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## DA7212 Ultra Low Power Codec

## and

## Power Commander™ GUI Software

#### Introduction

The DA7212 Evaluation Board has been designed to allow measurement and evaluation of the DA7212 device.

All Audio Codec functionalities are self-contained within the Evaluation Board (EVB).

The EVB is supplied with a USB memory stick containing various documents and a GUI to allow the user to control the DA7212.

The GUI is called Power Commander<sup>™</sup>. It uses a simple graphical interface, allowing the DA7212 to be controlled via a USB port of a PC.

The EVB has a number of jumper links to enable the user to change the system configuration and to allow him to make appropriate measurements, although, in reality, few jumper links are required to be altered for standard operations of the DA7212.



Figure :1 DA7212 Block Diagram



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#### Summary

This document provides some useful information to the user about the EVB and the GUI to allow testing and evaluation of the DA7212 Ultra Low Power Codec.

The hardware solution is based upon two PCBs:

- "EVALUATION MOTHERBOARD 170-03-A"
- "CUSTOMER REFERENCE BOARD 169-02-A" (DA7212 mini board)

The GUI, called Power Commander<sup>™</sup>, requires a PC operating Windows 2000/XP/Vista/Windows 7 with a USB1.1 or USB2 interface. To run Power Commander<sup>™</sup> under Windows Vista, set the default installation location to 'C:\Dialog Semiconductor\'.

Note that Dialog recommends connecting the EVB to a 500 mA capable USB port as we cannot guarantee that a USB hub (set to 100 mA) is sufficient to operate it correctly.

See the section on Power Supplies below.

The GUI allows the user to: (i) configure the DA7212 using one of the several pre-loaded initialisation files (i.e. start-up sequences) available; (ii) write and read operations to all control registers; and (iii) monitor of device status.



#### Hardware

The DA7212 Evaluation Board consists of two boards:

A daughterboard containing the DA7212, and the essential external components. This board could also be used in standalone or as a module for a customer development platform.



Figure 2: DA7212 Mini Board

Note a socketed mini board (169-01-A) is also available. See appendix B for more information.

A motherboard containing many circuit blocks that allows for flexible configuration and provides test access to the DA7212. It includes:

- a. USB Interface with Control Interface level shifters
- b. 1x audio optical input/output interfaces (with selection matrix)
- c. USB reset and 3.3V reset switches
- d. headphone output
- e. line out outputs
- f. auxiliary inputs
- g. analogue/digital microphone inputs
- h. master clock input
- i. power supply inputs (VBAT, GND)



A USB-I2C bridge is used for communication with the device, and there are a number of external active components to reduce the requirement for external circuitry.



Figure 3: Mother Board – Default Jumper positions shown in Red (power) and Blue (signal)

Note: The EVB has been configured by default to work from the mother board's on-board regulators.



#### **Power Supplies**

The DA7212 EVB is powered when a USB cable is connected to J1  $(+5V\_USB)$ . With default jumper settings (J6, J7, J11, J14 and J19, J21), the DA7212 device on the daughterboard is powered form the on-board regulators.



As DA7212 supports a wide supply range the jumper configuration allows the user to select one of two on-board supplies for each supply by connecting the jumper link between pins 1&2 or 2&3 of the jumper. For maximum flexibility the jumper link can be removed and a voltage can be supplied directly onto pin 2 of the jumper with a ground connection connected to the A pin of the jumper. Current measurements on individual supplies can also be performed by connecting an ammeter between the supply and pin2 of the jumper.

Note: As VDD\_IO supplies the IO voltage for the USB interface and level translators jumper J10 has been provided for current measurements on this supply of the DA7212 device. For current measurements on VDD\_IO remove the jumper link and insert an ammeter between pins 1 & 2 of J10.

Note: VDD\_CP and VDD\_DIG are not used in DA7212 and the jumper link should be left unpopulated.



