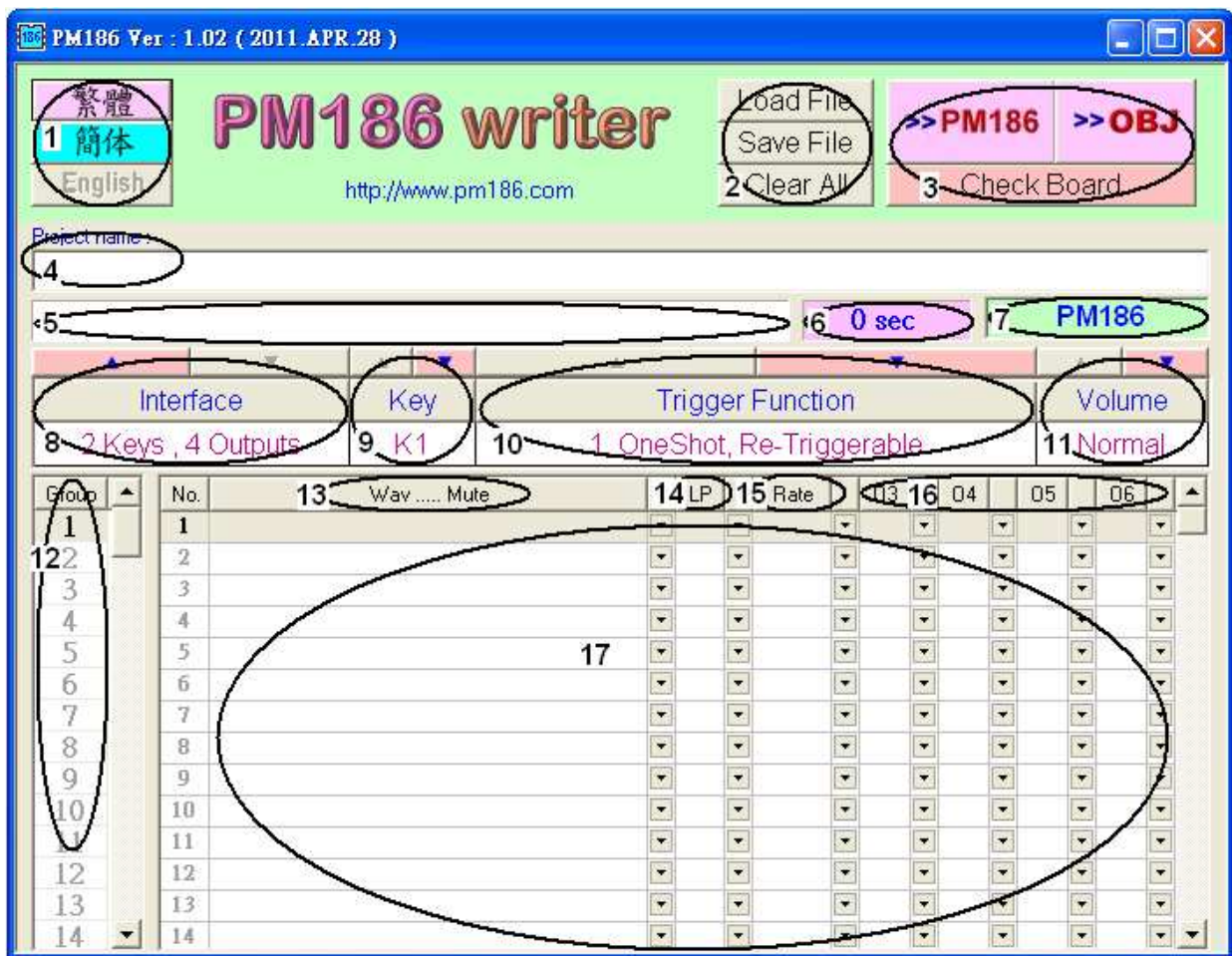


# PM186 HQ Voice Coding System

PM186 Utility Software is an utility software matching with **PM186P30 / PM186B30** Voice IC & Voice Module Board - **MEDIUM DURATION HIGH QUALITY VOICE PLAYBACK IC & MODULE.**

PM186 is a controversial user-friendly system – a combination of versatile program and cost-effective, outperforming **PM186P30 / PM186B30** Voice IC & Voice Module Board –

