

# REMOTE DISPLAY USER'S MANUAL



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## PROPRIETARY DATA

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# 1. OVERVIEW

The Remote Display can connect to any MicroFUSION or FUSION controller to view and change parameters on the Screen List. The Remote Display will display the Default Screen List when first connected to a controller. This list is quite extensive and can be cumbersome, therefore it is recommended to create a Custom Screen List using the Control Panel Software for a more practical experience.

**Note: This feature is only available on MicroFUSION firmware version 1.80.00 and FUSION firmware version 6.00.00 and later.**

The Remote Display is manipulated using five buttons found on the front of the device. This interface allows a user to browse through the Screen List to adjust parameters, view information and change MAC IDs of the slave device.

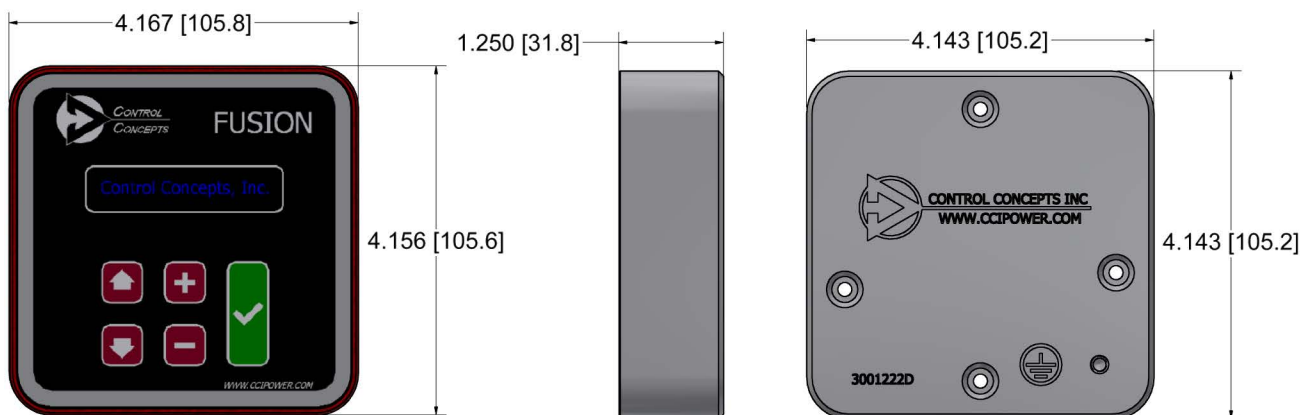
The Remote Display is able to communicate with up to 10 nodes across a network if the nodes are daisy chained together.

This manual will cover Installation, Basic Operation, and Setup of the Remote Display.

**Note: The Setup process will be more efficient if all networked controllers have been setup and configured before the Remote Display is connected.**



Wall mounted Remote Display



Rear housing used for remote mounting.  
Housing not used when mounting in a FUSION controller.

# 2. POINTS OF INTEREST

### DISPLAY SCREEN

A 2-Line Display that shows information about a selected parameter.