### Audio Connections

Connector	Name	Function
J17	AUX	Stereo single-ended auxiliary input
J30	MIC1_SE	Stereo single-ended microphone input (connects to MIC1_P and MIC2_P)
J22	MIC2_SE	Stereo single-ended microphone input (connects to MIC1_N and MIC2_N)
J26		Mono differential microphone input Pin 1: MIC1_P Pin 2: MIC1_N Pin 3: GND
J27		Mono differential microphone input Pin 1: MIC2_P Pin 2: MIC2_N Pin 3: GND
U7	S/PDIF IN	Digital optical input
U14	S/PDIF OUT	Digital optical output
J18	HP	Stereo single-ended headphone output
J24	LINEOUT	Differential line output (AC coupled, use J25 for speaker)
J23		Differential line output (AC coupled, use J25 for speaker) Pin 1: LINE_P Pin 2: GND Pin 3: LINE_N
J25		Differential speaker output (DC coupled) Pin 1: SP_P Pin 2: SP_N
J32	LINEOUT2	Unused
J31		Unused

Table 1 170-04-A Audio Connectors



## **Jumpers Link Positions and Button Settings**

Jumper number	Position	Function
J3 &J4		External VBAT and GND connection
J5	1-2, (default)	VBAT select: VBAT is generated from an on-board regulator supplied from the USB
	2-3	VBAT select: VBAT is supplied from J3&J4
J6	1-2, (default)	Connects VDD_A from onboard 1.8V supply
	2-3	Connects VDD_A from onboard 2.5V supply
	А	GND connection for connecting external supply between pin 2 and A
J7	1-2, (default)	Connects VDD_IO from onboard 1.8V supply
	2-3	Connects VDD_IO from onboard 3.3V supply
	А	GND connection for connecting external supply between pin 2 and A
J8	On, (default)	Connects USB I2C SCLK to device
J9	On, (default)	Connects USB I2C SDATA to device
J10	On, (default)	Connects VDD_IO to the DA7212 device.
J11	1-2	Connects VDD_SP from onboard 3.3V supply
	2-3, (default)	Connects VDD_SP from VBAT
	А	GND connection for connecting external supply between pin 2 and A
J12	1-2	MCLK comes from the SPDIF interface
	3-4, (default)	MCLK comes from the USB interface
	5	GND pin
	6	External MCLK pin,
		anexternal MCLK can be connected between pins 5

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		and 6.
J13	1-2	Inserts a 160hm load across the left headphone output for test purposes
	2-3	Inserts a 320hm load across the left headphone output for test purposes
J14	1-2	Connects VDD_MIC from onboard 3.3V supply
	2-3, (default)	Connects VDD_MIC from onboard 2.5V supply
	А	GND connection for connecting external supply between pin 2 and A
J15		Allows connection of an external MCLK using an SMB connector. J12 should have it's jumper link removed when using this option.
J16	1-2, (default)	Connects the SPDIF/USB BCLK to the DA7212 device
	3	GND for connecting BCLK to/from an external source between 2-3 (for example Audio Precision PSIA cable)
	4-5, (default)	Connects the SPDIF/USB WCLK to the DA7212 device
	6	GND for connecting WCLK to/from an external source between 5-6 (for example Audio Precision PSIA cable)
	7-8, (default)	Connects the SPDIF/USB DIN to the DA7212 device
	9	GND for connecting DIN from an external source between 8-9 (for example Audio Precision PSIA cable)
	10-11, (default)	Connects the SPDIF/USB WCLK to the DA7212 device
	12	GND for connecting DOUT to an external source between 11-12 (for example Audio Precision PSIA cable)
J19	1-2 2-3,	Not Used Do not connect for DA7212
	А	
J20	1-2	Inserts a 160hm load across



		the right headphone output for test purposes
	2-3	Inserts a 320hm load across the right headphone output for test purposes
J21	1-2, (default)	Not Used
	2-3	Do not connect for DA7212
	А	
<b>S1</b>		Regulator Reset button:
		Resets the 3.3V, 2.5V, 1.8V
		and 1.1V regulators
S2		USB Reset button:
		Resets the USB sub system

Table 2: 170-04-A Jumpers Link Positions and Button Settings



#### **Control Software**

#### Installation

From the USB memory stick provided with the EVB box, run the 'setup.exe' file (DA7212\_USB\DA7212 GUI\setup.exe).

