



Controller 6/30 Operation Manual

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Caution & Safety

READ THE ENTIRE MANUAL BEFORE OPERATING THE FAN. Ensure that all safety practices and instructions are followed during the installation, operation, and servicing of the fan. Failure to apply these safety practices could result in death or serious injury. If you do not understand the instructions please call our Technical Department for guidance [Technical Support contact information can be found on page 27].

All fan controls and incoming power should only be installed by qualified technicians familiar with the requirements of the NEC and local codes. Refer to appropriate portions of this manual for other important requirements. Failure to follow these guidelines will void the manufacturer's warranty.

Installation is to be in accordance with the national electrical code, ANSI/NFPA 70-1999 and local codes.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH.

Read and understand this manual before installing or operating a fan unit. Installation, adjustment, repair, or maintenance must be performed by qualified personnel.

The user is responsible for compliance with all international and national electrical code requirements with respect to grounding of all equipment.

Many of the parts of this unit operate at line voltage. **DO NOT TOUCH.**

Install all covers before applying power or starting and stopping the unit.

DAMAGED EQUIPMENT

Do not operate or install any fans or fan accessories that appear to be damaged.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

MAINTENANCE AND SERVICE:

If the fan does not operate properly using the procedures in this manual, **BE CERTAIN TO REMOVE ALL POWER TO THE UNIT** and contact our technical department for further assistance.

Keep all body parts clear of moving part at all times.

All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

REFER TO FAN INSTALLATION MANUAL(S) FOR FURTHER MAINTENANCE INFORMATION.

Fan Network Ordering

Types of controller:

- **Controller 6** can network up to 6 fans
- **Controller 30** can network up to 30 fans

It is important to purchase fans that are setup for a network. MacroAir customizes fan to operate in a network by:

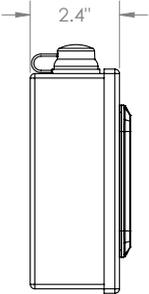
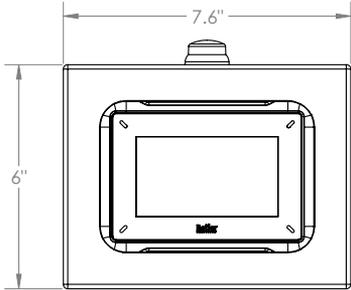
- 1) Addressing the fans and
- 2) Supplying an additional 15ft piece of CAT5

Repeaters/Isolators must be added every 5 fans for stability.

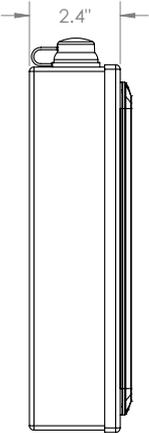
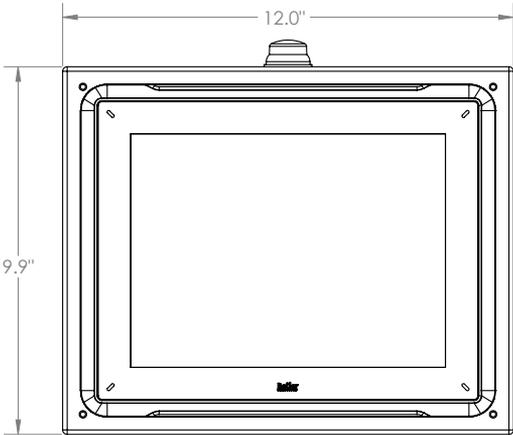
**If you did not order your fans for a network by default they will all have Node Address "2", and you will be missing necessary materials. Contact technical support to modify your fans for networking.*

