

Delcom – 706601-B Buzzer Programming

Revision 0 – 09/14/2027

The buzzer can be controlled manually via software using the Delcom USBIO commands and/or can be automatically triggered via a button press. The 706601-B device is shipped with the automatic mode is enabled.

Note the Buzzer is on port P1.6 on the 706601-B.

[Manual Mode]

To control the buzzer manually, see the buzzer commands in these two datasheets->

<https://www.delcomproducts.com/downloads/USBIOHID.pdf>

<https://www.delcomproducts.com/downloads/USBIOG3MIG.pdf>

Below is the example code to sound the buzzer. This code sounds the buzzer for two quick high tones on port P1.6

Set port 1.6 as an output. Use command 102-130 - Setup port pin. (This only needs to be sent once)

	Major	Minor	LSB	MSB	HID0	HID1	HID2	HID3	EXT0	EXT1	EXT2	EXT3	EXT4	EXT5	EXT6	EXT7
Decimal	102	130	0	0	255	127	255	0	0	0	0	0	0	0	0	0
Hex	66	32	0	0	FF	7F	FF	0	0	0	0	0	0	0	0	0
Note	16Byte	CfgPorts	Port#	n/a	Initial	I/O	PullUp	Events	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Sound Buzzer for two quick high tones. Use command 102-170 – Enhanced Clock Command.

	Major	Minor	LSB	MSB	HID0	HID1	HID2	HID3	EXT0	EXT1	EXT2	EXT3	EXT4	EXT5	EXT6	EXT7
Decimal	102	170	0	64	59	0	0	0	2	1	1	0	0	0	0	0
Hex	66	AA	0	40	3B	0	0	0	2	1	1	0	0	0	0	0
Note	16Byte	EnhancClk	P0	P1	FreqLsb	FreqMsb	n/a	n/a	Repeat	TimeOn	TimeOff	n/a	n/a	n/a	n/a	n/a

Buzzer command from <https://www.delcomproducts.com/downloads/USBIOG3MIG.pdf>

3.5 Enhanced Clock Command

This command is similar to the G2 clock command (#70) but allows the clock function to be placed on any pin and has a finer control on the frequency. This command is a 16 byte command, therefore you must use the major cmd of 102. Note output pin must be in output mode for the pin to work.

$\text{FreqValue} = 2 / (10.666\text{us} * \text{FreqHz})$

Do to integer math the actual frequency would be:

$\text{ActualFreq} = 2 / (10.666\text{us} * \text{FreqValue})$

For example is you wanted 4KHz the program value would be 47 (round up from 46.8). And the actual value would be 3989Hz

Syntax: WR 170 – Enhanced clock command

MajorCmd: 102 – 16 byte command

MinorCmd: 170 – Enhanced clock command

DataLSB: EnableP0 – Set the bitwise pin the clock is to be enabled on port0.

DataMSB: EnableP1 – Set the bitwise pin the clock is to be enabled on port1.

HidData0: FreqValueLSB – The LSB value of the frequency.

HidData1: FreqValueMSB – The MSB value of the frequency.

HidData2-3: N/A – Not used set as zero.

DataExt0: Repeat – 0=Continuous, else number of times to repeat.

DataExt1: TimeOn – On Duty cycle in 50ms units. Used with repeat function.

DataExt2: TimeOff – Off Duty cycle in 50ms units. Used with repeat function.

DataExt3-7: N/A – Not used set as zero.

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[Automatic mode]

In automatic mode, the buzzer is sounded when the button is pressed. To disable this uncheck the group checkbox in the DelcomSetupUtl program. DelcomSetupUtl ->

<https://www.delcomproducts.com/productdetails.aspx?PartNumber=890672>

Automatic mode works by calling a user command. To change the buzzer frequency, period and duty cycle change the user commands.

Note buzzer commands are 16 bytes command and require two 8 byte user commands.

The below windows batch file writes two buzzer commands to the user commands (UserCmd1 and UserCmd3) and saves the configuration.

UserCmd1 sounds the buzzer with two high tones (Success Tone).

UserCmd3 sounds the buzzer with two low tones (Fail Tone).

In DelcomSetupUtl you can setup which tone is called by selecting UserCmd1 or UserCmd3.