### MOVEMENT

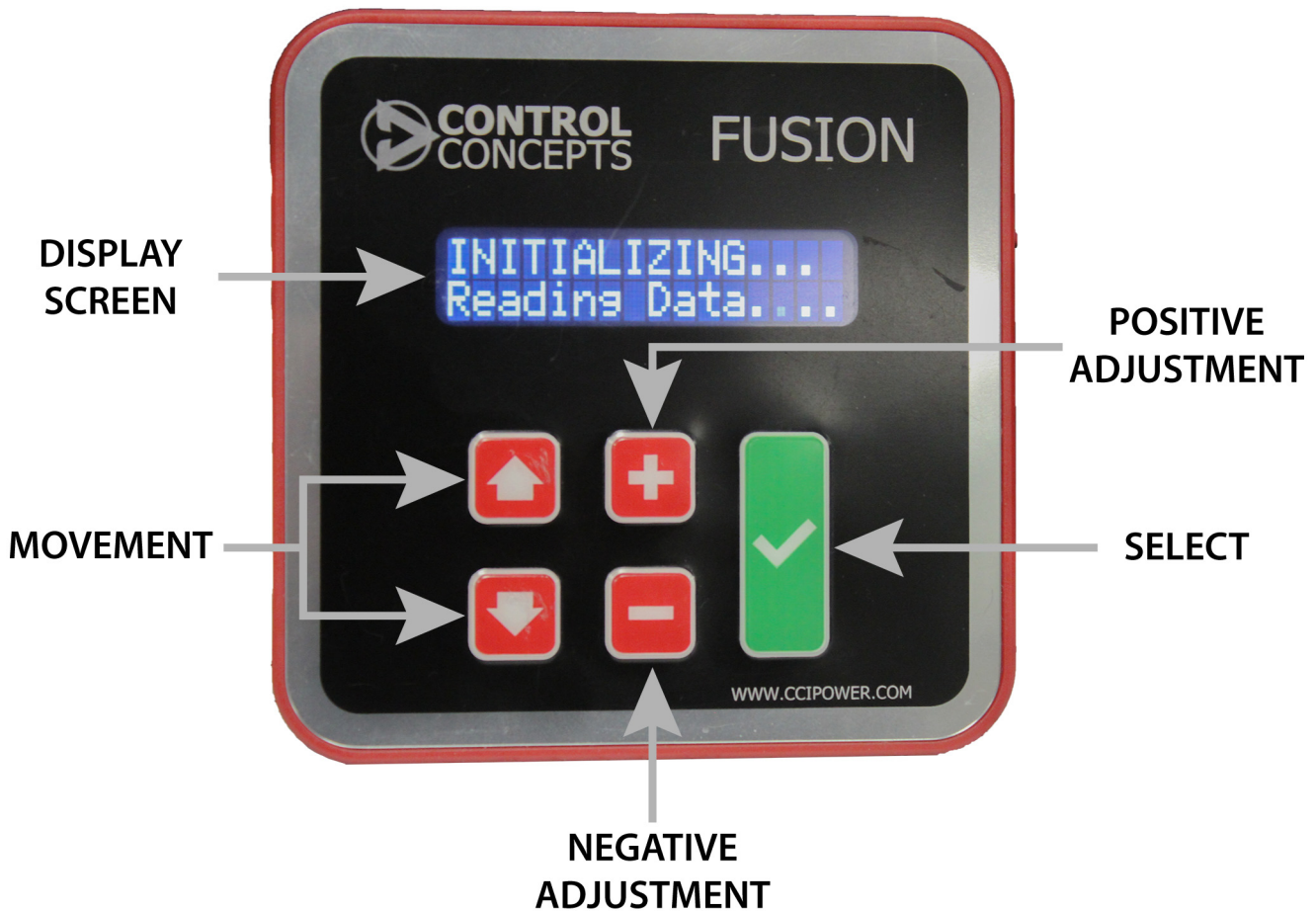
The Up/Down Movement arrows are used to navigate between parameters. In addition, when a parameter is selected the Movement arrows move the 2-Line Display cursor left or right to assist in setting the parameter value.

### SELECT

The green Select button is used to enter and exit parameters.

### POSITIVE/NEGATIVE ADJUSTMENT

The Adjustment buttons increase or decrease the value of parameter.



# 3. INSTALLATION

The Remote Display kit includes all necessary components (excluding knockout punch) to mount the Remote Display to the front of an electrical enclosure. This allows for easy viewing and adjustment of parameters and reduces costs by eliminating the need for external gauges.

The Remote Display meets CE and UL requirements. CE testing was conducted with a (25 Ft) Ethernet cable from the controller to the Remote Display. Contact the factory if you require a length longer than (25 Ft).

## Mounting Considerations

- Must be mounted on an enclosure with a smooth surface.
- Maximum panel thickness: 0.25 in [6.4 mm].