₩ DA7213_1v1	
Destination Directory Select the primary installation directory.	
All software will be installed in the following locations. To install software into a different locations, click the Browse button and select another directory.	
Directory for DA7213_1v1	
C:\Dialog Semiconductor\Audio\DA7213_1v1\	Browse
Directory for National Instruments products C:\Program Files\National Instruments\	Browse
< Back Next >:	Cancel

Click "Next>>".

🐨 DA7213_1v1 💼 🗉 💌	
Start Installation Review the following summary before continuing.	
Adding or Changing         • DA7213_1v1 Files         Back state         Click the Next button to begin installation. Click the Back button to change the installation settings.	
Save File << Back Next >> Cancel	

Click "Next>>".



₩ DA7213_1v1	
Installation Complete	
The installer has finished updating your system.	
	 Finish

Click "Finish".

You may need to restart your computer; in this case a pop up window will appear asking you to do so.

Once your computer has restarted, plug the USB cable to the EVB and Windows should detect the USB device and automatically install the driver. If not, the driver is located on this DA7212 USB stick



## **Control Panel**

Run the DA7212 program by clicking the shortcut on the appropriate item in the Start menu. The best setting for the PC display size is 1024x768 pixels or above. Font size on the PC display should be Normal (95dpi). It is important to note that a display size other than the recommended setting may affect the way in which the panels appear.

The following screen appears, with the "USB OK?" LED lit if the USB interface is correctly connected and operational.



To start the device, plug in the USB cable.

Figure 4 Initial Interface

If the Reset LED is blinking yellow, it indicates that the device is not yet communicating via the I2C interface. See Troubleshooting for more details.



#### **Status and Controls**

**Polling Enabled** BY default the current page contents is updated via polling the I2C interface. If disabled, these readbacks are suppressed. This is used to force the communication over the bus to be silent. If this is set to automatic, the program will only poll the device while the application is the topmost window. If obscured by another program or window, polling will be disabled.

**LED** If the device is active this LED is green, or red if inactive.

correct.



#### Stop Program

This terminates the program. If there are unsaved changes, a dialog box is displayed.

This indicates the device version when the device

is active. When inactive, version status will not be

File Operations				
	Load 🔻			
	Save	•		

*Load* Loads previously saved text files, send all Registers and read back all registers. "Load" opens a dialog box to select, view, copy or

re-name a file.

Load Codec file opens a dialog box to allow selection of a codec setup file in the "\Codec Setups" directory.

**Save** Saves current panel state to a text file. Selecting "Save Codec file.." saves the codec registers in a slightly different format. Selecting "Register Dump" option saves current register values to the text file. See Appendix A.

Note: Difference between "Save" and "Register Dump" is that the "Save" dumps the contents of all panel controls to the file (a save state operation); whereas, "Register Dump" reads the device contents (including status registers) into the file. Note that some codec registers do not have readback capability.



Interface Selects between USB I2C control and offline mode. Switching to offline, then back to USB reinitialises the USB interface.

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Find Send Read Find	<ul> <li>Slave Address</li> <li>Sets slave address of device. This affects all I2C communications.</li> <li>The codec slave addresses for DA7212 is 0x34. Note that this is the 8bit value (34h for Write, 35h for Read).</li> </ul>
S	<b>end</b> Sends a single byte data to I2C device using Slave Address, Register Address and Data to Send.
F	<ul> <li>Reads single byte data from I2C device using Slave Address and Register Address.</li> <li>Finds a control matching a full or partial register name, a control bit name, a register number (e.g. R23 or 17h). Pressing "Find" repetitively will step through all matching items.</li> </ul>

**USB OK?** Indicates that the USB is OK and communicating.

Note: If Device Address does not match the port numbers on the device, this can be used to control/read any other device on the I2C bus.



