SERIES 5100

INSTALLATION & SPECIFICATION GUIDE

ITEM NO: A5100-7010
REVISION DATE: 10/07

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Limited Warranty Agreement

Your Microframe System is warranted against failure due to defects in workmanship or material for a period of one (1) year from the date of purchase. Microframe Corporation will repair or replace any defective unit. Obvious abuse or mishandling of the unit is NOT covered by this warranty.

Merchandise Return

If your Unit does not work satisfactorily, please give us a call. We may be able to clear up the problem by phone. If it becomes necessary to return your Unit to the factory, please observe the following:

1. Place Unit in a sturdy box with sufficient packing material.

2. If requested, include the AC power adapter. It is not necessary to return the cable and connectors unless they are the problem.

3. Return the system insured and prepaid. Microframe is not responsible for shipping damages and losses on returned Units.

Warranty Service

For warranty service, please contact Microframe toll-free at (800) 635-3811. A technician will gladly assist you.

Assistance

For any product assistance or maintenance help, contact Microframe by either calling 1-800-635-3811 or e-mailing us at: support@microframecorp.com.

Safety

Do not install substitute parts or perform any modification to the product without first contacting Microframe.

Warning

All power adapters, line cords, and electrical equipment should be kept out of the reach of children and away from water. (If you are installing cable in an air plenum area, such as a drop ceiling used for air return, you must use plenum-rated cable. The cable supplied from Microframe is rated CL2 and is approved for indoor installation everywhere except plenum areas.)

Life Support Policy

Microframe's products are not authorized for use as components in life support devices or systems without the express written approval of the president of Microframe Corporation. As used herein:

1. Life support devices or systems are defined as systems which support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user or any one depending on the system.

2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Disclaimer

We constantly strive to improve our products. Specifications are subject to change without notice.

Microframe Corporation
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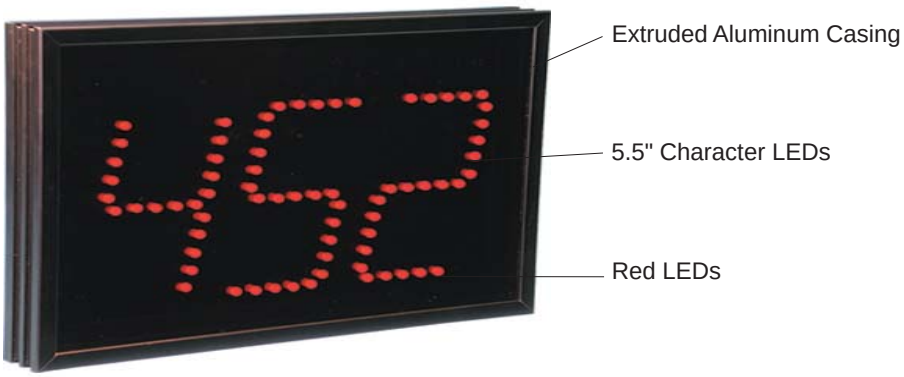
Parts and Features

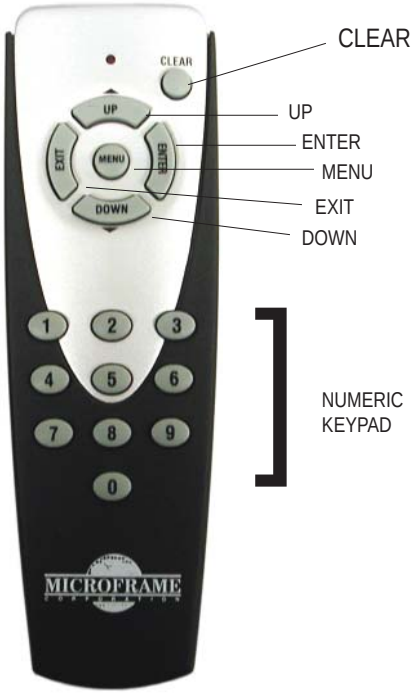
Parts List:

1. Display (A)
2. Remote (B) Optional
3. Push Buttons (C)
4. 100' Wire (not pictured)
5. Power Adapter (not pictured)
6. Power Adapter Wire (not pictured)
7. Manual (not pictured)
8. Screwdriver (not pictured)

(A)



(B)



(C)

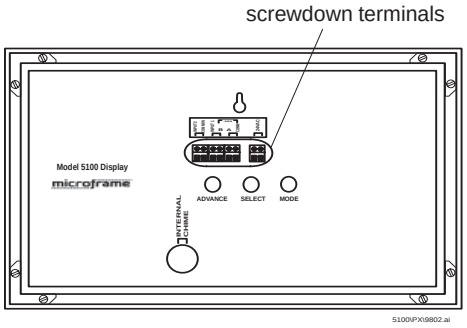
Getting Started

The 5100 system is preset at the factory to work as a Take-A-Number system. Simply make the connections as described below, read the brief operating instructions, and you should be ready to go.

5100 Display Installation Procedures

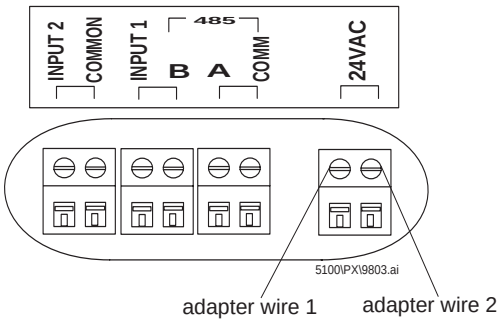
Step 1: Screwdown Connectors

All wire connections to Microframe displays are made with screwdown terminals located on the back of the display.

