



## Modem Installation

### Introduction

The following instructions cover connecting a phone line to an incoming phone source, installing a modem, and setting up a network of machines in one location. The installation of modems and networking of machines completes the League Master System. This allows the user to transfer league information to and from the dart machines to completely automate the league process.

**WARNING: DISCONNECT ELECTRICAL POWER TO MACHINE BEFORE PROCEEDING!**

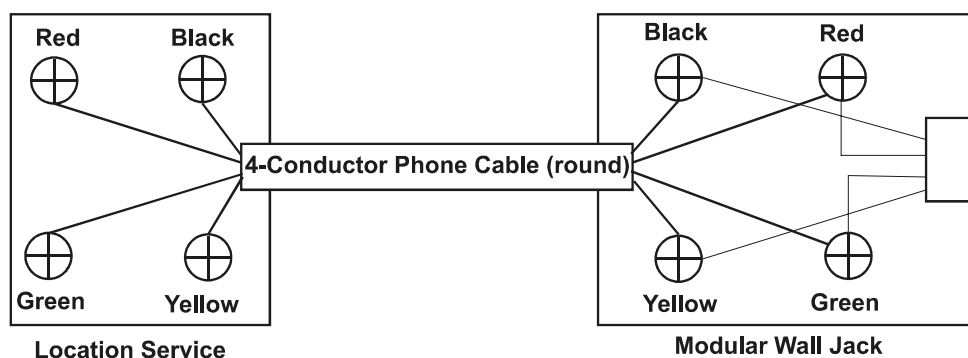
### Installing the Phone Line and Modem

#### Recommended Parts/Equipment for Installation:

- 4-conductor modular phone cable
- 4-conductor round phone cable
- RJ11 connectors & crimping tool
- Modular phone jacks and screws
- Modular "T" adapters
- Phone line polarity tester
- Phone for listening to newly installed phone line
- Internal modems

#### Phone Line Installation

It is best to connect the phone line where the **service enters the building**. This will avoid problems from existing wire connections that might be poorly made and other equipment that might cause electrical interference. When installing a phone line, it is best to use 4-conductor round phone cable (see Figure 1). Modular wall jacks and screws are recommended for mounting on the wall behind the dart machine. After mounting the wall jack, connect like colors (red to red, green to green, etc.). When the wall jack is completely wired, plug in the phone line polarity tester. A red light means the polarity is reversed; switch the red and green wires in the wall jack and test again. You should have a green light on the tester. If the light does not light at all, this indicates that you have no connection to the wall jack. (Read the instructions that came with your phone line polarity tester to see if the indications differ from the above.)



NOTE: In some cases, black and yellow are not used at the location's service.

Figure 1

When testing is completed, take a modular (flat) cable with the ends attached and plug one end into the wall jack and the other end into the **LINE** jack on the dart machine's mainboard (Galaxy and Galaxy II) or the Modem (Black Widow).

