

## DY-HV20T 20W Amplifier Voice Playback Module

### 1.Introduction:

DY-HV20T is an intelligent voice module developed by the division independently. It integrates I/O subsection triggering, UART serial port control, ONE\_line single bus serial port control. Onboard 20W Class D amplifier circuit and can directly drive 4ohm/20W 8ohm/10W speakers.Support MP3,WAV decoding format. Max support 32Gbit(4MByte) TF card memory which can connect the computer to update TF card to store audio files via USB cable. It has 3.5mm audio interface, U disk interface, Micro USB download interface, button module in one module.

### 2.Feature:

1>.Intelligent Voice Playback. 2 Single control , 2 Loop control , UART control, One\_line control mode within 7 control modes.and Play up to 8 or 255 musics which can meet the needs of different scenarios.

2>.Mono 20W Class D Amplifier. It has a built-in amplifier, not only direct AUX passive audio output to such as earphone, but also active output which can connected to 4ohm 20W speaker directly.

3>.32G TF Card Socket. It can support up to 32G TF card which be able to store more than enough music files.Users can download and update voice files directly via USB, which is very fast and easy to use.

4>.Adjustable Volume. The built-in potentiometer can adjust the volume and ultra-small size.

5>.Programmable Control. Users can not only control by simple buttons, but also connect to control devices such as MCU or PLC to complete music playback by command, integrated into their own embedded devices

### 3.Function:

1>.Support MP3 and WAV decoding format.

2>.Support sampling frequency (KHz) : 8/11.025/12/16/22.05/24/32/44.1/48.

3>.24-bit DAC output, dynamic range support 90dB, SNR support 85dB.

4>.Support the FAT16/FAT32 file system, with the maximum support 32Gbit(4MByte) TF card and 32Gbit(4MByte) U-disk.

5>.Support UART serial port control voice broadcast function.It can control playback, pause, selections, turn up and down volume and other functions, the largest selection of 65535 songs.The baud rate is 9600 bit/s.

6>.Support I/O trigger function, 8bit I/O ports can trigger 8 musics or 8 I/O combinations to trigger 255 songs.

7>.Support One\_line single bus serial port control, which can control playback, pause, selection, turn up and down volume and other functions.

8>.Support 3 configuration I/O for mode selection to make 7 work mode.

9>.Built in 20W Class D amplifier circuit and can directly drive 4ohm/20W 8ohm/10W speaker.

### 4.Parameter:

1>.Product Name:DY-HV20T20W Amplifier Voice Playback Module

2>.Product Number:DY-HV20T

3>.Work Voltage:DC 6V-35V

4>.Work Mode: 4-Kinds I/O, UART, ONE\_Line, Standard MP3

5>.File Format: MP3,WAV

6>.Speaker Power: 20W/4ohm, 10W/8ohm

7>.TF Card Type:32G(Max and NOT included)

8>.Audio Output: Active/passive output

9>.Adjust Volume: Yes

10>.Work Humidity:5%~95%RH

11>.Size(Installed):122\*66\*30mm

12>.Size :50\*50\*12mm

### 5.Frequently asked questions

1>.Does it support key recording?

A : No,It does not.It just support USB. Download new music file by micro USB.

2>.Can it play more than one file?

A : Yes,it can play more than one music.

3>.My computer does not recognize the device when i plug in the USB cable. the charging light comes on but nothing else. what can i do?

A : Please try use another USB data cable or PC to test it.Recommend using windows.

### 6.Application:

1>.DIY greeting card

2>.Music Box

3>.Toy/Gift Boxes

4>.Cake box

5>.Memorial album

### 7.Package:

1>.1pcs DY-HV20T20W Amplifier Voice Playback Module

IO7	IO6	IO5	IO4	IO3	IO2	IO1	IO0	Song	I/O0-I/O7 controls 8 songs.It will stop playing current song to end after I/O0-7 release input signal(return to high);It will playing new song when get new signal during playing and stop after end of song;It will play repeatedly if keep input;Busy pin will output valid signal(High) during playing.
1	1	1	1	1	1	1	0	00001.mp3	
1	1	1	1	1	1	0	1	00002.mp3	
1	1	1	1	1	0	1	1	00003.mp3	
1	1	1	1	0	1	1	1	00004.mp3	
1	1	1	0	1	1	1	1	00005.mp3	
1	1	0	1	1	1	1	1	00006.mp3	
1	0	1	1	1	1	1	1	00007.mp3	
0	1	1	1	1	1	1	1	00008.mp3	