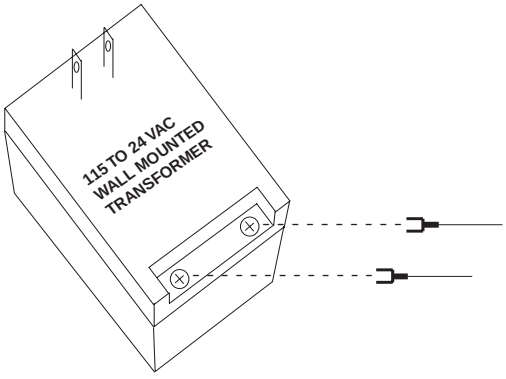


Step 2: Connecting Power

To connect power to the "24VAC terminal," first loosen the terminal's screw. Then push the stripped end of the power adapter wire into the opening in the side of the terminal. Tighten the screw onto the wire. Check that the wire is secure in the terminal by lightly pulling on it.



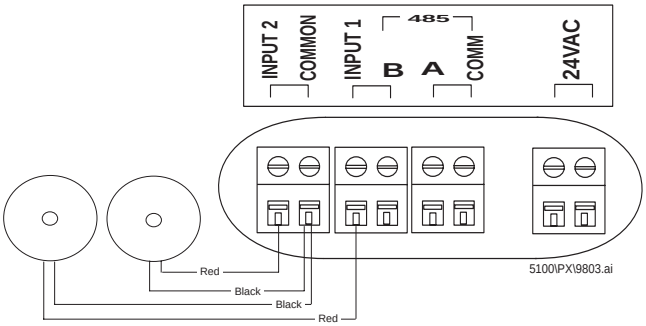
To connect the power adapter wire to the wall mounted transformer, first loosen the screwdown terminals. Next, slide one spade connector under each terminal. Lastly, tighten each screw onto the spade connectors.



Step 3: Push Buttons

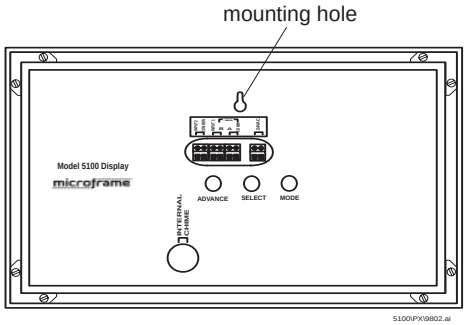
*****Please Note***** Only connect the push button wires to the screwdown terminals when the power to the display is "OFF."

From the provided wire, cut to length two pieces of wire, one for each button. For each wire, connect one end to a brass push button. Place the two black conductors (one from each wire) under the terminal labeled "common." Put the red conductor from one wire under the "Input 1" terminal. Put the remaining red wire from the other wire under the input 2 terminal.



Step 4: Hanging Display

The display is manufactured to hang on the wall like a picture. For aesthetic purposes, you may wish to run the wiring in a wall or raceway.



Step 5: Powering the Display

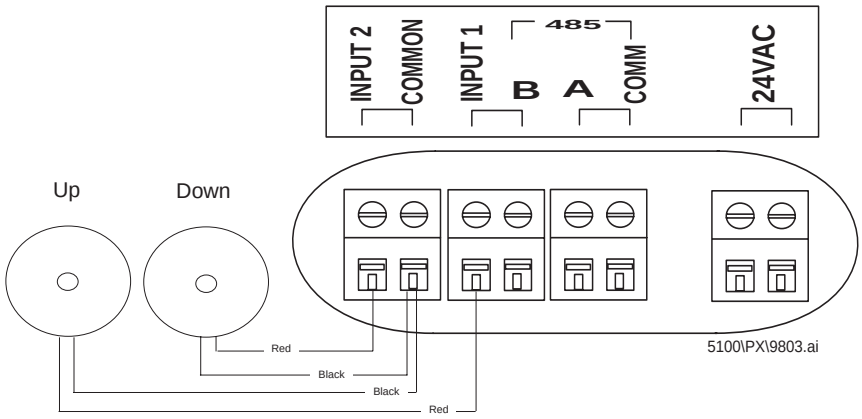
Plug the power adapter into an AC outlet. The display LEDs should now be illuminated and show numeric characters. The system is now operational.

*****Please Note***** To avoid damaging this product, please disconnect power before performing any service. To ensure proper disconnection, the power adapter must be unplugged from the AC outlet.

Using Your Remote or Push Buttons

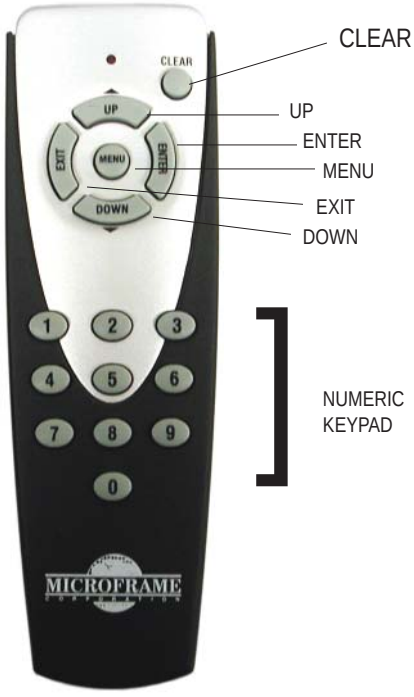
2.1 PUSH BUTTONS

Press input 1 button to count up.
Press input 2 button to count down.
Press both to reset to zero.