Controller Dimensions

Controller 6

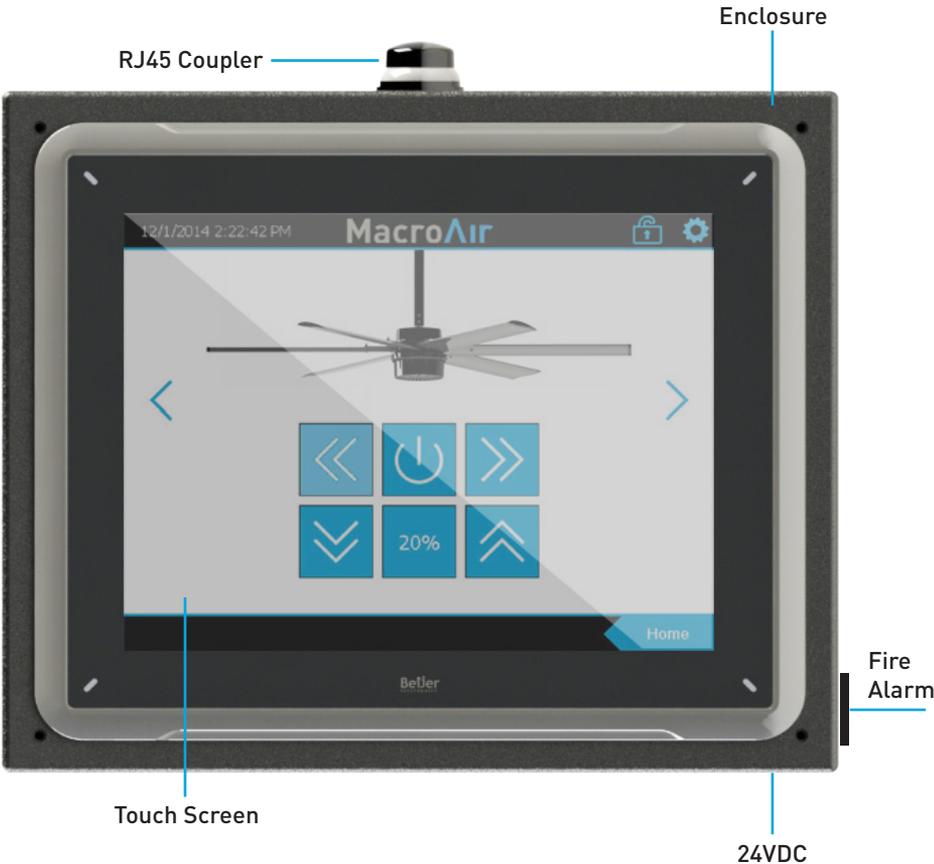


Controller 30



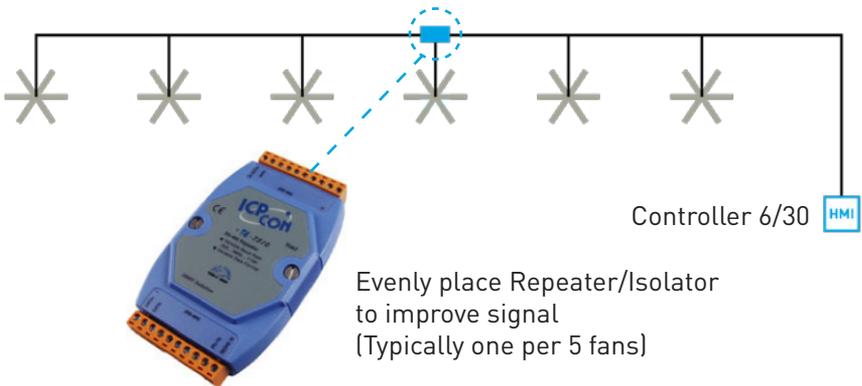
Controller Components

Components



Network Language

Language = Modbus
Communication Method = RS485



Repeater/Isolator

The Repeater/Isolator boosts the signal along the network preventing signal “loss” and minimizes noise on the line.

Repeaters/Isolators should be evenly placed in the network. Make sure there is at least one Repeater/Isolators every 5 fans.

Network Wiring Requirements

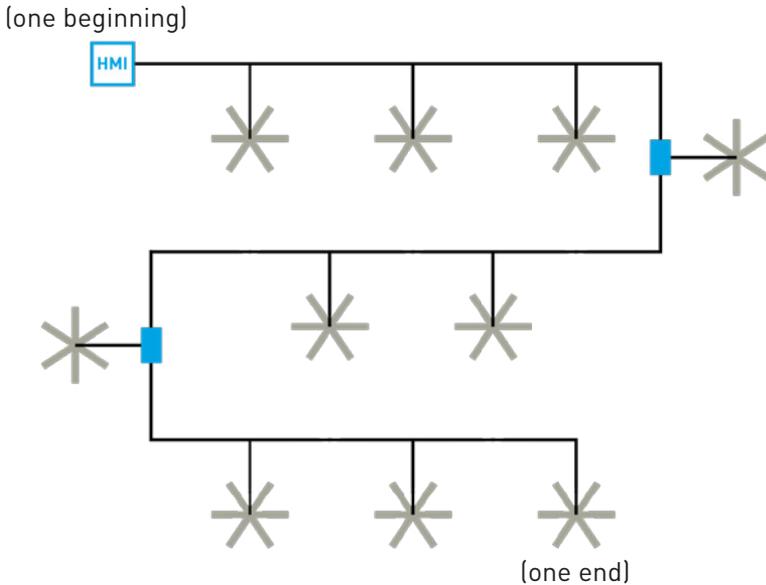
Network Wiring Requirements:

- Use of Twisted Pair, CAT5e (or higher grade) shielded cable
- Minimum 24 AWG (0.5mm) cross section
- Ground the shielding and drain wire at **only one point** of the cable run
- Add Repeaters/Isolator (1/5 fans).
- Route wires as far away as possible from high voltage AC cables, flourescent lights, arc welders, and other equipment that transmits EMI (electromagnetic interference).

Daisy Chain

Networked MacroAir fans must be connected in one single line, referred to in this document as a “**daisy chain**”. The characteristics of a proper daisy chain are: **one beginning** (Controller 6 or 30) and **one end** (last fan).

If the fans are not connected in one line/chain there will be a de-gradation of the communication signal and the network may not function as intended (fans in the network may not operate).

