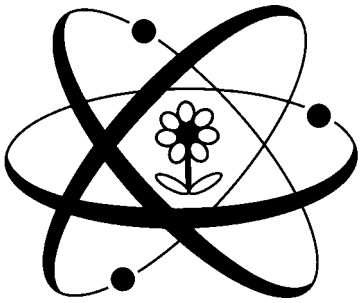

MICRO GROW

GREENHOUSE SYSTEMS, INC.

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REVISION 1.1 12-21-01

GROWLINK

Introduction

Welcome to the world of computer controlled environments and monitoring systems. We at Micro Grow Greenhouse Systems, Inc. thank you for buying the program Growlink.

Getting Ready

To use the Growlink PC interface program for the Growmaster line of greenhouse controls, you will require the following:

A. A personal computer with Microsoft Windows or Windows 95. A 486 microprocessor with a minimum of 4MB RAM. The faster the computer and the more RAM that you have the better.
B. An open serial communication port with a 25-pin connector. If your computer has a 9-pin connector you will need to purchase an adapter from your local computer store.
C. A hard drive sufficient enough to hold the greenhouse data. A minimum of 200 MB of available memory after installation of the Growlink software. **NOTE:** The space available on your hard drive will determine how long you will be able to log data.
D. For Remote Communications your computer system will need to have at least a 14,400 modem and a remote communication program like Carbon Copy.

Installation

The following items should be included in you Growlink Package:

A. The software diskette.
B. The RS-485 to RS-232 adapter.
C. 2 (120 Ohm) Resistors

Hardware Installation

In order to utilize your Growlink program you must first install the Growmaster Controls and the interconnecting communication cable. **This cable must be a two pair shielded cable, with each pair being individually shielded.**

Preparing the Growmaster Controls:

1. Ensure that each **Growmaster** Control has a separate **remote ID** number set in them. This ID number is setup in the **Set System** mode at each Growmaster control. The first unit should be set to "0" and the next "1", etc…
2. Ensure that the **custom name** is programmed into each Growmaster. This is also done in the **Set System** mode. Each name may be up to 16 alphanumeric characters. This custom name will be used throughout the program.

Installing the Communication Cable:

Important: The communications cable must not be installed in, or near any power conduit (120 VAC) or greater. It is best installed underground, in its own conduit. If it is necessary to cross power lines with the communications cable, do so only at right angles and maintain as much spacing as possible

1. Verify that the communications cable loop is installed to all the Growmaster's. It is very important that you use the correct cable. Micro Grow stocks the required cable, or you may purchase it from any electronic supply house. It is important that the cable be installed in a **continuos loop** format. This means that one loop must be used to **catch** all of the control panels. Simply running a communications cable and tapping into it at each control will not work. The final control must be fitted with two end of line 120 ohm resistors, one across each pair of wires. Please consult Micro Grow if you have any questions pertaining to this installation.

1. Terminate the communication cable at the correct terminals in each Growmaster control. Verify that the correct polarity of the communications cable is followed.
2. Install the end of the line terminating resistors (120 Ohms each) at the last Growmaster. These resistors install across each pair within the communications cable.

PC Preparations:

1. Install The RS-485 Adapter module into your serial communications port. Please consult your computer supplier if you are not sure if you have an available communications port.
2. Connect the communications cable to the RS-485 adapter module. Be sure to observe the polarity of the communications cable.

Software Installation

Place your Growlink floppy disk in the disk drive, either **A** or **B**. In Windows 3.1 perform the following from Program Manager, go to the File menu and select Run. Type "A:**SETUP**" (or "**B:SETUP**" if floppy was inserted into B: drive). Click "OK". IN Windows 95, go to start and then run. Type "**A:SETUP**" (or "**B:SETUP**" if floppy was inserted into B: drive). Click "**OK**".

This will begin the installation process. From here simply follow all on screen prompts. Generally all prompts will be answered **YES**. The only variance in this would be if you desire to locate the program in a location other than the default.

NOTE: Clicking on **Cancel** any time during the installation process will abort the installation.

Growlink will then finish the installation by copying any custom screens and backgrounds.

Installation of screens designed at Micro Grow:

Generally, Micro Grow will send out some custom screens that have been pre-designed for your particular project. To load these, perform the following tasks while operating the Growlink program:

Click on the File button located on the top left portion of the Growlink program.