2.2 REMOTE CONTROL (Optional)

Although the system works with most Phillips (RC5) remotes, Microframe remotes are specifically designed to work with these displays.



Multi-Display Systems

Introduction

Overview

The 5100 Series displays allow multiple displays to work together. The primary display is referred to as the "master" display. Other displays controlled by the master are referred to as "slave" displays. Slave displays get their information from the master via 485 communications (Terminals A, B, COMM).

Applications

Take-A-Number Systems (Standard)

To have multiple displays all showing the same number in a Take-A-Number system, simply connect the displays as shown in the wiring diagrams. You may wire push buttons to any of the displays in the system. Pushing the buttons connected to any of the displays will cause the numbers to change on all of the displays. **No programming is necessary for this option.**

Multi-Window Service System

A Multi-Window Service System is a Take-A-Number system with the ability to have displays over multiple service counters. Each service counter display can show the number of the customer that is actually being served rather than the highest number. Because this is a complex configuration, there is an entire section of the manual dedicated to this topic. Please see "Multi-Window Service System" for further information.

Wiring Considerations

Connect slave displays to the master with 3- or 5-conductor wire. The communications bus requires three conductors. Communication runs can be up to 3,000 ft. long. Five conductor wire [22 AWG] provides two additional conductors used to carry power. As such, it is suitable for short power runs. For longer runs, use 3-conductor cable. On these longer runs, each display may be powered seperately, or the displays may be broken up into groups powered by one adapter. For powering a group of displays, 18 gauge, 2-conductor wire is recommended for the power bus.

Power Considerations

Maximum Number of Displays using a 0.9A Adapter

		2-Digit	3-Digit
200 ft	22AWG	4	3
	18AWG	8	5
500 ft	22AWG	2	1
	18AWG	5	3

Maximum Number of Displays using a 1.2A Adapter

		2-Digit	3-Digit
200 ft	22AWG	7	5
	18AWG	13	9
500 ft	18AWG	8	5

Maximum Number of Displays using a 2.5A Adapter

		2-Digit	3-Digit
200 ft	22AWG	11	7
	18AWG	20	13
500 ft	18AWG	11	7

Multi-Window Service System (MWSS)

System Overview

A Multi-Window Service System is an advanced Take-A-Number system. In a typical MWSS application, there are several clerks at a service counter. All of the clerks are serving a "pool" of customers with sequentially numbered tickets. The system can be best understood by studying the concept drawing on the next page.

There are three types of displays shown in the concept drawing. The 5100 Series displays can be set to any of these types using the programmable options.

Lobby Master

The "Lobby Master" display shows the highest number being served. There can only be one "Lobby Master" per system.

Lobby Slave

The "Lobby Slave" displays show the same number as the "Lobby Master." You can have as many "Lobby Slaves" as you need.

Window Slave

"Window Slave" displays show the number currently being serviced by a clerk. You can have as many "Window Slave" displays as you need. Push buttons are attached to each window slave display.

System Operation

Push buttons are generally connected to the window slave displays. When the clerk pushes the button connected to the window slave, the lobby master and lobby slave displays will increment by one. The window slave, whose button was pushed, will show the same number as the lobby master. Other window slaves will not change. In this way customers in the waiting area will be able to see that their number is being called and see which clerk to go to for service.