## 3.1 FUSION Mounting Procedure

### Mounting Kit Includes:

- (1x) Gasket
- (1x) Ferrite
- (1x) Remote Display Retainer
- (4x) Screws
- (1x) (5/25 Ft) Shielded Ethernet Cable
- (1x) Replacement Remote Display Cover

1. Remove the (4x) screws securing the lid (Figure 3.00).
2. Disconnect the Remote Display Ethernet cable from the controller (Figure 3.01)
3. Manipulate the (4x) retaining clips to remove the Remote Display from the lid (Figure 3.02).
4. Insert the Replacement Remote Display Cover into the lid (Figure 3.03).
5. Attach the lid to the controller using the (4x) lid screws.



Figure 3.00: Remove (4x) screws

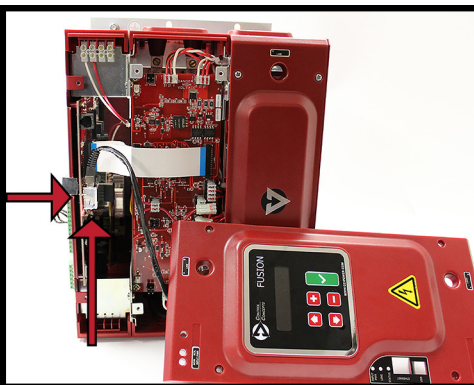


Figure 3.01: Remove Remote Display Cable

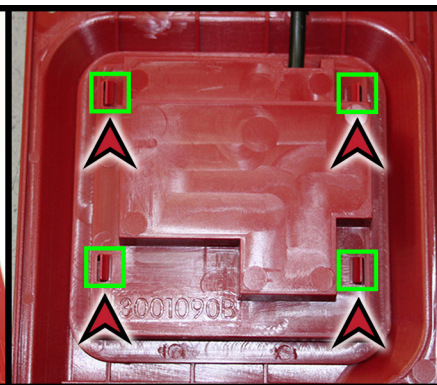


Figure 3.02: Placement of retaining clips



Figure 3.03: Insert Remote Display Cover



- Remove the (1 Ft) cable from the Remote Display. Run one end of the (5/25 Ft) Ethernet cable to the Remote Display connector on the side of the controller (Figure 3.04).
- Attach the other end of the Ethernet cable to the connector on the Remote Display. Place the ferrite as close to the connector as possible (Figure 3.05).

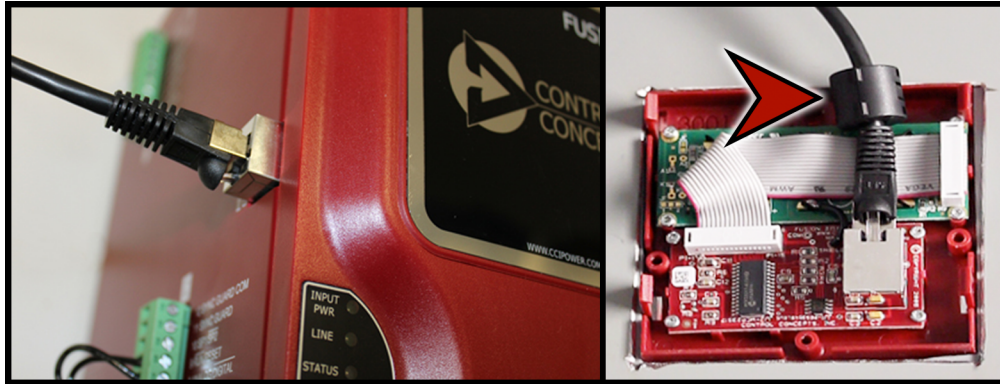


Figure 3.04: Attach Ethernet cable to controller

Figure 3.05: Check placement of ferrite

- Make a 1/4 DIN (3.63 in x 3.63 in [92.1mm x 92.1mm]) size hole in the cabinet (Figure 3.06).