Synchronise Panel from Device Reads all the register contents of the and updates the panel to match. Synchronise Device from Panel Writes all the device registers to mat panel. (Refresh operation) Reload Configuration Besots registers to values specified in	
configuratio values for th	n file for the PMIC section and default ne codec.
Clear all I2C readback indicators	Sets all readback indicators to 0.
Read All Registers	Reads all registers, comparing with the panel controls.

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## **Control Interface**

The Codec Config, DAI and PLL, Analogue Inputs, Analogue Outputs, Mixers, DAC Control, ADC Control, ALC control and Tone Gen pages all have the same format.

Each register cluster comprises a control with a mixture of Boolean toggle buttons, multi-value ring controls, or slide controls, as well as a hexadecimal indicator showing the total equivalent register value and a readback indicator showing the current register settings. The Event Register is labeled with a Register number in decimal and its hexadecimal equivalent.

The Readback indicator readings can be switched individually to decimal, octal, hexadecimal or binary by clicking on the "x", or they may all be changed at once between Hex and Binary by the "View>Binary Indicators" menu item.



## Codec Config Page

The Codec Config page allows access to the System Controller as well as some basic system settings such as the references, IO levels and digital LDO. To use the System Control panel (de)select the blocks as required for the inputs and outputs and click the Submit button to apply the changes. If no blocks are active then the System Active panel can be used to disable the onchip oscillator and put DA7212 into an ultra-low power standby state. The CIF CTRL panel can be used to reset the chip and return all the registers to their hardware defaults.

₩ DA7212_1v2 File Settings Help			- <b>-</b> X
Codec Config DAI and PLL Analogue In	puts Analogue Outputs Mixers ADC	Control DAC Control ALC Control Tone Gen Codec Registers	•
Svsta	em Control	System Confia	_ DA7212 IRQ
SYSTEM_MODES_INPUT_p0 ADC_R Disabled ADC_L Disabled MIXIN_R Disabled MIXIN_L Disabled MIC_2 Disabled MIC_2 Disabled MIC_1 Disabled MIC_BIAS Disabled MIC_BIAS Disabled R80=50h 00 SYSTEM_ACTIVE #88 Bits 1-7 0 SYSTEM_ACTIVE 0 SYSTEM_ACTIVE 0	SYSTEM_MODES_OUTPUT +) DAC_R Disabled DAC_L Disabled HP_R Disabled HP_L Disabled LINE Disabled AUX_R Disabled AUX_L Disabled Submit Disabled R81=51h 00 SYSTEM_STATUS 0 SYSTEM_STATUS	REFERENCES     B       Bit 7     Disabled       BANDGAP_EN     Disabled       VMID_DISCHARGE     Slow       VMID_CHARGE     Slow       Bit 0-1     00: •       Bit 0-1     00: •       R35=23h     08       CIF_CTRL     *0       Rec_SOFT_RESET_Disabled     Bit 2-7       Bit 2-6     00       IZC_WRITE_MODE     Page	Enabled       Interface     USB OK       SAMBU IZC     USB OK       Dev 02     Ver 01       21     Stop       Program     File Operations       Load     Save       Save     Save       Find     \$*0       Send     \$0       Read     \$*0       Data to Send       *0     Data read
		R29=1Dh 200	Image: second



## DAI and PLL Page

The DAI and PLL page allows control of the digital audio interface and phaselocked loop. The DAI CTRL panel sets the format on the DAI and the DAI CLK MODE panel sets the master/slave mode as well as the clock polarity and number of BCLKS per WCLK. The DIG ROUTING DAI panel selects the data source for the DAI and DIG ROUTING DAC selects the data source for the DAC.