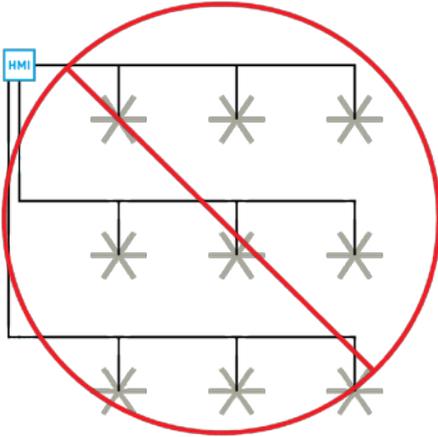


■ Repeater/Isolator

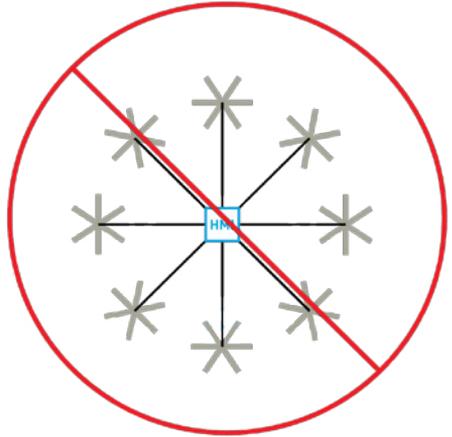
Network Wiring Configurations

Improper Wiring Configuration

End of Line x3

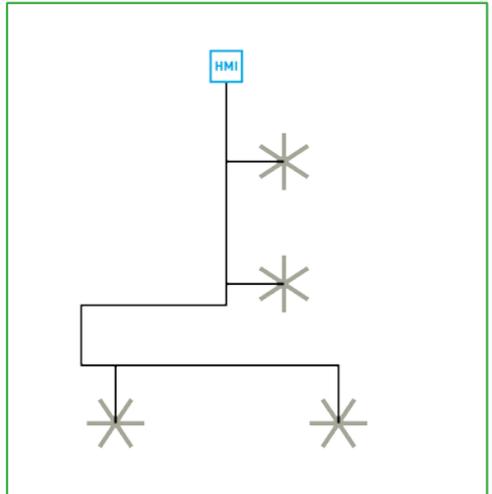
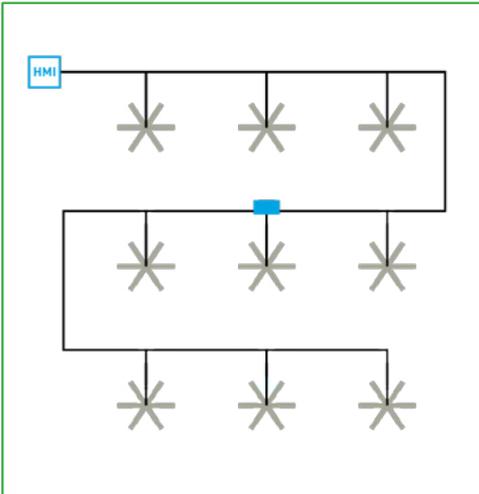


End of Line x8



Proper Wiring Configuration

ONE End of Line



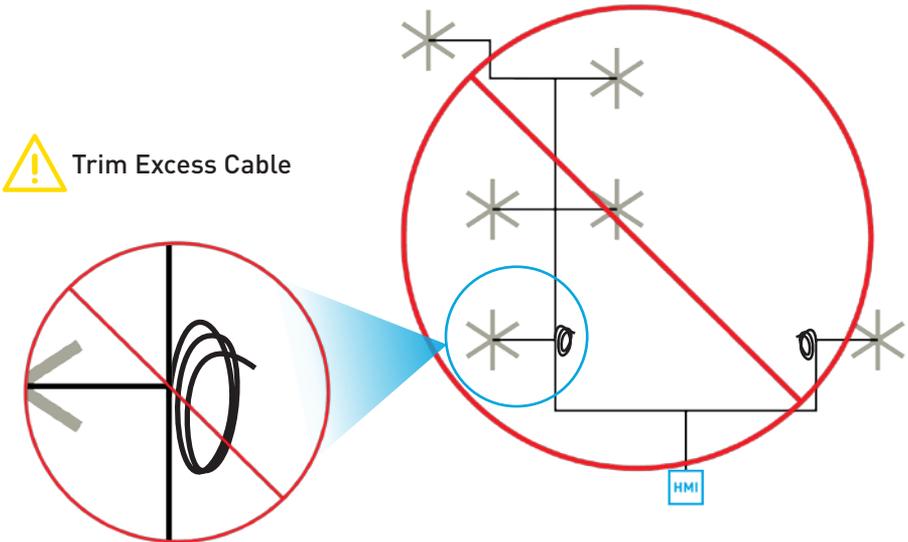
Network Excess Cable

Excess Cable at Connection Point

With noise being emitted throughout a typical industrial/commercial environment, **extra cable should not be coiled up** as the coil itself will create noise/interference in the communication signal. There should be no more than two feet of excess cable at each connection point.

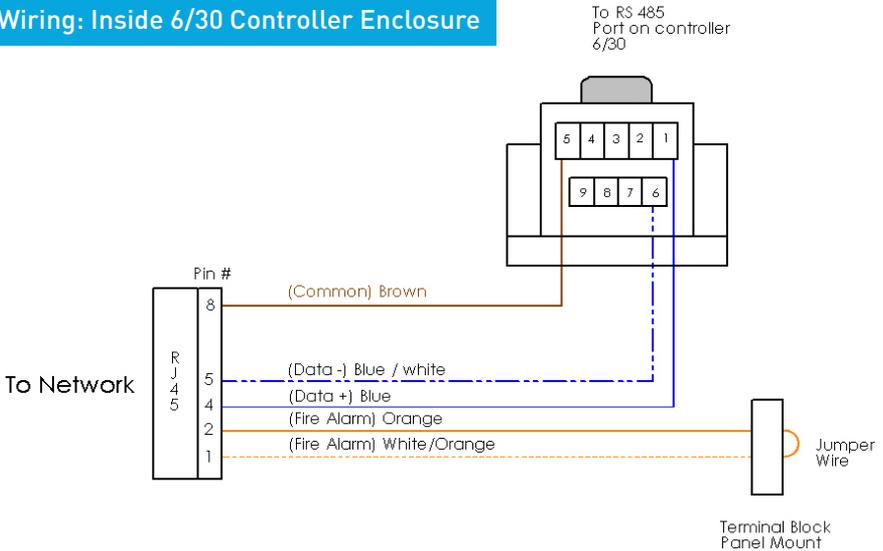
If more than two feet of cable is needed for future relocation of the fan, run the cable up toward the ceiling and back down in a horseshoe shape.

ALWAYS AVOID SHARP BENDS OF THE CABLE.