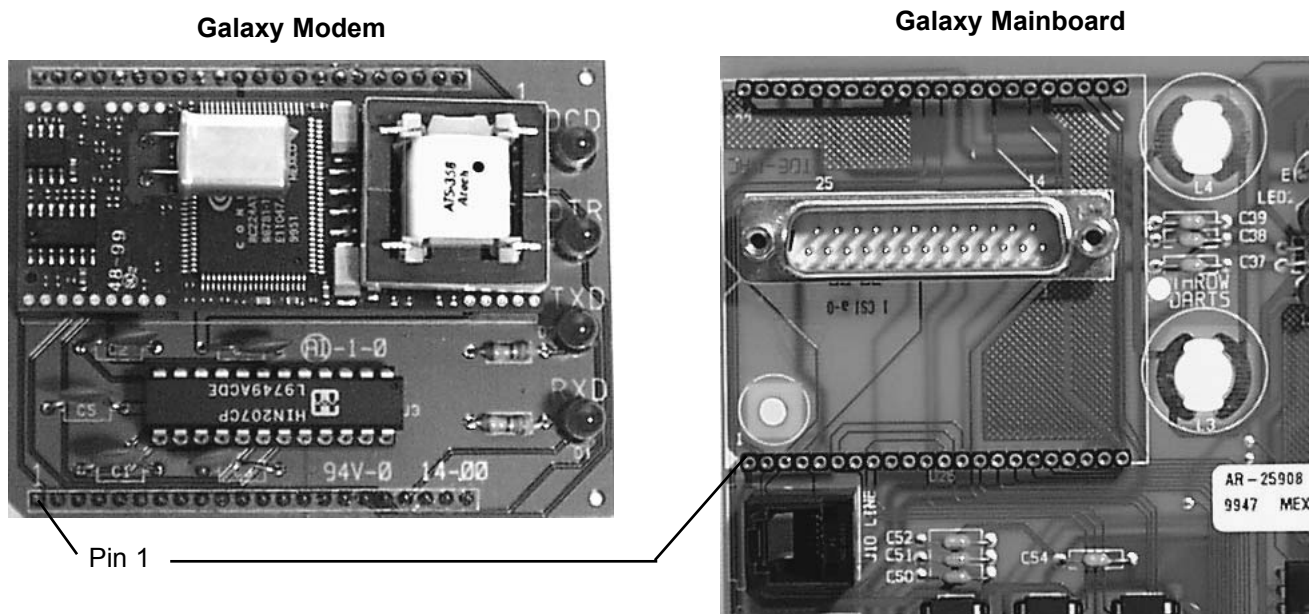
If it is not possible to install the phone line where the service enters the building, a modular "T" adapter can be used (though not recommended) at an existing phone jack at the location. After connecting the "T" adapter to the wall jack, use the phone line polarity tester to locate which of the two jacks has the correct polarity. Connect the modular phone line to the dart machine into that jack. Do not use a modular (flat) cable run over 15 feet. If it is necessary to run the flat cable more than 15 feet, it will be necessary to run round cable and install a modular wall jack closer to the machine.

## Modem Installation

### **WARNING: UNPLUG THE MACHINE FROM ELECTRICAL POWER BEFORE INSTALLING THE MODEM**

#### **Galaxy:**

Remove the four "thumb nuts" that hold the mainboard in place. Remove all harness connectors, then remove the mainboard. Carefully push the modem into the socket provided (see Figure 2). **Be sure to install the modem in the proper direction. Pin one is clearly marked on the modem, and also on the mainboard.** Make sure that pins are not bent and fully seated in the socket. Re-install the mainboard using only 3 "thumb nuts", as one of the screws is now located directly under the modem (therefore, not accessible). Re-attach the wire harness connections.



**Figure 2**

## Galaxy II (GII):

Remove all harness connectors. Remove the mainboard from the machine. Locate pin 1 on the modem - look at the back of the modem. There are four sets of pins - one set at each corner of the modem. Find the corner with only two pins, starting from the corner of the board they are pins 1 and 2. Now locate socket 1 on the mainboard. **Carefully push the modem into the socket, making sure pin one is in the proper location and the stand-off is lined up with the stand-off hole on the mainboard** (see Figure 3). Connect the voltage jumper across the two pins indicating the 5 volts. Re-install the mainboard and re-attach the harness connections.