The PLL Control panel contains all the settings for the PLL and on-chip clocking. The SR panel sets the sample rate being used. The PLL CTRL panel sets the input clock rate, whether the PLL is enabled and whether sample rate matching (SRM) is required to track the DAI in slave mode. If the PLL is required, the three FBDIV panels control the value of the feedback divider. The required values can be calculated using the DA7212 PLL Calculator spreadsheet, or they can be determined automatically by entering the supplied MCLK frequency and pressing the Calculate PLL button. The current status of the PLL is shown in the PLL STATUS panel. The PC COUNT panel controls the behavior of the internal program counter.

138 DA7212_1v2	
File Settings Help	
Codec Config       DAI and PLL       Analogue Inputs       Analogue Outputs       Mixes       ADC Control       DAC Control       ALC Control       Tone Ger       Codec Registers         DAL_CTRL       #0       DIG_ROUTING_DAI       #0       DAL_CLK_MODE       DIG_CTRL       #0       DIG_ROUTING_DAC       #10         DAL_CTRL       #0       DIG_ROUTING_DAI       #0       DAL_CLK_MODE       DIG_CTRL       #0       DIG_ROUTING_DAC       #10         DAL_SRC       01       #1       DOC       #0       DIG_CTRL       #0       DIG_ROUTING_DAC       #10         DAL_CLK_MODE_EN       #16       #0       #1       #0       CLK_EN       Stave       Bits 4-6       #0       DAC_R_MONO       Disabled       DAC_R_MONO       Disabled       DAC_R_SRC       1: ADC R       DAC_R_SRC       DISabled       DAC_R_SRC       1: ADC R       DAC_LK_POL       UNV       Normal       Bits 0-2       0       DAC_R_SRC       0: ADC C R       DAC_LSRC       0: ADC C R       DAC_LSRC<	DA7212 IRQ Polling Polling Interface USB OK? SAM3U I2C V Dev 02 Ver 01 21 Dev 02 Ver 01 Dev 02 Ver 02 Ver 01 Dev 02 Ver
R41=29h         80         R42=2Ah         10           DAL_OFFSET         x0         R152=98h         00	File Operations Load V Save V File Operations Save V Find \$40 Reg. address Sand \$40 Reg. address
SR       VB       PLL_FRAC_TOP       PD         Brt 4-       0       Brt 5-7       0       Calculate PLL       PLL_STATUS       C         SR       1011:48,000k       Brt 5-7       0       Calculate PLL       PLL_STATUS       C         R34=22h       06       R36=24h       00       R36=24h       00       Disabled       PLL_STATUS       Disabled         PLL_FRAC_BOT       0       FBDIV_FRAC_BOT       0       R39=27h       00       C         R37=25h       00       R37=25h       00       C       R39=27h       C4	Read     y0     Data read       G     Find     G       G     Find     G       G     G     G       Defaults     Clear all     registers
PLL_INTEGER     ×20       Bit 7     Dirabled       F8DIV_INTE     20       R38=26h     20	Status Idle

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## Analogue Inputs

The Analogue Inputs page controls the input amplifiers and microphone biases. Each of the GAIN panels sets the target gain for the amplifiers, and the GAIN STATUS shows the currently active gain setting. Each of the CTRL panels sets the enable, mute, and gain change behavior (ramped or zerocrossed) for the amplifiers. The MIC CTRL panels allow selection of singleended or differential input signal. The MICBIAS CTRL panel enables and sets the output level for the microphone bias outputs. The MIC CONFIG panel sets the clock and data format when digital microphones are used.