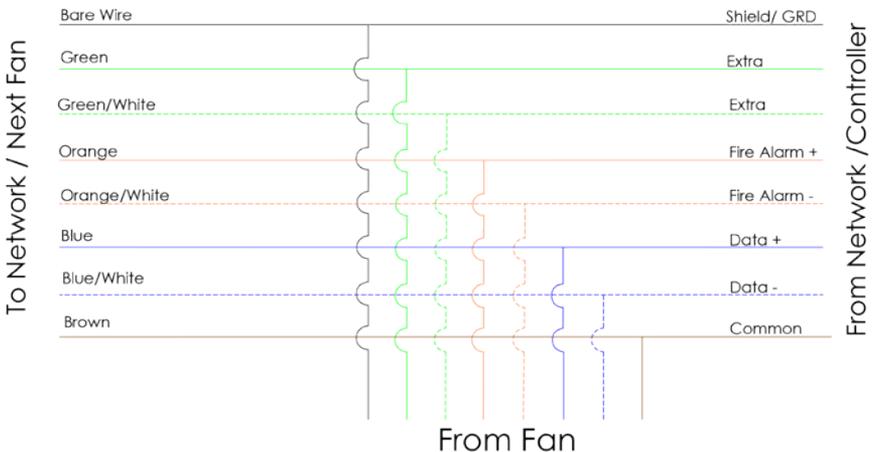
Wiring Diagrams

Wiring: Inside 6/30 Controller Enclosure



Wiring: Fan to Network

Typical T-Splice of CAT5 Network Cable



Wiring Diagrams

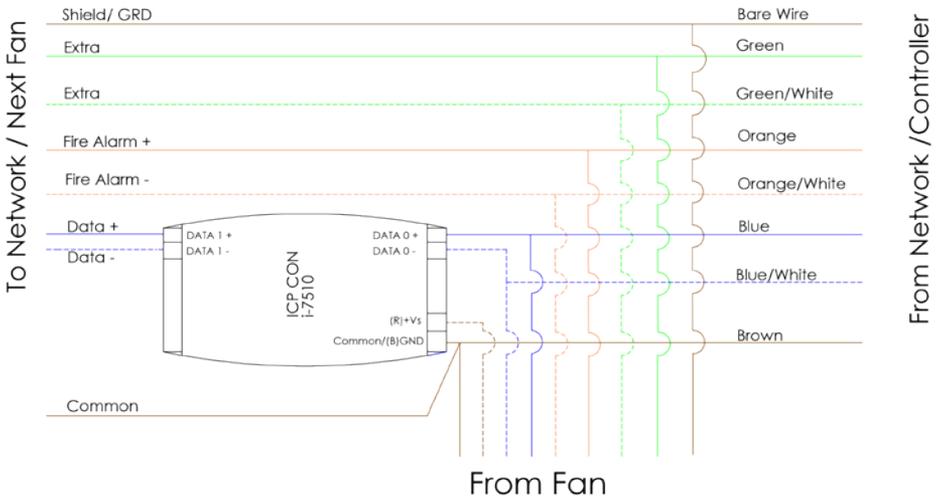
Wiring: CAT5 Pin-Out

CAT5-B to MacroAir Equipment Pin-Out

Cat 5-B pinout



Wiring: Repeater

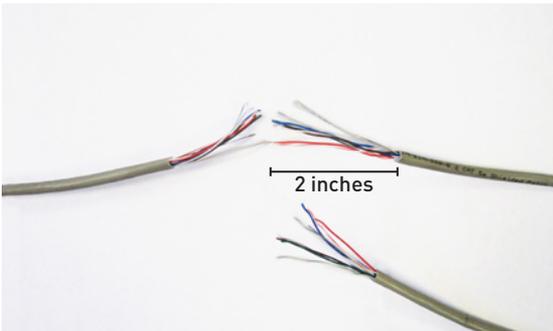


Connection Method

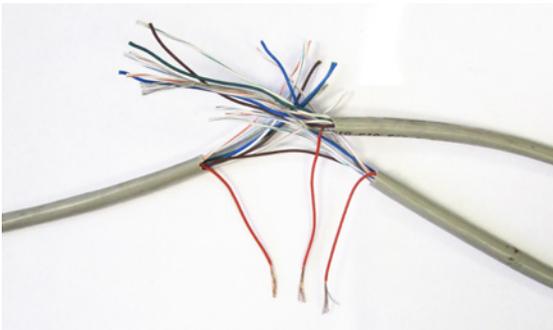
1. Take the incoming CAT5 from the network, the CAT5 from the fan, and the CAT5 going to the rest of the network. Give some slack (no more than 24") on each CAT5 to strip the wires and splice them together. Run the slack up towards the ceiling and back down in a horseshoe shape. **DO NOT roll the excess slack into a circle or coil because this creates a place for the network to pickup noise on the lines.**



2. Strip jacketing off the three CAT5 cables and separate each color wire leaving approximately 2 inches of each wire exposed including the drain/shield wire.

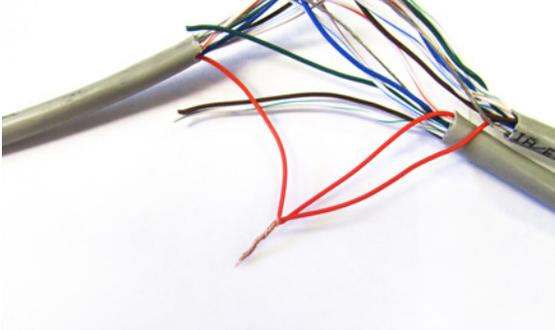


3. Strip approximately 1/2 inch off each color wire leaving the bare copper exposed.

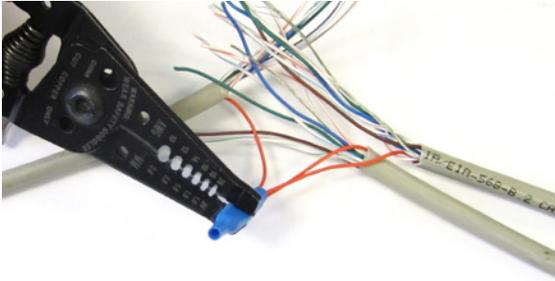


Connection Method

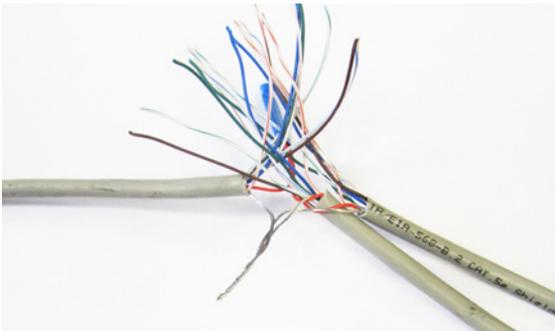
4. Twist the 3 wires of same color from each CAT5 together.