Setting Up the System

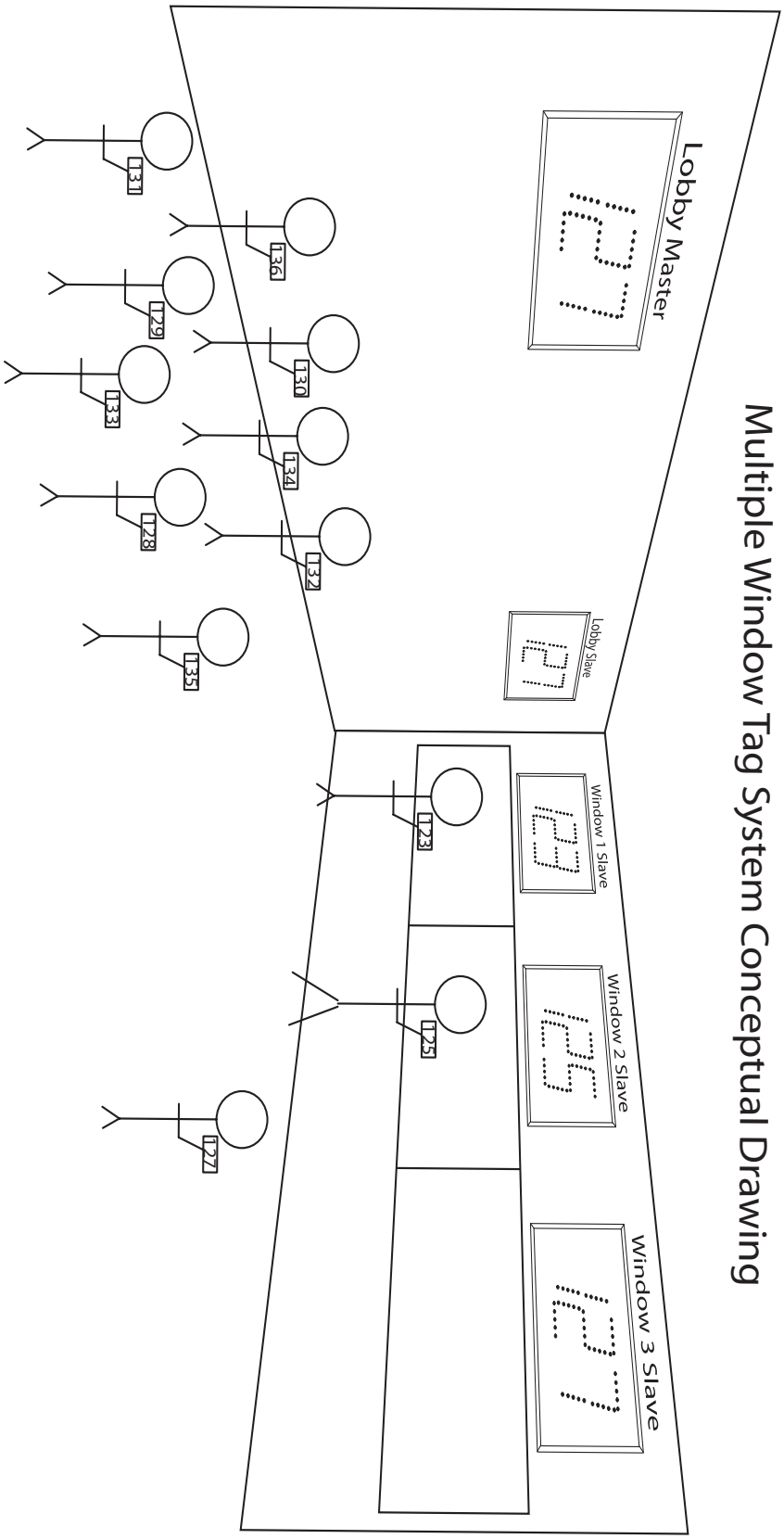
To set up a Take-A-Number System, first wire the system as shown in the wiring diagrams. Next, program the display to the appropriate value in Area 1. Setting Area 1 to a 4 will cause the display to be a lobby master; setting Area 1 to a 5 will cause the display to be a lobby slave, and setting Area 1 to a 6 will cause the display to be a window slave. See the "Setting Programmable Options" section for details on how to change these values.

All displays may be hung on the wall like a picture frame.

Special Case MWSS

In some cases, it may be necessary to have two window slave displays showing the same number. For instance, each service window has one display facing the customer and another display facing the clerk, so that the clerk can see the number they are about to serve. In this case all of the window slave displays will have to be set to "MWSS Slave Manual Address." This is done by setting Area 1 to a value of 7. In addition, each window slave display will have to be assigned an "address." This is done by setting the values of areas "8" and "9." Window slave displays with the same address will show the same number. For details on setting the values of these areas, see the section "Setting the Programmable Options."

Multi-Window Service System Concept



Master Detailed Instructions

The Take-A-Number Master shows the current number being served. This is the default mode of operation.

Set Display to Master Mode

Push Buttons

Press [MODE] then press [ADVANCE] until you see "14." Press and hold the [MODE] button for 3 seconds to save the change.

Remote Control

Press [MENU] "4" [ENTER]. The display is now in Master mode.

Operation

Count Up

Push the button wired as the "count up" button or push the "Up" button on your remote control.

Countdown

Push the button wired as the "countdown" button or push the "Down" button on your remote control.

Setting a New Number

If you have a remote control, enter the desired number on the remote and then press the "Enter" button to accept that number. If you have push buttons, push and hold the "Count Up" button until the 10s digit begins to blink. You may now use the "Count Up" button to change the 10s digit, or continue holding the button down until the next digit on your display begins to blink. You can use this method to set all of the digits on your display.

Reset to Zero

If you are using the remote control, press the "Clear" button to reset the displays to zero. If you have both the "Count Up" and "Countdown" push buttons connected, then pushing them both at the same time will cause the display to reset to all zeros.

Chime

This display is equipped with an internal chime. By default the chime is off. When activated, the chime will sound with every number change.

Push Buttons

Press [MODE] until you see "50." Press [ADVANCE] to "51" or "52." Press and hold the [MODE] button for 3 seconds to save the change.

Remote

Press [MENU], then [UP] until you see "50." Type "1" or "2." Press [Enter] to save the change.

Slave Displays

The Master coordinates numbers for both Lobby and MWSS slave display. To form a system, each display must connect to a common 3-wire communications bus. For wiring details see the Appendix.

Lobby Slave Display Options

The Lobby Slave display shows the same number as the Lobby Master.

Set Display to Lobby Slave Mode

Push Buttons

Press [MODE] then press [ADVANCE] until you see "15." Press and hold the [MODE] button for 3 seconds to save the change.

Remote Control

Press [MENU] "5" [ENTER]. The display is now in Lobby Slave mode.

Automatic Arbitration

Out of the box, these displays will automatically negotiate one Master with the remaining displays assuming Lobby Slave status. This means you do not need to set displays to Lobby Slave mode unless you wish to guarantee the position of the Master display. When displays change their status they will indicate the change as "P4" (Master) or "P5" (Lobby Slave).

Operation

Operation of the slave is identical to that of the Master display, including the use of push buttons and remote control.

To operate as a slave, this display must be connected to the master.

The MWSS Slave Display shows the current number being served at the clerks window. Manual address mode allows multiple window displays to have the same address, and thus show the same number.

Set Display to MWSS Slave Mode

Push Buttons

Press [MODE] then press [ADVANCE] until you see "16." Press and hold the [MODE] button for 3 seconds to save the change.