Dimensions:  
Inches [mm]

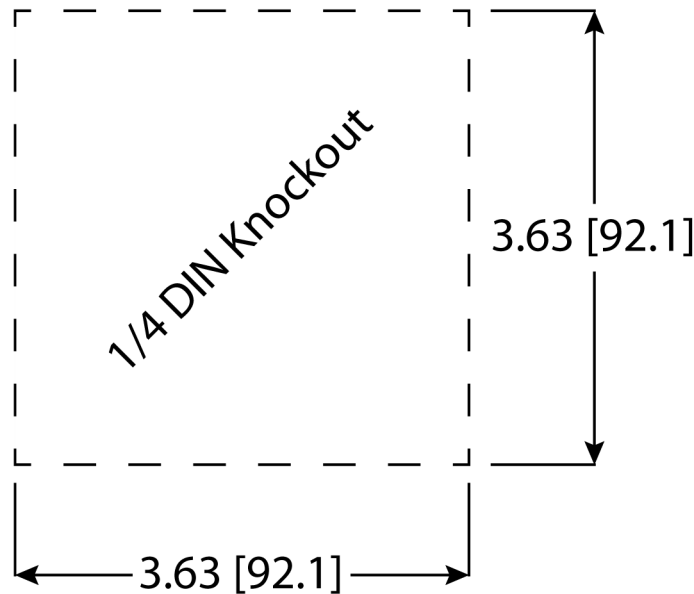


Figure 3.06: Knockout Dimensions

- Place the gasket on the back of the Remote Display. Make sure the gasket does not overhang the edges of the Remote Display. Place the Remote Display inside of the 1/4 DIN cutout of the cabinet with the Remote Display facing outward.
- Attach the Remote Display retainer with provided mounting screws. When tightening down the Remote Display make sure to apply equal pressure to each screw to ensure the gasket seals properly. When properly installed the gasket should be compressed 50% on all sides. If the gasket becomes damaged during installation please contact Control Concepts, Inc. for a replacement.

**- Installation Complete -**

## 3.2 microFUSION Mounting Procedure

### Mounting Kit Includes:

- (1x) Gasket
- (1x) Ferrite
- (1x) Rear Housing
- (4x) Screws
- (1x) (5 /25 Ft) Shielded Ethernet Cable

1. Run one end of the Ethernet cable to the CCI Link™ port on the side of the controller (Figure 3.07).
2. Attach the other end of the Ethernet cable to the connector on the Remote Display. Place the ferrite as close to the connector as possible (Figure 3.08).