**I/O Independent Mode 1 (Level independent controlling)**

IO7	IO6	IO5	IO4	IO3	IO2	IO1	IO0	Song	I/O0-I/O7 independently controls 8 songs.It will keep play repeatedly specify the triggered song.It will stop playing immediately after release level.Busy pin will output valid signal(High) during playing.
1	1	1	1	1	1	1	0	00001.mp3	
1	1	1	1	1	1	0	1	00002.mp3	
1	1	1	1	1	0	1	1	00003.mp3	
1	1	1	1	0	1	1	1	00004.mp3	
1	1	1	0	1	1	1	1	00005.mp3	
1	1	0	1	1	1	1	1	00006.mp3	
1	0	1	1	1	1	1	1	00007.mp3	
0	1	1	1	1	1	1	1	00008.mp3	

**UART Mode**

**Communication Format**

Adopt full duplex serial port communication. Baud rate 9600, data bits 8, stop bit 1, check bit N.

Start Code	Command Type	Data Length (n)	Data 1	Data n	Check Bit (SM)
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Command Code: fixed to 0xAA.

Command Type: used to distinguish the type of command.

Data Length: the number of bytes of data in an command.

Data: Relevant data in command, when length of data is 1, means there is only CMD and no data bits.

Check Bit: Low 8 bits of sum of all bytes. that is, When start code and data are added, take out low 8 bits.

Data format: Sent data or command, high 8-bit data is in front, low 8-bit is in the back.

**Communication Protocol**

The following is a data definition for the return and identification of the chip.

A. Playing State definition: the system is on the stop state when power on.

	00(stop)	01(play)	02(pause)	

B. Disk character definition: it is stopped after the switch disk.

	USB:00	SD:01	FLASH:02	NO_DEVICE: FF

C. Volume: the volume is 31grades, 0-30.The default is 20grade.

D. Play mode: the default is the single stop when power on.

Cycle for all songs (00) : play the whole songs in sequence and play it after the play.

Single cycle (01) : play the current song all the time.

Single stop (02) : Only play current song once and then stop.

Random play (03) : random play.

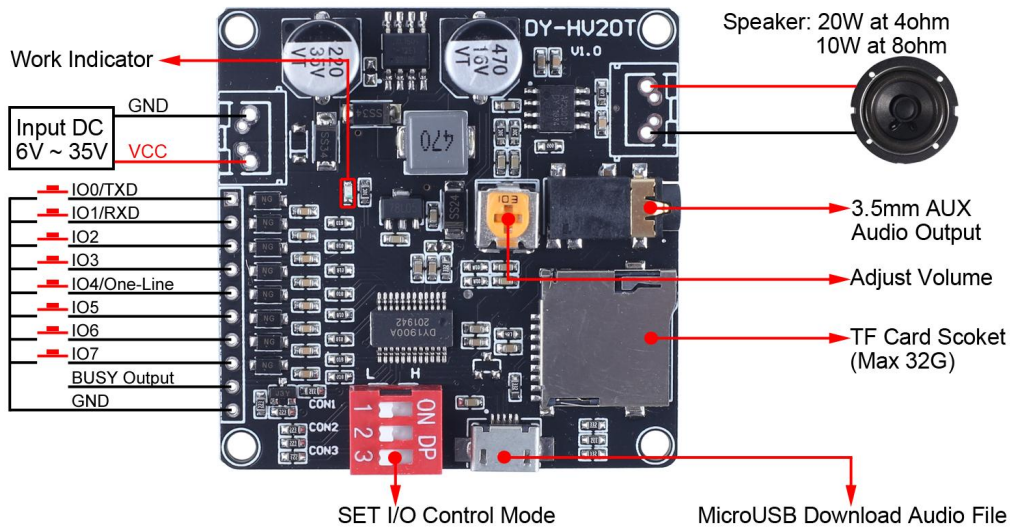
Directory loop (04) :Play in current folder in order, then play by play.Directory don't contain subdirectory.

Directory random (05): random play in the current folder, and directory does not contain subdirectory.