5. Place a gel filled bean crimp onto the end of the 3 wires and use a small crimper or pliers to crimp the bean tight on the wires.

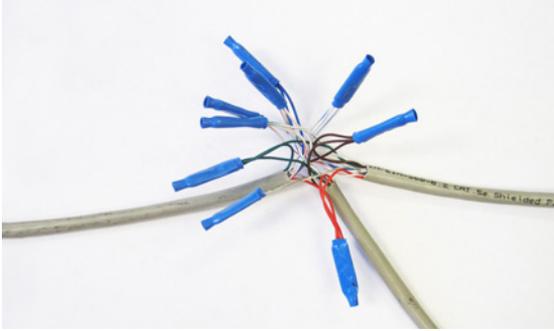


6. Double check that the 3 drain wire/bare wires are also crimped together as this is what continues the shielding throughout the network. The shielding and drain wire **MUST** be connected to Earth Ground at **only one point** of the cable run.



Connection Method

7. Repeat steps 3-5 for all the wires EXCEPT the Brown/White wire. **The Brown/White wire is only needed for wiring in a repeater.** Please refer to the repeater wiring diagram (pg.11) and instructions.

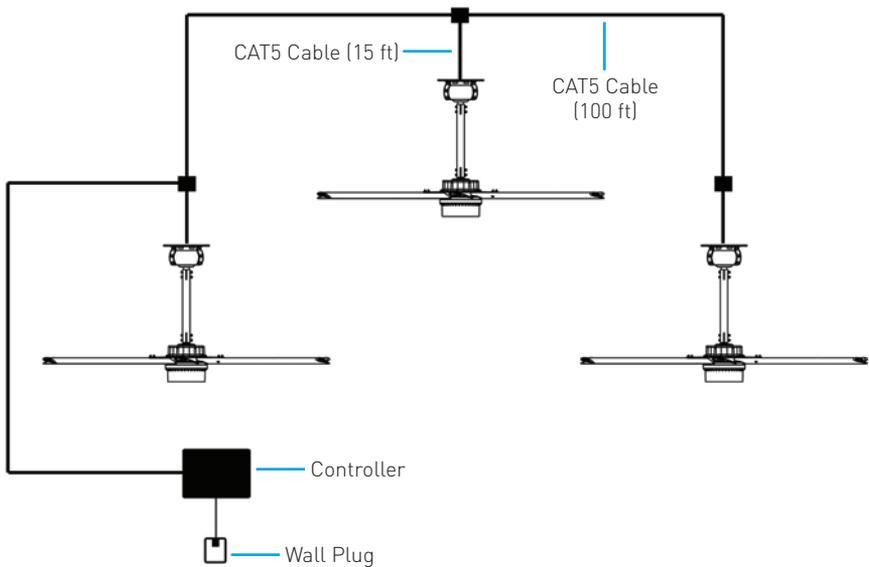


8. Once all the wires are crimped, carefully twist the wires up. Then fold them back and tape them up with electrical tape to clean up your wiring.



9. Make sure to tape or ziptie all 3 CAT5 lines to the structure to support the 3 way splice and provide strain relief.

Connect Fans To Network



Instructions:

1. Refer to the fan installation manual(s) for fan installation instructions. Fans that are ordered for networks are labeled with their assigned addresses. **Take note of the addresses and ensure that the fans are installed in the desired locations.**
2. Mount the controller in the desired location and apply power using the provided wall plug.
3. Connect all fans as described in the previous pages. Ensure that the 15 ft CAT5 cables are connected directly to the fans.

WARNING: FAILURE TO USE THE 15 FT CABLES CAN RESULT IN DAMAGE TO THE FANS.

4. Review safety and caution information in the fan installation manual(s) and apply power to all of the fans.

Home Screen

1. Power up the screen.
2. All fans on the network should appear* with individual icons on the home screen once the scan is complete. It is normal that the fans might be in a faulted state. To reset the faults, go to the control screen for each fan and hit the "Reset" button.
3. Prior to operating the fan, ensure that fan diameter is set. **The fan will not operate without proper diameter setting.**

12/2/2014 3:27:48 PM MacroAir

Fan Name: AirVolution-D 550/780

Fan Location:

Node Address:

Notes:

Size:

Serial #:

Panel:

Breaker:

Done

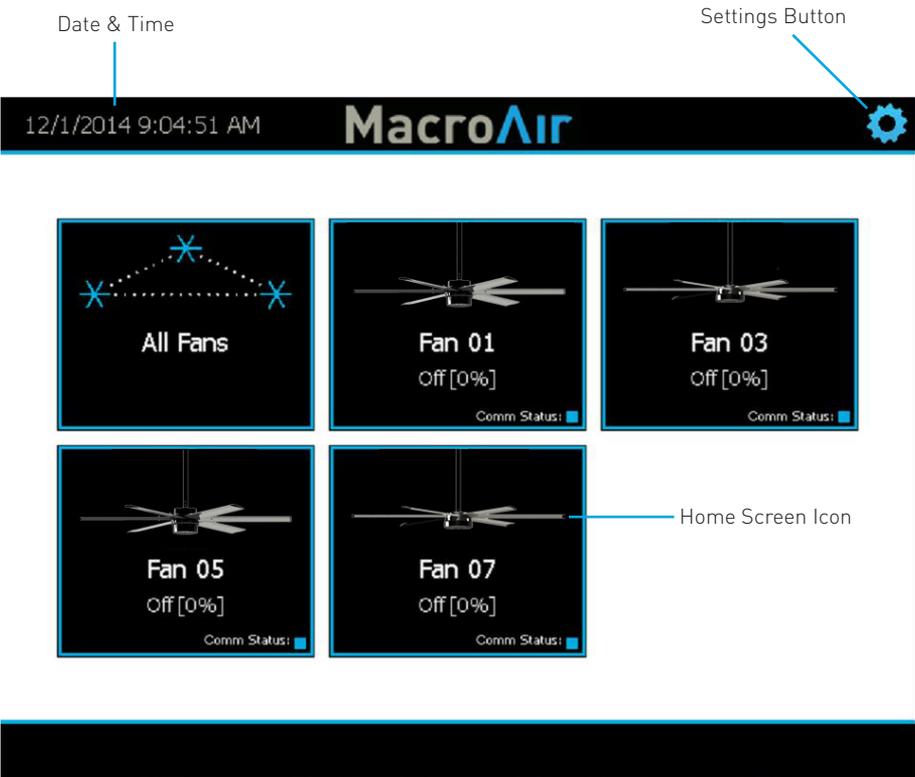
You can also add the following information:

- Fan Name: Allows the user to customize the name of the individual fan.
- Fan Location: Allows the user to customize the location of the individual fan.
- Notes: Allows the user to input miscellaneous notes regarding the individual fan.
- Serial # Input: This input is valuable in case of future service needs. It is highly recommended that the serial number for each fan is inputted.
- Panel Input: This input is valuable maintenance information.
- Breaker Input: This input is valuable maintenance information.

**If one or more of the fans is not present on the home screen, check the CAT5 splitter connections and ensure that all fans are powered on, then re-scan the network. Contact Technical Support for further assistance.*

Controller Home Screen

- Date & Time: Configurable in the settings screen. It is imperative that this is set properly if schedules are created for desired fan operation.
- Settings Button: Press to access the settings screen.
- Home Screen Icon: By default, an "All Fans" icon and an individual fan icon--one for each fan discovered on the network--will be displayed. Creating a group or groups will also create a home screen icon for the group or groups created. If more than 6 icons are present, navigation arrows will appear at the top and/or bottom of the home screen to allow for scrolling.



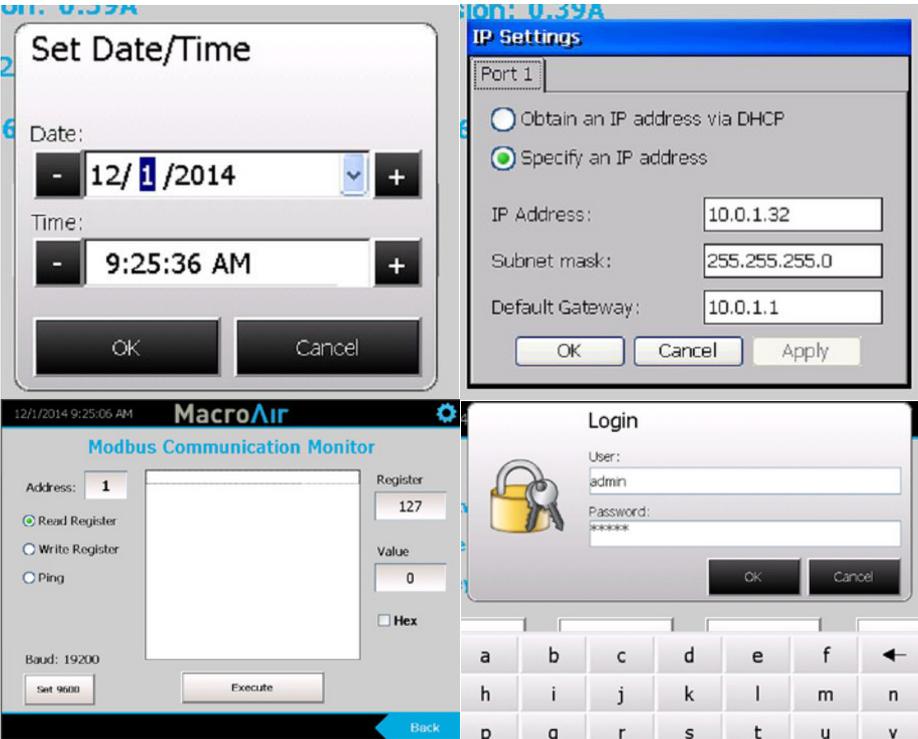
Settings Screen

The settings screen allows the user to set various options, create groups, create schedule-based tasks, troubleshoot issues, access administrative options, and establish remote access. (Refer to page 18 for images of the Date/Time, Ethernet, Comm and Login screens.)

- **Groups Button:** Allows the user to create groups for any combination of fans. Groups can be used when creating schedule-based tasks or for more convenient manual control.
- **Schedule Button:** Allows the user to create schedule-based tasks for individual fans, groups of fans, or all fans.
- **Login Button:** Allows for administrative login to gain access to administrative settings.
- **Ethernet Button:** Allows the user to configure ethernet-based settings for remote access (i.e. smart phone, computer, tablet, etc.).
- **Date/Time Button:** Allows the user to set the date and time for the system and schedule-based tasks.
- **Comm Button:** Provided for advanced diagnostics and configuration. Contact MacroAir Technical Support at 866-668-3247 for passwords and assistance.
- **Re-scan Network on Exit Checkbox:** If checked when the user exits the screen, the system will re-scan for changes to the network.



Date/Time, Ethernet, Comm and Login Screens



Schedule Screen

This screen allows the user to schedule tasks for automatic fan operation. Scheduling overlapping tasks will cause the tasks to interfere with each other if one or more of the fans are present on the overlapping tasks.