Clicking on the "RESTORE" button will cause a dialog box to appear that will ask if you really are sure about this restore. This operation has the potential to remove any changes done after the file has been backup. If "CONTINUE" button is clicked on, a dialog will appear asking for the filename of the file to be restored from. You should see just one filename available, click on that filename. Click on "OK". Once the "OK" button is click on, the restoration process will start. The restoration will run the ZIP program on your system. After the restoration is complete, Growlink must be restarted. This process should load all of the screen configurations for your particular project.

Running Growlink

In Windows 3.1 Open the Micro Grow Program Group and double click on the Growlink Icon this will start the Growlink Program. In Windows 95 go to click on the start button then go to programs, in programs go to Micro Grow and then click on the Growlink Icon this will start the Growlink program.

Configuring Growlink

To configure Growlink for the Growmaster Growcom, Procom, and/or Weathermaster controllers that are connected to the computer, click on the box that says "CONFIG". You are now in Config Mode.

Growlink will automatically figure out the available communication serial ports that are available. Select the communication serial port that the controllers are connected to. Select the mode for printing out graphs, monochrome is the default. Select the logging interval that you wish to have, the minimum is 15 seconds and the maximum is 8 hours.

Before finding the controllers that are connected, you must first ensure that each controller has a different "Remote ID Code". Growlink will not be able to find any controllers with the same "Remote ID Code". To find the controllers that are connected to the computer, click on "Start". Growlink will then start to look for the controllers, starting with ID number 0 and finishing with ID number 31. Once it has found all of your controllers you may hit stop you do not have to wait for it to look for all 31 stations. Growlink will build a list of controllers that it finds, with their name, ID number, "Logging", and "Viewing". Logging and viewing allow you to select the ability to log or view data from the controller. If Growlink does not find all of the controllers that you have linked together. Correct this now. Check for two of the same ID Codes, miss wired connections, broken connections, or other possible conditions, etc.

Click on "User-Defined Names". This brings up the list of controller inputs and outputs. If you want to change any of the names on the right hand side, do this by clicking twice on the name you want to change. You can then type in the name you want. Note that each item must have a separate name no two may be identical. When done click on "Save".

To save the configuration, click on "File" then click on "Save". Now Growlink is configured for your greenhouse(s).

Designing Growlink

To design new screens or edit existing screens, go to "Design Mode". Do this by clicking on "DESIGN". The way you design your view screens to look is up to you. Things that you can do for your view screen are:

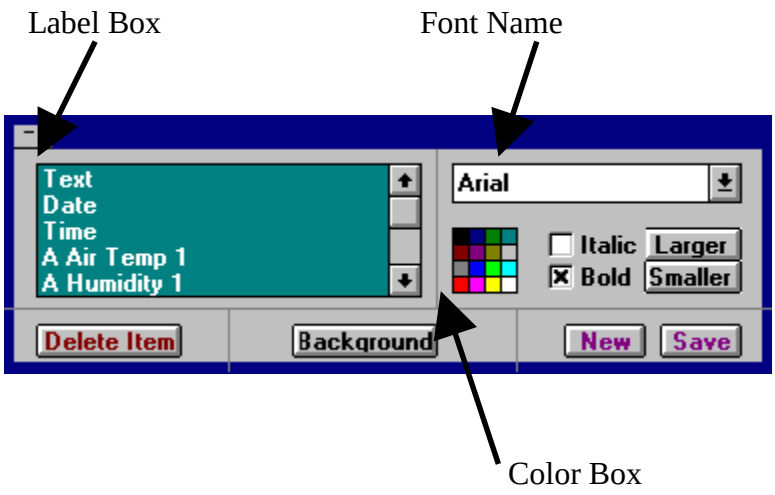
1. Multiple view screens.

