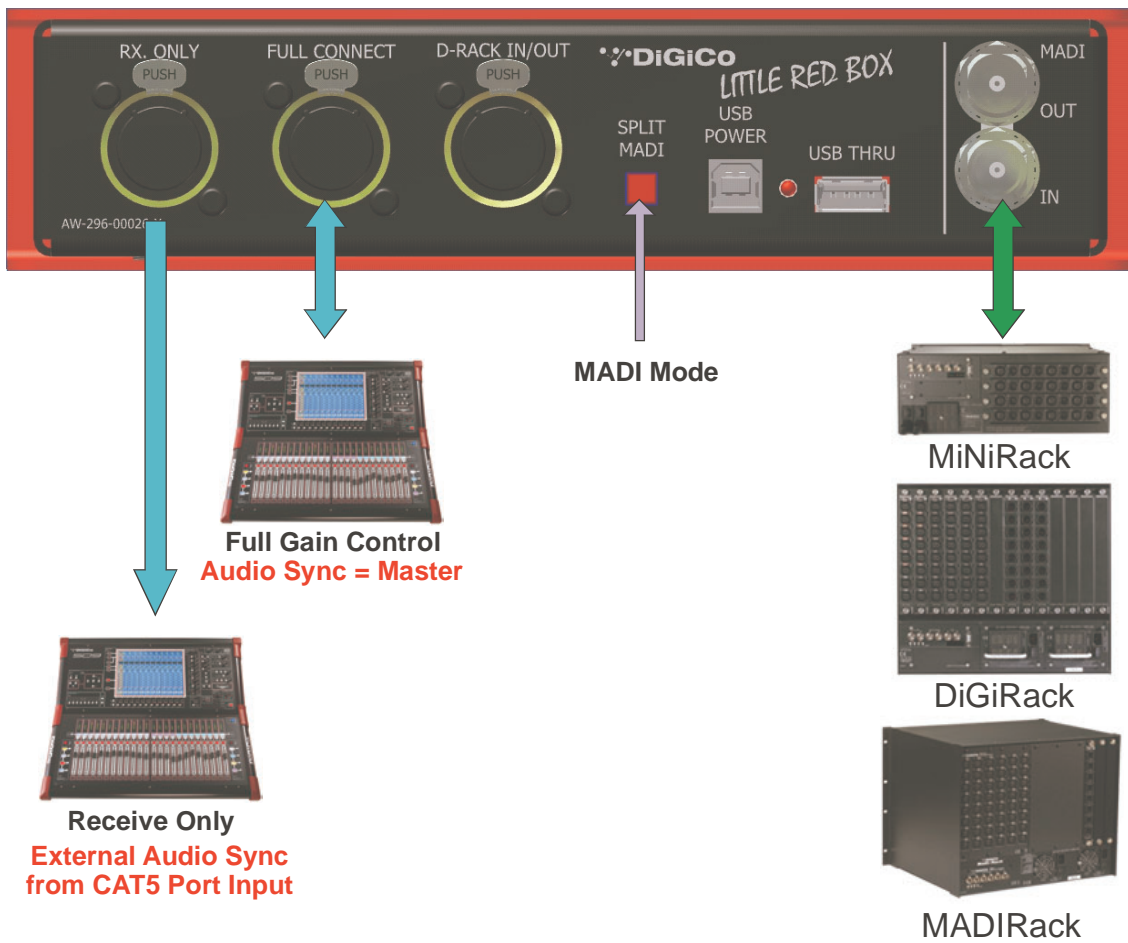
Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD9 with Full Gain Control - Audio Master Active (Orange) and no rack sharing

SD9 in Receive Only - Audio Master Off (Grey) - Rack Sharing ON for MaDiRack Port - Sharing mode is Receive Only.

Two SD9s Sharing one MADi connected Rack - Up to 56 Inputs

Little Red Box - MADi MODE



2.1.3 SD9 and SD8 Sharing One D-Rack Setup 1

In this example, the SD9 acts as analogue gain controller of the D-Rack. The SD8's which are connected to the **MADI OUT** ports on the Little Blue Box will receive all the D-Rack input signals but have no control of the analogue gains. This Receive Only SD8s can have Gain Tracking switched on for each shared input signal's channel and then any analogue gain change made by the master console will be automatically compensated by the digital trim on the Receive SD8's channels.