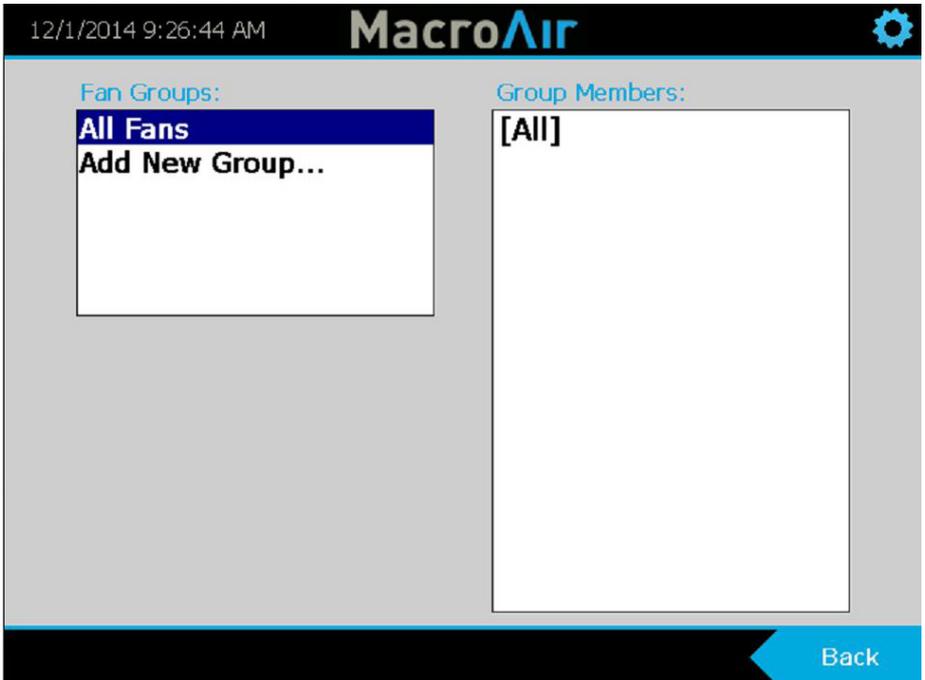
- Schedules Section: Shows existing tasks and allows the user to edit and add new tasks.
- Active/Inactive Button: Allows user to enable or disable a created task.
- Days of the Week Buttons: The red "x" in the lower right corner of one of these buttons indicates that the task will NOT run on that day. Clicking one of these buttons will toggle that day on and off.
- Start and End: The up and down arrows allow for the user to set the hour and minute (in 5 minute increments) that a task will start and end. The AM/PM buttons will toggle if clicked.
- Group or Fan Selection: This dropdown menu indicates which group or fan is selected to run with the selected task. (Modify groups in the group screen - pg 20).
- Speed Selection: This allows the user to set the speed that the fan or group of fans will run at when the task is running.
- Toggle Direction Button: Clicking this button will toggle the direction--forward or reverse--that the fan or group of fans will run in with the selected task.

The screenshot displays the MacroAir Schedules interface. At the top left, the date and time are 12/1/2014 9:29:29 AM. The MacroAir logo is centered at the top, and a gear icon is in the top right. On the left, a 'Schedules:' section lists 'Task 00' (highlighted), 'Task 01', 'Task 02', 'Task 03', and 'Add New Task...'. The main configuration area for 'Task 00' includes: a 'Name' field with 'Task 00' and an 'Active' status button; a row of day buttons (Sun, Mon, Tue, Wed, Thu, Fri, Sat) where 'Sun' and 'Sat' have red 'x' marks; 'Start' time set to 08:00 AM with up/down arrows; 'End' time set to 02:30 PM with up/down arrows; a dropdown menu for 'All Fans'; 'Speed' set to 50%; a 'Toggle Direction' button set to 'Forward'; and 'Cancel' and 'Accept' buttons at the bottom. A blue 'Back' button is located at the bottom right of the screen.

Groups Screen

By default, "All Fans" is the only pre-existing group and will be shown under the "Fan Groups" section.

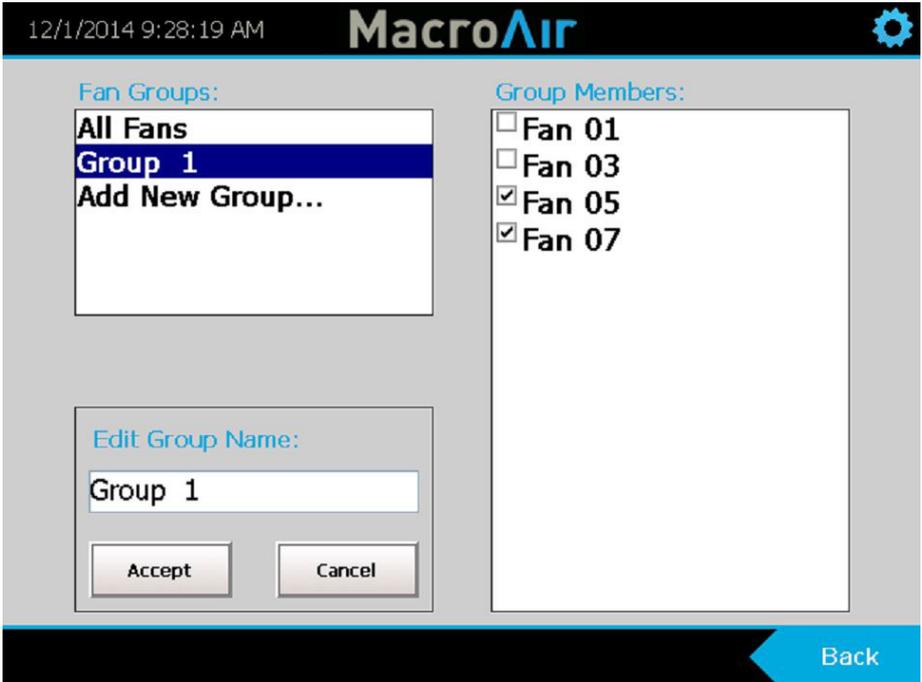
- Fan Groups: From here the user can view the existing groups, edit groups, or add new groups.
- Group Members: When a group in the "Fan Groups" section is highlighted, the "Group Members" section will be populated with the fans that are in that specific group.



Groups Screen

When Group is selected, the "Group Members" section will show all fans available on the network so that the user can pick which fans they would like to be included in the group.

- Edit Group Name: Allows the user to customize the name of the group.