(13) DA7212_1v2		x
File Settings Help		
Codec Config     DAI and PLL     Analogue Inputs     Analogue Outputs     Mixers     ADC Co       AUX_L_GAIN     #35     AUX_R_GAIN     #35     Bit 7     Disabled     Bit 7     Disabled     Bit 7     Disabled     Bit 7     Disabled     Bit 7     Bit 7     Disabled     Bit 7     Bit 7     Disabled     Bit 7     <	MIC_1_GAIN     ALC Control     Tone Gen     Codec Registers       MIC_1_GAIN     AIL     MIC_2_GAIN     AIL       Bit 3-7     0     AMP_GAIN     DAT212       Bit 3-7     0     AMP_GAIN     DI       MIC_1_GAIN     01     08 T     AMP_GAIN       MIC_1_GAIN_STATUS     MIC_2_GAIN_STATUS     MIC_2_GAIN_001:008 T	IRQ Polling Enabled USB OK
R4=04h     00     R5=05h     00       AUX_L_CTRL     444     AUX_R_CTRL     444       L_AMP_EN     Disabled     R_AMP_EN     Mute       L_AMP_RAMP_EN     Instant     L_AMP_ZC_EN     Mute       L_AMP_ZC_SEL     01:AUX_L     RAMP_ZC_EN     Instant       L_AMP_ZC_SEL     01:AUX_L     0     Bits 0-1       R96=60h     44     R97=61h     44	R6=06h     01     R7=07h     01       MIC_1_CTRL     *B4     MIC_2_CTRL     *B4       AMP_EN     Enabled     AMP_EN     Enabled       AMP_MUTE_EN     Normal     Bit 5     Disabled       Bit 4     Instant     AMP_IN_SEL     01 : MIC2_P SE       Bits 0-1     0     Bit 4     Instant       R99=63h     84     R100=64h     84	Stop Program
	MICBIAS_CTRL *AA MIC_CONFIG *D MICBIAS2_EN Enabled Bit 6 Disabled MICBIAS2_LEVEL 10:2.5V MICBIAS1_EN Enabled Bit 2 Disabled MICBIAS1_EVEL 10:2.5V R988=62h AA R147=93h 00	Read all registers



## Analogue Outputs

The Analogue Outputs page controls the headphone and line (speaker) amplifiers as well as the charge pump for the headphone supplies. The GAIN, GAIN STATUS and CTRL panels behave as for the Analogue Inputs page. The Charge Pump Control controls the mode and switching behavior of the charge pump as explained in the datasheet.

ta DA72	212_1v2			
File S	ettings Help			
Code	te Config DAI and PLL Analogue I	nputs Analogue Outputs Mixers A	DC Control DAC Control ALC Control Tone Gen Codec Registers	
	Head	phone Control	Line Control	DA7212 IRQ
	HP_L_GAIN ×2D	HP_R_GAIN ×2D	LINE_GAIN ×30	Polling The Enabled
	Bit 6 () 0	Bit 6 () 0	LINE_AMP_GAIN / 110000:0dB	Interface USB OK?
	HP_L_GAIN (101101 : -12dB	HP_R_GAIN / 101101 : -12dB	R74=4Ah 30	SAMBU I2C 🗸
	R72=48h 2D	R73=49h 2D	LINE_GAIN_STATUS	Dev 02 Ver 01
	HP_L_GAIN_STATUS	HP_R_GAIN_STATUS	LINE_AMP_GAIN () 000000 : -48dB	21 Stop Program
	R14=0Fh x2D	HP_R_GAIN = 101101:-12dB	R16=10h x00	Read Chip ID
	HP L CTRL ×A8		LINE_CTRL ×40	File Operations Load 🗸
	AMP_EN Enabled	AMP_EN Enabled	AMP_EN Disabled	Save 🔻
	MUTE_EN Normal	MUTE_EN Normal	MUTE_EN Mute RAMP EN Instant	\$ <mark>≭34</mark> Codec slave
	ZC_EN Instant	ZC_EN Instant	Bit 4 Disabled	Find \$×0 Reg. address
	OE Enabled MIN GAIN EN Normal	OE Enabled	OE HighZ MIN_GAIN_EN Normal	Send *0 Data to Send
	Bits 0-1 +)/ 0	Bits 0-1	Bits 0-1	Q Find
	R107=6Bh 🔣 A8	R108=6Ch A8	R109=6Dh 840	
		Charg	e Pump Control	
	CP CTPI			Reset to Defaults
	CP_EN Enabled	Bit.6-7 00:	CP_ON_OFF 10: auto	Clear all Read all
	CP_SMALL_SWITCH Enabled	CP_THRESH_VDD2	CP_TAU_DELAY100:64ms V CP_DECONTROL 101:004	Power
	CP_MOD 11:CPVDD/1	R149=95h 36	R151=97h 200	dialog Commander
	CP_ANA_LVL 01 : Boosts CP			Status
	R71=47h CD			Idle