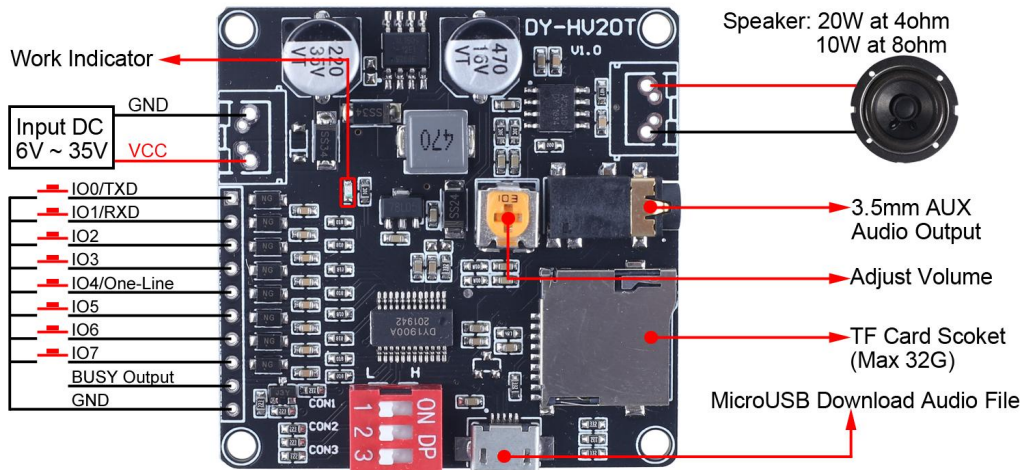
Stop playing	AA 10 00 BA	None	
Setting Command			
Command	Command code	Return	Remark
Set Volume	AA 13 01 VOL SM	None	VOL:0x00-0xFF
Set Loop mode	AA 18 01 Loop-mode SM	None	Loop-mode:0x00-0x07
Set Cycle times	AA 19 02 H L SM	None	H:0x00-0xFF L:0x00-0xFF
Set EQ	AA 1A 01 EQ SM	None	EQ:0x00-0x04
Specified Song	AA 07 02 S.N.H S.N.LSM	None	S.N.H:0x00-0xFF S.N.L:0x00-0xFF
Specified Path	AA 08 Length Drive Path SM	None	Length:0x00-0xFF
			Drive:0x00-0xFF
			Path:0x00-0xFF
Switch Specified Drive	AA 0B 01 Drive SM	None	Drive:0x00-0xFF
Specified song to be interplay	AA 16 03 Drive S.N.H S.N.L SM	None	Drive:0x00-0xFF
			S.N.H:0x00-0xFF
			S.N.L:0x00-0xFF
Specified path to be interplay	AA 17 Length Drive Path SM	None	Length:0x00-0xFF
			Drive:0x00-0xFF
			Path:0x00-0xFF
Select but no play	AA 1F 02 S.N.H S.N.L SM	None	S.N.H:0x00-0xFF S.N.L:0x00-0xFF
One_line Single Bus Mode			
Command(HEX)	Function	Note	
0x00	No. 0	The number 0-9 has corresponding functions, such as selecting music, setting the volume, setting EQ, setting cycle mode, setting channel, setting the repertoire, and sending the digital at first and then send function command.	
0x01	No. 1		
0x02	No. 2		
0x03	No. 3		
0x04	No. 4		
0x05	No. 5		
0x06	No. 6		
0x07	No. 7		
0x08	No. 8		
0x09	No. 9		
0x0A	Number reset	Sent the number of Cleared	
0x0B	Confirm choosing song	Cooperate with Numbers to achieve.	
0x0C	Volume setting		
0x0D	EQ setting		
0x0E	Loop mode setting		
0x0F	Channel setting		
0x10	Interplay song setting	Note: "selection" and "interplay" are played according to the track name, for example, the track is named "00123. Mp3", and the selected data is "0x01", "0x02" "0x03" "0x0B", and the selection is completed.	
0x11	Play		
0x12	Pause		
0x13	Stop		
0x14	Previous		
0x15	Previous directory		

0x16	Next directory
0x17	SD card selection
0x18	SD card selection
0x19	U disk selection
0x1A	FLASH selection
0x1B	System sleep
0x1C	Stop Playing