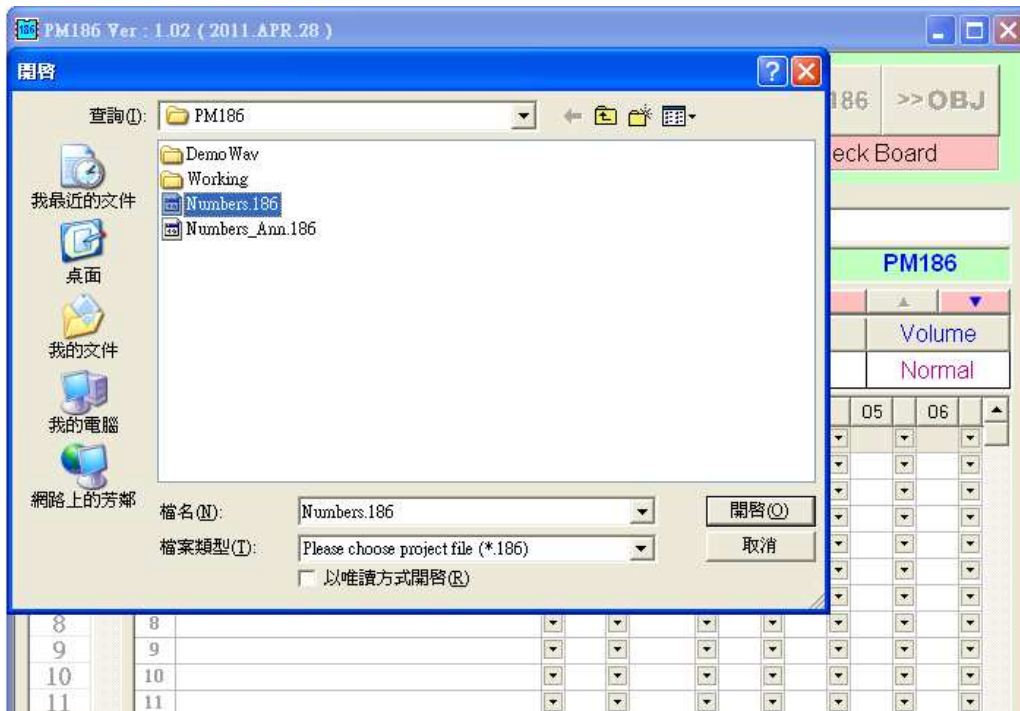


## FUNCTIONAL DESCRIPTION:

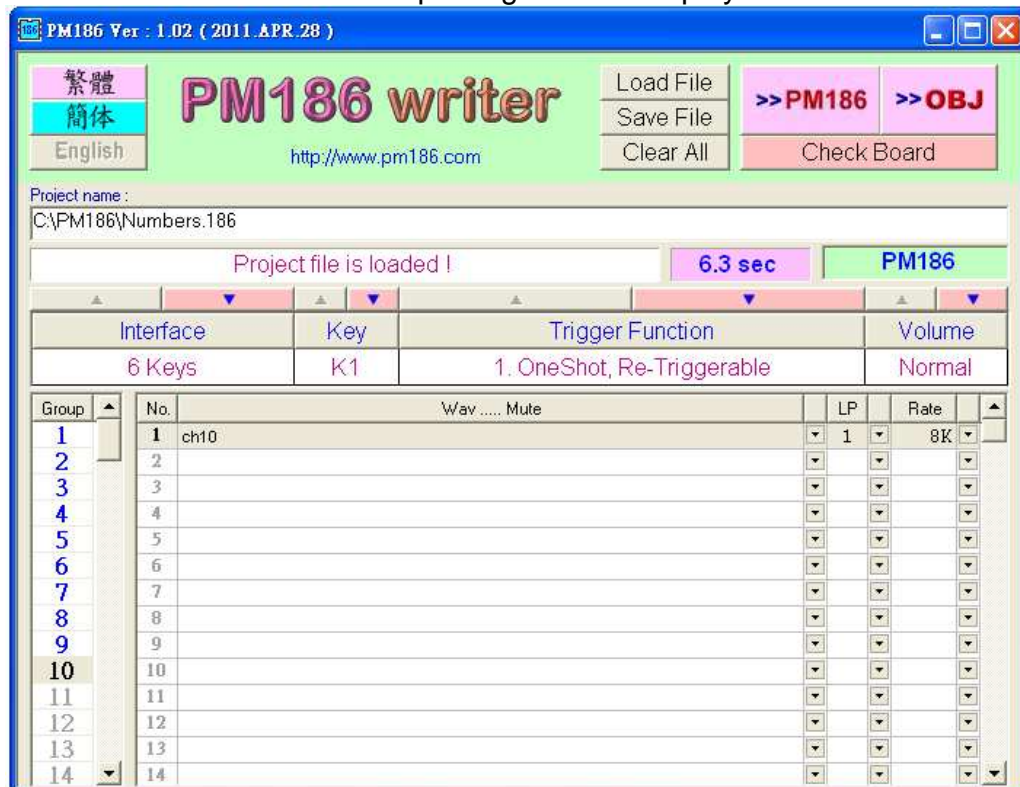
**F1** – Triple Language Selection: 繁體(Chinese) / 簡體(Simplified Chinese) / English