2. Boxes can be placed without using an additional program.

3. Remote monitoring of the controller.

4. Changing fonts and colors of text, sensor readings, output readings.

When in "Design" mode on your view screen, you place labels for Boxes, Text, Date, Time, Sensor Readings, Output Settings, Jumps to additional view screens, and Jumps to remote monitoring of controllers. Clicking on "Design" will bring up the following dialog box on the current view screen:



BOXES

Boxes are placed on the screen by using the Wingdings font. Boxes have to be placed before placing text inside the box. To place a box on the screen:

1. Click on the view screen in the location you would like to place the box. You do not have to be exact because you can move it later. In the label box, click on “Text”. If “Text” is not showing, use the up/down scroll bar buttons to find “Text”.
2. Click on the font name, then scroll using the up/down buttons to select “Wingdings” font.
3. Type a lower case “n”; a box should appear on the screen.
4. To increase or decrease the size of the box, click on “Larger” or “Smaller” as necessary.
5. To change the color, click on the desired color in the Color Box.
6. Move the box to the desired location on the screen by clicking on the box, which was created, and dragging it to the new location.

TEXT

To place a text on the screen:

1. Click on the view screen in the location you would like to place the text. You do not have to be exact because you can move it later. In the label box, click on “Text”. If “Text” is not showing, use the up/down scroll bar buttons to find “Text”.
2. Type in the text you want to appear.
3. To change the font, click on the font name, then scroll using the up/down buttons to select the font that you wish to use.
4. To increase or decrease the size of the box, click on “Larger” or “Smaller” as necessary. You can also select Bold and/or Italics by clicking on the “Bold” and/or “Italic” in the design box.
5. To change the color, click on the desired color in the Color Box.
6. Move the box to the desired location on the screen by clicking on the text label that was created and dragging it to the new location. Text may be placed on top of boxes that were created above.

DATE

To place the date on the screen:

1. Click on the view screen in the location you would like to place the date. You do not have to be exact because you can move it later. In the label box, click on “Date”. If the “Date” is not showing, use the up/down scroll bar buttons to find “Date”.
2. To change the font, click on the font name, then scroll using the up/down buttons to select the font that you wish to use.
3. To increase or decrease the size of the box, click on “Larger” or “Smaller” as necessary. You can also select Bold and/or Italics by clicking on the “Bold” and/or “Italic” in the design box.
4. To change the color, click on the desired color in the Color Box.
5. Move the date to the desired location on the screen by clicking on the date label that was created and dragging it to the new location. The date may be placed on top of boxes that were created above.

TIME

To place the time on the screen:

1. Click on the view screen in the location you would like to place the time. You do not have to be exact because you can move it later. In the label box, click on “Time”. If “Time” is not showing, use the up/down scroll bar buttons to find “Time”.
2. To change the font, click on the font name, then scroll using the up/down buttons to select the font that you wish to use.
3. To increase or decrease the size of the box, click on “Larger” or “Smaller” as necessary. You can also select Bold and/or Italics by clicking on the “Bold” and/or “Italic” in the design box.
4. To change the color, click on the desired color in the Color Box.
5. Move the time to the desired location on the screen by clicking on the time label that was created and dragging it to the new location. The Time may be placed on top of boxes that were created above.

SENSOR READINGS

To place a sensor reading on the screen:

1. Click on the view screen in the location you would like to place the sensor reading. You do not have to be exact because you can move it later. In the label box, select the sensor of the controller that you wish to have on the screen
2. Type in the text you want to appear, if any, in front of the sensor reading; i.e., “Air Temp”.
3. To change the font, click on the font name, then scroll using the up/down buttons to select the font that you wish to use.
4. To increase or decrease the size of the text, click on “Larger” or “Smaller” as necessary. You can also select Bold and/or Italics by clicking on the “Bold” and/or “Italic” in the design box.
5. To change the color, click on the desired color in the Color Box.

6. Move the sensor reading to the desired location on the screen by clicking on the sensor reading that was created and dragging it to the new location. The sensor reading may be placed on top of boxes that were created above.

OUTPUT READINGS

To place an output reading on the screen:

1. Click on the view screen in the location you would like to place the output reading. You do not have to be exact because you can move it later. In the label box, select the output of the controller that you wish to have on the screen
2. Type in the text you want to appear, if any, in front of the sensor reading; i.e. “Cooling”.
3. To change the font, click on the font name then scroll using the up/down buttons to select the font that you wish to use.
4. To increase or decrease the size of the text, click on “Larger” or “Smaller” as necessary. You can also select Bold and/or Italics by clicking on the “Bold” and/or “Italic” in the design box.
5. To change the color, click on the desired color in the Color Box.
6. Move the output reading to the desired location on the screen by clicking on the output reading that was created and dragging it to the new location. The output reading may be placed on top of boxes that were created above.

