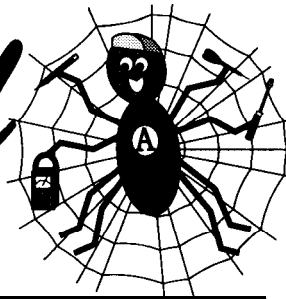


Arachnid Tech Tips



This publication is provided as an aid for field technicians and operators who troubleshoot, repair, and maintain Arachnid games. It is a technical tool designed to keep all the latest updates, service bulletins, suggestions and ideas together in one package

A Publication Especially for Operators and Technicians who service Arachnid Products

Troubleshooting Modem Collections...

Although hardware can fail, ninety percent of all modem stat collection problems arise from improper *configuration* (setup). When properly configured, your hardware and software should provide effortless and reliable stat collections. Configuration falls into two broad categories: *Computer* (setup of the modem and computer that you use to run Dartman III and collect stats), and *Game Serup* (configuration of the game, or games, at the remote location).

Configuring the Computer

In order to configure Dartman to use your modem, you need to know what the hardware settings are for your modem. The basic modem settings are Corn Port, Interrupt Request (IRQ) and Base Address. In the Dartman program you choose the Corn Port that your modem uses, however you cannot change the IRQ and Base address within the program. The default settings for each Corn Port are shown in **Table 1**, on page 2.

For example: if you chose Port 2 in Dartman, then your modem settings must be set to Corn Port - 2, IRQ - 3, and Base Address - 02F8. No other combination of IRQ and Base Address settings will work with Corn Port 2. Please refer to the literature that came with your computer or modem to configure your modem properly. After your modem is configured, check to see that your com-

puter's clock is showing the correct time and date, and that your modem is connected to your phone line. You are now ready to use your computer and the Dartman software to initiate calls to remote locations.

Testing Your Computer Setup

To make this testing procedure easier, Arachnid has set up a Galaxy game that you can call any time, night or day. It can be reached at 815-282-4738 (password DDDDDDDD). To run the test, set up your Dartman software to initiate a Manual Modem Collection using the number above. If you initiate a Collect, the game will respond with "HELLO FROM: ENG TEST BOARD, a Recollect will actually download data from a test match. If you fail to receive either of these responses, run through the checklist below:

- Yes Is a phone line connected to the modem (and there is a dial tone when off-hook)?
- Yes Is the modem configured to the proper settings for the Port chosen in Dartman?
- No Is another device connected to your computer, conflicting with the Port, IRQ, or Base Address of your modem?

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WEBstats?

Looking for a relatively inexpensive way to promote your business? Follow the lead of a few pioneering operators who have turned to the Internet to do just that. "Surfing the Web" has turned up dozens of sites where operators give darters the ability to view upcoming league information, league schedules, and even their team and player standings. One such site is Chambers Music Company of Ogden, Utah. We would like to thank Alan Chambers for submitting the following article describing how he publishes league stats on his web page from Dartman III. His website can be found at: WWW.RELIA.NET/~CHAMBERS and is worth a visit.

ARTICLE BEGINS ONPAGE 4...

Yes The league password is the correct one for the game in that location?

Yes Is the computer's date and time set correctly.

Yes Using a regular phone, can you dial the location and hear the modem answer (high pitched noise - like a fax machine)?

Yes Does the modem work properly with other software?

If you can check off all the above items and you still cannot connect to the test board, there are two possibilities: 1) Your modem is not designed to work with DOS programs (many of the newer modems are not); or 2) The default *Initialization String* shipped with Dartman is incorrect for your modem (see below).

TABLE 1 - COM-PORT DEFAULTS

PORT	IRQ	BASE ADDRESS
1	4	03F8h
2	3	02F8h
3	4	03E8h
4	3	02E8h

Initialization Strings - Software Configuration

Besides the basic hardware configuration (com port, IRQ & Base Address) each modem has a set of software settings that need to be configured. Dartman includes a generic *Initialization String* of commands, which when issued to the modem ensures that the modem's current software configuration matches Dartman's software requirements. Even though a modem may be called "100% AT compatible", its operation may vary so significantly from other AT compatible modems, that this generic Initialization String will not work. As there are literal-

ly hundreds of modems on the market, and no guarantee that the generic string will work, Dartman's Configuration screen provides an area where it can be modified. If you believe you are experiencing this problem, you can contact Arachnid or your modem's manufacturer for assistance.

