

# TOOL KIT

For use by software developers and programmers  
to design applications using Speedy Dialer



## Features:

To create your own applications not already available with ***Cheetah***, the Source Code is available for you to program Speedy Dialer. You may use standard AT Commands as well as numerous software tools. You may use Microsoft Windows 98, NT, 2000, or XP, as well as Linux.

05/01/07

## Source Code

The Source Code is available to developers who wish to design an application for the Speedy Dialer; however, there is NO TECH SUPPORT for any of the source code. Any tools used to create this application will have to be paid for by the user of this code.

Here is a list of some of the tools used to help create these programs:

### **1: amWavePro**

amWave Pro Registered Version 1.11 ActiveX control.

amWave Pro V1.11 Wave Audio Control: General purpose wave audio control that can be used to play and record audio files in mono or stereo for all formats for which an associated Windows ACM (Audio Compression Manager) codec is installed on the PC.

Product Code: 210111

\$149.00

[www.allen-martin-inc.com](http://www.allen-martin-inc.com)

### **2: ReSize**

ReSize is very easy to use. Simply place a resize control on a form in your Visual Basic application and all controls on that form will resize proportionally as the form is resized. ReSize is an invisible control that works with the other controls in your application, but it doesn't need to contain them as children. Adding a ReSize control to your application is about as easy as it gets. Just place one anywhere in your form (no code to write and not even a single property to set). ReSize will also resize the fonts used in each of your controls as they change in size and position. Each form in your application will need a separate resize control. In no case should you include more than one resize control on a form. ReSize can easily be added to your existing applications -- just drop it in.

<http://www.vbxtras.com/products/resizeocxdotnet.asp>

\$88.00

### **3: CTTools**

The Component Toolbox OCX 4.0 will list for \$299.00. We also sell additional component packages and have price breaks for the purchase of multiple products. Visit our web site or give us a call for additional details.

dbi Technologies Inc. / Gamesman Inc.

Email : [dbitech@dbi-tech.com](mailto:dbitech@dbi-tech.com)

702-44 Princess Street, Winnipeg, MB R3B 1K2 Canada

<http://www.dbi-tech.com>

### **4: DBImport.ocx**

Find the latest information at <http://www.lvdisoft.com>

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\$150.00

### **5: NumLed.ocx**

[Http://www.globalmajic.com](http://www.globalmajic.com)

Global Majic Software, Inc.

6767 Old Madison Pike Hwy Suite 405 Huntsville, Alabama 35806

TEL: (256) 922-0222 FAX: (256) 922-0708

Copyright © 1997, GMS Inc.

GMS.NET Alphanumeric LED Component (ALED) v1.0

Price: \$115.00

### **6: TrueDBGrid Pro 8.0**

<http://www.componentone.com>

\$399.00

## AT Commands

Speedy Dialer may be programmed with standard AT Commands.

All AT commands must be followed by a carriage return.

Send one command at a time to Speedy Dialer.

A carriage return (end of command) will flash the Status LED on Speedy Dialer.

Ring is always enabled while in the monitor loop waiting for a command. Speedy Dialer will send "RING" to the PC whenever a ring is detected.

ATH            Go On Hook (Hang up the phone)  
 ATH1          Go Off Hook (Pick up the phone).  
 ATH2          Disconnect phone line to allow recording wav files from Speedy Dialer Headset.  
 ATD            Dial a number using DTMF dialing. Does not take off hook  
 ATIO          Returns device serial number  
 ATI1          Returns device firmware software version  
 ATZ            Resets the Speedy Dialer micro-processor - 2 second delay  
 AT\*S+or-nn   Adjust headset speaker volume  
 AT\*M+or-nn   Adjust headset microphone volume  
 AT\*L0         Set DAA output to -9DB (Data setting per FCC)  
               or  
 AT\*L1         Set DAA output to 0DB (Voice setting per FCC).  
 AT\*X0         PC Card line out directed to the Speedy Dialer Inputs.  
 AT\*X1         PC Card line out directed to the external speaker jack  
 AT\*I          Enter new serial number. AT\*Ixxxxnnnnnnmmddy.

