

TextSpeakTM

Model TS-04-NK v2.0

Integrated Speech Generation System

Users' Guide



Overview

TextSpeak™ TS-04-NK is a text-to-speech speaker that generates a clear and crisp synthesized voice. Data is sent to the speaker from common USB devices via a side mounted connector. The easy-to-use speaker/data input combination works right out of the box without setup, and speaks with an unlimited vocabulary.

- Easy to use AAC Communication Device that supports virtually any USB keyboard
- Optional control via RS-232, I2S or other common data links
- Just type to talk, use any speakerphone to talk over a phone line
- Programmable phrase storage using integrated *FLASH* memory
- Operates on AC wall adaptor or batteries
- Uses exclusive Digital Acoustics® technology



LED Status Display

- | | |
|------------------------|----------------------------------|
| • On continuous | Active/Normal – waiting to Speak |
| • Flashing quickly | Synthesizing Speech |
| • Flashing slowly | Key macro recording in progress |
| • Flashing very slowly | Battery “standby” operation |

Power Modes and Battery Operation

AC Adapter Operation

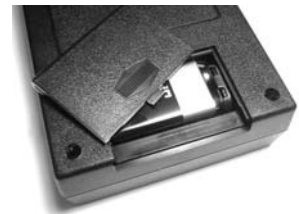
A 9-volt AC power adaptor is supplied with the TS-04. AC powering permits you to leave the TS-04 on all the time and be ready to use instantly when you type on the keyboard.



Portable/Battery Operation

Battery operation is enabled automatically if the AC power is not used or detected.

Press the **ON/OFF** button to control power in AC or battery modes



Smart powering modes: *(Battery operation only)*

Smart power management prolongs battery life and may provide weeks of usage before requiring a new battery in the speaker

- **Standby Power** - When the keyboard is not used for 3 minutes during battery operation the TS-04 will enter Sleep Mode.
- **Resume Power** - Press the space bar or any key to 'wake up the TS-04
- **Auto Off** - After 10 minutes of inactivity the TS-04 will automatically turn off to conserve battery power. Pressing the "END" key will also turn the power off and may be used at any time.

Low Battery Indication:



When the low battery indicator is flashing change the 9 Volts Battery in the TS-04 or use external AC power.

Typing To Talk

To start using the TS-04 press the speaker Power ON/OFF switch, wait until the blue Active indicator is ON, and begin typing to talk. There is no ON/OFF switch for the keyboard. It powers on instantly every time you begin typing and powers off automatically.

To talk, type a word or phrase, then press the enter key.

If you make a mistake typing just press the backspace key to delete the last key-press entry (or words) while typing.



*In normal operation TextSpeak waits to speak until after the **ENTER** key is pressed!*

Advanced features such as auto-repeat, saving phrases, continuous speech generation and speaking over telephones are described below.

Using Function Keys to Say Phrases

Function keys can be used to store commonly used phrases. After programming, pressing any function key will speak the pre-programmed phrases.



A total of 30 phrases are available. 28 may be programmed with up to 60 typed characters each

F1 is pre-programmed to speak

"Hello, I cannot speak and I will be using a speech synthesizer"

F1

F2 is pre-programmed to speak

"Please be patient while I type responses"

F2

F3 to F12 are User Programmable

F3 → F12

Function key phrases are recorded and saved to memory when the TS-04 is powered off.

"Alt" and "Control" key combinations may be used to store 20 additional phrases. Hold down (or press and release) the ALT or CTRL key, *then* press the desired Function Key (F3 to F12) to program recorded phrases.

Alt → F6

Storing Speech Keyboard Phrases To Memory

Record a Keyboard

Step 1

Press Press the **accent/tilde** key

Listen Listen for the reply "**Press F Key**"



Step 2

Select Press the desired key by pressing F3 to F12

Wait Wait for the confirmation of the key number to be spoken

Note: 10 phrases may be stored using F3 to F12. 20 additional phrases may be used by adding the ALT and CTRL key with keys F3 to F12. To program these press the Alt or CTRL key *before* the each function key.