Remote Control

Press [MENU] "6" [ENTER]. The display is now in MWSS Slave mode.

Set Display to MWSS Slave Manual Address

Push Buttons

Press [MODE] then press [ADVANCE] until you see "17." Press and hold the [MODE] button for 3 seconds to save the change.

Remote Control

Press [MENU] "7" [ENTER]. The display is now in MWSS Slave Manual Address mode.

Operation

Note: MWSS Slaves ignore count up/down commands from the remote, to avoid having all displays respond to the remote.

Count Up

Push the button wired as the "count up" button. The master will count up by one and this display will show the new number.

Count Down

Push the button wired as the "count down" button. This is useful if the clerk accidentally advances the count. This 'undo' feature is not available after another MWSS display takes a number.

Display Blanking

When a clerk goes on break, they may blank their display by holding the "count down" button for 3 seconds. The display will no longer be blank when any button is pressed.

Setting the Programmable Options

Overview

Programmable options are separated into nine 'areas.' Each area has an assigned 'value.' When in programming mode, the area is denoted by the tens digit, and the value is denoted by the ones digit.

Setting Options: Programming Buttons

Programming Buttons: These are the three function buttons on the back of the Model 5100 display designed to program your system and are labeled "Mode," "Select" and "Advance."

To enter programming mode, press the [MODE] button once. You will see the first area along with its value. Continue tapping the [MODE] button until you reach the desired area. To set the value on an area, tap the [ADVANCE] button until you see the desired value. To save changes press and hold the [MODE] button for about three seconds. To discard changes do nothing and the display will revert to the last settings.

Setting Options: Remote Control

Remote Control: This is the TV-style remote control which you may purchase as a option with your display to program and/or operate your system.

To enter programming mode, press the [MENU] button. Press the [UP] and [DOWN] buttons to navigate between areas. To set a new value, simply type that number on the remote. To save changes press [ENTER]. To discard changes press [EXIT].

Options Table Summary

(Options in **bold** are the default settings.)

1 Operation
- 1.4 Master
- 1.5 Lobby Slave
- 1.6 MWTS Slave
- 1.7 MWTS Slave Manual Address

2 Display Size
- 2.2 2-digit
- 2.3 3-digit

3 Zero Suppression
- 3.0 Off
- 3.1 Suppress Leading Zeros

4 IR Lockout
- 4.0 Ignore Remote
- 4.1 Enable Remote

5 Internal Chime
- 5.0 Off
- 5.1 Single
- 5.2 **Double**

6 Chime Volume
- 6.0 Low
- 6.1 Low
- 6.2 Low
- 6.3 Low
- 6.4 Low
- 6.5 High
- 6.6 High
- 6.7 High
- 6.8 High
- 6.9 High

7 External Chime
- 7.0 Off
- 7.1 0.1s
- 7.2 0.2s
- 7.3 0.3s
- 7.4 0.5s
- 7.5 1.0s
- 7.6 3.0s
- 7.7 5.0s
- 7.8 10.0s
- 7.9 20.0s

8 Address Tens
- 8.0 0
- 8.1 1
- 8.2 2
- 8.3 3
- 8.4 4
- 8.5 5
- 8.6 6
- 8.7 7
- 8.8 8
- 8.9 9

9 Address Ones
- 9.0 0
- 9.1 1
- 9.2 2
- 9.3 3
- 9.4 4
- 9.5 5
- 9.6 6
- 9.7 7
- 9.8 8
- 9.9 9

Options Definitions

This section gives additional information about each option introduced in the "Options Table."

Setup

1 Operation

This area determines the operation of the display.
1.4 Master - the standard TAN mode.
1.5 Lobby slaves - will display the same number as the master. 1.6 MWTS slave - used over counter windows. 1.7 MWTS slave Manual Address - allows a secondary display to be set up inside a counter window to echo the display outside the window.

2 Display Size

The display looks at this area to see how many digits it has. It is set at the factory to match the number of digits of the display; i.e. a 3-digit display would have a "3" in this area.

3 Leading Zero Suppression

The value in this area determines whether or not your display will show leading zeros; i.e., the difference between seeing "000001" on your display and seeing "1."

3.0 - Shows leading zeros
3.1 - Hides leading zeros

4 IR Lockout

This option causes the display to ignore the remote control. This helps prevent accidental changes to displays in a multi-display installation. To toggle IR Lockout using the remote, hold the [EXIT] button for 5 seconds. The display will indicate the change by showing "ir0" or "ir1."

4.0 - Display will ignore the remote
4.1 - Display will respond to the remote

5 Internal Chime

This area controls how many times the internal chime will sound.

5.0 – Off; no chime
5.1 – Single; chime once
5.2 – Double; two chimes

6 Chime Volume

The internal chime can be set to half or full volume. 0-4 Low, 5-9 High.

7 External Chime

This area controls the duration of the external chime driver circuit. The external driver can be activated from 0 to 20 seconds.

Note: The external chime option must be specified at the time of order. Dry contact (relay) and AC load (Triac) drivers are available. The maximum input voltage is 24V AC\DC. Typical uses include a triac driving a doorbell chime, and a relay sending a control signal to another device.

8 Display Address "Tens" Digit

This is used in the Multi-Window Service System configuration to set the address of Window Slaves; it stores a value from 0-9. See the Multi-Window Service System for further details.

9 Display Address "Ones" Digit

This is used in the Multi-Window Service System configuration to set the address of Window Slaves; it stores a value from 0-9. See the Multi-Window Service System for further details.