Access code = EVS01. x=access code, n=serial number, mm=month, dd=date, yy=year

AT\*C0 = off Call Progress Mode.

AT\*C1 = on Sends DTMF at slow speed. Can't decode DTMF's. Detects call progress tones.  
 Responses: Busy, Reorder, Ringback, Continuous Tone, Voice??

or

AT\*D0 = off DTMF Mode.

AT\*D1 = on Sends DTMF at fast speed. Decodes DTMF's. Can't detect call progress tones.  
 Responses: Sends single bytes to PC 1,2,3,4,5,6,7,8,9,\*,0,#.

All AT registers:

AT\*Sn?        causes Speedy Dialer to send the current value

AT\*Sn=        followed by new value 01 to 99 sets new value in Speedy Dialer

AT\*S2        Silence Detection Period in seconds. Enter 01 to 99

Rev 1.07 and earlier = 01 to 99 seconds

Rev 1.08 and later = 0.1 to 9.9 seconds

AT\*S3        Flash Interval Period ten msec. Enter 01 to 99 = .010 to .990 msec.

Dial String Modifiers: These can be placed anywhere in the string.

","        Inserts a 1 second delay in dialing.

"!"        Inserts a switchhook "flash" into the dialing sequence

\*Note - Goes on hook for ats\*3 \* 10 msec - then back off hook.

"/"        slash inserts a .1 sec pause in dialing.

@        Silence detection period adjusted by ats\*2. Used in dial string and also determines when "silent" message will be sent during Call Progress Monitoring

W        Waits for dial tone before continuing. Response "Dial Tone" or "No Dial Tone ". Automatically puts in Call Progress Mode to detect dial tone and " returns to whatever user had set previously.

F        Fast Dial 51msec on - 51msec off. Remembers all previous Mode settings.

S        Slow Dial Default 102msec on - 102msec off. Remembers Mode settings.

## Call Progress Routines in Speedy Dialer Firmware

### General Description:

The DAA module has an output pin that can be configured to output a square wave representation of the signal present at the phone line. When you send the instruction to place the SD into Call Progress Mode - the DAA is configured in this way. An interrupt is also enabled in the SD micro that will cause Speedy Dialer to jump to the call progress detection routine whenever this pin toggles low - which it will do whenever a signal appears on the phone line.

Speedy Dialer can detect very accurately the following phone line signals:

Reorder Tone, Busy Signal, Ringback. SD can also detect Silence on the line. Voice is indicated whenever a non-regular pattern appears.

Speedy Dialer is actually looking for a pattern signal. It measures both ON time and OFF time of the line signals.

The signal determination is made whenever the last OFFTIME is equal to or greater than .100 seconds or when the last ONTIME is equal to or greater than 3 seconds.

These correspond to the expected maximum and minimum patterns appearing on the phone line.

Following is the message sent that corresponds to the measured ONTIME:

Voice = less than .2 seconds(MAX of .1 second)  
 Reorder = less than .4 seconds(MAX of .3 seconds)  
 Busy = less than .7 seconds(MAX of .6 seconds)  
 RingBack = less than .8 seconds  
 RingBack = less than 2.7 seconds (RingBack is sent for ONTIME of .7 to 2.7 seconds).  
 Continuous Tone is sent for anything that is on the line continuously for 5 seconds.

The regular patterns are very easy to detect - however you should MUTE the Speedy Dialer microphone to prevent interference with phone line detection. THIS IS VERY IMPORTANT. Voice is sent whenever a high frequency non-regular signal is detected; however, it cannot be directly detected and is arrived at by the process of elimination.

A sharp noise on the phone line would generate the Voice signal. A normal voice would probably cause reorder and busy to be sent as well. This is normal.