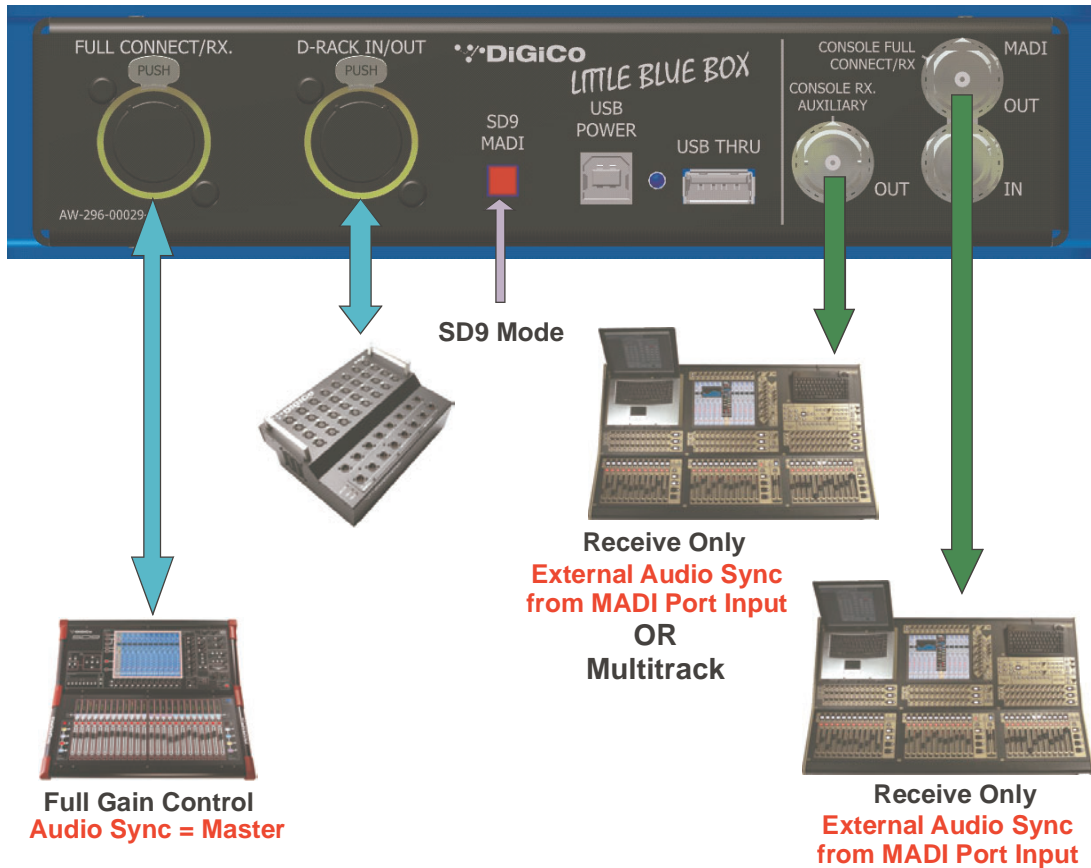
The SD9 should be Audio Sync Master and the two SD8s should be set to external Audio Sync from the incoming MADI ports from the Little Blue Box.

Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD9 with Full Gain Control - Audio Master Active (Orange) and no rack sharing

SD8s in Receive Only - Audio Master Off (Grey) - Rack Sharing ON for D-Rack Port - Sharing mode is Receive Only.

SD9 and SD8 Sharing one D-Rack with option for a MADI split to a third console or recorder Little Blue Box - SD9 MODE - SD9 Controls Gains



2.1.4 SD9 and SD8 Sharing One D-Rack Setup 2

In this example, one SD8 acts as analogue gain controller of the D-Rack. The SD9 and SD8 which are connected to the **MADI OUT** and **RX Only** ports on the Little Blue Box will receive all the D-Rack input signals but have no control of the analogue gains. The Receive Only SD9 and SD8 can have Gain Tracking switched on for each shared input signal's channel and then any analogue gain change made by the master console will be automatically compensated by the digital trim on the Receive console's channels.

