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microelectronics

# WM8711BL-6061-FL24-M-REV1

## Example Configurations

<b>DOC TYPE:</b>	EXAMPLE CONFIGURATIONS
<b>BOARD REFERENCE:</b>	WM8711BL-6061-FL24-M-Rev1
<b>BOARD TYPE:</b>	Customer Mini Board
<b>WOLFSON DEVICE(S):</b>	WM8711BL
<b>DATE:</b>	March 2008
<b>DOC REVISION:</b>	1.0

## INTRODUCTION

The WM8711BL-6061-FL24-M mini-board is compatible with the 6061-EV1 customer evaluation board and together provide a complete hardware platform for evaluation of the WM8711BL. The WM8711BL mini-board can also be used independently and connected directly to a processor board using flying wires or appropriate headers. This document will cover both, but performance data will be based on the Wolfson system with 6061-EV1 main board. Configurations covered are listed below:

- DAC Playback to 32 $\Omega$  Headphone on L/RHPOUT
- Analogue bypass (LINE in to LINE out)

This document should be used as a starting point for evaluation of WM8711BL. It will not cover every possible usage mode.

### Assumptions:

1. The user is familiar with the 6061-EV1 main board and that the board is configured correctly for the path of interest (see related documents below)
2. The user has setup WISCE as per instruction and has control of the DUT (register settings provided in this document)

### Related documents:

1. WM8711BL-6061-FL24-M-REV1\_Schematic\_Layout.pdf
2. 6061-EV1\_Schematic\_Layout.pdf
3. WISCE Quick Start Guide.pdf

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## BOARD CONFIGURATION STAND-ALONE

The WM8711BL mini board can be used a stand-alone module for direct connection to a processor board via flying leads or dedicated headers. This section will detail important considerations and provide all information required to do this without risking damage to the DAC.

### CONNECTION DIAGRAM

Figure 1 shows the connections required to power-up and control the WM8711BL mini board. Connections can be made through flying leads or with 2.54mm pitch headers compatible with those on the mini board. Additionally, MICIN can be configured to use the onboard silicon microphone, and the headphone Jack socket provides an AC-coupled headphone output.

Please refer to table 1 for further details on external I/O connections.

