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YAMAHA Digital Mixers:

A Redundancy Guide

*How to achieve “Mirroring” with:
PM5D(RH), M7CL, LS9, DM2000, DM1000, 02R96,
01V96*

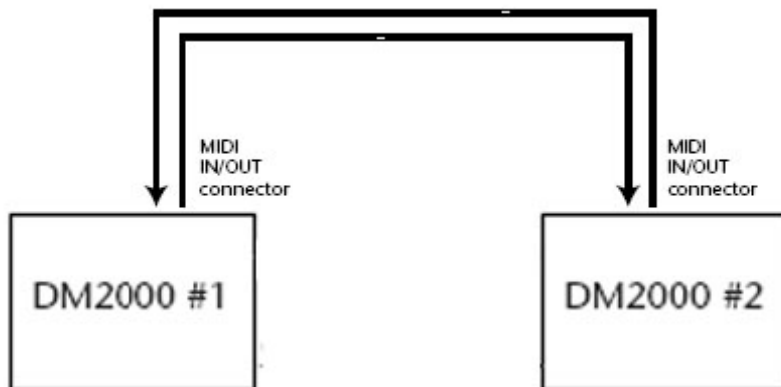
Concept

In mission-critical applications such as live TV broadcasts to millions of viewers, it may be necessary to have a spare mixing console connected to the audio system with all the same inputs and settings as the main console. Then in the event of an accident or failure, it is quick and easy to swap from main to spare console and continue mixing without interruption.

This concept will work with all of Yamaha's current range of digital mixers, but for this example DM2000 will be used. The procedure is basically the same with all the other digital mixers, with just small variations in the Display menus and Setup functions.

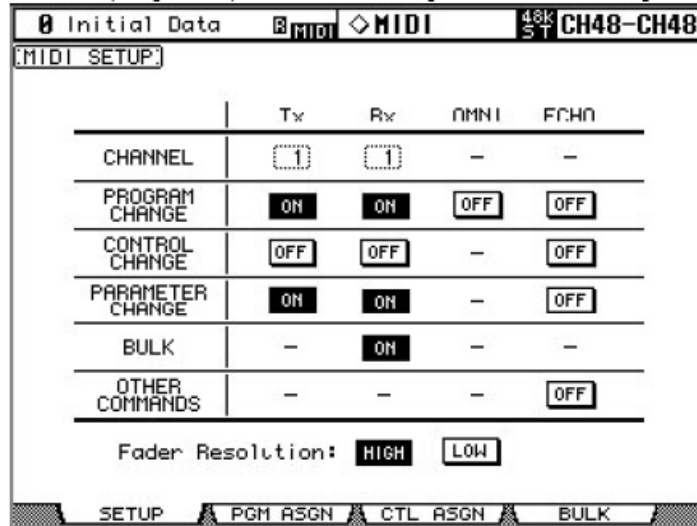
Preparation

1. Obviously both consoles need to be identical, and with the same MY-cards installed.
2. All inputs (analog and digital) need to be split to both consoles.
3. A memory card or a PC running Studio Manager software is needed to transfer the memories from the main console to the backup console.
4. 2 MIDI cables need to be connected between the two consoles:
Console #1 OUT to Console #2 IN;
Console #1 IN to Console #2 OUT.

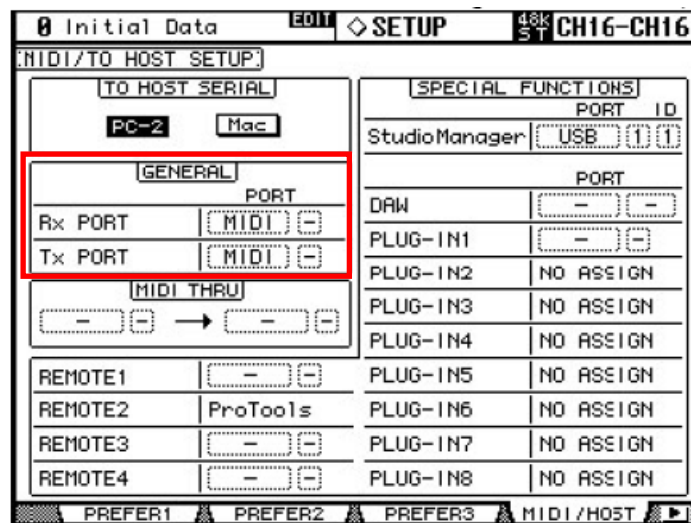


Console Setup

1. Open the MIDI SETUP page on Console #1 (using the [MIDI] DISPLAY ACCESS key) and turn on Tx and Rx for both PROGRAM CHANGE and PARAMETER CHANGE. Also make sure the Tx and Rx CHANNEL number is the same (see diagram below).