Remember that the \*S2 register has two functions. It was primarily intended to be used to detect silence on the phone line when a subscriber line is used that may not have a dial tone; however, it is also used in the Call Progress Detection loop to detect Silence. The loop is entered when an interrupt is generated by a signal on the phone line. If a signal does not appear within \*S2 seconds after the first signal appeared, then the message 'Silence' will be sent and the loop is exited, otherwise the loop measures the On and Off times as described above. It is important to remember that this loop is not exited until either the Silence period occurs or one of the signals is present and measured as described above. IMPORTANT - ONLY ONE SILENCE MESSAGE IS SENT for each period of silence. It is sent at the end of the \*S2 register time regardless of how long the silence lasts beyond that. The CallProgress loop is exited at the end of the \*S2 register time.

### Important Things to Keep in Mind:

1 -You must set the \*S2 register to 5 or greater during the time you are monitoring the RingBack signal, otherwise you will receive the 'Silence' message and will miss the RingBack itself. When you first receive something other than RingBack, you should immediately set the \*S2 register to whatever Silence period you want to look for.

2 – Also, remember 'Silence' is only sent once each time the Call Progress Loop is entered. If the line stays quiet, you won't receive it a 2nd time; however, any signal present on the line will generate a message and a new silence measuring period.

3 - Reorder, Busy, and RingBack are all regular patterns and will be detected exclusively as long as there is no noise on the line and you have your microphone muted. THIS MEANS YOU WILL GET - BUSY - BUSY - BUSY - BUSY - BUSY with nothing in between (although a noisy line may generate something).

Voice is an irregular pattern and can be comprised of all three of the above. Basically, if it isn't one of the main three, it is voice. Remember, we are looking for patterns here and nothing else. IF IT IS NOT REORDER, BUSY OR RINGBACK, IT IS VOICE.

Suggestions for Programming to place an automated call:

Put in Call Progress Mode. Set \*S2 to 5 seconds. Mute the microphone. Dial the phone number. Watch for messages from Speedy Dialer. If any message is received other than RingBack, you should look for 3 to 5 consecutively, with nothing else in between. If anything else, assume Voice and go to Voice procedure. If Busy or Reorder was detected at least 3 to 5 consecutively, then assume no voice and do accordingly.

Voice Procedure - If anything other than 3 to 5 consecutive messages, then assume this was voice. Immediately reset \*S2 to whatever silence period you want to detect.

Remember, you will receive the 'Silence' message only once, unless a voice or noise appears on the line to put it back into the Call Progress Loop; however, once you receive the Silence message, you can be assured there is nothing else on the line as long as you haven't received any other call progress message.

>From here, you may want to continue with the following:

1 - Set \*S2 to 3 seconds. Set a timer on the first message from SD (not the silence message). Check this timer when you receive the first Silence message. It would be assumed that if this timer is 1 or 2 seconds, then someone answered the phone with "Hello - Joe Blow". Play your message. If the timer is more than 2 or 3 seconds, assume this is probably an answering machine and do accordingly.

Remember that once we have made the decision that we are receiving a voice, assume all messages are voice, except the 'Silence' message.

## Speedy Dialer Control – SDCtl1.ocx

SDSample.vbp is a sample application that demonstrates programming for the Speedy Dialer Control. Place the Speedy Dialer Control on the Form1 and the sample will give you full access to all the features of Speedy Dialer. The code demonstrates full use of the Speedy Dialer hardware. It can be used as a starting point for inserting the Speedy Dialer functionality into your application. After the Speedy Dialer Control is placed on Form1, it can be expanded by grabbing the lower right corner with the mouse and pulling it down and to the right. This will bring into full view the text boxes, counters, etc. that are used by the control. You can also use the properties of the control to cause it to be invisible when your program is running. This would be normal use of the control.

### Speedy Dialer Control Properties:

SDPortOpen = 0 or 1. This will open or close the serial port that has been selected. The control uses MSComm so do not place MSComm on your application form.

Example: SpeedyDialCtl1.SDPortOpen = 1 - this opens the selected serial port.

SDCommPort = 1 to 16. This selects the serial port to be used by Speedy Dialer. The Speedy Dialer must be connected to this port.

Example: SpeedyDialCtl1.SDCommPort = 1 - selects serial port 1 for use by Speedy Dialer.