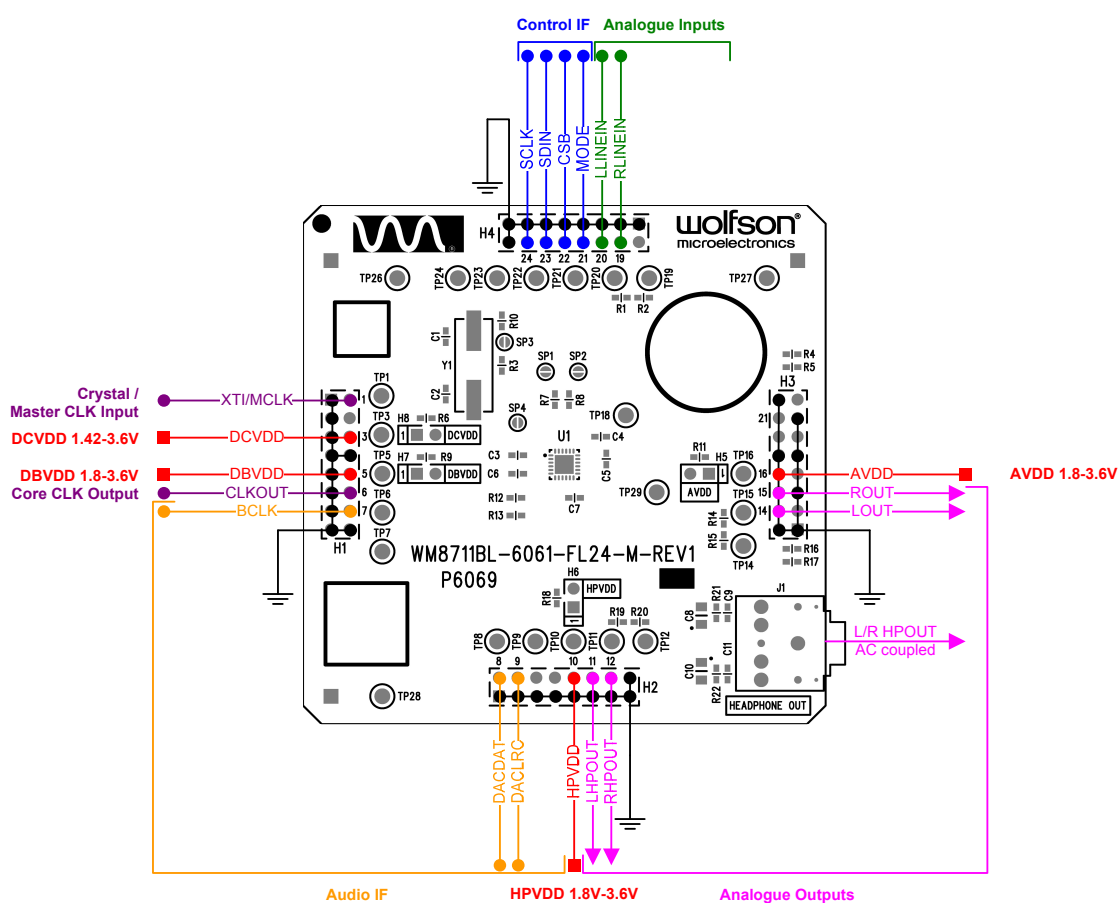


Figure 1 WM8711BL Mini Board Connection Diagram

I/O Table

SIGNAL	BOARD REFERENCE	IMPORTANT NOTES
Voltage Supplies		
AVDD	H3: pin 16	AVDD=1.8V to 3.6V
HPVDD	H2: pin 10	HPVDD=1.8V to 3.6V
DCVDD	H1: pin 3	DCVDD=1.42V to 3.6V
DBVDD	H1: pin 5	DBVDD=1.8V to 3.6V
AGND / HPGND / DGND	Common GND: H1: pin 4 H3: pin 13 H3: pin 17	Analogue and digital grounds must always be within 0.3V of each other
Control Interface		
MODE	H4: pin 21 Controlled via SP2	2-wire (default): MODE to GND via R8 3-wire: MODE to DBVDD via SP2
CSB	H4: pin 22 Controlled via SP1	2-wire address 0x34h (default): CSB to GND via R7 2-wire address 0x36h: CSB to DBVDD via SP1
SDIN	H4: pin 23	All control interface signals should swing between DGND and DBVDD
SCLK	H4: pin 24	
Crystal / Master Clock		
XTI/MCLK	H1: pin 1	Signal should swing between DGND and DBVDD
CLKOUT	H1: pin 6	Buffered Core CLK or Core CLK/2
Audio Interface		
BCLK	H1: pin 7	All audio interface signals should swing between DGND and DBVDD
DACDAT	H2: pin 8	
DACLRC	H2: pin 9	
Analogue Inputs		
LLINEIN	H4: pin 20	Full scale swing should not exceed AVDD/3.3 Vrms
RLINEIN	H4: pin 19	Full scale swing should not exceed AVDD/3.3 Vrms
Analogue Outputs		
LOUT	H3: pin 14	Line output (left channel)
ROUT	H3: pin 15	Line output (right channel)
LHPOUT	H2: pin 11	HP output (left channel) or left channel of AC coupled HP output (J1)
RHPOUT	H2: pin 12	HP output (right channel) or right channel of AC coupled HP output (J1)