**F2** – Script Program **Load File / Save File / Clear All** operation keys

**Load File** key actuated & selected Numbers.186 (PM186 Script Program):

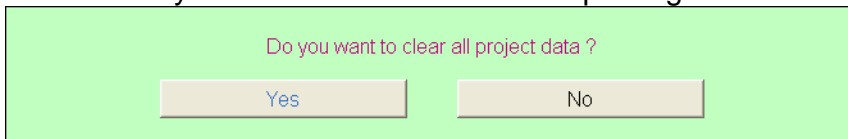


Load in the Numbers.186 Script Program and display the content



**Save File** key actuated to save the Script Program in the content as a PC file with extension ".186".

**Clear All** key actuated to clear all the Script Program in the content.



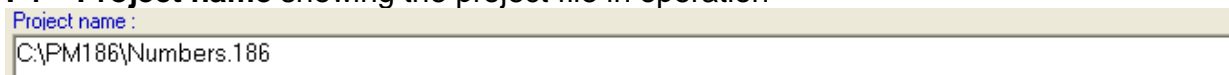
**F3 –Voice IC & Module Board operation keys: >> PM186 / >> OBJ / Check Board**  
 >> **PM186** key actuated to download the Script Program in the content to PM186 Voice IC or Module Board and at meantime requests user to save-up the Script Program if it is newly edited before the download process can be actuated.



.obj file will be generated and saved up at sub-directory where .186 file resided or saved up.

>> **OBJ** key actuated to download the selected OBJ file in PC to PM186 Voice IC or Module Board. This is an operation of transferring machine code to PM186 Voice IC or Module Board and the machine code can provide functions which the utility software cannot provide; however, the PM186 Voice IC and Module Board can perform.  
**Check Board** key actuated to check if the PM186 Voice IC or Module Board is connected properly and review the exact part number of the connected PM186 Voice IC or Module Board.

**F4 – Project name** showing the project file in operation



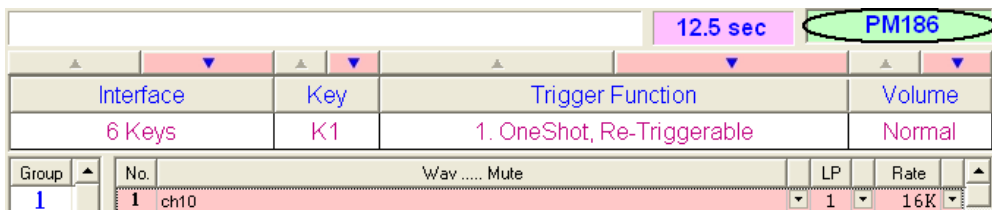
**F5 – Status Display** showing Voice Module Board P/N, Write Processing Details, Error Warning ...etc.



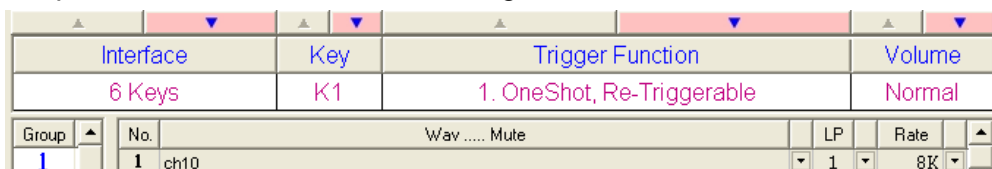
**F6** –Total Length of time used (measured by **6K** sampling rate with **4bit** data i.e. **24Kbps** equivalent to **24Kb** memory used for every second of voice, i.e. 6.3sec equivalent to 6.3sec x **24Kbps** = 151.2Kb & exact voice duration: 6.3 sec. x **6/8** = 4.725sec. for using **8K** sampling rate; however, if using **16K** sampling rate instead of **8K** sampling rate, Total Length of time displayed will be 12.6(~12.5), i.e. 12.6sec equivalent to 12.6sec x **24Kbps** = 302.4Kb & exact voice duration: 12.6 sec. x **6/16** = 4.725sec.)