SDSend = "text to send" + vbCr. This sends commands to Speedy Dialer.

Example: SpeedyDialCtl1.SDSend = "ATH1" + vbCR - This will take the Speedy Dialer phone line off hook.

"received text" = SDReceive. This reads the text that has been sent by Speedy Dialer. This text has already been stripped of control characters, etc. so it is the text message last sent by Speedy Dialer.

Example: txtIn.Text = SpeedyDialCtl1.SDReceive = txtIn.Text = "Voice". The last message from Speedy Dialer was the call progress Voice message.

### Flags and Counters:

The following flags are sent as Events and show the indicated messages were received from Speedy Dialer:

SDOkFlg - OK message received. This should be checked after each command is sent.

SDErrorFlg - An Error message has been received and the error message can be obtained using SDReceive.

SDTimeOutFlg - A Time Out error has occurred while waiting for a response from Speedy Dialer. This indicates improper connection, etc.

SDNewMsgFlg - This indicates a new message is available using SDReceive. For example: a call progress message.

The following counters are available and the following Events are generated as each counter is incremented. Check the sample program for proper implementation.

SDVoiceCnt - Voice message counter.

SDReOrderCnt - Reorder message counter.

SDRingBackCnt - Ringback message counter.

SDBusyCnt - Busy message counter.

SDContinuousToneCnt - Continuous Tone message counter.

SDRingCnt - Ring message counter.

Look at the Sample application Sub txtOut\_KeyPress() for a way to implement a real time text box for sending commands to Speedy Dialer.

## **SD Controls07**

SDCtl07.ocx is a new and improved control. Its operation is similar to the SDCtl1.ocx with much improved response filtering from the SpeedyDialer. Applications written using the SDCtl1.ocx will have to be rewritten to work properly with SDCtl07.ocx. The SDCtl07 will increment the counters SDRReOrderCnt, SDRingBackCtn, SDBusyCnt Busy as did the previous control. However this new control will determine when the first voice response has been received and will increment the SDVoiceCnt counter at that time. So in your software – you only have to wait for the first SDVoiceCnt increment and can then begin your routine to determine if it is a live caller or machine. An example using the SDCtl07.ocx along with SpeedyDialer Firmware Version1.08 is illustrated below.

## **Rev1.08 Firmware**

Firmware Version1.08 changed the adjustment resolution of register S2 from 01 - 99 seconds to 0.1 - 9.9 seconds. This is adjusted with the command ATS\*2 and adjusts the Silence detection time. This firmware detection can be accessed by adding @ to the dial string. To help determine if the phone was answered by a live person or a machine – you can issue the command ATD@ followed by a vbcr. The firmware will then wait for a silence period equal to the value of S2 and then send the Silence response. A typical implementation might be as follows:

- 1 – wait for first voice detect indicated by SDVoiceCnt increment.
- 2 – send "ATS\*2 = 15 vbcr" Sets the silence detect period to 1.5 seconds.
- 3 – Now wait for a silence period to start within a 3 second interval which is equivalent to receiving the Silence response before 4.5 seconds have elapsed.
- 4 – If no Silence response received before 4.5 seconds – assume this is a machine.
- 5 – If it is determined this is a machine answer – you could then set the S2 register to 30 (3 seconds) and then send the ATD@ command again. Then wait for the Silence response and play your machine message, etc. This would cause your message to be left on the answering machine 3 seconds after its message had finished. These timings are easily adjusted by adjusting the S2 register to make your programming very flexible.

## Technical Specifications

Speedy Dialer includes an FCC registered telephone line interface module (DAA) which includes a DTMF transmitter, DTMF decoder, and call progress monitor. FCC rules limit the signal level that equipment can place on the telephone line. The Speedy Dialer DAA incorporates an Automatic Gain Control (AGC) circuit to control the output signal level. The AGC optimizes the output level over a wide variety of input levels without introducing signal distortion. FCC rules also dictate a 2-second delay at the start of each call. This billing delay prevents information transmission during the billing period. The Speedy Dialer DAA includes this billing delay. Other features of the Speedy Dialer DAA are 1500 Volt Isolation between the telephone line and all other circuits, supplemental surge protection to survive both FCC Type A and Type B surges, integral 2-Second Billing Delay (required for FCC Part 68 registration), Automatic Gain Control to optimize transmit level for most any input level, integral DTMF transmitter and decoder, and Call Progress Monitoring.