JUMP TO ADDITIONAL SCREENS

To place a jump to another screen:

1. Click on the view screen in the location you would like to place the jump label. You do not have to be exact because you can move it later. In the label box, click on “Text”. If “Text” is not showing, use the up/down scroll bar buttons to find “Text”.
2. Type in the text you want to appear, if any, in the jump label; i.e., “West Range” or “Outputs”. Then type in “@@” and the name of new screen to go to followed by the .SCR extension; I.E.,

Where “view1.scr” is the name of the screen to go to, “@@view1.scr” will not appear on screen in View Mode.

3. To change the font, click on the font name then scroll using the up/down buttons to select the font that you wish to use.
4. To increase or decrease the size of the text, click on “Larger” or “Smaller” as necessary. You can also select Bold and/or Italics by clicking on the “Bold” and/or “Italic” in the design box.
5. To change the color, click on the desired color in the Color Box.
6. Move the text to the desired location on the screen by clicking on the box created and dragging it to the new location. The text may be placed on top of boxes that were created above.

   NOTE: The jump to another screen label can be placed at the end of any text that is typed into the view screen. For example, if you want to have the air temperature for the range used to jump to another screen when clicked on, the label would something like this:

Where "@@view1.scr" is the name of the new screen to jump to, "43 F" is the sensor reading, in this case, air temperature.

TO REMOTLY MONITOR A CONTROLLER

To place a jump to remote monitor a controller:

1. Click on the view screen in the location you would like to place the jump label. You do not have to be exact because you can move it later. In the label box, click on "Text". If "Text" is not showing, use the up/down scroll bar buttons to find "Text".
2. Type in the text you want to appear, if any, in remote label, that is, "West Range" or "Greenhouse". Then type in "@@" and the name remote controller you want to monitor, i.e.,

Where "RANGE 1" is the name of the controller to monitor. "@@RANGE 1" will not appear on the screen in View Mode. Please note that the name of the controller is in capital letters, the program is case sensitive. Use only capital letters.

3. To change the font click on the font name then scroll, using the up/down buttons to select the font that you wish to use.
4. To increase or decrease the size of the text, click on "Larger" or "Smaller" as necessary. You can also select Bold and/or Italics by clicking on the "Bold" and/or "Italic" in the design box.
5. To change the color, click on the desired color in the Color Box.
6. Move the text to the desired location on the screen by clicking on box created and dragging it to the new location. The output reading may be placed on top of boxes that were created above.

This remote monitor label can be placed at the end of any text that is typed into the view screen. For example, if you want to have the air temperature for the range to monitor that controller when clicked on, in this example the controller to be monitored is named "WEST". The label would something like this:

BACKGROUND

The background is a BMP file that can be created using the Windows program PAINTBRUSH or any other paint program. Clicking on this button brings up a dialog box that allows you to select the BMP file that you what to use. The file must be located in the GROWLINK directory.

SAVE

When making any changes to the screen, save must be done to keep all of the changes. Do this by clicking on the "SAVE" button. This will bring up a dialog box with the current filename of the screen being worked

on and a list of the screens that are in the GROWLINK directory. **Warning: If you type a different name in the box, then that will be the file Growlink saves the screen information to.**

DELETE ITEM

If you need to remove an item from the screen, click once on the item and then click on the "DELETE ITEM" button. This will remove the item from the screen. **WARNING: There is no way to undo a delete.**

NEW

To create a new screen, click on the "NEW" button. This will bring up a dialog box asking for the new screen name and a list of existing screens. If you type a name that does not appear in the list a blank viewing screen will appear. If you type a name that exists in the list, GROWLINK will load that view screen in for designing.

Graphing with GROWLINK

GROWLINK has the ability to graphically represent your greenhouse data that has been collected over a period of time. To do a graph, first click on the "GRAPH" button located across the top of the screen. This will bring up a dialog box with a list of available days, available inputs and outputs to be graphed, and graph resolution.

First select the inputs and/or outputs that you wish to have graphed. Clicking once on the name will select the item to be graphed; second click on the item will de-select the item. You will notice that not all of the sensors and outputs that are being used on your GROWMASTER series of controller is available to be graphed. Only the item with numerical value can be graphed. Items such as OVERRIDES, PHOTOCELLS, COOLING, HEATING, FOGGING, and other inputs or outputs that are either on or off, are not available to be graphed.