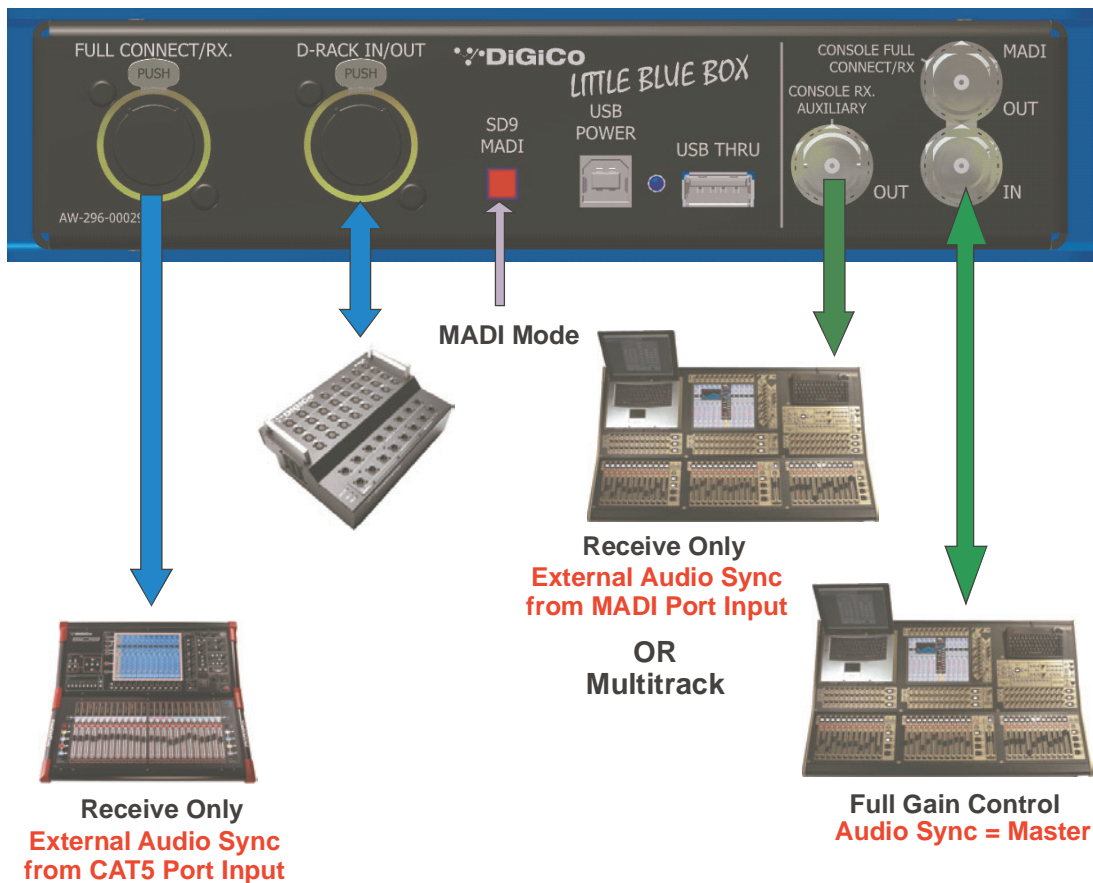
The SD8 with Full Control should be Audio Sync Master and the other SD8 and SD9 should be set to external Audio Sync from the incoming MADI and CAT5e ports from the Little Blue Box.

Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD8 with Full Gain Control - Audio Master Active (Orange) and no rack sharing

SD8 and SD9 in Receive Only - Audio Master Off (Grey) - Rack Sharing ON for D-Rack Port - Sharing mode is Receive Only.

SD9 and SD8 Sharing one D-Rack with option for a MADI split Little Blue Box - MADI MODE - SD8 Controls Gains