Table 1 I/O Configuration

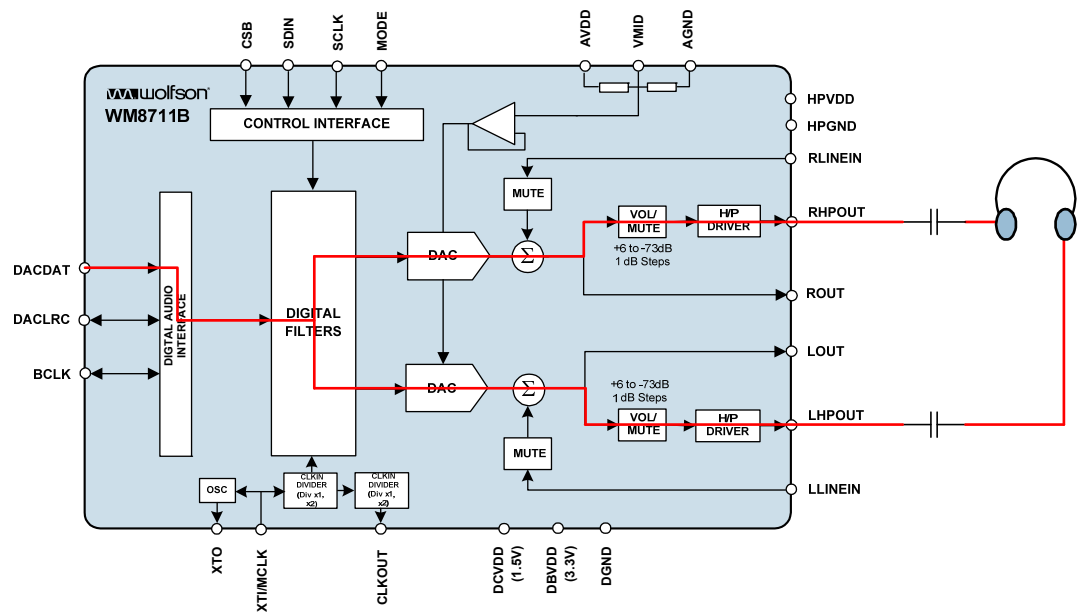
## BOARD CONFIGURATION WITH 6061-EV1 MAIN BOARD

This section focuses on evaluation of the WM8711BL mini board in combination with the 6061-EV1 main board. This system is the reference platform for measurement data contained in this document. Please note that only a limited number of usage modes will be covered.

