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# Copyrights on Creative TextAssist's Embedded Command Help

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## Introduction to TextAssist Embedded Command

Embedded commands offer a powerful and flexible means of controlling speech playback at the user level. By embedding commands directly into text, users can replicate much of the functionality of the TextAssist API without any programming. Following are some of the situations in which embedded commands might be effectively used:

1. To simulate a conversation between two characters, embedded commands can be used to change voices and alter other speech characteristics. As the conversation lags or becomes more heated, embedded pitch and rate commands can be used to relax or intensify the conversation.
2. Singing text can be created by modifying the rate and pitch information associated with each phoneme.
3. Inflection and emotion can be added to spoken text by modifying the rate and pitch information associated with each phoneme.

## Create a pause

**Command :** [*<pause time>*]

**Parameters :** Length of pause in milliseconds

**Default :** N/A

**Examples :** [*<500>*]

**Description :** Create a pause of length specified in the *pause time* parameter

# Change the Pause of Comma Punctuation

**Command :** `[:comma parameter]`

**Parameters :** *Pause time* in milliseconds

**Default :** 160 ms.

**Examples :** `[:comma 250]`

**Description :** Specifies the length of the pause for the punctuation ", " , ":" , and ";". Create a pause of length specified in the *pause time* parameter

## Change the Speech Parameter

**Command :** `[:dv parameter1 parameter2]`

**Parameters :** *Parameter1* - name of the voice parameter to be changed. Refer to the parameters in the following table for a list of voice parameters.  
*Parameter2* - value of the voice parameter to be modified.

**Default :** N/A

**Examples :** `[:dv ap120]` - set the average pitch to 120 Hz

**Description :** The following is a list of voice parameters and associated ranges which can be changed using embedded commands:

Name	Range		Unit	Description
sx	0	1		Set sex to female(0) or male(1)
hs	65	145	%	Head size
f4	2000	4650	Hz	Fourth formant frequency
f5	2500	4950	Hz	Fifth formant frequency
b4	100	2048	Hz	Fourth formant bandwidth
b5	100	2048	Hz	Fifth formant bandwidth
br	0	72	dB	Breathiness
lx	0	100	%	Lax breathiness
sm	0	100	%	Smoothness
ri	0	100	%	Richness
nf	0	100		Number of fixed samplings of glottal pulse
la	0	100	%	Laryngealization
bf	0	40	Hz	Baseline fall
hr	2	100	Hz	Hat rise
sr	1	100	Hz	Stress rise
as	0	100	%	Assertiveness
qu	0	100	%	Quickness
ap	50	350	Hz	Average pitch
pr	0	250	%	Pitch range
gv	0	86	dB	Gain of voice source
gh	0	86	dB	Gain of aspiration source
gf	0	86	dB	Gain of frication source
gn	0	86	dB	Gain of nasalization
g1	0	86	dB	Gain of first formant resonator
g2	0	86	dB	Gain of second formant resonator
g3	0	86	dB	Gain of third formant resonator
g4	0	86	dB	Gain of fourth formant resonator
g5	0	86	dB	Gain of fifth formant resonator

## Change in Math Mode

**Command :** `[[:mode math parameter]`

**Parameters :** on or off

**Default :** Off

**Examples :** `[[:mode math on]`

**Description :** Depending on the status of the math mode parameter, the following pronunciations will be used:

Character	math mode on	math mode off
+	plus	plus
-	minus	dash
*	multiplied by	asterisk
/	divided by	slash
^	to the power of	carat
<	less than	left angle bracket
>	greater than	right angle bracket
=	equal	equal
%	percent	percent
.	point	period

## Change the Pause of Period Punctuation

**Command :** `[[:period parameter]`

**Parameters :** Pause time in milliseconds

**Default :** 640 ms

**Examples :** `[[:period 250]`

**Description :** Specifies the length of the pause for the punctuation ".", "!", and "?".

## Turn on/off the Phoneme Interpretation

**Command :** `[:phone arpa parameter]`

**Parameters :** on or off

**Default :** Off

**Examples :** `[:phone arpa on]`

**Description :** When phoneme interpretation is enabled, all text (except embedded commands) within square brackets will be interpreted as phoneme text. The left and right brackets ( '[' and ']' ) are the phoneme delimiters. Text not enclosed by these brackets will be interpreted as regular text. It is important to include a close bracket after the phoneme text when this command is set.

## Change the Punctuation Mode

**Command :** `[:punc parameter]`

**Parameters :** Some or all

**Default :** Some

**Examples :** `[:punc some]`

**Description :** If the punctuation mode is set to "some", only non clause-final punctuation is spoken. If it is set to "all", all punctuation is spoken. It is useful for proofreading.

## Change the Speech Rate

**Command :** `[rate parameter]`

**Parameters :** Rate in words per minute (wpm)

**Default :** 180 wpm

**Examples :** `[rate 350]`

**Description :** The range of the speaking rate is from 120 to 400 wpm. If the specified value is outside the range, the rate will be set to the nearest legal value.

## Change the Speech Mode

**Command :** `[:say parameter]`

**Parameters :** Clause or word

**Default :** Say clause

**Examples :** `[:say word]`

**Description :** In "word" mode, speech is spoken a word at a time with pauses between words. The speech engine does not need to wait for clause terminators (period, comma, exclamation point, and question mark) when they are encountered in the text. In "clause" mode, speech pauses when a clause terminator is encountered. Speaking in clause mode is the default mode used by the TextAssist engine.