Select the days that you wish to graph. Clicking once on the name will select the item to be graphed; second click on the item will de-select the item.

Select the graphing resolution that you wish to use.

If you want to start over click on the "CLEAR" button.

To begin graphing, click on the "SHOW" button. Growlink will then calculate and display on the screen a graph of the selected items over the selected time period. If you have selected many days to view or a resolution of less than 1 hour, a scroll bar in the lower left-hand corner will appear on the graph. Use this to advance through the time period selected to be graphed.

Any graph being viewed can be printed. Clicking on the "PRINT" button will cause GROWLINK to change the graph to the output setup in the CONFIG area for print mode and print the graph out to the printer that is connected.

Tables with GROWLINK

Growlink has the ability to put in a table format your greenhouse data that has been collected over a period of time. To do a table, first click on the "TABLE" button located across the top of the screen. This will bring up a dialog box with a list of available days, inputs and outputs to be put into table format.

First select the inputs and/or outputs that you wish to be put into table format. Clicking once on the name will select the item to be tabled; second click on the item will de-select the item. All inputs and outputs connected to the GROWMASTER series are available to be put in a table format

Select the days that you wish to be put into table format. Clicking once on the name will select the item to be put into table format; second click on the item will de-select the item.

If you want to start over, click on the "CLEAR" button.

To show the table, click on the "SHOW" button. GROWLINK will then calculate and display on the screen a table of the selected items over the selected time period. A scroll bar on the right hand side allows you to scroll up and down through the table. If you have selected a few items a scroll bar on the bottom will also appear on the table.

Any table viewed can be printed. Clicking on the "PRINT" button will cause Growlink to the output the table to the printer that is connected.

FILE Area

The "FILE" button will allow you to do the following:

- Exit the Growlink program.
- Save the Current setting in Growlink.
- Delete old log files.
- Backup and restore the Growlink files.

EXIT

To exit Growlink, click on the FILE button. A dialog box will appear on the screen. Clicking on "CANCEL" button will return you to the Growlink program. Clicking on the "EXIT" button will close the Program. If the checkbox next to the "EXIT" button is crossed, then all settings within Growlink will be saved prior to exits.

SAVE

Clicking on the "SAVE" button will cause the Growlink program to save all the settings currently in use in the Growlink program.

DELETE

Clicking on the "DELETE" button will allow you to delete log files. This will permanently delete the log files. They can be restored by using a program such as MS UNDELETE. A dialog box will appear and list of available log files will be listed. Clicking once on the date will select the item to be deleted. A second click on the item will de-select the item. Clicking on the "DELETE" button will delete the select items. "CANCEL" button will return you to the Growlink program.