2. Make sure the MIDI Program Assign Table (on the PGM ASGN page) contains the default settings. If it doesn't, then INITIALIZE it, so PGM 1 recalls Scene 1, PGM 2 recalls Scene 2 and so on...
3. Open the MIDI/HOST page on Console #1 (found in the [SETUP] menu) and set the GENERAL Rx PORT and Tx PORT to MIDI (as shown below).



4. Now save an ALL DATA file for Console #1 onto the memory card (or USB memory in the case of M7CL and LS9), or alternatively synchronise from Console to PC with Studio Manager and save the Session.
5. Then insert the memory card into Console #2 and load the file that was saved in the previous step. Or load the Studio Manager Session that was just saved into the Editor for Console #2 and synchronise from PC to Console.
6. Now both consoles will have the same Scene Memories, Libraries, MIDI and Setup data.

Control

Because of the MIDI connections, any mixing parameter that is edited on Console #1 will also be changed on Console #2, and vice versa: they will completely mirror each other. Also when a Scene is recalled on one console, the same will be recalled on the other console.

But one thing to remember is that if any Scenes or Libraries are modified and Stored on one console during a show rehearsal or sound-check, then an ALL DATA file should be saved onto the memory card and transferred into the other console (or use Studio Manager to transfer the session file). It is important to keep all the memories synchronised so that when a Scene is recalled, all the mixing parameters on both consoles will be identical.

Here is a list of functions that are mirrored:

- All Mixing Parameters:
 - EQ
 - PAN
 - COMP
 - GATE
 - DELAY
 - INSERT
 - FADERS
 - CHANNEL ON
 - ROUTING
 - AUX SENDS
 - MATRIX
- DIO settings
- REMOTE setup
- METER
- PAIR
- GROUP
- INPUT PATCH
- OUTPUT PATCH
- EFFECTS
- GRAPHIC EQUALIZERS
- SCENE MEMORY
RECALL
- SCENE FADE TIME
- RECALL SAFE

Here is a list of functions that are not mirrored, but will need to be edited on each console separately if necessary. Or...set them up on one console and transfer them to the other console via memory card or Studio Manager:

- LOAD/SAVE to Memory Card (in [DATA] menu)
- Some [SETUP] functions in the PREFER2 and PREFER3 menus:
 - SET Time & Date; Sensitivity; Display Brightness;
 - SMPTE/MTC Settings; Insert Time Link to Locate Memory
- MIDI/HOST settings in [SETUP] menu
- INPUT PORT NAME, OUTPUT PORT NAME, TIME REF, TIME SEG settings in [SETUP] menu
- CH STATUS and LOCK functions in [UTILITY] menu
- CH NAME settings in INPUT PATCH and OUTPUT PATCH menus
- MIDI SETUP, Program Change Table, Control Change Table, BULK DUMP settings in the [MIDI] menu
- PLUG INS in the [EFFECTS/PLUGINS] menu
- SCENE MEMORY SORT and PASTE functions
- AUTOMIX functions
- USER DEFINED KEY assignments (though BANK SELECT is mirrored)
- LOCATOR functions
- MIX C-R SOURCES and MIX MONITOR SOURCES functions in the [MONITOR] menu.
- ENCODER MODE / FADER MODE / AUX SELECT / MATRIX SELECT
- Currently displayed menu.

TIP

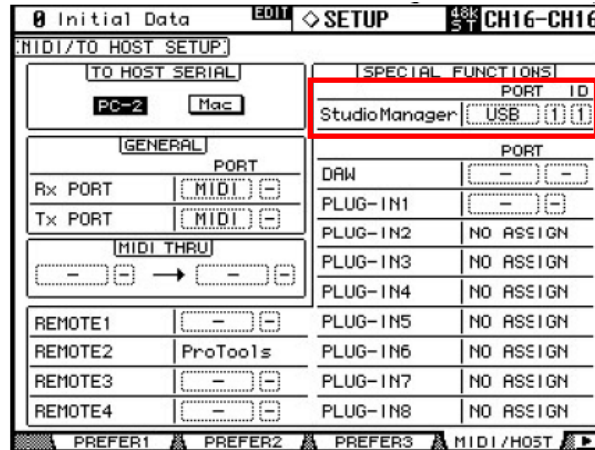
And of course with DM2000, remember that the analog input GAIN, +48V, PAD, INSERT of channels 1-24 need to be set individually on each console, and there is no way to copy these with a memory card or with Studio Manager: they must be set manually.

Why not use the CASCADE function?