Configuring the Games

Assuming that your computer is properly configured and you can connect to the test board, use the following checklist to setup and troubleshoot the game hardware and software at each remote location.

Hardware

Modem is installed. Pin one on the modem is lined up with connector one on the socket and the modem is fully seated in the socket. **WARNING: Installing the modem upside down and powering up the game can cause damage to the modem!**

External phone line has been checked for proper polarity and is connected to J10-LINE on the main board. **WARNING:**

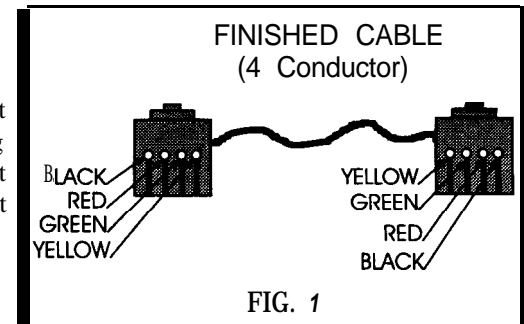
Connecting the external phone line to any other jack on the main board can cause damage to components on the main board!

The Game is grounded to an *earth ground* via the ground prong on the 110~ power cord.

Set Main Board Dip-Switches (SW1): Switches numbered 1 and 2 turned "ON" in the game with the modem. Switches 1, 2 and 3 turned on "ON" if it is the only game at that location. For locations with multiple games, connected together, switch 3 should be "ON" in the games at both ends of the

series. All switches should be "OFF" in all games between the two end games.

In multiple game locations: Games are connected together following the COM-OUT to COM-IN convention. Four conductor cable has been used and the connectors have been installed as shown in Fig. 1.



Software

Set answer times in **Modem Answer Setup** (modem game only). Set the modem to answer after 10-15 rings except during the hours of (earliest call time) thru (latest call time) after 1-2 rings. Time must be entered in the 24 hour format, e.g., 4 AM = 0400; 4 PM = 1600. Set the earliest call time fi hour before the time you plan to start calling from your computer. Do not enter 0 (zero) at any input - the modem will never answer. In Auto Stat Collection Mode, if the Game does not answer after 4 rings, Dartman will cancel that call and continue on to the next location.

Set Date and Time (all games). The current time must be entered in the 24 hour format as described above. Note: Be sure to make allowances for Daylight Savings Time in areas of the country where that practice is followed.

Input Machine Name (all games). Each machine should have a unique name. For example in a location called Boston Tap, games could be named Boston I, Boston II, Boston III . . . etc.

When stats are collected this will allow you to see which game the match was played on.

□ League Password Entry (all games). The league password must be entered into each game. The password must be exactly the same league password that was entered into the Dartman Program for that location. **Tip:** Use the same password for all locations and leagues and be careful of extra blank spaces after the letters of the password.

□ Set Node # (all games). Each game, at one location, must have a unique node number between 1 and 16. It is customary to set the modem game to node 1(one) and then increment each following game by 1. When all game node numbers are set, run "Find a Free Node" from the modem game. This should be the last thing done during any setup or testing procedure as it serves two purposes: it allows you to verify game to game connections and allows the game with the modem to remember which other games it must ask for stats when you call to collect.

□ Reset League Variables (all games). Use this function to clear all stats from the game memory. Note: This should be used at the end of, or prior to, a league's season. **Caution: Make sure all stats have been collected and have been successfully entered into the Dartman software. Once the memory has been cleared old stats cannot be retrieved.**

Testing the Game Setup

The following tests must be performed when setting up a new installation, adding a game to an existing network, or modifying a network in any way.