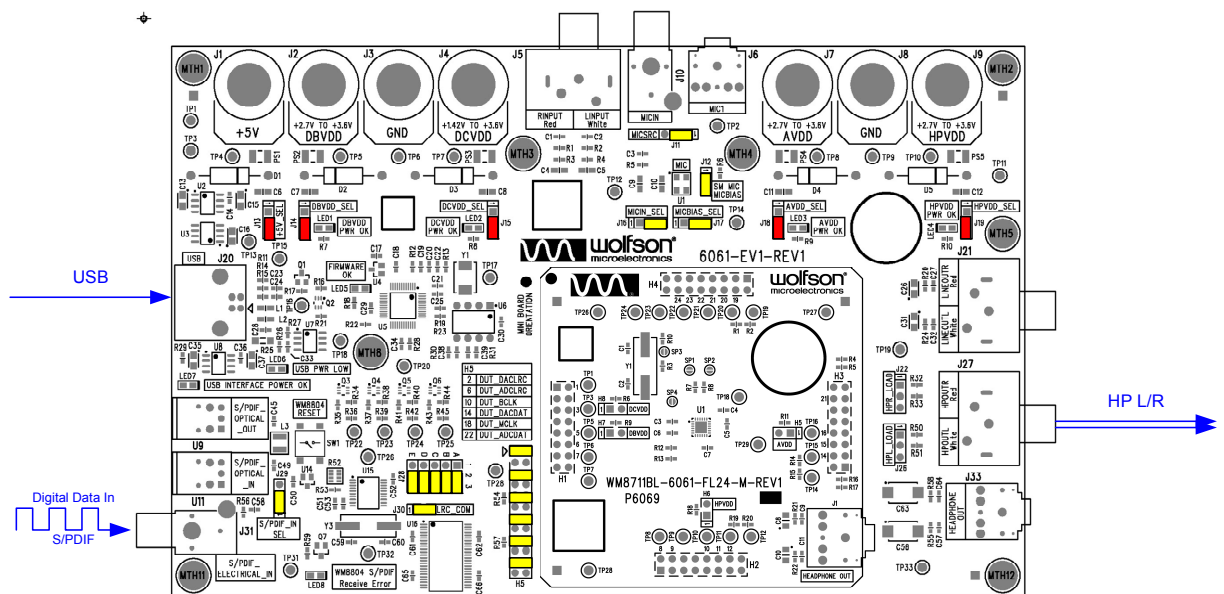
### DAC PLAYBACK TO 32Ω HEADPHONE ON L/RHPOUT

The following section details board configuration for stereo DAC playback to 32Ω headphone on L/RHPOUT. It should be noted that L/RHPOUT outputs are routed to headphone jack sockets on the WM8711BL mini-board and 6061-EV1 main-board, and also to phono connectors on the main-board. For the purpose of this test the main-board phono connectors were used with 32Ω loads applied.

#### EVALUATION BOARD SETUP



#### BOARD CONFIGURATION



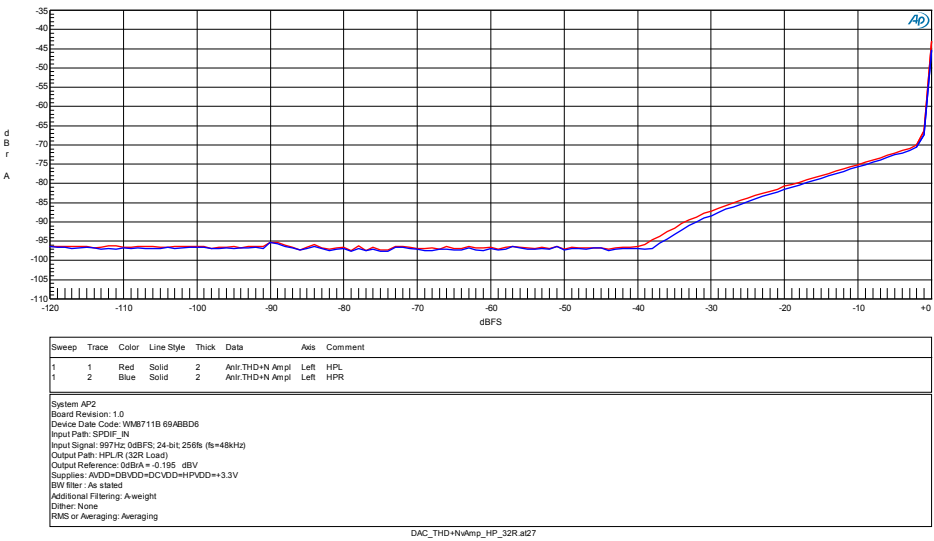
REGISTER SETTINGS

Register settings provided below are simply the minimum requirement to configure the desired path and have not in any way been optimised for pops and clicks.

REG INDEX	DATA VALUE	COMMENT
R15	0x000	RESET
R2	0x079	Left Headphone Out: LRHPBOTH=0, LZCEN=0, LHPVOL=111_1001
R3	0x079	Right Headphone Out: RLHPBOTH=0, RZCEN=0, RHPVOL=111_1001
R4	0x010	Analogue Audio Path Control: SIDEATT=00, SIDETONE=0, DACSEL=1, BYPASS=0, INSEL=0, MUTEMIC=0, MICBOOST=0
R5	0x000	Digital Audio Path Control: HPOR=0, DACMU=0, DEEMPH=00, ADCHPD=0
R6	0x007	Power Down Control: POWEROFF=0, CLKOUTPD=0, OSCPD=0, OUTPD=0, DACPD=0, ADCPD=1, MICPD=1, LINEINPD=1
R7	0x00A	Digital Audio Interface Format: BCLKINV=0, MS=0, LRSWAP=0, LRP=0, IWL=10, FORMAT=10
R8	0x000	Sampling Control: CLKODIV2=0, CLKIDIV2=0, SR=0000, BOSR=0, USB/NORMAL=0
R9	0x001	Active Control: Active=1