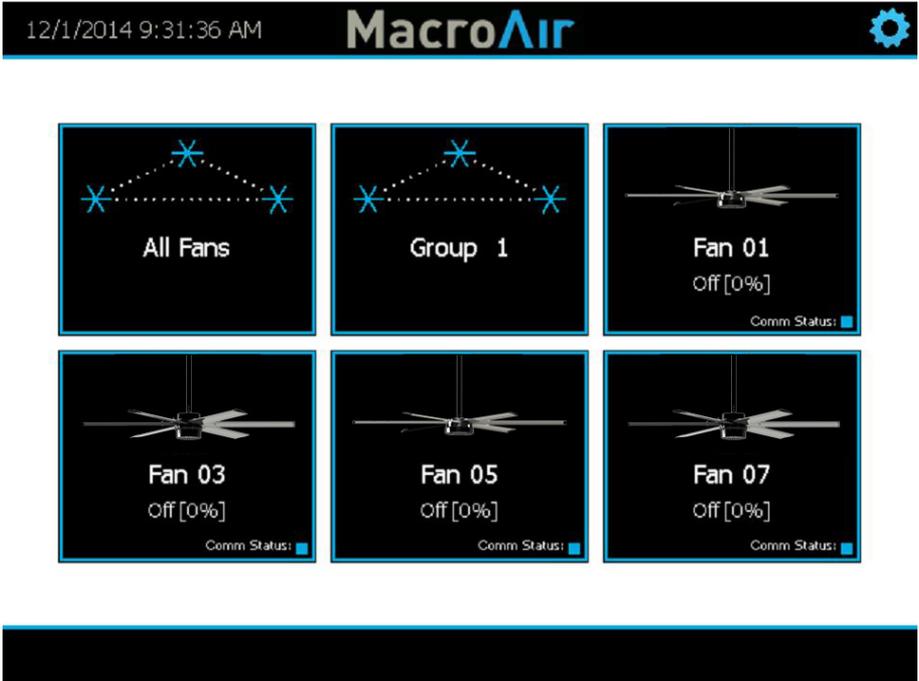


The screenshot displays the MacroAir interface for managing fan groups. At the top left, the date and time are shown as 12/1/2014 9:28:19 AM. The MacroAir logo is centered at the top, and a gear icon for settings is in the top right corner. The main area is divided into two columns. The left column, titled "Fan Groups:", contains a list with "All Fans", "Group 1" (highlighted in blue), and "Add New Group...". Below this is an "Edit Group Name:" section with a text input field containing "Group 1" and two buttons: "Accept" and "Cancel". The right column, titled "Group Members:", contains a list of fans with checkboxes: "Fan 01" (unchecked), "Fan 03" (unchecked), "Fan 05" (checked), and "Fan 07" (checked). A blue "Back" button is located in the bottom right corner of the interface.

Groups Screen

Groups Screen

Once a group has been created, a home screen icon will appear on the home screen. The group icons appear in the order that they were created.

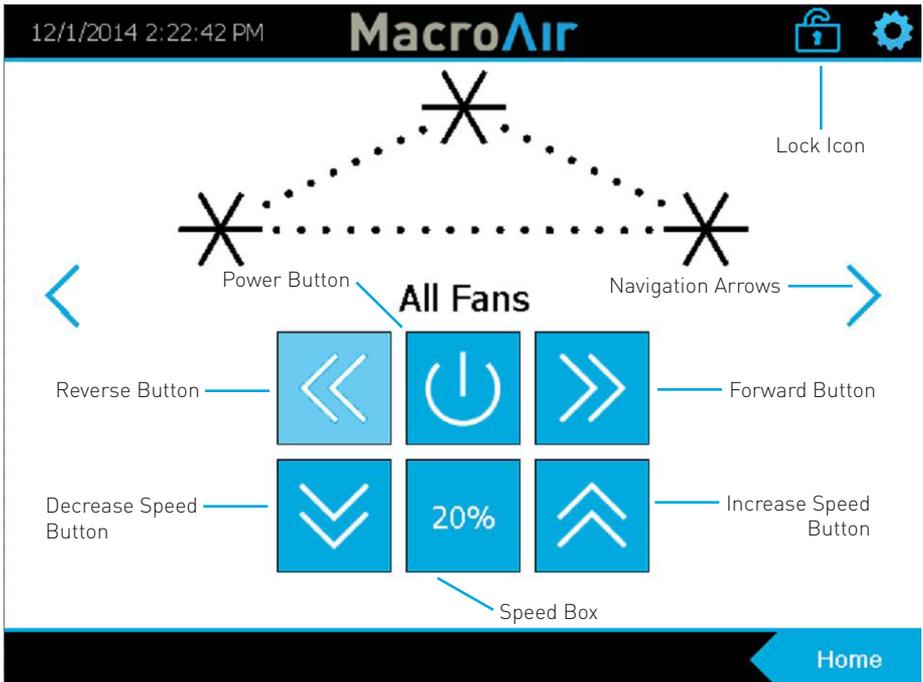


Fan Group Control Screen

Fan Group Control Screen

This screen allows the user to manually control the direction and speed of a fan group. This screen can be reached by clicking on the group's home screen icon.

- **Lock Icon:** Touching the lock icon will prompt the user to log in, unless they are already logged in. Once logged in, pressing the lock icon again will lock the group and prevent manual changes. Schedule-based tasks will NOT be affected by locking or unlocking manual group control.
- **Navigation Arrows:** These arrows allow the user to navigate through the groups and individual fan control screens in the order in which they appear on the home screen.
- **Control Buttons:** Clicking either the reverse or forward buttons will slow the group of fans down and the group will begin to operate in the direction specified. The decrease and increase speed buttons will adjust the group's speed. Holding either speed button will increase or decrease the speed in 5% increments. Momentary presses of either button will increase or decrease the speed in 1% increments. When the power button is clicked, it toggles the group off or on.
- **Speed Box:** Shows the user the commanded speed of the group.



Technical Support

For installation assistance, application questions, technical support & any other inquiries, please contact our Technical Support team at (866) 668-3247.

MacroAir
engineers of air™