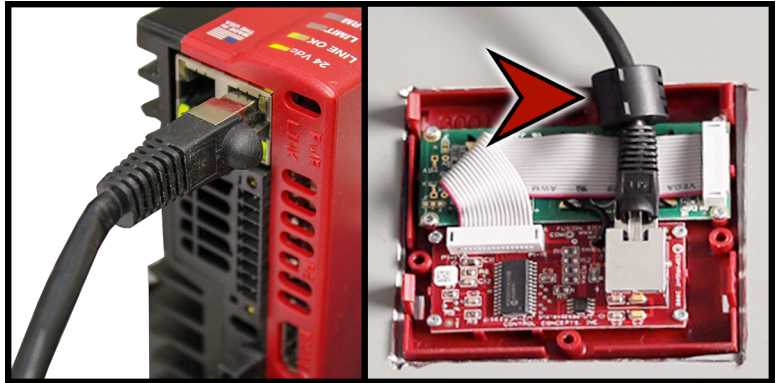


Figure 3.07: Attach Ethernet cable to controller

Figure 3.08: Check placement of ferrite

3. Make a 1/4 DIN (3.63 in x 3.63 in [92.1mm x 92.1mm]) size hole in the cabinet (Figure 3.09).

### Dimensions: Inches [mm]

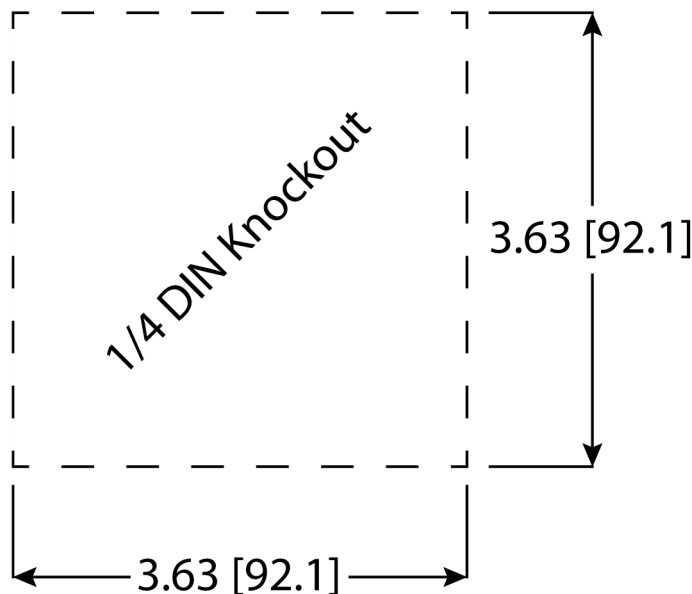


Figure 3.09: Knockout Dimensions

4. Place the gasket on the back of the Remote Display. Make sure the gasket does not overhang the edges of the Remote Display. Place the Remote Display inside of the 1/4 DIN cutout of the cabinet with the Remote Display facing outward.
5. Attach the Rear Housing with provided mounting screws. When tightening down the Remote Display make sure to apply equal pressure to each screw to ensure the gasket seals properly. When properly installed the gasket shall be compressed 50% on all sides. If the gasket becomes damaged during installation please contact Control Concepts, Inc. for a replacement.

**- Installation Complete -**



# 4. BASIC OPERATION

Review Chapter 2: Points of Interest for clarification of button keywords. The Remote Display is manipulated using a five button interface which allows a user to view/change parameters of a connected controller. The parameters shown on the 2-Line Display are called from a 'Screen List', Figure 4.00 shows examples of how those 'screens' (parameters) will appear.

### Auto Scroll

The controller will automatically start in Auto Scroll, which will cycle through the first 8 screens of the Screen List every few seconds. Auto Scroll can be enabled or disabled through Control Panel.

### Manual Scroll

Press any of the Movement arrows to force the 2-Line Display into Manual Scroll. To return to Auto Scroll, press and hold either Movement arrows for a minimum of two seconds. If the Remote Display idles for ten minutes in Manual Scroll, it will automatically return to Auto Scroll (if Auto Scroll is enabled).

### Movement

The Up and Down Movement arrows are used to scroll through different screens. If a settable parameter is selected, the arrows will move the cursor left or right on the 2-Line Display in order to change the values of the parameter.

### Changing Values

Settable parameters will display a dot in front of the parameter name. To adjust the value, press the green Select button to select the parameter. The dot will change to an arrow (Figure 4.01). Only one number can be adjusted at a time. Use the Movement arrows to move the cursor left or right in order to fully change the value and press the Plus or Minus Adjustment buttons to increase or decrease the value. After the desired value is reached, press the green Select button to accept the changes.

If the settable parameter has a star next to the displayed name, that indicates that the parameter has been locked. To unlock the parameter, enter the user set Parameter Lock or connect the controller to Control Panel. For more information, refer to the Control Panel User's Manual.

**Note: If the parameter entry is left unchanged, or the accept button is not pressed within 20 seconds the parameter will return to the original value.**

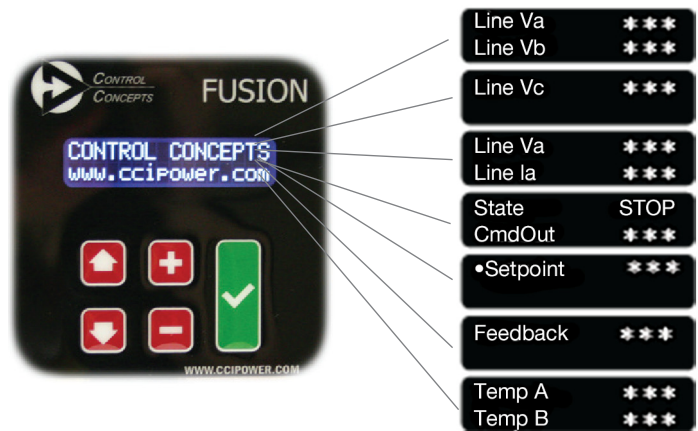


Figure 4.00: Screen List appearance



Figure 4.01:  
Top - Unlocked Settable Parameter,  
Middle - Selected Parameter,  
Bottom - Locked Parameter