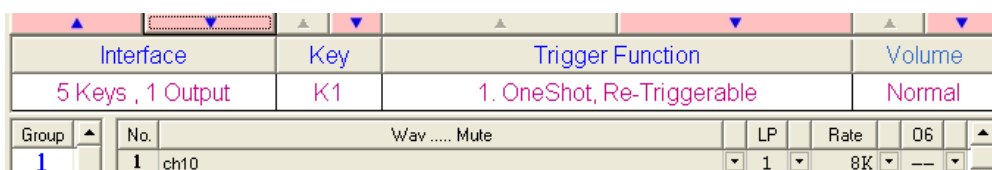
**F7** –Voice Module Number Display for showing the Voice IC & Module part no. **PM186**



**F8** – Interface 6 Keys/ 5 Keys 1 Output / 4 Keys 2 Outputs / 3 Keys 3 Outputs / 2 Keys 4 Outputs of Interface Selection using  &  buttons.



**Interface**  
6 Keys  
(K1, K2, K3, K4, K5, K6)



**Interface**  
5 Keys  
(K1, K2, K3, K4, K5)  
1 Output (06)



**Interface**  
4 Keys  
(K1, K2, K3, K4)  
2 Outputs  
(05, 06)



Interface		Key	Trigger Function				Volume
3 Keys , 3 Outputs		K1	1. OneShot, Re-Triggerable				Normal
Group	No.	Wav ..... Mute	LP	Rate	04	05	06
1	1	ch10	1	8K	--	--	--


**Interface**  
 3 Keys  
 (K1, K2, K3)  
 3 Outputs  
 (04, 05, 06)



Interface		Key	Trigger Function				Volume	
2 Keys , 4 Outputs		K1	1. OneShot, Re-Triggerable				Normal	
Group	No.	Wav ..... Mute	LP	Rate	03	04	05	06
1	1	ch10	1	8K	--	--	--	--

**Interface**  
 2 Keys (K1, K2)  
 4 Outputs  
 (03, 04, 05, 06)

**KEY** Interface selected showing

i. **F9** - **K1~K6** key number

ii.  &  buttons are used to select either the increment or decrement KEY code.

iii. **F10** - **KEY Trigger Function** Selection using  &  buttons

**KEY Trigger Function** –

1. **One shot, re-trigger:** One key stroke to play 1 cycle and stop; but can be re-trigger during playing and starts again from the beginning
2. **One shot, non-re-trigger:** One key stroke to play 1 cycle and stop; it cannot be interrupted by re-trigger for re-starting again.
3. **Level hold, play 1 cycle:** Hold the key for playing 1 cycle and stop, release the key during playing to an immediate stop
4. **Level hold, play repeat:** Hold the key for cyclical playing repeatedly, release the key during playing to a final stop
5. **One shot, re-trigger, play repeat:** One key stroke for cyclical playing repeatedly; but can be re-trigger during playing and starts again from the beginning
6. **Toggle on/off:** One key stroke to play to the end for 1 cycle and second stroke to stop during playing

Interface		Key	Trigger Function			
2 Keys , 4 Outputs		K1	2. OneShot, Non-Re-Triggerable			
Group	No.	Wav ..... Mute	LP	Rate	03	04
1	1	ch10	1	8K	--	--
2	2					
3	3					
4	4					
5	5					
6	6					
7	7					
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					

Only **KEY** Interface is available (i.e. no **Serial** and **Parallel** Interface); it provides i. **F9** – 6 Keys **K1 ~ K6** to 2 Keys **K1 ~ K2**, for **Voice / Program retrieval** and each Key has its own selected

ii. **F10** - **KEY Trigger Function**.