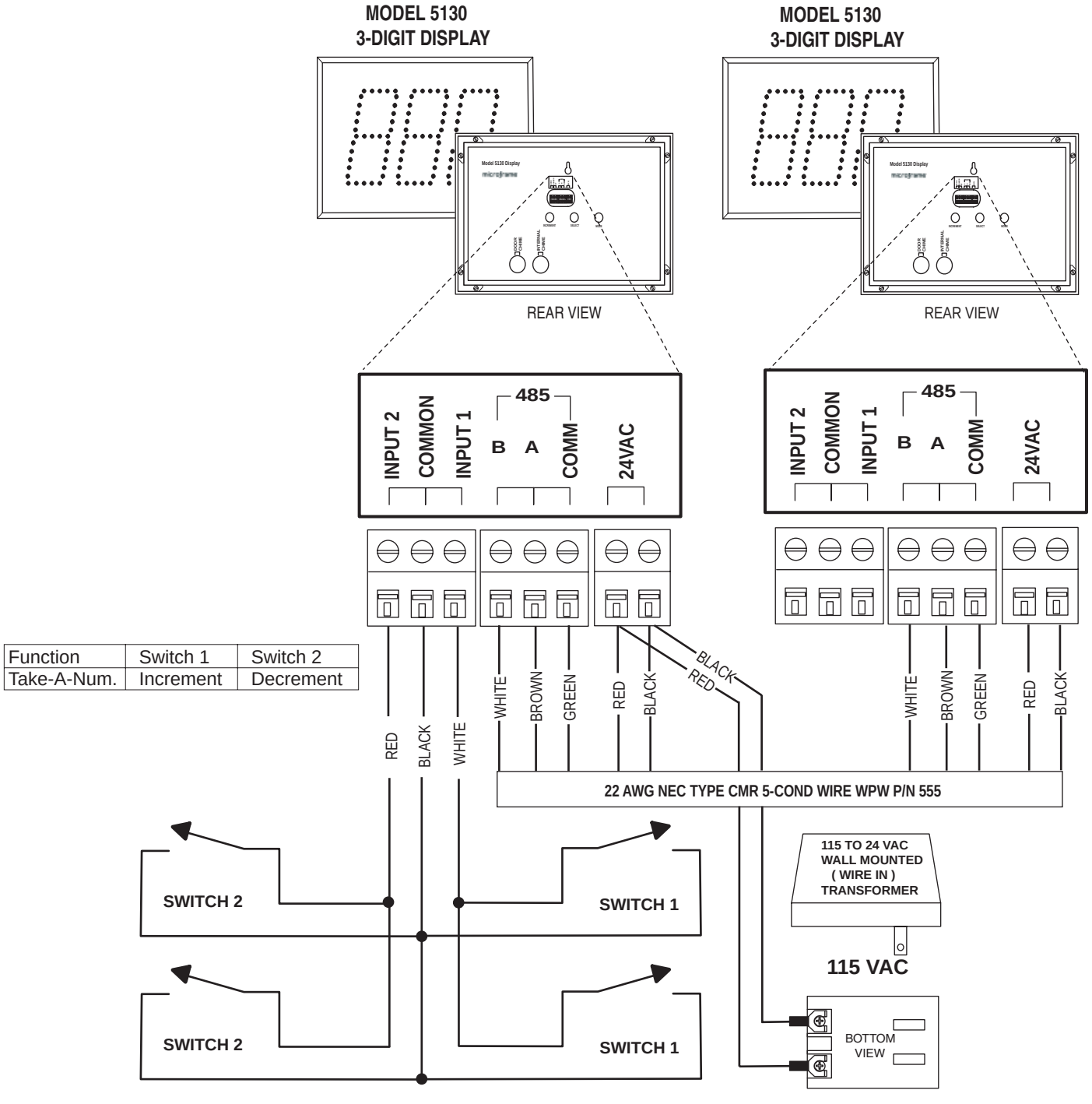
Appendix

Wiring Diagrams

Lobby Slave

The diagram below shows a multiple display system running off of one adapter. Although the drawings only show buttons connected to one display, you may connect buttons to each display in the system, depending on your application.

Note: While each display may have its own buttons, an individual button should not be connected to multiple displays.