2.1.5 Two SD9s Sharing Two D-Racks

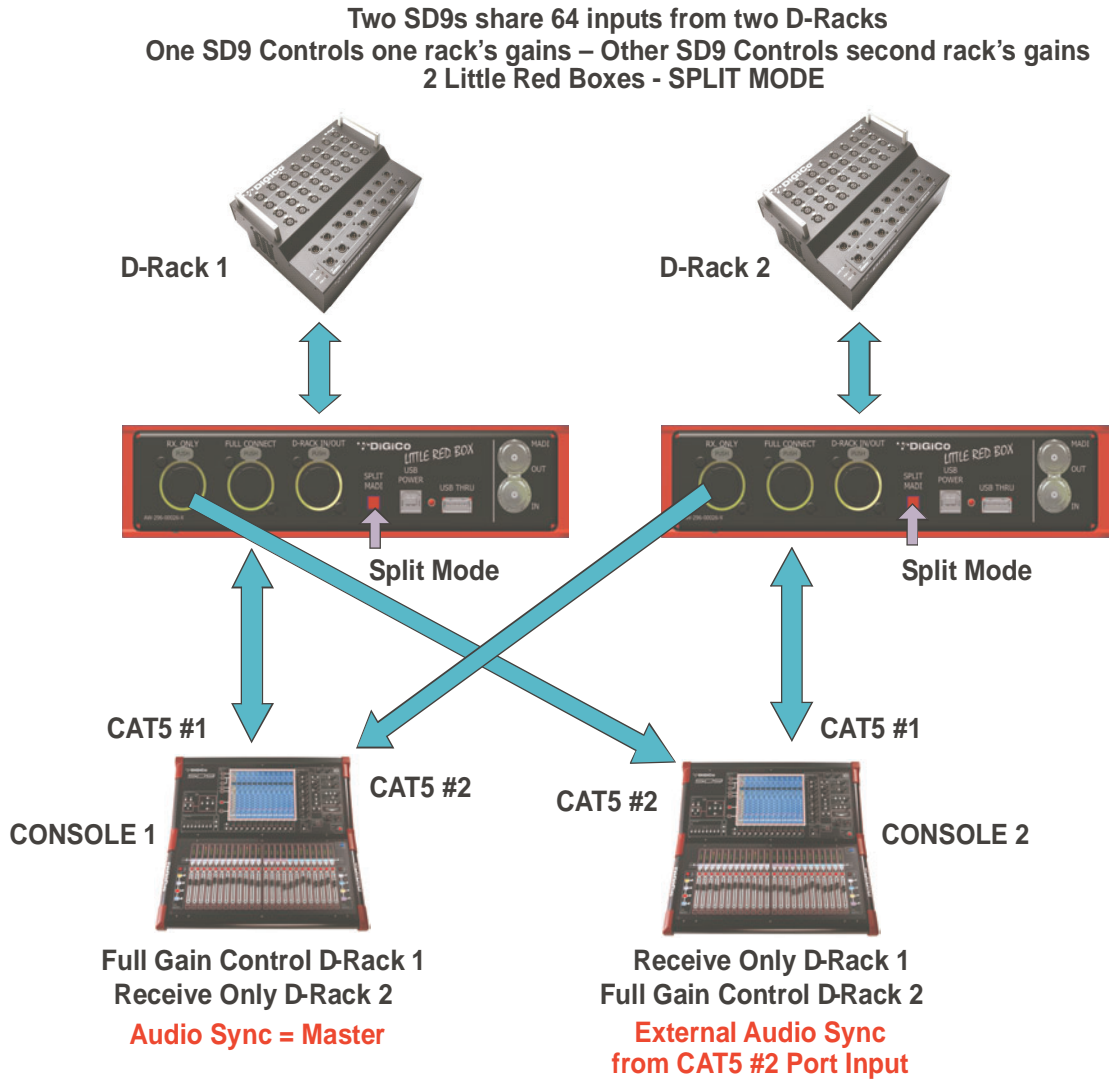
In this example, one of the SD9s acts as analogue gain controller for one of the D-Racks and the second SD9 acts as analogue gain controller for the other D-Rack. Each SD9 receives a Receive Only "split" from the other console's D-Rack.

One of the SD9s should be Audio Sync Master and the other SD9 should be set to external Audio Sync from the incoming CAT5e port from the Little Red Box.

Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD9 Console 1 - Audio Master Off (Grey) - Rack Sharing OFF for D-Rack 1 - Rack Sharing ON for D-Rack 2 - Sharing mode is Receive Only

SD9 Console 2 - Audio Master Off (Grey) - Rack Sharing OFF for D-Rack 2 - Rack Sharing ON for D-Rack 1 - Sharing mode is Receive Only.