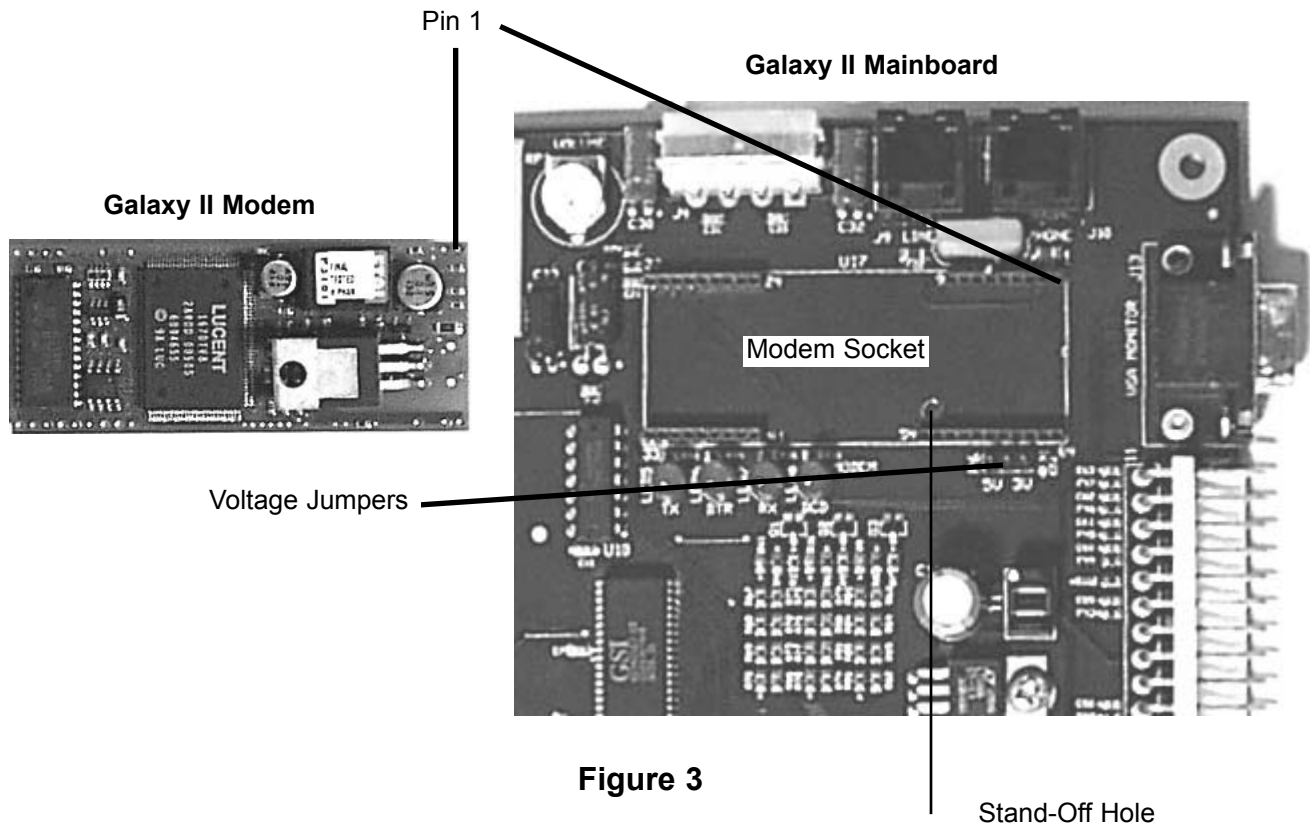


Figure 3

## Black Widow:

Refer to the Black Widow Operator's Manual for instructions on installing a modem in these machines.

## Testing the Phone Line (all machines)

To test the phone line, plug a telephone into the **PHONE** jack on the mainboard (Galaxy and Galaxy II) or the Modem (Black Widow). Lift the phone's handset and listen for a dial tone. Make a local call and listen for noise on the line (static, buzzing, etc). If noise is present, check all connections and make sure the line is not running past or over any fluorescent lighting, neon lights, power lines, etc. If noise can't be eliminated, try connecting a phone at the service box where it enters the building. If you believe that the noise is coming from outside the building, you will need to contact your local phone company.

If you have a dial tone and the call you make sounds clear, have someone call the machine and make sure the phone connected to it rings. This test verifies that you have the correct number for the line connected to the machine.