Function	Switch 1	Switch 2
Take-A-Num.	Increment	Decrement

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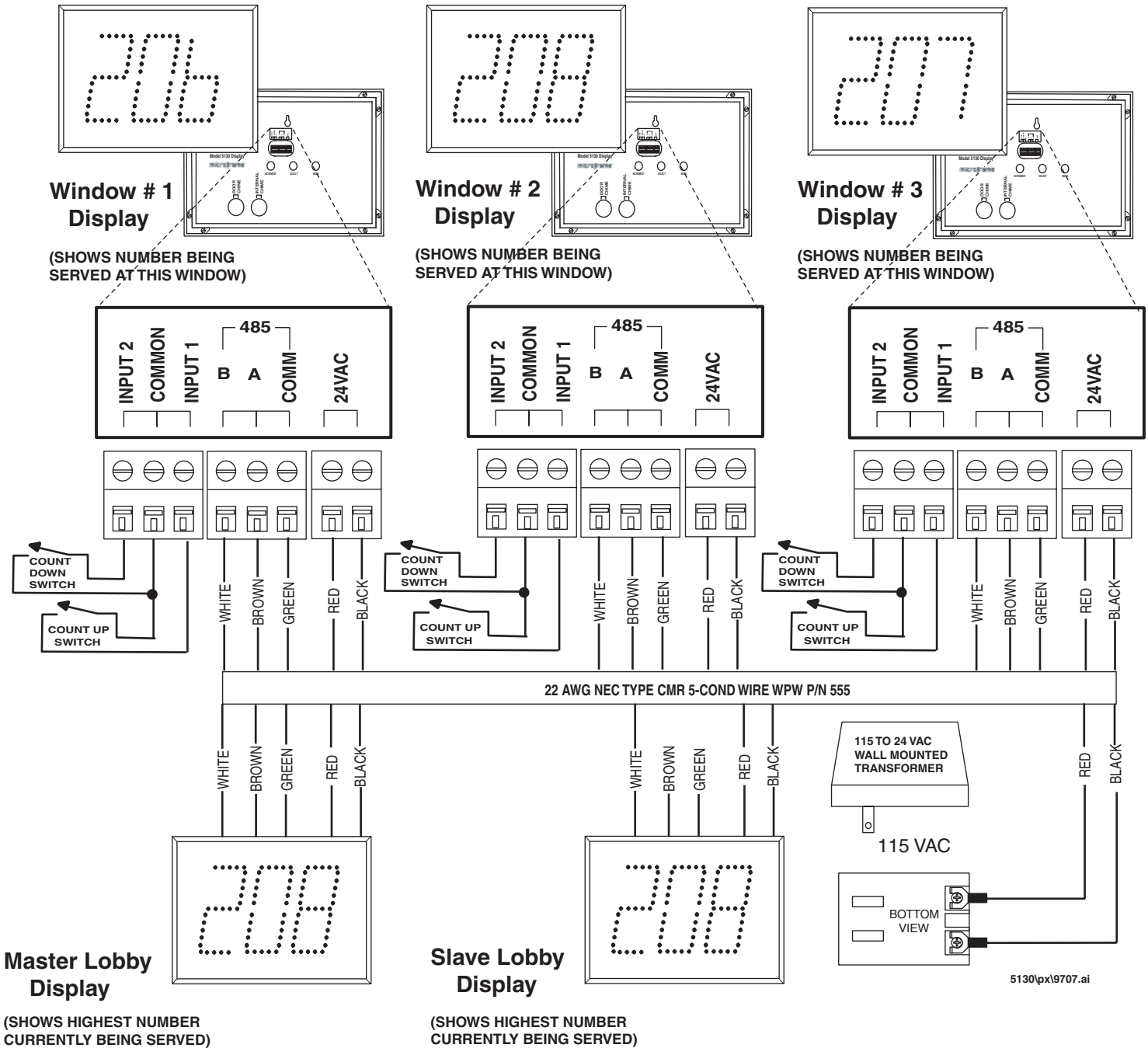
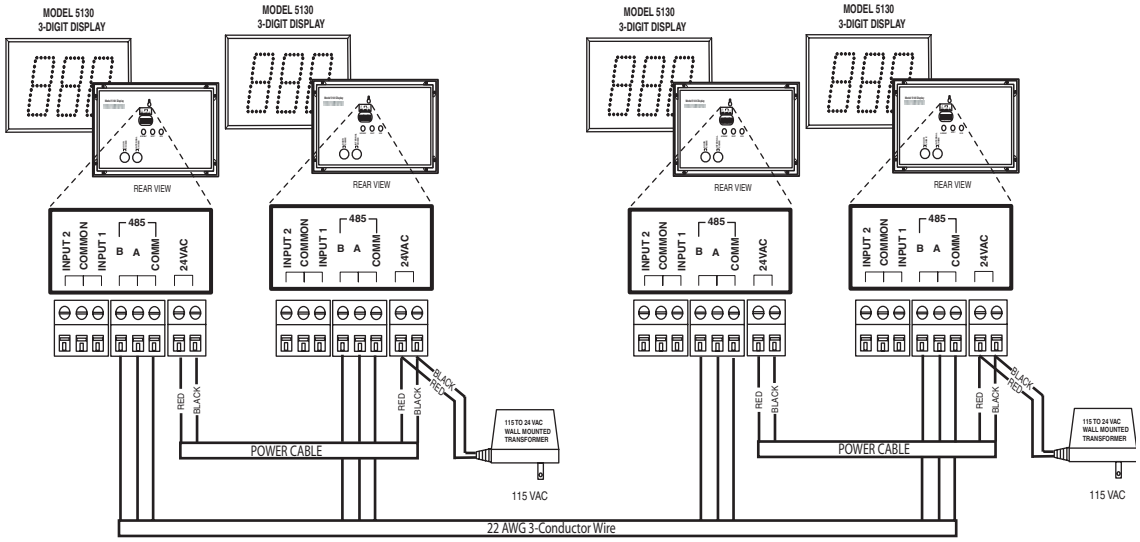
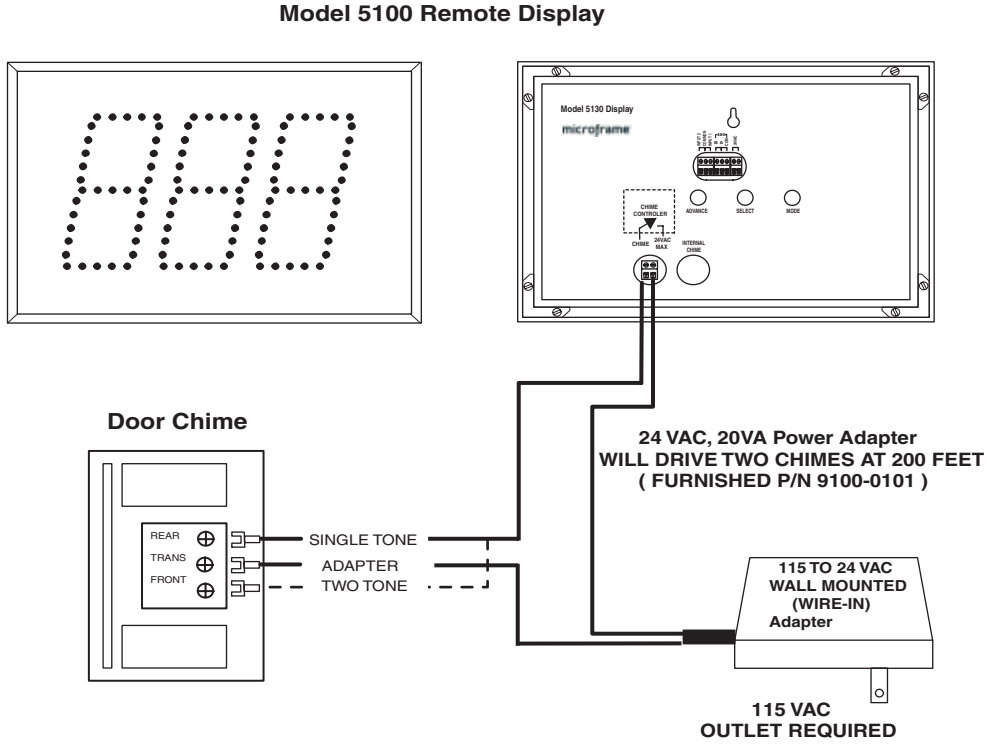
Multi-Window TAG System