## Change the Active Voice Name

**Command :** `[:name parameter] or [:nparameter]`

**Parameters :** Name of the voices

**Default :** Paul's voice

**Examples :** `[:nb]` changes to Betty's voice

**Description :** This command allows voices to be changed to one of the 9 default voices. The nine default voice are:

1. Paul(P)
2. Harry(H)
3. Frank(F)
4. Dennis(D)
5. Betty(B)
6. Ursula(U)
7. Rita(R)
8. Wendy(W)
9. Kit(K)

## Change the Volume by Absolute Value

**Command :** `[:volume set parameter]`

**Parameters :** Absolute value of the new volume setting

**Default :** 19

**Examples :** `[:volume set 15]`

**Description :** This command changes the volume of the speech to the value specified *parameter*. The range of the volume is 0 to 19.

## Change the Volume by a Relative Value

**Command :** [:volume up *parameter*] and [:volume down *parameter*]

**Parameters :** Volume to be increased or decreased

**Default :** N/A

**Examples :** [:volume up 5]

**Description :** This command changes the volume of speech output by the amount specified in the parameter. If the specified value is outside the range, the new volume will be set to nearest legal value.

## Controlling Prosody and Creating Singing Text

The TextAssist speech engine fully supports direct control of the pitch and duration of each phoneme. Pitch and duration values can be used to alter the inflection and /or prosody of the text or to create singing text. The format for phonemes with pitch and duration is as follows :

[*phoneme*<duration, pitch>]

As shown above, each phoneme is enclosed by "["square bracket. Duration and pitch values are enclosed by angle brackets, "<>". The duration is expressed in milliseconds (ms) and the pitch is expressed in one of two ways depending on the value of the pitch :

1-37	Corresponding to musical pitches C2 - C5
38-523	The absolute of the pitch expressed in Hz

User should use values between 38 and 523 Hz for controlling inflection directly. Singing text should use pitch values ranging from 1-37 (see [Musical Tones](#) ).

# Phoneme Symbols

The TextAssist engine uses 45 phonemes for its American English synthesis.

See also

[Appendix A : Vowels](#)

[Appendix B : Consonants](#)

[Appendix C : Stress Symbols](#)

[Example : Singing Text](#)

## Musical Tones

The speech engine can also be used to create singing text. The following table shows how pitch values 1-37 can be used to access pitches which correspond to musical notes C2-C5 :

Number	Note	Pitch (Hz)
1	C2	65
2	C#	69
3	D	73
4	D#	77
5	E	82
6	F	87
7	F#	92
8	G	98
9	G#	103
10	A	110
11	A#	116
12	B	123
13	C3	130
14	C#	138
15	D	146
16	D#	155
17	E	164
18	F	174
19	F#	185
20	G	196
21	G#	207
22	A	220
23	A#	233
24	B	247
25	C4	261
26	C#	277
27	D	293
28	D#	311
29	E	329
30	F	348
31	F#	370
32	G	392
33	G#	415
34	A	440
35	A#	466
36	B	494
37	C5	523

\* Note : C4 is middle C

## Appendix A : Vowels

Phoneme Symbol	Example
aa	Bob
ae	bat
ah	but
ao	bought
aw	bout
ax	about
ay	bite
eh	bet
ey	bake
ih	bit
ix	kisses
iy	beat
ow	boat
oy	boy
rr	bird
uh	book
uw	lute
yu	cute

## Appendix B : Consonants

Phoneme Symbol	Example
b	bet
ch	chin
d	debt
dh	this
el	bottle
en	button
f	fin
g	guess
hx	head
jh	gin
k	Ken
l	let
m	met
n	net
nx	sing
p	pet
r	red
s	sit
sh	shin
t	test
th	thin
v	vest
w	wet
y	yet
yx	yes
z	zoo
zh	measure

## Appendix C : Stress Symbols

'	Primary stress
`	Secondary stress
"	Emphatic stress

## Example : Singing Text

**Title of Song** : London Bridge

[ :phone arpa on]

```
[ :np][l<95,20>ah<164,20>n<83,20>
d<75,22>ix<113,22>n<113,22>
b<46,20>r<31,20>ih<135,20>
jh<88,20>ih<121,18>z<90,18>
f<108,18>ao<192,17>lx<94,19>
ix<76,18>nx<94,17>d<91,20>
aw<256,20>n<91,20>ax<69,20>_<120,0>]
```

```
[ :nk][f<108,16>ao<192,15>
lx<94,18>ix<76,17>nx<94,16>
d<81,20>aw<256,18>n<81,19>
ax<69,18>_<120,0>]
```

```
[ :nb][f<108,18>ao<192,17>
lx<94,19>ix<76,18>nx<94,17>
d<91,20>aw<256,20>n<91,20>
ax<69,20>_<120,0>]
```

```
[ :nh][l<95,20>ah<164,20>n<83,20>
d<75,22>ix<113,22>n<113,22>
b<46,19>r<31,19>ih<135,20>
jh<88,20>ih<121,18>z<90,18>
f<108,18>ao<192,17>lx<94,19>
ix<76,18>nx<94,17>d<91,20>
aw<256,20>n<91,20>ax<69,20>_<120,0>]
```

```
[ :nk][m<143,15>ay<415,15>f<202,20>
er<403,20>l<113,17>ey<255,17>
dx<42,13>iy<326,13>_<120,0>_<0,8>_<0,100>]
```