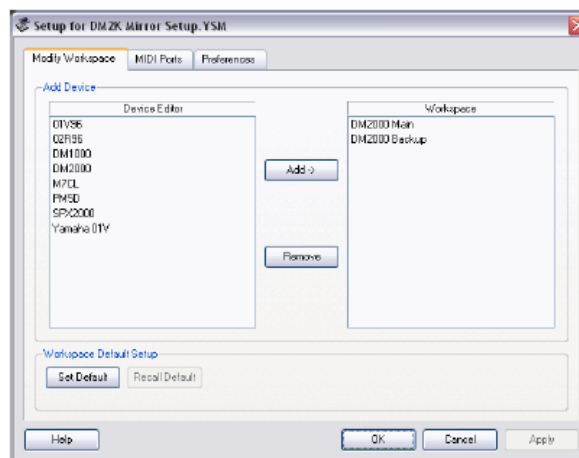
In this case, the CASCADE function should not be used. CASCADE links the output buses of both consoles together, and can link display pages, ENCODER MODE and FADER MODE and so on, but it does not mirror the mixing parameters. Instead, it makes both consoles work like one big console with twice the number of input channels, but no extra output channels.

Using Studio Manager with 2 Consoles

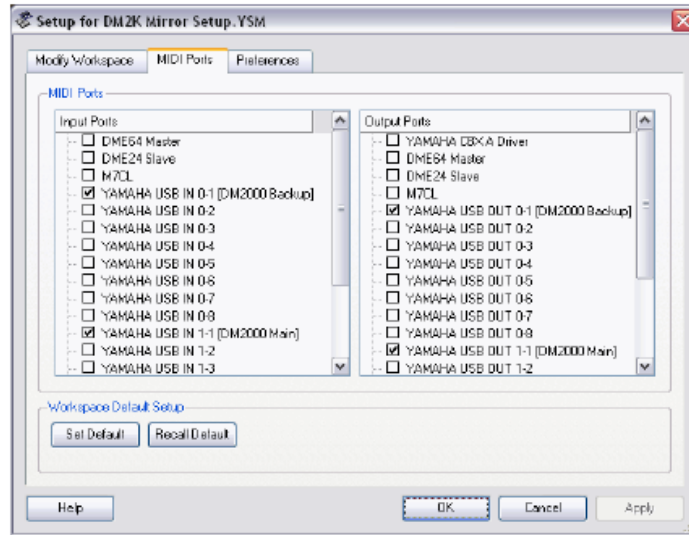
1. Connect a separate USB cable from the PC to each Console.
2. Select the correct settings for Studio Manager in the MIDI/HOST page of the [SETUP] menu for each Console:
 - i. Choose USB 1, ID1 for Console #1
 - ii. Choose USB 1, ID2 for Console #2



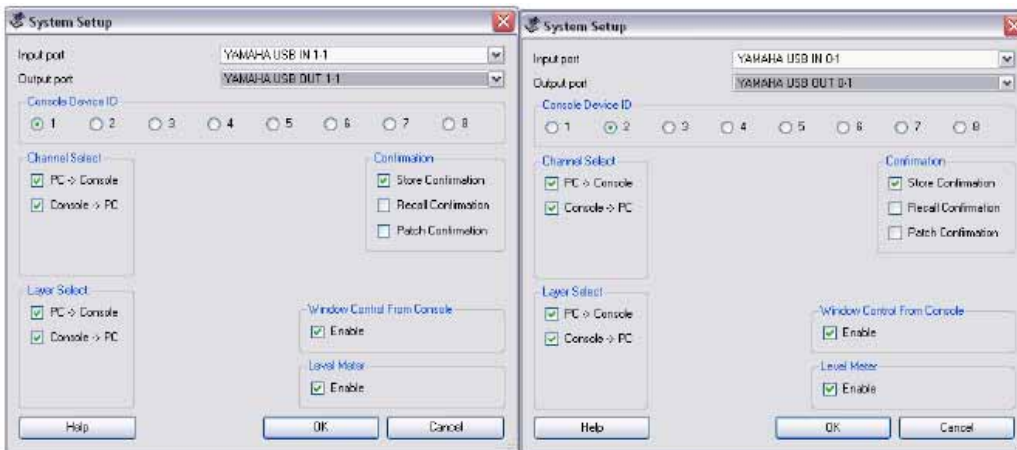
3. Launch Studio Manager, and in the Setup Window (File menu), create a Workspace for two DM2000 consoles, as shown below:



4. Then in the MIDI Ports tab of the Setup Window, select the USB ports to use for communicating with the Consoles:
 - i. YAMAHA USB IN 0-1 and 1-1
 - ii. YAMAHA USB OUT 0-1 and 1-1



5. In the System Setup window of each Console Editor, select the correct In Port, Out Port and ID for each Console, as shown below. (The ID here must correspond with the ID selected in the MIDI/HOST page of the Console).



6. When synchronising with the consoles, remember to check the “All Libs” option to save/load all the Scene Memories and Libraries.
7. To transfer the data from Console #1 to #2, first sync from Console #1 to PC, then save the session onto the PC. Next, open this session into the Editor for Console #2 and sync from PC to Console #2.
8. Now you are ready to enjoy “Mirroring” redundancy with Yamaha Digital Mixers!

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