#### Mixers

The Mixers page controls the behavior of the analogue input and output mixers. The GAIN, GAIN STATUS and CTRL panels behave as for the Analogue Inputs page. The MIXOUT CTRL panel also enables the Softmix feature to ramp in/out the the select inputs. The SELECT panels controls which inputs are routed to each of the four mixers.

(U3) DA7212_1v2	
File Settings Help	
DA7212_1v2         File Settings Help         Codec Config DA1 and PLL Analogue Inputs Analogue Outputs Moers ADC Centrol DAC Centrol ALC Centrol Tene Get Codec Registers         MDXIN_L_GAIN         Bit 4-7         LAMP_GAIN 0011:0.0dB         R2=34h       03         MDXIN_L_GAIN_STATUS         MDXIN_L_GAIN 0011:0.0dB         R3=35h       03         MDXIN_L_GAIN 0011:0.0dB         R3=08h       03         MDXIN_L_CTRL       MAB         MDXIN_L_CTRL       MAB         R_AMP_GAIN 0011:0.0dB       R=9-09h         R=08h       03         MDXIN_L_CTRL       MAB         R_AMP_EN       Inabled         L_AMP_ROM_EN       Inabled         R_AMP_COLL       Inabled         R_AMP_COLE       Inabled	DA7212     IRQ       Polling     Enabled       Interface     USB OK?       SAMBU I2C     USB OK?       Dev 02: Ver 01     Stop       Z1     Program       File Operations     Save       Save     Image: Save       \$x94     Codec slave       \$ix90     Reg. address       \$ix90     Data read       \$ix90     Data read
MIXIN_L_SELECT     2     MIXIN_R_SELECT     2       DMIC_L_EN     Disabled     DMIC_R_EN     Disabled       Bit 6     Disabled     Bit 6     Disabled       Bit 7     Disabled     Bit 6     Disabled       Bit 8     Disabled     Bit 7     Disabled       Bit 4     Disabled     Bit 5     Disabled       MIXIN_R     Disabled     Bit 4     Disabled       MIXIN_R     Disabled     MIXIN_L     Disabled       MIXIN_L     Di	Image: Clear all registers         Status         Idle
A Province of the second se	



## ADC Control

The ADC Control page enables the ADC, sets the digital gain applied after the ADC and controls the behavior of the high-pass filter.

127 DA7212_1v2		
File Settings Help		
GLI DA7212_1v2         File Settings Help         Codec Config DAI and PLL Analogue Inputs Analogue (Inputs)         ADC_L_CTRL #A0         ADC_L_CTRL #A0         L_EN         L_MUTE_EN Normal         L_RAMP_EN Pamped         Bits 2-4         Bits 2-4         Bits 2-4         Bits 0-1         R104=66h         ADC_FILTERS1         #80         ADC_FILTERS1         ADC_FILTERS1         #80         ADC_FILTERS1         VOICE_EN         Disabled         VOICE_EN         Disabled         VOICE_EN         Disabled         VOICE_EN         Disabled         VOICE_EN         Disabled         VOICE_BN         Bits 00	Dutputs     Mixers     ADC Control     DAC Control     ALC Control     Tone Gen     Codec Registers       ADC_L_GAIN     IDisabled     ADC_R_GAIN     IDisabled     Bit 7     Disabled       LDIGITAL_GAIN     1101111:0.000dB     R55=37h     6F       ADC_L_GAIN     1101111:0.000dB     R55=37h     6F       ADC_L_GAIN     1101111:0.000dB     R_DIGITAL_GAIN     1101111:0.000dB       R_DIGITAL_GAIN     1101111:0.000dB     R_DIGITAL_GAIN     1101111:0.000dB       R10=0Ah     6F     R11=0Bh     6F	DA7212 RQ Polling C Polling C Pollin
		□       □       □       □         Reset to       □       □       □         Defaults       □       □       □         Clear all readback ind.       Tegisters       □       □         Odiacoor       Ower Commander Software       □       □         Status       □       □       □