Multiple AC Adapter Connection Detail Info



Optional External Chime Connection Detail Info



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Model 5100 Specifications
Stand-Alone Displays

Features

The 5100 Series display is a 2 or 3-digit intelligent LED display with infrared capabilities. This display has two inputs for buttons or logic controls and a communications link for communicating with other displays. Displays are powered by a 24-Volt AC adapter (included). Displays include a built-in audio chime.

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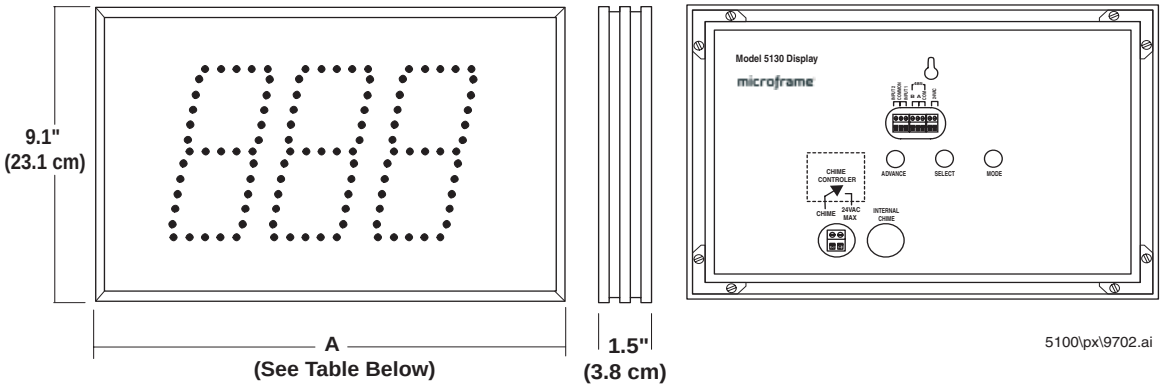

Model 5100 Specifications

Voltage Input Requirements	24 volts AC or DC	
Character Height	5.5 Inches	
Character Viewing Distance	125 Feet	
Temp	-20°C to 70°C (-4°F to 158°F)	
Case	Aluminum Extrusion	
Color	Black Frame w/ Dark Red Plexiglas Faceplate	
Environment	Indoor Use (Outdoor Cases Available)	
Display Size	**2-Digit**	**3-Digit**
Power Requirements	2.9 Watts	3.5 Watts
Weight	2.5 lbs	3.2 lbs
Width "A" Dimension Inches	9.8"	13.2"
Width "A" Dimension Centimeters	24.9 cm	33.5 cm

Support and Sales
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General Troubleshooting Chart

SYMPTOM	POSSIBLE CAUSE	CURE
Display will not light up.	Display is not plugged in or power adapter is bad.	Check AC wall connection or change to another wall outlet.
Display lights up but will not respond to wired buttons.	Poor or no signal connection to buttons.	Check signal cable connections to buttons and check for proper wiring on back panel. Try with a short cable to prove whether the problem is in the units or in the cable.
One or more segments do not light up.	One or more LEDs burned out. Typically caused only when lightning strikes.	Call Microframe to receive an RMA and then return to factory for repair.
Different displays are showing different numbers or times.	Poor signal connection to master display or displays are in different modes.	Check signal cables and routing. Make sure 'A' and 'B' wires are not reversed. Check Programmable Options to make sure correct modes are selected.
MWSS slave [16,17] is alternating between number and dashes.	Loss of communication to master display	Check that master is operating properly. Check wiring between master and window slaves.
Remote Control Troubleshooting		
Remote control buttons stopped responding.	Remote Locked Up Batteries dead	Remove Batteries. Press [Clear] 5 times. Insert batteries and check for operation. Replace batteries.

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