THD+N V AMPLITUDE PERFORMANCE CURVE

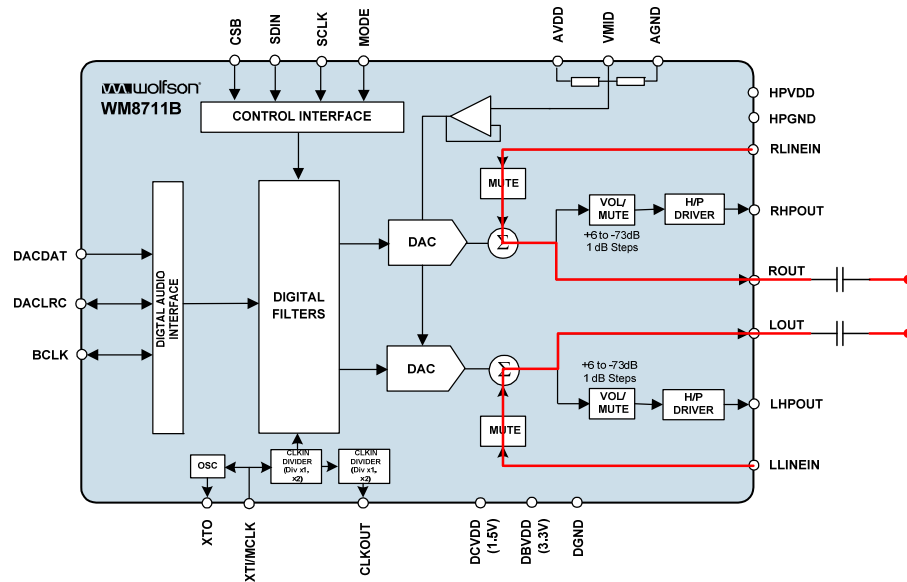
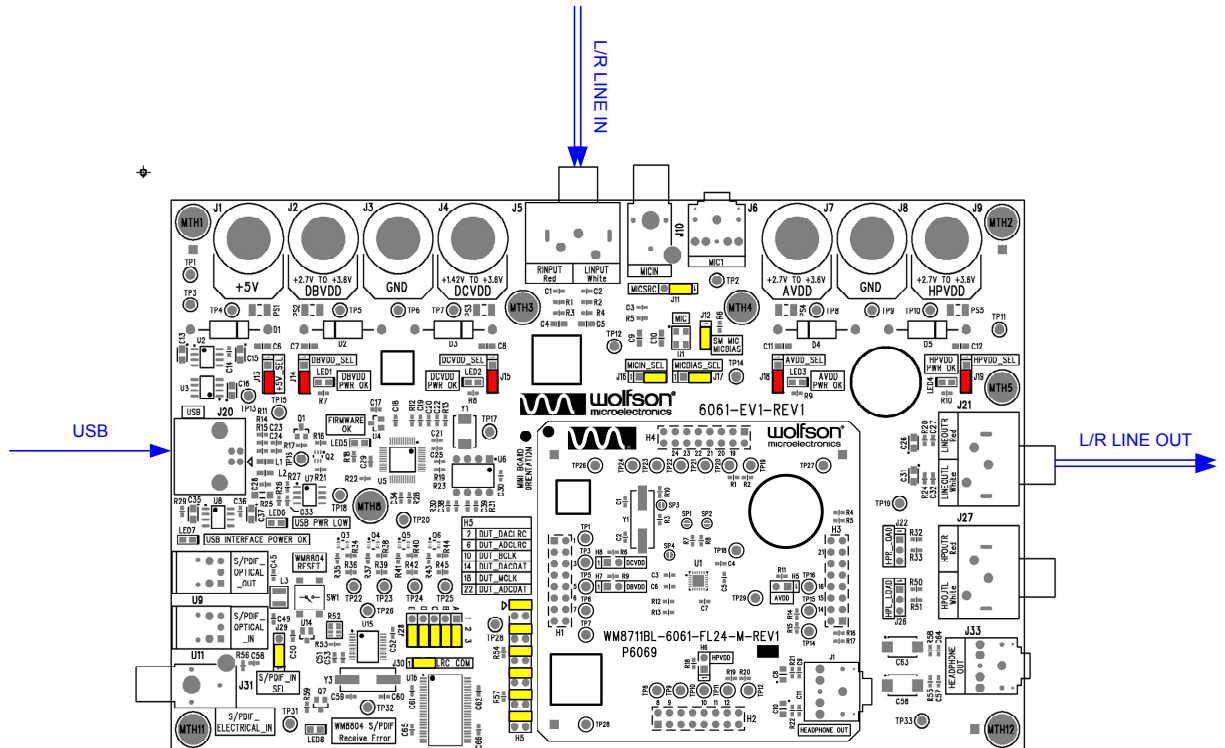
Audio Precision WM8711BL-6061-FL24-M-REV1 DAC Signal Path (to HP\_Out) THD+N v Amplitude  
Signal = 997kHz; 24-bit I2S; 256fs (fs=48kHz); Slave Mode