## Preparing the Machine for Modem Use in the Test/Setup Mode

### Galaxy:

Follow these steps to set up the Galaxy Machine containing the modem (see also Networking below):

1. Activate the "Test/Setup" mode by pressing the **Test** switch on the mainboard. This must be done on initial power up, when the screen reads "PRESS TEST SWITCH NOW" (see the Galaxy manual for more details on using the Test/Setup mode functions).
2. **Set the Time/Date:** From the Main Test Menu, select **Set-Up Mode > Machine Setup Menu > Time/Date Setup**. Set the clock to the proper time and date (using 24 hour format - 3 a.m. = 0300, 3 p.m. = 1500, etc).
3. **Set the Machine Name:** From the Main Test Menu, select **Set-Up Mode > Machine Setup Menu > Input Machine Name**. Give each machine a unique name (such as FOXYS I, FOXYS II, etc.).
4. **Set the League Password:** From the Main Test Menu, select **Set-Up Mode > Game Setup Menu > League Password Entry**. Enter the league password. If the machine is to be used with Operator Cards or a Modem, a password must be entered that matches the Location Password used in Dartman (and on the Operator Cards).
5. **Set The Node Number:** From the Main Test Menu, select **Communications > Arachnet Setup Menu > Set Machine to Node \_\_\_\_**. Press the **Enter Button** to change the node number for this machine (1 to 16). Each Galaxy machine in a location must have a different node number. Select **Find a Free Node** and press the **Enter Button** to configure the node in memory or to find an unused node in an existing network (see Networking below). This screen will display the node numbers assigned to the various machines. Up to 16 Galaxys can be added to a network of dart machines.
6. **Set the Call Window:** From the Main Test Menu, select **Communications > Modem Setup Menu > Modem Answer Setup**. Set the number of rings before the modem answers incoming calls, outside the call window (the first field (**Answer After**) (0 to 15), the Call Window (**Except During the Hours of 0300 thru 0600**), and the number of rings before the modem answers incoming calls during the Call Window (**Answer After**) (0 to 15).

**Note:** If the number of rings is set to 0 (zero) in the first field, then the modem will never answer. In order for Auto-calls to work properly the second field must be set to 1 or 2 rings only.

### Galaxy II (GII):

Follow these steps to set up the Galaxy II Machine containing the modem (see also Networking below):

1. Activate the "Test/Setup" mode by pressing the **Test** switch on the mainboard. (See the Galaxy II manual for more details on using the Test/Setup mode functions).
2. **Set the Time/Date:** From the Main Test Menu, select **Machine Setup Menu > Time Settings Menu > Set Time/Date**. Set the clock to the proper time and date (using 24 hour format - 3 a.m. = 0300, 3 p.m. = 1500, etc).
3. **Set the Machine Name:** From the Main Test Menu, select **Machine Setup Menu > Input Machine Name**. Give each machine a unique name (such as FOXYS I, FOXYS II, etc.).
4. **Set the Modem Password:** From the Main Test Menu, select **Communications Menu > Modem Menu > Input Modem Password**. Enter the league password. If the machine is to be used with a Modem, a password must be entered that matches the Location Password used in Dartman.
5. **Set The Node Number:** From the Main Test Menu, select **Communications > Network Menu > Reconfigure Network**. Choose **Yes** to run the configuration utility. This must be done on single machine locations as well as on multiple machine networks (see Networking below).

6. **Set the Call Window:** From the Main Test Menu, select **Communications > Modem Menu > Modem Call Window**: Set the number of rings before the modem answers incoming calls, outside the call window (the top field) **Answer After** (0 to 15) **ring(s)**, the Call Window (**Except between 3:00 a.m. and 6:00 p.m.**), and the number of rings before the modem answers incoming calls during the Call Window **Answer After** (0 to 15) **ring(s)**.

**Note:** If the number of rings is set to 0 (zero) in the top field, then the modem will never answer. In order for Auto-calls to work properly the bottom field must be set to 1 or 2 rings only.