[BATCH FILE: Delcom_WriteUserCmds_P1.6_Tone_PassFail.Bat]

```
ECHO OFF
REM Delcom Write user commands Example - For Buzzer notes
REM User Cmds Syntax: TID, SN, 102, 154, Cmd#[0-7], NA, NA, NA, NA, DATAEXT[8]=COMMAND
REM Requires USBCMDAP.exe found here-> https://www.delcomproducts.com/productdetails.aspx?ProductNum=890601

REM First set the P1.6 as an output so we can hear the buzzer
REM Syntax: TID, SN, 102, 130, Port#(0-4), NA, Value, Tris(0:OUT,1:IN), Pullups(0:off,1:on), Interrupts(0:off,1:on)
call USBCMDAP %Verbose% 0 0 101 130 0 0 255 127 255 0

REM First Tone
SET "EnableP0=0"           %= 0 not using port0.x =%
SET "EnableP1=64"          %= Enable on port 1.6 =%
SET "Verbose=v"            %= v=verbose mode, 0:verbose, leave blank for no verbose =%

ECHO Setting User command 0+1 to Play Pass Tone - two high notes
SET "FreqHz=3136"          %= Desired frequency. =%
SET /a "Value=(2*93756/%FreqHz%)" %= Approximate frequency value =%
SET /a "ValueMSB=Value%/256" %= calc the ValueLSB =%
SET /a "ValueLSB=Value%-(256*ValueMSB%)" %= calc the ValueMSB =%
REM NOTE: Batch files can only do integer math(no real/fractions), so values are approximate
SET /a "CalcHz=2*93756/Value%" %= Caluculates Freq. ActualHz=2/(Value*10.666us) =%
SET "Repeat=2"             %= How many times to repeat, 0=continuous =%
SET "TimeOn=1"             %= If repeating how long the freq is on in 50ms units (e.g 100=5secs) =%
SET "TimeOff=1"           %= If repeating how long the freq is off in 50ms units =%

echo Setting Calculated freq=~%CalcHz% (Desired FreqHz=%FreqHz% Calc Value=%Value% msb=%ValueMSB% lsb=%ValueLSB%)

REM Ext Buz Syntax: TID, SN, 102, 170, EnableP0, EnableP1, Freq_LSB, Freq_MSB, NA, NA, Repeat(0=continuous),
OnTime(50ms), OffTime(50ms)
call USBCMDAP 0 0 102 154 0 0 0 0 0 102 170 %EnableP0% %EnableP1% %ValueLSB% %ValueMSB% 0 0
call USBCMDAP 0 0 102 154 1 0 0 0 0 0 %Repeat% %TimeOn% %TimeOff% 0

ECHO Setting User command 2+3 to Play Fail tone - two low notes
SET "FreqHz=110"           %= Desired frequency. =%
SET /a "Value=(2*93756/%FreqHz%)" %= Approximate frequency value =%
SET /a "ValueMSB=Value%/256" %= calc the ValueLSB =%
SET /a "ValueLSB=Value%-(256*ValueMSB%)" %= calc the ValueMSB =%
REM NOTE: Batch files can only do integer math(no real/fractions), so values are approximate
SET /a "CalcHz=2*93756/Value%" %= Caluculates Freq. ActualHz=2/(Value*10.666us) =%
SET "Repeat=2"             %= How many times to repeat, 0=continuous =%
SET "TimeOn=2"             %= If repeating how long the freq is on in 50ms units (e.g 100=5secs) =%
SET "TimeOff=1"           %= If repeating how long the freq is off in 50ms units =%

echo Setting Calculated freq=~%CalcHz% (Desired FreqHz=%FreqHz% Calc Value=%Value% msb=%ValueMSB% lsb=%ValueLSB%)

REM Ext Buz Syntax: TID, SN, 102, 170, EnableP0, EnableP1, Freq_LSB, Freq_MSB, NA, NA, Repeat(0=continuous),
OnTime(50ms), OffTime(50ms)
call USBCMDAP 0 0 102 154 2 0 0 0 0 0 102 170 %EnableP0% %EnableP1% %ValueLSB% %ValueMSB% 0 0
call USBCMDAP 0 0 102 154 3 0 0 0 0 0 %Repeat% %TimeOn% %TimeOff% 0

ECHO Lastly Saving the new settings .....
call USBCMDAP 0 0 101 186 170 85 5 1 7 0

REM PAUSE
```