CRY573 MEMS MIC Adapter Box Manual V4.3

Introduction

CRY573 supports PDM and I2S signal to analog signal output conversion (software switching mode). It supports 8kHz~48kHz adjustable sampling rate (only PDM mode supports), supports analog output with left and right channel gain adjustable. CRY573 is connected to the computer via USB and is enumerated as a virtual serial port on the PC. Configuration can be modified through the virtual serial port.

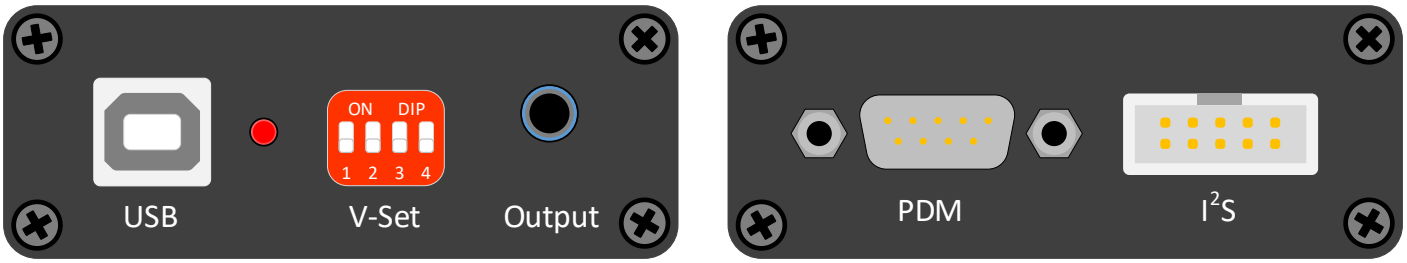


Fig1 schematic diagram of DIP switch and interface

Interface

- USB interface

CRY573 is powered and communicated via USB interface. Be attention to the power consumption of the load of USB interface (advice: the load current ≤ 100mA).

Switching PDM and I2S mode, signal sampling rate of digital interface and output gain of analog signal freely by supporting software.

- DIP switch

CRY573 uses DIP switch to adjust the working voltage (optional 3.3V, 3.0V, 2.8V, 2.0V and 1.8V, deviation within 0.1V) of the device chip to match digital signals at different electrical levels of the external device.

Form1 DIP switch setting

	1	2	3	4
3.3V	OFF	OFF	OFF	OFF
3.0V	ON	OFF	OFF	OFF
2.8V	OFF	ON	OFF	OFF
2.0V	OFF	OFF	ON	OFF
1.8V	OFF	OFF	OFF	ON

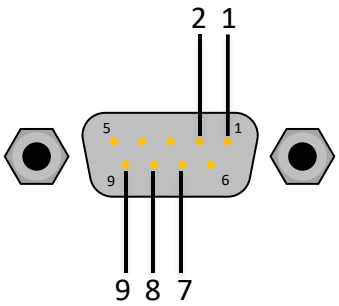
The form1 will be printed on the CRY573 for convenience of users. The first line corresponds to the No.1-4 switches of the DIP switch. For example, when setting 3.3V, turn off all switches.

- Analog signal output

The analog signal outputs by a 3.5mm audio output interface. It's left and right channels correspond to the left and right channels of the digital signal respectively.

- PDM signal input

Supporting one PDM signal input (including L/R channels). Through the software, setting the clock frequency (sampling rate) of PDM interface and the gain of left and right channels of analog output.

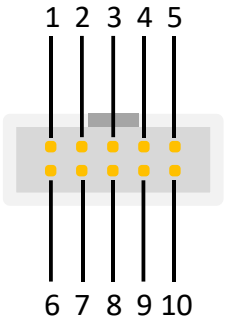


1：CLK
2：VDD
7：GND
8：GND
9：Data

Fig2 pin definition of PDM interface

- I2S signal input

Supporting one I2S signal input (only supporting standard I2S mode, including L/R channels, 16~32bit frame length per channel). Through the software, setting the gain of left and right channels of analog output.