In Slow Dial Mode (activated by inserting the letter 's' in the dial string), Speedy Dialer transmits a tone burst of 51 milliseconds on and 51 milliseconds off. In Fast Dial Mode (activated by inserting the letter 'f' in the dial string), the duration of the tone burst and pause after the tone burst are doubled to 102 milliseconds.

Call Progress Tones recognized by Speedy Dialer:

Dial Tone 350 + 400 Steady -13 dBm Indicates the network is ready to receive dialing signals.

Ringback 440 + 480 2 sec. On, 4 sec Off -19 dBm Indicates the called line is ringing.

Busy Tone 480 + 620 .5 sec. On, .5 sec Off -24 dBm Indicates the called line has been reached but is currently in use.

Reorder 480 + 620 .25 sec. On, .25 sec Off -24 dBm Indicates the switching path is busy.

Partial Dial Tone 480 Steady -17 dBm Notifies the calling party that dialing has not begun in the allotted time or that not enough digits have been dialed.

Speed Dialer DAA Specifications:

Power Supply Current Ring Indicate Active 20 mA

Coupler Match Output impedance 531 536 541 ohms

AGC Input Range Maintaining steady output level -40 0 dBm

AGC Output Level in Voice Mode -20 -9 dBm

AGC Output Level in Data Mode -11 0 dBm

Billing Delay OH activated 2.0 2.3 seconds

Transhybrid Loss at 1000 Hz -34 dBm

Receive Loss at 1000 Hz -1.0 0 1.0 dB

Ring Detect Min. AC voltage between Tip & Ring 38 vrms

Sensitivity Type B ringer

Ring Indicate Ring Voltage present on Tip & Ring 0.2 0.5 volts Output Voltage

Loop Current Switch ON: (off-hook) 2.0 3.0 volts

Control Voltage OFF: (on-hook) 0.2 0.5 volts

Loop Current Switch Off-hook 0.1 2.0 mA Control Current

Loop Current Off-Hook current draw from 0 20 100 mA Telephone Line

Data Bus, Low Level Input Voltage 0.8 volts

High Level Input Voltage 2.0 volts

Receive Sensitivity DTMF tones -37 dBm

Call Progress Tones -30 dBm

Tone Duration to Detect 40 msec

Tone Frequencies DTMF Transmission,

697 hz

770

852

941

1209

1336

## **FCC Compliance Information**

This product complies with Part 68 of the FCC Rules and Regulations. The FCC Registration Number is DWEUSA-75283-DP-N. The Ringer Equivalence Number (REN) is 0.6B. The product uses an RJ11 phone jack. You must, upon request, give this information to your telephone company.

The REN is useful to determine the quantity of devices you may connect to the telephone line and still have all of these devices ring when the number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to the line, as determined by the REN, you should contact the local telephone company to determine the maximum REN for your calling area.

If your system causes harm to the telephone network, the telephone company may discontinue service temporarily. If possible, they will notify you in advance. If advance notification is not practical, you will be notified as soon as possible.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted service.

If you experience trouble with the device, please contact our Technical Support at 972-248-0341 for information on obtaining service or repairs. The telephone company may ask you to disconnect this device from the network until the problem has been corrected or until you are sure that the device is not malfunctioning.

There are no repairs that can be made by the customer to this device.

The device may not be used on coin service lines provided by the telephone company (this does not apply to private coin telephone applications which use standard telephone lines). Connection to party lines is subject to state tariffs.

<b>FCC Registration Number</b>	<b>DWEUSA-75283-DP-N</b>
<b>Ringer Equivalence (REN)</b>	<b>0.6B</b>
<b>Telephone Jack</b>	<b>RJ11</b>