Furthermore, each Key has **F12** - sequential **Groups** from 1 to 100 for sequential operation i.e. for Interface ( **2 Keys 4 Outputs**): after inputting Group1 Data Wav .... Mute / LP / (Sampling) Rate

/ Out3~Out6

.....

operator can input Group2 Data Wav .... Mute / LP / (Sampling) Rate / Out3~Out6

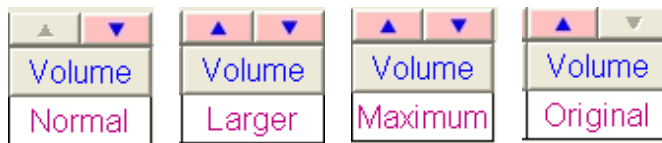
.....  
 .....

KEY1's Group1 Voice / Program can be retrieved by pressing KEY1 the 1st time and  
 KEY1's Group2 Voice / Program can be retrieved by pressing KEY1 the 2nd time ...etc.  
 Retrieval operation is cyclical i.e. after retrieval of the latest one, the first one will be  
 recurred to be called.

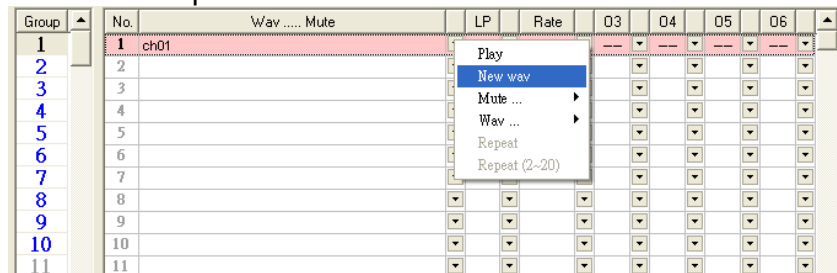
Only **PWM Direct Drive** and no DAC for Ext. AMP

**F11 – Volume**, Voice Level Adjustment for either Normal, Larger, Maximum or Original.

It is used to adjust Voice level for all stored Voice data simultaneously.



**F13 – Wav ..... Mute Content Input**  
**New wave Input**



Using pull-down menu(Play / New wav / Mute / Wav/ Repeat/ Repeat (2~20)) and select **New wav** for new wave input.



Default LP = 1 (Play one time by one trigger) which can be altered by using **F14 – LP**, Loop Selection pull-down menu to select more than one time i.e. from 1 ~ 16 times.

Group	No.	Wav ..... Mute	LP	Rate	O3	O4	O5	O6
1	1	ch01	1	1				
2	2			2				
3	3			3				
4	4			4				
5	5			5				
6	6			6				
7	7			7				
8	8			8				
9	9			9				
10	10			10				
11	11			11				
12	12			12				
13	13			13				
14	14			14				

Default 8K Sampling Rate which can be altered by using **F15 – Rate**, Sampling Rate Selection pull-down menu to select another i.e. from 4K ~ 32KHz.

Interface	Key	Trigger Function	Volume
2 Keys , 4 Outputs	K1	2. OneShot, Non-Re-Triggerable	Normal

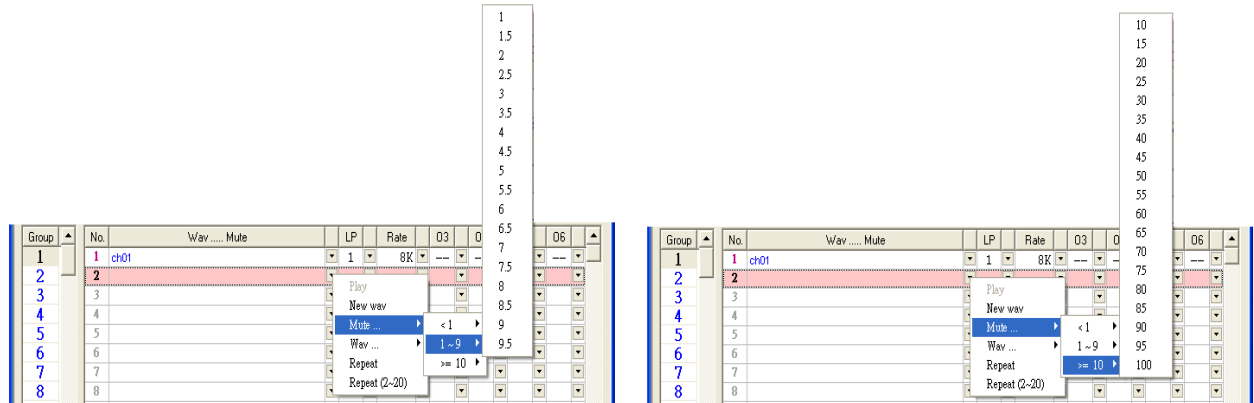
  

Group	No.	Wav ..... Mute	LP	Rate	O3	O4	O5	O6
1	1	ch01	1	8K	4K			
2	2				5.3K			
3	3				6.4K			
4	4				8K			
5	5				12K			
6	6				16K			
7	7				32K			
8	8							
9	9							
10	10							
11	11							