### **Black Widow:**

Follow these steps to set up the Black Widow Machine containing the modem (see also Networking below):

1. Activate the "Test/Setup" mode by pressing the **Test** switch on the CPU. (See the Black Widow manual for more details on using the Test/Setup mode functions).
2. **Set the Time/Date:** From the Main Test/Setup Menu, select **Setup > Machine Setup > Time Settings > Time and Date Settings**. Set the clock to the proper time and date (using 24 hour format - 3 a.m. = 0300, 3 p.m. = 1500, etc).
3. **Set the Machine Name:** From the Main Test/Setup Menu, select **Setup > Machine Setup > Machine Name and Password > Machine Name**. Give each machine a unique name (such as FOXYS I, FOXYS II, etc.).
4. **Set the Modem Password:** From the Main Test/Setup Menu, select **Setup > Machine Setup > Machine Name and Password > Modem Password**. Enter the league password then re-enter it for verification. If the machine is to be used with a Modem, a password must be entered that matches the Location Password used in Dartman.
5. **Set The Node Number:** From the Main Test/Setup Menu, select **Setup > Modem and Arachnet Setup > Arachnet Setup > Reconfigure Arachnet**. Choose **Yes** to run the configuration utility. This must be done on single machine locations as well as on multiple machine networks (see Networking below).
6. **Set the Call Window:** From the Main Test/Setup Menu, select **Setup > Modem and Arachnet Setup > Modem Menu > Modem Setup**: Set the number of rings before the modem answers incoming calls, outside the call window (the top field **Answer After** (0 to 15) **ring(s)**, the Call Window (**Except between 3:00 a.m. and 6:00 p.m.**), and the number of rings before the modem answers incoming calls during the Call Window **Answer After** (0 to 15) **ring**.

**Note:** If the number of rings is set to 0 (zero) in the top field, then the modem will never answer. In order for Auto-calls to work properly the bottom field must be set to 1 or 2 rings only.

The preceding setup requirements are for single machine locations. If you have multiple machines in one location, continue on to learn about Networking.

# Troubleshooting (First commandment - NEVER ASSUME)

## Modem Communications Checklist:

(Connect a telephone to the **Phone** jack on the master machine.

Modem does not answer:

Lift the handset of the connected phone - Is there a dial tone?

Make a phone call from the machine - Does the line sound clear - no static or other noise?

Have someone call the machine - Does the connected phone ring (correct phone number)?

Swap a known working modem into the machine - Working now - Replace modem.

Swap a known working mainboard into the machine - Working now - Repair or replace mainboard.

Modem answers but will not communicate:

Make a phone call from the machine - Does the line sound clear - No static or other noise?

Have someone call the machine - Does the connected phone ring (correct phone number)?

Is something else answering the phone? (Answering Machine, Fax, Computer, Alarm System, Another Game Machine, Jukebox, etc)?

Swap a known working modem into the machine - Working now - Replace modem.

Swap a known working mainboard into the machine - Working now - Repair or replace mainboard.

Manual Calls Work But Auto-Calls Fail:

Is the machine Time/Date set correctly? Is it different than your computer?

Is the Machine's Call Window set correctly. (sufficient length to handle all calls you make)

Make sure Auto-calls are calling within the Call Window (when the machine answers on 1 or 2 rings).

Time difference between central computer and machines. If the machine's call window is 3:00 a.m. to 6:00 a.m. set Auto-calls to begin at 3:30 am (half an hour later than the beginning of the call window). Time difference problems can also be attributed to: Daylight Savings Time changes ( the machines do not auto-update), Different Time Zones (calling across time zones).

Modem is not being initialized by machine - Swap modem with a known working modem and try again.

Modem is not being initialized by machine - Swap mainboard with a known working board and try again.

Refer to each machine's manual for additional modem troubleshooting information and diagnostic tests.