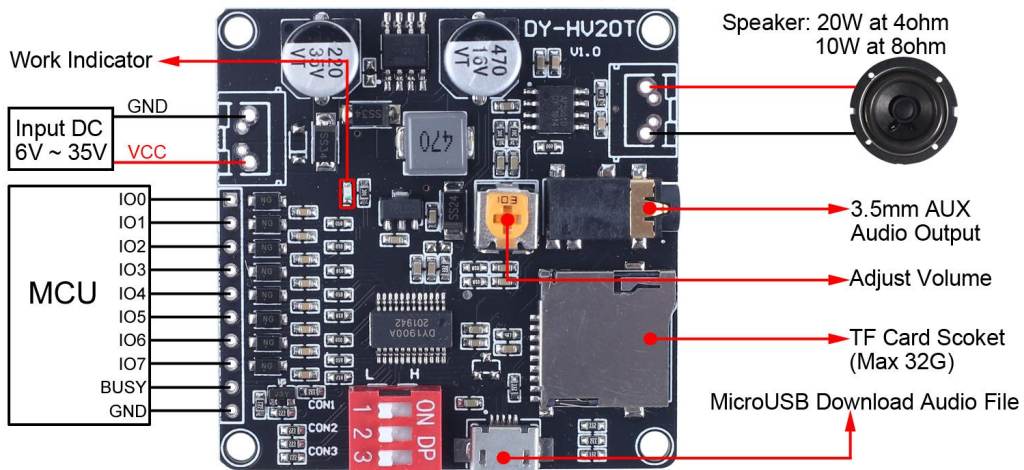


Set Mode	Switch Value			Control Mode	GPIO Function							
	CON3	CON2	CON1		IO7	IO6	IO5	IO4	IO3	IO2	IO1	IO0
ON DP 1 2 3	0	0	0	I/O Integrated Mode 0	Play music by buttons and play up to 255 songs							
ON DP 1 2 3	0	0	1	I/O Integrated Mode 1	Play music by input signal and play up to 255 songs							
ON DP 1 2 3	0	1	0	I/O Independent Mode 0	Song8	Song7	Song6	Song5	Song4	Song3	Song2	Song1
ON DP 1 2 3	0	1	1	I/O Independent Mode 1	Song8	Song7	Song6	Song5	Song4	Song3	Song2	Song1
ON DP 1 2 3	1	0	0	UART Mode							RXD	TXD
				One_Line Mode				RXD				
ON DP 1 2 3	1	0	1	Standard MP3 Mode				RPT	EQ	P/P/ Mode	PREV /VOL-	NEXT /VOL+

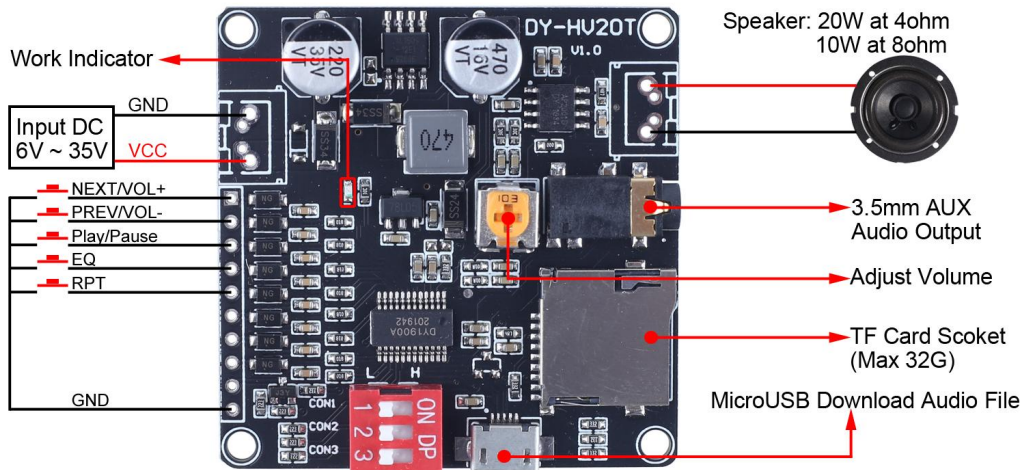
**I/O Independent Mode Wiring Diagram**



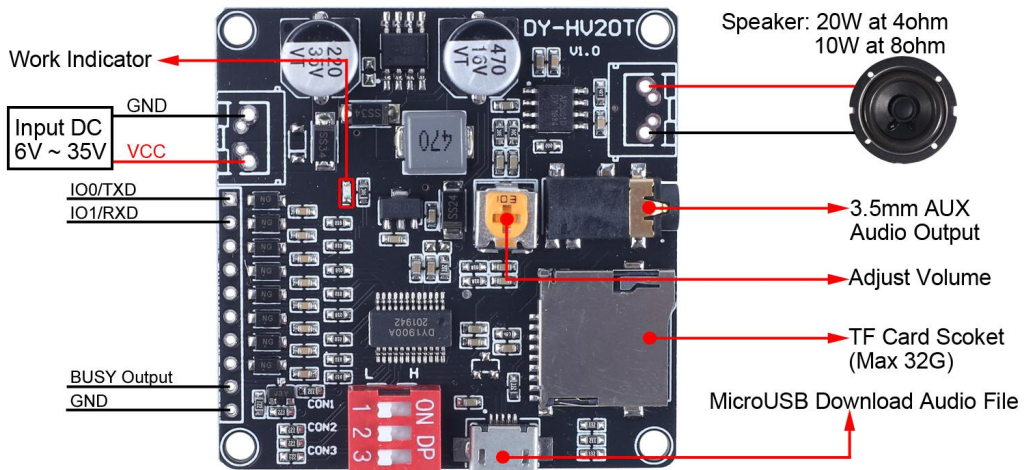
**I/O Independent Mode Wiring Diagram**



### MP3 Mode Wiring Diagram



### UART Mode Wiring Diagram



### One\_Line Mode Wiring Diagram