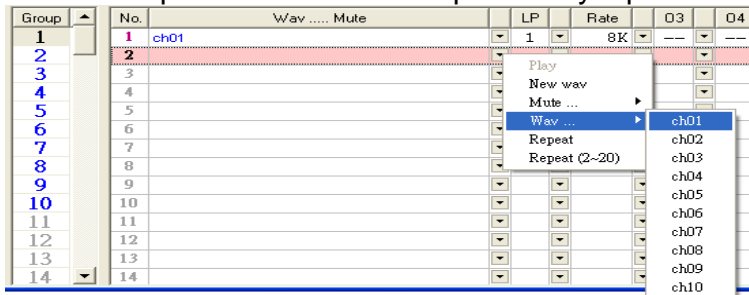
**Mute** Input can select <1 ranging from 0.01 ~ 0.9 sec.

Group	No.	Wav ..... Mute	LP	Rate	O3	O4	O5	O6
1	1	ch01	1	8K				
2	2							
3	3							
4	4							
5	5							
6	6							
7	7							
8	8							
9	9							
10	10							
11	11							
12	12							
13	13							
14	14							

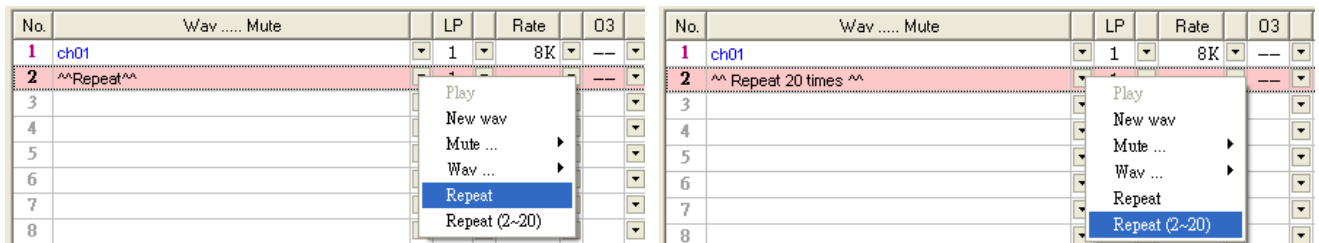
**Mute** Input can select 1 ~ 9 ranging from 1 ~ 9.5 sec.  
and >= 10 ranging from 10 ~ 100 sec.



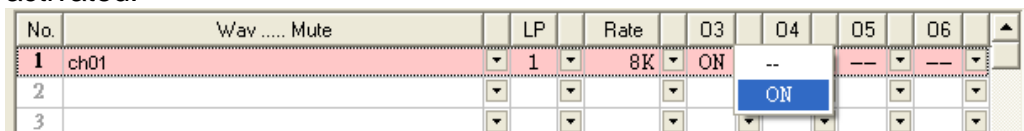
**Wave ...** Input can re-use those previously input voices



**Repeat** Input can force all Inputs above of it repeat endlessly in sequence or at a specific number of times (from 2 ~ 20).



All **Wav** and **Mute** Inputs can also control **F16** – Out3~Out6. When Out 3, 4, 5 or 6 actuated, their actuation duration are low as the ch01(wav) or 0.01(Mute duration) is activated.





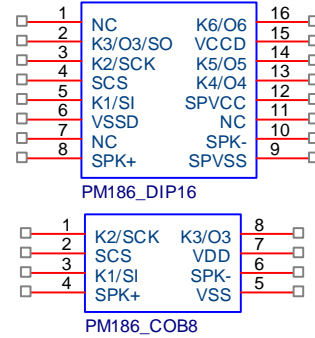
Therefore, operator can use **Mute** function to program a sequential activation of Out 3, 4, 5 or 6 with or without **Wav** intervening. Moreover, the total allowable program sequences are 200pcs.