□ Run Find a Free Node from the modem game as described above. This test checks both send and receive capabilities. If this is not performed, the network will not find all of the games. After

running, the screen will show a list of 16 nodes numbers and the status of each node. After each node number there are four possible status entries: *This Node* (the node that game is set to) , *Connect* (on the node numbers you set the other games to), a *long dash* (meaning it failed to communicate with a game assigned to that node or no game was assigned to that node), or Collision (usually an indication of game to game wiring or hardware problems).

□ Modem Status Test (modem game only). **Note: This test is designed for Arachnid internal modems only.** Running this option will show eight modem status indicators. When the modem is waiting for calls, the top three should be 0 (zero) and the bottom five should be 1(one). If you do not get these results, turn the game off and then on again, then check the status indicators. If you still have a problem, the modem is suspect. If you have an external modem, refer to the manufacturer's literature that came with it to determine the proper status light indicators.

□ Modem Configuration Test (modem game only). **Note: This test will work for Arachnid internal modems and some external modems.** This option will cause the modem to dump its memory to the monitor screen. When activated you will see the lines of information scroll down the screen. Since the modem configuration is written to the modem's memory, at the time of power-up, by the game software, there isn't anything you can do to change it. The fact that you see the information scrolling merely indicates that the modem is communicating with the main board in the game and is properly connected.

In addition to the above tests and settings, the following will help you troubleshoot problems.

□ Arachnet™ Xmit and Recv Tests. These options can be used to check one-

way communications between games connected together in a network. Set up one of the games to transmit (Xmit) and the rest to receive (Recv). When running, you should see 15 lines consisting of the letters A through Z printed character by character on each game set up to receive. When the transmitting game finishes the 15 lines it will clear the screen(s) and start over. This process is repeated until you cancel it. Since it does not return any error messages you must look at each receiving screen to make sure the characters are correct. Receiving an occasional "junk" character may indicate line noise or interference on the cables connecting the games together. Failing to receive anything at all indicates a hardware problem: cable, communications IC, etc. (See Communications Hardware below).

□ Arachnet™ Diagnostic Data. This screen provides information regarding packet transfer. When the games talk to each other, information is sent in "packets." Besides information such as player and team stats, each packet contains information that allows the software to determine if the packet was received correctly or if there was an error. Looking at the screen you will see the following:

BAD PACKETS: The number of bad packets received during game to game communications.

CHBRCVERROR: Channel B Receive Errors - Shows the number of errors on channel B (game to game communications).

CHARCVERROR: Channel A Receive Errors - Shows the number of errors on channel A (modem communications).

PKTCOUNTER: Total packets sent and received (game to game only).

TOTAL RETRIES: Total number times the game tried to retransmit bad packets (game to game).

STATE: This information is used by Arachnid's software engineers, but can be used, watching for changes in the numbers while communications are in progress, as an indication of activity on the network.

As you can see, the games do some error checking on each packet and then retransmit packets that were determined to be bad. It is normal for you to see a few Bad Packets, Channel A & B Receive errors, and Retries. When these numbers are excessive, you should start looking into hardware problems or electrical interference that might exist. For example, one of the ICs involved with game to game communication could be bad (see the list below) or the cables connecting the games might be bad or maybe you are picking up electrical interference from an outside source such as fluorescent lights near the connecting cables. You can reset these counters at any time by pressing the **SELECT** button while in this screen.

More Arachnid™ Diags Data. This area contains information about stat collections. The top portion of the screen shows the month and day (ma/day) of the last six collections, along with the time and whether it was a Collect or Recollect (C/R).

The bottom half of this screen contains information about software flag settings. This information was added during earlier software revisions, to be used by the

software engineers. It serves no purpose in troubleshooting modem collections..

Communications Hardware

When you are absolutely sure all software setting are correct and your collections still fail, it is time to look at the hardware involved. The easiest method for hardware troubleshooting is to "swap-out" suspect components. This can be accomplished in two ways: swapping a suspect component with one that is KNOWN to be in proper working order, or swapping a suspect component to a working game to see if the problem follows the component or stays with the game.