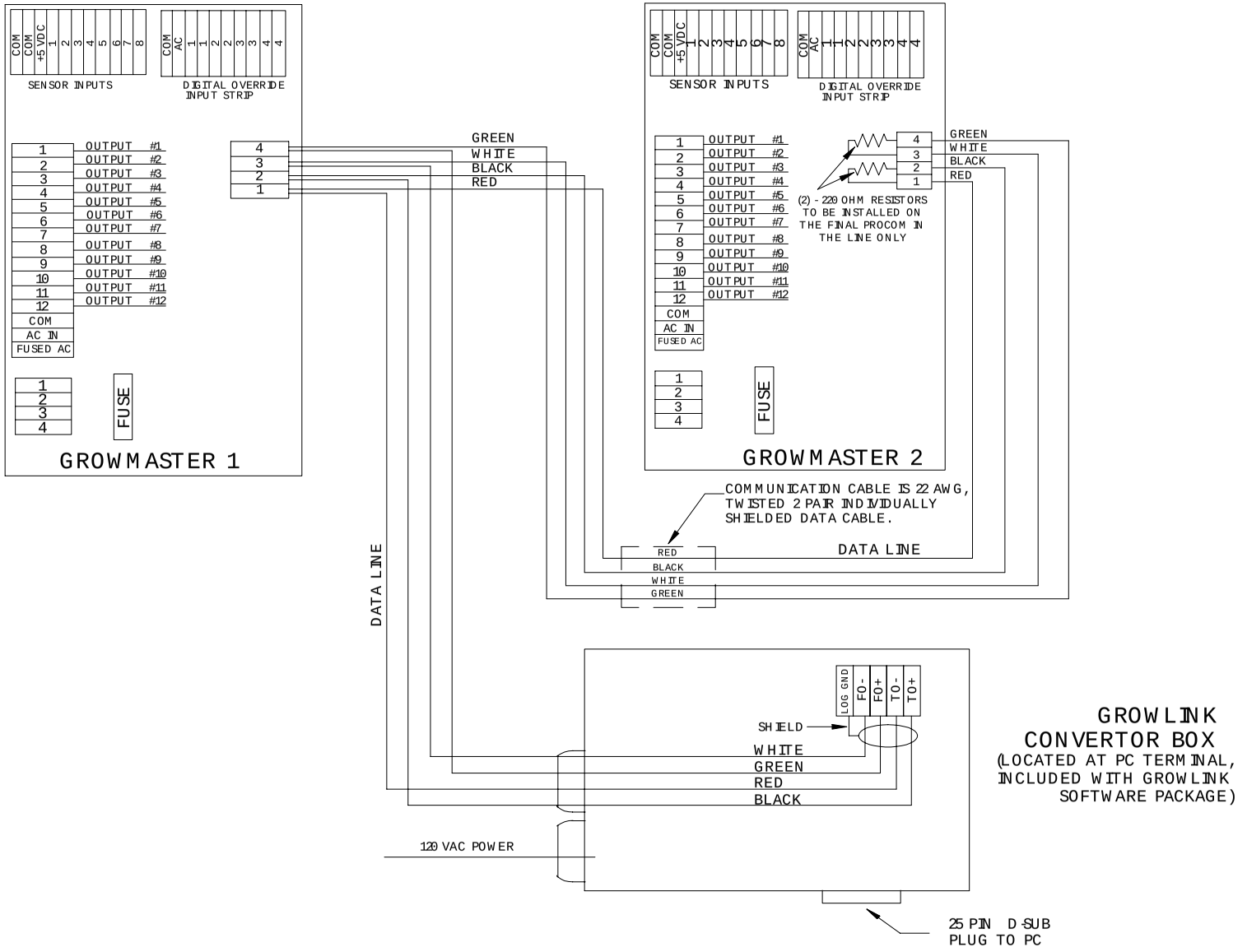
BACKUP

Clicking on the "BACKUP" button will cause a dialog box to appear that allows you to backup the Growlink program. Select the items to backup, and the associated dates of the log files, clicking once on the date will select the item to be backed up. A second click on the item will de-select the item. The "CANCEL" button will return you to the Growlink program. Clicking on the "OK" button will cause a

dialog box to appear with the location where the backup file is to be placed. A filename must be entered for the operation to continue. The “CANCEL” button will return you the previous dialog box. Once the file name has been entered, clicking on ”OK” will cause Growlink to make a file containing all of the information requested.

RESTORE

Clicking on the “RESTORE” button will cause a dialog box to appear that will ask if you really are sure about this restore. This operation has the potential to remove any changes done after the file has been backup. If “CONTINUE” button is clicked on, a dialog will appear asking for the filename of the file to be restored from. A filename must be entered for the operation to continue. The “CANCEL” button will return you to the Growlink program. Once a file name has been entered, clicking on “OK” button will cause Growlink to restore from that file. After the restoration is complete, Growlink must be restarted.