## **DAC Control**

The DAC Control page controls the DAC, the DAC filters and the DAC noise gate. The DAC FILTERS panels control the high-pass filter as well as the 5-band EQ filter. There is also an option to apply a soft mute to the DAC input signal. The DAC NG panels control the behavior of the DAC noise gate in terms of its on and off thresholds, attack/decay rates and hold time.



## ALC Control

The ALC Control page configures the automatic level control on the record path. The ALC behavior is described in detail in the datasheet.

11.3 DA7212_1v2		
File Settings Help		
Codec Config DAI and PLL Analogue Inputs Analogue Outputs Mixers ADC Control DAC Control ALC Control 1	Tone Gen Codec Registers	·
ALC_CTRL1     ×BB     ALC_CTRL2     53     ALC_GAIN_LIMITS     ×7F       ALC_REN     Enabled     ALC_RELASE     0101:19.2ms     GAIN_MAX     0111:42.0dB       Bit 6     Disabled     ALC_ATTACK     0011:1.224ms     ATTEN_MAX     1111:90.0dB       ALC_LEN     Idle     R154=9Ah     53     R159=9Fh     7F	ALC_TARGET_MIN ×3 Bit 7 Disabled Disabled Disabled THRESH_MIN () 000011 : -4.5dBFS R157=9Dh 203	DA7212 IRQ Polling T Interface USB OK? SAM3U IZC T
CALIB_MODE     Automatic     ALC_CTRL3     433     ALC_ANA_GAIN_LIMITS     71       SYNC_MODE     ON     INTEG_RELEASE     01:1/16     INTEG_AIN_LIMITS     71       OFFSET_EN     Enabled     INTEG_AINC     00:1/4     ALC_HOLD     0011:10.4ms       R43=28h     88     ALC_HOLD     0011:10.4ms     Bit 3     Bit 3     ANA_GAIN_MIN     101:00B       R155=98h     443     R160=A0h     71	ALC_TARGET_MAX 2 Bit 7 Disabled Bit 6 Disabled THRESH_MAX 000010:-3.0dBFS R158=9Eh 02	Dev 02 Ver 01 21 Stop Program File Operations Load V
ALC_ANTICLIP_CTRL xD ANTICLIP_EN Disabled Bits 0-6 0 ALC_ANTICLIP_LEVEL Disabled Bits 0-6 0 ALC_ANTICLIP_LEVEL Disabled ANTICLIP_LEVEL 00000000 : 0.0039FS R161=A1h 00 R162=A2h 00 R156=9Ch 3F		Find Send Read Codec slave Codec slave Send Send Send Send Send Send Send Sen
Advanced Controls           ALC_OFFSET_MAN_U_L         ALC_OFFSET_MAN_M_L         ALC_OFFSET_MAN_U_R         ALC_OFFSET_MAN_M_R         ALC_OFFSET_MAN_M_R	ALC_CIC_OP_LVL_CTRL ×0 CIC_OP_CHANNEL Left Bits 6-2 0 CIC_OP_CTRL 00 : Capture data R173=ADh 00 ALC_CIC_OP_LVL_DATA	Reset to Defaults Clear all readback ind. Read all registers Power Commander Software
OFFSET_AUTO_U_R         O         OFFSET_AUTO_U_R         O         OFFSET_AUTO_U_R         O           R164=A4h         00         R163=A3h         00         R169=A9h         00         R168=A8h         00	CIC_OP	Status Idle