Step 3

Type Text Type the text or phrase wish to record

Press ENTER Press the 'Enter' key to stop recording

Listen Listen for the audio reply "**O.K.**", *indicating success*

Step 4

Verify Press **the function key to verify the phrase**

- The ESC (Escape) key may be used to cancel a phrase recording sequence
- Saved phrases pressed sequentially will be spoken in order *and combined*.
- Phrases are saved in memory when power is removed.
- Up to 60 characters are available for each phrase

SAMPLE PHRASES

F3 *My name is John Russell, I live at 2, Main Street*

F7 *Please contact my brother at 203-820-1234*

CTRL+F3 *Tomorrow*

ALT+F3 *I am OK, thanks*

ALT+F4 *I would like to eat*

ALT+F5 *I would like to call home*


Speaking on a telephone line

You can use TextSpeak TS-04 to speak directly into a telephone using any standard speakerphone.

Simply place the TS-04 speaker near the phone and the distant caller will hear your typed phrases *loud and clear*.














Adjusting Volume and Speech Generation Speed

+/-  The Hi and Lo Switch on the TS-04 controls 2 levels of volume. If more adjustment is required press the keyboard Arrow Up and Arrow Down keys multiple times.

Talking Speed (time between each word) is adjustable in 4 steps. To slow down talking speed, press the Left Arrow multiple times. To speed up speech, press the Right Arrow multiple times.

Special Key control commands

	Enter	Press to speak a typed phrase (default mode)
	Page Up	Sentence Mode (speak when <i>Enter</i> is pressed)
	Page Down	Spelling Mode (speak every letter typed)
	Program	(refer to "Storing Phrases" in previous section)
	'Escape'	Cancel current action
	'Slash'	Repeat last phrase
	End	Power off command
	Arrow Down	Volume Down
	Arrow Up	Volume Up
	Arrow Left	Slow down speech playback
	Arrow Right	Speed up speech playback

Serial Operation

The TTS-04-NK supports RS-232 serial operation via an optional USB to Serial cable p/n USB-SERFT

Standard TTY or Terminal mode support common commands available from direct keyboard entry. Speech is generated on reception of a <CR> termination character ASCII 13 (0x0D)

Default Specifications:

Configuration:	DTE Device
Default Rate	9600,8,n,1
Reception buffer	64 bytes
Hardware Flow	RTS/CTS
Supported Pins	Rx, Tx, RTS, CTS, GND



Setup - Changing voice, language, rate and volume



The TS-04 is capable of supporting 2 voice styles as well as English and Spanish languages. Selecting these may be made by entering a special "Setup Mode".

Pressing the 'CTRL' and "S" key enables "Setup Mode"



E

Press "E" to alternate language between English and Spanish.

V

Press "V" to alternate voices between Female and Male.

F

Press "F" to restore all original factory volume and voice settings.

S

Press "S" to save settings. This stores the current voice and language setting in memory. The current selection of volume and speech rate will also be saved and used as the new power up default setting.

Appendix A Technical Information

Technical – How the TS-04 Works

- System based on unlimited Phoneme Based Word Generation
- Processor is a Flash Based RISC Processor with integrated Codec
- 2KB Flash hold 24 Items for phrase storage
- Real time conversion for streaming text
- Incorporates Digital Acoustics® speech technology

The TS-04 Speaker performs text-to-speech synthesis based on concatenative unit samples. The units can vary from whole words down to phonemes. Versions include a corpus of pre-recorded words is stored in flash memory using patented multilevel storage (MLS) memory and a mapping of the various sub-word parts, or fully parametric speech synthesis. Speech creation is achieved by combining concatenation units of speech elements to produce words. Speech may be generated in real time, with unlimited vocabulary

The system process flow includes Text Normalization, Words to Phoneme, Phoneme Mapper, MLS, Memory and Audio D/A Conversion.