Since there can be two forms of communications related to stat collections, game to game and modem to modem, the following list defines which hardware components are necessary to which method:

Modem to Modem (all locations):

The modem.
ICs (chips) U18, U20, U21, U22, U23.
IC U25- Voltage regulator that takes the +12vdc from the power supply and generates the -12vdc for the modem.
crystal Y3

Game to Game (locations with multiple games):

ICs U18, U20, U24.
crystal Y3

In addition to the above components, hardware troubleshooting includes examining all cables, physical board connections (solder joints on connectors, etc.), and power supply voltages.

Further Resources

From the above, you will be armed with a thorough knowledge of the subject, making communication setup easier. With that in mind, the list of materials below will help you master modem communications.

Available from Arachnid:

Part Number 36870.

"Galaxy Modem and Phone Line Installation Instructions."

Part Number 38969

"The Dartman III Manual."

Part Number 16119

"Galaxy Series Operator's Manual."

Part Number 3 168 1

"Arachnid League Master System."

General resource for computer hardware, configuration issues, and modem principles.

"Upgrading & Repairing PCs, Eighth Edition"

Copyright 1997 by Que Corporation. (Available at most bookstores.)

WEBSTATS FROM PAGE 1...

The purpose of this article is to get **T** more people to put their league standings/information on the Internet. At Chambers Music Company we have been using the Internet and our web page for one and a half years.

Our players wanted standings back to the bars sooner than two to three days

after league night play. I asked several players if they used the Internet and if they were interested in being able to read the standings on the computer. We even give the players a chance to get their standings by fax machine. I was surprised at how many have the capability to use the Internet at work as well as at home. So, we invested some time and a little money and bought a program called Microsoft Frontpage (now called

Frontpage 97 or 98). From there we started our web site for our league players. The web site has many benefits for our company. Some of these would be advertizing, the sale of darts and pool tables etc., and the simple effort of putting the leagues standings on the Internet. The biggest benefit is the cost factor of not having to deliver the standings to the bars after league night play.

CONTINUED ONNEXTPAGE...

As a dart operator, you are already accustomed to the day to day computer work that is involved in posting the players feats etc. from the nights play. If you are lucky, you have now evolved into the new dart games where you can use the modems and automated card systems.

Arachnid's Dartman Program gives you the option of printing your league standings to the printer or to a file. First, we print a paper copy and second, we print to a file and save the file as text (.TXT). We save our tiles to a 3.5 floppy disk, but you could also save them to the TEMP directory.

The FrontPage 97 Program has several different options in the package, but you will use Frontpage Editor for the following:

First, go to File/New/Normal Page. Second, select Insert/File from the top menu. Then a menu appears again and this time to you will need to choose a file to be modified from your .TXT list, open the tile. Then another menu appears, select Formatted Paragraphs. Now, you have your Dartman .TXT file on the screen and you are able to edit and modify it for the Internet (bold, italics, underline, size, color, etc.).

You can do many different things in FrontPage now that you have your basic page. You may select background colors and/or patterns, as well as, insert images. To insert an image you select Insert from the top menu. FrontPage 97 already comes with many images, backgrounds and animated images, you can also use images that you have collected.

Third, save your document as an .HTM file when you are finished designing it. The one thing you may want to remember when saving your file is to fill in the Page Title box with a title and/or description for the document that you just created. Example: Bull Shooters Wednesday Night Mens A League Player Standings.

Your first page is now complete and you can now begin another. When creating another page, we found it easier to leave open an existing page. After you open the existing page, you can delete what you don't want and keep the rest. When you are ready, go to Insert from the main menu and insert your new file.

From there, you will highlight, cut, paste, copy, etc. to get your new page looking the way you want it to. This way the new page will look identical to the previous page (that is, if you want it to look identical). If you want a different

look, just select New from the main menu and start all over again.

Fourth, get into the program WSJTP. This is a file transfer program, it will take your .HTM file and put it on the Internet for you. If you need this program you can download it from www.ipswitch.com.