Interface		Key	Trigger Function				Volume	
2 Keys , 4 Outputs		K1	2. OneShot, Non-Re-Triggerable				Normal	
Group	No.	Wav ..... Mute	LP	Rate	03	04	05	06
88	188							
89	189							
90	190							
91	191							
92	192							
93	193							
94	194							
95	195							
96	196							
97	197							
98	198							
99	199							
100	200							
End	End							

# PM186 HQ Voice IC & Voice Module <Built-in Flash>

## 1. FEATURES

- ◎ DIP16 and DIP8(COB) available, easy to use
- ◎ 2-Input Pins, 4-Bi\_direction Pins
- ◎ no External Components and Free combinations of USB Download Voices
- ◎ Wide Range Sampling Rate Selection ( 4 ~ 32K Hz )
- ◎ Operating Voltage : 2.7 ~ 3.6V
- ◎ Direct Key Trigger



## 2. DESCRIPTION

PM186 Series are the integration of circuits of flash memory, ADPCM decoder, power amplifier ...etc to a full-function Voice Playback Module. Standard plastic package DIP-16 and DIP-8 (COB), user can easily apply PM186 to all occasions of requisition of Voice Playback. By simply connecting voltage, speaker, trigger keys, PM186 is an independent Voice Playback system.

## 3. PINOUT DESCRIPTION

### PM186 (DIP16) PINOUTS :

PINOUT	PIN NUMBER	DESCRIPTION
K1,K2	5,3	Trigger Input Pins <negative trigger>
K3~K6/O3~O6	2,3,14,16	Input/Output Pins <negative trigger/negative output>
VCCD,SPVCC	15,12	Positive Power PIN
VSSD,SPVSS	6,9	Ground Voltage
SP+, SP-	8,10	Speaker Contacts (Differential Outputs)
SCS	4	Download Control Pin

### PM186 (DIP8) PINOUTS :

PINOUT	PIN NUMBER	DESCRIPTION
K1,K2	3,1	Trigger Input Pins <negative trigger>
K3/O	8	Input/Output Pins <negative trigger/negative output>
VDD	7	Positive Power PIN
VSS	5	Ground Voltage
SP+, SP-	4,6	Speaker Contacts (Differential Outputs)
SCS	2	Download Control Pin

## 4. ELECTRICAL CHARACTERISTIC

### 4.1. OPERATION CONDITIONS

Operation Voltage	2.7 ~ 3.6V
Operation Current	Maximum 20 mA(average value) < if use 8Ω Speaker for PWM Output >
Standby Current	Less than 1 uA

### 4.2. SPEAKER OUTPUTS

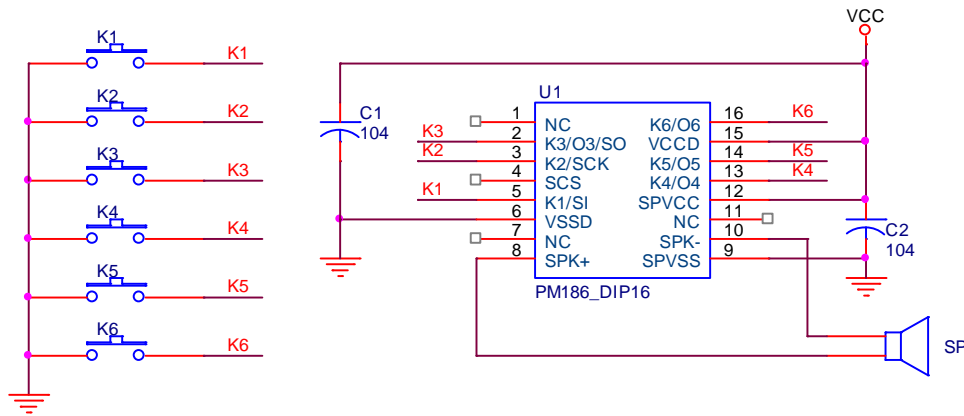
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	CONDITIONS
SNR, Memory to SPK+/SPK-	SNR <sub>MEM_SPK</sub>		60		dB	Load 150Ω
Output Power	P <sub>OUT_SPK</sub> VCC=3.0			0.4	W	Load 8Ω
THD, Memory to SPK+/SPK-	THD%		<1%			Load 8Ω
Minimum Load Impedance	R <sub>L(SPK)</sub>	4	8		Ω	