Wired keyboard systems incorporate PS/2 USB HID interfaces. Wireless versions utilize 2.4 GHZ Channel hopping transceivers.

Digital Acoustics® Speech Technology has been used in consumer and industrial applications worldwide. Company milestones include integration with satellite technology on NASA Space Shuttle mission STS116 and numerous Best in Class product awards.

Digital Acoustics® is a registered trademark of the Digital Acoustics Corporation,

Technical Support

Technical support is available M-F 9AM - 5PM EST

Telephone: (203) 557-0222

Email: tsupport@textspeak.com

Specifications

Power and Battery

Speaker Operation

- 9 Volt AC Adaptor
- Battery 9V Alkaline MN1604 or Equiv

Internal Audio

- 800mw Audio Amplifier / Internal 8 ohm Speaker

Keyboard Operation

- QWERTY Full Size, Wired, Mini or wireless USB 2.0 HID interface

RS-232 Serial Operation

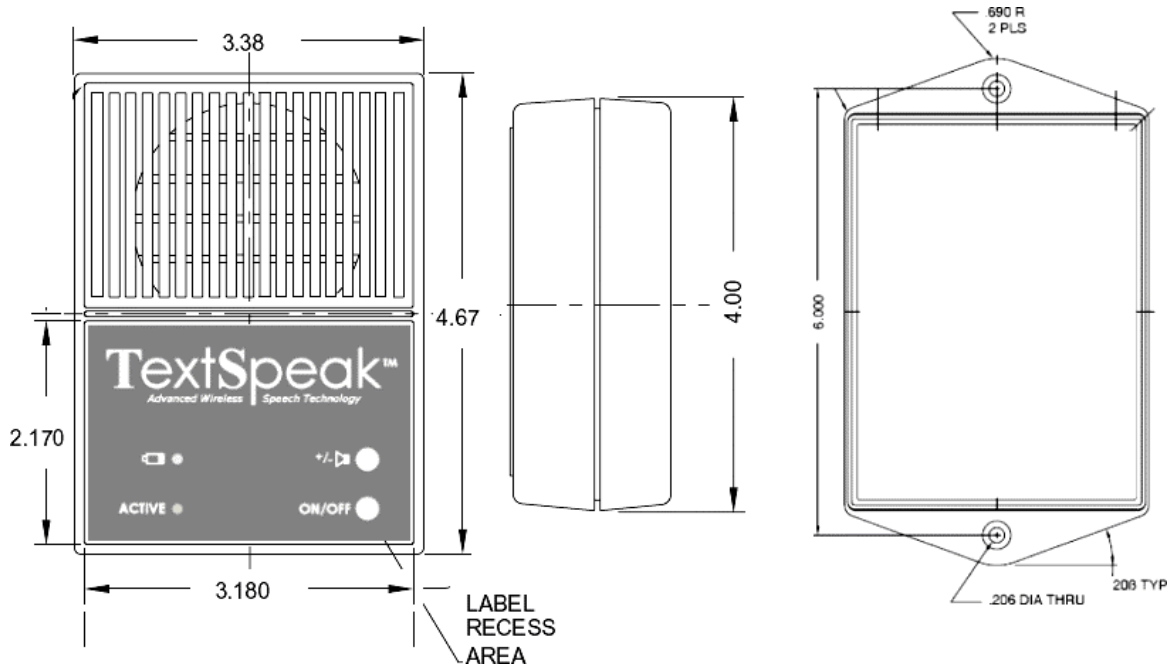
- DTE Device operation, Rate: 9600 8,n,1 , HW Flow CTS/RTS

What's In The Box?

- One TextSpeak TS-04 Speech Generating Speaker
- Battery
- Instruction manual

Size and Weight

TS-04 Speech Generating Speaker L: 5.3 inches W: 4.0 inches H: 1.5 inches W: 10 oz



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