**ANALOGUE BYPASS (LINE IN TO LINE OUT)**

The following section details board configuration for analogue bypass (Line In to Line Out) from L/RLINEIN to L/ROUT via the output mixers.

Note: In this case both L/RLINEIN inputs and L/ROUT outputs located on the 6061-EV1 main board were used.

**EVALUATION BOARD SETUP****BOARD CONFIGURATION**

REGISTER SETTINGS

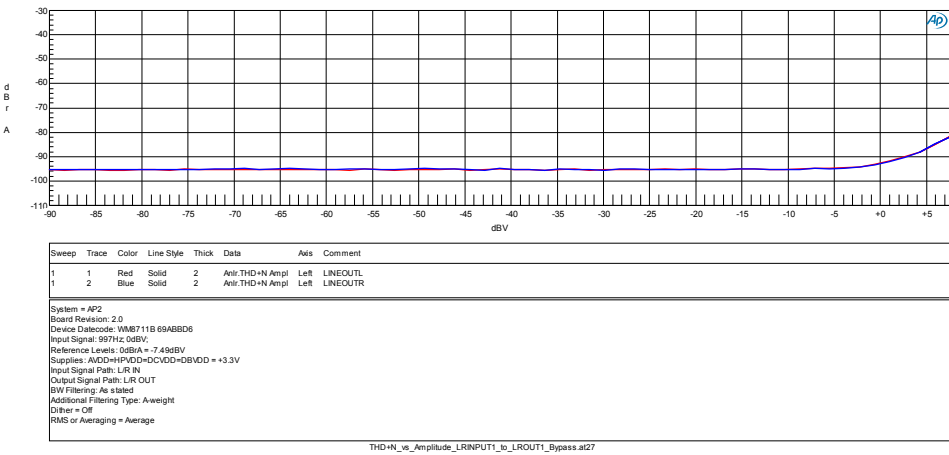
Register settings provided below are simply the minimum requirement to configure the desired path and have not in any way been optimised for pops and clicks.

REG INDEX	DATA VALUE	COMMENT
R15	0x000	RESET
R4	0x00A	Analogue Audio Path Control: SIDEATT=00, SIDETONE=0, DACSEL=0, BYPASS=1, INSEL=0, MUTEMIC=1, MICBOOST=0
R6	0x00E	Power Down Control: POWEROFF=0, CLKOUTPD=0, OSCPD=0, OUTPD=0, DACPD=1, ADCPD=1, MICPD=1, LINEINPD=0
R9	0x001	Active Control: Active=1

THD+N V AMPLITUDE PERFORMANCE CURVE

WM8711BL-6061-FL24-M-REV1 – Analogue BypassTHD+N v Amplitude (L/RIN1, L/ROUT1)

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## **APPLICATION SUPPORT**

If you require more information or require technical support, please contact the Wolfson Microelectronics Applications group through the following channels:

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Mail: Applications Engineering at the address on the last page

or contact your local Wolfson representative.

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