### 4.3. DC PARAMETERS

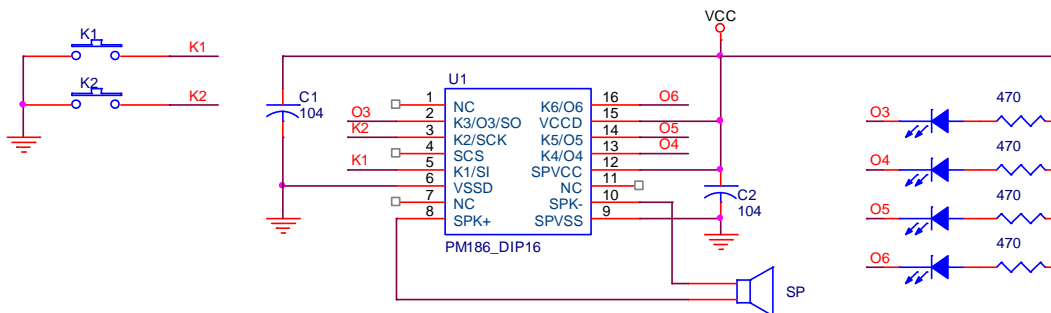
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	CONDITIONS
Supply Voltage	V <sub>DD</sub>	2.7		3.6	V	
Input Low Voltage	V <sub>IL</sub>	V <sub>SS</sub> -0.3		0.3xV <sub>DD</sub>	V	
Input High Voltage	V <sub>IH</sub>	0.7x V <sub>DD</sub>		V <sub>DD</sub>	V	
Output Low Voltage	V <sub>OL</sub>	V <sub>SS</sub> -0.3		0.3xV <sub>DD</sub>	V	I <sub>OL</sub> = 1mA
Output High Voltage	V <sub>OH</sub>	0.7x V <sub>DD</sub>		V <sub>DD</sub>	V	I <sub>OH</sub> = -1mA
INTB Output Low Voltage	V <sub>OH1</sub>			0.4	V	
Playback Current	I <sub>DDPlayback</sub>		5		mA	No Load
Standby Current	I <sub>SS</sub>		1	10	μA	V <sub>DD</sub> = 3.6V
Input Leakage Current	I <sub>IL</sub>			±1	μA	Force V <sub>DD</sub>

## 5. APPLICATION CIRCUITS

### PM186P30 (DIP16) 6KEY Application Circuit :



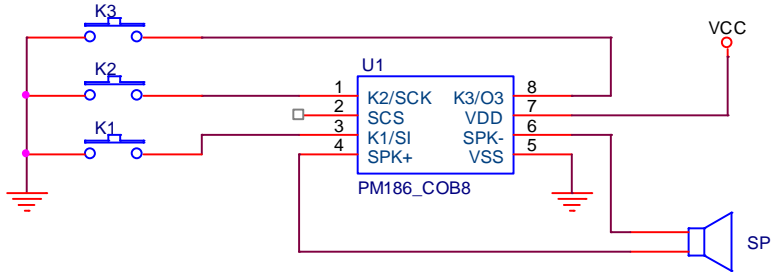
### PM186P30 (DIP16) 2KEY-4 OUTPUT Application Circuit :



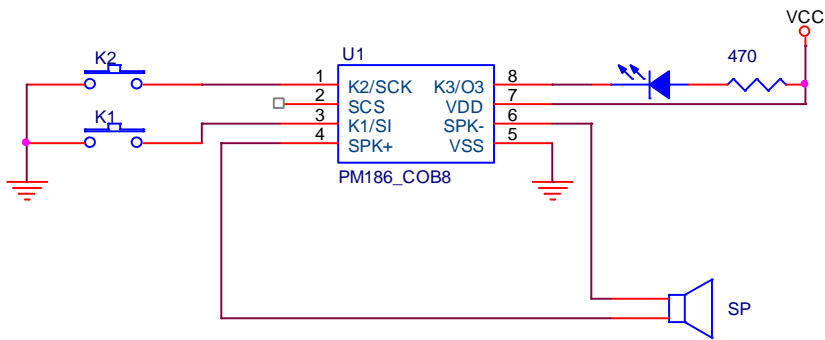
### DIP16 PICTURE : P/N# PM186P30



**PM186B30 (DIP8) 3KEY Application Circuit :**



**PM186B30 (DIP8) 2KEY-1 OUTPUT Application Circuit :**



**DIP8(COB) PICTURE : P/N# PM186B30**