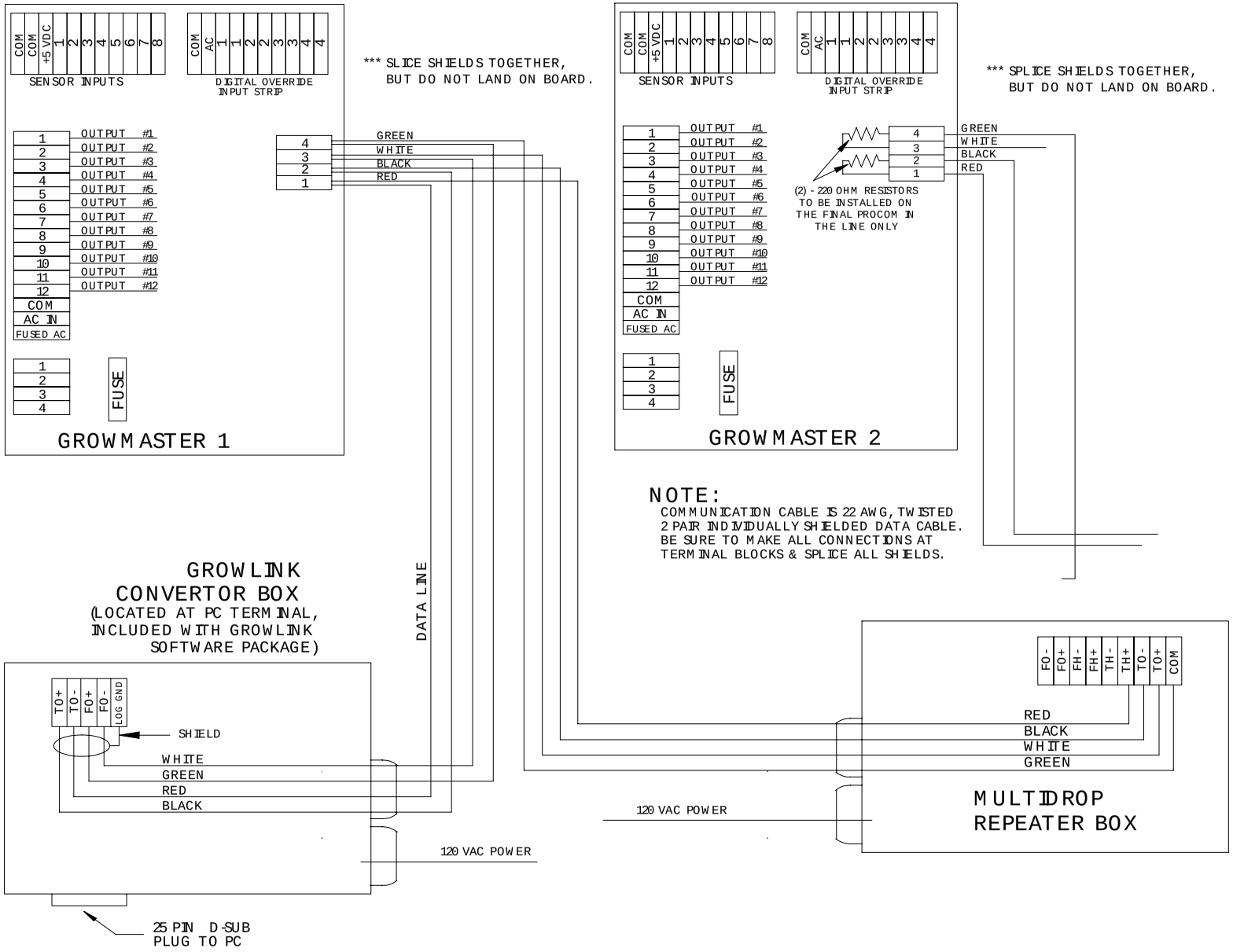


TYPICAL WIRING FOR GROWLINK CONVERTOR BOX TO MULTIPLE GROWMASTERS

FILE: GROWLINK TO MULTIPLE GROWMASTERS.DWG 02/01/02

Project: GROWLINK CONV. BOX TO MULTIGROWMASTERS
Drawn by: GH
Date: 11/28/01
Distributor: N/A
Order ID: N/A

MICRO GROW GREENHOUSE SYSTEMS, INC.
26111 Ynez Road, Suite C-4
Temecula, CA 92591
Phone 909 296 3340 Fax 909 296 3350



TYPICAL WIRING FOR GROWLINK CONVERTER BOX TO MULTIPLE GROWMASTERS WITH REPEATER BOX

FILE: GROWLINK TO MULTIPLE GROWMASTERS W REPEATER.DWG 02/08/02

Project: GROWLINK CONV. BOX TO MULTIGM SW/REPEATER
Order: N/A
Distributor: N/A
Drawn by: GH
Date: 02/08/02

MICRO GROW GREENHOUSE SYSTEMS, INC.
26111 Ynez Road, Suite C-4
Temecula, CA 92591
Phone 909.296.3340 Fax 909.296.3350

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