## 4.1 Screen Lists

The Default Lists will show information such as line/load voltages, load currents and heatsink temperatures. If the controller is equipped with a communications card the Default Screen List will also show specific parameters pertaining to the communications settings. The Screen List can be customized by connecting the controller to the Control Panel Software. Within the Software any combination of screens can be programmed (limit 50 screens). Refer to the Control Panel User's Manual for details on customizing the Remote Display Screen List.

**Note: If the Custom Screen List is updated while the Remote Display is connected, the Screen List must be manually updated. Navigate to Client Display Configuration, select Update Data, and then select Screen List. The Remote Display will then update the current Screen List.**

## 4.2 Parameter Lock

A parameter lock can be setup to prevent anyone from changing parameter values using the Remote Display keypad. Refer to the Control Panel User's Manual for details on locking parameters on the Remote Display.

## 4.3 Remote Display Navigation

The Remote Display has two categories of screens: Remote Node Monitor and Client Display Configuration.

### 4.3.1 Remote Node Monitor

When first powered-on, the Remote Display will cycle through the first 8 screens of the default or user-set Screen List. The Remote Node Monitor displays the Screen List of the controller that is currently communicating with the Remote Display. Therefore, the available screens within the Remote Node Monitor will change when a new slave device is selected. To cycle back to the top of Screen List, hold either of the movement arrows for at least 2 seconds.

### 4.3.2 Client Display Configuration

The Client Display Configuration allows a user to access communication information. The Screen List of this section cannot be changed and will always show:

Screen	Description														
Server MAC ID*	MAC ID of the controller that is currently communicating with the Remote Display														
Locate MAC ID*	Flashes the LEDs of a controller that matches the selected MAC ID value														
Update Data*	Stores information from the controller that is currently communicating with the Remote Display. When selected, this screen will give access to:														
	<table border="1"> <thead> <tr> <th>Selection</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Screen List</td> <td>Updates Screen List (Remote Node Monitor)</td> </tr> <tr> <td>Tag Name</td> <td>Updates the displayed Tag Name</td> </tr> <tr> <td>Custom Text (Cust Text)</td> <td>Updates any custom text used</td> </tr> <tr> <td>Parameter Lock Mask (ParamLk Msk)</td> <td>Updates locked out parameters</td> </tr> <tr> <td>Analog Input MP Text (Ain MP Text)</td> <td>Updates custom text</td> </tr> <tr> <td>All</td> <td>Updates ALL information from the current controller</td> </tr> </tbody> </table>	Selection	Description	Screen List	Updates Screen List (Remote Node Monitor)	Tag Name	Updates the displayed Tag Name	Custom Text (Cust Text)	Updates any custom text used	Parameter Lock Mask (ParamLk Msk)	Updates locked out parameters	Analog Input MP Text (Ain MP Text)	Updates custom text	All	Updates ALL information from the current controller
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Screen List	Updates Screen List (Remote Node Monitor)														
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Parameter Lock Mask (ParamLk Msk)	Updates locked out parameters														
Analog Input MP Text (Ain MP Text)	Updates custom text														
All	Updates ALL information from the current controller														
Display MAC ID*	MAC ID of the Remote Display, can be set to a value from 1 - 63														
Serial Number	Serial Number of the Remote Display														
Network Status	Displays current Network Status in a binary format. See Section 4.3.3 for more information.														
Node Count	Displays the number of successfully connected controllers														
On-Line MAC ID	Displays and cycles through all the MAC IDs of successfully connected controllers														
Software ID / Version	Displays the current Software ID and Version of the Remote Display														