Once you have the program and you are in it, you will need to change the Local System box to the location of your Internet files. This will either be your a: drive or your c: hard drive. Once you select it, it should bring in all of your Internet files below the Local System box. Then, you will need to select what will be in your Remote System box. The Remote System is your Internet directory tile name. After you have done this you are ready to put the .HTM files on the Internet. First, select the files that you want to put onto the Internet from the Local System. After you have selected the files, select the arrow that is pointing towards the Remote System (this just shows it which system you want to transfer it to). Make sure that the arrow you choose is the one pointing to the Remote System. Then, your done! You may want to get onto the Internet and go to your web site to make sure that the files are on there.

Tech Alert...

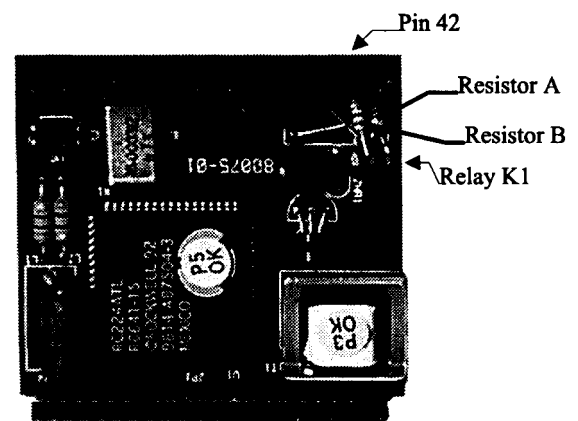
Before you send that next modem in for repairs or exchange, here is something that might get you up and running faster.

We have found that some of the solder joints on resistors A & B have been breaking loose. (See photograph at right.) If you feel comfortable with soldering and electrical repairs, this is easy to correct.

Resistor A goes from the modem board to Pin 1 on K1. Resistor B goes from Pin 42 on the modem board to Pin 2 on K1. K1 also has a wire jumper from Pin 2 to the modem board.

When a modem is found to be defective, it might be worth your time to check these solder connections.

Thanks,
Arachnid Engineering



Pin 1
23688 Internal Modem

FAQs...

Frequently Asked Questions.

Q. I have an Arachnid monitor with a single vertical line down the center. What is the cure?

A. Capacitor C416 has gone out. Replace it with a 6.8uf non-polarized, high frequency capacitor. Arachnid Part Number 39543.

Q. What is the latest version of software for the Galaxy?

A. Arachnid Part Number 39534. Version 6.1, which includes the game "Gotcha."

Q. What is the latest version of the Dartman League Management Software?

A. The latest version is Dartman III V1.2, Part No. 38983. For owners of

older versions, upgrades are available. For owners of Dartman III versions 1.0 and 1.1, order Part No. 39807. For owners of Dartman II, order Part No. 38990. Please note that upgrading from Dartman II to Dartman III also requires the Galaxy game software (eprom) be upgraded to 5.Xx or greater. If you have any questions about upgrading, contact Arachnid's Technical Service department for assistance.

Beginning a new year has always been a time of reflection. A time when we look at past trends and try to anticipate the future. Befitting the season, in this issue we will look at where we are and where we are going. From current hardware and software issues to how darting has reached the Internet. Hope you are all looking forward with glad anticipation as the industry and the sport of darting begins another year.

Dave Neal, Editor - Tech Tips

HOW TO REACH US:

HAVE A TECHNICAL QUESTION OR PROBLEM? HAVE A TIP TO SHARE?



ON THE INTERNET: Check us out at <http://www.bullshooter.com> OR E-mail us at techsupport@bullshooter.com



CALL US at 1-800-435-8319 and ask for Technical Service. We will be happy to assist you in any way we can.



ON OUR TECHNICAL BBS: Connect via modem at 1-815-654-7985 to download Tech Tips, Spider Writer Screens, Service Bulletens and more..



BY MAIL: Arachnid Inc, Tech Tips Editor
P.O. Box 2901
Rockford, Illinois 61132-2901

Arachnid Tech. Tips

Please Forward to your Technical Staff and Dartman Users

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