1：Vcc Supply
2：I2S Data Input
3：BCLK
4：LRCLK
5：PDM Mic In
6~10：GND

Fig3 pin definition of I2S interface

Features

Default test condition: (unless otherwise specified)

1> working level: 3.3V

2> sampling rate: 48kHz

Form2 parameters of PDM and I2S mode

Performance Index	PDM Mode	I2S Mode
Ground Noise (Analog Channel)	A-weighting: -95dBV Z-weighting: -92dBV (20Hz~20kHz)	
Dynamic Range	>90dB (1kHz, A-weighting)	
Frequency Response	<±0.15dB (20Hz~20kHz)	
Total Harmonic Distortion	<0.03% @1kHz	

Sampling Rate	8kHz, 12kHz, 16kHz, 24kHz, 32kHz, 37.5kHz, 48kHz	48kHz
Supported Electrical Level	3.3V, 3.0V, 2.8V, 2.0V, 1.8V	

Tip1: Digital interface clock frequency = sampling rate x64

Reminder: In PDM mode, a stable time of 0-3 seconds is needed when the device is powered on and started at 37.5kHz sampling rate, or when switching from other sampling rates to 37.5kHz (advice: delay at least 3 seconds before testing).

Device Connection

- Adjust the working level of CRY573 according to the device connected
- Connect the USB signal cable and install driver (see “Driver Installation” for installation method)
- Connect the device under test to the digital interface of CRY573 (see fig2 or fig3 for interface definition)
- Use software to set CRY573 to the suitable working mode (CRY573 will automatically remember the last setting after first setting)
- Start testing after setting up

Driver Installation

Installing a USB driver which can enumerate CRY573 as a virtual serial port via USB, to control the working mode of CRY573 by using software.

Steps:

- Open the "CRY573 Virtual comport driver" directory in the software package
- Enter “Win7” or “Win8” subdirectory, and choose suitable driver according to parameter of operating system
- Double-click driver to install (default parameter installation)

Tool Software

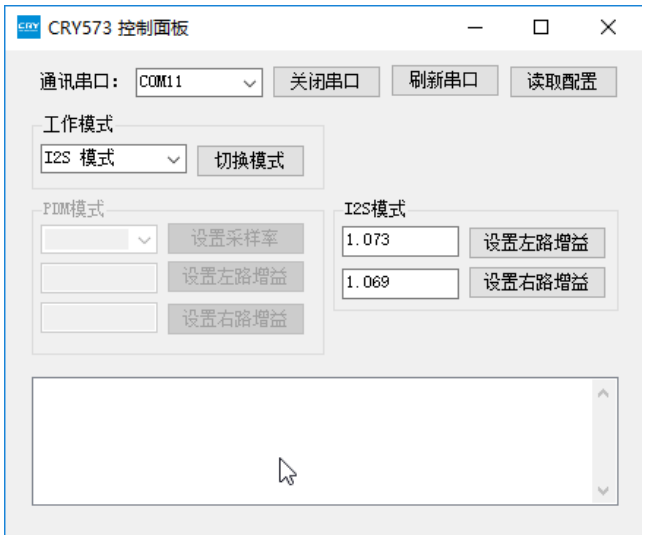


Fig4 interface of software

Use software to configure the working mode of CRY573.

- Serial port
  Select the serial port corresponding to CRY573, and open it

- Reading configuration
  Get CRY573 current configuration information, including working mode, sampling rate (if any) and the gain of left and right channels

- Working mode
  Choose one mode and click “switch mode” button to switch CRY573 to corresponding working mode
  Tip2: After switching, suggest restarting the device before testing.

- Parameter setting
  After choosing mode, the parameter settings (including sampling rate, gain setting of left and right channels) corresponding to the mode become settable. Clicking “setting” button to update the configuration of CRY573.

Tip3: When leaving the factory, the device modifies the gain of analog channel to make 0dBFS digital signal input corresponding to 0dBV analog output. Commonly not recommended that users self-modify the analog channel gain.

CRY SOUND

Update Record

Date	Content	Editors
2020.6.16	Create the document	Linn Zheng
2020.6.17	Check and modify	Jonah Chen