\* = screen/parameter can be user manipulated

### 4.3.3 Network Status [MP 26]

[MP 26] Network Status	
Units:	N/A
Binary Format:	xxxxxxx
Representation:	
BIT	
7	Buss-Off: The Remote Display is Off-Line / In Error
6	Bus - Passive: The Remote Display has detected network errors, but is not Off-Line
5	DUP MAC: The Remote Display is Off-Line due to another node having the same MAC ID
4	Timeout: The connection with the server node timed out
3,2	Not Used
1	An explicit connection has been established with the server node
0	The Remote Display is on the CCI Link™ network with another node

### 4.3.4 Remote Display on a Network

There are a few ways to identify which controller is currently communicating with the Remote Display on a Network:

#### Option 1: Locate MAC ID

Using the Remote Display, navigate to the Client Display Configuration and select Locate MAC ID. Then, enter the MAC ID of the node that needs to be identified and press the green Select button to initialize the feature. The node matching the entered MAC ID will begin to flash its LEDs.

#### Option 2: Server MAC ID

Using the Remote Display, navigate to the Client Display Configuration and select Server MAC ID. This screen will display the MAC ID of the current slave node. Selecting this screen will enable the user to change the value of the MAC ID. Changing the value will change the slave node to the matching MAC ID.

#### Option 3: Controller Tag Name

If the controllers Custom Screen List has the Controller Tag Name screen enabled, then the Remote Display can view the tag name through the 2-Line Display. Using the Remote Display, verify that the Remote Node Monitor is selected. Then, scroll through the Screen List using the Movement arrows until the tag name appears on the 2-Line Display. The Remote Display will not display “Controller Tag Name”, only the Tag itself.

# 5. SETUP

Setup for the Remote Display can be completed in three easy steps.

## **Step 1: Screen List**

- Connect the controller to Control Panel and verify that the MAC ID is unique on the network. If the controller has not yet been setup, refer to the appropriate User's Manual.
- Navigate to the Display category and customize the Screen List. Refer to the Control Panel User's Manual for more information on Custom Screen Lists.

## **Step 2: Connect and Power**

- If the Remote Display is being utilized in a Handheld Remote Display kit, connect an Ethernet Cord from the Handheld Display kit to the desired controller.
- If the Remote Display is to be mounted in an enclosure or wall mounted, refer to Chapter 3: Installation.
- Verify that the Remote Display is connected to a controller and power is applied.

## **Step 3: MAC ID**

- Using the Remote Display, navigate to Client Display Configuration.
- Within Client Display Configuration, navigate to Display MAC ID.
- Change the MAC ID to a unique value from 1 - 63, make sure that the Remote Display MAC ID does not match any controller on the network.

The Remote Display can now be used to monitor/change any parameters that were set in the Custom Screen List.

## 6. FAQ / COMMON ERRORS

### Are the Remote Display cables in the same wiring path as other voltage carrying wires?

No. The Remote Display is powered and has interaction with the connect controller only through the shielded Ethernet cables.

### Why doesn't the Remote Display turn on?

1. Check the supplied power to the controller or network.
2. Verify that the P1 (1-10) Command Connector Pin 8 (/common) has +5VDC supplied.
3. Check connections of the Ethernet Cable.

### Screen List on Remote Display does not match programmed Custom Screen List

Navigate to the Client Display Configuration on the Remote Display, and select the Update Data screen. Then, select Screen List. This will update the Screen List stored on the Remote Display with the Screen List from the slave device.

### Verify Ferrite Installation

The Ferrite must be installed as close to the Remote Display connector as possible.

**Note: The Ferrite is the black ring sent with the Remote Display Kit.**



# APPENDIX A: PART NUMBERS

Remote Display Kit		
Cable Length	MicroFUSION	FUSION
5 Ft	SMAUFUSION - RDK5	SMAFUSION - RD5
15 Ft	SMAUFUSION - RDK15	SMAFUSION - RD15
25 Ft	SMAUFUSION - RDK25	SMAFUSION - RD25

Ethernet Cables		
Length	MicroFUSION	FUSION
5 Ft	0058007 - 0050 - 05	0058003 - 0050 - 05
15 Ft	0058007 - 0050 - 15	0058003 - 0050 - 15
25 Ft	0058007 - 0050 - 25	0058003 - 0050 - 25