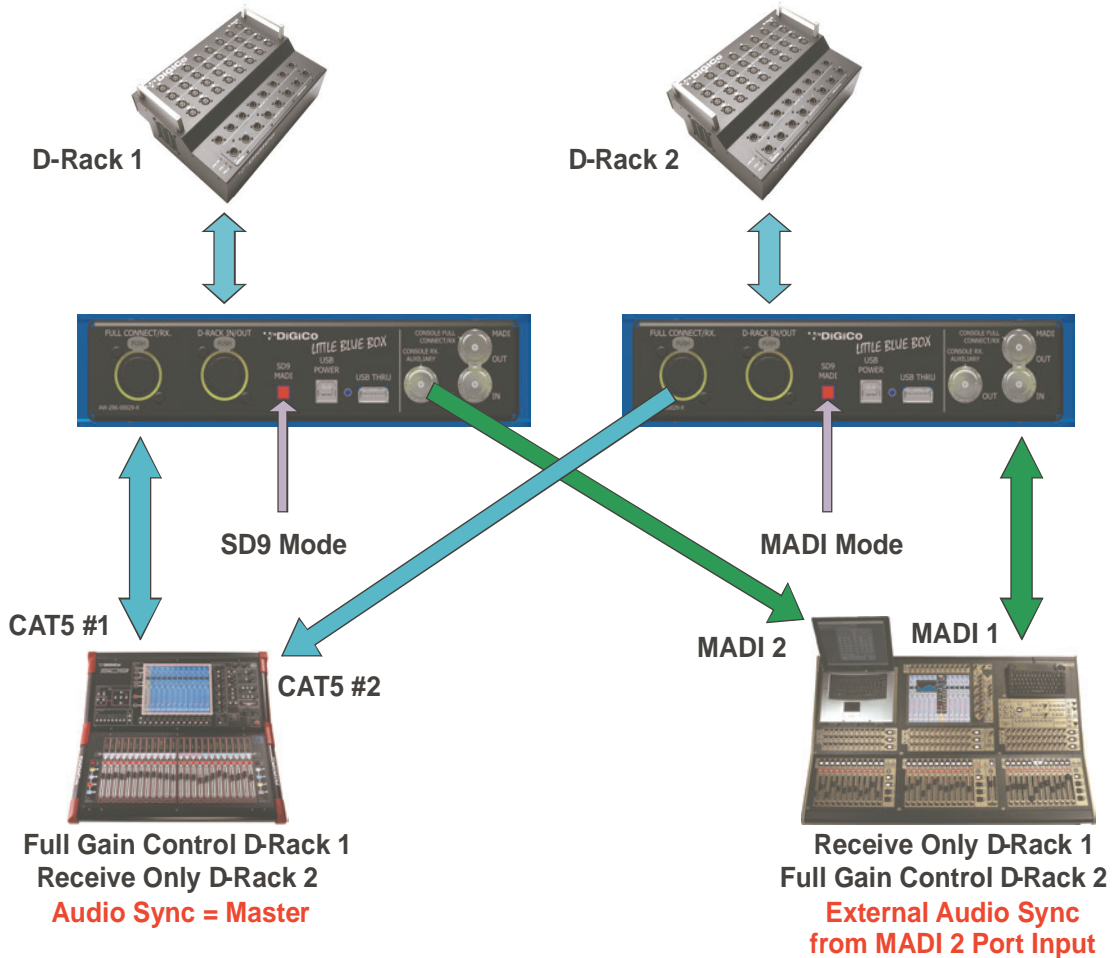
2.1.6 SD8 and SD9 Sharing Two D-Racks

In this example, the SD9 acts as analogue gain controller for one of the D-Racks and the SD8 acts as analogue gain controller for the other D-Rack. Both consoles receive a Receive Only "split" from the other console's D-Rack. One of the consoles should be Audio Sync Master and the other should be set to external Audio Sync from the incoming CAT5e port from the Little Blue Box.

Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD9 - Audio Master Off (Grey) - Rack Sharing OFF for D-Rack 1 - Rack Sharing ON for D-Rack 2 - Sharing mode is Receive Only
 SD8 - Audio Master Off (Grey) - Rack Sharing OFF for D-Rack 2 - Rack Sharing ON for D-Rack 1 - Sharing mode is Receive Only.

SD8 and SD9 share 64 inputs from two D-Racks SD9 Controls one rack's gains – SD8 Controls second rack's gains 2 Little Blue Boxes – SD9 & MADI MODE



DiGiCo Little Boxes

2.1.7 SD8 and SD9 Sharing a D-Rack and a MADIRack

In this example, the SD9 acts as analogue gain controller for the D-Rack and the SD8 acts as analogue gain controller for the MADIRack. Both consoles receive a Receive Only "split" from the other console's D-Rack.

One of the consoles should be Audio Sync Master and the other should be set to external Audio Sync from the incoming MADI or CAT5e port from the Little Blue Box.

Please see section 1.1.5 Full Connect and Receive Only for Rack Sharing for details of other console settings.

SD9 - Audio Master Off (Grey) - Rack Sharing OFF for D-Rack - Rack Sharing ON for MaDiRack - Sharing mode is Receive Only
 SD8 - Audio Master Off (Grey) - Rack Sharing OFF for MaDiRack - Rack Sharing ON for D-Rack - Sharing mode is Receive Only.

SD8 & SD9 share 80 inputs from a MADIRack and D-Rack – SD9 Recording both Racks Little Blue Box and Little Red Box together

